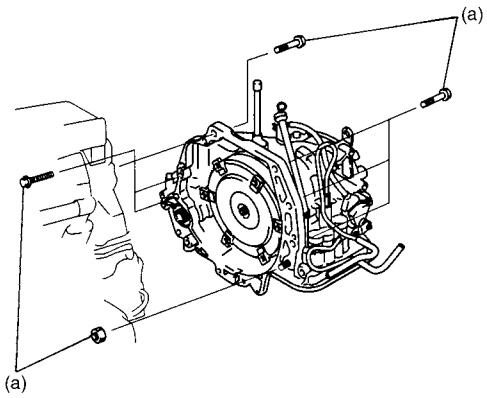
Remounting

1) Make sure that torque converter is installed correctly to transaxle.
   Refer to “Automatic Transaxle Unit Assembly”.
2) Attach transaxle to engine.

⚠ WARNING

Be sure to keep transaxle with torque converter horizontal or facing up throughout the work. Should it be tilted with torque converter down, converter may fall off and cause personal injury.

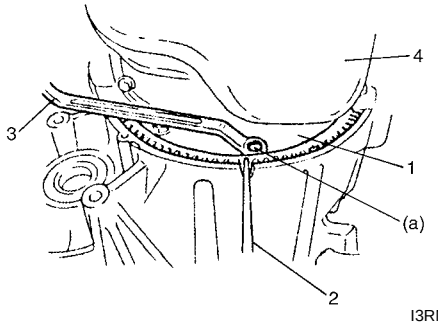
Tightening torque
Transaxle and engine fastening bolt and nut (a): 85 N·m (8.5 kgf-m, 61.5 lb-ft)



I3RM0B510050-01

3) Tighten drive plate to torque converter bolts. Align bolt hole of drive plate and torque converter then tighten bolts through torque converter housing lower plate opening.
   Lock drive plate (1) by engaging flat head rod or the like (2) with drive plate gear.

Tightening torque
Drive plate to torque converter bolt (a): 25 N·m (2.5 kgf-m, 18.0 lb-ft)

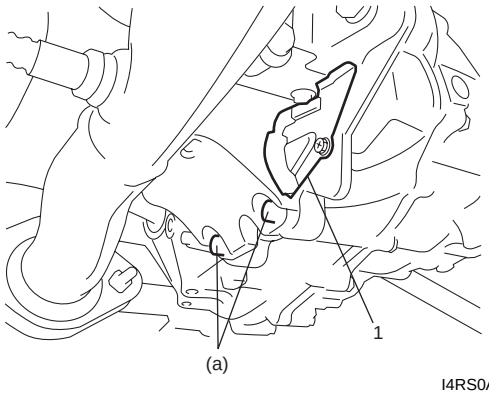


I3RM0B510051-01

3. Wrench	4. Engine oil pan

4) Tighten transaxle stiffener bolts to specified torque.
5) Install transaxle housing lower plates (1).

Tightening torque
Transaxle stiffener bolt (a): 55 N·m (5.5 kgf-m, 40 lb-ft)



I4RS0A510056-01

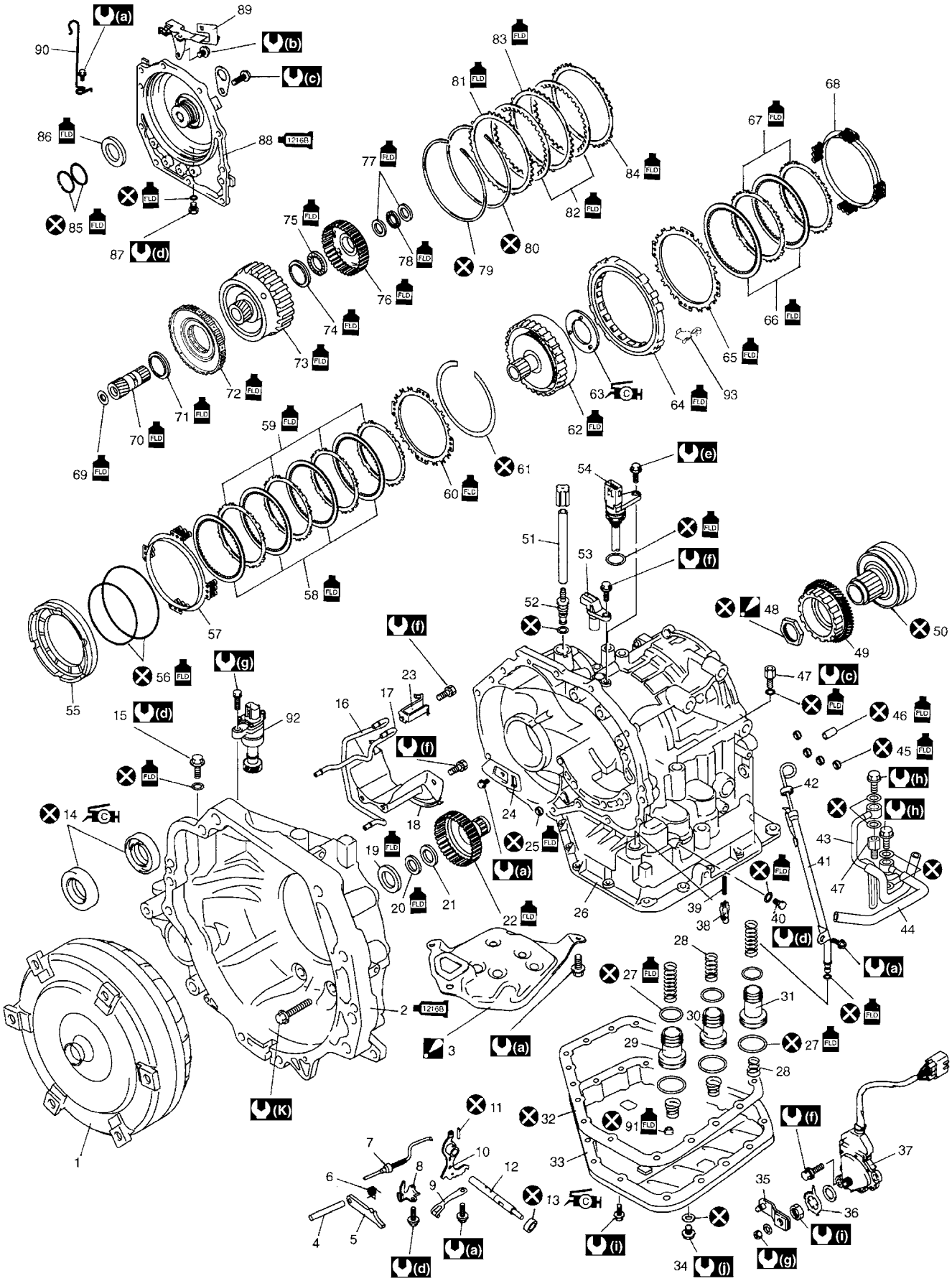
6) Install starter motor.

Tightening torque
Starter motor bolt and nut: 50 N·m (5.0 kgf-m, 36.5 lb-ft)

7) Remount engine with transaxle assembly to vehicle. Refer to “Engine Assembly Removal and Installation in Section 1D” for its procedure.

Automatic Transaxle Assembly Components

S7RS0B5106032



I6RS0C510016-04

1. Torque converter	37. Transmission range sensor	73. Rear planetary sun gear subassembly
1216B 2. Torque converter housing : Apply sealant 99000-31230 to mating surface to transaxle case.	38. Cooler check valve	74. Rear sun gear thrust bearing race
3. Oil strainer assembly : Replace oil strainer when overhauling.	39. Spring	75. Rear sun gear thrust bearing
4. Parking lock pawl shaft	40. Transaxle case plug	76. Forward clutch hub
5. Parking lock pawl	41. Fluid filler tube	77. Intermediate shaft thrust bearing race
6. Parking lock pawl return spring	42. Fluid level gauge	78. Intermediate shaft thrust bearing
7. Parking lock pawl rod	43. Fluid cooler inlet pipe	79. 2nd brake piston snap ring
8. Parking lock pawl bracket	44. Fluid cooler outlet pipe	80. O/D and 2nd coast brake retaining plate snap ring
9. Manual detent spring	45. 2nd brake gasket	81. O/D and 2nd coast brake retaining plate
10. Manual valve lever	46. Brake drum gasket	82. O/D and 2nd coast brake disc
11. Manual valve lever pin	47. Pipe union	83. O/D and 2nd coast brake separator plate
12. Manual shift shaft	48. Reduction drive gear nut : After tightening nut so as rotational torque of reduction drive gear to be in specified value, caulk nut securely.	84. O/D and 2nd coast brake rear plate
CH 13. Manual shift shaft oil seal : Apply grease 99000-25030 to oil seal lip.	49. Reduction drive gear	85. Rear cover seal ring
CH 14. Differential side oil seal : Apply grease 99000-25030 to oil seal lip.	50. Planetary ring gear subassembly	86. Reverse clutch drum thrust bearing
15. Torque converter housing plug	51. Breather hose	87. Rear cover plug
16. Lubrication LH tube	52. Breather union	1216B 88. Transaxle rear cover : Apply sealant 99000-31230 to mating surface.
17. Lubrication RH tube	53. Input shaft speed sensor	89. Harness bracket
18. Fluid reservoir RH plate	54. Valve body harness	90. Select cable clamp
19. Input shaft front thrust bearing	55. 1st and reverse brake piston	91. Governor apply No.1 gasket
20. Input shaft rear thrust bearing	56. O-ring	92. Output shaft speed sensor
21. Input shaft rear thrust bearing race	57. 1st and reverse brake return spring subassembly	93. One-way clutch outer race retainer
22. Direct clutch hub	58. 1st and reverse brake disc	: Do not reuse.
23. Lubrication tube clamp	59. 1st and reverse brake separator plate	FLD : Apply automatic transaxle fluid.
24. Fluid reservoir LH plate	60. 1st and reverse brake retaining plate	(a) : 10 N·m (1.0 kgf-m, 7.5 lb-ft)
25. Governor apply No.2 gasket	61. 1st and reverse brake snap ring	(b) : 23 N·m (2.3 kgf-m, 17 lb-ft)
26. Automatic transaxle case	62. Planetary gear assembly	(c) : 25 N·m (2.5 kgf-m, 18 lb-ft)
27. Accumulator piston O-ring	CH 63. Planetary carrier thrust washer : Apply grease 99000-25030 to slide contact face.	(d) : 7.5 N·m (0.75 kgf-m, 5.5 lb-ft)
28. Accumulator spring	64. One-way clutch No.2 assembly	(e) : 11 N·m (1.1 kgf-m, 8.0 lb-ft)
29. C2 accumulator piston	65. 2nd brake retaining plate	(f) : 5.5 N·m (0.55 kgf-m, 4.0 lb-ft)
30. C1 accumulator piston	66. 2nd brake disc	(g) : 13 N·m (1.3 kgf-m, 9.5 lb-ft)
31. B1 accumulator piston	67. 2nd brake separator plate	(h) : 22 N·m (2.2 kgf-m, 16 lb-ft)
32. Oil pan gasket	68. 2nd brake return spring subassembly	(i) : 7 N·m (0.7 kgf-m, 5.0 lb-ft)
33. Oil pan	69. Front sun gear thrust bearing race	(j) : 17 N·m (1.7 kgf-m,12.5 lb-ft)
34. A/T fluid drain plug	70. Front planetary sun gear	(k) : 29 N·m (2.9 kgf-m, 21 lb-ft)
35. Manual select lever	71. Planetary gear thrust bearing	
36. Lock washer	72. One-way clutch No.1 assembly	

Automatic Transaxle Unit Disassembly

S7RS0B5106033

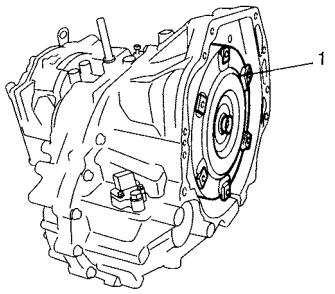
⚠ CAUTION

- **Thoroughly clean transaxle exterior before overhauling it.**
- **Keep working table, tools and hands clean while overhauling.**
- **Use special care to handle aluminum parts so as not to damage them.**
- **Do not expose removed parts to dust. Keep them always clean.**

1) Remove torque converter (1).

⚠ CAUTION

Remove torque converter as much straight as possible. Leaning it may cause to damage oil seal lip.



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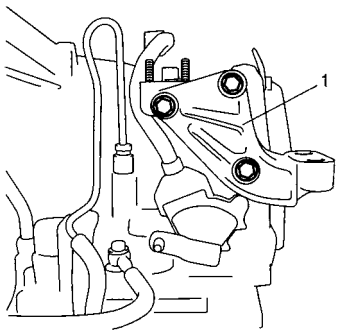
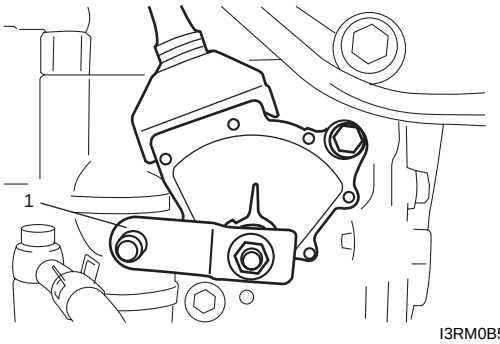
2) Remove engine mounting LH bracket (1).



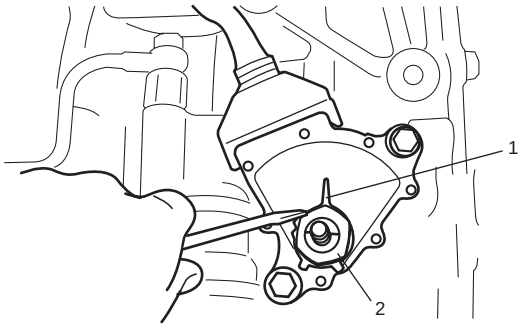
I3RM0B510054-01

3) Remove manual select lever (1).



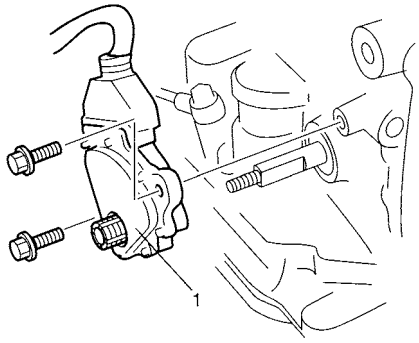
I3RM0B510055-01

4) Uncaulk lock washer (1), then remove lock nut (2) and lock washer.



I3RM0B510056-01

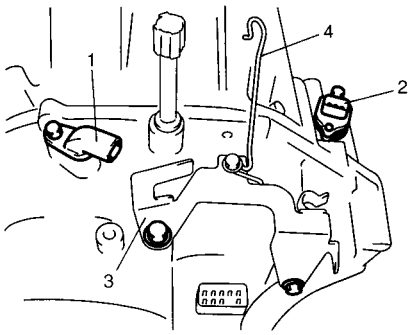
5) Remove transmission range sensor (1).



I3RM0B510057-01

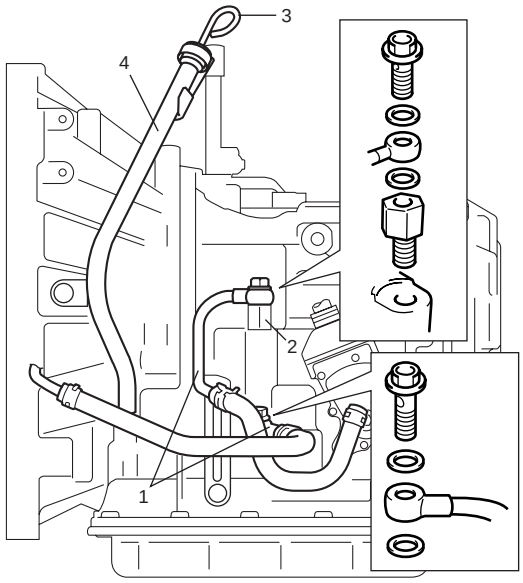
6) Remove output shaft speed sensor (2) and input shaft speed sensor (1).

7) Remove harness bracket (3) and select cable clamp (4).



I3RM0B510058-01

8) Remove fluid cooler pipes (1) and pipe union (2).
9) Remove fluid level gauge (3) and fluid filler tube (4).

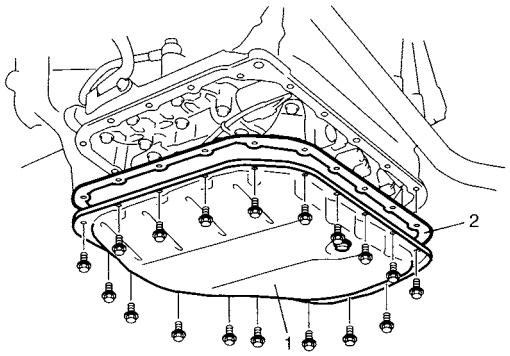


I3RM0B510059-01

10) Remove oil pan (1) and oil pan gasket (2).

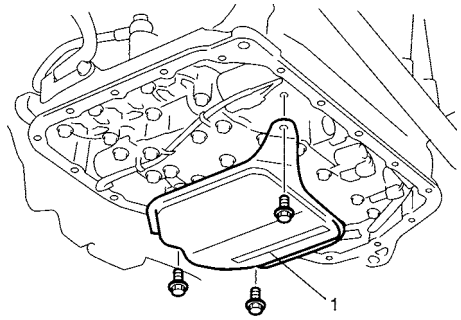
NOTE

- **For removal of oil pan, do not turn transaxle over as this will contaminate valve body with foreign materials in bottom of oil pan.**
- **When removing oil pan, tap around it lightly with plastic hammer. Do not force it off by using screwdriver or the like.**



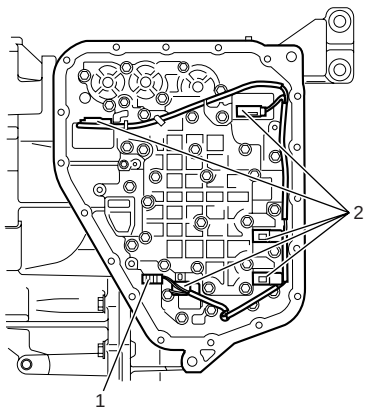
I2RH0B510086-01

11) Remove oil strainer assembly (1).



I2RH0B510087-01

12) Disconnect connectors (2) from solenoid valves and transmission fluid temperature sensor (1).



I4RS0A510027-01

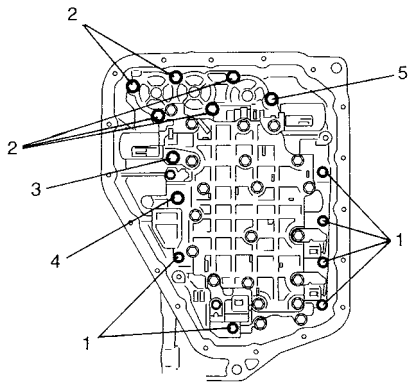
13) Remove valve body assembly bolts.

⚠ CAUTION

Be careful not to let manual valve fall off when removing valve body assembly.

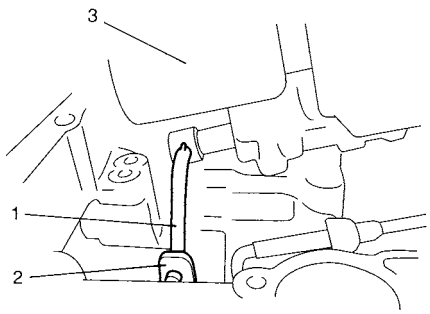
NOTE

There are five kinds of bolts (bolts A (1), B (2), C (3), D (4) and E (5)) fixing valve body assembly.



I2RH0B510089-01

14) Remove manual valve rod (1) from manual valve lever (2), then remove valve body assembly (3).

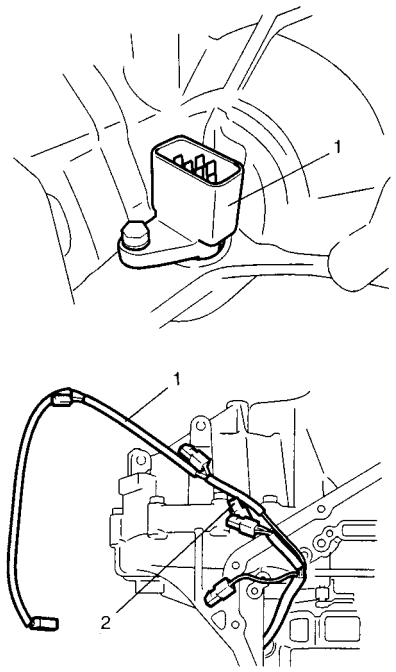


I2RH0B510090-01

15) Remove valve body harness (1).

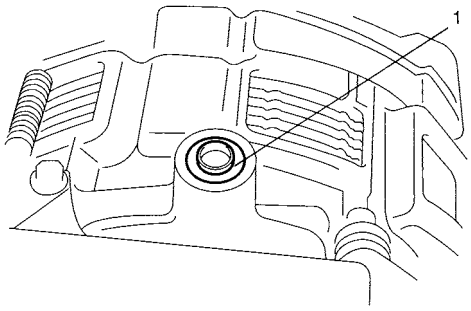
⚠ CAUTION

When pulling valve body harness out of transaxle case, take care not to damage transmission fluid temperature sensor (2) at narrow exit of case.
Careless sensor treatment might cause sensor malfunction.



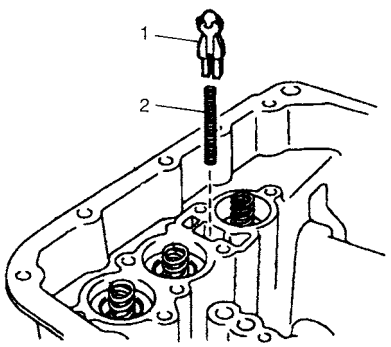
I2RH0B510091-01

16) Remove governor apply No.1 gasket (1).



I2RH0B510092-01

17) Remove cooler check valve (1) and spring (2).

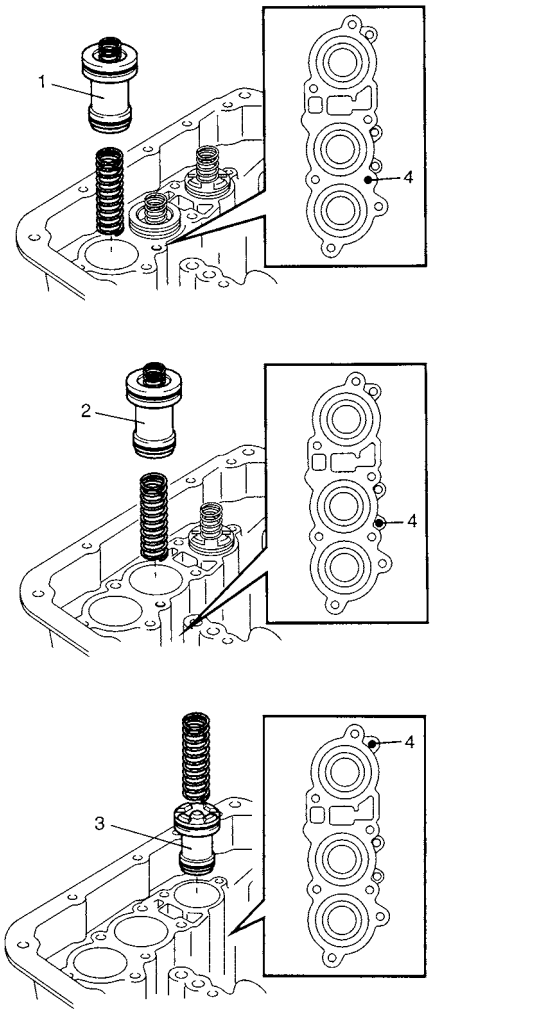


I2RH0B510093-01

18) Remove accumulator pistons and springs.
To remove C2 (1), C1 (2) and B1 (3) accumulator pistons and springs, position rag on pistons to catch each piston. To remove pistons, force low-pressure compressed air (1 kg/cm^2, 15 psi, 100 kPa, max) into hole (4) as shown in figure, and pop each piston into rag.

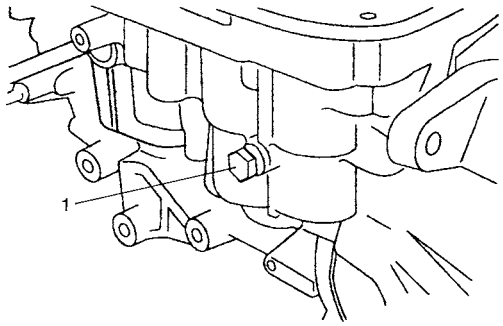
NOTE

Do not push accumulator pistons with fingers or anything before removing them. Pushing them may cause compressed fluid in accumulator to spew out of hole and get to your face and clothes.



I2RH0B510094-01

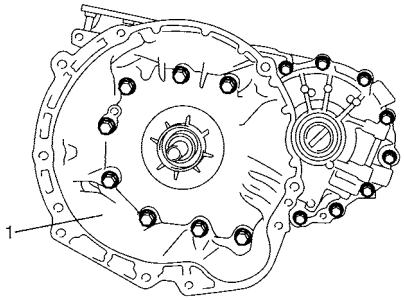
19) Remove transaxle case plug (1).



I2RH0B510095-01

20) Remove torque converter housing bolts.

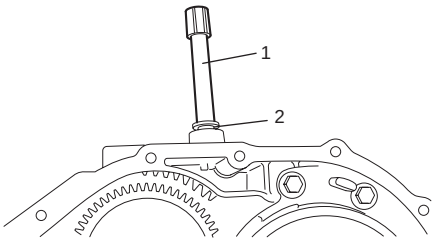
21) Remove torque converter housing (1) while tapping around it lightly with plastic hammer.



I3RM0B510060-01

22) Remove breather hose (1).

23) Remove breather union (2).



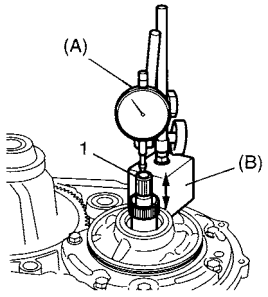
I2RH0B510097-01

24) Measure input shaft thrust play.
Apply dial gauge onto input shaft end (1) and measure thrust play of input shaft.
When input shaft thrust play is out of specification, select input shaft front thrust bearing with proper thickness from among the list below and replace it.

Special tool
(A): 09900–20607
(B): 09900-20701

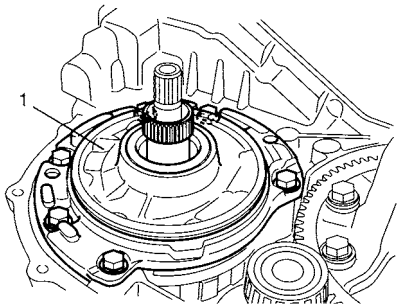
Input shaft thrust play
0.3 – 0.9 mm (0.012 – 0.035 in.)

Available input shaft front thrust bearing thickness
: 3.45, 4.05 mm (0.136, 0.159 in.)



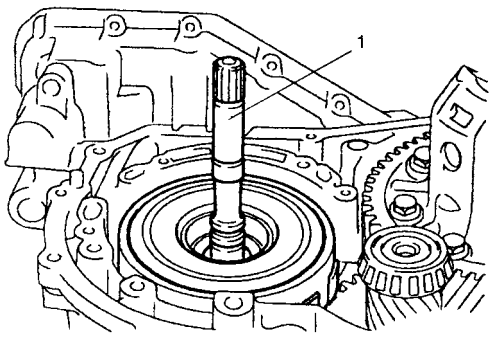
I2RH0B510098-01

25) Remove oil pump assembly (1).



I2RH0B510099-01

26) Remove direct clutch assembly (1).

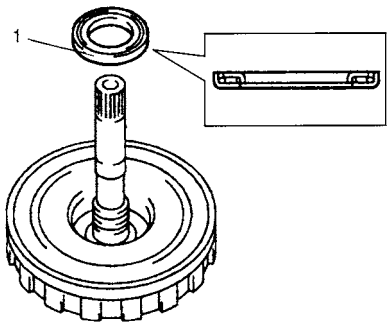


I2RH0B510100-01

27) Remove input shaft front thrust bearing (1).

NOTE

If input shaft front thrust bearing is not found, it may have been taken out with oil pump assembly.

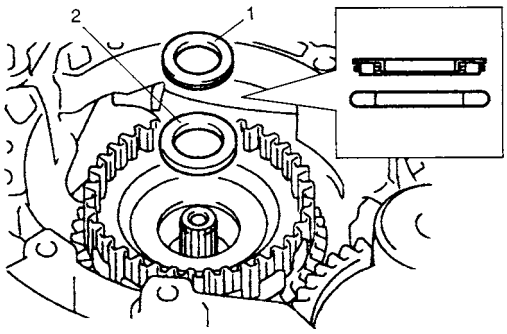


I2RH0B510101-01

28) Remove input shaft rear thrust bearing (1) and thrust bearing race (2).

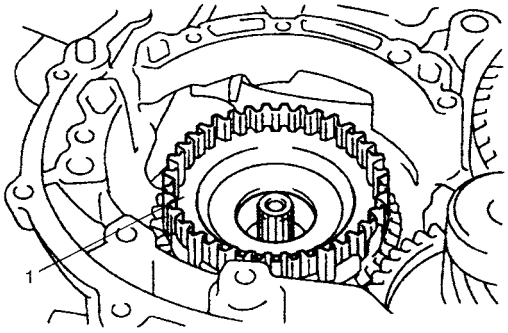
NOTE

If input shaft rear thrust bearing is not found, it may have been taken out with direct clutch assembly.



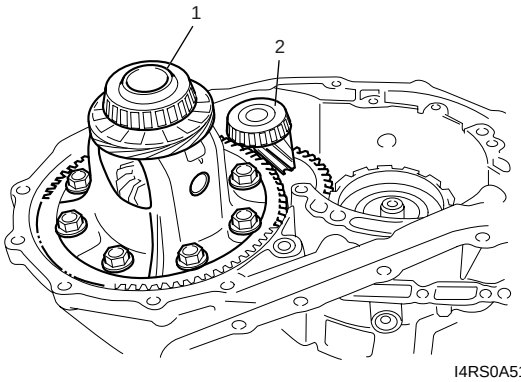
I2RH0B510102-01

29) Remove direct clutch hub (1).



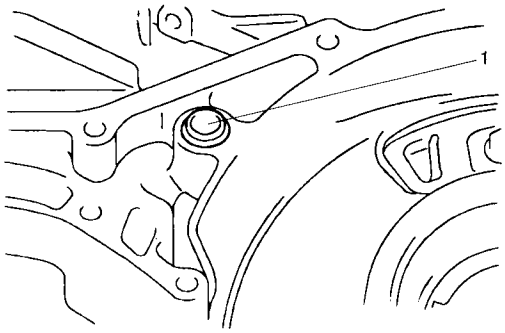
I2RH0B510103-01

30) Remove differential assembly (1) and countershaft assembly (2).



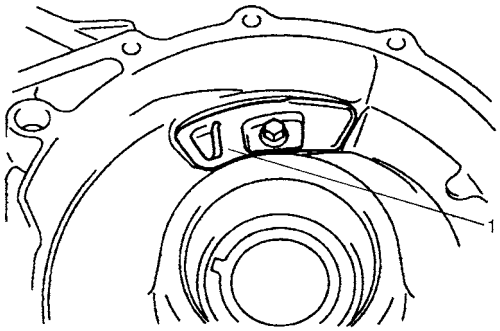
I4RS0A510036-01

31) Remove governor apply No.2 gasket (1).



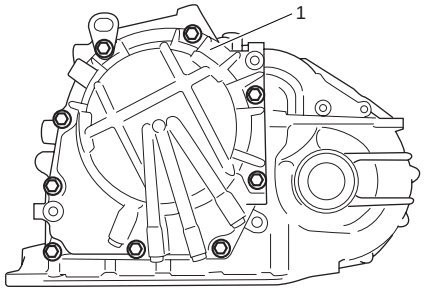
I2RH0B510105-01

32) Remove fluid reservoir LH plate (1).



I2RH0B510106-01

33) Turn over transaxle and remove rear cover assembly (1).

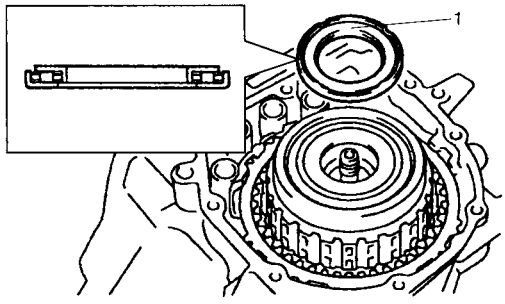


I4RS0A510037-01

34) Remove reverse clutch drum thrust bearing (1).

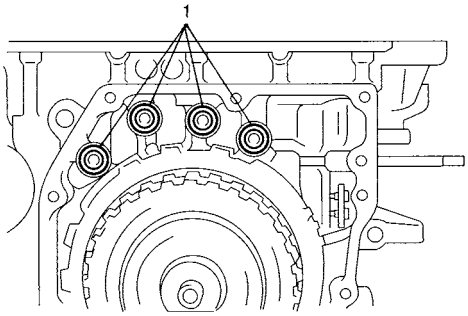
NOTE

If reverse clutch drum thrust bearing is not found, it may have been taken out with rear cover assembly.



I2RH0B510108-01

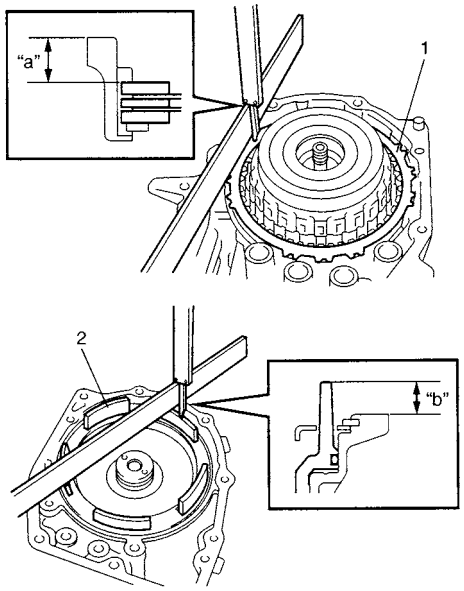
35) Remove 2nd brake gasket (1).



I2RH0B510109-01

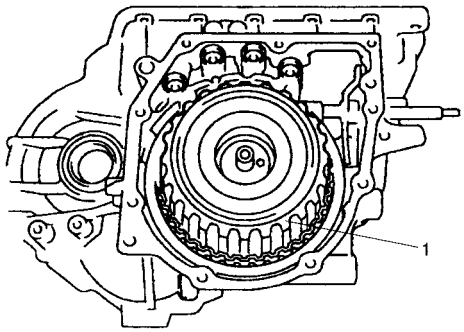
36) Measure O/D and 2nd coast brake piston stroke. If piston stroke exceeds specification, inspect and replace plates and discs.
- Measure dimension “a” from mating surface of transaxle case to O/D and 2nd coast brake rear plate (1) using straightedge and micrometer caliper.
- Measure dimension “b” from O/D and 2nd coast brake piston (2) to rear cover assembly mating surface using straightedge and micrometer caliper.
- Calculate piston stroke from measured value of dimensions “a” and “b”.
- Piston stroke = “a” – “b”

O/D and 2nd coast brake piston stroke
Standard: 0.65 – 1.05 mm (0.026 – 0.041 in.)



I2RH0B510110-01

37) Remove forward and reverse clutch assembly (1).

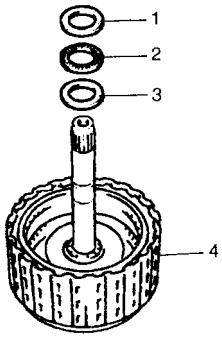


I2RH0B510111-01

38) Remove intermediate shaft thrust bearing front race (1), thrust bearing (2) and rear race (3) from forward and reverse clutch assembly (4).

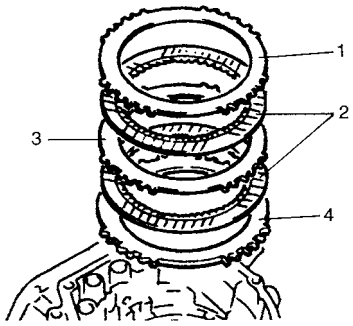
NOTE

If intermediate shaft thrust bearing and/or races are not found on forward and reverse clutch assembly, they may have been left in transaxle.



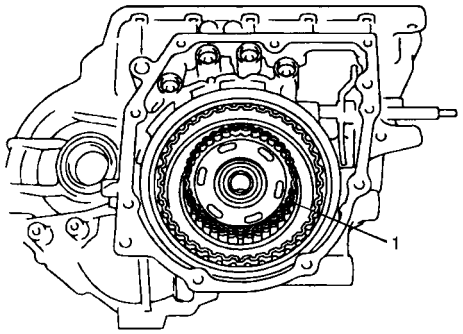
I2RH0B510112-01

39) Remove O/D and 2nd coast brake rear plate (1), discs (2), separator plate (3) and retaining plate (4).



I2RH0B510113-01

40) Remove forward clutch hub (1).

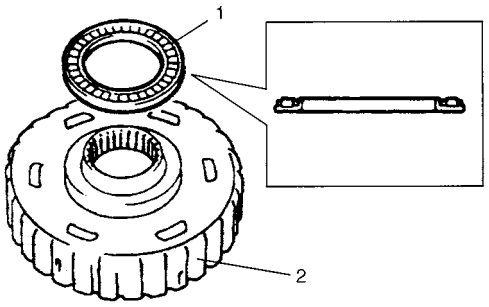


I2RH0B510114-01

41) Remove rear sun gear thrust bearing (1) from forward clutch hub (2).

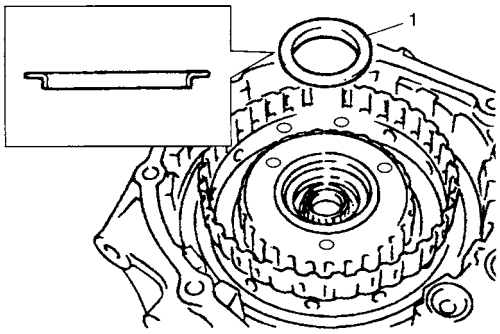
NOTE

If rear sun gear thrust bearing is not found on forward clutch hub, it may have been left in transaxle.



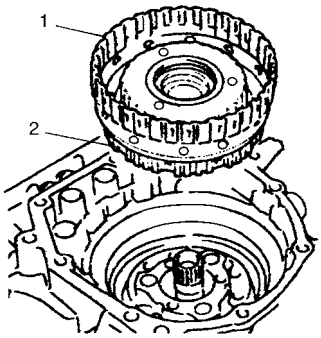
I2RH0B510115-01

42) Remove rear sun gear thrust bearing race (1).



I2RH0B510116-01

43) Remove rear planetary sun gear subassembly (1) and one-way clutch No.1 assembly (2).



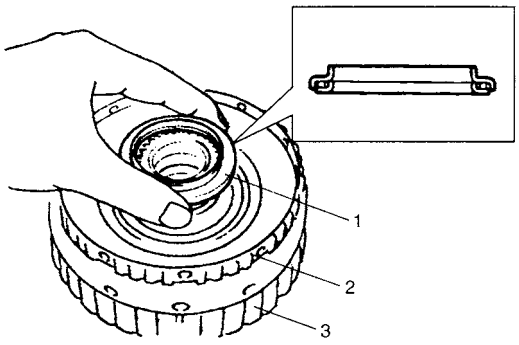
I2RH0B510117-01

44) Remove planetary gear thrust bearing (1).

NOTE

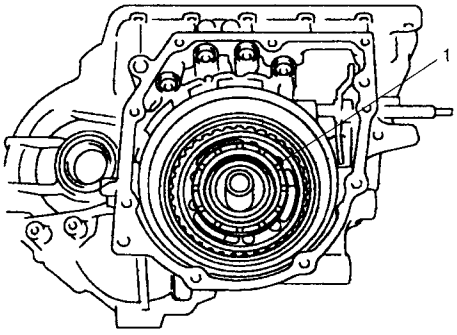
If planetary gear thrust bearing is not found on one-way clutch No.1 assembly, it may have been left in transaxle.

45) Remove one-way clutch No.1 assembly (2) from rear planetary sun gear subassembly (3).



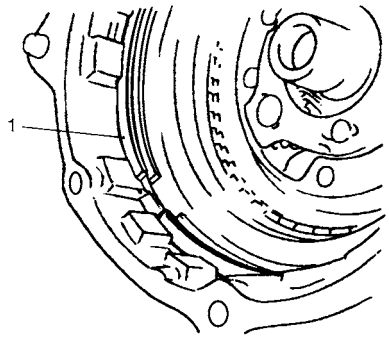
I2RH0B510118-01

46) Remove planetary carrier thrust washer (1).



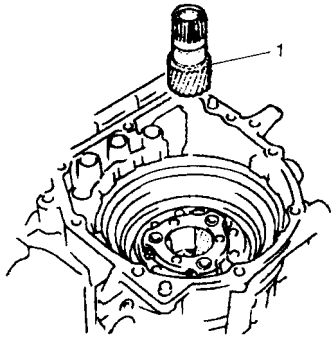
I2RH0B510119-01

47) Remove O/D and 2nd coast brake retaining plate snap ring (1).



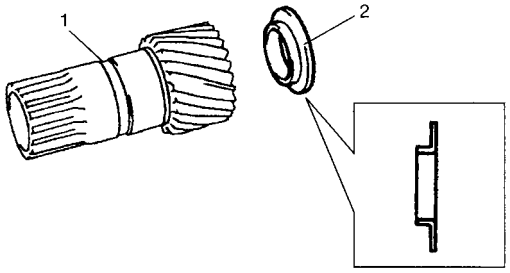
I2RH0B510120-01

48) Remove front planetary sun gear (1).



I2RH0B510121-01

49) Remove front sun gear thrust bearing race (2) from front planetary sun gear (1).



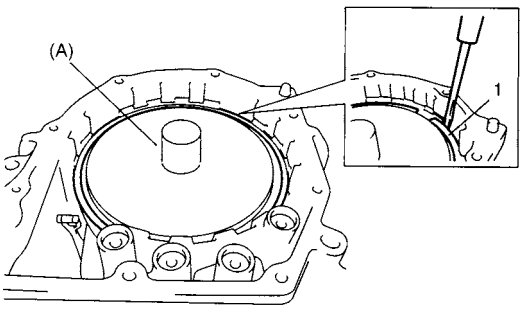
I2RH0B510122-01

50) Using special tool and hydraulic press, remove 2nd brake piston snap ring (1).

⚠ CAUTION

Do not press 2nd brake piston assembly in over 0.4 mm (0.016 in.).
Excessive compression may cause damage to piston assembly, return spring, plates and/or discs.

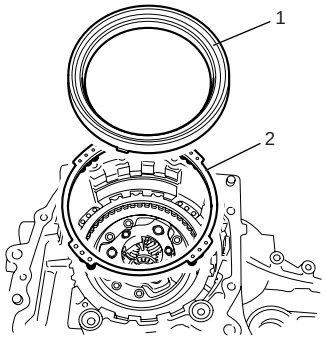
Special tool
(A): 09926–96050



I2RH0B510124-01

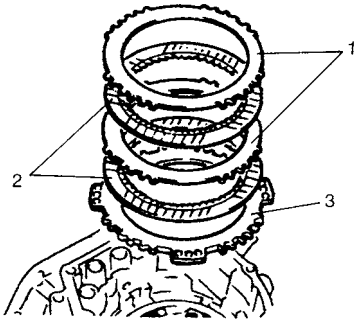
51) Remove 2nd brake piston assembly (1).

52) Remove 2nd brake return spring subassembly (2).



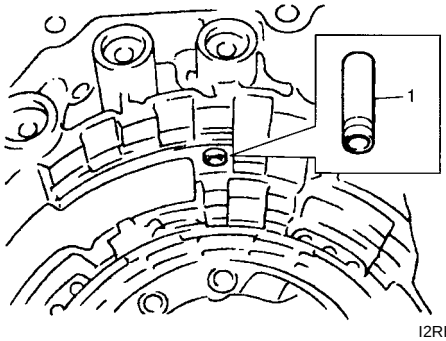
I4RS0A510038-01

53) Remove 2nd brake separator plates (1), discs (2) and retaining plate (3).



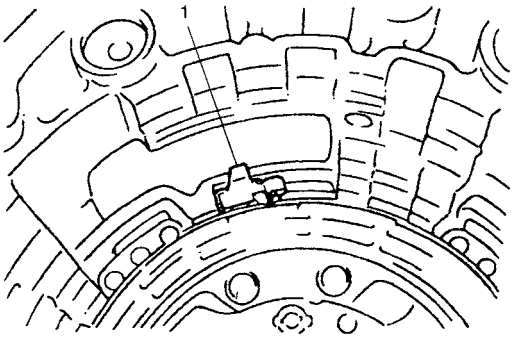
I2RH0B510127-01

54) Remove brake drum gasket (1).



I2RH0B510128-01

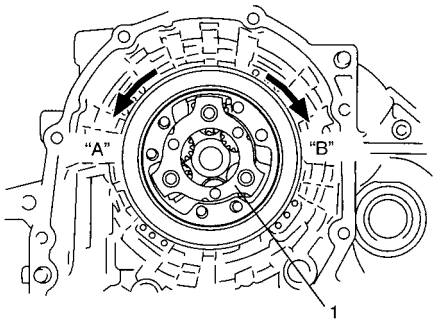
55) Remove one-way clutch outer race retainer (1).



I2RH0B510129-01

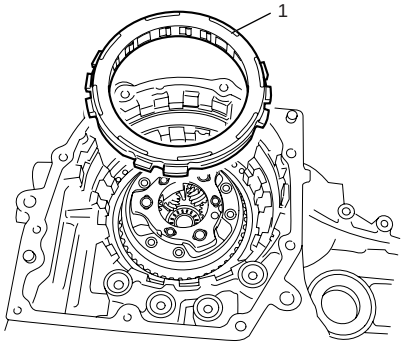
56) Check one-way clutch No.2 as follows.

- Ensure planetary carrier (1) rotates only in counterclockwise direction “A”, never in clockwise direction “B”.
- If the planetary carrier rotates both ways or does not rotate either way, one-way clutch No.2 assembly will need to be replaced with new one-way clutch No.2 assembly.



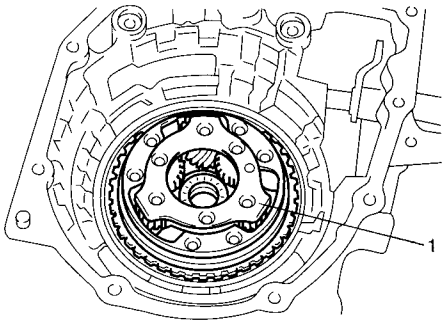
I2RH0B510130-01

57) Remove one-way clutch No.2 assembly (1).



I4RS0A510039-01

58) Remove planetary gear assembly (1).



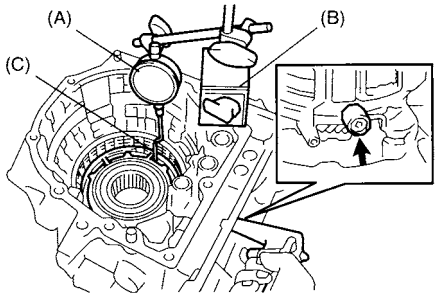
I2RH0B510132-01

59) Measure 1st and reverse brake piston stroke.
If piston stroke exceeds specified value, disassemble, inspect and replace discs and plates.

- Using special tool, measure 1st and reserve brake piston stroke when compressed air (400 – 800 kPa, 4 – 8 kg/cm^2, 57 – 113 psi) is blown through oil hole.

Special tool
(A): 09900–20607
(B): 09900–20701
(C): 09952–06020

1st and reverse brake piston stroke
Standard: 0.79 – 1.49 mm (0.031 – 0.059 in.)



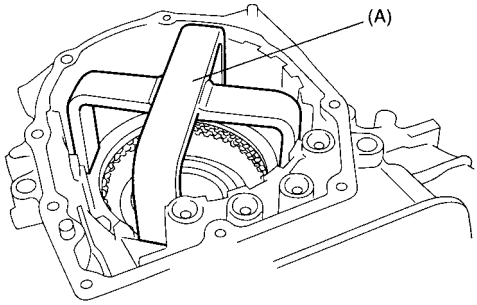
I2RH0B510133-01

60) Remove snap ring while the 1st and reverse brake piston return springs are compressed using special tool and hydraulic press.

⚠ CAUTION

Do not press 1st and reverse brake return spring subassembly in over 0.8 mm (0.031 in.).
Excessive compression may cause damage to return spring subassembly, discs, plates and/or piston.

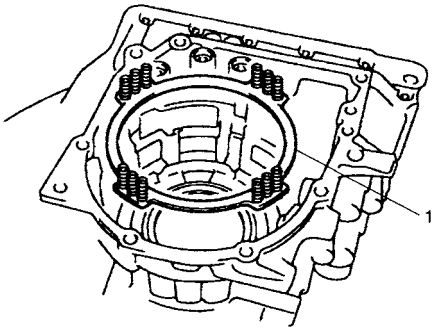
Special tool
(A): 09926–97620



I2RH0B510134-01

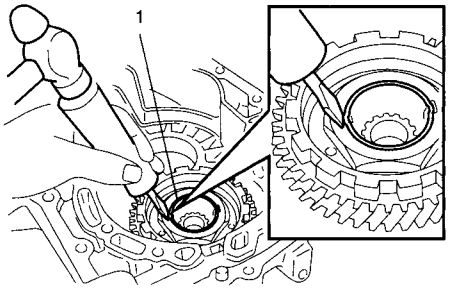
61) Remove 1st and reverse brake retaining plate, discs and separator plates.

62) Remove 1st and reverse brake return spring subassembly (1).



I2RH0B510135-01

63) Turn over transaxle and uncaulk reduction drive gear nut (1).

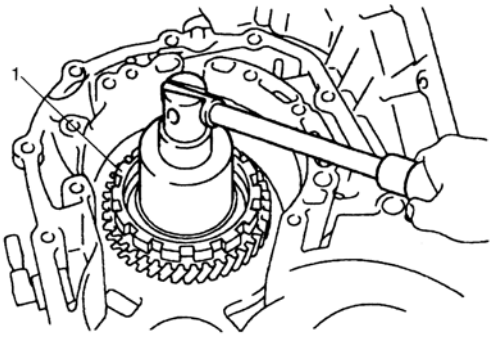


I2RH0B510136-01

64) Secure reduction drive gear (1) with parking lock pawl, then remove reduction drive gear nut.

⚠ CAUTION

- **It is recommended that this operation should be carried out on rubber mat to prevent damaging transaxle case.**
- **Never reuse removed nut.**



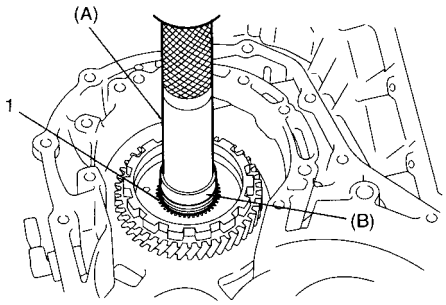
I2RH0B510137-02

65) Using special tools and hydraulic press, remove planetary ring gear subassembly (1).

⚠ CAUTION

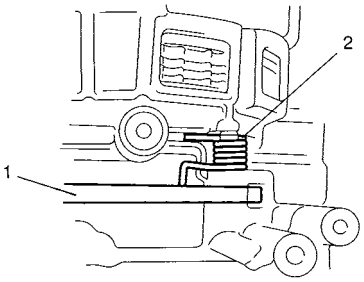
Do not reuse planetary ring gear subassembly. Otherwise it may cause damage to planetary gear unit and/or reduction gears.

Special tool
(A): 09913–84510
(B): 09923–78210



I2RH0B510138-01

66) Remove parking lock pawl shaft, then spring (2) and parking lock pawl (1).



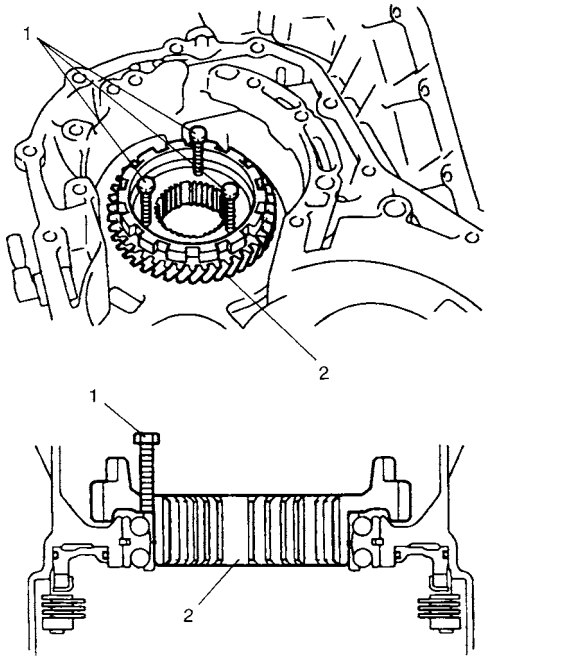
I2RH0B510139-01

67) Screwing 3 bolts (1), remove reduction drive gear (2).

⚠ CAUTION

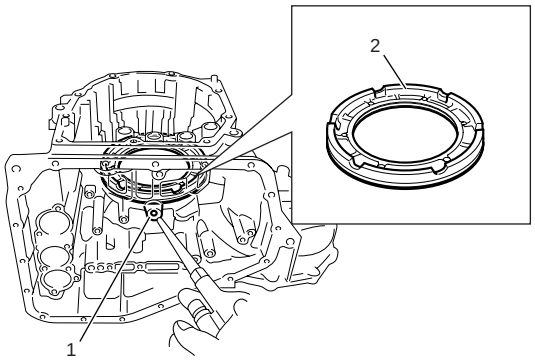
Screw 3 bolts into reduction drive gear uniformly, or reduction drive gear, bearing and transaxle case may be damaged.

Bolt length
35 mm (1.38 in.)



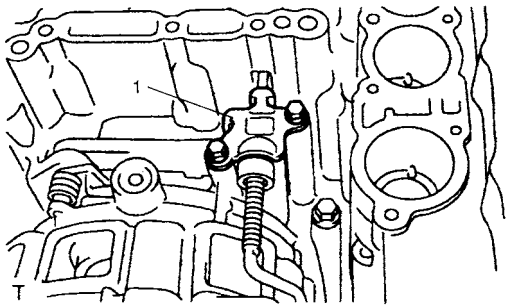
I2RH0B510140-01

68) Blowing compressed air from oil hole (1) of oil pump, remove 1st and reverse brake piston (2).



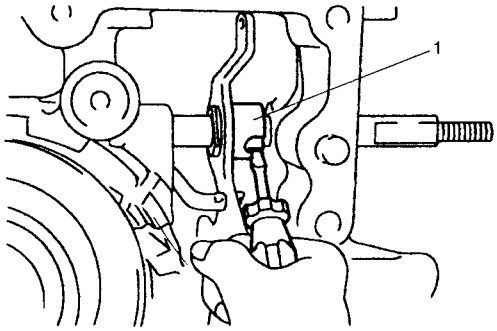
I4RS0A510040-01

69) Remove parking lock pawl bracket (1).



I2RH0B510142-01

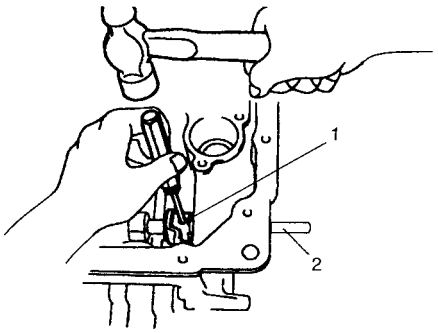
70) With slotted screwdriver, cut and unfold manual valve lever spacer (1) and proceed to remove manual valve lever spacer.



I2RH0B510143-01

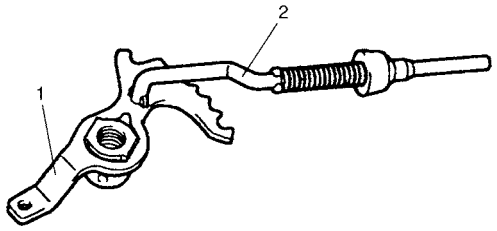
71) Using spring pin remover with 3.5 mm (0.14 in.) in diameter and hammer, drive out manual valve lever pin (1).

72) Remove manual shift shaft (2).



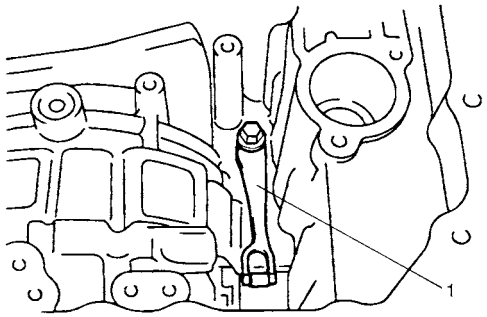
I2RH0B510144-01

73) Remove parking lock pawl rod (2) from manual valve lever (1).



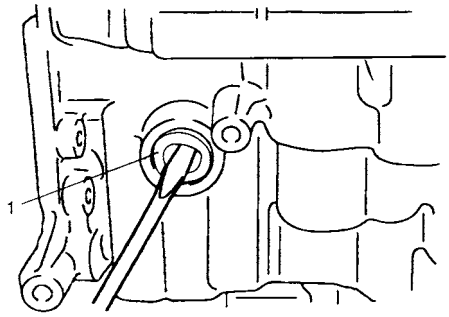
I2RH0B510145-01

74) Remove manual detent spring (1).



I2RH0B510146-01

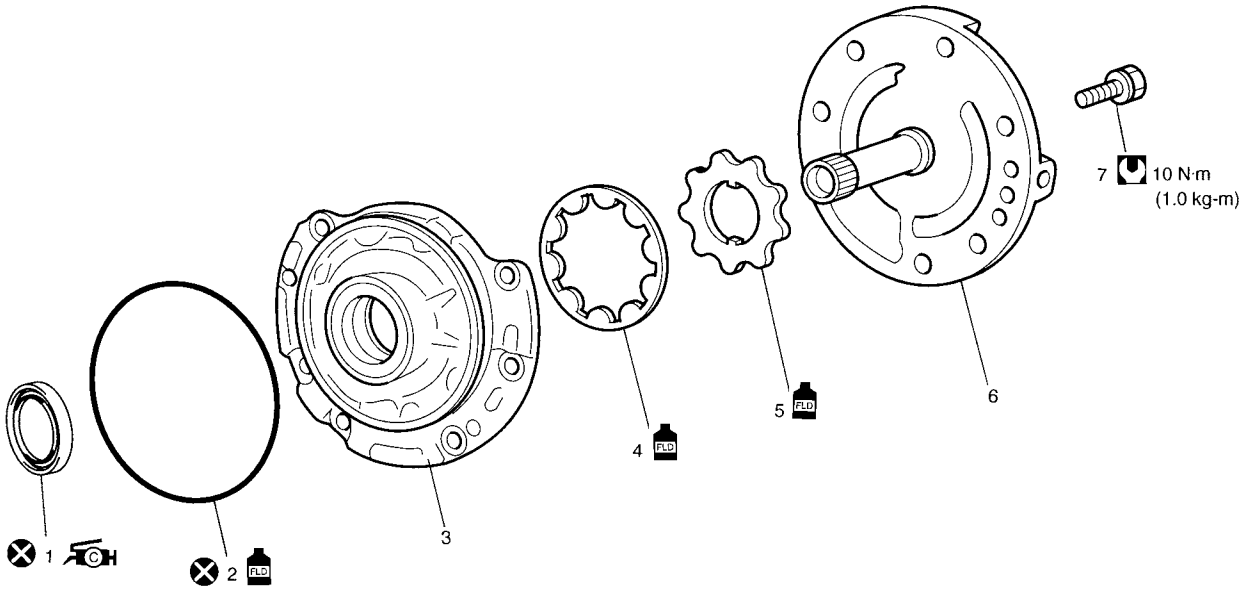
75) Remove manual shift shaft oil seal (1).



I2RH0B510147-01

Oil Pump Assembly Components

S7RS0B5106034



I2RH0B510148-01

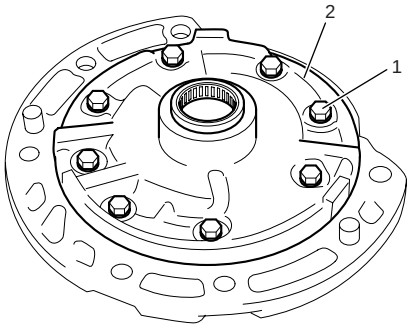
1. Oil seal : Apply grease 99000-25030 to oil seal lip.	5. Oil pump drive gear	: Apply automatic transaxle fluid.
2. O-ring	6. Stator shaft assembly	: Tightening torque
3. Oil pump body	7. Oil pump subassembly bolts	: Do not reuse.
4. Oil pump driven gear		

Oil Pump Assembly Disassembly and Reassembly

S7RS0B5106035

Disassembly

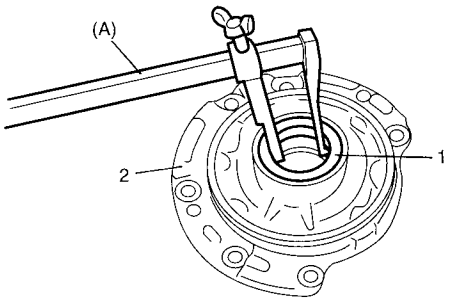
1) Remove O-ring from pump body.
2) Remove 8 oil pump subassembly bolts (1) and stator shaft assembly (2).



I4RS0A510041-01

3) Remove oil seal (1) using special tool.

Special tool
(A): 09913–50121



I2RH0B510150-01

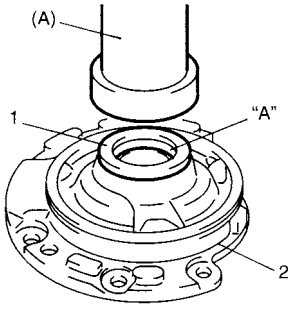
2. Oil pump body

Reassembly

1) Install new oil pump body oil seal (1).
Use special tool and hammer to install it, and then apply grease to its lip portion.

Special tool
(A): 09913–85210

"A": Grease 99000–25030 (SUZUKI Super Grease C)

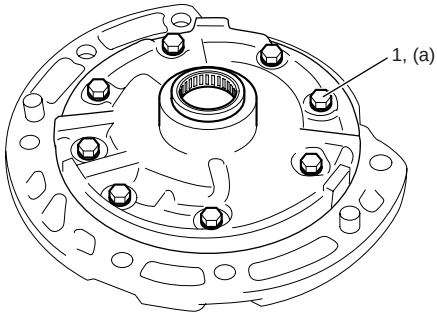


I2RH0B510151-01

2. Oil pump body

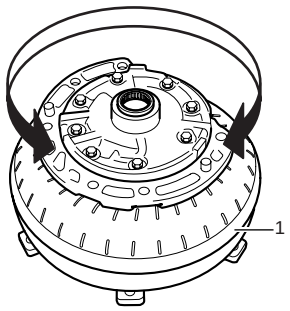
2) Install driven gear and drive gear to oil pump body after applying A/T fluid.
3) Install stator shaft assembly to oil pump body and tighten 8 pump subassembly bolts (1) to specification.

Tightening torque
Oil pump subassembly bolt (a): 10 N·m (1.0 kgf-m, 7.5 lb-ft)



I4RS0A510042-01

4) After applying A/T fluid to new O-ring, install it to oil pump body.
5) Check drive gear for smooth rotation by using torque converter (1).



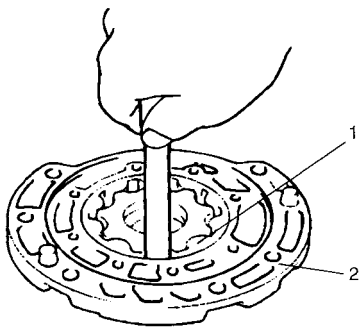
I4RS0A510043-01

Oil Pump Assembly Inspection

S7RS0B5106036

1) Check body clearance of driven gear (1).
Push driven gear to one side of oil pump body (2). Using a feeler gauge, measure clearance between driven gear and body. If clearance exceeds its standard value, replace oil pump assembly.

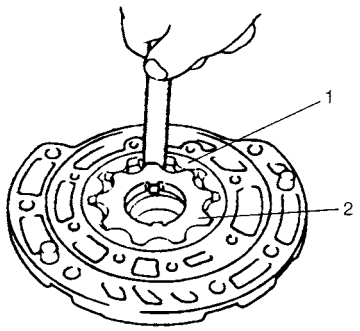
Clearance between oil pump driven gear and oil pump body
Standard: 0.10 – 0.17 mm (0.0039 – 0.0067 in.)



I2RH0B510154-01

2) Check tip clearance of both drive and driven gears.
Using a feeler gauge, measure clearance between drive and driven gear tips. If clearance exceeds its standard value, replace oil pump assembly.

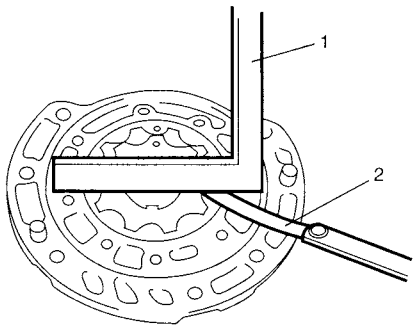
Tip clearance between oil pump drive gear and oil pump driven gear
Standard: 0.07 – 0.15 mm (0.0028 – 0.0059 in.)



I2RH0B510155-01

3) Check side clearance of both gears.
Using a straightedge (1) and a feeler gauge (2), measure side clearance between gears and pump body.
If clearance exceeds its standard value, replace oil pump assembly.

Side clearance between gears and oil pump body
Standard: 0.02 – 0.05 mm (0.0008 – 0.0019 in.)

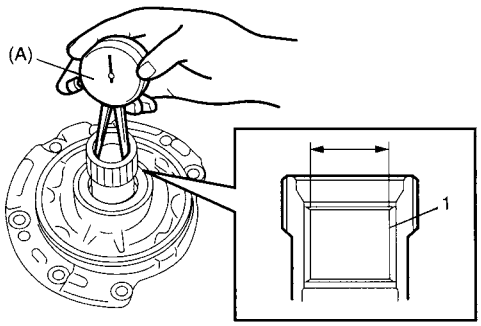


I2RH0B510156-01

4) Using special tool, measure stator shaft bush (1) bore.
If measured stator shaft bush bore is out of specifications, replace oil pump assembly with new one.

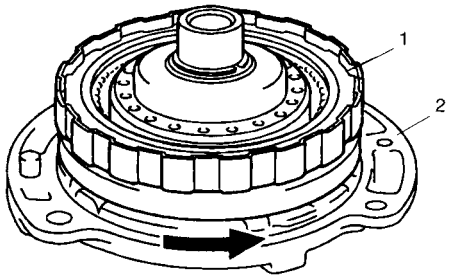
Special tool
(A): 09900–20605

Stator shaft bush bore
Standard: 18.424 – 18.450 mm (0.7254 – 0.7264 in.)



I2RH0B510157-01

5) Install direct clutch assembly (1) to stator shaft assembly (2), then ensure that direct clutch assembly turns smoothly.
If unsmooth rotation or noise are found in oil pump assembly, replace oil pump assembly with new one. This check should also be done to input shaft assembly and replace input shaft assembly if necessary.

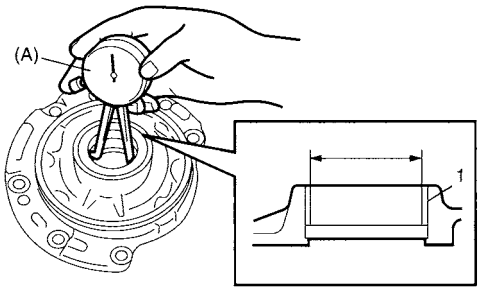


I2RH0B510158-01

6) Using special tool, measure oil pump body bush bore.
If measured oil pump body bush (1) bore is out of specifications, replace oil pump assembly with new one. Torque converter also needs to be checked. Replace torque converter, if necessary.

Special tool
(A): 09900–20605

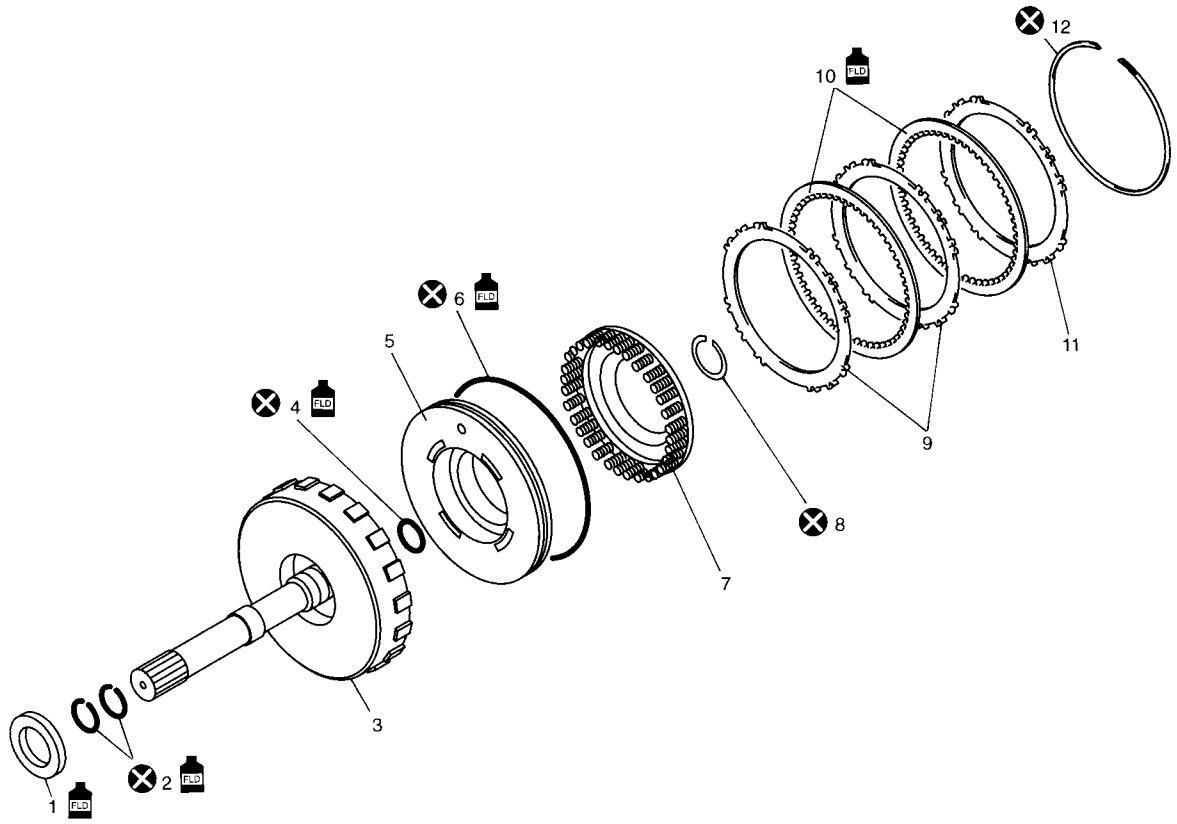
Oil pump body bush bore
Standard: 38.113 – 38.138 mm (1.5005 – 1.5015 in.)



I2RH0B510159-01

Direct Clutch Assembly Components

S7RS0B5106037



I2RH0B510160-01

1. Input shaft front thrust bearing	6. Outer O-ring	11. Direct clutch retaining plate
2. Input shaft seal ring	7. Direct clutch return spring subassembly	12. Plate snap ring
3. Input shaft subassembly	8. Shaft snap ring	FLD : Apply automatic transaxle fluid.
4. Inner O-ring	9. Direct clutch separator plate	⊗ : Do not reuse.
5. Direct clutch piston	10. Direct clutch disc	

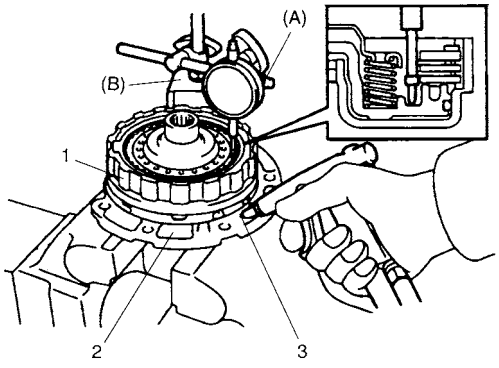
Direct Clutch Assembly Preliminary Check

S7RS0B5106038

Install direct clutch assembly (1) to oil pump assembly (2) blow in air (400 – 800 kPa, 4 – 8 kg/cm^2, 57 – 113 psi) through oil hole (3) of oil pump assembly with special tool attached on upper surface of direct clutch piston, and measure piston stroke of direct clutch.
If piston stroke exceeds specified value, disassemble, inspect and replace inner parts.

Special tool
(A): 09900–20607
(B): 09900–20701

Direct clutch piston stroke
0.4 – 0.7 mm (0.016 – 0.027 in.)



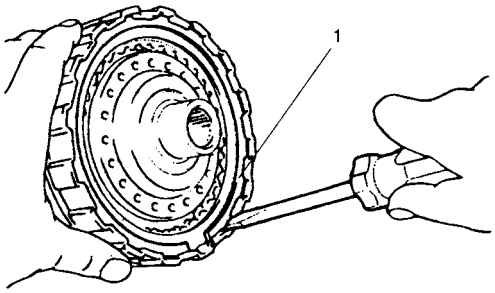
I2RH0B510161-01

Direct Clutch Assembly Disassembly and Reassembly

S7RS0B5106039

Disassembly

1) Remove plate snap ring (1) then remove direct clutch retaining plate, discs and separator plates.



I2RH0B510162-01

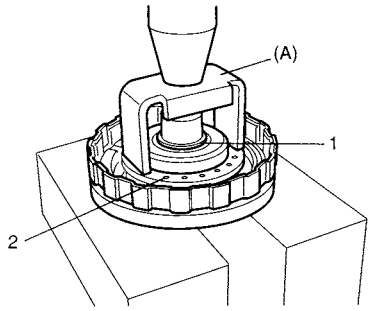
2) Using special tool and hydraulic press, remove shaft snap ring (1).

Special tool
(A): 09926–98310

⚠ CAUTION

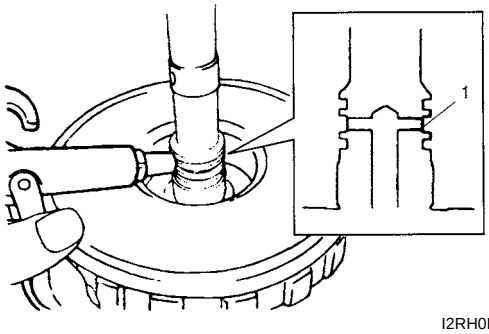
Do not press direct clutch return spring subassembly in over 0.7 mm (0.027 in.). Excessive compression may cause damage to direct clutch return spring subassembly and/or piston.

3) Remove direct clutch return spring assembly (2).



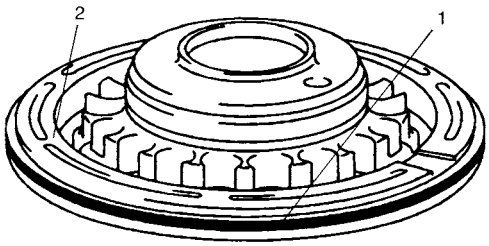
I2RH0B510163-01

4) Using a finger to block oil hole (1), apply compressed air (400 – 800 kPa, 4 – 8 kg/cm^2, 57 – 113 psi) to opposite hole, which will assist in removal of the clutch piston.



I2RH0B510164-01

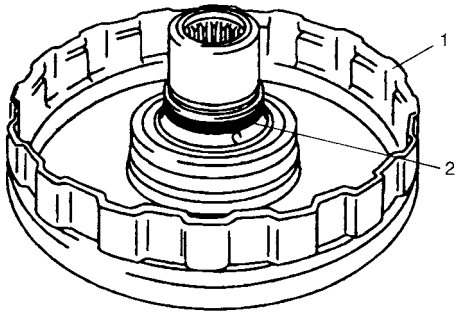
5) Remove outer O-ring (1).



I2RH0B510165-01

2. Direct clutch piston

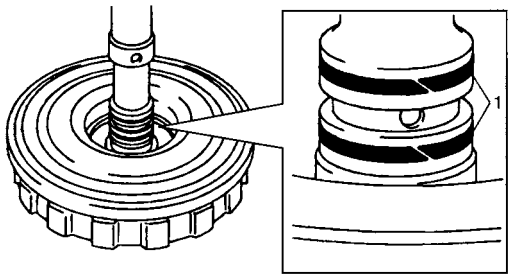
6) Remove inner O-ring (2).



I2RH0B510166-01

1. Input shaft subassembly

7) Remove input shaft seal rings (1).



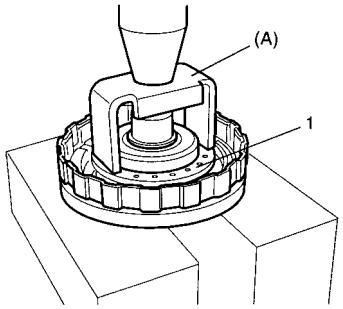
I2RH0B510167-01

Reassembly

Reverse disassembly procedure for assembly, noting the following points.

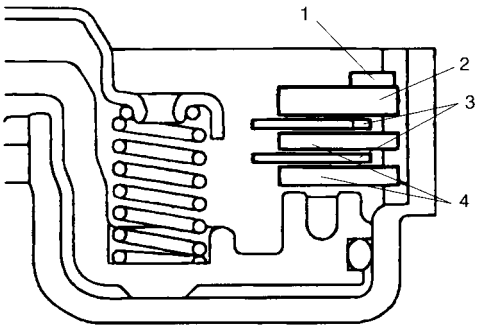
- Use new seal ring and O-ring. Apply A/T fluid before installation.
- Do not damage direct clutch return spring subassembly (1) and piston by pressing in direct clutch return spring subassembly passing through its original installing position over 0.7 mm (0.027 in.).

Special tool
(A): 09926–98310



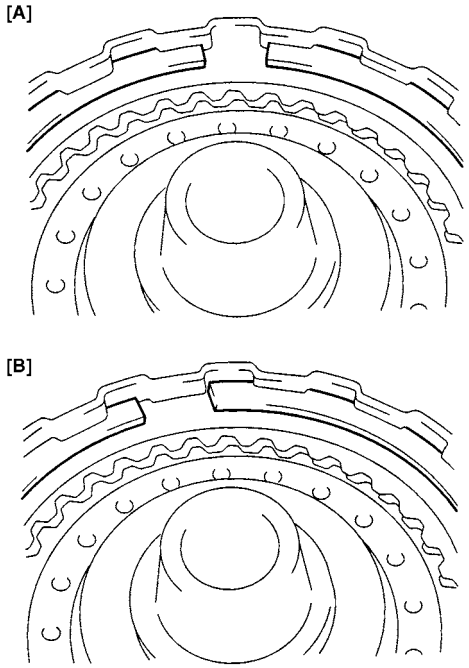
I2RH0B510168-01

- Apply A/T fluid to direct clutch separator plates (4), discs (3) and retaining plate (2).
- Install direct clutch separator plates (4), discs (3), retaining plate (2) and snap ring (1) to input shaft subassembly.



I2RH0B510169-01

- Install plate snap ring so that its both ends would be positioned in correct locations as shown in figure.



I2RH0B510170-01

[A]: Correct	[B]: Incorrect

- After assembly, measure direct clutch piston stroke.

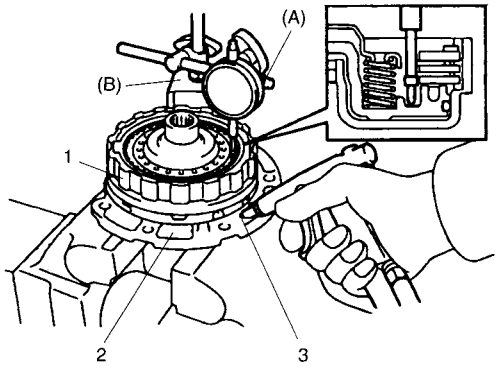
Special tool
(A): 09900–20607
(B): 09900–20701

Direct clutch piston stroke
0.4 – 0.7 mm (0.016 – 0.027 in.)

When piston stroke is out of specification, select direct clutch retaining plate with suitable thickness from among the following table and replace it.

Available direct clutch retaining plate thickness

Thickness	Identification mark
3.0 mm (0.118 in.)	1
3.2 mm (0.126 in.)	2
3.4 mm (0.134 in.)	3
2.8 mm (0.110 in.)	4



I2RH0B510171-01

1. Direct clutch assembly	3. Oil hole
2. Oil pump assembly	

Direct Clutch Assembly Inspection

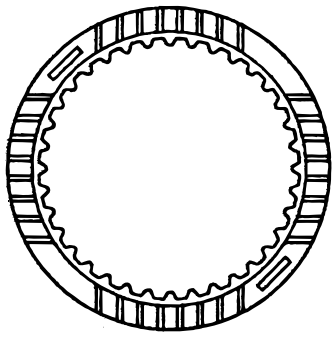
S7RS0B5106040

Clutch Discs, Plates and Retaining Plate

Check that sliding surfaces of discs, separator plates and retaining plate are not worn hard or burnt. If necessary, replace.

NOTE

- **If disc lining is exfoliated, discolored, replace all discs.**
- **Before assembling new discs, soak them in A/T fluid for at least two hours.**



I2RH0B510172-01

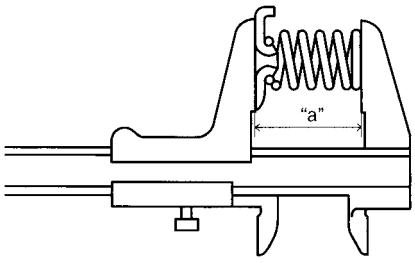
Direct Clutch Return Spring Subassembly

Measure free length of direct clutch return spring.

Direct clutch return spring free length
"a": 36.04 mm (1.419 in.)

NOTE

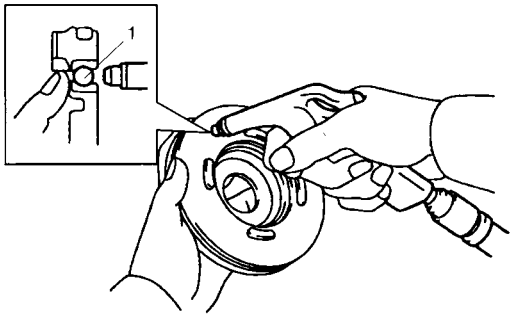
Do not apply excessive force when measuring spring free length. Perform measurement at several points.



I2RH0B510173-01

Direct Clutch Piston

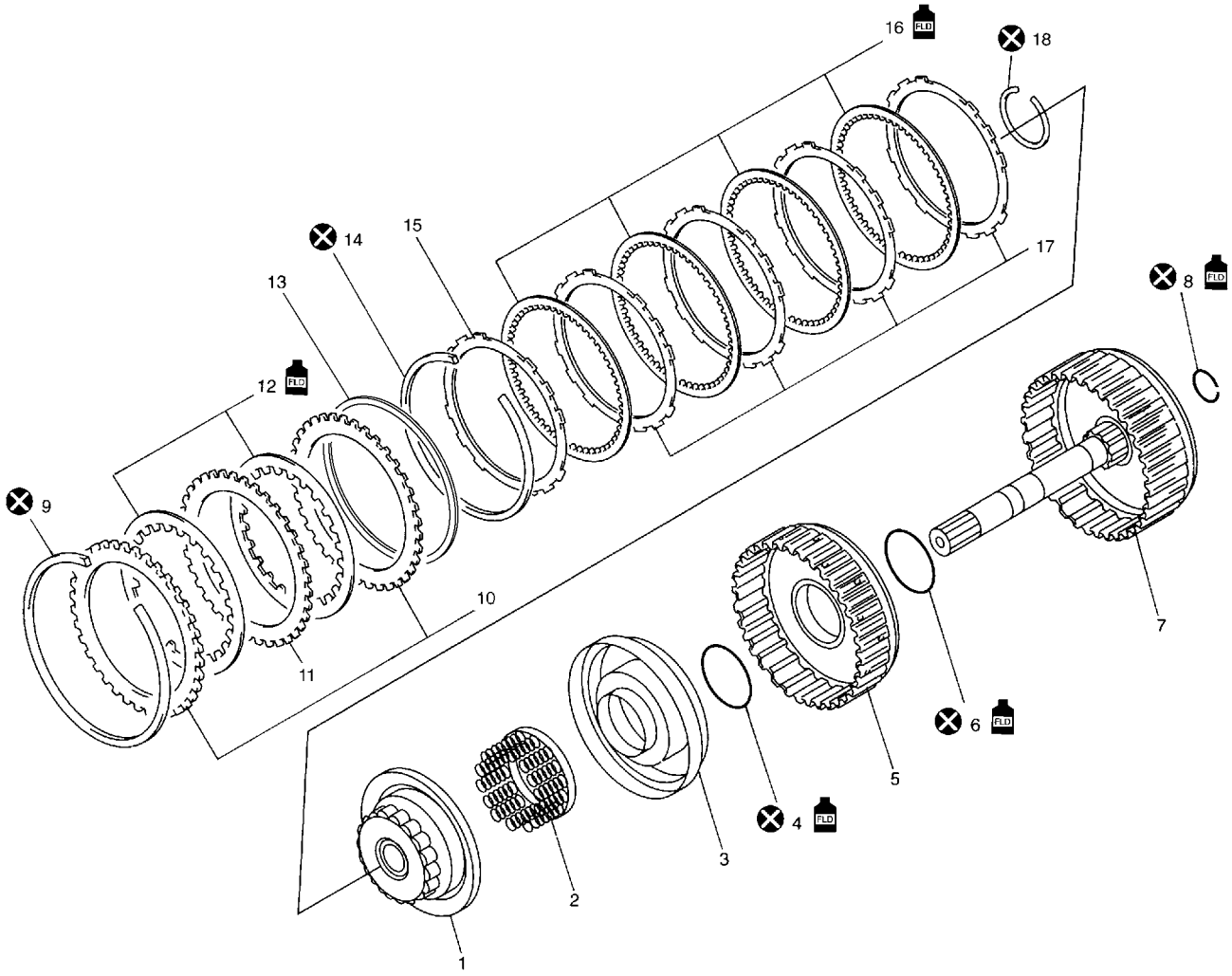
Shake direct clutch piston lightly and check that check ball (1) is not stuck.
Blow in low pressure air (Max. 100 kPa, 1 kg/cm^2, 15 psi) to check ball to check that there is no leakage.



I2RH0B510174-01

Forward and Reverse Clutch Assembly Components

S7RS0B5106041



I3RM0B510061-01

1. Forward clutch balancer	8. Intermediate shaft seal ring	15. Forward clutch retaining plate
2. Forward clutch return spring subassembly	9. Reverse clutch plate snap ring	16. Forward clutch disc
3. Forward clutch piston	10. Reverse clutch retaining plate	17. Forward clutch separator plate
4. Forward clutch piston O-ring	11. Reverse clutch separator plate	18. Balancer snap ring
5. Forward clutch drum	12. Reverse clutch disc	FLD : Apply automatic transaxle fluid.
6. Forward clutch drum O-ring	13. Reverse clutch cushion plate	⊗ : Do not reuse.
7. Intermediate shaft subassembly	14. Forward clutch plate snap ring	

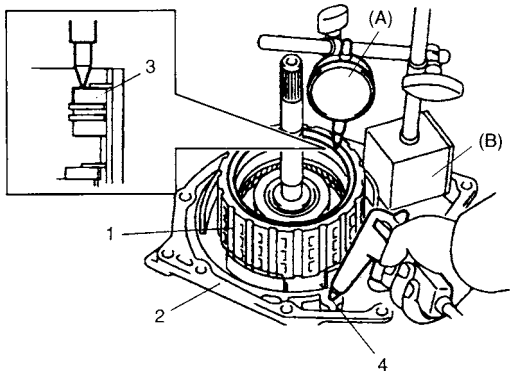
Forward and Reverse Clutch Assembly Preliminary Check

S7RS0B5106042

1) Install forward and reverse clutch assembly (1) to transaxle rear cover (2), blow in compressed air (400 – 800 kPa, 4 – 8 kg/cm^2, 57 – 113 psi) through oil hole (4) of transaxle rear cover with the special tool attached on the upper surface of reverse clutch retaining plate (3), and measure reverse clutch piston stroke.
If piston stroke exceeds specified value, disassemble, inspect and replace inner parts.

Special tool
(A): 09900–20607
(B): 09900–20701

Reverse clutch piston stroke
1.20 – 1.60 mm (0.047 – 0.063 in.)

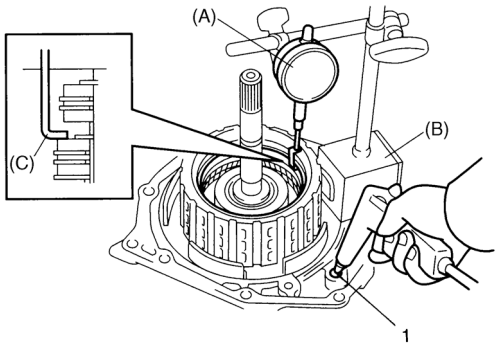


I2RH0B510176-01

2) Blow compressed air (400 – 800 kPa, 4 – 8 kg/cm^2, 57 – 113 psi) through oil hole (1) of transaxle rear cover with the special tool attached on the upper surface of forward clutch retaining plate, and measure forward clutch piston stroke.
If piston stroke exceeds specified value, disassemble, inspect and replace inner parts.

Special tool
(A): 09900–20607
(B): 09900–20701
(C): 09952–06020

Forward clutch piston stroke
1.30 – 1.50 mm (0.051 – 0.059 in.)



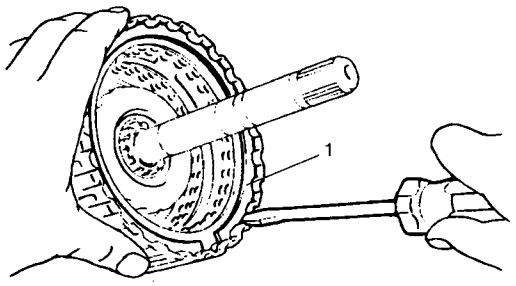
I2RH0B510177-02

Forward and Reverse Clutch Assembly Disassembly and Reassembly

S7RS0B5106043

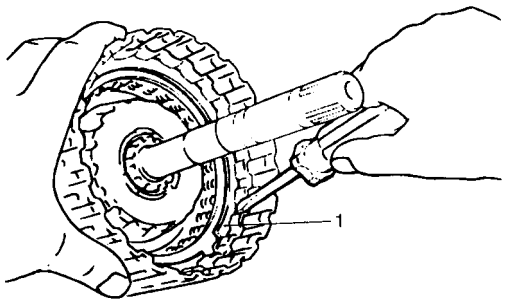
Disassembly

1) Remove reverse clutch plate snap ring (1) and take out reverse clutch retaining plate, discs, separator plates and clutch cushion plate from intermediate shaft subassembly.



I2RH0B510178-01

2) Remove forward clutch plate snap ring (1) and take out forward clutch retaining plate, discs and separator plates from forward clutch drum.



I2RH0B510179-01

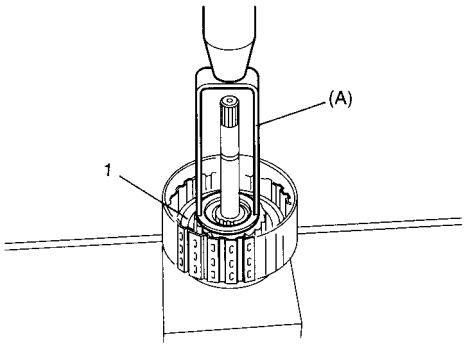
3) Remove balancer snap ring by using special tool and hydraulic press.

Special tool
(A): 09926–97610

⚠ CAUTION

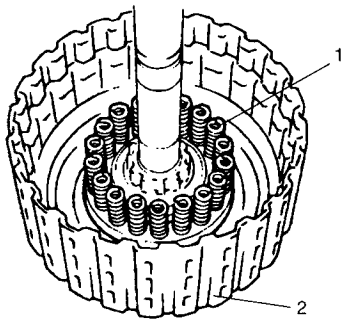
Do not press forward clutch return spring subassembly in over 1.5 mm (0.059 in.). Excessive compression may cause damage to return spring subassembly and/or balancer.

4) Remove forward clutch balancer (1).



I2RH0B510180-01

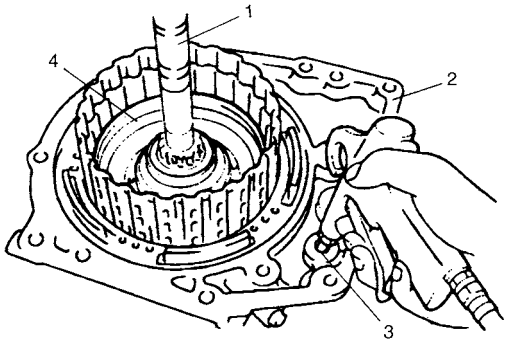
5) Remove forward clutch return spring subassembly (1).



I2RH0B510181-01

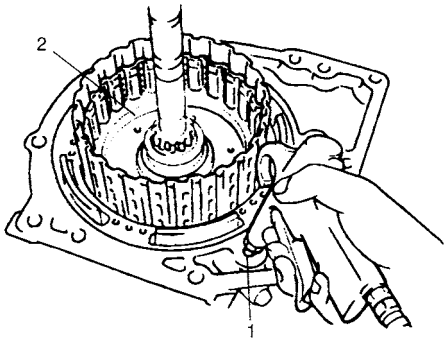
2. Intermediate shaft subassembly

6) Install intermediate shaft subassembly (1) to transaxle rear cover (2). Apply compressed air (400 – 800 kPa, 4 – 8 kg/cm^2, 57 – 113 psi) to oil hole (3) of transaxle rear cover to remove forward clutch piston (4).



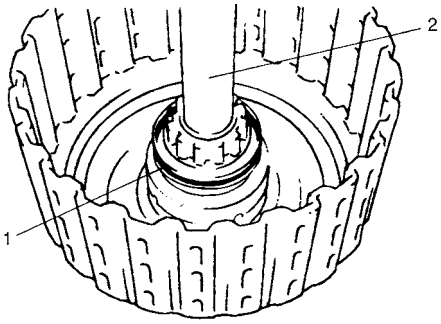
I2RH0B510182-01

7) Apply compressed air (400 – 800 kPa, 4 – 8 kg/cm^2, 57 – 113 psi) to oil hole (1) of transaxle rear cover to remove forward clutch drum (2).



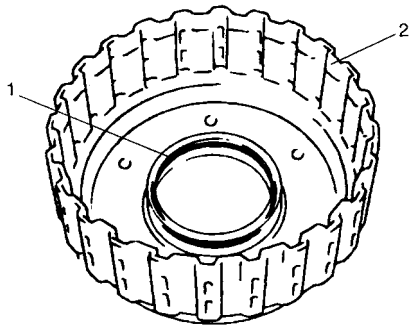
I2RH0B510183-01

8) Remove forward clutch piston O-ring (1) from intermediate shaft subassembly (2).



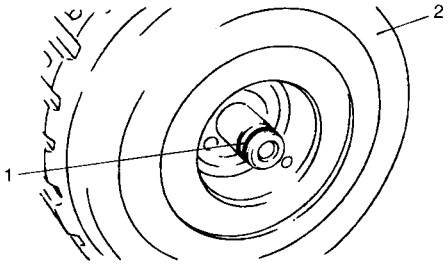
I2RH0B510184-01

9) Remove forward clutch drum O-ring (1) from forward clutch drum (2).



I2RH0B510185-01

10) Remove intermediate shaft seal ring (1) from intermediate shaft subassembly (2).



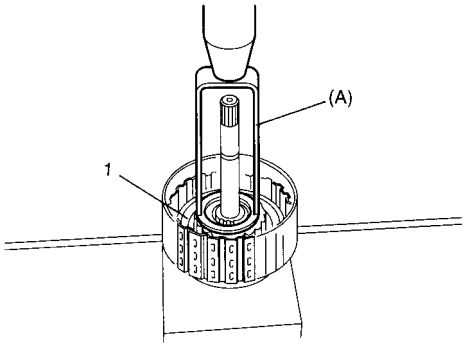
I2RH0B510186-01

Reassembly

Reverse disassembly procedure for assembly, noting the following points.

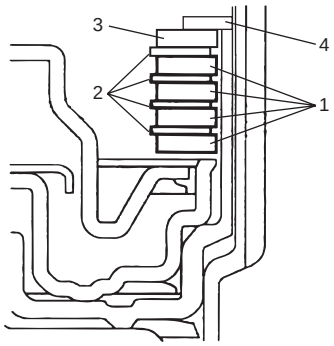
- Before assembling, apply automatic transaxle fluid to component parts.
- Replace O-rings and seal ring with new ones.
- Do not damage forward clutch return spring subassembly and balancer (1) by pressing forward clutch return spring subassembly passing through its original installing position over 1.5 mm (0.059 in.).

Special tool
(A): 09926–97610



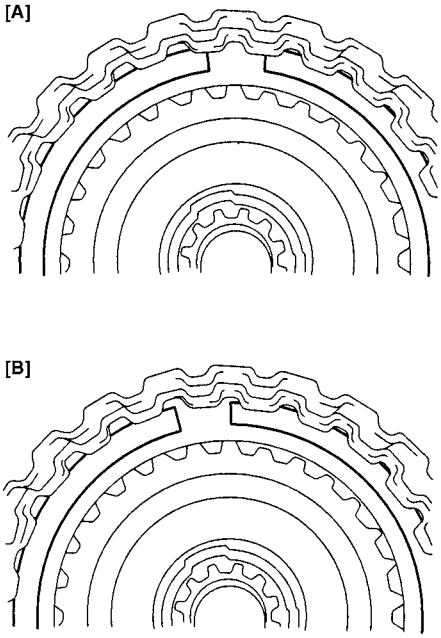
I2RH0B510180-01

- Apply A/T fluid to forward clutch separator plates (1), discs (2) and retaining plate (3).
- Install forward clutch separator plates (1), discs (2) and retaining plate (3), then snap ring (4) to forward clutch drum.



I5RW0C510062-01

- Install forward clutch plate snap ring so that its both ends would be positioned in correct locations as shown in figure.



I2RH0B510188-01

[A]: Correct	[B]: Incorrect

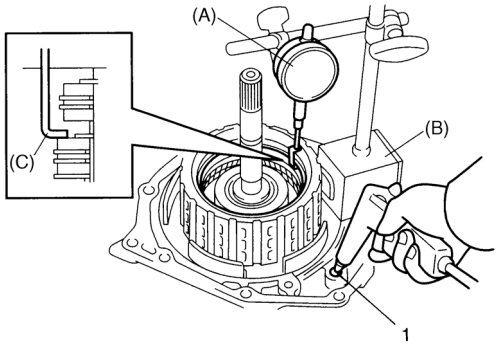
- Measure forward clutch piston stroke in the same manner as “Forward and Reverse Clutch Assembly Preliminary Check”.
  When piston stroke is out of specification, select forward clutch retaining plate with proper thickness from among the following table and replace it.

Special tool
(A): 09900–20607
(B): 09900–20701
(C): 09952–06020

Forward clutch piston stroke
1.30 – 1.50 mm (0.051 – 0.059 in.)

Available forward clutch retaining plate thickness

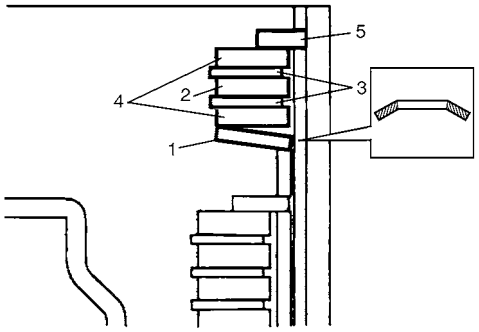
Thickness	Identification mark
3.0 mm (0.118 in.)	1
3.1 mm (0.122 in.)	5
3.2 mm (0.126 in.)	2
3.3 mm (0.130 in.)	6
3.4 mm (0.134 in.)	3
3.5 mm (0.138 in.)	7
3.6 mm (0.142 in.)	4



I2RH0B510177-02

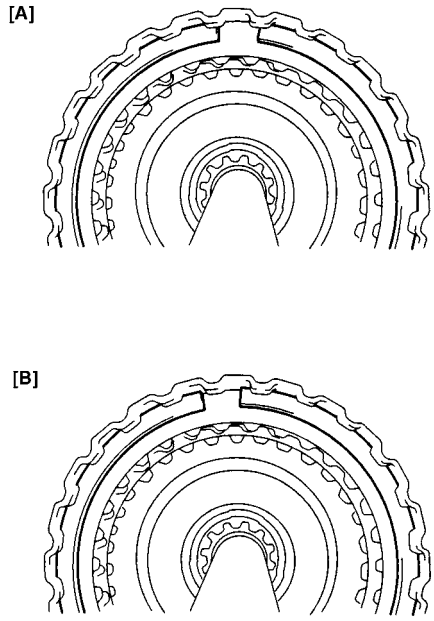
1. Oil hole

- Install reverse clutch cushion plate (1) in correct direction as shown in figure.
- Apply A/T fluid to reverse clutch cushion plate (1), reverse clutch separator plate (2), discs (3) and retaining plate (4).
- Install reverse clutch cushion plate (1), reverse clutch separator plate (2), discs (3), retaining plate (4) and then snap ring (5) to intermediate shaft subassembly.



I3RM0B510062-01

- Install reverse clutch plate snap ring so that its both ends would be positioned in correct locations as shown in figure.



I2RH0B510190-01

[A]: Correct	[B]: Incorrect

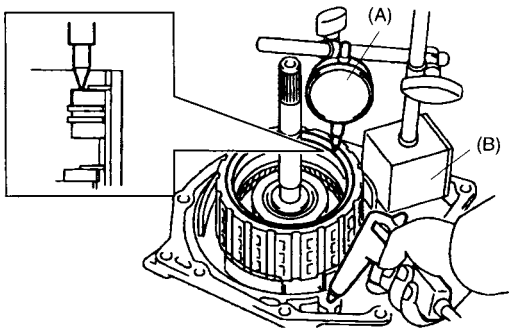
- Measure reverse clutch piston stroke in the same manner as “Forward and Reverse Clutch Assembly Preliminary Check”.
  When piston stroke is out of specification, select reverse clutch retaining plate with proper thickness from among the following table and replace it.

Special tool
(A): 09900–20607
(B): 09900–20701

Reverse clutch piston stroke
1.20 – 1.60 mm (0.047 – 0.063 in.)

Available reverse clutch retaining plate thickness

Thickness	Identification mark
3.0 mm (0.118 in.)	1
3.2 mm (0.126 in.)	2
3.4 mm (0.134 in.)	3
3.6 mm (0.142 in.)	4



I2RH0B510191-01

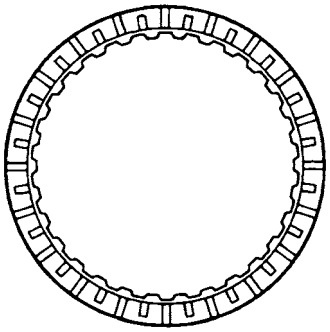
Forward and Reverse Clutch Assembly Inspection

S7RS0B5106044

Clutch, Discs, Separator Plates and Retaining Plate
Check that sliding surfaces of discs, separator plates and retaining plate are not worn hard or burnt. If necessary, replace.

NOTE

- **If disc lining is exfoliated or discolored, replace all discs.**
- **Before assembling new discs, soak them in A/T fluid for at least two hours.**



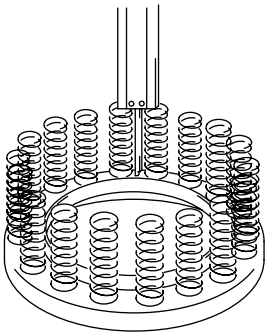
I2RH0B510192-01

Forward Clutch Return Spring Subassembly
Measure free length of forward clutch return spring.

Forward clutch return spring free length
24.04 mm (0.946 in.)

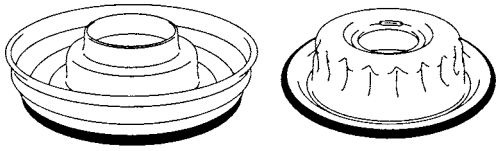
NOTE

Do not apply excessive force when measuring spring free length. Perform measurement at several points.



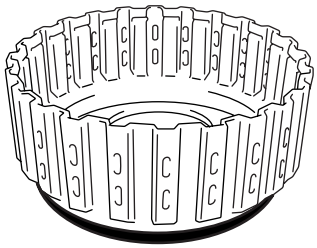
I2RH0B510193-01

Forward Clutch Piston Lip and Forward Clutch Balancer Lip
Check each lip for wear, deformation, cut and/or hardening. If necessary, replace.



I2RH0B510194-01

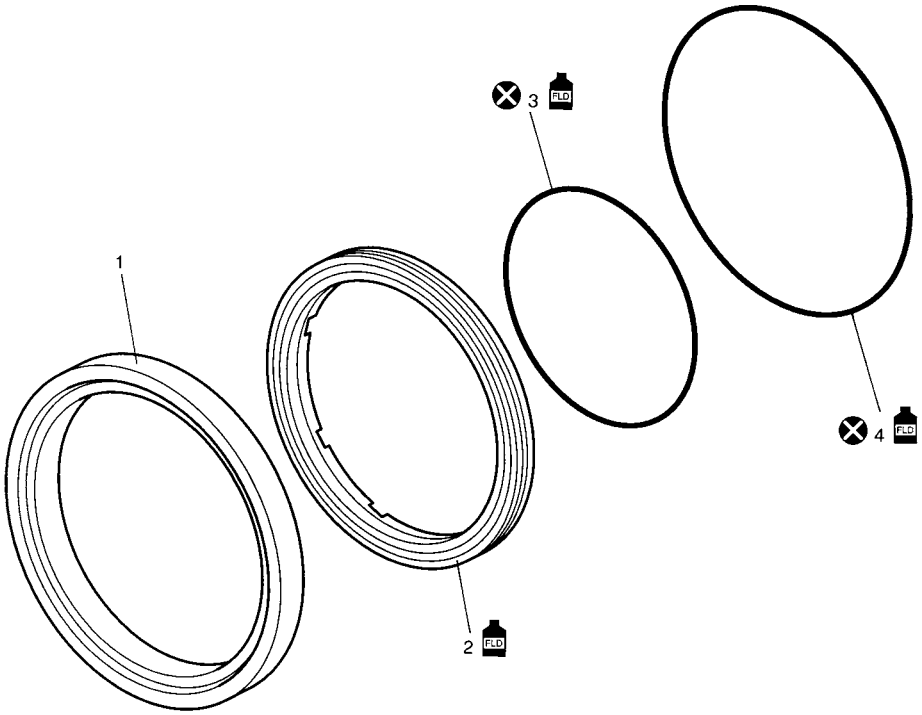
Forward Clutch Drum Lip
Check each lip for wear, deformation, cut and/or hardening. If necessary, replace.



I2RH0B510195-01

2nd Brake Piston Assembly Components

S7RS0B5106045



I2RH0B510196-01

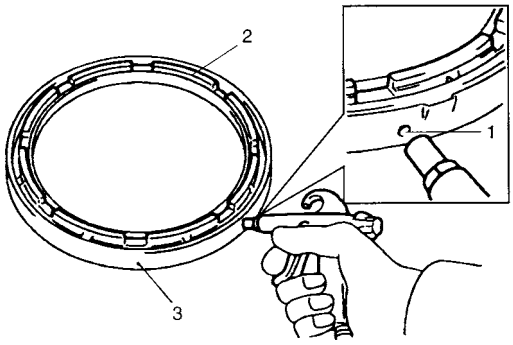
1. 2nd brake cylinder	3. Inner O-ring	FLD : Apply automatic transaxle fluid.
2. 2nd brake piston	4. Outer O-ring	: Do not reuse.

2nd Brake Piston Assembly Disassembly and Reassembly

S7RS0B5106046

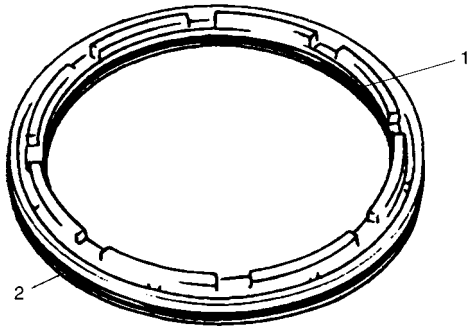
Disassembly

1) Apply compressed air (400 – 800 kPa, 4 – 8 kg/cm^2, 57 – 113 psi) to oil hole (1) of 2nd brake cylinder (3) to remove 2nd brake piston (2).



I2RH0B510197-01

2) Remove inner O-ring (1) and outer O-ring (2).

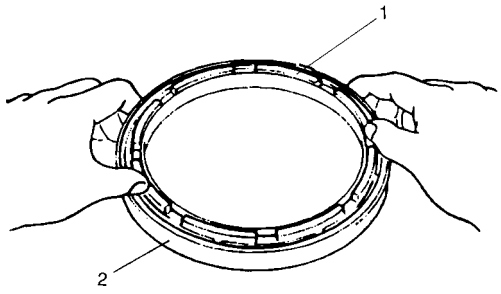


I2RH0B510198-01

Reassembly

Reverse disassembly procedure for assembly, noting the following points.

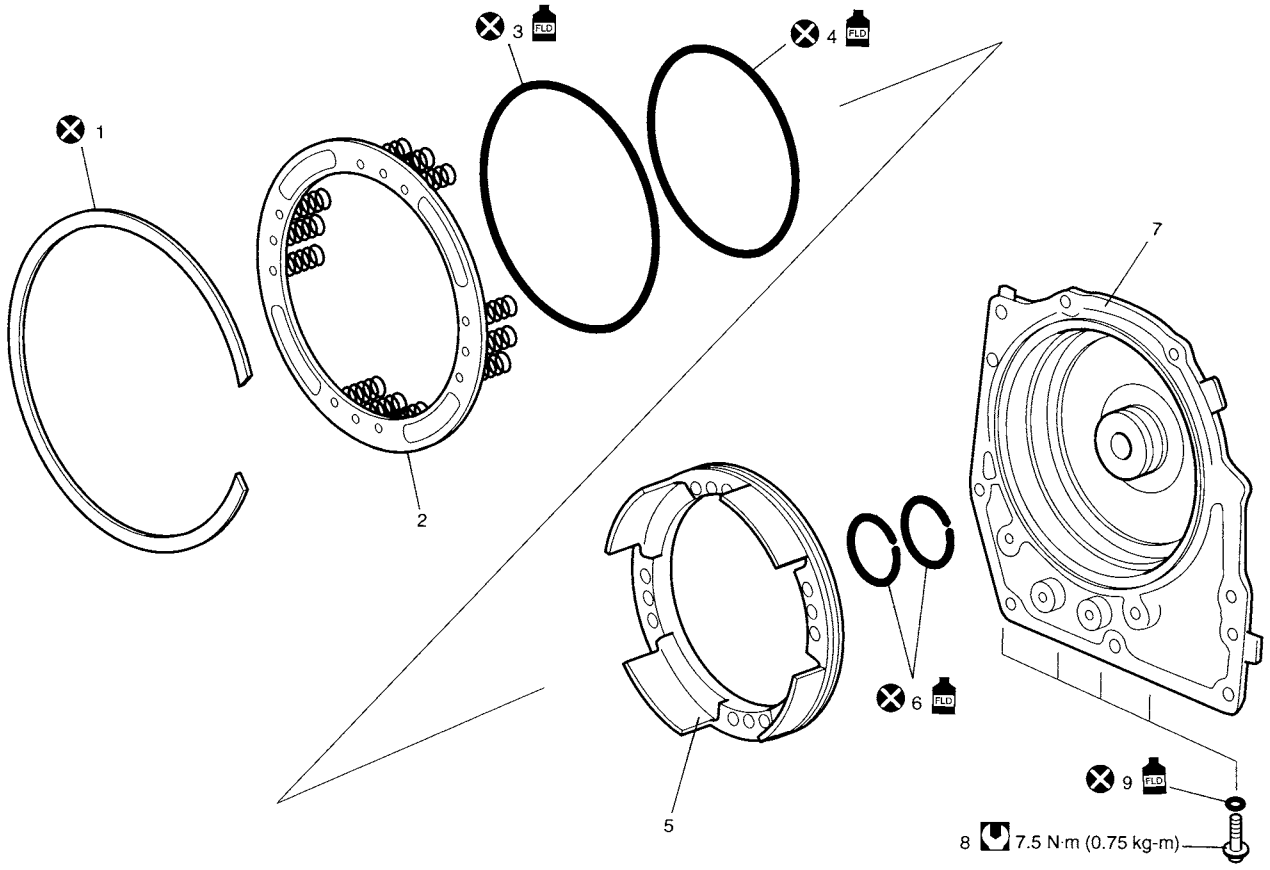
- Use new O-rings. Apply A/T fluid to the O-rings, before installation.
- Install 2nd brake piston (1) to which A/T fluid is applied to 2nd brake cylinder (2).
  Do not damage O-ring when installing 2nd brake piston.



I2RH0B510199-01

Transaxle Rear Cover (O/D and 2nd Coast Brake Piston) Assembly Components

S7RS0B5106047



I2RH0B510200-01

1. Snap ring	5. O/D and 2nd coast brake piston	9. Rear cover plug O-ring
2. O/D and 2nd coast brake return spring subassembly	6. Rear cover seal ring	: Apply automatic transaxle fluid.
3. O/D and 2nd coast brake piston front O-ring	7. Transaxle rear cover	: Do not reuse.
4. O/D and 2nd coast brake piston rear O-ring	8. Rear cover plug	: Tightening torque

Transaxle Rear Cover (O/D and 2nd Coast Brake Piston) Assembly Disassembly and Reassembly

S7RS0B5106048

Disassembly

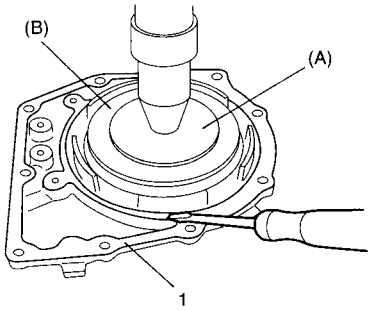
1) Remove snap ring by using special tools and hydraulic press.

Special tool
(A): 09926–96030
(B): 09946–06710

⚠ CAUTION

Do not press O/D and 2nd coast brake return spring subassembly in over 1.0 mm (0.039 in.).
Excessive compression may cause damage to O/D and 2nd coast brake return spring subassembly and/or piston.

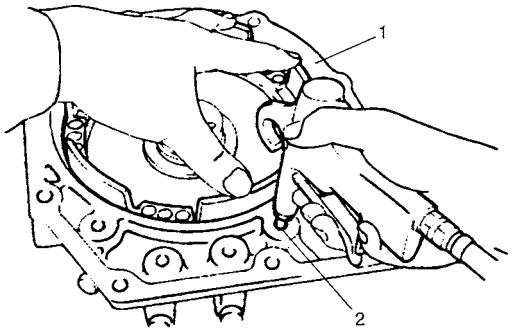
2) Remove O/D and 2nd coast brake return spring assembly.



I2RH0B510201-01

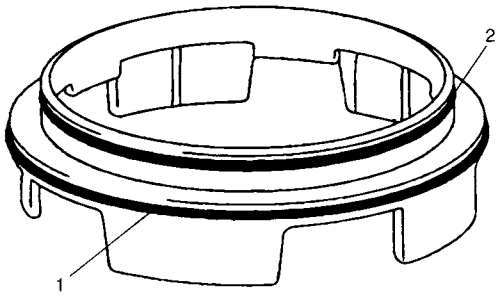
1. Transaxle rear cover

3) Apply compressed air (400 – 800 kPa, 4 – 8 kg/cm^2, 57 – 113 psi) to oil hole (2) of transaxle rear cover (1) to remove O/D and 2nd coast brake piston.



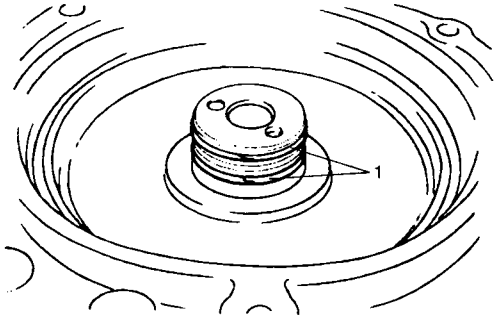
I2RH0B510202-01

4) Remove O/D and 2nd coast brake piston front O-ring (1) and rear O-ring (2).



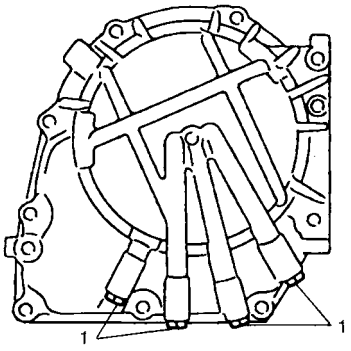
I2RH0B510203-01

5) Remove rear cover seal rings (1).



I2RH0B510204-01

6) Remove rear cover plugs (1).



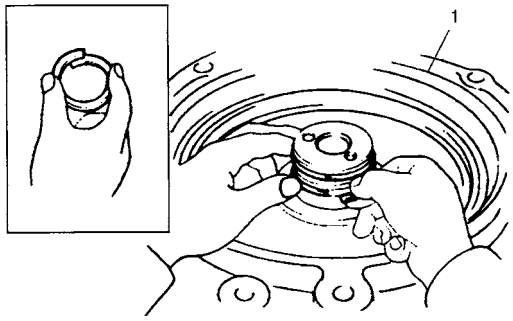
I2RH0B510205-01

Reassembly
Reverse disassembly procedure for assembly, noting the following points.

- Use new seal rings and O-rings. Apply A/T fluid to seal rings and O-rings before installation.
- Tighten rear cover plugs to specified torque.

  Tightening torque
  Rear cover plug: 7.5 N·m (0.75 kgf-m, 5.5 lb-ft)

- Before installing rear cover seal ring, apply A/T fluid to ring.
  First, tighten seal ring to 5 mm (0.197 in.), then install seal ring.
- Do not open rear cover seal ring too wide to attach.

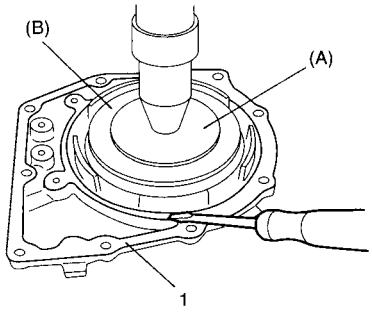


I2RH0B510206-01

1. Transaxle rear cover

- Do not damage O/D and 2nd coast brake return spring subassembly and piston by pressing in O/D and 2nd coast brake return spring subassembly passing through its original installing position over 1.0 mm (0.039 in.).

  Special tool
  (A): 09926–96030
  (B): 09946–06710



I2RH0B510201-01

1. Transaxle rear cover

Transaxle Rear Cover (O/D and 2nd Coast Brake Piston) Assembly Inspection

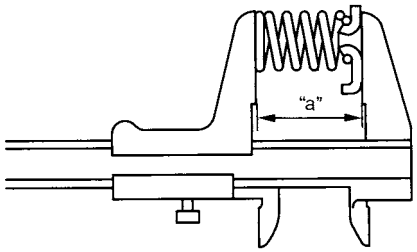
S7RS0B5106049

O/D and 2nd Coast Brake Return Spring Subassembly
Measure free length of O/D and 2nd coast brake return spring subassembly.

Free length of O/D and 2nd coast brake return spring subassembly
"a": 18.99 mm (0.748 in.)

NOTE

- **Do not apply excessive force when measuring spring free length.**
- **Perform measurement at several points.**

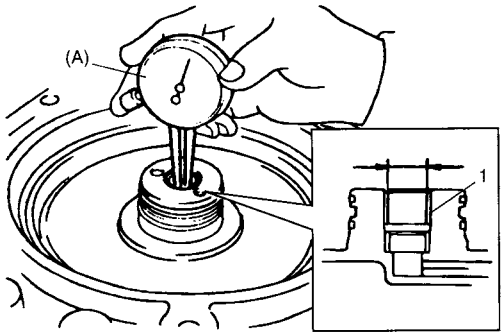


I2RH0B510207-01

Transaxle Rear Cover Bush
Measure transaxle rear cover bush bore by using special tool.
If measured transaxle rear cover bush bore is out of specifications, replace transaxle rear cover with new one. In replacement, intermediate shaft subassembly also needs to be checked. Replace intermediate shaft subassembly, if necessary.

Special tool
(A): 09900–20605

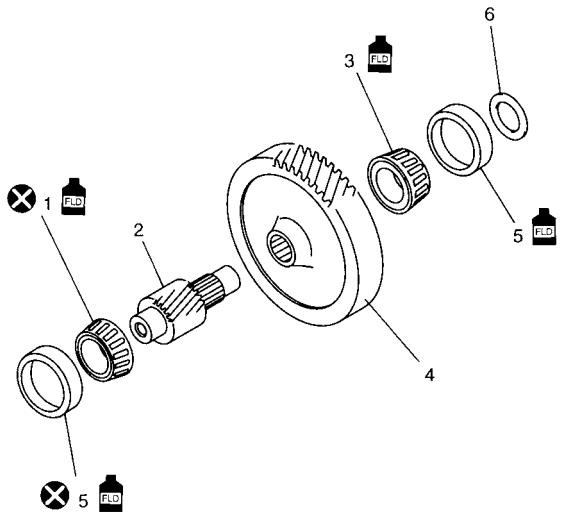
Transaxle rear cover bush bore
Standard: 13.94 – 13.96 mm (0.549 – 0.550 in.)



I2RH0B510208-01

Countershaft Assembly Components

S7RS0B5106050



I2RH0B510209-01

1. Countershaft RH bearing	5. Bearing cap
2. Countershaft	6. Countershaft bearing shim
3. Countershaft LH bearing	FLD : Apply automatic transaxle fluid.
4. Reduction driven gear	: Do not reuse.

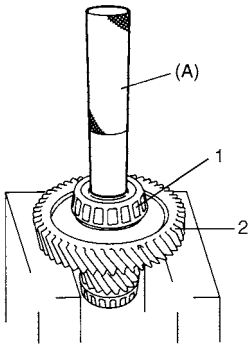
Countershaft Assembly Disassembly and Reassembly

S7RS0B5106051

Disassembly

1) Remove countershaft LH bearing (1) and reduction driven gear (2) at once by using special tool and hydraulic press.

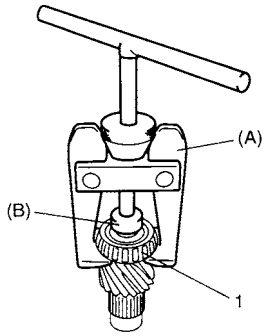
Special tool
(A): 09925–98221



I2RH0B510210-01

2) Remove countershaft RH bearing (1) by using special tools.

Special tool
(A): 09913–61510
(B): 09926–58010



I2RH0B510211-01

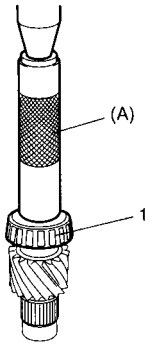
Reassembly

1) Install new countershaft RH bearing (1) by using special tool and hydraulic press.

Special tool
(A): 09913–84510

NOTE

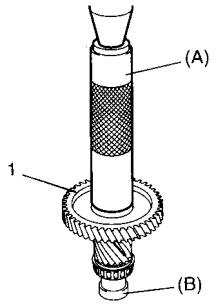
Replace countershaft RH bearing together with bearing cup as a set.



I2RH0B510212-01

2) Install reduction driven gear (1) with special tools and hydraulic press.

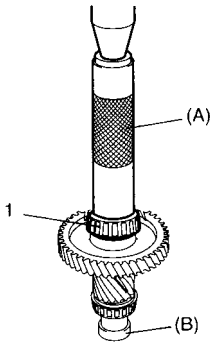
Special tool
(A): 09913–84510
(B): 09925–88210



I2RH0B510213-01

3) Install countershaft LH bearing (1) with special tools and hydraulic press.

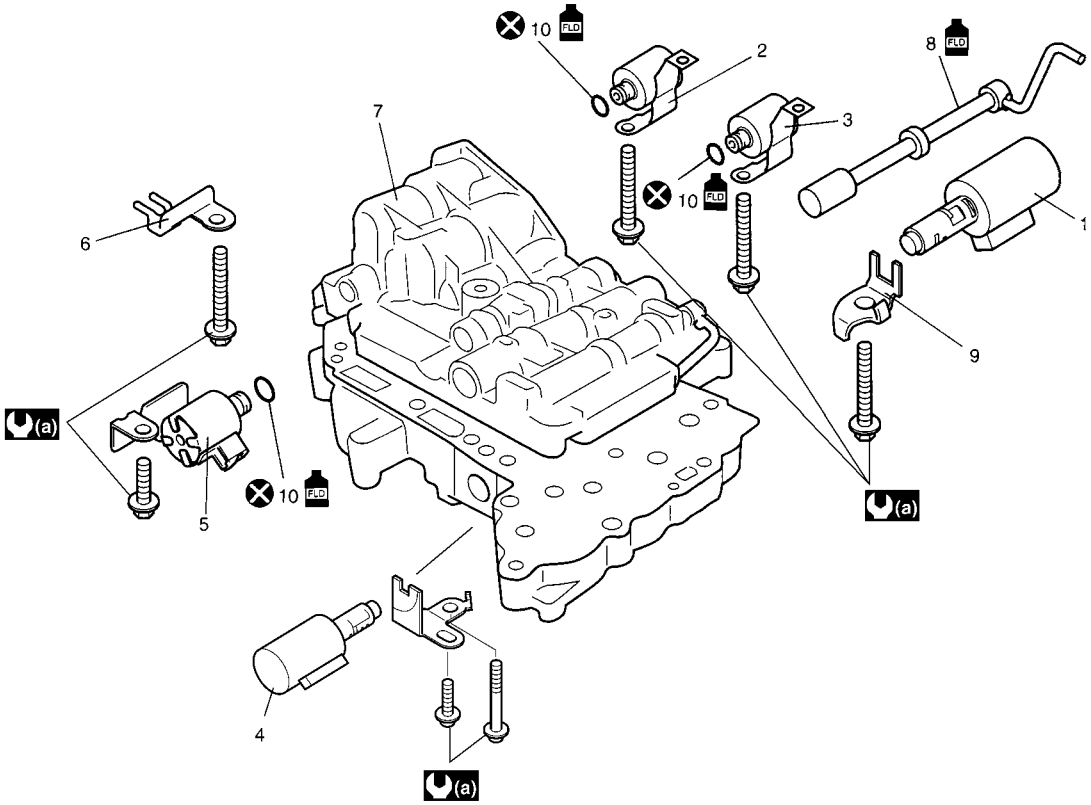
Special tool
(A): 09913–84510
(B): 09925–88210



I2RH0B510214-01

Valve Body Assembly Components

S7RS0B5106052



I4RS0A510044-01

1. Pressure control solenoid valve	6. Temperature sensor clamp	FLD : Apply automatic transaxle fluid.
2. Shift solenoid valve-A (No.1)	7. Valve body assembly	(a) : 11 N·m (1.1 kgf-m, 8.0 lb-ft)
3. Shift solenoid valve-B (No.2)	8. Manual valve	: Do not reuse.
4. TCC pressure control solenoid valve	9. Solenoid lock plate	
5. Timing solenoid valve	10. O-ring	

Valve Body Assembly Disassembly and Reassembly

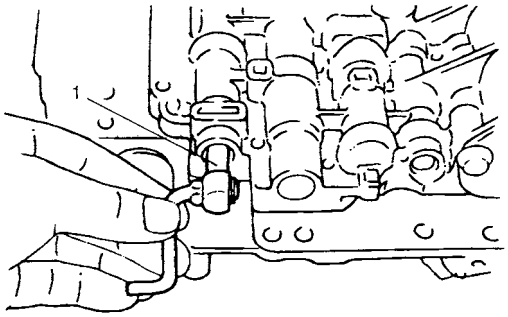
S7RS0B5106053

⚠ CAUTION

When replacing pressure control solenoid valve and/or TCC pressure control solenoid valve, it is strictly required to replace it together with valve body assembly as a set. Replacing pressure control solenoid valve and/or TCC pressure control solenoid valve independently may cause excessive shift shock.

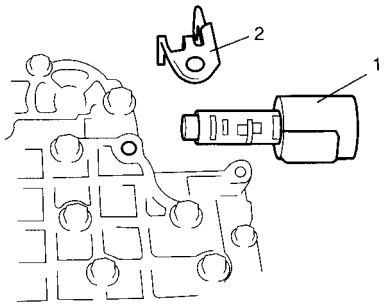
Disassembly

1) Pull out manual valve (1).



I2RH0B510216-01

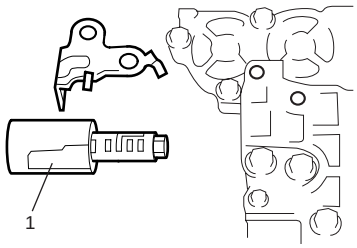
2) Remove pressure control solenoid valve (1).



I2RH0B510217-01

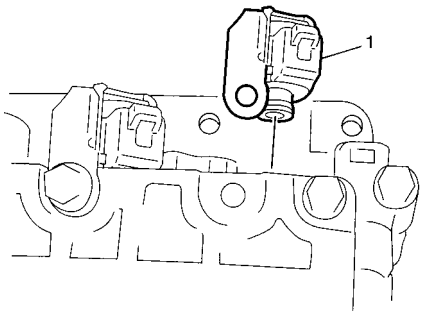
2. Solenoid lock plate

3) Remove TCC pressure control solenoid valve (1).



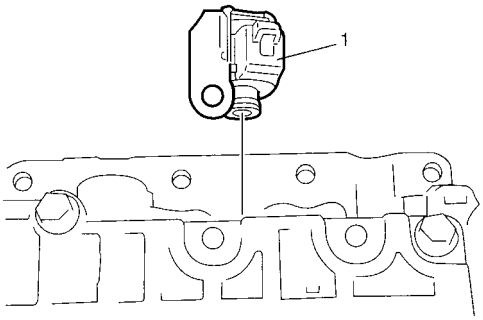
I4RS0A510045-01

4) Remove shift solenoid valve-A (1).



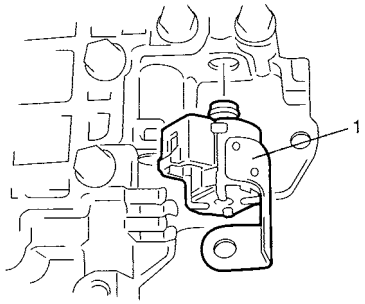
I2RH0B510219-01

5) Remove shift solenoid valve-B (1).



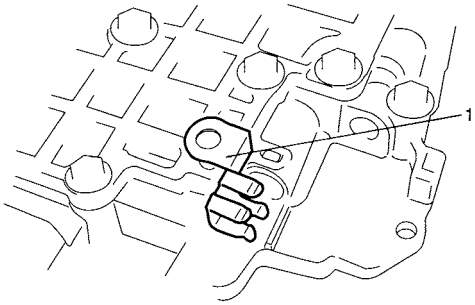
I2RH0B510220-01

6) Remove timing solenoid valve (1).



I2RH0B510221-01

7) Remove temperature sensor clamp (1).



I2RH0B510222-01

Reassembly

Reverse disassembly procedure for assembly, noting the following points.

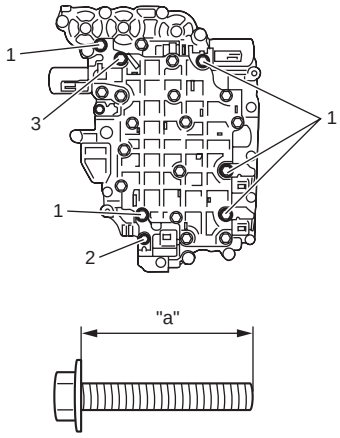
- Shift solenoid valve-A and -B are identical
- After applying A/T fluid to new O-rings, fit them to solenoid valves, then install solenoid valves to valve body.
- Tighten solenoid valve bolts to specified torque

Tightening torque

Solenoid valve bolt (a): 11 N·m (1.1 kgf-m, 8.0 lb-ft)

Solenoid valve bolt specification

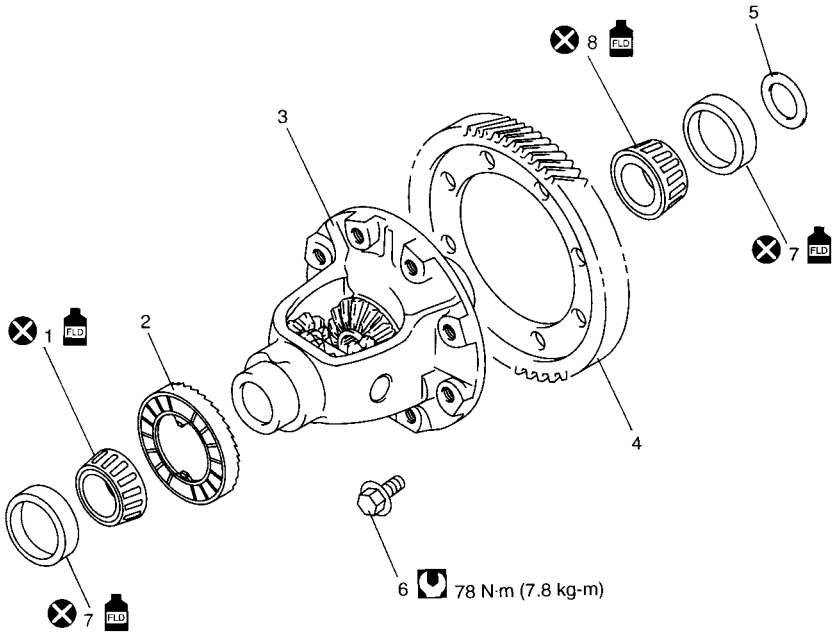
Bolt	Length “a”	Pieces
A (1)	49 mm (1.93 in.)	5
B (2)	20 mm (0.79 in.)	1
C (3)	60 mm (2.36 in.)	1



I4RS0A510046-01

Differential Assembly Components

S7RS0B5106054



I2RH0B510224-01

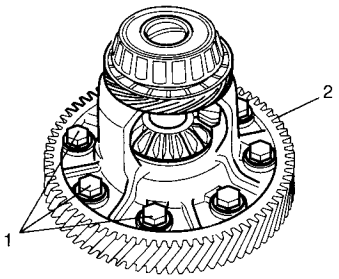
1. Differential side RH bearing	5. Side bearing shim	FLD : Apply automatic transaxle fluid.
2. Output shaft speed sensor drive gear	6. Final gear bolt	: Tightening torque
3. Differential case subassembly	7. Side bearing cup	: Do not reuse.
4. Final gear	8. Differential side LH bearing	

Differential Assembly Disassembly and Reassembly

S7RS0B5106055

Disassembly

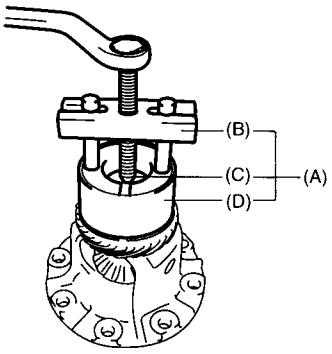
1) Remove final gear bolts (1), and then final gear (2).



I2RH0B510225-01

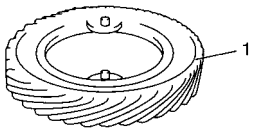
2) Remove differential side RH bearing by using special tools.

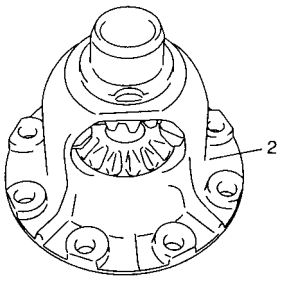
Special tool
(A): 09926–37610
(B): 09926–37610–001
(C): 09926–37610–003
(D): 09926–37610–002



I2RH0B510226-01

3) Remove output shaft speed sensor drive gear (1).



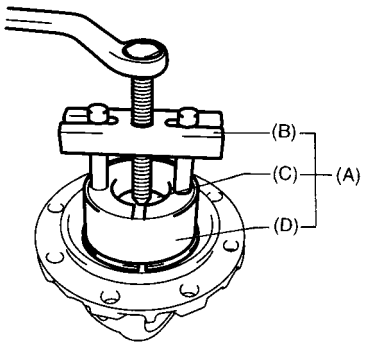


I2RH0B510227-01

2. Differential case subassembly

4) Remove differential side LH bearing by using special tools.

Special tool
(A): 09926–37610
(B): 09926–37610–001
(C): 09926–37610–003
(D): 09926–37610–002



I2RH0B510228-01

Reassembly

⚠ WARNING

- **When taking warmed final driven gear out of vessel, use tongs or the like. Taking out it with bare hand will cause severe burn.**
- **While installing warmed final driven gear, use oven glove such as leather glove. Picking up it with bare hand may cause burn.**

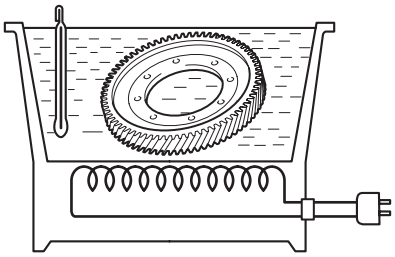
⚠ CAUTION

Do not leave final driven gear in boiling water for longer than 5 min. Overheating the gear may cause strength reduction of gear.

1) Put final driven gear in water vessel, heat and remove when it boils, then remove moisture.

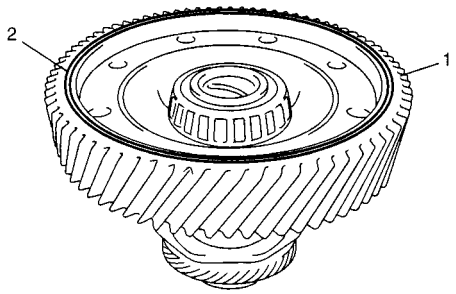
NOTE

After removing moisture on final driven gear, install final driven gear to differential case as quickly as possible.



I2RH0B510229-01

2) As shown in figure, facing groove (2) side upward, install final driven gear (1) to differential case.



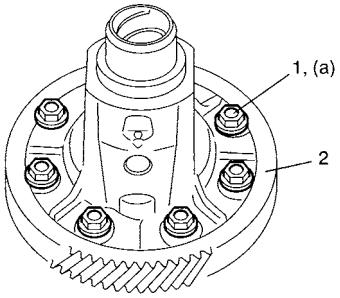
I2RH0B510230-01

3) Tighten final gear bolts (1) to specified torque.

NOTE

To avoid rust, apply A/T fluid to final driven gear after installation.

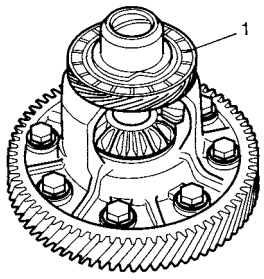
Tightening torque
Final gear bolt (a): 78 N·m (7.8 kgf-m, 56.5 lb-ft)



I2RH0B510231-01

2. Final driven gear

4) After applying A/T fluid to output shaft speed sensor drive gear (1), install output shaft speed sensor drive gear.



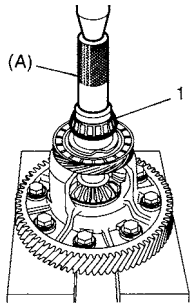
I2RH0B510232-01

5) Install new differential side RH bearing (1) by using special tool and hydraulic press.

NOTE

Replace differential side RH bearing together with bearing cup as a set.

Special tool
(A): 09913–70123



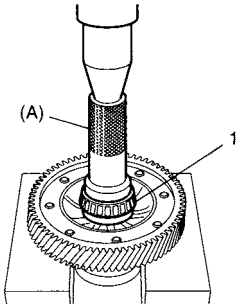
I2RH0B510233-01

6) Install new differential side LH bearing (1) by using special tool and hydraulic press.

NOTE

Replace differential side LH bearing together with bearing cup as a set.

Special tool
(A): 09913–70123



I2RH0B510234-01

Differential Assembly Inspection

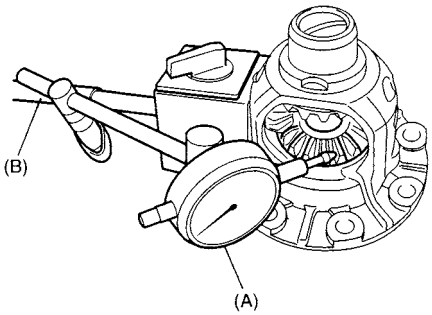
S7RS0B5106056

1) Hold differential case subassembly with soft jawed vice and set special tools as shown.

Special tool
(A): 09900–20607
(B): 09900–20701

2) Measure differential gear thrust play.

Differential gear thrust play
Standard: 0.05 – 0.20 mm (0.002 – 0.008 in.)



I2RH0B510235-01

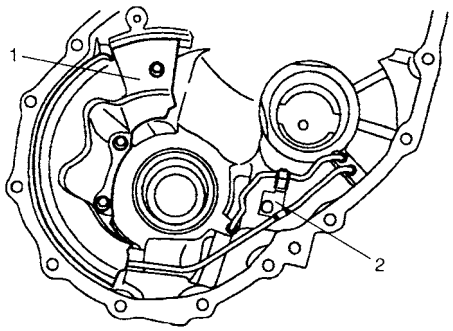
3) If thrust play is out of specification, replace differential case subassembly.

Torque Converter Housing Disassembly and Reassembly

S7RS0B5106057

Disassembly

1) Remove fluid reservoir RH plate (1) and lubrication tube clamp (2).

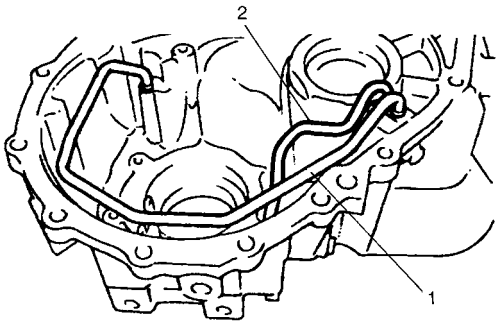


I2RH0B510236-01

2) Remove lubrication LH tube (1) and RH tube (2).

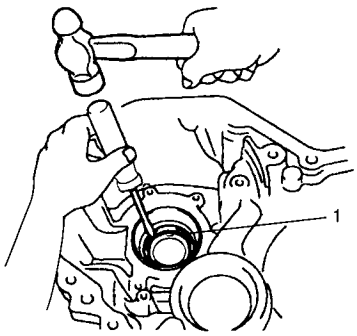
NOTE

Do not bend lubrication tube with excessive force.



I2RH0B510237-01

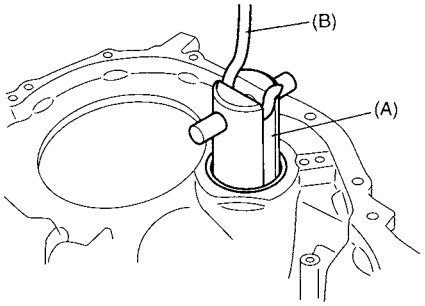
3) Remove differential side oil seal (1).



I2RH0B510238-01

4) Remove countershaft RH bearing cup by using special tools.

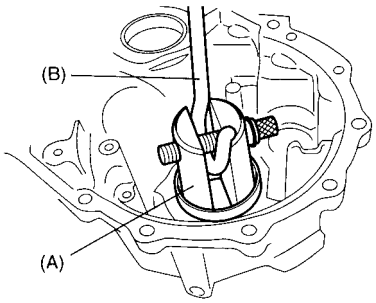
Special tool
(A): 09944–96011
(B): 09942–15511



I2RH0B510239-01

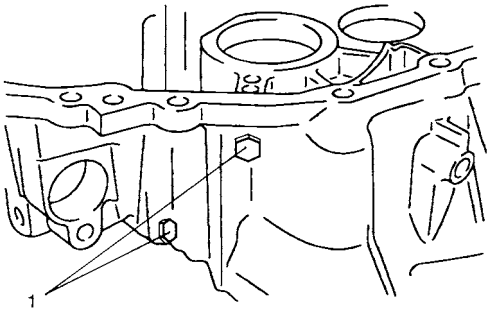
5) Remove differential side RH bearing cup by using special tools.

Special tool
(A): 09944–96011
(B): 09942–15511



I2RH0B510240-01

6) Remove torque converter case plugs (1).

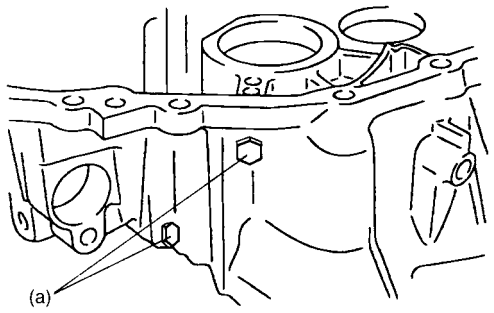


I2RH0B510241-01

Reassembly

1) After applying A/T fluid to new O-rings, fit them to housing plugs. Finally install plugs to torque converter housing.

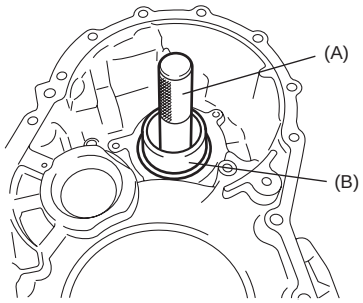
Tightening torque
Torque converter housing plug (a): 7.5 N·m (0.75 kgf-m, 5.5 lb-ft)



I2RH0B510242-01

2) Using special tools, assemble differential side RH bearing cup.

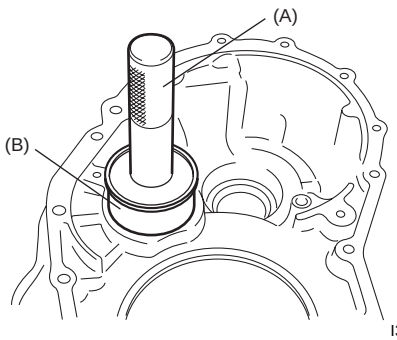
Special tool
(A): 09924–74510
(B): 09944–88220



I3RM0B510063-01

3) Using special tool, install countershaft RH bearing cup.

Special tool
(A): 09924–74510
(B): 09944–88220



I3RM0B510064-01

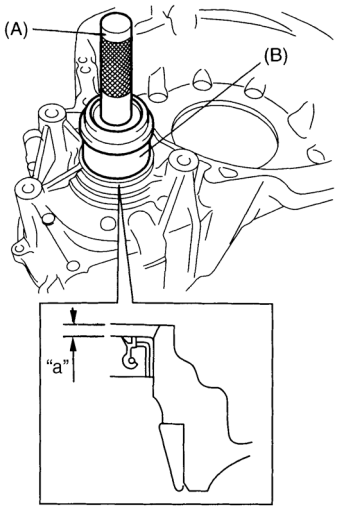
4) Using special tools, install new differential side oil seal to torque converter housing.

Special tool
(A): 09924–74510
(B): 09944–88220

Differential side oil seal installing depth
"a": 2.6 – 3.6 mm (0.10 – 0.14 in.)

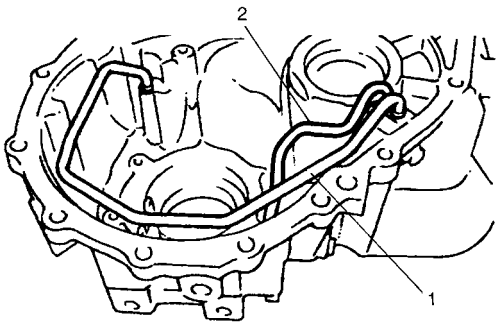
5) Apply grease to oil seal lip.

: Grease 99000–25030 (SUZUKI Super Grease C)



I2RH0B510245-02

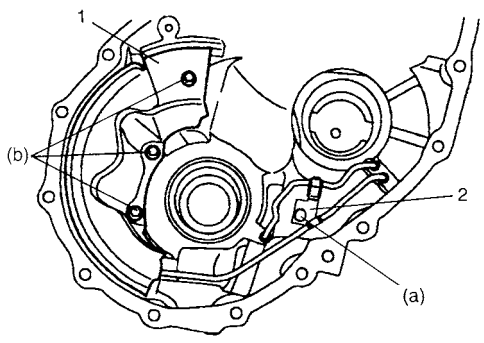
6) Install lubrication LH tube (1) and RH tube (2).



I2RH0B510237-01

7) Install fluid reservoir RH plate (1) and lubrication tube clamp (2).

Tightening torque
Lubrication tube clamp bolt (a): 5.5 N·m (0.55 kgf-m, 4.0 lb-ft)
Fluid reservoir RH plate bolt (b): 5.5 N·m (0.55 kgf-m, 4.0 lb-ft)



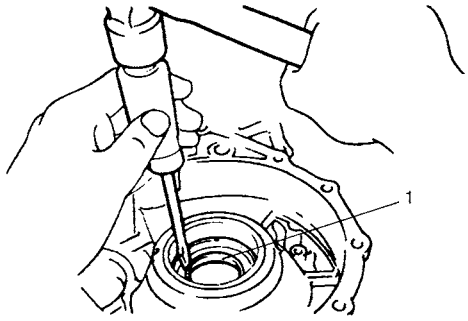
I2RH0B510246-01

Transaxle Case Disassembly and Reassembly

S7RS0B5106058

Disassembly

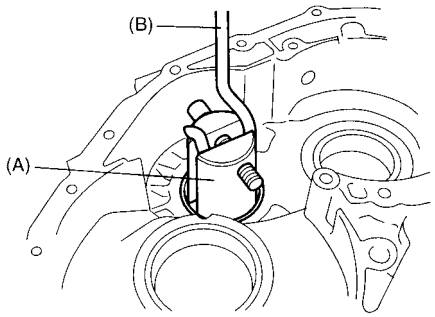
1) Remove differential side oil seal (1).



I2RH0B510247-01

2) Remove countershaft LH bearing cup and shim with special tools.

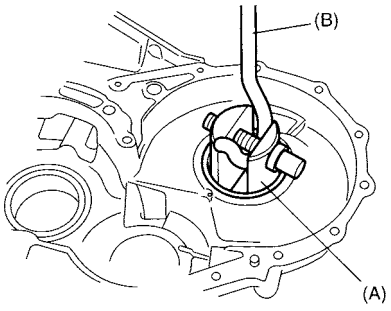
Special tool
(A): 09944–96011
(B): 09942–15511



I2RH0B510248-01

3) Remove differential side LH bearing cup and shim with special tools.

Special tool
(A): 09944–96011
(B): 09942–15511



I2RH0B510249-01

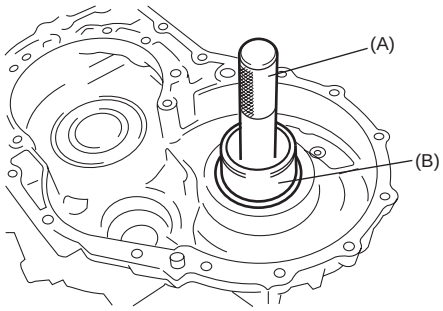
Reassembly

1) Using special tools, assemble shim and differential side LH bearing cup.

NOTE

Use shim with same thickness as the removed one.

Special tool
(A): 09924–74510
(B): 09944–88220



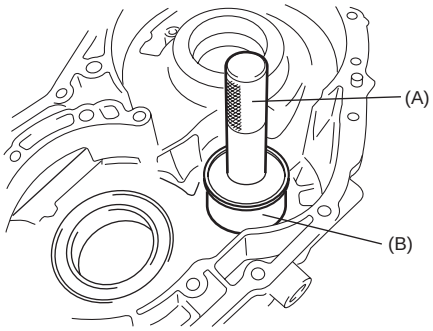
I3RM0B510065-01

2) Using special tools, assemble shim and countershaft LH bearing cup.

NOTE

Use shim with same thickness as the removed one.

Special tool
(A): 09924–74510
(B): 09944–88220



I3RM0B510066-01

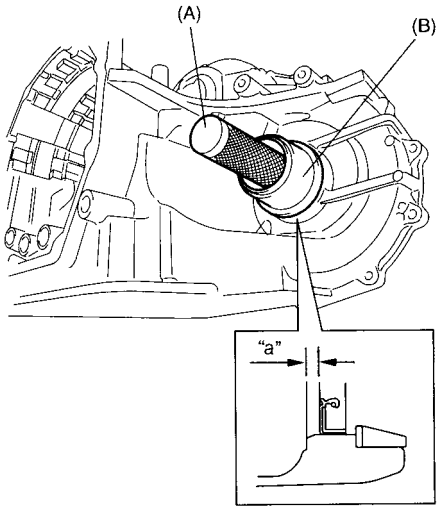
3) Install new differential side oil seal to transaxle case by using special tools.

Special tool
(A): 09924–74510
(B): 09944–88220

Differential side oil seal installing depth
"a": 3.8 – 4.8 mm (0.15 – 0.19 in.)

4) Apply grease to oil seal lip.

: Grease 99000–25030 (SUZUKI Super Grease C)



I2RH0B510252-01

Automatic Transaxle Unit Inspection and Adjustment

S7RS0B5106059

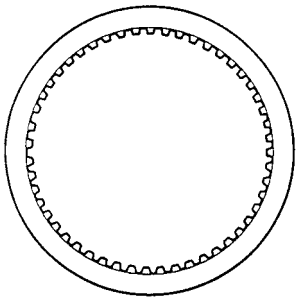
Inspection

Brake discs

Dry and inspect them for pitting, burn flaking, significant wear, glazing, cracking, charring and chips or metal particles imbedded in lining.
If discs show any of the above conditions, replacement is required.

NOTE

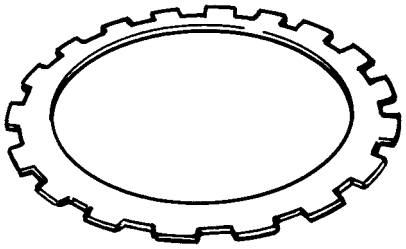
- **If disc lining is exfoliated or discolored, replace all discs.**
- **Before assembling new discs, soak them in A/T fluid for at least two hours.**



I2RH01510147-01

Brake separator plates and retaining plates

Dry plates and check for discoloration. If plate surface is smooth and even color smear is indicated, plate should be reused. If severe heat spot discoloration or surface scuffing is indicated, plate must be replaced.



I2RH0B510253-01

Brake return spring subassembly

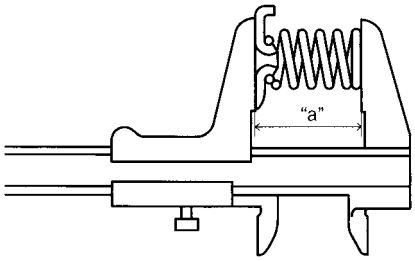
Measure free length of each brake return spring subassembly.
Evidence of extreme heat or burning in the area of clutch may have caused springs to take heat set and would require their replacement.

Free length of 1st & reverse brake return spring subassembly
"a": 21.71 mm (0.855 in.)

Free length of 2nd brake return spring subassembly
"a": 15.85 mm (0.624 in.)

NOTE

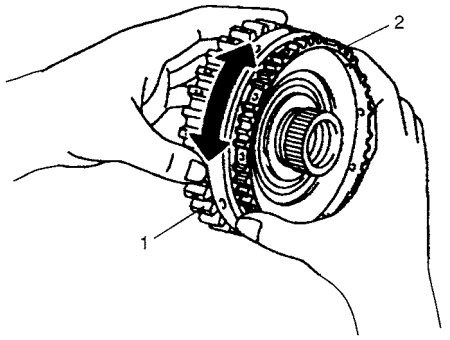
- **Do not apply excessive force when measuring spring free length.**
- **Perform measurement at several points.**



I2RH0B510173-01

One-way clutch No.1 assembly

1) Install one-way clutch No.1 assembly (2) to rear planetary sun gear subassembly (1).
2) Securing rear planetary sun gear subassembly, ensure that one-way clutch No.1 assembly rotates only in one direction.
   If the one-way clutch rotates in both directions or it does not rotate in either direction, replace it with new one.



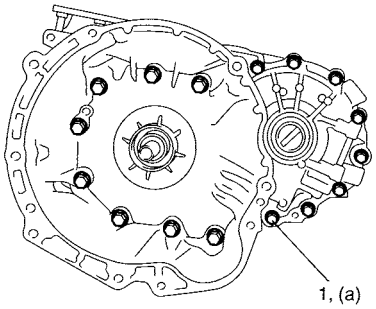
I2RH0B510254-01

Adjustment

Differential side bearing preload

1) After applying A/T fluid to differential assembly, fit it to transaxle case.
2) Install torque converter housing to transaxle case, then tighten bolts (1) to specified torque.

   Tightening torque
   Torque converter housing bolt (a): 29 N·m (2.9 kgf-m, 21 lb-ft)

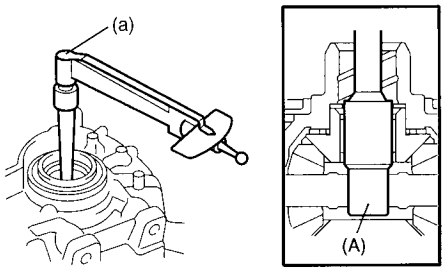


I2RH0B510255-01

3) Measure bearing preload (a) by using a special tool.

   Special tool
   (A): 09928–06050

   Differential side bearing preload (a) measured as starting torque
   In the case of new bearing: 0.78 – 1.37 N·m (7.9 – 13.9 kg-cm, 0.58 – 1.01 lb-ft)
   In the case of reused bearing: 0.39 – 0.69 N·m (3.9 – 6.9 kg-cm, 0.29 – 0.51 lb-ft)



I2RH0B510256-01

4) If bearing preload is out of specification, select shim with suitable thickness from among the list below and replace it. Then adjust differential side bearing preload within specification.

   Available shim thickness

Thickness	Identification mark
1.80 mm (0.070 in.)	A
1.85 mm (0.072 in.)	B
1.90 mm (0.074 in.)	C
1.95 mm (0.076 in.)	D
2.00 mm (0.078 in.)	E
2.05 mm (0.080 in.)	F
2.08 mm (0.081 in.)	G
2.11 mm (0.083 in.)	H
2.14 mm (0.084 in.)	J
2.17 mm (0.085 in.)	K
2.20 mm (0.087 in.)	L
2.23 mm (0.088 in.)	M
2.26 mm (0.089 in.)	N
2.29 mm (0.090 in.)	P
2.32 mm (0.091 in.)	Q
2.35 mm (0.092 in.)	R
2.40 mm (0.094 in.)	S
2.45 mm (0.096 in.)	T
2.50 mm (0.098 in.)	U
2.55 mm (0.100 in.)	V
2.60 mm (0.102 in.)	W
2.65 mm (0.104 in.)	X
2.70 mm (0.106 in.)	Y

NOTE

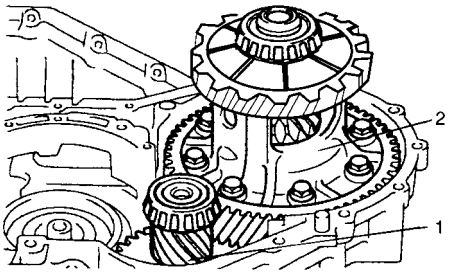
Record measured differential side bearing, because it is necessary to adjust countershaft bearing preload.

5) Remove differential assembly.

Countershaft bearing preload

1) After applying A/T fluid to countershaft assembly (1) and differential assembly (2), fit them.
2) Install torque converter housing to transaxle case, then tighten bolts to specified torque.

Tightening torque
Torque converter housing bolt: 29 N·m (2.9 kgf-m, 21 lb-ft)



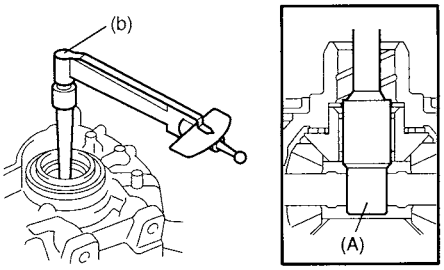
I2RH0B510257-01

3) Measure bearing preload (b) by using special tool.

Special tool
(A): 09928–06050

Countershaft bearing preload	=	(b) – Differential side bearing preload (a)

Countershaft bearing preload (b) measured as starting torque
In the case of new bearing: 0.33 – 0.96 N·m (3.3 – 9.8 kg-cm, 0.24 – 0.69 lb-ft)
In the case of reused bearing: 0.17 – 0.38 N·m (1.7 – 3.8 kg-cm, 0.12 – 0.28 lb-ft)



I3RM0B510067-01

4) If bearing preload is out of specification, select shim with suitable thickness from among the list below and replace it. Then adjust countershaft bearing preload within specification.

Available shim thickness

Thickness	Identification mark
1.70 (0.066 in.)	1
1.75 (0.068 in.)	2
1.80 (0.070 in.)	3
1.85 (0.072 in.)	4
1.90 (0.074 in.)	5
1.93 (0.075 in.)	6
1.96 (0.077 in.)	7
1.99 (0.078 in.)	A
2.02 (0.079 in.)	B
2.05 (0.080 in.)	C
2.08 (0.081 in.)	D
2.11 (0.083 in.)	E
2.14 (0.084 in.)	F
2.17 (0.085 in.)	G
2.20 (0.086 in.)	H
2.25 (0.088 in.)	K
2.30 (0.090 in.)	L
2.35 (0.092 in.)	M
2.40 (0.094 in.)	N
2.45 (0.096 in.)	P
2.50 (0.098 in.)	Q
2.55 (0.100 in.)	R
2.60 (0.102 in.)	S
2.65 (0.104 in.)	U
2.70 (0.106 in.)	W

5) Remove differential assembly and countershaft assembly.

Automatic Transaxle Unit Assembly

S7RS0B5106060

⚠ CAUTION

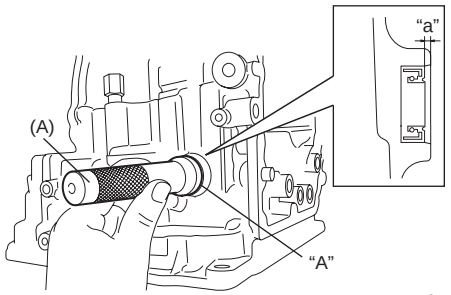
- **Automatic transaxle consists of highly precise parts. As even flaw in small part may cause oil leakage or decrease in function, check each part carefully before installation.**
- **Clean all parts with compressed air. Never use wiping cloths or rags.**
- **Before assembling new clutch or brake discs, soak them in automatic transaxle fluid for at least 2 hours.**
- **Be sure to use new gaskets and O-rings.**
- **Lubricate O-rings with automatic transaxle fluid.**
- **Apply automatic transaxle fluid on sliding or rotating surfaces of the parts before assembly.**
- **Use Suzuki Super Grease "C" to retain parts in place.**
- **Be sure to install thrust bearings and races in correct direction and position.**
- **Make sure that snap ring ends are not aligned with one of cut outs and are installed in groove correctly.**
- **Do not use adhesive cements on gaskets and similar parts.**
- **Be sure to torque each bolt and nut to specification.**

1) Install new manual shift shaft oil seal to transaxle case.
Use special tool and hammer to install it, and then apply grease to its lip.

Special tool
(A): 09925–98210

"A": Grease 99000–25030 (SUZUKI Super Grease C)

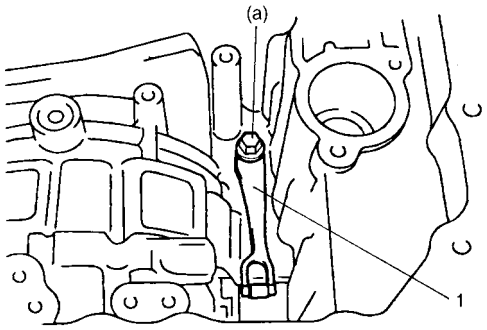
Manual shift shaft oil seal installing depth
"a": 0.5 – 1.5 mm (0.02 – 0.06 in.)



I2RH0B510258-01

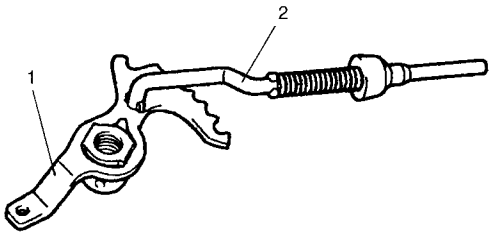
2) Install manual detent spring (1) to transaxle case and tighten manual detent spring bolt to specified torque.

Tightening torque
Manual detent spring bolt (a): 10 N·m (1.0 kgf-m, 7.5 lb-ft)



I2RH0B510259-01

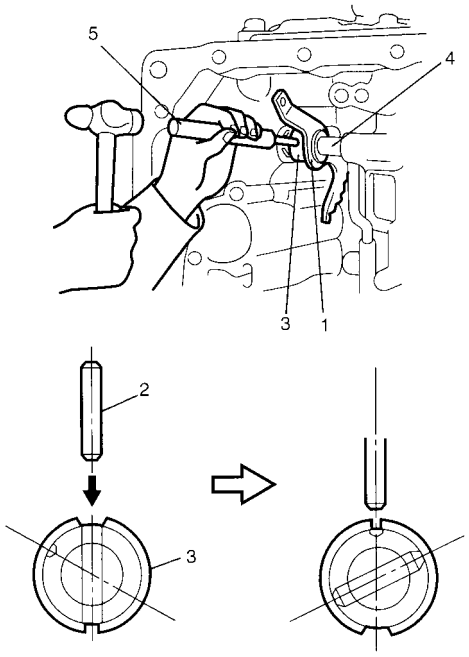
3) Install parking lock pawl rod (2) to manual valve lever (1).



I2RH0B510260-01

4) After applying A/T fluid to new manual valve lever (1), install new manual shift shaft (4), new spacer (3) and manual valve lever to transaxle case.

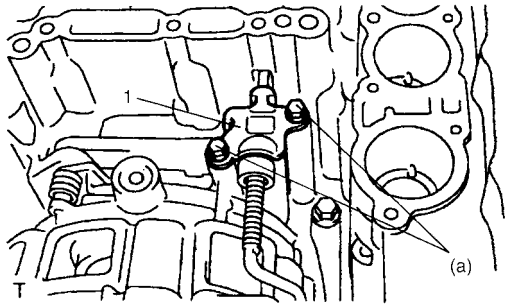
5) After installing manual valve lever pin (2) by using spring pin remover with 3.5 mm (0.14 in.) in diameter (5) and hammer, turn spacer to set the position as shown in figure. Then caulk spacer with a punch.



I2RH0B510261-01

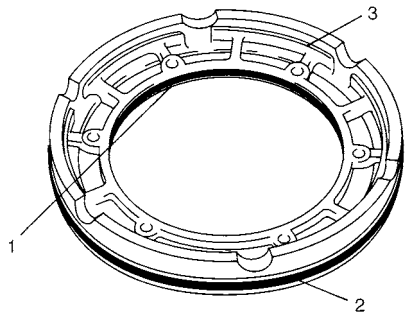
6) Install parking lock pawl bracket (1) to transaxle case.

Tightening torque
Parking lock pawl bracket bolt (a): 7.5 N·m (0.75 kgf-m, 5.5 lb-ft)



I2RH0B510262-01

7) After applying A/T fluid to new O-rings, install them to 1st and reverse brake piston (3).



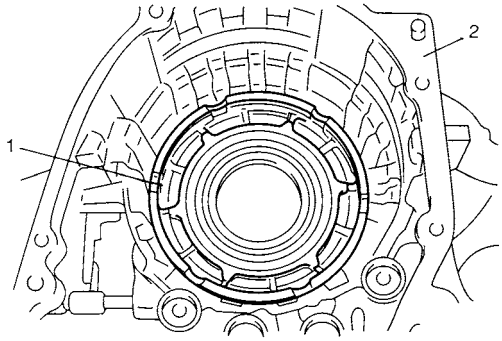
I2RH0B510263-01

1. Inner O-ring	2. Outer O-ring

8) Install 1st and reverse brake piston (1) to transaxle case (2).

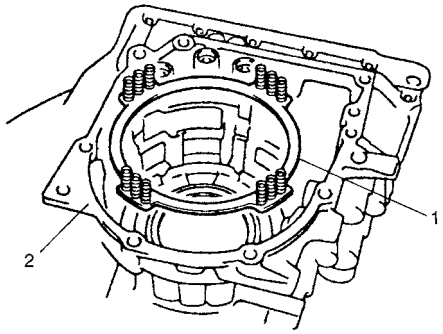
NOTE

Be careful not to damage O-ring when installing 1st and reverse brake piston.



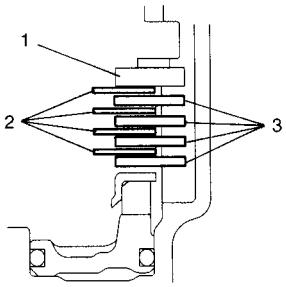
I2RH0B510264-01

9) Install 1st and reverse brake return spring subassembly (1) to transaxle case (2).



I2RH0B510265-01

10) Apply A/T fluid to 1st and reverse brake discs (2), separator plates (3) and retaining plate (1), then install them to transaxle case.



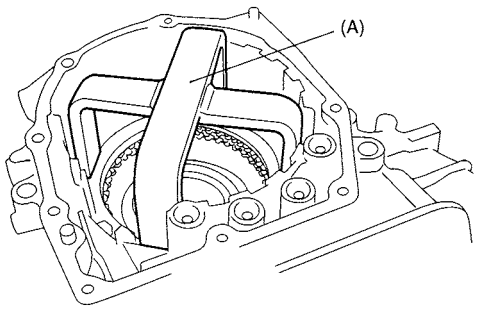
I2RH0B510266-01

11) Compress 1st and reverse brake return spring using special tool and hydraulic press, then attach snap ring.

⚠ CAUTION

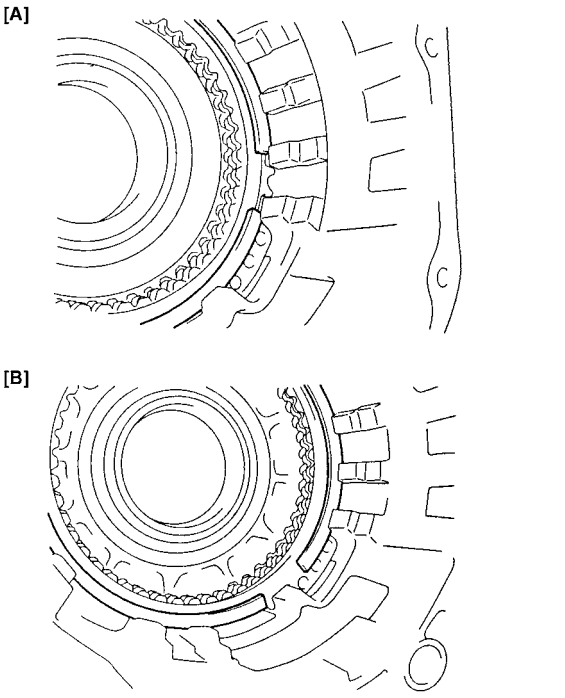
Do not damage 1st and reverse brake return spring subassembly discs, plates and piston by pressing in 1st and reverse brake return spring subassembly passing through its original installing position over 0.8 mm (0.031 in.).

Special tool
(A): 09926–97620



I2RH0B510267-01

12) Install 1st and reverse brake plate snap ring so that its both ends would be positioned in correct locations as shown in figure.



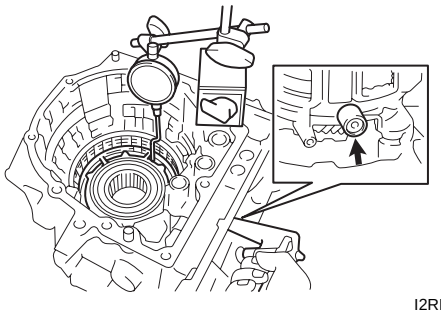
I2RH0B510268-01

[A]: Correct	[B]: Incorrect

13) Using special tools, measure 1st and reverse brake piston stroke when compressed air (400 – 800 kPa, 4 – 8 kg/cm^2, 57 – 113 psi) is brown through oil hole.

Special tool
(A): 09900–20607
(B): 09900–20701
(C): 09952–06020

1st and reverse brake piston stroke
Standard: 0.791 – 1.489 mm (0.0311 – 0.0586 in.)



I2RH0B510269-01

14) Install reduction drive gear (1) to transaxle case (3) by using special tools and hydraulic press.

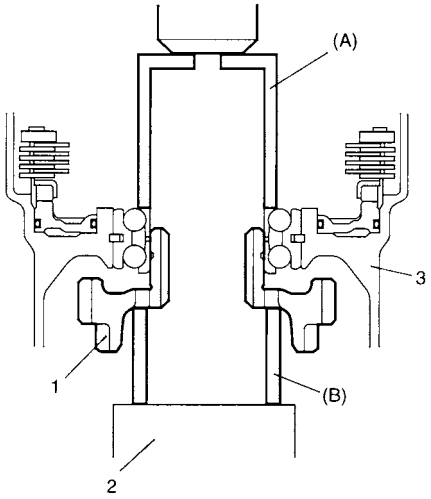
⚠ CAUTION

- **Do not use transaxle case as groundwork to press fit reduction drive gear.**
- **Do not give load more than 20 kN (2000 kg, 4410 lb) with hydraulic press. Otherwise, it may result in damaging reduction drive gear bearing.**

NOTE

When replacing reduction drive gear, replace it together with reduction driven gear as a set.

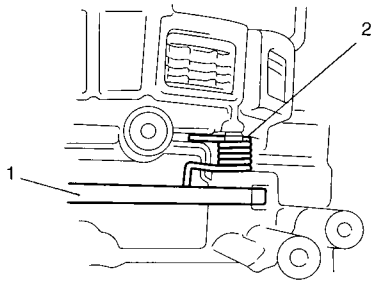
Special tool
(A): 09951–18210
(B): 09944–78210



I2RH0B510270-01

2. Stand that can slightly lift transaxle case.

15) Install parking lock pawl (1) and spring (2). Apply A/T fluid to parking lock pawl shaft, then insert it into transaxle case.



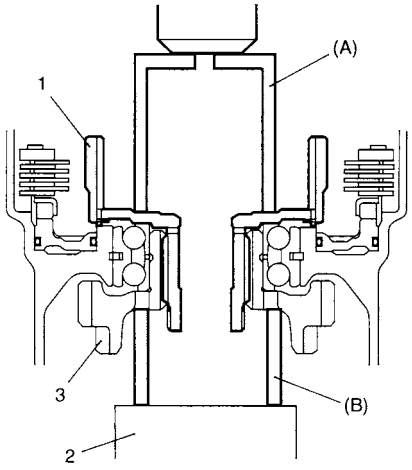
I2RH0B510271-01

16) Install new planetary ring gear subassembly (1) to reduction drive gear (3) by using special tools and hydraulic press.

⚠ CAUTION

- **Do not reuse planetary ring gear subassembly. Otherwise it may cause damage to planetary gear unit and/or reduction gears.**
- **Do not use transaxle case as groundwork to press fit planetary ring gear subassembly.**
- **Do not give load more than 20 kN (2000 kg, 4410 lb) with hydraulic press. Otherwise, it may result in damaging reduction drive gear bearing.**

Special tool
(A): 09951–18210
(B): 09944–78210



I2RH0B510272-01

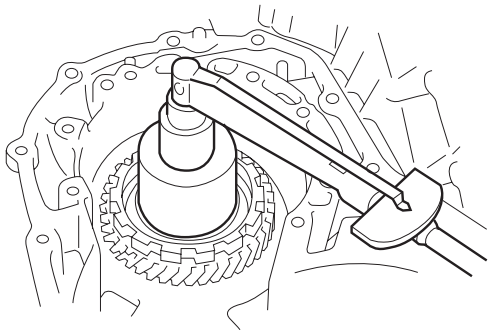
2. Stand that can slightly lift transaxle case.

17) Using a small torque wrench, while turning to counter drive gear 100 rpm and measure the preload.

⚠ CAUTION

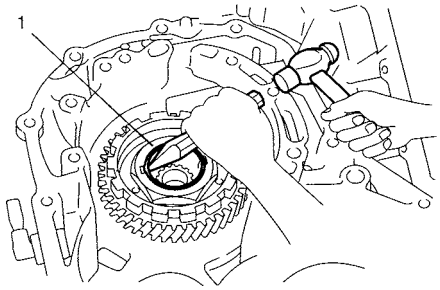
- **Do not tighten nut over the specifications so that reduction drive gear nut would not be broken.**
- **Carry out this procedure on rubber mat in order not to damage transaxle case.**

Reduction drive gear bearing preload measured as starting torque
Standard: 0.05 – 0.35 N·m (0.5 – 3.5 kg-cm, 0.036 – 0.253 lb-ft)



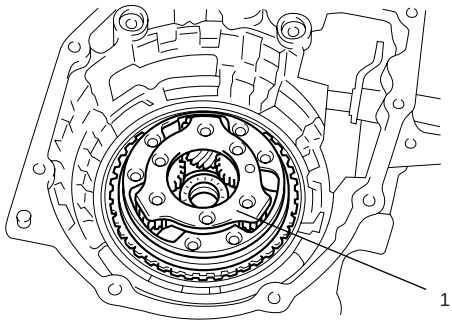
I2RH0B510273-01

18) Caulk reduction drive gear nut (1).



I2RH0B510274-01

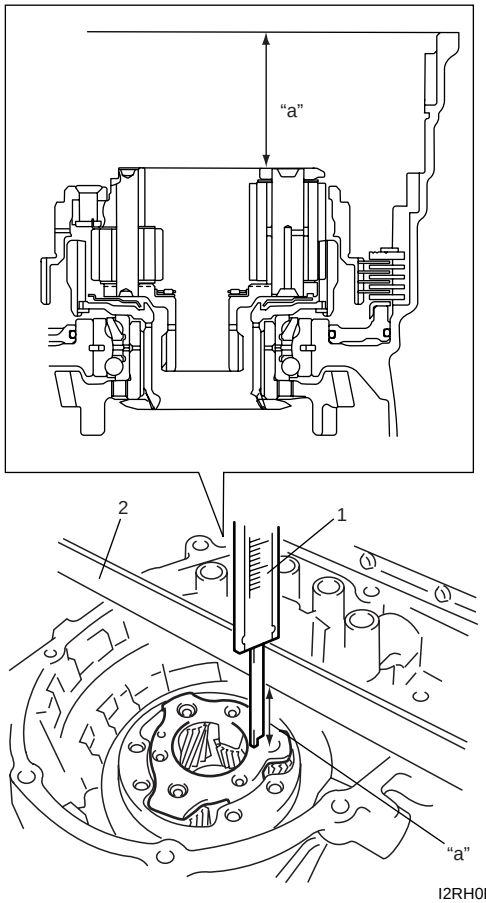
19) Apply A/T fluid to planetary gear assembly (1), then fit it to planetary ring gear assembly.



I2RH0B510275-01

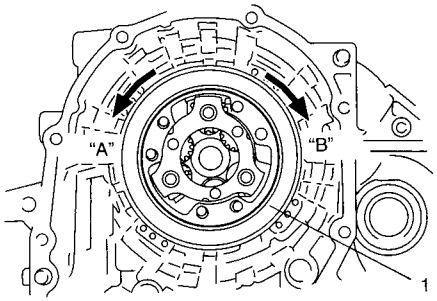
20) Check for correct installation of planetary gear assembly as follows.
Measure the distance “a” by using micrometer caliper (1) and straightedge (2). If measured value is out of specification, remove planetary gear assembly and reinstall it properly.

Distance between planetary gear assembly and mating surface of transaxle case
“a”: More than 49.9 m (1.965 in.)



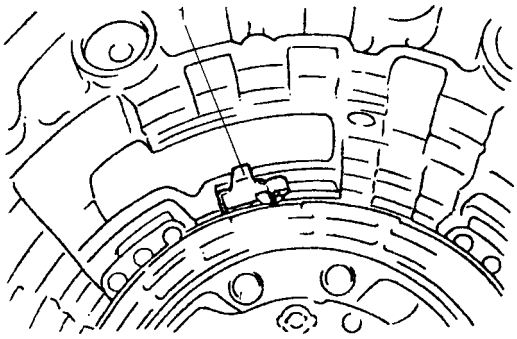
I2RH0B510276-01

21) Apply A/T fluid to one-way clutch No.2 assembly (1), then install it to planetary gear assembly. After that, ensure that planetary carrier rotates only in counterclockwise direction “A”, not in clockwise direction “B”.



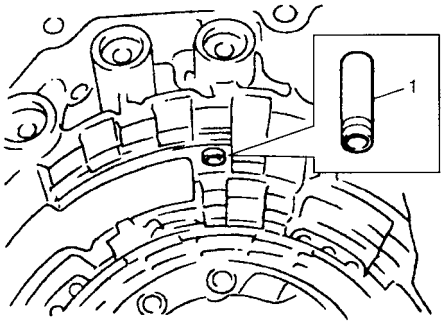
I2RH0B510277-01

22) Install one-way clutch outer race retainer (1).



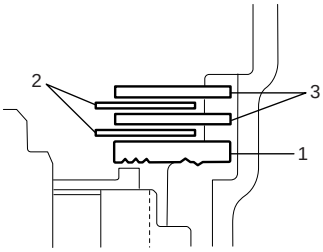
I2RH0B510278-01

23) Apply A/T fluid to new brake drum gasket (1), then install it to transaxle case.



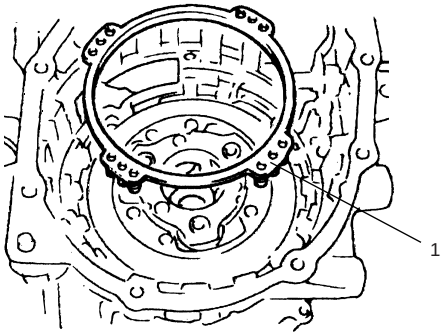
I2RH0B510279-01

24) Apply A/T fluid to 2nd brake retaining plate (1), discs (2) and separator plates (3), then install them to transaxle case.



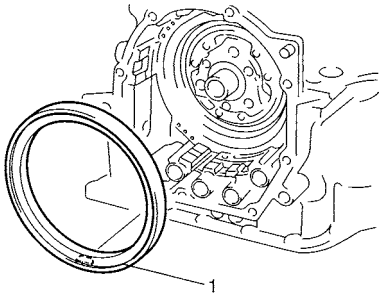
I2RH0B510280-01

25) Install 2nd brake return spring subassembly (1) to transaxle case.



I2RH0B510281-01

26) Apply A/T fluid to 2nd brake piston assembly (1), and align the projection of 2nd brake piston assembly with the groove of transaxle case, then put together.



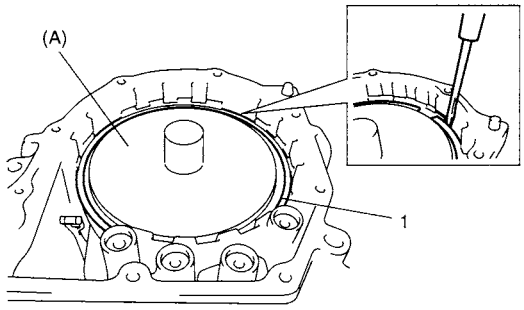
I2RH0B510282-01

27) Install 2nd brake piston snap ring (1) by using special tool and hydraulic press.

⚠ CAUTION

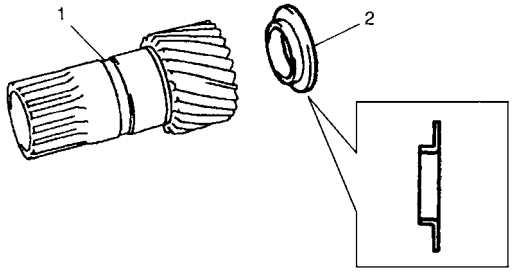
Do not damage 2nd brake piston assembly, return spring subassembly, plates and discs by pressing in 2nd brake assembly passing through its original installing position over 0.4 mm (0.016 in.).

Special tool
(A): 09926–96050



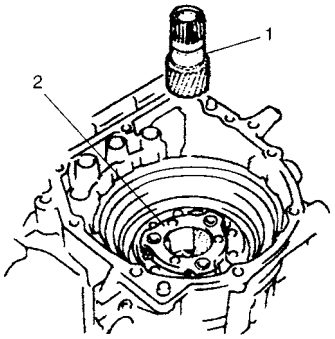
I2RH0B510283-01

28) After applying A/T fluid to front sun gear thrust bearing race (2), install it to front planetary sun gear (1).



I2RH0B510285-01

29) Apply A/T fluid to front planetary sun gear (1) and install it to planetary gear assembly (2).

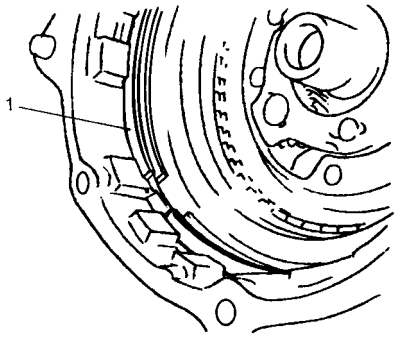


I2RH0B510286-01

30) Install O/D and 2nd coast brake retaining plate snap ring (1).

⚠ CAUTION

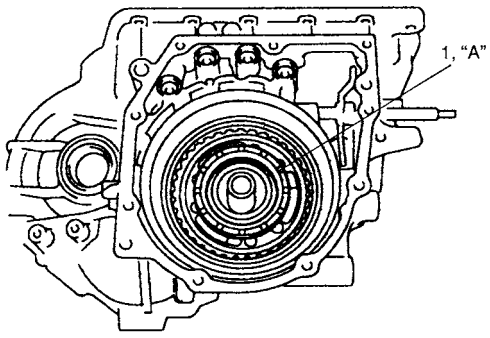
Be sure to install O/D and 2nd coast brake retaining plate snap ring correctly in groove of transaxle case.



I2RH0B510287-01

31) After applying grease to slide contact face of planetary carrier thrust washer (1), install it to planetary gear assembly.

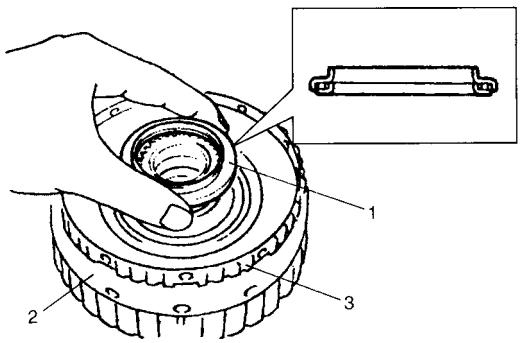
"A": Grease 99000–25030 (SUZUKI Super Grease C)



I2RH0B510288-01

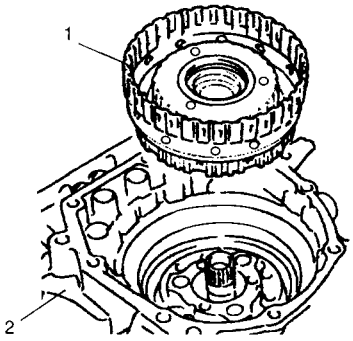
32) Apply A/T fluid to one-way clutch No.1 assembly (3) and install one-way clutch No.1 assembly (3) to rear planetary sun gear subassembly (2).

33) Apply A/T fluid to planetary gear thrust bearing (1), then install it to one-way clutch No.1 assembly (3).



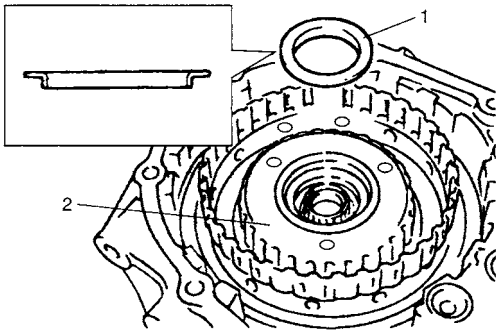
I2RH0B510289-01

34) After applying A/T fluid to rear planetary sun gear subassembly and one-way clutch No.1 assembly (1), install them in transaxle case (2).



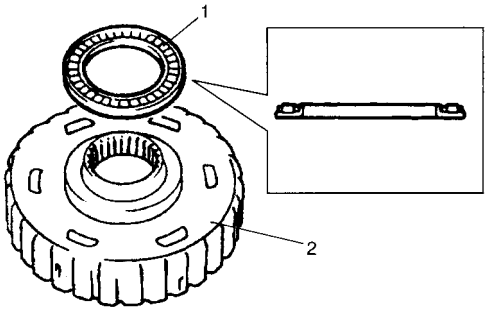
I2RH0B510290-01

35) After applying A/T fluid to rear sun gear thrust bearing race (1), install it to rear planetary sun gear (2).



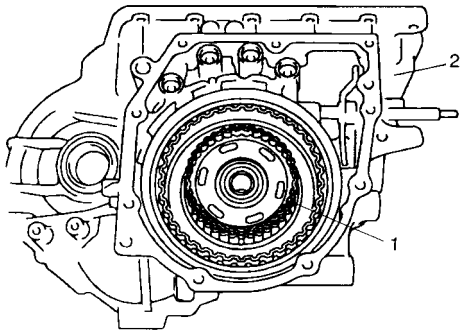
I2RH0B510291-01

36) After applying A/T fluid to rear sun gear thrust bearing (1), install it to forward clutch hub (2).



I2RH0B510292-01

37) After applying A/T fluid to forward clutch hub (1), install it in transaxle case (2).

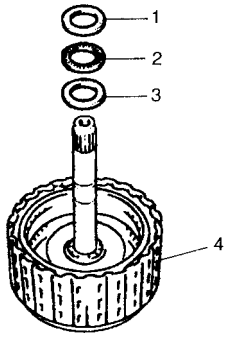


I2RH0B510293-01

38) After applying A/T fluid to intermediate shaft thrust bearing rear race (3), thrust bearing (2) and front race (1), install them to forward and reverse clutch assembly (4).

Bearing race dimension

	Front race	Rear race
Outside diameter	30.6 mm (1.20 in.)	28.2 mm (1.11 in.)
Thickness	2.0 mm (0.08 in.)	2.0 mm (0.08 in.)

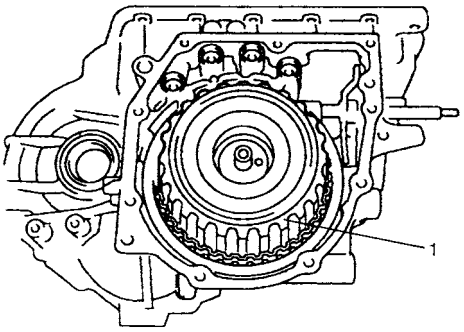


I2RH0B510294-01

39) Apply A/T fluid to forward and reverse clutch assembly (1).
Install forward and reverse clutch assembly while rotating clockwise and counterclockwise frequently to fit clutch discs to mating hubs.

NOTE

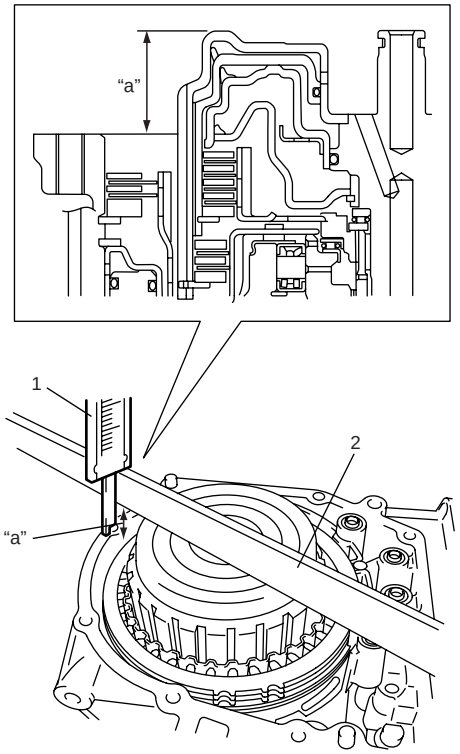
Before installation, align teeth of forward and reverse clutch discs to facilitate installation.



I2RH0B510295-01

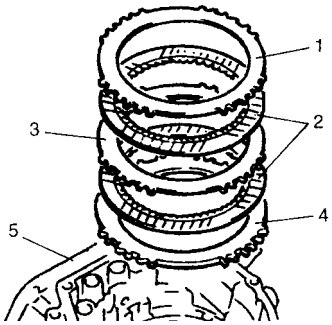
40) Check for correct installation of forward and reverse clutch assembly as follows.
Measure distance “a” by using micrometer caliper (1) and straightedge (2). If out of specification, remove forward and reverse clutch assembly, forward clutch hub, rear planetary sun gear subassembly and one-way clutch No.1 assembly, and reinstall them properly.

Distance between forward and reverse clutch assembly and mating surface of transaxle case
“a”: Less than 29.4 mm (1.157 in.)



I2RH0B510296-01

41) After applying A/T fluid to O/D and 2nd coast brake retaining plate (4), separator plate (3), discs (2) and rear plate (1), install them to transaxle case (5).



I2RH0B510297-01

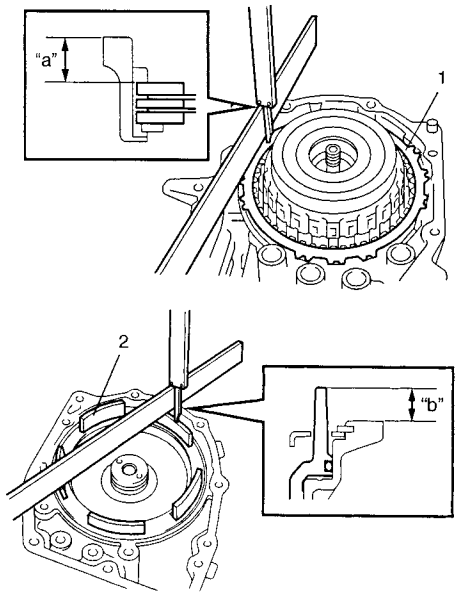
42) Measure O/D and 2nd coast brake piston stroke.
- Measure dimension “a” from end face of transaxle case to O/D and 2nd coast brake rear plate (1) using straightedge and micrometer caliper.
- Measure dimension “b” from O/D and 2nd coast brake piston (2) to rear cover assembly mating surface using straightedge and micrometer caliper.
- Calculate piston stroke from measured value of dimensions “a” and “b”.
- Piston stroke = “a” – “b”

O/D and 2nd coast brake piston stroke
Standard: 0.65 – 1.05 mm (0.026 – 0.041 in.)

When piston stroke is out of specification, select O/D and 2nd coast brake rear plate with proper thickness from among the following table and replace it.

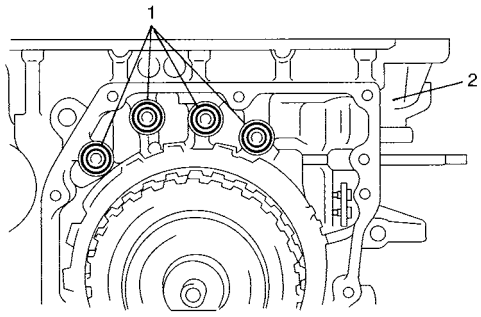
Available O/D and 2nd coast brake rear plate thickness

Thickness	Identification mark
1.8 mm (0.071 in.)	1
2.0 mm (0.079 in.)	2
2.2 mm (0.087 in.)	3
2.4 mm (0.094 in.)	4
2.6 mm (0.102 in.)	5



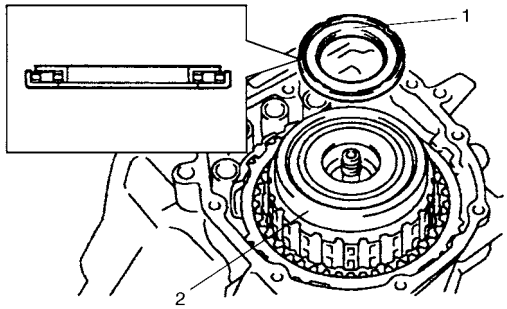
I2RH0B510298-01

43) After applying A/T fluid to new 2nd brake gaskets (1), install them to transaxle case (2).



I2RH0B510299-01

44) After applying A/T fluid to reverse clutch drum thrust bearing (1), install it to forward and reverse clutch assembly (2).

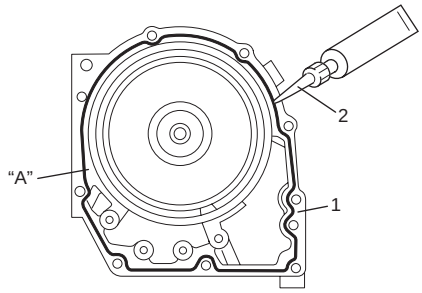


I2RH0B510300-01

45) Remove sealant attached to mating surface of transaxle rear cover (1) completely.

46) Apply sealant to mating surface of transaxle rear cover (1) by using a nozzle (2) as shown in figure by such amount that its section is 1.2 mm (0.047 in.) in diameter.

“A”: Sealant 99000–31230 (SUZUKI Bond No.1216B)



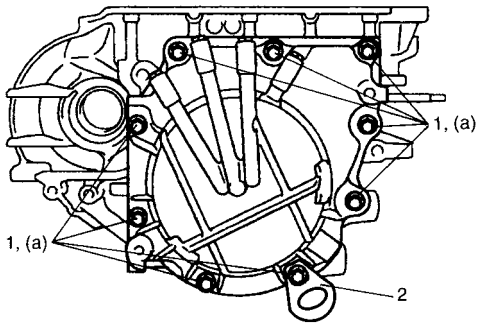
I2RH0B510301-01

47) Install transaxle rear cover assembly on transaxle case.

48) Install hook (2) to location shown in figure.

49) Tighten rear cover bolts (1).

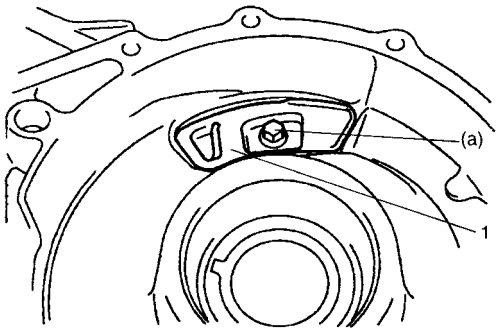
Tightening torque
Rear cover bolt (a): 25 N·m (2.5 kgf-m, 18.0 lb-ft)



I3RM0B510068-01

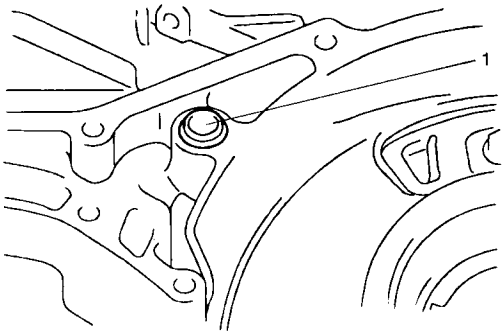
50) Install fluid reservoir LH plate (1).

Tightening torque
Fluid reservoir LH plate bolt (a): 10 N·m (1.0 kgf-m, 7.5 lb-ft)



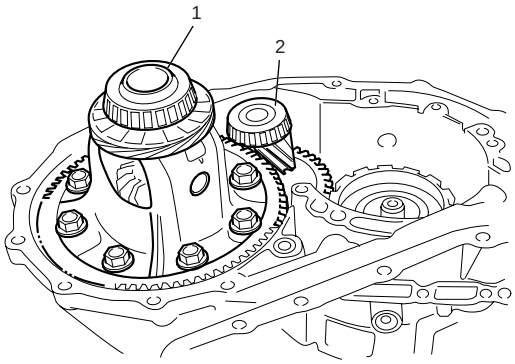
I2RH0B510303-01

51) After applying A/T fluid to new governor apply No.2 gasket (1), install it to transaxle case.



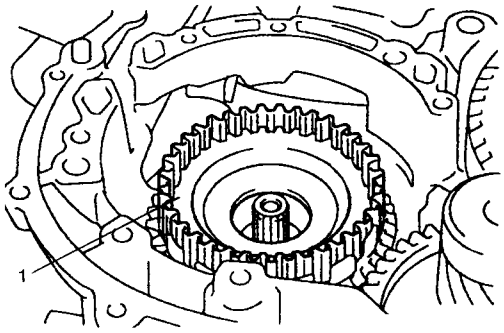
I2RH0B510304-01

52) After applying A/T fluid to differential assembly (1) and countershaft assembly (2), install them to transaxle case.



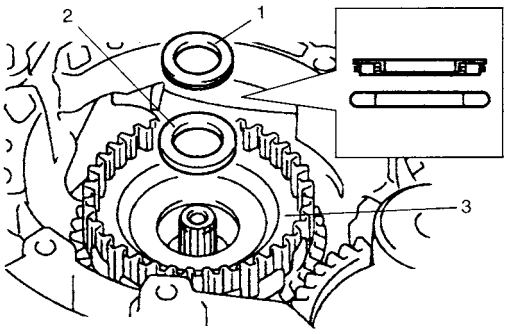
I4RS0A510036-01

53) After applying A/T fluid to direct clutch hub (1), install it to planetary gear assembly.



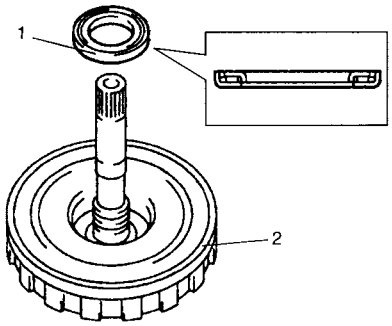
I2RH0B510306-01

54) After applying A/T fluid to input shaft rear thrust bearing (1) and thrust bearing race (2), install them into direct clutch hub (3).



I2RH0B510307-01

55) After applying A/T fluid to input shaft front thrust bearing (1), install it to direct clutch assembly (2).

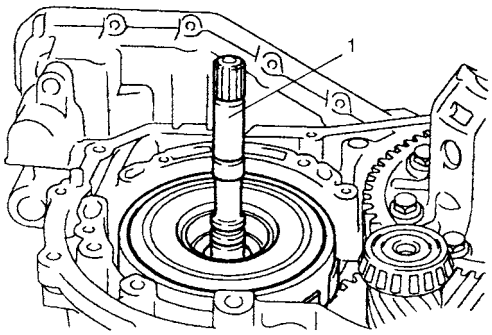


I2RH0B510308-01

56) Apply A/T fluid to direct clutch assembly (1). Install direct clutch assembly while rotating clockwise and counterclockwise frequently to fit clutch discs to mating hub.

NOTE

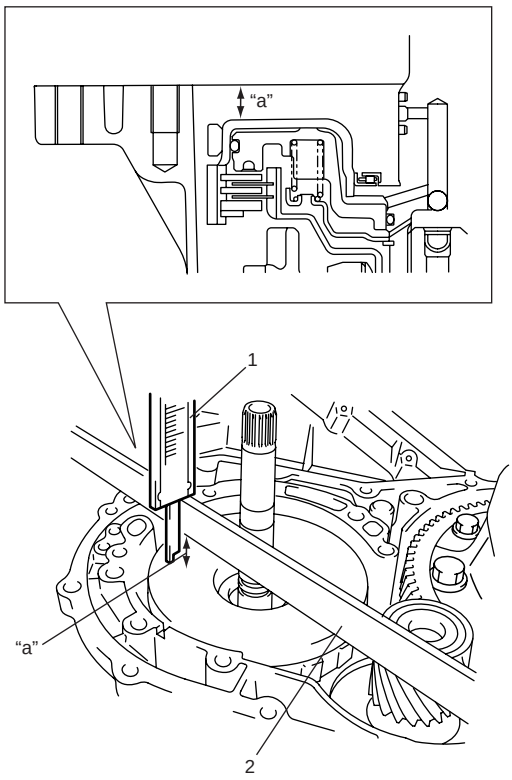
Before installation, align teeth of direct clutch discs to facilitate installation.



I2RH0B510309-01

57) Check for correct installation of direct clutch assembly as follows.
Measure distance “a” by using micrometer caliper (1) and straightedge (2). If out of specification, remove direct clutch assembly, direct clutch hub and reinstall them properly.

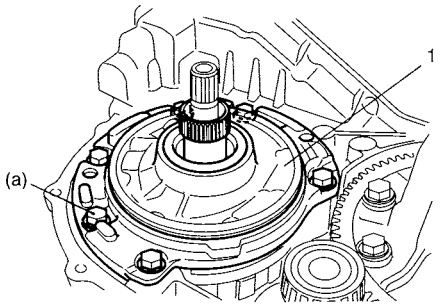
Distance between direct clutch assembly and mating surface of transaxle case
“a”: 10.4 – 11.4 mm (0.409 – 0.449 in.)



I2RH0B510310-01

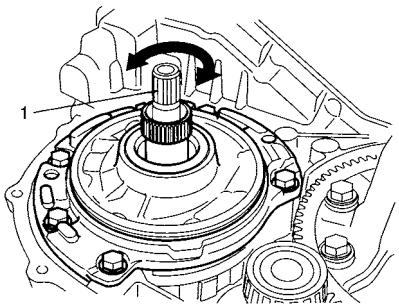
58) Install oil pump assembly (1) to transaxle case.

Tightening torque
Oil pump assembly bolt (a): 25 N·m (2.5 kgf-m, 18.0 lb-ft)



I2RH0B510311-01

59) Make sure that input shaft (1) turns smoothly.



I2RH0B510312-01

60) Measure input shaft thrust play.
Apply dial gauge onto input shaft end (1) and measure thrust play of input shaft.

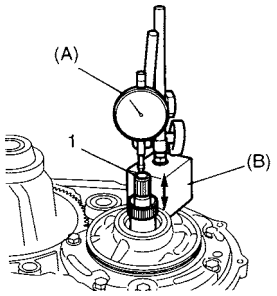
Special tool
(A): 09900–20607
(B): 09900–20701

Input shaft thrust play
0.3 – 0.9 mm (0.012 – 0.035 in.)

When input shaft thrust play is out of specification, select input shaft front thrust bearing with proper thickness from among the following table and replace it.

Available input shaft front thrust bearing thickness

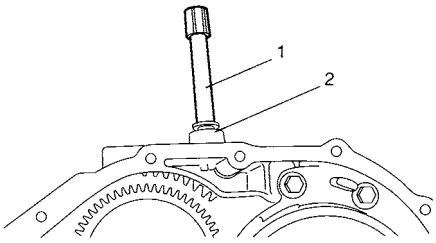
Thickness	Outside diameter	Inside diameter
3.45 mm (0.14 in.)	48.5 mm (1.90 in.)	32.9 mm (1.30 in.)
4.05 mm (0.16 in.)	48.5 mm (1.90 in.)	32.5 mm (1.28 in.)



I2RH0B510313-01

61) After applying A/T fluid to new O-ring, fit it to breather union (2). Then install breather union to transaxle case.

62) Install breather hose (1).

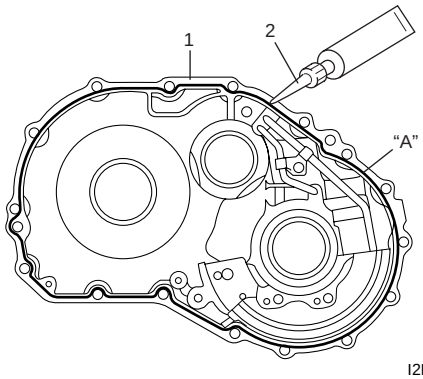


I2RH0B510314-01

63) Wipe off and clean mating surface between transaxle case (1) and torque converter housing.

64) Apply sealant to torque converter housing by using a nozzle (2) as shown in figure by such amount that its section is 1.2 mm (0.047 in.) in diameter.

"A": Sealant 99000–31230 (SUZUKI Bond No.1216B)



I2RH0B510315-01

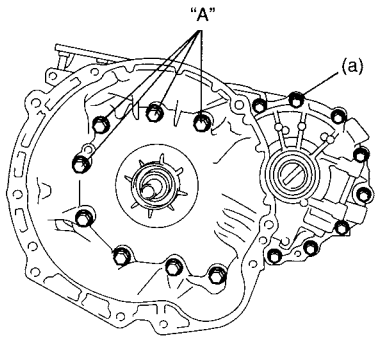
65) Install torque converter housing to transaxle case, tighten bolts to specified torque.

⚠ CAUTION

Apply sealant to threads of four bolts shown in figure before tightening.

"A": Sealant 99000–31230 (SUZUKI Bond No.1216B)

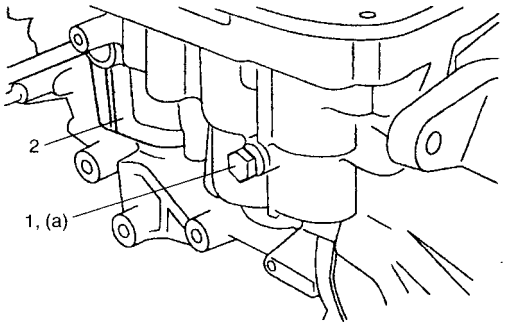
Tightening torque
Torque converter housing bolt (a): 29 N·m (2.9 kgf-m, 21 lb-ft)



I3RM0B510069-01

66) After applying A/T fluid to new O-ring, fit it to transaxle case plug (1). Then install the transaxle case plug to transaxle case (2).

Tightening torque
Transaxle case plug (a): 7.5 N·m (0.75 kgf-m, 5.5 lb-ft)



I2RH0B510317-01

67) Install new O-rings to each accumulator piston and apply A/T fluid to them.

Accumulator O-ring dimension

O-ring name	Inside diameter	Section diameter
Large B1 accumulator O-ring (2) Large C1 accumulator O-ring (2) Large C2 accumulator O-ring (2) – Above three O-rings are same.	29.4 mm (1.16 in.)	2.6 mm (0.10 in.)
Small B1 accumulator O-ring (4)	19.7 mm (0.78 in.)	2.6 mm (0.10 in.)
Small C1 accumulator O-ring (6) Small C2 accumulator O-ring (6) – Above two O-rings are same.	21.8 mm (0.86 in.)	2.6 mm (0.10 in.)

NOTE

Make sure that O-rings are not twisted or caught when installing.

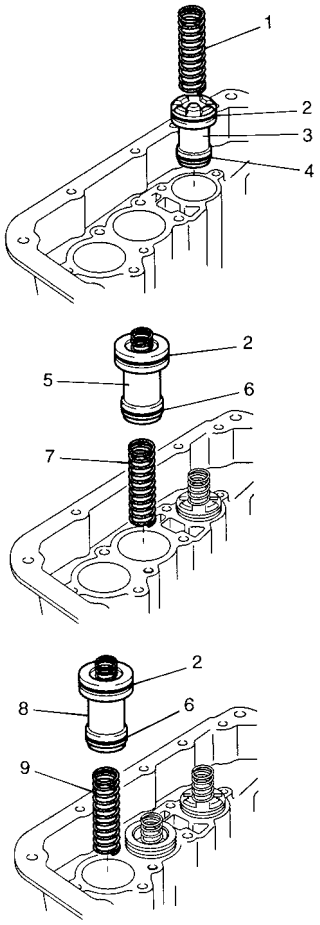
68) Install B1, C1, C2 accumulator pistons and springs.

Accumulator piston identification

Piston name	Identification as embossed letters on piston
B1 accumulator piston (3)	SB-1
C1 accumulator piston (5)	S2C-1
C2 accumulator piston (8)	S2C-2

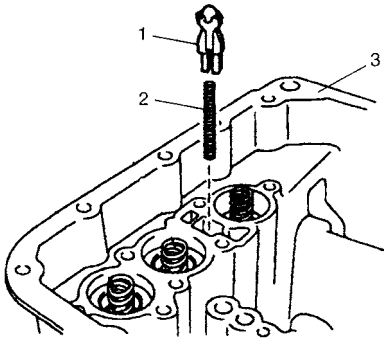
Accumulator spring identification

Spring name	Color of identification paint
B1 accumulator No.2 spring (1)	Pink
C1 accumulator No.2 spring (7)	Light blue
C2 accumulator No.2 spring (9)	Yellow



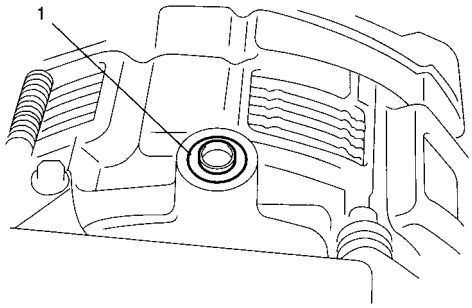
I2RH0B510318-01

69) After applying A/T fluid to cooler check valve (1) and spring (2), install them to transaxle case (3).



I2RH0B510319-01

70) After applying A/T fluid to new governor apply No.1 gasket (1), install it to transaxle case.



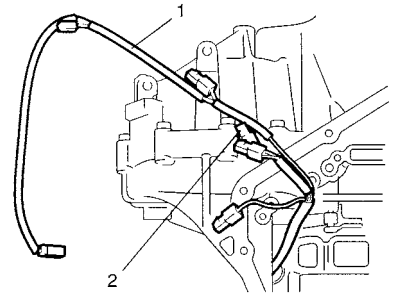
I2RH0B510320-01

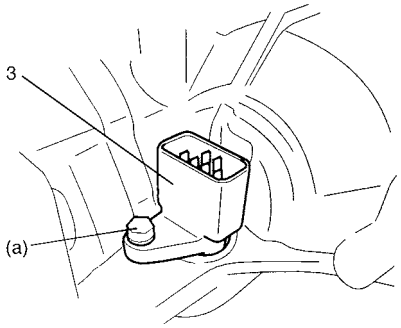
71) After applying A/T fluid to new O-ring, fit it to valve body harness connector (3), then install valve body harness to transaxle case.

⚠ CAUTION

When put valve body harness (1) into transaxle case, take care not to damage transmission fluid temperature sensor (2) at narrow entrance of case.
Careless sensor treatment might cause sensor malfunction.

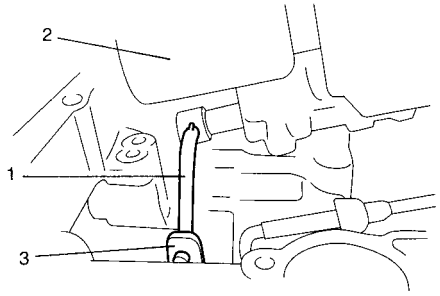
Tightening torque
Valve body harness connector bolt (a): 5.5 N·m (0.55 kgf-m, 4.0 lb-ft)





I2RH0B510321-01

72) Install manual valve rod (1) to manual valve lever (3) and then install valve body assembly (2) to transaxle case.



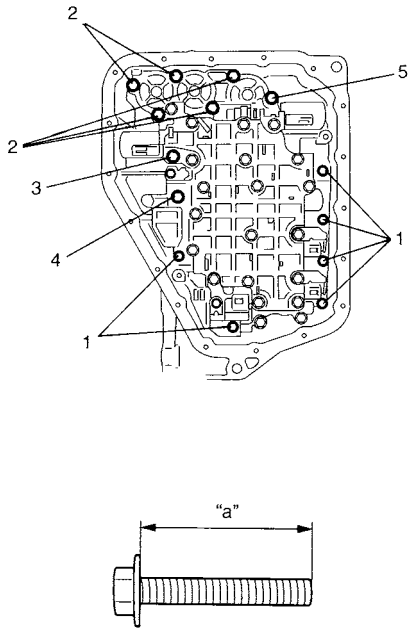
I2RH0B510322-01

73) Tighten valve body bolts to specified torque.

Tightening torque
Valve body bolt: 11 N·m (1.1 kgf-m, 8.0 lb-ft)

Valve body bolt length

Bolt	Length “a”	Pieces
A (1)	20 mm (0.79 in.)	6
B (2)	28 mm (1.10 in.)	5
C (3)	49 mm (1.93 in.)	1
D (4)	36 mm (1.42 in.)	1
E (5)	40 mm (1.58 in.)	1

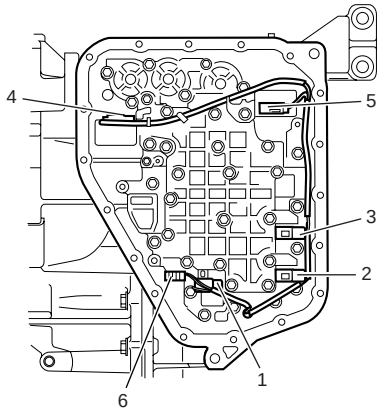


I2RH0B510323-01

74) Connect solenoid connectors to solenoid valves identifying their installing positions by wire colors, and install transmission fluid temperature sensor to its clamp.

Solenoid valve coupler specification

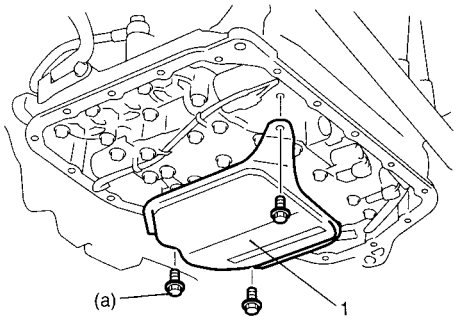
Solenoid valve coupler	Wire color
Shift solenoid valve-A (No.1) (2)	White
Shift solenoid valve-B (No.2) (3)	Black
Timing solenoid valve (1)	Yellow
TCC pressure control solenoid valve (4)	Light green / Brown
Pressure control solenoid valve (5)	Gray / Green
Transmission fluid temperature sensor (6)	Orange



I4RS0A510030-01

75) Install oil strainer assembly (1).

Tightening torque
Oil strainer bolt (a): 10 N·m (1.0 kgf-m, 7.5 lb-ft)

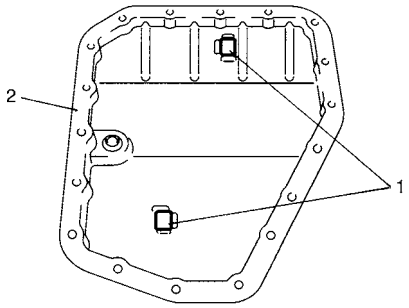


I2RH0B510325-01

76) Install oil cleaner magnets (1) in oil pan (2).

NOTE

If metal particles are attached to the magnets, clean them before installing.

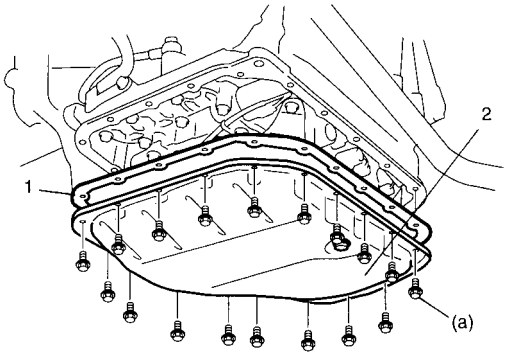


I2RH0B510326-01

77) Install new oil pan gasket (1) between transaxle case and oil pan (2).

78) Tighten oil pan bolts to specified torque diagonally and little by little.

Tightening torque
Oil pan bolt (a): 7.0 N·m (0.7 kgf-m, 5.0 lb-ft)



I2RH0B510327-01

79) After applying A/T fluid to new O-rings, fit it to fluid inlet union (1). Then install fluid outlet union to transaxle case.

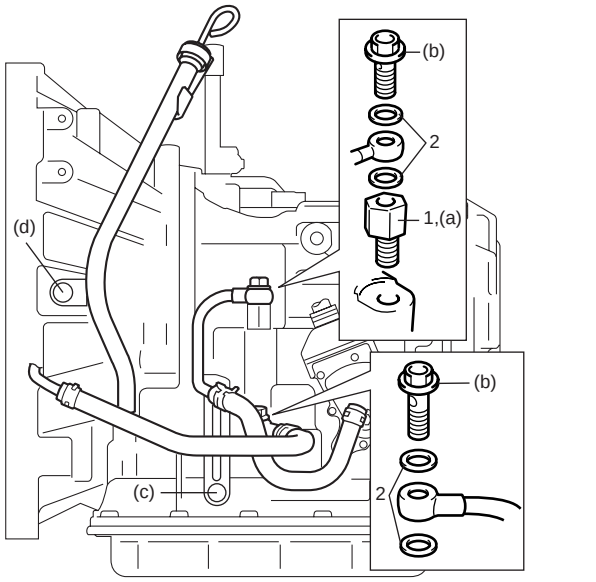
Tightening torque
Fluid outlet union (a): 25 N·m (2.5 kgf-m, 18.0 lb-ft)

80) Install new gaskets (2) and then install fluid cooler pipes.

Tightening torque
Fluid cooler pipe union bolt (b): 22 N·m (2.2 kgf-m, 16.0 lb-ft)
Fluid cooler pipe bracket bolt (c): 10 N·m (1.0 kgf-m, 7.5 lb-ft)

81) After applying A/T fluid to new O-ring, fit it to fluid filler tube. Then install fluid filler tube to transaxle case.

Tightening torque
Fluid filler tube bolt (d): 10 N·m (1.0 kgf-m, 7.5 lb-ft)



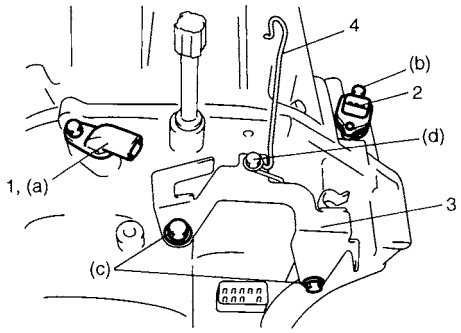
I3RM0B510070-01

82) Apply A/T fluid to O-rings of each sensor and install input shaft speed sensor (1) and output shaft speed sensor (2).

Tightening torque
Input shaft speed sensor bolt (a): 11 N·m (1.1 kgf-m, 8.0 lb-ft)
Output shaft speed sensor bolt (b): 13 N·m (1.3 kgf-m, 9.5 lb-ft)

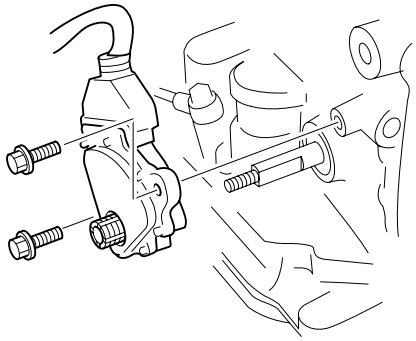
83) Install harness bracket (3) and select cable clamp (4).

Tightening torque
Harness bracket bolt (c): 23 N·m (2.3 kgf-m, 17.0 lb-ft)
Select cable clamp bolt (d): 10 N·m (1.0 kgf-m, 7.5 lb-ft)



I3RM0B510071-01

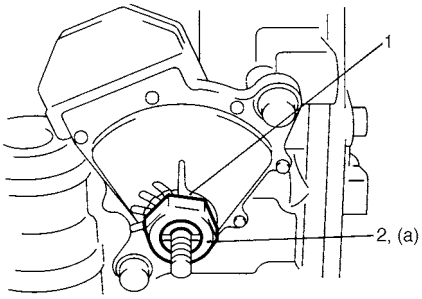
84) Install transmission range sensor to transaxle case, tighten bolts temporarily at this step.



I3RM0B510072-01

85) Install lock washer (1) and tighten lock nut (2) to specified torque.

Tightening torque
Transmission range sensor lock nut (a): 7 N·m (0.7 kgf-m, 5.0 lb-ft)



I3RM0B510073-01

86) Install manual select lever (1) temporarily at this step.

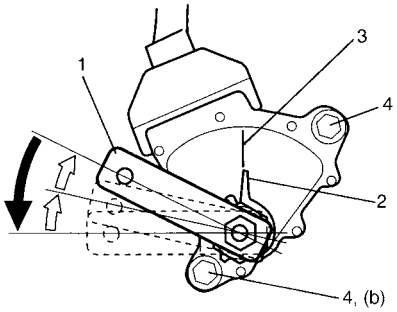
87) After shifting manual select lever counterclockwise fully, select “N” range position by bringing it back 2 notches clockwise.

88) Remove manual select lever (1) at this step.

89) Loosen sensor bolts (4) and align needle direction shaped on lock washer (2) with “N” reference line (3) on transmission range sensor by moving sensor in rotative direction.

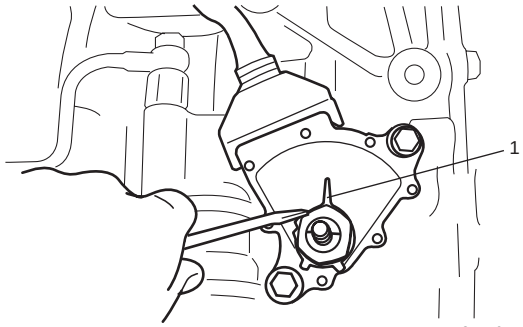
90) Tighten sensor bolts to specified torque.

Tightening torque
Transmission range sensor bolt (b): 5.5 N·m (0.55 kgf-m, 4.0 lb-ft)



I3RM0B510074-01

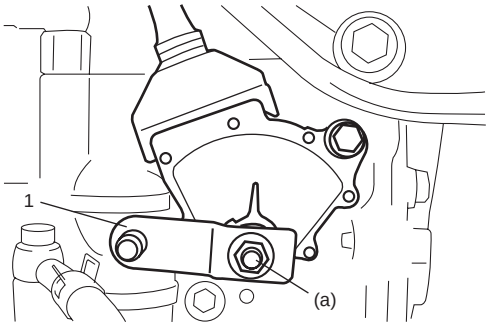
91) Bend dents of lock washer (1) in order to prevent displacement of lock washer.



I3RM0B510075-01

92) Install manual select lever (1).

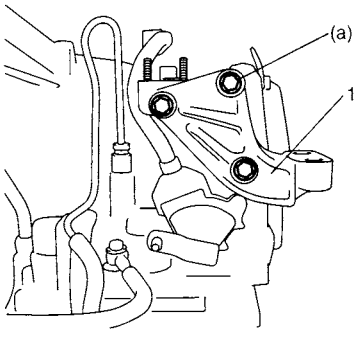
Tightening torque
Manual select lever nut (a): 13 N·m (1.3 kgf-m, 9.5 lb-ft)



I3RM0B510076-01

93) Install engine mounting LH bracket (1).

Tightening torque
Engine mounting LH bracket bolt (a): 55 N·m (5.5 kgf-m, 40.0 lb-ft)



I3RM0B510077-01

94) Install torque converter (3) noting the following points.

⚠ CAUTION

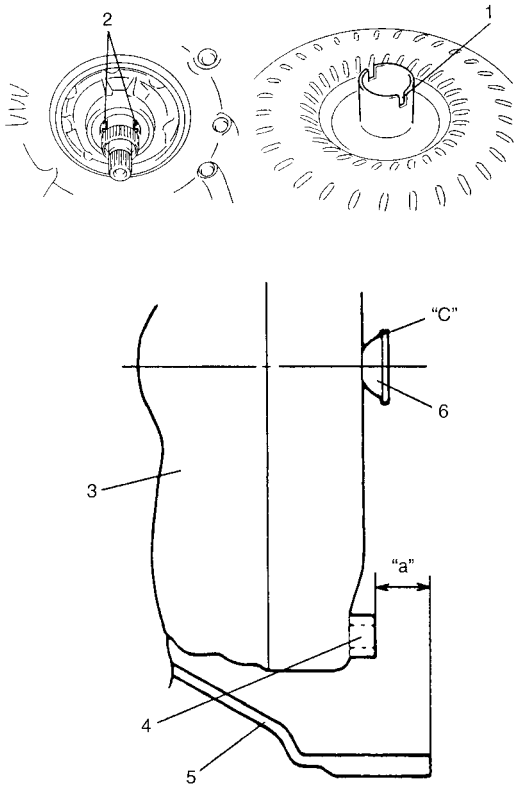
- **Before installing converter, make sure that its pump hub portion is free from nicks, burrs or damage which may cause oil seal to leak.**
- **Be very careful not to drop converter on oil pump gear. Damage in gear, should it occur, may cause a critical trouble.**

- Install torque converter aligning grooves (1) of torque converter and projection (2) of oil pump drive gear.
- Install torque converter, using care not to damage oil seal of oil pump.
- After installing torque converter, check that distance “a” is within specification.

Torque converter installing position
“a”: More than 19.9 mm (0.783 in.)

- Check torque converter for smooth rotation.
- Apply grease around cup (6) at the center of torque converter.

“C”: Grease 99000–25011 (SUZUKI Super Grease A)



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4. Flange nut	5. Torque converter housing

Specifications

Tightening Torque Specifications

S7RS0B5107001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
A/T fluid drain plug	17	1.7	12.5	☞ / ☞ / ☞
Transmission range sensor bolt	5.5	0.55	4.0	☞ / ☞
Output shaft speed sensor bolt	13	1.3	9.5	☞ / ☞
Input shaft speed sensor bolt	5.5	0.55	4.0	☞
Valve body harness connector bolt	7.0	0.7	5.0	☞
Shift solenoid bolt	11	1.1	8.0	☞
Oil strainer bolt	10	1.0	7.5	☞ / ☞
Oil pan bolt	7.0	0.7	5.0	☞ / ☞
Transaxle and engine fastening bolt and nut	85	8.5	61.5	☞
Drive plate to torque converter bolt	25	2.5	18.0	☞
Transaxle stiffener bolt	55	5.5	40	☞
Starter motor bolt and nut	50	5.0	36.5	☞
Oil pump subassembly bolt	10	1.0	7.5	☞
Rear cover plug	7.5	0.75	5.5	☞
Solenoid valve bolt	11	1.1	8.0	☞
Final gear bolt	78	7.8	56.5	☞
Torque converter housing plug	7.5	0.75	5.5	☞
Lubrication tube clamp bolt	5.5	0.55	4.0	☞
Fluid reservoir RH plate bolt	5.5	0.55	4.0	☞
Torque converter housing bolt	29	2.9	21	☞ / ☞ / ☞
Manual detent spring bolt	10	1.0	7.5	☞
Parking lock pawl bracket bolt	7.5	0.75	5.5	☞
Rear cover bolt	25	2.5	18.0	☞
Fluid reservoir LH plate bolt	10	1.0	7.5	☞
Oil pump assembly bolt	25	2.5	18.0	☞
Transaxle case plug	7.5	0.75	5.5	☞
Valve body harness connector bolt	5.5	0.55	4.0	☞
Valve body bolt	11	1.1	8.0	☞
Fluid outlet union	25	2.5	18.0	☞
Fluid cooler pipe union bolt	22	2.2	16.0	☞
Fluid cooler pipe bracket bolt	10	1.0	7.5	☞
Fluid filler tube bolt	10	1.0	7.5	☞
Input shaft speed sensor bolt	11	1.1	8.0	☞
Harness bracket bolt	23	2.3	17.0	☞
Select cable clamp bolt	10	1.0	7.5	☞
Transmission range sensor lock nut	7	0.7	5.0	☞
Manual select lever nut	13	1.3	9.5	☞
Engine mounting LH bracket bolt	55	5.5	40.0	☞

NOTE

The specified tightening torque is also described in the following.
“Select Cable Components”
“Automatic Transaxle Unit Components”
“Automatic Transaxle Assembly Components”
“Oil Pump Assembly Components”
“Transaxle Rear Cover (O/D and 2nd Coast Brake Piston) Assembly Components”
“Valve Body Assembly Components”
“Differential Assembly Components”

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Special Tools and Equipment

Recommended Service Material

S7RS0B5108001

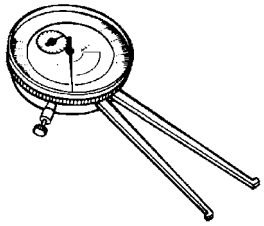
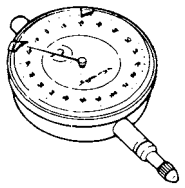
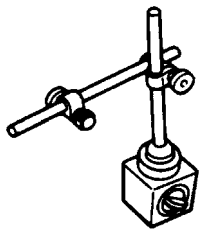
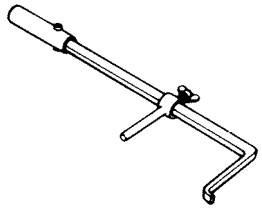
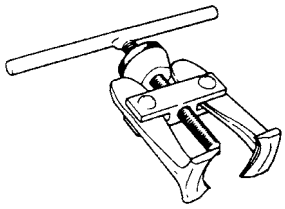
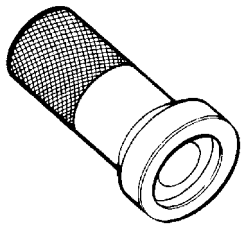
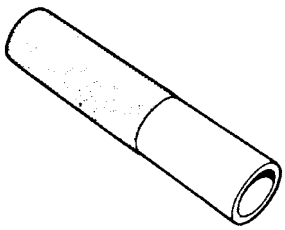
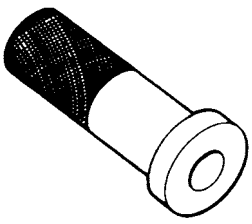
Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI Super Grease A	P/No.: 99000–25011	☞ / ☞
	SUZUKI Super Grease C	P/No.: 99000–25030	☞ / ☞ / ☞ / ☞ / ☞ / ☞
Sealant	SUZUKI Bond No.1216B	P/No.: 99000–31230	☞ / ☞ / ☞

NOTE

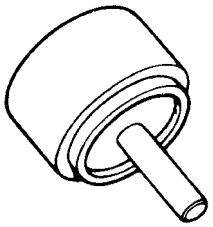
Required service material is also described in the following.
“Select Cable Components”
“Automatic Transaxle Unit Components”
“Automatic Transaxle Assembly Components”
“Oil Pump Assembly Components”
“Direct Clutch Assembly Components”
“Forward and Reverse Clutch Assembly Components”
“2nd Brake Piston Assembly Components”
“Transaxle Rear Cover (O/D and 2nd Coast Brake Piston) Assembly Components”
“Countershaft Assembly Components”
“Valve Body Assembly Components”
“Differential Assembly Components”

Special Tool

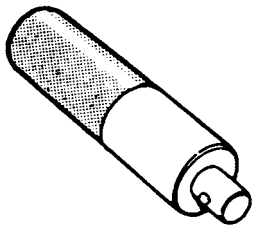
S7RS0B5108002

09900–20605 Dial calipers (1/100 mm, 10-34 mm) ☞ / ☞ / ☞ 	09900–20607 Dial gauge ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ 
09900–20701 Magnetic stand ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ 	09913–50121 Oil seal remover ☞ 
09913–61510 Bearing puller ☞ 	09913–70123 Bearing installing tool ☞ / ☞ 
09913–84510 Bearing installer ☞ / ☞ / ☞ / ☞ 	09913–85210 Bearing installer ☞ 

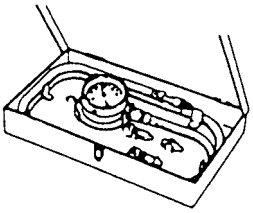
09923–78210
Bearing installer
☞



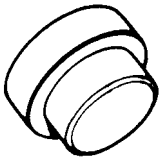
09924–74510
Bearing and oil seal handle
☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞



09925–37811–001
Oil pressure gauge
☞



09925–88210
Bearing puller attachment
☞ / ☞



09925–98210
Input shaft bearing installer
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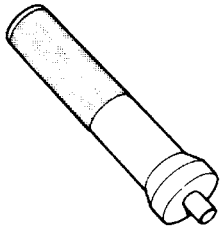
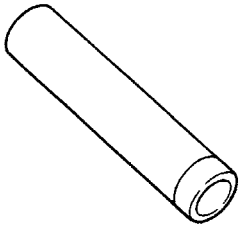
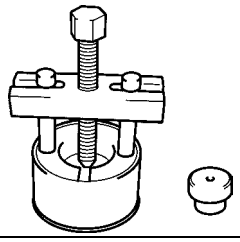


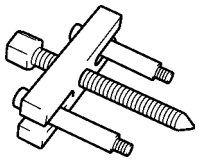
09925–98221
Bearing installer
☞



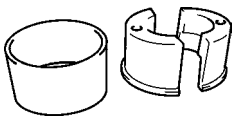
09926–37610
Bearing remover
☞ / ☞



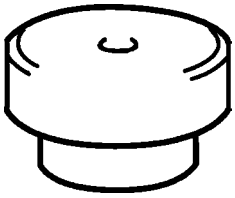
09926–37610–001
Bearing puller
☞ / ☞



09926–37610–002
Bearing puller attachment
☞ / ☞

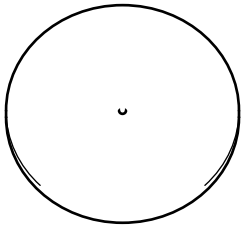


09926–37610–003
Bearing remover attachment
☞ / ☞

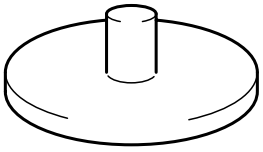


09926–58010
Bearing remover attachment
☞

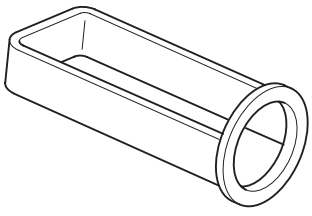
09926–96030
Clutch spring compressor
No.7
☞ / ☞



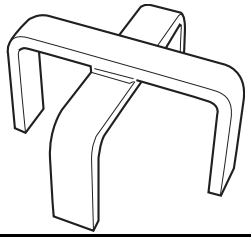
09926–96050
Brake piston compressor
☞ / ☞



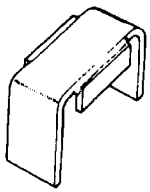
09926–97610
Spring compressor
☞ / ☞

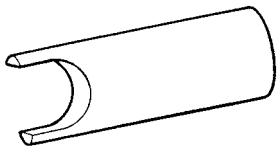
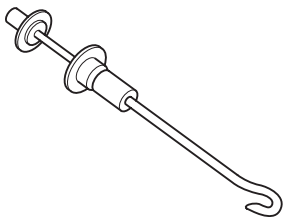
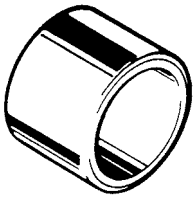
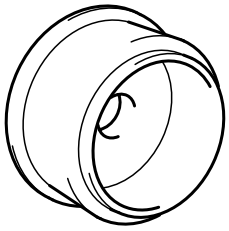
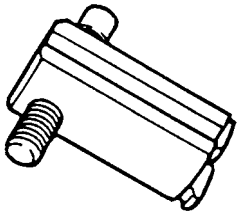
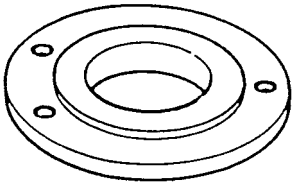
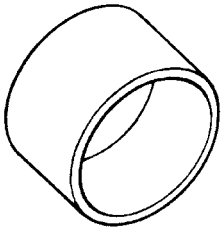
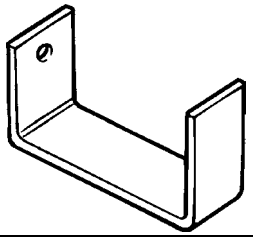
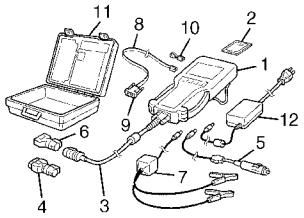


09926–97620
Spring compressor
☞ / ☞



09926–98310
Clutch spring compressor
☞ / ☞



09928–06050 Differential preload adapter ☞ / ☞ 	09942–15511 Sliding hammer ☞ / ☞ / ☞ / ☞ 
09944–78210 Bearing installer support ☞ / ☞ 	09944–88220 Oil seal installer ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ 
09944–96011 Bearing outer race remover ☞ / ☞ / ☞ / ☞ 	09946–06710 Transfer bearing dummy ☞ / ☞ 
09951–18210 Oil seal remover & installer No. 2 ☞ / ☞ 	09952–06020 Dial gauge plate No.2 ☞ / ☞ / ☞ / ☞ 
SUZUKI scan tool — This kit includes following items. 1. Tech 2, 2. PCMCIA card, 3. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loop back adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loop back connector, 11. Storage case, 12.☞ / ☞ / ☞ 	

Manual Transmission/Transaxle

General Description

Manual Transaxle Construction and Servicing

S7RS0B5201001

The transaxle provides five forward speeds and one reverse speed by means of three synchromeshs and three shafts (input shaft, countershaft and reverse gear shaft). All forward gears are in constant mesh, and reverse uses a sliding idler gear arrangement.

The low speed synchronizer sleeve & hub is mounted on countershaft and engaged with countershaft 1st gear or 2nd gear, while the high speed synchronizer sleeve & hub is done on input shaft and engaged with input shaft 3rd gear or 4th gear. The 5th speed synchronizer sleeve & hub on input shaft is engaged with input shaft fifth gear mounted on the input shaft.

To prevent the cracking noise from the reverse gear when shifting transaxle gear into the reverse gear, the reverse shift braking device is used.

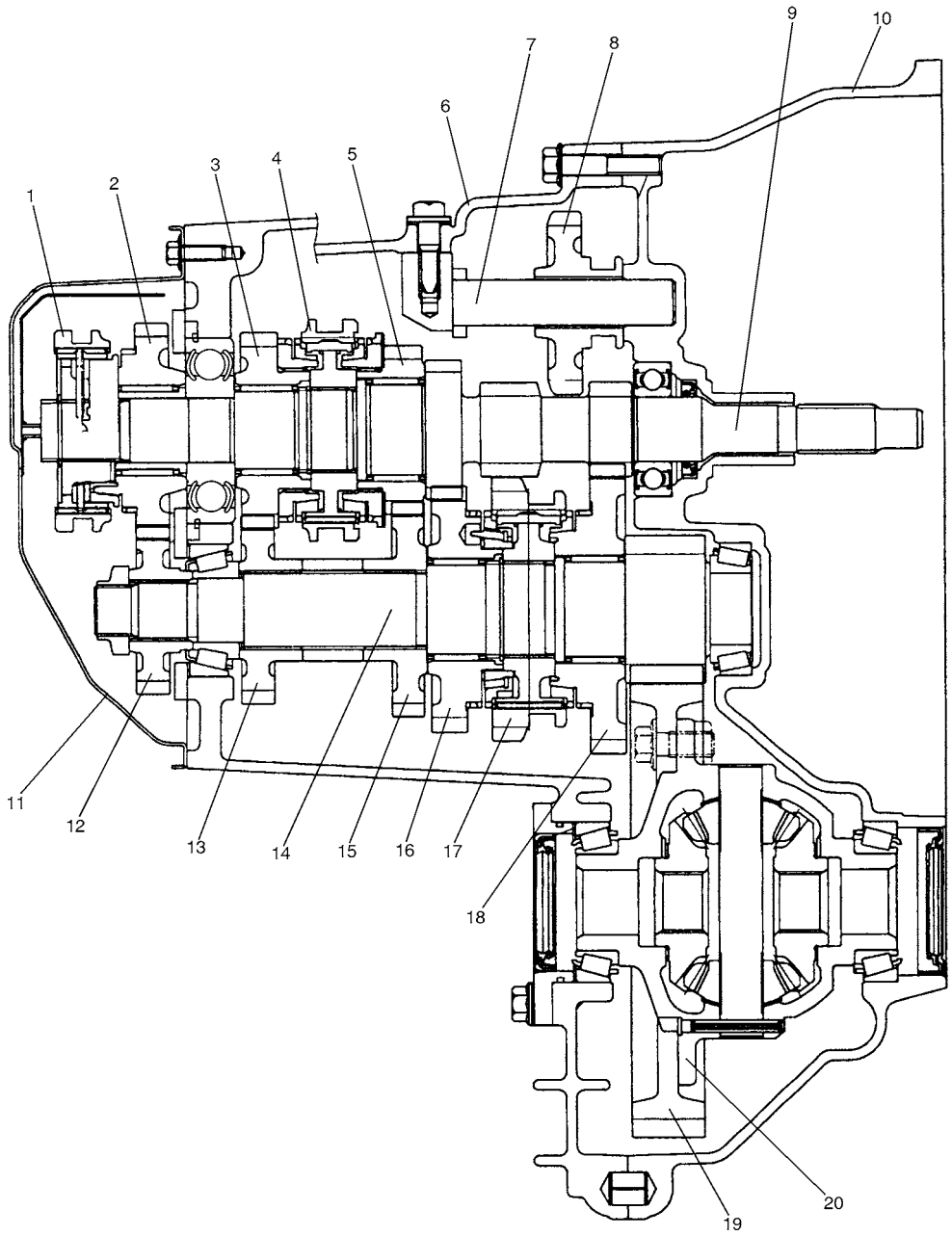
The device utilizes the 5th synchromesh, which is the lever synchro type, to apply the brake on the input shaft rotation.

The double cone synchronizing mechanism is provided to 2nd gear synchromesh device for high performance of shifting to 2nd gear.

The countershaft turns the final gear and differential assembly, thereby turning the front drive shafts which are attached to the front wheels.

For servicing, it is necessary to use genuine sealant or its equivalent on mating surfaces of transaxle case which is made of aluminum. The case fastening bolts must be tightened to specified torque by means of torque wrench. It is also important that all parts are thoroughly cleaned with cleaning fluid and air dried before reassembling.

Further, care must be taken to adjust preload of countershaft taper roller bearings. New synchronizer rings are prohibited from being lapped with respective gear cones by using lapping compound before they are assembled.



I6RS0C520009-01

1. 5th speed sleeve & hub	8. Reverse idler gear	15. Countershaft 3rd gear
2. Input shaft 5th gear	9. Input shaft	16. Countershaft 2nd gear
3. Input shaft 4th gear	10. Right case	17. Low speed synchronizer sleeve & hub
4. High speed synchronizer sleeve & hub	11. Side cover	18. Countershaft 1st gear
5. Input shaft 3rd gear	12. Countershaft 5th gear	19. Final gear
6. Left case	13. Countershaft 4th gear	20. Differential case
7. Reverse gear shaft	14. Countershaft	

Diagnostic Information and Procedures

Manual Transaxle Symptom Diagnosis

S7RS0B5204001

Condition	Possible cause	Correction / Reference Item
Gears slipping out of mesh	Worn shift fork shaft	*Replace.*
	Worn shift fork or synchronizer sleeve	*Replace.*
	Weak or damaged locating springs	*Replace.*
	Worn bearings on input shaft or countershaft	*Replace.*
	Worn chamfered tooth on sleeve and gear	*Replace sleeve and gear.*
Hard shifting	Maladjusted gear select control cable	*Adjust.*
	Inadequate or insufficient lubricant	*Replenish.*
	Improper clutch pedal free travel	*Replace clutch master cylinder or clutch pedal arm.*
	Distorted or broken clutch disc	*Replace.*
	Damaged clutch pressure plate	*Replace clutch cover.*
	Worn synchronizer ring	*Replace.*
	Worn chamfered tooth on sleeve or gear	*Replace sleeve or gear.*
	Worn gear shift / select control cables joint	*Replace.*
	Distorted shift shaft	*Replace.*
	Worn gear shift / select control cables	*Replace.*
Noise	Inadequate or insufficient lubricant	*Replenish.*
	Damaged or worn bearing(s)	*Replace.*
	Damaged or worn gear(s)	*Replace.*
	Damaged or worn synchronizer parts	*Replace.*

Repair Instructions

Manual Transaxle Oil Change

S7RS0B5206001

1) Before changing or inspecting oil, be sure to stop engine and lift vehicle horizontally.
2) With vehicle lifted up, check oil level and leakage. If leakage exists, correct it.

NOTE

Whenever vehicle is hoisted for any other service work than oil change, also be sure to check for oil leakage.

3) Remove oil filler plug (2).
4) Remove drain plug (1), and drain old oil.
5) Apply sealant to thread of drain plug (1), and tighten it to specified torque.

"A": Sealant 99000–31260 (SUZUKI Bond No.1217G)

Tightening torque
Transaxle oil drain plug (a): 21 N·m (2.1 kgf-m, 15.5 lb-ft)

6) Pour new specified oil until oil level reaches bottom of oil filler plug hole (3) as shown in figure.

NOTE

It is highly recommended to use API GL-4 75W-90 gear oil.

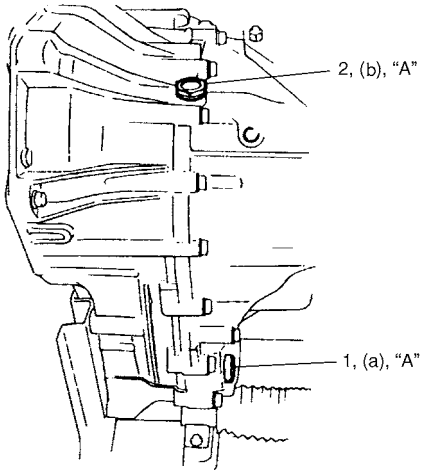
Transaxle oil specification
: API GL-4 (For SAE classification, refer to viscosity chart [A] in figure.)

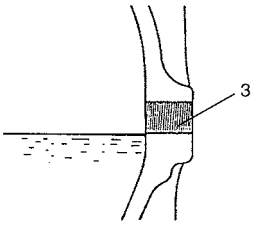
Manual transaxle oil capacity
Reference: 2.0 liters (4.2/3.5 US/Imp. pt)

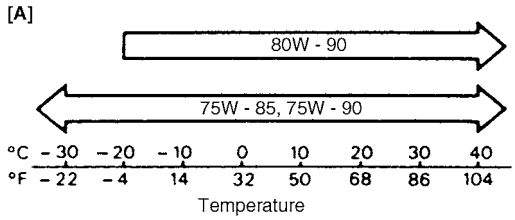
7) Apply sealant to thread of level / filler plug, and then tighten it to specified torque.

"A": Sealant 99000–31260 (SUZUKI Bond No.1217G)

Tightening torque
Transaxle oil level / filler plug (b): 21 N·m (2.1 kgf-m, 15.5 lb-ft)







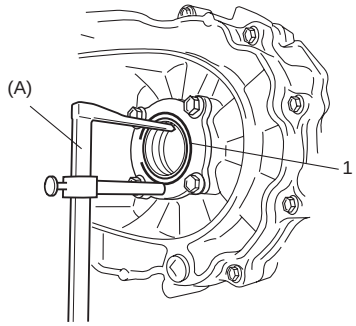
I4RS0A520001-01

Differential Side Oil Seal Replacement

S7RS0B5206002

1) Lift up vehicle and drain transaxle oil.
2) Remove front drive shaft and/or center shaft referring to "Front Drive Shaft Assembly Removal and Installation in Section 3A".
3) Remove oil seal (1) using special tool.

Special tool
(A): 09913–50121



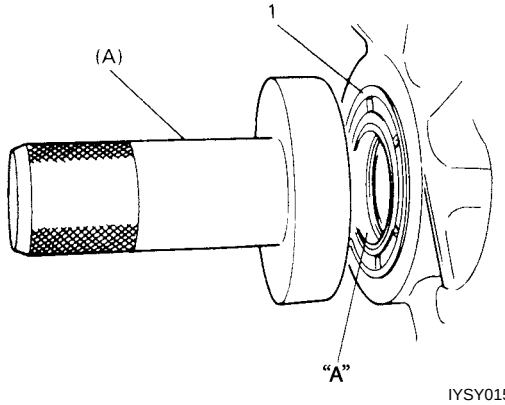
I4RH01520003-01

4) Install oil seal (1) facing its spring side inward. Use special tool and hammer for installation.

Special tool
(A): 09913–85210

5) Apply grease to oil seal lip and at the same time check drive shaft where oil seal contacts and make sure of its smoothness.

"A": Grease 99000–25011 (SUZUKI Super Grease A)



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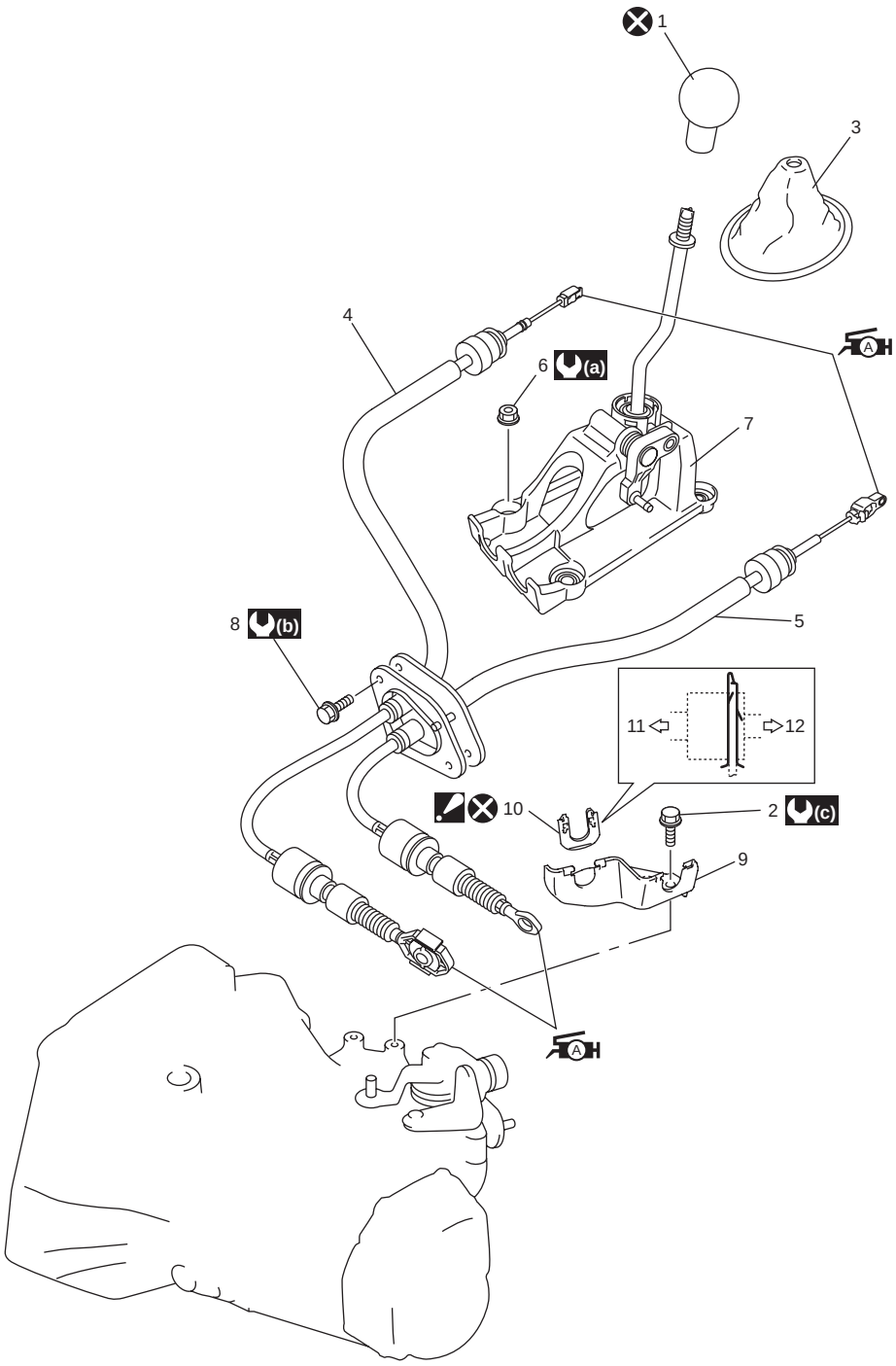
6) Insert front drive shaft and/or center shaft referring to "Front Drive Shaft Assembly Removal and Installation in Section 3A".
7) Fill transaxle oil as specified referring to "Manual Transaxle Oil Change", and make sure that oil has been sealed with oil seal.

Gear Shift Control Lever and Cable Components

S7RS0B5206003



I7RS0A521001-03

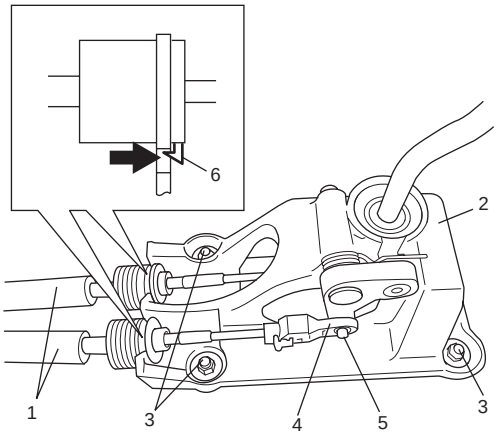
1. Gear shift control lever knob	9. Cable bracket
2. Cable bracket bolt	10. Clip Be sure to direct claw of clip to M/T side as shown in figure.
3. Gear shift lever boot	11. To gear shift control lever assembly
4. Gear shift control cable : Apply grease 99000-25011 to cable end.	12. To M/T
5. Gear select control cable : Apply grease 99000-25011 to cable end.	(a) : 13 N·m (1.3 kgf-m, 9.5 lb-ft)
6. Gear shift control lever assembly mounting nut	(b) : 10 N·m (1.0 kgf-m, 7.5 lb-ft)
7. Gear shift control lever assembly	(c) : 55 N·m (5.5 kgf-m, 40.0 lb-ft)
8. Cable grommet bolt	: Do not reuse.

Gear Shift Control Lever and Cable Removal and Installation

S7RS0B5206004

Removal

1) Remove console box.
2) Disconnect cable ends (4) from pivot (5) of gear shift control lever assembly.
3) Disconnect gear shift and select control cables (1) from gear shift control lever assembly (2) while pressing claw (6) as shown in figure.
4) Remove gear shift control lever assembly mounting nuts (3) and gear shift lever assembly from floor panel.



I7RS0A521002-01

5) Disconnect gear shift and select control cables from transaxle referring to step 2) to step 5) of "Dismounting" under "Manual Transaxle Unit Dismounting and Remounting".
6) Remove cable grommet bolt, and then remove gear shift and select control cables from floor panel.

Installation

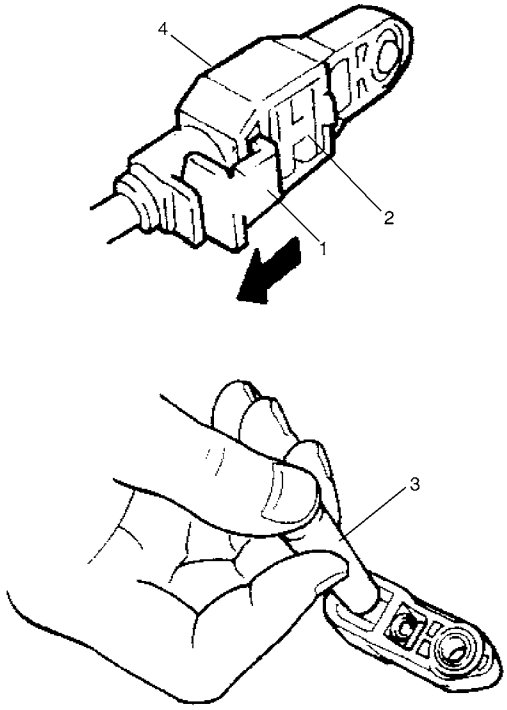
Reverse removal procedure for installation nothing the following.

- Tighten each bolts and nuts to specified torque referring to "Gear Shift Control Lever and Cable Components".
- Adjust gear select control cable referring to "Gear Select Control Cable Adjustment".

Gear Select Control Cable Adjustment

S7RS0B5206005

1) Release lock plate (1) which restricts moving of cable end holder (2).
2) Push cable end holder (2) out from adjuster (4) using appropriate tool (3) to disengage cable.



I4RS0A520004-01

3) Apply grease to pin (5) of gear shift control lever, and then install adjuster (1) into pin of gear shift control lever securely.

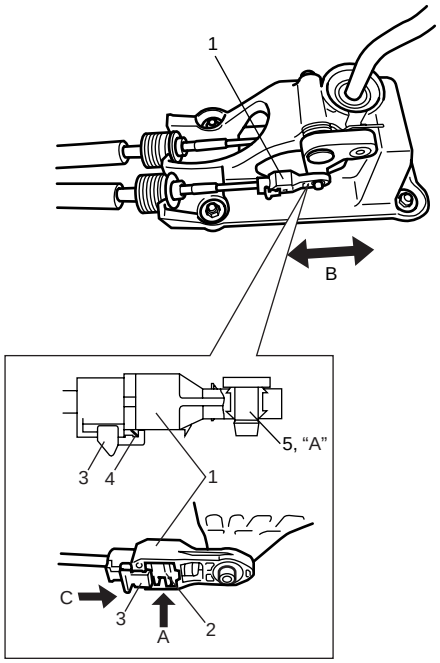
"A": Grease 99000–25011 (SUZUKI Super Grease A)

4) Push cable end holder (2) in the direction of A.

NOTE

At this time, do not apply force in the cable operation direction B to adjuster.

5) Slide lock plate (3) in the direction of C, until it gets over the claw (4) of cable end holder.



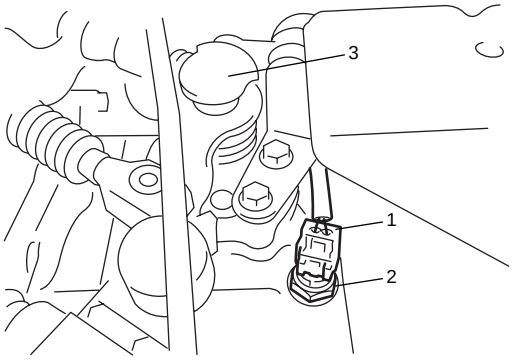
I4RS0A520005-01

Back Up Light Switch Removal and Installation

S7RS0B5206006

Removal

1) Remove battery and tray with coolant reservoir.
2) Disconnect back up light switch coupler (1).
3) Remove back up light switch (2).



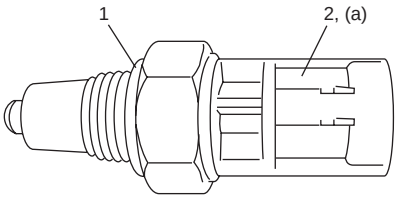
I4RS0A520010-01

3. Gear shift and select shaft assembly

Installation

1) Apply oil to new O-ring (1) and tighten back up light switch (2) to specified torque.

Tightening torque
Back up light switch (a): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



I3RH0A520006-01

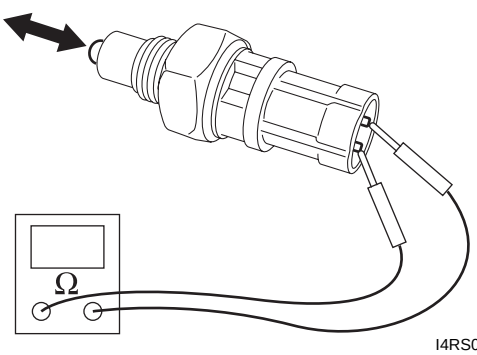
2) Connect back up light switch coupler.
3) Install battery and tray, and then install coolant reservoir to battery tray.

Back Up Light Switch Inspection

S7RS0B5206007

Check back up light switch for function using ohmmeter.

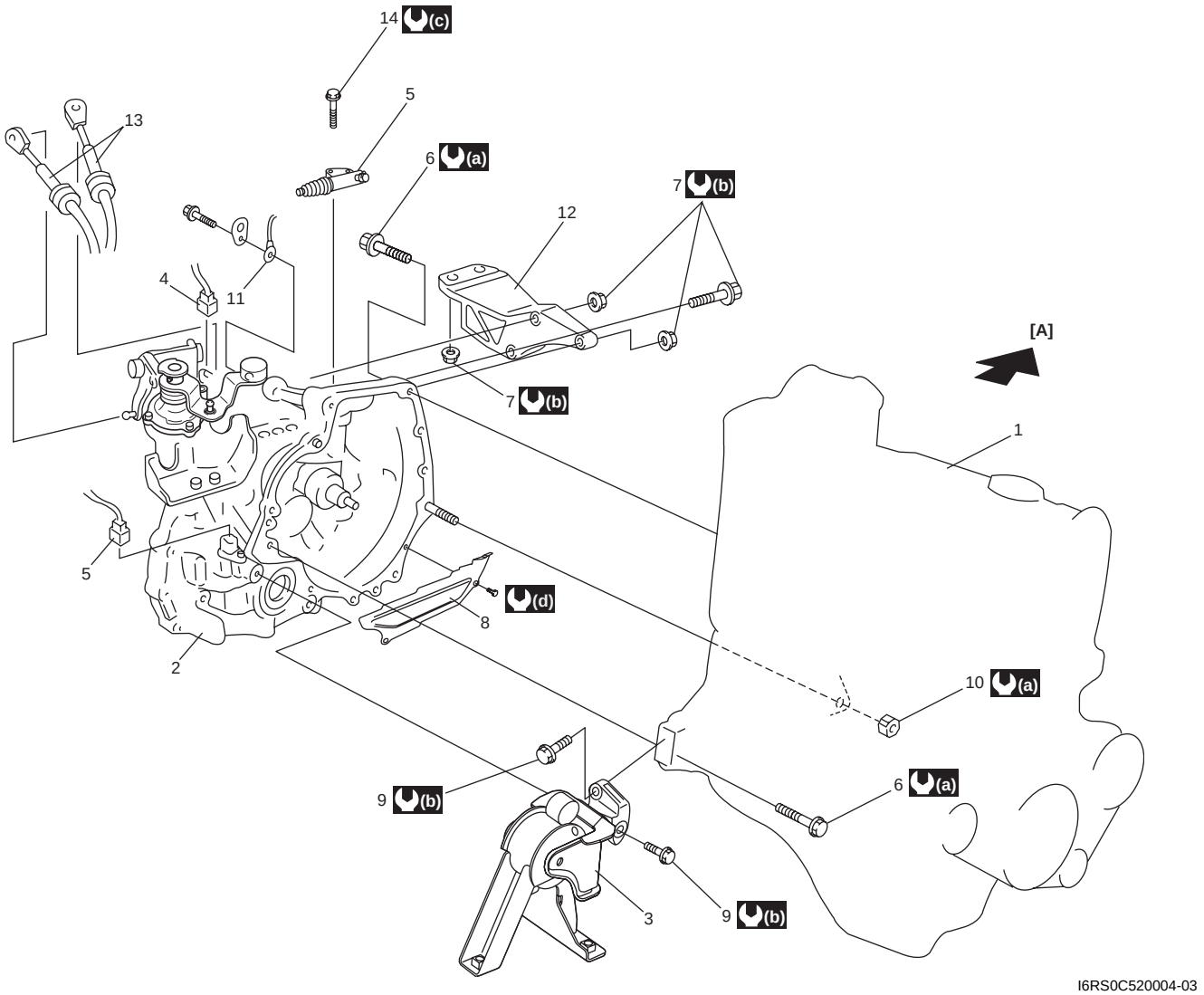
Back up light switch specification
Switch ON (Push): Continuity
Switch OFF (Release): No continuity



I4RS0A520011-01

Manual Transaxle Unit Components

S7RS0B5206008



I6RS0C520004-03

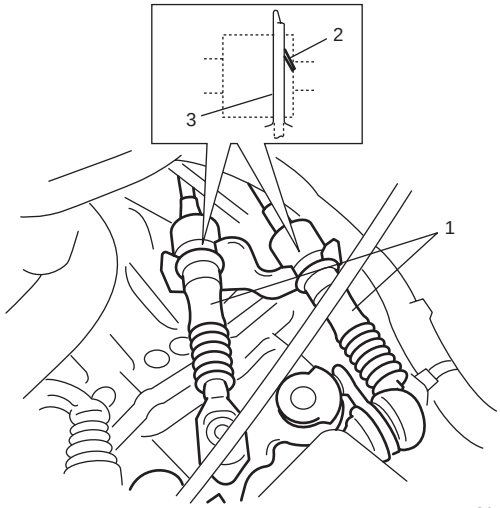
[A]: Forward	7. Engine left mounting bracket bolt and nuts	14. Clutch operating cylinder bolt
1. Engine	8. Clutch housing lower plate	(a) : 85 N·m (8.5 kgf-m, 61.5 lb-ft)
2. Transaxle	9. Engine rear mounting bracket bolts	(b) : 55 N·m (5.5 kgf-m, 40.0 lb-ft)
3. Engine rear mounting and bracket	10. Transaxle to engine nut	(c) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)
4. Back up light switch connector	11. Ground cable	(d) : 11 N·m (1.1 kgf-m, 8.0 lb-ft)
5. Clutch operating cylinder	12. Engine left mounting bracket	
6. Transaxle to engine bolt	13. Gear shift & select control cables	

Manual Transaxle Unit Dismounting and Remounting

S7RS0B5206009

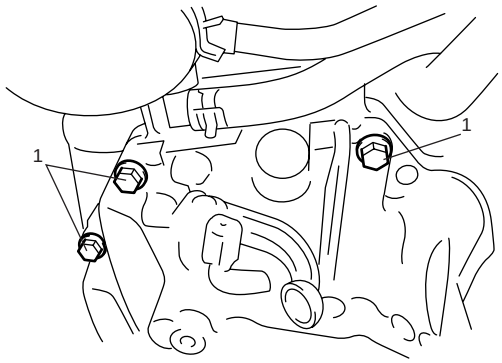
Dismounting

1) Drain coolant and transaxle oil.
2) Remove coolant reservoir with reservoir hose.
3) Remove battery and tray.
4) Remove air cleaner case and resonator.
5) Disconnect gear shift and gear select control cables (1) while pressing claws (2) of clip (3).



I7RS0A521003-01

6) Disconnect back up light switch coupler and undo wiring harness clamps.
7) Remove ground cable from transaxle.
8) Remove clutch operating cylinder with fluid hose from transaxle.
9) Remove water inlet No.2 pipe from transaxle.
10) Remove starting motor referring to “Starting Motor Dismounting and Remounting in Section 1I”.
11) Remove transaxle to engine bolts (1) of upper side.

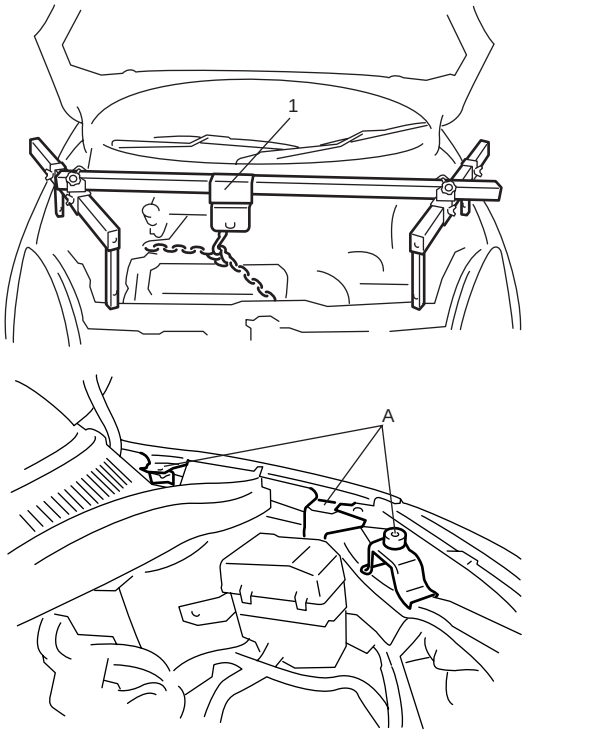


I4RS0A520018-01

12) Support engine using supporting device (1).

⚠ CAUTION

Do not apply supporting device to projection part A. If do so, it may be deformed.

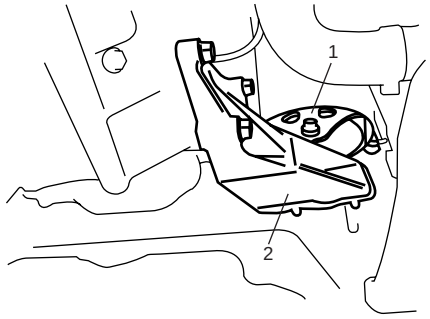


I4RS0A520019-01

13) Remove front drive shafts and center shaft referring to “Front Drive Shaft Assembly Removal and Installation in Section 3A”.
14) Remove exhaust No.2 pipe referring to “Exhaust Pipe and Muffler Removal and Installation in Section 1K”.
15) Remove clutch housing lower plate (1).

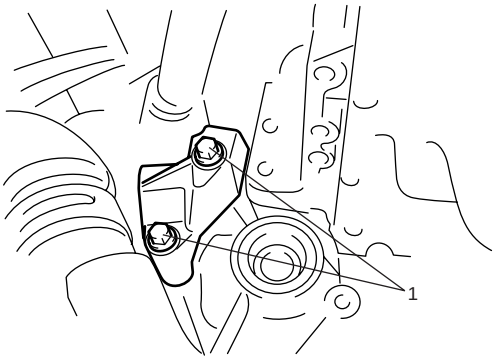
I4RS0A520020-01

16) Remove engine under covers.
17) Support transaxle with transmission jack.
18) Remove transaxle to engine bolts and nut of lower side.
19) Remove engine left mounting (1) with bracket (2).



I4RS0A520021-01

20) Remove engine rear mounting bracket bolts (1).



I4RS0A520022-01

21) Remove other attached parts from transaxle, if any.
22) Pull transaxle so as to disconnect input shaft from clutch disc, and then lower it.

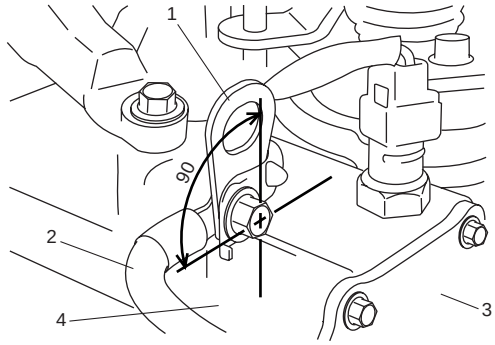
Remounting

⚠ CAUTION

- **Care should be taken not to scratch oil seal lip with drive shaft while raising transaxle.**
- **Do not hit drive shaft joint with hammer when installing it into differential gear.**

Reverse dismounting procedure for remounting noting the following.

- Tighten each bolts and nuts to specified torque referring to “Manual Transaxle Unit Components”.
- Set each clamp for wiring securely.
- Fill transaxle oil referring to “Manual Transaxle Oil Change”.
- Fill coolant referring to “Cooling System Flush and Refill in Section 1F”.
- Install hook (1) and ground cable (2) at specified position as shown in figure.



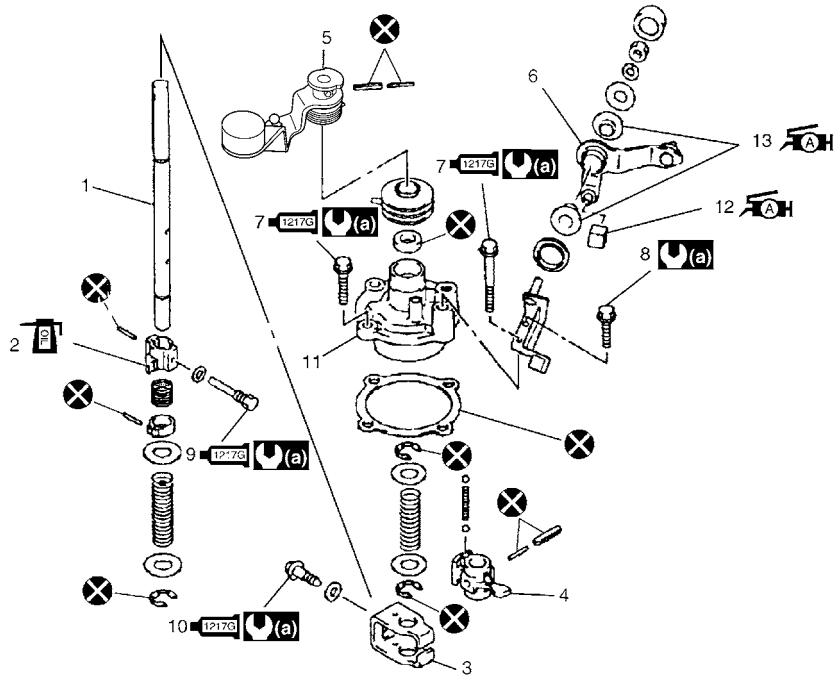
I4RS0A520023-01

3. Transaxle side cover	4. Transaxle left case

- Connect battery and check function of engine, clutch and transaxle.

Gear Shift and Select Shaft Assembly Components

S7RS0B5206010



I6RS0C520010-01

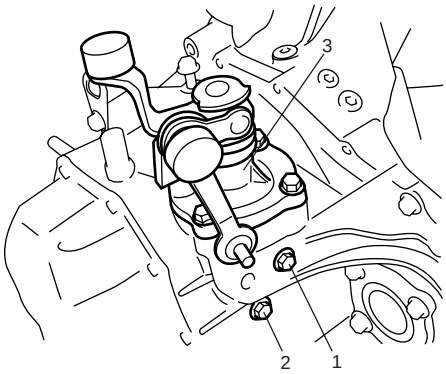
1. Gear shift & select shaft	1217G 7. Gear shift guide case bolt : Apply sealant 99000-31260 to bolt thread.	A H 13. Select lever boss : Apply grease 99000-25011 to internal and external diameter.
2. 5th & reverse gear shift cam	8. Select lever bracket bolt	(a) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)
3. Gear shift interlock plate	1217G 9. 5th to reverse interlock guide bolt : Apply sealant 99000-31260 to bolt thread.	: Do not reuse.
4. Gear shift & select lever	1217G 10. Gear shift interlock bolt : Apply sealant 99000-31260 to bolt thread.	: Apply transaxle oil.
5. Shift cable lever	11. Guide case	
6. Select cable lever	A H 12. Select lever shaft bush : Apply grease 99000-25011 to whole area of bush.	

Gear Shift and Select Shaft Assembly Removal and Installation

S7RS0B5206011

Removal

1) Remove gear shift interlock bolt (1) and 5th to reverse interlock guide bolt (2) from transaxle case.
2) Remove gear shift & select shaft assembly (3).



I4RS0A520024-01

Installation

1) Apply grease to select lever shaft bush and select lever boss, and install gear shift and select shaft assembly with new gasket into transaxle.

   "A": Grease 99000–25011 (SUZUKI Super Grease A)

2) Apply sealant to gear shift guide case bolts (1). Tighten gear shift guide case bolts to specified torque.

   B": Sealant 99000–31260 (SUZUKI Bond No.1217G)

   Tightening torque
   Gear shift guide case bolt (a): 23 N·m (2.3 kgf-m, 17.0 lb-ft)

3) Tighten select lever bracket bolt with select lever bracket to specified torque.

   Tightening torque
   Select lever bracket bolt: 23 N·m (2.3 kgf-m, 17.0 lb-ft)

4) Install washer and gear shift interlock bolt (2) to which sealant have been applied and then tighten it to specified torque.

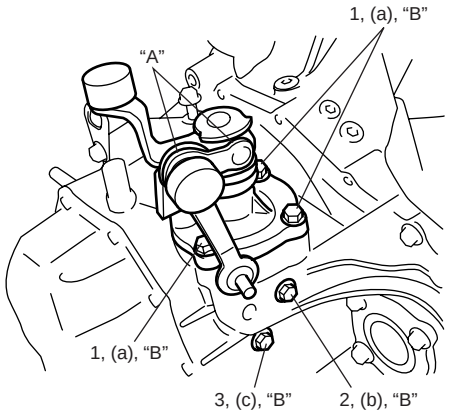
"B": Sealant 99000–31260 (SUZUKI Bond No.1217G)

Tightening torque
Gear shift interlock bolt (b): 23 N·m (2.3 kgf-m, 17.0 lb-ft)

5) Install washer and 5th to reverse interlock guide bolt (3) to which sealant have been applied and then tighten it to specified torque.

"B": Sealant 99000–31260 (SUZUKI Bond No.1217G)

Tightening torque
5th to reverse interlock guide bolt (c): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



I4RS0A520025-01

Gear Shift and Select Shaft Disassembly and Assembly

S7RS0B5206012

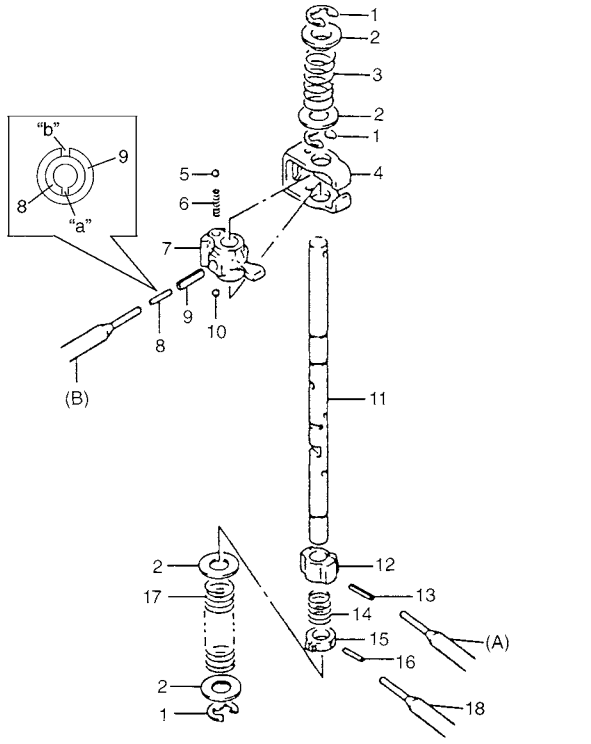
1) Push pins out using 2.8 – 3.0 mm (0.11 – 0.12 in.) commercially available spring pin remover and specified spring pin removers as shown below.

Special tool
(A): 09922–85811 4.5 mm
(B): 09925–78210 6.0 mm

2) Inspect component parts for wear, distortion or damage. If any detect is found, replace detective part with new one.

NOTE

- **Set new gear shift & select lever inner pin (8) and outer pin (9) facing each gap ("a", "b") in the opposite direction as shown in figure.**
- **When driving in pins, prevent shaft from being bent by supporting it with wood block.**
- **Assemble 5th & reverse gear shift cam with its pit and pin aligned.**
- **Make sure to select an appropriate spring by identifying the painted colors to keep gear shifting performance as designed.**
  - **Low speed select spring – Light blue**
  - **Reverse select spring – Yellow**

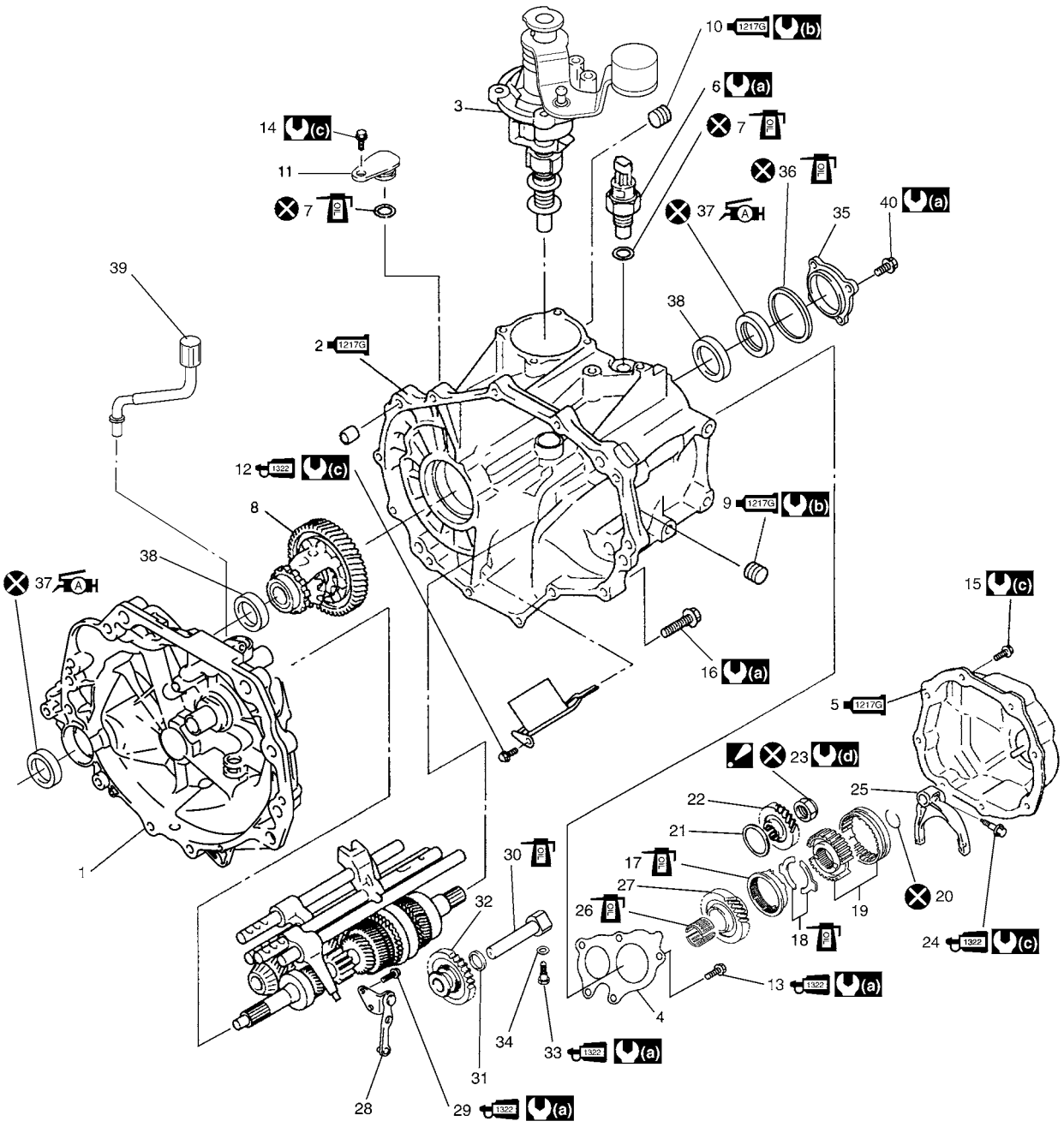


I6RS0C520011-01

1. E-ring	10. Ball
2. Washer	11. Gear shift & select shaft
3. Reverse select spring	12. 5th & reverse gear shift cam
4. Gear shift interlock plate	13. 5th & reverse gear shift cam guide pin
5. Ball	14. Cam guide return spring
6. Gear shift interlock spring	15. 5th & reverse gear shift cam guide
7. Gear shift & select lever	16. Gear shift cam guide pin
8. Inner pin	17. Low speed select spring
9. Outer pin	18. Spring pin remover

Manual Transaxle Assembly Components

S7RS0B5206013



I6RS0C520005-01

1. Transaxle right case	1322 24. Shift fork bolt : Apply thread lock 99000-32110 to all around thread part of bolt.
1217G 2. Transaxle left case : Apply sealant 99000-31260 to mating surface of left case and right case.	25. 5th gear shift fork
3. Gear shift and select shaft assembly	26. Needle bearing
4. Transaxle left case plate	27. Input shaft 5th gear
1217G 5. Transaxle side cover : Apply sealant 99000-31260 to mating surface of side cover and left case.	28. Reverse gear shift lever
6. Back up light switch	1322 29. Reverse gear shift lever bolt : Apply thread lock 99000-32110 to all around thread part of bolt.
7. O-ring	30. Reverse gear shaft
8. Differential assembly	31. Washer
1217G 9. Oil level/filler plug : Apply sealant 99000-31260 to all around thread part of plug.	32. Reverse idler gear
1217G 10. Oil drain plug : Apply sealant 99000-31260 to all around thread part of plug.	1322 33. Reverse shaft bolt : Apply thread lock 99000-32110 to all around thread part of bolt.

	11.	Sensor cap	
1322	12.	Oil gutter bolt : Apply thread lock 99000-32110 to all around thread part of bolt.	
1322	13.	Left case plate bolts : Apply thread lock 99000-32110 to all around thread part of bolt.	
	14.	Sensor cap bolt	
	15.	Side cover bolts	
	16.	Transaxle case bolts	
	17.	5th speed synchronizer ring	
	18.	5th speed synchronizer lever	
	19.	5th speed synchronizer sleeve & hub	
	20.	Circlip	
	21.	Bearing set shim	
	22.	Countershaft 5th gear	
	23.	Countershaft nut : After tightening nut to specified torque, caulk nut securely.	
	34.	Washer	
	35.	Side bearing retainer	
	36.	O-ring	
A	37.	Oil seal : Apply grease 99000-25011 to oil seal lip.	
	38.	Outer race	
	39.	Breather hose	
	40.	Side bearing retainer bolt	
	(a) :	23 N·m (2.3 kgf-m, 17.0 lb-ft)	
	(b) :	21 N·m (2.1 kgf-m, 15.5 lb-ft)	
	(c) :	10 N·m (1.0 kgf-m, 7.5 lb-ft)	
	(d) :	100 N·m (10.0 kgf-m, 72.5 lb-ft)	
	:	Do not reuse.	
	:	Apply transaxle oil.	

Fifth Gear Disassembly and Assembly

S7RS0B5206014

Disassembly

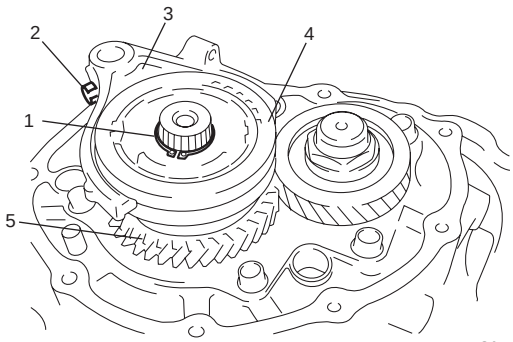
1) Remove cover bolts and take off transaxle side cover (1).

⚠ CAUTION

Care should be taken not to distort side cover when it is removed from left case.

I4RS0A520027-01

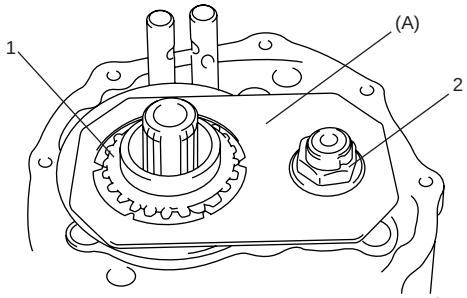
2) Using snap ring pliers, remove circlip (1).
3) Remove 5th shift fork bolt (2).
4) Remove gear shift fork (3), synchronizer sleeve & hub assembly (4), synchronizer levers, synchronizer ring and input shaft 5th gear (5) all together. Use gear puller for removal if spline fitting of hub is tight.



I4RS0A520028-01

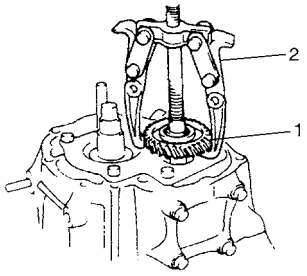
5) Unfasten caulking of countershaft nut (2), install input shaft 5th gear (1) and special tool to stop rotation of shafts, and then remove countershaft nut (2).

Special tool
(A): 09927–76060



I3RM0B521014-01

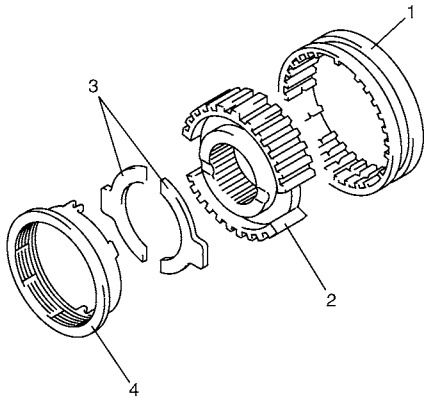
6) Remove input shaft 5th gear, needle bearing and then countershaft 5th gear (1). Gear puller (2) would be necessary if spline fitting of countershaft 5th gear is tight.



I4RS0A520041-01

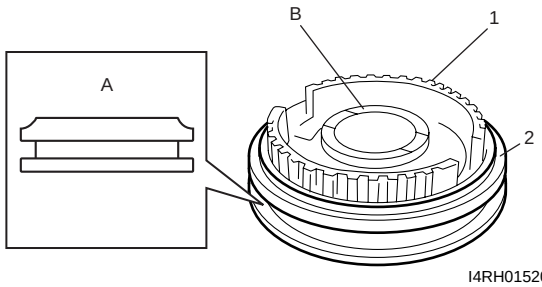
Assembly

1) Assemble 5th speed synchronizer sleeve (1), hub (2), 5th speed synchronizer levers (3) and synchronizer ring (4) as follows.



I4RH01520054-01

a) Install hub (1) to 5th speed synchronizer sleeves (2) in specified direction as shown in figure.



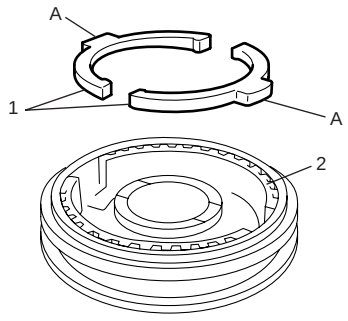
I4RH01520048-01

A: Chamfered side	B: Long boss

b) Fit 5th speed synchronizer levers (1) to hub (2) as shown in figure.

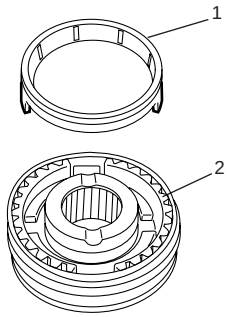
NOTE

Align protrusion A of 5th speed synchronizer levers (1) with groove of hub (2).



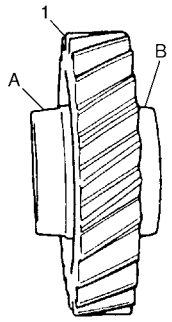
I4RH01520049-01

c) Install synchronizer ring (1) to hub (2) as shown in figure.



I4RH01520055-01

2) Install 5th gear (1) to countershaft facing machined boss A inward.



I2RH01520088-01

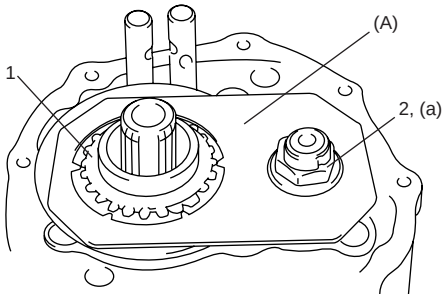
A: Machined boss (Inside)	B: No machining (Outside)

3) Install needle bearing to input shaft, apply oil then install input shaft 5th gear (1) and special tool to stop shaft rotation.

Special tool
(A): 09927–76060

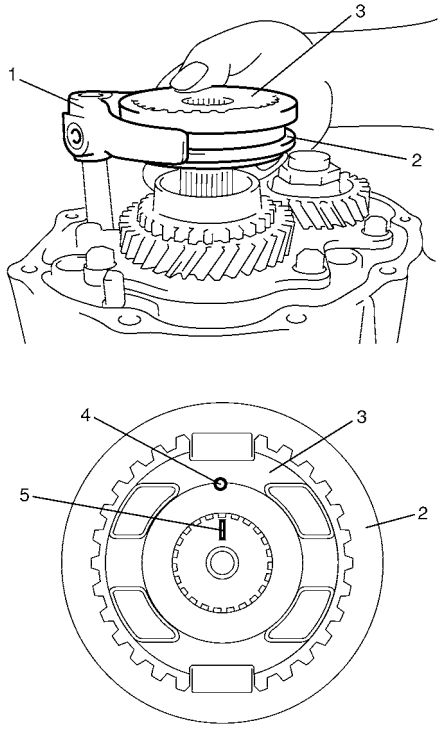
4) Tighten new countershaft nut (2) to specified torque, and caulk countershaft nut securely.

Tightening torque
Countershaft nut (a): 100 N·m (10.0 kgf-m, 72.5 lb-ft)



I3RM0B521016-01

5) Fit 5th gear shift fork (1) to synchronizer sleeve (2) and hub (3) assembly and install them into input shaft and gear shift shaft aligning punch mark (4) with matching mark (5) on input shaft.



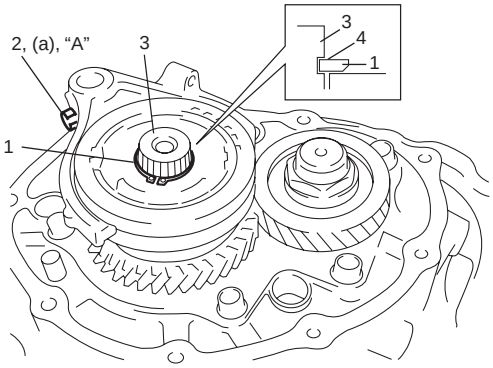
I4RS0A520029-01

6) Tighten shift fork bolt (2) to which thread lock cement has been applied.

"A": Thread lock cement 99000–32110 (Thread Lock Cement Super 1322)

Tightening torque
Shift fork bolt (a): 10 N·m (1.0 kgf-m, 7.5 lb-ft)

7) Using snap ring pliers, install new circlip (1) to input shaft (3) in specified direction as shown in figure.



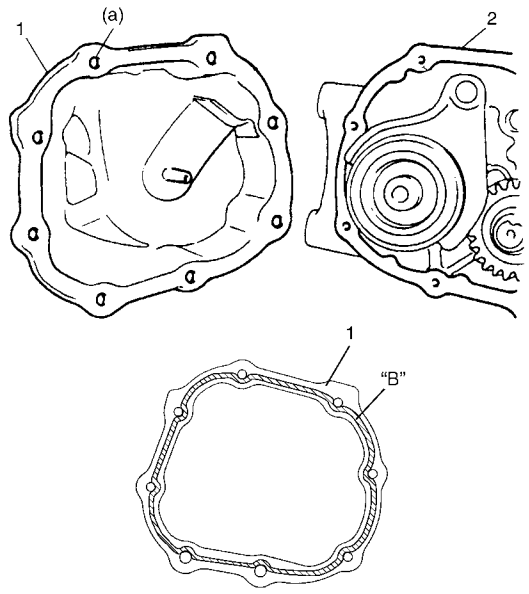
I4RS0A520030-01

4. Polished surface	

8) Clean mating surface of both left case (2) and side cover (1), apply sealant to side cover (1) as shown in figure by such amount that its section is 1.5 mm (0.059 in.) in diameter, mate it with left case and then tighten bolts to specified torque.

"B": Sealant 99000–31260 (SUZUKI Bond No.1217G)

Tightening torque
Side cover bolt (a): 10 N·m (1.0 kgf-m, 7.5 lb-ft)



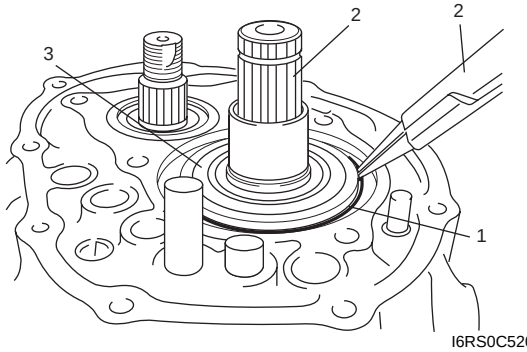
I4RS0A520031-01

Manual Transaxle Assembly Disassembly and Reassembly

S7RS0B5206015

Disassembly

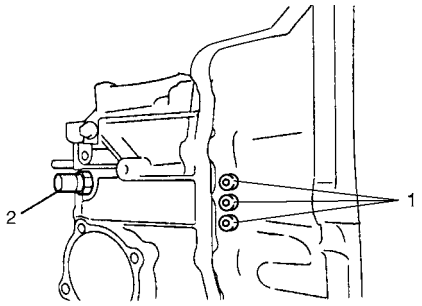
1) Remove gear shift and select shift assembly referring to "Gear Shift and Select Shaft Assembly Removal and Installation".
2) Remove fifth gear referring to "Fifth Gear Disassembly and Assembly".
3) Remove left case plate.
4) Remove snap ring (1) using snap ring pliers (2).



I6RS0C520012-01

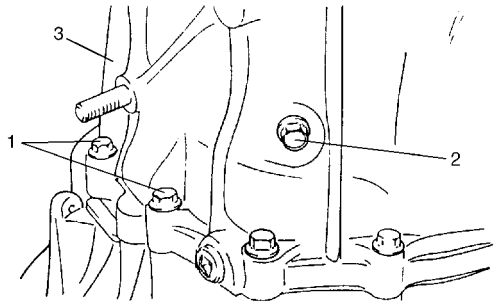
2. Input shaft	3. Input shaft left bearing

5) Remove gear shift locating bolts (1) with washers, then take out locating springs and steel balls.
6) Remove back up light switch (2).



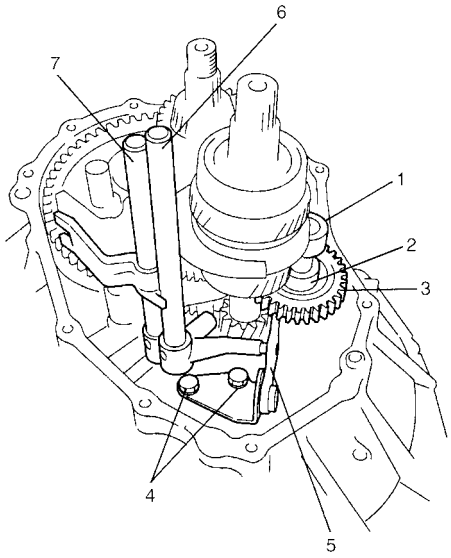
I2RH01520032-01

7) Remove reverse shaft bolt (2) with washer.
8) Remove case bolts (1) from outside and another bolts from clutch housing side.
9) Tapping left case flanges with plastic hammer, remove left case (3).



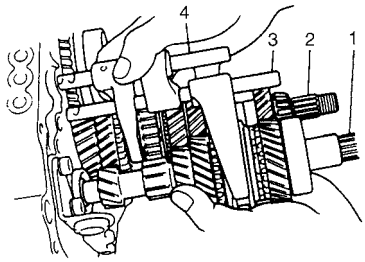
I4RS0A520032-01

10) Pull out reverse gear shaft (1) with washer (2), then take off reverse idler gear (3).
11) Remove reverse gear shift lever bolts (4) and reverse gear shift lever (5).
12) Pull out 5th & reverse gear shift guide shaft (6) together with 5th & reverse gear shift shaft (7).



I4RS0A520033-01

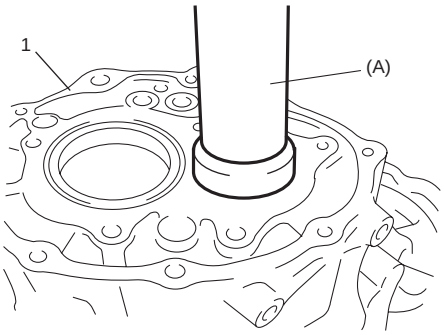
13) Tapping input shaft end with plastic hammer, push it out as assembly from case a little, then take out input shaft assembly (1), countershaft assembly (2), high speed gear shift shaft (3) and low speed gear shift shaft (4) all at once.



I2RH01520035-01

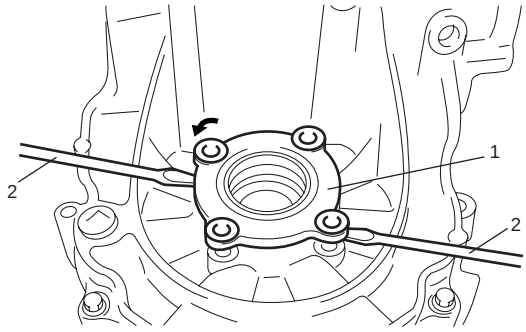
14) Remove countershaft left bearing outer race from left case (1) using special tool.

Special tool
(A): 09913–70123



I4RH01520021-01

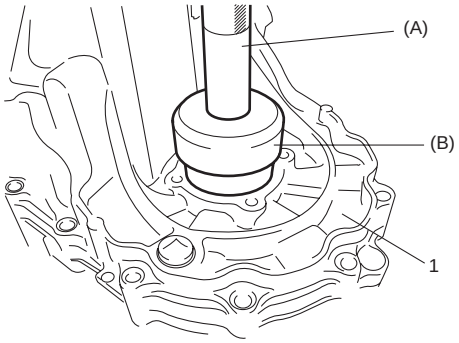
15) Remove side bearing retainer bolts.
16) Turn side bearing retainer (1) counterclockwise until it stops, and remove side bearing retainer using 2 flat end rods (2) or the like.
17) Remove O-ring from side bearing retainer.



I4RS0A520034-01

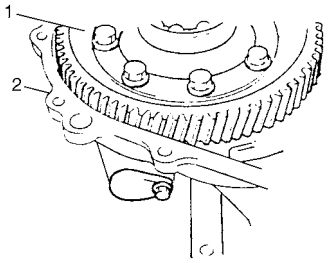
18) Remove differential bearing shim.
19) Remove differential side bearing outer race from left case (1) using special tools.

Special tool
(A): 09924–74510
(B): 09926–27610



I4RS0A520035-01

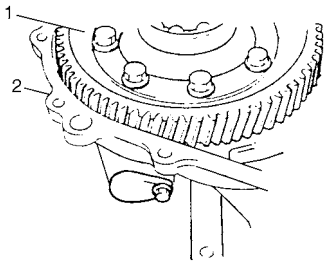
20) Remove differential gear assembly (1) from right case (2).



I6RS0C520006-02

Reassembly

1) Install differential assembly (1) into right case (2).



I6RS0C520006-02

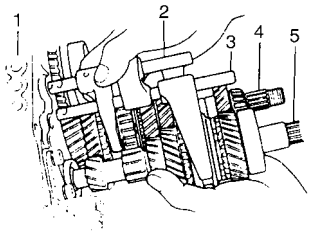
2) Join input shaft assembly (5), countershaft assembly (4), low speed gear shift shaft (2) and high speed gear shift shaft (3) assemblies all together, then install them into right case (1).

⚠ CAUTION

Take care not to damage oil seal lip by input shaft, or oil leakage may take place.

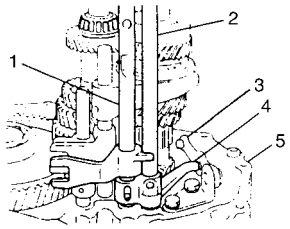
NOTE

- **Input shaft right bearing on shaft can be installed into right case tapping shaft with plastic hammer.**
- **Check to make sure that countershaft is engaged with final gear while installing.**



I2RH01520080-01

3) Install 5th & reverse gear shift shaft (1) with 5th & reverse gear shift guide shaft (2) into right case (5). Reverse gear shift arm (4) has to be joined with reverse gear shift lever (3) at the same time.



I2RH01520081-01

4) Make reverse idler gear (1) with reverse gear shift lever (2), insert reverse gear shaft (3) into case (4) through idler gear and then align “A” in shaft with “B” in case.

5) Fasten reverse gear shift lever bolts after applying thread lock cement.

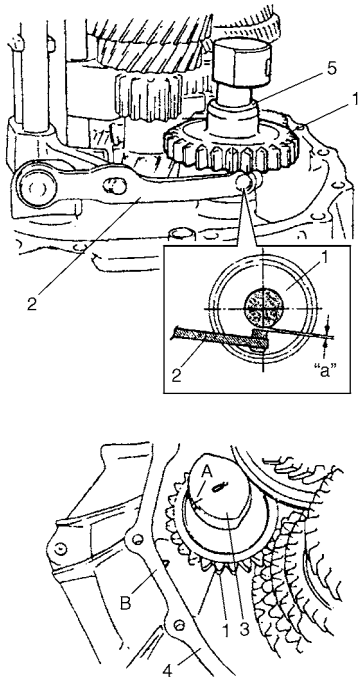
: Thread lock cement 99000–32110 (Thread Lock Cement Super 1322)

Tightening torque
Reverse gear shift lever bolt: 23 N·m (2.3 kgf-m, 17.0 lb-ft)

NOTE

- **Make sure that washer (5) has been installed in shaft at above the gear.**
- **Check to confirm that reverse gear shift lever end has clearance “a” to idler gear groove.**

Distance between lever and idler gear shaft
“a”: 0.5 – 1.0 mm (0.02 – 0.04 in.)



I4RS0A520036-01

6) Clean mating surfaces of both right and left cases, apply sealant to right case (2) as shown in the figure by such amount that its section is 1.5 mm (0.059 in.) in diameter then mate it with left case (1).

“B”: Sealant 99000–31260 (SUZUKI Bond No.1217G)

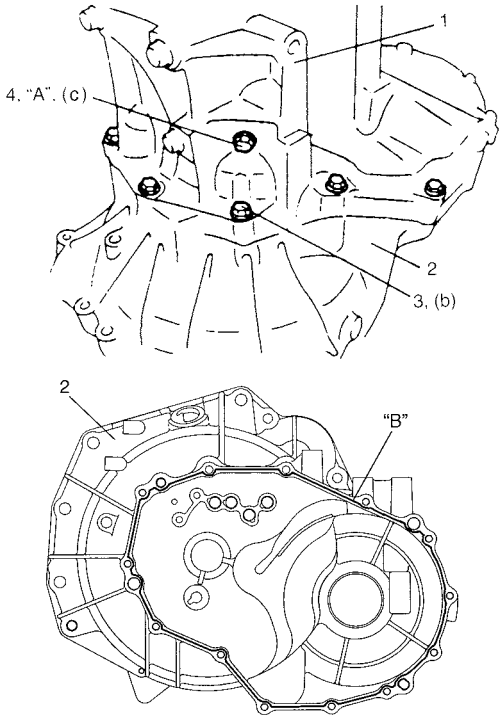
7) Install reverse shaft bolt (4) to which thread lock cement has been applied, with aluminum washer and tighten it to specified torque.

“A”: Thread lock cement 99000–32110 (Thread Lock Cement Super 1322)

Tightening torque
Reverse shaft bolt (c): 23 N·m (2.3 kgf-m, 17.0 lb-ft)

8) Tighten case bolts (3) from outside tighten another case bolts from clutch housing side to specified torque.

Tightening torque
Transaxle case bolt (b): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



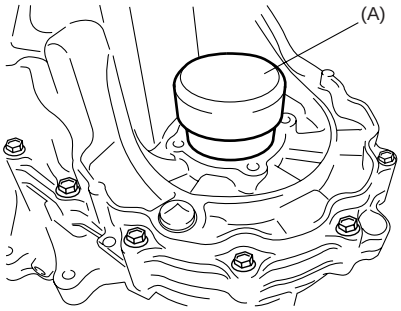
I3RM0A520043-01

9) Install side bearing retainer as follows.
   a) Install differential side bearing outer race to left case and then tap and accustom outer race using special tool and plastic hammer.

⚠ CAUTION

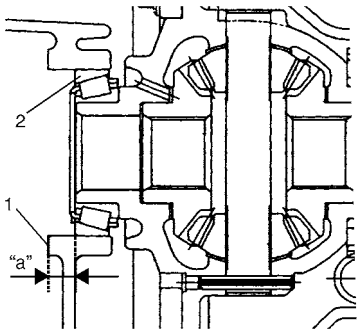
Do not drive in a race with hammer.
Driving it may cause to damage bearing.

Special tool
(A): 09926–27610



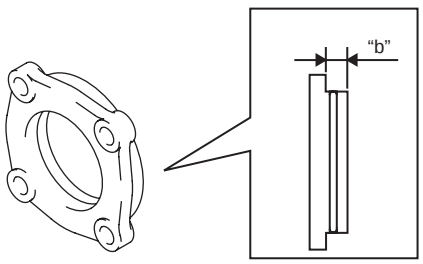
I4RH01520053-01

   b) Select a shim of differential side bearing as follows.
      i) Measure depth “a” from left case (1) face to side bearing outer race (2) using depth gauge.



I4RS0A520037-01

      ii) Measure height “b” of side bearing retainer with depth gauge.



I4RS0A520038-01

      iii) Calculate clearance a – b, and select differential shim according to the following table.

Bearing shim specification

Clearance “a” – “b”	Thickness of bearing shim to be installed
0.636 – 0.665 mm (0.0250 – 0.0261 in.)	0.75 mm (0.030 in.)
0.666 – 0.695 mm (0.0262 – 0.0273 in.)	0.78 mm (0.031 in.)
0.696 – 0.725 mm (0.0274 – 0.0285 in.)	0.81 mm (0.032 in.)
0.726 – 0.755 mm (0.0286 – 0.0297 in.)	0.84 mm (0.033 in.)
0.756 – 0.785 mm (0.0298 – 0.0309 in.)	0.87 mm (0.034 in.)
0.786 – 0.815 mm (0.0310 – 0.0320 in.)	0.90 mm (0.035 in.)
0.816 – 0.845 mm (0.0321 – 0.0332 in.)	0.93 mm (0.037 in.)
0.846 – 0.875 mm (0.0333 – 0.0344 in.)	0.96 mm (0.038 in.)
0.876 – 0.905 mm (0.0345 – 0.0356 in.)	0.99 mm (0.039 in.)
0.906 – 0.935 mm (0.0357 – 0.0368 in.)	1.02 mm (0.040 in.)
0.936 – 0.965 mm (0.0369 – 0.0379 in.)	1.05 mm (0.041 in.)
0.966 – 0.995 mm (0.0380 – 0.0391 in.)	1.08 mm (0.043 in.)
0.996 – 1.025 mm (0.0392 – 0.0403 in.)	1.11 mm (0.044 in.)
1.026 – 1.055 mm (0.0404 – 0.0415 in.)	1.14 mm (0.045 in.)
1.056 – 1.085 mm (0.0416 – 0.0427 in.)	1.17 mm (0.046 in.)
1.086 – 1.115 mm (0.0428 – 0.0438 in.)	1.20 mm (0.047 in.)
1.116 – 1.145 mm (0.0439 – 0.0450 in.)	1.23 mm (0.048 in.)
1.146 – 1.175 mm (0.0451 – 0.0462 in.)	1.26 mm (0.050 in.)
1.176 – 1.205 mm (0.0463 – 0.0474 in.)	1.29 mm (0.051 in.)
1.206 – 1.235 mm (0.0475 – 0.0486 in.)	1.32 mm (0.052 in.)
1.236 – 1.265 mm (0.0487 – 0.0498 in.)	1.35 mm (0.053 in.)
1.266 – 1.295 mm (0.0499 – 0.0509 in.)	1.38 mm (0.054 in.)
1.296 – 1.325 mm (0.0510 – 0.0521 in.)	1.41 mm (0.056 in.)

c) Install differential side bearing shim to left case (4).

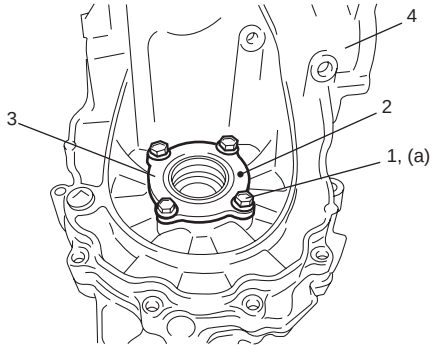
d) Apply oil to new O-ring of side bearing retainer (3), and install side bearing retainer with new O-ring to left case.

e) Tighten side bearing retainer bolts (1) to specified torque.

NOTE

Install side bearing retainer with its punch mark (2) facing upward.

Tightening torque
Side bearing retainer bolt (a): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



I4RS0A520039-01

10) Check locating springs (2, 4 and 5) for deterioration and replace with new one as necessary.

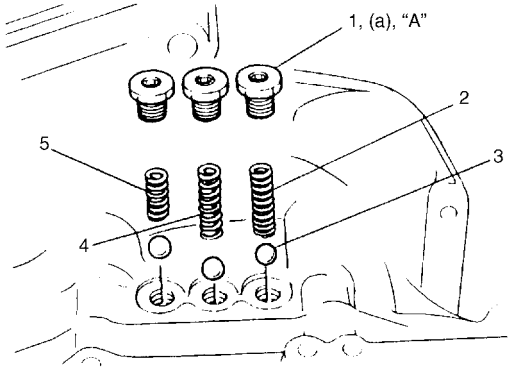
Locating spring

Locating spring free length	Standard	Service limit
Low speed (2)	53.1 mm (2.091 in.)	50.5 mm (1.988 in.)
High speed (4)	45.9 mm (1.807 in.)	44.0 mm (1.732 in.)
5th & reverse (5)	29.9 mm (1.777 in.)	28.5 mm (1.122 in.)

11) Install steel balls (3) and locating springs (2, 4 and 5) for respective gear shift shaft and tighten bolts (1) to which sealant has been applied.

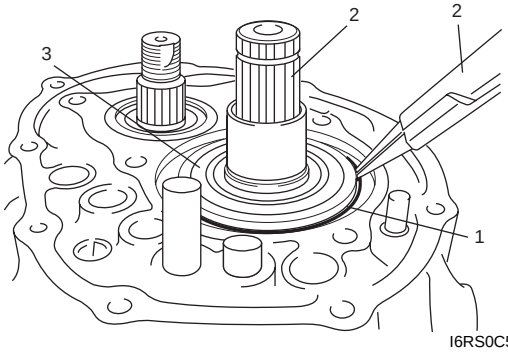
"A": Sealant 99000–31260 (SUZUKI Bond No.1217G)

Tightening torque
Gear shift locating bolt (a): 13 N·m (1.3 kgf-m, 9.5 lb-ft)



I2RH01520084-01

12) Install new snap ring (1) using snap ring pliers (2).

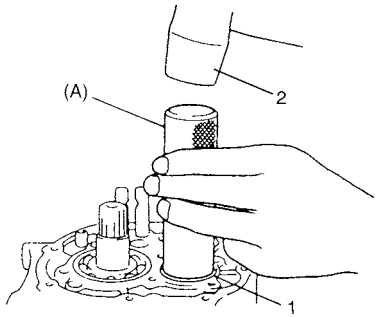


I6RS0C520012-01

2. Input shaft	3. Input shaft left bearing

13) To seat countershaft left bearing outer race (1) to bearing cone, and tap countershaft left bearing outer race (1) using special tool and plastic hammer (2).

Special tool
(A): 09913–70123



I3RM0A520030-01

14) With putting a shim (2) on bearing outer race (3), place straightedge (1) over it and compress it by hand through straightedge, and then measure clearance “a” between case surface (4) and straightedge using feeler gauge (5).

Clearance between case surface and straightedge (Shim protrusion)
“a”: 0.08 – 0.12 mm (0.0032 – 0.0047 in.)

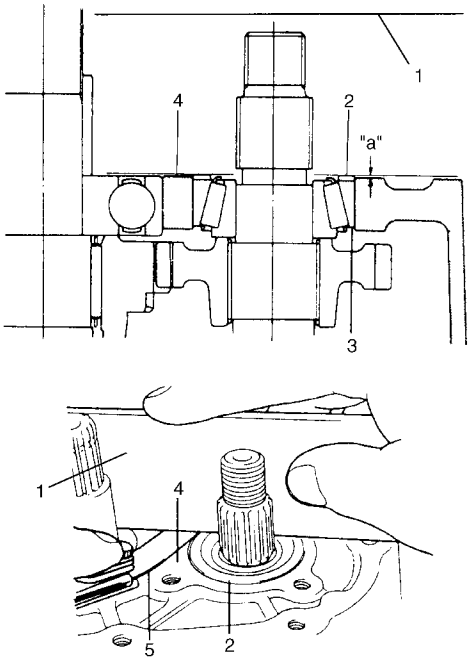
15) By repeating Step 14), select a suitable shim which adjusts clearance “a” to specification and put it on bearing outer race.

NOTE

Insert 0.10 mm (0.0039 in.) feeler to know whether or not a shim fulfills specification quickly.

Available shim thickness

0.55 mm (0.021 in.)	0.90 mm (0.035 in.)
0.60 mm (0.023 in.)	0.95 mm (0.037 in.)
0.65 mm (0.025 in.)	1.00 mm (0.039 in.)
0.70 mm (0.027 in.)	1.05 mm (0.041 in.)
0.75 mm (0.029 in.)	1.10 mm (0.043 in.)
0.80 mm (0.031 in.)	1.15 mm (0.059 in.)
0.85 mm (0.033 in.)	



I3RM0A520031-01

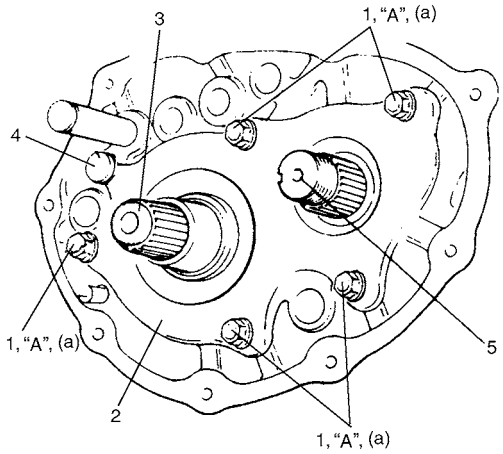
16) Place left case plate (2) inserting its end in groove of shift guide shaft (4) and tighten bolts (1) to which thread lock cement has been applied.

NOTE

After tightening bolts, make sure that countershaft (5) can be rotated by hand feeling certain load.

“A”: Thread lock cement 99000–32110 (Thread Lock Cement Super 1322)

Tightening torque
Left case plate bolt (a): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



I4RS0A520042-01

3. Input shaft

17) Install fifth gear referring to “Fifth Gear Disassembly and Assembly”.
18) Install gear shift and select shaft assembly referring to “Gear Shift and Select Shaft Assembly Removal and Installation”.
19) Install back up light switch referring to “Back Up Light Switch Removal and Installation”.
20) Check input shaft for rotation in each gear position.
21) Also confirm continuity of back up light switch in reverse position using ohmmeter.

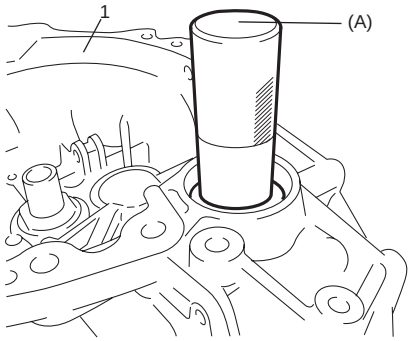
Transaxle Right Case Disassembly and Assembly

S7RS0B5206016

Disassembly

1) Remove gear shift shaft, input shaft assembly and countershaft assembly referring to “Manual Transaxle Assembly Disassembly and Reassembly”.
2) Remove differential side bearing outer race from right case (1) using special tool.

   Special tool
   (A): 09925–15410



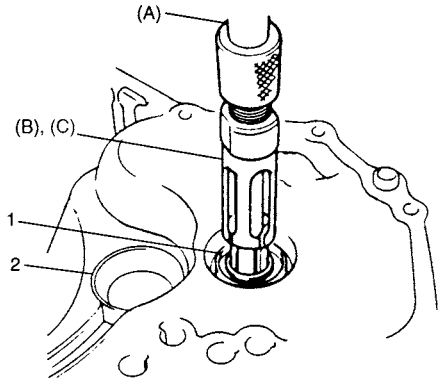
I3RM0B521021-01

3) Remove input shaft oil seal (1) using special tools, if necessary.

   Special tool
   (A): 09930–30104
   (B): 09923–74510

4) Pull out countershaft right bearing outer race (2) using special tools, if necessary.

   Special tool
   (A): 09930–30104
   (C): 09941–64511



I4RS0A520040-01

5) Replace differential side oil seal from right case referring to “Differential Side Oil Seal Replacement” if necessary.

Assembly

NOTE

Before installation, wash each part and apply specified transaxle oil to sliding faces of bearing and gear.

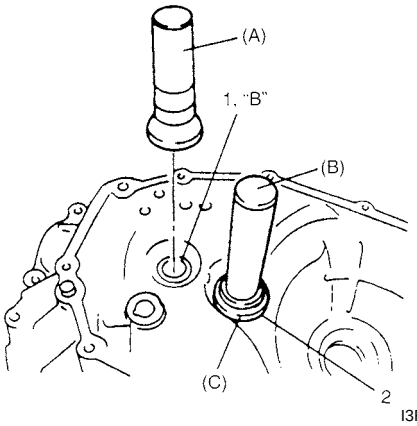
1) Install differential side oil seal into right case referring to “Differential Side Oil Seal Replacement” if removed.
2) If input shaft oil seal (1) has been removed, install it with its spring side facing upward. Use special tool and hammer for installation and apply grease to oil seal lip.

   “B”: Grease 99000–25011 (SUZUKI Super Grease A)

   Special tool
   (A): 09913–84510

3) If countershaft right bearing outer race (2) has been removed, install it using special tools and hammer.

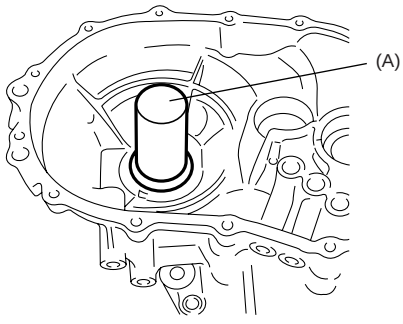
   Special tool
   (B): 09925–98210
   (C): 09924–84510–004



I3RM0A520047-01

4) Install differential side bearing outer race to right case using special tool and hammer.

   Special tool
   (A): 09913–85210



I4RH01520027-01

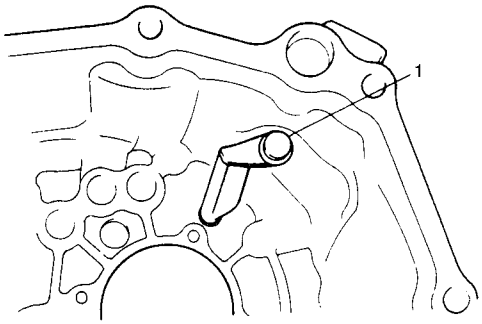
5) Install gear shift shaft, input shaft assembly and countershaft assembly referring to “Manual Transaxle Assembly Disassembly and Reassembly”.

Transaxle Left Case Disassembly and Assembly

S7RS0B5206017

Disassembly

1) Replace differential side oil seal from left case referring to “Differential Side Oil Seal Replacement”, if necessary.
2) Remove input oil gutter (1) from left case, if necessary.



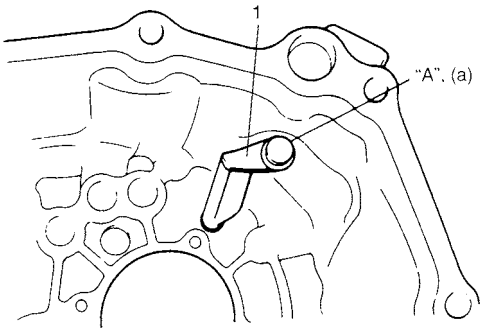
I4RH01520028-01

Assembly

1) If input oil gutter (1) has been removed, install it with bolt to which thread lock cement has been applied.

“A”: Thread lock cement 99000–32110 (Thread Lock Cement Super 1322)

Tightening torque
Oil gutter bolt (a): 10 N·m (1.0 kgf-m, 7.5 lb-ft)

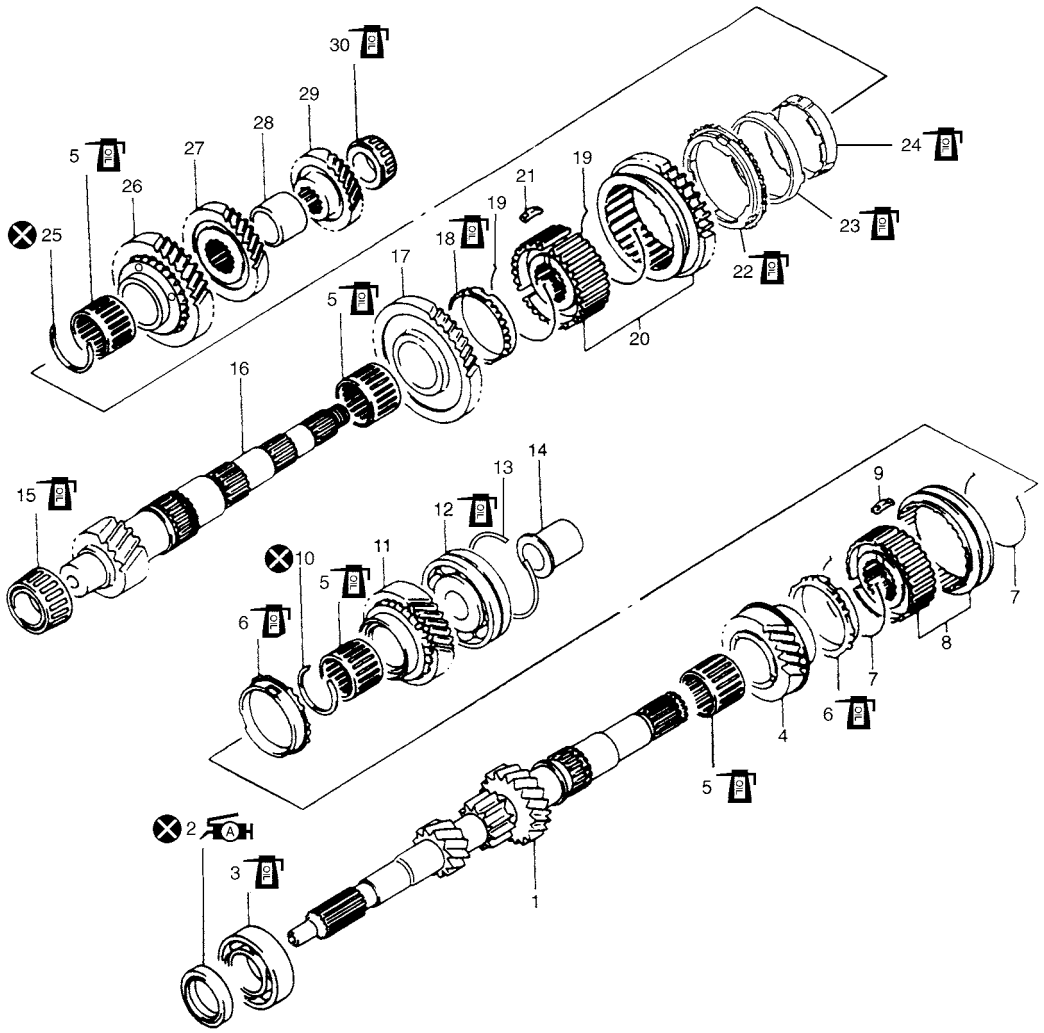


I3RM0A520048-01

2) If differential side oil seal is removed, install it to left case referring to “Differential Side Oil Seal Replacement”.

Input Shaft and Countershaft Components

S7RS0B5206018



I3RM0B521010-01

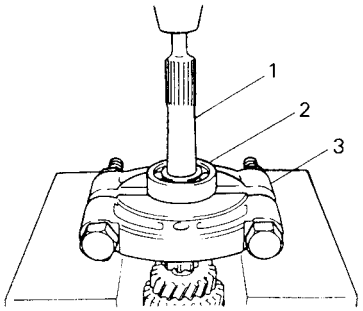
1. Input shaft	12. Input shaft left bearing	23. 2nd gear synchronizer center cone
2. Oil seal : Apply grease 99000-25011 to oil seal lip.	13. Circlip	24. 2nd gear synchronizer inner ring
3. Input shaft right bearing	14. 5th gear spacer	25. Circlip
4. Input shaft 3rd gear	15. Countershaft right bearing	26. Countershaft 2nd gear
5. Needle bearing	16. Countershaft	27. Countershaft 3rd gear
6. High speed synchronizer ring	17. Countershaft 1st gear	28. 3rd & 4th gear spacer
7. High speed synchronizer spring	18. 1st gear synchronizer ring	29. Countershaft 4th gear
8. High speed synchronizer sleeve & hub	19. Low speed synchronizer spring	30. Countershaft left bearing
9. High speed synchronizer key	20. Low speed synchronizer sleeve & hub	: Do not reuse.
10. Circlip	21. Low speed synchronizer key	: Apply transaxle oil.
11. Input shaft 4th gear	22. 2nd gear synchronizer outer ring	

Input Shaft Assembly Disassembly and Reassembly

S7RS0B5206019

Disassembly

1) Remove input shaft right bearing (2) from input shaft (1) using bearing puller (3) and hydraulic press.

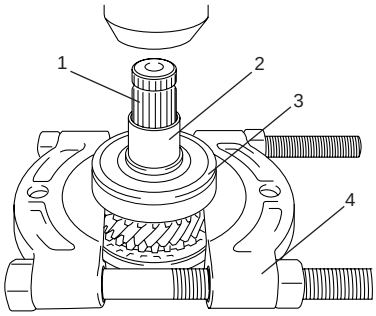


IYSY01521048-01

2) Drive out 5th gear spacer (2) and left bearing (3) from input shaft (1) using bearing puller (4) and hydraulic press.

⚠ CAUTION

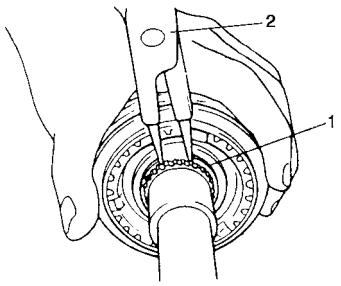
To avoid gear tooth from being damaged, support it at flat side of bearing puller.



I4RH01520030-01

3) Take out 4th gear, 4th gear needle bearing and high speed synchronizer ring.

4) Using snap ring pliers (2), remove circlip (1).

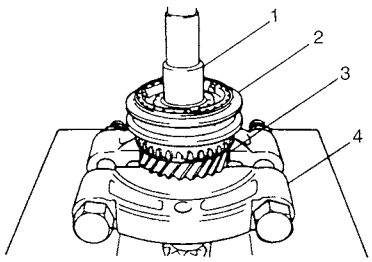


I6RS0C520013-01

5) Drive out high speed synchronizer sleeve & hub assembly (2) together with 3rd gear (3) from input shaft (1) using bearing puller (4) and hydraulic press.

⚠ CAUTION

Make sure to use flat side of bearing puller to avoid causing damage to 3rd gear tooth.



I2RH01520097-01

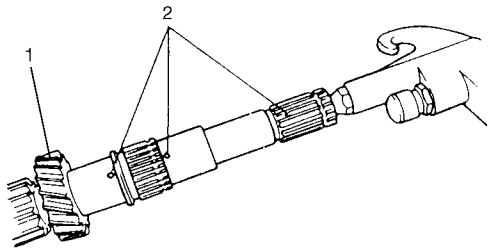
6) Take out 3rd gear needle bearing from shaft.

7) Disassemble high speed synchronizer sleeve & hub assembly.

Reassembly

1) Clean all components thoroughly, inspect them for any abnormality and replace with new ones as necessary.

2) To ensure lubrication of input shaft (1), air blow oil holes (2) and make sure that they are free from any obstruction.



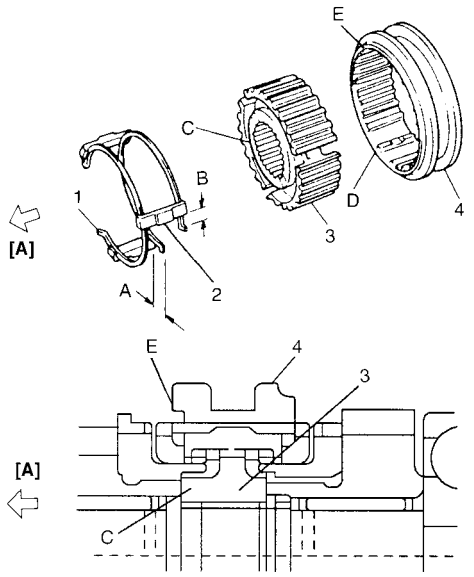
I2RH01520049-01

3) Fit high speed synchronizer sleeve (4) to hub (3), insert 3 keys (2) in it and then set springs (1) as shown in figure.

NOTE

- **No specific direction is assigned to each key but it is assigned as sleeve & hub assembly.**
- **Size of high speed synchronizer sleeve, hub, keys and springs is between those of low speed and 5th speed ones.**

Synchronizer key installation position
A = B

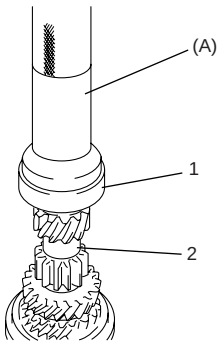


I3RM0B521022-01

[A]: 3rd gear side	D: Key way
C: Long flange	E: Projecting end

4) Drive in right bearing (1) to input shaft (2) using special tool and hammer.

Special tool
(A): 09951–16080



I4RH01520031-01

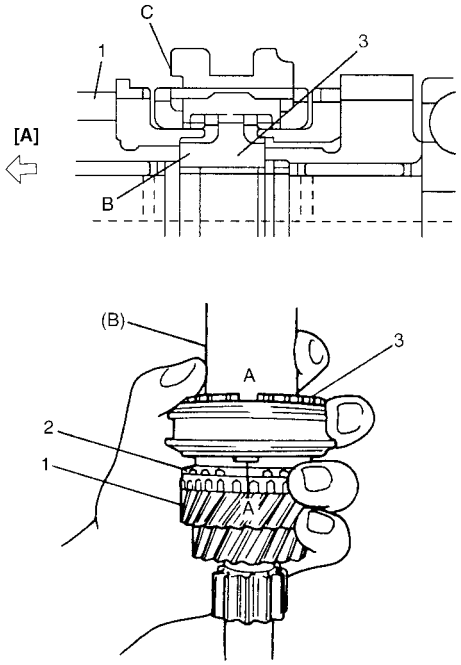
5) Install 3rd gear needle bearing, apply oil to it, then install 3rd gear (1) and synchronizer ring (2).

6) Drive in high speed synchronizer sleeve & hub assembly (3) using special tool and hammer, facing long flange side of hub to 3rd gear.

NOTE

- **While press-fitting sleeve & hub, make sure that synchronizer ring key slots are aligned with keys in sleeve & hub assembly.**
- **Check free rotation of 3rd gear after press-fitting sleeve & hub assembly.**
- **Synchronizer rings for 3rd and 4th are identical.**

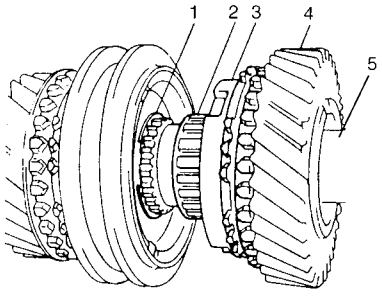
Special tool
(B): 09913–84510



I3RM0B521023-01

[A]: 3rd gear side	B: Long flange
A: Key way	C: Projecting end

7) Install circlip (1) and confirm that circlip is installed in groove securely. Install needle bearing (2) of resin cage type, apply oil to it and then install synchronizer ring (3) and 4th gear (4).



I2RH01520052-01

5. Input shaft

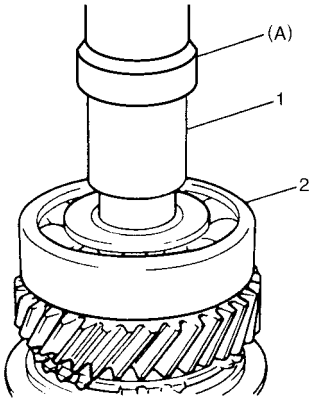
8) Press-fit left bearing (2) using special tool and hammer.

Special tool
(A): 09913–70123

9) Using the same special tool at Step 8), drive in 5th gear spacer (1).

⚠ CAUTION

To prevent 5th gear spacer from being distorted because of excessive compression, do not press-fit it with left bearing at once.



I4RH01520032-01

Countershaft Assembly Disassembly and Reassembly

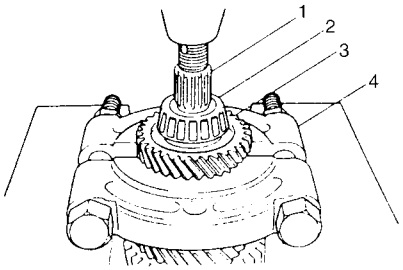
S7RS0B5206020

Disassembly

1) Drive out left bearing cone (2) with 4th gear (3) from countershaft (1) using bearing puller (4) and hydraulic press.

⚠ CAUTION

- **Use bearing puller and hydraulic press that will bear at least 5 ton (11,000 lb) safely.**
- **To avoid tooth damage, support 4th gear at flat side of bearing puller.**

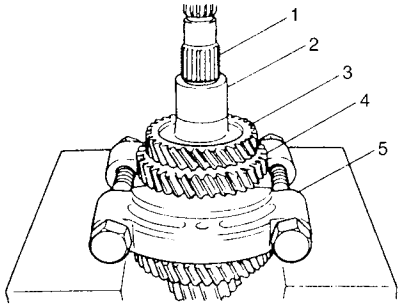


I2RH01520054-01

2) Apply bearing puller (5) to 2nd gear (4) and drive out 3rd & 4th gear spacer (2) and 3rd gear (3) together with 2nd gear from countershaft (1) using hydraulic press. Take out needle bearing from countershaft.

⚠ CAUTION

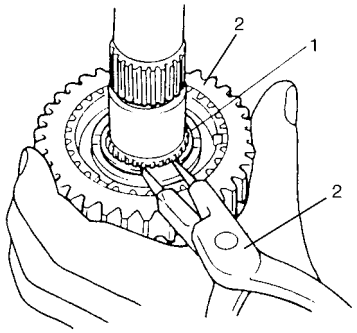
- **If compression exceeds 5 ton (11,000 lb), release compression once, reset bearing puller support and then continue press work again.**
- **To avoid gear tooth from being damaged, support it at flat side of bearing puller.**



I2RH01520055-01

3) Take out 2nd gear synchronizer outer ring, center cone and inner ring.

4) Using snap ring pliers (2), remove circlip (1).



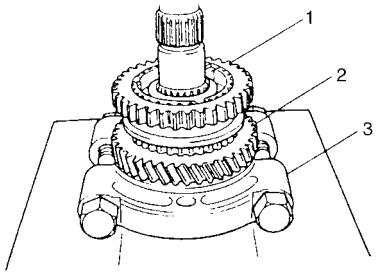
I6RS0C520014-01

2. Low speed synchronizer sleeve

5) Apply bearing puller (3) to 1st gear (2) and drive out low speed synchronizer sleeve & hub assembly (1) with 1st gear using hydraulic press.

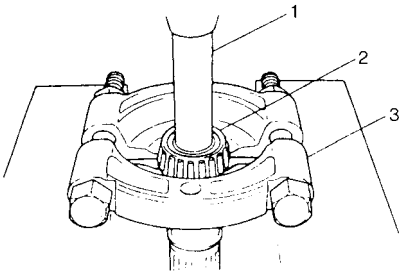
⚠ CAUTION

To avoid gear tooth from being damaged, support it at flat side of bearing puller.



I2RH01520057-01

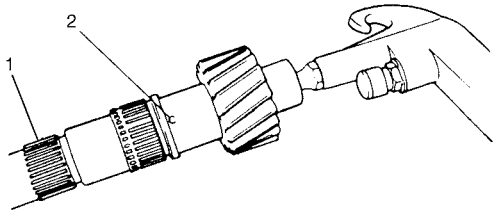
6) Disassemble low speed synchronizer sleeve & hub assembly.
7) Take out 1st gear needle bearing from shaft.
8) Remove right bearing cone (2) using bearing puller (3), metal stick (1) and hydraulic press.



I2RH01520058-01

Reassembly

1) Clean all components thoroughly, inspect them for any abnormality and replace with new ones as necessary.
2) To ensure lubrication of countershaft (1), air blow oil holes (2) and make sure that they are free from any obstruction.



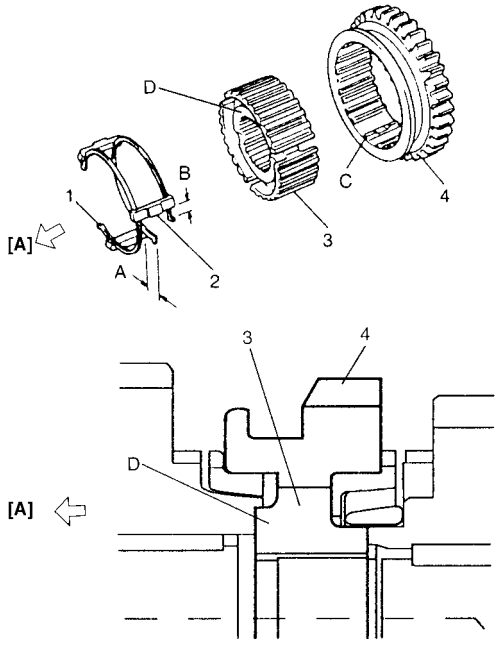
I2RH01520060-01

3) Fit low speed synchronizer sleeve (4) to hub (3), insert 3 keys (2) in it and then set springs (1) as shown in figure.

NOTE

- **No specific direction is assigned to each key but it is assigned as sleeve & hub assembly.**
- **Size of low speed synchronizer keys and springs are the largest compared with those of high speed and 5th speed ones.**

Synchronizer key installation position
A = B

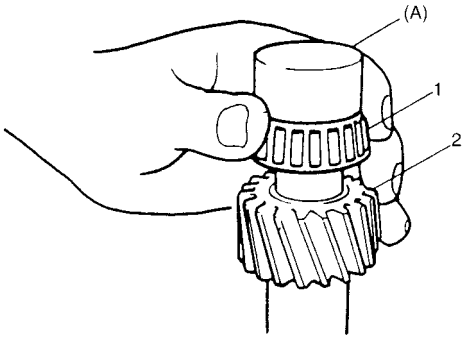


I3RM0A520051-01

[A]: 1st gear side	D: Short flange
C: Key way	

4) Install right bearing cone (1) to countershaft (2) using special tool and hammer.

Special tool
(A): 09923–78210



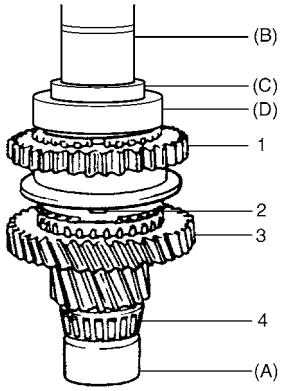
I2RH01520062-01

5) Install needle bearing, apply oil to it, then install 1st gear and 1st gear synchronizer ring.
6) Drive in low speed synchronizer sleeve & hub assembly (1) using special tools and hammer.

NOTE

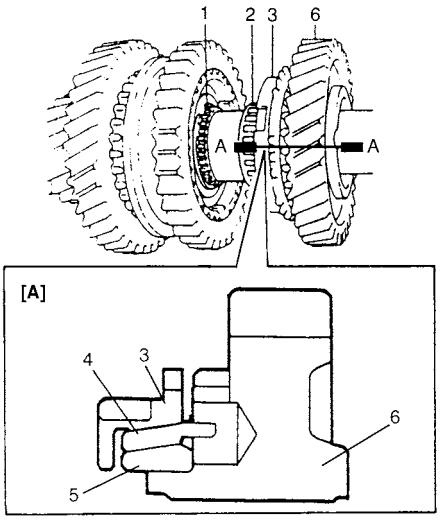
- **Support shaft with special tool as shown in figure so that retainer of bearing cone (4) will be free from compression.**
- **Make sure that synchronizer ring (2) key slots are aligned with keys while press-fitting sleeve & hub assembly.**
- **Check free rotation of 1st gear (3) after press-fitting sleeve & hub assembly.**

Special tool
(A): 09923–78210
(B): 09940–51710
(C): 09924–07730
(D): 09924–07710



I4RH01520057-01

7) Install circlip (1) and confirm that circlip is installed in groove securely.
Install needle bearing (2), apply oil to bearing.
With synchronizer outer ring (3), center cone (4) and inner ring (5) put together and installed to 2nd gear (6) as shown in figure.



I2RH01520064-01

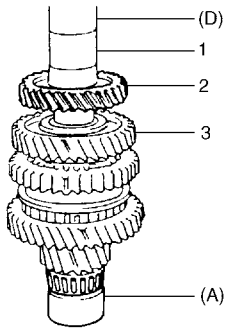
[A]: Section A – A

8) Press-fit 3rd gear (2) and spacer (1) using special tools and hydraulic press.

⚠ CAUTION

Press-fit spacer (1) and 3rd gear (2) first, and then 4th gear later separately so that countershaft will not be compressed excessively.

Special tool
(A): 09923–78210
(D): 09913–84510



I2RH01520065-01

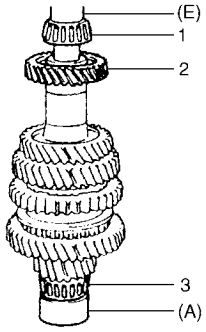
3. 2nd gear

9) Press-fit 4th gear (2) using the same procedure as Step 8).
10) Install left bearing cone (1) using special tools and hammer.

NOTE

For protection of right bearing cone (3), always support shaft with special tool as shown in figure.

Special tool
(A): 09923–78210
(E): 09913–80113



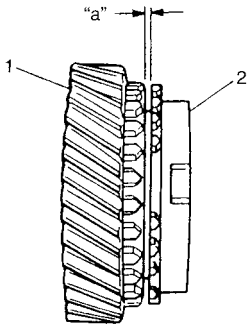
I2RH01520066-01

Synchronizer Parts Inspection

S7RS0B5206021

Check clearance “a” between synchronizer ring (2) and gear (1), each chamfered tooth of gear, synchronizer ring and sleeve, then determine parts replacement.

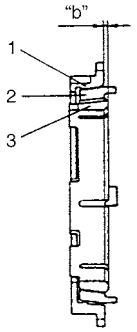
Clearance “a” between synchronizer ring and gear
Standard: 1.0 – 1.3 mm (0.039 – 0.051 in.)
Service limit: 0.5 mm (0.019 in.)



I2RH01520048-01

Put the 2nd gear synchronizer outer ring (1), inner ring (3) and the cone (2) together and then measure the step difference between the outer ring and the inner ring. And also check each chamfered tooth of gear and synchronizer ring and replace with new one, if necessary. Also, check gear tooth.

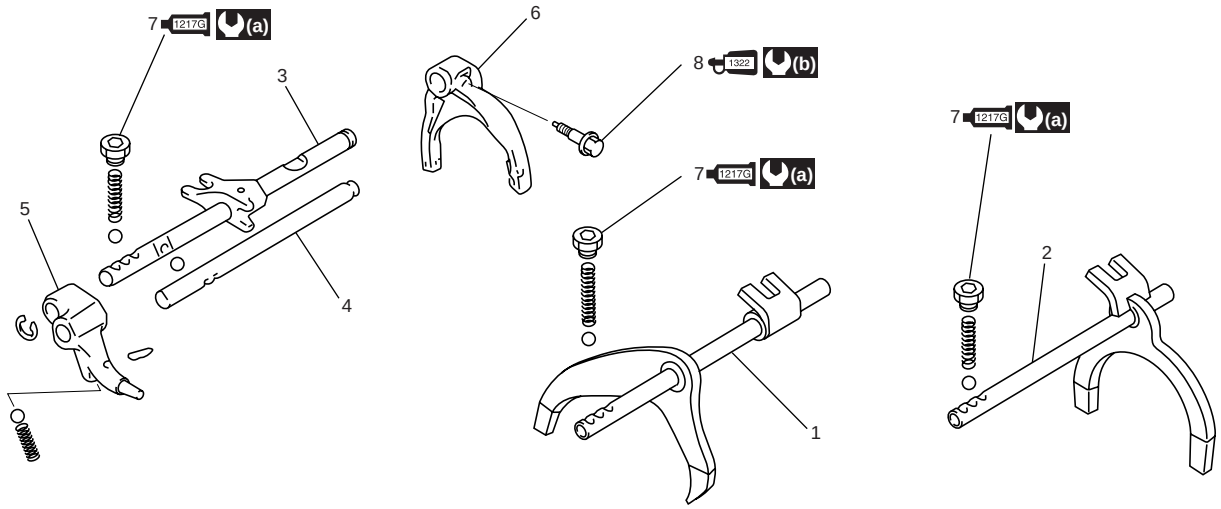
Difference “b” between synchronizer outer ring and inner ring
Standard: 1.0 – 1.3 mm (0.039 – 0.051 in.)
Service limit: 0.5 mm (0.019 in.)



I2RH01520059-01

Gear Shift Shaft Components

S7RS0B5206022



I4RS0A520015-01

1. Low speed gear shift shaft	5. Reverse gear shift arm	(a) : 13 N·m (1.3 kgf-m, 9.5 lb-ft)
2. High speed gear shift shaft	6. 5th gear shift fork	(b) : 10 N·m (1.0 kgf-m, 7.5 lb-ft)
3. 5th & reverse gear shift shaft	1217G 7. Gear shift locating bolt : Apply sealant 99000-31260 to bolt thread.	
4. 5th & reverse gear shift guide shaft	1322 8. Shift fork bolt : Apply thread lock 99000-32110 to bolt thread.	

5th and Reverse Gear Shift Shafts Disassembly and Assembly

S7RS0B5206023

Disassembly

Disassemble component parts using special tool and hammer.

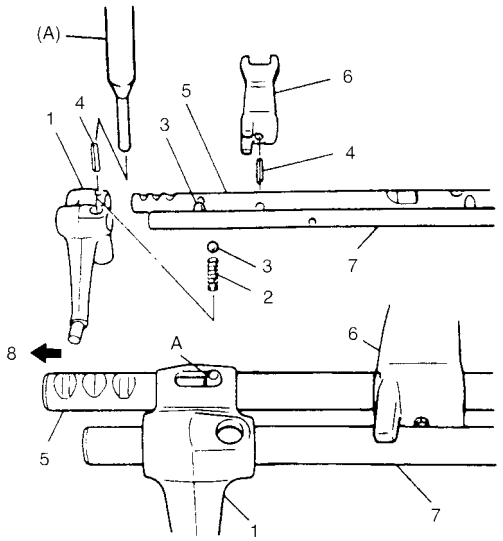
Special tool
(A): 09922–85811

Assembly

Replace or correct parts as required and assemble shafts making sure that component parts are in proper order as shown.

NOTE

- **Distinguish reverse gear shift arm spring (Blue) (2) from low speed locating spring (Yellow).**
- **Install 2 steel balls (3) in reverse gear shift arm (1) without fail.**
- **Drive in spring pin for reverse gear shift arm facing slit A toward 5th gear side.**



I3RM0A520053-01

A:	Face pin slit toward 5th gear side
4.	Spring pin
5.	5th & reverse gear shift shaft
6.	5th & reverse gear shift yoke
7.	5th & reverse gear shift guide shaft
8.	5th gear side

Gear Shift Shaft and Fork Inspection

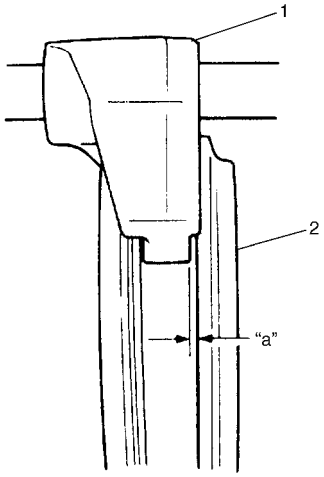
S7RS0B5206024

Using feeler gauge, check clearance between fork (1) and sleeve (2) and replace those parts if it exceeds limit.

NOTE

For correct judgement of parts replacement, carefully inspect contact portion of fork and sleeve.

Clearance “a” between fork and sleeve
Service limit “a”: 1.0 mm (0.039 in.)

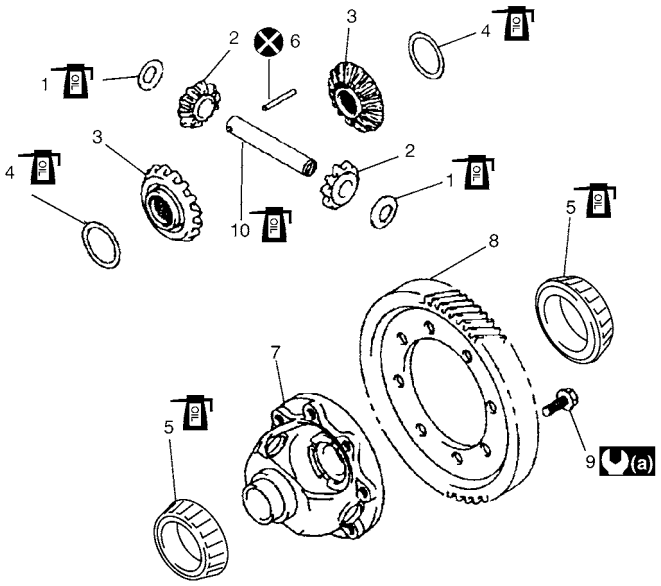


I2RH01520068-01

Insert each gear shift shaft into case and check that it moves smoothly. If it doesn’t, correct using oilstone, reamer or the like.

Differential Components

S7RS0B5206025



I6RS0C520007-01

1. Differential pinion washer	8. Final gear
2. Differential side pinion gear	9. Final gear bolt
3. Differential side gear	10. Differential pinion shaft
4. Side gear washer	(a) : 90 N·m (9.0 kgf-m, 65.0 lb-ft)
5. Differential side bearing	: Do not reuse.
6. Differential pinion shaft pin	: Apply transaxle oil.
7. Differential case	

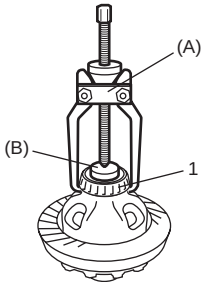
Differential Disassembly and Assembly

S7RS0B5206026

Disassembly

1) Using special tools, remove right bearing (1).

Special tool
(A): 09913–60910
(B): 09925–88210



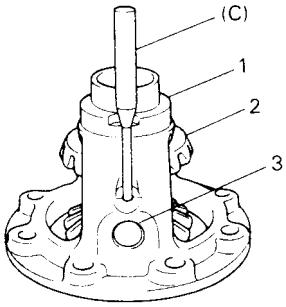
I5JB0A321013-02

2) Remove left bearing in the same manner at Step 1).

3) Support differential case with soft jawed vise and remove final gear bolts then take out final gear.

4) Using special tool and hammer, drive out differential pinion shaft pin and then disassemble component parts.

Special tool
(C): 09922–85811



IYSY01521077-01

1. Differential case	
2. Differential gear	
3. Differential pinion shaft	

Assembly

Judging from abnormality noted before disassembly and what is found through visual check of component parts after disassembly, prepare replacing parts and proceed to reassembly. Make sure that all parts are clean.

1) Assemble differential gear and measure thrust play of differential gear as follows.

Special tool
(A): 09900–20607
(B): 09900–20701

Differential gear thrust play
0.03 – 0.31 mm (0.001 – 0.012 in.)

Left side

1. Hold differential assembly with soft jawed vise and apply measuring tip of dial gauge to top surface of gear (2).
2. Using 2 screwdrivers (1), move gear up and down and read movement of dial gauge pointer.

Right side

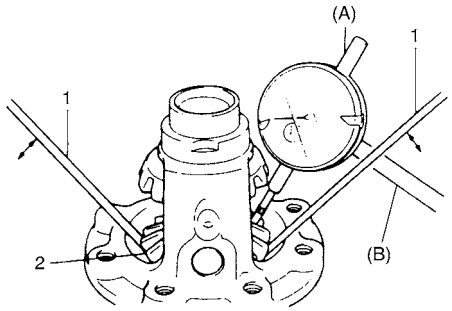
1. Using similar procedure to the left side, set dial gauge tip to gear (2) shoulder.
2. Move gear up and down by hand and read dial gauge.

2) If thrust play is out of specification, select suitable thrust washer from among the following available size, install it and check again that specified gear play is obtained.

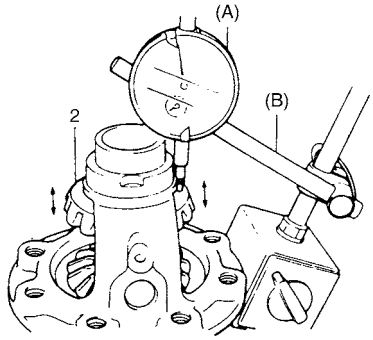
Available thrust washer thickness

0.85 mm (0.033 in.)	**1.05 mm (0.041 in.)**
0.90 mm (0.035 in.)	**1.10 mm (0.043 in.)**
0.95 mm (0.037 in.)	**1.15 mm (0.045 in.)**
1.00 mm (0.039 in.)	

[A]



[B]



I3RH0A520083-01

[A]: Left side	[B]: Right side

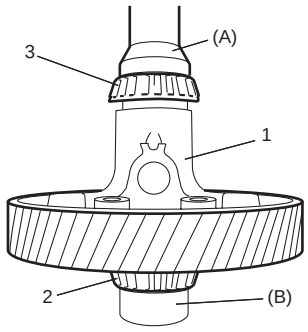
3) Drive in new differential pinion shaft pin (2) till the depth from differential case (3) surface is about 1 mm (0.04 in.).

4) Press-fit left bearing (2) using special tool and copper hammer.

Special tool
(A): 09913–76010

5) Support differential assembly (1) as illustrated so as to left bearing is floating, and then press-fit right bearing (3) using special tools.

Special tool
(A): 09913–76010
(B): 09951–16060



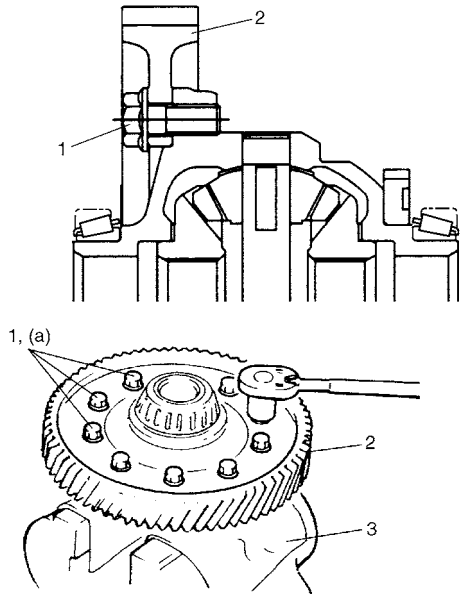
I6RS0C520008-01

6) Hold differential assembly with soft jawed vise (3), install final gear (2) as shown in figure and then tighten bolts (1) to specified torque.

⚠ CAUTION

Use of any other bolts than specified ones is prohibited.

Tightening torque
Final gear bolt (a): 90 N·m (9.0 kgf-m, 65.0 lb-ft)



I4RS0A520043-01

Specifications

Tightening Torque Specifications

S7RS0B5207001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
Transaxle oil drain plug	21	2.1	15.5	☞
Transaxle oil level / filler plug	21	2.1	15.5	☞
Back up light switch	23	2.3	17.0	☞
Gear shift guide case bolt	23	2.3	17.0	☞
Select lever bracket bolt	23	2.3	17.0	☞
Gear shift interlock bolt	23	2.3	17.0	☞
5th to reverse interlock guide bolt	23	2.3	17.0	☞
Countershaft nut	100	10.0	72.5	☞
Shift fork bolt	10	1.0	7.5	☞
Side cover bolt	10	1.0	7.5	☞
Reverse gear shift lever bolt	23	2.3	17.0	☞
Reverse shaft bolt	23	2.3	17.0	☞
Transaxle case bolt	23	2.3	17.0	☞
Side bearing retainer bolt	23	2.3	17.0	☞
Gear shift locating bolt	13	1.3	9.5	☞
Left case plate bolt	23	2.3	17.0	☞
Oil gutter bolt	10	1.0	7.5	☞
Final gear bolt	90	9.0	65.0	☞

NOTE

The specified tightening torque is also described in the following.
“Gear Shift Control Lever and Cable Components”
“Manual Transaxle Unit Components”
“Gear Shift and Select Shaft Assembly Components”
“Manual Transaxle Assembly Components”
“Gear Shift Shaft Components”
“Differential Components”

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Special Tools and Equipment

Recommended Service Material

S7RS0B5208001

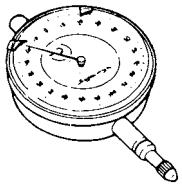
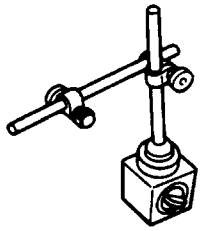
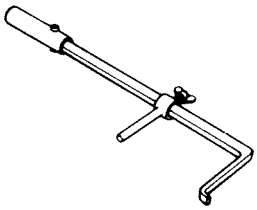
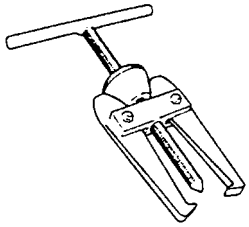
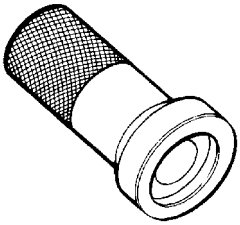
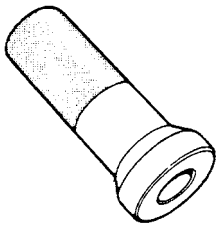
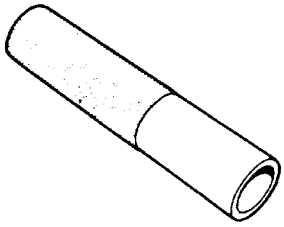
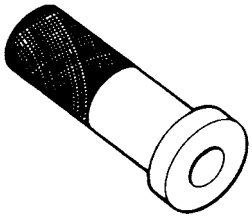
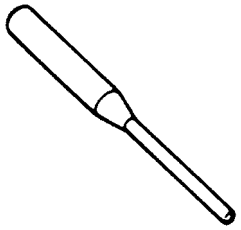
Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI Super Grease A	P/No.: 99000–25011	☞ / ☞ / ☞ / ☞
Sealant	SUZUKI Bond No.1217G	P/No.: 99000–31260	☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞
Thread lock cement	Thread Lock Cement Super 1322	P/No.: 99000–32110	☞ / ☞ / ☞ / ☞ / ☞

NOTE

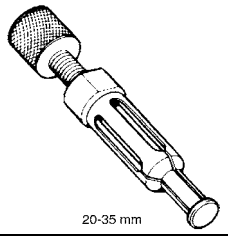
Required service material is also described in the following.
“Gear Shift Control Lever and Cable Components”
“Gear Shift and Select Shaft Assembly Components”
“Manual Transaxle Assembly Components”
“Input Shaft and Countershaft Components”
“Gear Shift Shaft Components”
“Differential Components”

Special Tool

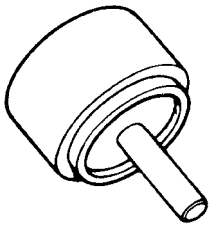
S7RS0B5208002

09900–20607 Dial gauge ☞		09900–20701 Magnetic stand ☞	
09913–50121 Oil seal remover ☞		09913–60910 Bearing and gear puller (40-60mm) ☞	
09913–70123 Bearing installing tool ☞ / ☞ / ☞		09913–76010 Bearing installer ☞ / ☞	
09913–80113 Bearing installer ☞		09913–84510 Bearing installer ☞ / ☞ / ☞	
09913–85210 Bearing installer ☞ / ☞		09922–85811 Spring pin remover (4.5 mm) ☞ / ☞ / ☞	

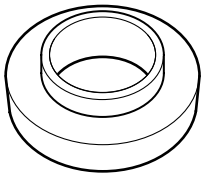
09923–74510
Bearing puller (20-35 mm)
☞



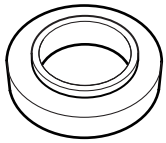
09923–78210
Bearing installer
☞ / ☞ / ☞ / ☞



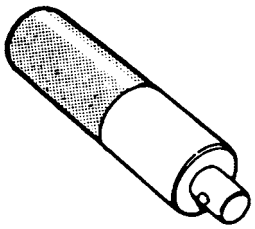
09924–07710
Synchronizer hub installer
☞



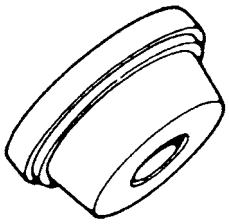
09924–07730
Bearing installer
☞



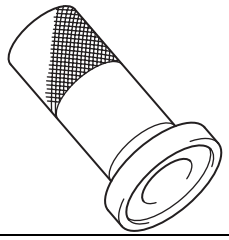
09924–74510
Bearing and oil seal handle
☞



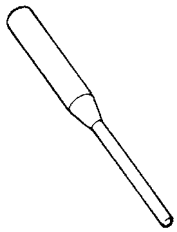
09924–84510–004
Bearing installer attachment
☞



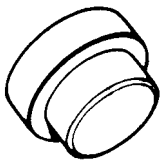
09925–15410
Oil seal installer
☞



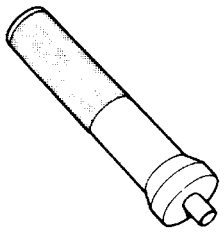
09925–78210
Spring pin remover (6 mm)
☞



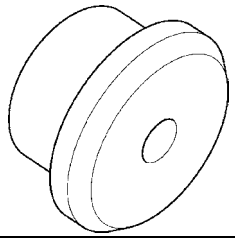
09925–88210
Bearing puller attachment
☞



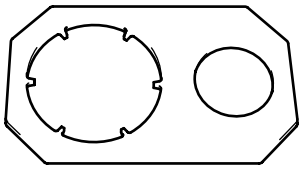
09925–98210
Input shaft bearing installer
☞



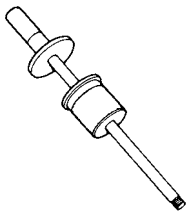
09926–27610
Oil seal installer
☞ / ☞



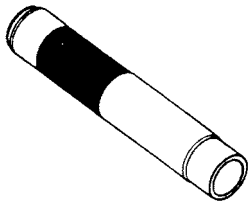
09927–76060
Gear holder
☞ / ☞



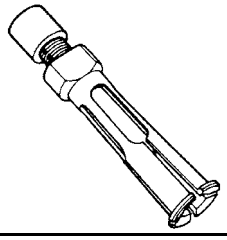
09930–30104
Sliding shaft
☞ / ☞



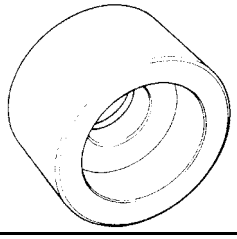
09940–51710
Bearing installer
☞

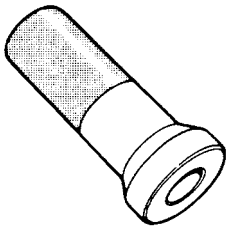


09941–64511
Bearing and oil seal remover
(30 mm Min.)
☞



09951–16060
Control arm bush remover
☞



09951–16080 Bearing installer ☞		

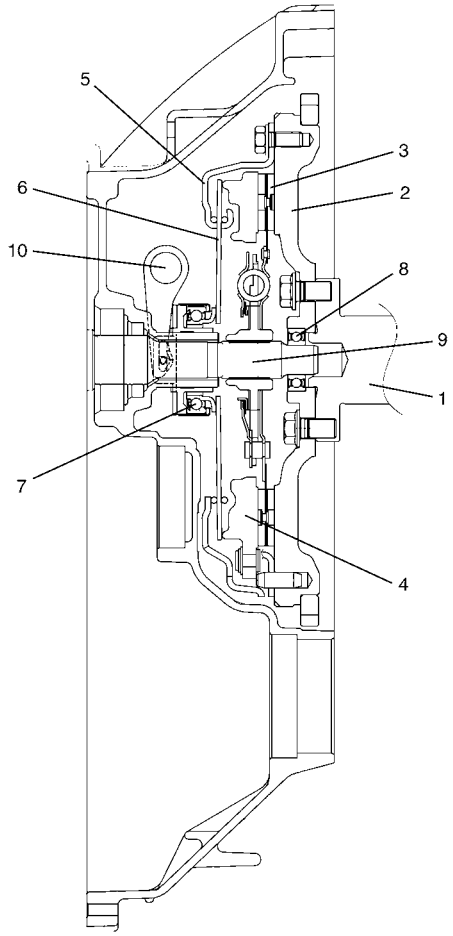
Clutch

General Description

Clutch Construction

S7RS0B5301001

The clutch is a diaphragm spring clutch of a dry single disc type. The diaphragm spring is of a tapering-finger type, which is a solid ring in the outer diameter part, with a series of tapered fingers pointing inward.
The disc, carrying four torsional coil springs, is positioned on the transaxle input shaft with an involute spline fit.
The clutch cover is secured to the flywheel, and carries the diaphragm spring in such a way that the peripheral edge part of the spring pushes on the pressure plate against the flywheel (with the disc in between), when the clutch release bearing is held back. This is the engaged condition of the clutch.
Depressing the clutch pedal causes the release bearing to advance and pushes on the tips of the tapered fingers of the diaphragm spring. When this happens, the diaphragm spring pulls the pressure plate away from the flywheel, thereby interrupting the flow of drive from flywheel through clutch disc to transaxle input shaft. Clutch fluid is supplied from brake fluid reservoir. Clutch fluid level can be checked by brake fluid level of brake fluid reservoir.



I4RS0A530001-01

[A]: For petrol engine model	2. Flywheel	5. Clutch cover	8. Input shaft bearing
[B]: For diesel engine model	3. Clutch disc	6. Diaphragm spring	9. Input shaft
1. Crankshaft	4. Pressure plate	7. Release bearing	10. Release shaft

Diagnostic Information and Procedures

Clutch System Symptom Diagnosis

S7RS0B5304001

Condition	Possible cause	Correction / Reference Item
Slipping	Improper clutch pedal free travel	*Replace master cylinder or clutch pedal arm.*
	Worn or oily clutch disc facing	*Replace disc.*
	Warped disc, pressure plate or flywheel surface	*Replace disc, clutch cover or flywheel.*
	Weakened diaphragm spring	*Replace clutch cover.*
	Master cylinder piston or seal cup not returning	*Replace master cylinder.*
Dragging clutch	Improper clutch pedal free travel	*Replace master cylinder or clutch pedal arm.*
	Weakened diaphragm spring, or worn spring tip	*Replace clutch cover.*
	Rusted input shaft splines	*Lubricate.*
	Damaged or worn splines of transaxle input shaft	*Replace input shaft.*
	Excessively wobbly clutch disc	*Replace disc.*
	Clutch facings broken or dirty with oil	*Replace disc.*
	Fluid leakage	*Repair or replace.*
Clutch vibration	Glazed (glass-like) clutch facings	*Repair or replace disc.*
	Clutch facings dirty with oil	*Replace disc.*
	Release bearing slides unsmoothly on input shaft bearing retainer	*Lubricate or replace input shaft bearing retainer.*
	Wobbly clutch disc, or poor facing contact	*Replace disc.*
	Weakened torsion springs in clutch disc	*Replace disc.*
	Clutch disc rivets loose	*Replace disc.*
	Distorted pressure plate or flywheel surface	*Replace clutch cover or flywheel.*
	Weakened engine mounting	*Replace engine mounting.*
	Loosened engine mounting bolt or nut	*Retighten engine mounting bolt or nut.*
Noisy clutch	Worn or broken release bearing	*Replace release bearing.*
	Input shaft front bearing worn down	*Replace input shaft bearing.*
	Excessive rattle of clutch disc hub	*Replace disc.*
	Cracked clutch disc	*Replace disc.*
	Pressure plate and diaphragm spring rattling	*Replace clutch cover.*
Grabbing clutch	Clutch disc facings soaked with oil	*Replace disc.*
	Clutch disc facings excessively worn	*Replace disc.*
	Rivet heads showing out of facing	*Replace disc.*
	Weakened torsion springs	*Replace disc.*

Repair Instructions

Clutch Pedal Inspection

S7RS0B5306001

Cylinder Push Rod Play “A”

1) Press clutch pedal (1) gradually with finger, stop when slight increase of resistance is felt and measure how much pedal has moved (push rod play) as represented by “A” as shown.

   Push rod play
   “A”: Max. 3 mm (0.12 in.)

2) If “A” is not within specification, replace master cylinder (3) or pedal arm (2).

Clutch Pedal Free Travel “B”

1) Depress clutch pedal (1), stop the moment clutch resistance is felt, and measure how much pedal has moved (clutch pedal free travel) as represented by “B” in figure.

   Clutch pedal free travel “B”
   : 2 – 8 mm (0.08 – 0.31 in.)

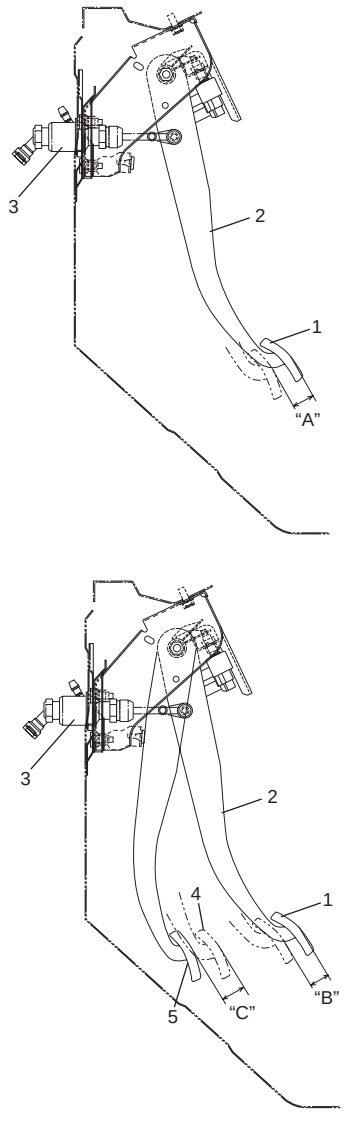
2) If “B” is not within specification, check pedal arm (2) and master cylinder (3) and replace defective part.

Clutch Release Margin "C"

1) Pull up parking brake fully and block wheels.
2) Start engine and keep engine at idle with neutral gear position.
3) Without clutch pedal (1) depressed, slightly push the shift lever to reverse position until transaxle emits gear contact noise. Do not shift the lever to reverse position.
4) With emitting gear contact noise, be slow to depress clutch pedal (1), and at gear contact noise died position (release point) stop depressing.
5) Measure distance between release point (4) and full stroke point (5) on clutch pedal (1) which is shown by "C" in figure.

   Clutch release margin
   "C": 25 – 55 mm (0.98 – 2.17 in.)

6) If "C" is not within specification, it is possible that air is trapped in this system. If suspected so, bleed air referring to "Air Bleeding of Clutch System". Upon completion of above inspection, start engine and check clutch for proper operation.



I4RS0B530001-01

Clutch Fluid Level Inspection

S7RS0B5306002

Refer to "Brake Fluid Level Inspection in Section 4A".

Clutch fluid specification
: Refer to reservoir cap.

Air Bleeding of Clutch System

S7RS0B5306003

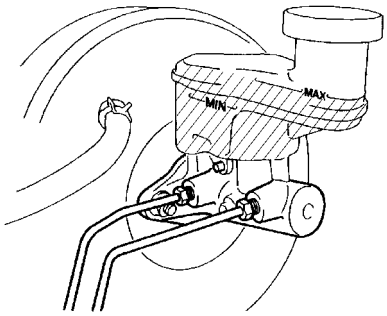
⚠ CAUTION

Brake fluid is extremely damaging to paint. If fluid should accidentally touch painted surface, immediately wipe fluid from paint and clean painted surface.

Bleeding operation is necessary to remove air whenever it entered hydraulic clutch system.

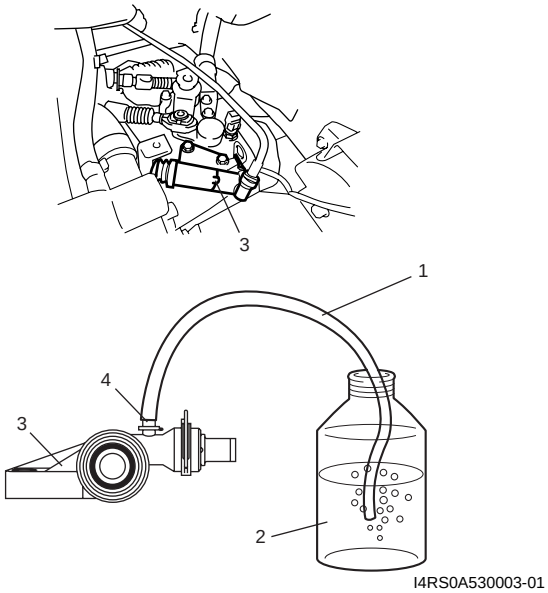
1) Fill master cylinder reservoir with brake fluid and keep at least one-half full of fluid during bleeding operation.

   Brake Fluid
   Refer to reservoir cap



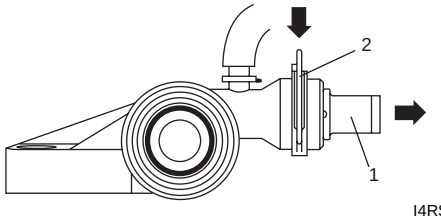
I4RS0A530023-01

2) Remove bleeder plug cap from clutch operating cylinder (3). Attach a vinyl tube (1) to bleeder plug (4), and insert the other end into container (2).



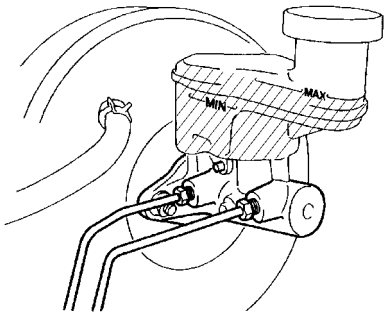
I4RS0A530003-01

3) Depress clutch pedal several times, and then release clutch pedal, push snap ring (2) and pull pipe connector (1) one notch.



I4RS0A530004-01

4) When fluid pressure in cylinder is almost depleted, push pipe connector.
5) Repeat this operation until there are no more air bubbles in hydraulic line.
6) When bubbles stop, depress and hold clutch pedal, push pipe connector, and pull snap ring.
7) Then attach bleeder plug cap.
8) After completing bleeding operation, apply fluid pressure to pipe line and check for leakage.
9) Replenish fluid into reservoir up to specified level.



I4RS0A530023-01

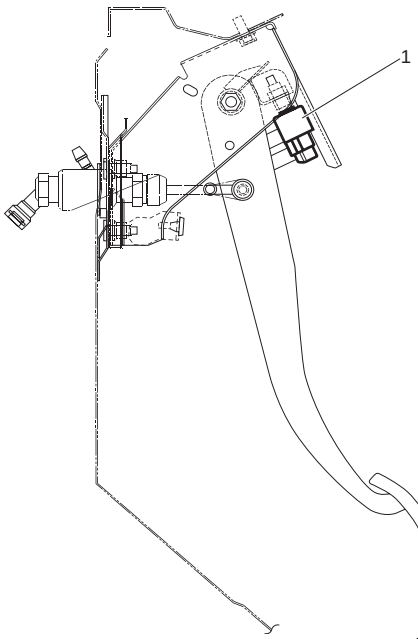
10) Check clutch pedal for sponginess. If found spongy, repeat entire procedure of bleeding.

Clutch Pedal Position (CPP) Switch Removal and Installation

S7RS0B5306004

Removal

1) Disconnect connector of CPP switch (1) with ignition switch OFF.
2) Remove CPP switch (1) from pedal bracket.



I6RS0C530001-02

Installation

1) Instal CPP switch to pedal bracket.
2) Adjust switch position referring to “Clutch Pedal Position (CPP) Switch Inspection and Adjustment”.
3) Connect connector to CPP switch securely.

Clutch Pedal Position (CPP) Switch Inspection and Adjustment

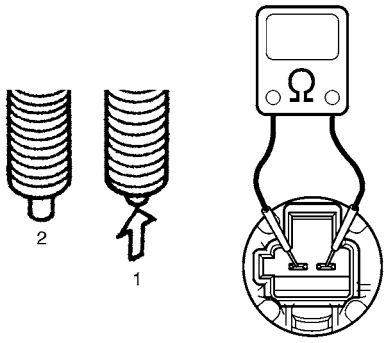
S7RS0B5306005

Inspection

Check for resistance between terminals under each condition below. If check result is not satisfactory, replace.

CPP switch resistance

When switch shaft is pushed (1): Continuity
When switch shaft is free (2): No continuity



I5JB0A530006-01

Adjustment

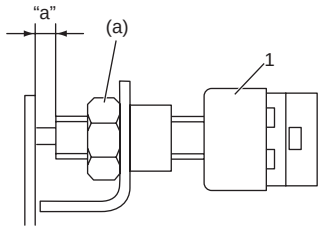
With clutch pedal depressed, adjust switch (1) position so that clearance between end of thread and clutch pedal arm is within specification, and then tighten lock nut to specified torque.

Clearance between end of thread and clutch pedal arm

"a": 3.5 – 4.0 mm (0.14 – 0.16 in.)

Tightening torque

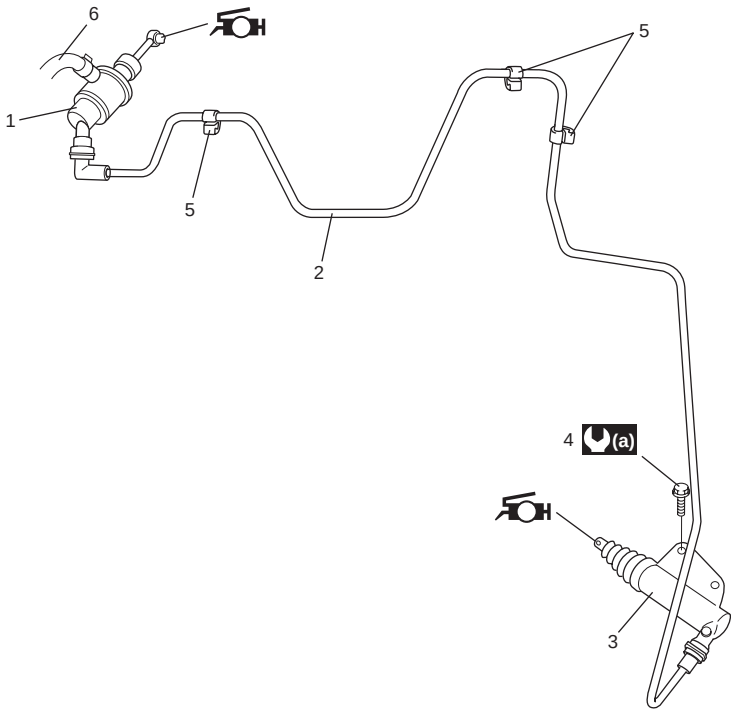
CPP switch lock nut (a): 7.5 N·m (0.75 kgf-m, 5.5 lb-ft)



I6RS0C530002-01

Clutch Fluid Pipe and Hose Components

S7RS0B5306006



I6RS0C530003-01

1. Master cylinder : Apply grease 99000-25100 to push rod end.	5. Clamp
2. Pipe	6. Clutch reservoir hose
3. Operating cylinder : Apply grease 99000-25100 to rod tip.	(a) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)
4. Operating cylinder bolt	

Clutch Fluid Pipe Removal and Installation

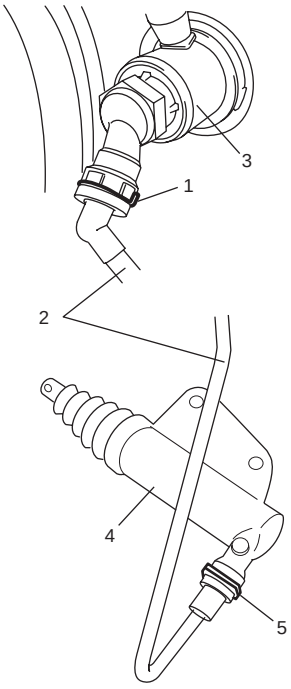
S7RS0B5306007

Removal

⚠ CAUTION

Do not allow fluid to get on painted surface. It may cause painted surface damage.

1) Remove dust and dirt from each joint of pipe to be disconnected and clean around brake master cylinder reservoir cap.
2) Take out fluid with syringe or such from brake master cylinder reservoir.
3) Pull clamp (1) of clutch master cylinder (3) and push clamp (5) of clutch operating cylinder (4) and then disconnect clutch fluid pipe (2).



I4RS0B530003-01

Installation

Reverse removal procedure for installation noting the following.

⚠ CAUTION

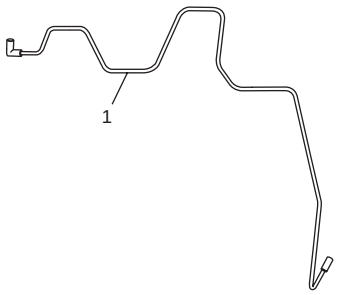
- **Do not allow fluid to get on painted surface.**
- **Do not allow pipe to contact hard against vehicle body or other parts.**

- Install each clamp securely.
- After installation, check clutch pedal free travel and bleed air from system referring to “Clutch Pedal Inspection” and “Air Bleeding of Clutch System”.
- Check fluid leakage.
- Add fluid to MAX level of reservoir.

Clutch Fluid Pipe Inspection

S7RS0B5306008

Check pipe (1) for dent, kink, crack, dirt and dust. Replace if check result is not satisfactory.



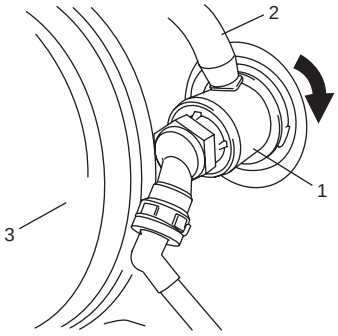
I6RS0C530004-01

Clutch Master Cylinder Removal and Installation

S7RS0B5306009

Removal

1) Clean around brake master cylinder reservoir cap and take out fluid with syringe or such from brake master cylinder reservoir.
2) Disconnect clutch fluid pipe from clutch master cylinder (1) referring to “Clutch Fluid Pipe Removal and Installation”.
3) Disconnect clutch reservoir hose (2).
4) Remove push rod from clutch pedal.
5) Turn clutch master cylinder (1) clockwise as shown in figure, and then remove it.



I4RS0B530005-01

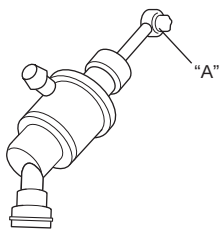
3. Brake booster

Installation

Reverse removal procedure for installation noting the following.

- Apply grease to push rod tip.

“A”: Grease 99000–25100 (SUZUKI Silicone Grease)



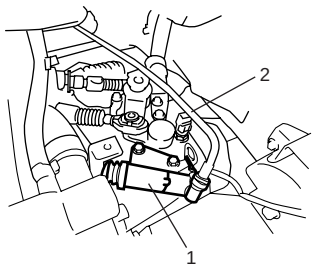
I4RS0B530006-01

Clutch Operating Cylinder Removal and Installation

S7RS0B5306010

Removal

1) Clean around brake master cylinder reservoir cap and take out fluid with syringe or such from brake master cylinder reservoir.
2) Disconnect clutch fluid pipe (2) from operating cylinder referring to “Clutch Fluid Pipe Removal and Installation”.
3) Remove clutch operating cylinder (1).



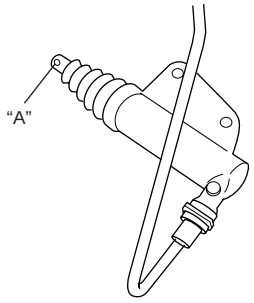
I4RS0A530010-01

Installation

Reverse removal procedure for installation noting the following.

- Apply grease to push rod tip.

  “A”: Grease 99000–25100 (SUZUKI Silicone Grease)



I4RS0A530011-01

- Tighten clutch operating cylinder bolt to specified torque.

  Tightening torque
  Clutch operating cylinder bolt: 23 N·m (2.3 kgf-m, 17.0 lb-ft)

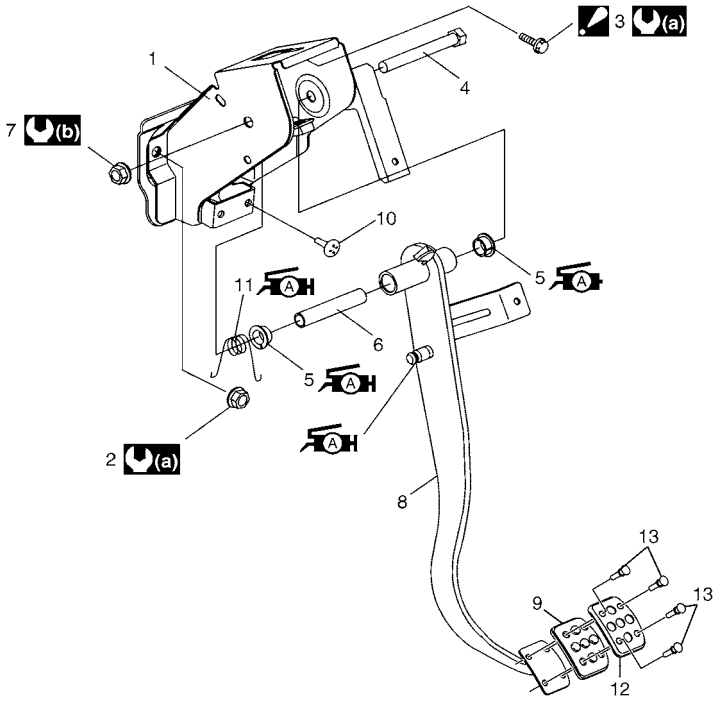
Clutch Operating Cylinder Inspection

S7RS0B5306011

Check operating cylinder for damage and fluid leakage. If malfunction is found, replace clutch operating cylinder.

Clutch Pedal and Clutch Pedal Bracket Components

S7RS0B5306012



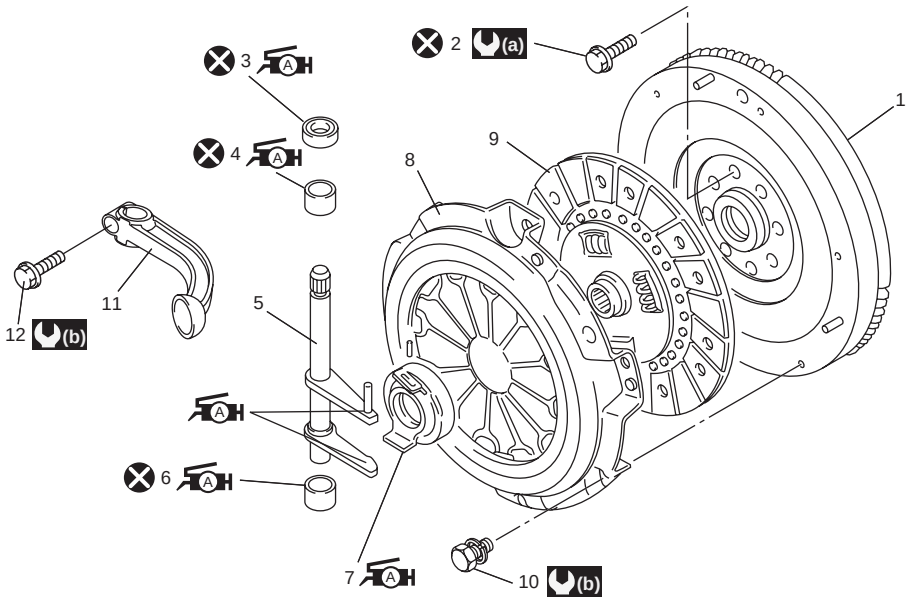
I6RS0C530005-01

1. Clutch pedal bracket	9. Pedal pad
2. Pedal bracket nut	10. Cushion
3. Pedal bracket bolt : Pedal bracket bolt must be tighten after pedal bracket nut.	11. Return spring : Apply grease 99000-25011 to inside of spring.
4. Pedal shaft bolt	12. Pedal cover plate
A H 5. Pedal bush : Apply grease 9900-25011 to outside of bush.	13. Pedal plate cushion
6. Pedal shaft spacer	(a) : 13 N·m (1.3 kgf-m, 9.5 lb-ft)
7. Pedal shaft nut	(b) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)

8. Clutch pedal : Apply grease 99000-25011 to outside surface of pin.	

Clutch Cover, Clutch Disc and Flywheel Components

S7RS0B5306013



I4RS0A530013-02

1. Flywheel	9. Clutch disc
2. Flywheel bolt	10. Clutch cover bolt
3. Clutch release shaft seal : Apply grease 99000-25011 to seal lip.	11. Release arm
4. Clutch release shaft No.2 bush : Apply grease 99000-25011 to bush inside.	12. Release arm bolt
5. Clutch release shaft : Apply grease 99000-25011 to the end of release shaft arm.	(a) : 70 N·m (7.0 kgf-m, 51.0 lb-ft)
6. Clutch release shaft No.1 bush : Apply grease 99000-25011 to bush inside.	(b) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)
7. Release bearing : Apply grease 99000-25011 to joint of bearing and release shaft and also bearing inside.	Do not reuse.
8. Clutch cover	

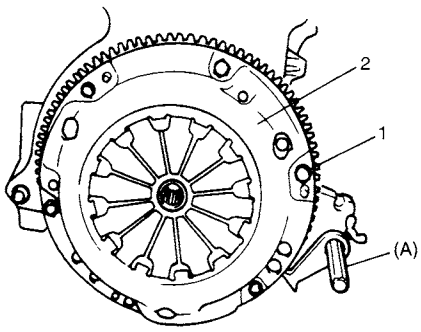
Clutch Cover, Clutch Disc and Flywheel Removal and Installation

S7RS0B5306014

Removal

1) Dismount manual transaxle assembly referring to “Manual Transaxle Unit Dismounting and Remounting in Section 5B”.
2) Hold flywheel with special tool and remove clutch cover bolts (1), clutch cover (2) and clutch disc.

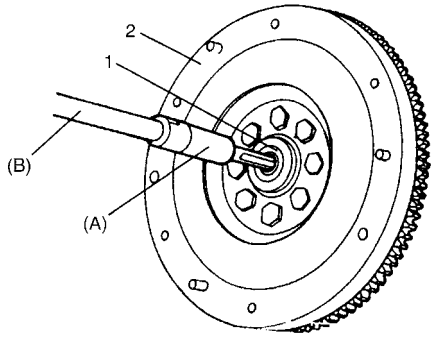
Special tool
(A): 09924–17811



I4RS0A530014-01

3) Pull out input shaft bearing (1) from flywheel (2), use the following special tool if necessary.

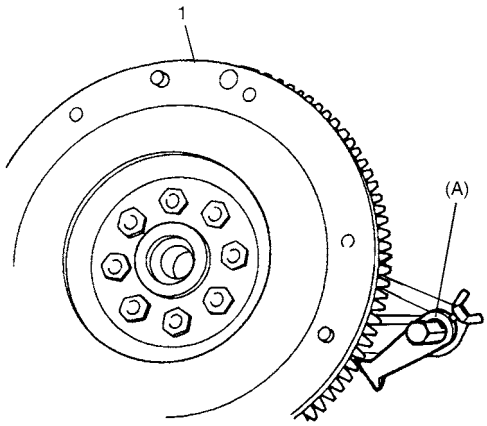
Special tool
(A): 09921–26020
(B): 09930–30104



I2RH01530023-01

4) Remove flywheel (1) from crank shaft using special tool.

Special tool
(A): 09924–17811



I4RS0A530015-02

Installation

⚠ CAUTION

Do not reuse flywheel bolts. Otherwise, bolts may loosen. Be sure to use new bolts with pre-coated adhesive.

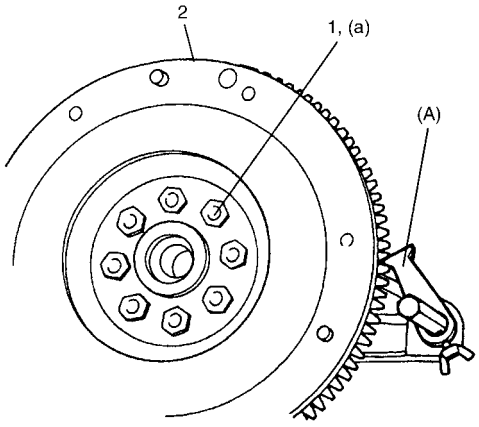
NOTE

Before assembling, make sure that flywheel surface and pressure plate surface have been cleaned and dried thoroughly.

1) Install flywheel (2) to crankshaft and tighten new bolts (1) to specification.

Special tool
(A): 09924–17811

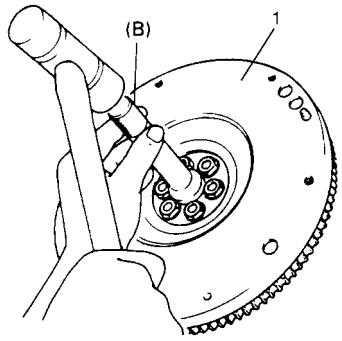
Tightening torque
Flywheel bolt (a): 70 N·m (7.0 kgf-m, 51.0 lb-ft)



I2RH01530024-01

2) Using special tool, install input shaft bearing to flywheel (1).

Special tool
(B): 09925–98210



I4RS0A530016-01

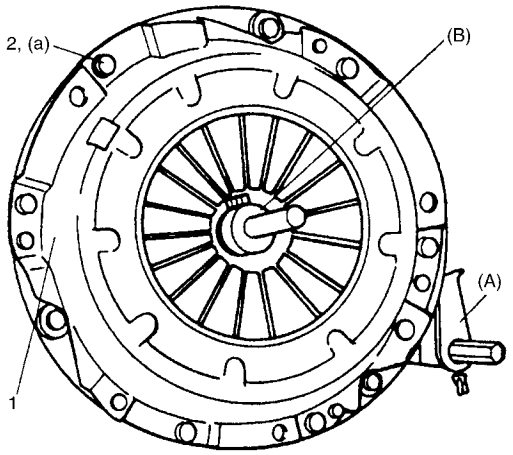
3) Aligning clutch disc to flywheel center using special tool, install clutch cover (1) and bolts (2). Then tighten bolts (2) to specification.

NOTE

- **While tightening clutch cover bolts, compress clutch disc with special tool (clutch center guide) by hand so that disc is centered.**
- **Tighten cover bolts little by little evenly in diagonal order.**

Special tool
(A): 09924–17811
(B): 09923–36320

Tightening torque
Clutch cover bolt (a): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



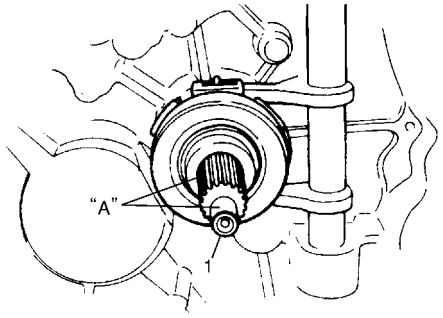
I4RS0A530017-01

4) Slightly apply grease to input shaft (1), then join manual transaxle assembly with engine referring to "Manual Transaxle Unit Dismounting and Remounting in Section 5B".

"A": Grease 99000–25210 (SUZUKI Super Grease I)

NOTE

When inserting transaxle input shaft to clutch disc, turn crankshaft little by little to match the splines.

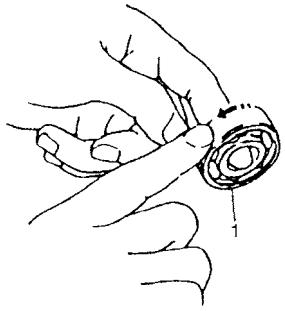


I4RS0A530018-01

Clutch Cover, Clutch Disc and Flywheel Inspection

S7RS0B5306015

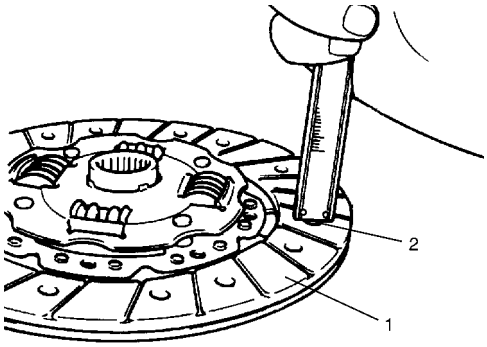
Input Shaft Bearing
Check bearing (1) for smooth rotation and replace it if abnormality is found.



I3RM0A530014-01

Clutch Disc
Measure depth of rivet head depression, i.e. distance between rivet head and facing surface.
If depression is found to have reached service limit at any of rivet holes (2), replace clutch disc assembly (1).

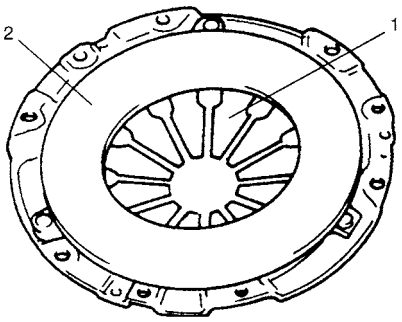
Rivet head depth
Standard: 1.65 – 2.25 mm (0.06 – 0.09 in.)
Limit: 0.5 mm (0.02 in.)



I4RS0A530019-01

Clutch Cover

1) Check diaphragm spring (1) for abnormal wear or damage.
2) Inspect pressure plate (2) for wear or heat spots.
3) If abnormality is found, replace clutch cover. Do not disassemble it into diaphragm spring and pressure plate.



I3RM0A530015-01

Flywheel

Check surface contacting clutch disc for abnormal wear or heat spots. Replace or repair as required.

Clutch Release System Removal and Installation

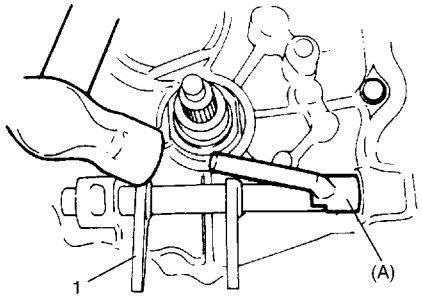
S7RS0B5306016

Removal

1) Remove release arm by loosening its bolt.
2) Take out release bearing by turning release shaft (1).
3) Drive out No.2 bush using special tool and hammer. Release shaft seal will also be pushed out.

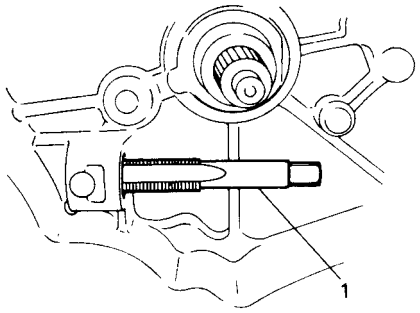
Special tool
(A): 09922–46010

4) Remove release shaft (1).



I4RS0A530020-01

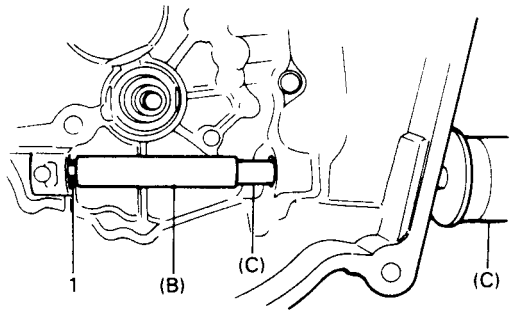
5) Install tap (M16 X 1.5) (1) to clutch release shaft No.1 bush.



IYSY01531016-01

6) Pull No.1 bush out using tap (1) and special tools.

Special tool
(B): 09923–46020
(C): 09930–30104



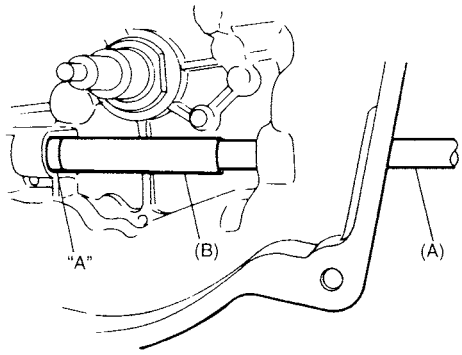
IYSY01531017-01

Installation

1) Drive in a new No.1 bush using special tools and hammer, and then apply grease to bush inside.

Special tool
(A): 09943–88211
(B): 09923–46030

"A": Grease 99000–25011 (SUZUKI Super Grease A)



I3RM0A530016-01

2) Install release shaft.
3) Apply grease to No.2 bush (1) inside and press-fit it using the same special tool as in removal.

"A": Grease 99000–25011 (SUZUKI Super Grease A)

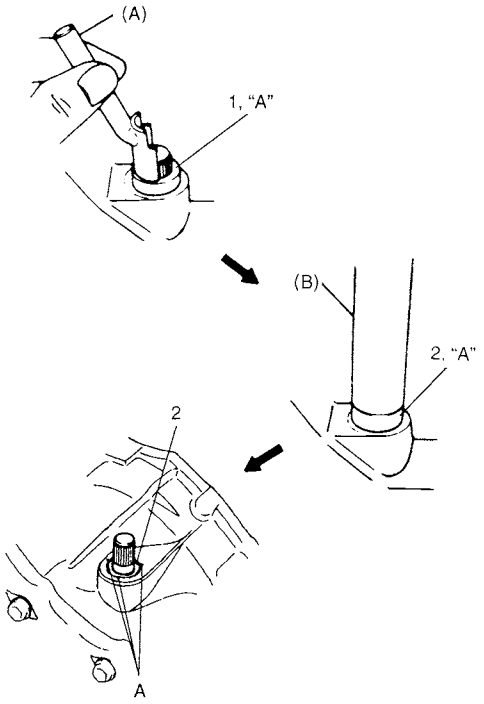
Special tool
(A): 09922–46010

4) Coat grease to release shaft seal (2) lip and then install it till it is flush with case surface. Use special tool for this installation and face seal lip downward (inside).

"A": Grease 99000–25011 (SUZUKI Super Grease A)

Special tool
(B): 09925–98221

5) Caulk seal at A using caulking tool and hammer.



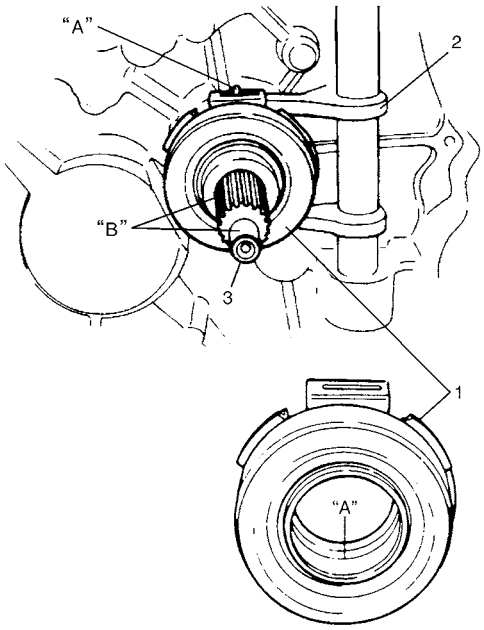
I3RM0A530017-01

6) Apply grease to release bearing inside and release shaft (2), then set release bearing (1).

"A": Grease 99000–25011 (SUZUKI Super Grease A)

7) Apply small amount of grease to input shaft (3) spline (0.3 g (0.01 oz)) and front end (0.15 g (0.005 oz)) as well.

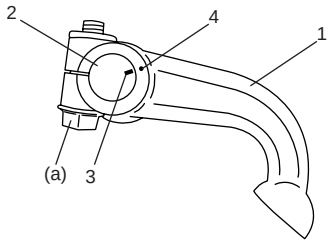
"B": Grease 99000–25210 (SUZUKI Super Grease I)



I4RS0A530021-01

8) Set release arm (1) to release shaft (2) aligning punch mark (4) of release arm and punch mark (3) of release shaft, then tighten bolt to specified torque.

Tightening torque
Release lever bolt (a): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



I4RS0A530022-01

Clutch Release System Inspection

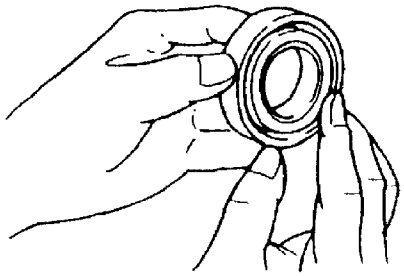
S7RS0B5306017

Clutch Release Bearing

Check clutch release bearing for smooth rotation. If abnormality is found, replace it.

⚠ CAUTION

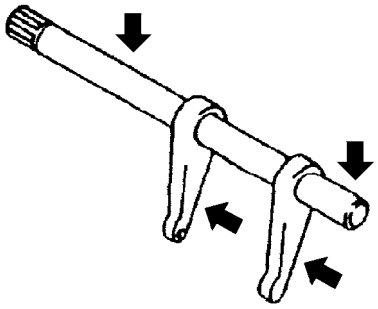
Do not wash release bearing. Washing may cause grease leakage and consequential bearing damage.



I3RM0A530020-01

Clutch Release Shaft

Check clutch release shaft and its pin for deflection or damage.
If abnormality is found, replace it.



I3RM0A530021-01

Specifications

Tightening Torque Specifications

S7RS0B5307001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
CPP switch lock nut	7.5	0.75	5.5	☞
Clutch operating cylinder bolt	23	2.3	17.0	☞
Flywheel bolt	70	7.0	51.0	☞
Clutch cover bolt	23	2.3	17.0	☞
Release lever bolt	23	2.3	17.0	☞

NOTE

The specified tightening torque is also described in the following.
“Clutch Fluid Pipe and Hose Components”
“Clutch Pedal and Clutch Pedal Bracket Components”
“Clutch Cover, Clutch Disc and Flywheel Components”

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Special Tools and Equipment

Recommended Service Material

S7RS0B5308001

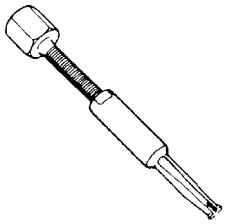
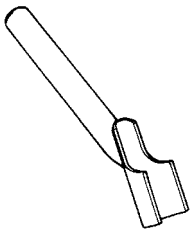
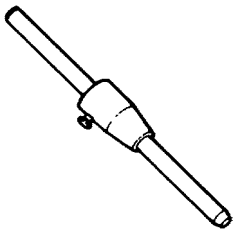
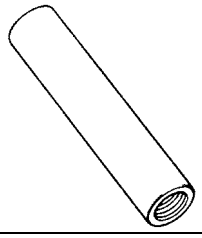
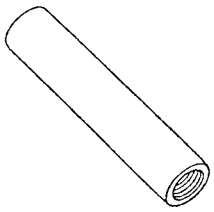
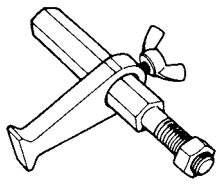
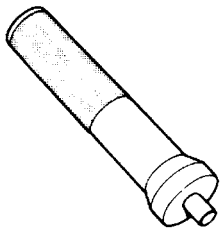
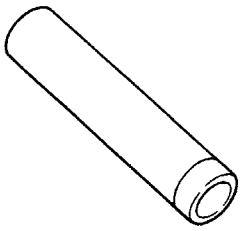
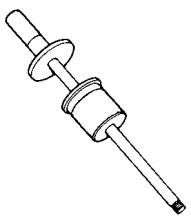
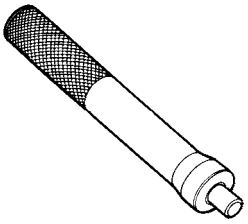
Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI Super Grease A	P/No.: 99000–25011	☞ / ☞ / ☞ / ☞
	SUZUKI Silicone Grease	P/No.: 99000–25100	☞ / ☞
	SUZUKI Super Grease I	P/No.: 99000–25210	☞ / ☞

NOTE

Required service material is also described in the following.
“Clutch Fluid Pipe and Hose Components”
“Clutch Pedal and Clutch Pedal Bracket Components”
“Clutch Cover, Clutch Disc and Flywheel Components”

Special Tool

S7RS0B5308002

09921–26020 Bearing remover ☞ 	09922–46010 Clutch bush remover ☞ / ☞ 
09923–36320 Clutch center guide (15 mm) ☞ 	09923–46020 Joint pipe ☞ 
09923–46030 Joint pipe ☞ 	09924–17811 Flywheel holder ☞ / ☞ / ☞ / ☞ 
09925–98210 Input shaft bearing installer ☞ 	09925–98221 Bearing installer ☞ 
09930–30104 Sliding shaft ☞ / ☞ 	09943–88211 Pinion bearing installer ☞ 

Section 6

Steering

CONTENTS

Precautions

Precautions

Precautions on Steering

S7RS0B6000001

Air Bag Warning
Refer to “Air Bag Warning in Section 00”.

Air Bag System Service Warning
Refer to “Air Bag System Service Warning in Section 00”.

Precautions for Steering Diagnosis
Refer to “Precautions for Steering Diagnosis in Section 6A”.

Service Precautions of Steering Wheel and Column
Refer to “Service Precautions of Steering Wheel and Column in Section 6B”.

P/S System Note
Refer to “Steering System Note in Section 6C”.

Steering General Diagnosis

Precautions

Precautions for Steering Diagnosis

S7RS0B6100001

Since the problems in steering involve several systems, they must all be considered when diagnosing a complaint. To avoid using the wrong symptom, always road test the vehicle first. Proceed with the following preliminary inspection and correct any defects which are found.

1) Inspect tires for proper pressure and uneven wear.
2) Raise vehicle on a hoist and inspect steering system for loose or damaged parts.
3) Spin front wheels. Inspect for out-of-round tires, out-of-balance tires, bent rims, loosen and/or rough wheel bearings.

Diagnostic Information and Procedures

Steering Symptom Diagnosis

S7RS0B6104001

Condition	Possible cause	Correction / Reference Item
Hard steering	Tire not adequately inflated	*Inflate tires to proper pressure.*
	Malfunction of power steering system	*Check and correct.*
	Bind in tie-rod end ball studs or lower ball joints	*Replace tie-rod end or front suspension arm.*
	Disturbed front wheel alignment	*Check and adjust front wheel alignment.*
	Bind in steering column	*Repair or replace steering column.*
	Rack and pinion adjustment	*Check and adjustment rack and pinion torque.*
Too much play in steering	Wheel bearings worn	*Replace wheel bearing.*
	Loose steering gear case bolts	*Tighten gear case bolts.*
	Faulty steering gear case assembly	*Replace steering gear case assembly.*
	Worn steering shaft joints	*Replace joint.*
	Worn tie-rod ends or tie-rod inside ball joints	*Replace tie-rod end or tie-rod.*
	Worn lower ball joints	*Replace front suspension control arm.*
	Rack and pinion adjustment	*Check and adjustment rack and pinion torque.*
Poor return ability	Bind in tie-rod end ball studs	*Replace tie-rod end.*
	Bind in ball joints	*Replace front suspension control arm.*
	Bind in steering column	*Repair or replace steering column.*
	Disturbed front end alignment	*Check and adjust front end alignment.*
	Faulty steering gear case assembly	*Replace steering gear case assembly.*
	Tires not adequately inflated	*Adjust tire pressure.*
	Rack and pinion adjustment	*Check and adjustment rack and pinion torque.*
Rack and pinion noise (Rattle or chuckle)	Loose steering gear case bolts	*Tighten steering gear case bolts.*
	Rack and pinion adjustment	*Check and adjustment rack and pinion torque.*
	Faulty steering gear case assembly	*Replace steering gear case assembly.*
	Broken or other wise damaged wheel bearing(s)	*Replace wheel bearing(s).*
Wander or poor steering stability	Mismatched or uneven tires	*Replace or inflate tires to proper pressure.*
	Loosen ball joints and tie-rod ends	*Replace suspension control arm or tie-rod end.*
	Faulty struts or mountings	*Replace strut or repair mounting.*
	Loose stabilizer bar	*Tighten or replace stabilizer bar or bush.*
	Broken or sagging springs	*Replace spring.*
	Rack and pinion adjustment	*Check and adjustment rack and pinion torque.*
	Disturbed front wheel alignment	*Check and adjust front wheel alignment.*
	Faulty steering gear case assembly	*Replace steering gear case assembly.*
Erratic steering when braking	Worn wheel bearing(s)	*Replace wheel bearing(s).*
	Broken or sagging spring(s)	*Replace coil spring(s).*
	Wheel tires are inflated unequally	*Inflate tires to proper pressure.*
	Disturbed front wheel alignment	*Check and adjust front wheel alignment.*
	Brakes not working in unison	*Check and repair brake system.*
	Leaking caliper	*Repair or replace caliper.*
	Warped discs	*Replace brake disc.*
	Badly worn brake pads	*Replace brake pads.*

Steering Wheel and Column

Precautions

Service Precautions of Steering Wheel and Column

S7RS0B6200001

For service precautions, refer to “Precautions on Service and Diagnosis of Air Bag System in Section 8B”.

Service and Diagnosis
For diagnosis and servicing, refer to “Precautions on Service and Diagnosis of Air Bag System in Section 8B”.

Disabling Air Bag System
For disabling air bag system, refer to “Disabling Air Bag System in Section 8B”.

Enabling Air Bag System
For enabling air bag system, refer to “Enabling Air Bag System in Section 8B”.

Handling and Storage
For handling and storage, refer to “Precautions on Handling and Storage of Air Bag System Components in Section 8B”.

Disposal
For disposal, refer to “Precautions on Disposal of Air Bag and Seat Belt Pretensioner in Section 8B”.

General Description

Steering Wheel and Column Construction

S7RS0B6201001

This double tube type steering column has the following three important features in addition to the steering function:

- The column is energy absorbing, designed to compress in a front-end collision.
- The ignition switch and lock are mounted conveniently on this column.
- With the column mounted lock, the ignition and steering operations can be locked to inhibit theft of the vehicle.

To insure the energy absorbing action, it is important that only the specified screws, bolts and nuts be used as designated, and that they are tightened to the specified torque. When the column assembly is removed from the vehicle, special care must be taken in handling it. Use of a steering wheel puller or a sharp blow on the end of the steering shaft, leaning on the assembly, or dropping the assembly could shear the plastic shear pins which maintain column length and position.
The driver air bag (inflator) module is one of the supplemental restraint (air bag) system components and is mounted to the center of the steering wheel. During certain frontal crashes, the air bag system supplements the restraint of the driver’s and passenger’s seat belts by deploying the air bags. The air bag (inflator) module should be handled with care to prevent accidental deployment. When servicing, be sure to observe “Precautions on Service and Diagnosis of Air Bag System in Section 8B”.

Diagnostic Information and Procedures

Checking Steering Column for Accident Damage

S7RS0B6204001

NOTE

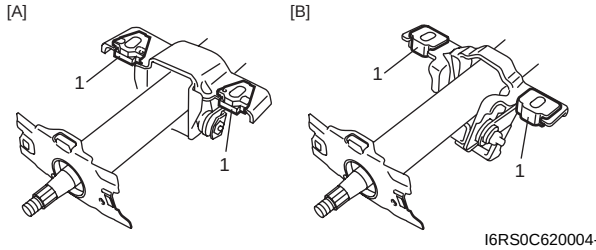
Vehicles involved in accidents resulting in body damage, where steering column has been impacted or air bag deployed may have a damaged or misaligned steering column.

Checking Procedure

NOTE

The steering column used in each vehicle is one of the two types as shown.

1) Check that two capsules (1) are attached to steering column bracket securely. If found loose, replace steering column assembly.



I6RS0C620004-01

[A]: Type A	[B]: Type B

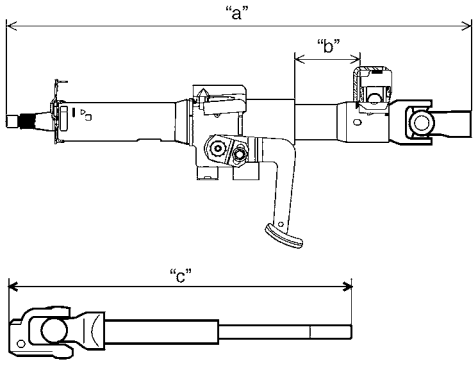
2) Take measurement “a”, “b” and “c” as shown.
If it is shorter than specified length, replace steering column assembly with new one.

Type A

Power steering column length
“a”: 459 ± 2 mm (18.1 ± 0.08 in.)
“b”: 64.1 ± 1 mm (2.5 ± 0.03 in.)
“c”: 306.7 ± 1 mm (12.0 ± 0.03 in.)

Type B

Power steering column length
“a”: 466 ± 2 mm (18.3 ± 0.08 in.)
“b”: 60.0 ± 1 mm (2.4 ± 0.03 in.)
“c”: 300.5 ± 1 mm (11.8 ± 0.03 in.)



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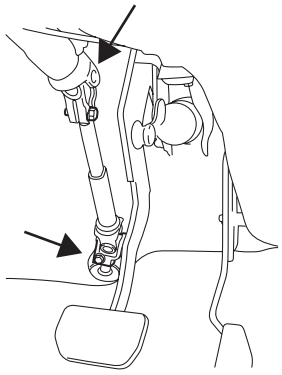
3) Check steering shaft joints and shaft for any damages such as crack, breakage, malfunction or excessive play.
If anything is found faulty, replace as lower shaft assembly or steering column assembly.



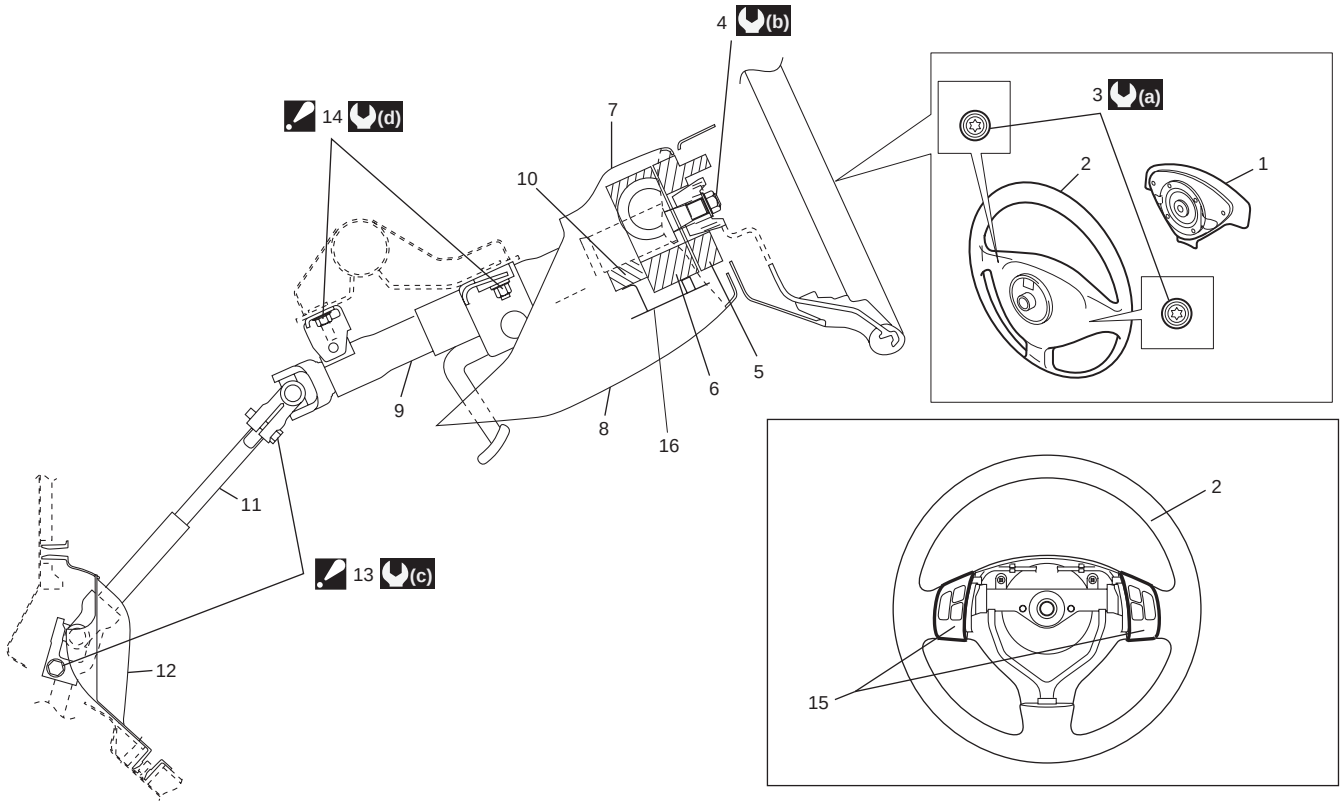
I4RS0A620003-01

4) Check steering shaft for smooth rotation.
If found defective, replace as steering column assembly.
5) Check steering shaft and steering column for bend, cracks or deformation.
If found defective, replace.

Repair Instructions

Steering Wheel and Column Construction

S7RS0B6206001



I4RS0B620001-04

1. Driver air bag (inflator) module	8. Steering column lower cover	15. Audio control switch
2. Steering wheel	9. Steering column	16. Knee protector plate
3. Driver air bag (inflator) module mounting bolt	10. Steering lock assembly (ignition switch)	(a) : 9 N·m (0.9 kgf-m, 6.5 lb-ft)
4. Steering wheel nut	11. Steering lower shaft	(b) : 33 N·m (3.3 kgf-m, 24 lb-ft)
5. Contact coil cable assembly	12. Steering joint cover	(c) : 25 N·m (2.5 kgf-m, 18 lb-ft)
6. Wiper switch and lighting switch	13. Upper and lower joint bolt : After tightening lower joint bolt, tighten upper joint bolt.	(d) : 14 N·m (1.4 kgf-m, 10.5 lb-ft)
7. Steering column upper cover	14. Steering column mounting nut : After tightening lower nut, tighten upper nut.	

Steering Wheel Removal and Installation

S7RS0B6206002

⚠ CAUTION

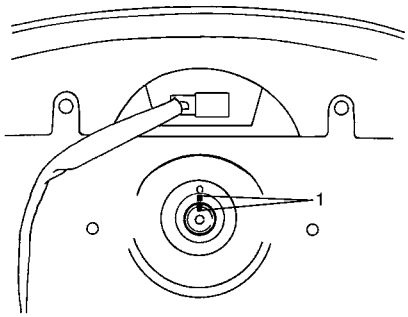
Do not turn the contact coil more than allowable number of turns (about two and a half turns from the center position clockwise or counterclockwise respectively) with steering wheel removed, or coil will break.

Removal

⚠ CAUTION

Do not hammer the end of the shaft. Hammering it will loosen the plastic shear pins which maintain the column length and impair the collapsible design of the column.

1) Disconnect negative (–) cable at battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove driver air bag (inflator) module from steering wheel. Refer to “Driver Air Bag (Inflator) Module Removal and Installation in Section 8B”.
4) Disconnect horn connector and audio control switch connector, if equipped.
5) Remove steering shaft nut and then make alignment marks (1) on steering wheel and shaft for a guide during reinstallation.



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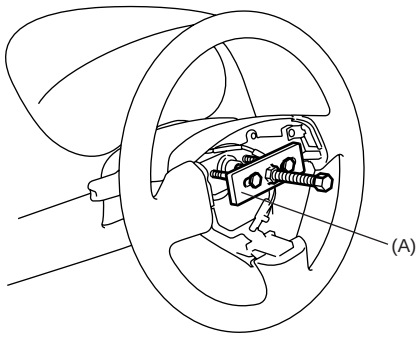
6) Remove steering wheel using special tool.

Special tool
(A): 09944–36011



I4RS0A620006-01

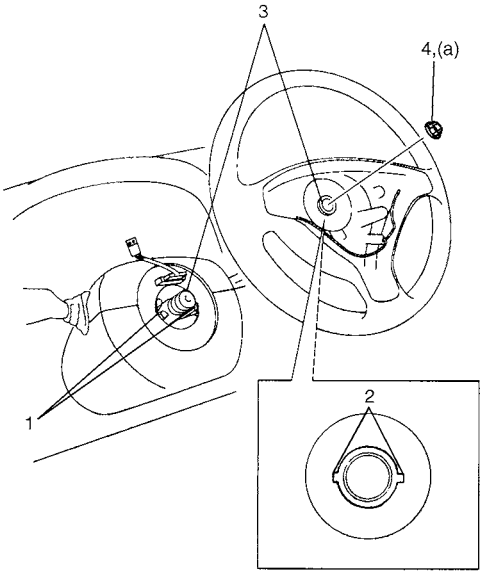
Installation

⚠ CAUTION

Following 2 Steps (Step 1) and 2)) are prerequisite for installation of steering wheel. If steering wheel has been installed without these 2 Steps, contact coil will break when steering wheel is turned.

1) Check that vehicle’s front tires are at straight-ahead position and contact coil is centered. If contact coil is turned after removing steering wheel, center contact coil referring to “Centering Contact Coil Cable Assembly”.
2) Install steering wheel to steering shaft with 2 grooves (1) on contact coil fitted in 2 lugs (2) in the back of steering wheel and also aligning marks (3) on steering wheel and steering shaft.
3) Tighten steering shaft nut (4) to specified torque.

Tightening torque
Steering shaft nut (a): 33 N·m (3.3 kgf-m, 24.0 lb-ft)



I4RS0A620007-01

4) Connect horn connector and audio control switch connector, if necessary.
5) Install driver air bag (inflator) module to steering wheel. Refer to “Driver Air Bag (Inflator) Module Removal and Installation in Section 8B”.
6) Connect negative (–) battery cable.
7) Enable air bag system referring to “Enabling Air Bag System in Section 8B”.

Contact Coil Cable Assembly Removal and Installation

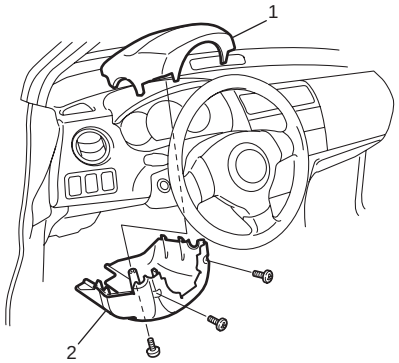
S7RS0B6206003

⚠ CAUTION

Do not turn contact coil more than allowable number of turns (about two and a half turns from the center position clockwise or counterclockwise respectively), or coil will break.

Removal

1) Disconnect negative (–) cable at battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove steering wheel from steering column referring to “Steering Wheel Removal and Installation”.
4) Remove steering column lower cover (2) and upper cover (1).



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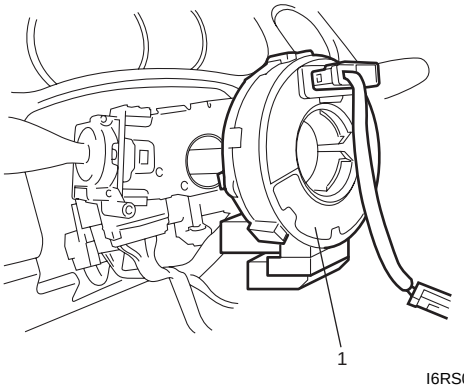
5) Remove contact coil cable assembly (1) from steering column.



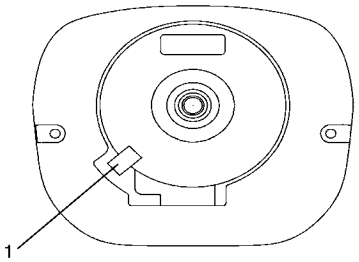
I6RS0B620001-01

Installation

1) Check to make sure that vehicle’s front tires are set at straight-ahead position and then ignition switch is at LOCK position.
2) Install contact coil cable assembly to steering column securely.

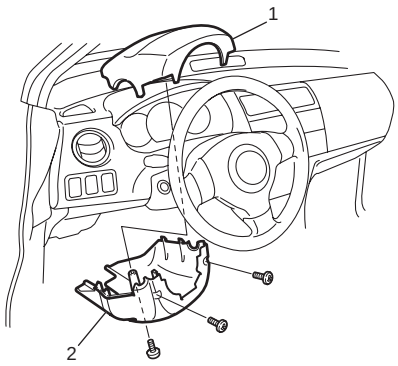
NOTE

New contact coil cable assembly is supplied with contact coil set and held at its center position with a lock pin (1). Remove this lock pin after installing contact coil cable assembly to steering column.



I4RS0A620010-01

3) Install steering column upper cover (1) and lower cover (2).



I4RS0B620002-04

4) Install steering wheel to steering column. Refer to “Steering Wheel Removal and Installation”.
5) Connect battery negative (–) cable.
6) Enable air bag system referring to “Enabling Air Bag System in Section 8B”.

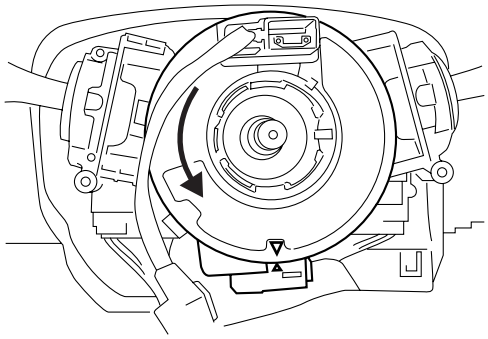
Centering Contact Coil Cable Assembly

S7RS0B6206004

1) Check that vehicle's wheels (front tires) are set at straight-ahead position.
2) Check that ignition switch is at LOCK position.
3) Turn contact coil counterclockwise slowly with a light force till contact coil will not turn any further.

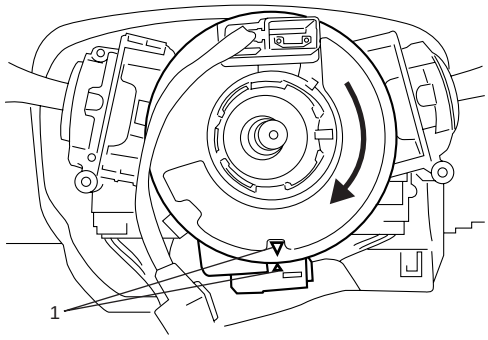
NOTE

Contact coil can turn about 5 turns at the maximum, that is, if it is at the center position, can turn about two and a half turns both clockwise and counterclockwise.



I4RS0A620012-01

4) From the position where contact coil became unable to turn any further (it stopped), turn it back clockwise about two and a half rotations and align center mark with alignment mark (1).



I4RS0A620013-01

Contact Coil Cable Assembly Inspection

S7RS0B6206005

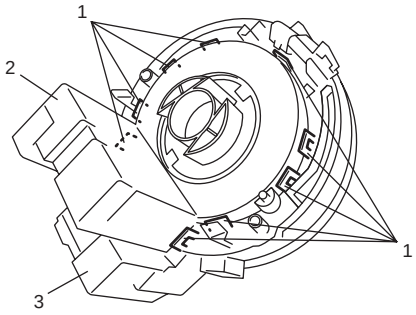
Refer to "Contact Coil Cable and Its Circuit Check in Section 8B".

Steering Angle Sensor Removal and Installation

S7RS0B6206011

Removal

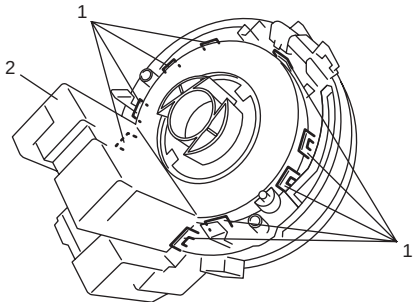
1) Remove steering wheel and contact coil cable assembly. Refer to "Steering Wheel Removal and Installation" and "Contact Coil Cable Assembly Removal and Installation".
2) Remove steering angle sensor (2) from contact coil cable assembly (3) while opening fitting parts (1) of contact coil cable assembly.



I6JB01620003-01

Installation

1) Install steering angle sensor (2) by fitting engagement parts (1) of contact coil cable assembly to claws of steering angle sensor as shown in figure.



I6JB01620004-01

2) Install contact coil cable assembly and steering wheel. Refer to "Contact Coil Cable Assembly Removal and Installation" and "Steering Wheel Removal and Installation".

Steering Angle Sensor Inspection

S7RS0B6206012

Refer to "Steering Angle Sensor Inspection in Section 4F".

Steering Column Removal and Installation

S7RS0B6206006

⚠ CAUTION

Once the steering column is removed from the vehicle, the column is extremely susceptible to damage.

- **Dropping the column assembly on its end could collapse the steering shaft or loosen the plastic shear pins which maintain column length.**
- **Leaning on the column assembly could cause it to bend or deform.**

Any of the damage could impair the column's collapsible design.
Steering column mounting nuts should not be loosened with steering shaft joint upper side bolt tightened as this could cause damage to shaft joint bearing.

NOTE

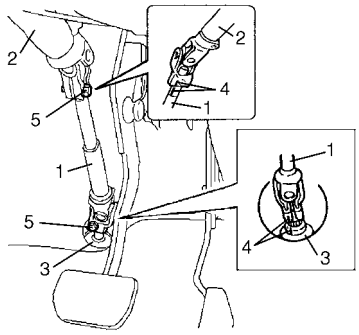
When servicing steering column or any column-mounted component, remove steering wheel. But when removing steering column simply to gain access to instrument panel components, leave steering wheel installed on steering column.

Removal

⚠ WARNING

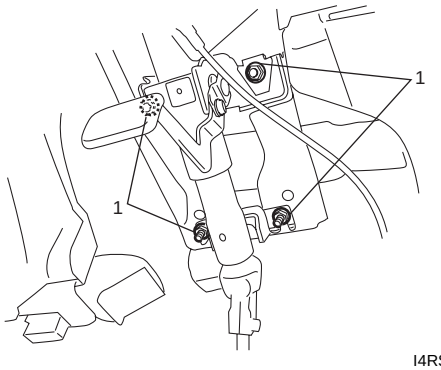
Never rest a steering column assembly on the steering wheel with the air bag (inflator) module face down and column vertical. Otherwise, personal injury may result.

1) Disconnect negative (–) cable at battery.
2) Disable air bag system. Refer to "Disabling Air Bag System in Section 8B".
3) Remove steering wheel and contact coil cable assembly referring to "Steering Wheel Removal and Installation" and "Contact Coil Cable Assembly Removal and Installation".
4) Detach lighting switch and wiper switch from steering column.
5) Remove immobilizer control module from steering column, referring to "Immobilizer Control Module (ICM) Removal and Installation in Section 10C".
6) Remove steering column hole cover.
7) Remove steering joint cover.
8) Make alignment marks (4) on lower shaft (1) and shaft joint of steering column (2) and lower shaft (1) and pinion shaft (3) for a guide during reinstallation.
9) Remove lower shaft joint bolts (5).
10) Remove steering lower shaft (1).



I4RS0A620016-01

11) Remove steering column mounting nuts (1).



I4RS0A620017-01

12) Remove steering column from vehicle.

Installation

⚠ CAUTION

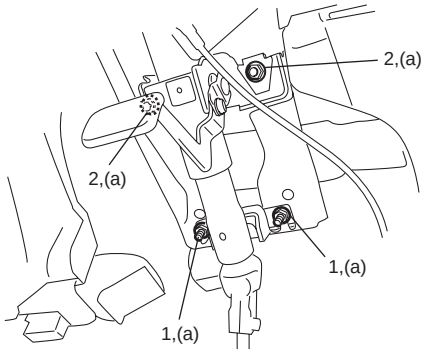
After tightening steering column mounting nuts, shaft joint bolts should be tightened. Wrong tightening order could cause a damage to shaft joint.

1) Be sure that front wheels are in straight.
2) Install steering column assembly to lower and upper brackets. Tighten steering column lower nuts (1) first and then upper nuts (2) to specifications as given below.

Tightening torque
Steering column nut (a): 14 N·m (1.4 kgf-m, 10.5 lb-ft)

NOTE

After installing tilt steering column, make sure that steering column moves backwards and forwards smoothly and stops when tilt lever is fixed.



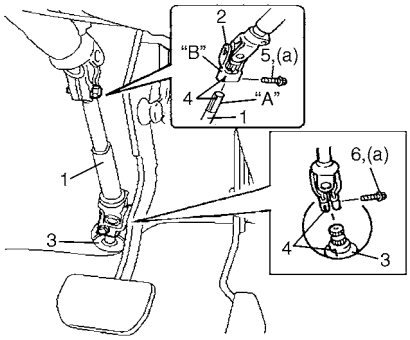
I4RS0B620009-02

3) Align flat part “A” of steering lower shaft (1) with bolt hole “B” of shaft joint (2) of column as shown. Then insert lower shaft into shaft joint of steering column with matching marks (4).
4) Insert lower shaft (1) into pinion shaft (3) with matching marks (4).
5) Tighten joint bolt (pinion shaft side) (6) to specified torque first and then joint bolt (steering column side) (5) to specified torque.

⚠ CAUTION

After tightening column nuts, tighten steering shaft upper joint bolt. Otherwise shaft joint bearing is damaged.

Tightening torque
Steering shaft joint bolt (a): 25 N·m (2.5 kgf-m, 18.5 lb-ft)



I6RS0C620003-01

6) Install steering joint cover.
7) Install immobilizer control module from steering column, referring to “Immobilizer Control Module (ICM) Removal and Installation in Section 10C”.
8) Install lighting switch and wiper switch to steering column.
9) Install contact coil cable assembly and steering wheel referring to “Contact Coil Cable Assembly Removal and Installation” and “Steering Wheel Removal and Installation”.
10) Install steering column hole cover.
11) Connect negative (–) battery to cable.
12) Enable air bag system referring to “Enabling Air Bag System in Section 8B”.

Steering Column Inspection

S7RS0B6206007

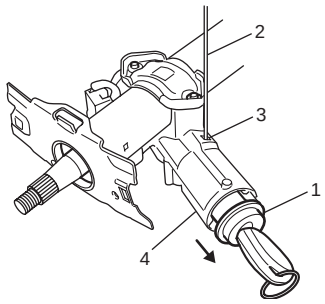
Check steering column for damage and operation referring to “Checking Steering Column for Accident Damage”.

Ignition Switch Cylinder Assembly Removal and Installation (Non- Keyless Start Model)

S7RS0B6206008

Removal

1) Disconnect negative (–) cable at battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove steering column upper and lower covers.
4) Remove immobilizer control module referring to “Immobilizer Control Module (ICM) Removal and Installation in Section 10C”.
5) Remove ignition switch cylinder assembly as follows.
   a) Turn ignition key to “ACC” position.
   b) Insert 2 mm (0.078 in.) rod (2) through hole (3) and push ignition switch cylinder lock.
   c) Detach ignition switch cylinder assembly (1) from steering lock assembly (4).



I5JB0A620025-01

Installation

1) Install ignition switch cylinder assembly as follows.
   a) Turn ignition key to “ACC” position.
   b) In this state, push ignition switch cylinder assembly into steering lock assembly till it clicks.
2) Install immobilizer control module referring to “Immobilizer Control Module (ICM) Removal and Installation in Section 10C”.
3) Install upper and lower cover and screws.
4) Connect negative (–) cable to battery.
5) Enabling air bag system referring to “Enabling Air Bag System in Section 8B”.
6) If ignition switch cylinder assembly (that is ignition key) has replaced, register ignition key transponder code to ECM referring to “Registration of the Ignition Key in Section 10C”.

Steering Lock Assembly (Ignition Switch) Removal and Installation

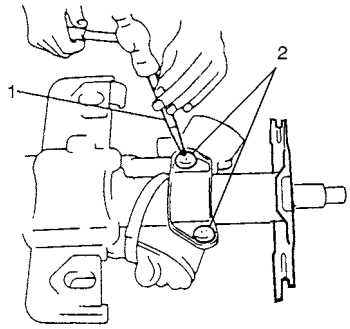
S7RS0B6206009

Removal

1) Remove steering column. Refer to “Steering Column Removal and Installation”.
2) Using center punch (1), loosen and remove steering lock mounting bolts (2).

NOTE

Use care not to damage aluminum part of steering lock body with center punch.

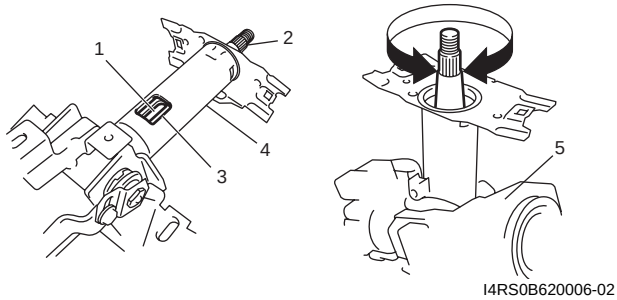


I4RS0B620005-02

3) Turn ignition key to “ACC” or “ON” position and remove steering lock assembly from steering column.

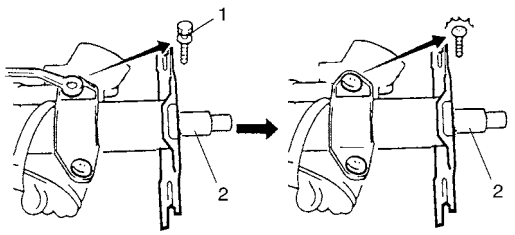
Installation

1) Position oblong hole (1) of steering shaft (2) in the center of hole (3) in column (4).
2) Turn ignition key to “ACC” or “ON” position and install steering lock assembly (5) onto column (4).
3) Now turn ignition key to “LOCK” position and pull it out.
4) Align hub on lock with oblong hole (1) of steering shaft (2) and rotate shaft to assure that steering shaft is locked.



I4RS0B620006-02

5) Tighten new bolts (1) until head of each bolt is broken off.
6) Turn ignition key to “ACC” or “ON” position and check to be sure that steering shaft (2) rotates smoothly. Also check for lock operation.



I4RS0B620007-02

7) Install steering column. Refer to “Steering Column Removal and Installation”.
8) If steering lock assembly has replaced, after completing installation, register ignition key transponder code in ECM referring to “Registration of the Ignition Key in Section 10C”.

Steering Lower Shaft Removal and Installation

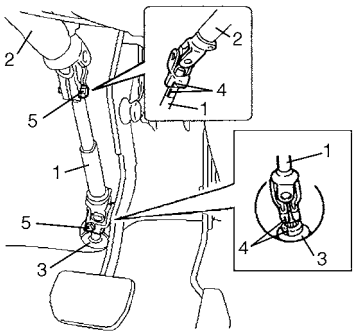
S7RS0B6206010

⚠ CAUTION

Never turn steering wheel while steering lower shaft is removed.
Should it have been turned and contact coil have got out of its centered position, it needs to be centered again. Also, turning steering wheel more than about two and a half turns will break contact coil.

Removal

1) Turn steering wheel so that vehicle’s front tires are at straight-ahead position.
2) Turn ignition switch to LOCK position and remove key.
3) Remove steering joint cover.
4) Make alignment marks (4) on lower shaft (1) and shaft joint of steering column (2) and lower shaft (1) and pinion shaft (3) for a guide during reinstallation.
5) Remove lower shaft joint bolts (5).
6) Remove steering lower shaft (1).

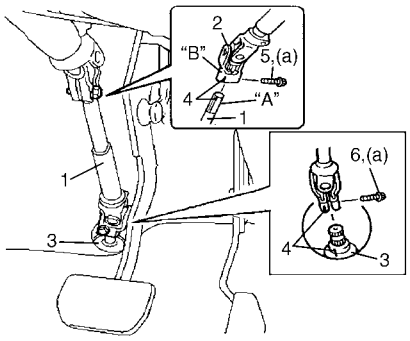


I4RS0A620020-01

Installation

1) Be sure that front wheels are in straight forward state.
2) Align flat part “A” of steering lower shaft (1) with bolt hole “B” of shaft joint (2) of column as shown. Then insert lower shaft into shaft joint of steering column with matching marks (4).
3) Insert lower shaft (1) into pinion shaft (3) with matching marks (4).
4) Tighten joint bolt (pinion shaft side) (6) to specified torque first and then joint bolt (steering column side) (5) to specified torque.

Tightening torque
Steering shaft joint bolt (a): 25 N·m (2.5 kgf-m, 18.5 lb-ft)



I6RS0C620002-01

Specifications

Tightening Torque Specifications

S7RS0B6207001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
Steering shaft nut	33	3.3	24.0	☞
Steering column nut	14	1.4	10.5	☞
Steering shaft joint bolt	25	2.5	18.5	☞ / ☞

NOTE

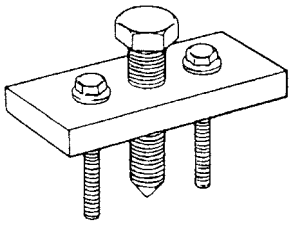
The specified tightening torque is also described in the following.
“Steering Wheel and Column Construction”

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Special Tools and Equipment

Special Tool

S7RS0B6208001

09944–36011 Steering wheel remover ☞		

Power Assisted Steering System

Precautions

Steering System Note

S7RS0B6300001

NOTE

All steering gear fasteners are important attaching parts in that they could affect the performance of vital parts and systems, and/or could result in major repair expense. They must be replaced with one of the same part number or with an equivalent part if replacement becomes necessary. Do not use a replacement part of lesser quality or substitute design. Torque values must be used as specified during reassembly to assure proper retention of these parts.

Precautions in Diagnosing Troubles

S7RS0B6300002

- Take a note of DTC indicated on the SUZUKI scan tool.
- Before inspection, be sure to read “Precautions for Electrical Circuit Service in Section 00” and understand what is written there.
- DTC C1122 (engine speed signal failure) is indicated when ignition switch is at ON position and engine is not running, but it means there is nothing abnormal if indication changes to a normal one when engine is started.
- As DTC is stored in memory of the P/S control module, be sure to clear memory after repair by performing the procedure described in “DTC Clearance”.

General Description

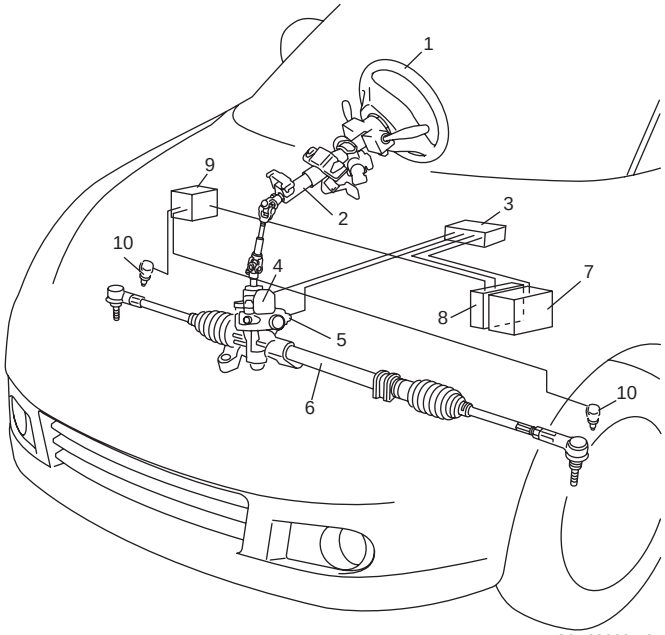
P/S System Description

S7RS0B6301001

This power steering (P/S) system consists of a P/S control module (3), a torque sensor (4), a motor (5). In this system, the P/S control module determines the level and direction of the assist force for the steering wheel (1) according to the signals from the torque sensor and vehicle speed signal from ECM. The P/S control module runs the motor so as to assist the operation of the steering wheel.

The P/S control module diagnoses troubles which may occur in the area including the following components when the ignition switch is ON and the engine is running. When the P/S control module detects any malfunction, it stops the motor operation.

- Torque sensor
- Vehicle speed signal
- Engine speed signal
- P/S motor
- P/S control module.



I7RS0B630001-01

2. Steering column	7. Battery	9. ABS/ESP® control module
6. Steering gear case assembly	8. ECM	10. Wheel speed sensor (right-front, left-front)

EPS Diagnosis General Description

S7RS0B6301002

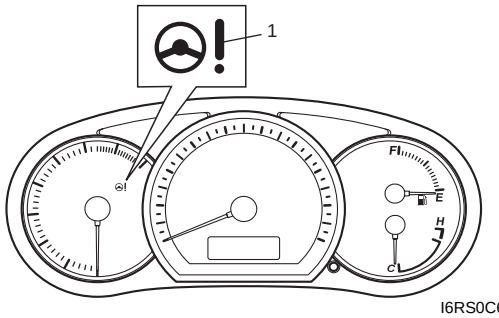
The P/S system in this vehicle is controlled by the P/S control module. The P/S control module has an on-board diagnostic system which detects a malfunction in this system. When diagnosing troubles, be sure to have full understanding of the outline of “On-Board Diagnostic System Description” and each item in “Precautions in Diagnosing Troubles”, and then execute diagnosis according to “EPS System Check”.

On-Board Diagnostic System Description

S7RS0B6301003

The P/S control module performs the on-board diagnosis (self-diagnosis) on the system and operates the “EPS” warning light (1) as follows.

- The “EPS” warning light lights when the ignition switch is turned to ON position (but the engine at stop) regardless of the condition of the P/S control system. This is only to check if the “EPS” warning light is operated properly.
- If the areas monitored by the P/S control module is free from any trouble after the engine start (while engine is running), the “EPS” warning light turns OFF.
- When the P/S control module detects a trouble which has occurred in the monitored areas the “EPS” warning light comes ON while the engine is running to warn the driver of such occurrence of the trouble and at the same time it stores the exact trouble area in memory inside of the P/S control module.



I6RS0C630002-01

Driving Cycle

A “Driving Cycle” consists of engine startup and engine shutoff.

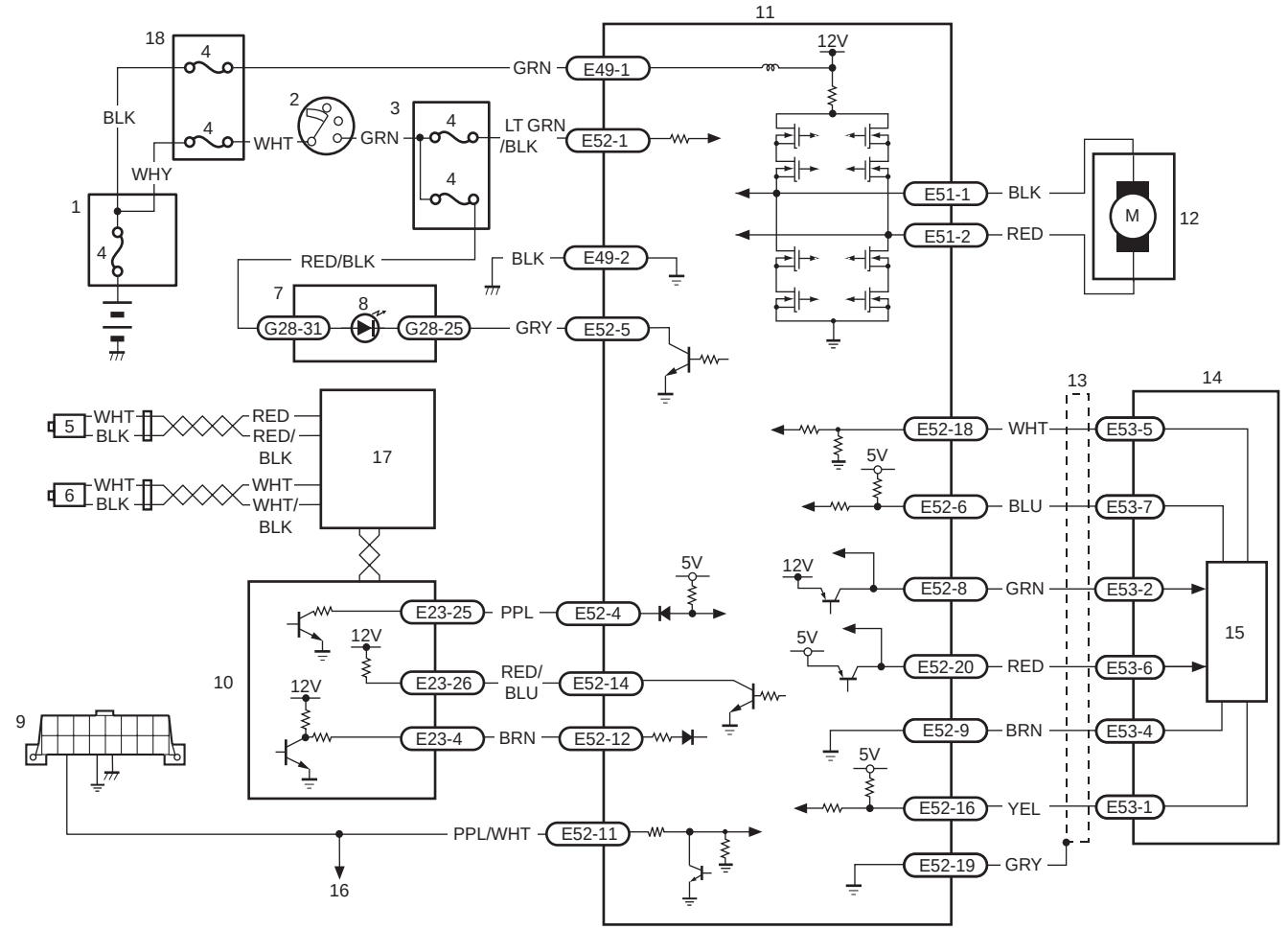
3 Driving Cycles Detection Logic

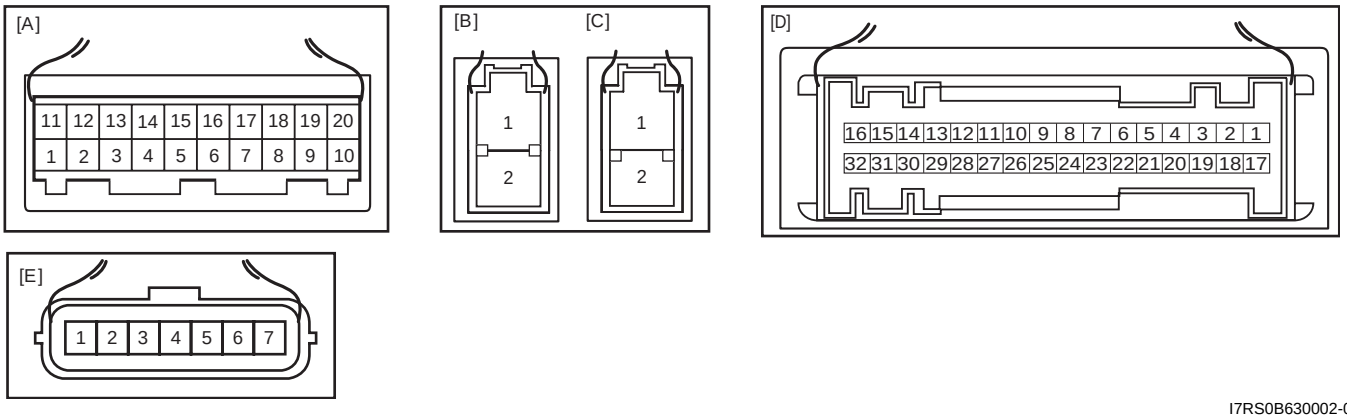
The malfunction detected in the first and second driving cycle is stored in P/S control module memory (in the form of pending DTC) but the “EPS” warning light does not light at these time. It lights up at the third detection of same malfunction also in the next driving cycle.

Schematic and Routing Diagram

EPS System Wiring Circuit Diagram

S7RS0B6302001





I7RS0B630002-01

[A]: Connector “E52” (viewed from harness side)	4. Fuse	12. P/S motor
[B]: Connector “E49” (viewed from harness side)	5. Left-front wheel speed sensor	13. Shield
[C]: Connector “E51” (viewed from harness side)	6. Right-front wheel speed sensor	14. Torque sensor
[D]: Connector “G28” (viewed from harness side)	7. Combination meter	15. Torque sensor amplifier
[E]: Connector “E53” (viewed from harness side)	8. “EPS” warning light	16. To ECM, BCM, Air bag SDM and ABS control module assembly
1. Main fuse box	9. Date link connector (DLC)	17. ABS/ESP® control module
2. Ignition switch	10. ECM	18. Individual circuit fuse box No.1
3. Junction block assembly	11. P/S control module	

Terminal Arrangement of P/S Control Module Coupler (Viewed from Harness Side)

Terminal	Circuit	Terminal	Circuit
E49-1	Main power supply for internal memory and EPS motor	E52-9	Ground for torque sensors
E49-2	Ground for P/S control module	E52-10	—
E51-1	Motor output 1	E52-11	Serial communication for data link connector
E51-2	Motor output 2	E52-12	Engine speed signal
E52-1	Ignition switch signal for P/S control module	E52-13	—
E52-2	—	E52-14	P/S operation signal (idle up signal)
E52-3	—	E52-15	—
E52-4	Vehicle speed signal	E52-16	Torque sensor internal failure signal
E52-5	“EPS” warning light	E52-17	—
E52-6	Torque sensor signal (Sub)	E52-18	Torque sensor signal (Main)
E52-7	—	E52-19	Ground for shield wire
E52-8	Main power supply for torque sensor	E52-20	5 V reference power supply for torque sensor

Diagnostic Information and Procedures

EPS System Check

S7RS0B6304001

⚠ WARNING

Carry out test drive in light traffic area to prevent an accident.

Refer to the following items for the details of each step.

Step	Action	Yes	No
1	☞ **Customer complaint analysis** 1) Perform customer complaint analysis referring to “Customer Complaint Analysis”. *Was customer complaint analysis performed?*	Go to Step 2.	Perform customer complaint analysis.
2	☞ **DTC check, record and clearance** 1) Check for DTC (including pending DTC) referring to “DTC Check”, Record and Clearance. *Is there any DTC(s)?*	Print DTC or write them down and clear them by referring to “DTC Clearance” and go to Step 3.	Go to Step 4.
3	☞ **Visual inspection** 1) Perform visual inspection referring to “Visual Inspection”. *Is there any faulty condition?*	Repair or replace malfunction part, and go to Step 11.	Go to Step 5.
4	☞ **Visual inspection** 1) Perform visual inspection referring to “Visual Inspection”. *Is there any faulty condition?*	Repair or replace malfunction part, and go to Step 11.	Go to Step 8.
5	☞ **Trouble symptom confirmation** 1) Confirm trouble symptom referring to “Trouble Symptom Confirmation”. *Is trouble symptom identified?*	Go to Step 6.	Go to Step 7.
6	☞ **Rechecking and record of DTC** 1) Recheck for DTC referring to “DTC Check”. *Is there any DTC(s)?*	Go to Step 9.	Go to Step 8.

Step	Action	Yes	No
7	☞ **Rechecking and record of DTC** 1) Recheck for DTC referring to “DTC Check”. *Is there any DTC(s)?*	Go to Step 9.	Go to Step 10.
8	☞ **Steering symptom diagnosis and P/S system symptom diagnosis** 1) Check and repair according to “Steering Symptom Diagnosis in Section 6A” and “P/S System Symptom Diagnosis”. *Are check and repair complete?*	Go to Step 11.	Check and repair malfunction part(s), and go to Step 11.
9	☞ **Troubleshooting for DTC** 1) Check and repair according to applicable DTC diag. flow. *Are check and repair complete?*	Go to Step 11.	Check and repair malfunction part(s), and go to Step 11.
10	☞ **Intermittent problems check** 1) Check for intermittent problems referring to “Intermittent Problems Check”. *Is there any faulty condition?*	Repair or replace malfunction part(s), and go to Step 11.	Go to Step 11.
11	☞ **Final confirmation test** 1) Clear DTC if any. 2) Perform final confirmation test referring to “Final Confirmation Test”. *Is there any problem symptom, DTC or abnormal condition?*	Go to Step 6.	End.

NOTE

- **As execution of “DTC Clearance” will clear all DTCs, be sure to record all DTCs before service.**
- **DTC C1122 is indicated when ignition switch is at ON position and engine is not running, it means that nothing is abnormal.**
- **Current DTC and history DTC can be identified by condition of the “EPS” warning light. “EPS” warning light operates as follows.**

	Current DTC is set. (Abnormality exists at present.)	**Only history DTC is set. (Faulty condition occurred once in the past, but normal condition is detected at present.)**	**Current and history DTC exist.**
“EPS” warning light after engine started	Remains ON.	Turns OFF.	Remains ON.

Step 1: Customer Complaint Analysis

Record details of the problem (failure, complaint) and how it occurred as described by the customer. For this purpose, use of such an inspection form will facilitate collecting information to the point required for proper analysis and diagnosis. Check if the problem described in “Customer questionnaire” occurs actually in the vehicle if necessary. (This step should be performed with the customer if possible.)

Customer problem inspection form (Example)

User name:	Model:	VIN:	
Date of issue:	Date Reg.	Date of problem:	Mileage:

Problem Symptoms	• Steering wheel feels heavy • Vehicle pulls to one side during straight driving • Poor recovery from turns • Too much play in steering • Abnormal noise while vehicle is running: from motor, from rack and pinion, other _____ • Other _____
Frequency of Occurrence	• Continuous/Intermittent (times a day, a month)/other _____
Conditions for Occurrence of Problem	• Vehicle at stop & ignition switch ON: • When starting: at initial start only/at every start/Other _____ • Vehicle speed while: while accelerating/while decelerating/at stop/ while turning/while running at constant speed/ other _____ • Road surface condition: Paved road/rough road/snow-covered road/other _____ • Chain equipment:
Environmental Condition	• Weather: fair/cloudy/rain/snow/other _____ • Temperature: °F (°C)
DTC	• First check: Normal code/malfunction code ( ) • Second check after driving test: Normal code/malfunction code ( )

I7RW01632004-02

NOTE

This form is a standard sample. It should be modified according to conditions characteristic of each market.

Step 2: DTC Check, Record and Clearance
First, check DTC, referring to “DTC Check”. If DTC is indicated, print it or write them down and then clear them by referring to “DTC Clearance”. DTC indicates malfunction that occurred in the system but does not indicate whether it exists now or it occurred in the past and the normal condition has been restored now. To check which case applies, check the symptom in question according to Step 5 and recheck DTC according to Step 6 and 7.
Attempt to diagnose a trouble based on DTC in this step only or failure to clear the DTC in this step will lead to incorrect diagnosis, trouble diagnosis of a normal circuit or difficulty in troubleshooting.

Step 3 and 4: Visual Inspection
As a preliminary step, be sure to perform visual check of the items that support proper function of the P/S system referring to “Visual Inspection”.

Step 5: Trouble Symptom Confirmation
Based on information obtained in “Step 1: Customer Complaint Analysis: ” and “Step 2: DTC Check, Record and Clearance: ”, confirm trouble symptoms. Also, reconfirm trouble symptom by performing test drive and turning steering wheel fully to right and left at stopped vehicle.

Step 6 and 7: Rechecking and Record of DTC
Refer to “DTC Check” for checking procedure.

Step 8: Steering Symptom Diagnosis and P/S System Symptom Diagnosis
Perform basic steering system check according to “Steering Symptom Diagnosis in Section 6A” first. When the end of the flow has been reached, check the parts of the system suspected as a possible cause referring to “P/S System Symptom Diagnosis” and based on symptoms appearing on the vehicle (symptoms obtained through steps of customer complaint analysis, trouble symptom confirmation and/or basic P/S system check) and repair or replace faulty parts, if any.

Step 9: Troubleshooting for DTC (See each DTC Diag. Flow)
Based on the DTC indicated in Step 6 or 7 and referring to the applicable DTC diag. flow, locate the cause of the trouble, namely in a sensor, switch, wire harness, connector, actuator, P/S control module or other part and repair or replace faulty parts.

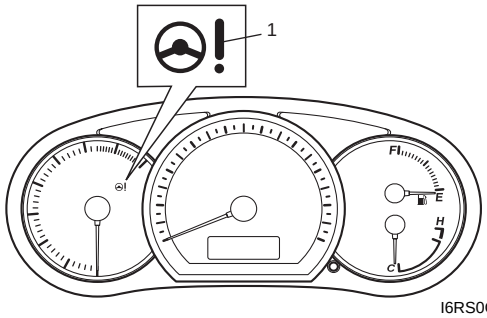
Step 10: Intermittent Problems Check
Check parts where an intermittent trouble is easy to occur (e.g., wire harness, connector, etc.), referring to “Intermittent and Poor Connection Inspection in Section 00” and related circuit of DTC recorded in Step 2.

Step 11: Final Confirmation Test
Confirm that the problem symptom has gone and the P/S system is free from any abnormal conditions. If what has been repaired is related to the DTC, clear the DTC once, perform DTC confirmation procedure and confirm that no DTC is indicated.

“EPS” Warning Light Check

S7RS0B6304002

1) Turn ignition switch to ON position (without engine running) and check if the “EPS” warning light (1) lights up. If the light dose not light up, go to ““EPS” Warning Light Does Not Come ON with Ignition Switch Turned ON before Engine Starts” of the diagnostic flows.
2) Start engine and check if the “EPS” warning light turns OFF. If light remains ON and no DTC is stored in P/S control module, go to ““EPS” Warning Light Remains ON Steady after Engine Starts” for troubleshooting.



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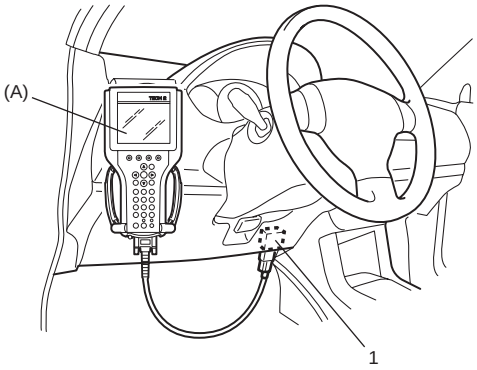
DTC Check

S7RS0B6304003

1) Turn ignition switch to OFF position.
2) Connect SUZUKI scan tool to data link connector (DLC) (1) located on underside of instrument panel at driver’s seat side.

Special tool
(A): SUZUKI scan tool



I4RS0B450003-01

3) Start engine.
4) Read DTC according to the instructions displayed on SUZUKI scan tool. For further details, refer to operator's manual for SUZUKI scan tool.

NOTE

- **If communication between SUZUKI scan tool and the vehicle can not be established, perform "Serial Data Link Circuit Check".**
- **DTC C1122 (engine speed signal failure) is indicated when ignition switch is at ON position and engine is not running, but it means there is nothing abnormal if indication changes to a normal one when engine is started.**

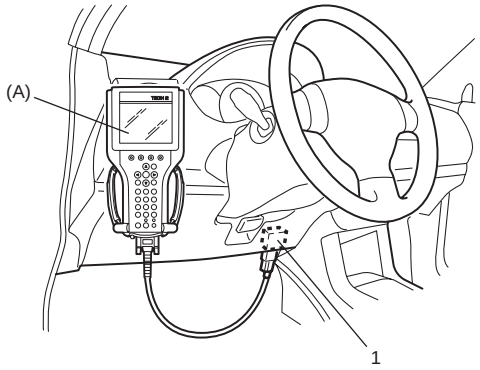
5) After completing the check, turn ignition switch to OFF position and disconnect SUZUKI scan tool from DLC.

DTC Clearance

S7RS0B6304004

1) Turn ignition switch to OFF position.
2) Connect SUZUKI scan tool to data link connector (DLC) (1) located on underside of instrument panel at driver's seat side.

Special tool
(A): SUZUKI scan tool



I4RS0B450003-01

3) Turn ignition switch to ON position.
4) Erase DTC according to the instructions displayed on SUZUKI scan tool. For further details, refer to operator's manual for SUZUKI scan tool.
5) After completing the clearance, turn ignition switch to OFF position and disconnect SUZUKI scan tool from DLC.

DTC Table

S7RS0B6304005

⚠ **CAUTION**

Be sure to perform the "EPS System Check" before starting troubleshooting corresponding to each DTC.

DTC No.	Detecting item	Detecting condition (DTC will set when detecting)	Trouble area	MIL
No CODES	Normal	—	—	—
☞ C1113	Steering torque sensor (Main and Sub) circuit correlation	Voltage difference between torque sensor main signal and sub signal is more than 0.6 V for 1 second continuously.	• Torque sensor signal circuit • Torque sensor • P/S control module	1 driving cycle
☞ C1114	Steering torque sensor reference power supply circuit	Circuit voltage of torque sensor 5 V reference power supply voltage is more than 5.7 V or less than 4.3 V for 1 second continuously.	• Torque sensor circuit • Torque sensor • P/S control module	1 driving cycle
☞ C1117	Steering torque sensor failure signal circuit low	Torque sensor internal failure signal circuit voltage is less than 1.7 V when ignition switch turned ON.	• Torque sensor signal circuit • Torque sensor • P/S control module	1 driving cycle
☞ C1118	Steering torque sensor failure signal circuit high	Torque sensor internal failure signal circuit voltage is more than 3.7 V for 1 second continuously.		1 driving cycle
☞ C1119	Steering torque sensor power supply circuit	Circuit voltage of torque sensor main power supply is less than 7.5 V for 1 second continuously.	• Torque sensor circuit • Torque sensor • P/S control module	1 driving cycle

DTC No.	Detecting item	Detecting condition (DTC will set when detecting)	Trouble area	MIL
☞ C1121	No vehicle speed signal (60 seconds or more)	Vehicle speed signal is 0 km/h even though engine speed is more than 4000 rpm for more than 60 seconds continuously (before elapse of 5 min from engine start) or vehicle speed signal is 0 km/h even though engine speed is more than 2500 rpm for more than 60 seconds continuously (after elapse of 5 min for engine start).	• Vehicle speed signal circuit • Wheel speed sensor • ECM • P/S control module • ABS control module • CAN communication circuit	Not applicable
☞ C1122	Engine speed signal	Engine speed signal is less than 220 rpm for more than 0.8 seconds. or Engine speed signal is less than 220 rpm for more than 20 seconds continuously even though vehicle speed signal is more than 50 km/h.	• Engine speed signal circuit • ECM • P/S control module • Vehicle speed signal	1 driving cycle
☞ C1123	No vehicle speed signal (30 seconds or more)	Vehicle speed signal is 0 km/h with continuously more than 3 driving cycles even though engine speed is more than 4000 rpm for more than 30 seconds continuously (before elapse of 5 min from engine start). or vehicle speed signal is 0 km/h with continuously more than 3 driving cycles even though engine speed is more than 2500 rpm for more than 30 seconds continuously (after elapse of 5 min for engine start).	• Vehicle speed signal circuit • Wheel speed sensor • ECM • P/S control module • ABS control module • CAN communication circuit	3 driving cycles
☞ C1124	Vehicle speed performance (Impossible deceleration)	Vehicle speed signal is less than 5 km/h for more than 5 seconds continuously with more than specified deceleration speed (–20 m/s^2) from over 20 km/h.		Not applicable
☞ C1141	P/S motor circuit voltage	Voltage between both motor drive circuits is more than 8.5 V or less than 0.2 V for 0.5 seconds continuously while motor is not drived.	• P/S motor circuit • P/S motor • P/S control module	1 driving cycle
☞ C1142	P/S motor circuit range / performance	Measured motor drive current is more than 10 A as compared with target motor drive current.		1 driving cycle

DTC No.	Detecting item	Detecting condition (DTC will set when detecting)	Trouble area	MIL
☞ C1143	P/S motor circuit current too high	Measured motor drive current is more than 50 A.	• P/S motor circuit • P/S motor • P/S control module	1 driving cycle
☞ C1145	P/S motor circuit current too low	Measured motor drive current is less than 2 A continuously for more than 3 seconds even though target motor drive current is more than 4 A. or Measured motor drive current is less than 0.8 A for total 1 second even though motor control duty is more than 90% while target motor drive current is less than 8 A.		1 driving cycle
☞ C1153	P/S control module power supply circuit	Power supply voltage of P/S control module is less than 9 V for 5 seconds continuously.	• P/S control module power supply circuit • Undercharged Battery • P/S control module	1 driving cycle
☞ C1155	P/S control module internal failure	Internal memory (EEPROM) is data error.	• P/S control module	Not applicable
		Internal circuit is faulty. or Power supply voltage of P/S control module exceeded 17.5 V.	• Overcharged Battery • P/S control module	1 driving cycle

Scan Tool Data

S7RS0B6304006

NOTE

When P/S motor is cold condition (that is, armature coil of P/S motor is not heated), normal value with asterisk (*) mark in the following table is displayed on scan tool.

Scan tool data	Vehicle condition		Normal condition
☞ Battery Voltage	Ignition switch ON		10 – 14 V
☞ TQS Power Supply			10 – 14 V
☞ TQS Main Torque	Engine running at idle speed	Steering wheel at fully turned to left	–9.4 – 0 N·m
		Steering wheel at free	0 N·m
		Steering wheel at fully turned to right	0 – 9.4 N·m
☞ TQS Sub Torque	Engine running at idle speed	Steering wheel at fully turned to left	–9.4 – 0 N·m
		Steering wheel at free	0 N·m
		Steering wheel at fully turned to right	0 – 9.4 N·m
☞ Assist Torque	Engine running at idle speed	Steering wheel at fully turned to left	–9.4 – 0 N·m
		Steering wheel at free	0 N·m
		Steering wheel at fully turned to right	0 – 9.4 N·m
☞ Motor Control	Engine running at idle speed	Steering wheel at free	0 A
		Steering wheel at fully turned to left or right	*35 – 45 A
☞ Motor Monitor	Engine running at idle speed	Steering wheel at free	0 A
		Steering wheel at fully turned to left or right	*35 – 45 A
☞ Vehicle Speed	Engine running and vehicle at stop		0 km/h
☞ Engine Speed	Engine running at idle speed after warming up		700 ± 50 rpm
☞ Motor Volt	Engine running at idle speed	Steering wheel at free	0.8 – 1 V
		Steering wheel at fully turned to right	About 5 V
☞ Ignition switch	Ignition switch ON		ON

Scan Tool Data Definitions

Battery Voltage
This parameter indicates battery positive voltage.

TQS Power Supply (Torque Sensor Power Supply, V)
This parameter indicates the power supply voltage which the P/S control module supplies to the torque sensor.

TQS Main Torque (Torque Sensor Main Torque, N·m)
The torque sensor is installed to detect the steering force and the steering direction. It consists of two potentiometers and the main torque sensor is one of these.

TQS Sub Torque (Torque Sensor Sub Torque, N·m)
The torque sensor is installed to detect the steering force and the steering direction. It consists of two potentiometers and the sub-torque sensor is one of these. Its output characteristics are compared with those of the main torque sensor.

Assist Torque (N·m)
This parameter is an internal parameter of the P/S control module. It is obtained by computing the torque sensor input signal.

Motor Control (Motor Control Current, A)
Based on the input signal, the P/S control module determines the assist amount and controls the current to the motor suitable for that assist amount. This parameter indicates that control value.

Motor Monitor (Motor Monitor Current, A)
This parameter indicates the actually measured value of the current flowing to the motor. The motor circuit condition is diagnosed by comparing this parameter with "Motor Control" parameter described previously.

Vehicle Speed (km/h, MPH)
Vehicle speed signal is fed from BCM. P/S control module determines the amount of power assist based on this vehicle speed signal and the torque sensor signal.

Engine Speed (rpm)
Engine speed signal is fed from the ECM so that it can be used for trouble diagnosis of the electric power steering system.

Motor Volt (V)
This parameter indicates the voltage between motor terminals.

Ignition switch (ON, OFF)
This parameter indicates the condition of the power supply through the ignition switch.

Visual Inspection

S7RS0B6304007

Visually check the following pats and system.

Inspection Item		Referring section
Battery	Level, leakage, color	"Battery Description in Section 1J"
Connectors of electric wire harness	Disconnection friction	"Intermittent and Poor Connection Inspection in Section 00"
Fuses	Burning	"Cautions in Body Electrical System Servicing in Section 9A"
Parts	Installation, damage	
Other parts that can be checked visually		

P/S System Symptom Diagnosis

S7RS0B6304008

This section describes trouble diagnosis of the P/S system parts whose trouble is not indicated by the on-board diagnostic system (self-diagnostic function). When no malfunction is indicated by the on-board diagnostic system (self-diagnosis function) and those steering basic parts as described in "Steering Symptom Diagnosis in Section 6A" are all in good condition, check the following power steering system parts which may be a possible cause for each symptom of the steering.

Condition	Possible cause	Correction / Reference Item
Steering wheel feels heavy (Perform "Steering Force Check" before diagnosis.)	Steering wheel installed improperly (twisted)	*Install steering wheel correctly.*
	Poor performance of torque sensor	*Check torque sensor referring to "Torque Sensor and Its Circuit Inspection".*
	Poor performance of P/S motor	*Check motor referring to "P/S Motor and Its Circuit Inspection".*
	Steering gear case assembly faulty	*Replace.*
	Poor performance of vehicle speed signal from ECM	*Check vehicle speed signal circuit referring to "DTC C1121 / C1123 / C1124: VSS Circuit Failure".*

Condition	Possible cause	Correction / Reference Item
Vehicle pulls to one side during straight driving	Poor performance of torque sensor	*Check torque sensor referring to "Torque Sensor and Its Circuit Inspection".*
	Steering gear case assembly faulty	*Replace.*
Poor recovery after turns	Poor performance of torque sensor	*Check torque sensor referring to "Torque Sensor and Its Circuit Inspection".*
	Steering column faulty	*Replace.*
Abnormal noise	P/S motor (built in steering gear case assembly) malfunction	*Replace steering gear case assembly.*
No idle up	P/S control module faulty	*Check P/S control module referring to "Inspection of P/S Control Module and Its Circuits".*

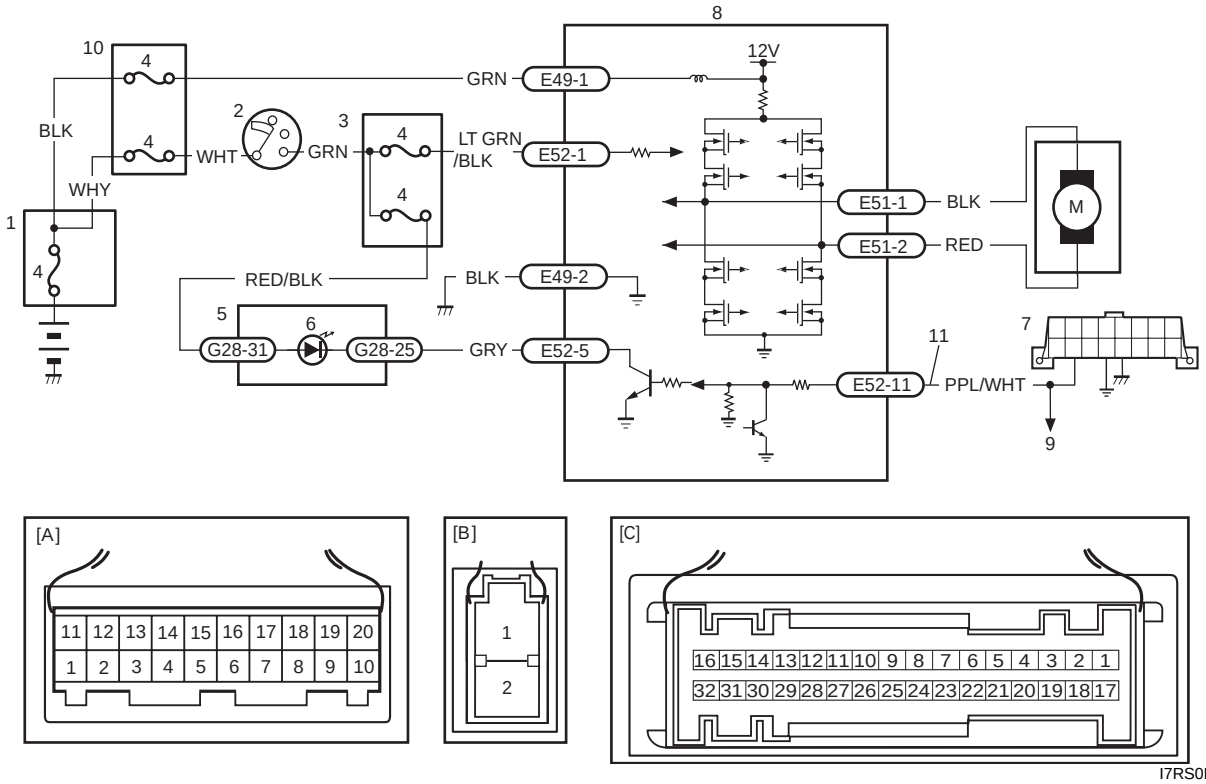
Serial Data Link Circuit Check

S7RS0B6304009

⚠ CAUTION

Be sure to perform "EPS System Check" before starting "Troubleshooting".

Wiring Diagram



I7RS0B630003-01

[A]: Connector "E52" (viewed from harness side)	3. Junction block assembly	8. P/S control module
[B]: Connector "E49" (viewed from harness side)	4. Fuse	9. To ECM, BCM, Air bag SDM control module and ABS control module assembly
[C]: Connector "G28" (viewed from harness side)	5. Combination meter	10. Individual circuit fuse box No.1
1. Main fuse box	6. "EPS" warning light	11. Serial data circuit
2. Ignition switch	7. Date link connector (DLC)	

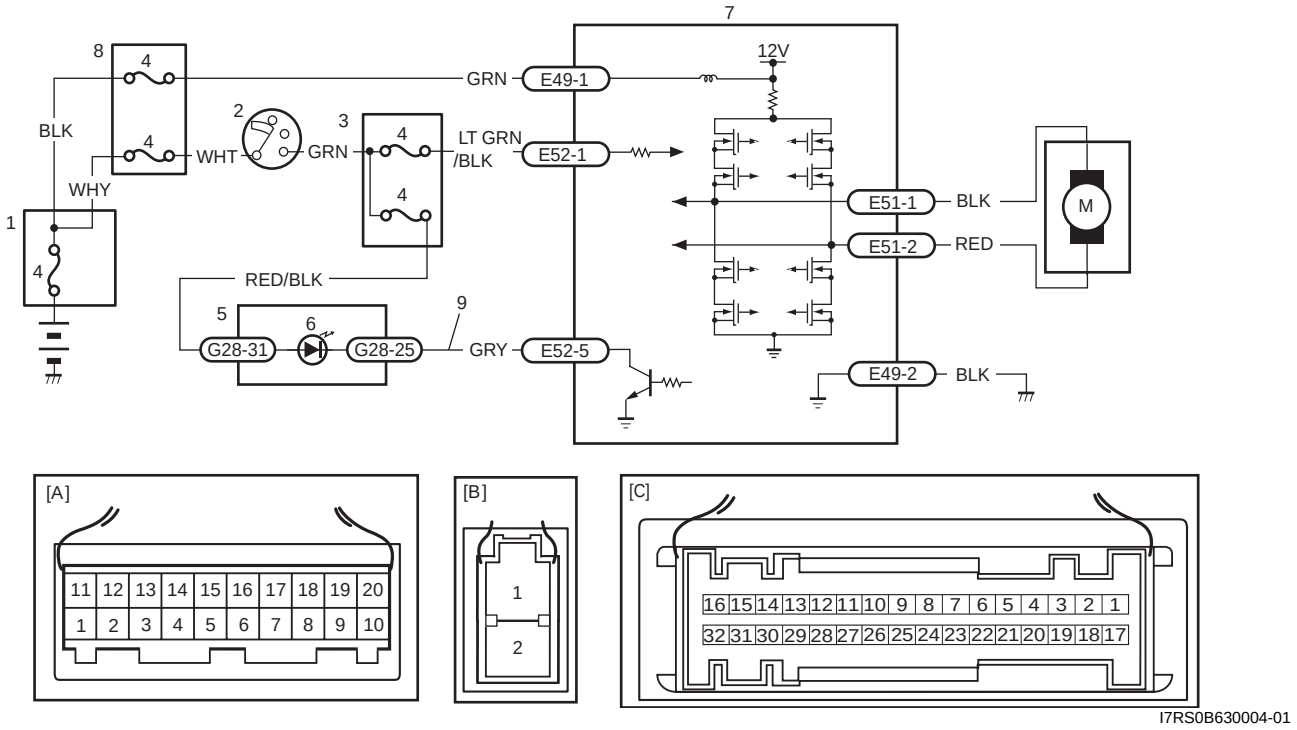
Troubleshooting

Step	Action	Yes	No
1	*Was "EPS System Check" performed?*	Go to Step 2.	Go to "EPS System Check".
2	1) Make sure that SUZUKI scan tool is free from malfunction and that correct program card (software) for P/S system is used. 2) Turn ignition switch to OFF position. 3) Check proper connection of SUZUKI scan tool to DLC. *Is connection in good condition?*	Go to Step 3.	Connect SUZUKI scan tool to DLC properly.
3	1) Check if communication is possible by making communication with other controllers (ECM, BCM, ABS or SDM) or other vehicles. *Is it possible to communicate with the other controllers?*	Go to Step 4.	Repair open in common section of "serial data circuit" ("PPL/WHT" wire circuit) used by all controllers or short to ground or power circuit which has occurred somewhere in serial data circuit ("PPL/WHT" wire circuit).
4	1) Check power supply circuit and ground circuit for P/S control module referring to "P/S Control Module Power Supply and Ground Circuit Check". *Is check result in good condition?*	Go to Step 5.	Repair or replace defective circuit.
5	1) With ignition switch turned OFF, disconnect "E52" connector from P/S control module and check for terminal to P/S control module connector. 2) If connections are OK, check that "Serial data circuit" is as following. • Insulation resistance of "Serial data circuit" wire is infinity between its terminal and other terminals at P/S control module connector. • Wiring resistance of "Serial data circuit" wire is less than 1 Ω. • Insulation resistance of "Serial data circuit" wire is infinity between its terminal and vehicle body ground. *Is circuit in good condition?*	Substitute a known-good P/S control module and recheck.	Repair or replace defective circuit.

"EPS" Warning Light Does Not Come ON with Ignition Switch Turned ON before Engine Starts

S7RS0B6304010

Wiring Diagram



I7RS0B630004-01

[A]: Connector "E52" (viewed from harness side)	2. Ignition switch	6. "EPS" warning light
[B]: Connector "E49" (viewed from harness side)	3. Junction block assembly	7. P/S control module
[C]: Connector "G28" (viewed from harness side)	4. Fuse	8. Individual circuit fuse box No.1
1. Main fuse box	5. Combination meter	9. "EPS" warning light circuit

Circuit Description

Operation (ON/OFF) of "EPS" warning light is controlled by P/S control module through combination meter.
If the P/S system is in good condition, P/S control module turns "EPS" warning light ON at the ignition switch ON, and then turns it OFF at the engine start. If an abnormality in the system is detected, "EPS" warning light is turned ON continuously by P/S control module. If P/S control module is disconnected, "EPS" warning light is not turned ON.

Troubleshooting

Step	Action	Yes	No
1	1) Turn ignition switch ON. *Do the other warning lights come on?*	Go to Step 2.	"GRN", "RED/BLK" wire circuit or circuit fuse for combination meter open or short to ground.
2	1) Check power supply circuit and ground circuit for P/S control module referring to "P/S Control Module Power Supply and Ground Circuit Check". *Is check result in good condition?*	Go to Step 3.	Repair or replace defective circuit.
3	1) Remove combination meter and disconnect combination meter connector ("G28") with ignition switch turned OFF. 2) Check for proper connection to the combination meter at "G28-31" terminal. 3) If OK, check voltage between "G28-31" ("RED/BLK" wire) terminal and body ground with ignition switch ON. *Is it 10 – 14 V?*	Go to Step 4.	"RED/BLK" wire circuit open or short to ground.

Step	Action	Yes	No
4	1) Check for proper connection to the combination meter at “G28-25” terminal and P/S control module at “E52-5” terminal. 2) Measure resistance between the combination meter at “G28-25” terminal and the P/S control module at “E52-5” terminal. *Is it infinite (∞)?*	“EPS warning light circuit” is open.	Go to Step 5.
5	1) Connect combination meter connector (“G28”) with ignition switch turned OFF. 2) Check for voltage between “E52-5” (“GRY” wire) terminal and body ground with ignition switch ON. *Is it 10 – 14 V?*	Replace the P/S control module.	Replace the combination meter.

“EPS” Warning Light Remains ON Steady after Engine Starts

S7RS0B6304011

Wiring Diagram

Refer to ““EPS” Warning Light Does Not Come ON with Ignition Switch Turned ON before Engine Starts”.

Circuit Description

Operation (ON/OFF) of “EPS” warning light is controlled by P/S control module through combination meter.
If the P/S system is in good condition, P/S control module turns “EPS” warning light ON at the ignition switch ON, and then turns it OFF at the engine start. If an abnormality in the system is detected, “EPS” warning light is turned ON continuously by P/S control module. If P/S control module is disconnected, “EPS” warning light is not turned ON.

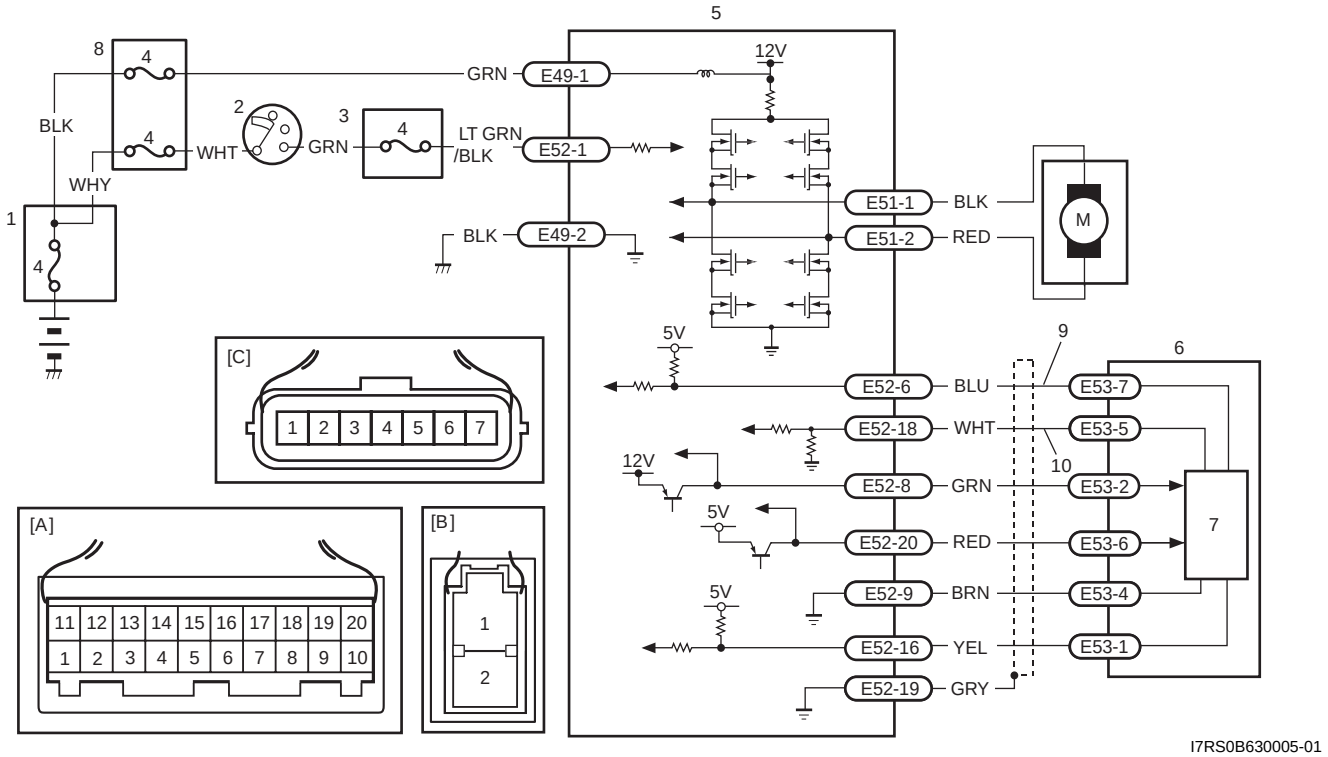
Troubleshooting

Step	Action	Yes	No
1	1) Check DTC referring to “DTC Check”. *Is there any DTC(s) (NO CODES on SUZUKI scan tool)?*	Go to applicable DTC diag. flow.	Go to Step 2.
2	1) With ignition switch OFF, disconnect P/S control module connector (“E52”). 2) Check for proper connection to the P/S control module at “E52-5” terminal. 3) If OK, then turn ignition switch to ON position. *Does “EPS” warning light turn on?*	Go to Step 3.	Replace the P/S control module.
3	1) With ignition switch turned OFF, remove combination meter and its connector. 2) Check for proper terminal connection to combination meter connector. 3) If connections are OK, check that “EPS warning light circuit” is as following. • Insulation resistance of “EPS warning light circuit” wire is infinity between its terminal and each terminal at combination meter connector. • Wiring resistance of “EPS warning light circuit” wire is less than 1 Ω. • Insulation resistance of “EPS warning light circuit” wire is infinity between its terminal and vehicle body ground. *Is circuit in good condition?*	Replace the combination meter.	Repair EPS warning light circuit.

DTC C1113: Steering Torque Sensor (Main and Sub) Circuit Correlation

S7RS0B6304012

Wiring Diagram



I7RS0B630005-01

[A]: Connector “E52” (viewed from harness side)	3. Junction block assembly	8. Individual circuit fuse box No.1
[B]: Connector “E49” (viewed from harness side)	4. Fuse	9. Torque sensor signal (sub) circuit
[C]: Connector “E53” (viewed from harness side)	5. P/S control module	10. Torque sensor signal (main) circuit
1. Main fuse box	6. Torque sensor	
2. Ignition switch	7. Torque sensor amplifier	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Voltage difference between torque sensor main signal and sub signal is more than 0.6 V for 1 second continuously (1 driving cycle detection logic)	• Torque sensor signal circuit • Torque sensor • P/S control module

DTC Troubleshooting

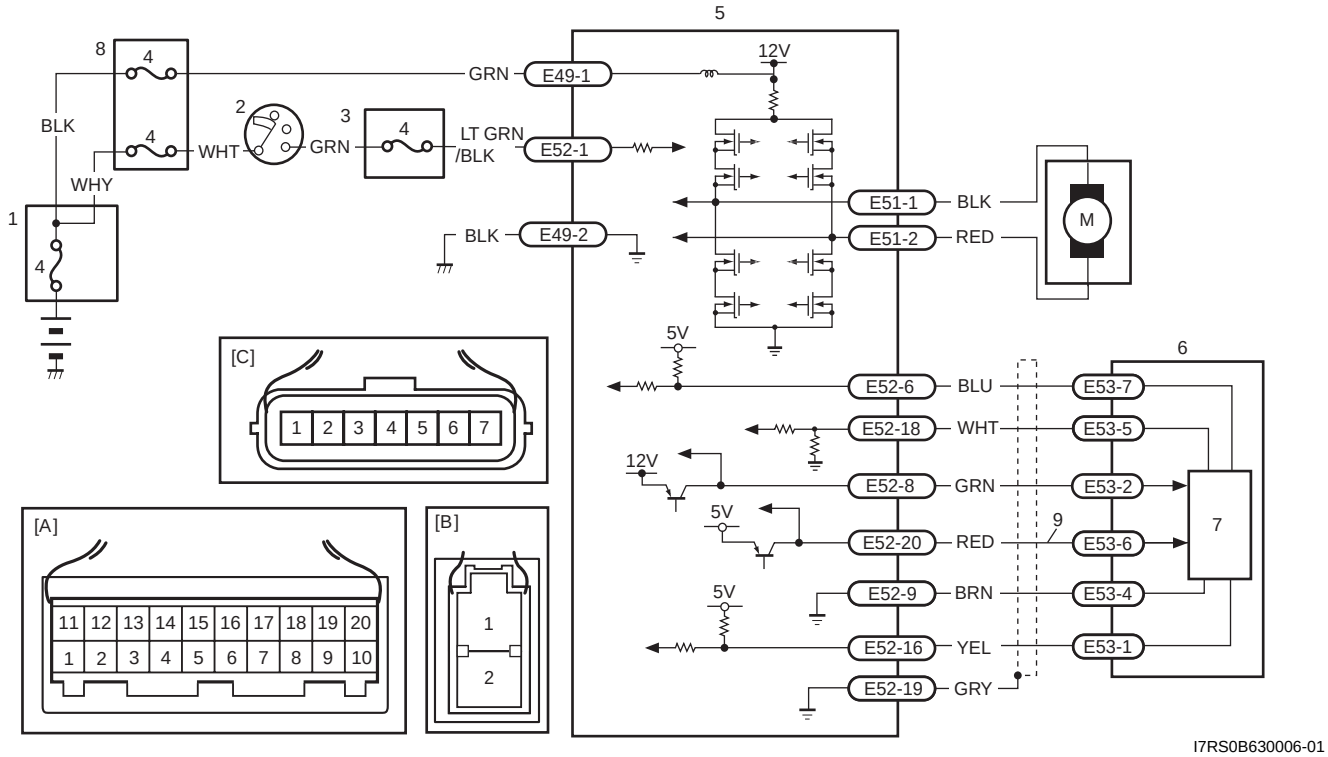
Step	Action	Yes	No
1	*Was “EPS System Check” performed?*	Go to Step 2.	Go to “EPS System Check”.
2	**DTC check** *Is DTC C1114 and/or DTC C1119 indicated together?*	Go to applicable diag. flow.	Go to Step 3.
3	**Torque sensor signal (sub) circuit check** 1) Check for P/S control module connector (“E52”) for proper connection. 2) With ignition switch turned OFF, disconnect torque sensor connector. 3) Check for voltage between “E53-7” (“BLU” wire) terminal and body ground with ignition switch ON. *Is it about 5 V?*	Go to Step 4.	Go to Step 7.

Step	Action	Yes	No
4	**Torque sensor signal (main) voltage check** 1) Check for voltage between “E53-5” (“WHT” wire) terminal and body ground with ignition switch ON. *Is it about 0 V?*	Go to Step 5.	Torque sensor signal circuit is shorted to other circuit.
5	**Torque sensor signal (main) resistance check** 1) Check for resistance “E53-5” (“WHT” wire) terminal and body ground terminal with ignition switch OFF. *Is it about 1 MΩ?*	Go to Step 6.	Go to Step 8.
6	**Torque sensor output voltage check** 1) Connect connector to torque sensor with ignition switch turned OFF. 2) Check torque sensor out put voltage referring to “Torque Sensor and Its Circuit Inspection”. *Is torque sensor in good condition?*	Substitute a known-good P/S control module and recheck.	Replace steering gear case.
7	**Torque sensor (sub) circuit wire check** 1) Disconnect P/S control module. 2) Check that torque sensor signal (sub) circuit is as follows. • Insulation resistance of wire harness is infinity between “Torque sensor signal (sub) circuit” terminal and other terminal at torque sensor connector. • Wiring harness resistance of “Torque sensor signal (sub) circuit” is less than 1 Ω. • Insulation resistance between “Torque sensor (sub) signal circuit” and vehicle body ground is infinity. • Circuit voltage between “Torque sensor signal (sub) circuit” circuit and ground circuit is 0 – 1 V with ignition switch turned ON. *Is circuit in good condition?*	Replace P/S control module.	Repair or replace defective circuit.
8	**Torque sensor (main) circuit wire check** 1) Disconnect P/S control module. 2) Check that torque sensor (main) signal circuit is as follows. • Insulation resistance of wire harness is infinity between “Torque sensor (main) signal circuit” terminal and other terminal at torque sensor connector. • Wiring harness resistance of “Torque sensor (main) signal circuit” is less than 1 Ω. • Insulation resistance between “Torque sensor (main) signal circuit” and vehicle body ground is infinity. *Is circuit in good condition?*	Replace P/S control module.	Repair or replace defective circuit.

DTC C1114: Steering Torque Sensor Reference Power Supply Circuit

S7RS0B6304013

Wiring Diagram



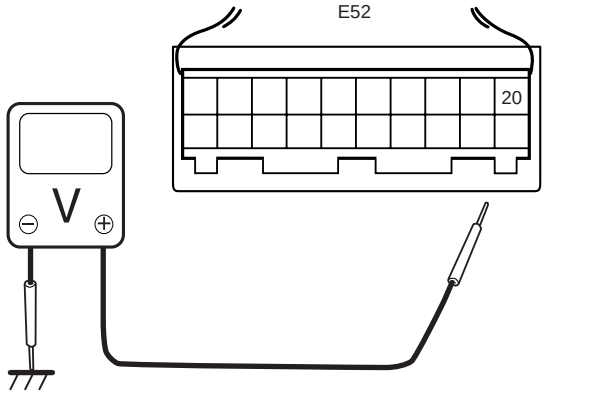
I7RS0B630006-01

[A]: Connector “E52” (viewed from harness side)	2. Ignition switch	6. Torque sensor
[B]: Connector “E49” (viewed from harness side)	3. Junction block assembly	7. Torque sensor amplifier
[C]: Connector “E53” (viewed from harness side)	4. Fuse	8. Individual circuit fuse box No.1
1. Main fuse box	5. P/S control module	9. Torque sensor 5 V reference power supply circuit

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Circuit voltage of torque sensor 5 V reference power supply voltage is more than 5.7 V or less than 4.3 V for 1 second continuously (1 driving cycle detection logic)	• Torque sensor circuit • Torque sensor • P/S control module

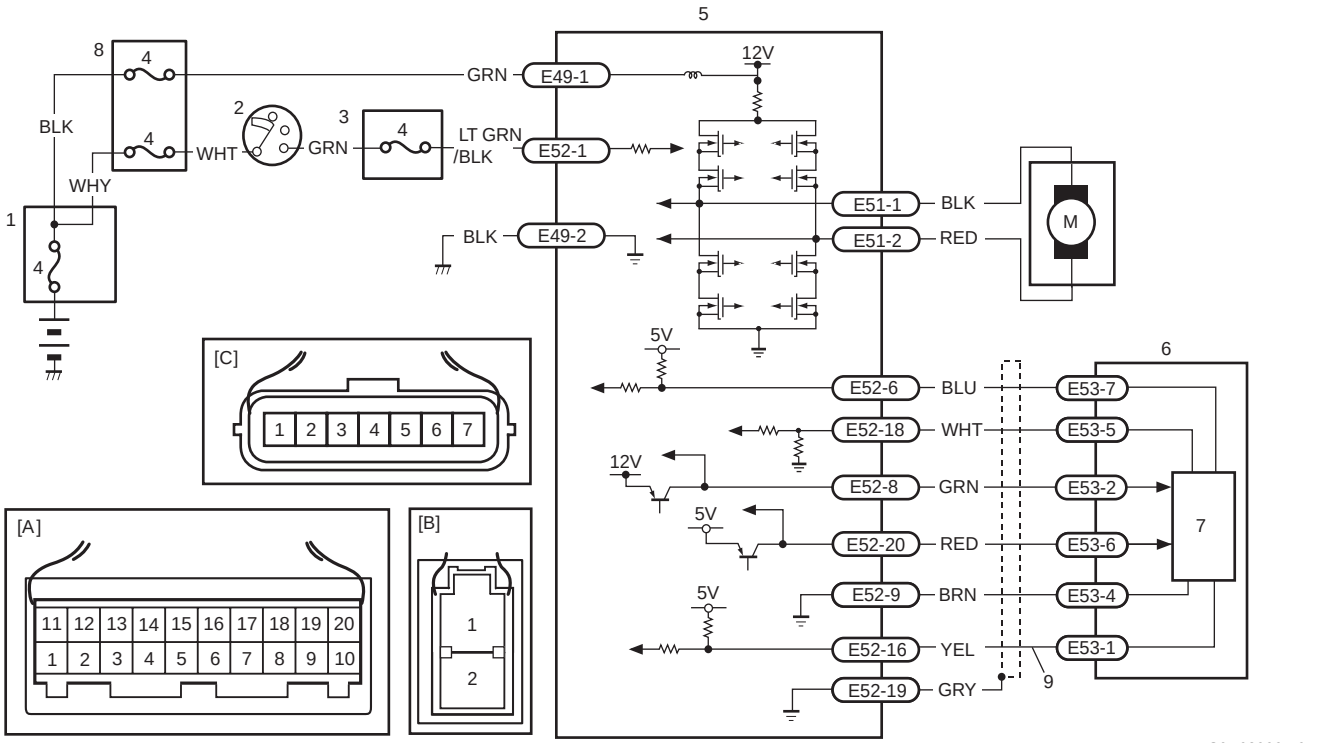
DTC Troubleshooting

Step	Action	Yes	No
1	*Was "EPS System Check" performed?*	Go to Step 2.	Go to "EPS System Check".
2	**DTC check** *Is DTC C1153 and/or DTC C1155 indicated together?*	Go to applicable DTC diag. flow.	Go to Step 3.
3	**Torque sensor 5 V reference power supply circuit voltage check** 1) With ignition switch turned OFF, disconnect torque sensor connector and check for proper terminal connection to torque sensor connector. 2) If connections are OK, check for voltage between "E53-6" ("RED" wire) terminal and body ground with ignition switch ON. *Is it approx. 5 V?*	Go to Step 4.	Go to Step 5.
4	**Torque sensor 5 V reference power supply circuit check** 1) With ignition switch turned OFF, connect torque sensor connector. 2) Check for P/S control module connector ("E52") for proper connection. 3) Turn ignition switch ON. 4) Check for voltage between "Torque sensor 5 V reference power supply circuit" terminal and body ground with connector ("E52") connected to the P/S control module.  I4RS0A630013-02 *Is it about 5 V?*	Substitute a known-good P/S control module and recheck.	Replace steering gear case.
5	**Torque sensor 5 V reference power supply circuit check** 1) With ignition switch turned OFF, disconnect P/S control module connector. 2) Check that "Torque sensor 5 V reference power supply circuit" is as following. • Insulation resistance of "Torque sensor 5 V reference power supply circuit" wire is infinity between its terminal and other terminal at torque sensor connector. • Wiring resistance of "Torque sensor 5 V reference power supply circuit" is less than 1 Ω. • Insulation resistance of "Torque sensor 5 V reference power supply circuit" between its circuit and vehicle body ground is infinity. *Is circuit in good condition?*	Replace P/S control module.	Repair or replace defective circuit.

DTC C1117: Steering Torque Sensor Failure Signal Circuit Low

S7RS0B6304014

Wiring Diagram



I7RS0B630007-01

[A]: Connector “E52” (viewed from harness side)	2. Ignition switch	6. Torque sensor
[B]: Connector “E49” (viewed from harness side)	3. Junction block assembly	7. Torque sensor amplifier
[C]: Connector “E53” (viewed from harness side)	4. Fuse	8. Individual circuit fuse box No.1
1. Main fuse box	5. P/S control module	9. Torque sensor internal failure signal circuit

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Torque sensor internal failure signal circuit voltage is less than 1.7 V when ignition switch turned ON (1 driving cycle detection logic)	• Torque sensor internal failure signal circuit • Torque sensor • P/S control module

DTC Troubleshooting

Step	Action	Yes	No
1	*Was "EPS System Check" performed?*	Go to Step 2.	Go to "EPS System Check".
2	**DTC check** *Is DTC C1113, C1114 and/or DTC C1119 indicated together?*	Go to applicable diag. flow.	Go to Step 3.
3	**Torque sensor internal failure signal circuit check** 1) Check for P/S control module connector ("E52") for proper connection. 2) With ignition switch turned OFF, disconnect torque sensor connector. 3) Check for voltage between "E53-1" ("YEL" wire) terminal and body ground with ignition switch ON. *Is it about 5 V?*	Go to Step 4.	Go to Step 5.
4	**Torque sensor internal failure signal circuit check** 1) With ignition switch turned OFF, connect torque sensor connector. 2) Check that voltage between "E52-16" ("YEL" wire) terminal and body ground is about 5V at the moment of ignition switch turned ON. *Is it about 5 V?*	Substitute a known-good P/S control module and recheck.	Replace steering gear case.
5	**Torque sensor internal failure signal circuit wire check** 1) Disconnect P/S control module. 2) Check that torque sensor failure signal circuit is as follows. • Insulation resistance of wire harness is infinity between "Torque sensor internal failure signal circuit" terminal and other terminal at torque sensor connector. • Insulation resistance between "Torque sensor internal failure signal circuit" and vehicle body ground is infinity. *Is circuit in good condition?*	Substitute a known-good P/S control module and recheck.	Repair or replace defective circuit.

DTC C1118: Steering Torque Sensor Failure Signal Circuit High

S7RS0B6304015

Wiring Diagram

Refer to "DTC C1117: Steering Torque Sensor Failure Signal Circuit Low".

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Torque sensor internal failure signal circuit voltage is more than 3.7 V for 1 second continuously (1 driving cycle detection logic)	• Torque sensor signal circuit • Torque sensor internal failure signal circuit • Torque sensor • P/S control module

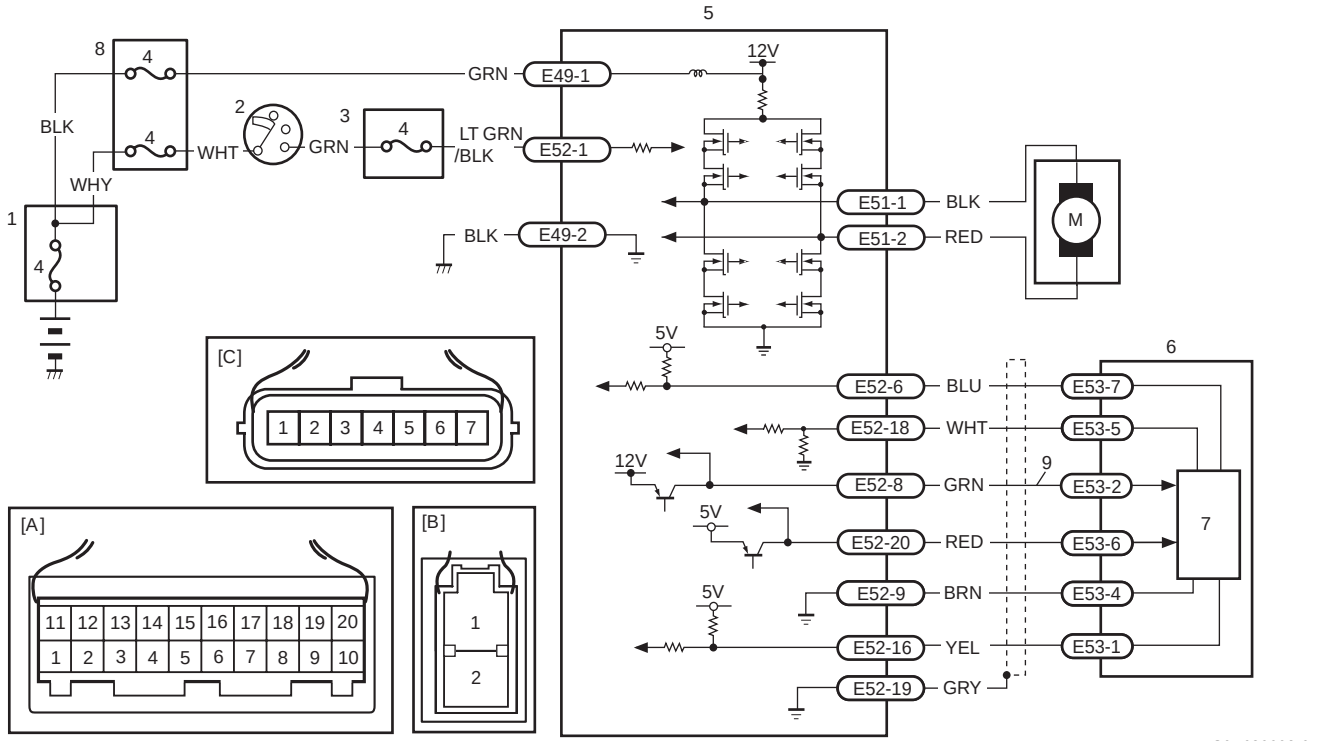
DTC Troubleshooting

Step	Action	Yes	No
1	*Was "EPS System Check" performed?*	Go to Step 2.	Go to "EPS System Check".
2	**DTC check** *Is DTC C1113, C1114 and/or DTC C1119 indicated together?*	Go to applicable diag. flow.	Go to Step 3.
3	**Torque sensor internal failure signal voltage check** 1) Check for P/S control module connector ("E52") for proper connection. 2) Check for voltage between "E52-16" ("YEL" wire) terminal and body ground with ignition switch ON. *Is voltage 0 – 1 V?*	Substitute a known-good P/S control module and recheck.	Go to Step 4.
4	**Torque sensor internal failure signal circuit check** 1) With ignition switch turned OFF, disconnect torque sensor connector. 2) Check for voltage between "E53-1" ("YEL" wire) terminal and body ground with ignition switch ON. *Is it about 5 V?*	Go to Step 5.	Go to Step 6.
5	**Torque sensor internal failure signal circuit check** 1) Disconnect P/S control module connector. 2) Check that torque sensor failure signal circuit is as follows. • Insulation resistance of wire harness is infinity between "Torque sensor internal failure signal circuit" terminal and other terminal at torque sensor connector. *Is circuit in good condition?*	Go to Step 7.	Repair or replace defective circuit.
6	**Torque sensor internal failure signal circuit check** 1) Disconnect P/S control module connector. 2) Check that torque sensor failure signal circuit is as follows. • Insulation resistance of wire harness is infinity between "Torque sensor internal failure signal circuit" terminal and other terminal at torque sensor connector. • Wiring harness resistance of "Torque sensor internal failure signal circuit" is less than 1 Ω. *Is circuit in good condition?*	Substitute a known-good P/S control module and recheck.	Repair or replace defective circuit.
7	**Torque sensor signal circuit check** 1) Check for torque sensor signal circuit referring to Step 3) – 8) of "DTC C1113: Steering Torque Sensor (Main and Sub) Circuit Correlation". *Is torque sensor and its circuit in good condition?*	Replace steering gear case.	Repair or replace defective parts.

DTC C1119: Steering Torque Sensor Power Supply Circuit

S7RS0B6304016

Wiring Diagram



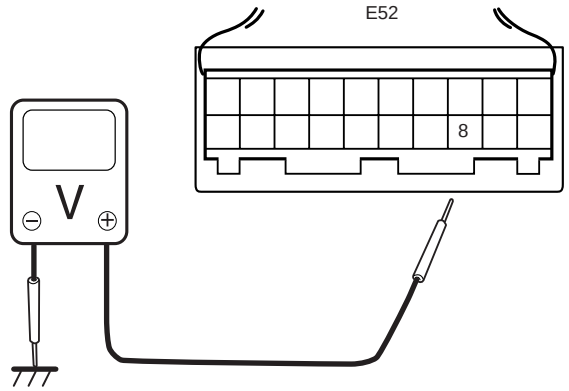
I7RS0B630008-01

[A]: Connector “E52” (viewed from harness side)	2. Ignition switch	6. Torque sensor
[B]: Connector “E49” (viewed from harness side)	3. Junction block assembly	7. Torque sensor amplifier
[C]: Connector “E53” (viewed from harness side)	4. Fuse	8. Individual circuit fuse box No.1
1. Main fuse box	5. P/S control module	9. Main power supply for torque sensor circuit

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Circuit voltage of torque sensor main power supply is less than 7.5 V for 1 second continuously (1 driving cycle detection logic)	• Torque sensor circuit • Torque sensor • P/S control module

DTC Troubleshooting

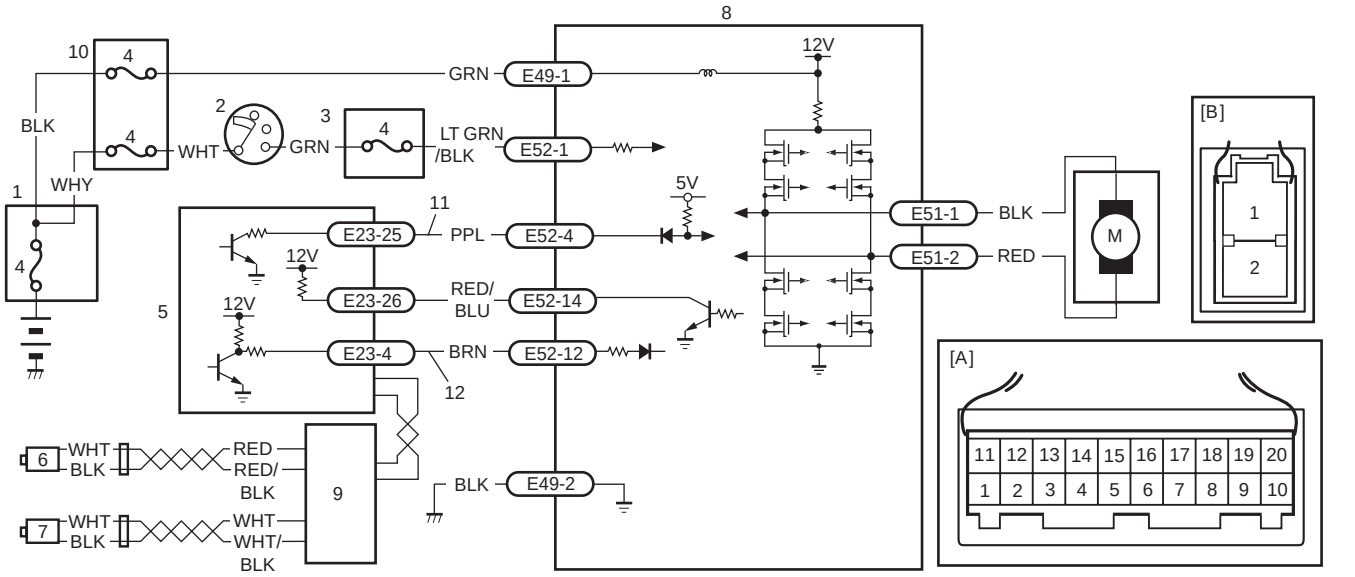
Step	Action	Yes	No
1	*Was "EPS System Check" performed?*	Go to Step 2.	Go to "EPS System Check".
2	**DTC check** *Is DTC C1153 indicated together?*	Go to DTC C1153 diag. flow.	Go to Step 3.
3	**Torque sensor main power supply voltage check** 1) With ignition switch turned OFF, disconnect torque sensor connector. 2) Check for P/S control module connector ("E52") for proper connection. 3) If connections are OK, check for voltage between "E52-8" ("GRN" wire) terminal and body ground with ignition switch ON. *Is it approx. 12 V?*	Go to Step 4.	Go to Step 5.
4	**Torque sensor main power supply voltage check** 1) With ignition switch turned OFF, connect torque sensor connector. 2) Check for P/S control module connector ("E52") for proper connection. 3) Turn ignition switch ON. 4) Check for voltage between "Main power supply for torque sensor circuit" terminal and body ground with connector ("E52") connected to the P/S control module.  I4RS0A630021-02 *Is it about 12 V?*	Substitute a known-good P/S control module and recheck.	Replace steering gear case assembly and recheck.
5	**Torque sensor main power supply circuit check** 1) With ignition switch turned OFF, disconnect P/S control module connector. 2) Check that "Main power supply for torque sensor circuit" is as following. • Insulation resistance of "Main power supply for torque sensor circuit" wire is infinity between its terminal and other terminal at torque sensor connector. • Wiring resistance of "Main power supply for torque sensor circuit" is less than 1 Ω. • Insulation resistance of "Main power supply for torque sensor circuit" between its circuit and vehicle body ground is infinity. *Is circuit in good condition?*	Replace P/S control module.	Repair or replace defective circuit.

DTC C1121 / C1123 / C1124: VSS Circuit Failure

S7RS0B6304017

DTC C1121: No Vehicle Speed Signal (60 Seconds or More)
DTC C1123: No Vehicle Speed Signal (30 Seconds or More)
DTC C1124: Vehicle Speed Performance (Impossible Deceleration)

Wiring Diagram



I7RS0B630009-01

[A]: Connector “E52” (viewed from harness side)	4. Fuse	9. ABS/ESP® control module
[B]: Connector “E49” (viewed from harness side)	5. ECM	10. Individual circuit fuse box No.1
1. Main fuse box	6. Left-front wheel speed sensor	11. Vehicle speed signal circuit
2. Ignition switch	7. Right-front wheel speed sensor	12. Engine speed signal circuit
3. Junction block assembly	8. P/S control module	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
DTC C1121: Vehicle speed signal is 0 km/h even though engine speed is more than 4000 rpm for more than 60 seconds continuously (before elapse of 5 min from engine start) or vehicle speed signal is 0 km/h even though engine speed is more than 2500 rpm for more than 60 seconds continuously (after elapse of 5 min for engine start). (1 driving cycle detection logic but MIL does not light up) **DTC C1123:** Vehicle speed signal is 0 km/h with continuously more than 3 driving cycles even though engine speed is more than 4000 rpm for more than 30 seconds continuously (before elapse of 5 min from engine start) or vehicle speed signal is 0 km/h with continuously more than 3 driving cycles even though engine speed is more than 2500 rpm for more than 30 seconds continuously (after elapse of 5 min for engine start). (3 driving cycle detection logic) **DTC C1124:** Vehicle speed signal is less than 5 km/h for more than 5 seconds continuously with more than specified deceleration speed (–20 m/s^2) from over 20 km/h. (1 driving cycle detection logic but MIL does not light up)	• Vehicle speed signal circuit • Wheel speed sensor • ECM • P/S control module • ABS/ESP® control module • CAN communication circuit

DTC Troubleshooting

Step	Action	Yes	No
1	*Was "EPS System Check" performed?*	Go to Step 2.	Go to "EPS System Check".
2	**DTC check** DTC Check for ECM referring to "DTC Check in Section 1A". *Is there any DTC detected?*	Go to applicable DTC diag. flow.	Go to Step 3.
3	**DTC check** 1) Check ABS control module for DTC referring to "DTC Check in Section 4E". *Is there any DTC detected?*	Go to applicable DTC diag. flow.	Go to Step 4.
4	**Vehicle speed signal circuit check** 1) With ignition switch turned OFF, disconnect connectors from ECM. 2) Check ECM connector for proper connection. 3) If OK, turn ON ignition switch, measure voltage between "E23-25" wire terminal of ECM connector and body ground. *Is voltage 4 – 5 V?*	Go to Step 6.	Go to Step 5.
5	**Vehicle speed signal circuit check** 1) With ignition switch turned OFF, disconnect P/S control module connector "E52". 2) Check for proper terminal connection to P/S control module connector and ECM connector. 3) If connections are OK, check that "Vehicle speed signal circuit" is as following. • Insulation resistance of "Vehicle speed signal circuit" wire harness is infinity between its terminal and other terminals at ECM and P/S control module connector. • Wiring resistance of "Vehicle speed signal circuit" is less than 1 Ω. • Insulation resistance of "Vehicle speed signal circuit" between its circuit and vehicle body ground is infinity. • Circuit voltage between "Vehicle speed signal" circuit and ground circuit is 0 – 1 V with ignition switch turned ON. *Is circuit in good condition?*	Replace P/S control module.	Repair or replace defective circuit.
6	**ECM voltage check** 1) Connect P/S control module and ECM connectors. 2) Check ECM for vehicle speed signal output referring to "Inspection of ECM and Its Circuits in Section 1A". *Is check result in good condition?*	Replace P/S control module.	Replace ECM.

DTC C1122: Engine Speed Signal

S7RS0B6304018

NOTE

DTC C1122 (engine speed signal failure) is indicated when ignition switch is at ON position and engine is not running, but means there is nothing abnormal if indication changes to a normal one when engine is started.

Wiring Diagram

Refer to “DTC C1121 / C1123 / C1124: VSS Circuit Failure”.

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Engine speed signal is less than 220 rpm for more than 0.8 seconds. or Engine speed signal is less than 220 rpm for more than 20 seconds continuously even though vehicle speed signal is more than 50 km/h. (1 driving cycle detection logic)	• Engine speed signal circuit • ECM • P/S control module • Vehicle speed signal circuit

DTC Troubleshooting

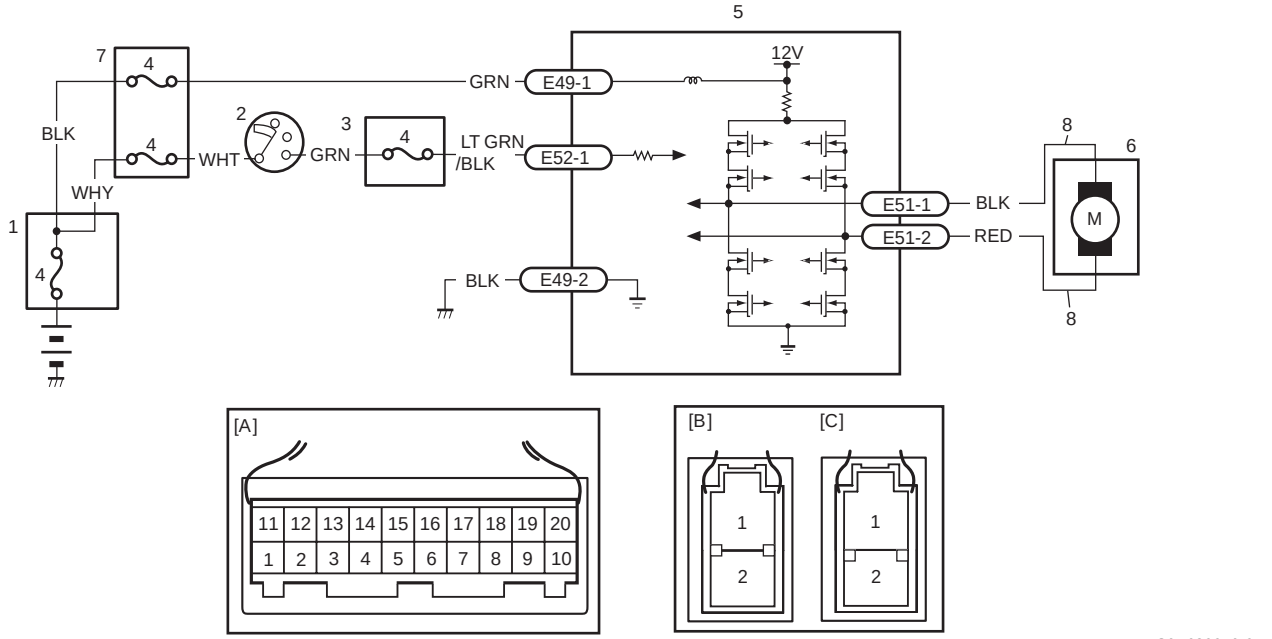
Step	Action	Yes	No
1	*Was "EPS System Check" performed?*	Go to Step 2.	Go to "EPS System Check".
2	**DTC check** 1) Clear DTC(s) referring to "DTC Clearance". 2) Run engine at idle speed. 3) Check if any DTC is detected referring to "DTC Check". *Is DTC C1122 still detected?*	Go to Step 3.	Check intermittent trouble referring to "Intermittent and Poor Connection Inspection in Section 00".
3	**DTC check** 1) Check ECM for DTC referring to "DTC Check in Section 1A". *Is there any DTC related to engine speed?*	Go to applicable DTC diag. flow.	Go to Step 4.
4	**Engine speed signal circuit check** 1) With ignition switch turned OFF, disconnect P/S control module connector. 2) Check P/S control module connector for proper connection. 3) If OK, turn ON ignition switch, measure voltage between "E52-12" wire terminal of P/S control module connector and vehicle body ground. *Is voltage 10 – 14 V?*	Go to Step 6.	Go to Step 5.
5	1) With ignition switch turned OFF, disconnect ECM connector. 2) Check for proper connection to the P/S control module and ECM at each "Engine speed signal circuit" terminal. 3) If connections are OK, check that "Engine speed signal circuit" is as following. • Insulation resistance of "Engine speed signal circuit" wire is infinity between its terminal and other terminals at ECM and P/S control module connector. • Wiring resistance of "Engine speed signal circuit" terminal are less than 1 Ω. • Insulation resistance of "Engine speed signal circuit" between its terminal and vehicle body ground is infinity. • Circuit voltage between "Engine speed signal circuit" and ground circuit is 0 – 1 V with ignition switch turned ON. *Is circuit in good condition?*	Go to Step 6.	Repair engine speed signal circuit.
6	**ECM voltage check** 1) Connect P/S control module and ECM connectors. 2) Check ECM for engine speed signal and vehicle speed signal output voltage to P/S control module referring to "Inspection of ECM and Its Circuits in Section 1A". *Is check result in good condition?*	Substitute a known-good P/S control module and recheck.	Substitute a known-good ECM and recheck.

DTC C1141 / C1142 / C1143 / C1145: P/S Motor Circuit Failure

S7RS0B6304019

DTC C1141: P/S Motor Circuit Voltage
DTC C1142: P/S Motor Circuit Range / Performance
DTC C1143: P/S Motor Circuit Current Too High
DTC C1145: P/S Motor Circuit Current Too Low

Wiring Diagram



I7RS0B630010-01

[A]: Connector “E52” (viewed from harness side)	2. Ignition switch	6. P/S motor
[B]: Connector “E49” (viewed from harness side)	3. Junction block assembly	7. Individual circuit fuse box No.1
[C]: Connector “E51” (viewed from harness side)	4. Fuse	8. P/S motor circuit
1. Main fuse box	5. P/S control module	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
DTC C1141: Voltage between both motor drive circuits is more than 8.5 V or less than 0.2 V for 0.5 seconds continuously while motor is not drived (1 driving cycle detection logic) **DTC C1142:** Measured motor drive current is more than 10 A as compared with target motor drive current. (1 driving cycle detection logic) **DTC C1143:** Measured motor drive current is more than 50 A. (1 driving cycle detection logic) **DTC C1145:** Measured motor drive current is less than 2 A continuously for more than 3 seconds even though target motor drive current is more than 4 A. or Measured motor drive current is less than 0.8 A for total 1 second even though motor control duty is more than 90% while target motor drive current is less than 8 A. (1 driving cycle detection logic)	• P/S motor circuit • P/S motor • P/S control module

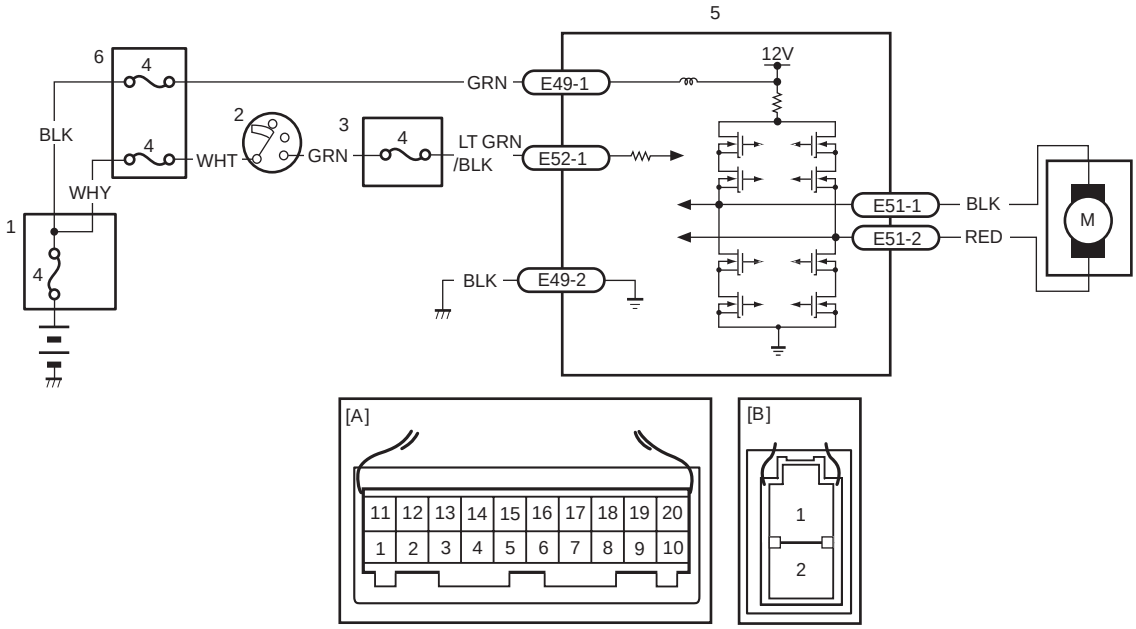
DTC Troubleshooting

Step	Action	Yes	No
1	*Was "EPS System Check" performed?*	Go to Step 2.	Go to "EPS System Check".
2	**DTC check** *Is DTC C1153 and/or DTC C1155 indicated together?*	Go to applicable DTC diag. flow.	Go to Step 3.
3	**Power supply and ground circuit check** 1) Check P/S control module power supply and ground circuit referring to "P/S Control Module Power Supply and Ground Circuit Check". *Is it in good condition?*	Go to Step 4.	Repair or replace defective circuit.
4	**Motor circuit check** 1) With ignition switch tuned OFF, disconnect P/S motor connector ("E51"). 2) Check that P/S motor circuit is as follows. • Insulation resistance of wire harness is infinity between each "P/S motor circuit" terminal and other terminal at P/S motor connector. • Wiring harness resistance of each "P/S motor circuit" is less than 1 Ω. • Insulation resistance between each "P/S motor circuit" and vehicle body ground is infinity. • Circuit voltage between each "P/S motor circuit" and ground circuit is 0 – 1 V with ignition switch turned ON. *Is circuit in good condition?*	Go to Step 5.	Repair or replace defective circuit.
5	**P/S motor check** 1) Check motor and its circuit referring to "P/S Motor and Its Circuit Inspection". *Is motor in good condition?*	Substitute a known-good P/S control module, and recheck.	Replace the steering gear case assembly.

DTC C1153: P/S Control Module Power Supply Circuit Voltage Low

S7RS0B6304020

Wiring Diagram



I7RS0B630011-01

[A]: Connector “E52” (viewed from harness side)	2. Ignition switch	5. P/S control module
[B]: Connector “E49” (viewed from harness side)	3. Junction block assembly	6. Individual circuit fuse box No.1
1. Main fuse box	4. Fuse	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Power supply voltage of P/S control module is less than 9 V for 5 seconds continuously (1 driving cycle detection logic)	• P/S control module power supply circuit • Undercharged Battery • P/S control module

DTC Troubleshooting

Step	Action	Yes	No
1	*Was “EPS System Check” performed?*	Go to Step 2.	Go to “EPS System Check”.
2	**Battery voltage check** 1) Check circuit fuse for P/S control module. 2) If OK, measure voltage between positive battery terminal and vehicle body ground with engine running. *Is voltage 10 V or more?*	Go to Step 3.	Check charging system referring to “Generator Test (Undercharged Battery Check) in Section 1J”.
3	**P/S control module power supply circuit check** 1) Check power supply circuit and ground circuit for P/S control module referring to “P/S Control Module Power Supply and Ground Circuit Check”. *Is check result in good condition?*	Substitute a known-good P/S control module and recheck.	Repair defective circuit.

DTC C1155: P/S Control Module Failure

S7RS0B6304021

Wiring Diagram

Refer to “DTC C1153: P/S Control Module Power Supply Circuit Voltage Low”.

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Internal memory (EEPROM) is data error. (In this case, MIL does not light up) or Internal circuit is faulty. or Power supply voltage of P/S control module exceeded 17.5 V. (1 driving cycle detection logic)	• Overcharged Battery • P/S control module

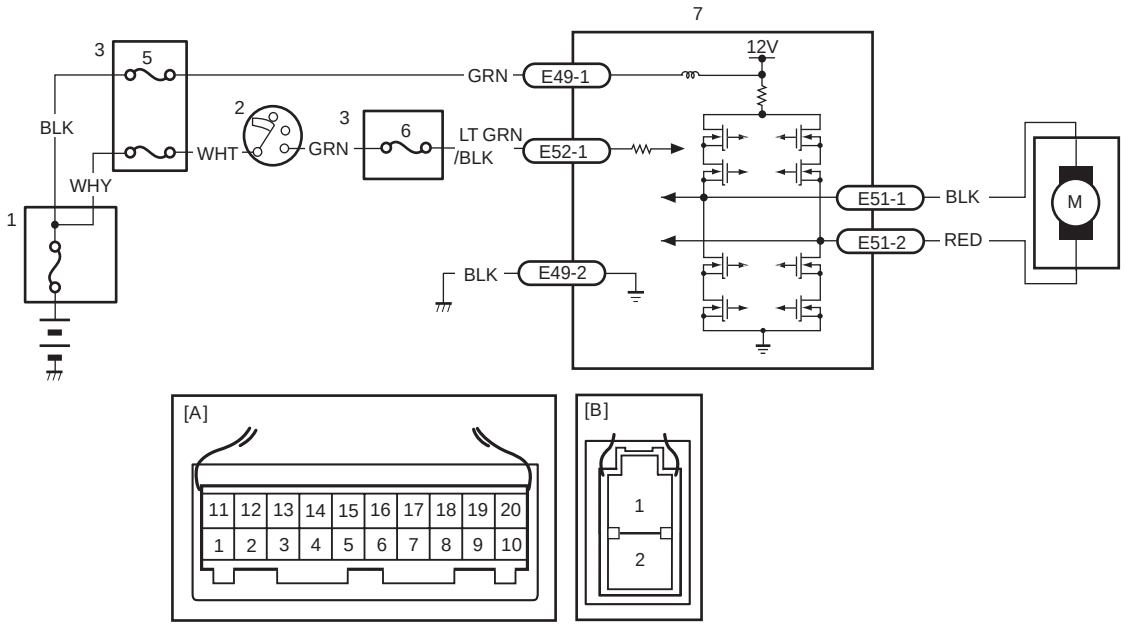
DTC Troubleshooting

Step	Action	Yes	No
1	*Was “EPS System Check” performed?*	Go to Step 2.	Go to “EPS System Check”.
2	**P/S control module power supply and ground circuit check** Check power supply circuit and ground circuit for P/S control module referring to “P/S Control Module Power Supply and Ground Circuit Check”. *Is check result in good condition?*	Go to Step 3.	Repair or replace defective circuit.
3	**Battery voltage check** 1) Check voltage between positive (+) battery terminal and vehicle body ground with engine speed at 3000 rpm. *Is voltage 15.5 V or less?*	Replace P/S control module.	Check charging system referring to “Generator Test (Overcharged Battery Check) in Section 1J”.

P/S Control Module Power Supply and Ground Circuit Check

S7RS0B6304022

Wiring Diagram



I7RS0B630012-01

[A]: Connector “E52” (viewed from harness side)	2. Ignition switch	5. “EPS” fuse
[B]: Connector “E49” (viewed from harness side)	3. Individual circuit fuse box No.1	6. “IG1 SIG” fuse
1. Main fuse box	4. Junction block assembly	7. P/S control module

Step	Action	Yes	No
1	**Circuit fuse check** 1) Disconnect P/S control module connector with ignition switch turned OFF. 2) Check for proper connection to P/S control module connector at “E49-1”, “E49-2” and “E52-1” terminals. 3) If OK, check “P/S” fuse and “IG1 SIG” fuse for blowing. *Are “P/S” fuse and “IG1 SIG” fuse in good condition?*	Go to Step 2.	Replace fuse(s) and check for short in circuits connected to fuse(s).
2	**Power supply circuit check** 1) Measure voltage between “E49-1” terminal of P/S control module connector and body ground. *Is voltage 10 - 14 V?*	Go to Step 3.	“GRN” or “BLK” wire is open circuit.
3	**Ignition signal check** 1) Turn ignition switch to ON position. 2) Measure voltage between “E52-1” terminal of P/S control module connector and body ground. *Is voltage 10 - 14 V?*	Go to Step 4.	“LT GRN/BLK” or “GRN” wire is open circuit.
4	**P/S control module ground circuit check** 1) Turn ignition switch to OFF position. 2) Disconnect connectors from P/S control module. 3) Measure resistance between “E49-2” terminals of P/S control module connector and body ground. *Is resistance 1 Ω or less?*	Go to Step 5.	“BLK” wire is open or high resistance circuit.

Step	Action	Yes	No
5	**P/S control module ground circuit check** 1) Connect connectors to P/S control module. 2) Start engine. 3) Measure voltage between “E49-2” terminals of P/S control module connector and body ground when steering wheel fully turned to left or right. *Is voltage 0.3 V or less?*	P/S Control Module Power Supply and Ground Circuit is in good condition.	“BLK” wire is open or high resistance circuit.

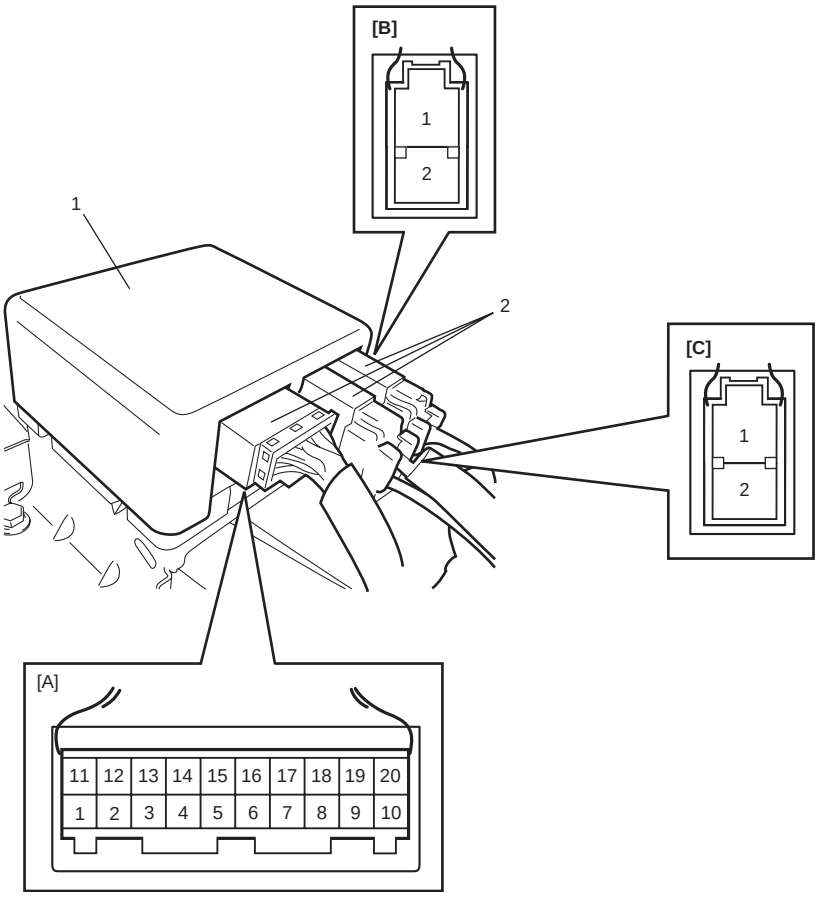
Inspection of P/S Control Module and Its Circuits

S7RS0B6304023

The P/S control module (1) and its circuits can be checked at the P/S control module wiring couplers (2) by measuring voltage and resistance.

⚠ CAUTION

P/S control module cannot be checked by itself. It is strictly prohibited to connect voltmeter or ohmmeter to the P/S control module with connectors disconnected from the P/S control module.



I6RS0C630016-03

[A]: Connector “E52” (viewed from harness side)	[C]: Connector “E49” (viewed from harness side)
[B]: Connector “E51” (viewed from harness side)	

Voltage Check

1) Remove console box.
2) Check for voltage at each terminal with connectors connected to the P/S control module.

NOTE

As each terminal voltage is affected by the battery voltage, confirm if the battery voltage is 11 V or more when ignition switch is ON.
***: The voltage of this circuit may not be checked by voltmeter. If so, use oscilloscope.**

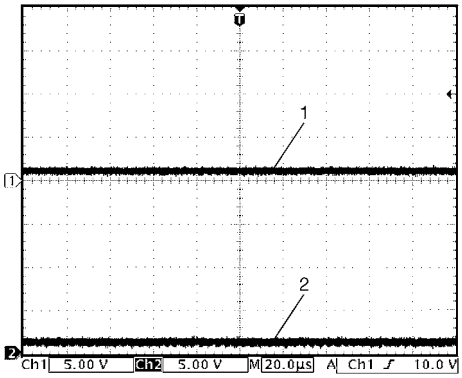
Terminal	Wire color	Circuit	Normal voltage	Remarks
E49-1	GRN	Main power supply for internal memory and P/S motor	10 – 14 V	—
E49-2	BLK	Ground for P/S control module	Below 0.3 V	—
E51-1	BLK	Motor output 1	*0 – 1 V ↑↓ 10 – 14 V (“Reference waveform No.1: ”, “Reference waveform No.2: ”and “Reference waveform No.3: ”)	• Engine idling and steering wheel at straight position • Voltage between “E51-1” and vehicle body ground
E51-2	RED	Motor output 2	*0 – 1 V ↑↓ 10 – 14 V (“Reference waveform No.1: ”, “Reference waveform No.2: ” and “Reference waveform No.3: ”)	• Engine idling and steering wheel at straight position • Voltage between “E51-2” and vehicle body ground
E52-1	LT GRN/BLK	Ignition switch signal for P/S control module	10 – 14 V	Ignition switch ON
E52-2	—	—	—	—
E52-3	—	—	—	—
E52-4	PPL	Vehicle speed signal	*0 – 1 V ↑↓ 8 – 14 V (“Reference waveform No.9” under “Inspection of ECM and Its Circuits in Section 1A”.)	• Ignition switch ON • Front left tire turned quickly with right tire locked
E52-5	GRY	“EPS” warning light	0 V	“EPS” warning light OFF
E52-6	BLU	Torque sensor signal (Sub)	About 0 – 2.5 V	• Steering wheel with left turn • Out put voltage varies linearly depending on steering force
			About 2.5 V	Steering wheel at free
			About 2.5 – 6 V	• Steering wheel with right turn • Out put voltage varies linearly depending on steering force
E52-7	—	—	—	—
E52-8	GRN	Main power supply for torque sensor	About 12 V	• Ignition switch ON • Check voltage between “E52-8” and “E52-9” terminals
E52-9	BRN	Ground for torque sensors	Below 0.3 V	—
E52-10	—	—	—	—

Terminal	Wire color	Circuit	Normal voltage	Remarks
E52-11	PPL/WHT	Data link connector	—	—
E52-12	BRN	Engine speed signal	*0 – 1 V ↑↓ 8 – 14 V (“Reference waveform No.30” and “Reference waveform No.31” under “Inspection of ECM and Its Circuits in Section 1A”.)	Engine idling
E52-13	—	—	—	—
E52-14	RED/BLU	P/S operation signal (idle up signal)	About 12 V	Ignition switch ON
			0 – 1 V	Engine idling and turned steering wheel to the right or left until it stops
E52-15	—	—	—	—
E52-16	YEL	Torque sensor internal failure signal	About 5 V	At the moment of Ignition switch ON
			0 V	Ignition switch ON
E52-17	—	—	—	—
E52-18	WHT	Torque sensor signal (Main)	About 0 – 2.5 V	• Steering wheel with left turn • Out put voltage varies linearly depending on steering force
			About 2.5 V	Steering wheel at free
			About 2.5 – 6 V	• Steering wheel with right turn • Out put voltage varies linearly depending on steering force
E52-19	GRY	Ground for shield wire	Below 0.3 V	—
E52-20	RED	5 V reference power supply for torque sensor	About 5 V	• Ignition switch ON • Check voltage between “E52-20” and “E52-9” terminals

Reference waveform No.1

Motor output signal 1(1), Motor output signal 2(2), with engine idling

Measurement terminal	CH1: “E51-1” to vehicle body ground CH2: “E51-2” to vehicle body ground
Oscilloscope setting	CH1: 5 V/DIV, CH2: 5 V/DIV TIME: 20 μs/DIV
Measurement condition	• Engine is idling and steering wheel at straight position

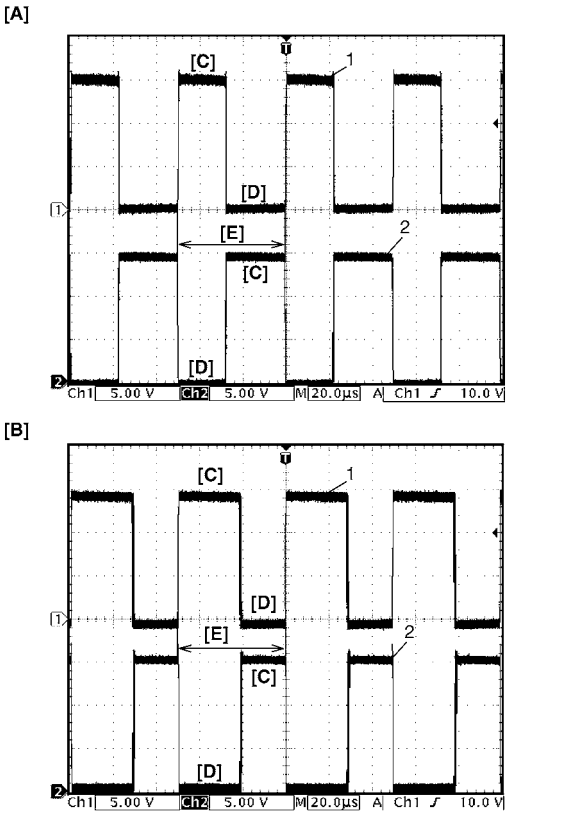


I6RS0B630017-01

Reference waveform No.2

Motor output signal 1(1), Motor output signal 2(2), with engine idling

Measurement terminal	CH1: “E51-1” to vehicle body ground CH2: “E51-2” to vehicle body ground
Oscilloscope setting	CH1: 5 V/DIV, CH2: 5 V/DIV TIME: 20 μs/DIV
Measurement condition	• Engine is idling and steering wheel is turned to left or right at turning speed of 90° /sec

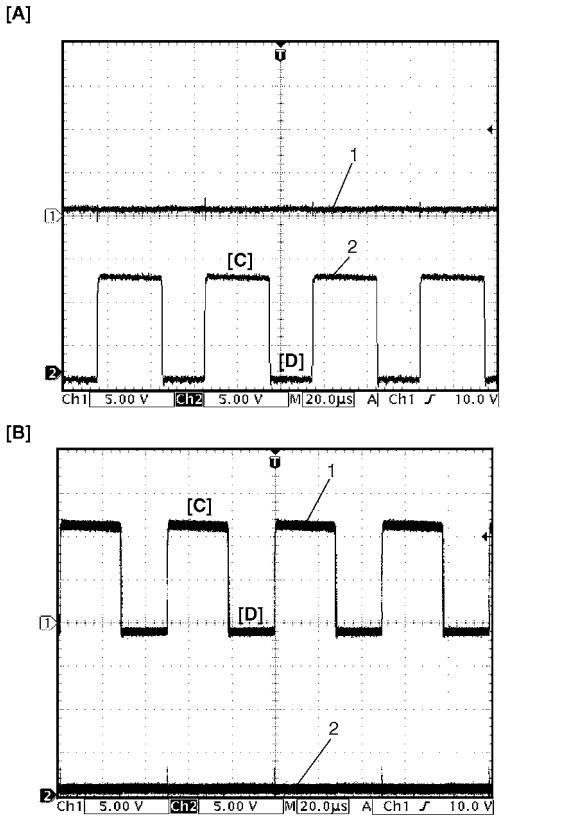


I6RS0B630018-01

[A]:	Steering wheel is turned left at turning speed of 90° /sec
[B]:	Steering wheel is turned right at turning speed of 90° /sec
[C]:	12 V ON
[D]:	GND ON
[E]:	1 duty cycle

Reference waveform No.3
Motor output signal 1(1), Motor output signal 2(2), with engine idling

Measurement terminal	CH1: “E51-1” to vehicle body ground CH2: “E51-2” to vehicle body ground
Oscilloscope setting	CH1: 5 V/DIV, CH2: 5 V/DIV TIME: 20 μs/DIV
Measurement condition	• Engine is idling and steering wheel is kept fully turned to left or right until it stops



I6RS0B630019-01

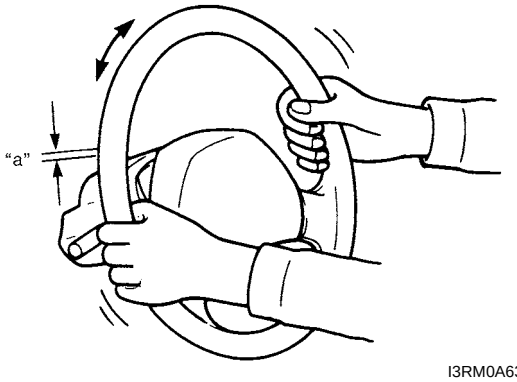
[A]:	Steering wheel is kept fully turned left until it stops
[B]:	Steering wheel is kept fully turned right until it stops
[C]:	12 V ON
[D]:	GND ON

Steering Wheel Play Check

S7RS0B6304024

- Check steering wheel for looseness or rattle by moving it in its shaft direction and lateral direction. If found defective, repair or replace.
- Check steering wheel for play, holding vehicle in straight forward condition on the ground with engine stopped.
  If steering wheel play is not within specification, inspect as follows and replace if found defective.
- Tie-rod end ball stud for wear (Ball stud should move when more than 0.2 N·m (2 kg-cm, 0.44 lb-ft) torque is applied.)
- Lower ball joint for wear
- Steering shaft joint for wear
- Steering pinion or rack gear for wear or breakage
- Each part for looseness

Steering wheel play “a”
: 0 – 30 mm (0 – 1.18 in.)



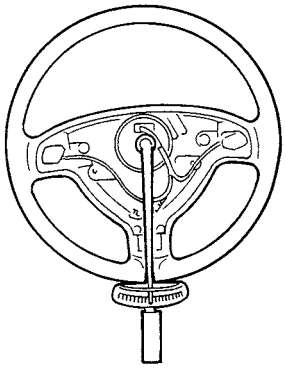
I3RM0A630021-01

Steering Force Check

S7RS0B6304025

1) Place vehicle on level road and set steering wheel at straight-ahead position.
2) Check if tire inflation pressure is as specified referring to the tire placard.
3) Remove driver air bag (inflator) module referring to “Driver Air Bag (Inflator) Module Removal and Installation in Section 8B”.
4) Start engine.
5) With engine idling, measure steering force by turning torque wrench.

   Steering force
   : Less than 6.4 N·m (0.64 kgf-m, 4.6 lb-ft)

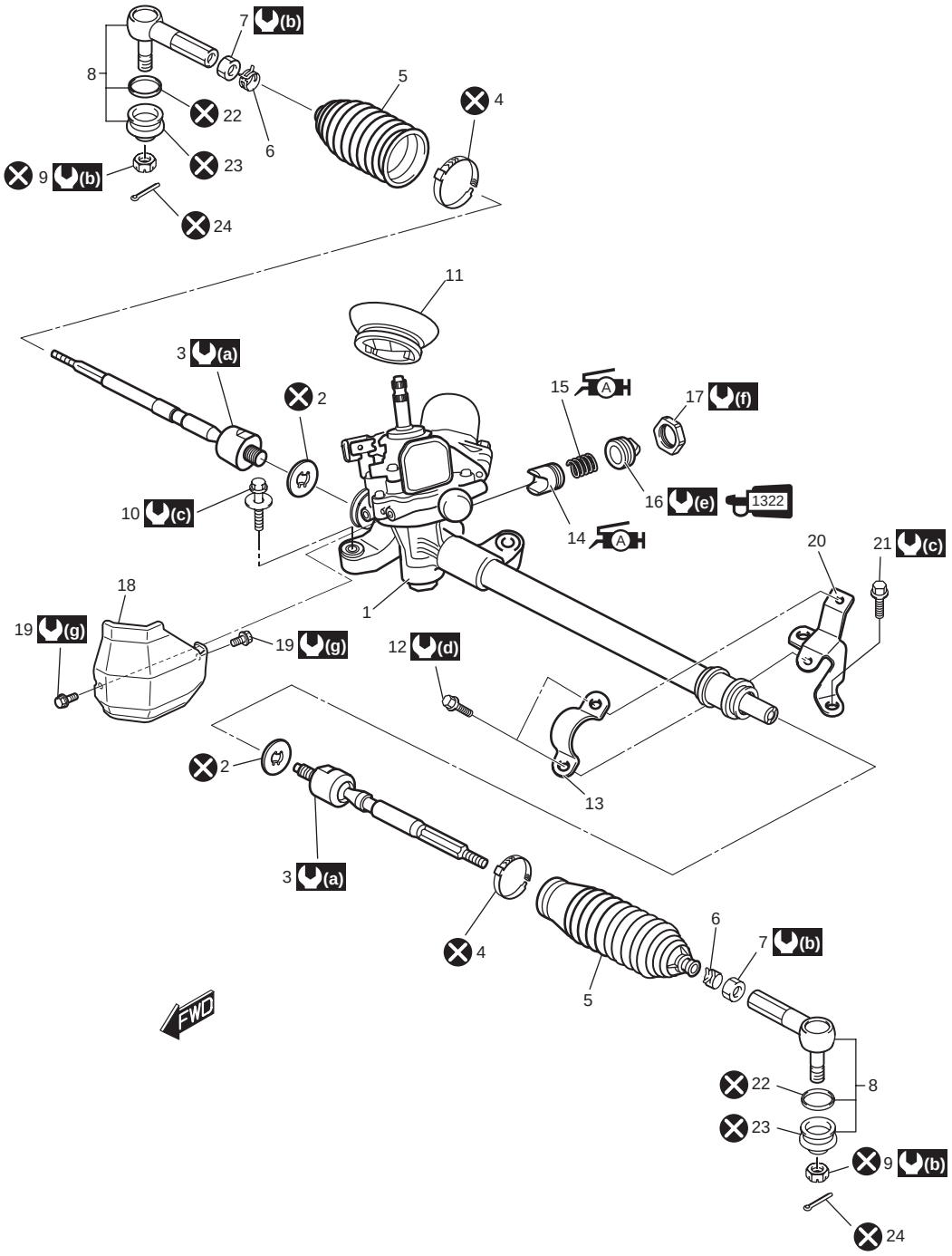

I3RM0A630022-01

6) Install driver air bag (inflator) module referring to “Driver Air Bag (Inflator) Module Removal and Installation in Section 8B”.

Repair Instructions

Steering Gear Case Assembly Components

S7RS0B6306001



I7RS0B630013-02

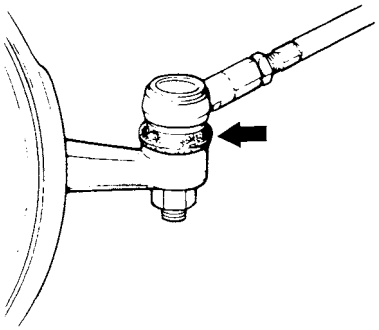
1. Steering gear case	12. Steering gear case mounting No.3 bolt	23. Boot
2. Tie-rod lock washer	13. Gear rack side No.1 bracket	24. split pin
3. Tie-rod	A H 14. Steering rack plunger : Apply grease 99000-25050 to rack plunger.	(a) : 93 N·m (9.3 kgf-m, 67.5 lb-ft)
4. Band	A H 15. Steering rack plunger spring : Apply grease 99000-25050 to spring end.	(b) : 45 N·m (4.5 kgf-m, 32.5 lb-ft) Refer to “Tie-Rod End Removal and Installation”.
5. Boot	1322 16. Steering rack damper screw : Apply thread lock 99000-32110 to all around thread part of rack damper screw.	(c) : 55 N·m (5.5 kgf-m, 40.0 lb-ft)
6. Rack boot clip	17. Steering rack damper lock nut	(d) : 40 N·m (4.0 kgf-m, 29.0 lb-ft)
7. Tie-rod end lock nut	18. Heat insulator	(e) : Refer to “Steering Rack Plunger Removal and Installation”.
8. Tie-rod end	19. Heat insulator bolt	(f) : 64 N·m (6.4 kgf-m, 46.5 lb-ft)

9. Tie-rod end nut	20. Gear rack side No.2 bracket	: 9.5 N·m (0.95 kgf-m, 7.0 lb-ft)
10. Steering gear case mounting No.1 bolt	21. Steering gear case mounting No.2 bolt	: Do not reuse.
11. Steering gear case grommet	22. Clip	

Tie-Rod End Boot On-Vehicle Inspection

S7RS0B6306002

Check boot for crack and damage.
If any defect is found, replace it with a new one.



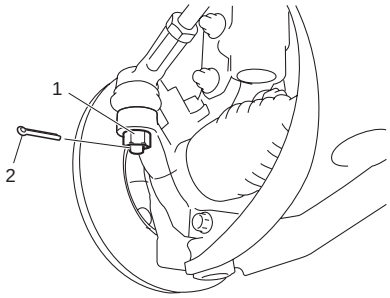
I3RM0A630024-01

Tie-Rod End Removal and Installation

S7RS0B6306003

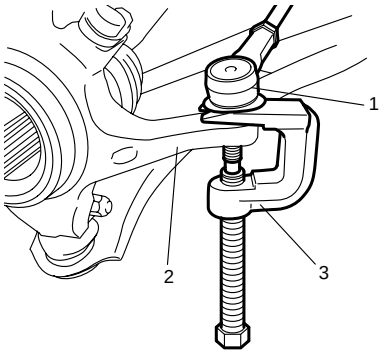
Removal

1) Hoist vehicle, and then remove wheel referring to "Wheel Removal and Installation in Section 2D".
2) Remove split pin (2) and tie-rod end nut (1) from steering knuckle.



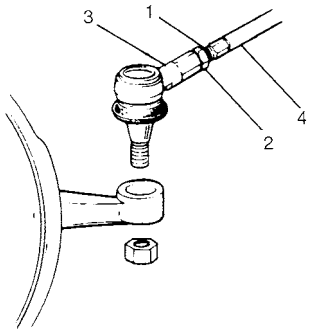
I7RS0A630016-01

3) Disconnect tie-rod end (1) from knuckle (2) using puller (3).



I4RS0A630040-01

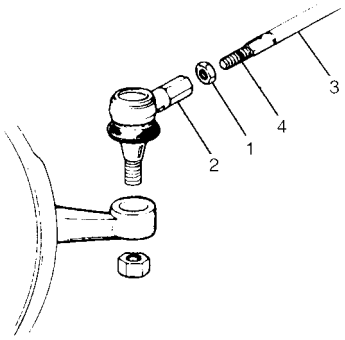
4) For ease of adjustment after installation, make marking (1) of tie-rod end lock nut (2) position on tie-rod end thread. Then, loosen lock nut and remove tie-rod end (3) from tie-rod (4).



I4RS0A630041-01

Installation

1) Install tie-rod end lock nut (1) and tie-rod end (2) to tie-rod (3). Align lock nut with mark (4) on tie-rod thread.



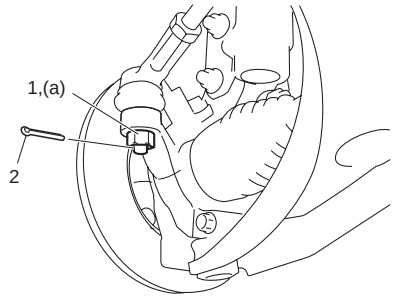
I4RS0A630042-01

2) Connect tie-rod end to knuckle. Tighten tie-rod end nut (1) to specified torque.
3) Bend new split pin (2).

NOTE

After tightening tie-rod end nut to specified torque, match next first slot of nut with hole of tie-rod end for insertion of split pin (rotation angle 60° max).

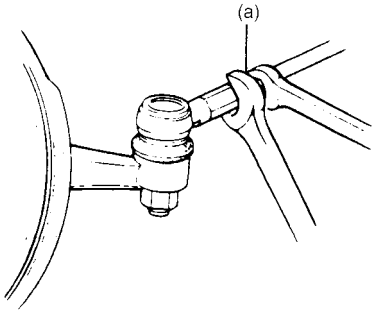
Tightening torque
Tie-rod end nut (a): 45 N·m (4.5 kgf-m, 32.5 lb-ft)



I7RS0A630017-01

4) Inspect for proper toe referring to “Front Wheel Alignment Inspection and Adjustment in Section 2B”.
5) After confirming proper toe, tighten tie-rod end lock nut to specified torque.

Tightening torque
Tie-rod end lock nut (a): 45 N·m (4.5 kgf-m, 32.5 lb-ft)



I3RM0A630030-01

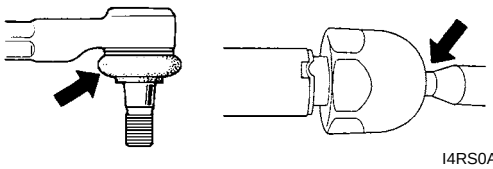
6) Tighten wheel nuts to specified torque and lower hoist.

Tightening torque
Wheel nut: 85 N·m (8.5 kgf-m, 61.5 lb-ft)

Tie-Rod End Inspection

S7RS0B6306004

- Inspect for play in ball joint.
- Inspect for play in rack end ball joint.
  In either case, if found defective, replace.

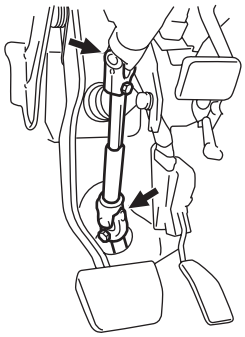


I4RS0A630043-01

Steering Shaft Joint On-Vehicle Inspection

S7RS0B6306005

Check shaft joint for wear, breakage and any other damage and replace if any defect exists.



I4RS0B630012-01

Steering Gear Case Assembly Removal and Installation

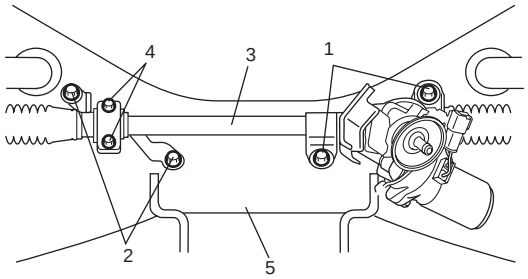
S7RS0B6306006

Removal

⚠ CAUTION

Be sure to set front wheels (tires) in straight direction and remove ignition key from key cylinder before performing the following steps; otherwise, contact coil of air bag system may get damaged.

1) Remove front suspension frame with steering gear case assembly referring to “Front Suspension Frame, Stabilizer Bar and/or Bushings Removal and Installation in Section 2B”.
2) Remove steering gear case mounting No.3 bolts (4), No.1 bolts (1), No.2 bolts (2) and gear case bracket, then remove gear case (3) from front suspension frame (5).



I6RS0C630018-01

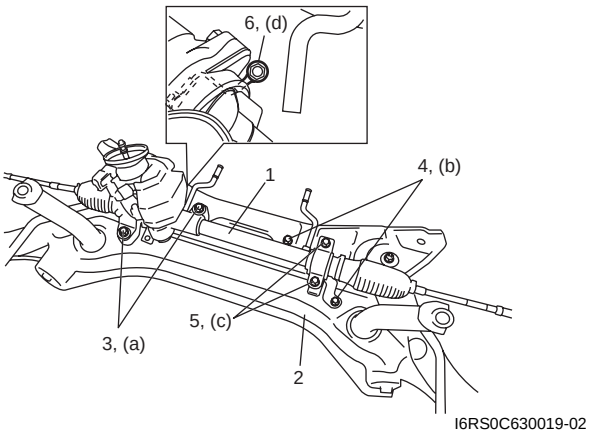
Installation

1) Mount steering gear case (1) to front suspension frame (2) and tighten gear case mounting No.1 bolts (3), No.2 bolts (4) and No.3 bolts (5) to specified torque.

   Tightening torque
   Steering gear case mounting No.1 bolt (a): 55 N·m (5.5 kgf-m, 40.0 lb-ft)
   Steering gear case mounting No.2 bolt (b): 55 N·m (5.5 kgf-m, 40.0 lb-ft)
   Steering gear case mounting No.3 bolt (c): 40 N·m (4.0 kgf-m, 29.0 lb-ft)

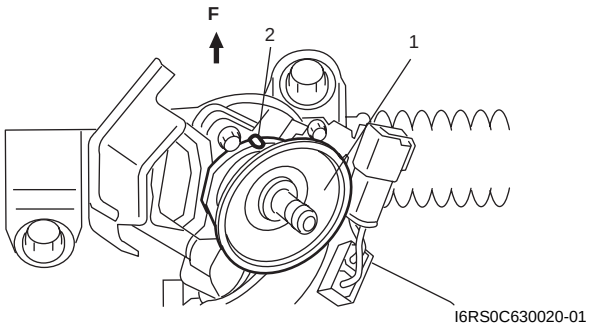
2) Install earth cable (6) as shown in figure.

   Tightening torque
   Earth cable bolt (d): 4.5 N·m (0.45 kgf-m, 3.5 lb-ft)



I6RS0C630019-02

3) Install grommet (1) whose projection (2) orients vehicle forward.



I6RS0C630020-01

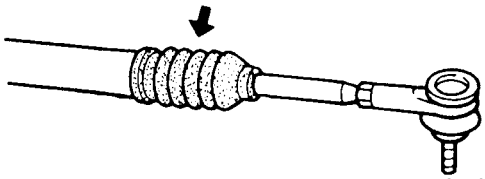
F: Vehicle forward

4) Install front suspension frame with steering gear case assembly referring to “Front Suspension Frame, Stabilizer Bar and/or Bushings Removal and Installation in Section 2B”.

Steering Rack Boot Inspection

S7RS0B6306007

Hoist vehicle.
Inspect each boot for tear. A torn boot allows entry of dust and water which can cause wear to steering rack and pinion to produce noise as well as rust to result in malfunction of steering system.
Even if boot tear is small, replace with new one.
Also, check each boot for dent. If there is a dent, keep boot in most compressed state for some seconds to correct dent.
Boots should be visually inspected for any damage, dent and tear during every periodical inspection at specified intervals and whenever vehicle is hoisted for any other purpose.

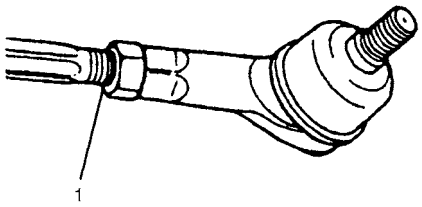

I2RH01630012-01

Tie-Rod / Rack Boot Removal and Installation

S7RS0B6306008

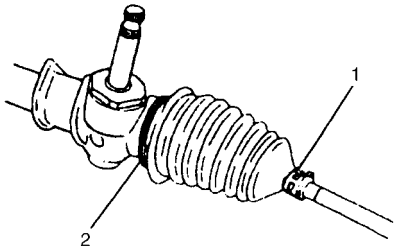
Removal

1) Remove steering gear case assembly referring to “Steering Gear Case Assembly Removal and Installation”.
2) For ease of adjustment after installation, make marking (1) of tie-rod end lock nut position of tie-rod thread.



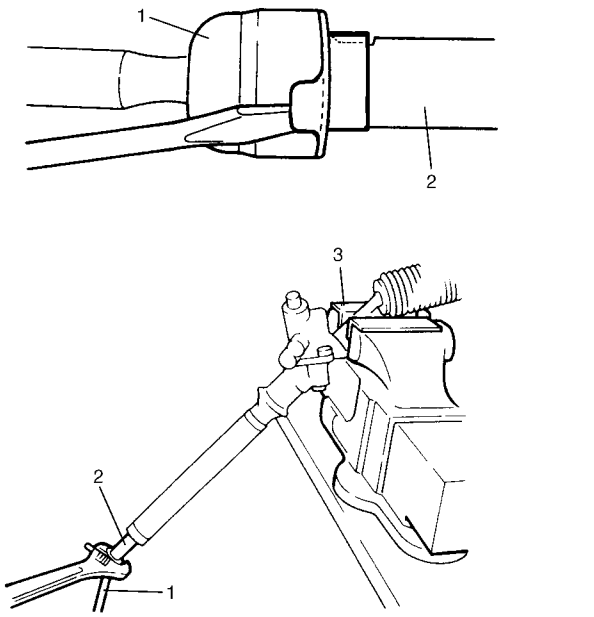
I4RS0A630044-01

3) Loosen tie-rod end lock nut and remove tie-rod end.
4) Remove boot band (2) and clip (1).
5) Remove boot from tie-rod.



IYSQ01630034-01

6) Unbend bent part of tie-rod lock washer (1).
7) Hold rack with soft jawed vise (3) and remove tie-rod from rack (2).

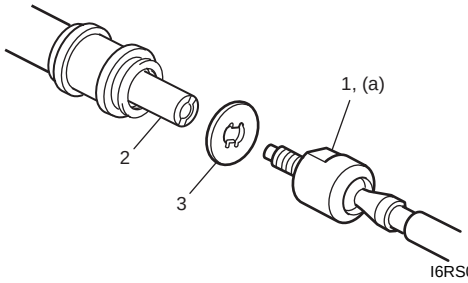


I4RS0A630033-01

Installation

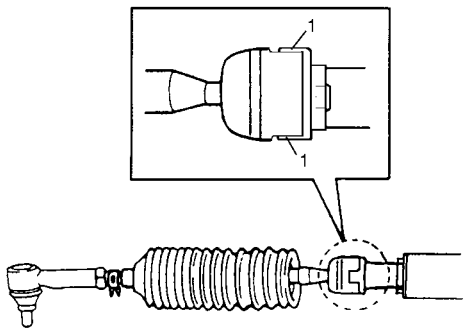
1) Install tie-rod (1) and new tie-rod lock washer (3) to rack (2).
2) Hold rack with soft jawed vise and tighten tie-rod to specified torque.

Tightening torque
Tie-rod (a): 93 N·m (9.3 kgf-m, 67.5 lb-ft)



I6RS0C630027-01

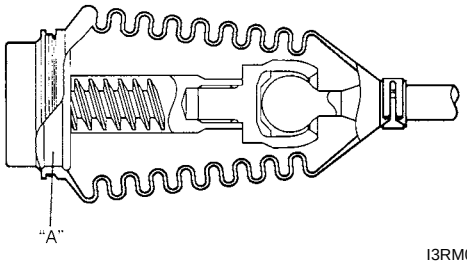
3) Bend lock washer at 2 places (1) as shown in figure.



I4RS0A630035-01

4) Apply sealant to gear case groove “A” indicated in figure. Position boot properly in grooves of gear case (or rack side mount) and tie-rod.
After this, check to ensure that boot is free from twist and dent.

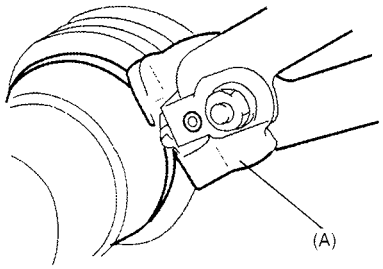
“A”: Silicone sealant 99000–31120 (Silicone sealant)



I3RM0A630050-01

5) Fasten boot with new band and clip securely.

Special tool
(A): 09943–55010

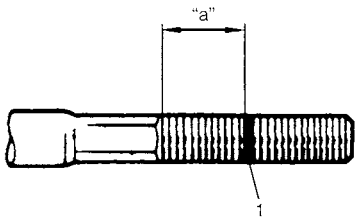


I3RM0A630051-01

6) Install tie-rod end lock nut and tie-rod end to tie-rod. Position lock nut to marking (1) made in removal.

NOTE

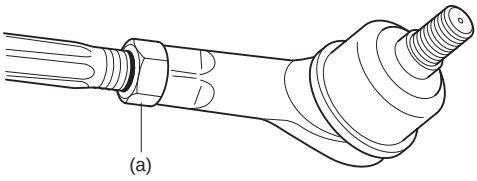
When tie-rod was replaced, measure length “a” on removed tie-rod and use it on new replacement tie-rod so as to position lock nut properly.



I3RM0A630052-01

7) Tighten tie-rod end lock nut to specified torque.

Tightening torque
Tie-rod end lock nut (a): 45 N·m (4.5 kgf-m, 32.5 lb-ft)



I7RS0A630018-01

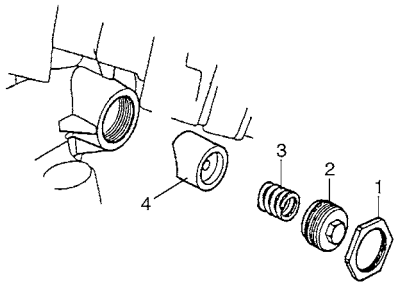
8) Install steering gear case assembly referring to “Steering Gear Case Assembly Removal and Installation”.

Steering Rack Plunger Removal and Installation

S7RS0B6306009

Removal

1) Remove gear case assembly referring to “Steering Gear Case Assembly Removal and Installation”.
2) Loosen lock nut (1) with holding damper screw (2).
3) Remove lock nut (1), rack damper screw (2), rack plunger spring (3) and rack plunger (4).



I4RS0A630045-01

Installation

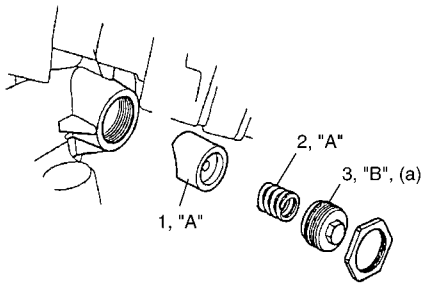
1) Apply grease lightly to sliding part of plunger (1) against rack.

   “A”: Grease 99000–25050 (SUZUKI Super Grease E)

2) Install plunger and spring (2) as shown.
3) Apply thread lock cement to rack damper screw (3) and tighten them as follows.
   a) Tighten damper screw to 25 N·m (2.5 kgf-m, 18.0 lb-ft).
   b) Loosen damper screw until 180°.
   c) Retighten damper screw to 3.9 N·m (0.39 kgf-m, 3.0 lb-ft).
   d) After tightening rack damper screw to specified torque, turn it back by 7 ± 3°.

      “B”: Thread lock cement 99000–32110 (Thread Lock Cement Super 1322)

      Tightening torque
      Rack damper screw (a): Tighten 25 N·m (2.5 kgf-m, 18.0 lb-ft) and loosen 180° and then tighten 3.9 N·m (0.39 kgf-m, 3.0 lb-ft) and turn it back by 7 ± 3° by the specified procedure.

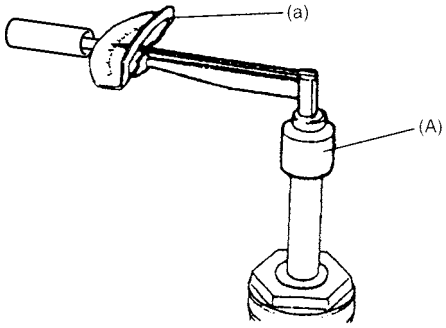


I4RS0A630046-01

4) Pinion rotation torque should be checked with rack position centered.
   Also, check if rack as a whole moves smoothly.

   Special tool
   (A): 09944–18310

   Tightening torque
   Rotation torquer of pinion (a): 2.0 N·m (0.2 kgf-m, 1.5 lb-ft)



I3RM0A630055-02

5) After adjustment, tighten lock nut to specified torque with holding damper screw at the position.

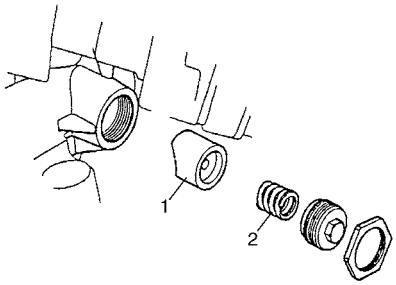
   Tightening torque
   Rack damper screw lock nut (a): 64 N·m (6.4 kgf-m, 46.5 lb-ft)

6) Install gear case assembly referring to “Steering Gear Case Assembly Removal and Installation”.

Steering Rack Plunger Inspection

S7RS0B6306010

- Inspect rack plunger (1) for wear or damage.
- Inspect rack plunger spring (2) for deterioration.



I4RS0A630047-01

P/S Control Module Removal and Installation

S7RS0B6306011

Removal

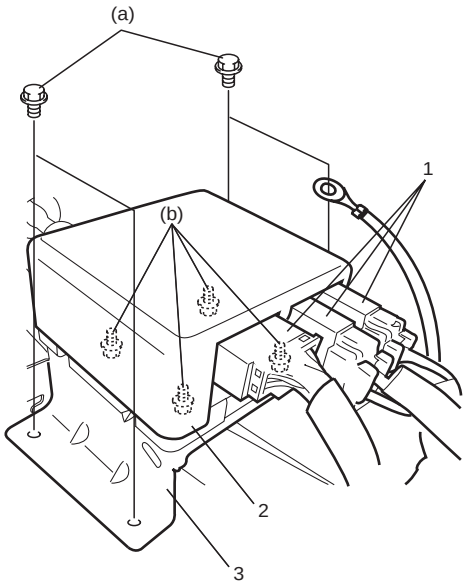
1) Disconnect negative cable at battery.
2) Remove console box.
3) Disconnect connectors (1) from P/S control module (2).
4) Disconnect connector from yaw rate / G sensor (ESP® model).
5) Remove P/S control module (2) with bracket (3) from floor panel.
6) Separate P/S control module and bracket.

Installation

Reverse removal procedure for installation noting the following.

- Tighten each screw to the specified torque.

Tightening torque
P/S control module bracket screw (ABS model) (a): 9 N·m (0.9 kgf-m, 6.5 lb-ft)
P/S control module bracket screw (ESP® model) (a): 7 N·m (0.7 kgf-m, 5.0 lb-ft)
P/S control module mounting screw (b): 5 N·m (0.5 kgf-m, 3.7 lb-ft)

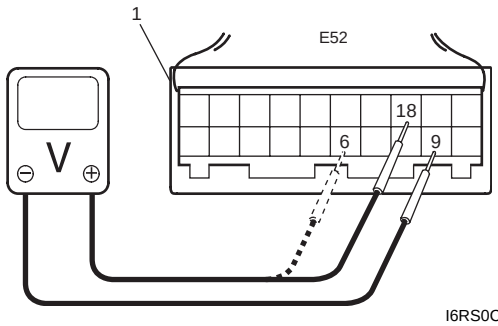


I7RS0A630020-01

Torque Sensor and Its Circuit Inspection

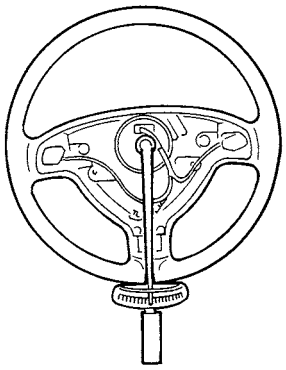
S7RS0B6306012

1) Remove console box.
2) With ignition switch turned OFF, connect scan tool to DLC or connect voltage tester between “E52-18” – “E52-9” (main sensor) or “E52-6” – “E52-9” (sub sensor) with connected connector (1) to P/S control module.



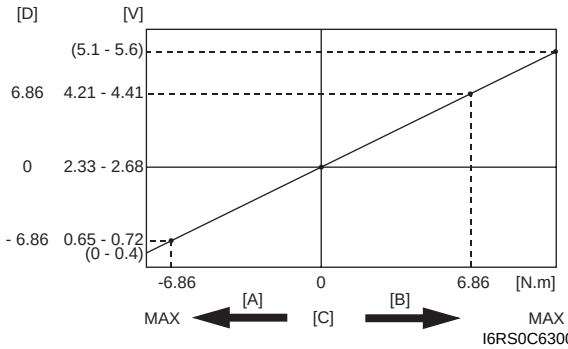
I6RS0C630024-01

3) Set torque wrench to steering wheel referring to “Steering Force Check” for checking steering force.



I3RM0A630022-01

4) Turn ON ignition switch without engine running and select scan tool “Data list” mode due to check of “TQS Main Torque”, “TQS Sub Torque” and “Assist Torque” display on scan tool when steering wheel turned left and right (if used).
5) Check that characteristic of torque sensor (main and sub) output voltage or scan tool data and steering force is as following graph when steering wheel is turned left and right. If sensor voltage or scan tool data is out of specified value or does not vary linearly as the following graph, check P/S control module and its circuit.
If they are OK, replace steering gear case assembly.



I6RS0C630021-04

[A]:	Steering force at left turn
[B]:	Steering force at right turn
[C]:	Steering wheel at free
[D]:	“TQS Main Torque”, “TQS Sub Torque” and “Assist Torque” in “Data List” displayed on scan tool

P/S Motor and Its Circuit Inspection

S7RS0B6306013

1) Remove console box.
2) Disconnect motor connector (“E51”) from P/S control module with ignition switch OFF.
3) Check for resistance between terminals of motor connector (“E51”).
   If check result is not as specified, replace steering gear case assembly.

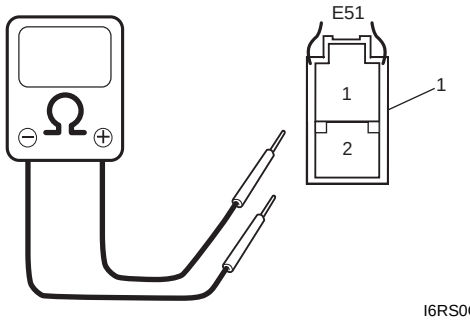
Motor circuit resistance

“E51-1” and “E51-2” (For motor)	**About 1 Ω**

4) Check for continuity between terminal of motor connector (“E51”) and body ground.
   If check result is not as specified, replace steering gear case assembly.

Motor circuit resistance

“E51-2” and body ground	**No continuity**



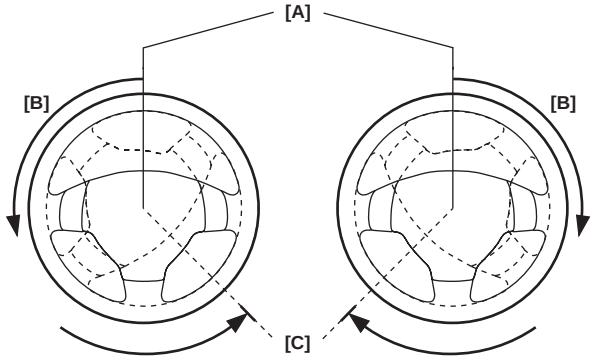
I6RS0C630025-01

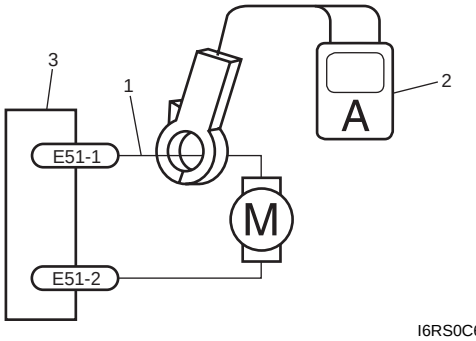
1. Connector “E51” (viewed from harness side)

5) Hoist vehicle.
6) Connect “E51” connector to P/S control module with ignition switch OFF position.
7) Using ammeter (2), check that P/S motor (1) current is as following table with idling engine. If check result is not satisfactory, check P/S control module referring to “Inspection of P/S Control Module and Its Circuits”. If OK, replace steering gear case assembly.

Motor current at hoisted vehicle

Condition	When steering wheel is left at straight position: [A]	When steering wheel is turned left or right by turning speed with 90° /sec: [B]	When steering wheel is kept fully turned left or right until it stops.: [C]
Motor current	**Approx. 0 A**	**Approx. 0 – 4 A**	**Approx. 30 – 45 A**





I6RS0C630022-01

Specifications

Tightening Torque Specifications

S7RS0B6307001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
Tie-rod end nut	45	4.5	32.5	☞
Tie-rod end lock nut	45	4.5	32.5	☞ / ☞
Wheel nut	85	8.5	61.5	☞
Steering gear case mounting No.1 bolt	55	5.5	40.0	☞
Steering gear case mounting No.2 bolt	55	5.5	40.0	☞
Steering gear case mounting No.3 bolt	40	4.0	29.0	☞
Earth cable bolt	4.5	0.45	3.5	☞
Tie-rod	93	9.3	67.5	☞
Rack damper screw	Tighten 25 N·m (2.5 kgf-m, 18.0 lb-ft) and loosen 180° and then tighten 3.9 N·m (0.39 kgf-m, 3.0 lb-ft) and turn it back by 7 ± 3° by the specified procedure.			☞
Rotation torquer of pinion	2.0	0.2	1.5	☞
Rack damper screw lock nut	64	6.4	46.5	☞
P/S control module bracket screw (ABS model)	9	0.9	6.5	☞
P/S control module bracket screw (ESP® model)	7	0.7	5.0	☞
P/S control module mounting screw	5	0.5	3.7	☞

NOTE

The specified tightening torque is also described in the following.
“Steering Gear Case Assembly Components”

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Special Tools and Equipment

Recommended Service Material

S7RS0B6308001

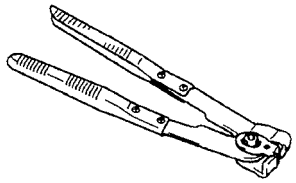
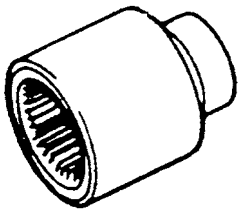
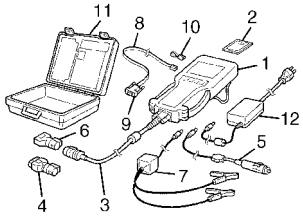
Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI Super Grease E	P/No.: 99000–25050	☞
Silicone sealant	Silicone sealant	P/No.: 99000–31120	☞
Thread lock cement	Thread Lock Cement Super 1322	P/No.: 99000–32110	☞

NOTE

Required service material is also described in the following.
“Steering Gear Case Assembly Components”

Special Tool

S7RS0B6308002

09943–55010 Boot clamp plier ☞ 	09944–18310 Pinion torque checking socket ☞ 
SUZUKI scan tool — This kit includes following items. 1. Tech 2, 2. PCMCIA card, 3. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loop back adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 loop back connector, 11. Storage case, 12.☞ / ☞ 	

Section 7

HVAC

CONTENTS

Precautions

Precautions

Precautions on HVAC

S7RS0B7000001

Air Bag Warning
Refer to “Air Bag Warning in Section 00”.

A/C System Caution
Refer to “A/C System Caution in Section 7B”.

Precautions on Servicing A/C System
Refer to “Precautions on Servicing A/C System in Section 7B”.

Heater and Ventilation

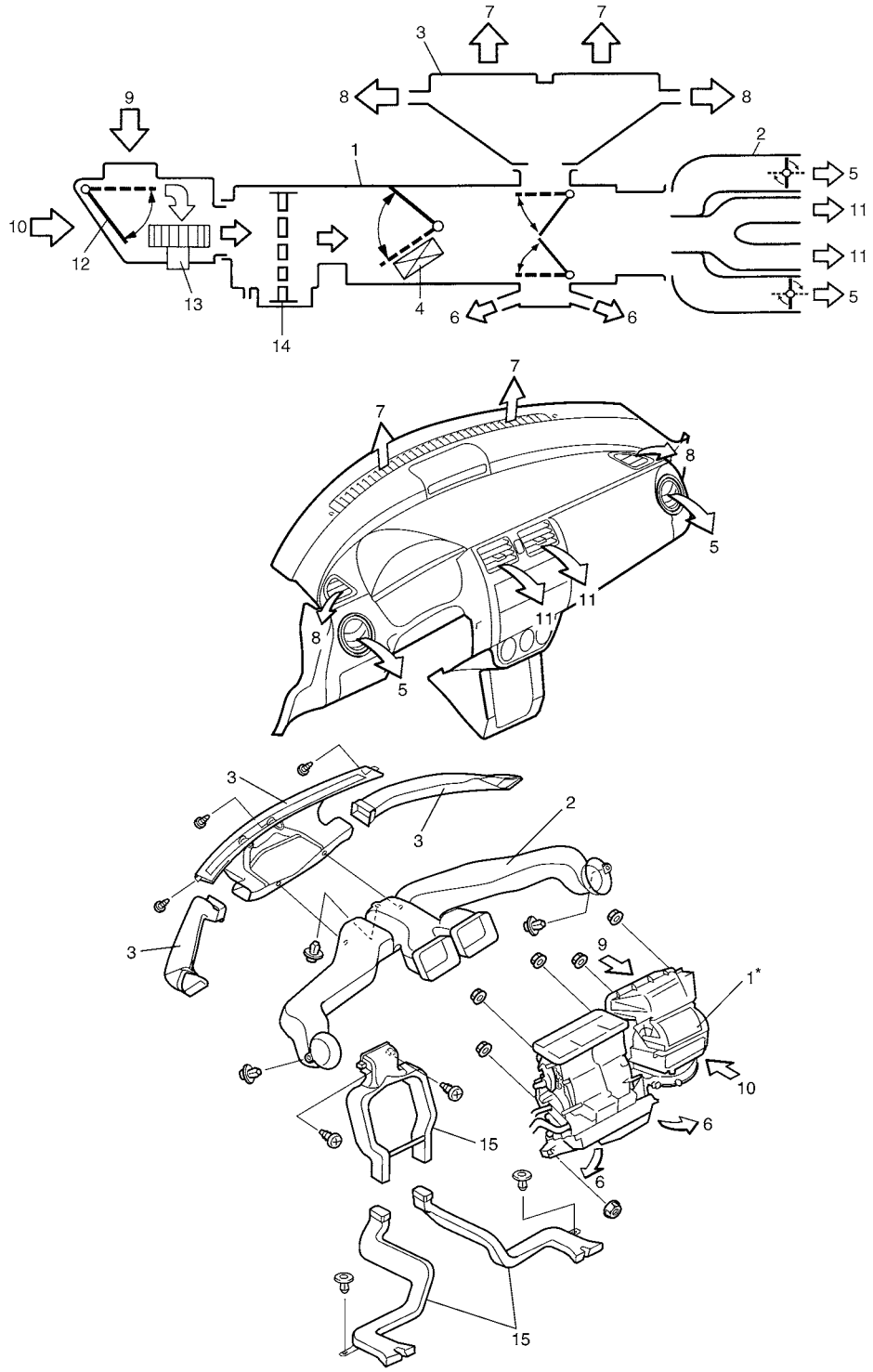
General Description

Heater and Ventilation Construction

S7RS0B7101001

NOTE

The figure shows left-hand steering vehicle. For right-hand steering vehicle, parts with (*) are installed at the opposite side.



I4RS0B710001-01

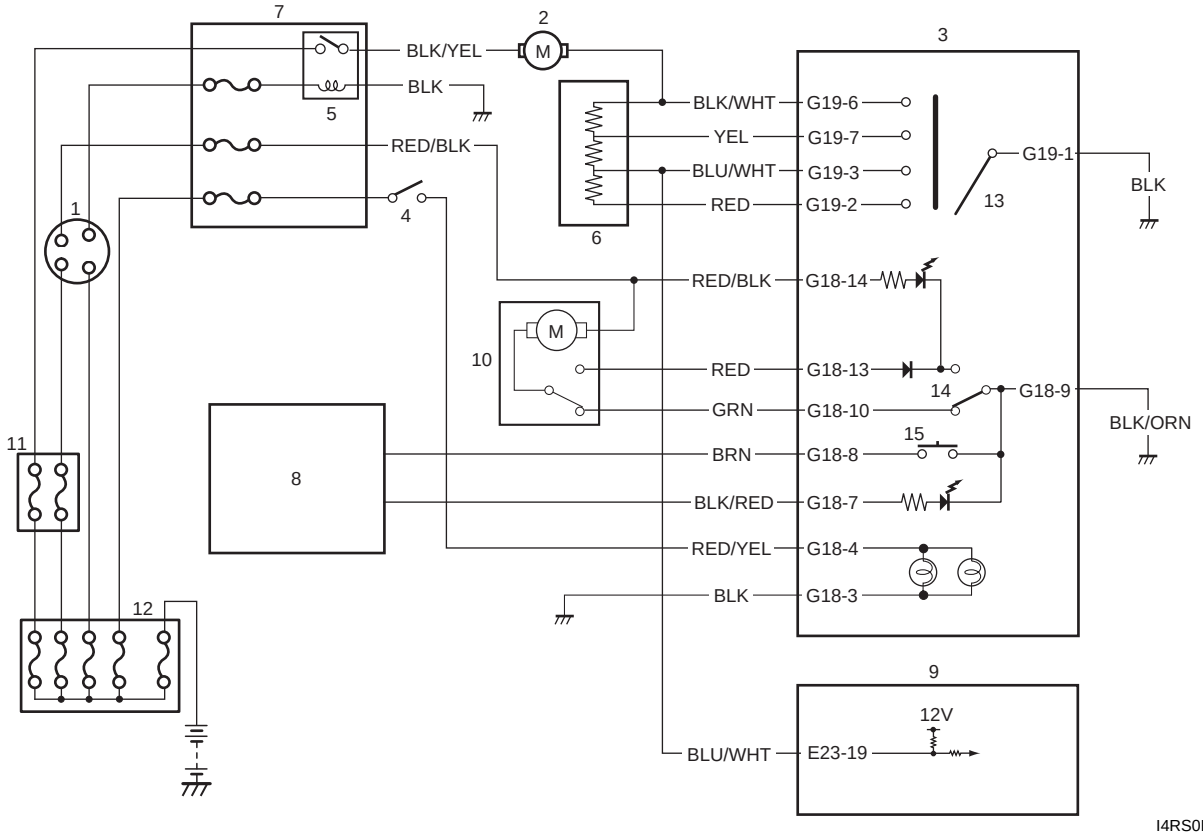
1. HVAC unit	5. Side ventilation air	9. Fresh air	13. Blower motor

2. Ventilator duct	6. Foot air	10. Recirculation air	14. Resistance board
3. Defroster nozzle	7. Front defroster air	11. Center ventilation air	15. Rear duct (if equipped)
4. Heater core	8. Side defroster air	12. Air intake door	

Schematic and Routing Diagram

Heater and Ventilation Wiring Circuit Diagram

S7RS0B7102001



I4RS0B710002-01

1. Ignition switch	5. Blower motor relay	9. ECM	13. Blower speed selector
2. Blower motor	6. Blower motor resistor	10. Air intake control actuator	14. Air intake selector
3. HVAC control unit	7. Junction block assembly	11. Individual circuit fuse box No.1	15. Rear defogger switch
4. Lighting switch	8. BCM	12. Main fuse box	

Diagnostic Information and Procedures

Heater and Ventilation Symptom Diagnosis

S7RS0B7104001

Condition	Possible cause	Correction / Reference Item
Blower motor does not operate with blower speed selector ON	Fuse blown	*Check related fuses, and then check for short circuit to ground.*
	Blower motor relay faulty	*Check blower motor relay referring to "Blower Motor Relay Inspection".*
	Blower motor resistor faulty	*Check blower motor resistor referring to "Blower Motor Resistor Inspection".*
	Blower speed selector faulty	*Check blower speed selector referring to "Blower Speed Selector Inspection".*
	Blower motor faulty	*Check blower motor referring to "Blower Motor Inspection".*
	Wiring or grounding faulty	*Repair as necessary.*
Incorrect temperature output	Temperature control cable broken or bent (manual A/C)	*Check temperature control cable.*
	Temperature control lever faulty (manual A/C)	*Check temperature control lever.*
	Incorrect installation of temperature control cable (manual A/C)	*Check position and adjust it as necessary.*
	Temperature control door assembly broken	*Repair temperature control door assembly.*
	Air ducts clogged	*Repair air ducts.*
	Heater core leaked or clogged	*Replace heater core.*
	Heater hoses leaked or clogged	*Replace heater hoses.*
	Thermostat faulty	*Check thermostat referring to "Thermostat Inspection in Section 1F".*
	Temperature control actuator faulty (automatic A/C)	*Check temperature control actuator referring to "Temperature Control Actuator Inspection in Section 7B".*
	HVAC control module faulty (automatic A/C)	*Check HVAC control module referring to "Inspection of HVAC Control Module and Its Circuit in Section 7B".*
	Wiring or grounding faulty (automatic A/C)	*Repair as necessary.*
Air outlet port does not change or does not agree with air flow selector's position even if air flow selector is changed	Air flow control cable broken or bent (manual A/C)	*Check air flow control cable.*
	Air flow control lever faulty (manual A/C)	*Check air flow control lever.*
	Incorrect installation of air flow control cable (manual A/C)	*Check position and adjust it as necessary.*
	Air flow control door assembly broken	*Repair air flow control door assembly.*
	Air ducts leaked or clogged	*Repair air ducts.*
	Air flow control actuator faulty (automatic A/C)	*Check air flow control actuator referring to "Air Flow Control Actuator Inspection in Section 7B".*
	HVAC control module faulty (automatic A/C)	*Check HVAC control module referring to "Inspection of HVAC Control Module and Its Circuit in Section 7B".*
	Wiring or grounding faulty (automatic A/C)	*Repair as necessary.*
Air intake door does not change even if air intake mode is changed	Air intake door broken	*Repair air intake door.*
	Air intake control actuator faulty	*Check air intake control actuator referring to "Air Intake Control Actuator Inspection".*
	Air intake selector faulty	*Check air intake selector referring to "Air Intake Selector Inspection".*
	Wiring or grounding faulty	*Repair as necessary.*

Repair Instructions

HVAC Unit Components

S7RS0B7106001

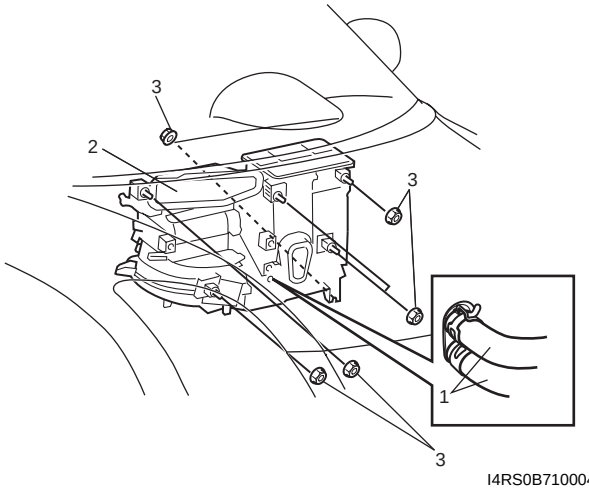
For manual type A/C, refer to “HVAC Unit Components in Section 7B”.
For automatic type A/C, refer to “HVAC Unit Components in Section 7B”.

HVAC Unit Removal and Installation

S7RS0B7106002

Removal

1) Disconnect negative (–) cable from battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove cowl top panel from vehicle body referring to “Cowl Top Components in Section 9K”.
4) Drain engine coolant, and then disconnect heater hoses (1) from HVAC unit (2).
5) Remove instrument panel from vehicle body referring to “Instrument Panel Removal and Installation in Section 9C”.
6) Remove nuts (3).
7) Remove HVAC unit from vehicle body.



I4RS0B710004-01

Installation

Reverse removal procedure noting the following instructions.

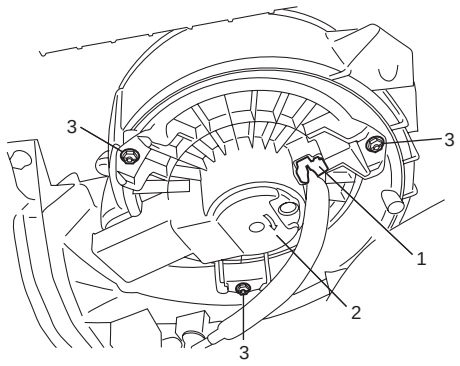
- Be careful not to catch any cable and wiring harness in inappropriate position.
- Adjust control cables of HVAC control unit referring to “HVAC Control Unit Removal and Installation”.
- Fill engine coolant to radiator.
- Enable air bag system referring to “Enabling Air Bag System in Section 8B”.

Blower Motor Removal and Installation

S7RS0B7106003

Removal

1) Disconnect negative (–) cable from battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Disconnect connector (1) from blower motor (2).
4) Remove blower motor from HVAC unit by removing screws (3).



I4RS0B710005-01

Installation

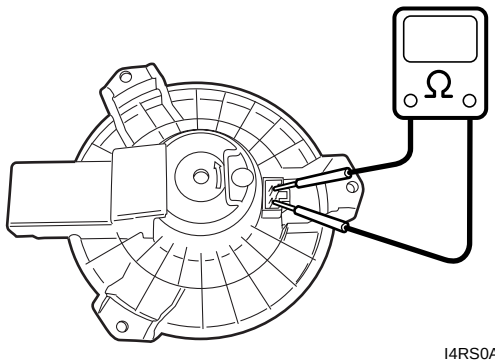
Reverse removal procedure noting the following instruction.

- Enable air bag system referring to “Enabling Air Bag System in Section 8B”.

Blower Motor Inspection

S7RS0B7106004

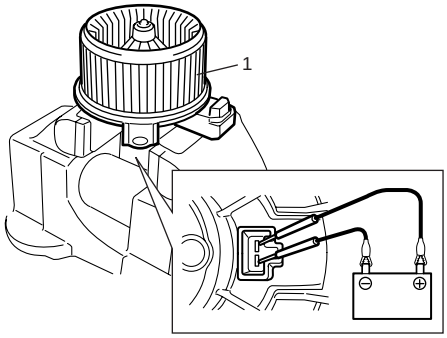
- Check for continuity between two terminals as shown. If there is no continuity, replace blower motor.



I4RS0A710006-01

- Check for operation and current.
  a. Put blower motor (1) in a soft-jawed vise.
  b. Connect battery to blower motor as shown.
  c. Check if blower motor operates smoothly without noise.
  d. Check if ammeter indicates the specified current. If measured current is out of specification, replace blower motor.

Blower motor specified current at 12 V
16 A maximum



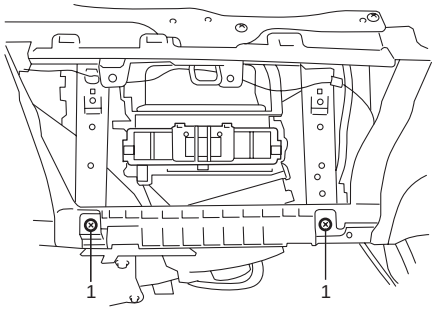
I4RS0A710007-01

Blower Motor Resistor Removal and Installation

S7RS0B7106005

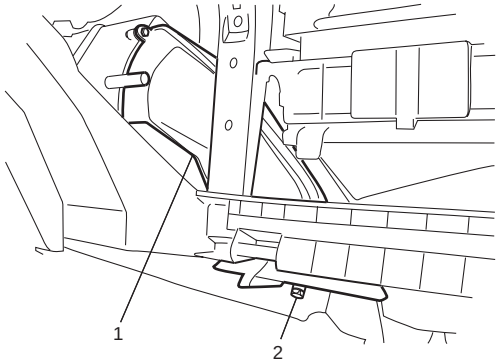
Removal

1) Disconnect negative (–) cable from battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove glove box from instrument panel.
4) Remove bolts (1) from instrument panel.



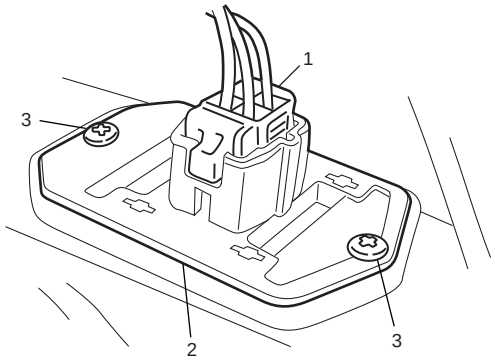
I4RS0B710006-01

5) Remove foot duct (1) from HVAC unit by removing screw (2).



I4RS0B710007-01

6) Remove connector (1) from blower motor resistor (2), and then remove blower motor resistor from HVAC unit by removing screws (3).



I4RS0A710010-01

Installation

Reverse removal procedure noting the following instruction.

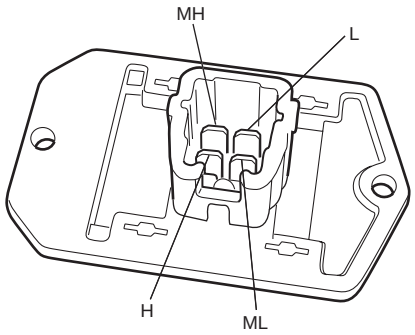
- Enable air bag system referring to “Enabling Air Bag System in Section 8B”.

Blower Motor Resistor Inspection

S7RS0B7106006

Measure each terminal-to-terminal resistance. If measured resistance is out of specification, replace blower motor resistor.

Blower motor resistor resistance
“H” – “MH”: Approximately 0.6 Ω at 20 – 25 °C (68 – 77 °F)
“MH” – “ML”: Approximately 1.6 Ω at 20 – 25 °C (68 – 77 °F)
“ML” – “L”: Approximately 3.4 Ω at 20 – 25 °C (68 – 77 °F)

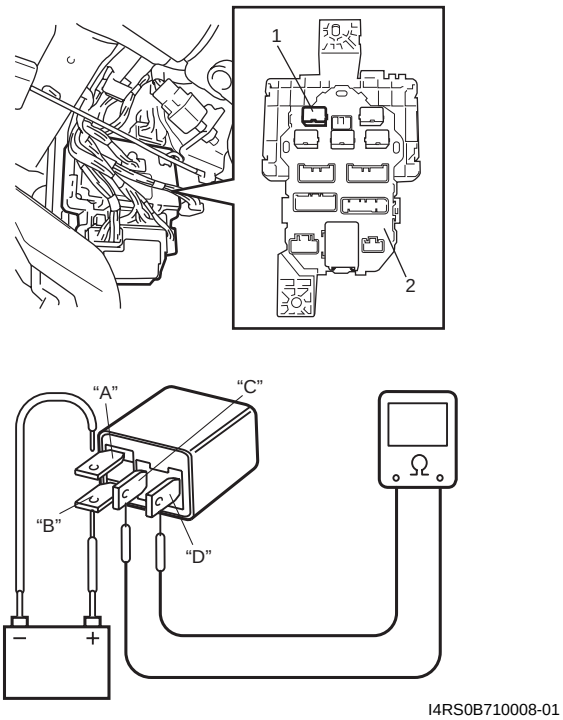


I4RS0B710024-01

Blower Motor Relay Inspection

S7RS0B7106007

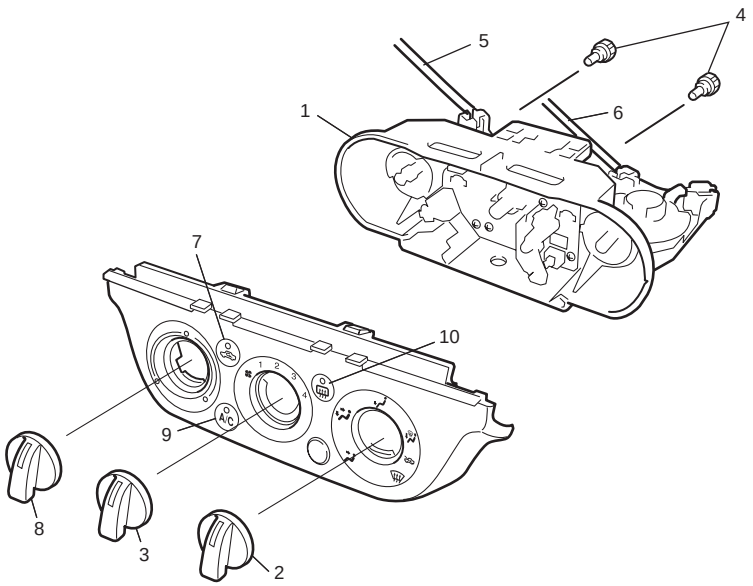
1) Remove junction block assembly referring to “BCM (Included in Junction Block Assembly) Removal and Installation in Section 10B”.
2) Disconnect blower motor relay (1) from junction block assembly (2).
3) Check that there is no continuity between terminal “C” and “D”. If there is continuity, replace relay.
4) Connect battery positive (+) terminal to terminal “B” of relay. Connect battery negative (–) terminal “A” of relay.
   Check continuity between terminal “C” and “D”.
   If there is no continuity when relay is connected to the battery, replace relay.



I4RS0B710008-01

HVAC Control Unit Components

S7RS0B7106008



I4RS0B710009-01

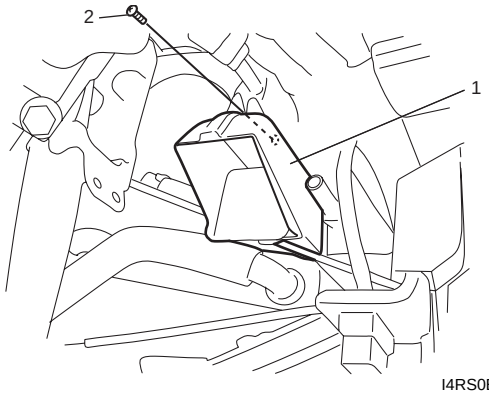
1. Heater control body assembly	4. Bulb	7. Air intake selector	10. Rear defogger switch (if equipped)
2. Air flow selector	5. Temperature control cable	8. Temperature selector	
3. Blower speed selector	6. Air flow control cable	9. A/C switch (if equipped)	

HVAC Control Unit Removal and Installation

S7RS0B7106009

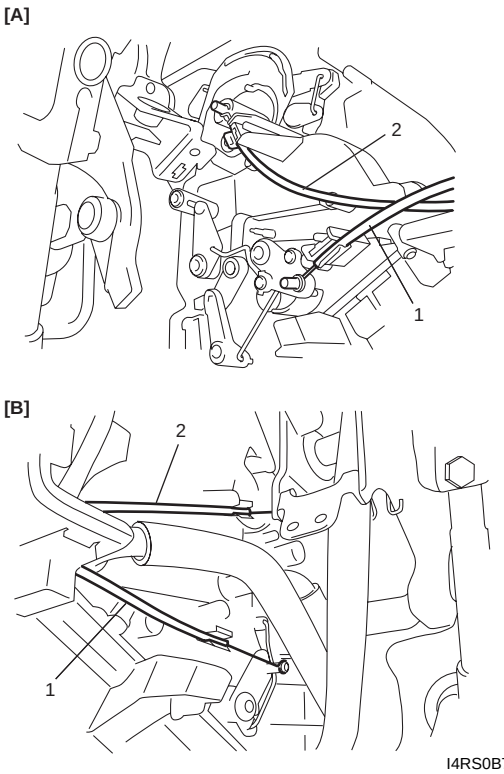
Removal

1) Disconnect negative (–) cable at battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove passenger air bag module from instrument panel referring to “Passenger Air Bag (Inflator) Module Removal and Installation in Section 8B”.
4) Remove radio assembly from instrument panel referring to “Audio Unit Removal and Installation in Section 9C”.
5) Remove driver side foot duct (1) from HVAC unit by removing screw (2).



I4RS0B710010-01

6) Disconnect temperature control cable (1) and air flow control cable (2) from HVAC unit.



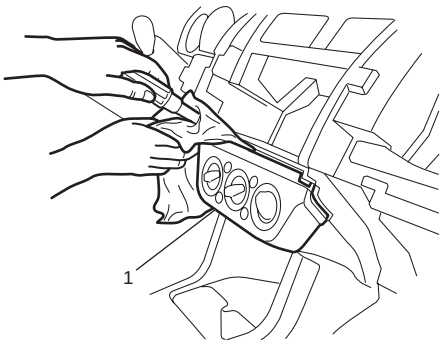
I4RS0B710011-01

[A]: LH steering vehicle	[B]: RH steering vehicle

7) Remove two connectors from HVAC control unit.
8) Remove HVAC control unit (1) from instrument panel.

NOTE

Be careful not to damage HVAC control unit and instrument panel by using rag.

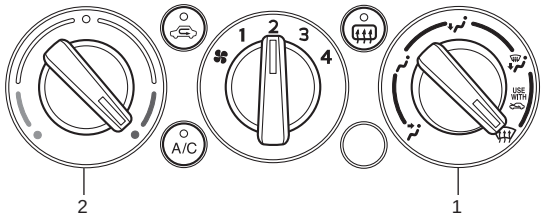


I4RS0B710012-01

Installation

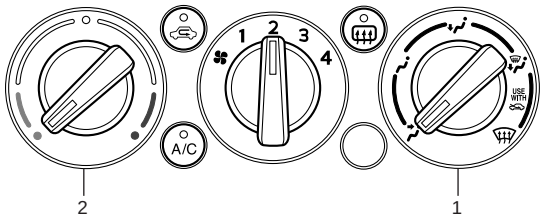
Reverse removal procedure noting the following instructions.

- Connect temperature control cable and air flow control cable of HVAC control unit to links of HVAC unit.
  a. For LH steering vehicle, set air flow selector (1) to “DEF” position and temperature selector (2) to “MAX HOT” position.



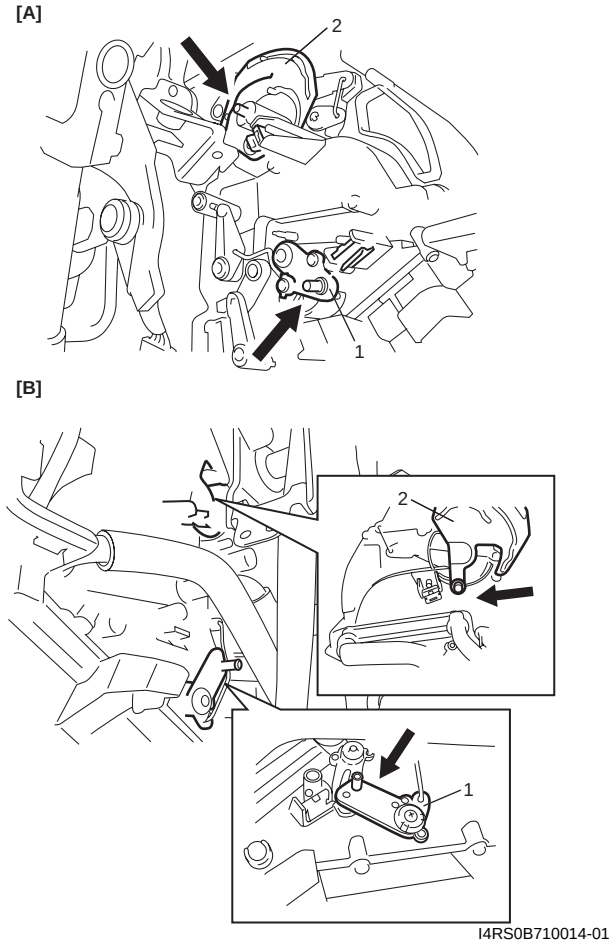
I4RS0B710013-01

For RH steering vehicle, set air flow selector (1) to “VENT” position and temperature selector (2) to “MAX COOL” position.



I4RS0A710016-01

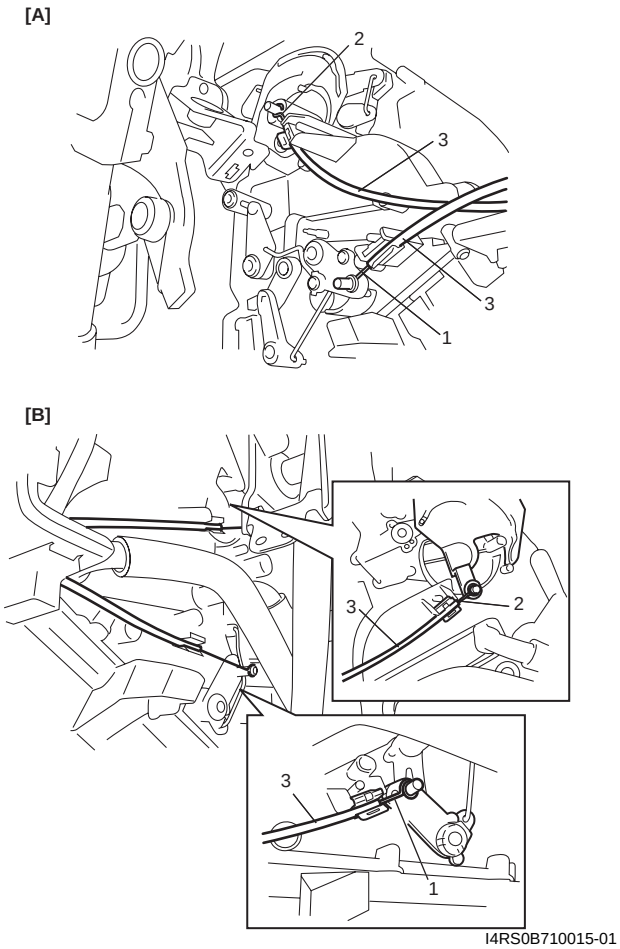
b. Move temperature control lever (1) and air flow control plate (2) fully to the arrow direction.



I4RS0B710014-01

[A]: LH steering vehicle	[B]: RH steering vehicle

c. Fix temperature control inner cable (1) to pin of temperature control lever and air flow control inner cable (2) to pin of air flow control plate, and then fix each outer cable (3) to each cable lock clamp.



I4RS0B710015-01

[A]: LH steering vehicle	[B]: RH steering vehicle

NOTE

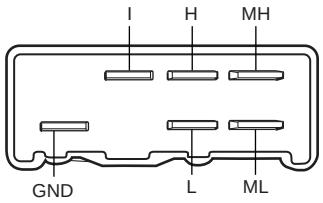
After installing control cables, make sure that control lever and plate move smoothly and stop at proper position.

- Enable air bag system referring to “Enabling Air Bag System in Section 8B”.
- Make sure that air flow outlet changes correctly as air flow selector is changed.

Blower Speed Selector Inspection

S7RS0B7106010

Check blower speed selector for each terminal to terminal continuity. If check result does not meet the following conditions, replace HVAC control unit.



Terminal / Position	GND	I	L	ML	MH	H
OFF	○					
1	○	○	○			
2	○	○		○		
3	○	○			○	
4	○	○				○

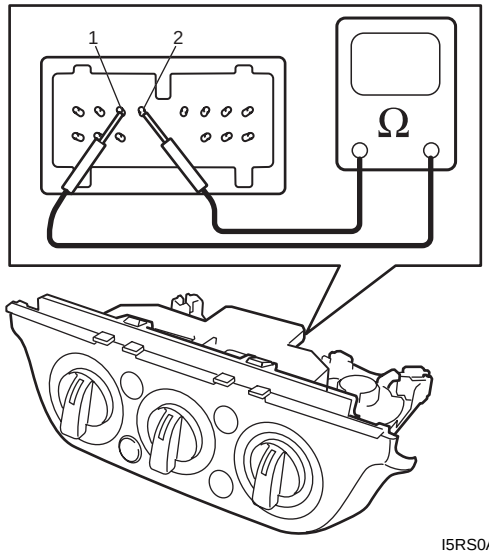
I4RS0A710019-01

Air Intake Selector Inspection

S7RS0B7106011

- Check that there is continuity between terminal (1) and terminal (2) when air intake selector is at fresh position.
- Check that there is no continuity between terminal (1) and terminal (2) when air intake selector is at recirculation position.

If check result does not meet the above conditions, replace HVAC control unit.



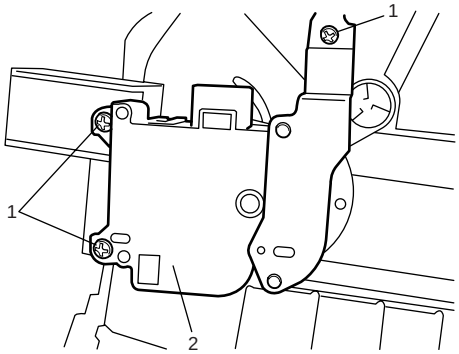
I5RS0A710001-01

Air Intake Control Actuator Removal and Installation

S7RS0B7106012

Removal

1) Remove instrument panel from vehicle body referring to “Instrument Panel Removal and Installation in Section 9C”.
2) Remove screws (1).
3) Remove air intake control actuator (2) from HVAC unit.

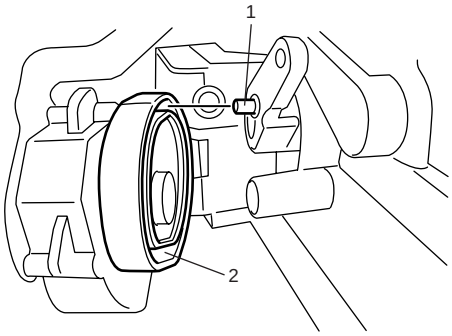


I4RS0A710021-01

Installation

Reverse removal procedure noting the following instruction.

- Be sure to insert the linkage pin (1) into the groove (2) of air intake control actuator.



I4RS0A710022-01

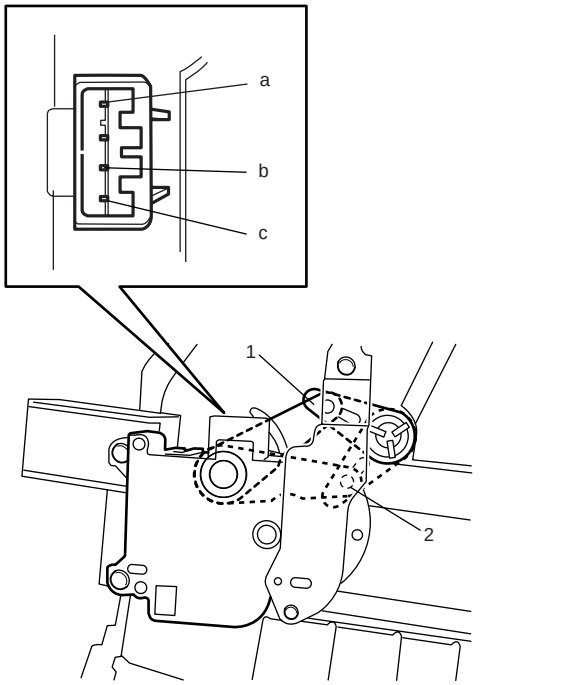
Air Intake Control Actuator Inspection

S7RS0B7106013

Check air intake control actuator as follows:

1) Using service wire, connect battery positive terminal to “a” terminal and battery negative terminal to terminal “b”. And, check if air intake selector link operates smoothly and it stops at fresh position (1).
2) Using service wire, connect battery positive terminal to “a” terminal and battery negative terminal to terminal “c”. And, check if air intake selector link operates smoothly and it stops at recirculation position (2).

If malfunction is found, replace air intake control actuator.



I4RS0A710023-01

Center Ventilation Louver Removal and Installation

S7RS0B7106014

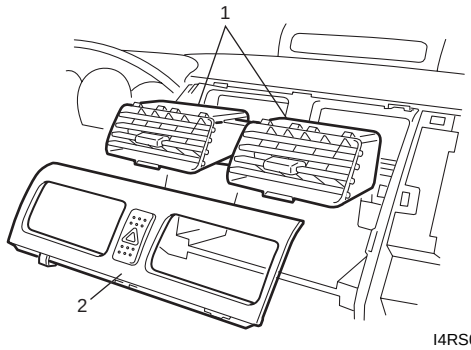
Removal

1) Disconnect negative (–) cable from battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove passenger air bag module from instrument panel referring to “Passenger Air Bag (Inflator) Module Removal and Installation in Section 8B”.
4) Remove radio assembly from instrument panel referring to “Audio Unit Removal and Installation in Section 9C”.
5) Remove center ventilation louver (1) with garnish (2) from instrument panel, and then disconnect connector from hazard switch.

NOTE

Garnish is fitted to instrument panel with six clips. When removing garnish from instrument panel, be careful not to break them.

6) Separate center ventilation louver and garnish.



I4RS0B710017-01

Installation

Reverse removal procedure.

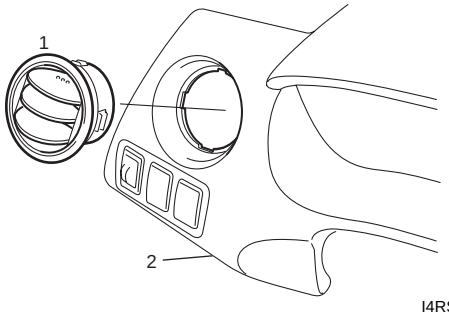
Side Ventilation Louver Removal and Installation

S7RS0B7106015

Driver side ventilation louver

Removal

1) Disconnect negative (–) cable from battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove steering column hole cover from instrument panel.
4) Remove combination meter cluster panel from instrument panel, and then disconnect connectors from front fog lamp switch, illumination cancel switch and headlight leveling switch (if equipped) of combination meter cluster panel.
5) Separate driver side ventilation louver (1) and combination meter cluster (2).

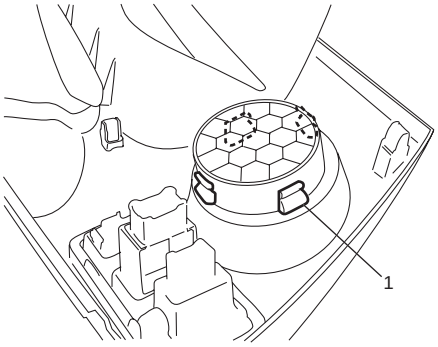


I4RS0B710018-01

Installation

Reverse removal procedure noting the following instruction.

- Driver side ventilation louver is fitted to combination meter cluster panel with four clips (1). When installing driver side ventilation louver to combination meter cluster panel, position the smallest clip to the top.

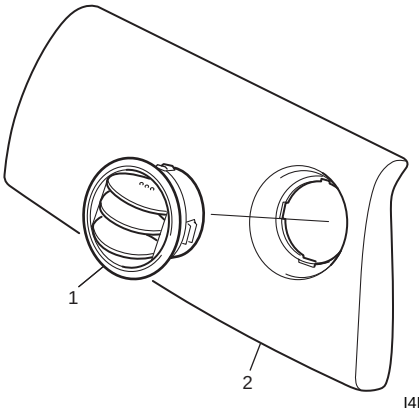


I4RS0B710019-01

Passenger side ventilation louver

Removal

1) Disconnect negative (–) cable from battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove glove box from instrument panel.
4) Remove passenger air bag module from instrument panel referring to “Passenger Air Bag (Inflator) Module Removal and Installation in Section 8B”.
5) Separate passenger side ventilation louver (1) and passenger air bag module (2).

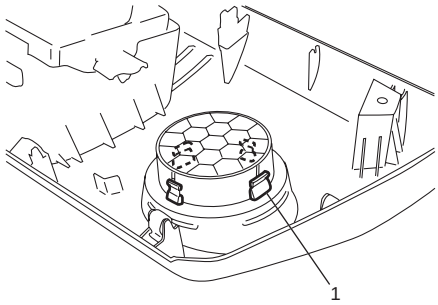


I4RS0B710020-01

Installation

Reverse removal procedure noting the following instruction.

- Passenger side ventilation louver is fitted to passenger air bag module with four clips (1). When installing passenger side ventilation louver to passenger air bag module, position the smallest clip to the top.



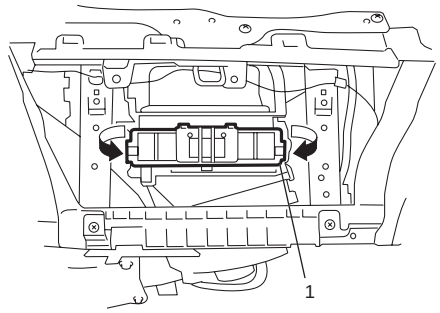
I4RS0B710021-01

HVAC Air Filter Removal and Installation (If Equipped)

S7RS0B7106016

Removal

1) Remove glove box from instrument panel.
2) Remove air filter cover (1) from HVAC unit while releasing lock of both sides of air filter cover.



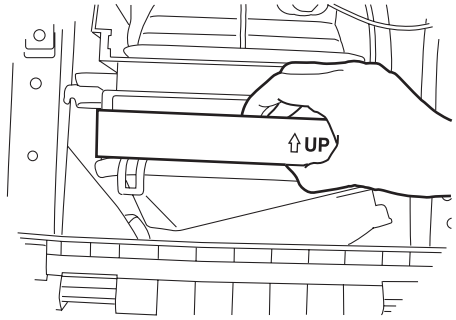
I5RS0C710001-01

3) Pull out air filter from HVAC unit.

Installation

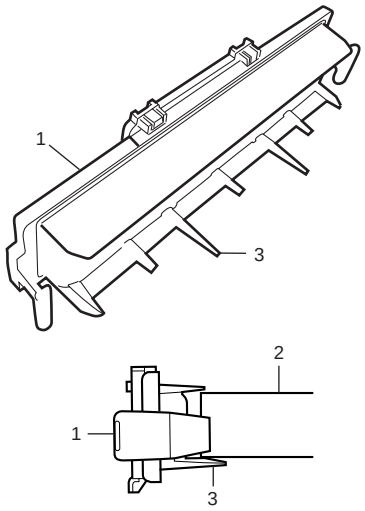
Reverse removal procedure noting the following instructions.

- Position air filter by directing its arrow mark to the upward.



I4RS0B710023-01

- Fit air filter cover (1) to HVAC unit so as not to stick air filter (2) by air filter cover's claw (3). Otherwise, air filter is deformed and loses its functionality.

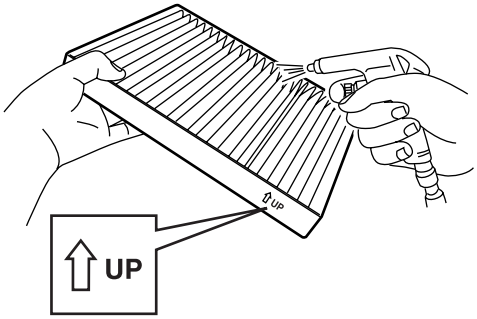


I4RS0A710031-01

HVAC Air Filter Inspection (If Equipped)

S7RS0B7106017

Check that filter is not excessively dirty, damage or oily, clean filter with compressed air from air outlet side of filter. If abnormality is found, replace filter with new one.



I4RS0A710032-01

Air Conditioning System

Manual Type

Precautions

A/C System Caution

S7RS0B7210001

⚠ CAUTION

- **The air conditioning system of this vehicle uses refrigerant HFC-134a (R-134a).**
  None of refrigerant, compressor oil and component parts is interchangeable between two types of A/C: one using refrigerant HFC-134a (R-134a) and the other using refrigerant CFC-12 (R-12).
  Be sure to check which refrigerant is used before any service work including inspection and maintenance. For identification between these two types, refer to "Refrigerant Type Identification".
  When replenishing or changing refrigerant and compressor oil and when replacing parts, make sure that the material or the part to be used is appropriate to the A/C installed in the vehicle being serviced.
  Use of incorrect one will result in leakage of refrigerant, damage in parts or other faulty condition.
- **When servicing the compressor, keep dirt or foreign material away from getting on or into the compressor parts and system. Clean tools and a clean work area are important for proper service. The compressor connection and the outside of the compressor should be cleaned before any "On vehicle" repair or before removal of the compressor. The parts must be kept clean at all times and any parts to be reassembled should be cleaned with trichloromethane, naphtha, kerosene or equivalent solvent and dried with dry air. Use only lint free cloths to wipe parts.**
- **When compressor is removed from the vehicle for servicing, the oil remaining in the compressor should be discarded and new refrigerant oil added to the compressor.**
  Minor repair procedures may be done on the vehicle without discharging the system. Major repair procedures require that the system be discharged of refrigerant.

Precautions on Servicing A/C System

S7RS0B7210002

⚠ WARNING

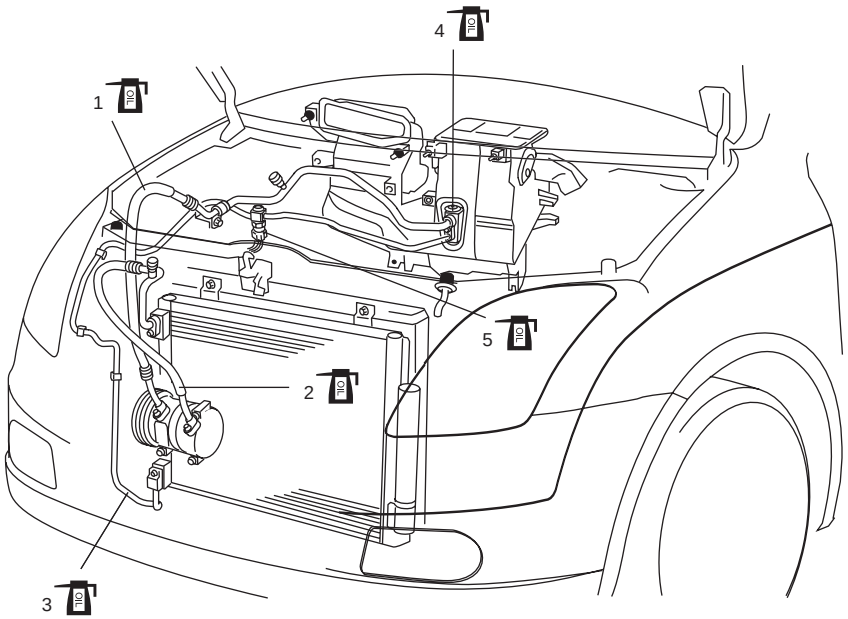
Should refrigerant HFC-134a (R-134a) is exposed to your eye(s), consult a doctor immediately.

- **Do not use your hand to rub affected eye(s). Instead, use fresh cold water to splash it over affected area to thus gradually raise its temperature above the freezing point.**
- **Obtain proper treatment as soon as possible from a doctor or eye specialist. Should liquid refrigerant HFC-134a (R-134a) is exposed to your skin, such affected part should be treated in the same manner as when skin is frostbitten or frozen.**

Handling Refrigerant HFC-134a (R-134a)

- Always wear goggles to protect your eyes.
- Avoid direct contact to liquid refrigerant.
- Do not heat refrigerant container higher than 40 °C (104 °F).
- Do not discharge refrigerant into atmosphere.
- Do not expose bright metals to liquid refrigerant. Refrigerant combined with moisture is corrosive and tarnishes surfaces of bright metals including chrome.

Refrigerant Line



I4RS0B720001-02

1. Suction hose : Apply compressor oil (refrigerant oil) to O-ring.	4. Expansion valve : Apply compressor oil (refrigerant oil) to O-ring.
2. Discharge hose : Apply compressor oil (refrigerant oil) to O-ring.	5. A/C refrigerant pressure sensor : Apply compressor oil (refrigerant oil) to O-ring.
3. Liquid pipe : Apply compressor oil (refrigerant oil) to O-ring.	

- Never use heat for bending pipes. When bending a pipe, try to make its bending angle as smooth as possible.
- Keep internal parts of air conditioning free from moisture and dirt. When disconnecting any line from system, install a blind plug or cap to the fitting immediately.
- When connecting hoses and pipes, apply a few drops of compressor oil (refrigerant oil) to O-ring.
- When tightening or loosening a fitting, use two wrenches, one for turning and the other for support.
- When handling recovery and recycling equipment, be sure to follow the instruction manual for the equipment.
- Check local governmental regulations regarding working with refrigerator systems and its tooling.
- Route drain hose so that drained water does not make any contact to vehicle components.
- If pipes or hoses are replaced, replenish specified amount of compressor oil to compressor suction side referring to “Replenishing Compressor Oil” in “Operation Procedure for Refrigerant Charge”.

Refrigerant Recovery

When discharging refrigerant out of A/C system, always recover it by using refrigerant recovery and recycling equipment because discharging refrigerant HFC-134a (R-134a) into atmosphere would cause adverse effect to environments.

NOTE

When handling recovery and recycling equipment, be sure to follow the instruction manual for the equipment.

Refrigerant Charge

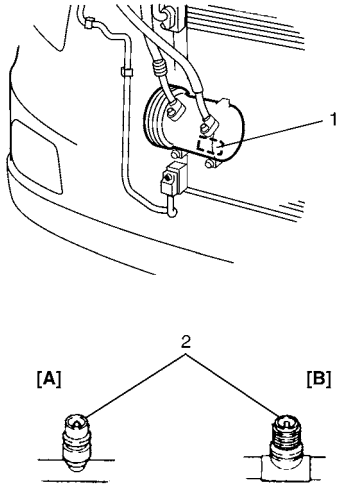
After performing compressor oil replenishment and evacuation, charge a proper amount of refrigerant to A/C system referring to “Charge” in “Operation Procedure for Refrigerant Charge”.

General Description

Refrigerant Type Identification

S7RS0B7211001

Whether the A/C system in the vehicle uses HFC-134a (R-134a) or CFC-12 (R-12) is indicated on label (1) on the compressor. Also, it can be checked by the shape of the service (charge) valve (2).



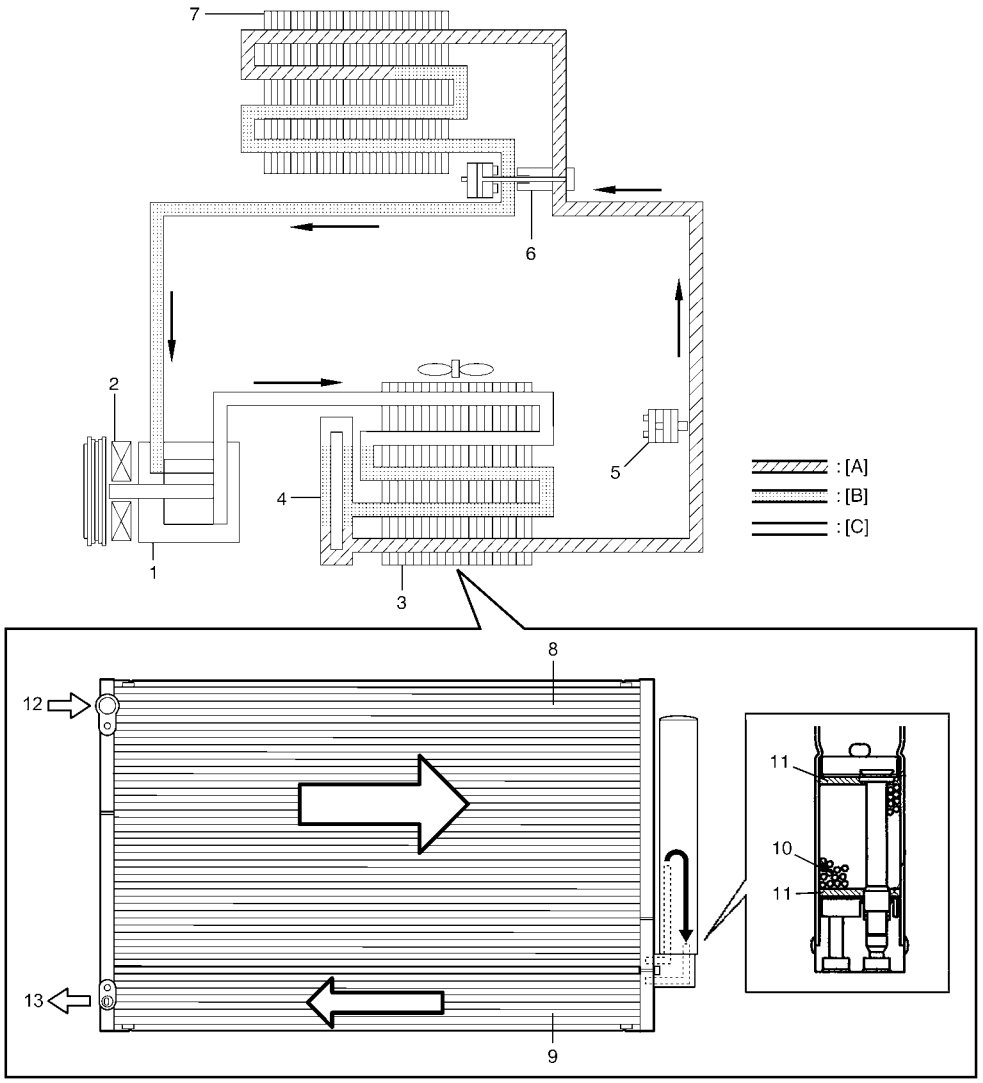
I4RS0A720002-01

[A]: HFC-134a (R-134a)	[B]: CFC-12 (R-12)

Sub-Cool A/C System Description

S7RS0B7211003

In the sub-cool A/C system (condenser integrated with receiver/dryer), the inside of the condenser is divided into the condensation part and the sub-cooler part, and the receiver/dryer is located between those. In the receiver/dryer, the refrigerant is separated into the vapor refrigerant and the liquid refrigerant. Only the liquid refrigerant is delivered to the sub-cooler part of the condenser. The refrigerant is supercooled by the sub-cooler part of the condenser.



I7RS0A721001-01

[A]: Liquid	2. Magnet clutch	6. Expansion valve	10. Desiccant
[B]: Vapor	3. Condenser	7. A/C evaporator	11. Filter
[C]: Superheated vapor	4. Receiver/dryer (Modulator)	8. Condensation part	12. Vapor refrigerant
1. Compressor	5. Refrigerant pressure sensor	9. Sub-cooler part	13. Liquid refrigerant

A/C Operation Description

S7RS0B7211004

ECM controls the radiator fan relay and the compressor relay by following signals.

- ON/OFF signal of A/C switch
- A/C refrigerant pressure sensor
- Evaporator thermistor (evaporator temperature sensor)
- ECT sensor

NOTE

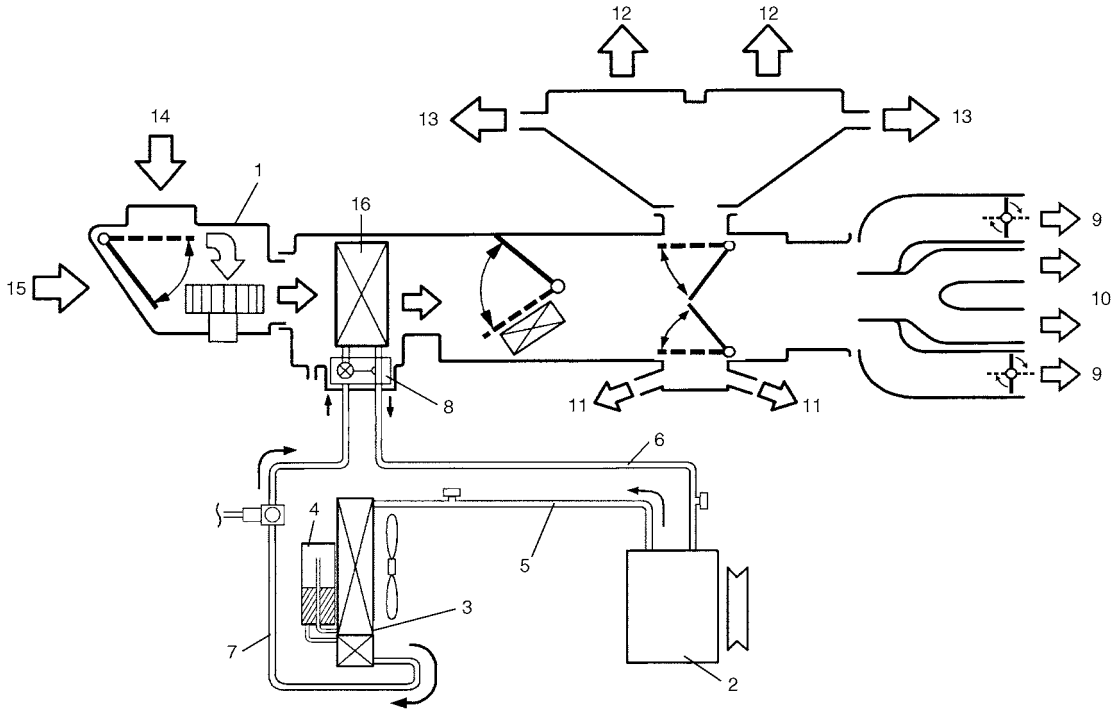
The signal of A/C switch is fed from BCM to ECM using CAN communication system. For CAN communication system, refer to “CAN Communication System Description in Section 1A”.

Schematic and Routing Diagram

Major Components of A/C System

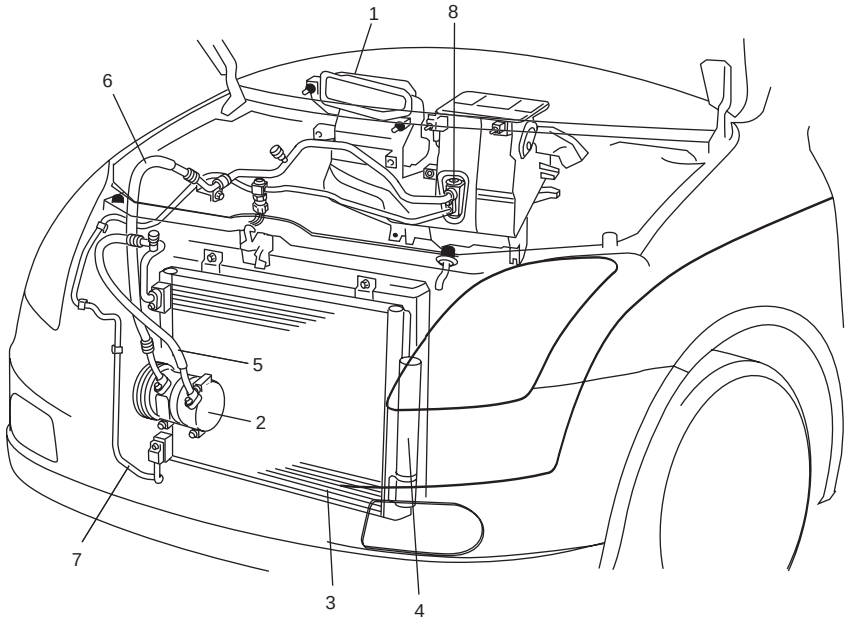
S7RS0B7212001

Airflow diagram



I4RS0A720003-01

Major components of A/C system

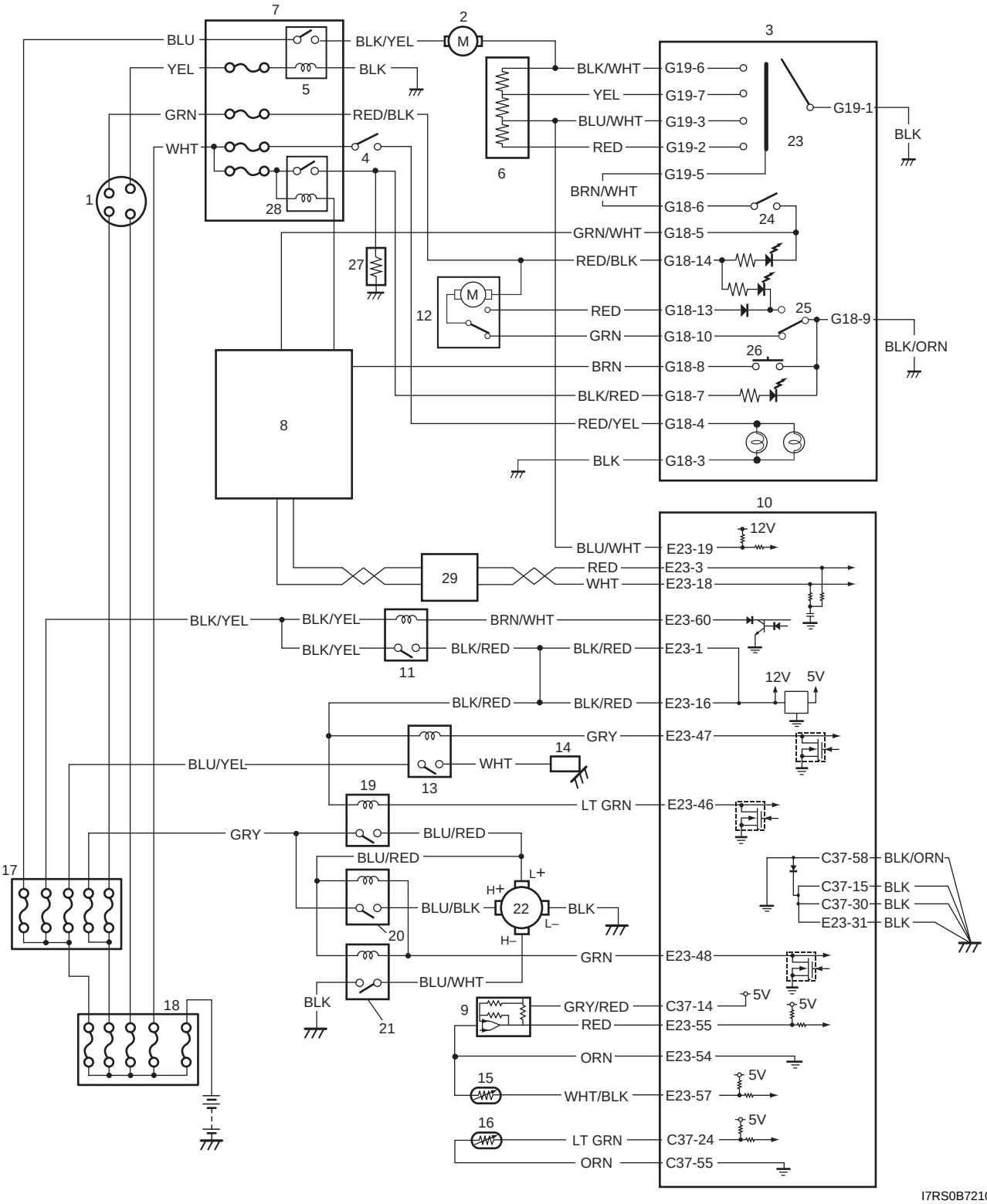


I4RS0B720002-01

1. HVAC unit	5. Discharge hose	9. Side ventilation air	13. Side defroster air
2. Compressor	6. Suction hose	10. Center ventilation air	14. Fresh air
3. Condenser assembly	7. Liquid pipe	11. Foot air	15. Recirculation air
4. Receiver/dryer (Modulator)	8. Expansion valve	12. Front defroster air	16. Evaporator

A/C System Wiring Diagram

S7RS0B7212002



I7RS0B721001-01

1. Ignition switch	9. A/C refrigerant pressure sensor	17. Individual circuit fuse box (No.1)	25. Air intake selector
2. Blower motor	10. ECM	18. Main fuse box	26. Rear defogger switch
3. HVAC control unit	11. Main relay	19. Radiator cooling fan relay No.1	27. Rear defogger
4. Lighting switch	12. Air intake control actuator	20. Radiator cooling fan relay No.2	28. Rear defogger relay
5. Blower motor relay	13. Compressor relay	21. Radiator cooling fan relay No.3	29. ABS / ESP® control module
6. Blower motor resistor	14. Compressor	22. Radiator cooling fan motor	
7. Junction block assembly	15. Evaporator thermistor (evaporator temperature sensor)	23. Blower speed selector	
8. BCM	16. ECT sensor	24. A/C switch	

Diagnostic Information and Procedures

A/C System Symptom Diagnosis

S7RS0B7214001

Condition	Possible cause	Correction / Reference Item
No cool air comes out (A/C system does not operate)	No refrigerant	*Perform recovery, evacuation and charge referring to "Operation Procedure for Refrigerant Charge".*
	Fuse blown	*Check related fuses, and then check for short circuit to ground.*
	A/C switch faulty	*Check A/C switch referring to "A/C Switch Inspection".*
	Blower speed selector faulty	*Check blower speed selector referring to "Blower Speed Selector Inspection in Section 7A".*
	Evaporator thermistor (Evaporator temperature sensor) faulty	*Check evaporator thermistor (evaporator temperature sensor) referring to "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection".*
	A/C refrigerant pressure sensor faulty	*Check A/C refrigerant pressure sensor referring to "A/C Refrigerant Pressure Sensor and Its Circuit Inspection".*
	Wiring or grounding faulty	*Repair as necessary.*
	ECM faulty	*Check ECM referring to "A/C System Inspection at ECM".*
	Magnet clutch faulty	*Check magnet clutch referring to "Magnet Clutch Inspection".*
	Compressor drive belt loosened or broken	*Adjust or replace drive belt.*
	Compressor faulty	*Check compressor.*
	Compressor relay faulty	*Check compressor relay referring to "Compressor Relay Inspection".*
	BCM faulty	*Check BCM referring to "Inspection of BCM and its Circuits in Section 10B".*
No cool air comes out (radiator cooling fan motor does not operate)	Fuse blown	*Check related fuses, and then check for short circuit to ground.*
	Wiring or grounding faulty	*Repair as necessary.*
	Radiator cooling fan motor relay faulty	*Check radiator cooling fan motor relay referring to "Radiator Cooling Fan Relay Inspection in Section 1F".*
	Radiator cooling fan motor faulty	*Check radiator cooling fan motor referring to "Radiator Cooling Fan Removal and Installation in Section 1F".*
	ECM and/or its circuit faulty	*Check ECM and/or its circuit referring to "A/C System Inspection at ECM".*
No cool air comes out (blower motor does not operate)	Fuse blown	*Check related fuses, and then check for short circuit to ground.*
	Blower motor relay faulty	*Check blower motor relay referring to "Blower Motor Relay Inspection in Section 7A".*
	Blower motor resistor faulty	*Check blower motor resistor referring to "Blower Motor Resistor Inspection in Section 7A".*
	Blower speed selector faulty	*Check blower speed selector referring to "Blower Speed Selector Inspection in Section 7A".*
	Wiring or grounding faulty	*Repair as necessary.*
	Blower motor faulty	*Check blower motor referring to "Blower Motor Inspection in Section 7A".*

Condition	Possible cause	Correction / Reference Item
Cool air does not come out or insufficient cooling (A/C system normal operation)	Insufficient or excessive charge of refrigerant	*Check the amount of refrigerant and system for leaks.*
	Condenser clogged	*Check condenser referring to "Condenser Assembly On-Vehicle Inspection".*
	A/C evaporator clogged or frosted	*Check A/C evaporator and evaporator thermistor (evaporator temperature sensor) referring to "Evaporator Inspection" and "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection".*
	Evaporator thermistor (Evaporator temperature sensor) faulty	*Check evaporator thermistor (Evaporator temperature sensor) referring to "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection".*
	Expansion valve faulty	*Check expansion valve referring to "Expansion Valve Inspection".*
	Desiccant clogged	*Replace receiver/dryer.*
	Compressor drive belt loosened or broken	*Adjust or replace drive belt.*
	Magnet clutch faulty	*Check magnet clutch referring to "Magnet Clutch Inspection".*
	Compressor faulty	*Check compressor.*
	Air in A/C system	*Replace receiver/dryer, and then perform evacuation and charge referring to "Operation Procedure for Refrigerant Charge".*
	Air leaking from HVAC unit or air duct	*Repair as necessary.*
	Heater and ventilation system faulty	*Check HVAC unit.*
	Blower motor faulty	*Check blower motor referring to "Blower Motor Inspection in Section 7A".*
	Excessive compressor oil in A/C system	*Drain excessive compressor oil from A/C system circuit and compressor.*
Cool air does not come out only intermittently	Wiring connection faulty	*Repair as necessary.*
	Expansion valve faulty	*Check expansion valve referring to "Expansion Valve Inspection".*
	Excessive moisture in A/C system	*Replace receiver/dryer, and then perform evacuation and charge referring to "Operation Procedure for Refrigerant Charge".*
	Magnet clutch faulty	*Check magnet clutch referring to "Magnet Clutch Inspection".*
	Excessive amount of refrigerant	*Check the amount of refrigerant.*
Cool air comes out only when driving vehicle at high speed	Condenser clogged	*Check condenser referring to "Condenser Assembly On-Vehicle Inspection".*
	Insufficient charge of refrigerant	*Check the amount of refrigerant and system for leaks.*
	Air in A/C system	*Replace receiver/dryer, and then perform evacuation and charge referring to "Operation Procedure for Refrigerant Charge".*
	Compressor drive belt loosened or broken	*Adjust or replace drive belt.*
	Compressor faulty	*Check compressor.*
Cool air does not come out only when driving vehicle at high speed	Excessive amount of refrigerant	*Check the amount of refrigerant.*
	A/C evaporator frosted	*Check A/C evaporator and evaporator thermistor (evaporator temperature sensor) referring to "Evaporator Inspection" and "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection".*

Condition	Possible cause	Correction / Reference Item
Insufficient airflow of cooled air	A/C evaporator clogged or frosted	*Check A/C evaporator and evaporator thermistor (evaporator temperature sensor) referring to "Evaporator Inspection" and "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection".*
	Air leaking from HVAC unit or air duct	*Repair as necessary.*
	Blower motor faulty	*Check blower motor referring to "Blower Motor Inspection in Section 7A".*
	Wiring or grounding faulty	*Repair as necessary.*

Abnormal Noise Symptom Diagnosis of A/C System

S7RS0B7214002

Abnormal Noise from Compressor

Condition	Possible cause	Correction / Reference Item
During compressor operation, a rumbling noise is heard proportional to engine revolutions	Inadequate clearance in scroll area	*Replace compressor.*
A loud noise is heard at a certain rpm, disproportionately to engine revolution	Loose or faulty compressor drive belt	*Adjust drive belt tension or replace drive belt.*
	Loose compressor mounting bolts	*Retighten mounting bolts.*
A loud rattle is heard at low engine rpm	Loose compressor clutch plate bolt	*Retighten clutch plate bolt.* *Replace compressor if it was operated in this condition for a long time.*

Abnormal Noise from Magnetic Clutch

Condition	Possible cause	Correction / Reference Item
A rumbling noise is heard when compressor is not in operation	Worn or damaged bearings	*Replace magnet clutch assembly.*
A chattering noise is heard when compressor is in operation	Faulty magnet clutch clearance (excessive clearance)	*Adjust magnet clutch clearance.*
	Worn magnet clutch friction surface	*Replace magnet clutch assembly.*
	Compressor oil leaked from shaft seal, contaminating the friction surface	*Replace compressor body assembly.*

Abnormal Noise from Tubing

Condition	Possible cause	Correction / Reference Item
A droning noise is heard from inside of the vehicle, but not particularly noticeable in engine compartment	Faulty tubing clamps	*Reposition clamps or increase the number of clamps.*
	Resonance caused by pulsation from variations in refrigerant pressure	*Attach a silencer to tubing, or modify its position and length.*

Abnormal Noise from Condenser Assembly

Condition	Possible cause	Correction / Reference Item
Considerable vibration in condenser assembly	Resonance from condenser assembly bracket and body	*Firmly insert a silencer between condenser assembly bracket and body.*

Abnormal Noise from Crankshaft Pulley

Condition	Possible cause	Correction / Reference Item
A large rattling noise is heard at idle or sudden acceleration	Loosen crankshaft pulley bolt	*Retighten bolt.*

Abnormal Noise from Tension Pulley

Condition	Possible cause	Correction / Reference Item
Clattering noise is heard from pulley	Worn or damaged bearing	*Replace tension pulley.*
Pulley cranks upon contact	Cracked or loose bracket	*Replace or retighten bracket.*

Abnormal Noise from A/C Evaporator

Condition	Possible cause	Correction / Reference Item
Whistling sound is heard from A/C evaporator	Depending on the combination of the interior / exterior temperatures, engine rpm and refrigerant pressure, the refrigerant flowing out of the expansion valve may, under certain conditions, make a whistling sound	*At times, slightly decreasing refrigerant volume may stop this noise.* *Inspect expansion valve and replace if faulty.*

Abnormal Noise from Blower Motor

Condition	Possible cause	Correction / Reference Item
Blower motor emits a chirping sound in proportion to its speed of rotation	Worn or damaged motor brushes or commutator	*Replace blower motor.*
Fluttering noise or large droning noise is heard from blower motor	Leaves or other debris introduced from fresh air inlet to blower motor	*Remove debris and make sure that the screen at fresh air inlet is intact.*

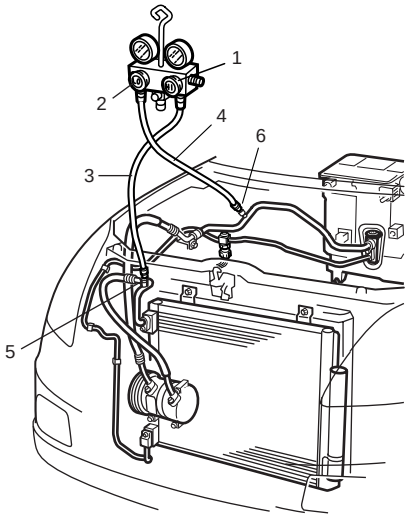
A/C System Performance Inspection

S7RS0B7214003

1) Confirm that vehicle and environmental conditions are as follows.
   - Vehicle is put indoors.
   - Ambient temperature is within 25 – 35 °C (77 – 95 °F).
   - Relative humidity is within 30 – 70%.
   - There is no wind indoors.
   - HVAC unit is normal.
   - Blower motor is normal.
   - There is no air leakage from air ducts.
   - Condenser fins are clean.
   - Air filter in HVAC unit is not clogged with dirt and dust.
   - Battery voltage is about 12 V.
   - Radiator cooling fan operates normally.
2) Make sure that high pressure valve (1) and low pressure valve (2) of manifold gauge are firmly closed.
3) Connect high pressure charging hose (3) to high pressure service valve (5) on vehicle and low pressure charging hose (4) to low pressure service valve (6).
4) Bleed the air in charging hoses (3) and (4) by loosening their nuts respectively utilizing the refrigerant pressure. When a hissing sound is heard, immediately tighten nut.

⚠ CAUTION

Do not connect high and low pressure charging hoses in reverse.



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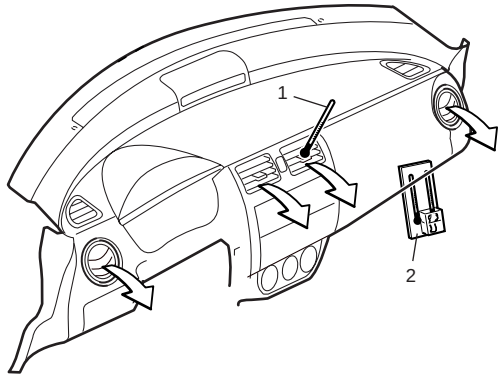
5) Warm up engine to the normal operating temperature and keep it at the specified idle speed.
6) Turn A/C switch ON, set blower speed selector at maximum speed position, temperature selector at maximum cold position, airflow selector at face position, and air intake switch at recirculation position. (Confirm that A/C compressor and condenser fans are working.)
7) Wait for ten minutes to stabilize the A/C operation.
8) Open front windows, front doors and engine hood.
9) With about 20 mm (0.8 in.) of dry bulb thermometer (1) put right in front of center ventilation louver and a wet and dry bulb thermometer (2) near air inlet of HVAC unit.



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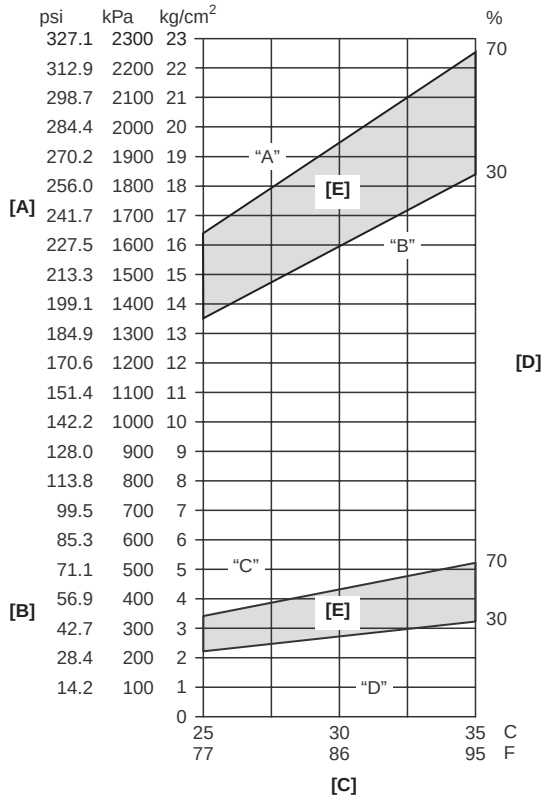
10) Check for each pressure of low side and high side if it is within shaded range of graph. If each gauge reading is out of specified pressure, correct defective part referring to the following table.

NOTE

Pressure registered on gauge varies with ambient temperature. Therefore, use the graphs when determining if pressures are normal or not.

Low side and high side pressure example, Gauges should read as follows when ambient temperature is 30 °C (86 °F)
Pressure on high pressure gauge (HI): 1590 – 1940 kPa (15.9 – 19.4 kg/cm²)
Pressure on low pressure gauge (LO): 270 – 430 kPa (2.7 – 4.3 kg/cm²)



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[A]:	Pressure of high pressure gauge
[B]:	Pressure of low pressure gauge
[C]:	Ambient temperature
[D]:	Humidity
[E]:	Acceptable range

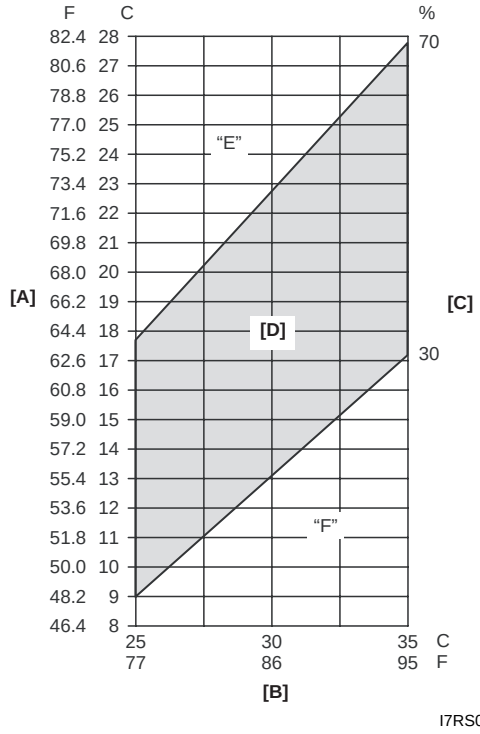
High pressure gauge

Condition	Possible cause	Correction
Pressure is higher than acceptable range (“A” area)	Refrigerant overcharged	Recharge.
	Expansion valve frozen or clogged	Check expansion valve.
	Clogged refrigerant passage of high pressure side	Clean or replace.
	Radiator cooling fan malfunction (Insufficient cooling of condenser)	Check radiator cooling fan.
	Dirty or bent condenser fins (Insufficient cooling of condenser)	Clean or repair.
	Compressor malfunction (Insufficient oil etc.)	Check compressor.
	Engine overheat	Check engine cooling system referring to “Engine Cooling Symptom Diagnosis in Section 1F”.
Pressure is lower than acceptable range (“B” area)	Insufficient refrigerant (Insufficient charge or leakage)	Check for leakage, repair if necessary and recharge.
	Expansion valve malfunction (valve opens too wide)	Check expansion valve.
	Compressor malfunction (Insufficient compression)	Check compressor.

Low pressure gauge

Condition	Possible cause	Correction
Pressure is higher than acceptable range (“C” area)	Expansion valve malfunction (valve opens too wide)	Check expansion valve.
	Compressor malfunction (Insufficient compression)	Check compressor.
Pressure is lower than acceptable range (“D” area)	Insufficient refrigerant (Insufficient charge or leakage)	Check for leakage, repair if necessary and recharge.
	Expansion valve malfunction (valve opens too narrow)	Check expansion valve.
	Clogged refrigerant passage (crashed pipe)	Repair or replace.

11) Check inlet port temperature-to-outlet port temperature relationship using the graph. For example, if temperature near air inlet of HVAC unit is 30 °C (86 °F) and the one at air outlet of center ventilation louver is 17 °C (62.6 °F), their crossing point is within acceptable range as shown in the graph. In this case, cooling performance is satisfactory and proper.
12) If crossing point is out of acceptable range, diagnose trouble referring to the following table.



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[A]: Temp at air outlet of center ventilation louver	[C]: Humidity
[B]: Temp near air inlet of HVAC unit	[D]: Acceptable range

Thermometer at center duct

Condition	Possible cause	Correction
Crossing point is higher than acceptable range ("E" area)	Insufficient or excessive charge of refrigerant	Check refrigerant pressure.
	Dirty or bent A/C evaporator fins	Clean or repair.
	Air leakage from cooling (heater) unit or air duct	Repair or replace.
	Malfunctioning, switch over function of door in cooling (heater) unit	Repair or replace.
	Compressor malfunction	Check compressor.
Crossing point is lower than acceptable range ("F" area)	Insufficient air volume from center duct (Heater blower malfunction)	Check blower motor and fan.
	Compressor malfunction	Check compressor.

NOTE

If ambient temperature is approximately 30 °C (86 °F), it is possible to diagnose A/C system in detail referring to the following table.

Condition			Possible cause	Correction
Manifold gauge	MPa (kg/cm^2) (psi)	Detail		
Lo	Hi			
0.27 – 0.43 (2.7 – 4.3) (38 – 61)	1.59 – 1.94 (15.9 – 19.4) (226 – 276)	Normal condition	—	—
Negative pressure	0.5 – 0.6 (5 – 6) (71.2 – 85.3)	The low pressure side reads a negative pressure, and the high pressure side reads an extremely low pressure. Presence of frost around tubing to and from receiver/dryer and expansion valve.	Dust particles or water droplets are either stuck or frozen inside expansion valve, preventing the refrigerant from flowing.	Clean expansion valve. Replace it if it cannot be cleaned. Replace receiver/ dryer. Evacuate the A/C system and recharge with fresh refrigerant.
Normal: 0.27 – 0.43 (2.7 – 4.3) (38 – 61) ↑ ↓ Abnormal: Negative pressure	Normal: 1.59 – 1.94 (15.9 – 19.4) (226 – 276) ↑ ↓ Abnormal: 0.7 – 1.0 (7 – 10) (100 – 142)	During A/C operation, the low pressure side sometimes indicates negative pressure, and sometimes normal pressure. Also high pressure side reading fluctuates between the abnormal and normal pressure.	Expansion valve is frozen due to moisture in the system, and temporarily shuts off the refrigeration cycle.	Replace expansion valve. Replace receiver/ dryer. Evacuate A/C system and recharge with fresh refrigerant.
0.05 – 0.15 (0.5 – 1.5) (4.2 – 21.3)	0.7 – 1.0 (7 – 10) (100 – 142)	Both low and high pressure sides indicate low readings. Output air is slightly cold.	Insufficient refrigerant in system (Refrigerant leaking).	Using leak detector, check for leaks and repair as necessary. Recharge refrigerant to a specified amount. If the pressure reading is almost 0 when the manifold gauges are attached, check for any leaks, repair them, and evacuate the system.
0.4 – 0.6 (4 – 6) (56.9 – 85.3)		Pressure on low pressure side is high. Pressure on high pressure side is low. Both pressure becoming equal right after A/C is turned OFF.	Internal leak in compressor.	Inspect compressor and repair or replace as necessary.

Condition			Possible cause	Correction
Manifold gauge	MPa (kg/cm^2) (psi)	Detail		
Lo	Hi			
0.40 – 0.45 (4.0 – 4.5) (57 – 64)	2.0 – 2.5 (20 – 25) (285 – 355)	High pressure reading on both low and high pressure sides.	Overcharged A/C system. Faulty condenser cooling operation. Faulty radiator cooling fan operation.	Adjust refrigerant to specified amount. Clean condenser. Inspect and repair radiator cooling fan.
		High pressure reading on both low and high pressure sides. Low pressure side tubing is not cold when touched.	Presence of air in A/C system (Improperly evacuated).	Replace receiver/ dryer. Inspect quantity of compressor oil and presence of contaminants in oil. Evacuate system and recharge with fresh refrigerant.
0.45 – 0.55 (4.5 – 5.5) (64 – 78)		High pressure reading on both low and high pressure sides. Large amount of frost or dew on the low pressure side tubing.	Faulty expansion valve. Refrigerant flow is not regulated properly.	Replace expansion valve.

A/C System Inspection at ECM

S7RS0B7214004

Voltage Check

When checking voltage at ECM connector terminals related to A/C system, refer to “DTC P2101: Throttle Actuator Control Motor Circuit Range / Performance in Section 1A”.

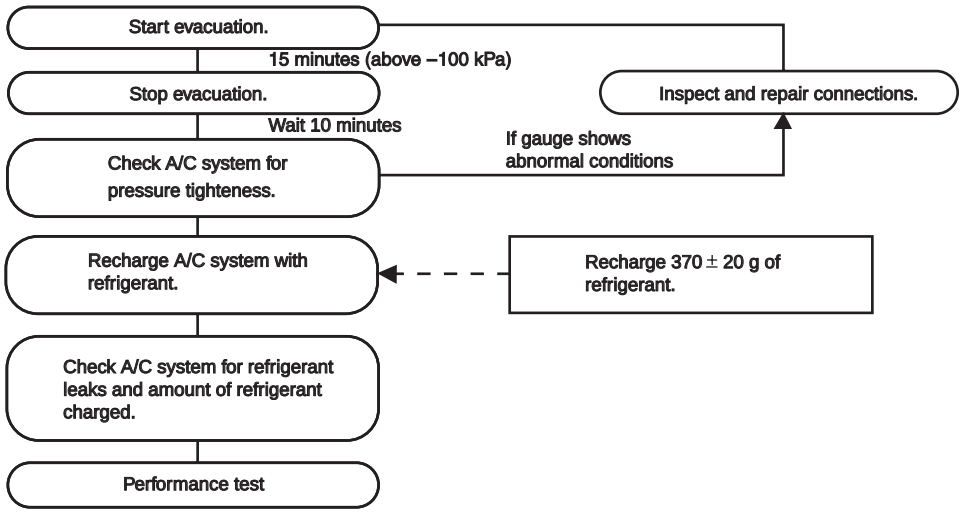
Repair Instructions

Operation Procedure for Refrigerant Charge

S7RS0B7216001

⚠ WARNING

- **Your eyes should not be exposed to refrigerant (liquid).**
  Any liquid HFC-134a (R-134a) escaping by accident shows a temperature as low as approximately –6 °C (21.2 °F) below freezing point. Should liquid HFC-134a (R-134a) is exposed to your eyes, it may cause a serious injury. To protect your eyes from such accident, it is necessary to always wear goggles. Should it occur that HFC-134a (R-134a) is exposed to your eyes, consult a doctor immediately.
  - **Do not use your hand to rub the affected eye(s). Instead, use fresh cold water to splash it over the affected area to gradually raise temperature of such area above freezing point.**
  - **Obtain proper treatment as soon as possible from a doctor or eye specialist.**
- **Should the liquid refrigerant HFC-134a (R-134a) is exposed to your skin, the affected area should be treated in the same manner as when skin is frostbitten or frozen.**
- **Do not handle refrigerant near any place where welding or steam cleaning is performed.**
- **Refrigerant should be kept in a cold and dark place. It should never be stored in any place where temperature is high, e.g. where exposed to direct sun light, close to fire or inside vehicle (including trunk room).**
- **Avoid breathing fume produced when HFC-134a (R-134a) is burned. Such fume may be hazardous to your health.**



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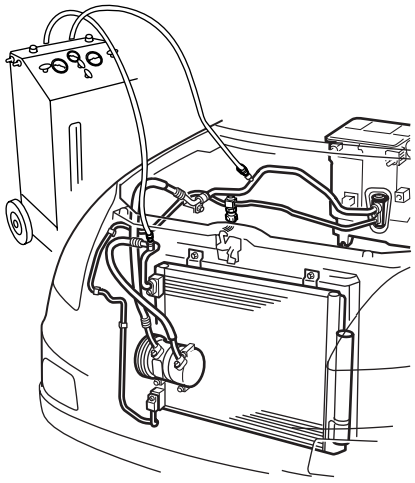
Recovery

When discharging refrigerant out of A/C system, always recover it by using refrigerant recovery and recycling equipment because discharging refrigerant HFC-134a (R-134a) into atmosphere would cause adverse effect to environments.

NOTE

- **After recovering refrigerant from system, the amount of removed compressor oil must be measured for replenishing compressor oil.**
- **When handling recovery and recycling equipment, be sure to follow the instruction manual for the equipment.**



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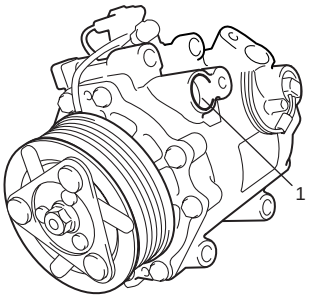
Replenishing Compressor Oil

It is necessary to replenish specified amount of compressor oil to compressor from compressor suction side hole (1) before evacuating and charging refrigerant.



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When charging refrigerant only

When charging refrigerant without replacing any component, replenish the same amount of measured oil when recovering refrigerant (if not measure, replenish 10 cm^3 (10 ml, 0.34 US. oz, 0.35 Imp. oz) oil).

When replacing compressor

⚠ CAUTION

Be sure to use specified compressor oil or an equivalent compressor oil.

Compressor oil is sealed in each new compressor by the amount required for A/C system. Therefore, when using a new compressor, drain the calculated amount of oil from it.

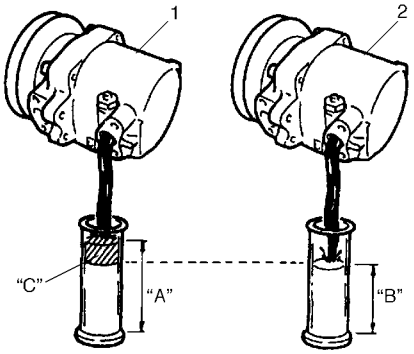
"C" = "A" – "B"
"C": Amount of oil to be drained
"A": Amount of oil in a new compressor
"B": Amount of oil in removed compressor

NOTE

Compressor assembly supplied from factory is filled up with the following amount of oil.

: Compressor oil 99000–99015–00A (MATSUSHITADENKI GU10)

Oil amount in compressor
90 ± 5 cm^3 (90 ± 5 ml, 3.04 ± 0.17 US. oz, 3.17 ± 0.18 Imp. oz)



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1. New compressor	2. Removed compressor

When replacing other parts
Replenish the following amount of oil to compressor.

Amount of compressor oil to be replenished
Evaporator: 25 cm^3 (25 ml, 0.85 US. oz, 0.88 Imp. oz)
Condenser: 15 cm^3 (15 ml, 0.51 US. oz, 0.53 Imp. oz)
Receiver/dryer: 10 cm^3 (10 ml, 0.34 US. oz, 0.35 Imp. oz)
Hoses: 10 cm^3 (10 ml, 0.34 US. oz, 0.35 Imp. oz) each
Pipes: 10 cm^3 (10 ml, 0.34 US. oz, 0.35 Imp. oz) each

Evacuation

⚠ CAUTION

Do not evacuate before recovering refrigerant in A/C system.

NOTE

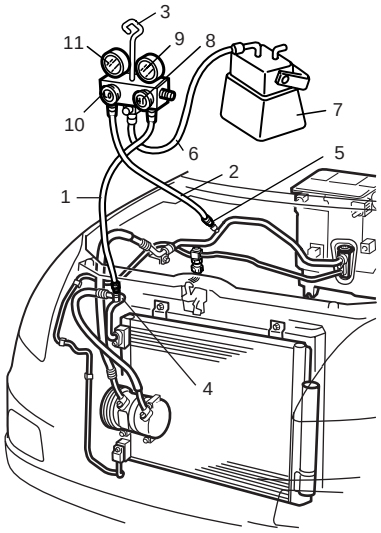
Once air conditioning system circuit is opened (exposed) to atmospheric air, system must be evacuated by using a vacuum pump. The A/C system should be attached with a manifold gauge set, and should be evacuated for approximately 15 minutes.

1) Connect high charging hose (1) and low charging hose (2) of manifold gauge set (3) respectively as follows:
   High charging hose → High pressure charging valve (4) on condenser outlet pipe
   Low charging hose → Low pressure charging valve (5) on suction pipe
2) Attach center charging hose (6) of manifold gauge set to vacuum pump (7).
3) Operate vacuum pump, and then open discharge side valve (Hi) (8) of manifold gauge set.
   If there is no blockage in the system, there will be an indication on high pressure gauge (9).
   In this case, open the other side valve (Lo) (10) of the set and repair the system.
4) Approximately 10 minutes later, low pressure gauge (11) should show a vacuum lower than –100 kPa (–1.0 kg/cm^2, –760 mmHg, –14.7 psi) providing no leakage exists.

NOTE

- **If the system does not show a vacuum below –100 kPa (–1.0 kg/cm^2, –760 mmHg, –14.7 psi), close both valves, stop vacuum pump and watch movement of low pressure gauge.**
- **Increase in the gauge reading suggests existence of leakage. In this case, repair the system before continuing its evacuation.**
- **If the gauge shows a stable reading (suggesting no leakage), continue evacuation.**

5) Evacuation should be carried out for a total of at least 15 minutes.
6) Continue evacuation until low pressure gauge indicates a vacuum less than –100 kPa (–1.0 kg/cm^2, –760 mmHg, –14.7 psi), and then close both valves.
7) Stop vacuum pump. Disconnect center charging hose from pump inlet. Now, the system is ready for charging refrigerant.



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Checking A/C System for Pressure Leaks
After completing the evacuation, close manifold gauge high pressure valve and low pressure valve and wait 10 minutes. Verify that low pressure gauge reading has not changed.

⚠ CAUTION

If the gauge reading moves closer to "0", there is a leak somewhere. Inspect the tubing connections and make necessary corrections. And then, evacuate system once again and make sure that there are no leaks.

Charge

⚠ CAUTION

- **Because the sight glass is not used for this A/C system, do not perform an additional charge to the A/C system. To charge the proper amount of refrigerant, recover and evacuate the A/C system first. And then, charge the proper amount of refrigerant into the A/C system.**
- **Always charge refrigerant through low pressure side of A/C system after the initial charge is performed from the high pressure side with the engine stopped.**
- **Never charge refrigerant through high pressure side of A/C system with engine running.**
- **Do not charge refrigerant while compressor is hot.**
- **When installing tap valve to refrigerant container to make a hole there through, carefully follow directions given by manufacturer.**
- **A pressure gauge should always be used before and during refrigerant charge.**
- **The refrigerant container should be emptied of refrigerant when discarding it.**
- **The refrigerant container should not be heated up to 40 °C (104 °F) or over.**
- **Refrigerant container should not be reversed in direction during refrigerant charge. Reversing in direction causes liquid refrigerant to enter compressor, causing troubles, such as compression of liquid refrigerant and the like.**

NOTE

The air conditioning system contains HFC-134a (R-134a).
Described here is a method to charge the air conditioning system with refrigerant from the refrigerant service container.
When charging refrigerant recovered by using the refrigerant and recycling equipment (when recycling refrigerant), follow the procedure described in the equipment manufacturer's instruction manual.

Charge proper amount of refrigerant accurately in accordance with the following procedure.

Specified amount of refrigerant
370 ± 20 g (13.0 ± 0.7 oz)

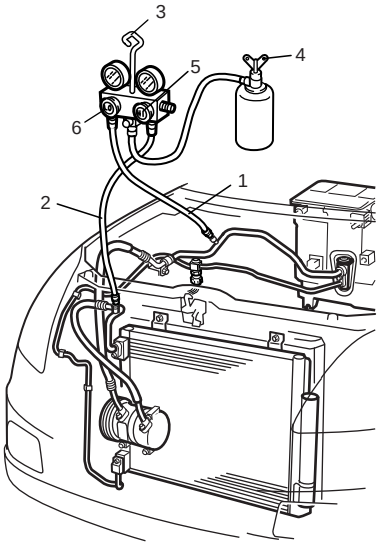
The initial charge of the A/C system is performed through the high pressure side with the engine stopped. And next, this method must be followed by charging from the low pressure side with the engine running.

1) Check if hoses are routed properly after evacuating the system.
2) Connect low charging hose (1) and high charging hose (2) of the manifold gauge set (3) in position. Then, open refrigerant container valve (4) to purge the charging line.
3) Open the high pressure side valve (5) and charge refrigerant to system.
4) After a while, open the low pressure side valve (6) and close the high pressure side valve.

⚠ WARNING

Make sure that high pressure side valve is closed securely.

5) Start engine and keep engine speed at 1500 r/min, and then operate A/C system.
6) Charge A/C system with refrigerant in vapor state. At this time, refrigerant container should be held upright.



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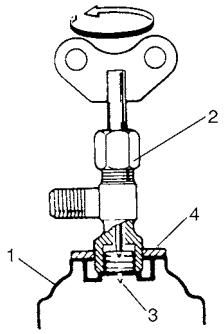
7) When refrigerant container (1) is emptied, use the following procedure to replace it with a new refrigerant container.
   a) Close low pressure valve.
   b) Replace empty container with a refrigerant container which has been charged with refrigerant. When using refrigerant container tap valve (2), use the following procedure for replacement.
      i) Retract needle (3) and remove refrigerant container tap valve by loosening its plate nut (4).
      ii) Install the refrigerant container tap valve to a new refrigerant container.



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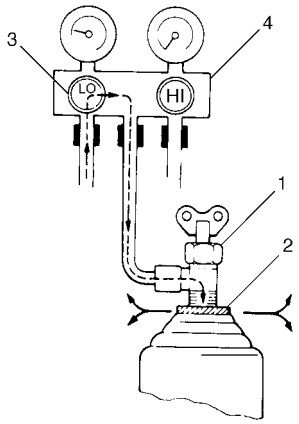
   c) Purge any air existing in center charging hose. When using refrigerant container tap valve, use the following procedure to purge air.
      i) Once fully tighten refrigerant container tap valve (1), and then loosen (open) plate nut (2) slightly.
      ii) Open low pressure side valve (3) of manifold gauge set (4) a little.
      iii) As soon as refrigerant comes out with a “hiss” through a clearance between refrigerant container and tap valve, tighten plate nut as well as low pressure side valve.
      iv) Turn handle of tap valve clockwise so that its needle is screwed into the new container to make a hole for refrigerant flow.

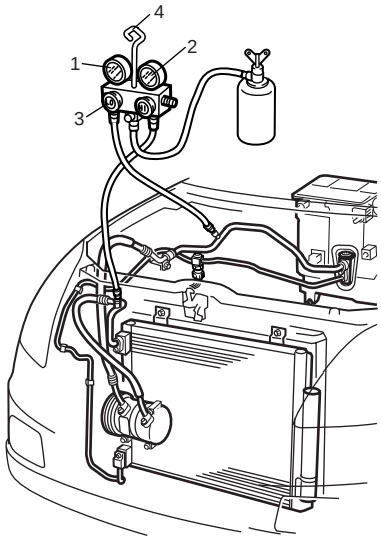


I2RH01720019-01

8) After the system has been charged with specified amount (370 ± 20 g) of refrigerant or when low pressure gauge (1) and high pressure gauge (2) have indicated the following specified value, close low pressure side valve (3) on manifold gauge set (4).

Low side and high side pressure example

Gauges should read as follows when ambient temperature is 30 °C (86 °F).	
Pressure on high pressure gauge	**1590 – 1940 kPa 15.9 – 19.4 kg/cm^2 226 – 276 psi**
Pressure on low pressure gauge	**270 – 430 kPa 2.7 – 4.3 kg/cm^2 38 – 61 psi**



I4RS0A720016-01

Removal of Manifold Gauge Set

⚠ WARNING

High pressure side is under high pressure. Therefore, be careful not to get injured especially on your eyes and skin.

For the A/C system charged with the specified amount of refrigerant, remove manifold gauge set as follows:

1) Close low pressure side valve of manifold gauge set. (The high pressure side valve is closed continuously during the process of charging.)
2) Close refrigerant container valve.
3) Stop engine.
4) Using shop rag, remove charging hoses from service valves. This operation must be performed quickly.
5) Put caps on service valves.

Check A/C System for Refrigerant Leaks

Whenever a refrigerant leak is suspected in the system or any service operation has been performed which may result in malfunction of lines and connections, it is advisable to check for leaks.
Common sense should be used during refrigerant leak test, since the need and extent of any such test will, in general, depend upon the nature of a complaint and the type of a service performed on the system.

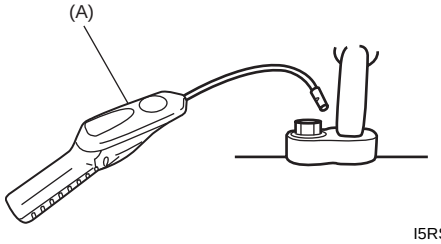
Liquid leak detector

⚠ WARNING

- **To prevent explosions and fires, make sure that there are no flammables in the vicinity.**
- **When the refrigerant exposed to fire, it turns into a poisonous gas (phosgene). Do not inhale this gas.**

There is a number of fittings and places throughout the A/C system where a liquid leak detector solution may be used to pinpoint refrigerant leaks.
By merely applying the solution to the area in question with a swab, such as attached to the cap of a vial, bubbles will form within seconds if there is a leak.
For confined areas, such as sections of the evaporator and condenser, an electronic (refrigerant) leak detector is more practical for determining leaks.

Special tool
(A): 09990–86012



I5RS0C721006-01

Condenser Assembly On-Vehicle Inspection

S7RS0B7216002

Check the followings.

- Clog of condenser fins
  If any clog is found, condenser fins should be washed with water and should be dried with compressed air.
- Condenser fins for leakage and breakage
  If any defects are found, repair or replace condenser.
- Condenser fittings for leakage.
  If any defects are found, repair or replace condenser.

Condenser Assembly Removal and Installation

S7RS0B7216003

⚠ CAUTION

Do not damage condenser fins. If condenser fin is bent, straighten it by using flat head screwdriver or pair of pliers.

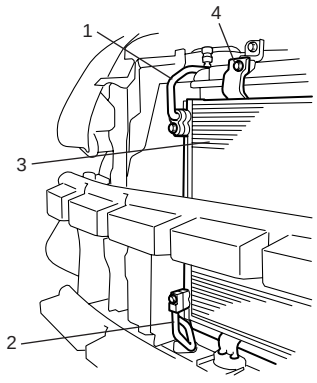
Removal

1) Recover refrigerant from A/C system referring to “Operation Procedure for Refrigerant Charge”.

NOTE

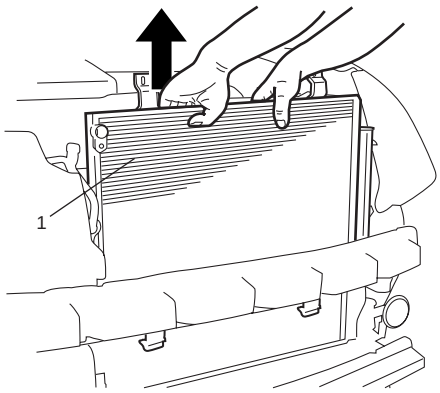
The amount of removed compressor oil must be measured for replenishing compressor oil.

2) Remove front bumper referring to “Front Bumper and Rear Bumper Components in Section 9K”.
3) Disconnect discharge hose (1) and liquid pipe (2) from condenser assembly (3).
4) Remove condenser assembly mounting bolts (4).



I4RS0A720017-01

5) Remove condenser assembly (1) as shown.



I4RS0A720018-01

Installation

Reverse the removal procedure to install condenser noting the following instructions.

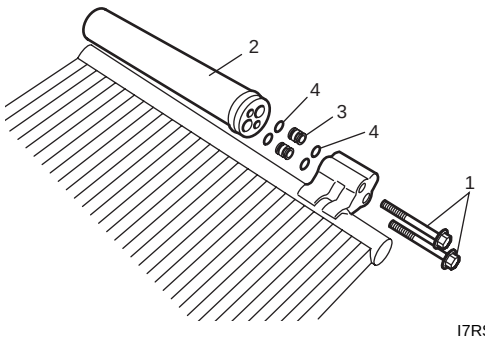
- Replenish specified amount of compressor oil to compressor suction side referring to “Replenishing Compressor Oil” in “Operation Procedure for Refrigerant Charge”.
- Evacuate and charge the A/C system referring to “Evacuation” and “Charge” in “Operation Procedure for Refrigerant Charge”.

Receiver/Dryer Removal and Installation

S7RS0B7216031

Removal

1) Remove front bumper referring to “Front Bumper and Rear Bumper Components in Section 9K”.
2) Remove receiver/dryer bolt (1), and then remove receiver/dryer (2) from condenser.
3) Remove joints (3) and O-rings (4).



I7RS0A721008-01

Installation

Reverse the removal procedure noting the following instructions.

- Replenish specified amount of compressor oil to compressor suction side referring to “When replacing other parts” in “Operation Procedure for Refrigerant Charge”.
- Use new receiver/dryer and O-ring.
- Do not remove plug from receiver/dryer until just before installing it condenser.
- Apply compressor oil to O-ring.

  : Compressor oil 99000–99015–00A (MATSUSHITADENKI GU10)

- Tighten receiver/dryer bolts to the specified torque.

  Tightening torque
  Receiver/dryer bolt: 10 N·m (1.0 kgf-m, 7.5 lb-ft)

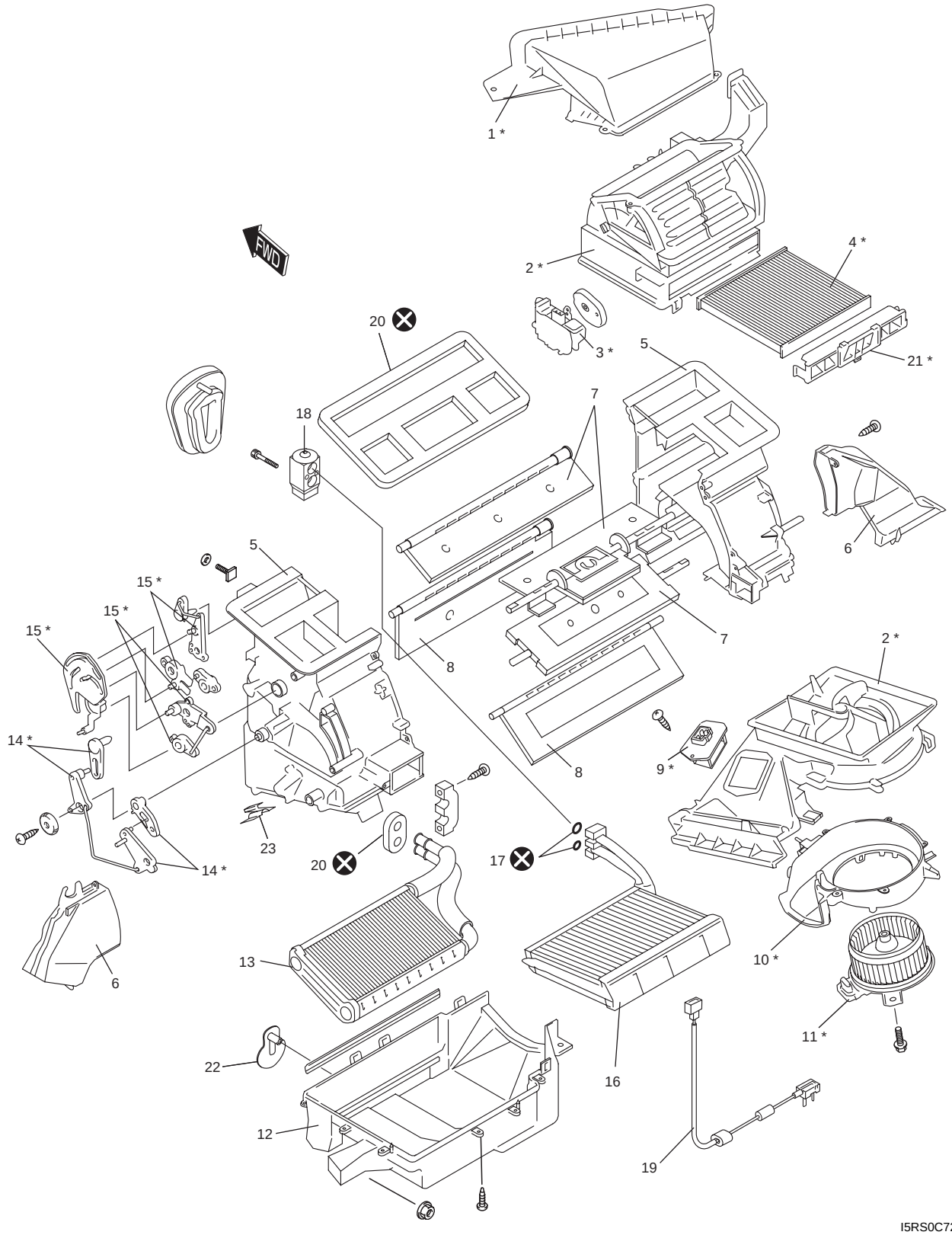
- Evacuate and charge the A/C system referring to “Evacuation” and “Charge” in “Operation Procedure for Refrigerant Charge”.

HVAC Unit Components

S7RS0B7216005

NOTE

The figure shows left-hand steering vehicle. For right-hand steering vehicle, parts with (*) are installed at the opposite side



I5RS0C721007-01

1. Fresh air inlet duct	7. Airflow control door assembly	13. Heater core	19. Evaporator thermistor (evaporator temperature sensor)

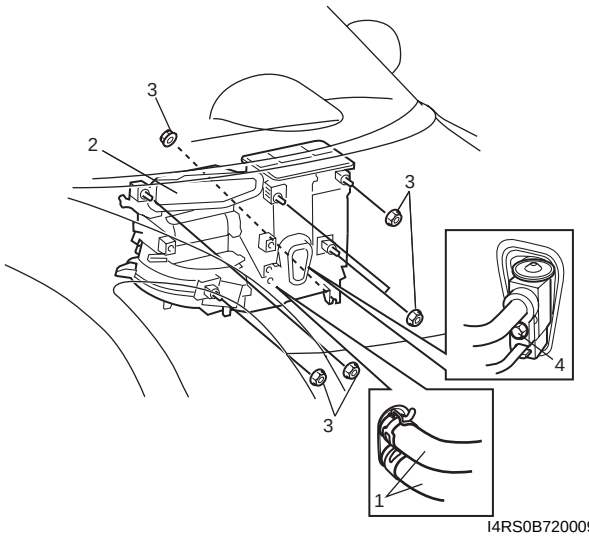
2. Blower upper case	8. Temperature control door assembly	14. Temperature control lever	20. Packing
3. Air intake control actuator	9. Blower motor resistor	15. Airflow control lever	21. Filter cover (if equipped)
4. HVAC Air filter (if equipped)	10. Blower lower case	16. Evaporator	22. Drain hose
5. Heater unit upper case	11. Blower motor	17. O-ring	23. Cable lock clamp
6. Foot duct	12. Heater unit lower case	18. Expansion valve	⊗ : Do not reuse.

HVAC Unit Removal and Installation

S7RS0B7216006

Removal

1) Disconnect negative (–) cable from battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Recover refrigerant from A/C system with recovery and recycling equipment referring to “Recovery” in “Operation Procedure for Refrigerant Charge”.
4) Remove cowl top panel referring to “Cowl Top Components in Section 9K”.
5) Drain engine coolant, and then disconnect heater hoses (1) from HVAC unit (2).
6) Remove instrument panel from vehicle body referring to “Audio Unit Removal and Installation in Section 9C”.
7) Loosen suction hose and liquid pipe bolt (4).
8) Remove nuts (3).
9) Remove HVAC unit from vehicle body.

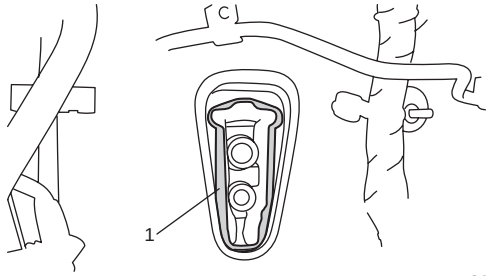


I4RS0B720009-01

Installation

Reverse removal procedure noting the following instructions.

- Replenish specified amount of compressor oil to compressor suction side referring to “Replenishing Compressor Oil” in “Operation Procedure for Refrigerant Charge”.
- Install the padding (1) to the installation hole uniformly.



I4RS0B720010-01

- Evacuate and charge the A/C system referring to “Evacuation” and “Charge” in “Operation Procedure for Refrigerant Charge”.
- Adjust control cables referring to “HVAC Control Unit Removal and Installation in Section 7A”.
- Enable air bag system referring to “Enabling Air Bag System in Section 8B”.

Evaporator Inspection

S7RS0B7216007

Check the followings.

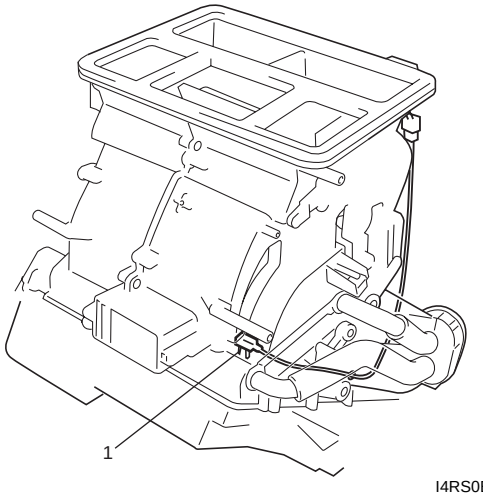
- Clog of A/C evaporator fins.
  If any clogs are found, A/C evaporator fins should be washed with water, and then should be dried with compressed air.
- A/C evaporator fins for leakage and breakage.
  If any defects are found, repair or replace A/C evaporator.
- A/C evaporator fittings for leakage.
  If any defects are found, repair or replace A/C evaporator.

Evaporator Thermistor (Evaporator Temperature Sensor) Removal and Installation

S7RS0B7216008

Removal

1) Disconnect negative (–) cable from battery.
2) Remove HVAC unit from vehicle body referring to "HVAC Unit Removal and Installation".
3) Remove evaporator thermistor (evaporator temperature sensor) (1) from evaporator by disassembling HVAC unit.

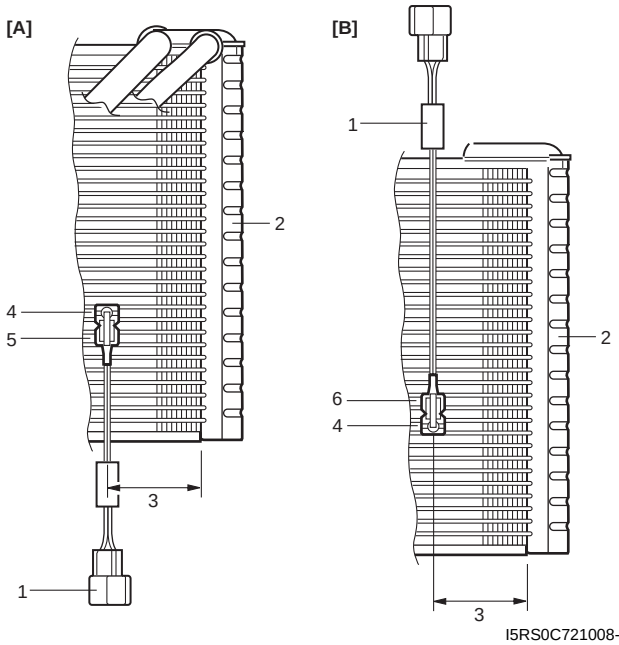


I4RS0B720011-01

Installation

Reverse the removal procedure noting the following instruction.

- Install evaporator thermistor (evaporator temperature sensor) (1) onto evaporator (2) as shown.



I5RS0C721008-01

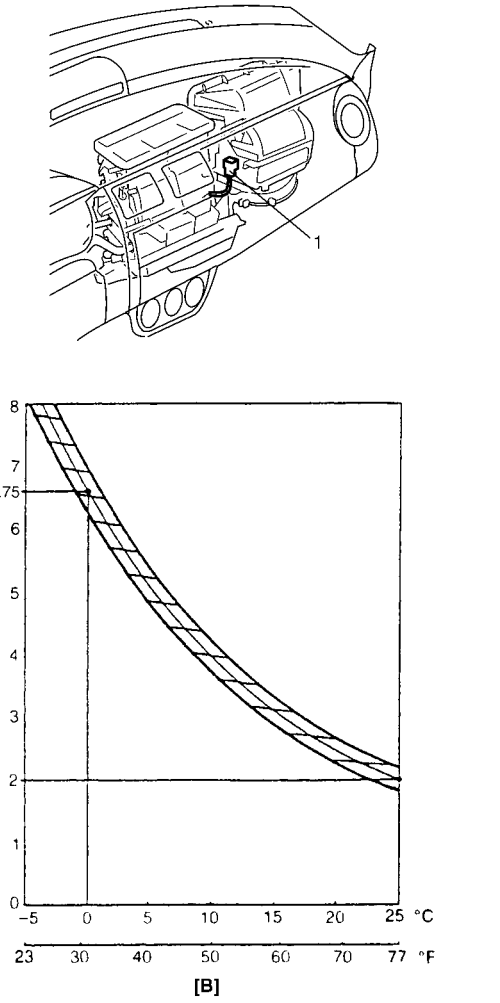
[A]:	LH steering vehicle
[B]:	RH steering vehicle
3.	50 ± 5 mm (2 ± 0.2 in.)
4.	Sensor part fixed to 10th fin from the bottom
5.	Holding part fixed to 8th fin from the bottom
6.	Holding part fixed to 12th fin from the bottom

Evaporator Thermistor (Evaporator Temperature Sensor) Inspection

S7RS0B7216009

Check resistance between terminals of evaporator thermistor (1).
If check results are as not specified, replace evaporator thermistor.

Evaporator thermistor resistance
0 °C (32 °F): 6.6 – 6.9 kΩ
25 °C (77 °F): 1.9 – 2.3 kΩ



I4RS0B720012-01

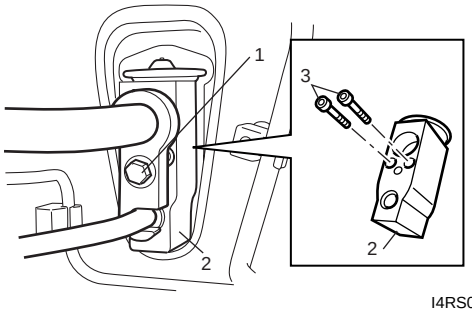
[A]: Resistance (kΩ)	[B]: Temperature

Expansion Valve Removal and Installation

S7RS0B7216010

Removal

1) Recover refrigerant from the A/C system with recovery and recycling equipment referring to “Recovery” in “Operation Procedure for Refrigerant Charge”.
2) Loosen a bolt (1) and remove pipes from expansion valve (2).
3) Loosen bolts (3) and remove expansion valve.



I4RS0A720028-01

Installation

Reverse removal procedure noting the following instructions.

- Apply compressor oil to O-ring of expansion valve and pipes.
- Evacuate and charge the A/C system referring to “Evacuation” and “Charge” in “Operation Procedure for Refrigerant Charge”.

Tightening torque
Expansion valve mount bolt: 3.5 N·m (0.35 kgf-m, 2.5 lb-ft)

Expansion Valve Inspection

S7RS0B7216011

Refer to “A/C System Performance Inspection”.

A/C Refrigerant Pressure Sensor and Its Circuit Inspection

S7RS0B7216012

1) Disconnect A/C refrigerant pressure sensor connector.
2) Turn ignition switch to ON position.
3) Check if voltage between “RED” wire terminal and “ORN” wire terminal of A/C refrigerant pressure sensor connector is 4.75 V to 5.25 V.
   If not, check A/C refrigerant pressure sensor circuit.
4) Connect A/C refrigerant pressure sensor connector with ignition switch turned OFF.
5) Connect manifold gauge set to the charging valves.
6) Check A/C refrigerant pressure sensor voltage of ECM connector referring to “A/C System Inspection at ECM”.
   If voltage is not as specified below, replace A/C refrigerant pressure sensor.

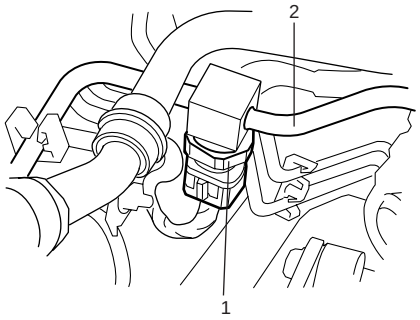
A/C refrigerant pressure sensor voltage specifications (A/C refrigerant pressure measured by manifold gauge)
0.8 MPa (8.0 kg/cm^2, 116 psi): 1.46 – 1.71 V
1.4 MPa (14 kg/cm^2, 203 psi): 2.28 – 2.53 V
1.6 MPa (16 kg/cm^2, 232 psi): 2.55 – 2.80 V
1.8 MPa (18 kg/cm^2, 261 psi): 2.82 – 3.03 V

A/C Refrigerant Pressure Sensor Removal and Installation

S7RS0B7216013

Removal

1) Recover refrigerant from the A/C system with the recovery and recycling equipment referring to “Recovery” in “Operation Procedure for Refrigerant Charge”.
2) Disconnect negative (–) cable from battery.
3) Disconnect A/C refrigerant pressure sensor connector.
4) Remove A/C refrigerant pressure sensor (1) from liquid pipe (2).



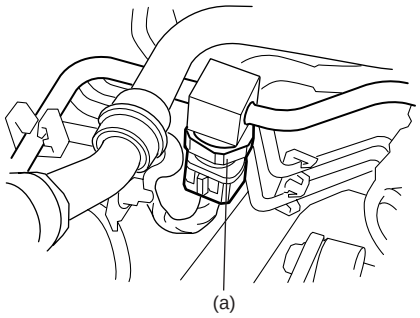
I4RS0A720029-01

Installation

Reverse removal procedure noting the following instructions.

- Apply compressor oil to O-ring of A/C refrigerant pressure sensor.
- Tighten A/C refrigerant pressure sensor to specified torque.

Tightening torque
A/C refrigerant pressure sensor (a): 11 N·m (1.1 kgf-m, 8.0 lb-ft)



I4RS0A720031-01

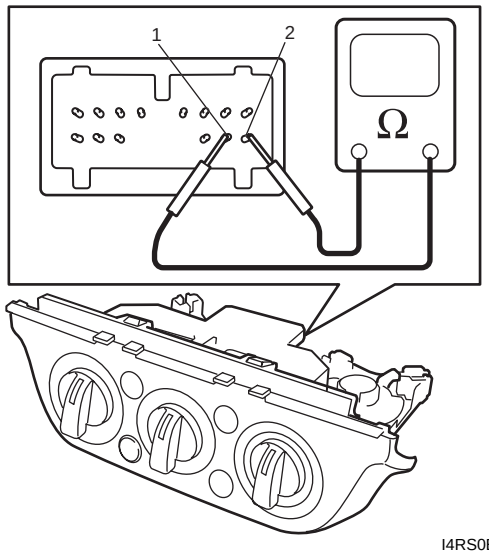
- Evacuate and charge the A/C system referring to “Evacuation” and “Charge” in “Operation Procedure for Refrigerant Charge”.

A/C Switch Inspection

S7RS0B7216014

- Check that there is continuity between terminal (1) and terminal (2) when A/C switch is at ON position.
- Check that there is no continuity between terminal (1) and terminal (2) when A/C switch is at OFF position.

If check result does not meet the above conditions, replace HVAC control unit.

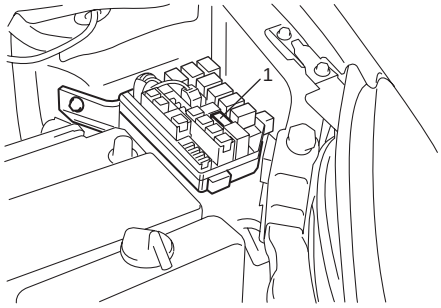


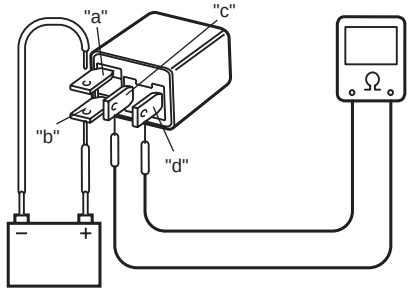
I4RS0B720013-01

Compressor Relay Inspection

S7RS0B7216015

1) Disconnect negative (–) cable from battery.
2) Remove compressor relay (1) from main fuse box.
3) Check that there is no continuity between terminal “c” and “d”. If there is continuity, replace relay.
4) Connect battery positive (+) terminal to terminal “b” of relay and battery negative (–) terminal to terminal “a” of relay, and then check continuity between terminal “c” and “d”. If there is no continuity, replace relay.





I4RS0B720014-01

Compressor Drive Belt Inspection and Adjustment

S7RS0B7216016

Inspection

- Check compressor drive belt (1) for wear, crack, deformation and cleanliness. If any defect is found, replace the belt with new one referring to “Compressor Drive Belt Removal and Installation”.
- Check compressor drive belt tension by measuring how much it deflects when pushed intermediate point between magnet clutch pulley (6) and crankshaft pulley (3) with about 100 N (10 kg) force after rotating crankshaft pulley 360°. If belt tension is out of specification, adjust belt tension referring to “Adjustment”.

Compressor drive belt tension “a”
: 7 – 8mm (0.28 – 0.31 in.)

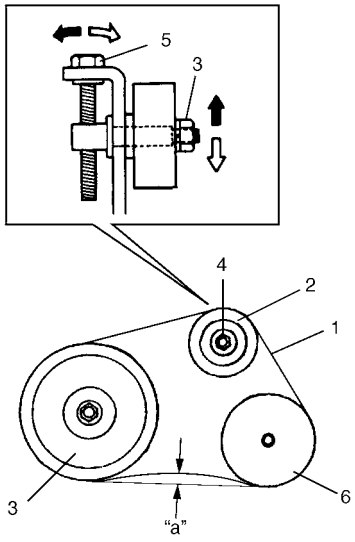
NOTE

When replacing drive belt, adjust drive belt tension to the following specification.

New compressor drive belt tension “a”
: 6 – 7mm (0.24 – 0.28 in.)

Adjustment

1) Loosen tension pulley nut (4).
2) Adjust belt tension by tighten or loosen tension pulley adjusting bolt (5).
3) Tighten tension pulley nut.
4) Rotate the crankshaft pulley 360°, and then recheck belt tension.



I4RS0A720033-01

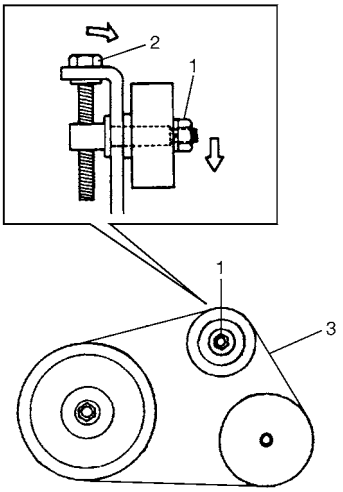
2. Tension pulley

Compressor Drive Belt Removal and Installation

S7RS0B7216017

Removal

1) Loosen tension pulley nut (1).
2) Loosen belt tension by loosening tension pulley adjusting bolt (2).
3) Remove compressor drive belt (3).



I4RS0A720034-01

Installation

Reverse removal procedure noting the following instruction.

- Adjust belt tension referring to “Compressor Drive Belt Inspection and Adjustment”.

Compressor Assembly Removal and Installation

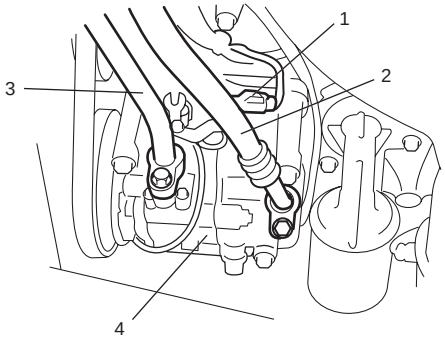
S7RS0B7216018

Removal

1) Run engine at idle speed with A/C ON for 10 minutes.
2) Stop the engine.
3) Disconnect negative (–) cable from battery.
4) Recover refrigerant from the A/C system with recovery and recycling equipment referring to “Recovery” in “Operation Procedure for Refrigerant Charge”.
5) Remove compressor drive belt referring to “Compressor Drive Belt Removal and Installation”.
6) Remove right side engine under cover.
7) Disconnect magnet clutch lead wire coupler (1).
8) Disconnect discharge hose (2) and suction hose (3) from compressor (4).

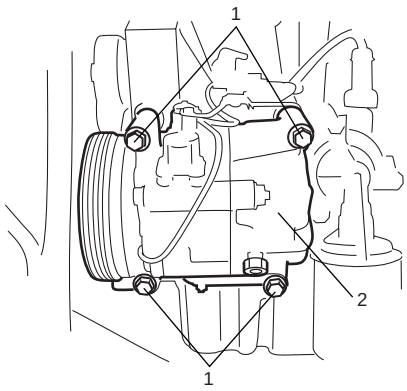
NOTE

Cap open fittings immediately to keep moisture out of the system.



I7RS0A721009-01

9) Remove compressor mounting bolts (1), and then remove compressor (2) from its bracket.



I7RS0A721010-02

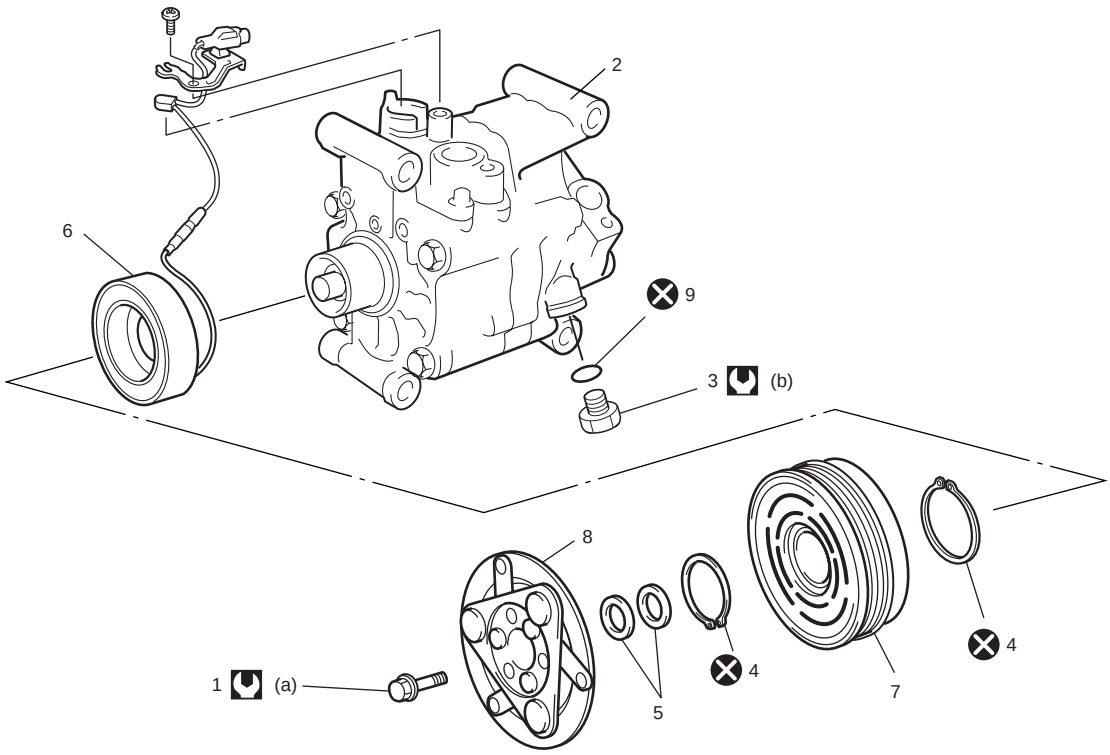
Installation

Reverse removal procedure noting the following instructions.

- If compressor is replaced, pour new compressor oil referring to “Replenishing Compressor Oil” in “Operation Procedure for Refrigerant Charge”.
- Evacuate and charge the A/C system referring to “Evacuation” and “Charge” in “Operation Procedure for Refrigerant Charge”.
- Adjust drive belt tension referring to “Compressor Drive Belt Inspection and Adjustment”.

Compressor Assembly Components

S7RS0B7216020



I4RS0A720037-01

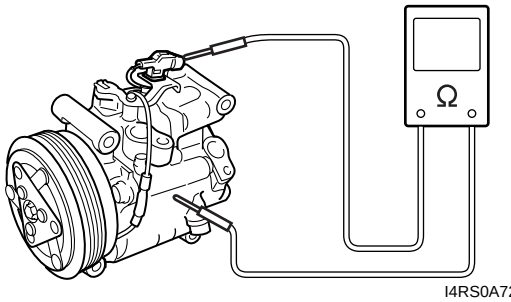
1. Armature plate bolt	4. Circlip	7. Magnet clutch pulley	⊗ : Do not reuse.
2. Compressor	5. Shim	8. Armature plate	(a) : 16 N·m (1.6 kgf-m, 11.5 lb-ft)
3. Relief valve	6. Magnet clutch coil and thermal switch	9. O-ring	(b) : 10 N·m (1.0 kgf-m, 7.5 lb-ft)

Magnet Clutch Inspection

S7RS0B7216022

- Check armature plate and magnet clutch pulley for wear and oil soak respectively.
- Check magnet clutch pulley bearing for noise, wear and grease leakage.
- Measure magnet clutch coil for resistance at 20 °C (68 °F). If the measured resistance does out of specification, replace magnet clutch assembly.

Magnet clutch coil resistance
Standard: 3.5 – 4.0 Ω



I4RS0A720038-01

Magnet Clutch Removal and Installation

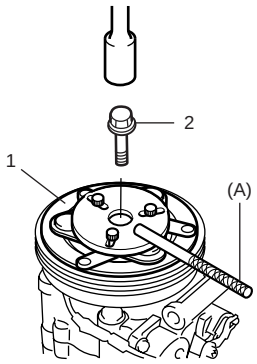
S7RS0B7216024

Removal

1) Remove compressor from vehicle referring to “Compressor Assembly Removal and Installation”.
2) Fix armature plate (1) with special tool and remove armature plate nut (2).

Special tool
(A): 09991–06310

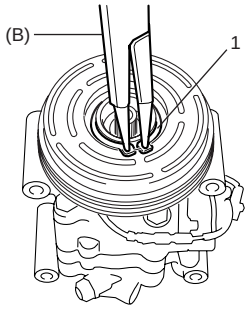
3) Remove armature plate (1).



I4RS0A720039-01

4) Remove shims from shaft.
5) Remove circlip (1) using special tool.

Special tool
(B): 09900–06107

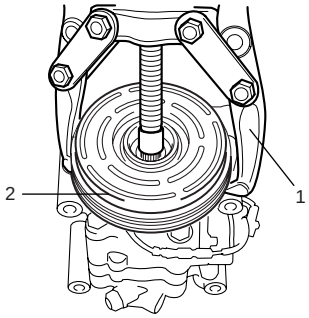


I4RS0A720040-01

6) Remove magnet clutch pulley (2).

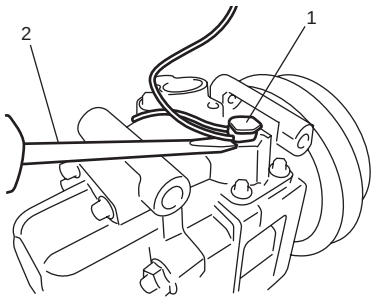
NOTE

- **If it is difficult to remove magnet clutch pulley by hand, use puller (1).**
- **Do not damage magnet clutch pulley when using puller.**



I4RS0A720041-01

7) Remove magnet clutch lead wire clamp.
8) Remove thermal switch (1) from compressor using flat head (2).

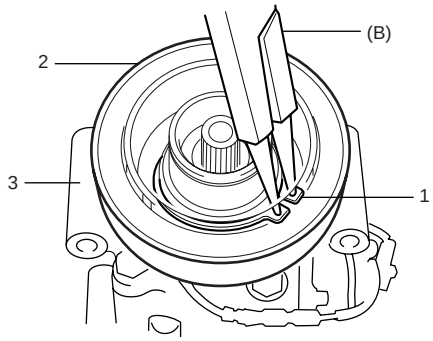


I5RS0C721011-01

9) Remove circlip (1) by using special tool.

Special tool
(B): 09900–06107

10) Remove magnet clutch coil (2) from compressor (3).

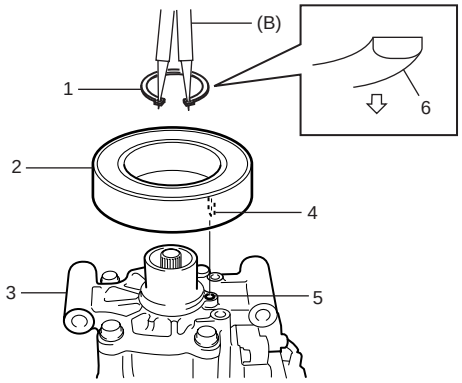


I4RS0A720042-01

Installation

1) Install magnet clutch coil (2) fitting protrusion (4) of magnet clutch coil onto hole (5) of compressor (3).
2) Install circlip (1) directing chamfer side (6) downward.

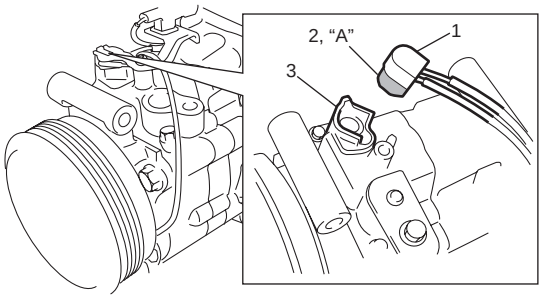
Special tool
(B): 09900–06107



I4RS0A720043-01

3) Apply silicon sealant to contact face (2) of thermal switch (1) and then, install thermal switch to compressor (3).

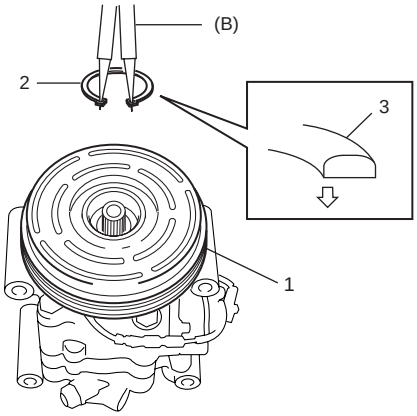
"A": Silicon sealant 99000–34220 (SUZUKI SILICON SEALANT KE-347W (100g))



I5RS0C721012-02

4) Install magnet clutch lead wire clamp.
5) Install magnet clutch pulley (1).
6) Install new circlip (2) directing chamfer side (3) upward.

Special tool
(B): 09900–06107

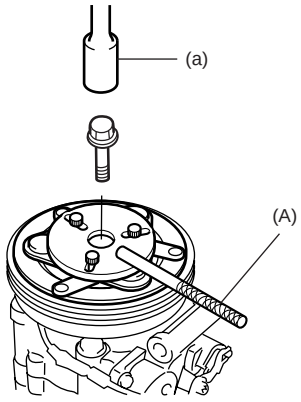


I4RS0A720044-01

7) Tighten armature plate bolt to specified torque.

Tightening torque
Armature plate bolt (a): 15 N·m (1.5 kgf-m, 11.0 lb-ft)

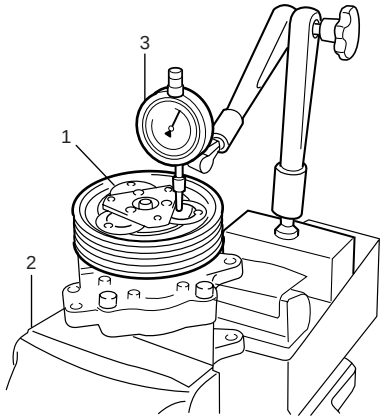
Special tool
(A): 09991–06310



I4RS0A720045-01

8) Adjust clearance between magnet clutch plate (1) and magnet clutch pulley by putting shim(s) on compressor shaft. To measure the clearance, perform the following steps.
   a) Put compressor in a vise (2).
   b) Set dial gauge (3) on magnet clutch plate, and then adjust its pointer at 0.
   c) Connect battery positive terminal (+) to magnet clutch coil lead wire.
   d) Connect battery negative terminal (–) to compressor body assembly. (At this point, magnet clutch plate and magnet clutch pulley are kept in contact.)
   e) Disconnect battery negative terminal (–) to compressor body assembly. (At this point, magnet clutch plate and magnet clutch pulley are not in contact.)
   f) Read stroke of magnet clutch plate from dial gauge by performing step d) and e) repeatedly. (Stroke of magnet clutch plate is clearance between magnet clutch plate and magnet clutch pulley.)

Standard clearance between magnet clutch plate and magnet clutch plate
0.3 – 0.5 mm (0.012 – 0.020 in.)



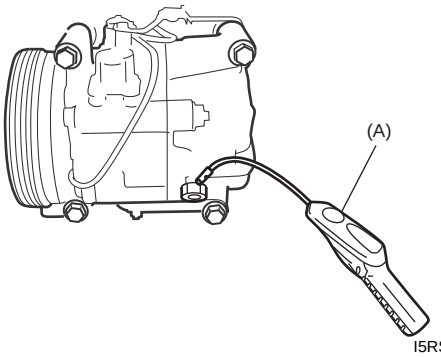
I4RS0A720046-01

Relief Valve Inspection

S7RS0B7216028

By using special tool, check if there is refrigerant leakage. If there is refrigerant leakage, replace the relief valve.

Special tool
(A): 09990–86012



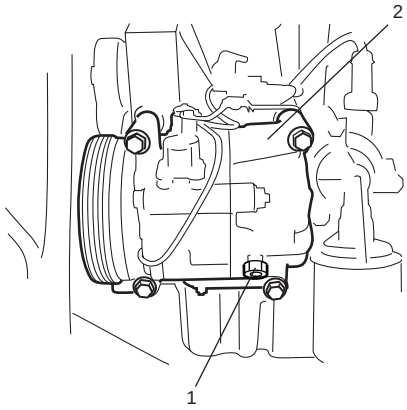
I5RS0C721014-01

Relief Valve Removal and Installation

S7RS0B7216030

Removal

1) Recover refrigerant from the A/C system with recovery and recycling equipment referring to “Recovery” in “Operation Procedure for Refrigerant Charge”.
2) Remove relief valve (1) from compressor (2).



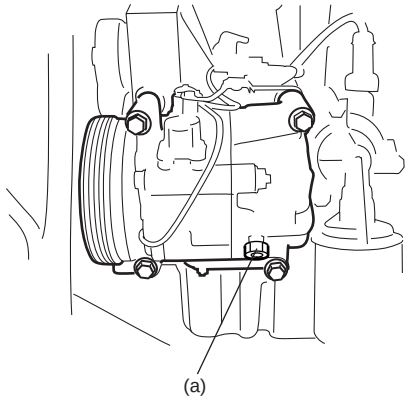
I4RS0A720048-01

Installation

Reverse removal procedure nothing the following instructions.

- Use new O-ring.
- Apply compressor oil to O-ring.
- Tighten relive valve to the specified torque.

Tightening torque
Relief valve (a): 8 N·m (0.8 kgf-m, 6.0 lb-ft)



I4RS0A720049-01

- Evacuate and charge the A/C system referring to “Evacuation” and “Charge” in “Operation Procedure for Refrigerant Charge”.

Specifications

Tightening Torque Specifications

S7RS0B7217001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
Receiver/dryer bolt	10	1.0	7.5	☞
Expansion valve mount bolt	3.5	0.35	2.5	☞
A/C refrigerant pressure sensor	11	1.1	8.0	☞
Armature plate bolt	15	1.5	11.0	☞
Relief valve	8	0.8	6.0	☞

NOTE

The specified tightening torque is also described in the following.
“Compressor Assembly Components”

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Special Tools and Equipment

Recommended Service Material

S7RS0B7218001

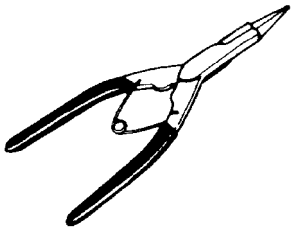
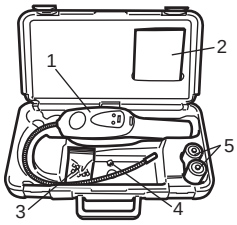
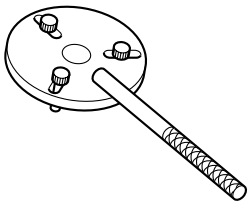
Material	SUZUKI recommended product or Specification		Note
Compressor oil	MATSUSHITADENKI GU10	P/No.: 99000–99015–00A	☞ / ☞
Silicon sealant	SUZUKI SILICON SEALANT KE-347W (100g)	P/No.: 99000–34220	☞

NOTE

Required service material is also described in the following.
“Precautions on Servicing A/C System”

Special Tool

S7RS0B7218002

09900–06107 Snap ring pliers (opening type) ☞ / ☞ / ☞ / ☞ 	09990–86012 Gas leak detector This kit includes following items. 1. Gas leak detector, 2. Instruction manual, 3. Filter, 4. Sensor, 5. Dri-sell battery (size D)☞ / ☞ 
09991–06310 Armature plate holder ☞ / ☞ 	

Automatic Type

Precautions

A/C System Caution

S7RS0B7220001

Refer to “A/C System Caution”.

Precautions in Diagnosing Trouble

S7RS0B7220002

- Do not disconnect couplers from HVAC control module, battery cable from battery, HVAC control module ground wire harness from body or main fuse before confirming diagnostic information (diagnostic trouble code) stored in HVAC control module memory.
- Diagnostic information (diagnostic trouble code) stored in HVAC control module can be checked by display of HVAC control module. Also, it can be checked by using SUZUKI scan tool. Before checking diagnostic information (diagnostic trouble code), read this manual and operator's manual for SUZUKI scan tool to know how to read diagnostic information (diagnostic trouble code).
- When trouble is diagnosed using diagnostic information (diagnostic trouble code) on display of HVAC control module, keep in your mind that each diagnostic information (diagnostic trouble code) has priority, and only diagnostic information (diagnostic trouble code) which has the highest priority is indicated. Therefore, after troubleshooting the malfunction, make sure if there exists any other diagnostic information (diagnostic trouble code).
- Be sure to read “Precautions for Electrical Circuit Service in Section 00” before inspection.

Precautions on Servicing A/C System

S7RS0B7220003

Refer to “Precautions on Servicing A/C System”.

General Description

Auto A/C System Description

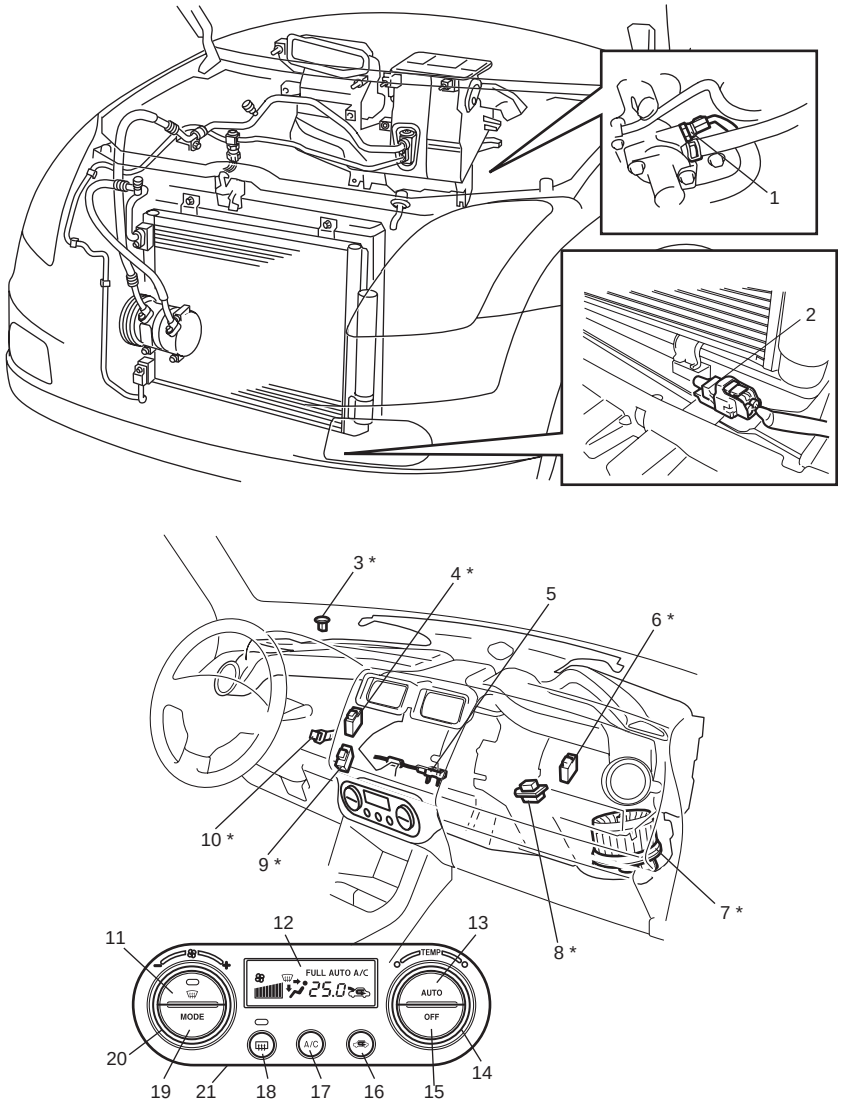
S7RS0B7221001

The automatic type air conditioning system (auto A/C) is provided with the function to automatically control the inside air temperature, fan speed, air flow outlet direction and air intake position by HVAC control module in addition to functions of the manual type air conditioning system (manual A/C). Once the inside air temperature is set using the temperature selector, HVAC control module automatically controls the inside air temperature at the constant level at all times based on the inside air temperature, outside air temperature, amount of sunlight and engine coolant temperature detected respectively by the inside air temperature sensor, outside air temperature sensor, sunload sensor and ECT sensor. At this time, “FULL AUTO A/C” appears on the display of HVAC control module.
With the air intake selector pushed in the above state, it is possible to select any position of the air intake actuator. Then, “FULL AUTO A/C” on the display changes to “AUTO A/C”.

Electronic Control System Location

NOTE

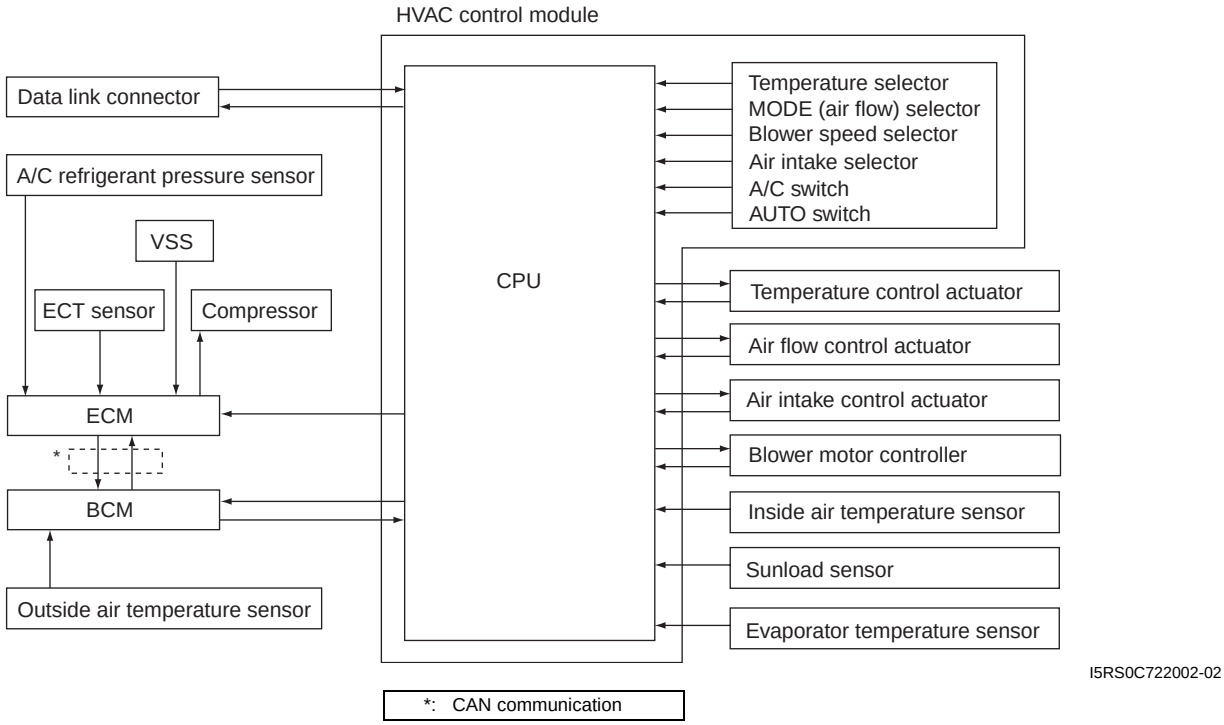
The figure shows left-hand steering vehicle. For right-hand steering vehicle, parts with (*) are installed at the opposite side.



I5RS0C722001-01

1. ECT sensor	7. Blower motor	13. AUTO switch	19. MODE (air flow) selector
2. Outside air temperature sensor	8. Blower motor controller	14. Temperature selector	20. Blower speed selector
3. Sunload sensor	9. Temperature control actuator	15. OFF switch	21. HVAC control module
4. Air flow control actuator	10. Inside air temperature sensor	16. Air intake selector	
5. Evaporator temperature sensor	11. Defroster switch	17. A/C switch	
6. Air intake actuator	12. Display	18. Rear defogger switch	

Auto A/C Electronic Control Input / Output Table



I5RS0C722002-02

HVAC Control Module Operation Description

S7RS0B7221002

Temperature Control

HVAC control module calculates the target temperature control door position based on signals from the temperature selector, inside air temperature sensor, outside air temperature sensor and sunload sensor and controls the temperature control actuator so that the current position of the temperature control door matches its target position.

Fan Speed Control

HVAC control module calculates the target blower fan speed based on signals from the temperature selector, inside air temperature sensor, outside air temperature sensor and sunload sensor, compares it with the current blower fan speed inputted from the blower motor controller to control the current blower fan speed to the target level.

Air Flow Outlet Control

HVAC control module calculates the target temperature control door position based on signals from the temperature selector, inside air temperature sensor, outside air temperature sensor and sunload sensor. Using thus obtained target temperature control door position, it further calculates the target air flow control door position and controls the air flow control actuator so that the current air flow control door position becomes the target position.

Air Intake Position Control

HVAC control module determines the position of the air intake control door based on signals from the temperature selector, inside air temperature sensor, outside air temperature sensor and sunload sensor and selects any of the following positions by controlling the position of the air intake control door.

- FRESH position (FRE)
- RECIRCULATION position (REC)
- MIX position (MIX)

Refrigerant Type Identification

S7RS0B7221003

Refer to “Refrigerant Type Identification”.

Sub-Cool A/C System Description

S7RS0B7221005

Refer to “Sub-Cool A/C System Description”.

A/C Operation Description

S7RS0B7221006

Refer to “A/C Operation Description”.

On-Board Diagnostic System Description

S7RS0B7221007

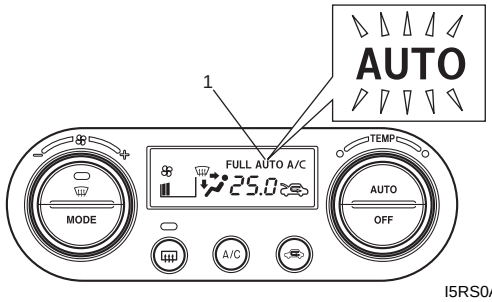
NOTE

The diagnostic information as diagnostic trouble code (DTC) can be known by using SUZUKI scan tool. For further details, refer to "DTC Check".

HVAC control module detects malfunctions, which may occur in the following area.

- Outside air temperature sensor
- Inside air temperature sensor
- Evaporator temperature sensor
- Sunload sensor
- ECT sensor
- Temperature control actuator of HVAC unit
- Air flow control actuator of HVAC unit
- A/C refrigerant pressure sensor
- HVAC control module
- VSS
- Serial Communication line
- CAN communication line

When HVAC control module detects malfunction, the "AUTO" indicator lamp (1) flashes to warn and the diagnostic trouble code (DTC) is stored in the memory of the module. When diagnosing trouble, the DTC can be checked according to "DTC Check".



I5RS0A722003-01

Schematic and Routing Diagram

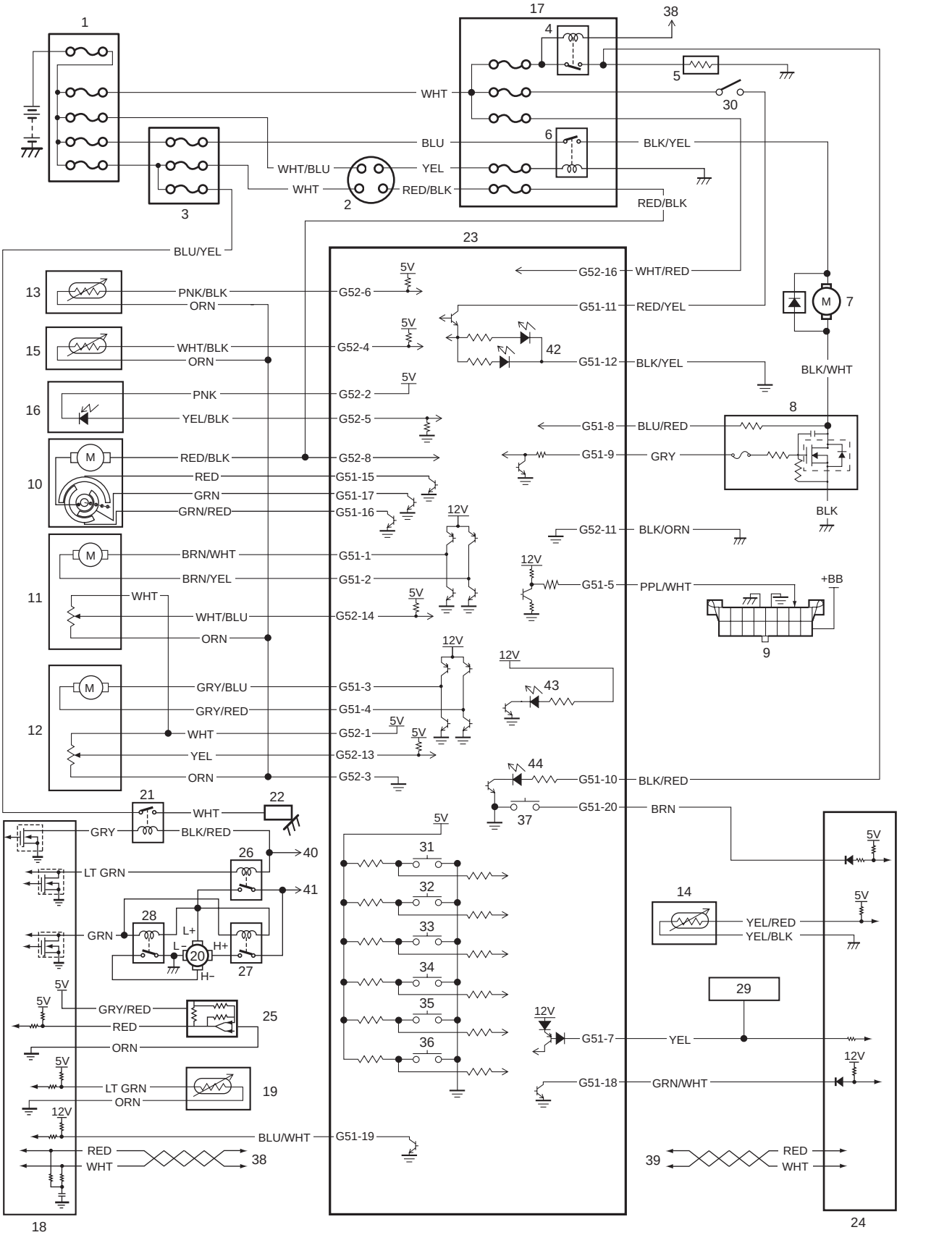
Major Components of A/C System

S7RS0B7222001

Refer to "Major Components of A/C System".

A/C System Wiring Diagram

S7RS0B7222002



I7RS0A722001-01

1. Main fuse box	12. Temperature control actuator	23. HVAC control module	34. Defroster switch
2. Ignition switch	13. Inside air temperature sensor	24. BCM	35. AUTO switch
3. Individual circuit fuse box No.1 box	14. Outside air temperature sensor	25. A/C refrigerant pressure sensor	36. OFF switch

4. Rear defogger relay	15. Evaporator temperature sensor	26. Radiator cooling fan relay No.1	37. Rear defogger switch
5. Rear defogger	16. Sunload sensor	27. Radiator cooling fan relay No.2	38. To BCM
6. Blower motor relay	17. Junction block assembly	28. Radiator cooling fan relay No.3	39. To ECM
7. Blower motor	18. ECM	29. Information display	40. To main relay
8. Blower motor controller	19. ECT sensor	30. Lighting switch	41. To main fuse
9. DLC	20. Radiator cooling fan motor	31. A/C switch	42. Back-light
10. Air intake actuator	21. Compressor relay	32. MODE (air flow) selector	43. Defroster indicator
11. Air flow control actuator	22. Compressor	33. Air intake selector	44. Rear defogger indicator

Diagnostic Information and Procedures

A/C System Symptom Diagnosis

S7RS0B7224001

Condition	Possible cause	Correction / Reference Item
No cool air comes out (A/C system does not operate)	No refrigerant	*Perform recovery, evacuation and charge referring to "Operation Procedure for Refrigerant Charge".*
	Fuse blown	*Check related fuses, and then check for short circuit to ground.*
	A/C switch faulty	*Check A/C switch referring to "Inspection of HVAC Control Module and Its Circuit".*
	Evaporator temperature sensor faulty	*Check evaporator temperature sensor referring to "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection".*
	A/C refrigerant pressure sensor faulty	*Check A/C refrigerant pressure sensor referring to "A/C Refrigerant Pressure Sensor and Its Circuit Inspection".*
	Wiring or grounding faulty	*Repair as necessary.*
	ECT sensor faulty	*Check ECT sensor referring to "ECT Sensor Inspection in Section 1C".*
	ECM faulty	*Check ECM referring to "A/C System Inspection at ECM".*
	HVAC control module faulty	*Check HVAC control module referring to "Inspection of HVAC Control Module and Its Circuit".*
	Magnet clutch faulty	*Check magnet clutch. Referring to "Magnet Clutch Inspection".*
	Compressor drive belt loosened or broken	*Adjust or replace drive belt.*
	Compressor faulty	*Check compressor.*
	Compressor relay faulty	*Check compressor relay referring to "Compressor Relay Inspection".*
	Temperature selector, blower speed selector, and/or air flow selector faulty	*Check HVAC control module referring to "Inspection of HVAC Control Module and Its Circuit".*
	BCM faulty	*Check BCM referring to "Inspection of BCM and its Circuits in Section 10B".*

Condition	Possible cause	Correction / Reference Item
No cool air comes out (radiator cooling fan motor does not operate)	Fuse blown	*Check related fuses, and then check for short circuit to ground.*
	Wiring or grounding faulty	*Repair as necessary.*
	Radiator cooling fan motor relay faulty	*Check radiator cooling fan motor relay referring to "Radiator Cooling Fan Relay Inspection in Section 1F".*
	Radiator cooling fan motor faulty	*Check radiator cooling fan motor referring to "Radiator Cooling Fan Motor On-Vehicle Inspection in Section 1F".*
	ECM faulty	*Check ECM referring to "A/C System Inspection at ECM".*
	HVAC control module faulty	*Check HVAC control module referring to "Inspection of HVAC Control Module and Its Circuit".*
No cool air comes out (blower motor does not operate)	Fuse blown	*Check related fuses, and then check for short circuit to ground.*
	Blower motor controller faulty	*Check blower motor controller referring to "Blower Motor Controller Inspection".*
	Blower speed selector faulty	*Check blower speed selector referring to "Inspection of HVAC Control Module and Its Circuit".*
	HVAC control module faulty	*Check HVAC control module referring to "Inspection of HVAC Control Module and Its Circuit".*
	Wiring or grounding faulty	*Repair as necessary.*
	Blower motor faulty	*Check blower motor referring to "Blower Motor Inspection in Section 7A".*
	Blower motor relay faulty	*Check blower motor relay referring to "Blower Motor Relay Inspection in Section 7A".*

Condition	Possible cause	Correction / Reference Item
Cool air does not come out or insufficient cooling (A/C system normal operation)	Insufficient or excessive charge of refrigerant	*Check the amount of refrigerant and system for leaks.*
	Condenser clogged	*Check condenser referring to "Condenser Assembly On-Vehicle Inspection".*
	A/C evaporator clogged or frosted	*Check A/C evaporator and evaporator temperature sensor referring to "Evaporator Inspection" and "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection".*
	Evaporator temperature sensor faulty	*Check evaporator temperature sensor referring to "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection".*
	Expansion valve faulty	*Check expansion valve referring to "Expansion Valve Inspection".*
	Desiccant clogged	*Replace receiver/dryer.*
	Compressor drive belt loosened or broken	*Adjust or replace drive belt.*
	Magnet clutch faulty	*Check magnet clutch. Referring to "Magnet Clutch Inspection".*
	Compressor faulty	*Check compressor.*
	Air in A/C system	*Replace receiver/dryer, and then perform evacuation and charge referring to "Operation Procedure for Refrigerant Charge".*
	Air leaking from HVAC unit or air duct	*Repair as necessary.*
	Heater and ventilation system faulty	*Check HVAC unit.*
	Temperature selector faulty	*Check temperature selector referring to "Inspection of HVAC Control Module and Its Circuit".*
	HVAC control module faulty	*Check HVAC control module referring to "Inspection of HVAC Control Module and Its Circuit".*
	Temperature control actuator faulty	*Check temperature control actuator referring to "Temperature Control Actuator Inspection".*
	Blower motor faulty	*Check blower motor referring to "Blower Motor Inspection in Section 7A".*
	Excessive compressor oil in A/C system	*Drain excessive compressor oil from A/C system circuit and compressor.*
Cool air does not come out only intermittently	Wiring connection faulty	*Repair as necessary.*
	Expansion valve faulty	*Check expansion valve referring to "Expansion Valve Inspection".*
	Excessive moisture in A/C system	*Replace receiver/dryer, and then perform evacuation and charge referring to "Operation Procedure for Refrigerant Charge".*
	Magnet clutch faulty	*Check magnet clutch. Referring to "Magnet Clutch Inspection".*
	Excessive amount of refrigerant	*Check the amount of refrigerant.*
Cool air comes out only at high speed	Condenser clogged	*Check condenser referring to "Condenser Assembly On-Vehicle Inspection".*
	Insufficient charge of refrigerant	*Check the amount of refrigerant and system for leaks.*
	Air in A/C system	*Replace receiver/dryer, and then perform evacuation and charge referring to "Operation Procedure for Refrigerant Charge".*
	Compressor drive belt loosened or broken	*Adjust or replace drive belt.*
	Compressor faulty	*Check compressor.*

Condition	Possible cause	Correction / Reference Item
Cool air does not come out only at high speed	Excessive amount of refrigerant	*Check the amount of refrigerant.*
	A/C evaporator frosted	*Check A/C evaporator and evaporator temperature sensor referring to "Evaporator Inspection" and "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection".*
Insufficient air flow of cooled air	A/C evaporator clogged or frosted	*Check A/C evaporator and evaporator temperature sensor referring to "Evaporator Inspection" and "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection".*
	Air leaking from HVAC unit or air duct	*Repair as necessary.*
	Blower motor faulty	*Check blower motor referring to "Blower Motor Inspection in Section 7A".*
	Wiring or grounding faulty	*Repair as necessary.*

Abnormal Noise Symptom Diagnosis of A/C System

S7RS0B7224002

Refer to "Abnormal Noise Symptom Diagnosis of A/C System".

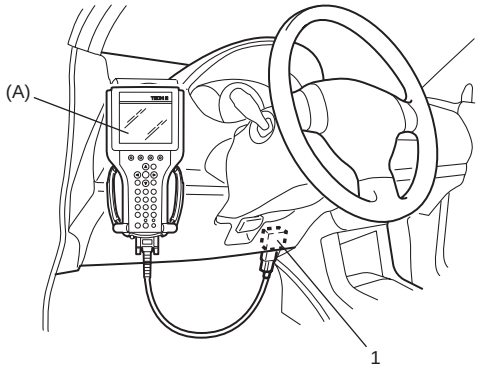
DTC Check

S7RS0B7224003

Using SUZUKI Scan Tool

1) Turn ignition switch to OFF position.
2) Connect SUZUKI scan tool to data link connector (DLC) (1) located on underside of instrument panel at driver's seat side.

Special tool
(A): SUZUKI scan tool



I5RS0A722005-01

3) Light over sunload sensor vertically with an incandescent lamp of approximately 100 W apart from about 100 mm (3.94 in.).

NOTE

If sunload sensor is not lighted over with an incandescent lamp, DTC B1504 is detected even though there is not any malfunction.

4) Turn ignition switch to ON position.
5) Read DTC displayed on SUZUKI scan tool.

NOTE

To know how to use SUZUKI scan tool, refer to operator's manual for SUZUKI scan tool.

6) After completing the check, turn ignition switch to OFF position and disconnect SUZUKI scan tool from data link connector (DLC).

Not Using SUZUKI Scan Tool

Current DTC mode

1) Light over sunload sensor vertically with an incandescent lamp of approximately 100 W apart from about 100 mm (3.94 in.).

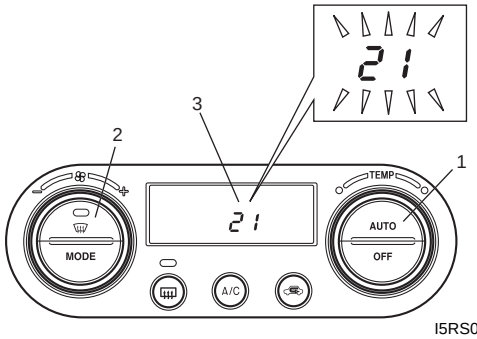
NOTE

If sunload sensor is not lighted over with an incandescent lamp, DTC B1504 is detected as current DTC even though there is not any malfunction.

2) Start engine.
3) Wait for 20 seconds or more after engine started and set temperature selector to 25 °C (77 °F).
4) Push AUTO switch (1) and defroster switch (2) at the same time.
5) Check DTC (3).

NOTE

- **DTC flashes for 15 seconds. After that, the normal display is restored. To have DTC displayed again, repeat the procedure from Step 4.**
- **When more than two DTCs are detected, only DTC having the highest priority is indicated. Therefore, after troubleshooting the malfunction, DTC check has to be performed again to see if any other DTC(s) is detected.**



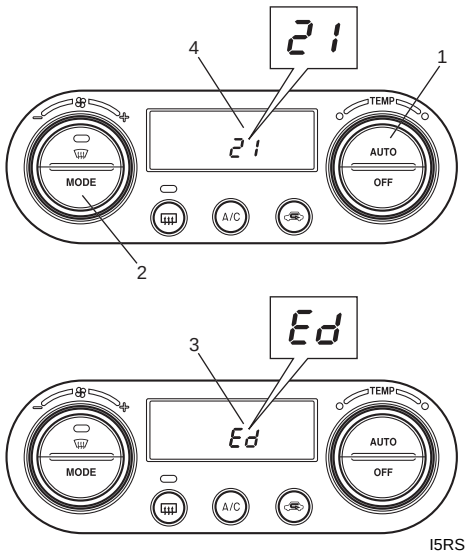
I5RS0A722006-02

History DTC mode

1) Turn ignition switch to ON position.
2) Set temperature selector to 25 °C (77 °F).
3) Push AUTO switch (1) and MODE (air flow) selector (2) at the same time.
4) Check DTC (4).

NOTE

Each DTC item is displayed (lights up) for 4 seconds.
When HVAC control module detects 2 or more DTC items, each one is displayed once starting from the one of higher priority order. After all DTC items being detected have been displayed, "Ed" (3) appears on display of HVAC control module and normal display is restored. "Ed" means that all DTC items have been displayed.



I5RS0A722007-02

DTC Clearance

S7RS0B7224004

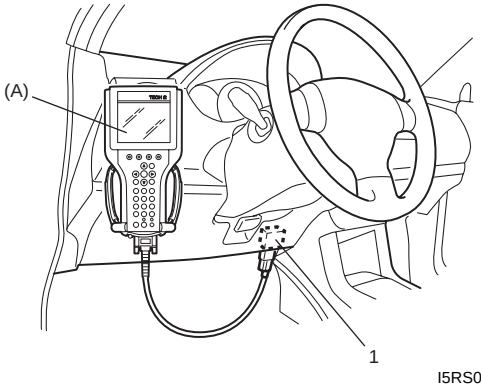
NOTE

Only history DTC(s) can be cleared. Current DTC(s) can not be cleared unless the problem(s) is fixed.

Using SUZUKI Scan tool

1) Turn ignition switch to OFF position.
2) Connect SUZUKI scan tool to data link connector (DLC) (1) located on underside of instrument panel at driver's seat side.

Special tool
(A): SUZUKI scan tool



I5RS0A722005-01

3) Light over sunload sensor vertically with an incandescent lamp approximately 100 W apart from about 100 mm (3.94 in.).

NOTE

If sunload sensor is not lighted over with an incandescent lamp, DTC B1504 is detected as current DTC even though there is not any malfunction.

4) Turn ignition switch to ON position.
5) Erase DTC according to instructions displayed on SUZUKI scan tool.

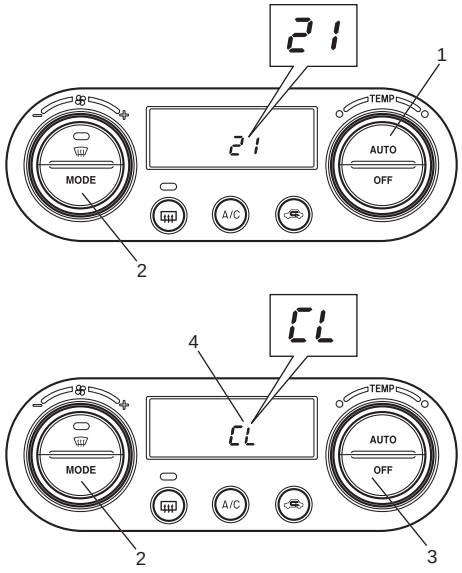
NOTE

To know how to use SUZUKI scan tool, refer to operator's manual for SUZUKI scan tool.

6) After completing the clearance, turn ignition switch to OFF position, and then disconnect SUZUKI scan tool from DLC.

Not Using SUZUKI Scan Tool

1) Turn ignition switch to ON position.
2) Set temperature selector to 25 °C (77 °F).
3) Push AUTO switch (1) and MODE (air flow) selector (2) at the same time to have history DTC displayed.
4) Push MODE (air flow) selector (2) and OFF switch (3) at the same time while history DTC is displayed.
5) Check that "CL" (4) appears on display. "CL" means that DTC has been cleared.



I5RS0A722008-01

DTC Table

S7RS0B7224005

⚠ CAUTION

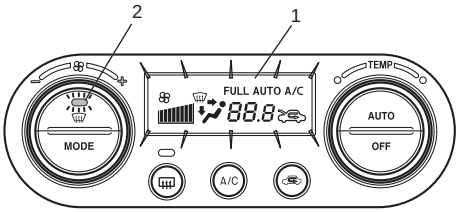
Be sure to perform "Air Conditioning System Check" before starting diagnosis.

DTC No. (displayed on SUZUKI scan tool)	DTC (indicated on display of HVAC control module)	Priority of display (current DTC)	Priority of display (history DTC)	Diagnosis		"AUTO" indicator lamp
☞ B1502	21	1	1	Inside air temperature sensor and/or its circuit malfunction	Open	Flashed
	22	2	2		Short	
☞ B1503	31	3	3	Evaporator temperature sensor and/or its circuit malfunction	Open	Flashed
	32	4	4		Short	
☞ B1504	41	21	—	Sunload sensor and/or its circuit malfunction	Open	—
	42	5	5		Short	Flashed
☞ B1511	61	6	6	Temperature control actuator (position sensor) and/or its circuit malfunction	Open	Flashed
	62	7	7		Short	
☞ B1512	71	8	8	Air flow control actuator (position sensor) and/or its circuit malfunction	Open	Flashed
	72	9	9		Short	
☞ B1513	63	10	10	Temperature control actuator and/or its circuit malfunction		Flashed
☞ B1514	73	11	11	Air flow control actuator and/or its circuit malfunction		Flashed
☞ B1541	E1	12	—	HVAC control module back-up power supply malfunction		—
☞ B1546	d5	22	—	A/C refrigerant pressure malfunction		—
☞ B1551	91	13	12	Serial communication circuit malfunction	Open	Flashed
	92	14	13		Short	
☞ B1552	94	15	14	Serial communication signal malfunction		Flashed
☞ B1553	A4	16	15	CAN communication signal malfunction		Flashed
☞ B1557	b4	19	16	Vehicle speed sensor signal malfunction		—
☞ B1561	54	17	17	Engine coolant temperature sensor signal malfunction		Flashed

DTC No. (displayed on SUZUKI scan tool)	DTC (indicated on display of HVAC control module)	Priority of display (current DTC)	Priority of display (history DTC)	Diagnosis	"AUTO" indicator lamp
☞ B1562	14	18	18	Outside air temperature sensor signal malfunction	Flashed
☞ B1563	d4	20	19	A/C refrigerant pressure sensor signal malfunction	—
—	See NOTE below (current DTC) 00 (history DTC)	—	—	Normal	—

NOTE

When no current DTC is detected, all contents displayed on display (1) of HVAC control module and defroster indicator (2) flash at the same time.



I5RS0A722009-01

Fail-Safe Table

S7RS0B7224006

When any of the following malfunctions (DTCs) is detected, fail-safe mode is activated.
However, when HVAC control module detects normal operation of A/C system, fail-safe mode is cancelled.

DTC No.	Trouble Area	Fail-Safe Operation
☞ B1502	Inside air temperature sensor and/or its circuit	HVAC control module controls actuators assuming that inside air temperature is 25 °C (77 °F).
☞ B1503	A/C evaporator temperature sensor and its circuit	• HVAC control module turns off A/C switch signal. • HVAC control module controls actuators assuming that evaporator temperature is 0 °C (32 °F).
☞ B1504	Sunload sensor and/or its circuit	HVAC control module controls actuators assuming that amount of sunlight is 0 W/m^2.
☞B1551	Serial communication circuit	HVAC control module controls actuators assuming that outside air temperature is 20 °C (68 °F), engine coolant temperature is 80 °C (176 °F), and vehicle speed is 40 km/h (25 mph).
☞ B1552	Serial communication circuit	
☞ B1553	CAN communication circuit	
☞ B1557	Vehicle speed sensor and/or its circuit	HVAC control module controls actuators assuming that vehicle speed is 40 km/h (25 mph).
☞ B1561	Engine coolant temperature sensor and/or its circuit	HVAC control module controls actuators assuming that engine coolant temperature is 80 °C (176 °F).
☞ B1562	Outside air temperature sensor and/or its circuit	HVAC control module controls actuators assuming that outside air temperature is 20 °C (68 °F).

Scan Tool Data

S7RS0B7224007

As the data values given in the following are standard values estimated on the basis of values obtained from the normally operation vehicles by using a scan tool, use them as reference values. Even when the vehicles are in good condition, there may be cases where the checked values do not fall within each specifies data range. Therefore, judgement as abnormal should not be made by checking with these data alone.

Scan Tool Data	Condition		Normal Condition / Reference Value
☞ TEMP CONT SWITCH	Each reference value is relative to the position of temperature selector of HVAC control module.		Max Cool, 18.5 °C (65 °F), 19 °C (66 °C) – 31 °C (88 °F), 31.5 °C (89 °F), Max Hot
☞ CABIN TEMPERATURE	Reference value is relative to in-car temperature.		–6.5 °C – 57.25 °C (20.3 °F – 135.05 °F)
☞ OUTSIDE AIR TEMP	Reference value is relative to outside air temperature.		–23.3 °C – 65.95 °C (–9.94 °F – 150.71 °F)
☞ EVAPORATOR TEMP	Reference value is relative to temperature of evaporator.		–29.7 °C – 59.55 °C (–21.46 °F – 139.19 °F)
☞ COOLANT TEMP	At specified idle speed after warming up.		80 °C – 100 °C (176 °F – 212 °F)
☞ SUN LOAD	Reference value depends on the situation.		0 W/m^2 – 4447.8 W/m^2
☞MODE CONT SWITCH	Each reference value is relative to the position of air flow selector of HVAC control module.		AUTO, FACE, B/L, FOOT, D/F, DER
☞ FAN CONT SWITCH	Each reference value is relative to the position of blower speed selector of HVAC control module.		AUTO, OFF, 1st, 2nd – 7th, 8th
☞ FAN DESIRED VOLT	Reference value is relative to the position of blower speed selector of HVAC control module.		0 – 16.0 V
☞ AIR MIX POS SEN	Reference value is relative to the position of temperature selector of HVAC control module.		about 2.0 V (Max Hot)
			about 4.0 V (Max Cool)
☞MODE POS SENSOR	Reference value is relative to the position of air flow selector of HVAC control module.		about 1.6 V (DEF)
			about 4.0 V (VENT)
☞ A/C CONT SIG	A/C system is ON.		ON
	A/C system is OFF.		OFF
☞ BLOWER LOAD SIG	Position of blower speed selector is 1st position or more.		ON
	Position of blower speed selector is OFF position.		OFF
☞ AIR INTAKE MODE	Fresh air (FRE) mode is activated.		FRE
	Recirculation air (REC) mode is activated.		REC
	AUTO mode is activated.		AUTO
☞ REFRIGERANT PRESSURE	Engine running.	A/C ON (A/C is operating) at ambient temperature: 30 °C (86 °F)	1470 – 1770 kPa For more details, refer to pressure of high pressure gauge under “A/C System Performance Inspection”
		A/C OFF (A/C is not operating) at ambient temperature: 30 °C (86 °F) and engine coolant temperature: 90 ° – 100 °C	600 – 1000 kPa After longer than 10 min from A/C switch turned off
☞ A/C COMP CLUTCH	Engine running.	A/C switch and blower motor switch turned ON	ON
		A/C switch and/or blower motor switch turned OFF	OFF
☞ DFR INDICATOR	Defroster indicator lamp is lighted.		ON
	Defroster indicator lamp is not lighted.		OFF
☞ VEHICLE SPEED	At stop.		OFF
			0 km/h (0 mph)

Scan Tool Data Definitions

TEMP CONT SWITCH (TEMPERATURE SELECTOR): Position of temperature control selector of HVAC control module

CABIN TEMPERATURE: In-car temperature detected by inside air temperature sensor installed in HVAC control module

OUTSIDE AIR TEMP (OUTSIDE AIR TEMPERATURE): Outside air temperature detected by outside air temperature sensor installed in front bumper member

EVAPORATOR TEMP (EVAPORATOR TEMPERATURE): Temperature of air passed through evaporator

COOLANT TEMP (ENGINE COOLANT TEMPERATURE): Engine coolant temperature detected by engine coolant temperature sensor

SUN LOAD: Amount of sunlight detected by sunload sensor installed on the driver side on the dashboard

MODE CONT SWITCH (MODE (AIR FLOW) SELECTOR): Position of air flow selector of HVAC control module

FAN CONT SWITCH (BLOWER SPEED SELECTOR): Position of blower speed selector of HVAC control module

FAN DESIRED VOLT: Voltage for blower motor

AIR MIX POS SEN (TEMPERATURE CONTROL ACTUATOR POSITION SENSOR): Input signal from position sensor in temperature control actuator

MODE POS SENSOR (AIR FLOW CONTROL ACTUATOR POSITION SENSOR): Input signal from position sensor in air flow control actuator

A/C CONT SIG (A/C SWITCH SIGNAL, ON or OFF): State of A/C switch

BLOWER LOAD SIG (BLOWER FAN LOAD SIGNAL, ON or OFF): ON: Position of blower speed selector is 1st position or more / OFF: Position of blower speed selector is OFF position.

AIR INTAKE MODE (AUTO, FRE or REC): State of air intake mode

REFRIGERANT PRESSURE (A/C REFRIGERANT ABSOLUTE PRESSURE): This parameter indicates A/C refrigerant absolute pressure calculated by ECM

A/C COMP CLUTCH (A/C COMPRESSOR MAGNET CLUTCH, ON or OFF): This parameter indicates the state of the A/C switch

DFR INDICATOR (DEFROSTER INDICATOR LAMP, ON or OFF): State of defroster indicator lamp

VEHICLE SPEED: It is computed based on pulse signals from vehicle speed sensor

Air Conditioning System Check

S7RS0B7224008

Step	Action	Yes	No
1	**Customer complaint analysis** 1) Perform ☞"Customer complaint analysis". *Was customer complaint analysis performed?*	Go to Step 2.	Perform customer complaint analysis.
2	**Visual inspection** 1) Perform ☞"Visual inspection". *Is there any faulty condition?*	Repair or replace malfunction part.	Go to Step 3.
3	**DTC check** 1) Perform ☞"DTC check". *Is there any DTC code?*	Go to Step 4.	Go to Step 5.
4	**Troubleshooting malfunction** 1) Perform ☞ "Troubleshooting malfunction". *Is there any faulty condition?*	Repair or replace malfunction part, and go to Step 7.	Go to Step 5.
5	**Perform A/C system symptom diagnosis** 1) Inspect and repair referring to "A/C System Symptom Diagnosis". *Is there any faulty condition?*	Repair or replace malfunction part, and go to Step 7.	Go to Step 6.
6	**Check for intermittent problem** 1) Check for intermittent troubles referring to "Intermittent and Poor Connection Inspection in Section 00". *Is there any faulty condition?*	Repair or replace malfunction part, and go to Step 7.	Go to Step 7.
7	**Final confirmation test** 1) Perform ☞ "Final confirmation test". *Is there any malfunction code?*	Go to Step 4.	End.

Description for Each Step

Step 1. Customer complaint analysis

Talk to customer, and then record details of the problem.

Customer questionnaire (Example)

Customer's Name:	Model:	VIN:	
Date of Issue:	Date of Reg:	Date of Problem:	Mileage:

Problem Symptoms	• A/C switch indicator lamp abnormal: fails to turn on/fails to turn off/flashes • Abnormal noise while A/C compressor is working: from compressor/ from condenser fan motor other_____ • Chattering from A/C compressor: • Condenser fan motor does not work: • A/C compressor does not work: • Other:
Frequency of Occurrence	• Continuous/Intermittent (times a day, a month)/ other_____
Conditions for Occurrence of Problem	• Vehicle at stop & A/C compressor is working: • For some time after A/C switch is ON: • When outside air temperature is high: • When outside air temperature is low: • All the time:
Environmental Condition	• Weather: fair/cloudy/rain/snow/other_____ • Temperature: °F (°C)
Diagnostic Trouble Code	• First check: Normal code/malfunctional code ( ) • Second check after test drive: Normal code/malfunctional code ( )

I4RH01722014-01

NOTE

The from is a standard sample. It should be modified according to conditions characteristic of each market.

Step 2. Visual inspection

As a preliminary step, be sure to perform visual check of the items that support proper function of the air conditioning referring to "Visual Inspection".

Step 3. DTC check

Check DTC referring to "DTC Check".

Step 4. Troubleshooting malfunction

Based on the DTC, perform an applicable DTC diagnostic flow and locate the cause of the trouble, namely in a sensor, wire harness, connector, actuator, HVAC control module or other part and repair faulty parts.

Step 5. A/C system symptom diagnosis

Check any part or system suspected to be a possible cause referring to "A/C System Symptom Diagnosis".

Step 6. Check for intermittent problem

Check any part where an intermittent trouble is easy to occur (e.g., wire harness, connector, etc.), referring to "Intermittent and Poor Connection Inspection in Section 00" and related circuit of trouble cord recorded.

Step 7. Final confirmation test
Confirm if the problem symptom is troubleshoot and the A/C system is free from any abnormal conditions. If there existed DTC, clear the DTC. Then, check if the DTC is still detected and if there is any other DTC.

Visual Inspection

S7RS0B7224009

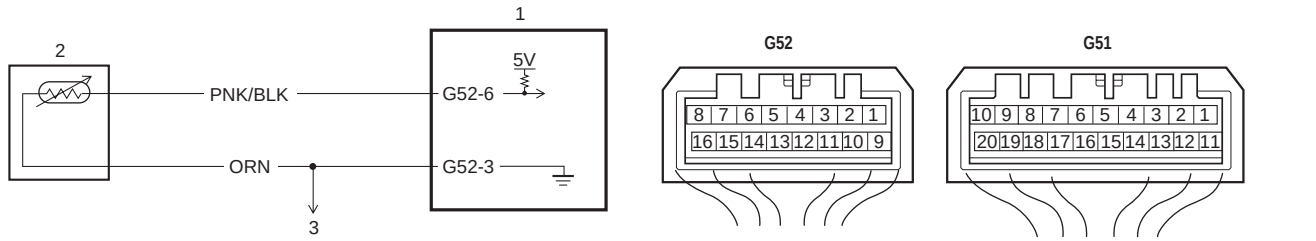
Check visually the following parts and systems.

Inspection item	Correction
• Refrigerant ---- leakage and amount • A/C pipe or hose ---- disconnection, looseness and deterioration • A/C compressor drive belt ---- looseness and damage • Battery ---- fluid level and corrosion of terminal • Connectors of electric wire harness ---- disconnection and friction • Fuses ---- burning • Parts ---- installation and damage • Other parts that can be checked visually	Refer to “Compressor Drive Belt Inspection and Adjustment”.

DTC B1502: Inside Air Temperature Sensor and/or Its Circuit Malfunction

S7RS0B7224010

Wiring Diagram



I5RS0A722010-01

1. HVAC control module	2. Inside air temperature sensor	3. To other sensors

DTC Detecting Condition and Trouble Area

DTC Detecting Condition	Trouble Area
Inside air temperature sensor signal voltage is higher than or lower than specified value for specified time continuously.	• Inside air temperature sensor circuit • Inside air temperature sensor • HVAC control module

DTC Troubleshooting

NOTE

When DTC B1503, B1513 and B1514 are indicated together, it is possible that “ORN” wire circuit open.

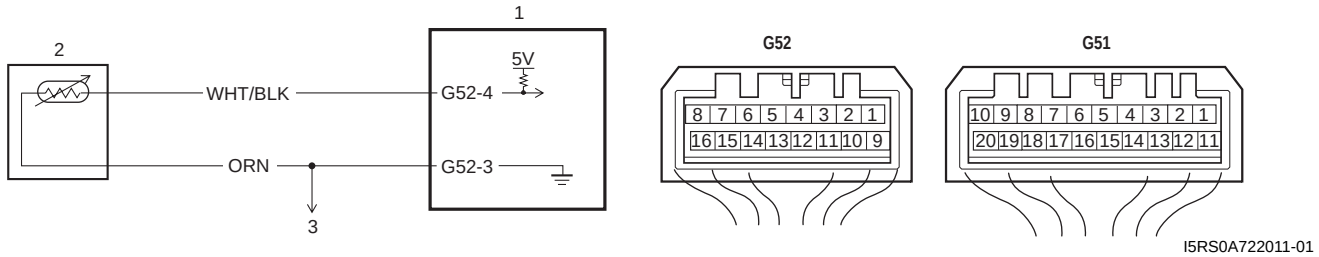
Step	Action	Yes	No
1	**Inside air temperature sensor signal circuit check** 1) Disconnect inside air temperature sensor connector. 2) Check for proper connection to inside air temperature sensor at “PNK/BLK” and “ORN” wire terminals. 3) If OK, measure voltage between “PNK/BLK” wire terminal of inside air temperature sensor connector and vehicle body ground with ignition switch turned ON. *Is voltage 4 – 6 V?*	Go to Step 5.	Go to Step 2.

Step	Action	Yes	No
2	**Inside air temperature sensor signal circuit check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Check for proper connection to HVAC control module connector at “G52-6” and “G52-3” terminals. 3) If OK, measure resistance between “PNK/BLK” wire terminal of inside air temperature sensor connector and “G52-6” terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 3.	“PNK/BLK” wire open or high resistance circuit.
3	**Inside air temperature sensor signal circuit check** 1) Measure resistance between “PNK/BLK” wire terminal of inside air temperature sensor connector and vehicle body ground. *Is resistance infinity?*	Go to Step 4.	“PNK/BLK” wire shorted to ground circuit.
4	**Inside air temperature sensor signal circuit check** 1) Measure voltage between “PNK/BLK” wire terminal of inside air temperature sensor connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 5.	“PNK/BLK” wire shorted to other circuit.
5	**Inside air temperature sensor ground circuit check** 1) Connect HVAC control module connector with ignition switch turned OFF. 2) Measure resistance between “ORN” wire terminal of inside air temperature sensor connector and vehicle body ground. *Is resistance below 5 Ω?*	Go to Step 7.	Go to Step 6.
6	**Inside air temperature sensor ground circuit check** 1) Measure resistance between “G52-3” terminal of HVAC control module connector and vehicle body ground. *Is resistance below 5 Ω?*	“ORN” wire open or high resistance circuit.	HVAC control module faulty.
7	**Inside air temperature sensor check** 1) Check inside air temperature sensor referring to “Inside Air Temperature Sensor Inspection”. *Is it in good condition?*	HVAC control module faulty.	Inside air temperature sensor faulty.

DTC B1503: A/C Evaporator Air Temperature Sensor and/or Its Circuit Malfunction

S7RS0B7224011

Wiring Diagram



I5RS0A722011-01

1. HVAC control module	2. Evaporator temperature sensor	3. To other sensors

DTC Detecting Condition and Trouble Area

DTC Detecting Condition	Trouble Area
Evaporator temperature sensor signal voltage is higher than or lower than specified value for specified time continuously.	• Evaporator temperature sensor circuit • Evaporator temperature sensor • HVAC control module

DTC Troubleshooting

NOTE

When DTC B1502, B1513 and B1514 are indicated together, it is possible that "ORN" wire circuit open.

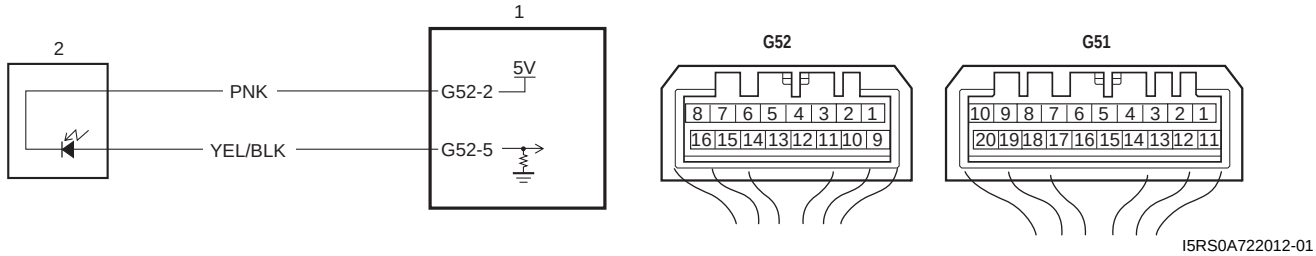
Step	Action	Yes	No
1	**Evaporator temperature sensor signal circuit check** 1) Disconnect evaporator temperature sensor connector. 2) Check for proper connection to evaporator temperature sensor at "WHT/BLK" and "ORN" wire terminals. 3) If OK, measure voltage between "WHT/BLK" wire terminal of evaporator temperature sensor connector and vehicle body ground with ignition switch turned ON. *Is voltage 4 – 6 V?*	Go to Step 5.	Go to Step 2.
2	**Evaporator temperature sensor signal circuit check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Check for proper connection to HVAC control module connector at "G52-4" and "G52-3" terminals. 3) If OK, measure resistance between "WHT/BLK" wire terminal of evaporator temperature sensor connector and "G52-4" terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 3.	"WHT/BLK" wire open or high resistance circuit.
3	**Evaporator temperature sensor signal circuit check** 1) Measure resistance between "WHT/BLK" wire terminal of evaporator temperature sensor connector and vehicle body ground. *Is resistance infinity?*	Go to Step 4.	"WHT/BLK" wire shorted to ground circuit.
4	**Evaporator temperature sensor signal circuit check** 1) Measure voltage between "WHT/BLK" wire terminal of evaporator temperature sensor connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 5.	"WHT/BLK" wire shorted to other circuit.
5	**Evaporator temperature sensor ground circuit check** 1) Connect HVAC control module connector with ignition switch turned OFF. 2) Measure resistance between "ORN" wire terminal of evaporator temperature sensor connector and vehicle body ground. *Is resistance below 5 Ω?*	Go to Step 7.	Go to Step 6.
6	**Evaporator temperature sensor ground circuit check** 1) Measure resistance between "G52-3" terminal of HVAC control module connector and vehicle body ground. *Is resistance below 5 Ω?*	"ORN" wire open or high resistance circuit.	HVAC control module faulty.

Step	Action	Yes	No
7	**Evaporator temperature sensor check** 1) Check evaporator temperature sensor referring to "Evaporator Thermistor (Evaporator Temperature Sensor) Inspection". *Is it in good condition?*	HVAC control module faulty.	Evaporator temperature sensor faulty.

DTC B1504: Sunload Sensor and/or Its Circuit Malfunction

S7RS0B7224012

Wiring Diagram



I5RS0A722012-01

1. HVAC control module	2. Sunload sensor

DTC Detecting Condition and Trouble Area

DTC Detecting Condition	Trouble Area
Sunload sensor signal voltage is higher than or lower than specified value for specified time continuously.	• Sunload sensor circuit • Sunload sensor • HVAC control module

DTC Troubleshooting

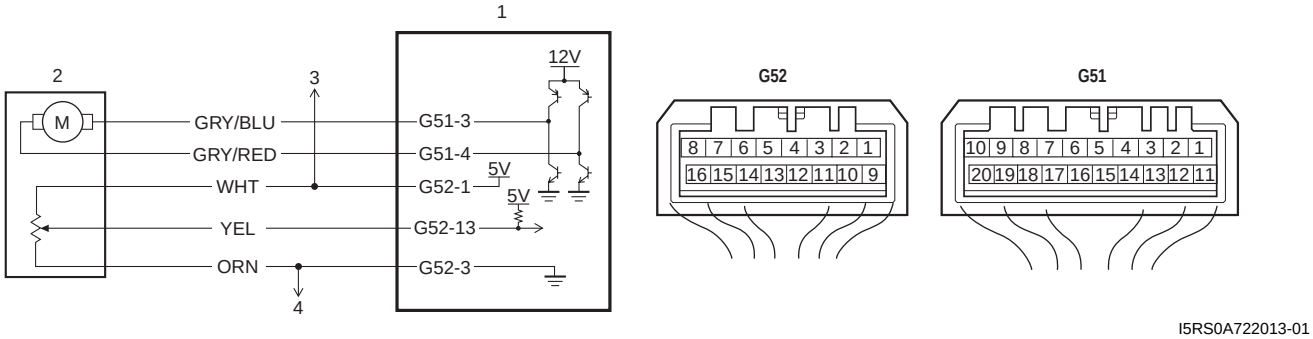
Step	Action	Yes	No
1	**Sunload sensor power supply circuit check** 1) Disconnect sunload sensor connector. 2) Check for proper connection to sunload sensor at "PNK" and "YEL/BLK" wire terminals. 3) If OK, measure voltage between "PNK" wire terminal of sunload sensor connector and vehicle body ground with ignition switch turned ON. *Is voltage 4 – 6 V?*	Go to Step 5.	Go to Step 2.
2	**Sunload sensor power supply circuit check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Check for proper connection to HVAC control module connector at "G52-2" and "G52-5" terminals. 3) If OK, measure resistance between "PNK" wire terminal of sunload sensor connector and "G52-2" terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 3.	"PNK" wire open or high resistance circuit.
3	**Sunload sensor power supply circuit check** 1) Measure resistance between "PNK" wire terminal of sunload sensor connector and vehicle body ground. *Is resistance infinity?*	Go to Step 4.	"PNK" wire shorted to ground circuit.

Step	Action	Yes	No
4	**Sunload sensor power supply circuit check** 1) Measure voltage between “PNK” wire terminal of sunload sensor connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 5.	“PNK” wire shorted to other circuit.
5	**Sunload sensor signal circuit check** 1) Disconnect HVAC control module connector with ignition switch turned OFF. 2) Measure resistance between “YEL/BLK” wire terminal of sunload sensor connector and vehicle body ground. *Is resistance infinity?*	Go to Step 6.	“YEL/BLK” wire shorted to ground circuit.
6	**Sunload sensor signal circuit check** 1) Measure resistance between “G52-5” terminal of HVAC control module connector and “YEL/BLK” wire terminal of sunload sensor connector. *Is resistance below 5 Ω?*	Go to Step 7.	“YEL/BLK” wire open or high resistance circuit.
7	**Sunload sensor signal circuit check** 1) Measure voltage between “YEL/BLK” wire terminal of sunload sensor connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 8.	“YEL/BLK” wire shorted to other circuit.
8	**Sunload sensor check** 1) Check sunload sensor referring to “Sunload Sensor Inspection”. *Is it in good condition?*	HVAC control module faulty.	Sunload sensor faulty.

DTC B1511: Temperature Control Actuator (Position Sensor) and/or Its Circuit Malfunction

S7RS0B7224013

Wiring Diagram



I5RS0A722013-01

1. HVAC control module	2. Temperature control actuator	3. To air flow control actuator	4. To other sensors

DTC Detecting Condition and Trouble Area

DTC Detecting Condition	Trouble Area
Temperature control actuator position sensor signal voltage is higher than or lower than specified value for specified time continuously.	• Temperature control actuator circuit • Temperature control actuator • HVAC control module

DTC Troubleshooting

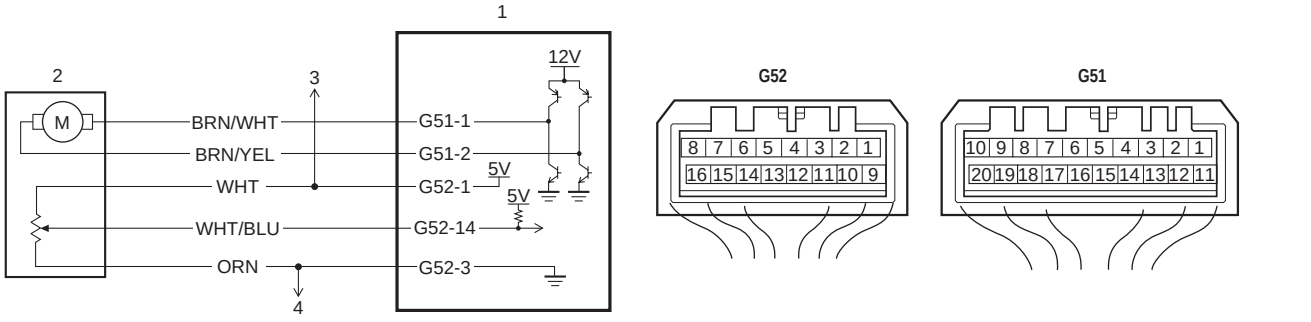
Step	Action	Yes	No
1	**Position sensor power supply circuit check** 1) Disconnect temperature control actuator connector. 2) Check for proper connection to temperature control actuator at “WHT”, “YEL” and “ORN” wire terminals. 3) If OK, measure voltage between “WHT” wire terminal of temperature control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 4 – 6 V?*	Go to Step 6.	Go to Step 2.
2	**Position sensor power supply circuit check** 1) Disconnect air flow control actuator connector with ignition switch turned OFF. 2) Measure voltage between “WHT” wire terminal of temperature control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 4 – 6 V?*	Air flow control actuator faulty.	Go to Step 3.
3	**Position sensor power supply circuit check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Check for proper connection to HVAC control module connector at “G52-1”, “G52-3” and “G52-13” terminals. 3) If OK, measure resistance between “WHT” wire terminal of temperature control actuator connector and “G52-1” terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 4.	“WHT” wire open or high resistance circuit.
4	**Position sensor power supply circuit check** 1) Measure resistance between “WHT” wire terminal of temperature control actuator connector and vehicle body ground. *Is resistance infinity?*	Go to Step 5.	“WHT” wire shorted to ground circuit.
5	**Position sensor power supply circuit check** 1) Measure voltage between “WHT” wire terminal of temperature control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 6.	“WHT” wire shorted to other circuit.
6	**Position sensor signal circuit check** 1) Connect HVAC control module connector with ignition switch turned OFF. 2) Measure voltage between “YEL” wire terminal of temperature control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 4 – 6 V?*	Go to Step 10.	Go to Step 7.
7	**Position sensor signal circuit check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Measure resistance between “YEL” wire terminal of temperature control actuator connector and “G52-13” terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 8.	“YEL” wire open or high resistance circuit.

Step	Action	Yes	No
8	**Position sensor signal circuit check** 1) Measure resistance between “YEL” wire terminal of temperature control actuator connector and vehicle body ground. *Is resistance infinity?*	Go to Step 9.	“YEL” wire shorted to ground circuit.
9	**Position sensor signal circuit check** 1) Measure voltage between “YEL” wire terminal of temperature control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 10.	“YEL” wire shorted to other circuit.
10	**Position sensor ground circuit check** 1) Connect HVAC control module connector with ignition switch turned OFF. 2) Measure resistance between “ORN” wire terminal of temperature control actuator connector and vehicle body ground. *Is resistance below 5 Ω?*	Go to Step 12.	Go to Step 11.
11	**Position sensor ground circuit check** 1) Measure resistance between “G52-3” terminal of HVAC control module connector and vehicle body ground. *Is resistance below 5 Ω?*	“ORN” wire open or high resistance circuit.	HVAC control module faulty.
12	**Temperature control actuator check** 1) Check temperature control actuator referring to “Temperature Control Actuator Inspection”. *Is it in good condition?*	HVAC control module faulty.	Temperature control actuator faulty.

DTC B1512: Air flow Control Actuator (Position Sensor) and/or Its Circuit Malfunction

S7RS0B7224014

Wiring Diagram



I5RS0A722014-01

1. HVAC control module	2. Air flow control actuator	3. To temperature control actuator	4. To other sensors

DTC Detecting Condition and Trouble Area

DTC Detecting Condition	Trouble Area
Air flow control actuator position sensor signal voltage is higher than or lower than specified value for specified time continuously.	• Air flow control actuator circuit • Air flow control actuator • HVAC control module

DTC Troubleshooting

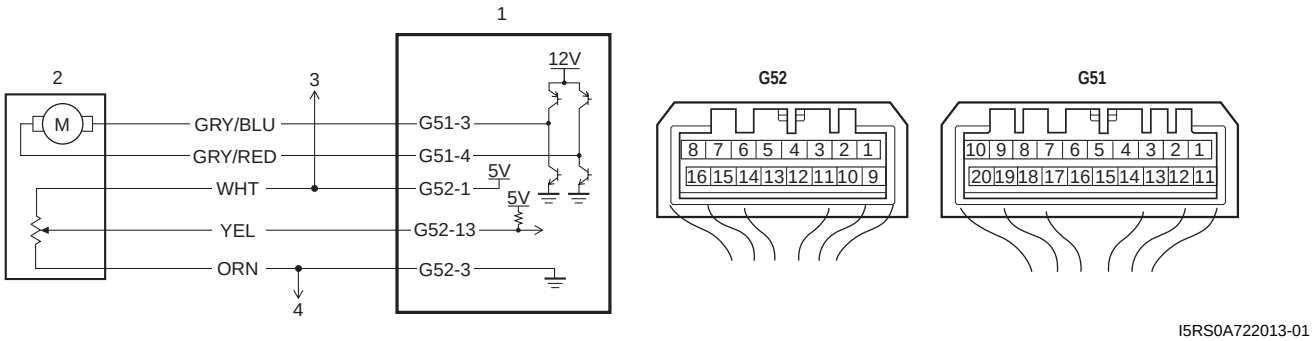
Step	Action	Yes	No
1	**Position sensor power supply circuit check** 1) Disconnect air flow control actuator connector. 2) Check for proper connection to air flow control actuator at “WHT”, “WHT/BLU” and “ORN” wire terminals. 3) If OK, measure voltage between “WHT” wire terminal of air flow control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 4 – 6 V?*	Go to Step 6.	Go to Step 2.
2	**Position sensor power supply circuit check** 1) Disconnect temperature control actuator connector with ignition switch turned OFF. 2) Measure voltage between “WHT” wire terminal of air flow control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 4 – 6 V?*	Temperature control actuator faulty.	Go to Step 3.
3	**Position sensor power supply circuit check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Check for proper connection to HVAC control module connector at “G52-1”, “G52-3” and “G52-14” terminals. 3) If OK, measure resistance between “WHT” wire terminal of air flow control actuator connector and “G52-1” terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 4.	“WHT” wire open or high resistance circuit.
4	**Position sensor power supply circuit check** 1) Measure resistance between “WHT” wire terminal of air flow control actuator connector and vehicle body ground. *Is resistance infinity?*	Go to Step 5.	“WHT” wire shorted to ground circuit.
5	**Position sensor power supply circuit check** 1) Measure voltage between “WHT” wire terminal of air flow control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 6.	“WHT” wire shorted to other circuit.
6	**Position sensor signal circuit check** 1) Connect HVAC control module connector with ignition switch turned OFF. 2) Measure voltage between “WHT/BLU” wire terminal of air flow control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 4 – 6 V?*	Go to Step 10.	Go to Step 7.
7	**Position sensor signal circuit check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Measure resistance between “WHT/BLU” wire terminal of air flow control actuator connector and “G52-14” terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 8.	“WHT/BLU” wire open or high resistance circuit.

Step	Action	Yes	No
8	**Position sensor signal circuit check** 1) Measure resistance between “WHT/BLU” wire terminal of air flow control actuator connector and vehicle body ground. *Is resistance infinity?*	Go to Step 9.	“WHT/BLU” wire shorted to ground circuit.
9	**Position sensor signal circuit check** 1) Measure voltage between “WHT/BLU” wire terminal of air flow control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 10.	“WHT/BLU” wire shorted to other circuit.
10	**Position sensor ground circuit check** 1) Connect HVAC control module connector with ignition switch turned OFF. 2) Measure resistance between “ORN” wire terminal of air flow control actuator connector and vehicle body ground. *Is resistance below 5 Ω?*	Go to Step 12.	Go to Step 11.
11	**Position sensor ground circuit check** 1) Measure resistance between “G52-3” terminal of HVAC control module connector and vehicle body ground. *Is resistance below 5 Ω?*	“ORN” wire open or high resistance circuit.	HVAC control module faulty.
12	**Air flow control actuator check** 1) Check air flow control actuator referring to “Air Flow Control Actuator Inspection”. *Is it in good condition?*	HVAC control module faulty.	Air flow control actuator faulty.

DTC B1513: Temperature Control Actuator and/or Its Circuit Malfunction

S7RS0B7224015

Wiring Diagram



I5RS0A722013-01

1. HVAC control module	2. Temperature control actuator	3. To air flow control actuator	4. To other sensors

DTC Detecting Condition and Trouble Area

DTC Detecting Condition	Trouble Area
Difference between target opening and actual opening is higher than specified value even though temperature control actuator has operated for 16 seconds.	• Temperature control actuator circuit • Temperature control linkage • Temperature control actuator • HVAC unit • HVAC control module

DTC Troubleshooting

NOTE

- **When DTC B1502, B1503 and B1514 are indicated together, it is possible that "ORN" wire circuit open.**
- **When DTC B1514 is indicated together, it is possible that "WHT" wire circuit open.**

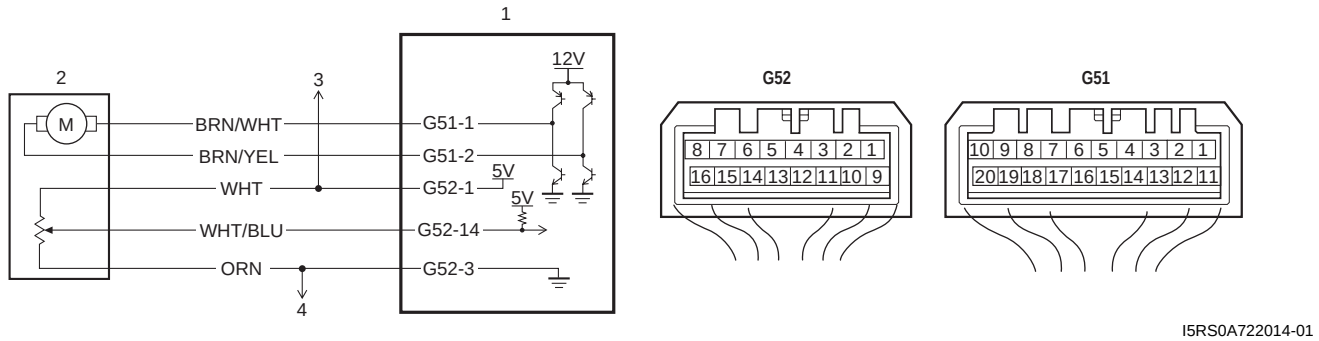
Step	Action	Yes	No
1	**DTC check** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Turn ON ignition switch and check DTC. *Is there DTC B1511?*	Go to applicable DTC diag. flow.	Go to Step 2.
2	**Visual check** 1) Check if there is any obstruction in operating range of actuator linkage and if actuator linkage operates smoothly. *Is it in good condition?*	Go to Step 3.	Obstruction in operating range of actuator linkage, actuator linkage faulty and/or internal fault of HVAC unit.
3	**Wire harness check** 1) Disconnect connector from temperature control actuator with ignition switch turned OFF. 2) Check for proper connection to temperature control actuator connector at "GRY/BLU" and "GRY/RED" wire terminals. 3) If OK, measure voltage between "GRY/BLU" wire terminal of temperature control actuator connector and vehicle body ground with ignition switch turned ON when temperature selector is operation to COOL direction. *Is voltage 10 – 14 V?*	Go to Step 7.	Go to Step 4.
4	**Wire harness check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Check for proper connection to HVAC control module connector at "G51-3" and "G51-4" terminals. 3) If OK, measure resistance between "GRY/BLU" wire terminal of temperature control actuator connector and "G51-3" terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 5.	"GRY/BLU" wire open or high resistance circuit.
5	**Wire harness check** 1) Measure resistance between "GRY/BLU" wire terminal of temperature control actuator connector and vehicle body ground. *Is resistance infinity?*	Go to Step 6.	"GRY/BLU" wire shorted to ground circuit.
6	**Wire harness check** 1) Measure voltage between "GRY/BLU" wire terminal of temperature control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 7.	"GRY/BLU" wire shorted to other circuit.

Step	Action	Yes	No
7	**Wire harness check** 1) Connect connector to HVAC control module with ignition switch turned OFF. 2) Measure voltage between “GRY/RED” wire terminal of temperature control actuator connector and vehicle body ground with ignition switch turned ON when temperature selector is operation to HOT direction. *Is voltage 10 – 14 V?*	Go to Step 11.	Go to Step 8.
8	**Wire harness check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Check for proper connection to HVAC control module connector at “G51-3” and “G51-4” terminals. 3) If OK, measure resistance between “GRY/RED” wire terminal of temperature control actuator connector and “G51-4” terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 9.	“GRY/RED” wire open or high resistance circuit.
9	**Wire harness check** 1) Measure resistance between “GRY/RED” wire terminal of temperature control actuator connector and vehicle body ground. *Is resistance infinity?*	Go to Step 10.	“GRY/RED” wire shorted to ground circuit.
10	**Wire harness check** 1) Measure voltage between “GRY/RED” wire terminal of temperature control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 11.	“GRY/RED” wire shorted to other circuit.
11	**Position sensor circuit check** 1) Check temperature control actuator position sensor circuit referring to Step 1 to Step 5 and Step 10 to Step 11 of “DTC B1511: Temperature Control Actuator (Position Sensor) and/or Its Circuit Malfunction”. *Is it in good condition?*	Go to Step 12.	Repair circuit.
12	**Temperature control actuator check** 1) Check temperature control actuator referring to “Temperature Control Actuator Inspection”. *Is it in good condition?*	HVAC control module faulty.	Temperature control actuator faulty.

DTC B1514: Air Flow Control Actuator and/or Its Circuit Malfunction

S7RS0B7224016

Wiring Diagram



I5RS0A722014-01

1. HVAC control module	2. Air flow control actuator	3. To temperature control actuator	4. To other sensors

DTC Detecting Condition and Trouble Area

DTC Detecting Condition	Trouble Area
Difference between target opening and actual opening is higher than specified value even though air flow control actuator has operated for 16 seconds.	• Air flow control actuator circuit • Air flow control linkage • Air flow control actuator • HVAC unit • HVAC control module

DTC Troubleshooting

NOTE

- **When DTC B1502, B1503 and B1513 are indicated together, it is possible that "ORN" wire circuit open.**
- **When DTC B1513 is indicated together, it is possible that "WHT" wire circuit open.**

Step	Action	Yes	No
1	**DTC check** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Turn ON ignition switch and check DTC. *Is there DTC B1512?*	Go to applicable DTC diag. flow.	Go to Step 2.
2	**Visual check** 1) Check if there is any obstruction in operating range of actuator linkage and if actuator linkage operates smoothly. *Is it in good condition?*	Go to Step 3.	Obstruction in operating range of actuator linkage, actuator linkage faulty and/or internal fault of HVAC unit.
3	**Wire harness check** 1) Disconnect connector from air flow control actuator with ignition switch turned OFF. 2) Check for proper connection to air flow control actuator connector at "BRN/WHT" and "BRN/YEL" wire terminals. 3) If OK, measure voltage between "BRN/WHT" wire terminal of air flow control actuator connector and vehicle body ground with ignition switch turned ON when air flow selector is operation to DEF direction. *Is voltage 10 – 14 V?*	Go to Step 7.	Go to Step 4.

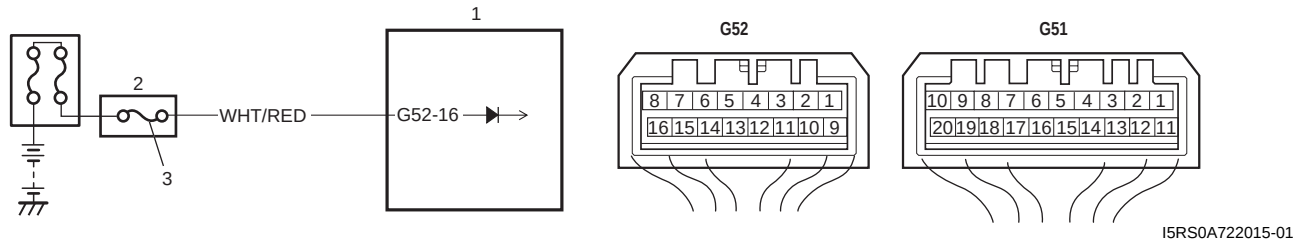
Step	Action	Yes	No
4	**Wire harness check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Check for proper connection to HVAC control module connector at “G51-1” and “G51-2” terminals. 3) If OK, measure resistance between “BRN/WHT” wire terminal of air flow control actuator connector and “G51-1” terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 5.	“BRN/WHT” wire open or high resistance circuit.
5	**Wire harness check** 1) Measure resistance between “BRN/WHT” wire terminal of air flow control actuator connector and vehicle body ground. *Is resistance infinity?*	Go to Step 6.	“BRN/WHT” wire shorted to ground circuit.
6	**Wire harness check** 1) Measure voltage between “BRN/WHT” wire terminal of air flow control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 7.	“BRN/WHT” wire shorted to other circuit.
7	**Wire harness check** 1) Connect connector to HVAC control module with ignition switch turned OFF. 2) Measure voltage between “BRN/YEL” wire terminal of air flow control actuator connector and vehicle body ground with ignition switch turned ON when air flow selector is operation to FACE direction. *Is voltage 10 – 14 V?*	Go to Step 11.	Go to Step 8.
8	**Wire harness check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Check for proper connection to HVAC control module connector at “G51-1” and “G51-2” terminals. 3) If OK, measure resistance between “BRN/YEL” wire terminal of air flow control actuator connector and “G51-2” terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 9.	“BRN/YEL” wire open or high resistance circuit.
9	**Wire harness check** 1) Measure resistance between “BRN/YEL” wire terminal of air flow control actuator connector and vehicle body ground. *Is resistance infinity?*	Go to Step 10.	“BRN/YEL” wire shorted to ground circuit.
10	**Wire harness check** 1) Measure voltage between “BRN/YEL” wire terminal of air flow control actuator connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 11.	“BRN/YEL” wire shorted to other circuit.

Step	Action	Yes	No
11	**Position sensor circuit check** 1) Check air flow control actuator position sensor circuit referring to Step 1 to Step 5 and Step 10 to Step 11 of "DTC B1512: Air flow Control Actuator (Position Sensor) and/or Its Circuit Malfunction". *Is it in good condition?*	Go to Step 12.	Repair circuit.
12	**Air flow control actuator check** 1) Check air flow control actuator referring to "Air Flow Control Actuator Inspection". *Is it in good condition?*	HVAC control module faulty.	Air flow control actuator faulty.

DTC B1541: HVAC Control Module Back-Up Power Supply Malfunction

S7RS0B7224017

Wiring Diagram



I5RS0A722015-01

1. HVAC control module	2. Junction block assembly	3. Circuit fuse

DTC Detecting Condition and Trouble Area

DTC Detecting Condition	Trouble Area
Back-up power supply voltage is lower than specified value continuously.	• Battery voltage supply circuit • HVAC control module

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check** 1) Turn ON ignition switch for 20 sec. or more. 2) Ignition switch turned OFF and connect scan tool to DLC. 3) Turn ON ignition switch and check DTC. *Is there DTC B1541?*	Go to Step 2.	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection in Section 00".
2	**Battery voltage supply circuit check** 1) Disconnect connector from HVAC control module with ignition switch turned OFF. 2) Check for proper connection to HVAC control module connector at "G52-16" terminal. 3) If OK, measure voltage between "G52-16" terminal of HVAC control module connector and vehicle body ground. *Is voltage 10 – 14 V?*	HVAC control module faulty.	Circuit fuse blown and/or "WHT/RED" wire circuit open or short.

DTC B1546: A/C Refrigerant Pressure Malfunction

S7RS0B7224018

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
A/C refrigerant pressure sensor signal voltage is lower than specified value even though outside air temperature is higher than specified value for specified time continuously.	• Insufficient of refrigerant • A/C refrigerant pressure sensor • Outside air temperature sensor • HVAC control module

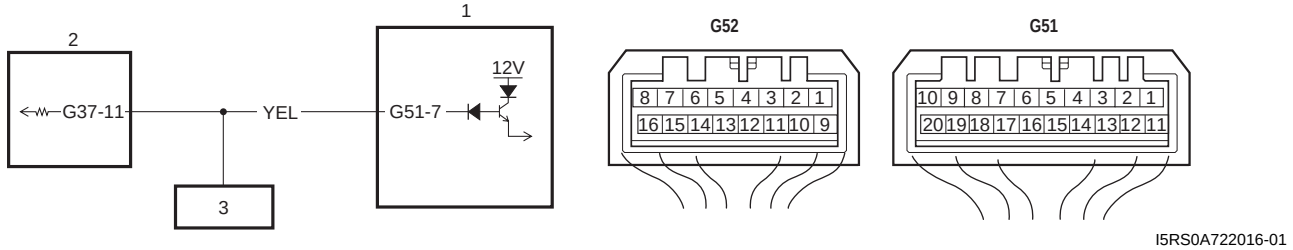
DTC Troubleshooting

Step	Action	Yes	No
1	**A/C refrigerant pressure and outside air temperature check** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Start engine and select “DATA LIST” mode on scan tool. 3) Check “Refrigerant Pressure” and “Outside Air Temp” varies displayed on scan tool. *Is displayed each varies described varies in “Scan Tool Data”?*	Go to Step 2.	Check the amount of refrigerant and system for leaks.
2	**A/C system performance check** 1) Check A/C system performance referring to “A/C System Performance Inspection”. *Is check result satisfactory?*	Go to Step 3.	Repair or replace defective part.
3	**A/C refrigerant pressure sensor check** 1) Check A/C refrigerant pressure sensor referring to “A/C Refrigerant Pressure Sensor and Its Circuit Inspection”. *Is check result satisfactory?*	Go to Step 4.	A/C refrigerant pressure sensor faulty.
4	**Outside air temperature sensor check** 1) Check outside air temperature sensor referring to “Information Display (Clock) Removal and Installation in Section 9C”. *Is check result satisfactory?*	HVAC control module faulty.	Outside air temperature sensor faulty.

DTC B1551: Serial Communication Circuit Malfunction

S7RS0B7224019

Wiring Diagram



I5RS0A722016-01

1. HVAC control module	2. BCM	3. Information display

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Serial communication signal is higher than or lower than specified value for specified time continuously.	• Serial communication line of BCM • BCM (included in junction block assembly) • Information display • HVAC control module

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Disconnect connector from information display. 3) Turn ignition switch ON and check DTC. *Is there DTC B1551?*	Go to Step 2.	Information display faulty.
2	**Wire harness check** 1) Disconnect connectors from BCM and HVAC control module. 2) Measure resistance between “G37-11” terminal of BCM connector and “G51-7” terminal of HVAC control module connector. *Is resistance below 5 Ω?*	Go to Step 3.	“YEL” wire open or high resistance circuit.
3	**Wire harness check** 1) Measure resistance between “G51-7” terminal of HVAC control module connector and vehicle body ground. *Is resistance infinity?*	Go to Step 4.	“YEL” wire shorted to ground circuit.
4	**Wire harness check** 1) Measure voltage between “G51-7” terminal of HVAC control module connector and vehicle body ground with ignition switch turned ON. *Is voltage 0 V?*	Go to Step 5.	“YEL” wire shorted to other circuit.
5	**Serial communication signal check** 1) Connect connectors to BCM and HVAC control module. 2) Using oscilloscope, check that serial communication signal is outputted referring to “Reference waveform No.8” of “Inspection of BCM and its Circuits in Section 10B”. *Is serial communication signal outputted at “G37-11” terminal of BCM connector?*	HVAC control module faulty.	BCM (included in junction block assembly) faulty.

DTC B1552: Serial Communication Signal Malfunction

S7RS0B7224020

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Data received by HVAC control module from BCM is erroneous continuously.	• BCM (included in junction block assembly) • HVAC control module

DTC Troubleshooting

Step	Action	Yes	No
1	**Serial communication signal data check** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Start engine and select “DATA LIST” mode on scan tool. 3) Check “Refrigerant Pressure”, “Vehicle Speed”, “Coolant Temp” and “Outside Air Temp” varies displayed on scan tool. *Is displayed each varies described varies in “Scan Tool Data”?*	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection in Section 00”.	Go to Step 2.
2	**Serial communication signal check** 1) Connect connectors to BCM and HVAC control module. 2) Using oscilloscope, check that serial communication signal is outputted referring to “Reference waveform No.8” of “Inspection of BCM and its Circuits in Section 10B”. *Is serial communication signal outputted at “G37-11” terminal of BCM connector?*	HVAC control module faulty.	BCM (included in junction block assembly) faulty.

DTC B1553: CAN Communication Signal Malfunction

S7RS0B7224021

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
HVAC control module receives error code from BCM continuously.	• CAN communication circuit • BCM (included in junction block assembly) • ECM • HVAC control module

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Check ECM and BCM for DTC. *Is there DTC(s)?*	Go to applicable DTC diag. flow.	Substitute a known-good HVAC control module and recheck.

DTC B1557: Vehicle Speed Sensor Signal Malfunction

S7RS0B7224022

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
HVAC control module receives error code from BCM continuously.	• VSS circuit • VSS • HVAC control module

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Check ECM for DTC. *Is there DTC P0500?*	Go to “DTC P0480: Fan 1 (Radiator Cooling Fan) Control Circuit in Section 1A”.	Substitute a known-good HVAC control module and recheck.

DTC B1561: Engine Coolant Temperature Sensor Signal Malfunction

S7RS0B7224023

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
HVAC control module receives error code from BCM continuously.	• ECT sensor circuit • ECT sensor • HVAC control module

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Check ECM for DTC. *Are there DTC P0116, P0117 or P0118?*	Go to applicable DTC diag. flow.	Substitute a known-good HVAC control module and recheck.

DTC B1562: Outside Air Temperature Sensor Signal Malfunction

S7RS0B7224024

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
HVAC control module receives error code from BCM continuously.	• Outside air temperature sensor circuit • Outside air temperature sensor • HVAC control module

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Check BCM for DTC. *Are there DTC B1141, B1142 or B1143?*	Go to applicable DTC diag. flow.	Substitute a known-good HVAC control module and recheck.

DTC B1563: A/C Refrigerant Pressure Sensor Signal Malfunction

S7RS0B7224025

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
HVAC control module receives error code from BCM continuously.	• A/C refrigerant pressure sensor circuit • A/C refrigerant pressure sensor • HVAC control module

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Check ECM for DTC. *Are there DTC P0532 or P0533?*	Go to applicable DTC diag. flow.	Substitute a known-good HVAC control module and recheck.

Inspection of HVAC Control Module and Its Circuit

S7RS0B7224026

HVAC control module and its circuits can be checked at HVAC control module wiring couplers by measuring voltage.

⚠ CAUTION

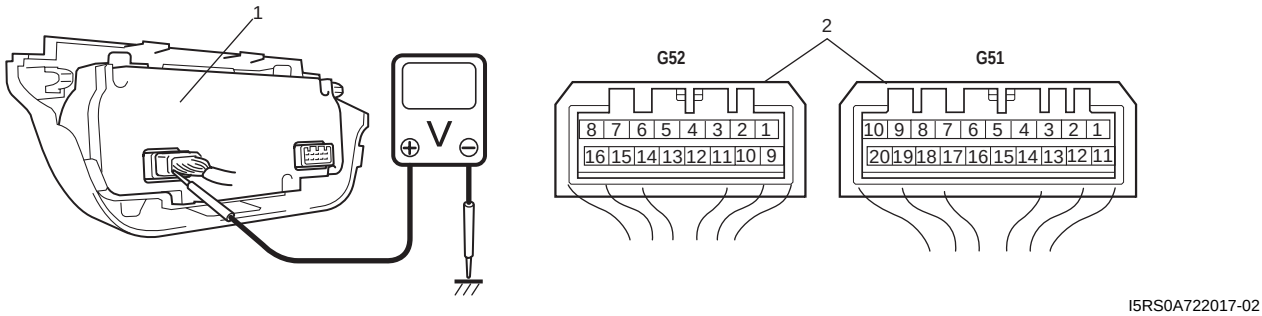
HVAC control module can not be checked by itself. It is strictly prohibited to connect voltmeter to HVAC control module with couplers disconnected from it.

Voltage Check

1) Remove HVAC control module referring to “HVAC Control Module Removal and Installation”.
2) Check voltage at each terminal.

NOTE

As each terminal voltage is affected by the battery voltage, confirm that it is 11 V or more when ignition switch is ON.



I5RS0A722017-02

1. HVAC control module
2. HVAC control module connector (viewed from harness side)

Terminal	Wire Color	Circuit	Normal Voltage	Condition
G51-1	BRN/WHT	Air flow control actuator (DEF)	10 – 14 V	Ignition switch turned ON, air flow control actuator is working in operation from VENT to DEF position
			0 – 1 V	Ignition switch turned ON, except the above condition
G51-2	BRN/YEL	Air flow control actuator (FACE)	10 – 14 V	Ignition switch turned ON, air flow control actuator is working in operation from DEF to VENT position
			0 – 1 V	Ignition switch turned ON, except the above condition
G51-3	GRY/BLU	Temperature control actuator (COOL)	10 – 14 V	Ignition switch turned ON, temperature control actuator is working in operation from HOT to COOL position
			0 – 1 V	Ignition switch turned ON, except the above condition
G51-4	GRY/RED	Temperature control actuator (HOT)	10 – 14 V	Ignition switch turned ON, temperature control actuator is working in operation from COOL to HOT position
			0 – 1 V	Ignition switch turned ON, except the above condition
G51-5	PPL/WHT	Serial communication line of data link connector	10 – 14 V	Ignition switch turned ON
G51-6	—	—	—	—
G51-7	YEL	Serial communication line of BCM	Refer to “Inspection of BCM and its Circuits in Section 10B”	

Terminal	Wire Color	Circuit	Normal Voltage	Condition
G51-8	BLU/RED	Blower motor control voltage feedback	10 – 14 V	Ignition switch turned ON, blower speed selector OFF
			About 8.5 V	Ignition switch turned ON, blower speed selector 1st position
			About 6.5 V	Ignition switch turned ON, blower speed selector 2nd position
			About 5.5 V	Ignition switch turned ON, blower speed selector 3rd position
			About 4.0 V	Ignition switch turned ON, blower speed selector 4th position
			About 3.0 V	Ignition switch turned ON, blower speed selector 5th position
			About 2.0 V	Ignition switch turned ON, blower speed selector 6th position
			About 1.0 V	Ignition switch turned ON, blower speed selector 7th position
			Below 1.0 V	Ignition switch turned ON, blower speed selector HIGH position
G51-9	GRY	Blower motor controller	0 – 1 V	Ignition switch turned ON, blower speed selector OFF position
			2 – 3 V	Ignition switch turned ON, blower speed selector between 1st and HIGH position
G51-10	BLK/RED	Rear defogger indicator	0 – 1 V	Ignition switch turned ON, rear defogger switch OFF
			10 – 14 V	Ignition switch turned ON, rear defogger switch ON
G51-11	RED/YEL	Illumination switch	0 – 1 V	Ignition switch turned ON, lighting switch OFF position
			10 – 14 V	Ignition switch turned ON, lighting switch ON position
G51-12	BLK/YEL	Illumination ground	0 – 1 V	Full-time
G51-13	—	—	—	—
G51-14	—	—	—	—
G51-15	RED	Air intake actuator (RECIRCULATION AIR)	0 – 1 V	Ignition switch turned ON, air intake selector is recirculation air mode or air intake actuator is working in operation to recirculation air position or fresh air position.
			10 – 14 V	Ignition switch turned ON, air intake selector is fresh air mode (air intake actuator fresh air position).
G51-16	GRN/RED	Air intake actuator (MIX AIR)	10 – 14 V	Ignition switch turned ON, air intake actuator is recirculation air or fresh air position.
			0 – 1 V	Ignition switch turned ON, air intake actuator is mix air position or air intake actuator is working in operation to recirculation air position or fresh air position.
G51-17	GRN	Air intake actuator (FRESH AIR)	0 – 1 V	Ignition switch turned ON, air intake selector is fresh air mode or air intake actuator is working in operation to recirculation air position or fresh air position.
			10 – 14 V	Ignition switch turned ON, air intake selector is recirculation air mode (air intake actuator recirculation air position).
G51-18	GRN/WHT	A/C switch signal	Refer to “Inspection of BCM and its Circuits in Section 10B”	
G51-19	BLU/WHT	Electric load signal for blower motor	10 – 14 V	Ignition switch turned ON, blower speed selector OFF or between 1st and 5th position
			0 – 2 V	Ignition switch turned ON, blower speed selector between 6th and HIGH position
G51-20	BRN	Rear defogger switch	0 – 1 V	Ignition switch turned ON, rear defogger switch ON (rear defogger switch is kept in push) position
			4 – 6 V	Ignition switch turned ON, rear defogger switch OFF position

Terminal	Wire Color	Circuit	Normal Voltage	Condition
G52-1	WHT	Output of 5 V power source for air flow control actuator position sensor and temperature control actuator position sensor	4 – 6 V	Ignition switch turned ON
G52-2	PNK	Output of 5 V power source for sunload sensor	4 – 6 V	Ignition switch turned ON
G52-3	ORN	Ground for sensors	Below 0.3 V	Ignition switch turned ON
G52-4	WHT/BLK	Evaporator temperature sensor signal	3.45 – 3.65 V	Ignition switch turned ON, evaporator temperature 0 °C (32 °F)
			2.55 – 2.85 V	Ignition switch turned ON, evaporator temperature 15 °C (59 °F)
			1.7 – 2.1 V	Ignition switch turned ON, evaporator temperature 30 °C (86 °F)
G52-5	YEL/BLK	Sunload sensor signal		
G52-6	PNK/BLK	Inside air temperature sensor signal	About 2.0 V	Ignition switch turned ON, room temperature 25 °C (77 °F)
			About 2.8 V	Ignition switch turned ON, room temperature 0 °C (32 °F)
G52-7	—	—	—	—
G52-8	RED/BLK	Electric power source	10 – 14 V	Ignition switch turned ON
G52-9	—	—	—	—
G52-10	—	—	—	—
G52-11	BLK/ORN	Ground for HVAC control module	Below 0.3 V	Ignition switch turned ON
G52-12	—	—	—	—
G52-13	YEL	Temperature control actuator position sensor signal	About 4.0 V	Ignition switch turned ON, temperature selector MAX COOL position
			About 2.0 V	Ignition switch turned ON, temperature selector MAX HOT position
G52-14	WHT/BLU	Air flow control actuator position sensor signal	About 4.0 V	Ignition switch turned ON, air flow selector VENT position
			About 1.6 V	Ignition switch ON, air flow selector DEF position
G52-15	—	—	—	—
G52-16	WHT/RED	Electric power source for back-up	10 – 14 V	Full-time

A/C System Performance Inspection

S7RS0B7224027

Refer to “A/C System Performance Inspection”.

A/C System Inspection at ECM

S7RS0B7224028

Voltage Check

ECM and its circuits can be checked by measuring voltage with special tool connected.

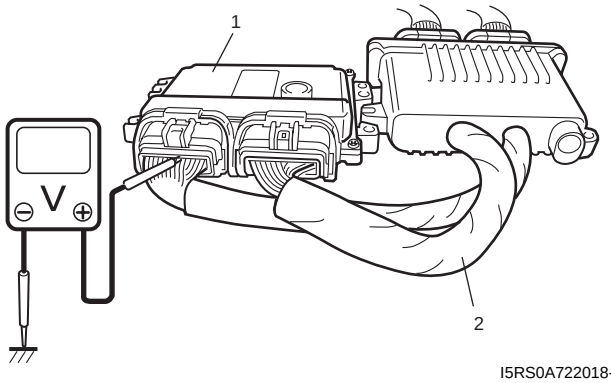
⚠ CAUTION

- **ECM connectors are waterproofed. Each terminal of the ECM connectors is sealed up with the grommet. Therefore, do not measure circuit voltage and resistance by inserting the tester’s probe into the sealed terminal at the harness side. Or, ECM and its circuits may be damaged by water.**
- **ECM cannot be checked by itself. It is strictly prohibited to connect voltmeter or ohmmeter to ECM with couplers disconnected from ECM.**

1) Remove ECM (1) from its bracket by referring to “Electric Throttle Body System Calibration in Section 1C”.
2) Connect special tool (2) between ECM and ECM connectors securely.
3) Check voltage at each terminal.

NOTE

As each terminal voltage is affected by the battery voltage, confirm that the battery voltage is 11 V or more when ignition switch is ON position.



I5RS0A722018-01

Terminal arrangement of ECM coupler (Viewed from harness side)

E23

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
60	59	58	57	56	55	54	53	52	51	50	49	48	47	46

C37

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
30	29	28	27	26	25	24	23	22	21	20	19	18	17	16
45	44	43	42	41	40	39	38	37	36	35	34	33	32	31
60	59	58	57	56	55	54	53	52	51	50	49	48	47	46

I4RS0A720010-01

ECM Voltage Values Table for Relation of A/C Control

Terminal	Wire Color	Circuit	Normal Value	Condition
C37-14	GRY/RED	Output of 5 V power source	4.5 – 5.5 V	Ignition switch turned ON
C37-15	BLK	Ground for ECM	Below 0.3 V	Ignition switch turned ON
C37-24	LT GRN	Engine coolant temp. (ETC) sensor signal	3.3 – 3.8 V	Ignition switch turned ON, ECT at 0 °C (32 °F)
			1.38 – 1.72 V	Ignition switch turned ON, ECT at 50 °C (122 °F)
C37-30	BLK	Ground for ECM	Below 0.3 V	Ignition switch turned ON
C37-55	ORN	Ground for sensors	Below 0.3 V	Ignition switch turned ON
C37-58	BLK/ORN	Ground for ECM	Below 0.3 V	Ignition switch turned ON
E23-1	BLK/RED	Main power supply	10 – 14 V	Ignition switch turned ON
E23-3	RED	CAN (high) communication line (active high signal) for BCM and combination meter	Refer to “DTC P2101: Throttle Actuator Control Motor Circuit Range / Performance in Section 1A”	
E23-16	BLK/RED	Main power supply	10 – 14 V	Ignition switch turned ON
E23-18	WHT	CAN (low) communication line (active low signal) for BCM and combination meter	Refer to “DTC P2101: Throttle Actuator Control Motor Circuit Range / Performance in Section 1A”	
E23-19	BLU/WHT	Electric load signal for blower motor	10 – 14 V	Ignition switch turned ON, blower speed selector OFF or between 1st and 5th position
			0 – 1 V	Ignition switch turned ON, blower speed selector between 6th and HIGH position
E23-46	LT GRN	Radiator fan relay No.1 output	10 – 14 V	Ignition switch turned ON, engine coolant temp.: below 95 °C (203 °F), or A/C refrigerant pressure: below 600 kPa (87 psi).
			0 – 2 V	Ignition switch turned ON, engine coolant temp.: 97.5 °C (207.5 °F) or higher, or A/C refrigerant pressure: 1100 kPa (159.5 psi) or higher.
E23-47	GRY	A/C compressor relay output	10 – 14 V	Engine running, A/C request signal high input
			0 – 1 V	Engine running, A/C request signal low input
E23-48	GRN	Radiator fan relay No.2 and No.3 output	10 – 14 V	Ignition switch turned ON, engine coolant temp.: below 100 °C (212 °F), or A/C refrigerant pressure: below 1200 kPa (174 psi).
			0 – 2 V	Ignition switch turned ON, engine coolant temp.: 102.5 °C (216.5 °F) or higher, or A/C refrigerant pressure: 1500 kPa (217.5 psi) or higher.
E23-55	RED	A/C refrigerant pressure sensor signal	1.46 – 1.71 V	Engine running, A/C refrigerant pressure at 0.8 MPa (8.0 kg/cm^2) (A/C refrigerant pressure measured by manifold gauge)
			2.55 – 2.80 V	Engine running, A/C refrigerant pressure at 1.6 MPa (16.0 kg/cm^2) (A/C refrigerant pressure measured by manifold gauge)
E23-60	BRN/WHT	Main power supply relay output	10 – 14 V	Ignition switch turned OFF
			0 – 2 V	Ignition switch turned ON

Repair Instructions

Operation Procedure for Refrigerant Charge

S7RS0B7226001

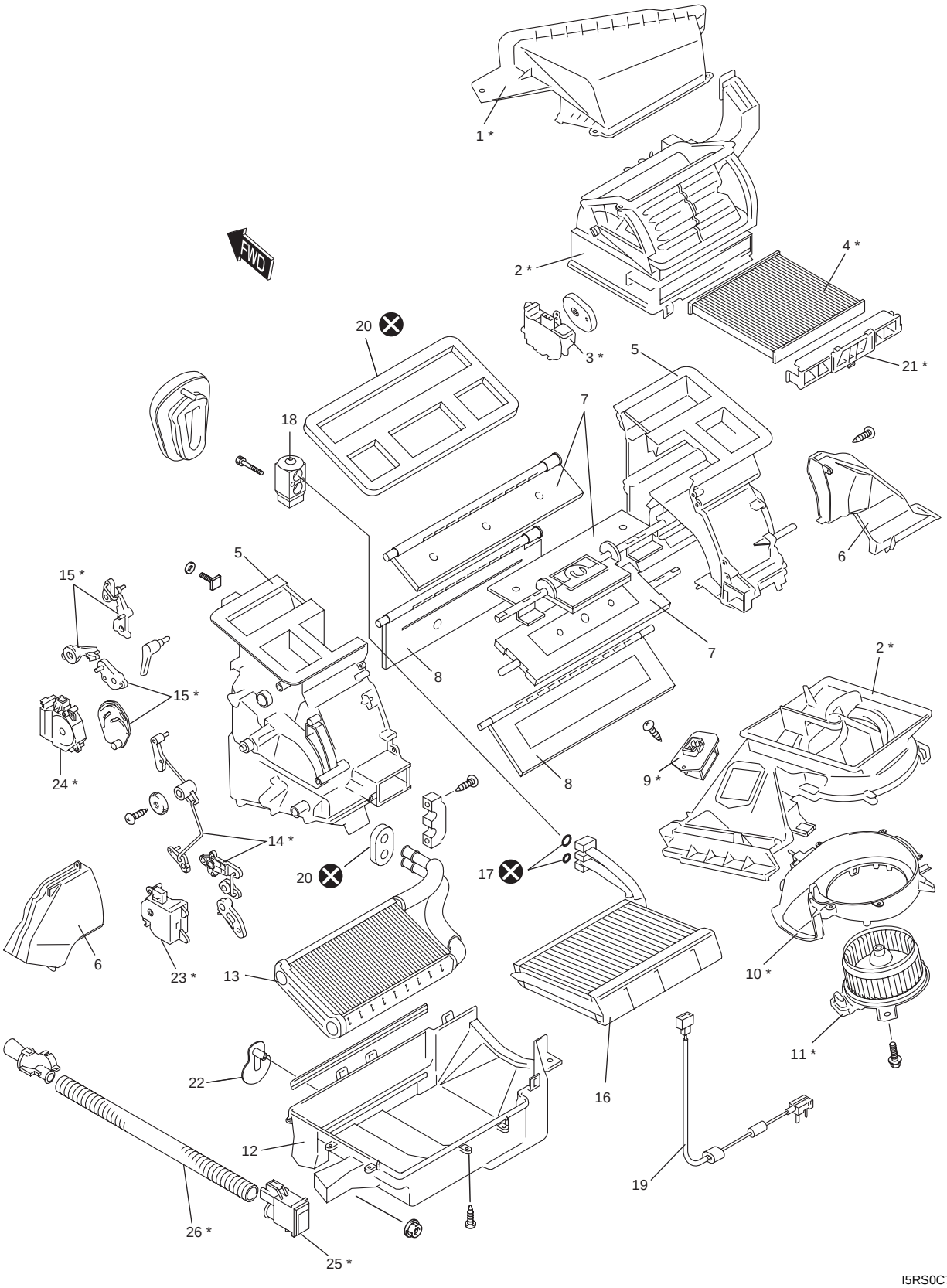
Refer to “Operation Procedure for Refrigerant Charge”.

HVAC Unit Components

S7RS0B7226002

NOTE

The figure shows left-hand steering vehicle. For right-hand steering vehicle, parts with (*) are installed at the opposite side.



I5RS0C722003-01

1. Fresh air inlet duct	8. Temperature control door assembly	15. Air flow control links	22. Drain hose

2. Blower upper case	9. Blower motor controller	16. Evaporator	23. Temperature control actuator
3. Air intake control actuator	10. Blower lower case	17. O-ring	24. Air flow control actuator
4. Air filter (if equipped)	11. Blower motor	18. Expansion valve	25. Inside air temperature sensor
5. Heater unit upper case	12. Heater unit lower case	19. Evaporator temperature sensor	26. Aspirator hose
6. Foot duct	13. Heater core	20. Packing	⊗ : Do not reuse.
7. Air flow control door assembly	14. Temperature control links	21. Filter cover	

HVAC Unit Removal and Installation

S7RS0B7226003

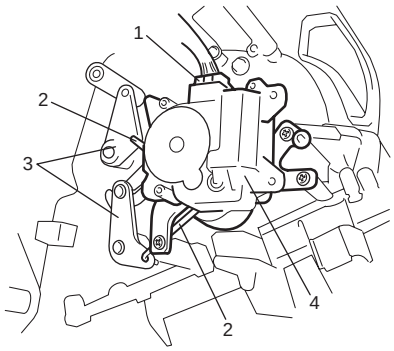
Refer to “HVAC Unit Removal and Installation”.

Temperature Control Actuator Removal and Installation

S7RS0B7226004

Removal

1) Disconnect negative (–) cable at battery.
2) Remove steering column hole cover from instrument panel.
3) Remove foot duct from HVAC unit.
4) Disconnect temperature control actuator connector (1).
5) Detach temperature control actuator rods (2) from linkage (3).
6) Remove temperature control actuator (4) from HVAC unit.



I5RS0A722020-02

Installation

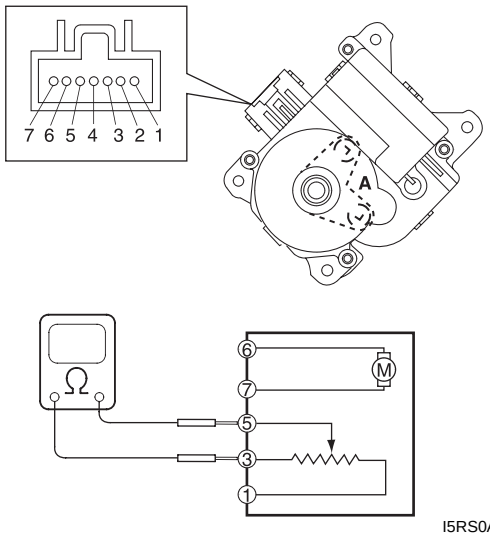
Reverse removal procedure.

Temperature Control Actuator Inspection

S7RS0B7226005

1) Remove temperature control actuator from HVAC unit referring to “Temperature Control Actuator Removal and Installation”.
2) Connect connector to temperature control actuator.
3) Set temperature selector of HVAC control module to MAX HOT position with ignition switch ON, and make sure if the position of actuator lever is MAX HOT position (A).
4) Turn ignition switch OFF, and then disconnect connector from temperature control actuator.
5) Measure resistance between terminal “3” and “5”.

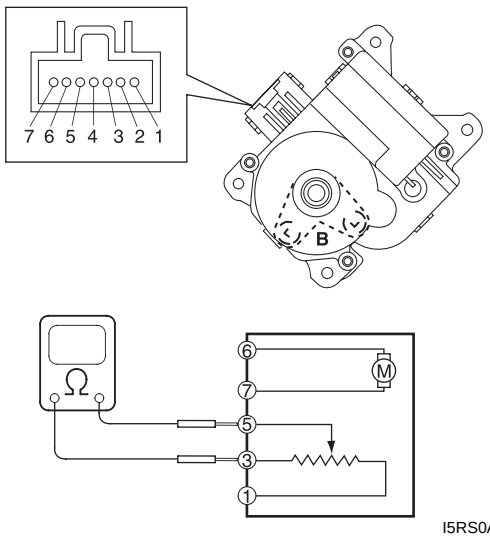
Temperature control actuator resistance between terminal “3” and “5” (MAX HOT position)
Approximately 2.5 kΩ at 25°C (77°F)



I5RS0A722021-03

6) Connect connector to temperature control actuator.
7) Set temperature selector of HVAC control module to MAX COOL position with ignition switch ON, and make sure if the position of actuator lever is MAX COOL position (B).
8) Turn ignition switch OFF, and then disconnect connector from temperature control actuator.
9) Measure resistance between terminal “3” and “5”

Temperature control actuator resistance between terminal “3” and “5” (MAX COOL position)
Approximately 4.8 kΩ at 25°C (77°F)



I5RS0A722022-03

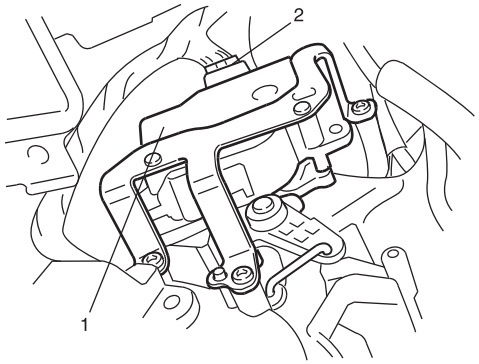
If check result is not satisfactory, replace the actuator with new one.

Air Flow Control Actuator Removal and Installation

S7RS0B7226006

Removal

1) Disconnect negative (–) cable at battery.
2) Remove steering column hole cover from instrument panel.
3) Remove foot duct from HVAC unit.
4) Disconnect air flow control actuator connector (2).
5) Remove air flow control actuator (1) from HVAC unit, and then detach air flow actuator rod from linkage.



I5RS0A722023-03

Installation

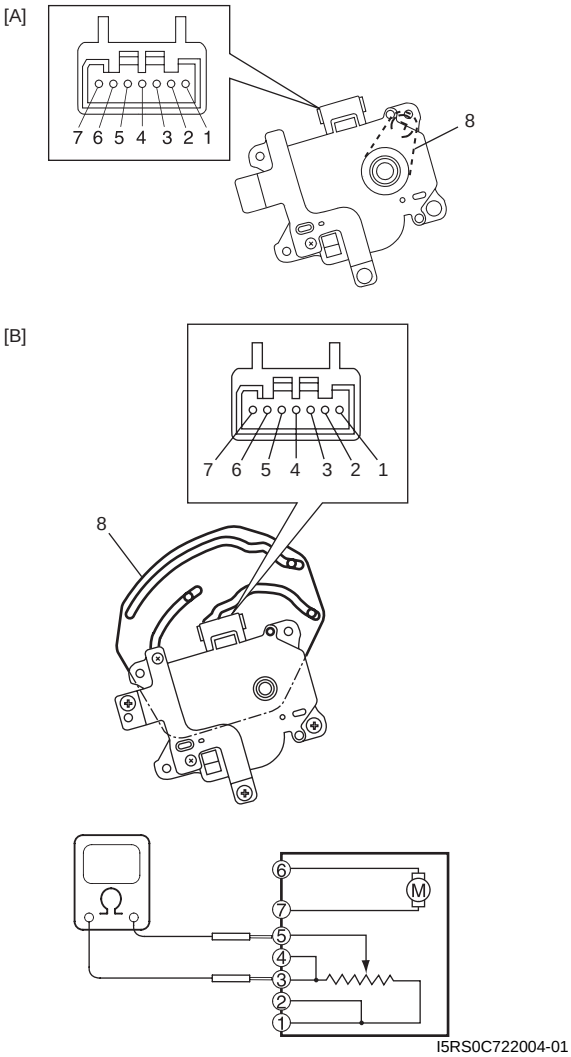
Reverse removal procedure.

Air Flow Control Actuator Inspection

S7RS0B7226007

1) Remove air flow control actuator from HVAC unit referring to “Air Flow Control Actuator Removal and Installation”.
2) Connect actuator connector to the actuator.
3) Set air flow selector of HVAC control module to DEF position with ignition switch ON, and make sure if the position of actuator lever is DEF position (8).
4) Turn ignition switch OFF, and then disconnect connector from air flow control actuator.
5) Measure resistance between terminal “3” and “5”

Air flow control actuator resistance between terminal “3” and “5” (DEF position)
Approximately 4.8 kΩ at 25°C (77°F)

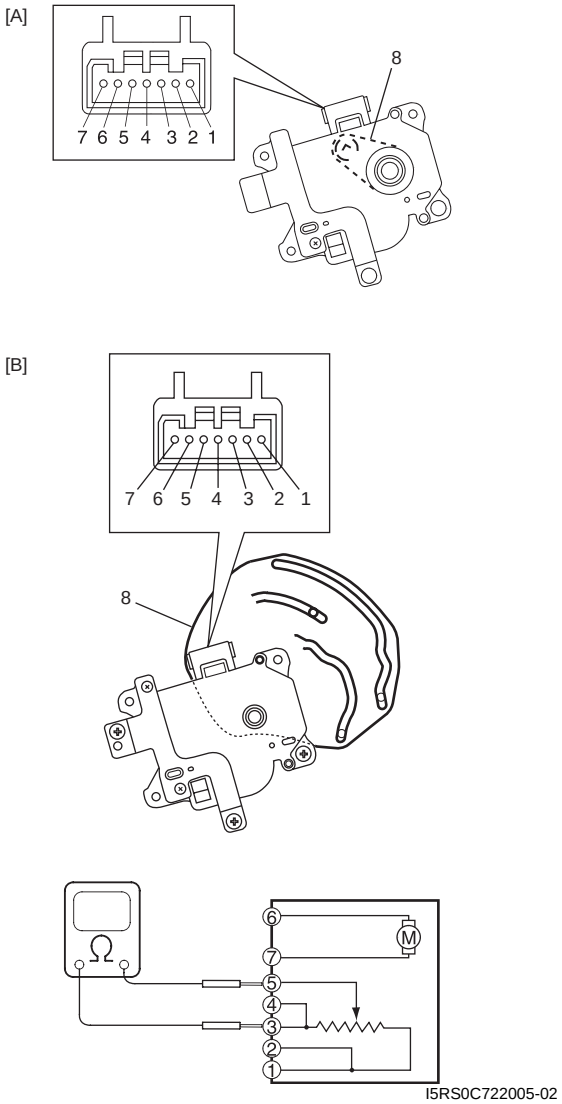


I5RS0C722004-01

[A]: LH steering vehicle	[B]: RH steering vehicle

6) Connect connector to air flow control actuator.
7) Set air flow selector of HVAC control module to VENT position with ignition switch ON, and make sure if the position of actuator lever is VENT position (8).
8) Turn ignition switch OFF, and then disconnect connector from air flow control actuator.
9) Measure resistance between terminal “3” and “5”.

Air flow control actuator resistance between terminal “3” and “5” (VENT position)
Approximately 2.0 kΩ at 25°C (77°F)



I5RS0C722005-02

[A]: LH steering vehicle	[B]: RH steering vehicle

If check result is not satisfactory, replace the actuator with new one.

Air Intake Control Actuator Removal and Installation

S7RS0B7226008

Refer to “Air Intake Control Actuator Removal and Installation in Section 7A”.

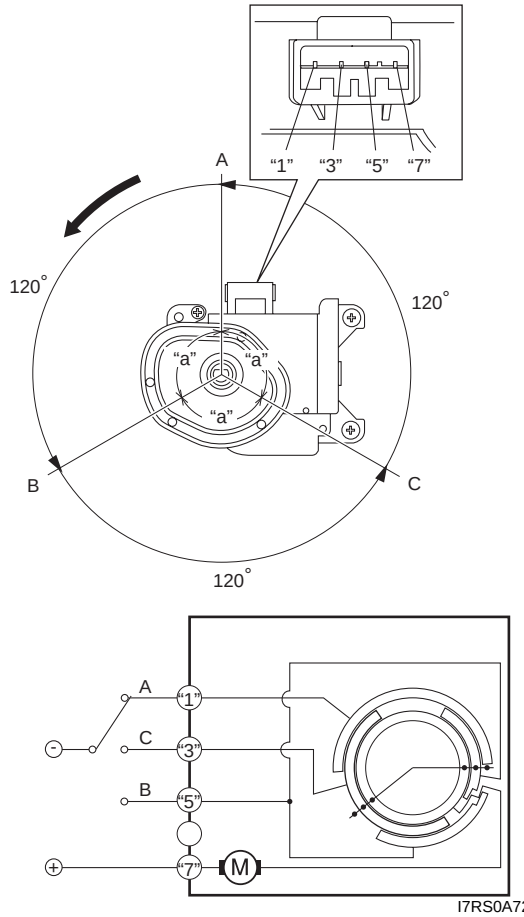
Air Intake Control Actuator Inspection

S7RS0B7226009

Check air intake control actuator as follows:

1) Using service wire, connect battery positive terminal to terminal “7” and battery negative terminal to terminal “1”. And, check if air intake selector link operates smoothly and it stops at “REC” position (A).
2) Using service wire, connect battery positive terminal to terminal “7” and battery negative terminal to terminal “5”. And, check if air intake selector link operates smoothly and it stops at “MIX” position (B).
3) For auto A/C model, using service wire, connect battery positive terminal to terminal “7” and battery negative terminal to “3” terminal. And, check air intake selector link operates smoothly and it stops at “FRE” position (C).

If malfunction is found, replace air intake control actuator.



I7RS0A722002-01

Actuator Linkage Inspection

S7RS0B7226010

- Check if each actuator linkage operates smoothly.
- Check actuator rod for bend.
- Check each actuator linkage for breakage.
- Make sure if there is not any obstruction in operating range of actuator linkage.
  If any malfunction is found, repair or replace faulty part(s).

Blower Motor Controller Removal and Installation

S7RS0B7226011

Refer to “Blower Motor Resistor Removal and Installation in Section 7A”.

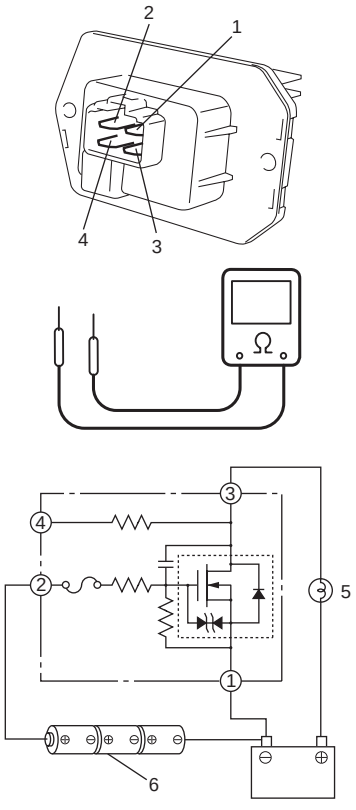
Blower Motor Controller Inspection

S7RS0B7226012

1) Check internal circuit of controller for resistance as follows.
   a) Measure resistance between “1” terminal and “2” terminal of blower motor controller.

      Blower motor controller resistance
      “1” – “2”: approximately 10 kΩ at 25°C (77°F)

      If resistance does not meet above specification, replace blower motor controller.
   b) Using ohmmeter, connect its positive terminal to “3” terminal of blower motor controller and negative terminal to “1” terminal of blower motor controller and check that there is no continuity.
2) Check controller for operation as follows.
   a) Using service wire, connect battery positive terminal to “3” terminal of blower motor controller and battery negative terminal to “1” terminal of blower motor controller.
   b) Using bulb (3.4 W) (5) and service wire, connect battery positive terminal to “3” terminal of blower motor controller as shown figure.
   c) Arrange 3 new 1.5 V batteries (6) in series (check that total voltage is 4.5 – 5.0 V) and connect its positive terminal to “2” terminal of blower motor controller and negative terminal to “1” terminal of blower motor controller.
      Then, check that bulb lights. If bulb does not light under the above conditions, replace blower motor controller.



I5RS0A722026-01

HVAC Control Module Removal and Installation

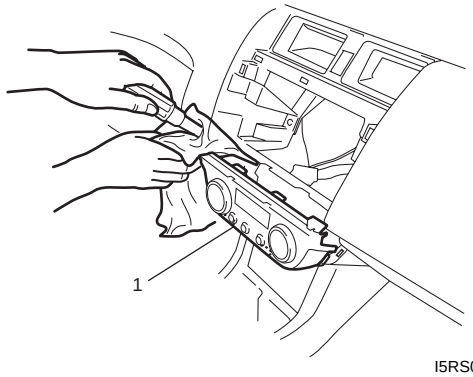
S7RS0B7226013

Removal

1) Disconnect negative (–) cable at battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove passenger air bag module from instrument panel referring to “Passenger Air Bag (Inflator) Module Removal and Installation in Section 8B”.
4) Remove radio assembly from instrument panel referring to “Rear Speaker Removal and Installation in Section 9C”.
5) Remove two connectors from HVAC control module.
6) Remove HVAC control module (1) from instrument panel.

NOTE

Be careful not to damage HVAC control module and instrument panel by using rag.



I5RS0A722030-01

Installation

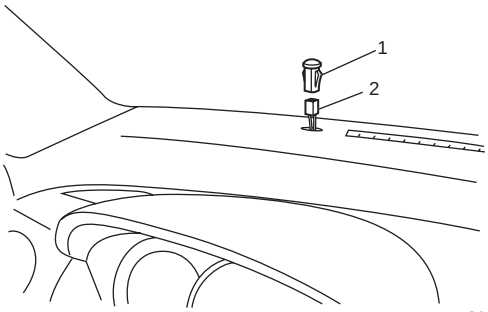
Reverse removal procedure noting the following instructions.
Enable air bag system referring to “Enabling Air Bag System in Section 8B”.

Sunload Sensor Removal and Installation

S7RS0B7226014

Removal

1) Disconnect negative (–) cable at battery.
2) Remove combination meter referring to “Combination Meter Removal and Installation in Section 9C”.
3) Remove sunload sensor (1) from instrument panel by depressing tab and pushing sensor upward from underneath.
4) Disconnect sunload sensor connector (2).



I5RS0A722027-01

Installation

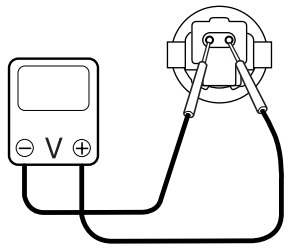
Reverse removal procedure.

Sunload Sensor Inspection

S7RS0B7226015

1) Light over sunload sensor vertically with an incandescent lamp of approximately 100 W. The distance between sunload sensor and lamp should be approximately 100 mm (3.94 in.).
2) Measure voltage between terminals of sunload sensor as shown.
   If check result is not satisfactory, replace sunload sensor with new one.

Sunload sensor voltage specification
0.4 V or more



I4RH01722036-01

Outside Air Temperature Sensor Removal and Installation

S7RS0B7226016

Refer to “Instrument Panel Removal and Installation in Section 9C”.

Outside Air Temperature Sensor Inspection

S7RS0B7226017

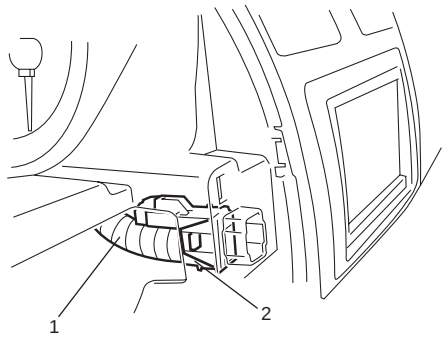
Refer to “Information Display (Clock) Removal and Installation in Section 9C”.

Inside Air Temperature Sensor Removal and Installation

S7RS0B7226018

Removal

1) Disconnect negative (–) cable at battery.
2) Remove steering column hole cover.
3) Remove connector and aspirator hose (1) from inside air temperature sensor (2).
4) Remove inside air temperature sensor from instrument panel while releasing lock of both sides of inside air temperature sensor.



I5RS0A722028-01

Installation

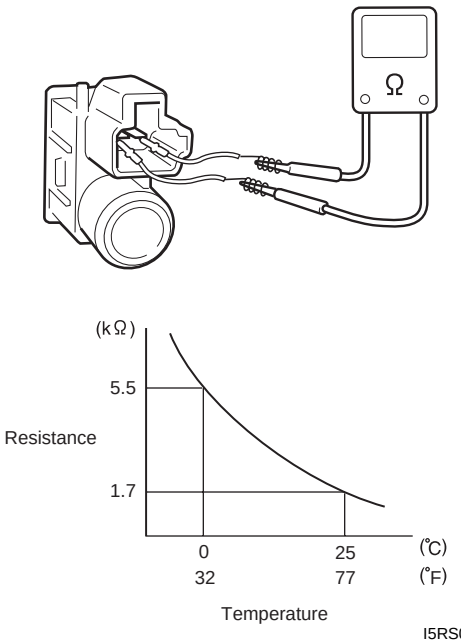
Reverse removal procedure.

Inside Air Temperature Sensor Inspection

S7RS0B7226019

Measure resistance between each connector terminal with an ohmmeter.
If resistance is incorrect, replace inside air temperature sensor with new one.

Inside air temperature sensor resistance
1.7 kΩ ± 0.085 kΩ at 25 °C (77 °F)



I5RS0A722029-01

Condenser Assembly On-Vehicle Inspection

S7RS0B7226020

Refer to “Condenser Assembly On-Vehicle Inspection”.

Condenser Assembly Removal and Installation

S7RS0B7226021

Refer to “Condenser Assembly Removal and Installation”.

Receiver/Dryer Removal and Installation

S7RS0B7226022

Refer to “Receiver/Dryer Removal and Installation”.

Evaporator Inspection

S7RS0B7226023

Refer to “Evaporator Thermistor (Evaporator Temperature Sensor) Inspection”.

Evaporator Temperature Sensor Removal and Installation

S7RS0B7226024

Refer to “Evaporator Thermistor (Evaporator Temperature Sensor) Removal and Installation”.

Evaporator Temperature Sensor Inspection

S7RS0B7226025

Refer to “Evaporator Thermistor (Evaporator Temperature Sensor) Inspection”.

Expansion Valve Removal and Installation

S7RS0B7226026

Refer to “Expansion Valve Removal and Installation”.

Expansion Valve Inspection

S7RS0B7226027

Refer to “Expansion Valve Inspection”.

A/C Refrigerant Pressure Sensor and Its Circuit Inspection

S7RS0B7226028

Refer to “A/C Refrigerant Pressure Sensor and Its Circuit Inspection”.

A/C Refrigerant Pressure Sensor Removal and Installation

S7RS0B7226029

Refer to “A/C Refrigerant Pressure Sensor Removal and Installation”.

Compressor Relay Inspection

S7RS0B7226030

Refer to “Compressor Relay Inspection”.

Compressor Drive Belt Inspection and Adjustment

S7RS0B7226031

Refer to “Compressor Drive Belt Inspection and Adjustment”.

Compressor Drive Belt Removal and Installation

S7RS0B7226032

Refer to “Compressor Drive Belt Removal and Installation”.

Compressor Assembly Removal and Installation

S7RS0B7226033

Refer to “Compressor Assembly Removal and Installation”.

Compressor Assembly Components

S7RS0B7226034

Refer to “Compressor Assembly Components”.

Magnet Clutch Removal and Installation

S7RS0B7226035

Refer to “Magnet Clutch Removal and Installation”.

Magnet Clutch Inspection

S7RS0B7226036

Refer to “Magnet Clutch Inspection”.

Relief Valve Inspection

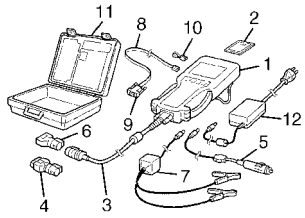
S7RS0B7226039

Refer to “Relief Valve Inspection”.

Special Tools and Equipment

Special Tool

S7RS0B7228001

SUZUKI scan tool — This kit includes following items. 1. Tech 2, 2. PCMCIA card, 3. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loop back adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loop back connector, 11. Storage case, 12.☞ / ☞		

Section 8

Restraint

CONTENTS

Precautions

Precautions

Precautions on Restraint

S7RS0B8000001

Air Bag System Service Warning
Refer to “Air Bag System Service Warning in Section 00”.

Fastener Caution
Refer to “Fastener Caution in Section 00”.

Precautions on Service and Diagnosis of Seat Belt
Refer to “Precautions on Service and Diagnosis of Seat Belt in Section 8A”.

Precautions on Service and Diagnosis of Air Bag System
Refer to “Precautions on Service and Diagnosis of Air Bag System in Section 8B”.

Precautions on Handling and Storage of Air Bag Components
Refer to “Precautions on Handling and Storage of Air Bag System Components in Section 8B”.

Precautions on Disposal of Air Bag and Seat Belt Pretensioner
Refer to “Precautions on Disposal of Air Bag and Seat Belt Pretensioner in Section 8B”.

Seat Belts

Precautions

Precautions on Service and Diagnosis of Seat Belt

S7RS0B8100001

⚠ WARNING

If replacing seat belt is necessary, replace buckle and seat belt assembly together as a set. This is for the reason of ensuring locking of tongue plate with buckle. If these parts are replaced individually, such a locking condition may become unreliable. For this reason, SUZUKI will supply only the spare buckle and seat belt assembly in a set part.

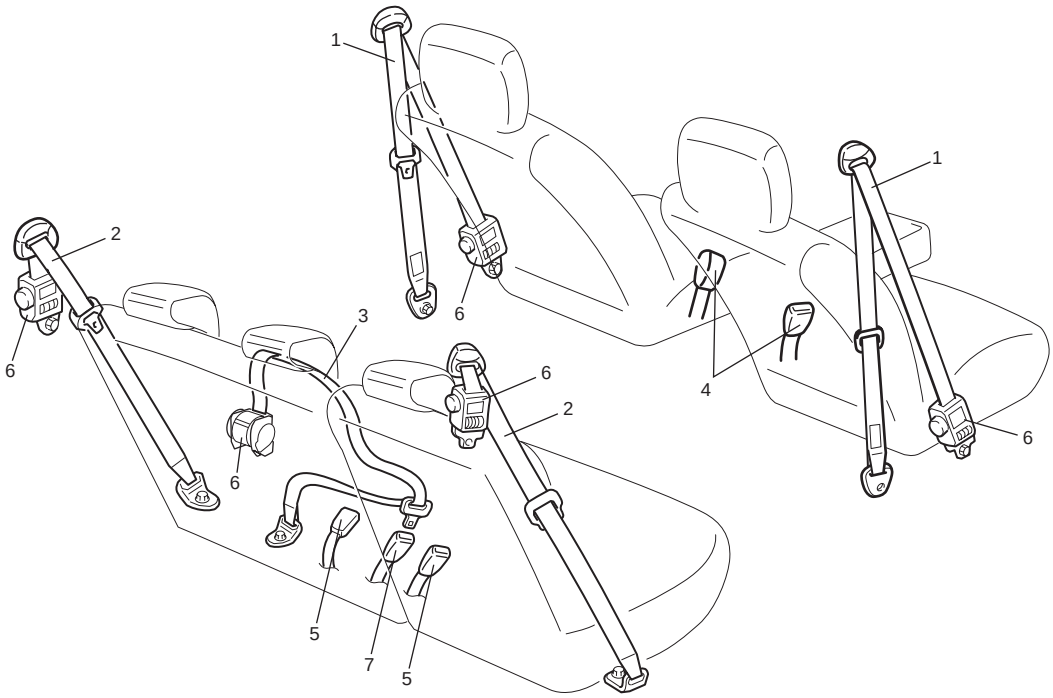
Before servicing or replacing seat belts, refer to the following precautionary items.

- Seat belts should be normal relative to strap retractor and buckle portions.
- Keep sharp edges and damaging objects away from belts.
- Avoid bending or damaging any portion of belt buckle or latch plate.
- Do not bleach or dye belt webbing. (Use only mild soap and lukewarm water to clean it.)
- When installing a seat belt anchor bolt, it should be tightened by hand at first to prevent cross-threading and then to specified torque.
- Do not attempt any repairs on retractor mechanisms or retractor covers. Replace defective assemblies with new replacement parts.
- Keep belts dry and clean at all times.
- If there exist any parts in question, replace such parts.
- Replace belts whose webbing is cut or otherwise damaged.
- Do not put anything into trim panel opening which seat belt webbing passes through.

General Description

Seat Belt Construction

S7RS0B8101001



I4RS0A810001-02

1. Front seat belt assembly (with ELR and pretensioner)	4. Buckle for front seat belt assembly	7. Buckle for rear center seat belt
2. Rear seat belt assembly (with A-ELR or ELR)	5. Buckle for rear seat belt assembly	
3. Rear center seat belt (with A-ELR or ELR)	6. Retractor assembly	

Seat Belt with ELR
The seat belt with emergency locking retractor (ELR) is designed so that it locks immediately (to prevent the webbing from being pulled out of the retractor any further) when any of the following items is detected as exceeding each set value;

- Speed at which the webbing is pulled out of the retractor.
- Acceleration or deceleration of the vehicle speed.
- Inclination.

Seat Belt with A-ELR
The automatic and emergency locking retractor (A-ELR) works as an Emergency Locking Retractor (ELR) till its webbing is pulled all the way out and then on as an Automatic Locking Retractor (ALR) till it is retracted fully.
ALR: Automatically locks when the webbing is pulled out from the retractor and allowed to retract even a little. Then the webbing can not be pulled out any further, unless it is wound all the way back into the retractor, which releases the lock and allows the webbing to be pulled out.

Seat Belt with ELR and Pretensioner
The seat belt with ELR and a pretensioner has a pretensioner mechanism which operates in linkage with the air bag in addition to the described ELR.
The pretensioner is incorporated in retractor assembly and controlled by SDM as one of air bag system components. It will be activated at the same time as the driver and passenger air bag module when an impact at the front of vehicle exceeds the specified value.
When servicing seat belt (retractor assembly) with pretensioner, be sure to observe all WARNINGS and CAUTIONS and “Precautions on Service and Diagnosis of Air Bag System in Section 8B”.

⚠ CAUTION

Do not reuse the seat belt pretensioner (retractor assembly) that has activated. Replace it with a new seat belt assembly and buckle together as a set. For checking procedure of its activation, refer to “Repair and Inspection Required after Accident in Section 8B”.

Seat Belt Remainder
When driver’s seat belt is unfastened (under the following conditions), seat belt reminder light and warning buzzer inform that driver’s seat belt is unfastened. Seat belt reminder light located in combination meter and warning buzzer located inside BCM operate as follows:

- Seat belt reminder light comes on when driver’s seat belt is unfastened while ignition key switch is at ON position.
- If vehicle speed exceeds 15 km/h with seat belt unfastened, warning buzzer operates for approximately 95 seconds and seat belt reminder light flashes synchronously with buzzer. When warning buzzer stops operating, seat belt reminder light is turned on.
- If driver’s seat belt state is changed from “fastened” to “unfastened” while vehicle speed is above 15 km/h, warning buzzer operates for approximately 95 seconds and seat belt reminder light flashes synchronously with buzzer. When warning buzzer stops operating, seat belt reminder light is turned on.

Diagnostic Information and Procedures

Repair and Inspection Required after Accident

S7RS0B8104001

After an accident, whether the seat belt pretensioner has been activated or not, be sure to perform checks and repairs described on “Repair and Inspection Required after Accident in Section 8B”.

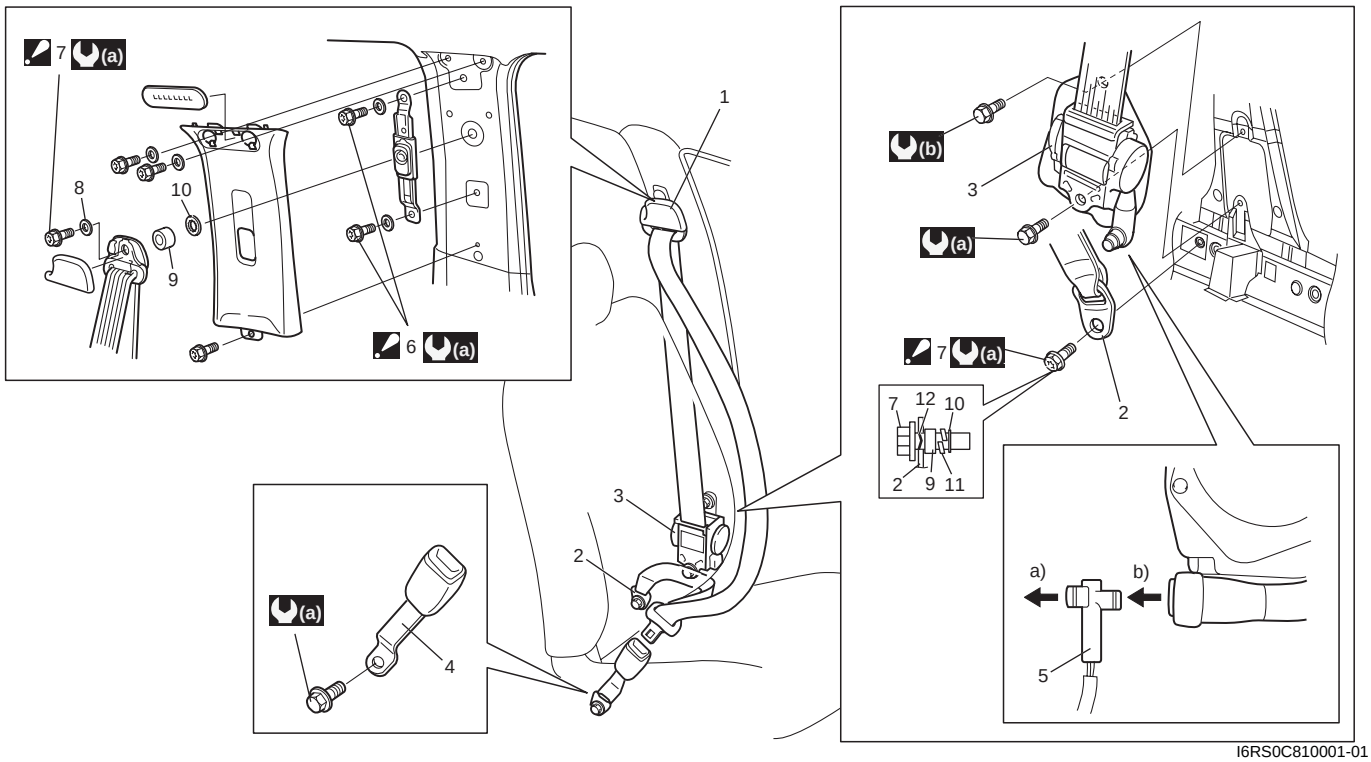
Repair Instructions

Front Seat Belt Components

S7RS0B8106001

⚠ WARNING

- **Never attempt to disassemble or repair the seat belt pretensioner (retractor assembly). If any abnormality is found, be sure to replace it with new one as an assembly.**
- **Be sure to read "Precautions on Service and Diagnosis of Seat Belt" before starting to work and observe every precaution during work. Neglecting them may result in personal injury or unactivation of the seat belt pretensioner when necessary.**



I6RS0C810001-01

1. Upper anchor	6. Shoulder adjuster mounting bolt : Tighten upper bolt first, then tighten lower bolt.	11. Spring washer
2. Lower anchor	7. Anchor bolt : Tighten upper bolt first, then tighten lower bolt.	12. Wave washer
3. Retractor assembly	8. Cushion	(a) : 43 N·m (4.3 kgf-m, 31.5 lb-ft)
4. Buckle	9. Spacer	(b) : 5.5 N·m (0.55 kgf-m, 4.0 lb-ft)
5. Yellow connector (for seat belt pretensioner)	10. Washer	

Front Seat Belt Removal and Installation

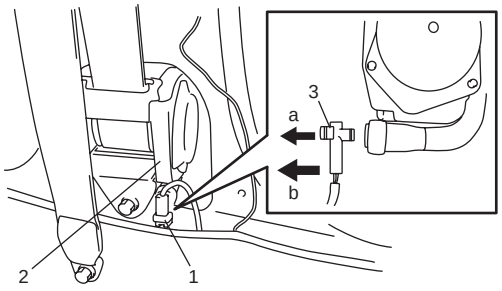
S7RS0B8106002

⚠ WARNING

- **Never attempt to disassemble or repair the seat belt pretensioner (retractor assembly). If any abnormality is found, be sure to replace it with new one as an assembly.**
- **Be sure to read "Precautions on Service and Diagnosis of Seat Belt" before starting to work and observe every precaution during work. Neglecting them may result in personal injury or unactivation of the seat belt pretensioner when necessary.**

Removal

1) Disconnect negative (–) cable at battery.
2) Disable air bag system. Refer to "Disabling Air Bag System in Section 8B".
3) Remove center pillar lower trim.
4) Disconnect Yellow connector (1) from seat belt pretensioner (2).
   a) Release locking of lock button (3).
   b) After unlocked, disconnect to connector.



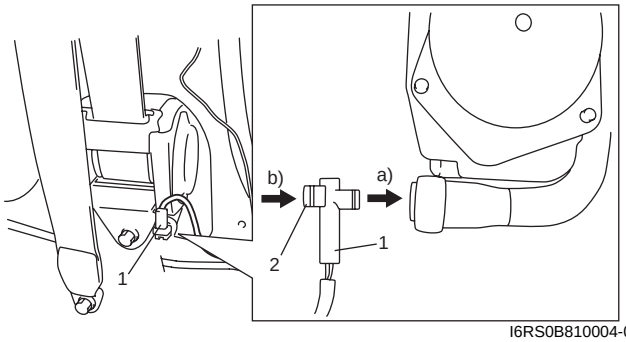
I6RS0B810003-01

5) Remove front seat belts from the vehicle.

Installation

Install in reverse order of removal, noting the following.

- Seat belt anchor bolts should have an unified fine thread (7/16-20 UNF). Under no circumstances should any different sized or metric screw threads be used.
- Connect Yellow connector (1) to seat belt pretensioner securely.
  a. Connect connector.
  b. Lock connector with lock slider (2).



I6RS0B810004-01

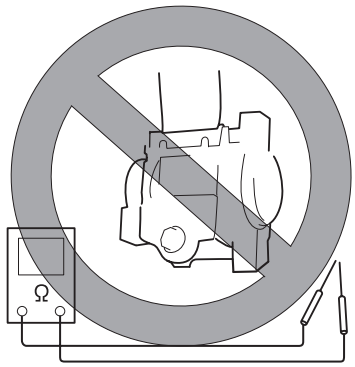
- Enable air bag system. Refer to "Enabling Air Bag System in Section 8B".

Front Seat Belt Inspection

S7RS0B8106003

⚠ WARNING

- **Never attempt to disassemble or repair the seat belt pretensioner (retractor assembly). If any abnormality is found, be sure to replace it with new one as an assembly.**
- **Be sure to read "Precautions on Service and Diagnosis of Seat Belt", before starting to work and observe every precaution during work. Neglecting them may result in personal injury or unactivation of the seat belt pretensioner when necessary.**
- **Never measure resistance of pretensioner or disassemble it. Otherwise, personal injury may result.**



I2RH01810004-01

⚠ CAUTION

If seat belt pretensioner (retractor assembly) was dropped from a height of 30 cm (1 ft) or more, it should be replaced.

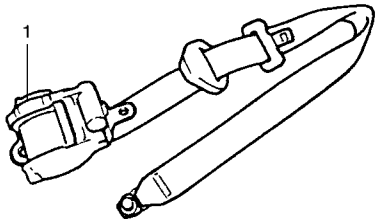
Seat belts and attaching parts can affect the vital components and systems of a vehicle.
Therefore, they should be inspected carefully and replaced with genuine parts only.

Seat Belt

- The seat belt webbing or strap should be free from damage.

Retractor Assembly (with Seat Belt Pretensioner)

1) Let the seat belt retract fully to confirm its easy retraction.
   - The retractor assembly should lock webbing when pulled quickly.
   - The front seat belt retractor assembly (1) should pass the inspection and should lock webbing even when tilted (approx. 15°) toward the fore and aft or right and left directions.
2) Check retractor assembly (1) with seat belt pretensioner appearance visually for following symptoms and if any one of them is applicable, replace it with a new one as an assembly.
   - Pretensioner has activated.
   - There is a crack in seat belt pretensioner (retractor assembly).
   - Seat belt pretensioner (retractor assembly) is damaged or a strong impact (e.g., dropping) was applied to it.



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Anchor Bolt

- Anchor bolts should be torqued to specification.

Belt Latch

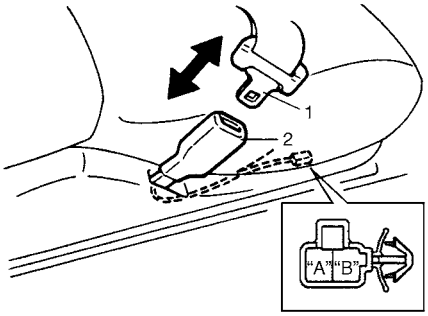
- It should be secure when latched.

Seat Belt Switch

Check driver side seat belt switch for continuity by using ohmmeter.

Seat belt switch specification

Without inserted buckle tongue to buckle catch:
Terminal “A” and “B”: Continuity
With inserted buckle tongue to buckle catch:
Terminal “A” and “B”: No continuity



I4RS0B810001-01

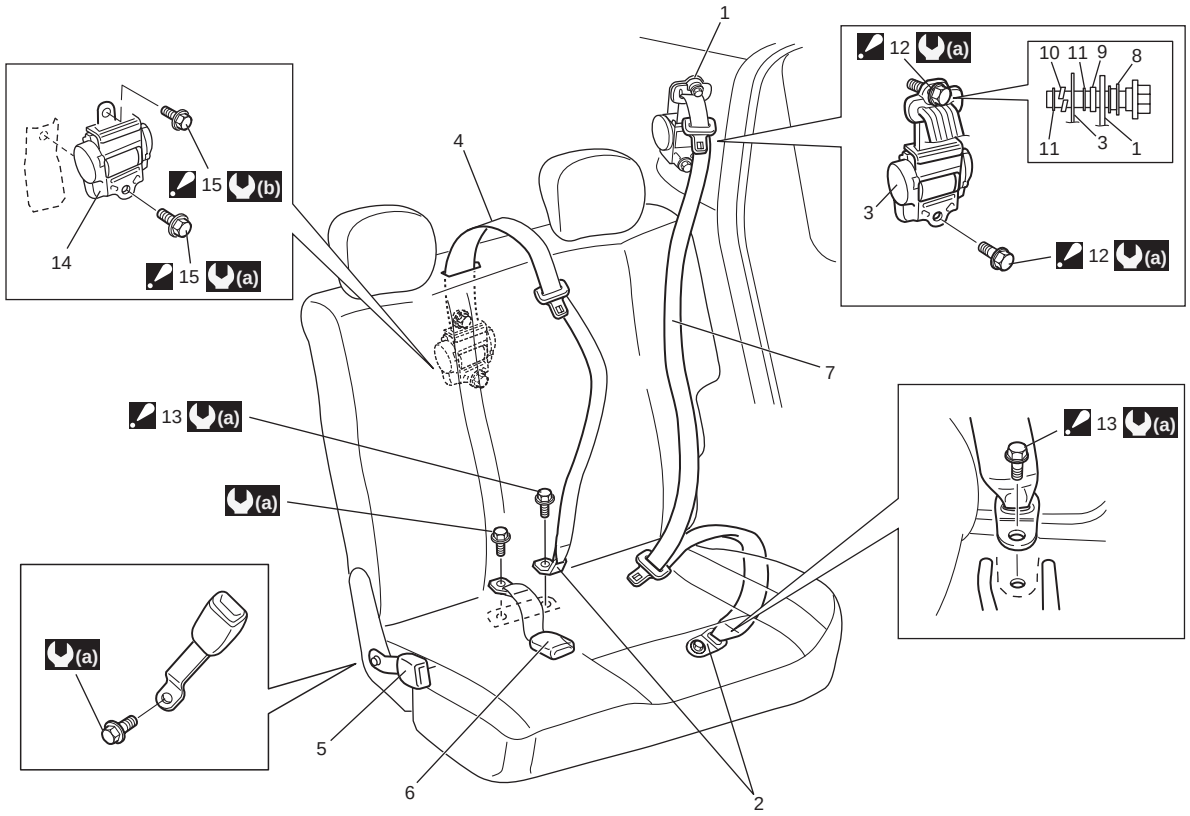
1.	Buckle tongue
2.	Buckle catch

Rear Seat Belt Components

S7RS0B8106004

⚠ WARNING

Be sure to read "Precautions on Service and Diagnosis of Seat Belt" before starting to work and observe every precaution during work.



I6RS0C810002-01

1. Upper anchor	7. Rear seat belt	13. Anchor bolt : Tighten retractor mounting bolts first, then tighten anchor bolt.
2. Lower anchor	8. Bush	14. Center retractor assembly
3. Side retractor assembly	9. Spacer	15. Center retractor mounting bolt : Tighten lower bolt first, then tighten upper bolt.
4. Rear center seat belt (if equipped)	10. Spring washer	(a) : 43 N·m (4.3 kgf-m, 31.5 lb-ft)
5. Buckle for rear seat belt	11. Washer	(b) : 5.5 N·m (0.55 kgf-m, 4.0 lb-ft)
6. Buckle for rear center seat belt (if equipped)	12. Side retractor mounting bolt : Tighten upper bolt first, then tighten lower bolt.	

Rear Seat Belt Removal and Installation

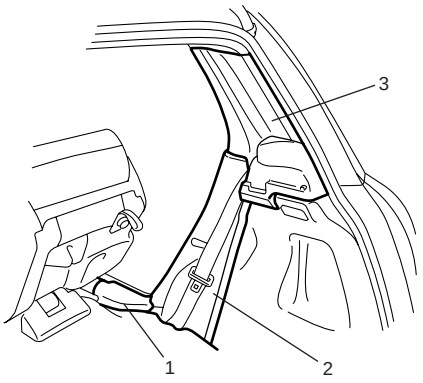
S7RS0B8106005

⚠ WARNING

Be sure to read “Precautions on Service and Diagnosis of Seat Belt” before starting to work and observe every precaution during work.

Removal

1) Fold rear seats referring to “Folding Rear Seats” in Owners Manual.
2) Remove rear side sill scuff (1), quarter lower trim (2) and quarter upper trim (3).



I4RS0A810004-01

3) Remove rear seat belt referring to “Rear Seat Belt Components”.

Installation

Reverse removal procedure for installation noting the following.

- Seat belt anchor bolts should have an unified fine thread (7/16-20 UNF). Under no circumstances should any different sized or metric screw threads be used.

Rear Seat Belt Inspection

S7RS0B8106006

⚠ WARNING

Be sure to read “Precautions on Service and Diagnosis of Seat Belt” before starting to work and observe every precaution during work.

- Check the rear seat belt in the same way as “Front Seat Belt Inspection”.
- As to seat belts with A-ELR, check them as follows.
  - With vehicle at stop, pull seat belt all the way out, let it retract a little and try to pull it. It should not be pulled out, that is, it should be locked where retracted.
  - Let seat belt retract to its original state. Next, pull it half way out, let it retract a little and try to pull it again. It should be pulled out smoothly, that is it should not be locked at this time.

Specifications

Tightening Torque Specifications

S7RS0B8107001

NOTE

The specified tightening torque is also described in the following.
“Front Seat Belt Components”
“Rear Seat Belt Components”

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Air Bag System

Precautions

Precautions on Service and Diagnosis of Air Bag System

S7RS0B8200001

⚠ WARNING

- **If the air bag system and another vehicle system both need repair, SUZUKI recommends that the air bag system be repaired first, to help avoid unintended air bag system activation.**
- **Do not modify the steering wheel, dashboard, both front seat or any other on or around air bag system components. Modifications can adversely affect air bag system performance and lead to injury.**
- **Be sure to follow the procedures described in this section. Failure to follow procedures could result in possible air bag system activation, personal injury or unneeded air bag system repairs.**

- WARNING / CAUTION labels are attached on each part of air bag system components (SDM, air bag (inflator) modules and seat belt pretensioners). Be sure to follow the instructions.
- Many of service procedures require disconnection of “A/BAG” fuse and air bag (inflator) module(s) (driver, passenger, side of both sides and curtain of both sides) from initiator circuit to avoid an accidental deployment.
- Do not apply power to the air bag system unless all components are connected or a diagnostic flow requests it, as this will set a DTC.
- The “Air Bag Diagnostic System Check” must be the starting point of any air bag diagnostics. The “Air Bag Diagnostic System Check” will verify proper “AIR BAG” warning right operation and will lead you to the correct flow to diagnose any air bag malfunctions. Bypassing these procedures may result in extended diagnostic time, incorrect diagnosis, and incorrect parts replacements.
- Never use air bag component parts from another vehicle.
- If the vehicle will be exposed to temperatures over 93 °C (200 °F) (for example, during a paint baking process), remove the air bag system components beforehand to avoid component damage or unintended system activation.
- When handling the air bag (inflator) modules (driver, passenger, side of both sides and curtain of both sides), seat belt pretensioners (driver and passenger), SDM, forward-sensor or side-sensor, be careful not to drop it or apply an impact to it. If an excessive impact was applied (e.g., SDM, forward-sensor and side-sensor are dropped, air bag (inflator) module is dropped from a height of 90 cm (3 ft) or more, seat belt pretensioner (retractor assembly) is dropped from a height of 30 cm (1 ft) or more), never attempt disassembly or repair but replace it with a new one.
- When using electric welding, be sure to disconnect air bag (inflator) module connectors (driver, passenger, side of both sides and curtain of both sides) and seat belt pretensioner connectors (driver and passenger) respectively.
- When applying paint around the air bag system related parts, use care so that the harness or connector will not be exposed to the paint mist.
- Never expose air bag system component parts directly to hot air (drying or baking the vehicle after painting) or flames.

⚠ WARNING

When performing service on or around air bag system components or air bag wiring, follow the procedures listed in “Disabling Air Bag System” to temporarily disable the air bag system.
Failure to follow procedures could result in possible air bag system activation, personal injury or unneeded air bag system repairs.

Precautions on Handling and Storage of Air Bag System Components

S7RS0B8200002

SDM

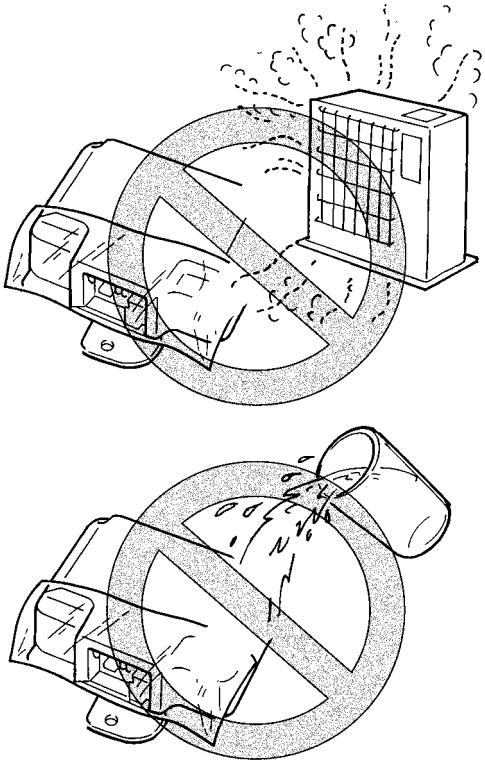
⚠ WARNING

Never power up air bag system when SDM is not rigidly attached to the vehicle. Otherwise, personal injury may result.

⚠ CAUTION

After detecting one time of such collision as to meet deployment conditions, SDM must not be used. Refer to "Air Bag Diagnostic System Check" when checking SDM.

- Never attempt disassembly of SDM.
- When storing SDM, select a place where neither high temperature nor high humidity is anticipated and oil, water and dust are kept off.



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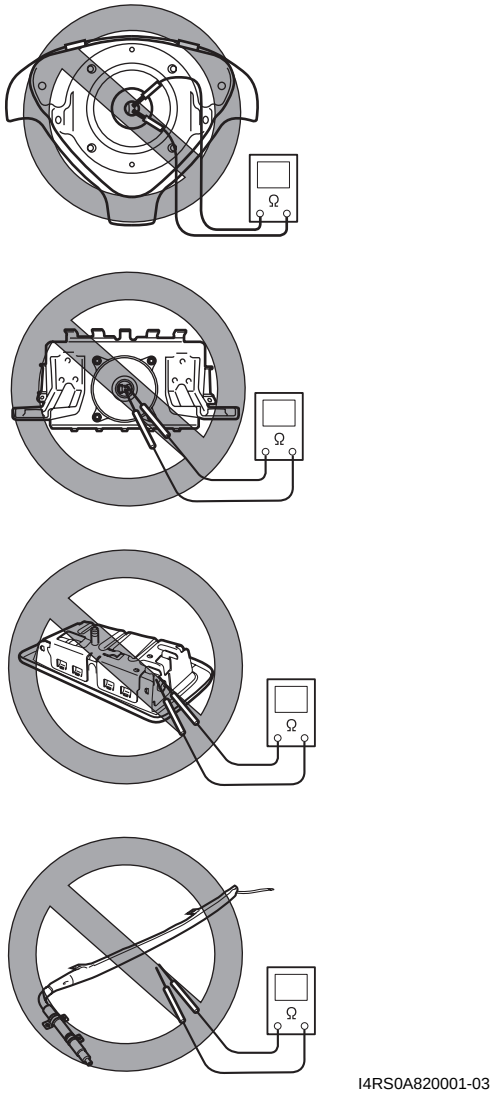
- If SDM has been dropped, replace it with a new one.
- If SDM installation part of floor was damaged, repair that part completely before reinstallation.
- All SDM and mounting bracket fasteners must be carefully torqued and the arrow must be pointed toward the front of the vehicle to ensure proper operation of the air bag system.

Live (Undeployed) Air Bag (Inflator) Modules

Special care is necessary when handling and storing a live (undeployed) air bag (inflator) modules.
The rapid gas generation produced during deployment of the air bag could cause the air bag (inflator) module, or an object in front of the air bag (inflator) module, to be thrown through the air in the unlikely event of an accidental deployment.

⚠ WARNING

Never attempt to measure the resistance of the air bag (inflator) modules (driver, passenger and side of both sides and curtain of both sides). It is very dangerous as the electric current from the tester may deploy the air bag.



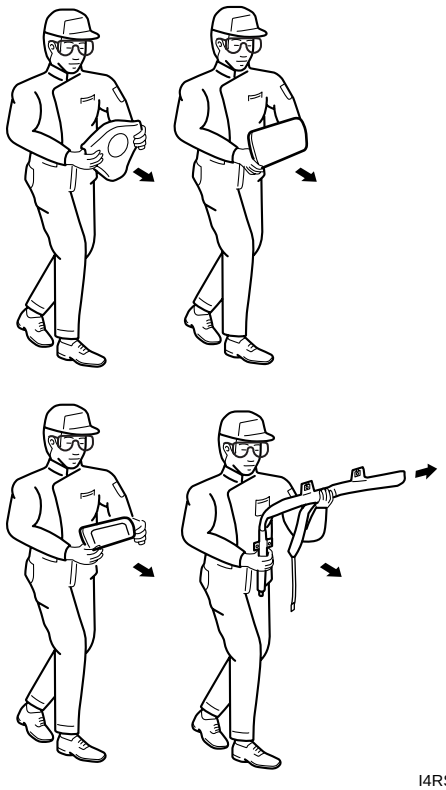
I4RS0A820001-03

- Never attempt disassembly of the air bag (inflator) modules.
- If any abnormality is found, be sure to replace it with new one as an assembly.
- When an abnormality is noted as existing in the live (undeployed) air bag (inflator) module, be sure to deploy it before discarding it.
- When grease, cleaning agent, oil, water, etc., got on the air bag (inflator) modules (driver, passenger, side of both sides and curtain of both sides), wipe it off immediately with a dry cloth.
- If air bag (inflator) module was dropped from a height of 90 cm (3 ft) or more, it should be replaced with a new one as an assembly.

⚠ WARNING

- **For handling and storage of a live air bag (inflator) module, select a place where the ambient temperature below 65 °C (150 °F), without high humidity and away from electric noise.**
- **When carrying a live air bag (inflator) module, make sure the bag opening is pointed away from you. In case of an accidental deployment, the bag will then deploy with minimal chance of injury. Never carry the air bag (inflator) module by the wires or connector on the underside of the module.**

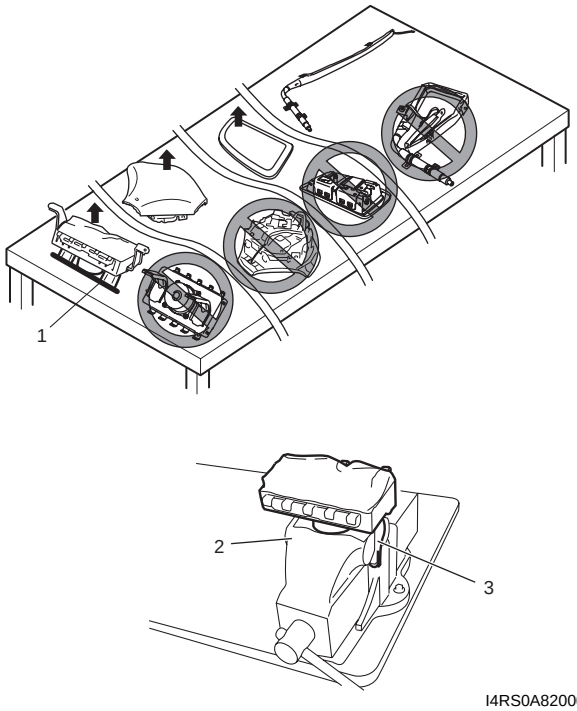
Otherwise, personal injury may result.



I4RS0A820002-01

⚠ WARNING

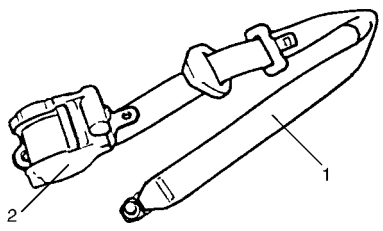
When placing a live air bag (inflator) module on bench or other surface, always face the bag up, away from the surface. As the live passenger air bag (inflator) module must be placed with its bag (trim cover) facing up, place it on the workbench with a slit (1) or use the workbench vise (2) to hold it securely at its lower mounting bracket (3).
It is also prohibited to place anything on top of the trim cover and stack air bag (inflator) modules.
This is necessary so that a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment. Otherwise, personal injury may result.



I4RS0A820003-02

Live (Inactivated) Seat Belt Pretensioner

Special care is necessary when handling and storing a live (inactivated) seat belt pretensioners.
Also, when the seat belt pretensioners activate, gas is generated and the seat belt (1) is retracted into the retractor assembly (2) quickly.
Note, therefore, that if they activate accidentally, the seat belt pretensioners and other object(s) around them may be thrown through the air.



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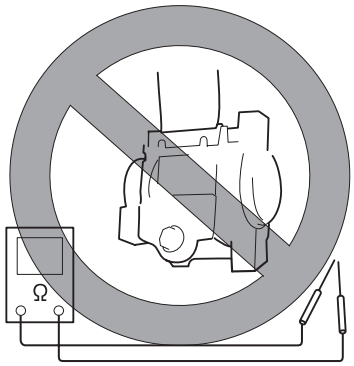
⚠ WARNING

Never attempt to measure the resistance of the seat belt pretensioners. It is very dangerous as the electric current from the tester may activate pretensioner.



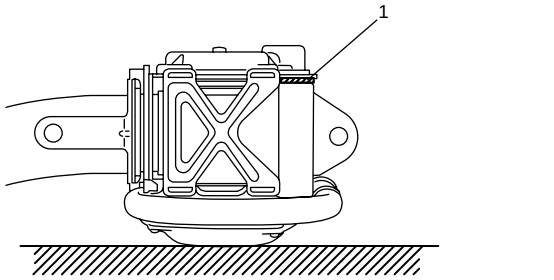
I2RH01820047-01

- Never attempt to disassemble the seat belt pretensioners (retractor assembly).
- If any abnormality is found, be sure to replace it with new one as an assembly.
- When an abnormality is noted as existing in the live (inactivated) seat belt pretensioner, be sure to activate it before discarding it.
- When grease, cleaning agent oil, water, etc., got on the seat belt pretensioners (retractor assembly), wipe it off immediately with a dry cloth.
- If seat belt pretensioner was dropped from a height of 30 cm (1 ft) or more, it should be replaced with a new one as an assembly.

⚠ WARNING

- **For handling and storage of a live seat belt pretensioner, select a place where the ambient temperature below 65 °C (150 °F), without high humidity and away from electric noise.**
- **Never carry the seat belt pretensioner by webbing.**
- **When placing a live seat belt pretensioner on the workbench or other surface, be sure not to lay it with its exhaust hole (1) provided side facing down. It is also prohibited to put something on its face with an exhaust hole (1) or to put a seat belt pretensioner on top of another.**

Otherwise, personal injury may result.



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Deployed Air Bag (Inflator) Module and Activated Seat Belt Pretensioner

⚠ WARNING

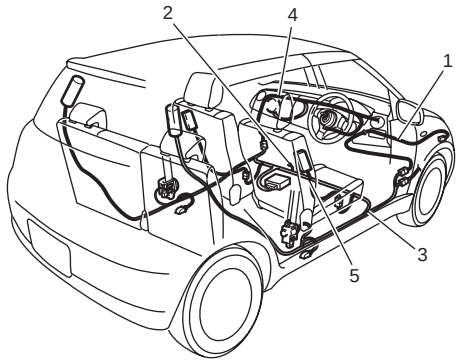
- **The air bag (inflator) module and seat belt pretensioner immediately after deployment/activation is very hot. Wait for at least 30 minutes to cool it off before proceeding the work.**
- **Do not apply water, oil, etc. to deployed air bag (inflator) module and to activate seat belt pretensioner.**
- **After an air bag (inflator) module has been deployed, the surface of the air bag may contain a powdery residue. This powder consists primarily of cornstarch (used to lubricate the bag as it inflates) and by-products of the chemical reaction. As with many service procedures, gloves and safety glasses should be worn.**
- **Wash your hands with mild soap and water after completing the work.**

Refer to the procedure described under “Deployed Air Bag (Inflator) Module and Activated Seat Belt Pretensioner Disposal” for disposal.

Air Bag Wire Harness and Connector

Air bag wire harness is included in main harness (1), instrument panel harness (4), floor harness (3) and seat harness (5). Air bag wire harness can be identified easily as the part of connector side wire harness is covered with a yellow protection tube. Be very careful when handling it.

- When an open in air bag wire harness, damaged wire harness, connector or terminal is found, replace wire harness, connectors and terminals as an assembly.
- When installing it, be careful so that the air bag wire harness is not caught or does not interfere with other parts.
- Make sure air bag system grounding point (2) is clean and ground is securely fastened for optimum metal-to-metal contact. Poor grounding can cause intermittent problems that are difficult to diagnose.



I4RS0A820004-01

Precautions on Disposal of Air Bag and Seat Belt Pretensioner

S7RS0B8200003

Do not dispose of the live (undeployed) air bag (inflator) modules and the live (inactivated) seat belt pretensioners.
When disposal is necessary, be sure to deploy / activate the air bag and seat belt pretensioner according to deployment / activation procedure described in “Air Bag (Inflator) Module and Seat Belt Pretensioner Disposal”.

⚠ WARNING

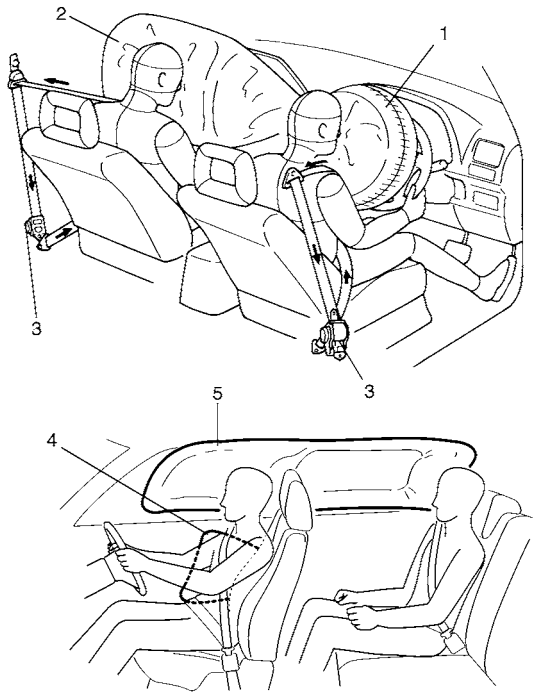
Failure to follow proper air bag (inflator) module and seat belt pretensioner disposal procedures can result in air bag deployment and pretensioner activation which could cause personal injury. Undeployed air bag (inflator) module and inactivated seat belt pretensioner must not be disposed of through normal refuse channels.
The undeployed air bag (inflator) module and inactivated seat belt pretensioner contain substances that can cause severe illness or personal injury if the sealed container is damaged during disposal.

General Description

Air Bag System Construction

S7RS0B8201001

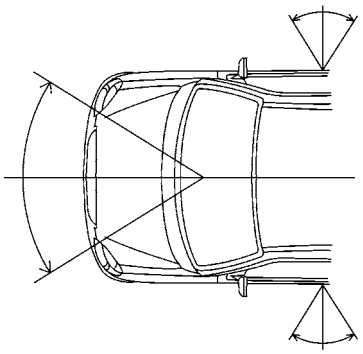
With the air bag system which includes front air bags, side curtain-air bag and side-air bags for both the driver’s and passenger’s sides as well as the seat belt pretensioners, the sag of the seat belt is taken up (for seat belt with pretensioner), the driver air bag (inflator) module is deployed from the center of the steering column and the passenger air bag (inflator) module from the top of the instrument panel in front of the front passenger seat in occurrence of a front collision with an impact larger than a certain set value to supplement protection offered by the driver and front passenger seat belts.
Side-air bag (inflator) module is deployed from the side of the seat back in occurrence of a sideward collision with an impact larger than a certain set value.
Side curtain-air bag (inflator) module is deployed from the roof side in occurrence of a sideward collision with an impact larger than a certain set value.



I4RS0A820102-01

1. Driver air bag	4. Side-air bag
2. Passenger air bag	5. Side curtain-air bag
3. Seat belt pretensioner	

The air bag system is designed to activate only in severe frontal and sideward collisions. It is not designed to activate in rear impacts, rollovers, or minor frontal and sideward collisions, since it would offer no protection in those types of accidents.



I2RH0B820007-01

Air Bag System Input / Output Table

S7RS0B8201002

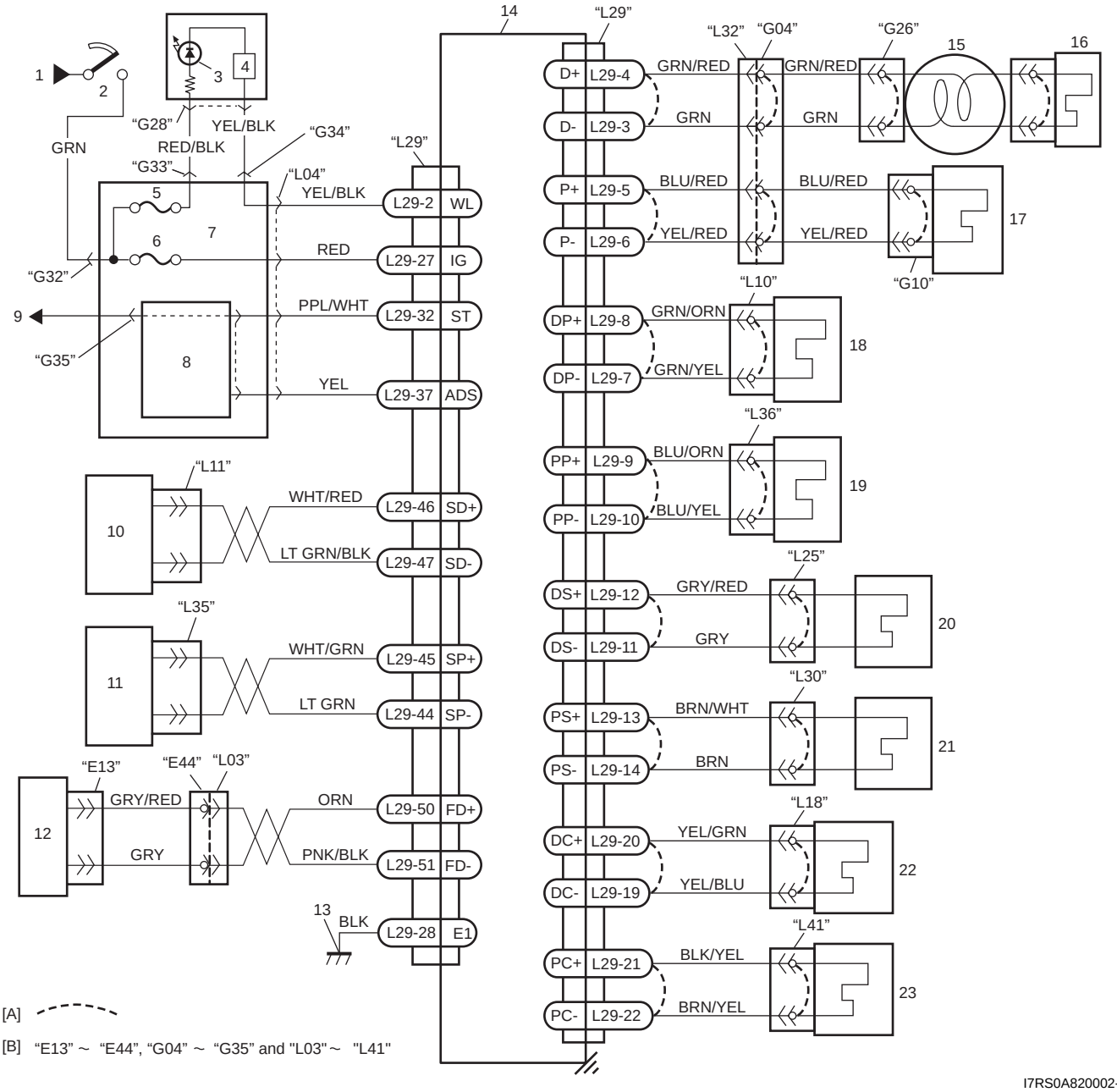
INPUT \ OUTPUT		Driver air bag, Passenger air bag, Seat belt with pretensioner (LH) and Seat belt with pretensioner (RH)	Driver side-air bag and Driver side curtain-air bag	Passenger side-air bag and Passenger side curtain-air bag
Signal from sensor	Sensor in SDM and forward-sensor	○	—	—
	Driver side-sensor	—	○	—
	Passenger side-sensor	—	—	○

I4RS0A820005-01

Schematic and Routing Diagram

Air Bag System Wiring Circuit Diagram

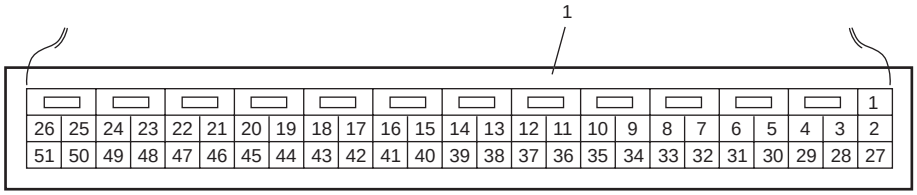
S7RS0B8202001



I7RS0A820002-03

[A]: Shorting bar	8. BCM	17. Passenger air bag (inflator) module
[B]: Connector	9. To data link connector (DLC)	18. Driver seat belt pretensioner
1. To battery	10. Driver side-sensor (if equipped)	19. Passenger seat belt pretensioner
2. Ignition switch	11. Passenger side-sensor (if equipped)	20. Driver side-air bag (inflator) module (if equipped)
3. "AIR BAG" warning light	12. Forward-sensor	21. Passenger side-air bag (inflator) module (if equipped)
4. Light driver	13. Ground for air bag system	22. Driver side curtain-air bag (inflator) module (if equipped)
5. "METER" fuse	14. SDM	23. Passenger side curtain-air bag (inflator) module (if equipped)
6. "A/BAG" fuse	15. Contact coil	
7. Junction block assembly	16. Driver air bag (inflator) module	

Terminal arrangement of SDM (viewed from harness side)



I7RS0A820003-02

1. SDM Connector “L29”

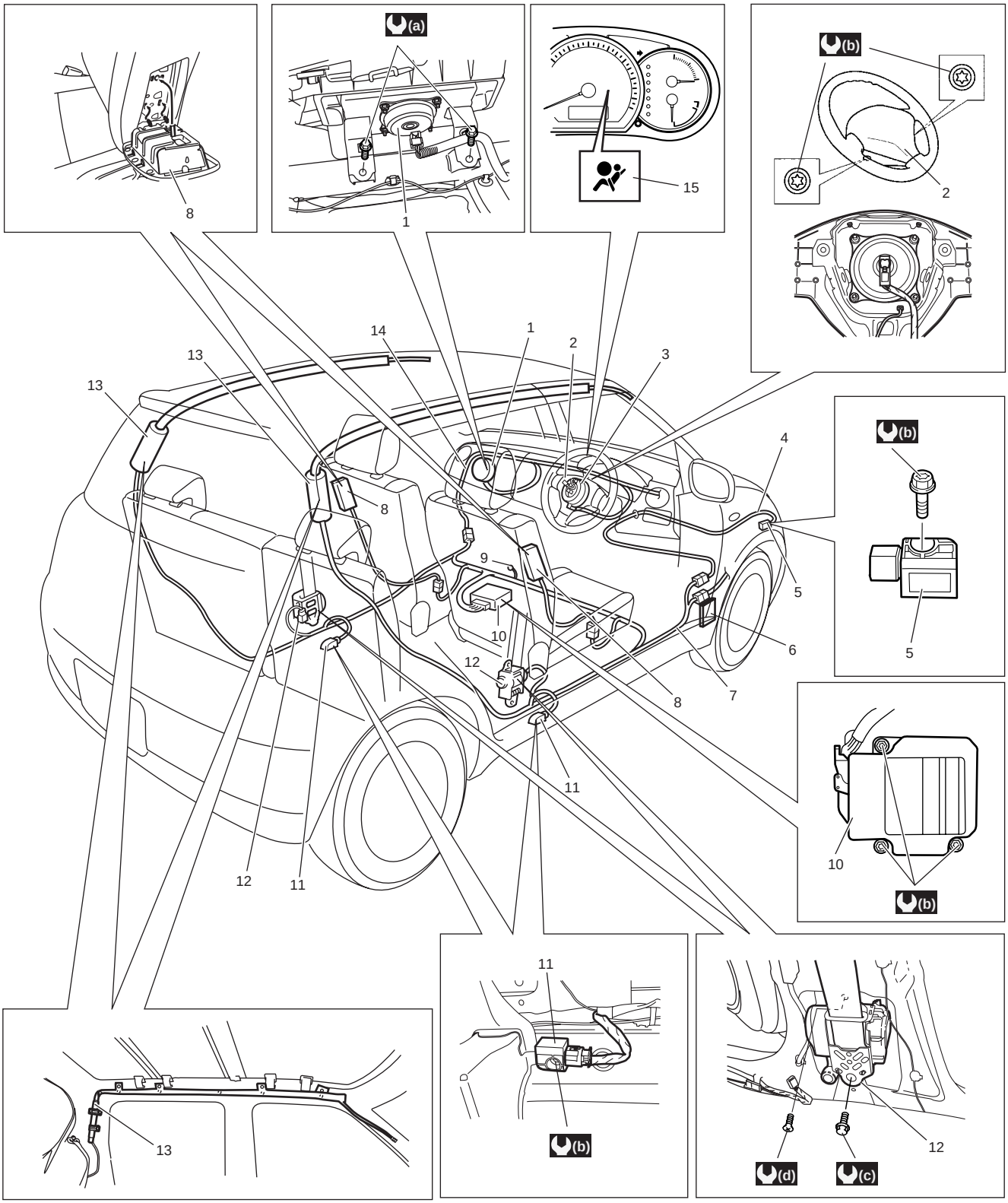
Connector “L29” (SDM connector)

Terminal	Terminal symbol	Circuit	Terminal	Terminal symbol	Circuit
L29-1	—	—	L29-27	IG	Ignition switch (power source)
L29-2	WL	“AIR BAG” warning right	L29-28	E1	Ground
L29-3	D–	Driver air bag (–)	L29-29	—	—
L29-4	D+	Driver air bag (+)	L29-30	—	—
L29-5	P+	Passenger air bag (+)	L29-31	—	—
L29-6	P–	Passenger air bag (–)	L29-32	ST	DLC
L29-7	DP–	Driver seat belt pretensioner (–)	L29-33	—	—
L29-8	DP+	Driver seat belt pretensioner (+)	L29-34	—	—
L29-9	PP+	Passenger seat belt pretensioner (+)	L29-35	—	—
L29-10	PP–	Passenger seat belt pretensioner (–)	L29-36	—	—
L29-11	DS–	Driver side-air bag (–) (If equipped)	L29-37	ADS	Air bag deployed signal for BCM
L29-12	DS+	Driver side-air bag (+) (If equipped)	L29-38	—	—
L29-13	PS+	Passenger side-air bag (+) (If equipped)	L29-39	—	—
L29-14	PS–	Passenger side-air bag (–) (If equipped)	L29-40	—	—
L29-15	—	—	L29-41	—	—
L29-16	—	—	L29-42	—	—
L29-17	—	—	L29-43	—	—
L29-18	—	—	L29-44	SP–	Passenger side-sensor (–)
L29-19	DC–	Driver side curtain-air bag (–)	L29-45	SP+	Passenger side-sensor (+)
L29-20	DC+	Driver side curtain-air bag (+)	L29-46	SD+	Driver side-sensor (+)
L29-21	PC+	Passenger side curtain-air bag (+)	L29-47	SD–	Driver side-sensor (–)
L29-22	PC–	Passenger side curtain-air bag (–)	L29-48	—	—
L29-23	—	—	L29-49	—	—
L29-24	—	—	L29-50	FD+	Forward-sensor (+)
L29-25	—	—	L29-51	FD–	Forward-sensor (–)
L29-26	—	—	—	—	—

Component Location

Air Bag System Components, Wiring and Connectors Location

S7RS0B8203001



I4RS0A820007-01

1. Passenger air bag (inflator) module	8. Side-air bag (inflator) module (if equipped)	15. "AIR BAG" warning right
2. Driver air bag (inflator) module	9. Ground for air bag system	(a) : 23 N·m (2.3 kgf-m, 16.5 lb-ft)
3. Contact coil assembly	10. SDM	(b) : 9 N·m (0.9 kgf-m, 6.5 lb-ft)
4. Air bag harness in main harness	11. side-sensor (if equipped)	(c) : 43 N·m (4.3 kgf-m, 31.5 lb-ft)
5. Forward-sensor	12. Seat belt pretensioner	(d) : 5.5 N·m (0.55 kgf-m, 4.0 lb-ft)

6. “A/BAG” fuse in junction block assembly (including BCM)	13. Side curtain-air bag (inflator) module (if equipped)	
7. Air bag harness in floor harness	14. Air bag harness in instrument panel harness	

Diagnostic Information and Procedures

Air Bag Diagnostic System Check

S7RS0B8204001

⚠ WARNING

To avoid deployment when troubleshooting the air bag system, do not use electrical test equipment such as a battery powered or AC powered voltmeter, ohmmeter, etc., or any type of electrical equipment other than that specified in this manual. Do not use a non-powered probe type tester.
Instructions in this manual must be followed carefully, otherwise personal injury may result.

⚠ CAUTION

The order in which DTCs are diagnosed is very important. Failure to diagnose the DTCs in the order specified may result in extended diagnostic time, incorrect diagnosis and incorrect parts replacement.

The diagnostic procedures used are designed to find and repair air bag system malfunctions.
To get the best results, it is important to use the diagnostic flow and follow the sequence in the following.

1) Perform the “Air Bag Diagnostic System Check Flow”.
(The “Air Bag Diagnostic System Check Flow” must be the starting point of any air bag system diagnosis. The “Air Bag Diagnostic System Check Flow” checks for proper “AIR BAG” warning right operation through “AIR BAG” warning right and whether air bag DTCs exist.)
2) Refer to the proper diagnostic flow as directed by the “Air Bag Diagnostic System Check Flow”.
(The “Air Bag Diagnostic System Check Flow” will lead you to the correct flow to diagnose any air bag system malfunctions. Bypassing these procedures may result in extended diagnostic time, incorrect diagnosis and incorrect parts replacement.)
3) Repeat the “Air Bag Diagnostic System Check Flow” after any repair or diagnostic procedures have been performed.
(Performing the “Air Bag Diagnostic System Check Flow” after all repair or diagnostic procedures will ensure that the repair has been made correctly and that no other malfunctions exist.)

Air Bag Diagnostic System Check Flow

S7RS0B8204002

Flow test description
Step 1: Check that “AIR BAG” warning right lights.
Step 2: Check that “AIR BAG” warning right lights.
Step 3: Check that “AIR BAG” warning right flashes 6 times after ignition switch is turned ON.
Step 4: Check that history codes are in SDM memory.
Step 5: Check that current code is in SDM memory.

Step	Action	Yes	No
1	1) Make sure that battery voltage is about 11 V or higher. 2) Note “AIR BAG” warning right as ignition switch is turned ON. *Does “AIR BAG” warning right come ON when ignition switch is turned ON?*	Go to Step 2.	Proceed to ““AIR BAG” Warning Right Does Not Come ON”.
2	*Does “AIR BAG” warning right come ON steady?*	Proceed to ““AIR BAG” Warning Right Comes ON Steady”.	Go to Step 3.
3	*Does “AIR BAG” warning right turn OFF, after flashing 6 times?*	“AIR BAG” warning right circuit is in good condition. Go to Step 4.	“AIR BAG” warning right circuit is in good condition. Go to Step 5.

Step	Action	Yes	No
4	1) Check DTC using SUZUKI scan tool referring to “DTC Check”. *Is “NO CODES” displayed on SUZUKI scan tool?*	Air bag system is in good condition.	An intermittent trouble has occurred at some place. Check the connector harness, etc. related to the sensed DTC. Refer to “Inspection of Intermittent and Poor Connections”. Then clear DTC (referring to “DTC Clearance”.) and repeat this flow.
5	Check DTC using SUZUKI scan tool, referring to “DTC Check”. *Is “NO CODES” displayed on SUZUKI scan tool?*	Substitute a known-good SDM and recheck.	Check and repair according to flow corresponding to that DTC.

DTC Table

S7RS0B8204003

SDM DTC

DTC	Diagnosis		
—	Normal		—
☞ B1013	SDM	SDM fault	Diagnose trouble according to diagnostic flow corresponding to each code No.
☞ B1014		“AIR BAG” warning right circuit failure	
☞ B1016	Power source voltage	Too high	
☞ B1017		Too low	
☞ B1021	SDM	Front air bag module exploded	
☞ B1024		Driver side-air bag module exploded	
☞ B1025		Passenger side-air bag module exploded	
☞ B1026		Pretensioner activated	
☞ B1027		Reusable number exceeded	
☞ B1031	Driver air bag circuit	Resistance high	
☞ B1032		Resistance low	
☞ B1033		Short to ground	
☞ B1034		Short to power circuit	

DTC	Diagnosis		
☞ B1041	Passenger air bag circuit	Resistance high	
☞ B1042		Resistance low	
☞ B1043		Short to ground	
☞ B1044		Short to power circuit	
☞ B1051	Driver pretensioner circuit	Resistance high	
☞ B1052		Resistance low	
☞ B1053		Short to ground	
☞ B1054		Short to power circuit	
☞ B1055	Passenger pretensioner circuit	Resistance high	
☞ B1056		Resistance low	
☞ B1057		Short to ground	
☞ B1058		Short to power circuit	
☞ B1061	Driver side-air bag	Resistance high	
☞ B1062		Resistance low	
☞ B1063		Short to ground	
☞ B1064		Short to power circuit	
☞ B1065	Passenger side-air bag	Resistance high	
☞ B1066		Resistance low	
☞ B1067		Short to ground	
☞ B1068		Short to power circuit	
☞ B1071	Forward-sensor circuit	Performance problem	
☞ B1072		Communication error	
☞ B1073		Short to ground	
☞ B1074		Short to power circuit or open	

DTC	Diagnosis		
☞ B1081	Driver side-sensor	Performance problem	Diagnose trouble according to diagnostic flow corresponding to each code No.
☞ B1082		Communication error	
☞ B1083		Short to ground	
☞ B1084		Short to power circuit or open	
☞ B1085		Wrong assembly	
☞ B1091	Passenger side-sensor	Performance problem	
☞ B1092		Communication error	
☞ B1093		Short to ground	
☞ B1094		Short to power circuit or open	
☞ B1095		Wrong assembly	
☞ B1361	Driver side curtain-air bag circuit	Resistance high	
☞ B1362		Resistance low	
☞ B1363		Short to ground	
☞ B1364		Short to power circuit	
☞ B1365	Passenger side curtain-air bag circuit	Resistance high	
☞ B1366		Resistance low	
☞ B1367		Short to ground	
☞ B1368		Short to power circuit	

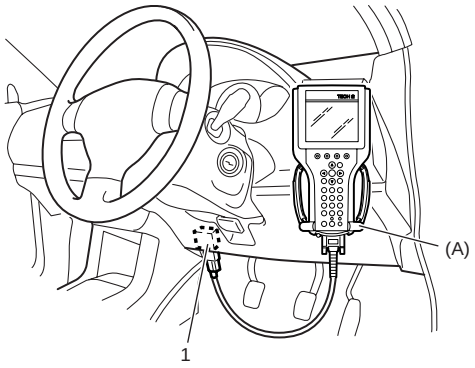
DTC Check

S7RS0B8204004

1) Turn ignition switch to OFF position.
2) Connect SUZUKI scan tool to data link connector (DLC) located on underside of instrument panel at driver's seat side.

   Special tool
   (A): SUZUKI scan tool

3) Turn ignition switch to ON position.
4) Read DTC according to instructions displayed on SUZUKI scan tool and print it or write it down. Refer to SUZUKI scan tool operator's manual for further details.
   If communication between scan tool and SDM is not possible, check if scan tool is communicable by connecting it to SDM in another vehicle. If communication is possible in this case, scan tool is in good condition. Then check data link connector and serial data line (circuit) in the vehicle with which communication was not possible.
5) After completing the check, turn ignition switch to OFF position and disconnect SUZUKI scan tool from data link connector (DLC) (1).



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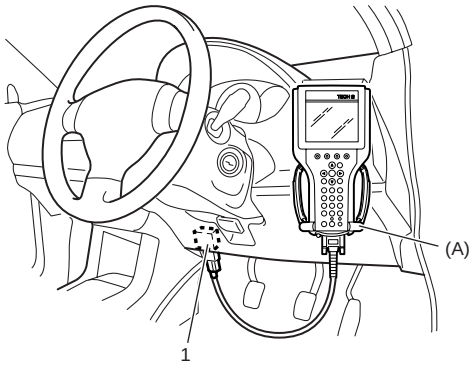
DTC Clearance

S7RS0B8204005

1) Turn ignition switch to OFF position.
2) Connect SUZUKI scan tool to data link connector (DLC) (1) in the same manner as when making this connection for DTC check.

   Special tool
   (A): SUZUKI scan tool



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3) Turn ignition switch to ON position.
4) Erase DTC according to instructions displayed on SUZUKI scan tool. Refer to SUZUKI scan tool operator's manual for further details.
5) After completing the clearance, perform "DTC Check" and confirm that normal DTC (NO CODES) is displayed and not malfunction DTC.
6) Turn ignition switch to OFF position and disconnect SUZUKI scan tool from DLC.

NOTE

If DTC B1013, DTC B1021 or DTC B1027 is stored in SDM, it is not possible to clear DTC.

Scan Tool Data

S7RS0B8204006

Data list of SDM

	Normal Condition / Reference Value
☞ Battery voltage	10 – 14 V
☞ Back up volt	27.0 – 33.0 V
☞ System ID	4ch or 8ch
☞ Driv A/B Ini Res	2.1 – 3.8 ohm
☞ Pass A/B Ini Res	1.8 – 2.8 ohm
☞ Driv Preten Ini Res	1.8 – 2.9 ohm
☞ Pass Preten Ini Res	1.8 – 2.9 ohm
☞ Driv Sidebag Ini Res	1.8 – 2.6 ohm
☞ Pass Sidebag Ini Res	1.8 – 2.6 ohm
☞ Driv curtain Ini Res	1.8 – 2.8 ohm
☞ Pass curtain Ini Res	1.8 – 2.8 ohm

Definition

Back Up Volt (V)
This parameter indicates the capacity of the backup condenser installed to maintain the ignition current (as much as possible) even when the power supply to SDM that ignites the inflator is shut off.

Battery Voltage (V)
Battery voltage is an analog input signal read by SDM.

System ID (4ch/8ch)
This parameter indicates the number of initiator circuits.

Driv A/B Ini Res (Driver air bag initiator resistance) (ohm)
This parameter indicates the resistance of the driver air bag initiator circuit.

Pass A/B Ini Res (Passenger air bag initiator resistance) (ohm)
This parameter indicates the resistance of the passenger air bag initiator circuit.

Driv Preten Ini Res (Driver pretensioner initiator resistance) (ohm)
This parameter indicates the resistance of the driver seat belt pretensioner initiator circuit.

Pass Preten Ini Res (Passenger pretensioner initiator resistance) (ohm)
This parameter indicates the resistance of the passenger seat belt pretensioner initiator circuit.

Driv Sidebag Ini Res (Driver side-air bag initiator resistance) (ohm)
This parameter indicates the resistance of the driver side-air bag initiator circuit.

Pass Sidebag Ini Res (Passenger side-air bag initiator resistance) (ohm)
This parameter indicates the resistance of the Passenger side-air bag initiator circuit.

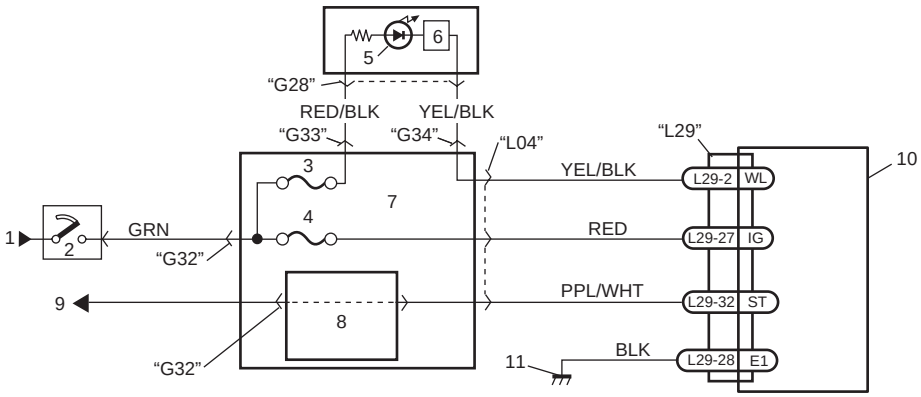
Driv curtain Ini Res (Driver side curtain-air bag initiator resistance) (ohm)
This parameter indicates the resistance of the driver side curtain-air bag initiator circuit.

Pass curtain Ini Res (Passenger side curtain-air bag initiator resistance) (ohm)
This parameter indicates the resistance of the passenger side curtain-air bag initiator circuit.

"AIR BAG" Warning Right Comes ON Steady

S7RS0B8204007

Wiring Diagram



I7RS0B820002-02

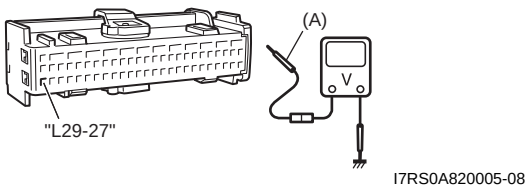
1. From main fuse	5. "AIR BAG" warning right in combination meter	9. To DLC
2. Ignition switch	6. Lamp driver	10. SDM
3. "METER" fuse	7. Junction block assembly	11. Ground for air bag system
4. "A/BAG" fuse	8. BCM	

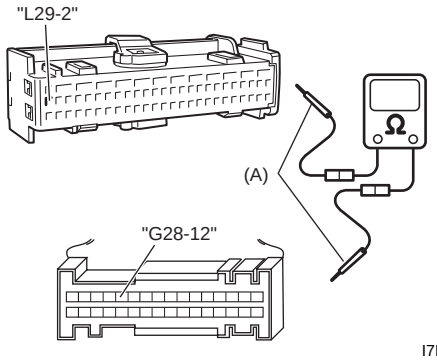
⚠ **CAUTION**

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

Flow Test Description
Step 1: Check for "A/BAG" fuse blown.
Step 2, 3: Check for loose connection between junction block assembly connector and junction block assembly.
Step 4: Check for loose connection between SDM connector and SDM.
Step 5: Check for SDM power supply circuit.
Step 6: Check for short circuit between "AIR BAG" warning right circuit and ground.

Troubleshooting

Step	Action	Yes	No
1	1) Turn ignition switch OFF. 2) Remove and inspect "A/BAG" fuse. *Is fuse good?*	Go to Step 2.	"RED" wire short to ground. After repair, replace "A/BAG" fuse.
2	1) Check for loose connection of junction block assembly connector "L04". *Is it connected securely?*	Go to Step 3.	Correct connector "L04" securely.
3	1) Check for loose connection of junction block assembly connector "G34". *Is it connected securely?*	Go to Step 4.	Correct connector "G34" securely.
4	1) Check for loose connection of SDM connector "L29". *Is it connected securely?*	Go to Step 5.	Correct connector "L29" securely.
5	1) Disconnect SDM connector "L29". 2) Check proper connection to SDM at terminal "L29-27". 3) If OK, then check voltage between "L29-27" terminal of SDM connector and body ground with ignition switch ON. **Special tool** **(A): 09932-76010**  I7RS0A820005-08 *Is it 8 V or more?*	Go to Step 6.	"RED" wire (between "A/BAG" fuse and SDM connector) open or "GRN" wire (between ignition switch and "A/BAG" fuse) open or short to ground.

Step	Action	Yes	No
6	1) Disconnect combination meter connector “G28” referring to “Combination Meter Removal and Installation in Section 9C”. 2) Check proper connection to combination meter at “YEL/BLK” terminal for “AIR BAG” warning right and to SDM at terminal “L29-2”. 3) If OK, then check resistance between “YEL/BLK” wire terminal of combination meter connector “G28” and “L29-2” terminal of SDM connector. **Special tool** **(A): 09932-76010**  *Is resistance 1 Ω or less?*	Substitute a known-good SDM and recheck. If “AIR BAG” warning right remain lighting, replace combination meter.	“YEL/BLK” wire (between combination meter and SDM connector) open or short to ground.

NOTE

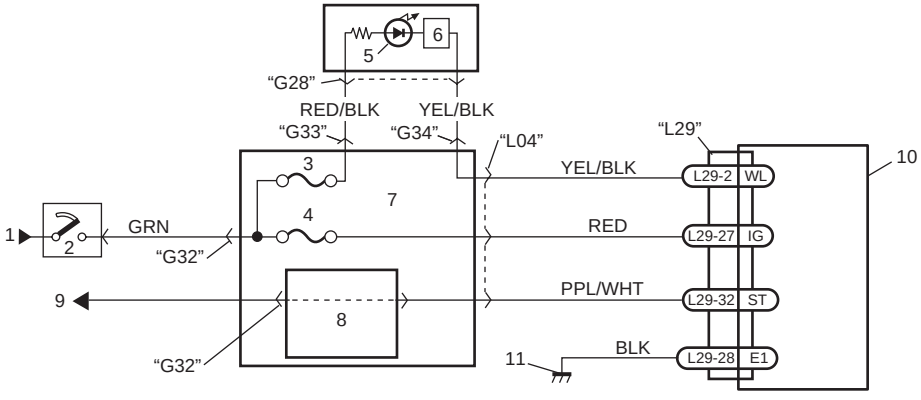
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

“AIR BAG” Warning Right Does Not Come ON

S7RS0B8204008

Wiring Diagram



I7RS0B820002-02

1. From main fuse	5. “AIR BAG” warning right in combination meter	9. To DLC
2. Ignition switch	6. Lamp driver	10. SDM
3. “METER” fuse	7. Junction block assembly	11. Ground for air bag system
4. “A/BAG” fuse	8. BCM	

⚠ CAUTION

- **Be sure to perform “Air Bag Diagnostic System Check” before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to “Inspection of Intermittent and Poor Connections”.**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

Flow Test Description
Step 1: Check combination meter power feed circuit.
Step 2: Check “AIR BAG” warning right circuit.

Troubleshooting

Step	Action	Yes	No
1	1) Set parking brake. 2) Note combination meter when ignition switch is turned ON. *Does the “BRAKE” indicator (warning right) come ON?*	Go to Step 2.	Check and correct the following possible cause. • Open circuit in “GRN” or “WHT/RED” wire. • Short circuit between “GRN” or “WHT/RED” and ground. • “METER” fuse blown.
2	1) Disconnect SDM connector “L29”. 2) Note combination meter when ignition switch is turned ON. *Does the “AIR BAG” warning right come ON?*	Substitute a known-good SDM and recheck.	“BLU/ORN” circuit shorted to power circuit. If OK, replace combination meter.

NOTE

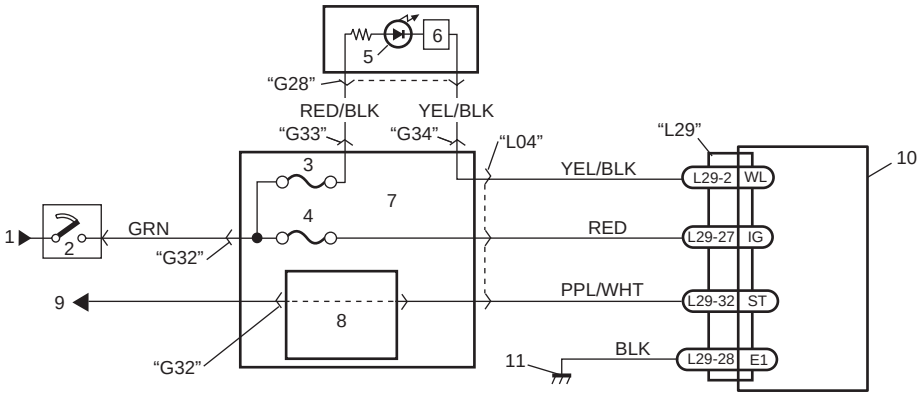
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

“AIR BAG” Warning Right Flashes

S7RS0B8204009

Wiring Diagram



I7RS0B820002-02

1. From main fuse	5. “AIR BAG” warning right in combination meter	9. To DLC
2. Ignition switch	6. Lamp driver	10. SDM
3. “METER” fuse	7. Junction block assembly	11. Ground for air bag system
4. “A/BAG” fuse	8. BCM	

⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

Flow Test Description
Check for short circuit between diagnosis switch circuit and ground.

Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect SDM connector "L29". 2) Check "L29-35" terminal of SDM. *Is it shorted to ground terminal or harness?*	Clean up terminal.	Substitute a know-good SDM and recheck.

NOTE

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Repeat "Air Bag Diagnostic System Check" to confirm that the trouble has been corrected.**

DTC B1013: SDM fault

S7RS0B8204010

DTC Will Set when
An internal SDM fault is detected by SDM.

NOTE

DTC B1013 can never be cleared once it has been set.

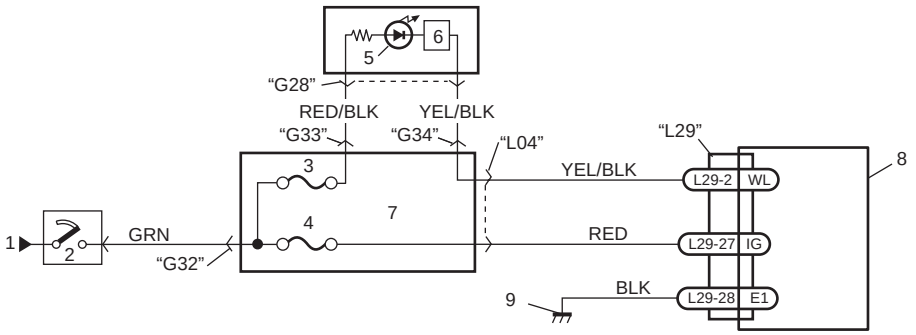
DTC Troubleshooting

1) Turn ignition switch OFF.
2) Replace SDM.
3) Repeat "Air Bag Diagnostic System Check".

DTC B1014: "AIR BAG" Warning Right Circuit Failure

S7RS0B8204011

Wiring Diagram



I7RS0B820004-04

1. From main fuse	4. "A/BAG" fuse	7. Junction block assembly
2. Ignition switch	5. "AIR BAG" warning right in combination meter	8. SDM
3. "METER" fuse	6. Lamp driver	9. Ground for air bag system

⚠ CAUTION

- **Be sure to perform “Air Bag Diagnostic System Check” before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to “Inspection of Intermittent and Poor Connections”.**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The voltage at the “AIR BAG” warning right circuit terminal “L29-2” does not match the commanded state of the warning right driver for specified time.

Flow Test Description
Step 1: This test rechecks “AIR BAG” warning right operation.
Step 2: This test rechecks whether an abnormality is in SDM.

DTC Troubleshooting

Step	Action	Yes	No
1	1) This DTC is set when there is a trouble in “AIR BAG” warning right circuit. Failure to properly perform “Air Bag Diagnostic System Check” may also result in misdiagnosis. Therefore, check “AIR BAG” warning right circuit again according to “Air Bag Diagnostic System Check”. *Is “AIR BAG” warning right circuit in good condition?*	Go to Step 2.	Repair “AIR BAG” warning right circuit.
2	1) Clear DTC referring to “DTC Clearance”. 2) Check DTC referring to “DTC Check”. *Is DTC B1014 set?*	Substitute a known-good SDM and recheck.	Recheck air bag system referring to “Air Bag Diagnostic System Check”.

NOTE

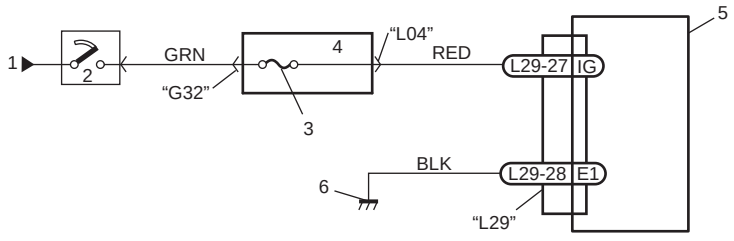
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1016: Power Source Voltage High

S7RS0B8204012

Wiring Diagram



I7RS0A820009-02

1. From main fuse	3. “A/BAG” fuse	5. SDM
2. Ignition switch	4. Junction block assembly	6. Ground for air bag system

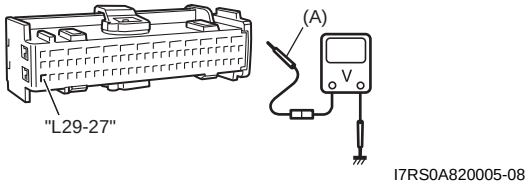
⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The power source voltage to SDM is above an approx. 21 V for specified time.

Flow Test Description
Step 1: Check if voltage applied to SDM is within normal range.
Step 2: Check if DTC B1016 still exists.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect SDM connector. 2) Check proper connection to SDM at "L29-27" terminal. 3) If OK, turn ignition switch ON and then check voltage between "L29-27" terminal on SDM connector and body ground. **Special tool** **(A): 09932-76010**  I7RS0A820005-08 *Is voltage 14 V or less?*	Go to Step 2.	Check charging system and repair as necessary referring to "Generator Test (Overcharged Battery Check) in Section 1J".
2	1) With ignition switch OFF, reconnect SDM connector. *With ignition switch ON, is DTC B1016 indicated?*	Substitute a known-good SDM and recheck.	Intermittent trouble. Check for intermittent trouble referring to "Inspection of Intermittent and Poor Connections" If OK, substitute a known-good SDM and recheck.

NOTE

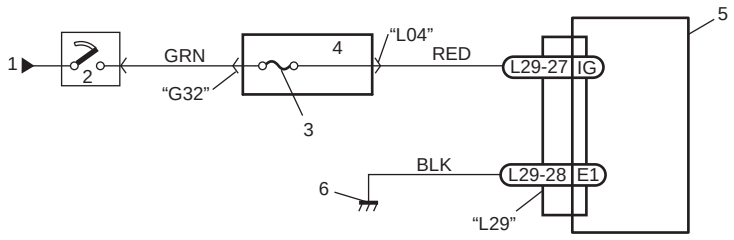
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to "DTC Clearance", if any.**
- **Repeat "Air Bag Diagnostic System Check" to confirm that the trouble has been corrected.**

DTC B1017: Power Source Voltage Low

S7RS0B8204013

Wiring Diagram



I7RS0A820009-02

1. From main fuse	3. "A/BAG" fuse	5. SDM
2. Ignition switch	4. Junction block assembly	6. Ground for air bag system

⚠ CAUTION

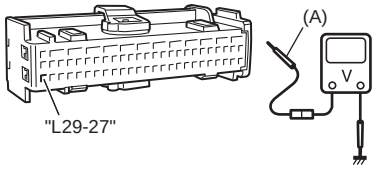
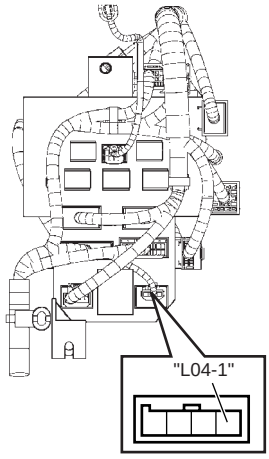
- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The power source voltage is below an approx. 8 V for specified time.

Flow Test Description
Step 1: Check if voltage on battery is within normal range.
Step 2: Check if voltage applied to SDM is within normal range.
Step 3: Check if voltage applied to "L04" connector is within normal range.
Step 4: Check if DTC B1017 still exists.

DTC Troubleshooting

Step	Action	Yes	No
1	1) Measure voltage on battery. *Is voltage 11 V or more?*	Go to Step 2.	Check charging system and repair as necessary referring to "Generator Test (Undercharged Battery Check) in Section 1J".

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector. 2) Check proper connection to SDM at “L29-27” terminal. 3) If OK, turn ignition switch ON and then check voltage between “L29-27” terminal on SDM connector and body ground. **Special tool** **(A): 09932-76010**  I7RS0A820005-08 *Is voltage 8 V or more?*	Go to Step 4.	Go to step 3.
3	1) With ignition switch OFF, disconnect on connector “L04” junction block assembly. 2) Check proper connection at “L04-1” terminal. 3) If OK, turn ignition switch ON and then check voltage between “L04-1” terminal and body ground.  I4RS0A820012-01 *Is voltage 8 V or more?*	Go to Step 4.	Check circuit from battery to “L04” connector and charging system.
4	1) With ignition switch OFF, reconnect SDM connector. *With ignition switch ON, does DTC B1017 exist?*	Substitute a known-good SDM and recheck.	Check charging system and repair as necessary referring to “Generator Test (Undercharged Battery Check) in Section 1J”.

NOTE

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1021: Front Air Bag Module Deployed

S7RS0B8204014

DTC Will Set when

The SDM detects a frontal crash of sufficient force to warrant activation of the air bag system. (SDM outputs a deployment command.)

Flow Test Description

Step 1: Check that DTC B1021 has been set although air bag has not been deployed.
Step 2: Check that DTC has been set due to failure of SDM.

NOTE

Before executing items in this flow, be sure to perform "Air Bag Diagnostic System Check".

DTC Troubleshooting

Step	Action	Yes	No
1	1) Turn ignition switch OFF. *Has air bag deployed?*	Replace components and perform inspections as directed in "Repair and Inspection Required after Accident".	Go to Step 2.
2	1) Inspect front of vehicle and undercarriage for signs of impact. *Are there signs of impact?*	Replace components and perform inspections as directed in "Repair and Inspection Required after Accident".	Substitute a known-good SDM and recheck.

NOTE

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Repeat "Air Bag Diagnostic System Check" to confirm that the trouble has been corrected.**
- **Clear DTCs of BCM referring to "DTC Clearance in Section 10B"**

DTC B1024 / B1025: Side-Air Bag (Driver / Passenger) Deployed

S7RS0B8204015

DTC Will Set when

The SDM detects a sideward crash (driver or passenger side) of sufficient force to warrant activation of the side-air bag system (driver or passenger). (SDM outputs a deployment command.)

Flow Test Description

Step 1: Check that DTC B1024 or B1025 has been set although side-air bag has not been deployed.
Step 2: Check that DTC has been set due to failure of SDM.

NOTE

Before executing items in this flow, be sure to perform "Air Bag Diagnostic System Check".

DTC Troubleshooting

Step	Action	Yes	No
1	1) Turn ignition switch OFF. *Has air bag deployed?*	Replace components and perform inspections as directed in “Repair and Inspection Required after Accident”.	Go to Step 2.
2	1) Inspect front of vehicle and undercarriage for signs of impact. *Are there signs of impact?*	Replace components and perform inspections as directed in “Repair and Inspection Required after Accident”.	Substitute a known-good SDM and recheck.

NOTE

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**
- **Clear DTCs of BCM referring to “DTC Clearance in Section 10B”**

DTC B1026: Pretensioner Activated

S7RS0B8204016

DTC Will Set when

The SDM detects a frontal crash of sufficient force to warrant activation of the pretensioner. (SDM outputs a deployment command.)

Flow Test Description

Step 1: Check that DTC B1026 has been set although pretensioner has not been activated.
Step 2: Check that DTC has been set due to failure of SDM.

NOTE

Before executing items in this flow, be sure to perform “Air Bag Diagnostic System Check”.

DTC Troubleshooting

Step	Action	Yes	No
1	1) Turn ignition switch OFF. *Has pretensioner activated?*	Replace components and perform inspections as directed in “Repair and Inspection Required after Accident”.	Go to Step 2.
2	1) Inspect front of vehicle and undercarriage for signs of impact. *Are there signs of impact?*	Replace components and perform inspections as directed in “Repair and Inspection Required after Accident”.	Substitute a known-good SDM and recheck.

NOTE

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**
- **Clear DTCs of BCM referring to “DTC Clearance in Section 10B”**

DTC B1027: Reusable Number Exceeded

S7RS0B8204017

DTC Will Set when

The SDM has not been replaced though the side-air bag developed several times in the past.

NOTE

DTC B1027 can never be cleared once it has been set.

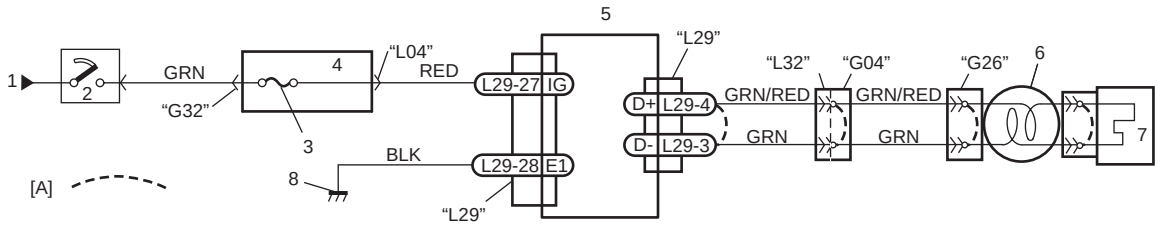
DTC Trouble shooting

1) Turn ignition switch OFF.
2) Replace SDM.
3) Repeat “Air Bag Diagnostic System Check”.

DTC B1031: Driver Air Bag Initiator Circuit Resistance High

S7RS0B8204018

Wiring Diagram



I7RS0A820010-07

[A]: Shorting bar	3. “A/BAG” fuse	6. Contact coil assembly
1. From main fuse	4. Junction block assembly	7. Driver air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

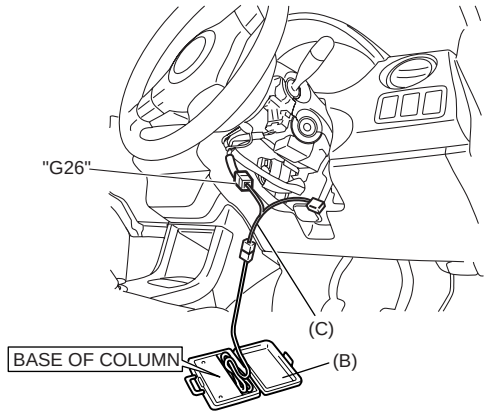
⚠ CAUTION

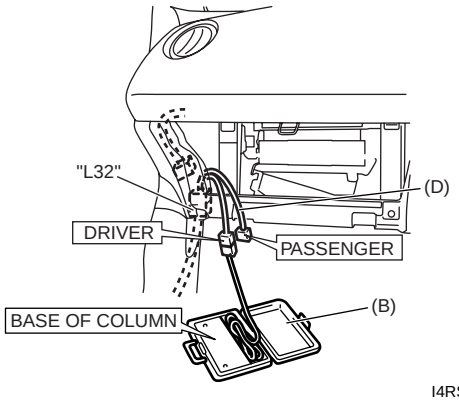
- **Be sure to perform “Air Bag Diagnostic System Check” before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to “Inspection of Intermittent and Poor Connections”.**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

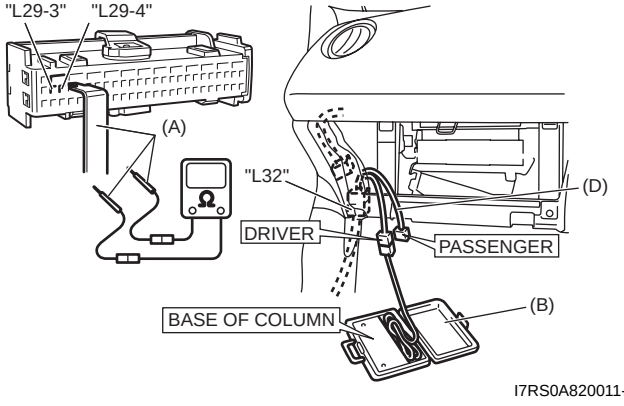
DTC Will Set when
The combined resistance of the driver air bag (inflator) module, contact coil assembly, harness wiring and connector terminal contact is above a specified value for specified time.

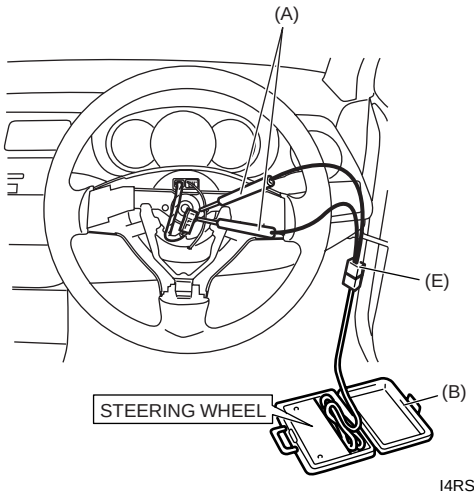
Flow Test Description
Step 1: Check whether malfunction is in contact coil and driver air bag (inflator) module or the others.
Step 2: Check driver air bag (inflator) module initiator circuit. (in instrument panel and floor harness)
Step 3: Check driver air bag (inflator) module initiator circuit. (in floor harness)
Step 4: Check whether malfunction is in contact coil or driver air bag (inflator) module.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect contact coil connector located under of the steering column. 2) Check proper connection to contact coil at terminal in “G26” connector. 3) If OK, then connect special tools (B) and (C) to “G26” connector disconnected in Step 1). **Special tool** **(B): 09932-75010** **(C): 09932–78340**  I4RS0A820014-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1031 indicated?*	Go to Step 2.	Go to Step 4.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect “L32” connector located near the glove box. 2) Check proper connection to floor harness connector at terminal “L32-1” and “L32-2”. 3) If OK, then connect special tools (B) and (D) to “L32” connector. **Special tool** **(B): 09932–75010** **(D): 09932–77320**  I4RS0A820015-01 4) Check SDM DTC. **NOTE** **At this time, DTC B1041 may be output, but it is not related to this check.** *With ignition switch ON, is DTC B1031 indicated?*	Go to Step 3.	High resistance or open wire in “GRN/RED” or “GRN” circuit in instrument panel harness.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect SDM connector “L29”. 2) Check proper connection to SDM at terminals “L29-3” and “L29-4”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “L29-3” and “L29-4” terminals with connected special tools (B) and (D). **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(D): 09932–77320**  *Is resistance 3.85 Ω or less?*	Substitute a known-good SDM and recheck.	High resistance or open wire in “GRN/RED” or “GRN” circuit in floor harness.

Step	Action	Yes	No
4	1) With ignition switch OFF, disconnect special tools (B) and (C) from “G26” connector and then reconnect contact coil connector located under of the steering column. 2) Remove driver air bag (inflator) module from steering wheel referring to “Driver Air Bag (Inflator) Module Removal and Installation”. 3) Check proper connection to driver air bag (inflator) module connector. 4) If OK, then connect special tools (A), (B) and (E) to driver air bag (inflator) module connector. **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932–78340** **(E): 09932-78310**  I4RS0A820017-01 5) Check SDM DTC. *With ignition switch ON, is DTC B1031 indicated?*	Turn ignition switch OFF. Replace contact coil assembly referring to “Contact Coil Cable Assembly Removal and Installation in Section 6B”.	Turn ignition switch OFF. Replace driver air bag (inflator) module referring to “Driver Air Bag (Inflator) Module Removal and Installation”.

NOTE

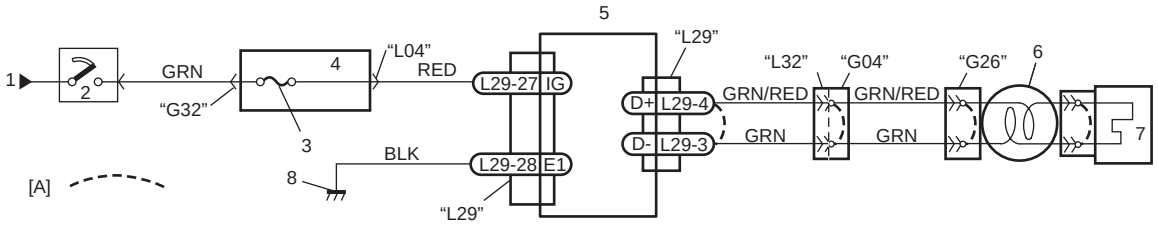
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1032: Driver Air Bag Initiator Circuit Resistance Low

S7RS0B8204019

Wiring Diagram



I7RS0A820010-07

[A]: Shorting bar	3. "A/BAG" fuse	6. Contact coil assembly
1. From main fuse	5. Junction block assembly	7. Driver air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

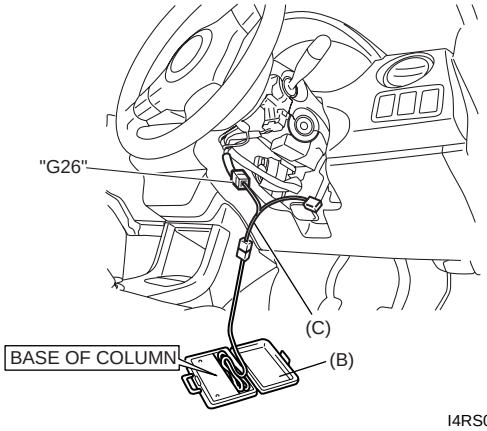
DTC Will Set when

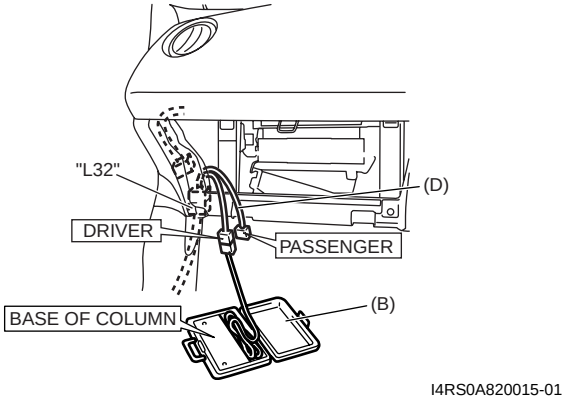
The combined resistance of the driver air bag (inflator) module, contact coil assembly, harness wiring and connector terminal contact is below a specified value for specified time.

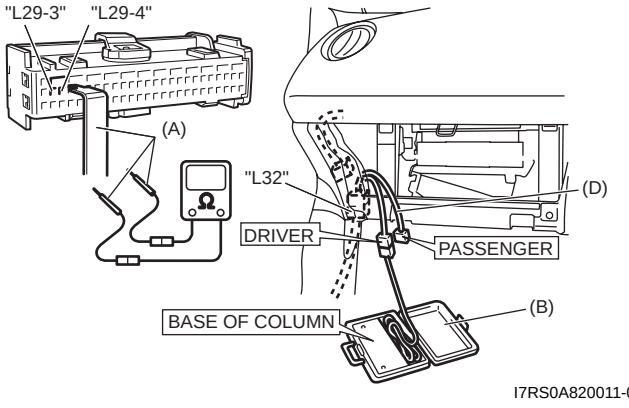
Flow Test Description

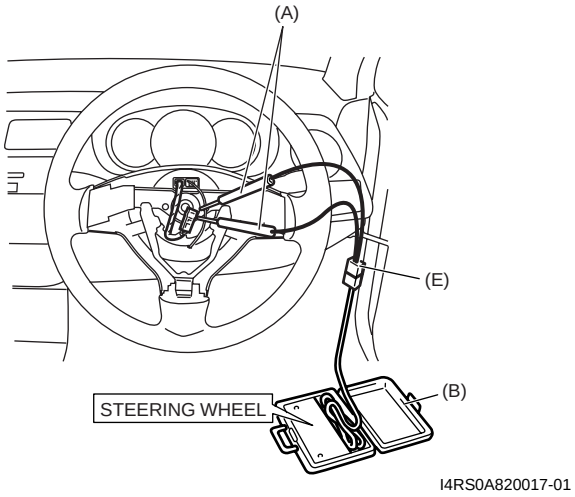
Step 1: Check whether malfunction is in contact coil and driver air bag (inflator) module or the others.
Step 2: Check driver air bag (inflator) module initiator circuit. (in instrument panel and floor harness)
Step 3: Check driver air bag (inflator) module initiator circuit. (in floor harness)
Step 4: Check whether malfunction is in contact coil or driver air bag (inflator) module.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect contact coil connector located under of the steering column. 2) Check proper connection to contact coil at terminal in “G26” connector. 3) If OK, then connect special tools (B) and (C) to “G26” connector disconnected in Step 1). **Special tool** **(B): 09932-75010** **(C): 09932–78340**  I4RS0A820014-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1032 indicated?*	Go to Step 2.	Go to Step 4.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect “L32” connector located near the glove box. 2) Check proper connection to floor harness connector at terminal “L32-1” and “L32-2”. 3) If OK, then connect special tools (B) and (D) to “L32” connector. **Special tool** **(B): 09932–75010** **(D): 09932–77320**  I4RS0A820015-01 4) Check SDM DTC. **NOTE** **At this time, DTC B1041 may be output, but it is not related to this check.** *With ignition switch ON, is DTC B1032 indicated?*	Go to Step 3.	“GRN/RED” circuit shorted to “GRN” circuit, “GRN/RED” circuit or “GRN” circuit shorted to other circuit in instrument panel harness.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect SDM connector “L29”. 2) Check proper connection to SDM at terminals “L29-3” and “L29-4”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “L29-3” and “L29-4” terminals with connected special tool (B) and (D). **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(D): 09932–77320**  I7RS0A820011-03 *Is resistance 2.1 Ω or more?*	Substitute a known-good SDM and recheck.	“GRN/RED” circuit shorted to “GRN” circuit, “GRN/RED” circuit or “GRN” circuit shorted to other circuit in floor harness.

Step	Action	Yes	No
4	1) With ignition switch OFF, disconnect special tools (B) and (C) from "G26" connector and reconnect contact coil connector located under of the steering column. 2) Remove driver air bag (inflator) module from steering column referring to "Driver Air Bag (Inflator) Module Removal and Installation". 3) Check proper connection to driver air bag (inflator) module connector. 4) If OK, then connect special tools (A), (B) and (E) to driver air bag (inflator) module connector. **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932–78340** **(E): 09932-78310**  I4RS0A820017-01 5) Check SDM DTC. *With ignition switch ON, is DTC B1032 indicated?*	Turn ignition switch OFF. Replace contact coil assembly referring to "Contact Coil Cable Assembly Removal and Installation in Section 6B".	Turn ignition switch OFF. Replace driver air bag (inflator) module referring to "Driver Air Bag (Inflator) Module Removal and Installation".

NOTE

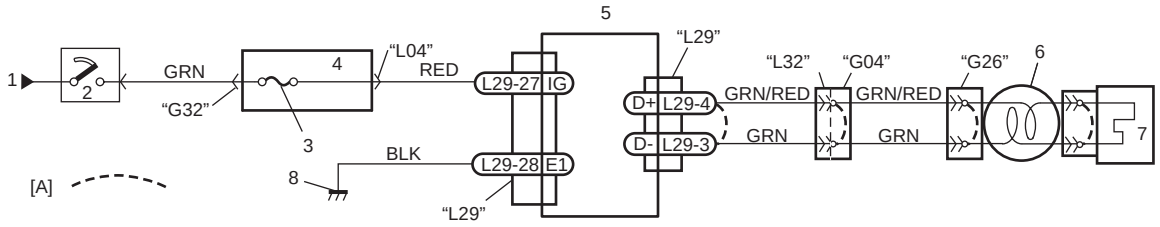
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to "DTC Clearance", if any.**
- **Repeat "Air Bag Diagnostic System Check" to confirm that the trouble has been corrected.**

DTC B1033: Driver Air Bag Initiator Circuit Short to Ground

S7RS0B8204020

Wiring Diagram



I7RS0A820010-07

[A]: Shorting bar	3. "A/BAG" fuse	6. Contact coil assembly
1. From main fuse	4. Junction block assembly	7. Driver air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

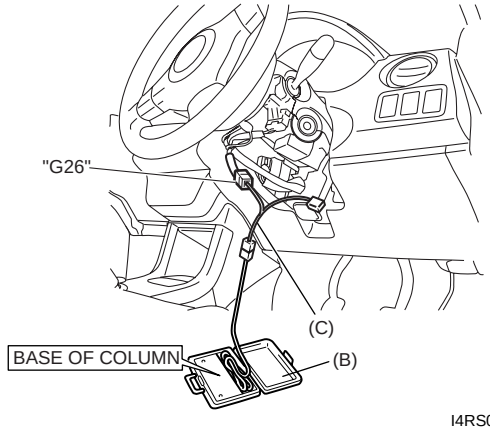
DTC Will Set when

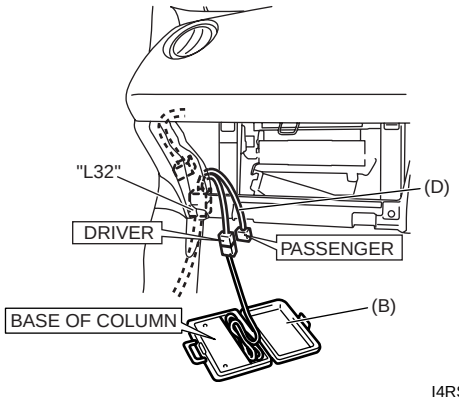
The voltage measured at driver air bag initiator circuit is below a specified value for specified time.

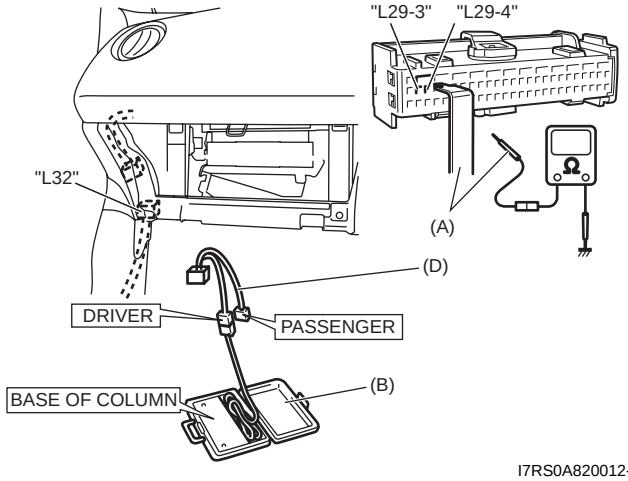
Flow Test Description

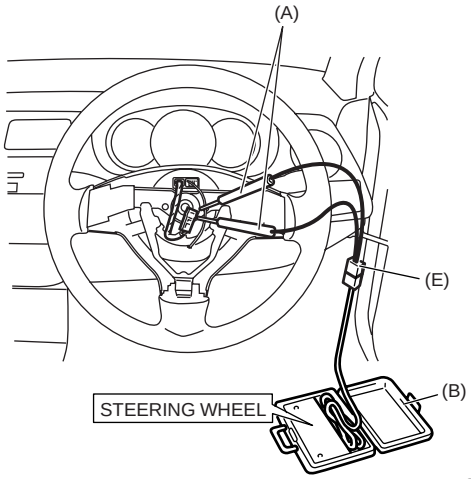
Step 1: Check whether malfunction is in contact coil and driver air bag (inflator) module or the others.
Step 2: Check driver air bag (inflator) module initiator circuit. (in instrument panel and floor harness)
Step 3: Check driver air bag (inflator) module initiator circuit. (in floor harness)
Step 4: Check whether malfunction is in contact coil or driver air bag (inflator) module.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect contact coil connector located under of the steering column. 2) Check proper connection to contact coil at terminal in “G26” connector. 3) If OK, then connect special tools (B) and (C) to “G26” connector disconnected in Step 1). **Special tool** **(B): 09932-75010** **(C): 09932–78340**  I4RS0A820014-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1033 indicated?*	Go to Step 2.	Go to Step 4.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect “L32” connector located near the glove box. 2) Check proper connection to floor harness connector at terminal “L32-1” and “L32-2”. 3) If OK, then connect special tools (B) and (D) to “L32” connector. **Special tool** **(B): 09932–75010** **(D): 09932–77320**  I4RS0A820015-01 4) Check SDM DTC. **NOTE** **At this time, DTC B1041 may be output, but it is not related to this check.** *With ignition switch ON, is DTC B1033 indicated?*	Go to Step 3.	“GRN/RED” circuit or “GRN” circuit shorted to ground in instrument panel harness.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect special tools (B) and (D) from “L32” connector and SDM connector “L29” from SDM respectively. 2) Release Shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure resistance between “L29-3” terminal and body ground and between “L29-4” terminal and body ground. **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(D): 09932–78340**  I7RS0A820012-03 *Are resistances infinity?*	Substitute a known-good SDM and recheck.	“GRN/RED” circuit or “GRN” circuit shorted to ground in floor harness.

Step	Action	Yes	No
4	1) With ignition switch OFF, disconnect special tools (B) and (C) from “G26” connector and reconnect contact coil connector located under of the steering column. 2) Remove driver air bag (inflator) module from steering column referring to “Driver Air Bag (Inflator) Module Removal and Installation”. 3) Check proper connection to driver air bag (inflator) module connector. 4) If OK, then connect special tools (A), (B) and (E) to driver air bag (inflator) module connector. **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932–78340** **(E): 09932-78310**  I4RS0A820017-01 5) Check SDM DTC. *With ignition switch ON, is DTC B1033 indicated?*	Turn ignition switch OFF. Replace contact coil assembly referring to “Contact Coil Cable Assembly Removal and Installation in Section 6B”.	Turn ignition switch OFF. Replace driver air bag (inflator) module referring to “Driver Air Bag (Inflator) Module Removal and Installation”.

NOTE

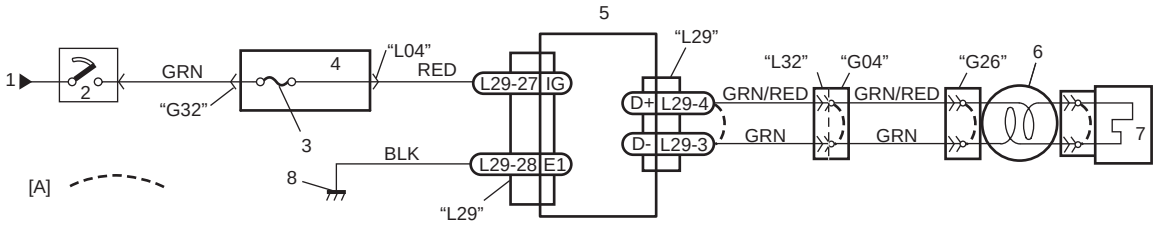
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1034: Driver Air Bag Initiator Circuit Short to Power Circuit

S7RS0B8204021

Wiring Diagram



I7RS0A820010-07

[A]: Shorting bar	3. "A/BAG" fuse	6. Contact coil assembly
1. From main fuse	4. Junction block assembly	7. Driver air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

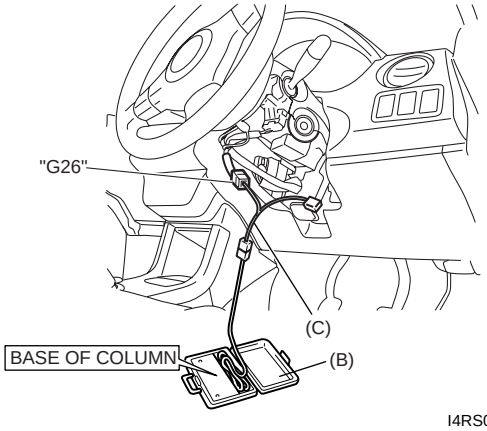
DTC Will Set when

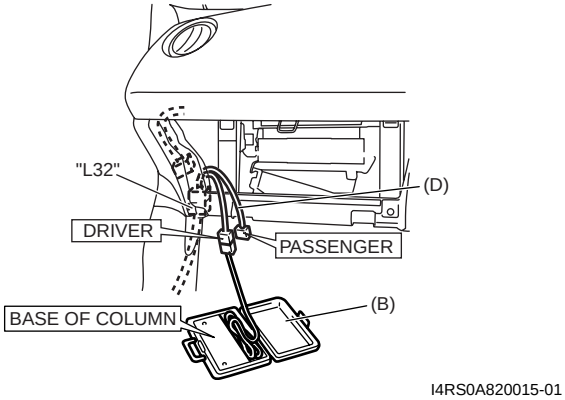
The voltage measured at driver air bag initiator circuit is above a specified value for specified time.

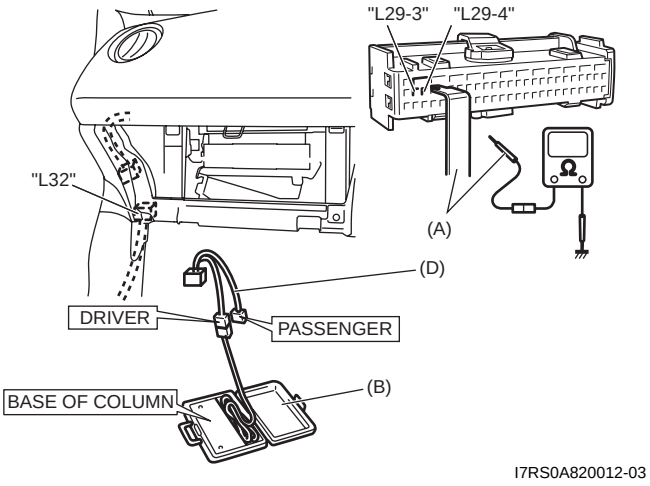
Flow Test Description

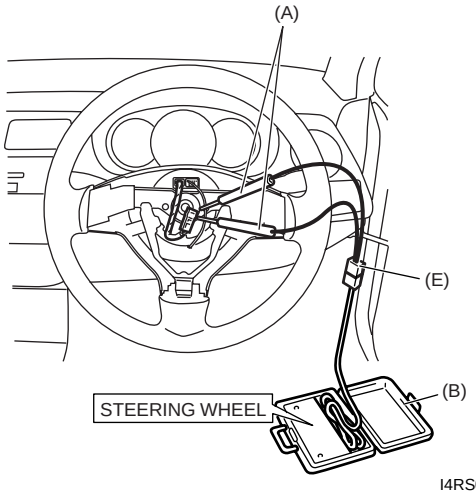
Step 1: Check whether malfunction is in contact coil and driver air bag (inflator) module or the others.
Step 2: Check driver air bag (inflator) module initiator circuit.
Step 3: Check whether malfunction is in contact coil or driver air bag (inflator) module.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect contact coil connector located under of the steering column. 2) Check proper connection to contact coil at terminal in “G26” connector. 3) If OK, then connect special tools (B) and (C) to “G26” connector disconnected in Step 1). **Special tool** **(B): 09932-75010** **(C): 09932–78340**  I4RS0A820014-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1034 indicated?*	Go to Step 2.	Go to Step 4.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect “L32” connector located near the glove box. 2) Check proper connection to floor harness connector at terminal “L32-1” and “L32-2”. 3) If OK, then connect special tools (B) and (D) to “L32” connector. **Special tool** **(B): 09932–75010** **(D): 09932–77320**  I4RS0A820015-01 4) Check SDM DTC. **NOTE** **At this time, DTC B1041 may be output, but it is not related to this check.** *With ignition switch ON, is DTC B1034 indicated?*	Go to Step 3.	“GRN/RED” circuit or “GRN” circuit shorted to power supply circuit in instrument panel harness.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect special tools (B) and (D) from “L32” connector and SDM connector “L29” from SDM respectively. 2) Release Shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure voltage from “L29-3” terminal to body ground and between “L29-4” terminal to body ground. **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(D): 09932–77320**  I7RS0A820012-03 *With ignition switch ON, is each measured value 1 V or less?*	Substitute a known-good SDM and recheck.	“GRN/RED” circuit or “GRN” circuit shorted to power supply circuit.

Step	Action	Yes	No
4	1) With ignition switch OFF, disconnect special tools (B) and (C) from "G26" connector and reconnect contact coil connector located under of the steering column. 2) Remove driver air bag (inflator) module from steering column referring to "Driver Air Bag (Inflator) Module Removal and Installation". 3) Check proper connection to driver air bag (inflator) module connector. 4) If OK, then connect special tools (A), (B) and (E) to driver air bag (inflator) module. **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932–78340** **(E): 09932-78310**  I4RS0A820017-01 5) Check SDM DTC. *With ignition switch ON, is DTC B1034 indicated?*	Turn ignition switch OFF. Replace contact coil assembly referring to "Contact Coil Cable Assembly Removal and Installation in Section 6B".	Turn ignition switch OFF. Replace driver air bag (inflator) module referring to "Driver Air Bag (Inflator) Module Removal and Installation".

NOTE

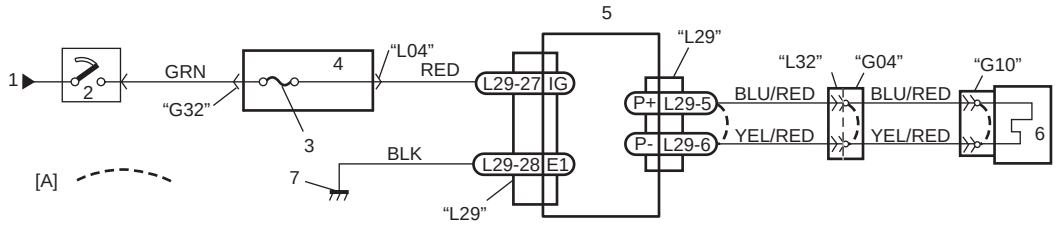
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to "DTC Clearance", if any.**
- **Repeat "Air Bag Diagnostic System Check" to confirm that the trouble has been corrected.**

DTC B1041: Passenger Air Bag Initiator Circuit Resistance High

S7RS0B8204022

Wiring Diagram



I7RS0A820013-06

[A]: Shorting bar	3. "A/BAG" fuse	6. Passenger air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Ground for air bag system
2. Ignition switch	5. SDM	

⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adaptor from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

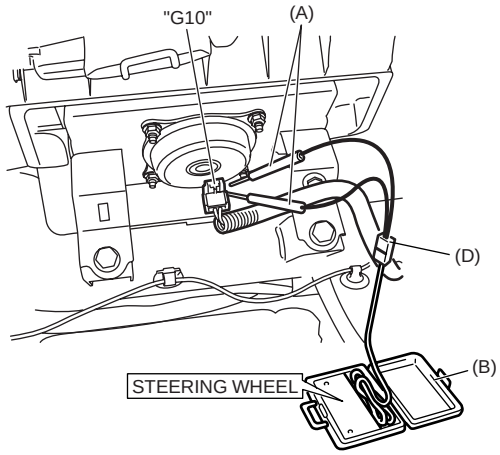
DTC Will Set when

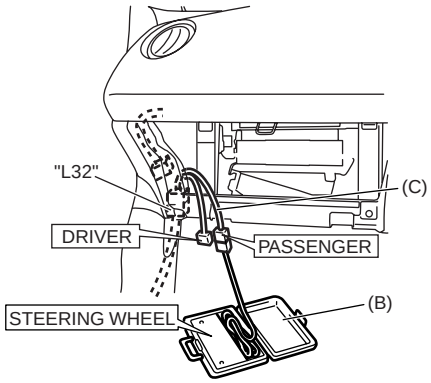
The combined resistance of the passenger air bag (inflator) module, harness wiring and connector terminal contact is above a specified value for specified time.

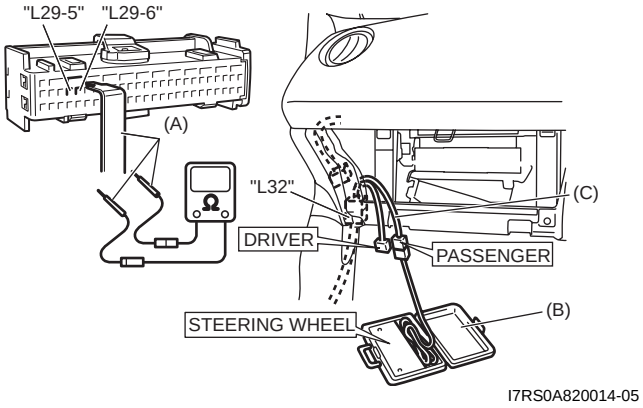
Flow Test Description

Step 1: Check if malfunction is in passenger air bag (inflator) module.
Step 2: Check passenger air bag (inflator) module initiator circuit. (in instrument panel harness)
Step 3: Check passenger air bag (inflator) module initiator circuit. (in floor harness)

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect passenger air bag (inflator) module connector. 2) Check proper connection to passenger air bag (inflator) module at terminals in “G10” connector. 3) If OK, then connect special tools (A), (B) and (D) to “G10” connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(D): 09932–78310**  I4RS0A820021-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1041 indicated?*	Go to Step 2.	Turn ignition switch OFF. Replace passenger air bag (inflator) module referring to “Passenger Air Bag (Inflator) Module Removal and Installation”.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect “L32” connector located near the glove box. 2) Check proper connection to floor harness connector at terminal “L32-3” and “L32-4”. 3) If OK, then connect special tools (B) and (C) to “L32” connector disconnected in Step 1). **Special tool** **(B): 09932-75010** **(C): 09932–77320**  I4RS0A820022-01 4) Check SDM DTC. **NOTE** **At this time, DTC B1031 may be output, but it is not related to this check.** *With ignition switch ON, is DTC B1041 indicated?*	Go to Step 3.	High resistance or open wire “BLU/RED” or “YEL/RED” circuit in instrument panel harness.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect SDM connector “L29”. 2) Check proper connection to SDM at terminals “L29-5” and “L29-6”. 3) If OK, release shorting bar in SDM connector inserting release too (1) included in special tool (A). 4) Measure resistance between “L29-5” and “L29-6” terminals with connected special tools (B) and (C). **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932–77320**  I7RS0A820014-05 *Is resistance 2.82 Ω or less?*	Substitute a known-good SDM and recheck.	High resistance or open wire in “BLU/RED” or “YEL/RED” circuit in floor harness.

NOTE

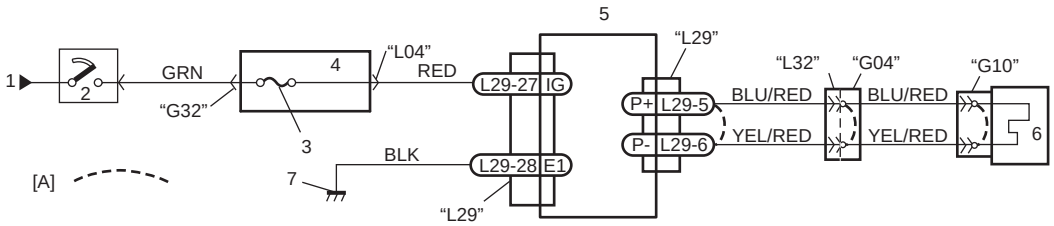
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1042: Passenger Air Bag Initiator Circuit Resistance Low

S7RS0B8204023

Wiring Diagram



I7RS0A820013-06

[A]: Shorting bar	3. “A/BAG” fuse	6. Passenger air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Ground for air bag system
2. Ignition switch	5. SDM	

⚠ CAUTION

- **Be sure to perform “Air Bag Diagnostic System Check” before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adaptor from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to “Inspection of Intermittent and Poor Connections”.**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

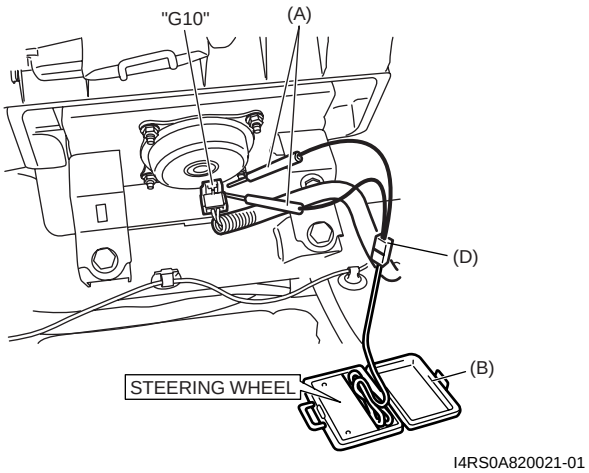
DTC Will Set when

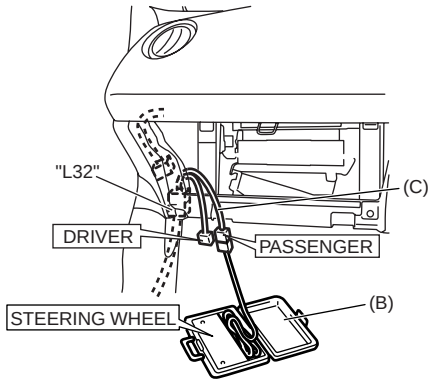
The combined resistance of the passenger air bag (inflator) module, harness wiring and connector terminal contact is below a specified value for specified time.

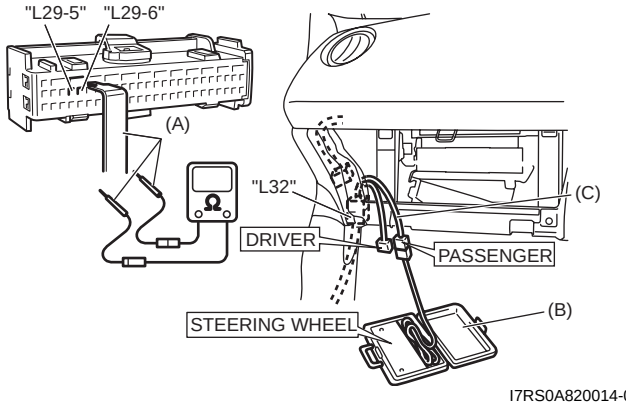
Flow Test Description

Step 1: Check if malfunction is in passenger air bag (inflator) module.
Step 2: Check passenger air bag (inflator) module initiator circuit. (in instrument panel harness)
Step 3: Check passenger air bag (inflator) module initiator circuit. (in floor harness)

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect passenger air bag (inflator) module connector. 2) Check proper connection to passenger air bag (inflator) module at terminals in “G10” connector. 3) If OK, then connect special tools (A), (B) and (D) to “G10” connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(D): 09932–78310**  I4RS0A820021-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1042 indicated?*	Go to Step 2.	Turn ignition switch OFF. Replace passenger air bag (inflator) module referring to “Passenger Air Bag (Inflator) Module Removal and Installation”.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect “L32” connector located near the glove box. 2) Check proper connection to floor harness connector at terminal “L32-3” and “L32-4”. 3) If OK, then connect special tools (B) and (C) to “L32” connector disconnected in Step 1). **Special tool** **(B): 09932-75010** **(C): 09932–77320**  I4RS0A820022-01 4) Check SDM DTC. **NOTE** **At this time, DTC B1031 may be output, but it is not related to this check.** *With ignition switch ON, is DTC B1042 indicated?*	Go to Step 3.	“BLU/RED” circuit shorted to “YEL/RED” circuit, “BLU/RED” circuit or “YEL/RED” circuit shorted to other circuit in instrument panel harness.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect SDM connector “L29”. 2) Check proper connection to SDM at terminals “L29-5” and “L29-6”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “L29-5” and “L29-6” terminals with connected special tools (B) and (C). **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932–77320**  I7RS0A820014-05 *Is resistance 1.8 Ω or more?*	Substitute a known-good SDM and recheck.	“BLU/RED” circuit shorted to “YEL/RED” circuit, “BLU/RED” circuit or “YEL/RED” circuit shorted to other circuit in floor harness.

NOTE

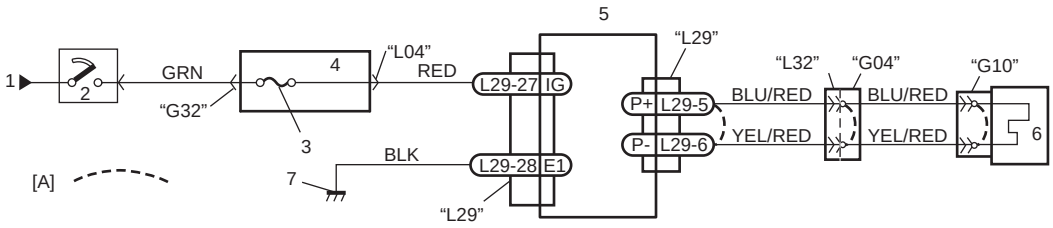
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1043: Passenger Air Bag Initiator Circuit Short to Ground

S7RS0B8204024

Wiring Diagram



I7RS0A820013-06

[A]: Shorting bar	3. “A/BAG” fuse	6. Passenger air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Ground for air bag system
2. Ignition switch	5. SDM	

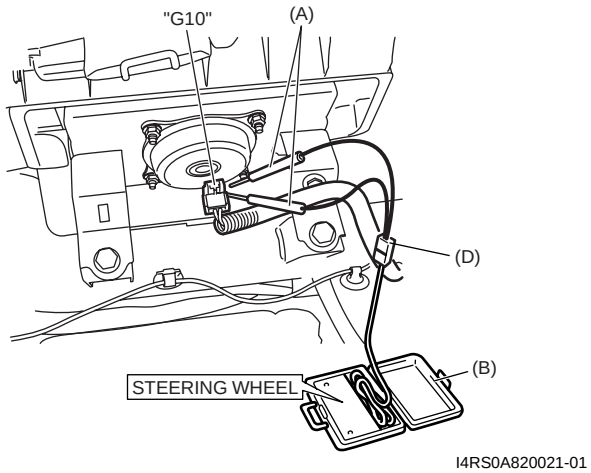
⚠ CAUTION

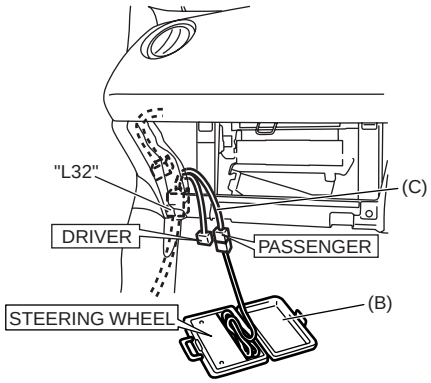
- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adaptor from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

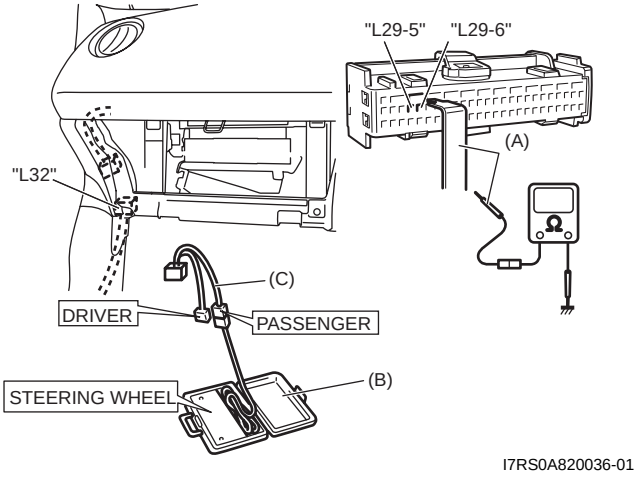
DTC Will Set when
The voltage measured at passenger air bag (initiator) circuit is below a specified value for specified time.

Flow Test Description
Step 1: Check if malfunction is in passenger air bag (inflator) module.
Step 2: Check passenger air bag (inflator) module initiator circuit. (in instrument panel harness)
Step 3: Check passenger air bag (inflator) module initiator circuit. (in floor harness)

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect passenger air bag (inflator) module connector. 2) Check proper connection to passenger air bag (inflator) module at terminals in "G10" connector. 3) If OK, then connect special tools (A), (B) and (D) to "G10" connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(D): 09932–78310**  I4RS0A820021-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1043 indicated?*	Go to Step 2.	Turn ignition switch OFF. Replace passenger air bag (inflator) module referring to "Passenger Air Bag (Inflator) Module Removal and Installation".

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect “L32” connector located near the glove box. 2) Check proper connection to floor harness connector at terminal “L32-3” and “L32-4”. 3) If OK, then connect special tools (B) and (C) to “L32” connector disconnected in Step 1). **Special tool** **(B): 09932-75010** **(C): 09932–77320**  I4RS0A820022-01 4) Check SDM DTC. **NOTE** **At this time, DTC B1031 may be output, but it is not related to this check.** *With ignition switch ON, is DTC B1043 indicated?*	Go to Step 3.	“BLU/RED” or “YEL/RED” circuit shorted to ground in instrument panel harness.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect special tools (B) and (C) from “L32” connector and SDM connector “L29” from SDM respectively. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure resistance between “L29-5” terminal and body ground and between “L29-6” terminal and body ground. **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932–77320**  I7RS0A820036-01 *Is resistance infinity?*	Substitute a known-good SDM and recheck.	“BLU/RED” or “YEL/RED” circuit shorted to ground in floor harness.

NOTE

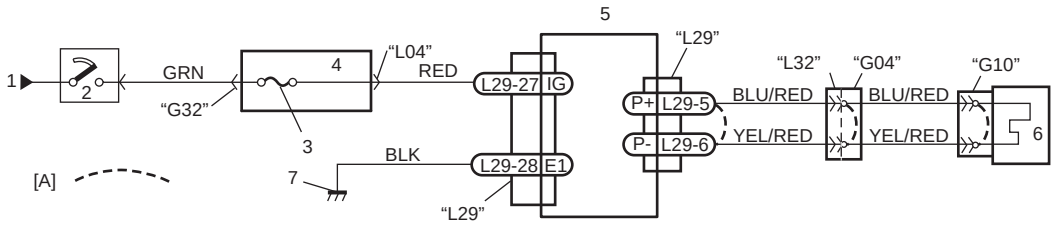
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1044: Passenger Air Bag Initiator Circuit Short to Power Circuit

S7RS0B8204025

Wiring Diagram



I7RS0A820013-06

[A]: Shorting bar	3. “A/BAG” fuse	6. Passenger air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Ground for air bag system
2. Ignition switch	5. SDM	

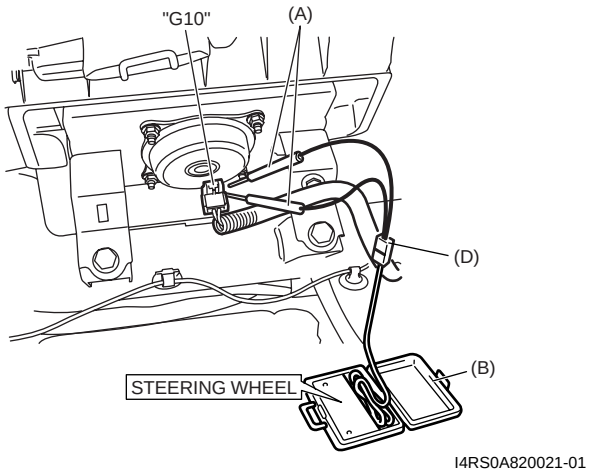
⚠ CAUTION

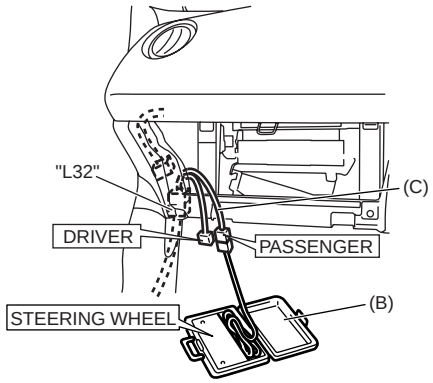
- **Be sure to perform “Air Bag Diagnostic System Check” before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adaptor from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to “Inspection of Intermittent and Poor Connections”.**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

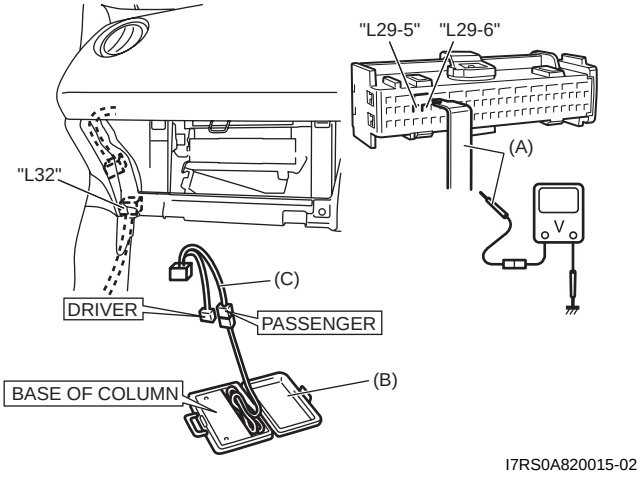
DTC Will Set when
The voltage measured at passenger air bag (initiator) circuit is above a specified value for specified time.

Flow Test Description
Step 1: Check if malfunction is in passenger air bag (inflator) module.
Step 2: Check passenger air bag (inflator) module initiator circuit. (in instrument panel harness)
Step 3: Check passenger air bag (inflator) module initiator circuit. (in floor harness)

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect passenger air bag (inflator) module connector. 2) Check proper connection to passenger air bag (inflator) module at terminals in “G10” connector. 3) If OK, then connect special tools (A), (B) and (D) to “G10” connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(D): 09932–78310**  I4RS0A820021-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1044 indicated?*	Go to Step 3.	Turn ignition switch OFF. Replace passenger air bag (inflator) module referring to “Passenger Air Bag (Inflator) Module Removal and Installation”.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect “L32” connector located near the glove box. 2) Check proper connection to floor harness connector at terminal “L32-3” and “L32-4”. 3) If OK, then connect special tools (B) and (C) to “L32” connector disconnected in Step 1). **Special tool** **(B): 09932-75010** **(C): 09932–77320**  I4RS0A820022-01 4) Check SDM DTC. **NOTE** **At this time, DTC B1031 may be output, but it is not related to this check.** *With ignition switch ON, is DTC B1044 indicated?*	Go to Step 3.	“BLU/RED” or “YEL/RED” circuit shorted to power supply circuit in instrument panel harness.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect special tools (B) and (C) from “L32” connector and SDM connector “L29” from SDM respectively. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure voltage from “L29-5” terminal to body ground and from “L29-6” terminal to body ground. **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932–77320**  I7RS0A820015-02 *With ignition switch ON, is voltage 1 V or less?*	Substitute a known-good SDM and recheck.	“BLU/RED” or “YEL/RED” circuit shorted to power supply circuit in floor harness.

NOTE

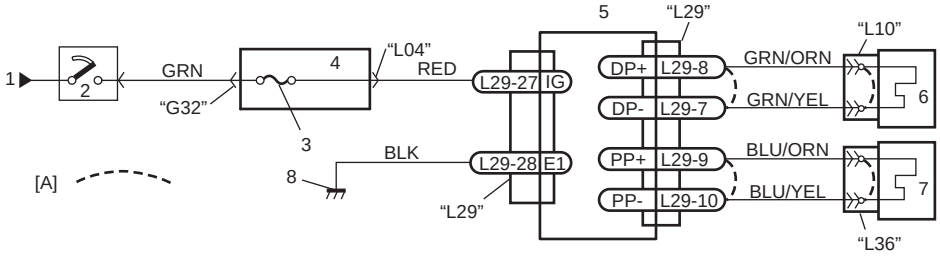
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1051 / B1055: Driver / Passenger Pretensioner Initiator Circuit Resistance High

S7RS0B8204026

Wiring Diagram



I7RS0A820016-05

[A]: Shorting bar	3. “A/BAG” fuse	6. Driver seat belt pretensioner
1. From main fuse	4. Junction block assembly	7. Passenger seat belt pretensioner
2. Ignition switch	5. SDM	8. Ground for air bag system

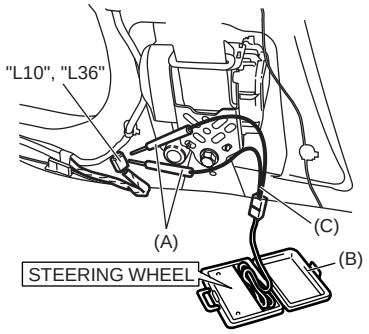
⚠ CAUTION

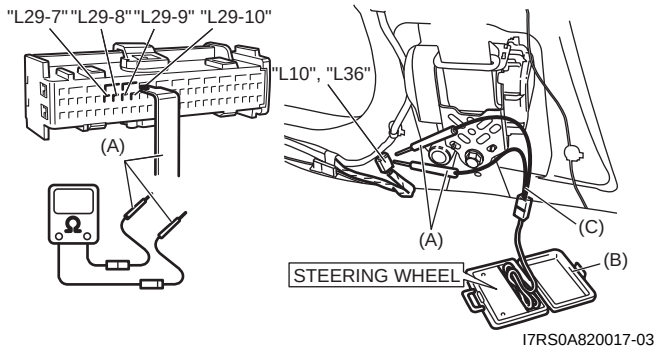
- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The resistance of driver or passenger seat belt pretensioner initiator circuit is above a specified value for specified time.

Flow Test Description
Step 1: Check if malfunction is in seat belt pretensioner.
Step 2: Check seat belt pretensioner initiator circuit.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, remove center pillar lower trim of driver or passenger side and disconnect seat belt pretensioner connector "L10" or "L36" (1). 2) Check proper connection to seat belt pretensioner at terminals in "L10" or "L36" connector. 3) If OK, then connect special tools (A), (B) and (C) to "L10" or "L36" connector disconnected in Step 1). **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932-78310**  I4RS0A820027-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1051 or B1055 still indicated?*	Go to Step 2.	Turn ignition switch OFF. Replace seat belt pretensioner referring to "Rear Seat Belt Removal and Installation in Section 8A".

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector “29”. 2) Check proper connection to SDM at terminals in “L29-7” and “L29-8” (for DTC B1051) or “L29-9” and “L29-10” (for DTC B1055). 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “L29-7” and “L29-8” terminals (for DTC B1051) or “L29-9” and “L29-10” terminals (for DTC B1055) with connected special tools (B) and (C). **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932–78310**  I7RS0A820017-03 *Is resistance 2.91 Ω or less?*	Substitute a known-good SDM and recheck.	DTC B1051: High resistance or open wire in “GRN/ORN” or “GRN/YEL” circuit. DTC B1055: High resistance or open wire in “BLU/ORN” or “BLU/YEL” circuit.

NOTE

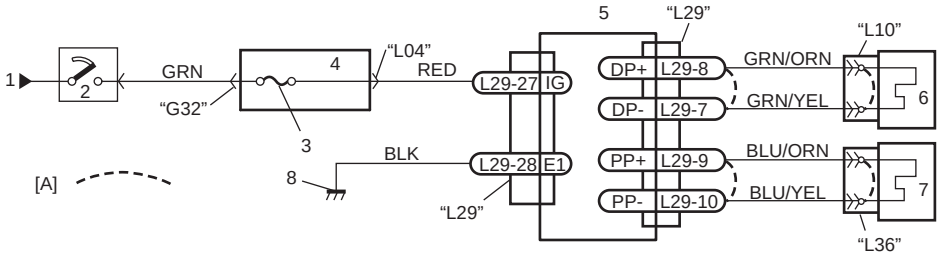
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1052 / B1056: Driver / Passenger Pretensioner Initiator Circuit Resistance Low

S7RS0B8204027

Wiring Diagram



I7RS0A820016-05

[A]: Shorting bar	3. “A/BAG” fuse	6. Driver seat belt pretensioner
1. From main fuse	4. Junction block assembly	7. Passenger seat belt pretensioner
2. Ignition switch	5. SDM	8. Ground for air bag system

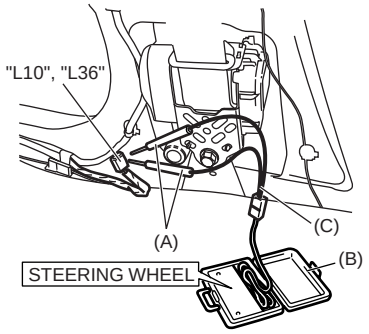
⚠ CAUTION

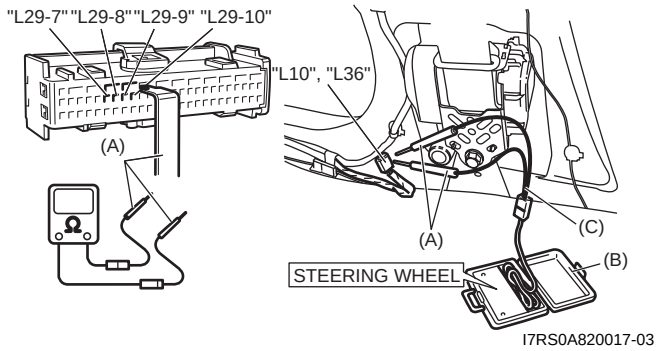
- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The resistance of driver or passenger seat belt pretensioner initiator circuit is below a specified value for specified time.

Flow Test Description
Step 1: Check if malfunction is in seat belt pretensioner.
Step 2: Check seat belt pretensioner initiator circuit.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, remove center pillar lower trim of driver or passenger side and disconnect seat belt pretensioner connector "L10" or "L36" (1). 2) Check proper connection to seat belt pretensioner at terminals in "L10" or "L36" connector. 3) If OK, then connect special tools (A), (B) and (C) to "L10" or "L36" connector disconnected in Step 1). **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932-78310**  I4RS0A820027-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1052 or B1056 still indicated?*	Go to Step 2.	Turn ignition switch OFF. Replace seat belt pretensioner referring to "Front Seat Belt Removal and Installation in Section 8A".

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector “29”. 2) Check proper connection to SDM at terminals in “L29-7” and “L29-8” (for DTC B1052) or “L29-9” and “L29-10” (for DTC B1056). 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) If OK, then measure resistance between “L29-7” and “L29-8” terminals (for DTC B1052) or “L29-9” and “L29-10” terminals (for DTC B1056) with connected special tools (B) and (C). **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932–78310**  I7RS0A820017-03 *Is resistance 1.8 Ω or more?*	Substitute a known-good SDM and recheck.	DTC B1052: “GRN/ORN” circuit shorted to “GRN/YEL” circuit, “GRN/ORN” circuit or “GRN/YEL” circuit shorted to other circuit. DTC B1056: “BLU/ORN” circuit shorted to “BLU/YEL” circuit, “BLU/ORN” circuit or “BLU/YEL” circuit shorted to other circuit.

NOTE

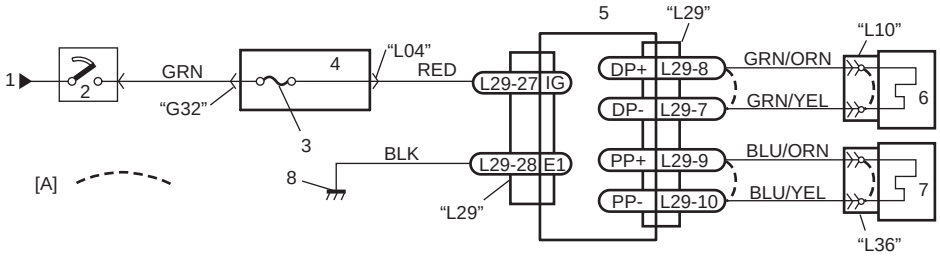
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1053 / B1057: Driver / Passenger Pretensioner Initiator Circuit Short to Ground

S7RS0B8204028

Wiring Diagram



I7RS0A820016-05

[A]: Shorting bar	3. “A/BAG” fuse	6. Driver seat belt pretensioner
1. From main fuse	4. Junction block assembly	7. Passenger seat belt pretensioner
2. Ignition switch	5. SDM	8. Ground for air bag system

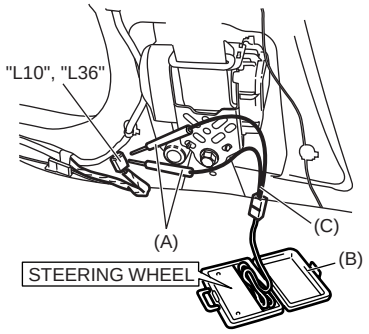
⚠ CAUTION

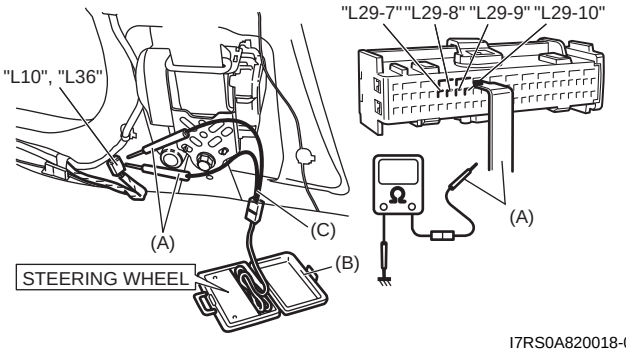
- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The voltage measured at driver or passenger seat belt pretensioner initiator circuit is below a specified value for specified time.

Flow Test Description
Step 1: Check if malfunction is in seat belt pretensioner.
Step 2: Check seat belt pretensioner initiator circuit.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, remove center pillar lower trim of driver or passenger side and disconnect seat belt pretensioner connector "L10" or "L36" (1). 2) Check proper connection to seat belt pretensioner at terminals in "L10" or "L36" connector. 3) If OK, then connect special tools (A), (B) and (C) to "L10" or "L36" connector disconnected in Step 1). **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932-78310**  I4RS0A820027-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1053 or B1057 still indicated?*	Go to Step 2.	Ignition switch OFF. Replace seat belt pretensioner referring to "Front Seat Belt Removal and Installation in Section 8A".

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect special tools (A), (B) and (C) and SDM connector. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure resistance between “L29-7” and body ground, and between “L29-8” and body ground (for DTC B1053) or between “L29-9” and body ground, and between “L29-10” and body ground (for DTC B1057). **Special tool** **(A): 09932-76010**  I7RS0A820018-02 *Is resistance infinity?*	Substitute a known-good SDM and recheck.	DTC B1053: “GRN/ORN” circuit or “GRN/YEL” circuit shorted to ground. DTC B1057: “BLU/ORN” circuit or “BLU/YEL” circuit shorted to ground.

NOTE

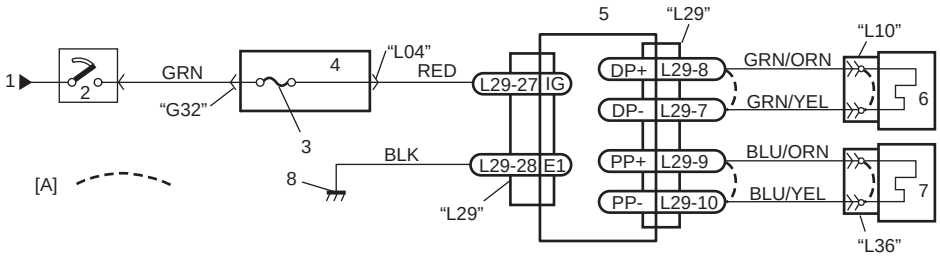
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1054 / B1058: Driver / Passenger Pretensioner Initiator Circuit Short to Power Circuit

S7RS0B8204029

Wiring Diagram



I7RS0A820016-05

[A]: Shorting bar	3. “A/BAG” fuse	6. Driver seat belt pretensioner
1. From main fuse	4. Junction block assembly	7. Passenger seat belt pretensioner
2. Ignition switch	5. SDM	8. Ground for air bag system

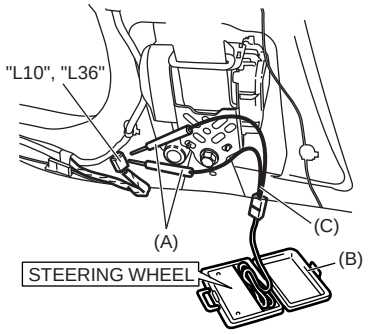
⚠ CAUTION

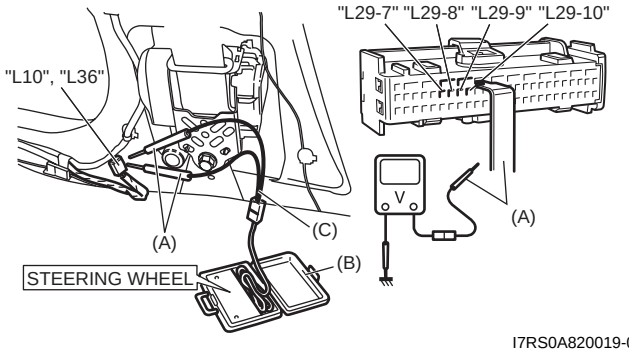
- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The voltage measured at driver or passenger seat belt pretensioner initiator circuit is above a specified value for specified time.

Flow Test Description
Step 1: Check if malfunction is in seat belt pretensioner.
Step 2: Check seat belt pretensioner initiator circuit.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, remove center pillar lower trim of driver or passenger side and disconnect seat belt pretensioner connector "L10" and "L36" (1). 2) Check proper connection to seat belt pretensioner at terminals in "L10" or "L36" connector. 3) If OK, then connect special tools (A), (B) and (C) to "L10" or "L36" connector disconnected in Step 1). **Special tool** **(A): 09932-76010** **(B): 09932-75010** **(C): 09932-78310**  I4RS0A820027-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1054 or B1058 still indicated?*	Go to Step 2.	Turn ignition switch OFF. Replace seat belt pretensioner referring to "Front Seat Belt Removal and Installation in Section 8A".

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect special tools (A), (B) and (C) and SDM connector. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure voltage between “L29-7” and body ground, and between “L29-8” and body ground (for DTC B1054) or between “L29-9” and body ground, and between “L29-10” and body ground (for DTC B1058). **Special tool** **(A): 09932-76010**  I7RS0A820019-02 *With ignition switch ON, is voltage 1 V or less?*	Substitute a known-good SDM and recheck.	DTC B1054: “GRN/ORN” circuit or “GRN/YEL” circuit shorted to power supply circuit. DTC B1058: “BLU/ORN” circuit or “BLU/YEL” circuit shorted to power supply circuit.

NOTE

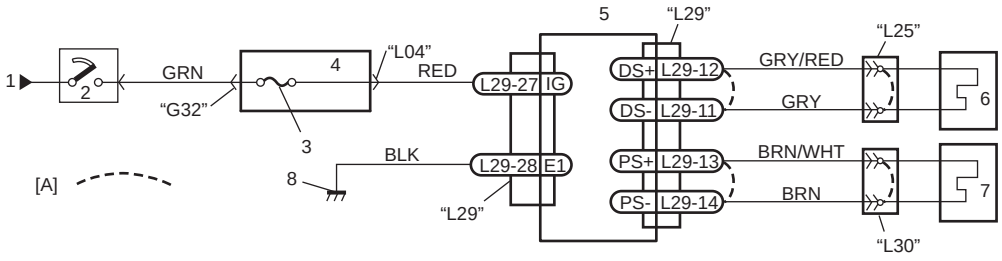
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1061 / B1065: Driver / Passenger Side-Air Bag Initiator Circuit Resistance High

S7RS0B8204030

Wiring Diagram



I7RS0A820020-04

[A]: Shorting bar	3. “A/BAG” fuse	6. Driver side-air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Passenger side-air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

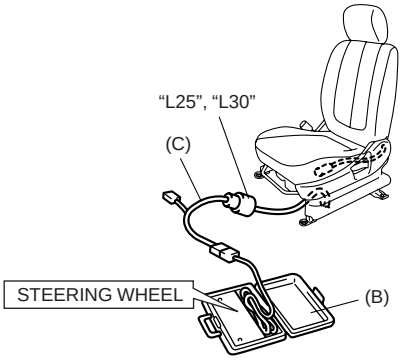
DTC Will Set when

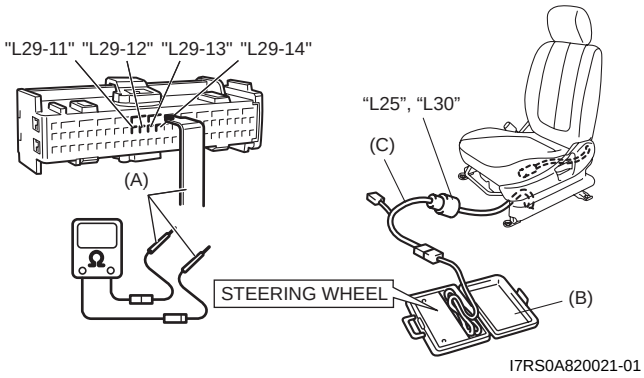
The combined resistance of the side-air bag (inflator) module (driver or passenger), harness wiring and connector terminal contact is above a specified value for specified time.

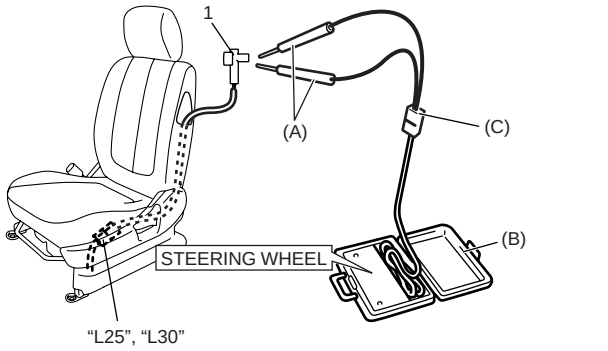
Flow Test Description

Step 1: Check whether malfunction is in side-air bag (inflator) module.
Step 2: Check side-air bag initiator circuit in floor harness.
Step 3: Check side-air bag initiator circuit in seat harness.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect side-air bag (inflator) module connector under front seat cushion. 2) Check proper connection to driver or passenger side-air bag (inflator) module at terminals in "L25" or "L30" connector. 3) If OK, then connect special tools (B) and (C) to side-air bag (inflator) module connector disconnected at the Step 1). **Special tool** **(B): 09932–75010** **(C): 09932–78340**  I4RS0A820032-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1061 or B1065 still indicated?*	Go to Step 2.	Go to Step 3.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector “L29”. 2) Check proper connection to SDM at terminals “L29-11” and “L29-12” or “L29-13” and “L29-14”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “L29-11” and “L29-12” terminals (for DTC B1061) or “L29-13” and “L29-14” terminals (for DTC B1065) with connected special tool (B) and (C). **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78340**  *Is resistance 2.62 Ω or less?*	Substitute a known-good SDM and recheck.	DTC B1061: Repair high resistance or open in “GRY/RED” or “GRY” wire circuit in floor harness. DTC B1065: Repair high resistance or open in “BRN/WHT” or “BRN” wire circuit in floor harness.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect special tools (B) and (C) then reconnect connector “L25” or “L30”. 2) Disconnect side-air bag (inflator) module connector (1) from side-air bag (inflator) module. 3) Check proper connection to side-air bag (inflator) module at terminal in connector. 4) If OK, then connect special tools (A), (B) and (C) to side-air bag (inflator) connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I4RS0A820034-01 5) Check SDM DTC. *With ignition switch ON, is DTC B1061 or B1065 still indicated?*	DTC B1061: Repair high resistance or open in “GRY/RED” or “GRY” wire circuit in seat harness. DTC B1065: Repair high resistance or open in “BRN/WHT” or “BRN” wire circuit in seat harness.	Replace side-air bag (inflator) module referring to “Side-Air Bag (Inflator) Module Removal and Installation”.

NOTE

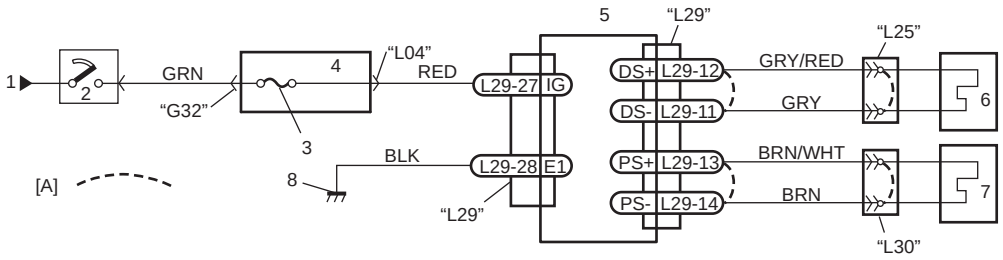
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1062 / B1066: Driver / Passenger Side-Air Bag Initiator Circuit Resistance Low

S7RS0B8204031

Wiring Diagram



I7RS0A820020-04

[A]: Shorting bar	3. “A/BAG” fuse	6. Driver side-air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Passenger side-air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

⚠ CAUTION

- **Be sure to perform “Air Bag Diagnostic System Check” before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to “Inspection of Intermittent and Poor Connections”.**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

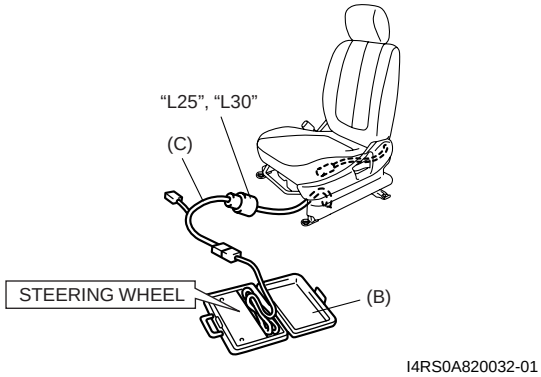
DTC Will Set when

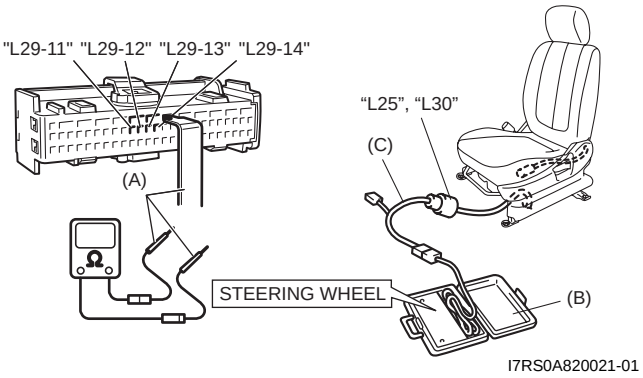
The combined resistance of the side-air bag (inflator) module (driver or passenger), harness wiring and connector terminal contact is below a specified value for specified time.

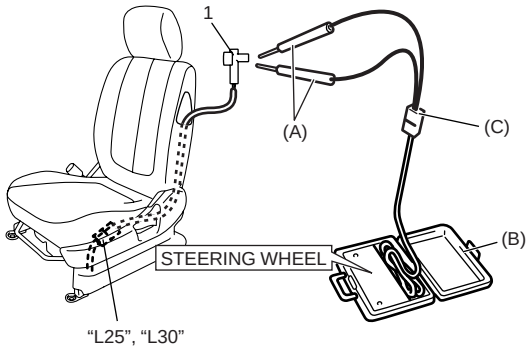
Flow Test Description

Step 1: Check whether malfunction is in side-air bag (inflator) module.
Step 2: Check side-air bag initiator circuit in floor harness.
Step 3: Check side-air bag initiator circuit in seat harness.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect side-air bag (inflator) module connector under front seat cushion. 2) Check proper connection to driver or passenger side-air bag (inflator) module at terminals in “L25” or “L30” connector. 3) If OK, then connect special tools (B) and (C) to side-air bag (inflator) module connector disconnected at the Step 1. **Special tool** **(B): 09932–75010** **(C): 09932–78340**  I4RS0A820032-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1062 or B1066 still indicated?*	Go to Step 2.	Go to Step 3.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector “L29”. 2) Check proper connection to SDM at terminals “L29-11” and “L29-12” or “L29-13” and “L29-14”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “L29-11” and “L29-12” terminals (for DTC B1062) or “L29-13” and “L29-14” terminals (for DTC B1066) with connected special tools (B) and (C). **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78340**  *Is resistance 1.8 Ω or more?*	Substitute a known-good SDM and recheck.	DTC B1062: Repair short from “GRY/RED” wire circuit to “GRY” wire circuit or from “GRY/RED” or “GRY” wire circuit to other wire circuit in floor harness. DTC B1066: Repair short from “BRN/WHT” wire circuit to “BRN” wire circuit or from “BRN/WHT” or “BRN” wire circuit to other wire circuit in floor harness.

Step	Action	Yes	No
3	1) With ignition switch OFF, disconnect special tools (B) and (C) then reconnect connector “L25” or “L30”. 2) Disconnect side-air bag (inflator) module connector (1) from side-air bag (inflator) module. 3) Check proper connection to side-air bag (inflator) module at terminal in connector. 4) If OK, then connect special tools (A), (B) and (C) to side-air bag (inflator) connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I4RS0A820034-01 5) Check SDM DTC. *With ignition switch ON, is DTC B1062 or B1066 still indicated?*	DTC B1062: Repair short from “GRY/RED” wire circuit to “GRY” wire circuit in seat harness or from “GRY/RED” or “GRY” wire circuit to other wire circuit. DTC B1066: Repair short from “BRN/WHT” wire circuit to “BRN” wire circuit in seat harness or from “BRN/WHT” or “BRN” wire circuit to other wire circuit.	Replace side-air bag (inflator) module referring to “Side-Air Bag (Inflator) Module Removal and Installation”.

NOTE

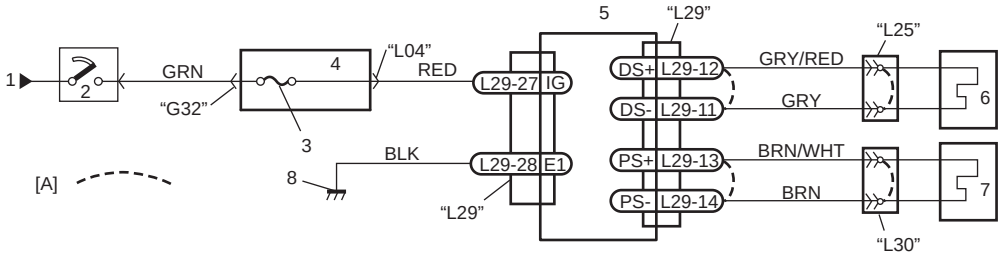
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1063 / B1067: Driver / Passenger Side-Air Bag Initiator Circuit Short to Ground

S7RS0B8204032

Wiring Diagram



I7RS0A820020-04

[A]: Shorting bar	3. “A/BAG” fuse	6. Driver side-air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Passenger side-air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

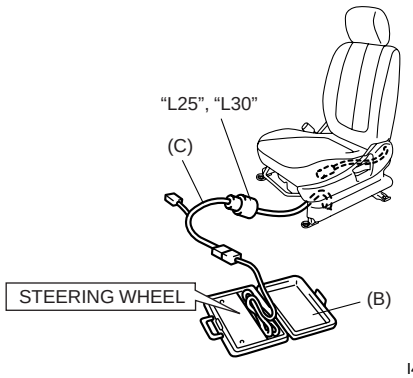
⚠ CAUTION

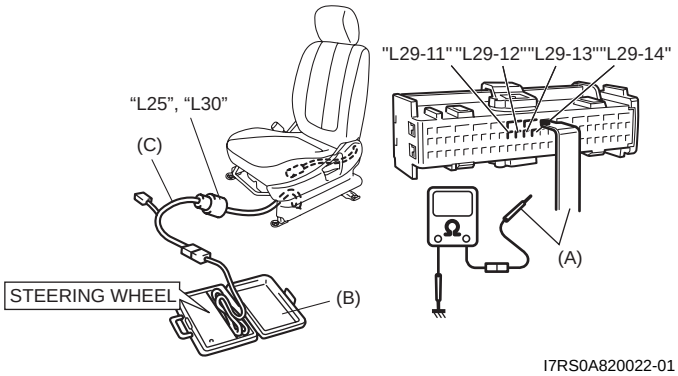
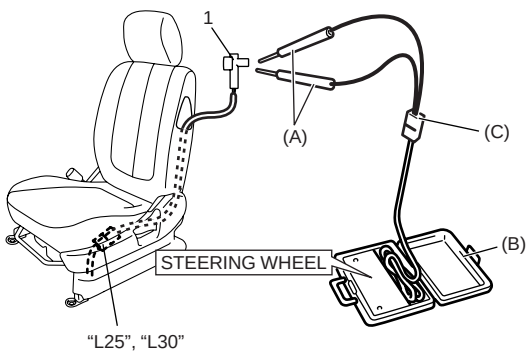
- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The voltage measured at side-air bag (driver or passenger) initiator circuit is below a specified value for specified time.

Flow Test Description
Step 1: Check whether malfunction is in side-air bag (inflator) module.
Step 2: Check side-air bag initiator circuit in floor harness.
Step 3: Check side-air bag initiator circuit in seat harness.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect side-air bag (inflator) module connector under front seat cushion. 2) Check proper connection to driver or passenger side-air bag (inflator) module at terminals in "L25" or "L30" connector. 3) If OK, then connect special tools (B) and (C) to side-air bag (inflator) module connector disconnected at the Step 1. **Special tool** **(B): 09932–75010** **(C): 09932–78340**  I4RS0A820032-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1063 or B1067 still indicated?*	Go to Step 2.	Go to Step 3.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect special tools and SDM connector “L29”. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure resistance between “L29-11” and body ground, and between “L29-12” and body ground (for DTC B1063) or “L29-13” and body ground, and between “L29-14” and body ground (for DTC B1067) with connected special tools (B) and (C). **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78340**  I7RS0A820022-01 *Is resistance infinity?*	Substitute a known-good SDM and recheck.	DTC B1063: Repair short from “GRY/RED” or “GRY” wire circuit to ground in floor harness. DTC B1067: Repair short from “BRN/WHT” or “BRN” wire circuit to ground in floor harness.
3	1) With ignition switch OFF, disconnect special tools (B) and (C) then reconnect connector “L25” or “L30”. 2) Disconnect side-air bag (inflator) module connector (1) from side-air bag (inflator) module. 3) Check proper connection to side-air bag (inflator) module at terminal in connector. 4) If OK, then connect special tools (A), (B) and (C) to side-air bag (inflator) connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I4RS0A820034-01 5) Check SDM DTC. *With ignition switch ON, is DTC B1063 or B1067 still indicated?*	DTC B1063: Repair short from “GRY/RED” or “GRY” wire circuit to ground in seat harness. DTC B1067: Repair short from “BRN/WHT” or “BRN” wire circuit to ground in seat harness.	Replace side-air bag (inflator) module referring to “Side-Air Bag (Inflator) Module Removal and Installation”.

NOTE

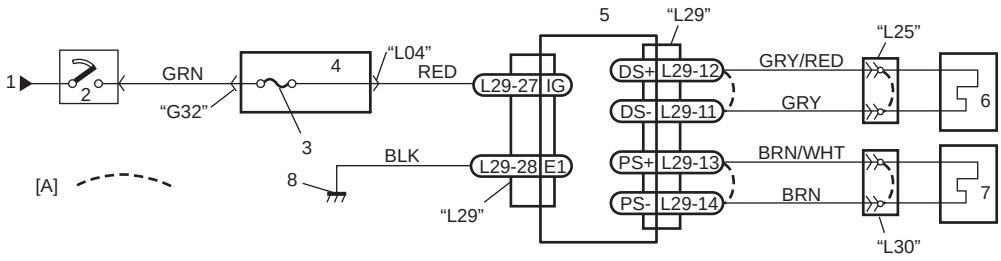
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear DTCs referring to "DTC Clearance", if any.**
- **Repeat "Air Bag Diagnostic System Check" to confirm that the trouble has been corrected.**

DTC B1064 / B1068: Driver / Passenger Side-Air Bag Initiator Circuit Short to Power Circuit

S7RS0B8204033

Wiring Diagram



I7RS0A820020-04

[A]: Shorting bar	3. "A/BAG" fuse	6. Driver side-air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Passenger side-air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

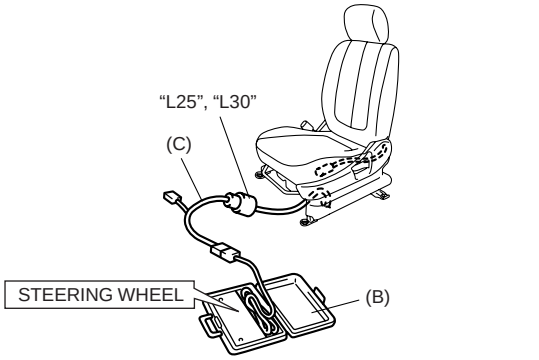
DTC Will Set when

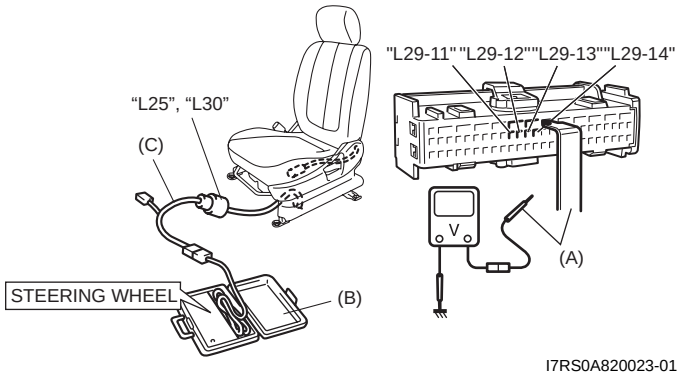
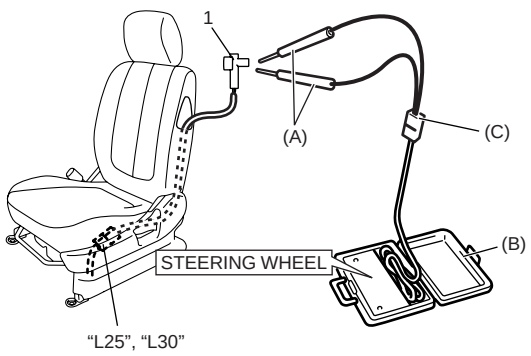
The voltage measured at side-air bag (driver or passenger) initiator circuit is above a specified value for specified time.

Flow Test Description

Step 1: Check whether malfunction is in side-air bag (inflator) module.
Step 2: Check side-air bag initiator circuit in floor harness.
Step 3: Check side-air bag initiator circuit in seat harness.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, disconnect side-air bag (inflator) module connector under front seat cushion. 2) Check proper connection to driver or passenger side-air bag (inflator) module at terminals in “L25” or “L30” connector. 3) If OK, then connect special tools (B) and (C) to side-air bag (inflator) module connector disconnected at the Step 1. **Special tool** **(B): 09932–75010** **(C): 09932–78340**  I4RS0A820032-01 4) Check SDM DTC. *With ignition switch ON, is DTC B1064 or B1068 still indicated?*	Go to Step 2.	Go to Step 3.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect special tools (B), (C) and SDM connector “L29”. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure voltage between “L29-11” and body ground, and between “L29-12” and ground (for DTC B1064) or “L29-13” and body ground, and between “L29-14” and body ground (for DTC B1068) with connected special tools (B) and (C). **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78340**  I7RS0A820023-01 *With ignition switch ON, is voltage 1 V or less?*	Substitute a known-good SDM and recheck.	DTC B1064: Repair short from “GRY/RED” or “GRY” wire circuit to power circuit in floor harness. DTC B1068: Repair short from “BRN/WHT” or “BRN” wire circuit to power circuit in floor harness.
3	1) With ignition switch OFF, disconnect special tools (B) and (C) then reconnect connector “L25” or “L30”. 2) Disconnect side-air bag (inflator) module connector (1) from side-air bag (inflator) module. 3) Check proper connection to side-air bag (inflator) module at terminal in connector. 4) If OK, then connect special tools (A), (B) and (C) to side-air bag (inflator) connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I4RS0A820034-01 5) Check SDM DTC. *With ignition switch ON, is DTC B1064 or B1068 still indicated?*	DTC B1064: Repair short from “GRY/RED” or “GRY” wire circuit to power circuit in seat harness. DTC B1068: Repair short from “BRN/WHT” or “BRN” wire circuit to power circuit in seat harness.	Replace side-air bag (inflator) module referring to“Side-Air Bag (Inflator) Module Removal and Installation”.

NOTE

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1071: Forward-Sensor Performance Problem

S7RS0B8204034

DTC Will Set when

SDM receives internal fault signal or wrong ID (Part No.) signal from forward-sensor.

DTC Troubleshooting

1) Turn ignition switch OFF.
2) Replace forward-sensor referring to “Forward-Sensor Removal and Installation”.
3) Repeat “Air Bag Diagnostic System Check”.

DTC B1072: Forward-Sensor Communication Error

S7RS0B8204035

DTC Will Set when

Forward-sensor abnormal signal is detected by SDM.

DTC Troubleshooting

1) Turn ignition switch OFF.
2) Replace forward-sensor referring to “Forward-Sensor Removal and Installation”.
3) Repeat “Air Bag Diagnostic System Check”.

NOTE

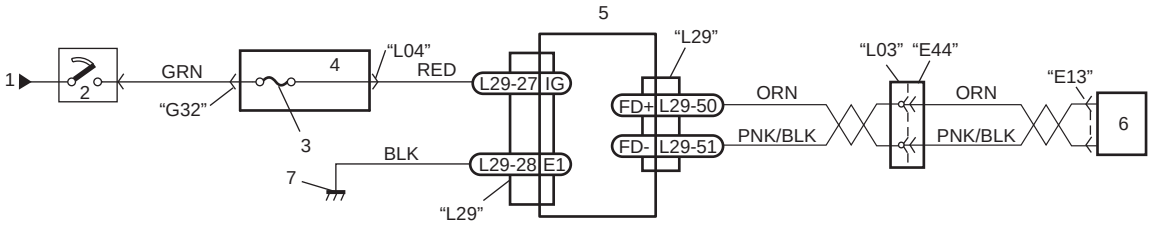
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1073: Forward-Sensor Circuit Short to Ground

S7RS0B8204036

Wiring Diagram



I7RS0A820024-01

1. From main fuse	4. Junction block assembly	7. Ground for air bag system
2. Ignition switch	5. SDM	
3. “A/BAG” fuse	6. Forward-sensor	

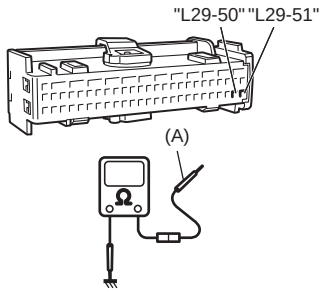
⚠ CAUTION

- **Be sure to perform “Air Bag Diagnostic System Check” before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to “Inspection of Intermittent and Poor Connections”.**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
Forward-sensor abnormal signal is detected by SDM.

Flow Test Description
Step 1: Check for short circuit between forward-sensor circuit and ground.
Step 2: Check if malfunction is in forward-sensor.

DTC Troubleshooting

Step	Action	Yes	No
1	1) Disconnect forward-sensor connector “E13”. 2) Disconnect SDM connector “L29”. 3) Check proper connection to SDM connector at terminals “L29-50” and “L29-51” or terminals. 4) Measure resistance between “L29-50” terminal and body ground, “L29-51” terminal and body ground. **Special tool** **(A): 09932–76010**  I7RS0A820025-01 *Is each measured resistance infinity?*	Go to Step 3.	“ORN” circuit or “PNK/BLK” circuit shorted to ground.
2	1) Check forward-sensor referring to “Forward-Sensor Inspection”. *Is it in good condition?*	Substitute a known-good SDM and recheck.	Replace forward-sensor referring to “Forward-Sensor Removal and Installation”. If DTC still exists, substitute a known-good SDM and recheck.

NOTE

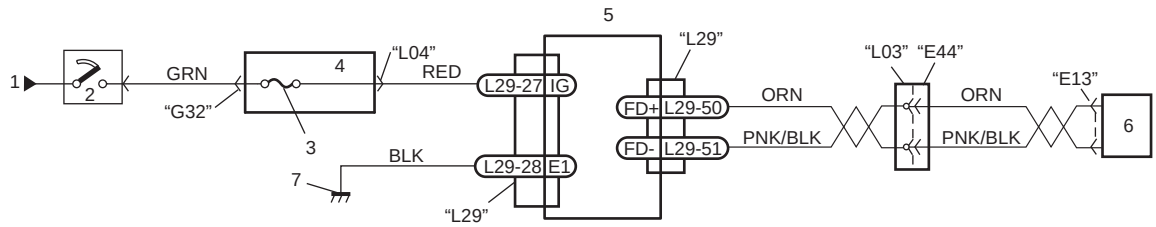
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1074: Forward-Sensor Circuit Short to Power Circuit or Open

S7RS0B8204037

Wiring Diagram



I7RS0A820024-01

1. From main fuse	4. Junction block assembly	7. Ground for air bag system
2. Ignition switch	5. SDM	
3. "A/BAG" fuse	6. Forward-sensor	

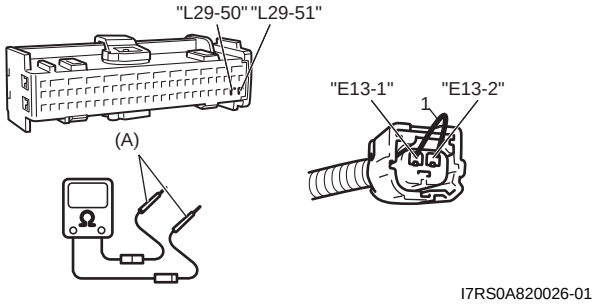
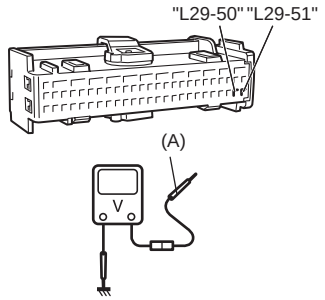
⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
Forward-sensor abnormal signal is detected by SDM.

Flow Test Description
Step 1: Check for open circuit in forward-sensor circuit.
Step 2: Check for short circuit between forward-sensor circuit and ground.
Step 3: Check for short circuit between forward-sensor circuit and power supply circuit.
Step 4: Check if malfunction is in forward-sensor.

DTC Troubleshooting

Step	Action	Yes	No
1	1) Disconnect forward-sensor connector “E13”. 2) Disconnect SDM connector “L29”. 3) Check proper connection to SDM connector at terminals “L29-50” and “L29-51” or terminals. 4) Check proper connection to forward-sensor connector at terminals “E13-1” and “E13-2”. 5) Using service wire (1), connect “E13-1” terminal and “E13-2” terminal of forward-sensor connector. 6) Measure resistance between terminals “L29-50” and “L29-51” of SDM connector. **Special tool** **(A): 09932-76010**  I7RS0A820026-01 *Is each measured resistance 1 Ω or less?*	Go to Step 2.	High resistance or open wire in “ORN” circuit or “PNK/BLK” circuit.
2	1) Disconnect service wire from “E13” connector. 2) Measure voltage between “L29-50” terminal and body ground, “L29-51” terminal and body ground.  I7RS0A820027-01 *With ignition switch ON, is each measured value 1 V or less?*	Go to Step 3.	“ORN” circuit or “PNK/BLK” circuit shorted to power supply circuit.
3	1) Check forward-sensor referring to “Forward-Sensor Inspection”. *Is it in good condition?*	Substitute a known-good SDM and recheck.	Replace forward-sensor referring to “Forward-Sensor Removal and Installation”. If DTC still exists, substitute a known-good SDM and recheck.

NOTE

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1081 / B1091: Driver / Passenger Side-Sensor Performance Problem

S7RS0B8204038

DTC Will Set when
SDM receives internal fault signal from side-sensor.

DTC Troubleshooting

1) Turn ignition switch OFF.
2) Replace driver or passenger side-sensor referring to “Side-Sensor Removal and Installation”.
3) Repeat “Air Bag Diagnostic System Check”.

DTC B1082 / B1092: Driver / Passenger Side-Sensor Communication Error

S7RS0B8204039

DTC Will Set when
Side-sensor abnormal signal is detected by SDM.

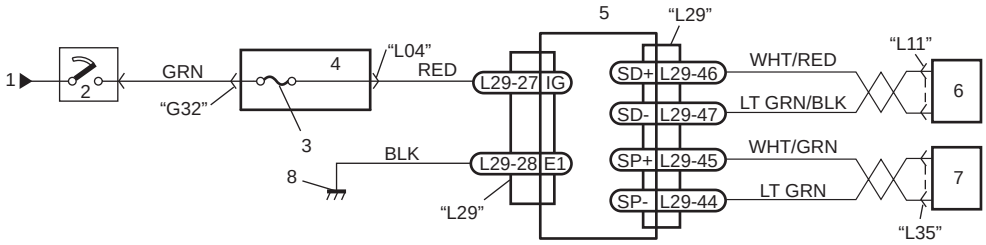
DTC Troubleshooting

1) Turn ignition switch OFF.
2) Replace driver or passenger side-sensor referring to “Side-Sensor Removal and Installation”.
3) Repeat “Air Bag Diagnostic System Check”.

DTC B1083 / B1093: Driver / Passenger Side-Sensor Circuit Short to Ground

S7RS0B8204040

Wiring Diagram



I7RS0A820028-02

1. From main fuse	4. Junction block assembly	7. Passenger side-sensor
2. Ignition switch	5. SDM	8. Ground for air bag system
3. “A/BAG” fuse	6. Driver side-sensor	

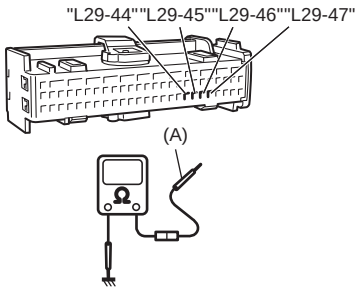
⚠ CAUTION

- **Be sure to perform “Air Bag Diagnostic System Check” before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to “Inspection of Intermittent and Poor Connections”.**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The resistance measured between side-sensor circuit and ground circuit is below a specified value for specified time.

Flow Test Description
Step 1: Check for short circuit between side-sensor circuit and ground.
Step 2: Check if malfunction is in side-sensor.

DTC Troubleshooting

Step	Action	Yes	No
1	1) Disconnect side-sensor connector “L11” or “L35”. 2) Disconnect SDM connector “L29”. 3) Check proper connection to SDM connector at terminals “L29-46” and “L29-47” or terminals “L29-44” and “L29-45”. 4) Measure resistance between “L29-46 terminal and body ground, “L29-47” terminal and body ground, or “L29-44” terminal and body ground, “L29-45” terminal and body ground. **Special tool** **(A): 09932–76010**  *Is each measured resistance infinity?*	Go to Step 3.	DTC B1083: “WHT/RED” circuit or “LT GRN/BLK” circuit shorted to ground. DTC B1093: “WHT/GRN” circuit or “LT GRN” circuit shorted to ground.
2	1) Check side-sensor referring to “Side-Sensor Inspection”. *Is it in good condition?*	Substitute a known-good SDM and recheck.	Replace side-sensor referring to “Side-Sensor Removal and Installation”. If DTC still exists, substitute a known-good SDM and recheck.

NOTE

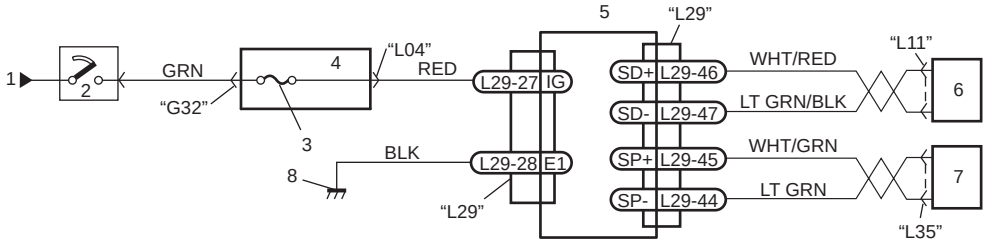
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1084 / B1094: Driver / Passenger Side-Sensor Circuit Short to Power Circuit or Open

S7RS0B8204041

Wiring Diagram



I7RS0A820028-02

1. From main fuse	4. Junction block assembly	7. Passenger side-sensor
2. Ignition switch	5. SDM	8. Ground for air bag system
3. “A/BAG” fuse	6. Driver side-sensor	

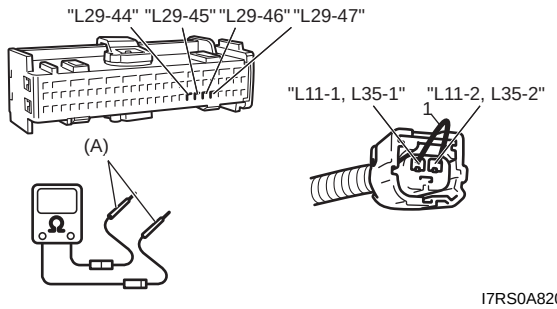
⚠ CAUTION

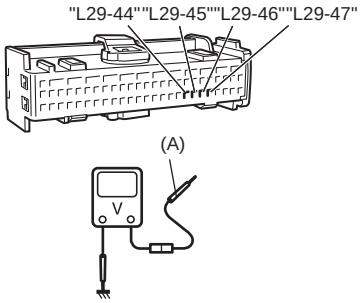
- **Be sure to perform “Air Bag Diagnostic System Check” before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to “Inspection of Intermittent and Poor Connections”.**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The resistance measured between side-sensor circuit and power source circuit is below a specified value for specified time.

Flow Test Description
Step 1: Check for open circuit in side-sensor circuit.
Step 2: Check for short circuit between side-sensor circuit and power supply circuit.
Step 3: Check if malfunction is in side-sensor.

DTC Troubleshooting

Step	Action	Yes	No
1	1) Disconnect side-sensor connector “L11” or “L35”. 2) Disconnect SDM connector “L29”. 3) Check proper connection to SDM connector at terminals “L29-46” and “L29-47” or terminals “L29-44” and “L29-45”. 4) Check proper connection to side-sensor connector at terminals “L11-1” and “L11-2” or terminals “L35-1” and “35-2”. 5) Using service wire (1), connect “L11-1” terminal and “L11-2” terminal of driver side-sensor connector or “L35-1” terminal and “L35-2” terminal of passenger side-sensor connector. 6) Measure resistance between terminals “L29-46” and “L29-47” or between “L29-44” and “L29-45” of SDM connector. **Special tool** **(A): 09932–76010**  I7RS0A820029-01 *Is each measured resistance 1 Ω or less?*	Go to Step 2.	DTC B1084: High resistance or open wire in “WHT/RED” circuit or “LT GRN/BLK” circuit. DTC B1094: High resistance or open wire in “WHT/GRN” circuit or “LT GRN” circuit.

Step	Action	Yes	No
2	1) Disconnect service wire from “L11” or “L35” connector. 2) Measure voltage between “L29-46” terminal and body ground, “L29-47” terminal and body ground or “L29-44” terminal and body ground, “L29-45” terminal and body ground.  *With ignition switch ON, is each measured value 1 V or less?*	Go to Step 3.	DTC B1084: “WHT/RED” circuit or “LT GRN/BLK” circuit shorted to power supply circuit. DTC B1094: “WHT/GRN” circuit or “LT GRN” circuit shorted to power supply circuit.
3	1) Check side-sensor referring to “Side-Sensor Inspection”. *Is it in good condition?*	Substitute a known-good SDM and recheck.	Replace side-sensor referring to “Side-Sensor Removal and Installation”. If DTC still exists, substitute a known-good SDM and recheck.

NOTE

Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1085 / B1095: Wrong Side-Sensor (Driver Side / Passenger) ID

S7RS0B8204042

DTC Will Set when

SDM receives wrong ID (Part No.) signal from side-sensor.

DTC Troubleshooting

1) Turn ignition switch OFF.
2) Replace driver or passenger side-sensor referring to “Side-Sensor Removal and Installation”.
3) Repeat “Air Bag Diagnostic System Check”.

NOTE

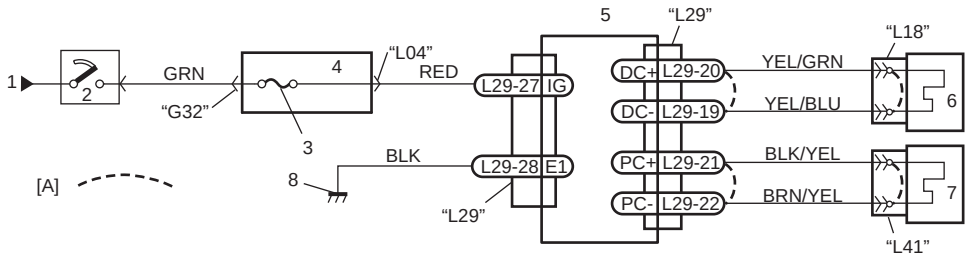
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components and ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1361 / B1365: Driver / Passenger Side Curtain-Air Bag Initiator Circuit Resistance High

S7RS0B8204043

Wiring Diagram



I7RS0A820031-04

[A]: Shorting bar	3. "A/BAG" fuse	6. Driver side curtain-air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Passenger side curtain-air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

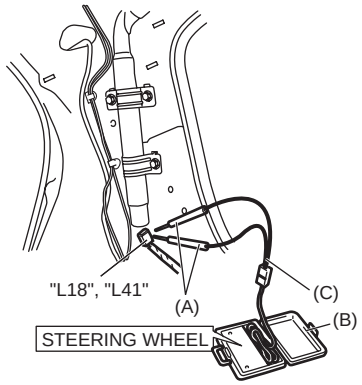
DTC Will Set when

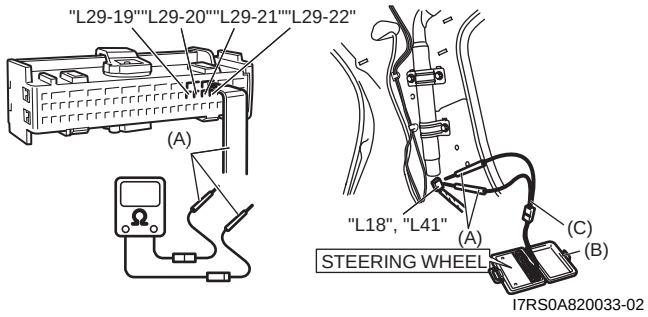
The combined resistance of the side curtain-air bag (inflator) module (driver or passenger), harness wiring and connector terminal contact is above a specified value for specified time.

Flow Test Description

Step 1: Check whether malfunction is in side curtain-air bag (inflator) module.
Step 2: Check side curtain-air bag initiator circuit.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, remove rear side upper trim of driver or passenger side and disconnect side curtain-air bag (inflator) module connector. 2) Check proper connection to side curtain-air bag (inflator) module at terminals in “L18” or “L41” connector. 3) If OK, then connect special tools (A), (B) and (C) to side curtain-air bag (inflator) module connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I7RS0A820032-04 4) Check SDM DTC. *With ignition switch ON, is DTC B1361 or B1365 still indicated?*	Go to Step 2.	Replace side curtain-air bag (inflator) module referring to “Side Curtain-Air Bag (Inflator) Module Removal and Installation”.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector “L29”. 2) Check proper connection to SDM at terminals “L29-19” and “L29-20” or “L29-21” and “L29-22”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “L29-19” and “L29-20” terminals (for DTC B1361) or “L29-21” and “L29-22” terminals (for DTC B1365) with connected special tools (A), (B) and (C). **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I7RS0A820033-02 *Is resistance 2.82 Ω or less?*	Substitute a known-good SDM and recheck.	DTC B1361: Repair high resistance or open in “YEL/GRN” or “YEL/BLU” wire circuit. DTC B1365: Repair high resistance or open in “BLK/YEL” or “BRN/YEL” wire circuit.

NOTE

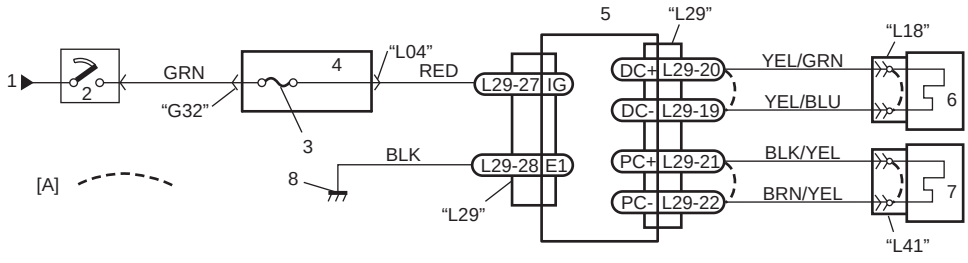
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1362 / B1366: Driver / Passenger Side Curtain-Air Bag Initiator Circuit Resistance Low

S7RS0B8204044

Wiring Diagram



I7RS0A820031-04

[A]: Shorting bar	3. “A/BAG” fuse	6. Driver side curtain-air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Passenger side curtain-air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

⚠ CAUTION

- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

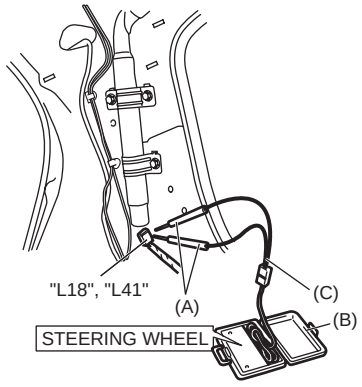
DTC Will Set when

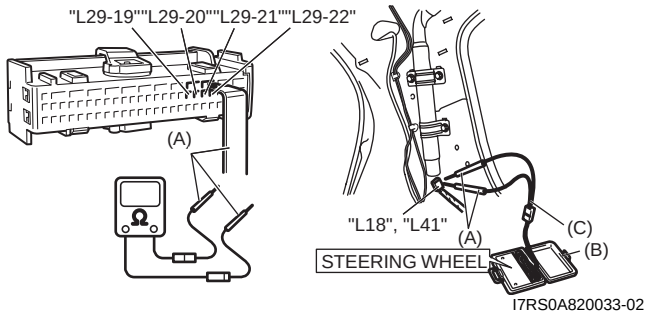
The combined resistance of the side curtain-air bag (inflator) module (driver or passenger), harness wiring and connector terminal contact is below a specified value for specified time.

Flow Test Description

Step 1: Check whether malfunction is in side curtain-air bag (inflator) module.
Step 2: Check side curtain-air bag initiator circuit.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, remove rear side upper trim of driver or passenger side and disconnect side curtain-air bag (inflator) module connector. 2) Check proper connection to side curtain-air bag (inflator) module at terminals in "L18" or "L41" connector. 3) If OK, then connect special tools (A), (B) and (C) to side curtain-air bag (inflator) module connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I7RS0A820032-04 4) Check SDM DTC. *With ignition switch ON, is DTC B1362 or B1366 still indicated?*	Go to Step 2.	Replace side curtain-air bag (inflator) module referring to "Side Curtain-Air Bag (Inflator) Module Removal and Installation".

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector “L29”. 2) Check proper connection to SDM at terminals “L29-19” and “L29-20” or “L29-21” and “L29-22”. 3) If OK, release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 4) Measure resistance between “L29-19” and “L29-20” terminals (for DTC B1362) or “L29-21” and “L29-22” terminals (for DTC B1366) with connected special tools (A), (B) and (C). **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I7RS0A820033-02 *Is resistance 1.8 Ω or more?*	Substitute a known-good SDM and recheck.	DTC B1362: Repair short from “YEL/GRN” wire circuit to “YEL/BLU” wire circuit or from “YEL/GRN” or “YEL/BLU” wire circuit to other wire circuit. DTC B1366: Repair short from “BLK/YEL” wire circuit to “BRN/YEL” wire circuit or from “BLK/YEL” or “BRN/YEL” wire circuit to other wire circuit.

NOTE

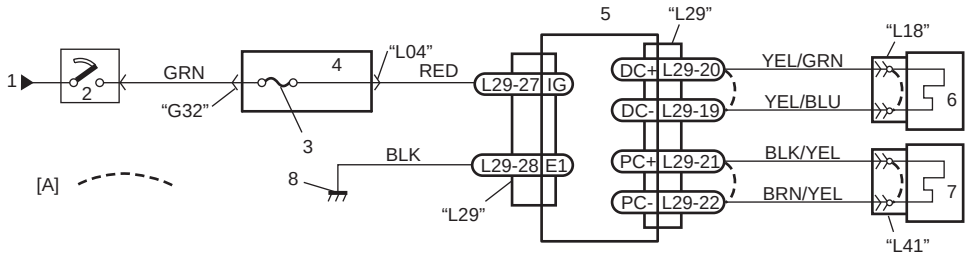
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

DTC B1363 / B1367: Driver / Passenger Side Curtain-Air Bag Initiator Circuit Short to Ground

S7RS0B8204045

Wiring Diagram



I7RS0A820031-04

[A]: Shorting bar	3. “A/BAG” fuse	6. Driver side curtain-air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Passenger side curtain-air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

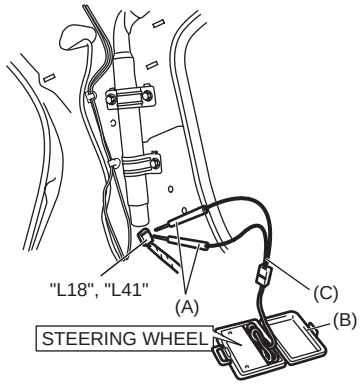
⚠ CAUTION

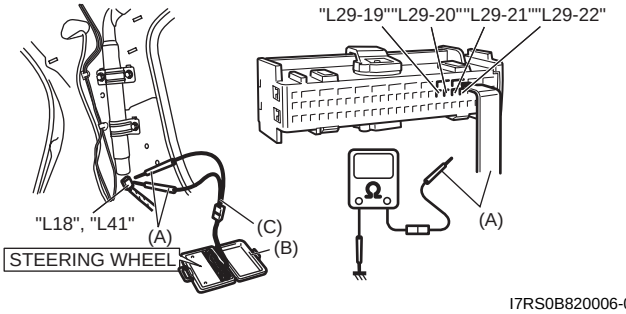
- **Be sure to perform “Air Bag Diagnostic System Check” before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to “Inspection of Intermittent and Poor Connections”.**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The voltage measured at side curtain-air bag (driver or passenger) initiator circuit is below a specified value for specified time.

Flow Test Description
Step 1: Check whether malfunction is in side curtain-air bag (inflator) module.
Step 2: Check side curtain-air bag initiator circuit.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, remove rear side upper trim of driver or passenger side and disconnect side curtain-air bag (inflator) module connector. 2) Check proper connection to side-air bag (inflator) module at terminals in “L18” or “L41” connector. 3) If OK, then connect special tools (A), (B) and (C) to side curtain-air bag (inflator) module connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I7RS0A820032-04 4) Check SDM DTC. *With ignition switch ON, is DTC B1363 or B1367 still indicated?*	Go to Step 2.	Replace side curtain-air bag (inflator) module referring to “Side Curtain-Air Bag (Inflator) Module Removal and Installation”.

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector "L29". 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure resistance between "L29-19" and body ground, and between "L29-20" and body ground (for DTC B1363) or "L29-21" and body ground, and between "L29-22" and body ground (for DTC B1367) with connected special tools (A), (B) and (C). **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I7RS0B820006-01 *Is resistance infinity?*	Substitute a known-good SDM and recheck.	DTC B1363: Repair short from "YEL/GRN" or "YEL/BLU" wire circuit to ground. DTC B1367: Repair short from "BLK/YEL" or "BRN/YEL" wire circuit to ground.

NOTE

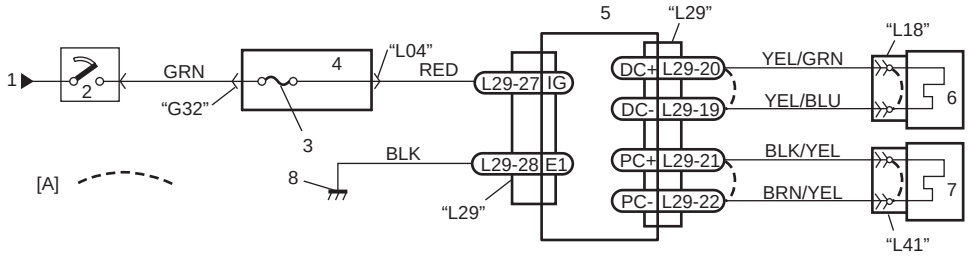
Upon completion of inspection and repair work, perform the following items.

- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear DTCs referring to "DTC Clearance", if any.**
- **Repeat "Air Bag Diagnostic System Check" to confirm that the trouble has been corrected.**

DTC B1364 / B1368: Driver / Passenger Side Curtain-Air Bag Initiator Circuit Short to Power Circuit

S7RS0B8204046

Wiring Diagram



I7RS0A820031-04

[A]: Shorting bar	3. "A/BAG" fuse	6. Driver side curtain-air bag (inflator) module
1. From main fuse	4. Junction block assembly	7. Passenger side curtain-air bag (inflator) module
2. Ignition switch	5. SDM	8. Ground for air bag system

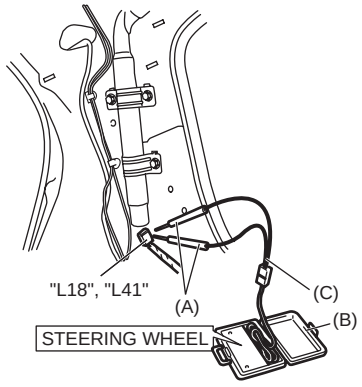
⚠ CAUTION

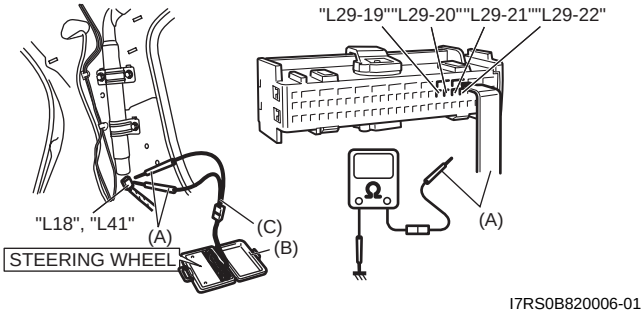
- **Be sure to perform "Air Bag Diagnostic System Check" before starting diagnosis according to flow.**
- **When measurement of resistance or voltage is required in this flow, use a tester along with a correct terminal adapter from special tool (Connector test adapter kit).**
- **When a check for proper connection is required, refer to "Inspection of Intermittent and Poor Connections".**
- **If there is open circuit in the air bag wire harness, connector or terminal is found damaged, replace the wire harness, connector and terminal as an assembly.**

DTC Will Set when
The voltage measured at side curtain-air bag (driver or passenger) initiator circuit is above a specified value for specified time.

Flow Test Description
Step 1: Check whether malfunction is in side curtain-air bag (inflator) module.
Step 2: Check side curtain-air bag initiator circuit.

DTC Troubleshooting

Step	Action	Yes	No
1	1) With ignition switch OFF, remove rear side upper trim of driver or passenger side and disconnect side curtain-air bag (inflator) module connector. 2) Check proper connection to side curtain-air bag (inflator) module at terminals in "L18" or "L41" connector. 3) If OK, then connect special tools (A), (B) and (C) to side curtain-air bag (inflator) module connector. **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I7RS0A820032-04 4) Check SDM DTC. *With ignition switch ON, is DTC B1364 or B1368 still indicated?*	Go to Step 2.	Replace side curtain-air bag (inflator) module referring to "Side Curtain-Air Bag (Inflator) Module Removal and Installation".

Step	Action	Yes	No
2	1) With ignition switch OFF, disconnect SDM connector “L29”. 2) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). 3) Measure voltage between “L29-19” and body ground, and between “L29-20” and ground (for DTC B1364) or “L29-21” and body ground, and between “L29-22” and body ground (for DTC B1368) with connected special tools (A), (B) and (C). **Special tool** **(A): 09932–76010** **(B): 09932–75010** **(C): 09932–78310**  I7RS0B820006-01 *With ignition switch ON, is voltage 1 V or less?*	Substitute a known-good SDM and recheck.	DTC B1064: Repair short from “YEL/GRN” or “YEL/BLU” wire circuit to power circuit. DTC B1068: Repair short from “BLK/YEL” or “BRN/YEL” wire circuit to power circuit.

NOTE

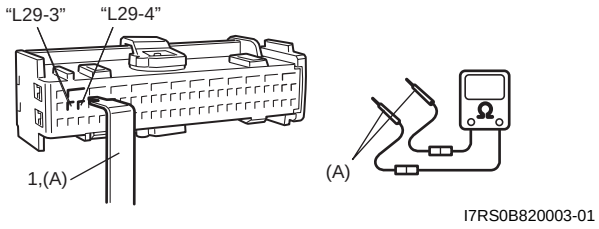
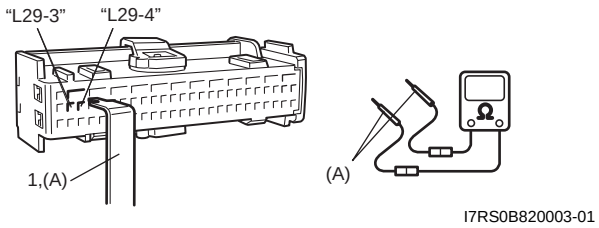
Upon completion of inspection and repair work, perform the following items.

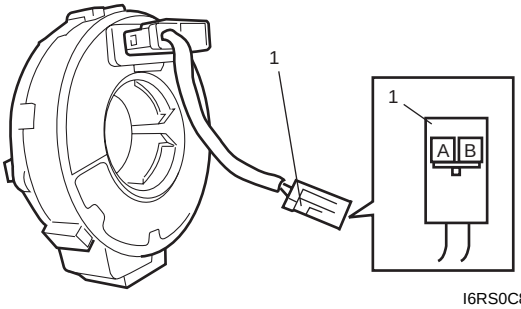
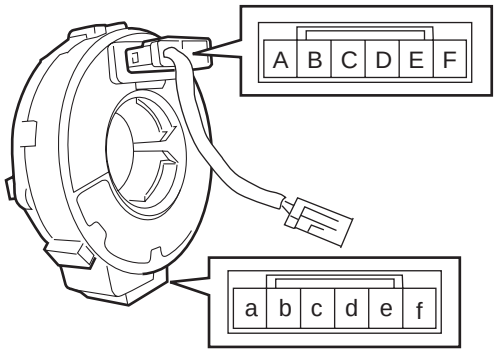
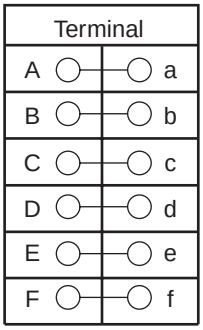
- **Reconnect all air bag system components, ensure all components are properly mounted.**
- **Clear DTCs referring to “DTC Clearance”, if any.**
- **Repeat “Air Bag Diagnostic System Check” to confirm that the trouble has been corrected.**

Contact Coil Cable and Its Circuit Check

S7RS0B8204047

Troubleshooting

Step	Action	Yes	No
1	**Driver air bag circuit check** 1) Remove driver air bag (inflator) module referring to "Driver Air Bag (Inflator) Module Removal and Installation". 2) With ignition switch turned OFF, disconnect SDM connector "L29". 3) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). **Special tool** **(A): 09932–76010** 4) Measure resistance between each air bag circuit terminal and other air bag circuit terminal in its connector.  I7RS0B820003-01 *Is each measured resistance infinity?*	Go to Step 3.	Check wire harness and connections. If wire and connection are OK, replace contact coil.
2	**Driver air bag circuit check** 1) Release shorting bar in SDM connector inserting release tool (1) included in special tool (A). **Special tool** **(A): 09932–76010** 2) Measure resistance between each air bag circuit terminal and body ground in its connector.  I7RS0B820003-01 *Is each measured resistance infinity?*	Go to Step 3.	Check defective wire harness. If wire is OK, replace contact coil.

Step	Action	Yes	No
3	**Contact coil circuit (driver air bag circuit) check** 1) Remove contact coil referring to “Contact Coil Cable Assembly Removal and Installation in Section 6B”. 2) Measure resistance between “A” and “B” terminal of drive air bag connector (1).  I6RS0C820012-01 *Is each measured resistance 1 Ω or less?*	Contact coil and its circuit are good condition.	If vehicle equipped with audio control switch, go to Step 4.
4	**Contact coil circuit (audio control switch circuit) check (if equipped)** 1) Check for continuity between each terminal of audio control switch connector as shown in figure.   I6RS0C820013-01 *Is each measured resistance 1 Ω or less?*	Go to Step 5.	Replace contact coil.
5	**Contact coil circuit (audio control switch circuit) check (if equipped)** 1) Measure resistance between each terminal and other terminal. *Is each measured resistance infinity?*	Contact coil and its circuit are good condition.	Replace contact coil.

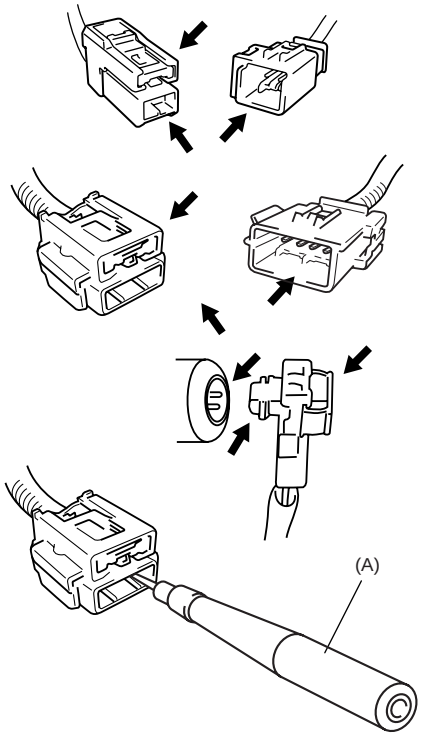
Inspection of Intermittent and Poor Connections

S7RS0B8204048

Most intermittents are caused by faulty electrical connections or wiring. When a check for proper connection is requested in a diagnostic flow, perform careful check of suspect circuits.
If any abnormality is found, repair or replace as a wire harness assembly.

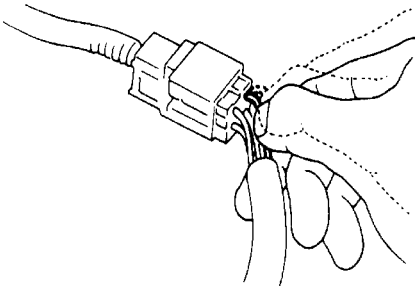
- Poor mating of connector halves, or terminals not fully seated in the connector body (backed out).
- Dirt or corrosion on the terminals. The terminals must be clean and free of any foreign material which could impede proper terminal contact.
  However, cleaning the terminal with a sand paper or the like is prohibited.
- Damaged connector body, exposing the terminals to moisture and dirt, as well as not maintaining proper terminal orientation with the component or mating connector.
- Improperly formed or damaged terminals.
  Check each connector terminal in problem circuits carefully to ensure good contact tension by using the corresponding mating terminal included in the connector test adapter kit (special tool).
  If contact tension is not enough, reform the terminal to increase contact tension or replace it.

  Special tool
  (A): 09932-76010 Connector test adapter kit



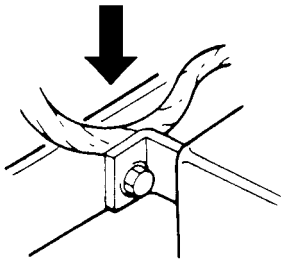
I4RS0A820045-01

- Poor terminal-to-wire connection.
  Check each wire harness in problem circuits for poor connection by shaking it by hand lightly. If any abnormal condition is found, change the wire harness assembly or component parts with new ones.



IYSQ01010028-01

- Wire insulation which is rubbed through, causing an intermittent short as the bare area touches other wiring or parts of the vehicle.
- Wire broken inside the insulation. This condition could cause a continuity check to show a good circuit, but if only 1 or 2 strands of a multi-strand-type wire are intact, resistance could be far too high.



IYSQ01820025-01

Repair and Inspection Required after Accident

S7RS0B8204049

⚠ CAUTION

- **All air bag system components, including the electrical harness (component mounting points), must be inspected after an accident. If any components are damaged or bent, they must be replaced even if air bag system activation did not occur.**
- **Never use air bag system parts from another vehicle.**
- **Do not attempt to service the parts below. Service of these parts is by replacement only.**
  - **– Driver / Passenger air bag (inflator) modules**
  - **– Driver / Passenger side-air bag (inflator) modules**
  - **– Driver / Passenger side curtain-air bag (inflator) modules**
  - **– Driver / Passenger seat belt pretensioners**
  - **– Forward-sensor**
  - **– Driver / Passenger side-sensors**
  - **– SDM**
  - **– Contact coil and combination switch assembly**
  - **– Air bag wire harness in main harness, instrument panel harness and floor harness.**
- **Proper operation of the sensors and air bag system requires that any repairs to the vehicle structure return it to its original production configuration.**

⚠ CAUTION

After detecting one time of such collision as to meet deployment conditions, the SDM must not be used.
Refer to "Air Bag Diagnostic System Check" when checking the SDM.

Accident with Deployment / Activation – Component Replacement

When driver and passenger air bags are deployed, the following components must be replaced.

- Driver and passenger air bag (inflator) modules
- Driver and passenger seat belt pretensioners
- SDM after detecting such collision as to meet deployment conditions
- Forward-sensor
- Instrument panel

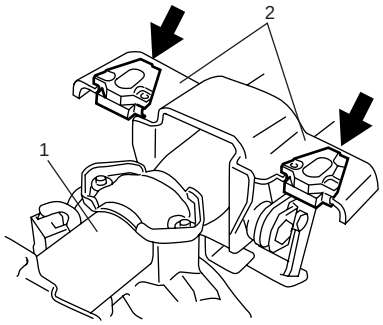
When side-air bag and side curtain-air bag are deployed, the following components must be replaced.

- Deployed side-air bag (inflator) module
- Deployed side curtain-air bag (inflator) module
- Side-sensor
- SDM

Accident with or without Deployment / Activation – Component Inspections

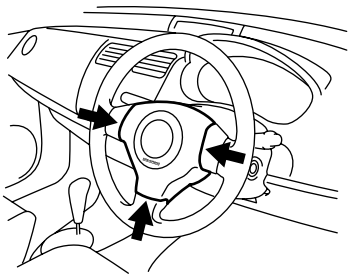
Certain air bag and restraint system components must be inspected after any crash, whether the air bag system activated or not. If any faulty condition is found in the following checks, replace faulty part.
Those components are:

- Steering column (1) and shaft joints
  - – Check for length, damage and bend according to "Checking Steering Column for Accident Damage in Section 6B".
- Steering column bracket (2) and capsules
  - – Check for damage and bent.



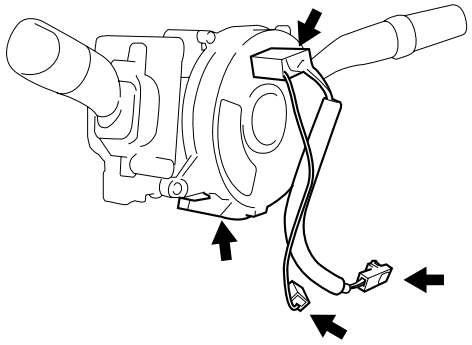
I4RS0A820046-01

- Steering wheel and driver air bag (inflator) module
  - – Check for damage or air bag (inflator) module fitness.
  - – Check trim cover (pad surface) for cracks.
  - – Check wire harness and connector for damage or tightness.



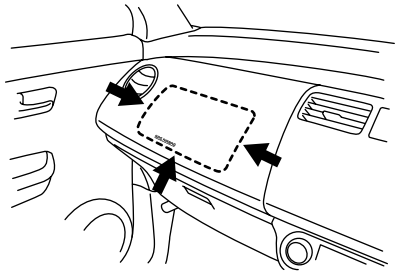
I4RS0A820047-01

- Contact coil and combination switch assembly
  - Check wire harness and connectors for damage or tightness.
  - Check contact coil case for damage.



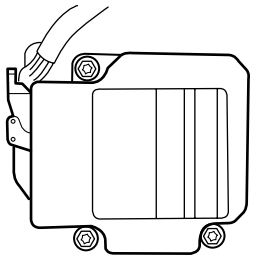
I4RS0A820048-01

- Instrument panel member and reinforcement
  - Check for any distortion, bending, cracking or other damage.
  - Check instrument panel for cracks or deformities.
- Passenger air bag (inflator) module
  - Check for dents, cracks, damage or fitness.
  - Check harness and connector for damage or tightness.



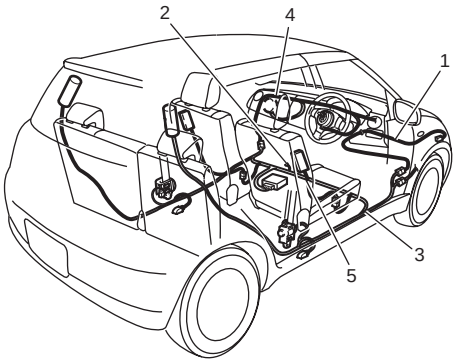
I4RS0A820049-01

- SDM
  - Check for external damage such as deformation, scratch, crack, peeled paint, etc.
  - Check SDM for a cause in itself preventing its proper installation. (There is a gap between SDM and SDM plate, or it cannot be fixed securely.)
  - Check connector or lead wire of SDM for scorching, melting or damage.
  - Check SDM connector and terminals for tightness.
  - Check if SDM sets a DTC and is judged as malfunctioning according to the diagnostic flow.



I5RH01820092-01

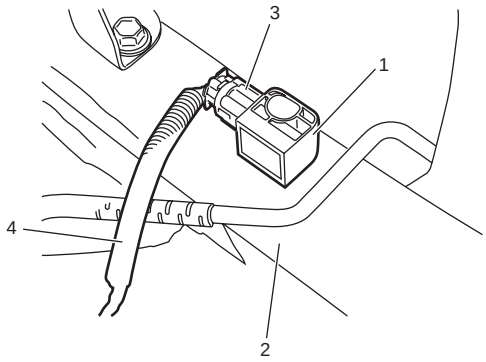
- Air bag wire harness and connections
  - Check for damages, deformities or poor connections.
    Refer to “Inspection of Intermittent and Poor Connections”.
  - Check wire harness clamps for tightness.
  - For air bag harness including in instrument panel harness replacement, refer to “Passenger Air Bag (Inflator) Module Repair Harness Installation”.



I4RS0A820004-01

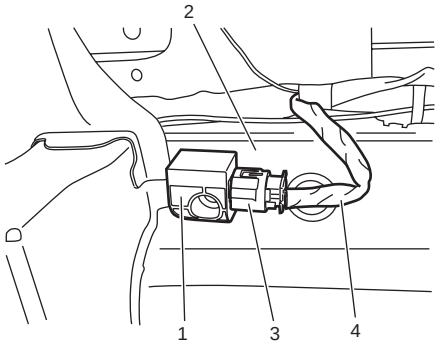
1. Main harness	4. Instrument panel harness
2. Grounding point	5. Seat harness
3. Floor harness	

- Forward-sensor
  - Check sensor (1) and front panel (2) for damage, bend or rust.
  - Check connector (3) or lead wire (4) of forward-sensor for scorching, melting or damage.



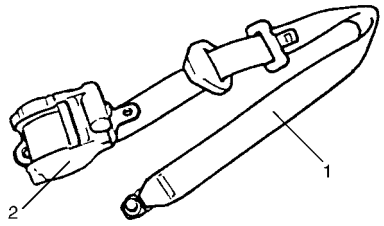
I4RS0A820050-01

- Side-sensor
  - Check sensor (1) and under body (2) for dents, cracks, deformation or rust.
  - Check sensor connector (sensor side and harness side) (3) or sensor lead wire (4) for damage, crack, scorching or melting.



I4RS0A820051-01

- Seat belt pretensioner
  - Check for dents, cracks, damage or fitness
  - Check harness and connector for damage or tightness.



I3JA01820043-01

1.	Seat belt
2.	Retractor assembly

- Seat belts and mounting points
  - Refer to “Front Seat Belt Components in Section 8A”.
- “AIR BAG” warning right
  - After vehicle is completely repaired, perform “Air Bag Diagnostic System Check”.
- Side-air bag (inflator) module
  - Check for dents, cracks, damage or fitness.
  - Check trim cover for cracks or deformities.
  - Check wire harness and connector for damage or tightness.
- Side curtain-air bag (inflator) module
  - Check for dents, cracks, damage or fitness.
  - Check harness wire harness and connector for damage or tightness.
  - Check headlining for cracks or deformation.

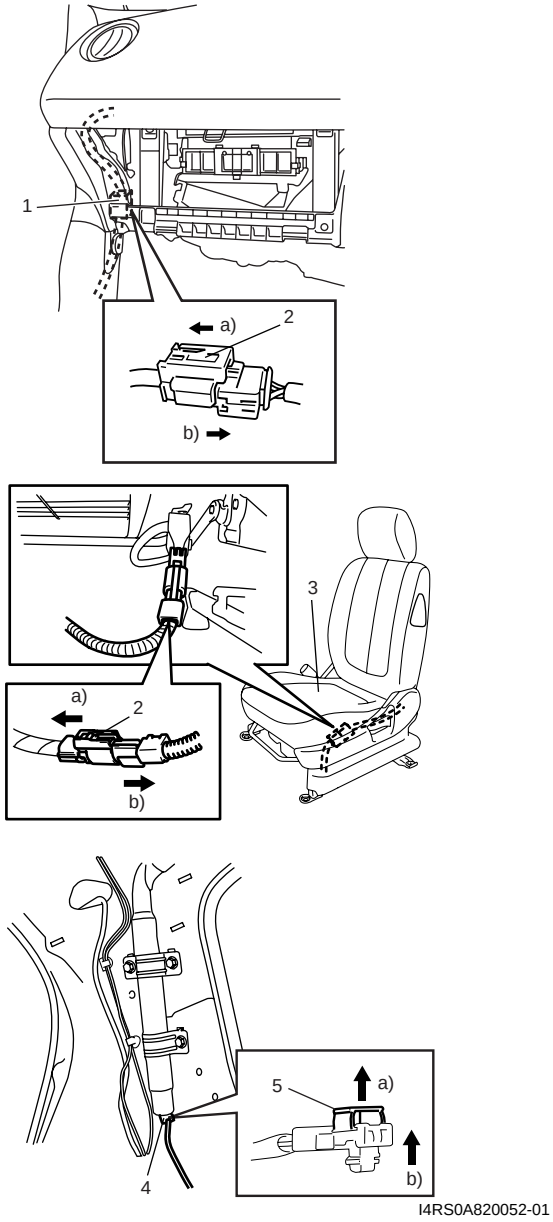
Repair Instructions

Disabling Air Bag System

S7RS0B8206001

1) Turn steering wheel so that vehicle’s wheels (front tires) are pointing straight ahead.
2) Disconnect negative (–) cable at battery.
3) Turn ignition switch to “LOCK” position and remove key.
4) Remove “A/BAG” fuse from fuse box.
5) Pull out glove box while pushing its stopper from both right and left sides and disconnect yellow connector (1) for driver and passenger air bags as follows.
   a) Release locking of lock slider (2).
   b) After unlocked, disconnect connector.
6) If equipped with side-air bag (inflator) module, disconnect yellow connector of side-air bag (inflator) module under front seat cushion (3).
   a) Release locking of lock slider.
   b) After unlocked, disconnect connector.

7) If equipped with side curtain-air bag (inflator) module, remove quarter inner trim and disconnect black connector (4) of side curtain-air bag (inflator) module.
   a) Unlock button (5).
   b) With lock button unlocked, disconnect connector.



I4RS0A820052-01

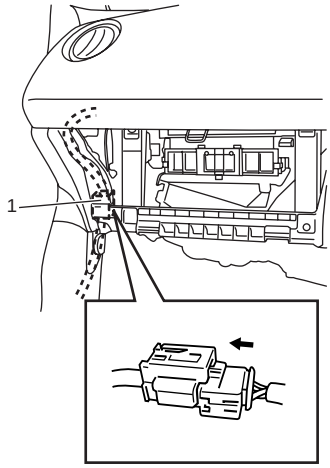
NOTE

With "A/BAG" fuse removed and ignition switch ON, "AIR BAG" warning right will be ON.
This is normal operation and does not indicate air bag system malfunction.

Enabling Air Bag System

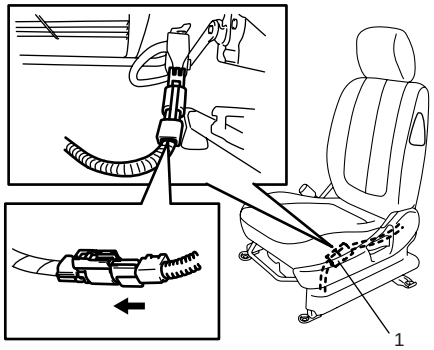
S7RS0B8206002

1) Confirm that battery negative (–) cable is disconnected.
2) Turn ignition switch to "LOCK" position and remove key.
3) Connect yellow connector (1) of passenger air bag (inflator) module by pushing connector till click is heard from it.



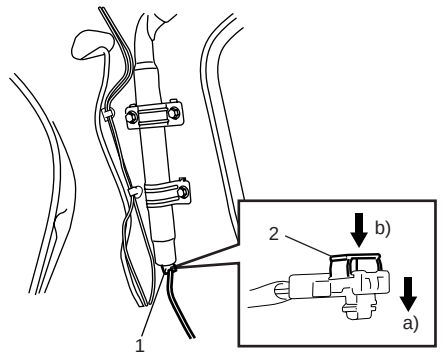
I4RS0A820053-01

4) Install glove box.
5) If equipped with side-air bag (inflator) module, connect yellow connector (1) of side-air bag (inflator) module by pushing connector till click is heard from it.



I4RS0A820054-01

6) If equipped with side curtain-air bag (inflator) module, connect black connector (1) securely as shown in figure.
   a) Connect connector.
   b) Lock connector with lock button (2).



I4RS0A820055-01

7) Install “A/BAG” fuse to fuse box.
8) Connect negative (–) cable at battery.
9) Turn ignition switch to ON position and verify that “AIR BAG” warning right flashes 6 times and then turns OFF. If it does not operate as described, perform “Air Bag Diagnostic System Check”.

SDM Removal and Installation

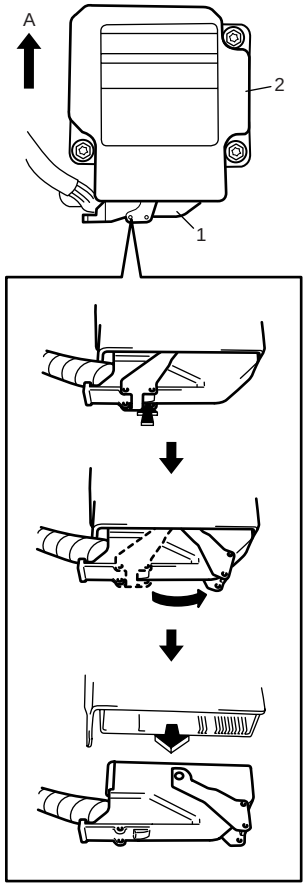
S7RS0B8206003

⚠ WARNING

During service procedures, be very careful when handling a Sensing and Diagnostic Module (SDM).
Be sure to read “Precautions on Service and Diagnosis of Air Bag System” before starting to work and observe every precaution during work. Neglecting them may result in personal injury or inactivation of the air bag system when necessary.

Removal

1) Disconnect negative cable at battery.
2) Disable air bag system referring to “Disabling Air Bag System”.
3) Remove center console box referring to “Console Box Components in Section 9H”.
4) Disconnect SDM connector (1) from SDM (2).
5) Remove SDM (2) from vehicle.



I4RS0A820056-01

A: Forward

Installation

1) Check that none of the following faulty conditions exists.
   - Bend, scratch, deformity in vehicle body where SDM is mounted.
   - Foreign matter or rust on mating surface of vehicle body where SDM is mounted.
2) Install SDM (2) to vehicle.

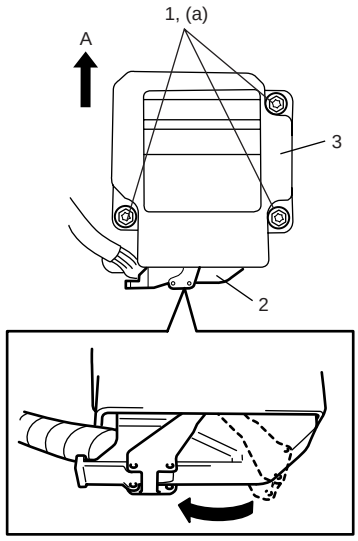
⚠ CAUTION

Ensure that arrow on the SDM is pointing toward the front of the vehicle.

3) Tighten SDM bolts (1) to specified torque.

Tightening torque
SDM bolt (a): 9 N·m (0.9 kgf-m, 6.5 lb-ft)

4) Connect SDM connector (2) to SDM (3) securely.



I4RS0A820107-01

A: Forward

5) Install center console box upper cover.
6) Enable air bag system referring to “Enabling Air Bag System”.
7) Connect negative cable at battery.

SDM Inspection

S7RS0B8206004

⚠ WARNING

During service procedures, be very careful when handling a Sensing and Diagnostic Module (SDM).
Be sure to read “Precautions on Service and Diagnosis of Air Bag System” before starting to work and observe every precaution during work. Neglecting them may result in personal injury or inactivation of the air bag system when necessary.

⚠ CAUTION

- **Do not connect a tester whatever type it may be.**
- **Never repair or disassemble SDM.**
- **If SDM has been dropped, it should be replaced.**

If any faulty condition is found in the following checks, replace.

- Check SDM and SDM plate for dents, cracks or deformation.
- Check SDM connector for damage, cracks or lock mechanism.
- Check SDM terminal for bend, corrosion or rust.

Driver Air Bag (Inflator) Module Removal and Installation

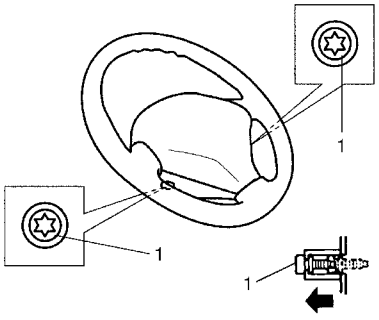
S7RS0B8206005

⚠ WARNING

When handling an air bag (inflator) module, be sure to read “Precautions on Handling and Storage of Air Bag System Components” and observe each instruction. Failure to follow them could cause a damage to the air bag (inflator) module or result in personal injury.

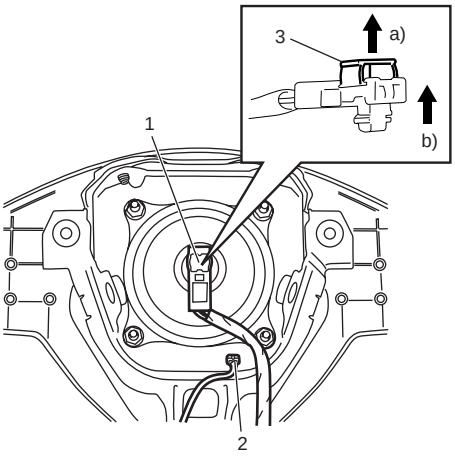
Removal

1) Disconnect negative cable at battery.
2) Disable air bag system. Refer to “Disabling Air Bag System”.
3) Loosen driver air bag (inflator) module mounting bolts (1) till it turns freely, pull them out and fix them to bolt clamps.



I3JA01820031-01

4) Remove air bag (inflator) module from steering wheel.
5) Disconnect driver air bag (inflator) module connector (1) of driver air bag (inflator) module and horn connector (2) as shown in figure.
   a) Unlock lock button (3).
   b) With lock button unlocked, disconnect connector.



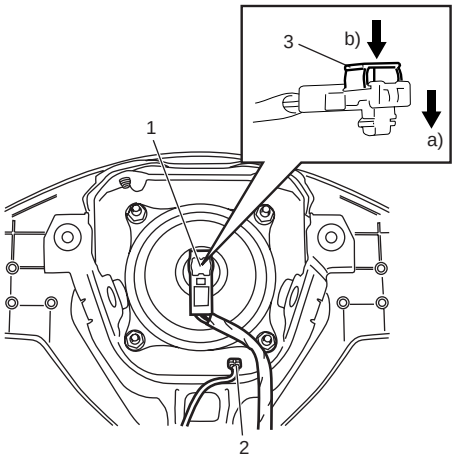
I4RS0A820057-01

⚠ WARNING

Special care is necessary when handling and storing a live (undeployed) air bag (inflator) module. Observe "Precautions on Handling and Storage of Air Bag System Components". Otherwise, personal injury may result.

Installation

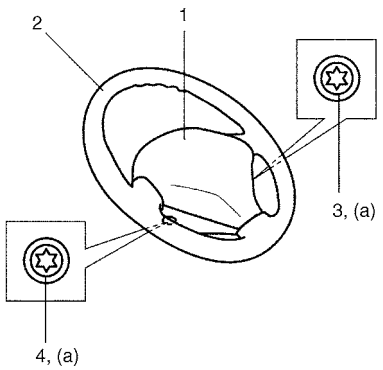
1) Connect horn connector (1) securely.
2) Connect driver air bag (inflator) module connector (2) to driver air bag (inflator) module (3) securely as shown in figure.
   a) Connect connector.
   b) Lock connector with lock button.



I4RS0A820058-01

3) Install driver air bag (inflator) module (1) to steering wheel (2), taking care so that no part of wire harness is caught between them.
4) Make sure that clearance between module (1) and steering wheel (2) is uniform all the way.
5) Tighten driver air bag (inflator) module mounting bolt (left side) (3) to specified torque first and then driver air bag (inflator) module mounting bolt (right side) (4) to specified torque.

   Tightening torque
   Driver air bag (inflator) module mounting bolt (a): 9 N·m (0.9 kgf-m, 6.5 lb-ft)



I5RH01820103-01

6) Enable air bag system. Refer to "Enabling Air Bag System".
7) Connect negative cable at battery.

Driver Air Bag (Inflator) Module Inspection

S7RS0B8206006

⚠ WARNING

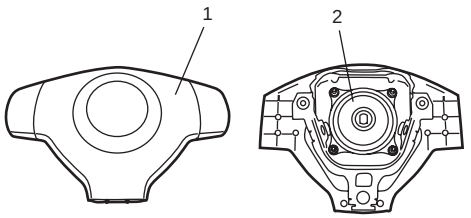
Never disassemble air bag (inflator) module or measure its resistance. Otherwise, personal injury may result.

⚠ CAUTION

If air bag (inflator) module was dropped from a height of 90 cm (3 ft) or more, it should be replaced.

Check air bag (inflator) module visually and if any of the following is found, replace it with a new one.

- Air bag being deployed
- Trim cover (pad surface) (1) being cracked
- Inflator case (2) being damaged or having been exposed to strong impact (dropped)
- Bend or deformity of air bag (inflator) module bracket.



I4RS0A820059-01

Passenger Air Bag (Inflator) Module Removal and Installation

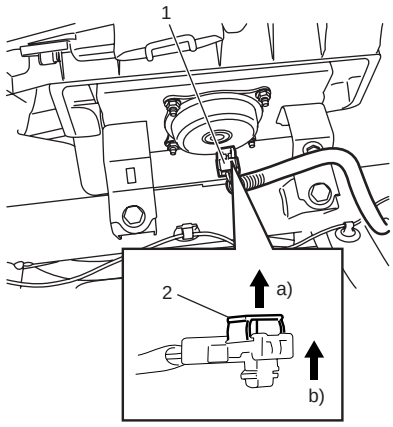
S7RS0B8206007

⚠ WARNING

- **Never attempt to disassemble or repair the passenger air bag (inflator) module. If any abnormality is found, be sure to replace it with new one as an assembly.**
- **Be sure to read "Precautions on Service and Diagnosis of Air Bag System", "Precautions on Handling and Storage of Air Bag System Components" and "Precautions on Disposal of Air Bag and Seat Belt Pretensioner" before starting to work and observe every precaution during work. Neglecting them may result in personal injury or undeployment of the air bag when necessary.**

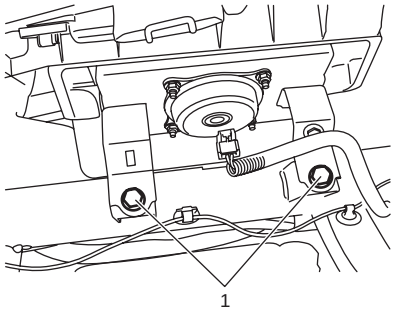
Removal

1) Disable air bag system. Refer to "Disabling Air Bag System".
2) Disconnect passenger air bag (inflator) module connector (1) as shown in figure.
   a) Unlock lock button (2).
   b) With lock button unlocked, disconnect connector.



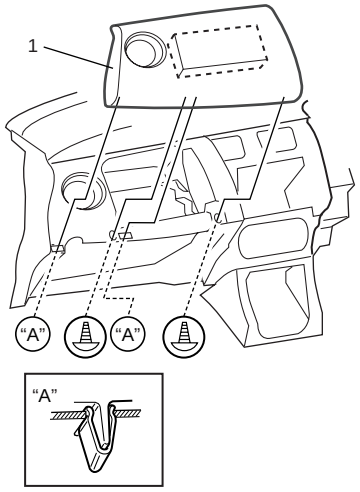
I4RS0A820060-01

3) Remove passenger air bag (inflator) module attaching bolts (1).



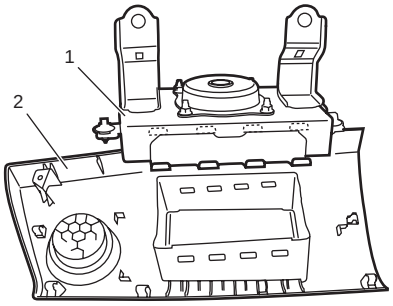
I4RS0A820061-01

4) Remove passenger air bag (inflator) module with air bag hole cover (1) from instrument panel as shown.



I4RS0A820062-01

5) Remove passenger air bag (inflator) module (1) from air bag hole cover (2).



I4RS0A820063-01

⚠ WARNING

- **When carrying a live air bag (inflator) module, make sure the bag opening is pointed away from you.**
  Never carry air bag (inflator) module by wires or connector on the side of the module. In case of an accidental deployment, the bag will then deploy with minimal chance of injury.
- **As the live passenger air bag (inflator) module must be kept with its bag (trim cover) facing up while being stored or left standing, place it on the workbench with a slit facing down or use the workbench vise to hold it securely at its lower mounting bracket. This is necessary so that a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment.**
- **Observe "Precautions on Handling and Storage of Air Bag System Components" for handling and storing it.**

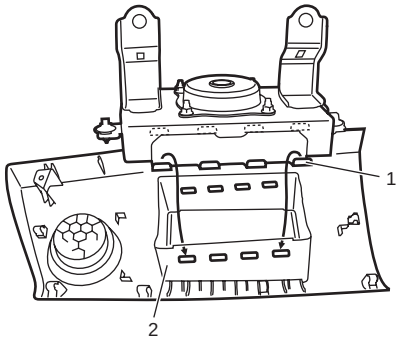
Otherwise, personal injury may result.

Installation

1) Install passenger air bag (inflator) module to air bag hole cover (2).

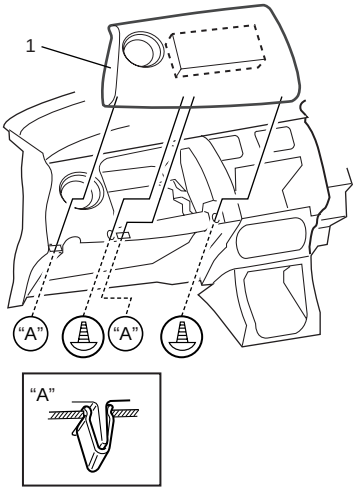
⚠ CAUTION

Confirm claw (1) of passenger air bag (inflator) module hangs in air bag hole cover (2).



I4RS0A820064-01

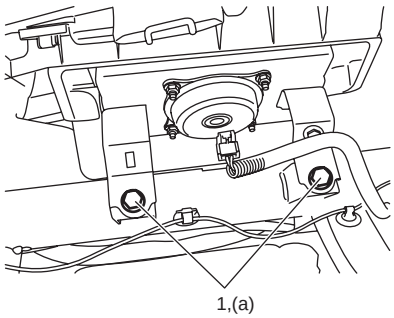
2) Install passenger air bag (inflator) module with air bag hole cover (1) to instrument panel as shown.



I4RS0A820062-01

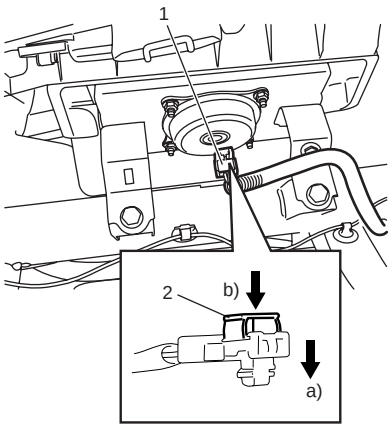
3) Tighten passenger air bag (inflator) module attaching bolts (1) to specified torque.

Tightening torque
Passenger air bag (inflator) module attaching bolt (a): 23 N·m (2.3 kgf-m, 16.5 lb-ft)



I4RS0A820065-01

4) Connect passenger air bag (inflator) module connector (1) securely as shown in figure.
   a) Connect connector.
   b) Lock connector with lock button (2).



I4RS0A820066-01

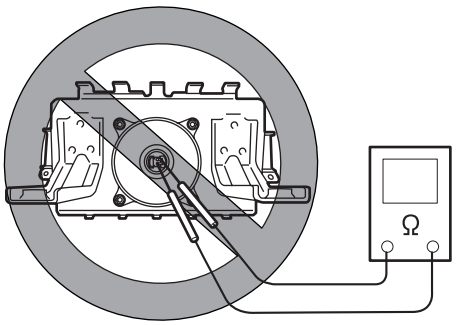
5) Enable air bag system. Refer to “Enabling Air Bag System”.

Passenger Air Bag (Inflator) Module Inspection

S7RS0B8206008

⚠ WARNING

- **Never measure resistance of passenger air bag (inflator) module or disassemble it. Otherwise personal injury may result.**
- **Never attempt to disassemble or repair the passenger air bag (inflator) module. If any abnormality is found, be sure to replace it with new one as an assembly.**
- **Be sure to read “Precautions on Service and Diagnosis of Air Bag System”, “Precautions on Handling and Storage of Air Bag System Components” and “Precautions on Disposal of Air Bag and Seat Belt Pretensioner” before starting to work and observe every precaution during work. Neglecting them may result in personal injury or undeployment of the air bag when necessary.**



I3RH0A820071-01

⚠ CAUTION

If air bag (Inflator) module was dropped from a height of 90 cm (3 ft) or more, it should be replaced.

Check air bag (inflator) module appearance visually for the following symptoms and if any one of them is found, replace with a new one.

- Air bag has deployed.
- Wire harness or connector is damaged.
- Air bag (inflator) module is damaged or a strong impact was applied to it.
- Bend or deformity of air bag (inflator) module bracket.

Side-Air Bag (Inflator) Module Removal and Installation

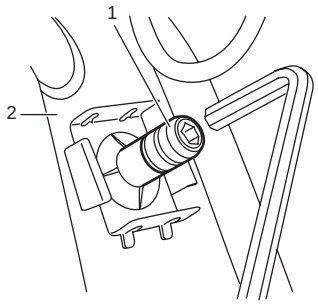
S7RS0B8206009

⚠ WARNING

- **Never attempt to disassemble or repair the side-air bag (inflator) module. If any abnormality is found, be sure to replace it with new one as an assembly.**
- **Be sure to read “Precautions on Service and Diagnosis of Air Bag System”, “Precautions on Handling and Storage of Air Bag System Components” and “Precautions on Disposal of Air Bag and Seat Belt Pretensioner” before starting to work and observe every precaution during work. Neglecting them may result in personal injury or undeployment of the air bag when necessary.**

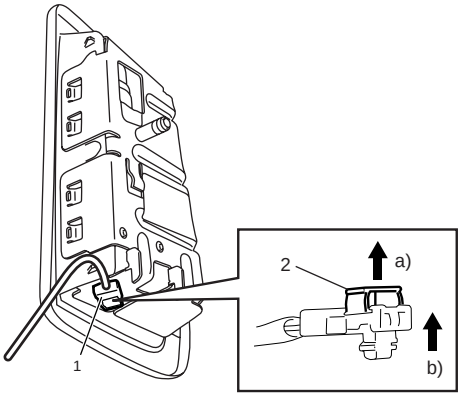
Removal

1) Disable air bag system. Refer to “Disabling Air Bag System”.
2) Roll up the seat surface of the seat back.
3) Remove sleeve lock nut (1) from seat back (2).



I4RS0A820067-01

4) Remove side-air bag (inflator) module from seat back.
5) Disconnect side-air bag (inflator) module connector (1) as shown in figure.
   a) Unlock lock button (2).
   b) With lock button unlocked, disconnect connector.



I4RS0A820068-01

⚠ WARNING

- **When carrying a live air bag (inflator) module, make sure the bag opening is pointed away from you.**
  Never carry air bag (inflator) module by wires or connector on the side of the module. In case of an accidental deployment, the bag will then deploy with minimal chance of injury.
- **As the live side-air bag (inflator) module must be kept with its bag (trim cover) facing up while being stored or left standing. This is necessary so that a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment.**
- **Observe "Precautions on Handling and Storage of Air Bag System Components" for handling and storing it.**

Otherwise, personal injury may result.

⚠ CAUTION

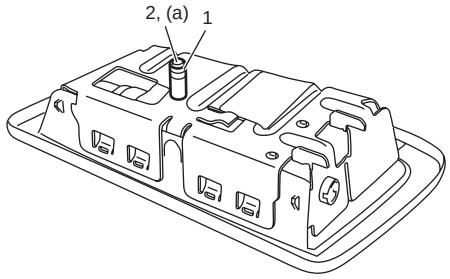
Do not damage the sleeve. Otherwise, the side-air bag cannot be correctly installed to seat back.

Installation

1) Confirm sleeve (1) is surely installed in side-air bag (inflator) module.
2) Tighten sleeve lock nut (2) to specified torque.

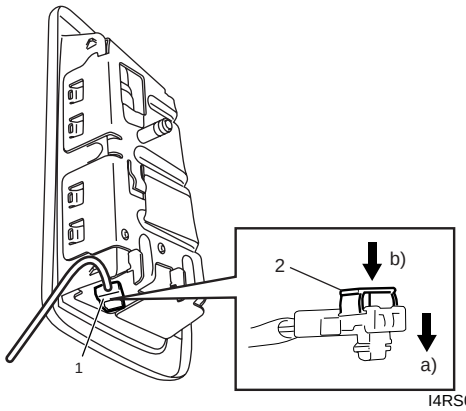
   Tightening torque
   Sleeve lock nut (a): 2.5 N·m (0.25 kgf-m, 2.0 lb-ft)

3) Install new clip to seat back.



I4RS0A820073-02

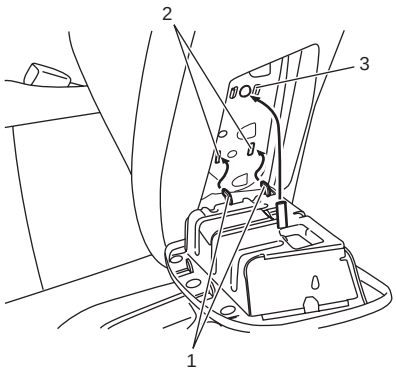
4) Connect side-air bag (inflator) module connector (1) securely as shown in figure.
   a) Connect connector.
   b) Lock connector with lock button (2).



I4RS0A820070-01

5) Insert claw (1) of side-air bag (inflator) module on installation hole (2).
6) Push side-air bag (inflator) module into clip (3) with specified force.

   <u>Side-air bag (inflator) module installation force</u>
   Pushing force: 180 N



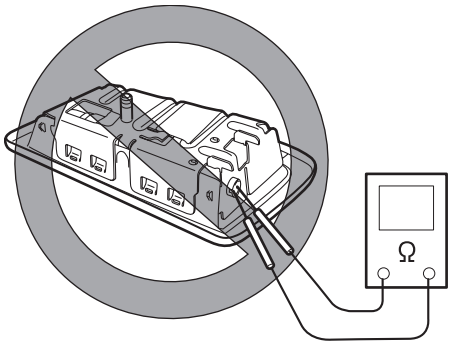
I4RS0A820074-02

Side-Air Bag (Inflator) Inspection

S7RS0B8206010

⚠ WARNING

- **Never attempt to disassemble or repair the side-air bag (inflator) module. If any abnormality is found, be sure to replace it with new one as an assembly.**
- **Be sure to read "Precautions on Service and Diagnosis of Air Bag System" before starting to work and observe every precaution during work. Neglecting them may result in personal injury or undeployment of the air bag when necessary.**



I4RS0A820075-02

⚠ CAUTION

If air bag (inflator) module was dropped from a height of 90 cm (3 ft) or more, it should be replaced.

Check air bag (inflator) module appearance visually for the following symptoms and if any one of them is found, replace with a new one.

- Air bag has deployed.
- There is a crack in trim cover (pad surface).
- Wire harness or connector is damaged.
- Air bag (inflator) module is damaged or a strong impact was applied to it.
- Bend or deformity of air bag (inflator) module bracket.

Side Curtain-Air Bag (Inflator) Module Removal and Installation

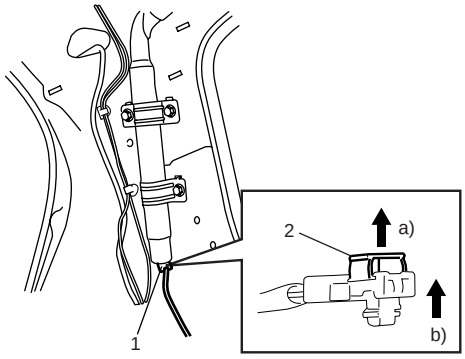
S7RS0B8206011

⚠ WARNING

- **Never attempt to disassemble or repair the side curtain-air bag (inflator) module. If any abnormality is found, be sure to replace it with new one as an assembly.**
- **Be sure to read "Precautions on Service and Diagnosis of Air Bag System", "Precautions on Handling and Storage of Air Bag System Components" and "Precautions on Disposal of Air Bag and Seat Belt Pretensioner" before starting to work and observe every precaution during work. Neglecting them may result in personal injury or undeployment of the air bag when necessary.**

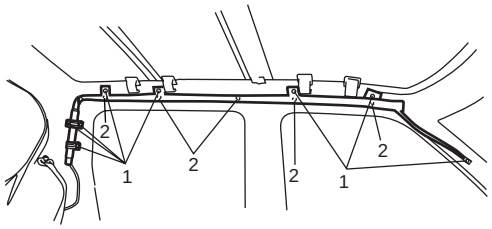
Removal

1) Disable air bag system. Refer to "Disabling Air Bag System".
2) Remove head lining referring to "Head Lining Removal and Installation in Section 9H".
3) Disconnect side curtain-air bag (inflator) module connector (1) as shown in figure.
   a) Unlock lock button (2).
   b) With lock button unlocked, disconnect connector.



I4RS0A820077-01

4) Remove side curtain-air bag (inflator) module fixing bolts (1) and clips (2).



I4RS0A820076-01

5) Remove side curtain-air bag (inflator) module.

⚠ WARNING

- **When carrying a live air bag (inflator) module, make sure the bag opening is pointed away from you.**
  Never carry air bag (inflator) module by wires or connector on the side of the module. In case of an accidental deployment, the bag will then deploy with minimal chance of injury.
- **As the live curtain air bag (inflator) module must be kept with its bag facing up while being stored or left standing. This is necessary so that a free space is provided to allow the air bag to expand in the unlikely event of accidental deployment.**
- **Observe "Precautions on Handling and Storage of Air Bag System Components" for handling and storing it.**

Otherwise, personal injury may result.

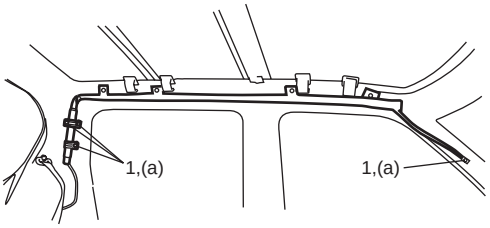
Installation

⚠ WARNING

Do not install side curtain-air bag (inflator) module while twisted or bended. Otherwise, side curtain-air bag (inflator) module may not deploy and injury may result.

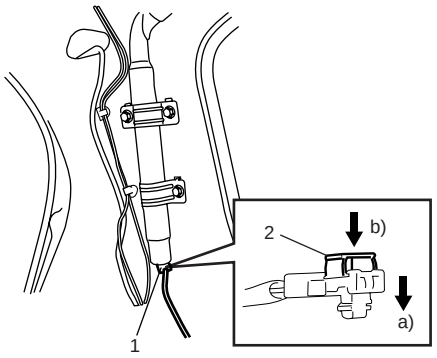
1) Install side curtain-air bag (inflator) module (1) with clips and new bolts.
2) Tighten side curtain-air bag (inflator) module attaching bolts (1) to specified torque.

Tightening torque
Side curtain-air bag (inflator) module attaching bolts (a): 11 N·m (1.1 kgf-m, 8.0 lb-ft)



I4RS0A820110-01

3) Connect side curtain-air bag (inflator) module connector (1) securely as shown in figure.
   a) Connect connector.
   b) Lock connector with lock button (2).



I4RS0A820055-01

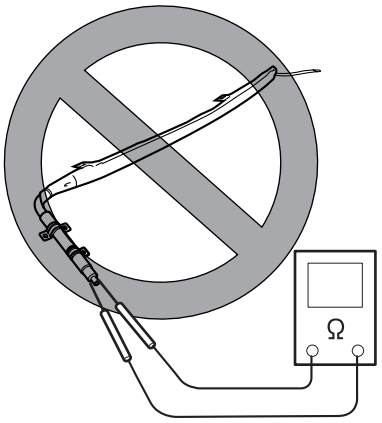
4) Install head lining referring to "Head Lining Removal and Installation in Section 9H".
5) Enable air bag system. Refer to "Enabling Air Bag System".

Side Curtain-Air Bag (Inflator) Module Inspection

S7RS0B8206012

⚠ WARNING

- **Never measure resistance of side curtain-air bag (inflator) module or disassemble it. Otherwise personal injury may result.**
- **Never attempt to disassemble or repair the side curtain-air bag (inflator) module. If any abnormality is found, be sure to replace it with new one as an assembly.**
- **Be sure to read "Precautions on Service and Diagnosis of Air Bag System", "Precautions on Handling and Storage of Air Bag System Components" and "Precautions on Disposal of Air Bag and Seat Belt Pretensioner" before starting to work and observe every precaution during work. Neglecting them may result in personal injury or undeployment of the air bag when necessary.**



I4RS0A820078-03

⚠ CAUTION

If air bag (inflator) module was dropped from a height of 90 cm (3 ft) or more, it should be replaced.

Check air bag (inflator) module appearance visually for the following symptoms and if any one of them is found, replace with a new one.

- Air bag has deployed.
- Inflator case being damaged or having been exposed to strong impact (dropped).

Forward-Sensor Removal and Installation

S7RS0B8206013

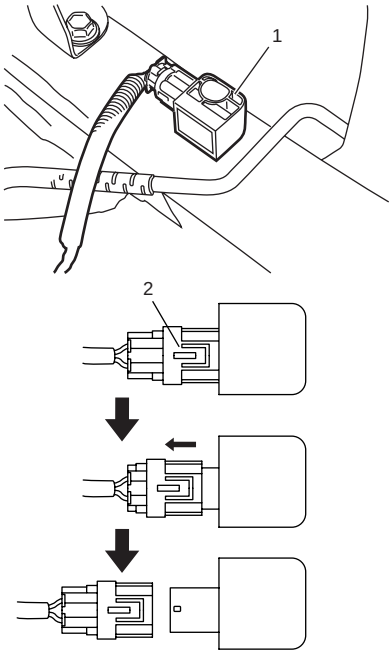
⚠ WARNING

During service procedures, be very careful when handling a sensor.

- **Never strike or jar a sensor.**
- **A sensor and mounting bracket bolts must be carefully torqued to assure proper operation. Under loose connection, it could cause improper operation of the air bag system.**

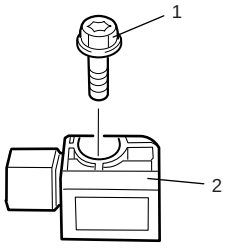
Removal

1) Disconnect negative cable at battery.
2) Disable air bag system referring to "Disabling Air Bag System".
3) Disconnect forward-sensor connector sliding connector outer (2) as shown.



I4RS0A820079-01

4) Remove forward-sensor bolt (1) and forward-sensor (2).



I5RH01820119-01

Installation

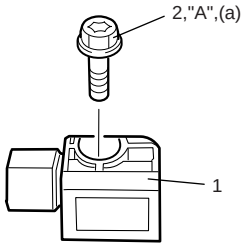
⚠ CAUTION

Proper operation of forward-sensor requires sensor be rigidly attached to vehicle structure and that the arrow on sensor be pointing toward the front of the vehicle.

1) Check that none of the following faulty conditions exists.
   - Bend, deformity or rust of front panel.
   - Foreign matter on mating surface of sensor.
2) Apply thread lock cement to mounting bolts thread. Install forward-sensor (1) on front panel and tighten mounting bolt (2) to specified torque.

   "A": Thread lock cement 99000–32100 (Thread Lock Cement 1305)

   Tightening torque
   Forward-sensor mounting bolt (a): 9 N·m (0.9 kgf-m, 6.5 lb-ft)



I5RH01820120-01

3) Connect forward-sensor connector by pushing connector till click is heard from it.
4) Connect negative cable at battery.
5) Enable air bag system referring to "Enabling Air Bag System".

Forward-Sensor Inspection

S7RS0B8206014

⚠ WARNING

During service procedures, be very careful when handling a sensor.
- **Never strike or jar a sensor.**
- **A sensor and mounting bracket bolts must be carefully torqued to assure proper operation. Under loose connection, it could cause improper operation of the air bag system.**

⚠ CAUTION

- **Never disassemble forward-sensor.**
- **Sensor should be replaced when it was dropped from a height of 90 cm (3 ft) or more.**
- Check sensor for dents, cracks or deformation.
- Check sensor connector (sensor side and harness side) and sensor connector lock mechanism for damage or crack.
- Check connector terminals for bend, corrosion or rust.

Side-Sensor Removal and Installation

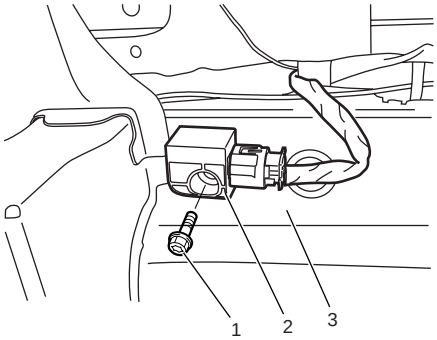
S7RS0B8206015

⚠ WARNING

During service procedures, be very careful when handling a sensor.
- **Never strike or jar a sensor.**
- **A sensor bolt must be carefully torqued to assure proper operation. Under loose connection, it could cause improper operation of the air bag system.**

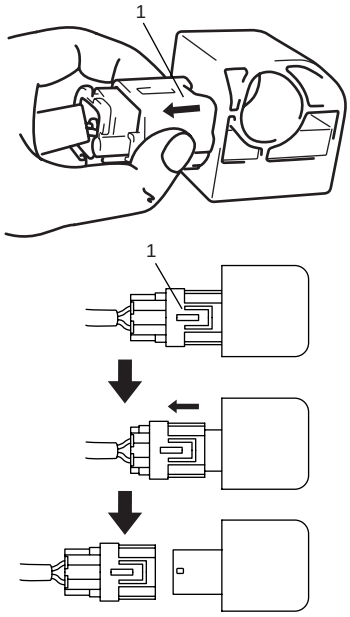
Removal

1) Disconnect negative (–) cable at battery.
2) Disable air bag system. Refer to "Disabling Air Bag System".
3) Remove center pillar lower trim and side sill scuff.
4) Turn up floor carpet at front seat side.
5) Remove side-sensor bolt (1), and side-sensor (2) from under body (3).



I4RS0A820080-01

6) Disconnect side-sensor connector sliding connector outer (1) as shown.



I4RS0A820109-01

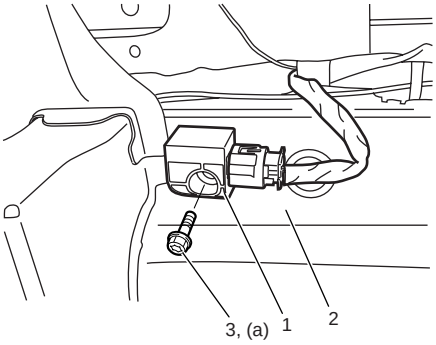
Installation

⚠ CAUTION

Proper operation of side-sensor requires sensor be rigidly attached to specified position.

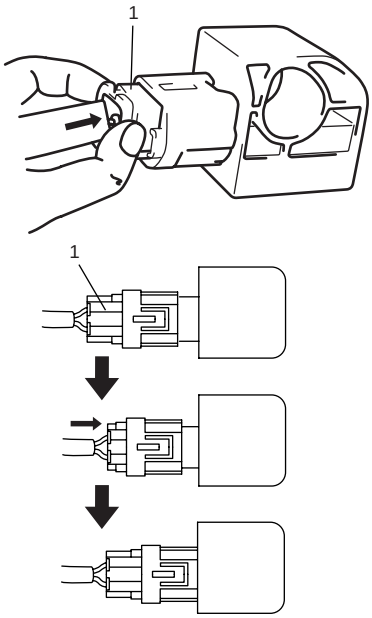
1) Check that none of following faulty conditions exists.
   - Bend, deformity or rust of under body.
   - Foreign matter on mating surface of sensor.
2) Install side-sensor (1) on under body (2) and tighten side-sensor bolt (3) to specified torque.

Tightening torque
Side-sensor bolt (a): 9 N·m (0.9 kgf-m, 6.5 lb-ft)



I4RS0A820081-01

3) Connect side-sensor connector pushing connector inner (1) as shown.



I4RS0A820106-01

4) Connect negative cable at battery.
5) Enable air bag system. Refer to “Enabling Air Bag System”.

Side-Sensor Inspection

S7RS0B8206016

⚠ WARNING

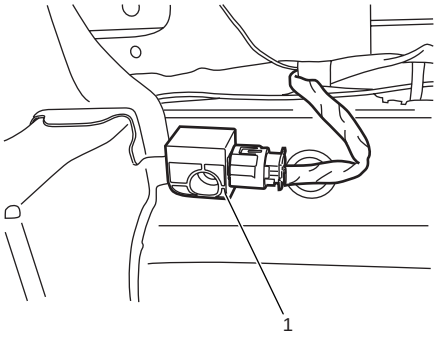
During service procedures, be very careful when handling a sensor.

- **Never strike or jar a sensor.**
- **A sensor and mounting bracket bolts must be carefully torqued to assure proper operation. Under loose connection, it could cause improper operation of the air bag system.**

⚠ CAUTION

- **Never disassemble side-sensor.**
- **Sensor should be replaced when it was dropped from a height of 90 cm (3 ft) or more.**

- Check sensor (1) for dents, crack, deformation.
- Check sensor connector (sensor side and harness side), lock mechanism or sensor lead wire for damage, crack, scorching or melting.
- Check connector terminals for bent, corrosion or rust. If any faulty condition is found in above checks, replace.

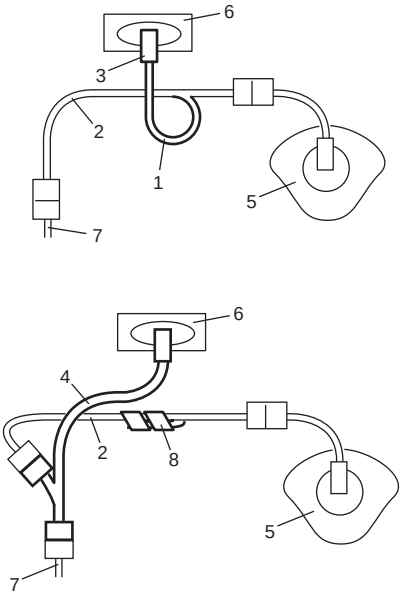


I4RS0A820082-01

Passenger Air Bag (Inflator) Module Repair Harness Installation

S7RS0B8206017

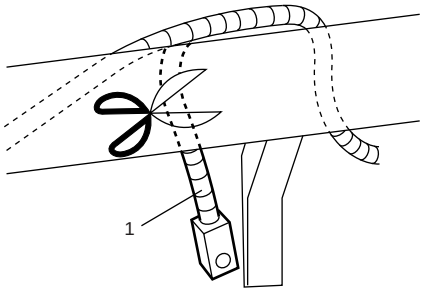
Replace passenger air bag (inflator) module repair harness (4) according to the following procedure when the harness (1) connected with passenger air bag (inflator) module of the air bag harness included in instrument panel harness (2) and passenger air bag (inflator) module connector (3) is damaged.



I4RS0A820103-01

5. Driver air bag (inflator) module	7. Floor harness
6. Passenger air bag (inflator) module	8. Vinyl tape

1) Disable air bag system. Refer to “Disabling Air Bag System”.
2) Disconnect “L32” connector from floor harness located near the glove box.
3) Cut off passenger air bag (inflator) module harness (1) included in instrument panel harness (2) as shown, and then fasten it to instrument panel harness with vinyl tape for avoiding interference with other parts.



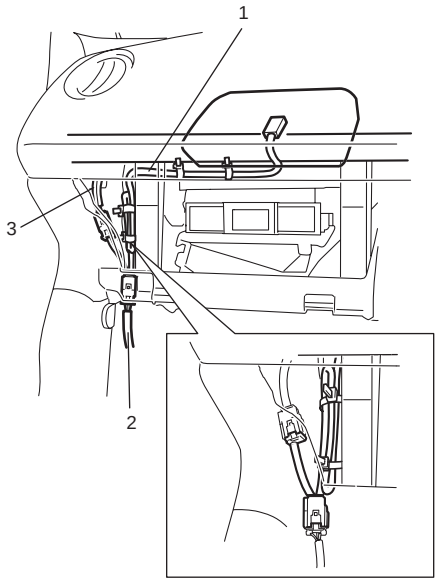
I4RS0A820083-01

4) Install passenger air bag (inflator) module repair harness (1) to floor harness (2), instrument panel harness (3) and passenger air bag (inflator) module.

⚠ CAUTION

To avoid interference with other parts, fasten the repair harness to instrument wire harness with a clamp or vinyl tape as shown in figure.

5) Connect each connector securely till click is heard.



I4RS0A820085-01

Air Bag (Inflator) Module and Seat Belt Pretensioner Disposal

S7RS0B8206018

⚠ WARNING

Failure to follow proper air bag (inflator) module and seat belt pretensioner disposal procedures can result in air bag deployment and pretensioner activation which may cause personal injury. Do not dispose of live (undeployed) air bag (inflator) modules and seat belt pretensioners. Because undeployed air bag (inflator) module / inactivated seat belt pretensioner must not be disposed of through normal refuse channels. Undeployed air bag (inflator) module and inactivated seat belt pretensioner contain substances that can cause severe illness or personal injury if sealed container is damaged during disposal.

Air bag (inflator) module / seat belt pretensioner can be deployed / activated inside or outside of vehicle. Deployment / Activation method used depends upon final disposition of vehicle. Review the following instructions in order to determine which will work best in a given situation.

Deployment / Activation Outside of Vehicle: When you intend to return the vehicle to service, deploy the air bag (inflator) module(s) and/or activate seat belt pretensioner(s) outside of the vehicle.

Deployment / Activation Inside of Vehicle: When the vehicle will be destroyed, or salvaged for component parts, deploy the air bag module(s) and/or activate seat belt pretensioner(s) installed on vehicle.

⚠ WARNING

The following precautions must be observed for this work. Failure to observe any of them may result in personal injury.

- **Procedure should be followed strictly as described here.**
- **Be sure to read “Precautions on Service and Diagnosis of Air Bag System” beforehand.**
- **To avoid accidental deployment / activation, this work should be performed by no more than one person.**
- **Since smoke is produced when air bag (inflator) module is deployed and pretensioner is activated, select well-ventilated area.**
- **Air bag (inflator) module and seat belt pretensioner will immediately deploy / activate when 12 volts vehicle battery is connected to it. Wear safety glasses throughout this entire deployment / activation and disposal procedure.**
- **Wear suitable ear protection when deploying air bag (inflator) module / activating seat belt pretensioner. Also, advise those who are in area close to deployment / activation site to wear suitable ear protection.**
- **Do not deploy / activate two or more air bag system components (air bag (inflator) modules and seat belt pretensioners) at the same time.**
- **Never connect deployment harness to any 12 volts vehicle battery before connecting deployment harness to air bag (inflator) module and seat belt pretensioner. Deployment harness shall remain shorted and not be connected to 12 volts vehicle battery till you are ready to deploy air bag (inflator) module or activate seat belt pretensioner.**

Deployment / Activation Outside of Vehicle
When you intend to return the vehicle to service, deploy the air bag (inflator) module(s) or activate seat belt pretensioner(s) outside of the vehicle.

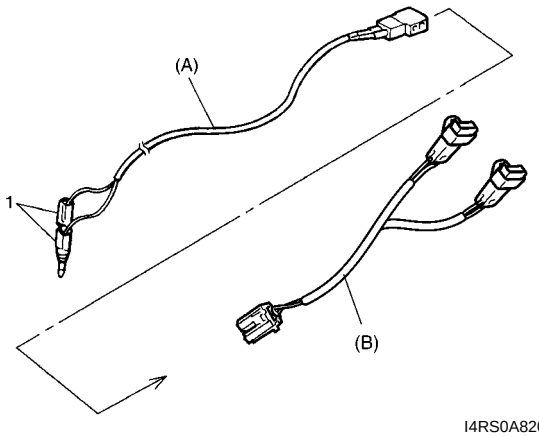
1) Turn ignition switch to LOCK position and remove key.
2) Wear safety glasses during this deployment / activation procedure.
3) Check that there is no open, short or damage in special tools (deployment harness (A) and adapter cable (B)). If any faulty is found, do not use it and be sure to use new special tool.

   Special tool
   (A): 09932-75031
   (B): 09932–76510

4) Short two deployment harness leads (1) together by fully seating one banana plug into the other.

⚠ WARNING

Deployment harness (A) shall remain shorted and not be connected to 12 volts vehicle battery till you are ready to deploy air bag module or activate seat belt pretensioner.



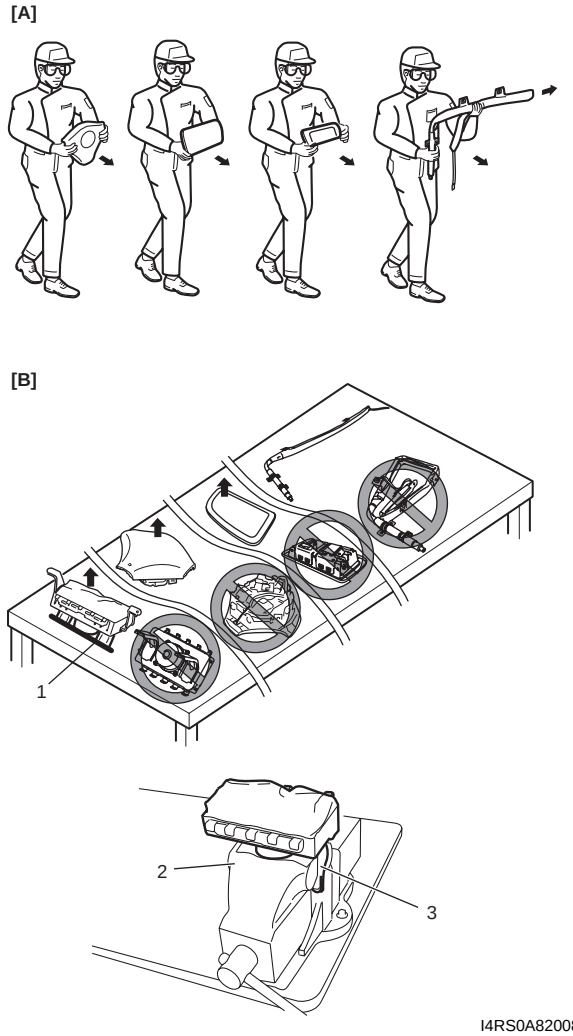
I4RS0A820084-01

5) Remove air bag (inflator) module(s) or seat belt pretensioner(s) from vehicle referring to “Driver Air Bag (Inflator) Module Removal and Installation”, “Passenger Air Bag (Inflator) Module Removal and Installation”or “Front Seat Belt Removal and Installation in Section 8A”.

⚠ WARNING

- **For handing and storage of live air bag (inflator) module, select place where ambient temperature below 65 °C (150 °F), without high humidity and away from electric noise.**
- **Always carry live air bag (inflator) module with trim cover away from you.**
- **When storing live air bag (inflator) module or when leaving live air bag (inflator) module unattended on bench or other surface, always face trim cover up and away from surface. As the live passenger air bag (inflator) module must be placed with its bag (trim cover) facing up, place it on the workbench with a slit (1) or use the workbench vise (2) to hold it securely at its lower mounting bracket (3). It is also prohibited to place anything on top of the trim cover and stack air bag (inflator) modules. This is necessary so that free space is provided to allow air bag (inflator) module to expand in the unlikely event of accidental deployment.**

Failure to follow procedures may result in personal injury.



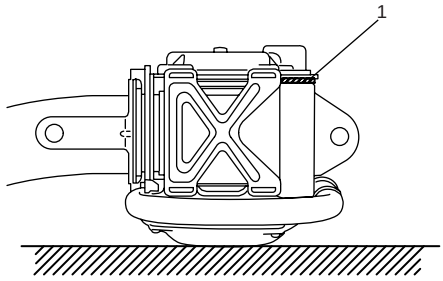
I4RS0A820086-02

[A]:	Always carry air bag (inflator) module with trim cover (air bag opening) away from body.
[B]:	Always place air bag (inflator) module on workbench with trim cover (air bag opening) up, away from loose objects.
2.	Lower mounting bracket
3.	Workbench vise

⚠ WARNING

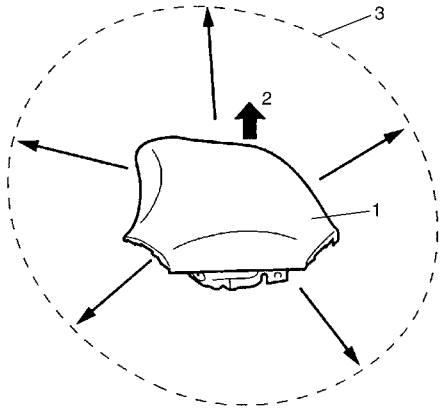
- **For handling and storage of seat belt pretensioner, select place where ambient temperature is below 65 °C (150 °F), without high humidity and away from electric noise.**
- **Never carry seat belt pretensioner by webbing.**
- **When placing seat belt pretensioner on workbench or other surface, be sure to lay it with its exhaust hole (1) side facing up. It is also prohibited to put something on seat belt pretensioner.**

Otherwise, personal injury may result.



I4JA01822118-01

6) Set air bag (inflator) module or seat belt pretensioner as follows.
   - For driver air bag (inflator) module
     a. Clear space (3) on ground about 185 cm (6 ft) in diameter where driver air bag (inflator) module (1) is set for deployment. Paved, outdoor location where there is no activity is preferred. If outdoor location is not available, use space on shop floor where there is no activity and sufficient ventilation is provided. Ensure no loose or flammable object exists within deployment area.
     b. Place driver air bag (inflator) module (1) with its vinyl trim cover facing up (2) on ground in step a.



I3JA01820036-01

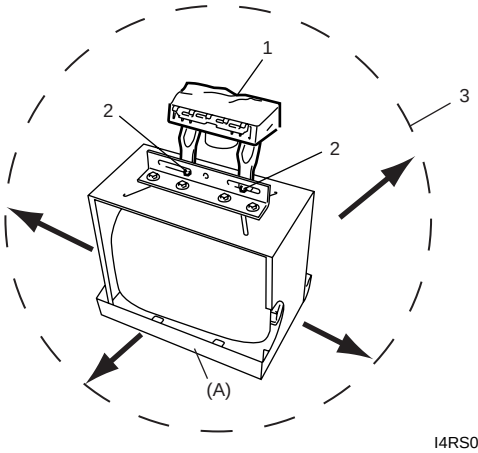
- For passenger air bag (inflator) module
  a. Clear space (3) on ground about 185 cm (6 ft) in diameter where passenger air bag (inflator) module (1) is set for deployment. Paved, outdoor location where there is no activity is preferred. If outdoor location is not available, use space on shop floor where there is no activity and sufficient ventilation is provided. Ensure no loose or flammable object exists within deployment area.
  b. Place deployment fixture (A) on ground in step a.

     Special tool
     (A): 09932-75041

  c. Fill plastic reservoir in deployment fixture (A) with water or sand. This is necessary to provide sufficient stabilization of fixture during deployment.
  d. Attach passenger air bag (inflator) module (1) in deployment fixture (A) securely using M8 bolt (2).

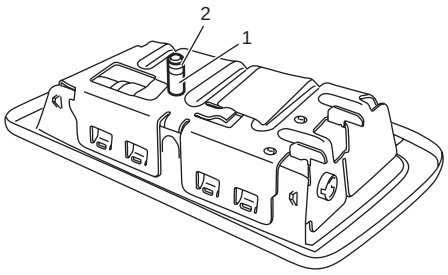
⚠ CAUTION

Be sure to use M8 size and 7T strength bolt for fixing passenger air bag (inflator) module (1) to deployment fixture (A).



I4RS0A820087-01

- For side-air bag (inflator) module
  a. Remove sleeve (1) and sleeve lock nut (2), if equipped.



I4RS0A820088-01

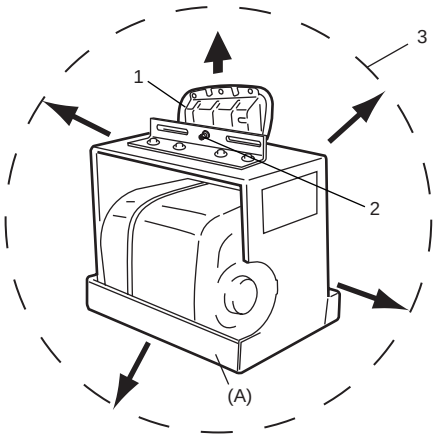
  b. Clear space (3) on ground about 185 cm (6 ft) in diameter where side-air bag (inflator) module for deployment. Paved, outdoor location where there is no activity is preferred. If outdoor location is not available, space on shop floor where there is no activity and provide sufficient ventilation. Ensure no loose or flammable objects are within deployment area.
  c. Place deployment fixture (A) on ground.

     Special tool
     (A): 09932–75041

  d. Fill plastic reservoir in deployment fixture (A) with water or sand. This is necessary to provide sufficient stabilization of fixture during deployment.
  e. Attach side-air bag (inflator) module (1) in deployment fixture using mounting attachment, sleeve lock nut and washer (2).

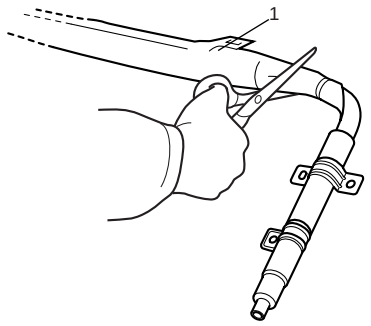
NOTE

Make sure that deploying direction faces as shown in figure against mounting attachment.



I4RS0A820089-01

- For side curtain-air bag (inflator) module
  a. Cut off bag (1) of side curtain-air bag (inflator) module.



I4RS0A820090-01

  b. Tie side curtain-air bag inflator (1) to tire (3) with wire harness (2) as shown.

Wire harness specifications
Stripped wire harness section 1.25 mm² (0.0019 in.²) or more (Stripped wire harness diameter 1.25 mm (0.05 in.) or more)

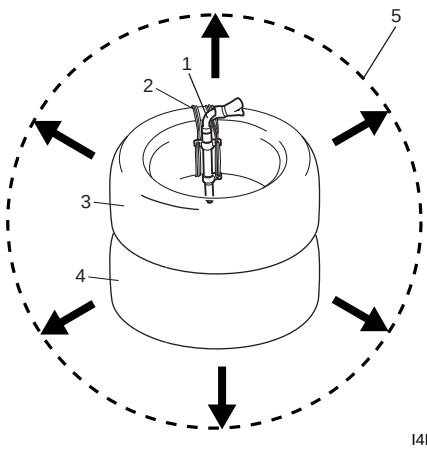
⚠ CAUTION

Make sure that wire harness is tight. It is very dangerous if looseness in wire harness results in side curtain-air bag inflator flying off due to shock from inflator deploying.

NOTE

Wind wire harness (2) around at least 3 times.

  c. Clear space (5) on ground about 185 cm (6 ft) in diameter where side curtain-air bag (inflator) module (1) is set for deployment. Paved, outdoor location where there is no activity is preferred. If outdoor location is not available, use space on shop floor where there is no activity and sufficient ventilation is provided. Ensure no loose or flammable object exists within activation area.
  d. Pile tire with side curtain-air bag (inflator) module on tire (4).



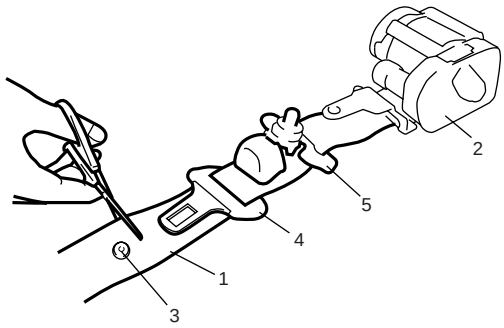
I4RS0A820091-01

- For seat belt pretensioner
  a. Cut webbing (1) at tongue plate stopper (3) of seat belt pretensioner (2) side as shown.

NOTE

Hold seat belt pretensioner (2) vertically in the same condition as it is installed. Otherwise, webbing can't be pulled out.

  b. Remove tongue plate (4) and shoulder anchor (5) from webbing.
  c. Tie webbing (1) tightly at 10 cm (3.9 in.) from cutting edge as shown.



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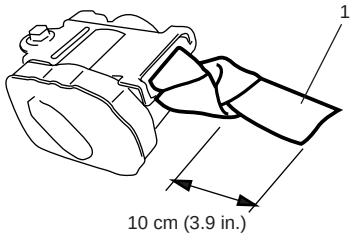


I4RS0A820104-01

d. Tie seat belt pretensioner (2) with wire harness (3) to wheel-installed tire (4) as shown.

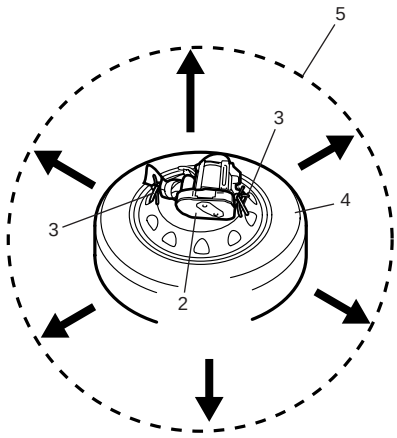
Wire harness specifications
Stripped wire harness section 1.25 mm² (0.0019 in.²) or more (Stripped wire harness diameter 1.25 mm (0.05 in.) or more)

NOTE

Wind wire harness (3) around at least 3 times.

e. Clear space (5) on ground about 185 cm (6 ft) in diameter where seat belt pretensioner (2) is to be activated. Paved, outdoor location where there is no activity is preferred. If outdoor location is not available, use space on shop floor where there is no activity and sufficient ventilation is provided. Ensure no loose or flammable object exists within activation area.

f. Place wheel-installed tire (4) with seat belt pretensioner (2) on ground in step e.



I4RS0A820105-01

1. Webbing

7) Stretch deployment harness (A) from air bag (inflator) module or seat belt pretensioner to its full length 10 m (33 ft).

Special tool
(A): 09932-75031

8) Place 12 volts vehicle battery (1) near the shorted end of deployment harness (A).

9) Check that area around air bag (inflator) module or seat belt pretensioner is clear of all people and loose or flammable objects.

10) Connect adapter cable (B) as follows.

Special tool
(B): 09932–76510

- For driver air bag (inflator) module [A]
  Check that driver air bag (inflator) module is placed with its vinyl trim cover facing up, and connect adapter cable (B) to driver air bag (inflator) module.
- For passenger air bag (inflator) module [B]
  Check that passenger air bag (inflator) module is firmly and properly secured on deployment fixture (special tool), and connect adapter cable (B) to passenger air bag (inflator) module.
- For side-air bag (inflator) module [C]
  Verify that side-air bag (inflator) module is firmly and properly on deployment fixture (special tool), and connect adapter cable (B) to side-air bag (inflator) module.
- For side curtain-air bag (inflator) module [D]
  a. Connect adapter cable (B) to side curtain-air bag (inflator) module.
  b. Pile 2 tires (2) and wheel-installed tire (3) on top of tire with side curtain-air bag (inflator) (4), and tie them with wire harness (5) as shown.

  Wire harness specifications
  Stripped wire harness section 1.25 mm² (0.0019 in.²) or more (Stripped wire harness diameter 1.25 mm (0.05 in.) or more)

NOTE

Wind wire harness (5) around at least 2 times.

- For seat belt pretensioner [E]
  a. Connect adapter cable (B) to seat belt pretensioner.
  b. Pile 2 wheel-installed tires (3) on top of tire with seat belt pretensioner (6), and tie them with wire harness (5) as shown.

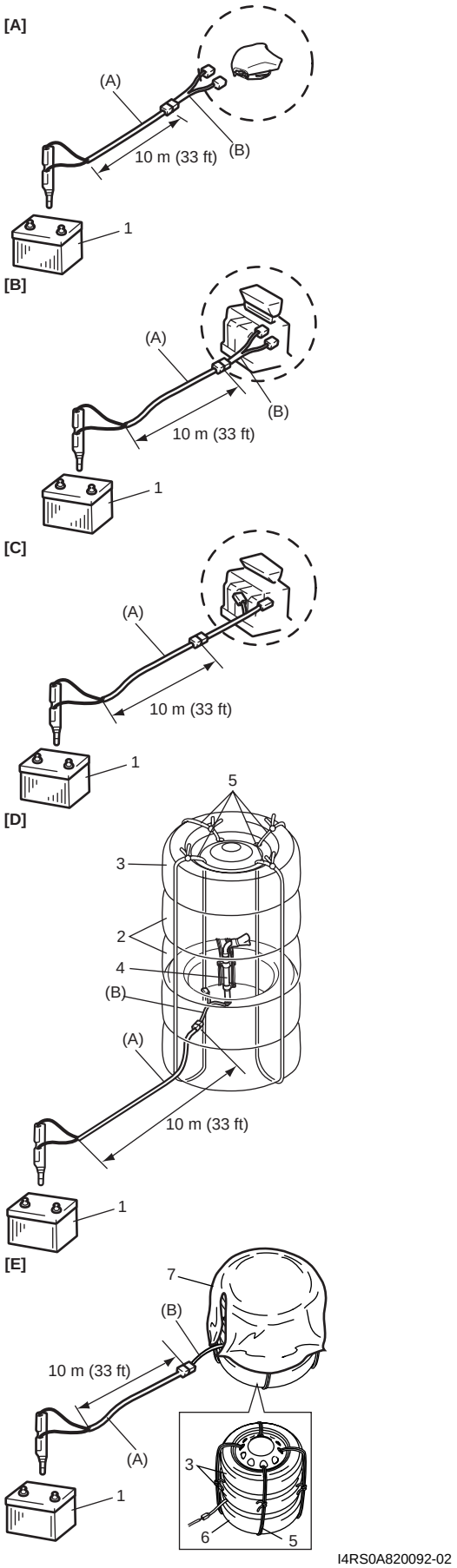
  Wire harness specifications
  Stripped wire harness section 1.25 mm² (0.0019 in.²) or more (Stripped wire harness diameter 1.25 mm (0.05 in.) or more)

NOTE

Wind wire harness (5) around at least 2 times.

c. Drape blanket (7) over those tires.

11) Connect adapter cable (B) to deployment harness (A) connector and lock connectors with lock lever.



I4RS0A820092-02

12) Notify all people in immediate area that you intend to deploy / activate air bag (inflator) module or seat belt pretensioner.

NOTE

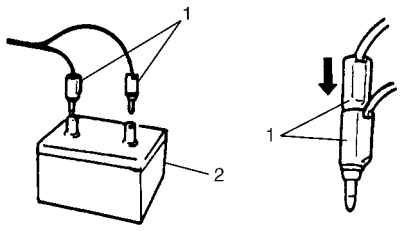
- **When air bag (inflator) module deploys and seat belt pretensioner activates, rapid gas expansion will create substantial report. Wear suitable ear protection. Notify all people in immediate area that you intend to deploy air bag (inflator) module or activate seat belt pretensioner and suitable ear protection should be worn.**
- **When driver air bag (inflator) module deploys, driver air bag (inflator) module may jump about 30 cm (1 ft) vertically. This is normal reaction to force of rapid gas expansion inside of drive air bag (inflator) module.**
- **After air bag (inflator) module has been deployed, surface of air bag (inflator) may contain powdery residue. This powder consists primarily of cornstarch (used to lubricate bag (inflator) as it inflates) and byproducts of chemical reaction.**

⚠ WARNING

- **Do not place deployed air bag (inflator) module and activated seat belt pretensioner near any flammable objects.**
- **Do not apply water, oil, etc. to deployed air bag (inflator) module and activated seat belt pretensioner.**
- **Wait for about 30 minutes before touching any metal surface of air bag (inflater) module or seat belt pretensioner module. Disregarding these precautions may cause fire or personal injury.**

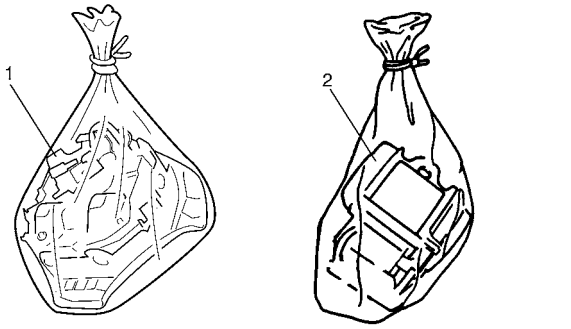
Failure to follow procedures may result in fire or personal injury.

13) Separate two banana plugs (1) on deployment harness.
14) Connect deployment harness to 12 volts vehicle battery (2). This will immediately deploy or activate air bag (inflator) module or seat belt pretensioner.
15) Disconnect deployment harness from 12 volts vehicle battery (2) and short two deployment harness leads together by fully seating one banana plug into the other.



I2RH01820069-01

16) In the unlikely event that air bag (inflator) module or seat belt pretensioner did not deploy / activate after following these procedures, proceed immediately with Step 22) through 25). If air bag (inflator) module or seat belt pretensioner did deploy or activate, proceed with Steps 18) through 21).
17) Put on pair of shop gloves to protect your hands from possible irritation and heat when handling deployed air bag (inflator) module or activated seat belt pretensioner.
18) Disconnect adapter cable (special tool) from air bag (inflator) module or seat belt pretensioner as soon as possible. This will prevent adapter cable (special tool) from damage due to possible contact with hot air bag (inflator) module or hot seat belt pretensioner.
19) Check adapter cable as follows.
    - For air bag (inflator) module
      Be sure to check air bag (inflator) module adapter cable (special tool) for damage after deployment and replace it with new adapter cable (special tool), if it is damaged.
    - For seat belt pretensioner
      Be sure to check seat belt pretensioner adapter cable (special tool) for damage after seat belt pretensioner is activated. Replace it with spare connector (special tool) or new adapter, if necessary.
20) Dispose of deployed air bag (inflator) module (1) or activated seat belt pretensioner (2) through normal refuse channels after it has cooled for at least 30 minutes and tightly seal air bag (inflator) module (1) or seat belt pretensioner (2) in strong vinyl bag. Refer to “Deployed Air Bag (Inflator) Module and Activated Seat Belt Pretensioner Disposal” for details.



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21) Wash your hands with mild soap and water afterward.

NOTE

Remaining steps are to be followed in the unlikely event that air bag (inflator) module did not deploy or seat belt pretensioner did not activate.

22) Ensure that deployment harness has been disconnected from 12 volts vehicle battery and that its two banana plugs have been shorted together by fully seating one banana plug into the other.
23) Disconnect deployment harness and adapter cable from air bag (inflator) module or seat belt pretensioner.
24) Temporarily store undeployed air bag (inflator) module referring to “Precautions on Service and Diagnosis of Air Bag System” for details.
25) Contact your local distributor for further assistance.

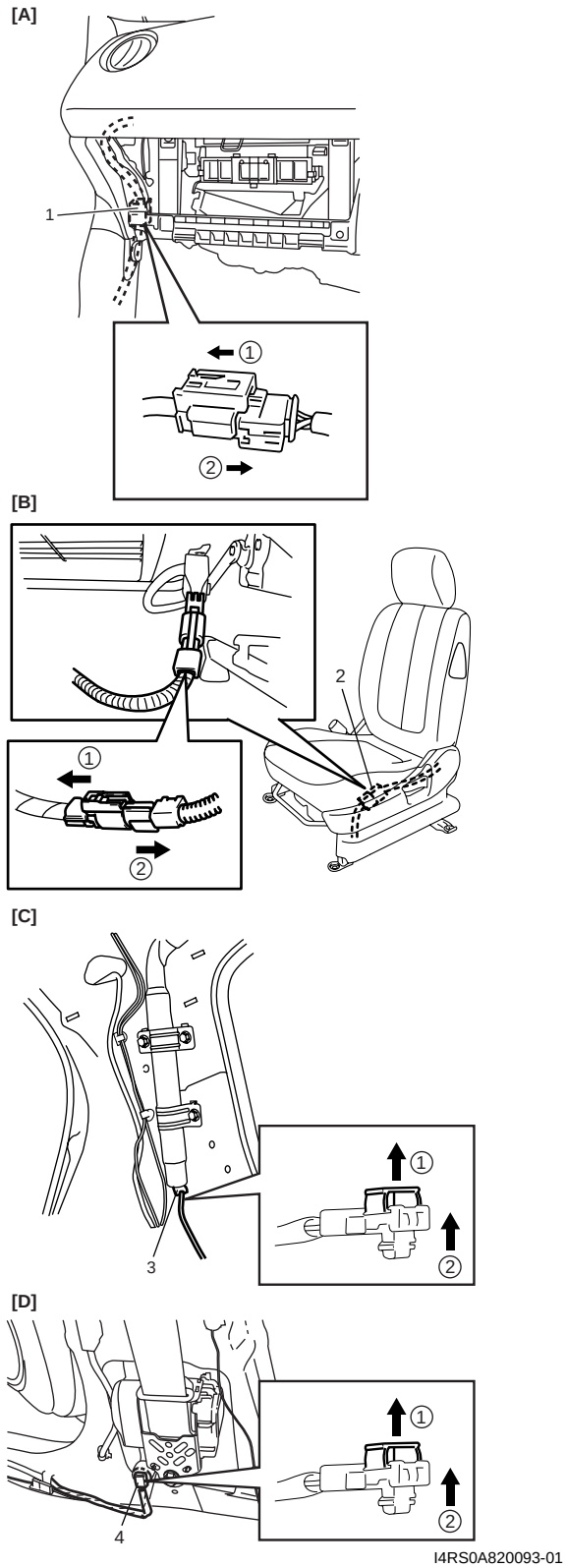
Deployment / Activation Inside of Vehicle

When the vehicle will be destroyed, or salvaged for component parts, deploy the air bag modules and/or activate seat belt pretensioners installed on vehicle.

NOTE

If equipped with the seat belt pretensioners, activate both side of seat belt pretensioners at the same time when using special tool (C).

1) Turn ignition switch to LOCK position, remove key and put on safety glasses.
2) Remove all loose objects from front seats and instrument panel.
3) Disconnect air bag (inflator) module or seat belt pretensioner connector as follows.
   - For driver and passenger air bag (inflator) module [A]
     Remove glove box from instrument panel and disconnect driver and passenger air bag (inflator) module connector (1).
   - For side-air bag (inflator) module [B]
     Disconnect side-air bag (inflator) module connectors (2) under front seat cushion.
   - For side curtain-air bag (inflator) module [C]
     Remove rear pillar trim and disconnect side curtain-air bag (inflator) module connectors (3).
   - For seat belt pretensioners (right and left) [D]
     Remove both side (driver and passenger side) center pillar lower trim and disconnect seat belt pretensioner connectors (4).
4) Confirm that each air bag (inflator) module and/or seat belt pretensioners is securely mounted.



I4RS0A820093-01

5) Check that there is no open, short or damage in special tools (deployment harness (A), adapter cable (B) and (C)). If any faulty condition is found, do not use it and be sure to use new special tool. And connect adapter cable (B), (C) or (D) to deployment harness (A) and lock connectors with lock slider.

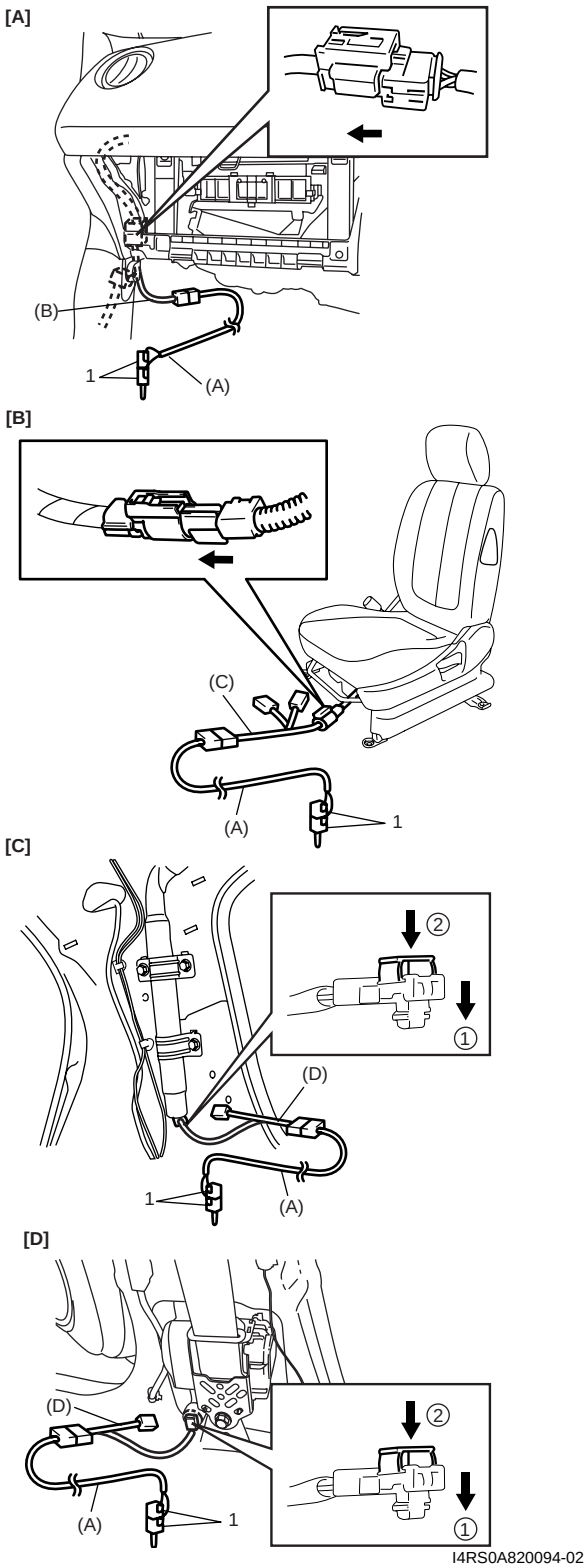
Special tool
(A): 09932-75031
(B): 09932–77310
(C): 09932–78332
(D): 09932–76510

6) Short two deployment harness leads together by fully seating one banana plug into the other.

⚠ WARNING

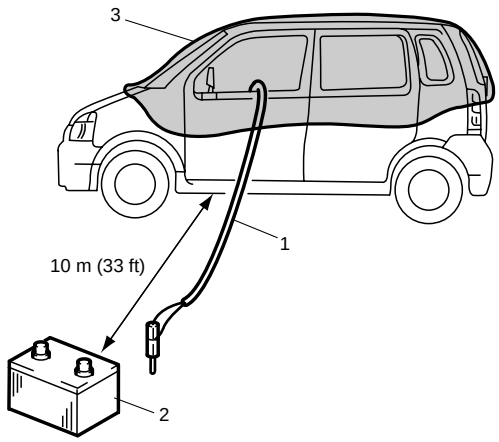
Deployment harness (A) shall remain shorted and not be connected to 12 volts vehicle battery until you are ready to deploy air bag (inflator) module or activate seat belt pretensioner.

7) Connect adapter cable (B) or (C) in series with deployment harness (A) to air bag (inflator) module or seat belt pretensioner as follows.
   - For driver and passenger air bag (inflator) module [A]
     Connect adapter cable (B) in series with deployment harness (A) and push adapter cable (B) connector to air bag (inflator) module connector till click can be heard.
   - For side-air bag (inflator) module [B]
     Connect adapter cable (C) in series with deployment harness (A) and push adapter cable (C) connector to side bag (inflator) module connector till click can be heard.
   - For side curtain-air bag (inflator) module [C]
     Connect adapter cable (D) in series with deployment harness (A) to curtain bag (inflator) module and lock connector with lock part.
   - For seat belt pretensioners [D]
     Connect adapter cable (D) in series with deployment harness (A) to seat belt pretensioner and lock connector with lock part.



I4RS0A820094-02

8) Route deployment harness (1) out of vehicle.
9) Check that inside of vehicle and area surrounding vehicle are clear of all people and loose or flammable objects.
10) Stretch deployment harness (1) to its full length 10 m (33 ft).
11) Place 12 volts vehicle battery (2) near shorted end of deployment harness (1).
12) Completely cover windshield area and front door window openings with drop cloth, a blanket or any similar item. This reduces possibility of injury due to possible fragmentation of vehicle's glass or interior.



I2RH01820073-01

13) Notify all people in immediate area that you intend to deploy air bag (inflator) module or activate seat belt pretensioners.

NOTE

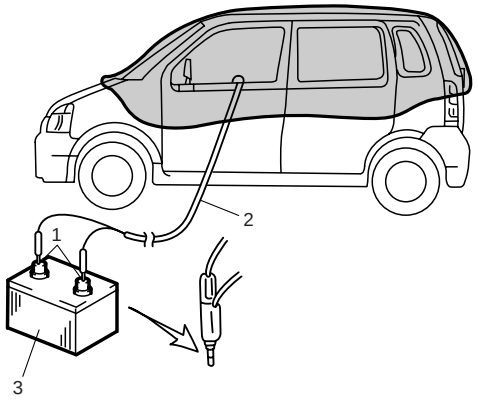
- **When air bag (inflator) module deploys or seat belt pretensioners activate, rapid gas expansion will create substantial report. Wear suitable ear protection. Notify all people in immediate area that you intend to deploy air bag (inflator) module or to activate seat belt pretensioner and suitable ear protection should be worn.**
- **After air bag (inflator) module has been deployed, surface of air bag may contain powdery residue. This powder consists primarily of cornstarch (used to lubricate air bag (inflator) module as it inflates) and by-products of chemical reaction.**

⚠ WARNING

- **Do not place deployed air bag (inflator) module and activated seat belt pretensioners near any flammable objects.**
- **Do not apply water, oil, etc. to deployed air bag (inflator) module and activated seat belt pretensioners.**
- **Wait for about 30 minutes before touching any metal surface of air bag (inflater) module or seat belt pretensioner modules. Disregarding these precautions may cause fire or personal injury.**

Failure to follow procedures may result in fire or personal injury.

14) Separate two banana plugs (1) on deployment harness (2).
15) Connect deployment harness (2) to 12 volts vehicle battery (3). This will immediately deploy or activate air bag (inflator) module or seat belt pretensioners.
16) Disconnect deployment harness (2) from 12 volts vehicle battery (3) and short two deployment harness leads together by fully seating one banana plug into the other.



I2RH01820074-01

17) Repeat Steps 3) through 16) to deploy / activate air bag (inflator) modules and seat belt pretensioners which has not been deployed / activated, if any.
18) In the unlikely event that air bag (inflator) module and seat belt pretensioners after following these procedures, proceed immediately with Step 24) through 26). If air bag (inflator) module and seat belt pretensioners did deploy / activate, proceed with Steps 19) through 23).
19) Carefully remove drop cloth from vehicle and clean off any fragments or discard it entirely.
20) Put on pair of shop gloves to protect your hands from possible irritation and heat when handling deployed air bag (inflator) module and activated seat belt pretensioners.

21) Disconnect adapter cable (special tool) from air bag (inflator) module or seat belt pretensioner as soon as possible. This will prevent adapter cable (special tool) from damage due to possible contact with hot air bag (inflator) module or hot seat belt pretensioner.
22) Check adapter cable connector as follows. Adapter cable connector (special tool) is designed to be reused. However it should be inspected for damage after deployment and replaced if necessary.
23) With air bag (inflator) modules deployed and seat belt pretensioners activated, vehicle may be scrapped in the same manner as non-air bag system / seat belt pretensioner equipped vehicle.

NOTE

Remaining steps are to be followed in the unlikely event that air bag (inflator) module did not deploy or seat belt pretensioner did not activate.

24) Remove undeployed air bag (inflator) module(s) and/or inactivated seat belt pretensioner(s) from vehicle. For driver air bag (inflator) module, refer to “Driver Air Bag (Inflator) Module Removal and Installation”. For passenger air bag (inflator) module, refer to “Passenger Air Bag (Inflator) Module Removal and Installation”. For seat belt pretensioner, refer to “Front Seat Belt Removal and Installation in Section 8A”.
25) Temporarily store undeployed air bag (inflator) module referring to “Precautions on Service and Diagnosis of Air Bag System” for details.
26) Contact your local distributor for further assistance.

Deployed Air Bag (Inflator) Module and Activated Seat Belt Pretensioner Disposal

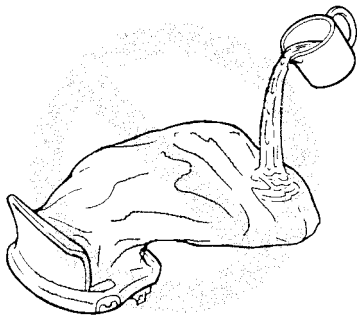
S7RS0B8206019

⚠ WARNING

Failure to follow proper air bag (inflator) module and seat belt pretensioner disposal procedures can result in air bag deployment and pretensioner activation which may cause personal injury. The undeployed air bag (inflator) module and the inactivated seat belt pretensioner must not be disposed of through normal refuse channels.
The undeployed air bag (inflator) module and the inactivated seat belt pretensioner contains substances that can cause severe illness or personal injury if the sealed container is damaged during disposal.

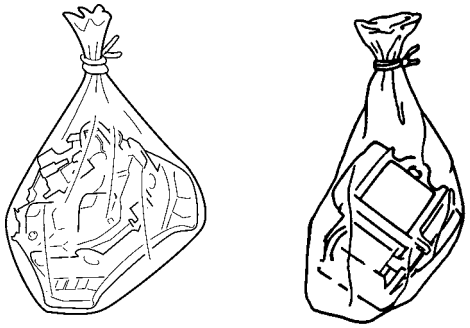
Deployed air bag (inflator) module and the activated seat belt pretensioner can be disposed of through normal refuse channels just like any other parts. For their disposal, however, the following points should be noted.

- The air bag (inflator) module and the seat belt pretensioner immediately after deployment / activation is very hot. Wait for 30 minutes to cool it off before handling it.
- Never apply water, oil, etc. to deployed air bag (inflator) module and the activated seat belt pretensioner to cool it off and be careful so that water, oil etc. does not get on the deployed air bag (inflator) module and the activated seat belt pretensioner.



IYSQ01820095-01

- After the air bag (inflator) module has been deployed, the surface of the air bag may contain a powdery residue. This powder consists primarily of cornstarch (used to lubricate the bag as it inflates) and by-products of the chemical reaction. As with many service procedures, you should wear gloves and safety glasses.
- When disposing of the deployed air bag (inflator) module and the activated seat belt pretensioner, be sure to seal it in a vinyl bag.



I3JA01820119-01

- When air bag (inflator) module and seat belt pretensioner have been deployed / activated inside the vehicle which is going to be scrapped, leave them as installed to the vehicle.
- Be sure to wash your hands with mild soap and water after handling them.

Specifications

Tightening Torque Specifications

S7RS0B8207001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
SDM bolt	9	0.9	6.5	☞
Driver air bag (inflator) module mounting bolt	9	0.9	6.5	☞
Passenger air bag (inflator) module attaching bolt	23	2.3	16.5	☞
Sleeve lock nut	2.5	0.25	2.0	☞
Side curtain-air bag (inflator) module attaching bolts	11	1.1	8.0	☞
Forward-sensor mounting bolt	9	0.9	6.5	☞
Side-sensor bolt	9	0.9	6.5	☞

NOTE

The specified tightening torque is also described in the following.
“Air Bag System Components, Wiring and Connectors Location”

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Special Tools and Equipment

Use of Special Tools

S7RS0B8208001

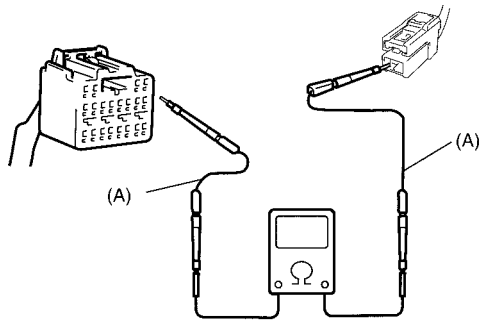
⚠ WARNING

To avoid deployment when troubleshooting the air bag system, do not use electrical test equipment such as a battery powered or AC powered voltmeter, ohmmeter, etc., or any type of electrical equipment other than that specified. Do not use a non-powered probe type tester.
Instructions must be followed carefully, otherwise personal injury may result.

You should be familiar with the tools listed under the heading “Special Tool”. You should be able to measure voltage and resistance. You should be familiar with proper use of a scan tool such as Air Bag Driver / Passenger Load Tool, Connector Test Adapter Kit and the Digital Multimeter.

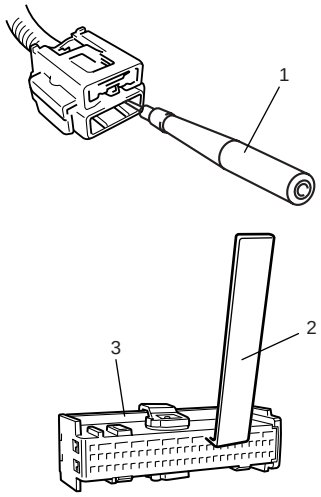
Special tool
(A): 09932–76010 Connector Test Adapter Kit

This must be used whenever a diagnostic procedure requests checking or probing a terminal.
Using the appropriate adapter in the special tool will ensure that no damage to the terminal will occur from the multimeter probe, such as spreading or bending.



I3JA01820041-01

The adapter (1) will also give an idea of whether or not contact tension is sufficient, helping to find an open or intermittent open due to poor terminal contact. An SDM short bar release tool (2) is included in the connector test adapter kit. Inserting it into the SDM connector (3) will releases the shorting bar.



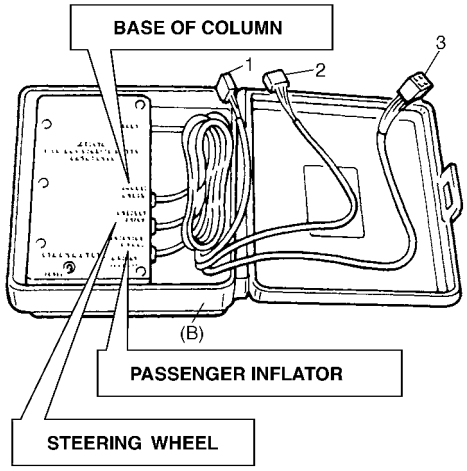
I4RS0A820108-01

Special tool
(B): 09932–75010 Air bag driver / passenger load tool

This tool is used as a diagnostic aid and safety device to prevent inadvertent air bag (inflator) module deployment. The load tool has three connectors attached to its case which are electrically functional and serve as resistive load substitutions.
No more than two connectors are used at any time.
One of connectors (“STEERING WHEEL”) is used to substitute the load of the followings.

- Driver air bag (inflator) module when it is connected at the top of the column to the contact coil assembly.
- Passenger air bag (inflator) module when it is connected to the air bag harness connector in instrument panel harness for passenger air bag (inflator) module.
- Each of driver and passenger seat belt pretensioners when it is connected to air bag harness connector in instrument panel harness for driver and passenger seat belt pretensioners.
- Side-air bag (inflator) module when it is connected to the floor harness connector for side-air bag (inflator) module.
- Side curtain-air bag (inflator) module when it is connected to the floor harness connector for side curtain-air bag (inflator) module.

Another connector (“BASE OF COLUMN”) is used to substitute the load of the driver air bag (inflator) module and the contact coil assembly when it is connected at the base of the column to the air bag wire harness.
The third connector (“PASSENGER INFLATOR”) is not used.
By substituting the resistance of the load tool when called for, a determination can be made as to whether an inflator circuit component is causing system malfunction and which component is causing the malfunction.
The load tool should be used only when specifically called for in the diagnostic procedures.



I1JA01820004-01

1.	Connector for contact coil and driver air bag (inflator) module (Located near the base of the steering column)
2.	Connector for driver, passenger air bag (inflator) module, side-air bag (inflator) module and driver and passenger seat belt pretensioners
3.	Not used

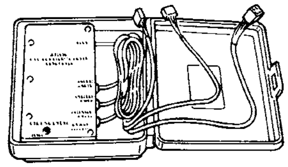
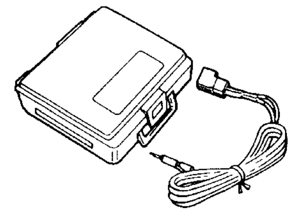
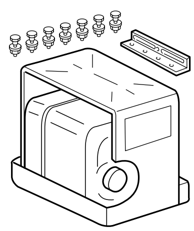
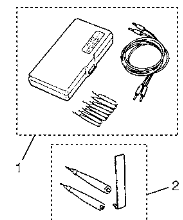
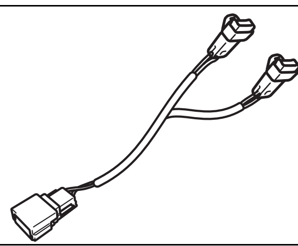
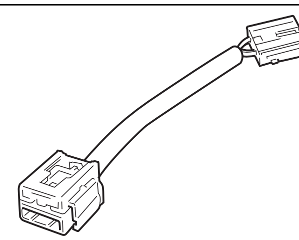
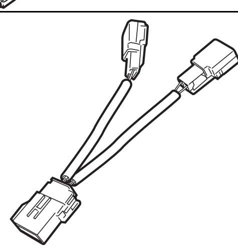
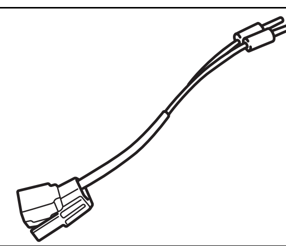
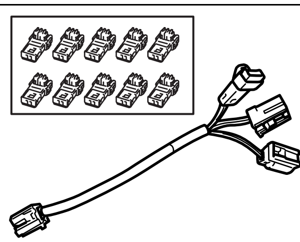
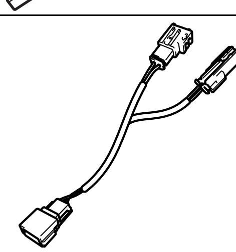
Recommended Service Material

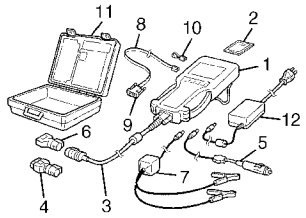
S7RS0B8208002

Material	SUZUKI recommended product or Specification		Note
Thread lock cement	Thread Lock Cement 1305	P/No.: 99000–32100	☞

Special Tool

S7RS0B8208003

09932–75010 Air bag load tool ☞ / ☞ 	09932–75031 Air bag deployment harness ☞ / ☞ / ☞ 
09932–75041 Passenger air bag (inflator) module deployment fixture ☞ / ☞ 	09932–76010 Connector test adapter set This set includes the following items. 1. Connector test adapter kit (09932-75020), 2. Connector test adapter & shorting bar release tool (09932-76020) ☞ / ☞ 
09932–76510 Deployment adapter cable ☞ / ☞ / ☞ 	09932–77310 Deployment adapter cable 4P ☞ 
09932–77320 Diagnosis adapter cable 4P ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ 	09932–78310 Adapter cable ☞ / ☞ 
09932–78332 Deployment adapter cable ☞ 	09932–78340 Deployment adapter cable ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ / ☞ 

SUZUKI scan tool — This kit includes following items. 1. Tech 2, 2. PCMCIA card, 3. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loop back adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loop back connector, 11. Storage case, 12. ☞ / ☞		

Section 9

Body, Cab and Accessories

CONTENTS

Precautions

Precautions

Precautions on Body, Cab and Accessories

S7RS0B9000001

Air Bag Warning
Refer to “Air Bag Warning in Section 00”.

Fastener Caution
Refer to “Fastener Caution in Section 00”.

Precautions for Body Service
Refer to “Precautions for Body Service”.

Fastener Caution for Body Service:
Refer to “Fastener Caution for Body Service”.

Cautions in Body Electrical System Servicing
Refer to “Cautions in Body Electrical System Servicing in Section 9A”.

Precautions for Body Service

S7RS0B9000002

⚠ WARNING

For vehicles equipped with a Supplemental Restraint (Air Bag) System:
When servicing vehicle body, if shock may be applied to air bag system component parts, remove those parts beforehand.

Fastener Caution for Body Service

S7RS0B9000003

⚠ CAUTION

- **Fasteners are important attaching parts in that they could affect the performance of vital components and systems, and/or could result in major repair expense. They must be replaced with one of the same part number of with an equivalent part if replacement become necessary.**
- **Do not use a replacement part of lesser quality or substitute a design. Torque values must be used as specified during reassembly to assure proper retention of these parts.**

Wiring Systems

Precautions

Cautions in Body Electrical System Servicing

S7RS0B9100001

When servicing the electric systems, observe the cautions described in “Precautions for Electrical Circuit Service in Section 00” to protect electrical parts and to prevent a fire.

General Description

Abbreviations

S7RS0B9101001

Refer to the “Abbreviations in Section 0A” for the general abbreviations.

Abbreviation	Full term	Abbreviation	Full term
2WD	2 Wheel Drive Vehicles	J/B	Junction block
4WD	4 Wheel Drive Vehicles	J/C	Joint connector
A/B	Air Bag	KLS	Keyless Start System
ACC	Accessory	L	Left
CAN	Controller Area Network	LED	Light Emitting Diode
COMB	Combination	LHD	Left Hand Drive Vehicle
DSL	Diesel engine	LO	Low
ELCM	EVAP leak check module	OCV	Oil Control Valve
ESP®	Electronic Stability Program	P/N	Power Normal
FWD	Forward	R	Right
HI	High	RHD	Right Hand Drive Vehicle
IF EQPD	If equipped	ST	Starter
IG COIL	Ignition coil	TPMS	Tire Pressure Monitoring System
ILL	Illumination	VIM	Valiable Intake Manifold
IND	Indicator	VSV	Vacuum Switching Valve
INT	Intermittent	5 dr	5 door

ESP® is a registered trademark of Daimler Chrysler AG.

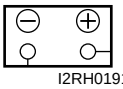
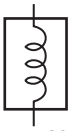
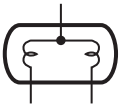
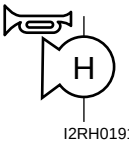
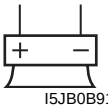
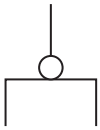
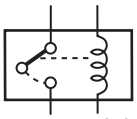
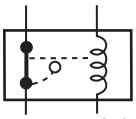
Wire / Connector Color Symbols

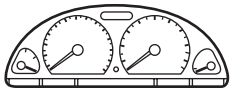
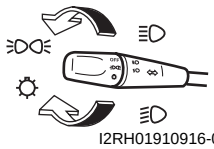
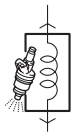
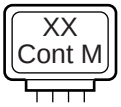
S7RS0B9101002

Refer to “Wire Color Symbols in Section 0A”.

Symbols and Marks

S7RS0B9101003

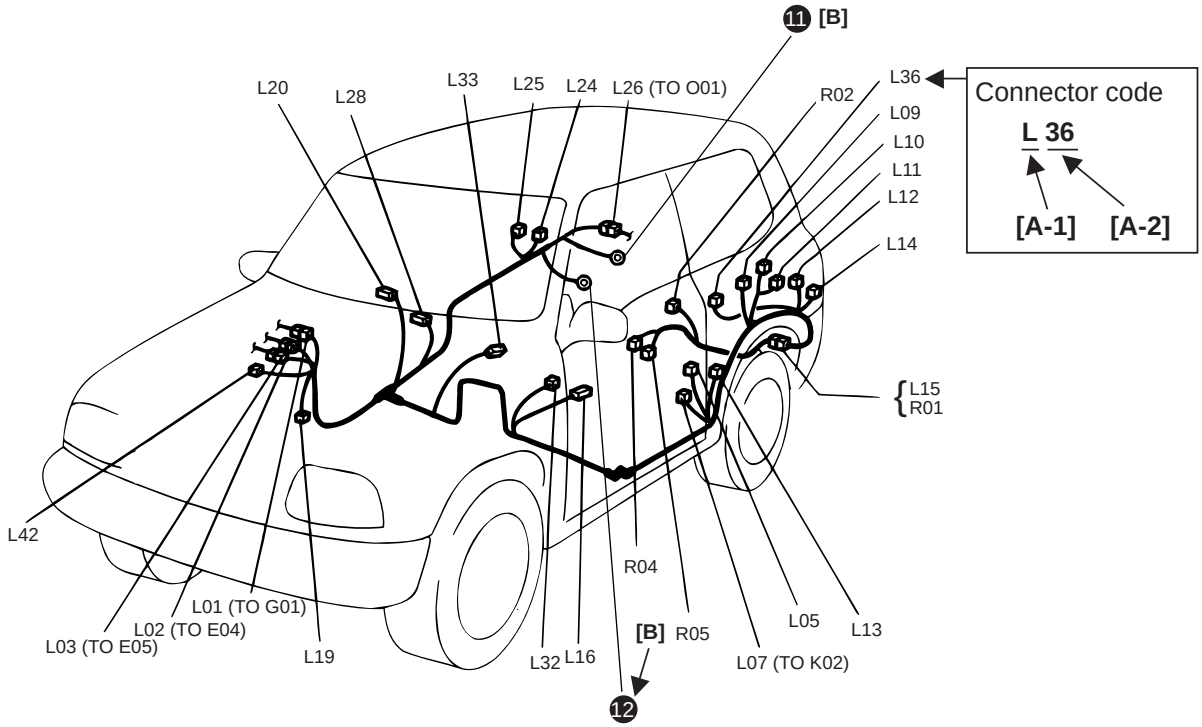
Battery	Ground		Normal fuse	Slow blow fuse
 I2RH01910910-01	 IYSQ01910915-01	 IYSQ01910916-01	 IYSQ01910917-01	 IYSQ01910918-01
Circuit breaker	Coil, Solenoid	Heater	Bulb	
 IYSQ01910919-01	 IYSQ01910920-01	 IYSQ01910921-01	 IYSQ01910922-01	 IYSQ01910923-01
Cigarette lighter	Motor	Pump	Horn	Speaker
 IYSQ01910924-01	 IYSQ01910925-01	 IYSQ01910926-01	 I2RH01910911-01	 I5JB0B910995-02
Buzzer	Chime	Condenser	Thermistor	Reed switch
 IYSQ01910929-01	 IYSQ01910930-01	 IYSQ01910931-01	 IYSQ01910932-01	 IYSQ01910933-01
Resistance	Variable resistance		Transistor	
 IYSQ01910934-01	 IYSQ01910935-01	 IYSQ01910936-01	 IYSQ01910937-01 NPN	 IYSQ01910938-01 PNP
Photo transistor	Diode	Zener diode	Light emitting diode	Photo diode
 IYSQ01910939-01	 IYSQ01910940-01	 IYSQ01910941-01	 IYSQ01910942-01	 IYSQ01910943-01
Piezoelectric element	Harness		Ring terminal	Connector
 IYSQ01910944-01	 IYSQ01910945-01 Connected	 IYSQ01910946-01 Not connected	 IYSQ01910947-01	 IYSQ01910948-01
Relay		Switch		
 I5RW0A910982-01 Normal open	 I5RW0A910983-01 Normal closed	 I5RW0A910984-01 Open switch	 I5RW0A910985-01 Closed switch	

Ignition switch	Keyless entry	Immobilizer system	Combination meter	Lighting switch
 I2RH01910912-01	 I3JA01910902-01	 I5RH01910901-01	 I2RH01910915-01	 I2RH01910916-01
Headlight leveling	**Hazard warning light**	**Front fog light**	**Rear fog light**	**Spark plug**
 I3JA01910904-01	 I3JA01910905-01	 I3JA01910906-01	 I3JA01910907-01	 I2RH01910921-01
Radiator fan	**Fuel pump**	**Fuel injector**	**XX control module**	**Windshield wiper**
 I2RH01910922-01	 I3JA01910908-01	 I5RW0A910987-01	 I2RH01910925-01	 I3JA01910909-01
Windshield washer	**Rear wiper**	**Rear washer**	**Rear defogger**	**Power window**
 I3JA01910910-01	 I3JA01910911-01	 I3JA01910912-01	 I2RH01910930-01	 I3JA01910913-01
Power door lock	**Power mirror**	**A/B**	**Pretensioner**	**Passenger side**
 I3JA01910914-01	 I3JA01910915-01	 I3JA01910916-01	 I3JA01910917-01	 I3JA01910918-01
Driver side	**Seat heater**	**A/C**	**Power steering**	**Side air-bag (R)**
 I3JA01910919-01	 I2RH01910938-01	 I3JA01910920-01	 I3JA01910921-01	 I4JA01910901-01
Side air-bag (L)	**Side curtain air-bag (R)**	**Side curtain air bag (L)**	**Glow plug**	
 I4JA01910902-01	 I5RS0A910958-01	 I5RS0A910959-01	 I5RW0A910986-01	

How to Read Connector Layout Diagram

S7RS0B9101004

[A-1]: Harness symbol and corresponding harness name
A: Battery harness
B: A/C harness
C: Engine harness
D: Injector harness
E: Main harness, Oil pressure switch wire, Console wire
G: Instrument panel harness
J: Side door wire (Power window)
K: Interior light harness, Rear speaker wire, Roof wire
L: Floor harness, G sensor wire (Fuel pump harness)
M: Rear bumper harness
O: Rear end door harness
Q: Air bag/Pretensioner harness
R: (Fuel pump wire)
[A-2]: Connector Number
[B]: Ground point No.



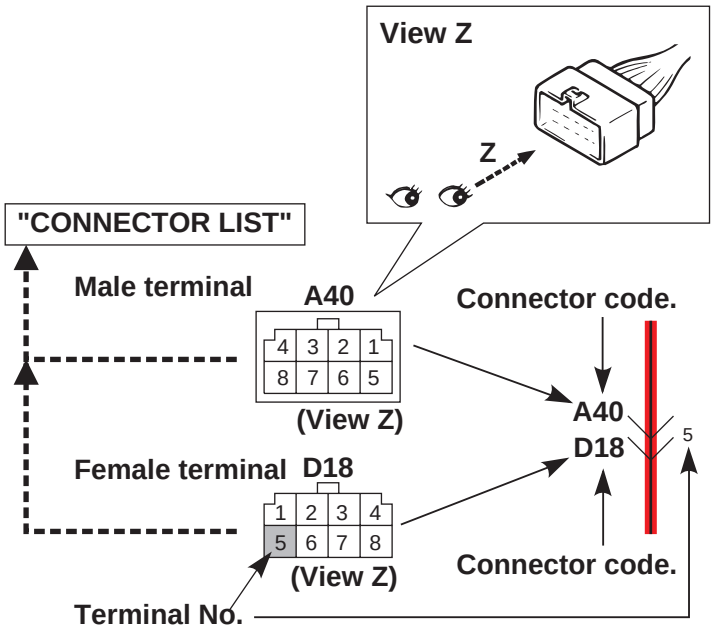
I2RH01910901-01

How to Read Connector Codes and Terminal Nos.

S7RS0B9101005

1) Connector code/Terminal No./Terminal layout

- The connector shape and terminal layout shown in this manual are those when viewed from “Z” in the illustration.
  Refer to “List of Connectors”.

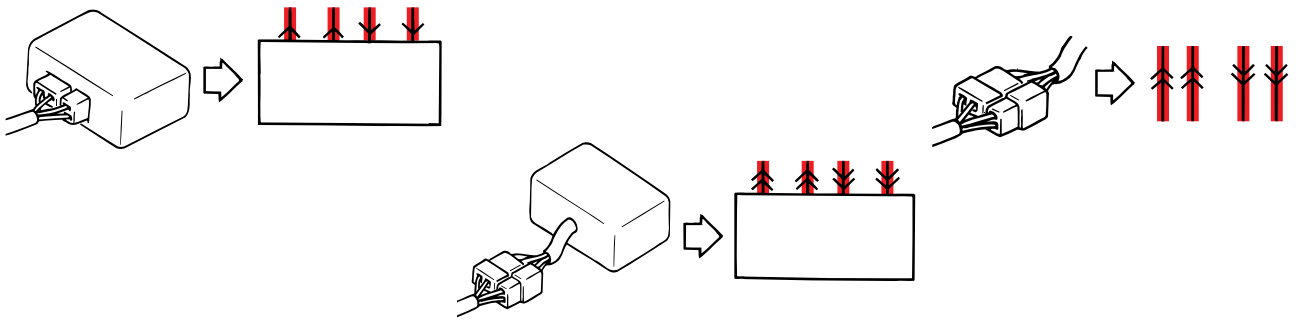


I5RW0A910988-02

NOTE

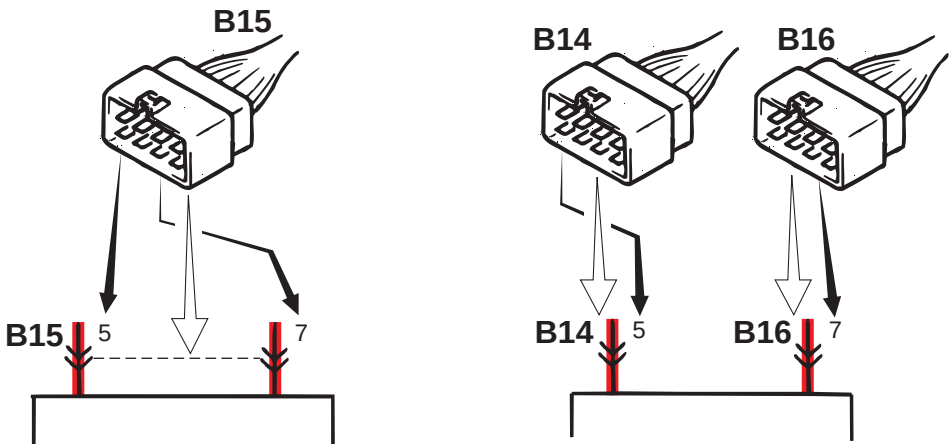
Molded terminal numbers that are different from the above can be found on some connectors in rare cases.
These molded numbers are not applied in this manual.

2) Connector type



I2RH01910903-01

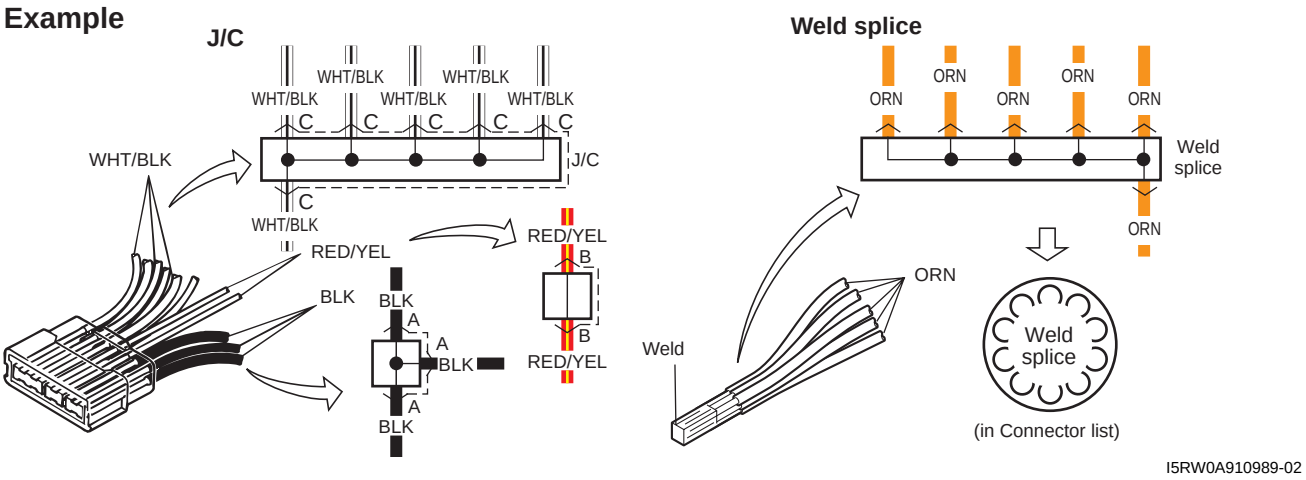
3) Terminals in one connector (Broken line) (B15)/Terminals in different connectors (B14, B16)



I5RW0A910995-03

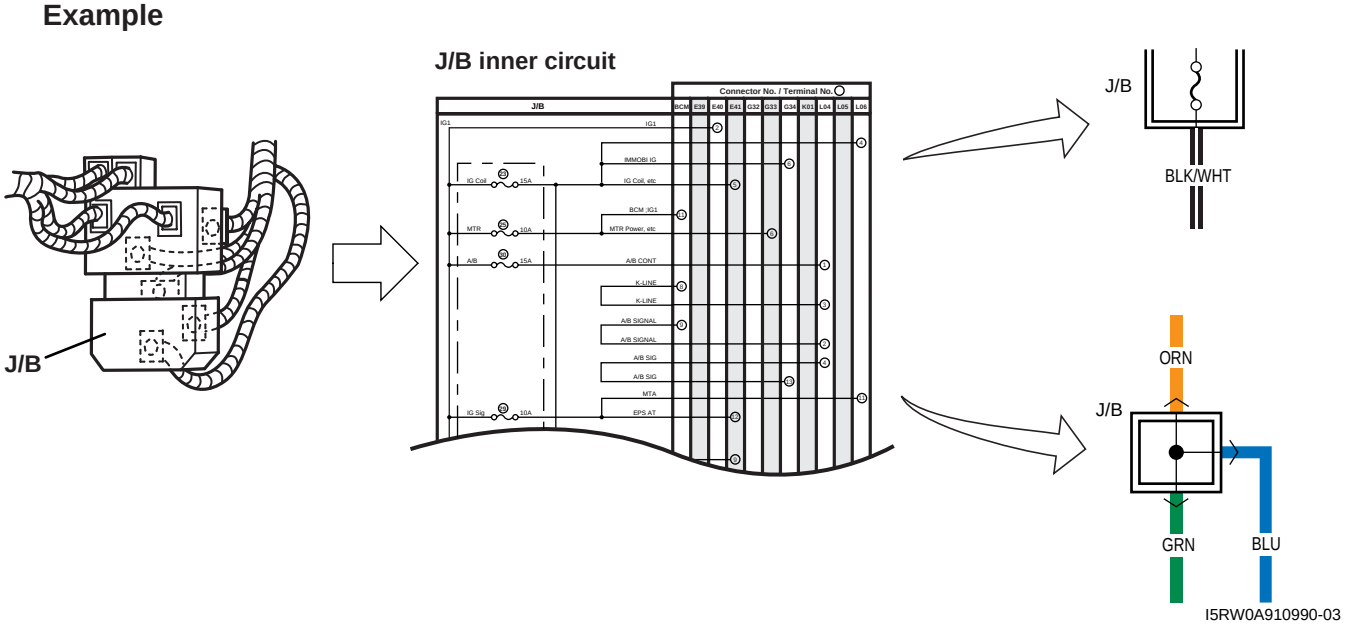
4) Joint connector (J/C)

- The joint connector (J/C) connects several different wires with the same wire color at one place instead of connecting them by welding or caulking one by one. It is not an ordinary connector but a part of the continuous wire in the harness.



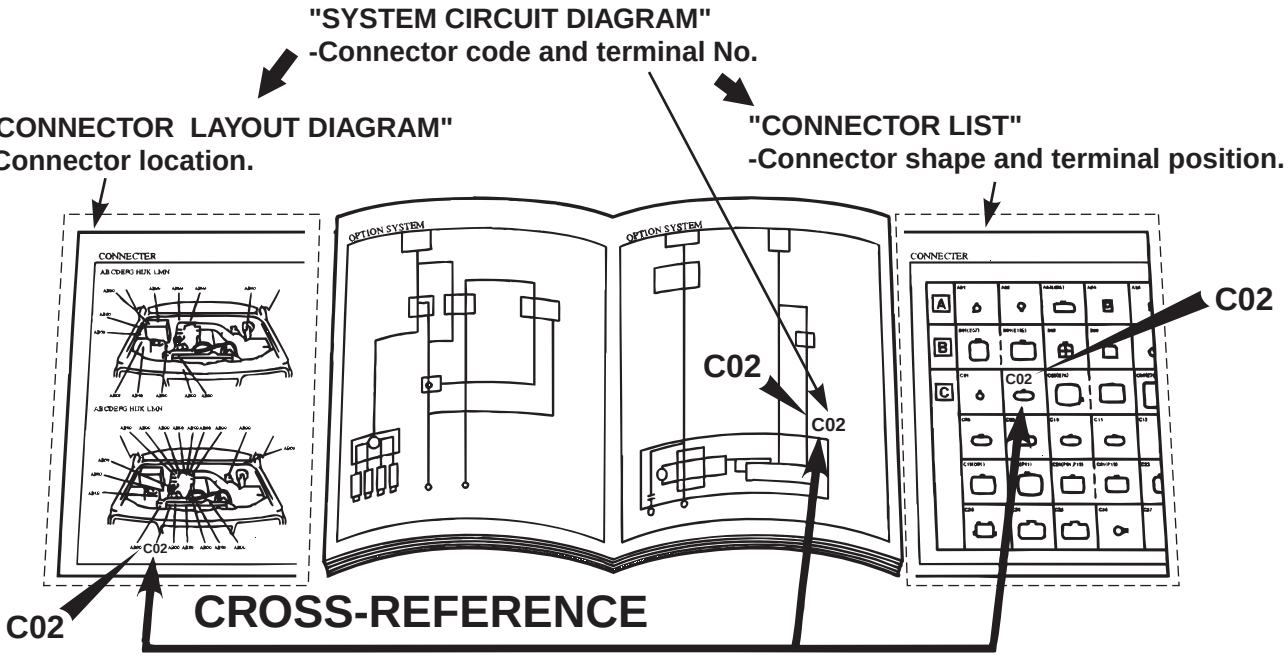
I5RW0A910989-02

5) Junction block (J/B)



I5RW0A910990-03

6) Connector location, shape and terminal No.
Refer to “Connector Layout Diagram”.
Refer to “System Circuit Diagram”.
Refer to “List of Connectors”.

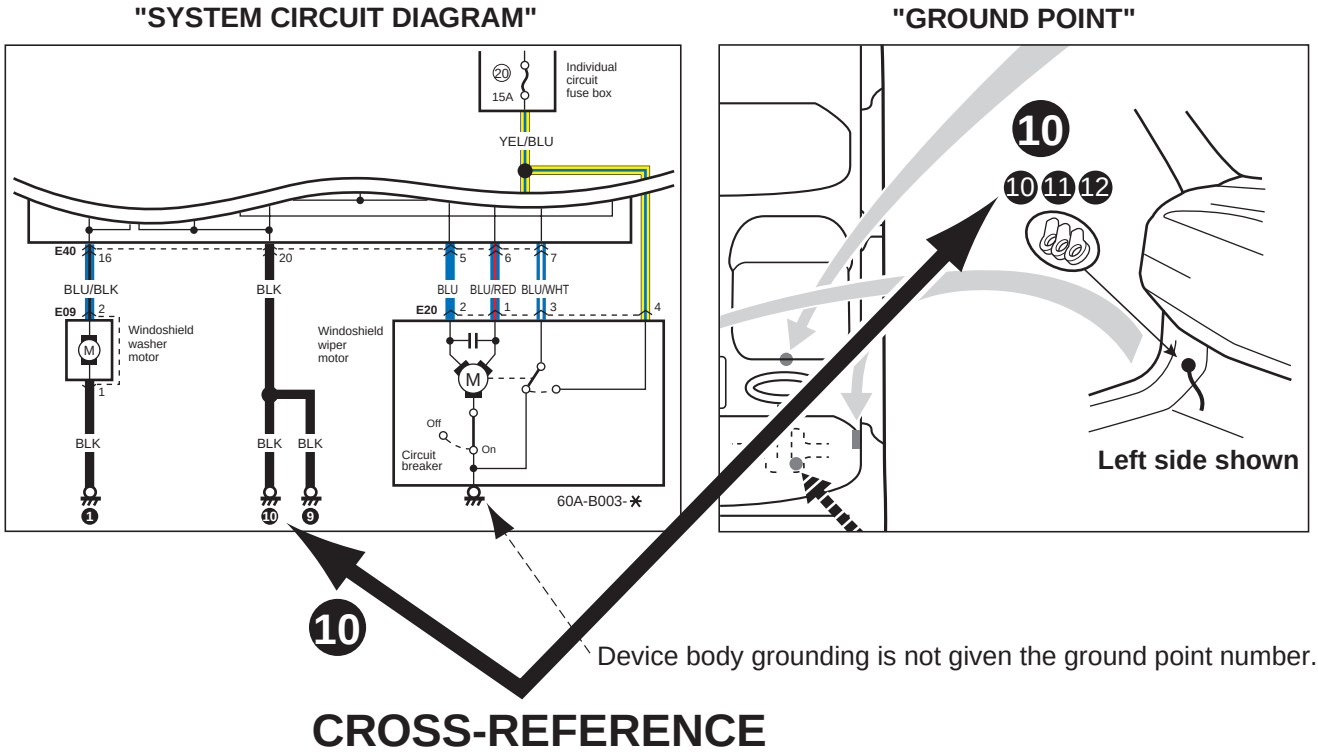


I5RW0A910991-02

How to Read Ground Point

S7RS0B9101006

Refer to “System Circuit Diagram”.
Refer to “Ground (earth) Point”.

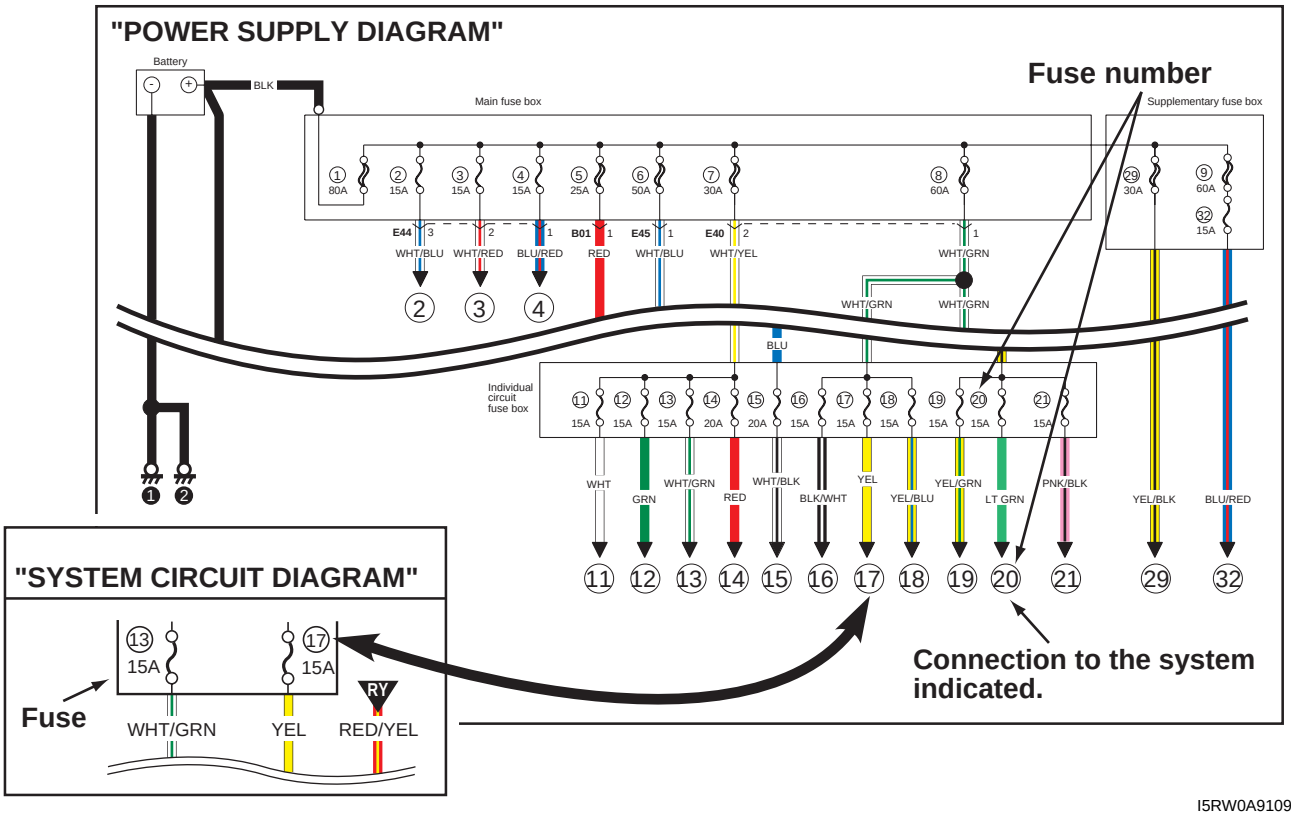


I5RW0A910992-02

How to Read Power Supply Diagram

S7RS0B9101007

Refer to “Power Supply Diagram”.
Refer to “System Circuit Diagram”.



I5RW0A910993-02

How to Read System Circuit Diagram

S7RS0B9101008

The circuit diagram is designed so the current flows from the top of the diagram (power source) to the bottom of the diagram (ground) as if giving an image of water flow.

[A]: Fuse No.

[B]: Circuit jumping page / direction

NOTE

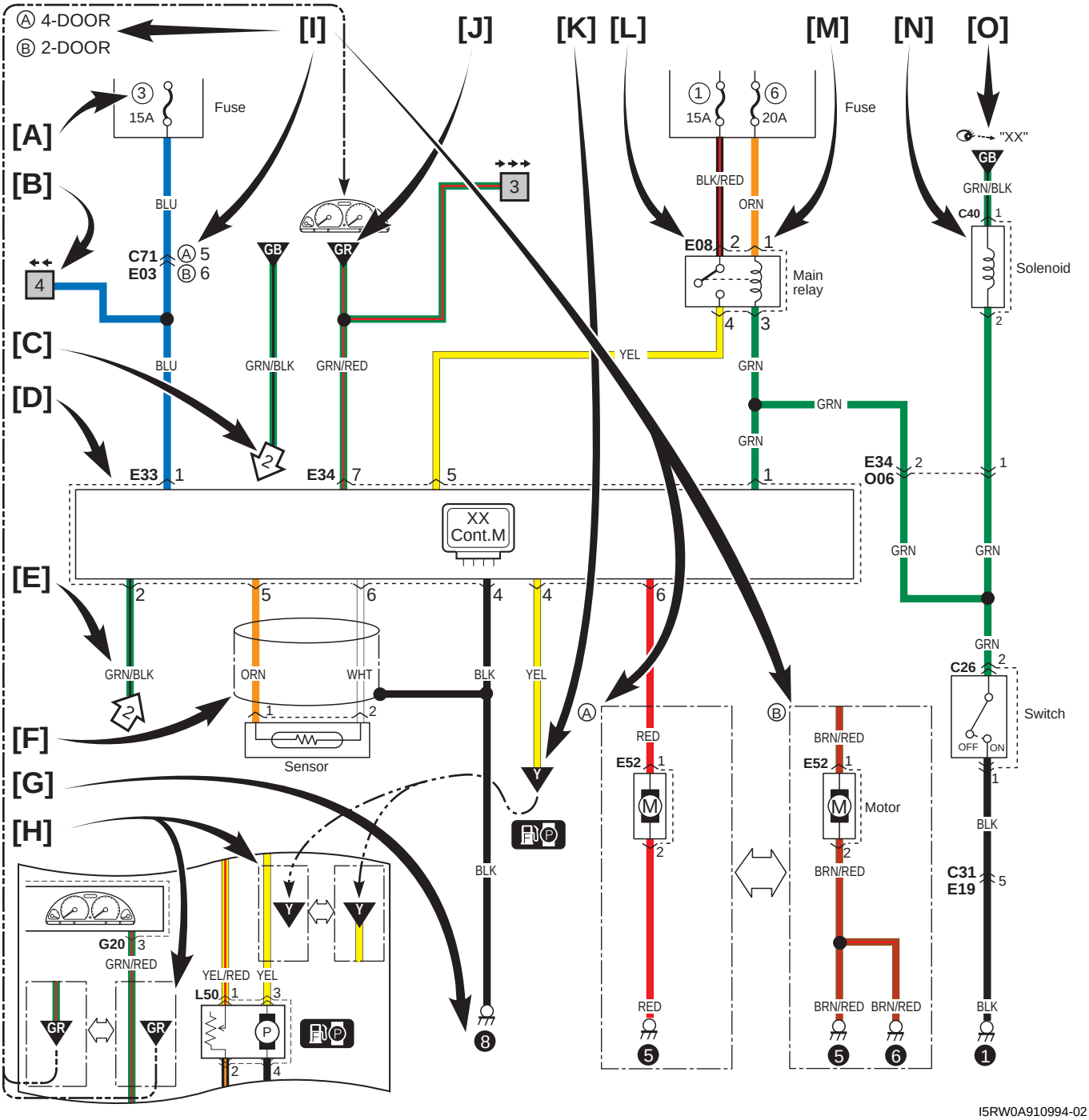
This means “Jump to the page directed with the arrow(s) by their number.
(For example:” Two arrows directing left” means” Jump to two pages before”.)
You will find the same symbol with the arrows directing opposite in the referenced page. The circuit continues between the symbols.

[C]: Circuit jumping point / direction

NOTE

The circuit continues to the same symbol with opposite direction within the page.
You will find the other symbol in the direction of the arrow.

[D]: Terminals-in-one-connector mark
[E]: Wire color
[F]: Shield wire
[G]: Ground point
[H]: “From” or “To” (With ID letter (s))
[I]: Specification variation
The white arrow between A and B means “or”.
[J]: “From” (With ID letter (s))
[K] “To” (With ID letter (s))
[L]: Connector code
[M]: Terminal No.
[N]: Symbol mark
[O]: “SEE” mark



Connector Layout Diagram

Connector Layout Diagram

S7RS0B910A001

Refer to “Engine Compartment”.
Refer to “Instrument Panel”.
Refer to “Door, Roof”.
Refer to “Floor”.
Refer to “Rear”.
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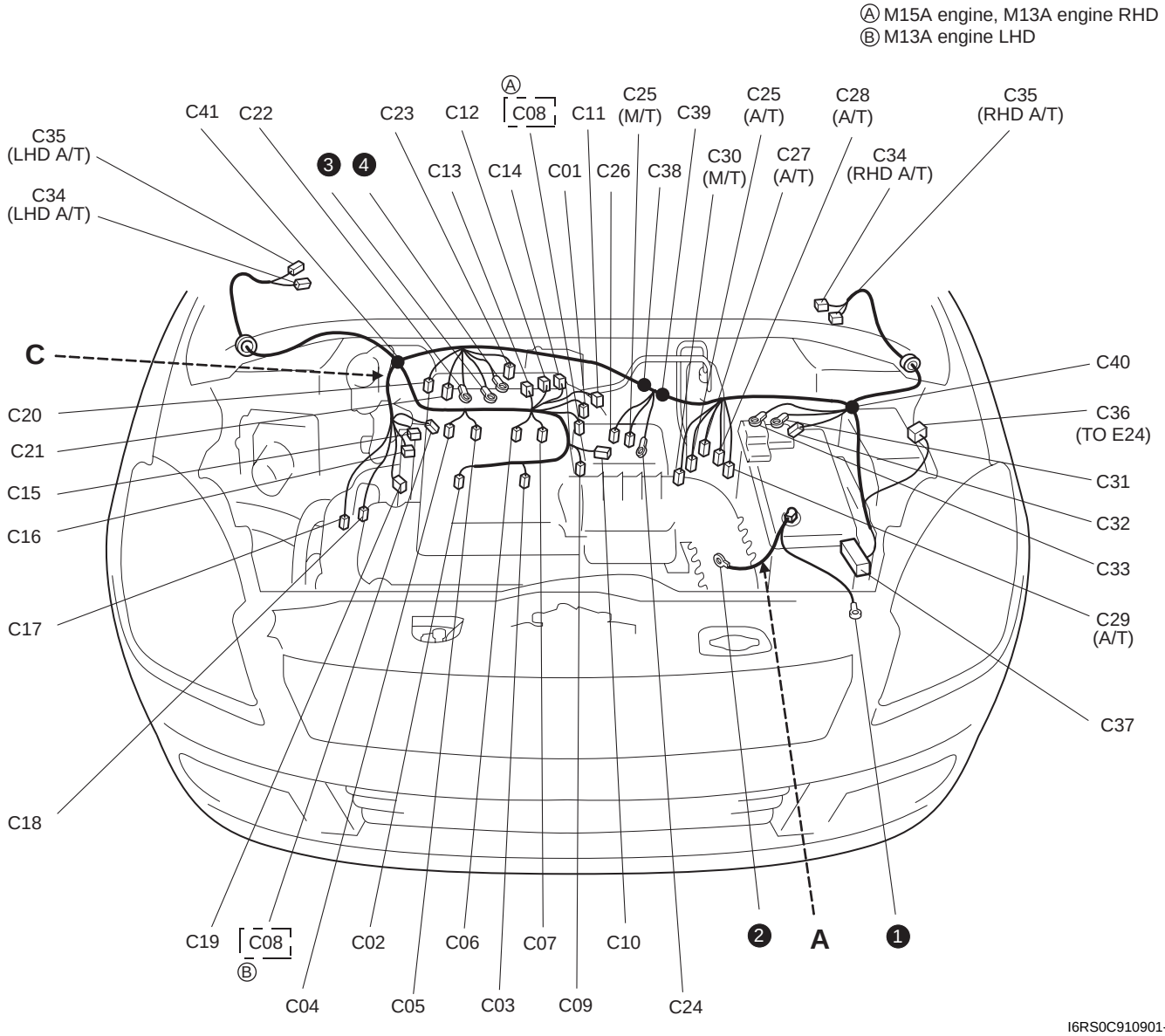
Engine Compartment

S7RS0B910A002

A: Battery cable / C: Engine harness (M13A engine, M15A engine)

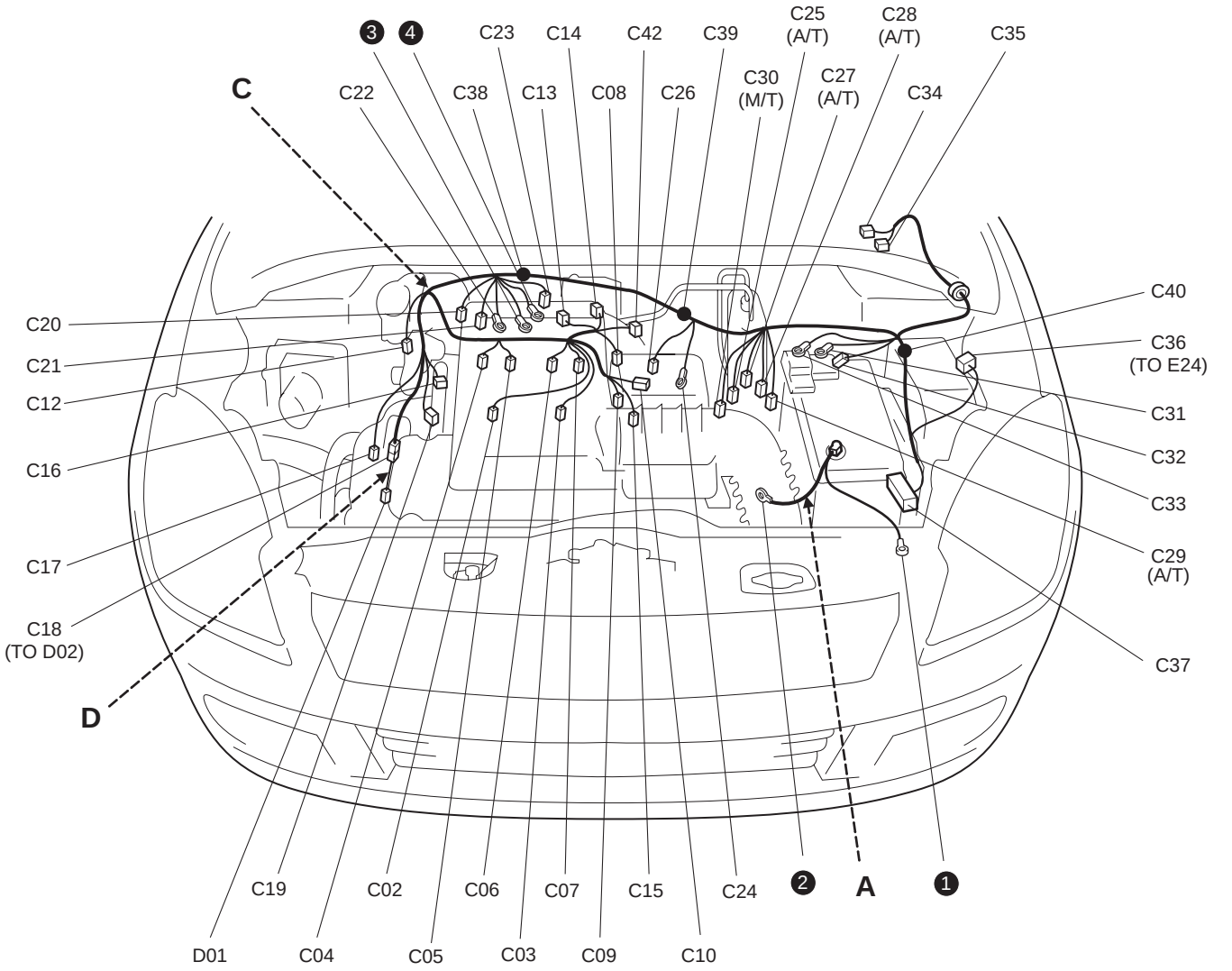


I6RS0C910901-01

C: Engine harness

No./Color	Connective position	No./Color	Connective position
C01/GRY	IAC valve	C22/-	Generator #2
C02/GRY	IG Coil #1	C23/BLK	Starting motor #1
C03/GRY	IG Coil #2	C24/-	Starting motor #2
C04/GRY	Fuel injector #1	C25/GRY	VSS (Vehicle speed sensor)
C05/GRY	Fuel injector #2	C26/GRY	Knock sensor
C06/GRY	Fuel injector #3	C27/BLU (A/T)	Input shaft speed sensor
C07/GRY	Fuel injector #4	C28/GRY (A/T)	Trans axle range sensor
C08/BLK or GRY	CMP sensor	C29/GRY (A/T)	Shift solenoid
C09/BLK	ECT sensor	C30/BLK (M/T)	Back-up light switch
C10/GRY	EGR stepper motor	C31/-	Main fuse box
C11/BLK	Throttle position sensor	C32/GRY (IF EQPD)	Current sensor
C12/BLK	MAP sensor	C33/-	Main fuse box
C13/BLK	MAF sensor	C34/N (A/T)	TCM
C14/BLK	EVAP canister purge valve	C35/N (A/T)	TCM
C15/GRY	Heated oxygen sensor #1	C36/N	Main harness (To E24)
C16/GRN	Heated oxygen sensor #2	C37/GRY	ECM
C17/BLK	A/C compressor	C38/-	Weld splice
C18/N	Oil pressure switch	C39/-	Weld splice
C19/BLU	VVT solenoid	C40/-	Weld splice
C20/GRY	CKP sensor	C41/-	Weld splice
C21/GRY or BLK	Generator #1		

A: Battery cable / C: Engine harness / D: Oil pressure switch wire (M16A engine, RHD)



I7RS0B910901-02

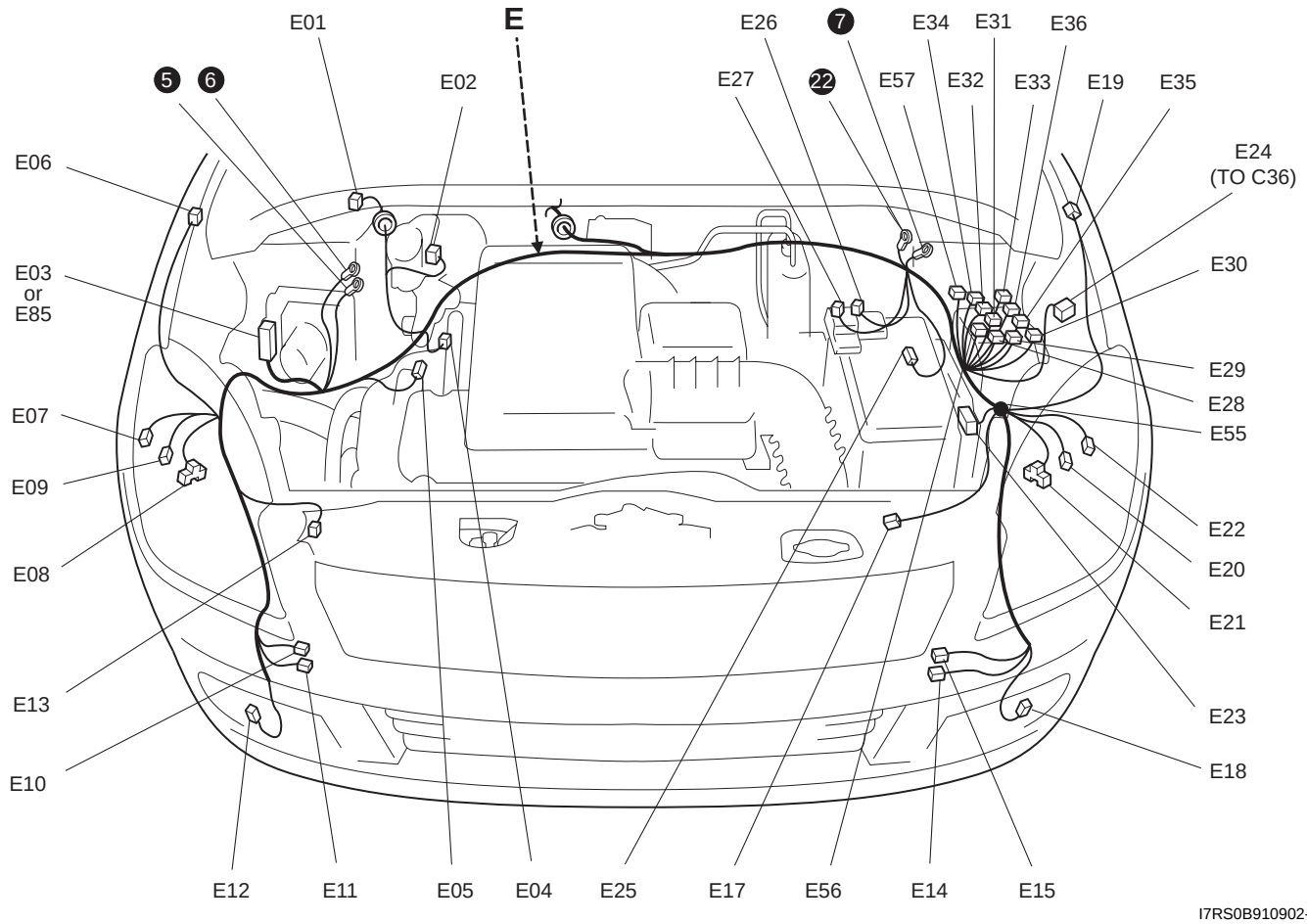
C: Engine harness

No./Color	Connective position	No./Color	Connective position
C02/GRY	IG Coil #1	C24/-	Starting motor #2
C03/GRY	IG Coil #2	C23/BLK	Starting motor #1
C04/GRY	Fuel injector #1	C25/GRY (A/T)	VSS (Vehicle speed sensor)
C05/GRY	Fuel injector #2	C26/GRY	Knock shaft speed sensor
C06/GRY	Fuel injector #3	C27/BLU (A/T)	Input shaft speed sensor
C07/GRY	Fuel injector #4	C28/GRY (A/T)	Trans axle range sensor
C08/BLK	CMP sensor	C29/GRY (A/T)	Shift solenoid
C09/BLK	ECT sensor	C30/BLK (M/T)	Back-up light switch
C10/GRY	EGR stepper motor	C31/-	Main fuse box
C12/BLK	MAP sensor	C32/GRY	Current sensor
C13/BLK	MAF sensor	C33/-	Main fuse box
C14/BLK	EVAP canister purge valve	C34/N (A/T)	TCM
C15/BLK	Heated oxygen sensor #1	C35/N (A/T)	TCM
C16/GRN	Heated oxygen sensor #2	C36/N	Main harness (To E24)
C17/BLK	A/C compressor	C37/GRY	ECM
C18/N	Oil pressure switch wire (To D02)	C38/-	Weld splice
C19/BLU	VVT solenoid	C39/-	Weld splice
C20/GRY	CKP sensor	C40/-	Weld splice
C21/BLK	Generator #1	C42/BLK	Electric throttle body
C22/-	Generator #2		

D: Oil pressure switch wire

No./Color	Connective position	No./Color	Connective position
D01/N	Oil pressure switch	D02/GRY	Engine harness (To C18)

E: Main harness (RHD)

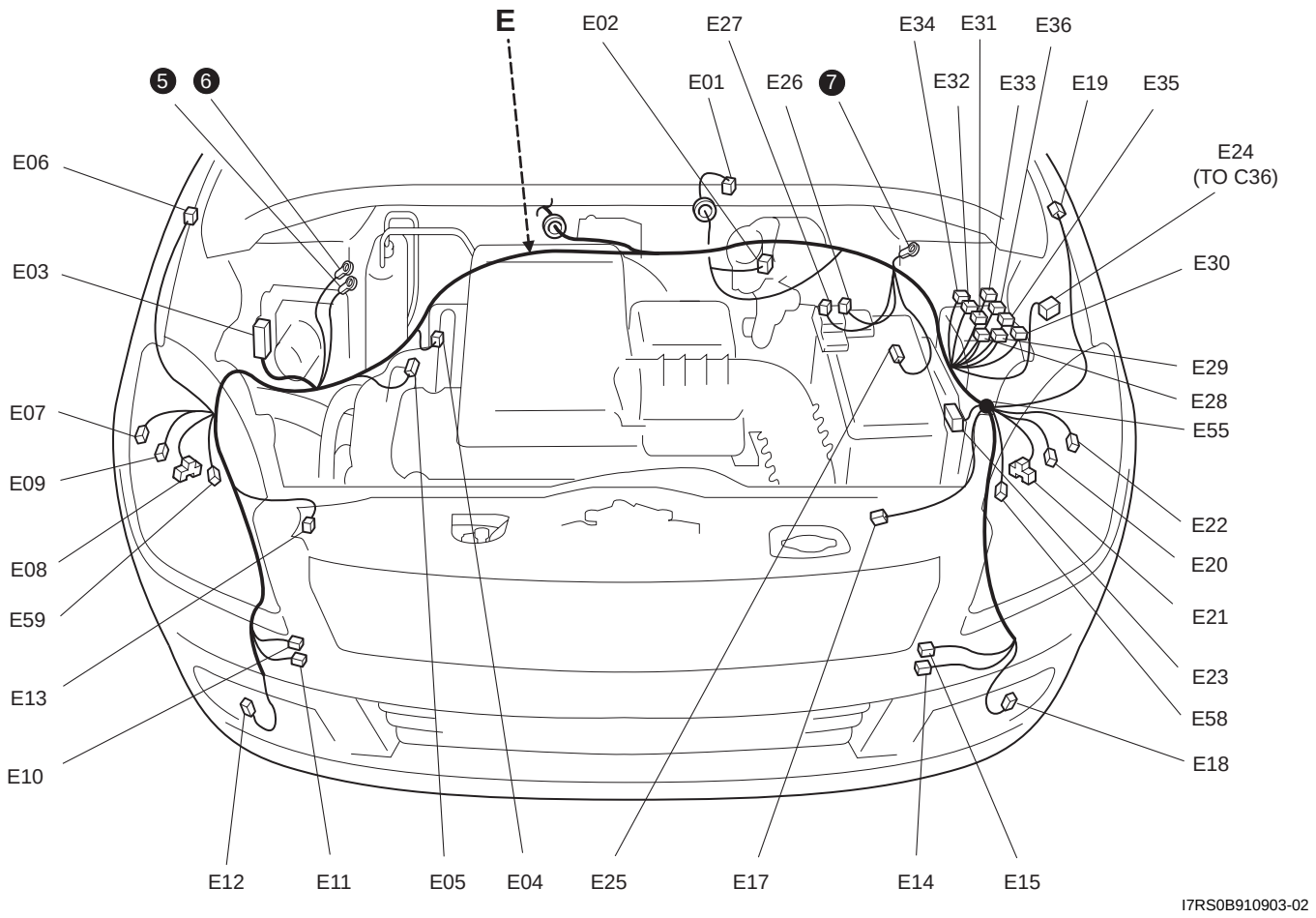


I7RS0B910902-02

E: Main harness

No./Color	Connective position	No./Color	Connective position
E01/GRY	Windshield wiper motor	E22/N	Front position light (L)
E02/GRY	Brake fluid level switch	E23/GRY	ECM
E03/BLK	ABS control module	E24/N	Engine Harness (To C36)
E04/BLK	A/C pressure sensor	E25/BLK	Wheel speed sensor (FL)
E05/BLK	Wheel speed sensor (FR)	E26/N	Main fuse box
E06/N	Side turn signal light (R)	E27/BLK	Main fuse box
E07/N	Front position light (R)	E28/BLK	Radiator fan relay #1
E08/BLK	Head light (R)	E29/BLK	Radiator fan relay #2
E09/GRY	Front turn signal light (R)	E30/BLK	Radiator fan relay #3
E10/GRN	Rear washer motor	E31/BLK	Starting motor relay
E11/BLU	Windshield washer motor	E32/BLK	Main relay
E12/BLK (IF EQPD)	Front fog light (R)	E33/BLK	A/T relay
E13/YEL	Forward sensor	E34/BLK (IF EQPD)	Front fog light relay
E14/BLK	Outside air temperature sensor	E35/BLK	Fuel pump relay
E15/BLK	Horn	E36/BLK	A/C compressor relay
E17/BLK	Radiator fan motor	E55/-	Weld splice
E18/BLK (IF EQPD)	Front fog light (L)	E56/BLK (M16A engine)	Throttle actuator control relay
E19/N	Side turn signal light (L)	E57/BLK	Diagnosis connector #1
E20/GRY	Front turn signal light (L)	E85/BLK (IF EQPD)	ESP® control module
E21/BLK	Headlight (R)		

E: Main harness (LHD)



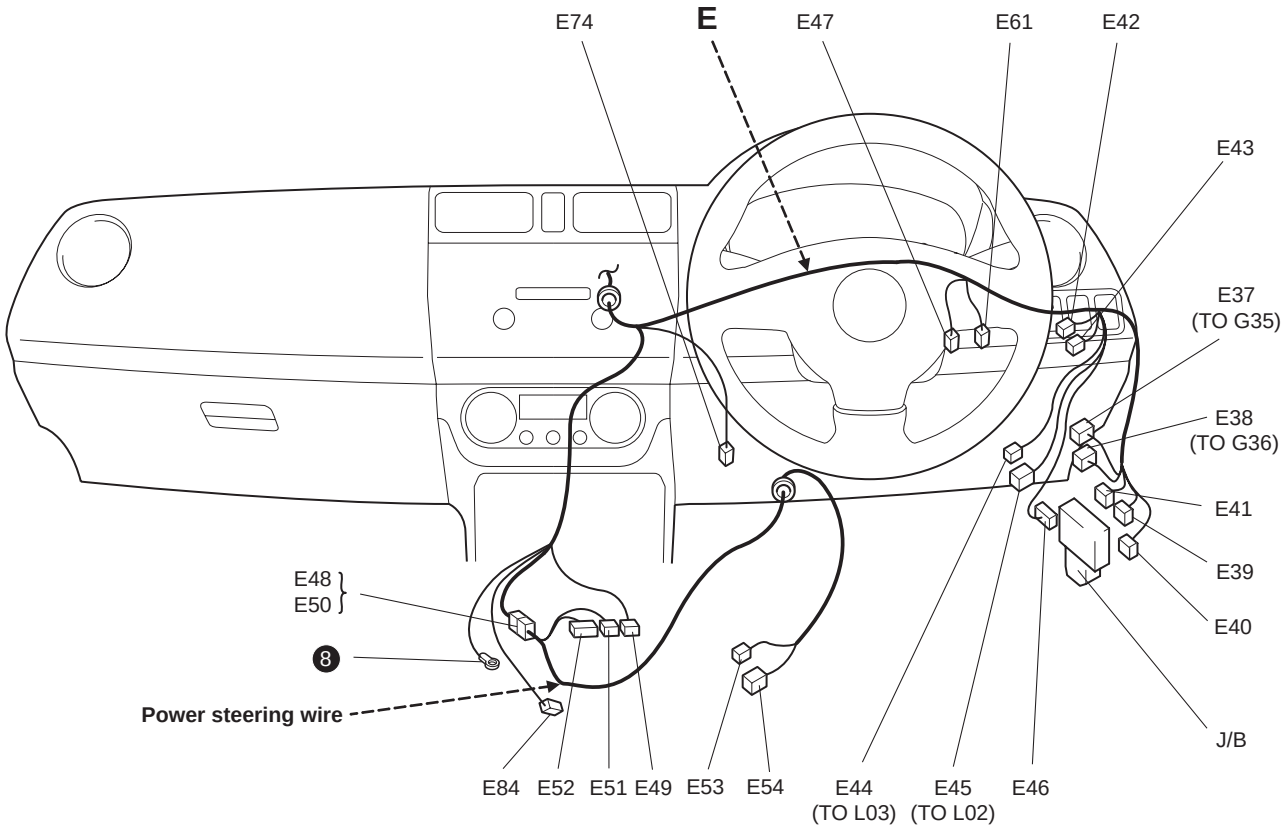
E: Main harness

No./Color	Connective position	No./Color	Connective position
E01/GRY	Windshield wiper motor	E21/BLK	Headlight (R)
E02/BRN	Brake fluid level switch	E22/N	Front position light (L)
E03/BLK	ABS control module	E23/GRY	ECM
E04/BLK	A/C pressure sensor	E24/N	Engine Harness (To C36)
E05/BLK	Wheel speed sensor (FR)	E25/BLK	Wheel speed sensor (FL)
E06/N	Side turn signal light (R)	E26/N	Main fuse box
E07/N	Front position light (R)	E27/BLK	Main fuse box
E08/BLK	Head light (R)	E28/BLK	Radiator fan relay #1
E09/GRY	Front turn signal light (R)	E29/BLK	Radiator fan relay #2
E10/GRN	Rear washer motor	E30/BLK	Radiator fan relay #3
E11/BLU	Windshield washer motor	E31/BLK	Starting motor relay
E12/BLK (IF EQPD)	Front fog light (R)	E32/BLK	Main relay
E13/YEL	Forward sensor	E33/BLK	A/T relay
E14/BLK	Outside air temperature sensor	E34/BLK (IF EQPD)	Front fog light relay
E15/BLK	Horn	E35/BLK	Fuel pump relay
E17/BLK	Radiator fan motor	E36/BLK	A/C compressor relay
E18/BLK (IF EQPD)	Front fog light (L)	E55/-	Weld splice
E19/N	Side turn signal light (L)	E58/GRY (IF EQPD)	Headlight beam leveling actuator (L)
E20/GRY	Front turn signal light (L)	E59/GRY (IF EQPD)	Headlight beam leveling actuator (R)

Instrument Panel

S7RS0B910A003

E: Main harness and power steering wire (RHD)



I7RS0B910904-01

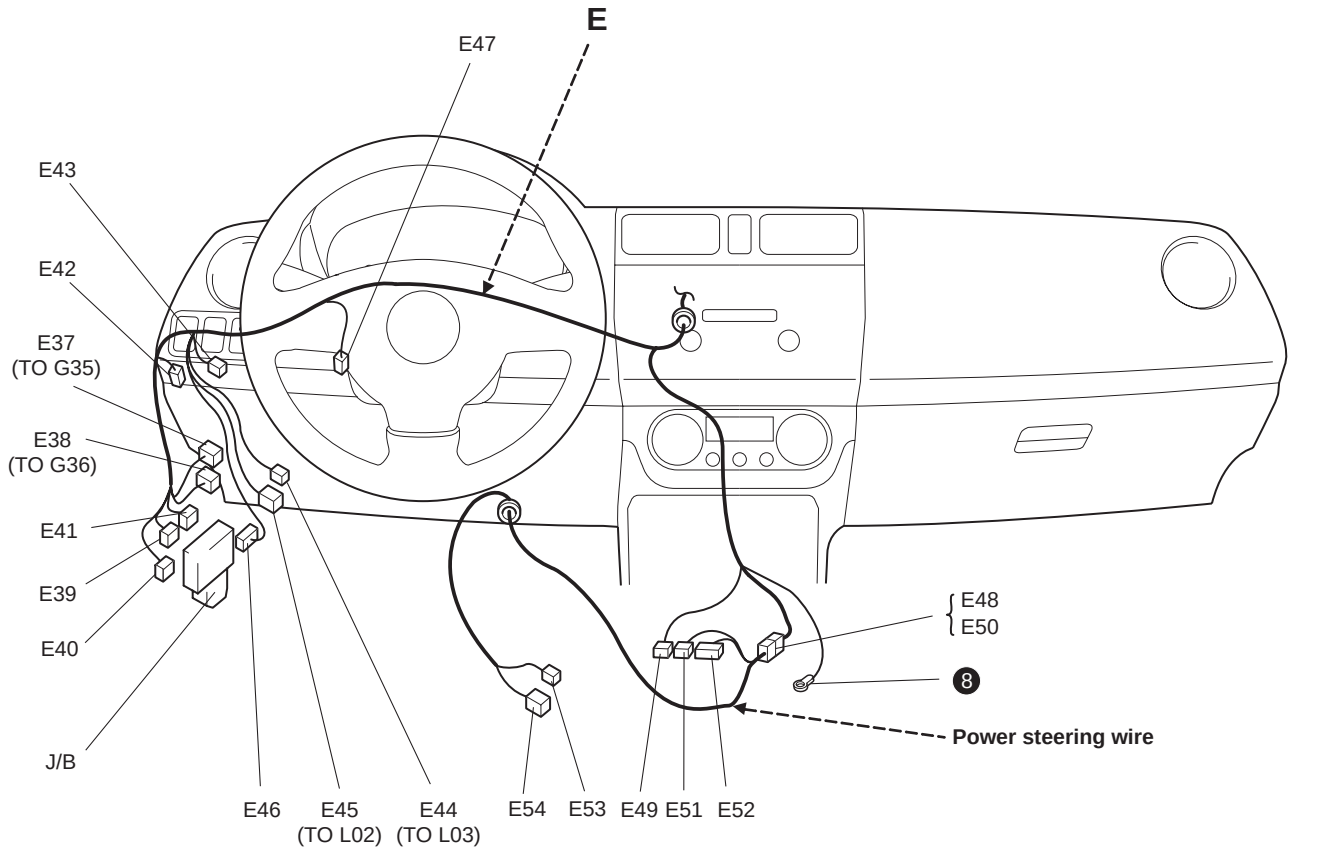
E: Main harness

No./Color	Connective position	No./Color	Connective position
E37/GRY	Instrument panel harness (To G35)	E45/N	Floor harness (To L02)
E38/N	Instrument panel harness (To G36)	E46/BLU	BCM
E39/BRN	J/B	E47/N	Brake light switch
E40/N	J/B	E48/BLU	Power steering wire (To E50)
E41/N	J/B	E49/BLK	P/S control module
E42/N	J/C	E61/N (M16A engine)	APP (Acceleration pedal position) sensor
E43/N	J/C	E74/N (IF EQPD)	CPP (Clutch pedal position) switch
E44/YEL	Floor harness (To L03)	E84/BLK (IF EQPD)	YAW/G sensor

E: Power steering wire

No./Color	Connective position	No./Color	Connective position
E50/BLU	Main harness (To E48)	E53/BLK	P/S torque sensor
E51/BLU	P/S control module	E54/GRY	P/S motor
E52/BLK	P/S control module		

E: Main harness and power steering wire (LHD)



I7RS0B910905-01

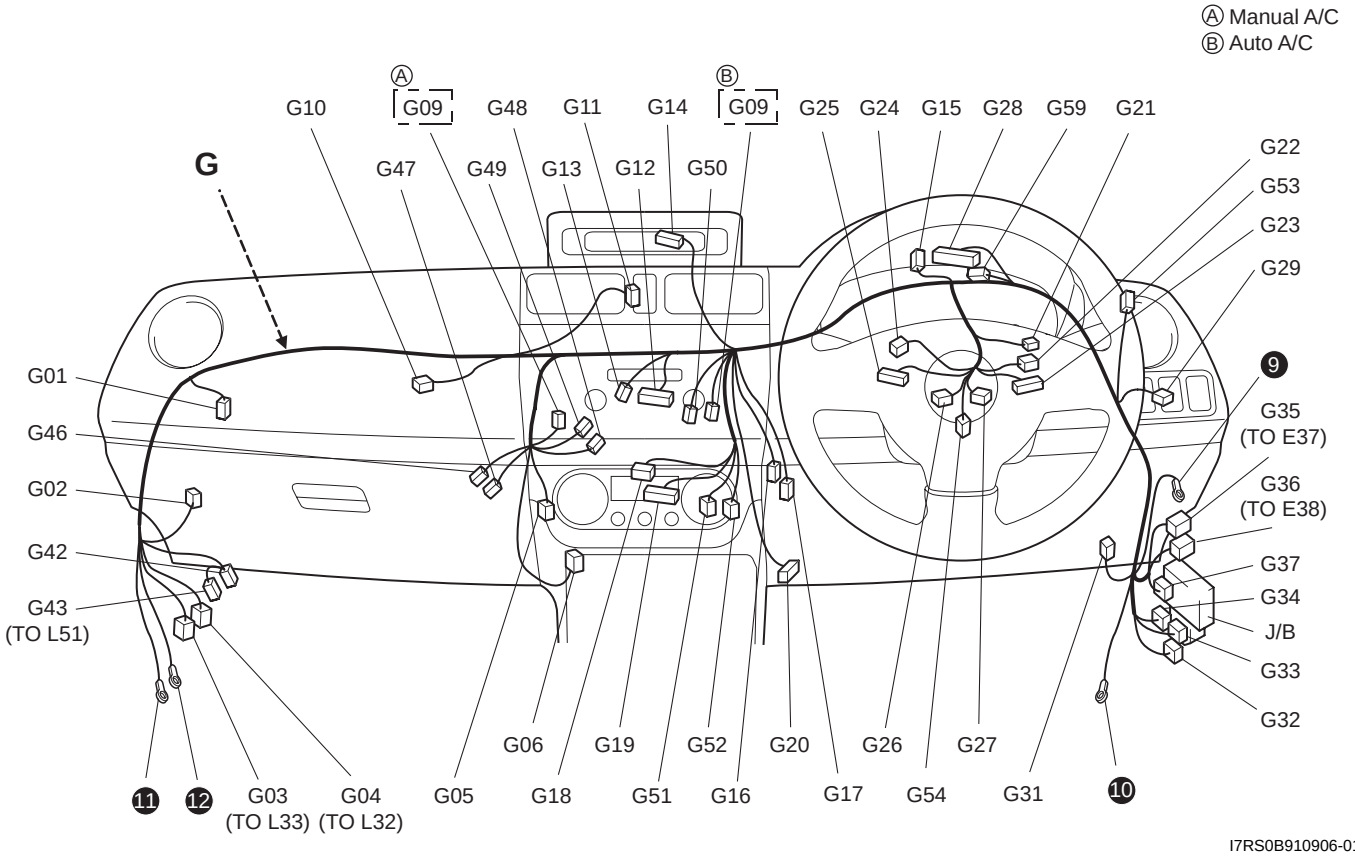
E: Main harness

No./Color	Connective position	No./Color	Connective position
E37/GRY	Instrument panel harness (To G35)	E44/YEL	Floor harness (To L03)
E38/N	Instrument panel harness (To G36)	E45/N	Floor harness (To L02)
E39/BRN	J/B	E46/BLU	BCM
E40/N	J/B	E47/N	Brake light switch
E41/N	J/B	E48/BLU	Power steering wire (To E50)
E42/N	J/C	E49/BLK	P/S control module
E43/N	J/C		

E: Power steering wire

No./Color	Connective position	No./Color	Connective position
E50/BLU	Main harness (To E48)	E53/BLK	P/S torque sensor
E51/BLU	P/S control module	E54/GRY	P/S motor
E52/BLK	P/S control module		

G: Instrument panel harness (RHD)

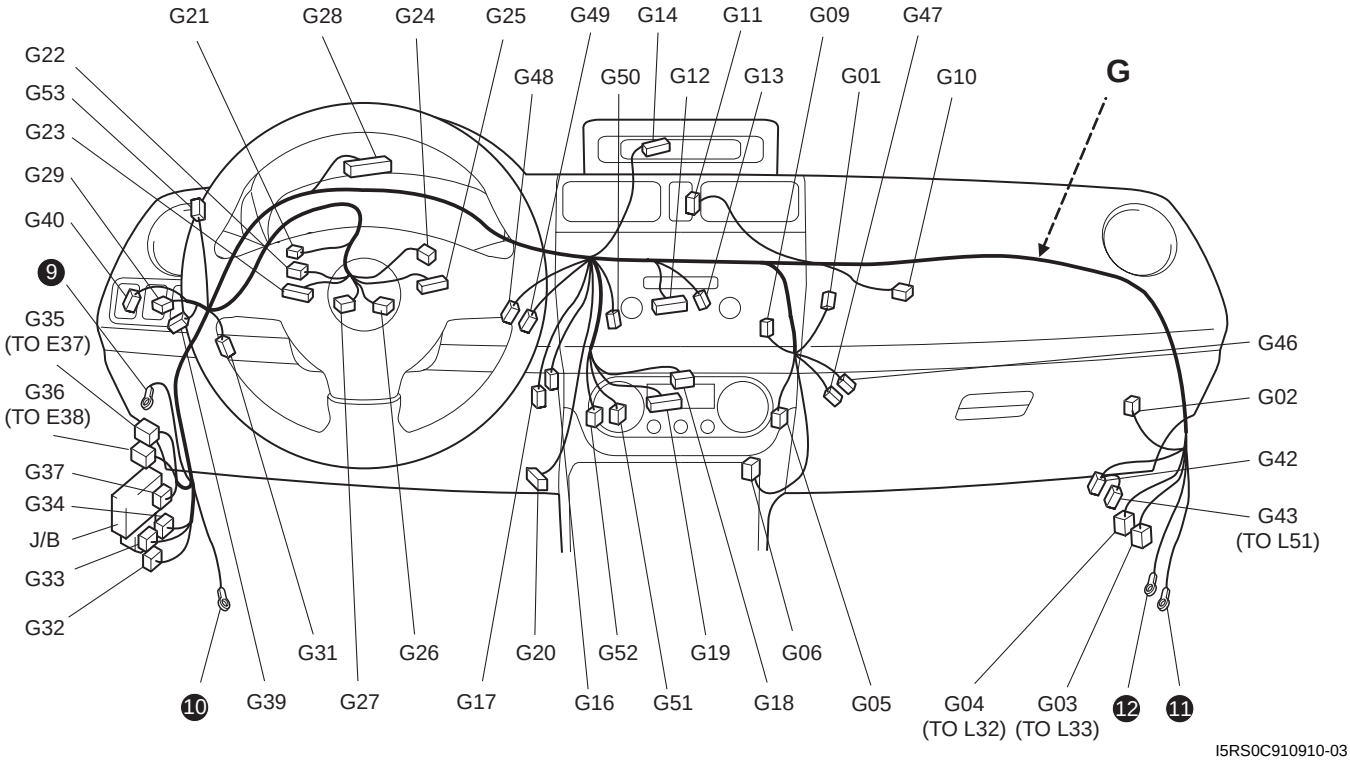


I7RS0B910906-01

G: Instrument panel harness

No./Color	Connective position	No./Color	Connective position
G01/GRN	Air intake control actuator	G26/YEL	Driver inflator
G02/N	Keyless receiver	G27/N	COMB switch
G03/N	Floor harness (To L33)	G28/GRY	COMB meter
G04/YEL	Floor harness (To L32)	G29/GRN (IF EQPD)	Front fog light switch
G05/N	Blower motor	G31/N	J/C
G06/N	Blower motor resister	G32/N	J/B
G09/N	Evaporator temperature sensor	G33/N	J/B
G10/BLK	Passenger inflator	G34/N	J/B
G11/N	Hazard switch	G35/GRY	Main harness (To E37)
G12/BLU	Audio	G36/N	Main harness (To E38)
G13/N	Navigation	G37/BLU	BCM
G14/GRN	Multi information display	G42/N (IF EQPD)	KLS ECM
G15/GRY	J/C	G43/GRY (IF EQPD)	Floor harness (To L51)
G16/N or BLU	J/C	G46/N	Blower motor controller
G17/N	J/C	G47/BLK	Diode
G18/GRN	HVAC control switch	G48/N	Temperature control actuator
G19/BRN	Blower speed selector	G49/GRN	Air flow control actuator
G20/BLK	DLC	G50/N	Inside air temperature sensor
G21/N	IG switch	G51/GRY	Auto A/C unit
G22/N	Main switch (Key switch)	G52/GRY	Auto A/C unit
G23/BLK	COMB switch	G53/N	Sunload sensor
G24/BLK	ICM	G54/N (IF EQPD)	Steering angle sensor
G25/N	COMB switch	G59/N (IF EQPD)	J/C

G: Instrument panel harness (LHD)



G: Instrument panel harness

No./Color	Connective position	No./Color	Connective position
G01/GRN	Air intake control actuator	G26/YEL	Driver inflator
G02/N	Keyless receiver	G27/N	COMB switch
G03/N	Floor harness (To L33)	G28/GRY	COMB meter
G04/YEL	Floor harness (To L32)	G29/GRN (IF EQPD)	Front fog light switch
G05/N	Blower motor	G31/N	J/C
G06/N	Blower motor resister	G32/N	J/B
G09/N	Evaporator temperature sensor	G33/N	J/B
G10/BLK	Passenger inflator	G34/N	J/B
G11/N	Hazard switch	G35/GRY	Main harness (To E37)
G12/BLU	Audio	G36/N	Main harness (To E38)
G13/N	Navigation	G37/BLU	BCM
G14/GRN	Multi information display	G39/N (IF EQPD)	DRL controller
G15/GRY	J/C	G40/N (IF EQPD)	Headlight leveling switch
G16/N	J/C	G42/N (IF EQPD)	KLS ECM
G17/N	J/C	G43/GRY (IF EQPD)	Floor harness (To L51)
G18/GRN	HVAC control switch	G46/N	Blower motor controller
G19/BRN	Blower speed selector	G47/BLK	Diode
G20/BLK	DLC	G48/N	Temperature control actuator
G21/N	IG switch	G49/GRN	Air flow control actuator
G22/N	Main switch (Key switch)	G50/N	Inside air temperature sensor
G23/BLK	COMB switch	G51/GRY	Auto A/C unit
G24/BLK	ICM	G52/GRY	Auto A/C unit
G25/N	COMB switch	G53/N	Sunload sensor

Door, Roof

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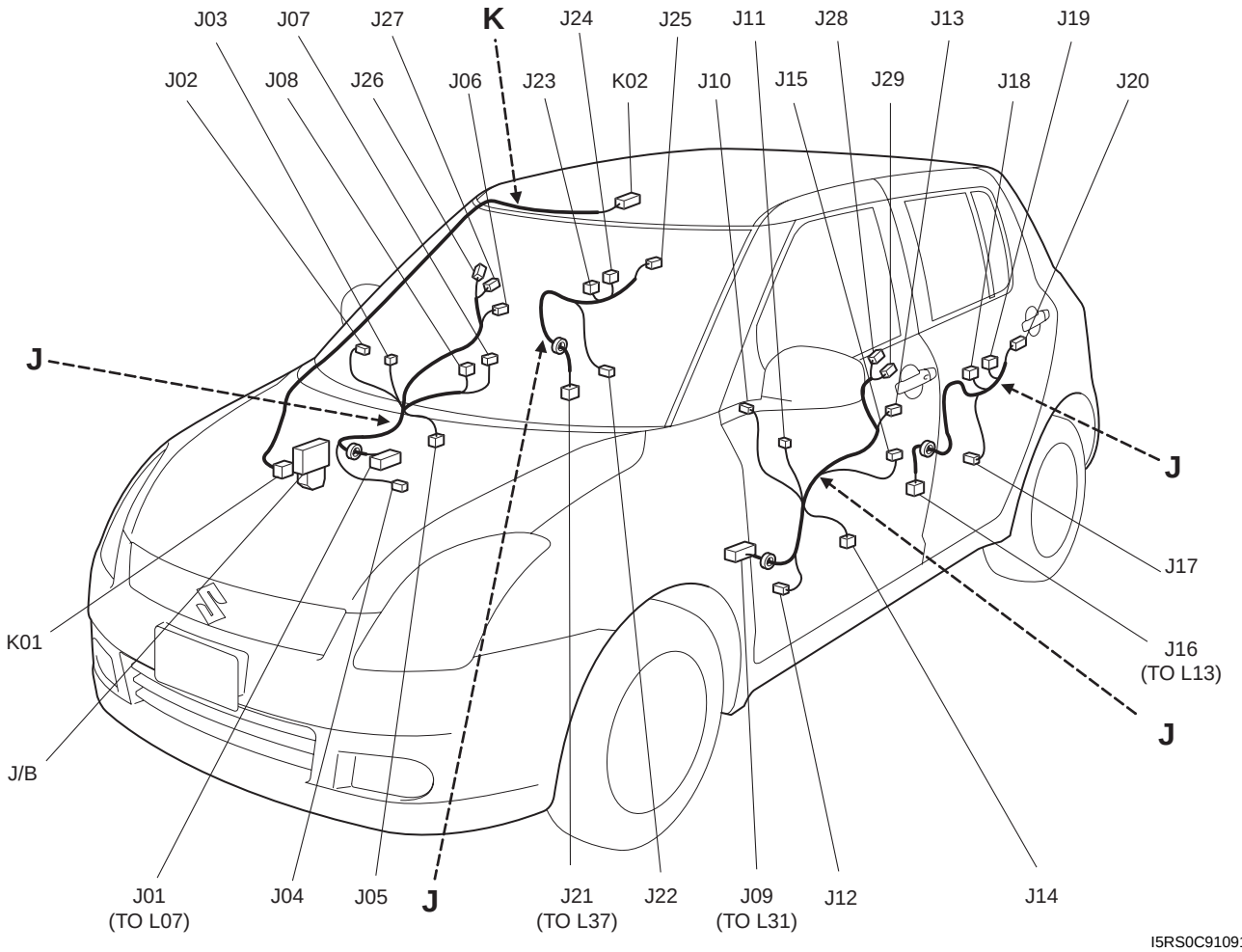
J: Front and rear door wire and rear door joint wire / K: Roof wire (RHD)



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J: Front door wire (Drive side)

No./Color	Connective position	No./Color	Connective position
J01/N	Floor harness (To L07)	J06/N	Front door lock switch (Driver side)
J02/BLK	Tweeter (R)	J07/N	Power mirror switch (Driver side)
J03/N	Power mirror motor (R)	J08/BLU	Power window main switch
J04/N	Front speaker (R)	J26/N (IF EQPD)	Door antenna (Driver side)
J05/GRY	Front power window motor (Driver side)	J27/N (IF EQPD)	Request switch (Driver side)

J: Front door wire (Passenger side)

No./Color	Connective position	No./Color	Connective position
J09/N	Floor harness (To L03)	J14/GRY	Front power window motor (Passenger side)
J10/BLK	Tweeter (L)	J15/N	Power window sub switch
J11/N	Power mirror motor (L)	J28/N (IF EQPD)	Door antenna (Passenger side)
J12/N	Front speaker (L)	J29/N (IF EQPD)	Request switch (Passenger side)
J13/N	Front door lock motor (Passenger side)		

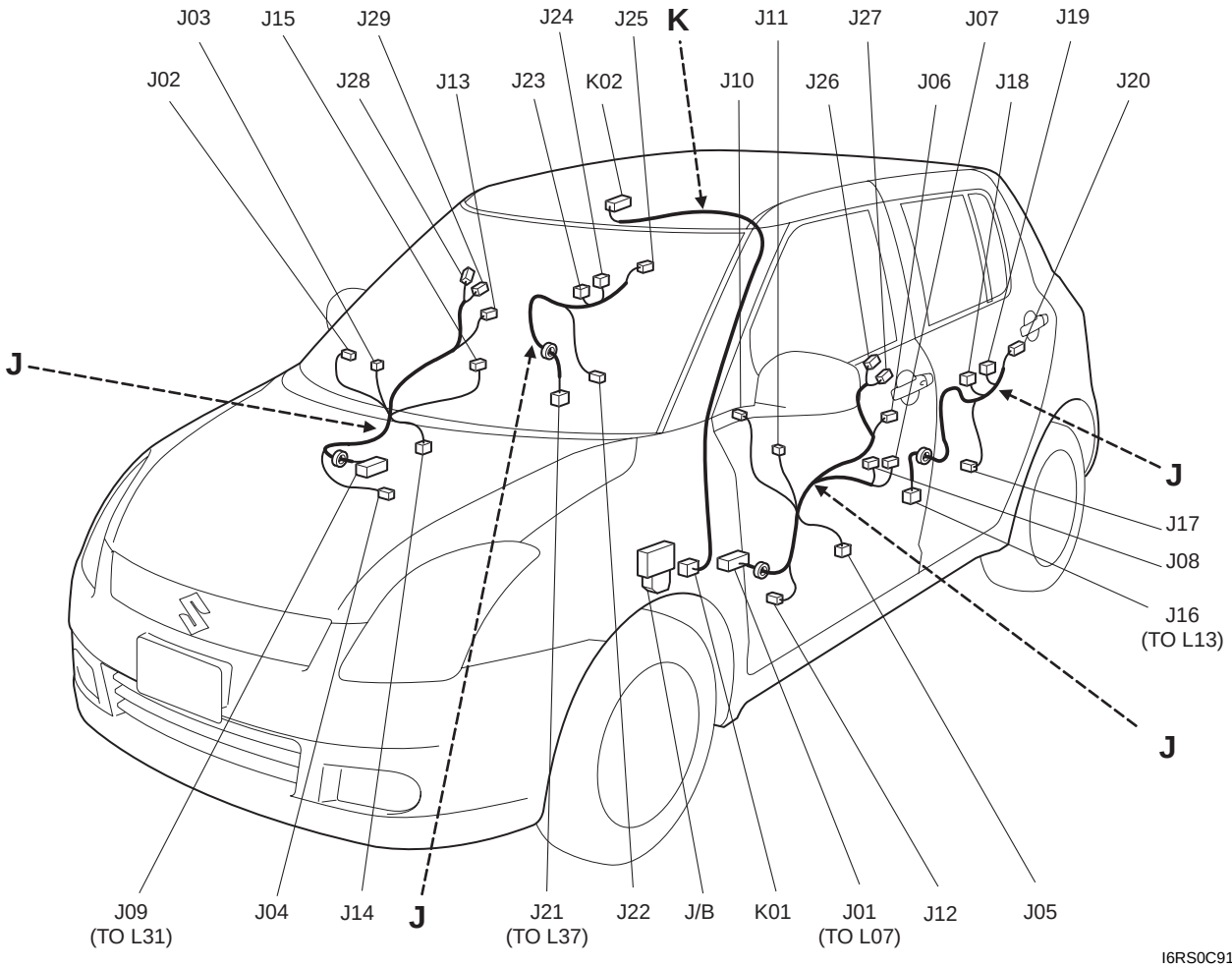
J: Rear door wire

No./Color	Connective position	No./Color	Connective position
J16/N	Floor harness (To L13)	J21/N	Floor harness (To L37)
J17/N	Rear speaker (R)	J22/N	Rear speaker (L)
J18/BLK	Rear power window motor (R)	J23/BLK	Rear power window motor (L)
J19/N	Rear power window sub switch (R)	J24/N	Rear power window sub switch (L)
J20/N	Rear door lock motor (R)	J25/N	Rear door lock motor (L)

K: Roof wire

No./Color	Connective position	No./Color	Connective position
K01/N	J/B	K02/N	Interior light

J: Front and rear door wire and rear door joint wire / K: Roof wire (LHD)



J: Front door wire (Drive side)

No./Color	Connective position	No./Color	Connective position
J01/N	Floor harness (To L07)	J10/BLK	Tweeter (L)
J05/GRY	Front power window motor (Driver side)	J11/N	Power mirror motor (L)
J06/N	Front door lock switch (Driver side)	J12/N	Front speaker (L)
J07/N	Power mirror switch (Driver side)	J26/N (IF EQPD)	Door antenna (Driver side)
J08/BLU	Power window main switch	J27/N (IF EQPD)	Request switch (Driver side)

J: Front door wire (Passenger side)

No./Color	Connective position	No./Color	Connective position
J02/BLK	Tweeter (R)	J14/GRY	Front power window motor (Passenger side)
J03/N	Power mirror motor (R)	J15/N	Power window sub switch
J04/N	Front speaker (R)	J28/N (IF EQPD)	Door antenna (Passenger side)
J09/N	Floor harness (To L03)	J29/N (IF EQPD)	Request switch (Passenger side)
J13/N	Front door lock motor (Passenger side)		

J: Rear door wire

No./Color	Connective position	No./Color	Connective position
J16/N	Floor harness (To L13)	J21/N	Floor harness (To L37)
J17/N	Rear speaker (R)	J22/N	Rear speaker (L)
J18/BLK	Rear power window motor (R)	J23/BLK	Rear power window motor (L)
J19/N	Rear power window sub switch (R)	J24/N	Rear power window sub switch (L)
J20/N	Rear door lock motor (R)	J25/N	Rear door lock motor (L)

K: Roof wire

No./Color	Connective position	No./Color	Connective position
K01/N	J/B	K02/N	Interior light

Floor

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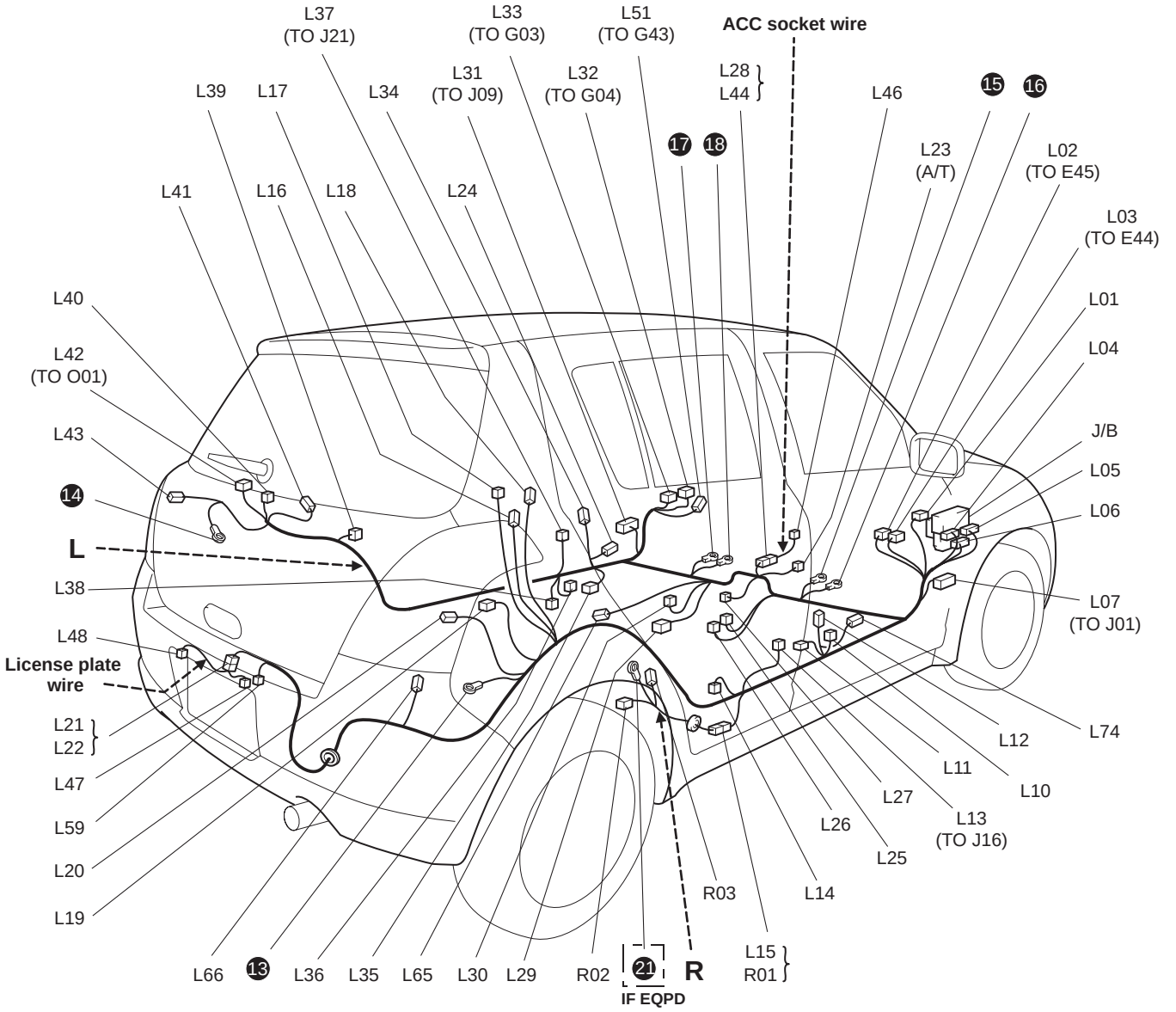
L: Floor harness, ACC socket wire, License plate wire / R: Fuel pump wire (NORMAL model, RHD)



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L: Floor harness

No./Color	Connective position	No./Color	Connective position
L01/BLU	BCM	L27/BLK	Parking brake switch
L02/N	Main harness (To E44)	L28/BLU	ACC socket wire (To L44)
L03/YEL	Main harness (To E45)	L29/PNK	A/B SDM
L04/YEL	J/B	L29/BRN (With Side A/B, Curtain A/B System)	A/B SDM
L05/N	J/B	L30/YEL (IF EQPD)	Side air-bag inflator (Passenger side)
L06/N	J/B	L31/N	Front door wire (Passenger side) (To J09)
L07/N	Front door wire (Driver side) (To J01)	L32/YEL	Instrument panel harness (To G04)
L10/BLK	Pretensioner (Driver side)	L33/N	Instrument panel harness (To G03)
L11/N (IF EQPD)	Driver side-sensor	L34/N	Front door switch (Passenger side)
L12/N	Front door switch (Driver side)	L35/N	Passenger side-sensor
L13/N	Rear door wire (R) (To J16)	L36/BLK	Pretensioner (Passenger side)
L14/N	Wheel speed sensor (RR)	L37/N	Rear door wire (L) (To J21)
L15/GRY	Fuel pump wire (To R01)	L38/N	Wheel speed sensor (RL)
L16/N	Rear door switch (R)	L39/N	Antenna amplifier
L17/N	High mounted stop light	L40/N	Rear door switch (L)
L18/BLK (IF EQPD)	Side curtain air-bag (R)	L41/BLK (IF EQPD)	Side curtain air-bag (L)
L19/GRY	Luggage compartment light	L42/N	Rear end door wire (To O01)
L20/N	Rear combination light (R)	L43/BLK	Rear combination light (L)
L21/N	License plate wire (To L22)	L51/GRY	Instrument panel harness (To G43)
L23/N (A/T)	A/T shift lever	L59/GRY (IF EQPD)	Rear end antenna
L24/GRY	J/C	L65/BRN (IF EQPD)	Inside antenna
L25/YEL (IF EQPD)	Side air-bag inflator (Driver side)	L66/BRN (IF EQPD)	Luggage antenna
L26/N	Seat belt switch	L74/BLU	J/C

L: ACC socket wire

No./Color	Connective position	No./Color	Connective position
L44/BLU	Floor harness (To L28)	L46/BLK	ACC socket

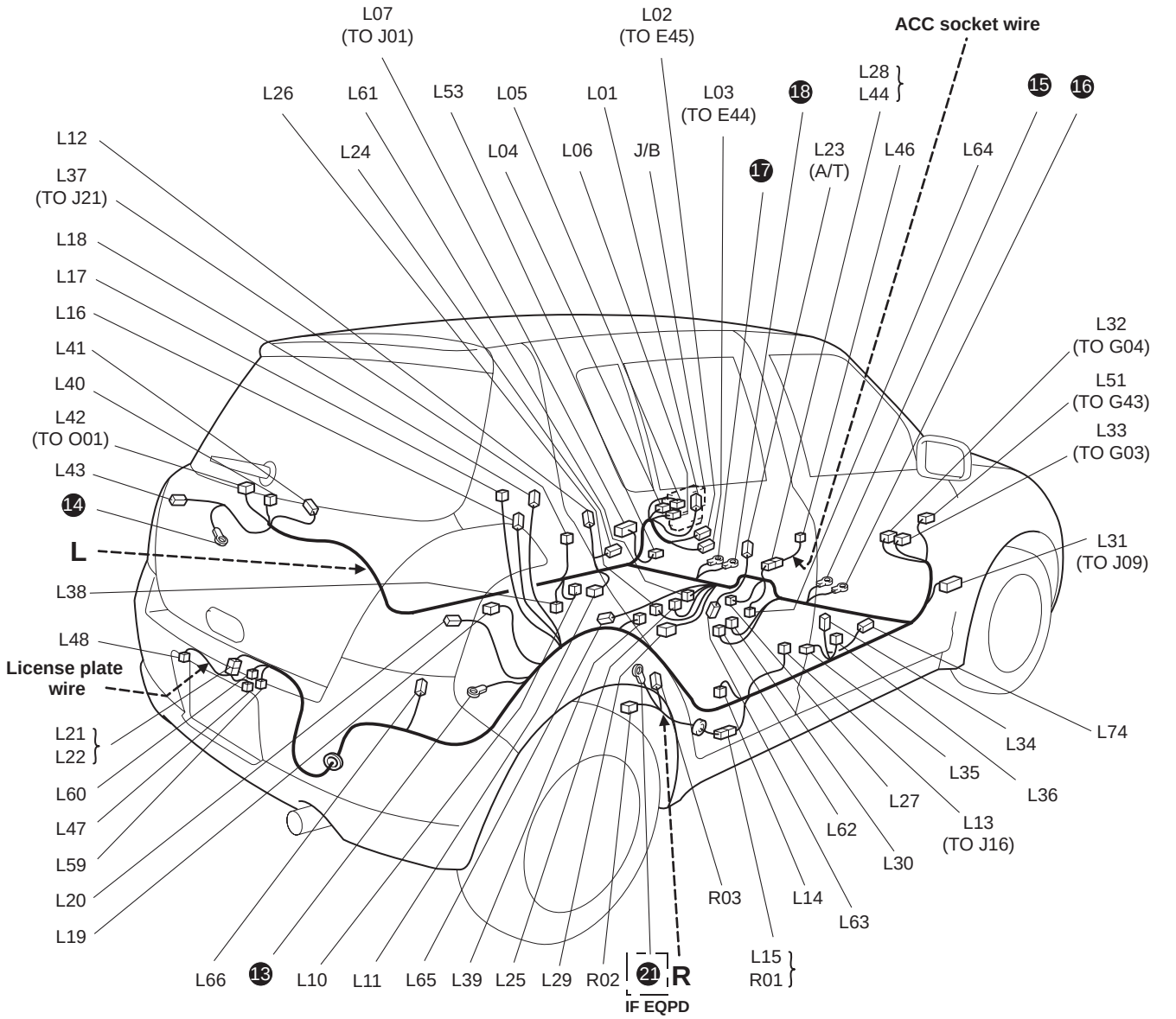
L: License plate wire

No./Color	Connective position	No./Color	Connective position
L22/N	Floor harness (To L21)	L48/N	License plate light #2
L47/N	License plate light #1		

R: Fuel pump wire

No./Color	Connective position	No./Color	Connective position
R01/GRY	Floor harness (To L15)	R03/N (IF EQPD)	Sub fuel level sensor
R02/BLK	Fuel pump and gauge		

L: Floor harness, ACC socket wire, License plate wire / R: Fuel pump wire (NORMAL model, LHD)



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L: Floor harness

No./Color	Connective position	No./Color	Connective position
L01/BLU	BCM	L29/BRN (With Side A/B, Curtain A/B System)	A/B SDM
L02/N	Main harness (To E44)	L30/YEL (IF EQPD)	Side air-bag inflator (Passenger side)
L03/YEL	Main harness (To E45)	L31/N	Front door wire (Passenger side) (To J09)
L04/YEL	J/B	L32/YEL	Instrument panel harness (To G04)
L05/N	J/B	L33/N	Instrument panel harness (To G03)
L06/N	J/B	L34/N	Front door switch (Passenger side)
L07/N	Front door wire (Driver side) (To J01)	L35/N (IF EQPD)	Passenger side-sensor
L10/BLK	Pretensioner (Driver side)	L36/BLK	Pretensioner (Passenger side)
L11/N (IF EQPD)	Driver side-sensor	L37/N	Rear door wire (L) (To J21)
L12/N	Front door switch (Driver side)	L38/N	Wheel speed sensor (RL)
L13/N	Rear door wire (R) (To J16)	L39/N	Antenna amplifier
L14/N	Wheel speed sensor (RR)	L40/N	Rear door switch (L)
L15/GRY	Fuel pump wire (To R01)	L41/BLK (IF EQPD)	Side curtain air-bag (L)
L16/N	Rear door switch (R)	L42/N	Rear end door wire (To O01)
L17/N	High mounted stop light	L43/BLK	Rear combination light (L)
L18/BLK	Side curtain air-bag (R)	L51/GRY	Instrument panel harness (To G43)
L19/GRY	Luggage compartment light	L53/N	Diagnosis connector #3
L20/N	Rear combination light (R)	L59/GRY (IF EQPD)	Rear end antenna
L21/N	License plate wire (To L22)	L60/BLK (IF EQPD)	Rear fog light
L23/N (A/T)	A/T shift lever	L61/N (IF EQPD)	Seat heater (Driver side) and seat belt switch
L24/GRY	J/C	L62/N (IF EQPD)	Seat heater (Passenger side)
L25/YEL	Side air-bag inflator (Driver side)	L63/YEL (IF EQPD)	Seat heater switch (Driver side)
L26/N	Seat belt switch	L64/GRN (IF EQPD)	Seat heater switch (Passenger side)
L27/BLK	Parking brake switch	L65/BRN (IF EQPD)	Inside antenna
L28/BLU	ACC socket wire (To L44)	L66/BRN (IF EQPD)	Luggage antenna
L29/PNK	A/B SDM	L74/BLU	J/C

L: ACC socket wire

No./Color	Connective position	No./Color	Connective position
L44/BLU	Floor harness (To L28)	L46/BLK	ACC socket

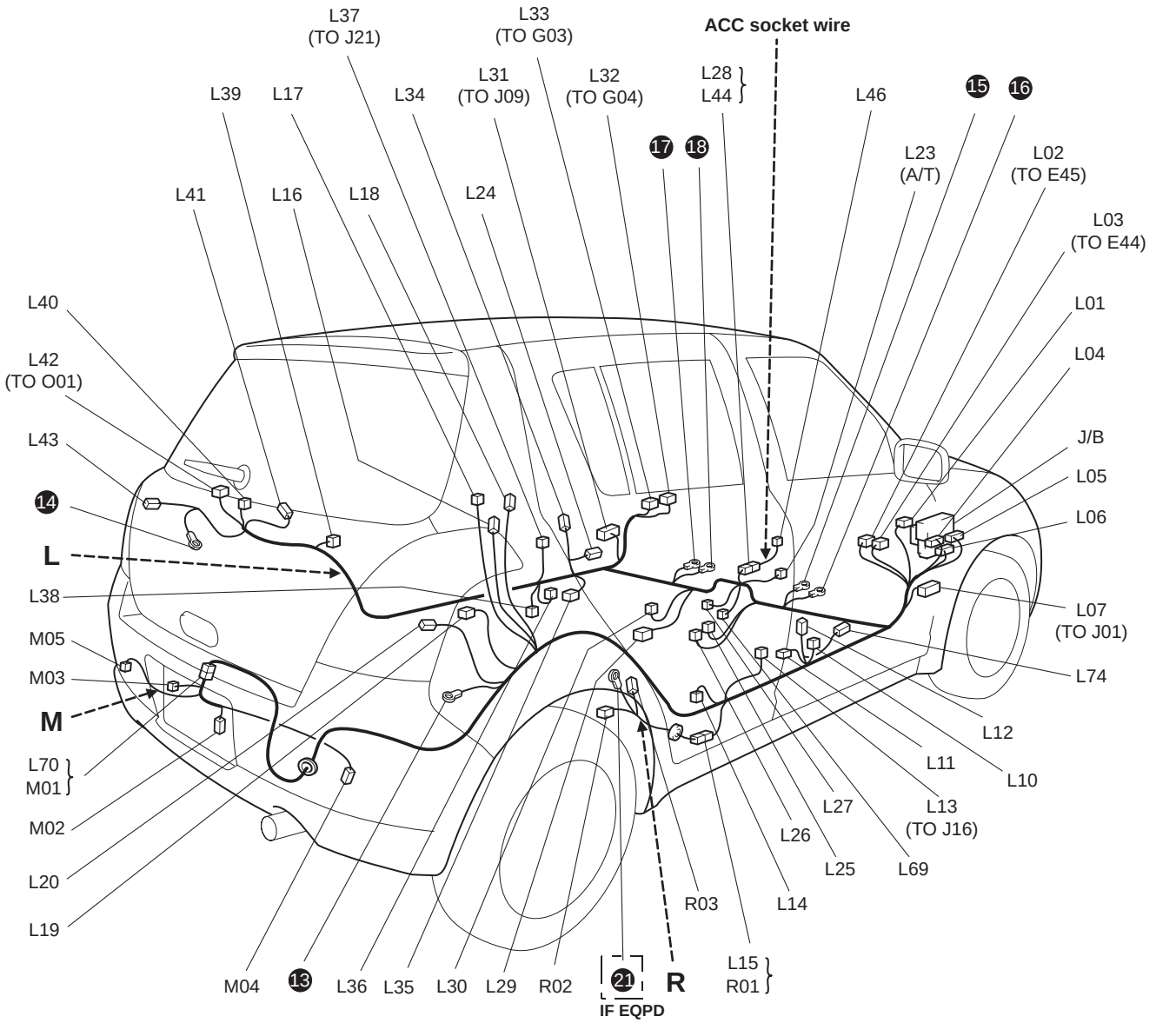
L: License plate wire

No./Color	Connective position	No./Color	Connective position
L22/N	Floor harness (To L21)	L48/N	License plate light #2
L47/N	License plate light #1		

R: Fuel pump wire

No./Color	Connective position	No./Color	Connective position
R01/GRY	Floor harness (To L15)	R03/N (IF EQPD)	Sub fuel level sensor
R02/BLK	Fuel pump and gauge		

L: Floor harness, ACC socket wire / M: Rear bumper wire / R: Fuel pump wire (SPORT model, RHD)



L: Floor harness

No./Color	Connective position	No./Color	Connective position
L01/BLU	BCM	L27/BLK	Parking brake switch
L02/N	Main harness (To E44)	L28/BLU	ACC socket wire (To L44)
L03/YEL	Main harness (To E45)	L29/PNK	A/B SDM
L04/YEL	J/B	L29/BRN (With Side A/B, Curtain A/B System)	A/B SDM
L05/N	J/B	L30/YEL (IF EQPD)	Side air-bag inflator (Passenger side)
L06/N	J/B	L31/N	Front door wire (Passenger side) (To J09)
L07/N	Front door wire (Driver side) (To J01)	L32/YEL	Instrument panel harness (To G04)
L10/BLK	Pretensioner (Driver side)	L33/N	Instrument panel harness (To G03)
L11/N (IF EQPD)	Driver side-sensor	L34/N	Front door switch (Passenger side)
L12/N	Front door switch (Driver side)	L35/N	Passenger side-sensor
L13/N	Rear door wire (R) (To J16)	L36/BLK	Pretensioner (Passenger side)
L14/N	Wheel speed sensor (RR)	L37/N	Rear door wire (L) (To J21)
L15/GRY	Fuel pump wire (To R01)	L38/N	Wheel speed sensor (RL)
L16/N	Rear door switch (R)	L39/N	Antenna amplifier
L17/N	High mounted stop light	L40/N	Rear door switch (L)
L18/BLK (IF EQPD)	Side curtain air-bag (R)	L41/BLK (IF EQPD)	Side curtain air-bag (L)
L19/GRY	Luggage compartment light	L42/N	Rear end door wire (To O01)
L20/N	Rear combination light (R)	L43/BLK	Rear combination light (L)
L23/N (A/T)	A/T shift lever assy	L70/GRY	Rear bumper wire (To M01)
L24/GRY	J/C	L69/BLU (IF EQPD)	ESP® off switch
L25/YEL	Side air-bag inflator (Driver side)	L74/BLU	J/C
L26/N	Seat belt switch		

L: ACC socket wire

No./Color	Connective position	No./Color	Connective position
L44/BLU	Floor harness (To L28)	L46/BLK	ACC socket

M: Rear bumper wire

No./Color	Connective position	No./Color	Connective position
M01/GRY	Floor harness (To L70)	M04/N	Back-up light (R)
M02/N	License plate light (R)	M05/N	Back-up light (L)
M03/N	License plate light (L)		

R: Fuel pump wire

No./Color	Connective position	No./Color	Connective position
R01/GRY	Floor harness (To L15)	R03/N (IF EQPD)	Sub fuel level sensor
R02/BLK	Fuel pump and gauge		

Rear

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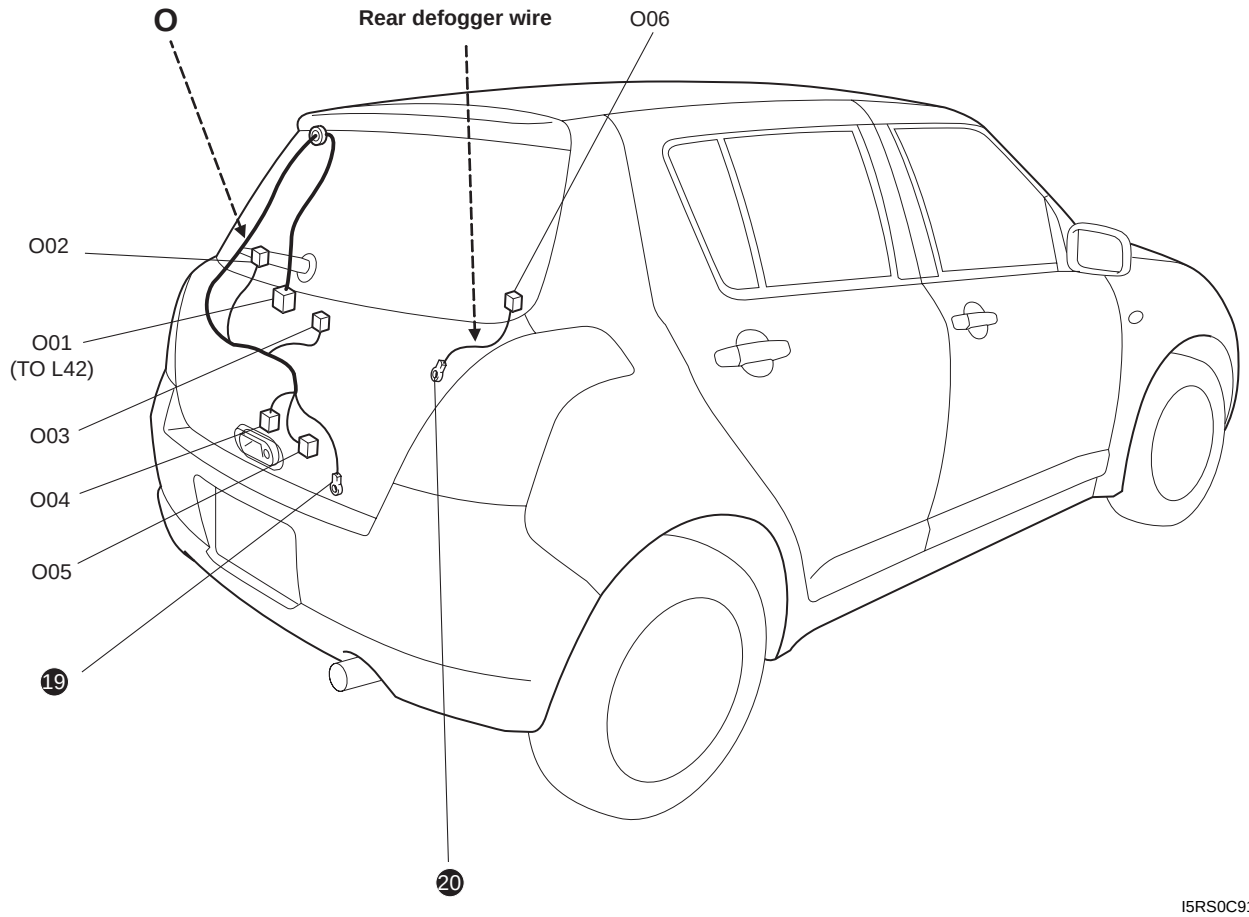
O: Rear end door harness, Rear defogger wire



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O: Rear end door harness

No./Color	Connective position	No./Color	Connective position
O01/N	Floor harness (To L42)	O04/N	Rear end door lock solenoid
O02/BLK	Rear defogger (+)	O05/GRN	Rear end door lock switch
O03/N	Rear wiper motor		

O: Rear defogger wire

No./Color	Connective position	No./Color	Connective position
O06/BLK	Rear defogger (–)		

Ground Point

Ground (earth) Point

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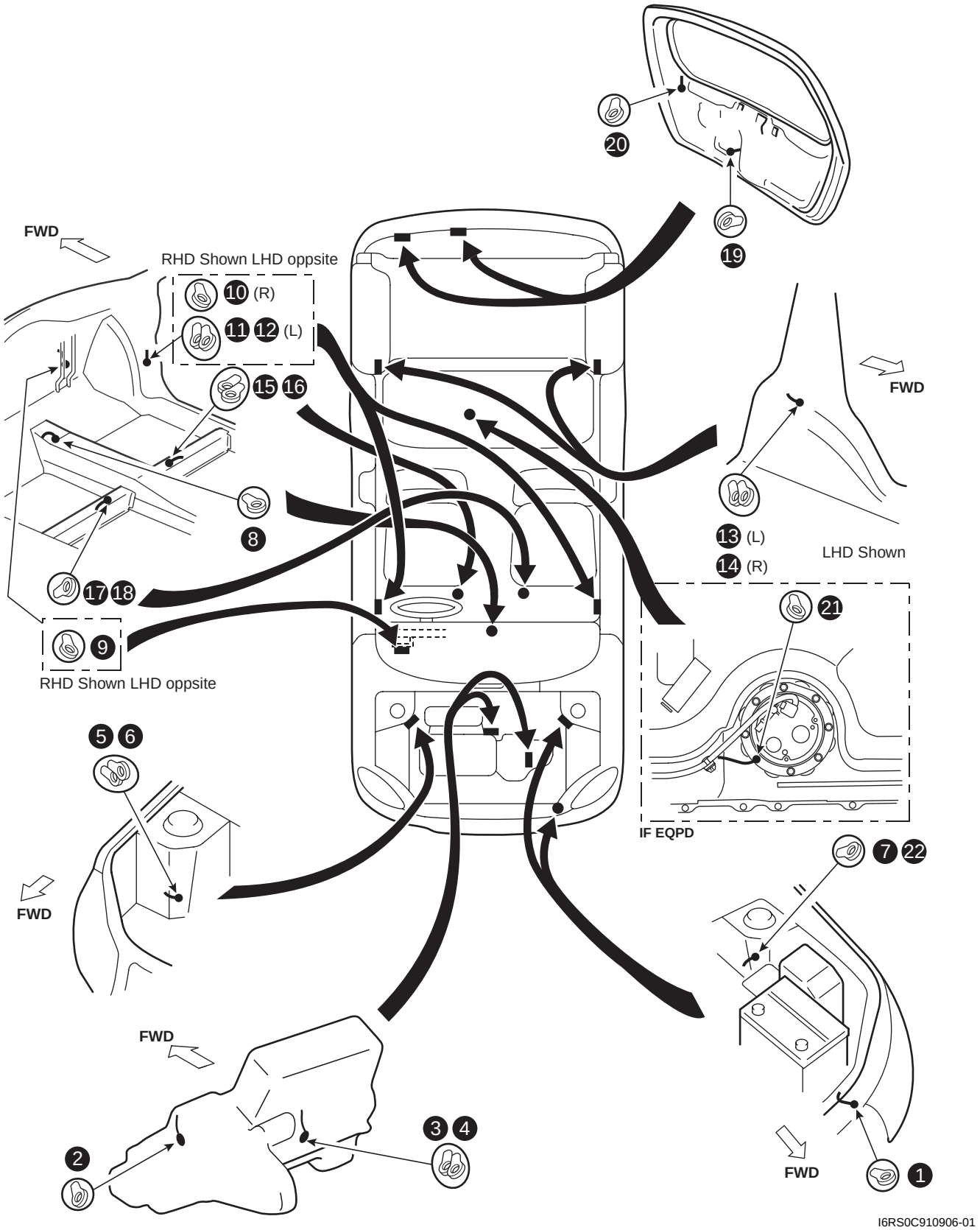
Refer to “Connector Layout Diagram”.



Power Supply Diagram

Power Supply Diagram

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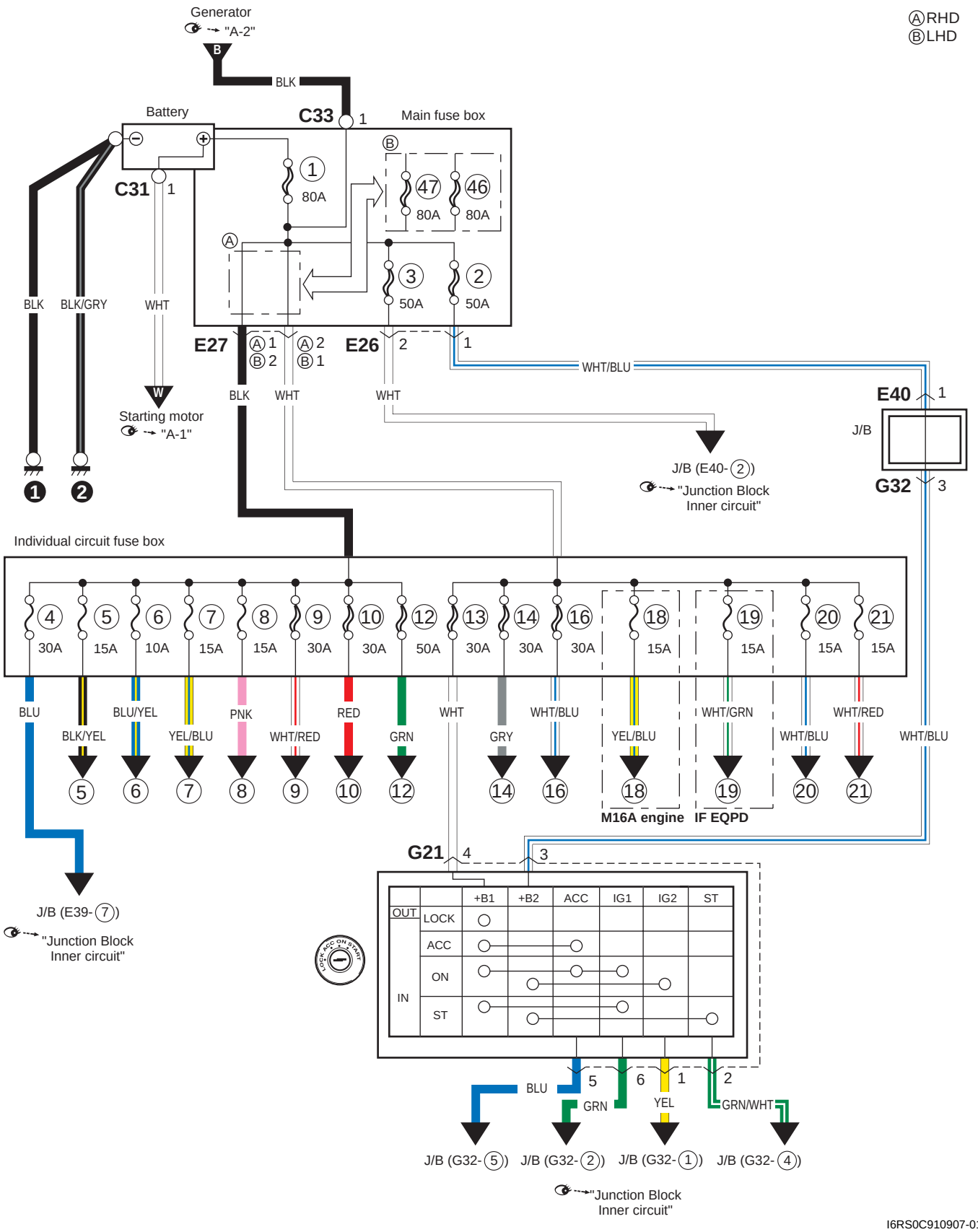
Refer to “Fuses and the Protected Parts”.
Refer to “Fuses in Main Fuse Box (RHD)”.
Refer to “Individual Circuit Fuse Box No. 1”.
Refer to “Individual Circuit Fuse Box No. 2 (In J/B)”.
Refer to “Junction Block (J/B) Connector / Fuse Layout”.
Refer to “Junction Block Inner Circuit (Overview)”.
Refer to “Junction Block Inner Circuit (Detail)”.



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Fuses and the Protected Parts

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The chart below describes what parts each fuse protects.

Fuses in Main Fuse Box (RHD)

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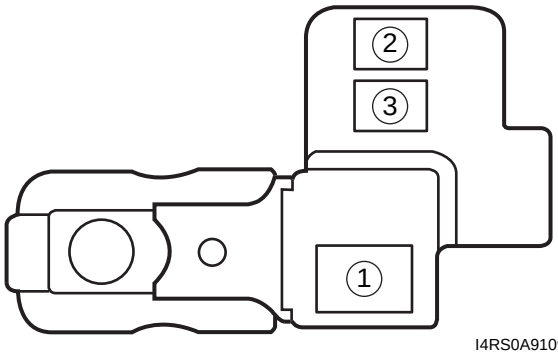

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Fuses in Main Fuse Box (LHD)

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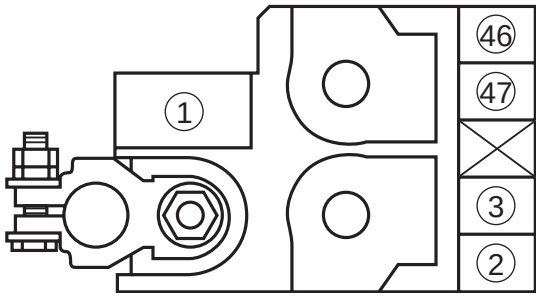

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No.	Fuse	Protected circuit
①	80 A	All electric circuit
		Battery
		Generator
②	50 A	LAMP
③	50 A	IG switch
		Supplementary fuse box No.2 (In J/B)
㊻	80 A	Individual circuit fuse box
㊼	80 A	Individual circuit fuse box

Individual Circuit Fuse Box No. 1

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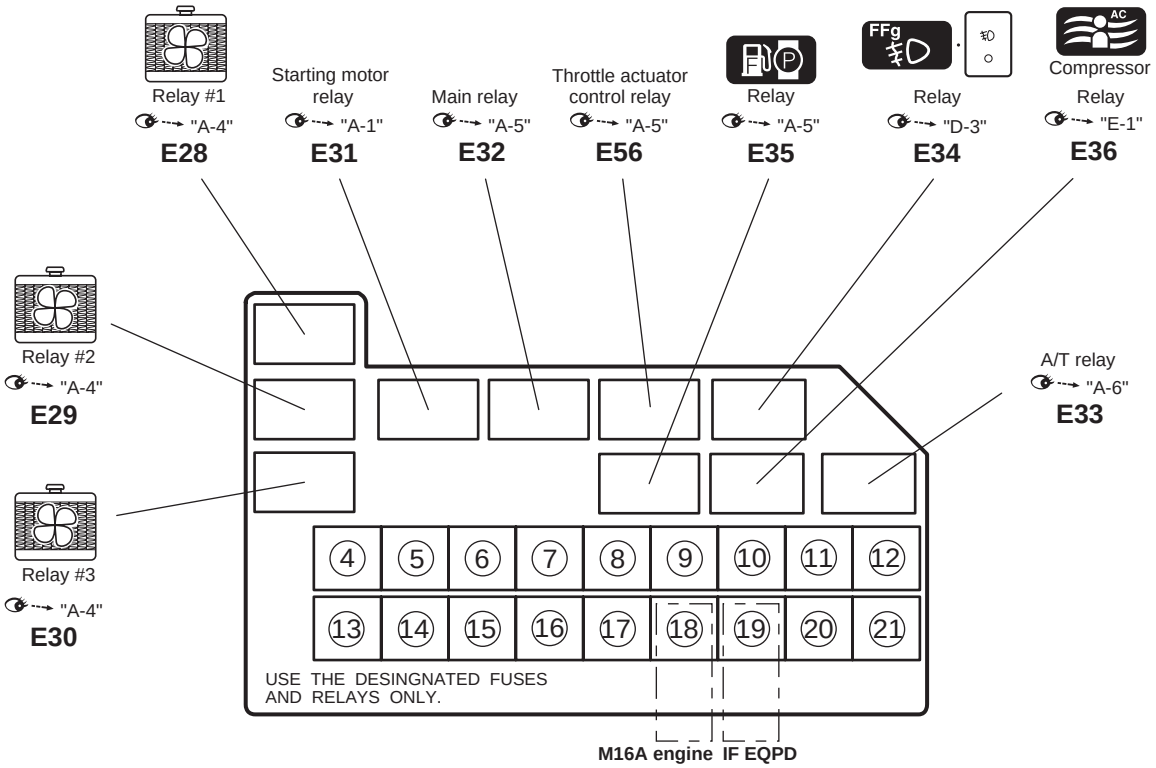

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No.	Fuse	Description on the cover	Protected circuit
④	30 A	HTR FAN	Blower motor relay
⑤	15 A	FI	Main relay
⑥	10 A	A/C CPRSR	A/C compressor relay
⑦	15 A	AT ETM	A/T relay
⑧	15 A	STOP LAMP	Brake light switch
⑨	30 A	ABS MOT	ABS control module
			ESP® control module
⑩	30 A	ST MOT	Starting motor relay
⑪	50 A	MTA	BLANK
⑫	50 A	EPS	Power steering control module
⑬	30 A	IG ACC	IG switch
⑭	30 A	RDTR FAN	Radiator fan relay #1
			Radiator fan relay #2
⑮	BLANK	BLANK	BLANK
⑯	30 A	ABS SOL	ABS control module
			ESP® control module
⑰	BLANK	BLANK	BLANK
⑱	15 A	THR MOT	Throttle actuator control relay
⑲	15 A	FR FOG	Front fog light relay
⑳	15 A	H/L L	Headlight (L)
㉑	15 A	H/L R	Headlight (R)

Individual Circuit Fuse Box No. 2 (In J/B)

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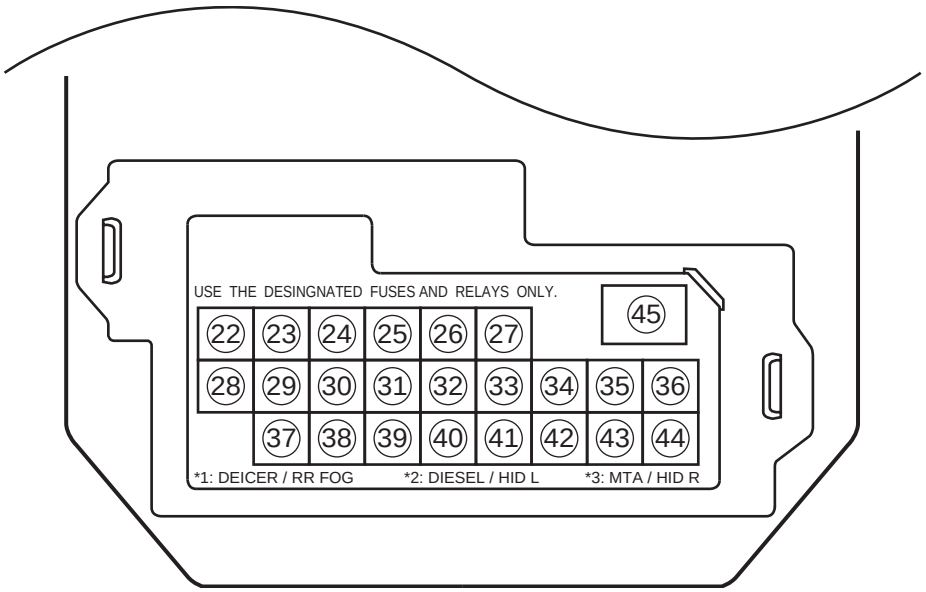

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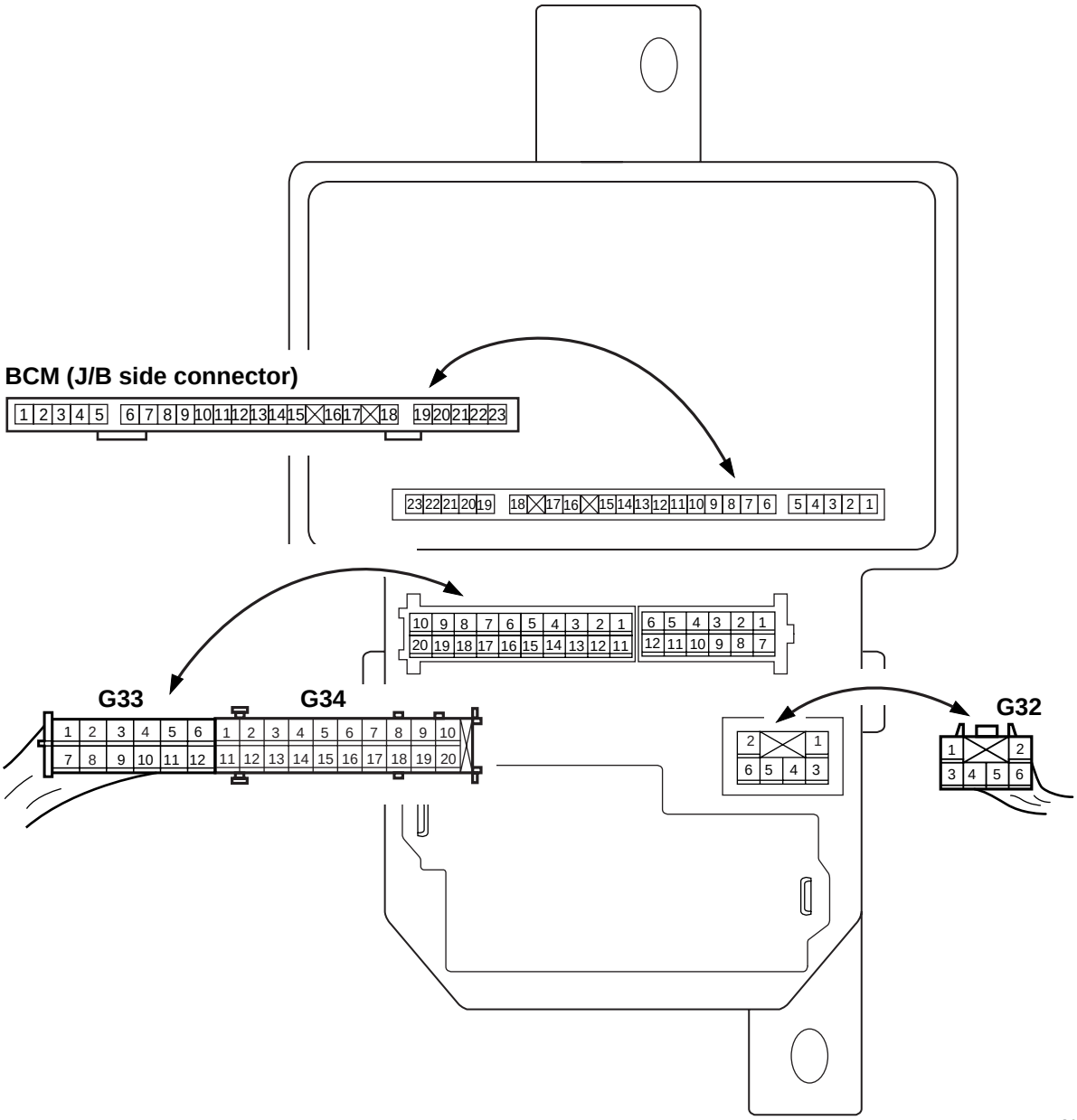
No.	Fuse	Description on the cover	Protected circuit
22	BLANK	BLANK	BLANK
23	15 A	IG COIL	Current sensor
			ECM
			Fuel pump relay
			Generator
			Heated oxygen relay #1
			Heated oxygen relay #2
			ICM
			IG coil #1
			IG coil #2
24	10 A	BACK	Auto A/C unit
			Back-up light switch (M/T)
			Air intake control actuator
			HVAC control switch
			Headlight leveling switch
			Headlight leveling actuator (R)
			Headlight leveling actuator (L)
			KLS ECM
			Transaxle range sensor (A/T)
25	10 A	METER	BCM
			COMB meter
			Flasher relay
26	15 A	ACC 1	BCM
			Power mirror
27	15 A	ACC 2	ACC socket or Cigar lighter
			Audio
			Multi information display
			KLS ECM
28	15 A	WIPER	COMB switch
			DRL controller
			Rear washer motor
			Rear wiper motor
			Rear wiper relay
			Windshield washer motor
			Windshield wiper motor
29	10 A	IG1 SIG	A/T relay (A/T)
			Power steering control module

No.	Fuse	Description on the cover	Protected circuit
㉚	15 A	A/BAG	A/B SDM
㉛	10 A	ABS	ABS control module
			ESP® control module
			Steering angle sensor
㉜	10 A	TAIL	COMB switch
㉝	BLANK	BLANK	BLANK
㉞	20 A	D/L	BCM
㉟	10 A	DIESEL/HID L	BLANK
㊱	10 A	ST SIG	Starting motor relay
㊲	15 A	SEAT HTR	Seat heater switch (Driver side)
			Seat heater switch (Passenger side)
㊳	10 A	IG2 SIG	Blower motor relay
㊴	15 A	DEICER/RR FOG	COMB switch
㊵	15 A	RADIO	Audio
			Auto A/C unit
			BCM
			COMB meter
			DLC
			ECM
			Interior light
			Luggage compartment light
			Main switch (Key switch)
			Multi information display
			KLS ECM
			Steering angle sensor
			TCM
㊶	25 A	RR DEF	Rear defogger relay
㊷	15 A	HAZ-HORN	Horn relay
			Flasher relay
㊸	10 A	MTA/HID R	BLANK
㊹	20 A	P/WT	BLANK
㊺	30 A	P/W	Front power window main switch
			Front power window sub switch
			Rear power window sub switch (R)
			Rear power window sub switch (L)

Junction Block (J/B) Connector / Fuse Layout

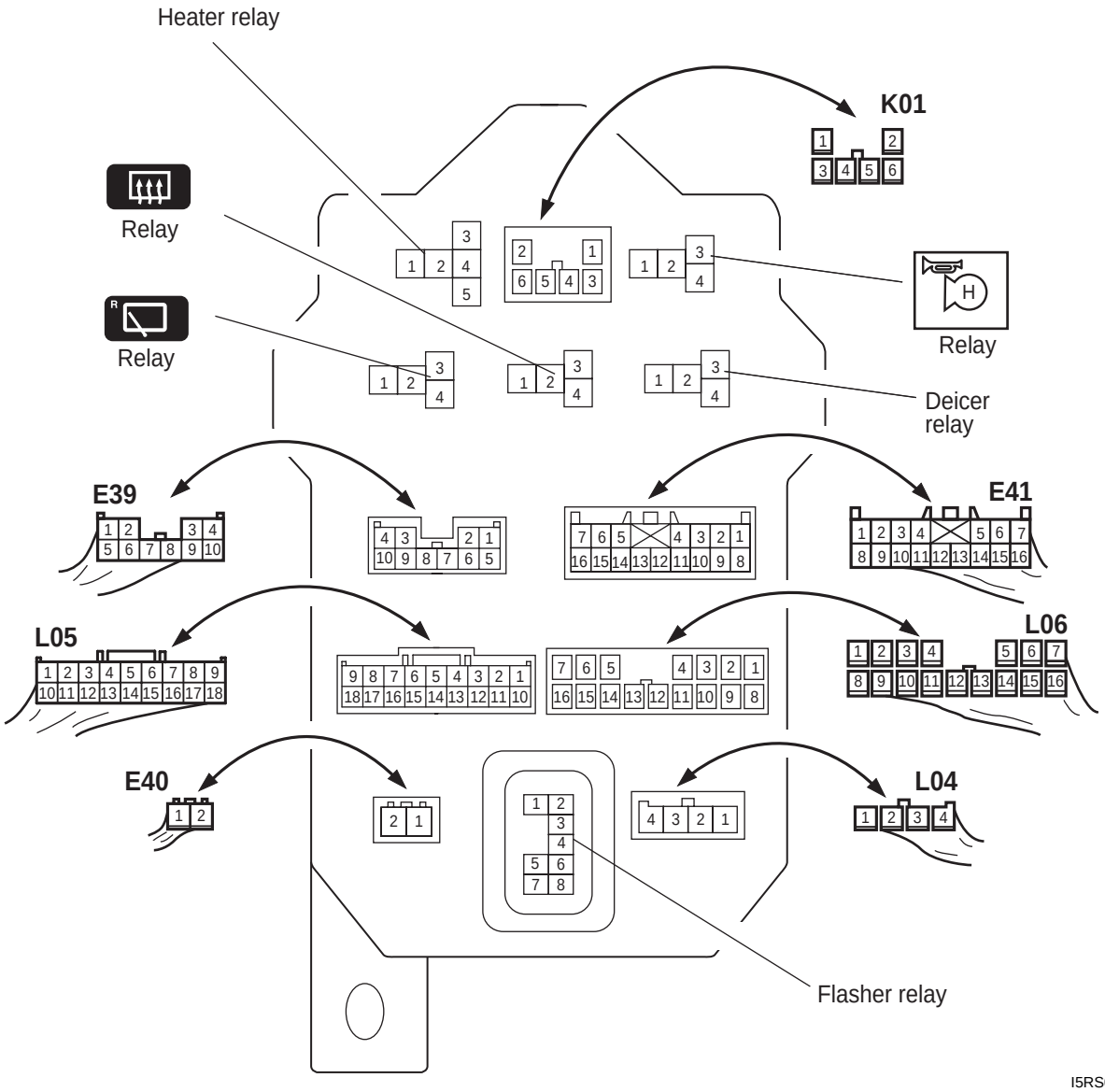
S7RS0B910D007

BCM side



I4RS0A910908-01

Fuse side



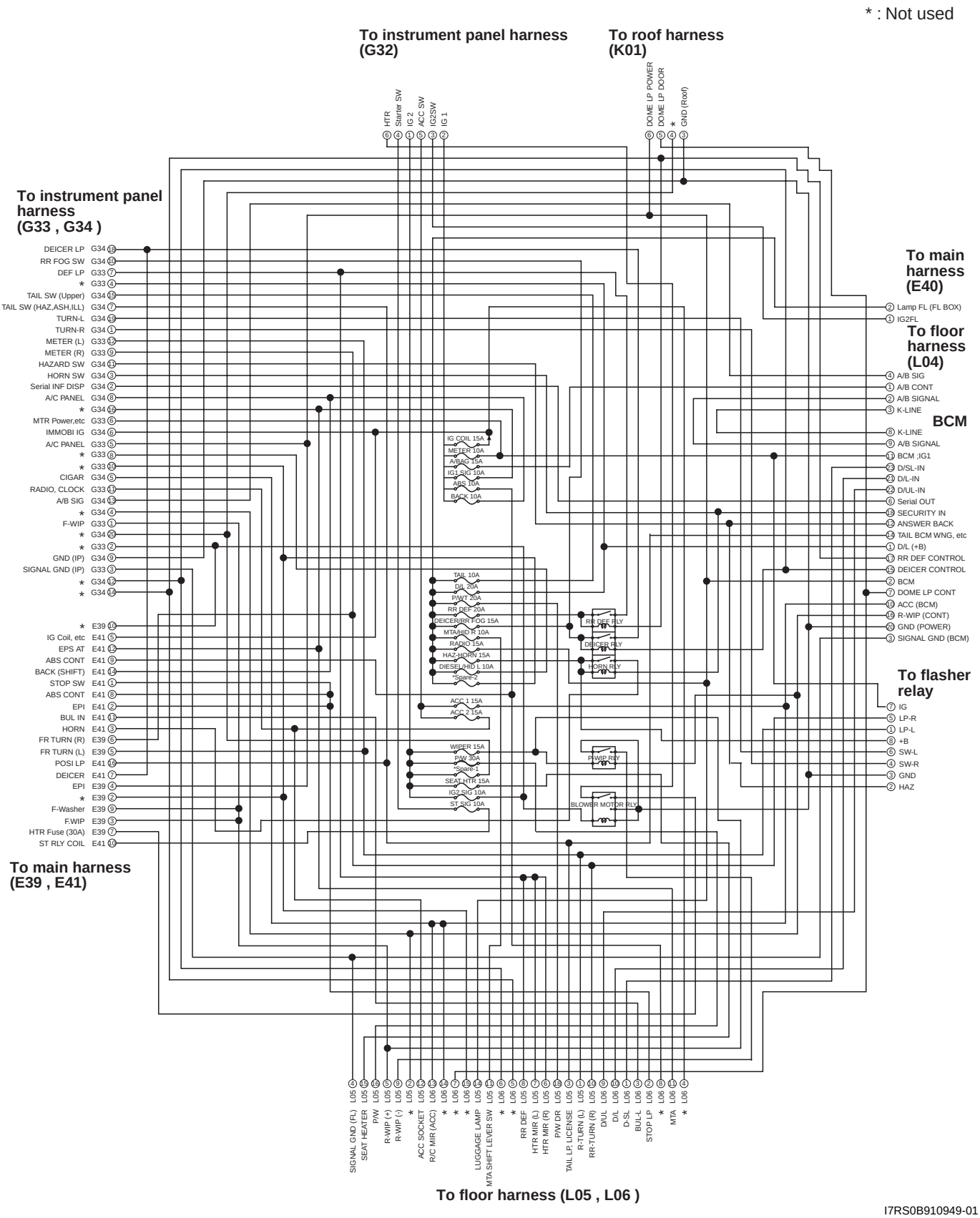
I5RS0C910902-01

Junction Block Inner Circuit (Overview)

S7RS0B910D008

Abbreviations

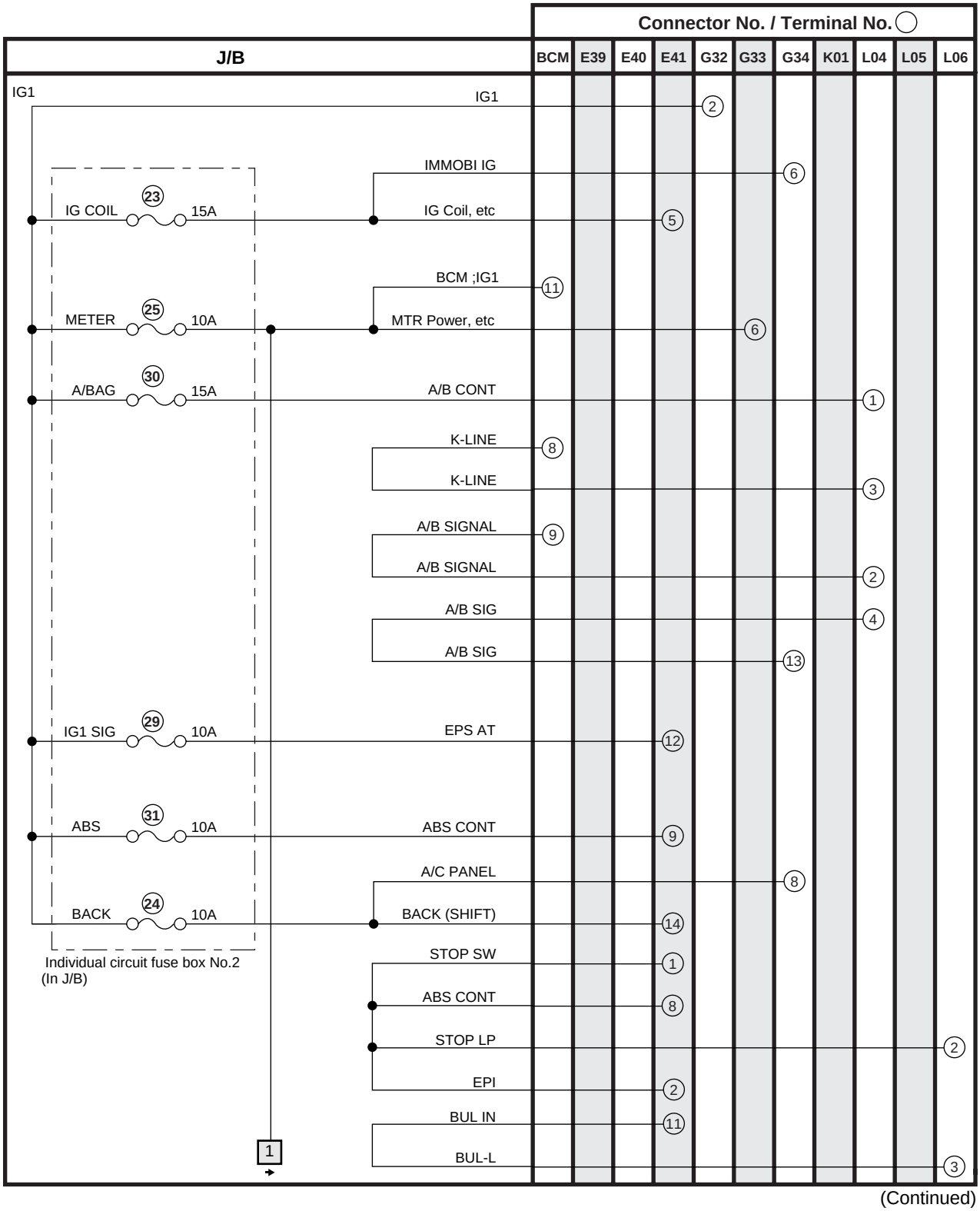
Abbreviation	Full term	Abbreviation	Full term
AS	Assistant (Front passenger)	LP	Lamp
CTR	Center	O/H	Over head
DR	Driver	R/B	Relay box
F-L	Front L	R-L	Rear L
F-R	Front R	R-R	Rear R
FR	Front	RR	Rear
INP	Instrument panel	S/H	Seat heater
LEV	(Head light) leveling		



I7RS0B910949-01

Junction Block Inner Circuit (Detail)

S7RS0B910D009



I5RS0C910963-02

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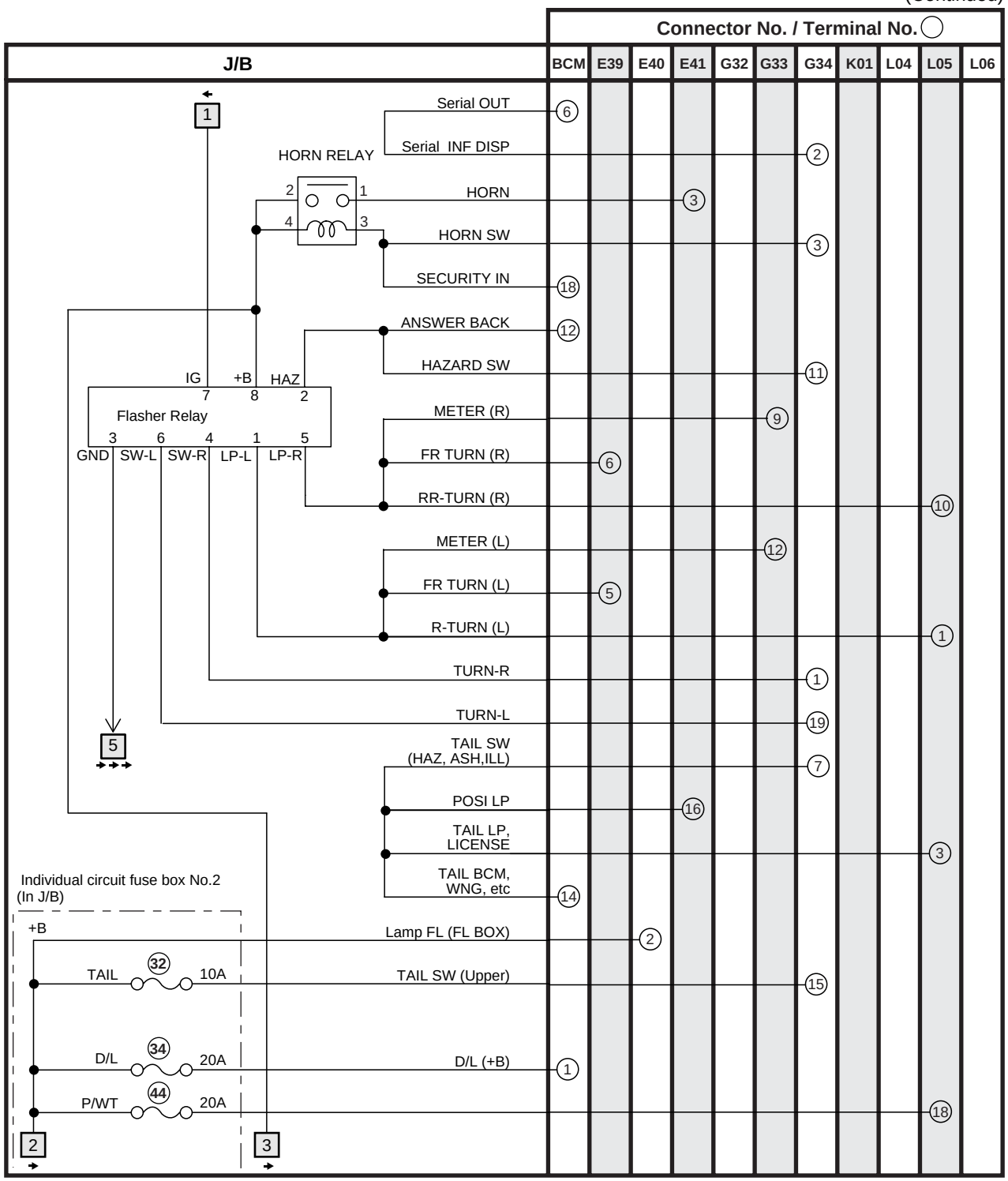

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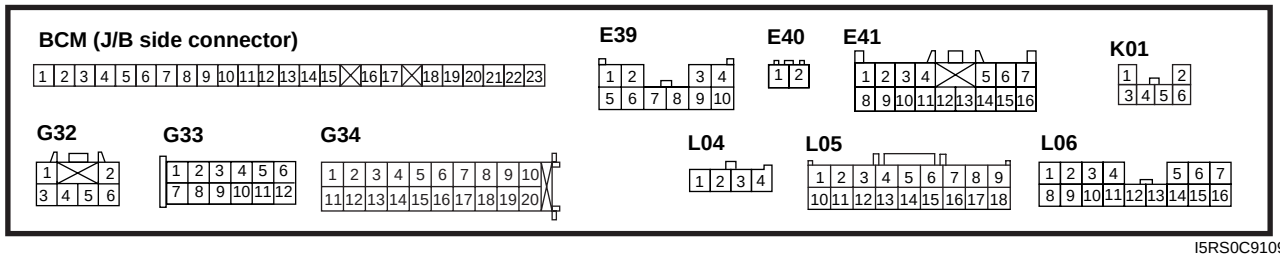

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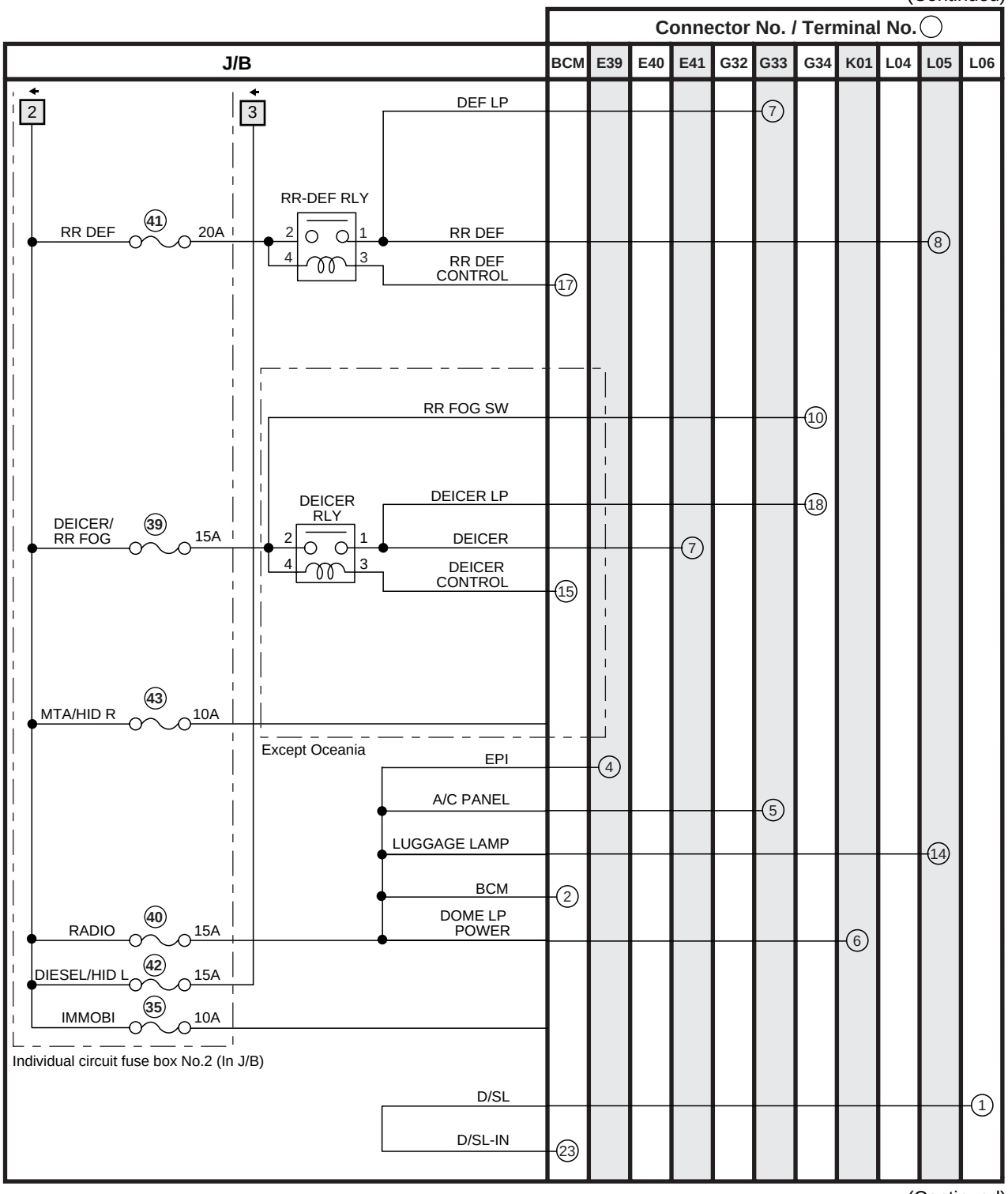

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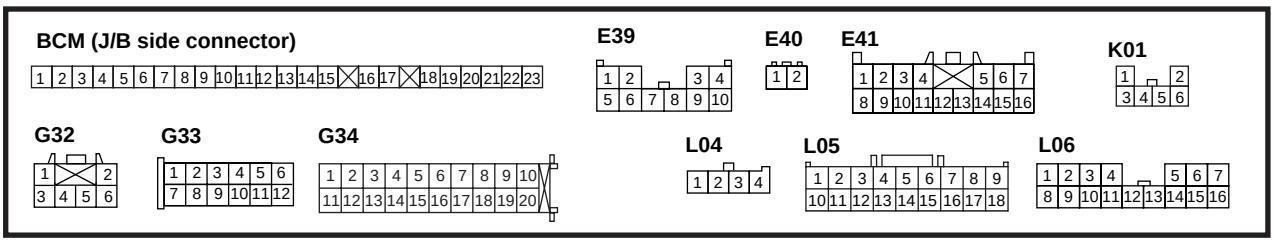

I5RS0C910904-03

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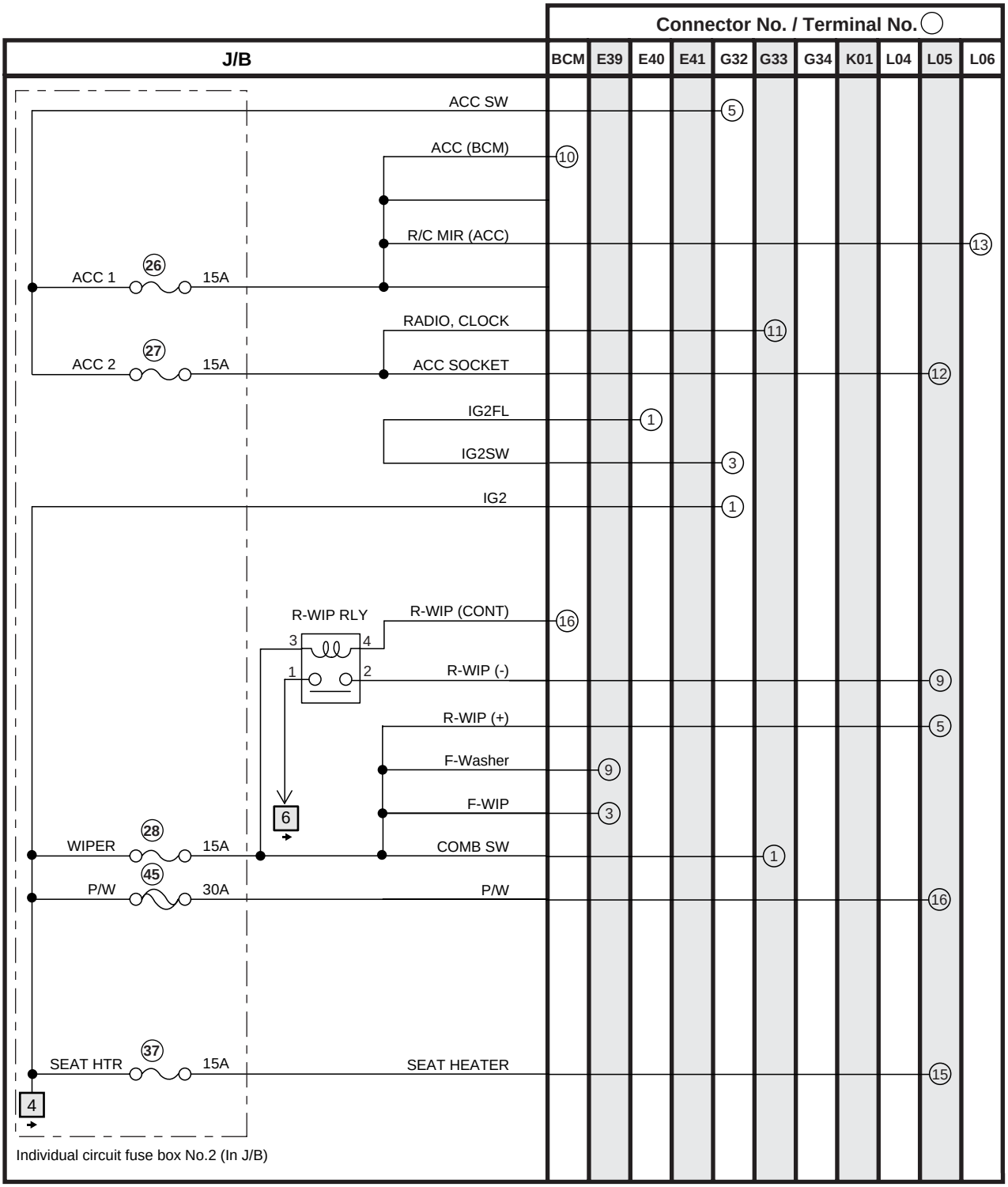

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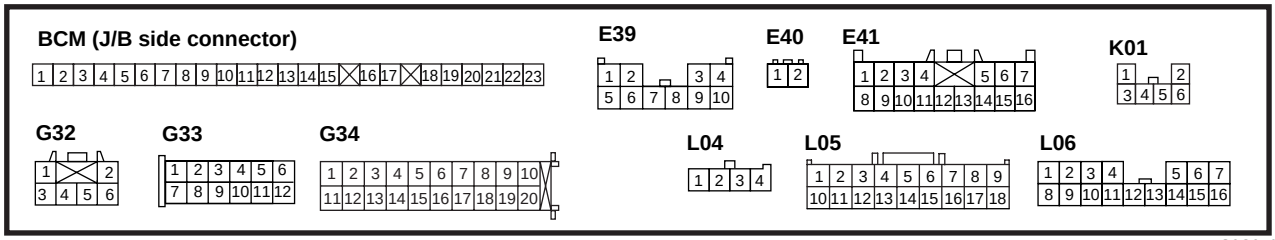

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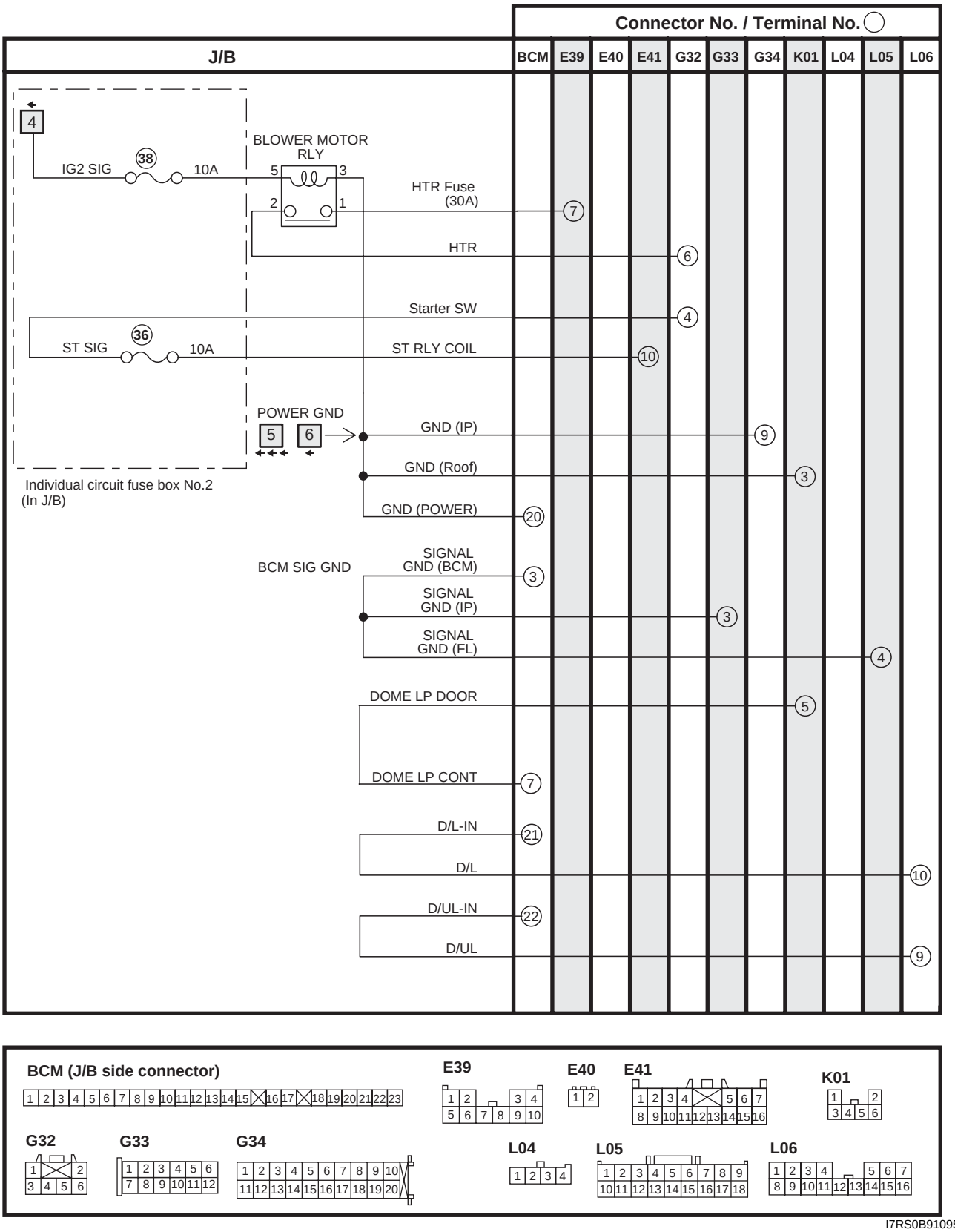
(Continued)



I7RS0B910950-01

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System Circuit Diagram

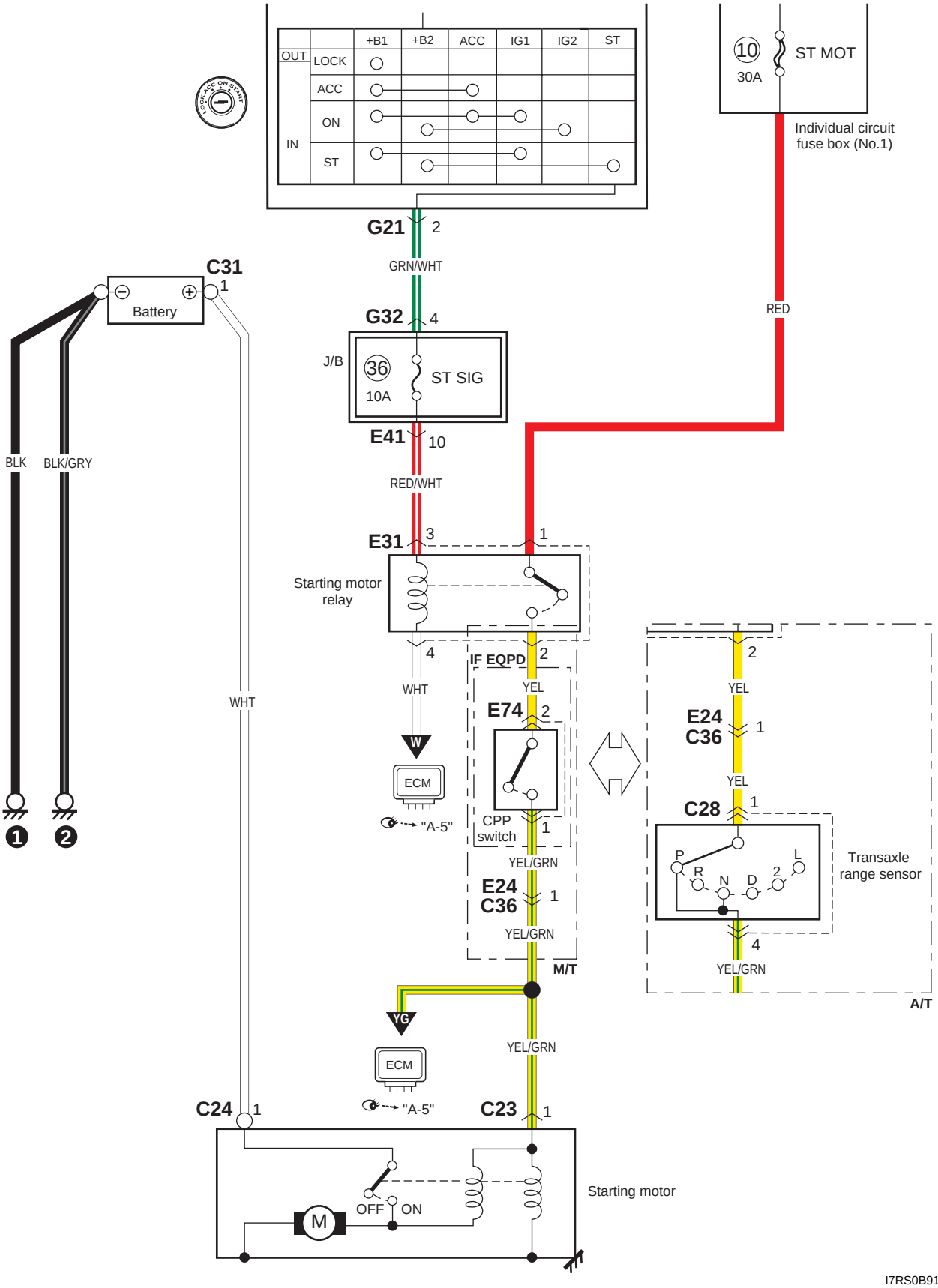
System Circuit Diagram

S7RS0B910E001

Refer to “A-1 Cranking System Circuit Diagram”.
Refer to “A-2 Charging System Circuit Diagram”.
Refer to “A-3 Ignition System Circuit Diagram”.
Refer to “A-4 Cooling System Circuit Diagram”.
Refer to “A-5 Engine and A/C Control System Circuit Diagram”.
Refer to “A-6 A/T Control System Circuit Diagram”.
Refer to “A-7 Immobilizer System Circuit Diagram”.
Refer to “A-8 Body Control System Circuit Diagram”.
Refer to “B-1 Windshield Wiper and Washer Circuit Diagram”.
Refer to “B-2 Rear Wiper and Washer Circuit Diagram”.
Refer to “B-3 Rear Defogger Circuit Diagram”.
Refer to “B-4 Power Window Circuit Diagram”.
Refer to “B-5 Power Door Lock Circuit Diagram”.
Refer to “B-6 Power Mirror Circuit Diagram”.
Refer to “B-7 Horn Circuit Diagram”.
Refer to “B-8 Seat Heater Circuit Diagram”.
Refer to “B-9 Keyless Start System Circuit Diagram”.
Refer to “C-1 Combination Meter Circuit Diagram (Meter)”.
Refer to “C-2 Combination Meter Circuit Diagram (Indicator)”.
Refer to “C-3 Combination Meter Circuit Diagram (Warning Light)”.
Refer to “D-1 Headlight System Circuit Diagram”.
Refer to “D-2 Position, Tail and Licence Plate Light System Circuit Diagram”.
Refer to “D-3 Front Fog Light System Circuit Diagram”.
Refer to “D-4 Illumination Light System Circuit Diagram”.
Refer to “D-5 Interior Light System Circuit Diagram”.
Refer to “D-6 Turn Signal and Hazard Warning Light System Circuit Diagram”.
Refer to “D-7 Brake Light System Circuit Diagram”.
Refer to “D-8 Back-Up Light System Circuit Diagram”.
Refer to “D-9 Headlight Beam Leveling System Circuit Diagram”.
Refer to “D-10 Rear Fog Light Circuit Diagram”.
Refer to “E-1 Heater System Circuit Diagram”.
Refer to “E-2 Auto A/C System Circuit Diagram”.
Refer to “F-1 Air-Bag System Circuit Diagram”.
Refer to “F-2 Anti-Lock Brake System Circuit Diagram”.
Refer to “F-3 Electronic Stability Program System Circuit Diagram”.
Refer to “F-4 Power Steering System Circuit Diagram”.
Refer to “G-1 Audio System Circuit Diagram”.
Refer to “G-2 Multi Information Display / Accessory Socket System Circuit Diagram”.

A-1 Cranking System Circuit Diagram

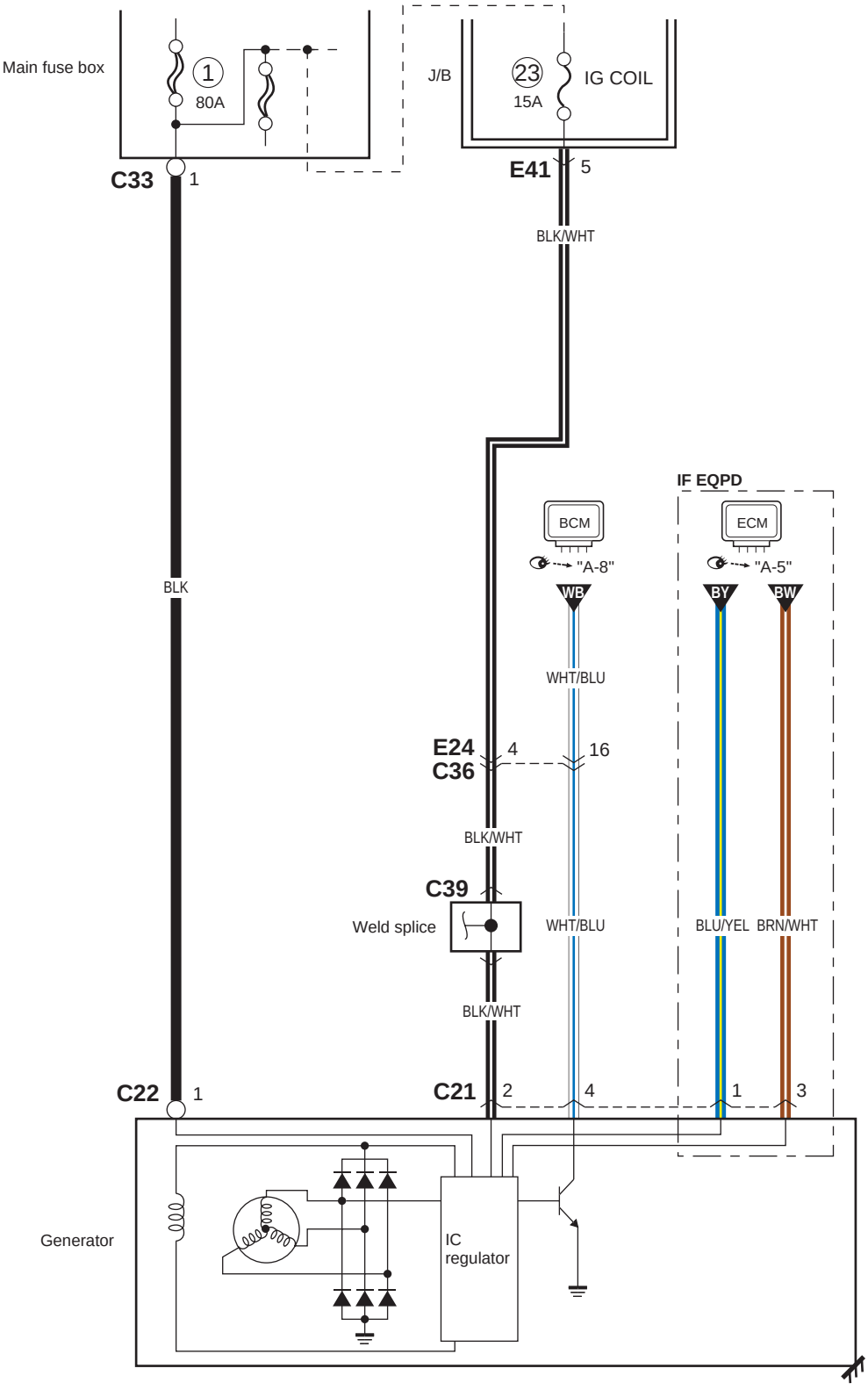
S7RS0B910E002



I7RS0B910940-01

A-2 Charging System Circuit Diagram

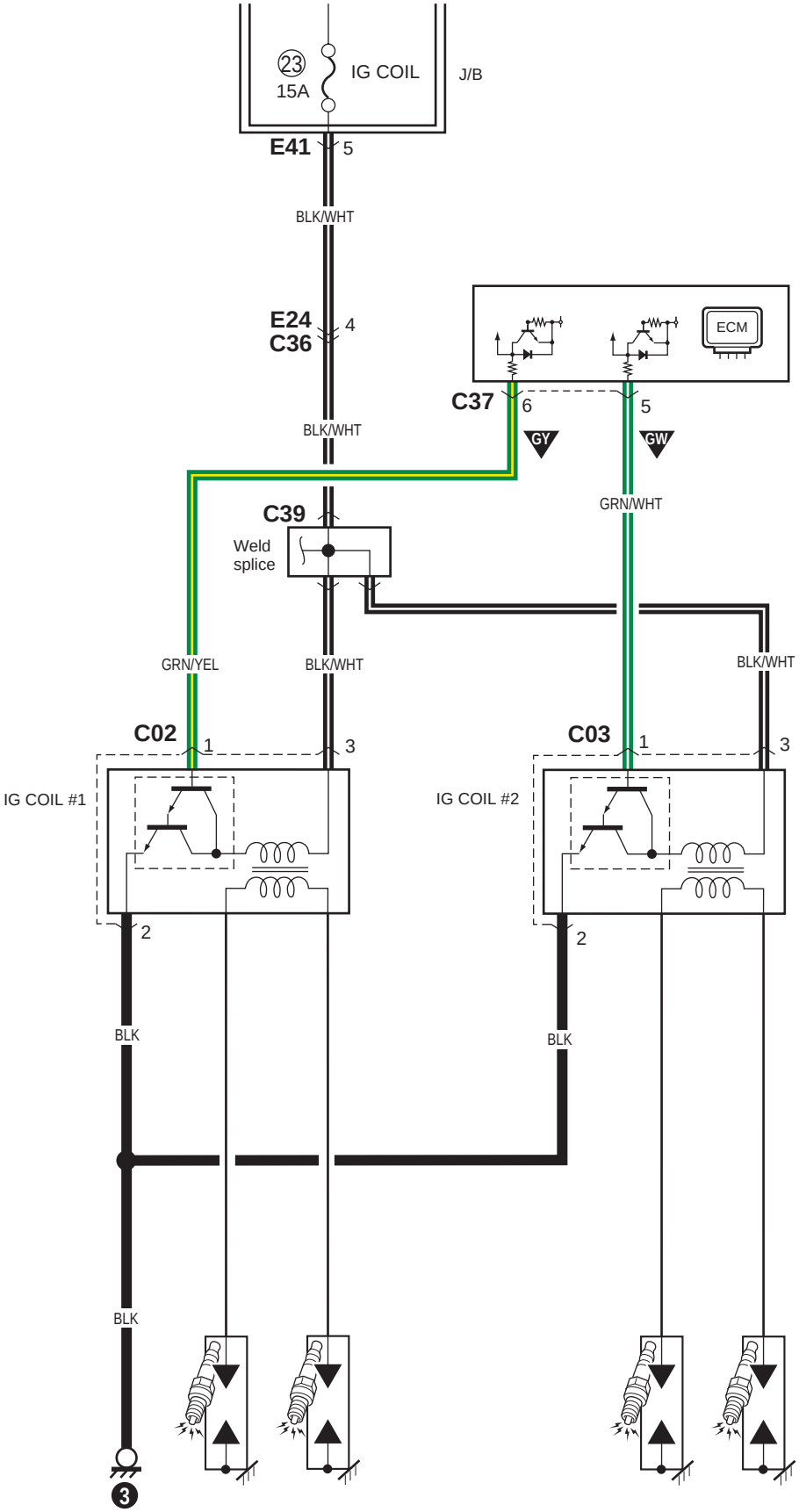
S7RS0B910E003



I7RS0B910910-01

A-3 Ignition System Circuit Diagram

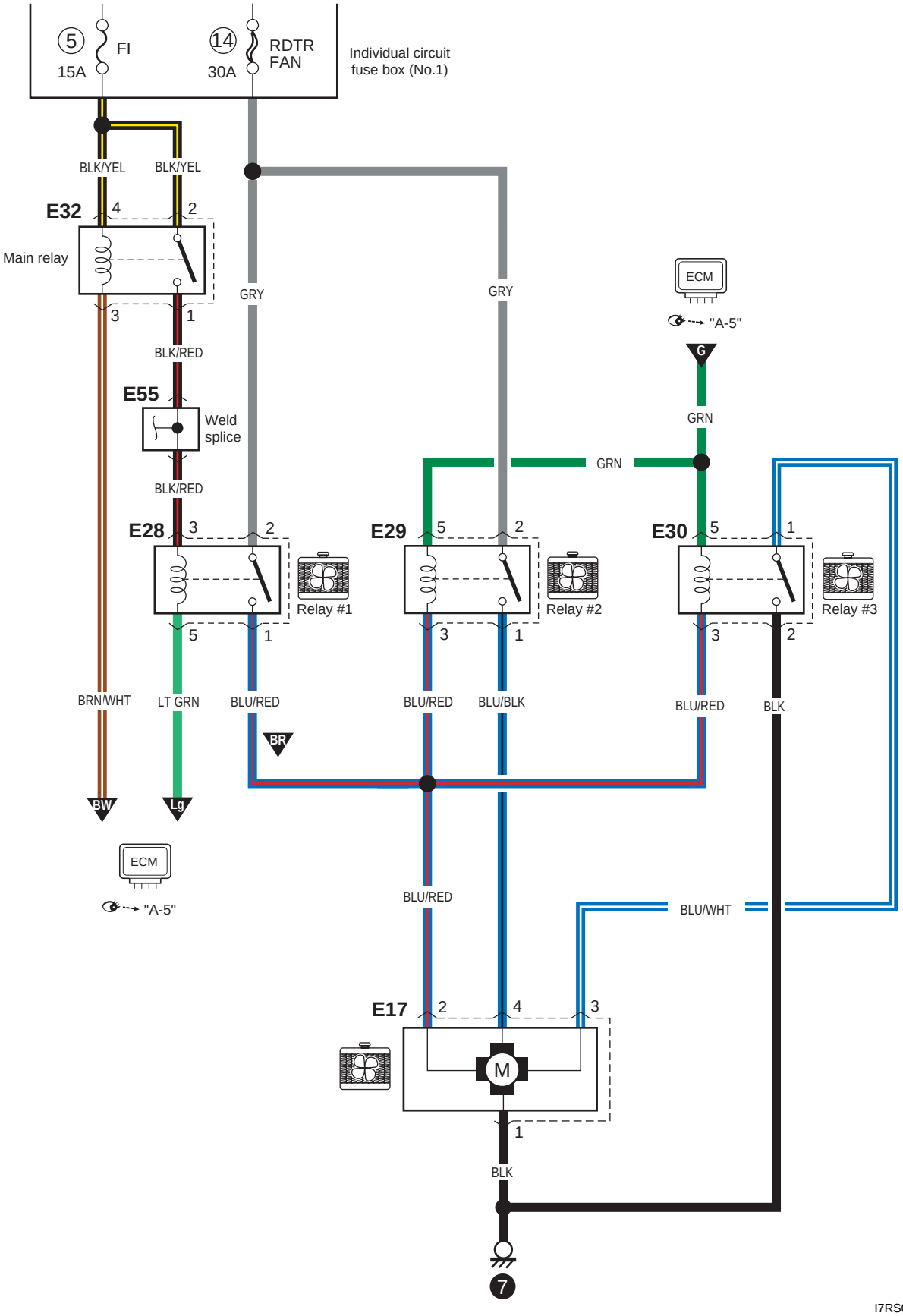
S7RS0B910E004



I5RS0C910967-01

A-4 Cooling System Circuit Diagram

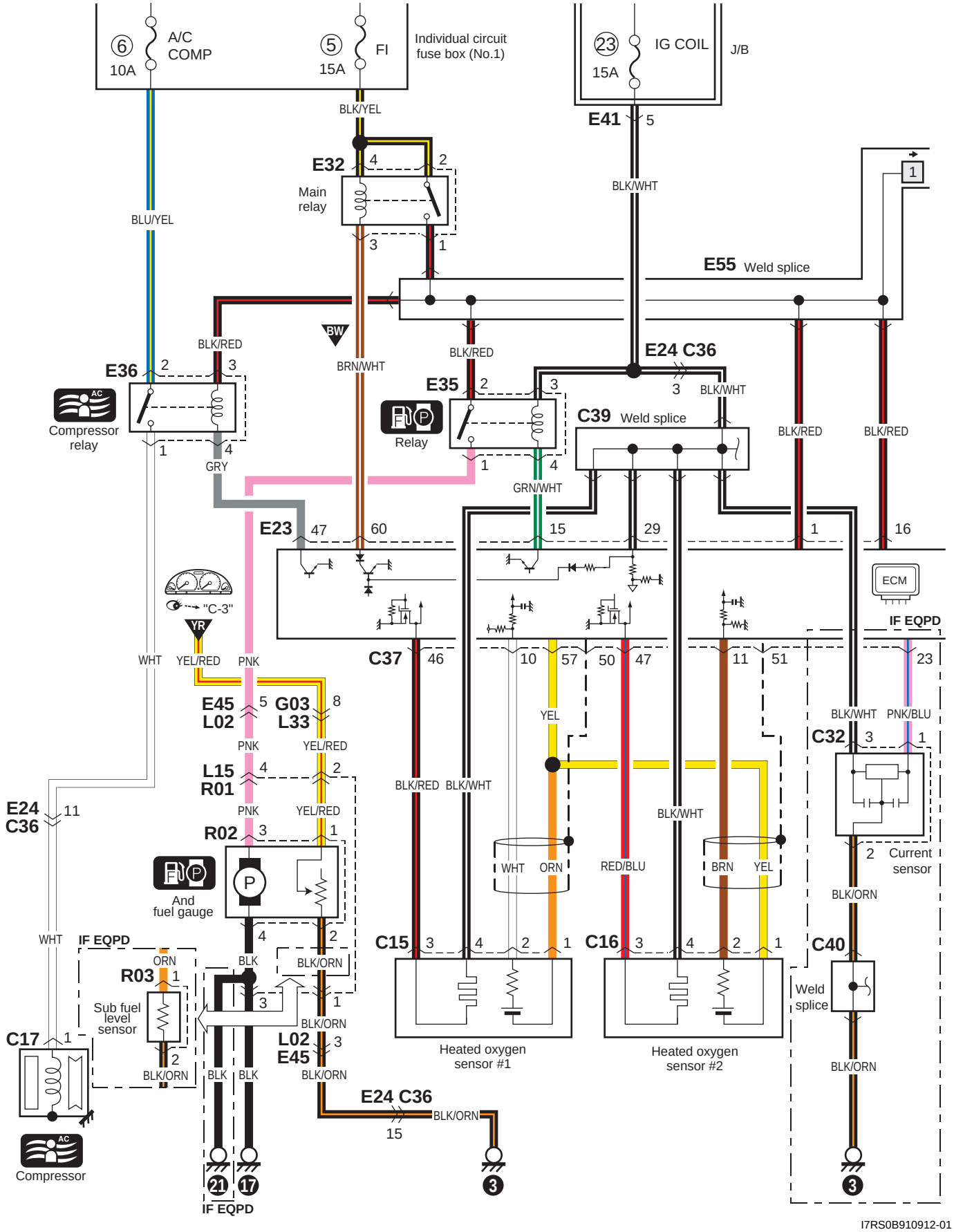
S7RS0B910E005

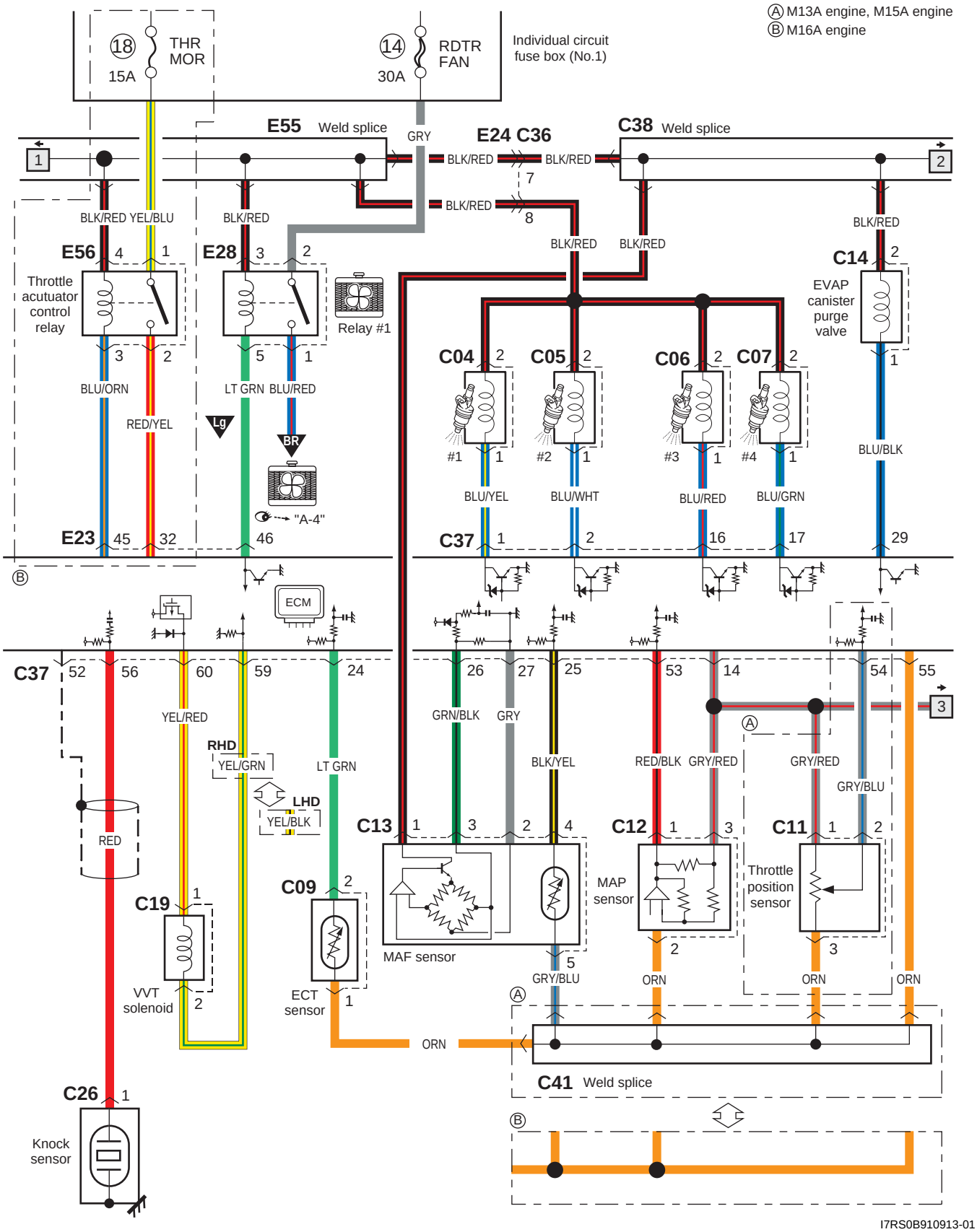


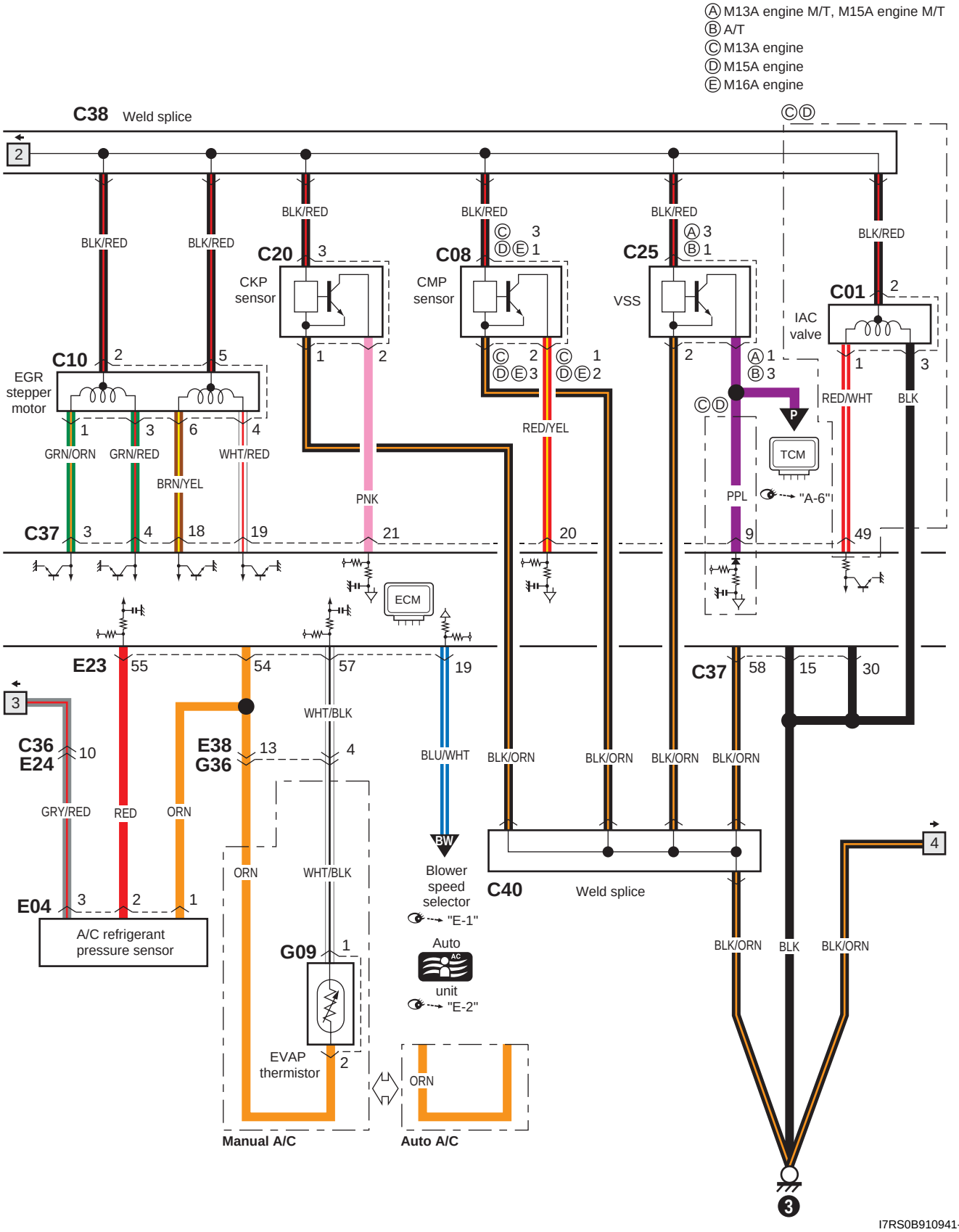
I7RS0B910911-01

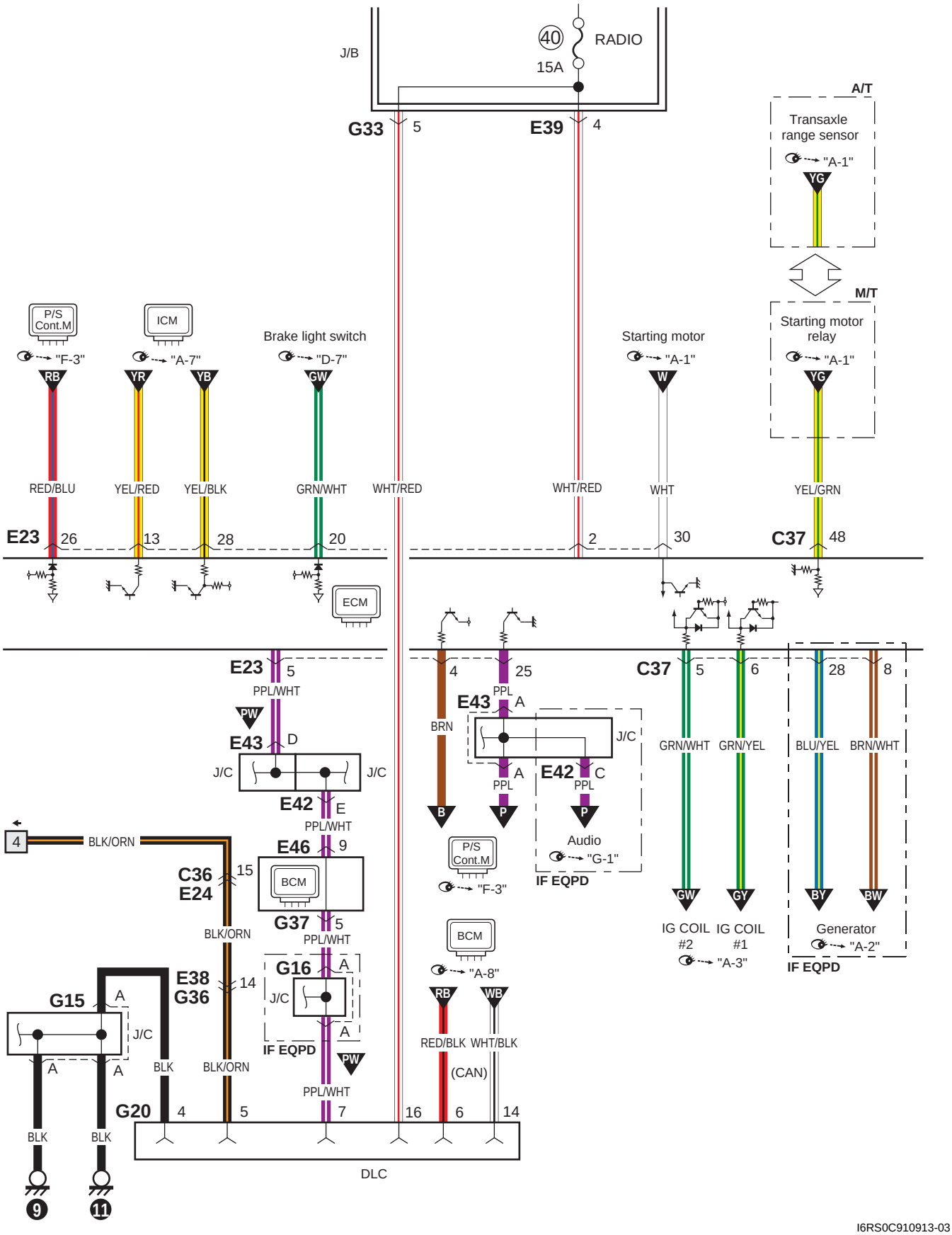
A-5 Engine and A/C Control System Circuit Diagram

S7RS0B910E006




Ⓐ M13A engine, M15A engine
Ⓑ M16A engine
18 THR MOR 15A
14 RDTR FAN 30A
Individual circuit fuse box (No.1)
E55 Weld splice
E24 C36
C38 Weld splice
GRY
BLK/RED
BLK/RED YEL/BLU
E56 4 1
Throttle acutuator control relay
E28 3 2
Relay #1
3 2
5 1
BLU/ORN
RED/YEL
LT GRN BLU/RED
Lg
BR
"A-4"
E23 45 32 46
C14 2
EVAP canister purge valve
1
BLU/BLK
C04 2
C05 2
C06 2
C07 2
#1 1
#2 1
#3 1
#4 1
BLU/YEL
BLU/WHT
BLU/RED
BLU/GRN
C37 1 2 16 17 29
ECM
C37 52 56 60 59 24
YEL/RED
RHD
YEL/GRN
LHD
YEL/BLK
LT GRN
RED
C19 1
VVT solenoid
2
C09 2
ECT sensor
1
ORN
C26 1
Knock sensor
C37 26 27 25 53 14 54 55
GRN/BLK
GRY
BLK/YEL
RED/BLK
GRY/RED
GRY/RED
GRY/BLU
3
C13 1 3 2 4
MAF sensor
5
GRY/BLU
C12 1 3
MAP sensor
2
ORN
C11 1 2
Throttle position sensor
3
ORN
ORN
C41 Weld splice
I7RS0B910913-01


Ⓐ M13A engine M/T, M15A engine M/T
Ⓑ A/T
Ⓒ M13A engine
Ⓓ M15A engine
Ⓔ M16A engine
C38 Weld splice
2
BLK/RED
BLK/RED
BLK/RED
BLK/RED
BLK/RED
C20
CKP sensor
C08
CMP sensor
C25
VSS
C01
IAC valve
C10
EGR stepper motor
GRN/ORN
GRN/RED
BRN/YEL
WHT/RED
PNK
RED/YEL
PPL
RED/WHT
BLK
TCM
"A-6"
C37
ECM
E23
WHT/BLK
BLU/WHT
BLK/ORN
C37
C36
E24
GRY/RED
RED
ORN
E38
G36
ORN
WHT/BLK
BW
Blower speed selector
"E-1"
Auto
unit
"E-2"
C40
Weld splice
E04
A/C refrigerant pressure sensor
G09
EVAP thermistor
ORN
Manual A/C
Auto A/C
BLK/ORN
BLK
BLK/ORN
3
4
I7RS0B910941-01



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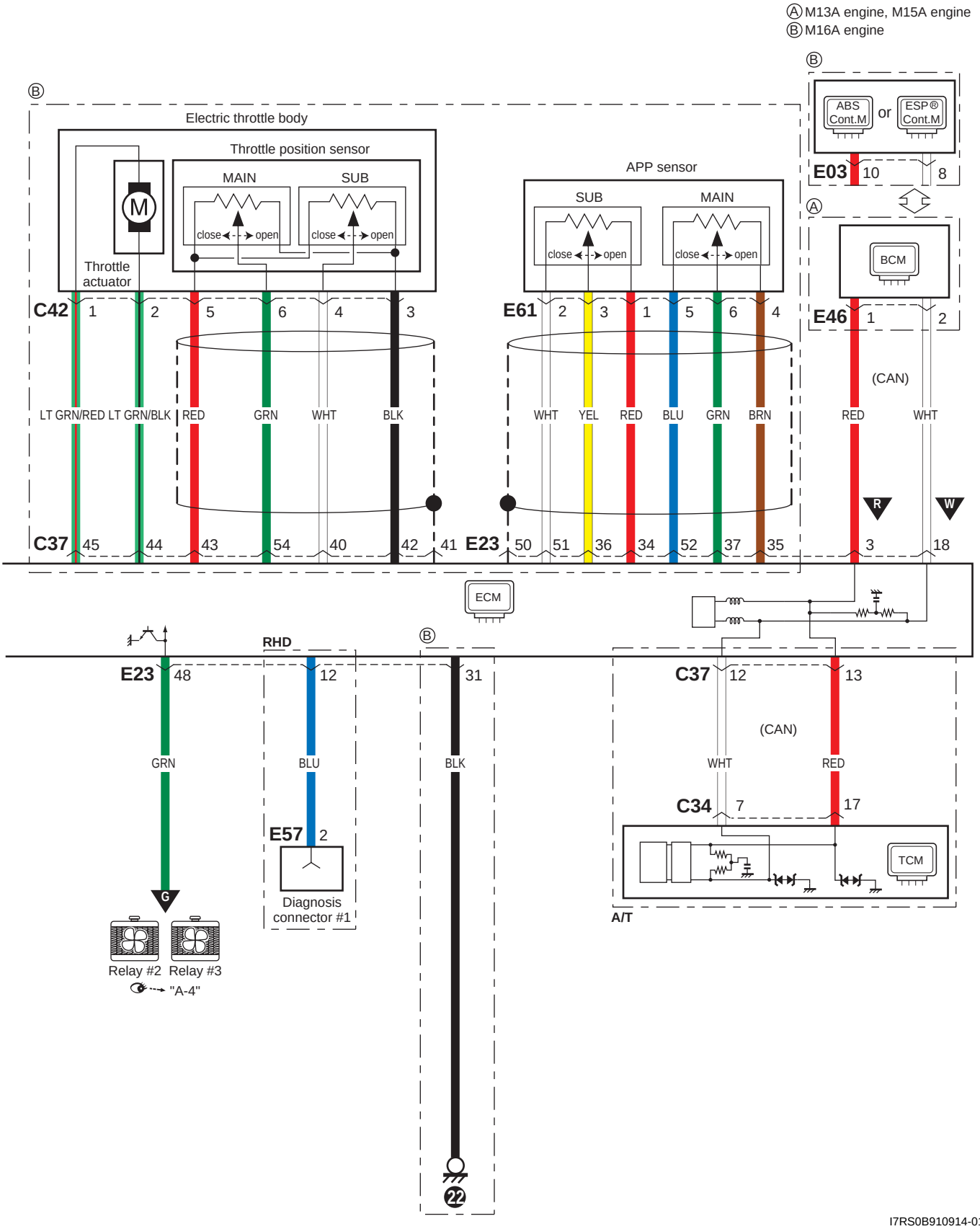
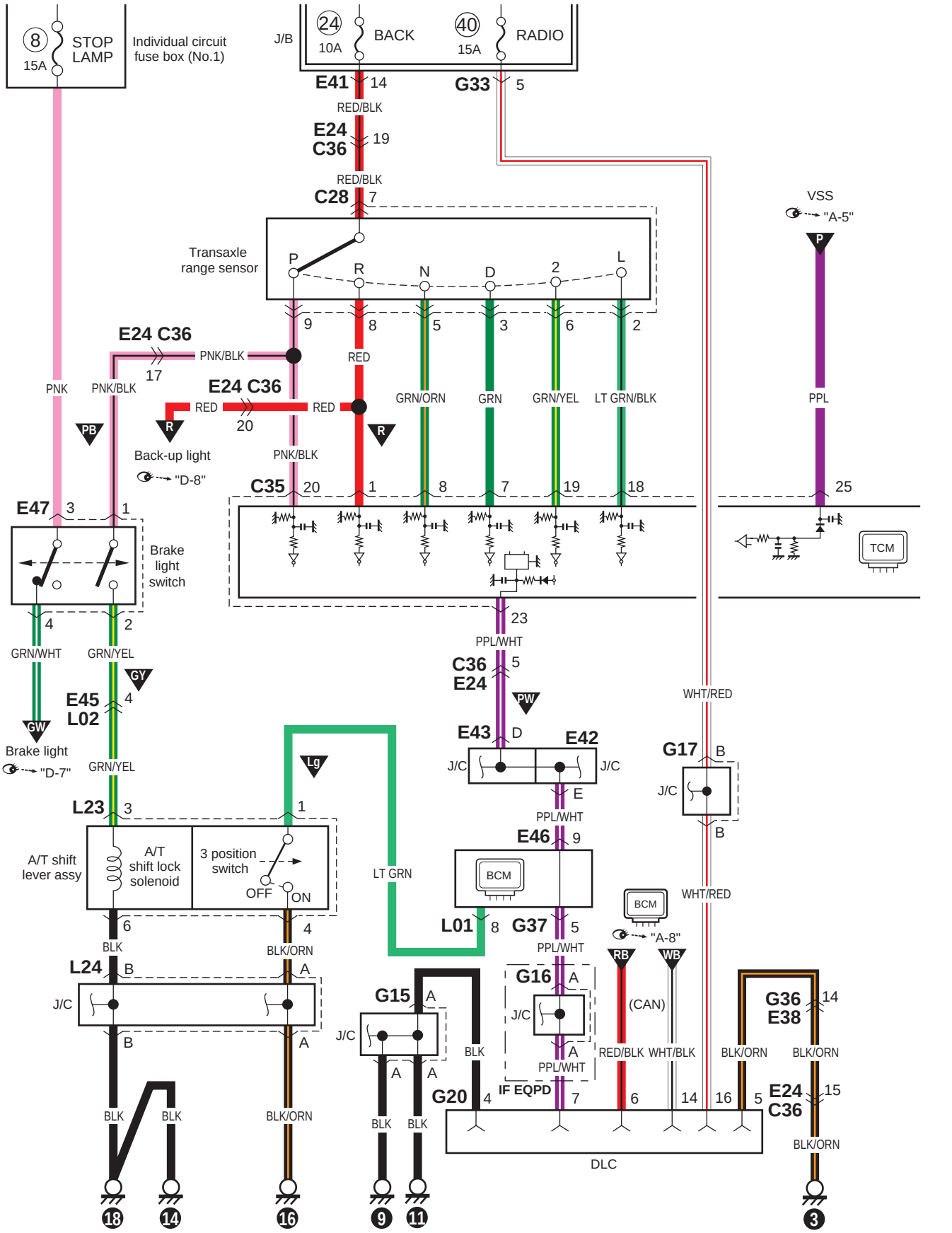
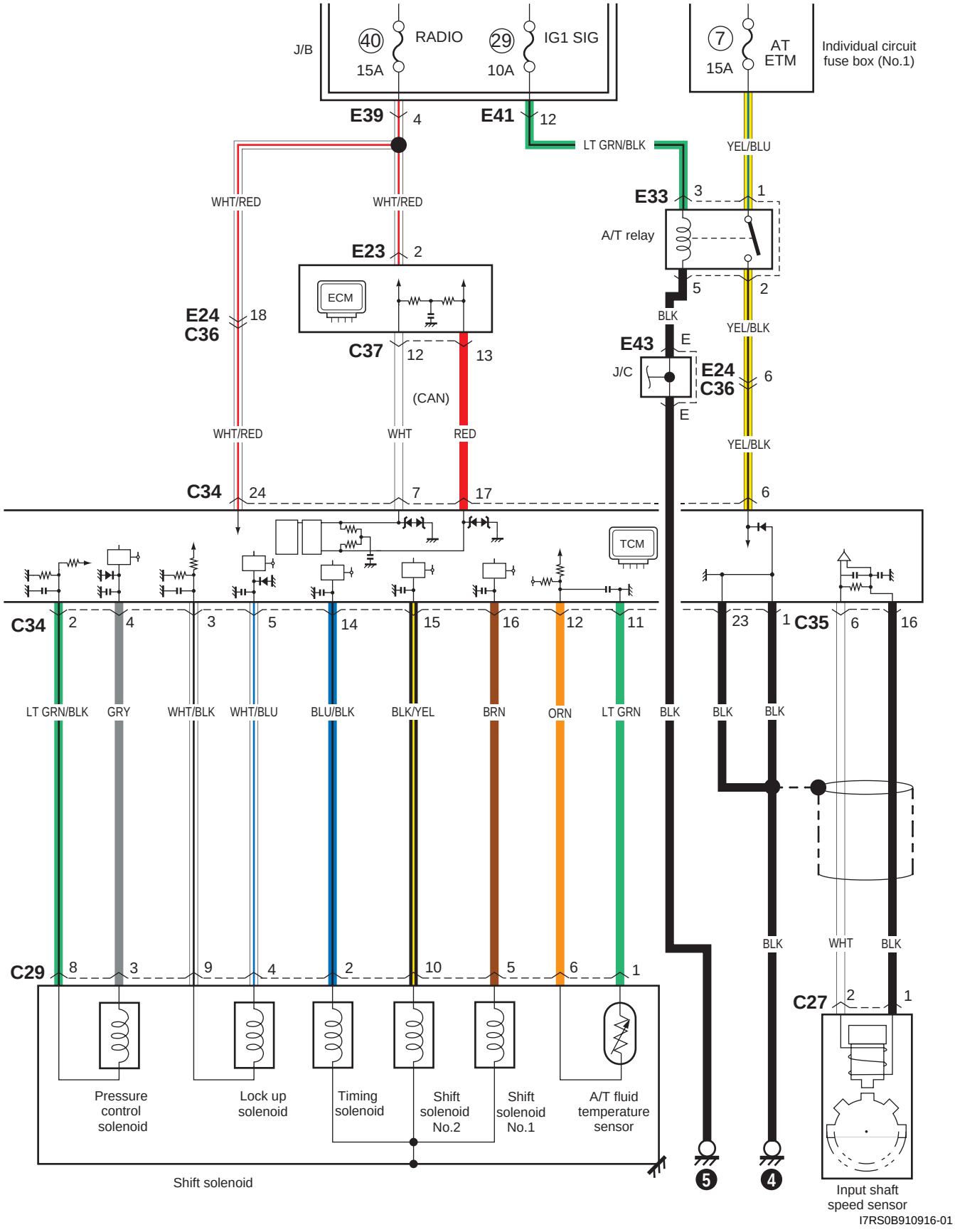

Ⓐ M13A engine, M15A engine
Ⓑ M16A engine
Ⓑ
Electric throttle body
Throttle position sensor
MAIN
SUB
close
open
Throttle actuator
M
C42
1
2
5
6
4
3
LT GRN/RED
LT GRN/BLK
RED
GRN
WHT
BLK
C37
45
44
43
54
40
42
41
APP sensor
SUB
MAIN
E61
2
3
1
5
6
4
WHT
YEL
RED
BLU
GRN
BRN
E23
50
51
36
34
52
37
35
ABS Cont.M
or
ESP® Cont.M
E03
10
8
Ⓐ
BCM
E46
1
2
(CAN)
RED
WHT
R
W
3
18
ECM
RHD
Ⓑ
E23
48
12
31
GRN
BLU
BLK
G
E57
2
Diagnosis connector #1
Relay #2
Relay #3
"A-4"
22
C37
12
13
(CAN)
WHT
RED
C34
7
17
TCM
A/T
I7RS0B910914-01

A-6 A/T Control System Circuit Diagram

S7RS0B910E007

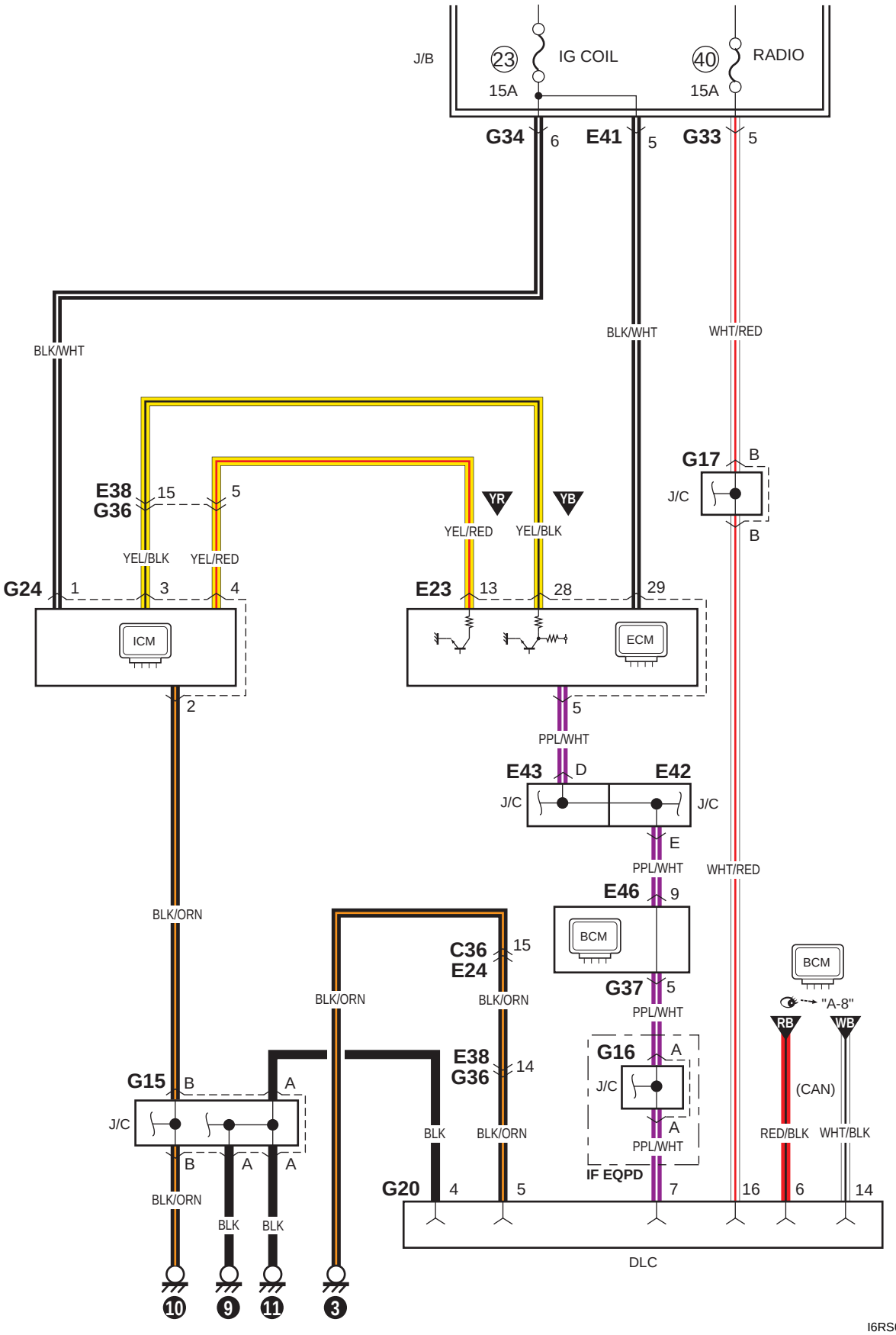


I7RS0B910915-01


J/B
40
RADIO
15A
29
IG1 SIG
10A
7
AT ETM
15A
Individual circuit fuse box (No.1)
E39
4
E41
12
LT GRN/BLK
YEL/BLU
WHT/RED
WHT/RED
E33
3
1
A/T relay
E23
2
ECM
5
2
BLK
YEL/BLK
E24
C36
18
C37
12
13
E43
E
J/C
E24
C36
6
E
(CAN)
WHT/RED
WHT
RED
YEL/BLK
C34
24
7
17
6
TCM
C34
2
4
3
5
14
15
16
12
11
C35
23
1
6
16
LT GRN/BLK
GRY
WHT/BLK
WHT/BLU
BLU/BLK
BLK/YEL
BRN
ORN
LT GRN
BLK
BLK
BLK
BLK
WHT
BLK
C29
8
3
9
4
2
10
5
6
1
C27
2
1
Pressure control solenoid
Lock up solenoid
Timing solenoid
Shift solenoid No.2
Shift solenoid No.1
A/T fluid temperature sensor
Shift solenoid
5
4
Input shaft speed sensor
I7RS0B910916-01

A-7 Immobilizer System Circuit Diagram

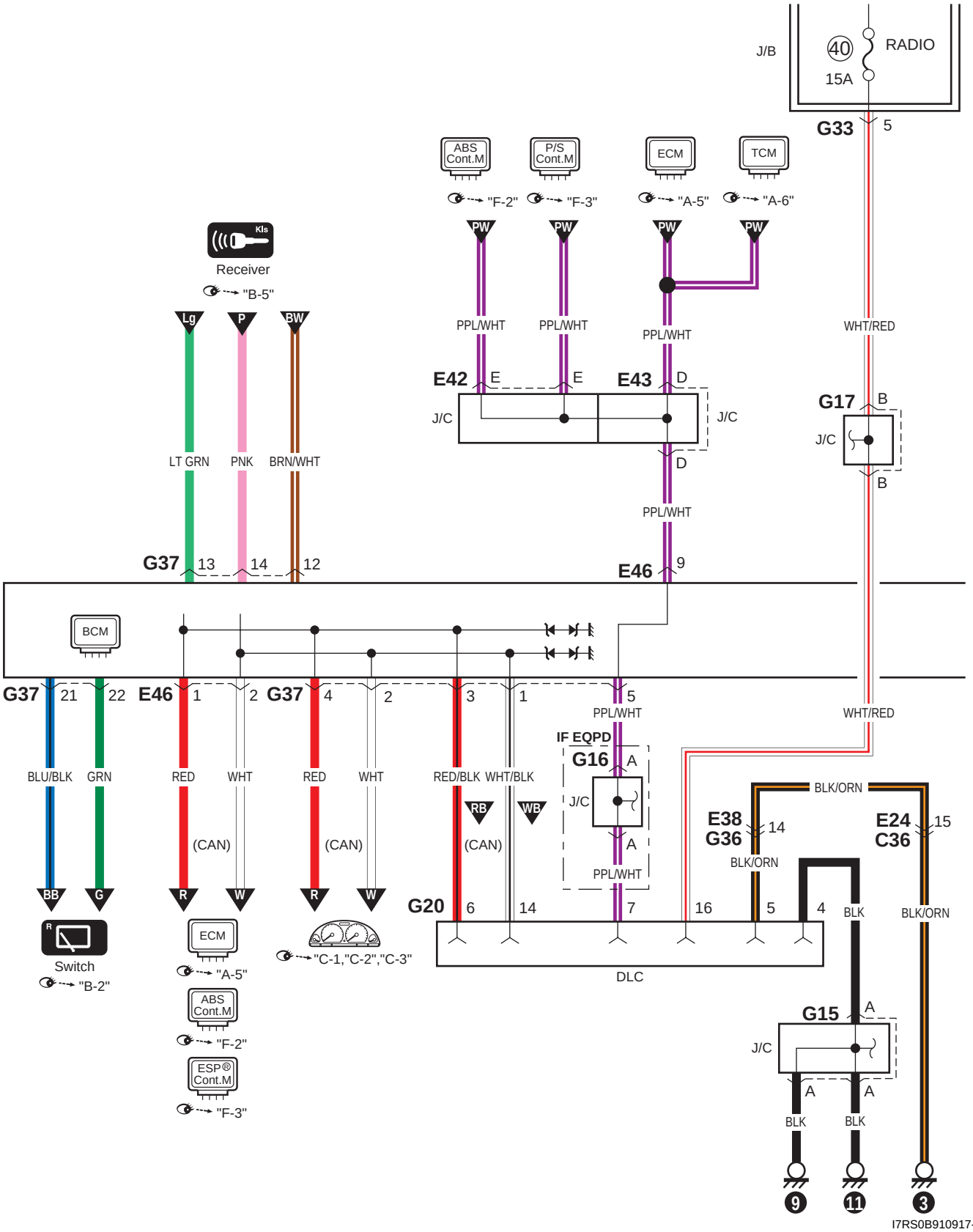
S7RS0B910E008

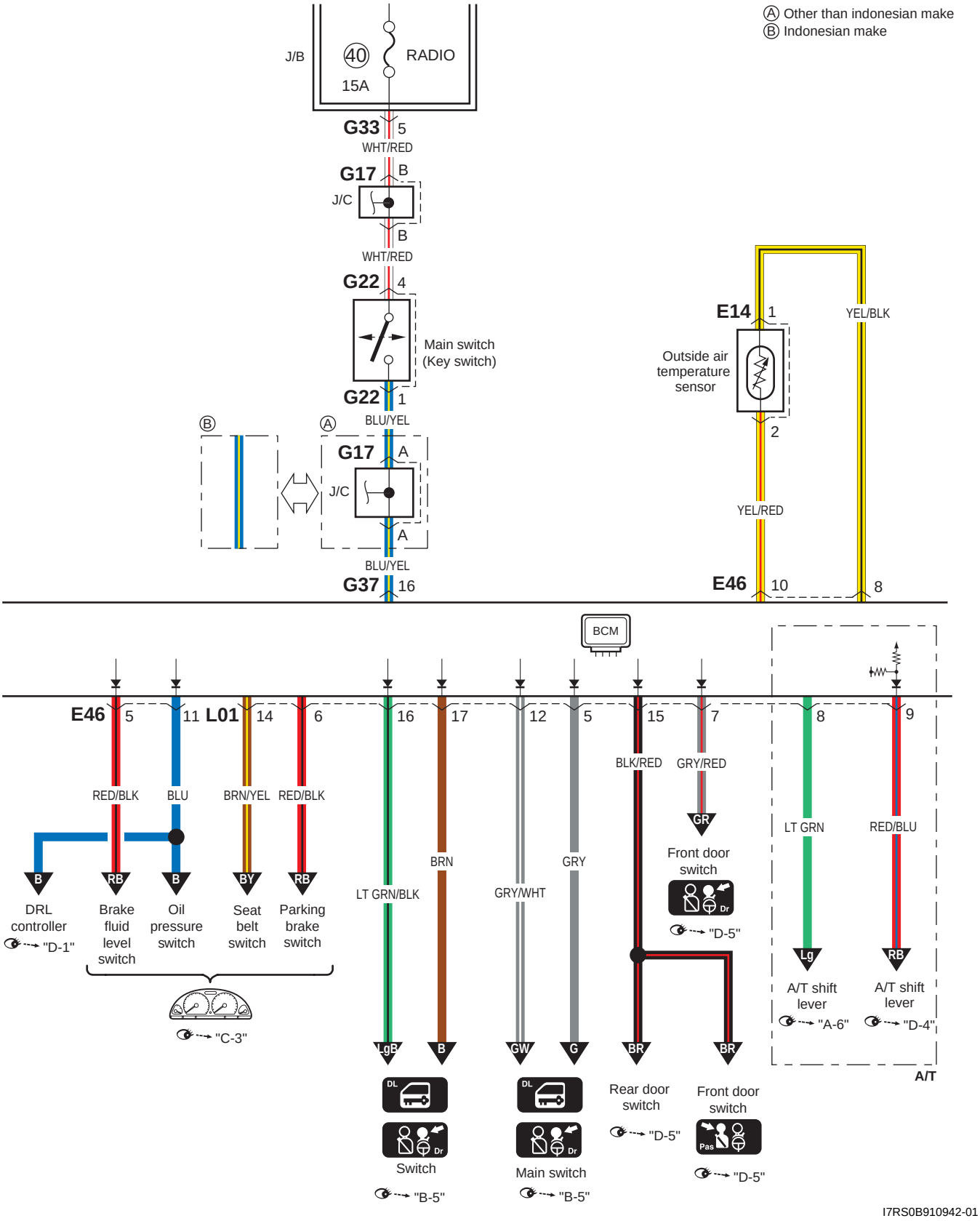


I6RS0C910917-01

A-8 Body Control System Circuit Diagram

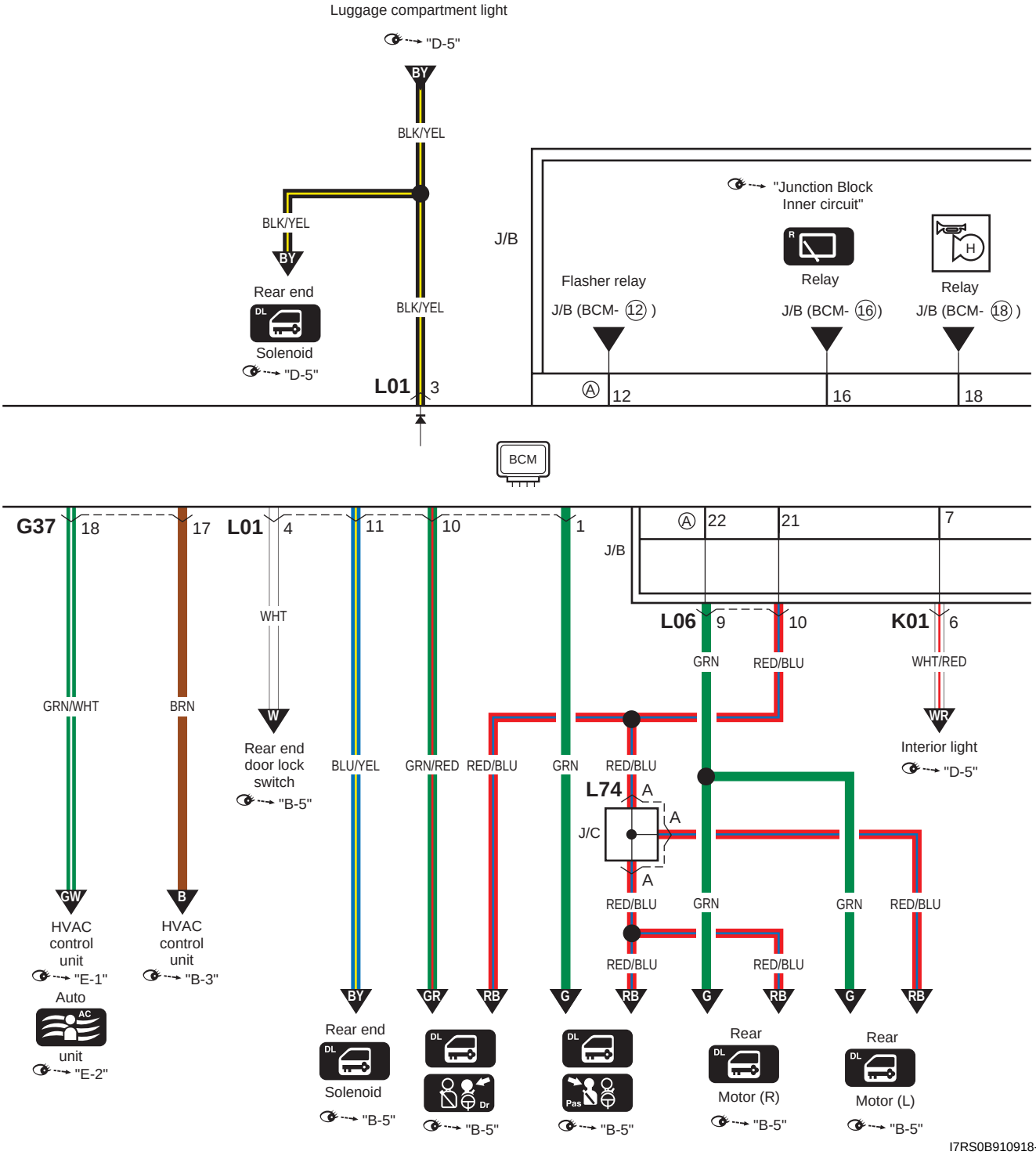
S7RS0B910E009



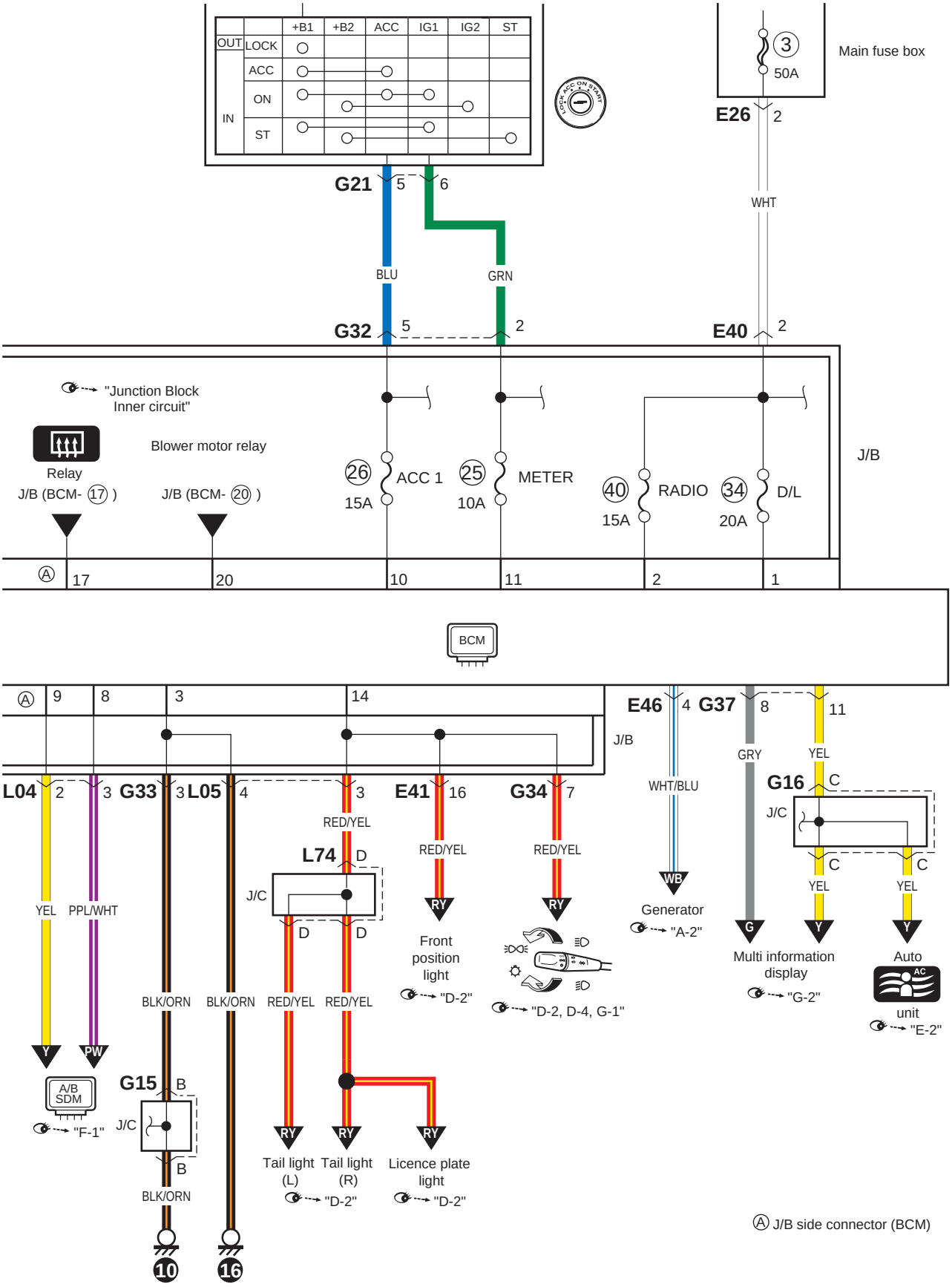


I7RS0B910942-01

Ⓐ J/B side connector (BCM)



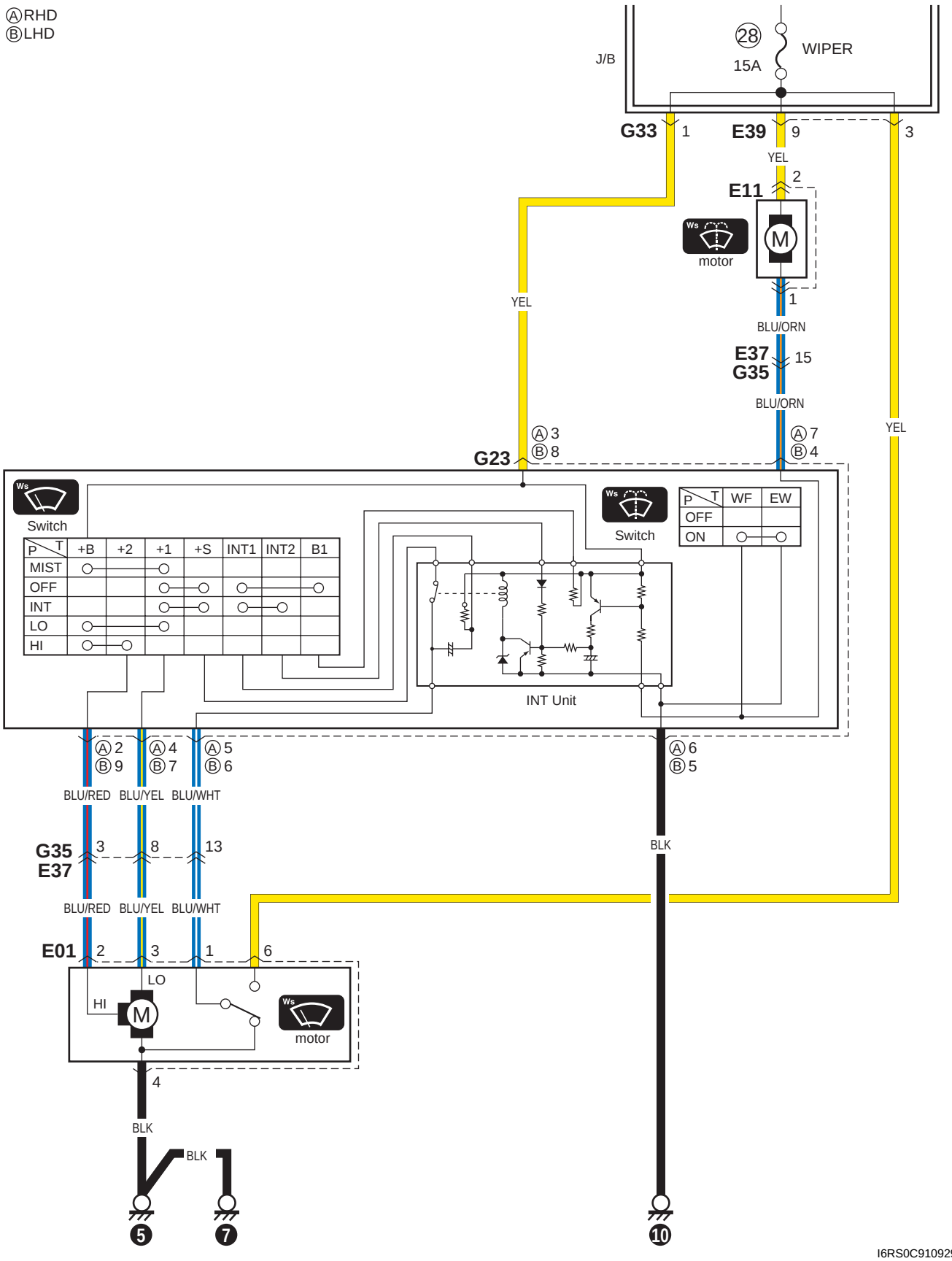
I7RS0B910918-01



I7RS0B910919-01

B-1 Windshield Wiper and Washer Circuit Diagram

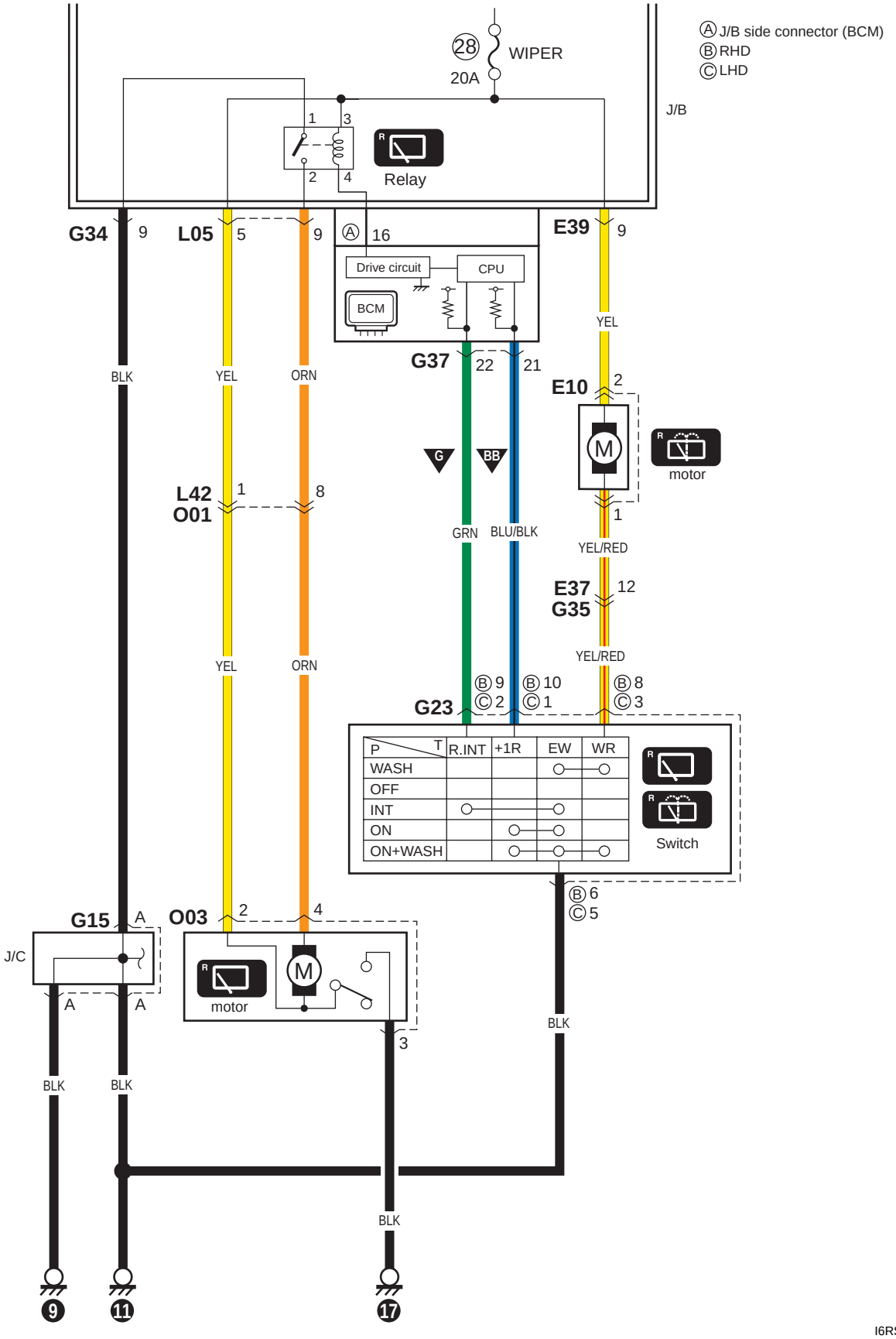
S7RS0B910E010



I6RS0C910929-01

B-2 Rear Wiper and Washer Circuit Diagram

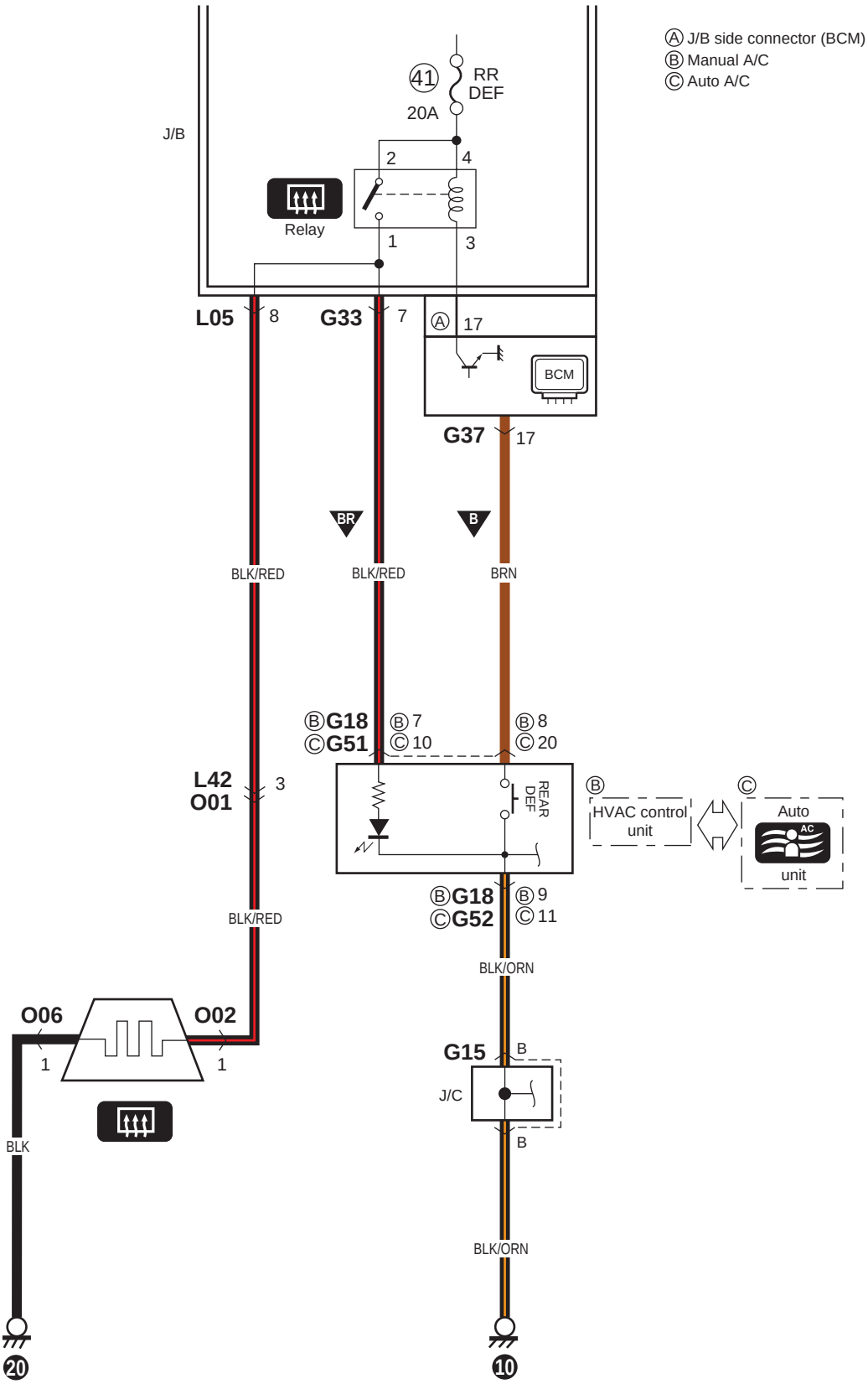
S7RS0B910E011



I6RS0C910930-01

B-3 Rear Defogger Circuit Diagram

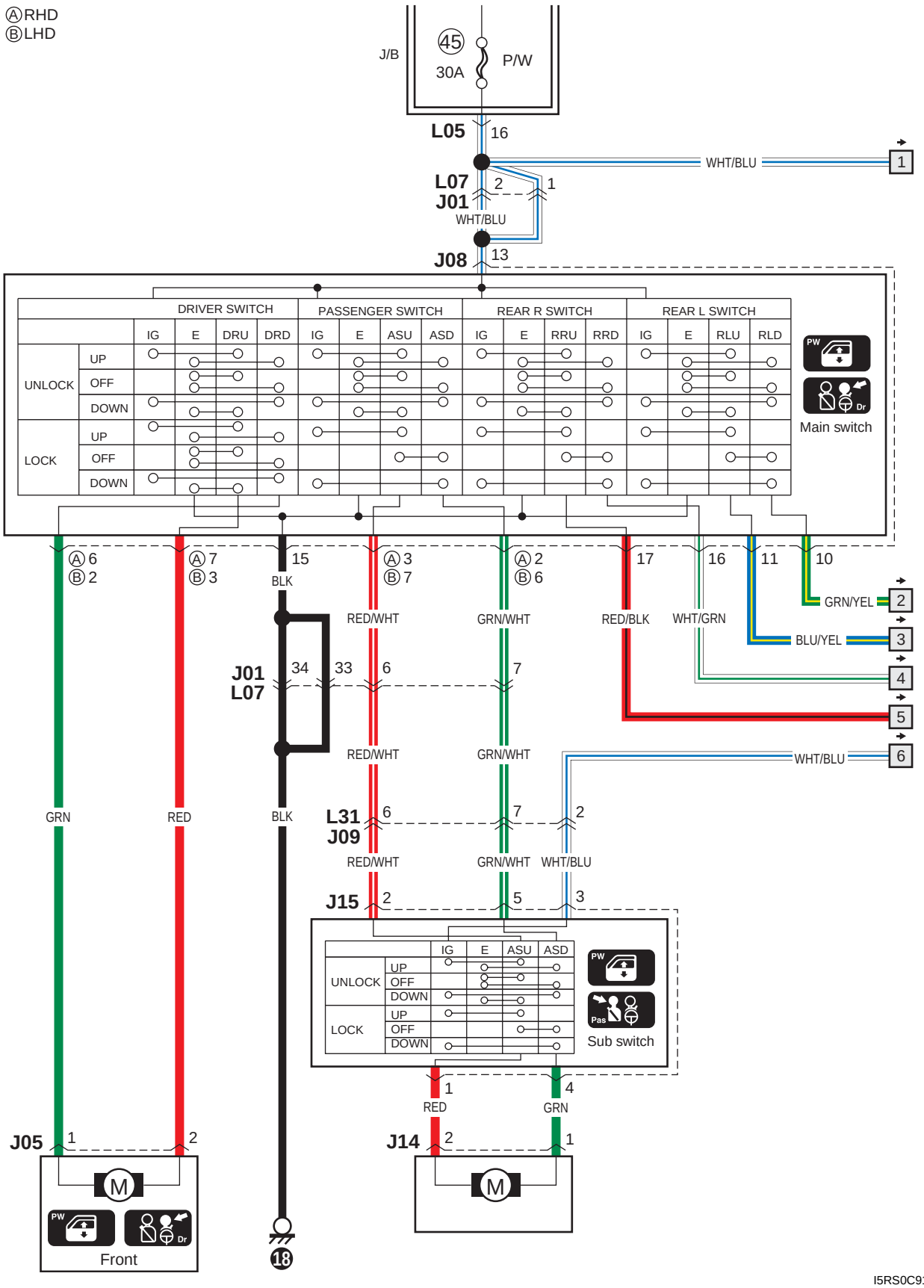
S7RS0B910E012

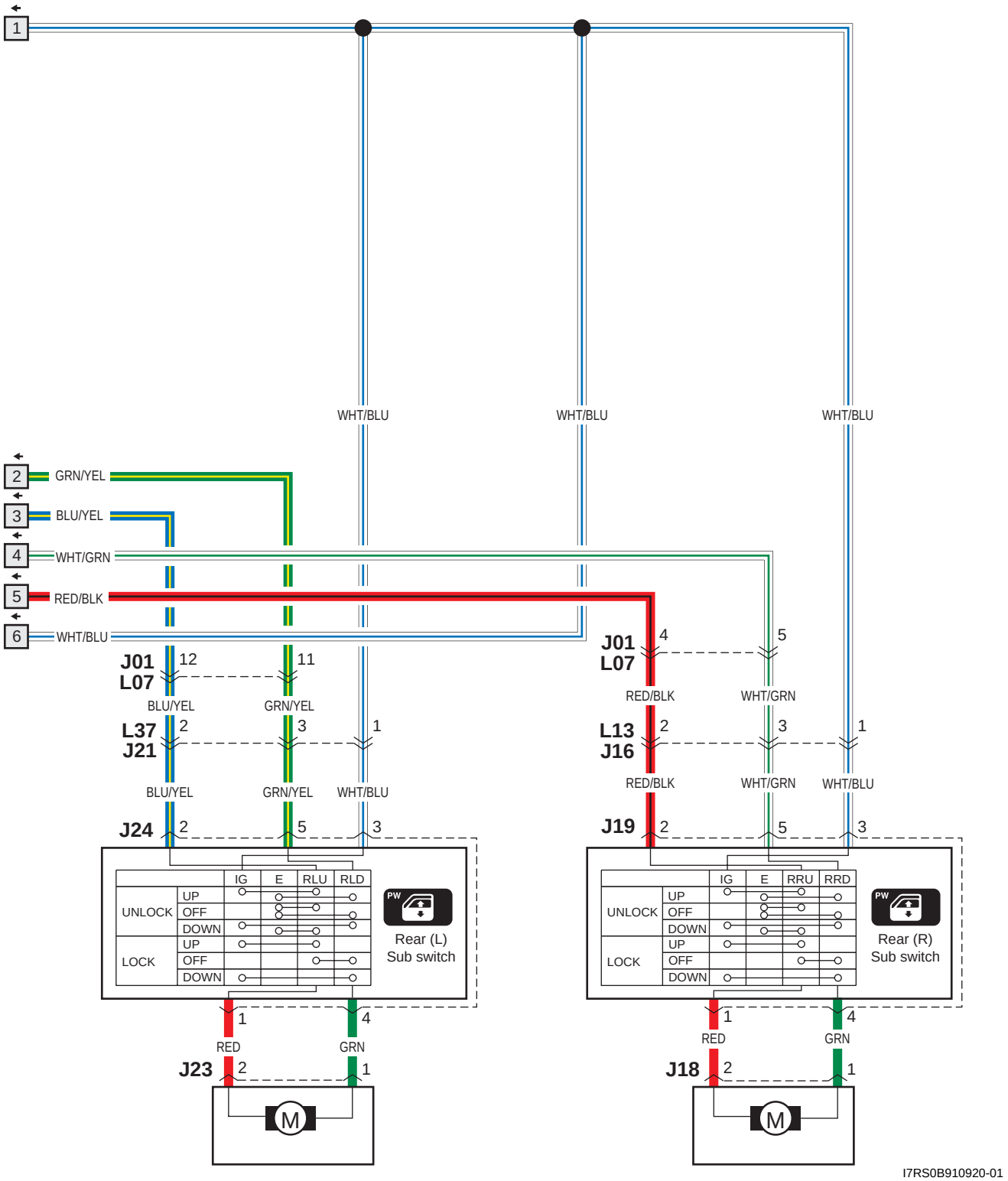


I7RS0B910943-01

B-4 Power Window Circuit Diagram

S7RS0B910E013

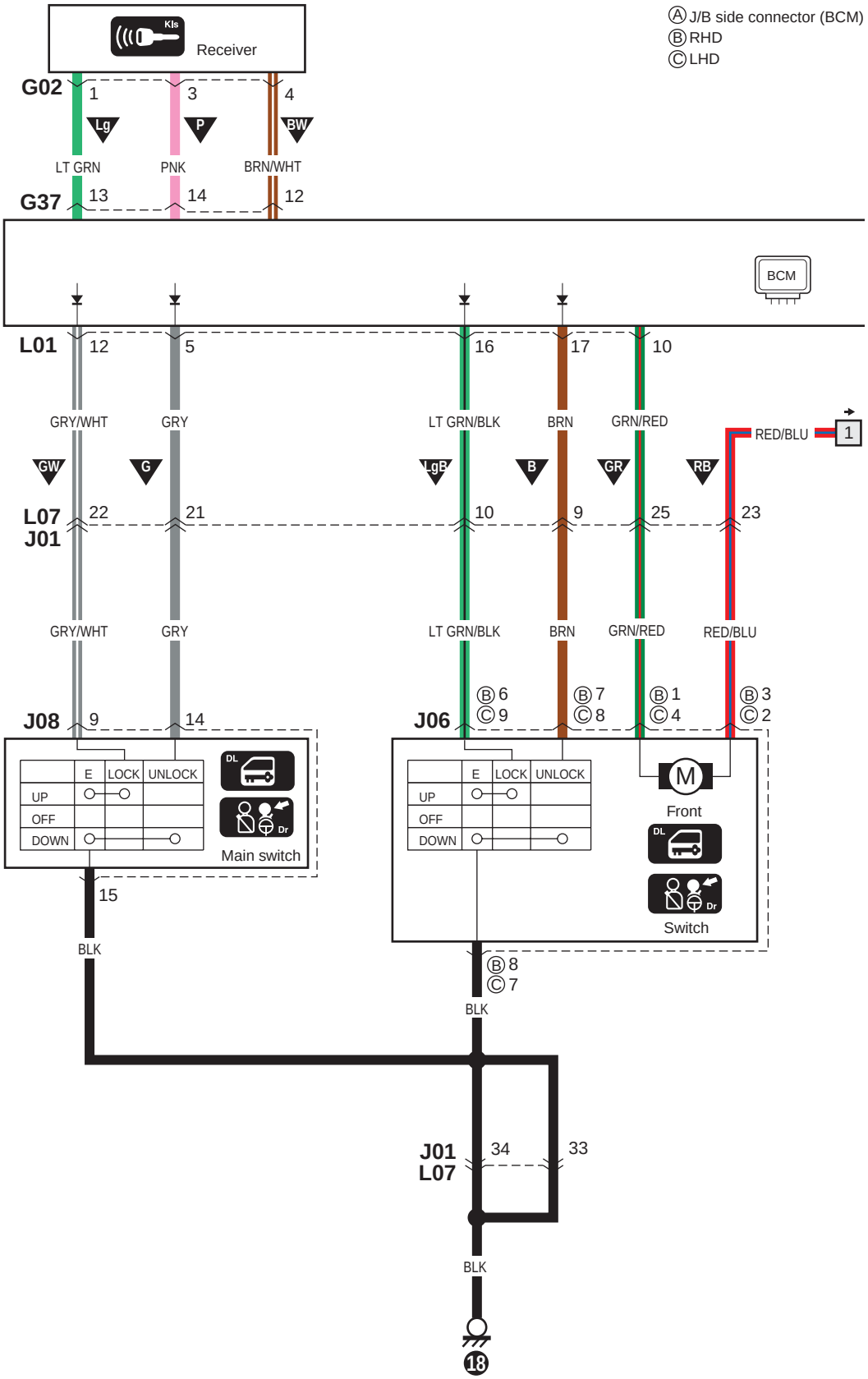




I7RS0B910920-01

B-5 Power Door Lock Circuit Diagram

S7RS0B910E014



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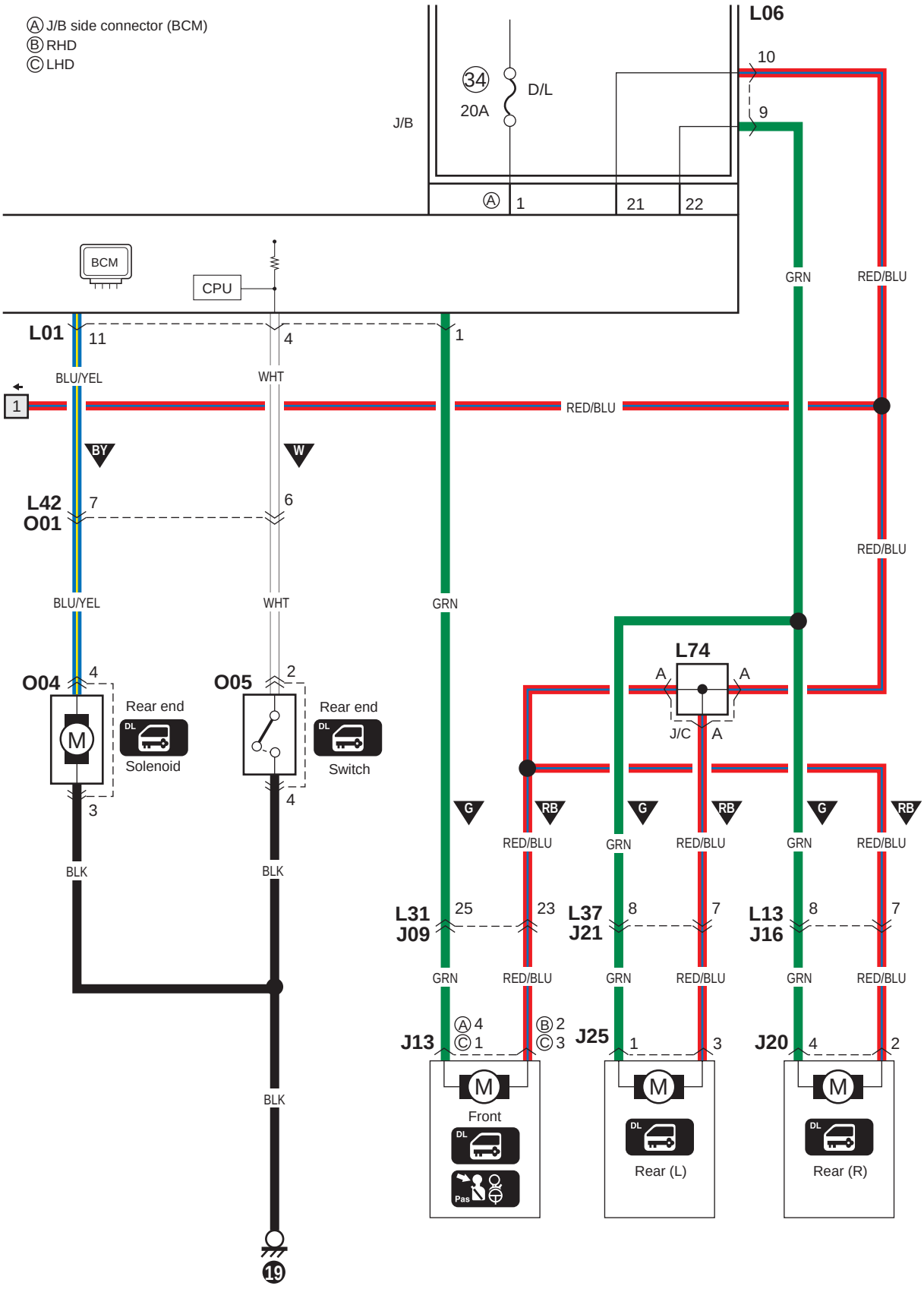
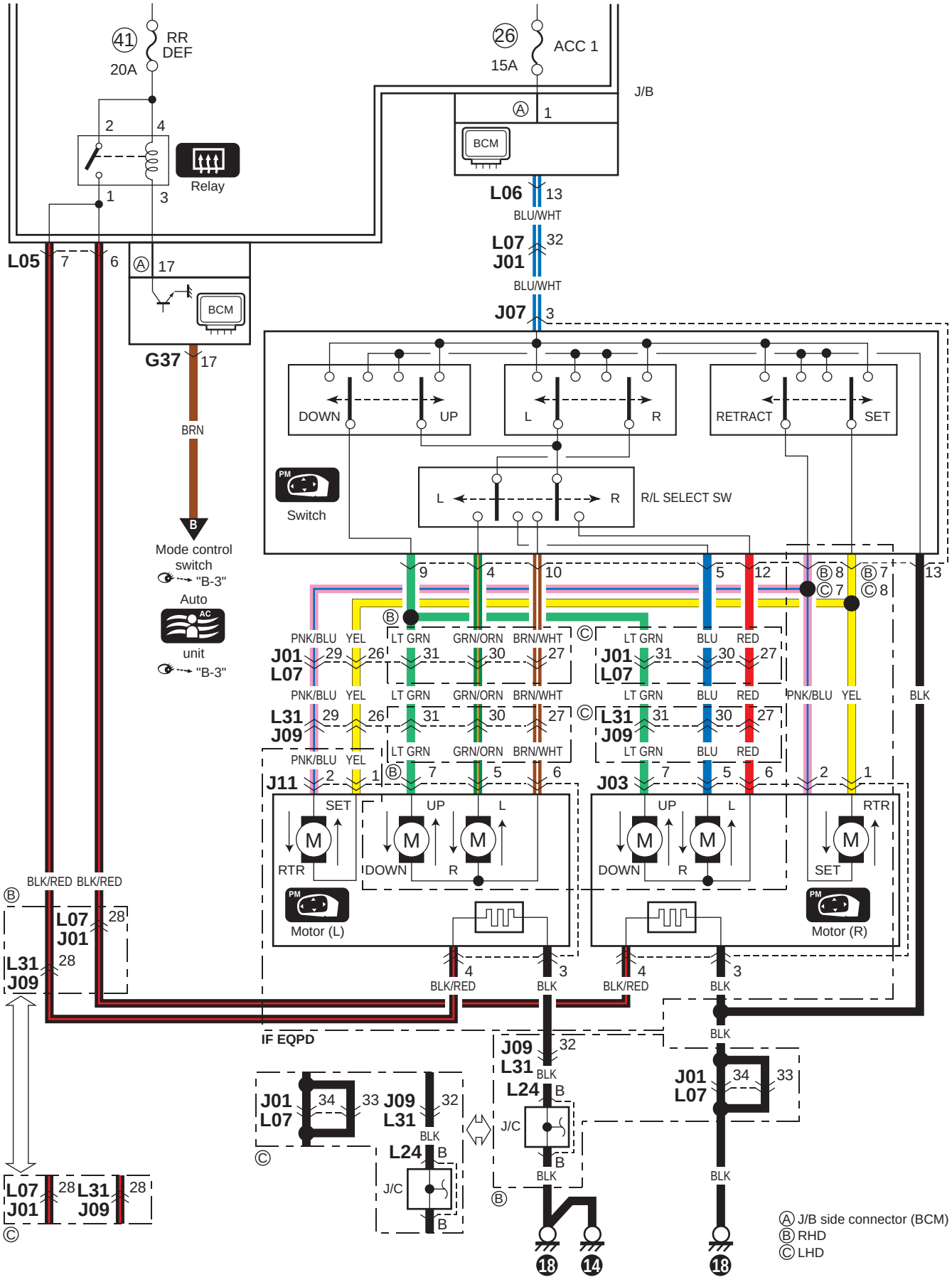


I7RS0B910921-01

B-6 Power Mirror Circuit Diagram

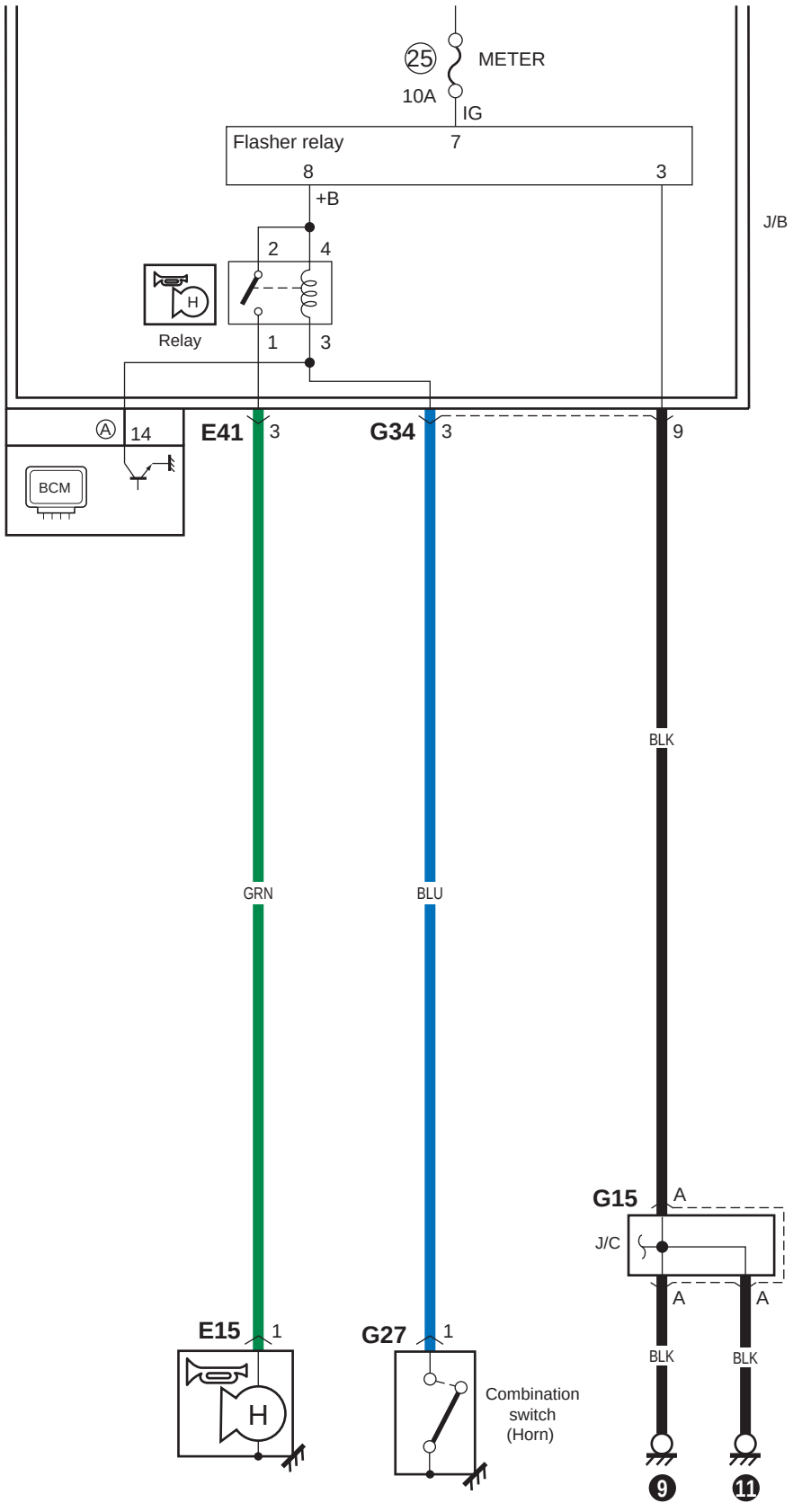
S7RS0B910E015



I7RS0B910922-01

B-7 Horn Circuit Diagram

S7RS0B910E016

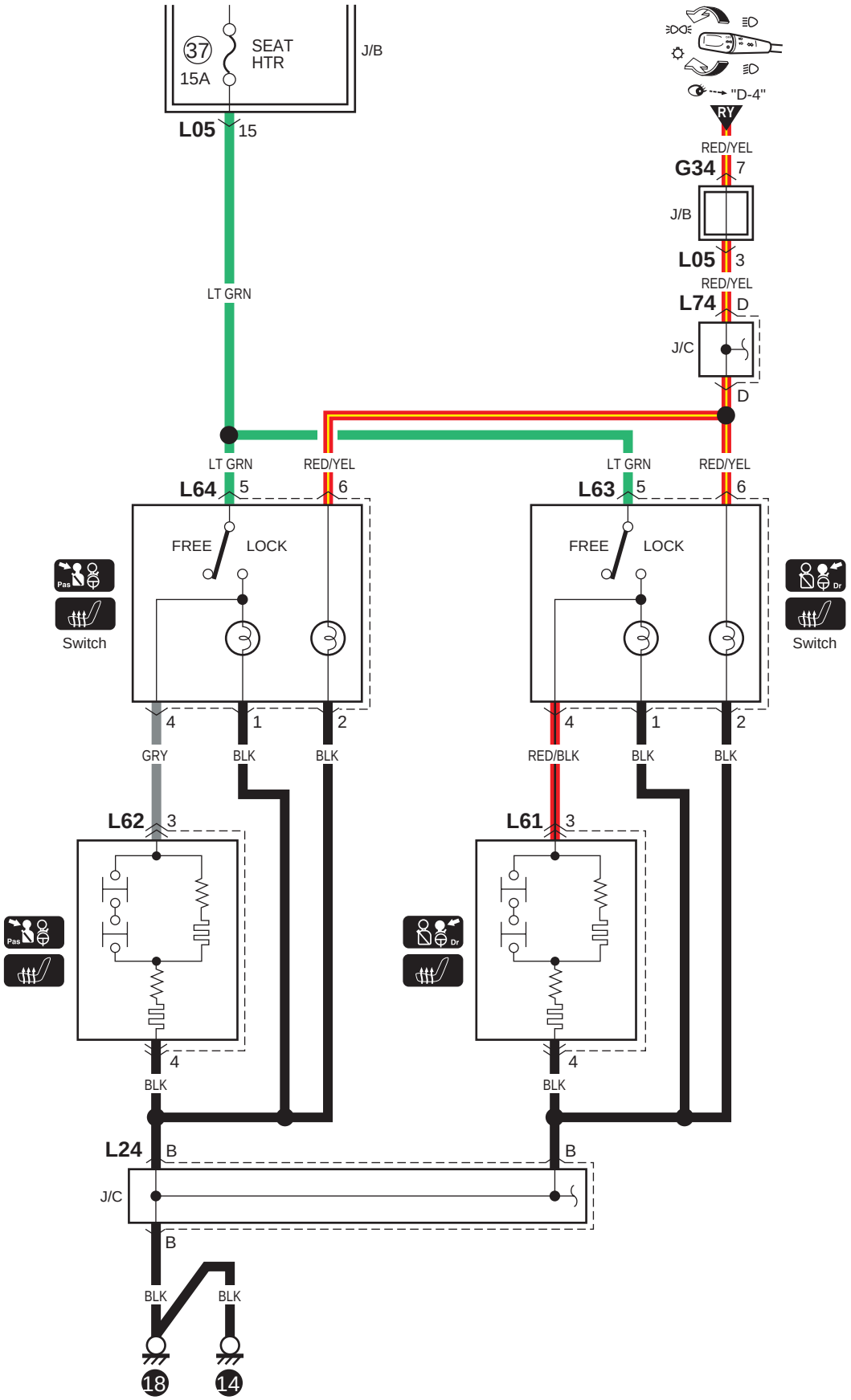


Ⓐ J/B side connector (BCM)

I5RS0C910970-02

B-8 Seat Heater Circuit Diagram

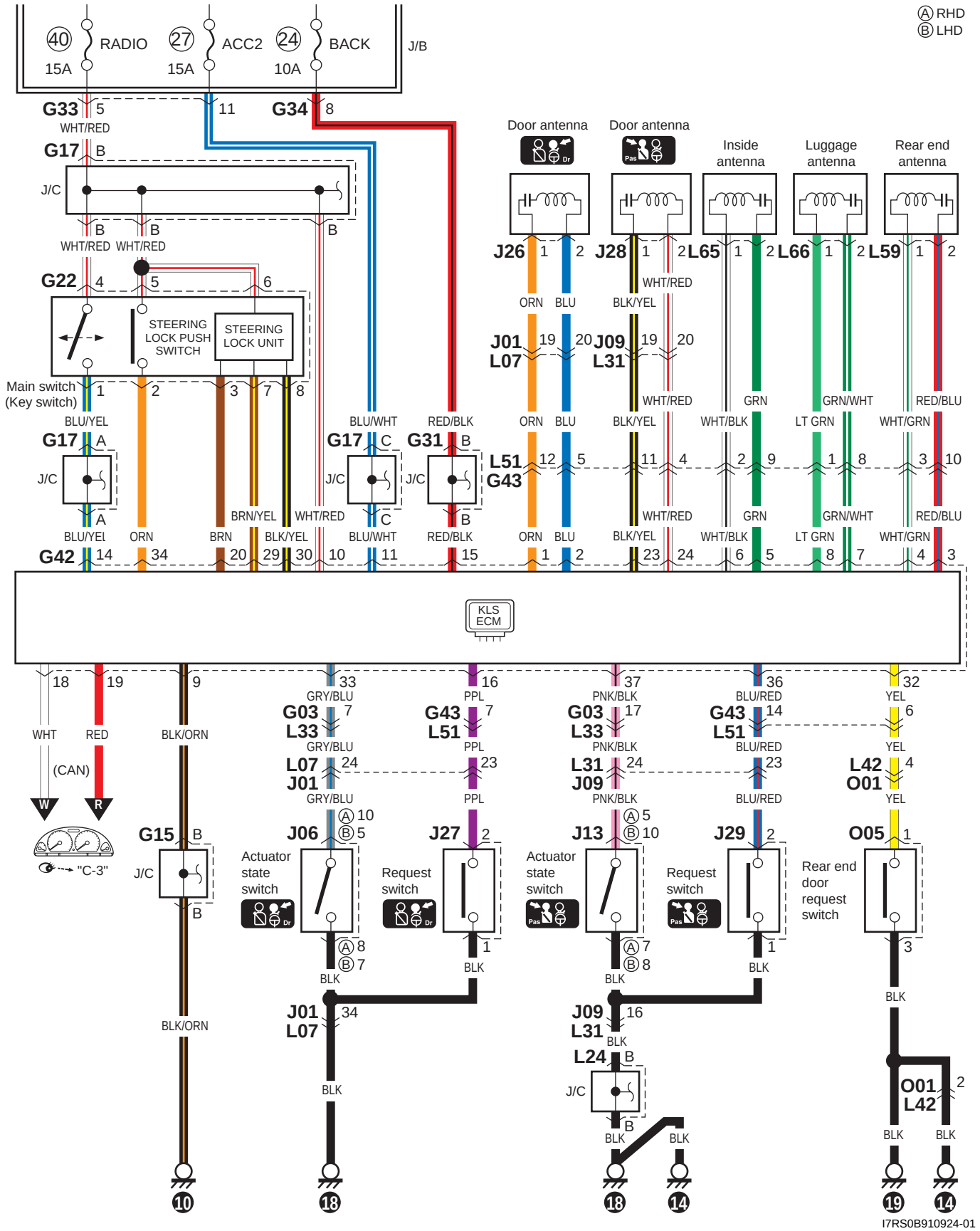
S7RS0B910E017



I7RS0B910923-01

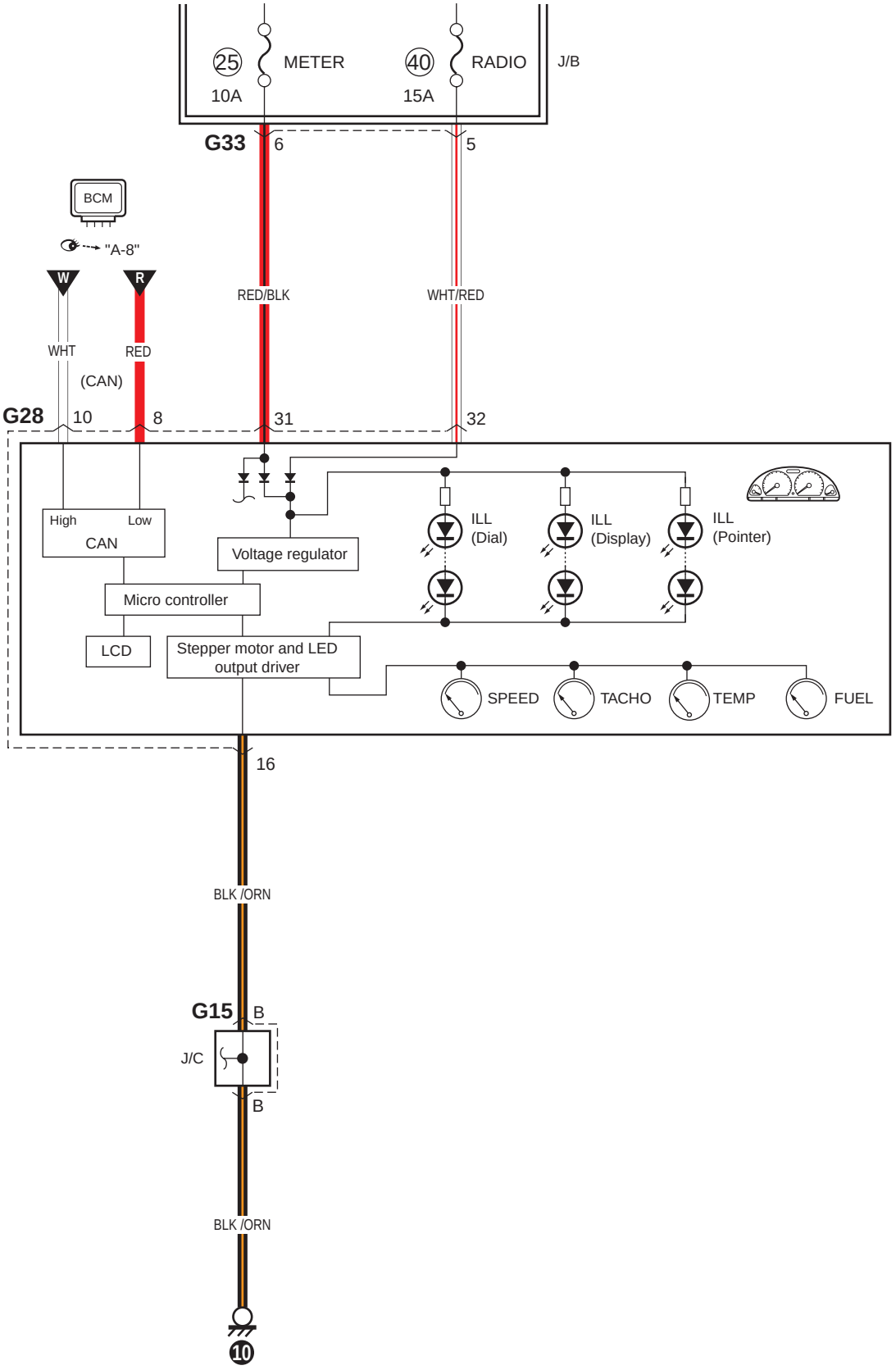
B-9 Keyless Start System Circuit Diagram

S7RS0B910E018



C-1 Combination Meter Circuit Diagram (Meter)

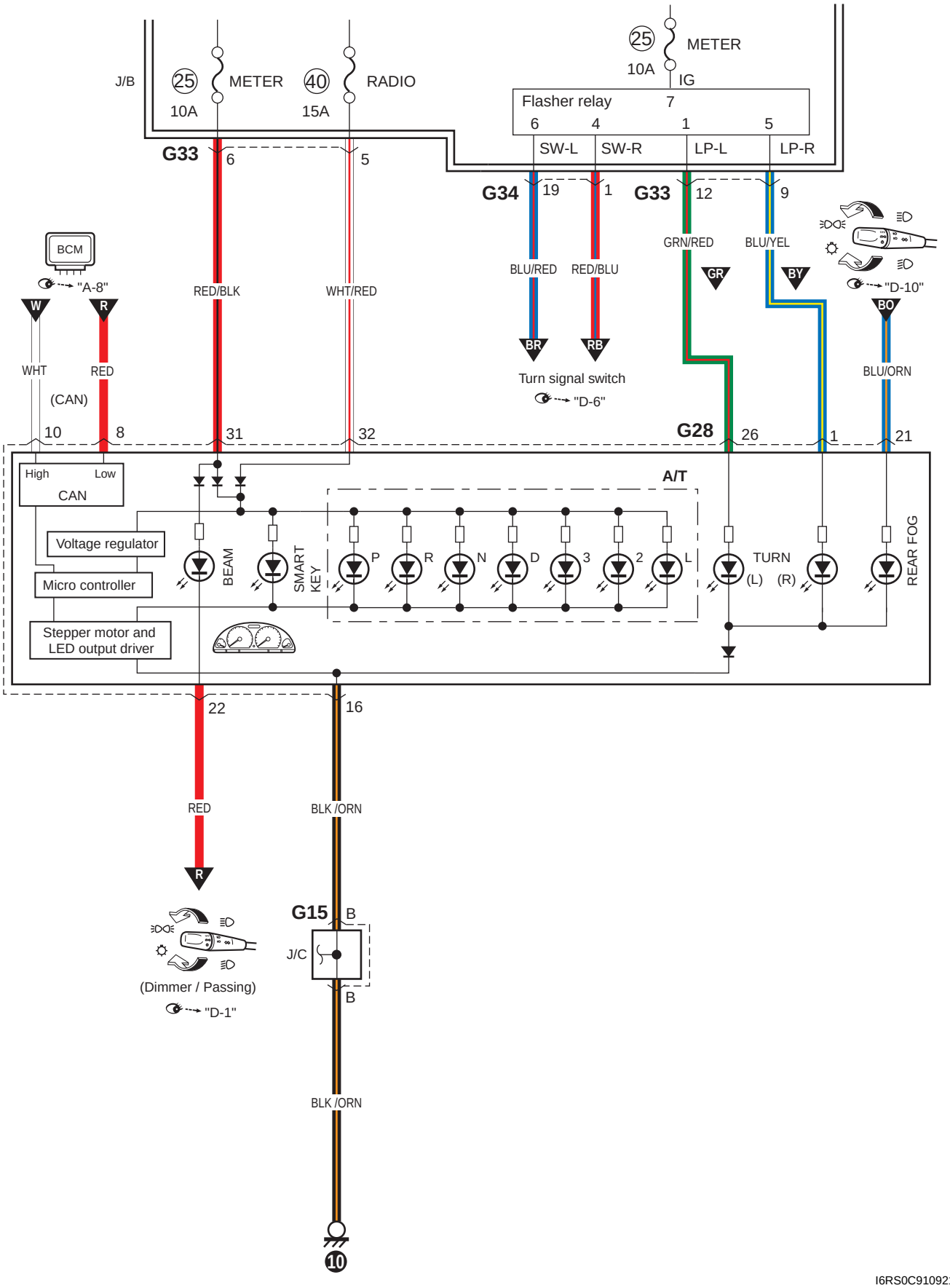
S7RS0B910E019



I6RS0C910920-01

C-2 Combination Meter Circuit Diagram (Indicator)

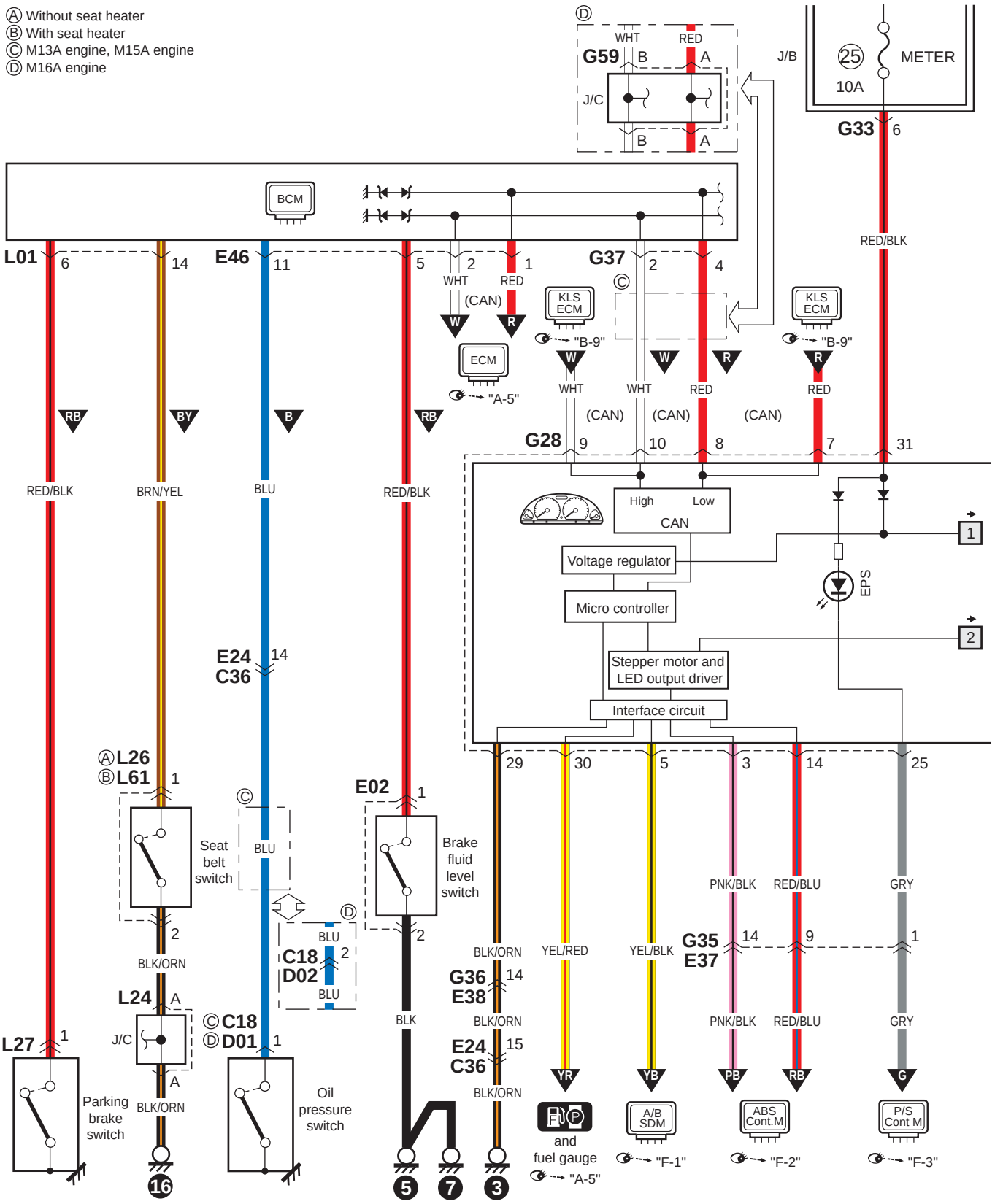
S7RS0B910E020



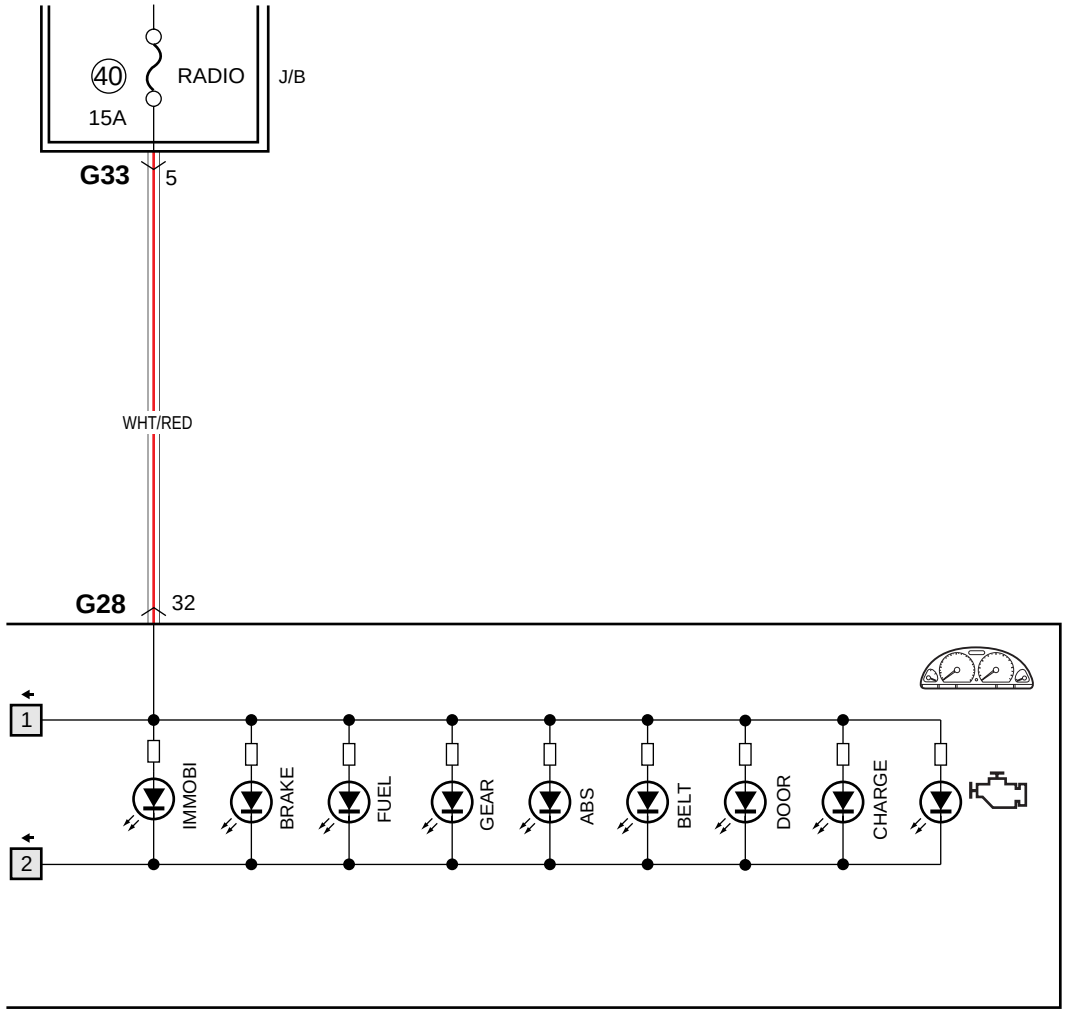
I6RS0C910921-01

C-3 Combination Meter Circuit Diagram (Warning Light)

S7RS0B910E021



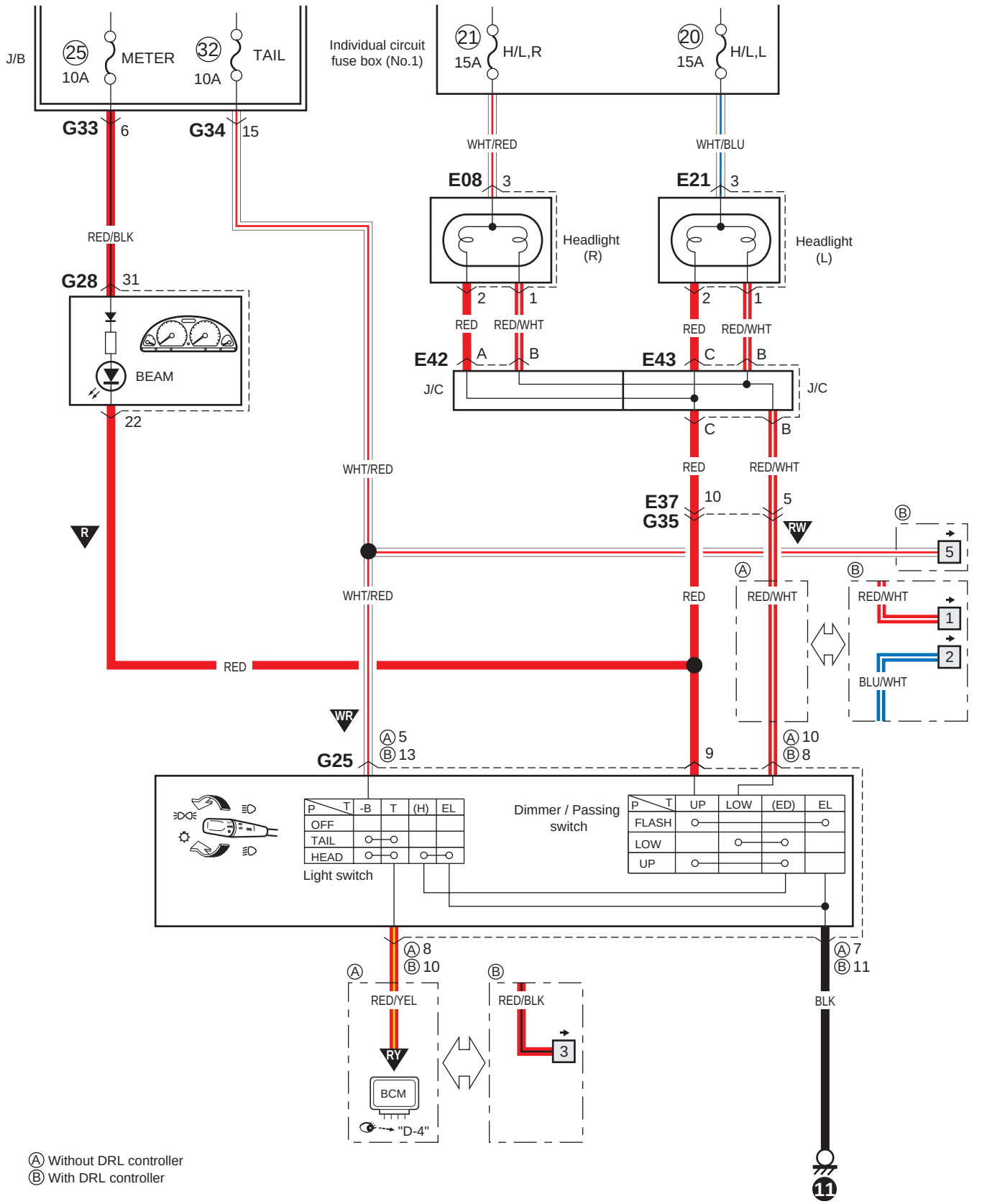
I7RS0B910925-01



I4RS0A910943-01

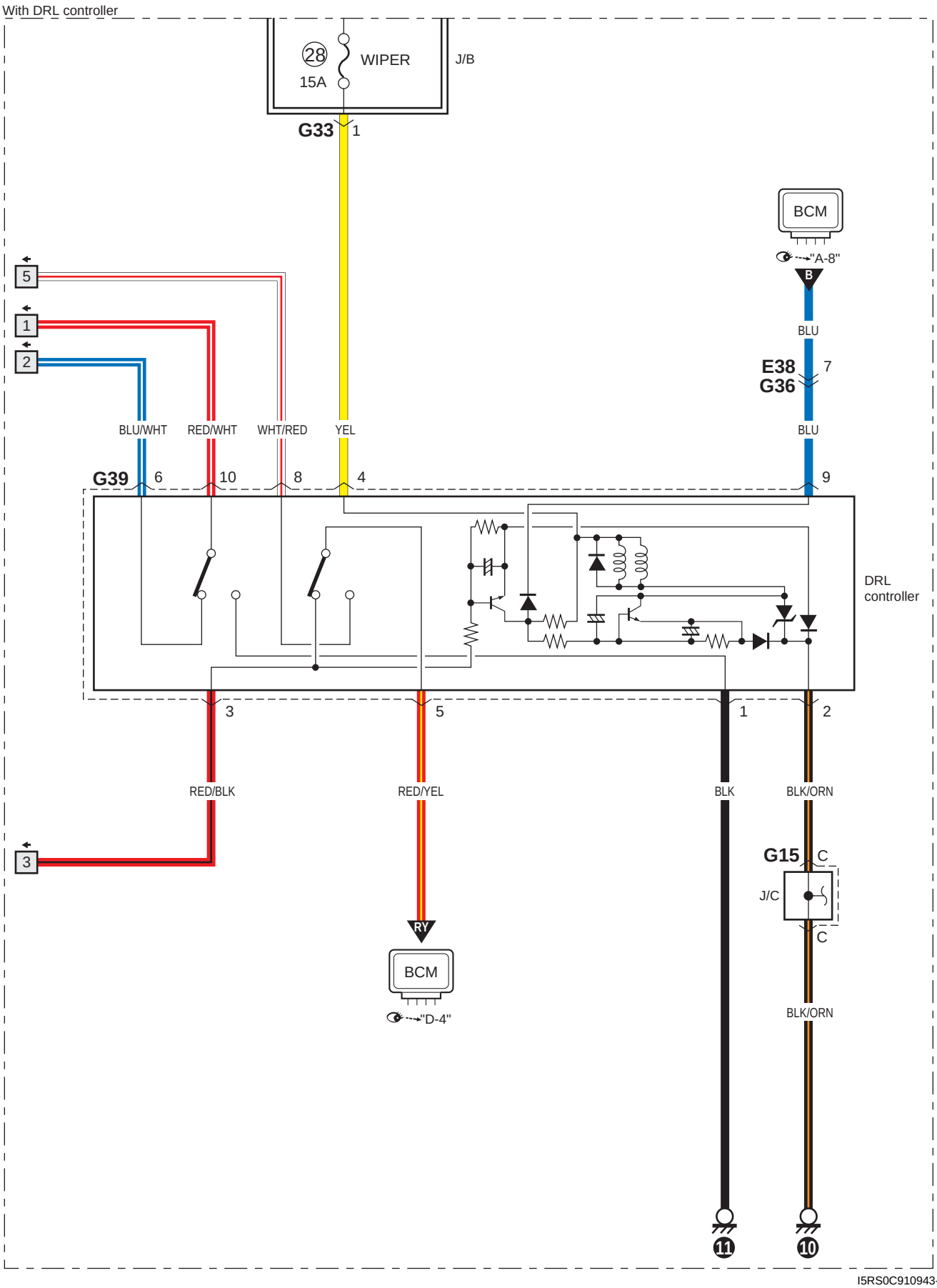
D-1 Headlight System Circuit Diagram

S7RS0B910E022



Ⓐ Without DRL controller
Ⓑ With DRL controller

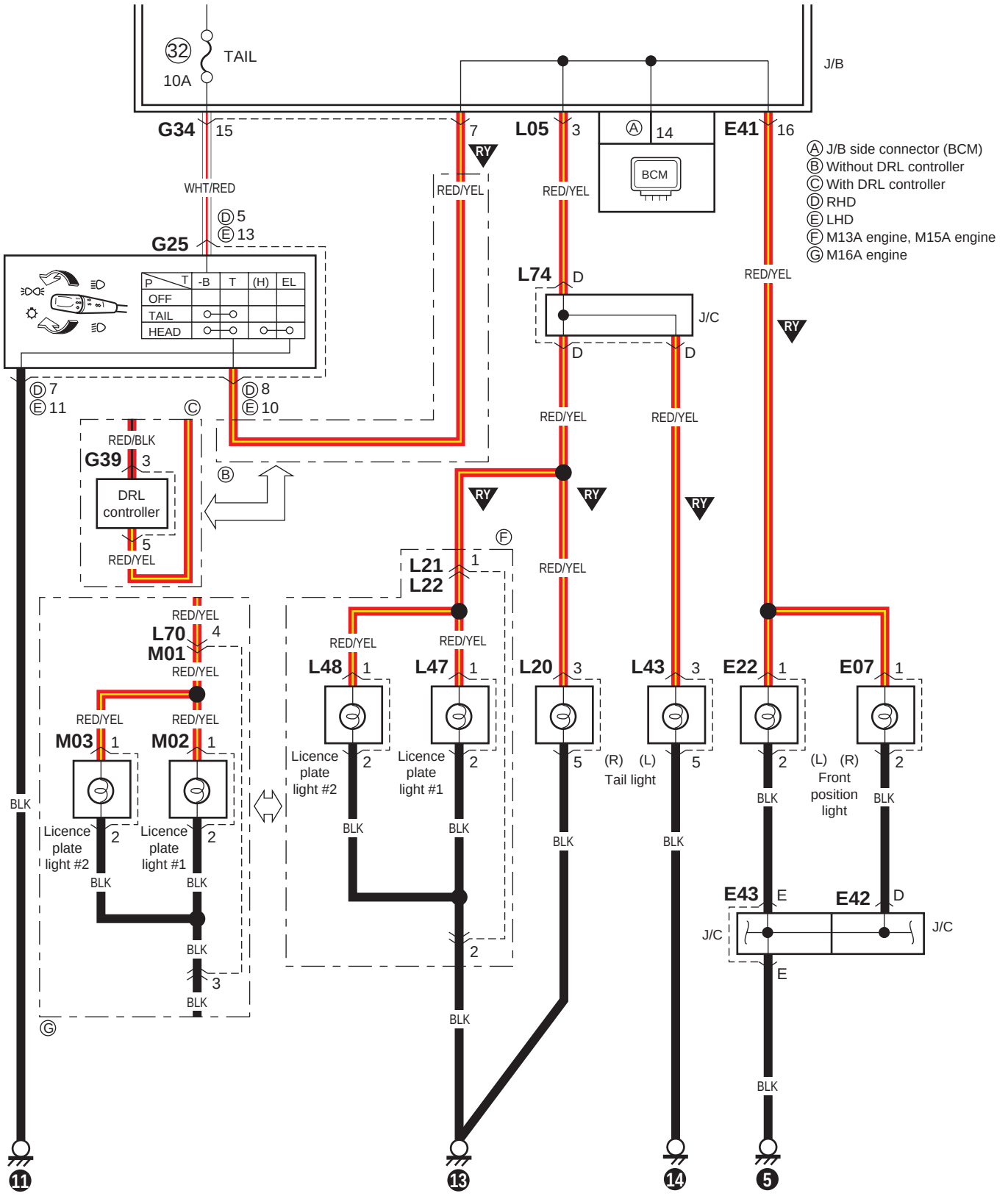
I5RS0C910942-02



I5RS0C910943-03

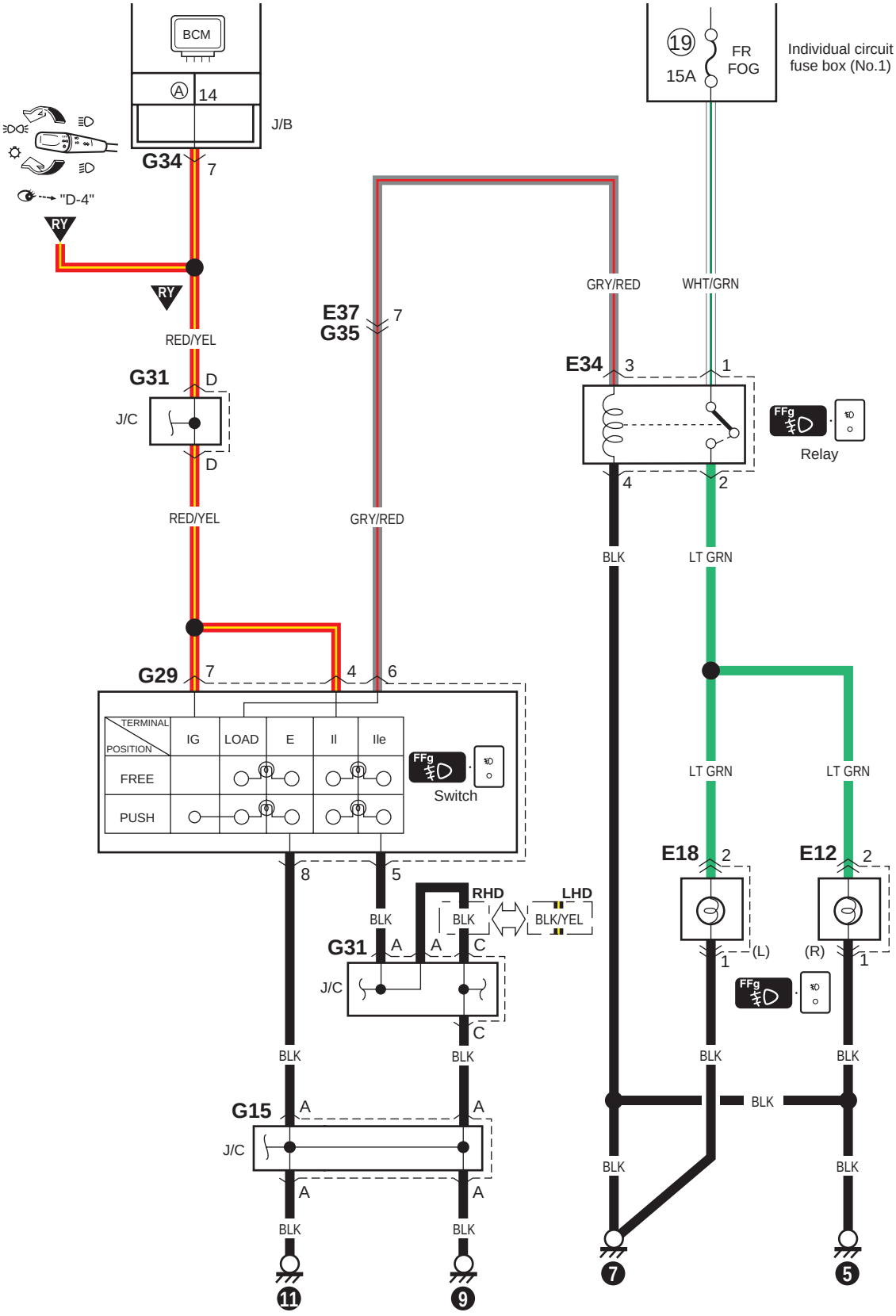
D-2 Position, Tail and Licence Plate Light System Circuit Diagram

S7RS0B910E023



D-3 Front Fog Light System Circuit Diagram

S7RS0B910E024

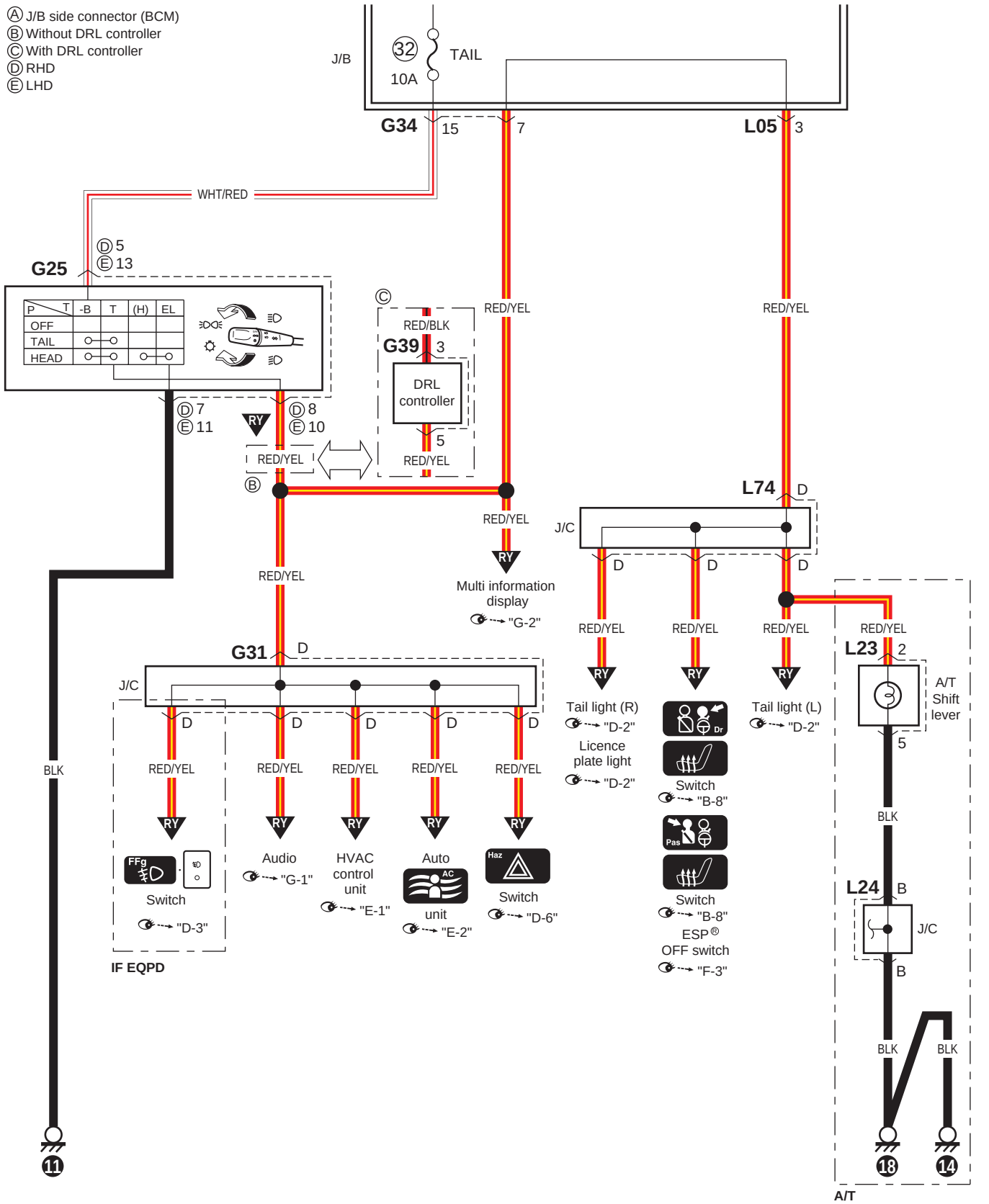


Ⓐ J/B side connector (BCM)

I5RS0C910945-02

D-4 Illumination Light System Circuit Diagram

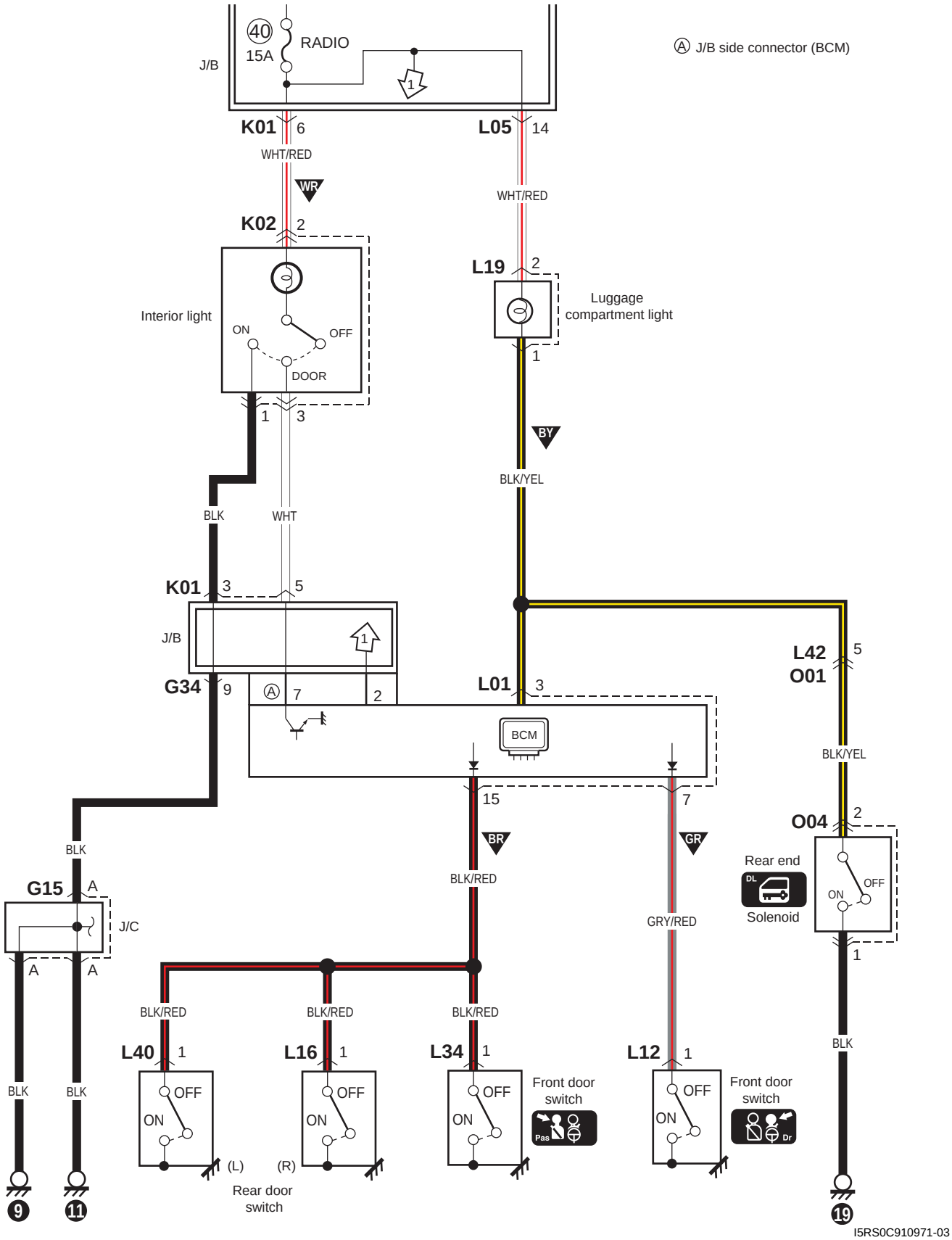
S7RS0B910E025



I7RS0B910927-01

D-5 Interior Light System Circuit Diagram

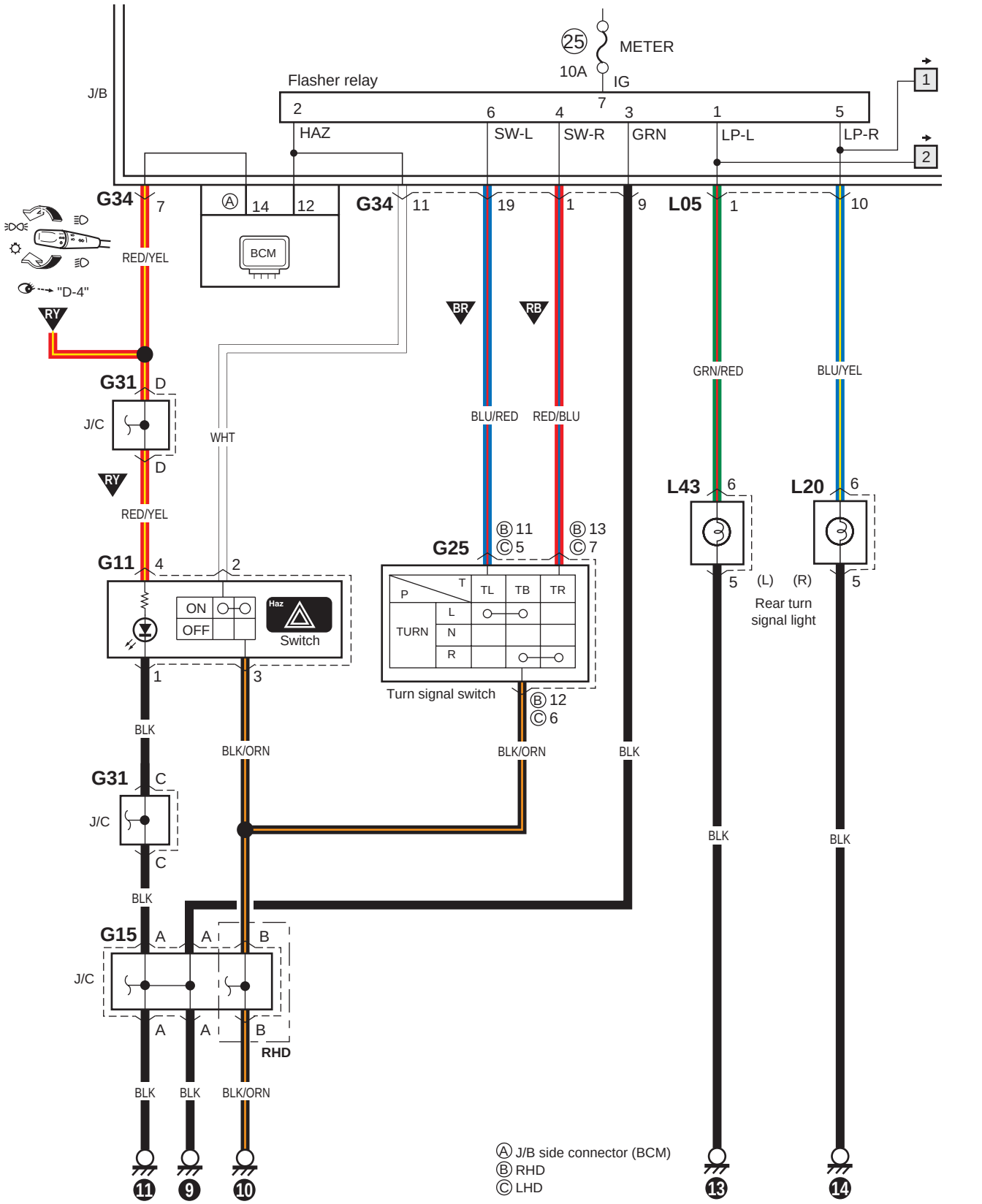
S7RS0B910E026



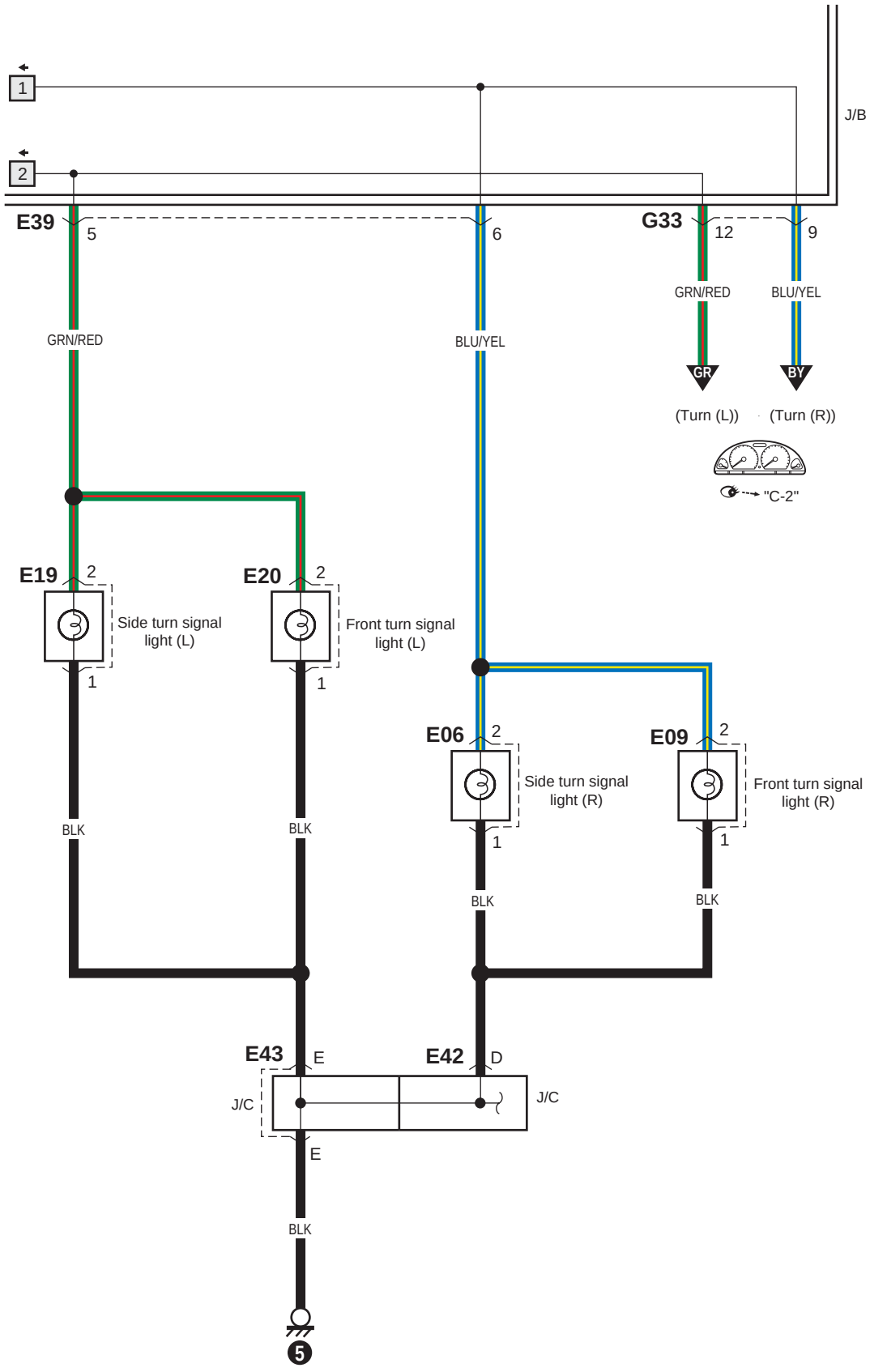
I5RS0C910971-03

D-6 Turn Signal and Hazard Warning Light System Circuit Diagram

S7RS0B910E027



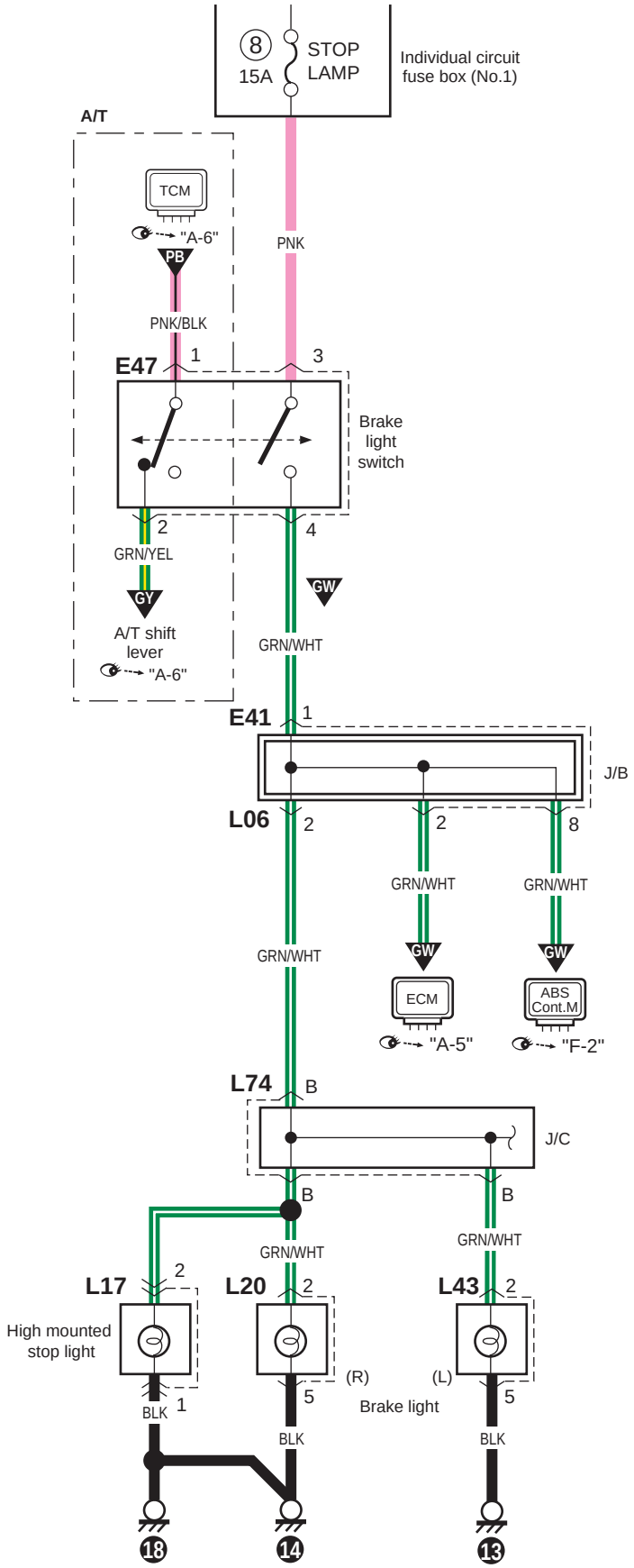
I5RS0C910947-02



I7RS0B910928-01

D-7 Brake Light System Circuit Diagram

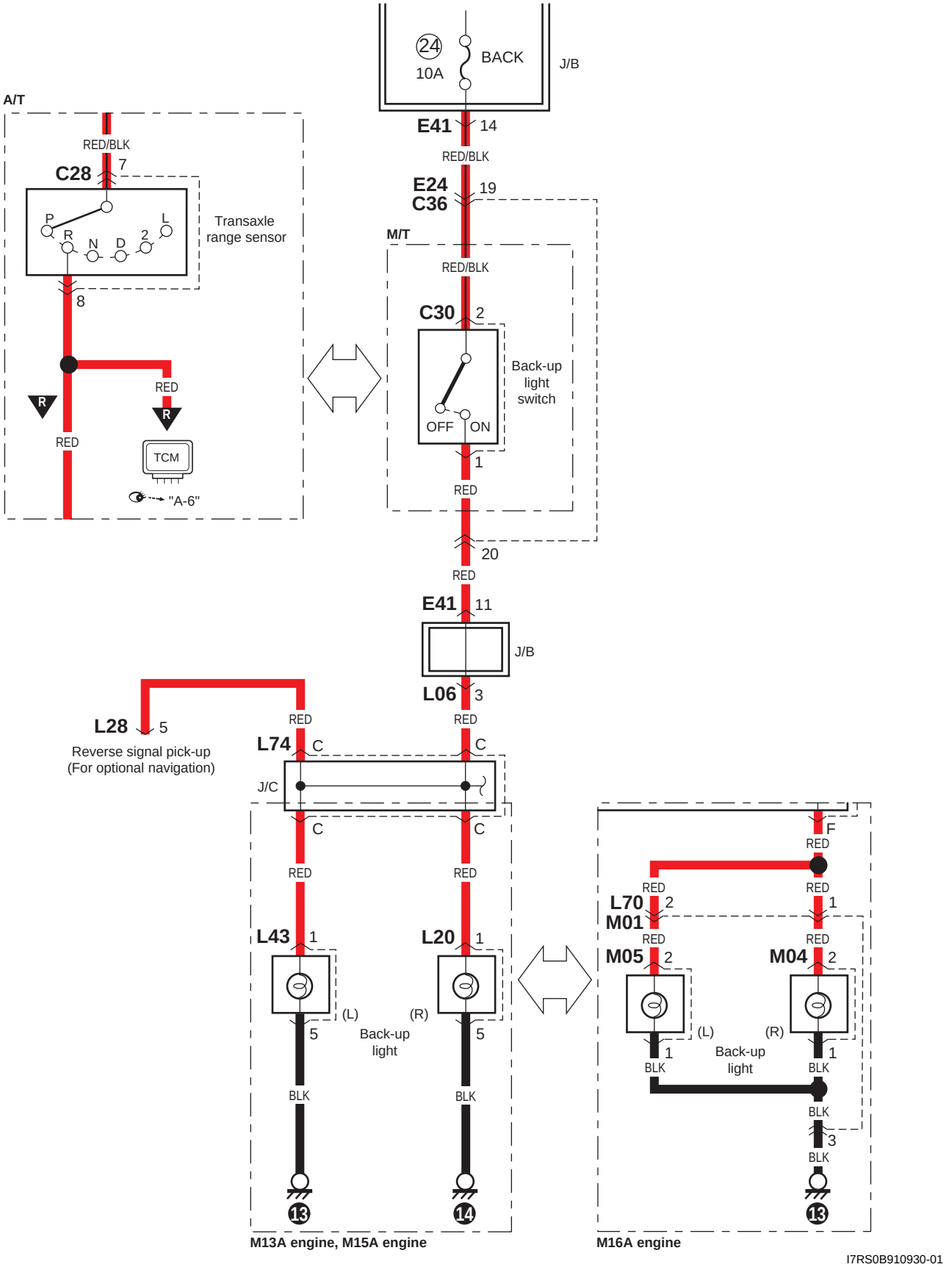
S7RS0B910E028



I7RS0B910929-01

D-8 Back-Up Light System Circuit Diagram

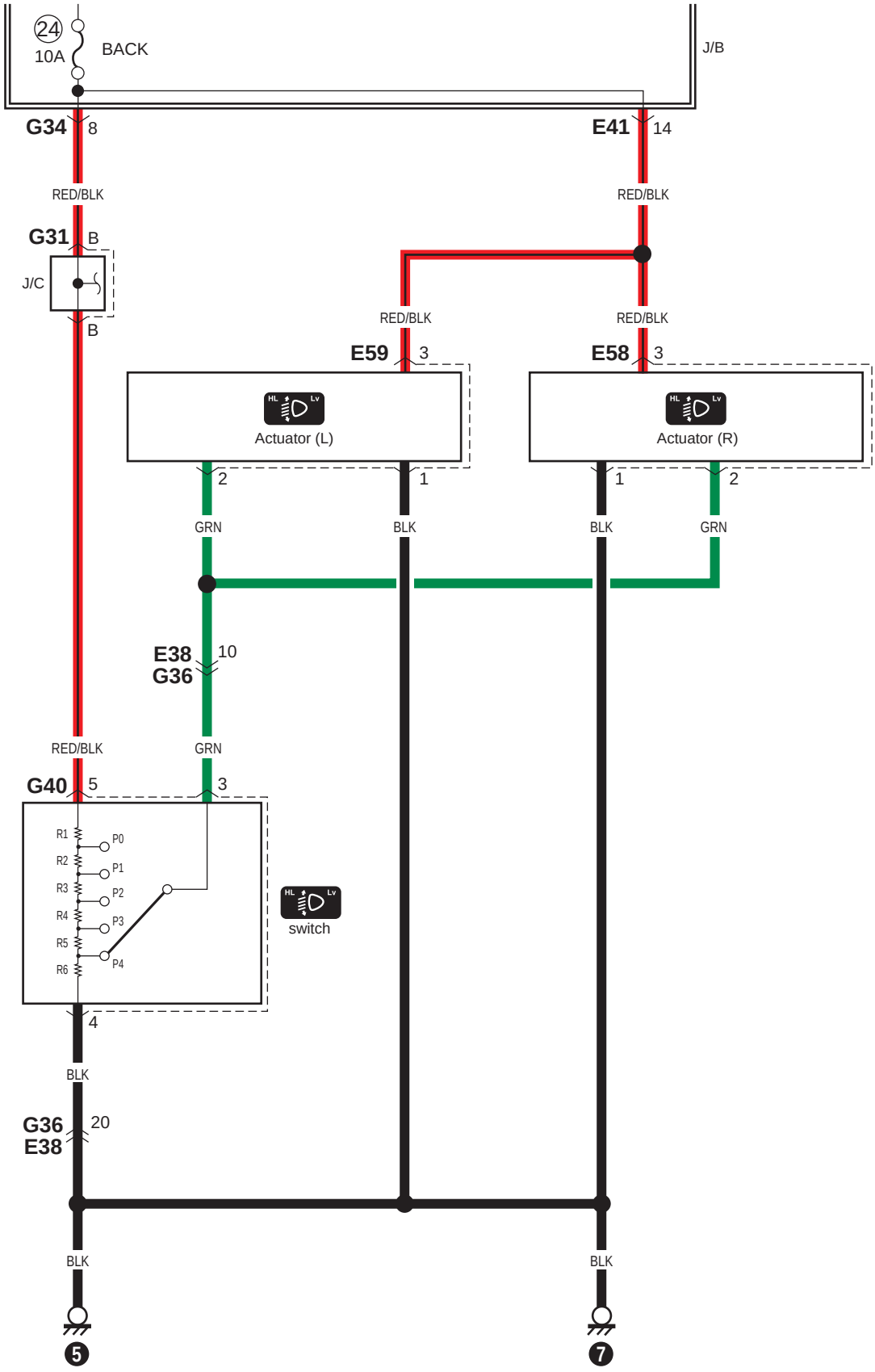
S7RS0B910E029



I7RS0B910930-01

D-9 Headlight Beam Leveling System Circuit Diagram

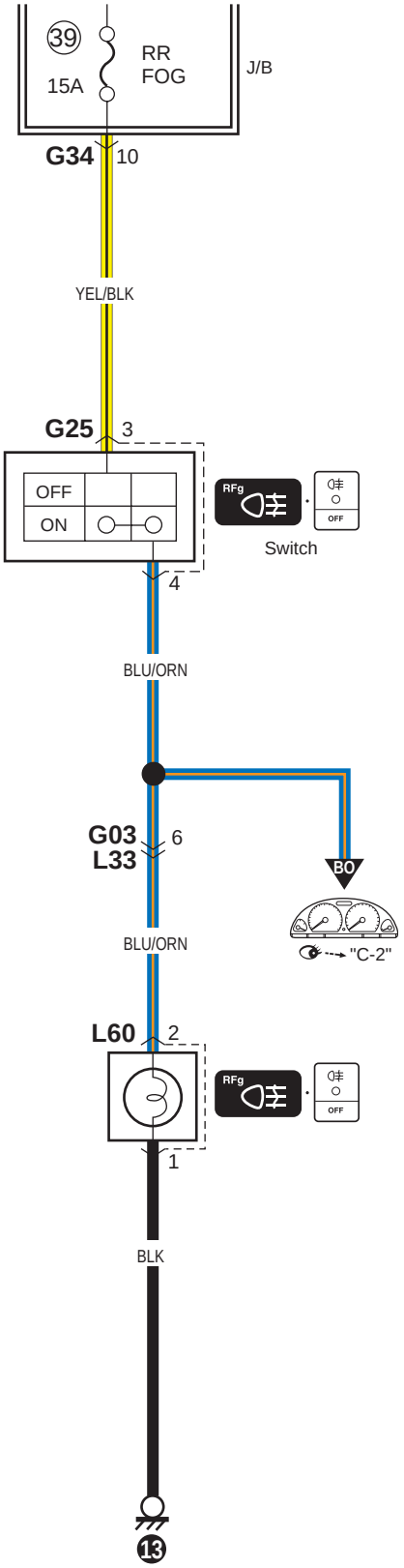
S7RS0B910E030



I7RS0B910944-01

D-10 Rear Fog Light Circuit Diagram

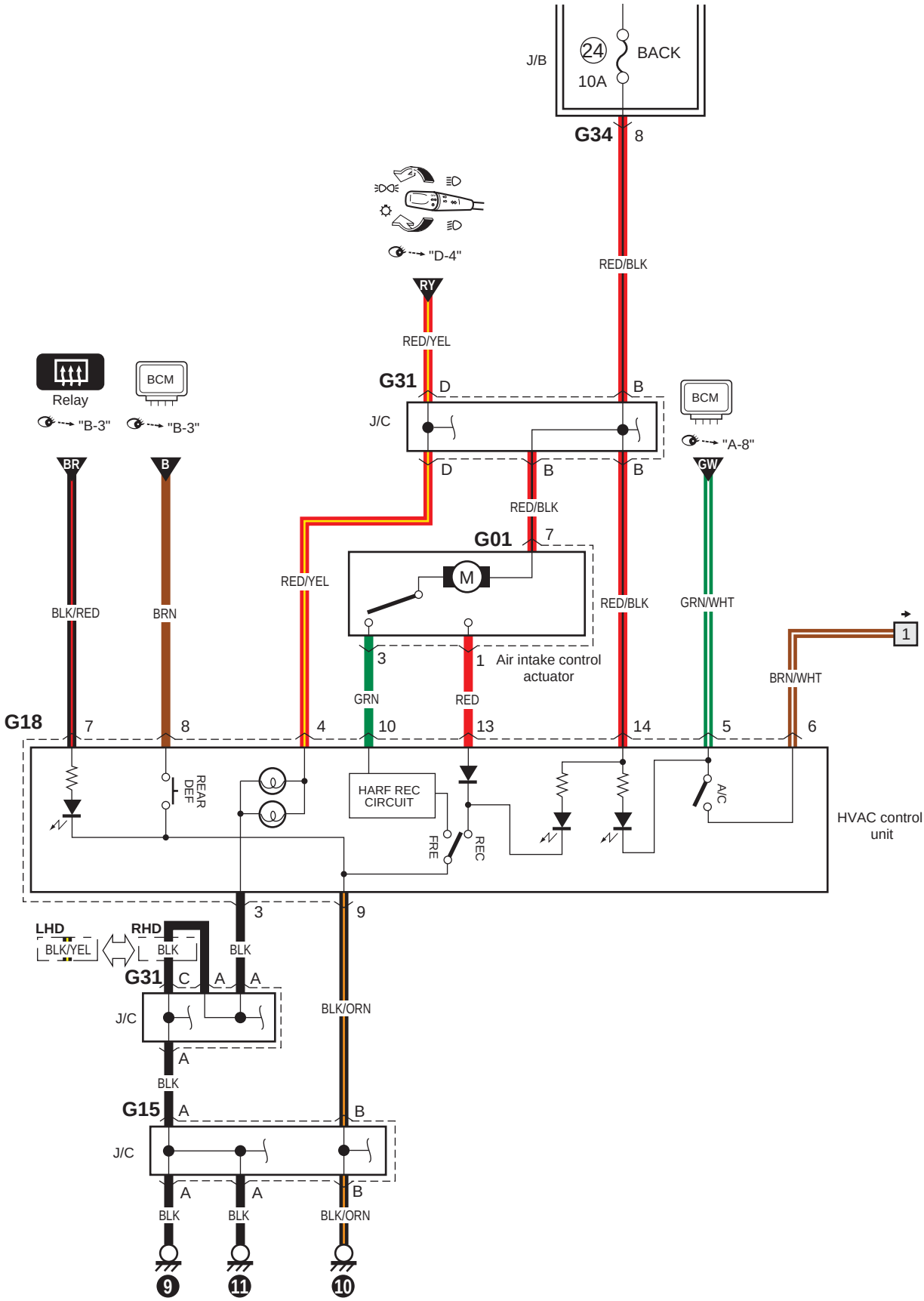
S7RS0B910E031



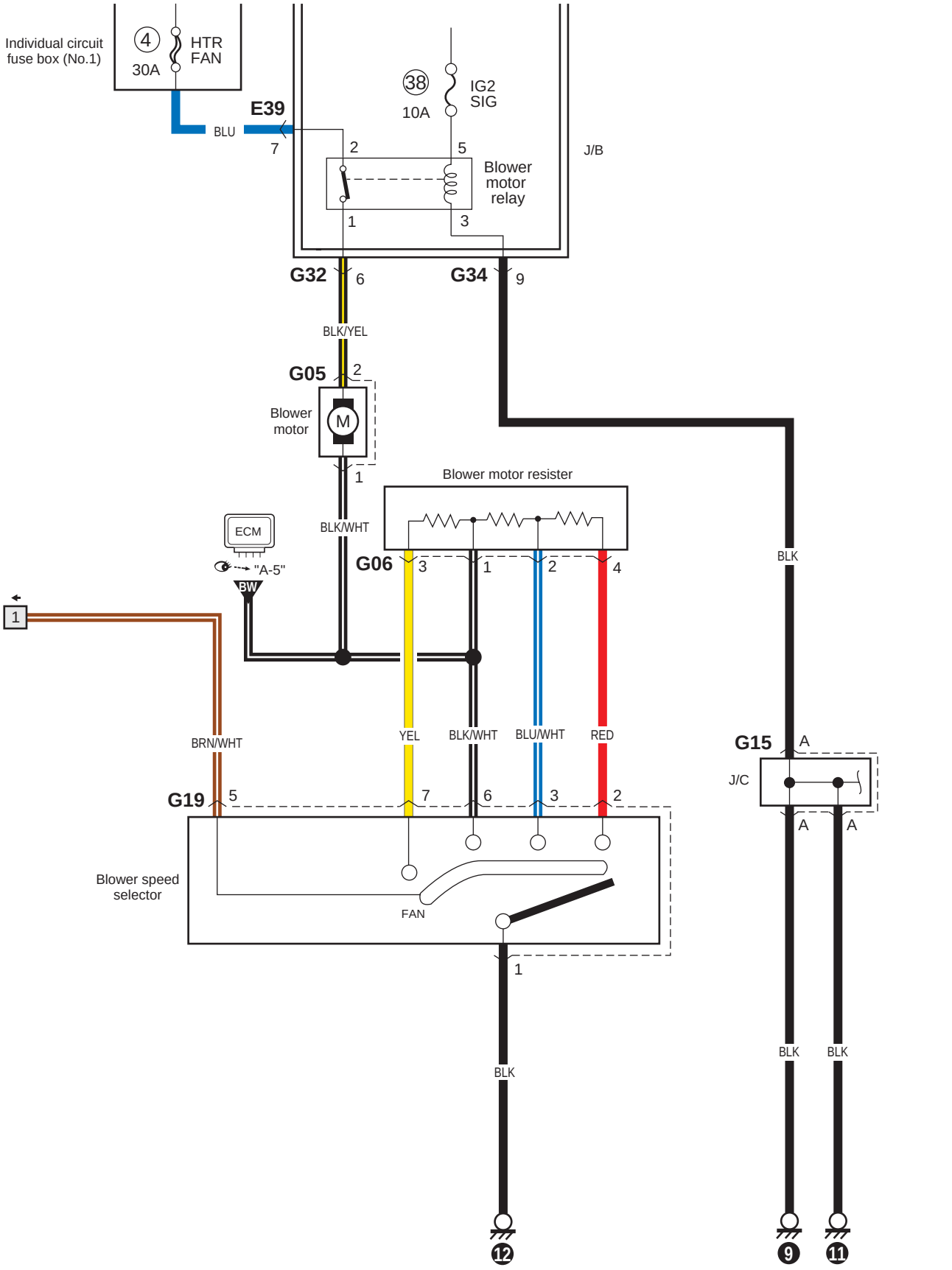
I5RS0C910950-02

E-1 Heater System Circuit Diagram

S7RS0B910E032

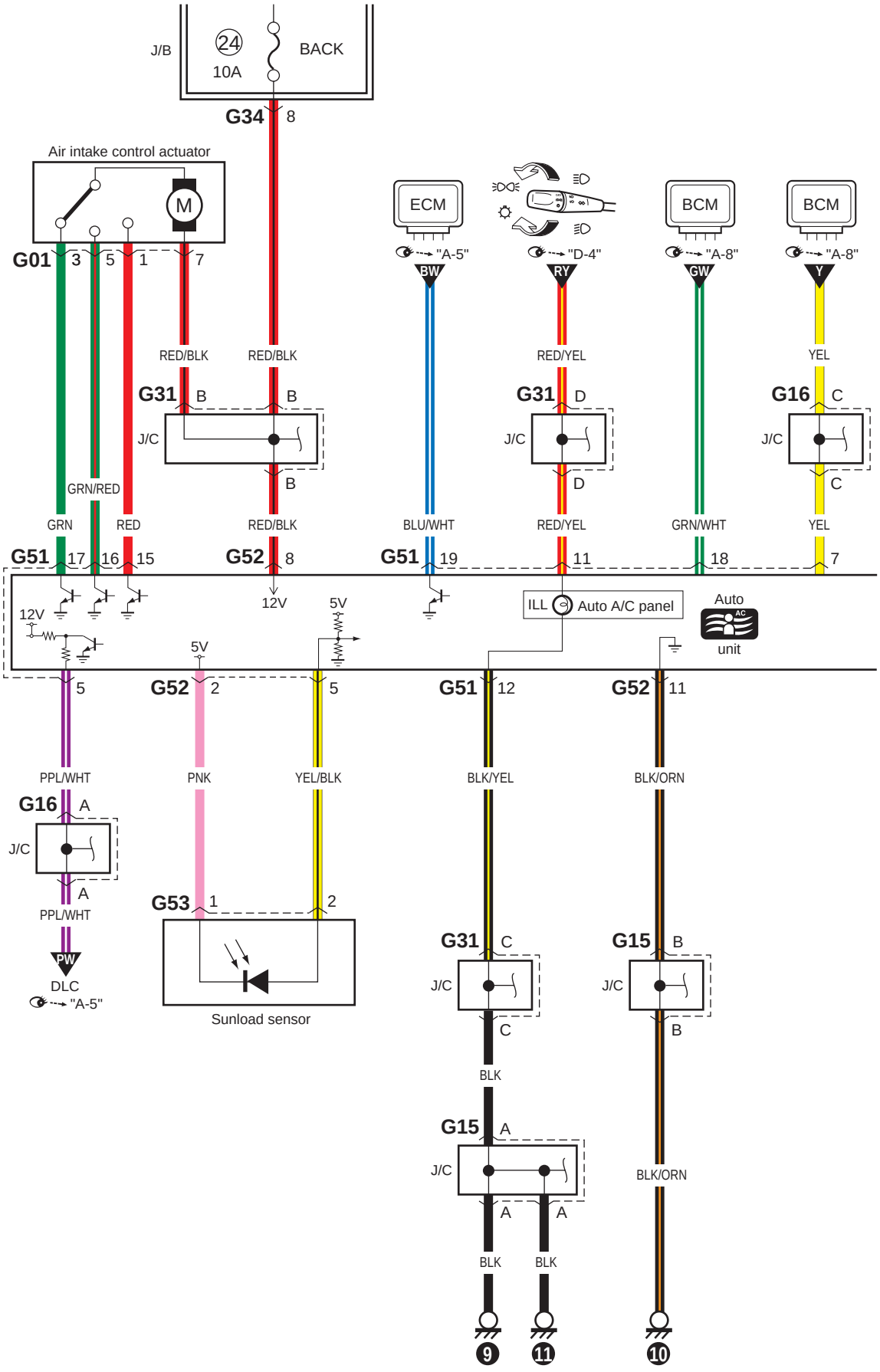


I7RS0B910945-01

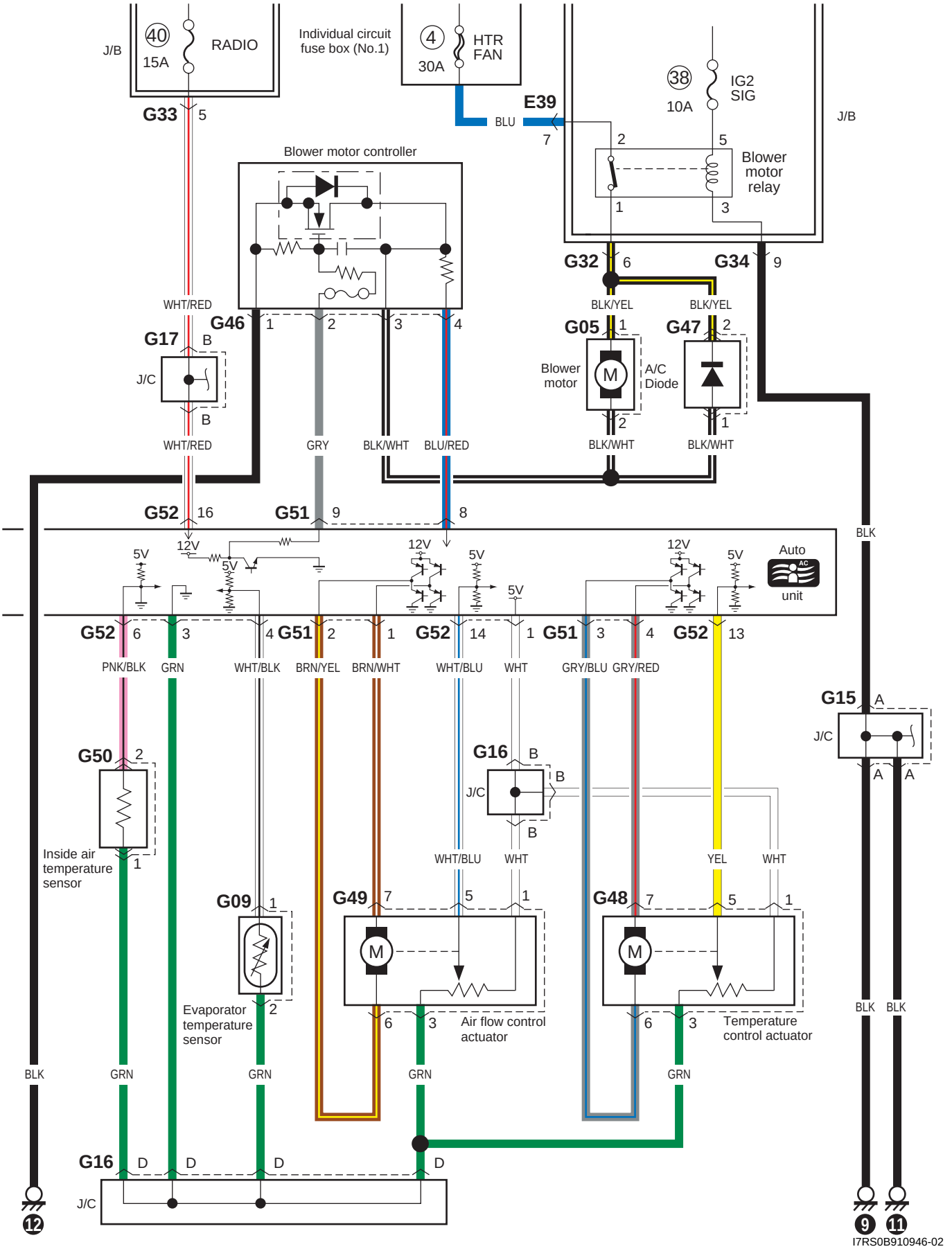

Individual circuit fuse box (No.1)
4
30A
HTR FAN
BLU
E39
7
38
10A
IG2 SIG
2
5
1
3
Blower motor relay
J/B
G32
6
G34
9
BLK/YEL
G05
2
Blower motor
M
1
Blower motor resister
ECM
"A-5"
BW
BLK/WHT
G06
3
1
2
4
BLK
1
BRN/WHT
YEL
BLK/WHT
BLU/WHT
RED
G15
A
J/C
A
A
G19
5
7
6
3
2
Blower speed selector
FAN
1
BLK
BLK
BLK
12
9
11
I7RS0B910931-01

E-2 Auto A/C System Circuit Diagram

S7RS0B910E033



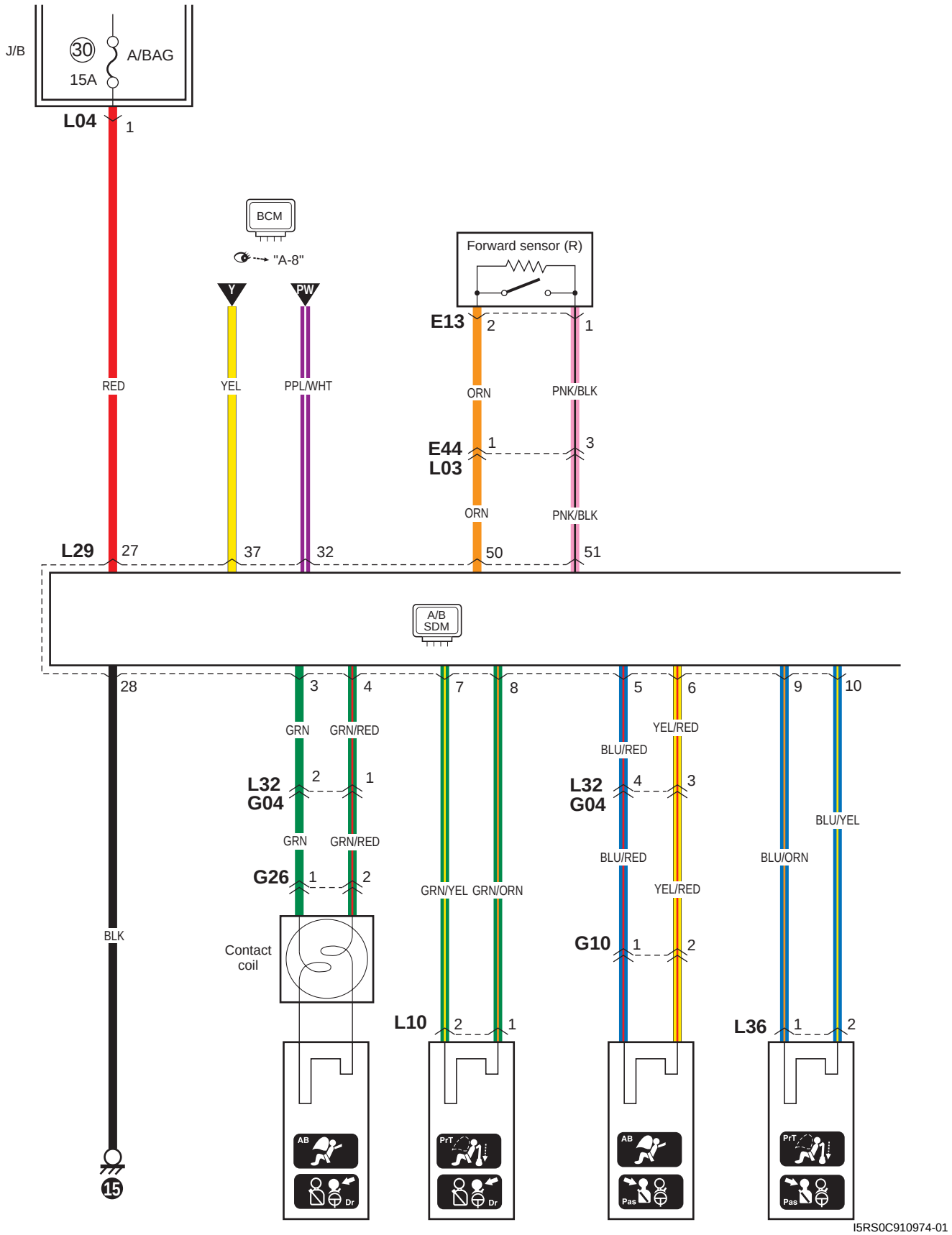
I7RS0B910932-01



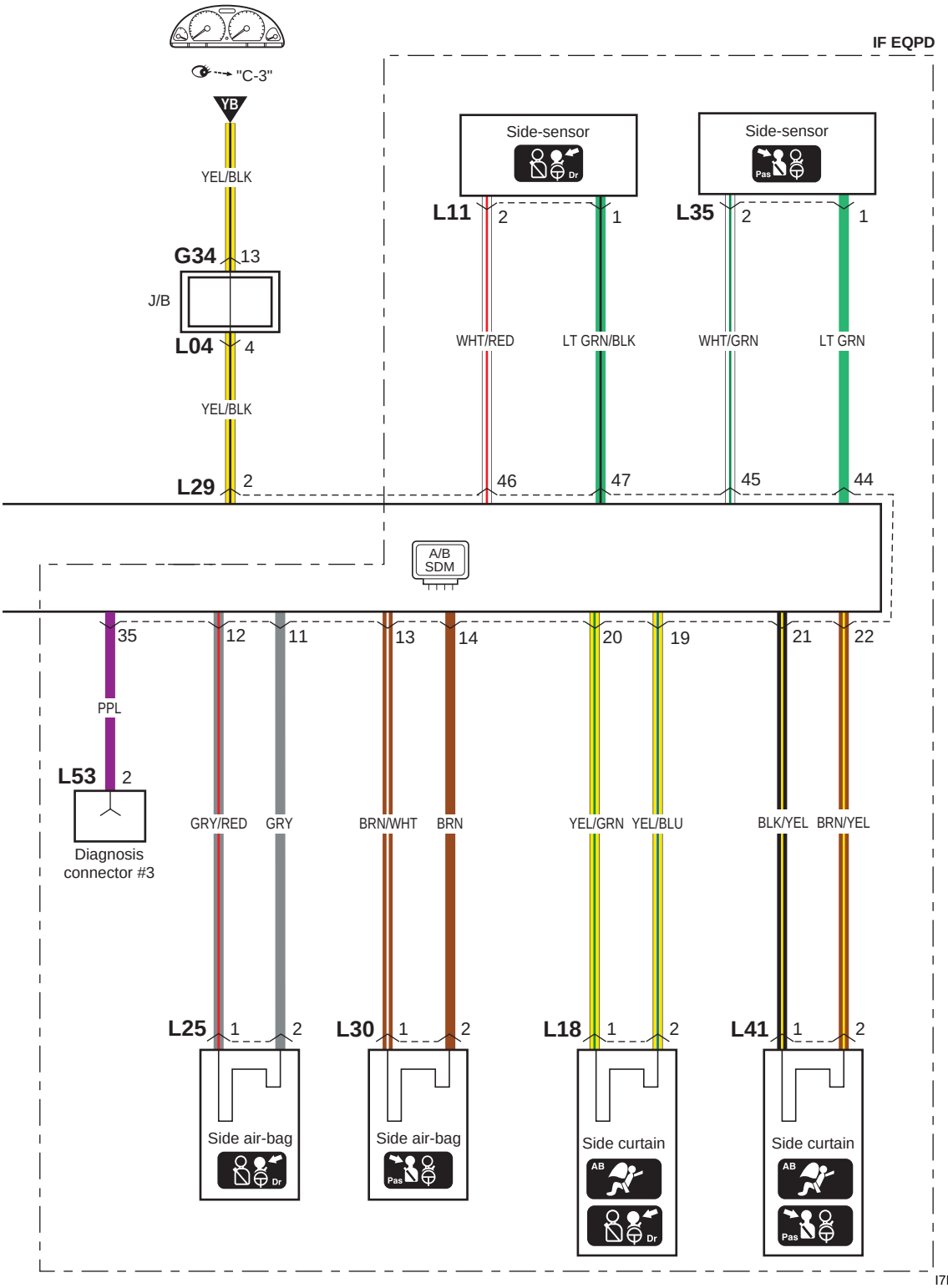
I7RS0B910946-02

F-1 Air-Bag System Circuit Diagram

S7RS0B910E034



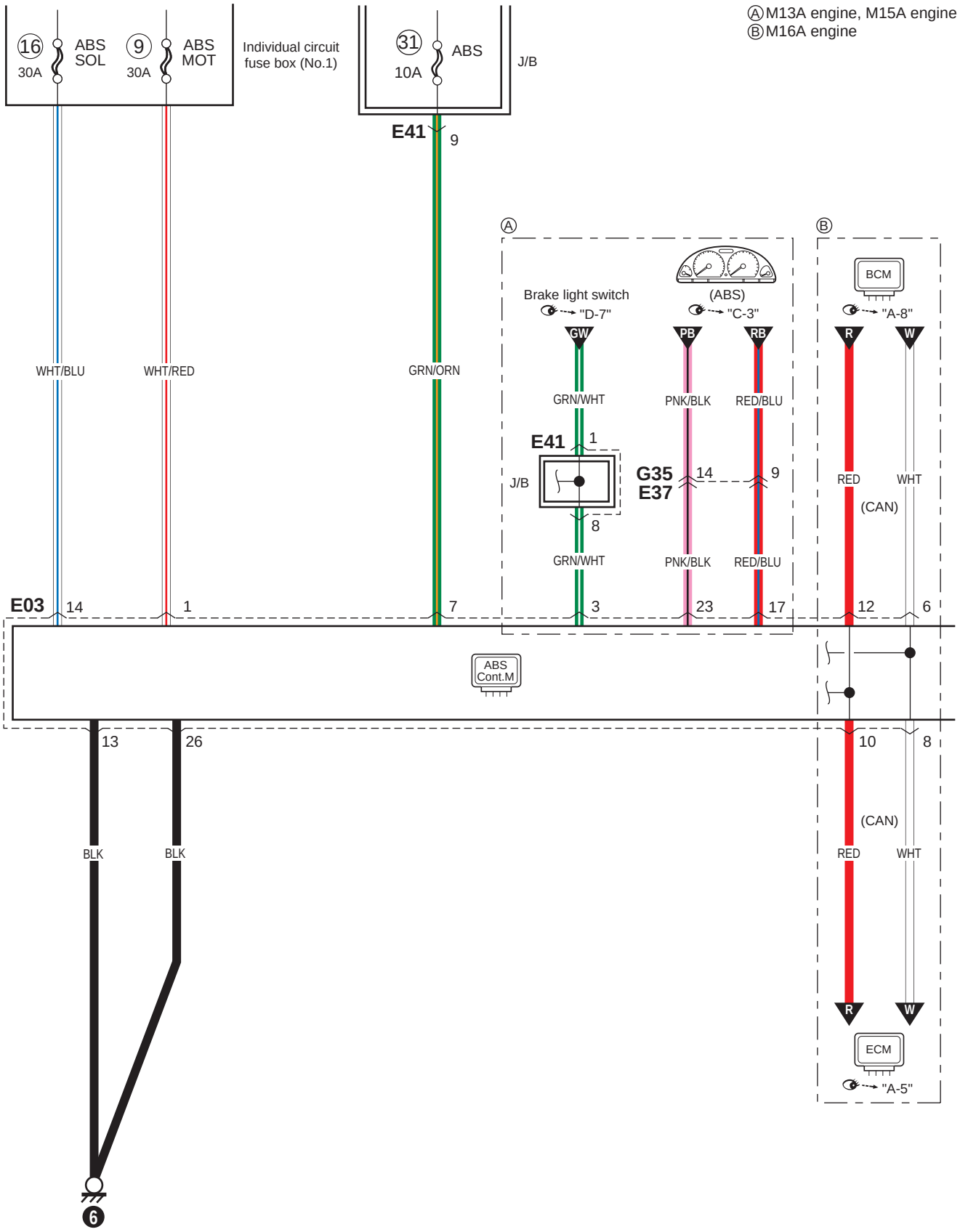
I5RS0C910974-01



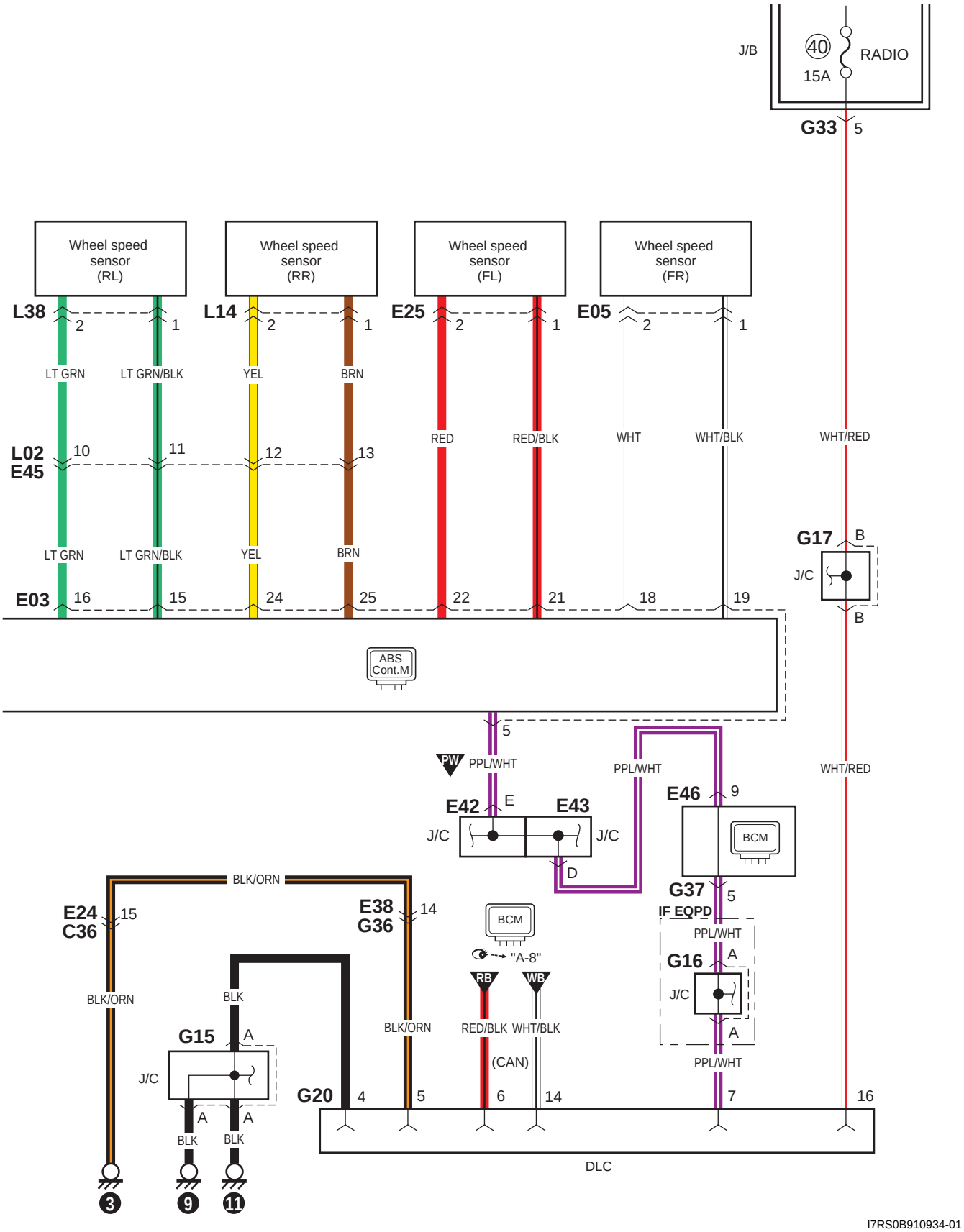
I7RS0B910947-01

F-2 Anti-Lock Brake System Circuit Diagram

S7RS0B910E035



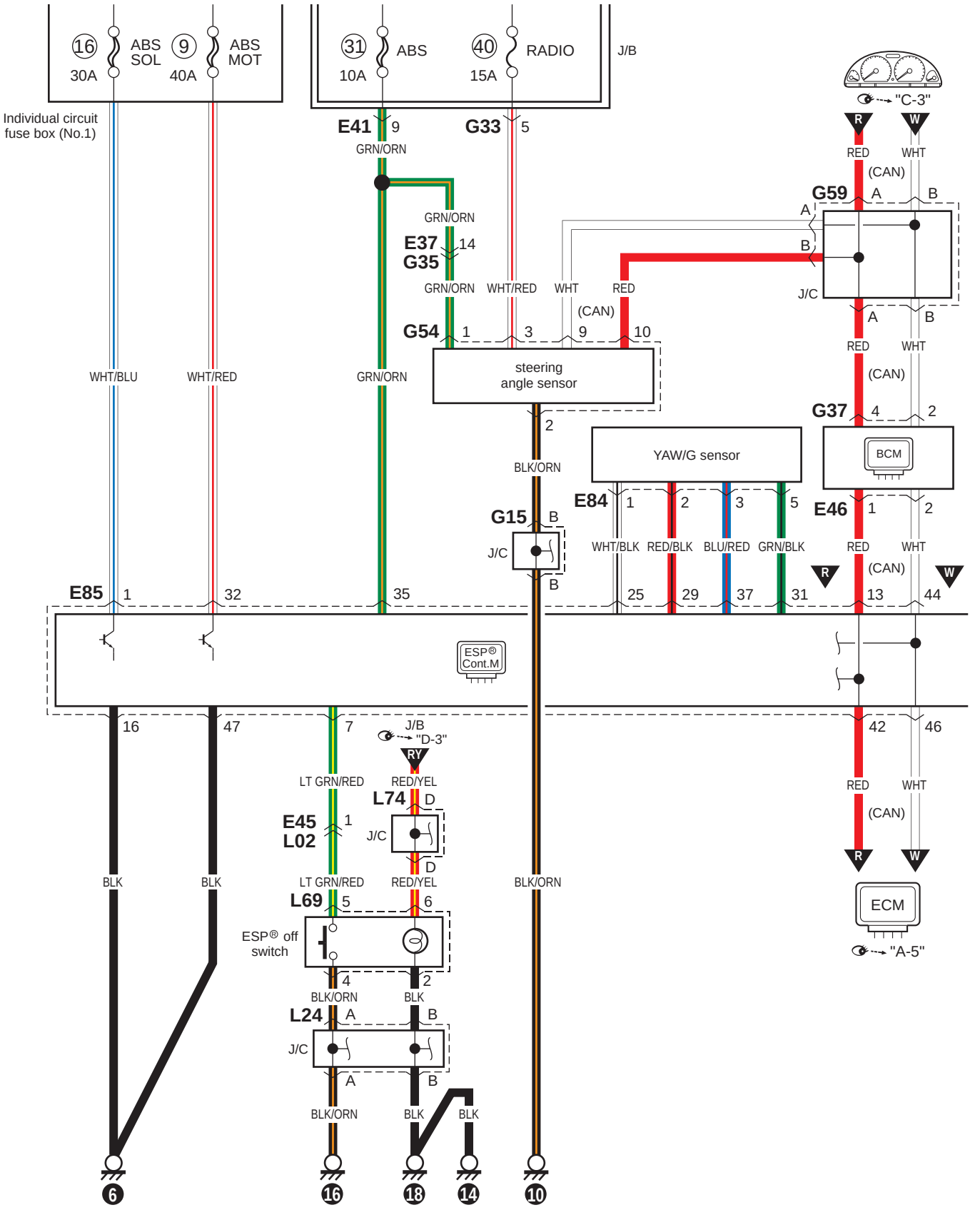
I7RS0B910933-01



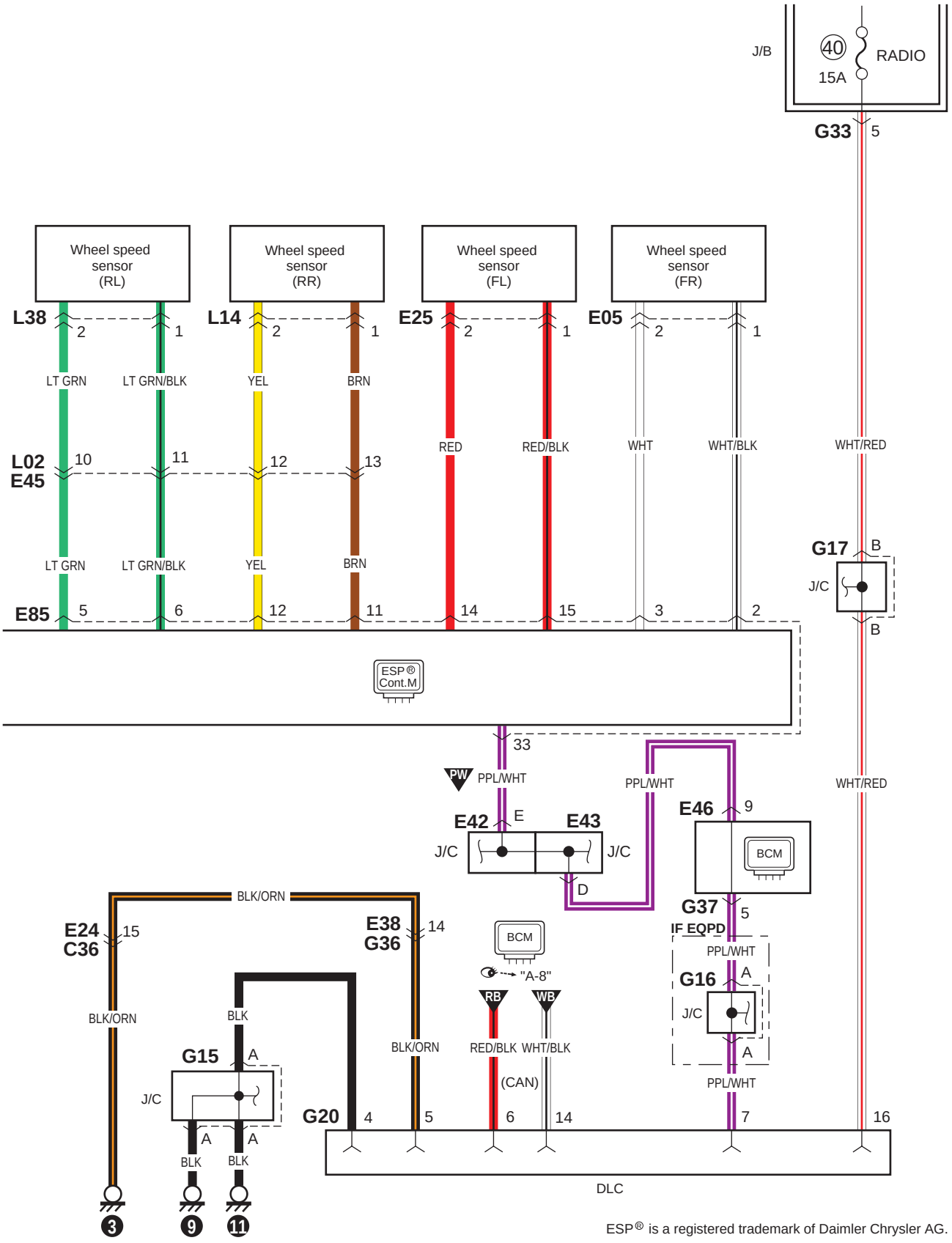
I7RS0B910934-01

F-3 Electronic Stability Program System Circuit Diagram

S7RS0B910E039



I7RS0B910935-01



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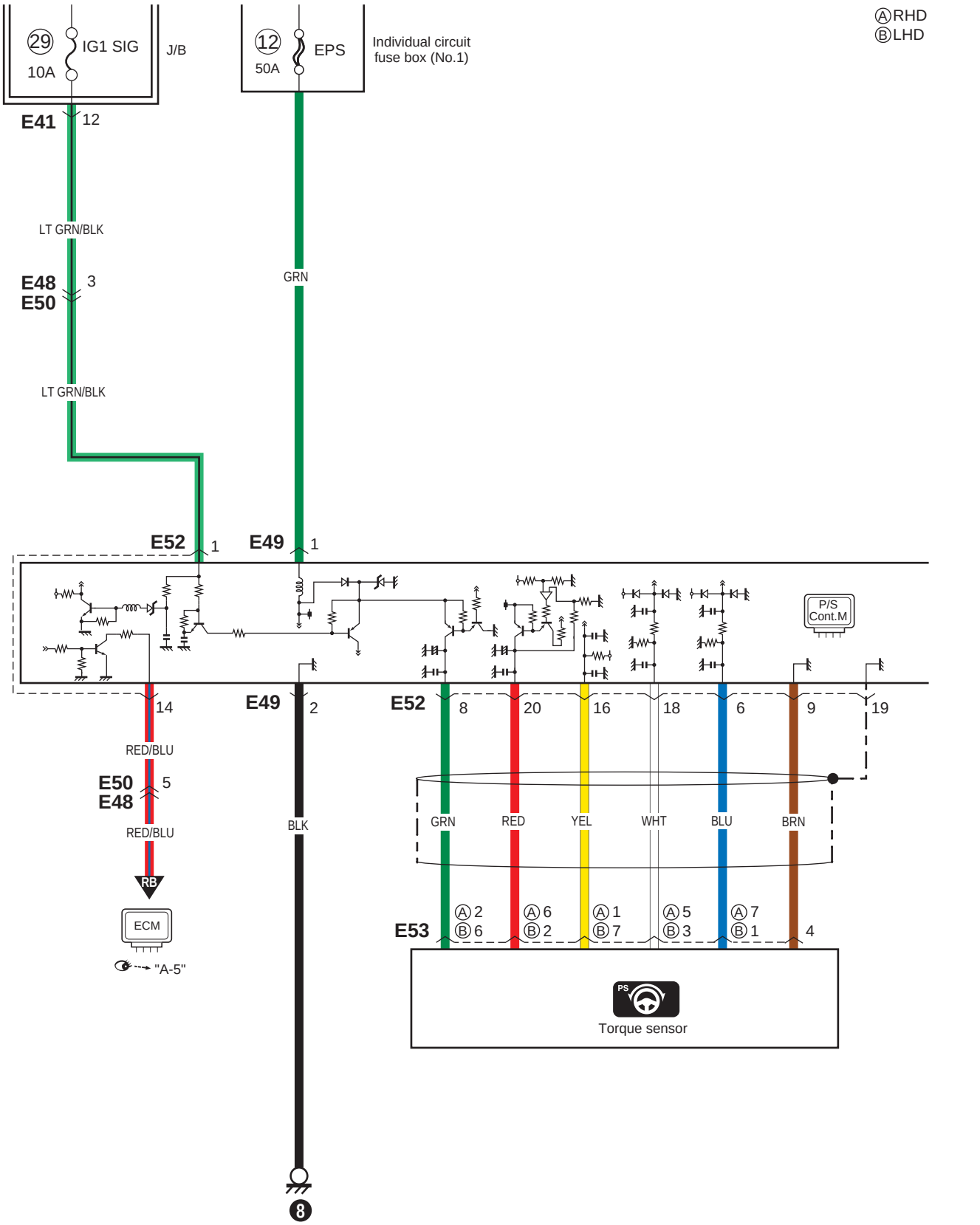
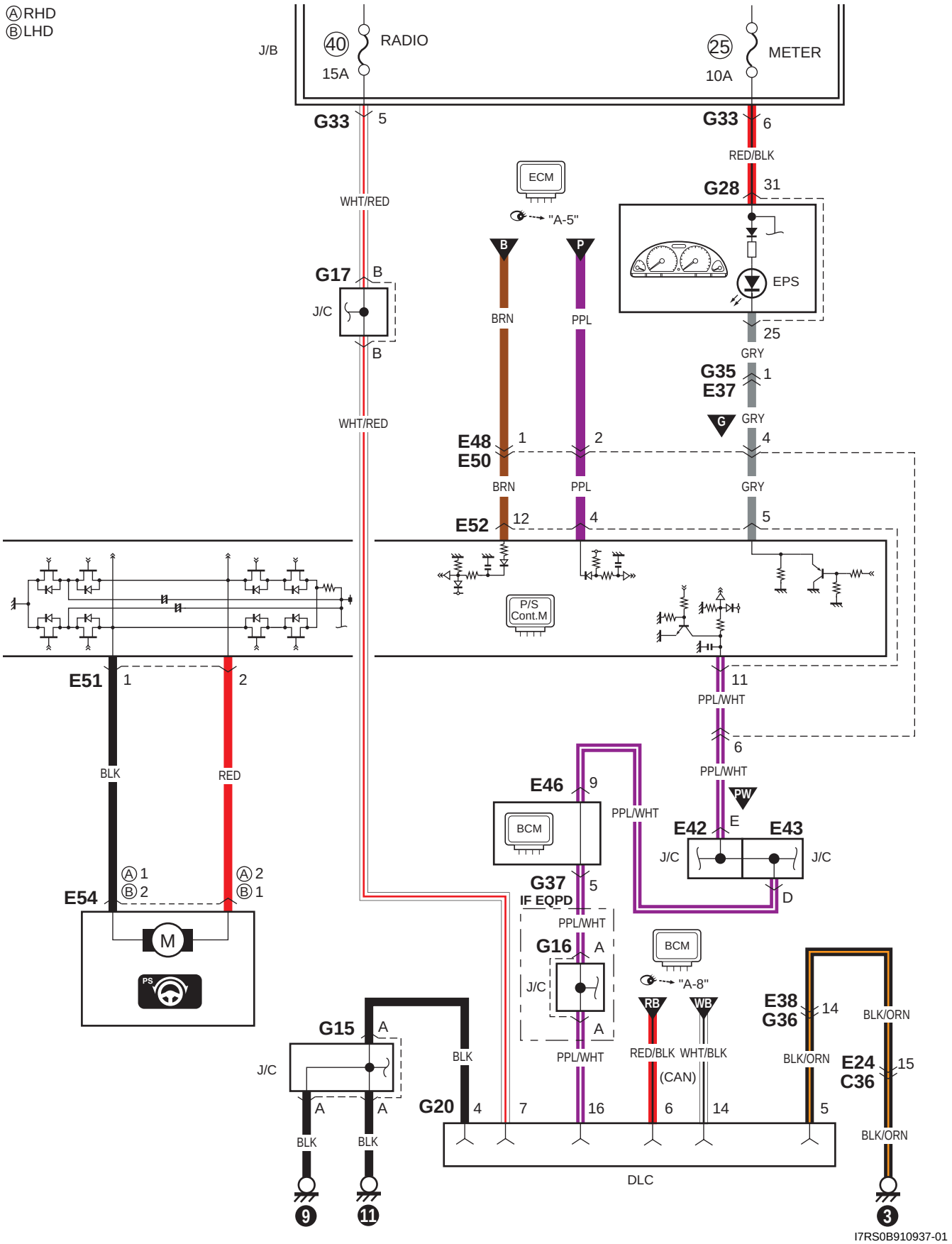
I7RS0B910936-01

F-4 Power Steering System Circuit Diagram

S7RS0B910E036

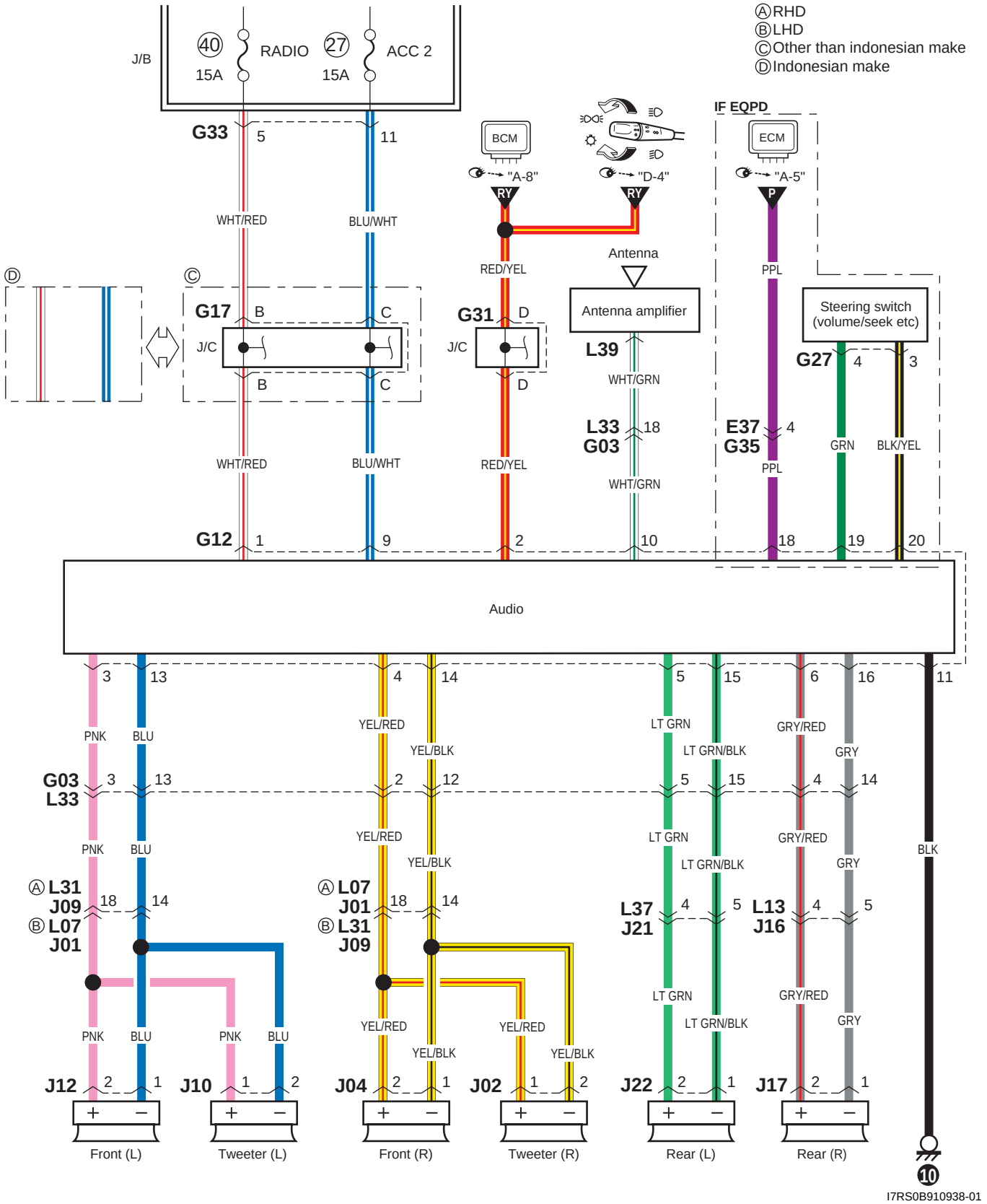


I5RS0C910957-02


ⒶRHD
ⒷLHD
J/B
40
RADIO
15A
25
METER
10A
G33
5
G33
6
RED/BLK
WHT/RED
ECM
"A-5"
G28
31
EPS
G17
B
J/C
B
B
P
BRN
PPL
25
GRY
G35
E37
1
G
GRY
WHT/RED
E48
E50
1
2
4
BRN
PPL
GRY
E52
12
4
5
P/S
Cont.M
E51
1
2
11
PPL/WHT
BLK
RED
6
PPL/WHT
E46
9
PW
E
E42
E43
BCM
PPL/WHT
J/C
J/C
D
Ⓐ1
Ⓑ2
Ⓐ2
Ⓑ1
E54
G37
5
IF EQPD
PPL/WHT
G16
A
BCM
M
PS
J/C
"A-8"
A
PPL/WHT
RB
WB
RED/BLK
WHT/BLK
(CAN)
E38
G36
14
BLK/ORN
BLK/ORN
G15
A
J/C
BLK
G20
4
7
16
6
14
5
E24
C36
15
A
A
A
BLK
BLK
BLK/ORN
DLC
9
11
3
I7RS0B910937-01

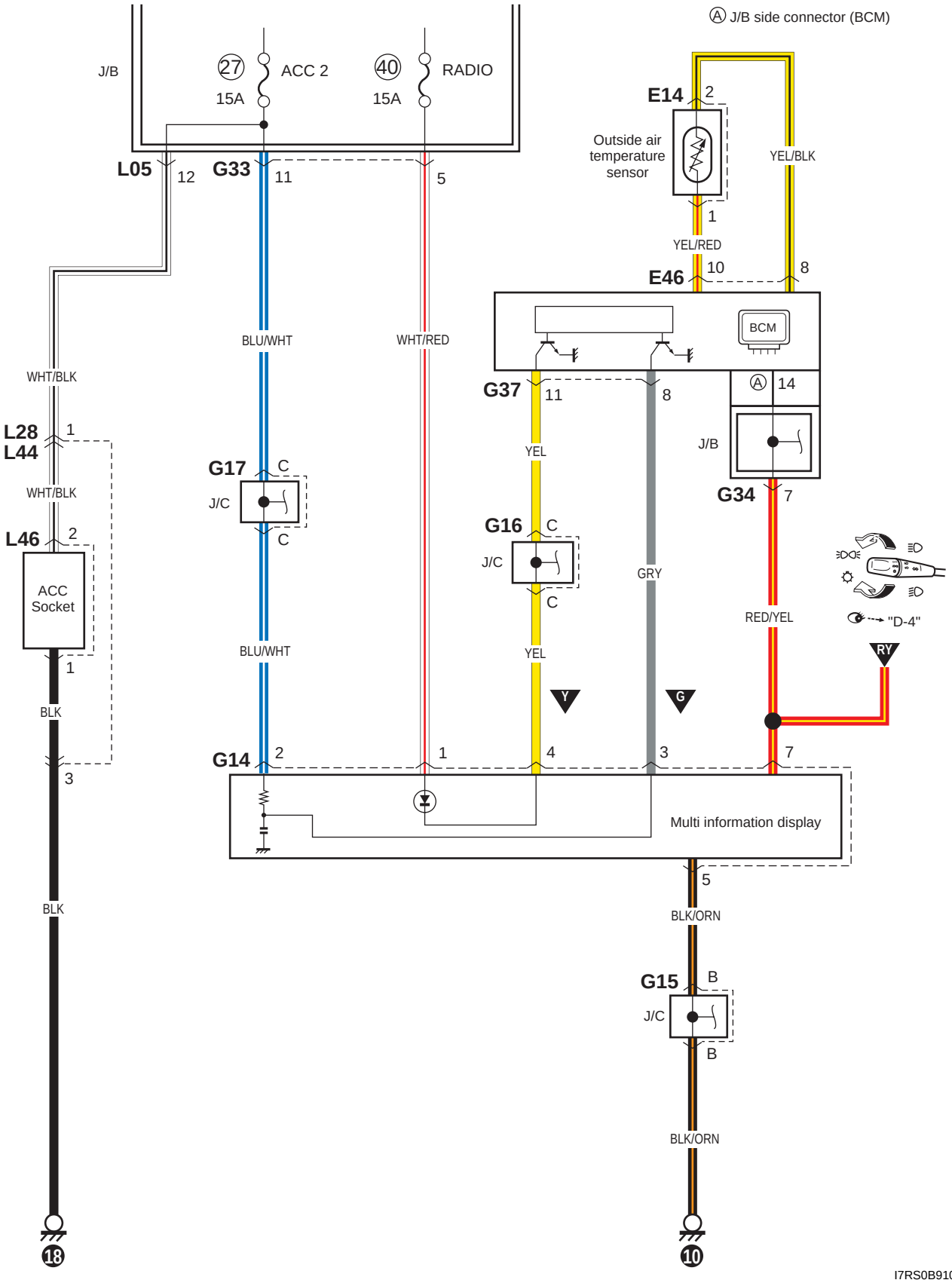
G-1 Audio System Circuit Diagram

S7RS0B910E037



G-2 Multi Information Display / Accessory Socket System Circuit Diagram

S7RS0B910E038



I7RS0B910948-01

List of Connector

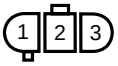
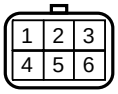
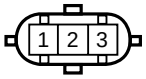
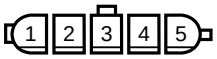
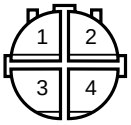
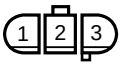
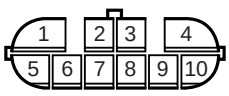
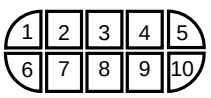
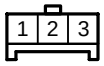
List of Connectors

S7RS0B910F001

Refer to “C Connector”.
Refer to “D Connector (M16A engine)”.
Refer to “E Connector”.
Refer to “G Connector”.
Refer to “J Connector”.
Refer to “K Connector”.
Refer to “L Connector”.
Refer to “M Connector (SPORT model)”.
Refer to “O Connector”.
Refer to “R Connector”.

C Connector

S7RS0B910F002

C01  MCONF030085-01 M13A engine, M15A engine	C02  MCONF030055-01	C03  MCONF030055-01	C04  MCONF020266-01	C05  MCONF020266-01	C06  MCONF020266-01
C07  MCONF020266-01	C08  MCONF030123-01 M15A engine, M13A engine RHD	C08  MCONF030103-02 M13A engine LHD	C09  MCONF020156-01	C10  MCONF060018-01	C11  MCONF030062-01
C12  MCONF030084-01	C13  MCONF050025-01	C14  MCONF020156-01	C15  MCONF040008-01	C16  MCONF040024-01	C17  MCONF010076-01
C18 (TO D02)  MCONF020310-01 M16A engine	C18  MCONF010027-01 M13A engine, M15A engine	C19  MCONM020042-01	C20  MCONF030103-02	C21  MCONF040127-01	C22  MCONF010057-03
C23  MCONF010021-01	C24  MCONF010077-03	C25  MCONF030103-02	C26  MCONF010054-01	C27  MCONF020150-01 A/T	
C28  MCONF100053-01 A/T		C29  MCONF100048-01 A/T	C30  MCONF020156-01 M/T	C31  MCONF010078-01	C32  MCONF030040-01 RHD

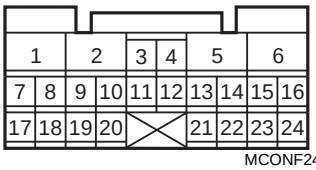
C33

MCONF010074-01

C33

MCONF010082-01

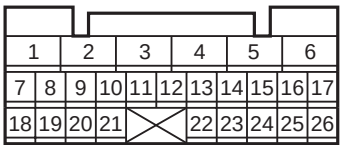
C34



MCONF240020-01

A/T

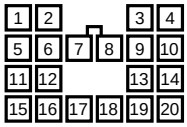
C35



MCONF260020-01

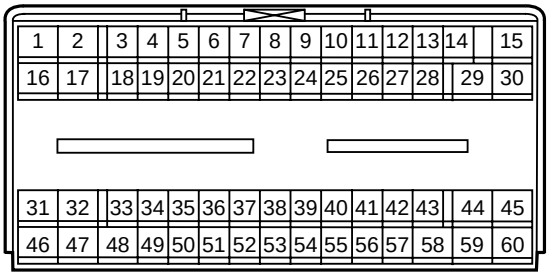
A/T

C36 (TO E24)



MCONF200011-01

C37



MCONF600002-01

C38

MCONN000002-01

C39

MCONN000002-01

C40

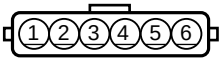
MCONN000002-01

C41

MCONN000002-01

M13A engine,
M15A engine

C42



MCONF060068-01

M16A engine

D Connector (M16A engine)

S7RS0B910F003

D01

MCONF010027-01

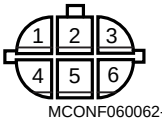
D02

MCONM020053-01

E Connector

S7RS0B910F004

E01



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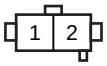
E02

MCONF020195-01

RHD

E02



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LHD

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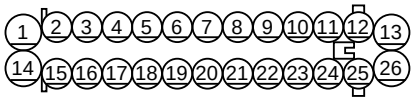

MCONF260011-01

E04

MCONF030062-01

E05

MCONM020043-01

E06

MCONF020156-01

E07

MCONF020013-01

E08

MCONF030101-01

E09

MCONF020197-01

E10

MCONF020008-01

E11

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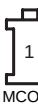
E13

MCONF020199-01

E14

MCONF020200-01

E15



MCONF010079-01

E17

MCONF040077-01

E18

MCONF020198-01

IF EQPD

E19

MCONF020156-01

E20

MCONF020197-01

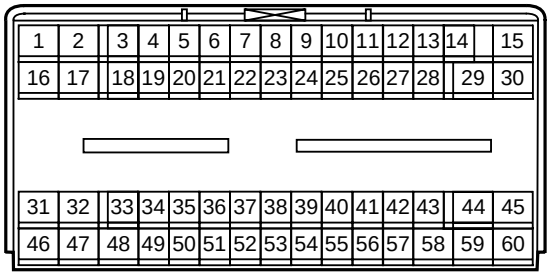
E21

MCONF030101-01

E22

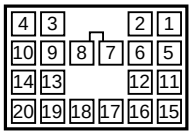
MCONF020013-01

E23



MCONF600003-01

E24 (TO C36)



MCONM200005-01

E25

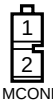
MCONM020043-01

E26

MCONF020114-01

RHD

E26



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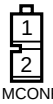
LHD

E27

MCONF020201-01

RHD

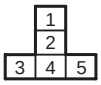
E27



MCONF020169-01

LHD

E28



MCONF050015-01

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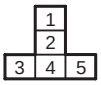

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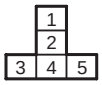

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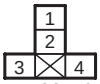
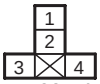
E31



MCONF040004-01

E32



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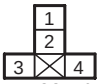

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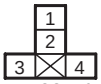

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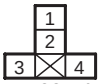

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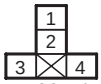
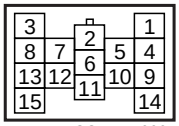


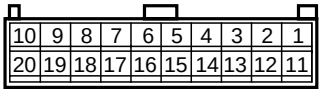
MCONF040004-01

E37 (TO G35)



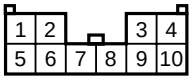
MCONM150001-01

E38 (TO G36)



MCONM200008-01

E39



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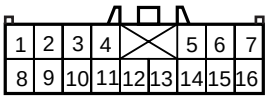
E40

MCONF020202-01

E41



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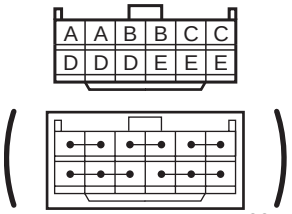

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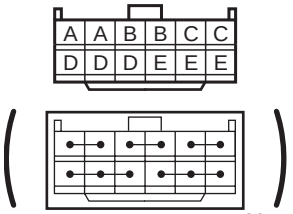
E43

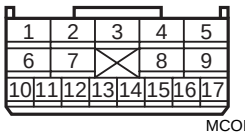


MCONF120059-01

E44 (TO L03)

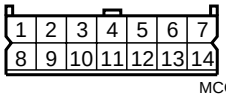
MCONF040095-01

E45 (TO L02)



MCONF170009-01

E46

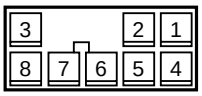


MCONF140012-01

E47

MCONF040009-01

E48 (TO E50)

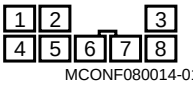


MCONM080012-01

E49

MCONF020203-01

E50 (TO E48)



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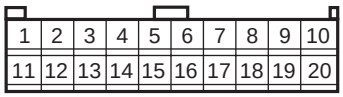
E51

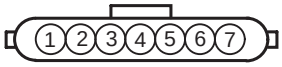
MCONF020204-01

E52



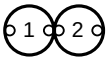
MCONF200021-01

E53



MCONF070015-01

E54



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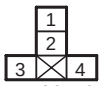
E55

MCONN000002-01

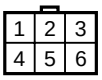
E56



MCONF040004-01

M16A engine

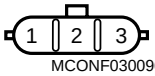
E57



MCONF060003-01

RHD

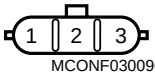
E58



MCONF030096-01

LHD

E59



MCONF030096-01

LHD

E61

MCONF060068-01

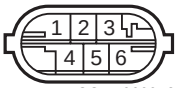
M16A engine

E74

MCONF040045-01

IF EQPD

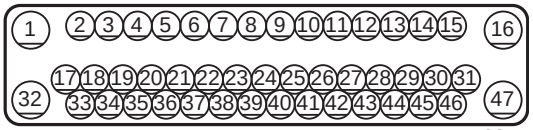
E84



MCONF060072-01

IF EQPD

E85



MCONF470001-01

IF EQPD

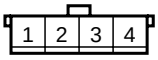
G Connector

S7RS0B910F005

G01

MCONF070004-01

G02



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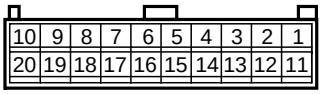
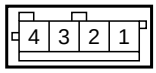
G03 (TO L33)



MCONM200008-01

G04 (TO L32)



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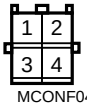
G05

MCONF020206-01

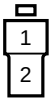
G06



MCONF040097-01

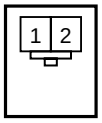
Manual A/C

G09



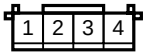
MCONF020112-01

G10



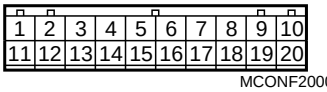
MCONF020207-01

G11



MCONF040098-01

G12

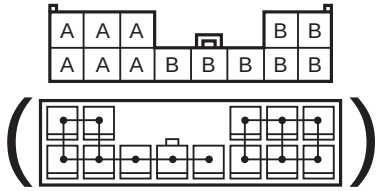


MCONF200014-01

G14

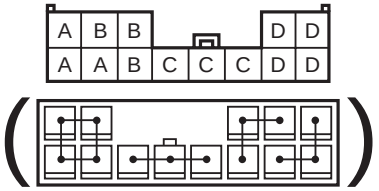
MCONF070004-01

G15



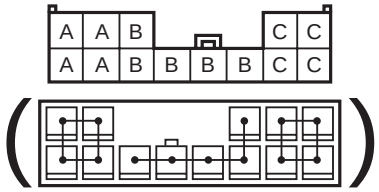
MCONF130021-01

G16



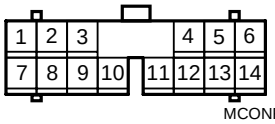
MCONF130023-01

G17



MCONF130019-01

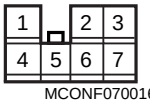
G18



MCONF140018-01

Manual A/C

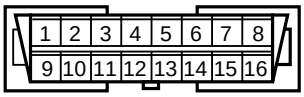
G19



MCONF070016-01

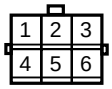
Manual A/C

G20



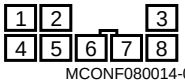
MCONF160023-01

G21



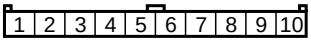
MCONF060063-01

G22



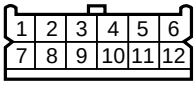
MCONF080014-01

G23



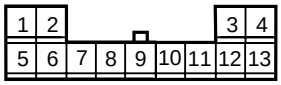
MCONF100038-01

G24



MCONF120026-01

G25

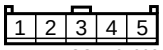


MCONF130010-01

G26

MCONF020111-01

G27

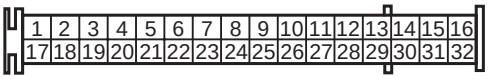


MCONF050021-01

G27

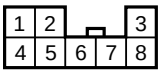
MCONF010121-01

G28



MCONF320005-01

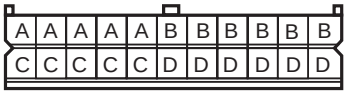
G29

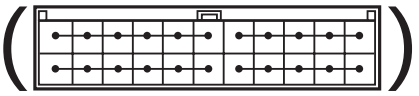


MCONF080002-01

IF EQPD

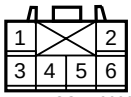
G31





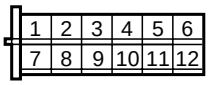
MCONF220018-01

G32



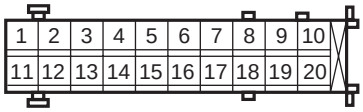
MCONF060064-01

G33



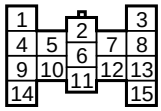
MCONF120028-01

G34



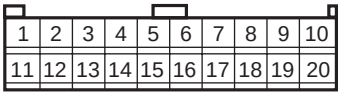
MCONF200020-01

G35 (TO E37)



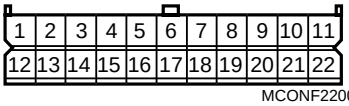
MCONF150002-01

G36 (TO E38)



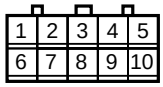
MCONF200021-01

G37



MCONF220009-01

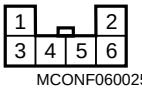
G39



MCONF100060-01

IF EQPD

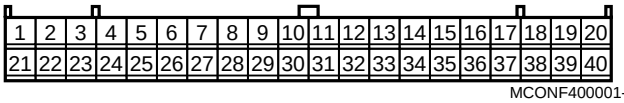
G40



MCONF060025-01

IF EQPD

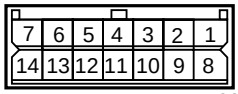
G42



MCONF400001-01

IF EQPD

G43 (TO L51)



MCONM140005-02

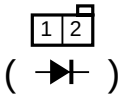
IF EQPD

G46

MCONF040009-01

Auto A/C

G47



MCONF020105-01

Auto A/C

G48

MCONF070002-01

Auto A/C

G49

MCONF070004-01

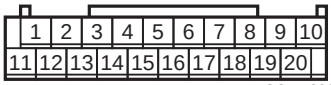
Auto A/C

G50

MCONF020268-01

Auto A/C

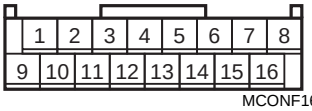
G51



MCONF200023-01

Auto A/C

G52



MCONF160009-01

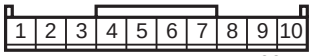
Auto A/C

G53

MCONF020148-01

Auto A/C

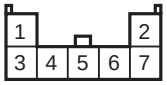
G54

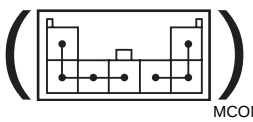


MCONF100064-01

IF EQPD

G59



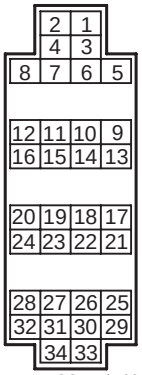
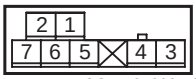
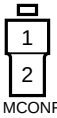
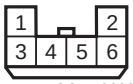
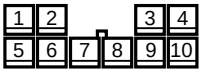
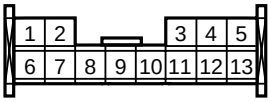
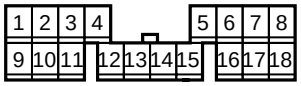
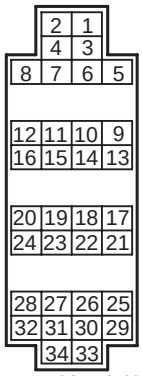
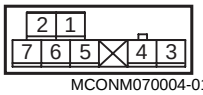
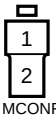
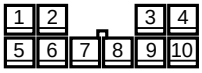
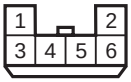
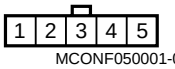
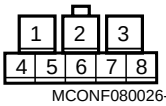
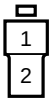
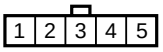
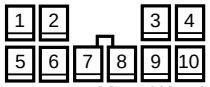
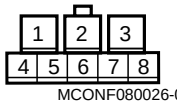
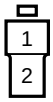
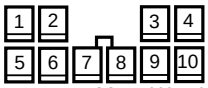


MCONF070021-01

M16A

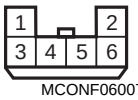
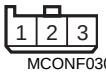
J Connector

S7RS0B910F006

J01 (TO L06)  MCONM340002-01	J02  MCONF020159-01	J03  MCONM070004-01	J04  MCONF020112-01	J05  MCONF060078-01	J06  MCONF100054-01
J07  MCONF130011-01	J08  MCONF180011-01	J09 (TO L31)  MCONM340002-01	J10  MCONF020159-01		
J11  MCONM070004-01	J12  MCONF020112-01	J13  MCONF100054-01	J14  MCONF060078-01	J15  MCONF050001-01	J16 (TO L13)  MCONF080026-01
J17  MCONF020112-01	J18  MCONF020208-01	J19  MCONF050001-01	J20  MCONF100055-01	J21 (TO L37)  MCONF080026-01	J22  MCONF020112-01
J23  MCONF020208-01	J24  MCONF050001-01	J25  MCONF100055-01	J26  MCONM020018-01 IF EQPD	J27  MCONM020016-01 IF EQPD	J28  MCONM020018-01 IF EQPD
J28  MCONM020016-01 IF EQPD					

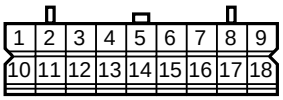
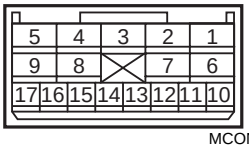
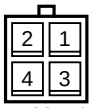
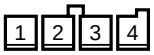
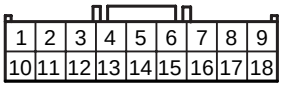
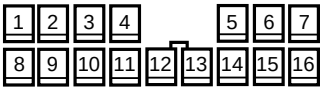
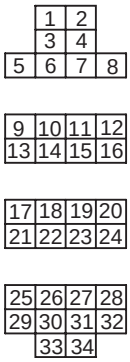
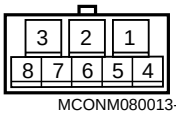
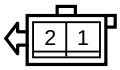
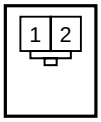
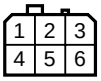
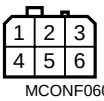
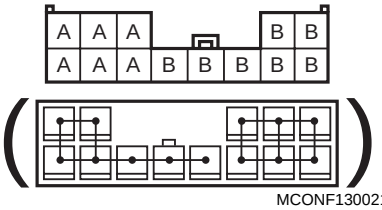
K Connector

S7RS0B910F007

K01	K02
 MCONF060078-01	 MCONF030134-01

L Connector

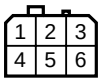
S7RS0B910F008

L01	L02 (TO E45)	L03 (TO E44)	L04
 MCONF180012-01	 MCONM170002-01	 MCONM040022-01	 MCONF040033-01
L05	**L06**	**L07 (TO J01)**	
 MCONF180013-01	 MCONF160014-01	 MCONF340005-01	
L10	**L11**	**L12**	**L13 (TO J16)**
 MCONF020209-01	 MCONF020210-01 IF EQPD	 MCONF010060-01	 MCONM080013-01
L14	**L15 (TO R01)**		
 MCONM020044-01	 MCONM040023-01		
L16	**L17**	**L18**	**L19**
 MCONF010060-01	 MCONM020045-01	 MCONF020207-01 IF EQPD	 MCONF020211-01
L20	**L21 (TO L22)**		
 MCONF060044-01	 MCONF020060-01		
L22 (TO L21)	**L23**	**L24**	**L25**
 MCONM020043-01	 MCONF060044-01 A/T	 MCONF130021-01	 MCONF020212-01 IF EQPD
L26			
 MCONF020084-01			

L27

MCONF010021-01

L28 (TO L44)



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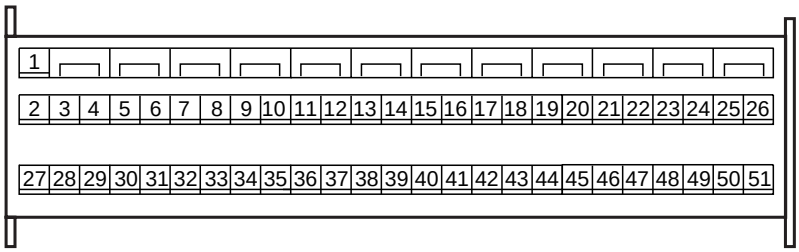
L29



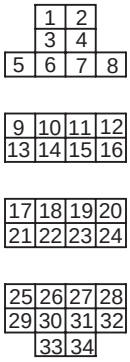
MCONF510002-01

L30

MCONF020212-01

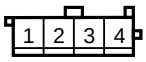
IF EQPD

L31 (TO J09)



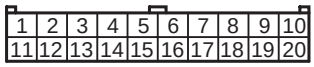
MCONF340005-01

L32 (TO G04)



MCONF040099-01

L33 (TO G03)



MCONF200003-01

L34

MCONF010060-01

L35

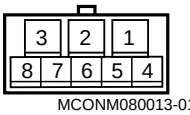
MCONF020210-01

IF EQPD

L36

MCONF020209-01

L37 (TO J21)



MCONM080013-01

L38

MCONM020044-01

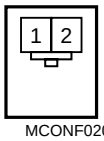
L39

MCONM010004-01

L40

MCONF010060-01

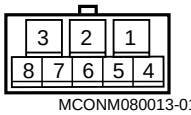
L41



MCONF020207-01

IF EQPD

L42 (TO O01)

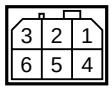


MCONM080013-01

L43

MCONF060044-01

L44 (TO L28)



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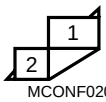
L46



MCONF020116-01

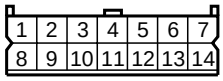
L47

MCONF020013-01

L48

MCONF020013-01

L51 (TO G43)



MCONF140012-01

L53

MCONF020084-01

LHD

L59

MCONF020266-01

L60

MCONF020060-01

LHD

L61

MCONF040143-01

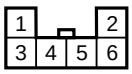
LHD

L62

MCONF040143-01

LHD

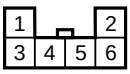
L63



MCONF060025-01

LHD

L64



MCONF060025-01

LHD

L65

MCONF020228-01

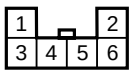
IF EQPD

L66

MCONF020228-01

IF EQPD

L69



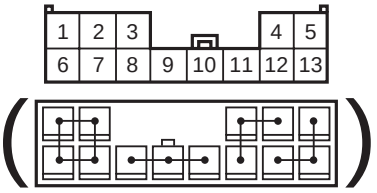
MCONF060025-01

IF EQPD

L70 (TO M01)

MCONM040027-01

L74



MCONF130026-01

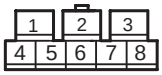
M Connector (SPORT model)

S7RS0B910F009

M01 (TO L70)	M02	M03	M04	M05
 MCONF040123-01	 MCONF020013-01	 MCONF020013-01	 MCONF020277-01	 MCONF020277-01

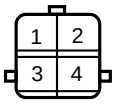
O Connector

S7RS0B910F010

O01 (TO L42)	O02	O03	O04	O05	O06
 MCONF080027-01	 MCONM010034-01	 MCONF040012-01	 MCONF040143-01	 MCONF040095-01	 MCONM010034-01

R Connector

S7RS0B910F011

R01 (TO L15)	R02
 MCONF040100-01	 MCONF040101-01

Lighting Systems

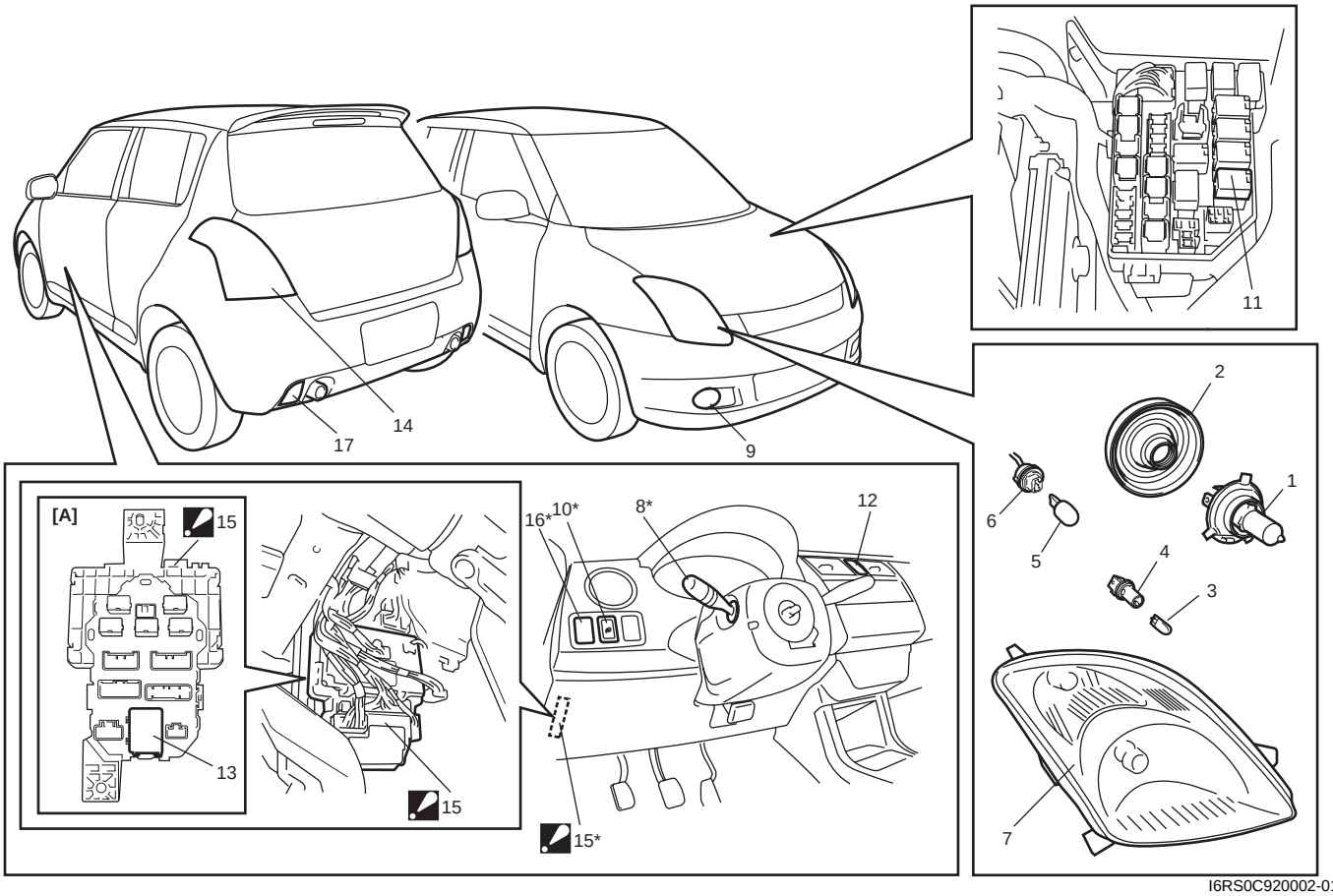
Component Location

Lighting System Components Location

S7RS0B9203001

NOTE

Below figure shows left-hand steering vehicle. For right-hand steering vehicle, parts with (*) are installed at the opposite side.

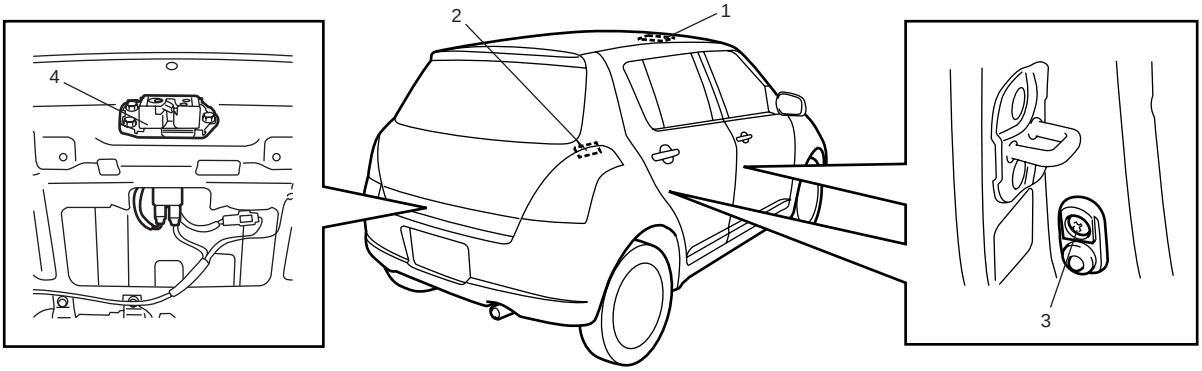


I6RS0C920002-01

1. Headlight bulb	7. Headlight unit	13. Turn signal / hazard warning relay
2. Socket cover	8. Lighting switch	14. Rear combination light
3. Clearance light bulb	9. Front fog light (if equipped)	15. BCM (included in junction block assembly) : BCM cannot be removed from junction block.
4. Clearance light bulb socket	10. Front fog light switch (if equipped)	16. Headlight leveling switch (if equipped)
5. Turn signal light bulb	11. Front fog light relay (if equipped)	17. Back-up light
6. Turn signal light bulb socket	12. Hazard warning switch	[A]: Junction block assembly viewed from relay side

Interior Light System Location

S7RS0B9203002



I4RS0A920002-01

1. Dome light	3. Door switches (both sides)
2. Luggage compartment light (if equipped)	4. Rear end door switch (included in rear end door lock)

Diagnostic Information and Procedures

Headlight Symptom Diagnosis

S7RS0B9204001

Condition	Possible cause	Correction / Reference Item
Headlights do not light up	Bulbs blown	*Replace bulbs.*
	Lighting or dimmer switch faulty	*Check headlight switch referring to "Headlight Switch (in Lighting Switch) Inspection".*
	Headlight R and L fuses blown	*Replace fuse and check for short circuit.*
	Wiring or grounding faulty	*Repair circuit.*
Only one headlight does not light up	Bulb blown	*Replace bulb.*
	Headlight R or L fuse blown	*Replace fuse and check for short circuit.*
	Wiring or grounding faulty	*Repair circuit.*
Only one beam ("Hi" or "Lo") does not light	Bulb blown	*Replace bulb.*
	Lighting or dimmer switch faulty	*Check headlight switch referring to "Headlight Switch (in Lighting Switch) Inspection".*
	Wiring or grounding faulty	*Repair circuit.*

Headlight Leveling System Symptom Diagnosis (If Equipped)

S7RS0B9204002

Condition	Possible cause	Correction / Reference Item
Optical axes of both headlights do not change	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Headlight leveling switch faulty	*Check headlight leveling switch referring to "Headlight Leveling Switch Inspection (If Equipped)".*
	Supply voltage too low	*Check charging system referring to "Generator Test (Undercharged Battery Check) in Section 1J".*
	Wiring or grounding faulty	*Repair circuit.*
Optical axis of only one headlight does not change	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Headlight leveling actuator faulty	*Check actuator referring to "Headlight Leveling Actuator Inspection (If Equipped)".*
	Headlight housing deformed	*Replace headlight housing.*
	Wiring or grounding faulty	*Repair circuit.*

Turn Signal and Hazard Warning Light Symptom Diagnosis

S7RS0B9204003

Condition	Possible cause	Correction / Reference Item
Flash rate high or one side only flashes	Bulb blown on “flash rate high”-side	*Replace bulb.*
	Incorrect bulb	*Replace bulb.*
	Turn signal / hazard warning relay faulty	*Check turn signal / hazard warning relay referring to “Turn Signal and Hazard Warning Relay Inspection”.*
	Open circuit or high resistance existing either; between turn signal switch and non lighting bulb, or between hazard warning switch and non lighting bulb	*Repair circuit.*
	Wiring or grounding faulty	*Repair circuit.*
No flashing ***NOTE*** • ***Use of SUZUKI scan tool makes it easy to check whether a faulty condition is on the input side or output side of BCM. For checking procedure, refer to “Diagnosis Using Output Test Function of SUZUKI Scan Tool” under “Scan Tool Data in Section 10B”.*** • ***Check each part in the order from the top of the following list.***	Circuit fuse(s) blown	*Replace fuse(s) and check for short circuit.*
	Turn signal / hazard warning relay faulty	*Check turn signal / hazard warning relay referring to “Turn Signal and Hazard Warning Relay Inspection”.*
	Turn signal light switch faulty	*Check turn signal light switch referring to “Turn Signal Light Switch (in Lighting Switch) Inspection”.*
	Hazard warning switch faulty	*Check hazard warning switch referring to “Hazard Warning Switch Inspection”.*
	Open circuit or high resistance existing between battery and switch	*Repair circuit.*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Flash rate low	Supply voltage low	*Check charging system.*
	Turn signal / hazard warning relay faulty	*Check turn signal / hazard warning relay referring to “Turn Signal and Hazard Warning Relay Inspection”.*

Clearance, Tail and License Plate Light Symptom Diagnosis

S7RS0B9204004

Condition	Possible cause	Correction / Reference Item
All lights do not light up	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Lighting and dimmer switch of combination switch faulty	*Check lighting and dimmer switch referring to “Headlight Switch (in Lighting Switch) Inspection”.*
	Wiring or grounding faulty	*Repair circuit.*
Some lights do not light up	Bulb(s) blown	*Replace bulb(s).*
	Wiring or grounding faulty	*Repair circuit.*

Back-Up Light Symptom Diagnosis

S7RS0B9204005

Condition	Possible cause	Correction / Reference Item
Back-up lights do not light up	Bulb(s) blown	*Replace bulb(s).*
	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Back-up light switch (M/T model) or transmission range sensor (A/T model) faulty	*Check back-up light switch or transmission range sensor referring to "Back Up Light Switch Inspection in Section 5B" or "Transmission Range Sensor (Shift Switch) Inspection and Adjustment in Section 5A".*
	Wiring or grounding faulty	*Repair circuit.*
Back-up lights stay on	Back-up light switch (M/T model) or transmission range sensor (A/T model) faulty	*Check back-up light switch or transmission range sensor referring to "Back Up Light Switch Inspection in Section 5B" or "Transmission Range Sensor (Shift Switch) Inspection and Adjustment in Section 5A".*

Brake Light Symptom Diagnosis

S7RS0B9204006

Condition	Possible cause	Correction / Reference Item
Brake light do not light up	Bulb(s) blown	*Replace bulb(s).*
	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Brake light switch faulty	*Check brake light switch referring to "Brake Light Switch Inspection".*
	Wiring or grounding faulty	*Repair circuit.*
Brake light stay on	Brake light switch faulty	*Check or adjust brake light switch referring to "Brake Light Switch Inspection" or "Stop Light Switch Adjustment in Section 4A".*

Front Fog Light Symptom Diagnosis (If Equipped)

S7RS0B9204007

Condition	Possible cause	Correction / Reference Item
Only one light does not light	Bulb blown	*Replace bulb.*
	Wiring or grounding faulty	*Repair circuit.*
Front fog lights do not light	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Bulb blown	*Replace bulb.*
	Front fog light switch faulty	*Check front fog light switch referring to "Front Fog Light Switch Inspection (If Equipped)".*
	Front fog light relay faulty	*Check front fog light relay referring to "Front Fog Light Relay Inspection (If Equipped)".*
	Wiring or grounding faulty	*Repair circuit.*

Interior Light Symptom Diagnosis

S7RS0B9204008

NOTE

- **Use of SUZUKI scan tool makes it easy to check whether a faulty condition is on the input side or output side of BCM. For checking procedure, refer to "Diagnosis Using Output Test Function of SUZUKI Scan Tool" under "Scan Tool Data in Section 10B".**
- **Check each part in the order from the top of the following list.**

Condition	Possible cause	Correction / Reference Item
Dome light does not light up	Bulb blown	*Replace bulb.*
	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Dome light switch faulty	*Check dome light switch.*
	Door switch faulty	*Check door switch referring to "Door Switch (Front / Rear Door) Inspection in Section 9C".*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Luggage compartment light does not light up (if equipped)	Bulb blown	*Replace bulb.*
	Rear end door switch faulty	*Check switch referring to "Rear End Door Switch Inspection in Section 9C".*
	Wiring or grounding faulty	*Repair circuit.*

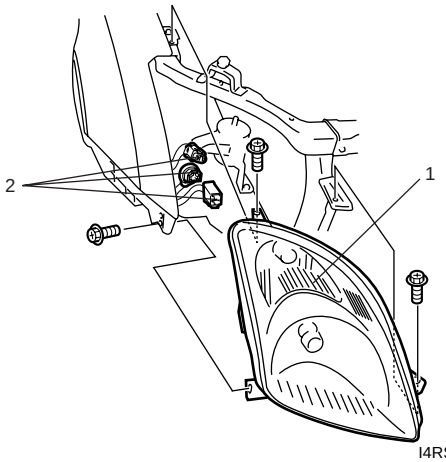
Repair Instructions

Headlight Housing Removal and Installation

S7RS0B9206001

Removal

1) Disconnect negative (–) cable at battery.
2) Remove front bumper. Refer to "Front Bumper and Rear Bumper Components in Section 9K".
3) Remove headlight mounting bolts.
4) Detach headlight housing (1) from vehicle.
5) Disconnect couplers (2) from headlight housing (1).

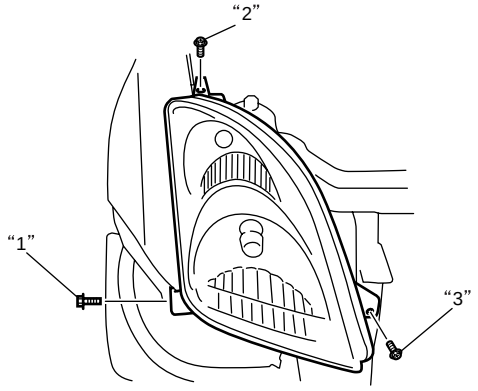


I4RS0A920003-01

Installation

Reverse removal procedure noting the following.

- Install headlight mounting bolts, and then tighten headlight mounting bolts ("1" – "3") according to numerical order as shown in figure.



I4RS0A920004-01

- After installation, be sure to inspect and adjust aiming referring to "Headlight Aiming Adjustment with Screen".

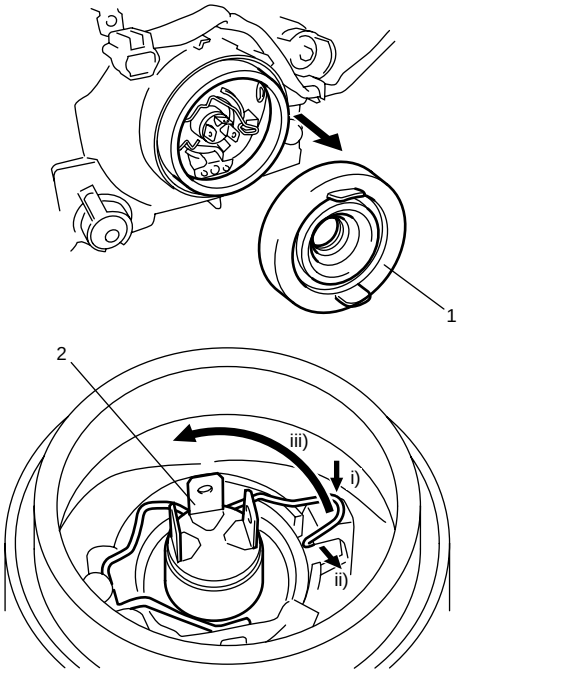
Headlight Bulb Replacement

S7RS0B9206002

⚠ WARNING

- **To avoid danger of being burned, don't touch when the bulb is hot.**
- **Don't touch glass surface of bulb, to avoid deteriorate as the case may be unclear when bulb light on at dirty condition.**

1) Disconnect negative (–) cable at battery.
2) Disconnect coupler from bulb.
3) Remove socket cover (1).
4) Replace bulb (2) and assemble all removed parts.



I4RS0A920005-01

Headlight Aiming Adjustment with Screen

S7RS0B9206003

NOTE

- **Unless otherwise obligated by local regulations, adjust headlight aiming according to the following procedure.**
- **After replacing headlight housing, be sure to adjust aiming.**
- **When inspecting and adjusting headlight with leveling system, make sure to set the leveling switch to "0" position with ignition switch turned ON.**

1) Make sure the following items.
   - Place vehicle on a flat surface in front of blank wall (screen) (1) ahead of headlight surface.

   Distance "a"
   10 m (32.8 ft.)

   - Adjust air pressure of all tires to the specified value respectively.
   - Bounce vehicle body up and down by hand to stabilize suspension.
   - Carry out aiming with a driver aboard.

   Driver's weight
   75 kg (165 lb)

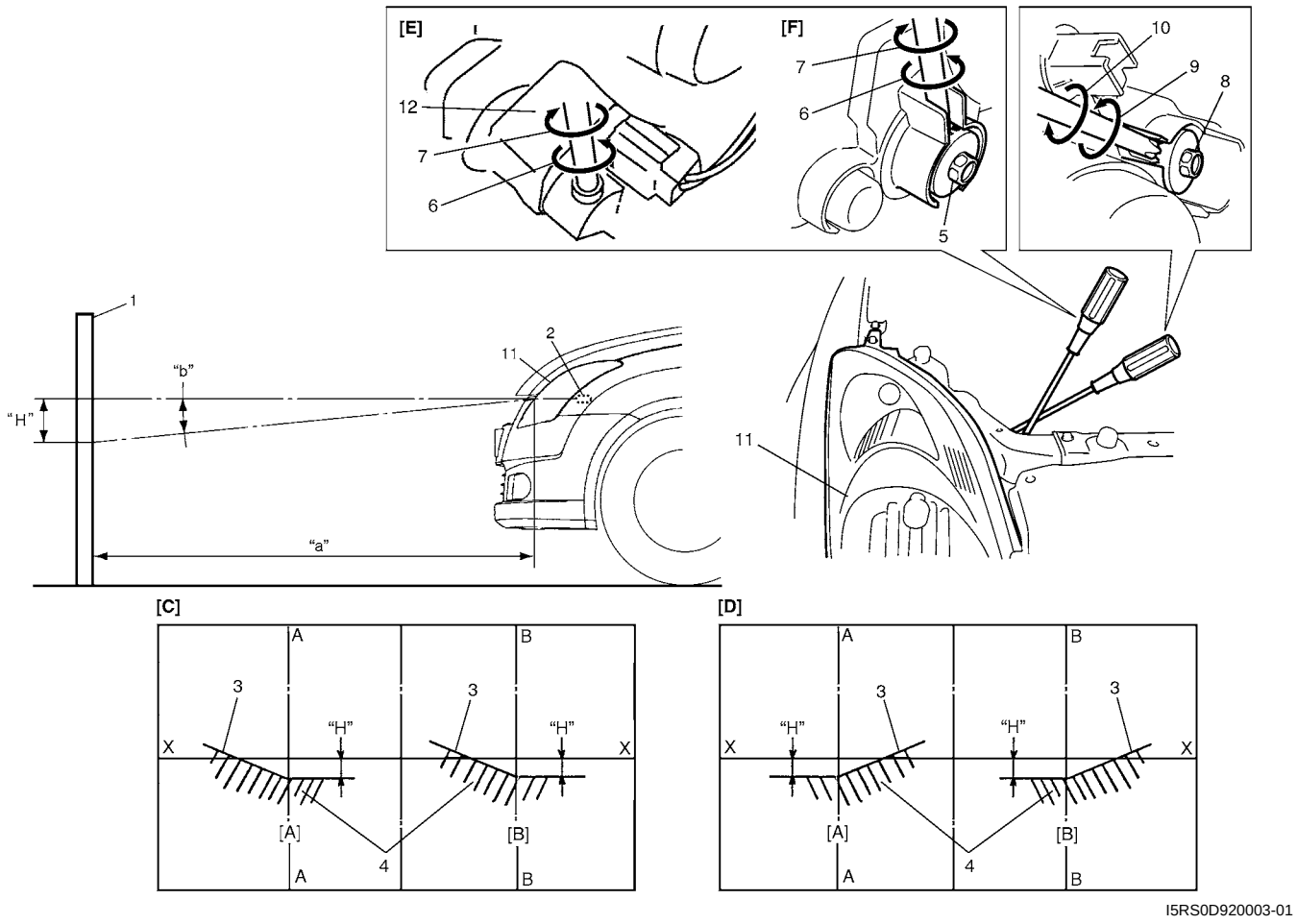
2) Check to see if hot spot (high intensity zone) of each low beam axis falls as shown in figure.

NOTE

If the headlights interfere each other and make it hard to see the cut line clearly, cover the headlight on one side. This helps to make aiming adjustment easier.

Hot spot specification
Angle "b": 0.75° (Specification)
Calculated distance "H": Approx. 130 mm (5.15 in.)

3) Align headlight aiming to specification by adjusting aiming gear if it is not set properly.



I5RS0D920003-01

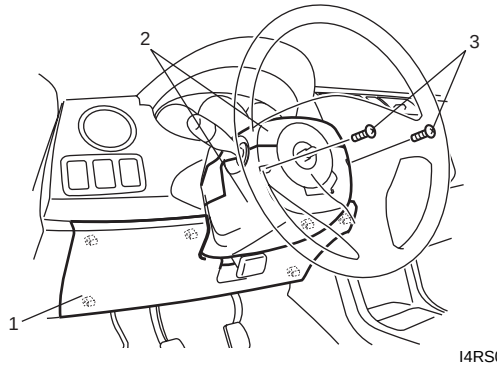
2. Headlight bulb	9. Turning (for right adjustment)	[A]: Left headlight
3. Cut line (bounding line)	10. Turning (for left adjustment)	[B]: Right headlight
4. Hot spot	11. Headlight housing	[C]: RH steering vehicle shown
5. Aiming gear (for up / down adjustment)	12. Headlight leveling actuator	[D]: LH steering vehicle shown
6. Turning (for up adjustment)	X-X: Horizontal center line of headlight bulbs	[E]: With leveling system
7. Turning (for down adjustment)	A-A: Vertical center line of left headlight bulb	[F]: Without leveling system
8. Aiming gear (for right / left adjustment)	B-B: Vertical center line of right headlight bulb	

Headlight Switch (in Lighting Switch) Removal and Installation

S7RS0B9206004

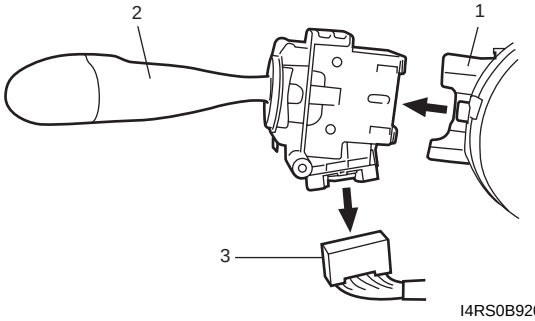
Removal

1) Disconnect negative cable at battery.
2) Remove steering column hole cover (1).
3) Remove steering column covers (2).
   Turn steering wheel to access steering column cover screws (3).



I4RS0B920004-02

4) Remove lighting switch (2) from combination switch assembly (1) and disconnect its coupler (3).



I4RS0B920005-01

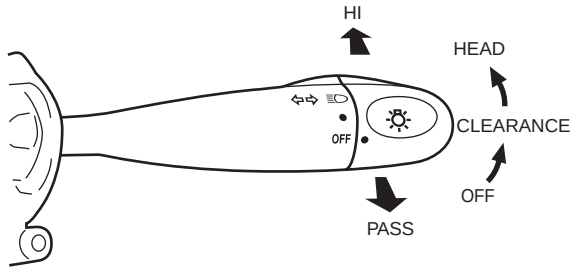
Installation

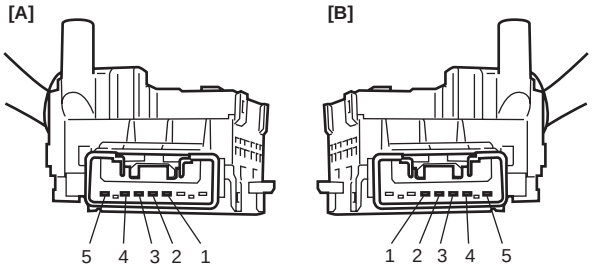
Reverse removal procedure for installation.

Headlight Switch (in Lighting Switch) Inspection

S7RS0B9206005

Check for continuity between terminals at each switch position. If check result is not as specified, replace switch.





Shaft condition \ Terminal		5	3	1	2	4
OFF	LOW					
	PASS				○	○
	HI					
CLEARANCE	LOW	○	○			
	PASS	○	○		○	○
	HI	○	○			
HEAD	LOW	○	○	○		○
	PASS	○	○		○	○
	HI	○	○		○	○

I5RS0D920004-02

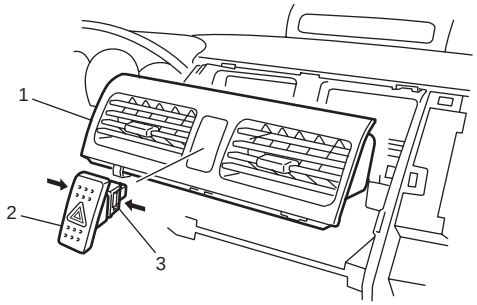
[A]: LH steering vehicle	[B]: RH steering vehicle

Hazard Warning Switch Removal and Installation

S7RS0B9206006

Removal

1) Disconnect negative (–) cable at battery.
2) Remove center ventilation louver (1) referring to “Center Ventilation Louver Removal and Installation in Section 7A”.
3) Disconnect coupler, and then remove hazard warning switch (2) from center ventilation louver (1) while releasing the locks (3).



I4RS0B920007-01

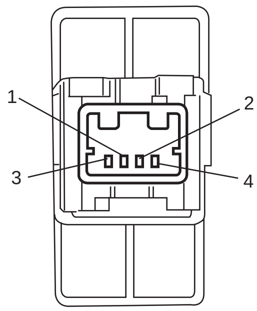
Installation

Reverse removal procedure for installation.

Hazard Warning Switch Inspection

S7RS0B9206007

Check for continuity between terminals at each switch position. If check result is not as specified, replace switch.



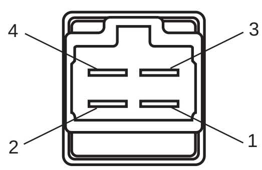
Shaft condition \ Terminal	1	2	3	4
OFF			○—	—○
ON	○—	—○	○—	—○

I4RS0A920011-02

Brake Light Switch Inspection

S7RS0B9206008

Check brake light switch for continuity between terminals at each switch position.
If check result is not as specified, replace switch.



Shaft condition \ Terminal	1	2	3	4
FREE	○—	—○	○—	—○
PUSH				

I4RS0A920012-01

Turn Signal Light Switch (in Lighting Switch) Removal and Installation

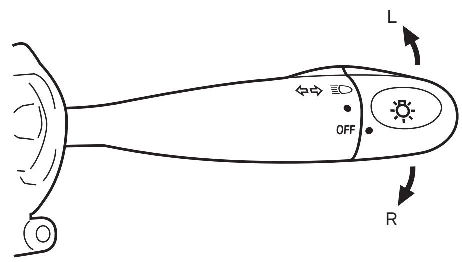
S7RS0B9206009

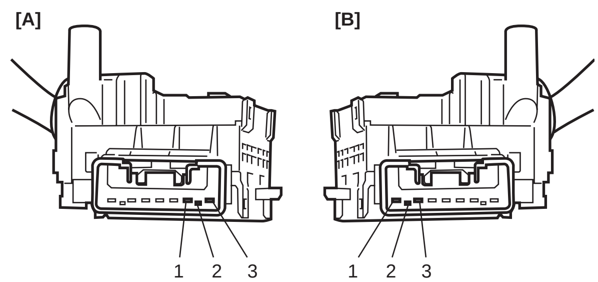
For removal and Installation, refer to “Headlight Switch (in Lighting Switch) Removal and Installation”.

Turn Signal Light Switch (in Lighting Switch) Inspection

S7RS0B9206010

Check for continuity between terminals at each switch position. If check result is not as specified, replace switch.





Turn signal SW \ Terminal	1	2	3
L		○—	—○
N			
R	○—	—○	

I5RS0D920006-01

[A]: LH steering vehicle	[B]: RH steering vehicle

Turn Signal and Hazard Warning Relay Removal and Installation

S7RS0B9206011

Removal

1) Disconnect negative (–) cable at battery.
2) Remove junction block assembly referring to “BCM (Included in Junction Block Assembly) Removal and Installation in Section 10B”.
3) Remove turn signal and hazard warning relay.

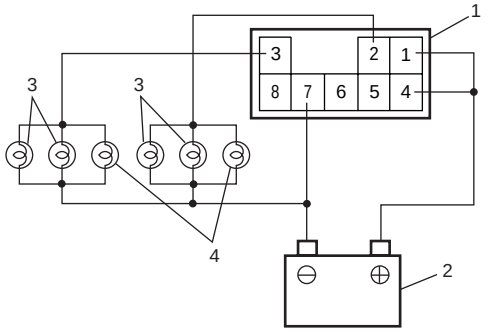
Installation

Reverse removal procedure for installation.

Turn Signal and Hazard Warning Relay Inspection

S7RS0B9206012

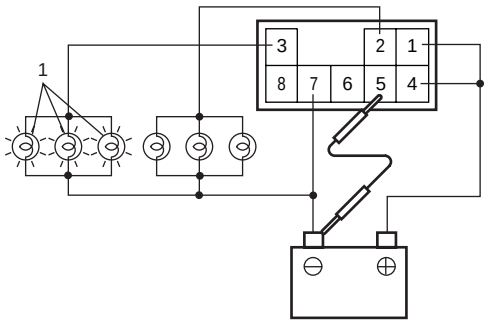
1) Connect turn signal and hazard warning relay (1), battery (2) and six test bulbs ((12V, 21W) (3) and 12 V, 5W (4)) as shown.



I4RS0A920014-01

2) Check turn L circuit
Connect terminal “5” and battery negative (–) terminal by a jumper wire.
Check left side bulbs (1) for flashing cycle.
If check result is not as specified, replace turn signal and hazard warning relay.

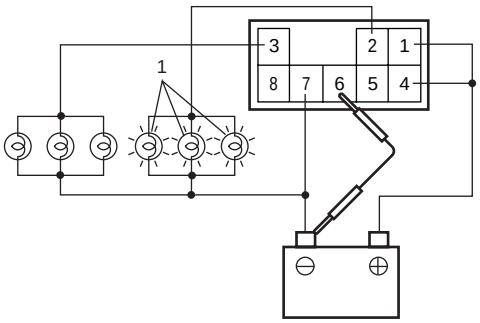
Reference flashing cycle
60 – 120 cycle/minute



I4RS0A920015-01

3) Check turn R circuit
Connect terminal “6” and battery negative (–) terminal by a jumper wire.
Check right side bulbs (1) for flashing cycle.
If check result is not as specified, replace turn signal and hazard warning relay.

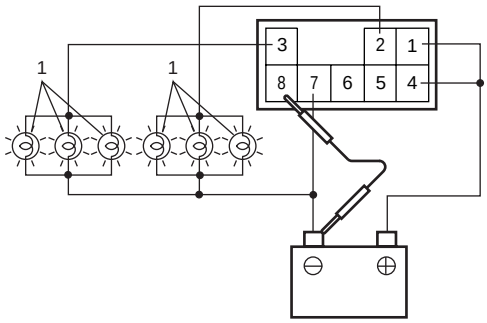
Reference flashing cycle
60 – 120 cycle/minute



I4RS0A920016-01

4) Check Hazard ON circuit
Connect terminal “8” and battery negative (–) terminal by a jumper wire.
Check all bulbs (1) for flashing cycle.
If check result is not as specified, replace turn signal and hazard warning relay.

Reference flashing cycle
60 – 120 cycle/minute



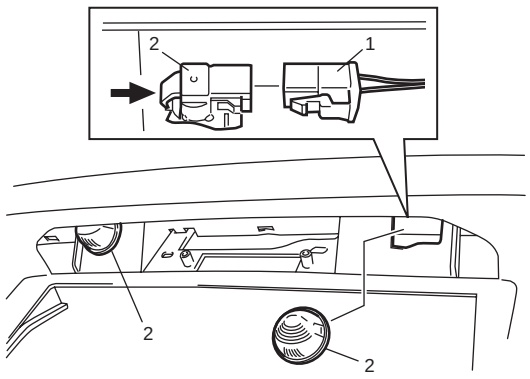
I4RS0A920017-01

License Light Removal and Installation

S7RS0B9206013

Removal

1) Disconnect negative (–) cable at battery.
2) Remove rear bumper. Refer to “Front Bumper and Rear Bumper Components in Section 9K”.
3) Disconnect coupler (1) from license light (2).
4) Push locking part to arrow direction, and then remove license light (2).



I4RS0B920010-01

Installation

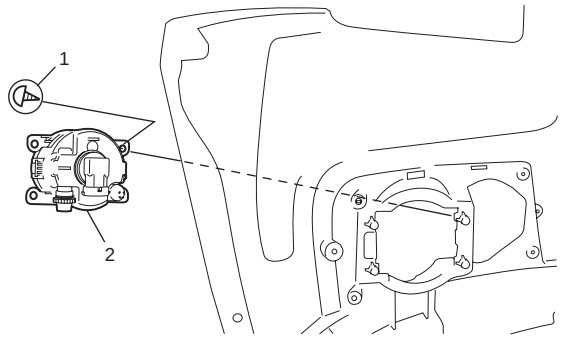
Reverse removal procedure for installation.

Front Fog Light Removal and Installation (If Equipped)

S7RS0B9206014

Removal

1) Disconnect negative (–) cable at battery.
2) Remove front bumper, and then remove front bumper guard from front bumper referring to “Front Bumper and Rear Bumper Components in Section 9K”.
3) Disconnect coupler from fog light.
4) Remove fog light screws (1), and remove front fog light (2).



I6RS0C920003-01

Installation

Reverse removal procedure for installation nothing the following:

- After installing, adjust aiming referring to “Front Fog Light Aiming Adjustment with Screen (If Equipped)”.

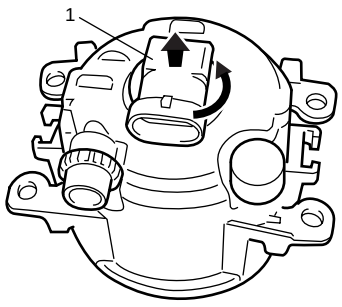
Front Fog Light Bulb Replacement (If Equipped)

S7RS0B9206015

⚠ WARNING

- **To avoid danger of being burned, don’t touch when the bulb is hot.**
- **Don’t touch glass surface of bulb to avoid deteriorate as the case may be unclear when bulb light on at dirty condition.**

1) Remove front bumper referring to “Front Bumper and Rear Bumper Components in Section 9K”.
2) Remove fog light bulb (1) as shown.



I4RS0A920020-01

3) Replace fog light bulb and assemble all removed parts.

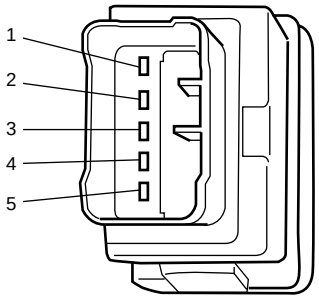
Front Fog Light Switch Inspection (If Equipped)

S7RS0B9206016

NOTE

Front fog lights light up only when headlight switch is in HEADLIGHT position (low or high beams) or SMALL position. Front fog lights turn OFF automatically when headlight switch is turned to OFF position. If front fog light switch holds ON position, front fog lights turn ON automatically when headlight switch is tuned to HEADLIGHT position (low or high beams) or SMALL position again.

Check for continuity between terminals at each switch position. If check result is not as specified, replace switch.



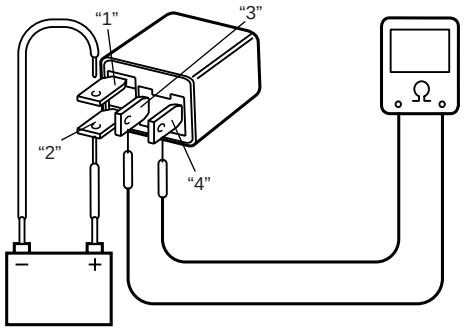
Switch Position \ Terminal	2	3	1	5	4
OFF		○—○	○	○—○	○
ON (PUSH IN)	○	○—○	○	○—○	○

I4RS0A920021-01

Front Fog Light Relay Inspection (If Equipped)

S7RS0B9206017

1) Check that there is no continuity between terminals “3” and “4”. If there is continuity, replace relay.
2) Connect battery positive (+) terminal to terminal “2” of relay.
3) Connect battery negative (–) terminal to terminal “1” of relay.
4) Check continuity between terminals “3” and “4”. If there is no continuity when relay is connected to the battery, replace relay.



I4RS0A920022-01

Front Fog Light Aiming Adjustment with Screen (If Equipped)

S7RS0B9206018

Basic Aiming

NOTE

- **Unless otherwise obligated by local regulations, adjust front fog light aiming according to the following procedure.**
- **An example in case that the light-to-wall distance 10 m is shown in the illustration. The beam descending distance "H" is calculated when "a" is 10 m with the specification angle "b" (1.14°).**

1) Make sure the following items.
   - Place vehicle on a flat surface in front of blank wall (screen) (1) ahead of front fog light surface.

     Distance between screen and front fog light
     "a": 10 m (32.8 ft.)
   - Adjust air pressure of all tires to the specified value respectively.
   - Bounce vehicle body up and down by hand to stabilize suspension.
   - Carry out aiming with a driver aboard.

     Driver's weight
     75 kg (165 lb)

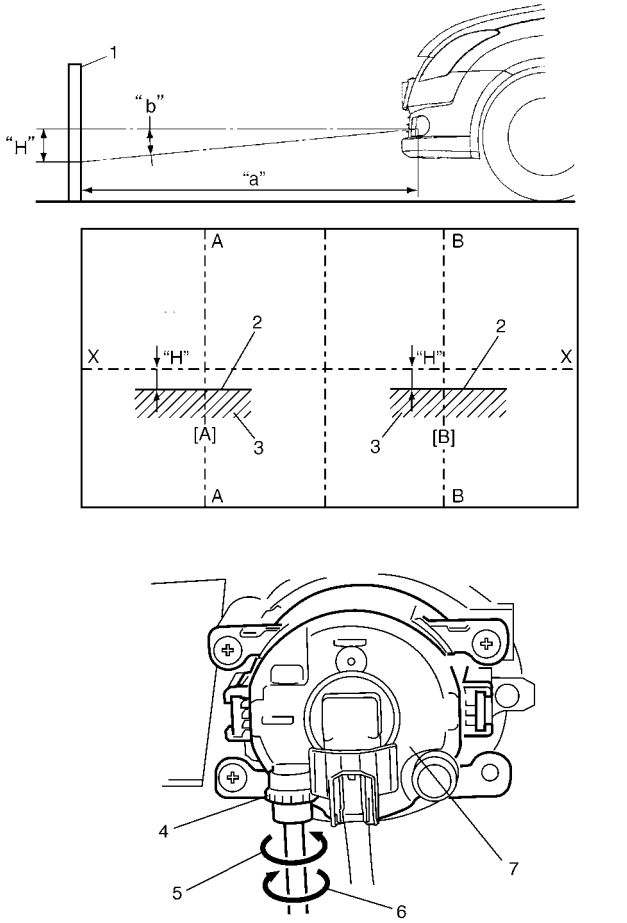
2) Check to see if hot spot (high intensity zone) of each front fog light axis falls as shown in the figure.

NOTE

If the fog lights interfere each other and make it hard to see the cut line clearly, cover the fog light on one side. This helps to make aiming adjustment easier.

Hot spot specification
Angle "b": 1.14° (Specification)
Calculated distance "H": Approx. 199 mm (7.83 in.)

3) If it is not set properly, align front fog light to specification by rotating aiming gear.



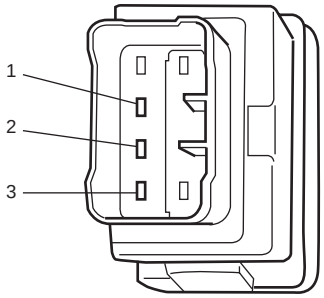
I4RS0B920011-01

2.	Bounding line
3.	Hot spot
4.	Aiming gear (for up / down adjustment)
5.	Turning (for up adjustment)
6.	Turning (for down adjustment)
7.	Front fog light assembly
X-X:	Horizontal center line of front fog light bulb
A-A:	Vertical center line of left front fog light bulb
B-B:	Vertical center line of right front fog light bulb
[A]:	Left front fog light
[B]:	Right front fog light

Headlight Leveling Switch Inspection (If Equipped)

S7RS0B9206019

Check for resistance between terminals at each switch position.If check result is not as specified, replace switch.



Switch Position	Terminal	Resistance (Ω)
-	1 and 2	4370 - 4830
0	1 and 3	646 - 714
	2 and 3	3724 - 4116
1	1 and 3	1292 - 1428
	2 and 3	3078 - 3402
2	1 and 3	1938 - 2142
	2 and 3	2432 - 2688
3	1 and 3	2584 - 2856
	2 and 3	1786 - 1974
4	1 and 3	3230 - 3570
	2 and 3	1140 - 1260

I4RS0B920012-01

Headlight Leveling Actuator Inspection (If Equipped)

S7RS0B9206020

1) Make sure all couplers of headlight and leveling actuator are connected securely.
2) Park vehicle in front of blank wall (screen).
3) Turn ignition switch to ON position.
4) Turn lighting switch to “HEAD” position.
5) Move headlight leveling switch and check that optical axes of headlights reflected on blank wall (screen) change then.Also check that leveling actuator sounds slightly while moving leveling switch. If optical axes do not change, go to “Headlight Leveling System Symptom Diagnosis (If Equipped)”.

Instrumentation / Driver Info. / Horn

Precautions

Precautions in Diagnosing Troubles for Combination Meter

S7RS0B9300001

Combination meter uses signals (information) from each control module by CAN communication to control speedometer, tachometer, engine coolant temp meter, warning light and indicator light (other than air bag warning light, high beam indicator light, EPS warning light and turn signal indicator light). Therefore, check that no DTC is detected in each module before performing combination meter symptom diagnosis. If any DTC is detected, correct trouble indicated by that DTC troubleshooting first.

General Description

CAN Communication System Description

S7RS0B9301001

Refer to “CAN Communication System Description in Section 1A” for Can communication system description. Combination meter communicates control data with each control module as follows.

Combination Meter Transmission Data

			BCM
Combination Meter	**DATA Transmit**	Fuel level signal	○

I7RS0A930001-01

Combination Meter Reception Data

			ECM	TCM (A/T model)	BCM	ABS/ESP® Control Module	Keyless Start Control Module (if equipped)
Combination Meter	DATA Receive	Engine speed signal	○				
		Immobilizer indicator light control signal	○				
		Vehicle speed signal	○				
		Engine coolant temperature signal	○				
		MIL control signal	○				
		Transmission range sensor signal		○			
		Transmission warning light signal		○			
		Diagnostic trouble code (DTC)	○		○		
		Brake fluid level switch signal (brake warning light control signal)			○		
		Driver side seat belt buckle switch signal (seat belt reminder light control signal)			○		
		Charging system warning light signal (charge warning light control signal)			○		
		Engine oil pressure switch signal (oil pressure warning light control signal)			○		
		Parking brake switch signal (brake warning light control signal)			○		
		Illumination ON signal			○		
		Door switch signal (open door warning light control signal)			○		
		ABS indication signal				○	
		EBD indication signal (brake warning light control signal)				○	
		ESP® status signal				○*	
		Key indicator light control signal					○

I7RS0B930001-01

NOTE

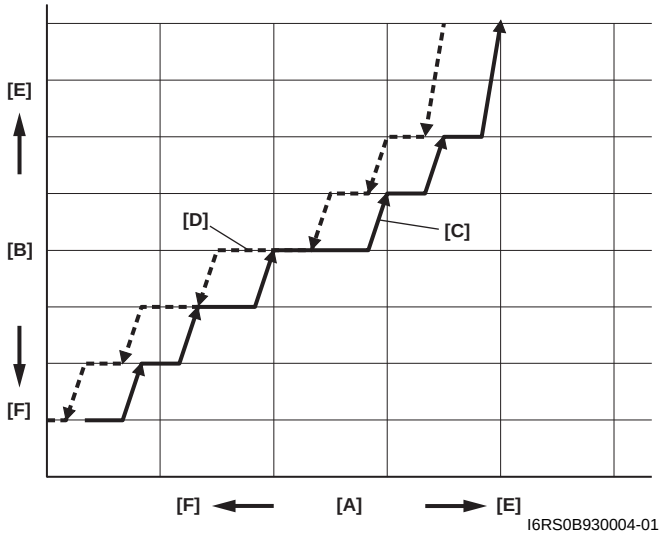
***:ESP® model**

Auto Volume Control System Description (If Equipped)

S7RS0B9301002

Function of auto volume control system is to vary sound volume according to changes of vehicle speed. How much sound volume varies depends on selected level.

Reference correlation chart of vehicle speed and sound volume



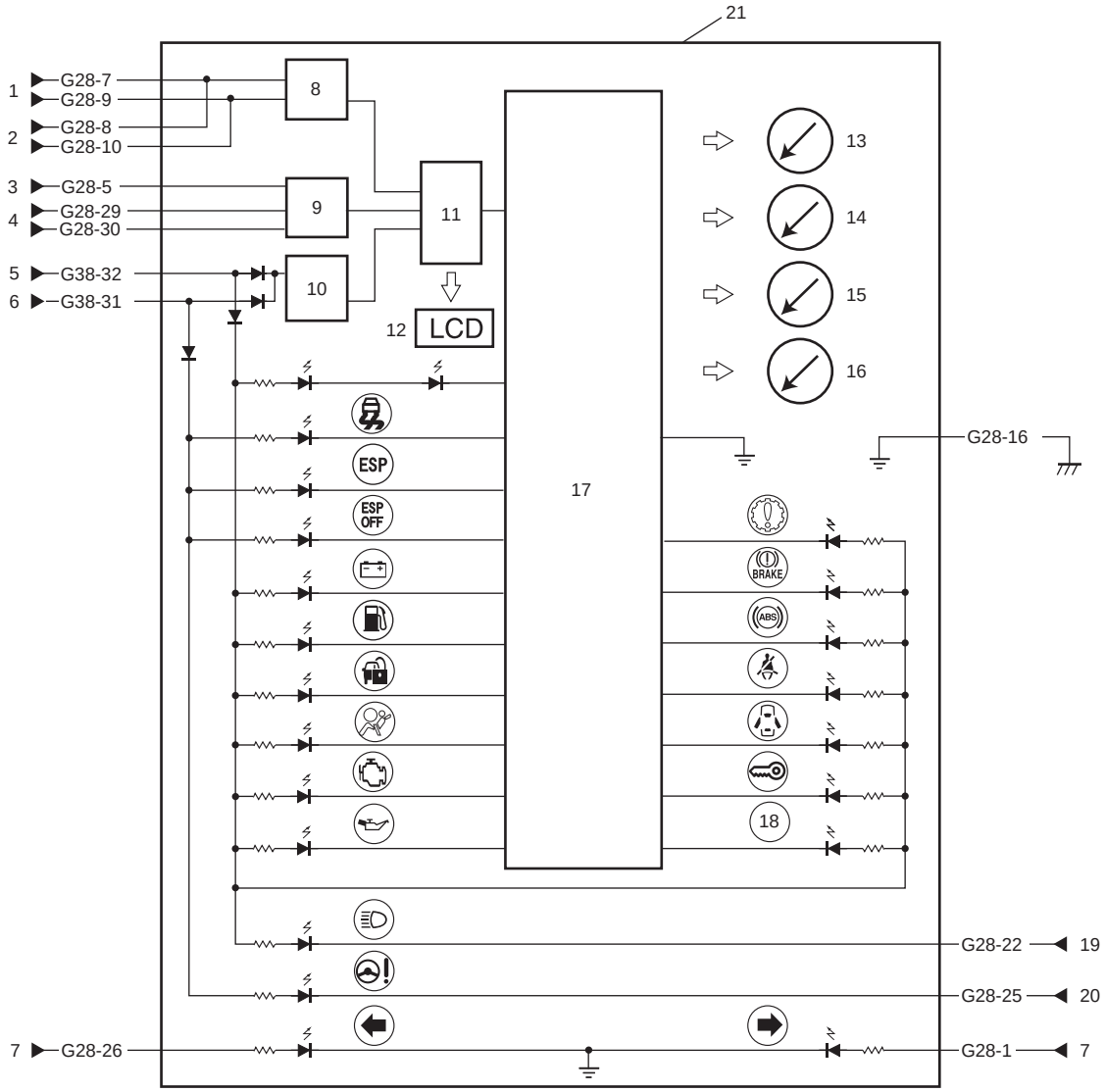
I6RS0B930004-01

[A]: Vehicle speed	[D]: Deceleration
[B]: Sound volume	[E]: Increase
[C]: Acceleration	[F]: Decrease

Schematic and Routing Diagram

Combination Meter Circuit Diagram

S7RS0B9302001



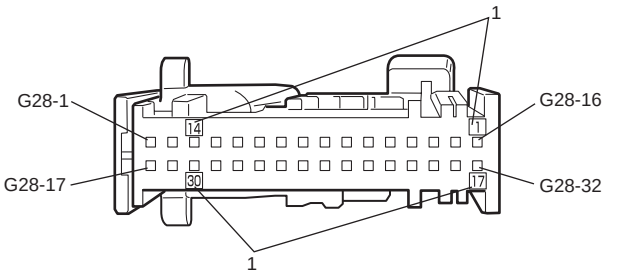
I7RS0B930002-01

1. Keyless start control module	8. CAN driver	15. Fuel meter
2. BCM	9. Interface circuit	16. ECT meter
3. SDM	10. Power supply	17. Stepper motor and LED output driver
4. Fuel level sensor	11. CPU	18. A/T shift position indicator (“P”, “R”, “N”, “D”, “3”, “2”, and “L”)
5. RADIO fuse	12. ODO-TRIP	19. Combination switch (high beam)
6. METER fuse	13. Tachometer	20. P/S control module
7. Combination switch	14. Speedometer	21. Combination meter

Terminal arrangement of coupler viewed from terminal side

NOTE

Molded numbers (1) have no relation to the terminal numbers.



I4RS0A930003-02

Terminal	Circuit	Terminal	Circuit
G28-1	To turn signal and hazard warning relay (turn R)	G28-17	—
G28-2	—	G28-18	—
G28-3	—	G28-19	—
G28-4	—	G28-20	—
G28-5	To SDM (air bag warning light control signal)	G28-21	—
G28-6	—	G28-22	To lighting switch (high beam)
G28-7	CAN communication line (Active High signal)	G28-23	—
G28-8	CAN communication line (Active High signal)	G28-24	—
G28-9	CAN communication line (Active Low signal)	G28-25	To P/S control module (EPS warning light control signal)
G28-10	CAN communication line (Active Low signal)	G28-26	To turn signal and hazard warning relay (turn L)
G28-11	—	G28-27	—
G28-12	—	G28-28	—
G28-13	—	G28-29	Fuel level sensor ground
G28-14	—	G28-30	To fuel level sensor
G28-15	—	G28-31	To METER fuse
G28-16	GND	G28-32	To RADIO fuse

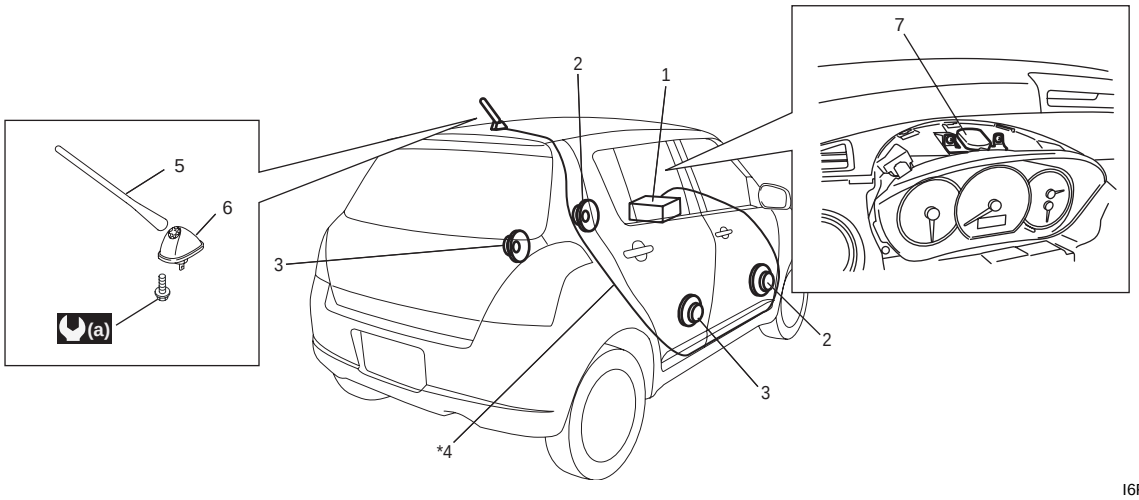
Component Location

Audio System Component Location

S7RS0B9303001

NOTE

Below figure shows left-hand steering vehicle. For right-hand steering vehicle, parts with (*) are installed at the opposite side.



I6RS0C930003-01

1. Radio assembly	3. Rear speaker	5. Antenna	7. GPS antenna (if equipped)
2. Front speaker	4. Antenna feeder	6. Antenna base	(a) : 5 N·m (0.5 kgf-m, 4.0 lb-ft)

Diagnostic Information and Procedures

Speedometer and VSS Symptom Diagnosis

S7RS0B9304001

Condition	Possible cause	Correction / Reference Item
Speedometer shows no operation or incorrect operation	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Front wheel speed sensor or sensor ring faulty (M/T model)	*Check front wheel speed sensor or sensor ring referring to "Front / Rear Wheel Speed Sensor On-Vehicle Inspection in Section 4E" or "Front Wheel Encoder On-Vehicle Inspection in Section 4E".*
	Output shaft speed sensor / VSS faulty (A/T model)	*Check output shaft speed sensor / VSS referring to "Output Shaft Speed Sensor Inspection in Section 5A".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	ECM faulty	*Replace after making sure that none of above parts is faulty.*

Tachometer Symptom Diagnosis

S7RS0B9304002

Condition	Possible cause	Correction / Reference Item
Tachometer shows no operation or incorrect operation	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	ECM faulty	*Replace after making sure that none of above parts is faulty.*

Engine Coolant Temperature (ECT) Meter Symptom Diagnosis

S7RS0B9304003

Condition	Possible cause	Correction / Reference Item
Engine coolant temperature (ECT) meter shows no operation or incorrect operation	Circuit fuse blown	*Replace fuse and check for short circuit.*
	ECT sensor faulty	*Check ECT sensor referring to "ECT Sensor Inspection in Section 1C".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	ECM faulty	*Replace after making sure that none of above parts is faulty.*

Fuel Meter Symptom Diagnosis

S7RS0B9304004

Condition	Possible cause	Correction / Reference Item
Fuel meter shows no operation or incorrect operation	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Fuel level sensor faulty	*Check fuel level sensor referring to "Fuel Level Sensor Inspection".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*

Low Fuel Warning Light Symptom Diagnosis

S7RS0B9304005

NOTE

Confirm that fuel meter is in good condition before referring to the following possible causes.

- **When fuel level sensor circuit is open or short, fuel meter indicates empty even if fuel tank does not empty.**
- **The low fuel warning light comes ON when fuel level is lower than specification below.**

Low fuel warning light operation:

Low fuel warning light operation:	Fuel amount:	Resistance of fuel level sensor:
ON	**Approx. 6.5 liter**	**Approx. 251 Ω**

Condition	Possible cause	Correction / Reference Item
Low fuel warning light does not come ON when fuel level is lower than specification	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Fuel level sensor faulty	*Check fuel level sensor referring to "Fuel Level Sensor Inspection".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
Low fuel warning light comes ON steady	Low fuel	*Refill fuel.*
	Fuel level sensor faulty	*Check fuel level sensor referring to "Fuel Level Sensor Inspection".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*

Oil Pressure Warning Light Symptom Diagnosis

S7RS0B9304006

Condition	Possible cause	Correction / Reference Item
Oil pressure warning light does not light up when ignition switch is turned to ON position at engine off	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Oil pressure switch faulty	*Check oil pressure switch referring to "Oil Pressure Switch Inspection".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Oil pressure warning light stays ON	Oil pressure switch faulty	*Check oil pressure switch referring to "Oil Pressure Switch Inspection".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

Brake and Parking Brake Warning Light Symptom Diagnosis

S7RS0B9304007

Condition	Possible cause	Correction / Reference Item
Brake warning light does not light up when brake fluid level is low or parking brake is pulled up or for 5 seconds after turning ON ignition switch	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Brake fluid level switch faulty	*Check brake fluid level switch referring to "Brake Fluid Level Switch Inspection".*
	Parking brake switch faulty	*Check parking brake switch referring to "Parking Brake Switch Inspection".*
	ABS system faulty	*Refer to "ABS Check in Section 4E".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Brake warning light stays ON	Brake fluid level switch faulty	*Check brake fluid level switch referring to "Brake Fluid Level Switch Inspection".*
	Parking brake switch faulty	*Check parking brake switch referring to "Parking Brake Switch Inspection".*
	EBD system faulty	*Refer to "EBD Warning Light (Brake Warning Light) Check in Section 4E".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

Seat Belt Reminder Light Symptom Diagnosis (If Equipped)

S7RS0B9304008

Condition	Possible cause	Correction / Reference Item
Seat belt reminder light does not light up	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Seat belt switch faulty	*Check seat belt switch referring to "Front Seat Belt Inspection in Section 8A".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Seat belt reminder light stays ON	Seat belt switch faulty	*Check seat belt switch referring to "Front Seat Belt Inspection in Section 8A".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

A/T Shift Position Indicator Symptom Diagnosis (A/T Model)

S7RS0B9304009

Condition	Possible cause	Correction / Reference Item
All A/T shift position indicator does not light up	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Transmission range sensor (shift switch) faulty	*Check transmission range sensor referring to "Transmission Range Sensor (Shift Switch) Inspection and Adjustment in Section 5A".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	TCM faulty	*Replace after making sure that none of above parts is faulty.*

Charge Warning Light Symptom Diagnosis

S7RS0B9304010

Condition	Possible cause	Correction / Reference Item
Charge warning light does not come ON	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Charge warning light stay ON	Charging system faulty	*Check charging system.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

Main Beam (High Beam) Indicator Symptom Diagnosis

S7RS0B9304011

Condition	Possible cause	Correction / Reference Item
Main beam (high beam) indicator does not come ON	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Combination switch faulty	*Check combination switch referring to "Headlight Switch (in Lighting Switch) Inspection in Section 9B".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*
Main beam (high beam) indicator stay ON	Combination switch faulty	*Check combination switch referring to "Headlight Switch (in Lighting Switch) Inspection in Section 9B".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Combination meter faulty	*Replace combination meter.*

Warning Buzzer Circuit Symptom Diagnosis

S7RS0B9304012

NOTE

- **Use of SUZUKI scan tool makes it easy to check whether a faulty condition is on the input side or output side of BCM. For checking procedure, refer to "Diagnosis Using Output Test Function of SUZUKI Scan Tool" under "Scan Tool Data in Section 10B".**
- **Check each part in the order from the top of the following list.**

Condition	Possible cause	Correction / Reference Item
Warning buzzer shows no sounding	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Driver side door switch faulty	*Check driver side door switch referring to "Door Switch (Front / Rear Door) Inspection".*
	Lighting switch faulty	*Check lighting switch referring to "Headlight Switch (in Lighting Switch) Inspection in Section 9B".*
	Key reminder switch faulty	*Check key reminder switch referring to "Ignition Switch Inspection".*
	Seat belt switch faulty (if equipped)	*Check seat belt switch referring to "Front Seat Belt Inspection in Section 8A".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

Cigarette Lighter Symptom Diagnosis (If Equipped)

S7RS0B9304013

Condition	Possible cause	Correction / Reference Item
Cigarette lighter shows no operation	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Cigarette lighter faulty	*Check cigarette lighter.*
	Ignition switch faulty	*Check ignition switch referring to "Ignition Switch Inspection".*
	Wiring and/or grounding faulty	*Repair as necessary.*

Horn Symptom Diagnosis

S7RS0B9304014

Condition	Possible cause	Correction / Reference Item
Horn does not operate	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Horn switch faulty	*Check horn switch.*
	Horn relay faulty	*Check horn relay referring to "Horn Relay Inspection".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Horn faulty	*Check horn referring to "Horn Inspection".*

Information Display Symptom Diagnosis (If Equipped)

S7RS0B9304015

NOTE

This thermometer indicates the ambient temperature in back of front bumper member. Under any one of the following listed conditions, however, even when the ambient temperature goes up, the thermometer display does not rise so as to correct the rise of the ambient temperature caused by the radiant heat of the engine. When the ambient temperature drops, the thermometer reading follows the change in the temperature.
Be sure to bear this in mind when diagnosing trouble.

- **The vehicle speed is 30 km/h (18 mph) or lower.**
- **Vehicle speed signal is faulty.**
- **The ignition switch is turned on again within 2 hours.**

Condition	Possible cause	Correction / Reference Item
No displaying of information display	Circuit fuse Blown	*Replace fuse and check for short circuit.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Information display unit faulty	*Replace unit.*
Incorrect thermometer display	Outside air temperature sensor faulty	*Check outside air temperature sensor referring to "Outside Air Temperature Sensor Inspection (If Equipped)".*
	Vehicle speed signal faulty	*Check ECM for DTC referring to "DTC Check in Section 1A".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Information display unit faulty	*Replace unit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Display of thermometer does not change at –30 °C	Outside air temperature is –30 °C (–22 °F) or less	—
	Outside air temperature sensor faulty	*Check outside air temperature sensor referring to "Outside Air Temperature Sensor Inspection (If Equipped)".*
	Information display unit faulty	*Replace unit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Display of thermometer does not change at 50 °C	Outside air temperature is 50 °C (122 °F) or more	—
	Outside air temperature sensor faulty	*Check outside air temperature sensor referring to "Outside Air Temperature Sensor Inspection (If Equipped)".*
	Information display unit faulty	*Replace unit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Display of thermometer does not change at "– – – °C"	Outside air temperature sensor faulty	*Check outside air temperature sensor referring to "Outside Air Temperature Sensor Inspection (If Equipped)".*
	Outside air temperature sensor circuit is open or short	*Repair as necessary.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Information display unit faulty	*Replace unit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

Condition	Possible cause	Correction / Reference Item
Display of fuel consumption does not change at "– – – l / 100 km (km/l, MPG)"	Vehicle is not running (instantaneous fuel consumption mode)	—
	Fuel consumption was reset (average fuel consumption mode, if equipped)	*Vehicle runs for a while.*
	Vehicle speed signal faulty	*Check ECM for DTC referring to "DTC Check in Section 1A".*
	Wiring and/or grounding faulty	*Repair as necessary.*
	ECM faulty	*Check input and output signal of ECM referring to "Inspection of ECM and Its Circuits in Section 1A".*
	Information display unit faulty	*Replace unit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

Clock Symptom Diagnosis (If Equipped)

S7RS0B9304016

Condition	Possible cause	Correction / Reference Item
No displaying of clock	Circuit fuse Blown	*Replace fuse and check for short circuit.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Clock unit faulty	*Replace unit.*

Audio System Symptom Diagnosis (If Equipped)

S7RS0B9304017

Radio

NOTE

Electronic part / system with undiagnosed problem may cause electromagnetic interference. Electromagnetic interference condition may have poor radio reception. To test for presence of electromagnetic interference in part / system, perform the following procedures.

1. **Turn ignition switch to OFF.**
2. **Systematically disconnect the electronic part / system connector(s) one at a time.**
3. **Turn ignition switch to ON.**
4. **Check any improvement in radio reception.**

Condition	Possible cause	Correction / Reference Item
Poor radio reception	Out of service area (Poor location)	—
	Antenna faulty	*Replace antenna.*
	Electrical part / system faulty	*Repair or replace electrical part / system referring to after-mentioned NOTE.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Radio assembly faulty	*Replace radio assembly.*
Radio does not operate and speaker does not sound	Circuit fuse(s) blown	*Replace fuse(s) and check for short circuit.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Radio assembly faulty	*Replace radio assembly.*
Radio does not operate, but speaker sound	Wiring and/or grounding faulty	*Repair as necessary.*
	Radio assembly faulty	*Replace radio assembly.*
Radio is operative, but all speakers does not sound	Wiring and/or grounding faulty	*Repair as necessary.*
	Radio assembly faulty	*Replace radio assembly.*
Individual speaker is noisy or inoperative	Wiring and/or grounding faulty	*Repair as necessary.*
	Speaker faulty	*Replace speaker.*
	Radio assembly faulty	*Replace radio assembly.*
Sound quality is poor	Out of service area (Poor location)	—
	Speaker installed incorrectly	*Install correctly.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Speaker faulty	*Replace speaker.*
	Radio assembly faulty	*Replace radio assembly.*

CD Player

Condition	Possible cause	Correction / Reference Item
CD-ROM does not insert	Another CD-ROM already inserted	*Eject CD-ROM.*
	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Extraneous material come to be mixed CD player	*Clear extraneous material from CD player or replace radio assembly.*
	Radio assembly faulty	*Replace radio assembly.*
CD-ROM does not eject	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Extraneous material come to be mixed in CD player	*Clear extraneous material from CD player or replace radio assembly.*
	Radio assembly faulty	*Replace radio assembly.*
CD player does not load CD-ROM	CD-ROM faulty	—
	CD-ROM inserted with incorrect side up	*Insert correctly.*
	Temperature in cabin is too hot	—
	Water droplets form on internal lens	*Dry about 1 hour with power on.*
	Radio assembly faulty	*Replace radio assembly.*
Sound skips or is noisy	CD-ROM faulty	—
	Driving vibration	—
	Water droplets form on internal lens	*Dry about 1 hour with power on.*
	Radio assembly installed incorrectly	*Install correctly.*
	Radio assembly faulty	*Replace radio assembly.*
CD player is operative, but all speakers does not sound	Wiring and/or grounding faulty	*Repair as necessary.*
	Radio assembly faulty	*Replace radio assembly.*
Individual speaker is noisy or inoperative	Wiring and/or grounding faulty	*Repair as necessary.*
	Speaker faulty	*Replace speaker.*
	Radio assembly faulty	*Replace radio assembly.*
Sound quality or volume is poor	CD-ROM faulty	—
	Wiring and/or grounding faulty	*Repair as necessary.*
	Speaker installed incorrectly	*Install correctly.*
	Speaker faulty	*Replace speaker.*

Auto Volume Control System

Condition	Possible cause	Correction / Reference Item
Sound volume does not vary according to changes of vehicle speed	Auto volume control system is “OFF” mode	*Select auto volume control.*
	Vehicle speed signal faulty	*Check vehicle speed signal referring to “Vehicle Speed Signal Inspection (For Audio Unit) (If Equipped)”.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	ECM faulty	*Check input and output signal of ECM referring to “Inspection of ECM and Its Circuits in Section 1A”*
	Radio assembly faulty	*Replace radio assembly.*

Remote Audio Control Switch Symptom Diagnosis (If Equipped)

S7RS0B9304018

Condition	Possible cause	Correction / Reference Item
Audio system is operative, but remote control switch does not control audio system	Remote audio control switch faulty	*Check remote audio control switch referring to “Remote Audio Control Switch Inspection (If Equipped)”.*
	Contact coil faulty	*Replace contact coil.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Radio assembly faulty	*Replace radio assembly.*

Navigation Symptom Diagnosis (If Equipped)

S7RS0B9304019

Condition	Possible cause	Correction / Reference Item
No displaying of navigation	Circuit fuse Blown	*Replace fuse and check for short circuit.*
	Wiring and/or grounding faulty	*Repair as necessary.*
	Navigation unit faulty	*Replace unit.*

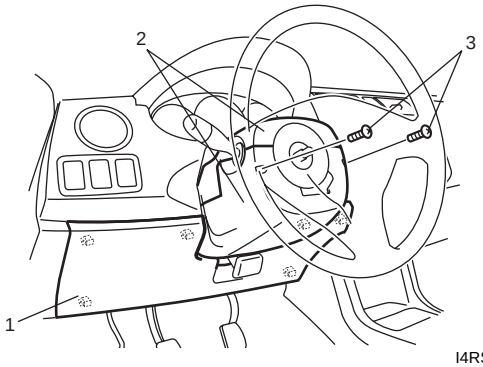
Repair Instructions

Ignition Switch Removal and Installation

S7RS0B9306001

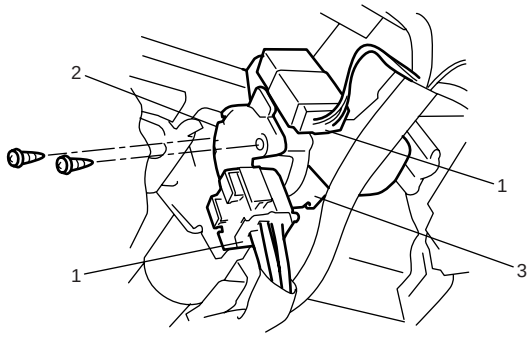
Removal

1) Disconnect negative (–) cable at battery.
2) Confirm that ignition key is removed.
3) Remove steering column hole cover (1).
4) Turn steering wheel to remove steering column cover screws (3) and then remove steering column covers (2).



I4RS0B920004-02

5) Disconnect couplers (1) from ignition switch (2).
6) Remove ignition switch (2) from key cylinder (3).



I4RS0A930008-01

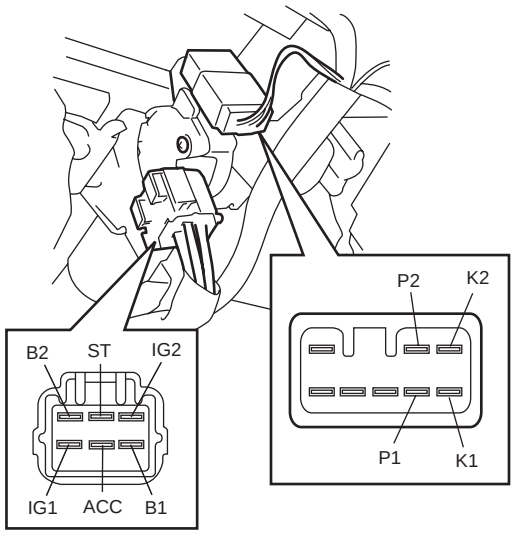
Installation

Reverse removal procedure.

Ignition Switch Inspection

S7RS0B9306002

- Check for continuity between terminals at each switch position. If check result is not as specified, replace switch.



Key Position \ Terminal	B1	B2	ACC	IG1	IG2	ST	K1	K2
OUT	○							
IN – LOCK	○							
IN – ACC	○		○					
IN – ON	○	○	○	○	○		○	○
IN – START	○	○		○		○		

Ignition knob switch (with keyless start system only) \ Terminal	P1	P2
OFF (ignition knob switch released)		
ON (ignition knob switch pushsed)	○	○

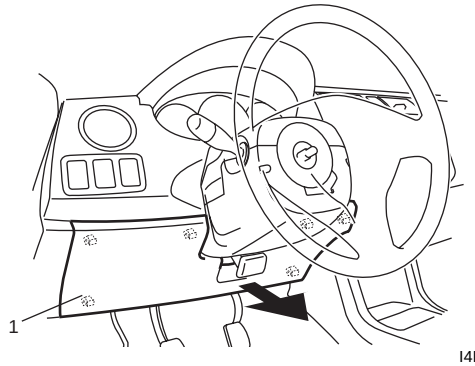
I5RS0D930003-02

Combination Meter Removal and Installation

S7RS0B9306003

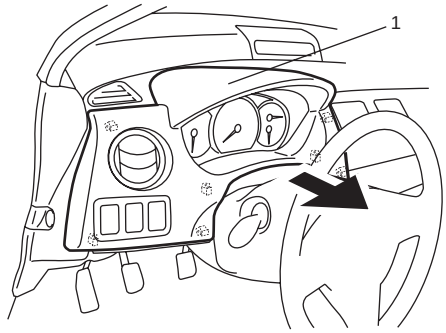
Removal

1) Disconnect negative (–) cable at battery.
2) Remove steering column hole cover (1) pulling it in arrow direction shown in figure.



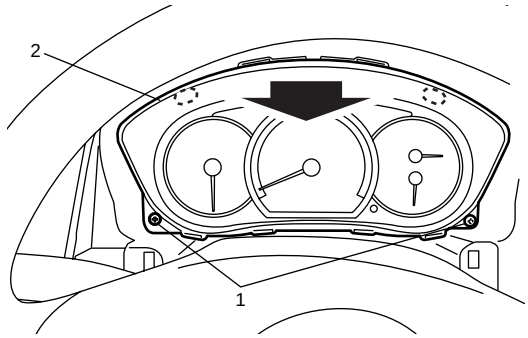
I4RS0B930005-02

3) Remove combination meter cluster panel (1) pulling it in arrow direction shown in figure.



I4RS0B930006-02

4) Remove screws (1) fastening combination meter.
5) Remove combination meter (2) pulling it arrow direction as shown.



I4RS0A930012-02

Installation

Reverse removal procedure.

Fuel Level Sensor Removal and Installation

S7RS0B9306004

For removal and installation, refer to “Main Fuel Level Sensor Removal and Installation in Section 1G”.

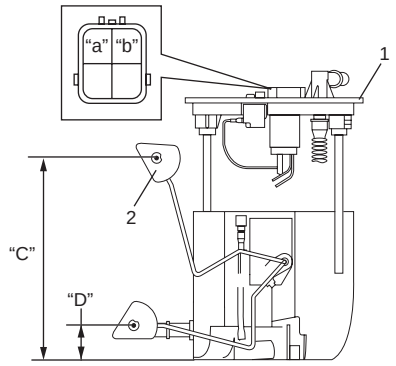
Fuel Level Sensor Inspection

S7RS0B9306005

- Check that resistance between terminals “a” and “b” of fuel level sensor changes with change of float position.
- Check resistance between terminals “a” and “b” at each float position in the following.
  If the measured value is out of specification, replace.

Fuel level sensor specifications

Float Position		Resistance (Ω)
Full Upper “C”	**160 mm (6.30 in.)**	**40 ± 2**
Full Lower “D”	**19 mm (0.75 in.)**	**280 ± 3.3**



I6RS0C930004-01

1. Fuel pump	2. Float

Oil Pressure Switch Removal and Installation

S7RS0B9306006

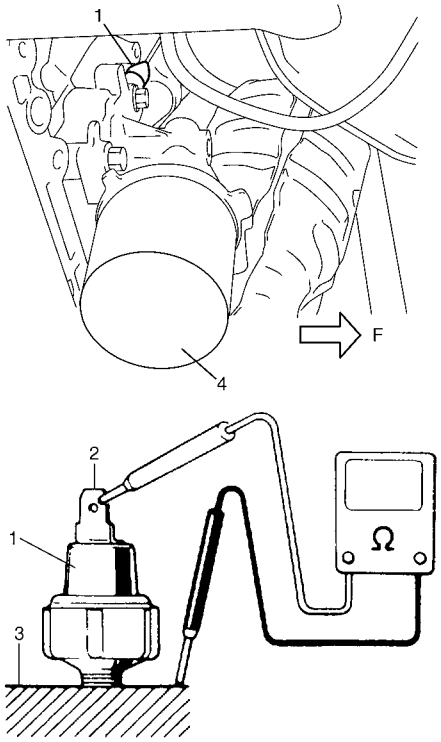
For removal and installation, refer to “Oil Pressure Check in Section 1E”.

Oil Pressure Switch Inspection

S7RS0B9306007

1) Disconnect oil pressure switch (1) lead wire.
2) Check for continuity between oil pressure switch terminal (2) and cylinder block (3) as shown. If check result is not as specified, replace oil pressure switch (1).

Oil pressure sensor specification
During engine running: No continuity
At engine stop: Continuity



I3RM0A930009-01

4. Engine oil filter	F: Front

Engine Coolant Temperature (ECT) Sensor Inspection

S7RS0B9306008

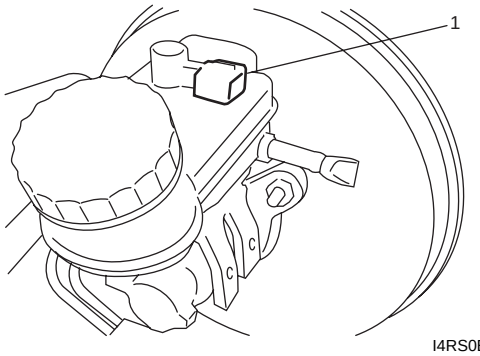
Check engine coolant temperature sensor for resistance, refer to “ECT Sensor Inspection in Section 1C”.

Brake Fluid Level Switch Inspection

S7RS0B9306009

Check for continuity between terminals of brake fluid level switch coupler (1). If found defective, replace switch.

Brake fluid level switch specification
OFF position (float up): No continuity
ON position (float down): Continuity



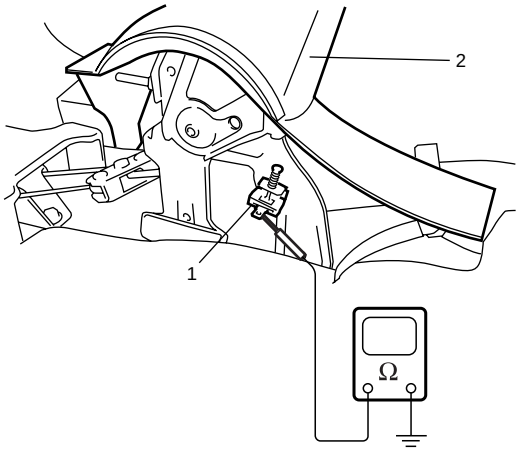
I4RS0B930007-01

Parking Brake Switch Inspection

S7RS0B9306010

Check for continuity between parking brake switch terminal and body ground as shown in figure. If found defective, replace switch.

Parking brake switch specification
OFF position (parking brake released): No continuity
ON position (parking brake lever pulled up): Continuity



I4RS0A930014-01

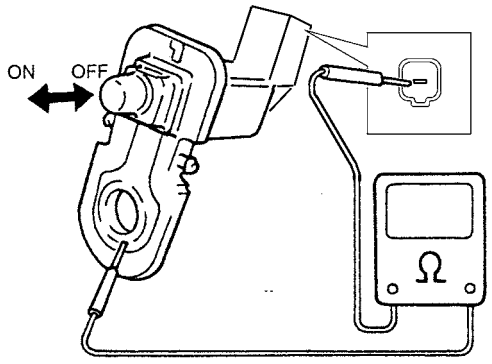
1. Parking brake switch	2. Parking brake lever

Door Switch (Front / Rear Door) Inspection

S7RS0B9306011

Remove door switch from body and check switch for continuity. If found defective, replace switch.

Door switch (front / rear door) specification
OFF position (Door closed): No continuity
ON position (Door open): Continuity



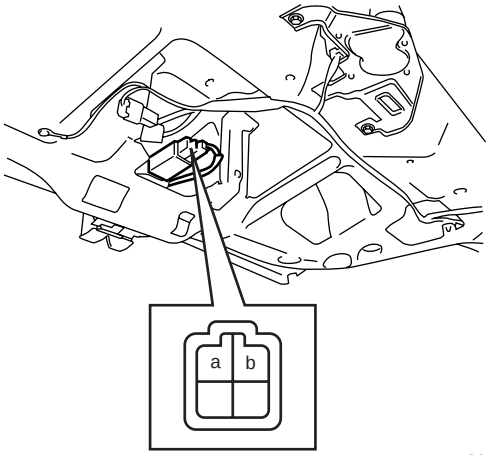
I3RH0A930004-01

Rear End Door Switch Inspection

S7RS0B9306012

Check for continuity between terminal “a” and “b” shown in the following.
If check result is not as specified, replace switch.

Rear end door switch specification
Rear end door closed: No continuity
Rear end door opened: Continuity



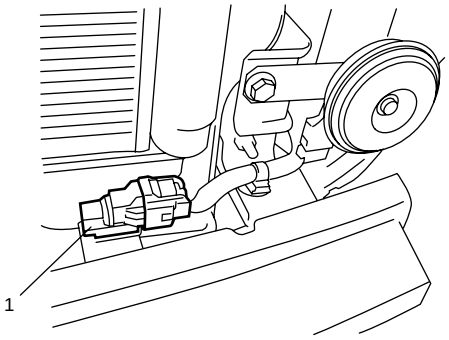
I4RS0A930015-01

Outside Air Temperature Sensor Removal and Installation (If Equipped)

S7RS0B9306013

Removal

1) Disconnect negative (–) cable at battery.
2) Remove front bumper referring to “Front Bumper and Rear Bumper Components in Section 9K”.
3) Disconnect connector from outside air temperature sensor.
4) Remove outside air temperature sensor (1) from front bumper member.



I4RS0A930016-01

Installation

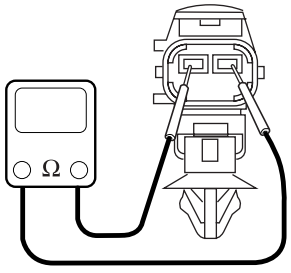
Reverse removal procedure for installation.

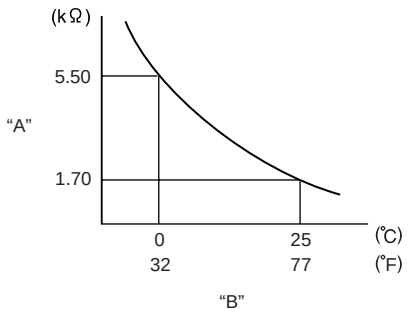
Outside Air Temperature Sensor Inspection (If Equipped)

S7RS0B9306014

Measure resistance of outside air temperature sensor using an ohmmeter.
If resistance is out of specification, replace outside air temperature sensor.

Outside air temperature sensor resistance
1.61 kΩ – 1.79 kΩ at 25 °C (77 °F)





I4RS0A930017-01

“A”: Resistance	“B”: Temperature

Instrument Panel Removal and Installation

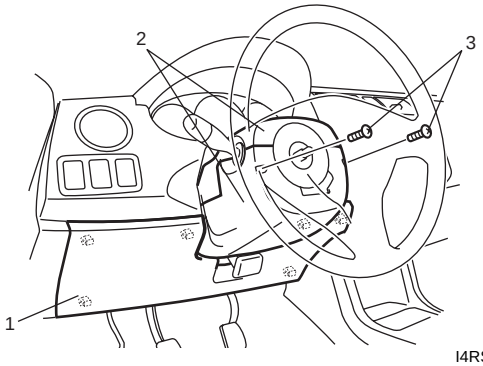
S7RS0B9306015

⚠ WARNING

Refer to "Air Bag Warning in Section 00" before starting service work.

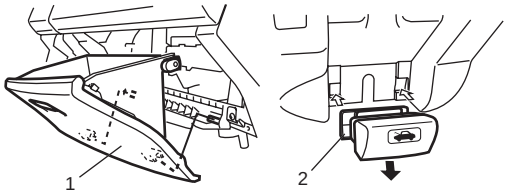
Removal

1) Disconnect negative (–) cable at battery.
2) Disable air bag system referring to "Disabling Air Bag System in Section 8B".
3) Remove steering column hole cover (1).
4) Turn steering wheel to remove steering column cover screws (3).
5) Remove steering column covers (2).



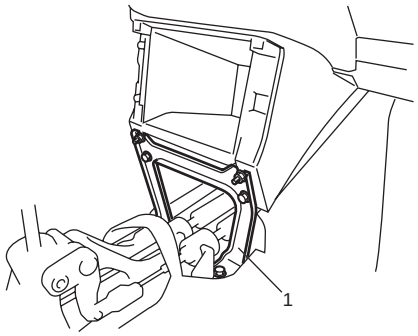
I4RS0B920004-02

6) Remove glove box (1).
7) Remove hood latch release lever (2).



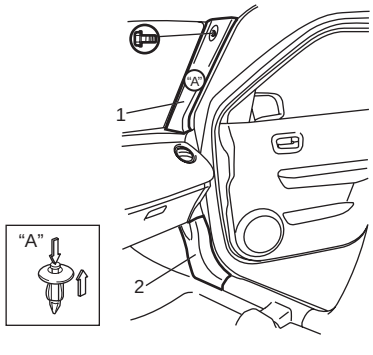
I4RS0B930008-01

8) Remove console box referring to "Console Box Components in Section 9H".
9) Remove instrument panel center lower bracket (1).



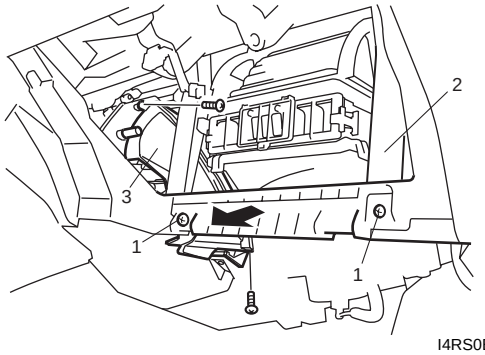
I4RS0B930009-01

10) Remove front pillar trims (1) and dash side trims (2).



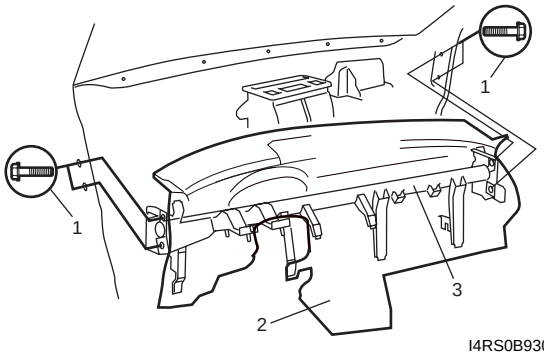
I4RS0B930010-01

11) Remove instrument panel mounting screws (1).
12) Detach instrument panel from steering support member (2) and then remove foot duct (3).



I4RS0B930011-01

13) Disconnect instrument panel harness connectors, heater control cables and antenna cable for instrument panel removal.
14) Remove steering column mounting nuts referring to "Steering Column Removal and Installation in Section 6B".
15) Remove instrument panel ground wire.
16) Remove instrument panel mounting bolts (1).
17) Remove instrument panel (2) with steering support member (3) and instrument panel harness.

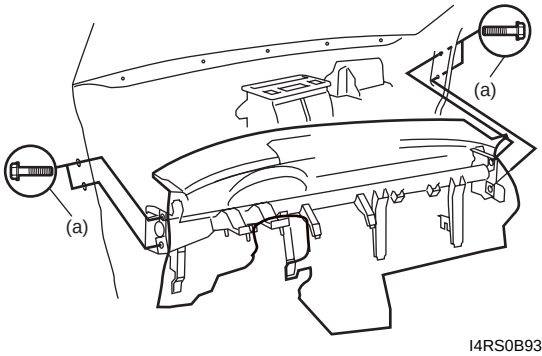


I4RS0B930012-01

Installation
Reverse removal procedure noting the following.

- When installing each part, be careful not to catch any cable or wiring harness.
- Tighten instrument panel mounting bolts to specified torque

  Tightening torque
  Instrument panel mounting bolt (a): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



I4RS0B930013-01

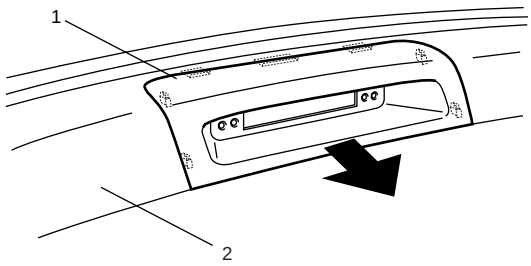
- Tighten steering column mounting nuts referring to "Steering Column Removal and Installation in Section 6B".
- Enable air bag system referring to "Enabling Air Bag System in Section 8B".

Information Display (Clock) Removal and Installation

S7RS0B9306016

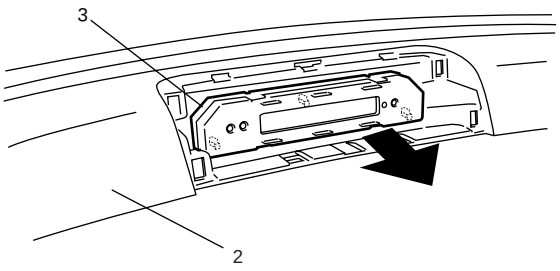
Removal

1) Remove information display (clock) garnish (1) from instrument panel (2) pulling it arrow direction as shown.



I4RS0A930032-01

2) Remove information display (clock) (3) from instrument panel (2) pulling it in arrow direction shown in figure.
3) Disconnect information display (clock) coupler.



I4RS0A930025-01

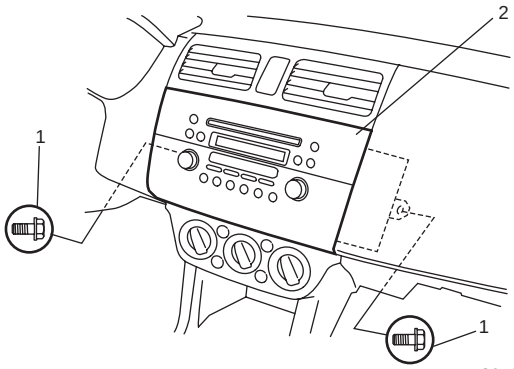
Installation
Reverse removal procedure.

Audio Unit Removal and Installation

S7RS0B9306017

Removal

1) Disconnect negative (–) cable at battery.
2) Remove globe box referring to Step 6) of "Instrument Panel Removal and Installation".
3) Remove 2 mounting bolts (1).
4) Disconnect electrical connectors from audio unit.
5) Remove audio unit (2) from instrument panel.



I4RS0B930014-01

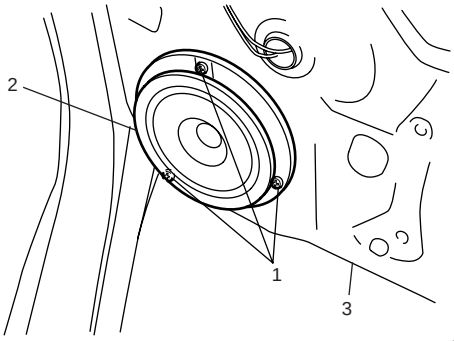
Installation
Reverse removal procedure.

Front Speaker Removal and Installation

S7RS0B9306018

Removal

1) Remove front door trim referring to Step 1) to 3) of "Front Door Glass Removal and Installation in Section 9E".
2) Remove 3 front speaker mounting screws (1).
3) Remove front speaker (2) from front door panel (3).
4) Disconnect front speaker coupler from front speaker (2).



I4RS0A930027-01

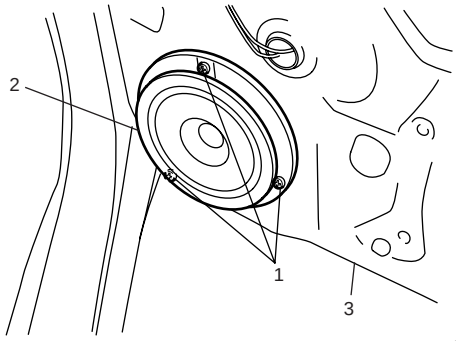
Installation
Reverse removal procedure.

Rear Speaker Removal and Installation

S7RS0B9306019

Removal

1) Remove rear door trim referring to Step 1) to 3) of "Rear Door Glass Removal and Installation in Section 9E".
2) Remove 3 rear speaker mounting screws (1).
3) Remove rear speaker (2) from rear door panel (3).
4) Disconnect rear speaker coupler from rear speaker (2).



I4RS0A930027-01

Installation

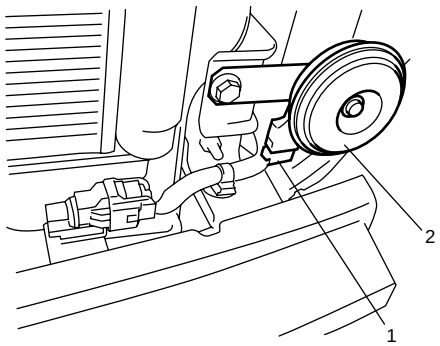
Reverse removal procedure.

Horn Removal and Installation

S7RS0B9306020

Removal

1) Disconnect negative (–) cable at battery.
2) Remove front bumper referring to "Front Bumper and Rear Bumper Components in Section 9K".
3) Disconnect horn connector (1).
4) Remove horn (2).



I4RS0A930028-01

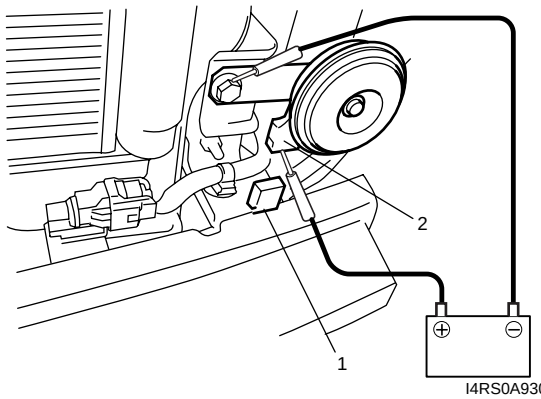
Installation

Reverse removal procedure.

Horn Inspection

S7RS0B9306021

1) Disconnect negative (–) cable at battery.
2) Remove front bumper referring to "Front Bumper and Rear Bumper Components in Section 9K".
3) Disconnect horn connector (1).
4) Connect battery positive (+) terminal to horn connector (2) and negative (–) terminal to body ground.
   If horn is not sounding, replace horn.

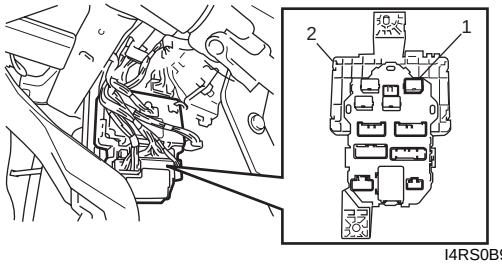


I4RS0A930030-01

Horn Relay Inspection

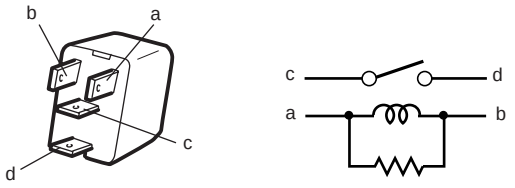
S7RS0B9306022

1) Disconnect negative (–) cable at battery.
2) Remove junction block assembly referring to "BCM (Included in Junction Block Assembly) Removal and Installation in Section 10B".
3) Remove horn relay (1) from junction block assembly (2).



I4RS0B930018-01

4) Check that there is no continuity between terminal "c" and "d". If there is continuity, replace relay.
5) Check that there is continuity between terminals "c" and "d" when a 12 V battery is connected to terminals "a" and "b". If malfunction is found, replace it with a new one.



I3JA01920006-01

Antenna Amplifier Removal and Installation

S7RS0B9306023

NOTE

Antenna amplifier incorporated with antenna base.

Removal

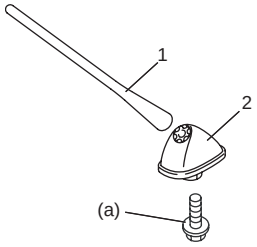
1) Remove head lining referring to “Head Lining Removal and Installation in Section 9H”.
2) Remove antenna (1) from antenna base (2).
3) Disconnect antenna feeder from antenna base (2).
4) Remove antenna base (2) from vehicle.

Installation

Reverse removal procedure noting the following.

- Tighten antenna base mounting nut to specified torque.

Tightening torque
Antenna base mounting nut (a): 5 N·m (0.5 kgf-m, 4.0 lb-ft)



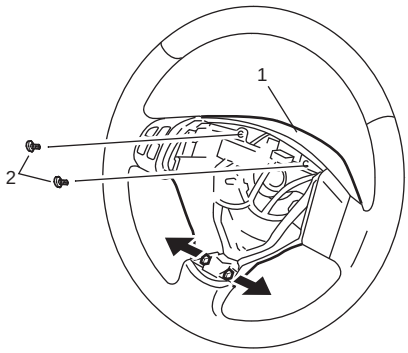
I7RW01930012-01

Remote Audio Control Switch Removal and Installation (If Equipped)

S7RS0B9306026

Remove

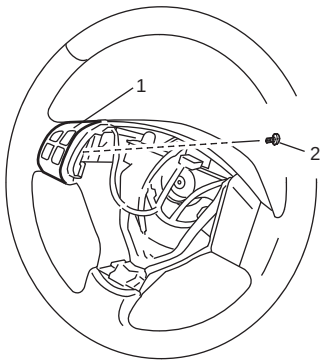
1) Remove steering wheel referring to “Steering Wheel Removal and Installation in Section 6B”.
2) Remove steering wheel cover (1) from steering wheel.



I5RW0A930025-02

2: Screw

3) Remove remote audio control switch (1) from steering wheel.



I5RW0A930026-02

2: Screw

Installation

Reverse removal procedure noting the following.

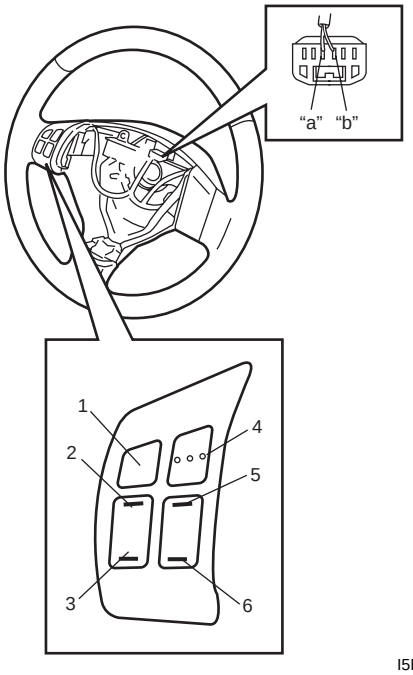
- Install steering wheel referring to “Steering Wheel Removal and Installation in Section 6B”.

Remote Audio Control Switch Inspection (If Equipped)

S7RS0B9306024

1) Remove driver air bag (inflator) module referring to "Driver Air Bag (Inflator) Module Removal and Installation in Section 8B".
2) Disconnect remote audio control switch connector from contact coil.
3) Check switch for resistance between "a" and "b" terminals under each condition below.
   If check result is not satisfactory, replace remote audio control switch.

Remote audio control switch resistance)
All switches released (OFF): 5119 – 5223 Ω
Switch "1" pushing on (ON): 55 – 57 Ω
Switch "2" pushing on (ON): 129 – 133 Ω
Switch "3" pushing on (ON): 238 – 244 Ω
Switch "4" pushing on (ON): 416 – 426 Ω
Switch "5" pushing on (ON): 743 – 759 Ω
Switch "6" pushing on (ON): 1555 – 1587 Ω



I5RW0A930027-01

Vehicle Speed Signal Inspection (For Audio Unit) (If Equipped)

S7RS0B9306025

Check vehicle speed pulse output signal of ECM referring to "Reference waveform No.32" under "Inspection of ECM and Its Circuits in Section 1A"

Specifications

Tightening Torque Specifications

S7RS0B9307001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
Instrument panel mounting bolt	23	2.3	17.0	☞
Antenna base mounting nut	5	0.5	4.0	☞

NOTE

The specified tightening torque is also described in the following.
"Audio System Component Location"

Reference:
For the tightening torque of fastener not specified in this section, refer to "Fasteners Information in Section 0A".

Wipers / Washers

Diagnostic Information and Procedures

Front Wiper and Washer Symptom Diagnosis

S7RS0B9404001

Condition	Possible cause	Correction / Reference Item
Wiper malfunctions	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Wiper motor faulty	*Check wiper motor referring to "Windshield Wiper Motor Inspection".*
	Combination switch (wiper switch) faulty	*Check wiper switch referring to "Windshield Wiper and Washer Switch Inspection".*
	Wiring or grounding faulty	*Repair circuit.*
Washer malfunctions	Washer hose or nozzle clogged	*Clean or repair clogged hose or nozzle.*
	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Washer motor faulty	*Check washer motor referring to "Washer Pump Inspection".*
	Combination switch (washer switch) faulty	*Check washer switch referring to "Windshield Wiper and Washer Switch Inspection".*
	Wiring or grounding faulty	*Repair circuit.*

Rear Wiper and Washer Symptom Diagnosis

S7RS0B9404002

Condition	Possible cause	Correction / Reference Item
Wiper malfunctions ***NOTE*** • ***Use of SUZUKI scan tool makes it easy to check whether a faulty condition is on the input side or output side of BCM. For checking procedure, refer to "Diagnosis Using Output Test Function of SUZUKI Scan Tool" under "Scan Tool Data in Section 10B".*** • ***Check each part in the order from the top of the following list.***	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Wiper motor faulty	*Check wiper motor referring to "Rear Wiper Motor Inspection".*
	Combination switch (wiper switch) faulty	*Check wiper switch referring to "Rear Wiper and Washer Switch Inspection".*
	Rear wiper relay faulty	*Check rear wiper relay referring to "Rear Wiper Relay Inspection".*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Washer malfunctions	Washer hose or nozzle clogged	*Clean or repair clogged hose or nozzle.*
	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Washer motor faulty	*Check washer motor referring to "Washer Pump Inspection".*
	Combination switch (washer switch) faulty	*Check washer switch referring to "Rear Wiper and Washer Switch Inspection".*
	Wiring or grounding faulty	*Repair circuit.*

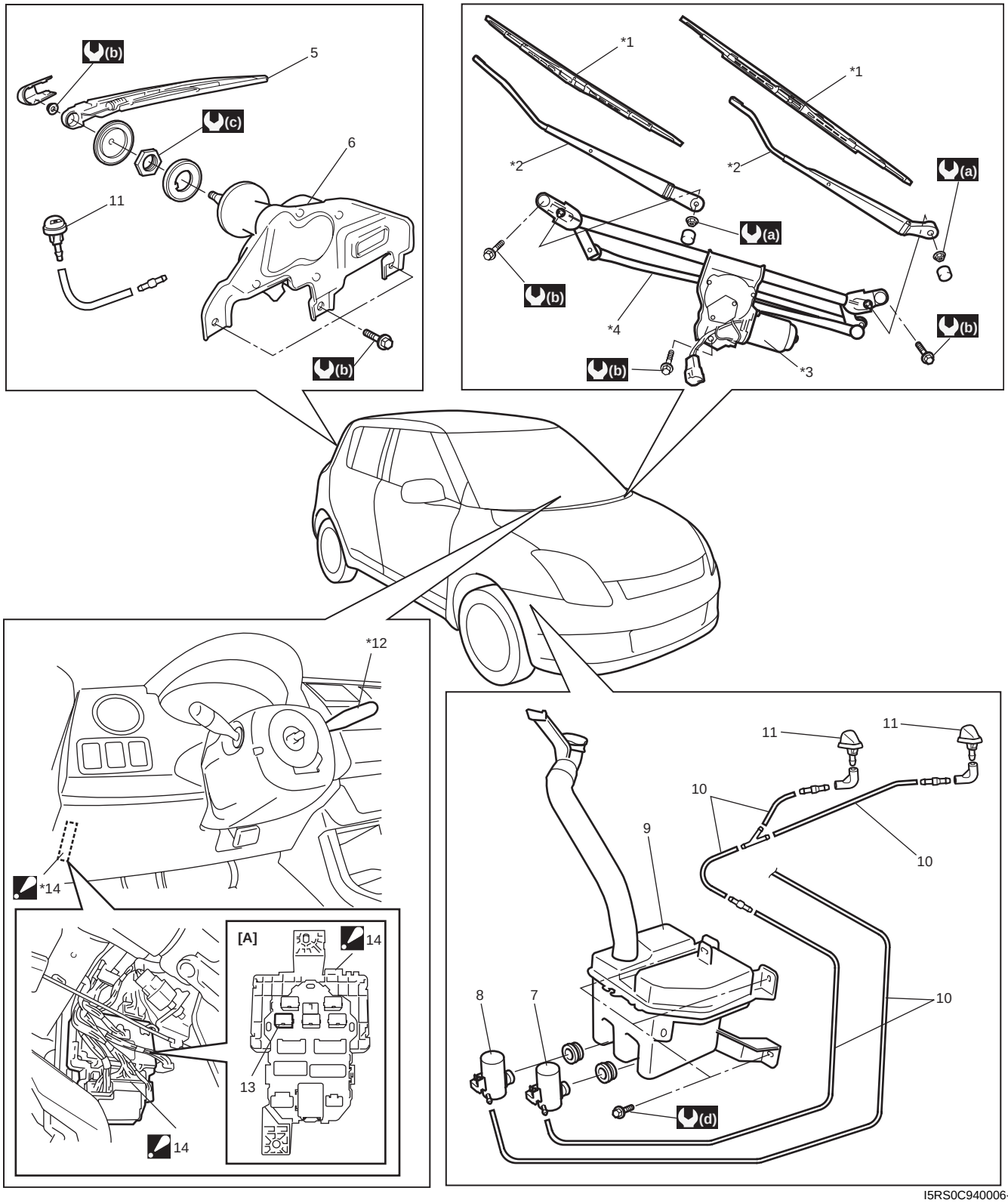
Repair Instructions

Wipers and Washers Components

S7RS0B9406001

NOTE

Below figure shows left-hand steering vehicle. For right-hand steering vehicle, parts with (*) are installed at the opposite side.



I5RS0C940006-01

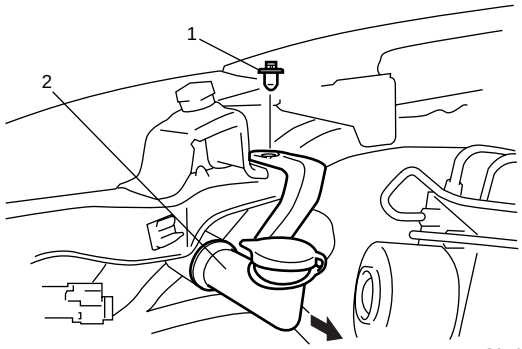
1. Windshield wiper blade	8. Washer pump for rear washer	[A]: Junction block assembly viewed from relay side
2. Windshield wiper arm	9. Washer tank	(a) : 16 N·m (1.6 kgf-m, 11.5 lb-ft)
3. Windshield wiper motor	10. Washer hose	(b) : 8 N·m (0.8 kgf-m, 6.0 lb-ft)
4. Windshield wiper link	11. Washer nozzle	(c) : 5 N·m (0.5 kgf-m, 4.0 lb-ft)
5. Rear wiper arm with blade assembly	12. Wiper switch	(d) : 4 N·m (0.4 kgf-m, 3.0 lb-ft)
6. Rear wiper motor	13. Rear wiper relay	
7. Washer pump for windshield washer	◪ 14. Junction block assembly : BCM cannot be removed from junction block.	

Washer Tank and Washer Pump Removal and Installation

S7RS0B9406002

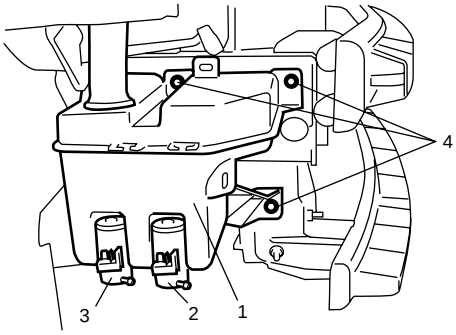
Removal

1) Disconnect negative (–) cable at battery.
2) Remove front bumper referring to “Front Bumper and Rear Bumper Components in Section 9K”.
3) Remove grommet (1) and upper part (2) of washer tank.



I4RS0A940002-01

4) Remove washer tank attaching bolts (4).
5) Disconnect washer pump lead wire couplers and hoses.
6) Remove washer tank (1).
7) Remove windshield washer pump (2) and rear washer pump (3) from washer tank (1).



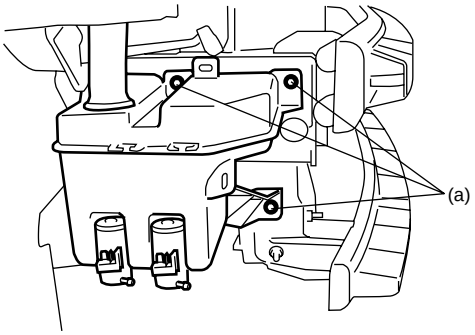
I4RS0A940003-01

Installation

Install washer tank and washer pump by reversing removal procedure, noting the following instructions.

- Connect washer pump connector(s) securely.
- Tighten washer tank bolts to specified torque.

Tightening torque
Washer tank bolt (a): 4 N·m (0.4 kgf-m, 3.0 lb-ft)

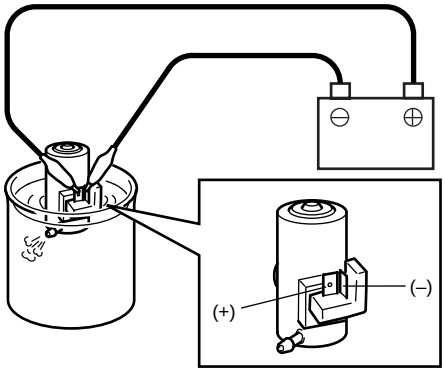


I4RS0A940004-01

Washer Pump Inspection

S7RS0B9406003

1) Connect battery positive (+) and negative (–) terminals to pump (+) and (–) terminals respectively.
2) Check windshield and rear washer pumps for operation.
   If pump does not operate, replace washer pump.



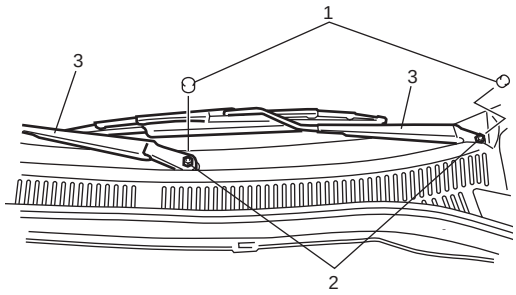
I4RS0A940005-01

Windshield Wiper Removal and Installation

S7RS0B9406004

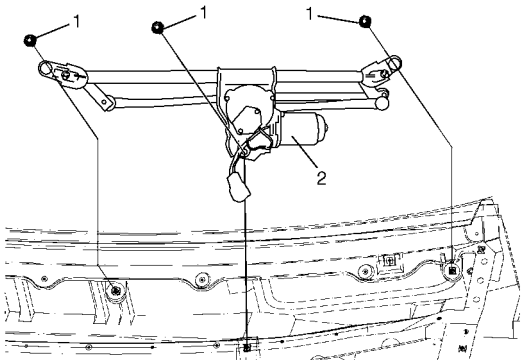
Removal

1) Disconnect negative (–) cable at battery.
2) Remove wiper pivot caps (1) and wiper arm nuts (2), and remove windshield wiper arms with wiper blades (3).



I4RS0B940003-03

3) Remove cowl top garnish referring to “Cowl Top Components in Section 9K”.
4) Disconnect coupler from windshield wiper motor.
5) Remove bolts (1), and remove windshield wiper assembly (2).

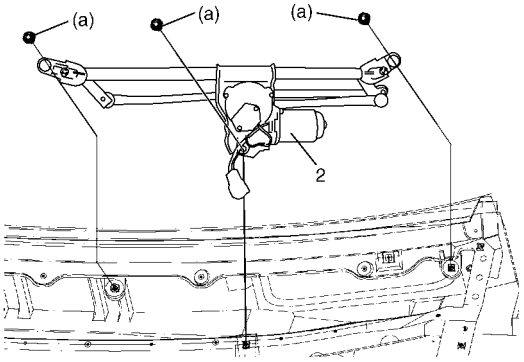


I5RS0C940007-01

Installation

1) Install windshield wiper assembly (1), and tighten bolts to specified torque.

Tightening torque
Windshield wiper bolt (a): 8 N·m (0.8 kgf-m, 6.0 lb-ft)

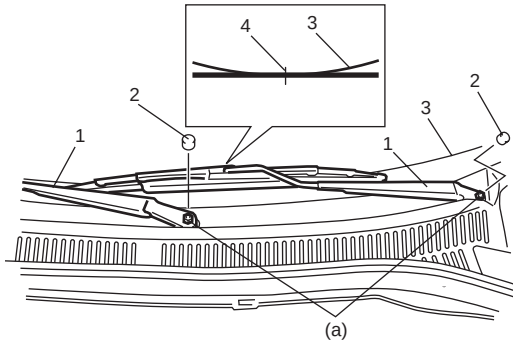


I5RS0C940008-01

2) Connect coupler to windshield wiper motor.
3) Install cowl top garnish referring to “Cowl Top Components in Section 9K”.
4) Install windshield wiper arms with wiper blades (1) to specified position as shown in figure, and then tighten windshield wiper nuts to specified torque.

Tightening torque
Windshield wiper arm nut (a): 16 N·m (1.6 kgf-m, 11.5 lb-ft)

5) Install wiper pivot caps (2) to windshield wiper arm nuts.



I4RS0B940004-03

3. Ceramic line
4. Wiper blade center

6) Connect negative (–) cable to battery.

Windshield Wiper Motor Inspection

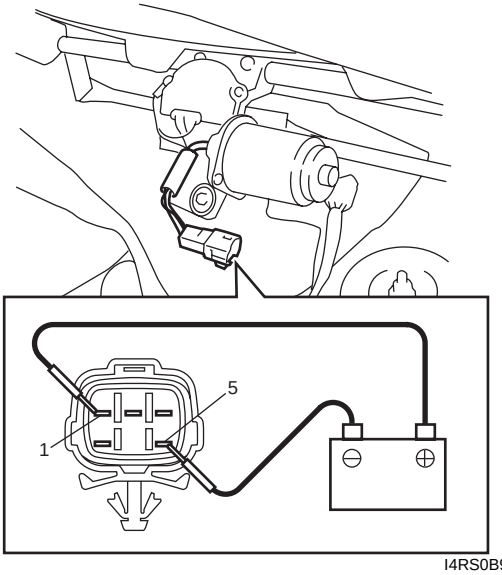
S7RS0B9406005

NOTE

Make sure that battery voltage is 12 V or more.

1) Disconnect negative (–) cable at battery.
2) Remove windshield wiper arms with wiper blades referring to “Windshield Wiper Removal and Installation”.
3) Remove cowl top garnish referring to “Cowl Top Components in Section 9K”.
4) Disconnect coupler from windshield wiper motor.
5) Reinstall windshield wiper arms with wiper blade. For details, refer to Step 4) of “Installation” in “Windshield Wiper Removal and Installation”.
6) Check windshield wiper motor for operation as follows
   - For motor operation in low speed
     a. Connect battery positive (+) terminal to terminal “1” and its negative (–) terminal to terminal “5”.
     b. Check if wiper arm reciprocation speed is as specification. If check result is not as specified, replace motor.

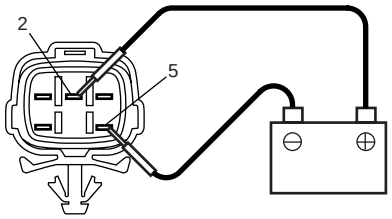
        Specification
        LH steering vehicle: 42 – 50 r/min (rpm)
        RH steering vehicle: 41 – 51 r/min (rpm)



I4RS0B940005-01

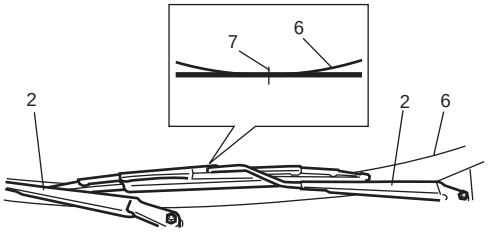
   - For motor operation in high speed
     a. Connect battery positive (+) terminal to “2” and its negative (–) terminal to terminal “5”.
     b. Check if motor revolution speed is as specification. If check result is not as specified, replace motor.

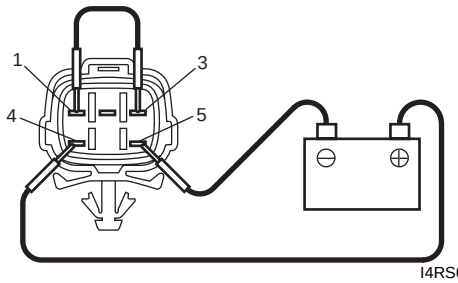
        Specification
        LH steering vehicle: 66 – 76 r/min (rpm)
        RH steering vehicle: 60 – 76 r/min (rpm)



I4RS0A940011-01

   - For automatic stop operation
     a. Connect battery positive (+) terminal to terminal “1” and its negative (–) terminal to terminal “5” and let the motor turn.
     b. Disconnect terminal “1” from battery positive (+) terminal, and let the motor stop.
     c. Connect terminals “1” and “3” with a jumper wire, and connect terminal “4” to battery positive (+) terminal.
        Observe the motor turns once again then stops at a specified position as shown.





I4RS0B940006-03

2.	Windshield wiper arms with wiper blades
6.	Ceramic line
7.	Wiper blade center

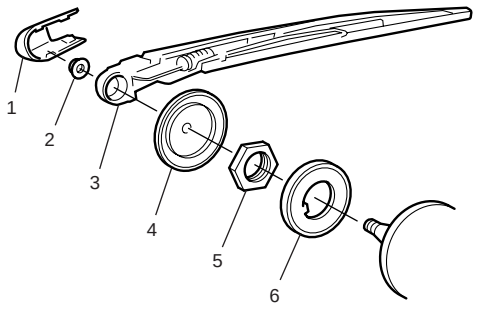
     d. Repeat Step a to c several times and check that the motor stops at the specified position every time.
        If check result is not satisfied, replace motor.

Rear Wiper Removal and Installation

S7RS0B9406006

Removal

1) Disconnect negative (–) cable at battery.
2) Remove arm cover (1), rear wiper arm nut (2), rear wiper arm with blade assembly (3), rear wiper pivot cap (4), rear wiper nut (5) and rear wiper seal (6).



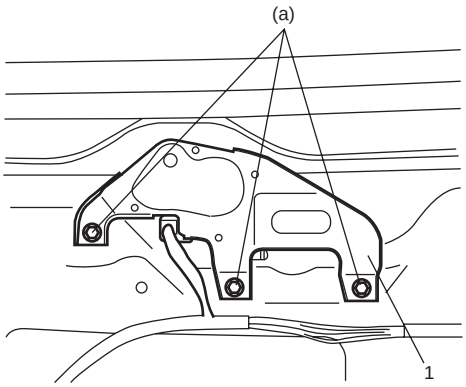
I4RS0A940013-01

3) Remove rear end door trim referring to “Rear End Door Lock Assembly Removal and Installation in Section 9F”.
4) Disconnect coupler from rear wiper motor.
5) Remove rear wiper motor.

Installation

1) Install rear wiper motor (1) and tighten rear wiper motor mounting bolts to specified torque.

Tightening torque
Rear wiper motor mounting bolt (a): 8 N·m (0.8 kgf-m, 6.0 lb-ft)

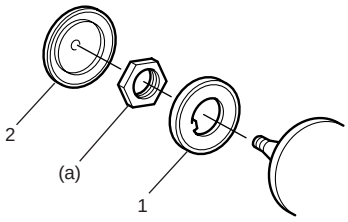


I4RS0B940018-01

2) Connect coupler to rear wiper motor
3) Install rear end door trim referring to “Rear End Door Lock Assembly Removal and Installation in Section 9F”.
4) Install rear wiper seal (1), and tighten rear wiper nut to specified torque.

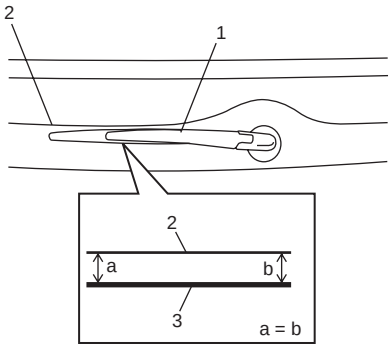
Tightening torque
Rear wiper nut (a): 5 N·m (0.5 kgf-m, 4.0 lb-ft)

5) Install rear wiper pivot cap (2).



I4RS0A940015-01

6) Install rear wiper arm with blade assembly (1) to specified position as shown in figure.

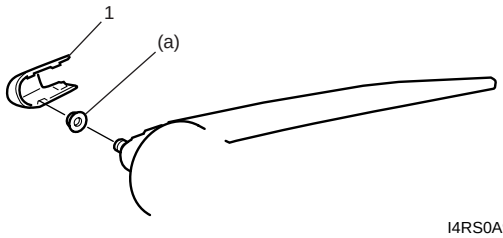


I5RS0C940009-01

2.	Ceramic line
3.	Rear wiper blade

7) Tighten rear wiper arm nut to specified torque, and then install arm cover (1).

Tightening torque
Rear wiper arm nut (a): 8 N·m (0.8 kgf-m, 6.0 lb-ft)



I4RS0A940017-01

8) Connect negative (–) cable to battery.

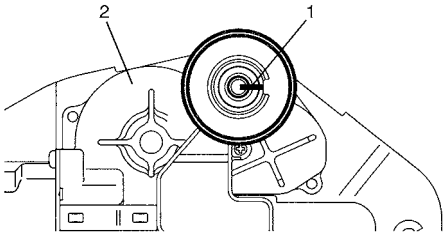
Rear Wiper Motor Inspection

S7RS0B9406007

NOTE

Make sure that battery voltage is 12 V or more.

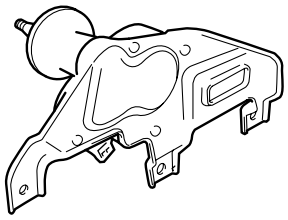
1) Make a mark (1) on rear wiper motor (2) stop position as shown.

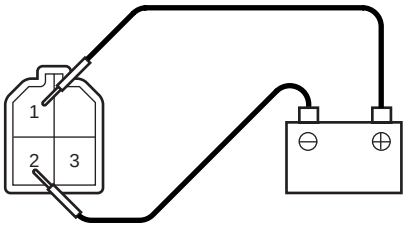


I4RS0A940018-01

2) Check rear wiper motor for operation as follows.
   - For motor operation
     a. Connect battery positive terminal to terminal “1” and its negative terminal to terminal “2”.
     b. Check motor revolution speed as specification. If check result is not as specified, replace motor.

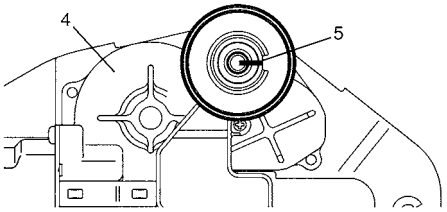
Specification
35 – 45 r/min (rpm)

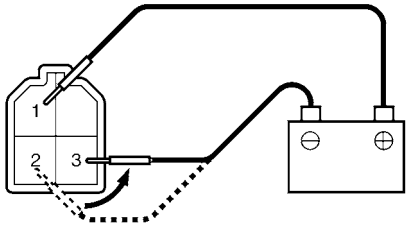




I4RS0A940019-01

   - For automatic stop operation
     a. Connect battery positive (+) terminal to terminal “1” and its negative (–) terminal to terminal “2” and let the motor turn.
     b. Disconnect terminal “2” from battery negative (–) terminal and let the motor stop.
     c. Observe the motor (4) turns once again then stops at a specified position as shown.





I4RS0A940020-01

5. Mark

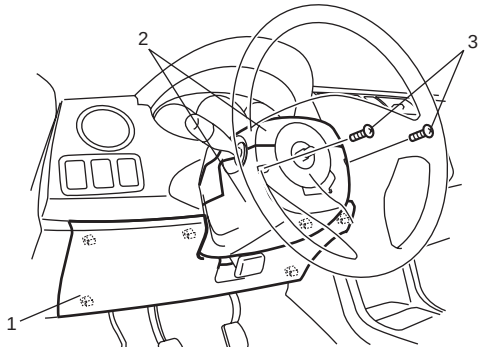
     d. Repeat Step a. to c. several times and check that the motor stops at the specified position every time.
     If check result is not satisfied, replace motor.

Windshield Wiper and Washer Switch Removal and Installation

S7RS0B9406008

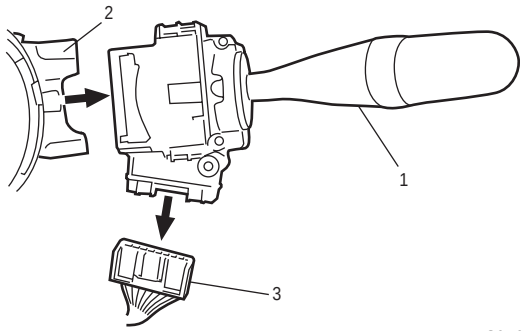
Removal

1) Disconnect negative (–) cable at battery.
2) Remove steering column hole cover (1).
3) Remove steering column covers (2).
   Turn steering wheel to access steering column cover rear end screws (3).



I4RS0B940007-02

4) Remove windshield wiper and washer switch (1) from combination switch assembly (2) and disconnect its coupler (3).



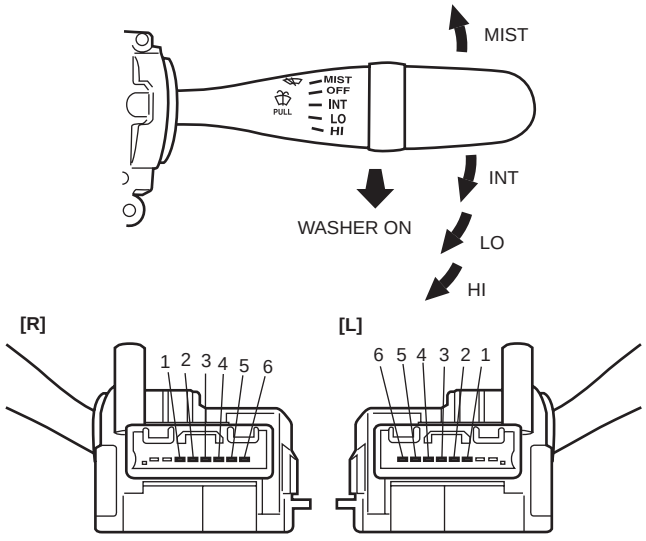
I4RS0B940008-01

Installation
Reverse removal procedure.

Windshield Wiper and Washer Switch Inspection

S7RS0B9406009

Windshield Wiper and Washer Switch
Check for continuity between terminals at each switch position. If check result is not as specified, replace switch.



Wiper SW \ Terminal	6	5	4	3
OFF			○	○
INT			○	○
LO		○	○	
HI	○	○		
MIST		○	○	

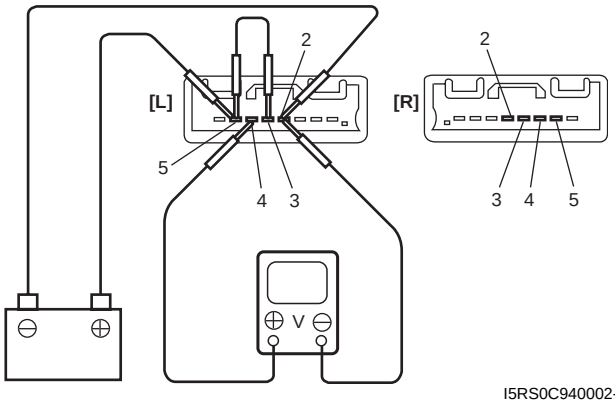
Washer SW \ Terminal	1	2
ON	○	○
OFF		

I5RS0C940001-01

[R]: RH steering vehicle	
[L]: LH steering vehicle	

Intermittent Wiper Relay Circuit

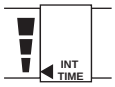
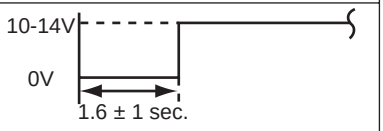
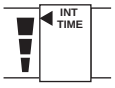
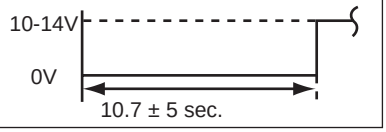
1) Turn the windshield wiper switch to “INT” position.
2) Connect battery positive (+) terminal to terminal “5” and its negative (–) terminal to terminal “2”.
3) Connect voltmeter positive lead to terminal “4” and its negative lead to terminal “2”.
4) Check that the voltmeter indicates the battery voltage (10 – 14 V).
5) Connect terminal “3” and terminal “5” by a jumper wire.

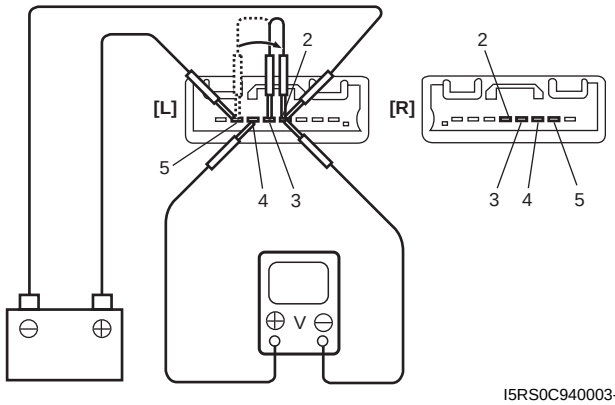


I5RS0C940002-01

[R]: RH steering vehicle	[L]: LH steering vehicle

6) Disconnect end of the jumper wire from terminal “5”.
7) Connect disconnected jumper wire end to terminal “2”, then check that voltage between terminal “4” and terminal “2” changes as shown.
If check result is not satisfied, replace switch.

INT time control switch position	Voltage
	
	

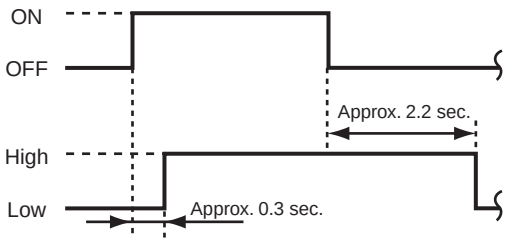


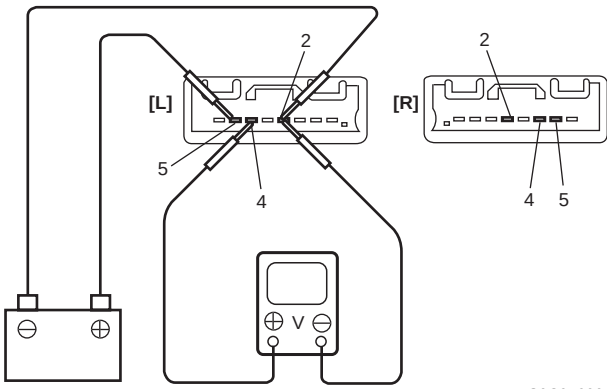
I5RS0C940003-01

[R]: RH steering vehicle	[L]: LH steering vehicle

Washer Linked Circuit

1) Make sure that front wiper switch is at “OFF” position.
2) Connect battery positive (+) terminal to terminal “5” and its negative (–) terminal to terminal “2”.
3) Connect voltmeter positive lead to terminal “4” and its negative lead to terminal “2”.
4) When front washer switch is ON, check that voltage changes as shown in figure.
   If check result is not satisfied, replace switch.





I5RS0C940004-01

[R]: RH steering vehicle	[L]: LH steering vehicle

Rear Wiper and Washer Switch Removal and Installation

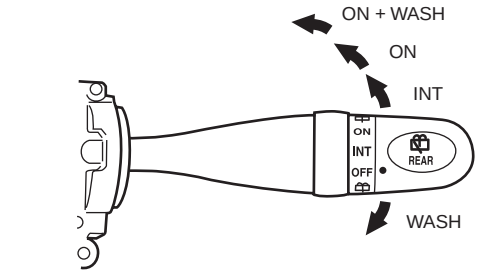
S7RS0B9406010

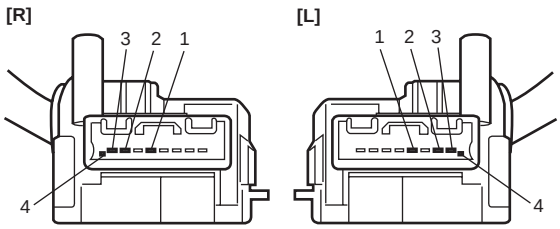
For removal and installation, refer to “Windshield Wiper and Washer Switch Removal and Installation”.

Rear Wiper and Washer Switch Inspection

S7RS0B9406011

Check for continuity between terminals at each switch position. If check result is not as specified, replace switch.





Position \ Terminal	1	2	3	4
OFF				
INT	○			○
ON	○		○	
ON + WASH	○	○	○	
WASH	○	○		

I5RS0C940005-01

[R]: RH steering vehicle
[L]: LH steering vehicle

Rear Wiper Relay Removal and Installation

S7RS0B9406012

Removal

1) Disconnect negative (–) cable at battery.
2) Remove junction block assembly referring to “BCM (Included in Junction Block Assembly) Removal and Installation in Section 10B”.
3) Remove rear wiper relay.

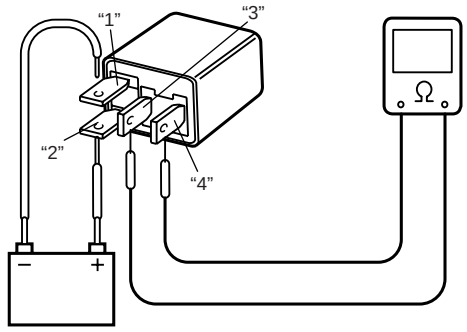
Installation

Reverse removal procedure for installation.

Rear Wiper Relay Inspection

S7RS0B9406013

1) Check that there is no continuity between terminal “3” and “4”. If there is continuity, replace relay.
2) Connect battery positive (+) terminal to terminal “2” of relay.
3) Connect battery negative (–) terminal to terminal “1” of relay.
4) Check continuity between terminal “3” and “4”. If there is no continuity when relay is connected to the battery, replace relay.



I4RS0A940028-01

Specifications

Tightening Torque Specifications

S7RS0B9407001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
Washer tank bolt	4	0.4	3.0	☞
Windshield wiper bolt	8	0.8	6.0	☞
Windshield wiper arm nut	16	1.6	11.5	☞
Rear wiper motor mounting bolt	8	0.8	6.0	☞
Rear wiper nut	5	0.5	4.0	☞
Rear wiper arm nut	8	0.8	6.0	☞

NOTE

The specified tightening torque is also described in the following.
“Wipers and Washers Components”

Reference:

For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Glass / Windows / Mirrors

General Description

Rear End Door Window Defogger System Description

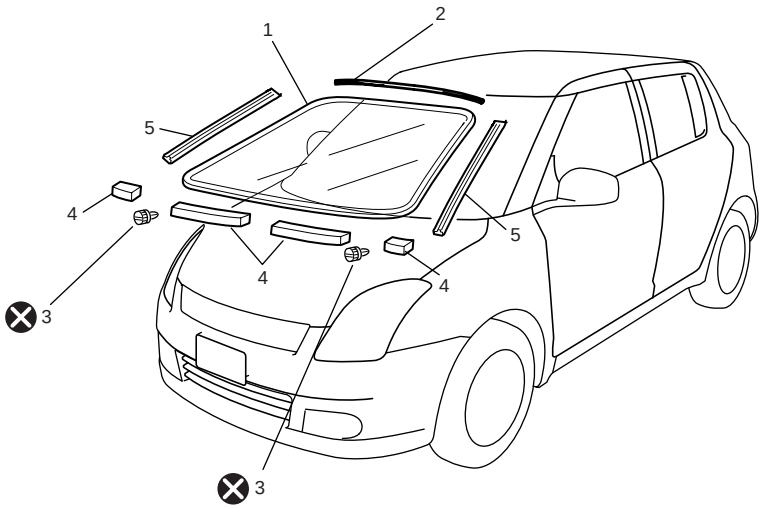
S7RS0B9501001

The rear end door window defogger is controlled by BCM. For the BCM description refer to “BCM General Description in Section 10B”.

Windshield Construction

S7RS0B9501002

The windshield is installed by using a special type of adhesive (that is, one component urethane adhesive used with primer). For the windshield replacement, it is important to use an adhesive which provides sufficient adhesion strength and follow the proper procedure.



I4RS0A950001-01

1. Windshield glass	3. Windshield glass stopper	5. Windshield side garnish
2. Windshield molding	4. Spacer	⊗ : Do not reuse.

⚠ CAUTION

- **Described is the glass replacement by using 3 types of primers and 1 type of adhesive made by YOKOHAMA (one component urethane adhesive to be used with primer in combination). When using primer and adhesive made by other manufacturers, be sure to refer to handling instructions supplied with them. Negligence in following such procedure or misuse of the adhesive in any way hinders its inherent adhesive property. Therefore, before the work, make sure to read carefully the instruction and description given by the maker of the adhesive to be used and be sure to follow the procedure and observe each precaution throughout the work.**
- **Should coated surface be scratched or otherwise damaged, be sure to repair damaged part, or corrosion may start from there.**

Use the specific adhesive which has the following property.

Glass adhesive shearing strength
40 kg/cm^2 (569 lb/in^2) or more

Adhesive materials and tools required for removal and installation.

- One component urethane adhesive and primers used in combination (For one sheet of windshield).
  - Adhesive (470 g (15.7 oz.))
  - Primer for glass (30 g (1.0 oz.))
  - Primer for body (30 g (1.0 oz.))
  - Primer for molding (30 g (1.0 oz.))

- Eyeleteer
- Piano string
- Windshield knife
- Brush for primer application (2 pcs)
- Knife
- Rubber sucker grip
- Sealant gun (for filling adhesive)
- Putty spatula (for correcting adhered parts)

Diagnostic Information and Procedures

Rear End door Window Defogger Symptom Diagnosis

S7RS0B9504001

NOTE

- **Use of SUZUKI scan tool makes it easy to check whether a faulty condition is on the input side or output side of BCM. For checking procedure, refer to "Diagnosis Using Output Test Function of SUZUKI Scan Tool" under "Scan Tool Data in Section 10B".**
- **Check each part in the order from the top of the following list.**

Condition	Possible cause	Correction / Reference Item
Rear end door window defogger does not operate	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Rear end door window defogger switch faulty	*Check rear end door window defogger switch referring to "Rear End Door Window Defogger Switch Inspection".*
	Rear end door window defogger relay faulty	*Check rear end door window defogger relay referring to "Rear End Door Window Defogger Relay Inspection".*
	Defogger wire faulty	*Check defogger wire referring to "Rear End Door Window Defogger Wire Inspection".*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

Power Window Control System Symptom Diagnosis

S7RS0B9504002

Condition	Possible cause	Correction / Reference Item
All power windows do not operate	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Power window main switch faulty	*Check power window main switch referring to "Power Window Main Switch Inspection".*
	Ignition switch faulty	*Check ignition switch referring to "Ignition Switch Inspection in Section 9C".*
	Wiring or grounding faulty	*Repair circuit.*
Only one power window does not operate	Power window main switch faulty	*Check power window main switch referring to "Power Window Main Switch Inspection".*
	Power window sub switch faulty	*Check power window sub switch referring to "Power Window Sub Switch Inspection".*
	Wiring and/or coupler faulty	*Check wiring and/or coupler.*
	Power window regulator faulty	*Check window regulator.*
	Power window motor faulty	*Check power window motor.*
	Wiring or grounding faulty	*Repair circuit.*

Power Door Mirror Control System Symptom Diagnosis

S7RS0B9504003

Condition	Possible cause	Correction / Reference Item
All power mirrors do not operate	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Power door mirror switch faulty	*Check power door mirror switch referring to "Power Door Mirror Switch Inspection".*
	Wiring or grounding faulty	*Repair circuit.*
One power mirror does not operate	Power door mirror switch faulty	*Check power door mirror switch referring to "Power Door Mirror Switch Inspection".*
	Power door mirror actuator faulty	*Check actuator refraining to "Power Door Mirror Actuator Inspection".*
	Wiring or grounding faulty	*Repair circuit.*

Door Mirror Heater Symptom Diagnosis (If Equipped)

S7RS0B9504004

NOTE

- **Use of SUZUKI scan tool makes it easy to check whether a faulty condition is on the input side or output side of BCM. For checking procedure, refer to "Diagnosis Using Output Test Function of SUZUKI Scan Tool" under "Scan Tool Data in Section 10B".**
- **Check each part in the order from the top of the following list.**

Condition	Possible cause	Correction / Reference Item
All door mirror heaters does not operate	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Rear end door window defogger switch faulty	*Check rear end door window defogger switch referring to "Rear End Door Window Defogger Switch Inspection".*
	Rear end door window defogger relay faulty	*Check rear end door window defogger relay referring to "Rear End Door Window Defogger Relay Inspection".*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Only one door mirror heater does not operate	Door mirror heater faulty	*Check door mirror heater referring to "Door Mirror Heater Inspection (If Equipped)".*
	Wiring or grounding faulty	*Repair circuit.*

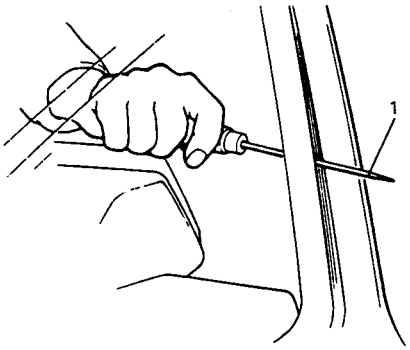
Repair Instructions

Windshield Removal and Installation

S7RS0B9506001

Removal

1) Clean both inside and outside of glass and around it.
2) Remove wiper arms and cowl top garnish.
3) Remove windshield side garnish.
4) Using tape, cover body surface around glass to prevent any damage.
5) Remove rear view mirror, sun visor and front pillar trims (right & left).
6) If necessary, remove instrument panel. Refer to “Instrument Panel Removal and Installation in Section 9C”.
7) If necessary, remove head lining. Refer to “Head Lining Removal and Installation in Section 9H”.
8) Remove (or cut) windshield molding.
9) Drill hole with eyeleteer (1) through adhesive and let piano string through it.

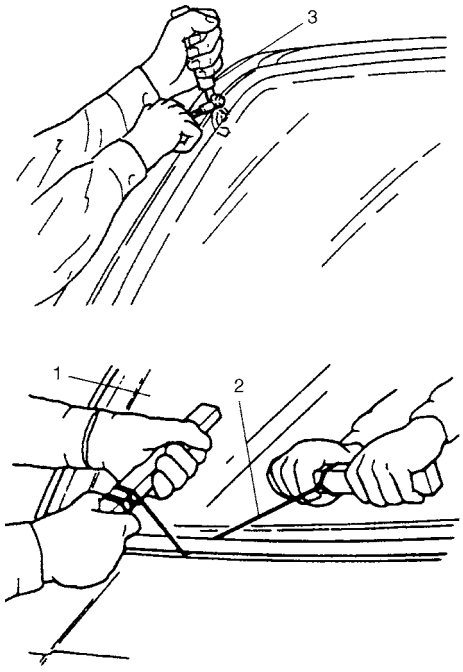


I2RH01950040-01

10) Cut adhesive all around windshield (1) with piano string (2). When using tool, windshield knife (3), to cut adhesive, be careful not to cause damage to windshield. Use wire to cut adhesive along lower part of windshield.

NOTE

Use piano string (2) as close to glass as possible so as to prevent damage to body and instrument panel.

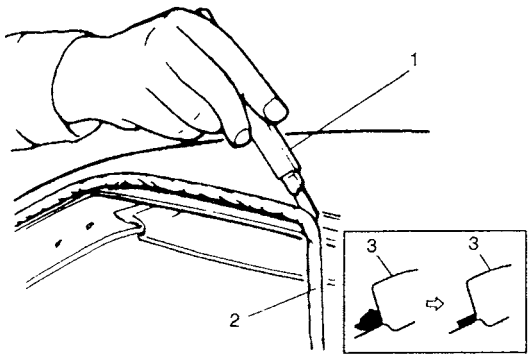


I3RH0A950006-01

11) Using knife (1), smoothen adhesive (2) remaining on body side (3) so that it is 1 – 2 mm (0.039 – 0.078 in.) thick all around.

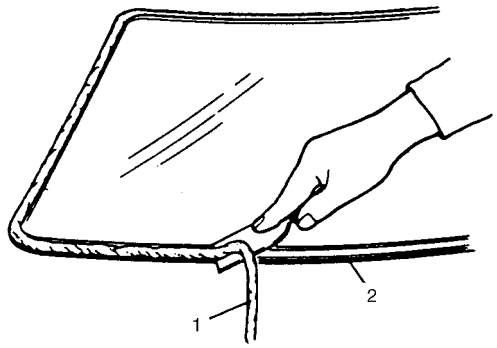
NOTE

Before using knife (1), clean it with alcohol or the like to remove oil from it.



I2RH01950042-01

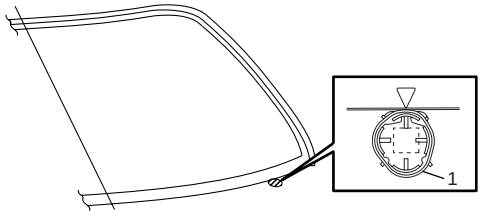
12) When reusing windshield, remove the adhesive (1) from it, using care not to damage primer coated surface (2).



I2RH01950043-01

Installation

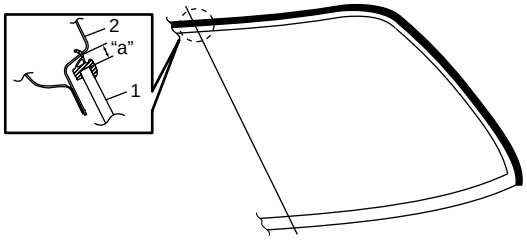
1) Using cleaning solvent, clean windshield edge where windshield glass is to be adhered. (Let it dry for more than 10 minutes.)
2) Install new glass stoppers (1) (2 pieces) to lower side of windshield.



I4RH01950001-01

3) To determine installing position of glass (1) to body (2), position glass against body so that clearance between upper end of glass (1) and body (2) is approximately 5 mm (0.197 in.) and clearances between each side end (right & left) of glass (1) and body (2) are even. Then mark mating marks on glass (1) and body (2) as shown. Upper clearance can be adjusted by moving glass stoppers position.

Windshield clearance
"a": approx. 5 mm (0.197 in.)

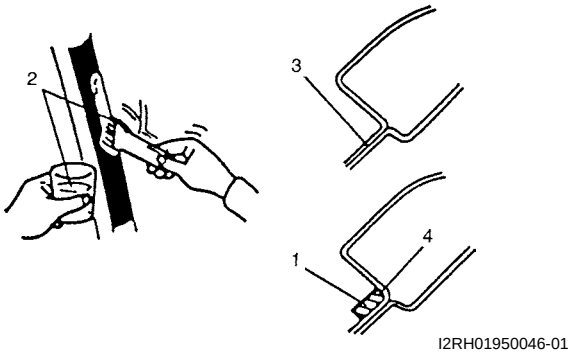


I2RH01950045-01

4) Clean contact surfaces of old adhesive (4), paint or bare metal thoroughly.
If surfaces of paint or bare metal come out, apply primer (2) for body with caution not to apply primer (2) to surface of adhesive remaining on body.

NOTE

- **Be sure to refer to primer maker's instruction for proper handling and drying time.**
- **Do not touch body and old adhesive surfaces where glass is to be adhered.**



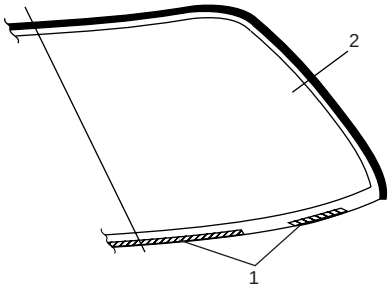
I2RH01950046-01

1. Do not apply primer	3. Apply primer

5) Install new molding to glass.
6) Clean glass surface to be adhered to body with clean cloth. If cleaning solvent is used, let it dry for 10 minutes or more.

Cleaning Area for windshield (distance from the edge of glass or molding)
30 – 50 mm (1.18 – 1.97 in.)

7) Install new spacers (1) to windshield (2).



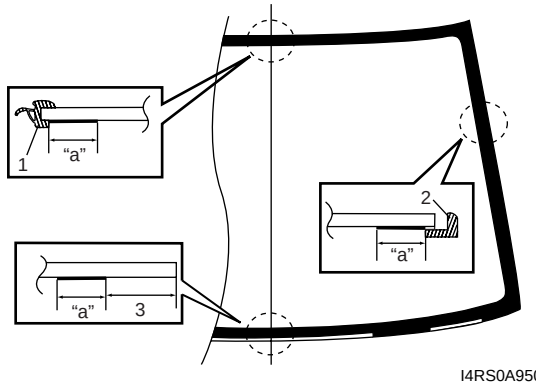
I4RS0A950002-01

8) Using new brush, apply sufficient amount of primer onto glass along glass edge.

NOTE

- **Be sure to refer to maker's instruction for proper handling and drying time.**
- **Do not apply primer on outside of ceramic coated surface.**
- **Do not touch primer coated surface.**

Width applied primer for windshield
"a": 15 mm (0.59 in.)



I4RS0A950003-01

1.	Molding
2.	Windshield side garnish clip
3.	32.5 mm (1.28 in.)

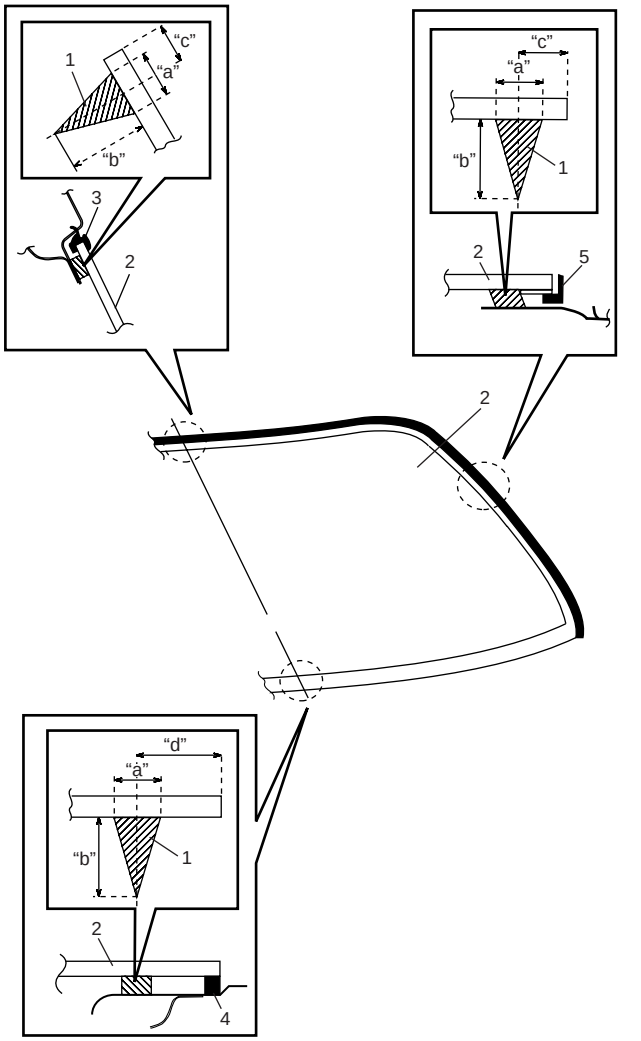
9) Apply primer for molding along molding surface all around.

10) Apply adhesive (1) referring to figure.

NOTE

- **Press glass (2) against fittings surface of body panel quickly after adhesive (1) is applied.**
- **Use of rubber sucker grip is helpful to hold and carry glass after adhesive (1) is applied.**
- **Perform steps 8) to 9) within 10 min. to ensure sufficient adhesion.**
- **Be sure to refer to adhesive maker's instruction for proper handling and drying time.**
- **Start from bottom side of glass (2).**
- **Be careful not to damage primer.**

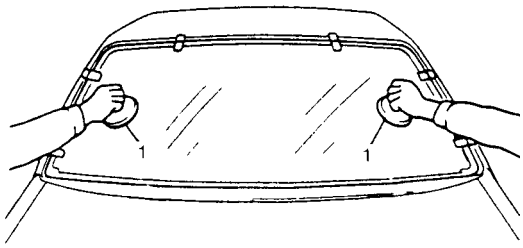
Adhesive amount specifications and position for windshield
Width "a": Approx. 7 mm (0.27 in.)
Height "b": Approx. 15 mm (0.59 in.)
Position "c": Approx. 11 mm (0.43 in.) for front, rear and upper sections
Position "d": Approx. 35 mm (1.38 in.) for bottom section



I4RS0A950004-01

3.	Molding
4.	Windshield glass spacer
5.	Windshield side garnish clip

11) Holding rubber sucker grips (1), place glass onto body by aligning mating marks marked in step 3) and press it.



I2RH01950050-01

12) Check for water leakage by pouring water over windshield through hose. If leakage is found, dry windshield and fill leaky point with adhesive. If water still leaks even after that, remove glass and start installation procedure all over again.

NOTE

- **Do not use high pressure water.**
- **Do not blow compressed air directly at adhesive applied part when drying.**
- **Do not use infrared lamp or like for drying.**

I2RH01950051-01

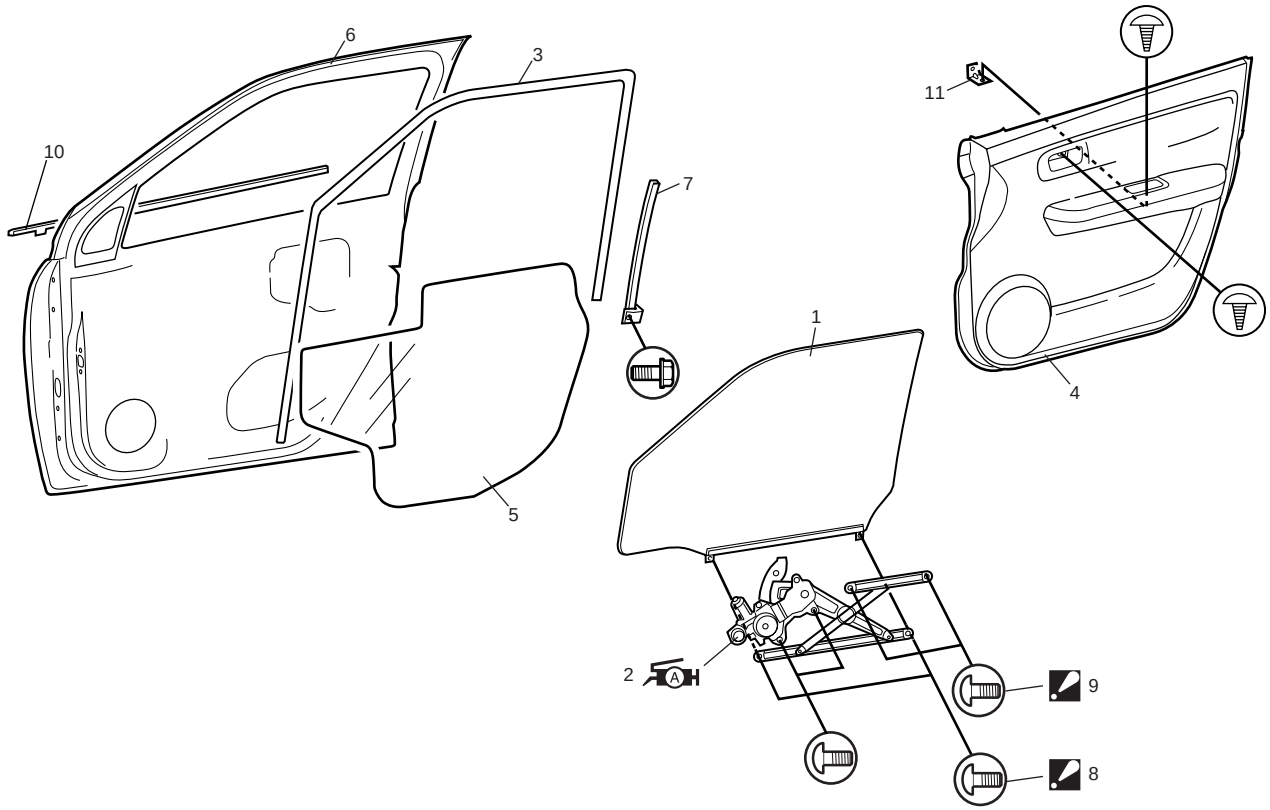
⚠ CAUTION

Upon completion of installation, note the following.

- **Sudden closing of door before adhesive is completely set may cause glass to become loose or to come off. Therefore, if door is opened or closed before adhesive is completely set, make sure to open all door glasses and use proper care.**
- **If molding is not securely in place, hold it down with a tape until adhesive is completely set.**
- **Each adhesive has its own setting time.**
- **Be sure to refer to its maker's instruction, check setting time of adhesive to be used and observe precautions to be taken before adhesive is set.**
- **Refrain from driving till adhesive is completely set so as to ensure proper and sufficient adhesion.**

Front Door Window Components

S7RS0B9506002



I4RS0A950005-01

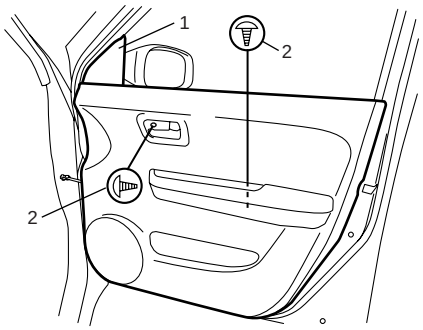
1. Door glass	7. Front door sash
2. Window regulator assembly : Apply lithium grease 99000-25011 to sliding part.	8. Door glass mounting screw : Tighten rear screw first, and then tighten front screw.
3. Glass run	9. Front door window regulator mounting screw : Tighten rear screw first, and then tighten front screw.
4. Door trim	10. Front door outer weather-strip
5. Door sealing cover	11. Door trim bracket
6. Door panel	

Front Door Glass Removal and Installation

S7RS0B9506003

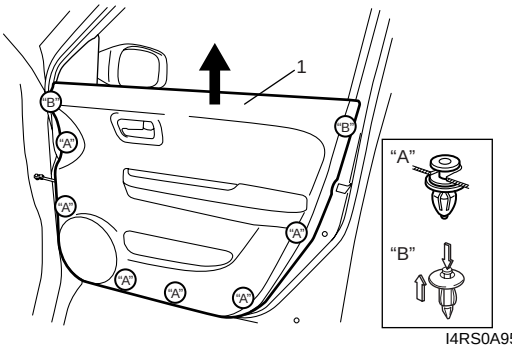
Removal

1) Remove door mirror trim (1).
2) Remove door trim mounting screws (2).



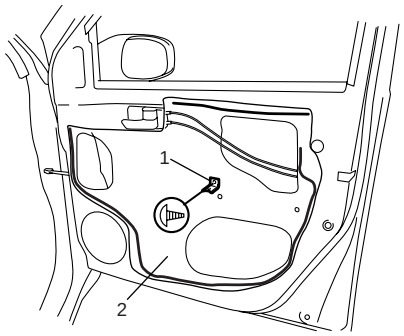
I4RS0A950006-01

3) Remove door trim (1) as shown.
And disconnect power window switch lead wire at coupler.



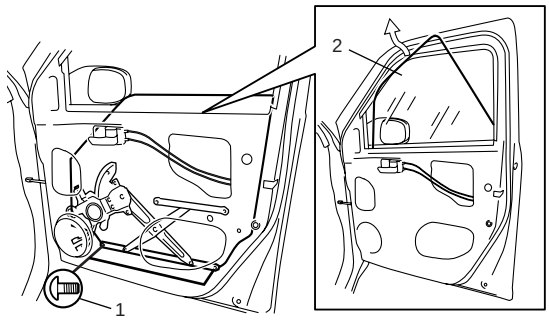
I4RS0A950007-01

4) Remove door trim bracket (1).
5) Remove door sealing cover (2).



I4RS0A950008-01

6) Remove door glass mounting screws (1).
7) Remove door glass (2) while tilting it as shown.

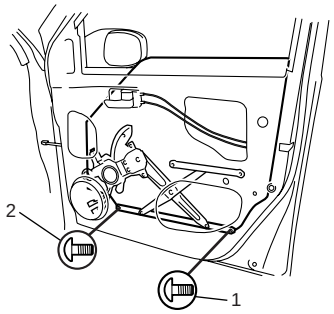


I4RS0A950009-01

Installation

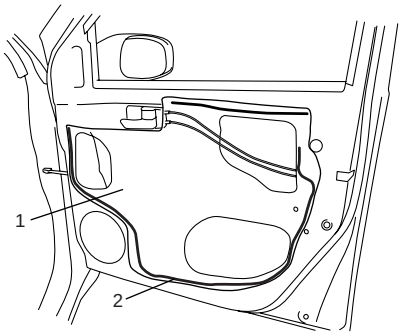
Reverse removal procedure noting the following instructions.

- If there is deformity for glass run, replace it with a new one.
- Tighten door glass rear mounting screw (1) first, and then tighten door glass front mounting screw (2).



I4RS0A950010-01

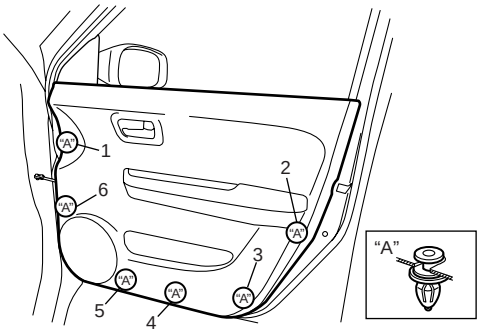
- Secure door sealing cover (1) with adhesive (2).



I4RS0A950011-01

- Install front door trim.

Front door trim attaching order
(1) → (2) → (3) → (4) → (5) → (6)



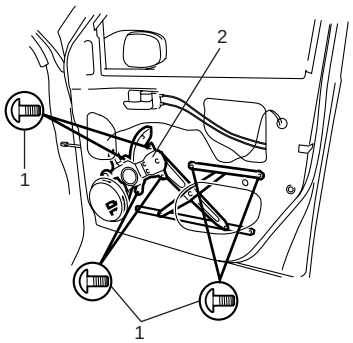
I4RS0A950012-01

Front Door Window Regulator Removal and Installation

S7RS0B9506004

Removal

1) Remove door glass referring to “Front Door Glass Removal and Installation”.
2) Disconnect power window motor lead wire at coupler.
3) Remove regulator mounting screws (1), and then remove front door window regulator (2).



I4RS0A950013-01

Installation

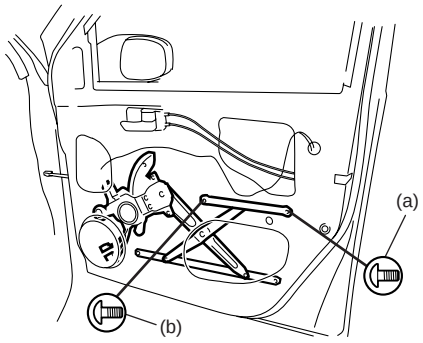
Reverse removal procedure noting the following instruction.

- Apply grease to sliding portions of window regulator.

  : Grease 99000–25011 (SUZUKI Super Grease A)

- Tighten front door window regulator attaching screws.

  Front door window regulator screw tightening order
  (a) → (b)



I4RS0A950014-01

Front Door Window Regulator Inspection

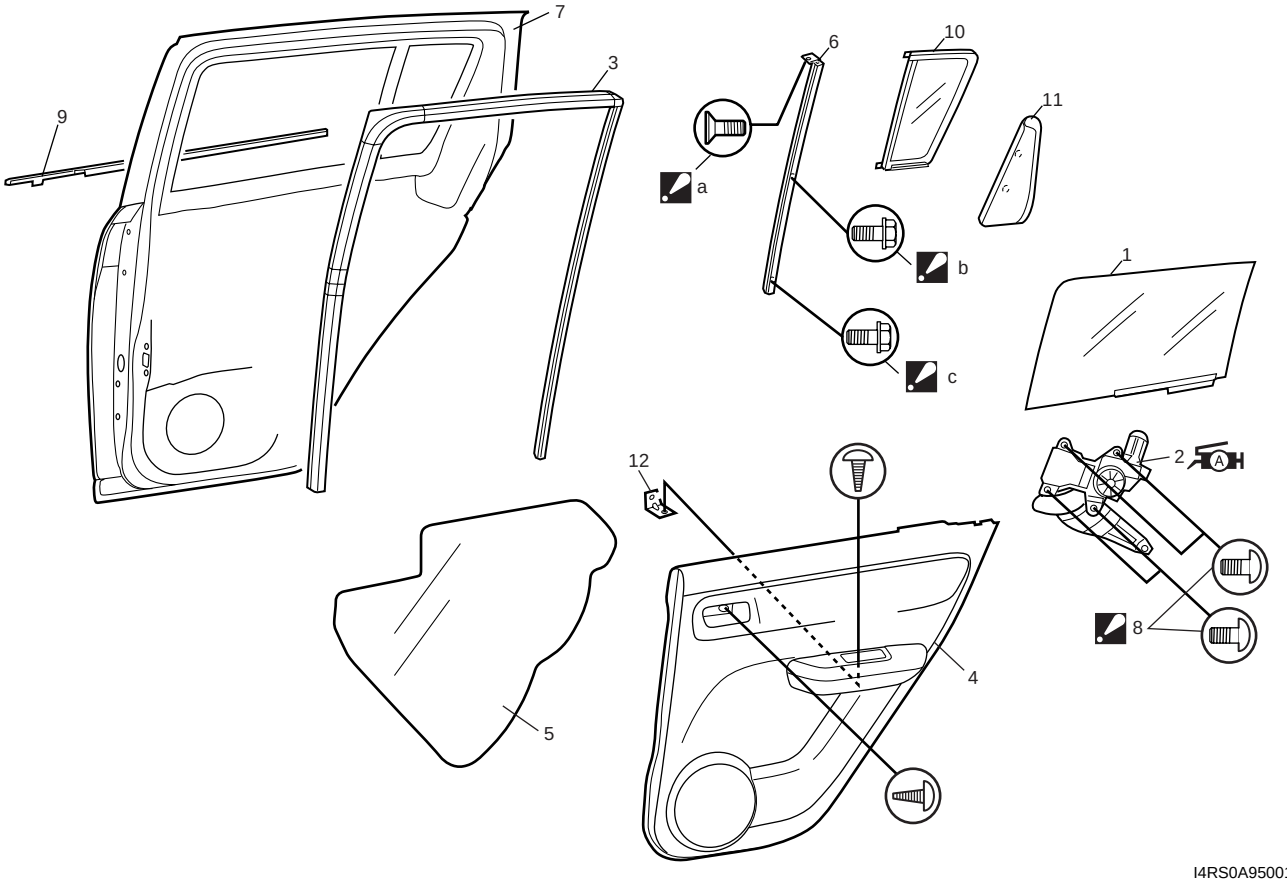
S7RS0B9506005

Check the following parts for wear, damage, smooth operation and lubrication:

- Check regulator sliding and rotating parts.
- Check rollers.

Rear Door Window Components

S7RS0B9506006



I4RS0A950015-01

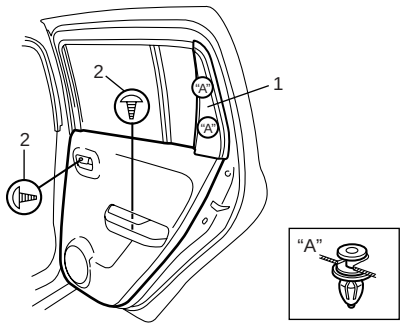
1. Door glass	6. Door sash	11. Rear door inner garnish
2. Window regulator assembly : Apply lithium grease 99000-25011 to sliding part.	7. Door panel	12. Door trim bracket
3. Glass run	8. Rear door window regulator mounting screw : Tighten lower screw first, and then tighten upper screw.	a: Sash upper mounting screw : Tightening order: a → b → c
4. Door trim	9. Rear door outer weather-strip	b, c: Sash lower mounting bolt : Tightening order: a → b → c
5. Door sealing cover	10. Rear door partition glass.	

Rear Door Glass Removal and Installation

S7RS0B9506007

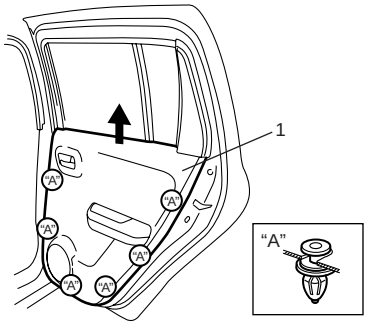
Removal

1) Remove rear door inner garnish (1).
2) Remove door trim mounting screws (2).



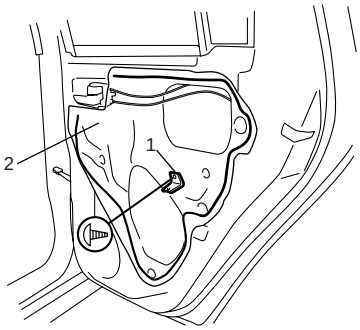
I4RS0A950016-01

3) Remove door trim (1) as shown.
   And disconnect power window switch lead wire at coupler.



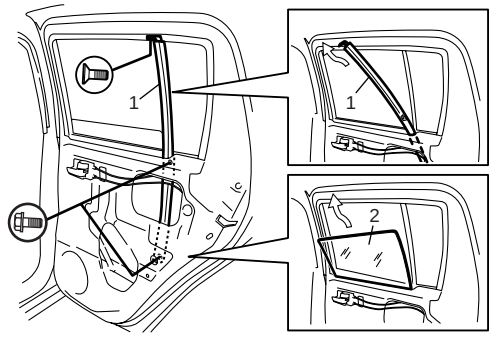
I4RS0A950017-01

4) Remove door trim bracket (1).
5) Remove door sealing cover (2).



I4RS0A950018-01

6) Detach rear part of glass run from door sash (1), and remove door sash (1).
7) Remove door glass (2) as shown.



I4RS0A950019-01

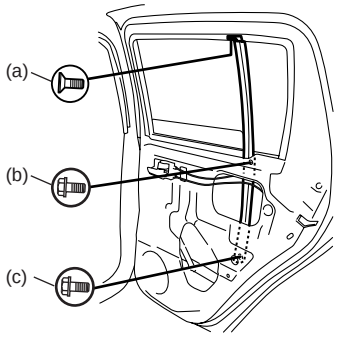
Installation

Reverse removal procedure noting the following instructions.

- If there is deformity for glass run, replace it with a new one.
- Tighten door sash mounting screw and bolts.

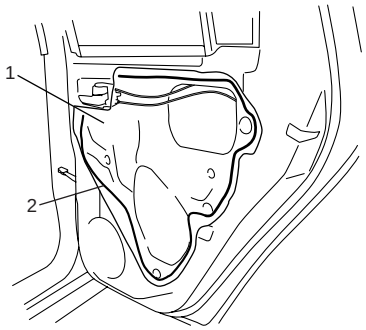
Door sash mounting screw and bolt tightening order

(a) → (b) → (c)



I4RS0A950020-01

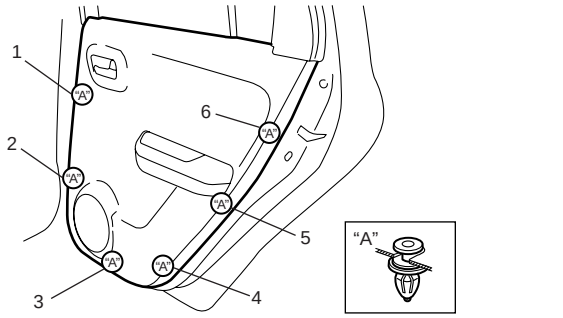
- Secure door sealing cover (1) with adhesive (2).



I4RS0A950021-01

- Install rear door trim.

  Rear door trim attaching order
  (1) → (2) → (3) → (4) → (5) → (6)



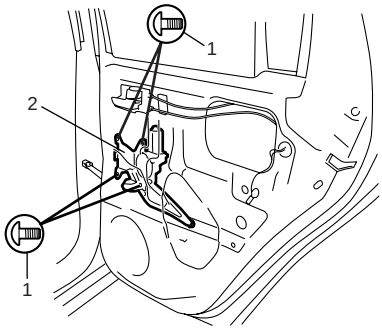
I4RS0A950022-01

Rear Door Window Regulator Removal and Installation

S7RS0B9506008

Removal

1) Remove door glass referring to “Rear Door Glass Removal and Installation”.
2) Disconnect power window motor lead wire at coupler and loosen clamp.
3) Loosen regulator mounting screws (1), and then remove rear window regulator (2).



I4RS0A950023-01

Installation

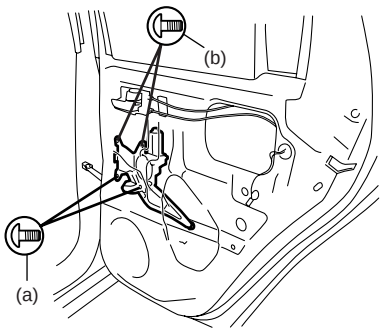
Reverse removal procedure noting the following.

- Apply grease to sliding and rotating portions of window regulator.

  : Grease 99000–25011 (SUZUKI Super Grease A)

- Tighten rear door window regulator attaching screws.

  Rear door window regulator screw tightening order
  (a) → (b)



I4RS0A950024-01

Rear Door Window Regulator Inspection

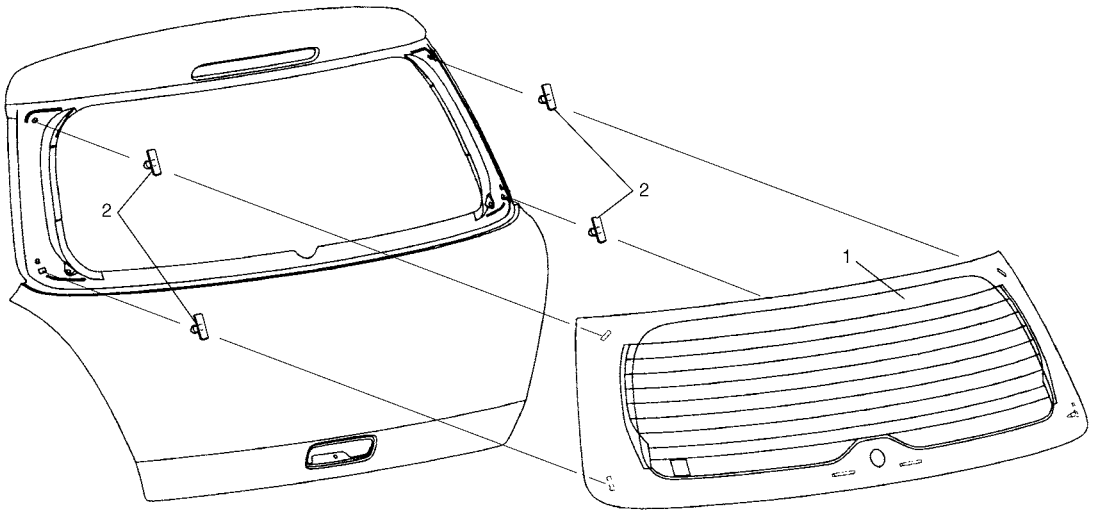
S7RS0B9506009

Check the following point:

- Check regulator sliding and rotating parts.
- Check rollers for wear and damage.

Rear End Door Window Components

S7RS0B9506010



I4RS0A950025-01

1. Rear end door glass	2. Fastener

Rear End Door Glass Removal and Installation

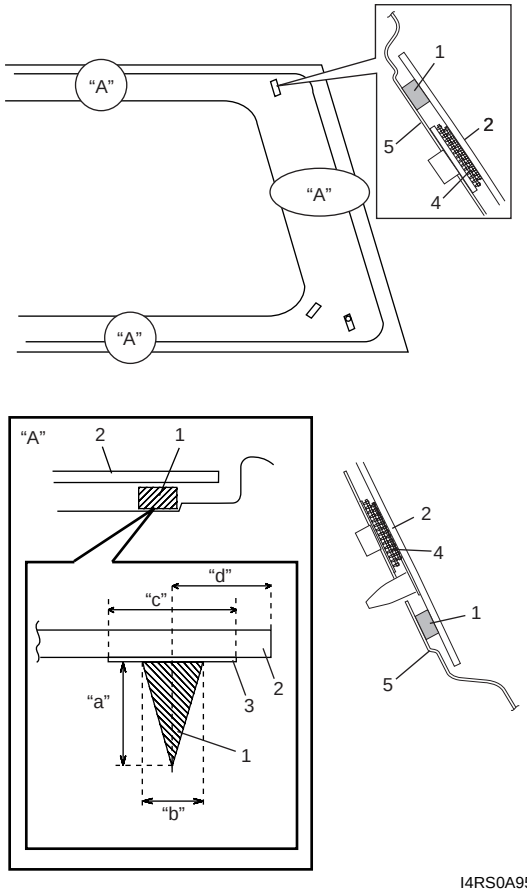
S7RS0B9506011

Refer to “Windshield Removal and Installation” as removal and installation procedures are basically the same. However, note the following.

- Observe the following precautions when applying adhesive (1) along glass (2) edge.
- Adhesive (1) should be applied evenly especially in height.
- Be careful not to damage primer (3).
- With the position of fastener (4) properly aligned, install glass (2) on rear end door panel (5).
- Press glass against body quickly after adhesive (1) is applied.

Adhesive amount specifications and position for rear end door glass

Height “a”: 13 mm (0.51 in.)
Width “b”: 6 mm (0.24 in.)
Width “c”: 14 mm (0.55 in.)
Position “d”: 12 mm (0.47 in.) for glass upper section
Position “d”: 16 mm (0.63 in.) for glass bottom section
Position “d”: 32.5 mm (1.28 in.) for glass side sections



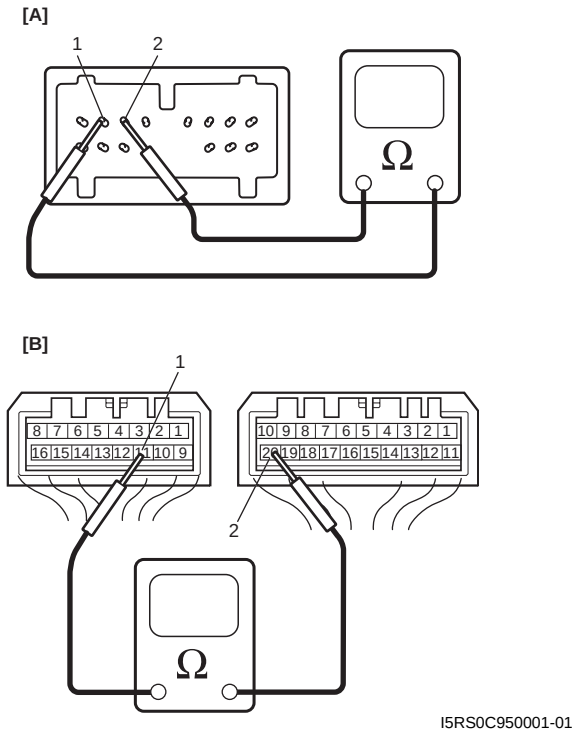
I4RS0A950026-01

Rear End Door Window Defogger Switch Inspection

S7RS0B9506012

1) Check rear end door window defogger switch for operation as follows.
   a) Rear end door window defogger switch is built in HVAC control module (unit).
      Remove HVAC control module (unit) referring to "HVAC Control Unit Removal and Installation in Section 7A" or "HVAC Control Module Removal and Installation in Section 7B".
   b) Check that there is continuity between terminal (1) and terminal (2) of HVAC control module (unit) when rear end door window defogger switch is at ON position. (Rear end door window defogger switch is kept in push.)
   c) Check that there is no continuity between terminal (1) and terminal (2) of HVAC control module (unit) when rear end door window defogger switch is at OFF position.

If check result does not meet the above conditions, replace HVAC control module (unit).



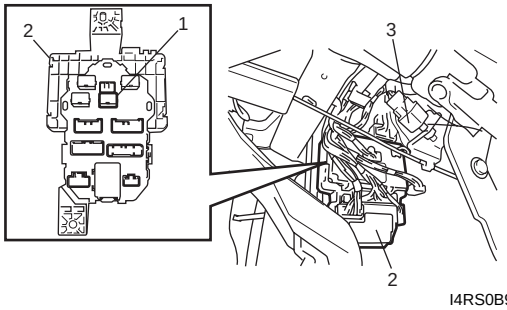
I5RS0C950001-01

[A]: Manual A/C model	[B]: Automatic A/C model

Rear End Door Window Defogger Relay Inspection

S7RS0B9506013

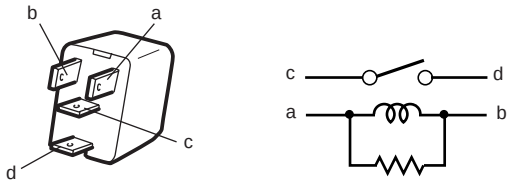
1) Disconnect negative (–) cable from battery.
2) Remove junction block assembly for inspection of rear end door window defogger relay.
   For removal, refer to "BCM (Included in Junction Block Assembly) Removal and Installation in Section 10B".
3) Remove rear end door window defogger relay (1) from junction block assembly (2).



I4RS0B950009-01

3. Brake (stop) lamp switch

4) Check that there is no continuity between terminal "c" and "d". If there is continuity, replace relay.
5) Check that there is continuity between terminals "c" and "d" when a 12 V battery is connected to terminals "a" and "b".
   If malfunction is found, replace it with a new one.



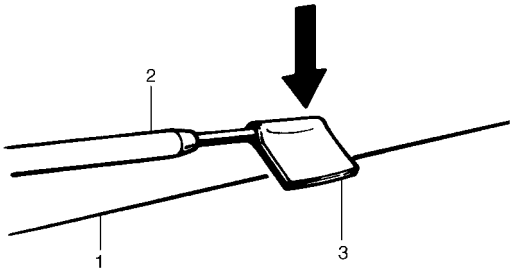
I4RS0A950028-01

Rear End Door Window Defogger Wire Inspection

S7RS0B9506014

NOTE

- **When cleaning rear end door window glass, use a dry cloth to wipe it along heat wire (1) direction.**
- **When cleaning glass, do not use detergent or abrasive-containing glass cleaner.**
- **When measuring wire voltage, use a tester with positive probe (2) wrapped with a tin foil (3) which should be held down on wire by finger pressure.**



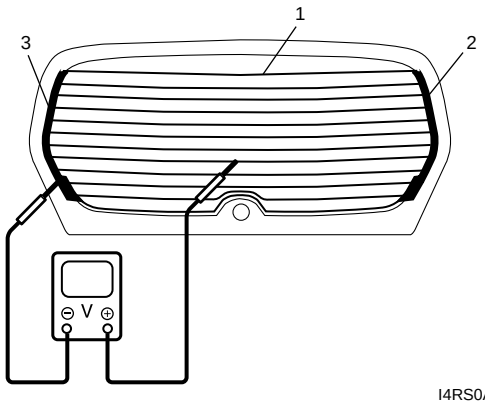
I2RH01950002-01

Wire Damage Inspection

1) Start engine.
2) Turn on defogger switch.
3) Measure voltage at the center of each defogger wire (1), and check defogger wire condition according to the following table.
   If defogger wire open is found, go to next step.

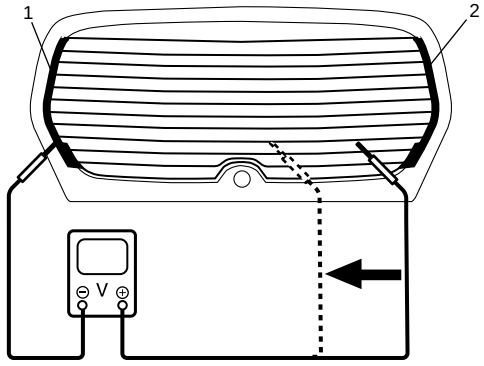
Defogger wire voltage

Voltage	Circuit
0 – 1 V	Defogger wire open between its center and defogger wire power source terminal end (2)
4 – 6 V	Normal condition
10 – 12 V	Defogger wire open between its center and defogger wire ground terminal end (3)



I4RS0A950029-01

4) Touch voltmeter negative (–) lead to defogger wire ground terminal end (1).
5) Touch voltmeter positive (+) lead with a foil strip to defogger wire power source terminal end (2), then move it along wire to defogger wire ground terminal end (1).
   The place where voltmeter fluctuates from 10 – 12 V to 0 – 1 V is where there is open.
   If found defective, repair defogger wire referring to "Rear End Door Window Defogger Wire Repair".

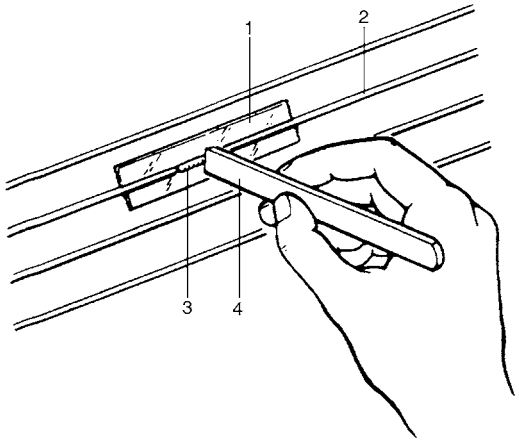


I4RS0A950030-01

Rear End Door Window Defogger Wire Repair

S7RS0B9506015

1) Use white gasoline for cleaning.
2) Apply masking tape (1) at both upper and lower sides of heat wire (2) to be repaired.
3) Apply commercially-available repair agent (3) with a fine-tip brush (4).
4) 2 to 3 minutes later, remove masking tapes (1).



I2RH01950005-01

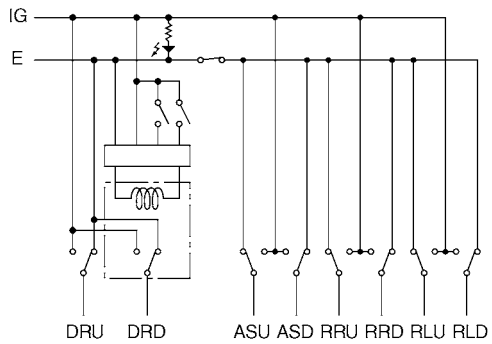
5) Leave repaired heat wire as it is for at least 24 hours before operating the defogger again.

Power Window Main Switch Inspection

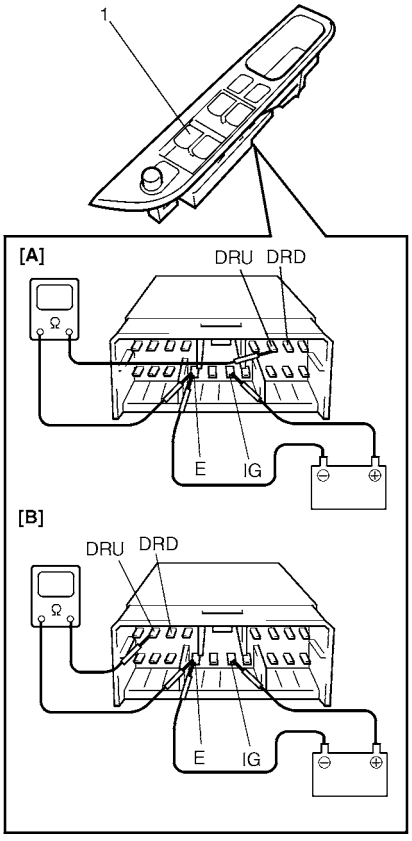
S7RS0B9506016

Switch for driver side window

1) Remove driver side door trim referring to step 1) to 3) of “Front Door Glass Removal and Installation”.
2) Remove power window main switch from door trim.
3) Connect 12 V battery positive (+) terminal to terminal “IG” of power window main switch and its negative (–) terminal to terminal “E” of power window main switch.
4) Check for continuity between terminals as shown below.
   If check result is not as specified, replace power window main switch.



	IG	DRU	DRD	E
UP	○—○			○—○
OFF			○—○	○
DOWN	○		○—○	
			○	○



I5RS0C950002-01

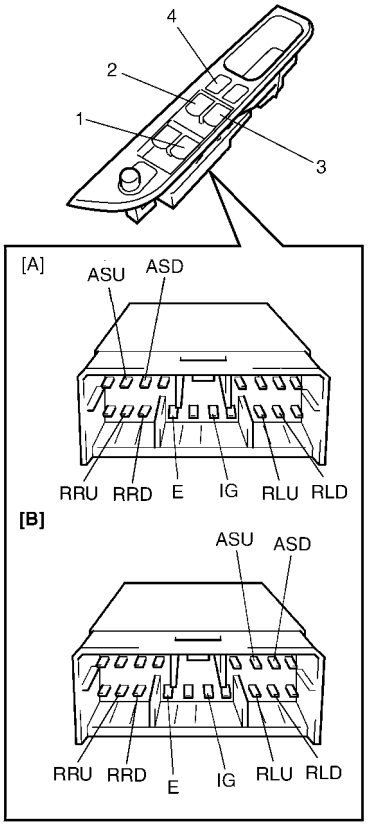
[A]: LH steering vehicle
[B]: RH steering vehicle
1. Driver side power window switch

Switch for other window than driver side

1) Remove driver side door trim referring to step 1) to 3) of “Front Door Glass Removal and Installation”.
2) Remove power window main switch from door trim.
3) Check for continuity between terminals as shown below.

If check result is not as specified, replace power window main switch.

Passenger side window switch (1)		IG	ASU	ASD	E
Rear right side window switch (2)		IG	RRU	RRD	E
Rear left side window switch (3)		IG	RLU	RLD	E
UNLOCK	UP	○—○		○—○	
	OFF		○—○	○—○	○—○
	DOWN	○—○	○—○	○	
LOCK	UP	○—○			
	OFF		○—○	○—○	
	DOWN	○	○—○	○—○	



I5RS0C950003-01

[A]: LH steering vehicle
[B]: RH steering vehicle
4. Power window lock switch

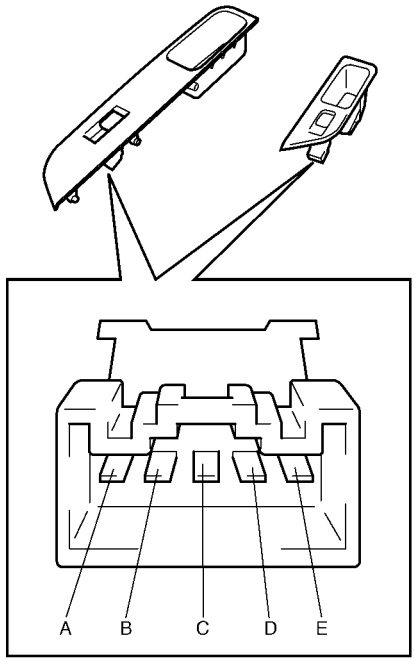
Power Window Sub Switch Inspection

S7RS0B9506017

1) Remove front and/or rear door trim from door panel, refer to Step 1) to 3) of “Front Door Glass Removal and Installation” and/or “Rear Door Glass Removal and Installation”.
2) Remove power window sub switch from door trim.
3) Check for continuity between terminals at each switch condition.

If check result is not as specified, replace switch.

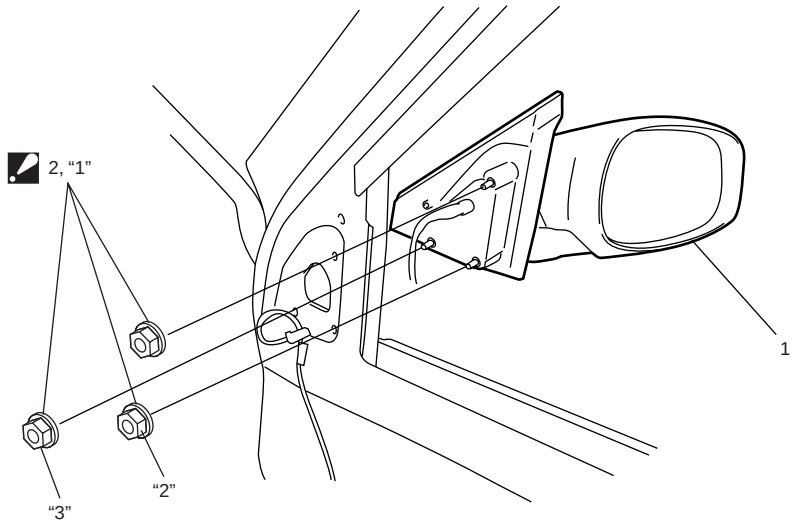
Switch Position \ Terminal	A	B	C	D	E
UP	○—○		○—○		
OFF	○—○			○—○	
DOWN		○—○		○—○	



I4RS0A950033-01

Door Mirror Components

S7RS0B9506018



I4RS0A950034-01

	1. Door mirror
✎	2. Door mirror mounting nut :Tighten nuts in such order as indicated in the figure.

Door Mirror Removal and Installation

S7RS0B9506019

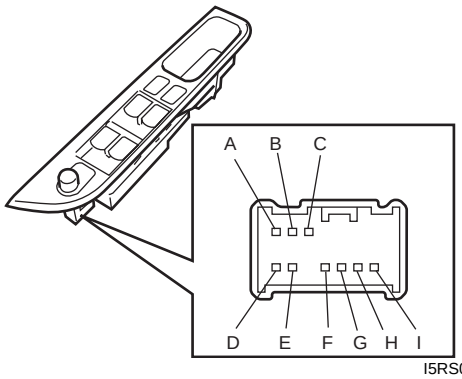
When removing or installing door mirror, refer to the figure in “Door Mirror Components”.

Power Door Mirror Switch Inspection

S7RS0B9506020

1) Remove driver side door trim referring to step 1) to 3) of “Front Door Glass Removal and Installation”.
2) Remove power window main switch from door trim.
3) Check for continuity between terminals at each switch position.
   If check result is not as specified, replace door mirror switch.

L R	A B	C	D	E F	G	H	I
Up		○		○	○		
			○	○			
Down		○	○		○		
		○		○			
Left	○	○					
			○	○			
Right	○		○				
		○		○			
*Set			○			○	
		○					○
*Retract			○				○
		○				○	



I5RS0C950004-01

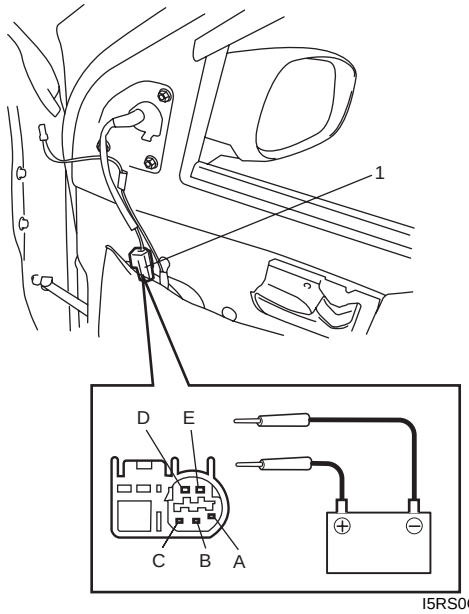
*: Vehicle with retractable mirror only

Power Door Mirror Actuator Inspection

S7RS0B9506021

1) Remove front door trim referring to step 1) to 3) of “Front Door Glass Removal and Installation”.
2) Disconnect door mirror coupler (1).
3) Check that door mirror operates properly when battery voltage is applied to connector terminals.
4) Connect battery positive (+) and negative (–) terminal to the door mirror terminals as shown. If it does not follow the table’s operation, replace door mirror assembly.

Terminal / Operation	A	B	C	D	E
Up	⊕	⊖			
Down	⊖	⊕			
Left		⊖	⊕		
Right		⊕	⊖		
*Set				⊖	⊕
*Retract				⊕	⊖



I5RS0C950005-01

*: Vehicle with retractable mirror only

Door Mirror Heater Switch Inspection (If Equipped)

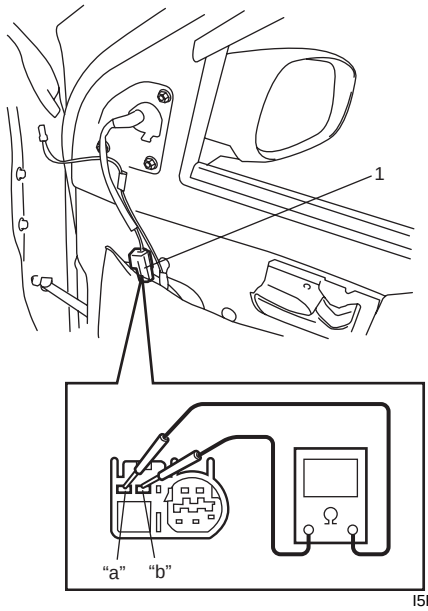
S7RS0B9506022

Door mirror heater is operated by rear end door window defogger switch. Check rear end door window defogger switch referring to “Rear End Door Window Defogger Switch Inspection”.

Door Mirror Heater Inspection (If Equipped)

S7RS0B9506023

1) Remove front door trim referring to Step 1) to 3) of “Front Door Glass Removal and Installation”.
2) Disconnect door mirror coupler (1).
3) Check for continuity between terminals “a” and “b”. If no continuity, replace outside mirror.



I5RS0D950001-01

Special Tools and Equipment

Recommended Service Material

S7RS0B9508001

Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI Super Grease A	P/No.: 99000–25011	☞ / ☞

NOTE

Required service material is also described in the following.
“Front Door Window Components”
“Rear Door Window Components”

Security and Locks

General Description

Key Coding Construction

S7RS0B9601001

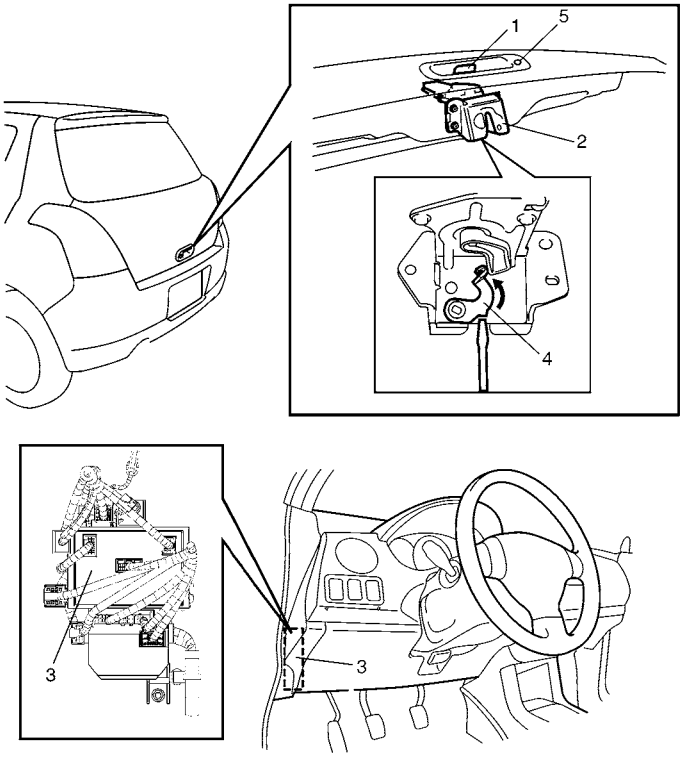
Key Usage and Identification

Key is used for ignition and door lock cylinders. Key is cut on both edges to make them reversible.
Key identification is obtained from five character key code stamped on key code tag. Using this key code, key code cutting combination can be determined from a code list (available to owners of key cutting equipment from suppliers).

Rear End Door Opener System Description

S7RS0B9601002

Rear end door opener system consists of rear end door opener switch (1), rear end door opener relay (in BCM), rear end door lock assembly (2) and BCM (3) (in junction block assembly).
Rear end door opener system is activated by pushing rear end door opener switch after all doors are unlocked by manual door switch, key cylinder switch, keyless entry transmitter or request switch (5) (if equipped).
When rear end door opener switch pushed rear end door opener relay is ON. Then, BCM releases latch of rear end door lock assembly from striker and rear end door can be opened.
In addition, in case that rear end door cannot be opened by rear end door opener switch, rear end door can be opened by emergency lever (4) in rear end door lock assembly.

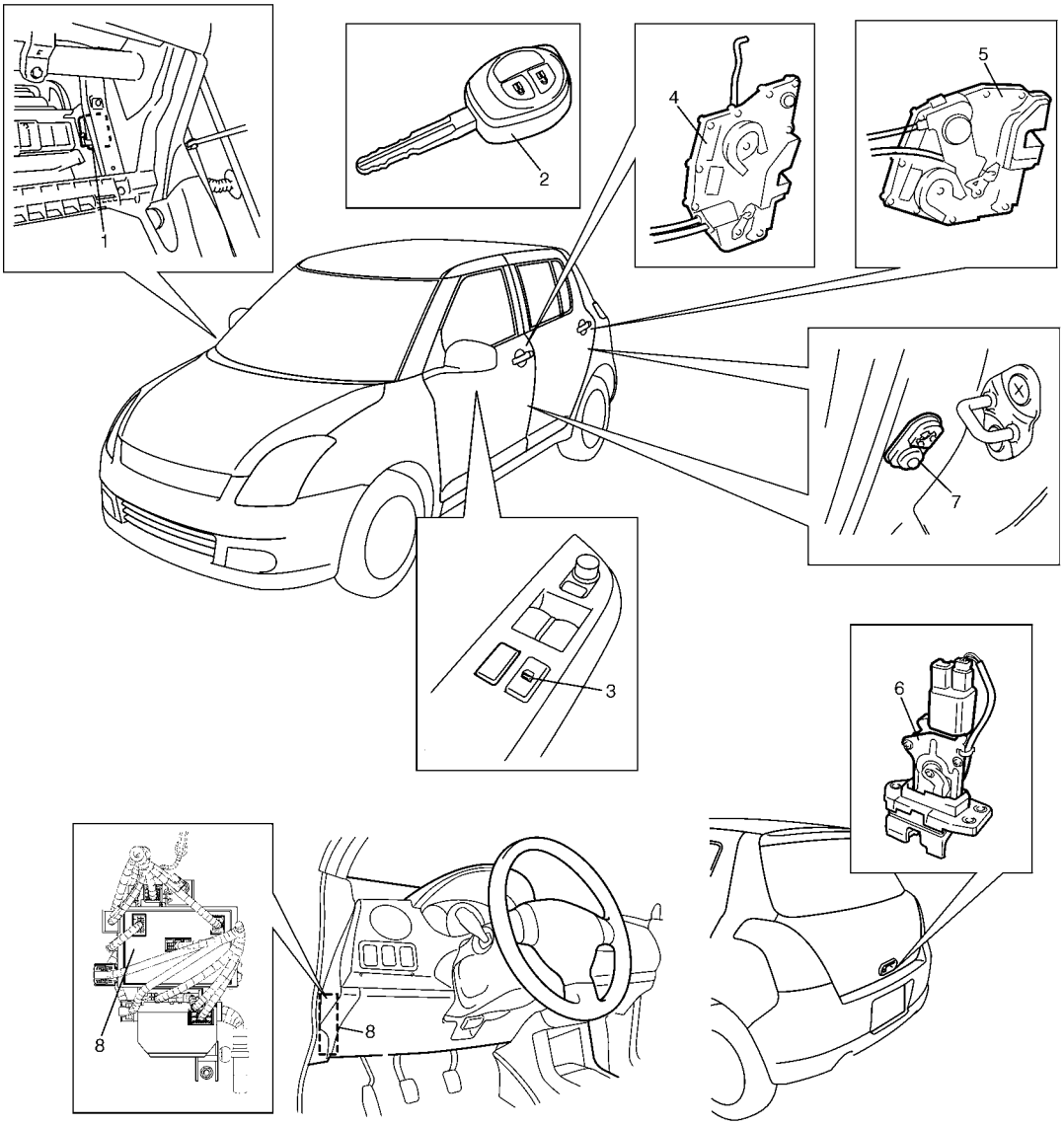


I4RS0B960001-01

Component Location

Power Door Lock and Keyless Entry System Component Location

S7RS0B9603001



I4RS0B960002-01

1. Keyless entry receiver	3. Power door lock switch	5. Rear door actuator	7. Door switch
2. Transmitter	4. Front door actuator	6. Rear end door actuator	8. BCM (included in junction block assembly)

Diagnostic Information and Procedures

Power Door Lock System Symptom Diagnosis

S7RS0B9604001

NOTE

- **Use of SUZUKI scan tool makes it easy to check whether a faulty condition is on the input side or output side of BCM. For checking procedure, refer to "Diagnosis Using Output Test Function of SUZUKI Scan Tool" under "Scan Tool Data in Section 10B".**
- **Check each part in the order from the top of the following list.**

Condition	Possible cause	Correction / Reference Item
All door can not be locked / unlocked by all of switches	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
All door can not be locked / unlocked by only power door lock switch	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Power door lock switch faulty	*Check power door lock switch referring to "Power Door Lock Switch Inspection".*
	Wiring harness connected to power door lock switch faulty	*Repair.*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
All door can not be locked / unlocked by only key cylinder switch	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Key cylinder switch faulty	*Check key cylinder switch referring to "Door Key Cylinder Switch Inspection".*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Only one door can not be locked / unlocked	Power door lock actuator faulty	*Check actuator referring to "Power Door Lock Actuator Inspection".*
	Wiring harness connected to applicable door lock actuator faulty	*Repair.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

Power Door Lock System Operation Inspection

S7RS0B9604002

1) Check the following operation:

a) Turn the driver side key cylinder is turned LOCK once, check all doors lock.

b) Turn the driver side door key cylinder is turned UNLOCK position with door key twice, check all doors unlock.

If malfunction is found, go to "Power Door Lock System Symptom Diagnosis".

Keyless Entry System Symptom Diagnosis (If Equipped)

S7RS0B9604003

NOTE

- **Confirm that power door lock system is in good condition before referring to the following possible causes.**
- **Check each part in the order from the top of the following list.**

Condition	Possible cause	Correction / Reference Item
All door can not be locked / unlocked by only keyless entry transmitter	Transmitter battery dead	*Replace battery referring to "Replacement of Transmitter Battery".*
	Door switch faulty	*Check door switch referring to "Door Switch (Front / Rear Door) Inspection in Section 9C" and/or "Rear End Door Switch Inspection in Section 9C".*
	Transmitter faulty	*Replace transmitter.*
	Key reminder switch in ignition switch faulty	*Check ignition switch referring to "Ignition Switch Inspection in Section 9C".*
	Wiring or grounding faulty	*Repair circuit.*
	Keyless entry receiver faulty	*Check keyless entry receiver referring to "Keyless Entry Receiver and Its Circuit Inspection".*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Interior light does not light when doors are unlocked by keyless entry transmitter	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Hazard warning lights do not light when doors are locked/unlocked by keyless entry transmitter	Turn signal and hazard warning relay faulty	*Check turn signal and hazard warning relay referring to "Turn Signal and Hazard Warning Relay Inspection in Section 9B".*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*
Transmitter code can not be programmed to BCM	Door switch faulty	*Check door switch referring to "Door Switch (Front / Rear Door) Inspection in Section 9C" and/or "Rear End Door Switch Inspection in Section 9C".*
	Keyless entry receiver faulty	*Check keyless entry receiver referring to "Keyless Entry Receiver and Its Circuit Inspection".*
	Key reminder switch in ignition switch faulty	*Check ignition switch referring to "Ignition Switch Inspection in Section 9C".*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

Keyless Entry System Operation Inspection

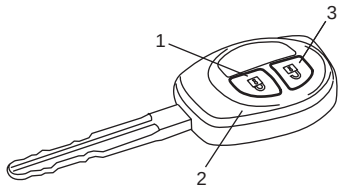
S7RS0B9604004

NOTE

When performing the this inspection, make sure to have any of the door once opened/ closed after the ignition key has been removed from the ignition key cylinder.

1) Confirm that power door lock system operates normally, refer to “Power Door Lock System Operation Inspection”.
2) All doors are closed and unlocked.
3) Check the following operation:
   a) Push “lock” button (1) on transmitter (2) or remote controller once, and check all doors lock and hazard waning lights flash once.
   b) Push “unlock” button (3) on transmitter (2) or remote controller twice, and check all doors unlock and hazard waning lights flash twice and interior light turns on several seconds with the interior light switch in the middle position.

If malfunction is found, go to “Keyless Entry System Symptom Diagnosis (If Equipped)”.



I4RS0B960013-01

Door Lock Function of Keyless Start System Symptom Diagnosis (If Equipped)

S7RS0B9604005

Proceed to “Keyless Start System Symptom Diagnosis in Section 10E” in case that doors cannot be locked and unlocked by operating the request switch at the outside door handle.

Rear End Door Opener System Symptom Diagnosis

S7RS0B9604006

NOTE

- **Use of SUZUKI scan tool makes it easy to check whether a faulty condition is on the input side or output side of BCM. For checking procedure, refer to “Diagnosis Using Output Test Function of SUZUKI Scan Tool” under “Scan Tool Data in Section 10B”.**
- **Check each part in the order from the top of the following list.**

Condition	Possible cause	Correction / Reference Item
Rear end door can not be opened	Circuit fuse blown	*Replace fuse and check for short circuit.*
	Rear end door opener switch faulty	*Check rear end door opener switch referring to “Rear End Door Opener Switch Inspection”.*
	Rear end door actuator faulty	*Check rear end door actuator referring to “Power Door Lock Actuator Inspection”.*
	Wiring or grounding faulty	*Repair circuit.*
	BCM faulty	*Replace after making sure that none of above parts is faulty.*

Rear End Door Opener System Operation Inspection

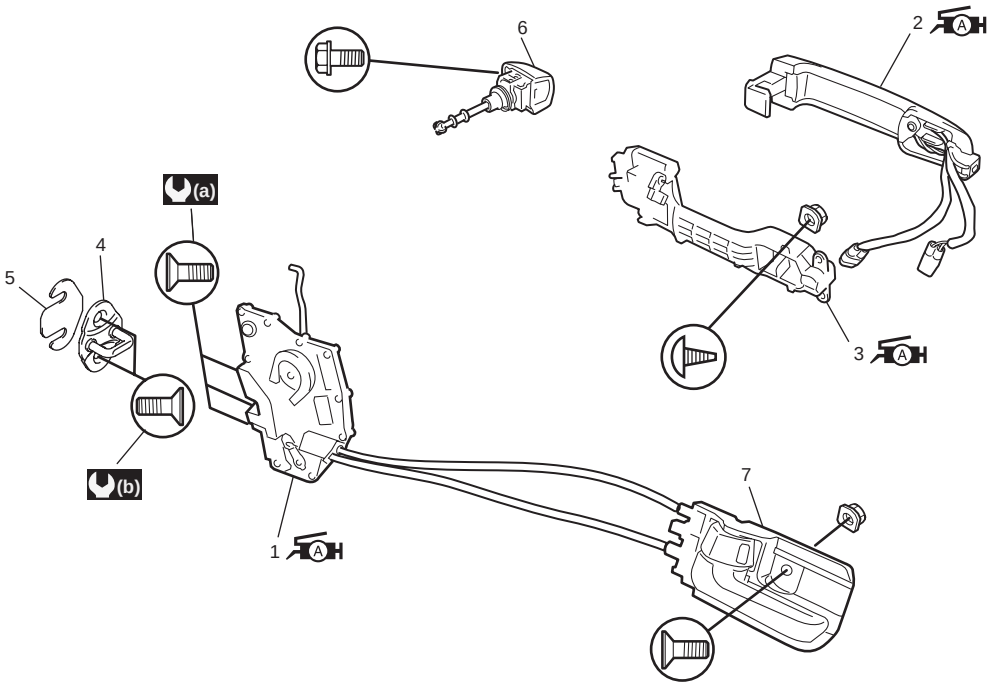
S7RS0B9604007

1) Unlock all doors by using manual lock switch, keyless entry transmitter, or key cylinder switch.
2) Make sure that latch of rear end door is released from striker when rear end door opener switch is pushed. If malfunction is found, go to “Rear End Door Opener System Symptom Diagnosis”.

Repair Instructions

Front Door Lock Assembly Components

S7RS0B9606001



I4RS0B960003-01

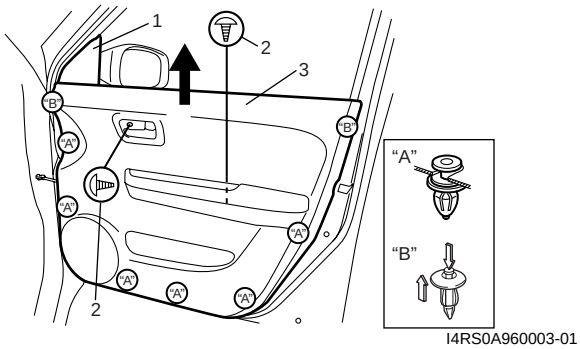
1. Front door latch assembly : Apply lithium grease 99000-25010 to sliding and rotating parts and spring if any.	4. Latch striker	7. Inside handle bezel
2. Outside handle assembly : Apply lithium grease 99000-25010 to sliding part.	5. Shim	(a) : 5.0 N·m (0.5 kgf-m, 4.0 lb-ft)
3. Outside handle frame : Apply lithium grease 99000-25010 to sliding part and spring.	6. Key cylinder	(b) : 10 N·m (1.0 kgf-m, 7.5 lb-ft)

Front Door Lock Assembly Removal and Installation

S7RS0B9606002

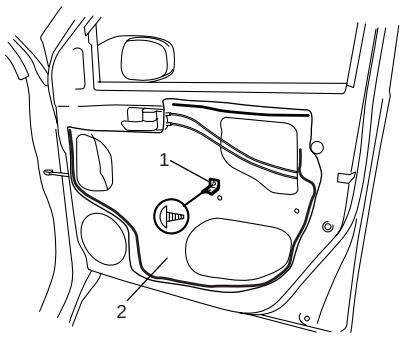
Removal

1) Remove door mirror trim (1).
2) Remove door trim (3) after removing screws (2) and clips “A” and “B”.



I4RS0A960003-01

3) Disconnect power window switch and mirror switch lead wire at coupler.
4) Remove door trim bracket (1).
5) Remove door sealing cover (2).



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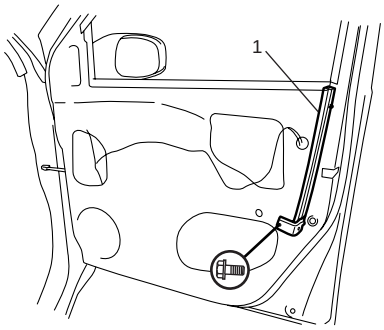
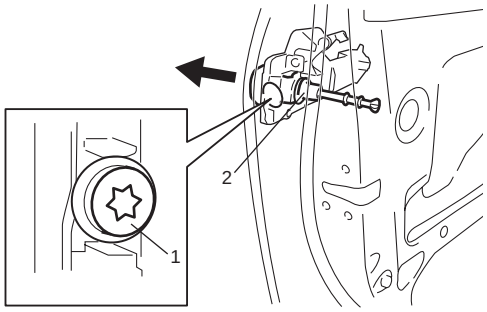
6) Raise window all the way up.
7) Remove door sash (1).



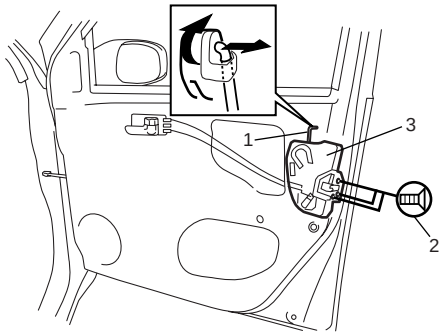
I4RS0A960007-01

8) Remove key cylinder mounting bolt (1), and then remove key cylinder (2).



I4RS0B960005-01

9) Disconnect door opening control rod (1) from outside handle.
10) Disconnect door lock motor lead wire at coupler.
11) Remove door latch screws (2) and remove door lock assembly (3).



I4RS0A960006-01

Installation

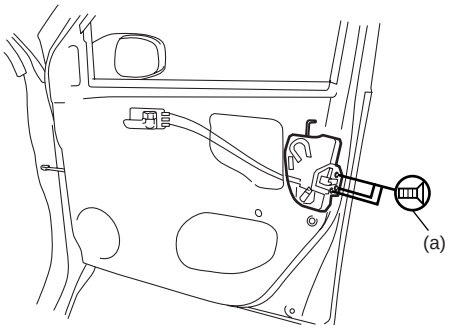
Reverse removal procedure to install front door lock assembly noting the following instructions.

- Apply grease to sliding parts of door latch assembly.

  : Grease 99000–25010 (SUZUKI Super Grease A)

- Tighten door latch screws to specified torque.

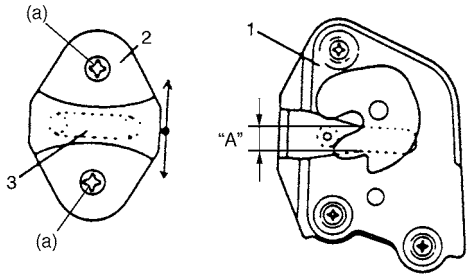
Tightening torque
Door latch screw (a): 5.0 N·m (0.5 kgf-m, 4.0 lb-ft)



I4RS0A960008-01

- Move door latch striker (2) up or down so its center aligns with the center of groove “A” on the door lock assembly (1) as shown.
  Striker should be moved vertically and placed level. Do not adjust door lock.

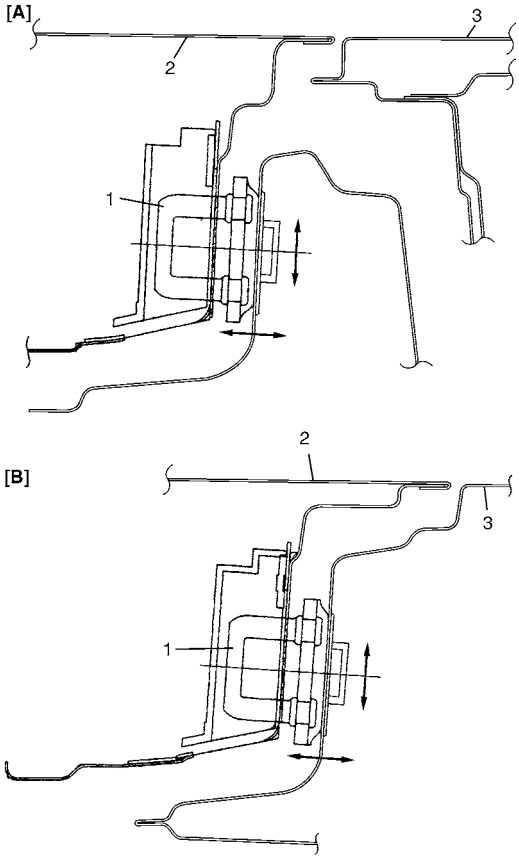
Tightening torque
Door latch striker screw (a): 10 N·m (1.0 kgf-m, 7.5 lb-ft)



I4RS0A960029-01

3. Shaft

- Move door latch striker (1) sideways to adjust door outer panel surface (2) flush with rear door outer panel or body outer panel surface (3) as shown.
  In order to correctly obtain door lock operation increase or decrease number of shims inserted between body and striker (1) to adjust it.



I3RM0A960013-01

[A]: Front door
[B]: Rear door

Front Door Lock Assembly Inspection

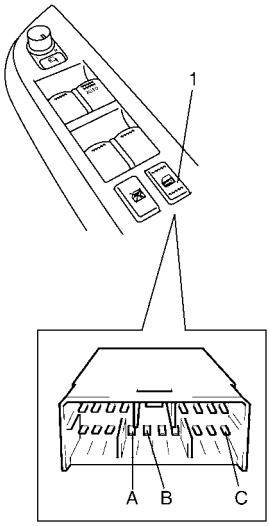
S7RS0B9606003

- Check that door open and closes smoothly and properly.
- Check that door stops in the secondary latched position properly (preventing door from opening freely) and that door closed completely in the fully latched position.
- Adjust door latch striker position, if necessary.

Power Door Lock Switch Inspection

S7RS0B9606004

Check for continuity between terminals at each switch position. If check result is not as specified, replace switch.



Terminal / Switch	A	B	C
LOCK	○		○
OFF			
UNLOCK	○	○	

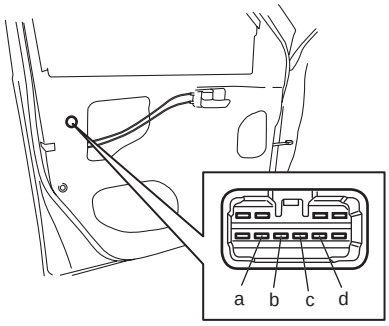
I4RS0A960009-01

1. Power door lock switch

Door Key Cylinder Switch Inspection

S7RS0B9606005

1) Remove front door trim referring to Step 1) to 3) of "Front Door Glass Removal and Installation in Section 9E"
2) Check for continuity between terminals at each switch position. If check result is not as specified, replace door lock assembly.



Right side switch terminals	b	c	d
Left side switch terminals	c	b	a
LOCK	○		○
OFF			
UNLOCK	○	○	

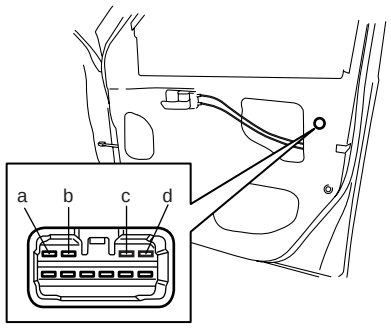
I4RS0B960007-01

Power Door Lock Actuator Inspection

S7RS0B9606006

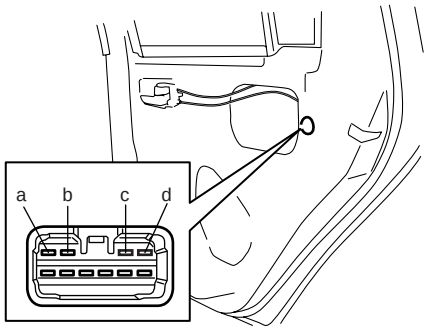
1) Remove door trim from door panel.
   For front door, refer to Step 1) to 3) of “Front Door Glass Removal and Installation in Section 9E”.
   For rear door, refer to Step 1) to 3) of “Rear Door Glass Removal and Installation in Section 9E”.
   For rear end door, refer to Step 1) of “Rear End Door Assembly Removal and Installation in Section 9J”.
2) Disconnect power door lock actuator coupler.
3) Connect battery positive (+) and negative (–) terminals to the door lock actuator terminals (a, b, c, d) as shown in figure.
   If it does not operate as specified in the following table, replace door lock assembly.

[A]



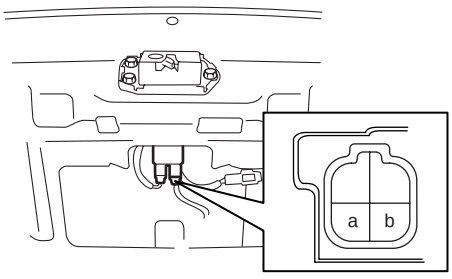
Right side switch terminals			d	b
Left side switch terminals			a	c
Unlock	→	Lock	⊖	⊕
Lock	→	Unlock	⊕	⊖

[B]



Right side switch terminals			a	c
Left side switch terminals			d	b
Unlock	→	Lock	⊖	⊕
Lock	→	Unlock	⊕	⊖

[C]



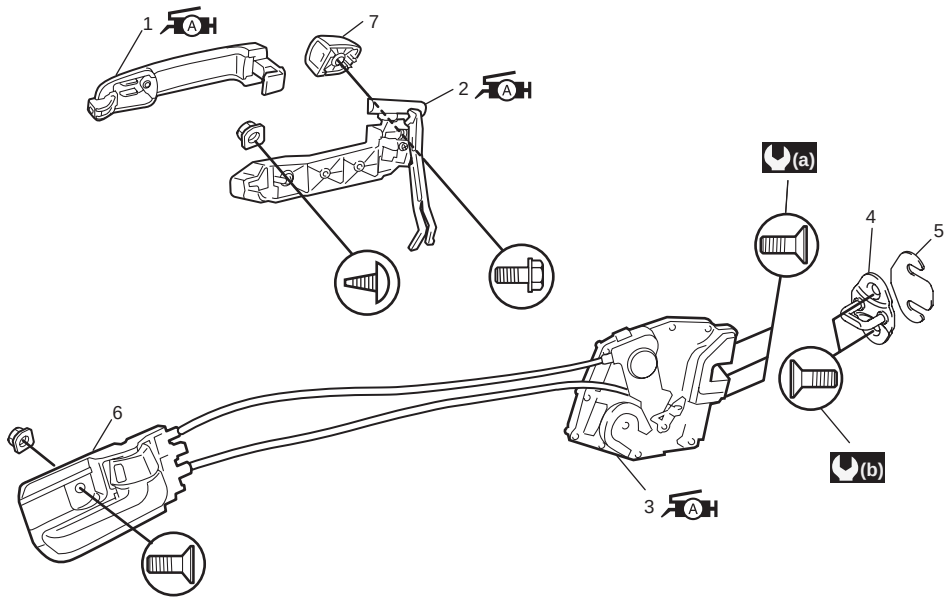
			a	b
Lock	→	Unlock	⊕	⊖

I4RS0A960011-02

[A]: Front door
[B]: Rear door
[C]: Rear end door

Rear Door Lock Assembly Components

S7RS0B9606007



I4RS0A960012-02

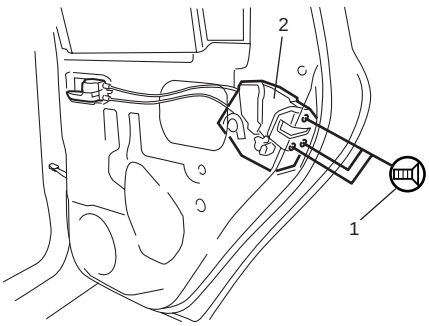
1. Outside handle : Apply lithium grease 99000-25010 to sliding part.	4. Latch striker	7. Out side handle cap
2. Outside handle frame : Apply lithium grease 99000-25010 to sliding part and spring.	5. Shim	(a) : 5.0 N·m (0.5 kgf-m, 4.0 lb-ft)
3. Rear door latch assembly : Apply lithium grease 99000-25010 to sliding part.	6. Inside handle bezel	(b) : 10 N·m (1.0 kgf-m, 7.5 lb-ft)

Rear Door Lock Assembly Removal and Installation

S7RS0B9606008

Removal

1) Remove rear door glass referring to “Rear Door Glass Removal and Installation in Section 9E”.
2) Disconnect door lock motor lead wire.
3) Remove door latch mounting screws (1) and remove door latch assembly (2).



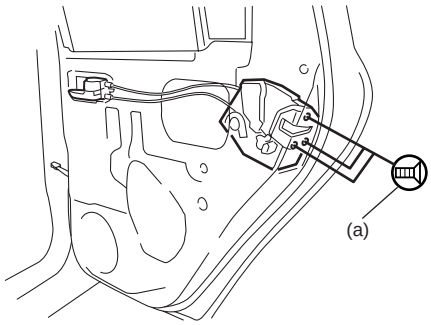
I4RS0A960013-01

Installation

Reverse removal procedure to install rear door lock assembly referring to the following instruction and “Front Door Lock Assembly Removal and Installation”.

- Tighten door latch screw to specified torque.

Tightening torque
Door latch screw (a): 5.0 N·m (0.5 kgf-m, 4.0 lb-ft)



I4RS0A960014-01

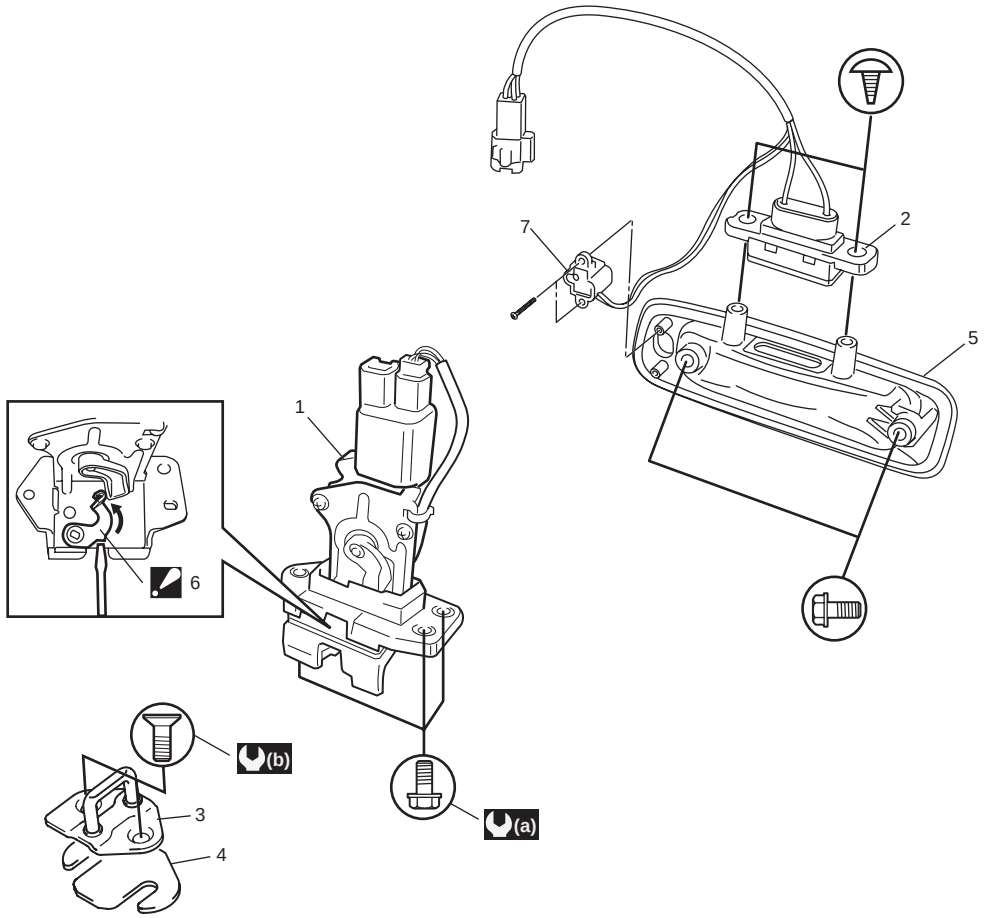
Rear Door Lock Assembly Inspection

S7RS0B9606009

- Check that door opens and closes smoothly and properly.
- Check that door stops in the secondary latched position properly (preventing door from opening freely) and that door closes completely in the fully latched position.
- Adjust door latch striker position, if necessary.

Rear End Door Lock Assembly Components

S7RS0B9606010



I4RS0B960009-01

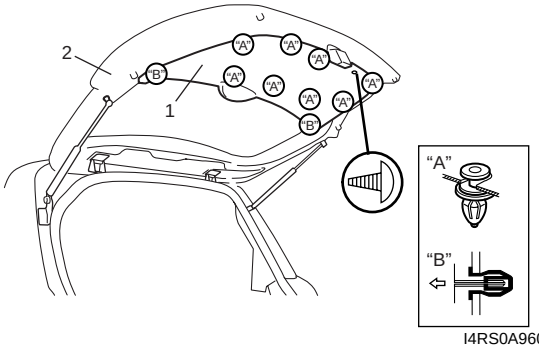
1. Rear end door latch assembly (rear end door switch is built in this assembly)	4. Shim	7. Rear end door request switch (if equipped)
2. Rear end door opener switch	5. Door handle	(a) : 10 N·m (1.0 kgf-m, 7.5 lb-ft)
3. Latch striker	6. Emergency lever : Rear end door is unlocked by pushing emergency lever with flat head driver if rear end door lock can not be released by door opener switch.	(b) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)

Rear End Door Lock Assembly Removal and Installation

S7RS0B9606011

Removal

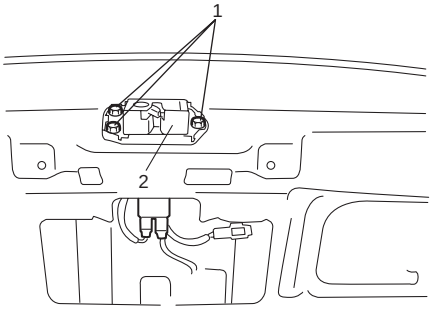
1) Remove door trim (1) from rear end door panel (2).



I4RS0A960016-01

2) Disconnect door lock motor lead wire.

3) Loosen door latch bolts (1) and remove door latch assembly (2).



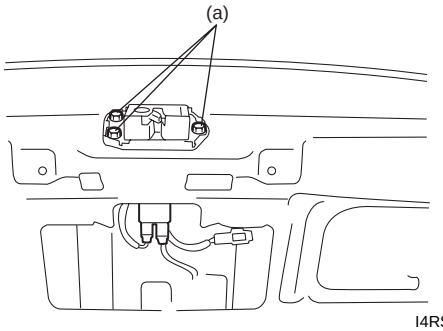
I4RS0A960017-01

Installation

Reverse removal procedure to install rear end door lock assembly noting the following instruction.

- Tighten rear end door latch bolt to specified torque.

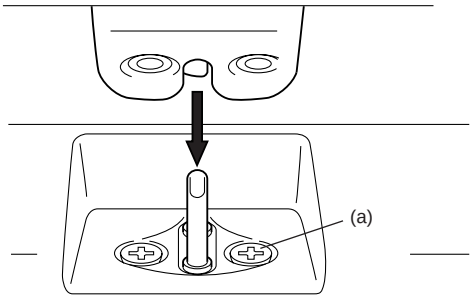
  Tightening torque
  Rear end door latch bolt (a): 10 N·m (1.0 kgf-m, 7.5 lb-ft)



I4RS0A960018-01

- Adjust door latch striker so that its center aligns with the center of groove in door latch base.

  Tightening torque
  Rear end door striker screw (a): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



I4RS0A960019-01

Rear End Door Lock Assembly Inspection

S7RS0B9606012

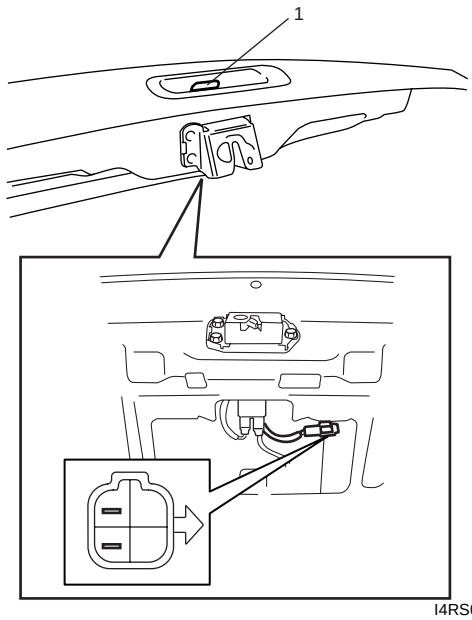
- Check that door opens and closes smoothly and properly.
- Check that door stops in the secondary latched position properly (preventing door from opening freely) and that door closes completely in the fully latched position.
- Adjust door latch striker position, if necessary.

Rear End Door Opener Switch Inspection

S7RS0B9606013

1) Remove rear end door trim.
2) Disconnect rear end door switch coupler.
3) Check that there is continuity between terminals when rear end door opener switch (1) is pushed.
4) Check that there is no continuity between terminals when rear end door opener switch (1) is not pushed.

If check result is not as specified, replace switch.



I4RS0A960020-01

Replacement of Transmitter Battery

S7RS0B9606014

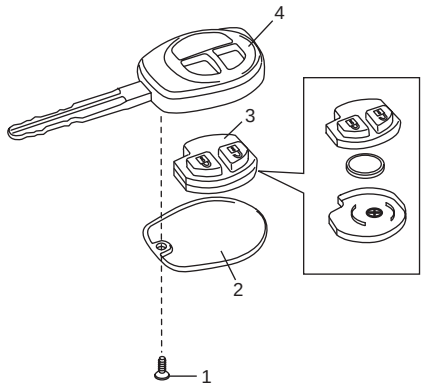
If transmitter becomes unreliable, replace transmitter battery as follows.

1) Remove screw (1) and transmitter cover (2).
2) Remove transmitter (3) from transmitter holder (4).

⚠ CAUTION

Use care not to allow grease or dirt to be attached on the printed circuit board and the battery.

3) With tip of flat blade screwdriver put in slot of transmitter, pry it open.
4) Replace the battery (lithium disc-type CR 1620 or equivalent battery) so its (+) terminal faces "+" mark on transmitter.
5) Fit together transmitter (3) and install it into transmitter holder (4).
6) Install transmitter cover (2) and screw (1).
7) Make sure that door locks can be operated with transmitter.



I4RS0B960014-01

NOTE

- **To prevent theft, be sure to break the transmitter before discarding it.**
- **Dispose of the used battery properly according to applicable rules or regulations. Do not dispose of lithium batteries with ordinary household trash.**

Programming Transmitter Code for Keyless Entry System (Vehicle without Keyless Start System)

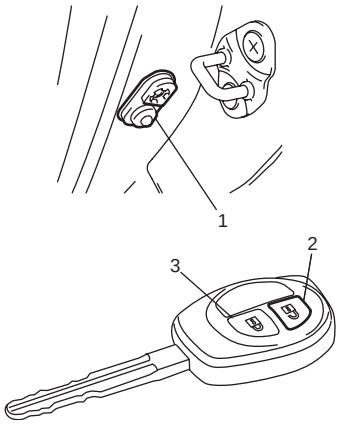
S7RS0B9606015

NOTE

- **Three transmitter codes can be registered.**
- **When a new transmitter code is registered, the oldest one will be cleared.**
- **As for vehicle equipped with keyless start system, perform "Registration Procedure for Remote Controller ID Code in Section 10E" instead of "Programming Transmitter Code for Keyless Entry System (Vehicle without Keyless Start System):".**

If transmitter or BCM (included in junction block assembly) is replaced with a new one or additional transmitter(s) is necessary, program transmitter code(s).

1) Confirm that all doors are closed and ignition key is out of ignition key cylinder.
2) Open driver side door.
3) Turn ignition switch to ON position, and then drawn ignition key from ignition key cylinder within 10 seconds after that.
4) Push and release driver side door switch (1) at 3 times by hand within 20 seconds after removing ignition key from ignition key cylinder.
5) Turn ignition switch to ON position, and then drawn ignition key from ignition key cylinder within 10 seconds after that. All doors automatically lock and unlock once.
   With this, registration mode.
6) Push "UNLOCK" button (2) on transmitter (3) within 20 seconds after Step 5). All doors automatically lock and unlock once.
   With this, code registration is completed.
7) If an additional transmitter, needs to be programed repeat the procedure of Step 1).



I4RS0B960010-01

Keyless Entry Answer Back Function Change-over Procedure (If Equipped)

S7RS0B9606016

Output of keyless entry answer back function can be switched over by performing the following procedure.

1) Confirm that all doors are closed, all doors are unlocked, ignition key is out of ignition key cylinder and interior light switch is in the middle position.
2) Perform Step a) through c) described below within 10 seconds.
   a) Insert ignition key in ignition key cylinder.
   b) Remove ignition key from ignition key cylinder.
   c) Repeat Step a) and b) once.
3) Push “UNLOCK” button on transmitter 3 times within 10 seconds.
4) Interior light flashes once which indicates that answer back function is changed over from A mode to B mode.

NOTE

When answer back function is changed from B mode to A mode, hazard warning lights flashes once.

	Answer back A mode		Answer back B mode	
	LOCK	UNLOCK	LOCK	UNLOCK
Hazard warning light	Flashes once	Flashes twice		
Interior light		Turn on for a while	Flashes once	Turn on for a while

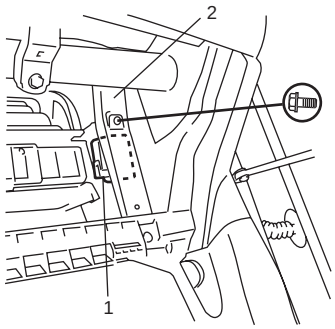
I5RS0C960001-01

Keyless Entry Receiver Removal and Installation

S7RS0B9606017

Removal

1) Disconnect negative cable at battery.
2) Remove grove box referring to Step 6) of “Instrument Panel Removal and Installation in Section 9C”.
3) Disconnect keyless entry receiver coupler.
4) Remove keyless entry receiver (1) from steering support member (2).



I4RS0B960011-01

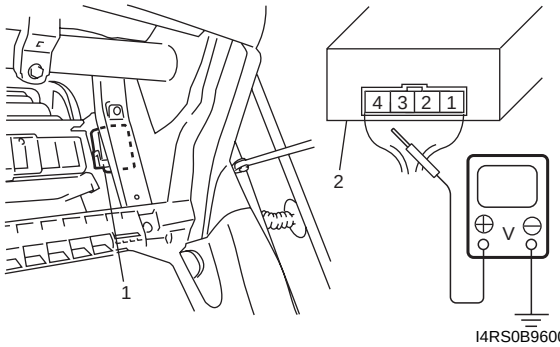
Installation

Reverse removal procedure.

Keyless Entry Receiver and Its Circuit Inspection

S7RS0B9606018

1) Check that the voltage between the following terminals and body ground are specifications under each conditions. If check result is not as specified, check applicable circuit for open or short. If circuit is normal, proceed to next step.



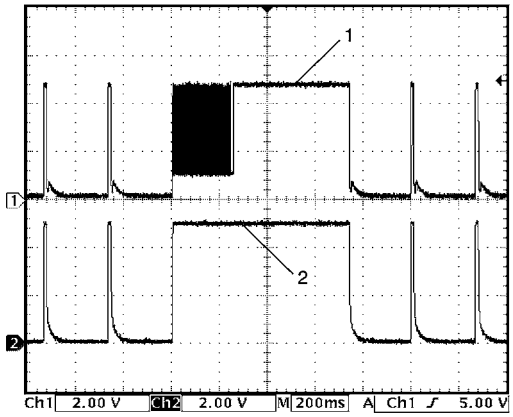
I4RS0B960012-01

1. Keyless entry receiver
2. Keyless entry receiver connector (view from harness side)

Terminal	Circuit	Specification	Condition
1	Power source	Figure [A]	Push “Lock” or “Unlock” button on transmitter.
		0-1 V	Except the above-mentioned condition.
3	Lock/Unlock output signal circuit	Figure [A]	Push “Lock” or “Unlock” button on transmitter.
		0-1 V	Except the above-mentioned condition.
4	Ground	0-1 V	—

Oscilloscope setting
CH1: 2V/DIV
CH2: 2V/DIV
TIME: 200 ms/DIV

[A]



I4RS0A960024-01

1. Lock/Unlock out put signal
2. Power source

1) Recheck keyless entry receiver as follows.
   a) Substitute a known-good keyless entry receiver.
   b) Record key code referring to “Programming Transmitter Code for Keyless Entry System (Vehicle without Keyless Start System)”.
   c) Recheck keyless entry receiver system.

Specifications

Tightening Torque Specifications

S7RS0B9607001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
Door latch screw	5.0	0.5	4.0	☞ / ☞
Door latch striker screw	10	1.0	7.5	☞
Rear end door latch bolt	10	1.0	7.5	☞
Rear end door striker screw	23	2.3	17.0	☞

NOTE

The specified tightening torque is also described in the following.
“Front Door Lock Assembly Components”
“Rear Door Lock Assembly Components”
“Rear End Door Lock Assembly Components”

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Special Tools and Equipment

Recommended Service Material

S7RS0B9608001

Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI Super Grease A	P/No.: 99000–25010	☞

NOTE

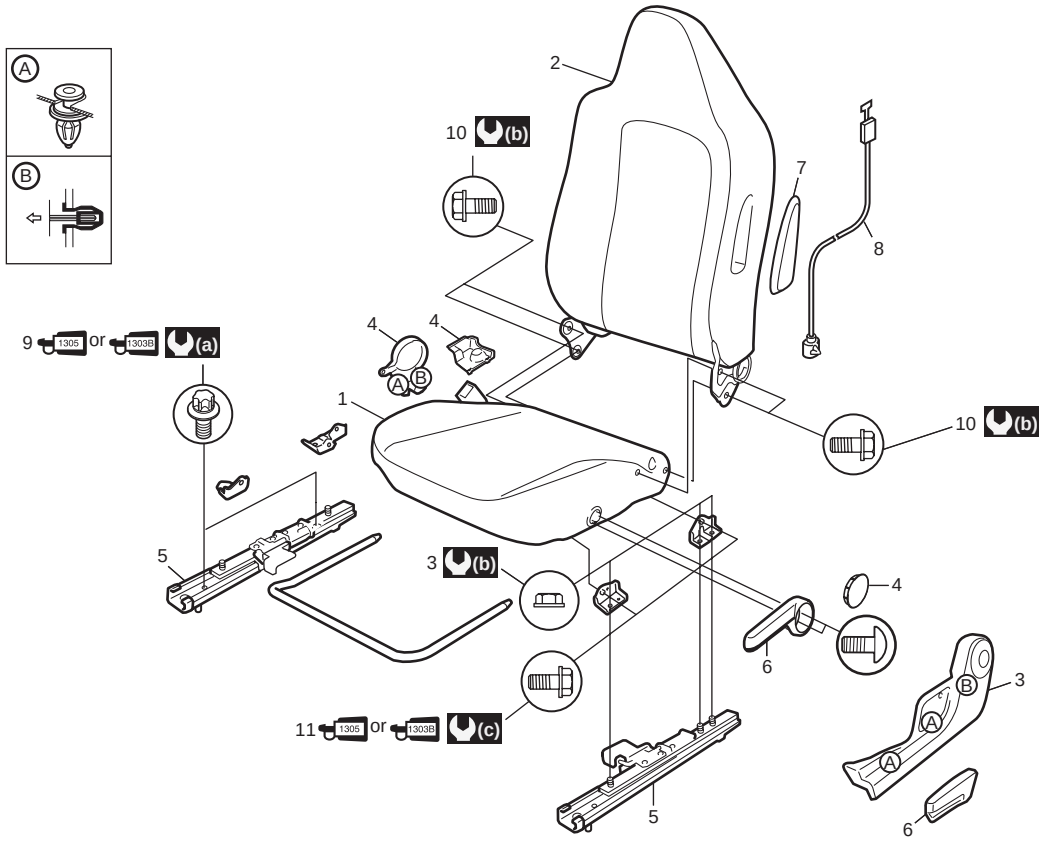
Required service material is also described in the following.
“Front Door Lock Assembly Components”
“Rear Door Lock Assembly Components”

Seats

Repair Instructions

Front Seat Components

S7RS0B9706001



I6RS0C970001-02

1. Seat cushion	6. Knob	1305 or 1303B 11. Riser bolt : Apply thread lock 99000-32100 or 99000-32030 to all around thread part of bolt.
2. Seat back	7. Side air bag module (if equipped)	(a) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)
3. Riser nut	8. Side air bag harness (if equipped)	(b) : 35 N·m (3.5 kgf-m, 25.5 lb-ft)
4. Cover	1305 or 1303B 9. Seat mounting bolt : Apply thread lock 99000-32100 or 99000-32030 to all around thread part of bolt.	(c) : 28 N·m (2.8 kgf-m, 20.5 lb-ft) (Seat lifter type) 35 N·m (3.5 kgf-m, 25.5 lb-ft) (Non seat lifter type)
5. Seat adjuster	10. Seat back mounting bolt	

Front Seat Removal and Installation

S7RS0B9706002

⚠ WARNING

Refer to “Air Bag Warning in Section 00” before starting service work.

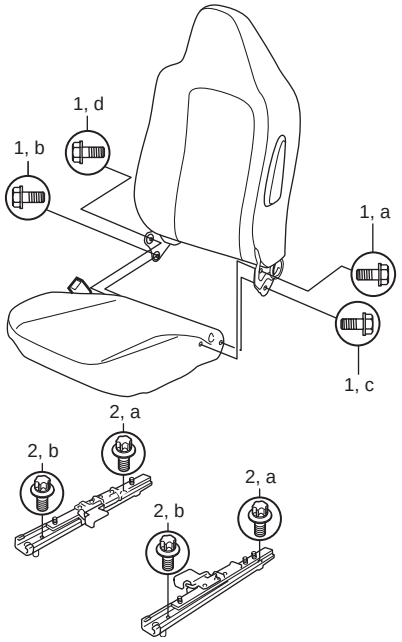
Removal

1) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
2) Disconnect couplers for seat harness and side air bag, if equipped.
3) Remove 4 mounting bolts to remove seat assembly.
4) Disassemble and repair seat if necessary.

Installation

Reverse removal procedure to install front seat.

- If necessary tighten seat back and seat cushion, after tighten seat back mounting bolt (1) by hand, tighten completely as shown according to the alphabetical order.
- In the case of installing seat assembly to the body, insert seat adjuster pin in the location hole of the body. After seat mounting bolt (2) is tightened by the hand, tighten completely as shown according to the alphabetical order.



I6RS0C970002-01

- Apply thread lock cement to seat mounting bolts and riser bolts.

  : Thread lock cement 99000–32100 (Thread Lock Cement 1305)

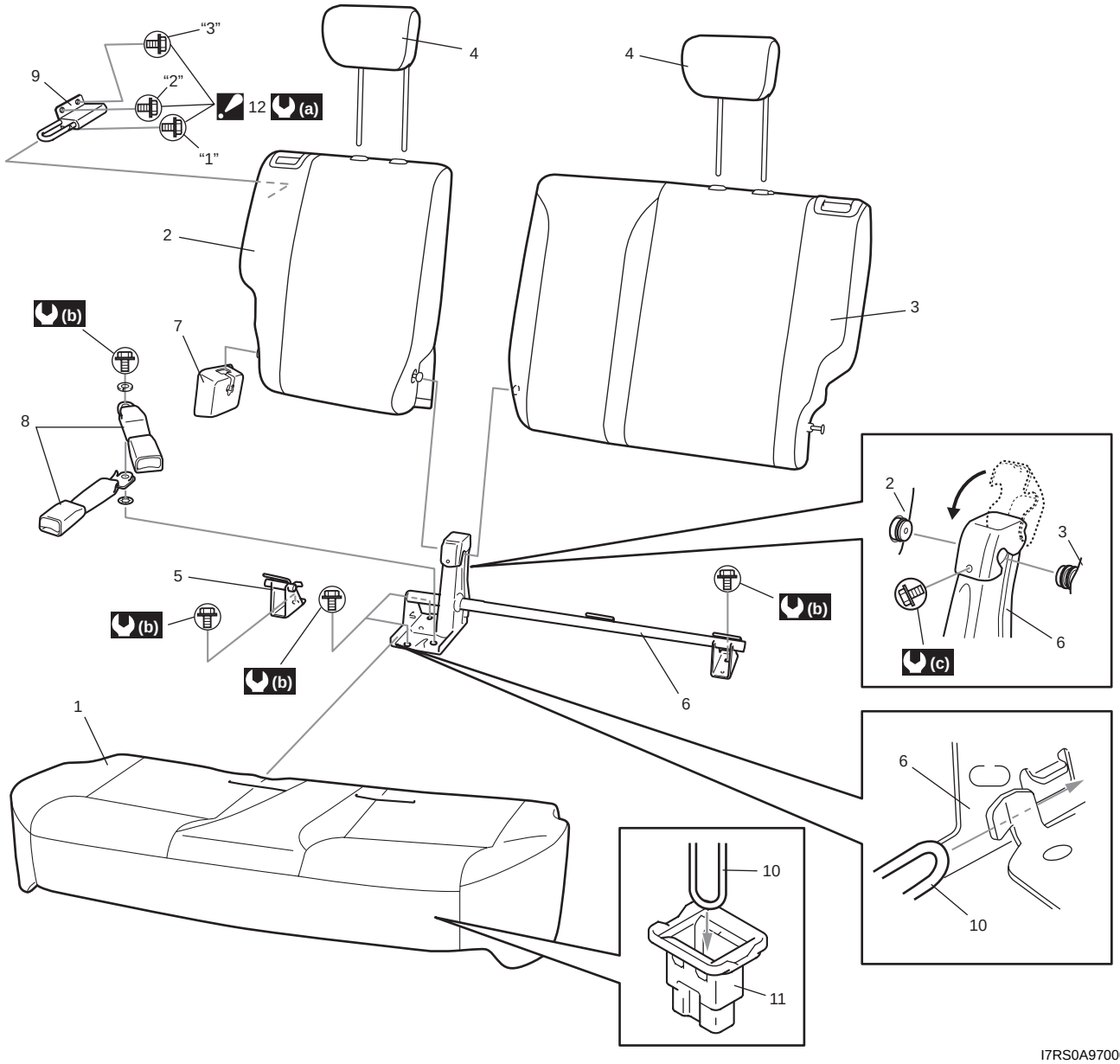
  or

  : Thread lock cement 99000–32030 (Thread Lock Cement Super 1303B)

- Torque to specifications as shown in “Front Seat Components”.
- Enable air bag system referring to “Enabling Air Bag System in Section 8B”.

Rear Seat Components

S7RS0B9706003



I7RS0A970001-01

1. Rear seat cushion	6. Rear seat center hinge	11. Seat cushion hook
2. Rear seat back right	7. Seat hinge bracket	12. Seat back striker mounting bolt :Tightening order (Right side): "1"→"2"→"3" :Tightening order (Left side): "2"→"1"→"3"
3. Rear seat back left	8. Rear seat belt buckle	(a) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)
4. Head rest	9. Seat back striker	(b) : 43 N·m (4.3 kgf-m, 31.5 lb-ft)
5. Child anchorage bracket	10. Seat cushion insert wire	(c) : 10 N·m (1.0 kgf-m, 7.5 lb-ft)

Rear Seat Removal and Installation

S7RS0B9706004

Removal

1) Fold rear seat back forward.
2) Remove seat mounting bolts and nuts to remove seat assembly.
3) Disassemble and repair seat as necessary.

Installation

Reverse removal procedure to install rear seat.

- Tighten seat back striker mounting bolts according to “Rear Seat Components”.
- Torque to specifications in “Rear Seat Components”.
- When installing seat cushion, align seat cushion hook with center hinge bracket.

Specifications

Tightening Torque Specifications

S7RS0B9707001

NOTE

The specified tightening torque is also described in the following.
“Front Seat Components”
“Rear Seat Components”

Reference:

For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Special Tools and Equipment

Recommended Service Material

S7RS0B9708001

Material	SUZUKI recommended product or Specification		Note
Thread lock cement	Thread Lock Cement Super 1303B	P/No.: 99000–32030	☞
	Thread Lock Cement 1305	P/No.: 99000–32100	☞

NOTE

Required service material is also described in the following.
“Front Seat Components”

Interior Trim

Repair Instructions

Floor Carpet Removal and Installation

S7RS0B9806001

⚠ WARNING

Refer to "Air Bag Warning in Section 00" before starting service work.

Removal

1) Remove front seats and rear seats referring to "Front Seat Removal and Installation in Section 9G" and "Rear Seat Removal and Installation in Section 9G".
2) Remove seat belt lower anchor bolt.
3) Remove dash side trims, front side sill scuffs, center pillar inner lower trims, quarter inner front trims and rear side sill scuffs.
4) Remove console box.
5) Remove floor carpet.

Installation

Reverse removal sequence to install floor carpet, noting the following instruction.

- For tightening torque of rear seat mounting bolt, refer to "Rear Seat Components in Section 9G".
- For tightening torque of front seat mounting bolt, refer to "Front Seat Components in Section 9G".

Head Lining Removal and Installation

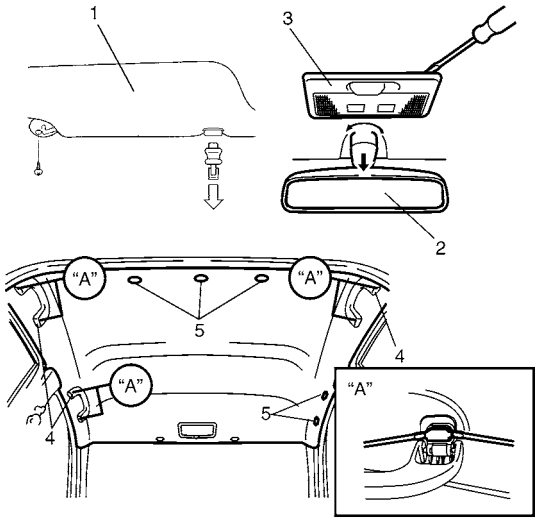
S7RS0B9806002

⚠ WARNING

Refer to "Air Bag Warning in Section 00" before starting service work.

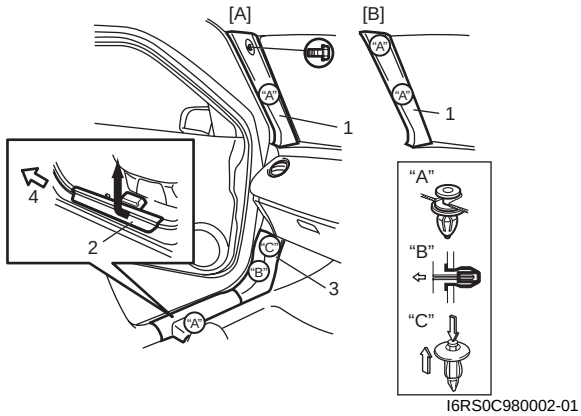
Removal

1) Remove sun visor (1), room mirror (2), dome light (3), assistant grip (4) and head lining clips (5).



I6RS0C980001-02

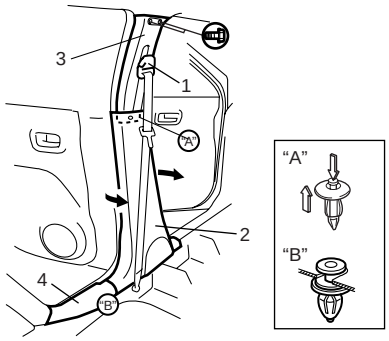
2) Remove front pillar trim (1), front side sill scuff (2) and dash side trim (3).



I6RS0C980002-01

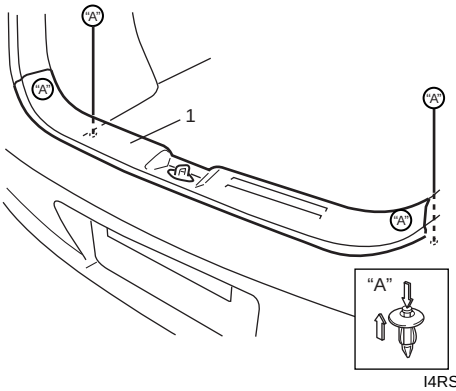
[A]: With curtain air bag	4. Forward
[B]: Without curtain air bag	

3) Remove front seat belt upper anchor (1), center pillar inner trim (2), center pillar inner upper trim (3) and rear side sill scuff (4).



I4RS0A980002-01

4) Remove tail end member trim (1).



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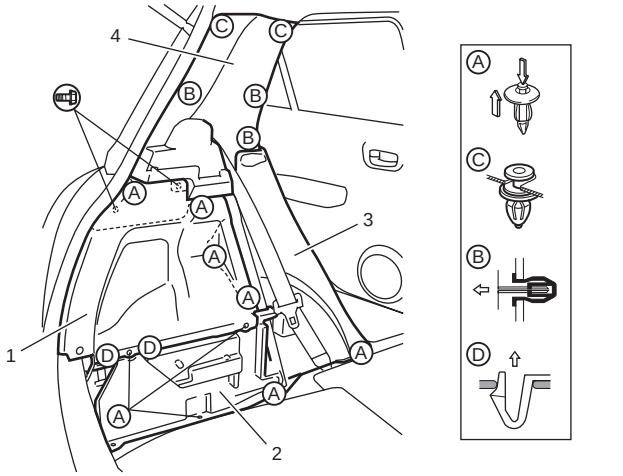
5) Remove quarter inner rear upper trim (1), quarter inner rear lower trim (2), quarter inner front trim (3) and quarter inner upper trim (4).



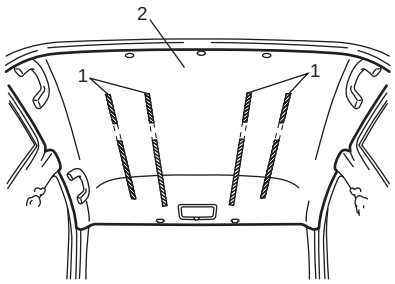
I7RS0A980001-01

6) Remove head lining.

Installation

Reverse removal procedure noting the following.

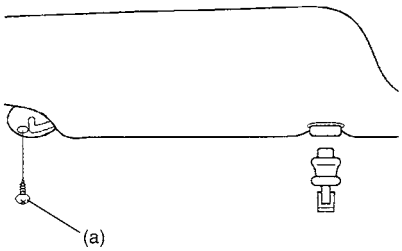
- Apply adhesive (1) to head lining (2) as shown in the figure, and then install head lining (2).



I6RS0C980004-01

- Tighten sun visor screw to specified torque.

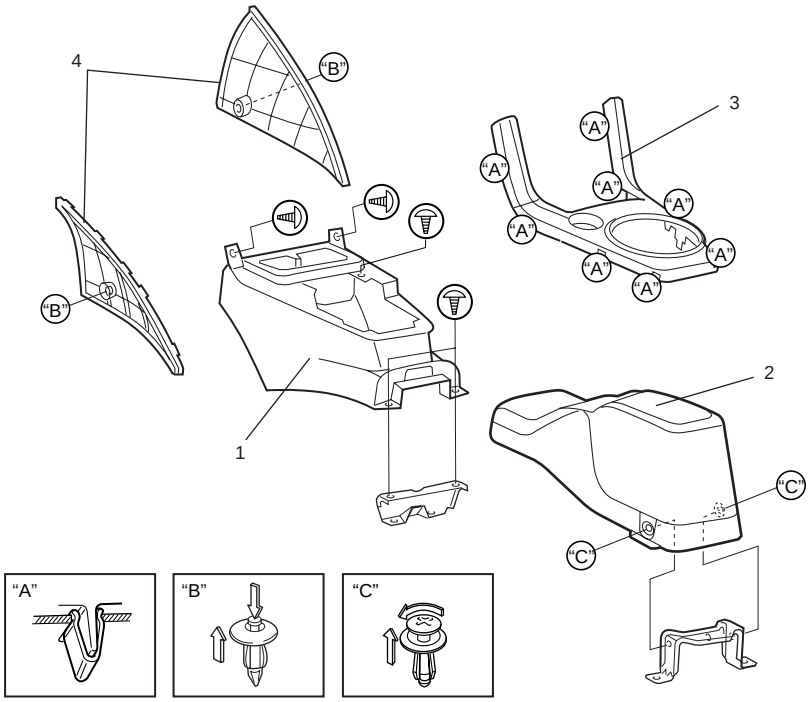
Tightening torque
Sun visor screw (a): 4 N·m (0.4 kgf-m, 3.0 lb-ft)



I4RS0A980007-01

Console Box Components

S7RS0B9806003



I4RS0A980008-01

1. Front console box	2. Rear console box	3. Front console box garnish	4. Console side cover

Specifications

Tightening Torque Specifications

S7RS0B9807001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
Sun visor screw	4	0.4	3.0	☞

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Hood / Fenders / Doors

Repair Instructions

Hood Removal and Installation

S7RS0B9A06001

Removal

⚠ CAUTION

Place cloth to prevent body from any damage.

1) Remove hood silencer (4).
2) Disconnect window washer hose (1) from hood.
3) Remove 4 mounting bolts (3) to detach hood (2).

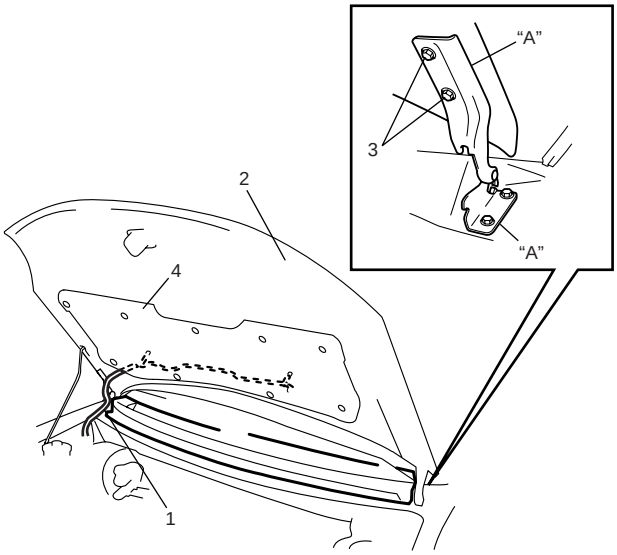
Installation

Reverse removal procedure noting the following.

- Apply sealant to contact face “A” of hood hinge. Specified sealant.

  “A”: Sealant 99000–31110 (SUZUKI Bond No.1215)

- Adjust hood lock position if necessary referring to “Hood Inspection and Adjustment”.



I4RS0A9A0001-01

Hood Inspection and Adjustment

S7RS0B9A06002

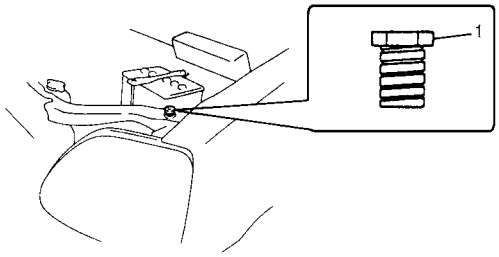
Inspection

- Check that hood opens and closes smoothly and properly. Lubricate if necessary.
- Check that hood stops in the secondary latched position properly (preventing hood from opening freely) and that hood closes completely in the fully latched position.
- Adjust hood locks position, if necessary.

Adjustment

Adjust the following point:

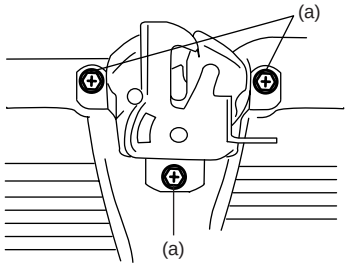
- Hood position adjustment.
  Fore-and-aft and right-and-left adjustment.
  Adjust hood clearance by loosening hood mounting bolts. Refer to “Panel Clearance in Section 9K”.
- Vertical adjustment
  If only one side (right or left) of hood is not level with front fender, make it level by tightening or loosening hood cushion (1).



I2RH019A0022-01

- Hood lock position adjustment
  a. Loosen hood lock bolts.
  b. Adjust hood lock height position so the hood is locked without looseness.
  c. Tighten hood latch bolts to specified torque.

     Tightening torque
     Hood latch bolt (a): 10 N·m (1.0 kgf-m, 7.5 lb-ft)

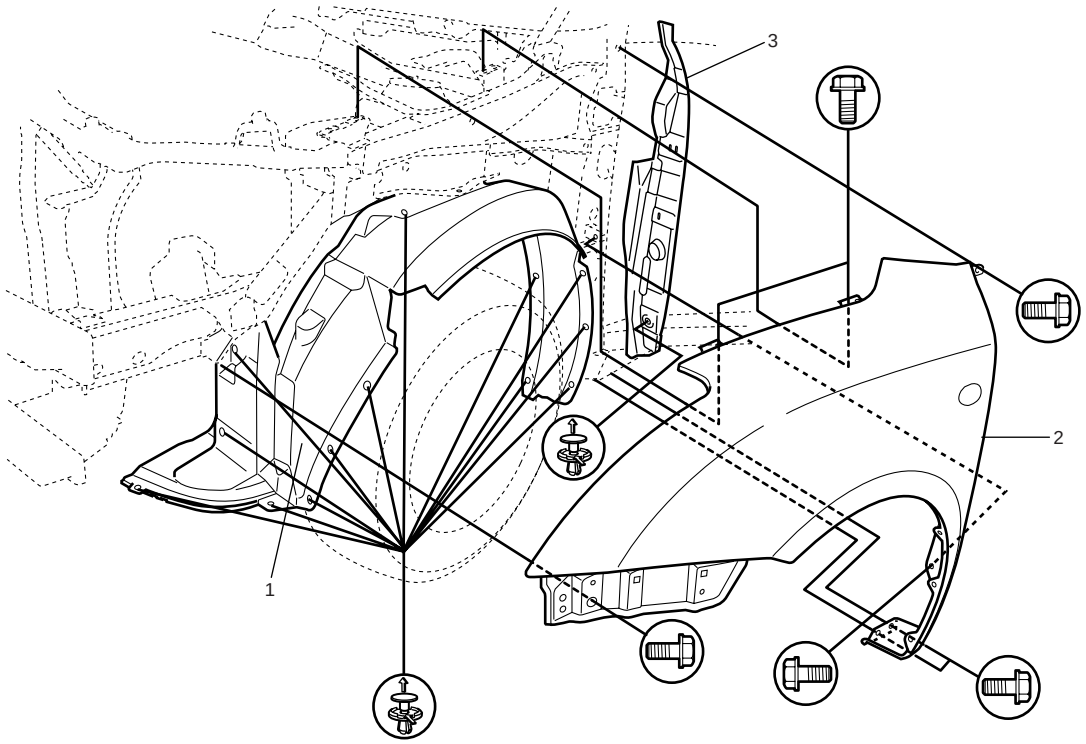


I4RS0A9A0002-01

  d. Make sure the hood is locked smoothly and securely.

Front Fender Components

S7RS0B9A06003



I4RS0A9A0003-01

1. Front fender lining	2. Front fender	3. Front fender cover

Front Fender Removal and Installation

S7RS0B9A06004

Removal

1) Remove splash guard (if equipped) referring to “Splash Guard (If Equipped) Components in Section 9M”.
2) Remove front fender lining.
3) Remove front bumper referring to “Front Bumper and Rear Bumper Components in Section 9K”.
4) Remove headlight assembly referring to “Headlight Housing Removal and Installation in Section 9B”.
5) Disconnect connector from side turn signal lamp.
6) Remove front fender cover.
7) Remove front fender.

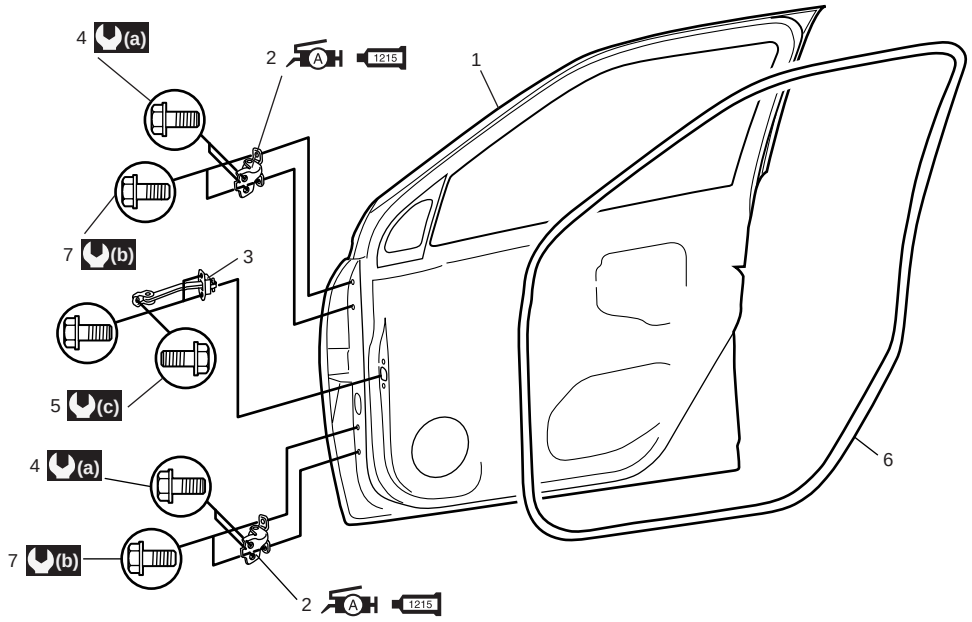
Installation

Reverse removal procedure to install front fender noting the following instruction.

- If paint on fender bolt is peeled off, be sure to apply paint again.
- Adjust panel clearance referring to “Panel Clearance in Section 9K”.

Front Door Assembly Components

S7RS0B9A06005



I4RS0A9A0004-01

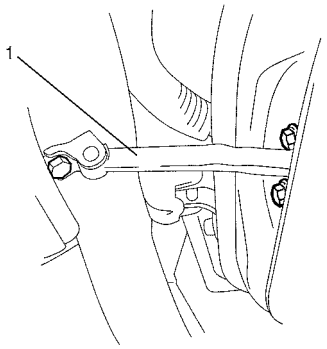
1. Door panel	5. Door open stopper bolt	(b) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)
A 1215 2. Door hinge : Apply lithium grease 99000-25010 to rotating part. : Apply sealant 99000-31110 to contact face.	6. Front door opening weather-strip	(c) : 21 N·m (2.1 kgf-m, 15.5 lb-ft)
3. Door open stopper	7. Front door hinge bolt (door side)	
4. Front door hinge bolt (body side)	(a) : 27 N·m (2.7 kgf-m, 19.5 lb-ft)	

Front Door Assembly Removal and Installation

S7RS0B9A06006

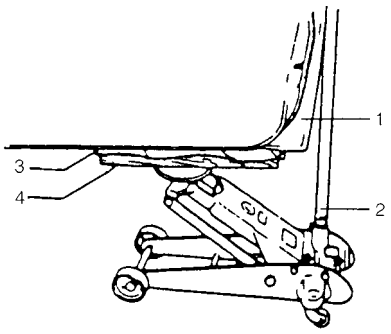
Removal

1) Remove front fender referring to “Front Fender Components”.
2) Remove door trim referring to “Front Door Glass Removal and Installation in Section 9E”.
3) Disconnect door harness lead wires at each coupler.
4) Remove door open stopper (1).



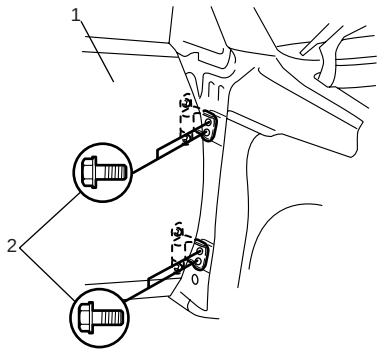
I4RS0A9A0005-01

5) Support door panel (1) using a jack (2) with rags (3) and a piece of wood (4) placed between jack (2) and panel (1) as shown.



I2RH019A0003-01

6) Remove door assembly (1) by loosening hinge mounting bolts (2).



I4RS0A9A0006-01

Installation

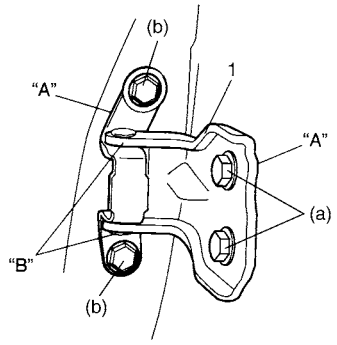
Reverse removal procedure to install door assembly noting the following instructions.

- When replacing door, coat replacement door inside with wax for proper anti-corrosion treatment. Refer to “Sealant Application Areas in Section 9L”.
- Apply sealant to contact face “A” of hinge (1) and apply grease to rotating part “B” of hinge (1). Specified sealant and grease.

  “A”: Sealant 99000–31110 (SUZUKI Bond No.1215)
  “B”: Grease 99000–25010 (SUZUKI Super Grease A)

- Tighten hinge bolt to specified torque.

  Tightening torque
  Door hinge mounting bolt (body side) (a): 27 N·m (2.7 kgf-m, 19.5 lb-ft)
  Door hinge mounting bolt (door side) (b): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



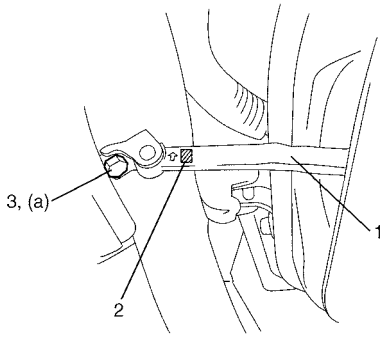
I4RS0A9A0007-01

- When door open stopper (1) is installed, be careful make sure punch mark (2) comes to the top.

  Door open stopper installing direction
  Left side door: L punch mark is upward
  Right side door: R punch mark is upward

- Tighten door open stopper bolt (3) to specified torque.

  Tightening torque
  Door open stopper bolt (a): 21 N·m (2.1 kgf-m, 15.5 lb-ft)

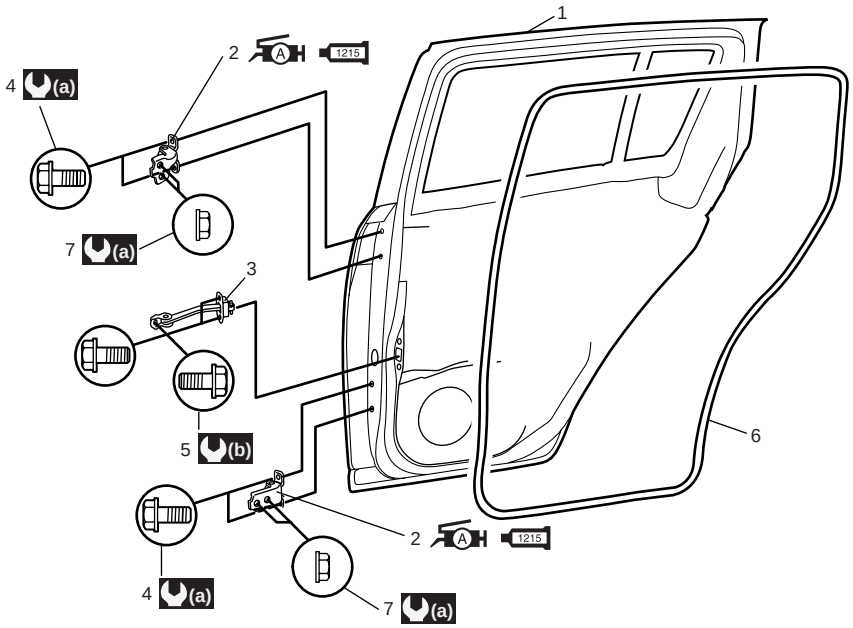


I4RS0A9A0008-01

- Adjust door latch striker position referring to “Front Door Lock Assembly Removal and Installation in Section 9F”.
- Adjust front door cushion so that door becomes flush with side body.
- After installation, open and close the door to check looseness.

Rear Door Assembly Components

S7RS0B9A06007



I4RS0A9A0009-01

1. Door panel	4. Rear door hinge bolt	7. Rear door hinge nut
1215 2. Door hinge : Apply lithium grease 99000-25010 to rotating part. : Apply sealant 99000-31110 to contact face.	5. Door open stopper bolt	(a) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)
3. Door open stopper	6. Rear door opening weather-strip	(b) : 21 N·m (2.1 kgf-m, 15.5 lb-ft)

Rear Door Assembly Removal and Installation

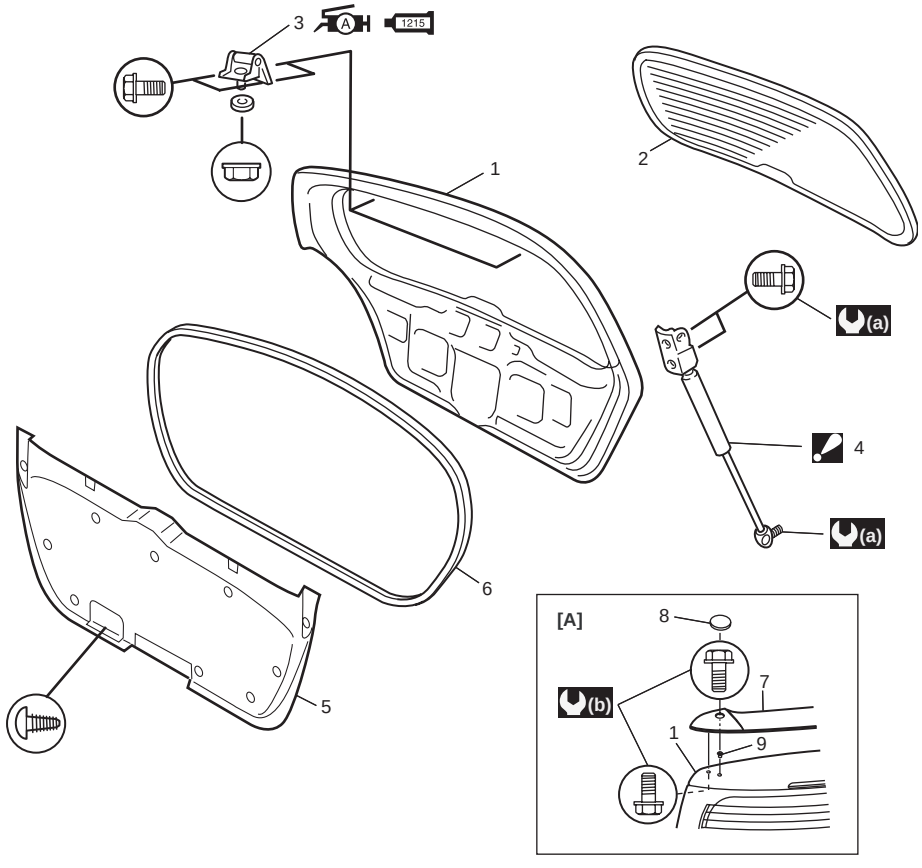
S7RS0B9A06008

Refer to “Front Door Assembly Removal and Installation” as removal and installation procedures are basically the same. However, note the following.

- Tighten rear door hinge bolts and nuts to specified torque referring to “Rear Door Assembly Components”.

Rear End Door Assembly Components

S7RS0B9A06009



I6RS0B9A0001-01

[A]: Rear end door spoiler installation position	4. Rear end door balancer : Never disassemble rear end door balancer.	8. Cap
1. Rear end door panel assembly	5. Rear end door trim	9. Rubber nut
2. Rear end door window glass	6. Rear end door opening wether-strip	(a) : 23 N·m (2.3 kgf-m, 17.0 lb-ft)
A 1215 3. Rear end door hinge : Apply lithium grease 99000-25010 to door hinge moving section. : Apply sealant 99000-31110 to contact face.	7. Rear end door spoiler	(b) : 5 N·m (0.5 kgf-m, 4.0 lb-ft)

Rear End Door Assembly Removal and Installation

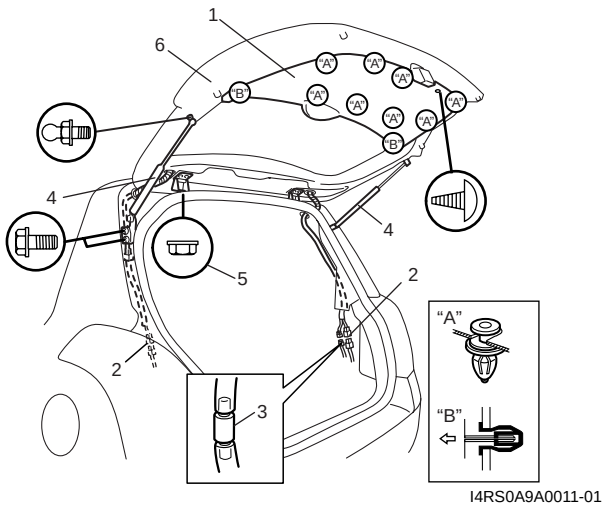
S7RS0B9A06010

⚠ WARNING

Be careful enough when you open and shut with door balancer has not adhered to Rear end door.
Otherwise, Rear end door doses in weight and is injured.

Removal

1) Remove rear end door trim (1).
2) Remove related section of head lining and rear trim.
3) Disconnect rear end door harness couplers (2) and washer hose (3).
4) Remove rear end door balancers (4).
5) Remove door hinge nuts (5) and remove rear end door assembly (6).



I4RS0A9A0011-01

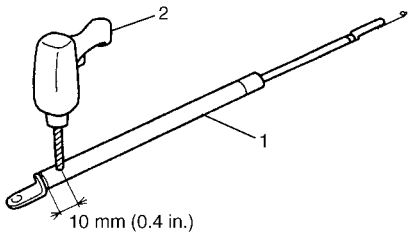
⚠ WARNING

Handling of Rear End Door Balancer (Damper)

- **Handle balancer carefully. Do not scar or scratch exposed surface of its piston rod, and never allow any paint or oil to stick to its surface.**
- **Do not turn piston rod with balancer fully extended.**
- **Do not disassemble balancer (1) because its cylinder is filled with gas.**

Discarding of Rear End Door Balancer (Damper)

- **The gas itself in balancer is harmless but it may issue out of the hole together with chips generated by the drill (2). Therefore, be sure to wear goggle when drilling.**
- **Using a 2 to 3 mm (0.08 to 0.12 in.) drill (2), make a hole to remove gas inside as shown before discarding.**



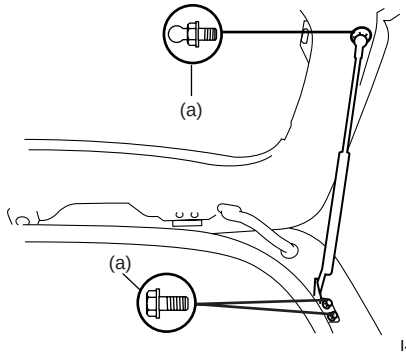
I2RH019A0010-01

Installation

Reverse removal procedure noting the following.

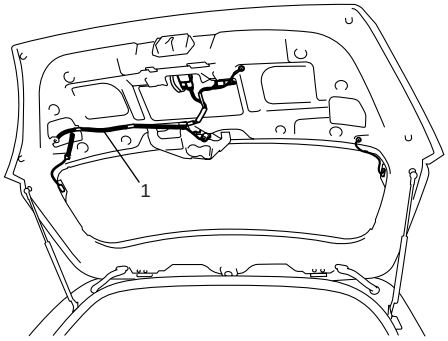
- Tighten rear end door balancer bolt to specified torque.

  Tightening torque
  Rear end door balancer bolt (a): 23 N·m (2.3 kgf-m, 17.0 lb-ft)



I4RS0A9A0013-01

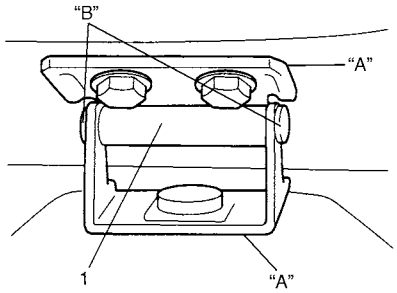
- Secure wiring harness (1).



I4RS0A9A0012-01

- Adjust door latch striker position by referring to “Rear Door Lock Assembly Removal and Installation in Section 9F”.
- Adjust door cushion so that door contacts body when closed.
- Apply sealant to contact face “A” of door hinge (1) and apply grease to rotating part “B” of hinge (1).
  Specified sealant and grease.

  “A”: Sealant 99000–31110 (SUZUKI Bond No.1215)
  “B”: Grease 99000–25010 (SUZUKI Super Grease A)



I2RH019A1012-01

Specifications

Tightening Torque Specifications

S7RS0B9A07001

Fastening part	Tightening torque			Note
	N·m	kgf-m	lb-ft	
Hood latch bolt	10	1.0	7.5	☞
Door hinge mounting bolt (body side)	27	2.7	19.5	☞
Door hinge mounting bolt (door side)	23	2.3	17.0	☞
Door open stopper bolt	21	2.1	15.5	☞
Rear end door balancer bolt	23	2.3	17.0	☞

NOTE

The specified tightening torque is also described in the following.
“Front Door Assembly Components”
“Rear Door Assembly Components”
“Rear End Door Assembly Components”

Reference:
For the tightening torque of fastener not specified in this section, refer to “Fasteners Information in Section 0A”.

Special Tools and Equipment

Recommended Service Material

S7RS0B9A08001

Material	SUZUKI recommended product or Specification		Note
Grease	SUZUKI Super Grease A	P/No.: 99000–25010	☞ / ☞
Sealant	SUZUKI Bond No.1215	P/No.: 99000–31110	☞ / ☞ / ☞

NOTE

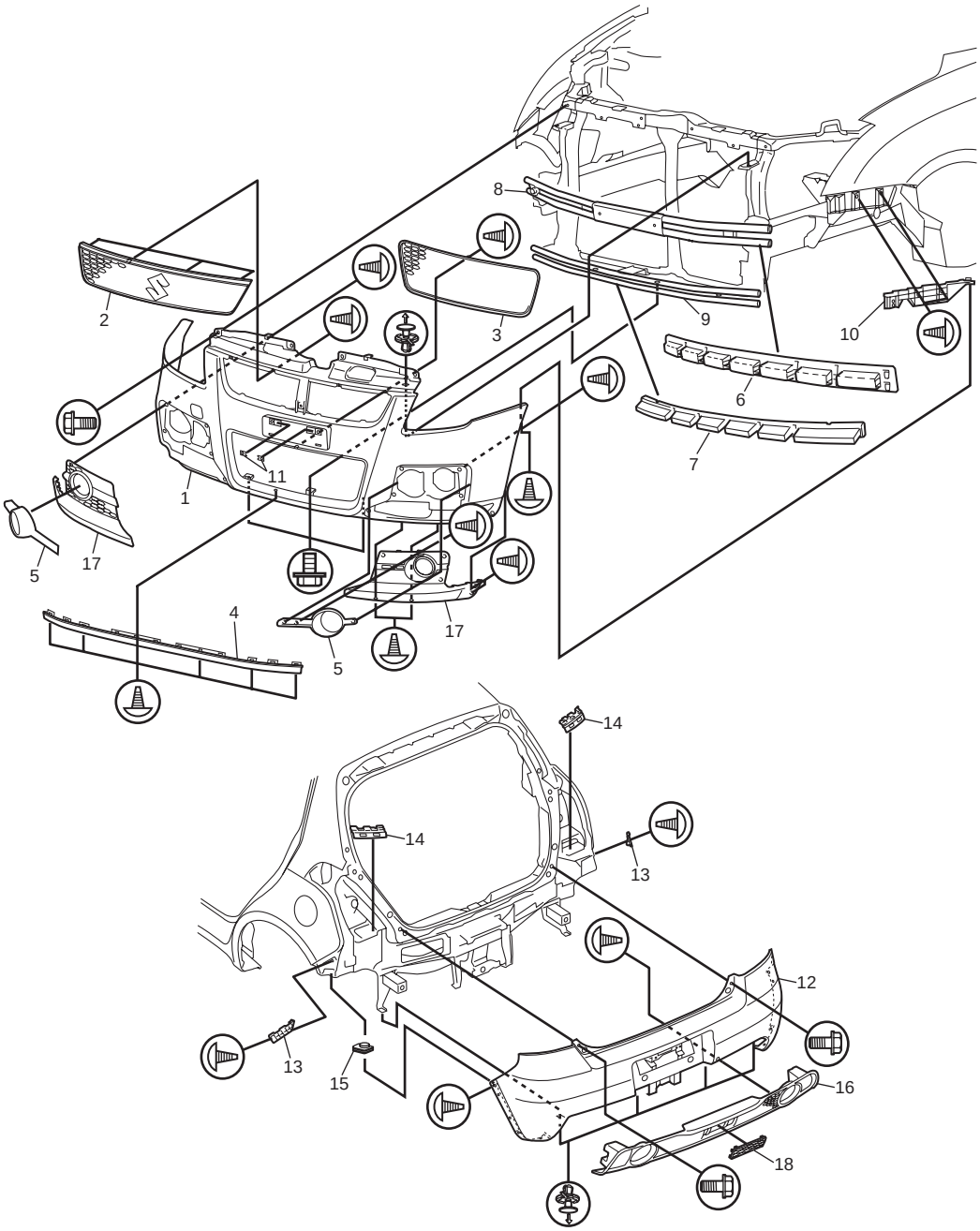
Required service material is also described in the following.
“Front Door Assembly Components”
“Rear Door Assembly Components”
“Rear End Door Assembly Components”

Body Structure

Repair Instructions

Front Bumper and Rear Bumper Components

S7RS0B9B06001

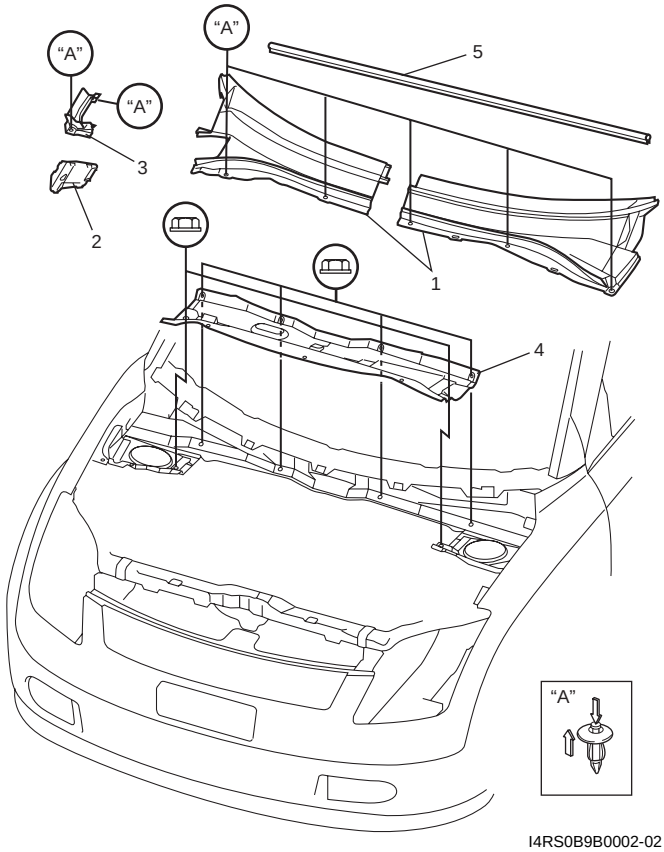


I7RS0B9B0001-01

1. Front bumper	6. Front bumper upper absorber	11. License plate nut	16. Front bumper guard
2. Radiator upper grill	7. Front bumper lower absorber	12. Rear bumper	17. Rear bumper guard cap
3. Radiator lower grill	8. Front bumper upper member	13. Rear bumper holder	
4. Front air dam skirt	9. Front bumper lower member	14. Plastic nut	
5. Front fog lamp cap	10. Front bumper holder	15. Rear bumper guard	

Cowl Top Components

S7RS0B9B06002



I4RS0B9B0002-02

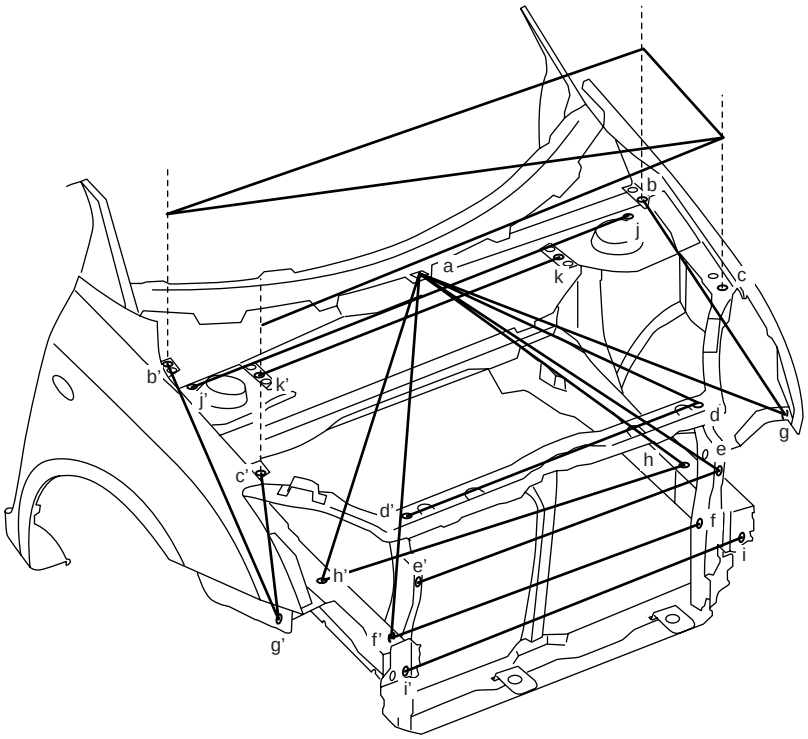
1. Cowl top cover	3. Cowl top side garnish	5. Hood rear seal
2. Cowl top cover lid	4. Cowl top panel	

Specifications

Body Dimensions

S7RS0B9B07001

Engine Room



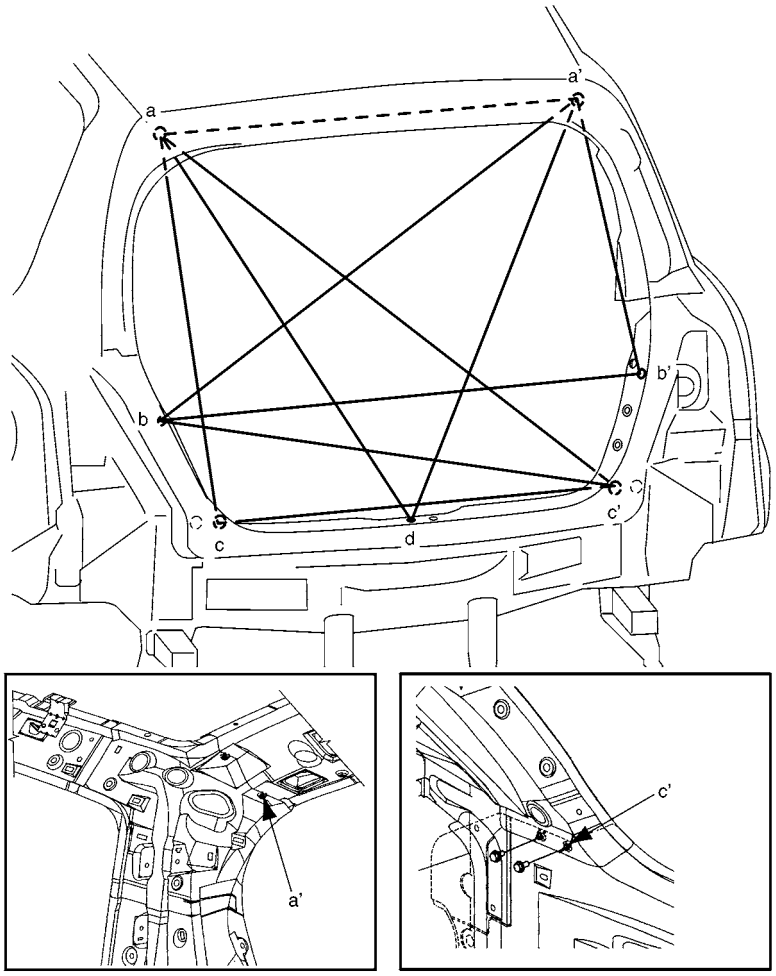
I4RS0A9B0003-01

a. Cowl top installation center hole	e (e'). Headlight installation hole	i (i'). Front bumper upper member installation hole
b (b'). Front fender installation hole	f (f'). Jig hole (ϕ 8 mm)	j (j'). Jig hole (ϕ 8 mm)
c (c'). Headlight installation hole	g (g'). Front fender installation hole	k (k'). Jig hole (ϕ 7 mm)
d (d'). Hood lock member installation hole (when hood lock member removed)	h (h'). Engine mounting installation front hole	

Hole to hole distance

a-d: 675 mm (26.57 in.)	**b-c: 343 mm (13.50 in.)**	**e-e': 851 mm (33.50 in.)**
a-e: 816 mm (32.13 in.)	**b-g: 625 mm (24.61 in.)**	**f-f': 817 mm (32.17 in.)**
a-g: 943 mm (37.13 in.)	**b'-c: 1364 mm (53.70 in.)**	**h-h': 950 mm (37.40 in.)**
a-h: 784 mm (30.87 in.)	**b'-g': 647 mm (25.47 in.)**	**i-i': 937 mm (36.89 in.)**
a-f': 864 mm (34.02 in.)	**c-c': 1310 mm (51.57 in.)**	**j-j': 1249 mm (49.17 in.)**
a-h': 743 mm (29.25 in.)	**c'-g': 324 mm (12.76 in.)**	**k-k': 886 mm (34.88 in.)**
b-b': 1317 mm (51.85 in.)	**d-d': 800 mm (31.50 in.)**	

Rear end Door



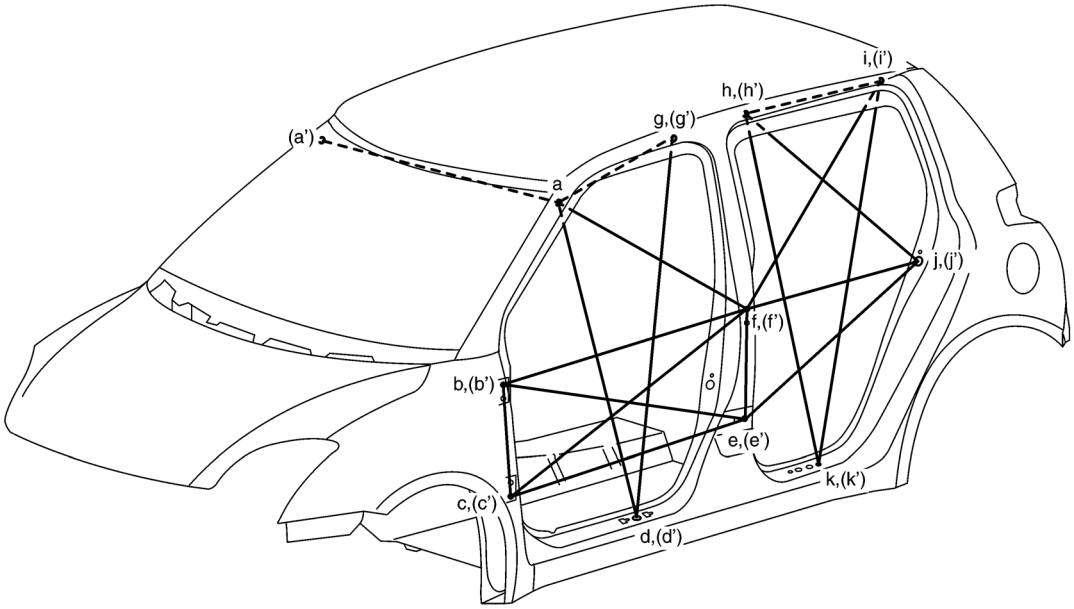
I4RS0A9B0004-01

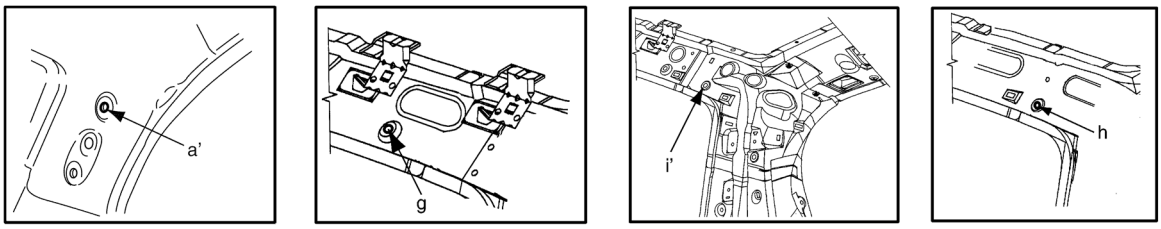
a (a'). Roof back member bolt installation hole	c (c'). Back panel bolt installation hole
b (b'). Jig hole	d. Rear end door striker installation left side hole

Hole to hole distance

a-a': 759 mm (29.88 in.)	**a'-b: 1037 mm (40.83 in.)**	**b-c': 985 mm (38.78 in.)**
a-c: 762 mm (30.00 in.)	**a'-d: 904 mm (35.59 in.)**	**c-c': 850 mm (33.46 in.)**
a-d: 887 mm (34.92 in.)	**a'-b': 528 mm (20.79 in.)**	
a-c': 1107 mm (43.58 in.)	**b-b': 1051 mm (41.38 in.)**	

Side Body





I4RS0A9B0005-02

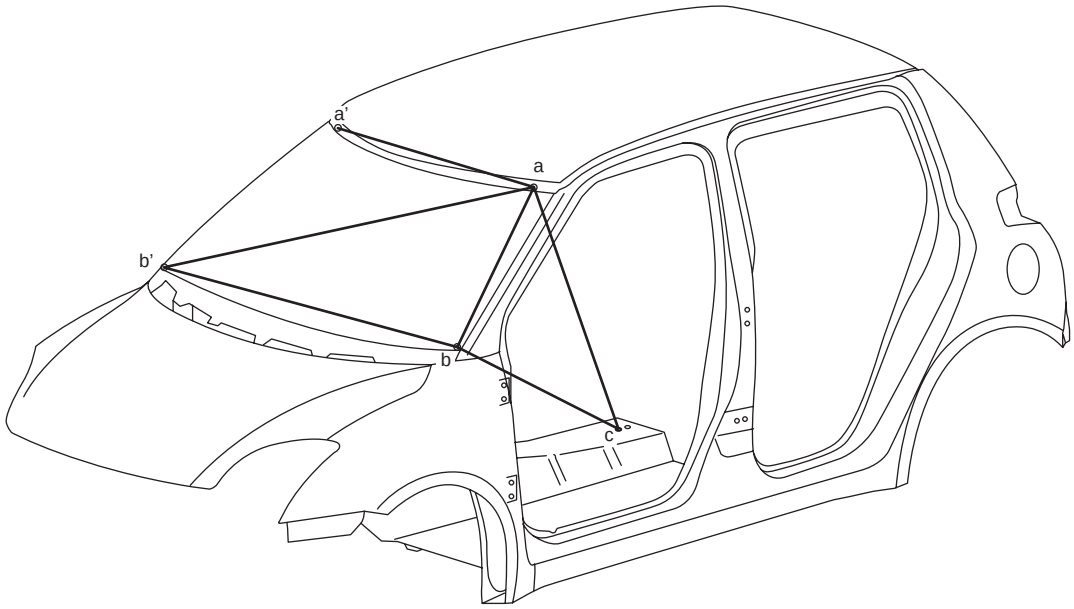
a (a'). Jig hole (ϕ 8 mm)	e (e'). Rear door lower hinge installation rear hole	i (i'). Jig hole (ϕ 10 mm)
b (b'). Front door upper hinge installation upper hole	f (f'). Rear door upper hinge installation upper hole	j (j'). Rear door switch installation hole (large hole)
c (c'). Front door lower hinge installation lower hole	g (g'). Jig hole (ϕ 10 mm)	k (k'). Rear side sill scuff installation hole
d (d'). Bleeding hole	h (h'). Curtain air bag clip installation hole	

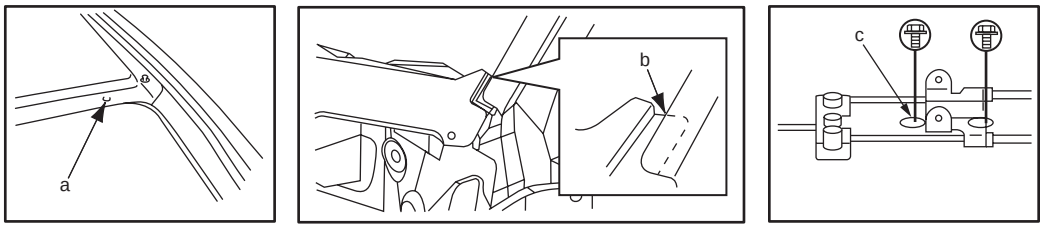
Hole to hole distance

a-d: 1055 mm (41.54 in.)	**c-e: 1021 mm (40.20 in.)**	**f-j: 835 mm (32.87 in.)**
a-f: 747 mm (29.41 in.)	**c-f: 1123 mm (44.21 in.)**	**h-i: 601 mm (23.66 in.)**
a-g: 378 mm (14.88 in.)	**d-g: 1129 mm (44.45 in.)**	**h-j: 817 mm (32.17 in.)**
b-c: 383 mm (15.08 in.)	**e-f: 354 mm (13.94 in.)**	**h-k: 1097 mm (43.19 in.)**
b-e: 1085 mm (42.72 in.)	**e-j: 946 mm (37.24 in.)**	**i-k: 1153 mm (45.39 in.)**
b-f: 1061 mm (41.77 in.)	**f-i: 926 mm (36.46 in.)**	

Hole to hole distance

a-a': 1039 mm (40.91 in.)	**e-e': 1474 mm (58.03 in.)**	**i-i': 1009 mm (39.72 in.)**
b-b': 1461 mm (57.52 in.)	**f-f': 1468 mm (57.80 in.)**	**j-j': 1327 mm (52.24 in.)**
c-c': 1489 mm (58.62 in.)	**g-g': 1018 mm (40.08 in.)**	**k-k': 1472 mm (57.95 in.)**
d-d': 1472 mm (57.95 in.)	**h-h': 1022 mm (40.24 in.)**	





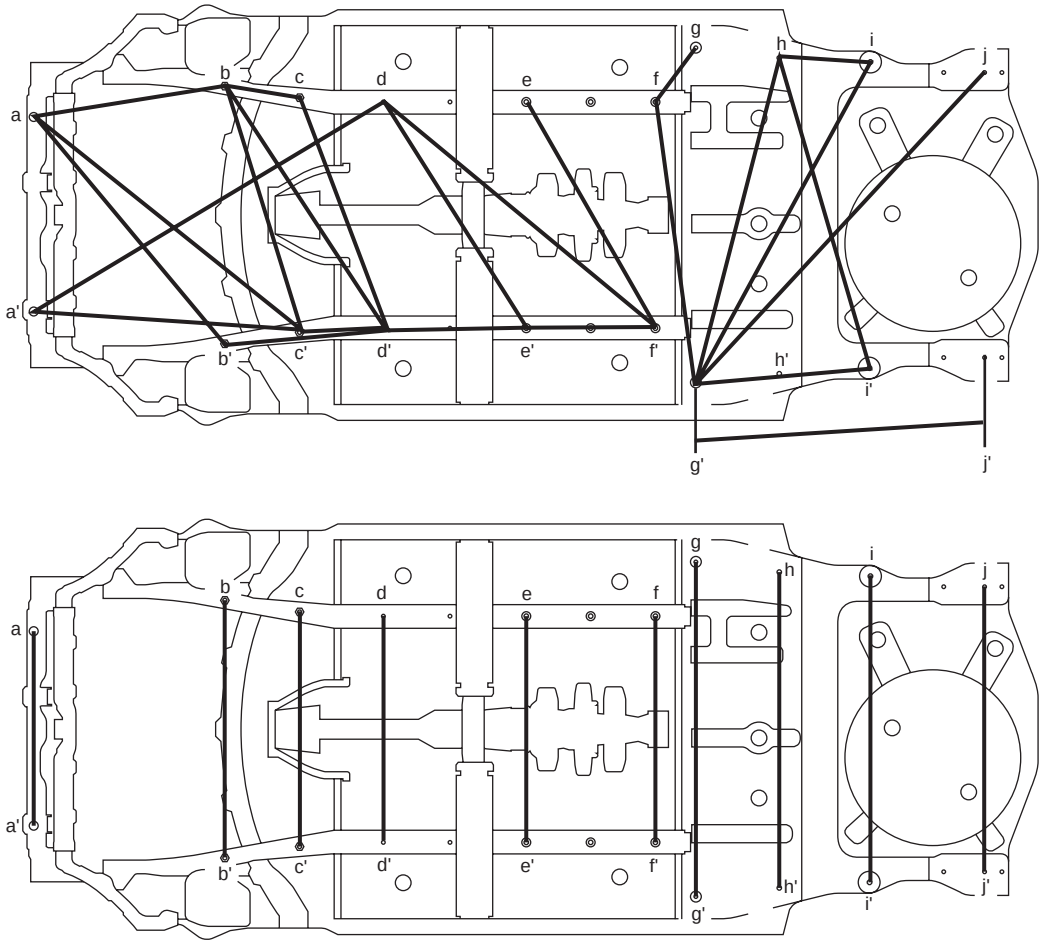
I4RS0B9B0004-02

a (a'). Jig hole (ϕ 6.5 mm)	b (b'). Panel cross point	c. Parking brake cable bracket installation front hole

Hole to hole distance

a-b: 638 mm (25.12 in.)	**a-b': 1194 mm (47.01 in.)**
a-c: 1293 mm (50.91 in.)	**b-c: 1422 mm (55.98 in.)**
a-a': 800 mm (31.50 in.)	**b-b': 1272 mm (50.08 in.)**

Under Body



I4RS0A9B0007-01

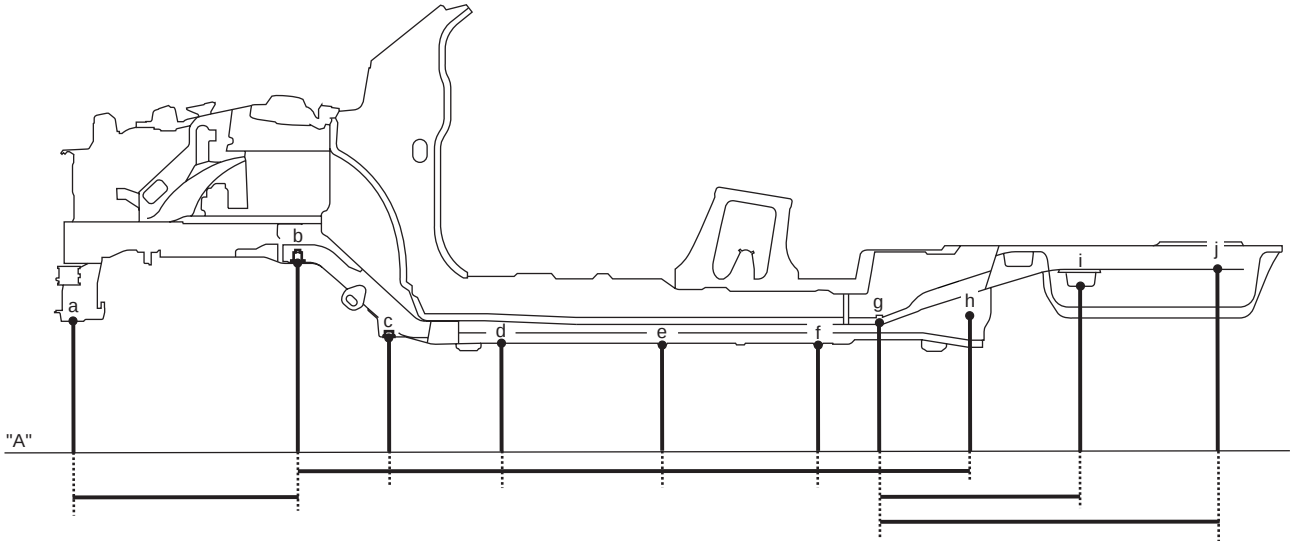
a (a'). Jig hole (ϕ 20 mm)	e (e'). Jig hole (ϕ 15 mm)	i (i'). Drain hole (ϕ 10 mm)
b (b'). Front suspension frame installation hole	f (f'). Jig hole (ϕ 15 mm)	j (j'). Jig hole (ϕ 16 mm)
c (c'). Front suspension frame installation hole	g (g'). Jig hole (ϕ 25 mm)	
d (d'). Jig hole (ϕ 10 mm)	h (h'). Rear axle housing installation inside hole	

Hole to hole distance

a-b: 674 mm (26.54 in.)	**c-d': 836 mm (32.91 in.)**	**g'-h: 1135 mm (44.69 in.)**
a-b': 1018 mm (40.08 in.)	**c'-d': 288 mm (11.34 in.)**	**g'-i: 1229 mm (48.39 in.)**
a-c': 1163 mm (45.79 in.)	**d-e': 911 mm (35.87 in.)**	**g'-i': 612 mm (24.09 in.)**
a'-d: 1391 mm (54.76 in.)	**d-f': 1205 mm (47.44 in.)**	**g'-j: 1433 mm (65.42 in.)**
a'-c': 908 mm (35.75 in.)	**d'-e': 488 mm (19.21 in.)**	**g'-j': 971 mm (38.23 in.)**
b-c: 335 mm (13.19 in.)	**e-f': 887 mm (34.92 in.)**	**h-i: 324 mm (12.76 in.)**
b-c': 904 mm (35.59 in.)	**e'-f': 440 mm (17.32 in.)**	**h-i': 1070 mm (42.13 in.)**
b-d': 1016 mm (40.00 in.)	**f-g: 240 mm (9.45 in.)**	
b'-d': 594 mm (23.39 in.)	**f-g': 969 mm (38.15 in.)**	

Hole to hole distance

a-a': 660 mm (25.98 in.)	**e-e': 770 mm (30.31 in.)**	**i-i': 992 mm (39.06 in.)**
b-b': 881 mm (34.69 in.)	**f-f': 770 mm (30.31 in.)**	**j-j': 970 mm (38.19 in.)**
c-c': 800 mm (31.50 in.)	**g-g': 1144 mm (45.04 in.)**	
d-d': 770 mm (30.31 in.)	**h-h': 1048 mm (41.26 in.)**	



I4RS0A9B0008-01

a. Jig hole (ϕ 20 mm)	e. Jig hole (ϕ 15 mm)	i. Drain hole (ϕ 10 mm)
b. Front suspension frame installation hole	f. Jig hole (ϕ 15 mm)	j. Jig hole (ϕ 16 mm)
c. Front suspension frame installation hole	g. Jig hole (ϕ 25 mm)	
d. Jig hole (ϕ 10 mm)	h. Rear axle housing installation inside hole	

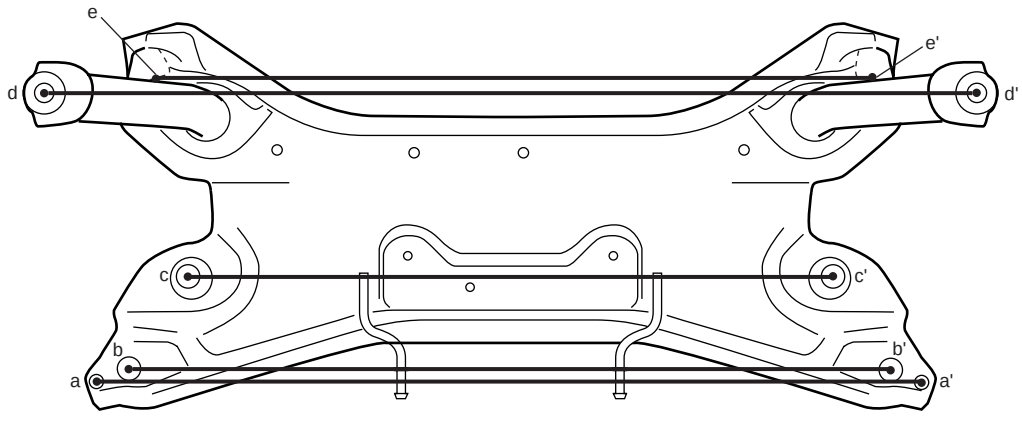
Hole to hole distance

a-b: 644 mm (25.35 in.)	**d-e: 488 mm (19.21 in.)**	**g-h: 293 mm (11.54 in.)**
b-c: 260 mm (10.24 in.)	**e-f: 440 mm (17.32 in.)**	**g-i: 597 mm (23.50 in.)**
c-d: 288 mm (11.34 in.)	**f-g: 138 mm (5.43 in.)**	**g-j: 956 mm (37.64 in.)**

Projection dimension from standard line “A”

a: 73 mm (2.87 in.)	**e: 10 mm (0.39 in.)**	**i: 181 mm (7.13 in.)**
b: 236 mm (9.29 in.)	**f: 10 mm (0.39 in.)**	**j: 221 mm (8.70 in.)**
c: 29 mm (1.14 in.)	**g: 68 mm (2.68 in.)**	
d: 12 mm (0.47 in.)	**h: 72 mm (2.83 in.)**	

Front Suspension Frame

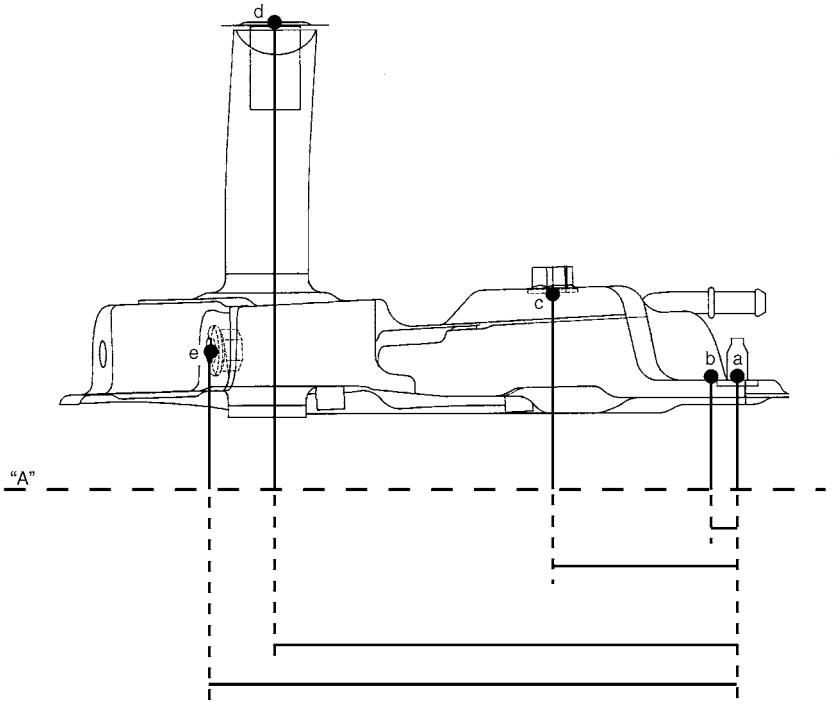


I4RS0A9B0009-01

a (a’). Stud	d (d’). Front suspension frame installation hole
b (b’). Front suspension frame installation hole	e (e’). Front suspension control arm installation hole
c (c’). Front suspension control arm installation hole	

Hole to hole distance

a-a’: 896 mm (35.28 in.)	**d-d’: 881.5 mm (34.70 in.)**
b-b’: 800 mm (31.50 in.)	**e-e’: 765 mm (30.12 in.)**
c-c’: 666 mm (26.22 in.)	



I4RS0A9B0010-01

a. Stud	d. Front suspension frame installation hole
b. Front suspension frame installation hole	e. Front suspension control arm installation hole
c. Front suspension control arm installation hole	

Hole to hole distance

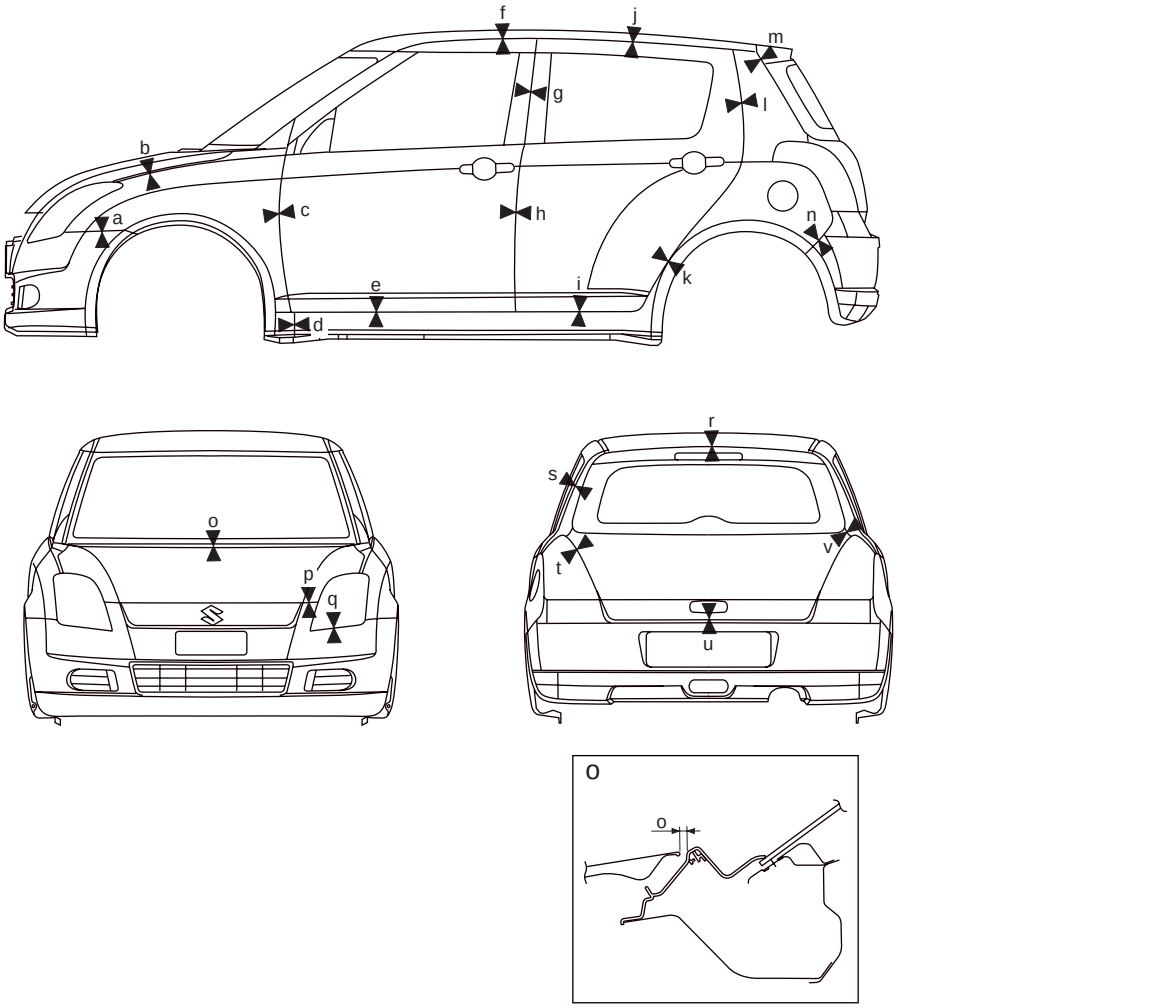
a-b: 10 mm (0.39 in.)	**a-d: 270 mm (10.63 in.)**
a-c: 108 mm (4.25 in.)	**a-e: 309 mm (12.17 in.)**

Projection dimension from standard line "A"

a: 50 mm (1.97 in.)	**d: 258 mm (10.16 in.)**
b: 50 mm (1.97 in.)	**e: 66 mm (2.60 in.)**
c: 97 mm (3.82 in.)	

Panel Clearance

S7RS0B9B07002



I7RS0B9B0002-01

Panel to panel distance

a: 0-1 mm (0-0.039 in.)	i: 4.7-6.7 mm (0.185-0.263 in.)	q: 1.5-3.0 mm (0.059-0.118 in.)
b: 2.3-4.3 mm (0.091-0.169 in.)	j: 15.4-18.4 mm (0.606-0.724 in.)	r: 6.8-8.3 mm (0.268-0.327 in.)
c: 3.1-5.1 mm (0.122-0.201 in.)	k: 3.0-5.0 mm (0.118-0.197 in.)	s: 4.1 mm (0.161 in.)
d: 1.1-3.1 mm (0.043-0.122 in.)	l: 3.1-5.1 mm (0.122-0.201 in.)	t: 3.8-5.8 mm (0.150-0.228 in.)
e: 4.7-6.7 mm (0.185-0.263 in.)	m: 3.6-5.6 mm (0.142-0.220 in.)	u: 5.8-7.8 mm (0.228-0.307 in.)
f: 14.7-17.7 mm (0.579-0.697 in.)	n: 0-1.0 mm (0-0.039 in.)	v: 3.6-5.6 mm (0.142-0.220 in.)
g: 3.1-5.1 mm (0.122-0.201 in.)	o: 8.1 mm (0.319 in.)	
h: 3.1-5.1 mm (0.122-0.201 in.)	p: 6.1-8.1 mm (0.240-0.319 in.)	

Paint / Coatings

General Description

Anti-Corrosion Treatment Construction

S7RS0B9C01001

⚠ WARNING

Standard shop practices, particularly eye protection, should be followed during the performance of the following operations to avoid personal injury.

As rust proof treatment, steel sheets are given corrosion resistance on the interior and/or exterior.
These corrosion resistance steel sheet materials are called one of two-side galvanized steel sheets.
It is for the sake of rust protection that these materials are selected and given a variety of treatments as described blow.

- Steel sheets are treated with cathodic electro primer which is excellent in corrosion resistance.
- Rust proof wax coatings are applied to door and side sill insides where moisture is liable to stay.
- Vinyl coating is applied to body underside and wheel housing inside.
- Sealer is applied to door hem, engine compartment steel sheet-to-steel sheet joint, and the like portions to prevent water penetration and resulting in rust occurrence.

In panel replacement or collision damage repair, leaving the relevant area untreated as it is in any operation which does disturb the rust proof treatment will cause corrosion to that area. Therefore, it is the essential function of any repair operation to correctly recoat the related surfaces of the relevant area.
All the metal panels are coated with metal conditioners and primer coating during vehicle production. Following the repair and/or replacement parts installation, every accessible bare metal surface should be cleaned and coated with rust proof primer. Perform this operation prior to the application of sealer and rust proof wax coating.
Sealer is applied to the specific joints of a vehicle during production. The sealer is intended to prevent dust from entering the vehicle and serves also as an anti corrosion barrier. The sealer is applied to the door and hood hem areas and between panels. Correct and reseal the originally sealed joints if damaged. Reseal the attaching joints of a new replacement panel and reseal the hem area of a replacement door or hood.
Use a quality sealer to seal the flanged joints, overlap joints and seams. The sealer must have flexible characteristics and paint ability after it’s applied to repair areas.
For the sealer to fill open joints, use caulking material. Select a sealer in conformance with the place and purpose of a specific use. Observe the manufacturer’s label-stand instructions when using the sealer.
In many cases, repaired places require color painting. When this is required, follow the ordinary techniques specified for the finish preparation, color painting and undercoating build-up.
Rust proof wax, a penetrative compound, is applied to the metal-to-metal surfaces (door and side sill insides) where it is difficult to use ordinary undercoating material for coating. Therefore, when selecting the rust proof wax, it may be the penetrative type.
During the undercoating (vinyl coating) application, care should be taken that sealer is not applied to the engine-related parts and shock absorber mounting or rotating parts. Following the under coating, make sure that body drain holes are kept open.
The sequence of the application steps of the anti-corrosion materials are as follows:

1) Clean and prepare the metal surface.
2) Apply primer.
3) Apply sealer (all joints sealed originally).
4) Apply color in areas where color is required such as hem flanges, exposed joints and under body components.
5) Apply anti corrosion compound (penetrative wax).
6) Apply undercoating (rust proof material).

Plastic Parts Finishing

S7RS0B9C01002

Paintable plastic parts are ABS plastic parts.

Painting

Rigid or hand ABS plastic needs no primer coating.
General acrylic lacquers can be painted properly over hard ABS plastic in terms of adherence.

1) Use cleaning solvent for paint finish to wash each part.
2) Apply conventional acrylic color lacquer to part surface.
3) Follow lacquer directions for required drying time. (Proper drying temperature range is 60 – 70 °C (140 – 158 °F)).

Reference

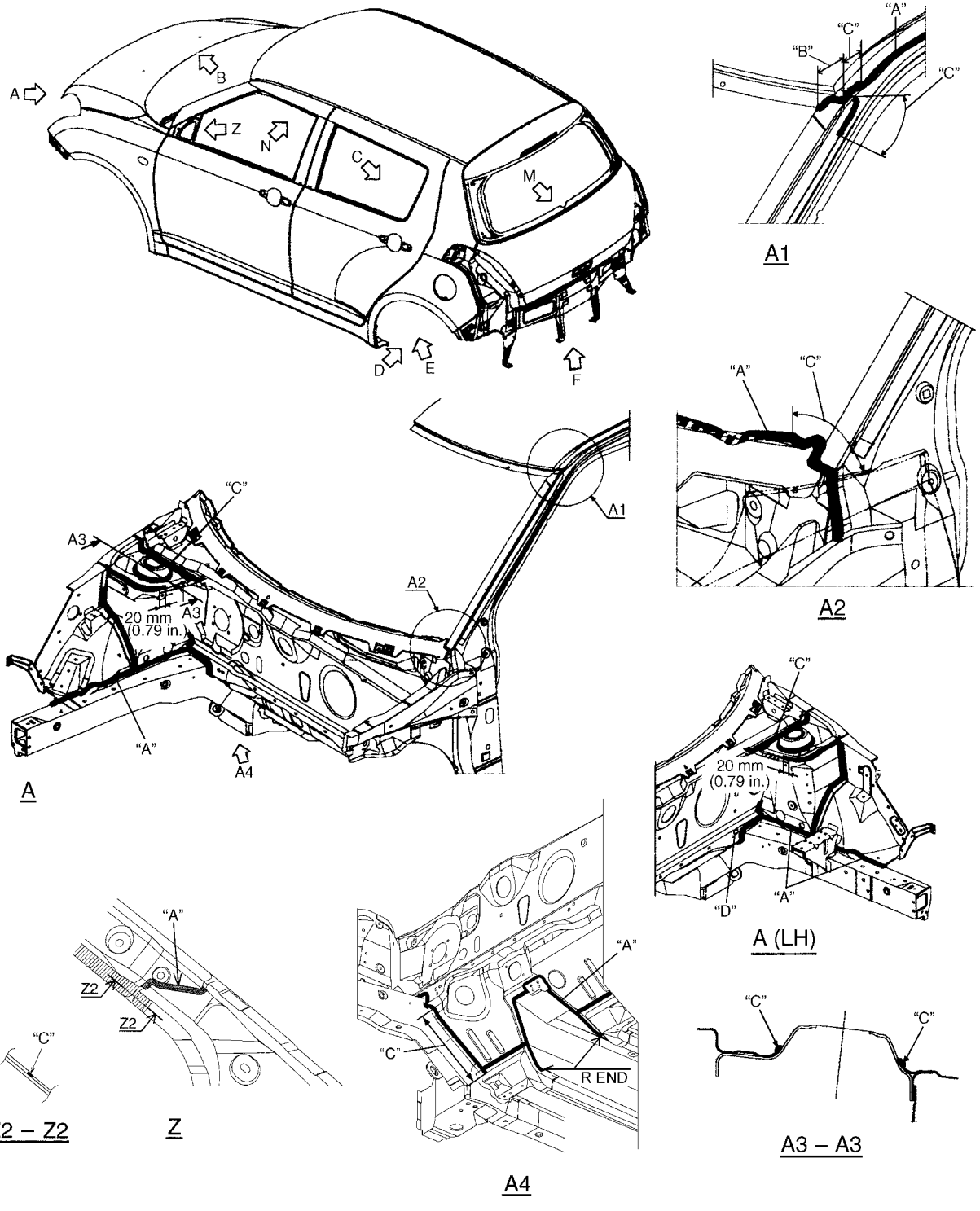
Plastic parts employ not only ABS (Acrylonitrile Butadiene Styrene) plastic but also polypropylene, vinyl, or the like plastic. Burning test method to identify ABS plastic is described below.

1) Use a sharp blade to cut off a plastic sliver from the part at its hidden backside.
2) Hold sliver with pincers and set it on fire.
3) Carefully observe condition of the burning plastic.
4) ABS plastic must raise readily distinguishable back smoke while burning with its residue suspended in air temporarily.
5) Polypropylene must raise no readily distinguishable smoke while burning.

Component Location

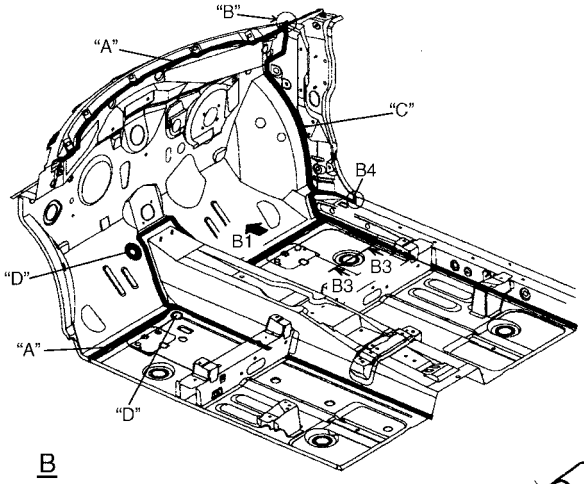
Sealant Application Areas

S7RS0B9C03001

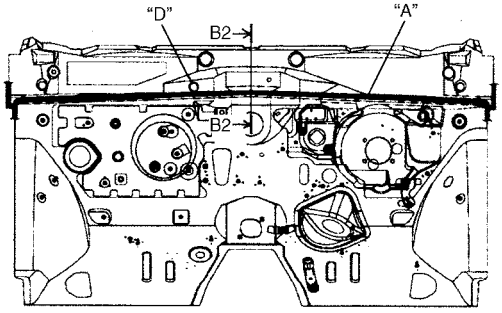


I7RS0A9C0001-01

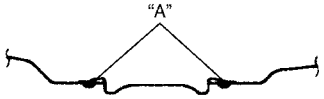
"A": Apply sealant.	"C": Smooth out sealant with a brush.
"B": Wipe off excess sealant after application.	"D": Do not apply sealant



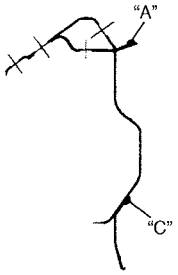
B



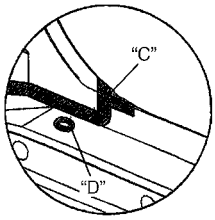
B1



B3 – B3



B2 – B2



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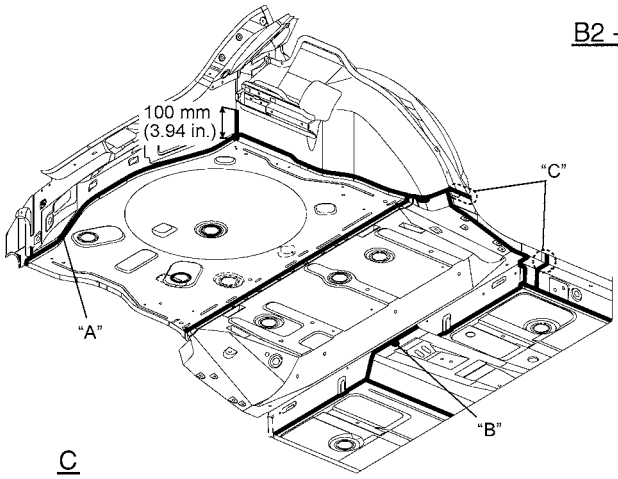
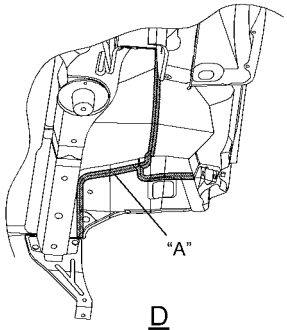


C



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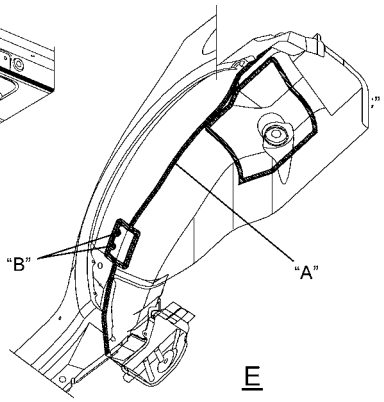
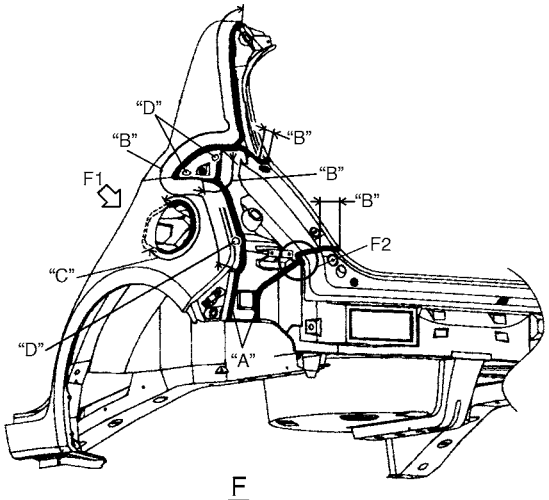


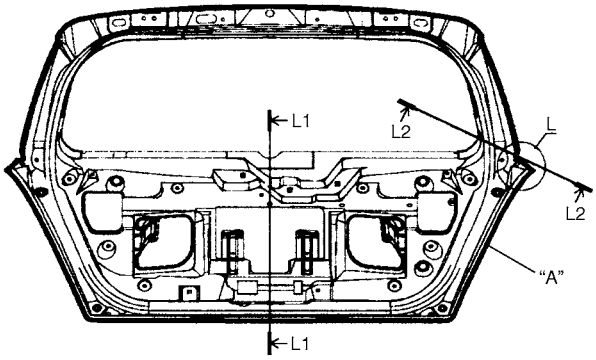
E

I7RS0A9C0002-01

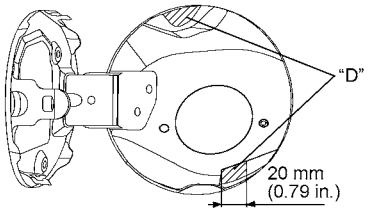
"A": Apply sealant.	"C": Smooth out sealant with a brush.
"B": Fill gap / hole with sealant.	"D": Do not apply sealant.



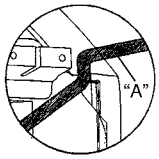
F



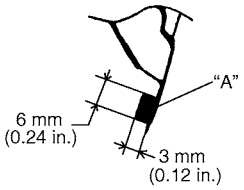
M



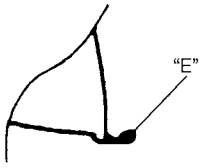
F1



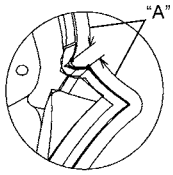
F2



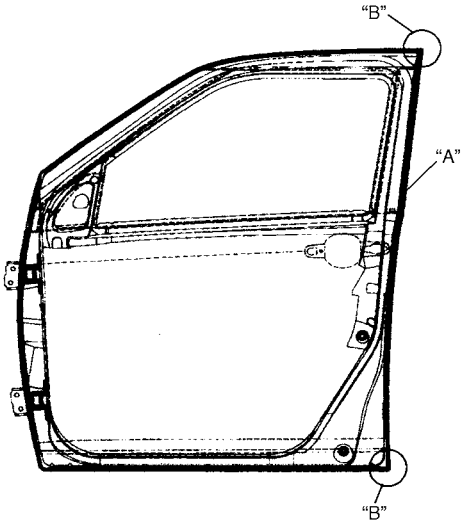
L1 – L1

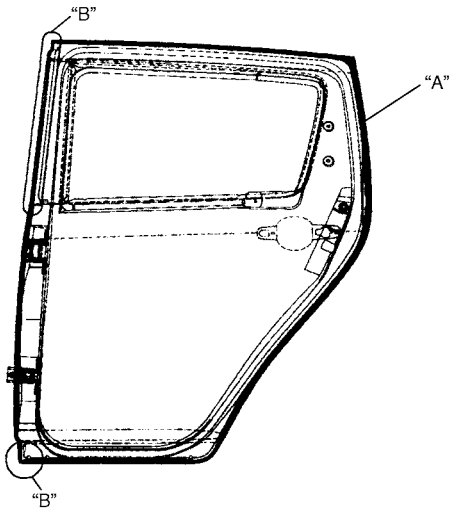


L2 – L2



L

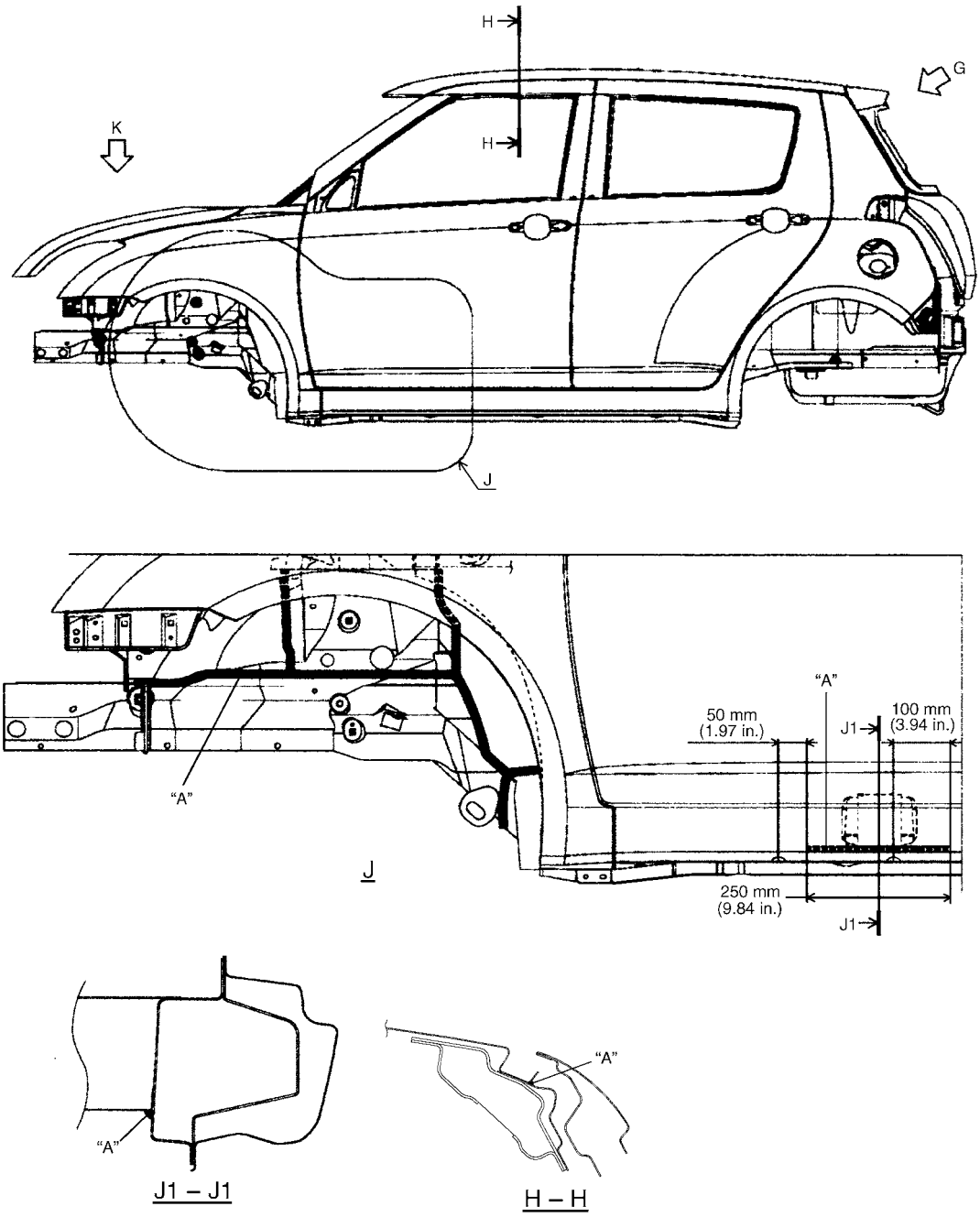




N

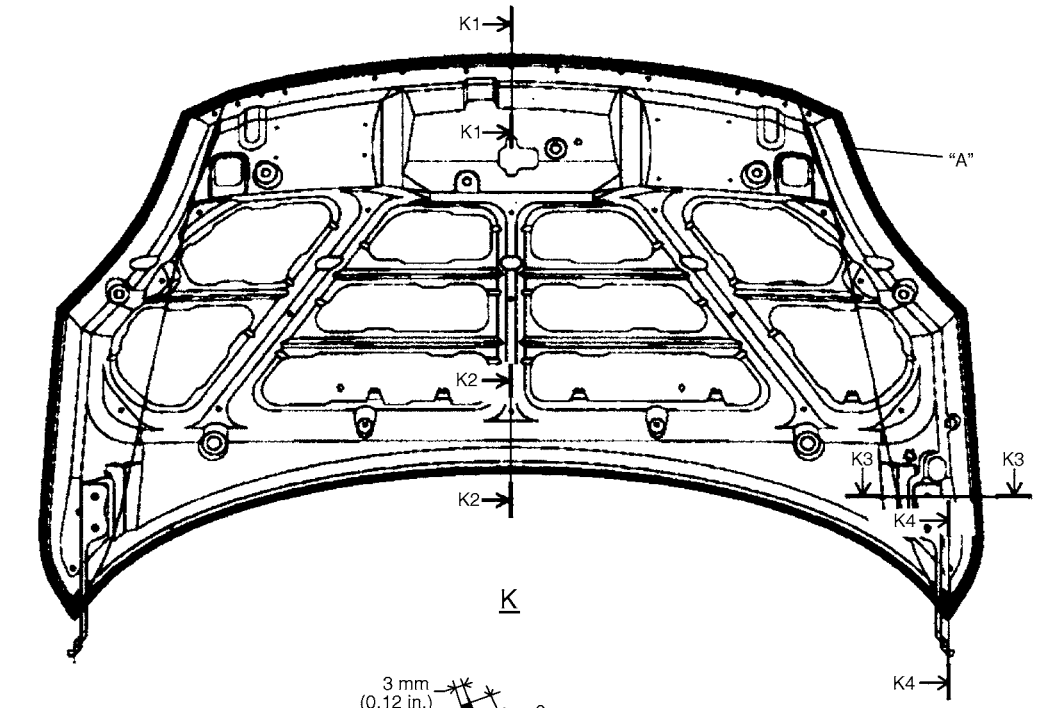
I7RS0A9C0003-01

"A": Apply sealant.	"C": Smooth out sealant with a brush.	"E": Apply sealant covering flange end (between "c" and "d").
"B": Wipe off excess sealant after application.	"D": Do not apply sealant.	

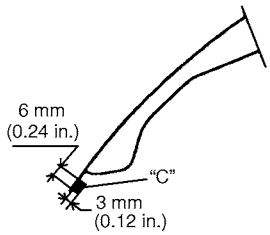


I6RS0C9C0001-01

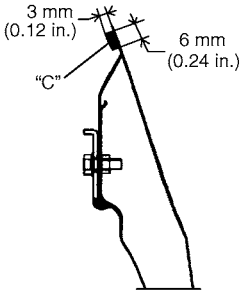
"A": Apply sealant



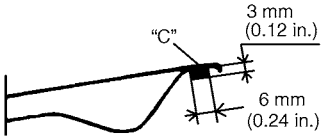
K



K1 – K1

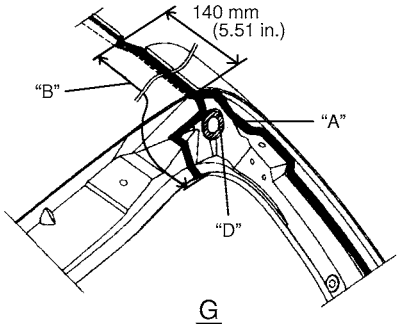


K3 – K3



K2 – K2

K4 – K4



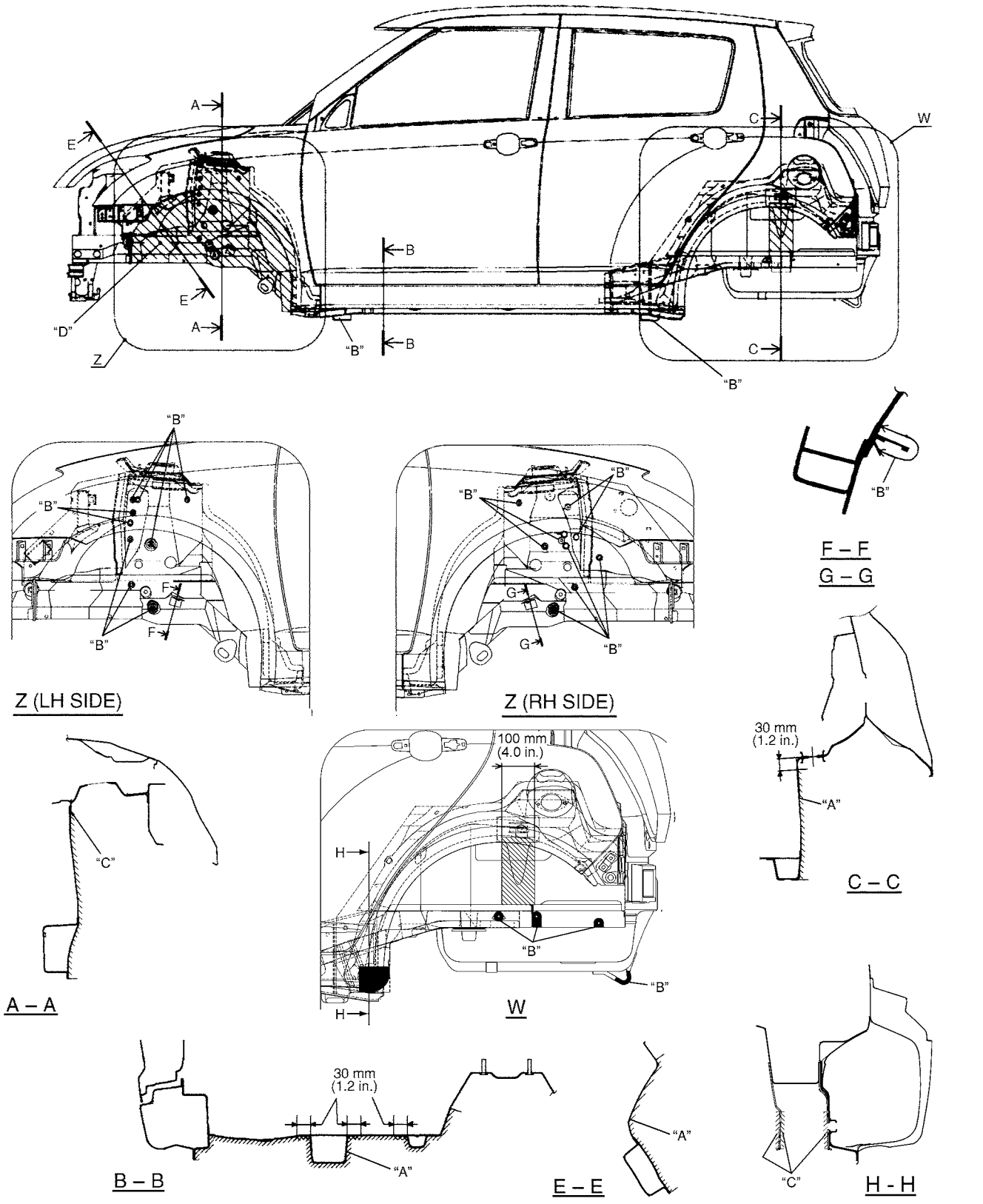
G

I4RS0A9C0005-01

"A": Apply sealant.	"C": Apply sealant covering flange end.
"B": Wipe off excess sealant after application.	"D": Do not apply sealant.

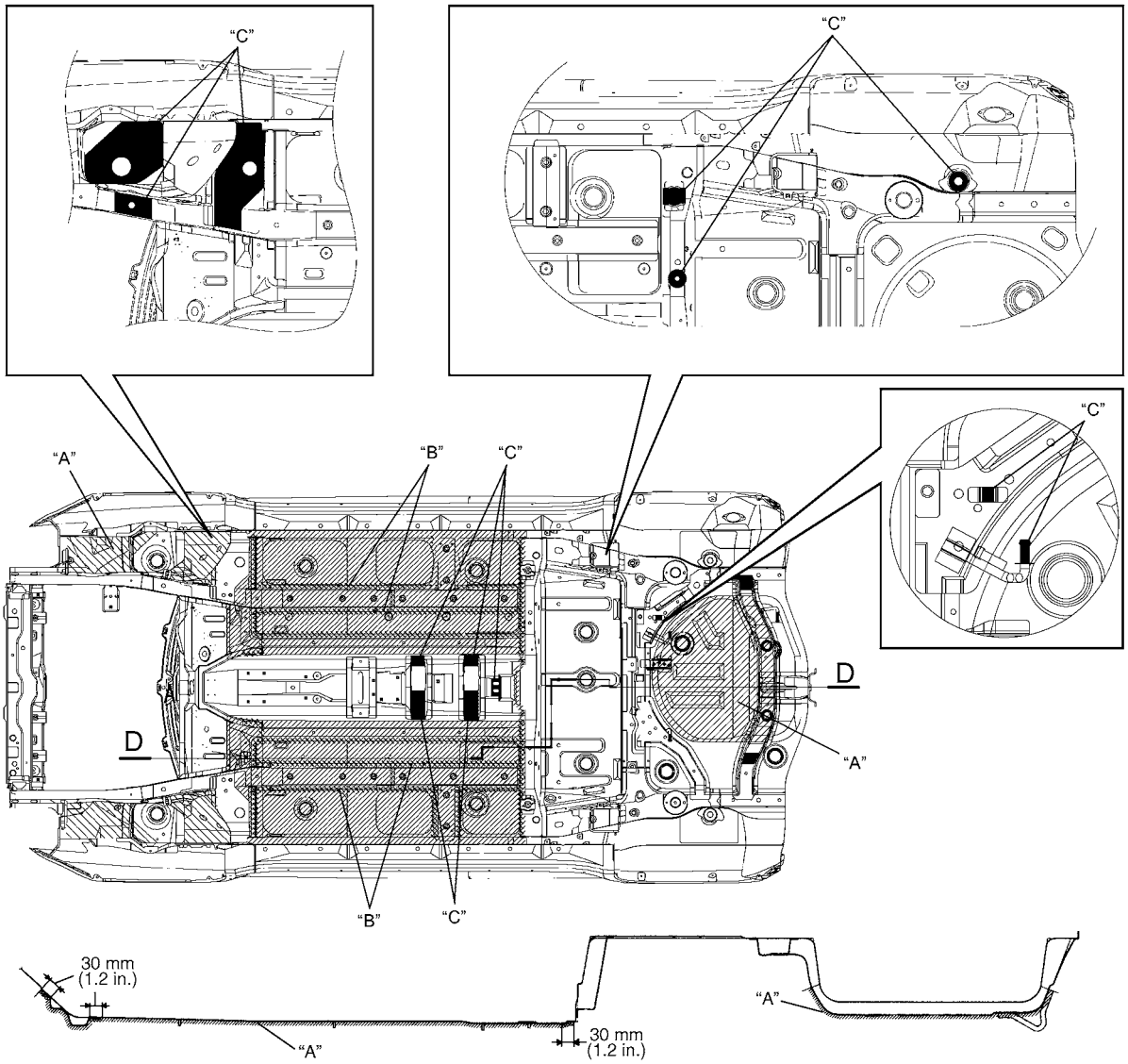
Under Coating Application Areas

S7RS0B9C03002



I7RS0B9C0001-01

"A": Apply undercoating (PVC, 400 μm or more).	"C": Apply undercoating (PVC, 400 μm or more) covering flange end.
"B": Do not apply undercoating.	"D": Apply undercoating (PVC, 400 μm or more) after painted black paint.

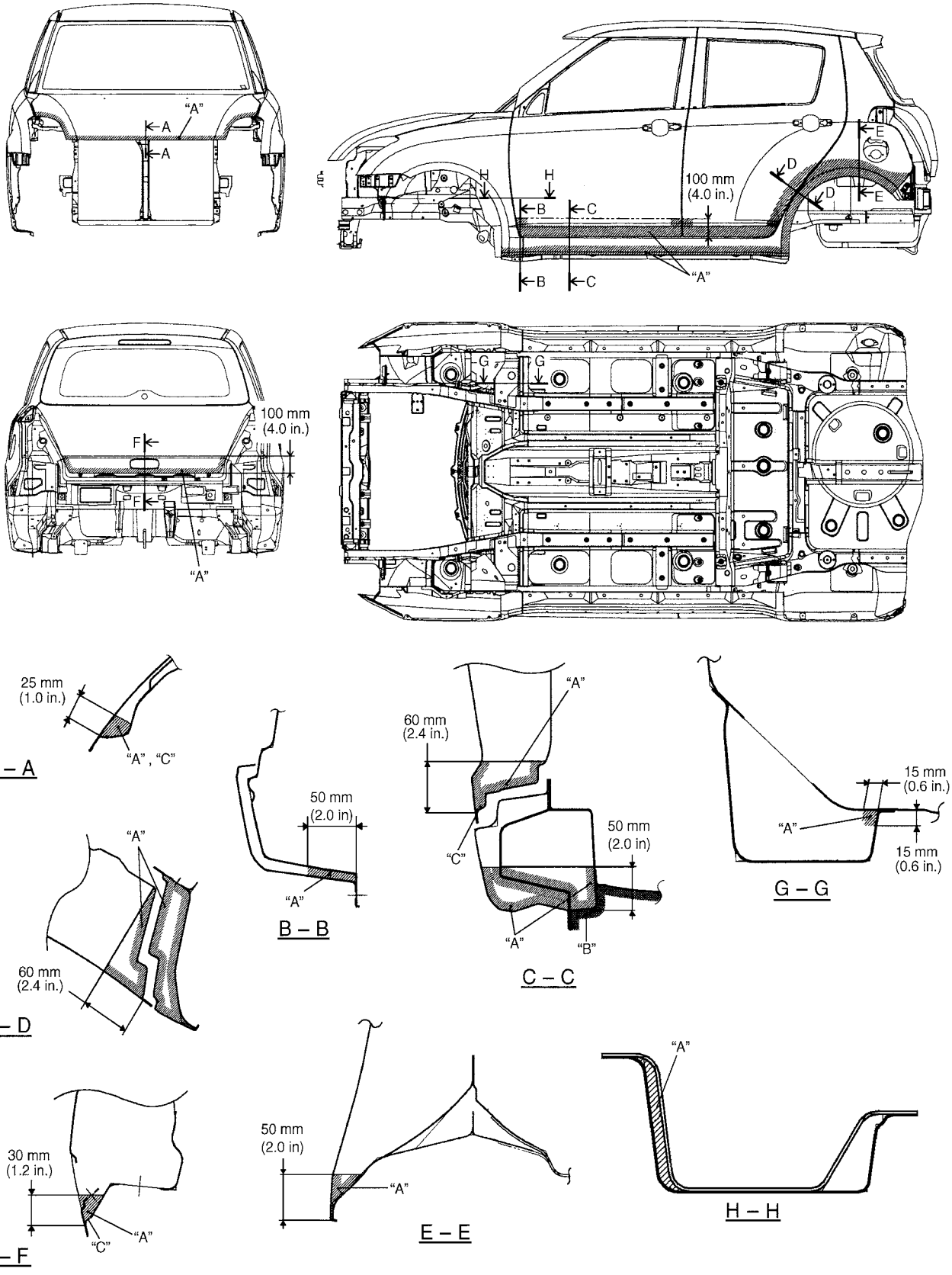


I7RS0B9C0002-01

"A": Apply undercoating (PVC, 400 μm or more).	"C": Do not apply undercoating.
"B": Apply undercoating (PVC, 600 μm or more).	

Anti-Corrosion Compound Application Area

S7RS0B9C03003



I5RS0D9C0005-01

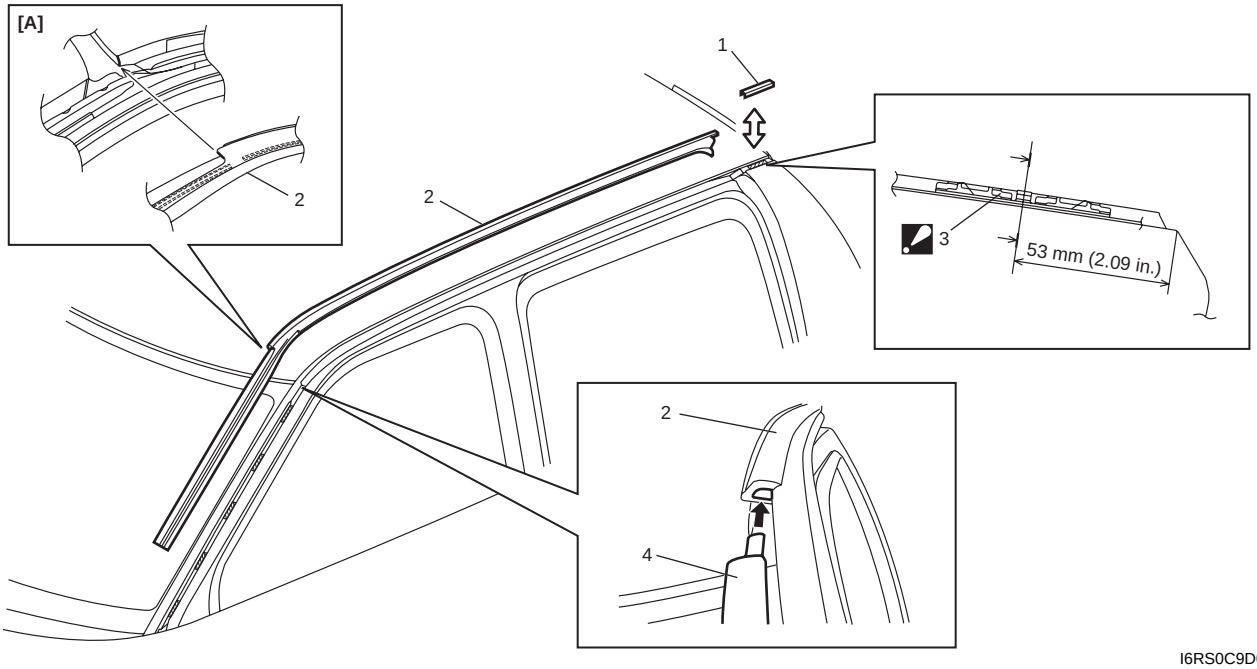
"A": Apply rust proof wax (hot wax 50 μm or more).	"C": Never fill up drain holes with rust proof wax.
"B": Apply rust proof wax (high viscosity wax 50 μm or more).	

Exterior Trim

Repair Instructions

Roof Molding Components

S7RS0B9D06001

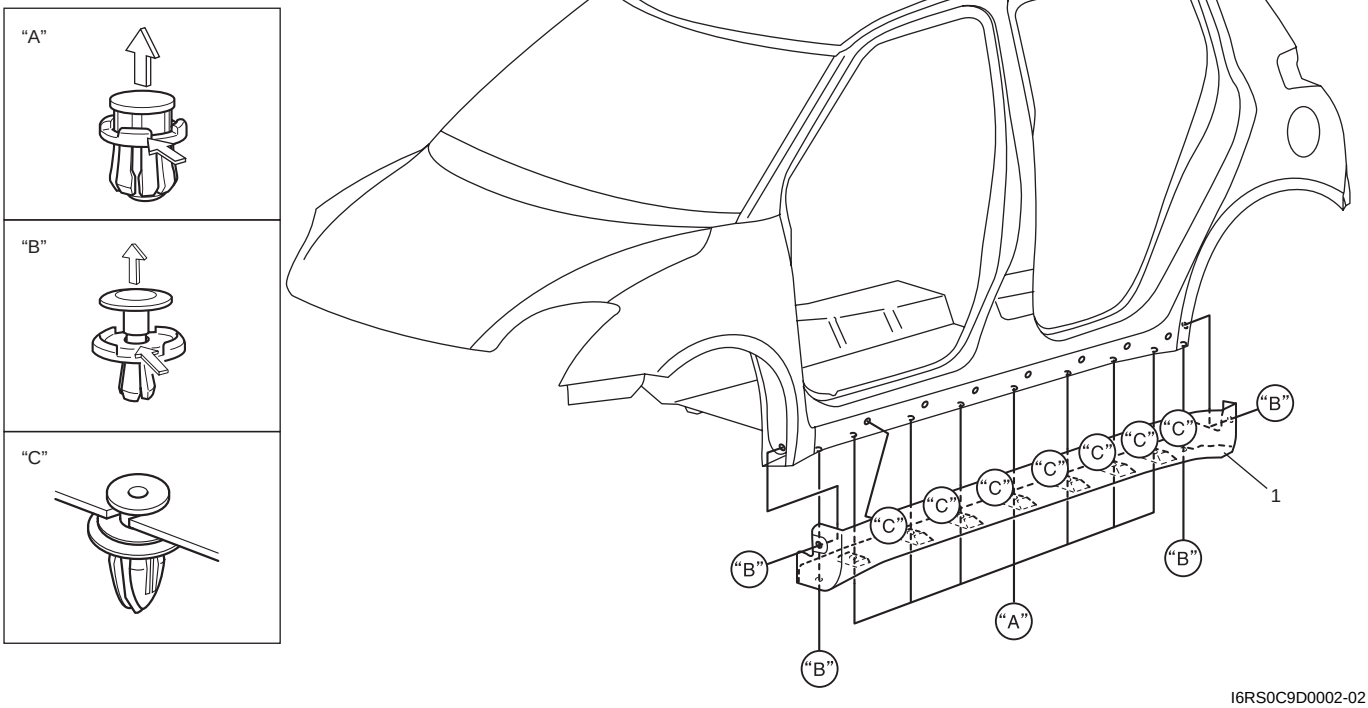


I6RS0C9D0001-01

[A]: Roof side weather-strip installation position	3. Roof molding clip (Push-in type) : Install roof molding clip to specified position on body with epoxy adhesive applied.
1. Roof molding	4. Windshield side garnish
2. Roof side weather-strip	

Splash Guard (If Equipped) Components

S7RS0B9D06002



I6RS0C9D0002-02

1. Side sill splash guard

Section 10

Control Systems

CONTENTS

Precautions

Precautions

Precautions for Control Systems

S7RS0BA000001

Air Bag Warning
Refer to “Air Bag Warning in Section 00”.

Body Electrical Control System

Precautions

Precautions in Diagnosing Trouble

S7RS0BA200001

- Diagnostic information stored in BCM memory can be cleared as well as checked by using SUZUKI scan tool. Before using scan tool, read its Operator's (Instruction) Manual carefully to have good understanding as to what functions are available and how to use it.
- Be sure to read "Precautions for Electrical Circuit Service in Section 00" before inspection and observe what is written there.
- Communication of ECM, TCM (if equipped), ABS/ESP® control module, steering angle sensor (ESP® model), keyless start control module (if equipped), combination meter and BCM is established by CAN (Controller Area Network). For detail of CAN communication for BCM, refer to "CAN Communication System Description". Therefore, handle CAN communication line with care referring to "Precaution for CAN Communication System in Section 00".

General Description

BCM General Description

S7RS0BA201001

The Body electrical Control Module (BCM) is incorporated in junction block assembly. Do not attempt removal of BCM from junction block assembly as it may cause contact failure.
The BCM incorporates relays and controllers which are used for the following systems and controls them.

- Power door lock
- Keyless entry (if equipped)
- Door lock function of keyless start system (if equipped)
- Rear wiper
- Combination meter
- Interior light
- Warning buzzer
- Rear end door window defogger and door mirror heater (if equipped)
- Rear end door opener
- Theft deterrent light

Also, the BCM has a function to cause the interior light and open door warning lamp in the combination meter to turn off when any door is left open for longer than 15 minutes to reduce wasteful battery consumption.
In addition, it is possible to check operation of actuator which is controlled by BCM by using the output test function of SUZUKI scan tool to operate actuator simulatively.

CAN Communication System Description

S7RS0BA201002

Refer to “CAN Communication System Description in Section 1A” for CAN communication system description. BCM communication control data with each control module as follows.

BCM Transmission Data

				ECM	TCM (A/T model)	Combination Meter	ESP ® Control Module (if equipped)	Keyless Start Control Module (if equipped)
BCM	Transmit	DATA	A/C switch ON signal	○				
			Electric load signal	○				
			"3" position switch signal		○			
			Illumination ON signal			○		
			Brake fluid level switch signal			○	○	
			Parking brake switch signal			○	○	
			Seat belt buckle switch signal			○		
			Charging system signal			○		○
			Engine oil pressure switch signal			○		○
			Diagnostic trouble code (DTC)			○		
			Door switch status			○		○
			Door lock status					○

I7RS0BA20002-01

BCM Reception Data

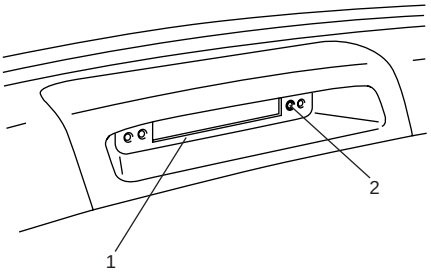
				ECM	TCM (A/T model)	Combination Meter	Keyless Start Control Module (if equipped)
BCM	Receive	DATA	Engine speed signal	○			
			Engine coolant temperature signal	○			
			Vehicle speed signal	○			
			A/C compressor clutch signal	○			
			A/C refrigerant pressure signal	○			
			Fuel consumption signal	○			
			Transmission range sensor signal		○		
			Fuel level signal			○	
			Ignition knob switch signal				○
			Door lock/unlock request signal				○
			Buzzer request signal				○
			Answer back request signal				○

I7RS0AA20001-01

Theft Deterrent Light

S7RS0BA201003

The information display or clock (1) of this vehicle includes a theft deterrent light (2) for the theft preventive purpose. The BCM makes the theft deterrent light flash at certain intervals after the ignition switch is turned off until it is turned on again. Also, to check DTCs stored in BCM without using a SUZUKI scan tool when diagnosing troubles, it is possible to identify them by flashing patterns of the theft deterrent light.



I4RS0AA20031-01

Security Alarm Description (If Equipped)

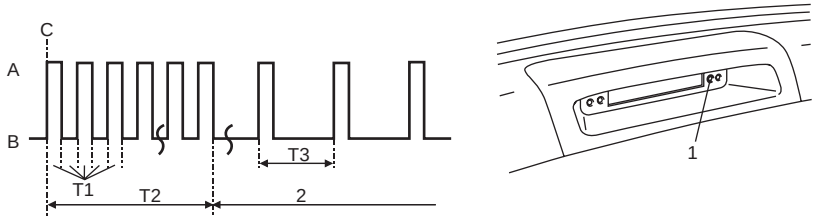
S7RS0BA201004

Operation

The security alarm system provides a warning of an abnormal condition to those who are around. Its operation is as follows. While the system is in the stand-by mode (when 20 seconds or more elapsed after the door is locked using a keyless entry transmitter or door request switch), BCM monitors door lock status, door switch status and battery power supply voltage. When it detects an abnormal condition (door is unlocked by some way other than using keyless entry transmitter or door request switch and opened or cut off BCM power supply voltage temporarily), it activates the warning buzzer (located in BCM), theft deterrent light, hazard warning relay and horn relay.
The security alarm system has 2 selectable modes.

- A mode: No operation
- B mode: Theft deterrent light blinks, hazard warning lights blink, warning buzzer (located in BCM) sounds and horn sounds

When B mode is selected and the door is locked using keyless entry transmitter or door request switch, the theft deterrent light (1) flashes at 0.1 second interval for 20 seconds and the security alarm system is set to the stand-by mode (2). Once it is set to the stand-by mode, the theft deterrent light blinks at 2 second intervals.
When the system is set to stand-by mode and the door is unlocked by some way other than using keyless entry transmitter or door request switch and opened or cut off BCM power supply voltage temporarily, the alarm devices operate according to the selected mode as described above.



I5RS0DA20003-01

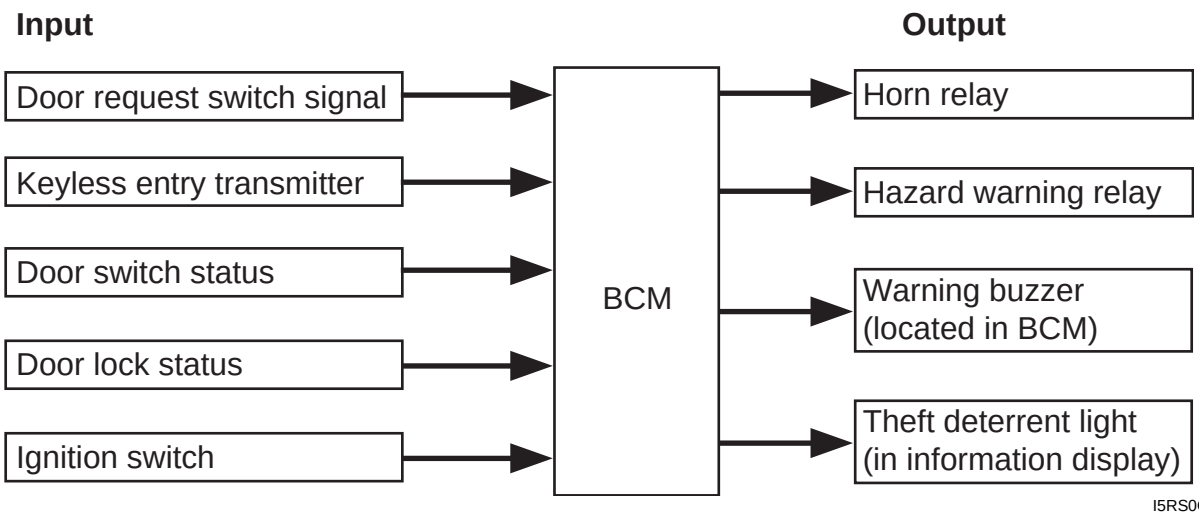
A: Indicator lamp turned ON	T1: 0.1 seconds
B: Indicator lamp turned OFF	T2: 20 seconds
C: When door is locked using keyless entry transmitter or door request switch	T3: 2 seconds

The alarm stops under either of the following conditions.

- Ignition switch is turned ON
- A certain time has elapsed since the alarm started

For selection of the mode of the security alarm system, refer to “Security Alarm Mode Selection Procedure (If Equipped)”.

Input / Output Table



I5RS0CA20003-01

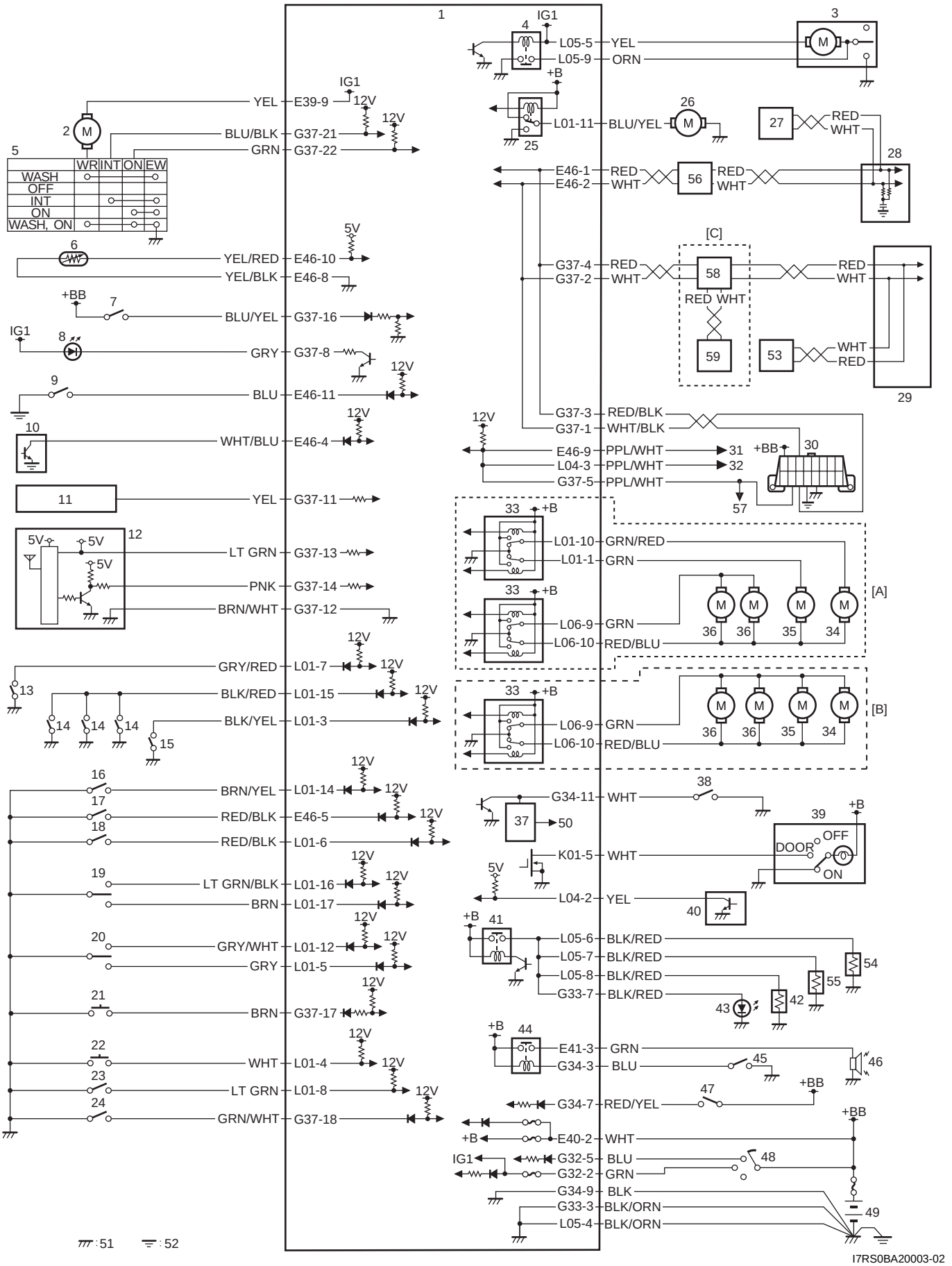
Schematic and Routing Diagram

Body Electrical Control System Wiring Circuit Diagram

S7RS0BA202001

NOTE

This wiring diagram shows circuits related to only BCM, not the entire circuits of BCM and junction block. Refer to “Power Supply Diagram in Section 9A” for wiring circuits other than the figure below.

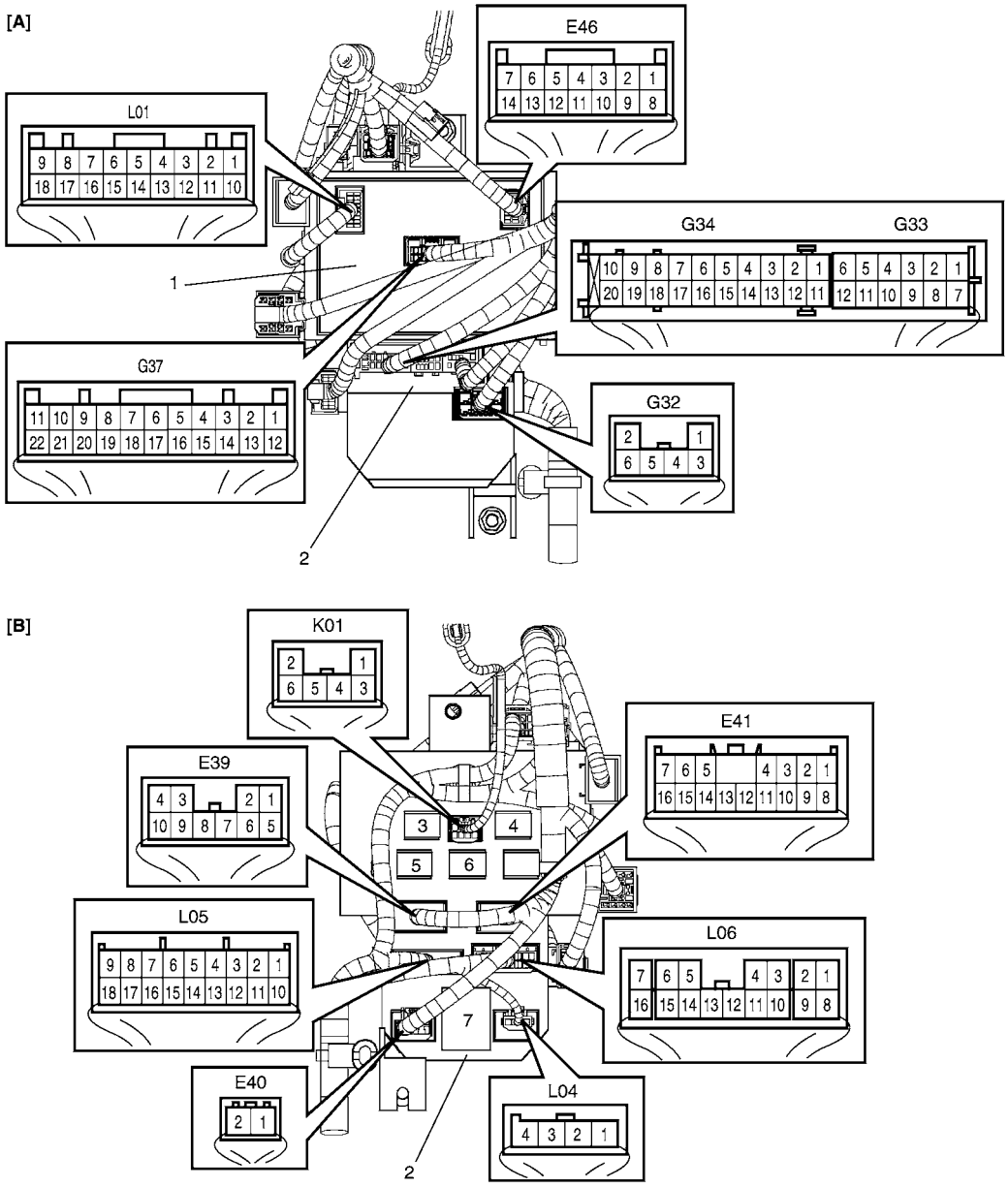

1
IG1
4
L05-5 YEL
L05-9 ORN
3
M
+B
L01-11 BLU/YEL
26
M
27
RED
WHT
25
28
E46-1 RED
E46-2 WHT
56
RED
WHT
2
M
YEL E39-9
BLU/BLK G37-21
GRN G37-22
12V
5
WR INT ON EW
WASH
OFF
INT
ON
WASH, ON
6
5V
YEL/RED E46-10
YEL/BLK E46-8
[C]
G37-4 RED
G37-2 WHT
58
RED WHT
59
53
RED
WHT
WHT
RED
29
+BB
7
BLU/YEL G37-16
IG1
8
GRY G37-8
9
BLU E46-11
10
WHT/BLU E46-4
G37-3 RED/BLK
G37-1 WHT/BLK
E46-9 PPL/WHT
31
L04-3 PPL/WHT
32
G37-5 PPL/WHT
57
+BB
30
11
YEL G37-11
33
+B
L01-10 GRN/RED
L01-1 GRN
[A]
L06-9 GRN
L06-10 RED/BLU
36
36
35
34
12
5V
LT GRN G37-13
PNK G37-14
BRN/WHT G37-12
GRY/RED L01-7
13
BLK/RED L01-15
BLK/YEL L01-3
14
14
14
15
[B]
16
BRN/YEL L01-14
17
RED/BLK E46-5
18
RED/BLK L01-6
19
LT GRN/BLK L01-16
BRN L01-17
20
GRY/WHT L01-12
GRY L01-5
21
BRN G37-17
22
WHT L01-4
23
LT GRN L01-8
24
GRN/WHT G37-18
G34-11 WHT
38
37
50
39
DOOR
OFF
ON
K01-5 WHT
L04-2 YEL
40
41
L05-6 BLK/RED
L05-7 BLK/RED
L05-8 BLK/RED
G33-7 BLK/RED
54
55
42
43
44
E41-3 GRN
G34-3 BLU
45
46
47
G34-7 RED/YEL
E40-2 WHT
G32-5 BLU
G32-2 GRN
48
G34-9 BLK
G33-3 BLK/ORN
L05-4 BLK/ORN
49
: 51
: 52
I7RS0BA20003-02

[A]: Vehicle not equipped with diagnosis connector	19. Door key cylinder switch (included in door lock actuator)	40. SDM
[B]: Vehicle equipped with diagnosis connector	20. Manual door lock switch	41. Rear end door window defogger relay
[C]: ESP® model	21. Rear end door window defogger switch	42. Rear end door window defogger
1. BCM (included in junction block assembly)	22. Rear end door opener switch	43. Rear end door window defogger indicator lamp
2. Rear washer motor	23. “3” position switch (A/T model)	44. Horn relay
3. Rear wiper motor	24. A/C switch	45. Horn switch
4. Rear wiper relay	25. Rear end door opener relay	46. Horn
5. Rear wiper and washer switch	26. Rear end door opener actuator	47. Lighting switch
6. Outside air temperature sensor	27. TCM (A/T model)	48. Ignition switch
7. Key reminder switch	28. ECM	49. Battery
8. Theft deterrent light	29. Combination meter	50. To turn signal light
9. Oil pressure switch	30. Data link connector (DLC)	51. Body ground
10. Generator	31. To ECM, ABS/ESP®, P/S control module	52. Engine ground
11. Information display (if equipped)	32. To SDM	53. Keyless start control module (if equipped)
12. Keyless entry receiver (if equipped)	33. Door lock actuator relay	54. Right side door mirror heater (if equipped)
13. Driver side door switch	34. Driver side door lock actuator	55. Left side door mirror heater (if equipped)
14. Other than driver side door switch	35. Passenger side door lock actuator	56. ABS/ESP® control module
15. Rear end door switch	36. Rear door lock actuator	57. To HVAC control module
16. Driver side seat belt switch	37. Turn signal and hazard warning relay	58. CAN junction connector
17. Brake fluid level switch	38. Hazard warning switch	59. Steering angle sensor
18. Parking brake switch	39. Interior light	

Connector Layout Diagram of BCM and Junction Block Assembly

S7RS0BA202002

BCM and junction block assembly connectors (viewed from harness side)



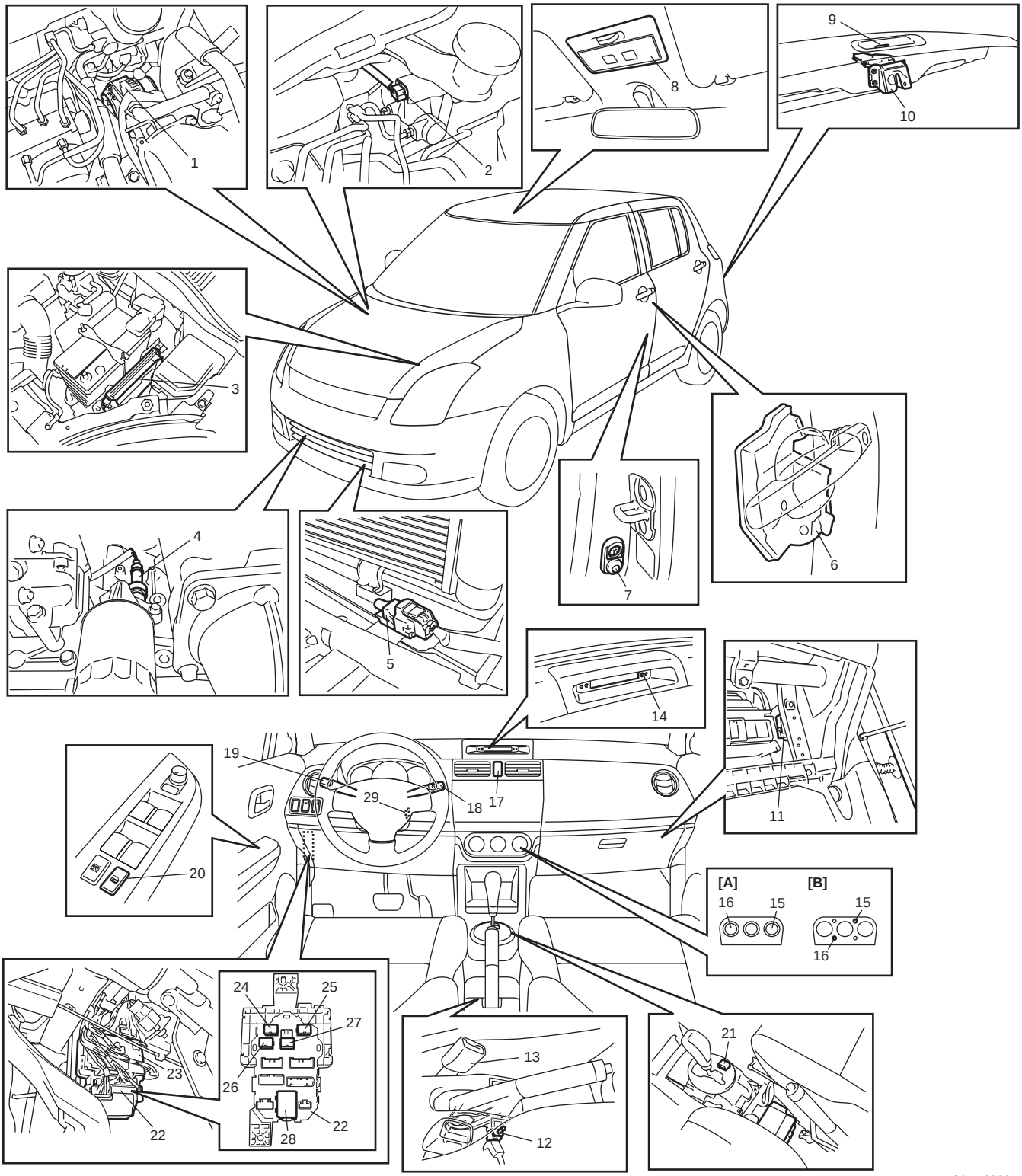
I4RS0AA20004-01

[A]: Junction block assembly (viewed from BCM side)	2. Junction block assembly	5. Rear wiper relay
[B]: Junction block assembly (viewed from relay side)	3. Heater relay	6. Rear end door window defogger relay
1. BCM	4. Horn relay	7. Turn signal and hazard warning relay

Component Location

BCM and Related System Component Location

S7RS0BA203001



I5RS0DA20005-01

[A]: Automatic A/C	10. Rear end door opener actuator (incorporated in door switch)	21. "3" position switch (A/T model)
[B]: Manual A/C	11. Keyless entry receiver or keyless start control module (if equipped)	22. Junction block assembly
1. Generator	12. Parking brake switch	23. BCM
2. Brake fluid level switch	13. Seat belt buckle switch	24. Heater relay
3. ECM	14. Theft deterrent light	25. Horn relay

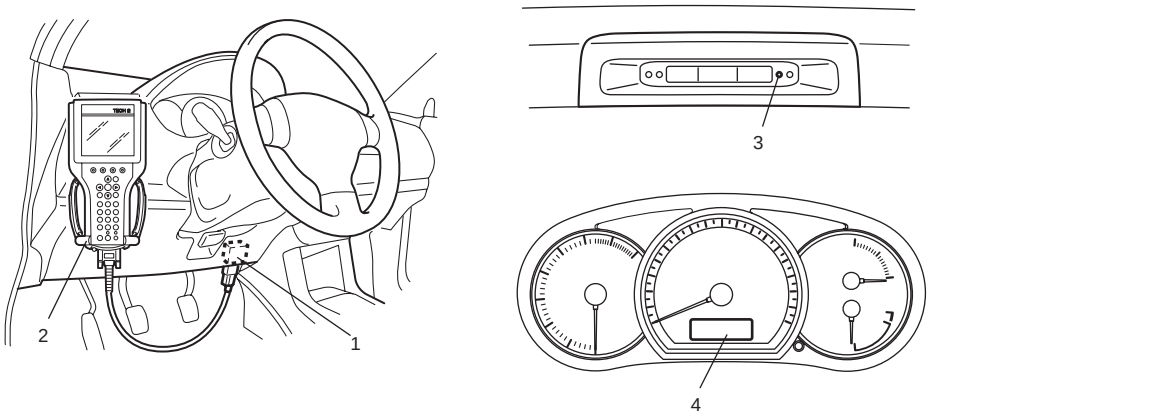
4. Oil pressure switch	15. Rear end door window defogger switch	26. Rear wiper relay
5. Outside air temperature sensor (if equipped)	16. A/C switch	27. Rear end door window defogger relay
6. Door lock actuator (incorporated in key cylinder switch)	17. Hazard warning switch	28. Turn signal and hazard warning relay
7. Door switch	18. Rear wiper switch	29. Key reminder switch (included in ignition switch)
8. Interior light	19. Lighting switch	
9. Rear end door opener switch	20. Manual door lock switch	

Diagnostic Information and Procedures

BCM Self-Diagnosis Function

S7RS0BA204001

- BCM monitors conditions of the system components and its circuit with ignition switch turned to ON position. When an abnormality in the system occurs, the area where that abnormality lies is stored in the memory of EEPROM in BCM.
- DTC can be checked in either one of following ways.
  - DTC can be checked by SUZUKI scan tool (2) connected to DLC (1).
  - DTC can be read from flashing pattern of theft deterrent light (3). Also, DTC is displayed on combination meter (4) at the same time.



I4RS0BA20004-03

BCM input / output table

Control	Input	Output
Power door lock system	• Key cylinder switch • Manual door lock switch	• Each door lock actuator
Keyless entry system	• Key reminder switch • Keyless entry receiver • Driver side door switch	• Each door lock actuator • Turn signal and hazard warning relay • Interior light
Keyless start system (Door lock function)	• Keyless start control module	• Each door lock actuator • Turn signal and hazard warning relay • Interior light
Rear wiper	• Rear wiper INT switch • Rear wiper LO switch	• Rear wiper relay
Combination meter	• Tail light switch • Oil pressure switch • Parking brake switch • Driver side seat belt switch • Brake fluid level switch • Generator • Each door switch	• Combination meter

Control	Input	Output
Interior light	• Each door switch • Key reminder switch	• Interior light
Warning buzzer	• Key reminder switch • Tail light switch • Driver side door switch • TCM (reverse signal) (if equipped) • ECM (vehicle speed signal) • Keyless start control module (if equipped)	• Warning buzzer (located in BCM)
Rear end door window defogger	• Rear end door window defogger switch • Generator	• Rear end door window defogger relay
Rear end door opener	• Manual door lock switch (unlock signal) • Key cylinder switch (unlock signal) • Keyless entry transmitter (unlock signal) (if equipped) • Rear end door opener switch	• Rear end door opener relay
Theft deterrent light	• Key reminder switch	• Theft deterrent light (located in information display or clock)

Body Electrical Control System Check

S7RS0BA204002

Step	Action	Yes	No
1	☞ **Customer complaint analysis** 1) Perform customer complaint analysis. *Was customer complaint analysis performed?*	Go to Step 2.	Perform customer complaint analysis.
2	☞ **Problem symptom confirmation** 1) Perform problem symptom confirmation. *Does trouble recur?*	Go to Step 3.	Go to Step 7.
3	☞ **DTC check** 1) Check DTC. *Is it malfunction code?*	Go to Step 4.	Go to Step 5.
4	☞ **Troubleshooting for DTC** 1) Check and repair according to DTC diag. flow. *Are check and repair completed?*	Go to Step 7.	Check and repair malfunction part(s).
5	☞ **Body electrical control system symptom diagnosis** 1) Perform check and repair referring to “Symptom Diagnosis” of system having a trouble. *Is there faulty condition?*	Repair or replace malfunction part(s).	Go to Step 6.
6	☞ **Check for intermittent problem** 1) Check for intermittent problem. *Is there faulty condition?*	Repair or replace malfunction part(s).	Go to Step 7.
7	☞ **Final confirmation test** 1) Clear DTC referring to “DTC Clearance”. 2) Check DTC referring to “DTC Check”. *Is there any DTC?*	Go to Step 4.	End.

Customer Complaint Analysis
Record details of the problem (failure, complaint) and how it occurred as described by the customer.
For this purpose, use of such a questionnaire form as shown in figure will facilitate collecting information to the point required for proper analysis and diagnosis.

Customer questionnaire (example)

Customer's name:	Model:	VIN:	
Date of issue:	Date Reg:	Date of problem:	Mileage:

Problem Symptoms	・Power door lock system does not operate ・Keyless entry system does not operate ・Rear end door window defogger does not operate ・Rear wiper does not operate ・Rear end door opener does not operate ・Warning buzzer does not sound ・Interior light does not light ・Theft deterrent light does not flush ・Other_____
Frequency of Occurrence	・Continuous / Intermittent (times a day, a month) / Other_____
Environmental Condition	・Weather: Fine / Cloudy / Rain / Snow / Other_____ ・Temperature: ℃(°F)
Diagnostic Trouble Code	・Normal code / Malfunction code ( )

I5RS0DA20006-01

Problem Symptom Confirmation
Check if what the customer claimed in "Customer Questionnaire" is accurately found in the vehicle. If that symptom is found, check whether the symptom is identified as a failure. (This step should be shared with the customer if possible.)

DTC Check
Check DTC stored in BCM memory referring to "DTC Check", record it and then clear it referring to "DTC Clearance". DTC indicates malfunction that occurred in the system but does not indicate whether it exists now or it occurred in the past and the normal condition has been restored now. To check which case applies, clear DTC once and check whether or not any fault exists.

Troubleshooting for DTC
Based on the DTC indicated in Step 3 and referring to applicable DTC flow, locate the cause of the trouble, namely in a sensor, wire harness, connector, BCM or other part and repair or replace faulty parts.

Body Electrical Control System Symptom Diagnosis
Check the parts or system suspected as a possible cause referring to symptom diagnosis of each system.

Check for Intermittent Problem
Check parts where an intermittent trouble is easy to occur (e.g., wire harness, connector, etc.), referring to "Intermittent and Poor Connection Inspection in Section 00".

Final Confirmation Test
Confirm that the problem symptom has gone and the body electrical control system is free from any abnormal conditions. If what has been repaired is related to the malfunction DTC, check DTC again and confirm that no DTC is indicated.

Scan Tool Data

S7RS0BA204003

Scan tool Data	Condition	Normal condition / reference value
Vehicle Speed	At stop with ignition switch turned ON	0 km/h
Outside air Temp	Reference value is relative to outside air temperature	–40 °C – 70 °C (–40 °F – 158 °F)
Battery Voltage	At specified idle speed after warming up	10 – 14 V
Coolant Temp	At specified idle speed after warming up	80 °C – 100 °C (176 °F – 212 °F)
Engine Speed	Engine idling with no load applied after warming up	Desired idle speed ± 50 rpm
Fuel Consumption	At specified idle speed after warming up	0.0 km/l
Key Reminder Sw	Ignition key inserted in ignition key cylinder	Key in
	Ignition key pulled out from ignition key cylinder	Pulled
Rear Wiper Sw	Rear wiper switch at ON position and ignition switch turned ON	ON
	Rear wiper switch at INT position and ignition switch turned ON	INT
	Rear wiper switch at OFF position and ignition switch turned ON	OFF
Door key Sw	Key cylinder switch of driver side door at lock position	LOCK
	Key cylinder switch of driver side door not turned	Neutral
	Key cylinder switch of driver side door at unlock position	Unlock
Door Lock Sw	Lock side of manual door lock switch pressed	LOCK
	Manual door lock switch not pressed	Neutral
	Unlock side of manual door lock switch pressed	Unlock
Driv Door Sw	Driver side door open	Open
	Driver side door closed	Close
Pass Door Sw	Doors other than driver side door open	Open
	Doors other than driver side door closed	Close
Brake Fluid Level	Brake fluid level at MIN level or higher	Normal
	Brake fluid level lower than MIN level	Low
Parking Brake Sw	Parking brake lever pulled	ON
	Parking brake lever released	OFF
Rear Defogger Sw	Rear end door window defogger switch turned ON with engine running	ON
	Rear end door window defogger switch turned OFF with engine running	OFF
Tail Light Sw	Lighting switch at HEAD or CLEARANCE position	ON
	Lighting switch at OFF position	OFF
Driv Seatbelt Sw	Driver side seat belt fastened	Fasten
	Driver side seat belt unfastened	Unfasten
Rear end door opener	Rear end door open	ON
	Rear end door closed	OFF
“3” Position Sw	A/T select lever at 2nd or 3rd position with ignition switch turned ON	ON
	A/T select lever at other than 2nd or 3rd position with ignition switch turned ON	OFF
Charge Lamp	Engine at stop with ignition switch turned ON	ON
	Engine running	OFF
Oil pressure switch	Engine at stop with ignition switch turned ON	ON
	Engine running	OFF
A/C Switch	A/C and ignition switch turned ON	ON
	A/C switch turned OFF	OFF

Scan Tool Data Definitions

Vehicle Speed (km/h, mph): It is computed based on pulse signals from vehicle speed sensor on transmission.
Outside air Temp (°C, °F): It is detected by outside air temperature sensor.
Battery Voltage (V): This parameter indicates battery positive voltage inputted to BCM.
Coolant Temp (Engine coolant temperature) (°C, °F): It is detected by engine coolant temperature sensor.
Engine Speed (RPM): It is computed by reference pulse signals from CMP sensor.
Fuel Consumption (km/l): This parameter indicates the fuel consumption computed by ECM.
Key Reminder Sw (Key reminder switch) (Pulled / Key in): This parameter indicates the state of the key reminder switch.
Rear Wiper Sw (Rear wiper switch) (ON / INT / OFF): This parameter indicates the state of the rear wiper switch.
Door key Sw (Door key cylinder switch) (Lock / Neutral / Unlock): This parameter indicates the state of the door key cylinder switch.
Door lock Sw (Manual door lock switch) (Lock / Neutral / Unlock): This parameter indicates the state of the manual door lock switch.
Driv Door Sw (Driver side door switch) (Open / Close): This parameter indicates the state of the driver side door switch.
Pass Door Sw (Other than driver side door switch) (Open / Close): This parameter indicates the state of the door switches other than driver side door switch.
Brake Fluid Level (Low / Normal): Low: Brake fluid level is lower than specified level.
Normal: Brake fluid level is higher than MIN level.
Parking Brake Sw (Parking brake switch) (ON / OFF): ON: Parking brake lever is pulled up.
OFF: Parking brake lever is released.
Rear Defogger Sw (Rear end door window defogger switch) (ON / OFF): This parameter indicates the state of the rear end door window defogger switch.
Tail Light Sw (Lighting switch) (ON / OFF): This parameter indicates the state of the lighting switch.
Driv Seatbelt Sw (Driver seat belt switch) (Fasten / Unfasten): This parameter indicates the state of the driver side seat belt buckle switch.
Rear end Door Opener (Rear end door opener switch) (ON / OFF): This parameter indicates the state of the rear end door opener switch.
"3" position Sw (ON/OFF): This parameter indicates the state of the "3" position switch included in A/T manual selector assembly.
Charge lamp (ON / OFF): This parameter indicates the state of the charge system monitor switch.
Oil pressure switch (ON / OFF): This parameter indicates the state of the oil pressure switch.
A/C Switch (ON / OFF): This parameter indicates the state of the air conditioning switch.

Diagnosis Using Output Test Function of SUZUKI Scan Tool

SUZUKI scan tool has the output test function which can force operation of following actuators and relays of the system controlled by BCM. When a malfunction is found in the system controlled by BCM, execute the output test which enables easy judgment whether the malfunction is on the input side or output side of BCM. For detailed information on operation of SUZUKI scan tool, refer to "SUZUKI Scan Tool Operator's Manual".

Output Teat Item	Controlled Parts
Hazard Warning Light	Turn signal and hazard warning relay
Interior (Dome) Light	Interior (Dome) light (when interior light switch is at DOOR position)
Door	Each door lock actuator
Rear end door open	Rear end door opener relay
Warning buzzer	Warning buzzer (in BCM)
Rear wiper	Rear wiper relay
Alarm indicator	Theft deterrent light (in information display or clock)
Rear defogger	Rear end door window defogger relay

DTC Table

S7RS0BA204004

DTC (displayed on SUZUKI scan tool)	DTC (indicated by theft deterrent light)	DTC (displayed on odometer in combination meter)	Detected item	Detecting condition
NO DTC	0000	0000	—	No DTC detected
☞ B1133	1133	b1133	Battery voltage too high	Battery voltage too high
☞ B1141	1141	b1141	Outside air temperature (ambient temperature) sensor circuit open	Sensor output voltage too high
☞ B1142	1142	b1142	Outside air temperature (ambient temperature) sensor circuit short to ground	Sensor output voltage too low
☞ B1150	1150	b1150	Air bag communication circuit malfunction	Air bag communication circuit open or short to ground
☞ B1157	1157	b1157	Air bag deployment signal input	Air bag deployment signal inputted
☞ B1170	1170	b1170	EEPROM access error	Memory error
☞ U0155	0155	U0155	Lost communication with instrument panel cluster (IPC) control module	Receiving error of BCM from combination meter for specified time continuously
☞ U1073	1073	U1073	Control module communication bus off	Transmitting and receiving error of BCM for specified time continuously
☞ U1100	1100	U1100	Lost communication with ECM	Receiving error of BCM from ECM for specified time continuously
☞ U1101	1101	U1101	Lost communication with TCM	Receiving error of BCM from TCM for specified time continuously
☞ U1144	1144	U1144	Lost communication with keyless start control module	Receiving error of BCM from keyless start control module for specified time continuously

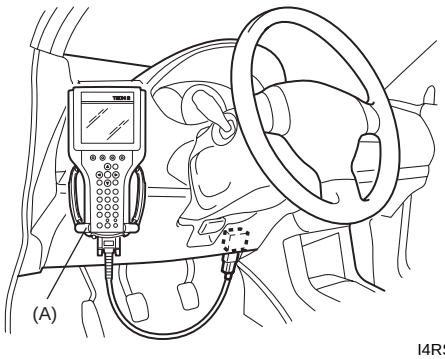
DTC Check

S7RS0BA204005

Using SUZUKI Scan Tool

1) Prepare SUZUKI scan tool.
2) With ignition switch turned OFF, connect it to data link connector (DLC) located on underside of instrument panel of driver's side.

   Special tool
   (A): SUZUKI scan tool



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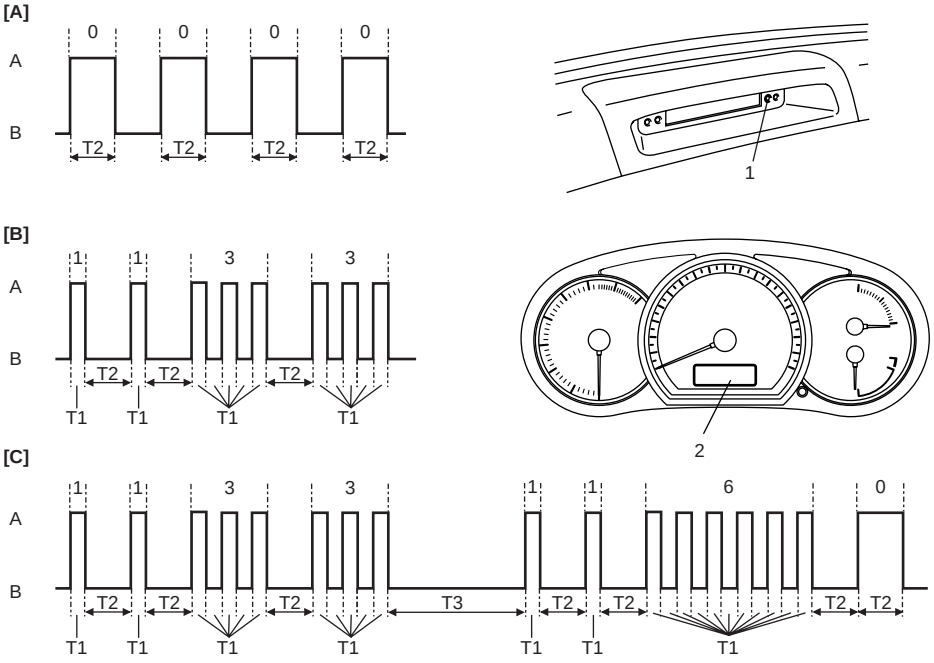
3) Turn ignition switch ON.
4) Read DTC according to instructions displayed on SUZUKI scan tool and print it or write it down. Refer to SUZUKI scan tool operator's manual for further details.
   If communication between SUZUKI scan tool and BCM is not possible, check if SUZUKI scan tool is communicable by connecting it to BCM in another vehicle. If communication is possible in this case, SUZUKI scan tool is in good condition. Then check data link connector and serial data line (circuit) in the vehicle with which communication was not possible.
5) After completing the check, turn ignition switch off and disconnect SUZUKI scan tool from data link connector.

Without Using SUZUKI Scan Tool

1) Turn ignition switch to OFF position.
2) Perform following Steps a) to d) within 10 seconds after ignition switch is turned ON and engine stops.
   a) Turn headlight switch to “SMALL” position.
   b) Turn headlight switch to “OFF” position.
   c) Repeat Steps a) and b) 2 times.
   d) Press and release driver side door switch 3 times.
3) Check DTC displayed on odometer of combination meter or read flashing pattern of theft deterrent light which represents DTC as shown in the following example and write it down.
   When more than 2 DTCs are stored in memory, flashing for each DTC starts with the smallest DTC number in increasing order. Also, DTC is indicated repeatedly until the ignition switch is turned OFF.



I4RS0AA20007-01

[A]: No DTC (No. 0000)	B: Indicator lamp turned OFF	1. Theft deterrent light
[B]: DTC B1133 (No. 1133)	T1: 0.3 seconds	2. Odometer
[C]: When 2 DTCs are detected	T2: 1.0 seconds	
A: Indicator lamp turned ON	T3: 3.0 seconds	

4) After completing the check, turn ignition switch to OFF position.

DTC Clearance

S7RS0BA204006

After repair or replace of malfunction part(s), clear all DTCs by performing the following procedure.

Using SUZUKI Scan Tool

1) Connect SUZUKI scan tool to data link connector in the same manner as when making this connection for DTC check.
2) Turn ignition switch ON and engine stops.
3) Erase DTC according to instructions displayed on scan tool. Refer to scan tool operator’s manual for further details.
4) After completing the clearance, turn ignition switch off and disconnect scan tool from data link connector.

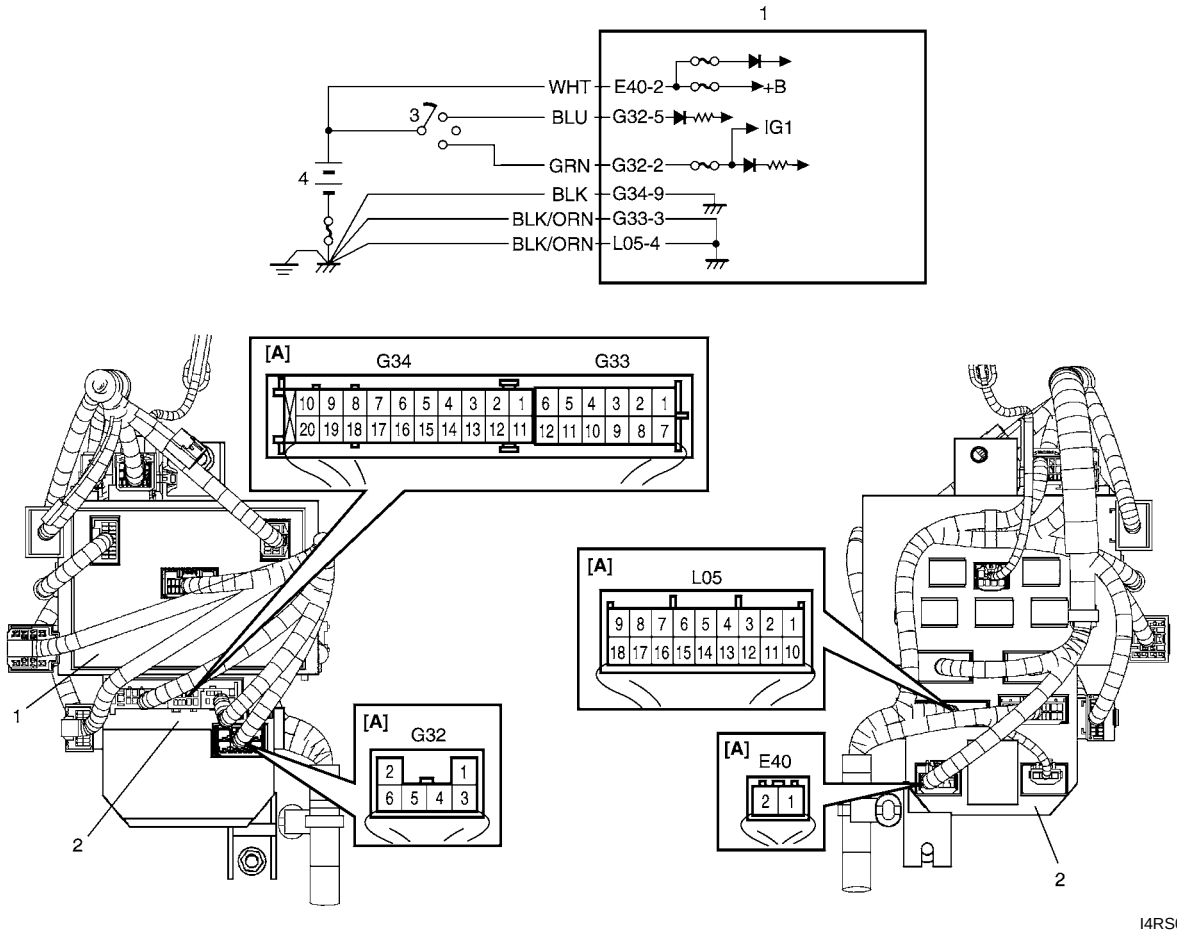
Without Using SUZUKI Scan Tool

1) Turn ignition switch to OFF position.
2) Perform following Steps a) to d) within 10 seconds after ignition switch is turned ON and engine stops.
   a) Turn headlight switch to “SMALL” position.
   b) Turn headlight switch to “OFF” position.
   c) Repeat Steps a) and b) 3 times.
   d) Press and release driver side door switch 4 times.
3) After completing above Steps, confirm that no malfunction DTC is detected.

BCM Power Circuit and Ground Circuit Check

S7RS0BA204007

Wiring Diagram



I4RS0AA20008-01

[A]: Junction block assembly connector viewed from harness side	3. Ignition switch
1. BCM	4. Battery
2. Junction block assembly	

Troubleshooting

Step	Action	Yes	No
1	**Fuse check** 1) Turn ignition switch to OFF position. 2) Check circuit fuses for condition. *Are circuit fuses in good condition?*	Go to Step 2.	Replace fuse and check for short circuit to ground.
2	**Power supply circuit check** 1) Disconnect connectors from junction block assembly. 2) Check for proper connection to junction block assembly connector at terminal “E40-2”. 3) If OK, then measure voltage between “E40-2” terminal of junction block assembly connector and vehicle body ground. *Is voltage 10 – 14 V?*	Go to Step 3.	Repair power supply circuit.

Step	Action	Yes	No
3	**Power supply circuit check** 1) Check for proper connection to junction block assembly connector at terminals “G32-2” and “G32-5”. 2) If OK, turn ignition switch ON. 3) Measure voltage between following terminals. • Between “G32-2” terminal of junction block assembly connector and vehicle body ground • Between “G32-5” terminal of junction block assembly connector and vehicle body ground *Is each voltage 10 – 14 V?*	Go to Step 4.	Repair power supply circuit.
4	**Ground circuit check** 1) Turn ignition switch to OFF position. 2) Check for proper connection to junction block assembly connector at terminals “G33-3”, “G34-9” and “L05-4”. 3) If OK, then measure resistance between following terminals. • Between “G33-3” terminal of junction block assembly connector and vehicle body ground • Between “G34-9” terminal of junction block assembly connector and vehicle body ground • Between “L05-4” terminal of junction block assembly connector and vehicle body ground *Is each resistance 2 Ω or less?*	BCM power supply circuit and ground circuit are in good condition.	Repair ground circuit.

DTC B1133 (DTC No. 1133): Battery Voltage Too High

S7RS0BA204008

Wiring Diagram

Refer to “BCM Power Circuit and Ground Circuit Check”.

DTC Detecting Condition and Possible Cause

DTC detecting condition	Possible cause
Power voltage supplied from battery to BCM is higher than 16V.	• Charging system malfunction • BCM malfunction

Flow Test Description

Step 1: Check charging system

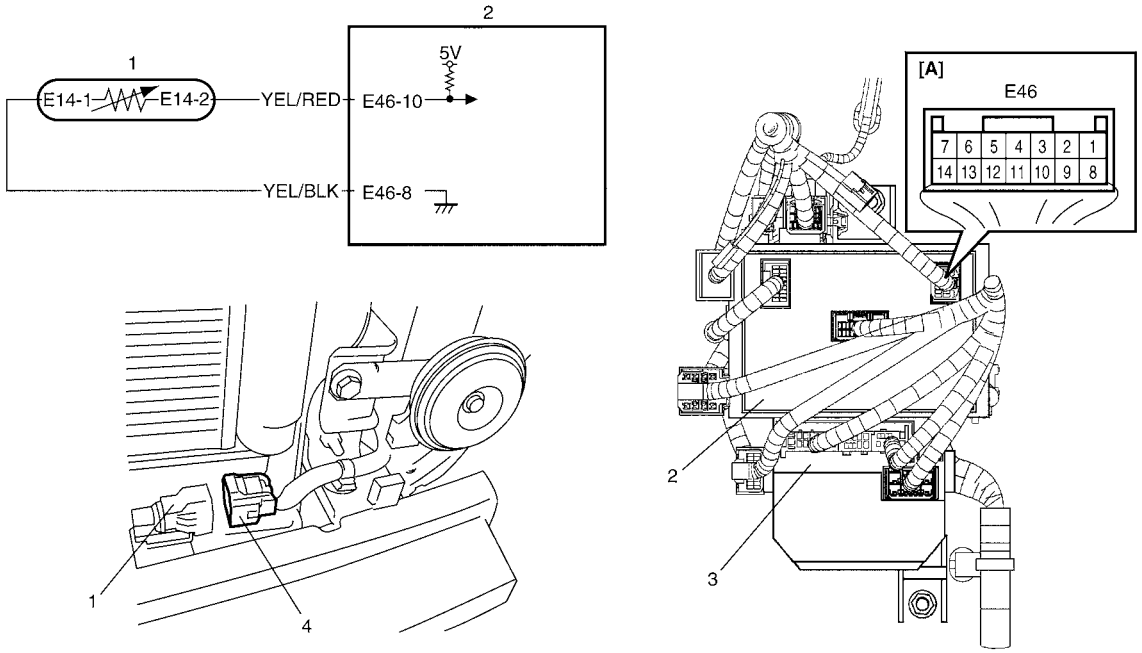
DTC Troubleshooting

Step	Action	Yes	No
1	**Charging system operation check** 1) Check generator for operation referring to “Generator Test (Overcharged Battery Check) in Section 1J”. *Is it in good condition?*	Substitute a known good BCM (included in junction block assembly) and recheck.	Repair charging system.

DTC B1141 / DTC B1142 (No. 1141 / No. 1142): Outside Air Temperature (Ambient Temp.) Sensor Circuit Malfunction

S7RS0BA204009

Wiring Diagram



I4RS0AA20010-01

[A]: BCM connector viewed from harness side	3. Junction block assembly
1. Outside air temperature sensor	4. Outside air temperature sensor connector
2. BCM	

DTC Detecting Condition and Possible Cause

DTC detecting condition	Possible cause
DTC B1141 (DTC No. 1141): Input signal from outside air temperature sensor is higher than 4.88 V.	• Open in outside air temperature sensor circuit • Outside air temperature sensor malfunction • BCM malfunction
DTC B1142 (DTC No. 1142): Input signal from outside air temperature sensor is lower than 0.1 V.	• Short in outside air temperature sensor circuit • Outside air temperature sensor malfunction • BCM malfunction

Flow Test Description

Step 1: Check whether malfunction is in outside air temperature sensor.
Step 2: Check outside air temperature sensor input circuit.
Step 3: Check outside air temperature sensor ground circuit (for DTC B1141).

DTC Troubleshooting

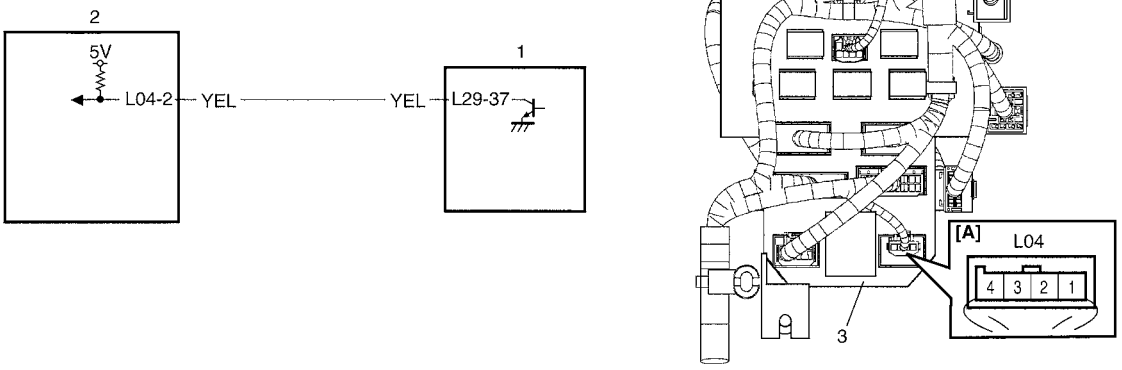
Step	Action	Yes	No
1	**Check outside air temperature sensor** 1) Turn ignition switch to OFF position. 2) Disconnect connector from outside air temperature sensor. 3) Check outside air temperature sensor for resistance referring to “Outside Air Temperature Sensor Inspection (If Equipped) in Section 9C”. *Is it in good condition?*	Go to Step 2.	Replace outside air temperature sensor.

Step	Action	Yes	No
2	**Check outside air temperature sensor circuit** 1) Turn ignition switch to ON position. 2) Measure voltage between “E14-2” terminal of outside air temperature sensor connector and vehicle body ground. *Is voltage 4 – 6 V?*	Go to Step 3.	Open or short in “YEL/RED” wire circuit. If OK, substitute a known-good BCM (included in junction block assembly) and recheck.
3	**Check outside air temperature sensor circuit** 1) Turn ignition switch to OFF position. 2) Check for proper connection to “E46-8” terminal of BCM connector. 3) If OK, measure resistance between “E14-1” terminal of outside air temperature sensor connector and vehicle body ground. *Is resistance 1 Ω or less?*	Substitute a known-good BCM (included in junction block assembly) and recheck.	Open or high resistance in “YEL/BLK” wire circuit.

DTC B1150 (No. 1150): Air Bag Communication Circuit Malfunction

S7RS0BA204010

Wiring Diagram



I4RS0AA20011-01

[A]: Junction block assembly connector viewed from harness side	2. BCM
1. SDM	3. Junction block assembly

DTC Detecting Condition and Possible Cause

DTC detecting condition	Possible cause
After ignition switch is turned on, abnormal signal is fed from SDM to BCM.	• Air bag communication circuit open or short • SDM malfunction • BCM malfunction

Flow Test Description

Step 1: Check air bag communication circuit.

Step 2: Check air bag communication circuit.

Step 3: Check air bag communication circuit.

DTC Troubleshooting

Step	Action	Yes	No
1	**Check air bag communication circuit** 1) Turn ignition switch to OFF position. 2) Disconnect connector from SDM referring to “SDM Removal and Installation in Section 8B”. 3) Disconnect connector from junction block assembly. 4) Turn ignition switch to ON position. 5) Measure voltage between “L29-37” terminal of SDM connector and vehicle body ground. *Is voltage 0 V?*	Go to Step 2.	Short to power supply in air bag communication circuit.
2	**Check air bag communication circuit** 1) Turn ignition switch to OFF position. 2) Connect connectors to junction block assembly. 3) Turn ignition switch to ON position. 4) Measure voltage between “L04-2” terminal of junction block assembly connector and vehicle body ground. *Is voltage 4 – 6 V?*	Go to Step 3.	Short to ground in air bag communication circuit. If OK, substitute a known-good BCM (included in junction block assembly) and recheck.
3	**Check air bag communication circuit** 1) Measure voltage between “L29-37” terminal of SDM connector and vehicle body ground. *Is voltage 4 – 6 V?*	Substitute a known-good SDM and recheck.	Open or high resistance in air bag communication circuit.

DTC B1157 (No. 1157): Air Bag Deployment Signal Input

S7RS0BA204011

Wiring Diagram

Refer to “DTC B1150 (No. 1150): Air Bag Communication Circuit Malfunction”.

DTC Detecting Condition and Possible Cause

DTC detecting condition	Possible cause
Air bag deployment signal is fed from SDM to BCM.	• Air bag component parts • BCM malfunction

Flow Test Description

Step 1: Check DTC for SDM.

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check of SDM** 1) Check DTC stored in SDM referring to “DTC Check in Section 8B”. *Is DTC B1021 detected?*	Go to “DTC B1021: Front Air Bag Module Deployed in Section 8B”.	Substitute a known-good BCM (included in junction block assembly) and recheck.

DTC B1170 (No. 1170): EEPROM Access Error

S7RS0BA204012

DTC Detecting Condition and Possible Cause

DTC detecting condition	Possible cause
Data write error or check sum error.	BCM malfunction

DTC Troubleshooting

NOTE

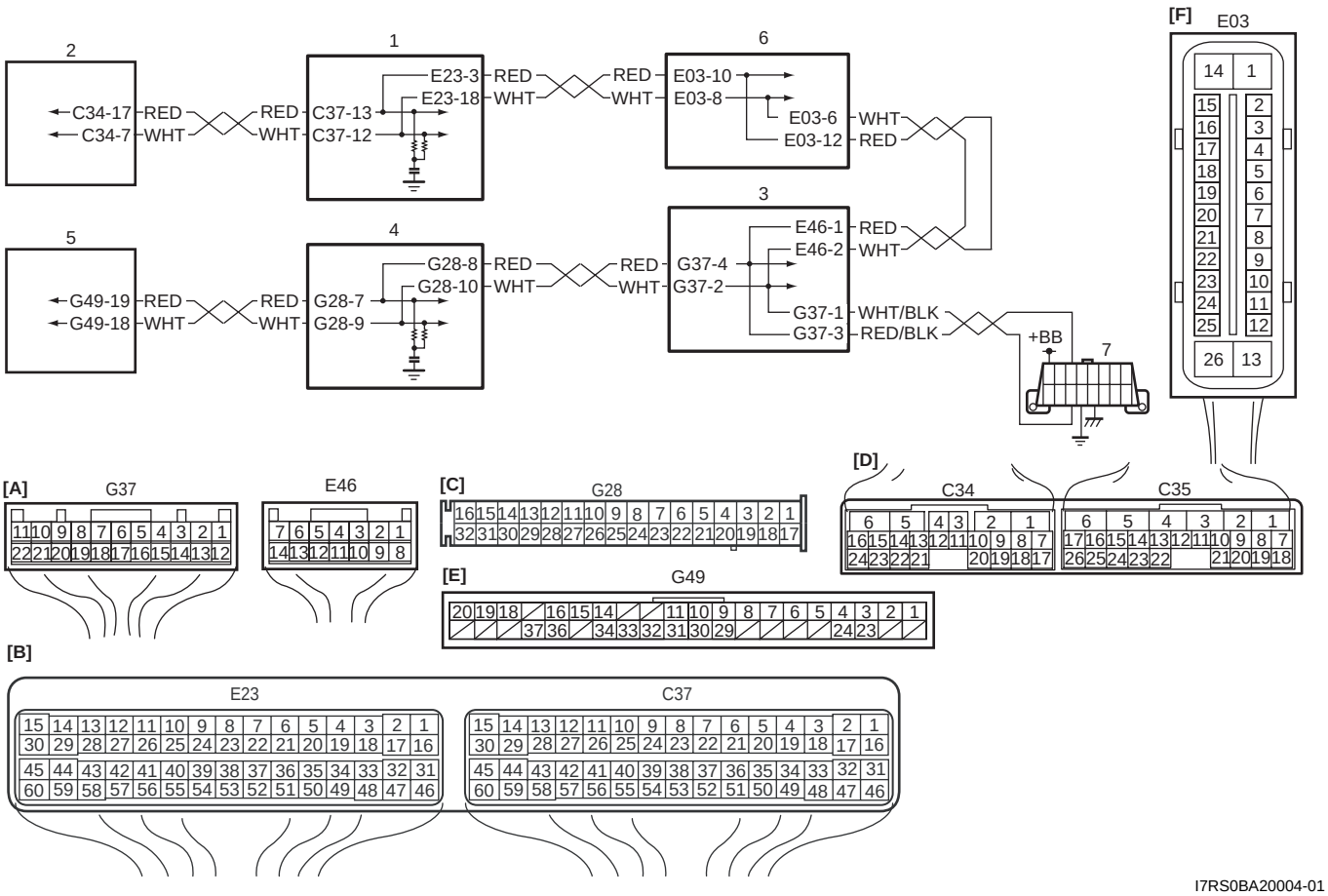
Before performing steps below, be sure to perform “Body Electrical Control System Check”.

1) Ignition switch OFF.
2) Replace BCM.
3) Repeat BCM Check Flow Table.

DTC U0155 (No. 0155): Lost Communication with Instrument Panel Cluster (IPC) Control Module

S7RS0BA204019

Wiring Diagram
ABS model



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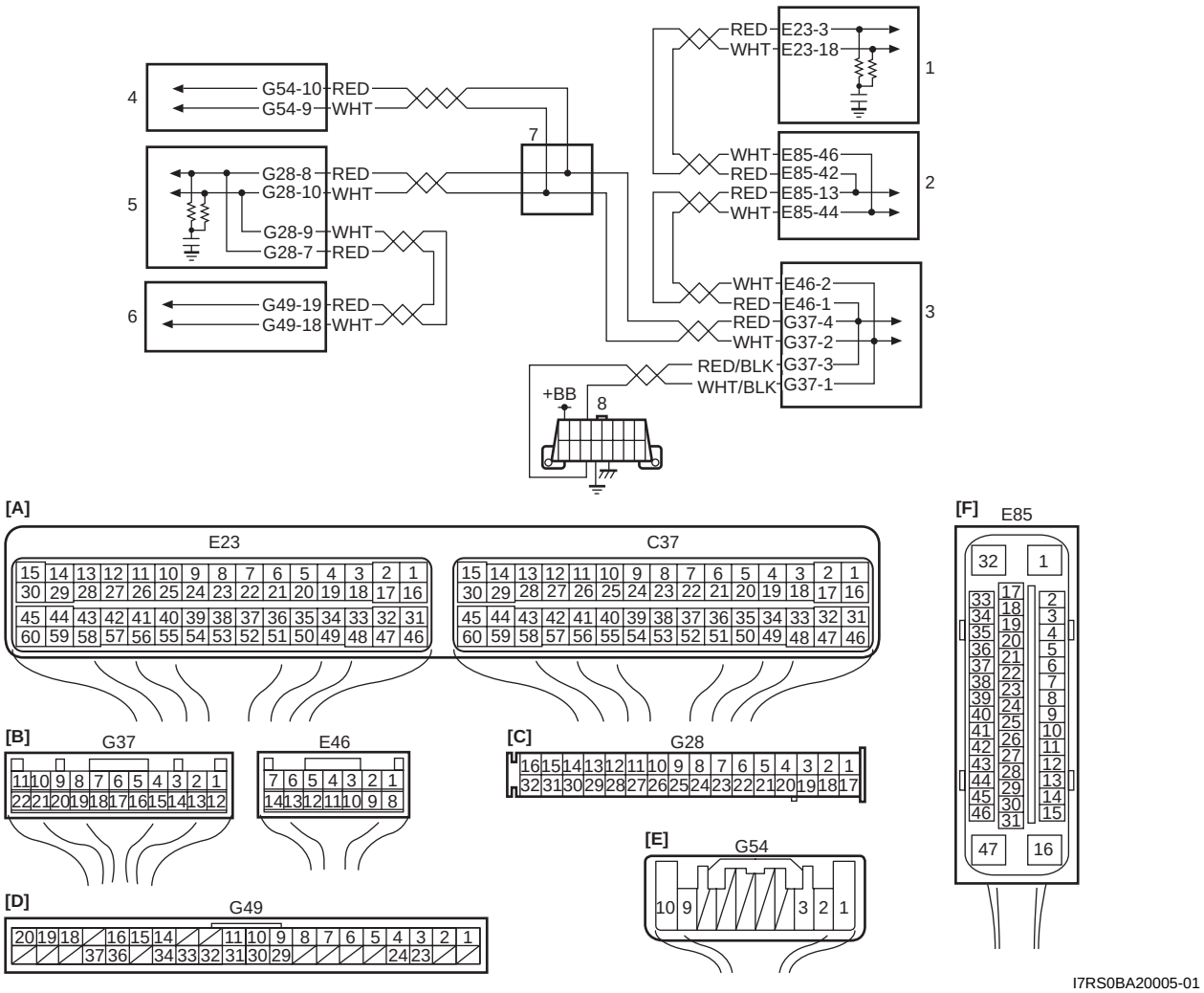
[A]: BCM connector (viewed from harness side)	1. ECM
[B]: ECM connector (viewed from harness side)	2. TCM (A/T model)
[C]: Combination meter connector (viewed from harness side)	3. BCM
[D]: TCM connector (viewed from harness side)	4. Combination meter
[E]: Keyless start control module connector (viewed from harness side)	5. Keyless start control module (if equipped)
[F]: ABS control module connector (viewed from harness side)	6. ABS control module
	7. Data link connector (DLC)

ESP® model



I7RS0BA20005-01

[A]: ECM connector (viewed from harness side)	1. ECM
[B]: BCM connector (viewed from harness side)	2. ESP® control module
[C]: Combination meter connector (viewed from harness side)	3. BCM
[D]: Keyless start control module connector (viewed from harness side)	4. Steering angle sensor
[E]: Steering angle sensor connector (viewed from harness side)	5. Combination meter
[F]: ESP® control module connector (viewed from terminal side)	6. Keyless start control module
	7. CAN junction connector
	8. Data link connector (DLC)

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
BCM can not receive CAN data from combination meter for longer than specified time continuously.	• CAN communication circuit • BCM • Combination meter

DTC Confirmation Procedure

1) Connect scan tool to DLC with ignition switch turned OFF.
2) Turn ON ignition switch and clear DTC by using scan tool.
3) Start engine and run it for 1 min. or more.
4) Check DTC.

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check of BCM** *Is DTC U0155 (No. 0155) and DTC U1073 (No. 1073) detected together?*	Go to "DTC U1073 (No. 1073): Control Module Communication Bus Off".	Go to Step 2.
2	**Control module connector check** 1) Check connection of connectors of all control modules communicating by means of CAN. 2) Recheck BCM for DTC. *Is DTC U0155 (No. 0155) detected?*	Go to Step 3.	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection in Section 00".
3	**Combination meter power and ground circuit check** 1) Turn ignition switch to ON position. *Do warning lights in combination meter other than key indicator light light up?*	Go to Step 4.	Check combination meter power and ground circuit. If circuit is OK, substitute a known-good combination meter and recheck.
4	**CAN communication circuit check** 1) Turn ignition switch to OFF position. 2) Disconnect connectors from BCM, combination meter and steering angle sensor (ESP® model). 3) Check CAN communication circuit between BCM and combination meter for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 5.	Repair circuit.
5	**CAN communication circuit check** 1) Disconnect connectors of all control modules communicating by means of CAN. 2) Check CAN communication circuit between control modules other than Step 4 for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 6.	Repair circuit.
6	**DTC check of BCM** 1) Connect connectors of disconnected control modules communicating by means of CAN. 2) Disconnect connector of any one of control module other than BCM. 3) Recheck BCM for DTC. *Is DTC U0155 (No.0155) detected?*	Disconnect connectors of control modules other than the one whose connector is disconnected in Step 2) one by one and check that DTC U0155 is detected by BCM each time connector is disconnected. When DTC U0155 is not detected by BCM while checking in this way, go to description under "NO" below. If DTC U0155 is detected by BCM even when connectors of all control modules that use CAN communication with BCM are disconnected, substitute a known-good BCM and recheck.	Check power and ground circuit of control module disconnected in Step 2). If circuit is OK, substitute a known-good control module disconnected in Step 2) and recheck.

DTC U1073 (No. 1073): Control Module Communication Bus Off

S7RS0BA204014

Wiring Diagram

Refer to “DTC U0155 (No. 0155): Lost Communication with Instrument Panel Cluster (IPC) Control Module”.

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Transmission error that is inconsistent between transmission data and transmission monitor (CAN bus monitor) data is detected more than 7 times continuously. (1 driving detection logic)	• CAN communication circuit • Combination meter • BCM (included in junction block assembly) • TCM (A/T model) • ABS/ESP® control module • Keyless start control module (if equipped) • ECM • Steering angle sensor (if equipped)

DTC Confirmation Procedure

1) Connect scan tool to DLC with ignition switch turned OFF.
2) Turn ON ignition switch and clear DTC by using scan tool.
3) Start engine and run it for 1 min. or more.
4) Check DTC.

DTC Troubleshooting

Step	Action	Yes	No
1	**Control module connector check** 1) Check connection of connectors of all control modules communicating by means of CAN. 2) Recheck DTC. *Is DTC U1073 detected?*	Go to Step 2.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection in Section 00”.
2	**CAN communication circuit check** 1) Turn ignition switch to OFF position. 2) Disconnect connectors of all control modules communicating by means of CAN. 3) Check CAN communication circuit between control modules for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 3.	Repair circuit.

Step	Action	Yes	No
3	**DTC check of BCM** 1) Turn ignition switch to OFF position. 2) Connect connectors of disconnected control modules communicating by means of CAN. 3) Disconnect connector from any one of control modules other than BCM. 4) Recheck BCM for DTC. *Is DTC U1073 detected?*	Disconnect connectors of control modules other than the one whose connector is disconnected in Step 3) one by one and check that DTC U1073 is detected by BCM each time connector is disconnected. When DTC U1073 is not detected by BCM while checking in this way, go to description under "NO" below. If DTC U1073 is detected by BCM even when connectors of all control modules that use CAN communication with BCM are disconnected, substitute a known-good BCM and recheck.	Check power and ground circuit of control module disconnect in Step 3). If circuit is OK, substitute a known-good control module disconnected in Step 3) and recheck.

DTC U1100 (No. 1100): Lost Communication with ECM

S7RS0BA204015

Wiring Diagram

Refer to "DTC U0155 (No. 0155): Lost Communication with Instrument Panel Cluster (IPC) Control Module".

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
BCM can not receive CAN data from ECM for longer than specified time continuously.	• CAN communication circuit • BCM (included in junction block assembly) • ECM

DTC Confirmation Procedure

1) Connect scan tool to DLC with ignition switch turned OFF.
2) Turn ON ignition switch and clear DTC by using scan tool.
3) Start engine and run it for 1 min. or more.
4) Check DTC.

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check of BCM** *Is DTC U1100 (No. 1100) and DTC U1073 (No. 1073) detected together?*	Go to "DTC U1073 (No. 1073): Control Module Communication Bus Off".	Go to Step 2.
2	**DTC check of ECM** 1) Check ECM for DTC. *Is DTC P1674 detected?*	Go to "DTC P1674: CAN Communication (Bus Off Error) in Section 1A".	Go to Step 3.
3	**DTC check of ABS/ESP® control module** 1) Check ABS/ESP® control module for DTC. *Is DTC U1073 detected?*	Go to "DTC U1073: Control Module Communication Bus Off in Section 4E" or "DTC U1073: Control Module Communication Bus Off in Section 4F".	Go to Step 4.
4	**Control module connector check** 1) Check connection of connectors of all control modules communicating by means of CAN. 2) Recheck BCM for DTC. *Is DTC U1100 (No. 1100) detected?*	Go to Step 5.	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection in Section 00".
5	**DTC check of ABS/ESP® control module** 1) Check DTC for ABS/ESP® control module. *Is DTC U1100 detected?*	Go to Step 6.	Go to Step 7.
6	**CAN communication circuit check** 1) Disconnect connectors from ECM and ABS/ESP® control module. 2) Check CAN communication circuit between ECM and ABS/ESP® control module for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Check ECM power and ground circuit. If circuit is OK, substitute a known-good ECM and recheck.	Repair circuit.
7	**CAN communication circuit check** 1) Disconnect connectors from BCM and ABS/ESP® control module. 2) Check CAN communication circuit between BCM and ABS/ESP® control module for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 8.	Repair circuit.
8	**CAN communication circuit check** 1) Disconnect connectors of all control modules communicating by means of CAN. 2) Check CAN communication circuit between control modules other than Step 7 for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 9.	Repair circuit.

Step	Action	Yes	No
9	**DTC check of BCM** 1) Connect connectors of disconnected control modules communicating by means of CAN. 2) Disconnect connector of any one of control module other than BCM. 3) Recheck BCM for DTC. *Is DTC U1100 (No.1100) detected?*	Disconnect connectors of control modules other than the one whose connector is disconnected in Step 2) one by one and check that DTC U1100 is detected by BCM each time connector is disconnected. When DTC U1100 is not detected by BCM while checking in this way, go to description under "NO" below. If DTC U1100 is detected by BCM even when connectors of all control modules that use CAN communication with BCM are disconnected, substitute a known-good BCM and recheck.	Check power and ground circuit of control module disconnected in Step 2). If circuit is OK, substitute a known-good control module disconnected in Step 2) and recheck.

DTC U1101 (No. 1101): Lost Communication with TCM

S7RS0BA204016

Wiring Diagram

Refer to "DTC U0155 (No. 0155): Lost Communication with Instrument Panel Cluster (IPC) Control Module".

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
BCM can not receive CAN data from TCM for longer than specified time continuously.	• CAN communication circuit • BCM (included in junction block assembly) • TCM (A/T model)

DTC Confirmation Procedure

1) Connect scan tool to DLC with ignition switch turned OFF.
2) Turn ON ignition switch and clear DTC by using scan tool.
3) Start engine and run it for 1 min. or more.
4) Check DTC.

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check of BCM** *Is DTC U1101 (No. 1101) and DTC U1073 (No. 1073) detected together?*	Go to "DTC U1073 (No. 1073): Control Module Communication Bus Off".	Go to Step 2.
2	**DTC check of TCM** 1) Check TCM for DTC. *Is DTC P1774 detected?*	Go to "DTC P1774: CAN Communication Bus Off in Section 5A".	Go to Step 3.
3	**DTC check of ECM** 1) Check ECM for DTC. *Is DTC P1674 detected?*	Go to "DTC P1674: CAN Communication (Bus Off Error) in Section 1A".	Go to Step 4.

Step	Action	Yes	No
4	**Control module connector check** 1) Check connection of connectors of all control modules communicating by means of CAN. 2) Recheck BCM for DTC. *Is DTC U1101 (No. 1101) detected?*	Go to Step 5.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection in Section 00”.
5	**DTC check of ECM** 1) Check ECM for DTC. *Is DTC P1676 detected?*	Go to Step 6.	Go to Step 7.
6	**CAN communication circuit check** 1) Disconnect connectors from ECM and TCM. 2) Check CAN communication circuit between ECM and TCM for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Check TCM power and ground circuit. If circuit is OK, substitute a known-good TCM and recheck.	Repair circuit.
7	**CAN communication circuit check** 1) Disconnect connectors from BCM, ABS control module and ECM. 2) Check CAN communication circuit between BCM and ECM for open, short and high resistance. • Between BCM and ABS control module • Between ECM and ABS control module *Is each CAN communication circuit in good condition?*	Go to Step 8.	Repair circuit.
8	**CAN communication circuit check** 1) Disconnect connectors of all control modules communicating by means of CAN. 2) Check CAN communication circuit between control modules other than Step 7 for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 9.	Repair circuit.
9	**DTC check of BCM** 1) Connect connectors of disconnected control modules communicating by means of CAN. 2) Disconnect connector of any one of control module other than BCM. 3) Recheck BCM for DTC. *Is DTC U1101 (No.1101) detected?*	Disconnect connectors of control modules other than the one whose connector is disconnected in Step 2) one by one and check that DTC U1101 is detected by BCM each time connector is disconnected. When DTC U1101 is not detected by BCM while checking in this way, go to description under “NO” below. If DTC U1101 is detected by BCM even when connectors of all control modules that use CAN communication with BCM are disconnected, substitute a known-good BCM and recheck.	Check power and ground circuit of control module disconnected in Step 2). If circuit is OK, substitute a known-good control module disconnected in Step 2) and recheck.

DTC U1144 (No. 1144): Lost Communication with Keyless Start Control Module

S7RS0BA204017

Wiring Diagram

Refer to “DTC U0155 (No. 0155): Lost Communication with Instrument Panel Cluster (IPC) Control Module”.

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
BCM can not receive data sent by CAN from keyless start control module for longer than specified time continuously.	• CAN communication circuit • Combination meter • Keyless start control module • BCM (included in junction block assembly)

DTC Confirmation Procedure

1) Connect scan tool to DLC with ignition switch turned OFF.
2) Turn ON ignition switch and clear DTC by using scan tool.
3) Start engine and run it for 1 min. or more.
4) Check DTC.

DTC Troubleshooting

Step	Action	Yes	No
1	**DTC check of BCM** *Is DTC U1144 (No. 1144) and DTC U1073 (No. 1073) detected together?*	Go to “DTC U1073 (No. 1073): Control Module Communication Bus Off”.	Go to Step 2.
2	**DTC check of keyless start control module** 1) Check keyless start control module for DTC. *Is DTC No. 33 detected?*	Go to “DTC No. 33: Control Module Communication Bus Off in Section 10E”.	Go to Step 3.
3	**Control module connector check** 1) Check connection of connectors of all control modules communicating by means of CAN. 2) Recheck BCM for DTC. *Is DTC U1144 (No. 1144) detected?*	Go to Step 4.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection in Section 00”.
4	**CAN communication circuit check** 1) Disconnect connectors from BCM, combination meter and keyless start control module. 2) Check CAN communication circuit for open, short and high resistance. • Between BCM and combination meter • Between combination meter and keyless start control module *Is each CAN communication circuit in good condition?*	Go to Step 5.	Repair circuit.
5	**CAN communication circuit check** 1) Disconnect connectors of all control modules communicating by means of CAN. 2) Check CAN communication circuit between control modules other than Step 4 for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 6.	Repair circuit.

Step	Action	Yes	No
6	**Combination meter operation check** 1) Connect connectors of disconnected control modules communicating by means of CAN. 2) Turn ignition switch to ON position. 3) Check combination meter operation for seat belt reminder light (fastening and unfastening driver side seat belt). *Are they OK?*	Go to Step 7.	Check combination meter power and ground circuit. If circuit is OK, substitute a known-good combination meter and recheck.
7	**Key indicator light operation check** 1) Turn ignition switch to OFF position. 2) Push ignition knob switch of steering lock unit. *Does key indicator light turn ON?*	Go to Step 8.	Check keyless start control module power and ground circuit. If circuit is OK, substitute a known-good keyless start control module and recheck.
8	**DTC check of BCM** 1) Disconnect connector of any one of control module other than BCM. 2) Recheck BCM for DTC. *Is DTC U1144 (No.1144) detected?*	Disconnect connectors of control modules other than the one whose connector is disconnected in Step 1) one by one and check that DTC U1144 is detected by BCM each time connector is disconnected. When DTC U1144 is not detected by BCM while checking in this way, go to description under "NO" below. If DTC U1144 is detected by BCM even when connectors of all control modules that use CAN communication with BCM are disconnected, substitute a known-good BCM and recheck.	Check power and ground circuit of control module disconnected in Step 1). If circuit is OK, substitute a known-good control module disconnected in Step 1) and recheck.

Inspection of BCM and its Circuits

S7RS0BA204018

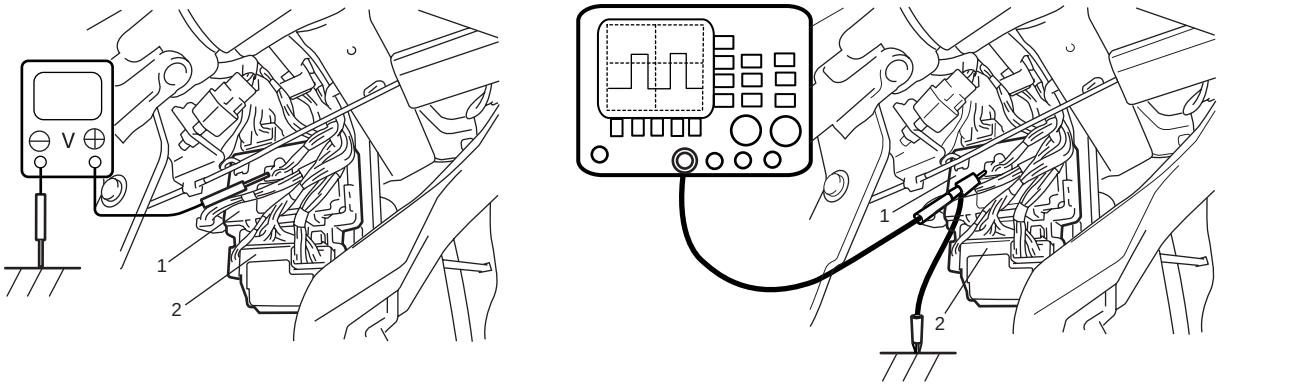
BCM and its circuits can be checked at BCM wiring couplers by measuring voltage and resistance.

⚠ CAUTION

BCM cannot be checked by itself. It is strictly prohibited to connect voltmeter or ohmmeter to BCM with couplers disconnected from it.

Voltage Check

1) Disconnect negative (–) cable at battery.
2) Remove BCM (included in junction block assembly) referring to “BCM (Included in Junction Block Assembly) Removal and Installation”.
3) Connect connectors to BCM (1) and junction block assembly (2).
4) Check voltage at each terminal number of couplers connected.
   For connector and terminal number, refer to “Connector Layout Diagram of BCM and Junction Block Assembly”.



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NOTE

- **As each terminal voltage is affected by the battery voltage, confirm that it is 11 V or more when ignition switch is ON.**
- **Voltage with asterisk (*) can not be measured by voltmeter because it is pulse signal. Check it with oscilloscope if necessary.**

BCM connector “L01”

Terminal	Circuit	Normal voltage	Condition
L01-1	Passenger side door lock actuator control (Unlock) (if equipped)	10 – 14 V	Unlock signal is output for passenger side door lock actuator
		0 V	Unlock signal is not output for passenger side door lock actuator
L01-2	—	—	—
L01-3	Rear end door switch	10 – 14 V	Rear end door is closed
		0 V	Rear end door is opened
L01-4	Rear end door opener switch	10 – 14 V	Rear end door switch is not pushed
		0 V	Rear end door switch is pushed
L01-5	Manual door lock switch (Unlock)	10 – 14 V	Manual door lock switch is at any position other than unlock position
		0 V	Manual door lock switch is at unlock position
L01-6	Parking brake switch	*0 – 3 V ↑↓ 10 – 14 V	Refer to “Reference waveform No. 1: ”
		0 V	Ignition switch is at ON position and parking brake lever is pulled up
L01-7	Driver side door switch	10 – 14 V	Driver side door is closed
		0 V	Driver side door is opened

Terminal	Circuit	Normal voltage	Condition
L01-8	"3" position switch (A/T model)	*0 – 1 V ↑↓ 10 – 14 V	Refer to "Reference waveform No. 2: "
		0 V	Ignition switch is at ON position and A/T select lever is at "2" or "3" position
L01-9	—	—	—
L01-10	Driver side door lock actuator control (Unlock) (if equipped)	10 – 14 V	Unlock signal is output for driver side door lock actuator.
		0 V	Unlock signal is not output for driver side door lock actuator.
L01-11	Rear end door opener actuator control	0 V	Rear end door opener actuator is not in operation
		10 – 14 V	Rear end door opener actuator is in operation
L01-12	Manual door lock switch (Lock)	10 – 14 V	Manual door lock switch is at any position other than lock position
		0 V	Manual door lock switch is at lock position
L01-13	—	—	—
L01-14	Driver side seat belt switch	*0 – 3 V ↑↓ 10 – 14 V	Refer to "Reference waveform No. 3: "
		0 V	Ignition switch is at ON position and driver side seat belt is unfastened
L01-15	Door switch (other than driver side door and rear end door)	10 – 14 V	Rear right and left side door and passenger side door are closed
		0 V	Any one of the door is opened (except driver side door and rear end door)
L01-16	Driver side door key cylinder switch (Lock)	10 – 14 V	Driver side door key cylinder switch is at any position other than lock position
		0 V	Driver side door key cylinder switch is at lock position
L01-17	Driver side door key cylinder switch (Unlock)	10 – 14 V	Driver side door key cylinder switch is at any position other than unlock position
		0 V	Driver side door key cylinder switch is at unlock position
L01-18	—	—	—

BCM connector "E46"

Terminal	Circuit	Normal voltage	Condition
E46-1	CAN communication line (high) for ABS/ESP® control module	*2.5 – 3.6 V	Refer to "Reference waveform No. 4: "
E46-2	CAN communication line (low) for ABS/ESP® control module	*1.6 – 2.5 V	
E46-3	—	—	—
E46-4	Generator "L" terminal	10 – 14 V	Engine is running
		0 V	Ignition switch is at ON position
E46-5	Brake fluid level switch	*0 – 3 V ↑↓ 10 – 14 V	Refer to "Reference waveform No. 1: "
		0 V	Ignition switch is at ON position, parking brake lever is released and brake fluid level is lower than MIN level
E46-6	—	—	—
E46-7	—	—	—
E46-8	Sensor ground for outside air temperature sensor (if equipped)	0 V	—
E46-9	Serial communication line of data link connector for ECM, TCM, ABS and P/S control module	8 – 12 V	Ignition switch is at ON position
E46-10	Outside air temperature sensor (if equipped)	About 1.5 V	Ignition switch is at ON position and outside air temperature approx. 20 °C (68 °F)

Terminal	Circuit	Normal voltage	Condition
E46-11	Oil pressure switch	*3 – 14 V	Refer to “Reference waveform No. 5: ”
		0 V	Ignition switch is at ON position and engine is at stop
E46-12	—	—	—
E46-13	—	—	—
E46-14	—	—	—

BCM connector “G37”

Terminal	Circuit	Normal voltage	Condition
G37-1	CAN communication line (low) for DLC	*1.6 – 2.5 V	Refer to “Reference waveform No. 6: ”
G37-2	CAN communication line (low) for combination meter	*1.6 – 2.5 V	Refer to “Reference waveform No. 7: ”
G37-3	CAN communication line (high) for DLC	*2.5 – 3.6 V	Refer to “Reference waveform No. 6: ”
G37-4	CAN communication line (high) for combination meter	*2.5 – 3.6 V	Refer to “Reference waveform No. 7: ”
G37-5	Serial communication line of data link connector	8 – 12 V	Ignition switch is at ON position
G37-6	—	—	—
G37-7	—	—	—
G37-8	Theft deterrent light	10 – 14 V	Theft deterrent light is not lit up
		0 V	Theft deterrent light is lit up
G37-9	—	—	—
G37-10	—	—	—
G37-11	Serial communication line for information display (if equipped)	*0 – 1 V ↑↓ 10 – 14 V	Refer to “Reference waveform No. 8: ”
G37-12	Ground for keyless entry receiver (if equipped)	0 V	—
G37-13	Power supply for keyless entry receiver (if equipped)	4 – 6 V	Ignition switch is at all positions
G37-14	Signal for keyless entry receiver (if equipped)	*0 – 1 V ↑↓ 4 – 6 V	Refer to “Reference waveform No. 9: ”
G37-15	—	—	—
G37-16	Key reminder switch	10 – 14 V	Ignition key is inserted to ignition key cylinder
		0 V	Ignition key is pulled out from ignition key cylinder
G37-17	Rear end door window defogger switch	0 V	Ignition switch is at ON position and rear end door window defogger switch is pushed
		10 – 14 V	Ignition switch is at ON position and rear end door window defogger switch is not pushed
G37-18	A/C switch	*3 – 14 V	Refer to “Reference waveform No. 10: ”
		0 V	Ignition switch is at ON position, blower speed selector is at any position other than OFF position and A/C switch is at ON position
G37-19	—	—	—
G37-20	—	—	—
G37-21	Rear wiper INT switch	*0 – 1 V ↑↓ 10 – 14 V	Refer to “Reference waveform No. 11: ”
		0 V	Ignition switch is at ON position and rear wiper switch is at INT position
G37-22	Rear wiper low switch	*0 – 1 V ↑↓ 10 – 14 V	Refer to “Reference waveform No. 12: ”
		0 V	Ignition switch is at ON position and rear wiper switch is at LOW position

Junction block connector “E40”

Terminal	Circuit	Normal voltage	Condition
E40-2	Backup power source	10 – 14 V	Ignition switch is at all positions

Junction block connector “E41”

Terminal	Circuit	Normal voltage	Condition
E41-3	Horn	10 – 14 V	Horn switch is at ON position
		0 V	Horn switch is at OFF position

Junction block connector “G32”

Terminal	Circuit	Normal voltage	Condition
G32-2	Power source (IG)	10 – 14 V	Ignition switch is at ON position
		0 V	Ignition switch is at any position other than ON position
G32-5	Power source (ACC)	10 – 14 V	Ignition switch is at ACC or ON position
		0 V	Ignition switch is at any position other than ACC or ON position

Junction block connector “G33”

Terminal	Circuit	Normal voltage	Condition
G33-3	Ground for BCM	0 V	Ignition switch is at all positions
G33-7	Rear end door window defogger indicator light	10 – 14 V	Engine is running and rear end door window defogger indicator light is lit up
		0 V	Engine is running and rear end door window defogger indicator light is not lit up

Junction block connector “G34”

Terminal	Circuit	Normal voltage	Condition
G34-3	Horn switch	10 – 14 V	Horn switch is not pushed
		0 V	Horn switch is pushed
G34-7	Lighting switch	10 – 14 V	Engine is running (equipped with DRL) or lighting switch is at any position other than OFF position
		0 V	Lighting switch is at OFF position
G34-9	Ground for BCM	0 V	Ignition switch is at all positions
G34-11	Hazard warning switch	0 V	Hazard warning switch is at ON position or lock or unlock button of key less entry transmitter (answer back control) is pushed
		10 – 14 V	Hazard warning switch is at OFF position

Junction block connector “K01”

Terminal	Circuit	Normal voltage	Condition
K01-5	Interior light	10 – 14 V	Interior light switch is at DOOR position and interior light is not lit up
		0 V	Interior light switch is at DOOR position and interior light is lit up

Junction block connector “L04”

Terminal	Circuit	Normal voltage	Condition
L04-2	Air bag communication line	*0 – 1 V ↑↓ 4 – 6 V	Refer to “Reference waveform No. 13: ”
L04-3	Serial communication line of data link connector for SDM	8 – 12 V	Ignition switch is at ON position

Junction block connector “L05”

Terminal	Circuit	Normal voltage	Condition
L05-4	Ground for BCM	0 V	Ignition switch is at all positions
L05-5	Power supply for rear wiper motor	10 – 14 V	Ignition switch is at ON position

Terminal	Circuit	Normal voltage	Condition
L05-6	Right side door mirror heater (if equipped)	10 – 14 V	Engine is running and rear end door window defogger is in operation
		0 V	Engine is running and rear end door window defogger is not in operation
L05-7	Left side door mirror heater (if equipped)	10 – 14 V	Engine is running and rear end door window defogger is in operation
		0 V	Engine is running and rear end door window defogger is not in operation
L05-8	Rear end door window defogger wire	10 – 14 V	Engine is running and rear end door window defogger is in operation
		0 V	Engine is running and rear end door window defogger is not in operation
L05-9	Rear wiper control	10 – 14 V	Ignition switch is at ON position and rear wiper is not in operation
		0 V	Ignition switch is at ON position and rear wiper is in operation

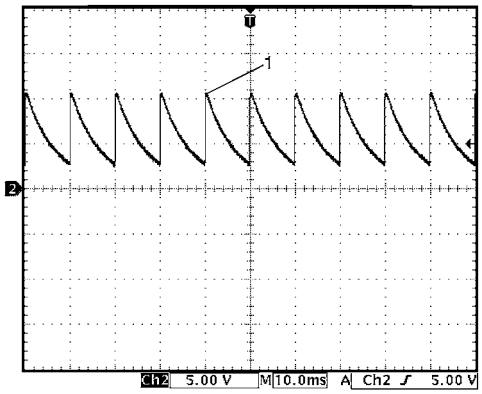
Junction block connector “L06”

Terminal	Circuit	Normal voltage	Condition
L06-9	Door lock actuator control (Unlock)	10 – 14 V	Unlock signal is output for rear door lock actuator
		0 V	Unlock signal is not output for rear door lock actuator
L06-10	Door lock actuator control (Lock)	10 – 14 V	Lock signal is output for all door lock actuators
		0 V	Lock signal is not output for all door lock actuators

Reference waveform No. 1

Parking brake or brake fluid level switch signal (1)

Measurement terminal	Parking brake switch CH2: “L01-6” to “G33-3” Brake fluid level switch CH2: “E46-5” to “G33-3”
Oscilloscope setting	CH2: 5 V / DIV TIME: 10 ms / DIV
Measurement condition	Parking brake switch: • Ignition switch is at ON position, parking brake lever is released Brake fluid level switch • Ignition switch is at ON position, brake fluid level is in normal



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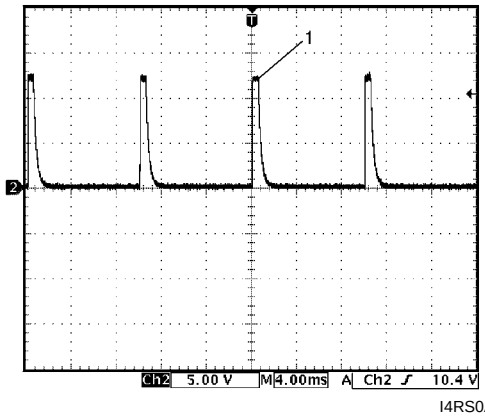
Reference waveform No. 2

“3” position switch signal (1) for TCM

Measurement terminal	CH2: “L01-8” to “G33-3”
Oscilloscope setting	CH2: 5 V/DIV TIME: 4 ms/DIV
Measurement condition	Ignition switch is at ON position and A/T selector lever is at any position other than “2” or “3” position



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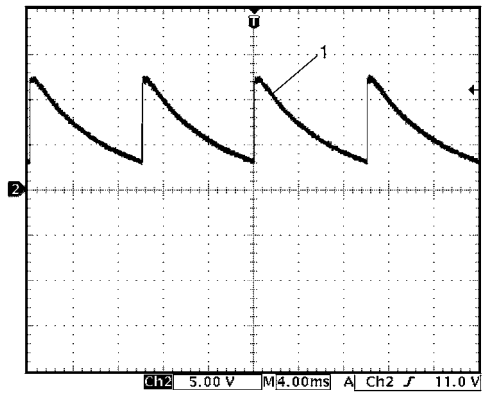
Reference waveform No. 3

Driver side seat belt switch signal (1)

Measurement terminal	CH2: “L01-14” to “G33-3”
Oscilloscope setting	CH2: 5 V/DIV TIME: 4 ms/DIV
Measurement condition	Ignition switch is at ON position and driver side seat belt is fastened



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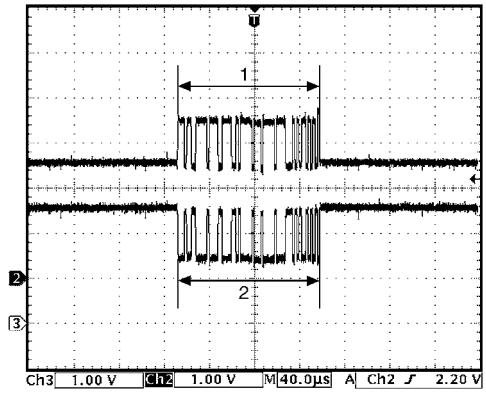
Reference waveform No. 4

BCM – ABS/ESP® control module CAN communication signal

Measurement terminal	CH2: “E46-1” to “G33-3” CH3: “E46-2” to “G33-3”
Oscilloscope setting	CH2: 1 V/DIV CH3: 1 V/DIV TIME: 40 μs/ DIV
Measurement condition	Ignition switch is at ON position



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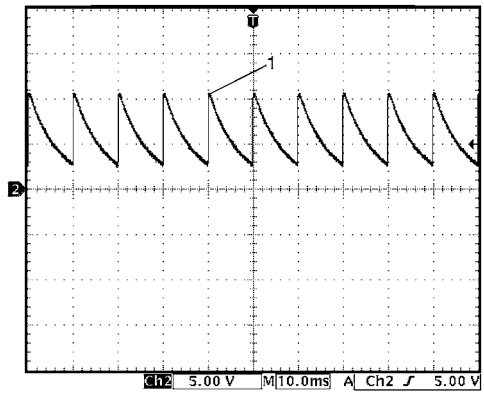
1. CAN communication line signal (High)
2. CAN communication line signal (Low)

Reference waveform No. 5

Oil pressure switch signal (1)

Measurement terminal	CH2: “E46-11” to “G33-3”
Oscilloscope setting	CH2: 5 V / DIV TIME: 10 ms / DIV
Measurement condition	Engine is running and oil pressure is in normal condition



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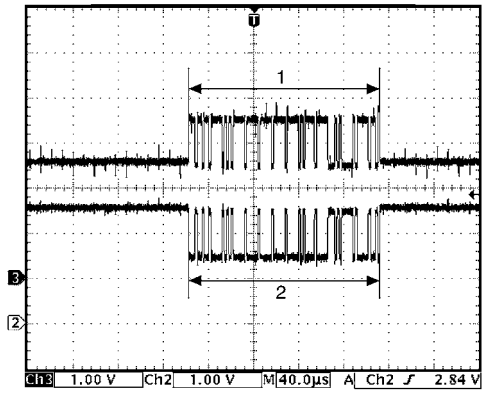
Reference waveform No. 6

BCM – DLC CAN communication signal

Measurement terminal	CH2: “G37-1” to “G33-3” CH3: “G37-3” to “G33-3”
Oscilloscope setting	CH2: 1 V / DIV CH3: 1 V / DIV TIME: 40 μs / DIV
Measurement condition	Ignition switch is at ON position



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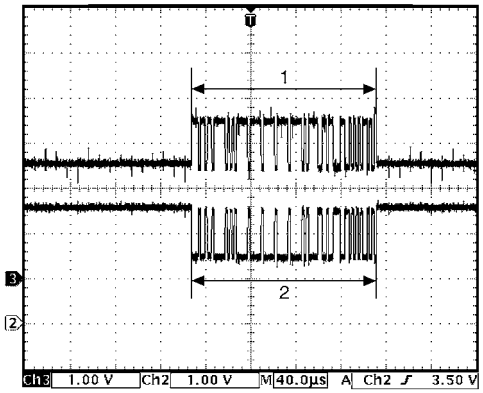
1. CAN communication line signal (High)
2. CAN communication line signal (Low)

Reference waveform No. 7

BCM – combination meter CAN communication signal

Measurement terminal	CH2: “G37-2” to “G33-3” CH3: “G37-4” to “G33-3”
Oscilloscope setting	CH2: 1 V / DIV CH3: 1 V / DIV TIME: 40 μs / DIV
Measurement condition	Ignition switch is at ON position



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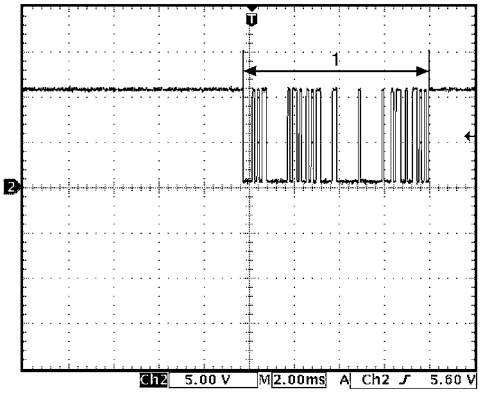
1. CAN communication line signal (High)
2. CAN communication line signal (Low)

Reference waveform No. 8

Information display serial communication signal (1)

Measurement terminal	CH2: “G37-11” to “G33-3”
Oscilloscope setting	CH2: 5 V / DIV TIME: 2 ms / DIV
Measurement condition	Ignition switch is at ON position



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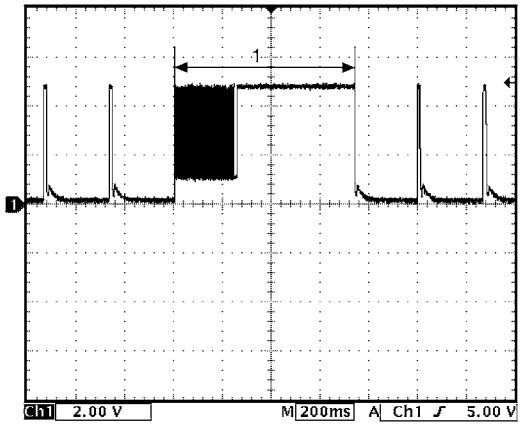
Reference waveform No. 9

Keyless entry receiver signal (1)

Measurement terminal	CH2: “G37-14” to “G33-3”
Oscilloscope setting	CH2: 2 V / DIV TIME: 200 ms / DIV
Measurement condition	Lock or unlock button of keyless entry transmitter is pushed



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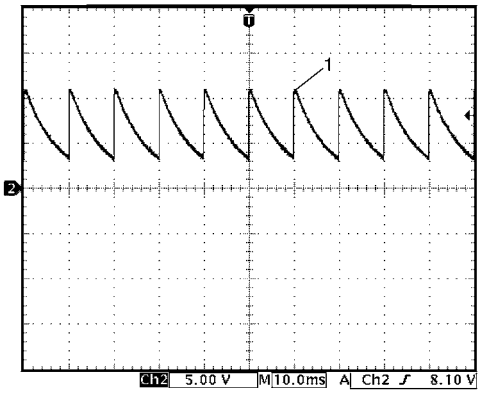
Reference waveform No. 10

A/C switch signal (1)

Measurement terminal	CH2: “G37-18” to “G33-3”
Oscilloscope setting	CH2: 5 V / DIV TIME: 10 ms / DIV
Measurement condition	Ignition switch is at ON position, A/C switch or blower speed selector is at OFF position



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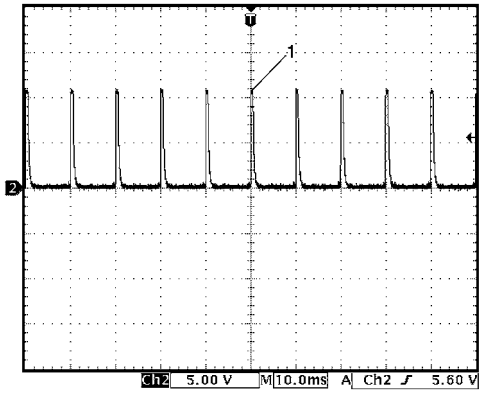
Reference waveform No. 11

Rear wiper INT signal (1)

Measurement terminal	CH2: “G37-21” to “G33-3”
Oscilloscope setting	CH2: 5 V / DIV TIME: 10 ms / DIV
Measurement condition	Ignition switch is at ON position and rear wiper switch is at any position other than INT position



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Reference waveform No. 12

Rear wiper LOW signal (1)

Measurement terminal	CH2: “G37-22” to “G33-3”
Oscilloscope setting	CH2: 5 V / DIV TIME: 4 ms / DIV
Measurement condition	Ignition switch is at ON position and rear wiper switch is at any position other than LOW position

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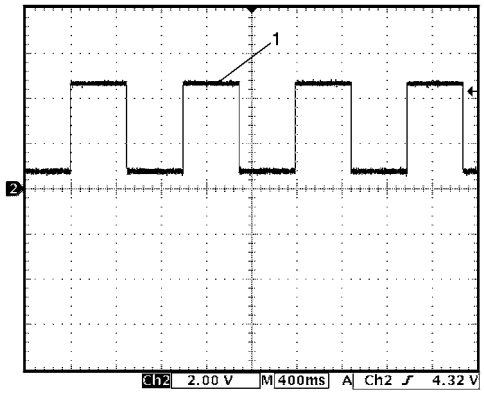
Reference waveform No. 13

SDM communication signal (1)

Measurement terminal	CH2: “L04-2” to “G33-3”
Oscilloscope setting	CH2: 2 V / DIV TIME: 400 ms / DIV
Measurement condition	Ignition switch is at ON position



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Repair Instructions

BCM (Included in Junction Block Assembly) Removal and Installation

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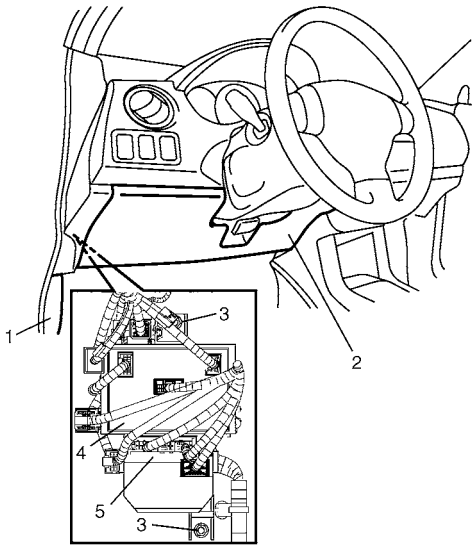
⚠ CAUTION

Do not attempt removal of BCM from junction block assembly as it may cause contact failure.
If there is faulty condition in BCM, replace junction block assembly.

Removal

1) Disconnect negative (–) cable from battery.
2) Disable air bag system referring to “Disabling Air Bag System in Section 8B”.
3) Remove dash side trim (1) and steering column hole cover (2).
4) Remove junction block assembly mounting nuts (3).



I4RS0BA20010-01

4. BCM	5. Junction block assembly

5) Disconnect connectors from BCM and junction block assembly.
6) Detach wiring harness clamp from junction block assembly.

Installation

Reverse removal procedure for installation, noting following points.

- Connect connectors securely.
- Enable air bag system referring to “Enabling Air Bag System in Section 8B”.

Outside Air Temperature Sensor Removal and Installation

S7RS0BA206002

For removal and installation, refer to “Outside Air Temperature Sensor Removal and Installation (If Equipped) in Section 9C”.

Outside Air Temperature Sensor Inspection

S7RS0BA206003

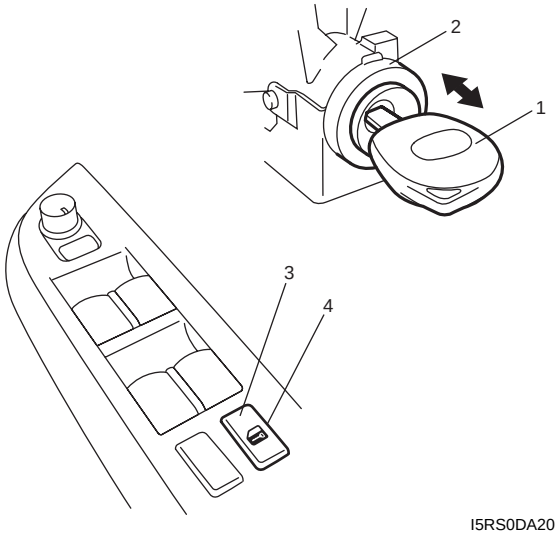
For inspection, refer to “Outside Air Temperature Sensor Inspection (If Equipped) in Section 9C”.

Security Alarm Mode Selection Procedure (If Equipped)

S7RS0BA206004

Security alarm mode can be selected by performing the following procedure.

1) Confirm that all doors are closed, all doors are unlocked and ignition key is inserted in ignition key cylinder.
2) Remove ignition key from ignition key cylinder.
3) Perform Step a) through e) described below within 15 seconds.
   a) Insert ignition key (1) in ignition key cylinder (2).
   b) Remove ignition key from ignition key cylinder.
   c) Repeat Step a) and b) twice.
   d) Insert ignition key in ignition key cylinder.
   e) Push lock side (3) of driver side manual lock switch (4) 3 times.



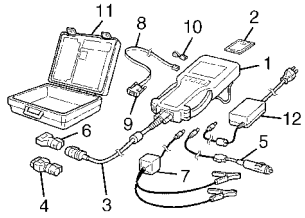
I5RS0DA20007-01

4) When Step 3) is completed, the mode changes to the next one automatically. The warning buzzer (located in BCM) sounds by the number of specified for each mode as follows.
   - Changed from A mode to B mode: Buzzer sounds 4 times
   - Changed from B mode to A mode: Buzzer sounds once

Special Tools and Equipment

Special Tool

S7RS0BA208001

SUZUKI scan tool — This kit includes following items. 1. Tech 2, 2. PCMCIA card, 3. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loop back adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loop back connector, 11. Storage case, 12.☞		

Immobilizer Control System

Precautions

Precautions in Diagnosing Troubles

S7RS0BA300001

- Before confirming the diagnostic trouble code (DTC), do not disconnect connector from ECM, battery cable from battery, ground wire harness, or main fuse. Such disconnection will erase DTC stored in ECM.
- DTC stored in ECM memory can be checked as well as cleared by using SUZUKI scan tool. Before using SUZUKI scan tool, read its operator's manual carefully to know how to use it and what functions are available.
- Be sure to read "Precautions for Electrical Circuit Service in Section 00" before inspection.
- Communication of ECM, BCM, keyless start control module (if equipped), ABS / ESP® control module, steering angle sensor (ESP® model), combination meter and TCM (A/T model) is established by CAN (Controller Area Network). Therefore, handle CAN communication lines with care referring to "Precaution for CAN Communication System in Section 00". For CAN communication system, refer to description on "CAN Communication System Description in Section 1A".

Precaution in Replacing ECM

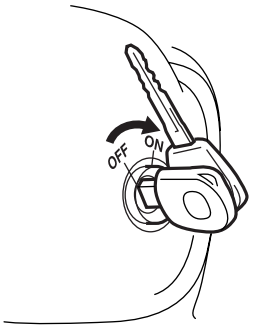
S7RS0BA300002

- If ECM is replaced with new or used one without immobilizer control function, the engine will not be started. In case of the above, check if the newly installed ECM has immobilizer control function.
- After ECM is replaced with new one or used one, the transponder code in the transponder built in the ignition key has to be registered with ECM. Or, the engine cannot be started up. For the registration procedure, refer to "Procedure after ECM Replacement".

Precautions in Handling Immobilizer Control System

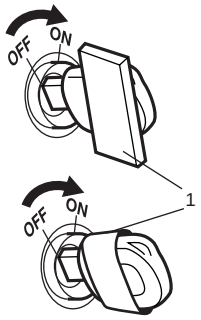
S7RS0BA300003

- Do not turn ON ignition switch with ignition key in contact with another one or quite close to another one. Or, the immobilizer control system may detect some abnormal condition and prevent the engine from starting.



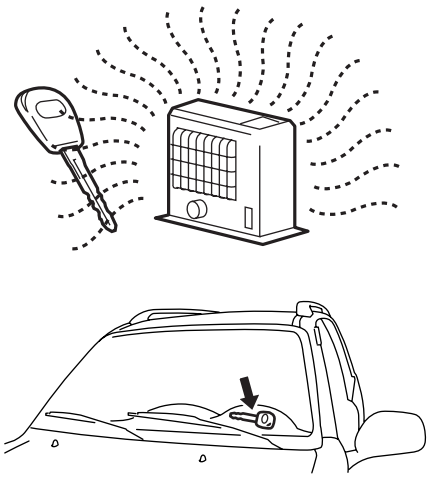
I3RH0AA30001-01

- Do not turn ON ignition switch by using ignition key with any type of metal (1) wrapped its grip or in contact with it. Or, the immobilizer control system may detect some abnormal condition and prevent the engine from starting.



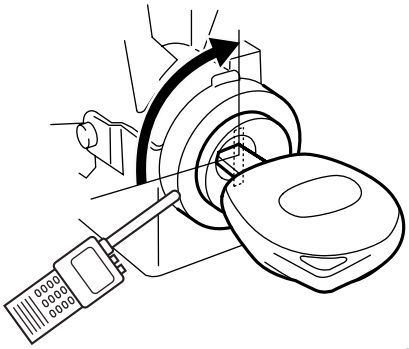
I3RH0AA30002-01

- Do not leave ignition key in a place where temperature is high. High temperature may cause damage to the transponder built in the ignition key.



I3RH0AA30003-01

- Do not turn ignition switch to ON position by bringing radio antenna close to coil antenna. Or, the immobilizer control system may detect some abnormal condition and prevent the engine from starting.



I3RH0AA30004-01

General Description

Immobilizer Control System Introduction

S7RS0BA301001

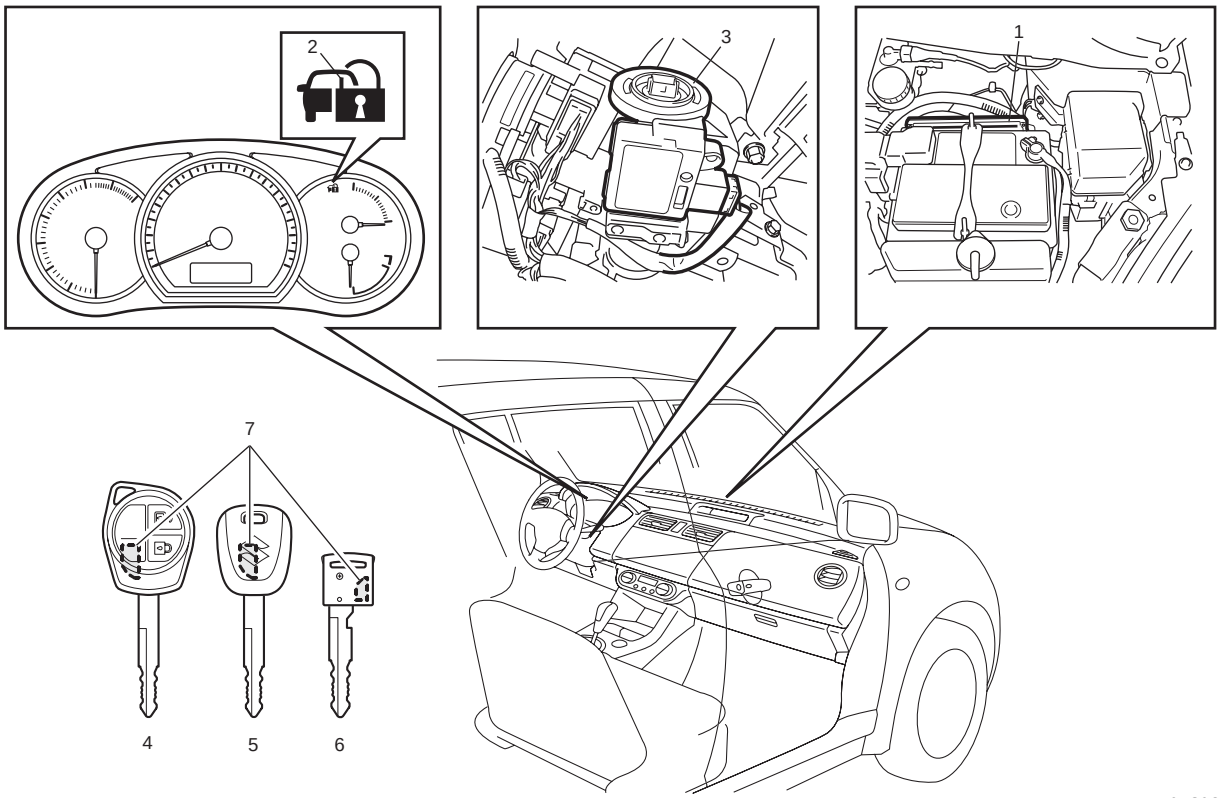
The immobilizer control system is an anti-theft device that immobilizes the vehicle. It stops the engine from working and prevents the vehicle from being stolen. It mainly consists of the following components.

- Engine Control Module (ECM)
- Immobilizer control module (ICM) with the built-in coil antenna
- Ignition key with the built-in transponder

A code called the transponder code is memorized in the transponder. And, the code is registered with ECM. Basically, when the ignition switch is turned ON, ECM reads the code by the coil antenna. Then, if the code in transponder in the ignition key does not match with the one registered with ECM, ECM stops the operation of the fuel injection so as not to start up the engine and turns the immobilizer indicator lamp ON and OFF using CAN communication lines. In the case of the vehicle equipped with the keyless start system, in addition to the above operation, ECM makes the immobilizer indicator lamp ON and OFF when it detects a trouble related to ID code verification of the keyless start system.

Immobilizer Control System Components Location

S7RS0BA301002



I6RS0CA30001-01

1. ECM	4. Ignition key with keyless entry system	7. Transponder
2. Immobilizer indicator lamp	5. Ignition key without keyless entry system	
3. Immobilizer control module (ICM)	6. Ignition key with keyless start system	

On-Board Diagnostic System Description (Self-diagnosis Function)

S7RS0BA301003

ECM diagnoses if there is any trouble with the immobilizer control system. The diagnostic information is stored as the diagnostic trouble code (DTC) in ECM. To read the diagnostic information, use SUZUKI scan tool referring to “Diagnostic Trouble Code (DTC) Check”.
With the ignition switch turned ON (but the engine at stop) regardless of the condition of the engine and emission control system, ECM indicates whether there is any trouble with the immobilizer control system or not by either lighting ON or flashing ON and OFF the immobilizer indicator lamp.

Immobilizer indicator lamp lights ON:
No trouble exists in the immobilizer control system. (After starting up the engine, the light turns OFF.)

Immobilizer indicator lamp flashes ON and OFF:
There is some trouble in the immobilizer control system. Its diagnostic information is stored in ECM.

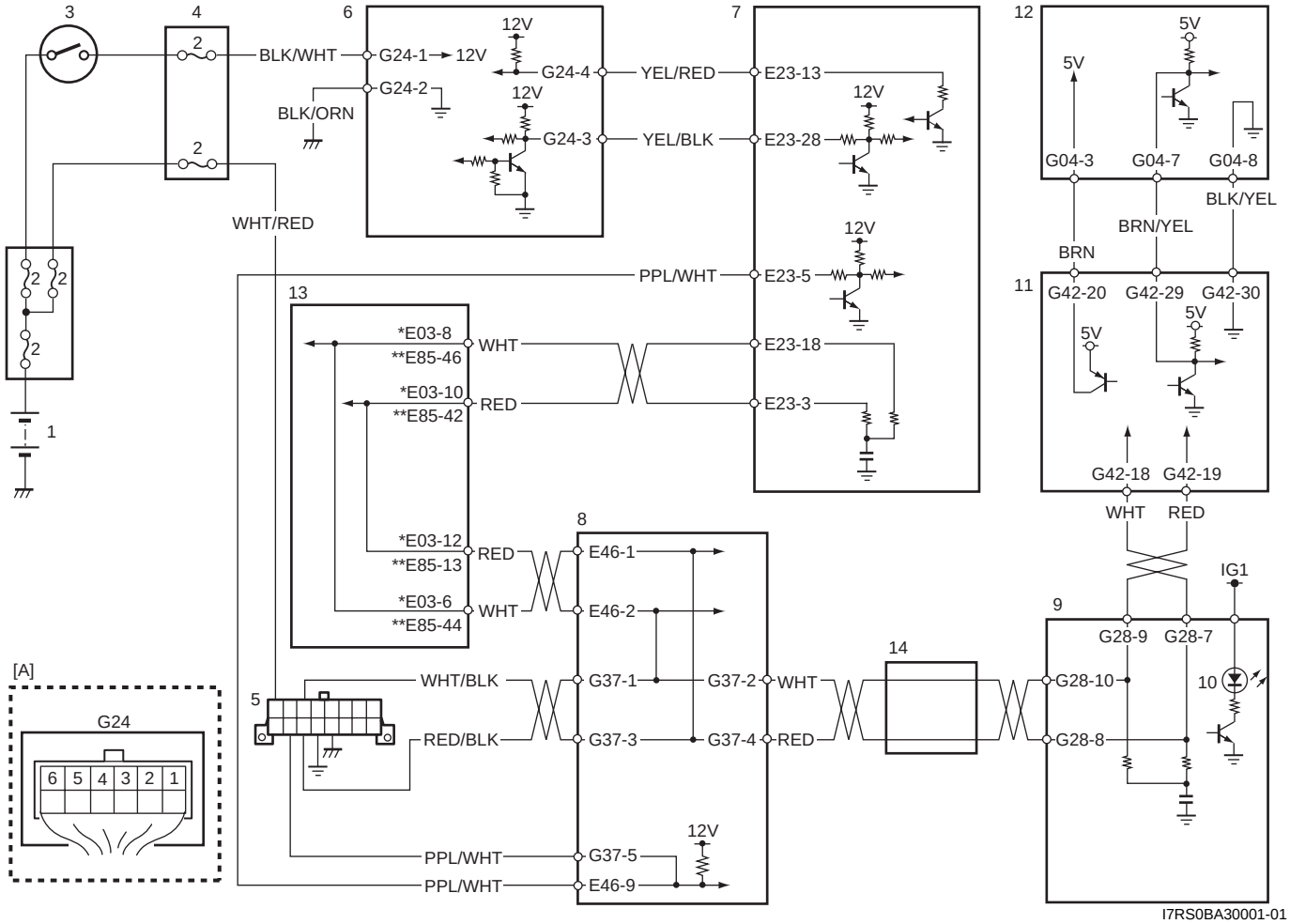
Schematic and Routing Diagram

Immobilizer Control System Wiring Circuit Diagram

S7RS0BA302001

NOTE

For more details about power supply and ground circuits for ECM, BCM, keyless start control module, ABS control module and combination meter, refer to “System Circuit Diagram in Section 9A”.



I7RS0BA30001-01

[A]: Immobilizer control module connector (harness side view)	6. Immobilizer control module (ICM)	12. Steering lock unit
1. Battery	7. ECM	13. ABS/ESP® control module
2. Fuse	8. BCM	14. CAN junction connector (ESP® model)
3. Ignition switch	9. Combination meter	*: ABS model
4. Junction block assembly	10. Immobilizer indicator lamp	**: ESP® model
5. Data link connector (DLC)	11. Keyless start control module	

Diagnostic Information and Procedures

Immobilizer Control System Check

S7RS0BA304001

Step	Action	Yes	No
1	**Immobilizer indicator lamp check** Turn ignition switch to ON position using ignition key. *Does it immobilizer indicator lamp come on?*	Go to Step 2.	Check if DTC P1636 and/or P1638 are detected by ECM referring to “Diagnostic Trouble Code (DTC) Check”. If detected, go to applicable DTC diag. flow. If not detected, go to “Immobilizer Indicator Lamp Does Not Come ON with Ignition Switch ON and Engine Stop”.
2	**Immobilizer indicator lamp check** *Does it immobilizer indicator lamp flashes on and off continuously in Step 1?*	Check ECM for DTC referring to “Diagnostic Trouble Code (DTC) Check”. Then, Go to applicable DTC diag. flow.	Go to Step 3.
3	**Engine start check** Start engine using ignition key. *Does engine start?*	Go to Step 4.	Perform “Engine and Emission Control System Check in Section 1A”.
4	**Immobilizer indicator lamp check** Check Immobilizer indicator lamp remains ON after engine start. *Does immobilizer indicator lamp remains ON after engine start?*	Go to “Immobilizer Indicator Lamp Remains ON after Engine Starts”.	Immobilizer system is good condition. Then go to “Keyless Start System Check in Section 10E”. (Vehicle equipped with keyless start system only)

Diagnostic Trouble Code (DTC) Check

S7RS0BA304002

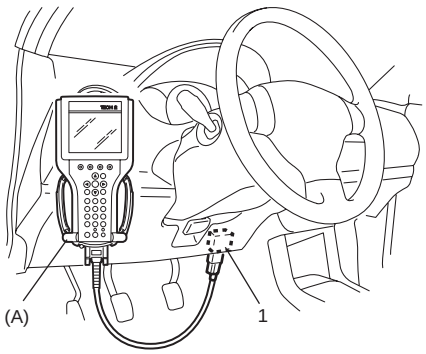
NOTE

To know how to use SUZUKI scan tool in detail, refer to its operator’s manual.

Using Scan Tool

1) Turn the ignition switch to OFF position.
2) Connect SUZUKI scan tool to data link connector (DLC) (1) located under instrument panel at driver’s seat side.

Special tool
(A): SUZUKI scan tool



I4RS0BA30003-03

3) Turn the ignition switch to ON position.
4) Check if any DTC is stored in ECM according to the instructions displayed on SUZUKI scan tool.
5) After completing the check, turn ignition switch to OFF position, and then disconnect SUZUKI scan tool from DLC.

Using Diagnosis Connector (If equipped)

Refer to “Without Using Scan Tool (Vehicle Equipped with Diagnosis Connector)” under “DTC Check in Section 1A”.

Diagnostic Trouble Code (DTC) Clearance

S7RS0BA304003

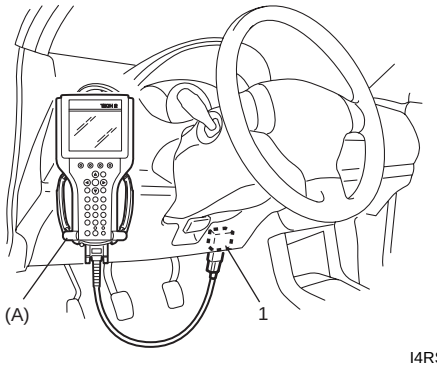
NOTE

To know how to use SUZUKI scan tool in detail, refer to its operator's manual.

Using Scan Tool

1) Turn the ignition switch to OFF position,
2) Connect SUZUKI scan tool to data link connector (DLC) (1) located under instrument panel at driver's seat side.

Special tool
(A): SUZUKI scan tool



I4RS0BA30003-03

3) Turn the ignition switch to ON position.
4) Clear DTC(s) according to the instructions displayed on SUZUKI scan tool.
5) After completing the clearance, turn the ignition switch to OFF position, and then disconnect SUZUKI scan tool from DLC.

Using Diagnosis Connector (If Equipped)

Refer to "Without Using Scan Tool" under "DTC Clearance in Section 1A".

Diagnostic Trouble Code (DTC) Table

S7RS0BA304004

ECM

DTC No.	Detecting Item	Detecting Condition	Immobilizer Indicator Lamp
P1614	Transponder Response Error	Transponder code in the transponder built in the ignition key cannot be read through ICM.	Flash
P1615	ID Code Does Not Registered (Vehicle equipped with Keyless Start System only)	• While registering the transponder code in the transponder built in the ignition key in ECM, the keyless start control module sent a signal to ECM indicating that the ID code could not be registered. • The ID code could not be registered in the keyless start control module or ECM.	Flash
P1616	Different Registration ID Codes (Vehicle equipped with Keyless Start System only)	ECM detects different ID codes registered in ECM and keyless start system.	Flash
P1618	CAN Communication Error (Reception Error for Keyless Start Control Module) (Vehicle equipped with Keyless Start System only)	Reception error communication data for keyless start control module is detected for longer than specified time continuously.	Flash
P1621	Immobilizer Communication Line Error	Communication error between ICM and ECM is detected by ECM.	Flash
P1622	EEPROM Reading / Writing Error	EEPROM in ECM is corrupted.	Flash
P1623	Unregistered Transponder	Transponder code in the transponder built in the ignition key is invalid.	Flash
P1625	Immobilizer Antenna Error	ICM is faulty.	Flash
P1636	Immobilizer Information Registration Failure	Communication error between ECM and BCM is detected by ECM.	No operation
P1638	Immobilizer Information Mismatched	• Communication error between ECM and BCM is detected by ECM • Wrong ECM or BCM is used.	No operation

NOTE

If any DTC other than the above DTCs is detected, refer to "DTC Table in Section 1A".

Scan Tool Data

S7RS0BA304005

Scan Tool Data	Vehicle Condition	Normal Data
NUMBER OF LEARNT KEY	Ignition switch at ON position	0 – 4
INPUT YEAR	Ignition switch at ON position	2005 or later
INPUT MONTH	Ignition switch at ON position	1 – 12

Scan Tool Data Definitions

NUMBER OF LEARNT KEY

0 – 4 PCS: The number of the transponder code in the transponder built in the ignition key that is registered with ECM

NOTE

A maximum of four transponder codes can be registered with ECM. Therefore, the maximal value should be 4.

INPUT YEAR

20:** The year in which the transponder code in the transponder built in the ignition key is registered with ECM

INPUT MONTH

1 – 12: The month in which the transponder code in the transponder built in the ignition key is registered with ECM

Immobilizer Indicator Lamp Does Not Come ON with Ignition Switch ON and Engine Stop

S7RS0BA304006

Wiring Diagram

Refer to “Immobilizer Control System Wiring Circuit Diagram”.

Circuit Description

When the ignition switch is turned ON, ECM read the code by the coil antenna from ignition key. Then if the code in transponder in the key match with the one registered with ECM, transmits indication ON signal of immobilizer indicator lamp to combination meter in order to turn immobilizer indicator lamp on. And then, combination meter turns immobilizer indicator lamp on. When the engine starts to run and no malfunction is detected in the system, ECM transmits immobilizer indicator lamp indication OFF signal to combination meter in order to turn immobilizer indicator lamp off. And then, combination meter turns immobilizer indicator lamp off, but if a malfunction was or is detected, immobilizer indicator lamp is flashes ON and OFF, when ignition switch turn to ON position.

Troubleshooting

Step	Action	Yes	No
1	**Immobilizer indicator lamp power supply check** 1) Turn ignition switch to ON position. *Do other warning lights come ON?*	Go to Step 2.	Go to Step 4.
2	**DTC check of ECM** 1) Connect scan tool to DLC with ignition switch turned OFF. 2) Turn ON ignition switch and check DTC. *Is DTC P1674, P1675, P1678 and/or P1685 detected?*	Go to applicable DTC diag. flow.	Go to Step 3.
3	**DTC check of BCM** 1) Check BCM for DTC referring to “DTC Check in Section 10B”. *Is DTC U1073, U1100 and/or U1144 detected?*	Go to applicable DTC diag. flow.	Substitute a known-good combination meter and recheck. If immobilizer indicator lamp still remains OFF, substitute a known good ECM and recheck.

Step	Action	Yes	No
4	**Fuse check** 1) Turn ignition switch to OFF position. 2) Check for fuse blown at combination meter circuit fuse in junction block assembly. *Is fuse in good condition?*	Go to Step 5.	Replace fuse and check for short to power or ground circuit.
5	**CAN communication circuit check** 1) Disconnect connectors of all control modules communicating by means of CAN. 2) Check CAN communication circuit between control modules for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 6.	Repair circuit.
6	**Combination meter power and ground circuit check** 1) Remove combination meter referring to “Combination Meter Removal and Installation in Section 9C”. 2) Check for proper connection to combination meter connector terminals. 3) If OK, then turn ignition switch to ON position, Check terminal voltage of combination meter between power supply and ground terminal. Refer to “Combination Meter Circuit Diagram in Section 9C”. *Is it 10 – 14 V?*	Substitute a known-good combination meter and recheck. If immobilizer indicator lamp still remains OFF, substitute a known good ECM and recheck.	Repair power supply and/or ground circuit.

Immobilizer Indicator Lamp Remains ON after Engine Starts

S7RS0BA304007

Wiring Diagram

Refer to “Immobilizer Control System Wiring Circuit Diagram”.

Circuit Description

When the ignition switch is turned ON, ECM read the code by the coil antenna from ignition key. Then if the code in transponder in the key match with the one registered with ECM, transmits indication ON signal of immobilizer indicator lamp to combination meter in order to turn immobilizer indicator lamp on. And then, combination meter turns immobilizer indicator lamp on. When the engine starts to run and no malfunction is detected in the system, ECM transmits immobilizer indicator lamp indication OFF signal to combination meter in order to turn immobilizer indicator lamp off. And then, combination meter turns immobilizer indicator lamp off, but if a malfunction was or is detected, immobilizer indicator lamp is flashes ON and OFF, when ignition switch turn to ON position.

Troubleshooting

Step	Action	Yes	No
1	**DTC check of ECM** 1) Start engine and recheck DTC of ECM while engine running. *Is DTC P1674, P1675, P1678 and/or P1685 detected?*	Go to applicable DTC diag. flow.	Go to Step 2.
2	**CAN communication circuit check** 1) Disconnect connectors from ECM, BCM, ABS control module and combination meter. 2) Check CAN communication circuit for open, short and high resistance. • Between ECM and ABS control module • Between BCM and ABS control module • Between BCM and combination meter *Is each CAN communication circuit in good condition?*	Substitute a known-good combination meter and recheck. If immobilizer indicator lamp still remains ON, substitute a known-good ECM and recheck.	Repair circuit.

DTC P1614: Transponder Response Error

S7RS0BA304008

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
Transponder code in the transponder built in the ignition key cannot be read through ICM.	• Ignition key • ICM • ECM

DTC Confirmation Procedure

1) Turn ignition switch to ON position.
2) Check DTC in ECM.

Troubleshooting

Step	Action	Yes	No
1	*Was "Immobilizer Control System Check" performed?*	Go to Step 2.	Go to "Immobilizer Control System Check".
2	**DTC check of ECM** 1) Check if DTC other than P1614 is detected referring to "Diagnostic Trouble Code (DTC) Check". *Is DTC other than P1614 detected?*	Go to applicable DTC diag. flow.	Go to Step 3.
3	**Registration of ignition key in use with ECM** 1) Register ignition key in use with ECM referring to "Registration of the Ignition Key". *Was registration of ignition key completed?*	Unregistered ignition key.	Go to step 4.
4	**Registration of spare ignition key with ECM** 1) Register spare ignition key with ECM referring to "Registration of the Ignition Key". *Was registration of spare ignition key completed?*	Replace ignition key which can not be registered.	Substitute a known-good ECM and recheck.

DTC P1615: ID Code Does Not Registered (Vehicle equipped with keyless start system only)

S7RS0BA304009

Circuit Description

When the transponder code of the ignition key is registered in ECM, the remote controller ID code is also registered in ECM and keyless start control module at the same time.
DTC P1615 is detected only when the remote controller ID code cannot be registered in ECM and keyless start control module when the ignition key is registered.

NOTE

- **Perform troubleshooting of DTC P1618 if both DTC P1615 and P1618 have been detected.**
- **After replacing ECM, be sure to register the transponder code in the ignition key with ECM referring to "Registration of the Ignition Key". After replacing the keyless start control module of the vehicle equipped with the keyless start system, be sure to register referring to "Registration of the Ignition Key".**

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
• While registering the transponder code in the transponder built in the ignition key in ECM, the keyless start control module sent a signal to ECM indicating that the ID code could not be registered. • The ID code could not be registered in the keyless start control module or ECM.	• Circuit between steering lock unit and keyless start control module • CAN communication circuit • Steering lock unit • Keyless start control module • ECM

DTC Confirmation Procedure

1) Register the transponder code in the transponder in the ignition key with ECM referring to “Registration of the Ignition Key”.
2) Check DTC in ECM.

Troubleshooting

Step	Action	Yes	No
1	*Was “Immobilizer Control System Check” performed?*	Go to Step 2.	Go to “Immobilizer Control System Check”.
2	**Registration of Ignition Key** 1) Register ignition key in use with ECM referring to “Registration of the Ignition Key”. *Was registration of ignition key completed?*	Unregistration of remote controller ID code.	Go to Step 3.
3	**DTC check of ECM** *Is DTC detected other than P1615?*	Go to applicable DTC diag. flow.	Go to Step 4.
4	**DTC check of keyless start control module** 1) Check keyless start control module for DTC referring to “DTC Check in Section 10E”. *Is DTC detected?*	Go to applicable DTC diag. flow.	Go to step 5.
5	**Check for communication circuit between steering lock unit and keyless start control module** 1) With the ignition switch at OFF position, disconnect steering lock unit connector and keyless start control module connector. 2) Check for proper connection at terminals and wires of each connector referring to “Intermittent and Poor Connection Inspection in Section 00”. 3) If OK, check for open, short, and high resistance in each circuit between steering lock unit and keyless start control module. Refer to step 2 in “DTC No. 11: Communication Error with Steering Lock Unit in Section 10E”. *Is each circuit in good condition?*	Go to Step 6.	Repair malfunction part.
6	**Steering lock unit power supply check** 1) Connect keyless start control module connector. 2) With ignition switch at ON position, check voltage between power supply terminal and ground terminal of steering lock unit connector. *Is voltage 4 – 6 V?*	Replace steering lock unit.	Substitute a known-good keyless start control module and recheck. If DTC P1615 is still detected, substitute a known good ECM and recheck.

DTC P1616: Different Registration ID Codes (Vehicle equipped with keyless start system only)

S7RS0BA304010

Circuit Description

P1616 is detected when ECM detects different ID codes registered in ECM and keyless start control module after turning engine start knob to ON position.
Normally, when keyless start control module is replaced with new one, ECM automatically registers blank ID code of keyless start control module to applicable one after turning ignition switch to ON position.
However, when keyless start control module is replaced with used one, ECM does not automatically register old ID code of keyless start control module to applicable one even if ignition switch is turned to ON position.

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
ECM detects different ID codes registered in ECM and keyless start control module.	• Keyless start control module • ECM

DTC Confirmation Procedure

1) Engine start knob turn to ON position.
2) Check DTC for ECM.

Troubleshooting

Step	Action	Yes	No
1	*Was "Immobilizer Control System Check" performed?*	Go to Step 2.	Go to "Immobilizer Control System Check".
2	**Registration of the Ignition Key** 1) Clear DTC referring to "Diagnostic Trouble Code (DTC) Clearance". 2) Register ignition key with ECM referring to "Registration of the Ignition Key". *Is ignition key able to be registered?*	Go to Step 3.	Go to Step 4.
3	**Keyless start system operation check** Engine start using keyless start system. *Does engine start?*	Unregistration of remote controller ID code.	Check DTC for ECM. When DTC is detected, go to applicable DTC.
4	**DTC check of ECM** Check DTC for ECM. *Is DTC P1618 and/or P1615 detected other than P1616?*	Go to DTC P1618 troubleshooting.	Go to DTC P1615 troubleshooting.

DTC P1618: CAN Communication Error (Reception Error for Keyless Start Control Module) (Vehicle equipped with keyless start system only)

S7RS0BA304011

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
Reception error of communication data for keyless start control module is detected for longer than specified time continuously.	• CAN communication circuit • Combination meter • Keyless start control module • BCM • ECM • ABS/ESP® control module

DTC Confirmation Procedure

1) Turn Ignition switch to ON position.
2) Check DTC for ECM.

Troubleshooting

Step	Action	Yes	No
1	*Was "Immobilizer Control System Check" performed?*	Go to Step 2.	Go to "Immobilizer Control System Check".
2	**DTC check of ECM** *Is DTC P1674, P1675, P1678 and/or P1685 detected together?*	Go to applicable DTC diag. flow.	Go to Step 3.

Step	Action	Yes	No
3	**DTC check of BCM** Check BCM for DTC referring to “DTC Check in Section 10B”. *Is DTC U1073, U1100 and/or U1144 detected?*	Go to applicable DTC diag. flow.	Go to Step 4.
4	**Control module connector check** 1) Check connection of connectors of all control modules communicating by means of CAN. 2) Recheck DTC. *Is DTC P1618 detected?*	Go to Step 5.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection in Section 00”.
5	**CAN communication circuit check** 1) Turn ignition switch to OFF position. 2) Disconnect connectors of all control modules communicating by means of CAN. 3) Check CAN communication circuit between control modules for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 6.	Repair circuit.
6	**Keyless start control module power and ground circuit check** Check for keyless start control module power and ground circuit referring to “Keyless Start Control Module Power and Ground Circuit Check in Section 10E”. *Are they in good condition?*	Substitute a known-good keyless start control module and recheck.	Repair keyless start control module power and/or ground circuits.

DTC P1621: Immobilizer Communication Line Error

S7RS0BA304012

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
Communication error between ICM and ECM is detected by ECM.	• Related fuse(s) • Circuit between ICM and ECM • ICM • ECM

DTC Confirmation Procedure

1) Ignition switch turn to ON position.
2) Check DTC for ECM.

Troubleshooting

Step	Action	Yes	No
1	*Was “Immobilizer Control System Check” performed?*	Go to Step 2.	Go to “Immobilizer Control System Check”.
2	**Fuse check** 1) Check fuse for ICM circuit. *Is fuse in good condition?*	Go to Step 3.	Replace fuse and check for short to power and ground circuit.
3	**Voltage check at ICM power and ground terminal** 1) Check power and ground terminal voltage of ICM connector referring to “Inspection of Immobilizer Control Module (ICM) and Its Circuit”. *Is each terminal voltage in good condition?*	Go to Step 4.	Repair circuit.

Step	Action	Yes	No
4	**ICM and ECM connector check** 1) With the ignition switch at OFF position, check intermittent and poor connection of ICM connector and ECM connectors referring to “Intermittent and Poor Connection Inspection in Section 00”. *Is each connector in good condition?*	Go to Step 5.	Repair poor connection.
5	**Communication circuit check between ICM and ECM** 1) Check for open, short and high resistance in serial communication and clock circuit between ICM and ECM. *Is each communication circuit in good condition?*	Substitute a known-good ICM and recheck. If DTC P1621 is still detected, substitute a known good ECM and recheck.	Repair circuit.

DTC P1622: EEPROM Reading / Writing Error

S7RS0BA304013

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
EEPROM in ECM is corrupted.	ECM

DTC Confirmation Procedure

1) Turn ignition switch to ON position.
2) Check DTC in ECM.

Troubleshooting

1) Clear DTC(s) referring to “Diagnostic Trouble Code (DTC) Clearance”.
2) Turn the ignition switch to OFF position.
3) Check if DTC P1622 is still detected referring to “Diagnostic Trouble Code (DTC) Check”. If still detected, go to the next step. If not, the troubleshooting is completed.
4) Replace ECM with new one referring to “ECM Removal and Installation in Section 1C”.
5) Perform “Procedure after ECM Replacement”.

DTC P1623: Unregistered Transponder

S7RS0BA304014

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
Transponder code in the transponder built in the ignition key is invalid.	• Use of unregistered ignition key • Ignition key • ICM • ECM

DTC Confirmation Procedure

1) Turn ignition switch to ON position.
2) Check DTC in ECM.

Troubleshooting

Step	Action	Yes	No
1	*Was “Immobilizer Control System Check” performed?*	Go to Step 2.	Go to “Immobilizer Control System Check”.
2	**DTC check of ECM** *Is DTC other than P1623 detected?*	Go to applicable DTC diag. flow.	Go to Step 3.

Step	Action	Yes	No
3	**Registration of unregistered ignition key with ECM** 1) Register unregistered ignition key with ECM referring to "Registration of the Ignition Key". *Was registration of ignition key completed?*	Unregistered ignition key.	Go to Step 4.
4	**Registration of the spare ignition key** 1) Register the spare ignition key referring to "Registration of the Ignition Key". *Was registration of spare ignition key completed?*	Replace ignition key which cannot be registered.	Substitute a known-good ECM and recheck.

DTC P1625: Immobilizer Antenna Error

S7RS0BA304015

Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
ICM	• ICM • ECM

DTC Confirmation Procedure

1) Turn ignition switch to ON position.
2) Check DTC in ECM.

Troubleshooting

Step	Action	Yes	No
1	*Was "Immobilizer Control System Check" performed?*	Go to Step 2.	Go to "Immobilizer Control System Check".
2	**DTC confirmation** 1) Clear DTC(s) referring to "Diagnostic Trouble Code (DTC) Clearance". 2) Turn the ignition switch to OFF position. 3) Check ECM for DTC referring to "Diagnostic Trouble Code (DTC) Check". *Is DTC P1625 still detected?*	Replace ICM and recheck DTC. If DTC P1625 is still detected, substitute a known-good ECM and recheck.	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection in Section 00".

DTC P1636: Immobilizer Information Registration Failure

S7RS0BA304016

DTC Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
The registration of the immobilizer control system information in ECM is failed.	• CAN communication wire circuits • BCM • ECM

Troubleshooting

Step	Action	Yes	No
1	*Was "Immobilizer Control System Check" performed?*	Go to Step 2.	Go to "Immobilizer Control System Check".
2	**DTC check of ECM** 1) Check ECM for DTC referring to "DTC Check in Section 1A". *Is DTC P1674, P1675, P1678 and/or P1685 detected?*	Go to applicable DTC diag. flow.	Go to Step 3.

Step	Action	Yes	No
3	**DTC check of BCM** 1) Check BCM for DTC referring to “DTC Check in Section 10B”. *Is DTC U1073, U1100, and/or U1114 detected?*	Go to applicable DTC diag. flow.	Go to step 4.
4	**CAN communication circuit check** 1) Disconnect connectors from ECM, BCM and ABS control module. 2) Check CAN communication circuit for open, short and high resistance. • Between ECM and ABS control module • Between BCM and ABS control module *Is each CAN communication circuit in good condition?*	Go to Step 5.	Repair circuit.
5	**Replacement of BCM** 1) Replace BCM with new one referring to “BCM (Included in Junction Block Assembly) Removal and Installation in Section 10B”. 2) Check ECM for DTC referring to “Diagnostic Trouble Code (DTC) Check”. *Is DTC P1636 still detected?*	Substitute a known-good ECM and recheck.	BCM faulty.

DTC P1638: Immobilizer Information Mismatched

S7RS0BA304017

DTC Detecting Condition and Trouble Area

Detecting Condition	Trouble Area
• The immobilizer control system information in ECM and the one in BCM does not match. • The registration of the immobilizer control system information in ECM is failed.	• Use of the wrong ECM • CAN communication circuits • BCM • ECM

Troubleshooting

Step	Action	Yes	No
1	*Was “Immobilizer Control System Check” performed?*	Go to Step 2.	Go to “Immobilizer Control System Check”.
2	**DTC confirmation** 1) Disconnect negative (–) cable from battery for more than 5 seconds. 2) Connect negative (–) cable to battery. 3) Check if any DTC is detected referring to “Diagnostic Trouble Code (DTC) Check”. *Is DTC P1638 still detected?*	Go to Step 3.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection in Section 00”.
3	**DTC check of ECM** 1) Check ECM for DTC referring to “DTC Check in Section 1A”. *Is DTC P1674, P1675, P1678 and/or P1685 detected?*	Go to applicable DTC diag. flow.	Go to Step 4.
4	**DTC check of BCM** 1) Check BCM for DTC referring to “DTC Check in Section 10B”. *Is DTC U1073, U1100, U0155 and/or U1114 detected?*	Go to applicable DTC diag. flow.	Go to step 5.

Step	Action	Yes	No
5	**CAN communication circuit check** 1) Disconnect connectors from ECM, BCM and ABS control module. 2) Check CAN communication circuit for open, short and high resistance. • Between ECM and ABS control module • Between BCM and ABS control module *Is each CAN communication circuit in good condition?*	Go to Step 6.	Repair circuit.
6	**Replacement of BCM** 1) Replace BCM with new one referring to "BCM (Included in Junction Block Assembly) Removal and Installation in Section 10B". 2) Check ECM for DTC referring to "Diagnostic Trouble Code (DTC) Check". *Is DTC P1638 still detected?*	Substitute a known-good ECM and recheck.	BCM faulty.

Inspection of Immobilizer Control Module (ICM) and Its Circuit

S7RS0BA304018

ICM and its circuit can be checked at ICM wiring connector by measuring voltage.

⚠ CAUTION

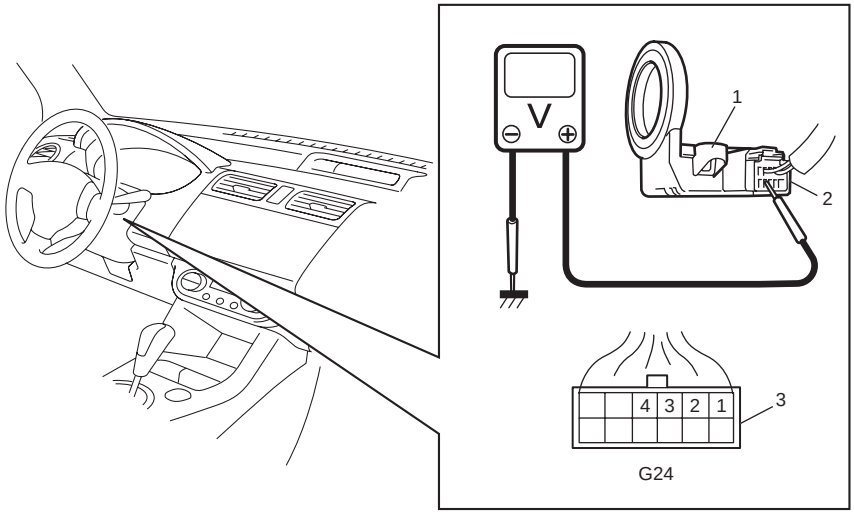
ICM cannot be checked by itself. It is strictly prohibited to connect voltmeter or ohmmeter to ICM with connector disconnected from it.

Voltage Check

1) Remove ICM (1) from steering lock assembly or steering lock unit referring to "Immobilizer Control Module (ICM) Removal and Installation".
2) Connect ICM connector (2) to ICM.
3) Check voltage at each terminal.

NOTE

As each terminal voltage is affected by the battery voltage, confirm that it is 11 V or more when the ignition switch is turned to ON position.

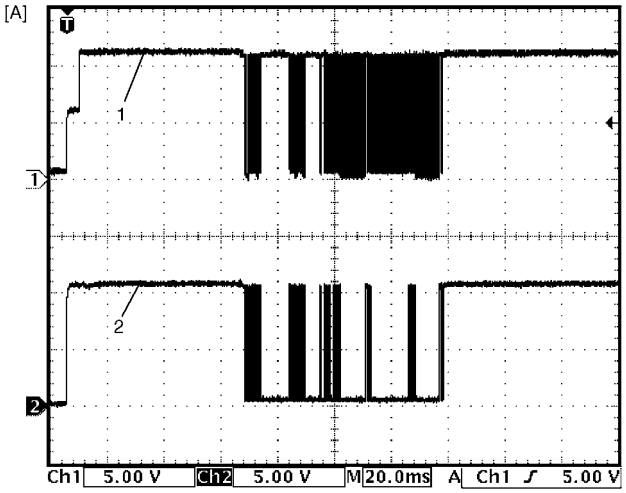


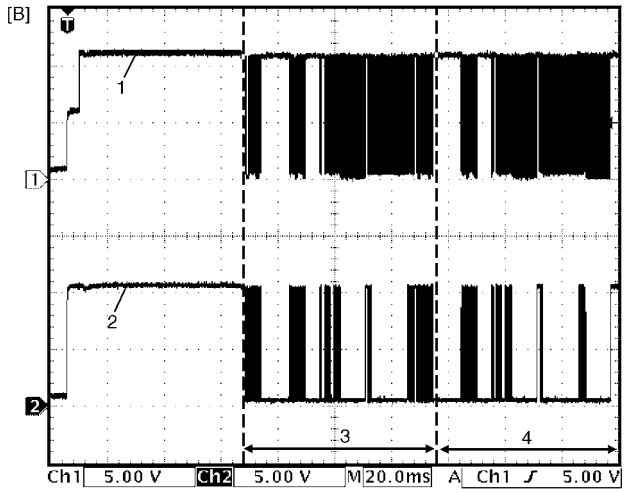
I4RS0BA30005-02

3. ICM connector (harness side view)

Terminal	Circuit	Normal Voltage	Condition
G24-1	Power supply	About 12.0 V	Ignition switch at ON position
		0.0 V	Ignition switch at OFF position
G24-2	Ground	0.0 V	Ignition switch at ON position
		0.0 V	Ignition switch at OFF position
G24-3	Serial communication line	See the reference waveform.	—
		0.0 V	Ignition switch at OFF position
G24-4	Clock line	See the reference waveform.	—
		0.0 V	Ignition switch at OFF position

Reference Waveform





I4RS0AA30007-01

[A]: The transponder code read successfully at the first try.
[B]: The transponder code read successfully at the second try.
1. Serial communication line
2. Clock line
3. First try
4. Second try

NOTE

When ECM cannot read the transponder code at the first try, ECM tries to read the transponder code repeatedly up to 8 times. The second waveform is the example showing that ECM read the transponder code successfully at the second try.

Measurement terminals	CH1: G24-3 to G24-2 CH2: G24-4 to G24-2
Oscilloscope settings	CH1: 5 V/DIV CH2: 5 V/DIV TIME: 20 ms
Measurement condition	Right after the ignition switch is turned ON, the waveform can be read.

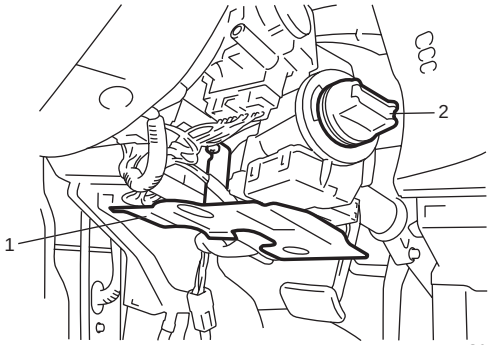
Repair Instructions

Immobilizer Control Module (ICM) Removal and Installation

S7RS0BA306001

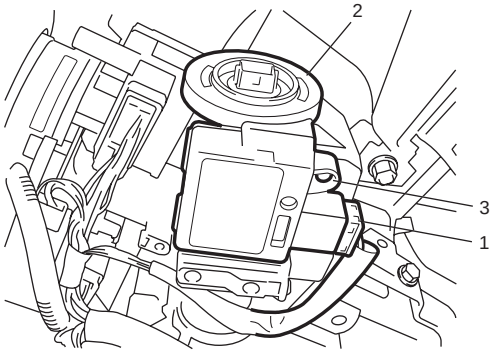
Removal

1) Disconnect negative (–) cable at battery.
2) Remove steering wheel referring to “Steering Wheel Removal and Installation in Section 6B”.
3) Remove steering column lower and upper covers.
4) Remove knee protector plate (1). (if equipped)
5) Remove engine start knob (2). (if equipped with keyless start system)



I4RS0BA30006-03

6) Disconnect connector (1) from ICM (2).
7) Remove a screw (3) from ICM.



I4RS0BA30007-03

8) Remove ICM from steering lock assembly or steering lock unit.

NOTE

The antenna part of ICM is fragile. Therefore, do not add strong power to the part or twist the part.

Installation

Reverse the removal procedure.

Registration of the Ignition Key

S7RS0BA306002

To finish the registration of the ignition key, the transponder code memorized in the transponder built in the ignition key has to be registered with ECM. To register the transponder code with ECM, perform “Register Ig Key” mode of SUZUKI scan tool referring to “SUZUKI Tech 2 Operator’s Manual”.

NOTE

- **A maximum of four transponder codes can be registered with ECM.**
- **At an early part of the registration process, all transponder codes of the ignition keys in use already registered with ECM are cleared. Therefore, before starting the registration, prepare all ignition keys in use in addition to the new ignition key(s) to be registered with ECM.**

Procedure after ECM Replacement

S7RS0BA306003

After ECM is replaced with new one or used one, the transponder code in the transponder built in the ignition key has to be registered with ECM. To register transponder code in the ignition key with ECM, perform “Replace New ECM” mode of SUZUKI scan tool referring to “SUZUKI Tech 2 Operator’s Manual”.

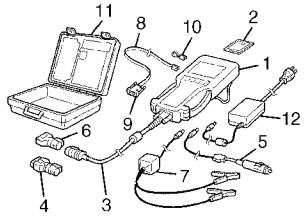
NOTE

A maximum of four transponder codes can be registered with ECM.

Special Tools and Equipment

Special Tool

S7RS0BA308001

SUZUKI scan tool — This kit includes following items. 1. Tech 2, 2. PCMCIA card, 3. DLC cable, 4. SAE 16/19 adapter, 5. Cigarette cable, 6. DLC loop back adapter, 7. Battery power cable, 8. RS232 cable, 9. RS232 adapter, 10. RS232 loop back connector, 11. Storage case, 12.☞ / ☞		

Keyless Start System

General Description

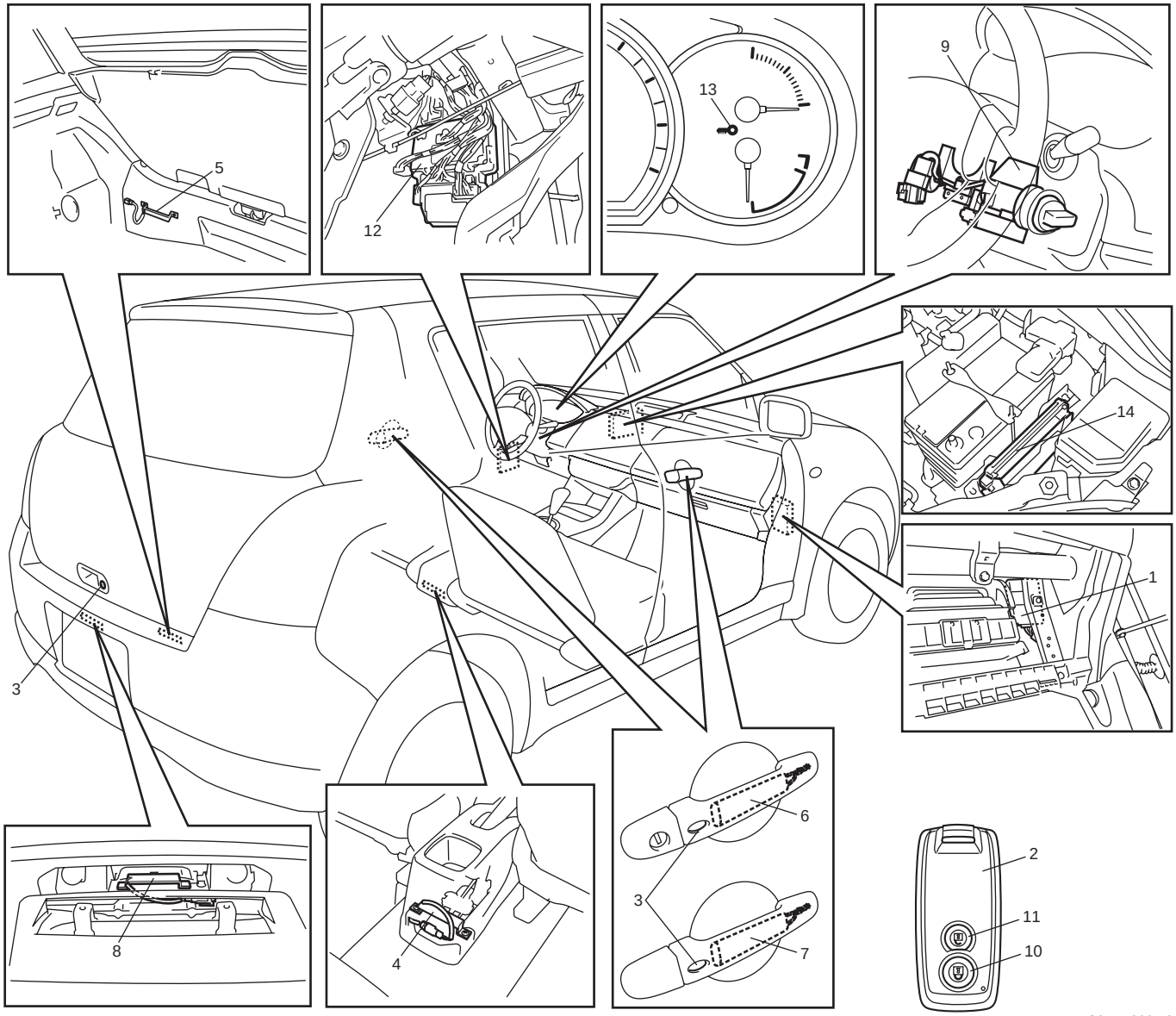
Keyless Start System Description

S7RS0BA501001

Keyless start system consisting of the parts shown below has three functions as described below.

- Keyless engine start function:
  With the remote controller which has been registered in the keyless start control module carried with oneself, the engine can be started without using the ignition key.
- Door lock function:
  Pushing the request switch incorporated in the outside handle of the driver side door, passenger side door or rear end door while carrying the remote controller which has been registered in the keyless start control module, doors can be locked or unlocked.
- Keyless entry system function:
  It is possible to lock or unlock doors by pushing the lock or unlock button of remote controller.

The keyless start control module can accept registration of up to four remote controllers.



I4RS0BA50001-02

1. Keyless start control module	5. Luggage room antenna	9. Steering lock unit	13. Key indicator lamp
2. Remote controller	6. Driver side door antenna	10. Lock button	14. ECM
3. Request switch	7. Passenger side door antenna	11. Unlock button	
4. Center antenna	8. Rear end door antenna	12. BCM	

Parts and Functions

S7RS0BA501002

Parts	Function
Keyless start control module	• Activates each antenna • Verifies ID code of remote controller • Requests steering lock unit to release steering lock • Requests BCM to lock or unlock doors • Controls key indicator lamp in combination meter • Transmits its ID code to ECM
Remote controller	• Receives request signal from each antenna • Transmits ID code and request signal to keyless start control module • Request keyless start control module to lock or unlock doors (keyless entry system function)
Request switch	• Requests keyless start control module to activate each antenna
Center antenna	• Transmits request signal to remote controller
Luggage room antenna	• Transmits request signal to remote controller
Driver side door antenna	• Transmits request signal to remote controller
Passenger side door antenna	• Transmits request signal to remote controller
Rear end door antenna	• Transmits request signal to remote controller
Steering lock unit	• Releases steering lock
Unlock button	• Transmits door unlock request signal (keyless entry system function)
Lock button	• Transmits door lock request signal (keyless entry system function)
BCM	• Controls each door lock actuator • Controls warning buzzer • Lights hazard warning lamp and interior (DOME) light (answer back)
Key indicator lamp	• Indicates operation state of keyless start system (indicates check result of remote controller ID code)
ECM	• Checks keyless start control module ID code • Transmits its ID code to keyless start control module • Starts engine

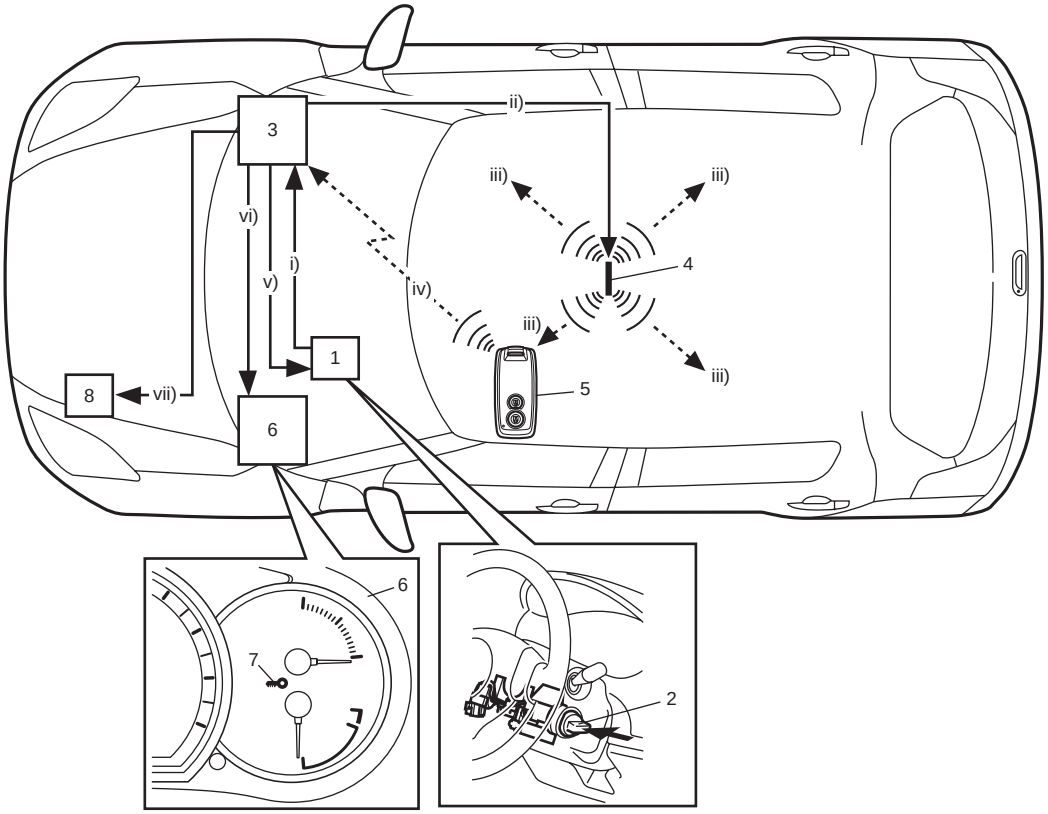
Keyless Engine Start Function

S7RS0BA501003

When the ignition knob switch (2) installed to the steering lock unit (1) is pushed, the keyless start control module (3) activates the center antenna (4) to send out the request signal in the vehicle compartment. When the remote controller (5) receives the request signal from the center antenna, it transmits the ID code to the keyless start control module. The keyless start control module compares the ID code sent by the remote controller with the ID code registered in the keyless start control module. When these ID codes match, the keyless start control module makes the key indicator lamp (7) in the combination meter (6) light in blue and unlocks the steering lock unit to enable the ignition knob switch to turn. When the ignition knob switch is turned to ON position in this state, ID codes of ECM and keyless start control module are compared through CAN communication (immobilizer function). When they match, turning the ignition knob switch to start position will start the engine.

NOTE

When ignition knob switch is at ACC or ON position (engine not running) and any door has been kept open for a certain time, it may happen that engine fails to start. In such a case, turn ignition knob switch to OFF position once and then try to start engine again.



[A]: i) ~ vii)

I5RS0CA50001-01

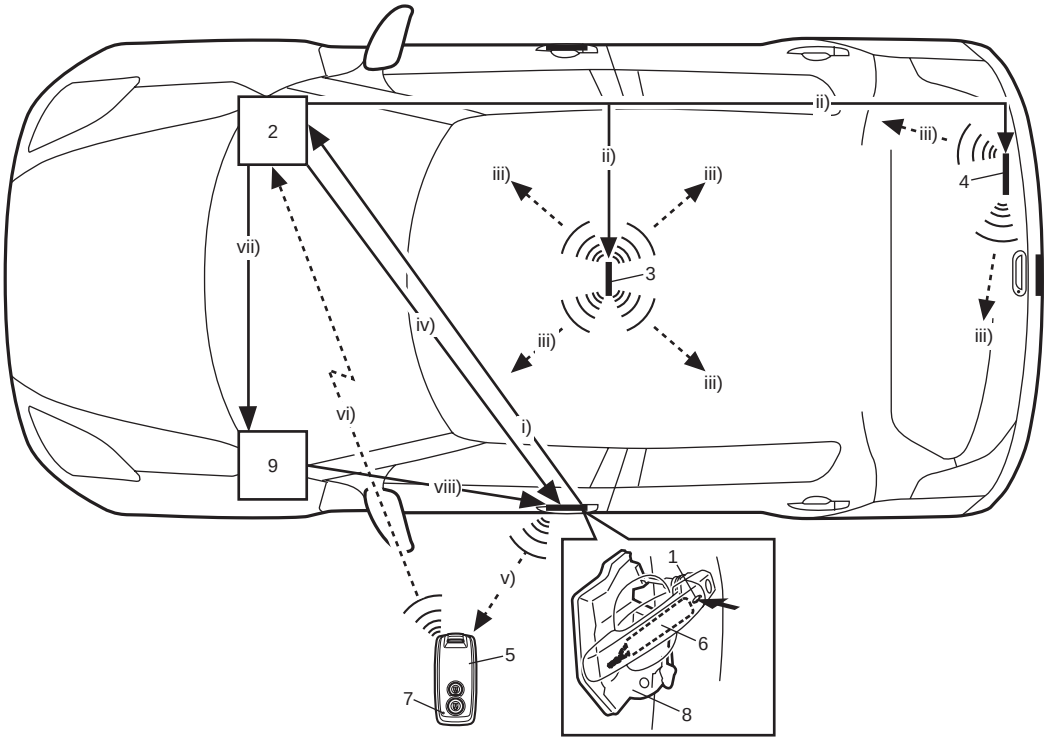
[A]: Signal flow	8. ECM

When the ID code from the remote controller and the ID code registered in the keyless start control module do not match or when the remote controller is outside the operation area of the remote controller and the ignition knob switch is pushed, the steering lock unit cannot be unlocked and so the ignition knob switch cannot be turned. Then, the keyless start control module makes the key indicator lamp in the combination meter light in red to warn the driver that it is not possible to turn the ignition knob switch. Also, when the ID code of ECM and that of the keyless start control module do not match, the engine cannot be started even if the ignition knob switch is turned to the start position. Then ECM makes the immobilizer light in the combination meter flash to warn the driver that it is not possible to start the engine.

Door Lock Function of Keyless Start System

S7RS0BA501004

When the request switch (1) incorporated in the outside handle of the driver side door, front passenger side door or rear end door is pushed, the keyless start control module (2) activates the center antenna (3) and luggage room antenna (4) to send out the radio wave in the vehicle compartment to check if the remote controller (5) is in the vehicle compartment or not. When the keyless start control module receives no signal from the remote controller (i.e., the remote controller does not exist in the vehicle compartment), it activates the antenna (6) of the door of which the request switch has been pushed to send the request signal out of the compartment.
If the remote controller exists within the door lock operation area, it receives the request signal sent from the above said antenna, sends the ID code of the remote controller and the request signal to the keyless start control module and at the same time, it makes the operation indicator lamp (7) of the remote controller light up. Lighting of the operation indicator lamp indicates that the remote controller sent the ID code and the request signal.
The keyless start control module compares the ID code sent from the remote controller with the ID code registered in the keyless start control module. If both ID codes match, the keyless start control module outputs the lock or unlock request signal (depending on the door lock switch (8) state then) to BCM (9). When BCM receives such signal through CAN communication from the keyless start control module, it activates the door lock actuator to lock or unlock doors.
When the keyless start control module receives a signal from the remote controller (i.e., the remote controller exists in the vehicle compartment), the function of the keyless start system to prevent the remote controller from being closed in the vehicle works and the keyless start control module sends a request signal to unlock doors to BCM. In this way, doors are kept unlocked.
Also, when the driver or passenger has left the vehicle with the remote controller left behind in the vehicle compartment and locked doors by using the door lock knob or manual door lock switch, the function to prevent the remote controller from being closed in the vehicle works to unlock doors.



[A]: i) ~ viii)

I4RS0BA50003-02

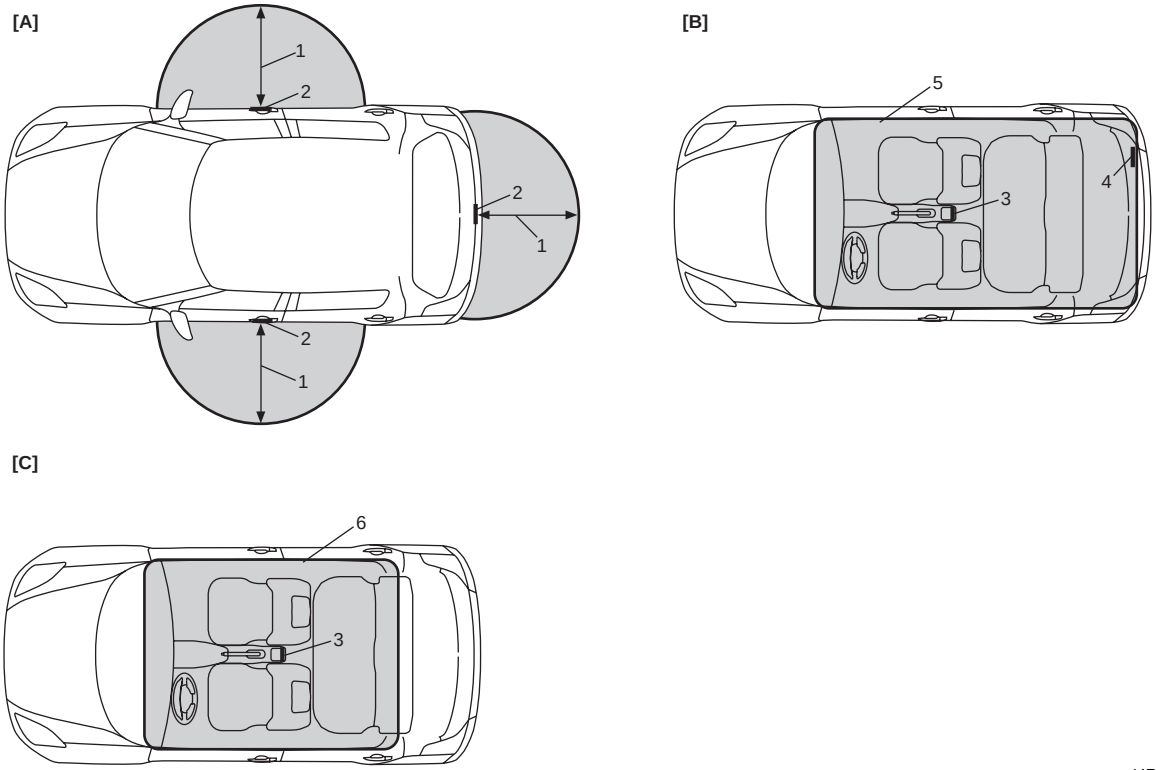
[A]: Signal flow

Furthermore, when ID codes of the remote controller and keyless start control module do not match or the remote controller exists outside of the operation area, doors are not locked or unlocked even if the request switch of the outside handle is operated.

Operation Area of Remote Controller

S7RS0BA501005

Shown below are the operation areas of the remote controller for the keyless engine start function and door lock function of the keyless start system.



I4RS0BA50004-02

[A]: Door lock function of keyless start system	1. About 80 cm (31.5 in, 2.6 ft)	4. Luggage room antenna
[B]: Function of keyless start system to prevent remote controller from being closed in vehicle compartment	2. Each door antenna	5. Vehicle compartment including luggage room
[C]: Keyless engine start function	3. Center antenna	6. Vehicle compartment excluding luggage room

However, even when the remote controller is within the operation area as shown above, there are cases where the keyless start system doesn't work under certain conditions as described below. And when the keyless engine start function doesn't work, the key indicator lamp in the combination meter may light up.

- Doors cannot be locked or unlocked using the door lock function of keyless start system when:
  - The remote controller which has been registered in the keyless start control module and another un-registered one are both carried at the same time
  - The remote controller is kept in some metallic container which disturb radio wave transmission/reception
  - One of doors is open
  - The ignition key is inserted in the ignition key cylinder
- The function of the keyless start system to prevent the remote controller from being closed in the vehicle compartment doesn't work when:
  - The remote controller is in the door pocket or in the glove box
  - The remote controller is kept in some metallic container which disturb radio wave transmission/reception
  - The remote controller is placed close to outside of the vehicle compartment (such as on the instrument panel beside the front window shield glass or in a corner of the luggage room)
- The ignition knob switch cannot be turned using the keyless engine start function fails to turn:
  - The remote controller which has been registered in the keyless start control module and another un-registered one are both carried at the same time
  - The remote controller is kept in some metallic container which disturbs radio wave transmission/reception
  - The ignition knob switch has been pushed for 5 seconds or longer
  - The remote controller is placed close to outside of the vehicle compartment (such as on the instrument panel beside the front window shield glass or in a corner of the luggage room)

Alarm Function

S7RS0BA501006

Under conditions as described in the table below, the keyless start control module makes the key indicator lamp flash in red and the buzzer sound to call the driver's attention.

Condition	Buzzer operation	Key indicator lamp operation
Ignition knob switch has stopped between ACC and OFF positions while driver side door is opened (ignition knob switch un-returned alarm)	Intermittent	—
Ignition switch has stopped between ACC and OFF positions while driver side door is closed (ignition knob switch un-returned alarm)	2 times	Flashing in red
Remote controller is carried out of vehicle and doors are closed while ignition switch is at ON position (remote controller carried-out alarm)	5 times	Flashing in red
Remote controller is carried out of vehicle through a window without opening door while ignition switch is at ON position (engine is running) and vehicle has been driven at 10km/h (6 MPH) or more speed without remote controller in vehicle compartment (the first time 10 km/h (6 MPH) speed is exceeded only) (Remote controller carried-out alarm)	5 times	Flashing in red

CAN Communication System Description

S7RS0BA501007

Refer to "CAN Communication System Description in Section 1A" for CAN communication system description. Keyless start control module communicates control data with each control as follows.

Keyless Start Control Module Transmission Data

				ECM	BCM	Combination Meter
Keyless Start Control Module	Transmit	DATA	ID code of keyless start control module	○		
			ECM-keyless start control module code	○		
			Ignition knob switch signal		○	
			Door lock/unlock request signal		○	
			Buzzer request signal		○	
			Answer back request signal		○	
			Key indicator light control signal			○

I6JB0AA50005-01

Keyless Start Control Module Reception Data

				ECM	BCM
Keyless Start Control Module	Receive	DATA	Vehicle speed signal	○	
			ECM-keyless start control module code	○	
			Door switch status		○
			Door lock status		○
			Charging system signal		○
			Engine oil pressure switch signal		○

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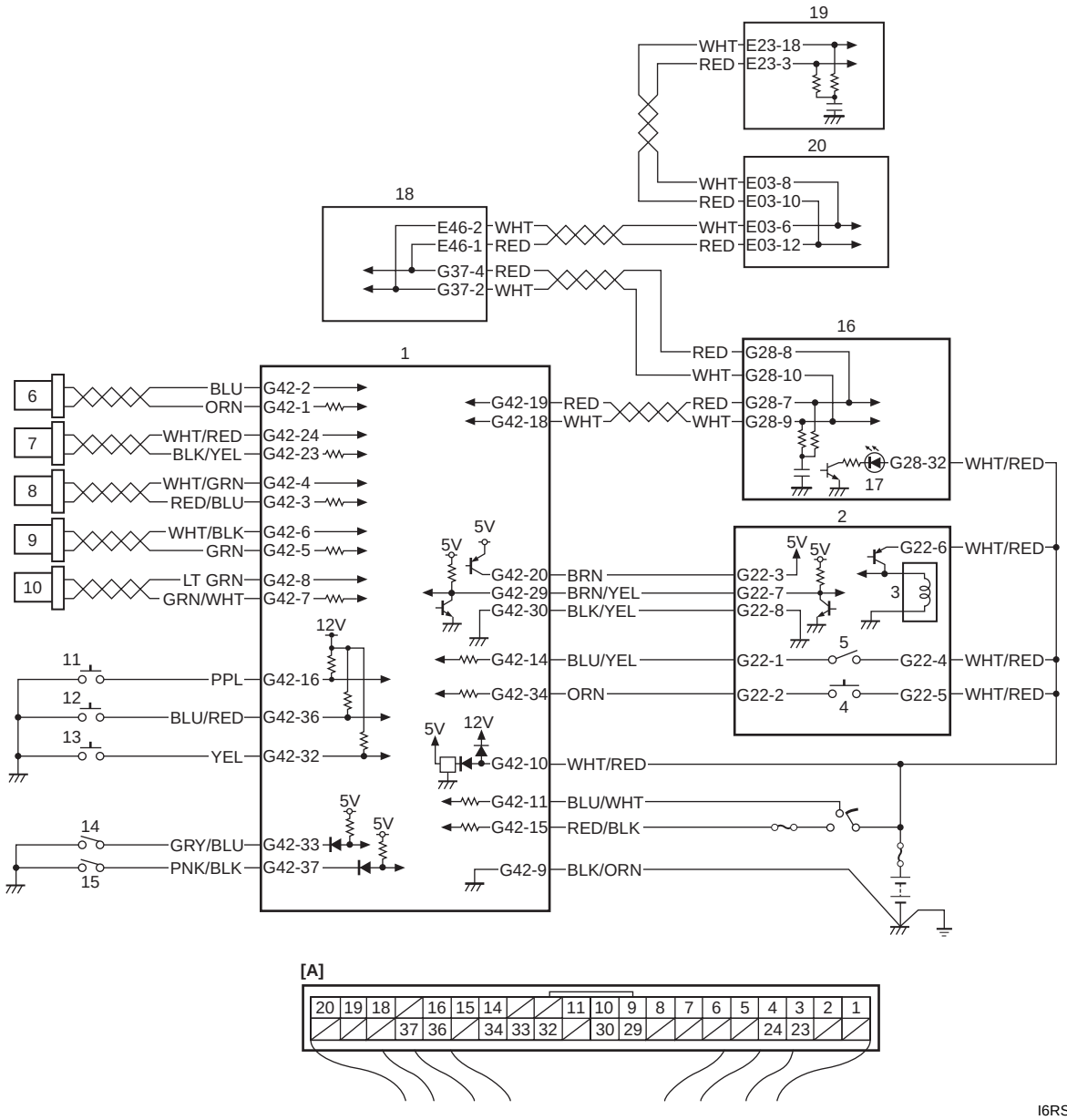
Schematic and Routing Diagram

Keyless Start System Electric Wiring Circuit Diagram

S7RS0BA502001



I6RS0CA50001-01

[A]: Keyless start control module connector (viewed from harness side)	7. Passenger side door antenna	14. Driver side door lock switch
1. Keyless start control module	8. Rear end door antenna	15. Passenger side door lock switch
2. Steering lock unit	9. Center antenna	16. Combination meter
3. Steering lock solenoid	10. Luggage room antenna	17. Key indicator lamp
4. Ignition knob switch	11. Driver side door request switch	18. BCM
5. Key reminder switch	12. Passenger side door request switch	19. ECM
6. Driver side door antenna	13. Rear end door request switch	20. ABS control module

Diagnostic Information and Procedures

Precautions in Diagnosing Troubles

S7RS0BA504001

- The keyless start system executes data transmission/ reception by means of the radio wave. Therefore, proper operation may not be obtained if use of the door lock function and engine start function of the keyless start system is attempted near the place where strong radio wave is emitted (TV and radio broadcasting stations, etc.).
- Diagnostic information stored in keyless start control module memory can be checked only by key indicator lamp.
- Be sure to use the trouble diagnosis procedure as described in “Keyless Start System Check”. Failure to follow it may result in incorrect diagnosis. (Some other DTC may be stored by mistake in the memory of keyless start control module during inspection.)
- Be sure to read “Precautions for Electrical Circuit Service in Section 00” before inspection and observe what is written there.
- Communication of ECM, BCM, TCM (A/T model), ABS control module, keyless start control module and combination meter is established by CAN (Controller Area Network). (For detail of CAN communication for keyless start control module, refer to “CAN Communication System Description”). Therefore, handle CAN communication line with care referring to “Precaution for CAN Communication System in Section 00”.
- Replacement of the keyless start control module
  When keyless start control module is replaced with new one, make sure that register remote controller ID code to keyless start control module correctly according to “Registration Procedure for Remote Controller ID Code”.
- Keyless start control module substitution
  When the keyless start control module used in another vehicle was installed in the vehicle, register the ID code of the remote controller in the keyless start control module as well as the ignition key transponder code for the immobilizer control system in ECM. For the registration procedure of the ignition key transponder code, refer to “Registration of the Ignition Key in Section 10C”.

Self-Diagnosis Function

S7RS0BA504002

The keyless start control module has self-diagnosis function to monitor the system components and circuits while the keyless start system is at work. When the keyless start control module detects an abnormality in the system, it saves the area where such abnormality has occurred as a DTC in its memory. The DTC stored in memory of the keyless start control module is indicated by the key indicator lamp in the combination meter flashing in a specific pattern. For DTC indication, refer to “DTC Check” and for the clearing procedure, to “DTC Clearance”.

Keyless Start System Diagnosis Introduction

S7RS0BA504003

To ensure that the trouble diagnosis is done accurately and smoothly, observe “Precautions in Diagnosing Troubles” and follow “Keyless Start System Check”.

Keyless Start System Check

S7RS0BA504004

Step	Action	Yes	No
1	1) Record details of the problem. For your record, use of a questionnaire form will facilitate collecting information for proper analysis and diagnosis. 2) Check if the problem described in “Customer Questionnaire (Example)” actually occurs in the vehicle. (This step should be performed with the customer if possible.) Perform “Keyless Start System Operation Inspection” procedure to check if the symptom which has occurred is abnormal or not. 3) Check for DTC referring to “DTC Check”, and then record DTC(s). 4) Clear DTC referring to “DTC Clearance” if any DTC exists, and then recheck for DTC. *Is any DTC still detected?*	Go to Step 2.	Go to Step 3.
2	1) Check and repair referring to applicable “DTC Table”. *Are check and repair complete?*	Go to Step 5.	Check and repair malfunction part(s), and go to Step 5.

Step	Action	Yes	No
3	1) Inspect and repair basic parts referring to “Keyless Start System Symptom Diagnosis”. *Is there faulty condition?*	Repair or replace malfunction part(s), and go to Step 5.	Go to Step 4.
4	1) Check for intermittent problems referring to “Intermittent and Poor Connection Inspection in Section 00”. *Is there any faulty condition?*	Repair or replace malfunction part(s), and go to Step 5.	Go to Step 5.
5	1) Confirm if the problem is solved and the keyless start system is free from any abnormal conditions. If what has been repaired is related to the DTC, clear the DTC once and then confirm that no DTC is indicated. *Is there any problem symptom, DTC or abnormal condition?*	Go to 2) of Step 1 and perform trouble diagnosis again.	End.

Customer Questionnaire (Example)

S7RS0BA504005

Customer’s name:	Model:	VIN:	
Date of issue:	Date Reg:	Date of problem:	Mileage:

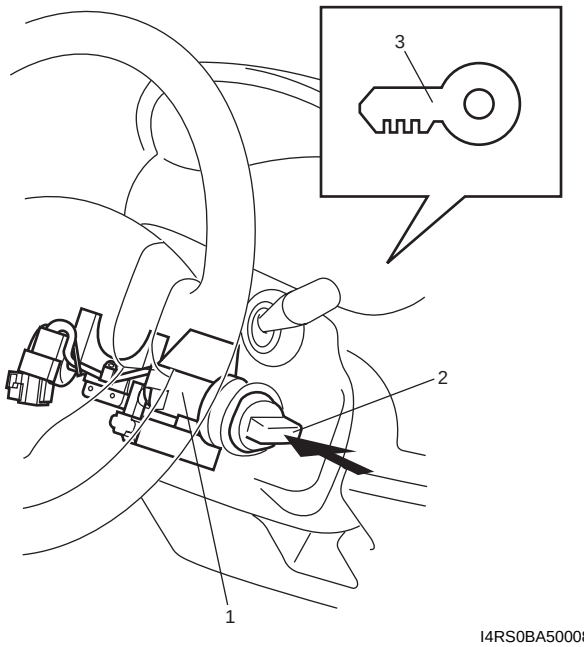
Problem Symptoms	・ Engine can not be started by turning Ignition knob switch ・ All doors can not be locked / unlocked by all of request switches ・ Other_____
Frequency of Occurrence	・Continuous / Intermittent (times a day, a month) / Other_____
Environmental Condition	・ Weather: Fine / Cloudy / Rain / Snow / Other_____ ・ Temperature: ℃(° F) ・ Stopping near area where intense radio waves are emitted such as TV station, radio station, etc. Yes / No
Diagnostic Trouble Code	・ First check: Normal code / malfunction code ( ) ・ Second check: Normal code / malfunction code ( )

I4RS0BA50007-03

Key Indicator Lamp Check

S7RS0BA504006

Push the ignition knob switch (2) of the steering lock unit (1) and check that the key indicator lamp (3) in the combination meter lights up in red or blue. If it does not light, go to “Key Indicator Lamp Circuit Check (Key indicator lamp doesn’t light when ignition knob switch is pushed.)”.

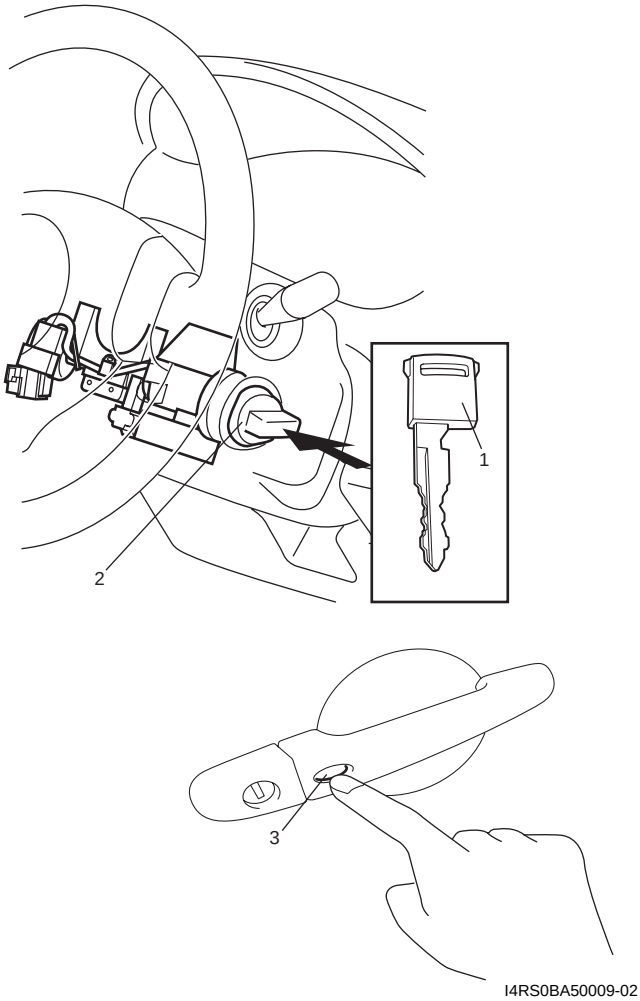


I4RS0BA50008-01

DTC Check

S7RS0BA504007

1) Check to make sure that all doors are closed.
2) Open driver side door window glass and door.
3) Check to make sure that ignition key is not inserted in ignition key cylinder. If it is, remove it.
4) Perform “Key Indicator Lamp Check”.
5) Close driver side door and within 15 seconds after that, perform Steps a) through e) described below.
   a) Insert ignition key (1) in ignition key cylinder (2).
   b) Remove ignition key from ignition key cylinder.
   c) Repeat Steps a) and b) twice.
   d) Insert ignition key in ignition key cylinder.
   e) Push driver side door request switch (3) 4 times. At the end of Step e), buzzer sounds 4 times to inform that trouble diagnosis mode has started.

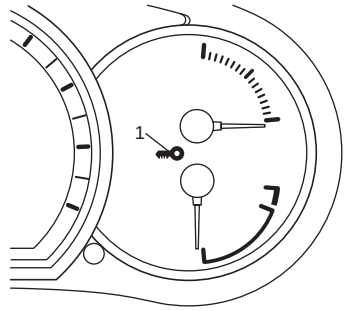


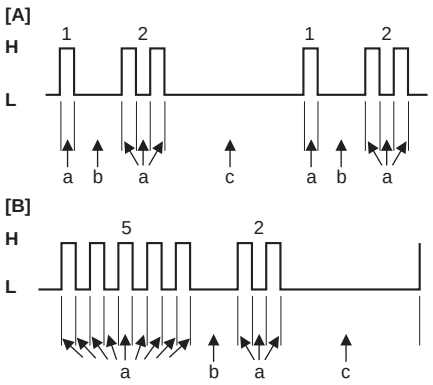
I4RS0BA50009-02

6) Read flashing pattern of key indicator lamp (1) which represents DTC as shown in example below and write it down. When more than 2 DTCs are stored in memory, flashing for each DTC is repeated three times starting with the smallest DTC number in increasing order.

NOTE

Go to "No DTC Detection After Performing DTC Check" in case that any DTC is detected after performing the procedure mentioned above.





I4RS0BA50010-02

[A]: DTC NO. 12 (Normal)	a: 0.3 seconds
[B]: DTC NO. 52	b: 1.0 second
H: Key indicator lamp turned ON	c: 3.0 seconds
L: Key indicator lamp turned OFF	

7) After completing the check, remove ignition key from ignition key cylinder.

DTC Table

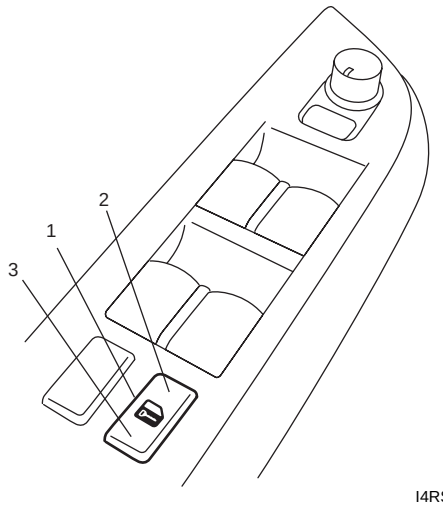
S7RS0BA504008

DTC (Flashing pattern of key indicator lamp)	Detected parts item	Detecting condition
☞ 11	Communication Error With Steering Lock Unit	No communication is available between keyless start control module and steering lock unit
12	—	Normal (No malfunction DTC is detected)
☞ 13	Release Signal Error from Steering Lock Unit	Although lock release signal is output to steering lock unit, it is not inputted from steering lock unit
☞ 14	Steering Lock Unit Malfunction	Steering lock unit cannot be unlocked due to its temperature rise
☞ 21	Internal Error in Keyless Start Control Module (EEPROM Reading Error)	Data cannot be read from memory in keyless start control module
☞ 22	Internal Error in Keyless Start Control Module (EEPROM Writing Error)	Data cannot be written into memory in keyless start control module
☞ 31	Lost Communication With BCM	Keyless start control module cannot receive data sent by CAN from BCM
☞ 33	Control Module Communication Bus Off	No communication is available with all control modules connected by CAN
☞ 51	Driver Side Door Request Switch Malfunction	Input signal from driver side door request switch remains ON, unchanged
☞ 52	Passenger Side Door Request Switch Malfunction	Input signal from passenger side door request switch remains ON, unchanged
☞ 53	Rear End Door Request Switch Malfunction	Input signal from rear end door request switch remains ON, unchanged

DTC Clearance

S7RS0BA504009

1) Perform Steps 1) through 5) of DTC check procedure and have DTC indicated.
2) Open driver side door.
3) Close driver side door and within 10 seconds after that, perform Steps a) to c) described below.
   a) Push unlock side (3) of driver side manual door lock switch (1).
   b) Push lock side (2) of driver side manual door lock switch.
   c) Repeat Steps a) and b) 3 times.
   At the end of Step c), DTCs are cleared and key indicator lamp indicates DTC No. 12 (Normal).



I4RS0BA50011-02

4) After completing DTC clearance, remove ignition key from ignition key cylinder.

Keyless Start System Symptom Diagnosis

S7RS0BA504010

Door Lock Function of Keyless Start System

NOTE

Before performing trouble diagnosis procedure for door lock function of keyless start system, check that power door lock system operates properly referring to "Power Door Lock System Operation Inspection in Section 9F". If power door lock system does not operate properly, go to "Power Door Lock System Symptom Diagnosis in Section 9F".

Condition	Possible cause	Correction / Reference Item
All doors can not be locked / unlocked by all of door request switches	Circuit fuse(s) blown	*Replace fuse(s) and check for short circuit.*
	Remote controller battery dead	*Replace battery.*
	Remote controller faulty	*Check remote controller for operation referring to "Remote Controller Inspection".*
	Wiring or grounding faulty	*Repair circuit.*
	Antennas or keyless start control module faulty	*Check input and output signals of keyless start control module referring to "Inspection of Keyless Start Control Module and Its Circuits".*
	BCM faulty	*Check input and output signal of BCM referring to "Inspection of BCM and its Circuits in Section 10B".*
All doors can not be locked / unlocked by any one of door request switch	Request switch faulty	*Check request switch for operation referring to "Front Door (Driver and Passenger Side), Rear End Door Request Switch Inspection".*
	Wiring or grounding faulty	*Repair circuit.*
	Antennas or keyless start control module faulty	*Check input and output signals of keyless start control module referring to "Inspection of Keyless Start Control Module and Its Circuits".*
	BCM faulty	*Check input and output signal of BCM referring to "Inspection of BCM and its Circuits in Section 10B".*

Keyless Engine Start Function

NOTE

Before performing symptom diagnosis procedure for keyless engine start system, check that engine starts by using ignition key. If it cannot be started by using ignition key, go to "Engine Symptom Diagnosis in Section 1A".

Condition	Possible cause	Correction / Reference Item
Engine can not be started by turning Ignition knob switch	Circuit fuse(s) blown	*Replace fuse(s) and check for short circuit.*
	Remote controller battery dead	*Replace battery.*
	Remote controller faulty	*Check remote controller for operation referring to "Remote Controller Inspection".*
	Steering lock unit faulty	*Check steering lock unit for operation referring to "Steering Lock Unit Inspection".*
	Wiring or grounding faulty	*Repair circuit.*
	Antennas or keyless start control module faulty	*Check input and output signals of keyless start control module referring to "Inspection of Keyless Start Control Module and Its Circuits".*
	ECM faulty	*Check input and output signal of ECM referring to "Inspection of ECM and Its Circuits in Section 1A".*

Keyless Start System Operation Inspection

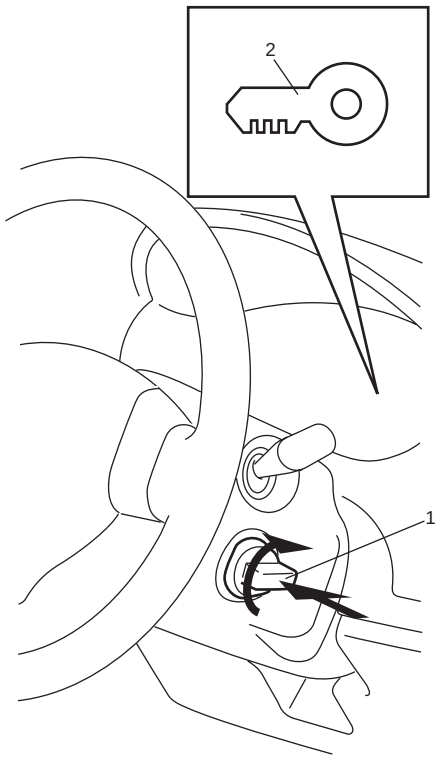
S7RS0BA504011

Keyless engine start operation

1) Sit in driver seat with remote controller carried with you.
2) Check that all doors are closed and ignition key is not inserted in ignition key cylinder.
3) While pushing ignition knob switch (1) of steering lock unit, check if ignition knob switch can be turned from its lock position.
   If key indicator lamp (2) in combination meter lights in blue and ignition knob switch can be turned from its lock position in this check, keyless engine start operation is in good condition.
   If key indicator lamp in combination meter lights in red and ignition knob switch cannot be turned from its lock position in this check, go to "Keyless Start System Check".

NOTE

Pushing ignition knob switch for 5 seconds or longer causes function to protect steering lock releasing solenoid against heat to work. Then steering lock unit stops energizing solenoid, preventing ignition knob switch from turning. At the same time, key indicator lamp in combination meter turns off. In such case, take your hand off from ignition knob switch once and operate it again.

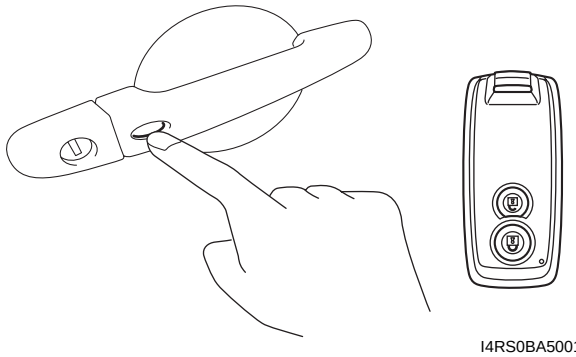


I4RS0BA50012-01

Door Lock Operation (Keyless Start System)

S7RS0BA504012

1) Check that all door locks are released and all doors are closed.
2) With remote controller of which ID code is registered in keyless start control module carried with yourself, check that pushing driver door, passenger door or rear end door request switch once locks all doors.
3) Check that pushing request switch of driver door, passenger door or rear end door once releases all door locks.



I4RS0BA50013-01

Inspection of Keyless Start Control Module and Its Circuits

S7RS0BA504013

Keyless start control module and its circuits can be checked at keyless start control module wiring couplers by measuring voltage and resistance.

⚠ CAUTION

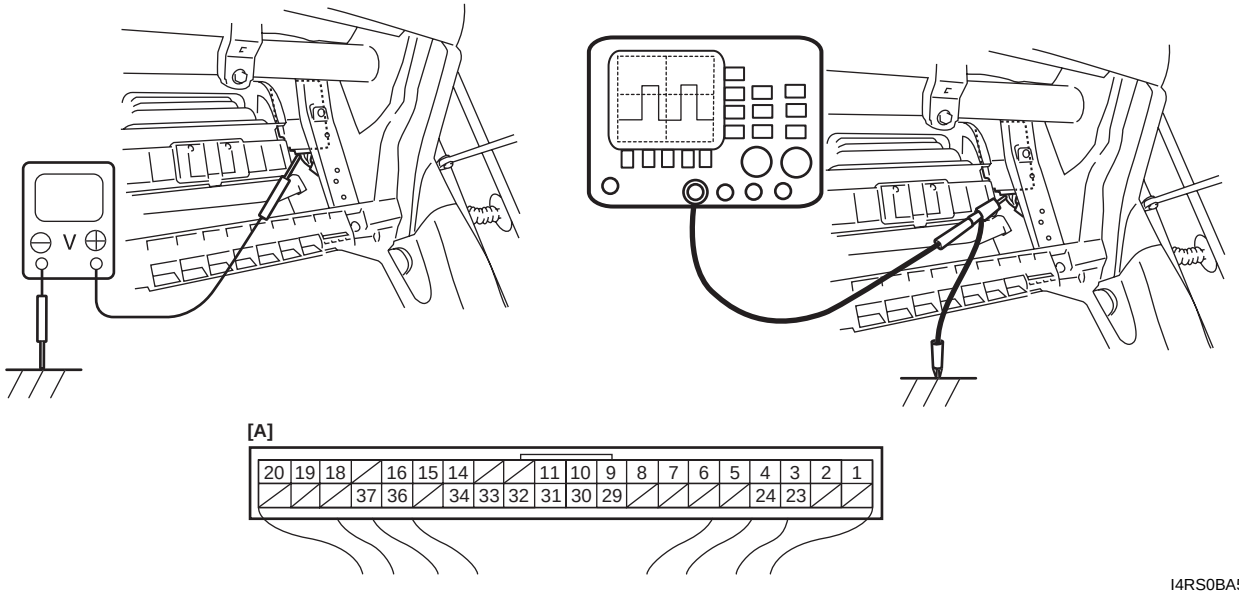
Keyless start control module cannot be checked by itself. It is strictly prohibited to connect voltmeter or ohmmeter to keyless start control module with coupler disconnected from it.

Voltage Check

1) Disconnect negative (–) cable at battery.
2) Remove keyless start control module from vehicle body referring to “Keyless Start Control Module Removal and Installation”.
3) Connect connector to keyless start control module.
4) Check voltage at each terminal number of couplers connected.

NOTE

- **As each terminal voltage is affected by the battery voltage, confirm that it is 11 V or more when ignition switch is ON.**
- **Voltage with asterisk (*) cannot be measured by voltmeter because it is pulse signal.**



I4RS0BA50014-02

[A]: Keyless start control module connector (viewed from harness side)

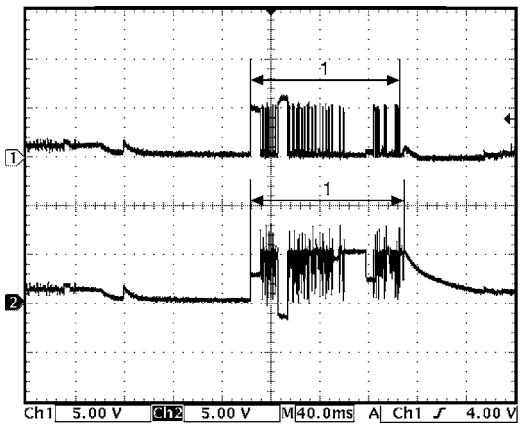
Terminal Number	Circuit	Normal Voltage	Condition
G42-1	Driver side door antenna (–)	*0 – 5 V	Refer to “Reference waveform No. 1: ”
G42-2	Driver side door antenna (+)		
G42-3	Rear end door antenna (–)	*0 – 5 V	Refer to “Reference waveform No. 1: ”
G42-4	Rear end door antenna (+)		
G42-5	Center antenna (–)	*–2 – 2 V	Refer to “Reference waveform No. 2: ”
G42-6	Center antenna (+)	*–10 – 15 V	
G42-7	Luggage room antenna (–)	*–10 – 10 V	Refer to “Reference waveform No. 3: ”
G42-8	Luggage room antenna (+)	*–8 – 14 V	
G42-9	Ground for keyless start control module	0 – 1 V	Ignition switch is at all positions
G42-10	Power source	10 – 12 V	Ignition switch is at all positions
G42-11	Ignition switch (ACC signal)	10 – 12 V	Ignition switch is at ACC or ON position
		0 – 1 V	Ignition switch is at any position other than ACC or ON position
G42-12	—	—	—
G42-13	—	—	—
G42-14	Ignition switch (Key reminder signal)	10 – 12 V	Insert ignition key to ignition key cylinder
		0 – 1 V	Pull out ignition key from ignition key cylinder
G42-15	Ignition switch (ON signal)	10 – 12 V	Ignition switch is at ON position
		0 – 1 V	Ignition switch is at any position other than ON position
G42-16	Driver side door request switch	10 – 12 V	Request switch of driver side door is released
		0 – 1 V	Request switch of driver side door is pushed
G42-17	—	—	—
G42-18	CAN communication line (low)	*1.6 – 2.5 V	Refer to “Reference waveform No. 4: ”
G42-19	CAN communication line (high)	*2.5 – 3.6 V	
G42-20	Power supply for steering lock unit	4 – 6 V	Full time
G42-21	—	—	—
G42-22	—	—	—
G42-23	Passenger side door antenna (–)	*0 – 5 V	Refer to “Reference waveform No. 1: ”
G42-24	Passenger side door antenna (+)		
G42-25	—	—	—
G42-26	—	—	—
G42-27	—	—	—
G42-28	—	—	—
G42-29	Signal for steering lock unit	4 – 6 V	Ignition knob switch is at any position other than ON and OFF position
		*0 – 5 V	Refer to “Reference waveform No. 5: ”
G42-30	Ground for steering lock unit	0 – 1 V	Full time
G42-31	—	—	—
G42-32	Rear end door request switch	10 – 12 V	Request switch of rear end door is released
		0 – 1 V	Request switch of rear end door is pushed
G42-33	Driver side door lock switch	0 – 1 V	Driver side door is at unlock position and passenger side door is at lock position
		4 – 6 V	Driver and passenger side door is at lock position
		*3 – 5 V	Refer to “Reference waveform No. 6: ”
G42-34	Ignition knob switch	10 – 12 V	When pushing ignition knob switch of steering lock unit
		0 – 1 V	When releasing ignition knob switch of steering lock unit
G42-35	—	—	—
G42-36	Passenger side door request switch	10 – 12 V	Request switch of passenger side door is released
		0 – 1 V	Request switch of passenger side door is pushed

Terminal Number	Circuit	Normal Voltage	Condition
G42-37	Passenger side door lock switch	0 – 1 V	Passenger side door is at unlock position and driver side door is at lock position
		4 – 6 V	Driver and passenger side door is at lock position
		*3 – 5 V	Refer to “Reference waveform No. 6: ”
G42-38	—	—	—
G42-39	—	—	—
G42-40	—	—	—

Reference waveform No. 1

Driver, passenger and rear end door antenna request signals (Request signal (1) transmitted by each door antenna when each door request switch is pushed)

Measurement terminal	Driver side door antenna • CH1: “G42-2” to “G42-9” • CH2: “G42-1” to “G42-9” Passenger side door antenna • CH1: “G42-24” to “G42-9” • CH2: “G42-23” to “G42-9” Rear end door antenna • CH1: “G42-4” to “G42-9” • CH2: “G42-3” to “G42-9”
Oscilloscope setting	CH1: 5 V/DIV, CH2: 5V/DIV TIME: 40 ms/DIV
Measurement condition	Request switch of each door is pushed with remote controller carried



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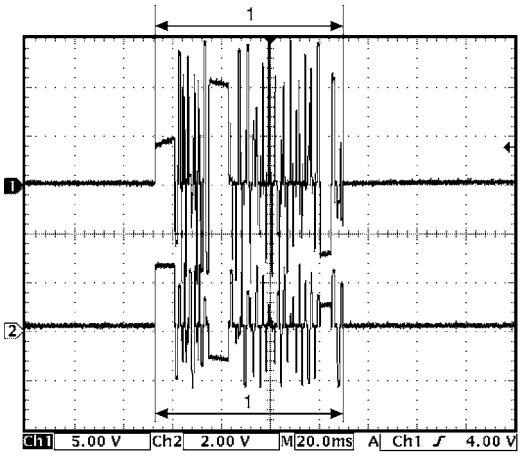
Reference waveform No. 2

Center antenna signal
(Request signal (1) transmitted by center antenna when each door request switch is pushed)

Measurement terminal	CH1: “G42-6” to “G42-9” CH2: “G42-5” to “G42-9”
Oscilloscope setting	CH1: 5 V/DIV, CH2: 2 V/DIV TIME: 20 ms/DIV
Measurement condition	• Ignition knob switch of steering lock unit is pushed • Any one of door is opened • Request switch of each door is pushed



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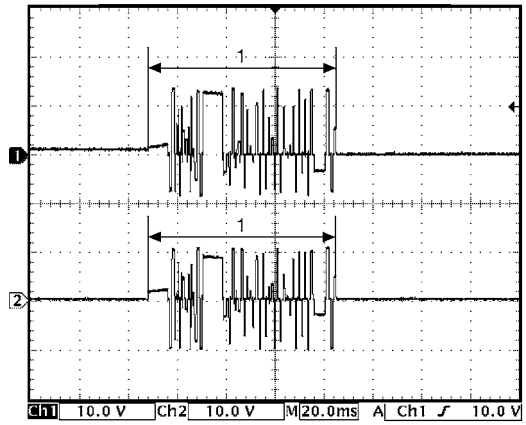
Reference waveform No. 3
Luggage room antenna signal
(Request signal (1) transmitted by luggage room antenna when each door request switch is pushed)

Measurement terminal	CH1: “G42-8” to “G42-9” CH2: “G42-7” to “G42-9”
Oscilloscope setting	CH1: 10 V/DIV, CH2: 10 V/DIV TIME: 20 ms/DIV
Measurement condition	• Any one of door is opened • Request switch of each door is pushed



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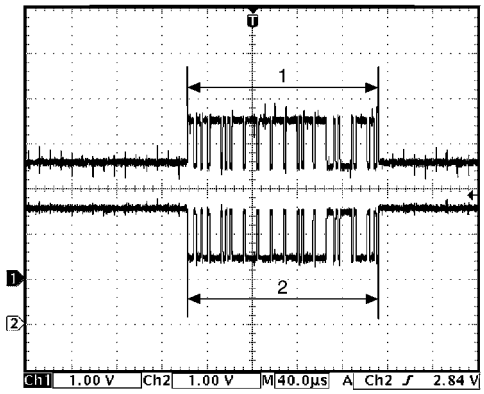
Reference waveform No. 4
CAN communication signals
(CAN signal communicated to each control module when ignition switch is turned ON)

Measurement terminal	CH1: “G42-19” to “G42-9” CH2: “G42-18” to “G42-9”
Oscilloscope setting	CH1: 1 V/DIV, CH2: 1V/DIV TIME: 40 μs/DIV
Measurement condition	Ignition switch is at ON position

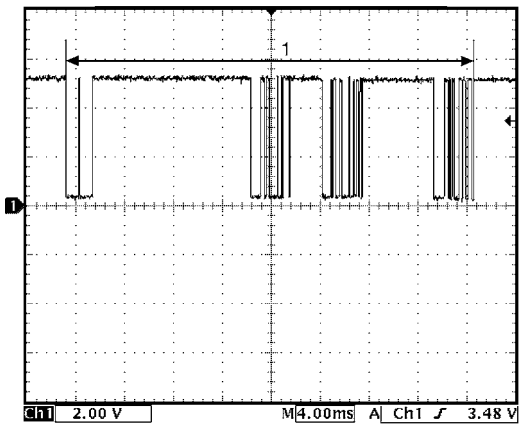


I5RS0DA50002-01

1. CAN communication line signal (high)
2. CAN communication line signal (low)

Reference waveform No. 5
Steering lock unit signal
(Signal (1) communicated between keyless start control module and steering lock unit when measurement condition described below applies)

Measurement terminal	CH1: “G42-29” to “G42-9”
Oscilloscope setting	CH1: 2 V/DIV TIME: 4 ms/DIV
Measurement condition	• Ignition knob switch of steering lock unit is pushed • Any one of door is opened • Request switch of each door is pushed



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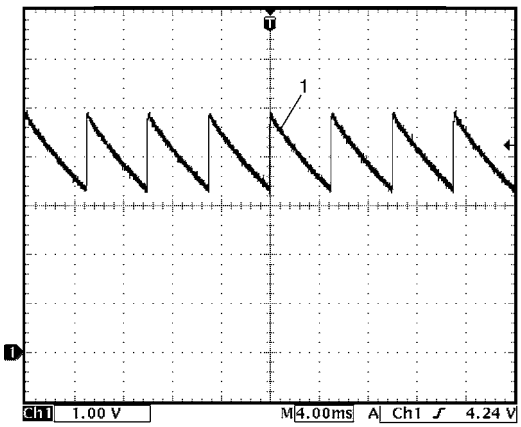
Reference waveform No. 6

Driver side and passenger side door lock switch signals (Signal (1) indicating door lock switch status which keyless start control module receives from BCM)

Measurement terminal	Driver side door lock switch • CH1: “G42-33” to “G42-9” Passenger side door lock switch • CH1: “G42-37” to “G42-9”
Oscilloscope setting	CH1: 1 V/DIV TIME: 4 ms/DIV
Measurement condition	Driver side door lock switch • Driver side door is at lock position • Passenger side door is at unlock position Passenger side door lock switch • Driver side door is at unlock position • Passenger side door is at lock position



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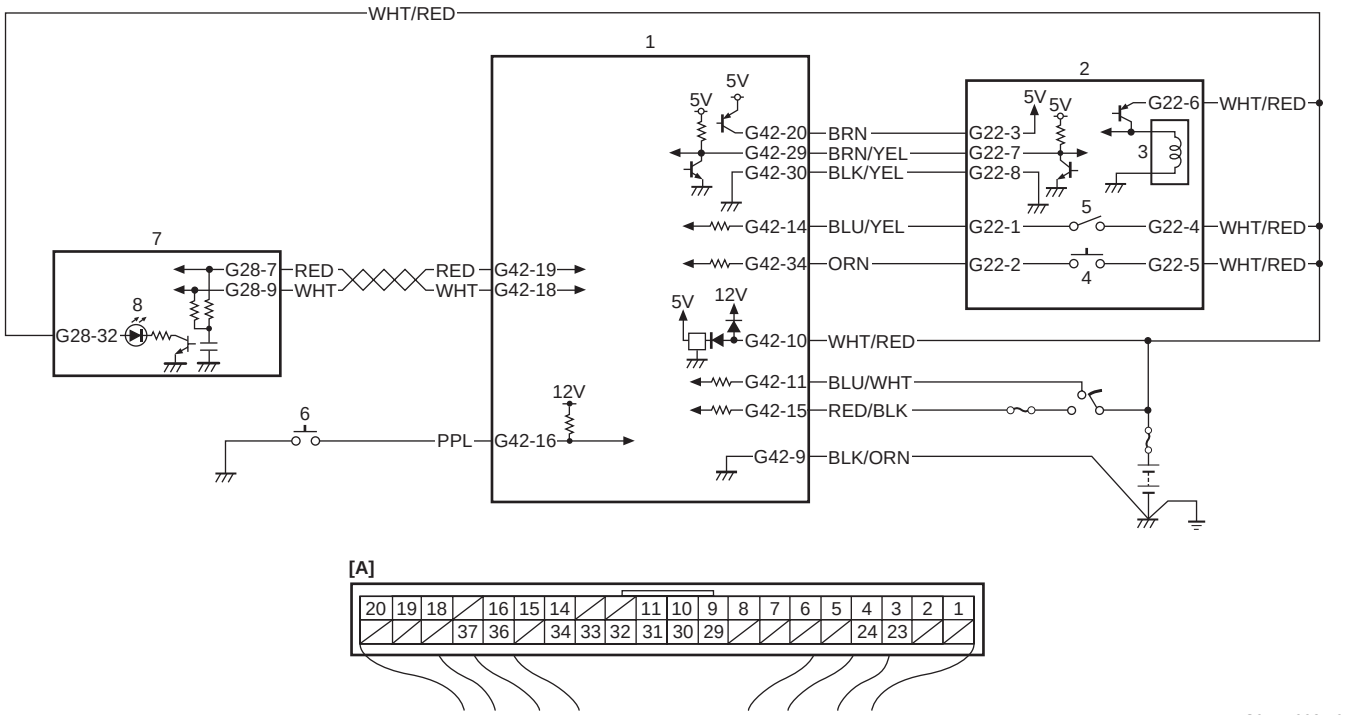
No DTC Detection After Performing DTC Check

S7RS0BA504014

Wiring Diagram



I4RS0BA50035-01

[A]: Keyless start control module connector (viewed from harness side)	3. Steering lock solenoid	6. Driver side door request switch
1. Keyless start control module	4. Ignition knob switch	7. Combination meter
2. Steering lock unit	5. Key reminder switch	8. Key indicator lamp

Description

The keyless start control module detects DTC by using signals from the key reminder and driver side door request switches. The keyless start control module makes the key indicator lamp in the combination meter flash on and off by using CAN communication.

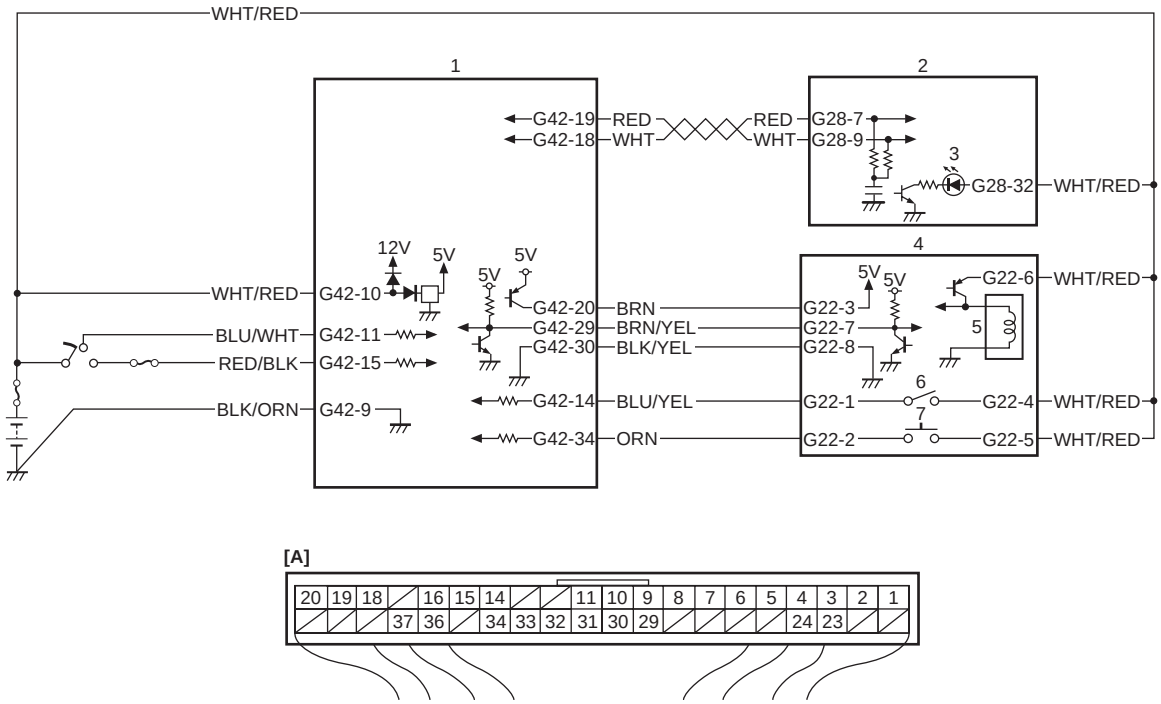
Troubleshooting

Step	Action	Yes	No
1	**Combination meter power and ground circuit check** 1) Turn ignition switch to ON position. *Do warning lights in combination meter other than key indicator lamp light up?*	Go to Step 2.	Check main fuse, circuit fuse, combination meter power and ground circuit.
2	**Driver side door request switch and its circuit check** 1) Check driver side door request switch and its circuit referring to “DTC No. 51 / No. 52 / No. 53: Driver Side / Passenger Side / Rear End Door Request Switch Failure”. *Is it in good condition?*	Go to Step 3.	Repair or replace malfunction part.
3	**Key reminder switch and its circuit check** 1) Turn ignition switch to OFF position. 2) Disconnect connector from ignition switch. 3) Check key reminder switch for operation referring to “Ignition Switch Inspection in Section 9C”. 4) If OK, check for open, short and high resistance in key reminder switch circuit. *Is it in good condition?*	Go to Step 4.	Repair or replace malfunction part.
4	**Keyless start control module power and ground circuit check** 1) Check keyless start control module power and ground circuit for condition referring to “Keyless Start Control Module Power and Ground Circuit Check”. *Is it in good condition?*	Go to Step 5.	Repair circuit.
5	**CAN communication circuit check** 1) Turn ignition switch to OFF position. 2) Disconnect connectors of all control modules communicating by means of CAN. 3) Check CAN communication circuit between control modules for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Substitute a known-good keyless start control module and recheck.	Repair circuit.

Key Indicator Lamp Circuit Check (Key indicator lamp doesn't light when ignition knob switch is pushed.)

S7RS0BA504015

Wiring Diagram



I5RS0CA50005-01

[A]: Keyless start control module connector (viewed from harness side)	4. Steering lock unit
1. Keyless start control module	5. Steering lock solenoid
2. Combination meter	6. Key reminder switch
3. Key indicator lamp	7. Ignition knob switch

Description

When the ignition knob switch is pushed, the key indicator lamp lights up in blue if you carry the remote controller registered in the keyless start control module and it lights in red if you carry the remote controller which has not been registered in the keyless start control module or if you carry no remote controller.

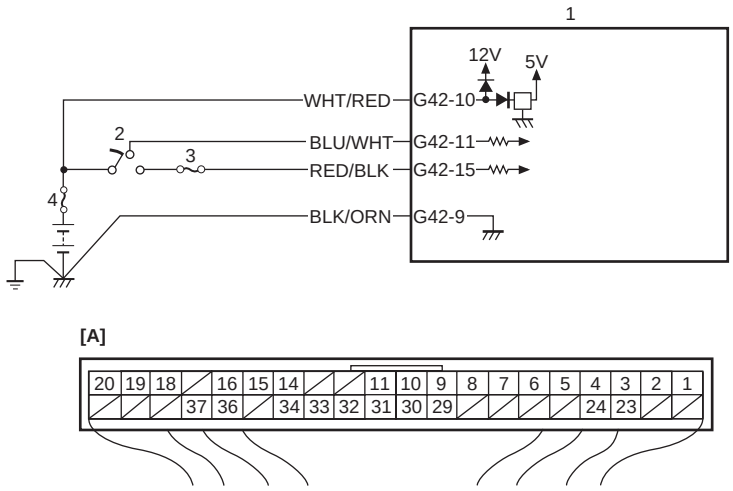
Troubleshooting

Step	Action	Yes	No
1	**Combination meter power and ground circuit check** 1) Turn ignition switch to ON position. *Do warning lights in combination meter other than key indicator lamp light up?*	Go to Step 2.	Check main fuse, circuit fuse, combination meter power and ground circuit.
2	**Keyless start control module power and ground circuit check** 1) Check keyless start control module power and ground circuit for condition referring to “Keyless Start Control Module Power and Ground Circuit Check”. *Is it in good condition?*	Go to Step 3.	Repair circuit.
3	**Steering lock unit ignition knob switch check** 1) Check ignition knob switch of steering lock unit for operation referring to “Steering Lock Unit Inspection”. *Is it in good condition?*	Go to Step 4.	Replace steering lock unit.
4	**Wire harness check** 1) Turn ignition switch to OFF position. 2) Disconnect connector from keyless start control module, steering lock unit and combination meter. 3) Check for open, short and high resistance in. • Between “G22-2” terminal of steering lock unit connector and “G42-34” terminal of keyless start control module connector • Between “G28-7” terminal of combination meter connector and “G42-19” terminal of keyless start control module connector • Between “G28-9” terminal of combination meter connector and “G42-18” terminal of keyless start control module connector *Is it in good condition?*	Go to Step 5.	Repair circuit.
5	**Keyless start system operation check** 1) With remote controller of which ID code is registered in keyless start control module carried with you, try to turn ignition knob switch. *Can it be turned to any position other than “LOCK” position?*	Replace combination meter.	Substitute a known-good keyless start control module and recheck.

Keyless Start Control Module Power and Ground Circuit Check

S7RS0BA504016

Wiring Diagram



I4RS0BA50022-01

[A]: Keyless start control module connector (viewed from harness side)	3. Circuit fuse
1. Keyless start control module	4. Main fuse
2. Ignition switch	

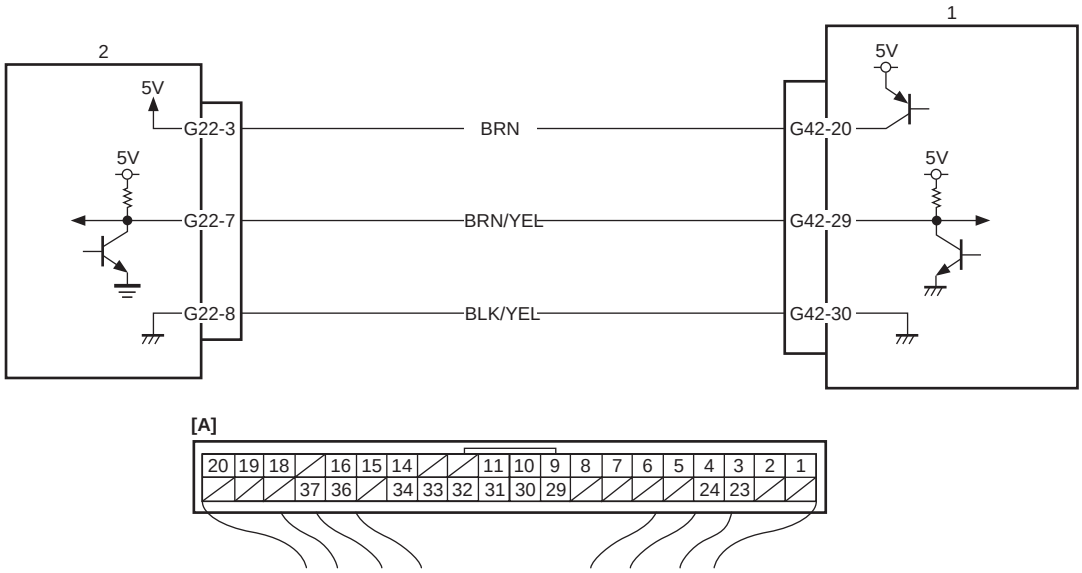
Troubleshooting

Step	Action	Yes	No
1	**Fuse check** 1) Turn ignition switch to OFF position. 2) Check circuit fuse and main fuse for condition. *Are fuses in good condition?*	Go to Step 2.	Replace fuse(s) and check for short.
2	**Power supply circuit check** 1) Disconnect connector from keyless start control module. 2) Check for proper connection to “G42-10”, “G42-11” and “G42-15” terminals of keyless start control module connector. 3) If OK, measure voltage between the following terminals. • When ignition switch is at OFF position Between “G42-10” terminal of keyless start control module connector and vehicle body ground: 10 – 14 V • When ignition switch is at ACC position Between “G42-11” terminal of keyless start control module connector and vehicle body ground: 10 – 14 V • When ignition switch is at ON position Between “G42-15” terminal of keyless start control module connector and vehicle body ground: 10 – 14 V *Is check result satisfactory?*	Go to Step 3.	Repair power supply circuit.
3	**Ground circuit check** 1) Check for proper connection to “G42-9” terminal of keyless start control module connector. 2) If OK, measure resistance between “G42-9” terminal of keyless start control module connector and vehicle body ground. *Is resistance 1 Ω or less?*	Power and ground circuit is in good condition.	Repair ground circuit.

DTC No. 11: Communication Error with Steering Lock Unit

S7RS0BA504017

Wiring Diagram



I4RS0BA50023-01

[A]: Keyless start control module connector (viewed from harness side)	2. Steering lock unit
1. Keyless start control module	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
No communication is available between keyless start control module and steering lock unit	• Steering lock unit and its circuit • Keyless start control module

DTC Confirmation Procedure

1) Clear DTC referring to “DTC Clearance”.
2) Turn ignition knob switch pushing ignition knob switch.
3) Check DTC referring to “DTC Check”.

Troubleshooting

Step	Action	Yes	No
1	*Was “Keyless Start System Check” performed?*	Go to Step 2.	Go to “Keyless Start System Check”.
2	**Steering lock unit circuit check** 1) Disconnect connector from keyless start control module. 2) Check for proper connection to “G42-20”, “G42-29” and “G42-30” terminals of keyless start control module connector. 3) If OK, check for open, short and high resistance in each circuit. • Between “G22-3” terminal of steering lock unit connector and “G42-20” terminal of keyless start control module connector • Between “G22-7” terminal of steering lock unit connector and “G42-29” terminal of keyless start control module connector • Between “G22-8” terminal of steering lock unit connector and vehicle body ground *Is each circuit in good condition?*	Go to Step 3.	Repair circuit.

Step	Action	Yes	No
3	**Steering lock unit power supply voltage check** 1) Connect connector to keyless start control module. 2) Measure voltage between “G22-3” terminal of steering lock unit connector and vehicle body ground. *Is voltage 4 – 6 V?*	Replace steering lock unit.	Substitute a known-good keyless start control module and recheck.

DTC No. 13 / No. 14: Release Signal Error from Steering Lock Unit / Steering Lock Unit Malfunction

S7RS0BA504018

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
DTC No. 13: Although lock release signal is output to steering lock unit, no lock release signal is inputted from steering lock unit. (wire harness is normal) **DTC No. 14:** Although lock release signal is output to steering lock unit, steering lock is not released due to temperature rise of steering lock unit solenoid and no lock release signal is inputted. (wire harness is normal)	• Steering lock unit

DTC Confirmation Procedure

1) Clear DTC referring to “DTC Clearance”.
2) Turn ignition knob switch pushing ignition knob switch.
3) Check DTC referring to “DTC Check”.

Troubleshooting

Replace steering lock unit and recheck.

NOTE

DTC No. 13 is also set is such case where the keyless start control module which was used in another vehicle is installed, the remote controller ID code is registered in it but the ignition key transponder code is not registered in ECM. Therefore, when DTC No. 13 is detected, register the ignition key transponder code in ECM before replacing the steering lock unit.

DTC No. 21 / No. 22: Internal Error of Keyless Start Control Module (EEPROM reading error) / (EEPROM writing error)

S7RS0BA504019

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
DTC No. 21: Data cannot be read from memory in keyless start control module. **DTC No. 22:** Data cannot be written into memory in keyless start control module.	• Keyless start control module

DTC Confirmation Procedure

1) Clear DTC referring to “DTC Clearance”.
2) Turn ignition knob switch pushing ignition knob switch.
3) Push request switch of each door.
4) Check DTC referring to “DTC Check”.

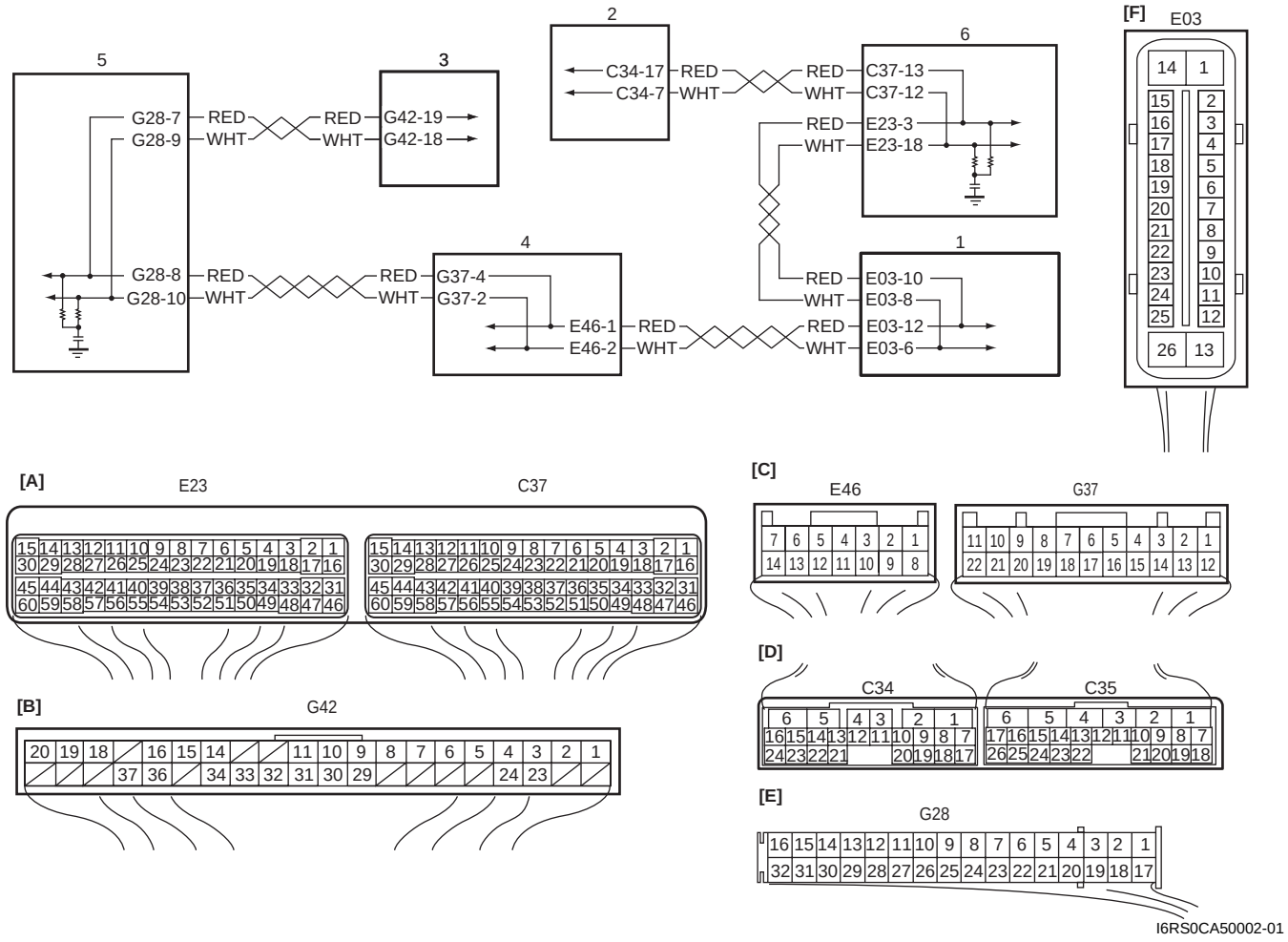
Troubleshooting

Substitute a known-good keyless start control module and recheck.

DTC No. 31: Lost Communication with BCM

S7RS0BA504020

Wiring Diagram



I6RS0CA50002-01

[A]: ECM connector (viewed from harness side)	1. ECM
[B]: Keyless start control module connector (viewed from harness side)	2. TCM (A/T model)
[C]: BCM connector (viewed from harness side)	3. Keyless start control module
[D]: TCM connector (A/T model) (viewed from harness side)	4. BCM
[E]: Combination meter connector (viewed from harness side)	5. Combination meter
[F]: ABS control module connector (viewed from terminal side)	6. ABS control module

DTC Detecting condition and trouble area

DTC detecting condition	Trouble area
Keyless start control module cannot receive data sent by CAN from BCM	• CAN communication circuit • Keyless start control module • Combination meter • BCM

DTC Confirmation Procedure

1) Clear DTC referring to “DTC Clearance”.
2) Turn ignition key knob by pushing ignition key knob.
3) Check DTC referring to “DTC Check”.

Troubleshooting

Step	Action	Yes	No
1	*Was "Keyless Start System Check" performed?*	Go to Step 2.	Go to "Keyless Start System Check".
2	**DTC check of keyless start control module** *Is DTC No. 33 detected?*	Go to "DTC No. 33: Control Module Communication Bus Off".	Go to Step 3.
3	**DTC check of BCM** 1) Check BCM for DTC. *Is DTC U1073, DTC U1100 or DTC U1101 detected?*	Go to applicable DTC diag flow.	Go to Step 4.
4	**Control module connector check** 1) Check connection of connectors of all control modules communicating by means of CAN. 2) Recheck keyless start control module for DTC. *Is DTC No.31 detected?*	Go to Step 5.	Intermittent trouble. Check for intermittent referring to "Intermittent and Poor Connection Inspection in Section 00".
5	**CAN communication circuit check** 1) Disconnect connectors from BCM, combination meter and keyless start control module. 2) Check CAN communication circuit for open, short and high resistance. • Between BCM and combination meter • Between combination meter and keyless start control module *Is each CAN communication circuit in good condition?*	Go to Step 6.	Repair circuit.
6	**CAN communication circuit check** 1) Disconnect connectors of all control modules communicating by means of CAN. 2) Check CAN communication circuit between control modules other than Step 5 for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 7.	Repair circuit.
7	**DTC check of ECM** 1) Connect connectors disconnected control module communications by means of CAN. 2) Check ECM for DTC. *Is DTC P1678 detected?*	Check BCM power and ground circuit. If circuit is OK, substitute a known-good BCM and recheck.	Go to Step 8.

Step	Action	Yes	No
8	**DTC check of keyless start control module** 1) Turn ignition switch to OFF position. 2) Disconnect connector of any one of control module other than keyless start control module. 3) Recheck keyless start control module for DTC. *Is DTC No.31 detected?*	Using same method, disconnect connectors of control module other than keyless start control module one by one to check if DTC No.31 is detected. If DTC No.31 is detected even through connector of control module other than keyless start control module is disconnected, substitute a known-good keyless start control module and recheck.	Check power and ground circuit of disconnected control module and recheck. If circuit is OK, substitute a known-good disconnected control module and recheck.

DTC No. 33: Control Module Communication Bus Off

S7RS0BA504021

Wiring Diagram

Refer to “DTC No. 31: Lost Communication with BCM”.

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
Communication is not available with all control modules connected by CAN	• CAN communication circuit • Combination meter • Keyless start control module • BCM • TCM (A/T model) • ECM • ABS control module

DTC Confirmation Procedure

1) Clear DTC referring to “DTC Clearance”.
2) Start engine and run it for 1 min. or more.
3) Check DTC referring to “DTC Check”.

Troubleshooting

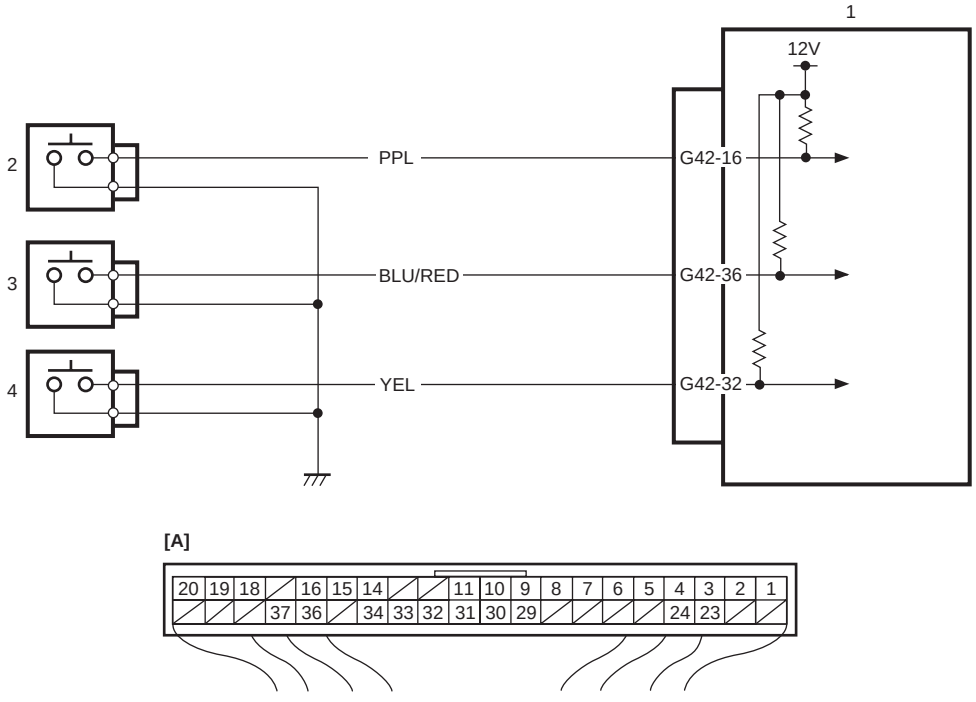
Step	Action	Yes	No
1	*Was “Keyless Start System Check” performed?*	Go to Step 2.	Go to “Keyless Start System Check”.
2	**Control module connector check** 1) Check connection of connectors of all control modules communicating by means of CAN. 2) Recheck keyless start control module for DTC. *Is DTC No. 33 detected?*	Go to Step 3.	Intermittent trouble. Check for intermittent referring to “Intermittent and Poor Connection Inspection in Section 00”.

Step	Action	Yes	No
3	**CAN communication circuit check** 1) Turn ignition switch to OFF position. 2) Disconnect connectors of all control modules communicating by means of CAN. 3) Check CAN communication circuit between control modules for open, short and high resistance. *Is each CAN communication circuit in good condition?*	Go to Step 4.	Repair circuit.
4	**DTC check of keyless start control module** 1) Turn ignition switch to OFF position. 2) Connect connectors of disconnected control modules communicating by means of CAN. 3) Disconnect connector of any one control module other than keyless start control module. 4) Recheck keyless start control module for DTC. *Is DTC No.33 detected?*	Using same method, disconnect connectors of control module other than keyless start control module one by one to check if DTC No.33 is detected. If DTC No.33 is detected even through connector of control module other than keyless start control module is disconnected, substitute a known-good keyless start control module and recheck.	Check power and ground circuit of disconnect control module. If circuit is OK, substitute a known-good disconnected control module and recheck.

DTC No. 51 / No. 52 / No. 53: Driver Side / Passenger Side / Rear End Door Request Switch Failure

S7RS0BA504022

Wiring Diagram



I4RS0BA50026-01

[A]: Keyless start control module connector (viewed from harness side)	3. Passenger side door request switch
1. Keyless start control module	4. Rear end door request switch
2. Driver side door request switch	

DTC Detecting Condition and Trouble Area

DTC detecting condition	Trouble area
DTC No. 51: Input signal from driver side door request switch remains ON, unchanged for 10 minutes or longer. **DTC No. 52:** Input signal from passenger side door request switch remains ON, unchanged for 10 minutes or longer. **DTC No. 53:** Input signal from rear end door request switch remains ON, unchanged for 10 minutes or longer.	• Driver side door request switch and its circuit • Passenger side door request switch and its circuit • Rear end door request switch and its circuit • Keyless start control module

DTC Confirmation Procedure

1) Clear DTC referring to “DTC Clearance”.
2) Push request switch of each door.
3) Check DTC referring to “DTC Check”.

Troubleshooting

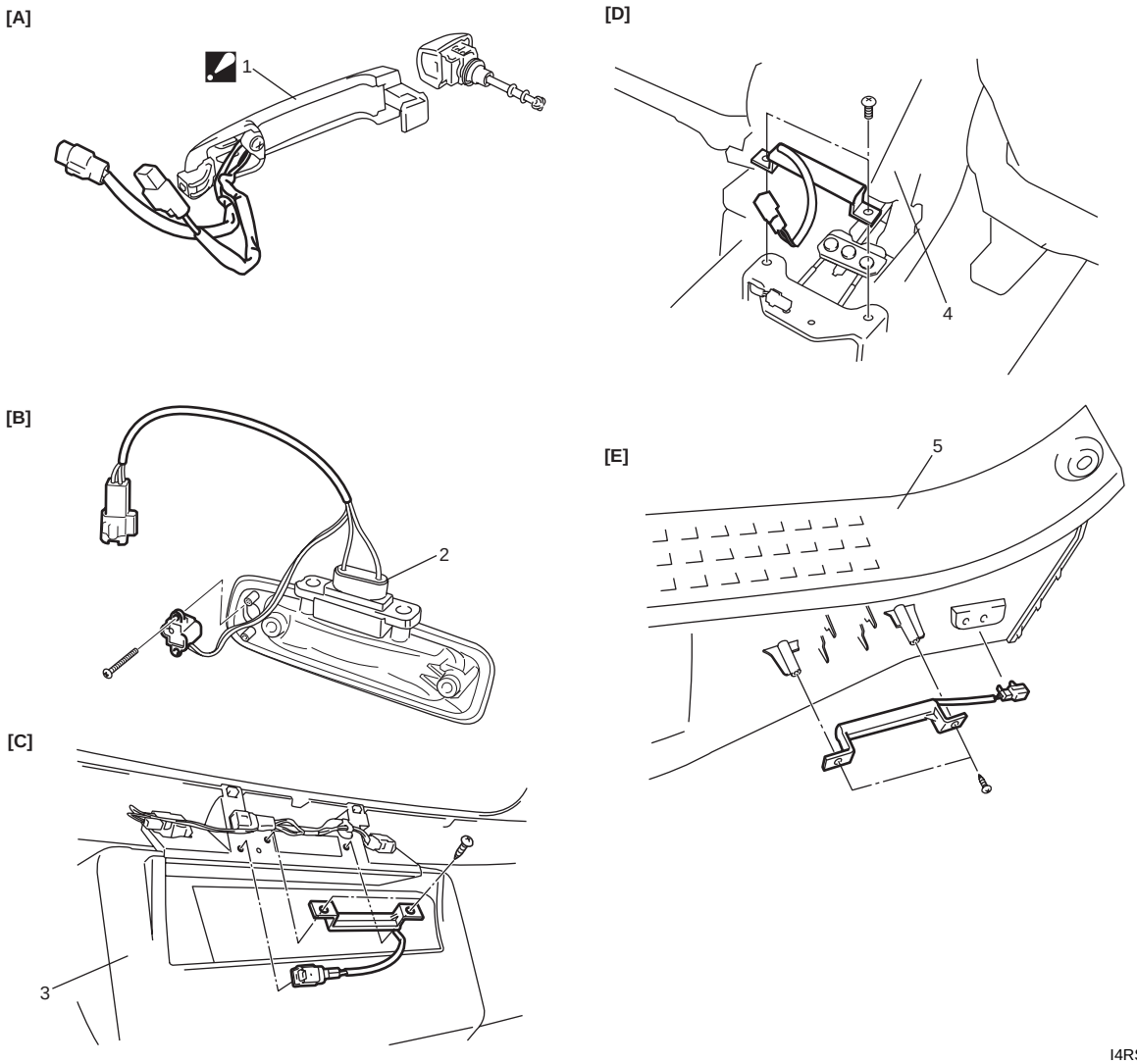
Step	Action	Yes	No
1	*Was “Keyless Start System Check” performed?*	Go to Step 2.	Go to “Keyless Start System Check”.
2	**Keyless start control module voltage check** 1) Turn ignition switch to OFF position. 2) Disconnect connector from each door request switch. 3) Check for proper connection to all terminals of each door request switch connector. 4) If OK, measure voltage between “PPL”, “BLU/RED” or “YEL” terminal of related door request switch connector and vehicle body ground. *Is voltage 10 – 14 V?*	Go to Step 3.	Go to Step 4.
3	**Request switch check** 1) Check related door request switch for function referring to “Front Door (Driver and Passenger Side), Rear End Door Request Switch Inspection”. *Is each switch in good condition?*	Substitute a known-good keyless start control module and recheck.	Replace request switch.
4	**Wire harness check** 1) Turn ignition switch to OFF position. 2) Check for open, short and high resistance in related circuit. • Between “PPL” wire terminal of driver side door request switch connector and “G42-16” terminal of keyless start control module connector • Between “BLU/RED” wire terminal of passenger side door request switch connector and “G42-36” terminal of keyless start control module connector • Between “YEL” wire terminal of rear end door request switch connector and “G42-32” terminal of keyless start control module connector *Is it in good condition?*	Substitute a known-good keyless start control module and recheck.	Repair circuit.

Repair Instructions

Antennas and Request Switches Removal and Installation

S7RS0BA506001

Remove and install antennas and request switches referring to the following figures.



I4RS0BA50027-04

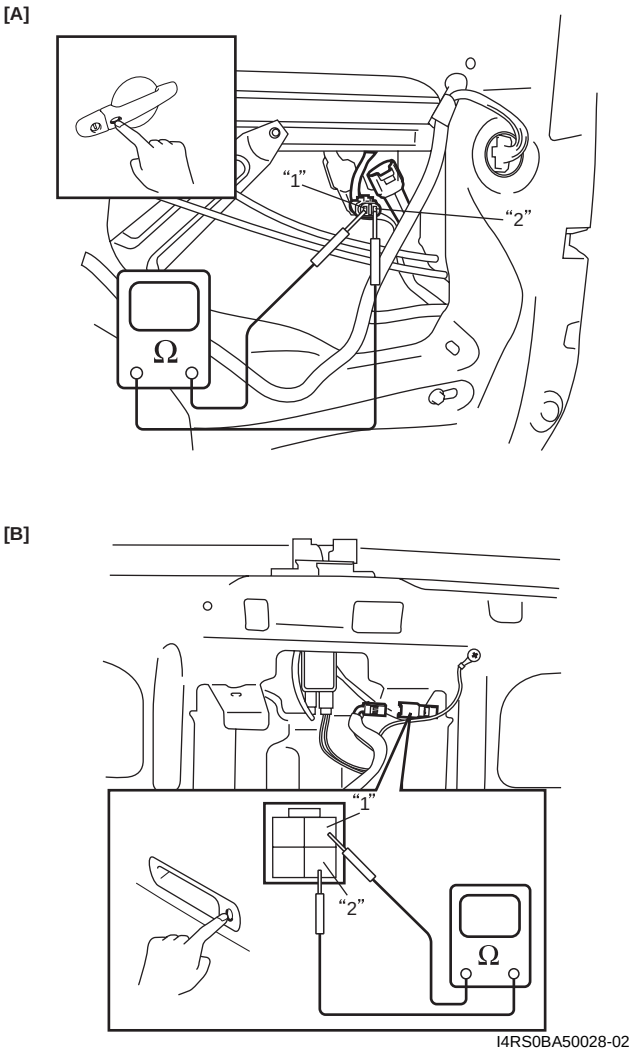
[A]: Front door antenna and request switch (included in outside door handle assembly)	1. Outside handle assembly : Antenna and request switch can not be removed from outside door handle assembly
[B]: Rear end door opener and request switch assembly	2. Rear end opener and request switch
[C]: Rear end door antenna	3. Rear bumper (viewed from inside)
[D]: Center antenna	4. Parking brake lever
[E]: Luggage room antenna	5. Tail end member trim

Front Door (Driver and Passenger Side), Rear End Door Request Switch Inspection

S7RS0BA506002

1) Remove door trim from door panel.
   For front door trim, refer to Step 1) to 3) of “Front Door Glass Removal and Installation in Section 9E”.
   For rear end door trim, refer to Step 1) of “Rear End Door Lock Assembly Removal and Installation in Section 9F”.
2) Check for continuity between terminals “1” and “2” at each switch position as shown below. If check result is not as specified, replace.

Request switch specification
ON position (request switch pushed): Continuity
OFF position (request switch released): No continuity



I4RS0BA50028-02

[A]:	Front door request switch (driver and passenger side)
[B]:	Rear end door request switch

Steering Lock Unit Removal and Installation

S7RS0BA506003

For removal and installation, refer to “Steering Lock Assembly (Ignition Switch) Removal and Installation in Section 6B”.

Steering Lock Unit Inspection

S7RS0BA506004

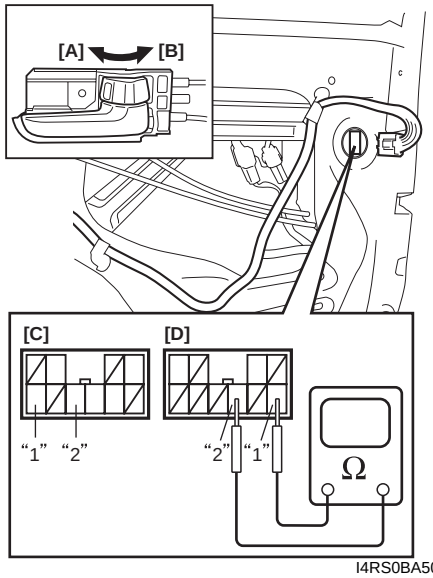
Check key reminder switch and ignition knob switch in steering lock unit for operation referring to “Ignition Switch Inspection in Section 9C”.

Front Door Lock Switch Inspection

S7RS0BA506005

1) Remove door trim from door panel referring to Step 1) to 3) of “Front Door Glass Removal and Installation in Section 9E”.
2) Check for continuity between terminals “1” and “2” at each switch position as shown below. If check result is not as specified, replace.

Door lock switch specification
LOCK position: No continuity
UNLOCK position: Continuity



I4RS0BA50029-01

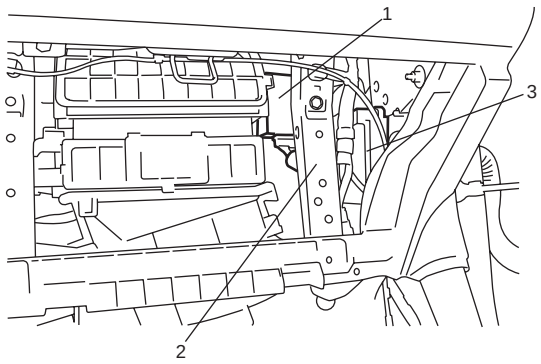
[A]: Lock	[C]: Right side door lock switch
[B]: Unlock	[D]: Left side door lock switch

Keyless Start Control Module Removal and Installation

S7RS0BA506006

Removal

1) Disconnect negative (–) cable at battery.
2) Remove glove box from instrument panel.
3) Remove keyless start control module (1) as follows.
   - For vehicle equipped with M/T:
     a. Disconnect connector from keyless start control module.
     b. Remove keyless start control module mounting bolt and then remove keyless start control module from steering support member (2).
   - For vehicle equipped with A/T:
     a. Remove TCM (3) from vehicle body referring to “Transmission Control Module (TCM) Removal and Installation in Section 5A”.
     b. Disconnect connector from keyless start control module.
     c. Remove keyless start control module mounting bolt and then remove keyless start control module from steering support member.



I4RS0BA50030-01

Installation

For installation, reverse removal procedure.
If Keyless start control module is replaced, register ID code of remote controller into Keyless start control module, referring to “Registration Procedure for Remote Controller ID Code”.

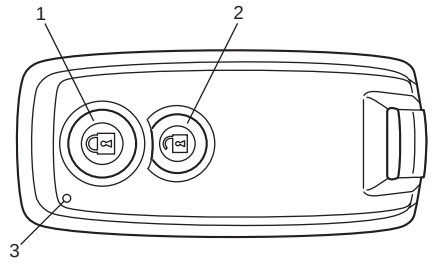
Remote Controller Inspection

S7RS0BA506007

Check that remote controller operation indicator lamp (3) lights up when lock (1) or unlock (2) button of remote controller is pushed.
If it doesn’t light up in this check, replace battery and then recheck. If it doesn’t light up even after battery replacement, replace remote controller.

NOTE

When remote controller transmits lock or unlock signal, it makes operation indicator lamp light up.



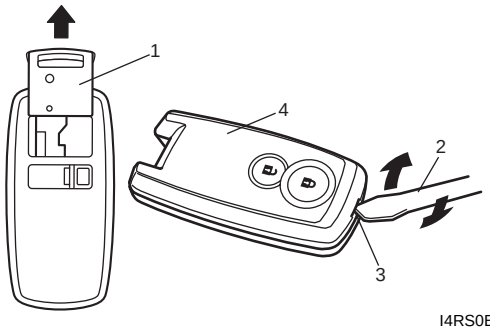
I4RS0BA50031-01

Replacement of Remote Controller Battery

S7RS0BA506008

If remote controller operation indicator lamp fails to light up when lock or unlock button of remote controller is pushed, replace its battery as follows.

1) If ignition key (1) is inserted in remote controller, remove it.
2) With tip of flat blade screwdriver (2) put in slot (3) of remote controller (4), pry it open.



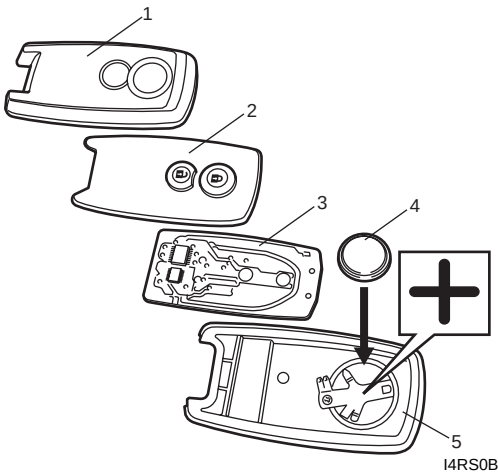
I4RS0BA50032-01

3) Remove battery (4) from lower case (5).

⚠ CAUTION

Use care not to allow grease or dirt to be attached on the printed circuit board and the battery.

4) Replace the battery (lithium disc-type CR 2032 or equivalent battery) so its (+) terminal faces on remote controller lower case.



I4RS0BA50033-01

1. Upper case	3. Printed circuit board
2. Rubber switch	

5) Install printed circuit board and rubber switch to upper case and then fit lower case securely.

NOTE

- **To prevent theft, be sure to break the remote controller before discarding it.**
- **Dispose of the used battery properly according to applicable rules or regulations. Do not dispose of lithium batteries with ordinary household trash.**

Registration Procedure for Remote Controller ID Code

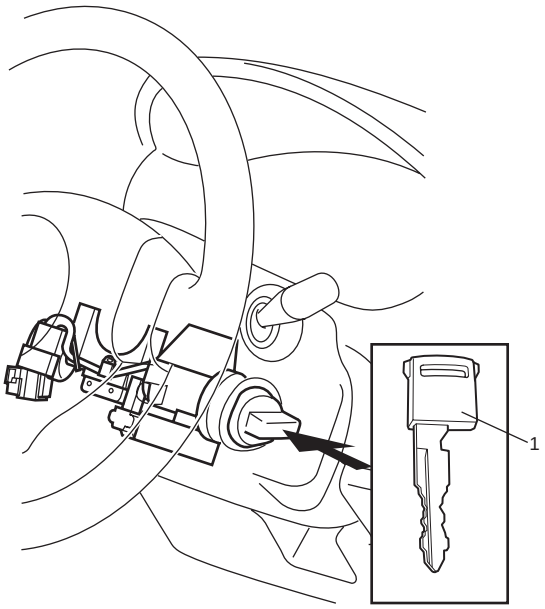
S7RS0BA506009

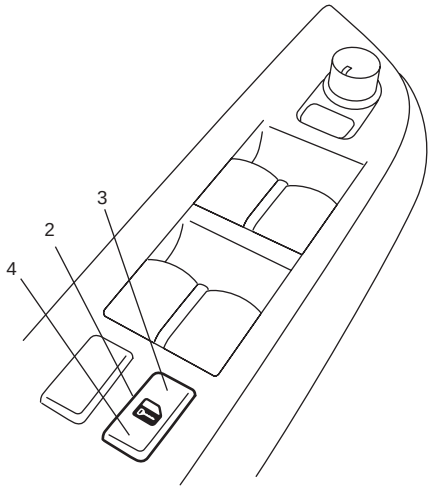
NOTE

- **It is possible to register up to 4 remote controllers in keyless start control module.**
- **Setting keyless start control module to ID code registration mode of remote controller will erase all remote controller ID codes that have been registered in keyless start control module.**
  Therefore, when registering remote controller ID codes in keyless start control module, have all of those to be registered ready and execute their registration at the same time.
- **When registration of more than four remote controller ID codes is attempted, the oldest remote controller ID code will be erased and that inputted after the fourth one will be registered.**
- **When keyless start control module which was used in another vehicle has been installed, it is necessary to perform both registration of remote controller ID code in keyless start control module and registration of ignition key transponder code in ECM. For registration procedure of ignition key transponder code, refer to "Registration of the Ignition Key in Section 10C".**

If remote controller or keyless start control module is replaced with a new one or additional remote controller is necessary, register ID code(s) of remote controller.

1) Sit in driver seat and close all doors.
2) Check that door lock of driver seat is unlocked.
3) Insert ignition key (1) into ignition key cylinder.
4) Perform Steps a) through f) described blow within 25 seconds after Step 3).
   a) First push manual door lock switch (2) toward lock side (3) and then push it toward unlock side (4).
   b) Repeat Step a) 2 more times.
   c) Push lock side of manual door lock switch.
   d) Remove ignition key from ignition key cylinder once and then insert it again.
   e) Repeat Step d) 3 more times.
   f) Start engine and wait for 3 seconds.





I4RS0BA50034-02

NOTE

When 60 seconds elapse after engine is started, the above process to enter registration mode will be cancelled. Therefore, be sure to proceed to the next step within 60 seconds.

5) Turn ignition switch to OFF position.
   When ignition switch is turned to OFF position, buzzer sounds twice and door lock is activated from lock position to unlock position. This operation indicates that keyless start control module has entered registration mode.
6) Push lock or unlock button of remote controller within 30 seconds after Step 5) to be registered.
   When lock or unlock button of remote controller is pushed, buzzer sounds twice, door lock is activated to lock position and then to unlock position. This operation indicates that remote controller ID code has been registered in keyless start control module. If an additional remote controller needs to be registered, repeat the procedure of Step 6) within 30 seconds after Step 5).
7) To end registration mode, remove ignition key from ignition key cylinder or turn it to ON position.
   If engine start function of keyless start system does not work after registration, check ECM if DTC P1615 is detected. If it is detected, go to “DTC P1615: ID Code Does Not Registered (Vehicle equipped with keyless start system only) in Section 10C”. If it is not detected, perform registration procedure again.