

Left-front Solenoid

Diagnostic Trouble Code (DTC) 7-2: Left-front Solenoid Diagnosis

During the initial diagnosis, after the fail-safe relays are turned on, and during the regular diagnosis, the ABS control unit monitors the voltage from the battery for the six solenoids (when the ABS is not functioning).

If the detection circuit for the left-front solenoid detects 0 V, the ABS control unit keeps the ABS indicator light on after the engine is started. It turns the ABS indicator light on again if it detects 0 V after the light goes off.

Possible causes:

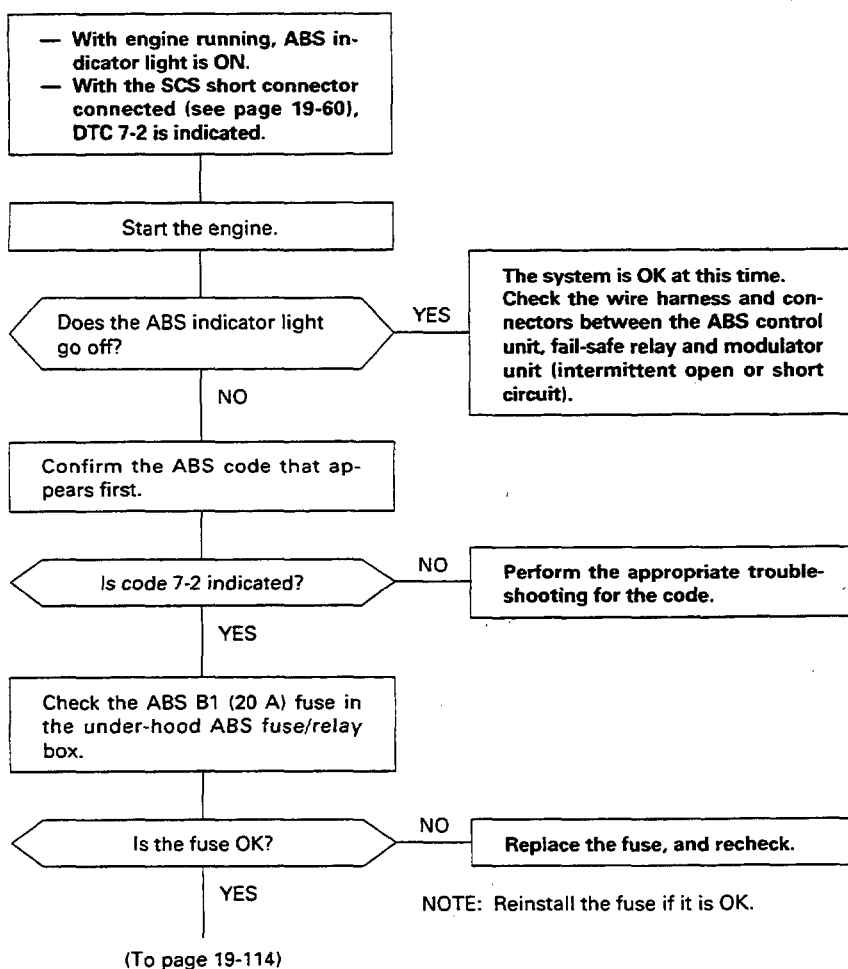
- Front fail-safe relay stuck OFF
- Open circuit in the left-front solenoid drive circuits between the under-hood ABS fuse/relay box and ABS control unit
- Short circuit to body ground in the left-front solenoid drive circuits between the solenoids and ABS control unit
- Faulty left-front solenoid drive transistor (ON) in the ABS control unit

The ABS control unit momentarily outputs the ON signal to each solenoid (too momentary to turn the solenoid on) during the initial diagnosis, and each time the car is started, to check the voltage from the battery with the detection circuit.

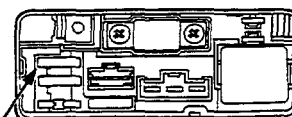
If the detection circuit for the left-front solenoids detects battery voltage at this time, the ABS control unit keeps the ABS indicator light on. It turns the ABS indicator light on again if it detects the battery voltage when the car is started.

Possible causes:

- Short circuit to power in the left-front solenoid drive circuits between the solenoids and ABS control unit
- Faulty left-front solenoid drive transistor (OFF) in the ABS control unit
- Short circuit to power in the left-front solenoid drive circuits in the modulator wire harness or solenoids
- Short circuit to the left-front solenoid outlet circuit in the inlet circuit between the solenoids and ABS control unit
- Short circuit to the right-front solenoid inlet or outlet circuit in the left-front solenoid inlet or outlet circuit between the solenoids and ABS control unit



UNDER-HOOD ABS FUSE/RELAY BOX



ABS B1 (20 A) FUSE

(cont'd)

Troubleshooting

Left-front Solenoid (cont'd)

(From page 19-113)

Measure the voltage between the under-hood ABS fuse/relay box 4P connector No. 4 (WHT/GRN) terminal and body ground.

Is there battery voltage?

NO

Replace the under-hood ABS fuse/relay box.
(Internal open)

YES

Remove the front fail-safe relay.

Wire colors of the front fail-safe relay connector: WHT/GRN, BRN/BLK, YEL/GRN, BLK

Measure the voltage between the front fail-safe relay connector No. 1 (WHT/GRN) terminal and body ground.

Is there battery voltage?

NO

Repair open in the WHT/GRN wire between the under-hood ABS fuse/relay box and front fail-safe relay.

YES

Check the front fail-safe relay
(see page 19-142).

Is the relay OK?

NO

Replace the front fail-safe relay.

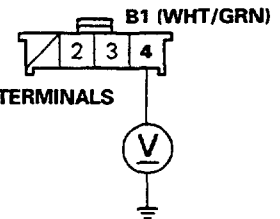
YES

Disconnect the modulator unit 14P connector.

Connect the front fail-safe relay connector No. 1 (WHT/GRN) and No. 3 (BRN/BLK) terminals using a jumper wire.

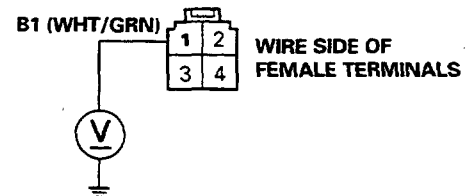
(To page 19-115)

UNDER-HOOD ABS FUSE/RELAY BOX
4P CONNECTOR

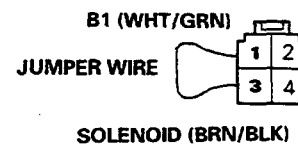


WIRE SIDE OF FEMALE TERMINALS

FRONT FAIL-SAFE RELAY CONNECTOR



WIRE SIDE OF FEMALE TERMINALS



(From page 19-114)

Measure the voltage between the modulator unit 14P connector No. 7 (BRN/BLK) and No. 10 (BRN/BLK) terminals and body ground.

Is there battery voltage?

NO

Repair open in the BRN/BLK wire(s) between the front fail-safe relay and modulator unit.

YES

Measure the resistance between the modulator unit 14P connector terminals to determine the solenoid standard resistance (A type or B type).

Inlet:

- No. 8 (WHT/BLK) and No. 12 (RED/BLK)
- No. 9 (WHT) and No. 13 (RED/WHT)

Outlet:

- No. 1 (YEL/BLK) and No. 5 (GRY/BLK)
- No. 2 (YEL/WHT) and No. 6 (GRY/WHT)

Measure the resistance between the modulator unit 14P connector No. 3 (YEL/BLU) and No. 7 (GRY/BLU) terminals, and the No. 10 (WHT/BLU) and No. 14 (RED/BLU) terminals.

Is the resistance as specified?
Inlet: 2.5 – 2.9 Ω or 6.5 – 7.5 Ω
Outlet: 2.5 – 2.9 Ω or 3.3 – 3.9 Ω

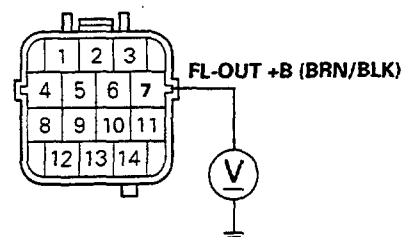
NO

Visually inspect the modulator wire harness. If the wire harness is OK, replace the modulator unit. (Open or short in the left-front inlet or outlet solenoid)

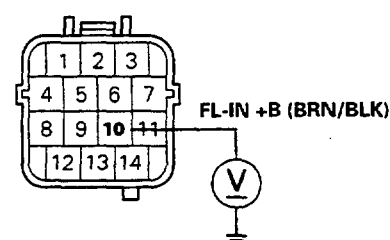
YES

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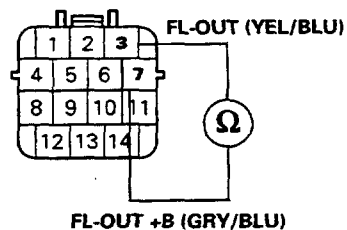
MODULATOR UNIT 14P CONNECTOR



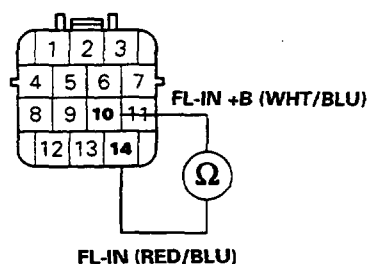
TERMINAL SIDE OF MALE TERMINALS



MODULATOR UNIT 14P CONNECTOR



WIRE SIDE OF FEMALE TERMINALS



(cont'd)

Troubleshooting

Left-front Solenoid (cont'd)

(From page 19-115)

Check for continuity between the modulator unit 14P connector No. 3 (YEL/BLU) and No. 14 (RED/BLU) terminals and body ground.

Is there continuity?

YES

Visually inspect the modulator wire harness. If the wire harness is OK, replace the modulator unit. (Short to body ground in the left-front inlet or outlet solenoid)

NO

Check for continuity between the modulator unit 14P connector No. 14 (RED/BLU) terminal and following terminals:

- No. 3 (YEL/BLU): Left-front outlet
- No. 12 (RED/BLK): Right-front inlet
- No. 1 (YEL/BLK): Right-front outlet

Is there continuity?

YES

Replace the modulator wire harness. (Short to the YEL/BLU, RED/BLK or YEL/BLK wire in the RED/BLU wire)

NO

Check for continuity between the modulator unit 14P connector No. 3 (YEL/BLU) terminal and following terminals:

- No. 12 (RED/BLK): Right-front inlet
- No. 1 (YEL/BLK): Right-front outlet

Is there continuity?

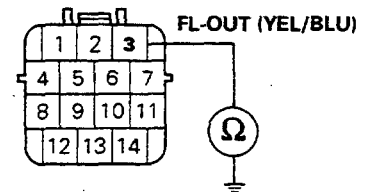
YES

Replace the modulator wire harness. (Short to the RED/BLK or YEL/BLK wire in the YEL/BLU wire)

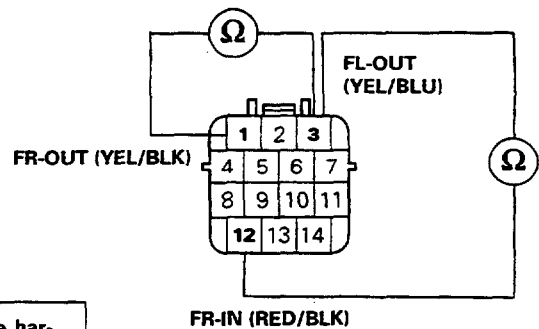
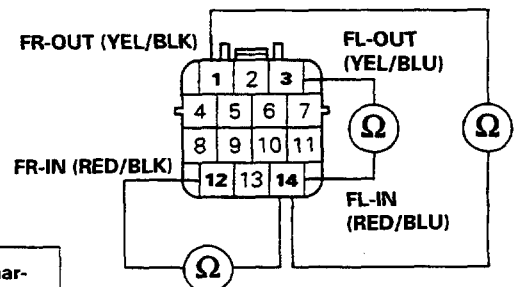
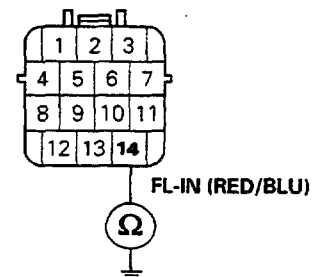
NO

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MODULATOR UNIT 14P CONNECTOR



WIRE SIDE OF FEMALE TERMINALS



(From page 19-116)

Disconnect the ABS control unit 26P connector.

Check for continuity between the ABS control unit 26P connector No. 14 (YEL/BLU) and No. 1 (RED/BLU) terminals and body ground.

Is there continuity?

YES

Repair short to body ground in the YEL/BLU or RED/BLU wire between the ABS control unit and modulator unit.

NO

Check for continuity between the ABS control unit 26P connector No. 1 (RED/BLU) and following terminals.

- No. 14 (YEL/BLU): Left-front outlet
- No. 2 (RED/BLK): Right-front inlet
- No. 15 (YEL/BLK): Right-front outlet

Is there continuity?

YES

Repair short to the YEL/BLU, RED/BLK or YEL/BLK wire in the RED/BLU wire between the ABS control unit and modulator unit.

NO

Check for continuity between the ABS control unit 26P connector No. 14 (YEL/BLU) and following terminals.

- No. 2 (RED/BLK): Right-front inlet
- No. 15 (YEL/BLK): Right-front outlet

Is there continuity?

YES

Repair short to the RED/BLK or YEL/BLK wire in the YEL/BLU wire between the ABS control unit and modulator unit.

NO

(To page 19-118)

ABS CONTROL UNIT 26P CONNECTOR

| | | | | | | | | | | | | |
|----|----|----|----|----|--|--|--|--|----|----|----|----|
| 1 | 2 | 3 | 5 | | | | | | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 19 | | | | | 24 | 25 | 26 | |

FL-OUT (YEL/BLU)



WIRE SIDE OF FEMALE TERMINALS

FL-IN (RED/BLU)



| | | | | | | | | | | | | |
|----|----|----|----|----|--|--|--|--|----|----|----|----|
| 1 | 2 | 3 | 5 | | | | | | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 19 | | | | | 24 | 25 | 26 | |



FL-IN (RED/BLU)



FL-OUT (YEL/BLU)

FR-IN (RED/BLK)

FR-OUT (YEL/BLK)

| | | | | | | | | | | | | |
|----|----|----|----|----|--|--|--|--|----|----|----|----|
| 1 | 2 | 3 | 5 | | | | | | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 19 | | | | | 24 | 25 | 26 | |



FL-OUT (YEL/BLU)

FR-IN (RED/BLK)

FR-OUT (YEL/BLK)

| | | | | | | | | | | | | |
|----|----|----|----|----|--|--|--|--|----|----|----|----|
| 1 | 2 | 3 | 5 | | | | | | 10 | 11 | 12 | 13 |
| 14 | 15 | 16 | 17 | 19 | | | | | 24 | 25 | 26 | |



(cont'd)

Troubleshooting

Left-front Solenoid (cont'd)

(From page 19-117)

Connect the modulator unit 14P connector.

Measure the voltage between the ABS control unit 26P connector No. 14 (YEL/BLU) and No. 1 (RED/BLU) terminals and body ground.

Is there battery voltage?

NO

Repair open in the YEL/BLU or RED/BLU wire between the ABS control unit and modulator unit.

YES

Disconnect the ABS control unit 22P connector.

Check for continuity between the ABS control unit 26P connector No. 25 (BLK) terminal and body ground.

Is there continuity?

NO

Repair open in the BLK wire between the ABS control unit and body ground, or a poor ground.

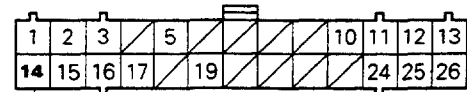
YES

Remove the rear fail-safe relay.

Remove the jumper wire from the front fail-safe relay connector.

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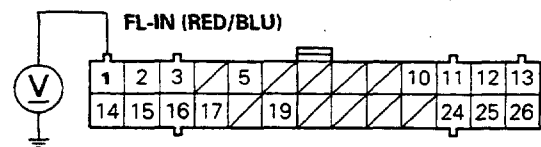
ABS CONTROL UNIT 26P CONNECTOR



FL-OUT (YEL/BLU)



WIRE SIDE OF FEMALE TERMINALS



FL-GND (BLK)

