

Troubleshooting

DTC 7-2: Left-front Solenoid

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.

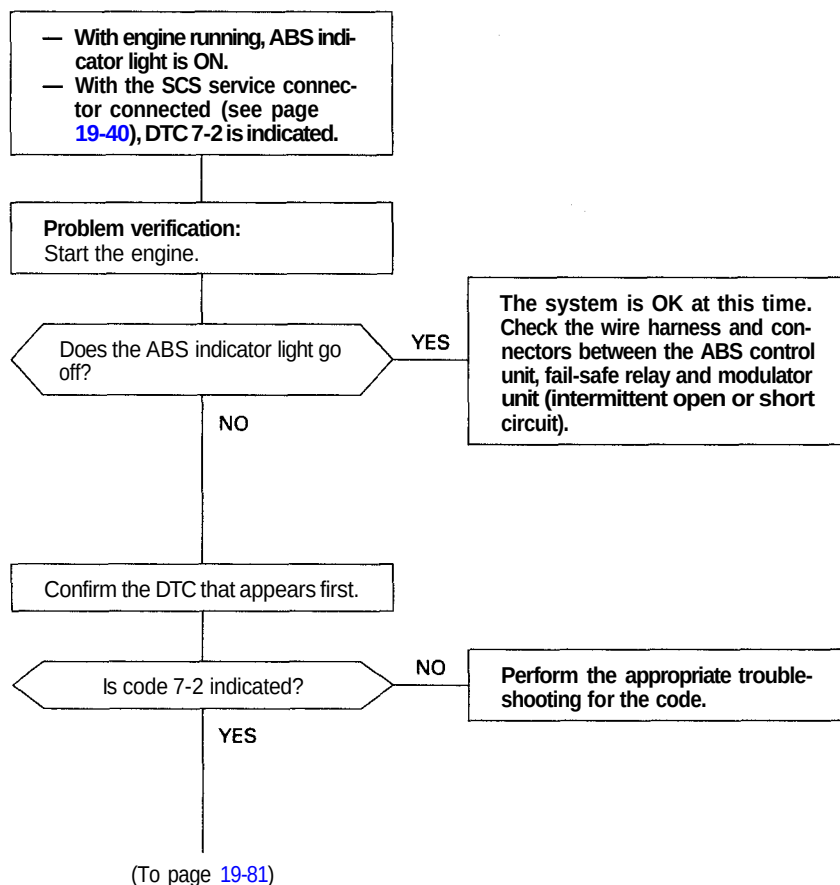
Possible causes:

- Front fail-safe relay stuck OFF
- Open circuit in the left-front solenoid drive circuits between the under-hood 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.

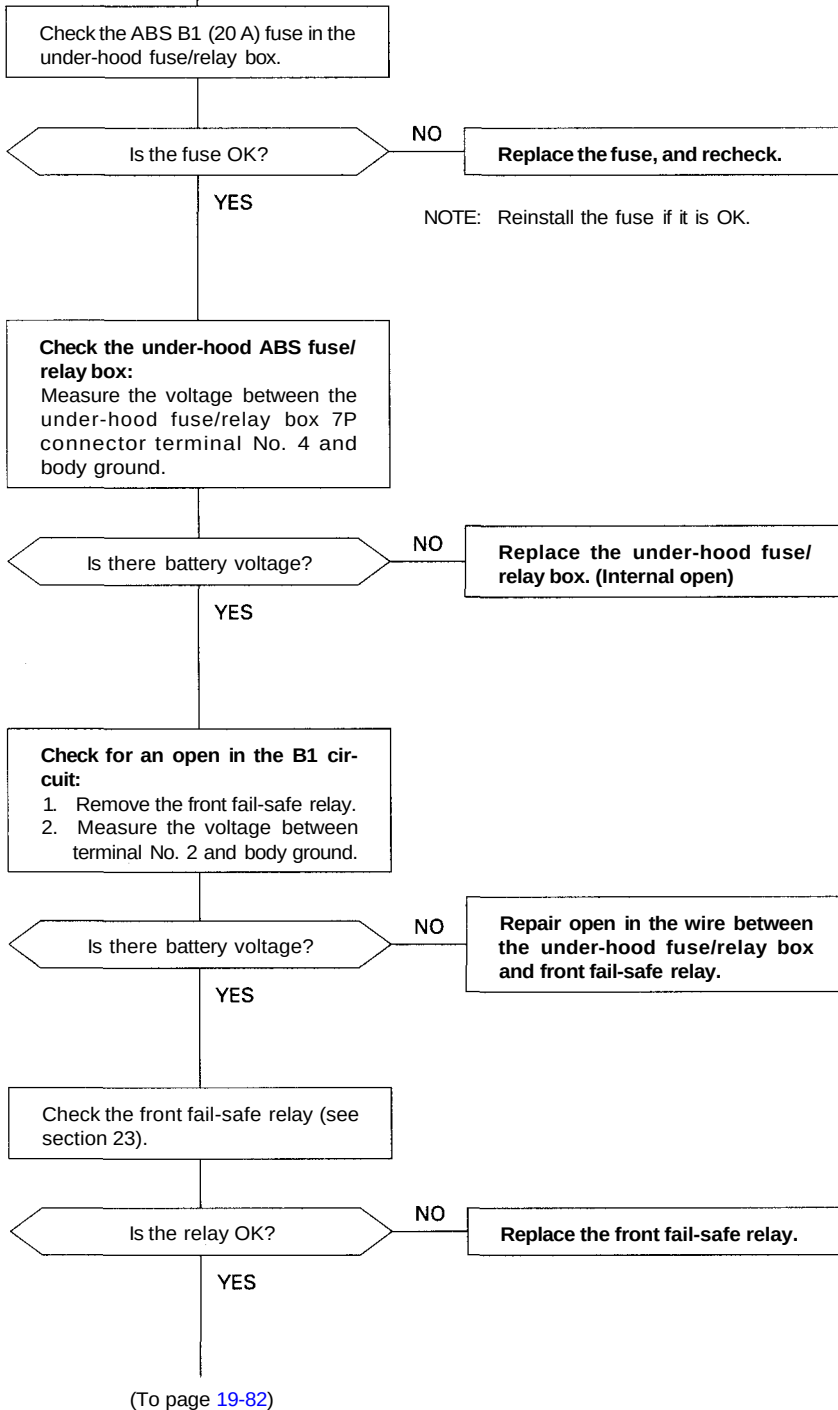
The ABS control unit momentarily outputs the ON signal to each solenoid (too momentary to turn the solenoid on) during the initial diagnosis, and each time the vehicle is driven, to check the voltage from the battery with the detection circuit. If the detection circuit for the left-front solenoids detects 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 vehicle is driven.

Possible causes:

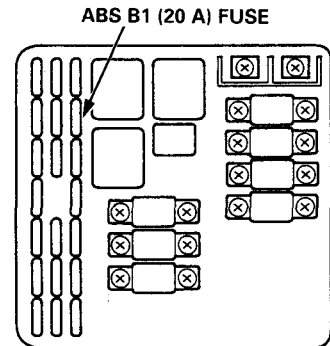
- Short circuit to power in the left-front solenoid drive circuits between the solenoids and ABS control unit
- Faulty left-front solenoid drive transistor (OFF) in the ABS control unit
- Short circuit to power in the left-front solenoid drive circuits in the modulator wire harness or solenoids
- Short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



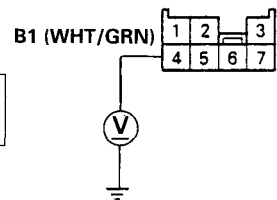
(From page 19-80)



UNDER-HOOD FUSE/RELAY BOX

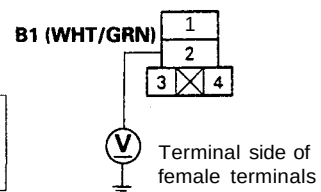


UNDER-HOOD FUSE/RELAY BOX 7P CONNECTOR



Wire side of female terminals

FRONT FAIL-SAFE RELAY CONNECTOR



Terminal side of female terminals

(cont'd)

Troubleshooting

DTC 7-2: Left-front Solenoid (cont'd)

(From page 19-81)

Check for an open in the SOLENOID circuit:

1. Connect the front fail-safe relay connector terminals No. 1 and No. 2 using a jumper wire.
2. Disconnect the modulator unit 14P connector.
3. Measure the voltage between body ground and terminals No. 7 and No. 10 individually.

Is there battery voltage?

YES

NO

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

Check the solenoid:

1. Measure the resistance between the modulator unit 14P connector terminals to determine the solenoid standard resistance (A type or B type).
Inlet:
— No. 8 and No. 12
— No. 9 and No. 13
Outlet:
— No. 1 and No. 5
— No. 2 and No. 6
2. Measure the resistance between the modulator unit 14P connector terminals No. 3 and No. 7, and terminals No. 10 and No. 14.

NOTE:

	STANDARD RESISTANCE	
	A TYPE	B TYPE
Inlet Solenoid	2.5-2.9 Ω	6.5-7.5 Ω
Outlet Solenoid	2.5-2.9 Ω	3.3-3.9 Ω

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

YES

Check for a short to body ground in the solenoid:

Check for continuity between the modulator unit 14P connector terminals No. 3 and No. 14 and body ground.

Is there continuity?

YES

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

NO

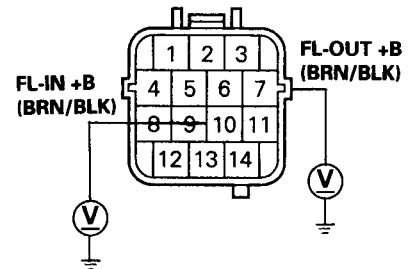
(To page 19-83)

FRONT FAIL-SAFE RELAY CONNECTOR SOLENOID (BRN/BLK)



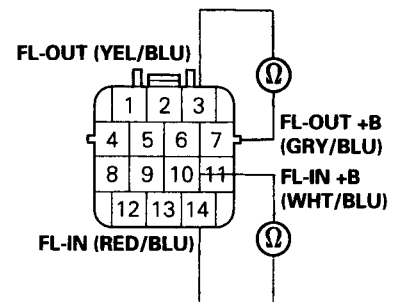
Terminal side of female terminals

MODULATOR UNIT 14P CONNECTOR

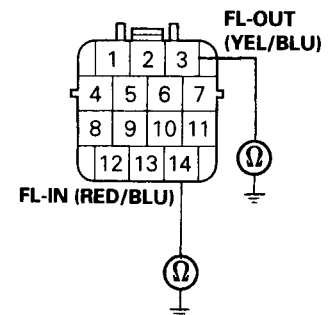


Terminal side of male terminals

MODULATOR UNIT 14P CONNECTOR



Wire side of female terminals



(From page 19-82)

Check for a short in the modulator wire harness:

Check for continuity between the modulator unit 14P connector terminal No. 14 and the following terminals:

- No. 3: Left-front outlet
- No. 12: Right-front inlet
- No. 1: Right-front outlet

Is there continuity?

YES

Replace the modulator wire harness. (Short to the FL-OUT, FR-IN or FR-OUT circuit in the FL-IN circuit)

NO

Check for a short in the modulator wire harness:

Check for continuity between the modulator unit 14P connector terminal No. 3 and the following terminals:

- No. 12: Right-front inlet
- No. 1: Right-front outlet

Is there continuity?

YES

Replace the modulator wire harness. (Short to the FR-IN or FR-OUT circuit in the FL-OUT circuit)

NO

Check for a short to body ground in the FL-IN and FL-OUT circuit:

1. Disconnect the ABS control unit 26P connector.
2. Check for continuity between body ground and terminals No. 1 and No. 14 individually.

Is there continuity?

YES

Repair short to body ground in the FL-IN or FL-OUT circuit between the ABS control unit and modulator unit.

NO

Check for a short in the FL-IN circuit:

Check for continuity between the ABS control unit 26P connector terminal No. 1 and the following terminals:

- No. 14: Left-front outlet
- No. 2: Right-front inlet
- No. 15: Right-front outlet

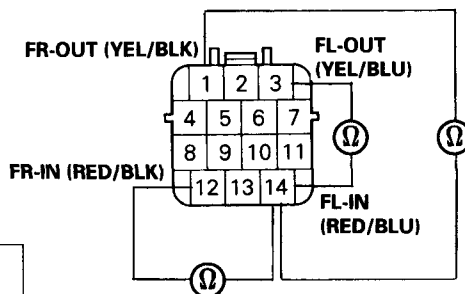
Is there continuity?

YES

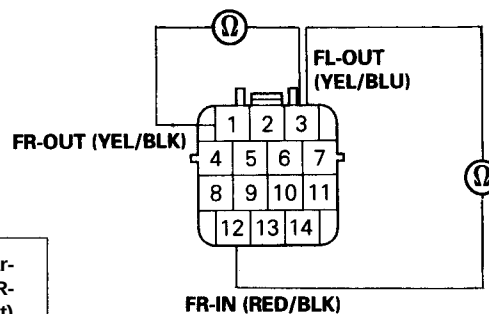
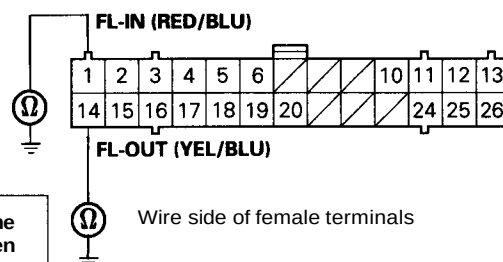
Repair short to the FL-OUT, FR-IN or FR-OUT circuit in the FL-IN circuit between the ABS control unit and modulator unit.

NO

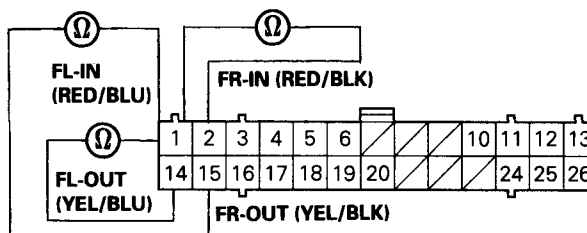
(To page 19-84)

MODULATOR UNIT 14P CONNECTOR

Wire side of female terminals

**ABS CONTROL UNIT 26P CONNECTOR**

Wire side of female terminals



(cont'd)

Troubleshooting

DTC 7-2: Left-front Solenoid (cont'd)

(From page 19-83)

Check for a short in the FL-OUT circuit:
Check for continuity between the ABS control unit 26P connector terminal No. 14 and the following terminals:
— No. 2 : Right-front inlet
— No. 15: Right-front outlet

Is there continuity?

YES

Repair short to the FR-IN or FR-OUT circuit in the FL-OUT circuit between the ABS control unit and modulator unit.

NO

Check for an open in the FL-IN and FL-OUT circuits:

1. Connect the modulator unit 14P connector.
2. Measure the voltage between body ground and the ABS control unit 26P connector terminals No. 1 and No. 14 individually.

Is there battery voltage?

NO

Repair open in the FL-IN or FL-OUT circuit between the ABS control unit and modulator unit.

YES

Check for an open in the GND circuit:

1. Disconnect the ABS control unit 22P connector.
2. Check for continuity between the ABS control unit 26P connector terminal No. 25 and body ground.

Is there continuity?

NO

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

YES

Check for a short to body ground in the FSR circuit:

1. Remove the rear fail-safe relay.
2. Remove the jumper wire from the front fail-safe relay connector.
3. Check for continuity between the ABS control unit 22P connector terminal No. 1 and body ground.

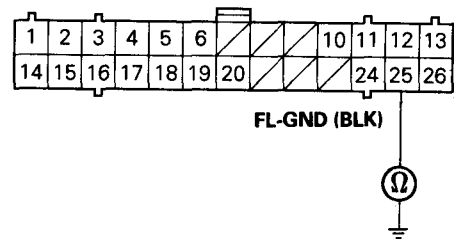
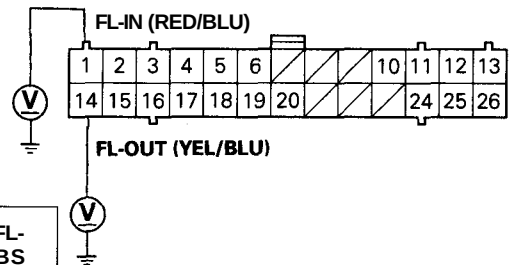
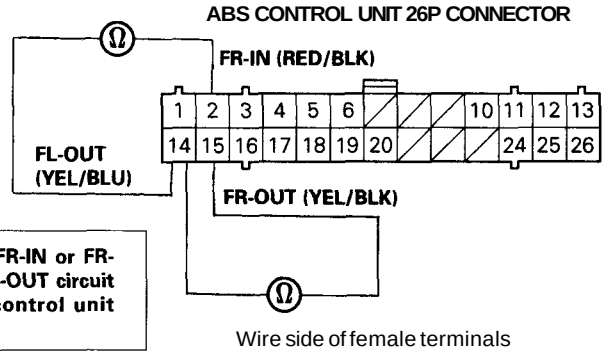
Is there continuity?

YES

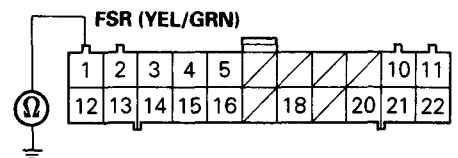
Repair short to body ground in the wire between the ABS control unit and front fail-safe relay.

NO

(To page 19-85)



ABS CONTROL UNIT 22P CONNECTOR



Wire side of female terminals

(From page 19-84)

Check for an open in the FSR circuit:

1. Connect the front fail-safe relay terminal No. 4 to body ground with a jumper wire.
2. Check for continuity between the ABS control unit 22P connector terminal No. 1 and body ground.

Is there continuity?

NO

Repair open in the wire between the ABS control unit and front fail-safe relay.

YES

Check for an open in the GND circuit:

Check for continuity between the front fail-safe relay connector terminal No. 3 and body ground.

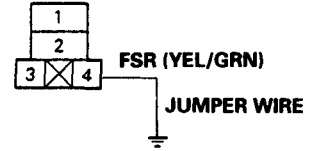
Is there continuity?

NO

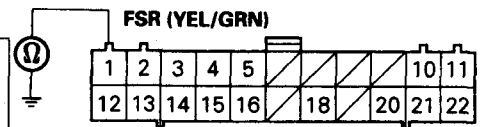
Repair open in the wire between the front fail-safe relay and body ground, or poor ground.

YES

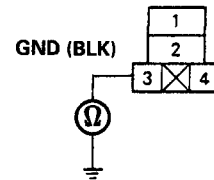
Check for loose ABS control unit connectors. If necessary, substitute a known-good ABS control unit and recheck.

FRONT FAIL-SAFE RELAY CONNECTOR

Terminal side of female terminals

ABS CONTROL UNIT 22P CONNECTOR

Wire side of female terminals

FRONT FAIL-SAFE RELAY CONNECTOR

Terminal side of female terminals