

HVAC (Heating, Ventilation, and Air Conditioning)

HVAC (Heating, Ventilation, and Air Conditioning)

Special Tools 21-2

Climate Control

Component Location Index 21-3
A/C Service
 Tips and Precautions 21-6
A/C System Inspection 21-6
A/C Refrigerant Oil
 Replacement 21-7
A/C Line Replacement 21-8
General Troubleshooting
 Information 21-9
DTC Troubleshooting Index 21-15
Symptom Troubleshooting
 Index 21-16
System Description 21-19
Circuit Diagram 21-26
DTC Troubleshooting 21-28
Climate Control
 Power and Ground Circuit
 Troubleshooting 21-53
Navigation Communication
 Line Circuit
 Troubleshooting 21-54
Radiator and A/C Condenser
 Fan Low Speed Circuit
 Troubleshooting 21-56
A/C Condenser Fan High Speed
 Circuit Troubleshooting 21-60
A/C Compressor Clutch Circuit
 Troubleshooting 21-62
A/C Signal Circuit
 Troubleshooting 21-64
In-car Temperature Sensor
 Test 21-67
In-car Temperature Sensor
 Replacement 21-67
Outside Air Temperature
 Sensor Test 21-68
Outside Air Temperature
 Sensor Replacement 21-68
Sunlight Sensor Test 21-69
Sunlight Sensor
 Replacement 21-69
Evaporator Temperature
 Sensor Test 21-70

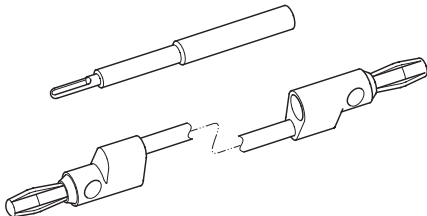
Power Transistor Test 21-71
Air Mix Control Motor Test 21-72
Air Mix Control Motor
 Replacement 21-72
Mode Control Motor Test 21-73
Mode Control Motor
 Replacement 21-73
Recirculation Control Motor
 Test 21-74
Recirculation Control Motor
 Replacement 21-74
Climate Control Unit
 Removal/Installation 21-75
Dust and Pollen Filter
 Replacement 21-75
Blower Unit
 Removal/Installation 21-76
Blower Unit Component
 Replacement 21-77
Evaporator Core
 Replacement 21-78
Expansion Valve
 Replacement 21-80
* Heater Unit/Core
 Replacement 21-81
A/C Compressor
 Replacement 21-83
A/C Compressor Clutch
 Check 21-85
A/C Compressor Clutch
 Overhaul 21-86
A/C Compressor
 Thermal Protector
 Replacement 21-87
A/C Compressor Relief Valve
 Replacement 21-87
A/C Condenser
 Replacement 21-88
Receiver/Dryer Desiccant
 Replacement 21-89
Refrigerant Recovery 21-90
System Evacuation 21-91
System Charging 21-92
Refrigerant Leak Check 21-93
A/C System Noise Check 21-97
A/C System Test 21-99



HVAC (Heating, Ventilation, and Air Conditioning)

Special Tools

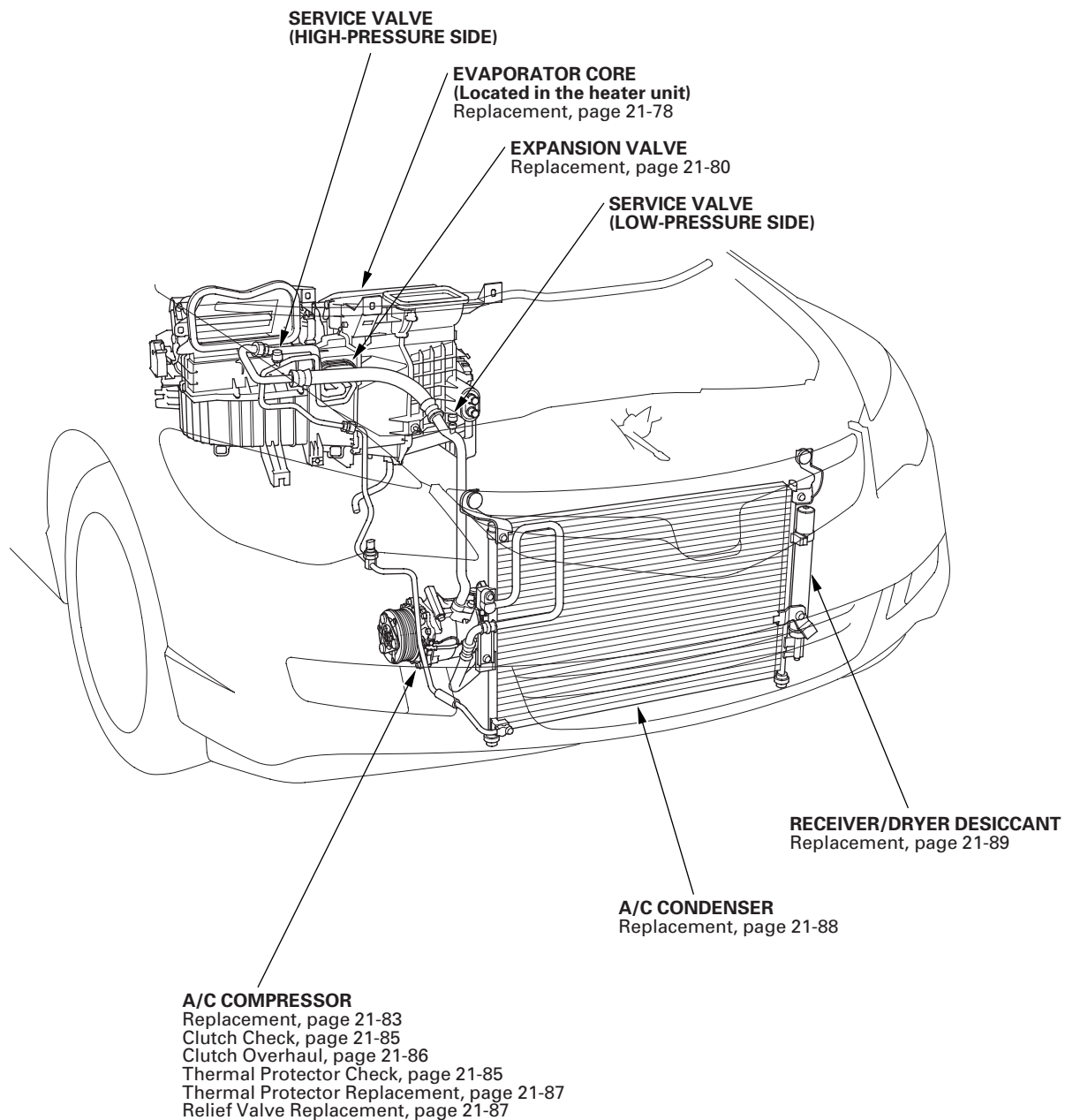
Ref. No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2



①



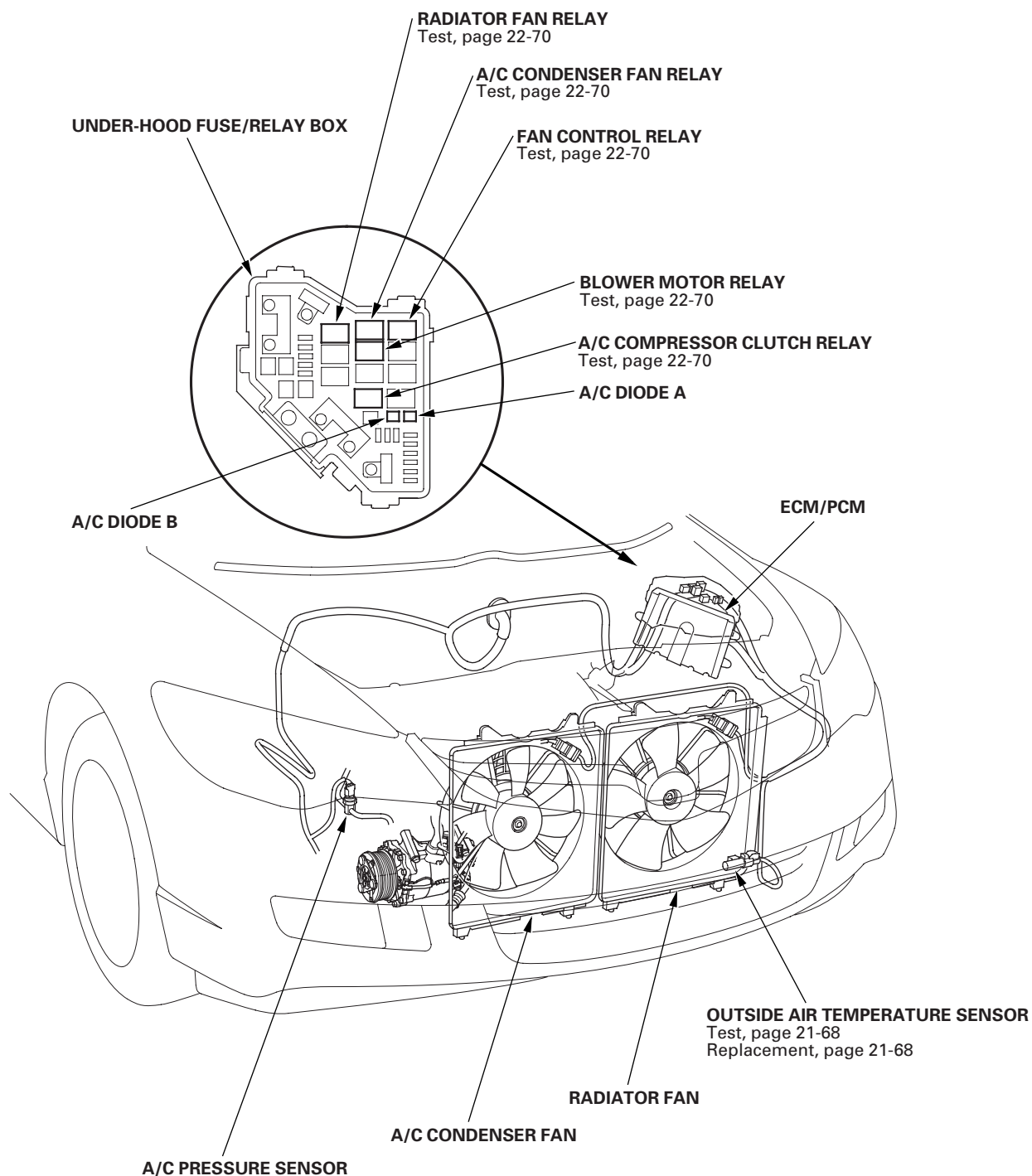
Component Location Index

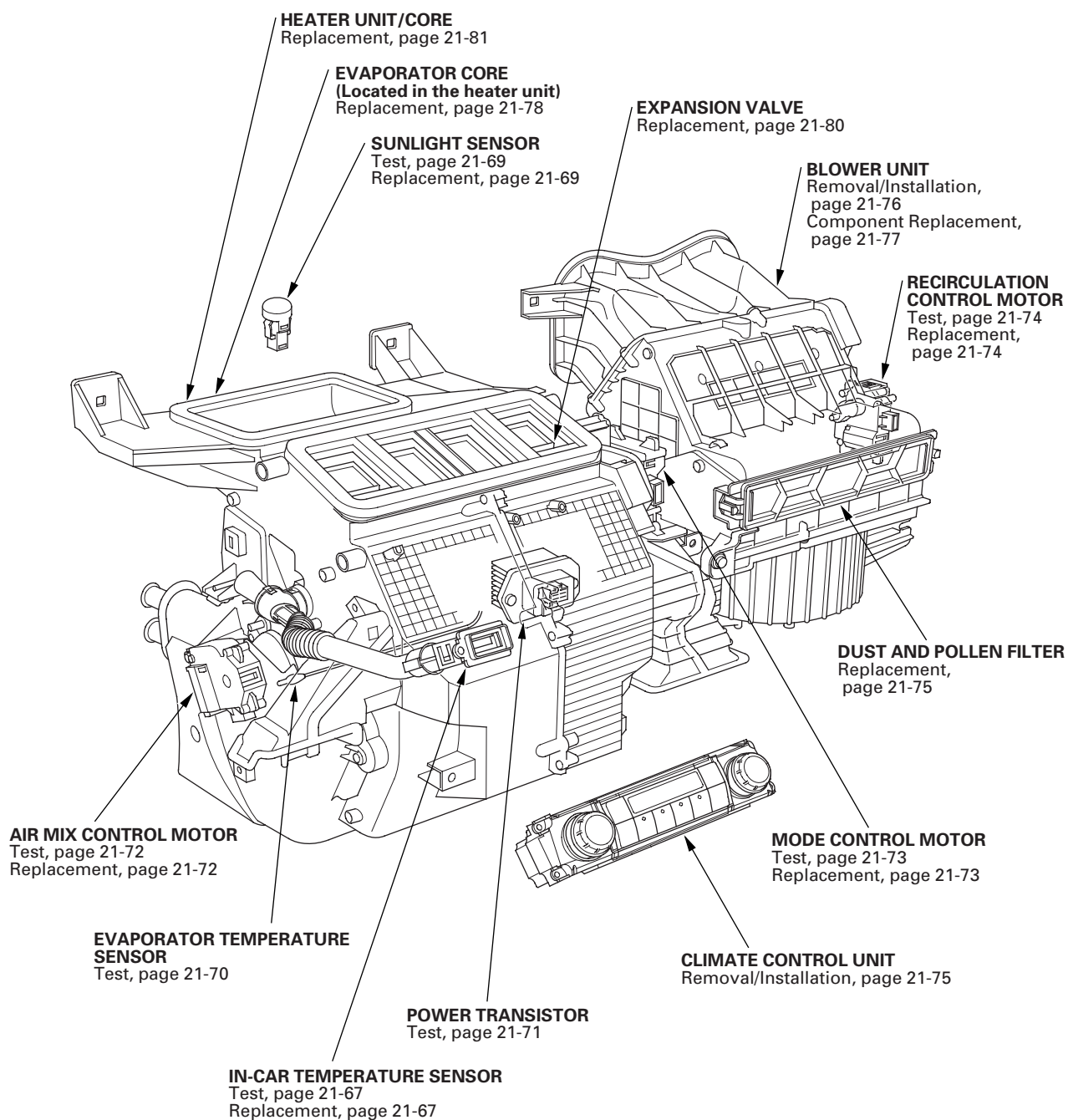


(cont'd)

Climate Control

Component Location Index (cont'd)





Climate Control

A/C Service Tips and Precautions

WARNING

- Compressed air mixed with the R-134a forms a combustible vapor.
- The vapor can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.

CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The air conditioning system uses HFC-134a (R-134a) refrigerant and polyalkyleneglycol (PAG) refrigerant oil, which are not compatible with CFC-12 (R-12) refrigerant or mineral oil. Do not use R-12 refrigerant or mineral oil in this system, and do not attempt to use R-12 servicing equipment; damage to the air conditioning system or your servicing equipment will result.

Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove R-134a from the air conditioning system.

If accidental system discharge occurs, ventilate the work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

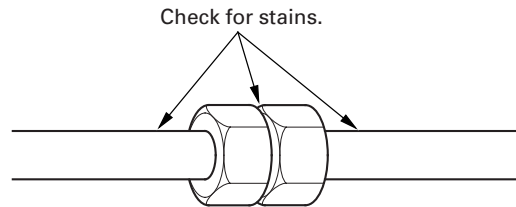
Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

- Always disconnect the negative cable from the battery whenever replacing air conditioning parts.
- Keep moisture and dirt out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before you reconnect each line.
- Before connecting any hose or line, apply a few drops of refrigerant oil to the O-ring.
- When tightening or loosening a fitting, use a second wrench to support the matching fitting.
- When discharging the system, use an R-134a refrigerant recovery/recycling/charging station; don't release refrigerant into the atmosphere.

A/C System Inspection

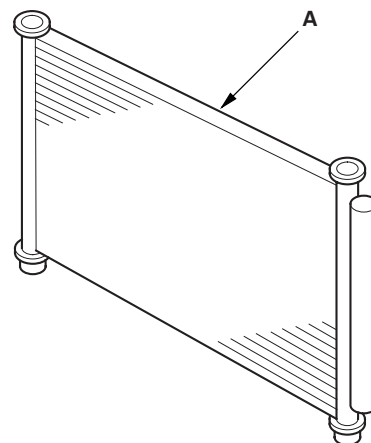
Before troubleshooting any problem with the air conditioning system, do the following:

1. With the ignition switch in LOCK (0), inspect the A/C components, the pressure lines, and the hoses for stains that may indicate a refrigerant or a compressor oil leak.



2. Check the A/C condenser (A) for material clogging the fins or for damage to the fins:

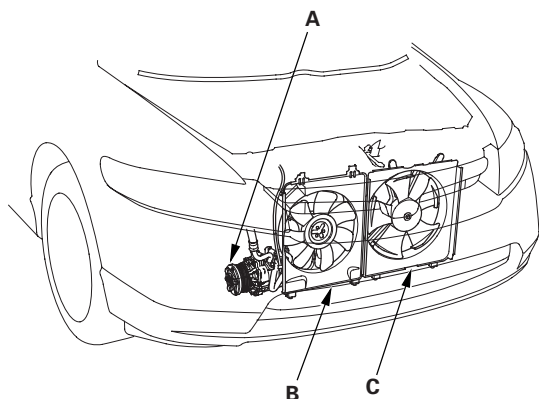
- Carefully clean any material from the A/C condenser fins with water and detergent. If deeper cleaning is required, clean the fins with Honda brite cleaner (P/N 08732-0020B).
- Be sure to dry the A/C condenser completely.
- Refer to the Refrigerant Leak Check (see page 21-93) to confirm leaks if there is visible damage to the A/C condenser.





A/C Refrigerant Oil Replacement

3. Inspect the drive belt (see page 4-30).
4. Make sure no material is blocking the air flow to the A/C condenser.
5. Check the dust and pollen filter. Replace it if it is clogged (see page 21-75).
6. Check for kinks or sharp bends in the A/C lines and hoses, which can greatly reduce system performance. Replace A/C lines and hoses if they are kinked or damaged (see page 21-8).
7. Start the engine, turn the air conditioning system on, and allow it to run for a few minutes and reach stable operation.
 - Check that the A/C operates at each position of the blower fan switch (except OFF). If the A/C does not operate, refer to the symptom troubleshooting.
 - Check that the A/C compressor clutch (A) is engaged. The pressure plate should be rotating at the same speed as the pulley. If the pressure plate does not engage, refer to the symptom troubleshooting.
 - Check that the A/C condenser fan (B) and radiator fan (C) operate when the A/C compressor clutch is engaged. If either fan fails to operate when the A/C compressor clutch is engaged, refer to the symptom troubleshooting.
 - Check that the engine idle speed is correctly maintained when the A/C is switched on and off and the A/C compressor clutch is engaged and disengaged.



Recommended PAG oil: SP-10

P/N 38897-P13-A01AH: 120 mL (4 fl.oz)

It is important to have the correct amount of refrigerant oil in the A/C system to ensure proper lubrication of the compressor. Too little oil damages the compressor; too much oil reduces the cooling capacity of the system, and can produce high vent temperatures.

- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if it gets on the paint, wash it off immediately.

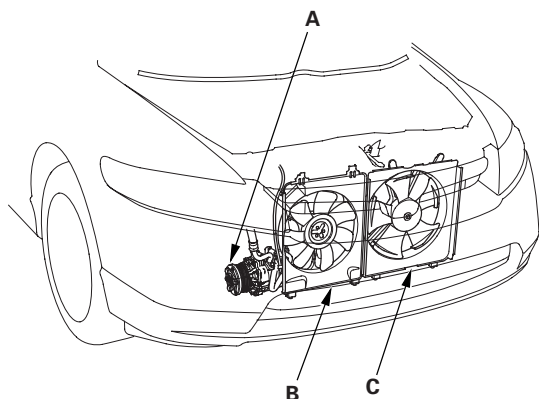
Add the recommended refrigerant oil in the amount listed if you replace any of the following parts:

A/C condenser	50 mL (1 2/3 fl.oz)
Evaporator	40 mL (1 1/3 fl.oz)
Line or hose	10 mL (1/3 fl.oz)
Receiver/Dryer	10 mL (1/3 fl.oz)
Leakage repair	25 mL (5/6 fl.oz)
A/C compressor	Since the oil separator is equipped inside the compressor for this vehicle, oil drainage is unnecessary at the time of compressor replacement.



A/C Refrigerant Oil Replacement

3. Inspect the drive belt (see page 4-30).
4. Make sure no material is blocking the air flow to the A/C condenser.
5. Check the dust and pollen filter. Replace it if it is clogged (see page 21-75).
6. Check for kinks or sharp bends in the A/C lines and hoses, which can greatly reduce system performance. Replace A/C lines and hoses if they are kinked or damaged (see page 21-8).
7. Start the engine, turn the air conditioning system on, and allow it to run for a few minutes and reach stable operation.
 - Check that the A/C operates at each position of the blower fan switch (except OFF). If the A/C does not operate, refer to the symptom troubleshooting.
 - Check that the A/C compressor clutch (A) is engaged. The pressure plate should be rotating at the same speed as the pulley. If the pressure plate does not engage, refer to the symptom troubleshooting.
 - Check that the A/C condenser fan (B) and radiator fan (C) operate when the A/C compressor clutch is engaged. If either fan fails to operate when the A/C compressor clutch is engaged, refer to the symptom troubleshooting.
 - Check that the engine idle speed is correctly maintained when the A/C is switched on and off and the A/C compressor clutch is engaged and disengaged.



Recommended PAG oil: SP-10

P/N 38897-P13-A01AH: 120 mL (4 fl.oz)

It is important to have the correct amount of refrigerant oil in the A/C system to ensure proper lubrication of the compressor. Too little oil damages the compressor; too much oil reduces the cooling capacity of the system, and can produce high vent temperatures.

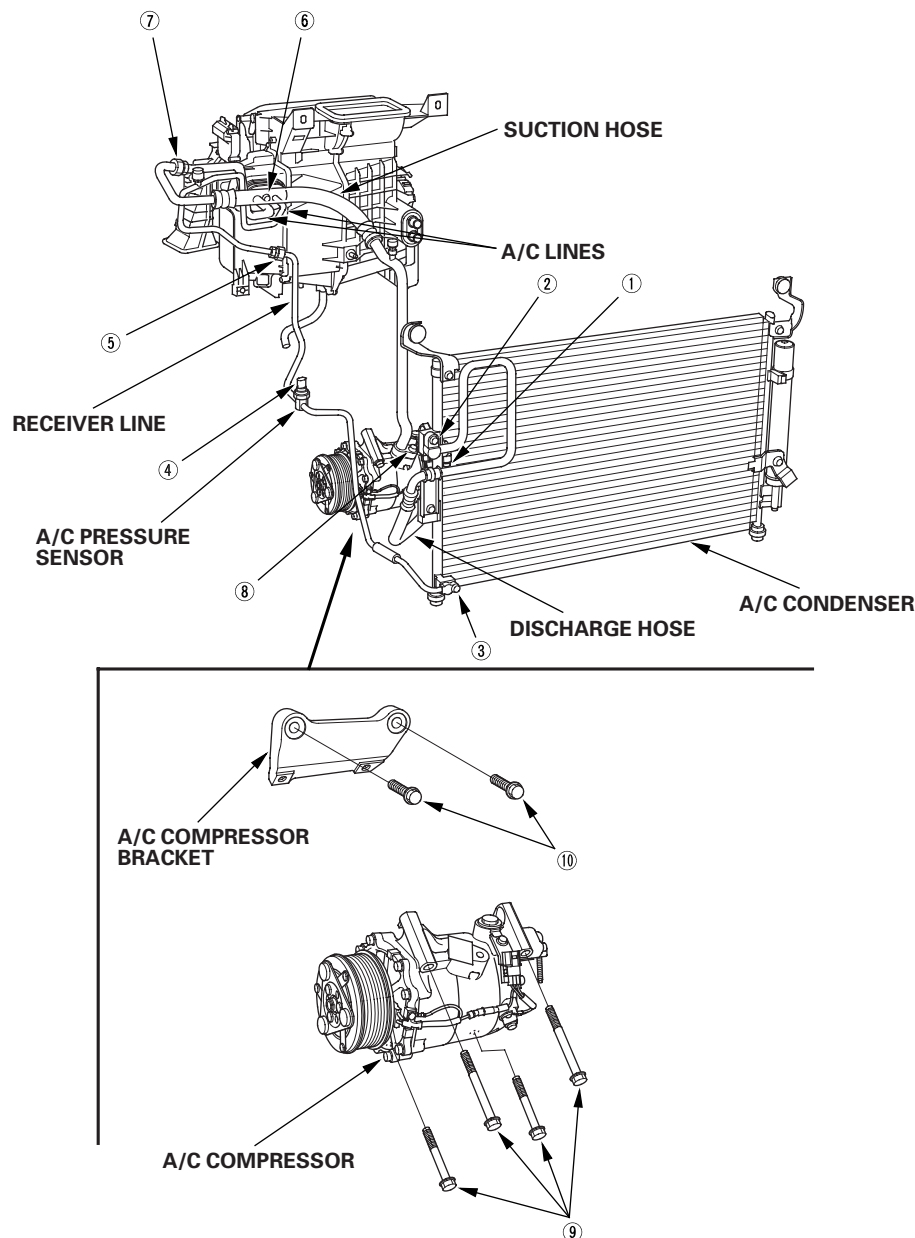
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if it gets on the paint, wash it off immediately.

Add the recommended refrigerant oil in the amount listed if you replace any of the following parts:

A/C condenser	50 mL (1 2/3 fl.oz)
Evaporator	40 mL (1 1/3 fl.oz)
Line or hose	10 mL (1/3 fl.oz)
Receiver/Dryer	10 mL (1/3 fl.oz)
Leakage repair	25 mL (5/6 fl.oz)
A/C compressor	Since the oil separator is equipped inside the compressor for this vehicle, oil drainage is unnecessary at the time of compressor replacement.

Climate Control

A/C Line Replacement



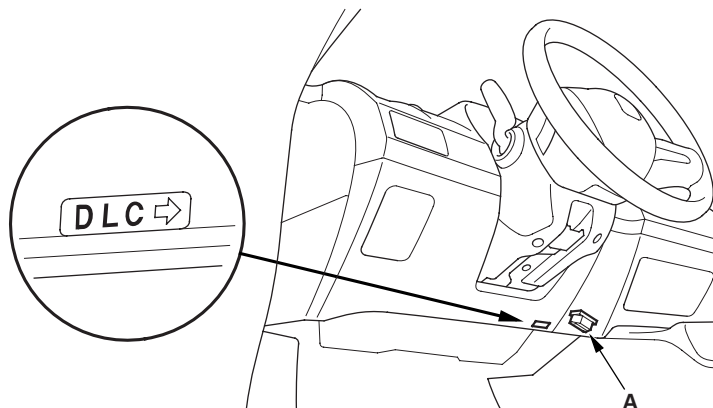
- ① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ③ Receiver line to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ④ A/C pressure sensor to the receiver line (11 x 1.0 mm): 11.3 N·m (1.2 kgf·m, 8.3 lbf·ft)
- ⑤ Receiver line to the A/C line (16 x 1.5 mm): 13.3 N·m (1.4 kgf·m, 9.8 lbf·ft)
- ⑥ A/C lines to the evaporator (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ⑦ A/C line to the suction hose (24 x 1.5 mm): 31.9 N·m (3.2 kgf·m, 23.5 lbf·ft)
- ⑧ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- ⑨ A/C compressor to the A/C compressor bracket (8 x 1.25 mm): 22 N·m (2.2 kgf·m, 16 lbf·ft)
- ⑩ A/C compressor bracket to the engine block (8 x 1.25 mm): 24 N·m (2.4 kgf·m, 17.7 lbf·ft)



General Troubleshooting Information

How to Check for DTCs with the HDS

1. Make sure the ignition switch is in LOCK (0).
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the vehicle and the climate control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).
5. Select HVAC/CLIMATE CONTROL in the BODY ELECTRICAL menu.
6. Select DTCs in the HVAC/CLIMATE CONTROL menu.
7. Check for DTCs. If any DTCs are indicated, write down the DTCs, then go to the indicated DTC troubleshooting. If no DTCs are indicated, refer to symptom troubleshooting.

NOTE:

- After troubleshooting, clear the DTCs with the HDS.
- For specific operations, refer to the user's manual that came with the HDS.

(cont'd)

Climate Control

General Troubleshooting Information (cont'd)

How to Use the Self-diagnostic Function with the HDS

1. Make sure the ignition switch is in LOCK (0).
2. Connect the HDS to the data link connector (DLC).
3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the vehicle and the climate control unit. If it doesn't, troubleshoot the DLC circuit (see page 11-204).
5. Select HVAC/CLIMATE CONTROL in the BODY ELECTRICAL menu.
6. Select INSPECTION in the HVAC/CLIMATE CONTROL menu.
7. Select CLIMATE CONTROL SELF TEST in the INSPECTION menu.
8. Check for DTCs. If any DTCs are indicated, write down the DTCs, then go to the indicated DTC troubleshooting.

NOTE:

- After troubleshooting, clear the DTCs with the HDS.
- For specific operations, refer to the user's manual that came with the HDS.



How to Use the Self-diagnostic Function without the HDS

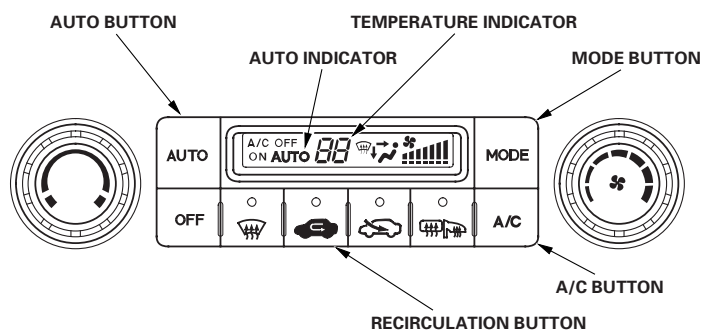
The climate control unit has a self-diagnostic function. To run the self-diagnostic function, do the following:

1. Make sure the ignition switch is in LOCK (0).
2. Press and hold the AUTO and RECIRCULATION buttons, turn the ignition switch to ON (II), then release the AUTO and RECIRCULATION buttons.
3. All LCD segments come on for 2 seconds, then self-diagnostic function begins.

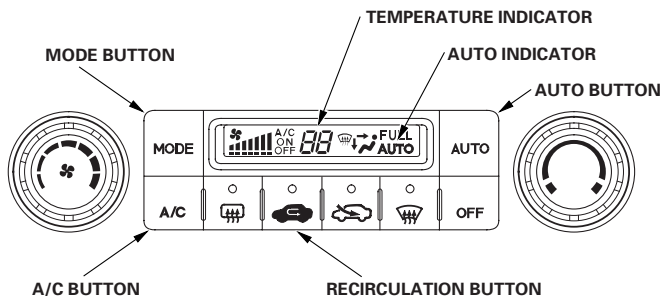
NOTE: The blower motor will run at various speeds when in the self-diagnostic mode, regardless of what the panel is displaying.

- If there is any problem in the system, the temperature indicator will light up the segment (A through P) and AUTO indicator corresponding to the error. The temperature indicator will then alternate every second between displaying "88" (all segments lit) and the error code segment (A through P) and AUTO indicator. To determine the meaning of the DTC, refer to checking for DTCs.
- If there are no problems detected, the segments will not illuminate, and the system will appear to be turned off.

Except Type S model



Type S model



Canceling the Self-diagnostic Function

4. Turn the ignition switch to LOCK (0) to cancel the self-diagnostic function. After completing repair work, run the self-diagnostic function again to make sure that there are no other DTCs.

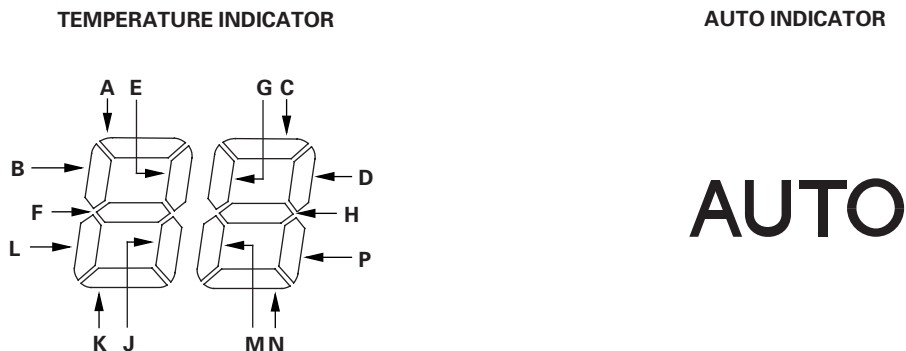
(cont'd)

Climate Control

General Troubleshooting Information (cont'd)

Checking for DTCs

The temperature display indicates single or multiple DTCs. If indicator segments A, C, E, G, J, M, and AUTO are on at the same time, there may be an open in the common ground wire. If no DTCs are present, the indicator remains blank.



DTC (Temperature Indicator Segment and AUTO Indicator)	Detection Item
A	An open in the in-car temperature sensor circuit (see page 21-31)
B	A short in the in-car temperature sensor circuit (see page 21-32)
C	An open in the outside air temperature sensor circuit (see page 21-33)
D	A short in the outside air temperature sensor circuit (see page 21-34)
E	An open in the sunlight sensor circuit (see page 21-35)
F	A short in the sunlight sensor circuit (see page 21-36)
G	An open in the evaporator temperature sensor circuit (see page 21-37)
H	A short in the evaporator temperature sensor circuit (see page 21-39)
J	An open in the air mix control motor circuit (see page 21-40)
K	A short in the air mix control motor circuit (see page 21-41)
L	A problem in the air mix control linkage, door, or motor (see page 21-42)
M	An open or short in the mode control motor circuit (see page 21-44)
N	A problem in the mode control linkage, doors, or motor (see page 21-46)
P	A problem in the blower motor circuit (see page 21-47)
A and AUTO	An open in the recirculation control motor circuit (see page 21-52)
B and AUTO	A problem in the recirculation control linkage, door, or motor (see page 21-51)
C and AUTO	Climate control unit internal error (see page 21-28)
D and AUTO	Climate control unit lost communication with gauge control module (TACH) (ILLUMI message) (see page 21-28)
E and AUTO	A short in the recirculation control motor circuit (see page 21-29)
F and AUTO	Climate control unit lost communication with gauge control module (TACH) (ECT message) (see page 21-28)
J and AUTO	Climate control unit lost communication with gauge control module (TACH) (VSP message) (see page 21-28)
K and AUTO	Communication bus line error (see page 22-106)
L and AUTO	Climate control unit lost communication with gauge control module (TACH) (NE message) (see page 21-28)



Displaying Sensor Inputs at the Climate Control Unit

The climate control unit has a mode that displays the sensor inputs it receives. This mode shows you what data the climate control unit is receiving from each of the sensors, one at a time, and it can help you determine if a sensor is faulty.

Check these items before using the sensor input display mode

1. Turn the ignition switch to ON (II), and check the recirculation door function; press the recirculation button to switch from FRESH to RECIRC. The air volume and sound should change slightly.
2. Set the temperature control knob to the desired test temperature. When selecting the test temperature, note these items:
 - “Lo” temperature setting will default to MAX COOL, VENT, and RECIRC.
 - “Hi” temperature setting will default to MAX HOT, FLOOR, and FRESH.
 - 19 through 31 °C settings will use the automatic climate control logic.
3. Turn the ignition switch to LOCK (0).

To run the sensor input display mode, follow these steps

1. Turn the ignition switch to LOCK (0).
2. Press and hold both the AUTO and MODE buttons, then start the engine.
3. After the engine starts, release both buttons. The display panel will flash the sensor number and then the value for that sensor. Record the value displayed.
4. To advance to the next sensor, press the A/C button.

Sensor	Item	Displayed Value
1	Mode Positioning	BIT
2	In-car Temperature	°C
3	Outside Air Temperature	°C
4	Solar Radiation Sensor Value: Dark = 00, Flashlight = 04, Cloudy = 10, Sunny = 65	10 kcal/m ² .h
5	Evaporator Outlet Air Temperature	°C
6	Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution)	% of opening
7	Recirculation Opening	% of opening
8	Vehicle Speed (Vehicle must be driven to display speed)	km/h
9	Engine Coolant Temperature	°C
A	Vent Temperature Air Out (TAO)	°C

NOTE:

- The sensor values will be displayed in degrees Celsius (°C) or an alphanumeric code. Use the chart to convert the value to degrees Fahrenheit (°F).
 - If the sensor value displays “Er” this indicates there is an open or short in the circuit or sensor. Check for DTCs using the HDS, or use the climate control self-diagnostic function.
 - If necessary, compare the sensor input display to a known-good vehicle under the same test conditions.
 - If the sensor is out of the normal range, refer to the sensor test or substitute a known-good sensor, and recheck.
5. To cancel the sensor input display mode, press the AUTO button or turn the ignition switch to LOCK (0).

(cont'd)

Climate Control

General Troubleshooting Information (cont'd)

Celsius to Fahrenheit Conversion Table

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
0	32	10	50	20	68	30	86	40	104
1	34	11	52	21	70	31	88	41	106
2	36	12	54	22	72	32	90	42	108
3	37	13	55	23	73	33	91	43	109
4	39	14	57	24	75	34	93	44	111
5	41	15	59	25	77	35	95	45	113
6	43	16	61	26	79	36	97	46	115
7	45	17	63	27	81	37	99	47	117
8	46	18	64	28	82	38	100	48	118
9	48	19	66	29	84	39	102	49	120

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
50	122	60	140	70	158	80	176	90	194
51	124	61	142	71	160	81	178	91	196
52	126	62	144	72	162	82	180	92	198
53	127	63	145	73	163	83	181	93	199
54	128	64	147	74	165	84	183	94	201
55	131	65	149	75	167	85	185	95	203
56	133	66	151	76	169	86	187	96	205
57	135	67	152	77	170	87	188	97	207
58	136	68	154	78	172	88	190	98	208
59	139	69	158	79	174	89	192	99	210

Alphanumeric Conversion Table

Display Reading (Alphanumeric)	°C	°F	%
A1 thru A9	—1 thru —9	30 thru 16	—1 thru —9
B0 thru B9	—10 thru —19	14 thru —2	—10 thru —19
C0 thru C9	—20 thru —29	—4 thru —20	—20 thru —29
D0 thru D9	—30 thru —39	—22 thru —38	—30 thru —39
E0 thru E9	—40 thru —49	—40 thru —58	—40 thru —49
F0 thru F9	—	—	+100 thru +109

Alphanumeric Conversion Table (Mode Positioning)

Display Reading (Alphanumeric)	Mode Position
2	OVER VENT
A	VENT
8	VENT-HEAT/VENT
c	HEAT/VENT
d	HEAT/VENT-HEAT
9	HEAT
b	HEAT-HEAT/DEF
3	HEAT/DEF
7	HEAT/DEF-DEF
6	DEF
E	OVER DEF



DTC Troubleshooting Index

Checking the DTCs by HDS

DTC	Detection Item or Symptom	ECU	DTC type	Page
B1200	Communication bus line error	Climate control unit	Loss of communication	(see page 22-107)
B1202	Climate control unit internal error	Climate control unit	Internal error	(see page 21-28)
B1205	Climate control unit lost communication with gauge control module (TACH) (VSP/NE message)	Climate control unit	Loss of communication	(see page 21-28)
B1206	Climate control unit lost communication with gauge control module (TACH) (ECT message)	Climate control unit	Loss of communication	(see page 21-28)
B1207	Climate control unit lost communication with gauge control module (TACH) (ILLUMI message)	Climate control unit	Loss of communication	(see page 21-28)
B1220	A short in the recirculation control motor circuit	Climate control unit	Signal error	(see page 21-29)
B1225	An open in the in-car temperature sensor circuit	Climate control unit	Signal error	(see page 21-31)
B1226	A short in the in-car temperature sensor circuit	Climate control unit	Signal error	(see page 21-32)
B1227	An open in the outside air temperature sensor circuit	Climate control unit	Signal error	(see page 21-33)
B1228	A short in the outside air temperature sensor circuit	Climate control unit	Signal error	(see page 21-34)
B1229	An open in the sunlight sensor circuit	Climate control unit	Signal error	(see page 21-35)
B1230	A short in the sunlight sensor circuit	Climate control unit	Signal error	(see page 21-36)
B1231	An open in the evaporator temperature sensor circuit	Climate control unit	Signal error	(see page 21-37)
B1232	A short in the evaporator temperature sensor circuit	Climate control unit	Signal error	(see page 21-39)
B1233	An open in the air mix control motor circuit	Climate control unit	Signal error	(see page 21-40)
B1234	A short in the air mix control motor circuit	Climate control unit	Signal error	(see page 21-41)
B1235	A problem in the air mix control linkage, door, or motor	Climate control unit	Signal error	(see page 21-42)
B1239	An open or short in the mode control motor circuit	Climate control unit	Signal error	(see page 21-44)
B1240	A problem in the mode control linkage, doors, or motor	Climate control unit	Signal error	(see page 21-46)
B1241	A problem in the blower motor circuit	Climate control unit	Signal error	(see page 21-47)
B2983	A problem in the recirculation control motor linkage, door, or motor	Climate control unit	Signal error	(see page 21-51)
B2986	An open in the recirculation control motor circuit	Climate control unit	Signal error	(see page 21-52)

Climate Control

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
The blower and heater controls and the A/C system do not work	- Probable cause: Climate control unit malfunction - Do the climate control power and ground circuit troubleshooting (see page 21-53)	- HVAC DTCs (see page 21-9) - Blown fuse No. 36 (10 A) in the driver's under-dash fuse/relay box - Poor ground at G504 (see page 22-30) - Poor or loose connections at the terminals
The A/C compressor clutch and the A/C condenser/radiator fans are inoperative, but the blower and heater controls work	- Probable cause: A/C pressure sensor circuit malfunction - Troubleshoot the pressure sensor circuit: - A/C pressure sensor circuit low voltage (see page 11-301) - A/C pressure sensor circuit high voltage (see page 11-303) NOTE: The A/C pressure sensor can malfunction without setting a DTC	- HVAC DTCs (see page 21-9) - Powertrain DTCs (see page 11-3) - A/C signal circuit troubleshooting (see page 21-64) - Poor or loose connections at the terminals
The A/C compressor clutch does not engage, but the A/C condenser/radiator fans operate, and the blower and heater controls work	- Probable cause: No power to the A/C compressor clutch - Do the A/C compressor clutch circuit troubleshooting (see page 21-62)	- HVAC DTCs (see page 21-9) - Blown fuse No. 20 (7.5 A) in the under-hood fuse/relay box - A/C system pressure is normal (see page 21-21) - A/C thermal protector has continuity (see step 4 on page 21-85) - Poor or loose connections at the terminals
The A/C condenser fan and/or the radiator fan do not run with the A/C on	- Probable cause: Condenser/radiator fan low speed circuit malfunction - Do the radiator and A/C condenser fan low speed circuit troubleshooting (see page 21-56)	- HVAC DTCs (see page 21-9) - Powertrain DTCs (see page 11-3) - Blown fuse No. 7 (20 A) in the under-hood fuse/relay box - Poor ground at G301 (see page 22-22) - Poor or loose connections at the terminals
The condenser/radiator fans do not run at high speed, but do run at low speed	- Probable cause: Malfunction in the fan(s) high speed circuit - Do the following troubleshooting as needed: - A/C condenser fan high speed circuit troubleshooting (see page 21-60) - Radiator fan high speed circuit troubleshooting (see page 10-26)	- HVAC DTCs (see page 21-9) - Powertrain DTCs (see page 11-3) - Blown fuse No. 6 (20 A) and/or No.7 (20 A) in the under-hood fuse/relay box - Poor ground at G301 (see page 22-22) - Poor or loose connections at the terminals
Voice commands do not work	- Probable cause: Communication problem between the climate control unit and the navigation system - Do the navigation communication line circuit troubleshooting (see page 21-54)	- HVAC DTCs (see page 21-9) - Navi system link (see page 23-135) - Poor or loose connections at the terminals



Symptom	Diagnostic procedure	Also check for
Blower fan runs slower than expected in cold weather (when in AUTO mode) NOTE: It is normal for the blower fan to run slowly until the coolant temperature rises when in AUTO mode	- Probable cause: Engine coolant temperature (ECT) circuit malfunction - Troubleshooting the ECT sensor circuit: - ECT sensor 2 circuit low voltage (see page 11-170) - ECT sensor 2 circuit high voltage (see page 11-172)	- HVAC DTCs (see page 21-9) - Powertrain DTCs (see page 11-3) - Blower motor operation
The A/C compressor clutch cycles rapidly on and off	- Probable cause: A/C system is very low on refrigerant, indicating a possible leak - Do the refrigerant leak check (see page 21-93) and repair any leaks. Replace the receiver/dryer (see page 21-89), then recharge the system to specifications (see page 21-92)	- HVAC DTCs (see page 21-9) - If there is no leak and the refrigerant level is normal, do the A/C compressor clutch circuit troubleshooting (see page 21-62), and look for an intermittent problem
Warm air comes out of the vents, and the high pressure liquid line is very hot	- Probable causes: The A/C system is overcharged (too much refrigerant), or the condenser is malfunctioning - Recover A/C refrigerant (see page 21-90), then check the condenser for restrictions or poor airflow. Repair as needed. Recharge the system to specifications (see page 21-92)	- Incorrect tension or abnormal wear on the drive belt. Replace the belt and/or the belt tensioner as needed - Proper operation of the condenser/radiator fans. Repair as needed - Signs of an overheated engine. Repair as needed
Warm air comes out of the vents. The suction line is cool to warm, and the discharge line is warm to hot	- Probable cause: A/C system is low on refrigerant, indicating a possible leak - Do the refrigerant leak check (see page 21-93) and repair any leaks. Recharge the system to specifications (see page 21-92)	- HVAC DTCs (see page 21-9) - Add refrigerant oil depending on the part you replaced (see page 21-7)
Warm air comes out of the vents. The suction line is cool to warm, the discharge line is warm to hot, and there is no frost on the expansion valve	- Probable cause: Excessive air and/or moisture in the system, indicating a possible leak - Do the refrigerant leak check (see page 21-93) and repair any leaks. Replace the receiver/dryer (see page 21-89), then recharge the system to specifications (see page 21-92)	- HVAC DTCs (see page 21-9) - Check the amount of refrigerant oil in the system. Adjust the oil level as needed
Warm air comes out of the vents. The liquid line or the condenser outlet is abnormally cool, or there is frost or condensation on the receiver/dryer	- Probable cause: A restriction in the high-pressure side of the system - Recover A/C refrigerant (see page 21-90), then check the liquid line, the receiver/dryer, and the condenser for restrictions. Repair as needed. Recharge the system to specifications (see page 21-92)	HVAC DTCs (see page 21-9)
There is heavy frost or condensation on the expansion valve, and frost on the suction line	- Probable cause: A restriction in the low-pressure side of the system - Recover A/C refrigerant (see page 21-90), then check the suction line and the expansion valve for restrictions. Repair as needed. Recharge the system to specifications (see page 21-92)	HVAC DTCs (see page 21-9)

(cont'd)

Climate Control

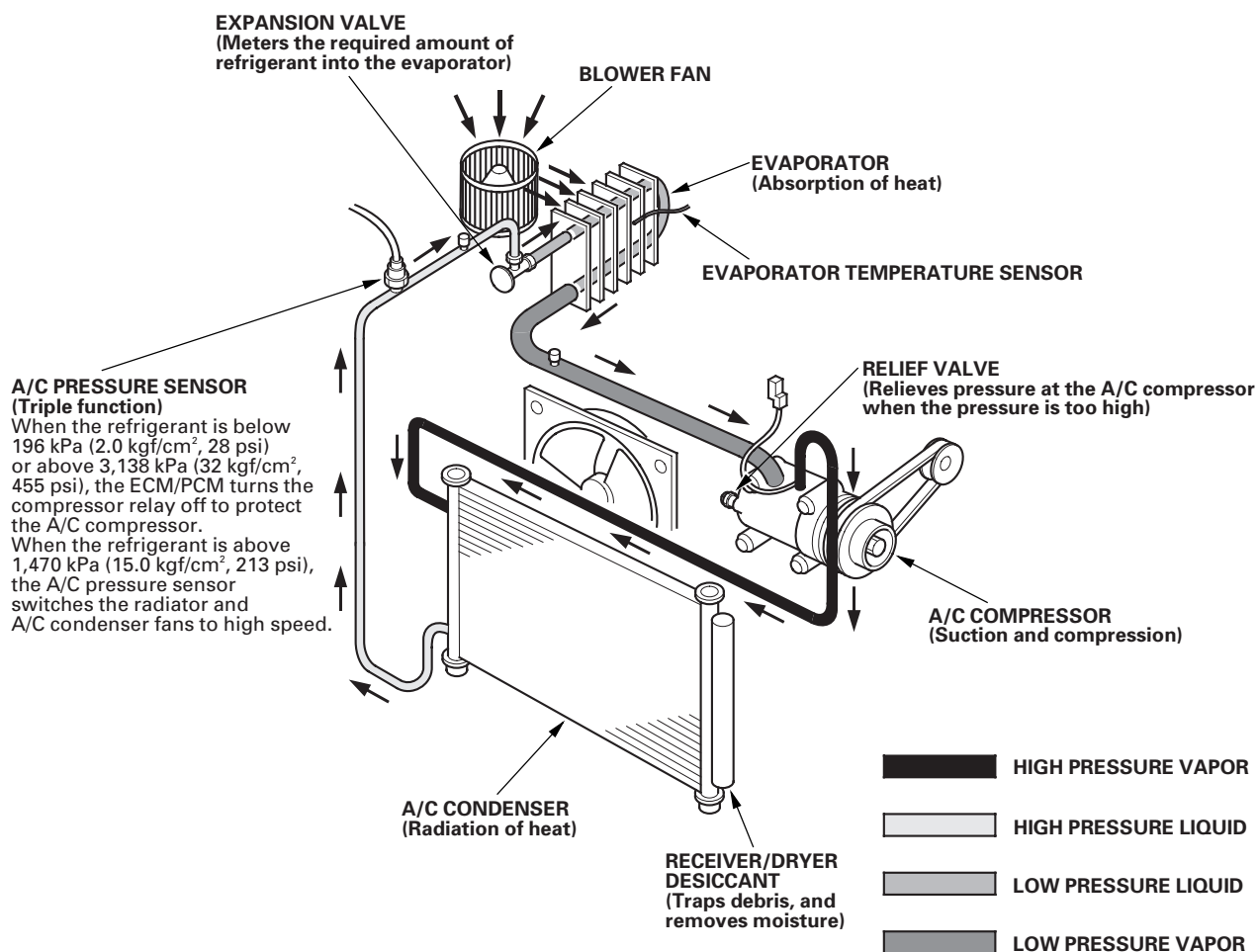
Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Warm air comes out of the vents, and there is frost on the expansion valve	• Probable cause: The expansion valve is stuck closed • Replace the expansion valve (see page 21-80)	• HVAC DTCs (see page 21-9) • Check the old expansion valve for contamination. If contaminants are found, replace the A/C system component that caused the contamination
The temperature of the liquid line is the same on both sides of the expansion valve, and the evaporator coil or suction line has heavy condensation	• Probable cause: The expansion valve is stuck open • Replace the expansion valve (see page 21-80)	• HVAC DTCs (see page 21-9) • Check the old expansion valve for contamination. If contaminants are found, replace the A/C system component that caused the contamination
Warm air comes out of the vents, but operation is normal otherwise	• Probable cause: Compressor failure • Do the A/C system test (see page 21-99), and correct any problems. If necessary, replace the compressor (see page 21-83)	• HVAC DTCs (see page 21-9) • Add refrigerant oil depending on the part you replaced (see page 21-7)
Driver's and passenger's side vent temperatures vary by more than 11 °C (20 °F)	• Probable causes: The recirculation control door or the air mix door is malfunctioning • Do the following troubleshooting: – Recirculation control motor test (see page 21-74) – Air mix control motor test (see page 21-72)	• HVAC DTCs (see page 21-9) • Poor or loose connections at the terminals
Insufficient heating	1. Check the coolant level (see page 10-7) 2. Check the radiator cap (see page 10-4) 3. Check the coolant temperature during normal operation 4. Check the heater core inlet hose temperature: • If it is COLD, check for restrictions in the hose, a damaged or leaking thermostat, or a damaged or leaking water pump • If it is HOT, check for restrictions in the heater core. Back flush or replace the heater core 5. Do the air mix control motor test (see page 21-72) 6. Check the blower motor unit for obstructions 7. Check for air leaks around the ducts and vents	• HVAC DTCs (see page 21-9) • Damaged cylinder head gasket



System Description

The air conditioning (A/C) system removes heat from the passenger compartment by transferring heat from the ambient air to the evaporator. The A/C system refrigerant expands in the evaporator, and the evaporator becomes very cold and absorbs the heat from the ambient air. The blower fan pushes air across the evaporator where the heat is absorbed, and then it blows the cool air into the passenger compartment.



This vehicle uses HFC-134a (R-134a) refrigerant, which does not contain chlorofluorocarbons. Pay attention to the following service items:

- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the recommended polyalkyleneglycol (PAG) refrigerant oil (SP-10) designed for the R-134a A/C compressor. Intermixing the recommended (PAG) refrigerant oil with any other refrigerant oil will result in A/C compressor failure.
- All A/C system parts (A/C compressor, discharge line, suction line, evaporator, A/C condenser, receiver/dryer, expansion valve, O-rings for joints) are designed for refrigerant R-134a. Do not exchange with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- R-12 and R-134a refrigerant servicing equipment are not interchangeable. Use only a recovery/recycling/charging station that is U.L.-listed and is certified to meet the requirements of SAE J2210 to service the R-134a air conditioning systems.
- Always recover refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

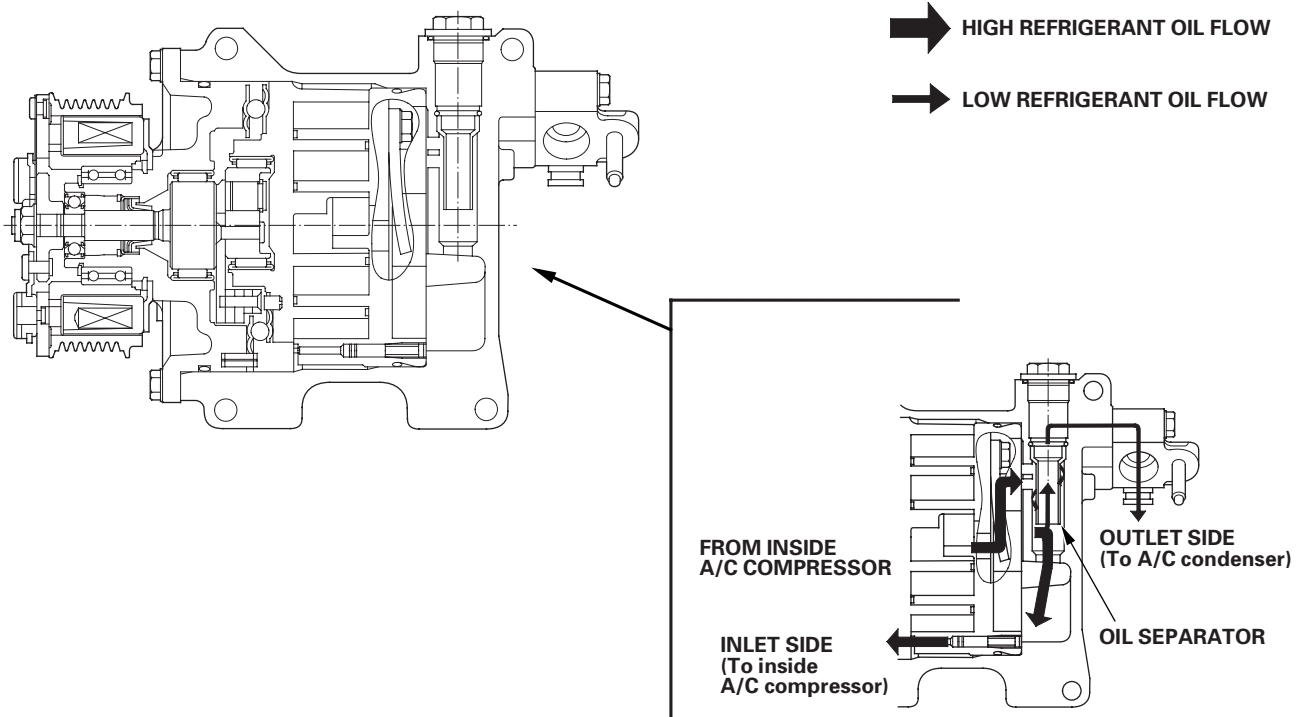
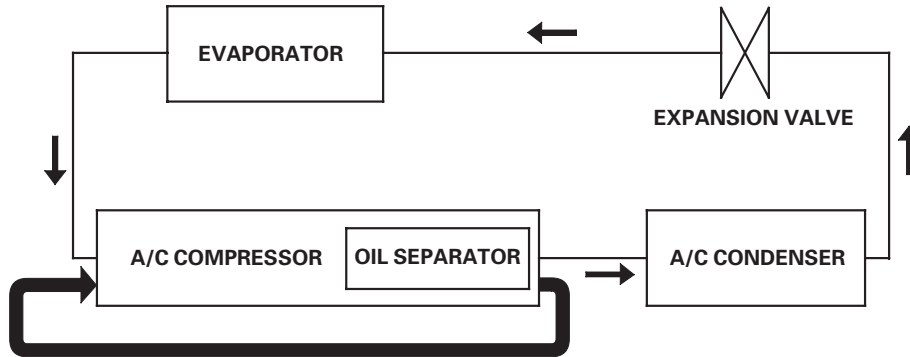
(cont'd)

Climate Control

System Description (cont'd)

Oil Separator

Oil emission from the A/C compressor to the A/C line is reduced by placing the oil separator in the A/C compressor. This results in a thinner oil film inside of the heat exchangers (A/C condenser and evaporator). Air conditioning efficiency is increased without sacrificing engine performance.





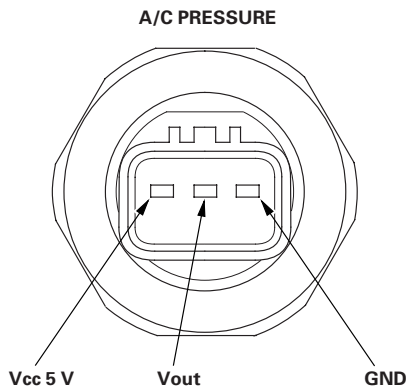
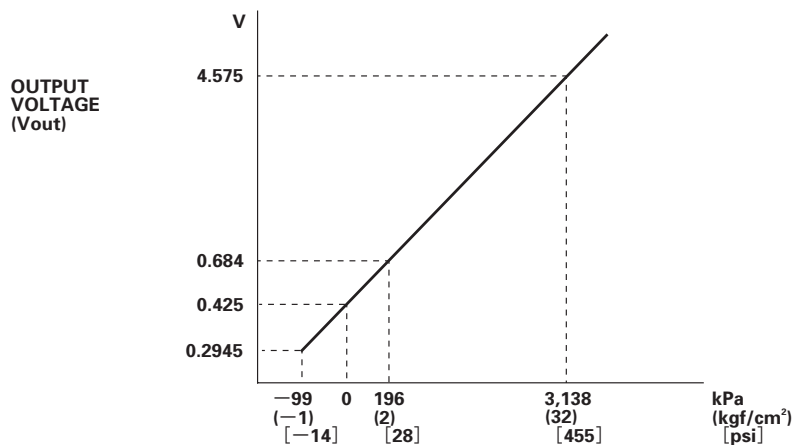
A/C Pressure Sensor

The A/C pressure sensor converts A/C pressure into electrical signals to the ECM/PCM.

A/C System Pressure *	Sensor Output Voltage (V out)	System Operation
Abnormally low pressure: Below 196 kPa (2.0 kgf/cm ² , 28 psi)	Below 0.685 V	The ECM/PCM disengages the compressor clutch. The radiator and condenser fans operate based on engine coolant temperature.
Normal operating pressure: - Above 196 kPa (2.0 kgf/cm², 28 psi) - Below 1,470 kPa (15.0 kgf/cm², 213 psi)	0.686 V to 1.944 V	The ECM/PCM cycles the compressor clutch based on cooling demand. The radiator and condenser fans operate at low speed unless the engine coolant temperature exceeds 206 °F.
High operating pressure: - Above 1,470 kPa (15.0 kgf/cm², 213 psi) - Below 3,138 kPa (32 kgf/cm², 455 psi)	1.945 V to 4.575 V	The ECM/PCM cycles the compressor clutch based on cooling demand. The radiator and condenser fans operate at high speed.
Abnormally high pressure: More than 3,138 kPa (32 kgf/cm ² , 455 psi)	Above 4.575 V	The ECM/PCM disengages the compressor clutch. The radiator and condenser fans operate based on engine coolant temperature.

* : The A/C system pressure can be monitored in the HDS PGM-FI Data List.

The response of the A/C pressure sensor is shown in the graph.

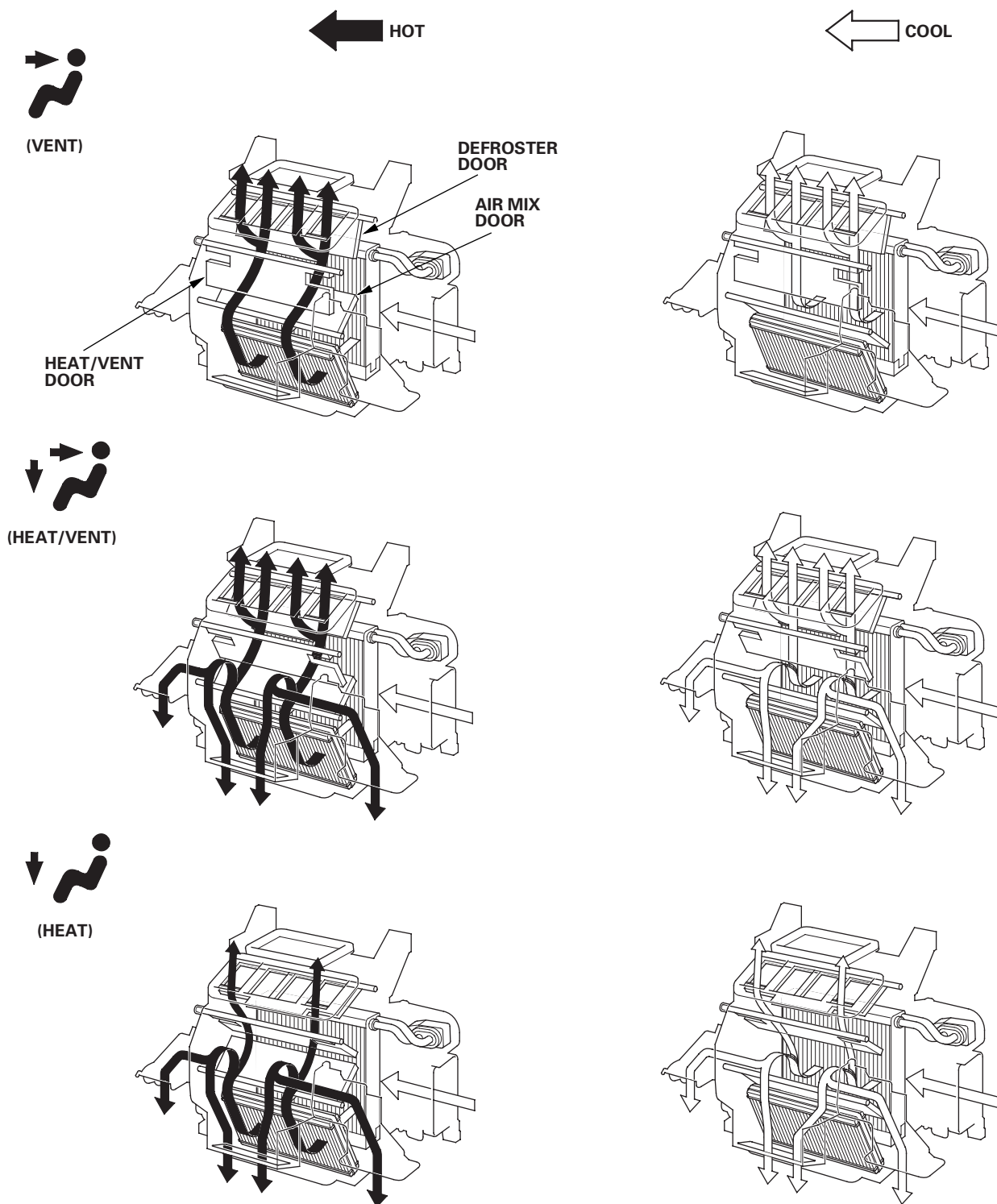


(cont'd)

Climate Control

System Description (cont'd)

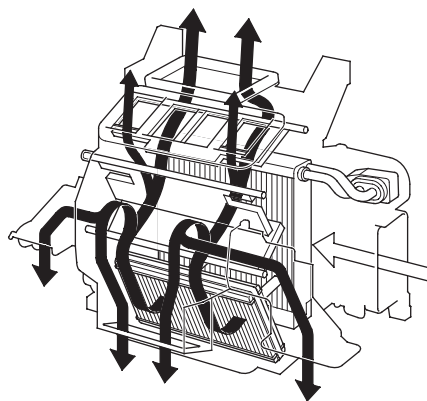
Climate Control Door Positions



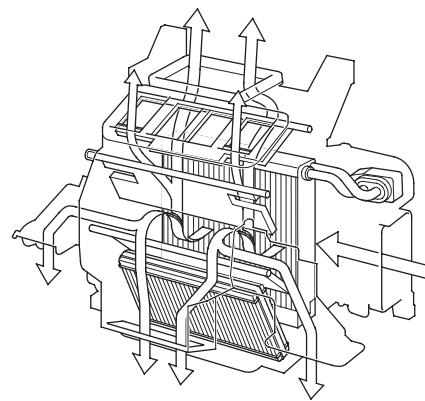


(HEAT/DEF)

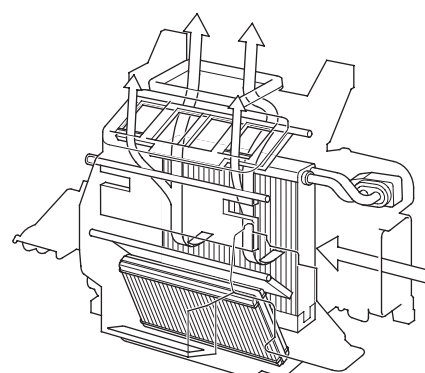
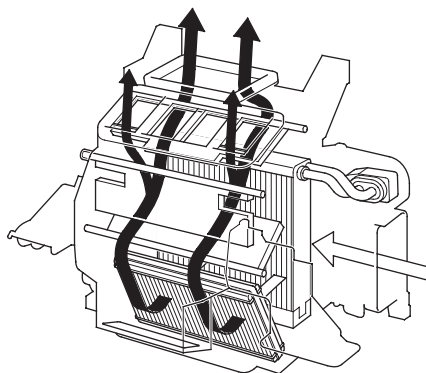
← HOT



← COOL



(DEF)



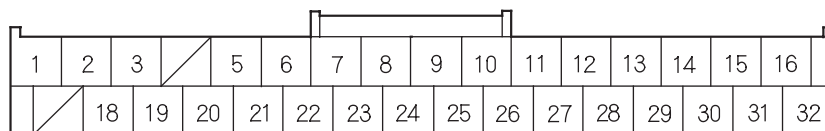
(cont'd)

Climate Control

System Description (cont'd)

Climate Control Unit Inputs and Outputs

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Cavity	Wire color	Terminal name	Description	Signal
1	GRY	ILL +	Power source for illumination	With lighting switch ON: battery voltage
2	BRN	RrDEF Ry	Drives rear window defogger relay	_____
3	LT GRN	IG2	IG2 power source	With ignition switch ON (II): battery voltage
5	BLK	GND	Ground for climate control unit (G504)	_____
6	RED	ACS	Outputs A/C ON signal	_____
7	BLK	S5V	Outputs sensor 5V	With ignition switch ON (II): about 5 V
8	BRN	Teva	Detects evaporator temperature sensor signal	_____
9	LT BLU	M-COOL	Drives air mix control motor COOL side	Drive on COOL side: 7 V—15 V
10	WHT	M-VENT	Drives mode control motor VENT side	Drive on VENT side: about 14.5 V
11	PNK	M-HOT	Drives air mix control motor HOT side	Drive on HOT side: 7 V—15 V
12	GRN	M-DEF	Drives mode control motor DEF side	Drive on DEF side: about 14.5 V
13	YEL	BLW-G	Outputs power transistor gate	_____
14	BLU	BLW-V	Feedback signal of power transistor drain voltage	_____
15	ORN	REC	Drives recirculation control motor REC side	Drive on REC side: about 14.5 V
16	PUR	FRS	Drives recirculation control motor FRESH side	Drive on FRESH side: about 14.5 V
18	RED	ILL —	Ground for illumination	_____
19	RED	S-COM	Ground exclusive for sensor	_____
20	BLU	MODE 4	Inputs mode motor signal 4	_____

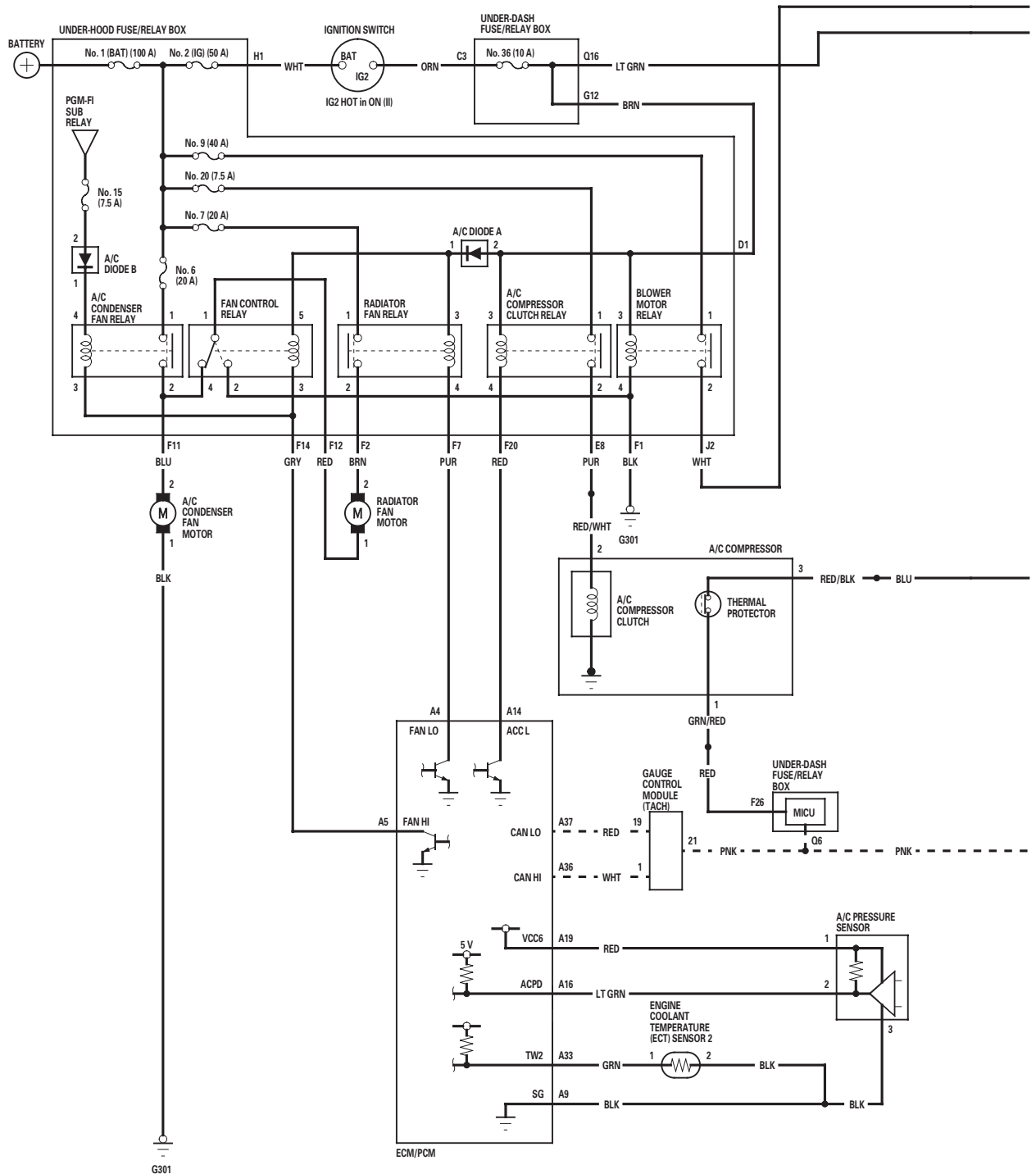


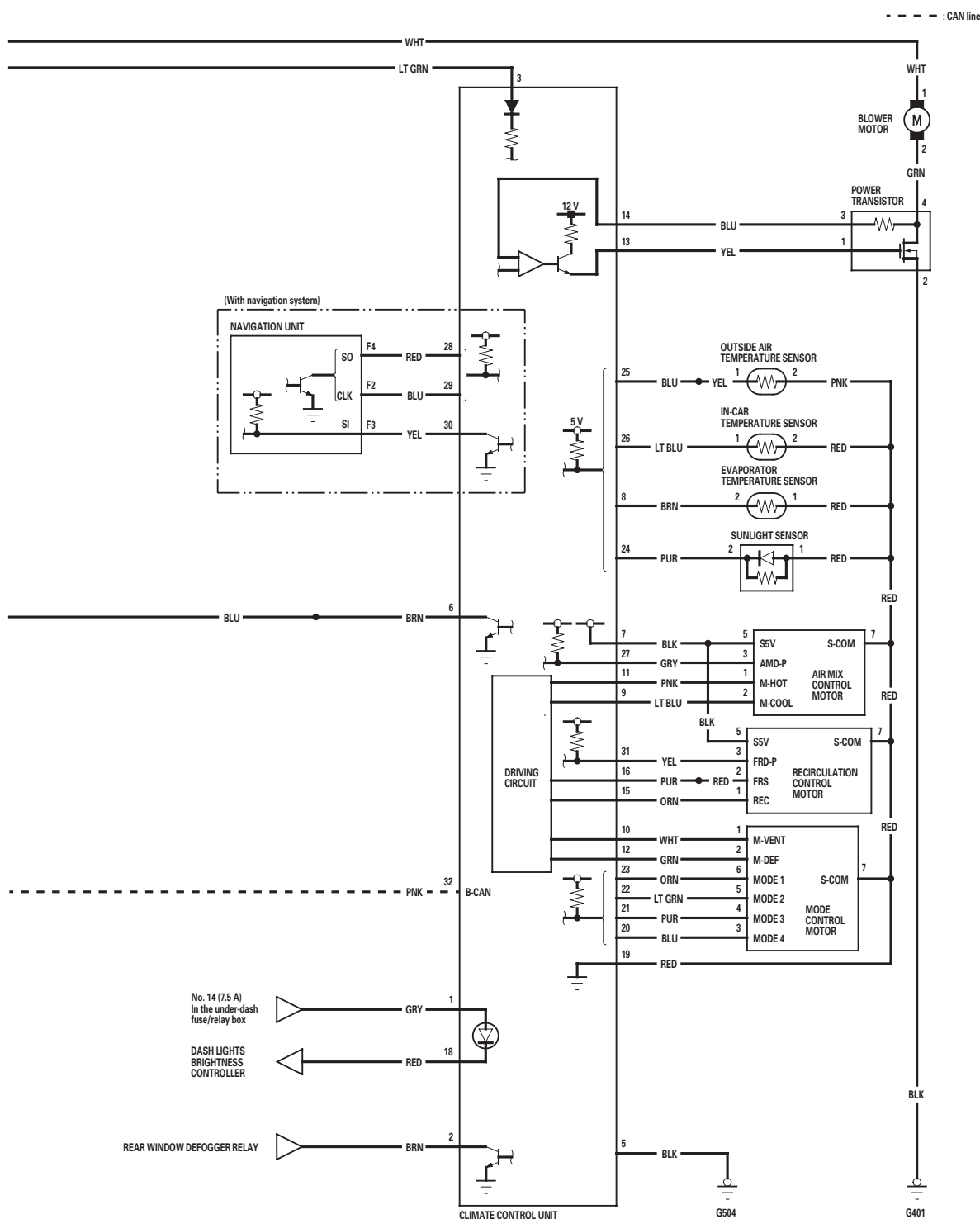
Cavity	Wire color	Terminal name	Description	Signal
21	PUR	MODE 3	Inputs mode motor signal 3	———
22	LT GRN	MODE 2	Inputs mode motor signal 2	———
23	ORN	MODE 1	Inputs mode motor signal 1	———
24	PUR	Tsun	Detects sunlight sensor signal	———
25	BLU	Tam	Detects outside air temperature sensor signal	———
26	LT BLU	Tr	Detects in-car sensor signal	———
27	GRY	AMD-P	Air mix control motor potentiometer signal	Drive on HOT side: about 4.5 V Drive on COOL side: about 1.5 V
28*	RED	AC SO	SO for navigation communication (A/C side receiving)	———
29*	BLU	AC CLK	CLK for navigation communication	———
30*	YEL	AC SI	SI for navigation communication (A/C side transmission)	———
31	YEL	RFD-P	Recirculation control motor potentiometer signal	———
32	PNK	B-CAN	CAN communication	———

* : With navigation

Climate Control

Circuit Diagram





Climate Control

DTC Troubleshooting

DTC B1202 or DTC indicator C and AUTO: Climate Control Unit Internal Error

NOTE: Check the battery condition (see page 22-67) and the charging system (see page 4-26).

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1202 or C and AUTO indicated?

YES—The climate control unit is faulty, replace the climate control unit. ■

NO—Intermittent failure, the climate control unit is OK at this time. ■

DTC B1205, DTC indicator J and AUTO or L and AUTO: Climate Control Unit Lost Communication with Gauge Control Module (TACH) (VSP/NE message)

DTC B1206 or DTC indicator F and AUTO: Climate Control Unit Lost Communication with Gauge Control Module (TACH) (ECT message)

DTC B1207 or DTC indicator D and AUTO: Climate Control Unit Lost Communication with Gauge Control Module (TACH) (ILLUMI message)

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check the DTCs.

Is DTC B1205, J and AUTO or L and AUTO, and/or DTC B1206 or F and AUTO, and/or DTC B1207 or D and AUTO indicated?

YES—Go to step 5.

NO—Intermittent failure, check for loose wires or poor connections on the gauge control module (TACH) and climate control unit circuit. ■

5. Select UNIT INFORMATION in the BODY ELECTRICAL menu.
6. Select CONNECTED UNIT in the UNIT INFORMATION menu.

Is gauge control module detected?

YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

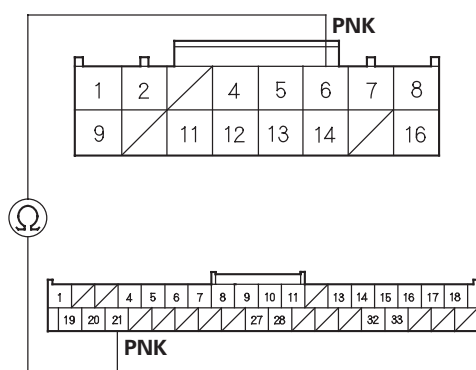
NO—Go to step 7.

7. Turn the ignition switch to LOCK (0).



8. Disconnect under-dash fuse/relay box connector Q (16P).
9. Disconnect the gauge control module (TACH) 36P connector.
10. Check for continuity between under-dash fuse/relay box connector Q (16P) terminal No. 6 and the gauge control module (TACH) 36P connector terminal No. 21.

UNDER-DASH FUSE/RELAY BOX CONNECTOR Q (16P)
Wire side of female terminals



GAUGE CONTROL MODULE (TACH) 36P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to the gauge control module input test (see page 22-271). ■

NO—Repair open in the wire between the MICU and the gauge control module (TACH). ■

DTC B1220 or DTC indicator E and AUTO: A Short in the Recirculation Control Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1220 or E and AUTO indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Test the recirculation control motor (see page 21-74).

Is the recirculation control motor OK?

YES—Go to step 7.

NO—Replace the recirculation control motor (see page 21-74). ■

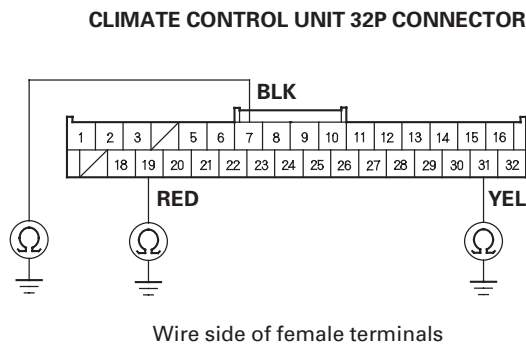
7. Disconnect the recirculation control motor 7P connector (see page 21-74).
8. Disconnect the climate control unit 32P connector.

(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

9. Check for continuity between body ground and the climate control unit 32P connector terminals No. 7, 19, and No. 31 individually.



Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the recirculation control motor. ■

NO—Go to step 10.

10. Check for continuity between the climate control unit 32P connector terminals as follows.

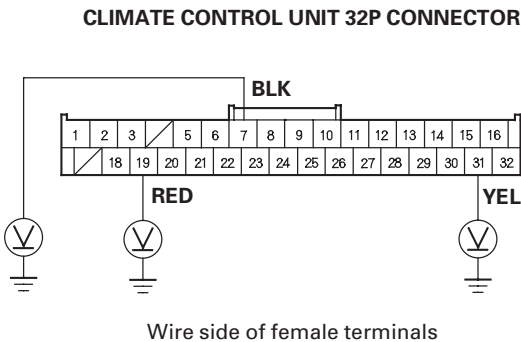
From terminal	To terminals
7	19, 31
19	31

Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

NO—Go to step 11.

11. Turn the ignition switch to ON (II), and measure the same terminals for voltage to body ground.



Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the recirculation control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■



DTC B1225 or DTC indicator A: An Open in the In-car Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1225 or A indicated?

YES—Go to step 5.

NO—Intermittent failure, check for loose wires or poor connections on the in-car temperature sensor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Remove the in-car temperature sensor (see page 21-67), and test it (see page 21-67).

Is the in-car temperature sensor OK?

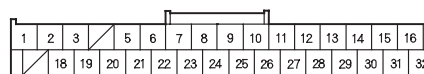
YES—Go to step 7.

NO—Replace the in-car temperature sensor. ■

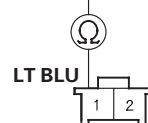
7. Disconnect the climate control unit 32P connector.

8. Check for continuity between the climate control unit 32P connector terminal No. 26 and the in-car temperature sensor 2P connector terminal No. 1.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



LT BLU



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

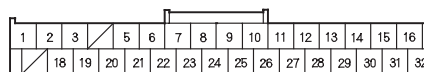
Is there continuity?

YES—Go to step 9.

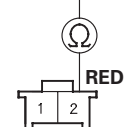
NO—Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

9. Check for continuity between the climate control unit 32P connector terminal No. 19 and the in-car temperature sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



RED



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the in-car temperature sensor. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B1226 or DTC indicator B: A Short in the In-car Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1226 or B indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Remove the in-car temperature sensor (see page 21-67), and test it (see page 21-67).

Is the in-car temperature sensor OK?

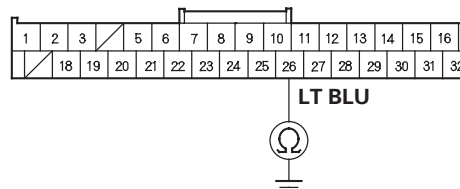
YES—Go to step 7.

NO—Replace the in-car temperature sensor. ■

7. Disconnect the climate control unit 32P connector.

8. Check for continuity between body ground and the climate control unit 32P connector terminal No. 26.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

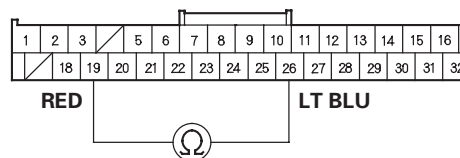
Is there continuity?

YES—Repair short to body ground in the wire between the climate control unit and the in-car temperature sensor. ■

NO—Go to step 9.

9. Check for continuity between the climate control unit 32P connector terminals No. 19 and No. 26.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the in-car temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■



DTC B1227 or DTC indicator C: An Open in the Outside Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1227 or C indicated?

YES—Go to step 5.

NO—Intermittent failure, check for loose wires or poor connections on the outside air temperature sensor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Remove the outside air temperature sensor (see page 21-68), and test it (see page 21-68).

Is the outside air temperature sensor OK?

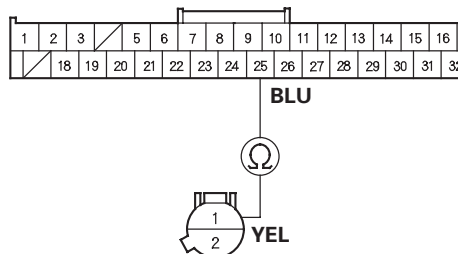
YES—Go to step 7.

NO—Replace the outside air temperature sensor. ■

7. Disconnect the climate control unit 32P connector.

8. Check for continuity between the climate control unit 32P connector terminal No. 25 and the outside air temperature sensor 2P connector terminal No. 1.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

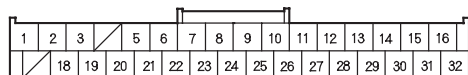
(cont'd)

Climate Control

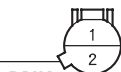
DTC Troubleshooting (cont'd)

9. Check for continuity between the climate control unit 32P connector terminal No. 19 and the outside air temperature sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



RED



PNK

OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the outside air temperature sensor. ■

DTC B1228 or DTC indicator D: A Short in the Outside Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1228 or D indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Remove the outside air temperature sensor (see page 21-68), and test it (see page 21-68).

Is the outside air temperature sensor OK?

YES—Go to step 7.

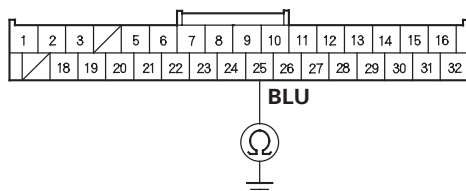
NO—Replace the outside air temperature sensor. ■

7. Disconnect the climate control unit 32P connector.



8. Check for continuity between body ground and the climate control unit 32P connector terminal No. 25.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

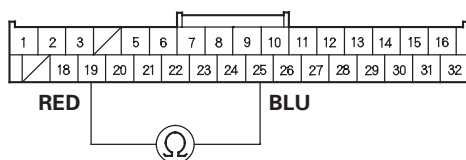
Is there continuity?

YES—Repair short to body ground in the wire between the climate control unit and the outside air temperature sensor. ■

NO—Go to step 9.

9. Check for continuity between the climate control unit 32P connector terminals No. 19 and No. 25.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the outside air temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1229 or DTC indicator E: An Open in the Sunlight Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1229 or E indicated?

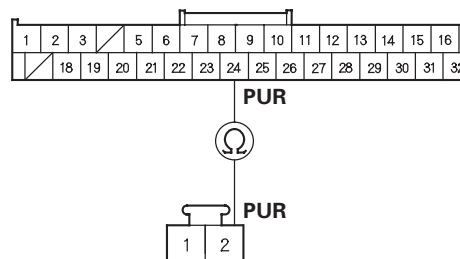
YES—Go to step 5.

NO—Intermittent failure, check for loose wires or poor connections on the sunlight sensor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the sunlight sensor 2P connector.
7. Disconnect the climate control unit 32P connector.
8. Check for continuity between the climate control unit 32P connector terminal No. 24 and the sunlight sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 32P CONNECTOR

Wire side of female terminals



SUNLIGHT SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 9.

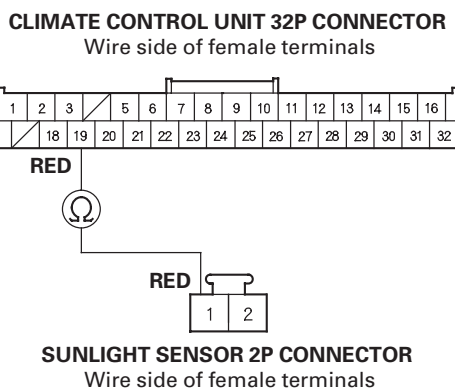
NO—Repair open in the wire between the climate control unit and the sunlight sensor. ■

(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

9. Check for continuity between the climate control unit 32P connector terminal No. 19 and the sunlight sensor 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the climate control unit and the sunlight sensor. ■

10. Reconnect the sunlight sensor 2P connector.
11. Reconnect the climate control unit 32P connector.
12. Test the sunlight sensor (see page 21-69).

Is the sunlight sensor OK?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the sunlight sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the sunlight sensor (see page 21-69).
■

DTC B1230 or DTC indicator F: A Short in the Sunlight Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

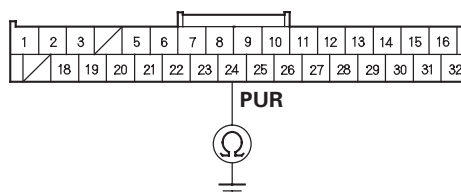
Is DTC B1230 or F indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the sunlight sensor 2P connector.
7. Disconnect the climate control unit 32P connector.
8. Check for continuity between body ground and the climate control unit 32P connector terminal No. 24.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

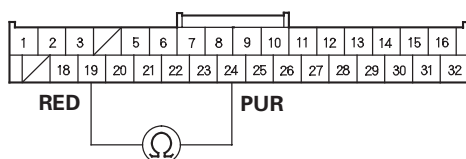
YES—Repair short to body ground in the wire between the climate control unit and the sunlight sensor. ■

NO—Go to step 9.



9. Check for continuity between the climate control unit 32P connector terminals No. 19 and No. 24.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the sunlight sensor. ■

NO—Go to step 10.

10. Reconnect the sunlight sensor 2P connector.
11. Reconnect the climate control unit 32P connector.
12. Test the sunlight sensor (see page 21-69).

Is the sunlight sensor OK?

YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the sunlight sensor (see page 21-69). ■

DTC B1231 or DTC indicator G: An Open in the Evaporator Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1231 or G indicated?

YES—Go to step 5.

NO—Intermittent failure, check for loose wires or poor connections on the evaporator temperature sensor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Remove the evaporator temperature sensor (see page 21-78), and test it (see page 21-70).

Is the evaporator temperature sensor OK?

YES—Go to step 7.

NO—Replace the evaporator temperature sensor. ■

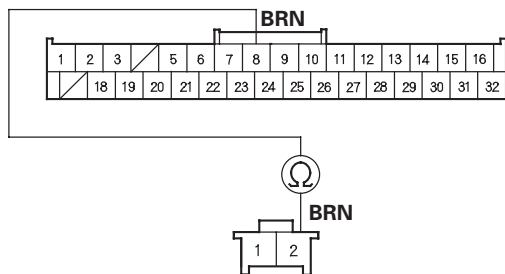
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

7. Disconnect the climate control unit 32P connector.
8. Check for continuity between the climate control unit 32P connector terminal No. 8 and the evaporator temperature sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

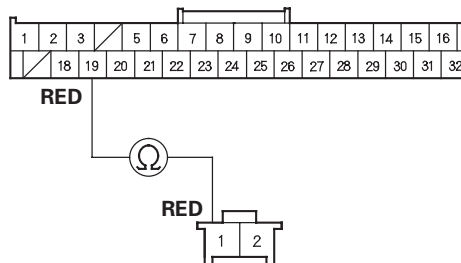
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■

9. Check for continuity between the climate control unit 32P connector terminal No. 19 and the evaporator temperature sensor 2P connector terminal No. 1.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire between the climate control unit and the evaporator temperature sensor. ■



DTC B1232 or DTC indicator H: A Short in the Evaporator Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1232 or H indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Remove the evaporator temperature sensor (see page 21-78), and test it (see page 21-70).

Is the evaporator temperature sensor OK?

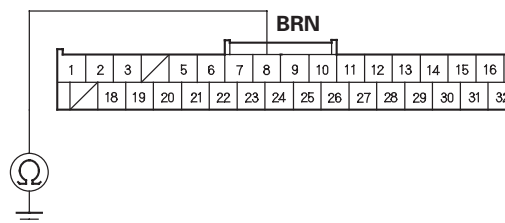
YES—Go to step 7.

NO—Replace the evaporator temperature sensor. ■

7. Disconnect the climate control unit 32P connector.

8. Check for continuity between body ground and the climate control unit 32P connector terminal No. 8.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

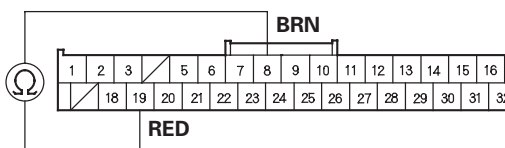
Is there continuity?

YES—Repair short to body ground in the wires between the climate control unit and the evaporator temperature sensor. ■

NO—Go to step 9.

9. Check for continuity between the climate control unit 32P connector terminals No. 8 and No. 19.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the climate control unit and the evaporator temperature sensor. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B1233 or DTC indicator J: An Open in the Air Mix Control Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1233 or J indicated?

YES—Go to step 5.

NO—Intermittent failure, check for loose wires or poor connections on the air mix control motor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Test the air mix control motor (see page 21-72).

Is the air mix control motor OK?

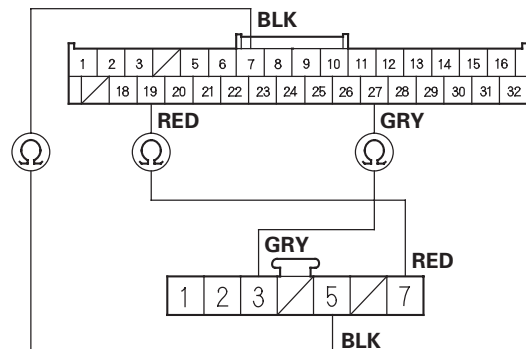
YES—Go to step 7.

NO—Replace the air mix control motor (see page 21-72). ■
7. Disconnect the air mix control motor 7P connector.
8. Disconnect the climate control unit 32P connector.

9. Check for continuity between the following terminals of the climate control unit 32P connector and the air mix control motor 7P connector.

32P:	7P:
No. 7	No. 5
No. 19	No. 7
No. 27	No. 3

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the air mix control motor 7P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire(s) between the climate control unit and the air mix control motor. ■



DTC B1234 or DTC indicator K: A Short in the Air Mix Control Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1234 or K indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Test the air mix control motor (see page 21-72).

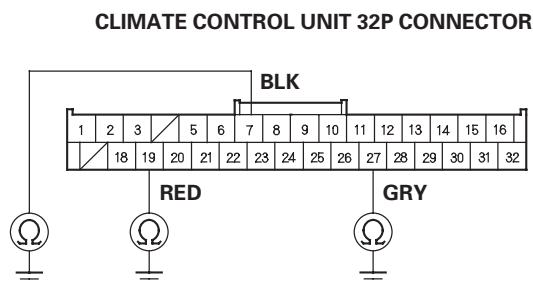
Is the air mix control motor OK?

YES—Go to step 7.

NO—Replace the air mix control motor (see page 21-72). ■

7. Disconnect the air mix control motor 7P connector.
8. Disconnect the climate control unit 32P connector.

9. Check for continuity between body ground and the climate control unit 32P connector terminals No. 7, 19, and No. 27 individually.



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the air mix control motor. ■

NO—Go to step 10.

10. Check for continuity between the climate control unit 32P connector terminals as follows.

From terminal	To terminals
7	19, 27
19	27

Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

NO—Go to step 11.

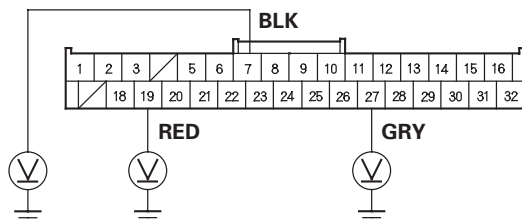
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

11. Turn the ignition switch to ON (II), and measure the same terminals for voltage to body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the air mix control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

DTC B1235 or DTC indicator L: A Problem in the Air Mix Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1235 or L indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

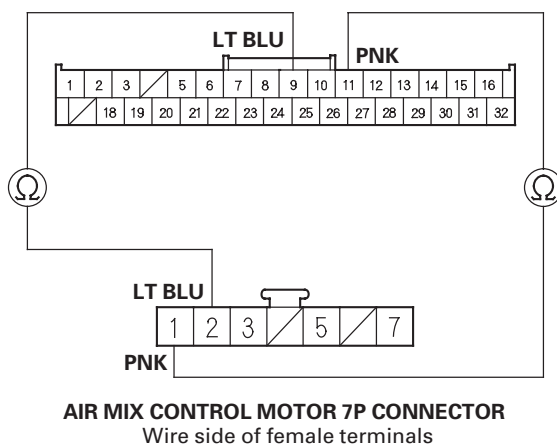
5. Turn the ignition switch to LOCK (0).
6. Disconnect the air mix control motor 7P connector.
7. Disconnect the climate control unit 32P connector.



8. Check for continuity between the following terminals of the climate control unit 32P connector and the air mix control motor 7P connector.

32P: 7P:
No. 9 No. 2
No. 11 No. 1

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



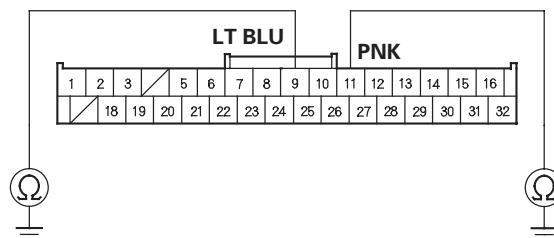
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire(s) between the climate control unit and the air mix control motor. ■

9. Check for continuity between body ground and the climate control unit 32P connector terminals No. 9 and No. 11 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the air mix control motor. ■

NO—Go to step 10.

10. Test the air mix control motor (see page 21-72).

Is the air mix control motor OK?

YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the air mix control motor (see page 21-72), or repair the air mix control linkage or door. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B1239 or DTC indicator M: An Open or Short in the Mode Control Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1239 or M indicated?

YES—Go to step 5.

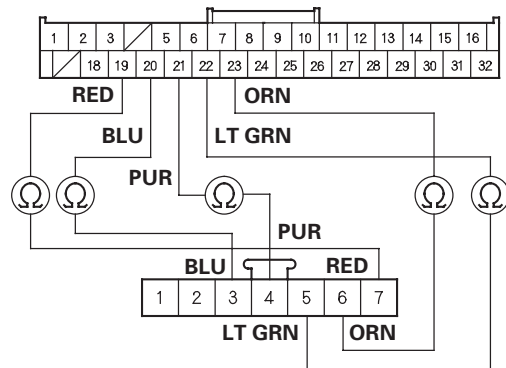
NO—Intermittent failure, check for loose wires or poor connections on the mode control motor circuit. ■

5. Turn the ignition switch to LOCK (0).
 6. Test the mode control motor (see page 21-73).
- Is the mode control motor OK?*
- YES**—Go to step 7.
- NO**—Replace the mode control motor (see page 21-73). ■
7. Disconnect the mode control motor 7P connector.
 8. Disconnect the climate control unit 32P connector.

9. Check for continuity between the following terminals of the climate control unit 32P connector and the mode control motor 7P connector.

32P:	7P:
No. 19	No. 7
No. 20	No. 3
No. 21	No. 4
No. 22	No. 5
No. 23	No. 6

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



MODE CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

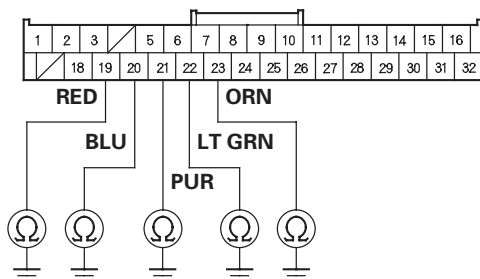
YES—Go to step 10.

NO—Repair open in the wire(s) between the climate control unit and the mode control motor. ■



10. Check for continuity between body ground and the climate control unit 32P connector terminals No. 19, 20, 21, 22, and No. 23 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the mode control motor. ■

NO—Go to step 11.

11. Check for continuity between the climate control unit 32P connector terminals as follows.

From terminal	To terminals
19	20, 21, 22, 23
20	21, 22, 23
21	22, 23
22	23

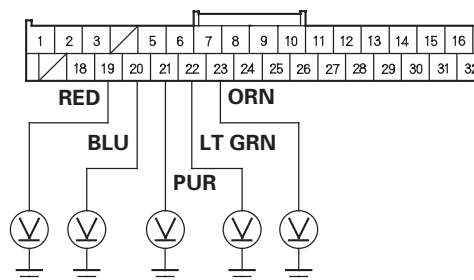
Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

NO—Go to step 12.

12. Turn the ignition switch to ON (II), and measure the same terminals for voltage to body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there any voltage?

YES—Repair short to power in the wire(s) between the climate control unit and the mode control motor. This short may also damage the climate control unit. Repair the short to power before replacing the climate control unit. ■

NO—Check for loose wires or poor connections at the climate control unit 32P connector and at the mode control motor 7P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B1240 or DTC indicator N: A Problem in the Mode Control Linkage, Doors, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1240 or N indicated?

YES—Go to step 5.

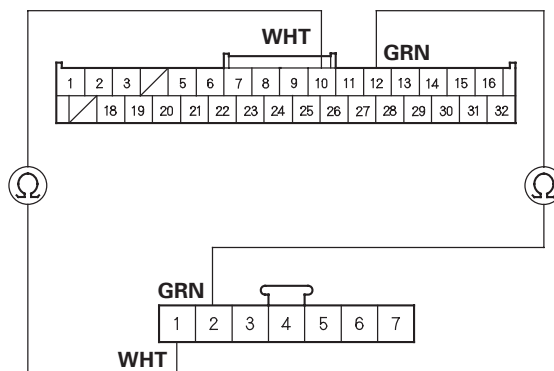
NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the mode control motor 7P connector.
7. Disconnect the climate control unit 32P connector.

8. Check for continuity between the following terminals of climate control unit 32P connector and the mode control motor 7P connector.

32P: 7P:
No. 10 No. 1
No. 12 No. 2

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



MODE CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

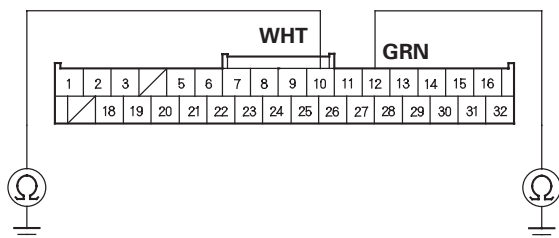
YES—Go to step 9.

NO—Repair open in the wire(s) between the climate control unit and the mode control motor. ■



9. Check for continuity between body ground and the climate control unit 32P connector terminals No. 10 and No. 12 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the mode control motor. ■

NO—Go to step 10.

10. Test the mode control motor (see page 21-73).

Is the mode control motor OK?

YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the mode control motor (see page 21-73), or repair the mode control linkage or doors. ■

DTC B1241 or DTC indicator P: A Problem in the Blower Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B1241 or P indicated?

YES—Go to step 5.

NO—Intermittent failure, check for loose wires or poor connections on the blower motor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Check the No. 9 (40 A) fuse in the under-hood fuse/relay box, and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

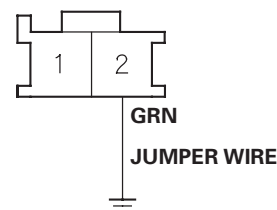
Are the fuses OK?

YES—Go to step 7.

NO—Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 9 (40 A) and No. 36 (10 A) fuses circuit. ■

7. Connect the blower motor 2P connector terminal No. 2 to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

8. Turn the ignition switch to ON (II).

Does the blower motor run?

YES—Go to step 9.

NO—Go to step 24.

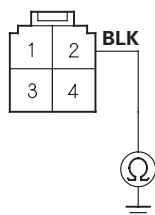
9. Turn the ignition switch to LOCK (0).

10. Disconnect the jumper wire.

11. Disconnect the power transistor 4P connector.

12. Check for continuity between the power transistor 4P connector terminal No. 2 and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

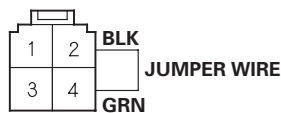
Is there continuity?

YES—Go to step 13.

NO—Check for an open in the wire between the power transistor and body ground. If the wire is OK, check for poor ground at G401 (see page 22-64). ■

13. Connect the power transistor 4P connector terminals No. 2 and No. 4 with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

14. Turn the ignition switch to ON (II).

Does the blower motor run at high speed?

YES—Go to step 15.

NO—Repair open in the GRN wire between the power transistor and the blower motor. ■

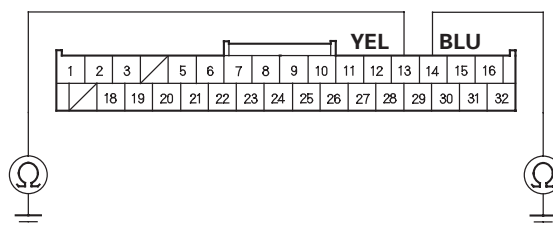
15. Turn the ignition switch to LOCK (0).

16. Disconnect the jumper wire.

17. Disconnect the climate control unit 32P connector.

18. Check for continuity between body ground and the climate control unit 32P connector terminals No. 13 and No. 14 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

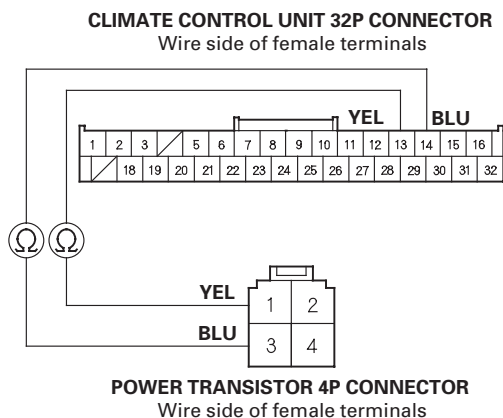
YES—Repair short to body ground in the wire(s) between the climate control unit and the power transistor. ■

NO—Go to step 19.



19. Check for continuity between the following terminals of the climate control unit 32P connector and the power transistor 4P connector.

32P: 4P:
No. 13 No. 1
No. 14 No. 3

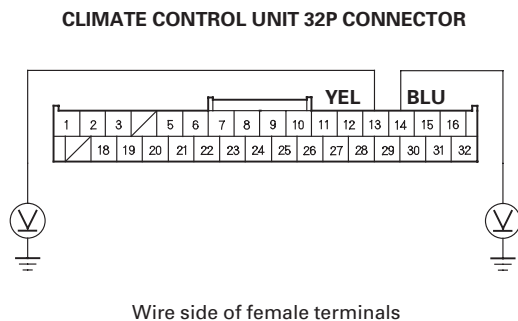


Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire(s) between the climate control unit and the power transistor. ■

20. Turn the ignition switch to ON (II).
21. Measure the voltage between body ground and the climate control unit 32P connector terminals No. 13 and No. 14 individually.



Is there voltage?

YES—Repair short to power in the wire(s). ■

NO—Go to step 22.

22. Reconnect the climate control unit 32P connector.

23. Test the power transistor (see page 21-71).

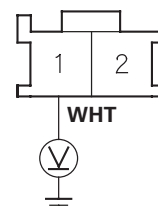
Is the power transistor OK?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the power transistor 4P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the power transistor. ■

24. Disconnect the jumper wire.
25. Disconnect the blower motor 2P connector.
26. Measure the voltage between the blower motor 2P connector terminal No. 1 and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the blower motor. ■

NO—Go to step 27.

27. Turn the ignition switch to LOCK (0).
28. Remove the blower motor relay from the under-hood fuse/relay box, and test it (see page 22-70).

Is the relay OK?

YES—Go to step 29.

NO—Replace the blower motor relay. ■

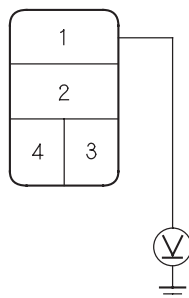
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

29. Measure the voltage between the blower motor relay 4P socket terminal No. 1 and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

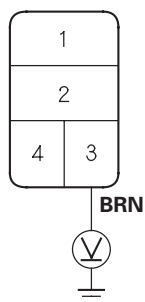
YES—Go to step 30.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■

30. Turn the ignition switch to ON (II).

31. Measure the voltage between the blower motor relay 4P socket terminal No. 3 and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

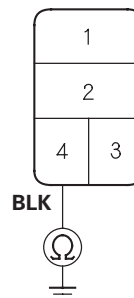
YES—Go to step 32.

NO—Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the blower motor relay. ■

32. Turn the ignition switch to LOCK (0).

33. Check for continuity between the blower motor relay 4P socket terminal No. 4 and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES—Repair open in the WHT wire between the blower motor relay and the blower motor. ■

NO—Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G301 (see page 22-64). ■



DTC B2983 or DTC indicator B and AUTO: A Problem in the Recirculation Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

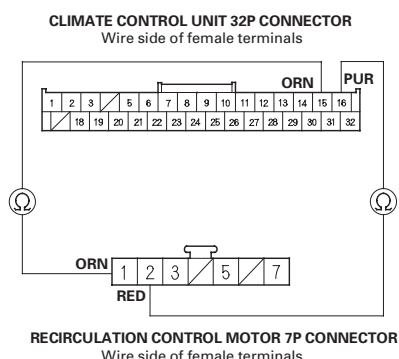
Is DTC B2983 or B and AUTO indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the recirculation control motor 7P connector.
7. Disconnect the climate control unit 32P connector.
8. Check for continuity between the following terminals of climate control unit 32P connector and the recirculation control motor 7P connector.

32P: 7P:
No. 15 No. 1
No. 16 No. 2



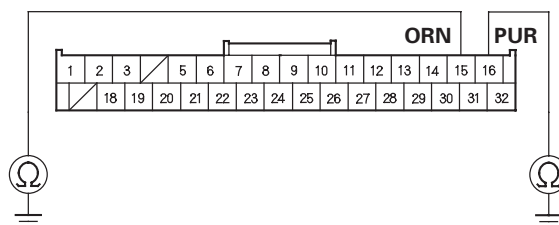
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire(s) between the climate control unit and the recirculation control motor. ■

9. Check for continuity between body ground and the climate control unit 32P connector terminals No. 15 and No. 16 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire(s) between the climate control unit and the recirculation control motor. ■

NO—Go to step 10.

10. Test the recirculation control motor (see page 21-74).

Is the recirculation control motor OK?

YES—Substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Replace the recirculation control motor (see page 21-74), or repair the recirculation control linkage or door. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B2986 or DTC indicator A and AUTO: An Open in the Recirculation Control Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then turn to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11).
4. Check for DTCs.

Is DTC B2986 or A and AUTO indicated?

YES—Go to step 5.

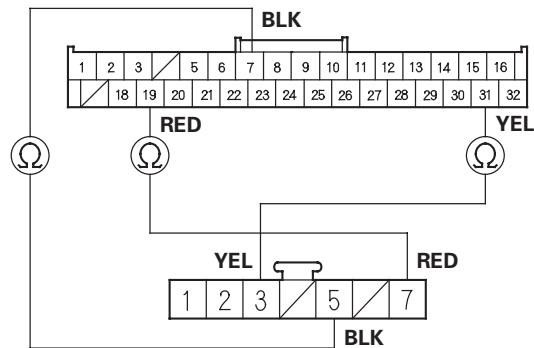
NO—Intermittent failure, check for loose wires or poor connections on the recirculation control motor circuit. ■

5. Turn the ignition switch to LOCK (0).
 6. Test the recirculation control motor (see page 21-74).
- Is the recirculation control motor OK?*
- YES**—Go to step 7.
- NO**—Replace the recirculation control motor (see page 21-74). ■
7. Disconnect the recirculation control motor 7P connector.
 8. Disconnect the climate control unit 32P connector.

9. Check for continuity between the following terminals of the climate control unit 32P connector and the recirculation control motor 7P connector.

32P:	7P:
No. 7	No. 5
No. 19	No. 7
No. 31	No. 3

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



RECIRCULATION CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the recirculation control motor 7P connector. If the connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair open in the wire(s) between the climate control unit and the recirculation control motor. ■



Climate Control Power and Ground Circuit Troubleshooting

1. Check the No. 36 (10 A) fuse in the under-dash fuse/relay box.

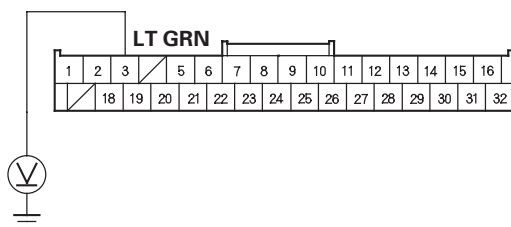
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. If the fuse blows again, check for a short in the No. 36 (10 A) fuse circuit. ■

2. Disconnect the climate control unit 32P connector.
3. Turn the ignition switch to ON (II).
4. Measure the voltage between the climate control unit 32P connector terminal No. 3 and body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

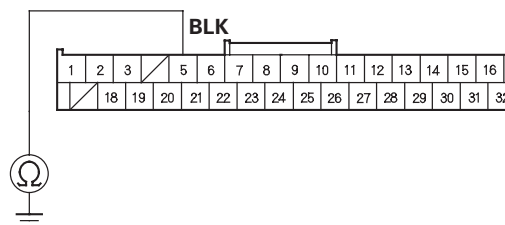
Is there battery voltage?

YES—Go to step 5.

NO—Repair an open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the climate control unit. ■

5. Turn the ignition switch to LOCK (0).
6. Check for continuity between the climate control unit 32P connector terminal No. 5 and body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose wires and poor connections at the climate control unit 32P connector. If connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Check for an open in the wire between the climate control unit and body ground. If the wire is OK, check for poor ground at G504 (see page 22-64). ■

Climate Control

Navigation Communication Line Circuit Troubleshooting

1. Operate the climate control system in several modes.

Is the climate control system OK?

YES—Go to step 2.

NO—Do the self-diagnostic with the HDS (see page 21-10) or climate control unit (see page 21-11). ■

2. Do the Navi system link (see page 23-135). ■

Is the Air-Con icon red?

YES—

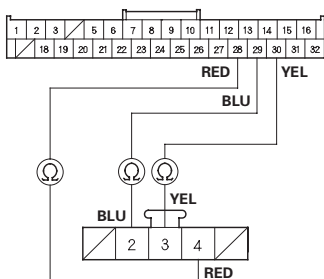
- '06-08 models: Go to step 3.
- '09 model: Go to step 7.

NO—Go to step 13.

3. Turn the ignition switch to LOCK (0).
4. Disconnect navigation unit connector F (5P).
5. Disconnect climate control unit 32P connector.
6. Check for continuity between the following terminals of climate control unit 32P connector and navigation unit connector F (5P).

32P:	5P:
No. 28	No. 4
No. 29	No. 2
No. 30	No. 3

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



NAVIGATION UNIT CONNECTOR F (5P)
Wire side of female terminals

Is there continuity?

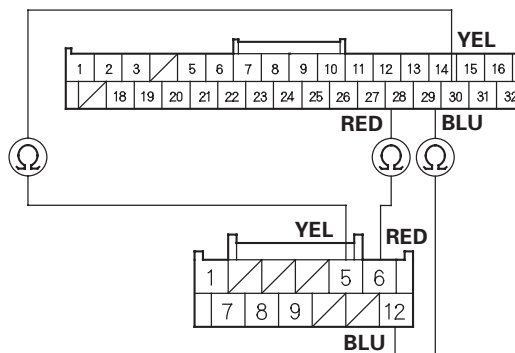
YES—Go to step 11.

NO—Repair open in the wire(s) between the climate control unit and the navigation unit. ■

7. Turn the ignition switch to LOCK (0).
8. Disconnect navigation unit connector D (12P).
9. Disconnect climate control unit 32P connector.
10. Check for continuity between the following terminals of climate control unit 32P connector and navigation unit connector D (12P).

32P:	12P:
No. 28	No. 6
No. 29	No. 12
No. 30	No. 5

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



NAVIGATION UNIT CONNECTOR D (12P)
Wire side of female terminals

Is there continuity?

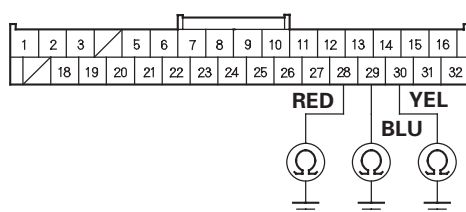
YES—Go to step 11.

NO—Repair open in the wire(s) between the climate control unit and the navigation unit. ■



11. Check for continuity between body ground and climate control unit 32P connector terminals No. 28, 29, and No. 30 individually.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there continuity?

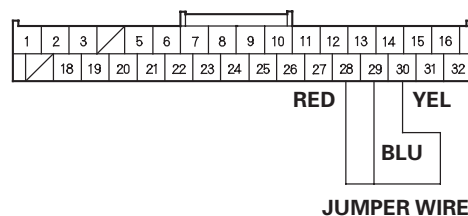
YES—Repair short to body ground in the wire(s) between the climate control unit and the navigation unit. ■

NO—Go to step 12.

12. Reconnect climate control unit 32P connector.
13. '06-08 models: Disconnect navigation unit connector F (5P).
'09 model: Disconnect navigation unit connector D (12P).

14. Connect climate control unit 32P connector terminals No. 28, 29, and No. 30 with a jumper wire.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

15. Turn the ignition switch to ON (II).
16. Press the RECIRCULATION and OFF buttons.

Does the RECIRCULATION indicator turn on?

YES—Troubleshoot the navigation system: '06-08 models (see page 23-130), '09 model (see page 23-346). ■

NO—Substitute a known-good climate control unit, and recheck. If the symptom goes away, replace the original climate control unit. ■

Climate Control

Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 7 (20 A) fuse in the under-hood fuse/relay box, and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 7 (20 A) and No. 36 (10 A) fuses circuit. ■

2. Remove the radiator fan relay from the under-hood fuse/relay box, and test it (see page 22-70).

Is the relay OK?

YES—Go to step 3.

NO—Replace the radiator fan relay. ■

3. Connect the HDS to the DLC.
4. Turn the ignition switch to ON (II).
5. Turn on the A/C.
6. Check the FAN LOW CTRL in the PGM-FI Data List with the HDS.

Is the FAN LOW CTRL on?

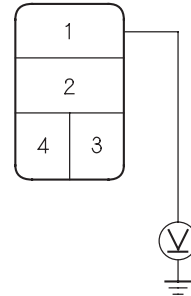
YES—Go to step 7.

NO—Substitute a known-good ECM/PCM (see page 11-7), and retest. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

7. Turn the ignition switch to LOCK (0).

8. Measure the voltage between the radiator fan relay 4P socket terminal No. 1 and body ground.

RADIATOR FAN RELAY 4P SOCKET



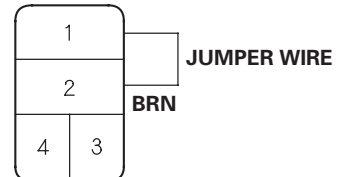
Is there battery voltage?

YES—Go to step 9.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■

9. Connect the radiator fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

RADIATOR FAN RELAY 4P SOCKET



Do the A/C condenser and radiator fans run on low?

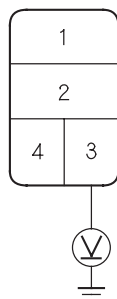
YES—Go to step 10.

NO—Go to step 19.



10. Disconnect the jumper wire.
11. Turn the ignition switch to ON (II).
12. Measure the voltage between the radiator fan relay 4P socket terminal No. 3 and body ground.

RADIATOR FAN RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 13.

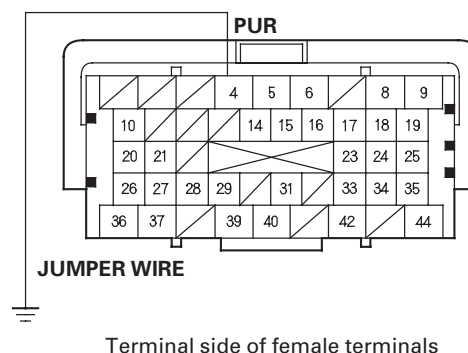
NO—Go to step 37.

13. Turn the ignition switch to LOCK (0).
14. Reinstall the radiator fan relay.
15. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

16. Disconnect ECM/PCM connector A (44P).
17. Connect the ECM/PCM connector A (44P) terminal No. 4 to body ground with a jumper wire.

ECM/PCM CONNECTOR A (44P)



18. Turn the ignition switch to ON (II).

Do the A/C condenser and radiator fans run on low?

YES—Check for loose wires or poor connections at ECM/PCM connector A (44P) terminal No. 4. If the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM (see page 11-228). ■

NO—Repair open in the wire between the radiator fan relay and the ECM/PCM. ■

19. Disconnect the jumper wire.
20. Reinstall the radiator fan relay.
21. Disconnect the radiator fan 2P connector.
22. Turn the ignition switch to ON (II), then set the A/C button and fan control dial ON.

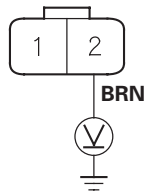
(cont'd)

Climate Control

Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting (cont'd)

23. Measure the voltage between the radiator fan 2P connector terminal No. 2 and body ground.

RADIATOR FAN 2P CONNECTOR



Wire side of female terminals

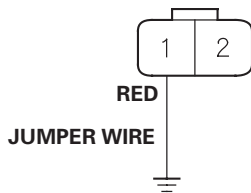
Is there battery voltage?

YES—Go to step 24.

NO—Repair open in the wire between the radiator fan relay and the radiator fan. ■

24. Set the A/C button and fan control dial OFF, then turn the ignition switch to LOCK (0).
25. Reconnect the radiator fan 2P connector.
26. Connect the radiator fan 2P connector terminal No. 1 to body ground with a jumper wire.

RADIATOR FAN 2P CONNECTOR



Wire side of female terminals

27. Turn the ignition switch to ON (II), then set the A/C button and fan control dial ON.

Does the radiator fan run?

YES—Go to step 28.

NO—Replace the radiator fan motor. ■

28. Set the A/C button and fan control dial OFF, then turn the ignition switch to LOCK (0).

29. Disconnect the jumper wire.

30. Remove the fan control relay from the under-hood fuse/relay box, and test it (see page 22-70).

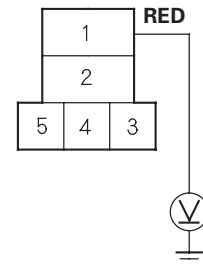
Is the relay OK?

YES—Go to step 31.

NO—Replace the fan control relay. ■

31. Turn the ignition switch to ON (II), then set the A/C button and fan control dial ON.
32. Measure the voltage between the fan control relay 5P socket terminal No. 1 and body ground.

FAN CONTROL RELAY 5P SOCKET



Is there battery voltage?

YES—Go to step 33.

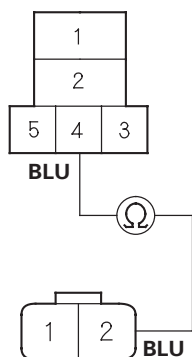
NO—Repair open in the wire between the radiator fan and the fan control relay. ■

33. Set the A/C button and fan control dial OFF, then turn the ignition switch to LOCK (0).



34. Disconnect the A/C condenser fan 2P connector.
35. Check for continuity between the fan control relay 5P socket terminal No. 4 and the A/C condenser fan 2P connector terminal No. 2.

FAN CONTROL RELAY 5P SOCKET



A/C CONDENSER FAN 2P CONNECTOR
Wire side of female terminals

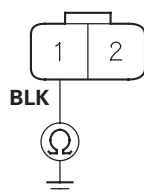
Is there continuity?

YES—Go to step 36.

NO—Repair open in the wire between the fan control relay and the A/C condenser fan. ■

36. Check for continuity between the A/C condenser fan 2P connector terminal No. 1 and body ground.

A/C CONDENSER FAN 2P CONNECTOR



Wire side of female terminals

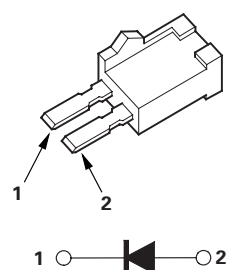
Is there continuity?

YES—Replace the A/C condenser fan motor. ■

NO—Check for an open in the wire between the A/C condenser fan and body ground. If the wire is OK, check for poor ground at G301 (see page 22-64). ■

37. Turn the ignition switch to LOCK (0).
38. Remove A/C diode A from the under-hood fuse/relay box.
39. Using the diode setting ($\rightarrow \leftarrow$) on a DVOM, check for current flow in both directions between the A/C diode A terminals No. 1 and No. 2.

A/C DIODE A



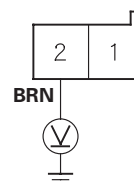
Is there current flow in only one direction?

YES—Go to step 40.

NO—Replace A/C diode A. ■

40. Turn the ignition switch to ON (II).
41. Measure the voltage between the A/C diode A 2P socket terminal No. 2 and body ground.

A/C DIODE A 2P SOCKET



Is there battery voltage?

YES—Replace the under-hood fuse/relay box (see page 22-65). ■

NO—Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and A/C diode A. ■

Climate Control

A/C Condenser Fan High Speed Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 6 (20 A) and No. 15 (7.5 A) fuses in the under-hood fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuses, and recheck. If the fuses blow again, check for a short in the No. 6 (20 A) and No. 15 (7.5 A) fuses circuit. ■

2. Remove the A/C condenser fan relay from the under-hood fuse/relay box, and test it (see page 22-70).

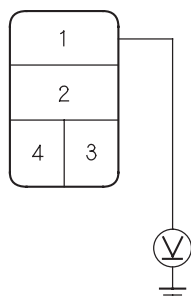
Is the relay OK?

YES—Go to step 3.

NO—Replace the A/C condenser fan relay. ■

3. Measure the voltage between the A/C condenser fan relay 4P socket terminal No. 1 and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



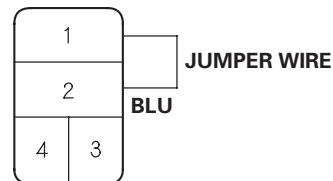
Is there battery voltage?

YES—Go to step 4.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■

4. Connect the A/C condenser fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

A/C CONDENSER FAN RELAY 4P SOCKET



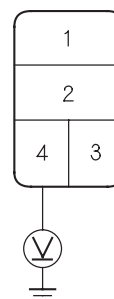
Does the A/C condenser fan run on high?

YES—Go to step 5.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■

5. Disconnect the jumper wire.
6. Turn the ignition switch to ON (II).
7. Measure the voltage between the A/C condenser fan relay 4P socket terminal No. 4 and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 8.

NO—Go to step 14.



8. Turn the ignition switch to LOCK (0).

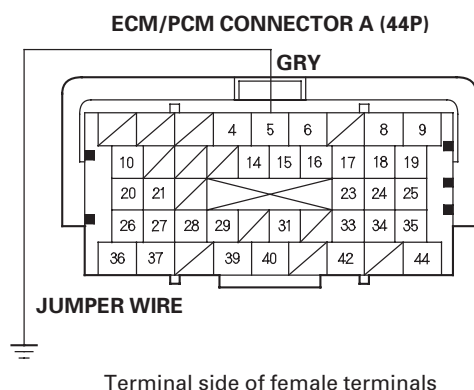
9. Reinstall the A/C condenser fan relay.

10. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

11. Disconnect ECM/PCM connector A (44P).

12. Connect the ECM/PCM connector A (44P) terminal No. 5 to body ground with a jumper wire.



13. Turn the ignition switch to ON (II).

Does the A/C condenser fan run on high?

YES—Check for loose wires or poor connections at ECM/PCM connector A (44P) terminal No. 5. If the connections are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM (see page 11-228). ■

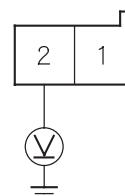
NO—Repair open in the wire between the A/C condenser fan relay and the ECM/PCM. ■

14. Remove the A/C diode B from the under-hood fuse/relay box.

15. Turn the ignition switch to ON (II).

16. Measure the voltage between the A/C diode B 2P socket terminal No. 2 and body ground.

A/C DIODE B 2P SOCKET



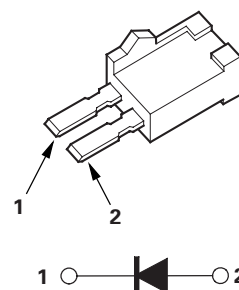
Is there battery voltage?

YES—Go to step 17.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■

17. Using the diode setting (→|←) on a DVOM, check for current flow in both directions between the A/C diode B terminals No. 1 and No. 2.

A/C DIODE B



Is there current flow in only one direction?

YES—Replace the under-hood fuse/relay box (see page 22-65). ■

NO—Replace the A/C diode B. ■

Climate Control

A/C Compressor Clutch Circuit Troubleshooting

NOTE:

- It is normal for the A/C compressor to turn off under certain conditions, such as low idle, high engine coolant temperature, or hard acceleration.
- Do not use this troubleshooting procedure if the fans are also inoperative with the A/C on. Refer to the symptom troubleshooting index.
- Before doing any symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 20 (7.5 A) fuse in the under-hood fuse/relay box, and the No. 36 (10 A) fuse in the under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuses and recheck. If the fuses blow again, check for a short in the No. 20 (7.5 A) and No. 36 (10 A) fuses circuit. ■

2. Connect the HDS to the DLC.
3. Start the engine.
4. Turn on the A/C.
5. Using the HDS, confirm the following values in the PGM-FI Data List at idle.

ECT Sensor 2	80—100 °C (176—212 °F)
TP Sensor	About 0.5 V at idle
RPM	More than 670
A/C Switch	ON
A/C Clutch	ON
A/C Pressure Sensor	196—455 kPa (28—455 psi)

Are all the values within specifications?

YES—Go to step 6.

NO—Troubleshoot the value that is not within the specifications. ■

6. Turn the ignition switch to LOCK (0).
7. Remove the A/C compressor clutch relay from the under-hood fuse/relay box, and test it (see page 22-70).

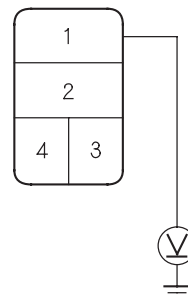
Is the relay OK?

YES—Go to step 8.

NO—Replace the A/C compressor clutch relay. ■

8. Measure the voltage between the A/C compressor clutch relay 4P socket terminal No. 1 and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Is there battery voltage?

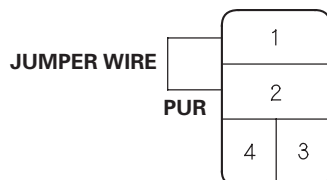
YES—Go to step 9.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■



9. Connect the A/C compressor clutch relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



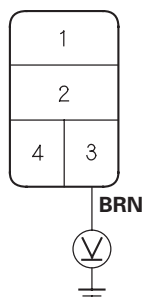
Does the A/C compressor clutch click?

YES—Go to step 10.

NO—Go to step 19.

10. Disconnect the jumper wire.
11. Turn the ignition switch to ON (II).
12. Measure the voltage between the A/C compressor clutch relay 4P socket terminal No. 3 and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 13.

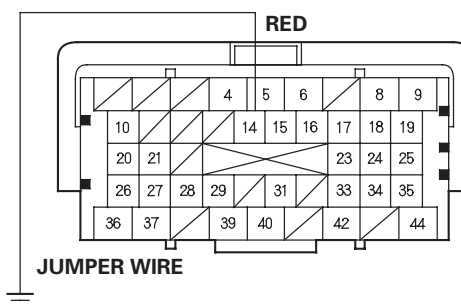
NO—Repair open in the wire between the No. 36 (10 A) fuse in the under-dash fuse/relay box and the A/C compressor clutch relay. ■

13. Turn the ignition switch to LOCK (0).
14. Reinstall the A/C compressor clutch relay.
15. Jump the SCS line with the HDS.

NOTE: This step must be done to protect the engine control module (ECM)/powertrain control module (PCM) from damage.

16. Disconnect ECM/PCM connector A (44P).
17. Connect the ECM/PCM connector A (44P) terminal No. 14 to body ground with a jumper wire.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

18. Turn the ignition switch to ON (II).

Does the A/C compressor click?

YES—Check for loose wires or poor connections at ECM/PCM connector A (44P). If the connections are good, check the ECM/PCM grounds. If the grounds are good, substitute a known-good ECM/PCM, and recheck. If the symptom/indication goes away, replace the original ECM/PCM (see page 11-228). ■

NO—Repair open in the wire between the A/C compressor clutch relay and the ECM/PCM. ■

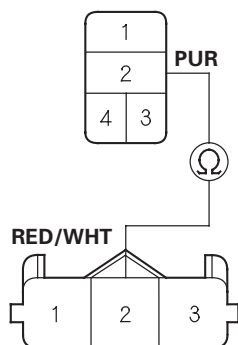
(cont'd)

Climate Control

A/C Compressor Clutch Circuit Troubleshooting (cont'd)

19. Disconnect the jumper wire.
20. Disconnect the A/C compressor clutch 3P connector.
21. Check for continuity between the A/C compressor clutch relay 4P socket terminal No. 2 and the A/C compressor clutch 3P connector terminal No. 2.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



A/C COMPRESSOR CLUTCH 3P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Check the A/C compressor clutch clearance, and the compressor clutch field coil (see page 21-85). Repair as needed. ■

NO—Repair open in the wire between the A/C compressor clutch relay and the A/C compressor clutch. ■

A/C Signal Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if any of the following items are operative: A/C condenser fan, radiator fan, A/C compressor. Refer to the symptom troubleshooting index.
- Before doing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Connect the HDS to the DLC.
2. Start the engine.
3. Turn on the A/C.
4. Check the A/C SWITCH in the PGM-FI Data List with the HDS.

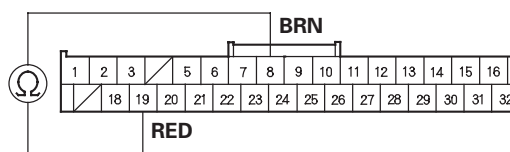
Is the A/C SWITCH on?

YES—The A/C signal is OK at this time.

NO—Go to step 5.

5. Turn the ignition switch to LOCK (0), and disconnect the climate control unit 32P connector.
6. Measure the evaporator temperature sensor resistance between the climate control unit 32P connector terminals No. 8 and No. 19.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is resistance less than 24 k Ω ?

YES—Go to step 7.

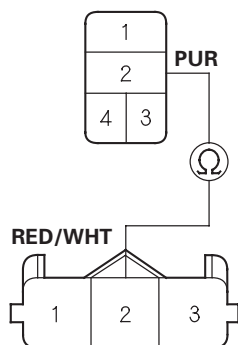
NO—Test the evaporator temperature sensor (see page 21-70). ■

Climate Control

A/C Compressor Clutch Circuit Troubleshooting (cont'd)

19. Disconnect the jumper wire.
20. Disconnect the A/C compressor clutch 3P connector.
21. Check for continuity between the A/C compressor clutch relay 4P socket terminal No. 2 and the A/C compressor clutch 3P connector terminal No. 2.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



A/C COMPRESSOR CLUTCH 3P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Check the A/C compressor clutch clearance, and the compressor clutch field coil (see page 21-85). Repair as needed. ■

NO—Repair open in the wire between the A/C compressor clutch relay and the A/C compressor clutch. ■

A/C Signal Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if any of the following items are operative: A/C condenser fan, radiator fan, A/C compressor. Refer to the symptom troubleshooting index.
- Before doing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Connect the HDS to the DLC.
2. Start the engine.
3. Turn on the A/C.
4. Check the A/C SWITCH in the PGM-FI Data List with the HDS.

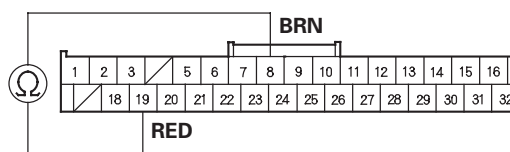
Is the A/C SWITCH on?

YES—The A/C signal is OK at this time.

NO—Go to step 5.

5. Turn the ignition switch to LOCK (0), and disconnect the climate control unit 32P connector.
6. Measure the evaporator temperature sensor resistance between the climate control unit 32P connector terminals No. 8 and No. 19.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is resistance less than 24 k Ω ?

YES—Go to step 7.

NO—Test the evaporator temperature sensor (see page 21-70). ■



7. Reconnect the climate control unit 32P connector.

8. Turn the ignition switch to ON (II).

9. Check the blower motor operates at all speeds.

Does the blower motor operate at all speeds?

YES—Go to step 10.

NO—Repair the problem in the blower motor circuit. ■

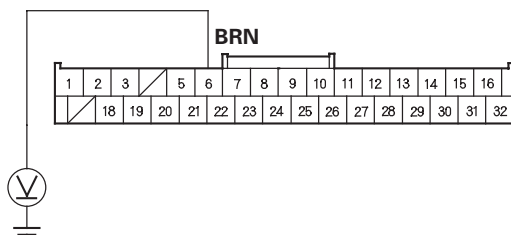
10. Turn the ignition switch to LOCK (0).

11. Disconnect the climate control unit 32P connector.

12. Turn the ignition switch to ON (II).

13. Measure the voltage between the climate control unit 32P connector terminal No. 6 and body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 14.

NO—Go to step 18.

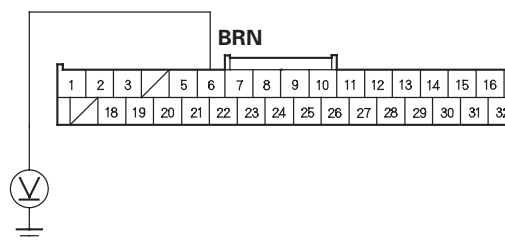
14. Turn the ignition switch to LOCK (0).

15. Reconnect the climate control unit 32P connector.

16. Set the A/C button and fan control switch ON, then turn the ignition switch to ON (II).

17. Measure the voltage between the climate control unit 32P connector terminal No. 6 and body ground.

CLIMATE CONTROL UNIT 32P CONNECTOR



Wire side of female terminals

Is there 0.5 V or less?

YES—Substitute a known-good MICU and recheck. If the symptom goes away, replace the original MICU (see page 22-66). ■

NO—Check for loose wires or poor connections at the climate control unit 32P connector. If connections are good, substitute a known-good climate control unit and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

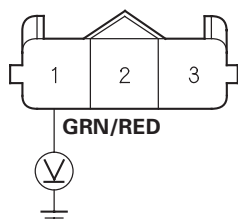
(cont'd)

Climate Control

A/C Signal Circuit Troubleshooting (cont'd)

18. Turn the ignition switch to LOCK (0).
19. Disconnect the A/C compressor clutch 3P connector.
20. Turn the ignition switch to ON (II).
21. Measure the voltage between the A/C compressor clutch 3P connector terminal No. 1 and body ground.

A/C COMPRESSOR CLUTCH 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 22.

NO—Repair open in the wire between the A/C compressor and the MICU. If the wire is OK, substitute a known-good MICU and recheck. If the symptom goes away, replace the original MICU (see page 22-66). ■

22. Test the A/C compressor thermal protector (see page 21-85).

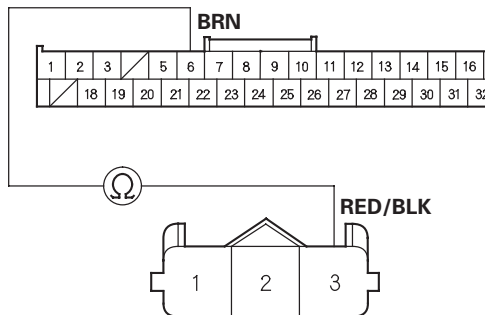
Is the A/C compressor thermal protector OK?

YES—Go to step 23.

NO—Replace the A/C compressor thermal protector (see page 21-87). ■

23. Check for continuity between the climate control unit 32P connector terminal No. 6 and the A/C compressor clutch 3P connector terminal No. 3.

CLIMATE CONTROL UNIT 32P CONNECTOR
Wire side of female terminals



A/C COMPRESSOR CLUTCH 3P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 32P connector and at the A/C compressor clutch 3P connector. ■

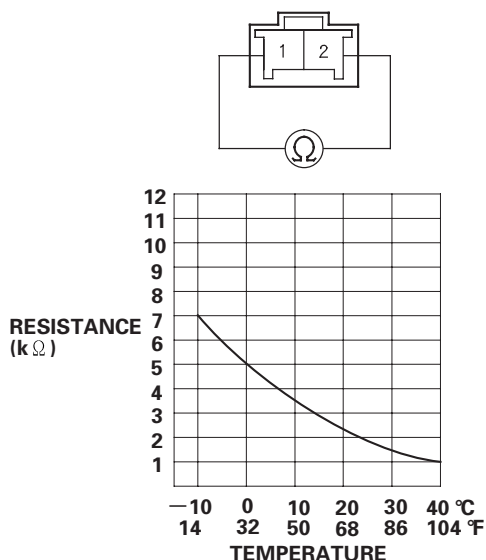
NO—Repair open in the wire between the climate control unit and A/C compressor. ■



In-car Temperature Sensor Test

1. Remove the in-car temperature sensor (see page 21-67).
2. Test the in-car temperature sensor while holding it in front of the dashboard center vent.
 - Measure the resistance with the system set to Max Cool.
 - Measure the resistance with the system set to Max Hot.
3. Compare the resistance reading between terminals No. 1 and No. 2 of the in-car temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

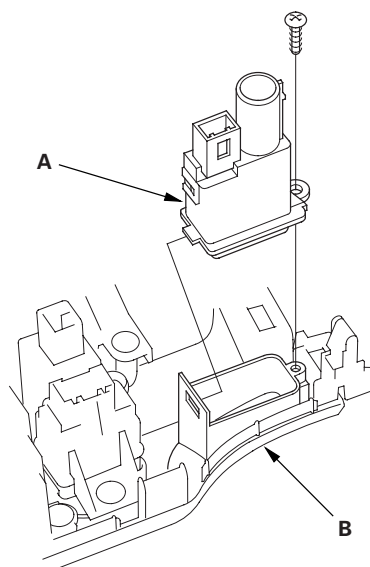
IN-CAR TEMPERATURE SENSOR



4. If the resistance is not as specified, replace the in-car temperature sensor (see page 21-67).

In-car Temperature Sensor Replacement

1. Remove the center panel:
 - '06-08 models with navigation (see page 23-155)
 - '06-08 models without navigation (see page 23-80)
 - '09 model with navigation (see page 23-355)
 - '09 model without navigation (see page 23-256)
2. Remove the self-tapping screw and the in-car temperature sensor (A) from the center panel (B).



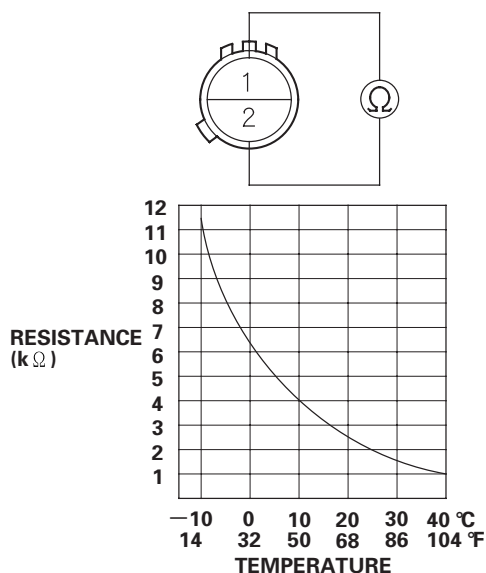
3. Install the sensor in the reverse order of removal. Be sure to connect the air hose securely.

Climate Control

Outside Air Temperature Sensor Test

1. Remove the outside air temperature sensor (see page 21-68).
2. Dip the sensor in ice water, and measure the resistance. Then pour warm water on the sensor, and check for a change in resistance.
3. Compare the resistance reading between terminals No. 1 and No. 2 of the outside air temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

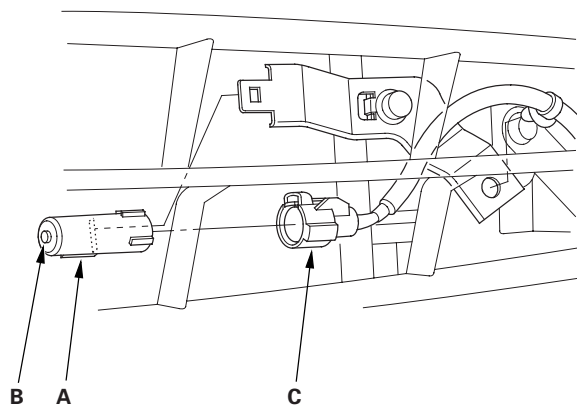
OUTSIDE AIR TEMPERATURE SENSOR



4. If the resistance is not as specified, replace the outside air temperature sensor (see page 21-68).

Outside Air Temperature Sensor Replacement

1. Remove the front grille cover (see page 20-163).
2. Lift the tab (A) to release the lock, then remove the outside air temperature sensor (B) from the bracket. Disconnect the 2P connector (C) from the outside air temperature sensor.

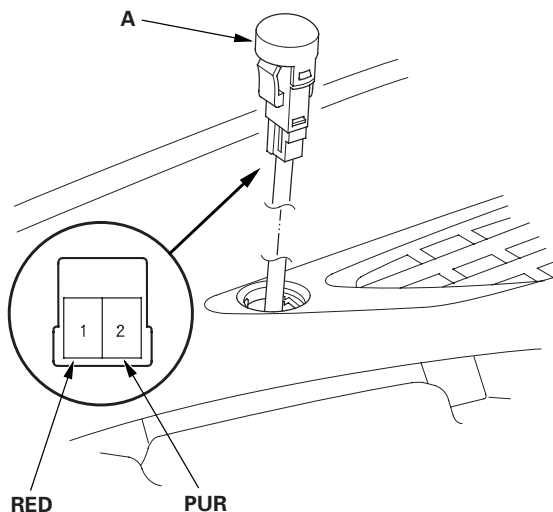


3. Install the sensor in the reverse order of removal.



Sunlight Sensor Test

1. Remove the sunlight sensor (A) from the dashboard (see page 21-69).



2. Turn the ignition switch to ON (II). Measure the voltage between the terminals with the (+) probe on terminal No. 2 and the (-) probe on terminal No. 1 with the connector connected.

NOTE: The voltage readings will not change under the light of a flashlight or a fluorescent lamp.

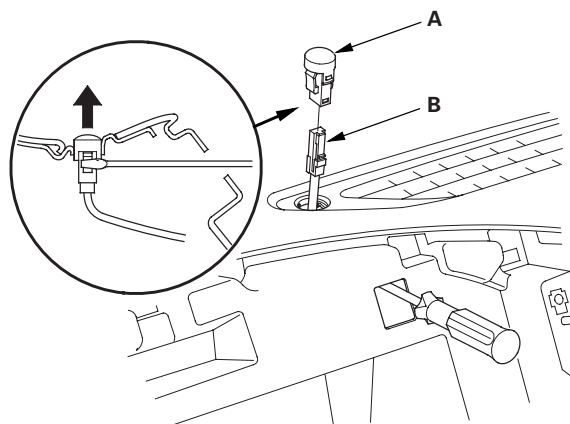
Voltage should be:

- 3.6—3.7 V or more with the sensor out of direct sunlight.
- 3.3—3.5 V or less with the sensor in direct sunlight.

3. If the voltage is not as specified, replace the sunlight sensor (see page 21-69).

Sunlight Sensor Replacement

1. Remove the gauge control module (SPEEDO) (see page 22-277).
2. Remove the sunlight sensor (A) from the dashboard with a flat-tip screwdriver, then disconnect the connector (B). Be careful not to damage the sensor and the dashboard.



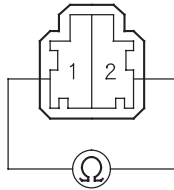
3. Install the sensor in the reverse order of removal.

Climate Control

Evaporator Temperature Sensor Test

1. Remove the evaporator core and the evaporator temperature sensor (see page 21-78).
2. Dip the sensor in ice water, and measure the resistance between its terminals.

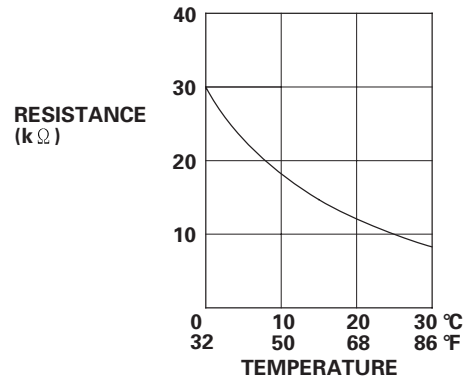
EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

3. Then pour warm water on the sensor, and check for a change in resistance.

4. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.



5. If the resistance is not as specified, replace the evaporator temperature sensor (see page 21-78).

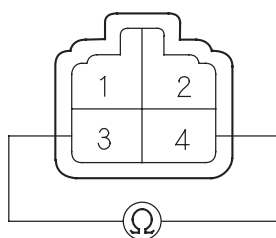


Power Transistor Test

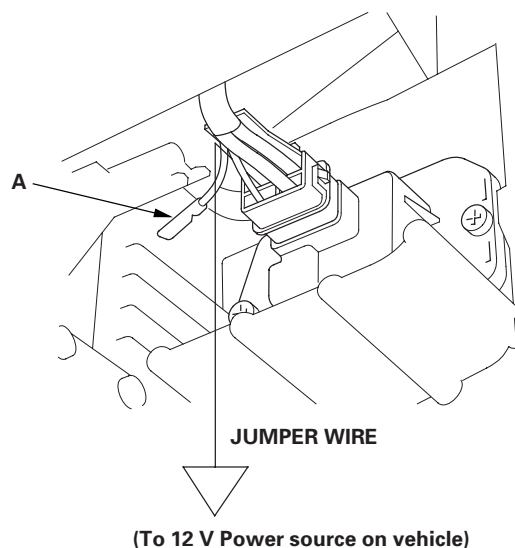
1. Remove the passenger's dashboard undercover (see page 20-104).
2. Disconnect the 4P connector from the power transistor.
3. Measure the resistance between terminals No. 3 and No. 4 of the power transistor. It should be about 1.5 k Ω .
 - If the resistance is within the specifications, go to step 4.
 - If the resistance is not within the specifications, replace the power transistor.

NOTE: Also check the blower motor. Power transistor failure can be caused by a defective blower motor.

POWER TRANSISTOR



4. Carefully release the lock tab on terminal No. 1 (YEL) (A) in the 4P connector, then remove the terminal and insulate it from body ground.



5. Reconnect the 4P connector to the power transistor.
6. Make sure the YEL wire is completely isolated, then supply 12 V to cavity No. 1 with a jumper wire.
7. Turn the ignition switch to ON (II), and check that the blower motor runs.
 - If the blower motor does not run, replace the power transistor.

NOTE: A faulty blower motor can cause the power transistor to fail. If the power transistor is replaced, also check the blower motor for binding, and replace it if necessary.

- If the blower motor runs, the power transistor is OK.

Climate Control

Air Mix Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-9).

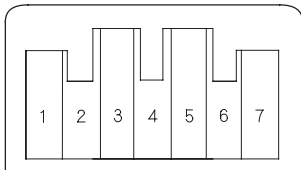
1. Disconnect the 7P connector from the air mix control motor.

NOTICE

Incorrectly applying power and ground to the air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to terminal No. 1 of the air mix control motor, and ground terminal No. 2; the air mix control motor should run, and stop at Max Hot. If it doesn't, reverse the connections; the air mix control motor should run, and stop at Max Cool. When the air mix control motor stops running, disconnect battery power immediately.

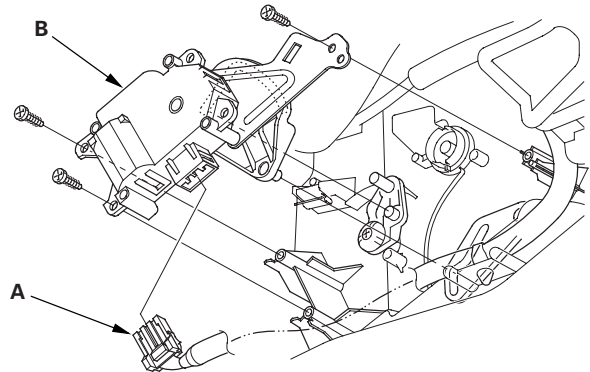
AIR MIX CONTROL MOTOR



3. If the air mix control motor did not run in step 2, remove it, then check the air mix control linkage and door for smooth movement.
 - If the linkage and door move smoothly, replace the air mix control motor (see page 21-72).
 - If the linkage or door sticks or binds, repair them as needed.
 - If the air mix control motor runs smoothly, go to step 4.
4. Measure the resistance between terminals No. 5 and No. 7. It should be between 4.2 to 7.8 k Ω .
5. Reconnect the air mix control motor 7P connector, then turn the ignition switch to ON (II).
6. Using the backprobe set, measure the voltage between terminals No. 3 and No. 7.
Max Cool: About 0.5 V
Max Hot: About 4.5 V
7. If either the resistance or voltage readings are not as specified, replace the air mix control motor (see page 21-72).

Air Mix Control Motor Replacement

1. Remove the driver's dashboard undercover (see page 20-103).
2. Disconnect the 7P connector (A) from the air mix control motor (B). Remove the self-tapping screws and the air mix control motor from the heater unit.



3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.



Mode Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-9).

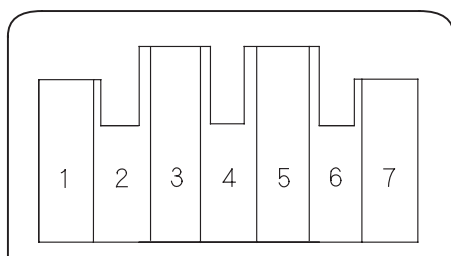
1. Disconnect the 7P connector from the mode control motor.

NOTICE

Incorrectly applying power and ground to the mode control motor will damage it. Follow the instructions carefully.

2. Connect battery power to terminal No. 1 of the mode control motor, and ground terminal No. 2; the mode control motor should run smoothly, and stop at Vent. If it doesn't, reverse the connections; the mode control motor should run smoothly, and stop at Defrost. When the mode control motor stops running, disconnect battery power immediately.

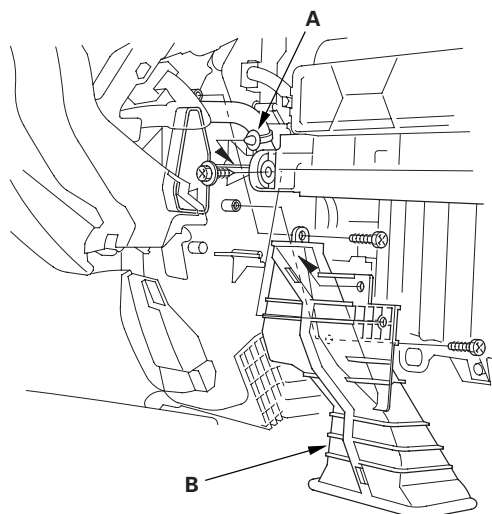
MODE CONTROL MOTOR



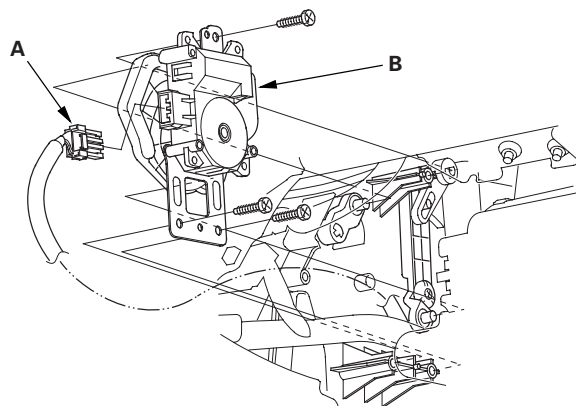
3. If the mode control motor did not run in step 2, remove it, then check the mode control linkage and doors for smooth movement.
 - If the linkage and doors move smoothly, replace the mode control motor (see page 21-73).
 - If the linkage or doors stick or bind, repair them as needed.
 - If the mode control motor runs smoothly, go to step 4.
4. Use a digital multimeter with an output of 1 mA or less at the 20 k Ω range. With the mode control motor running as in step 2, check for continuity between terminals No. 3, 4, 5, and 6 and terminal No. 7 individually. There should be continuity for a moment at each terminal as the motor moves past the switch's terminal.
5. If there is no continuity for a moment at each terminal, replace the mode control motor (see page 21-73).

Mode Control Motor Replacement

1. Remove the glove box (see page 20-104).
2. Remove the wire harness clip (A), the self-tapping screws, and the passenger's heater duct (B).



3. Disconnect the 7P connector (A) from the mode control motor (B). Remove the self-tapping screws and the mode control motor from the heater unit.



4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Climate Control

Recirculation Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-9).

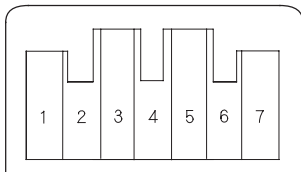
1. Disconnect the 7P connector from the recirculation control motor.

NOTICE

Incorrectly applying power and ground to the recirculation control motor will damage it. Follow the instructions carefully.

2. Connect battery power to terminal No. 1 of the recirculation control motor, and ground terminal No. 2; the recirculation control motor should run, and stop at Recirculate. If it doesn't, reverse the connections; the recirculation control motor should run, and stop at Fresh. When the recirculation control motor stops running, disconnect battery power immediately.

RECIRCULATION CONTROL MOTOR



3. If the recirculation control motor did not run in step 2, remove it, then check the recirculation control linkage and door for smooth movement.

- If the linkage and door move smoothly, replace the recirculation control motor (see page 21-74).
- If the linkage or door sticks or binds, repair them as needed.
- If the recirculation control motor runs smoothly, go to step 4.

4. Measure the resistance between terminals No. 5 and No. 7. It should be between 4.2 to 7.8 k Ω .

5. Reconnect the recirculation control motor 7P connector, then turn the ignition switch to ON (II).

6. Using the backprobe set, measure the voltage between terminals No. 3 and No. 7.

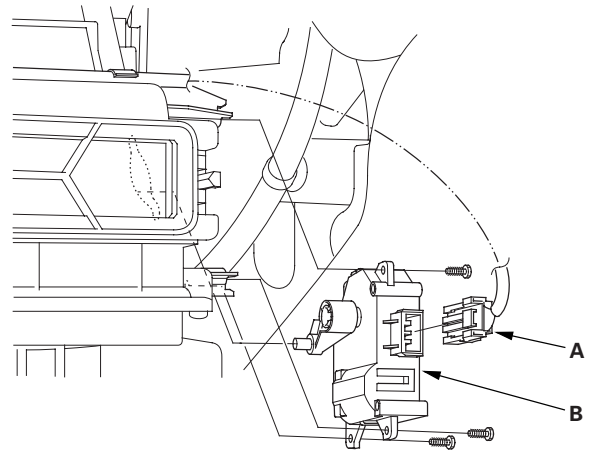
Recirculate: About 4.0 V

Fresh: About 1.0 V

7. If either the resistance or voltage readings are not as specified, replace the recirculation control motor (see page 21-74).

Recirculation Control Motor Replacement

1. Remove the glove box (see page 20-104) and the kick panel (see page 20-66).
2. Disconnect the 7P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower unit.



3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

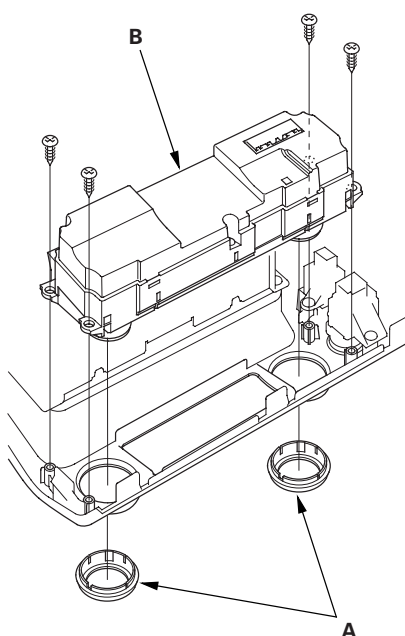


Climate Control Unit Removal/Installation

1. Remove the center panel:

- '06-08 models with navigation (see page 23-155)
- '06-08 models without navigation (see page 23-80)
- '09 model with navigation (see page 23-355)
- '09 model without navigation (see page 23-256)

2. Remove the dials (A), the self-tapping screws, and the climate control unit (B).



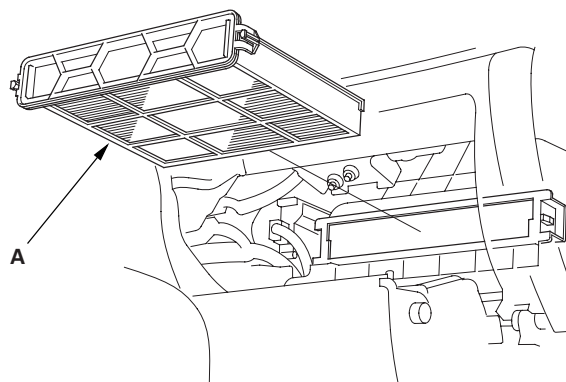
3. Install the control unit in the reverse order of removal. After installation, operate the various functions to see whether works properly.

4. Run the self-diagnostic function to confirm that there are no problems in the system (see page 21-11).

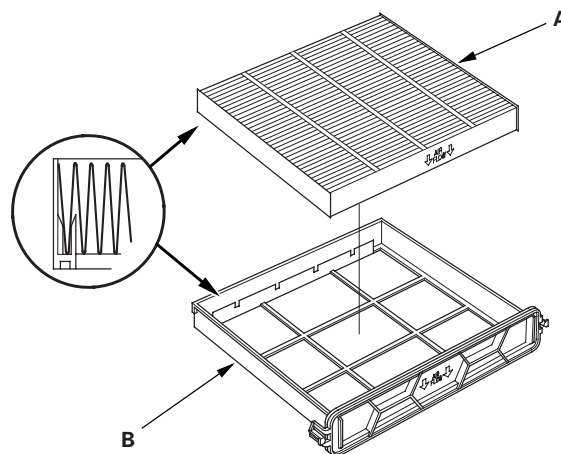
Dust and Pollen Filter Replacement

1. Open the glove box. Remove the glove box stop on each side, then let the glove box hang down (see page 20-104).

2. Remove the dust and pollen filter assembly (A) from the evaporator.



3. Remove the filter (A) from the housing (B), and replace the filter.

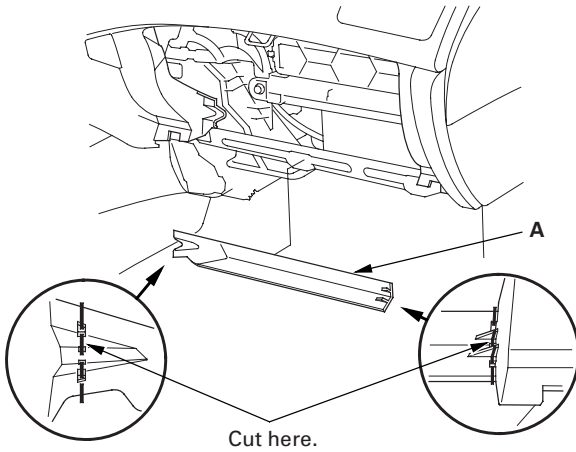


4. Install the filter in the reverse order of removal. Make sure that there is no air leaking out of the evaporator.

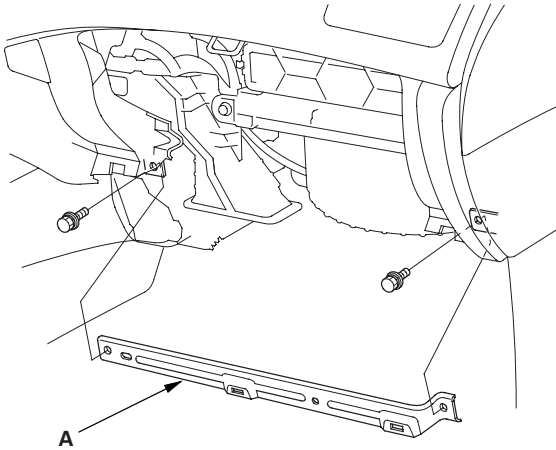
Climate Control

Blower Unit Removal/Installation

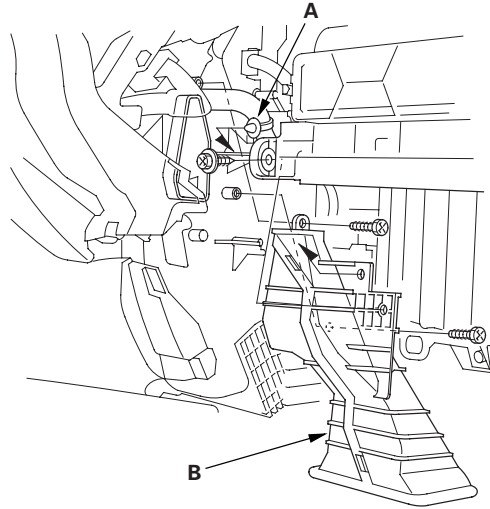
1. Remove the glove box (see page 20-104).
2. Cut the plastic cross brace (A) in the glove box opening with diagonal cutters in the area shown, and discard it.



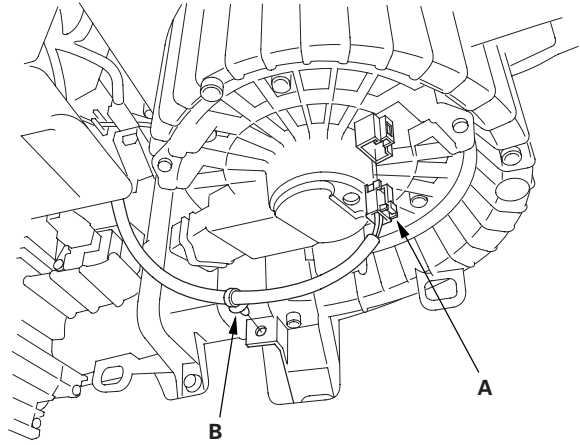
3. Remove the bolts and the glove box frame (A).



4. Remove the wire harness clip (A), the self-tapping screws, and the passenger's heater duct (B).

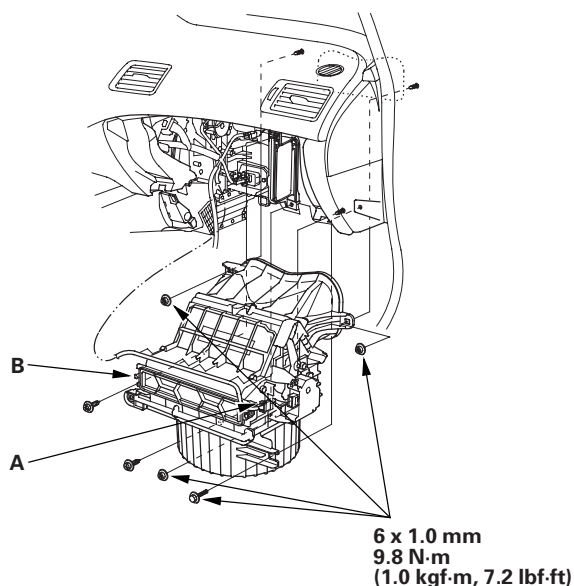


5. Disconnect the connector (A) from the blower motor. Remove the wire harness clip (B).





6. Disconnect the connector (A) from the recirculation control motor. Remove the self-tapping screws, the bolt, the mounting nuts, and the blower unit (B).

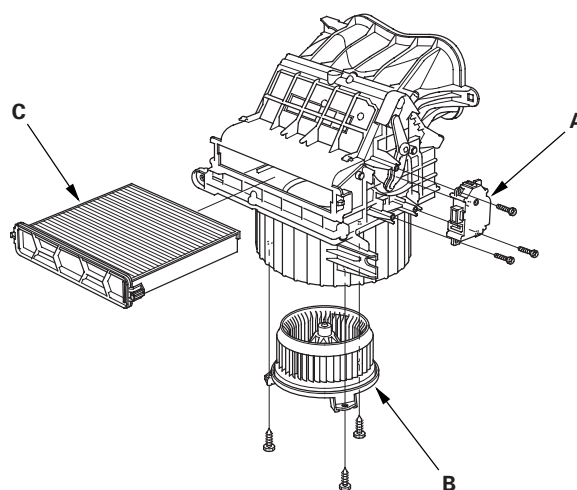


7. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

Blower Unit Component Replacement

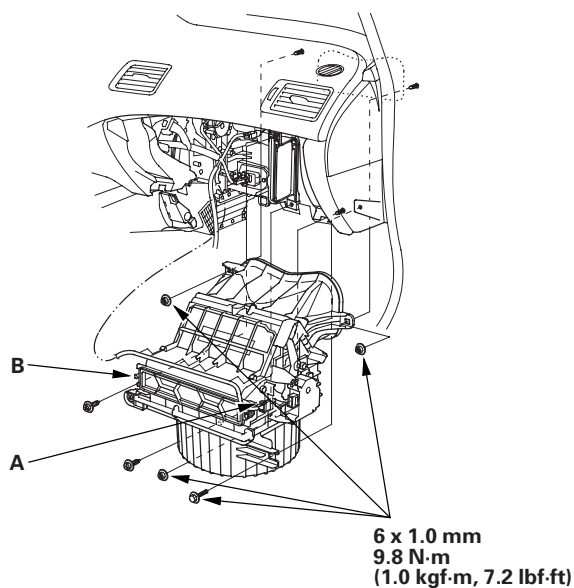
Note these items when overhauling the blower unit:

- The recirculation control motor (A), blower motor (B), and the dust and pollen filter (C) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and door move smoothly without binding.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-74).





6. Disconnect the connector (A) from the recirculation control motor. Remove the self-tapping screws, the bolt, the mounting nuts, and the blower unit (B).

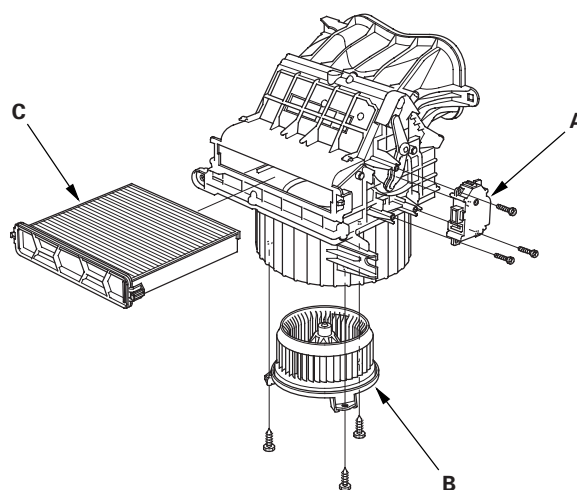


7. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

Blower Unit Component Replacement

Note these items when overhauling the blower unit:

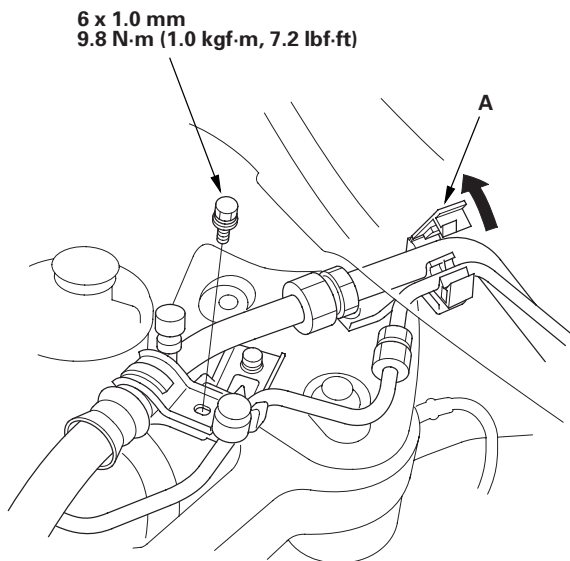
- The recirculation control motor (A), blower motor (B), and the dust and pollen filter (C) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and door move smoothly without binding.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-74).



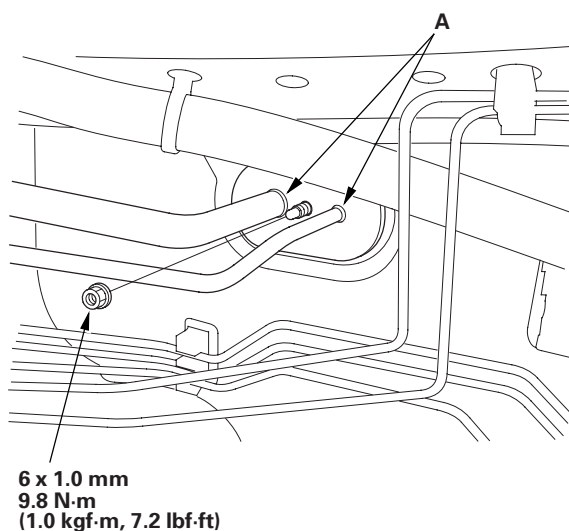
Climate Control

Evaporator Core Replacement

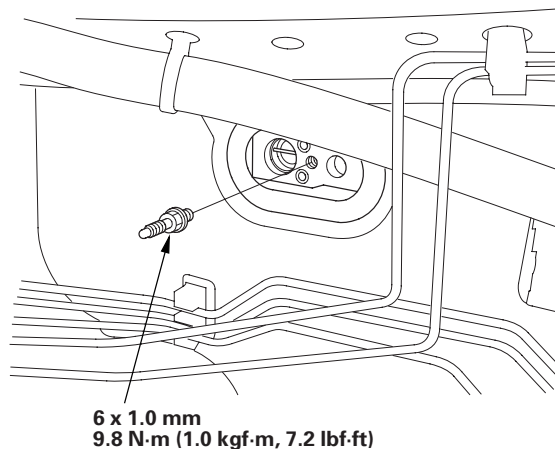
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-90).
2. Disconnect the clamp (A), then remove the bolt.



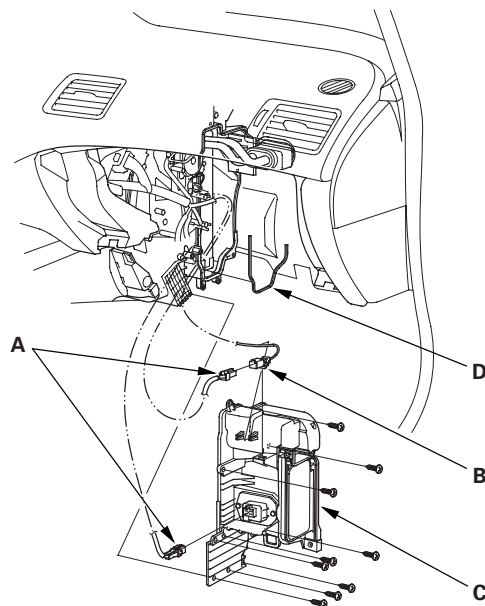
3. Remove the nut, then disconnect the A/C lines (A) from the evaporator core.



4. Remove the stud bolt.

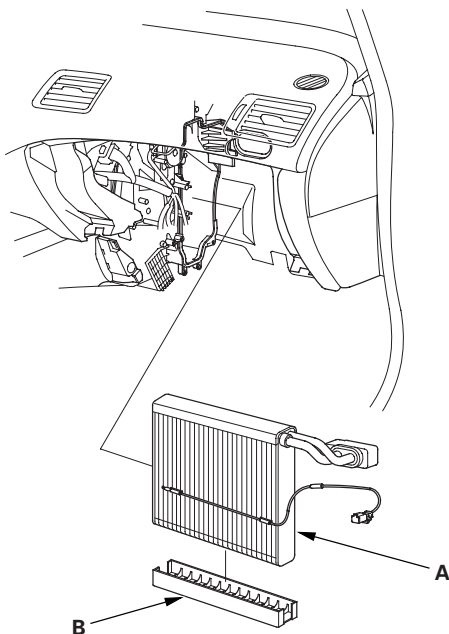


5. Remove the blower unit (see page 21-76).
6. Disconnect the connectors (A) from the evaporator temperature sensor and the power transistor, then remove the connector clip (B). Remove the self-tapping screws, the expansion valve cover (C), and the seal (D).

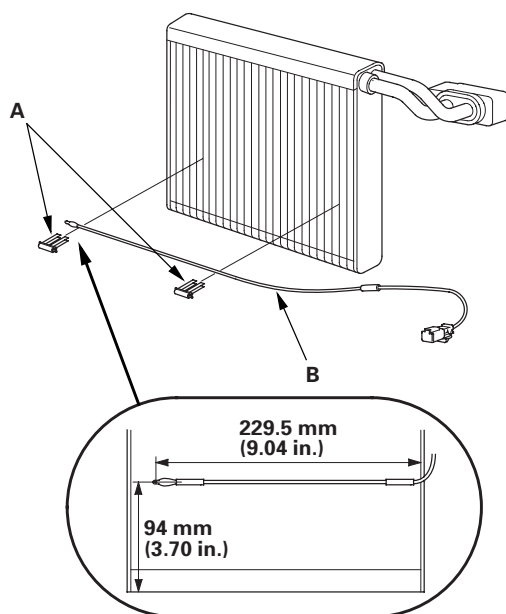




7. Carefully pull out the evaporator core (A) without bending the lines, then remove the plate (B).



8. Remove the clips (A) and the evaporator temperature sensor (B).



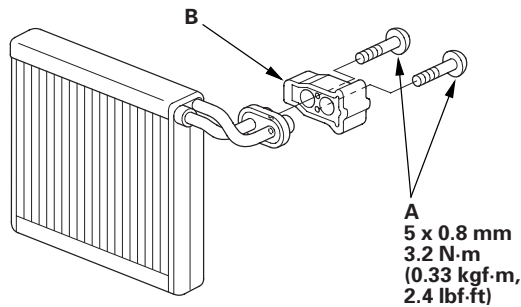
9. Install the core in the reverse order of removal, and note these items:

- If you're installing a new evaporator core, add refrigerant oil (SP-10) (see page 21-7).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Make sure that there is no air leakage.
- Charge the system (see page 21-92).

Climate Control

Expansion Valve Replacement

1. Remove the evaporator core (see page 21-78).
2. Remove the bolts (A) and expansion valve (B).



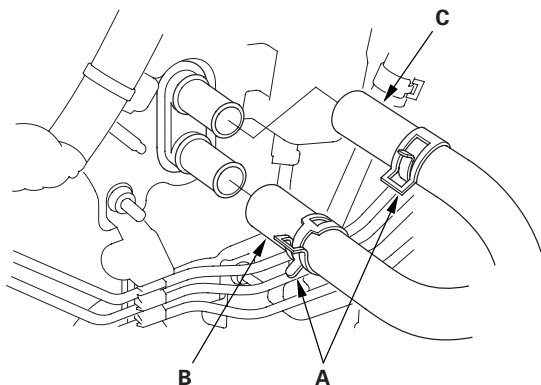
3. Install the expansion valve in the reverse order of removal and note these items:
 - If you're installing a new expansion valve, add refrigerant oil (SP-10) (see page 21-7).
 - Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
 - Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
 - Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
 - Make sure that there is no air leakage.
 - Charge the system (see page 21-92).



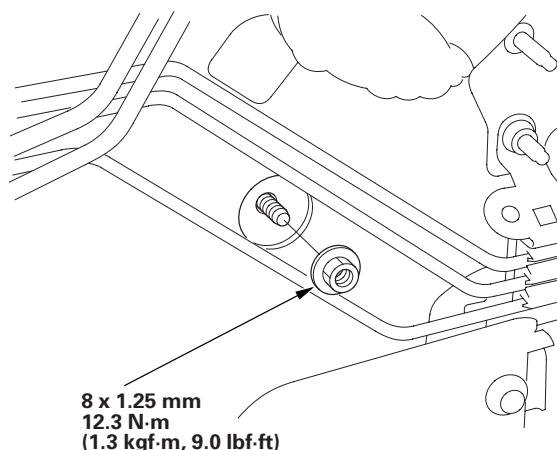
Heater Unit/Core Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before doing repairs or service.

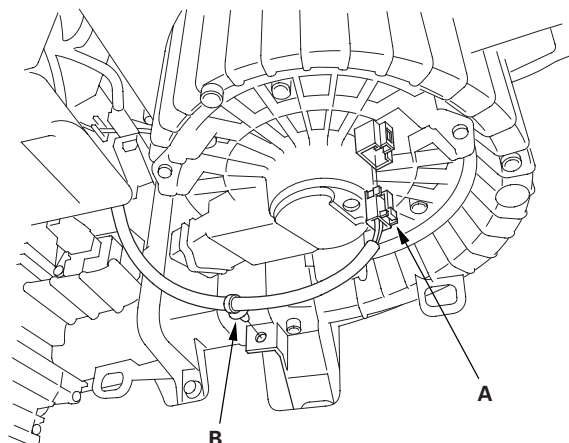
1. Do the battery terminal disconnection procedure (see page 22-68).
2. Disconnect the A/C line from the evaporator core (see page 21-78).
3. Remove the air cleaner housing assembly (see page 11-345).
4. When the engine is cool, drain the engine coolant from the radiator (see page 10-8).
5. From under the hood, slide the hose clamps (A) back. Disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater unit. Note the orientation of the hoses. Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.



6. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines or brake lines, etc.



7. Remove the dashboard (see page 20-108).
8. Disconnect the connector (A) from the blower motor. Remove the wire harness clip (B).

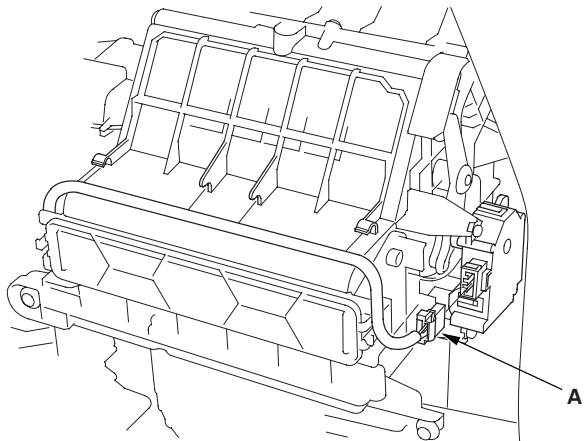


(cont'd)

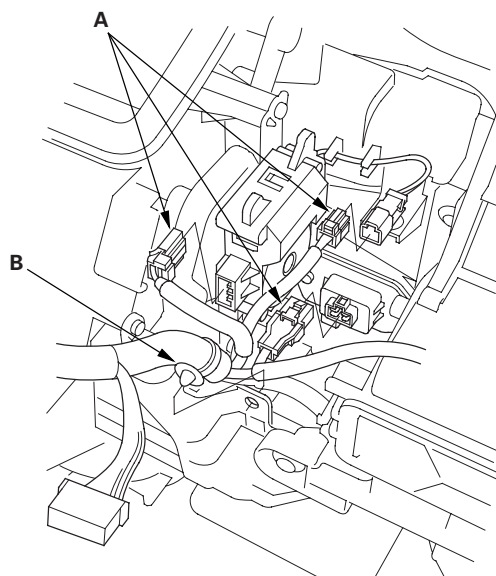
Climate Control

Heater Unit/Core Replacement (cont'd)

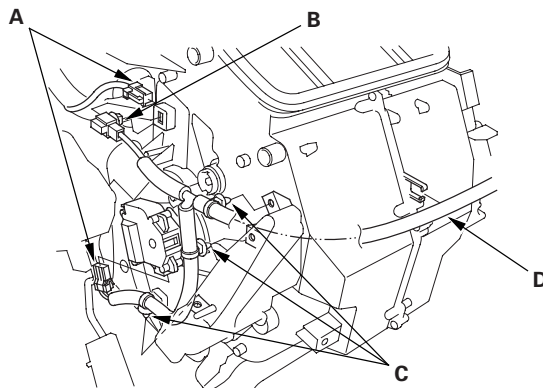
9. Disconnect the connector (A) from the recirculation control motor.



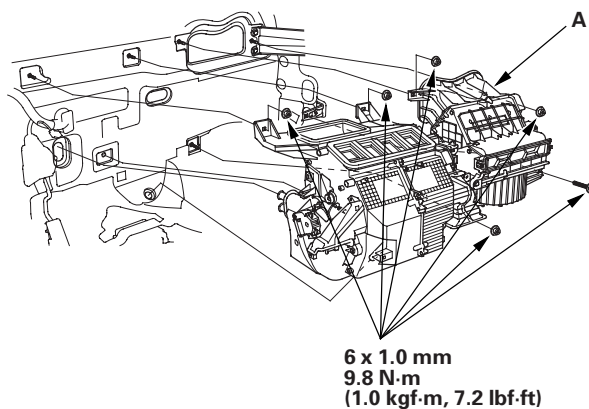
10. Disconnect the connectors (A) from the mode control motor, the evaporator temperature sensor, and the power transistor. Remove the wire harness clip (B).



11. Disconnect the connectors (A) from the air mix control motor and A/C wire harness. Remove the connector clip (B), the wire harness clips (C), and the wire harness (D).



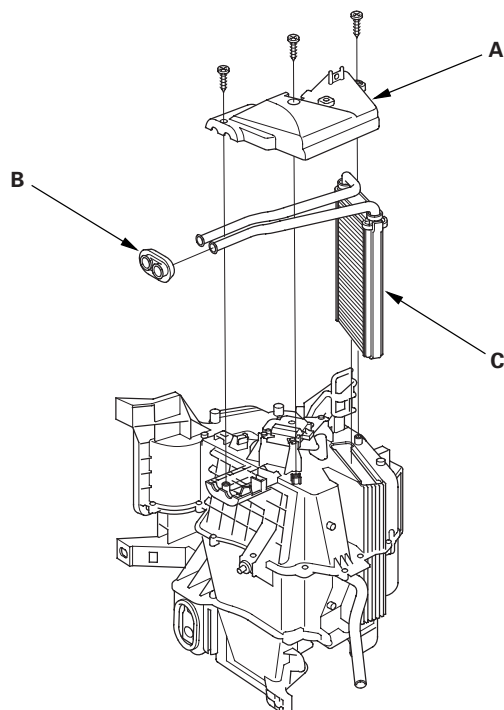
12. Remove the mounting bolt, mounting nuts, and blower-heater unit (A).





A/C Compressor Replacement

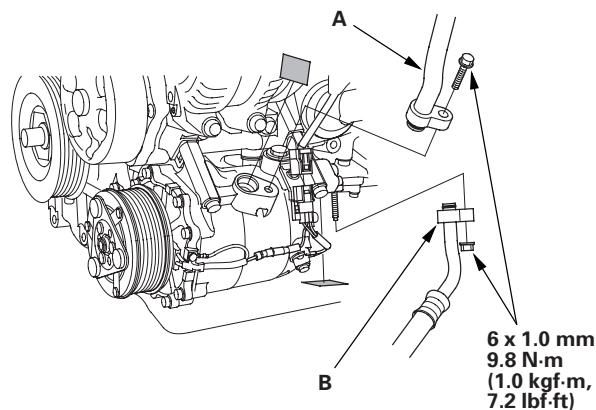
13. Remove the self-tapping screws, the heater core cover (A), the grommet (B), and carefully pull out the heater core (C).



14. Install the heater core and the evaporator core in the reverse order of removal.
15. Install the heater unit in the reverse order of removal, and note these items:
- Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
 - Refill the cooling system with engine coolant (see page 10-8).
 - Make sure that there is no coolant leakage.
 - Make sure that there is no air leakage.
 - Refer to evaporator core replacement (see page 21-78).
16. Do the battery terminal reconnection procedure (see page 22-68).

NOTE: Do not install an A/C compressor into a system unless you are completely sure that the system is free of contamination. Installing the A/C compressor into a contaminated system can result in premature A/C compressor failure.

1. If the A/C compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Recover the refrigerant with a recovery/recycling/charging station (see page 21-90).
3. Remove the drive belt (see page 4-31).
4. Remove the front bulkhead and the condenser fan shroud (see page 10-19).
5. Remove the splash shield (see page 20-172).
6. Remove the bolt and the nut, then disconnect the suction hose (A) and discharge hose (B) from the A/C compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.

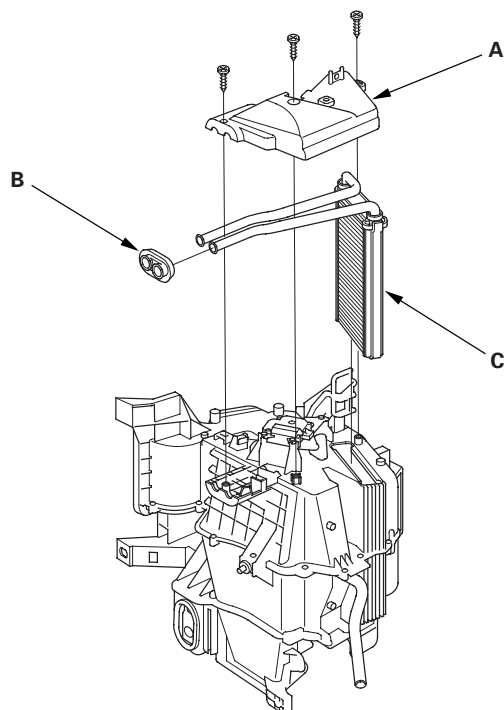


(cont'd)



A/C Compressor Replacement

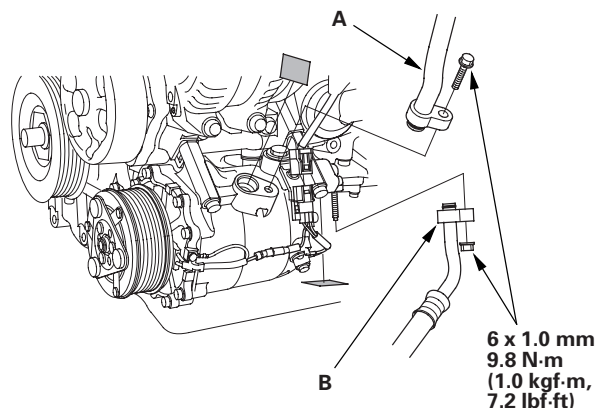
13. Remove the self-tapping screws, the heater core cover (A), the grommet (B), and carefully pull out the heater core (C).



14. Install the heater core and the evaporator core in the reverse order of removal.
15. Install the heater unit in the reverse order of removal, and note these items:
- Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
 - Refill the cooling system with engine coolant (see page 10-8).
 - Make sure that there is no coolant leakage.
 - Make sure that there is no air leakage.
 - Refer to evaporator core replacement (see page 21-78).
16. Do the battery terminal reconnection procedure (see page 22-68).

NOTE: Do not install an A/C compressor into a system unless you are completely sure that the system is free of contamination. Installing the A/C compressor into a contaminated system can result in premature A/C compressor failure.

1. If the A/C compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Recover the refrigerant with a recovery/recycling/charging station (see page 21-90).
3. Remove the drive belt (see page 4-31).
4. Remove the front bulkhead and the condenser fan shroud (see page 10-19).
5. Remove the splash shield (see page 20-172).
6. Remove the bolt and the nut, then disconnect the suction hose (A) and discharge hose (B) from the A/C compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.

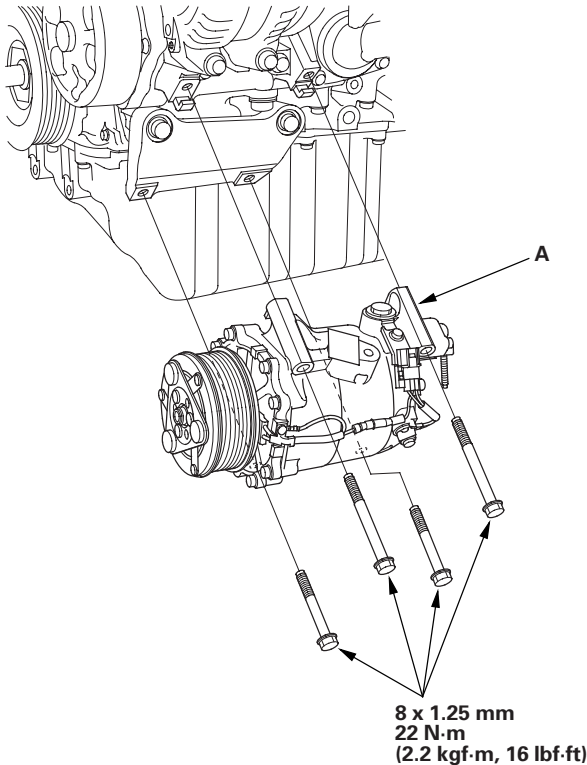


(cont'd)

Climate Control

A/C Compressor Replacement (cont'd)

7. Remove the mounting bolts and the A/C compressor (A). Be careful not to damage the radiator fins when removing the A/C compressor.



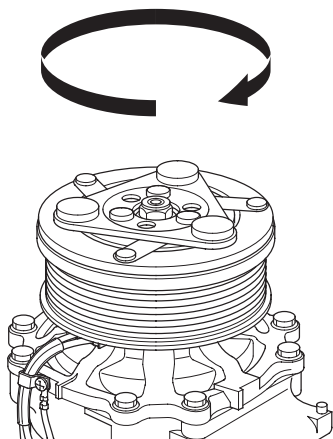
8. Install the compressor in the reverse order of removal, and note these items:

- Inspect the A/C lines for any signs of contamination.
- If you're installing a new A/C compressor, you must calculate the amount of refrigerant oil to be removed from it (see page 21-7). A new A/C compressor comes with a full charge of oil.
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Use refrigerant oil (SP-10) for HFC-134a SANDEN spiral type A/C compressor only.
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Charge the system (see page 21-92).



A/C Compressor Clutch Check

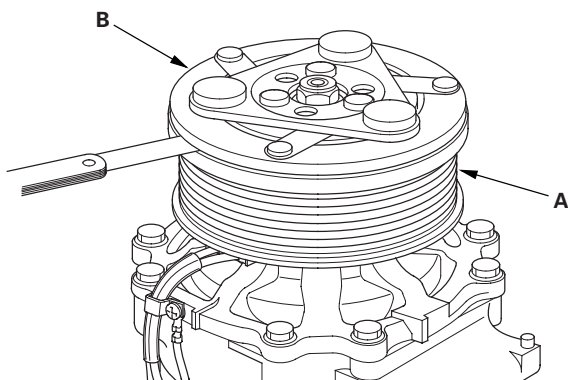
1. Check the armature plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see page 21-86).
2. Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see page 21-86).



3. Measure the clearance between the rotor pulley (A) and the armature plate (B) all the way around. If the clearance is not within specified limits, remove the armature plate (see page 21-86) and add or remove shims as needed to increase or decrease clearance.

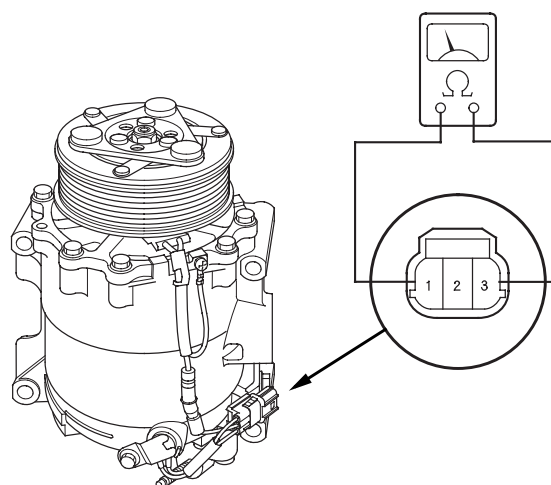
Clearance: 0.35—0.65 mm (0.014—0.026 in.)

NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



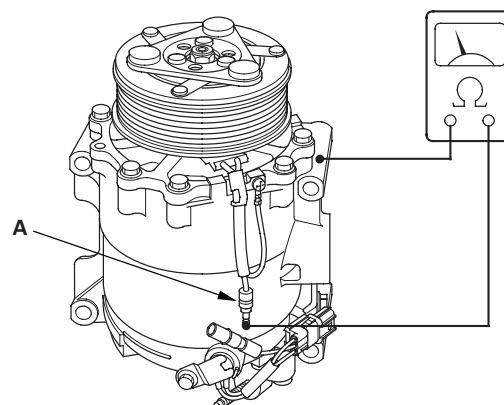
4. Check the thermal protector for continuity between the A/C compressor clutch connector terminals No. 1 and No. 3. If there is no continuity, replace the thermal protector (see page 21-87).

NOTE: The thermal protector will have no continuity above about 122 to 128 °C (252 to 262 °F). When the temperature drops below about 116 to 104 °C (241 to 219 °F), the thermal protector will have continuity.



5. Disconnect the field coil connector (A). Check resistance of the field coil. If resistance is not within specifications, replace the field coil (see page 21-86).

Field Coil Resistance: 3.15—3.45 Ω 20 °C (68 °F)



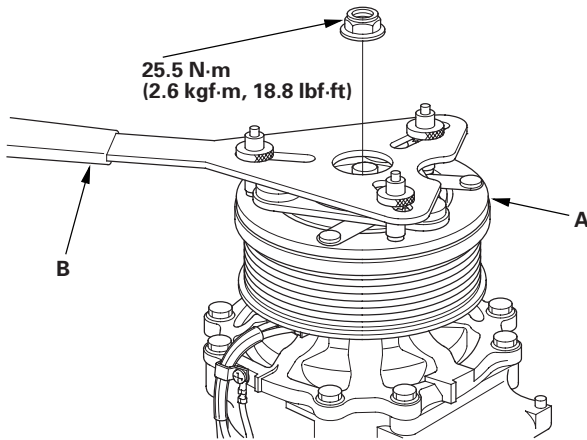
Climate Control

A/C Compressor Clutch Overhaul

Special Tools Required

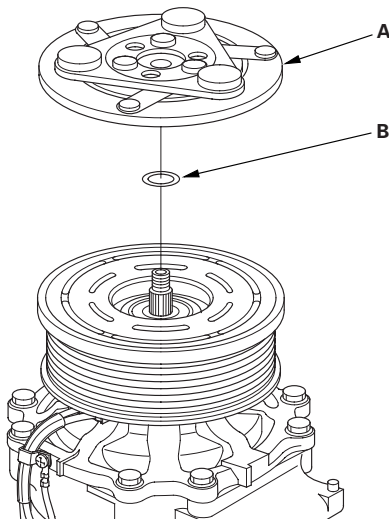
A/C clutch holder, Robinair 10204 or Kent-Moore J37872, or Honda Tool and Equipment KMT-J33939, commercially available

1. Remove the center nut while holding the armature plate (A) with a commercially available A/C clutch holder (B).

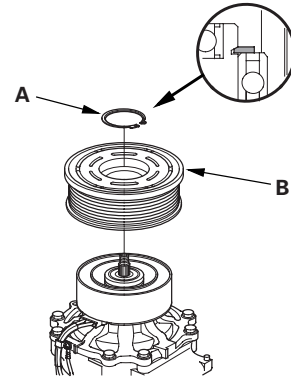


2. Remove the armature plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the armature plate, and recheck its clearance (see page 21-85).

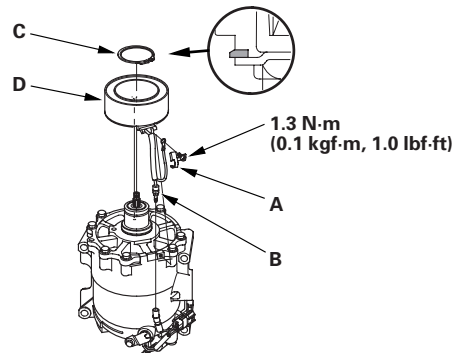
NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



3. If you are replacing the field coil, remove the snap ring (A) with snap ring pliers, then remove the rotor pulley (B). Be careful not to damage the rotor pulley and A/C compressor.



4. Remove the bolt and holder (A), then disconnect the field coil connector (B). Remove the snap ring (C) with snap ring pliers, then remove the field coil (D). Be careful not to damage the field coil and A/C compressor.



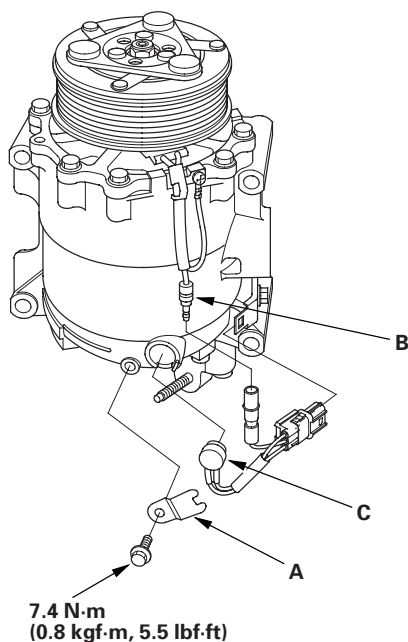
5. Reassemble the clutch in the reverse order of disassembly, and note these items:

- Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the A/C compressor.
- Clean the rotor pulley and A/C compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
- Install new snap rings, note the installation direction, and make sure they are fully seated in the groove.
- Make sure that the rotor pulley turns smoothly after it's reassembled.
- Route and clamp the wires properly or they can be damaged by the rotor pulley.

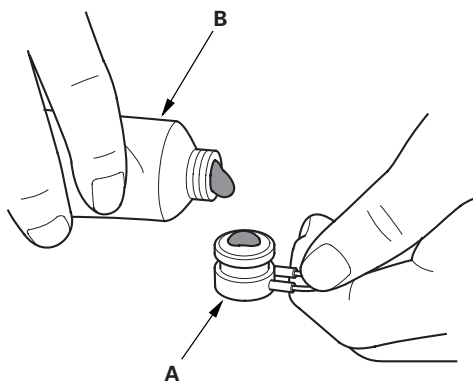


A/C Compressor Thermal Protector Replacement

1. Remove the bolt and the holder (A). Disconnect the field coil connector (B), then remove the thermal protector (C).



2. Replace the thermal protector (A) with a new one, and apply silicone sealant (B) to the bottom of the thermal protector.

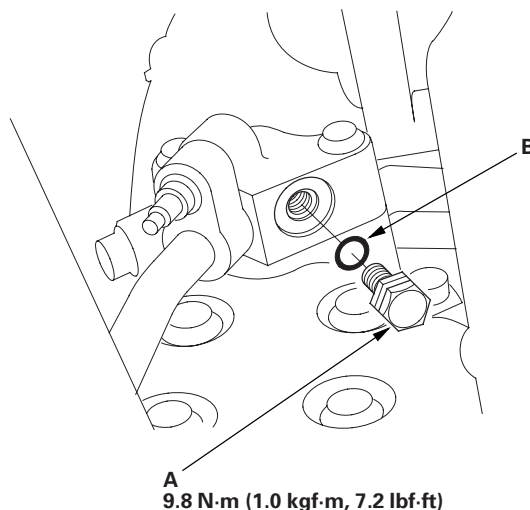


3. Install the thermal protector in the reverse order of removal.

A/C Compressor Relief Valve Replacement

NOTE: If the A/C compressor relief valve released refrigerant to the atmosphere, determine and correct the cause of the excessive system pressure, then replace the relief valve.

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-90).
2. Remove the relief valve (A), and the O-ring (B). Plug the opening to keep foreign matter from entering the system and the A/C compressor oil from running out.

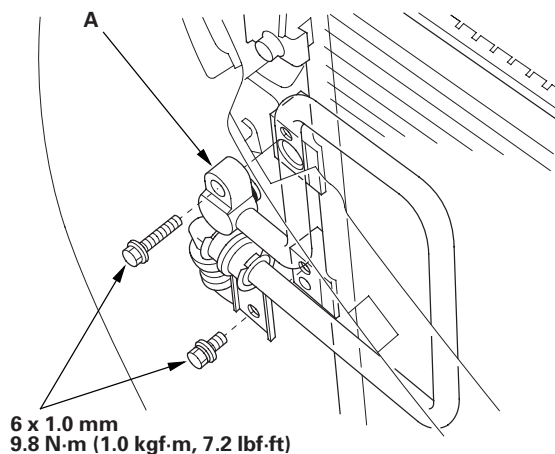


3. Clean the mating surfaces.
4. Replace the O-ring with a new one at the relief valve, and apply a thin coat of refrigerant oil before installing it.
5. Remove the plug, and install and tighten the relief valve.
6. Charge the system (see page 21-92).

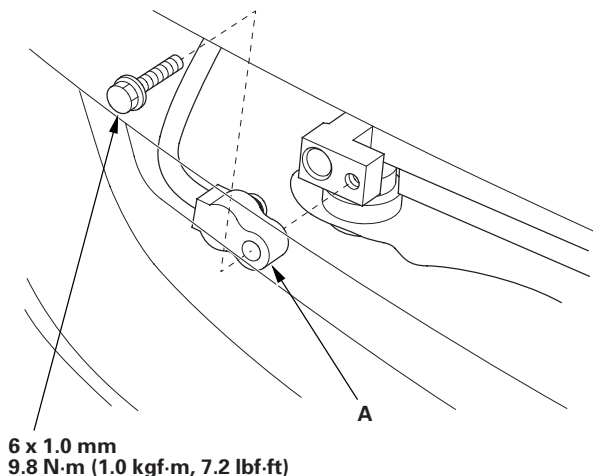
Climate Control

A/C Condenser Replacement

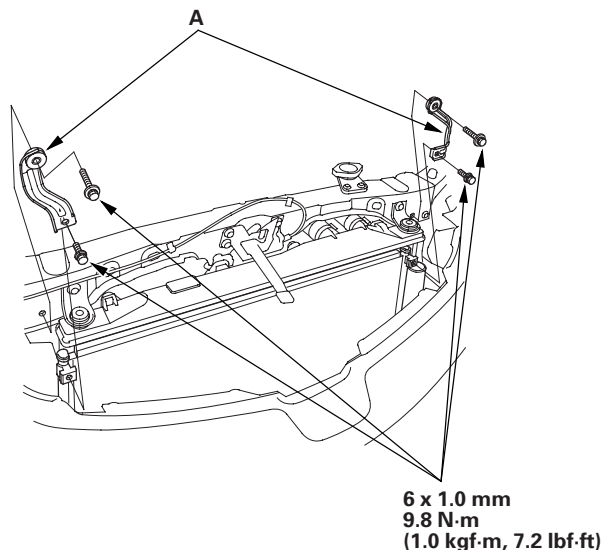
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-90).
2. Remove the front grille:
 - '06-08 models (see page 20-160)
 - '09 model (see page 20-161)
3. Remove the bolts, then disconnect the discharge hose (A) from the A/C condenser.



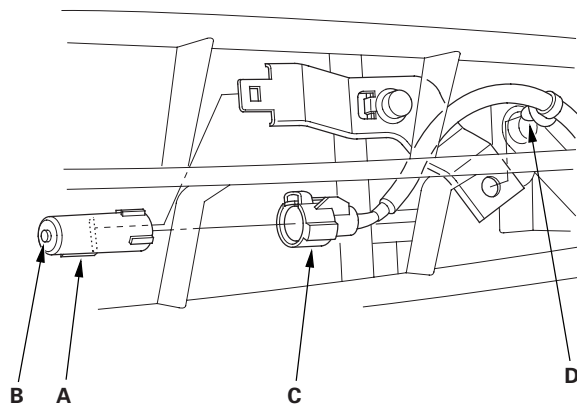
4. Remove the bolt, then disconnect the receiver line (A) from the A/C condenser.



5. Remove the bolts and the A/C condenser upper mount brackets (A).



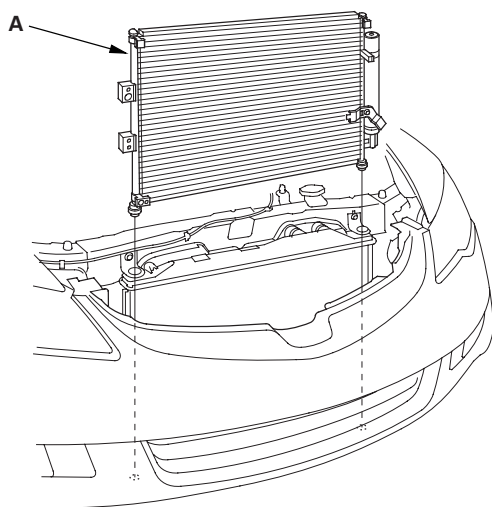
6. Lift the tab (A) to release the lock, then remove the outside air temperature sensor (B) from the bracket. Disconnect the 2P connector (C), then remove the clip (D).



7. Remove the hood latch (see page 20-181).



8. Remove the A/C condenser (A) by lifting it up. Be careful not to damage the radiator and A/C condenser fins when removing the A/C condenser.



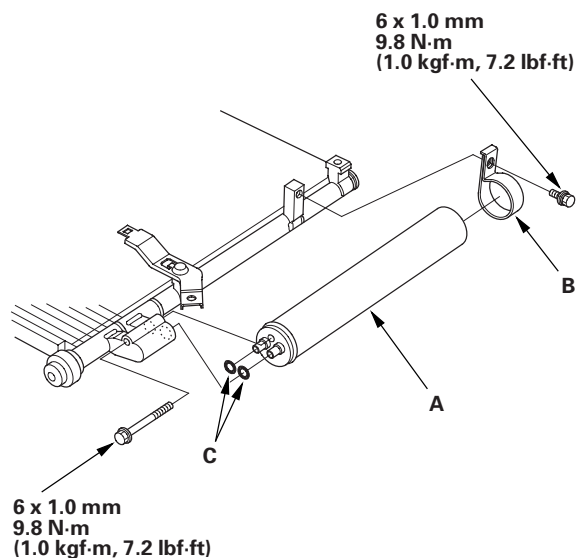
9. Install the A/C condenser in the reverse order of removal, and note these items:

- If you're installing a new A/C condenser, add refrigerant oil (SP-10) (see page 21-7).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Charge the system (see page 21-92).
- Adjust the hood latch (see page 20-152).

Receiver/Dryer Desiccant Replacement

NOTE: Install the receiver/dryer as quickly as possible to prevent the system from absorbing moisture from the air.

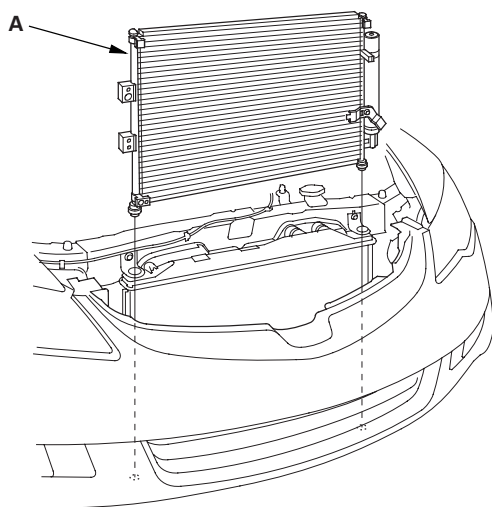
1. Remove the A/C condenser (see page 21-88).
2. Remove the bolts from the A/C condenser, then remove the receiver/dryer (A), the bracket (B), and the O-rings (C).



3. Install the receiver/dryer in the reverse order of removal. Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (SP-10) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.



8. Remove the A/C condenser (A) by lifting it up. Be careful not to damage the radiator and A/C condenser fins when removing the A/C condenser.



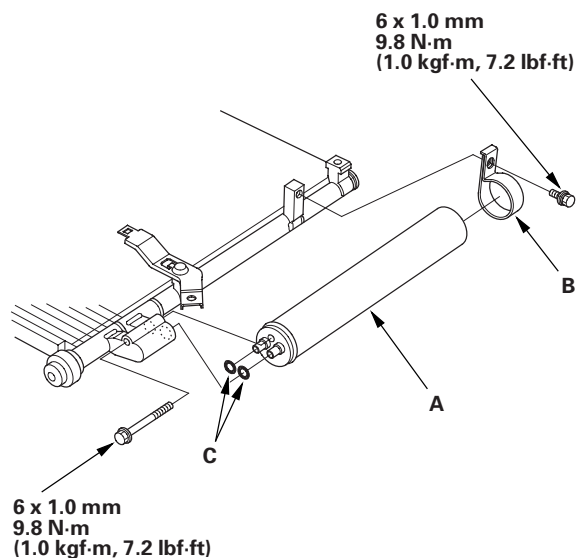
9. Install the A/C condenser in the reverse order of removal, and note these items:

- If you're installing a new A/C condenser, add refrigerant oil (SP-10) (see page 21-7).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Charge the system (see page 21-92).
- Adjust the hood latch (see page 20-152).

Receiver/Dryer Desiccant Replacement

NOTE: Install the receiver/dryer as quickly as possible to prevent the system from absorbing moisture from the air.

1. Remove the A/C condenser (see page 21-88).
2. Remove the bolts from the A/C condenser, then remove the receiver/dryer (A), the bracket (B), and the O-rings (C).



3. Install the receiver/dryer in the reverse order of removal. Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (SP-10) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.

Climate Control

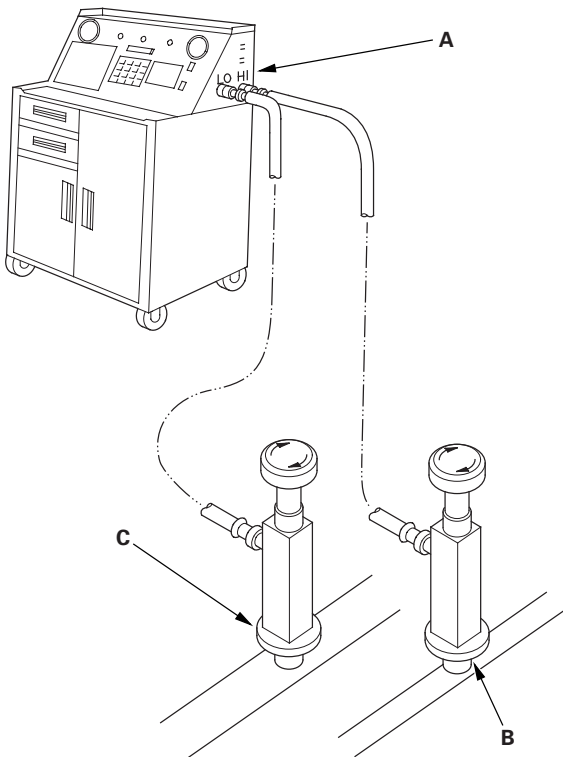
Refrigerant Recovery

CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
 - Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Measure the amount of refrigerant oil removed from the A/C system after the recovery process is completed. Be sure to put the same amount of new refrigerant oil back into the A/C system before charging.



System Evacuation

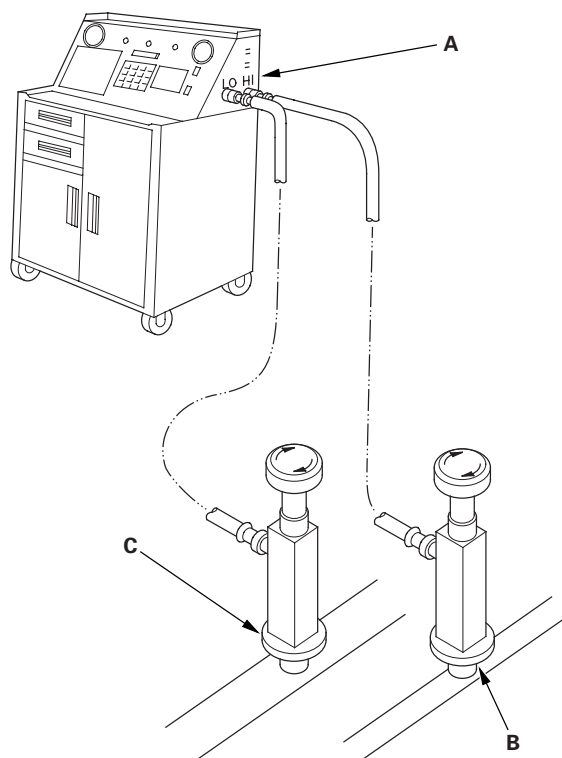
CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
 - Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
 - Do not allow moisture to contaminate the A/C system oil. Moisture in the oil is difficult to remove, and it can damage the A/C compressor.
1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using an R-134a refrigerant recovery/recycling/charging station. If the system has been open for several days, the receiver/dryer should be replaced, recover the refrigerant, if any, from the A/C system (see page 21-90). And the system should be evacuated for several hours.

2. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions. Recover the refrigerant, if any, from the A/C system (see page 21-90).



3. Evacuate the system. The vacuum pump should run for a minimum of 45 minutes to eliminate all moisture from the system. When the suction gauge reads -93.3 kPa (700 mmHg, 27.6 in.Hg) for at least 45 minutes, close all valves, and turn off the vacuum pump.
4. If the suction gauge does not reach approximately -93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, there is probably a leak in the system. Partially charge the system, and check for leaks (see page 21-93).

Climate Control

System Charging

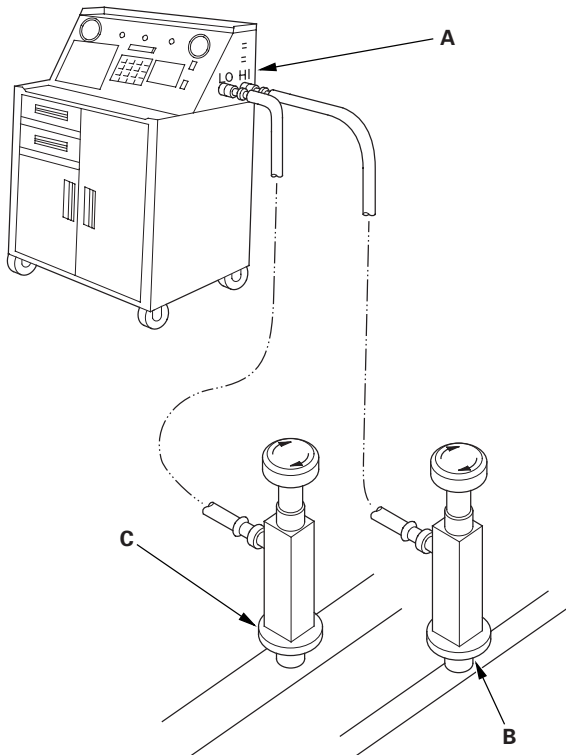
CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Recover the refrigerant in the A/C system (see page 21-90).
3. Evacuate the system (see page 21-91). If the system cannot reach a vacuum of -93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, or cannot hold a vacuum for at least 15 minutes, there is probably a leak. Do the Refrigerant Leak Check (see page 21-93), and repair any leaks before charging the system.
4. Add the same amount of new refrigerant oil to the system that was removed during recovery. Use only SP-10 refrigerant oil.
5. Charge the system with the specified amount of R-134a refrigerant. Do not overcharge the system; the A/C compressor will be damaged.

Select the appropriate units of measure for your refrigerant charging station.

Refrigerant Capacity:

400 to 450 g
0.40 to 0.45 kg
0.9 to 1.0 lbs
14.1 to 15.9 oz

6. Check for refrigerant leaks (see page 21-93).
7. Check the system performance (see page 21-99).



Refrigerant Leak Check

Special Tools Required

- Leak detector YGK-H-10PM
 - Leak detector HLD-100
 - Leak detector TIFZX-1, or commercially available
 - OPTIMAX Jr. A/C Leak Detection Kit (TRP124893)
- These tools are available through the Honda Tool and Equipment Program; call 888-424-6857

CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
- Check the system for leaks using an R-134a refrigerant leak detector with an accuracy of 14 g (0.5 oz) per year or better.

Leak Detector Usage Tips (Refer to the Operator's Manual for complete operating instructions)

- Position the vehicle in a wind-free work area. This will aid in detecting small leaks.
- When using the leak detector for the first time, allow it to warm up for 2 minutes with the probe in a clean atmosphere. This lets the temperature sensor in the detector stabilize.
- The calibration check should be done in the "Search 2" mode. Once that is done, the other check modes do not need calibrating.
- When leak checking through the HVAC module drain hose, avoid drawing water into the probe. Water can damage the internal pump and sensor.
- Avoid creasing the flexible probe extension. Creases can restrict air flow and give false readings.
- Because the detector recalibrates itself for ambient gases, it may be necessary to move the detector away from the leak to clear the sensor. Once the sensor has cleared, recheck the suspected leak.
- When removing the clear probe tip, be careful not to lose the flow ball.
- R-134a is heavier than air; always check below and to the sides of all potential leak sources.
- Halogen leak detectors are sensitive to chemicals: windshield washing solutions, solvents/cleaners, and some vehicle adhesives. Keep these chemicals out of the area when doing leak detection.

(cont'd)

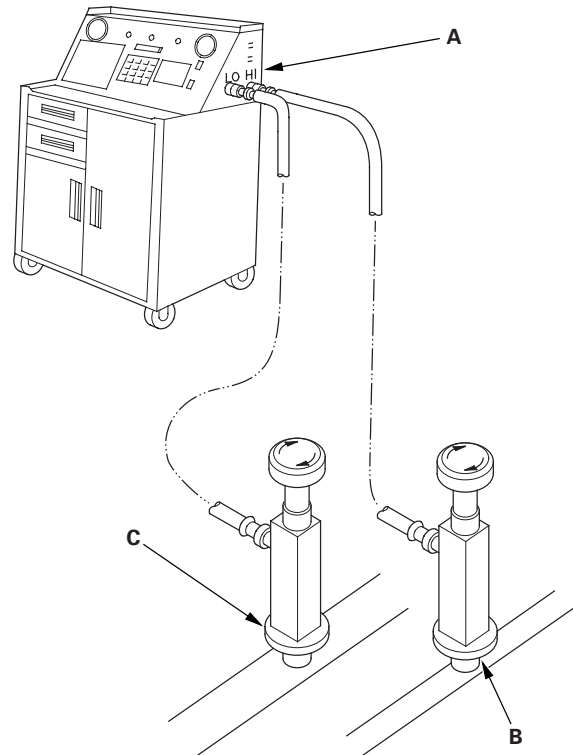
Climate Control

Refrigerant Leak Check (cont'd)

Fluorescent Dye Usage Tips

- Use only Tracer-Stick single dose fluorescent dye capsules from Tracerline®. Other dyes contain solvents that may contaminate the refrigerant oil, leading to component failure.
- Adding excessive amounts of dye can damage the compressor.
- PAG oil is water soluble, so condensation on the evaporator core or the refrigerant lines may wash the PAG oil and fluorescent dye away from the actual leak. Condensation may also carry dye through the evaporator module drain.
- After checking and repairing leaks, thoroughly clean any residual dye from the areas where leaks were found. Use GLO-AWAY dye cleaner, from Tracerline®, and hot water to remove the dye (follow the instructions on the bottle). Residual dye stains can cause misdiagnosis of any future A/C system leaks.
- If any refrigerant dye contacts an exterior paint surface, remove it by doing this:
 - Carefully wash the affected surfaces to remove any dirt, and to prevent paint scratching.
 - Mix water and isopropyl alcohol in a 50/50 mixture.
 - Soak a soft 100 percent cotton towel with the water/alcohol mixture, and place the cloth on the affected areas to remove the dye.
 - After removing the dye with the water/alcohol-soaked cloth, carefully wash the affected areas, and check that there is no remaining dye.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Recover refrigerant from the A/C system (see page 21-90), and evacuate the system (see page 21-91). If the system achieves a vacuum of approximately 93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, and holds the vacuum for 15 minutes, then the system does not have a leak at this time. If the system cannot achieve or hold a vacuum, continue the refrigerant leak check.
3. Open the high pressure valve to charge the system to the specified capacity.

Select the appropriate units of measure for your refrigerant charging station.

Refrigerant Capacity:

400 to 450 g
0.40 to 0.45 kg
0.9 to 1.0 lbs
14.1 to 15.9 oz



4. With the engine OFF, use a halogen leak detector first to detect the leak source. Follow a continuous path in order to ensure that you will not miss any possible leaks. Test the following areas of the system for leaks:

Possible Leak Area	Diagnostic Procedure with the Leak Detector	Notes
Service Ports	• Check the service ports with the detector. • If the detector “sniffs” a leak, use fluorescent dye to confirm it.	When capping the service ports, ensure that the seals on the port caps are in place, and that the caps are tight. The caps are used as the final seals in the system.
Condenser	If the detector “sniffs” a leak, use fluorescent dye to confirm it.	• Check for joints or connections coated with oily dust. • Check for damaged and corroded areas. • Check all fittings, couplings, brazed/welded areas and areas around attachment points. • Move the probe slowly (1 inch/second or less), and keep it within 1/4 inch of the component being checked. This maximizes the chance of detecting a leak. • If you detect a leak, blow compressed air over the area, then recheck for leaks. For large leaks, clearing the area with compressed air may help you pinpoint the leak source.
A/C Lines (Low pressure side)	• Wiggle the rubber hoses when checking crimped metal ends. • If the detector “sniffs” a leak, use fluorescent dye to confirm it.	• Check all fittings, couplings, pressure switches, brazed/welded areas, and areas around attachment points on A/C lines and components. • Check for damaged and corroded areas. • Move the probe slowly (1 inch/second or less), and keep it within 1/4 inch of the component being checked. This maximizes the chance of detecting a leak.

5. Close the quick coupler valves, then disconnect the quick couplers from the vehicle service ports.
6. Attach the universal connect set, from the Optimax Jr. Leak Detection Kit, to the service valve fitting. Close the control valve (the black knob on the connect set).
7. Attach the charging station low pressure hose quick coupler to the service valve fitting, and open the quick coupler valve. Evacuate the connect set using the charging station vacuum pump, then close the quick coupler valve.
8. Detach the universal connect set, and install a Tracer-Stick® dye capsule between the connect set and the service valve fitting (see the manufacturer’s instructions for more detail).
9. Attach the quick coupler on the universal connect set to the low pressure service port on the vehicle. Open the charging station low pressure hose quick coupler valve, but do not open the control valve.
10. Start the engine, and set the A/C system to MAX A/C. Open the control valve to let refrigerant and the dye enter the A/C system through the low pressure service port. Close the control valve when the Tracer-Stick® dye capsule is empty.
11. Run the engine and A/C system for 15 minutes to thoroughly circulate the dye. Then shut the engine off, and inspect the following areas of the system for leaks.

(cont’d)

Climate Control

Refrigerant Leak Check (cont'd)

NOTE:

- Check for leaks in a dark work area, and use the UV light and the special glasses from the leak check kit. Other UV lights may not work well with the Tracer-Stick® dye.
- Small leaks may take up to 1 week of vehicle operation (with normal A/C use) to become visible.

Possible Leak Area	Diagnostic Procedure with Fluorescent Dye
Service Ports	If a leak is found, replace the Schrader valve on the service port.
A/C Lines	• Use a permanent marker pen to circle the leak area. • If a leak is found, remove and replace the A/C line (see page 21-8).
Condenser	• If a leak is found, remove the condenser (see page 21-88). • Determine whether leak is in the condenser or the receiver/dryer. • Use a permanent marker pen to circle the leak area. • Replace either the receiver/dryer (see page 21-89), or the condenser (see page 21-88), depending upon which is leaking.
A/C Compressor	• Check for leaks at all of the compressor joints, the clutch center, the compressor front housing bolts, and the scroll bolts on the back of the compressor. • If a leak is found, use a permanent marker pen to circle the leak area. • If the compressor relief valve appears to be leaking, determine whether the leak is coming from the relief valve, or the joint between the compressor casing and the valve. • If the leak is from the relief valve, check the A/C system pressures, and refer to the pressure test table in the A/C system test (see page 21-99). If the leak is from the casing/valve joint, replace the A/C compressor relief valve (see page 21-87). • If the leak is coming from the suction hose and/or discharge hose fittings on the compressor, clean the A/C fittings and replace the suction/discharge fitting O-rings. • For all other compressor leaks, remove and replace the A/C compressor (see page 21-83).
Evaporator	• Start checking for evaporator leaks by illuminating the evaporator drain tube area. • If a leak is found, remove the evaporator core (see page 21-78). • Determine whether leak is from evaporator or expansion valve. • Use a permanent marker pen to circle the leak area. • Replace the expansion valve (see page 21-80), or the evaporator core (see page 21-78), depending upon which is leaking.



A/C System Noise Check

CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The A/C system noise check will help you determine the source of abnormal A/C system noise.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
 - Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
 - Identify the conditions when the noise occurs. The weather, the vehicle speed, the vehicle being in gear or in neutral, the engine temperature, or other conditions may be factors in determining the noise source.
 - Do an A/C system inspection (see page 21-6), and correct any problems found prior to diagnosing abnormal noises.
 - Abnormal A/C noises can be misleading. For example, a sound similar to a failed bearing may be caused by loose fasteners, loose mounting brackets, or faulty compressor clutch assembly.
1. Inspect the air inlet grille in the cowl cover for debris. If debris is present, remove it.
 2. Sit inside the vehicle, close the doors and windows, and turn the ignition switch to ON (II), but do not start the engine. Cycle the HVAC system through all blower speeds and all air distribution modes to determine where and when the noise occurs.

3. Operate the blower at each speed with the engine and A/C off, and check for unusual noises and excessive vibration. If noise and/or vibration are present, do the following checks:

- 1 If the noise or vibration occurs only in a specific mode or setting, then check these items:
 - Operation of the mode control motor, door, and linkage
 - Operation of the air mix control motor(s), door(s), and linkage
 - Operation of the recirculation motor, door, and linkage
- 2 If there is a squeaking or chirping noise, but no unusual vibration, replace the blower motor (see page 21-77).
- 3 Remove the blower unit (see page 21-76), and check for foreign material (leaves or twigs, for example) on the blower motor and fan. If foreign material is present, remove it, and recheck for noise. If you don't find any foreign material, remove the blower motor (see page 21-77), and check these items:
 - Check if the fan blades are cracked or broken
 - Make sure the fan retainer is tight
 - Inspect the fan alignment on the blower motor shaftReplace the blower motor if any problems are present.

4. Set up the vehicle for the running A/C checks:

- Select a quiet area for testing
- Apply the parking brake
- Shift the vehicle in PARK or in Neutral
- Start the engine
- Set the temperature control dial to Max Cool
- Set the mode control switch to Vent
- Set the fan control dial to minimum (but not OFF)
- Turn the A/C switch ON

Switch the compressor on and off several times to clearly identify the sound during A/C compressor operation. Listen to the noise while the A/C compressor clutch is engaged and disengaged. Probe the A/C system with a stethoscope to pinpoint the noise.

NOTE: If the noise does not change when the A/C compressor clutch engages or disengages, the noise may be caused by an engine-related component. Probe the engine area with a stethoscope to pinpoint the noise.

(cont'd)

Climate Control

A/C System Noise Check (cont'd)

5. Turn the ignition switch to LOCK (0), and check the drive belt for excessive wear, oil contamination, improper routing, or a faulty belt tensioner (see page 4-30). Correct any problems found. Start the engine, run the A/C system, and check if the noise is coming from the drive belt, the belt tensioner or any of the pulleys. Repair or replace any faulty components.
6. Listen for noises coming from the A/C lines, the A/C hoses, the condenser, the evaporator, the receiver/drier, or the expansion valve, and check these items:
 - Noises caused by A/C components touching other components or the body. Reroute or insulate the A/C component(s) as needed, and recheck for noise.
 - Loose, damaged or excessively worn A/C components or mounting hardware. Repair or replace the faulty component(s) or hardware, and recheck for noise.
 - A moaning noise coming from the A/C suction line. If there is a moaning noise, check the system refrigerant charge (see page 21-92). If the refrigerant charge is OK, replace the receiver/drier.
7. Check the operation of the A/C compressor clutch:
 - Make sure compressor clutch engages without slipping. If the clutch does not engage, troubleshoot the A/C compressor clutch circuit (see page 21-62). If the compressor clutch slips, replace the complete clutch assembly (see page 21-86).
 - Make sure the compressor clutch disengages. If the clutch does not disengage, do the A/C compressor clutch check (see page 21-85). If the compressor clutch is OK, replace the A/C compressor (see page 21-83).
 - Make sure the compressor clutch cycles normally. If the compressor clutch is cycling rapidly, the A/C system is probably low on refrigerant due to a leak. Do the refrigerant leak check (see page 21-93). If the refrigerant charge is OK, and there are no leaks, troubleshoot the A/C compressor clutch circuit.
8. Listen with a stethoscope for noises coming from the A/C compressor, and check these items:
 - The noise changes when the compressor clutch disengages. If the noise does not change when the A/C compressor disengages, the noise may be caused by an engine-related component. Probe the engine area with a stethoscope to pinpoint the noise.
 - The A/C system operating pressures are normal. If the system pressures are abnormal, troubleshoot the problem using the pressure test table in the A/C system check (see page 21-99). Correct the pressure-related problem(s), and recheck for noise.
 - The compressor hose connections, mounting brackets, and fasteners are in good condition. If any of these components are loose, damaged, or excessively worn, repair or replace the faulty component(s), and recheck for noise. If these components are in good condition, and the noise is still present, replace the A/C compressor (see page 21-83).



A/C System Test

Performance Test

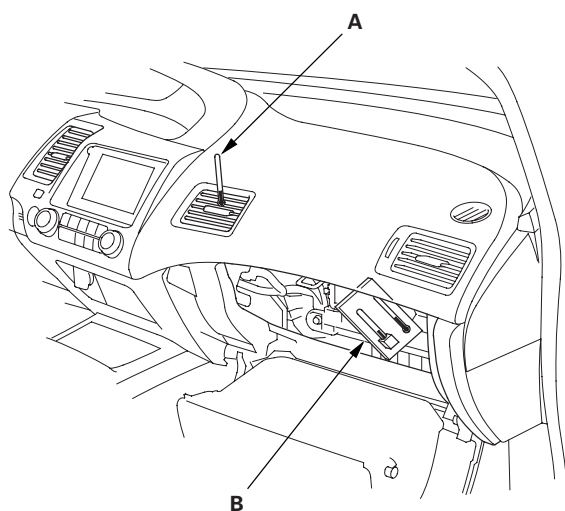
⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The performance test will help determine if the A/C system is operating within specifications.

NOTE:

- If accidental system discharge occurs, ventilate the work area before resuming service.
 - Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
1. Do the A/C system inspection (see page 21-6), and correct any problems found.
 2. Connect an R-134a refrigerant recovery/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.
 3. Determine the relative humidity and air temperature.
 4. Open the glove box. Remove the glove box stop on each side, then let the glove box hang down (see page 20-104).
 5. Insert a thermometer (A) in the center vent.



6. Place a thermometer (B) near the blower unit's recirculation inlet duct.

7. Test conditions:

- Move the vehicle out of direct sunlight and let it cool down to the surrounding (ambient) temperature. If necessary, wash the vehicle to cool it down more quickly.
- The ambient temperature must be at least 16 °C (60 °F).
- Open the hood.
- Open the front doors.
- Set the temperature control dial to Max Cool, the mode control switch to Vent, and the recirculation control switch to Recirculate.
- Turn the A/C switch ON and the fan switch to Max.
- Hold the engine speed at 1,500 rpm.
- No driver or passengers in the vehicle.

8. Inspect the A/C components for the following conditions:

- A/C compressor clutch not engaged.
- Abnormal frost areas.
- Unusual noises.

If you observe any of these conditions, refer to the Symptom Troubleshooting Index.

9. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the center vent, the intake temperature near the blower unit, and the discharge (high) and suction (low) pressures on the A/C gauges.

(cont'd)

Climate Control

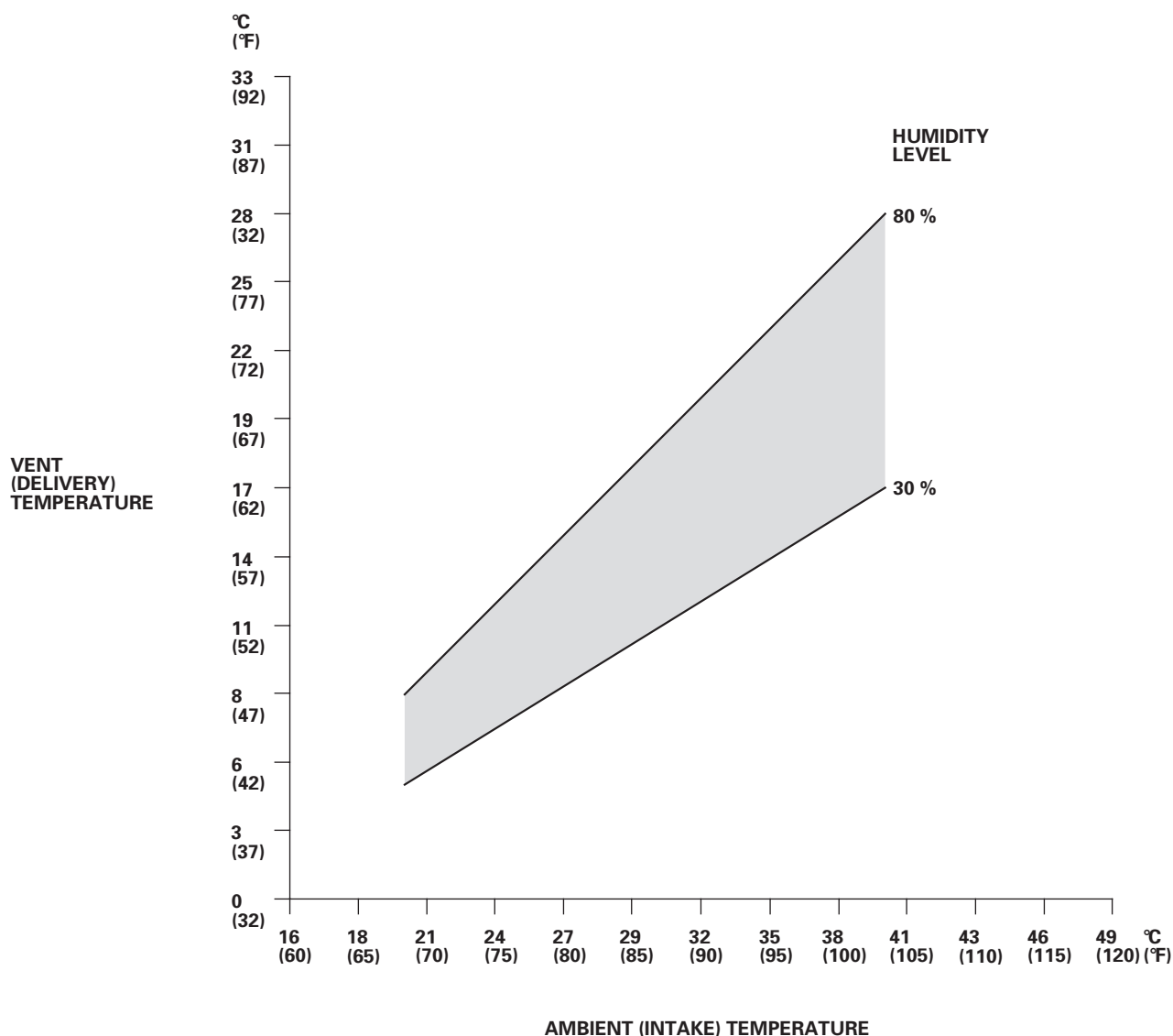
A/C System Test (cont'd)

10. To complete the vent (delivery)/ambient air (intake) temperature chart:

- Mark the vent (delivery) temperature on the vertical line.
- Mark the ambient air (intake) temperature on the bottom line.
- Draw a vertical line from the ambient air (intake) temperature mark.
- Draw a horizontal line from the vent (delivery) temperature mark until it intersects the vertical line.

NOTE: The low side and intake temperatures should intersect in the shaded area within about 10 % of the measured humidity level. Any measurements outside the line may indicate the need for further inspection.

Ambient (Intake) Temperature vs. Vent (Delivery) Temperature



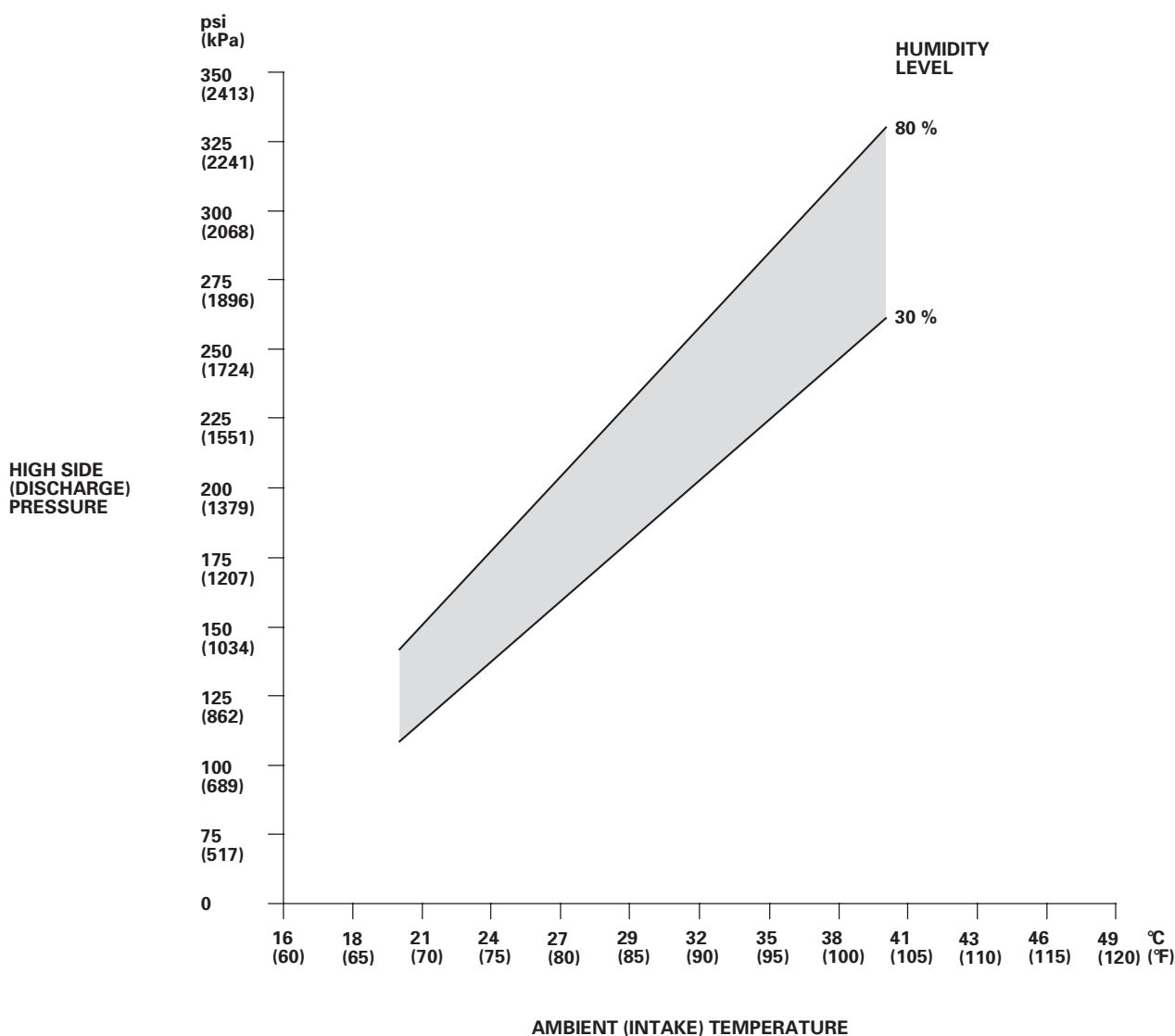


11. To complete the high side (discharge pressure)/ambient air (intake) temperature chart:

- Mark the high side (discharge pressure) temperature on the vertical line.
- Mark the ambient air (intake) temperature on the bottom line.
- Draw a vertical line from the high side (discharge pressure) temperature mark.
- Draw a horizontal line from the vent (delivery) temperature mark unit it intersects the vertical line.

NOTE: The low side and intake temperatures should intersect in the shaded area within about 10 % of the measured humidity level. Any measurements outside the line may indicate the need for further inspection.

Ambient (Intake) Temperature vs. High Side (Discharge) Pressure



(cont'd)

Climate Control

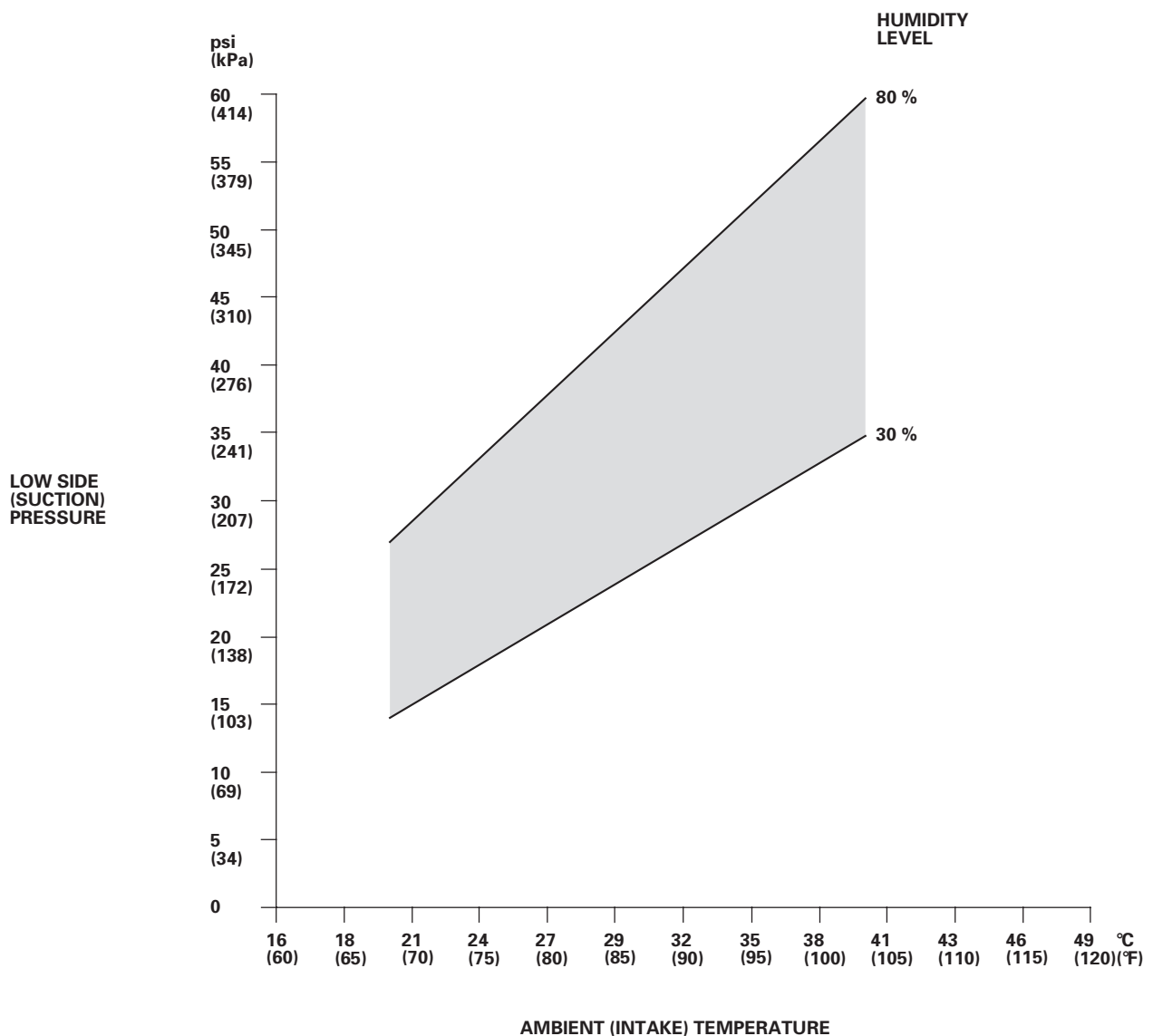
A/C System Test (cont'd)

12. To complete the low side (suction pressure)/ambient air (intake) temperature chart:

- Mark the low side (suction pressure) temperature along the vertical line.
- Mark the ambient air (intake) temperature along the bottom line.
- Draw a vertical line from the ambient air (intake) temperature mark.
- Draw a horizontal line from the vent (delivery) temperature mark unit it intersects the vertical line.

NOTE: The low side and intake temperatures should intersect in the shaded area within about 10 % of the measured humidity level. Any measurements outside the line may indicate the need for further inspection.

Ambient (Intake) Temperature vs. Low Side (Suction) Pressure





Pressure Test

Test results	Related symptoms	Probable cause	Remedy
Suction and discharge pressures are normal	Warm air from the vents.	The A/C system contains too much refrigerant oil. The air mix door is not operating properly.	• Recover refrigerant (see page 21-90) and evacuate the system (see page 21-91). Adjust the amount of oil in the system, then recharge the system (see page 21-92). • Check air mix door operation (see page 21-72), and repair as needed.
Suction and discharge pressures are roughly equal and steady	The suction and discharge pressures equalize when the engine is revved.	The A/C compressor clutch or the drive belt is slipping, or the compressor shaft seal is leaking.	• Check whether the A/C compressor clutch or the drive belt is slipping. • If the drive belt is slipping, replace the drive belt (see page 4-31). Also inspect the drive belt auto-tensioner (see page 4-31). • If the A/C compressor clutch is slipping, replace it (see page 21-86). • Check the A/C compressor shaft seal. If it's leaking, replace the A/C compressor (see page 21-83).
Suction and discharge pressures are roughly equal but fluctuate	Suction and discharge pressures fluctuate while running. Pressures equalize as soon as the A/C compressor disengages.	The compressor discharge valve or the compressor gasket is faulty.	Replace the A/C compressor (see page 21-83).
Suction and discharge pressures are roughly equal and abnormally low	The suction and discharge pressures do not change during continued operation.	The A/C system is undercharged.	Recover refrigerant (see page 21-90), then do the refrigerant leak check (see page 21-93). Repair any leaks, then recharge the system (see page 21-92).
Suction and discharge pressures are abnormally high, but normalize when the condenser is cooled	The suction pressure decreases when cool water is sprayed on the A/C condenser.	The A/C system is overcharged.	Recover refrigerant (see page 21-90), evacuate the system (see page 21-91), and recharge the system to specifications (see page 21-92).

(cont'd)

Climate Control

A/C System Test (cont'd)

Test results	Related symptoms	Probable cause	Remedy
Suction and discharge pressures are abnormally high, and refrigerant line temperatures are abnormal	- The high pressure vapor line to the condenser is too hot. - The low pressure liquid line from the expansion valve is not cold. - There is an abrupt temperature drop along a refrigerant line, or in the condenser or evaporator.	The A/C system refrigerant flow is restricted.	Replace the restricted line or component.
Suction and discharge pressures are abnormally high, but drop rapidly when the compressor disengages	- After stopping the A/C compressor, the discharge pressure quickly drops about 196 kPa (28 psi), then falls gradually. - The input and output temperatures at the expansion valve are not similar.	There is excess air in the A/C system.	Recover refrigerant (see page 21-90), evacuate the system (see page 21-91), and recharge the system (see page 21-92).
Suction and discharge pressures are abnormally high, and there is little or no airflow through the A/C condenser		- The condenser and/or radiator fins are clogged. - The condenser fins are damaged. - The condenser and/or radiator fans are not working properly.	- Clean debris from the condenser and/or radiator fins. - Comb the condenser fins to repair any damage. - Troubleshoot the A/C condenser fan and/or the radiator fan circuit(s).
The suction pressure is high and the discharge pressure is low. Both pressures are steady	- The liquid line temperature is similar on both sides of expansion valve. - System pressures do not vary at a steady engine speed.	The expansion valve is stuck open.	Replace the expansion valve (see page 21-80).
The suction pressure is low, the discharge pressure is high, and the refrigerant temperature changes abnormally somewhere in the system	- The high pressure liquid line going into the expansion valve is cold. - There is an abrupt temperature drop in the line between the compressor and the condenser, or in the line between the condenser and the expansion valve.	The A/C system refrigerant flow is restricted.	Replace the restricted line or component.



Test results	Related symptoms	Probable cause	Remedy
The suction pressure is high, the discharge pressure is low, and there are particle contaminants in the refrigerant lines	The expansion valve and/or the compressor discharge hose are contaminated with metal flakes or desiccant particles.	The A/C compressor is malfunctioning.	Replace the A/C compressor (see page 21-83). If the system is contaminated with desiccant, replace the receiver/dryer (see page 21-89).
The suction pressure is high, the discharge pressure is low, and the pressures quickly change when the A/C disengages	The discharge and suction pressures equalize soon after the A/C compressor stops.	The A/C compressor seal is faulty.	Replace the A/C compressor (see page 21-83).
Suction and discharge pressures are both low and none of the refrigerant lines are cold	There is no frost on the expansion valve, and the low-pressure liquid line is not cold.	The A/C system has a leak (very low refrigerant charge).	Do the refrigerant leak check (see page 21-93), repair any leaks, and recharge the A/C system (see page 21-92).
Suction and discharge pressures are both low, and the expansion valve or the suction line is abnormally cold	- The temperature around the expansion valve is too low compared to the temperature around the receiver/dryer. - The low pressure (suction) hose/line is cooler than the evaporator.	The discharge hose/line is clogged or kinked, which is restricting refrigerant flow. The suction hose/line is clogged or kinked, which is restricting refrigerant flow.	Repair or replace the faulty A/C line (see page 21-8).
Initially, the suction and discharge pressure are normal, but both become abnormally low during operation	During extended operation, the air flow from the vents decreases.	The evaporator is freezing up.	Run the fan with A/C compressor off to warm the evaporator, then test the evaporator temperature sensor (see page 21-70). If necessary, replace the evaporator temperature sensor.
Suction and discharge pressures are both low and there are abnormal temperature changes at the expansion valve	- During extended operation, warm air comes out of the vents, the suction pressure decreases, and heavy frost occurs on the low pressure liquid line. - The low pressure liquid line is cold at the expansion valve, but warm after the valve. - There is frost on the expansion valve.	The expansion valve is stuck closed.	- Replace the expansion valve (see page 21-80), and the receiver/dryer (see page 21-89). - Check the old expansion valve for contamination. If contaminants are found, replace the component that caused the contamination.

(cont'd)

Climate Control

A/C System Test (cont'd)

Test results	Related symptoms	Probable cause	Remedy
The discharge pressure is low, the suction pressure is extremely low, and the expansion valve outlet is abnormally warm	There is no frost on the expansion valve outlet, and the liquid line temperature changes significantly across the expansion valve.	There is excessive moisture in the A/C system.	Recover refrigerant (see page 21-90), then replace the receiver/dryer (see page 21-89). Evacuate the system (see page 21-91), and recharge the system (see page 21-92).
The discharge pressure is low, the suction pressure is extremely low, and the suction line is abnormally cold	There is frost on the line from the evaporator to the compressor.	The evaporator is internally contaminated or plugged.	Recover refrigerant (see page 21-90), then replace the evaporator. Evacuate the system (see page 21-91), and recharge the system (see page 21-92).
The discharge pressure is low, the suction pressure is extremely low, and the refrigerant temperature doesn't change going through the expansion valve	- There is no frost on the expansion valve, and the low pressure liquid line is not cold. - The liquid line temperatures are similar on both sides of expansion valve.	The expansion valve is faulty.	Replace the expansion valve (see page 21-80).
The discharge pressure is low, the suction pressure is extremely low, and the expansion valve is abnormally cold	There is frost on the expansion valve.	Excessive moisture in the system is freezing the expansion valve.	Recover refrigerant (see page 21-90), then replace the receiver/dryer (see page 21-89). Evacuate the system (see page 21-91), and recharge the system (see page 21-92).
The discharge pressure is low, the suction pressure is extremely low, and the high pressure liquid line is abnormally cold	There is frost on the line from the receiver/dryer to the expansion valve.	The receiver/dryer is clogged.	Recover refrigerant (see page 21-90), then replace the receiver/dryer (see page 21-89). Evacuate the system (see page 21-91), and recharge the system (see page 21-92).