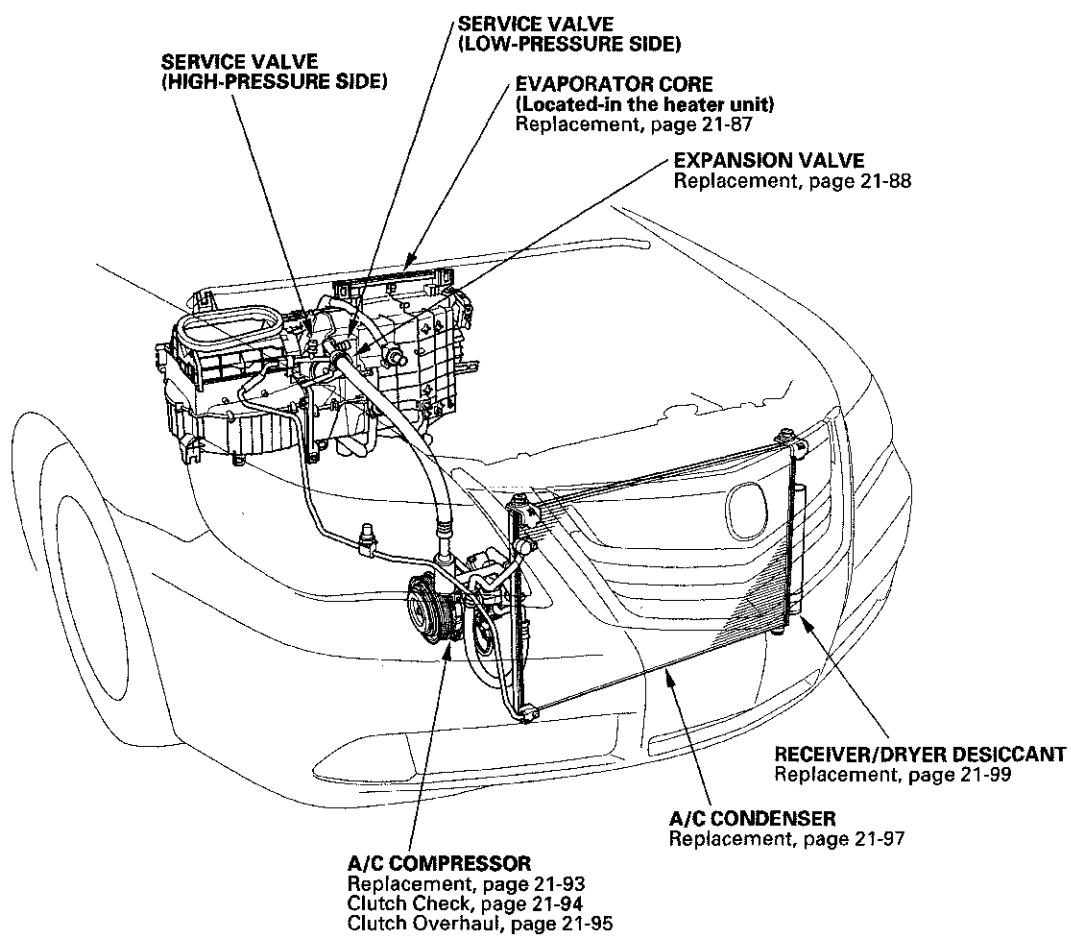


Climate Control



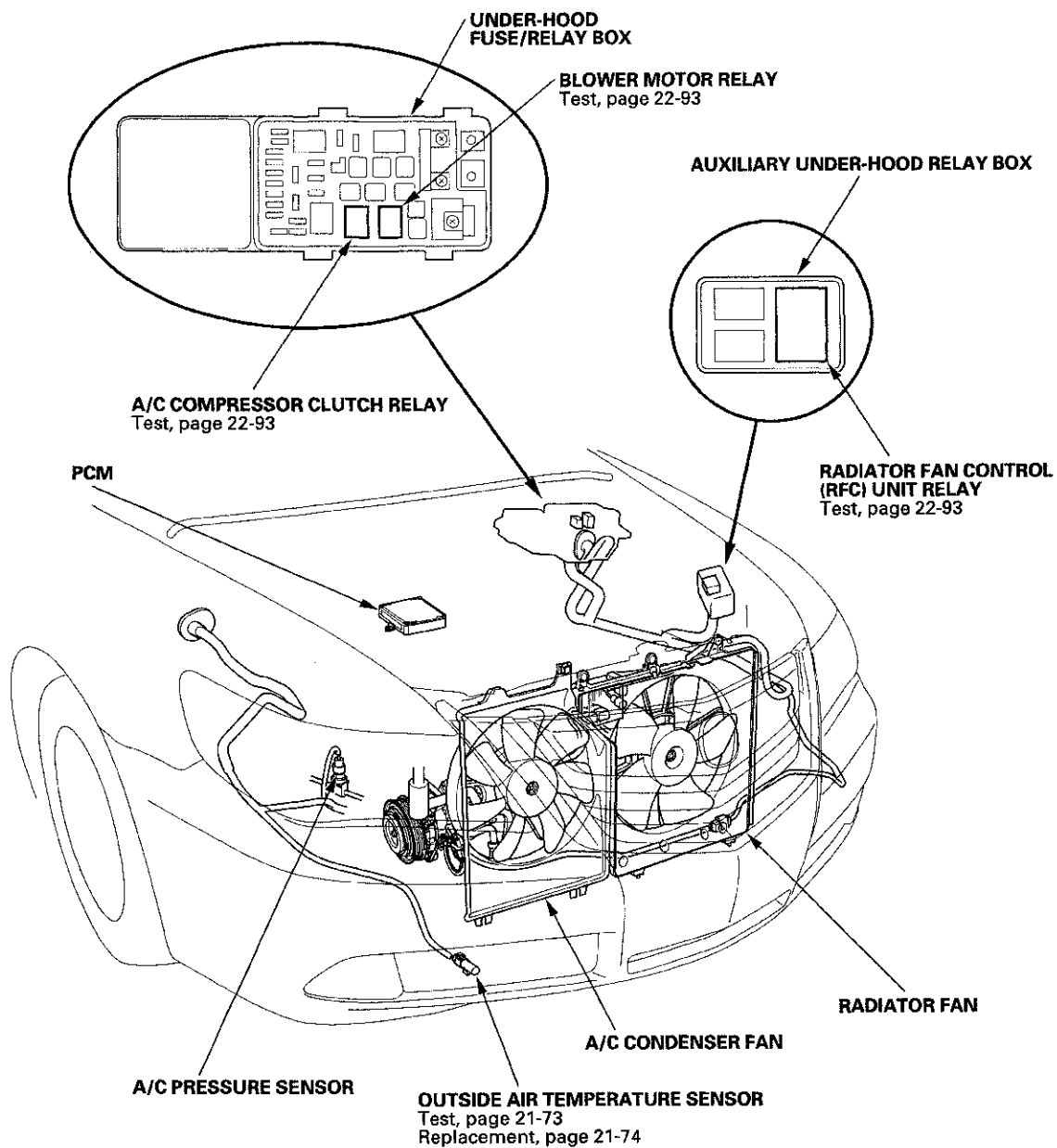
Component Location Index

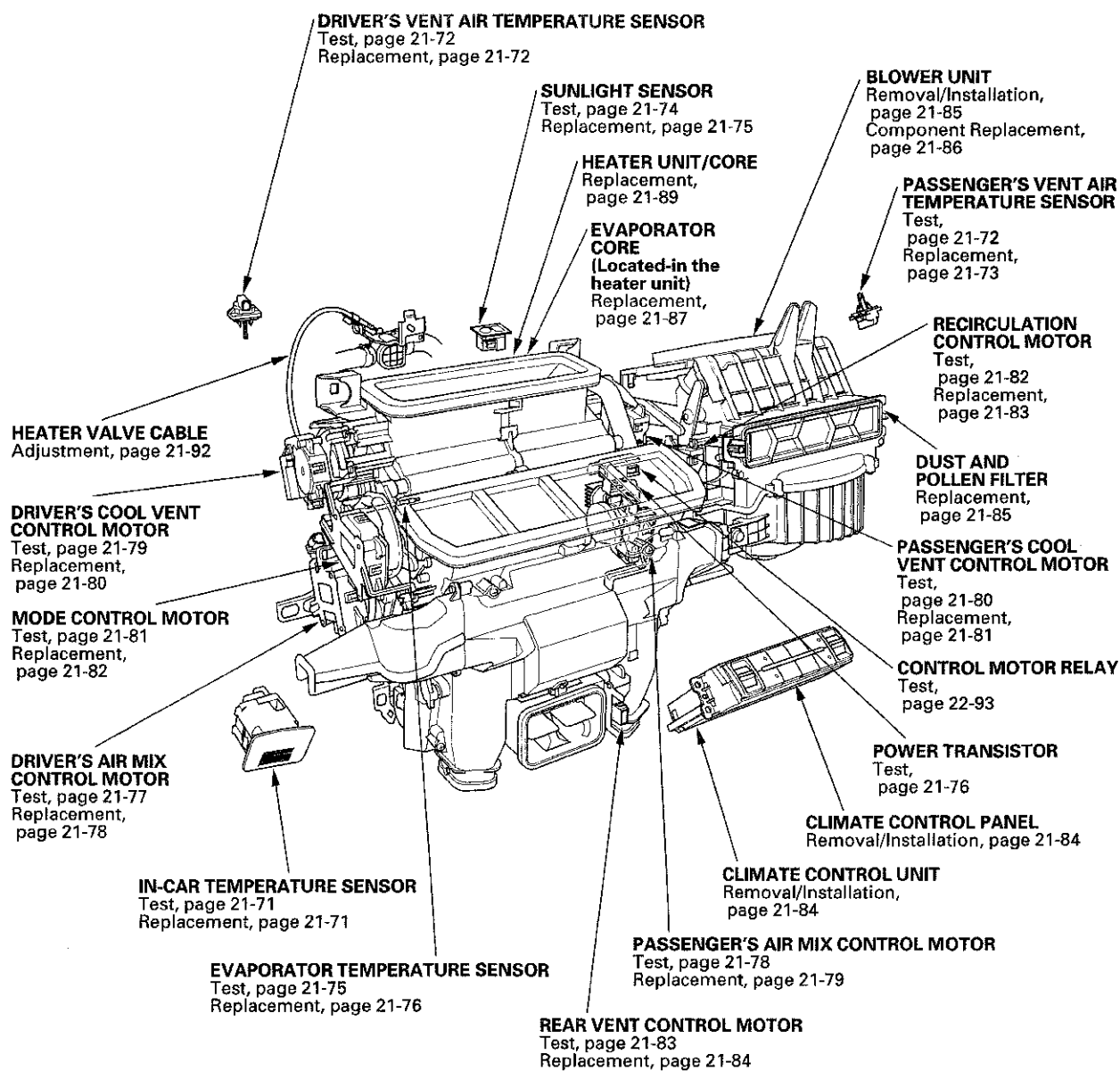


(cont'd)

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 Refrigerant Oil Replacement

Recommended PAG oil: DENSO ND-OIL 8

P/N 38897-PR7-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
(including Dryer

Desiccant) 35 mL (1 1/5 fl-oz)

Evaporator 45 mL (1 1/2 fl-oz)

Line or hose 10 mL (1/3 fl-oz)

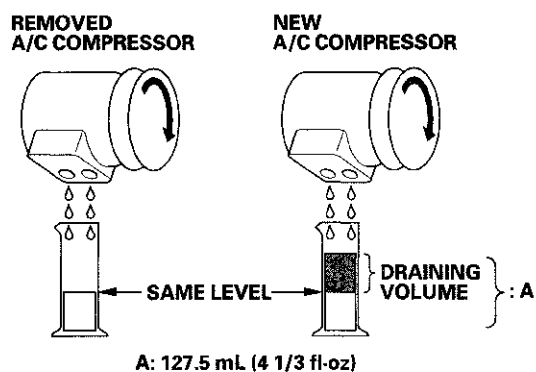
Receiver/Dryer

Desiccant 10 mL (1/3 fl-oz)

Leakage repair 25 mL (5/6 fl-oz)

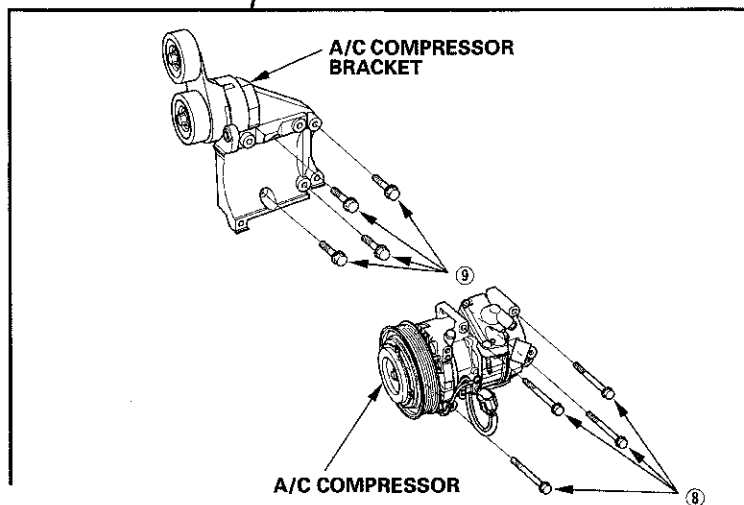
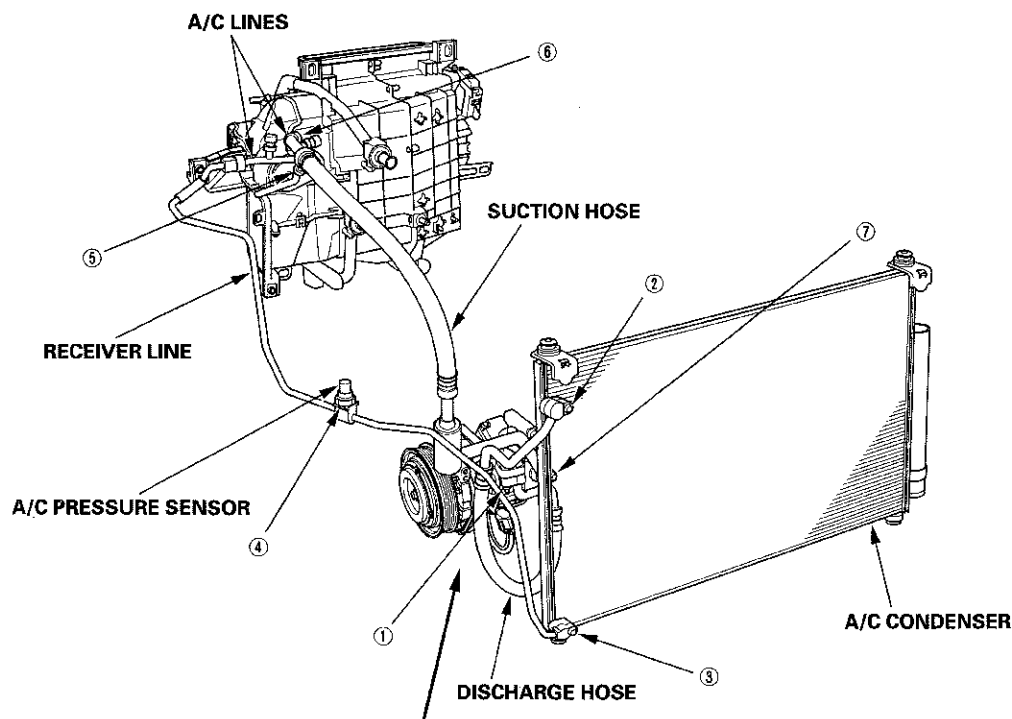
A/C compressor For A/C compressor replacement, subtract the volume of oil drained from the removed A/C compressor from 127.5 mL (4 1/3 fl-oz), and drain the calculated volume of oil from the new A/C compressor: 127.5 mL (4 1/3 fl-oz) — Volume of removed A/C compressor = Volume to drain from new A/C compressor.

NOTE: Even if no oil is drained from the removed A/C compressor, don't drain more than 50 mL (1 2/3 fl-oz) from the new A/C compressor.



Climate Control

A/C Line Replacement



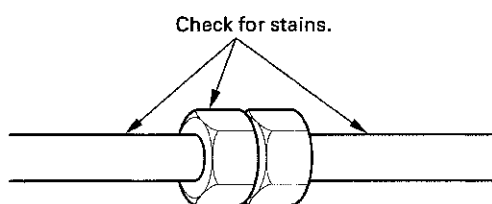
- ① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N-m (1.0 kgf-m, 7.2 lbf-ft)
- ② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N-m (1.0 kgf-m, 7.2 lbf-ft)
- ③ Receiver line to the A/C condenser (6 x 1.0 mm): 9.8 N-m (1.0 kgf-m, 7.2 lbf-ft)
- ④ Receiver line to the A/C pressure sensor (11 x 1.0 mm): 10.8 N-m (1.1 kgf-m, 8.0 lbf-ft)
- ⑤ A/C lines to the evaporator (6 x 1.0 mm): 9.8 N-m (1.0 kgf-m, 7.2 lbf-ft)
- ⑥ A/C lines to the suction hose (6 x 1.0 mm): 9.8 N-m (1.0 kgf-m, 7.2 lbf-ft)
- ⑦ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N-m (1.0 kgf-m, 7.2 lbf-ft)
- ⑧ A/C compressor to the A/C compressor bracket (8 x 1.25 mm): 21.5 N-m (2.2 kgf-m, 16 lbf-ft)
- ⑨ A/C compressor bracket to the engine block (10 x 1.25 mm): 44 N-m (4.5 kgf-m, 33 lbf-ft)



A/C System Inspection

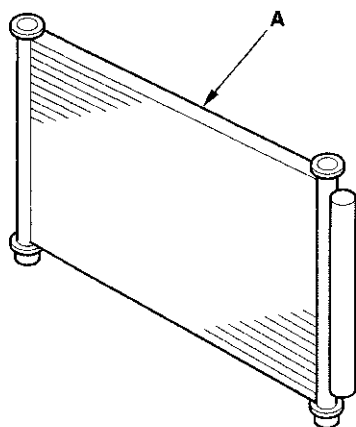
Before troubleshooting any problem with the air conditioning system, do the following:

1. Check for collision damage or body shop work.
2. Make sure the ignition switch is 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.

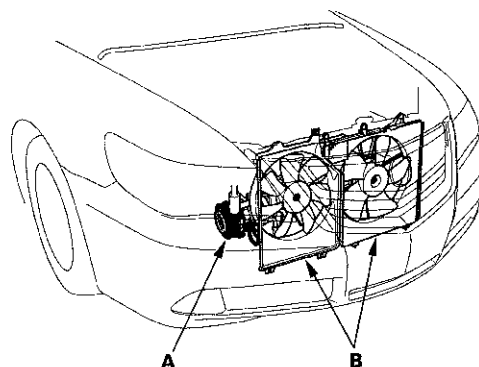


3. Check the A/C condenser for material clogging the fins or for damage to the fins:

- 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 (A) completely.
- Refer to the refrigerant leak check (see page 21-103) to confirm leaks if there is visible damage to the A/C condenser.



4. Inspect the drive belt (see page 4-33).
5. Make sure no material is blocking the airflow to the A/C condenser.
6. Check the dust and pollen filter, and replace it if it is clogged (see page 21-85).
7. 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).
8. Start the engine, turn the air conditioning system on, and allow it to run for a few minutes and reach stable operation.
9. 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.
10. 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, or fails to disengage, refer to the symptom troubleshooting.



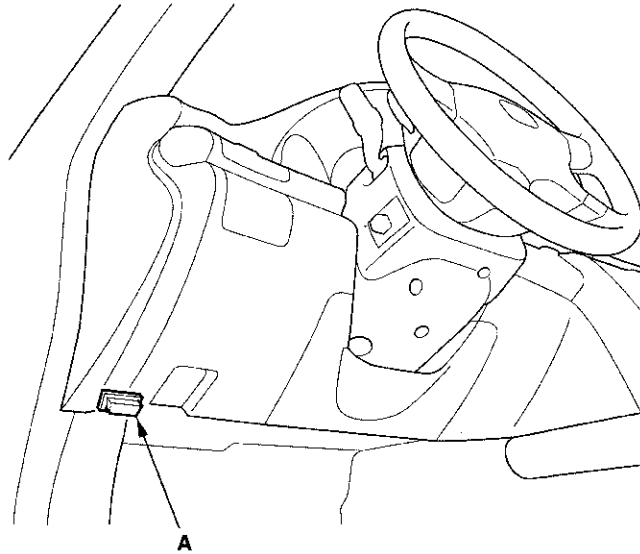
11. Check that the cooling fans (B) operate when the A/C compressor clutch is engaged. If either fan fails to operate when the A/C compressor clutch is engaged, refer to the symptom troubleshooting.
12. Check that the engine idle speed is correctly maintained when the A/C is switched on and off, and when the A/C compressor clutch is engaged and disengaged.

Climate Control

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 11-211).
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.



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 11-211).
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.

(cont'd)

Climate Control

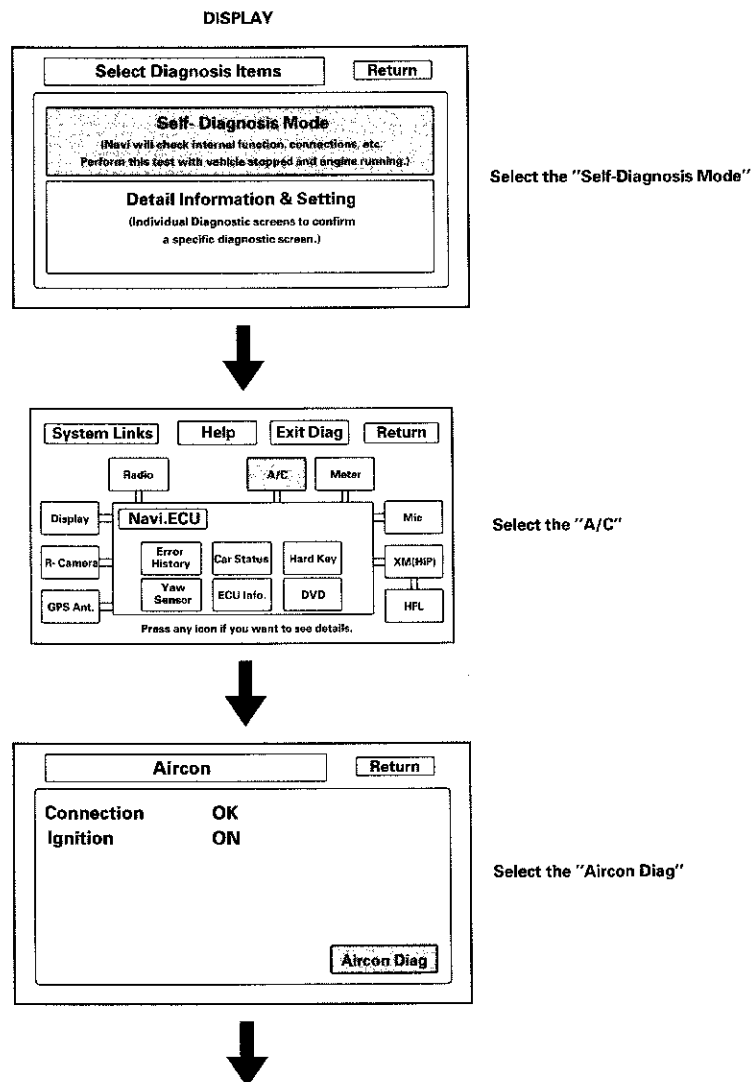
General Troubleshooting Information (cont'd)

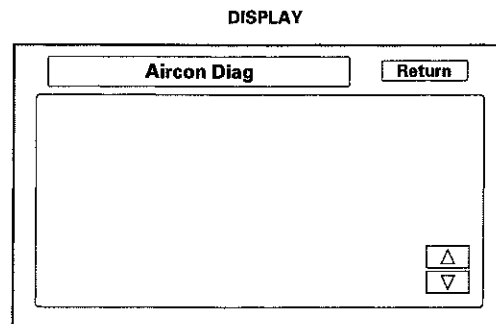
How to Use the Self-diagnostic Function without HDS

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

NOTE: Before troubleshooting the climate control system, refer to B-CAN System Diagnosis Test Mode A Troubleshooting (see page 22-131).

1. Turn the ignition switch to ON (II).
2. Press and hold the three buttons (Menu, Map/Guide, and Cancel), and keep them pressed for about 5 seconds. The display screen will go directly to the "Select Diagnosis Items" menu.
3. Use the interface dial to select Self-Diagnosis, then select A/C. The screen will go to Aircon, then select Aircon Diag.

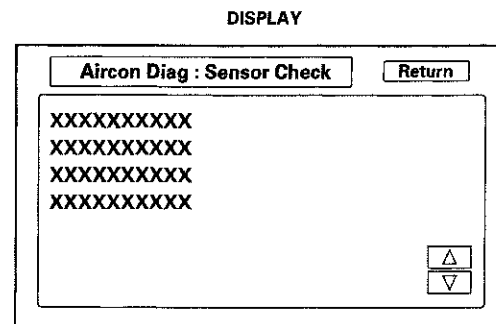
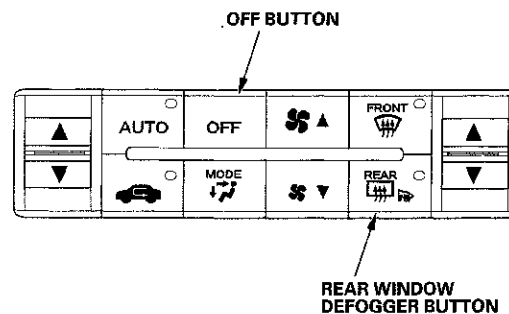




4. Press and hold the OFF button, then press the rear window defogger button five times within 10 seconds. Release the buttons. All the LEDs blink for 2 seconds, then the self-diagnostic function begins.

NOTE: The blower motor should run at various speeds when in the self-diagnostic mode.

- If there is any problem in the system, the display will indicate it. To determine the meaning of the indication, refer to the table that follows.
- If there are no problems detected, the display will show normal.



Canceling the Self-diagnostic Function

5. 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 malfunctions.

(cont'd)

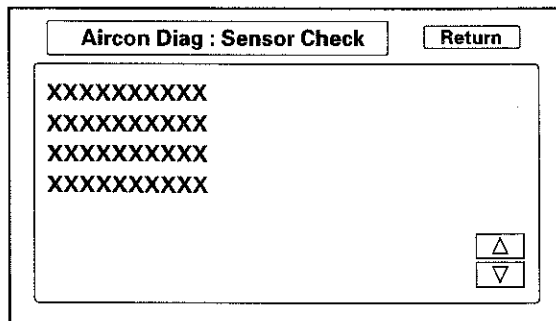
Climate Control

General Troubleshooting Information (cont'd)

Checking for DTCs

NOTE: In the case of multiple problems, the display panel will indicate them all. If the navigation display indicates TR sensor open, TAM sensor open, TS sensor open, TE sensor open, DrVENT sensor open, PaVENT sensor open, and PRE sensor open at the same time, there may be an open in the common ground wire.

DISPLAY



Display	Item
TR sensor open	An open in the in-car temperature sensor circuit (see page 21-34)
TR sensor short	A short in the in-car temperature sensor circuit (see page 21-35)
TAM sensor open	An open in the outside air temperature sensor circuit (see page 21-37)
TAM sensor short	A short in the outside air temperature sensor circuit (see page 21-38)
TS sensor open	An open in the sunlight sensor circuit (see page 21-39)
TS sensor short	A short in the sunlight sensor circuit (see page 21-40)
TE sensor open	An open in the evaporator temperature sensor circuit (see page 21-41)
TE sensor short	A short in the evaporator temperature sensor circuit (see page 21-43)
DrVENT sensor open	An open in the driver's vent air temperature sensor circuit (see page 21-49)
DrVENT sensor short	A short in the driver's vent air temperature sensor circuit (see page 21-50)
PaVENT sensor open	An open in the passenger's vent air temperature sensor circuit (see page 21-51)
PaVENT sensor short	A short in the passenger's vent air temperature sensor circuit (see page 21-53)
PRE sensor open	An open in the A/C pressure sensor circuit (see page 21-54)
PRE sensor short	A short in the A/C pressure sensor circuit (see page 21-55)
Blower motor lock	A problem in the blower motor circuit (see page 21-45)
NAVI communication error	Climate control unit lost communication with navigation unit (see page 21-56)
Audio communication error	Climate control unit lost communication with audio unit (see page 21-60)
BUS communication error	Climate control unit lost communication with each control motor (see page 21-57)
DrA/M motor lock	A problem in the driver's air mix control linkage, door, or motor (see page 21-44)
PaA/M motor lock	A problem in the passenger's air mix control linkage, door, or motor (see page 21-44)
Mode motor lock	A problem in the mode control linkage, doors, or motor (see page 21-45)
R/F motor lock	A problem in the recirculation control linkage, door, or motor (see page 21-58)
DrC/V motor lock	A problem in the driver's cool vent control linkage, door, or motor (see page 21-58)
PaC/V motor lock	A problem in the passenger's cool vent control linkage, door, or motor (see page 21-59)
RrVENT motor lock	A problem in the rear vent control linkage, door, or motor (see page 21-59)
COMP Solenoid error	A problem in the variable capacity control solenoid valve circuit (see page 21-62)
EEPROM error	Climate control unit internal error (see page 21-33)
TW sensor error	Climate control unit lost communication with gauge control module (ECT message) (see page 21-33)
Vehicle speed error	Climate control unit lost communication with gauge control module (VSP/NE message) (see page 21-33)
ENGNe error	



Displaying Sensor Inputs at the Climate Control Unit

The climate control unit has a mode that displays sensor inputs it receives. This mode shows you what 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), then select AUTO 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. Adjust 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.
 - 58 through 86 °F settings will use the automatic climate control logic (USA models).
 - 16 through 28 °C settings will use the automatic climate control logic (Canada models).
3. Turn the ignition switch to LOCK (0).

To run the sensor input display mode, follow these steps

4. Press and hold both the AUTO and recirculation buttons while starting the engine. Release the buttons.
5. Turn the ignition switch to ON (II).
6. Press and hold the three buttons (Menu, Map/Guide, and Cancel), and keep them pressed for about 5 seconds. The display screen will go directly to the "Select Diagnosis Items" menu.
7. Use the interface dial to select Self-Diagnosis Mode, then select A/C. The screen will go to Aircon, then select Aircon Diag. The display will show the sensor inputs.

Display Panel	Item	Displayed Value
TR sensor	In-car Temperature	°C
TAM sensor	Outside Air Temperature	°C
TS sensor	Solar Radiation Sensor Value: Dark=00, Flashlight=04, Cloudy=10, Sunny=65	kcal/m ² ·min
TW sensor	Engine Coolant Temperature	°C
TE sensor	Evaporator Outlet Air Temperature	°C
DrVENT sensor	Driver's Vent Air Temperature	°C
PaVENT sensor	Passenger's Vent Air Temperature	°C
DrA/M motor	Driver's Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution)	% of opening
PaA/M motor	Passenger's Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution)	% of opening
Mode motor	Mode Opening	% of opening
R/F motor	Recirculation Opening	% of opening
DrC/V sensor	Driver's Cool Vent Opening	% of opening
PaC/V sensor	Passenger's Cool Vent Opening	% of opening
RrVENT motor	Rear Vent Opening	% of opening
TAO	Vent Temperature Air Out (TAO)	°C
VSP	Vehicle Speed (Vehicle must be driven to display speed)	km/h
Pd sensor	A/C pressure	MPa

NOTE:

- The sensor values will be displayed in degrees Celsius (°C). 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 refer to checking DTCs by DTC indication.
- 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.

8. 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



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 22-148)
B1202	Climate control unit internal error	Climate control unit	Internal error	(see page 21-33)
B1205	Climate control unit lost communication with gauge control module (VSP/NE message)	Climate control unit	Loss of communication	(see page 21-33)
B1206	Climate control unit lost communication with gauge control module (ECT message)	Climate control unit	Loss of communication	(see page 21-33)
B1207	Climate control unit lost communication with gauge control module (ILLUMI message)	Climate control unit	Loss of communication	(see page 21-33)
B1208	Climate control unit lost communication with keyless access control unit (FOB ID message)	Climate control unit	Loss of communication	(see page 21-33)
B1225	An open in the in-car temperature sensor circuit	Climate control unit	Signal error	(see page 21-34)
B1226	A short in the in-car temperature sensor circuit	Climate control unit	Signal error	(see page 21-35)
B1227	An open in the outside air temperature sensor circuit	Climate control unit	Signal error	(see page 21-37)
B1228	A short in the outside air temperature sensor circuit	Climate control unit	Signal error	(see page 21-38)
B1229	An open in the sunlight sensor circuit	Climate control unit	Signal error	(see page 21-39)
B1230	A short in the sunlight sensor circuit	Climate control unit	Signal error	(see page 21-40)
B1231	An open in the evaporator temperature sensor circuit	Climate control unit	Signal error	(see page 21-41)
B1232	A short in the evaporator temperature sensor circuit	Climate control unit	Signal error	(see page 21-43)
B1235	A problem in the driver's air mix control linkage, door, or motor	Climate control unit	Signal error	(see page 21-44)
B1238	A problem in the passenger's air mix control linkage, door, or motor	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 21-45)
B1241	A problem in the blower motor circuit	Climate control unit	Signal error	(see page 21-45)
B2975	An open in the driver's vent air temperature sensor circuit	Climate control unit	Signal error	(see page 21-49)
B2976	A short in the driver's vent air temperature sensor circuit	Climate control unit	Signal error	(see page 21-50)
B2977	An open in the passenger's vent air temperature sensor circuit	Climate control unit	Signal error	(see page 21-51)
B2978	A short in the passenger's vent air temperature sensor circuit	Climate control unit	Signal error	(see page 21-53)
B2979	An open in the A/C pressure sensor circuit	Climate control unit	Signal error	(see page 21-54)

(cont'd)

Climate Control

DTC Troubleshooting Index (cont'd)

Checking the DTCs by HDS

DTC	Detection Item or Symptom	ECU	DTC type	Page
B2980	A short in the A/C pressure sensor circuit	Climate control unit	Signal error	(see page 21-55)
B2981	Climate control unit lost communication with navigation unit	Climate control unit	Loss of communication	(see page 21-56)
B2982	Climate control unit lost communication with each control motor	Climate control unit	Loss of communication	(see page 21-57)
B2983	A problem in the recirculation control linkage, door, or motor	Climate control unit	Signal error	(see page 21-58)
B2984	A problem in the driver's cool vent control linkage, door, or motor	Climate control unit	Signal error	(see page 21-58)
B2985	A problem in the passenger's cool vent control linkage, door, or motor	Climate control unit	Signal error	(see page 21-59)
B2987	A problem in the rear vent control linkage, door, or motor	Climate control unit	Signal error	(see page 21-59)
B2991	Climate control unit lost communication with audio unit	Climate control unit	Loss of communication	(see page 21-60)



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
All the control motors do not run	- Probable cause: The control motor circuit malfunction - Do the control motor power supply circuit troubleshooting (see page 21-64)	- HVAC DTCs (see page 21-10) - Blown fuse No. 9 (7.5 A) in the passenger's under-dash fuse/relay box - Poor or loose connections at the terminals
The aspirator fan does not run	- Probable cause: The aspirator fan circuit malfunction - Do the aspirator fan circuit troubleshooting (see page 21-65)	- HVAC DTCs (see page 21-10) - Blown fuse No. 30 (7.5 A) in the driver's under-dash fuse/relay box - Poor ground at G501 (see page 22-32) - Poor or loose connections at the terminals
The blower and heater controls and the A/C system do not work	- Probable cause: The climate control unit has malfunctioned, or has lost power or ground - Do the climate control power and ground circuit troubleshooting (see page 21-66)	- HVAC DTCs (see page 21-10) - Blown fuse No. 30 (7.5 A) in the driver's under-dash fuse/relay box - Poor ground at G503 (see page 22-36) - 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	Do the radiator and A/C condenser fans common circuit troubleshooting (see page 10-20)	- Powertrain DTCs (see page 11-3) - Blown fuse No. 23 (7.5 A) in the driver's under-dash fuse/relay box - Faulty radiator fan control (RFC) unit relay - Faulty radiator fan control (RFC) unit - Poor ground at G301 (see page 22-26) - Poor or loose connections at the terminals
The A/C condenser fan does not run at all (but the radiator fan and the A/C compressor run with the A/C on)	Do the A/C condenser fan circuit troubleshooting (see page 10-21)	- Powertrain DTCs (see page 11-3) - Faulty A/C condenser fan motor - Faulty radiator fan control (RFC) unit - Poor or loose connections at the terminals
The radiator fan does not run at all (but the A/C condenser fan and the A/C compressor run with the A/C on)	Do the radiator fan circuit troubleshooting (see page 10-20)	- Powertrain DTCs (see page 11-3) - Faulty radiator fan motor - Faulty radiator fan control (RFC) unit - Poor or loose connections at the terminals

(cont'd)

Climate Control

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
The 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 - Troubleshoot ECT 2 circuit performance problem (see page 11-162)	- HVAC DTCs (see page 21-10) - Powertrain DTCs (see page 11-3) - Manual 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 21-103) and repair any leaks. Replace the receiver/dryer (see page 21-99), then recharge the system to specifications (see page 21-102)	- HVAC DTCs (see page 21-10) - If there is no leak and the refrigerant level is normal, do the A/C compressor clutch circuit troubleshooting (see page 21-67), and look for an intermittent problem.
The A/C compressor clutch does not disengage when the A/C switch is off	- Probable cause: The A/C compressor clutch circuit is on (energized) continuously, shorted to ground, or the compressor clutch is mechanically jammed - Do the A/C compressor clutch circuit troubleshooting (see page 21-67), and repair any circuit problems - If the A/C compressor clutch circuit is OK, then do the A/C compressor clutch check (see page 21-94), and repair any problems with the compressor clutch	The A/C compressor relief valve. If it has vented refrigerant to the atmosphere, correct the problem with the compressor clutch or clutch circuit, then replace the relief valve (see page 21-97).
The A/C compressor relief valve has vented refrigerant NOTE: This indicates the A/C system pressure was very high	- Probable cause: A high-side restriction, the A/C condenser/radiator fans are inoperative, or the A/C compressor clutch is not disengaging - If the fans and compressor clutch operate normally, recover refrigerant (see page 21-100), and check for restrictions - If the compressor clutch will not disengage, troubleshoot the clutch circuit (see page 21-67), and check for mechanical problems (see page 21-94) - If the fans are inoperative, troubleshoot the fan circuits (see page 10-21)	Powertrain DTCs (see page 11-3)
Warm air comes out of the vents, and the high pressure liquid line is very hot	- Probable cause: The A/C system is overcharged (too much refrigerant), or the condenser is malfunctioning - Recover A/C refrigerant (see page 21-100), then check the condenser for restrictions or poor airflow. Repair as needed. Recharge the system to specifications (see page 21-102)	- 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: The A/C system is low on refrigerant, indicating a possible leak - Do the refrigerant leak check (see page 21-103) and repair any leaks. Recharge the system to specifications (see page 21-102)	- HVAC DTCs (see page 21-10) - Add refrigerant oil depending on the part you replaced (see page 21-6)
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 21-103) and repair any leaks. Replace the receiver/dryer (see page 21-99), then recharge the system to specifications (see page 21-102)	- HVAC DTCs (see page 21-10) - Check the amount of refrigerant oil in the system. Adjust the oil level as needed.

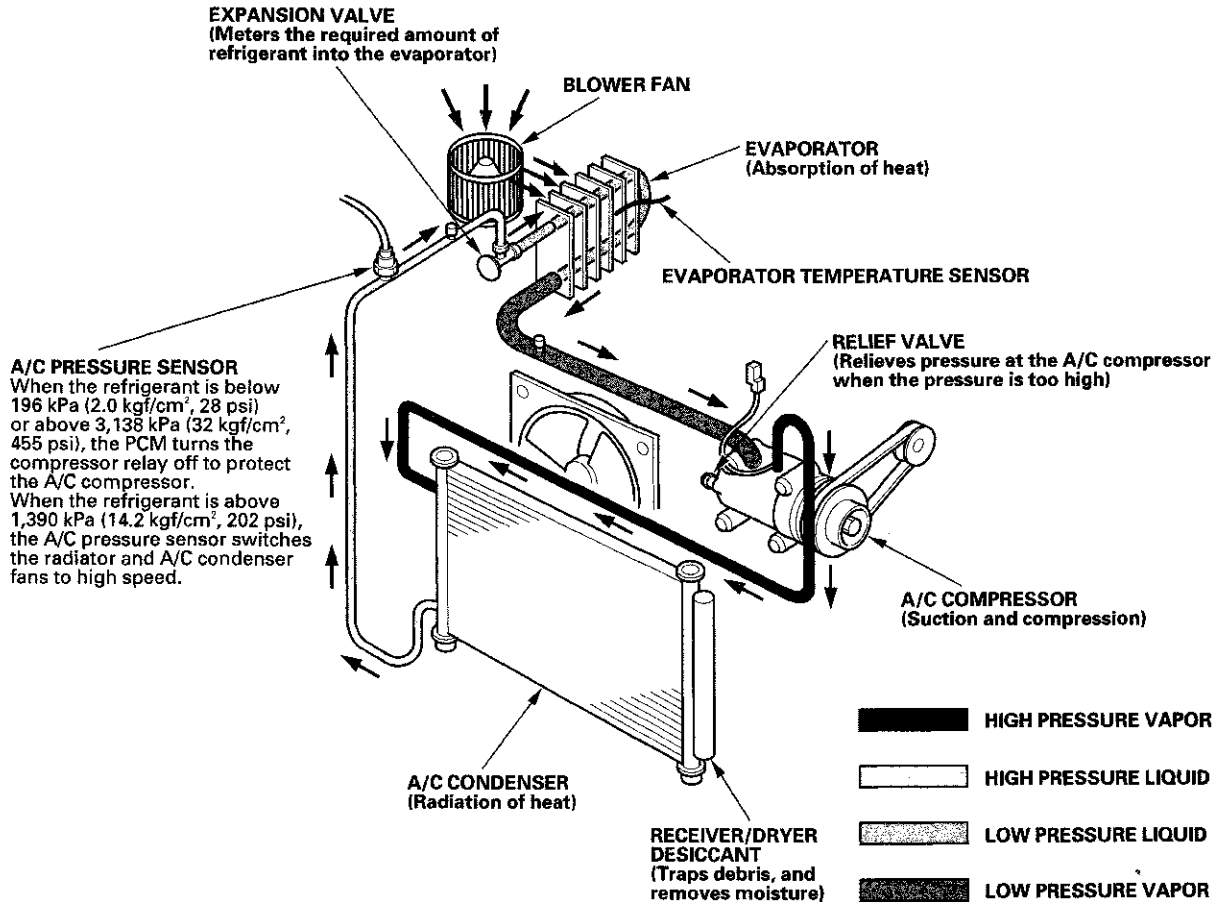


Symptom	Diagnostic procedure	Also check for
Warm air comes out of the vents. The liquid line or the condenser outlet is abnormally cool, or there is frost or condensation on the receiver/dryer	- Probable cause: A restriction in the high-pressure side of the system - Recover A/C refrigerant (see page 21-100), then check the liquid line, the receiver/dryer, and the condenser for restrictions. Repair as needed. Recharge the system to specifications (see page 21-102)	HVAC DTCs (see page 21-10)
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 21-100), then check the suction line and the expansion valve for restrictions. Repair as needed. Recharge the system to specifications (see page 21-102)	HVAC DTCs (see page 21-10)
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 21-88)	- HVAC DTCs (see page 21-10) - 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 21-88)	- HVAC DTCs (see page 21-10) - 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 A/C command is normal (A/C switch and clutch are on)	- Probable cause: Compressor failure - Do the A/C system test (see page 21-109), and correct any problems. If necessary, replace the compressor (see page 21-93)	- HVAC DTCs (see page 21-10) - Add refrigerant oil depending on the part you replaced (see page 21-6)
HDS does not communicate with the climate control unit or the vehicle	Troubleshoot the DLC circuit (see page 11-211)	
Insufficient heating	- Check the coolant level (see page 10-6) - Check the radiator cap (see page 10-3) - Check the coolant temperature during normal operation - 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, an operation of the heater valve - If it is HOT, check for restrictions in the heater core. Back flush or replace the heater core - Check the operation of the air mix doors: - Driver's (see page 21-77) - Passenger's (see page 21-78) - Check the blower motor unit for obstructions - Check for air leaks around the ducts and vents	- HVAC DTCs (see page 21-10) - Damaged cylinder head gasket

Climate Control

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 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 (DENSO ND-OIL 8) 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.



A/C Pressure Sensor

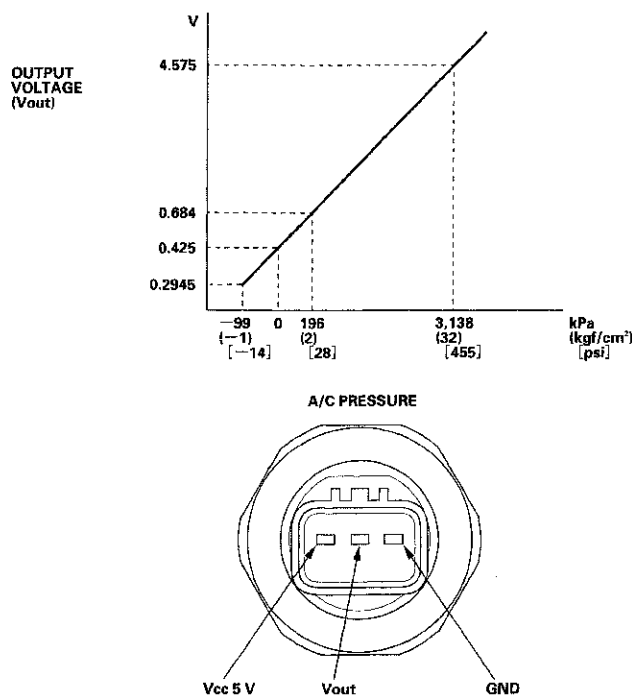
The A/C pressure sensor converts A/C pressure into electrical signals to the PCM.

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 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 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 (97 °C)
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 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 PCM disengages the compressor clutch. The radiator and condenser fans operate based on engine coolant temperature.

* : The A/C system pressure can be monitored through the climate control sensor input display function (see page 21-15).

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

NOTE: When the refrigerant is below 196 kPa (2.0 kgf/cm², 28 psi) or above 3,138 kPa (32 kgf/cm², 455 psi), the PCM turns the compressor relay off to protect the A/C compressor. When the refrigerant pressure is above 1,390 kPa (14.2 kgf/cm², 202 psi), the PCM switches the radiator and A/C condenser fans to high speed.



(cont'd)

Climate Control

System Description (cont'd)

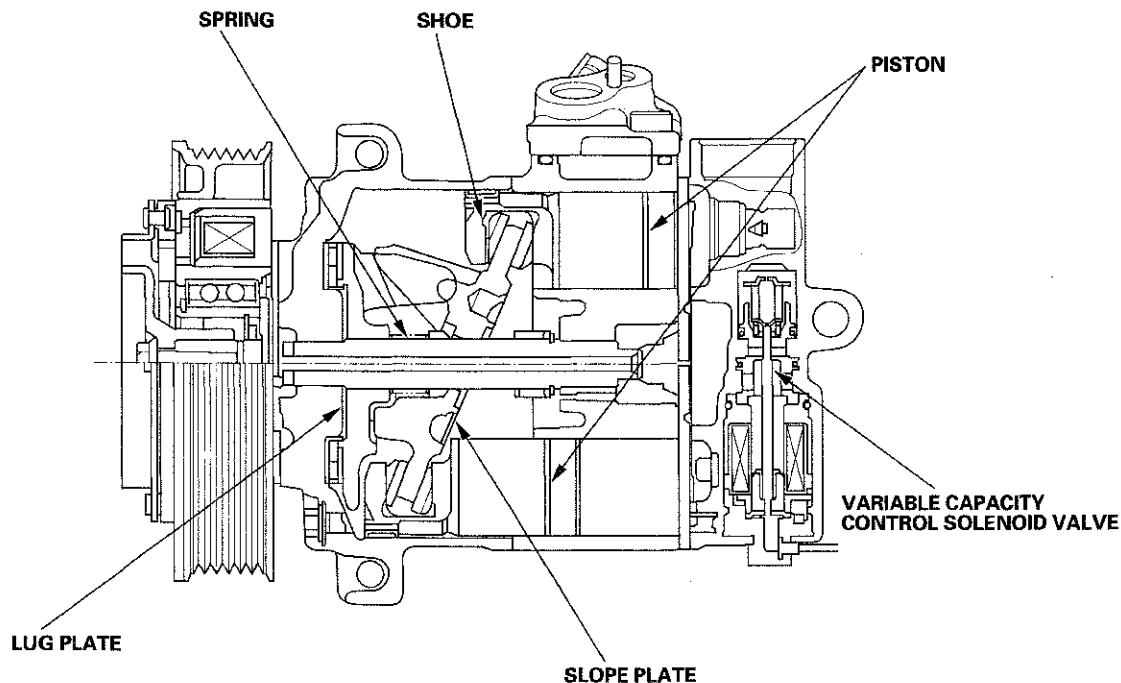
Continuously Variable Capacity Compressor

When the shaft rotates, the slope plate rotates by means of the lug plate which is attached to the shaft. The rotational movement of the slope plate is converted through the use of shoes to the reciprocal movement of the pistons, which in turn take in, compress, and discharge the refrigerant.

The inner pressure of the slope plate chamber is controlled between low to mid range, and the pressure determines the slope angle, determining the piston stroke as well and further controlling the discharge amount, resulting in the continuously variable capacity.

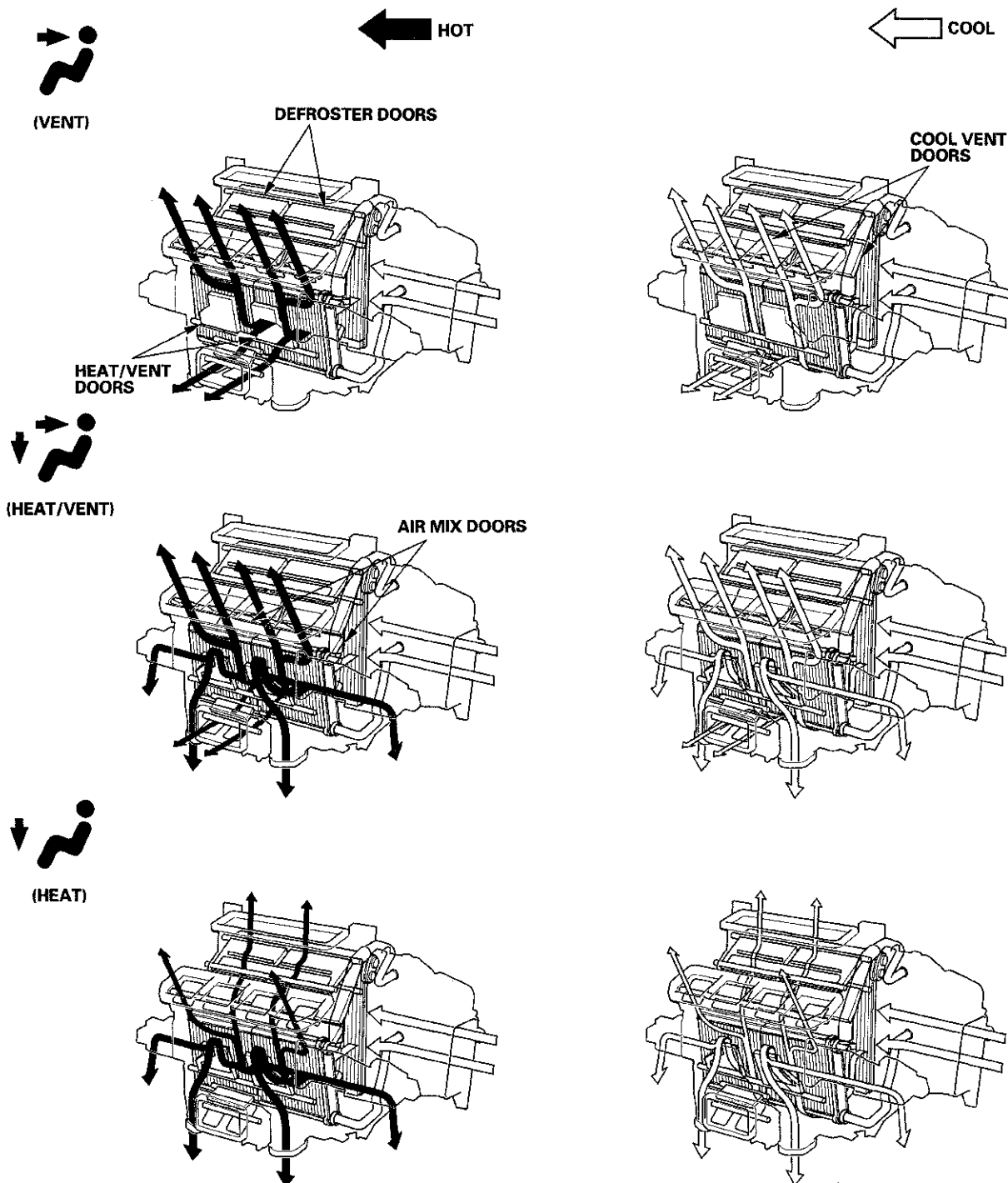
The amperage to the variable capacity control solenoid valve is controlled to obtain continuously variable low pressure, further achieving the continuous control of variable compressor capacity resulting in the continuous control of the cooling capacity.

On/Off of the compressor clutch is eliminated in the system, hence no shock of the clutch engaging/disengaging, and the idle speed becomes stable.





Climate Control Door Positions



(cont'd)

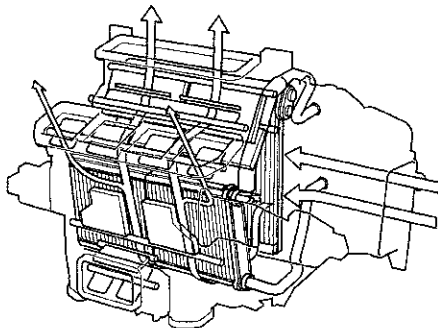
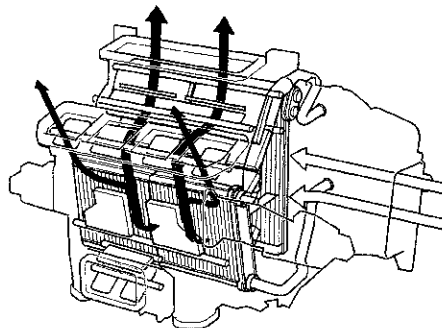
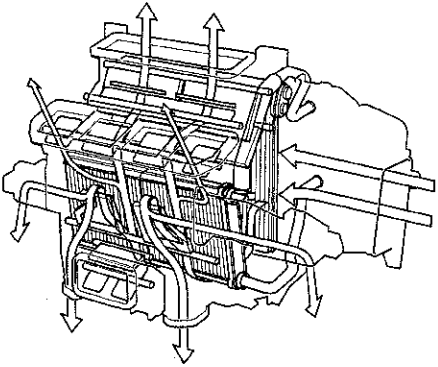
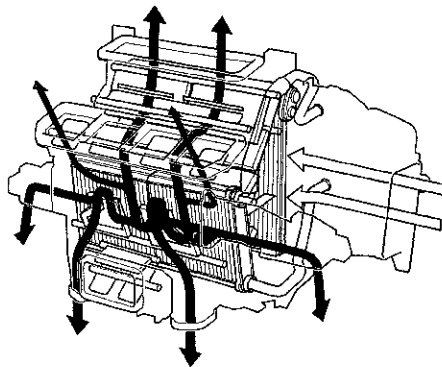
Climate Control

System Description (cont'd)



← HOT

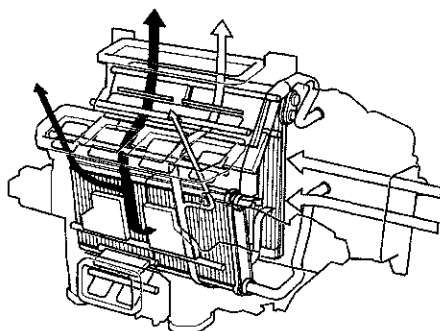
← COOL



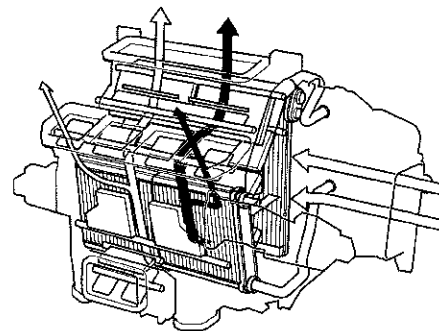


Dual Air Mix Control System

Driver's side: HOT
Passenger's side: COOL

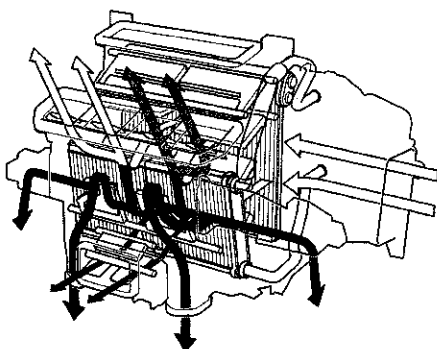


Driver's side: COOL
Passenger's side: HOT

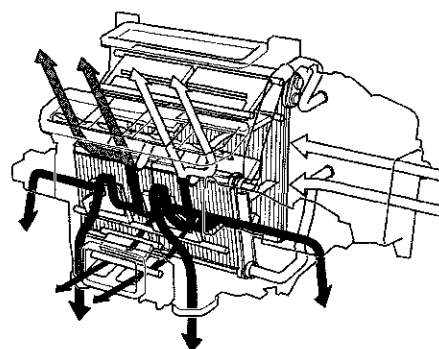


Dual Cool Vent Control System

Driver's side:
VENT/COOL, HEAT/HOT



Passenger's side:
VENT/COOL, HEAT/HOT

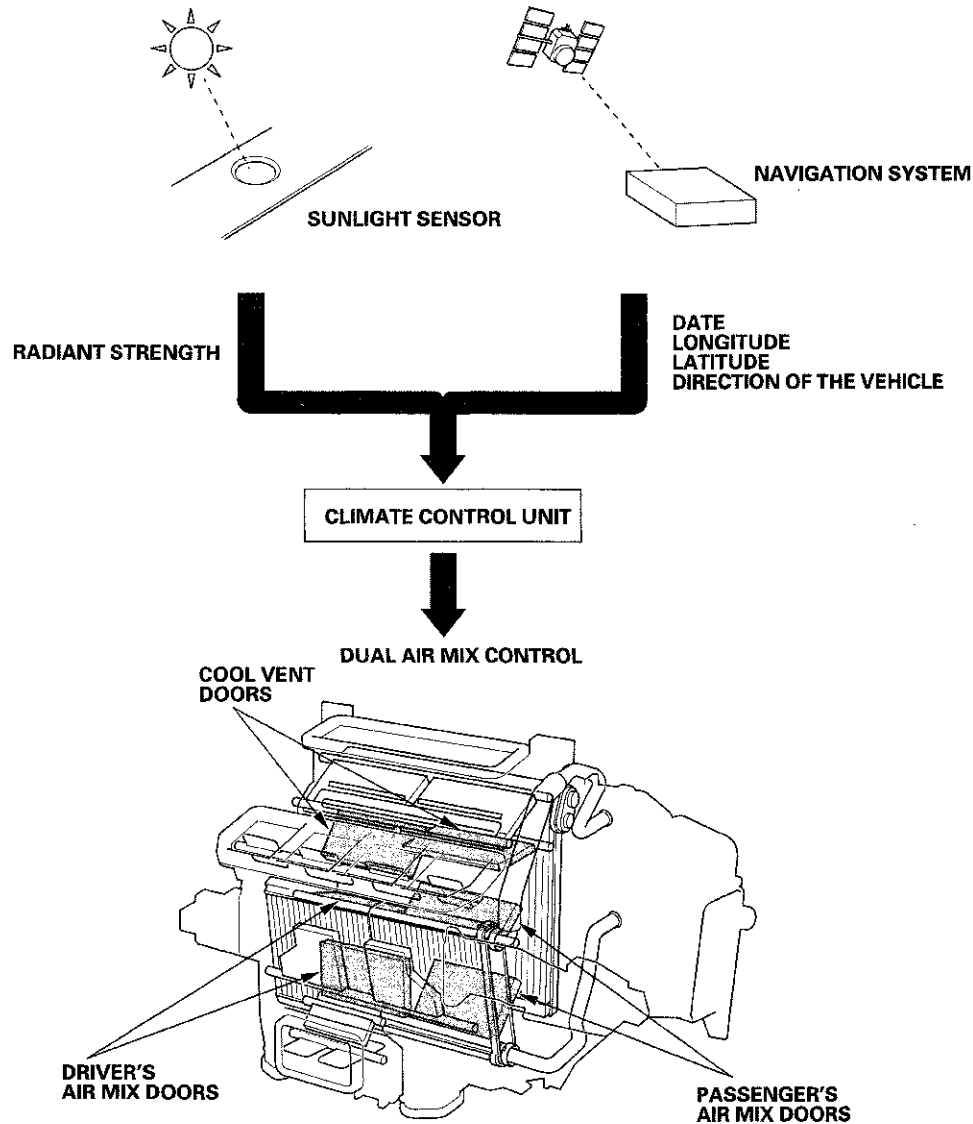


Climate Control

System Description (cont'd)

i-Dual Climate Control System

This system automatically controls the temperature and the vent mode of the air direction to the driver and passenger's side depending on the angle of the sun and the direction of the vehicle. It calculates information such as date, time, longitude, and latitude from the navigation system, as well as the radiant strength of the sun from the sunlight sensor, to determine the appropriate mode position and temperature to be directed to each side.

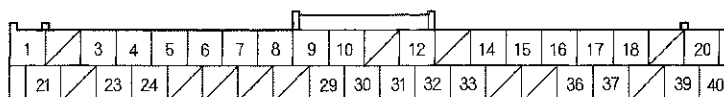


In the event that the navigation system malfunctions, or when driving in areas where the navigation cannot determine the vehicle position (non-coverage areas, tunnels, etc.), the climate control system will operate the same as a vehicle without navigation.



Climate Control Unit Inputs and Outputs

CLIMATE CONTROL UNIT 40P CONNECTOR

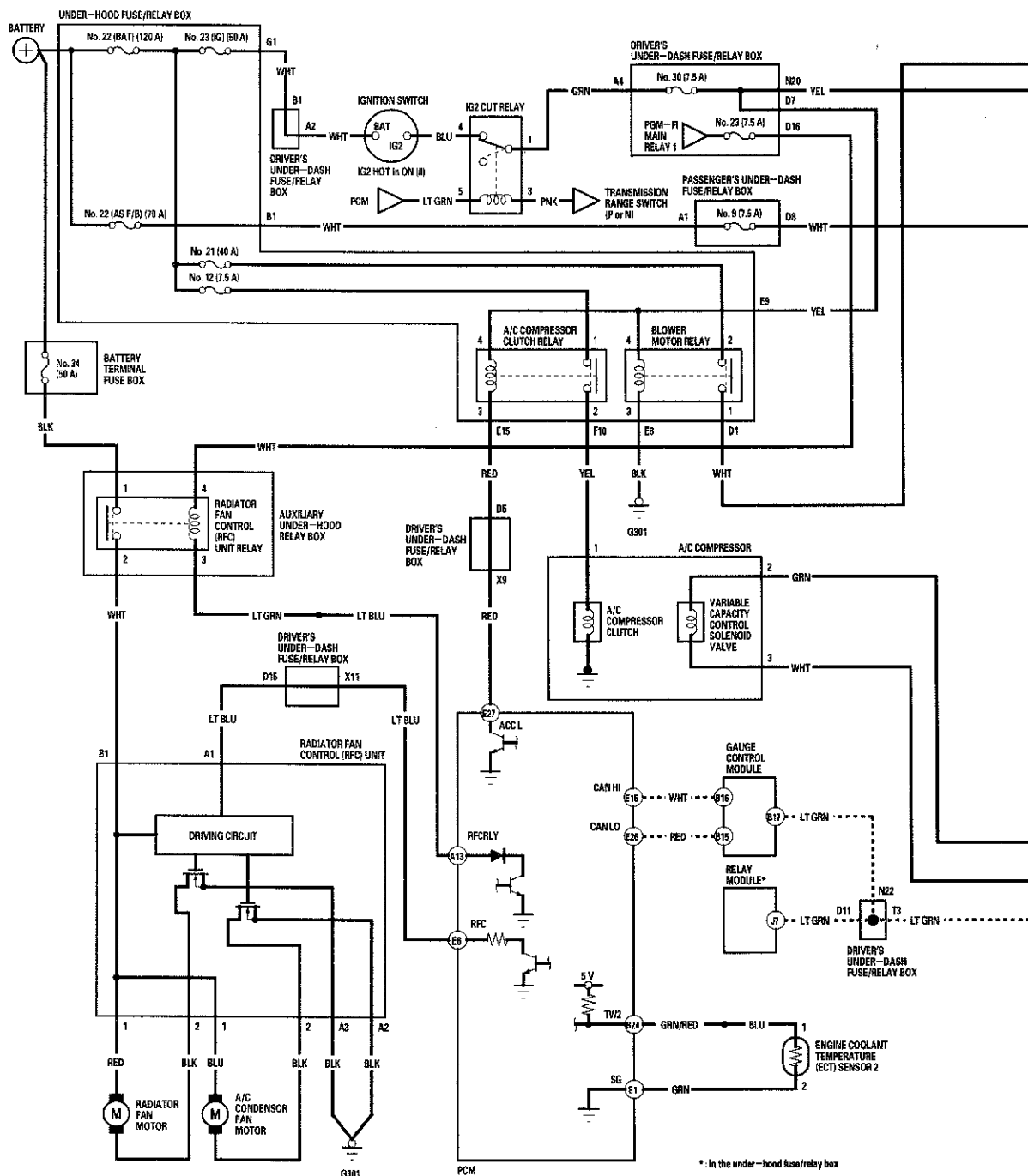


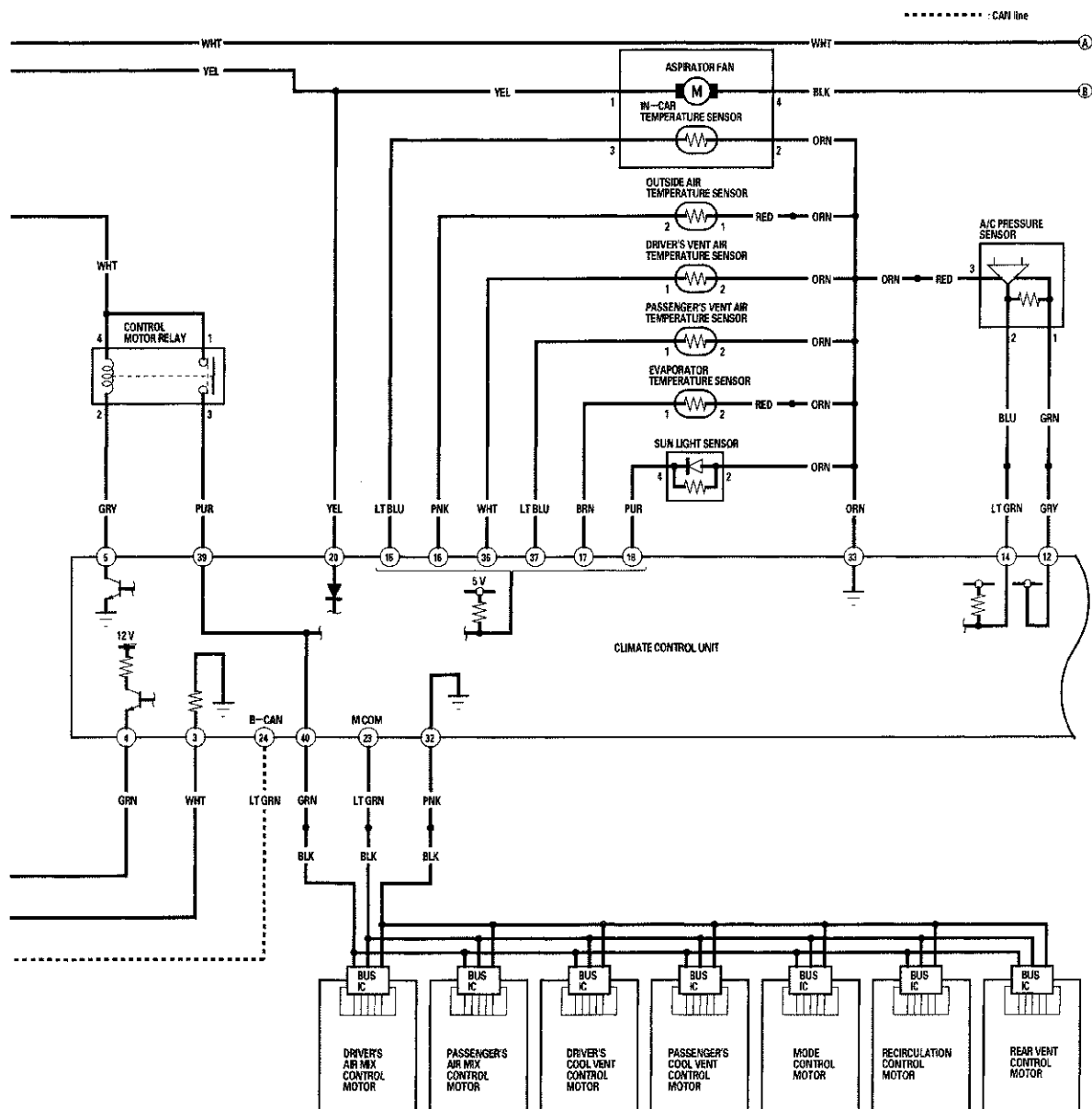
Wire side of female terminals

Cavity	Wire color	Terminal name	Description	Signal
1	LT BLU	Illumination (+)	Input voltage for illumination	With headlight switch ON: battery voltage
3	WHT	Variable Capacity Control Solenoid Valve In	Ground for variable capacity control solenoid valve	Less than 0.5 V at all times
4	GRN	Variable Capacity Control Solenoid Valve Out	Outputs 12 V to variable capacity control solenoid valve	Variable voltage based on cooling load. Battery voltage with compressor at maximum
5	GRY	Control Motor Relay	Switches control motor relay	With control motor relay OFF: battery voltage With control motor relay switched ON: Less than 0.5 V
6	PUR	Navigation Unit (SO)	Communication signal from navigation	With ignition switch ON (II): pulses (about 2.5 V)
7	ORN	Navigation Unit (SI)	Communication signal from navigation	With ignition switch ON (II): pulses (about 2.5 V)
8	BRN	Navigation Unit (CLK)	Communication signal from navigation	With ignition switch ON (II): pulses (about 2.5 V)
9	BLU	Blower Feedback	Feedback signal from blower power resistor	With ignition switch ON (II) and blower ON: between 5 V and 12 V. Voltage decreases as blower speed increases
10	RED	Blower Transistor Control	Outputs blower power resistor gate voltage	With ignition switch ON (II) and blower OFF: 0 V. Voltage increases as blower speed increases
12	GRY	A/C Pressure Sensor 5 V	Outputs 5 V to pressure sensor	With climate control unit ON: about 5.0 V
14	LT GRN	A/C Pressure Sensor	Detects A/C pressure sensor signal	With climate control unit ON: about 0.4—4.6 V, depending upon refrigerant pressure
15	LT BLU	In-car Temperature Sensor	Detects in-car temperature sensor signal	With ignition switch ON (II): about 1.0—4.0 V (depending on in-car temperature).
16	PNK	Outside Air Temperature Sensor	Detects outside air temperature sensor signal	With ignition switch ON (II): about 1.0—4.0 V (depending on outside air temperature).
17	BRN	Evaporator Temperature Sensor	Detects evaporator temperature sensor signal	With ignition switch ON (II): about 1.0—4.0 V (depending on evaporator temperature).
18	PUR	Sunlight Sensor	Detects sunlight sensor signal	With ignition switch ON (II) and sensor out of direct sunlight: 3.6 V or more With ignition switch ON (II) and sensor in direct sunlight: 3.5 V or less
20	YEL	IG2	IG2 Power supply	With ignition switch ON (II): battery voltage
21	GRN	Illumination (—)	Detects illumination control signal	With headlight switch ON: voltage varies as dash lights brightness varies
23	LT GRN	M-COM	Communication signal from climate control motors	With ignition switch ON (II): pulses (about 2.5 V)
24	LT GRN	B-CAN	B-CAN communication signal	With ignition switch ON (II): pulses (about 2.5 V)
29	YEL	Audio Unit (SO)	Communication signal from audio unit	With ignition switch ON (II): pulses (about 2.5 V)
30	RED	Audio Unit (Clock)	Communication signal from audio unit	With ignition switch ON (II): pulses (about 2.5 V)
31	BLK	Ground for climate control unit (G503)	Ground for control unit	Less than 0.5 V at all times
32	PNK	Control motor ground	Common ground for climate control motors	Less than 0.5 V at all times
33	ORN	Sensor ground	Common ground for sensors	Less than 0.5 V at all times
36	WHT	Driver's Air Vent Temperature Sensor	Detects driver's air vent temperature sensor signal	With ignition switch ON (II): about 1.0—4.0 V (depending driver's air vent temperature).
37	LT BLU	Passenger's Air Vent Temperature Sensor	Detects passenger's air vent temperature sensor signal	With ignition switch ON (II): about 1.0—4.0 V (depending passenger's air vent temperature).
39	PUR	Control Motor Relay	Inputs 12 V from control motor relay	With control motor relay OFF: about 0 V With control motor relay ON: battery voltage
40	GRN	Control Motor Power	Outputs 12 V to climate control motors	With control motor relay OFF: about 0 V With control motor relay ON: battery voltage

Climate Control

Circuit Diagram

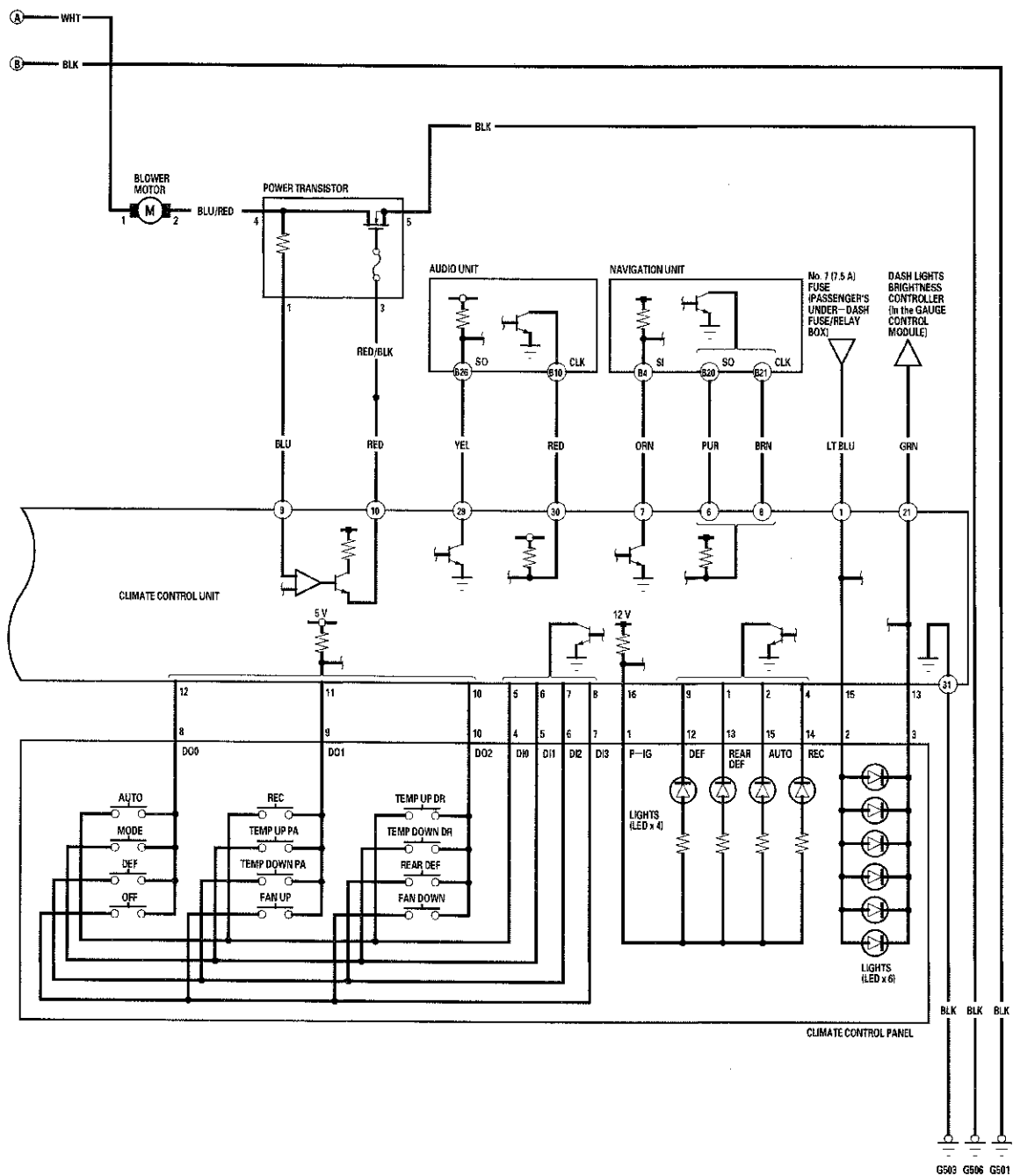




(cont'd)

Climate Control

Circuit Diagram (cont'd)



cardiagn.com



DTC Troubleshooting

DTC B1202 or EEPROM error is indicated: Climate Control Unit Internal Error

NOTE:

- Check the battery condition (see page 22-90) and the charging system (see page 4-30).
- If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-131).

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for 6 seconds or more.
4. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
5. Check for DTCs.

Is DTC B1202 or EEPROM error 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. Check for loose connections at the climate control unit 40P connector. ■

DTC B1205 or Vehicle speed error or ENGINE error is indicated: Climate Control Unit Lost Communication with Gauge Control Module (VSP/NE message)

DTC B1206 or TW sensor error is indicated: Climate Control Unit Lost Communication with Gauge Control Module (ECT message)

DTC B1207: Climate Control Unit Lost Communication with Gauge Control Module (ILLUMI message)

DTC B1208: Climate Control Unit Lost Communication with Keyless Access Control Unit (FOB ID message)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-131).

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Wait for 6 seconds or more.
4. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
5. Check for DTCs.

Is DTC B1205 or Vehicle speed error/ENGINE error, and/or B1206 or TW sensor error, and/or B1207, and/or B1208 indicated?

YES—Go to step 6.

NO—Intermittent failure. Check for loose wires or poor connections on the B-CAN lines between the gauge control module circuit. ■

6. Clear for DTC using the HDS.

Is DTC B1011, B1060, B1408, B1610, B1805 and/or B2160, and/or B1207 indicated?

YES—Go to the gauge control module input test (see page 22-155). ■

NO—The climate control unit is faulty, replace the climate control unit. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B1225 or TR sensor open is indicated: 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 back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B1225 or TR sensor open 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 21-71) and test it (see page 21-71).

Is the in-car temperature sensor OK?

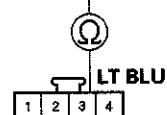
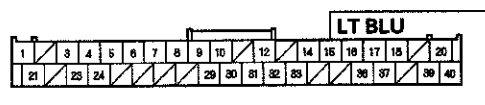
YES—Go to step 7.

NO—Replace the in-car temperature sensor. ■

7. Disconnect the climate control unit 40P connector.

8. Check for continuity between climate control unit 40P connector terminal No. 15 and in-car temperature sensor 4P connector terminal No. 3.

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



IN-CAR TEMPERATURE SENSOR 4P CONNECTOR
Wire side of female terminals

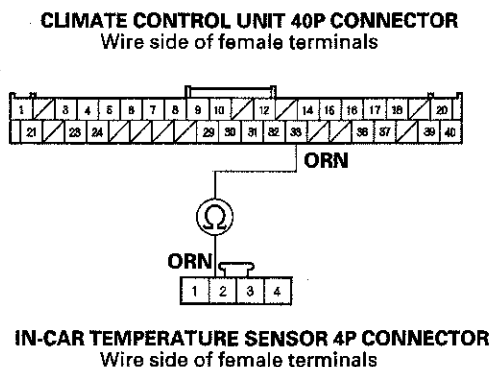
Is there continuity?

YES—Go to step 9.

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



9. Check for continuity between climate control unit 40P connector terminal No. 33 and in-car temperature sensor 4P connector terminal No. 2.



Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 40P connector and at the in-car temperature sensor 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—Repair an open in the wire between the climate control unit and the in-car temperature sensor. ■

DTC B1226 or TR sensor short is indicated: 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 back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B1226 or TR sensor short 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 21-71) and test it (see page 21-71).

Is the in-car temperature sensor OK?

YES—Go to step 7.

NO—Replace the in-car temperature sensor. ■

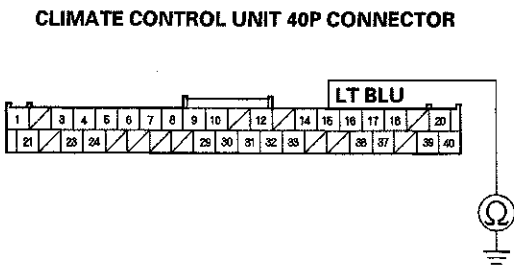
7. Disconnect the climate control unit 40P connector.

(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

8. Check for continuity between body ground and climate control unit 40P connector terminal No. 15.



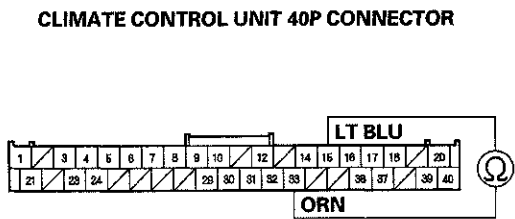
Wire side of female terminals

Is there continuity?

YES—Repair a 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 climate control unit 40P connector terminals No. 15 and No. 33.



Wire side of female terminals

Is there continuity?

YES—Repair a 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 TAM sensor open is indicated:
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 back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B1227 or TAM sensor open 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 21-74) and test it (see page 21-73).

Is the outside air temperature sensor OK?

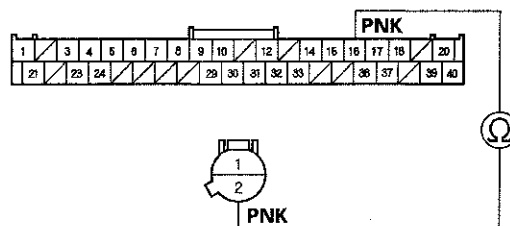
YES—Go to step 7.

NO—Replace the outside air temperature sensor. ■

7. Disconnect the climate control unit 40P connector.

8. Check for continuity between climate control unit 40P connector terminal No. 16 and outside air temperature sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 40P 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.

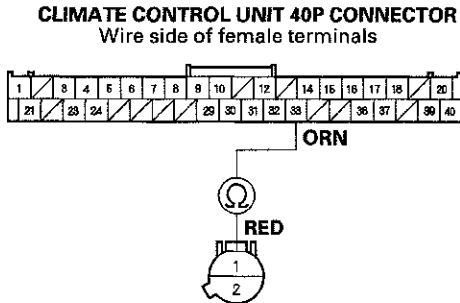
NO—Repair an open in the wire between the climate control unit and the outside air temperature sensor. ■

(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

9. Check for continuity between climate control unit 40P connector terminal No. 33 and outside air temperature sensor 2P connector terminal No. 1.



Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 40P 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 an open in the wire between the climate control unit and the outside air temperature sensor. ■

DTC B1228 or TAM sensor short is indicated: 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 back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B1228 or TAM sensor short 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 21-74) and test it (see page 21-73).

Is the outside air temperature sensor OK?

YES—Go to step 7.

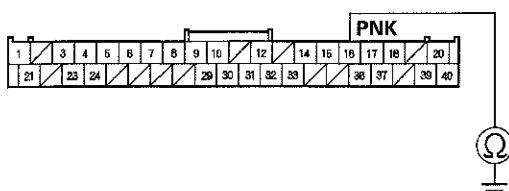
NO—Replace the outside air temperature sensor. ■

7. Disconnect the climate control unit 40P connector.



8. Check for continuity between body ground and climate control unit 40P connector terminal No. 16.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

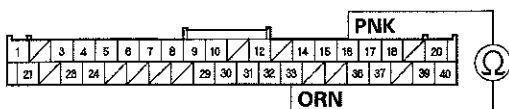
Is there continuity?

YES—Repair a 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 climate control unit 40P connector terminals No. 16 and No. 33.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a 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 TS sensor open is indicated:
An Open in the Sunlight Sensor Circuit**

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

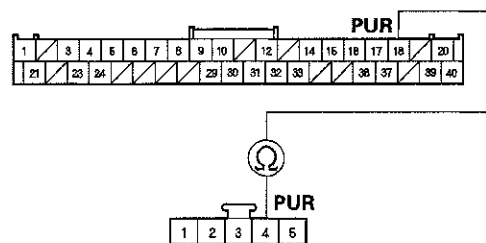
Is DTC B1229 or TS sensor open indicated?

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 5P connector.
7. Disconnect the climate control unit 40P connector.
8. Check for continuity between climate control unit 40P connector terminal No. 18 and sunlight sensor 5P connector terminal No. 4.

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



SUNLIGHT SENSOR 5P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

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

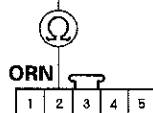
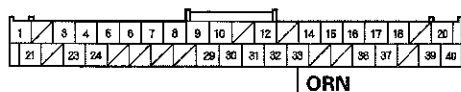
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

- Check for continuity between climate control unit 40P connector terminal No. 33 and sunlight sensor 5P connector terminal No. 2.

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



SUNLIGHT SENSOR 5P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 10.

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

- Reconnect the sunlight sensor 5P connector.
- Reconnect the climate control unit 40P connector.
- Test the sunlight sensor (see page 21-74).

Is the sunlight sensor OK?

YES—Check for loose wires or poor connections at the climate control unit 40P connector and at the sunlight sensor 5P 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 21-75). ■

DTC B1230 or TS sensor short is indicated: A Short in the Sunlight Sensor Circuit

- Clear the DTC with the HDS.
- Turn the ignition switch to LOCK (0), and then back to ON (II).
- Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).

- Check for DTCs.

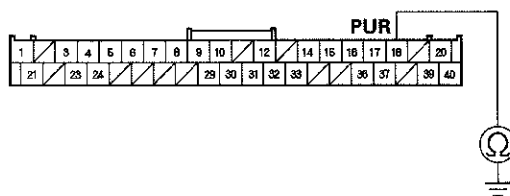
Is DTC B1230 or TS sensor short indicated?

YES—Go to step 5.

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

- Turn the ignition switch to LOCK (0).
- Disconnect the sunlight sensor 5P connector.
- Disconnect the climate control unit 40P connector.
- Check for continuity between body ground and climate control unit 40P connector terminal No. 18.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

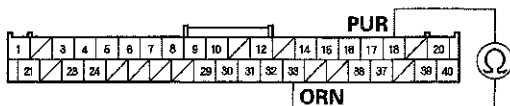
YES—Repair a short to body ground in the wire between the climate control unit and the sunlight sensor. ■

NO—Go to step 9.



9. Check for continuity between climate control unit 40P connector terminals No. 18 and No. 33.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

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

NO—Go to step 10.

10. Reconnect the sunlight sensor 5P connector.
11. Reconnect the climate control unit 40P connector.
12. Test the sunlight sensor (see page 21-74).

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 21-75). ■

**DTC B1231 or TE sensor open is indicated:
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 back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B1231 or TE sensor open 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 21-76) and test it (see page 21-75).

Is the evaporator temperature sensor OK?

YES—Go to step 7.

NO—Replace the evaporator temperature sensor. ■

7. Disconnect the climate control unit 40P connector.

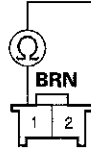
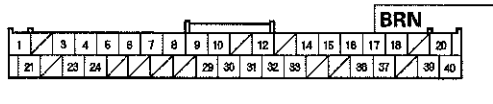
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

8. Check for continuity between climate control unit 40P connector terminal No. 17 and evaporator temperature sensor 2P connector terminal No. 1.

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

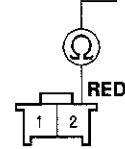
Is there continuity?

YES—Go to step 9.

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

9. Check for continuity between climate control unit 40P connector terminal No. 33 and evaporator temperature sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 40P 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 40P 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 an open in the wire between the climate control unit and the evaporator temperature sensor. ■



**DTC B1232 or TE sensor short is indicated:
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 back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B1232 or TE sensor short 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 21-76) and test it (see page 21-75).

Is the evaporator temperature sensor OK?

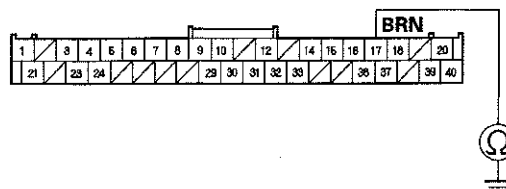
YES—Go to step 7.

NO—Replace the evaporator temperature sensor. ■

7. Disconnect the climate control unit 40P connector.

8. Check for continuity between body ground and climate control unit 40P connector terminal No. 17.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

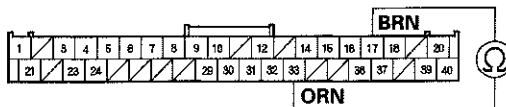
Is there continuity?

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

NO—Go to step 9.

9. Check for continuity between climate control unit 40P connector terminals No. 17 and No. 33.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a 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 B1235 or DrA/M motor lock is indicated:
A Problem in the Driver's Air Mix Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B1235 or DrA/M motor lock indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Test the driver's air mix control motor (see page 21-77).

Is the driver's 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 driver's air mix control motor (see page 21-78), or repair the driver's air mix control linkage or door. ■

DTC B1238 or PaA/M motor lock is indicated:
A Problem in the Passenger's Air Mix Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B1238 or PaA/M motor lock indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Test the passenger's air mix control motor (see page 21-78).

Is the passenger's 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 passenger's air mix control motor (see page 21-79), or repair the passenger's air mix control linkage or door. ■



DTC B1240 or Mode motor lock is indicated:
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 back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B1240 or Mode motor lock indicated?

YES—Go to step 5.

NO—Intermittent failure. ■

5. Turn the ignition switch to LOCK (0).
6. Test the mode control motor (see page 21-81).

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 21-82), or repair the mode control linkage or doors. ■

DTC B1241 or Blower motor lock is indicated:
A Problem in the Blower Motor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B1241 or Blower motor lock 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. 21 (40 A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5 A) fuse in the driver's under-dash fuse/relay box.

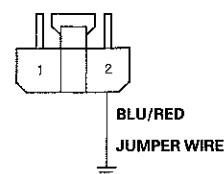
Are the fuses OK?

YES—Go to step 7.

NO—Check for a short in the No. 21 (40 A) and No. 30 (7.5 A) fuses circuit. ■

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

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

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

Does the blower motor run?

YES—Go to step 9.

NO—Go to step 25.

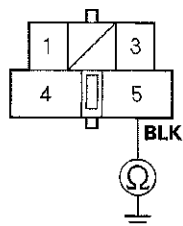
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Climate Control

DTC Troubleshooting (cont'd)

9. Turn the ignition switch to LOCK (0).
10. Disconnect the jumper wire.
11. Disconnect the power transistor 5P connector.
12. Check for continuity between power transistor 5P connector terminal No. 5 and body ground.

POWER TRANSISTOR 5P CONNECTOR



Wire side of female terminals

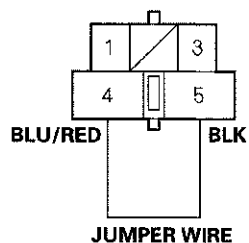
Is there continuity?

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 G506 (see page 22-38). ■

13. Connect power transistor 5P connector terminals No. 4 and No. 5 with a jumper wire.

POWER TRANSISTOR 5P CONNECTOR



Wire side of female terminals

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

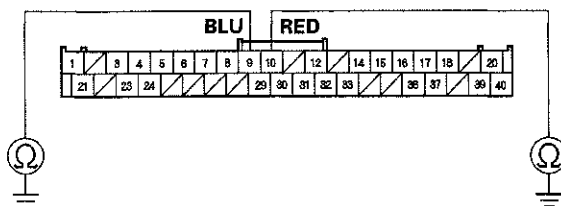
Does the blower motor run at high speed?

YES—Go to step 15.

NO—Repair open in the BLU/RED 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 40P connector.
18. Check for continuity between body ground and climate control unit 40P connector terminals No. 9 and No. 10 individually.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

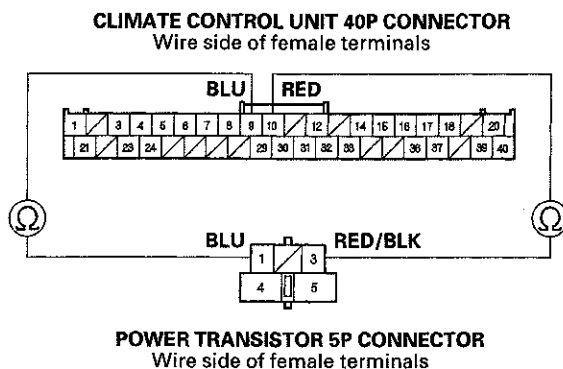
YES—Repair a short to body ground in the wire(s) between the climate control unit and the power transistor. ■

NO—Go to step 19.



19. Check for continuity between the following terminals of the climate control unit 40P connector and the power transistor 5P connector.

40P: 5P:
No. 9 No. 1
No. 10 No. 3

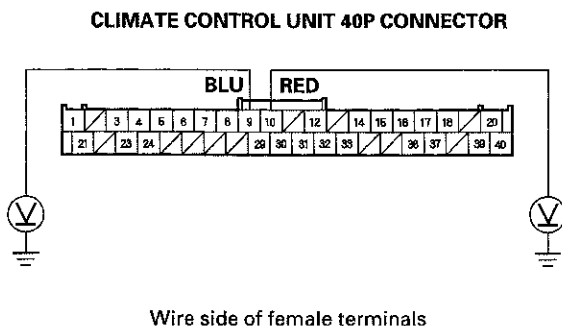


Is there continuity?

YES—Go to step 20.

NO—Repair an 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 climate control unit 40P connector terminals No. 9 and No. 10 individually.



Is there voltage?

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

NO—Go to step 22.

22. Turn the ignition switch to LOCK (0).
23. Reconnect the climate control unit 40P connector.
24. Test the power transistor (see page 21-76).

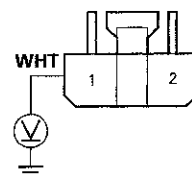
Is the power transistor OK?

YES—Check for loose wires or poor connections at the climate control unit 40P connector and at the power transistor 5P 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. ■

25. Disconnect the jumper wire.
26. Disconnect the blower motor 2P connector.
27. Measure the voltage between 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 (see page 21-86). ■

NO—Go to step 28.

28. Turn the ignition switch to LOCK (0).
29. Remove the blower motor relay from the under-hood fuse/relay box, and test it (see page 22-93).

Is the relay OK?

YES—Go to step 30.

NO—Replace the blower motor relay. ■

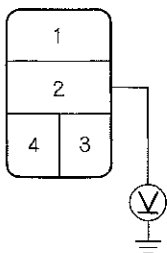
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Climate Control

DTC Troubleshooting (cont'd)

30. Measure the voltage between blower motor relay 4P socket terminal No. 2 and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Terminal side of female terminals

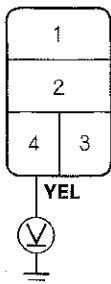
Is there battery voltage?

YES—Go to step 31.

NO—Replace the under-hood fuse/relay box (see page 22-84). ■

31. Turn the ignition switch to ON (II).
32. Measure the voltage between blower motor relay 4P socket terminal No. 4 and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Terminal side of female terminals

Is there battery voltage?

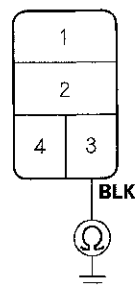
YES—Go to step 33.

NO—Repair an open in the wire between the No. 30 (7.5 A) fuse in the driver's under-dash fuse/relay box and the blower motor relay. ■

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

34. Check for continuity between blower motor relay 4P socket terminal No. 3 and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Terminal side of female terminals

Is there continuity?

YES—Repair an open in the BLK 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 22-26). ■



DTC B2975 or DrVENT sensor open is indicated: An Open in the Driver's Vent Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2975 or DrVENT sensor open indicated?

YES—Go to step 5.

NO—Intermittent failure. Check for loose wires or poor connections on the driver's vent air temperature sensor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Remove the driver's vent air temperature sensor (see page 21-72) and test it (see page 21-72).

Is the driver's vent air temperature sensor OK?

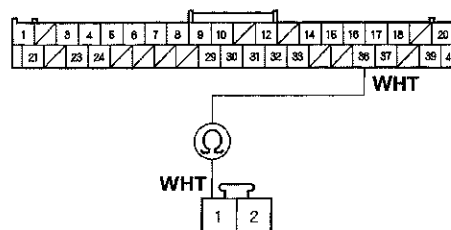
YES—Go to step 7.

NO—Replace the driver's vent air temperature sensor. ■

7. Disconnect the climate control unit 40P connector.

8. Check for continuity between climate control unit 40P connector terminal No. 36 and driver's vent air temperature sensor 2P connector terminal No. 1.

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



DRIVER'S VENT AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

NO—Repair an open in the wire between the climate control unit and the driver's vent air temperature sensor. ■

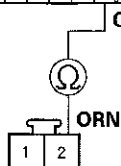
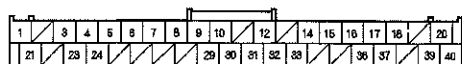
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Climate Control

DTC Troubleshooting (cont'd)

9. Check for continuity between climate control unit 40P connector terminal No. 33 and driver's vent air temperature sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



DRIVER'S VENT 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 40P connector and at the driver's vent 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 an open in the wire between the climate control unit and the driver's vent air temperature sensor. ■

DTC B2976 or DrVENT sensor short is indicated: A Short in the Driver's Vent Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2976 or DrVENT sensor short indicated?

YES—Go to step 5.

NO—Intermittent failure. Check for loose wires or poor connections on the driver's vent air temperature sensor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Remove the driver's vent air temperature sensor (see page 21-72) and test it (see page 21-72).

Is the driver's vent air temperature sensor OK?

YES—Go to step 7.

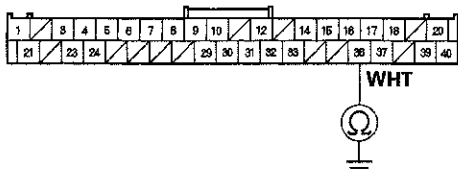
NO—Replace the driver's vent air temperature sensor. ■

7. Disconnect the climate control unit 40P connector.



8. Check for continuity between body ground and climate control unit 40P connector terminal No. 36.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

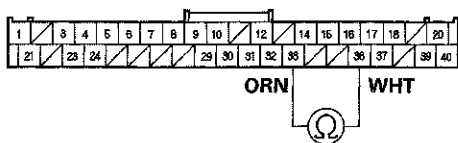
Is there continuity?

YES—Repair a short to body ground in the wire between the climate control unit and the driver's vent air temperature sensor. ■

NO—Go to step 9.

9. Check for continuity between climate control unit 40P connector terminals No. 33 and No. 36.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wires between the climate control unit and the driver's vent 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 B2977 or PaVENT sensor open is indicated: An Open in the Passenger's Vent Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2977 or PaVENT sensor open indicated?

YES—Go to step 5.

NO—Intermittent failure. Check for loose wires or poor connections on the passenger's vent air temperature sensor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Remove the passenger's vent air temperature sensor (see page 21-73) and test it (see page 21-72).

Is the passenger's vent air temperature sensor OK?

YES—Go to step 7.

NO—Replace the passenger's vent air temperature sensor. ■

7. Disconnect the climate control unit 40P connector.

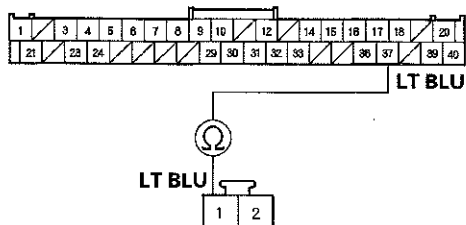
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

8. Check for continuity between climate control unit 40P connector terminal No. 37 and passenger's vent air temperature sensor 2P connector terminal No. 1.

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



PASSENGER'S VENT AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

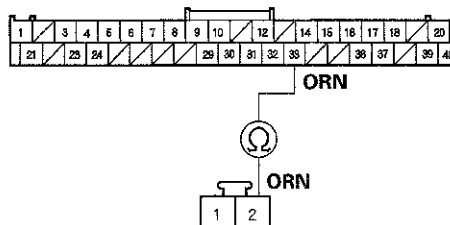
Is there continuity?

YES—Go to step 9.

NO—Repair an open in the wire between the climate control unit and the passenger's vent air temperature sensor. ■

9. Check for continuity between climate control unit 40P connector terminal No. 33 and passenger's vent air temperature sensor 2P connector terminal No. 2.

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



PASSENGER'S VENT 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 40P connector and at the passenger's vent 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 an open in the wire between the climate control unit and the passenger's vent air temperature sensor. ■



DTC B2978 or PaVENT sensor short is indicated: A Short in the Passenger's Vent Air Temperature Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2978 or PaVENT sensor short indicated?

YES—Go to step 5.

NO—Intermittent failure. Check for loose wires or poor connections on the passenger's vent air temperature sensor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Remove the passenger's vent air temperature sensor (see page 21-73) and test it (see page 21-72).

Is the passenger's vent air temperature sensor OK?

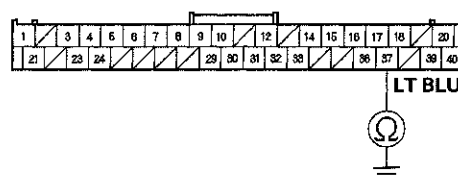
YES—Go to step 7.

NO—Replace the passenger's vent air temperature sensor. ■

7. Disconnect the climate control unit 40P connector.

8. Check for continuity between body ground and climate control unit 40P connector terminal No. 37.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

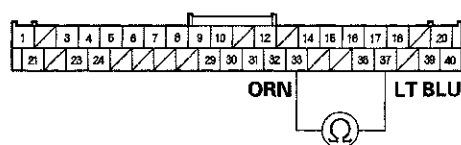
Is there continuity?

YES—Repair a short to body ground in the wire between the climate control unit and the passenger's vent air temperature sensor. ■

NO—Go to step 9.

9. Check for continuity between climate control unit 40P connector terminals No. 33 and No. 37.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wires between the climate control unit and the passenger's vent 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. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B2979 or PRE sensor open is indicated: An Open in the A/C Pressure Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2979 or PRE sensor open indicated?

YES—Go to step 5.

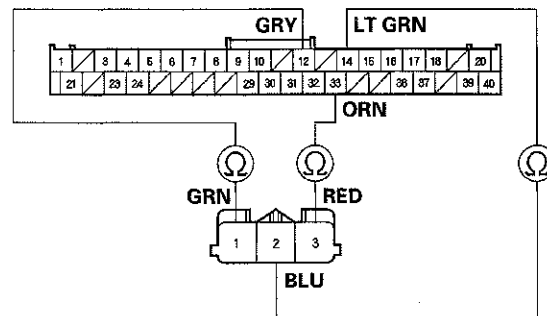
NO—Intermittent failure. Check for loose wires or poor connections on the A/C pressure sensor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the A/C pressure sensor 3P connector.
7. Disconnect the climate control unit 40P connector.

8. Check for continuity between the following terminals of the climate control unit 40P connector and the A/C pressure sensor 3P connector.

40P:	3P:
No. 12	No. 1
No. 14	No. 2
No. 33	No. 3

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



A/C PRESSURE SENSOR 3P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 9.

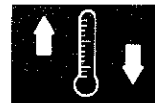
NO—Repair an open in the wire(s) between the climate control unit and the A/C pressure sensor. ■

9. Check for proper A/C system pressure.

Is the pressure within specifications?

YES—Check for loose wires or poor connections at the climate control unit 40P connector and at the A/C pressure sensor 3P connector. If the connections are good, replace the A/C pressure sensor. If the symptom/indication continues, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair the A/C pressure problem. ■



DTC B2980 or PRE sensor short is indicated:
A short in the A/C Pressure Sensor Circuit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2980 or PRE sensor short indicated?

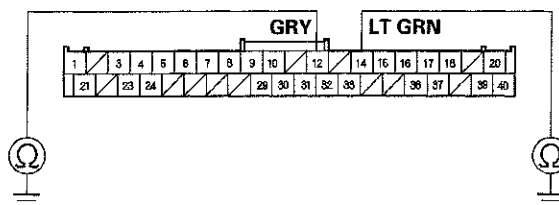
YES—Go to step 5.

NO—Intermittent failure. Check for loose wires or poor connections on the A/C pressure sensor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the A/C pressure sensor 3P connector.
7. Disconnect the climate control unit 40P connector.

8. Check for continuity between body ground and climate control unit 40P connector terminals No. 12 and No. 14 individually.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to body ground in the wire(s) between the climate control unit and the A/C pressure sensor. ■

NO—Go to step 9.

9. Check for continuity between the climate control unit 40P connector terminals as follows.

From terminal	To terminals
12	14, 33
14	33

Is there continuity between any of the terminals?

YES—Repair a short in the wires. ■

NO—Go to step 10.

10. Check for proper A/C system pressure.

Is the pressure within specifications?

YES—Replace the A/C pressure sensor. If the symptom/indication continues, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original climate control unit. ■

NO—Repair the A/C pressure problem. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B2981 or NAVI communication error is indicated: Climate Control Unit Lost Communication with Navigation Unit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2981 or NAVI communication error indicated?

YES—Go to step 5.

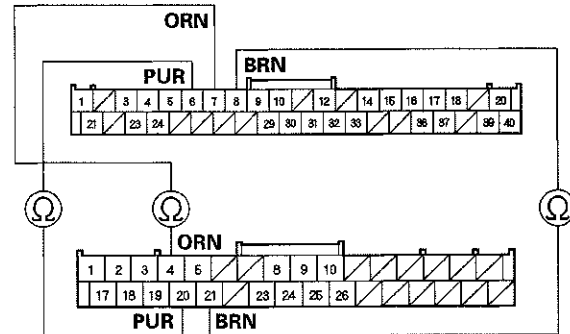
NO—Intermittent failure. Check for loose wires or poor connections on the navigation unit and climate control unit circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect navigation unit connector B (32P).
7. Disconnect the climate control unit 40P connector.

8. Check for continuity between the following terminals of the climate control unit 40P connector and navigation unit connector B (32P).

40P:	32P:
No. 6	No. 20
No. 7	No. 4
No. 8	No. 21

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



NAVIGATION UNIT CONNECTOR B (32P)
Wire side of female terminals

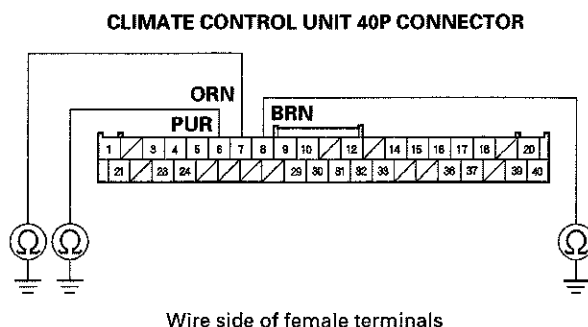
Is there continuity?

YES—Go to step 9.

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



9. Check for continuity between body ground and climate control unit 40P connector terminals No. 6, 7, and 8 individually.



Is there continuity?

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

NO—Go to step 10.

10. Check for continuity between the climate control unit 40P connector terminals as follows.

From terminal	To terminals
6	7, 8
7	8

Is there continuity between any of the terminals?

YES—Repair a short in the wires. ■

NO—Check for loose wires or poor connections at the climate control unit 40P connector and at navigation unit connector B (32P). 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. If the symptom/indication continues, substitute a known-good navigation unit, and recheck. If the symptom/indication goes away, replace the original navigation unit. ■

DTC B2982 or BUS communication error is indicated: Climate Control Unit Lost Communication with Each Control Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2982 or BUS communication error indicated?

YES—Go to step 5.

NO—Intermittent failure. Check for loose wires or poor connections on the each control motor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Test the driver's air mix control motor (see page 21-77), the passenger's air mix control motor (see page 21-78), the driver's cool vent control motor (see page 21-79), the passenger's cool vent control motor (see page 21-80), the mode control motor (see page 21-81), the recirculation control motor (see page 21-82), and the rear vent control motor (see page 21-83).

Is each control motor OK?

YES—Check for loose wires or poor connections at the climate control unit 40P connector and at the each control motor 5P 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. If the symptom/indication continues, replace the A/C wire harness. ■

NO—Replace the control motor with a problem. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B2983 or R/F motor lock is indicated: 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 back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2983 or R/F motor lock 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 21-82).

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 21-83), or repair the recirculation control linkage or door. ■

DTC B2984 or DrC/V motor lock is indicated: A Problem in the Driver's Cool Vent Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2984 or DrC/V motor lock indicated?

YES—Go to step 5.

NO—Intermittent failure. Check for loose wires or poor connections on the driver's cool vent control motor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Test the driver's cool vent control motor (see page 21-79).

Is the driver's cool vent 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 driver's cool vent control motor (see page 21-80), or repair the driver's cool vent control linkage or door. ■



DTC B2985 or PaC/V motor lock is indicated:
A Problem in the Passenger's Cool Vent Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2985 or PaC/V motor lock indicated?

YES—Go to step 5.

NO—Intermittent failure. Check for loose wires or poor connections on the passenger's cool vent motor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Test the passenger's cool vent control motor (see page 21-80).

Is the passenger's cool vent 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 passenger's cool vent control motor (see page 21-81), or repair the passenger's cool vent control linkage or door. ■

DTC B2987 or RrVENT motor lock is indicated: A Problem in the Rear Vent Control Linkage, Door, or Motor

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2987 or RrVENT motor lock indicated?

YES—Go to step 5.

NO—Intermittent failure. Check for loose wires or poor connections on the rear vent control motor circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Test the rear vent control motor (see page 21-83).

Is the rear vent 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 rear vent control motor (see page 21-84), or repair the rear vent control linkage or door. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B2991 or Audio communication error is indicated: Climate Control Unit Lost Communication with Audio Unit

1. Clear the DTC with the HDS.
2. Turn the ignition switch to LOCK (0), and then back to ON (II).
3. Do the self-diagnostic with the HDS (see page 21-11) or the climate control unit (see page 21-12).
4. Check for DTCs.

Is DTC B2991 or Audio communication error indicated?

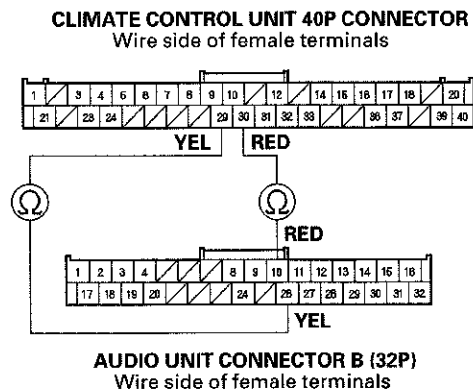
YES—Go to step 5.

NO—Intermittent failure. Check for loose wires or poor connections on the audio unit circuit. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect audio unit connector B (32P).
7. Disconnect the climate control unit 40P connector.

8. Check for continuity between the following terminals of the climate control unit 40P connector and audio unit connector B (32P).

40P: 32P:
No. 29 No. 26
No. 30 No. 10



Is there continuity?

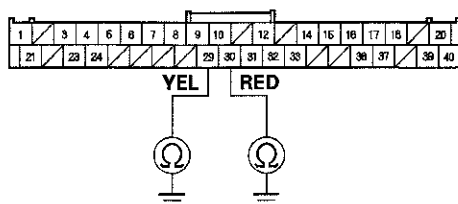
YES—Go to step 9.

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



9. Check for continuity between body ground and climate control unit 40P connector terminals No. 29 and No. 30 individually.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

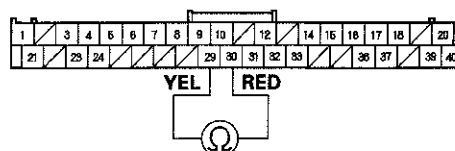
Is there continuity?

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

NO—Go to step 10.

10. Check for continuity between climate control unit 40P connector terminals No. 29 and No. 30.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

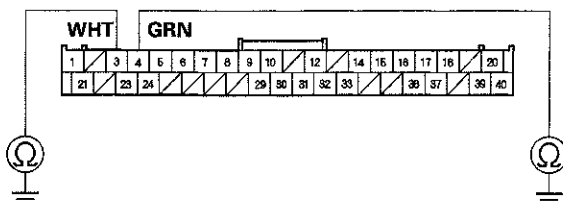
YES—Repair a short in the wires between the climate control unit and the audio unit. ■

NO—Check for loose wires or poor connections at the climate control unit 40P connector and at audio unit connector B (32P). 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. If the symptom/indication continues, substitute a known-good audio unit, and recheck. If the symptom/indication goes away, replace the original audio unit. ■



12. Disconnect the A/C compressor clutch 3P connector.
13. Check for continuity between body ground and climate control unit 40P connector terminals No. 3 and No. 4 individually.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

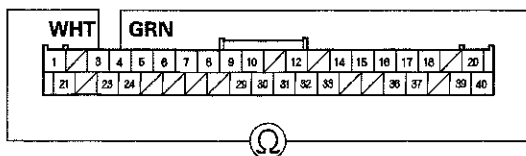
Is there continuity?

YES—Repair a short to body ground in the wire(s) between the climate control unit and the variable capacity control solenoid valve. ■

NO—The variable capacity control solenoid valve is faulty, replace the A/C compressor. ■

14. Disconnect the A/C compressor clutch 3P connector.
15. Check for continuity between climate control unit 40P connector terminals No. 3 and No. 4.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wires between the climate control unit and the variable capacity control solenoid valve. ■

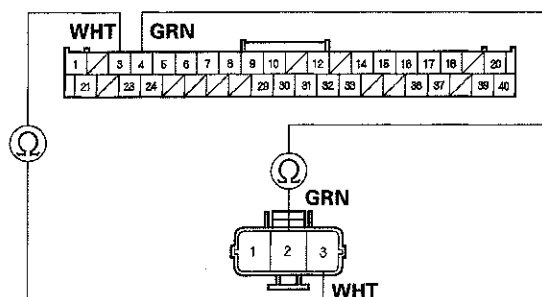
NO—Go to step 16.

16. Check for continuity between the following terminals of the climate control unit 40P connector and the A/C compressor clutch 3P connector.

40P: 3P:
No. 3 No. 3
No. 4 No. 2

CLIMATE CONTROL UNIT 40P CONNECTOR

Wire side of female terminals



A/C COMPRESSOR CLUTCH 3P CONNECTOR

Terminal side of male terminals

Is there continuity?

YES—The variable capacity control solenoid valve is faulty, replace the A/C compressor. ■

NO—Repair an open in the wire(s) between the climate control unit and the variable capacity control solenoid valve. ■

Climate Control

Control Motor Power Supply Circuit Troubleshooting

1. Check the No. 9 (7.5 A) fuse in the passenger's under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Check for a short in the No. 9 (7.5 A) fuse circuit. ■

2. Remove the control motor relay, and test it (see page 22-93).

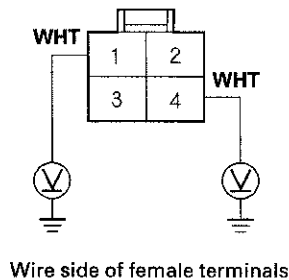
Is the relay OK?

YES—Go to step 3.

NO—Replace the control motor relay. ■

3. Measure the voltage between body ground and the control motor relay 4P connector terminals No. 1 and No. 4 individually.

CONTROL MOTOR RELAY 4P CONNECTOR



Is there battery voltage?

YES—Go to step 4.

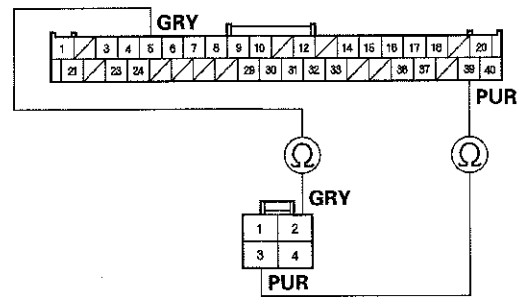
NO—Repair an open in the wire(s) between the No. 9 (7.5 A) fuse in the passenger's under-dash fuse/relay box and the control motor relay. ■

4. Disconnect the climate control unit 40P connector.

5. Check for continuity between the following terminals of the climate control unit 40P connector and the control motor relay 4P connector.

40P:	4P:
No. 5	No. 2
No. 39	No. 3

CLIMATE CONTROL UNIT 40P CONNECTOR
Wire side of female terminals



CONTROL MOTOR RELAY 4P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 40P connector and at the control motor relay. 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 an open in the wire(s) between the control motor relay and the climate control unit. ■



Aspirator Fan Circuit Troubleshooting

1. Check the No. 30 (7.5 A) fuse in the driver's under-dash fuse/relay box.

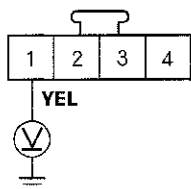
Is the fuse OK?

YES—Go to step 2.

NO—Check for a short in the No. 30 (7.5 A) fuse circuit. ■

2. Disconnect the in-car temperature sensor 4P connector.
3. Turn the ignition switch to ON (II).
4. Measure the voltage between in-car temperature sensor 4P connector terminal No. 1 and body ground.

IN-CAR TEMPERATURE SENSOR 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

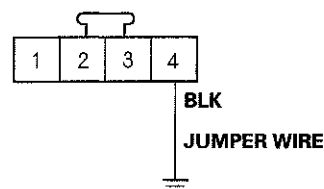
YES—Go to step 5.

NO—Repair an open in the wire between the No. 30 (7.5 A) fuse in the driver's under-dash fuse/relay box and the aspirator fan. ■

5. Reconnect the in-car temperature sensor 4P connector.

6. Connect in-car temperature sensor 4P connector terminal No. 4 to body ground with a jumper wire.

IN-CAR TEMPERATURE SENSOR 4P CONNECTOR



Wire side of female terminals

Does the aspirator fan run?

YES—Check for an open in the wire between the aspirator fan and body ground. If the wire is OK, check for poor ground at G501 (see page 22-32). ■

NO—Replace the aspirator fan. ■

Climate Control

Climate Control Power and Ground Circuit Troubleshooting

1. Check the No. 30 (7.5 A) fuse in the driver's under-dash fuse/relay box.

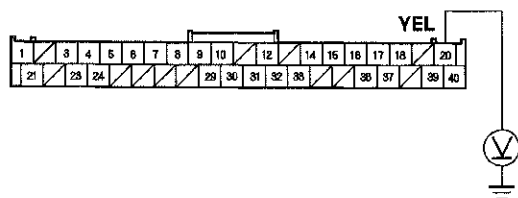
Is the fuse OK?

YES—Go to step 2.

NO—Check for a short in the No. 30 (7.5 A) fuse circuit. ■

2. Disconnect the climate control unit 40P connector.
3. Turn the ignition switch to ON (II).
4. Measure the voltage between climate control unit 40P connector terminal No. 20 and body ground.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there battery voltage?

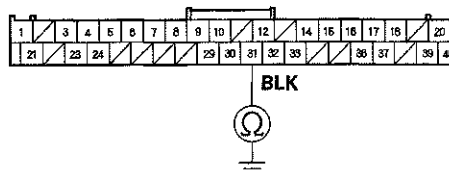
YES—Go to step 5.

NO—Repair an open in the wire between the No. 30 (7.5 A) fuse in the driver's under-dash fuse/relay box and the climate control unit. ■

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

6. Check for continuity between climate control unit connector terminal No. 31 and body ground.

CLIMATE CONTROL UNIT 40P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at the climate control unit 40P 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—Check for an open in the wires between the climate control unit and body ground. If the wire is OK, check for poor ground at G503 (see page 22-36). ■



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, hard acceleration, or high/low pressure.
- 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 symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 12 (7.5 A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5 A) fuse in the driver's under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Check for a short in the No. 12 (7.5 A) and No. 30 (7.5 A) fuses circuit. ■

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

Is the A/C CLUTCH on?

YES—Go to step 7.

NO—Go to step 6.

6. Using the HDS, confirm the following values in the PGM-FI Data List at idle.

ECT SENSOR 2	169—194 °F (76—90 °C)
TP SENSOR A	About 0.5 V
RPM	630—730
A/C PRESSURE SENSOR	196—3,138 kPa (2—32 kgf/cm ²) [28—455 psi]

Are all the values within specifications?

YES—Go to step 7.

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

7. Remove the A/C compressor clutch relay from the under-hood fuse/relay box, and test it (see page 22-93).

Is the relay OK?

YES—Go to step 8.

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

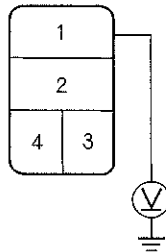
(cont'd)

Climate Control

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

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

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Terminal side of female terminals

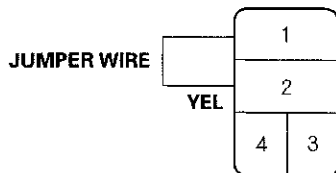
Is there battery voltage?

YES—Go to step 9.

NO—Replace the under-hood fuse/relay box (see page 22-84). ■

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

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Terminal side of female terminals

Does the A/C compressor clutch click?

YES—Go to step 10.

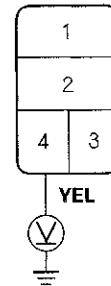
NO—Go to step 20.

10. Disconnect the jumper wire.

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

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

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 13.

NO—Repair an open in the wire between the No. 30 (7.5 A) fuse in the driver's 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.

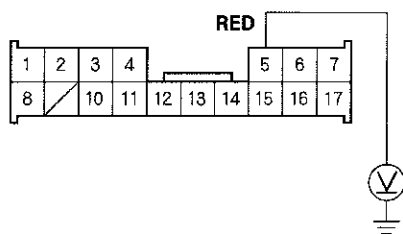
15. Turn the ignition switch to ON (II).

16. Make sure the A/C switch is OFF.



17. Measure the voltage between driver's under-dash fuse/relay box connector D (17P) terminal No. 5 and body ground.

**DRIVER'S UNDER-DASH FUSE/RELAY BOX
CONNECTOR D (17P)**



Wire side of female terminals

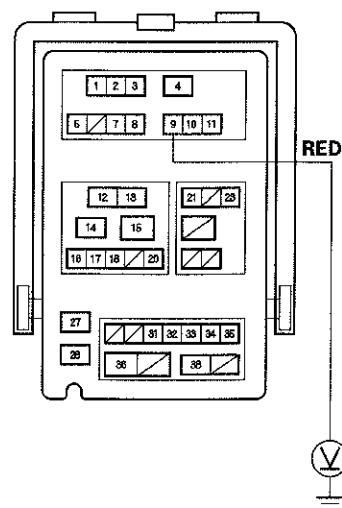
Is there battery voltage?

YES—Go to step 18.

NO—Repair an open in the wire between the A/C compressor clutch relay and the driver's under-dash fuse/relay box. ■

18. Measure the voltage between driver's under-dash fuse/relay box connector X (39P) terminal No. 9 and body ground.

**DRIVER'S UNDER-DASH FUSE/RELAY BOX
CONNECTOR X (39P)**



Wire side of female terminals

Is there battery voltage?

YES—Go to step 19.

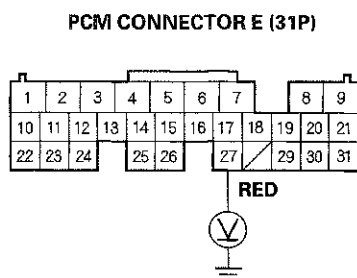
NO—Replace the driver's under-dash fuse/relay box (see page 22-88). ■

(cont'd)

Climate Control

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

19. Using the backprobe set, measure the voltage between PCM connector E (31P) terminal No. 27 and body ground with the PCM connectors connected.



Wire side of female terminals

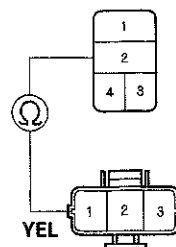
Is there battery voltage?

YES—Check for loose wires or poor connections at PCM connector E (31P). If the connections are good, check the PCM grounds. If the grounds are good, substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM (see page 11-232). ■

NO—Repair an open in the wire between the driver's under-dash fuse/relay box and the PCM. ■

20. Disconnect the jumper wire.
21. Disconnect the A/C compressor clutch 3P connector.
22. Check for continuity between A/C compressor clutch relay 4P socket terminal No. 2 and A/C compressor clutch 3P connector terminal No. 1.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET
Terminal side of female terminals



A/C COMPRESSOR CLUTCH 3P CONNECTOR
Terminal side of male terminals

Is there continuity?

YES—Check the A/C compressor clutch clearance, and the A/C compressor clutch field coil (see page 21-95). Repair as needed. ■

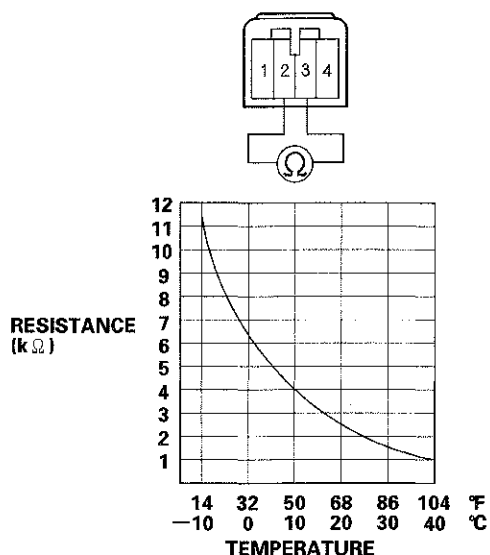
NO—Repair an open in the wire between the A/C compressor clutch relay and the A/C compressor clutch. ■



In-car Temperature Sensor Test

1. Remove the in-car temperature sensor (see page 21-71).
2. Compare the resistance reading between terminals No. 2 and No. 3 of the in-car temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

IN-CAR TEMPERATURE SENSOR



3. If the resistance is not as specified, replace the in-car temperature sensor (see page 21-71).

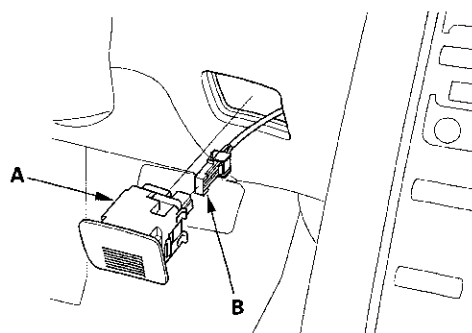
NOTICE

Incorrectly applying power and ground to the in-car temperature sensor will damage it. Follow the instructions carefully.

4. Connect battery power to terminal No. 1 of the in-car temperature sensor, and ground terminal No. 4; the aspirator fan should run.
5. If the aspirator fan did not run in step 4, replace the in-car temperature sensor (see page 21-71).

In-car Temperature Sensor Replacement

1. Remove the in-car temperature sensor (A) from the driver's dashboard lower cover, then disconnect the 4P connector (B).



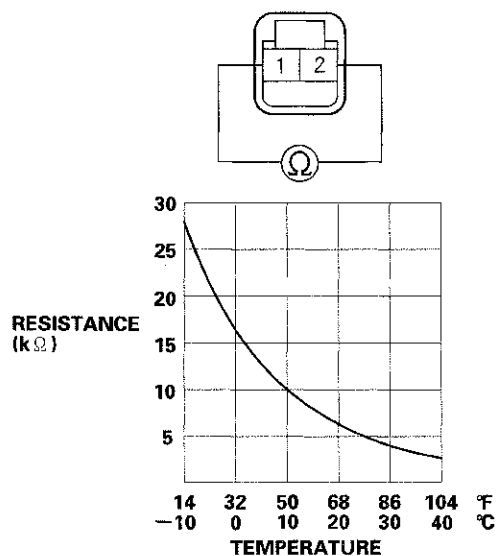
2. Install the sensor in the reverse order of removal.

Climate Control

Vent Air Temperature Sensor Test

1. Remove the driver's vent air temperature sensor (see page 21-72) or the passenger's vent air temperature sensor (see page 21-73).
2. Check for a change in resistance by heating the sensor with a hair dryer or cooling the sensor in a cool cup of water.
3. Compare the resistance reading between terminals No. 1 and No. 2 of the vent air temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

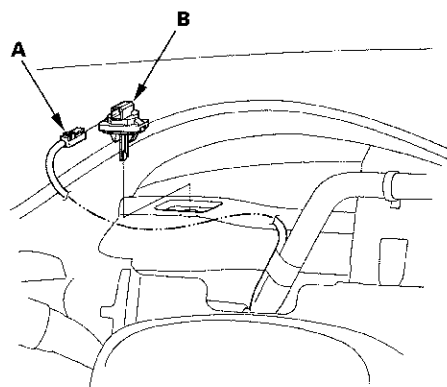
VENT AIR TEMPERATURE SENSOR



4. If the resistance is not as specified, replace the driver's vent air temperature sensor (see page 21-72) or the passenger's vent air temperature sensor (see page 21-73).

Driver's Vent Air Temperature Sensor Replacement

1. Remove the gauge control module (see page 22-419).
2. Disconnect the connector (A) from the driver's vent air temperature sensor. Remove the driver's vent air temperature sensor (B).

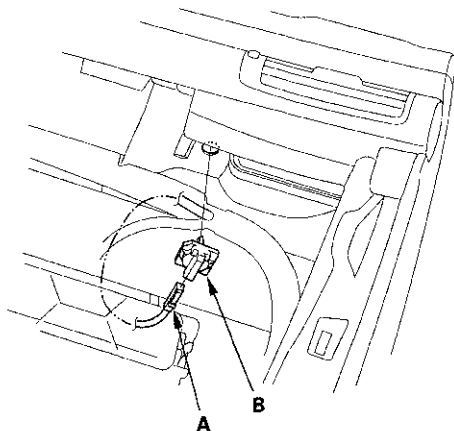


3. Install the sensor in the reverse order of removal.



Passenger's Vent Air Temperature Sensor Replacement

1. Remove the glove box (see page 20-103).
2. Disconnect the connector (A) from the passenger's vent air temperature sensor. Remove the passenger's vent air temperature sensor (B).

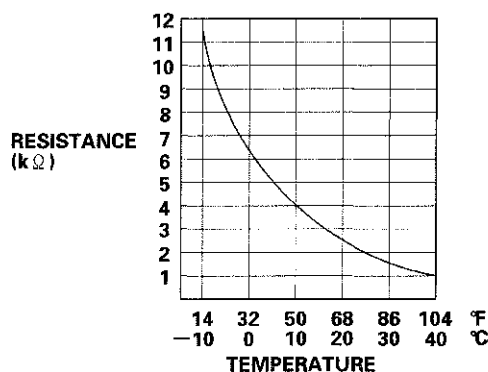
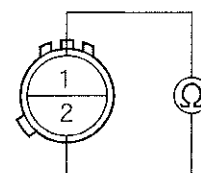


3. Install the sensor in the reverse order of removal.

Outside Air Temperature Sensor Test

1. Remove the outside air temperature sensor (see page 21-74).
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

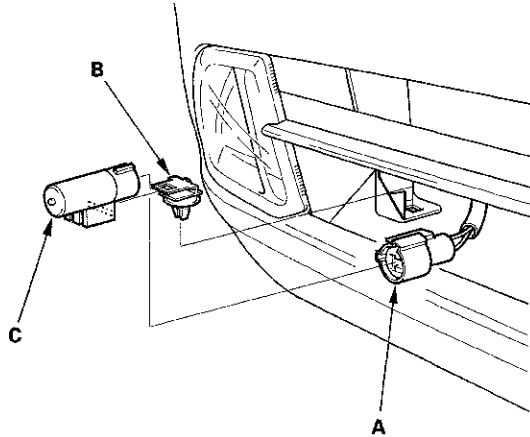


4. If the resistance is not as specified, replace the outside air temperature sensor (see page 21-74).

Climate Control

Outside Air Temperature Sensor Replacement

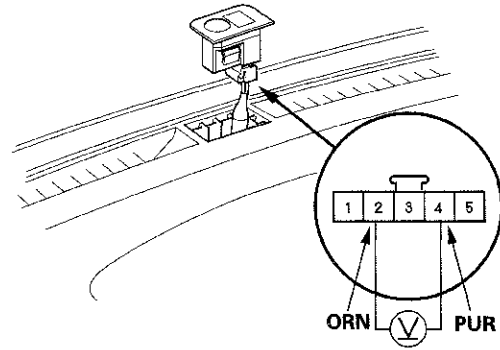
1. Disconnect the 2P connector (A) from the outside air temperature sensor.



2. Remove the sensor clip (B), then remove the outside air temperature sensor (C).
3. Install the sensor in the reverse order of removal.

Sunlight Sensor Test

1. Remove the sunlight sensor from the dashboard (see page 21-75).
2. Connect the sunlight sensor 5P connector.



3. Turn the ignition switch to ON (II). Measure the voltage between the terminals with the (+) probe on terminal No. 4 and the (-) probe on terminal No. 2 with the 4P connector connected.

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

Voltage should be:

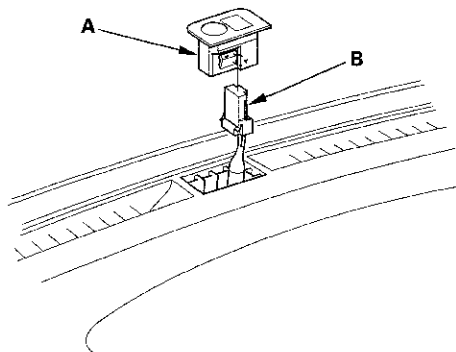
- 3.6—3.7 V or more with the sensor out of direct sunlight.
- 3.3—3.5 V or less with the sensor in direct sunlight.

4. If the voltage is not as specified, replace the sunlight sensor (see page 21-75).



Sunlight Sensor Replacement

1. Remove the sunlight sensor (A) from the dashboard, then disconnect the 5P connector (B). Be careful not to damage the sensor and the dashboard.

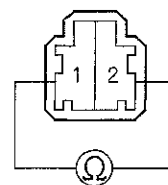


2. Install the sensor in the reverse order of removal.

Evaporator Temperature Sensor Test

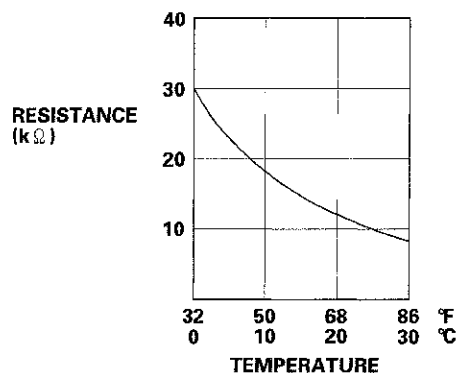
1. Remove the evaporator temperature sensor (see page 21-76).
2. Dip the sensor in ice water, and measure the resistance between its terminals.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

3. 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.

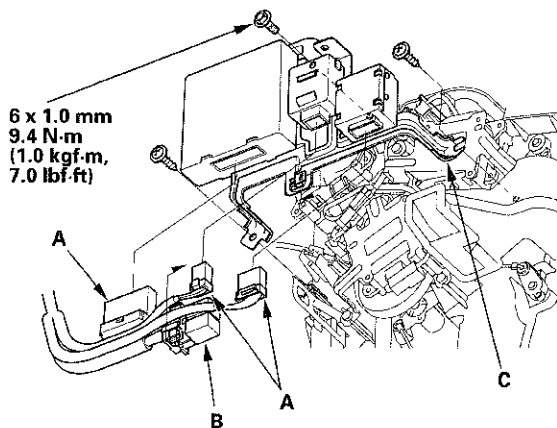


5. If the resistance is not as specified, replace the evaporator temperature sensor (see page 21-76).

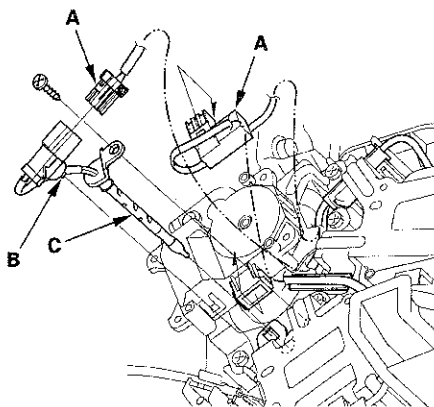
Climate Control

Evaporator Temperature Sensor Replacement

1. Remove the driver's dashboard undercover (see page 20-100).
2. Disconnect the connectors (A) from the adaptive front lighting control unit, the electronically controlled power steering control unit, and the daytime running lights control unit. Remove the relay (B), the bolt, and the self-tapping screws, then remove the bracket (C).



3. Disconnect the connectors (A) from the evaporator temperature sensor and the driver's cool vent control motor, then remove the connector clip (B). Remove the self-tapping screw and the evaporator temperature sensor (C).



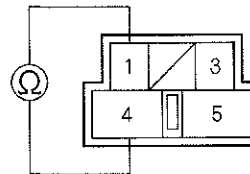
4. Install the sensor in the reverse order of removal.

Power Transistor Test

1. Remove the passenger's dashboard undercover (see page 20-102).
2. Disconnect the 5P connector from the power transistor.
3. Measure the resistance between terminals No. 1 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.

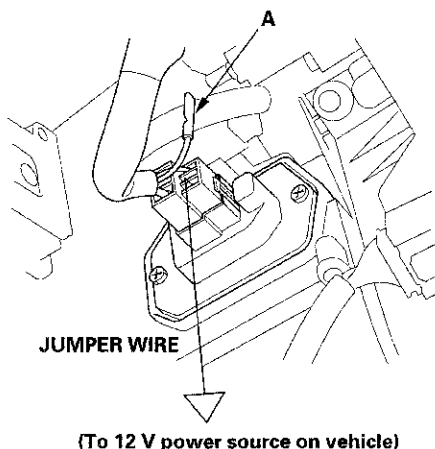
POWER TRANSISTOR





Driver's Air Mix Control Motor Test

4. Carefully release the lock tab on terminal No. 3 (RED/BLK) (A) in the 5P connector, then remove the terminal and insulate it from body ground.



5. Reconnect the 5P connector to the power transistor.
6. Make sure the RED/BLK wire is completely isolated, then supply 12 V to cavity No. 3 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.

NOTE: Before testing, check for HVAC DTCs (see page 21-10).

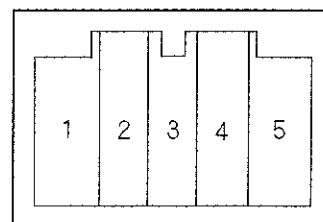
1. Disconnect the 5P connector from the driver's air mix control motor.

NOTICE

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

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

DRIVER'S AIR MIX CONTROL MOTOR



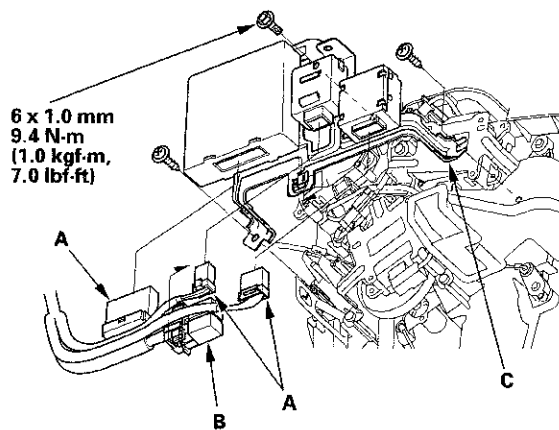
3. If the driver's air mix control motor did not run in step 2, remove it, then check the driver's air mix control linkage and the door for smooth movement.

- If the linkage and the door move smoothly, replace the driver's air mix control motor (see page 21-78).
- If the linkage or the door sticks or binds, repair them as needed.

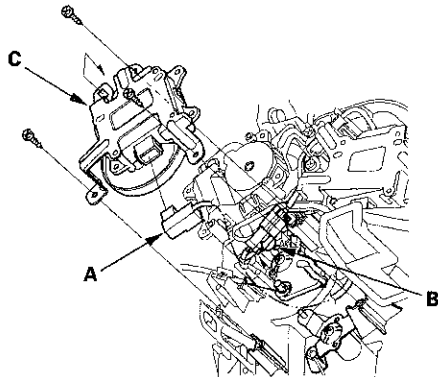
Climate Control

Driver's Air Mix Control Motor Replacement

1. Remove the driver's dashboard undercover (see page 20-100).
2. Disconnect the connectors (A) from the adaptive front lighting control unit, the electronically controlled power steering control unit, and the daytime running lights control unit. Remove the relay (B), the bolt, and the self-tapping screws, then remove the bracket (C).



3. Disconnect the 5P connector (A) from the driver's air mix control motor. Remove the connector clip (B). Remove the self-tapping screws and the driver's air mix control motor (C).



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.

Passenger's Air Mix Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-10).

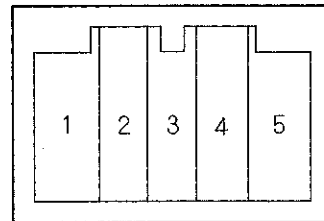
1. Disconnect the 5P connector from the passenger's air mix control motor.

NOTICE

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

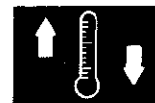
2. Connect battery power to terminal No. 1 of the passenger's air mix control motor, and ground terminal No. 2; the passenger's air mix control motor should run, and stop at Max Hot. If it doesn't, reverse the connections; the passenger's air mix control motor should run, and stop at Max Cool.

PASSENGER'S AIR MIX CONTROL MOTOR



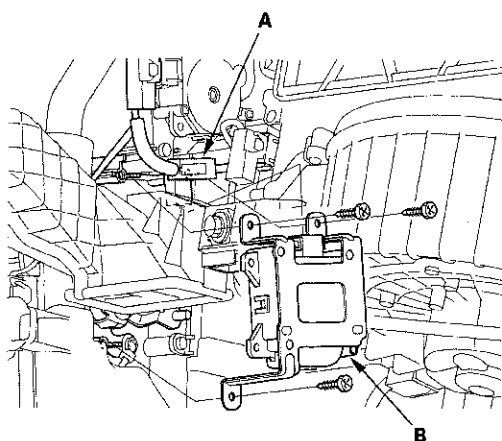
3. If the passenger's air mix control motor did not run in step 2, remove it, then check the passenger's air mix control linkage and the door for smooth movement.

- If the linkage and the door move smoothly, replace the passenger's air mix control motor (see page 21-79).
- If the linkage or the door sticks or binds, repair them as needed.



Passenger's Air Mix Control Motor Replacement

1. Remove the glove box (see page 20-103).
2. Remove the USB adapter unit (see page 23-114).
3. Disconnect the 5P connector (A) from the passenger's air mix control motor. Remove the self-tapping screws and the passenger's air mix control motor (B) 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.

Driver's Cool Vent Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-10).

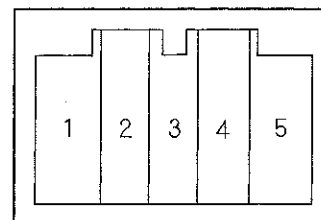
1. Disconnect the 5P connector from the driver's cool vent control motor.

NOTICE

Incorrectly applying power and ground to the driver's cool vent control motor will damage it. Follow the instructions carefully.

2. Connect battery power to terminal No. 1 of the driver's cool vent control motor, and ground terminal No. 2; the driver's cool vent control motor should run, and stop at Open. If it doesn't, reverse the connections; the driver's cool vent control motor should run, and stop at Shut.

DRIVER'S COOL VENT CONTROL MOTOR

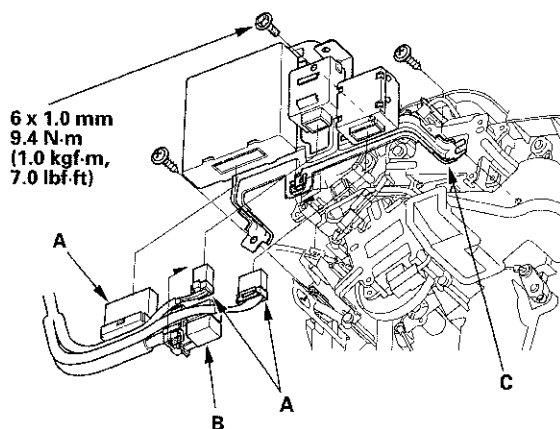


3. If the driver's cool vent control motor did not run in step 2, remove it, then check the driver's cool vent control linkage and the door for smooth movement.
 - If the linkage and the door move smoothly, replace the driver's cool vent control motor (see page 21-80).
 - If the linkage or the door sticks or binds, repair them as needed.

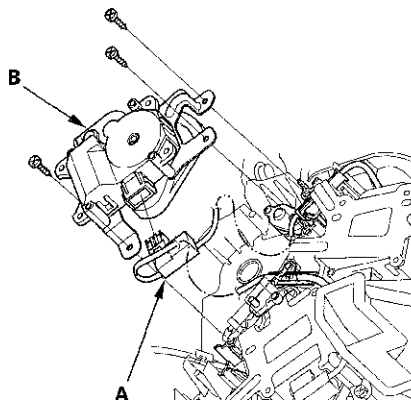
Climate Control

Driver's Cool Vent Control Motor Replacement

1. Remove the driver's dashboard undercover (see page 20-100).
2. Disconnect the connectors (A) from the adaptive front lighting control unit, the electronically controlled power steering control unit, and the daytime running lights control unit. Remove the relay (B), the bolt, and the self-tapping screws, then remove the bracket (C).



3. Disconnect the 5P connector (A) from the driver's cool vent control motor. Remove the self-tapping screws and the driver's cool vent control motor (B).



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.

Passenger's Cool Vent Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-10).

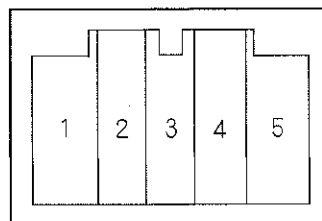
1. Disconnect the 5P connector from the passenger's cool vent control motor.

NOTICE

Incorrectly applying power and ground to the passenger's cool vent control motor will damage it. Follow the instructions carefully.

2. Connect battery power to terminal No. 1 of the passenger's cool vent control motor, and ground terminal No. 2; the passenger's cool vent control motor should run, and stop at Shut. If it doesn't, reverse the connections; the passenger's cool vent control motor should run, and stop at Open.

PASSENGER'S COOL VENT CONTROL MOTOR



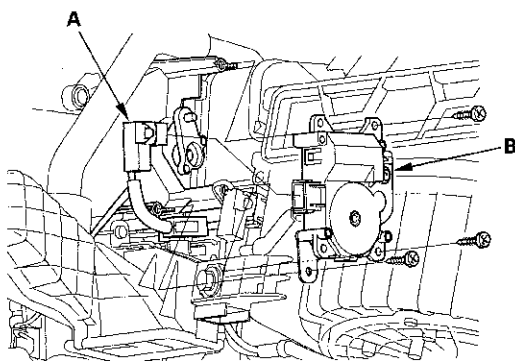
3. If the passenger's cool vent control motor did not run in step 2, remove it, then check the passenger's cool vent control linkage and the door for smooth movement.

- If the linkage and the door move smoothly, replace the passenger's cool vent control motor (see page 21-81).
- If the linkage or the door sticks or binds, repair them as needed.



Passenger's Cool Vent Control Motor Replacement

1. Remove the glove box (see page 20-103).
2. Remove the USB adapter unit (see page 23-114).
3. Disconnect the 5P connector (A) from the passenger's cool vent control motor. Remove the self-tapping screws and the passenger's cool vent control motor (B) 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.

Mode Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-10).

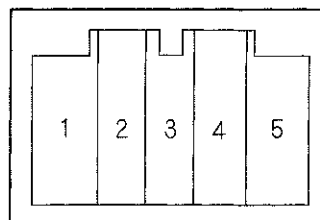
1. Disconnect the 5P connector from the mode control motor.

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

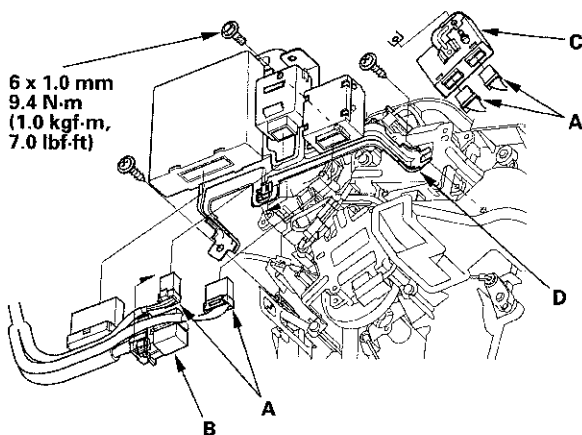


3. If the mode control motor did not run in step 2, remove it, then check the mode control linkage and the doors for smooth movement.
 - If the linkage and the doors move smoothly, replace the mode control motor (see page 21-82).
 - If the linkage or the doors stick or bind, repair them as needed.

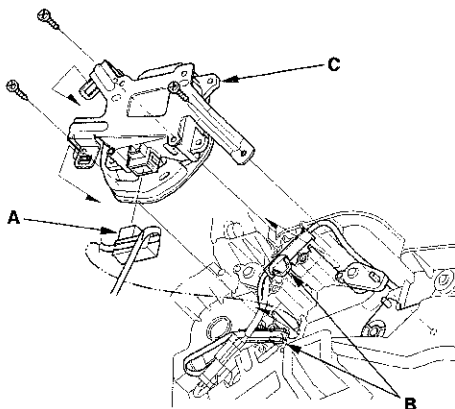
Climate Control

Mode Control Motor Replacement

1. Remove the driver's dashboard undercover (see page 20-100).
2. Disconnect the connectors (A) from the power tilt/telescopic steering control unit, the adaptive front lighting control unit, the electronically controlled power steering control unit, and the daytime running lights control unit. Remove the relay (B) and the power tilt/telescopic steering control unit (C), then remove the self-tapping screws and the bracket (D).



3. Remove the driver's air mix control motor (see page 21-78).
4. Disconnect the 5P connector (A) from the mode control motor. Remove the harness clips (B). Remove the self-tapping screws and the mode control motor (C).



5. 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.

Recirculation Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-10).

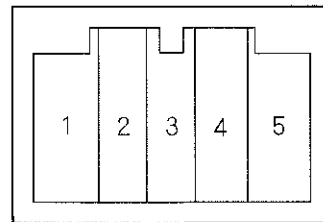
1. Disconnect the 5P connector from the recirculation control motor.

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.

RECIRCULATION CONTROL MOTOR



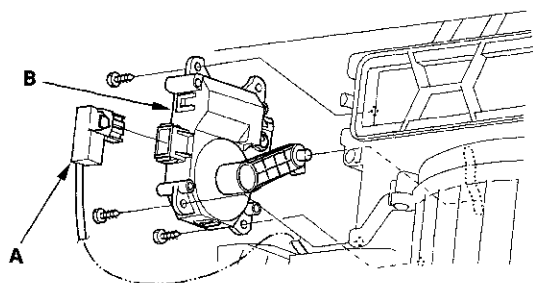
3. If the recirculation control motor did not run in step 2, remove it, then check the recirculation control linkage and the door for smooth movement.

- If the linkage and the door move smoothly, replace the recirculation control motor (see page 21-83).
- If the linkage or the door stick or bind, repair them as needed.



Recirculation Control Motor Replacement

1. Remove the glove box (see page 20-103).
2. Remove the USB adapter unit (see page 23-114).
3. Disconnect the 5P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower 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.

Rear Vent Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-10).

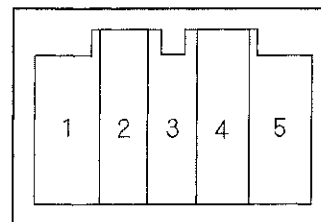
1. Disconnect the 5P connector from the rear vent control motor.

NOTICE

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

2. Connect battery power to terminal No. 1 of the rear vent control motor, and ground terminal No. 2; the rear vent control motor should run, and stop at Shut. If it doesn't, reverse the connections; the rear vent control motor should run, and stop at Rear Vent.

REAR VENT CONTROL MOTOR

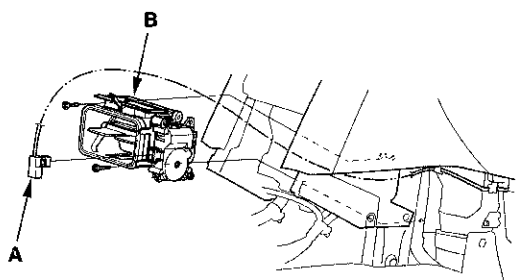


3. If the rear vent control motor did not run in step 2, remove it, then check the rear vent control linkage and the door for smooth movement.
 - If the linkage and the door move smoothly, replace the rear vent control motor (see page 21-84).
 - If the linkage or the door sticks or binds, repair them as needed.

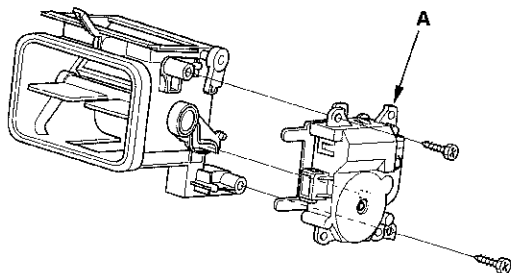
Climate Control

Rear Vent Control Motor Replacement

1. Remove the utility pocket (see page 20-97).
2. Remove the center console (see page 20-92). Remove the rear vent duct (see step 5 on page 20-110).
3. Remove the shift lever (see page 14-230).
4. Disconnect the 5P connector (A) and the duct (B).



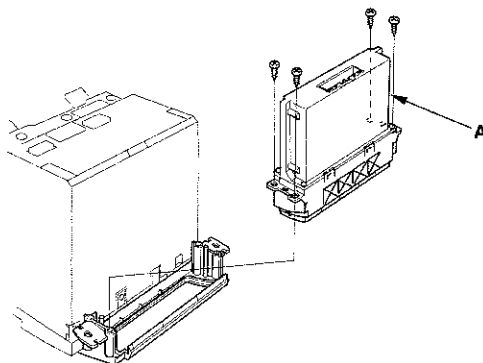
5. Remove the self-tapping screws and the rear vent control motor (A).



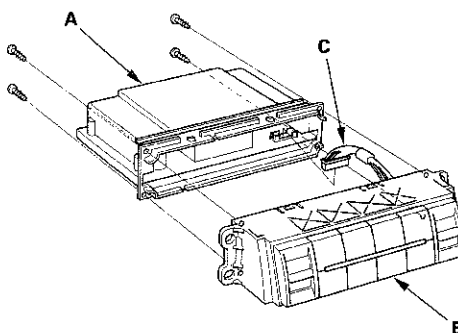
6. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Climate Control Unit Removal/Installation

1. Remove the audio unit (see page 23-106).
2. Remove the self-tapping screws and the climate control unit (A).



3. Discharge the static electricity (which accumulated on you when you removed the climate control unit) by touching the door striker or other body parts.
4. Remove the self-tapping screws, then carefully separate the climate control unit (A) from the climate control panel (B). Disconnect the connector (C) from the climate control unit. Do not kink or pull on the wires between the control panel and the control unit. Do not touch the electronic components on the printed circuit board in the control unit and the control panel.

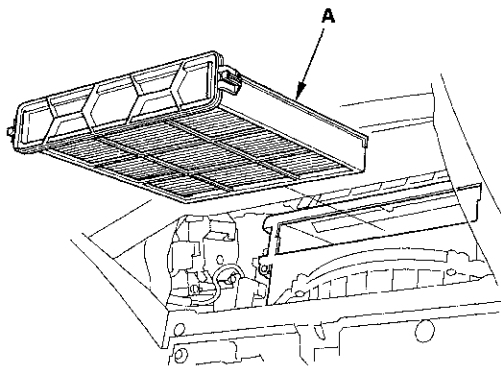


5. Install the control unit in the reverse order of removal. After installation, operate the various functions to see whether it works properly.
6. Run the self-diagnostic function to confirm that there are no problems in the system (see page 21-10).

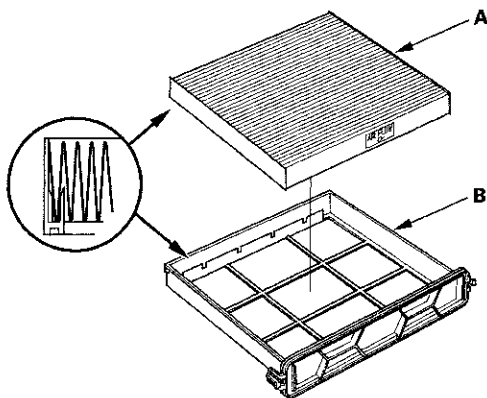


Dust and Pollen Filter Replacement

1. Remove the glove box (see page 20-103).
2. Remove the dust and pollen filter assembly (A) from the blower unit.



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

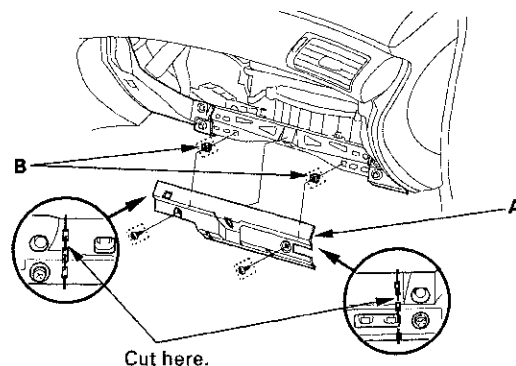


4. Install the filter in the reverse order of removal. Make sure that there is no air leaking out of the blower unit.

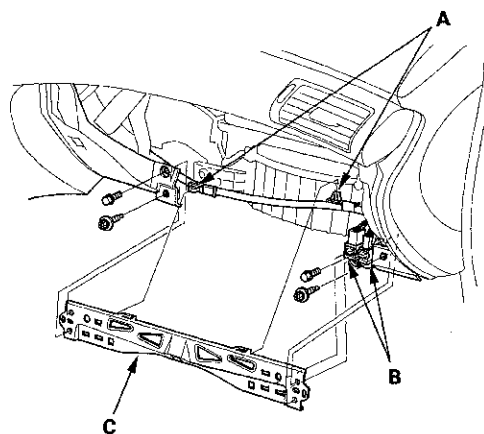
Blower Unit Removal/Installation

1. Remove the glove box (see page 20-103).
2. Remove the right kick panel (see page 20-67).
3. Remove the USB adapter unit (see page 23-114).
4. Cut the plastic cross brace (A) in the glove box opening with diagonal cutters in the area shown. Retain the plastic cross brace to be reinstalled later.

NOTE: Use the grommets (B) and the self-tapping screws to reinstall the plastic cross brace.



5. Remove the wire harness clips (A) and the connector clips (B). Remove the bolts and the glove box frame (C).

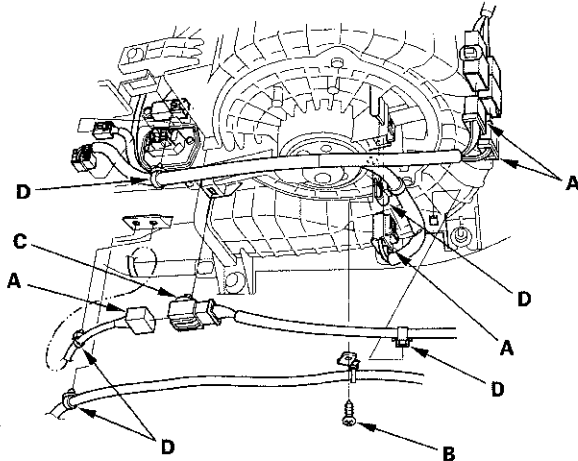


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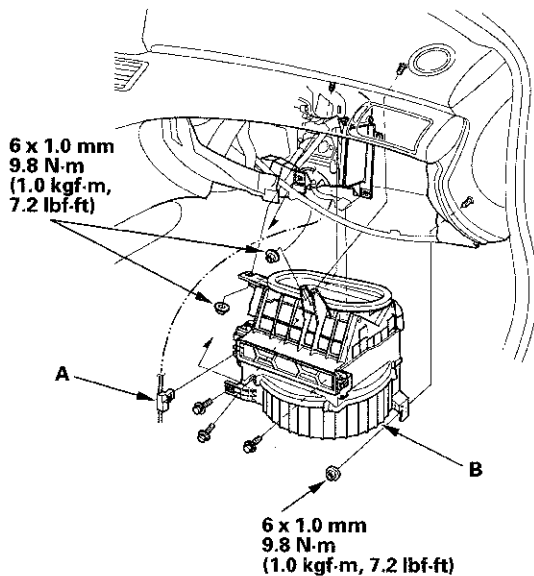
Climate Control

Blower Unit Removal/Installation (cont'd)

6. Disconnect the connectors (A) from the blower motor, the throttle actuator control module subharness, and the dashboard wire harnesses. Remove the self-tapping screw (B), the connector clip (C) and the wire harness clips (D).



7. Disconnect the connector (A) from the recirculation control motor. Remove the mounting nuts, the bolts, and the blower unit (B).

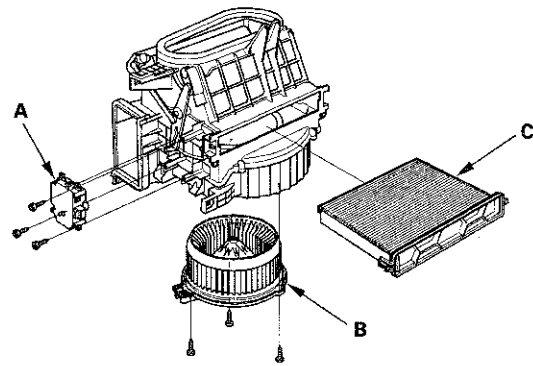


8. Install the unit in the reverse order of removal. Make sure that there is no air leakage.

Blower Unit Component Replacement

Note these items when overhauling the blower unit:

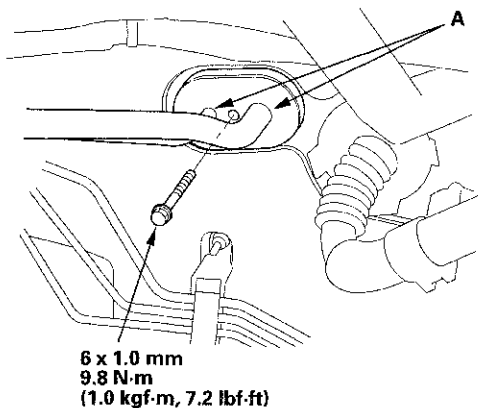
- The recirculation control motor (A), the blower motor (B), and the dust and pollen filter (C) can be replaced without removing the blower unit.
- Before reassembly, make sure that the recirculation control linkage and the door move smoothly without binding.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-82).



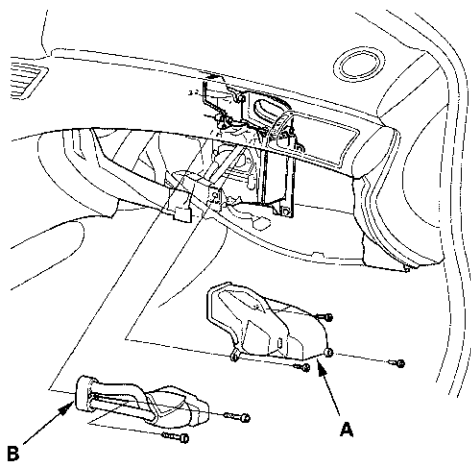


Evaporator Core Replacement

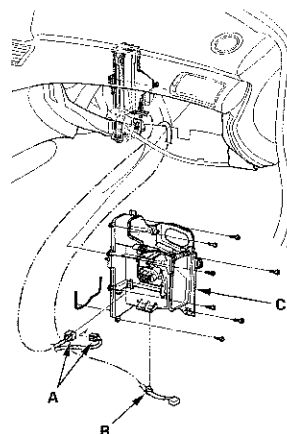
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-100).
2. Remove the engine cover (see page 4-21).
3. Remove the bolt, then disconnect the A/C lines (A) from the evaporator core.



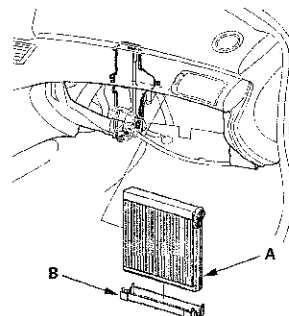
4. Remove the blower unit (see page 21-85).
5. Remove the self-tapping screws and the expansion valve cover (A), then remove the bolts and the expansion valve (B) without bending the lines.



6. Disconnect the connectors (A) from the power transistor and the control motor relay. Remove the wire harness clip (B), then remove the joint duct (C).



7. Carefully pull out the evaporator core (A) and the plate (B).



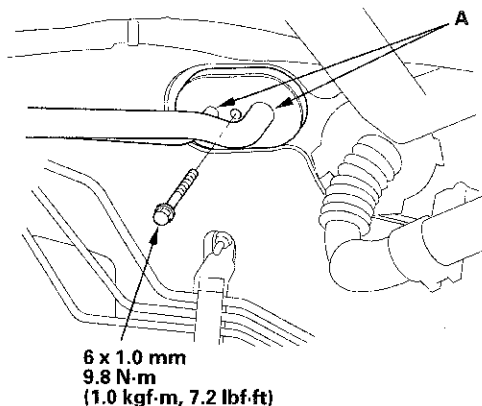
8. Install the core in the reverse order of removal, and note these items:

- If you're installing a new evaporator core, add the appropriate amount of refrigerant oil (DENSO ND-OIL 8) (see page 21-6).
- 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 21-102).

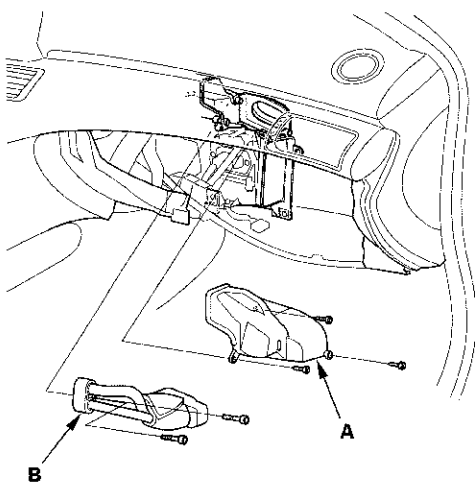
Climate Control

Expansion Valve Replacement

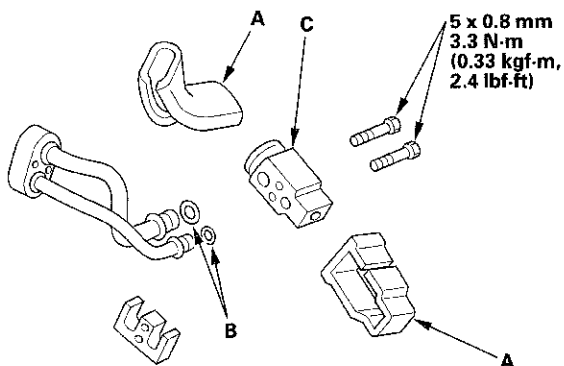
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-100).
2. Remove the engine cover (see page 4-21).
3. Remove the bolt, then disconnect the A/C lines (A) from the evaporator core.



4. Remove the blower unit (see page 21-85).
5. Remove the self-tapping screws and the expansion valve cover (A), then remove the bolts and the pipe (B) without bending the lines.



6. Remove the seals (A), the bolts, the O-rings (B), and the expansion valve (C) without bending the pipe.



7. Install the valve in the reverse order of removal, and note these items:

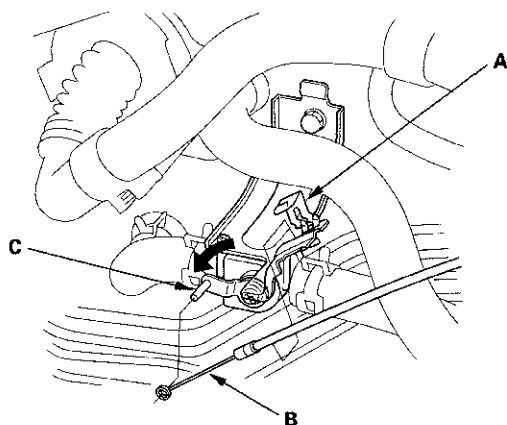
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, reinstall the cap on the container, and seal it to avoid moisture absorption.
- 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 21-102).



Heater Unit/Core Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-12) and the precautions and procedures (see page 24-14) before doing repairs or service.

1. Do the battery terminal disconnection procedure (see page 22-91).
2. Disconnect the A/C lines from the evaporator core (see page 21-87).
3. From under the hood open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C). Turn the heater valve arm to the fully opened position as shown.

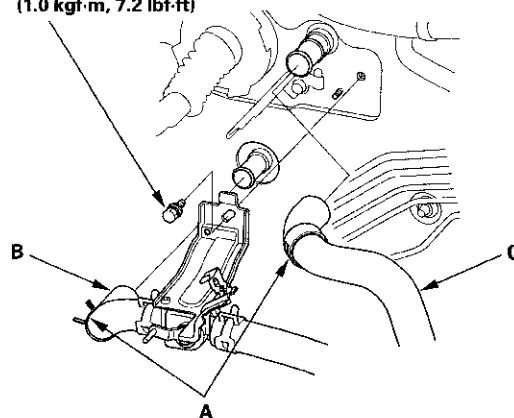


4. When the engine is cool, drain the engine coolant from the radiator (see page 10-6).

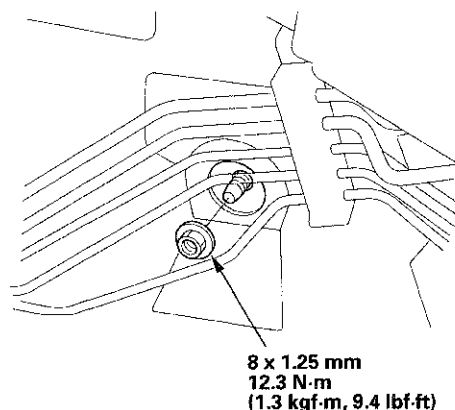
5. Slide the hose clamps (A) back. Remove the bolt and the water valve bracket, then disconnect the inlet heater hose (B) and the outlet heater hose (C) from the heater unit.

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 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)



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



8 x 1.25 mm
12.3 N·m
(1.3 kgf·m, 9.4 lbf·ft)

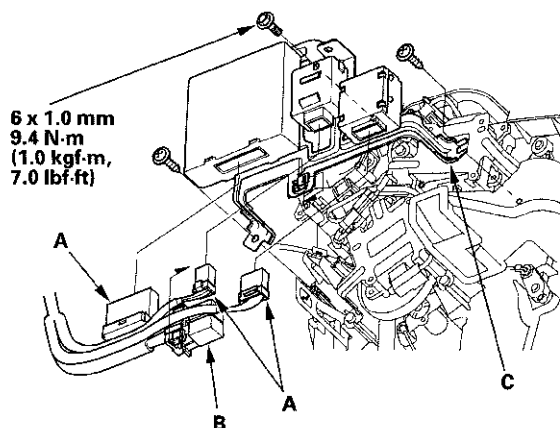
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Climate Control

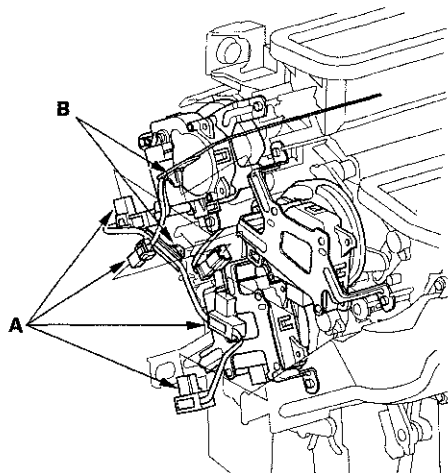
Heater Unit/Core Replacement (cont'd)

7. Remove the dashboard (see page 20-107).

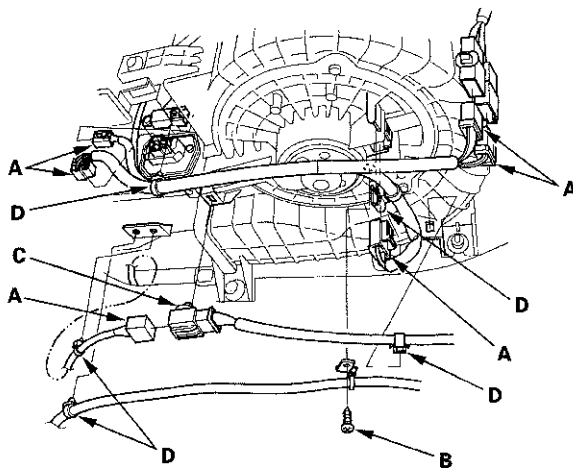
8. Disconnect the connectors (A) from the adaptive front lighting control unit, the electronically controlled power steering control unit, and the daytime running lights control unit. Remove the relay (B), the bolt, and the self-tapping screws, then remove the bracket (C).



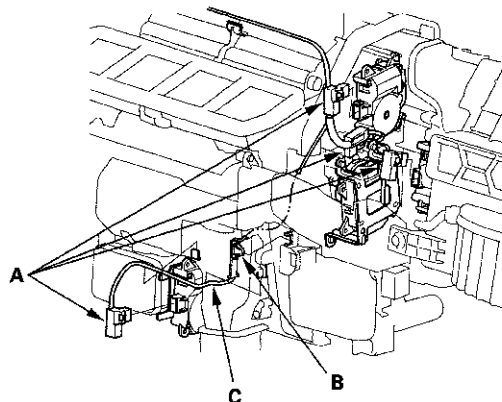
9. Disconnect the connectors (A) from the driver's cool vent control motor, the driver's air mix control motor, the mode control motor, and the evaporator temperature sensor, then remove the wire harness clips (B).



10. Disconnect the connectors (A) from the blower motor, the power transistor, the control motor relay, the throttle actuator control module subharness, and the dashboard wire harnesses. Remove the self-tapping screw (B), the connector clip (C) and the wire harness clips (D).

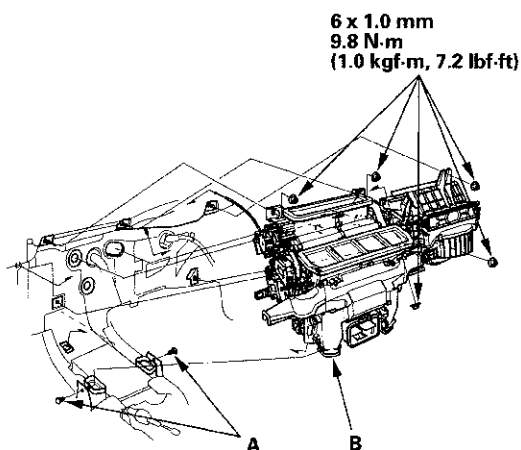


11. Disconnect the connectors (A) from the recirculation control motor, the passenger's cool vent control motor, the passenger's air mix control motor, and the rear vent control motor, and then remove the wire harness clip (B) and the wire harness (C).

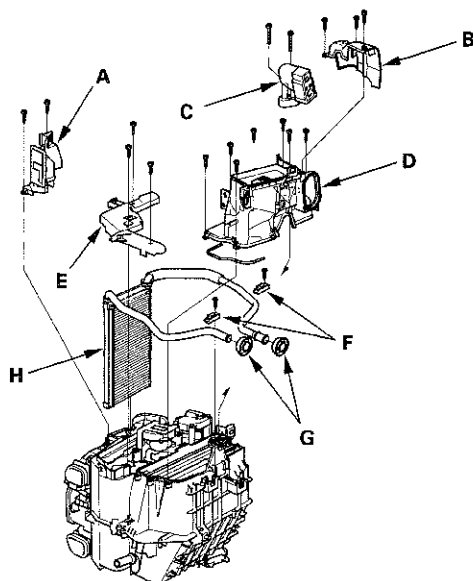




12. Remove the clips (A), the mounting nuts, and the blower-heater unit (B).



13. Remove the self-tapping screws and the passenger's heater duct (A), then remove the expansion valve cover (B), the bolts, and the expansion valve (C). Remove the self-tapping screws, the joint duct (D), and the heater core cover (E). Remove the self-tapping screws, the heater pipe brackets (F), and the grommets (G), then carefully pull out the heater core (H).



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:

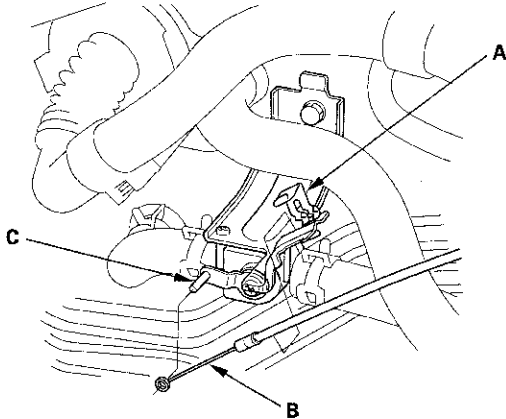
- Do not interchange the inlet and the outlet heater hoses, and install the hose clamps securely.
- Refill the cooling system with engine coolant (see page 10-6).
- Adjust the heater valve cable (see page 21-92).
- Make sure that there is no coolant leakage.
- Make sure that there is no air leakage.

16. Do the battery terminal reconnection procedure (see page 22-91).

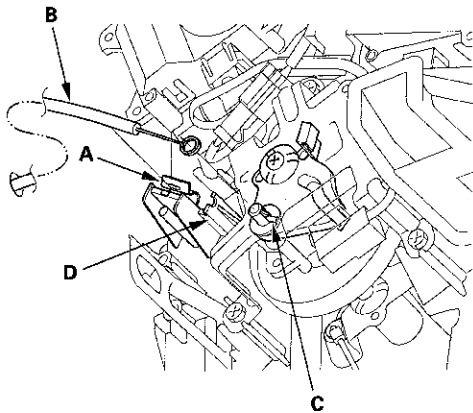
Climate Control

Heater Valve Cable Adjustment

1. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C).



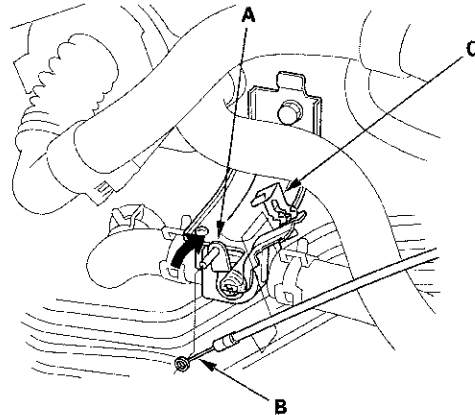
2. From under the dash, disconnect the heater valve cable housing from the cable clamp (A), and disconnect the heater valve cable (B) from the air mix control linkage (C).



3. Set the temperature control button to Max Cool (Lo) with the ignition switch to ON (II).
4. Attach the heater valve cable (B) to the air mix control linkage (C) as shown in step 2. Hold the end of the heater valve cable housing against the stop (D), then snap the heater valve cable housing into the cable clamp (A).

NOTE: Make sure the ring-end of the cable is pushed all the way to the base of the pin on the air mix control linkage.

5. From under the hood, turn the heater valve arm (A) to the fully closed position as shown, and hold it. Attach the heater valve cable (B) to the heater valve arm, and gently pull on the heater valve cable housing to take up any slack, then install the heater valve cable housing into the cable clamp (C).



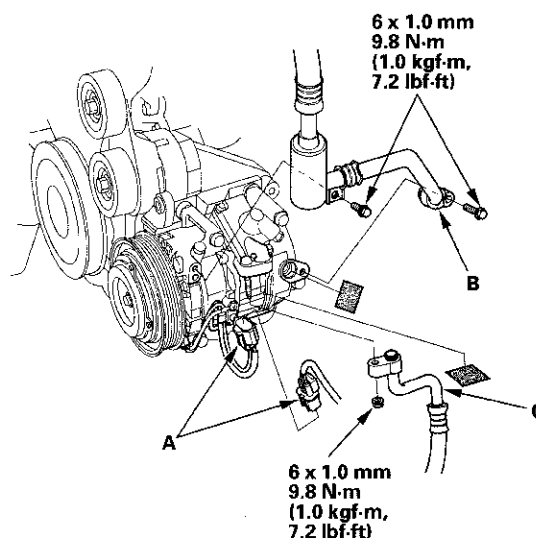


A/C Compressor Replacement

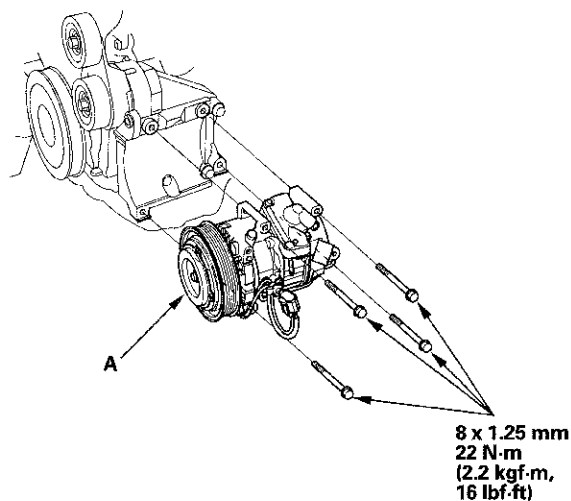
NOTE: Do not install the A/C compressor into a system unless you are completely sure that the system is free of contamination. Installing the A/C compressor into a contaminated system can result in premature A/C compressor failure.

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. Do the battery terminal disconnection procedure (see page 22-91).
3. Recover the refrigerant with a recovery/recycling/charging station (see page 21-100).
4. Remove the engine cover (see page 4-21), and the alternator (see page 4-36).

5. Disconnect the A/C compressor clutch connector (A). Remove the bolts and the nuts, then disconnect the suction hose (B) and the discharge hose (C) from the A/C compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



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



(cont'd)

Climate Control

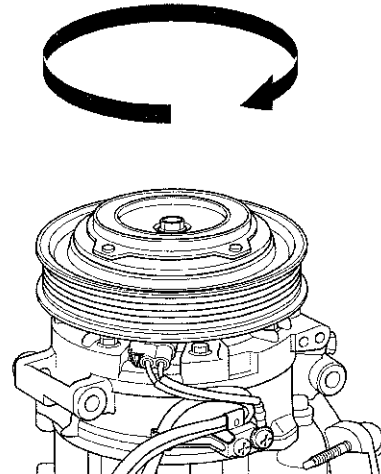
A/C Compressor Replacement (cont'd)

7. Install the A/C compressor in the reverse order of removal, and note these items:
 - Inspect the A/C lines for any signs of contamination. Purge the system if necessary before installing the compressor.
 - If you're installing a new A/C compressor, you must calculate the amount of refrigerant oil to be removed from it (see page 21-6). 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 only refrigerant oil (DENSO ND-OIL 8) for HFC-134a DENSO piston 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.
 - Be careful not to damage the radiator fins when installing the compressor and the A/C condenser fan shroud.
 - Charge the system (see page 21-102).
8. Do the battery terminal reconnection procedure (see page 22-91).

A/C Compressor Clutch Check

1. Check the pressure plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see page 21-95).
2. Check the pulley bearing play and drag by rotating the pulley by hand. Also check for grease leakage from the bearing. Replace the clutch set with a new one if it is noisy, has excessive play/drag, or has bearing grease contamination on the clutch faces (see page 21-95).

NOTE: The pulley and the pressure plate were mated at the factory by a burnishing operation. Always replace the pulley and the pressure plate as a set. Replacing only one part of the clutch set will cause clutch slippage.



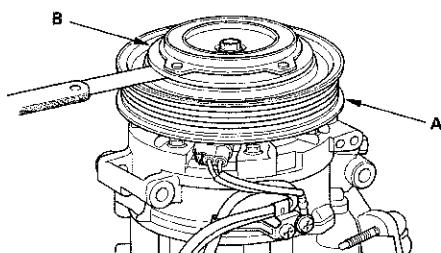


A/C Compressor Clutch Overhaul

3. Measure the clearance between the pulley (A) and the pressure plate (B) all the way around. If the clearance is not within specified limits, remove the pressure plate (see page 21-95) and add or remove shims as needed to increase or decrease clearance.

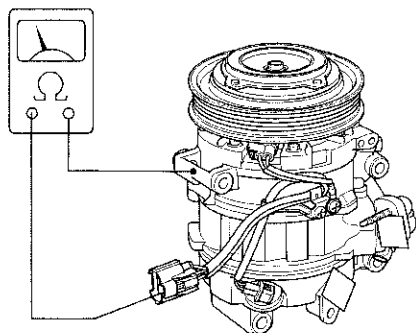
Clearance: 0.26—0.60 mm (0.010—0.024 in.)

NOTE: The shims are available in three thicknesses: 0.1 mm, 0.3 mm, and 0.5 mm.



4. Remove the pressure plate (see page 21-95), and inspect the pressure plate and pulley friction surface for wear. If there is excessive wear, roughness, or scoring, replace the clutch set.
5. Inspect the friction surfaces and the A/C compressor shaft hub for excess oil. If excess oil is present, and it is not from the engine or power steering system, then the A/C compressor shaft seal is leaking. In the case, replace the A/C compressor (see page 21-93).
6. Measure the resistance of the field coil. If the resistance is not within specifications, replace the field coil (see page 21-95).

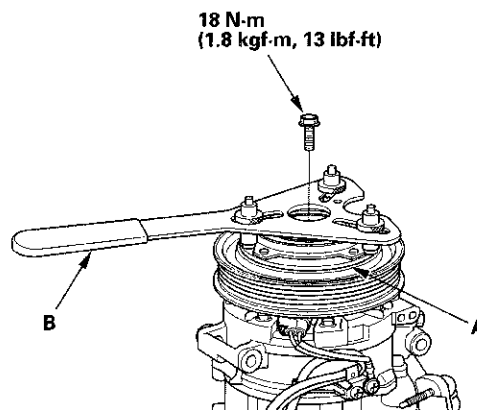
Field Coil Resistance: 3.9—4.3 Ω at 68° F (20 °C)



Special Tools Required

A/C clutch holder: Robinair 10290, Kent-Moore J37872, Honda Tool and Equipment ACT499A, or commercially available

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



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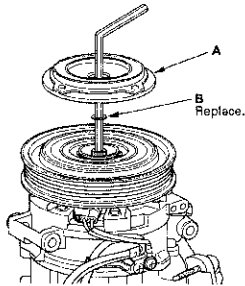
Climate Control

A/C Compressor Clutch Overhaul (cont'd)

2. Remove the pressure plate (A) and the 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 pressure plate, and recheck its clearance (see step 3 on page 21-95).

NOTE:

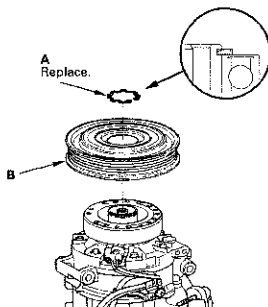
- The shims are available in three thicknesses: 0.1 mm, 0.3 mm, and 0.5 mm.
- Do not pry on the pressure plate with screwdrivers or similar tools. Prying damages the pressure plate and the pulley.
- When replacing the clutch set, place a trial stack of shims, 1 mm total thickness, on the A/C compressor shaft. Install the pressure plate, and check its clearance (see step 3 on page 21-95). If the clearance is not with specification, add or subtract shims as needed.



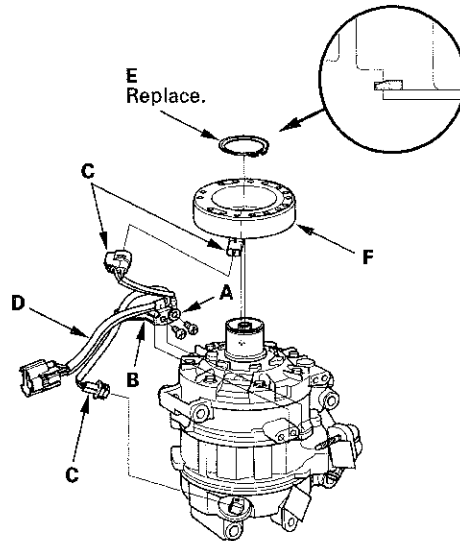
3. Remove the snap ring (A) with snap ring pliers, then remove the pulley (B). Be careful not to damage the pulley or the A/C compressor.

NOTE:

- Do not use a hammer to remove the snap rings. Using a hammer damages the A/C compressor.
- Do not hammer or pry on the pulley to remove it. If the pulley is difficult to remove, use a commercially available pulley removing tool. Make sure the jaws of the pulling tool engage the back face of the pulley, not the pulley grooves.



4. Remove the screws from the field coil ground terminal (A) and the bracket (B). Disconnect the connectors (C) from the field coil and the variable capacity control solenoid valve, then remove the wire harness (D). Remove the snap ring (E) with snap ring pliers, then remove the field coil (F). Be careful not to damage the field coil or the A/C compressor.



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

- When replacing the field coil, check that the new coil has the correct resistance (see step 6 on page 21-95).
- 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 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 grooves.
- Make sure that the pulley turns smoothly after it's reassembled.
- Route and clamp the wires properly to prevent damage by the pulley.

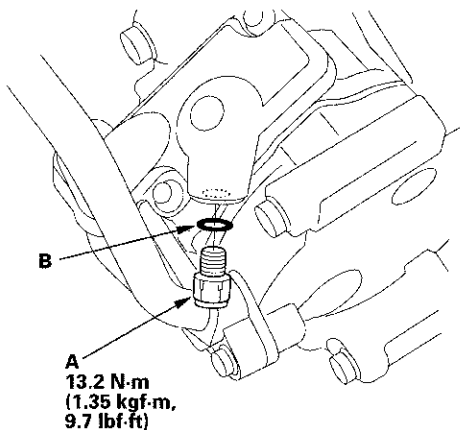
6. Cycle the A/C by running the engine at 1,500–2,000 rpm and setting the climate control temperature to Lo with the A/C button ON. This procedure seats the clutch friction surfaces, and increases clutch torque capacity.



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.

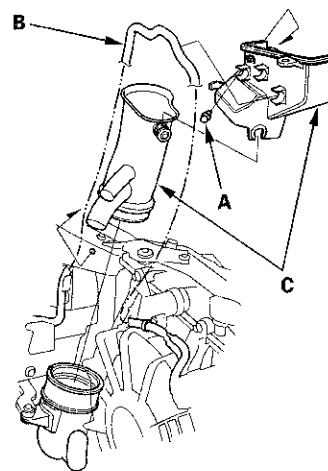
1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-100).
2. Remove the relief valve (A) and the O-ring (B). Plug the opening to keep foreign matter from entering the system and the A/C compressor oil from running out.



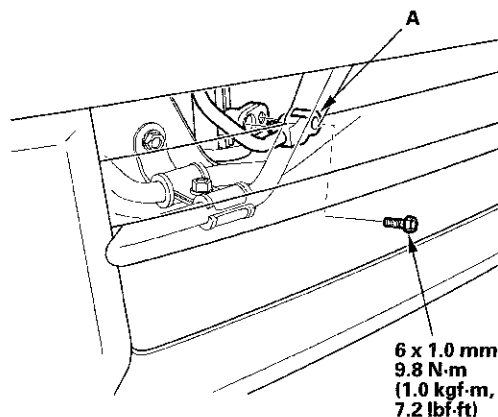
3. Clean the mating surfaces.
4. Replace the O-ring with a new one at the relief valve, and apply a thin coat of refrigerant oil before installing it.
5. Remove the plug, and install and tighten the relief valve.
6. Charge the system (see page 21-102).

A/C Condenser Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-100).
2. Remove the upper grille cover (see page 20-163).
3. Do the battery terminal disconnection procedure (see page 22-91).
4. Remove the battery and the battery box.
5. Remove the clip (A) and the harness (B), then remove the air intake ducts (C).



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

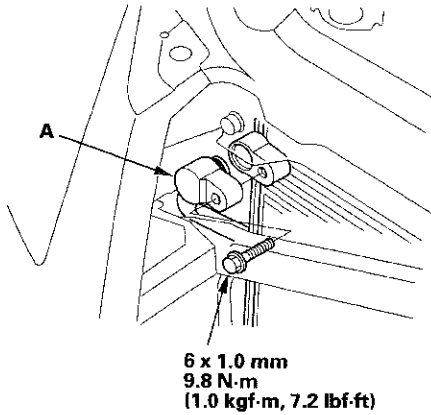


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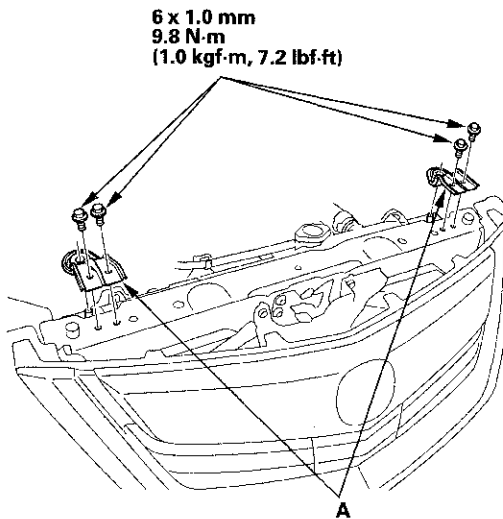
Climate Control

A/C Condenser Replacement (cont'd)

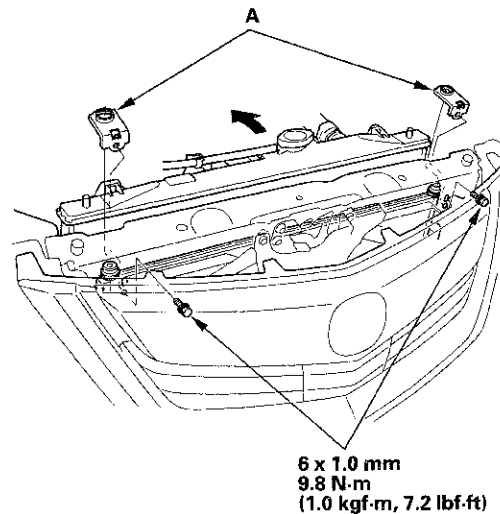
7. Remove the bolt, then disconnect the discharge hose (A) from the A/C condenser.



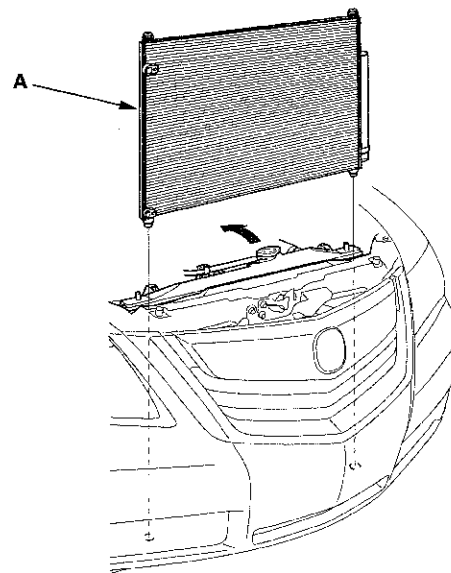
8. Remove the bolts and the radiator upper mount brackets (A).



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



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





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

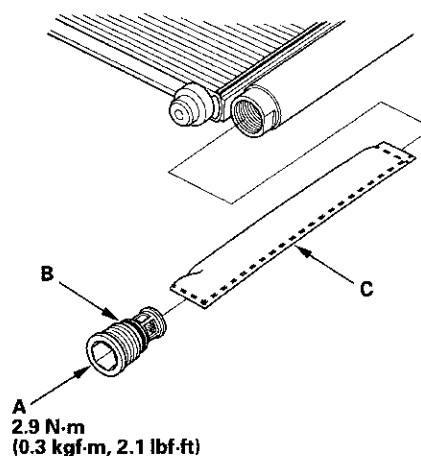
- If you're installing a new A/C condenser, add refrigerant oil (DENSO ND-OIL 8) (see page 21-6).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately 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 21-102).

12. Do the battery terminal reconnection procedure (see page 22-91).

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 21-97).
2. Remove the cap (A) from the bottom of the A/C condenser. Remove the O-ring (B) and the desiccant (C).



3. Install the receiver/dryer in the reverse order of removal, and note these items:

- Replace the O-rings with new ones, and apply a thin coat of refrigerant oil (DENSO ND-OIL 8) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Install the cap to the specified torque. It is made of resin and can be easily stripped.

Climate Control

Refrigerant Recovery

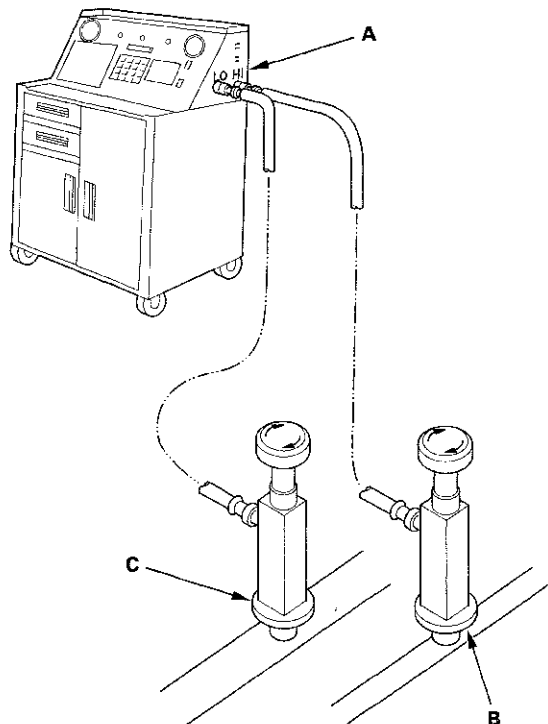
CAUTION

- 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 a 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

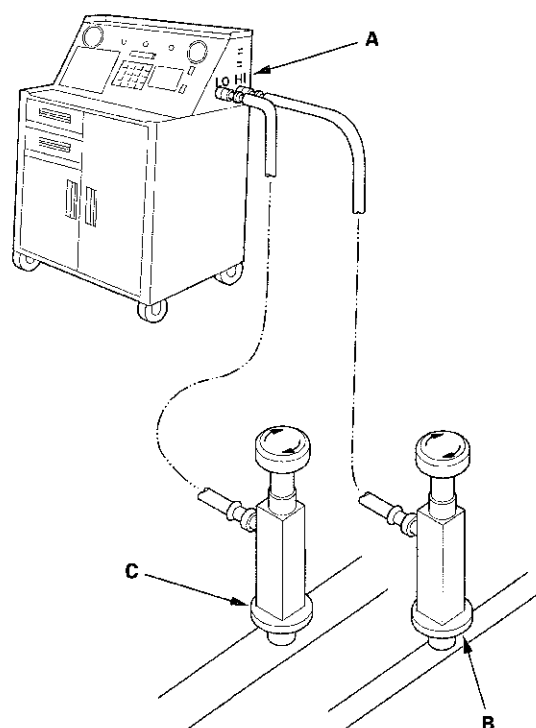
CAUTION

- 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 a R-134a refrigerant recovery/recycling/charging station. If the system has been open for several days, replace the receiver/dryer, drain the refrigerant oil, and add fresh oil (see page 21-6), then evacuate the system for several hours before charging it.

2. Connect a 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 21-100).



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 21-103).

Climate Control

System Charging

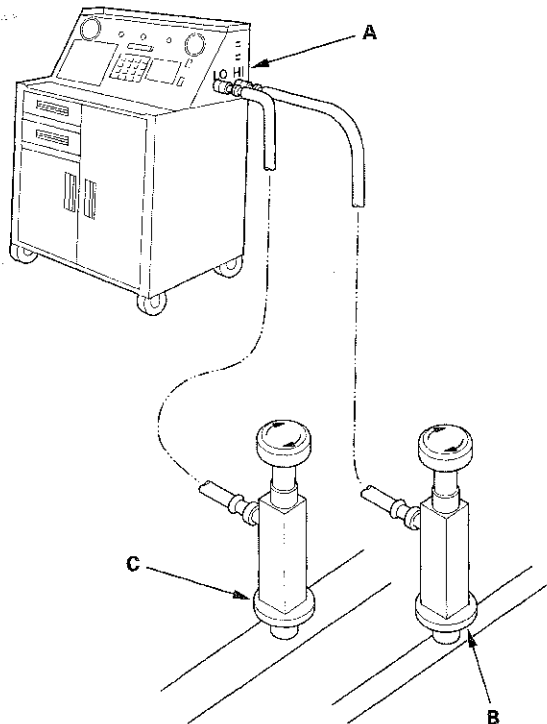
CAUTION

- 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 a 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 21-100).
3. Evacuate the system (see page 21-101). 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 21-103), 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 DENSO ND-OIL 8 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:

450 to 500 g
0.45 to 0.50 kg
1.0 to 1.1 lbs
15.8 to 17.6 oz

6. Check for refrigerant leaks (see page 21-103).
7. Check for system performance (see page 21-109).



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.

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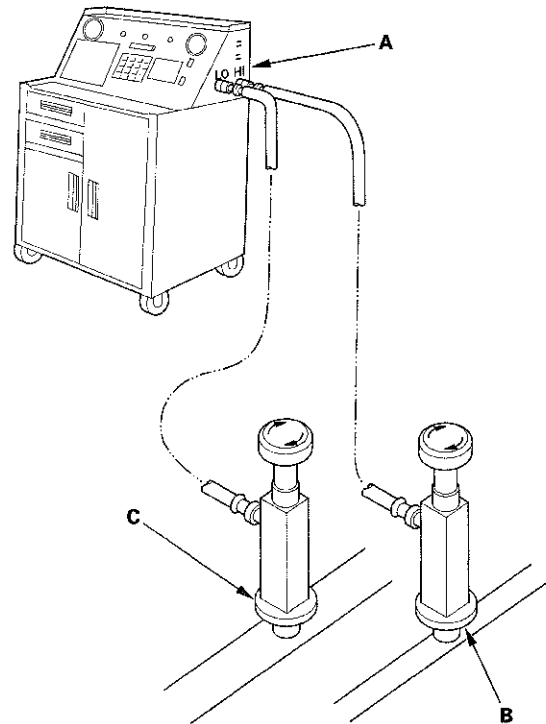
Climate Control

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 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 21-100), and evacuate the system (see page 21-101). 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:

450 to 500 g
0.45 to 0.50 kg
1.0 to 1.1 lbs
15.8 to 17.6 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, cleaning the area with compressed air may help you pinpoint the leak source.
A/C Lines	• 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 maximum cooling. 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 21-97). • 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 21-99), or the condenser (see page 21-97), 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 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, diagnose and repair the cause of excessive A/C system pressure, then replace the compressor relief valve (see page 21-97). – If the leak is from the casing/valve joint, replace the A/C compressor relief valve (see page 21-97). • 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 21-93).
Evaporator	• Start checking for evaporator leaks by illuminating the evaporator drain tube area. Let the vehicle sit for 30 minutes with the engine off, and the doors and windows closed. Then place the detector probe in the center vent, and turn the fan on to low speed. • If a leak is found, remove the evaporator core (see page 21-87). • Determine whether leak is from the evaporator or the expansion valve. • Use a permanent marker pen to circle the leak area. • Replace the expansion valve (see page 21-88), or the evaporator core (see page 21-87), 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 21-9), 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 a 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 motors, doors, and linkage
- 2 If there is a squeaking or chirping noise, but no unusual vibration, replace the blower motor (see page 21-86).
- 3 Remove the blower unit (see page 21-85), 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 21-86), 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 button to Max Cool
- Set the mode control button to Vent
- Set the fan control button to minimum (but not OFF)
- Turn the A/C button 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 4-33). 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 from the A/C suction line. If there is a moaning noise, check the system refrigerant charge (see page 21-102). If the refrigerant charge is OK, replace the receiver/dryer.
 - A whistling or hissing noise from the expansion valve. Evacuate the system for 3 hours (see page 21-101), then recheck. If the noise is still present, replace the expansion valve (see page 21-88).
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 21-67). If the compressor clutch slips, replace the complete clutch assembly (see page 21-95).
 - Make sure the compressor clutch disengages. If the clutch does not disengage, do the A/C compressor clutch circuit troubleshooting (see page 21-67). If the clutch circuit is OK, do the A/C compressor clutch check (see page 21-94), and see if the clutch is mechanically jammed. If there are no electrical or mechanical problems with the compressor clutch, replace the A/C compressor (see page 21-93).
 - 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 21-103). 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 test (see page 21-109). 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 21-93).



A/C System Test

Performance Test

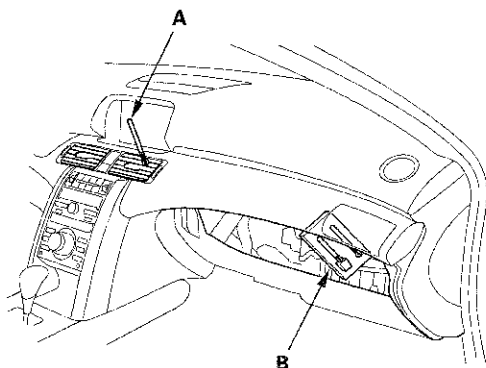
CAUTION

- 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 21-9), 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. Remove the glove box (see page 20-103).
 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 60 °F (16 °C).
- Open the hood.
- Open the front doors.
- Set the temperature control button to Max Cool, the mode control button to Vent, and the recirculation control button to Recirculate.
- Turn the A/C button ON and the fan control button 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.

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Climate Control

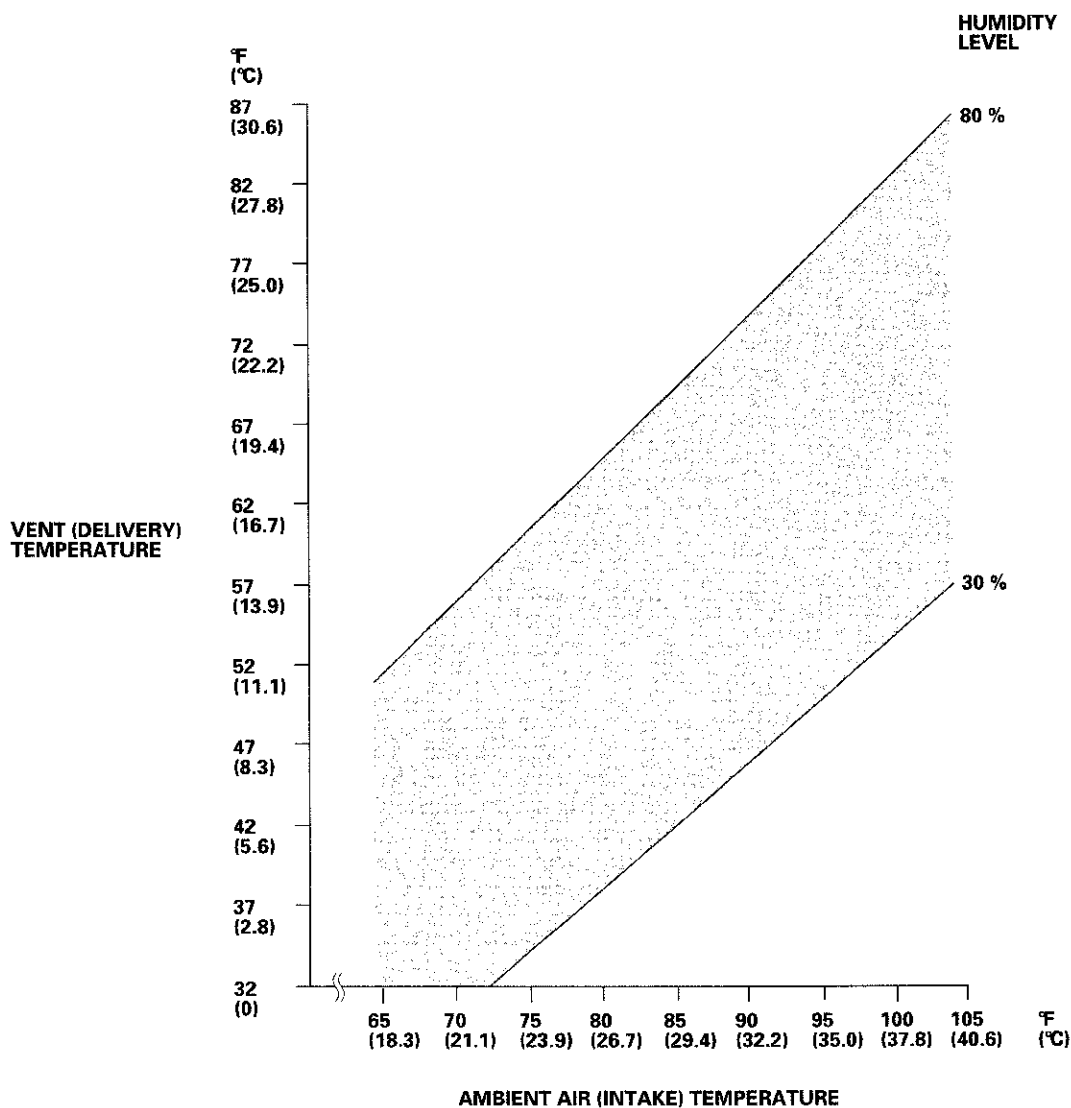
A/C System Test (cont'd)

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 vent temperature and the ambient air temperature lines should intersect in the shaded area. Any measurements outside the area may indicate the need for further inspection.

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



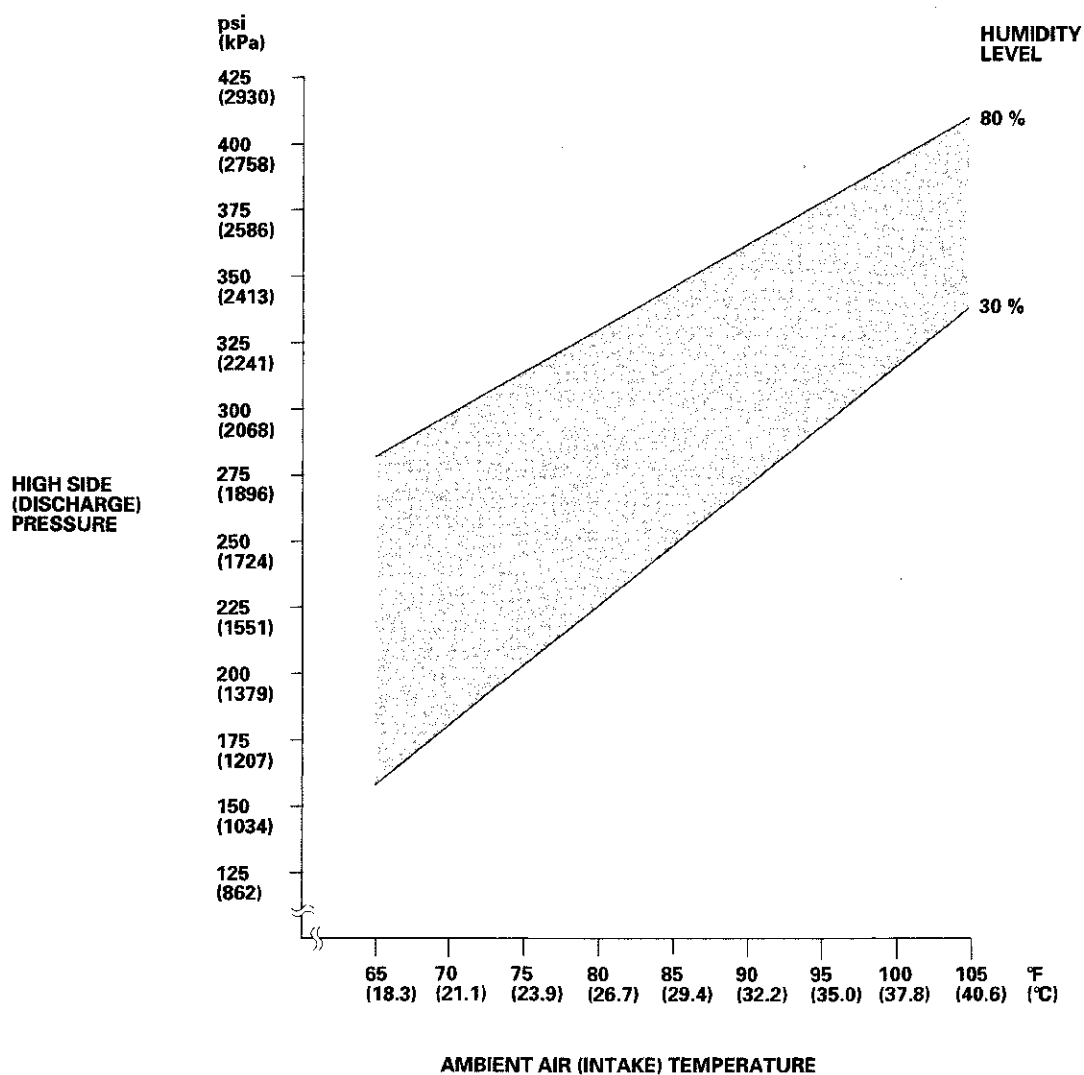


11. To complete the high side (discharge) pressure/ambient air (intake) temperature chart:

- Mark the high side (discharge) pressure 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 high side (discharge) pressure mark until it intersects the vertical line.

NOTE: The high side pressure and the ambient air temperature lines should intersect in the shaded area. Any measurements outside the area may indicate the need for further inspection.

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



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Climate Control

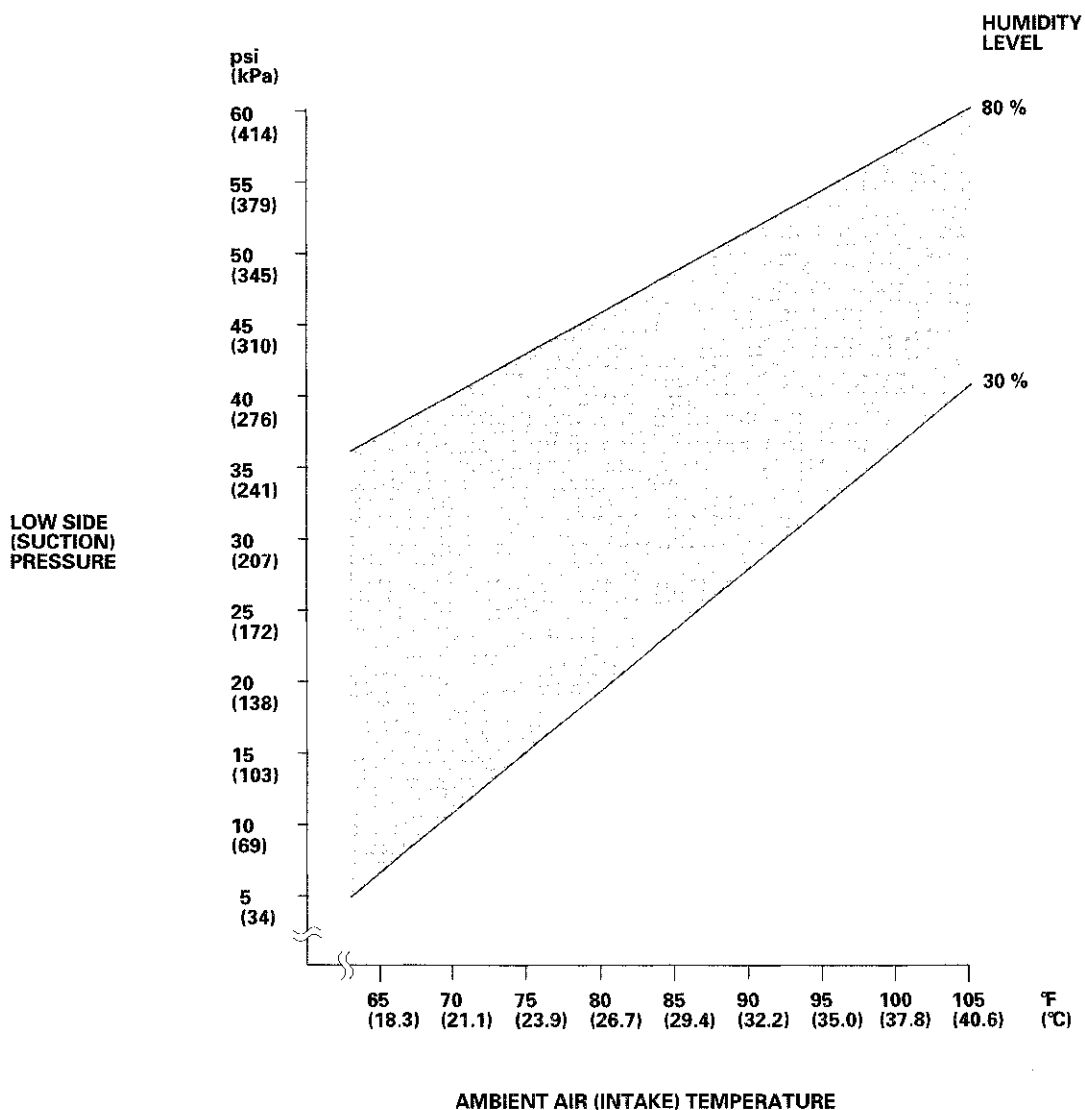
A/C System Test (cont'd)

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

- Mark the low side (suction) pressure 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 low side (suction) pressure mark until it intersects the vertical line.

NOTE: The low side pressure and the ambient air temperature lines should intersect in the shaded area. Any measurements outside the area may indicate the need for further inspection.

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





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.	- Evacuate the system (see page 21-101). Adjust the oil level (see page 21-6), then recharge the system (see page 21-102). - Check air mix door operation; driver's (see page 21-77), passenger's (see page 21-78), 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.	- If the drive belt is slipping, replace the drive belt (see page 4-33). Also inspect the drive belt auto-tensioner (see page 4-35). - If the A/C compressor clutch is slipping, replace it (see page 21-95). - Check the A/C compressor shaft seal. If it's leaking, replace the A/C compressor (see page 21-93).
Suction and discharge pressures are roughly equal but fluctuate	Suction and discharge pressures fluctuate during operation, and equalize when the compressor clutch disengages.	The compressor discharge valve or the compressor gasket is faulty.	Replace the A/C compressor (see page 21-93).
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.	Do the refrigerant leak check (see page 21-103). Repair any leaks, then recharge the system (see page 21-102).
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.	Evacuate the A/C system (see page 21-101), and recharge it to specifications (see page 21-102).
Suction and discharge pressures are abnormally high, and refrigerant line temperatures are abnormal	- The vapor line to the condenser is too hot. - The liquid line from the expansion valve is not cold. - There is an abrupt temperature change in the system.	The A/C system refrigerant flow is restricted.	Replace the restricted line or component.
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 an A/C line or hose.	The A/C system refrigerant flow is restricted.	Replace the restricted line or component.
Discharge pressure is so high that the compressor relief valve has opened. Suction pressure is normal or below normal	The temperature drop between the condenser inlet and outlet is less than 30 °F (16 °C) or more than 60 °F (32 °C).	The A/C condenser or receiver/dryer is restricted.	Replace the restricted component; the condenser (see page 21-97) or the receiver/dryer (see page 21-99).
Discharge pressure is so high that the compressor relief valve has opened. Suction pressure is also above normal	- No evidence of restricted refrigerant flow. - The A/C compressor clutch stays engaged with the A/C switch off.	The A/C compressor clutch circuit is always on (energized), or the compressor clutch is mechanically jammed.	- Do the A/C compressor clutch circuit troubleshooting (see page 21-67), and repair the problem with the circuit. - If the A/C compressor clutch circuit is OK, do the A/C compressor clutch check (see page 21-94), and repair as needed.
Suction and discharge pressures are abnormally high, but drop rapidly when the compressor disengages	- Discharge pressure quickly drops about 196 kPa (28 psi) when the clutch disengages. - Expansion valve inlet and outlet temperatures are different.	There is excess air in the A/C system.	Evacuate the A/C system (see page 21-101), and recharge it (see page 21-102).

(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 there is little or no airflow through the A/C condenser	Suction and discharge pressures normalize when water is sprayed on 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 21-88).
The suction pressure is high, the discharge pressure is low, and there are particle contaminants in the refrigerant lines	Metal flakes or Desiccant particles are in the discharge hose or expansion valve.	The A/C compressor is malfunctioning.	Replace the A/C compressor (see page 21-93). If the system is contaminated with desiccant, replace the receiver/dryer (see page 21-99).
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 21-93).
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 21-103), repair any leaks, and recharge the A/C system (see page 21-102).
Suction and discharge pressures are both low, and the expansion valve or the suction line is abnormally cold	- Expansion valve inlet temperature is much lower than receiver/dryer outlet temperature. - 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 or hose (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 21-75). 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 operation, 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 21-88), and the receiver/dryer (see page 21-99). - Check the old expansion valve for contamination. If contaminants are found, replace the component that caused the contamination.
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.	Evacuate the A/C system (see page 21-101), and replace the receiver/dryer (see page 21-99). Recharge the A/C system (see page 21-102).
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.	Replace the evaporator core (see page 21-87).



Test results	Related symptoms	Probable cause	Remedy
The discharge pressure is low, the suction pressure is extremely low, and the refrigerant temperature doesn't change going through the expansion valve	• 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 21-88).
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.	Replace the receiver/dryer (see page 21-99). Evacuate the A/C system (see page 21-101), and recharge the A/C system (see page 21-102).
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.	Replace the receiver/dryer (see page 21-99). Evacuate the A/C system (see page 21-101), and recharge the A/C system (see page 21-102).