Fastener Tightening Specifications

Application	Specifications	
	Metric	English
Air Inlet Assembly Screws	1.5 N·m	13 lb in
Air Outlet Duct Screws	1.5 N·m	13 lb in
Air Temperature Actuator to Evaperator Case Screws	1.5 N·m	13 lb in
Blower Case Assembly Screws	1.5 N·m	13 lb in
Blower Motor Control Module Screws	1.5 N·m	13 lb in
Blower Motor Screws	1.5 N·m	13 lb in
Compressor Clutch Bolt	12 N·m	106 lb in
Compressor Hose Assembly-to-Compressor Nut	27 N·m	20 lb ft
Compressor Hose Assembly-to-Condenser Nut	16 N·m	12 lb ft
Compressor Pressure Relief Valve	8 N·m	70 lb in
Compressor Stud-to-Engine-LZ4	8 N·m	71 lb in
Compressor-to-Engine Bolts - LAT/LE5	22 N·m	16 lb ft
Compressor-to-Engine Bolts - LZ4/LY7	50 N·m	37 lb ft
Condensor-to-Radiator Bolts	5 N·m	44 lb in
Evaporator Case Assembly Screws	1.5 N·m	13 lb in
Evaporator Outlet Hose Bracket Nut	10 N·m	89 lb in
Evaporator Outlet Hose-to-Compressor Hose Nut	16 N·m	12 lb ft
Evaporator Outlet Hose and Liquid Line Clamp Bracket Nut to TXV	16 N·m	12 lb ft
Front of Dash-to-HVAC Module Seal Nuts	9 N·m	80 lb in
Heater Core Cover Screws	1.5 N·m	13 lb in
Liquid Line-to-Condenser Nut	16 N·m	12 lb ft
Liquid Line-to-Body Nuts	9 N·m	80 lb in
Mode Actuator to Evaporator Case Screws	1.5 N·m	13 lb in
Mode Cam Bracket to Evaporator Case Screws	1.5 N·m	13 lb in
Passenger Compartment Air Filter Housing Nuts	9 N·m	80 lb in
Receiver Dehydrator Cap	16 N·m	12 lb ft
Receiver Dehydrator/Condenser to Radiator Bolts	16 N·m	12 lb ft
Recirc Actuator to Air Inlet Screws	1.5 N·m	13 lb in
Refrigerant Pressure Sensor-to-Compressor Hose Assembly	4 N·m	35 lb in
TXV Backing Plate Bolts	3.5 N·m	31 lb in

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Refrigerant System Capacities (With HP5)

Refrigerant System Capacities

Application	Specification	
	Metric	English
POE Oil GM P/N 88862929 (US) or 88862930 (Canada)		
Abrupt Refrigerant Loss	74 ml[1]	2.5 oz[1]
Compressor Replacement		
· The Denso model ES34 service compressor is precharged with the specified amount of POE oil.	74 ml[1]	2.5 oz[1]
Condenser Replacement	28.4 ml[2]	1 oz[2]
A/C Suction Hose Replacement	5.5 ml[2]	0.2 oz[2]
Evaporator Outlet Hose Replacement	5.5 ml[2]	0.2 oz[2]
A/C Discharge Hose Replacement	5.5 ml[2]	0.2 oz[2]
Evaporator Replacement	20 ml[2]	0.75 oz[2]
Thermal Expansion Valve Replacement	12.5 ml[2]	0.4 oz[2]
Total System POE Oil Capacity	139 ml	4.7 oz
R-134a		
Refrigerant Charge	0.75 kg	1.65 lb

[1]Abrupt refrigerant loss due to a large leak, hose rupture, collision, or pressure relief valve opening. Conditions that allow the refrigerant to seep or bleed off over time do not cause this oil loss. Upon replacement of a component that caused a large refrigerant loss, also add the required amount of oil for the particular component.

[2]If more than the specified amount of POE oil was drained from a component, add the equal amount of oil drained.

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Refrigerant System Capacities (Without HP5)

Refrigerant System Capacities

Application	Specification	
	Metric	English
PAG Oil Saturn P/N 22695048		
Abrupt Refrigerant Loss	74 ml[1]	2.5 oz[1]
Compressor Replacement		
- The Visteon model FS18 service compressor is precharged with the specified amount of PAG oil. - LE5/LZ4/LY7	74 ml[1]	2.5 oz[1]
- The Delphi model 7CVC service compressor is precharged with the specified amount of PAG oil. - LAT	74 ml[2]	2.5 oz[2]
Condenser Replacement - LE5/LZ4/LY7	30 ml[2]	1 oz[2]
Condenser Replacement - LAT	15 ml[2]	0.5 oz[2]
Evaporator Replacement - LE5/LZ4/LY7	30 ml[2]	1 oz[2]
Evaporator Replacement - LAT	15 ml[2]	0.5 oz[2]
Thermal Expansion Valve Replacement - LE5/LZ4/LY7	20 ml[2]	0.75 oz[2]
Thermal Expansion Valve Replacement - LAT	7.5 ml[2]	0.25 oz[2]
Total System PAG Oil Capacity	150 ml	5.00 oz
R-134a		
- Refrigerant Charge	0.57 kg	1.26 lb

[1]Abrupt refrigerant loss due to a large leak, hose rupture, collision, or pressure relief valve opening. Conditions that allow the refrigerant to seep or bleed off over time do not cause this oil loss. Upon replacement of a component that caused a large refrigerant loss, also add the required amount of oil for the particular component.

[2]If more than the specified amount of PAG oil was drained from a component, add the equal amount of oil drained.

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Odor Correction (With HP5)

Eliminating Air Conditioning Odor

Odors may be emitted from the air conditioning system primarily at start up in hot, humid climates. The following conditions may cause the odor:

- Debris is present in the HVAC module.
- Microbial growth on the evaporator core

When the blower motor fan is turned on, the microbial growth may release an unpleasant musty odor into the passenger compartment. To remove odors of this type, the microbial growth must be eliminated. Perform the following procedure:

Deodorize the evaporator core using Deodorizing Aerosol Kit.

Perform the following steps in order to deodorize the A/C system:

1. Ensure that the plenum which draws outside air into the HVAC module is clear of debris.
2. Disable the A/C compressor operation by disconnecting the compressor electrical connector. This connector is located on the top side of the compressor.
3. Dry the evaporator core by performing the following steps:
   3.1. Start the engine.
   3.2. Select the warmest temperature setting.
   3.3. Select the recirculation mode.
   3.4. Run the blower motor on high for 10 minutes.
4. Locate an area in the HVAC module case between the blower motor and the evaporator core downstream of the blower motor.
5. Drill a 3.175 mm (0.125 in) hole where the hole will not interfere with or damage the following components:
   - The blower motor
   - The evaporator core
   - Any other operating part the of system
6. Wear safety goggles and latex gloves in order to perform the following actions:
   6.1. Select the maximum blower speed.
   6.2. Insert the deodorizer extension tube into the hole to the mark on the extension tube.
   6.3. Use short spray bursts and vary the direction of spray for a 2-3 minute period of time.
7. Shut the engine OFF. Allow the vehicle to sit for 3-5 minutes.
8. Seal the 3.175 mm (0.125 in) hole with body sealer or RTV gasket compound.
9. Start the engine.
10. Operate the blower motor on high for 15-20 minutes to dry.
11. Reconnect the A/C compressor electrical connector.
12. Verify proper clutch operation.

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Refrigerant Recovery and Recharging (With HP5)

Special Tools

- *J 43600* ACR 2000 Air Conditioning Service Center
- *J 45037* A/C Oil Injector
- *GE 48997* Hybrid A/C Oil Injector Adapter Hose

Warning: To prevent personal injury, avoid breathing A/C Refrigerant and lubricant vapor or mist. Work in a well ventilated area. To remove refrigerant from the A/C System, use service equipment designed for recovery that is certified to meet the requirements of the appropriate SAE Standards. If an accidental system discharge occurs, ventilate the work area before continuing service. Additional health and safety information may be obtained from the refrigerant, refrigerant recovery, and lubricant manufacturers.

Warning: For personal protection, goggles and lint-free gloves should be worn and a clean cloth wrapped around fittings, valves, and connections when doing work that includes opening the refrigerant system. If refrigerant comes in contact with any part of the body severe frostbite and personal injury can result. The exposed area should be flushed immediately with cold water and prompt medical help should be obtained.

Caution: R-134a is the only approved refrigerant for use in this vehicle. The use of any other refrigerant may result in poor system performance or component failure.

Caution: To avoid system damage use only R-134a dedicated tools when servicing the A/C system.

Caution: Use only polyolester refrigerant oil (POE) for internal circulation through the R1344a A/C system and only use 525 viscosity mineral oil on fitting threads and O-rings. If lubricants other than those specified are used compressor failure and/or fitting seizure may result.

Caution: R-12 refrigerant and R-134a refrigerant must never be mixed, even in the smallest of amounts, as they are incompatible with each other. If the refrigerants are mixed, compressor failure is likely to occur. Refer to the manufacturer instructions included with the service equipment before servicing.

The *J 43600* ACR 2000 is a complete air conditioning service center for R-134a. The ACR 2000 recovers, recycles, evacuates and recharges A/C refrigerant quickly, accurately and automatically. The unit has a display screen that contains the function controls and displays prompts that will lead the technician through the recover, recycle, evacuate and recharge operations. R-134a is recovered into and charged out of an internal storage vessel. The ACR 2000 automatically replenishes this vessel from an external source tank in order to maintain a constant 5.45-6.82 kg (12-15 lbs) of A/C refrigerant.

The ACR 2000 has a built in A/C refrigerant identifier that will test for contamination, prior to recovery and will notify the technician if there are foreign gases present in the A/C system. If foreign gases are present, the ACR 2000 will not recover the refrigerant from the A/C system.

The ACR 2000 also features automatic air purge, single pass recycling and an automatic oil drain.

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Capacities for the correct amount.

A/C Refrigerant System Oil Charge Replenishing

If oil was removed from the A/C system during the recovery process or due to component replacement, the oil must be replenished. POE refrigerant oil can be injected into a charged A/C system using *J 45037* injector along with *GE 48997* adapter . For the proper quantities of oil to add to the A/C refrigerant system, refer to Refrigerant System Capacities.

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Refrigerant Recovery and Recharging (Without HP5)

Special Tools

- *J 43600* ACR 2000 Air Conditioning Service Center
- *J 45037* A/C Oil Injector

Warning: To prevent personal injury, avoid breathing A/C Refrigerant and lubricant vapor or mist. Work in a well ventilated area. To remove refrigerant from the A/C System, use service equipment designed for recovery that is certified to meet the requirements of the appropriate SAE Standards. If an accidental system discharge occurs, ventilate the work area before continuing service. Additional health and safety information may be obtained from the refrigerant, refrigerant recovery, and lubricant manufacturers.

Warning: For personal protection, goggles and lint-free gloves should be worn and a clean cloth wrapped around fittings, valves, and connections when doing work that includes opening the refrigerant system. If refrigerant comes in contact with any part of the body severe frostbite and personal injury can result. The exposed area should be flushed immediately with cold water and prompt medical help should be obtained.

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The ACR 2000 also features automatic air purge, single pass recycling and an automatic oil drain.

Refer to the *J 43600* ACR 2[redacted] instruction. Always

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A/C Refrigerant System Oil Charge Replenishing

If oil was removed from the A/C system during the recovery process or due to component replacement, the oil must be replenished. Oil can be injected into a charged A/C system using *J 45037* injector . For the proper quantities of oil to add to the A/C refrigerant system, refer to Refrigerant System Capacities.

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Flushing (Non-HP5)

Tools Required

- J 43600 ACR 2000 Air Conditioning Service Center
- J 45268 Flush Adapter Kit
- J 41447 R134A A/C Tracer Dye - Box of 24
- J 42220 Universal 12V Leak Detection Lamp

Note: Flushing with the ACR 2000 is not intended to remove metal from the A/C system.

Flushing is intended to remove the following:

- Contaminated polyalkylene glycol (PAG) oil
- Desiccant, following a desiccant bag failure
- Overcharge of PAG oil
- Refrigerant contamination

Note: Warmer engine or ambient temperature decreases the refrigerant recovery time during the A/C flush procedure.

1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging.
2. Remove the thermal expansion valve (TXV). Refer to Air Conditioning Evaporator Thermal Expansion Valve Replacement.
3. Install the stud for the J 45268 kit onto the J 45268-115.
4. Install the J 45268-115 in place of the TXV.

   Caution: Refer to Fastener Caution in the Preface section.

5. Install the TXV mounting bolts and tighten to **7 N·m (62 lb in)**.
6. Connect the evaporator line to the J 45268-115.
7. Install the TXV block fitting nut and tighten to **27 N·m (20 lb ft)**.
8. Remove the A/C compressor. Refer to Air Conditioning Compressor Replacement.
9. Install J 45268-10 to the A/C compressor hose assembly.
10. Install the nut and bolt from the J 45268 kit to the J 45268-10 and compressor hose assembly.

    Tighten the bolts to **27 N·m (20 lb ft)**.

11. Forward flow refrigerant flushing is recommended for contaminated refrigerant or PAG oil.

    Perform the following procedure:

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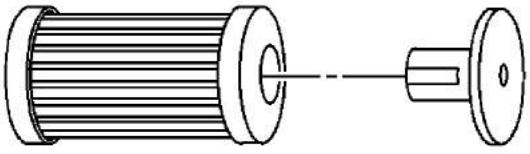

Note: The filter inside J 45268-1 is serviceable. Remove and discard the check valve from the filter.

11.1. Service the filter with ACDelco P/N GF 470, before each flush.
11.2. Install the port plugs J 45268-9 onto the J 45268-10.
11.3. Install the fitting J 45268-7 onto the J 45268-10.
11.4. Install the fitting J 45268-8 onto the J 45268-10.
11.5. Connect J 45268-1 flush filter to the suction port of J 45268-7 flush adapter.
11.6. Connect the blue hose from the J 43600 to the J 45268-1 flush filter adapter.
11.7. Connect the red hose from the J 43600 to the J 45268-8 flush adapter.

12. Reverse flow refrigerant flush is recommended for desiccant bag failure. Replace the receiver dehydrator when the A/C flush is complete and perform the following procedure:

Note: The filter inside J 45268-1 is serviceable. Remove and discard the check valve from the filter.

12.1. Service the filter with ACDelco P/N GF 470, before each flush.
12.2. Install the port plugs J 45268-9 onto the J 45268-10.
12.3. Install the fitting J 45268-7 onto the J 45268-10.
12.4. Install the fitting J 45268-8 onto the J 45268-10.
12.5. Connect J 45268-1 flush filter to the discharge port of J 45268-7 flush adapter.
12.6. Connect the blue hose from J 43600 to the J 45268-1 flush filter adapter.
12.7. Connect the red hose from J 43600 to the J 45268-8 flush adapter.

Note: Close the valve on the external refrigerant tank, before starting the flush process.

13. Flush the A/C system. Follow the instructions supplied with the J 43600 .

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16. Remove J 45268-1 from the J 45268-10.
17. Remove the J 45268-10 from the A/C compressor hose assembly.

Note: Flushing will remove all the PAG oil from the A/C system.

The A/C system must be replenished with the correct amount of PAG oil.

18. If you will reinstall the removed A/C compressor, perform the following procedure:
    18.1. Remove the A/C compressor drain plug.
    18.2. Drain the PAG oil from the A/C compressor. Rotate the compressor input shaft to assist in draining the PAG oil from the compressor.

Caution: Refer to Component Fastener Tightening Caution in the Preface section.

    18.3. Install the A/C compressor drain plug and tighten to **16 N·m (12 lb ft)**.

Note: Flushing will remove the fluorescent leak detection dye from the A/C system.

    18.4. Add one bottle of J 41447 .
    18.5. Add the total system capacity of PAG oil to the A/C compressor. Refer to Refrigerant System Capacities.
19. If you will replace the A/C compressor after flushing the system, perform the following procedure:
    19.1. Determine if the new service compressor is shipped with PAG oil. Refer to the Refrigerant System Capacities.
    19.2. If the service compressor is shipped with PAG oil, DO NOT drain the new PAG oil from the compressor.
    19.3. Deduct the amount of PAG oil shipped with the service compressor from the amount of PAG oil listed in the capacities table. Refer to Refrigerant System Capacities.
    19.4. Add the calculated amount to the compressor, as needed.

Note: Flushing will remove the fluorescent leak detection dye from the A/C system.

    19.5. Add one bottle of J 41447 .
20. Install the A/C compressor. Refer to Air Conditioning Compressor Replacement.
21. Remove J 45268-115.
22. Inspect the TXV for debris. Clean or replace as needed.
23. Install the TXV. Refer to Air Conditioning Evaporator Thermal Expansion Valve Replacement.
24. Evacuate and recharge the A/C system. Refer to Refrigerant Recovery and Recharging.
25. Leak test the fittings using J 42220 .

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Air Conditioning Compressor Oil Balancing (With HP5)

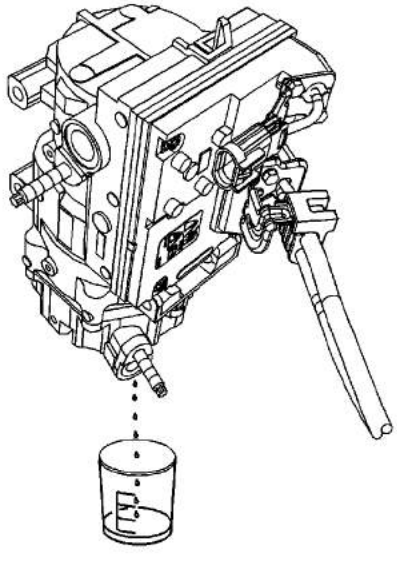
Special Tools

- *J 45037* A/C Oil Injector
- *GE 48997* Hybrid A/C Oil Injector Adaptor Hose

Draining Procedure

Note: Drain and measure as much of the refrigerant oil as possible from the removed compressor.

1. Drain the oil from both the suction and discharge ports of the removed compressor into a clean, graduated container.



2. Measure and record the amount of oil drained from the removed compressor. This measurement will be used during installation of the replacement compressor.

   30ml (1oz) of POE refrigerant oil will remain in the compressor after draining. This amount should be considered when calculating the amount of oil needed to replenish the system.

   Note: During the oil removal procedure, the condition of the oil should be evaluated. Compressor oil never breaks down unless something is wrong with the compressor or air conditioning (A/C) system. If one or more of the following conditions exist, replace the compressor and receiver dehydrator.

3. Inspect oil drained from removed compressor. Refer to Air Conditioning Compressor Oil Diagnosis
4. Properly discard the used refrigerant oil.

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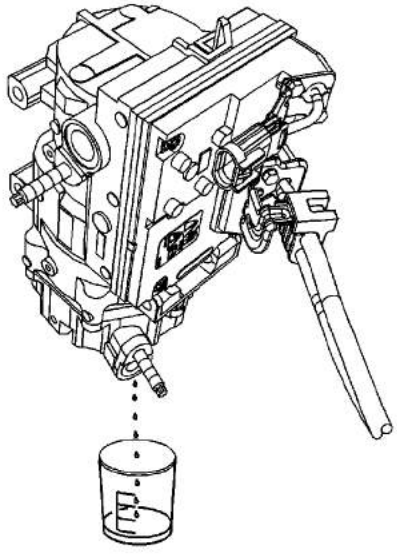
Note: The refrigerant oil in the A/C system must be balanced during compressor replacement.

1. The replacement compressor is shipped with 74 ml (2.5 oz) of refrigerant oil.



2. Before installing the compressor, calculate the total amount of oil drained from the compressor and collected by the recovery equipment.
3. If the amount drained and recorded is:
   - LESS THAN 74ml (2.5 ounces), leave 74ml (2.5 ounces) in the replacement compressor. Do not drain the oil from the replacement compressor.
   - MORE THAN 74ml (2.5 ounces), calculate the difference between the amount that was drained and recorded. ADD the calculated difference to the A/C system using *J 45037* injector along with *GE 48997* adapter .

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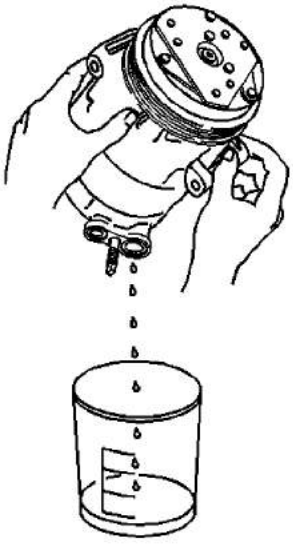
Air Conditioning Compressor Oil Balancing (Without HP5)

Draining Procedure

Note: Drain and measure as much of the refrigerant oil as possible from the removed compressor.

1. Drain the oil from both the suction and discharge ports of the removed compressor into a clean, graduated container.

   Rotate the compressor shaft to assist in draining the compressor.



2. Measure and record the amount of oil drained from the removed compressor.

   This measurement will be used during installation of the replacement compressor.

   Note: During the oil removal procedure, the condition of the oil should be evaluated. Compressor oil never breaks down unless something is wrong with the compressor or air conditioning (A/C) system. If one or more of the following conditions exist, replace the compressor and receiver dehydrator.

3. Inspect oil drained from removed compressor. Refer to Air Conditioning Compressor Oil Diagnosis
4. Properly discard the used refrigerant oil.

Balancing Procedure

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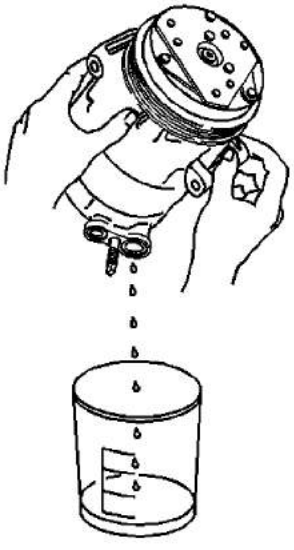
1. The replacement compressor is shipped with 74 ml (2.5 oz) of refrigerant oil.



2. Before installing the compressor, the refrigerant oil may have to be partially drained:
   2.1. Refer to the amount of refrigerant oil recorded during the compressor removal.
   2.2. Subtract the amount recorded from the total system capacity. Refer to Refrigerant System Capacities. The difference between the total system capacity and the recorded amount is the calculated amount to be drained from the replacement compressor.
3. Drain the calculated amount of refrigerant oil from the replacement compressor.

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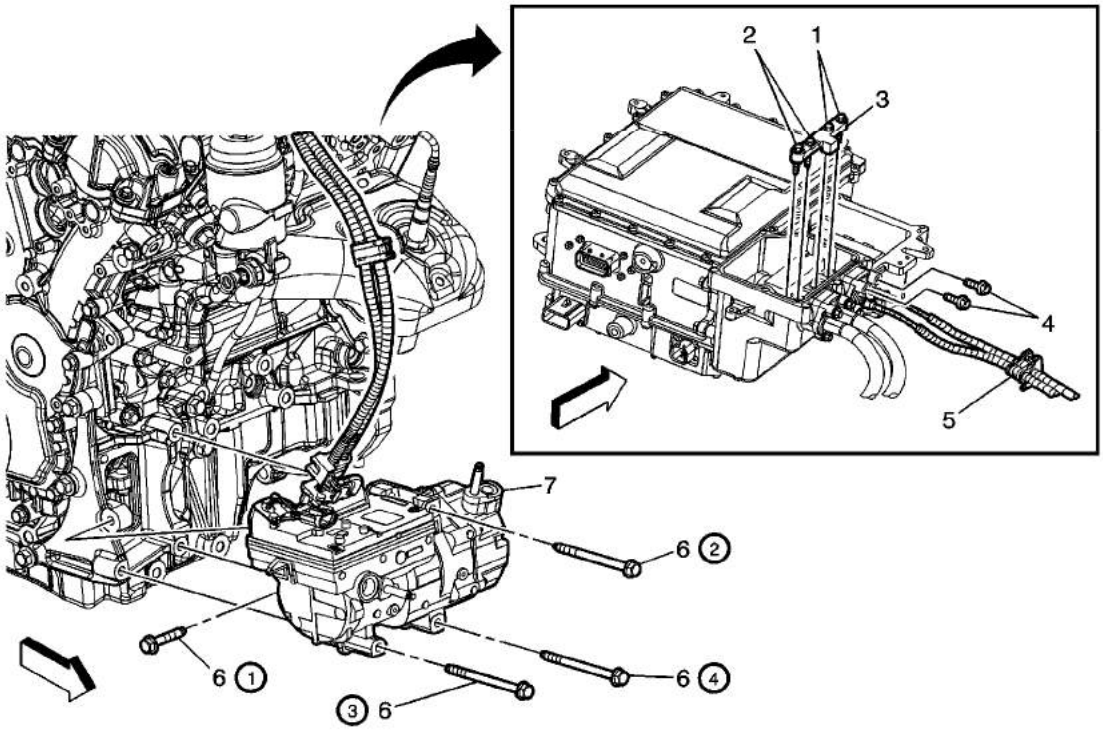
Air Conditioning Compressor Replacement (HP5)



Callout	Component Name

Danger: Always perform the High Voltage Disabling procedure prior to servicing any High Voltage component or connection. Personal Protection Equipment (PPE) and proper procedures must be followed.

The High Voltage Disabling procedure will perform the following tasks:

- Identify how to disable high voltage.
- Identify how to test for the presence of high voltage.
- Identify condition under which high voltage is always present and personal protection equipment (PPE) and proper procedures must be followed.

Failure to follow the procedures exactly as written may result in serious injury or death.

Preliminary Procedures

1. Disable hybrid high voltage system. Refer to High Voltage Disabling and High Voltage Enabling.
2. Remove the fuel injector sight shield. Refer to Fuel Injector Sight Shield Replacement.
3. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging.
4. Raise and support th[redacted]icle.

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6. Remove the discharge hose from the A/C compressor. Refer to Discharge Hose Replacement.

Note: Ensure to cap all HVAC line connections immediately after removal to avoid contamination. Refer to Handling of Refrigerant Lines and Fittings.

7. Remove the generator control module cover to access the A/C compressor cable connector bolts.
8. Remove A/C compressor bracket. Refer to Air Conditioning Compressor Bracket Replacement.

1	A/C Compressor Cable Bolt (Qty: 2) **Caution:** High Voltage (HV) cables should never be removed from the mounting block. Removal of the individual HV cable from the mounting block may result in HV cable and/or component damage from improper: • Cable sealing • Electrical shielding • Terminal position assurance **Notice:** Refer to Fastener Caution in the Preface section. **Tighten** 9 N·m (80 lb in)
2	Battery Positive and Negative Cable Mounting Bolt (Qty: 2) **Tighten** 9 N·m (80 lb in)
3	Battery Cable and A/C Compressor Cable Guide Assembly
4	A/C Compressor Cable Bolt (Qty: 2) **Tighten** 9 N·m (80 lb in)
5	A/C Compressor Cable **Procedure** 1. Pull A/C Compressor Cable straight outward from module and discard seal. 2. Remove any fasteners from A/C Compressor Cable brackets.
6	A/C Compressor Bolt (Qty: 4) **Tighten** 50 N·m (37 lb ft) **Procedure** 1. Relocate and support the A/C compressor forward while removing the A/C compressor bracket.

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	A/C Compressor **Procedure**
7	1. Disconnect three wire low voltage electrical connector from compressor. 2. The A/C Compressor Cable is part of the compressor and is serviced as an assembly. 3. Insert bottom compressor bolts into compressor before installing compressor to vehicle.

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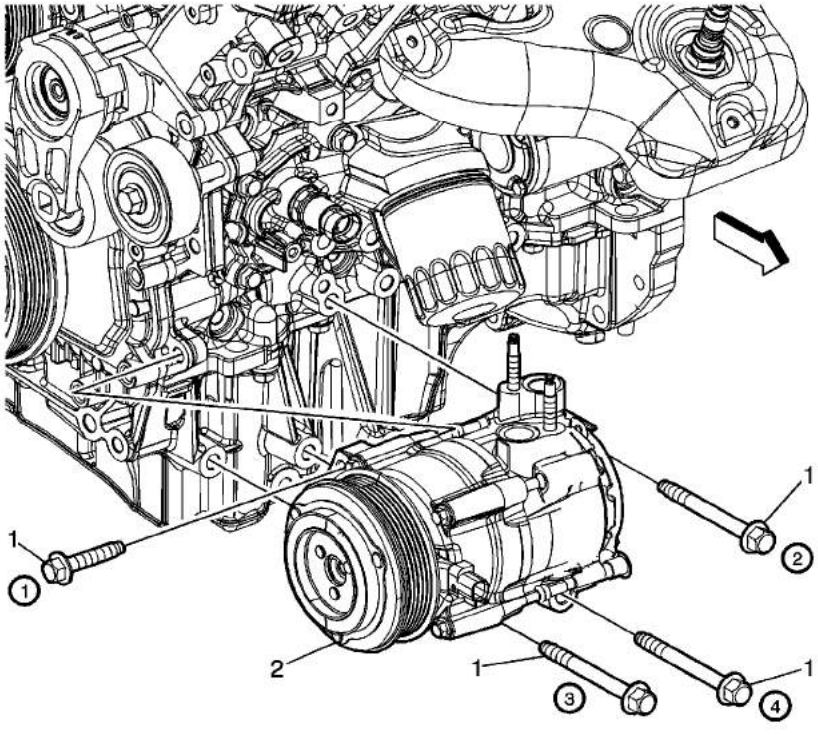
Air Conditioning Compressor Replacement (LY7)



Callout	Component Name
	Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Remove the drive belt. Refer to Drive Belt Replacement. 3. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 4. Disconnect the A/C compressor electrical connector. 5. Remove compressor hose assembly. Refer to Air Conditioning Compressor Hose Replacement.
1	A/C Compressor Bolt (Qty: 4) **Caution:** Refer to Fastener Caution in the Preface section. **TIP:** • Tighten the A/C compressor mounting bolts in sequence shown in graphic. • Reposition the CRFM if necessary. **Tighten** 22 N·m (16 lb ft) [redacted]

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2	**Procedure** 1. Use a low viscosity, poly-alkylene glycol (PAG) oil. Use of the incorrect oil can result in compressor failure. 2. When replacing the A/C compressor, balance the compressor oil. Refer to Air Conditioning Compressor Oil Balancing. 3. Using J 39400 leak test A/C compressor fittings. **Special Tools** J 39400 Electronic Halogen Leak Detector

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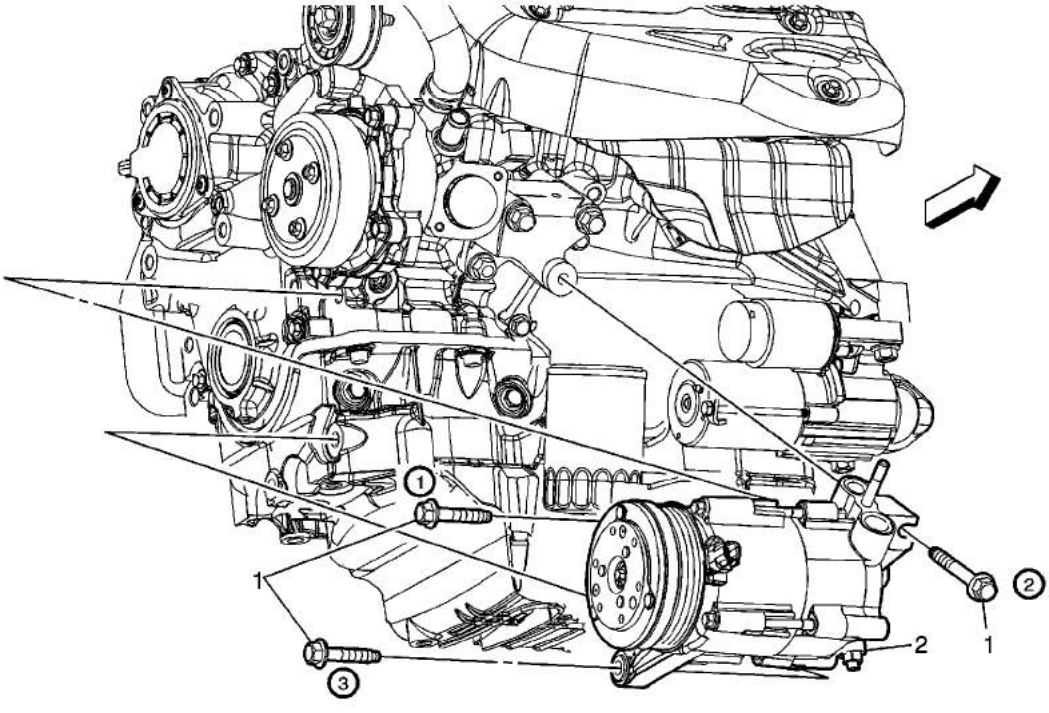
Air Conditioning Compressor Replacement (LZ4)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Remove the drive belt. Refer to Drive Belt Replacement. 3. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 4. Disconnect the A/C compressor electrical connector. 5. Remove the compressor hose assembly. Refer to Air Conditioning Compressor Hose Replacement.	
1	A/C Compressor Bolt (Qty: 3) **Caution:** Refer to Fastener Caution in the Preface section. **Procedure** 1. Tighten the A/C compressor mounting bolts in sequence shown in graphic. 2. Reposition the CRFM if necessary. **Tighten** 50 N·m (37 lb ft)
[redacted]	

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2	## Procedure 1. When replacing the A/C compressor, balance the compressor oil. Refer to Air Conditioning Compressor Oil Balancing. 2. Using the J 39400 leak test the A/C compressor fittings. **Tip** Use a low viscosity, poly-alkylene glycol (PAG) oil. Use of the incorrect oil can result in compressor failure. ## Special Tools J 39400 Electronic Halogen Leak Detector

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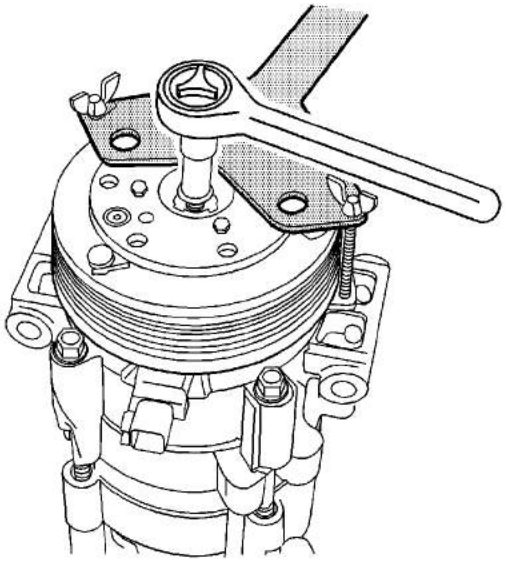
Compressor Clutch Assembly Replacement

Special Tools

- J 25031-A Three Jaw Puller
- J 39400-A Halogen Leak Detector
- SA9149AC-8 Snap Ring Pliers
- SA9510AC Clutch Drive Plate Holder

Removal Procedure

1. Remove the compressor. Refer to Air Conditioning Compressor Replacement.



2. Use SA9510AC to hold the disk and hub assembly. Remove the clutch bolt and drive plate assembly.

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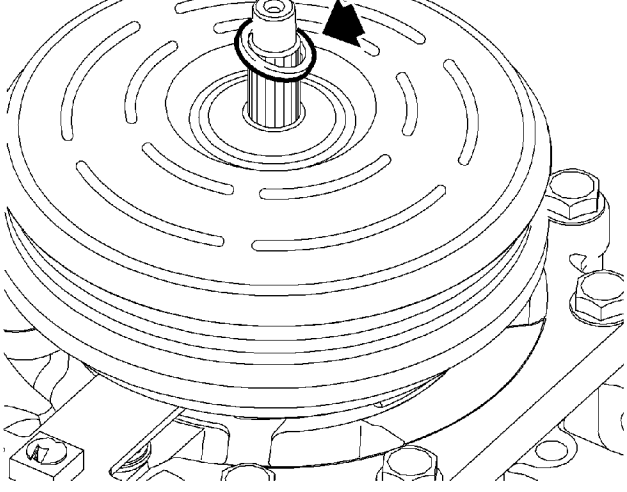
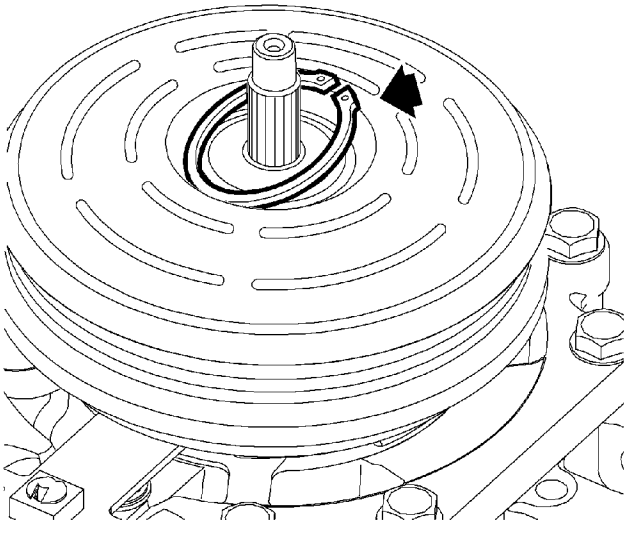


3. Remove the shim(s).



4. Use SA9149AC-8 to remove the pulley snap ring.

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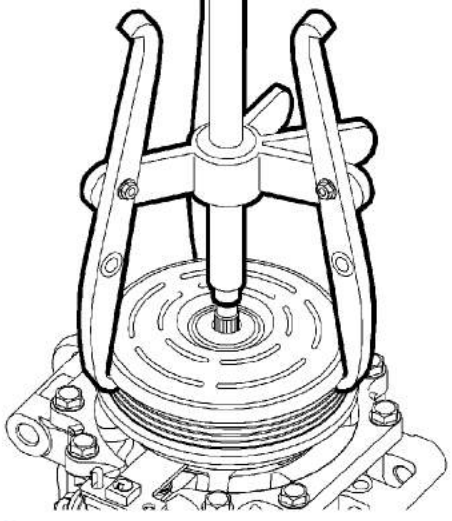
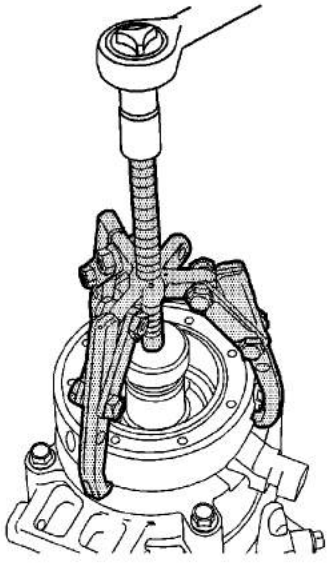


5. Grasp the air conditioning (A/C) clutch pulley and bearing assembly and remove from compressor.



6. Use J 25031-A to remove the field coil.

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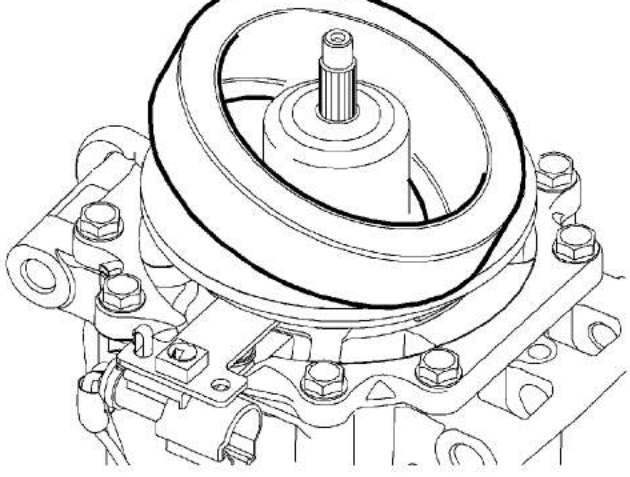
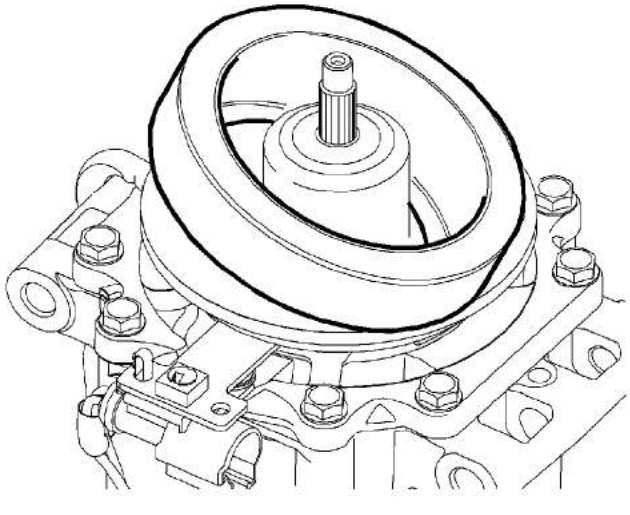


7. Remove the A/C clutch field coil.

Installation Procedure

1. Clean the mounting surfaces on the A/C clutch field coil and pulley.



2. Install the A/C clutch field coil.

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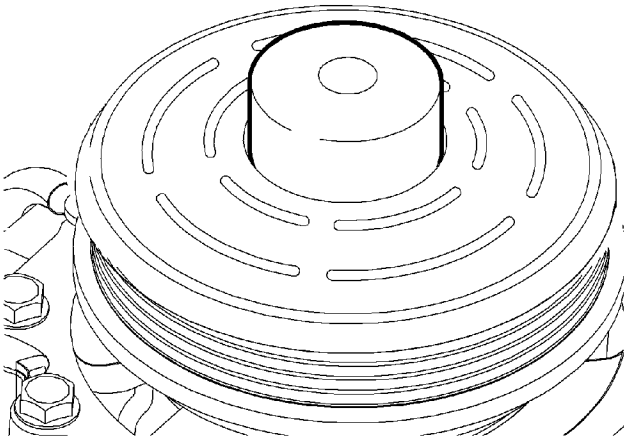
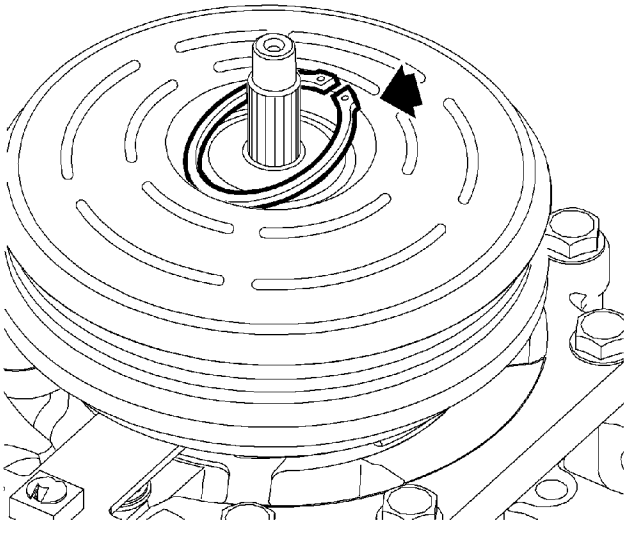


3. The A/C clutch bearing and pulley is a slip fit on the compressor. If correctly aligned the pulley should slip on easily.



4. Use SA9149AC-8 to install the pulley snap ring with the bevel side out.

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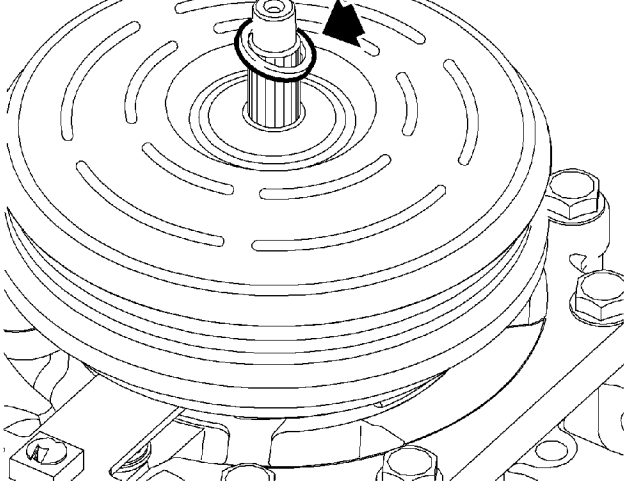
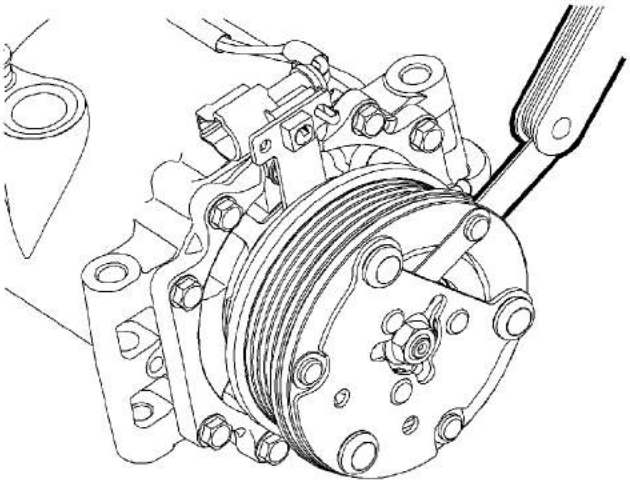


5. Install the shim(s).
6. Install the drive plate and bolt.



7. Using a feeler gage, measure the clearance between the pulley and the drive plate.

   Measure
   The clearance should be 0.35-0.65 mm (0.014-0.025 in).

8. If necessary, adjust the clearance by adding or removing clutch hub shim(s).

   Caution: Refer to Fastener Caution in the Preface section.

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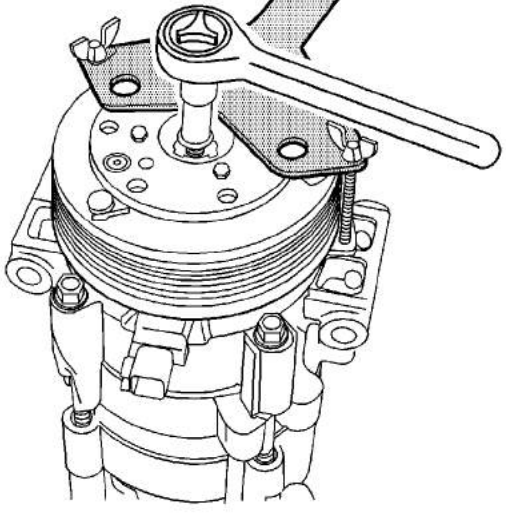

9. Once the correct air gap is obtained, install a new clutch bolt. Use SA9510AC to hold the disk and hub assembly while tightening.

   Tighten the nut to **12 N·m (106 lb in)**.

10. Install the compressor. Refer to Air Conditioning Compressor Replacement.
11. Evacuate and charge the A/C system. Refer to Refrigerant Recovery and Recharging.
12. Test the affected A/C joints for leaks using J 39400-A .

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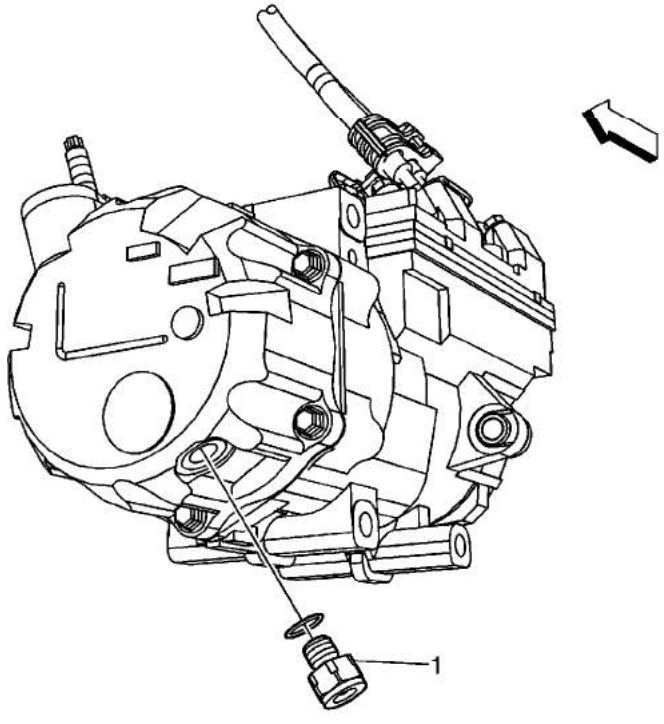
Compressor Pressure Relief Valve Replacement



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Raise and support vehicle. Refer to Lifting and Jacking the Vehicle.	
1	Compressor Pressure Relief Valve **Notice:** Refer to Fastener Caution in the Preface section. **Tighten** 8 N·m (70 lb in) **Tip** Leak test the fittings of the components using J 39400-A .

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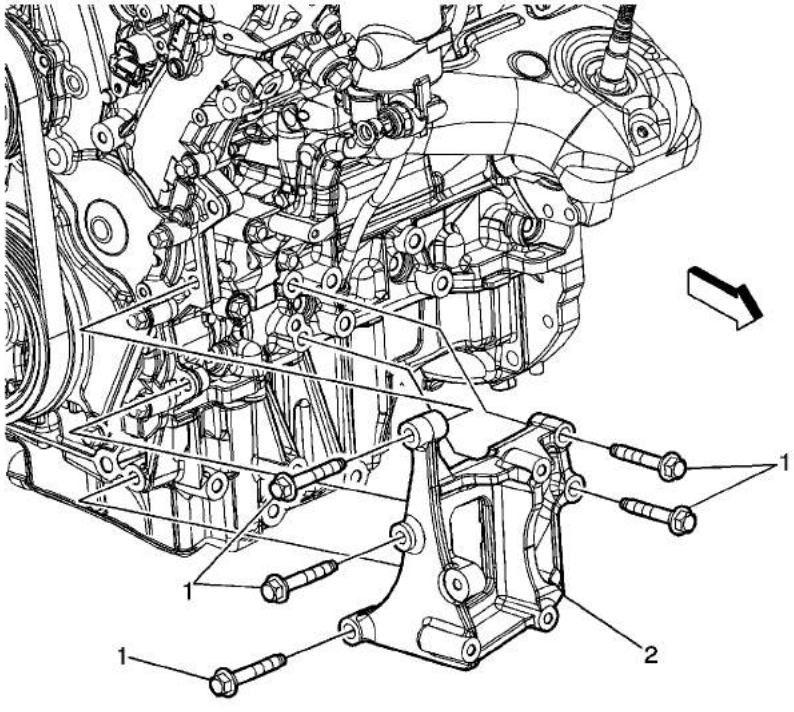
Air Conditioning Compressor Bracket Replacement



Callout	Component Name
Preliminary Procedure 1. Raise and support vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the A/C Compressor from the A/C Compressor Bracket. Refer to Air Conditioning Compressor Replacement **Note:** If only servicing the A/C compressor bracket, remove the A/C compressor bolts without removing any A/C lines or wiring. Reposition and support the A/C compressor forward while removing the bracket.	
1	A/C Compressor Bracket Bolt (Qty 5) **Notice:** Refer to Fastener Caution in the Preface section. **Tighten** 50 N·m (37 ft in)
2	A/C Compressor Bracket **Procedur** [redacted]

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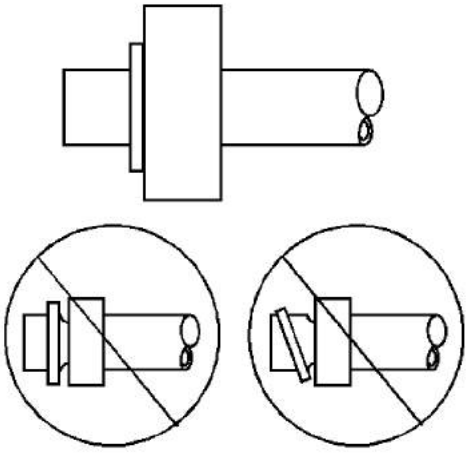
Sealing Washer Replacement

Removal Procedure



1. Remove the seal washer from the A/C refrigerant component.

   Important: Cap or tape the open A/C refrigerant components immediately to prevent system contamination.

2. Inspect the seal washer for signs of damage to help determine the root cause of the failure.
3. Inspect the A/C refrigerant components for damage or burrs. Repair if necessary.

   Important: DO NOT reuse sealing washer.

4. Discard the sealing washer.

Installation Procedure

Important: Flat washer type seals do not require lubrication.

1. Inspect the new seal washer for any signs of cracks, cuts, or damage.

   Do not use a damaged seal washer.

2. Remove the cap or tape from the A/C refrigerant components.

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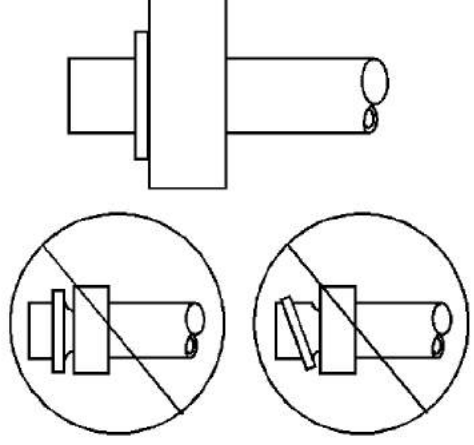

3. Using a lint-free clean, dry cloth, clean the sealing surfaces of the A/C refrigerant components.
4. Carefully install the new seal washer onto the A/C refrigerant component.

   The washer must completely bottom against the surface of the fitting.

   Important: After tightening the A/C components, there should be a slight sealing washer gap of approximately 1.2 mm (3/64 in) between the A/C line and the A/C component.

5. Assemble the remaining A/C refrigerant components. Refer to the appropriate repair procedure.

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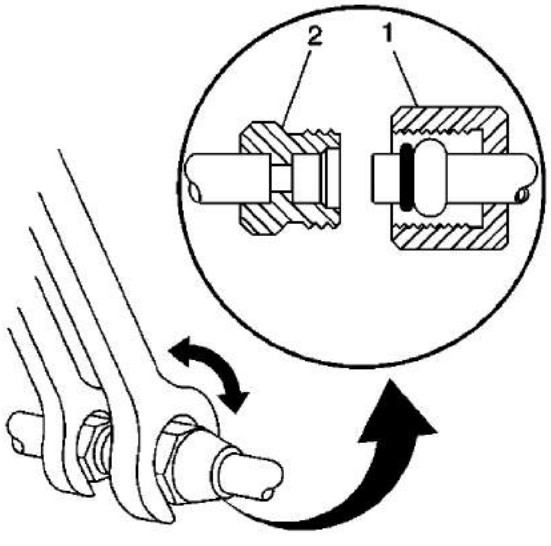
O-Ring Replacement

Removal Procedure



1. Disassemble the A/C refrigerant components. Refer to the appropriate repair procedure
   - For compression style fittings use a back up wrench on the fitting (2) and loosen the fitting nut (1).
   - For banjo style fittings remove the bolt retaining the banjo type fitting.
2. Remove the O-ring seal from the A/C refrigerant component.
3. Inspect the O-ring seal for signs of damage to help determine the root cause of the failure.
4. Inspect the A/C refrigerant components for damage or burrs. Repair if necessary.

Important: Cap or tape the open A/C refrigerant components immediately to prevent system contamination.

5. Cap or tape the A/C refrigerant components.
6. Discard the O-ring seal.

Installation Procedure

1. Inspect the new O-ring seal for any sign or cracks, cuts, or damage. Replace if necessary.
2. Remove the cap or tape from the A/C refrigerant components.
3. Using a lint-free clean, dry cloth, carefully clean the sealing surfaces of the A/C refrigerant components.

Important: DO NOT allow any of the mineral base 525 viscosity refrigerant oil on the new O-ring seal to enter the refrigerant system.

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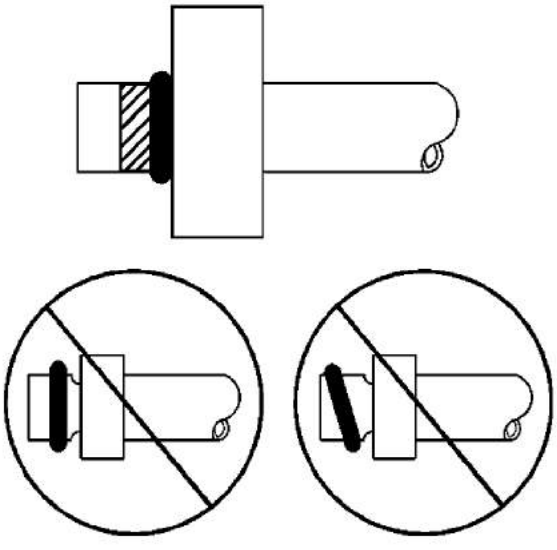
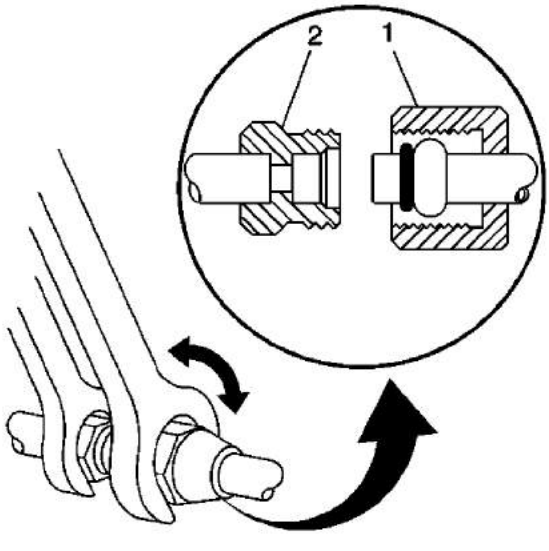
Important: DO NOT reuse O-ring seals.

5. Carefully slide the new O-ring seal onto the A/C refrigerant component.



6. The O-ring seal must be fully seated.



7. Assemble the A/C components.

   Refer to the appropriate repair procedure.

   - For compression style fittings use a back up wrench on the fitting (2) and tighten the fitting nut (1) to specification.

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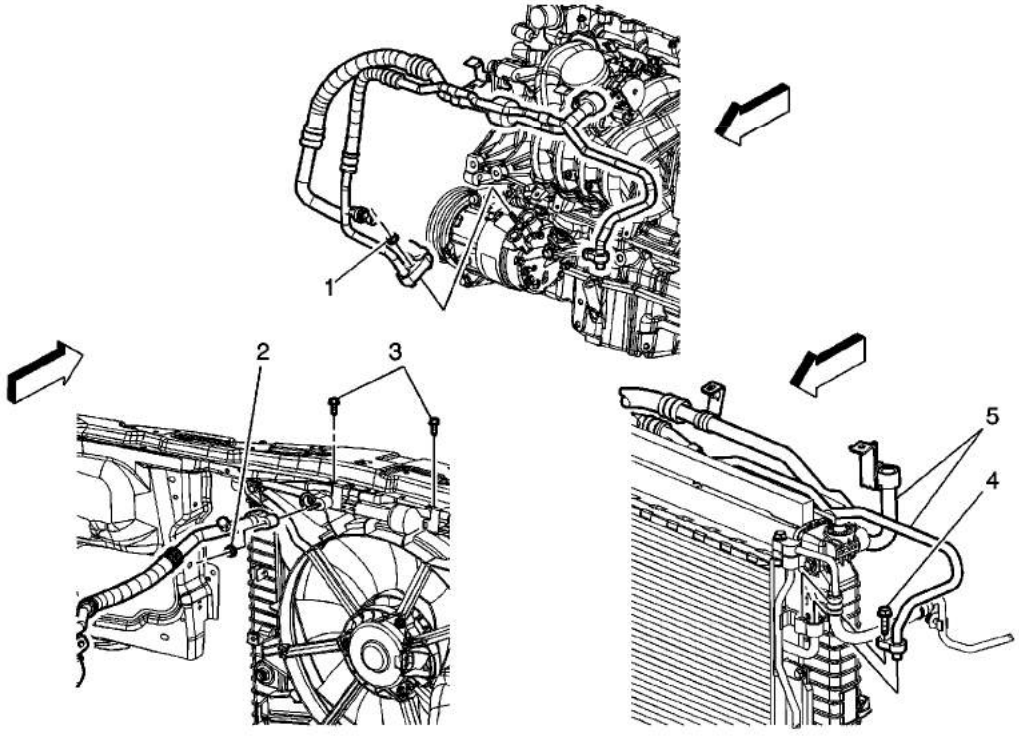
Air Conditioning Compressor Hose Replacement (LZ4)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Raise and support the vehicle as necessary. Refer to Lifting and Jacking the Vehicle. 3. Remove the radiator opening upper cover. Refer to Radiator Opening Upper Cover Replacement.	
1	A/C Compressor Hose Nut **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 27 N·m (20 lb ft)
2	A/C Compressor Hose to Evaporator Outlet Hose Nut **Tighten** 16 N·m (12 lb ft)
3	A/C Compressor Hose Mounting Bracket Bolt **Tighten**

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4	A/C Compressor Hose to Condenser Bolt **Tighten** 16 N·m (12 lb ft)
5	A/C Compressor Hose Assembly

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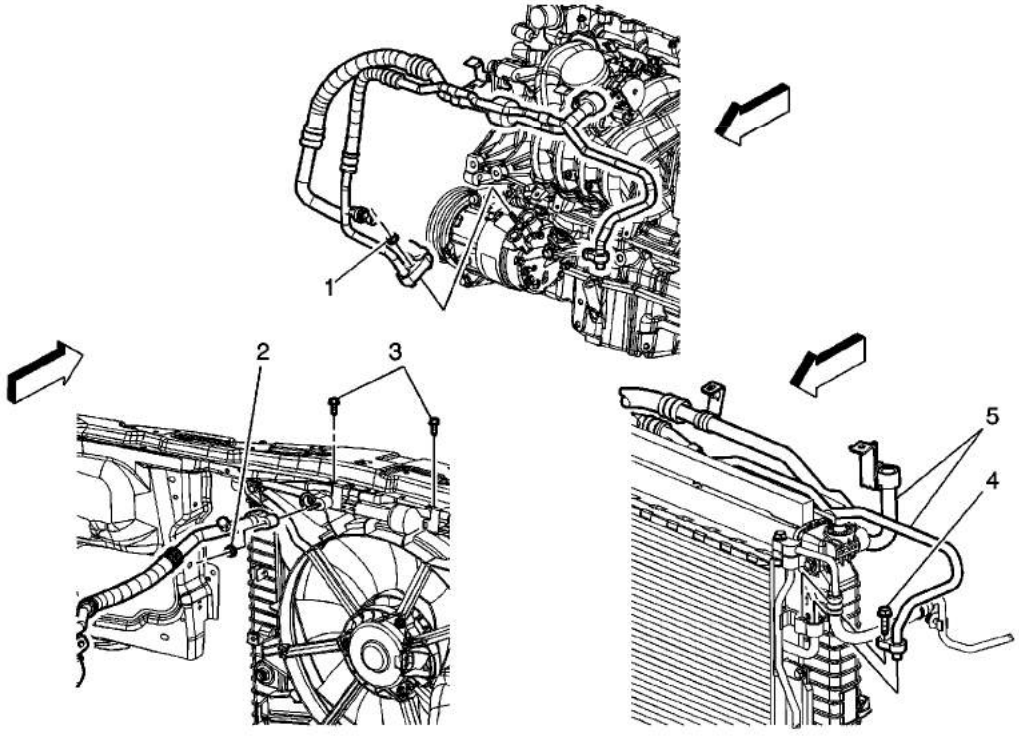
Air Conditioning Compressor Hose Replacement (LAT)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Raise and support the vehicle as necessary. Refer to Lifting and Jacking the Vehicle. 3. Remove the radiator opening upper cover. Refer to Radiator Opening Upper Cover Replacement. 4. Remove CRFM brackets. 5. Remove LH headlamp. Refer to Headlamp Replacement 6. Disconnect the liquid line from the condenser.	
1	A/C Compressor Hose Nut **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 27 N·m (20 lb ft)
2	A/C Compressor Hose to Evaporator Outlet Hose Nut **Tighten** 16 N·m (12 lb ft)
[redacted]	

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3	**Tighten** 16 N·m (12 lb ft)
4	A/C Compressor Hose to Condenser Bolt **Tighten** 16 N·m (12 lb ft)
5	A/C Compressor Hose Assembly

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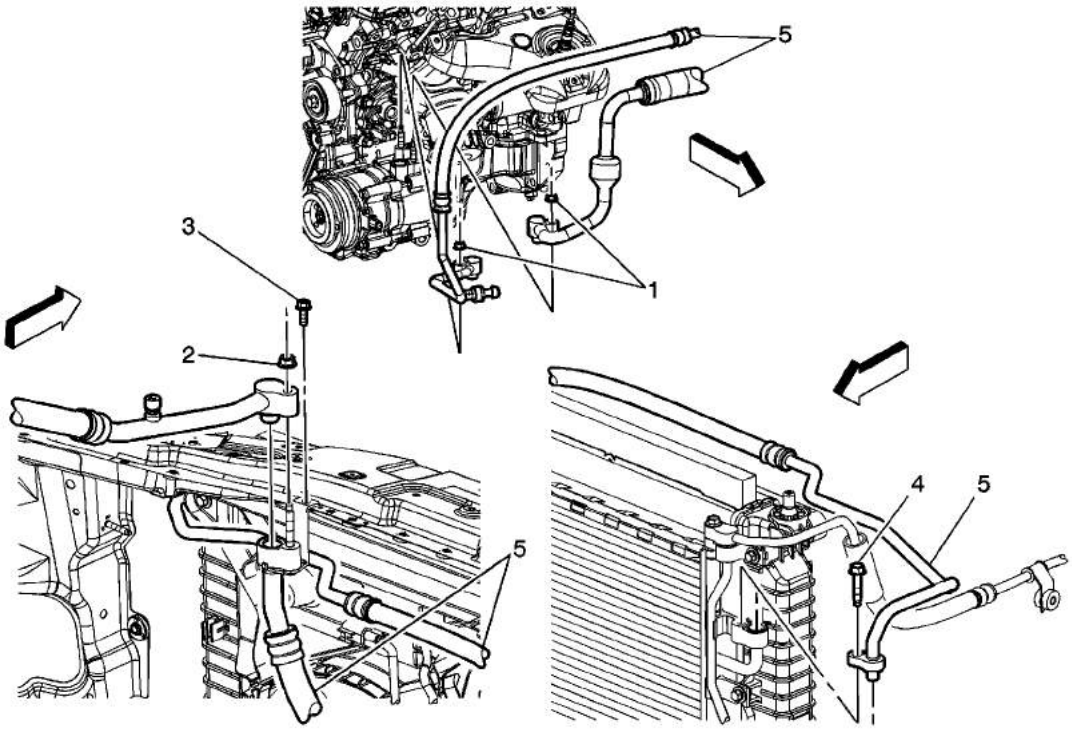
Air Conditioning Compressor Hose Replacement (LY7)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Raise and support the vehicle as necessary. Refer to Lifting and Jacking the Vehicle. 3. Remove the compressor from the engine. Refer to Air Conditioning Compressor Replacement 4. Remove the radiator opening upper cover. Refer to Radiator Opening Upper Cover Replacement.	
1	A/C Compressor Hose Nut (Qty: 2) **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 27 N·m (20 lb ft)
2	A/C Compressor Hose to Evaporator Outlet Hose Nut **Tighten** 16 N·m (12 lb ft)
	A/C Compressor Hose Mounting Bracket Bolt

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4	A/C Compressor Hose to Condenser Bolt **Tighten** 16 N·m (12 lb ft)
5	A/C Compressor Hose Assembly

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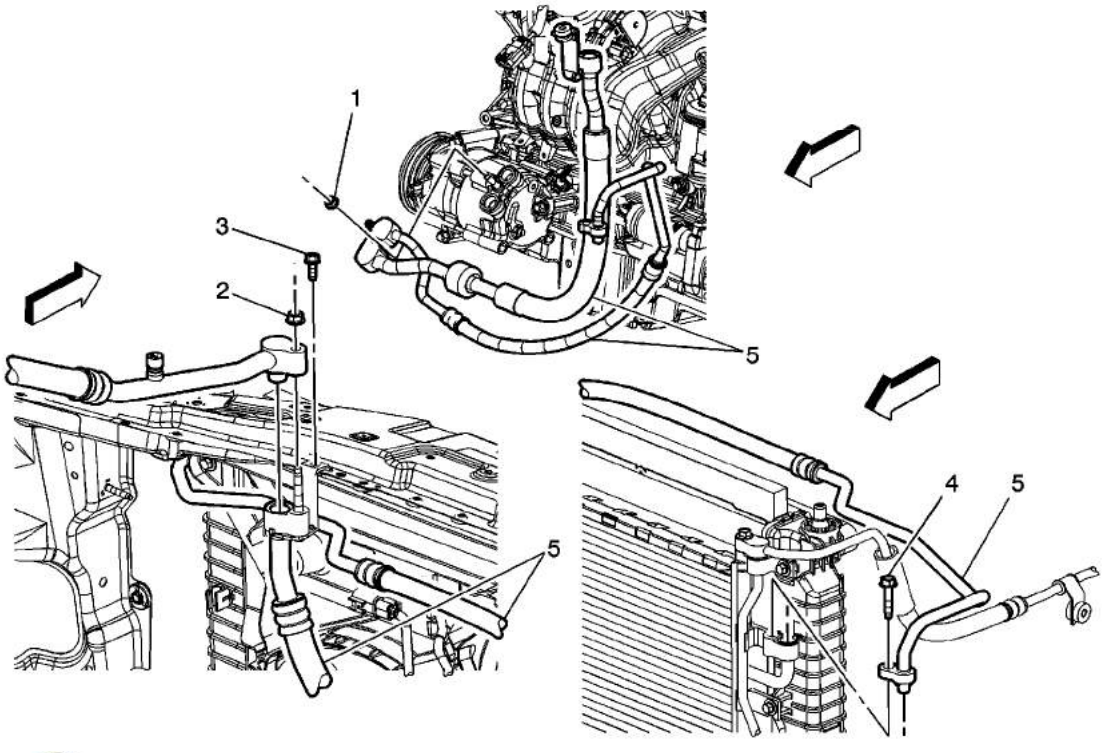
Air Conditioning Compressor Hose Replacement (LE5)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Raise and support the vehicle as necessary. Refer to Lifting and Jacking the Vehicle. 3. Remove the radiator opening upper cover. Refer to Radiator Opening Upper Cover Replacement.	
1	A/C Compressor Hose Nut **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 27 N·m (20 lb ft)
2	A/C Compressor Hose to Evaporator Outlet Hose Nut **Tighten** 16 N·m (12 lb ft)
3	A/C Compressor Hose Mounting Bracket Bolt **Tighten**

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4	A/C Compressor Hose to Condenser Bolt **Tighten** 16 N·m (12 lb ft)
5	A/C Compressor Hose Assembly

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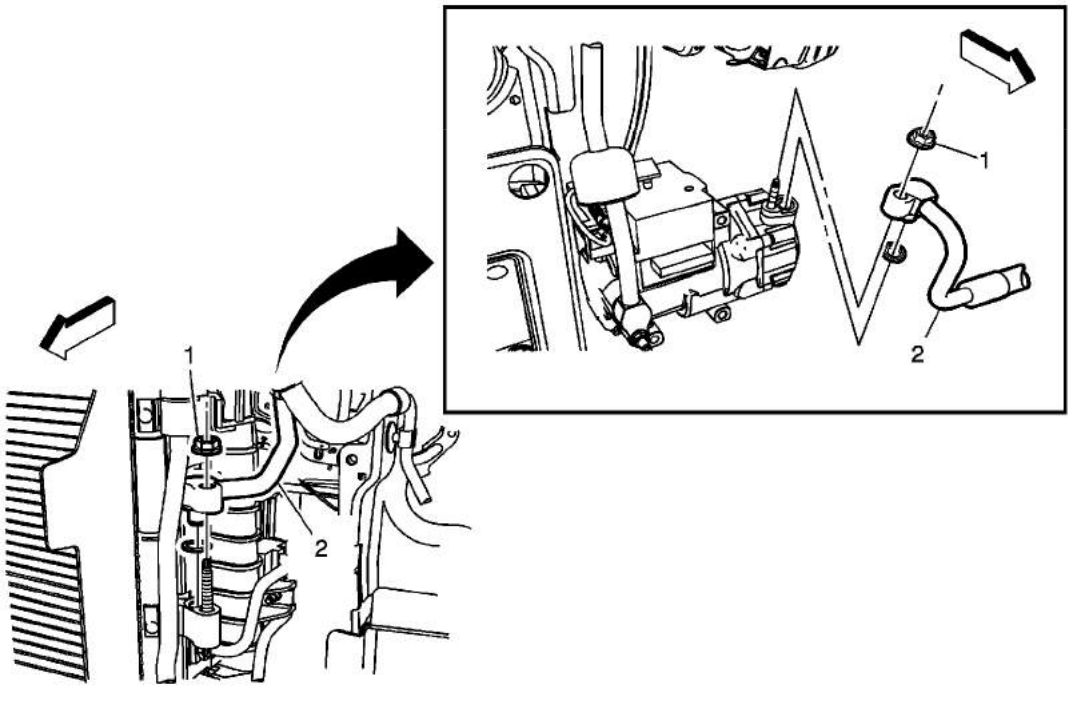
Discharge Hose Replacement (HP5)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Remove the left headlamp assembly. Refer to Headlamp Replacement. 3. Disconnect the A/C refrigerant pressure sensor. Refer to Air Conditioning (A/C) Refrigerant Pressure Sensor Replacement. 4. Raise and support the vehicle as necessary. Refer to Lifting and Jacking the Vehicle.	
1	A/C Discharge Line Fastener (Qty: 2) **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 16 N·m (12 lb ft)
2	A/C Discharge Line **Procedure** 1. Ensure to cap all HVAC line/hose connections immediately after removal to avoid contamination. Refer to Handling of Refrigerant Lines and Fittings.

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	3. Rotate the discharge line to gain clearance for removal. 4. Install new sealing washers. Refer to Sealing Washer Replacement

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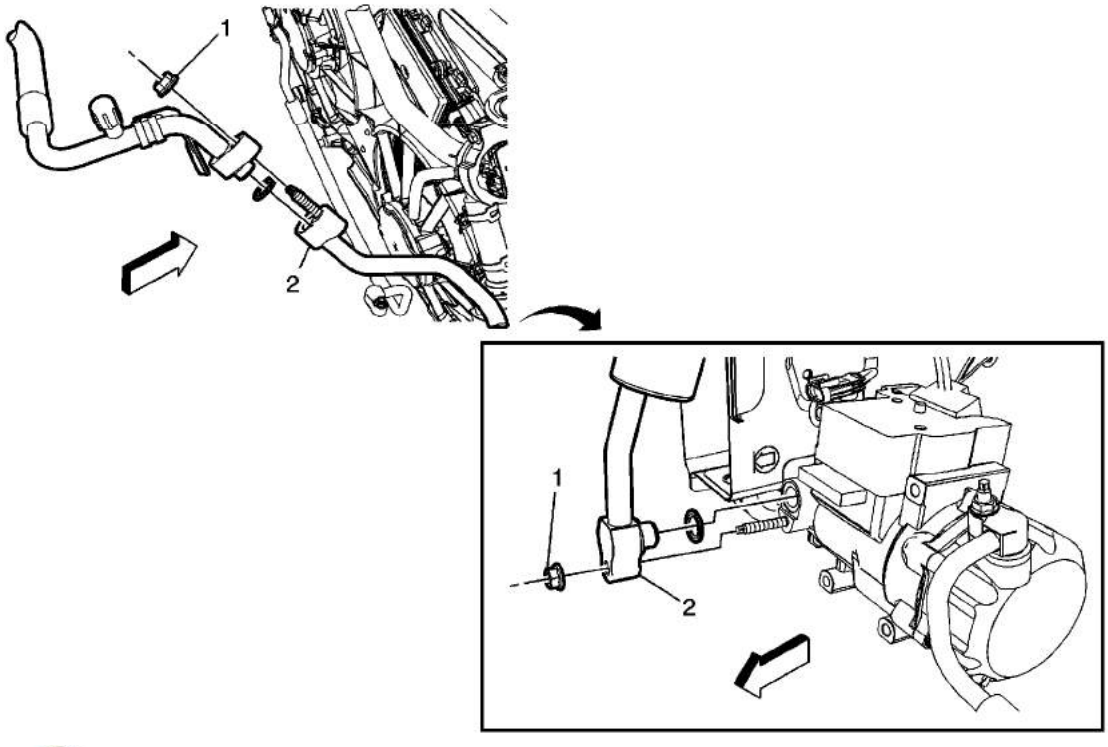
Suction Hose Replacement (HP5)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Raise and support the vehicle as necessary. Refer to Lifting and Jacking the Vehicle.	
1	A/C Suction Line Fastener (Qty: 2) **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 16 N·m (12 lb ft)
2	A/C Suction Line. **Procedure** 1. Ensure to cap all HVAC line/hose connections immediately after removal to avoid contamination. Refer to Handling of Refrigerant Lines and Fittings. 2. Relocate any wiring or fasteners as necessary. 3. Rotate the suction line to gain clearance for removal. 4. Install new sealing washers. Refer to Sealing Washer Replacement

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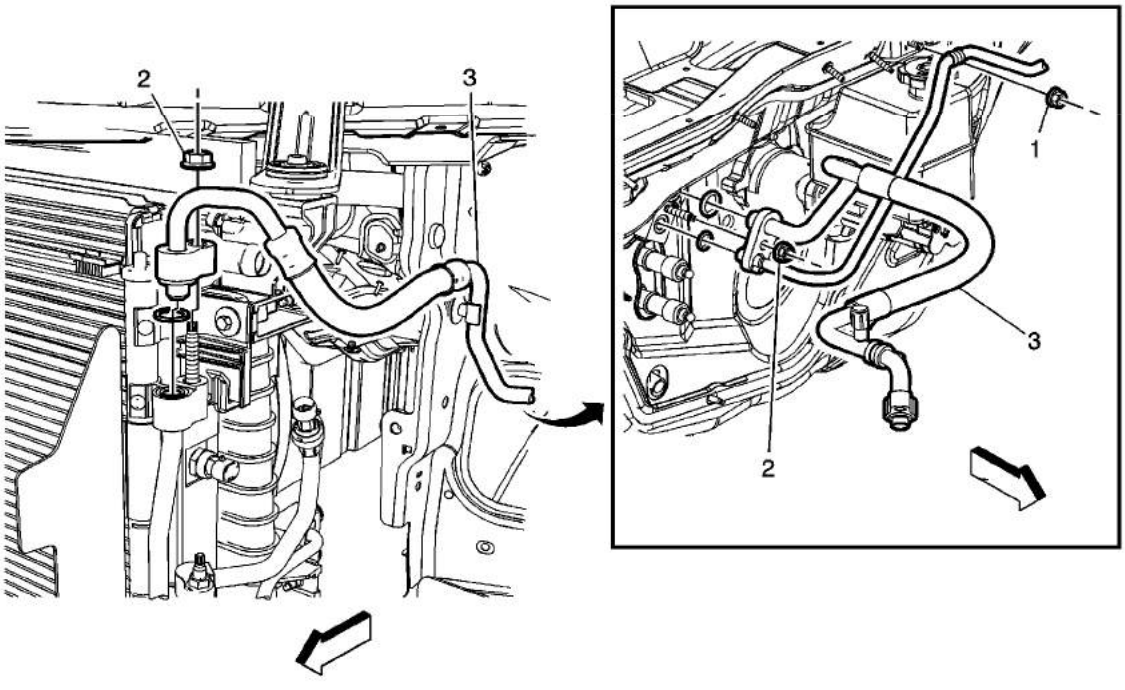
Liquid Line Replacement (HP5)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Remove the left headlamp assembly. Refer to Headlamp Replacement. 3. Remove the accessory DC power control module mounting plate. Refer to Accessory DC Power Control Module Mounting Plate Replacement.	
1	Liquid Line Clamp Fastener. **Caution:** Refer to Fastener Caution in the Preface section. **Tip** Liquid line clamp is located behind brake master cylinder reservoir on cowl. **Tighten** 4 N·m (35 lb in)
2	Liquid Line Fastener (Qty: 2) **Tighten** 16 N·m (12 lb ft)
[redacted]	

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3	**Procedure** 1. Remove the liquid line from the connection block at the thermal expansion valve (TXV). 2. Ensure to cap all HVAC line/hose connections immediately after removal to avoid contamination. Refer to Handling of Refrigerant Lines and Fittings. 3. Remove liquid line from attachment clamps located inside the left strut housing and on the left hand compartment panel behind the headlamp assembly. 4. Install new sealing washers. Refer to Sealing Washer Replacement

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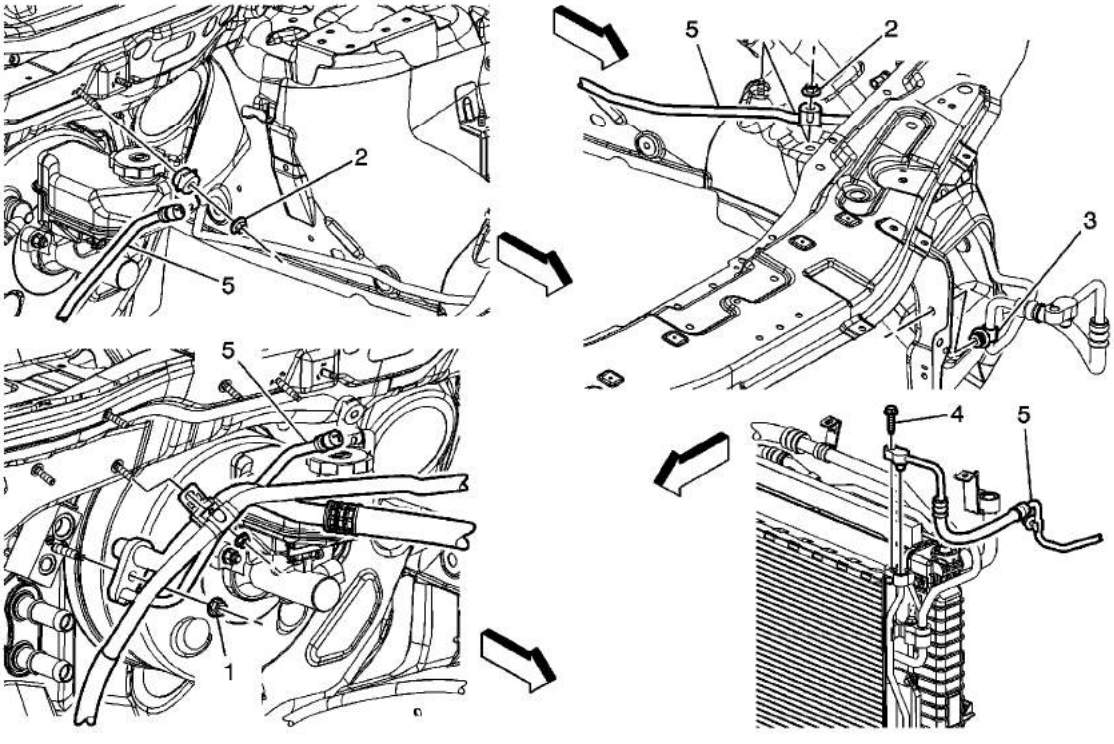
Liquid Line Replacement (LAT)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Remove the surge tank. Refer to Radiator Surge Tank Replacement. 3. Remove the radiator opening upper cover. Refer to Radiator Opening Upper Cover Replacement. 4. Remove the battery. Refer to Battery Replacement. 5. Remove the LH headlamp. Refer to Headlamp Replacement. 6. Remove the engine control module and the transmission control module. Refer to Engine Control Module Replacement and Transmission Control Module Replacement.	
1	Thermal Expansion Valve (TXV) Nut **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 16 N·m (12 lb ft)
2	Liquid Line Bracket Nut (Qty: 2) **Tighten** 9 N·m (80 l[redacted]

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4	Liquid Line to Condenser Bolt **Tighten** 16 N·m (12 lb ft)
5	Liquid Line Assembly

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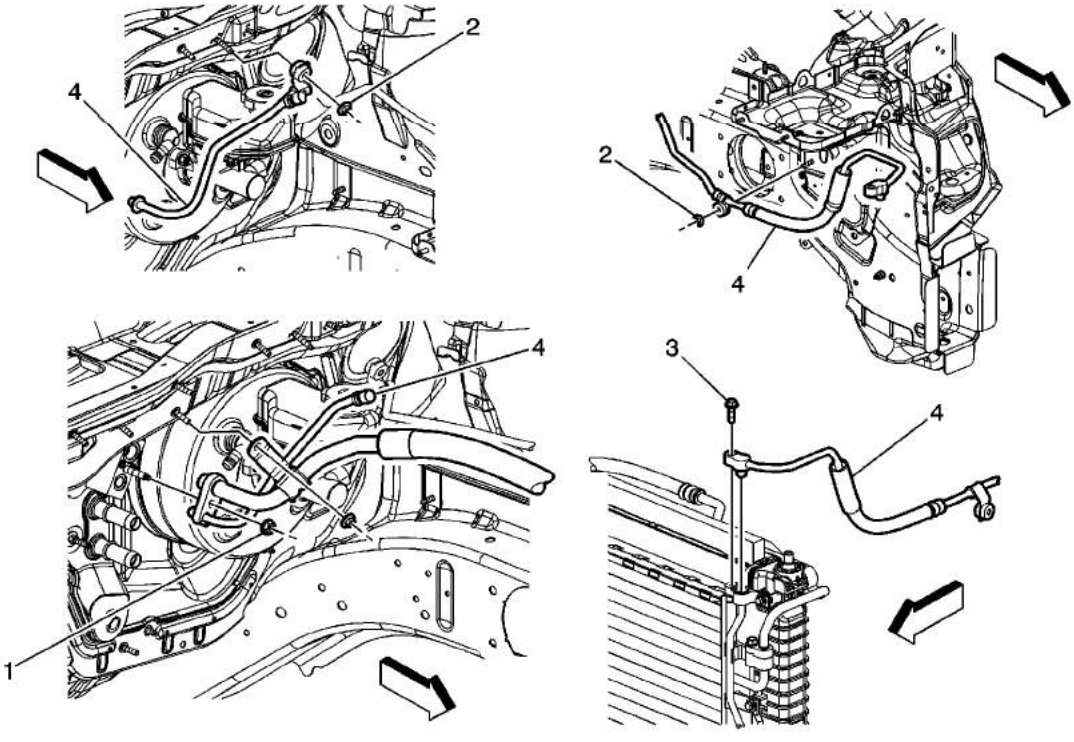
Liquid Line Replacement (LE5, LZ4, LY7)



Callout	Component Name

Preliminary Procedures

1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging.
2. Remove the surge tank. Refer to Radiator Surge Tank Replacement.
3. Remove the radiator opening upper cover. Refer to Radiator Opening Upper Cover Replacement.
4. Remove the battery. Refer to Battery Replacement.
5. Remove the LH headlamp. Refer to Headlamp Replacement.
6. Remove the engine control module and the transmission control module. Refer to Engine Control Module Replacement , Engine Control Module Replacement , Engine Control Module Replacement and Transmission Control Module Replacement.

1	Thermal Expansion Valve (TXV) Nut **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 16 N·m (12 lb ft)
2	Liquid Line Hose Bracket Nut (Qty: 2) **Tighten** [redacted]

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3	Liquid Line Hose to Condenser Bolt **Tighten** 16 N·m (12 lb ft)
4	Liquid Line Hose Assembly

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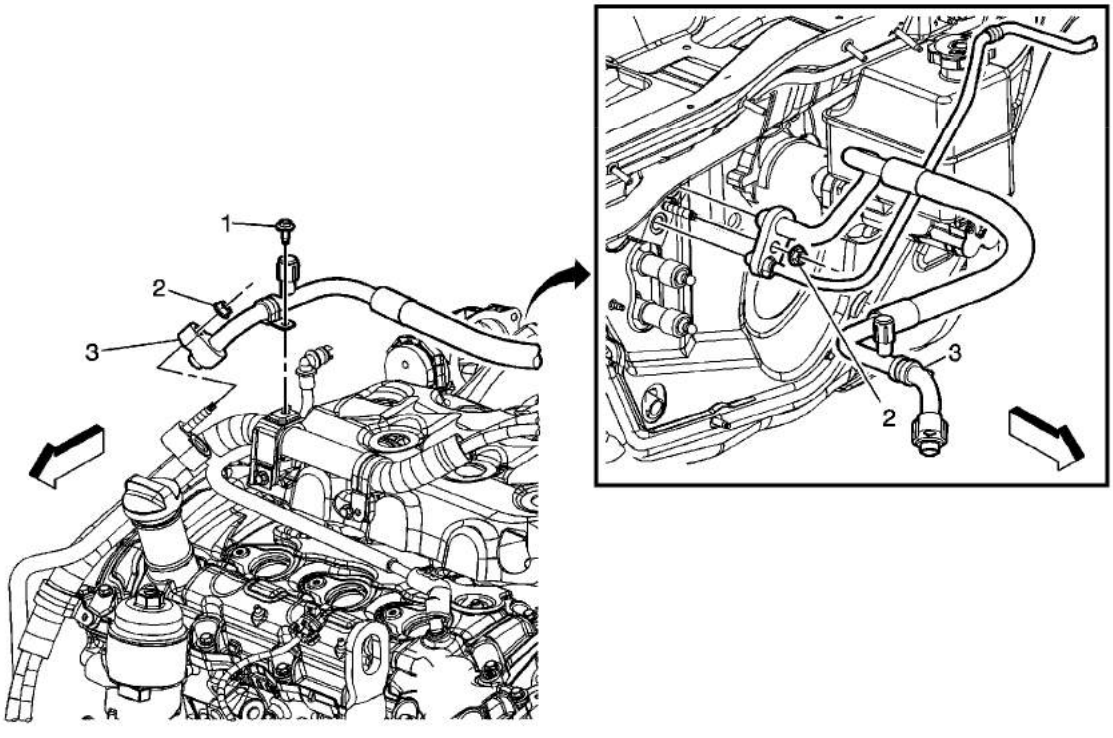
Evaporator Outlet Hose Replacement (HP5)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Remove the fuel injector sight shield. Refer to Fuel Injector Sight Shield Replacement	
1	Evaporator Outlet Hose Bracket Fastener. **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 4 N·m (35 lb in)
2	Evaporator Outlet Hose Nut (Qty: 2) **Tighten** 16 N·m (12 lb ft)
3	Evaporator Outlet Hose. **Procedure** [redacted]

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	2. Ensure to cap all HVAC line/hose connections immediately after removal to avoid contamination. Refer to Handling of Refrigerant Lines and Fittings. 3. Install new sealing washers. Refer to Sealing Washer Replacement

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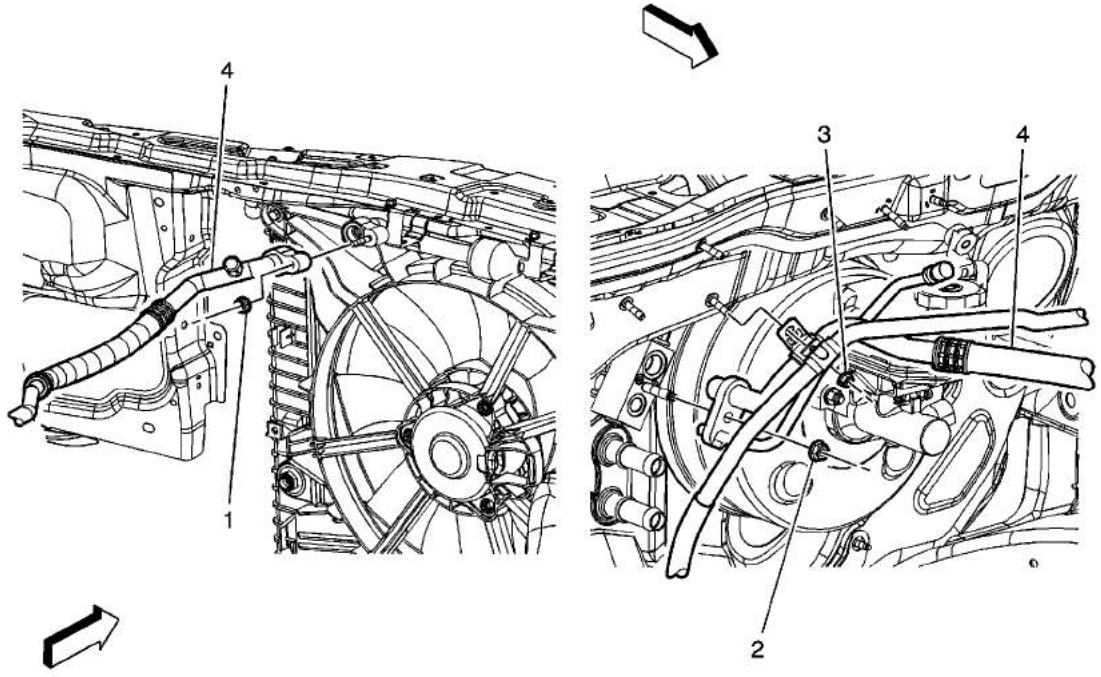
Evaporator Outlet Hose Replacement (LAT)



Callout	Component Name
Preliminary Procedure Recover the refrigerant. Refer to Refrigerant Recovery and Recharging.	
1	Evaporator Outlet Hose Nut **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 16 N·m (12 lb ft)
2	Thermal Expansion Valve (TXV) Nut **Tighten** 16 N·m (12 lb ft)
3	Evaporator Outlet Hose Bracket Nut **Tighten** 10 N·m (89 lb in)
	Evaporator Outlet Hose

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4	Remove and discard the seal. Refer to Sealing Washer Replacement. **Tip** Note the routing of the wiring harness around the hose prior to removal of the hose.

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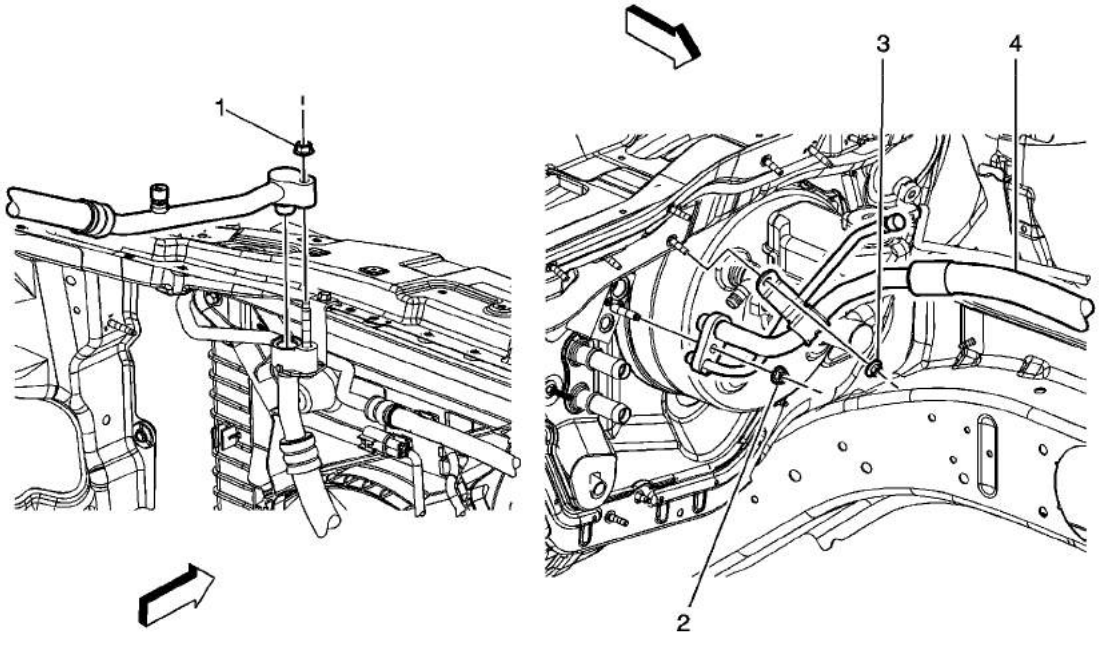
Evaporator Outlet Hose Replacement (LE5, LZ4, LY7)



Callout	Component Name
Preliminary Procedure Recover the refrigerant. Refer to Refrigerant Recovery and Recharging.	
1	Evaporator Outlet Hose Nut **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 16 N·m (12 lb ft)
2	Thermal Expansion Valve (TXV) Nut **Tighten** 16 N·m (12 lb ft)
3	Evaporator Outlet Hose Bracket Nut **Tighten** 10 N·m (89 lb in)
	Evaporator Outlet Hose

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4	Remove and discard the seal. Refer to Sealing Washer Replacement.

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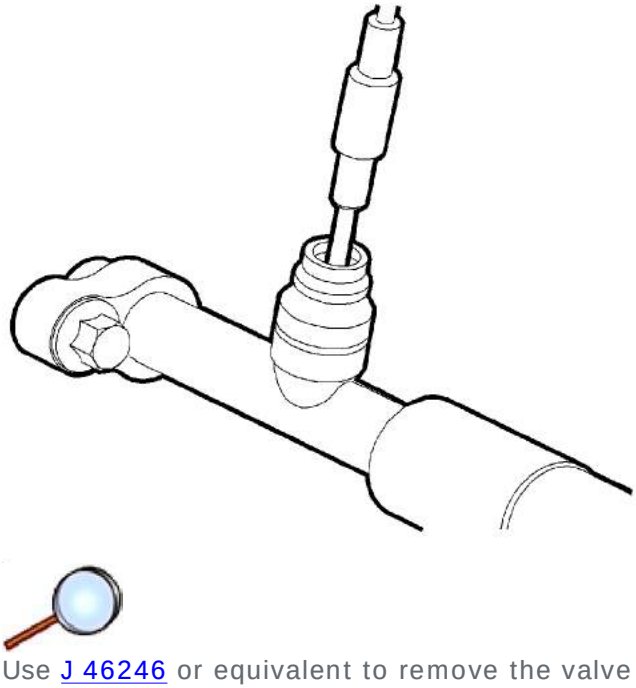
Air Conditioning Refrigerant Service Valve Core Replacement

Tools Required

- J 39400-A Halogen Leak Detector
- J 46246 Valve Core Removal Tool

Removal Procedure

1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging .



2. Use J 46246 or equivalent to remove the valve core.

Installation Procedure

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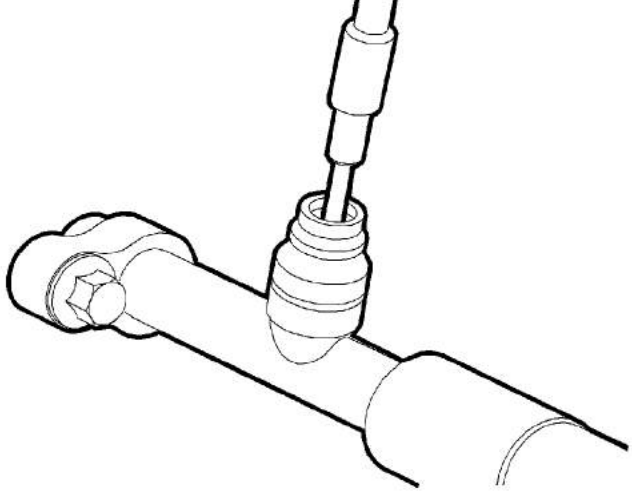

1. Use J 46246 or equivalent to install and tighten the valve core.
2. Evacuate and charge the A/C system. Refer to Refrigerant Recovery and Recharging .

Important: To prevent loss of refrigerant charge, tighten the cap. Replace the cap if the seal is missing or damaged.

3. Test the affected A/C fittings for leaks using J 39400-A .

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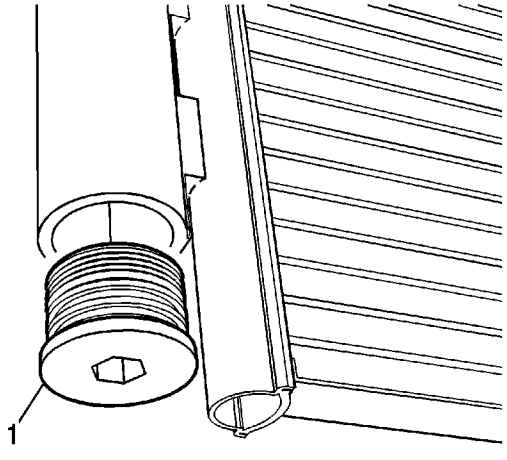
Air Conditioning Refrigerant Desiccant Replacement

Special Tools

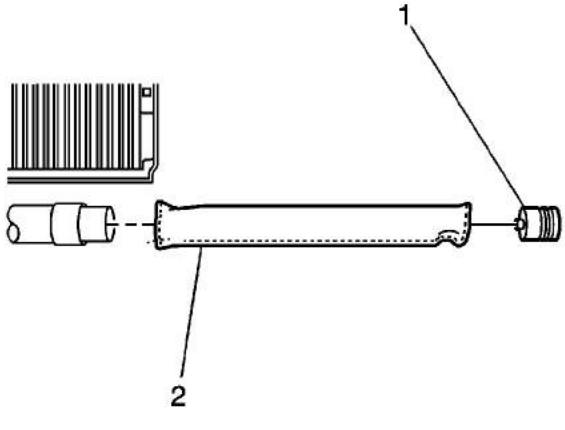
J 39400-A Halogen Leak Detector

Removal Procedure

1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging.
2. Remove the front air deflector. Refer to Front Bumper Fascia Air Deflector Replacement.
3. Remove the condenser mounting brackets and reposition the condenser.



4. Remove the receiver dryer bottom cap (1).



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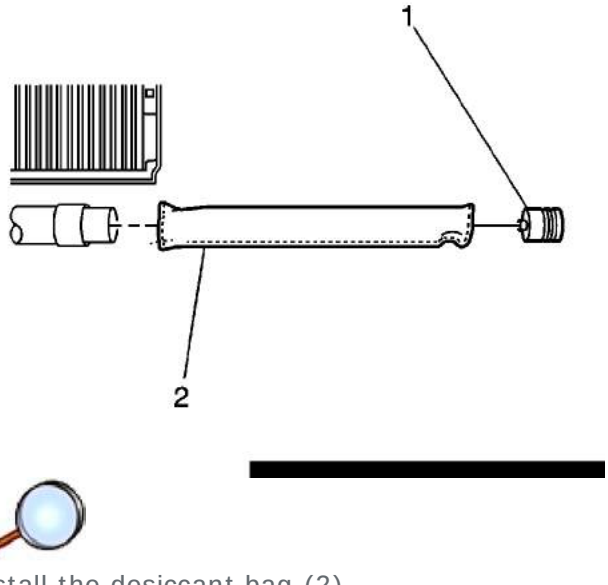
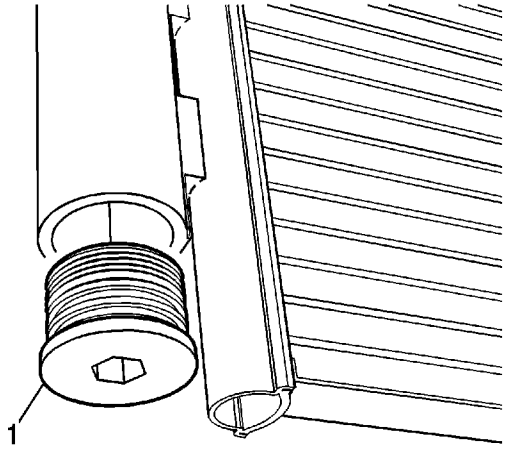
5. Remove the desiccant bag (2).

Installation Procedure



1. Install the desiccant bag (2).
2. Lubricate the O-rings on the plug with refrigerant oil before installing. Refer to O-Ring Replacement.

Caution: Refer to Component Fastener Tightening Caution in the Preface section.



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3. Install the bottom plug (1) and tighten to **12.5 N·m (111 lb in)**.
4. Install the condenser brackets, then tighten the plug to **8 N·m (71 lb in)**.
5. Install the front air deflector. Refer to Front Bumper Fascia Air Deflector Replacement.
6. Lower the vehicle.
7. Add the proper amount of oil. Refer to Refrigerant System Capacities.
8. Evacuate and recharge the refrigerant. Refer to Refrigerant Recovery and Recharging.
9. Leak test the fittings of the component with J 39400-A .

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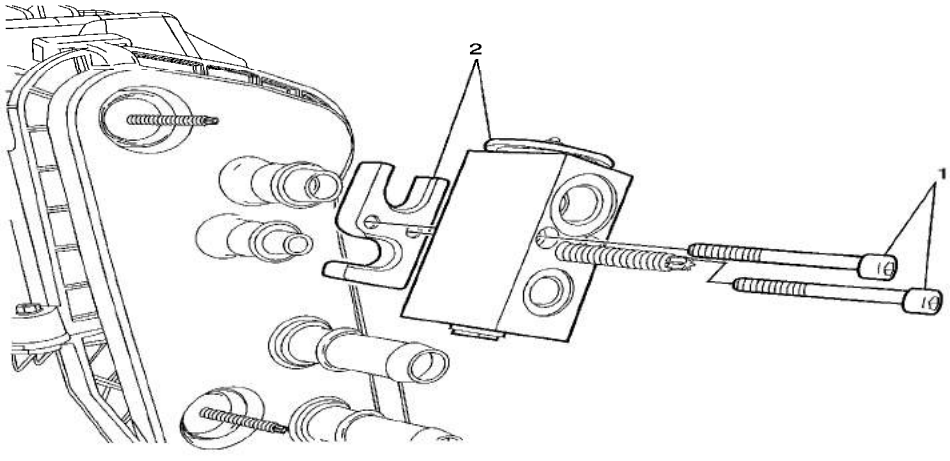
Air Conditioning Evaporator Thermal Expansion Valve Replacement



Callout	Component Name
Preliminary Procedure 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Remove liquid line. Refer to Liquid Line Replacement 3. Remove evaporator outlet hose. Refer to Evaporator Outlet Hose Replacement.	
1	Thermal Expansion Valve (TXV) Bolt **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 3.5 N·m (31 lb in)
2	TXV/Plate **Tip** Remove and discard the seal. Refer to O-Ring Replacement.

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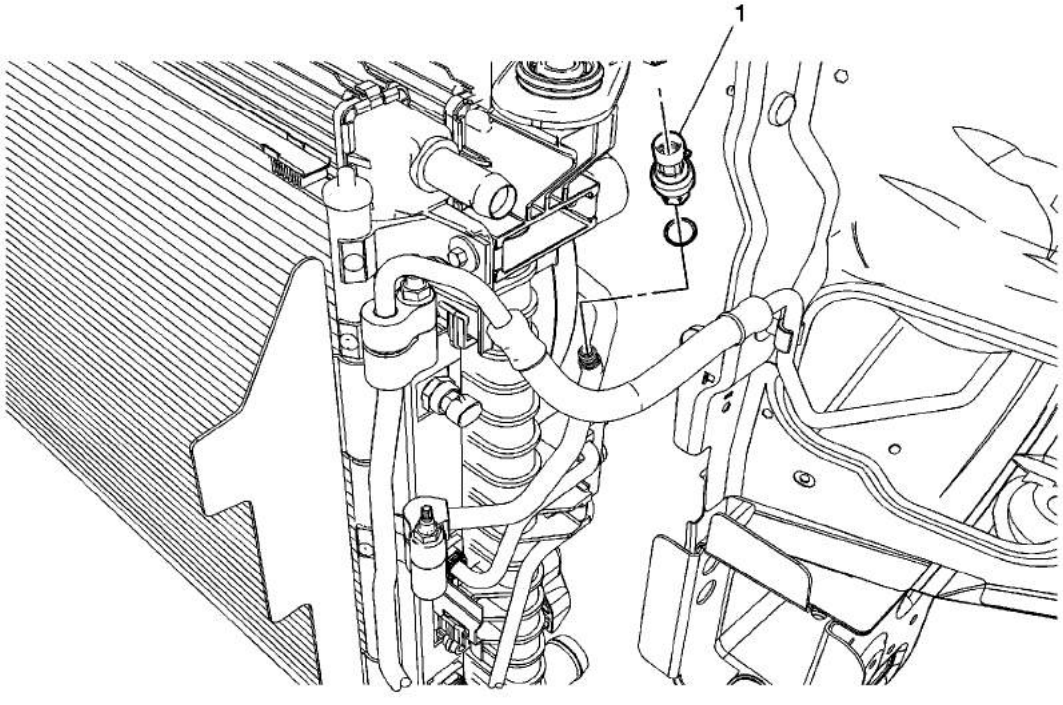
Air Conditioning (A/C) Refrigerant Pressure Sensor Replacement (with HP5)



Callout	Component Name
	Preliminary Procedures 1. Remove the left headlamp assembly. Refer to Headlamp Replacement. 2. Reposition any coolant hoses to access A/C pressure sensor.
1	Refrigerant Pressure Sensor. **Caution:** Refer to Fastener Caution in the Preface section. **Procedure** 1. Disconnect the electrical connector from the sensor. 2. Lubricate the refrigerant pressure sensor O-ring with mineral oil. **Tighten** 4 N·m (35 lb in)

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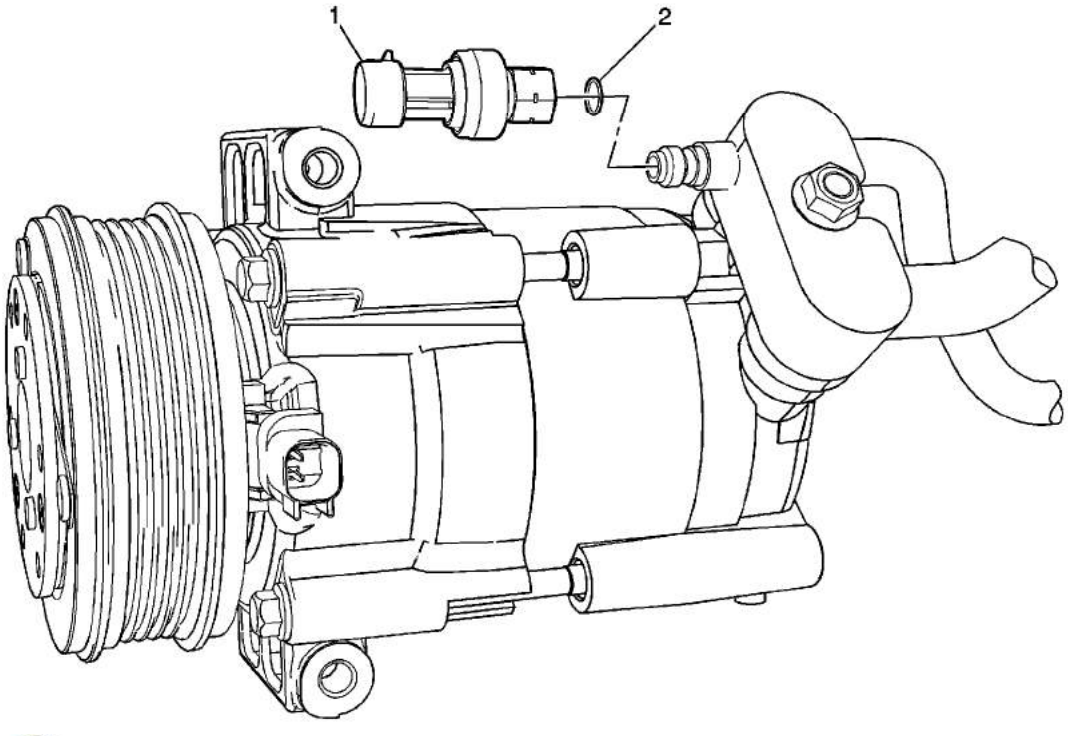
Air Conditioning (A/C) Refrigerant Pressure Sensor Replacement (without HP5)



Callout	Component Name
1	Refrigerant Pressure Sensor **Caution:** Refer to Fastener Caution in the Preface section. **Procedure** Hand start the refrigerant pressure sensor to the compressor hose, taking care not to pinch the O-ring and tighten. **Tighten** 4 N·m (35 lb in)
2	O-ring **Tip** Lubricate the refrigerant pressure sensor O-ring with mineral oil.

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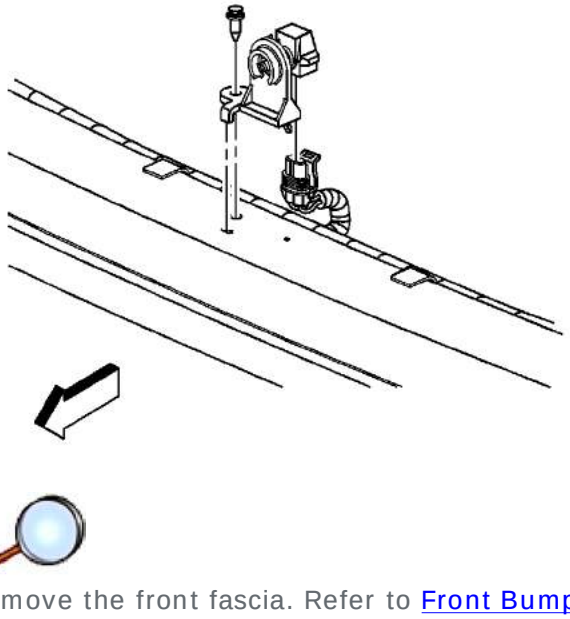
Ambient Air Temperature Sensor Replacement

Removal Procedure



1. Remove the front fascia. Refer to Front Bumper Fascia Replacement .
2. Remove the push-in retainer that secures the ambient air temperature sensor to the impact bar.
3. Disconnect the electrical connector from the ambient air temperature sensor.
4. Remove the sensor from the vehicle.

Installation Procedure

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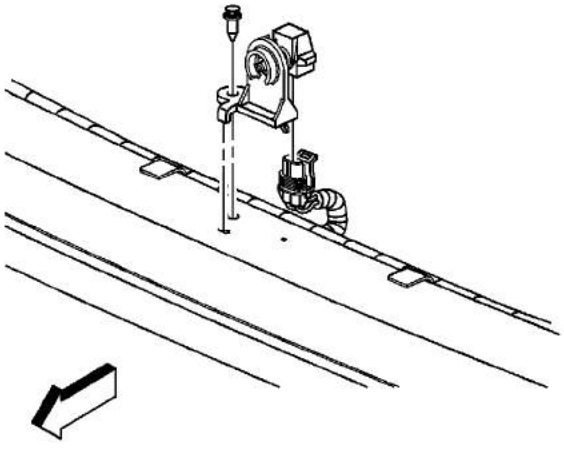

1. Connect the electrical connector to the ambient air temperature sensor.
2. Install the ambient air temperature sensor to the impact bar and with the push-in retainer.
3. Install the front fascia. Refer to Front Bumper Fascia Replacement .

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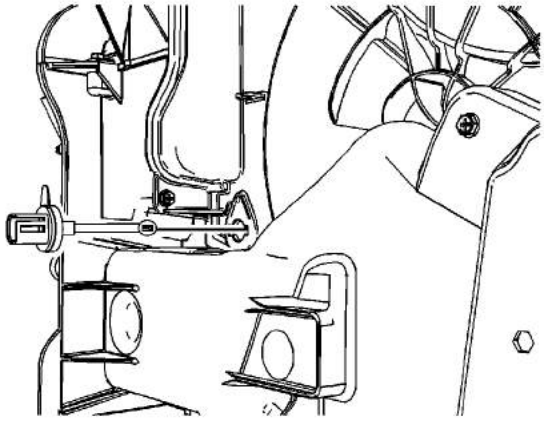
Air Conditioning (A/C) Refrigerant Low Temperature Sensor Replacement

Removal Procedure



1. Remove the driver knee bloster panel. Refer to Driver Knee Bolster Replacement .
2. If equipped with OnStar®, remove the communications interface module. Refer to Communication Interface Module Replacement .
3. Disconnect the temperature sensor connector from the temperature sensor.
4. Twist the temperature sensor one quarter turn to disengage from the evaporator case assembly.
5. Remove the temperature sensor from the evaporator case assembly.

Installation Procedure

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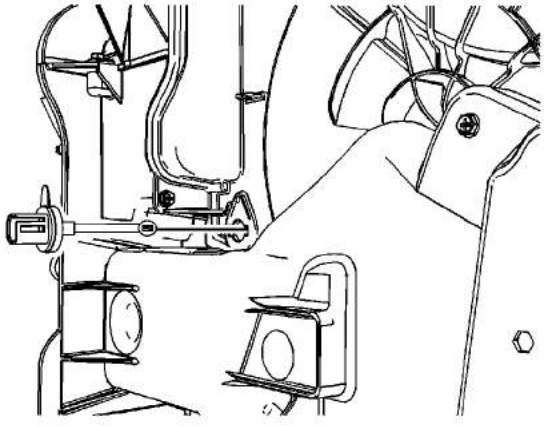

1. Install the temperature sensor to the evaporator case assembly.
2. Twist the temperature sensor one quarter turn to engage to the evaporator case assembly.
3. Install the temperature sensor connector to the temperature sensor.
4. If removed, install the communications interface module. Refer to Communication Interface Module Replacement .
5. Install the driver knee bolster panel. Refer to Driver Knee Bolster Replacement .

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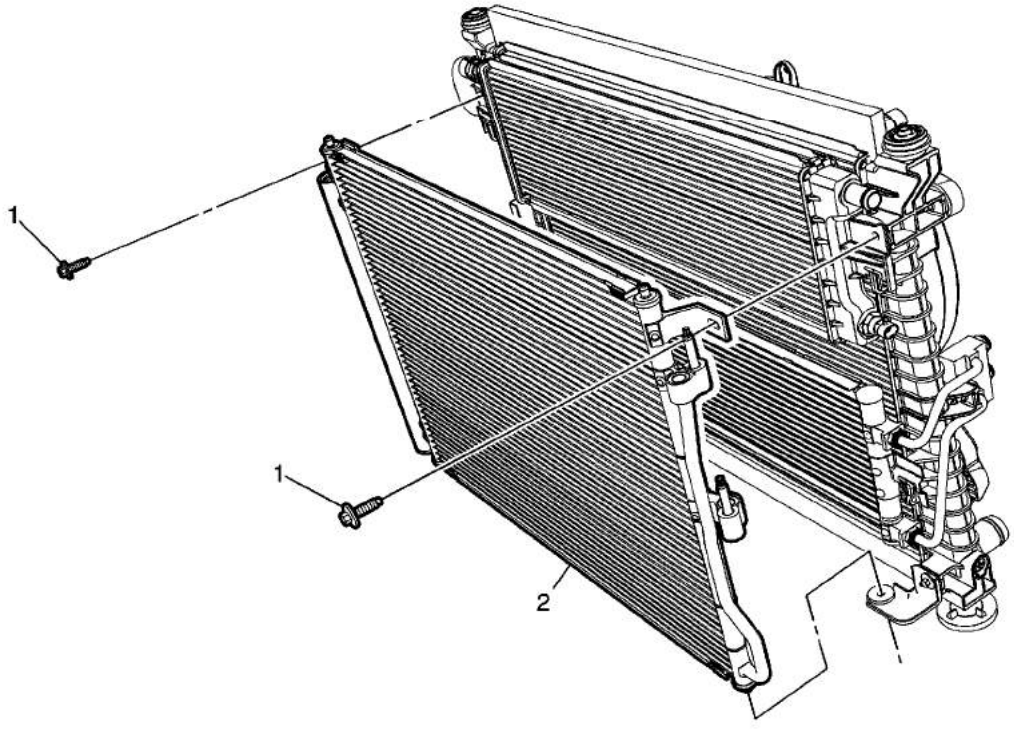
Air Conditioning Condenser Replacement (With HP5)



Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging 2. Remove the radiator opening upper cover. Refer to Radiator Opening Upper Cover Replacement 3. Remove both headlamps. Refer to Headlamp Replacement 4. Remove the front bumper facia. Refer to Front Bumper Fascia Replacement 5. Remove the hood latch support. Refer to Hood Latch Support Replacement 6. Remove the front bumper impact bar. Refer to Front Bumper Impact Bar Replacement 7. Remove the generator control module coolant radiator. Refer to 8. Remove the discharge hose. Refer to Discharge Hose Replacement 9. Remove the liquid line. Refer to Liquid Line Replacement	
1	Air Conditioning Condenser Bolts (Qty 2). **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 10 N·m (88 lb in)
2	Air Conditioning Condenser

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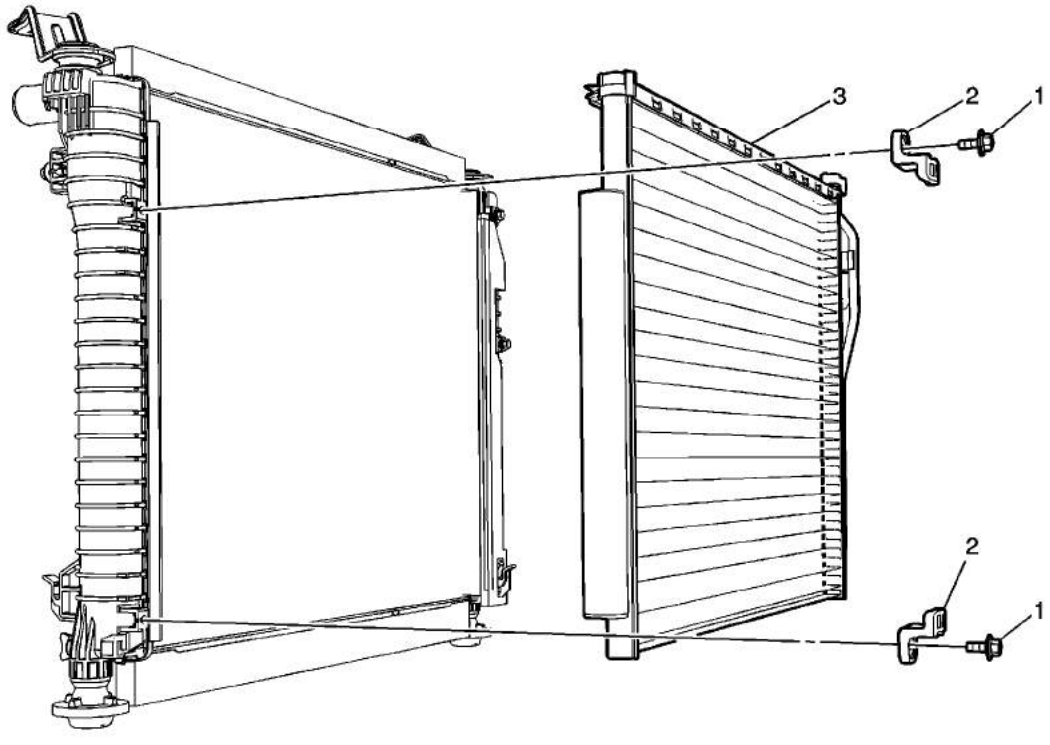
Air Conditioning Condenser Replacement (Without HP5)



Callout	Component Name
Preliminary Procedure 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging. 2. Remove the radiator opening upper cover. Refer to Radiator Opening Upper Cover Replacement. 3. Remove the A/C compressor hose at condenser. Refer to Compressor Hose Assembly Replacement. 4. Remove the A/C liquid line at condenser. Refer to Liquid Line Replacement.	
1	Condenser Bracket Nut (Qty: 2) **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 5 N·m (44 lb in)
2	Condenser Bracket
	Condenser Assembly

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g	Slide condenser to the right and upward to remove.

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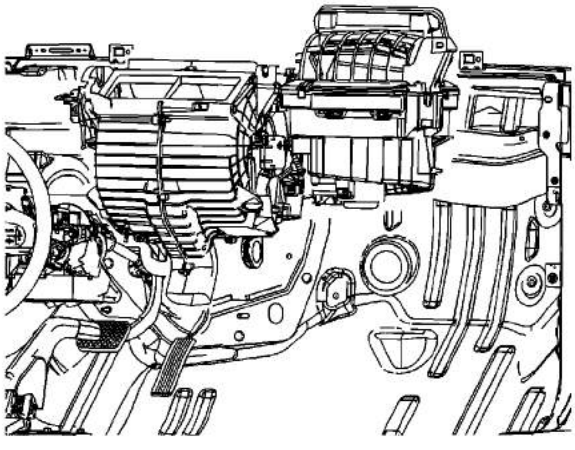
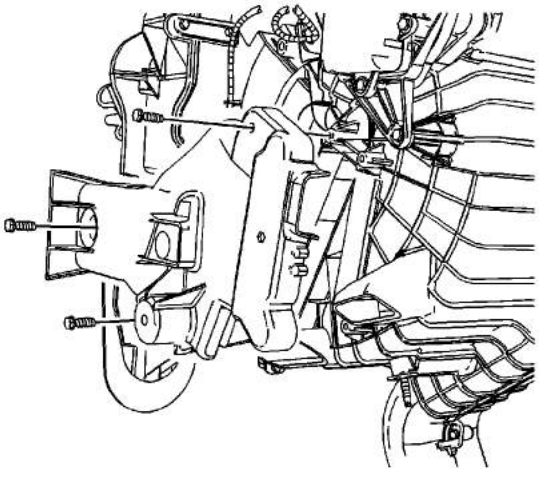
Air Conditioning (A/C) Evaporator Case Assembly Replacement

Removal Procedure



1. Remove the HVAC module. Refer to HVAC Module Assembly Replacement.



2. Remove the heater core cover screws from the evaporator case assembly.
3. Remove the heater core cover from the evaporator case assembly.

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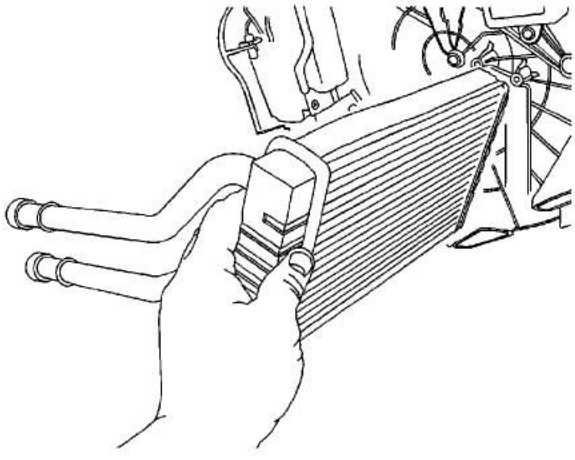
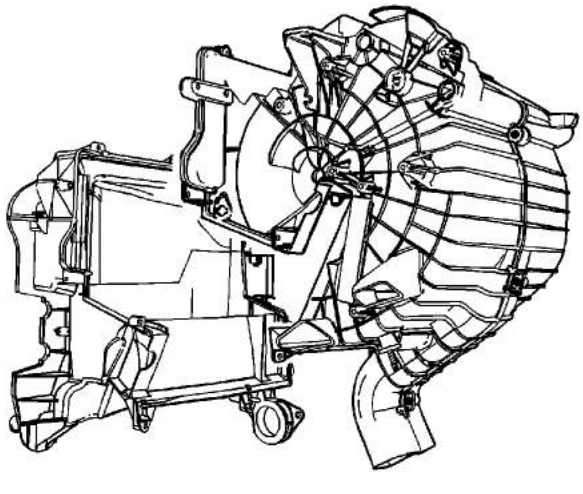


4. Remove the heater core from the HVAC module.



5. Remove the evaporator case assembly screws from the blower case assembly.
6. Remove the evaporator case assembly from the blower case assembly.

Installation Procedure

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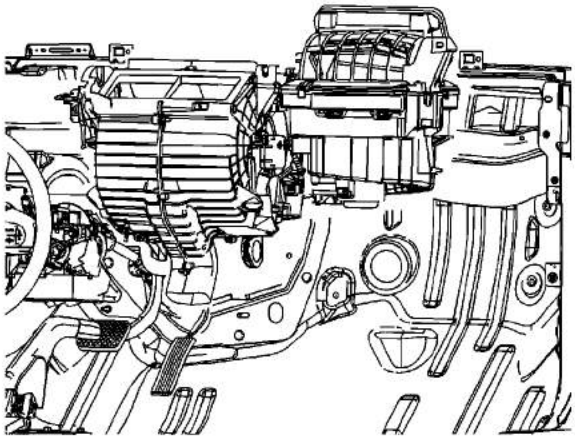
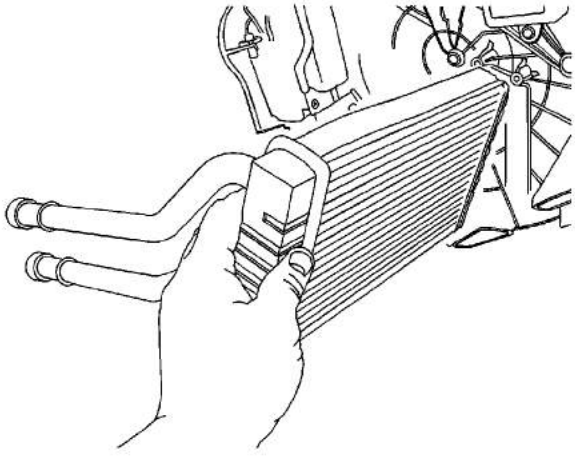


1. Install evaporator case assembly to the blower case assembly.

   Caution: Refer to Fastener Caution in the Preface section.

2. Install evaporator case assembly screws to the blower case assembly.

   Tighten
   Tighten the screws to 1.5 N·m (13 lb in).



3. Install heater core to the HVAC module.

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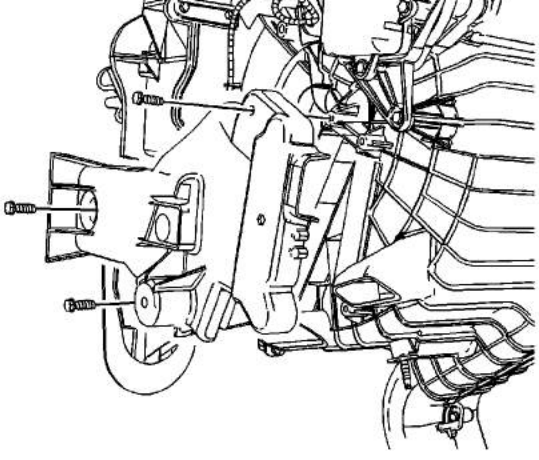
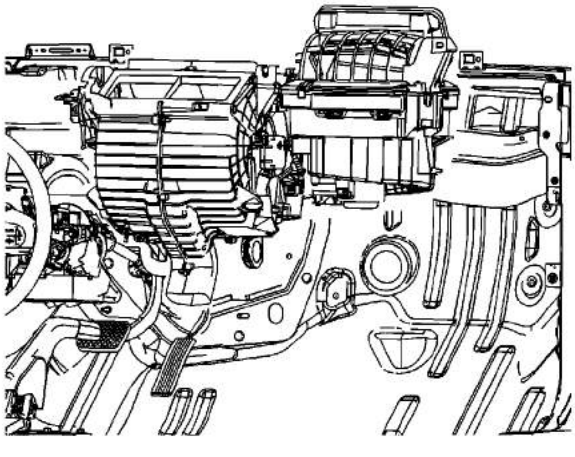


4. Install heater core cover.
5. Install heater core cover screws.

Tighten
Tighten the screws to 1.5 N·m (13 lb in).



6. Install the HVAC module. Refer to HVAC Module Assembly Replacement.

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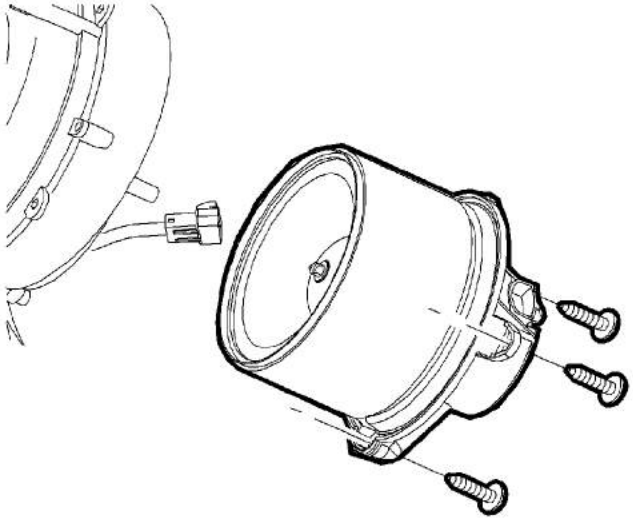
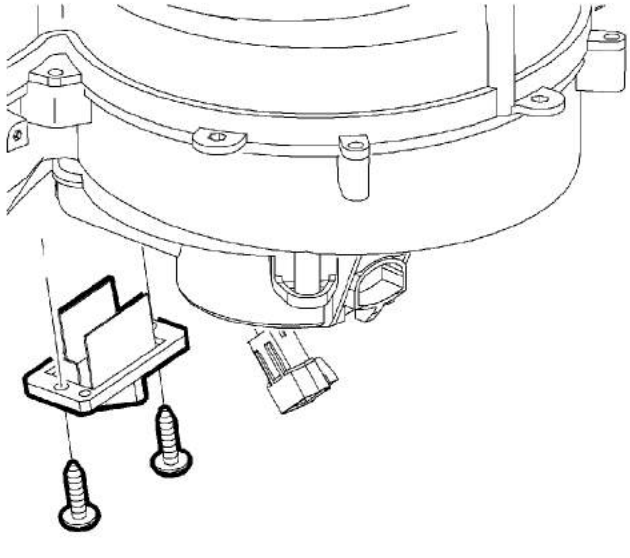
Blower Case Replacement

Removal Procedure

1. Remove the HVAC module assembly. Refer to HVAC Module Assembly Replacement.
2. Remove the evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.
3. Remove the air inlet assembly. Refer to Air Inlet Assembly Replacement.



4. Remove the blower motor screws from the blower case assembly.
5. Remove the blower motor from the blower case assembly.



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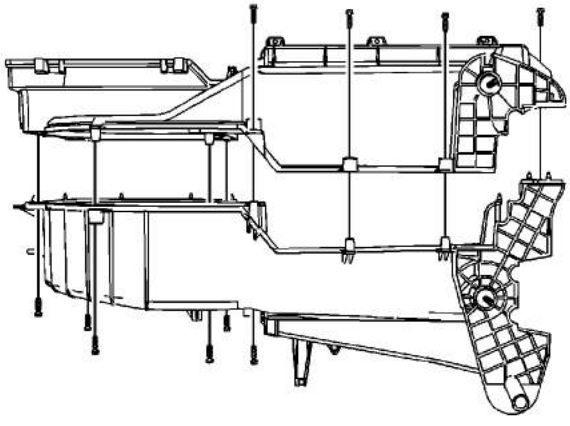
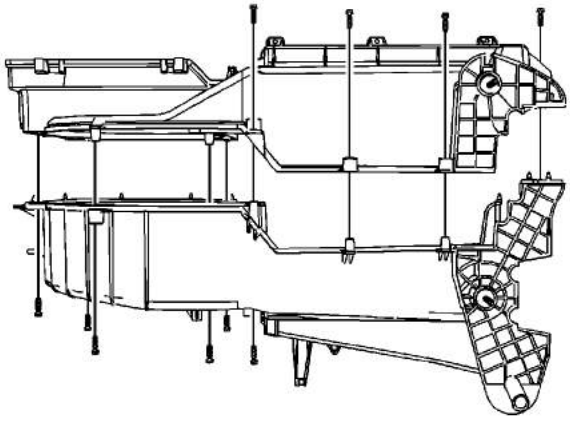


8. Remove the screws retaining the two halves of the blower case assembly.
9. Separate the two halves of the blower case assembly.
10. Remove the evaporator core from the blower case assembly.

Installation Procedure



1. Install the evaporator core to the blower case assembly.
2. Assemble the two halves of the blower case assembly.

Caution: Refer to Fastener Caution in the Preface section.

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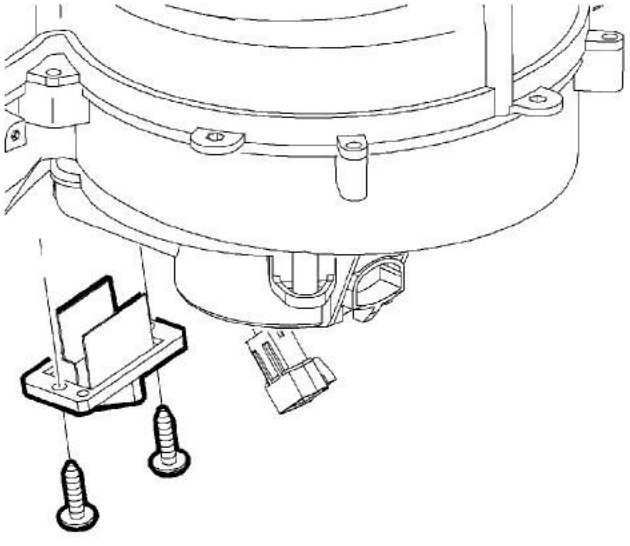
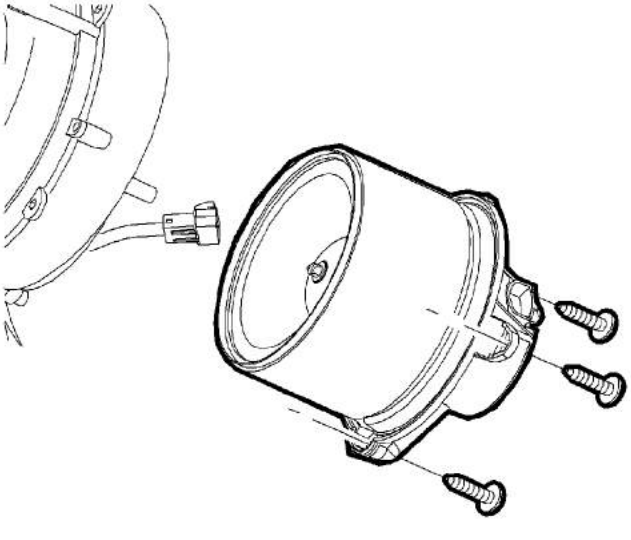
Tighten
Tighten the screws to 1.5 N·m (13 lb in).



4. Install the blower motor control module to the blower case assembly.
5. Install the blower motor control module screws to the blower case assembly.

Tighten
Tighten the screws to 1.5 N·m (13 lb in).



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Tighten
Tighten the screws to 1.5 N·m (13 lb in).

8. Install the air inlet assembly. Refer to Air Inlet Assembly Replacement.
9. Install the evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.
10. Install the HVAC module. Refer to HVAC Module Assembly Replacement.

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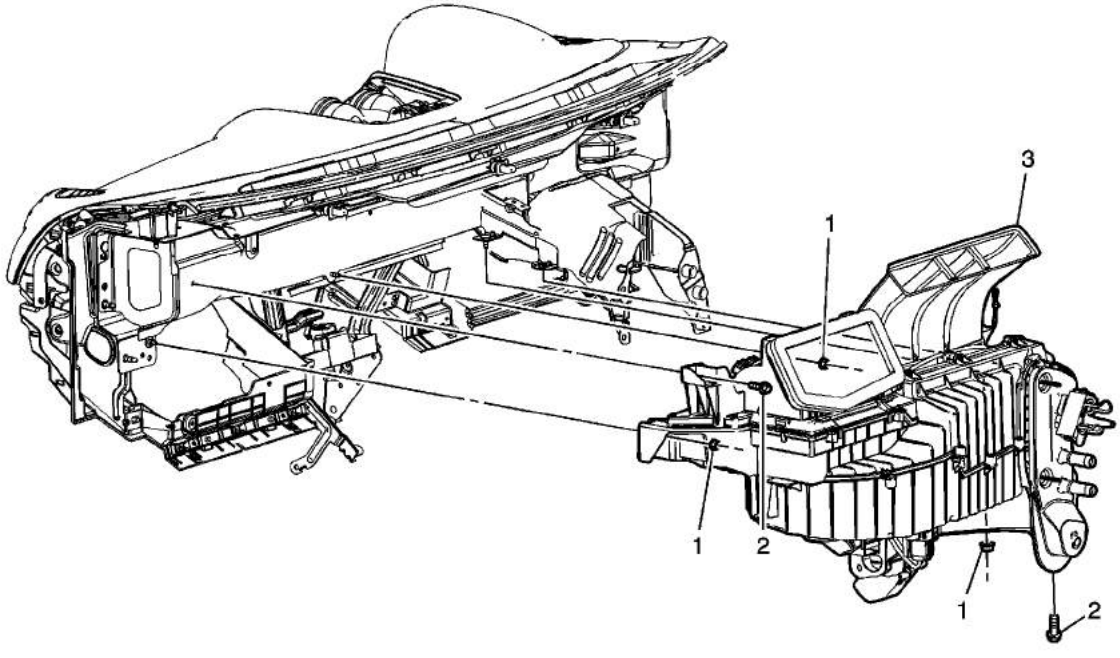
HVAC Module Assembly Replacement



Callout	Component Name
Caution: To avoid damage to the vehicle and/or the components of the instrument panel because of hidden fasteners and retainers the instrument panel must be removed from the vehicle as an assembly. **Preliminary Procedure** Remove the instrument panel assembly. Refer to Instrument Panel Assembly Replacement.	
1	HVAC Module Nut (Qty: 3) **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 8 N·m (71 lb in)
2	HVAC Module Bolt (Qty: 2) **Tighten** 8 N·m (71 lb in)
	HVAC Module Assembly

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3	1. Note the location and routing of the electrical harness to ensure proper reinstallation. 2. Disconnect the electrical connections. 3. When replacing the HVAC module assembly, transfer all necessary components.

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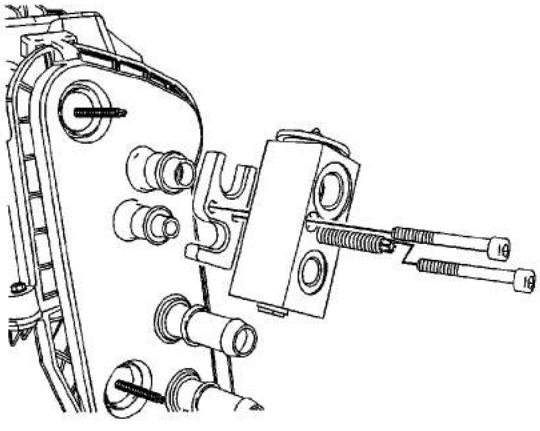
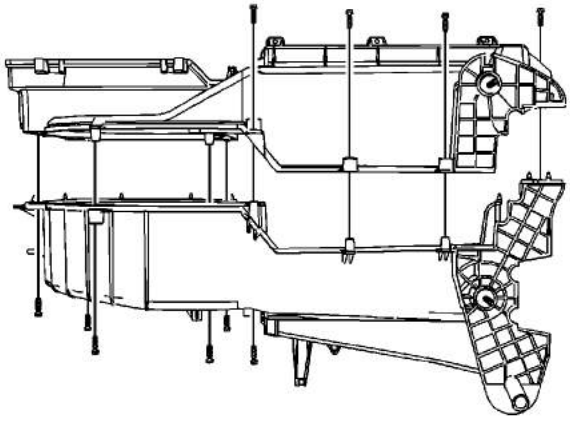
Air Conditioning Evaporator Core Replacement



1. Remove the HVAC module. Refer to HVAC Module Assembly Replacement.
2. Remove the evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.
3. Remove the thermal expansion valve (TXV) bolts from the backing plate.
4. Remove the TXV and the backing plate from the evaporator pipes.
5. Remove the seal washers from evaporator pipes. Refer to Sealing Washer Replacement.
6. Remove the HVAC module front of dash seal.



7. Remove the screws retaining the two halves of the blower case assembly.

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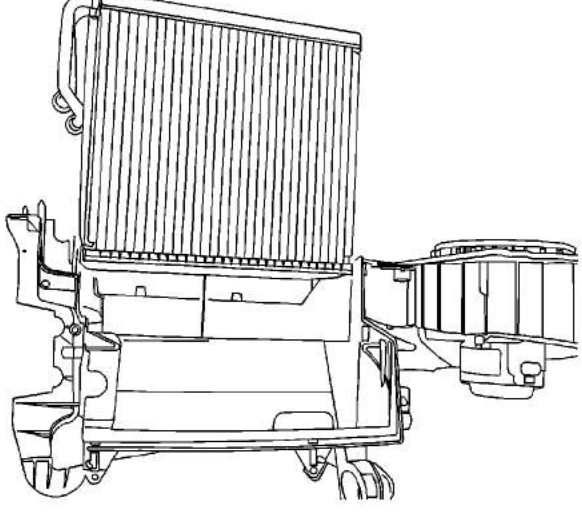
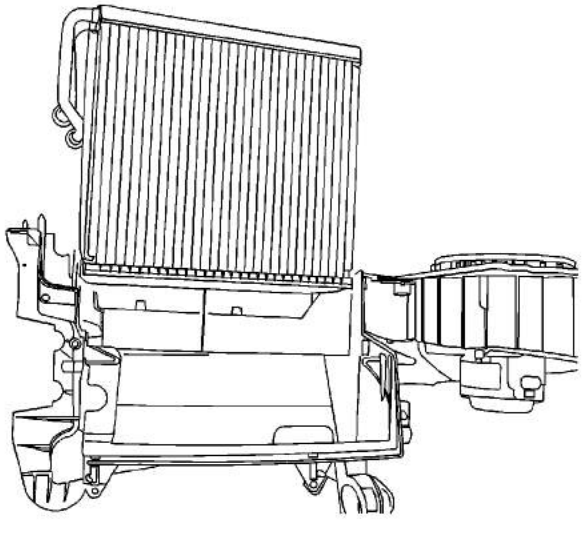


9. Remove the evaporator core from the blower case assembly.

Installation Procedure



1. Add the proper of polyalkylene glycol (PAG) oil to the evaporator core. Refer to Refrigerant System Capacities.
2. Inspect the seal around the evaporator core. Make sure the seal is in correct position and retained properly.
3. Install the evaporator core to the blower case assembly.

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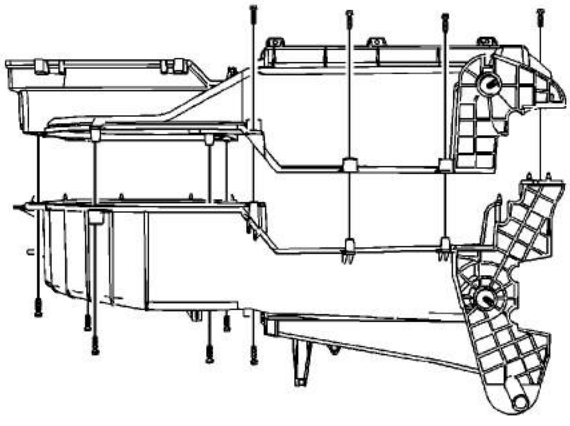


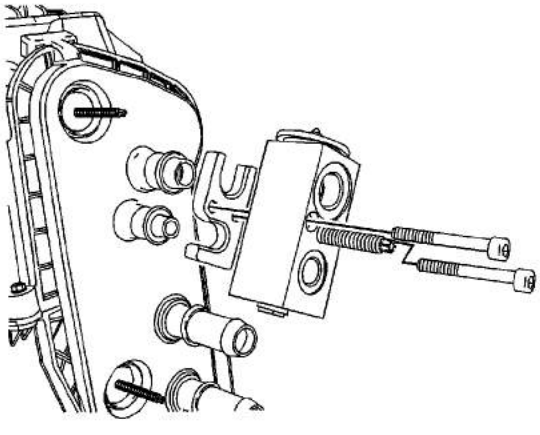
4. Assemble the two halves of the blower case assembly.

   Caution: Refer to Fastener Caution in the Preface section.

5. Install the blower case assembly screws.

   Tighten
   Tighten the screw to 1.5 N·m (13 lb in).

6. Install the HVAC module front of dash seal.



7. Install new seal washers to the evaporator pipes. Refer to Sealing Washer Replacement.
8. Instal the TXV and the backing plate to the evaporator pipes.
9. Install the TXV screws to the backing plate.

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10. Install the evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.
11. Install the HVAC module. Refer to HVAC Module Assembly Replacement.

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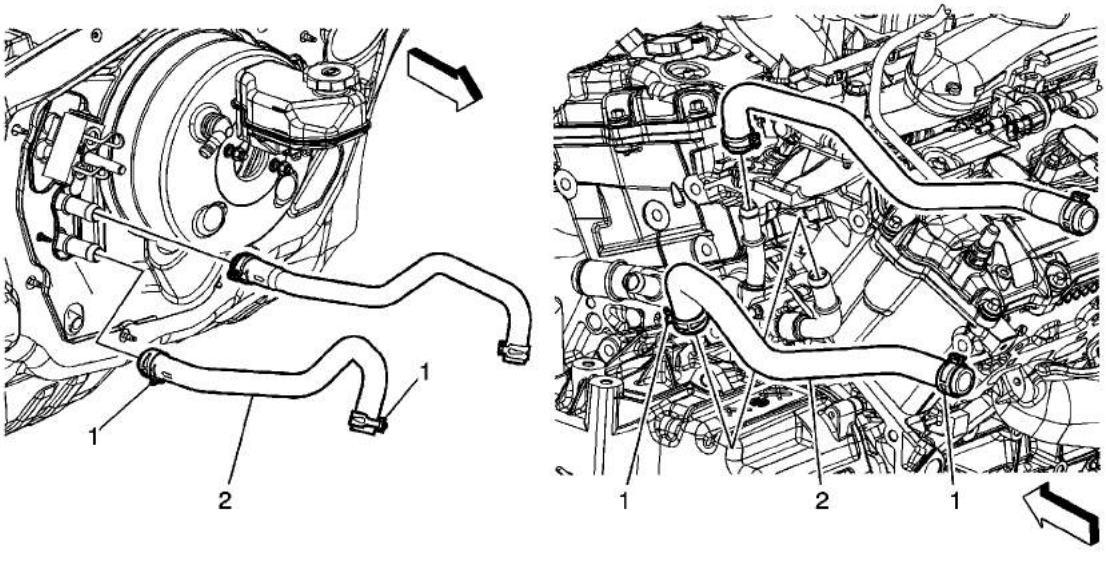
Heater Inlet Hose Replacement (LY7)



Callout	Component Name
Preliminary Procedures 1. Remove the fuel injector sight shield. Refer to Fuel Injector Sight Shield Replacement. 2. Partially drain the cooling system. Refer to Cooling System Draining and Filling.	
1	Heater Inlet Hose Clamp (Qty: 2)
2	Heater Inlet Hose

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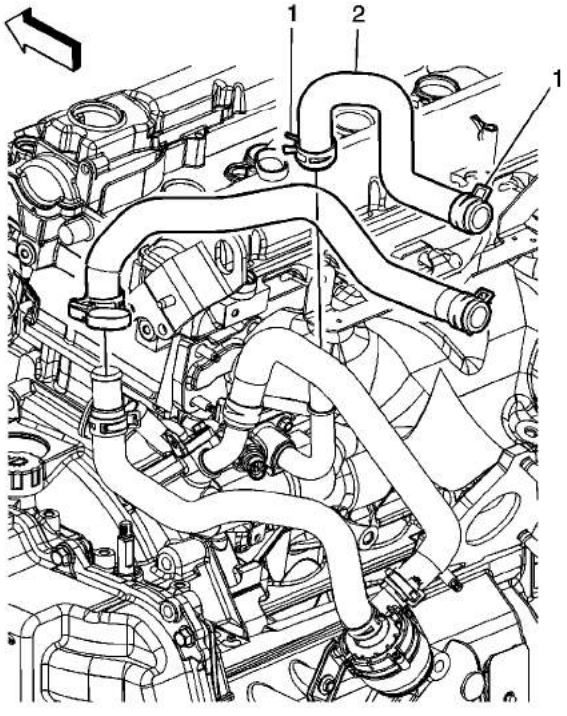
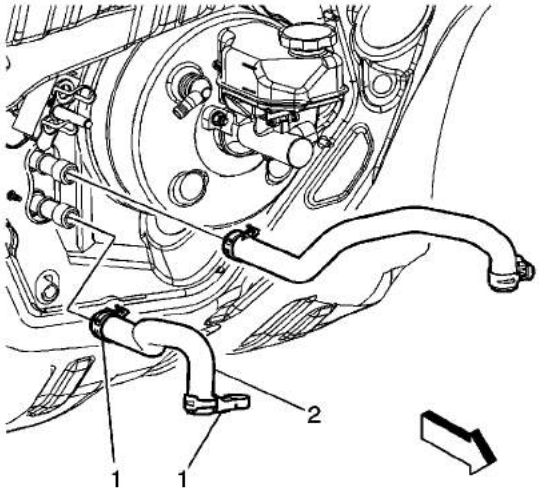
Heater Inlet Hose Replacement (LAT)





Callout	Component Name
Preliminary Procedures Partially drain the cooling system. Refer to Cooling System Draining and Filling.	
1	Heater inlet hose clamps (Qty 2).
2	Heater inlet hose.

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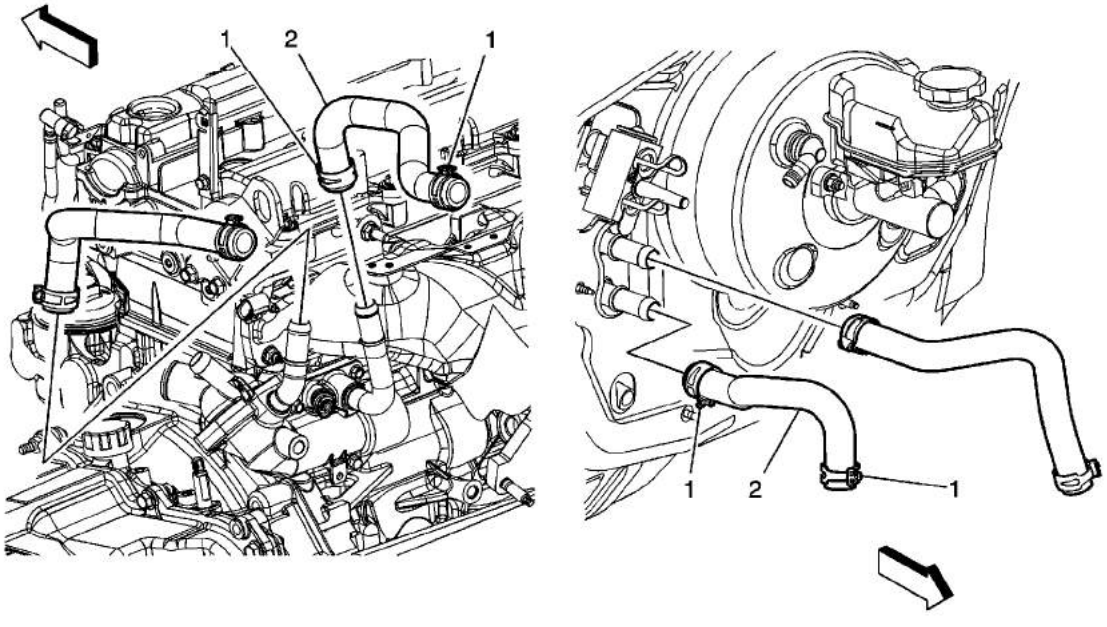
Heater Inlet Hose Replacement (LE5)



Callout	Component Name
Preliminary Procedures Partially drain the cooling system. Refer to Cooling System Draining and Filling.	
1	Heater inlet hose clamps (Qty 2).
2	Heater inlet hose.

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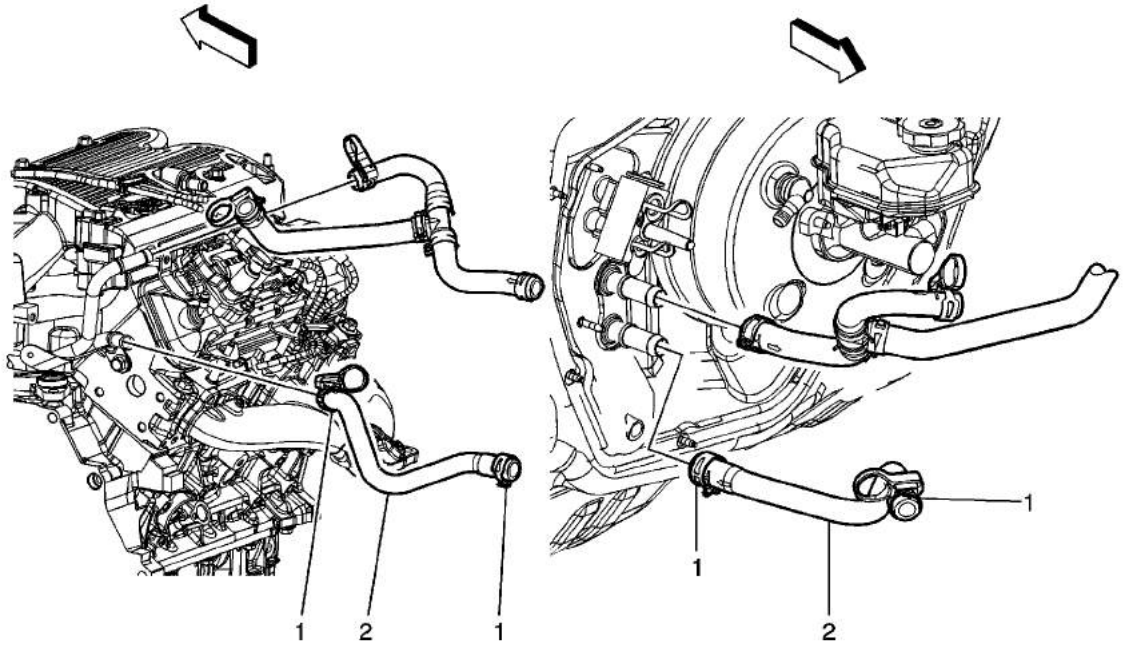
Heater Inlet Hose Replacement (LZ4)



Callout	Component Name
Preliminary Procedures Partially drain the cooling system. Refer to Cooling System Draining and Filling.	
1	Heater Inlet Hose Clamps (Qty: 2)
2	Heater Inlet Hose

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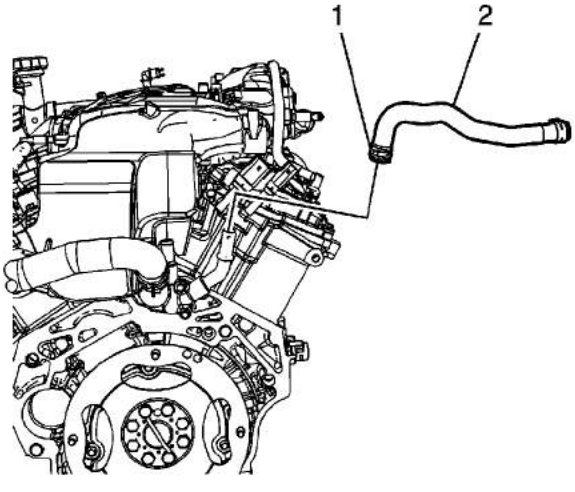
Heater Inlet Hose Replacement (HP5)

Special Tools

J 38185 Hose Clamp Pliers

Removal Procedure

1. Drain the coolant. Refer to Cooling System Draining and Filling
2. Remove the drive motor generator control module assembly. Refer to Drive Motor Generator Control Module Assembly Replacement



3. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and remove the heater inlet hose (2) from the thermostat housing.

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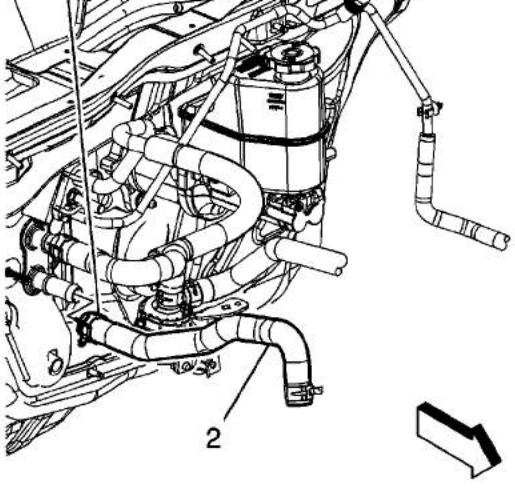
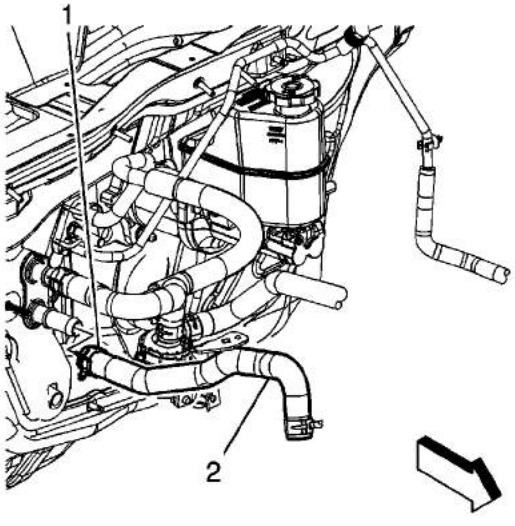


4. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and remove the heater inlet hose (2) from the heater core.
5. Remove the heater inlet hose from the vehicle.

Installation Procedure

1. Install the heater inlet hose to the vehicle.



2. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and install the heater inlet hose (2) to the heater core.

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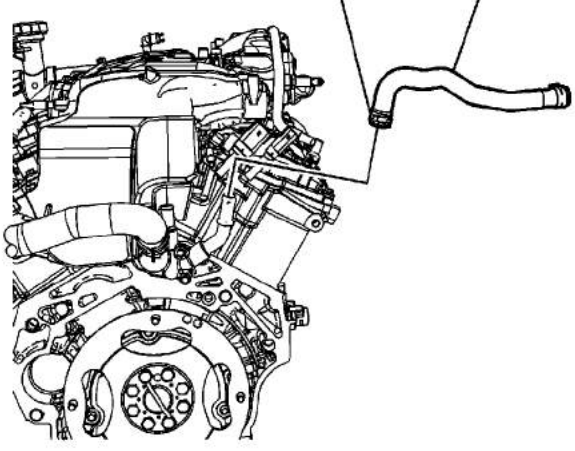

3. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and install the heater inlet hose (2) to the thermostat housing.
4. Install the drive motor generator control module assembly. Refer to Drive Motor Generator Control Module Assembly Replacement
5. Fill the coolant. Refer to Cooling System Draining and Filling

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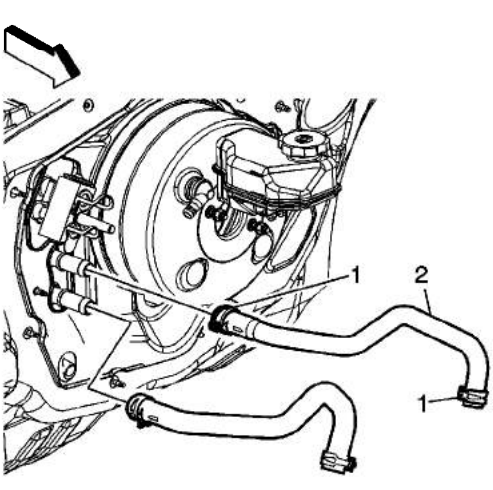
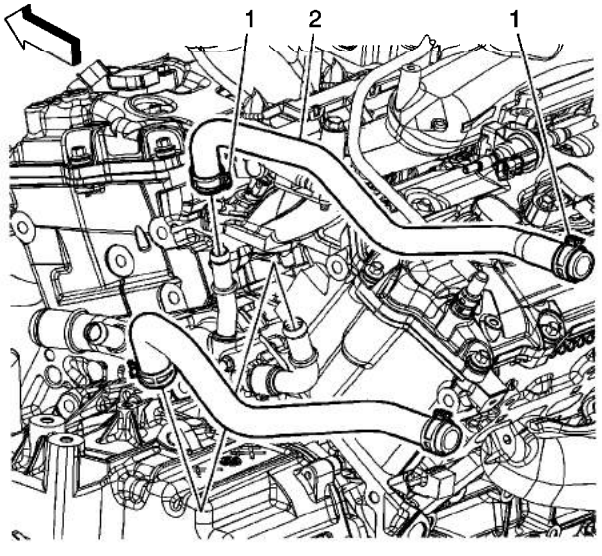
Heater Outlet Hose Replacement (LY7)





Callout	Component Name
Preliminary Procedures 1. Remove the fuel injector sight shield. Refer to Fuel Injector Sight Shield Replacement. 2. Partially drain the cooling system. Refer to Cooling System Draining and Filling.	
1	Heater Outlet Hose Clamp (Qty: 2)
2	Heater Outlet Hose

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Odor Correction (Without HP5)

Eliminating Air Conditioning Odor

Odors may be emitted from the air conditioning system primarily at start up in hot, humid climates. The following conditions may cause the odor:

- Debris is present in the HVAC module.
- Microbial growth on the evaporator core

When the blower motor fan is turned on, the microbial growth may release an unpleasant musty odor into the passenger compartment. To remove odors of this type, the microbial growth must be eliminated. Perform the following procedure:

Deodorize the evaporator core using Deodorizing Aerosol Kit.

Perform the following steps in order to deodorize the A/C system:

1. Ensure that the plenum which draws outside air into the HVAC module is clear of debris.
2. Disable the A/C compressor clutch operation by disconnecting the clutch coil electrical connector.
3. Dry the evaporator core by performing the following steps:
   3.1. Start the engine.
   3.2. Select the warmest temperature setting.
   3.3. Select the recirculation mode.
   3.4. Run the blower motor on high for 10 minutes.
4. Locate an area in the HVAC module case between the blower motor and the evaporator core downstream of the blower motor.
5. Drill a 3.175 mm (0.125 in) hole where the hole will not interfere with or damage the following components:
   - The blower motor
   - The evaporator core
   - Any other operating part the of system
6. Wear safety goggles and latex gloves in order to perform the following actions:
   6.1. Select the maximum blower speed.
   6.2. Insert the deodorizer extension tube into the hole to the mark on the extension tube.
   6.3. Use short spray bursts and vary the direction of spray for a 2-3 minute period of time.
7. Shut the engine OFF. Allow the vehicle to sit for 3-5 minutes.
8. Seal the 3.175 mm (0.125 in) hole with body sealer or RTV gasket compound.
9. Start the engine.
10. Operate the blower motor on high for 15-20 minutes to dry.
11. Reconnect the A/C compressor clutch coil electrical connector.
12. Verify proper clutch operation.

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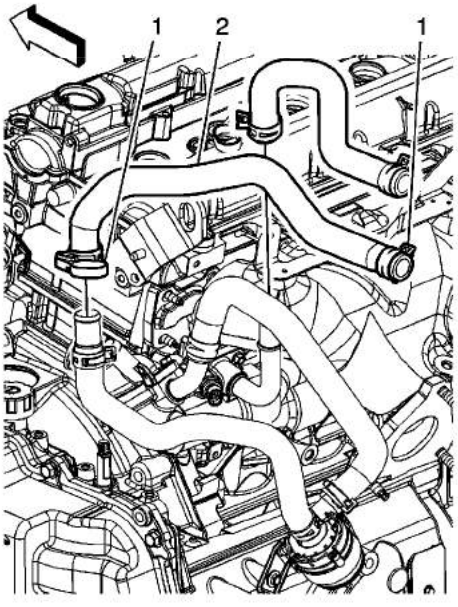
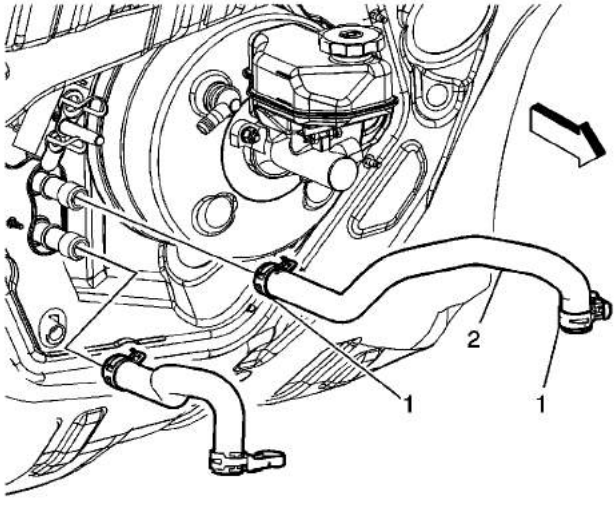
Heater Outlet Hose Replacement (LAT)





Callout	Component Name
Preliminary Procedures Partially drain the cooling system. Refer to Cooling System Draining and Filling.	
1	Heater outlet hose clamps (Qty 2).
2	Heater outlet hose.

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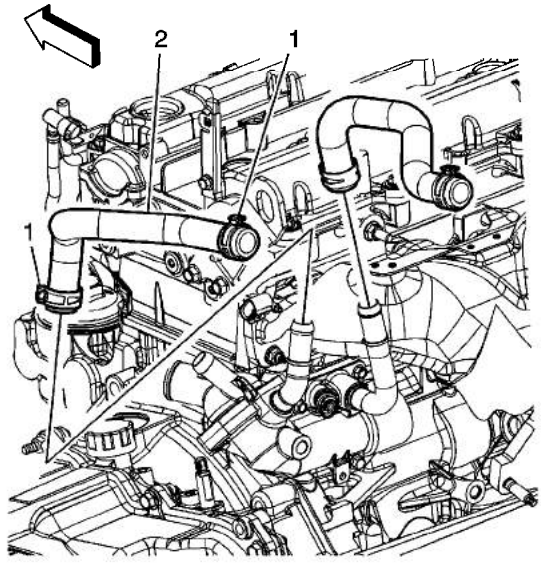
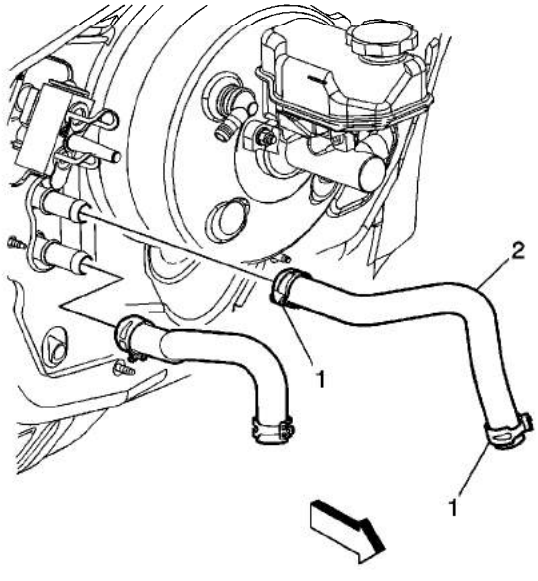
Heater Outlet Hose Replacement (LE5)





Callout	Component Name
Preliminary Procedures Partially drain the cooling system. Refer to Cooling System Draining and Filling.	
1	Heater outlet hose clamps (Qty 2).
2	Heater outlet hose.

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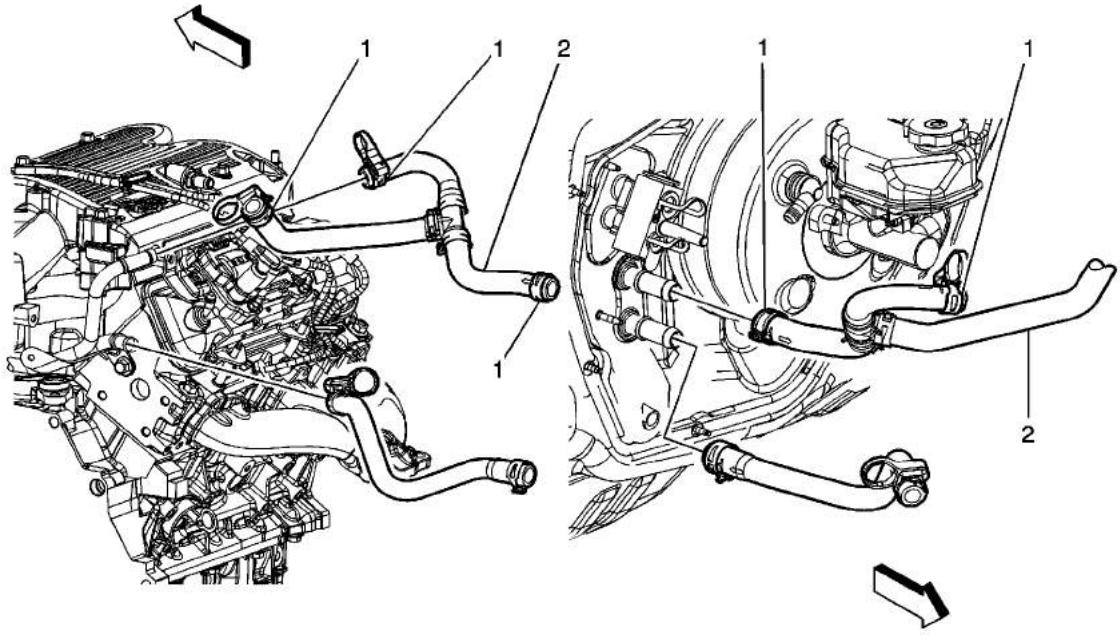
Heater Outlet Hose Replacement (LZ4)



Callout	Component Name
Preliminary Procedures Partially drain the cooling system. Refer to Cooling System Draining and Filling.	
1	Heater Outlet Hose Clamp (Qty: 3)
2	Heater Outlet Hose

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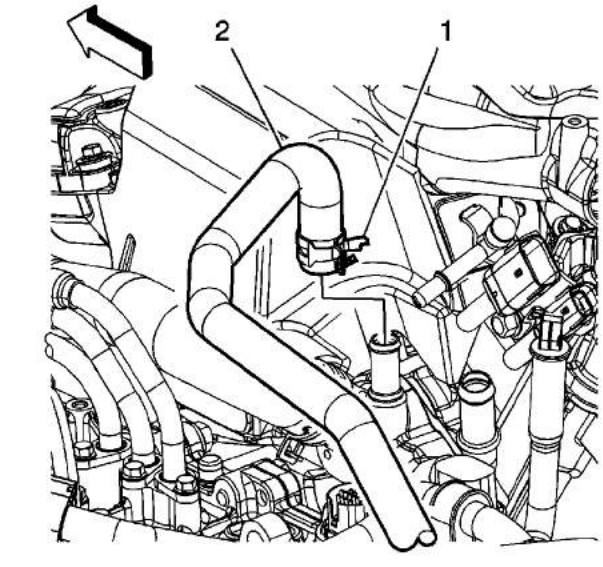
Heater Outlet Hose Replacement (HP5 Pump to Engine)

Special Tools

J 38185 Hose Clamp Pliers

Removal Procedure

1. Drain the coolant. Refer to Cooling System Draining and Filling
2. Remove the drive motor generator control module assembly. Refer to Drive Motor Generator Control Module Assembly Replacement



3. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and remove the heater outlet hose (2) from the thermostat housing.

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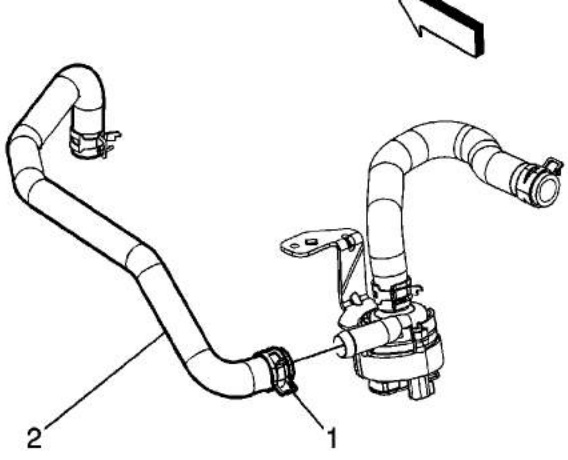
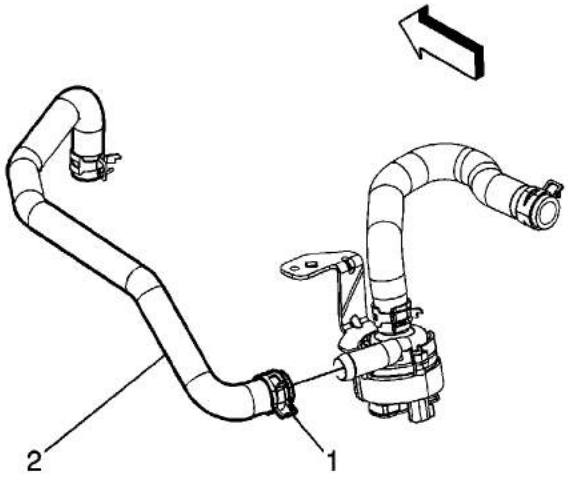


4. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and remove the heater outlet hose (2) from the heater coolant pump.
5. Remove the heater outlet hose - pump to engine from the vehicle.

Installation Procedure

1. Install the heater outlet hose - pump to engine to the vehicle.



2. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and install the heater outlet hose (2) to the heater coolant pump.

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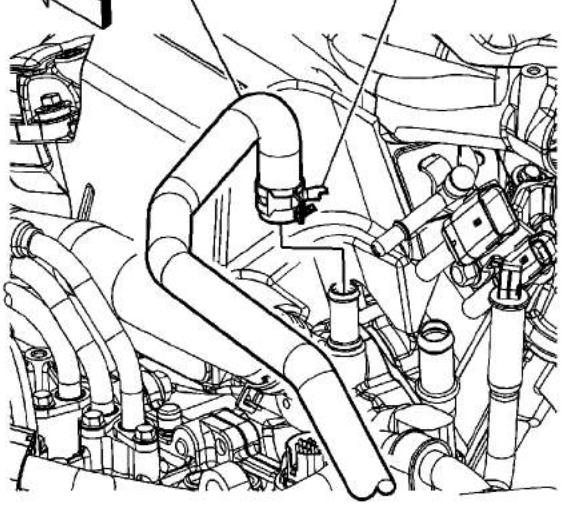

3. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and install the heater outlet hose (2) to the thermostat housing.
4. Install the drive motor generator control module assembly. Refer to Drive Motor Generator Control Module Assembly Replacement
5. Fill the coolant. Refer to Cooling System Draining and Filling

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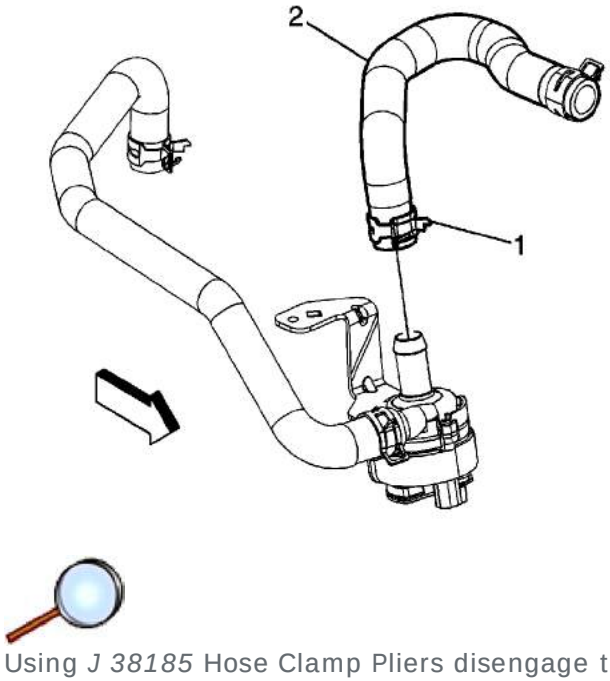
Heater Outlet Hose Replacement (HP5 Pump to Heater Core)

Special Tools

J 38185 Hose Clamp Pliers

Removal Procedure

1. Drain the coolant. Refer to Cooling System Draining and Filling
2. Remove the drive motor generator control module assembly. Refer to Drive Motor Generator Control Module Assembly Replacement



3. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and remove the heater outlet hose (2) from the heater coolant pump.

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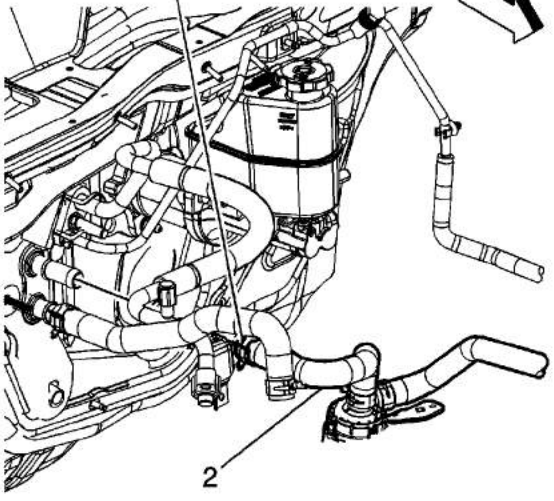
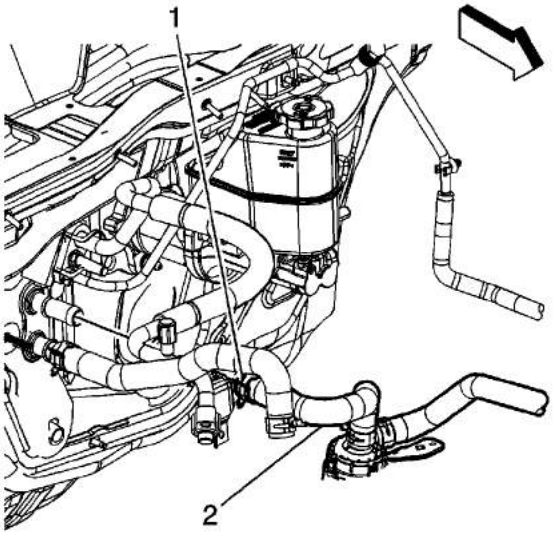


4. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and remove the heater outlet hose (2) from the heater core.
5. Remove the heater outlet hose - pump to heater core from the vehicle.

Installation Procedure

1. Install the heater outlet hose - pump to heater core to the vehicle.



2. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and install the heater outlet hose (2) to the heater core.

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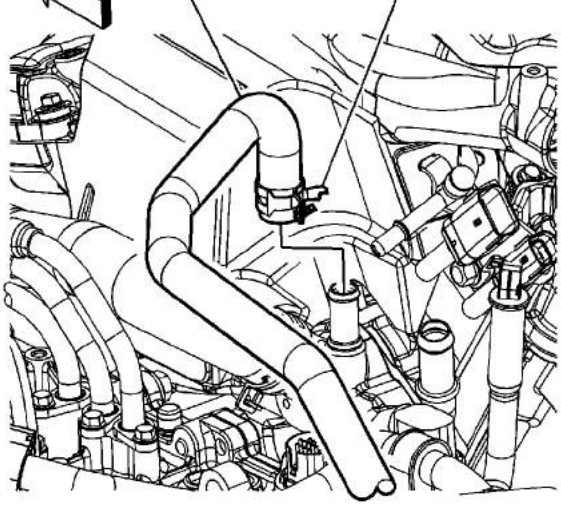

3. Using *J 38185* Hose Clamp Pliers disengage the tension on the hose clamp (1) and install the heater outlet hose (2) to the heater coolant pump.
4. Install the drive motor generator control module assembly. Refer to Drive Motor Generator Control Module Assembly Replacement
5. Fill the coolant. Refer to Cooling System Draining and Filling

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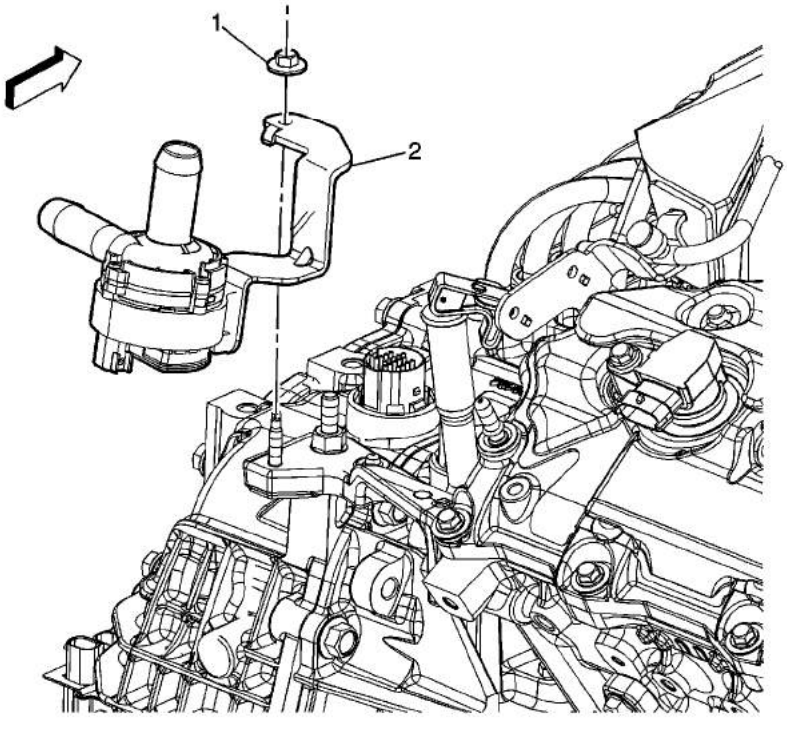
Heater Coolant Pump Replacement (HP5)



Callout	Component Name
Preliminary Procedures 1. Drain the coolant. Refer to Cooling System Draining and Filling 2. Remove the heater outlet hoses connected to the heater coolant pump. Refer to Heater Outlet Hose Replacement 3. Disconnect the heater coolant pump electrical connector.	
1	Heater Coolant Pump Bolt **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 10 N·m (88 lb in)
2	Heater Coolant Pump

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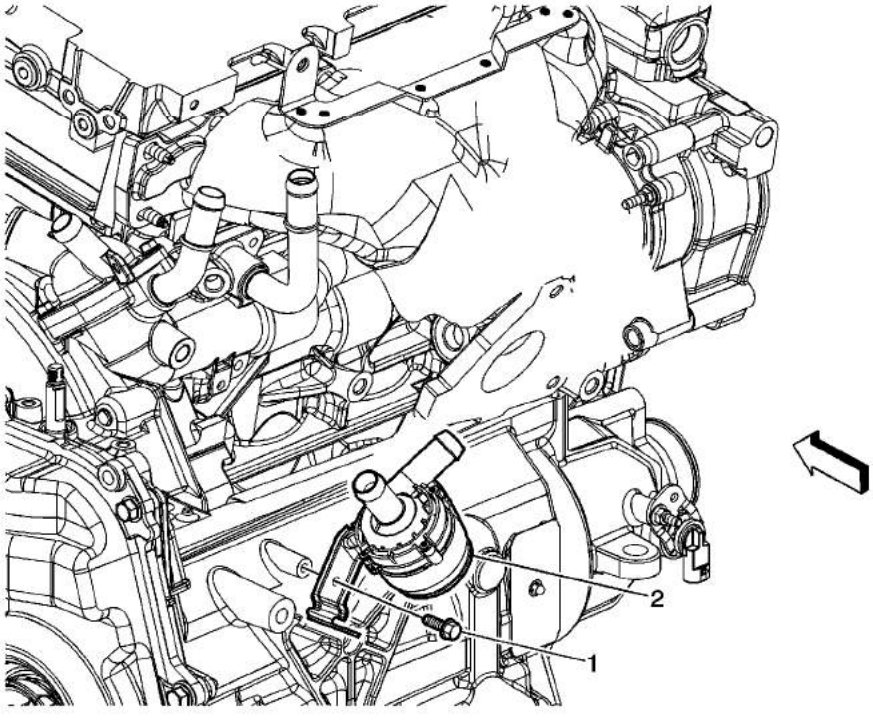
Heater Coolant Pump Replacement (LAT)



Callout	Component Name
Preliminary Procedures 1. Drain the cooling system. Refer to Cooling System Draining and Filling. 2. Remove the inlet and outlet hose clamp from the auxiliary heater pump. 3. Remove the inlet and outlet hoses from the auxiliary heater pump.	
1	Auxiliary Heater Coolant Pump Screw **Caution:** Refer to Fastener Caution in the Preface section. **Tighten** 9 N·m (80 lb in)
2	Auxiliary Heater Coolant Pump **Procedure** Disconnect the electrical connection.

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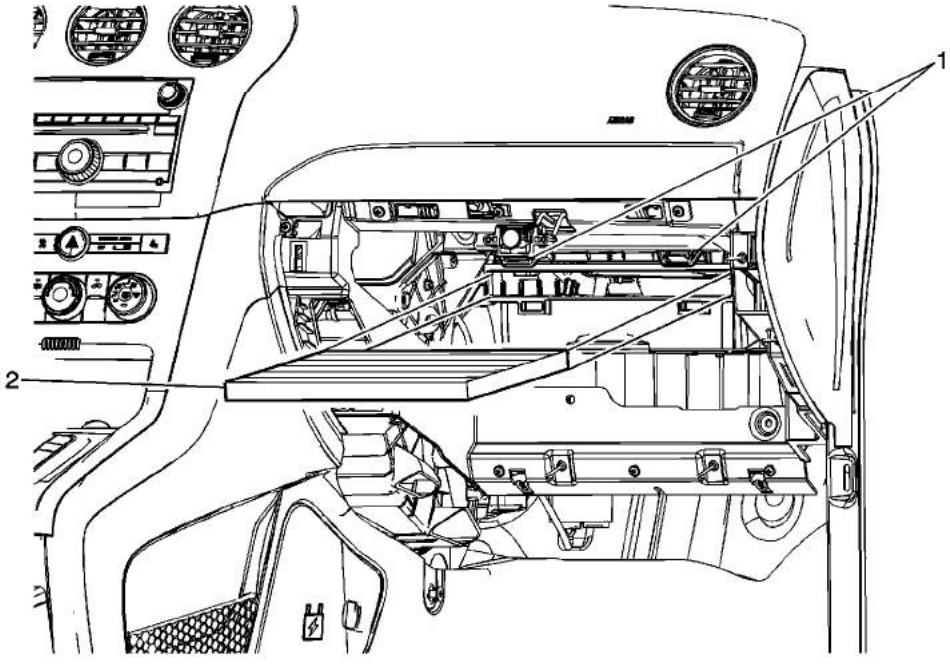
Passenger Compartment Air Filter Replacement



Callout	Component Name
Preliminary Procedure Remove the instrument panel compartment. Refer to Instrument Panel Compartment Replacement .	
1	Passenger Compartment Air Filter Cover **Procedure** Squeeze the cover tabs for removal.
2	Passenger Compartment Air Filter

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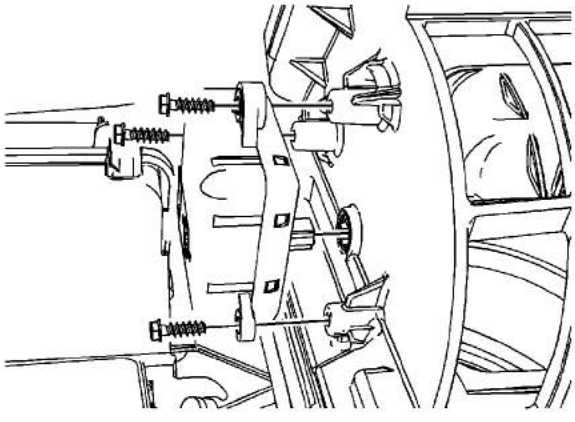
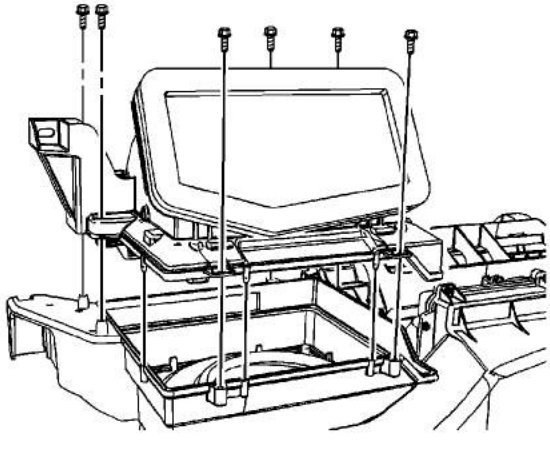
Air Inlet Assembly Replacement

Removal Procedure



1. Remove the HVAC module. Refer to HVAC Module Assembly Replacement.
2. Disconnect the electrical connector from the recirculation actuator.
3. Remove the recirculation actuator screws.
4. Remove the recirculation actuator.



5. Remove the air inlet assembly screws.

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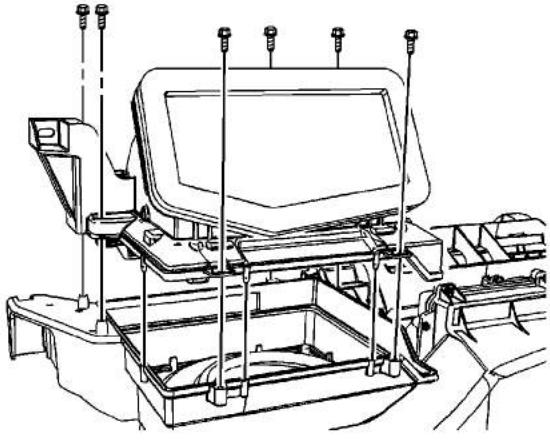
Installation Procedure

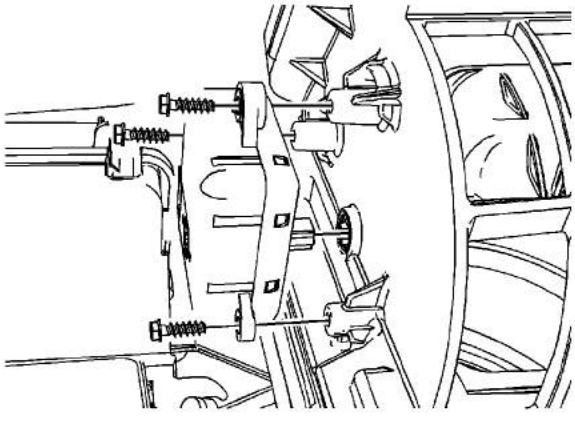


1. Install the air inlet assembly.

   Caution: Refer to Fastener Caution in the Preface section.

2. Install the air inlet assembly screws.

   Tighten
   Tighten the screws to 1.5 N·m (13 lb in).



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3. Install the recirculation actuator.
4. Install the recirculation actuator screws.

Tighten
Tighten the screws to 1.5 N·m (13 lb in).

5. Install the electrical connector to the recirculation actuator.
6. Install the HVAC module. Refer to HVAC Module Assembly Replacement.

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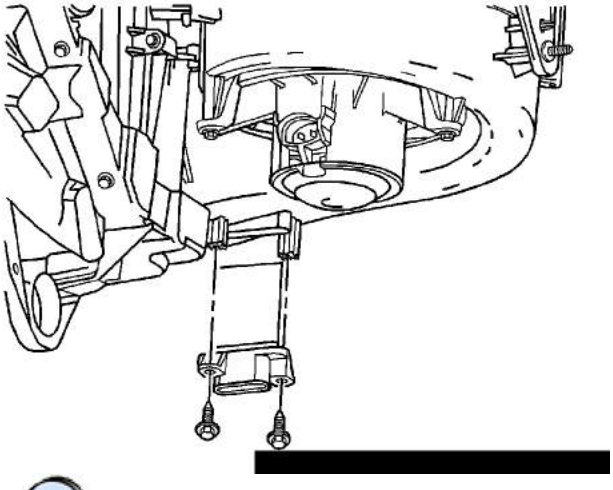
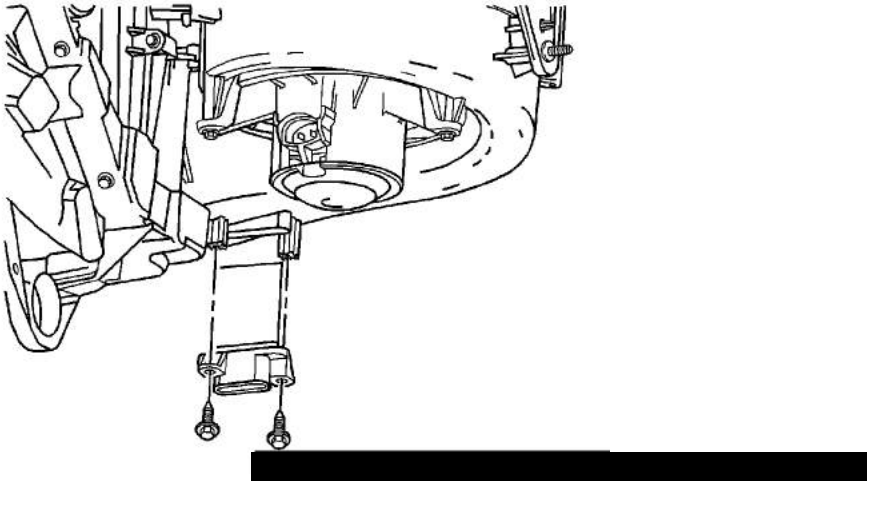
Blower Motor Control Module Replacement

Removal Procedure



1. Disconnect the electrical connector from the blower motor control module.
2. Remove the blower control module screws from the HVAC module.
3. Remove the blower motor control module from the HVAC module.

Installation Procedure



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1. Install the blower motor control module to the HVAC module.

   Caution: Refer to Fastener Caution in the Preface section.

2. Install the blower motor control module screws to the HVAC module and tighten the screws to **1.5 N·m (13 lb in)**.
3. Connect the electrical connector to the blower motor control module.

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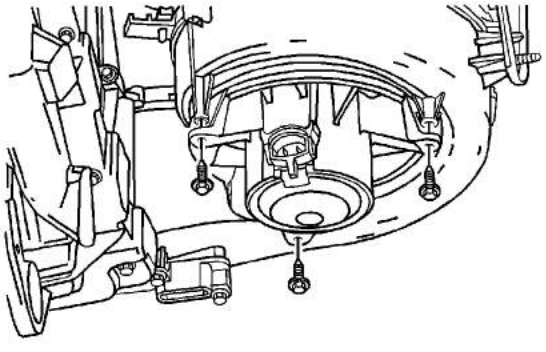
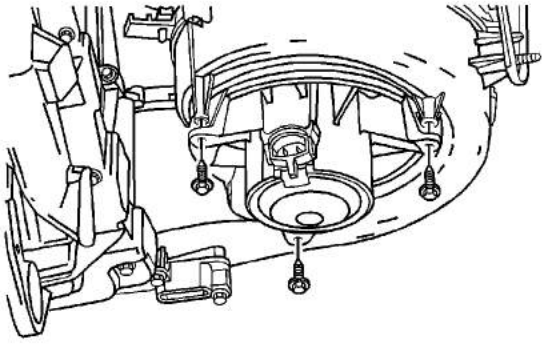
Blower Motor Replacement

Removal Procedure



1. Disconnect the electrical connector from the blower motor.
2. Remove the blower motor screws from the HVAC module.
3. Remove the blower motor from the HVAC module.

Installation Procedure



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1. Install the blower motor to the HVAC module.

   Caution: Refer to Fastener Caution in the Preface section.

2. Install the blower motor screws to the HVAC module and tighten the screws to **1.5 N·m (13 lb in)**.
3. Connect the electrical connector to the blower motor.

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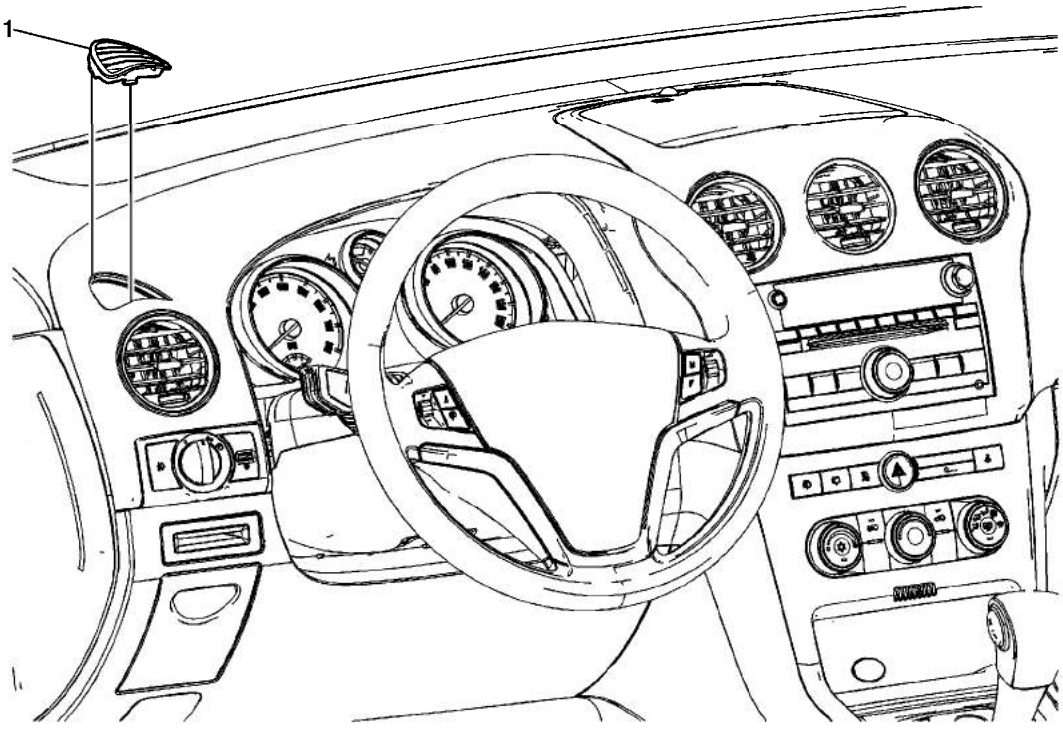
Side Window Air Outlet Replacement



Callout	Component Name
1	Side Window Air Outlet **Procedure** Use a flat bladed plastic trim tool in order to unsnap the air outlet from the instrument panel.

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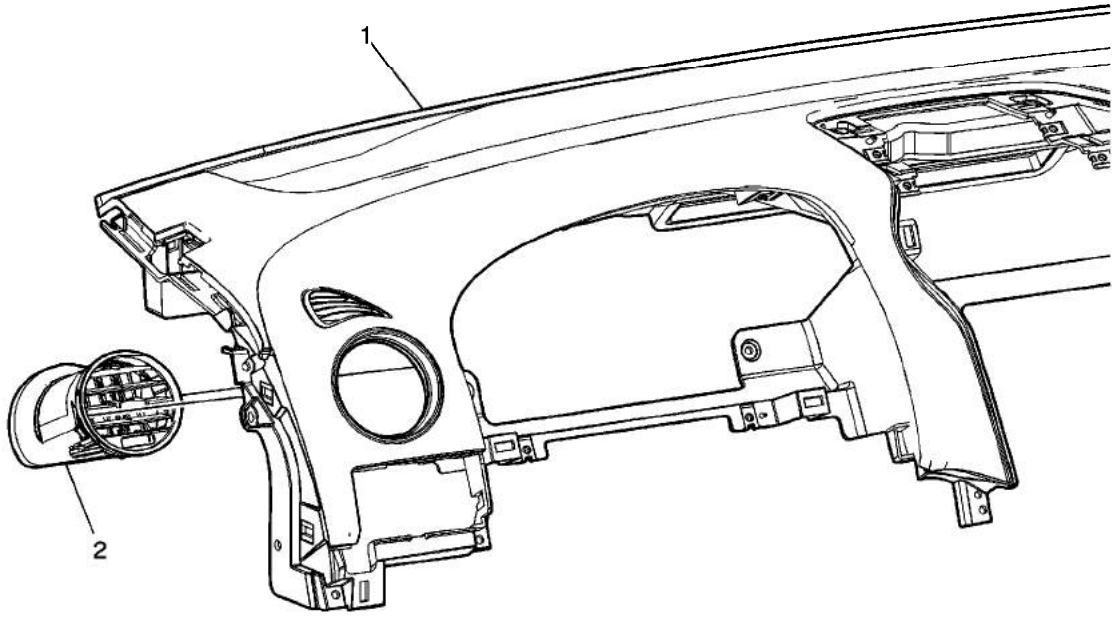
Instrument Panel Outer Air Outlet Replacement - Left Side



Callout	Component Name
1	Instrument Panel Trim Panel. Refer to Instrument Panel Trim Panel Replacement.
2	Instrument Panel Left Air Outlet. **Procedure** Unsnap the outlet from the instrument panel trim panel.

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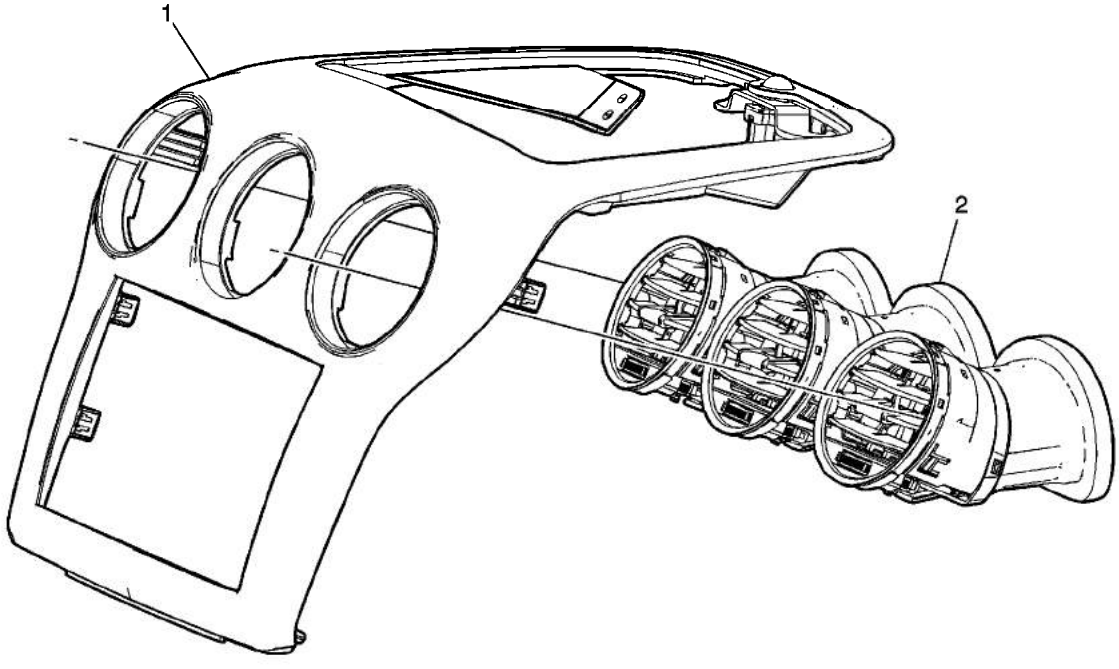
Instrument Panel Center Air Outlet Replacement



Callout	Component Name
1	Instrument Panel Accessory Bezel. Refer to Instrument Panel Accessory Bezel Replacement.
2	Instrument Panel Center Air Outlet (Qty: 3) **Procedure** Unsnap the outlet from the accessory bezel.

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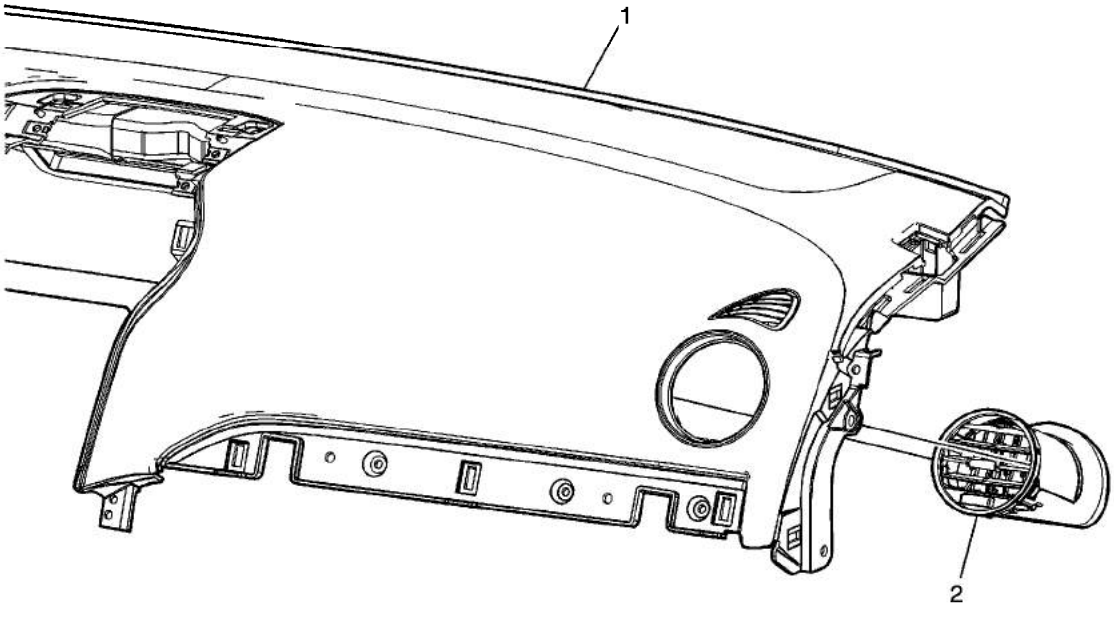
Instrument Panel Outer Air Outlet Replacement - Right Side



Callout	Component Name
1	Instrument Panel Trim Panel. Refer to Instrument Panel Trim Panel Replacement.
2	Instrument Panel Right Air Outlet. **Procedure** Unsnap the outlet from the instrument panel trim panel.

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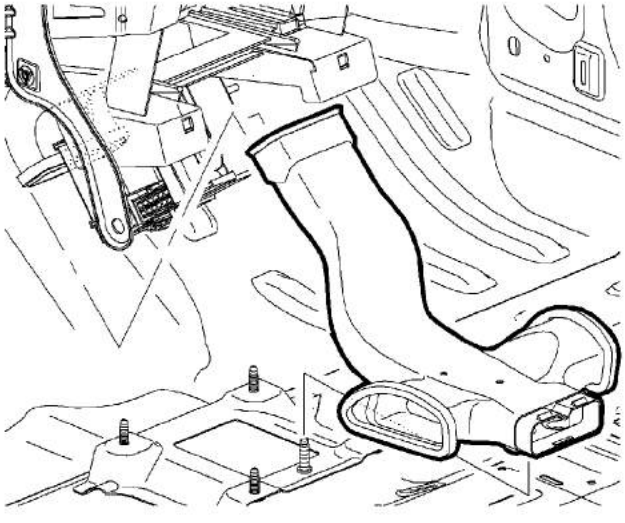
Floor Air Outlet Replacement - Center

Removal Procedure



1. Remove the transmission control bracket. Refer to Transmission Control Bracket Replacement .
2. Slide the center floor air outlet duct forward enough to clear the rear floor air outlet duct, and then up, and rearward to remove.

Installation Procedure

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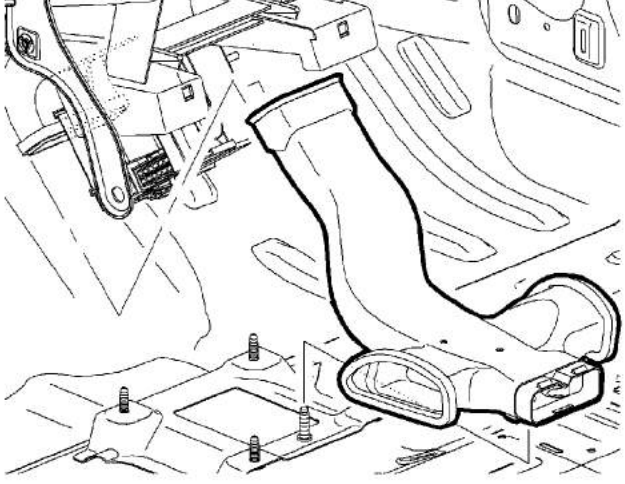

1. Slide the center floor air outlet duct forward enough to clear rear floor air duct, and then down, and rearward to install.
2. Install the transmission control bracket. Refer to Transmission Control Bracket Replacement .

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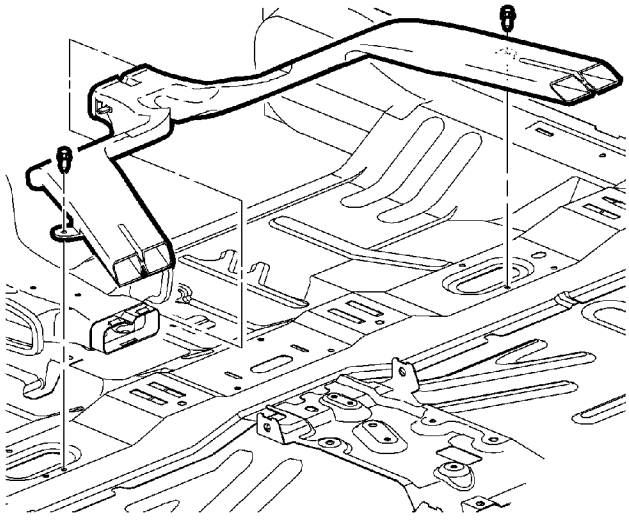
Rear Floor Air Outlet Replacement

Removal Procedure



1. Remove the front seats. Refer to Front Seat Replacement - Bucket.
2. Remove the floor console. Refer to Front Floor Console Replacement.
3. Partially remove the floor carpet from the front footwells to the B-pillars.
4. Remove the rear floor air outlet push pins from the floor pan.
5. Remove the rear floor air outlet from the floor pan.

Installation Procedure

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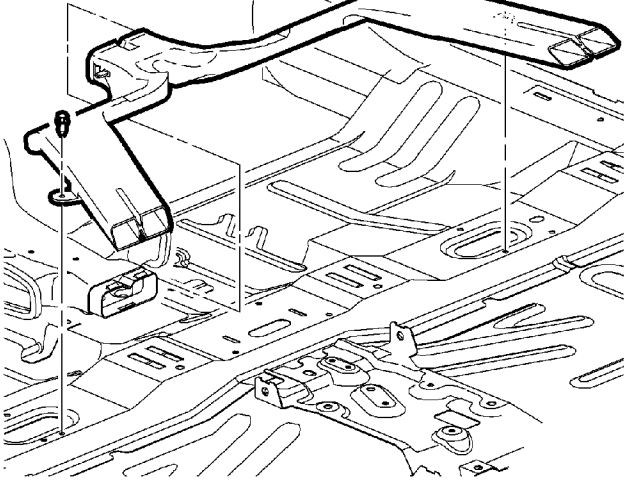

1. Install the rear floor air outlet to the floor pan.
2. Install the rear floor air outlet push pins to the floor pan.
3. Install the floor carpet to the B-pillars and the front footwells .
4. Install the floor console. Refer to Front Floor Console Replacement.
5. Install the front seats. Refer to Front Seat Replacement - Bucket.

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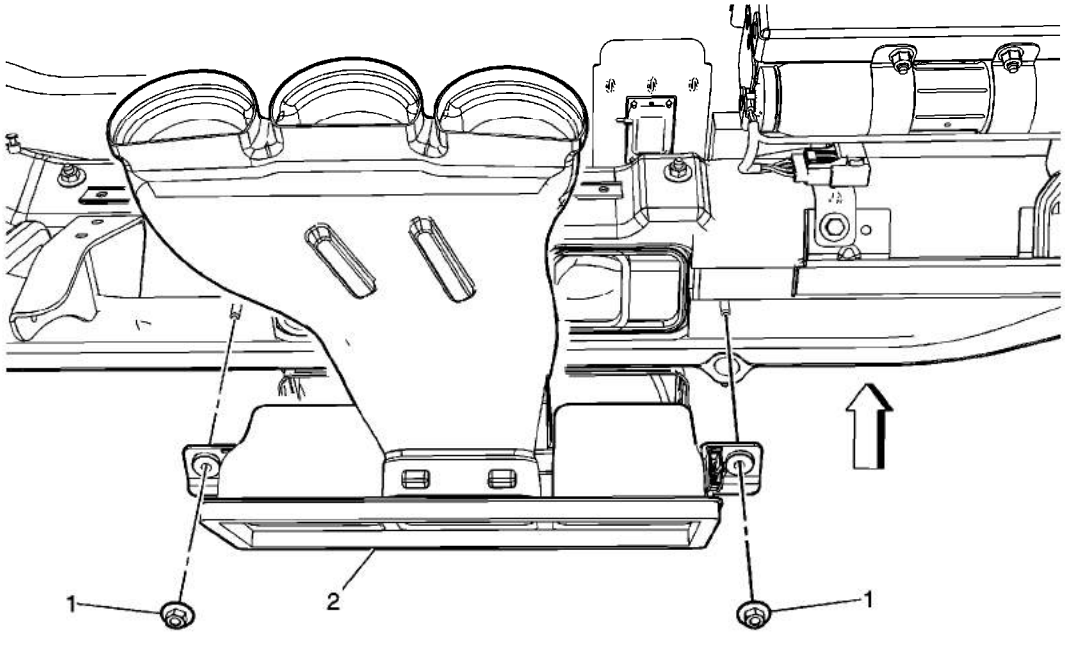
Center Air Outlet Duct Replacement



Callout	Component Name
Preliminary Procedure 1. Remove I/P trim panel. Refer to Instrument Panel Trim Panel Replacement . 2. Disconnect any electrical connections.	
1	Center Air Outlet Duct Nut (Qty: 2)
2	Center Air Outlet Duct **Tip** Ensure all air duct seals are secure upon installation.

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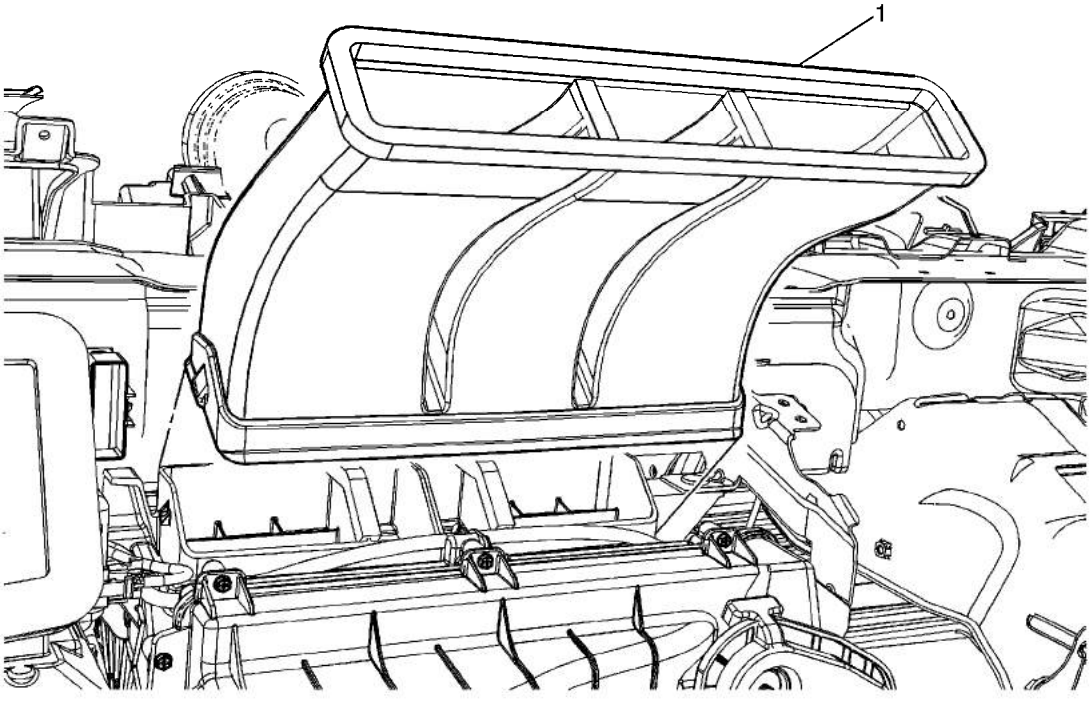
Windshield Defroster Duct Replacement



Callout	Component Name
Preliminary Procedure 1. Remove I/P trim panel. Refer to Instrument Panel Trim Panel Replacement . 2. Disconnect any electrical connections.	
1	Windshield Defroster Duct **Tip** Ensure all air duct seals are secure upon installation.

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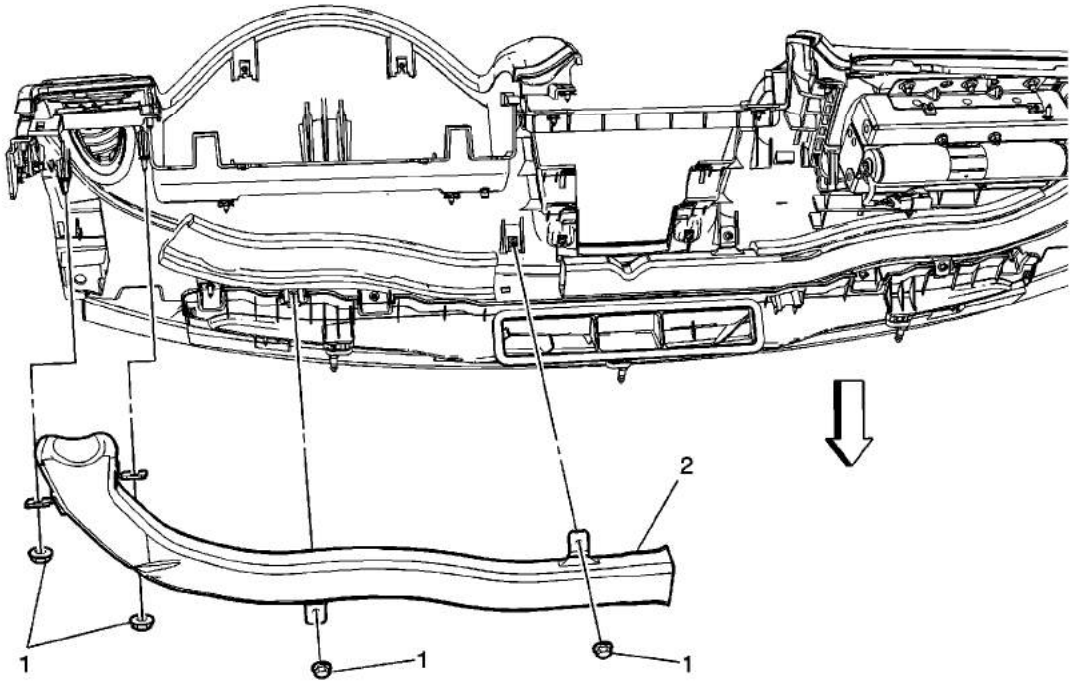
Side Window Defogger Outlet Duct Replacement - Left Side



Callout	Component Name
Preliminary Procedure 1. Remove I/P trim panel. Refer to Instrument Panel Trim Panel Replacement . 2. Disconnect any electrical connections. 3. Invert I/P assembly to access defogger duct.	
1	Side Window Defogger Outlet Duct - Left Side Nut (Qty: 4)
2	Side Window Defogger Outlet Duct - Left Side **Tip** Ensure all air duct seals are secure upon installation.

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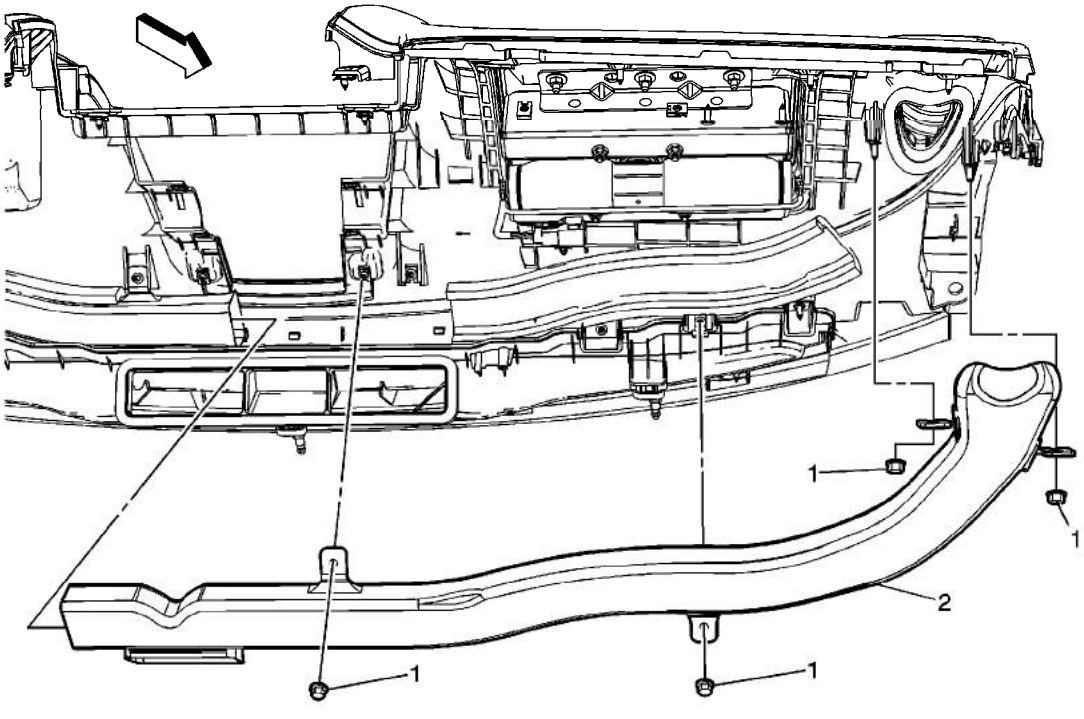
Side Window Defogger Outlet Duct Replacement - Right Side



Callout	Component Name
Preliminary Procedure 1. Remove I/P trim panel. Refer to Instrument Panel Trim Panel Replacement . 2. Disconnect any electrical connections. 3. Invert I/P assembly to access defogger duct.	
1	Side Window Defogger Outlet Duct - Right Side Nut (Qty: 4)
2	Side Window Defogger Outlet Duct - Right Side **Tip** Ensure all air duct seals are secure upon installation.

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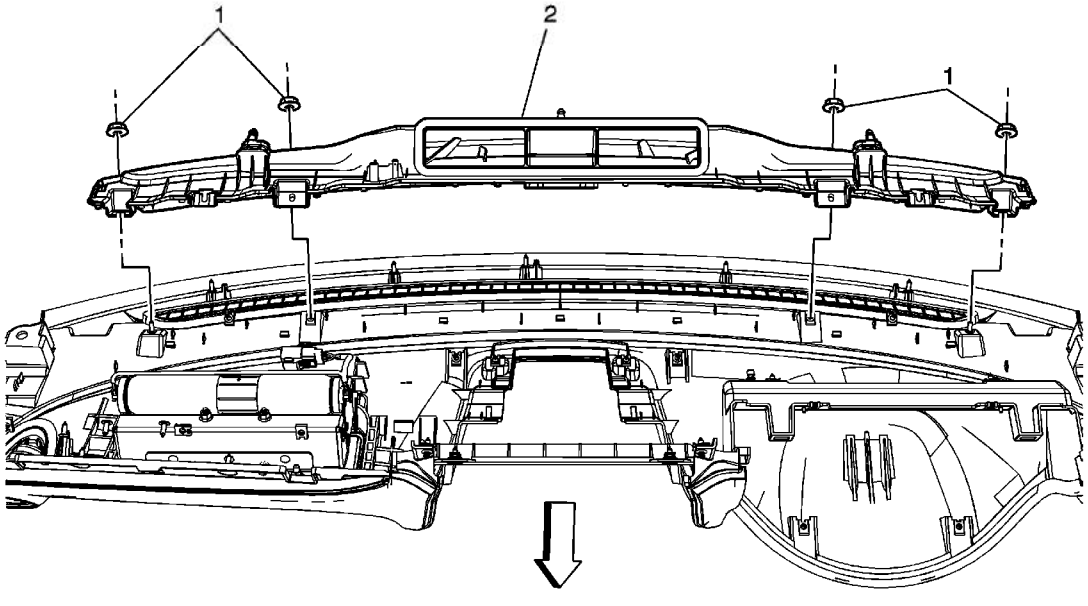
Defroster Air Outlet Replacement



Callout	Component Name
Preliminary Procedure 1. Remove I/P trim panel. Refer to Instrument Panel Trim Panel Replacement . 2. Remove side window defogger outlet duct - left side. Refer to Side Window Defogger Outlet Duct Replacement - Left Side . 3. Remove side window defogger outlet duct - right side. Refer to Side Window Defogger Outlet Duct Replacement - Right Side . 4. Disconnect any electrical connections.	
1	Defroster Air Outlet Nut (Qty: 4)
2	Defroster Air Outlet **Tip** Ensure all air duct seals are secure upon installation.

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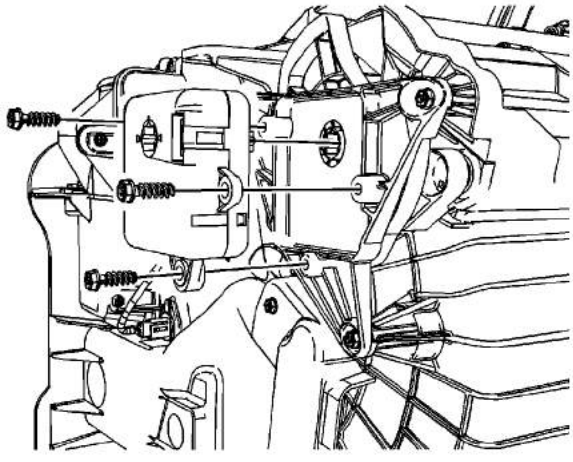
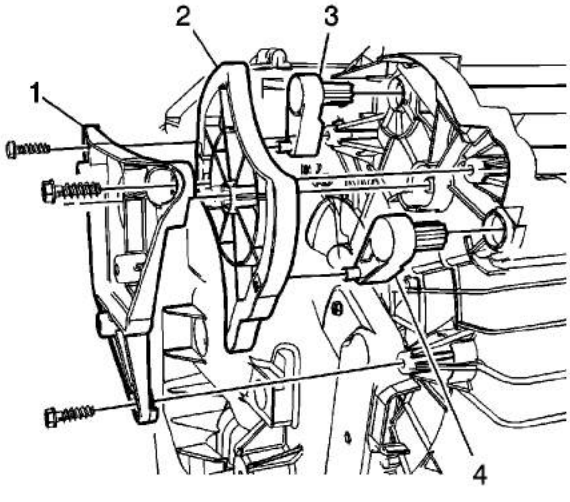
Air Temperature Door Replacement

Removal Procedure



1. Remove the HVAC module. Refer to HVAC Module Assembly Replacement.
2. Remove the evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.
3. Remove the mode actuator screws from the evaporator case assembly.
4. Remove the mode actuator from the evaporator case assembly.



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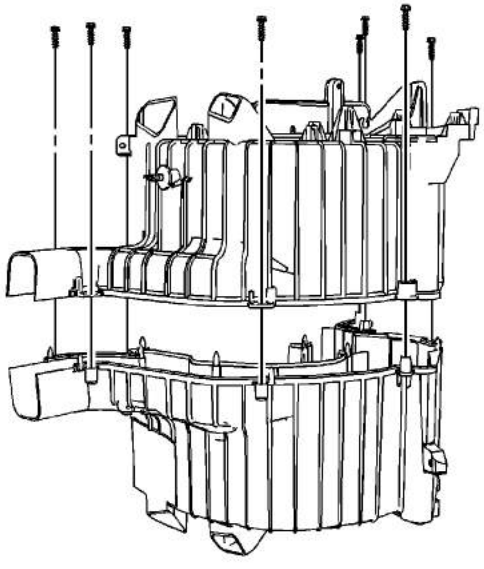
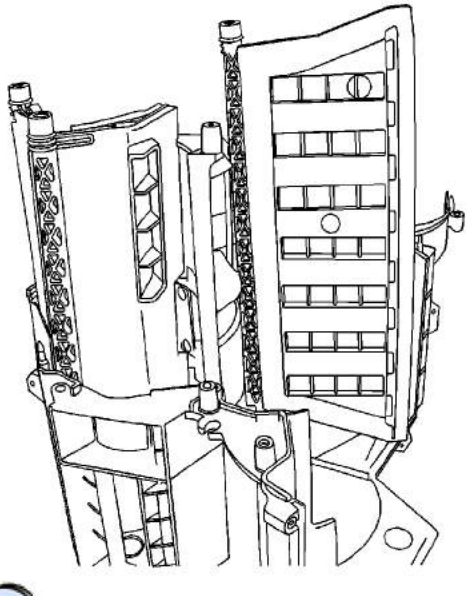
7. Remove the mode cam (2) and the mode cam levers (1) from the evaporator case assembly.



8. Remove the screws retaining the two evaporator case halves.
9. Separate the evaporator case halves.



10. Remove the temperature door from the evaporator case assembly.

Installation Procedure

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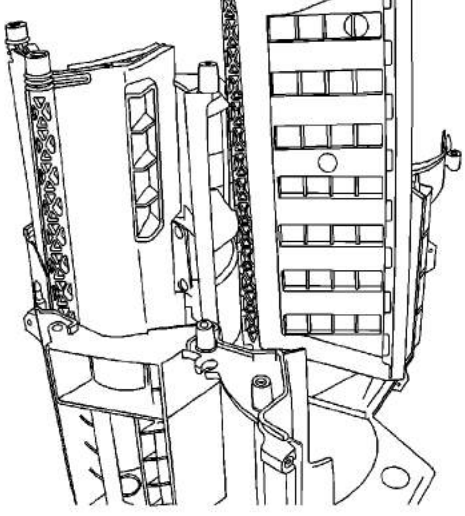
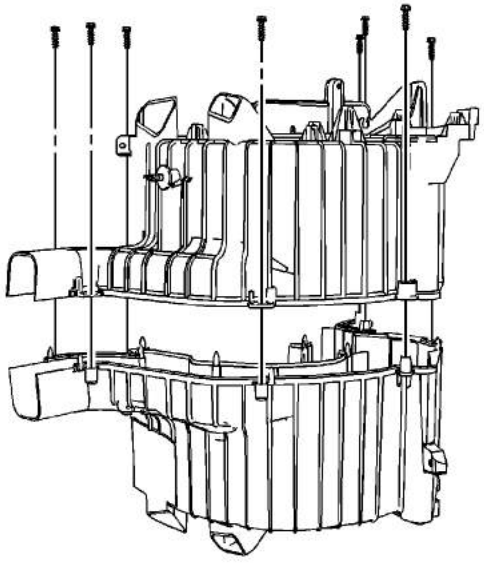


1. Install the temperature door to the evaporator case assembly.



2. Assemble the evaporator case halves.

   Caution: Refer to Fastener Caution in the Preface section.

3. Install the screws to retain the evaporator case halves.

   Tighten
   Tighten the screws to 1.5 N·m (13 lb in).

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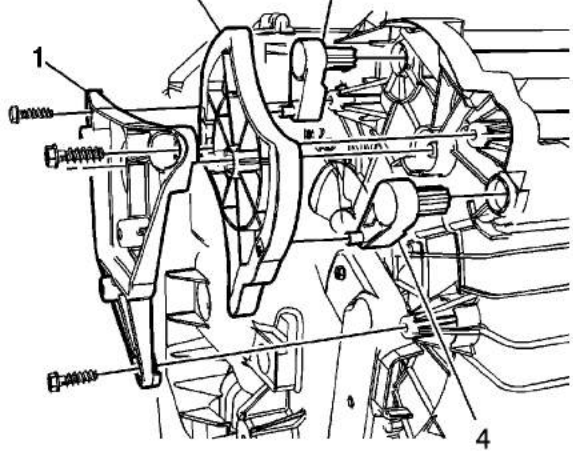
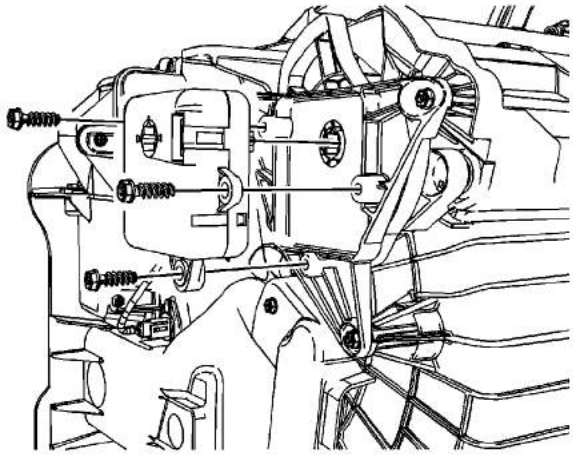


4. Install the mode cam levers (3) to the evaporator case assembly.
5. Align and install the mode cam (2) to the mode cam levers (3). Rotate the mode cam (2) to verify mode door operation.
6. Install the mode cam bracket (1) to the evaporator case assembly.
7. Install the mode cam bracket screws to the evaporator case assembly.

Tighten
Tighten the screws to 1.5 N·m (13 lb in).



8. Install the mode actuator to the evaporator case assembly.
9. Install the mode actuator screws to the evaporator case assembly.

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10. Install the evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.
11. Install the HVAC module. Refer to HVAC Module Assembly Replacement.

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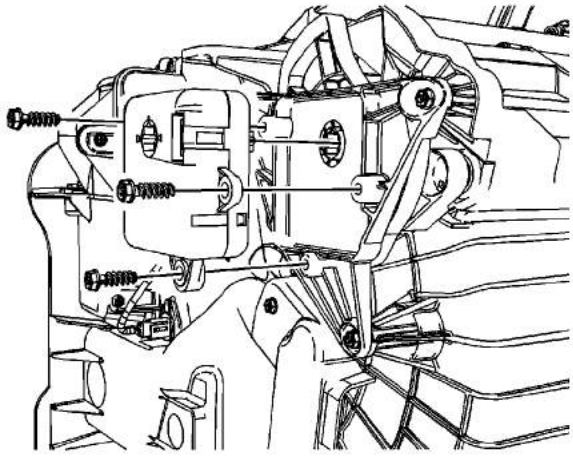
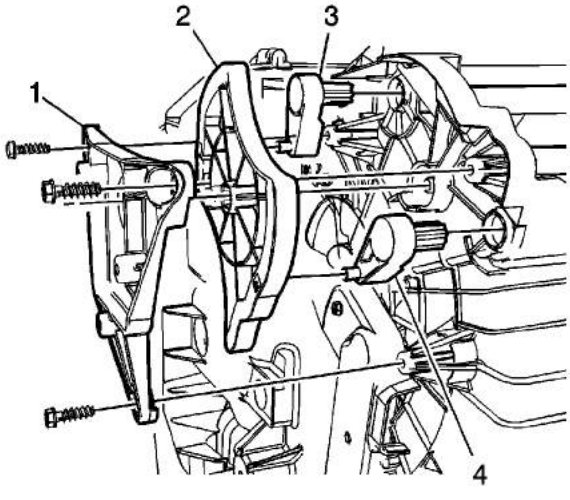
Defroster Door Replacement

Removal Procedure



1. Remove the HVAC module. Refer to HVAC Module Assembly Replacement.
2. Remove the evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.
3. Remove the mode actuator screws from the evaporator case assembly.
4. Remove the mode actuator from the evaporator case assembly.



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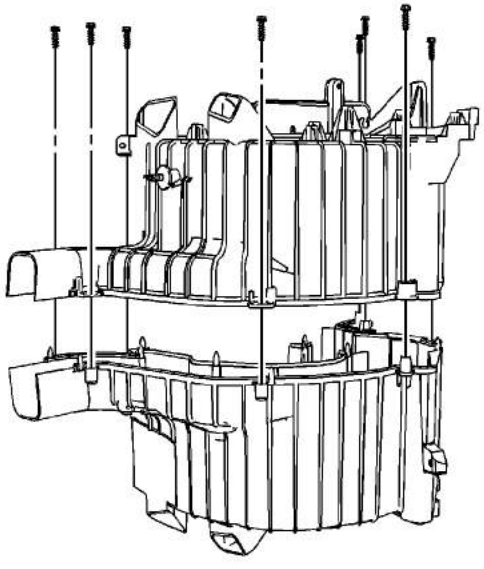
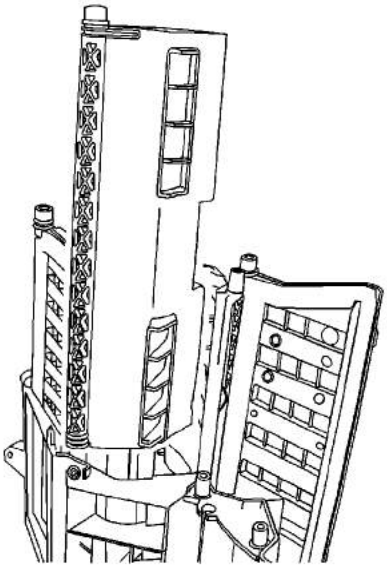
7. Remove the mode cam (2) and the mode cam levers (1) from the evaporator case assembly.



8. Remove the screws retaining the two evaporator case halves.
9. Separate the evaporator case halves.



10. Remove the defroster door from the evaporator case assembly.

Installation Procedure

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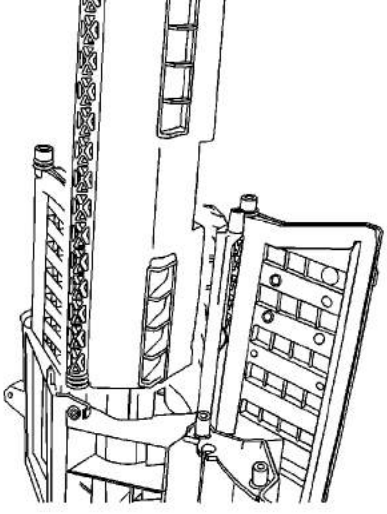
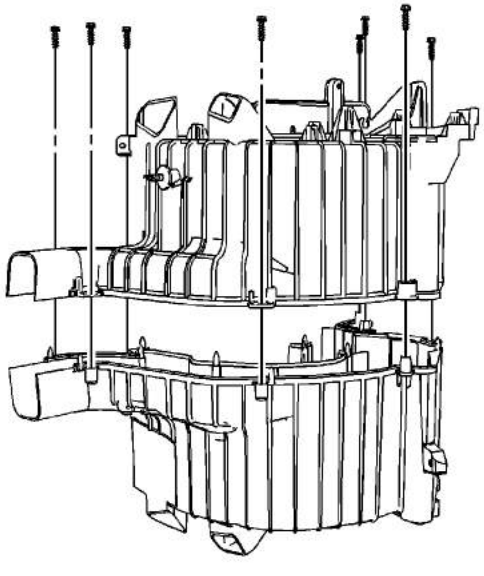


1. Install the defroster door to the evaporator case assembly.



2. Assemble the evaporator case halves.

   Caution: Refer to Fastener Caution in the Preface section.

3. Install the screws to retain the evaporator case halves.

   Tighten
   Tighten the screws to 1.5 N·m (13 lb in).

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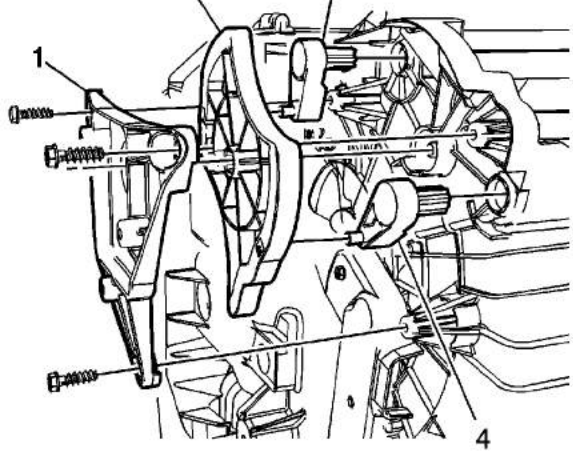
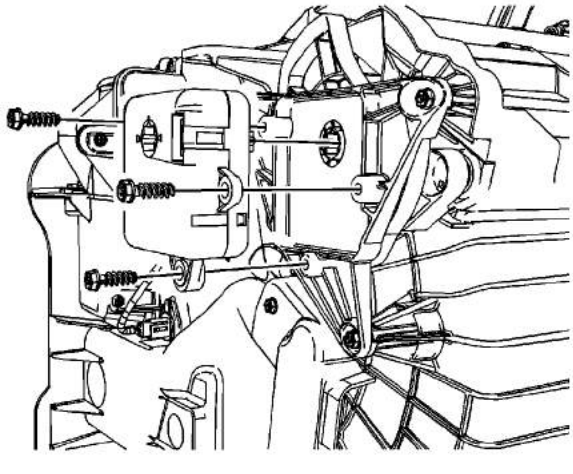


4. Install the mode cam levers (3) to the evaporator case assembly.
5. Align and install the mode cam (2) to the mode cam levers (3). Rotate the mode cam (2) to verify mode door operation.
6. Install the mode cam bracket (1) to the evaporator case assembly.
7. Install the mode cam bracket screws to the evaporator case assembly.

Tighten
Tighten the screws to 1.5 N·m (13 lb in).



8. Install the mode actuator to the evaporator case assembly.
9. Install the mode actuator screws to the evaporator case assembly.

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10. Install the evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.
11. Install the HVAC module. Refer to HVAC Module Assembly Replacement.

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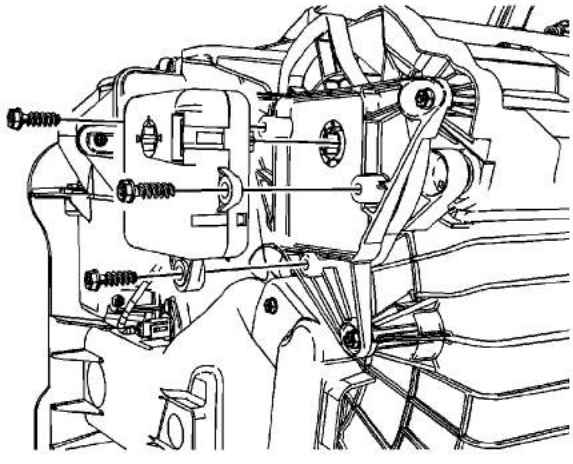
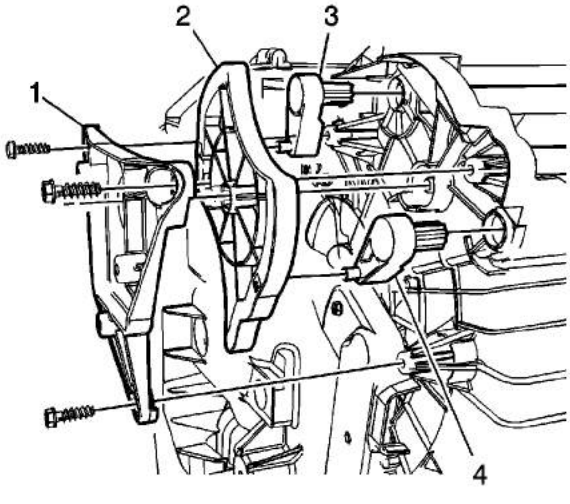
Panel Air Door Replacement

Removal Procedure



1. Remove the HVAC module. Refer to HVAC Module Assembly Replacement.
2. Remove the evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.
3. Remove the mode actuator screws from the evaporator case assembly.
4. Remove the mode actuator from the evaporator case assembly.



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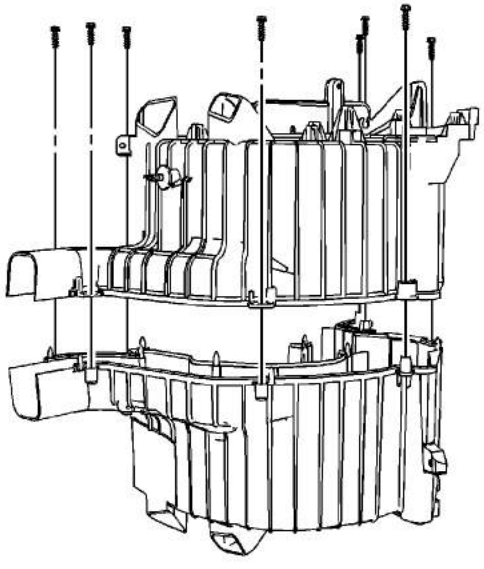
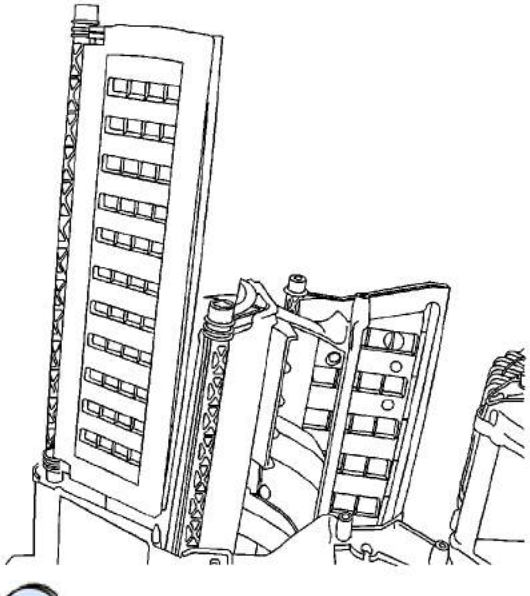
7. Remove the mode cam (2) and the mode cam levers (1) from the evaporator case assembly.



8. Remove the screws retaining the two evaporator case halves.
9. Separate the evaporator case halves.



10. Remove the panel air door from the evaporator case assembly.

Installation Procedure

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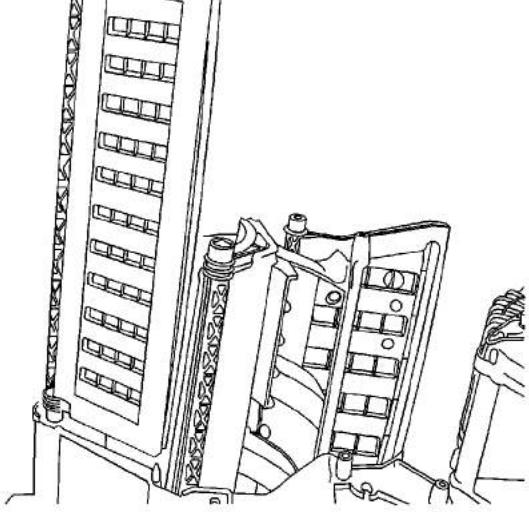
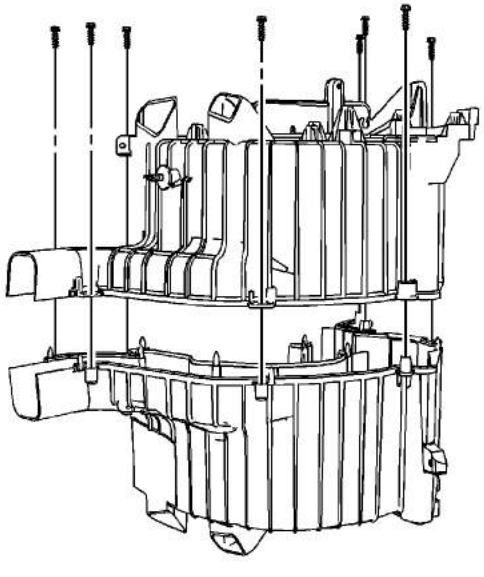


1. Install the panel air door to the evaporator case assembly.



2. Assemble the evaporator case halves.

   Caution: Refer to Fastener Caution in the Preface section.

3. Install the screws to retain the evaporator case halves.

   Tighten
   Tighten the screws to 1.5 N·m (13 lb in).

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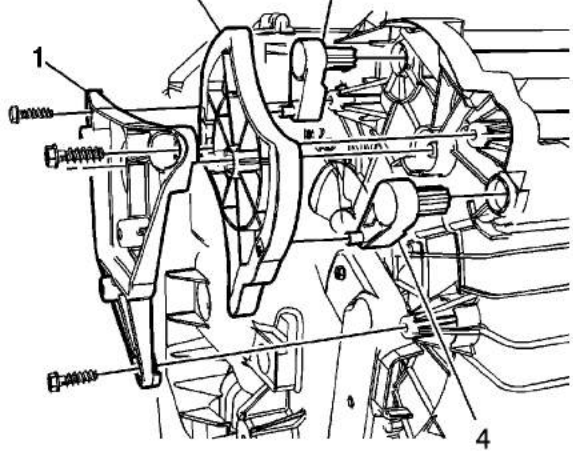
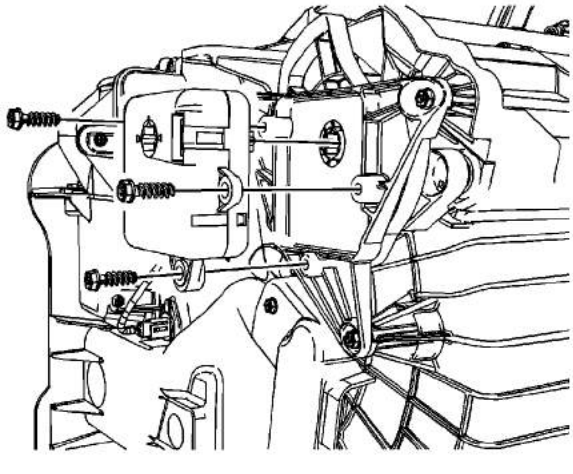


4. Install the mode cam levers (3) to the evaporator case assembly.
5. Align and install the mode cam (2) to the mode cam levers (3). Rotate the mode cam (2) to verify mode door operation.
6. Install the mode cam bracket (1) to the evaporator case assembly.
7. Install the mode cam bracket screws to the evaporator case assembly.

Tighten
Tighten the screws to 1.5 N·m (13 lb in).



8. Install the mode actuator to the evaporator case assembly.
9. Install the mode actuator screws to the evaporator case assembly.

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10. Install the evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.
11. Install the HVAC module. Refer to HVAC Module Assembly Replacement.

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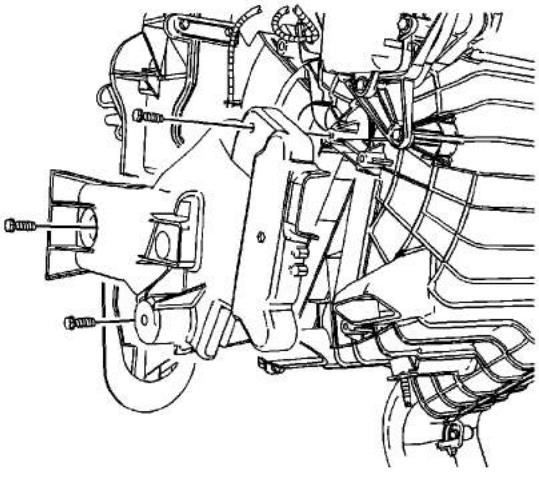
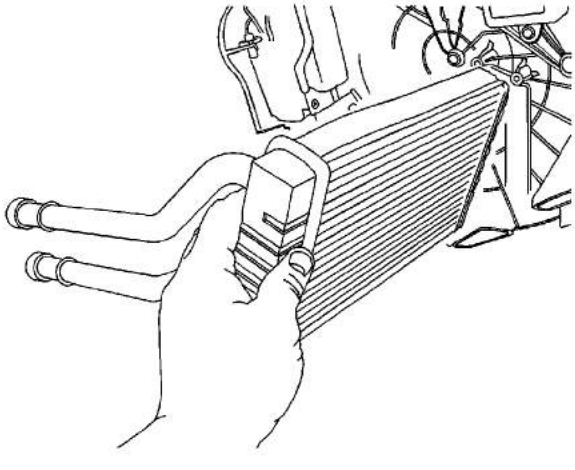
Heater Core Replacement

Removal Procedure



1. Remove the HVAC module from the vehicle. Refer to HVAC Module Assembly Replacement.
2. Remove the heater core cover screws from the HVAC module.
3. Remove the heater core cover from the HVAC module.



4. Remove the heater core from the HVAC module.

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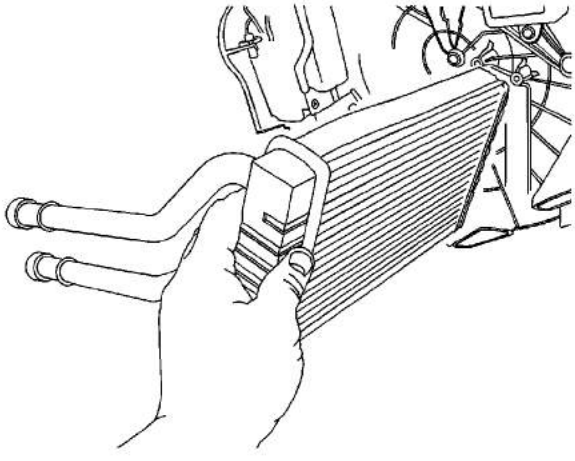
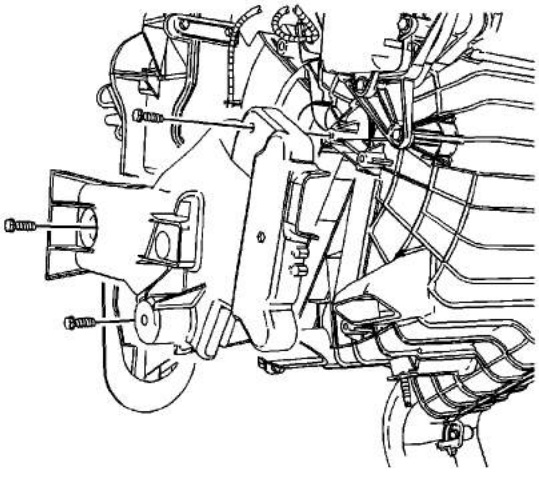


1. Install the heater core to the HVAC module.



2. Install the heater core cover to the HVAC module.

   Caution: Refer to Fastener Caution in the Preface section.

3. Install the heater core cover screws to the HVAC module.

   Tighten
   Tighten the screw to 1.5 N·m (13 lb in).

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