

2018 HVAC**Heating, Ventilation, And Air Conditioning - Traverse****SPECIFICATIONS****FASTENER SPECIFICATIONS****Single Use Non-Threaded Fasteners/Components**

NOTE: <i>All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.</i>
Application
Air Conditioning System Sealing Washer

Reusable Threaded Fastener Tightening Specifications

NOTE: <i>All fasteners listed in this table can be reused after removal.</i>	
Application	Specification
	Metric (English)
Air Conditioning Compressor and Condenser Hose Nut @ Air Conditioning Compressor and Condenser Hose	22 N.m (16 lb ft)
Air Conditioning Compressor and Condenser Hose Nut @ Air Conditioning Condenser	22 N.m (16 lb ft)
Air Conditioning Compressor and Condenser Hose Nut @ Front End Upper Tie Bar-Right Side	9 N.m (80 lb in)
Air Conditioning Compressor Bolt	22 N.m (16 lb ft)
Air Conditioning Compressor Clutch Pulley Bolt	18 N.m (13 lb ft)
Air Conditioning Compressor Drain Plug	7 N.m (62 lb in)
Air Conditioning Compressor Nut	22 N.m (16 lb ft)
Air Conditioning Refrigerant Pressure Sensor	7 N.m (62 lb in)
Air Conditioning Compressor Stud	9 N.m (80 lb in)
Air Conditioning Evaporator Thermal Expansion Valve Bolt	6 N.m (53 lb in)
Air Conditioning Receiver and Dehydrator	7 N.m (62 lb in)
Air Conditioning Refrigerant Heat Exchanger Nut @ Air Conditioning Evaporator Thermal Expansion Valve	22 N.m (16 lb ft)
Air Conditioning Refrigerant Heat Exchanger Nut @ Auxiliary Air Conditioning Evaporator Intermediate Tube	22 N.m (16 lb ft)
Air Conditioning Refrigerant Heat Exchanger Nut @ Front Wheelhouse Panel	9 N.m (80 lb in)
Air Conditioning Refrigerant Pressure Sensor	7 N.m (62 lb in)
Air Distributor Duct Adapter Bolt	2.5 N.m (22 lb in)
Air Heater Screw	2.5 N.m (22 lb in)
Air Inlet Housing Bolt	2.5 N.m (22 lb in)
Auxiliary Air Conditioning Air Lower Duct Bolt	2.5 N.m (22 lb in)
Auxiliary Air Conditioning Evaporator and Blower Case Bolt	1.5 N.m (13 lb in)
Auxiliary Air Conditioning Evaporator and Blower Module Bolt	2.5 N.m (22 lb in)
Auxiliary Air Conditioning Evaporator and Blower Module Nut	9 N.m (80 lb in)
Auxiliary Air Conditioning Evaporator Intermediate Tube Bolt @ Auxiliary Air Conditioning Evaporator Intermediate Tube	4.5 N.m (40 lb in)

NOTE:

All fasteners listed in this table can be reused after removal.

Application	Specification
	Metric (English)
Auxiliary Air Conditioning Evaporator Intermediate Tube Nut	22 N.m (16 lb ft)
Auxiliary Air Conditioning Evaporator Intermediate Tube Nut @ Auxiliary Air Conditioning Evaporator Intermediate Tube	4.5 N.m (40 lb in)
Auxiliary Air Conditioning Evaporator Intermediate Tube Nut @ Auxiliary Thermal Expansion Valve	22 N.m (16 lb ft)
Auxiliary Blower Motor Bolt	2 N.m (18 lb in)
Auxiliary Heater Air Outlet Duct Bolt	2.5 N.m (22 lb in)
Blower Motor Bolt	2.5 N.m (22 lb in)
Blower Motor Control Module Bolt	2 N.m (18 lb in)
Floor Front Air Outlet Duct Bolt	2.5 N.m (22 lb in)
Front Floor Console Auxiliary Cooling Intermediate Duct Bolt	2.5 N.m (22 lb in)
Ground Nut	9 N.m (80 lb in)
Heater and Air Conditioning Evaporator and Blower Module Nut	9 N.m (80 lb in)
Heater and Air Conditioning Evaporator and Blower Lower Case Bolt	2.5 N.m (22 lb in)
Heater and Air Conditioning Evaporator and Blower Upper Case Bolt	2.5 N.m (22 lb in)
Heater Coolant Pump Bolt	9 N.m (80 lb in)
Heater Core Cover Screw	2.5 N.m (22 lb in)
Heater Core Tube Bracket Bolt	2.5 N.m (22 lb in)
Heater Inlet Hose Bracket Bolt	22 N.m (16 lb ft)
Instrument Panel Outer Air Outlet Duct Bolt	2.5 N.m (22 lb in)
Passenger Compartment Air Filter bolt	2.5 N.m (22 lb in)
Refrigerant Charge Port Caps	1.3 N.m (12 lb in)
Side Window Defogger Outlet Duct Bolt	2.5 N.m (22 lb in)

APPROXIMATE FLUID CAPACITIES

Application	Specification	
	Metric	US English
Total System PAG Oil Capacity		
With Rear Air Conditioning (C69)	230 ml	7.8 oz
Front Air Conditioning only (-C69)	80 mL	3 oz
Compressor	75 ml ¹	2.5 oz ¹
The service compressor contains 75 ml (2.5 oz) of PAG oil.		
Condenser with Desiccant	20 ml ¹	0.6 oz ¹
Desiccant Cartridge Only	10 ml ¹	0.3 oz ¹
Evaporator, Front	10 ml ¹	0.3 oz ¹
Evaporator, Rear	10 ml ¹	0.3 oz ¹
Abrupt Refrigerant Loss	60 ml ²	2.0 oz ²
Refrigerant Charge		
With Rear Air Conditioning (C69)	1.1 kg	2.43 lb

¹ If more than the specified amount of PAG oil was drained from a component, add the equal amount of oil drained.

² Abrupt refrigerant loss due to 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.

Application	Type of Material	GM Part Number	
		United States	Canada
Cooling Coil Coating Applicator Kit	Coating	12346391	88865439
Cooling Coil Coating Applicator Kit - Refill Kit	Coating	12346390	88865440
PAG Oil (R-134a)	Lubricant	88901445	88900060
PAG Oil (R-1234yf)	Lubricant	19354657	19354658

VISUAL IDENTIFICATION

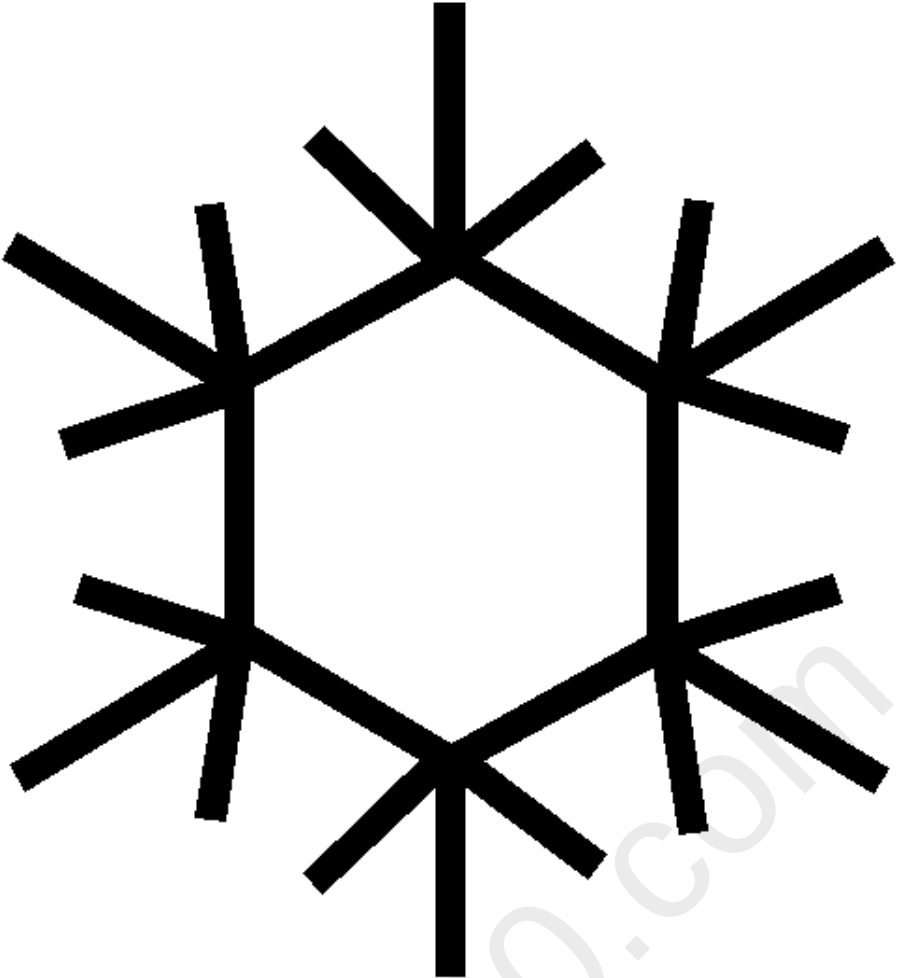
REFRIGERANT LABEL SYMBOLS

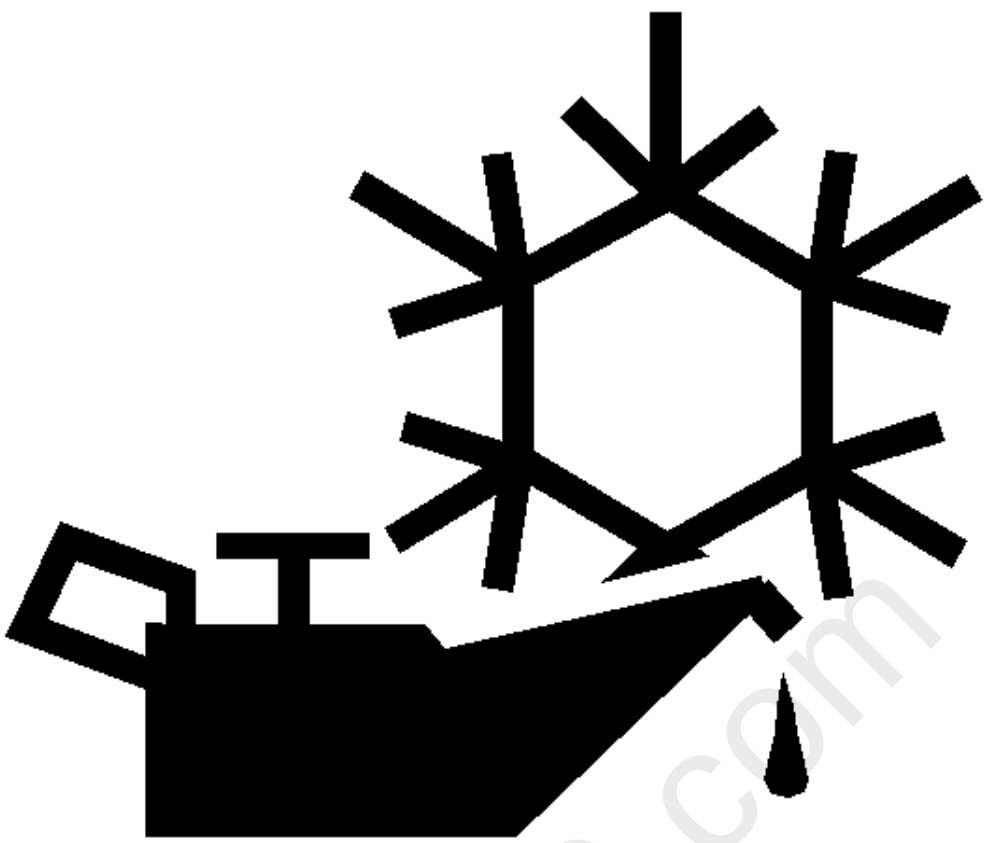
Air Conditioning Service Fittings

Service fittings meeting SAE J639 are used on this vehicle for R-1234yf refrigerant. GM has chosen gray caps to designate systems with R-1234yf.

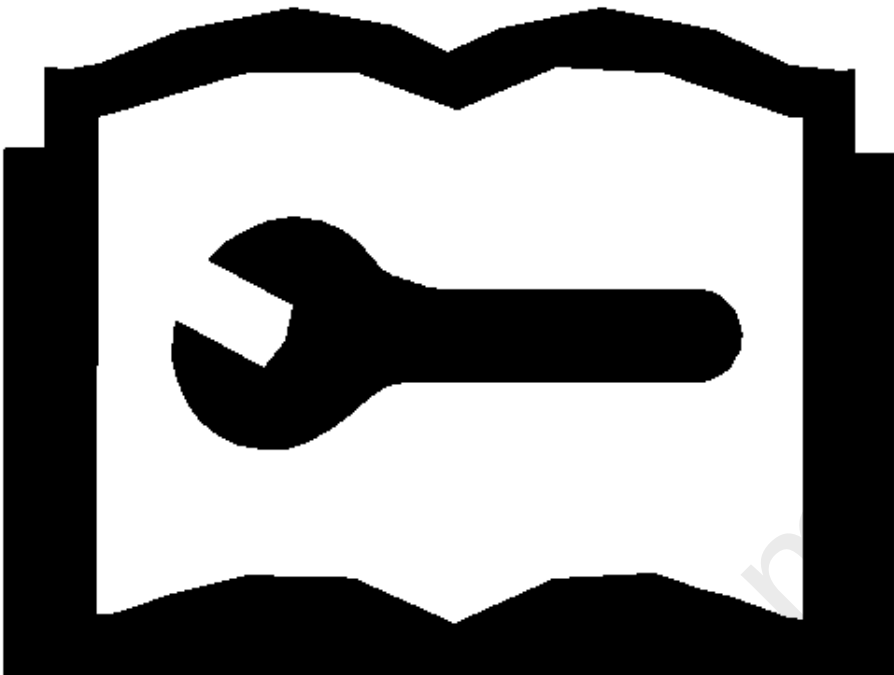
Refrigerant Charge Label Symbols

Symbols	Description
	Caution

Symbols	Description
 A black symbol consisting of a central hexagon with six lines extending from its vertices. Each line has three shorter segments branching off it at various angles, creating a star-like or snowflake-like pattern.	Air Conditioning System-Mobile Air Conditioning

Symbols	Description
	MAC System Lubricant Type

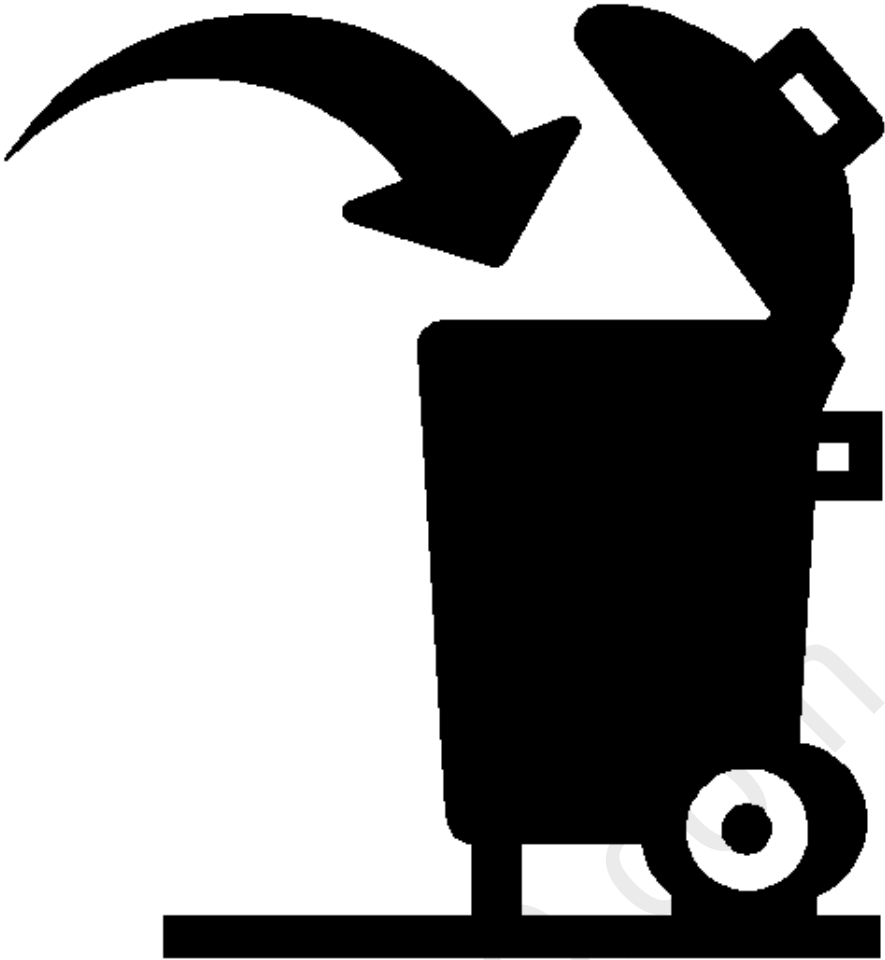
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Symbols	Description
	See Vehicle Service Information for MAC Service Information

mcx30.com

Symbols	Description
	Requires Registered Technician to Service MAC System

Symbols	Description
	Flammable Refrigerant

Symbols	Description
	For Safety System Components Shall Be Replaced-Shall Not Be Repaired or Salvaged for Reuse

DIAGNOSTIC INFORMATION AND PROCEDURES

HANDLING OF REFRIGERANT LINES AND FITTINGS

CAUTION: To avoid system damage use only R-1234yf and R-134a dedicated tools when servicing the A/C system.

- Keep all metal tubing lines free of dents or kinks. Any line restrictions will cause the loss of system capacity.
- Never bend a flexible hose line to a radius of less than four times the diameter of the hose.
- Never allow a flexible hose line to come within 65 mm (2 - 1/2 in) of the exhaust manifold.
- Inspect flexible hose lines regularly for leaks or brittleness.
- Replace flexible hose lines with new lines if you find signs of deterioration or leaking.
- Discharge the refrigeration system of all refrigerant before disconnecting any fitting in the refrigeration system.
- Proceed very cautiously regardless of the gauge readings.

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.

- Open the fittings very slowly.

- If you notice pressure when you loosen a fitting, allow the pressure to bleed off as described Discharging, Adding Oil, Evacuating, and Charging Procedures for A/C System.
- Cap or tape any refrigerant line immediately after it is opened. This will prevent the entrance of moisture and dirt, which can cause internal compressor wear or plugged lines in the condenser, the evaporator core, the expansion valve, or the compressor inlet screens.

NOTE: Use two proper wrenches to connect the fittings.

- Back up the opposing fitting to prevent distortion of the connecting lines or the components.
- Keep the sealing surfaces in perfect condition. A burr or a piece of dirt may cause a refrigerant leak.
- When seal washers are used, always install the seal washer without lubrication.
- When O-rings are used, always lightly coat the new O-ring seal with the proper viscosity and type refrigerant oil prior to installation.

SYMPTOMS - HEATING, VENTILATION, AND AIR CONDITIONING

NOTE: The following steps must be completed before using the symptom tables.

1. Perform the [Diagnostic Starting Point - Vehicle](#) before using the symptom tables in order to verify that all of the following are true:
 - There are no DTCs set
 - The control modules can communicate via the serial data link
2. Review the system operation in order to familiarize yourself with the system functions. Refer to [Symptoms - HVAC Systems - Automatic](#).

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the HVAC System. Refer to [Checking Aftermarket Accessories](#).
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.
- Verify the A/C compressor clutch turns freely and is not seized.
- The A/C compressor will not operate in cold outside air temperatures.
- The following could cause window fogging:
 - Wet carpet or mats
 - High humidity
 - Interior water leak
 - Blocked A/C evaporator drain tube
 - Maximum passenger capacity
 - Blocked body pressure relief valves
- Inspect the air distribution system for causes of reduced air flow:
 - Obstructed or dirty passenger compartment air filter, if equipped
 - Blocked or damaged air inlet or outlet vents

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to [Testing for Intermittent Conditions and Poor Connections](#).

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- [Leak Testing](#)
- [Noise Diagnosis - HVAC Module](#)
- [Noise Diagnosis - Air Conditioning \(A/C\) System](#)
- [Noise Diagnosis - Blower Motor](#)
- [Odor Diagnosis](#)

LEAK TESTING

Special Tools

- **GE-41447** Air Conditioning Tracer Dye-Box of 24
- **GE-42220** Universal 12V Leak Detection Lamp
- **GE-43872** Fluorescent Dye Cleaner
- **GE-50078** Electronic Leak Detector

Equivalent regional tools: [Special Tools](#)

Refrigerant Leak Testing

In certain regions, technicians repairing or servicing motor vehicle air conditioning (MVAC) systems must be trained and certified by the appropriate regional or national regulatory agency.

- In the USA, refer to the EPA website for MVAC training requirements. <http://www.epa.gov/ozone/title6/609/technicians/609certs.html>
- In Canada, refer to the Environment Canada website for MVAC training requirements. <http://www.ec.gc.ca/ozone/default.asp?lang=En&n=943E1CAB-1#ws4E6F6835>
- In Europe, refer to Commission Regulation (EC) No 307/2008 for MVAC training requirements. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:092:0025:0027:EN:PDF>

WARNING: Technicians must only use a SAE J2913 certified electronic leak detector when checking for leaks in an R-1234yf A/C refrigerant system. Other, non - certified, leak detection devices could serve as ignition sources in the presence of hydrocarbons or other flammable refrigerants. Failure to follow these precautions may cause personal injury and/or damage to the vehicle or its components.

WARNING: [R-1234yf Proper Service Procedures Warning](#)

WARNING: *R1234-yf is considered a mildly flammable refrigerant and proper refrigerant leak testing should be completed to ensure safe and proper operation. Failure to follow these precautions may cause personal injury and/or damage to the vehicle or its components.*

WARNING: Evaporators in vehicles equipped with R-1234yf refrigerant systems must never be repaired or replaced with an evaporator removed from another or salvage vehicle. Use only new SAE J2842 certified and labeled evaporator (s) as replacement parts. Failure to follow this guideline could pose a health and/or safety risk to the vehicle occupant (s).

CAUTION: Leak detection shall only be done with the refrigerant that is specified for the system. Do not attempt to increase pressure of the A/C refrigerant system with shop air or another type of refrigerant. Failure to follow the above guidelines could result in damage to the vehicle or its components.

NOTE: General Motors vehicles are manufactured with fluorescent dye installed in the air conditioning refrigerant system.

The fluorescent dye mixes and flows with the air conditioning compressor oil throughout the refrigerant system.

NOTE: The only time adding additional fluorescent dye is required is after flushing the air conditioning system.

Verifying some passive leaks may require using **GE-50078** Electronic Leak Detector or a SAE J2913 certified electronic leak detector, even though the refrigerant system contains fluorescent dye.

Fluorescent Leak Detection

Fluorescent dye will assist in locating any leaks in the air conditioning system.

- Condensation on the evaporator core or the refrigerant lines may wash the compressor oil and fluorescent dye away from the actual leak. Condensation may also carry dye through the HVAC module drain.
- Leaks in the air conditioning system will be indicated in a light green or yellow color when using the leak detection lamp.

Use the leak detection lamp in the following areas:

- All fittings or connections that use seal washers or O-rings
- All of the air conditioning components
- The air conditioning compressor shaft seal
- The air conditioning hoses and pressure switches
- The HVAC module drain tube, if the evaporator core is suspected of leaking
- The service port sealing caps
- The sealing cap is the primary seal for the service ports.
- Engine drive belt (s) - (Replace if contaminated with fluorescent dye)
- Air conditioning compressor high pressure relief valve (HPRV)
- Air conditioning compressor high pressure relief valve (HPRV) Cap
- Follow the instructions supplied with **GE-42220** Universal 12V Leak Detection Lamp.
- To prevent false diagnosis in the future, thoroughly clean the residual dye from any area where leaks were found. Use a rag and the approved **GE-43872** Fluorescent Dye Cleaner.

Fluorescent Dye Injection

NOTE: Use only fluorescent dye approved by General Motors.

- Not all of the fluorescent dyes are compatible with all air conditioning oils. Some types of dye decrease the oil viscosity or may chemically react with the oil.
- **GE-41447** A/C Tracer Dye-Box of 24 can be poured directly into a removed air conditioning component.

NOTE: Do NOT overcharge the air conditioning system with dye.

- Leak detection dye requires time to work. Depending upon the leak rate, a leak may not become visible for between 15 minutes and 7 days.
- To prevent false diagnosis, thoroughly clean any residual dye from the service port with a rag and the approved **GE-43872** Fluorescent Dye Cleaner.

Electronic Leak Detector - SAE J2913 Certified

Ensure that the vehicle has at least 15 percent of the specified refrigerant charge in the air conditioning refrigeration system in order to perform a leak test. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)

NOTE: Follow a continuous path in order to ensure that you will not miss any possible leaks. Test all areas of the system for leaks.

Follow the manufacturer instructions supplied with **GE-50078** Electronic Leak Detector or a SAE J2913 certified electronic leak detector.

AIR CONDITIONING (A/C) SYSTEM PERFORMANCE TEST

This test measures the operating efficiency of the A/C system under the following conditions:

- The current ambient air temperature
- The current relative humidity
- The high side pressure of the A/C system
- The low side pressure of the A/C system
- The temperature of the air being discharged into the passenger compartment

Test Description

The numbers below refer to the step numbers on the diagnostic table.

1

This step determines if the A/C system has at least the minimum refrigerant charge required to operate the system without damage.

2

This step measures the performance of the A/C system.

3

This step is to allow for vehicle variations as well as high ambient temperatures.

Step	Action	Values	Yes	No
NOTE: • The ambient air temperature must be at least 16Â°C (60Â°F). • Do not induce additional air flow across the front of the vehicle during the test. • If you were sent here from a DTC diagnostic table, clear the DTC upon completion of this test.				
1	1. Park the vehicle inside or in the shade. 2. Open the windows in order to ventilate the interior of the vehicle. 3. If the A/C system was operating, allow the A/C system to equalize for about 2 minutes. 4. Turn OFF the ignition. 5. Install the J-43600 ACR2000 Air Conditioning Service Center or GE-48800 CoolTech A/C Recharge Machine. 6. Record the ambient air temperature and humidity. 7. Record the low and high side STATIC pressure readings. Are both the low side and high side pressures within the specified value?	More than 16Â°C (60Â°F) - 345 kPa (50 psi) More than 24Â°C (75Â°F) - 483 kPa (70 psi) More than 33Â°C (90Â°F) - 690 kPa (100 psi)	Go to Step 2	Go to Leak Testing

Step	Action	Values	Yes	No
2	NOTE: Record the relative humidity and the ambient air temperature at the time of the test. 1. Close the vehicle doors and windows. 2. Open the drivers door window 12.7 - 15.2 cm (5 - 6 in). 3. Select the following HVAC control settings: • The A/C is ON. • The coldest temperature setting • The maximum blower speed • Recirculation mode • The instrument panel (I/P) outlet mode • All I/P outlets are OPEN. 4. Install thermometers in the left and right center panel air outlets. 5. Apply the parking brake. 6. Place the transaxle/transmission in one of the following positions: • PARK (Automatic) • NEUTRAL (Manual) 7. Start the engine and warm to operating temperature. 8. Operate the A/C system for 5 minutes. 9. Inspect A/C components for the following conditions: • Abnormal frost areas • Unusual noises 10. Record the following information: • The panel outlet air temperatures • The low-side pressure • The high-side pressure 11. Compare the low and high side pressures and the panel output temperatures to the A/C Performance Table below. Does all the data recorded fall within the specified ranges of the A/C Performance Table below?	-	Go to Step 5	Go to Step 3
3	If the pressures and temperatures recorded do not fall within the specified ranges: 1. Continue to operate the A/C system for an additional 5 minutes. 2. Record the pressures and temperatures again. 3. Compare the low and high side pressures and the panel output temperature to the A/C Performance Table below. Does all the data recorded fall within the specified ranges of the A/C Performance Table below?	-	Go to Step 5	Go to Step 4

Step	Action	Values	Yes	No
4	Perform the necessary repairs. Refer to A/C Diagnostics Chart . Is the action complete?	-	Go to Step 5	-
5	Operate the system in order to verify the test results. Did you find the same results?	-	System OK	Go to Symptoms - HVAC Systems - Automatic

A/C Performance Table

Ambient Temperature	Relative Humidity	Low Side Service Port Pressure	High Side Service Port Pressure	Maximum Left Center Discharge Air Temperature
13 - 18Â°C (55 - 65Â°F)	0 - 100%	213 - 289 kPa (31 - 42 psi)	1123 - 1350 kPa (163 - 196 psi)	10Â°C (50Â°F)
19 - 24Â°C (66 - 75Â°F)	Below 40%	213 - 296 kPa (31 - 43 psi)	1191 - 1419 kPa (173 - 206 psi)	10Â°C (50Â°F)
	Above 40%	234 - 323 kPa (34 - 47 psi)	1219 - 1460 kPa (177 - 212 psi)	13Â°C (54Â°F)
25 - 29Â°C (76 - 85Â°F)	Below 35%	241 - 316 kPa (35 - 46 psi)	1322 - 1522 kPa (196 - 221 psi)	13Â°C (54Â°F)
	35 - 50%	254 - 323 kPa (37 - 47 psi)	1336 - 1529 kPa (194 - 222 psi)	13Â°C (55Â°F)
	Above 50%	261 - 351 kPa (38 - 51 psi)	1350 - 1550 kPa (196 - 225 psi)	15Â°C (59Â°F)
30 - 35Â°C (86 - 95Â°F)	Below 30%	261 - 337 kPa (38 - 49 psi)	1433 - 1639 kPa (208 - 238 psi)	13Â°C (55Â°F)
	30 - 50%	268 - 351 kPa (39 - 51 psi)	1440 - 1646 kPa (209 - 239 psi)	15Â°C (59Â°F)
	Above 50%	289 - 378 kPa (42 - 55 psi)	1446-1660 kPa (210 - 241 psi)	18Â°C (64Â°F)
36 - 41Â°C (96 - 105Â°F)	Below 20%	275 - 351 kPa (40 - 51 psi)	1550 - 1756 kPa (225 - 255 psi)	14Â°C (57Â°F)
	20 - 40%	289 - 365 kPa (42 - 53 psi)	1577 - 1770 kPa (226 - 257 psi)	17Â°C (61Â°F)
	Above 40%	303 - 385 kPa (44 - 56 psi)	1570 - 1770 kPa (228 - 257 psi)	19Â°C (66Â°F)
42 - 46Â°C (106 - 115Â°F)	Below 20%	303 - 372 kPa (44 - 54 psi)	1681 - 1867 kPa (244 - 271 psi)	17Â°C (61Â°F)
	Above 20%	310 - 385 kPa (45 - 56 psi)	1681 - 1867 kPa (244 - 271 psi)	18Â°C (64Â°F)
47 - 49Â°C (116 - 120Â°F)	Below 30%	330 - 399 kPa (48 - 58 psi)	1791 - 1970 kPa (260 - 286 psi)	19Â°C (66Â°F)

A/C DIAGNOSTICS CHART

A/C System Concern		Potential Causes
Compressor Inoperative		Electrical Wiring Issue
		No or Low Refrigerant Charge
		Compressor Internal Malfunction
		Compressor Clutch Malfunction
		A/C Pressure Sensor Malfunction
		Evaporator Air Temperature (EAT) Malfunction
		HVAC Controls Malfunction
Low Side Gauge Reading	High Side Gauge Reading	Potential Causes
Same as High Side	Same as Low Side	No or Low Refrigerant Charge
		Compressor Malfunction
		A/C Pressure Sensor Malfunction

A/C System Concern		Potential Causes
Normal	Normal	EAT Malfunction
		HVAC Controls Malfunction
		Temperature Actuator Malfunction
		Temperature Door Malfunction
Low	Low	Low Refrigerant Charge
	Low/Normal	Restriction between the Compressor Outlet and Low Side Port
		Evaporator Freezing/EAT Malfunction
Normal/High	High	Compressor Stuck at Maximum Displacement/EAT Malfunction
	Normal/High	PAG or POE Oil Overcharge
High	Low	Restriction between the Low Side Port and Compressor Inlet
		Expansion Device Stuck Open
		Compressor has Low Displacement or Internal Malfunction
	High	Malfunctioning Cooling Fans
		Refrigerant Overcharge
		Restricted Condenser Air Flow
		Air in A/C System

NOTE:

Restrictions can occur in any part of an A/C system and may result in various gauge pressure values, depending on the system design and service port locations. The use of a non-contact, infrared thermometer can help diagnose a restricted A/C system with the ability to quickly observe significant, unexpected temperature changes in components and plumbing due to debris, contamination, pinched/damaged hoses, etc.

HEATING PERFORMANCE DIAGNOSTIC

Step	Action	Yes	No
DEFINITION: Heating system performance.			
1	Were you sent here from Symptoms or another diagnostic table?	Go to Step 2	Go to Symptoms - HVAC Systems - Automatic
2	1. Start the engine. 2. Allow the engine to idle. Does the engine reach a normal operating temperature?	Go to Step 3	Go to Step 9
3	WARNING: Refer to Moving Parts and Hot Surfaces Warning . 1. Select the FLOOR mode. 2. Select the minimum blower speed. 3. Select the warmest temperature setting. 4. Feel the temperature of the inlet and outlet heater hoses at the heater core. Does the inlet heater hose feel warmer than the outlet heater hose?	Go to Step 7	Go to Step 4

Step	Action	Yes	No
4	1. Install a thermometer into the center I/P PANEL air outlet. 2. Secure a thermometer to the heater core outlet hose. 3. Select the PANEL mode. 4. Select the maximum blower speed. 5. Select the warmest temperature setting. 6. Record the temperature at the following locations: • The center I/P PANEL air outlet • The heater core outlet hose 7. Compare the recorded temperatures. Are the 2 temperature readings about equal?	Go to Step 5	Go to Step 6
5	1. Inspect and repair the following areas of the vehicle for cold air leaks: • The cowl • The recirculation door • The HVAC module case 2. Perform the necessary repairs. Are the repairs complete?	Go to Step 10	-
6	1. Inspect the temperature door operation. Refer to <u>Diagnostic System Check - Vehicle</u> . 2. Perform any necessary repairs. Are the repairs complete?	Go to Step 10	-
7	1. Turn OFF the engine. 2. Backflush the heater core. 3. Start the engine. 4. Select the FLOOR mode. 5. Select the minimum blower speed. 6. Select the warmest temperature setting. 7. Feel the temperature of the inlet and outlet heater hoses at the heater core. Does the inlet heater hose feel warmer than the outlet heater hose?	Go to Step 8	Go to Step 10
8	Replace the heater core. Refer to <u>Heater Core Replacement</u>. Is the repair complete?	Go to Step 10	-
9	Repair the low engine temperature concern. Refer to <u>Engine Fails To Reach Normal Operating Temperature</u> . Is the repair complete?	Go to Step 10	-
10	Operate the system in order to verify the repair. Did you find and correct the condition?	System OK	Go to Step 2

DEFROSTING INSUFFICIENT

Step	Action	Yes	No
DEFINITION: Time required to defrost the windshield is longer than normal.			

Step	Action	Yes	No
1	Were you sent here from Symptoms or another diagnostic table?	Go to Step 2	Go to Symptoms - HVAC Systems - Automatic
2	1. Turn ignition to ON. 2. Select the DEFROST mode. 3. Select the maximum blower speed. Does sufficient air flow from the defroster outlets?	Go to Step 3	Go to Step 6
3	1. Select the minimum blower speed. 2. Select the maximum temperature setting. WARNING: Refer to <u>Moving Parts and Hot Surfaces Warning</u> . 3. Feel the temperature of the inlet and outlet hoses at the heater core. Does the inlet hose feel warmer than the outlet hose?	Go to Step 7	Go to Step 4
4	Perform the A/C system performance test. Refer to <u>Air Conditioning (A/C) System Performance Test</u> . Is the A/C system operating within the specifications?	Go to Step 5	Go to Step 8
5	Inspect for correct operation of the air inlet door. Is the air inlet door operating correctly?	Go to Step 10	Go to Step 9
6	Repair the air delivery concern. Refer to <u>Diagnostic Starting Point - Vehicle</u> . Is the repair complete?	Go to Step 10	-
7	Repair the heating concern. Refer to <u>Heating Performance Diagnostic</u> . Is the repair complete?	Go to Step 10	-
8	Repair the A/C performance concern. Refer to <u>Air Conditioning (A/C) System Performance Test</u> . Is the repair complete?	Go to Step 10	-
9	Repair the air inlet door concern. Refer to <u>Air Inlet Housing Replacement</u> . Is the repair complete?	Go to Step 10	-
10	Operate the system in order to verify the repair. Did you find and correct the problem?	System OK	Go to Step 2

NOISE DIAGNOSIS - AUXILIARY BLOWER MOTOR

Step	Action	Yes	No
DEFINITION: Noise originating from the auxiliary blower motor.			
1	Were you sent here from Symptoms or another diagnostic table?	Go to Step 2	Go to Diagnostic System Check - Vehicle
2	1. Sit inside the vehicle. 2. Close the vehicle doors and windows. 3. Turn ON the ignition, with the engine OFF. 4. Cycle the auxiliary blower motor through all of the speeds in order to determine where and when the noise occurs. Is a noise evident during auxiliary blower operation?	Go to Step 3	Go to Step 12

Step	Action	Yes	No
3	Inspect for excessive vibration at each auxiliary blower motor speed by feeling the auxiliary blower case. Is excess vibration present?	Go to Step 5	Go to Step 4
4	Listen to the auxiliary blower motor at each blower speed. Is the auxiliary blower motor making a squeaking or chirping noise?	Go to Step 10	Go to Step 12
5	Inspect the blower motor and the blower motor housing for proper installation. Is the blower motor or the blower motor housing touching the vehicles body and causing the vibration?	Go to Step 9	Go to Step 6
6	1. Remove the auxiliary blower motor. Refer to Auxiliary Blower Motor Replacement (C69). 2. Inspect the auxiliary blower motor impeller for deposits of foreign material. 3. Inspect the auxiliary blower motor for deposits of foreign material. Did you find foreign material on the auxiliary blower motor?	Go to Step 8	Go to Step 7
7	Inspect the auxiliary blower motor for the following conditions: • Cracked blades • A loose impeller retainer • Improper impeller alignment Did you find any of these conditions?	Go to Step 9	Go to Step 11
8	Remove the foreign material. Is the action complete?	Go to Step 11	-
9	Install the component so there is no contact with the vehicles body. Is the action complete?	Go to Step 12	-
10	Replace the auxiliary blower motor. Refer to Auxiliary Blower Motor Replacement (C69) . Is the repair complete?	Go to Step 12	-
11	Install the auxiliary blower motor. Refer to Auxiliary Blower Motor Replacement (C69) . Is the action complete?	Go to Step 12	-
12	Operate the system in order to verify the repair. Did you find and correct the condition?	System OK	Go to Step 2

NOISE DIAGNOSIS - BLOWER MOTOR

Step	Action	Yes	No
DEFINITION: Noise originating from the blower motor.			
1	Were you sent here from Symptoms or another diagnostic table?	Go to Step 2	Go to Diagnostic System Check - Vehicle
2	Inspect the air inlet grille for debris. Is debris present?	Go to Step 8	Go to Step 3

Step	Action	Yes	No
3	1. Sit inside the vehicle. 2. Close the vehicle doors and windows. 3. Turn ON the ignition, with the engine OFF. 4. Cycle the blower motor through all of the speeds and modes in order to determine where and when the noise occurs. Is a noise evident during the blower operation?	Go to Step 4	Go to Step 11
4	Inspect for excessive vibration at each blower motor speed by feeling the blower case. Is excess vibration present?	Go to Step 6	Go to Step 5
5	Listen to the blower motor at each speed. Is the blower motor making a squeaking or chirping noise?	Go to Step 9	Go to Step 11
6	1. Remove the blower motor. Refer to <u>Blower Motor Replacement</u> . 2. Inspect the blower motor impeller for deposits of foreign material. 3. Inspect the blower motor for deposits of foreign material. Did you find any foreign material on the blower motor or blower motor impeller?	Go to Step 8	Go to Step 7
7	Inspect the blower motor for the following conditions: • Cracked blades • A loose impeller retainer • Improper impeller alignment Did you find any of these conditions?	Go to Step 9	Go to Step 10
8	Remove the foreign material. Is the action complete?	Go to Step 10	-
9	Replace the blower motor. Refer to <u>Blower Motor Replacement</u> . Is the repair complete?	Go to Step 11	-
10	Install the blower motor. Refer to <u>Blower Motor Replacement</u> . Is the action complete?	Go to Step 11	-
11	Operate the system in order to verify the repair. Did you find and correct the condition?	System OK	Go to Step 2

AIR CONDITIONING COMPRESSOR OIL DIAGNOSIS

Condition	Corrective Action
CAUTION: Always ensure the correct refrigerant oil is used during A/C servicing of R-134a or R-1234YF systems. Failure to use the correct refrigerant oil could cause A/C performance issues and/or A/C system failure. NOTE: To avoid repeat compressor failure, always inspect the condition of the refrigerant oil and take the appropriate corrective action before installing the replacement compressor.	
Clean Oil no debris present	No corrective action necessary.

Condition	Corrective Action
Clean Oil with debris present	- Inspect the suction port of the replacement compressor for presence of a suction screen. If the replacement compressor does NOT contain a suction screen, install suction screen in the line. - Replace desiccant or component containing the desiccant. - Replace desiccant filter if applicable. - Remove and inspect high pressure side filter (if applicable). - Remove, inspect, clean, or replace orifice tube. - If the system has a front orifice tube and is equipped with a filter in the rear auxiliary line, remove, inspect, clean, or replace the filter.
Dark brown/black and/or pungent/unusual odor with no debris present	- Replace desiccant or component containing the desiccant. - Replace desiccant filter if applicable. - Flush refrigerant system.
Dark brown/black and/or pungent/unusual odor with debris present	- Replace desiccant or component containing the desiccant. - Replace desiccant filter if applicable. - Flush refrigerant system. - Inspect the suction port of the replacement compressor for presence of a suction screen. If the replacement compressor does NOT contain a suction screen, install suction screen. - Remove and inspect high pressure side filter (if applicable). - Remove, inspect, clean, or replace orifice tube. - If the system has a front orifice tube and is equipped with a filter in the rear auxiliary line, remove, inspect, clean, or replace the filter.
Oil Overcharge	Flush refrigerant system.
Refrigerant Contamination	Flush refrigerant system.
Hybrid Polyester Refrigerant Oil (POE) Contamination	- Flush refrigerant system. - Replace desiccant or component containing the desiccant. - Replace desiccant filter if applicable.

NOISE DIAGNOSIS - AIR CONDITIONING (A/C) SYSTEM

Step	Action	Yes	No
DEFINITION: Noise originating from the A/C compressor, drive belt or the A/C lines.			
1	Were you sent here from Symptoms or another diagnostic table?	Go to Step 2	Go to Symptoms - HVAC Systems - Automatic
2	1. A/C system noises can be generally categorized into three areas: - Screeching, squealing, chirping noises - Moaning noises - Vibration/rattle noises 2. Start the engine. 3. Ensure that the A/C is ON. Is a screeching, squealing noise heard when the A/C is engaged?	Go to Step 3	Go to Step 9

Step	Action	Yes	No
3	With the engine OFF, inspect the drive belt for excessive wear. Drive Belt Falls Off and Excessive Wear Diagnosis Is the drive belt excessively worn?	Go to Step 18	Go to Step 4
4	Inspect the drive belt tension. Drive Belt Tensioner Diagnosis Is the drive belt tension correct?	Go to Step 5	Go to Step 19
5	Inspect the drive belt for excessive oil coverage. Is the drive belt covered with oil?	Go to Step 17	Go to Step 6
6	1. Start the engine. 2. Ensure that the A/C is ON. 3. Inspect the compressor and the clutch. Is the A/C compressor locked up?	Go to Step 24	Go to Step 7
7	Is the A/C compressor clutch slipping?	Go to Step 23	Go to Step 8
8	WARNING: Refer to <u>Moving Parts and Hot Surfaces Warning</u> . Using a stethoscope, listen to the A/C compressor for any abnormal noises. Is the compressor causing an abnormal noise?	Go to Step 15	Go to Step 10
9	Does a moaning noise exist when the A/C clutch is engaged?	Go to Step 10	Go to Step 12
10	Listen to the A/C compressor components and mounting for noise concerns using a stethoscope. Are any of these components loose, damaged or excessively worn?	Go to Step 20	Go to Step 11
11	1. Idle the engine. 2. Engage the A/C compressor clutch. 3. Using a stethoscope, move around the entire refrigerant plumbing system. Listening for any abnormal noises caused by a component of the A/C system touching another component. Are any of the A/C components grounding out and causing a vibration noise?	Go to Step 22	Go to Step 13
12	Does a vibration or rattle noise exist when the A/C clutch is engaged?	Go to Step 13	Go to Step 14
13	Does the noise stop when the A/C clutch is disengaged?	Go to Step 15	Go to Step 25
14	1. Idle the engine in PARK with the A/C compressor clutch engaged. 2. Using a stethoscope, move around the entire A/C system testing for any abnormal noises caused by a component. Do any of the A/C components cause an abnormal noise?	Go to Step 21	Go to Step 25
15	Verify that the A/C system is properly charged. Approximate Fluid Capacities Is the A/C system properly charged?	Go to Step 26	Go to Step 16
16	Recharge the A/C system to specification. Refrigerant Recovery and Recharging (R-134a) Refrigerant Recovery and Recharging (R-1234yf) Is the abnormal compressor noise still present?	Go to Step 24	Go to Step 26

Step	Action	Yes	No
17	Repair the oil leak. Oil Leak Diagnosis Is the repair complete?	Go to Step 18	-
18	Replace the drive belt. Drive Belt Replacement Is the replacement complete?	Go to Step 26	-
19	Replace the drive belt tensioner. Drive Belt Tensioner Replacement Is the replacement complete?	Go to Step 26	-
20	Repair or replace the A/C compressor mounting component. Is the repair complete?	Go to Step 26	-
21	Repair or replace the component which is causing the moaning concern as needed. Is the repair complete?	Go to Step 26	-
22	Correctly route or insulate the A/C component. Is the repair complete?	Go to Step 26	-
23	Replace the A/C compressor clutch. Air Conditioning Clutch Assembly Replacement Is the repair complete?	Go to Step 26	-
24	Replace the A/C compressor. Air Conditioning Compressor Replacement (LFY) Air Conditioning Compressor Replacement (LTG) Is the repair complete?	Go to Step 26	-
25	The concern may be caused by an engine related component. Vibration Analysis - Engine Did you find and correct the condition?	Go to Step 26	-
26	Operate the system in order to verify the repair. Did you find and correct the condition?	System OK	Go to Step 2

NOISE DIAGNOSIS - HVAC MODULE

Step	Action	Yes	No
DEFINITION: Noise originating from the HVAC module.			
1	Were you sent here from Symptoms or another diagnostic table?	Go to Step 2	Go to Symptoms - HVAC Systems - Automatic
2	1. Start the engine. 2. Cycle through all of the following: • Blower motor speeds • HVAC modes • Temperature control settings 3. Determine the type of noise: • Scrape, pop • Tick/click, chirp or groaning • Air rush/whistle Is a scrape or pop noise evident when selecting modes or temperature settings?	Go to Step 6	Go to Step 3
3	Is a tick/click, chirping, groaning or scraping noise present, but decreases as blower motor speed is decreased?	Go to Step 6	Go to Step 4
4	Is an air rush/whistle noise evident in all modes but not all temperature settings?	Go to Step 6	Go to Step 5
5	Is an air rush/whistle noise evident only in defrost or floor mode?	Go to Step 6	Go to Step 6

Step	Action	Yes	No
6	Remove the instrument panel (I/P) carrier. Refer to Instrument Panel Tie Bar Replacement . Is the action complete?	Go to Step 7	-
7	- Inspect the air flow doors for proper operation. - Inspect the ducts for obstructions or foreign materials. Were any of these conditions found?	Go to Step 10	Go to Step 8
8	Inspect the mode and temperature doors and seals for warping or cracking. Are the doors in normal condition?	Go to Step 11	Go to Step 9
9	Replace the appropriate door and/or seals. Is the repair complete?	Go to Step 11	-
10	Remove any obstructions or foreign material found. Is the action complete?	Go to Step 11	-
11	Install the I/P carrier. Refer to Instrument Panel Tie Bar Replacement . Is the action complete?	Go to Step 12	-
12	Operate the system to verify the repair. Did you find and correct the condition?	System OK	Go to Step 2

ODOR DIAGNOSIS

Step	Action	Yes	No
DEFINITION: Odor originating or noticed through the HVAC system.			
1	Were you sent here from Symptoms or another diagnostic table?	Go to Step 2	Go to Symptoms - HVAC Systems - Automatic
2	- Sit inside the vehicle. - Close all of the doors and windows. - Start the engine. - Allow the engine idle at normal operating temperature. - Select the maximum blower speed. - Select the PANEL air outlet mode. - Select the coldest temperature setting. - Cycle through all of the blower speeds, modes and temperatures to define what type of odor is present. - Musty smell - Coolant smell - Oil smell Does the odor have a musty smell?	Go to Step 3	Go to Step 8
3	Inspect the HVAC filter and the air inlet grille for debris. Passenger Compartment Air Filter Replacement Is debris present?	Go to Step 4	Go to Step 5
4	Remove any debris. Is the action complete?	Go to Step 15	-
5	Inspect for wet carpeting. Is the carpet wet?	Go to Step 6	Go to Step 14

Step	Action	Yes	No
6	Inspect for the following conditions: • Water leaks around the windshield • Blockage of the HVAC module drain • Leaks around the door seals Is a leak present?	Go to Step 7	Go to Step 14
7	Repair the leak as necessary. Is the repair complete?	Go to Step 15	-
8	Does the odor have a coolant smell?	Go to Step 9	Go to Step 12
9	Inspect the cooling system for leaks. Loss of Coolant Is a leak present?	Go to Step 10	Go to Step 12
10	Inspect for coolant leaking inside the vehicle or for a film build-up on the windshield. Is the condition present?	Go to Step 11	Go to Step 15
11	Replace the heater core. Heater Core Replacement Is the repair complete?	Go to Step 15	-
12	Does the odor have an oily smell?	Go to Step 13	Go to Step 15
13	1. Inspect the engine compartment for any leaks. • Oil Leak Diagnosis , for the 2.0L (LTG) engine or Oil Leak Diagnosis for the 3.6L (LFY) engine. • Fluid Leak Diagnosis for the 9T65 (M3W) Transmission. 2. Repair any oil leaks. Is the repair complete?	Go to Step 15	Â
14	A musty odor can be caused by mold or mildew build-up on the evaporator or the heater core or inside of the HVAC module. Odor Correction Is the action complete?	Go to Step 15	-
15	Operate the system in order to verify the repair. Did you find and correct the condition?	System OK	Go to Step 2

REPAIR INSTRUCTIONS

ODOR CORRECTION

Eliminating Air Conditioning (A/C) Odor

Odors may be emitted from the heat and air conditioning system primarily at start up in hot, humid climates. When the blower motor fan is turned on, an unpleasant, musty odor may be released into the passenger compartment. The following conditions may cause the odor:

- Debris is present in the heater and air conditioning evaporator and blower module.
- Microbial growth is on the evaporator core

The following procedures should be completed to eliminate most common sources of odor:

1. Use the scan tool to enable the afterblow function, if heater and air conditioning remote control has this functionality. **Afterblow Enabling**
2. Ensure that the fresh air inlet is clear of debris.
3. Verify that the heater and air conditioning evaporator and blower module drain is not blocked. If the drain is blocked, remove the debris and dry the heater and air conditioning evaporator and blower module performing the following procedure:
 1. Start the engine and allow the engine to reach operating temperature.
 2. Open the vehicle windows.

3. Select the hottest temperature setting.
4. Select the recirculation mode.
5. Run the blower motor on high for 10 minutes.
4. If equipped, remove the passenger compartment air filter and examine for debris or odor. **Passenger Compartment Air Filter Replacement**
 1. Take care upon passenger compartment air filter removal to prevent debris on top of the passenger compartment air filter from falling into the heater and air conditioning evaporator and blower module.
 2. If the filter is dirty or suspected as the source of the odor, replace the passenger compartment air filter.
 3. If the debris has fallen into heater and air conditioning evaporator and blower module, remove the blower motor to remove the debris. **Blower Motor Replacement**
5. If this procedure is unsuccessful in eliminating the odor, perform the AC Delco Cooling Coil Coating procedure if it is available in your market. If the AC Delco Cooling Coil Coating is not available in your market, perform the water and vinegar solution cleaning procedure.

AC Delco Cooling Coil Coating Procedure

The evaporator core and heater and air conditioning evaporator and blower module should be treated with AC Delco Cooling Coil Coating to eliminate microbial growth. **Adhesives, Fluids, Lubricants, and Sealers** Perform the following procedure:

1. Disable the air conditioning compressor clutch operation by disconnecting the air conditioning compressor clutch coil electrical connector.
2. Start the engine and let the engine idle.
3. Select the hottest temperature setting.
4. Select the heater and air conditioning evaporator and blower module controls to the recirculation mode.
5. Run the blower motor on high for 10 minutes.
6. Place a drain pan beneath the heater and air conditioning evaporator and blower module drain tube.
7. If equipped, remove the passenger compartment air filter.
8. Place protective shop cloths or equivalent over outlet ducts to prevent overspray.
9. Locate an area in the heater and air conditioning evaporator and blower module downstream of the blower, between the blower motor and the evaporator core. Drill a 3.175 mm (0.125 in) hole where the hole will not interfere with or damage the blower motor, blower motor speed controller, evaporator core, or any other operating part the of system.
10. Set the blower speed to maximum high speed.
11. Set heater and air conditioning evaporator and blower module controls to floor outlet mode.
12. Close all air conditioning outlet vents.
13. Wear an approved respirator mask, safety goggles, and latex gloves when applying the AC Delco Cooling Coil Coating.
14. Insert the applicator extension tube into the hole to the mark on the extension tube, ensuring the spray is aiming the same direction as the airflow. Coating should be applied in 3 second bursts with the nozzle being repositioned within the case between bursts until all 4 ounces of coating are applied.
15. Shut the engine OFF. Allow the vehicle to sit for 3 - 5 minutes.
16. Seal the 3.175 mm (0.125 in) hole with body sealer or RTV gasket compound.
17. To cure the Cooling Coil Coating:
 1. Start the engine and let the engine idle.
 2. Lower one side door window 1/2 inch, 12 mm.
 3. Set the blower speed to maximum high speed.
 4. Set heater and air conditioning evaporator and blower module controls to floor outlet mode.
 5. Select the hottest temperature setting.
 6. Let the vehicle idle for 10 minutes.
18. Reconnect the air conditioning compressor clutch coil electrical connector.
19. Verify proper air conditioning compressor clutch operation.
20. Reinstall the passenger compartment air filter if necessary.
21. Remove the protective shop cloths from inside the vehicle.

22. Ensure the afterblow function has been enabled. [Afterblow Enabling](#)

Water And Vinegar Solution Cleaning Procedure

If the AC Delco Cooling Coil Coating is not available perform the following steps:

1. Remove the evaporator core. [Air Conditioning Evaporator Replacement \(R134a\)](#)[Air Conditioning Evaporator Replacement \(R-1234yf\)](#)
2. Clean evaporator core with a solution of 40% vinegar and 60% water.
3. Reinstall the evaporator core. [Air Conditioning Evaporator Replacement \(R134a\)](#)[Air Conditioning Evaporator Replacement \(R-1234yf\)](#)

REFRIGERANT RECOVERY AND RECHARGING (R-134A)

Special Tools

- J-43600 ACR2000 Air Conditioning Service Center
- J-45037 A/C Oil Injector
- GE-48800 CoolTech A/C Recharge Machine

Equivalent regional tools: [Special Tools](#)

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 with side protection and lint-free gloves (insulated against heat loss and impermeable to refrigerant) must 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 may result. The exposed area should be flushed immediately with cold water and prompt medical attention should be obtained.

CAUTION: You must replace the desiccant if the A/C refrigerant system has been open to atmosphere for more than four hours, or if the A/C refrigerant oil has been contaminated. Failure to replace the desiccant will result in damage to the A/C refrigerant system.

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 and potentially void the vehicle warranty for the refrigerant system.

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

CAUTION: Do not lubricate A/C line seal washers as mineral oil will damage the seal and cause leaks. Use only 525 viscosity mineral oil to lubricate o-rings as well as fitting threads for the prevention of fitting seizure.

CAUTION: Use only GM approved Polyalkylene Glycol Synthetic Refrigerant Oil (PAG) for internal circulation through the R-134a A/C system.

NOTE: In certain regions, technicians repairing or servicing motor vehicle air conditioning (MVAC) systems must be trained and certified by the appropriate regional or national regulatory agency.

- In the USA, refer to the EPA website for MVAC training requirements. <http://www.epa.gov/ozone/title6/609/technicians/609certs.html>
- In Canada, refer to the Environment Canada website for MVAC training requirements. <http://www.ec.gc.ca/ozone/default.asp?lang=En&n=943E1CAB-1#ws4E6F6835>
- In Europe, refer to Commission Regulation (EC) No 307/2008 for MVAC training requirements. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:092:0025:0027:EN:PDF>

Both the **J-43600** ACR2000 Air Conditioning Service Center and **GE-48800** CoolTech A/C Recharge Machine are complete air conditioning service center for R-134a. Both units recovers, recycles, evacuates and recharges A/C refrigerant quickly, accurately and automatically. Both units have 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. Both units 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 ACR2000 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 ACR2000 will not recover the refrigerant from the A/C system.

The ACR2000 also features automatic air purge, single pass recycling and an automatic oil drain.

GE-48800 CoolTech A/C Recharge Machine is released as a required replacement for the previously essential **J-43600** ACR2000 Air Conditioning Service Center. The **GE-48800** CoolTech A/C Recharge Machine is SAE J2788 compliant and meets GM requirements for A/C Refrigerant System Repairs on all General Motors vehicles, including Hybrid systems with Polyolester (POE) refrigerant oil.

Refer to the **J-43600** ACR2000 Air Conditioning Service Center or **GE-48800** CoolTech A/C Recharge Machine manual for operation and setup instruction. Always recharge the A/C System with the proper amount of R-134a.

[Approximate Fluid Capacities](#)

[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 same quantity of PAG oil must be replenished. If no oil was removed from the A/C system during recovery, do not charge any PAG oil into the A/C system. Oil can be injected into a charged system using **J-45037** A/C Oil Injector. For the proper quantities of oil to add to the A/C refrigerant system, Refer to [Approximate Fluid Capacities](#)

After completing the recharge process, install and torque the charge port caps to 1.3 N.m (12 lb in)

REFRIGERANT RECOVERY AND RECHARGING (R-1234YF)

Special Tools

- **GE-45037** A/C Oil Injector
- **GE-50078** Electronic Leak Detector
- **GE-50300** R-1234yf Air Conditioning Refrigerant Recovery/Recharge Cart
- **GE-50744** A/C R-1234yf PAG Oil Injector Hose
- **GE-50745** A/C R-1234yf POE Oil Injector Hose
- **GE-50957** Machine R-1234yf Contaminated Refrigerant

Equivalent regional tools: [Special Tools](#)

Refrigerant label symbols: [Refrigerant Label Symbols](#)

General Information

WARNING: Refer to [R-1234yf Proper Service Procedures Warning](#) .

R-1234yf (HFO-1234yf) - 2, 3, 3, 3 - Tetrafluoroprop-1-ene (CF₃CFCH₂), is an olefin containing hydrogen, fluorine and carbon with thermodynamic properties similar to R-134a. This refrigerant is a mildly flammable gas. It has a

boiling point of -29.2Å°C, a vapor pressure of 583 kPa absolute at 20Å°C, no ozone depletion potential, and a global warming potential (GWP) of 4.

R-1234yf supply tank is white with red band to denote flammability.

NOTE: In certain regions, technicians repairing or servicing motor vehicle air conditioning (MVAC) systems must be trained and certified by the appropriate regional or national regulatory agency.

- In the USA, refer to the EPA website for MVAC training requirements. <http://www.epa.gov/ozone/title6/609/technicians/609certs.html>
- In Canada, refer to the Environment Canada website for MVAC training requirements. <http://www.ec.gc.ca/ozone/default.asp?lang=En&n=943E1CAB-1#ws4E6F6835>
- In Europe, refer to Commission Regulation (EC) No 307/2008 for MVAC training requirements. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:092:0025:0027:EN:PDF>

MVAC service shops must certify to the EPA that they have acquired and are properly using approved refrigerant recovery equipment. Service shops must also verify (with on site documentation) that each person using the equipment has been properly trained and certified. MVAC service shops must maintain records of the names and addresses of facilities to which the refrigerant they recover is sent.

(<http://www.epa.gov/ozone/title6/609/technicians/appequip.html>)

Vehicles equipped with R-1234yf refrigerant systems have unique low and high side service fittings.

The proper handling procedures should be followed for all refrigerants as designated by the refrigerant manufacturer's Material Safety Data Sheet (MSDS).

Refrigerant Recovery and Recharging

To remove, recycle and install R-1234yf from/to a vehicles refrigerant system only use **GE-50300** R-1234yf Air Conditioning Refrigerant Recovery/Recharge Cart or refrigerant recovery recharge equipment certified to meet the requirements of Society of Automotive Engineers (SAE) J2843 and approved by the EPA.

(<http://www.epa.gov/ozone/title6/609/technicians/appequip.html>)

To remove contaminated refrigerant from a vehicles refrigerant system use **GE-50957** Machine R-1234yf Contaminated Refrigerant or only service equipment designed for contaminated refrigerant removal and certified to meet the requirements of SAE J2851. Refrigerant recovered by this equipment cannot be reused or recycled on site and must be sent to an EPA approved reclamation facility for reprocessing or disposal.

(<http://www.epa.gov/ozone/title6/608/reclamation/reclist.html>)

To prevent accidental release of refrigerant and minimize safety concerns, the installation of any refrigerant service equipment to the vehicle shall only be done with the engine off and after the refrigerant high side pressure has been reduced (approximately 2 - 3 minutes).

Open the windows and/or doors before charging the vehicle to prevent an accumulation of refrigerant in case of a major refrigerant leak.

WARNING: *R-1234yf is heavier than air and may accumulate in low or pit areas - make sure these areas are properly ventilated. Failure to follow this precaution may cause personal injury.*

Refrigerant service equipment is required to ensure adequate refrigerant recovery to reduce emissions and provide for accurate recharging of mobile air conditioning systems. Venting refrigerant to the atmosphere is illegal per United States Environmental Protection Agency (EPA) Clean Air Act Section 608.

WARNING: *To prevent personal injury, avoid breathing any refrigerant vapor and lubricant mist. Servicing of R-1234yf systems shall only be done in well ventilated work areas. To remove R-1234yf refrigerant from the A/C refrigerant system, recover using SAE J2843 certified equipment. Un-controlled release of R-1234yf refrigerant in the work*

area may result in high concentrations of R-1234yf that can be flammable. If an accidental system discharge occurs, ventilate the work area before continuing service. Failure to follow these precautions may cause personal injury and/or damage to the vehicle or its components.

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: Air Conditioning (A/C) desiccant must be replaced if the A/C refrigerant system has been open to atmosphere for more than four hours, or if the A/C refrigerant oil has been contaminated. Failure to replace the A/C desiccant will result in damage to the A/C refrigerant system.

CAUTION: Use only the refrigerant and the charge amount specified in "Refrigerant System Specifications" found in HVAC Service Information or the vehicles under hood refrigerant label. Use of incorrect refrigerant or charge amounts may result in poor system performance and premature system failure.

CAUTION: Use only the lubricant specified for this vehicles refrigerant system. Do not mix refrigerant oils which may result in system contamination and unknown reaction by-products which may cause HVAC System failure.

To protect the refrigerant supply **GE-50300** R-1234yf Air Conditioning Refrigerant Recovery/Recharge Cart or SAE J-2843 equipment requires the refrigerant to be analyzed for purity prior to its recovery or transfer. The equipment is required to receive an acceptable reading from the integrated refrigerant identifier prior to recovery or transfer. An acceptable reading is $\geq 98\%$ -1/+2 R-1234yf.

If an unacceptable reading is received (and the presence of foreign gases detected) the refrigerant is considered contaminated and the equipment will not allow its recovery or transfer to an onboard storage vessel. If refrigerant is contaminated use **GE-50957** Machine R-1234yf Contaminated Refrigerant or SAE J2851 compliant equipment to recover for reclamation and/or disposal at an EPA approved facility (<http://www.epa.gov/ozone/title6/608/reclamation/reclist.html>).

As a safety precaution **GE-50300** R-1234yf Air Conditioning Refrigerant Recovery/Recharge Cart or SAE J2843 compliant equipment requires the Mobile Air Conditioning (MAC) system to pass a pre-charge leak test (to detect the possibility of a gross system leak prior to charging, >0.3 g/s) prior to allowing the MAC system to be charged. The pressurized portion of this test will require the technician set the vehicles Heater, Ventilation and Air Conditioning (HVAC) blower motor on high, A/C switch off and air distribution mode set to floor. The technician shall insert a **GE-50078** Electronic Leak Detector or GE-50078 compliant electronic leak detector, set to low sensitivity (14 grams/year leak rate) into the center of a floor duct outlet, as far as possible. When the technician confirms that the vehicle is set up for the pressurized leak check the **GE-50300** R-1234yf Air Conditioning Refrigerant Recovery/Recharge Cart will install 15% of the programmed charge into the vehicles refrigerant system. The technician monitors the electronic leak detector for 5 minutes or until the detector alarms.

The equipments display will then ask the following:

1. Was this test performed? If the technician replies Yes, the display next shall ask,
2. Was a leak found? If technician replies Yes, the machine shall only allow recovery and evacuation to allow repair. If the technician replies No, the display shall continue with,
3. Is there an auxiliary evaporator? If the technician replies No the machine shall permit completion of the recharge process. If the technician replies Yes, the display shall instruct the technician to perform a leak check with **GE-50078** Electronic Leak Detector or a GE-50078 compliant detector at a rear evaporator outlet, then ask,
4. Was an auxiliary evaporator leak check performed? If the technician replies Yes, the display will continue with Was a leak found? and if the answer is Yes, the machine shall only allow recovery and evacuation to allow repair. If the technician replies No, the machine shall permit completion of the recharge process.

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 system using **GE-45037** injector with **GE-50744** A/C R-1234yf PAG Oil Injector Hose or **GE-50745** A/C R-1234yf POE Oil Injector Hose. For the proper quantities of oil to add to the A/C refrigerant system, refer to [Approximate Fluid Capacities](#), and [Air Conditioning Compressor Oil Balancing](#).

After completing the recharge process, install and torque the charge port caps to 1.3 N.m (12 lb in)

FLUSHING (R-134A)

Special Tools

- **GE-41447** Air Conditioning Tracer Dye-Box of 24
- **GE-42220** Universal 12V Leak Detection Lamp
- **GE-45268** Air Conditioning Flush Adapter Kit

For equivalent regional tools, refer to [Special Tools](#).

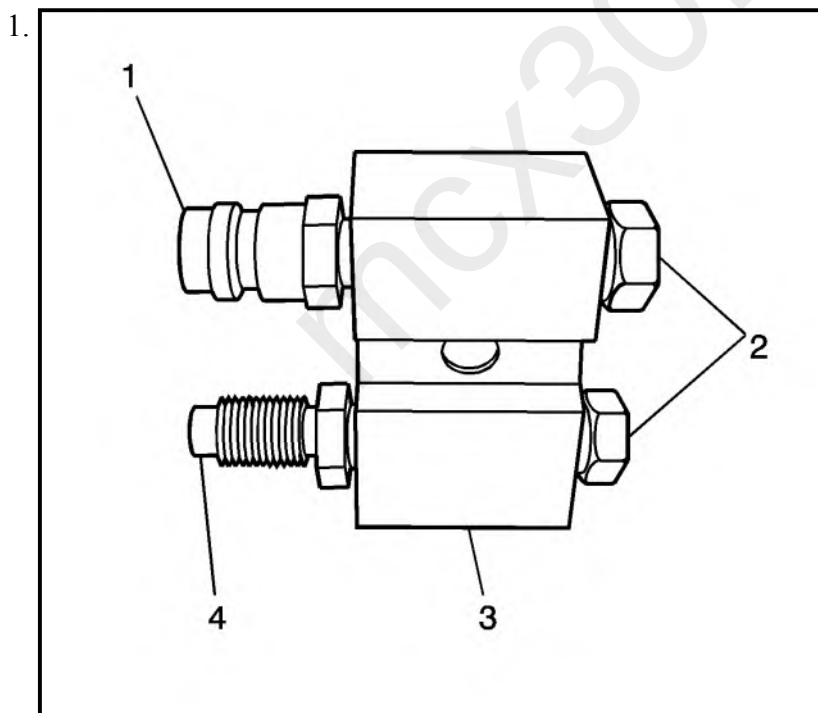
General Information

NOTE: Flushing is not intended to remove metal from the air conditioning system.

Flushing is intended to remove the following:

- Contaminated Air Conditioning Compressor oil
- Desiccant, following a desiccant bag failure
- Overcharge of Air Conditioning Compressor oil
- Refrigerant contamination

Forward Flushing Setup



NOTE:

- Forward flow refrigerant flushing is recommended for contaminated refrigerant or Air Conditioning Compressor oil.
- Inspect and lubricate **GE-45268** adapter kit fitting O-rings. [Air Conditioning O-Ring Seal Replacement](#).

Install both **GE-45268-9** fitting O-ring onto **GE-45268-10** adapter.

2. Install **GE-45268-8** fitting O-ring onto suction side of **GE-45268-10** adapter.
3. Install **GE-45268-7** fitting O-ring onto discharge side of **GE-45268-10** adapter.

NOTE:

- Reverse flow refrigerant flush is recommended for desiccant bag failure. Replace condenser/receiver dehydrator assembly when air conditioning flush is complete and perform the following procedure:
- Inspect and lubricate GE-45268 adapter kit fitting O-rings. [Air Conditioning O-Ring Seal Replacement](#).

1. Install both GE-45268-9 fitting O-ring onto GE-45268-10 adapter.
2. Install GE-45268-7 fitting O-ring onto suction side of GE-45268-10 adapter.
3. Install GE-45268-8 fitting O-ring onto discharge side of GE-45268-10 adapter.

Flush Procedure

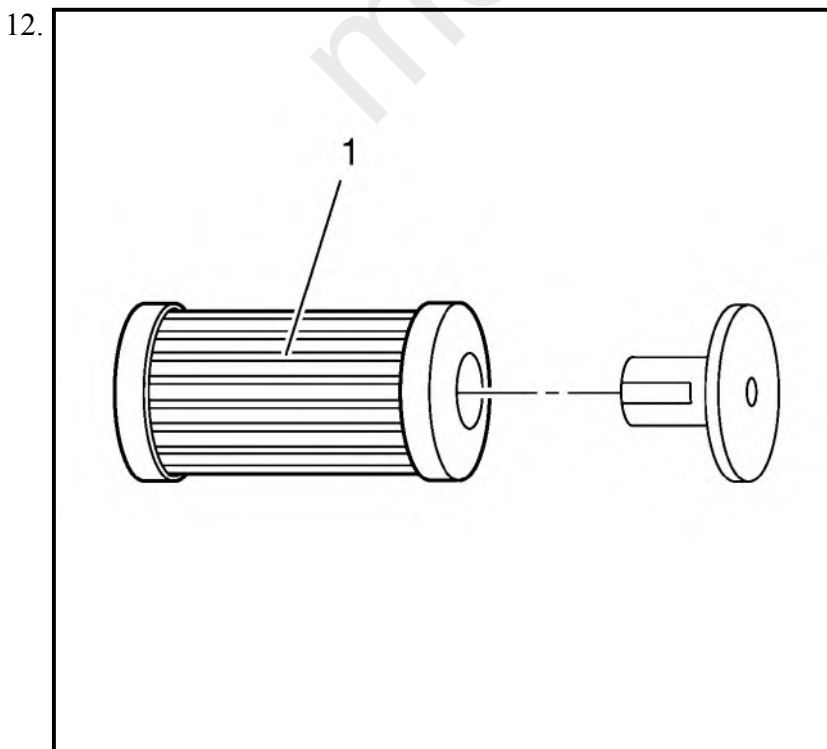
NOTE:

Warmer engine or ambient temperatures decreases refrigerant recovery time during the air conditioning flush procedure.

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#).
2. Remove the thermal expansion valve. [Air Conditioning Evaporator Thermal Expansion Valve Replacement](#).
3. Install the thermal expansion valve stud onto GE-45268-115 adapter.
4. Install new sealing washers onto evaporator core. [Air Conditioning System Seal Replacement](#)
5. Install GE-45268-115 adapter in place of the TXV, using an oversized seal washer.

CAUTION: Refer to [Fastener Caution](#) .

6. Install the air conditioning evaporator thermal expansion valve bolt and tighten to 4.5 N.m (40 lb in).
7. Install new washers onto liquid line and suction hose. [Air Conditioning System Seal Replacement](#).
8. Connect liquid line and suction hose to GE-45268-115 adapter using an oversized seal washer.
9. Install the thermal expansion valve block fitting nut and tighten to 19 N.m (14 lb ft).
10. Remove the air conditioning compressor. [Air Conditioning Compressor Replacement \(LFY\)](#)[Air Conditioning Compressor Replacement \(LTG\)](#)
11. Remove the air conditioning refrigerant filter. [Receiver and Dehydrator Replacement \(LFY\)](#)[Receiver and Dehydrator Replacement \(LTG\)](#)



NOTE:

The filter inside GE-45628-1 adapter is serviceable. Remove and discard check valve from the filter.

Service the filter before each flush.

NOTE: Assure that suction and discharge ports on J-45268-10 correspond to suction and discharge ports on compressor hose assembly.

13. Install new sealing washers onto air conditioning compressor and condenser hose. Refer to [Air Conditioning O-Ring Seal Replacement](#). Assure that suction and discharge ports on GE-45268-10 adapter correspond to suction and discharge ports on air conditioning compressor to condenser hose.
14. Install GE-45268-10 filter adapter to the air conditioning compressor to condenser hose.
15. Connect GE-45268-1 filter to J-45268-7 adapter.
16. Connect blue hose from air conditioning filling device to GE-45268 adapter.
17. Connect red hose from air conditioning filling device to GE-45268 adapter.
18. Disconnect blue hose from air conditioning filling device to GE-45268-1 adapter.
19. Disconnect GE-45268-1 adapter from GE-45268-10 adapter.
20. Remove GE-45268-10 adapter from the air conditioning compressor to condenser hose.

NOTE: Flushing will remove all PAG oil from the air conditioning system. The air conditioning system must be replenished with the correct amount of PAG oil.

21. If you will reinstall the removed air conditioning compressor, perform the following procedure:
 - Remove the air conditioning compressor drain plug.
 - Drain PAG oil from the air conditioning compressor. Rotate compressor input shaft to assist in draining the PAG oil from compressor.
 - Add the total system capacity of PAG oil to air conditioning compressor. Refer to [Approximate Fluid Capacities](#).
 - Add one bottle of GE-41447 Air Conditioning Tracer Dye.
 - Install the air conditioning compressor drain plug and tighten to 14 N.m (10 lb ft).

NOTE: Flushing will remove fluorescent leak detection dye from air conditioning system.

22. Install the air conditioning compressor. Refer to [Air Conditioning Compressor Replacement \(LFY\)](#)[Air Conditioning Compressor Replacement \(LTG\)](#).
23. Install new air conditioning refrigerant filter. Refer to [Receiver and Dehydrator Replacement \(LFY\)](#)[Receiver and Dehydrator Replacement \(LTG\)](#).
24. Remove the TXV block fitting nut.
25. Disconnect liquid line and suction line from GE-45268-115 adapter.
26. Remove the TXV bolts retaining GE-45268-115 adapter.
27. Remove GE-45268-115 adapter.
28. Inspect the TXV for debris. Clean or replace as needed.
29. Install the TXV. Refer to [Air Conditioning Evaporator Thermal Expansion Valve Replacement](#).
30. Evacuate and recharge the air conditioning system. Refer to [Refrigerant Recovery and Recharging \(R-134a\)](#).
31. Leak test fittings using GE-42220 lamp.

FLUSHING (R-1234YF)

Tools Required

- GE-45268 Air Conditioning Flushing Adapter Kit
- GE-41447-a Leak Detection Dye
- GE-50078 Electronic Leak Detector
- GE-50300 Air Conditioning Service Center for HFO1234-yf

General Information

R-1234yf (HFO-1234yf) - 2, 3, 3, 3 - Tetrafluoroprop-1-ene (CF₃CFCH₂), is an olefin containing hydrogen, fluorine and carbon with thermodynamic properties similar to R-134a. This refrigerant is a mildly flammable gas. It has a boiling point of -29.2Â°C, a vapor pressure of 583 kPa absolute at 20Â°C, no ozone depletion potential, and a global warming potential (GWP) of 4.

In certain regions, technicians repairing or servicing motor vehicle air conditioning (MVAC) systems must be trained and certified by the appropriate regional or national regulatory agency.

- In the USA, refer to the EPA website for MVAC training requirements. <http://www.epa.gov/ozone/title6/609/technicians/609certs.html>
- In Canada, refer to the Environment Canada website for MVAC training requirements. <http://www.ec.gc.ca/ozone/default.asp?lang=En&n=943E1CAB-1#ws4E6F6835>
- In Europe, refer to Commission Regulation (EC) No 307/2008 for MVAC training requirements. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:092:0025:0027:EN:PDF>

WARNING: R-1234yf Proper Service Procedures Warning .

NOTE: **Flushing with the GE-50300 Cool Tech Refrigerant Recovery/Recharge Machine is not intended to remove metal from the air conditioning system.**

Flushing is intended to remove the following contaminants:

- Contaminated air conditioning oil
- Desiccant, following a desiccant bag failure
- Overcharge of air conditioning oil
- Refrigerant contamination

Metal Contamination

In the event of an A/C Compressor failure, metal will be released throughout the system resulting in contamination of the refrigerant and all system components.

Only install a designated machine for contaminated refrigerant (GE-50957 Machine R-1234yf Contaminated Refrigerant or equivalent service machine designated for contaminated refrigerant). This is critical to meet the requirements of SAE J2851, and so the standard refrigerant service machine is not contaminated thus introducing contamination into other vehicles.

For more information on recovery and recharging when system contamination is present, as well as proper disposal, refer to **Refrigerant Recovery and Recharging (R-1234yf)**.

Components that are to be REPLACED due to metal contamination are as follows:

- Air conditioning compressor
- Metal lines that contain mufflers
- Thermal expansion valve (TXV)
- Receiver/Drier bottle with desiccant bag
- All rubber O-rings and seals
- Schrader valves on service ports

Components that are to be FLUSHED due to metal contamination, and are considered reusable are as follows:

- Basic metal lines that contain no mufflers
- Condenser
- Evaporator

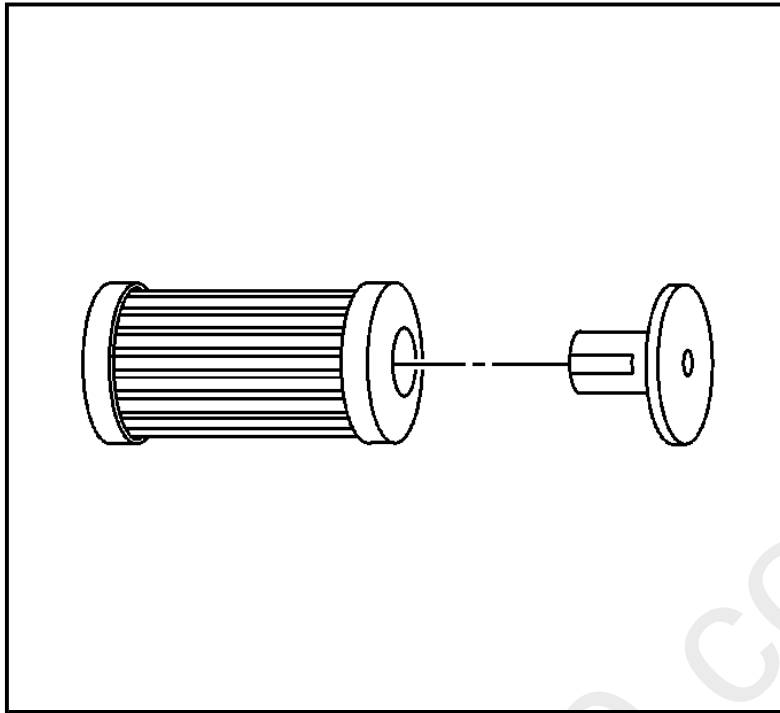
Flushing

NOTE: **Warmer engine or ambient temperature decreases the refrigerant recovery time during the air conditioning flush procedure.**

NOTE: **Minimum flush time for metal contamination should be 25 minutes**

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-1234yf\)](#)
2. Remove the front air conditioning evaporator thermal expansion valve. [Air Conditioning Evaporator Thermal Expansion Valve Replacement](#)
3. Install the J 45268-115 in place of the thermal expansion valve.
4. Remove the air conditioning compressor. [Air Conditioning Compressor Replacement \(LFY\)](#)[Air Conditioning Compressor Replacement \(LTG\)](#)
5. Install J 45268-10 to the discharge hose.
6. Install J 45268-10 to the suction hose.

7.



NOTE: Forward flow refrigerant flushing is recommended for contaminated refrigerant or air conditioning oil.

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

Service the filter with ACDelco P/N GF 470, before each flush.

1. Connect J 45268-1 to the suction port of J 45268-10.
2. Connect the blue hose from GE-50300 Air Conditioning Service Center for HFO1234-yf to the J 45268-1 flush filter adapter.
3. Connect the red hose from GE-50300 Air Conditioning Service Center for HFO1234-yf to the J 45268-10 flush adapter.

NOTE: Reverse flow refrigerant flushing is recommended for desiccant cartridge failure.

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

8. Service the filter with ACDelco P/N GF 470, before each flush.
 1. Connect J 45268-1 to the discharge port of J 45268-10.
 2. Connect the blue hose from GE-50300 Air Conditioning Service Center for HFO1234-yf to the suction port of J 45268-1 flush adapter.
 3. Connect the red hose from GE-50300 Air Conditioning Service Center for HFO1234-yf to the suction port of J 45268-10 flush adapter.

NOTE: The valve on the external refrigerant tank must be closed before starting the flush process.

9. Flush the front air conditioning system by following the instructions supplied with the GE-50300 Air Conditioning Service Center for HFO1234-yf.

NOTE: If the vehicle is equipped with an auxiliary air conditioning system, it will be necessary to flush the front air conditioning system before flushing the auxiliary air conditioning system.

10. Service the filter with ACDelco P/N GF 470 before each flush.
1. Remove J 45268-115 from the front evaporator.
 2. Inspect the front air conditioning evaporator thermal expansion valve for debris. Clean or replace as needed
 3. Install the front air conditioning evaporator thermal expansion valve. [Air Conditioning Evaporator Thermal Expansion Valve Replacement](#)
 4. Install J 45268-115 in place of the auxiliary air conditioning evaporator thermal expansion valve.
11. Flush the auxiliary air conditioning system by following the instructions supplied with the GE-50300 Air Conditioning Service Center for HFO1234-yf.
12. Remove J 45268-10 from the discharge hose.
13. Remove J 45268-10 from the suction hose.

NOTE: Flushing will remove all the air conditioning oil from the air conditioning system. The air conditioning system must be replenished with the correct amount of air conditioning oil.

14. If the removed air conditioning compressor is being reinstalled, perform the following procedure:

NOTE: Rotate the compressor input shaft to assist in draining the air conditioning oil from the compressor.

1. Drain the air conditioning oil from the air conditioning compressor.

CAUTION: Refer to [Correct Refrigerant Lubricant Caution](#) .

2. Add the total system capacity of air conditioning oil to the air conditioning compressor. [Approximate Fluid Capacities](#)

15. Refill the air conditioning system with the proper amount of air conditioning oil. [Approximate Fluid Capacities](#)

16. If the removed air conditioning compressor is being reinstalled, perform the following procedure:

1. Drain the air conditioning oil from the air conditioning compressor.

CAUTION: Refer to [Correct Refrigerant Lubricant Caution](#) .

2. Add the total system capacity of air conditioning oil to the air conditioning compressor. [Approximate Fluid Capacities](#)

17. If you will replace the air conditioning compressor after flushing the system, perform the following procedure:

1. DO NOT drain the new air conditioning oil from the compressor.
2. Deduct the amount of air conditioning oil shipped with the service compressor from the amount of air conditioning oil listed in the approximate fluid capacities table. [Approximate Fluid Capacities](#)

CAUTION: Refer to [Correct Refrigerant Lubricant Caution](#) .

18. Add the calculated amount to the compressor, as needed.

NOTE: GE-41447-a leak detection dye is for PAG oil only.

19. Add one bottle of GE-41447-a leak detection dye directly to the air conditioning compressor.
20. Install the air conditioning compressor. [Air Conditioning Compressor Replacement \(LFY\)](#)[Air Conditioning Compressor Replacement \(LTG\)](#)

21. Replace the air conditioning receiver and dehydrator. [Receiver and Dehydrator Replacement \(LFY\)](#)[Receiver and Dehydrator Replacement \(LTG\)](#)
22. Remove J 45268-115.
23. Install the auxiliary air conditioning evaporator thermal expansion valve. [Air Conditioning Evaporator Thermal Expansion Valve Replacement](#)
24. Evacuate and recharge the air conditioning system. [Refrigerant Recovery and Recharging \(R-1234yf\)](#).
25. Leak test the fittings using **GE-50078** Electronic Leak Detector.

AIR CONDITIONING COMPRESSOR OIL BALANCING

Special Tools

- **GE-45037** A/C Oil Injector

Draining Procedure

1. Remove the A/C compressor from the vehicle. [Air Conditioning Compressor Replacement \(LFY\)](#)[Air Conditioning Compressor Replacement \(LTG\)](#)
2. Record the amount of oil removed from the refrigerant system during refrigerant recovery. This measurement will be used during installation of the replacement compressor.
3. Drain as much refrigerant oil as possible from both the suction and discharge ports of the removed compressor into a clean, graduated container.
4. 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.

5. Inspect the oil drained from the compressor. Refer to [Air Conditioning Compressor Oil Diagnosis](#).
6. Properly discard the used refrigerant oil.

Balancing Procedure with Service Compressor Replacement (Flushing Not Required)

NOTE:

- The refrigerant oil in the A/C system must be balanced during compressor replacement.
- The new service compressor is shipped with 40 ml (1.4 oz) of refrigerant oil.

1. Before installing the compressor, calculate the total amount of oil drained from the compressor and collected by the recovery equipment.
2. If the sum of the amount of oil drained from the removed compressor and the amount of oil removed during refrigerant recovery is:
 - LESS THAN 40 ml (1.4 ounces), no balancing is required. Install the replacement compressor as is. It contains 40 ml (1.4 ounces) of refrigerant oil.
 - MORE THAN 40 ml (1.4 ounces), additional oil is required. Subtract 40 ml (1.4 oz) from the sum of removed oil (oil drained + oil recovered). ADD the calculated difference to the A/C compressor or by filling the A/C system using GE-45037 A/C Oil Injector.

Balancing Procedure with Service Compressor Replacement (Flushing Required)

1. Flush the A/C system. Flushing will remove all the oil from the A/C system. [Flushing \(R-134a\)](#)[Flushing \(R-1234yf\)](#)
2. Remove the A/C compressor from the vehicle. [Air Conditioning Compressor Replacement \(LFY\)](#)[Air Conditioning Compressor Replacement \(LTG\)](#)

NOTE:

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

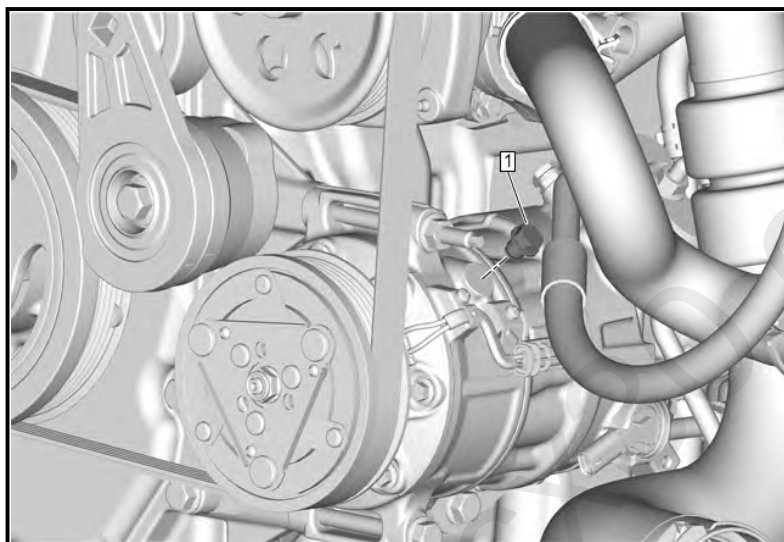
- The new service compressor is shipped with 40 ml (1.4 oz) of refrigerant oil. Do not drain the oil from the compressor.

3. Before installing the compressor, deduct the amount of oil shipped with the compressor 40 ml (1.4 oz) from the total amount of the system oil. [Approximate Fluid Capacities](#)
4. Add the calculated amount of oil to the A/C compressor or by filling the A/C system using GE-45037 A/C Oil Injector.

Balancing Procedure (Flushing Required Only)

1. Flush the A/C system. Flushing will remove all the oil from the A/C system. [Flushing \(R-134a\)](#)[Flushing \(R-1234yf\)](#)
2. Remove the A/C compressor from the vehicle. [Air Conditioning Compressor Replacement \(LFY\)](#)[Air Conditioning Compressor Replacement \(LTG\)](#)
3. Drain the oil from both the suction and discharge ports of the removed compressor into a clean, graduated container.
4. Add the total system capacity of refrigerant oil to the A/C system by filling the A/C compressor or by filling the A/C system using GE-45037 A/C Oil Injector. [Approximate Fluid Capacities](#)

AIR CONDITIONING COMPRESSOR OIL DRAIN PLUG REPLACEMENT (LTG)



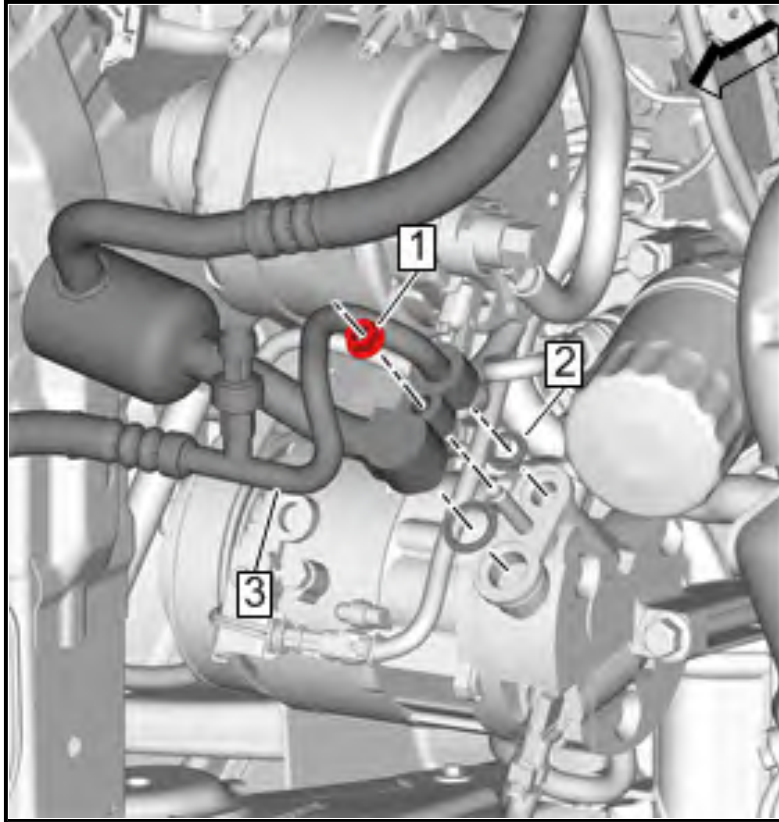
Callout	Component Name
Preliminary Procedures 1. Refrigerant Recovery and Recharging (R-134a)Refrigerant Recovery and Recharging (R-1234yf) 2. Air Cleaner Outlet Duct Replacement (Non-Tamperproof) Air Cleaner Outlet Duct Replacement (Tamperproof)	
1	Air Conditioning Compressor Oil Drain Plug CAUTION: Refer to Component Fastener Tightening Caution . Tighten 7 N.m (62 lb in)

AIR CONDITIONING COMPRESSOR REPLACEMENT (LFY)

Removal Procedure

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
2. Drive Belt @ Air Conditioning Compressor - Remove - [Drive Belt Replacement](#)

3.

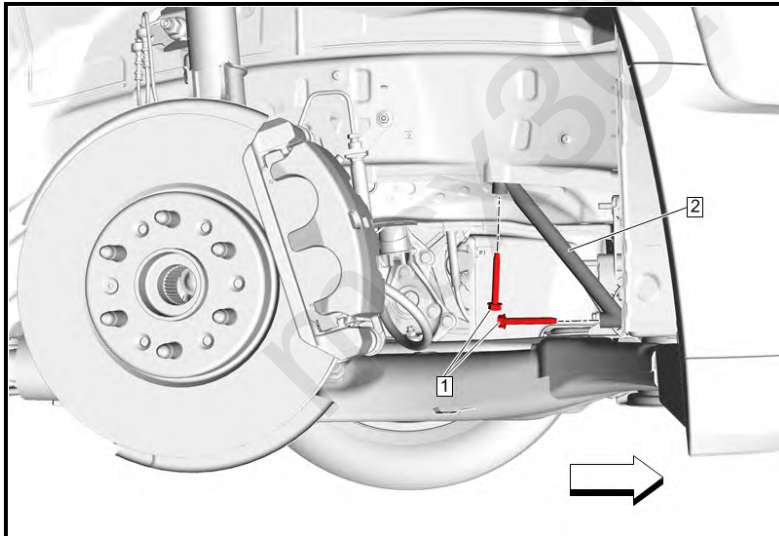


Air Conditioning Compressor and Condenser Hose (3) @ Air Conditioning Compressor - Remove - [Air Conditioning Compressor and Condenser Hose Replacement \(LFY\)](#)

4. Disconnect all electrical connectors.

5. Front Wheelhouse Liner-Right Side - Remove - [Front Wheelhouse Liner Replacement](#)

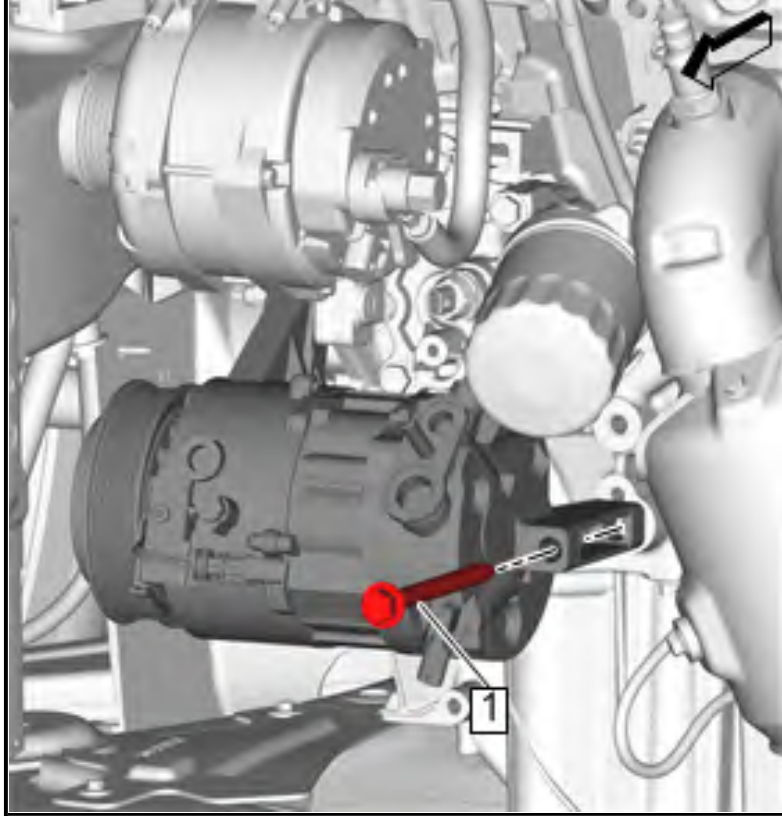
6.



Front End Sheet Metal Diagonal Brace-Right Side (2) - Remove - [Front End Sheet Metal Diagonal Brace Replacement - Right Side](#)

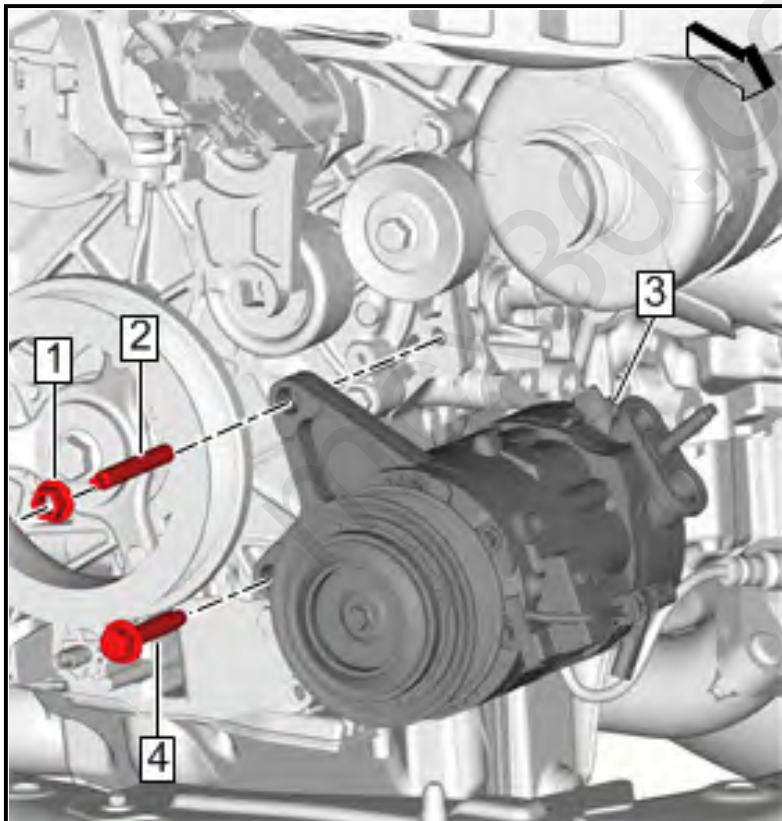
7.





Air Conditioning Compressor Bolt (1) @ Air Conditioning Compressor - Remove

8.

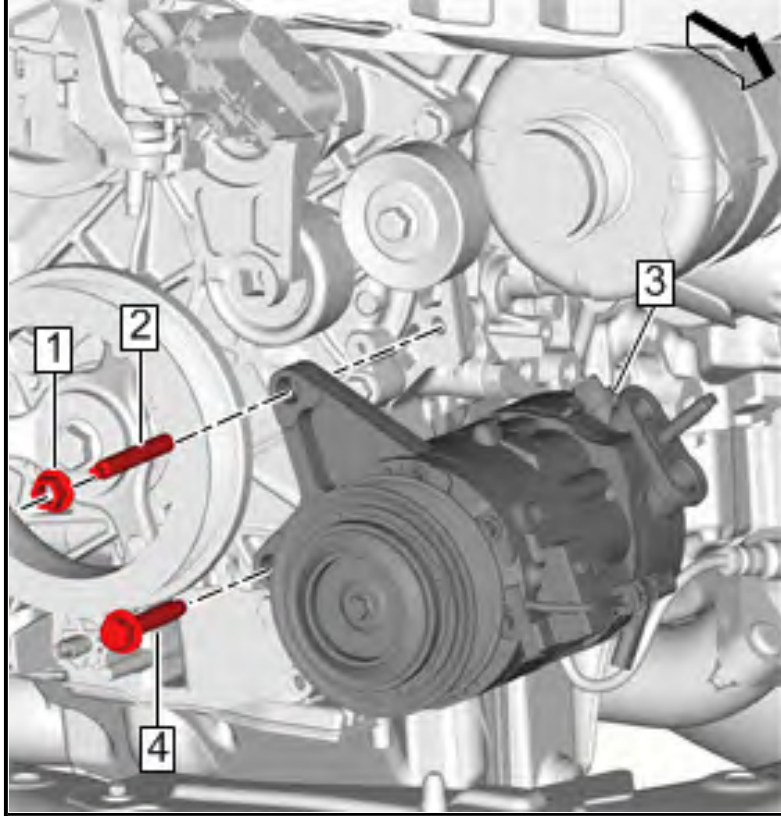


Air Conditioning Compressor Nut (1) @ Air Conditioning Compressor (3) - Remove

9. Air Conditioning Compressor Bolt (4) @ Air Conditioning Compressor (3) - Remove
10. Air Conditioning Compressor Stud (2) @ Air Conditioning Compressor (3) - Remove
11. Remove the air conditioning compressor (3) from the vehicle.

Installation Procedure

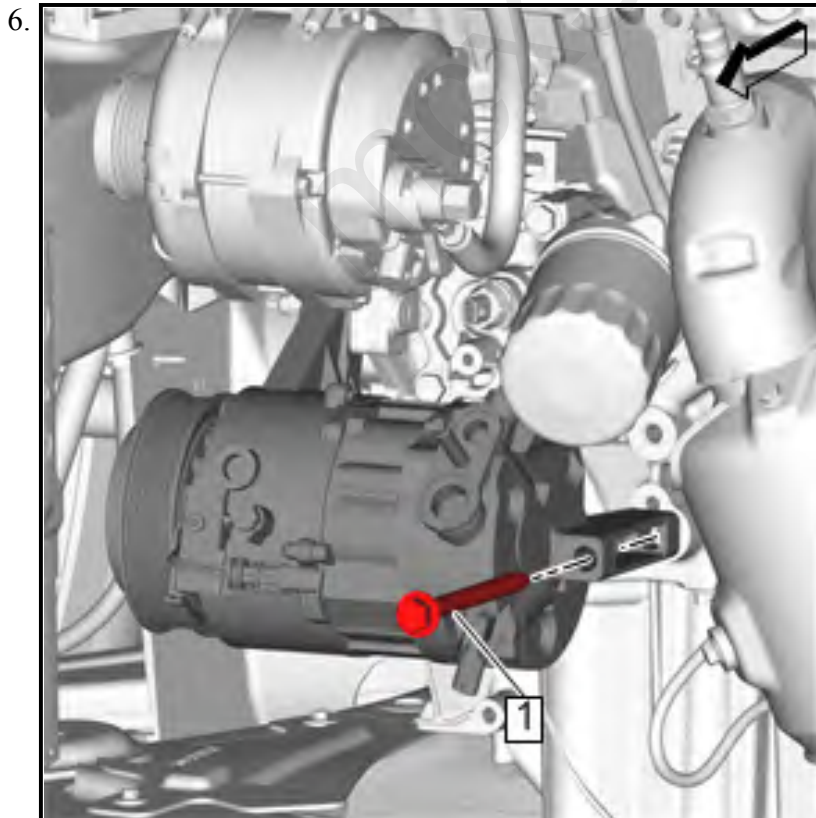
1. Prior to installing the air conditioning compressor perform the air conditioning compressor oil balancing procedure. [Air Conditioning Compressor Oil Balancing](#)
2. Install the air conditioning compressor (1) to the vehicle.
3.



CAUTION: Refer to [Fastener Caution](#) .

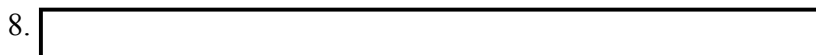
Air Conditioning Compressor Stud (2) @ Air Conditioning Compressor (3) - Install and tighten 9 N.m (80 lb in)

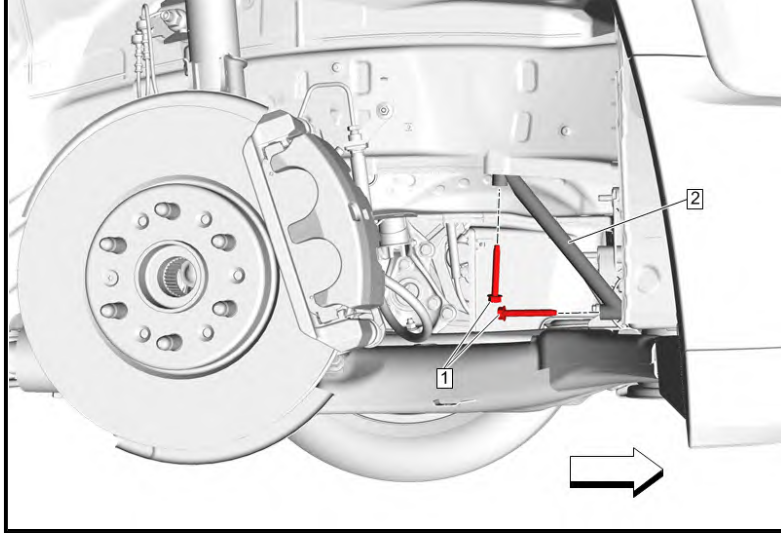
4. Air Conditioning Compressor Bolt (4) @ Air Conditioning Compressor (3) - Install and tighten 22 N.m (16 lb ft)
5. Air Conditioning Compressor Nut (1) @ Air Conditioning Compressor (3) - Install and tighten 22 N.m (16 lb ft)



Air Conditioning Compressor Bolt (1) @ Air Conditioning Compressor - Install and tighten 22 N.m (16 lb ft)

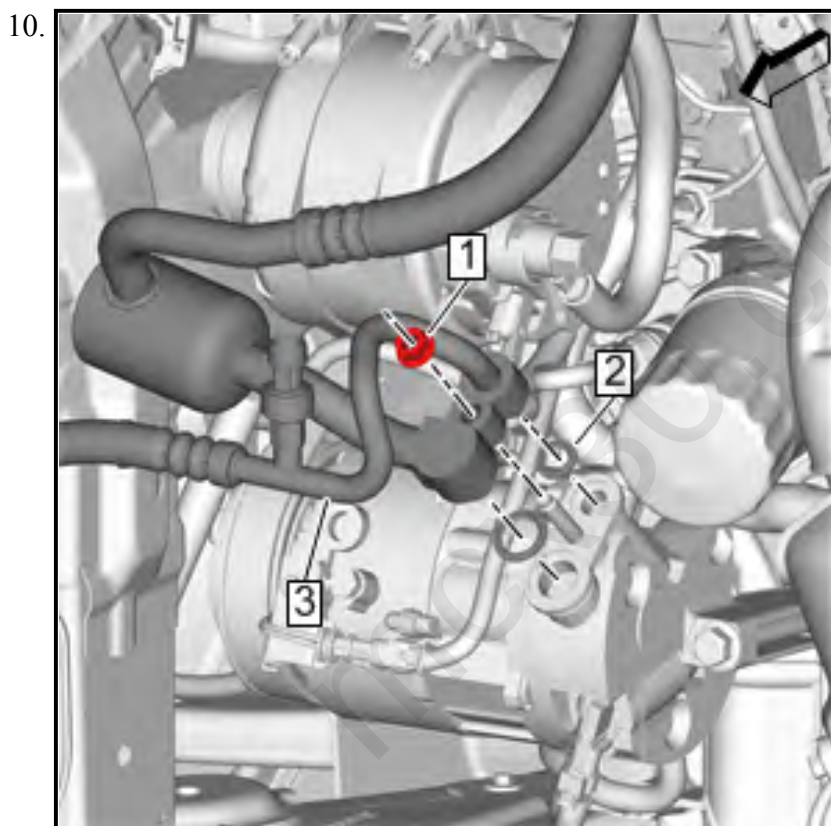
7. Connect the electrical connectors.





Front End Sheet Metal Diagonal Brace-Right Side (2) - Install - [Front End Sheet Metal Diagonal Brace Replacement - Right Side](#)

9. Front Wheelhouse Liner-Right Side - Install - [Front Wheelhouse Liner Replacement](#)



Air Conditioning Compressor and Condenser Hose (3) @ Air Conditioning Compressor - Install - [Air Conditioning Compressor and Condenser Hose Replacement \(LFY\)](#)

11. Drive Belt @ Air Conditioning Compressor - Install - [Drive Belt Replacement](#)

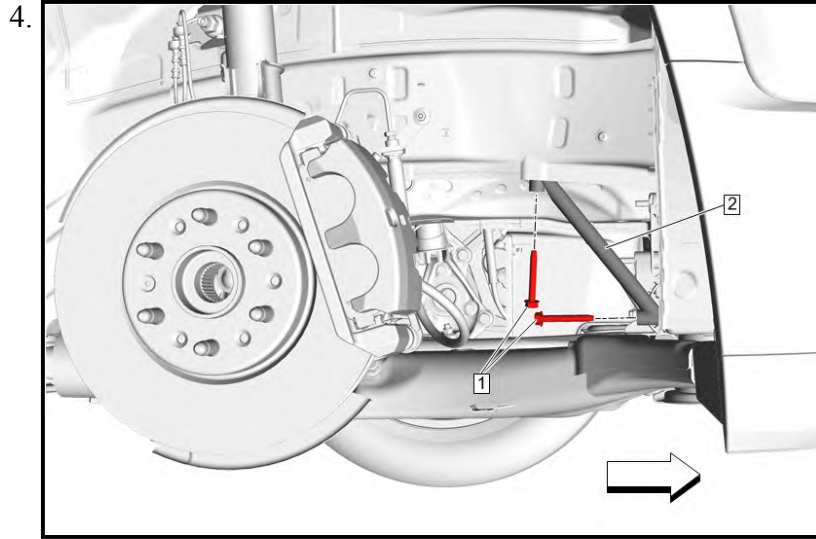
12. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)Refrigerant Recovery and Recharging \(R-1234yf\)](#)

AIR CONDITIONING COMPRESSOR REPLACEMENT (LTG)

Removal Procedure

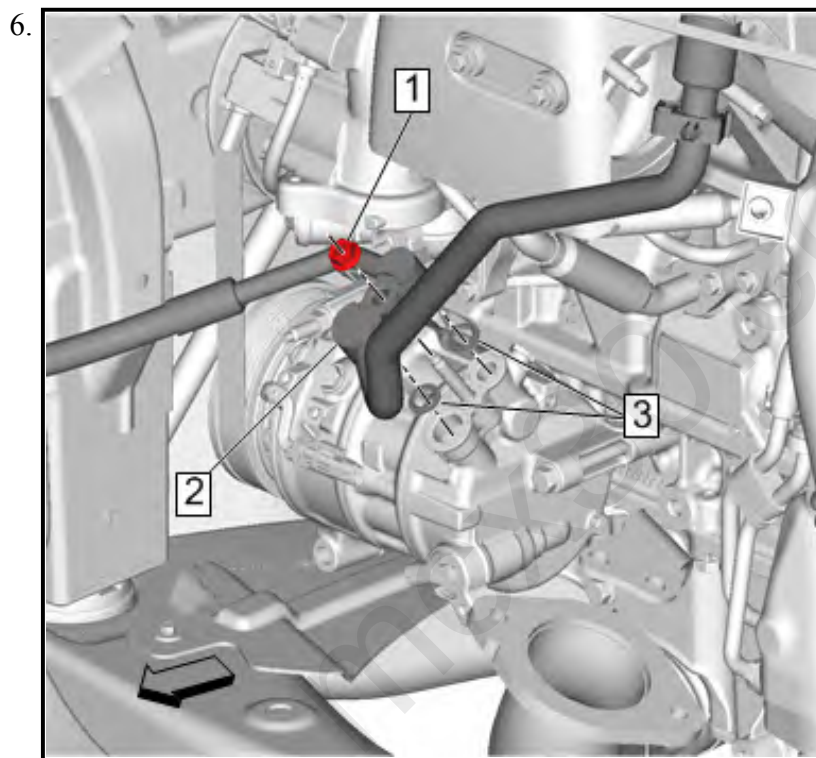
WARNING: Refer to [R-1234yf Proper Service Procedures Warning](#) .

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)Refrigerant Recovery and Recharging \(R-1234yf\)](#)
2. Charge Air Cooler Inlet Air Hose - Remove - [Charge Air Cooler Inlet Air Hose Replacement](#)
3. Drive Belt @ Air Conditioning Compressor - Remove - [Drive Belt Replacement](#)



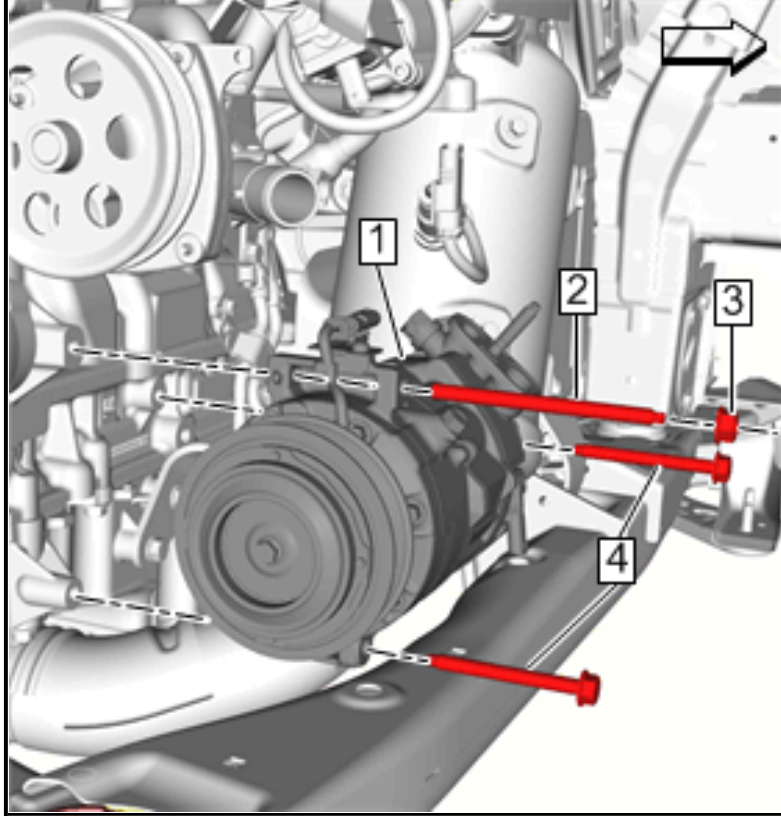
Front End Sheet Metal Diagonal Brace-Right Side (2) - Remove - [Front End Sheet Metal Diagonal Brace Replacement - Right Side](#)

5. Disconnect all electrical connectors.



Air Conditioning Compressor and Condenser Hose (2) @ Air Conditioning Compressor - Remove - [Air Conditioning Compressor and Condenser Hose Replacement \(LTG\)](#)





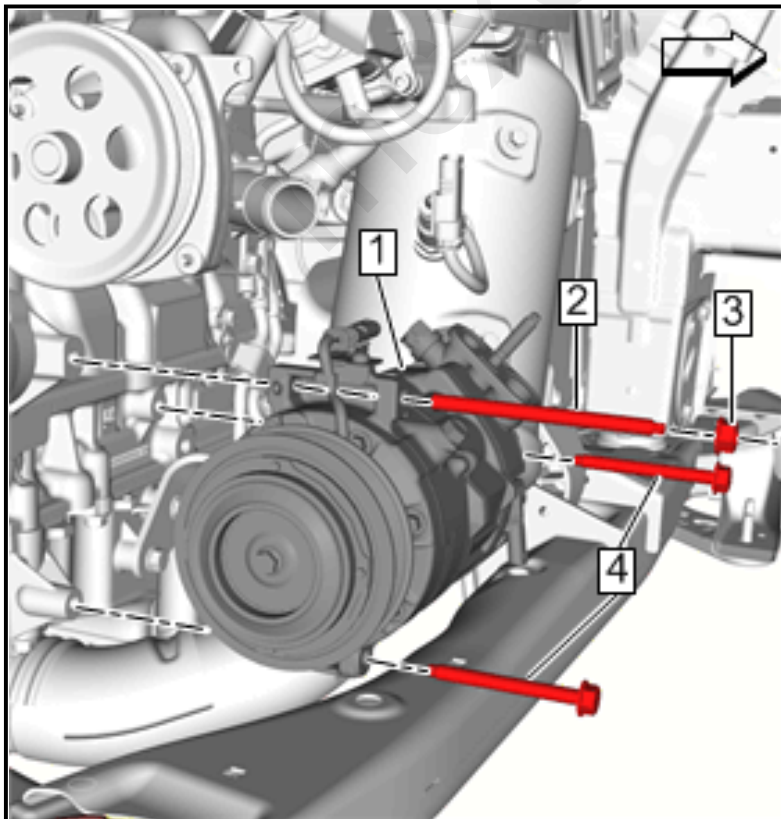
Air Conditioning Compressor Nut (3) @ Air Conditioning Compressor (1) - Remove

8. Air Conditioning Compressor Bolt (4) @ Air Conditioning Compressor (1) - Remove [2x]
9. Air Conditioning Compressor Stud (2) @ Air Conditioning Compressor (1) - Remove
10. Remove the air conditioning compressor (1) from the vehicle.

Installation Procedure

1. Prior to installing the air conditioning compressor perform the air conditioning compressor oil balancing procedure. [Air Conditioning Compressor Oil Balancing](#)

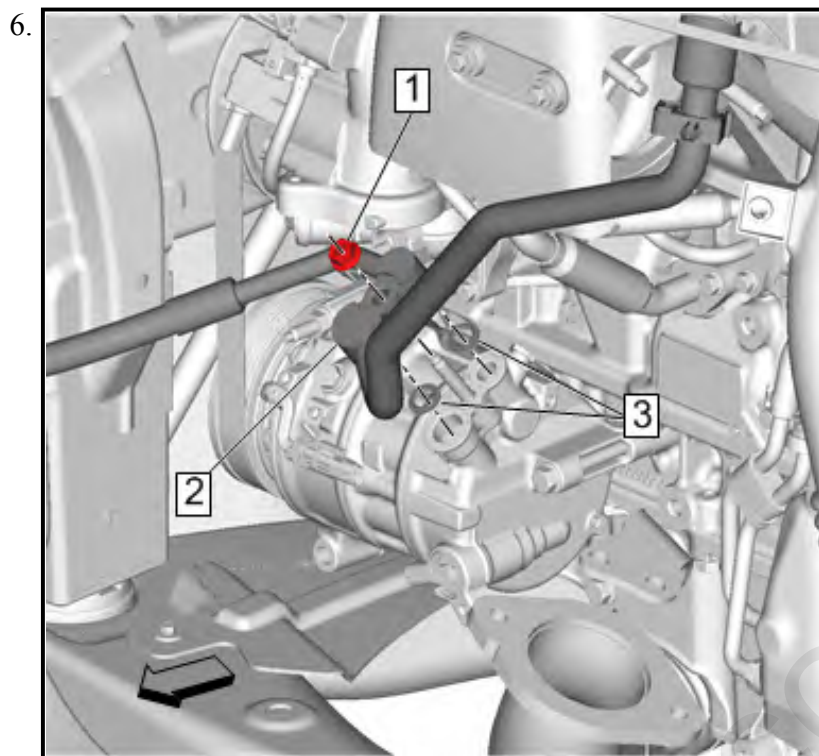
2.



Install the air conditioning compressor (1) to the vehicle.

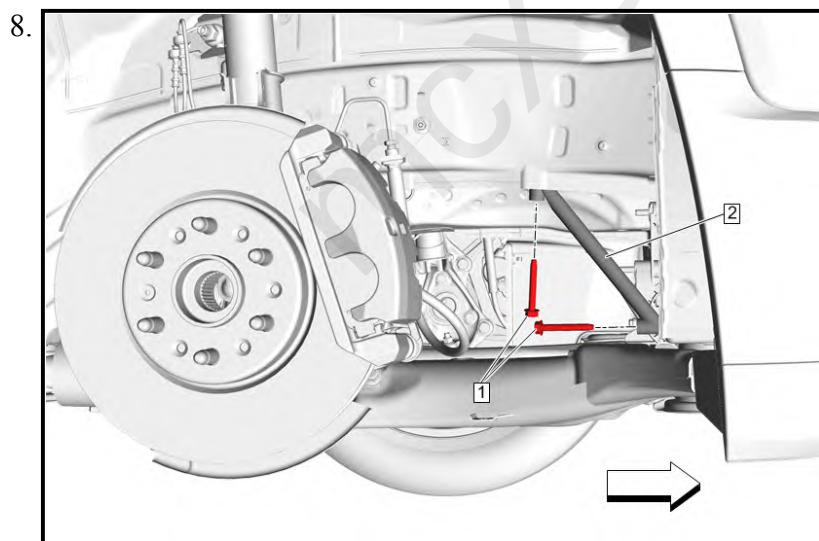
CAUTION: Refer to [Fastener Caution](#) .

3. Air Conditioning Compressor Stud (2) @ Air Conditioning Compressor (1) - Install and tighten 9 N.m (80 lb in)
4. Air Conditioning Compressor Bolt (4) @ Air Conditioning Compressor (1) - Install and tighten [2x] 22 N.m (16 lb ft)
5. Air Conditioning Compressor Nut (3) @ Air Conditioning Compressor (1) - Install and tighten 22 N.m (16 lb ft)



Air Conditioning Compressor and Condenser Hose (3) @ Air Conditioning Compressor - Install - [Air Conditioning Compressor and Condenser Hose Replacement \(LTG\)](#)

7. Connect the electrical connectors.



Front End Sheet Metal Diagonal Brace-Right Side (2) - Install - [Front End Sheet Metal Diagonal Brace Replacement - Right Side](#)

9. Drive Belt @ Air Conditioning Compressor - Install - [Drive Belt Replacement](#)
10. Charge Air Cooler Inlet Air Hose - Install - [Charge Air Cooler Inlet Air Hose Replacement](#)
11. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
12. Inspect for refrigerant leaks.

AIR CONDITIONING CLUTCH ASSEMBLY REPLACEMENT

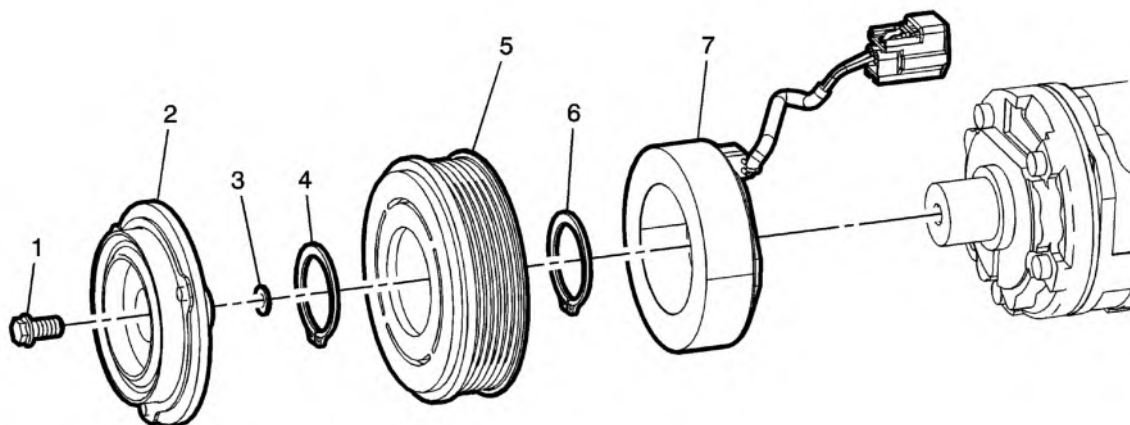


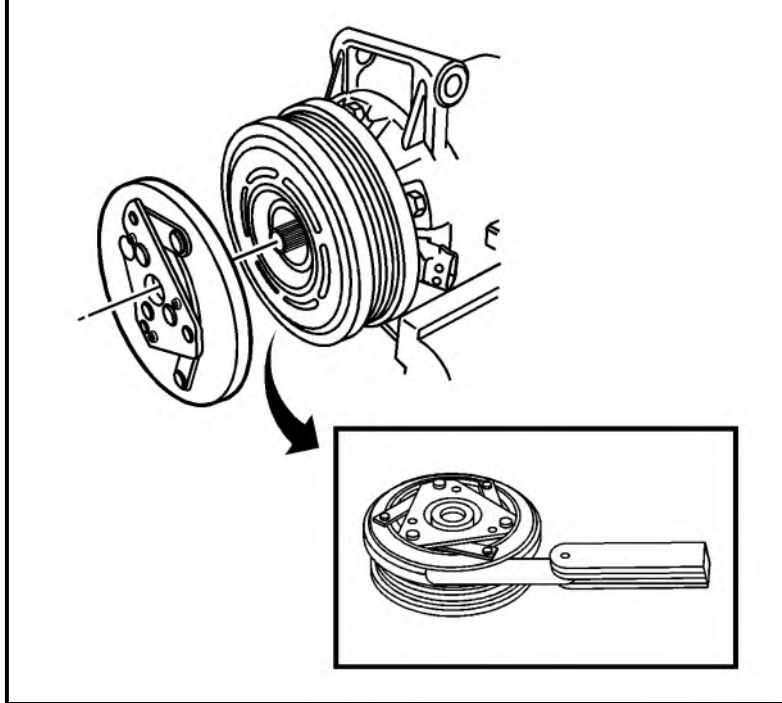
Fig. 1: Exploded View Of Air Conditioning Clutch Assembly Components

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Air Conditioning Compressor Replacement (LFY)</u> <u>Air Conditioning Compressor Replacement (LTG).</u>	
1	Air Conditioning Compressor Clutch Pulley Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 18 N.m (13 lb ft)
2	Air Conditioning Compressor Clutch Drive Plate Procedure Measure and adjust the air conditioning compressor clutch drive plate. <u>Air Conditioning Clutch Drive Plate Adjustment.</u>
3	Air Conditioning Compressor Clutch Shim [3x]
4	Retaining Ring
5	Air Conditioning Compressor Pulley
6	Retaining Ring
7	Air Conditioning Compressor Coil

AIR CONDITIONING CLUTCH DRIVE PLATE ADJUSTMENT

-



Install the clutch plate assembly. Refer to [Air Conditioning Clutch Assembly Replacement](#).

NOTE: Ensure the drive plate does not drag against the pulley when the pulley is rotated.

2. Measure the air gap between the pulley and the drive plate. Adjust the shims to achieve a 0.4 - 0.70 mm (0.015 - 0.028 in) air gap.

CAUTION: Refer to [Fastener Caution](#).

3. Install the clutch plate retaining bolt and tighten to 18 N.m (13 lb ft).

AIR CONDITIONING SYSTEM SEAL REPLACEMENT

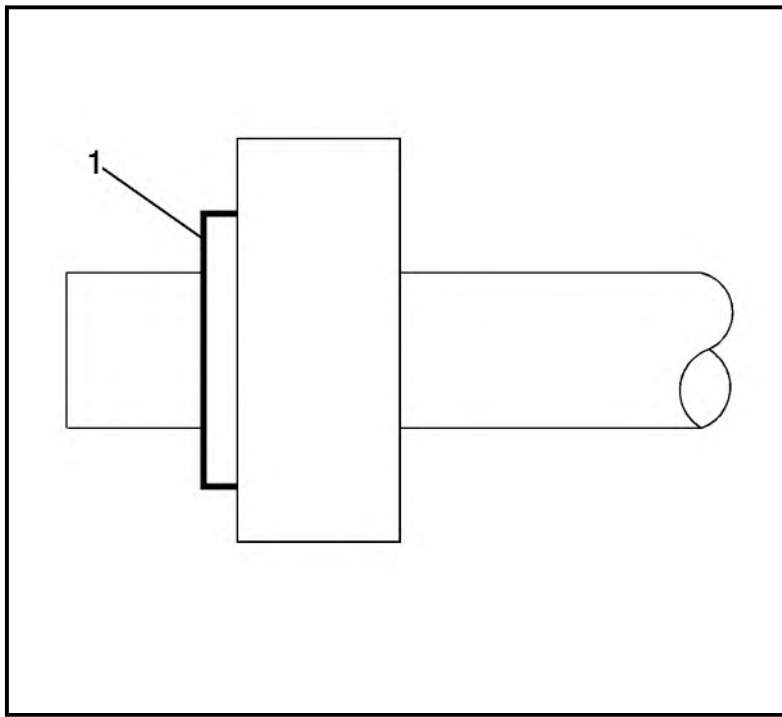
Removal Procedure

1. Disassemble the A/C refrigerant components. Refer to the appropriate repair procedure.

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

2. Cap or tape the A/C refrigerant components.

3.



Remove the sealing washer (1) from the A/C refrigerant component.

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

NOTE: **DO NOT reuse sealing washer.**

6. DISCARD the sealing washer.

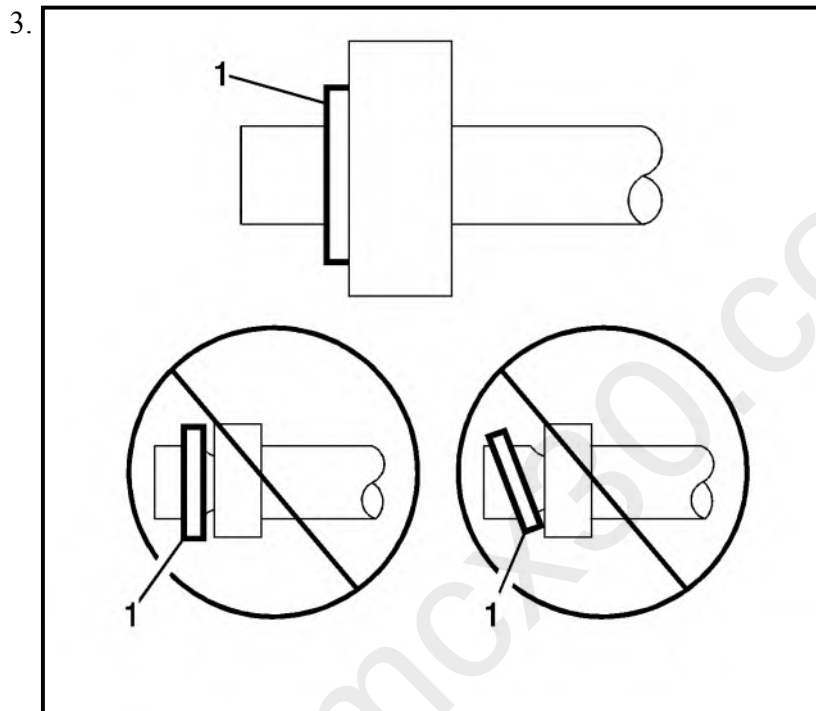
Installation Procedure

NOTE: **Flat washer type seals do not require lubrication.**

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

Do not use a damaged sealing washer.

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



Using a lint-free clean, dry cloth, clean the sealing surfaces of the A/C refrigerant components.

4. Carefully install the NEW sealing washer (1) onto the A/C refrigerant component.

The sealing washer (1) must completely bottom against the surface of the fitting.

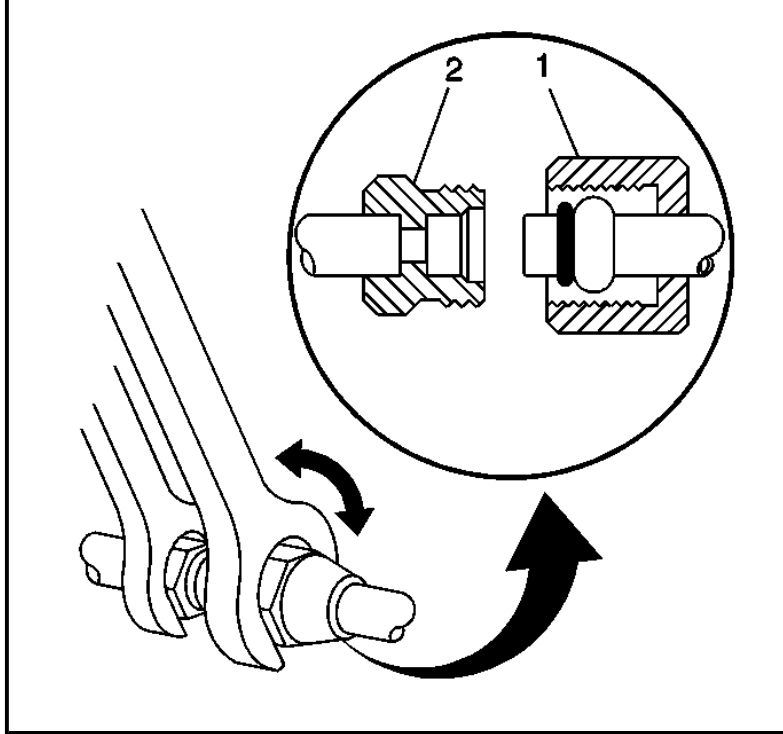
NOTE: **After tightening the A/C components, there should be a slight sealing gap of approximately 1.2 mm (3/64 in) between the A/C line and the A/C component.**

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

AIR CONDITIONING O-RING SEAL 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.
 4. Inspect the A/C refrigerant components for damage or burrs. Repair if necessary.
 5. 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. Using a lint-free clean, dry cloth, carefully clean the sealing surfaces of the A/C refrigerant components.

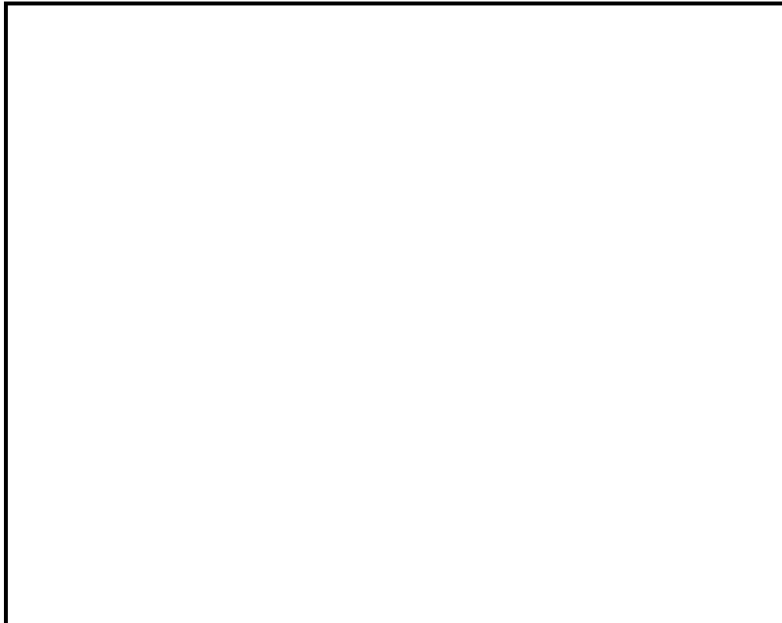
IMPORTANT: DO NOT allow any of the mineral base 525 viscosity refrigerant oil on the new O-ring seal to enter the refrigerant system.

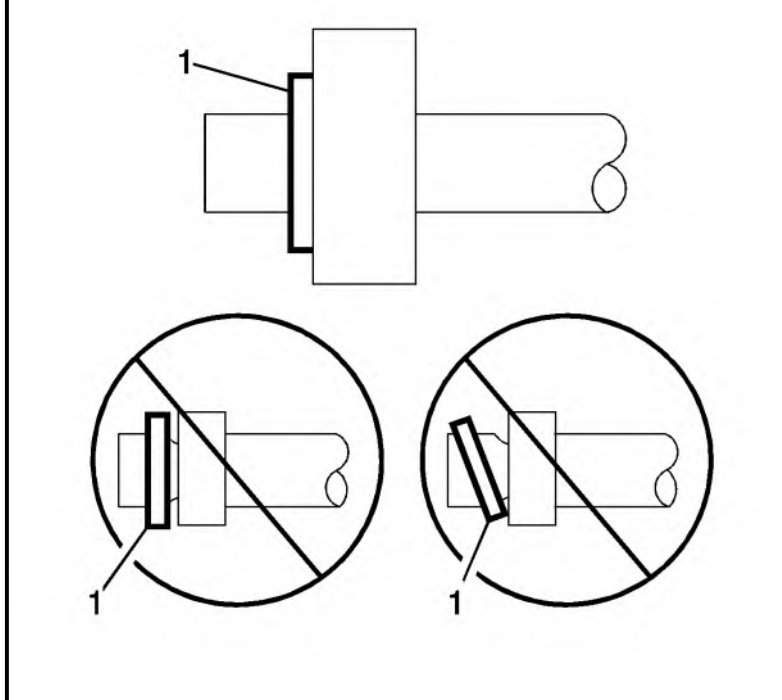
3. Lightly coat the new O-ring seal with mineral base 525 viscosity refrigerant oil.

IMPORTANT: DO NOT reuse O-ring seals.

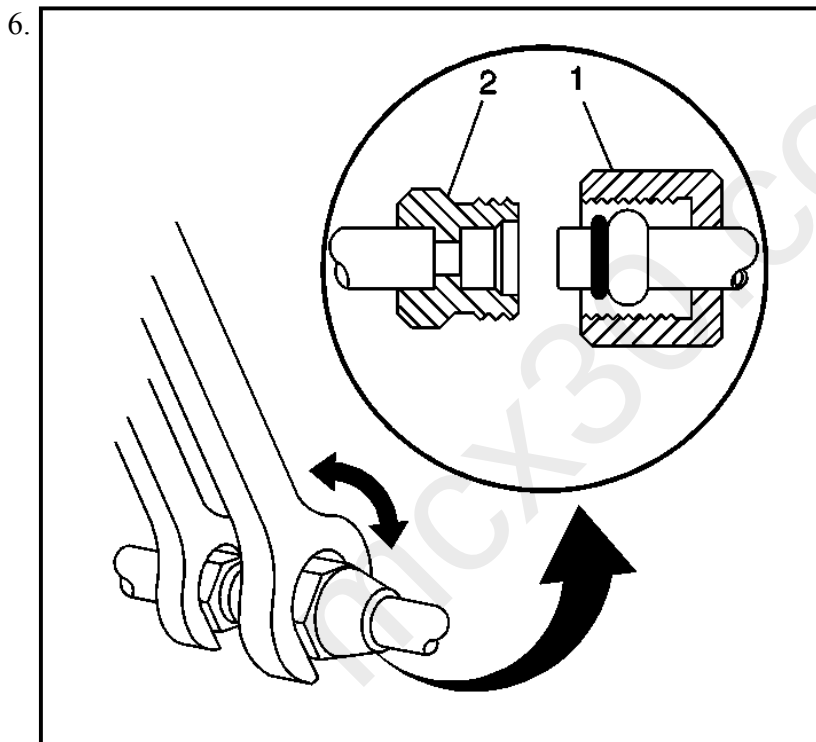
4. Carefully slide the new O-ring seal onto the A/C refrigerant component.

5.





The O-ring seal must be fully seated.



Assemble the A/C components.

Refer to the appropriate repair procedure.

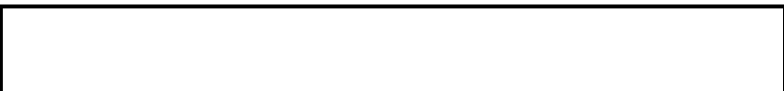
- For compression style fittings use a back up wrench on the fitting (2) and tighten the fitting nut (1) to specification.
- For banjo style fittings install the bolt retaining the banjo type fitting and tighten to specification.

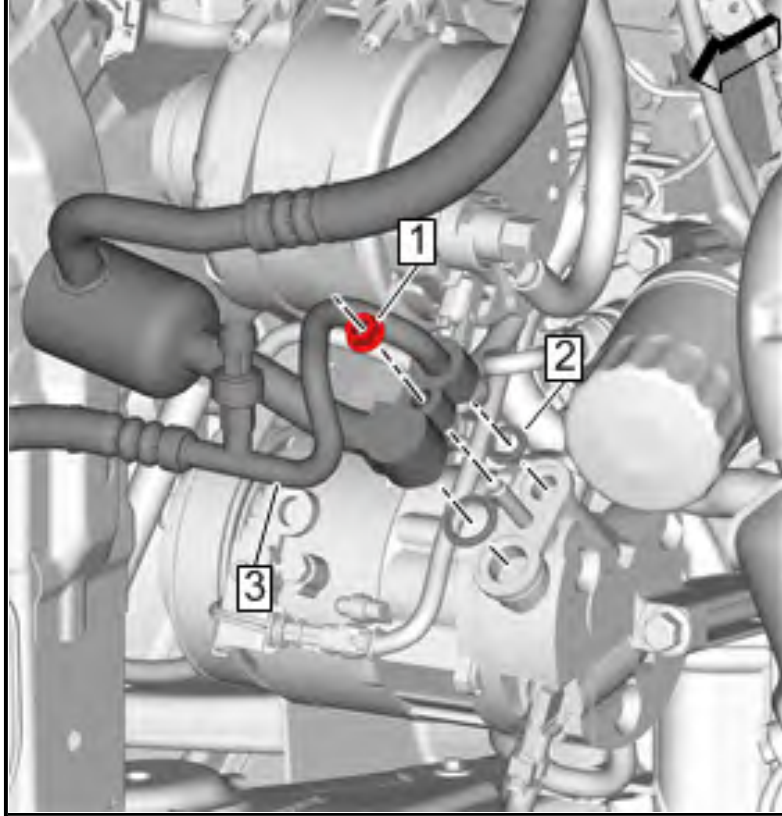
AIR CONDITIONING COMPRESSOR AND CONDENSER HOSE REPLACEMENT (LFY)

Removal Procedure

WARNING: Refer to [R-1234yf Proper Service Procedures Warning](#) .

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)

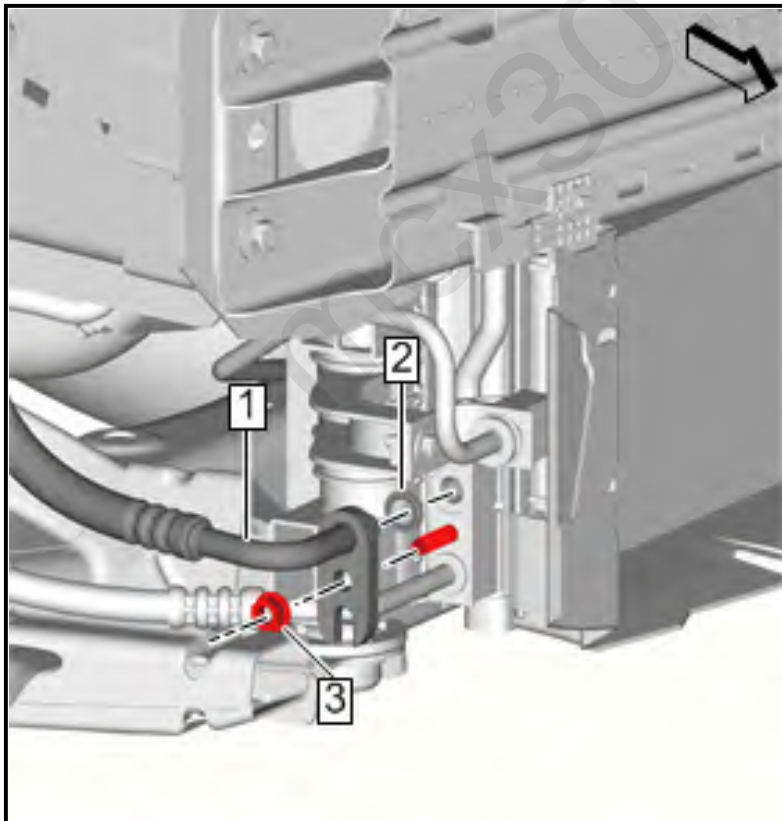
2. 



Disconnect all electrical connectors.

3. Air Conditioning Compressor Nut (1) @ Air Conditioning Compressor - Remove
4. Air Conditioning Compressor and Condenser Hose (3) @ Air Conditioning Compressor - Remove
5. Remove and DISCARD the sealing washer. (2) [2x] [Air Conditioning System Seal Replacement](#)

6.

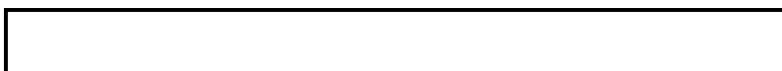


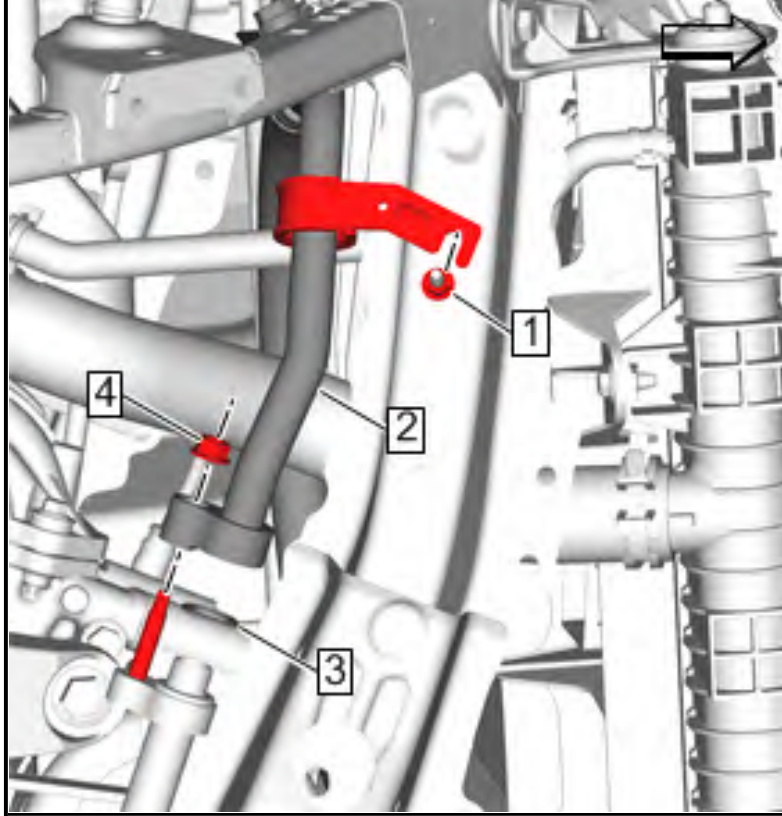
NOTE: Fascia removed for clarity.

Air Conditioning Compressor and Condenser Hose Nut (3) @ Air Conditioning Condenser - Remove

7. Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Remove
8. Remove and DISCARD the sealing washer. (2)

9.



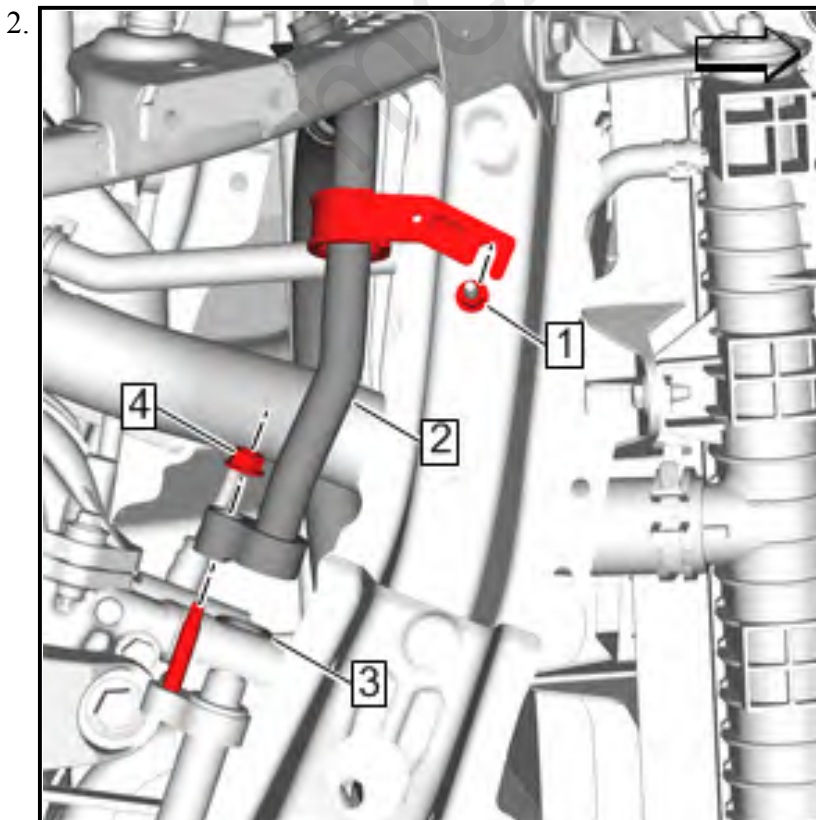


Air Conditioning Compressor and Condenser Hose Nut (4) @ Air Conditioning Compressor and Condenser Hose - Remove

10. Air Conditioning Compressor and Condenser Hose Nut (1) @ Front End Upper Tie Bar-Right Side - Loosen
11. Air Conditioning Compressor and Condenser Hose (2) @ Air Conditioning Refrigerant Heat Exchanger - Remove
12. Remove and DISCARD the sealing washer. (3)
13. Remove the air conditioning compressor and condenser hose (2) from the vehicle.

Installation Procedure

1. Install the air conditioning compressor and condenser hose to the vehicle.

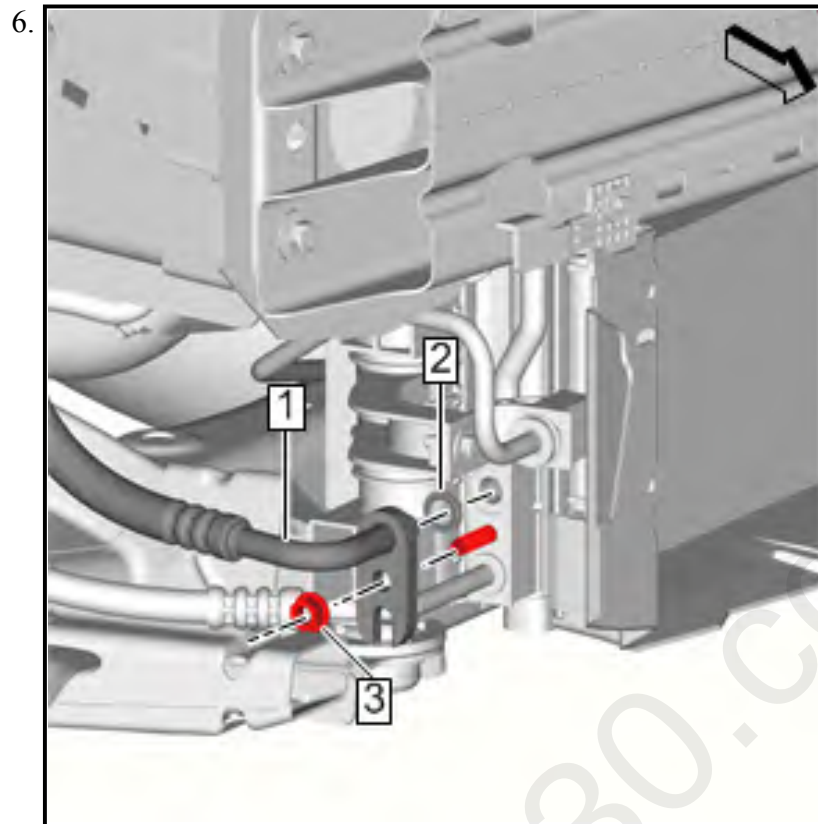


Install a NEW sealing washer. (3) [Air Conditioning System Seal Replacement](#)

3. Air Conditioning Compressor and Condenser Hose (2) @ Air Conditioning Refrigerant Heat Exchanger - Install

CAUTION: Refer to [Fastener Caution](#) .

4. Air Conditioning Compressor and Condenser Hose Nut (4) @ Air Conditioning Compressor and Condenser Hose - Install and tighten 22 N.m (16 lb ft)
5. Air Conditioning Compressor and Condenser Hose Nut (1) @ Front End Upper Tie Bar-Right Side - Tighten 9 N.m (80 lb in)



NOTE: Fascia removed for clarity.

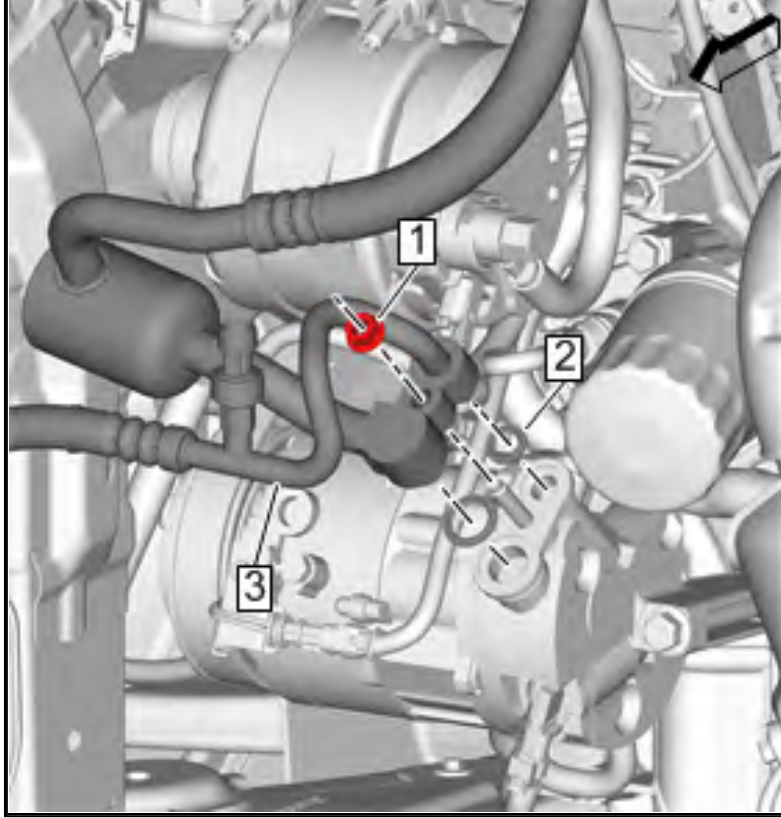
Install a NEW sealing washer. (2)

7. Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Install

CAUTION: Refer to [Fastener Caution](#) .

8. Air Conditioning Compressor and Condenser Hose Nut (3) @ Air Conditioning Condenser - Install and tighten 22 N.m (16 lb ft)





Install NEW sealing washers. (2) [2x]

10. Air Conditioning Compressor Hose (3) @ Air Conditioning Compressor - Install

CAUTION: Refer to [Fastener Caution](#) .

11. Air Conditioning Compressor Nut (1) @ Air Conditioning Compressor - Install and tighten 22 N.m (16 lb ft)
12. Connect the electrical connector.
13. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
14. Check for refrigerant leaks.

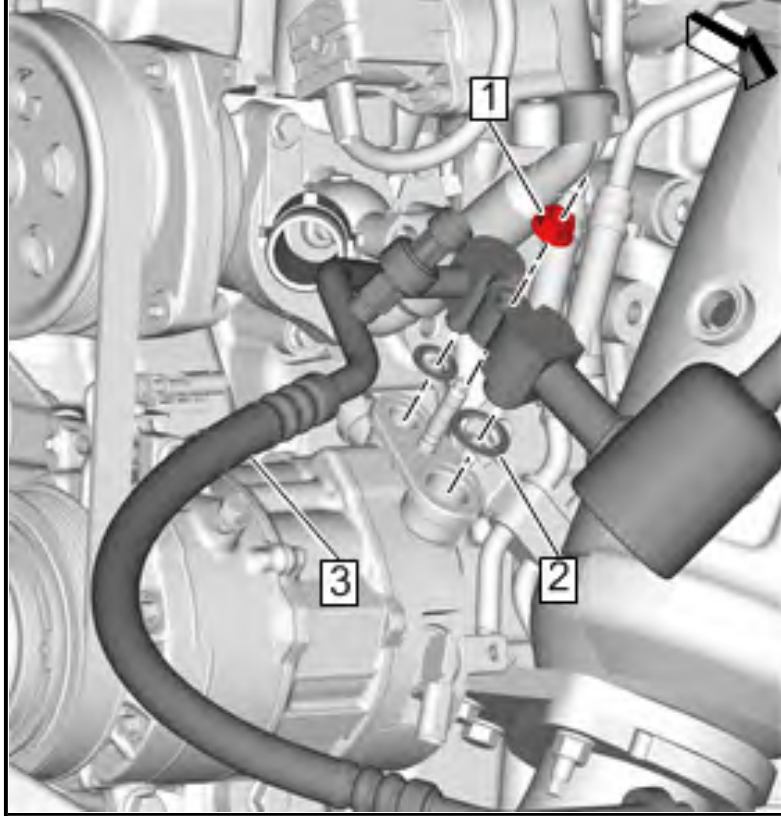
AIR CONDITIONING COMPRESSOR AND CONDENSER HOSE REPLACEMENT (LTG)

Removal Procedure

WARNING: Refer to [R-1234yf Proper Service Procedures Warning](#) .

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
2. Charge Air Cooler Inlet Air Hose - Remove - [Charge Air Cooler Inlet Air Hose Replacement](#)
- 3.

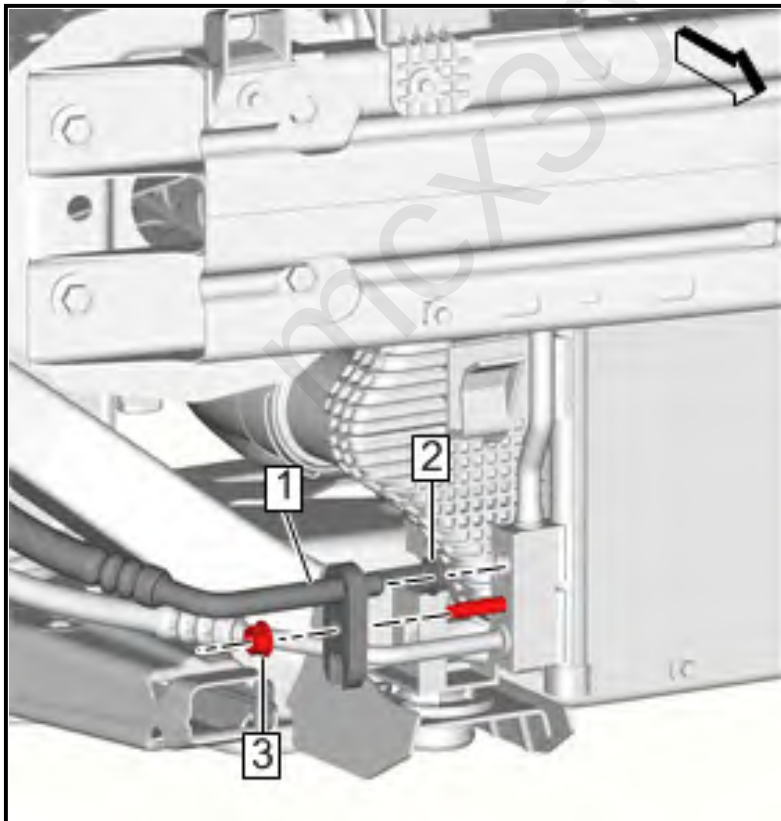




Disconnect all electrical connectors.

4. Air Conditioning Compressor Nut (1) @ Air Conditioning Compressor - Remove
5. Air Conditioning Compressor and Condenser Hose (3) @ Air Conditioning Compressor - Remove
6. Remove and DISCARD the sealing washer. (2) [2x] [Air Conditioning System Seal Replacement](#)

7.

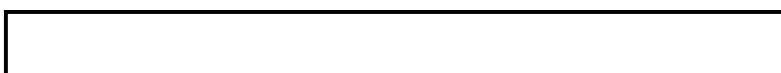


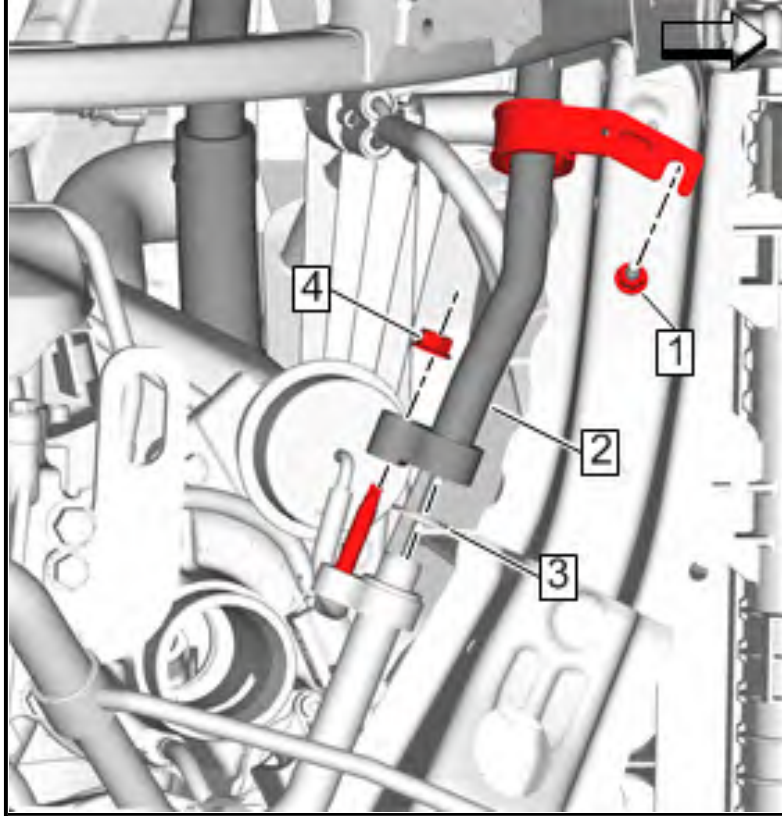
NOTE: Fascia removed for clarity.

Air Conditioning Compressor and Condenser Hose Nut (3) @ Air Conditioning Condenser - Remove

8. Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Remove
9. Remove and DISCARD the sealing washer. (2)

10.





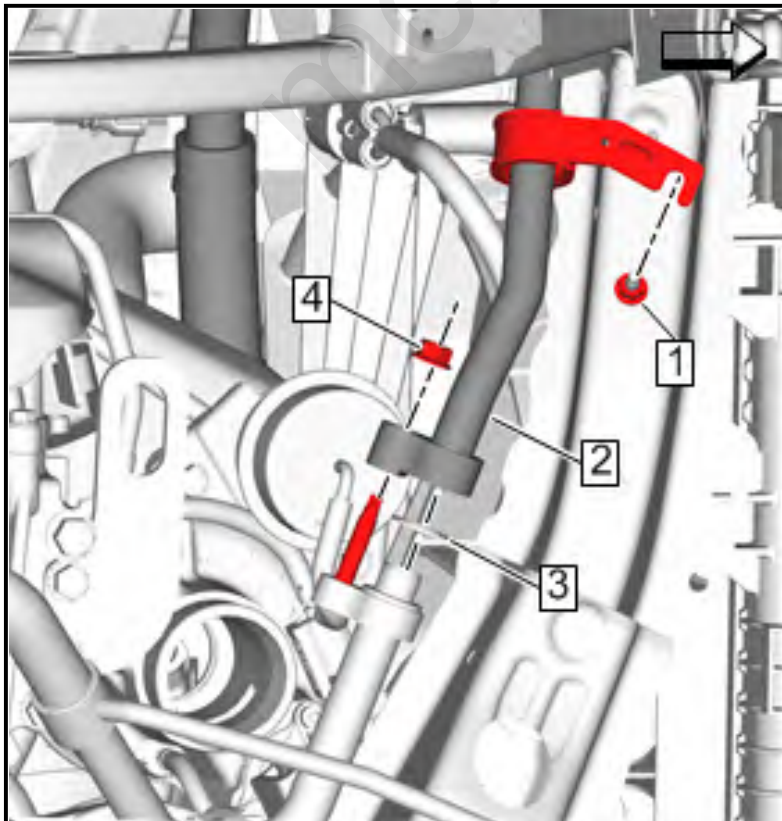
Air Conditioning Compressor and Condenser Hose Nut (4) @ Air Conditioning Compressor and Condenser Hose - Remove

11. Air Conditioning Compressor and Condenser Hose Nut (1) @ Front End Upper Tie Bar-Right Side - Loosen
12. Air Conditioning Compressor and Condenser Hose (2) @ Air Conditioning Refrigerant Heat Exchanger - Remove
13. Remove and DISCARD the sealing washer. (3)
14. Remove the air conditioning compressor and condenser hose (2) from the vehicle.

Installation Procedure

1. Install the air conditioning compressor and condenser hose to the vehicle.

2.

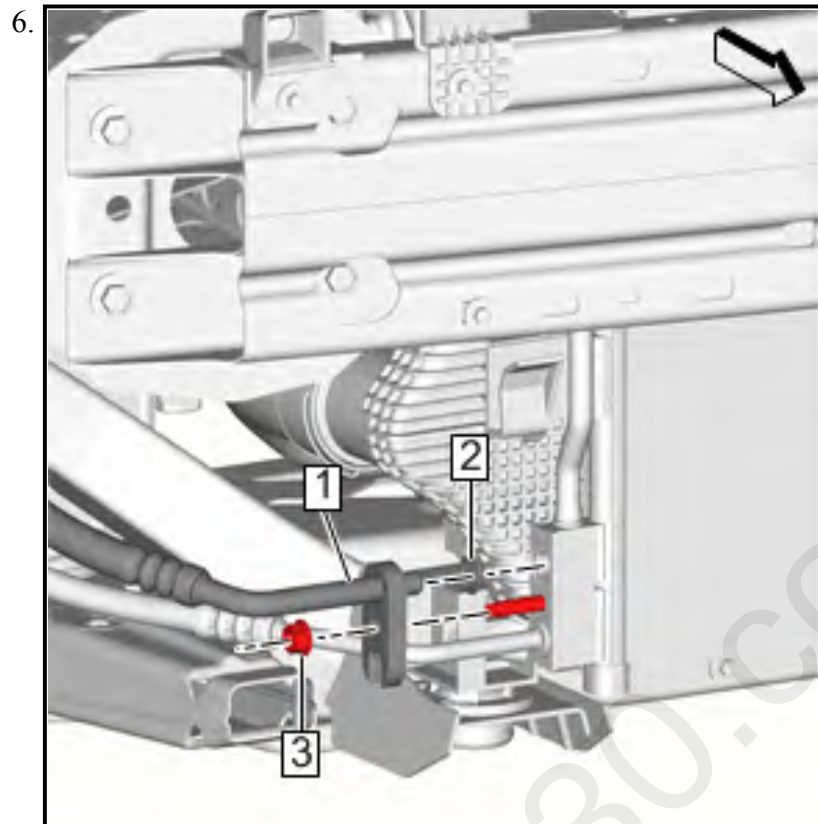


Install a NEW sealing washer. (3) [Air Conditioning System Seal Replacement](#)

3. Air Conditioning Compressor and Condenser Hose (2) @ Air Conditioning Refrigerant Heat Exchanger - Install

CAUTION: Refer to [Fastener Caution](#) .

4. Air Conditioning Compressor and Condenser Hose Nut (4) @ Air Conditioning Compressor and Condenser Hose - Install and tighten 22 N.m (16 lb ft)
5. Air Conditioning Compressor and Condenser Hose Nut (1) @ Front End Upper Tie Bar-Right Side - Tighten 9 N.m (80 lb in)



NOTE: Fascia removed for clarity.

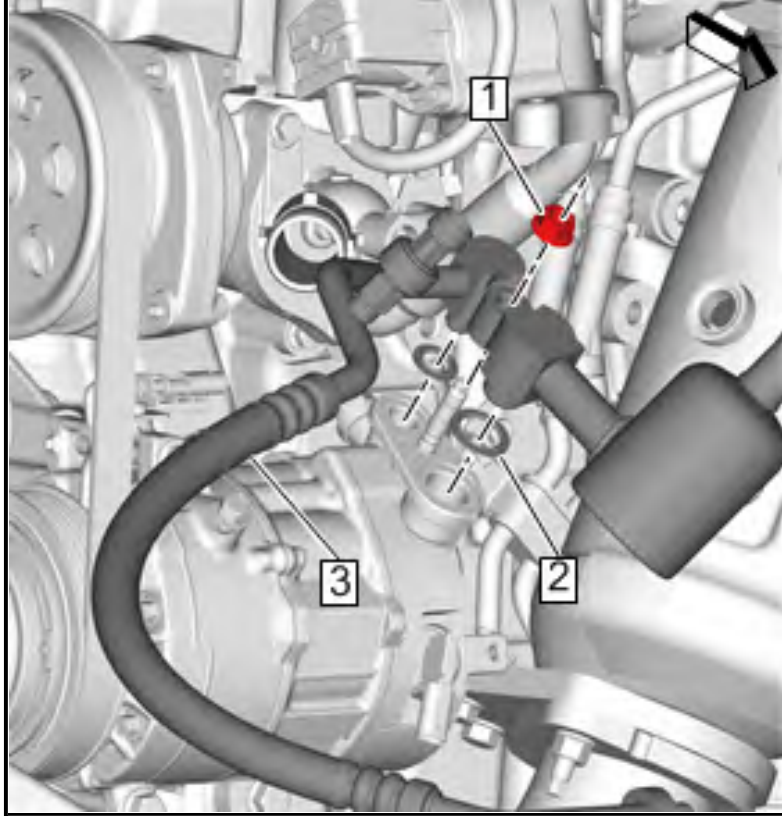
Install a NEW sealing washer. (2)

7. Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Install

CAUTION: Refer to [Fastener Caution](#) .

8. Air Conditioning Compressor and Condenser Hose Nut (3) @ Air Conditioning Condenser - Install and tighten 22 N.m (16 lb ft)





Install NEW sealing washers. (2) [2x]

10. Air Conditioning Compressor Hose (3) @ Air Conditioning Compressor - Install

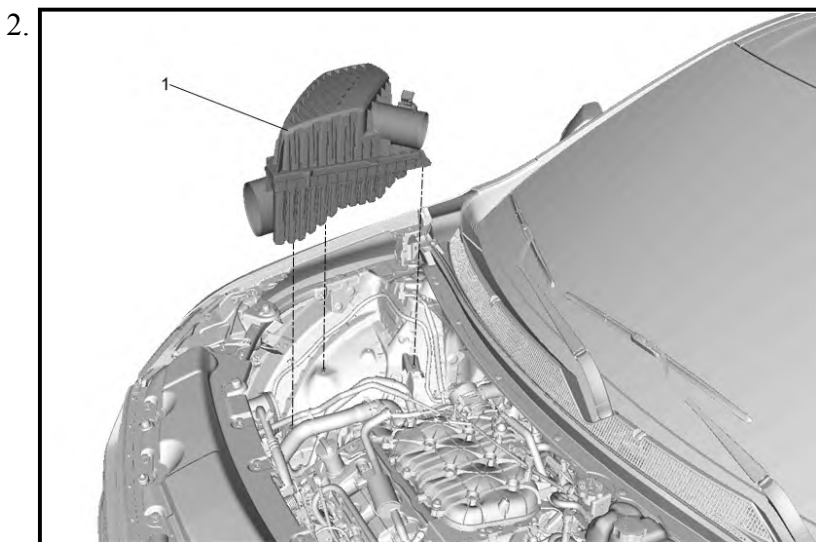
CAUTION: Refer to [Fastener Caution](#) .

11. Air Conditioning Compressor Nut (1) @ Air Conditioning Compressor - Install and tighten 22 N.m (16 lb ft)
12. Connect the electrical connector.
13. Charge Air Cooler Inlet Air Hose - Install - [Charge Air Cooler Inlet Air Hose Replacement](#)
14. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
15. Check for refrigerant leaks.

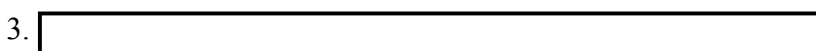
AIR CONDITIONING REFRIGERANT HEAT EXCHANGER REPLACEMENT (LFY)

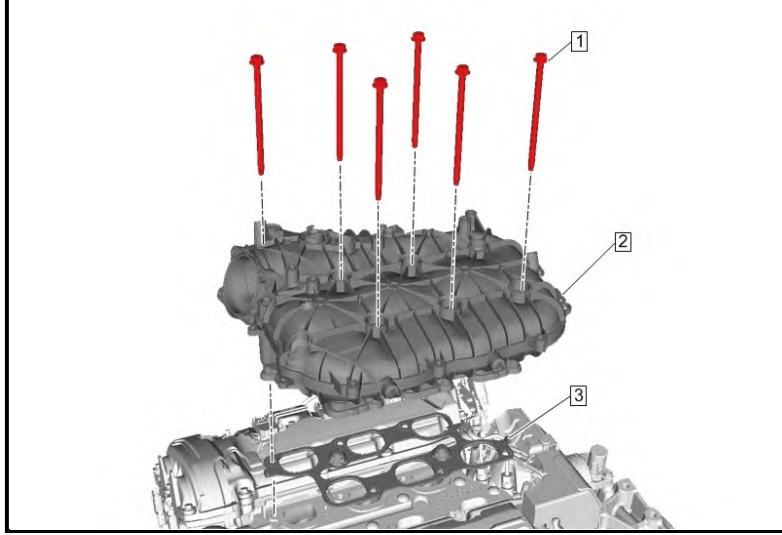
Removal Procedure

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)



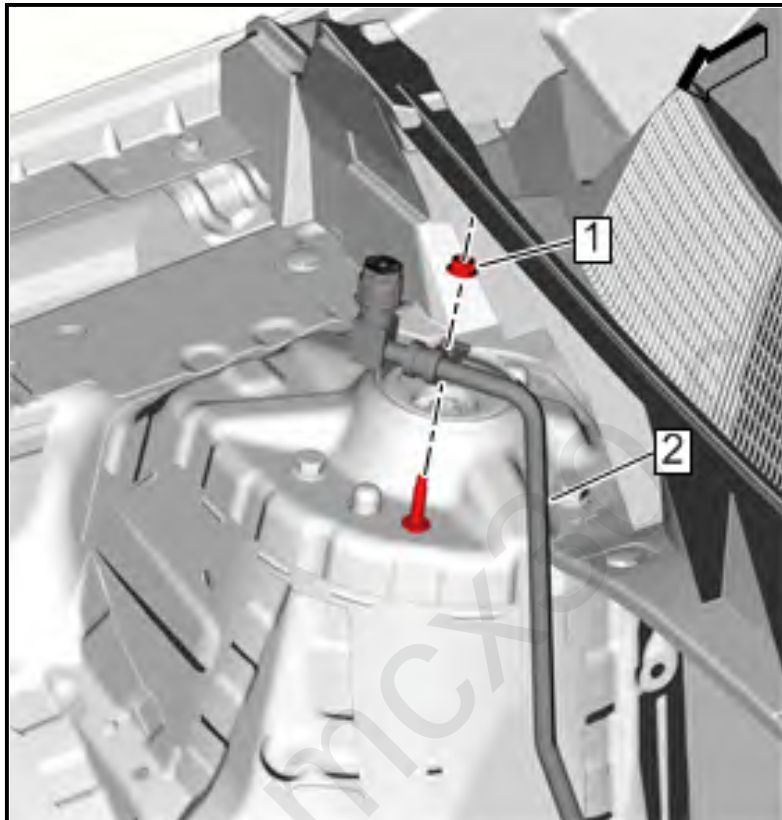
Air Cleaner Assembly (1) - Remove - [Air Cleaner Assembly Replacement](#)





Upper Intake Manifold (2) - Remove - [Upper Intake Manifold Replacement](#)

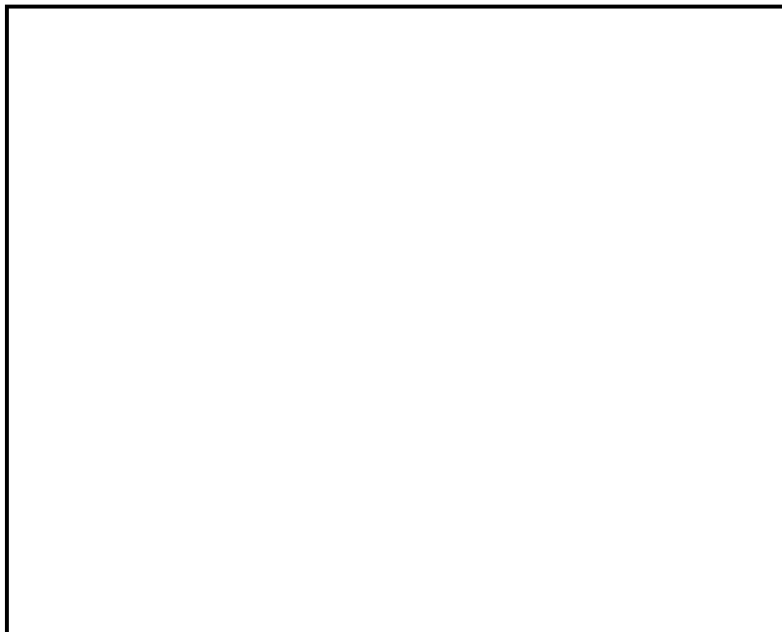
4.

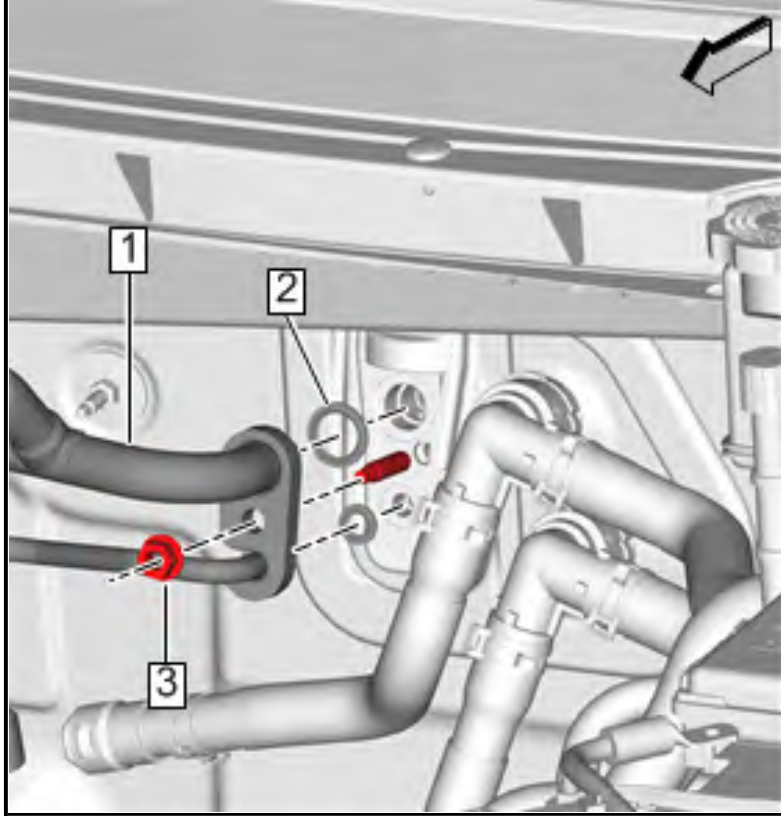


Air Conditioning Refrigerant Heat Exchanger Nut (1) @ Front Wheelhouse Panel - Remove

5. Air Conditioning Refrigerant Heat Exchanger (2) @ Front Wheelhouse Panel - Remove

6.

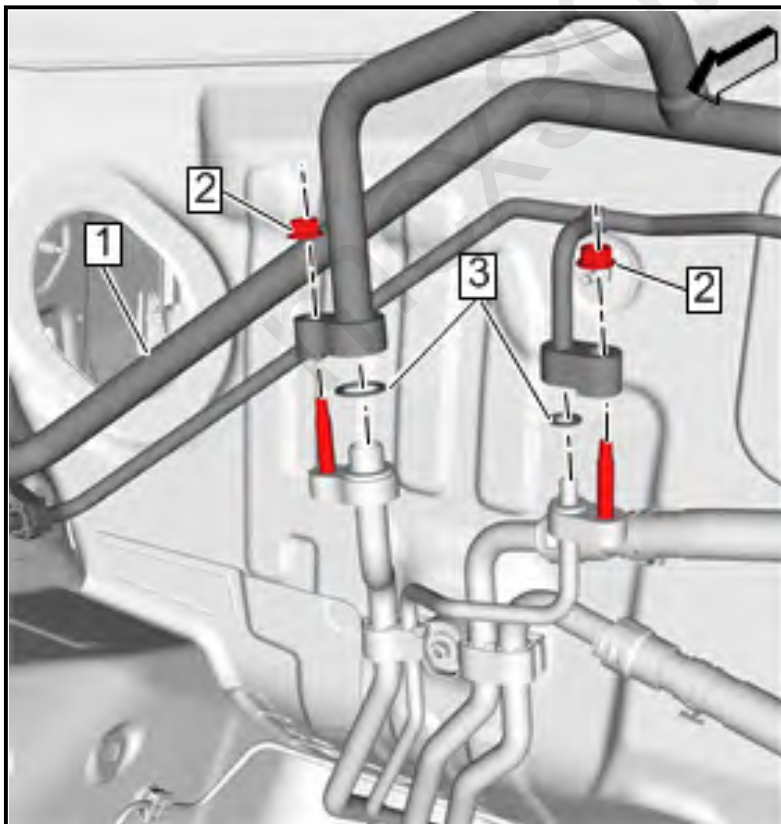




Air Conditioning Refrigerant Heat Exchanger Nut (3) @ Air Conditioning Evaporator Thermal Expansion Valve - Remove

7. Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Evaporator Thermal Expansion Valve - Remove
8. Remove and DISCARD the sealing washer. (2) [2x] [Air Conditioning System Seal Replacement](#)

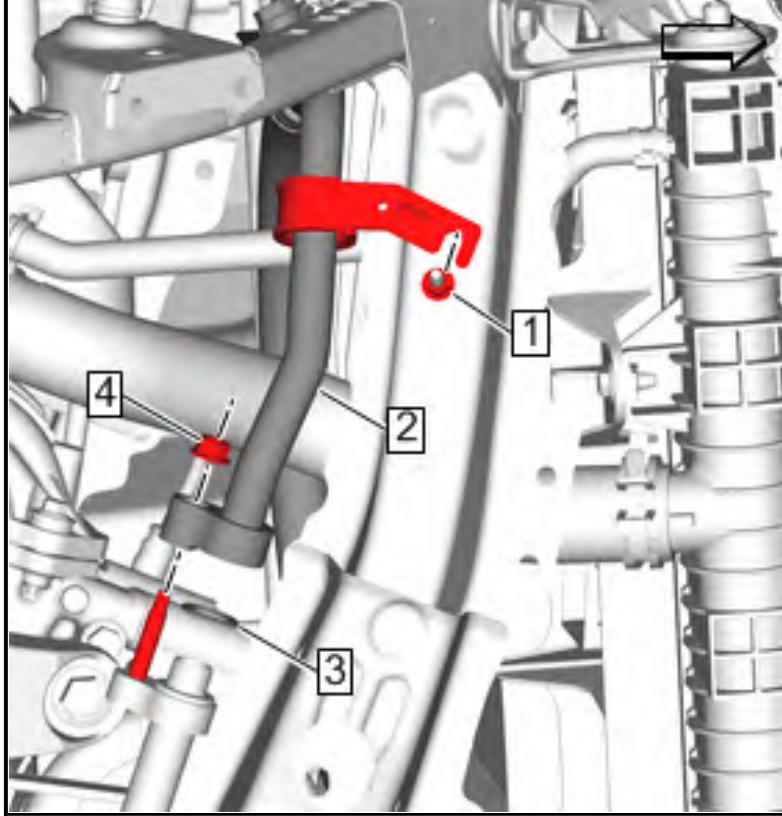
9.



Air Conditioning Refrigerant Heat Exchanger Nut (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Remove [2x]

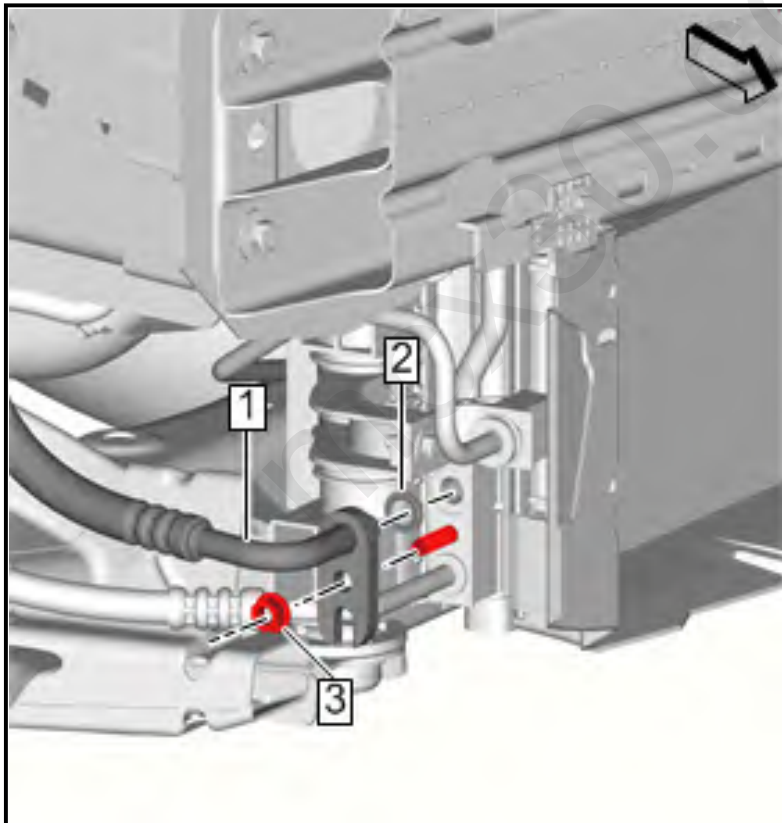
10. Air Conditioning Refrigerant Heat Exchanger (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Remove
11. Remove and DISCARD the sealing washer. (3) [2x]

12.



Air Conditioning Compressor and Condenser Hose (2) @ Air Conditioning Refrigerant Heat Exchanger - Remove - [Air Conditioning Compressor and Condenser Hose Replacement \(LFY\)](#)

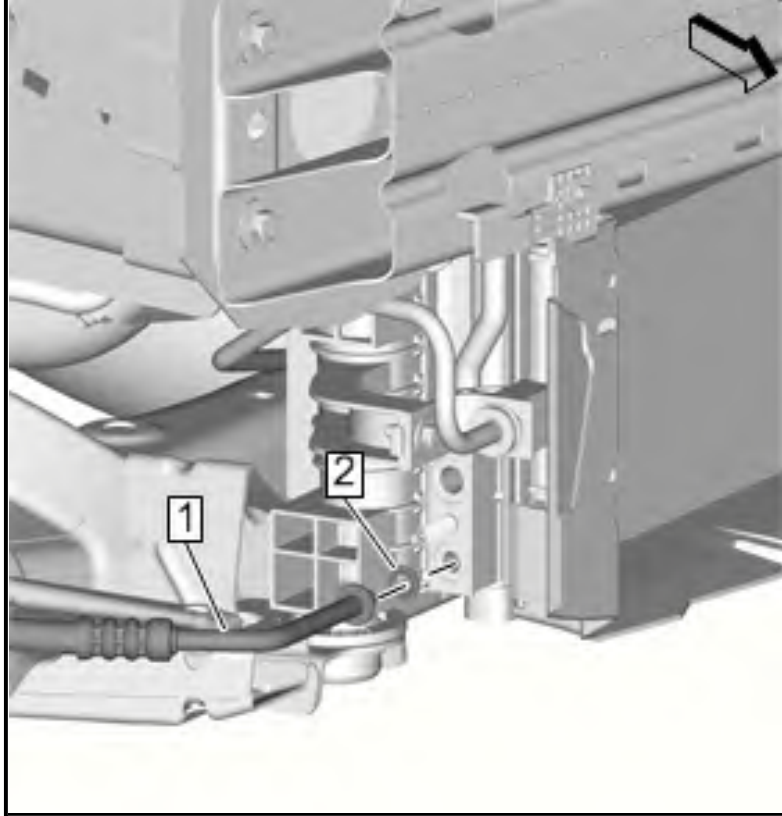
13.



Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Remove - [Air Conditioning Compressor and Condenser Hose Replacement \(LFY\)](#)

14.

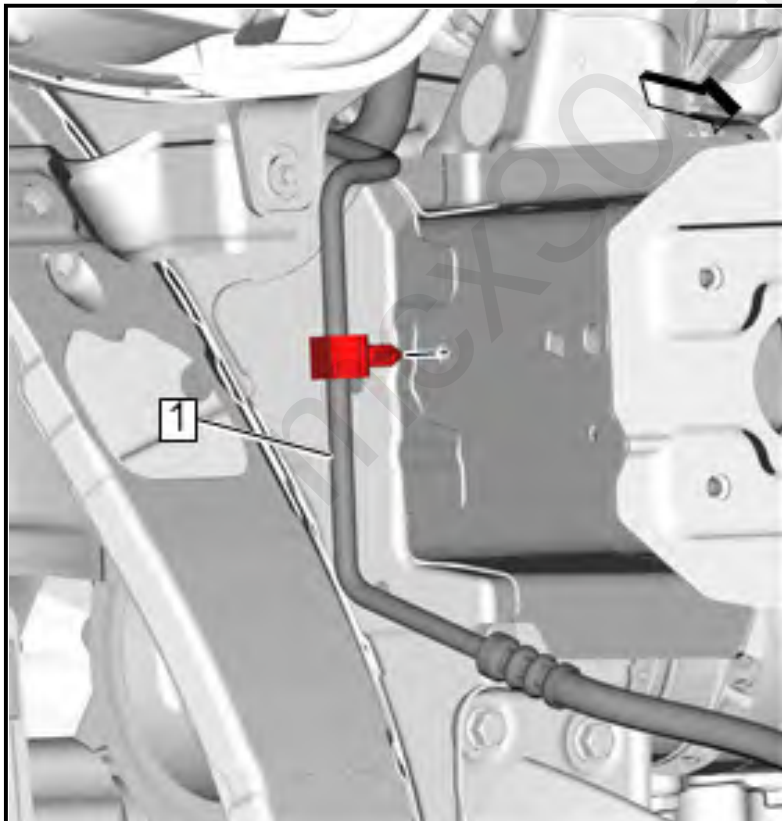




Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Condenser - Remove

15. Remove and DISCARD the sealing washer. (2)

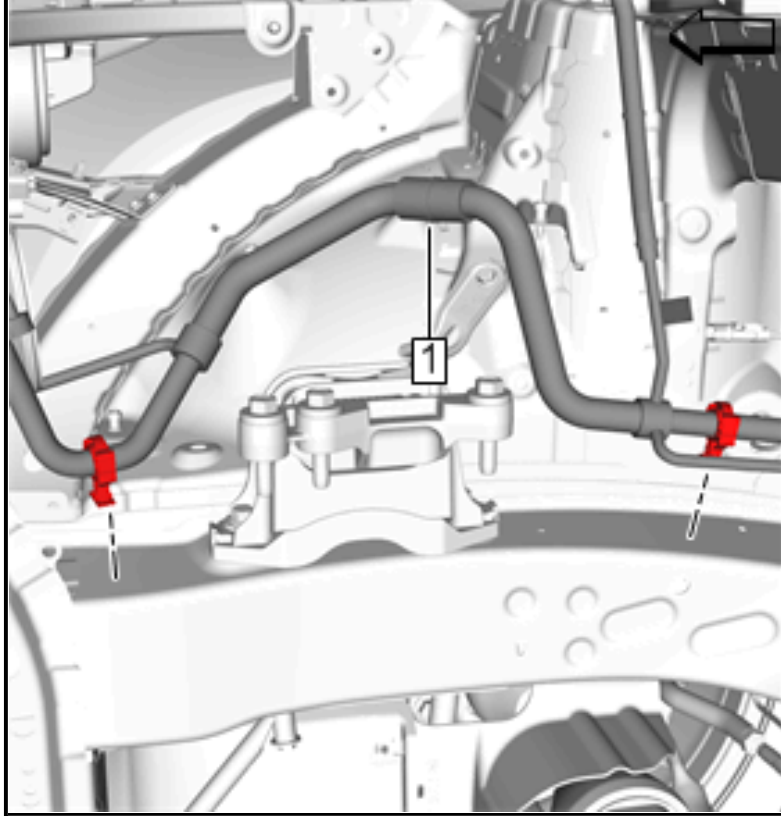
16.



Air Conditioning Refrigerant Heat Exchanger (1) @ Front Compartment Side Rail - Remove

17.



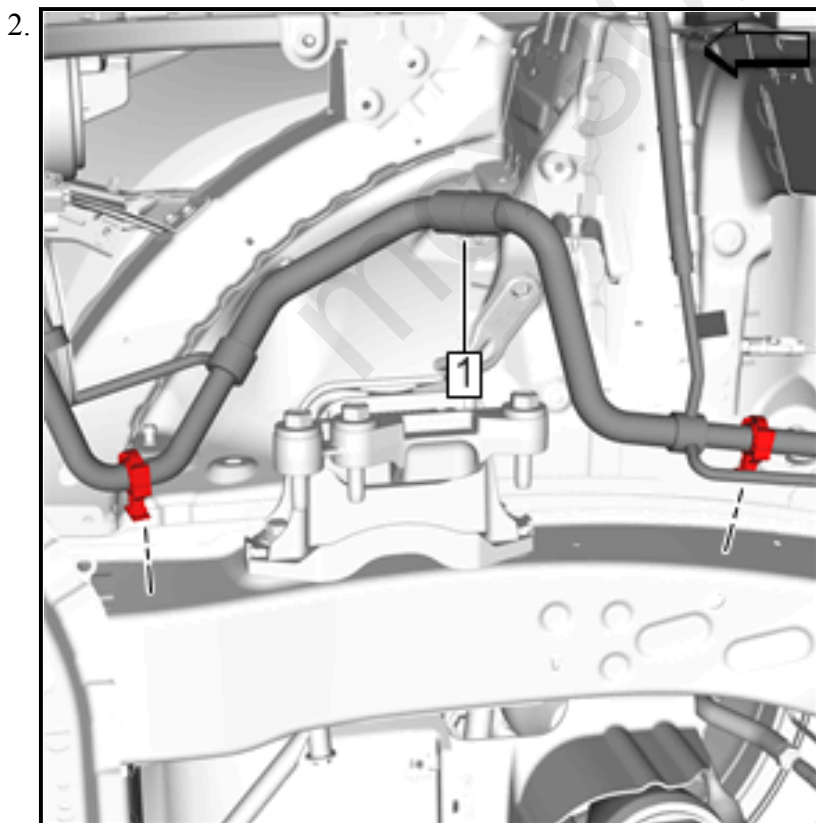


Air Conditioning Refrigerant Heat Exchanger (1) @ Front Compartment Side Rail - Remove

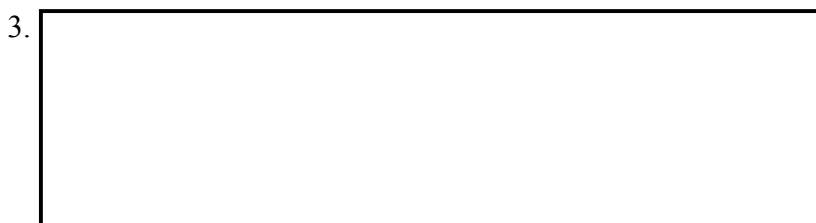
18. Remove the air conditioning refrigerant heat exchanger from the vehicle.

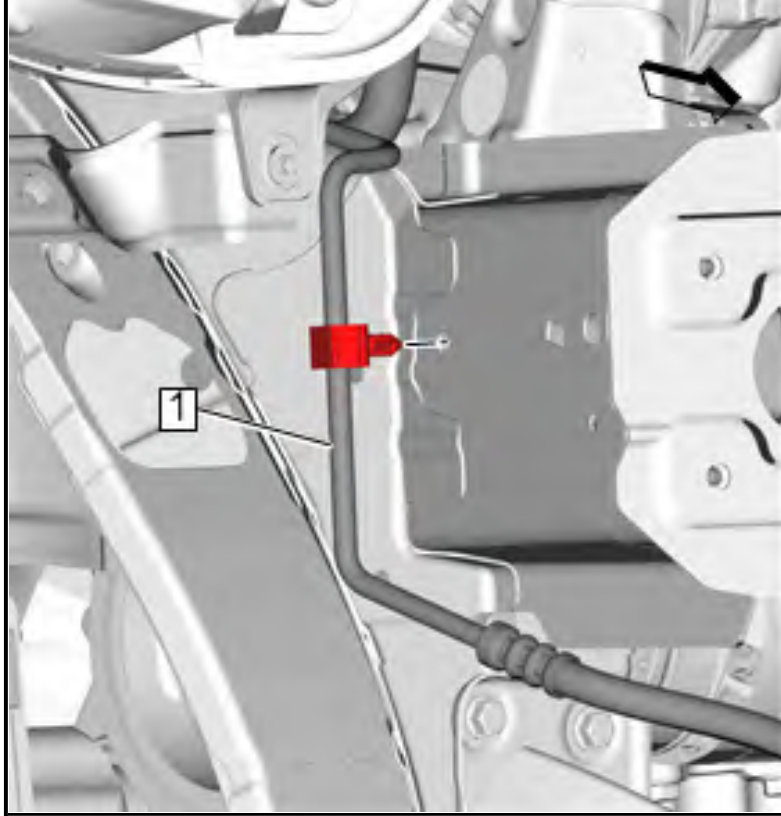
Installation Procedure

1. Install the air conditioning refrigerant heat exchanger to the vehicle.

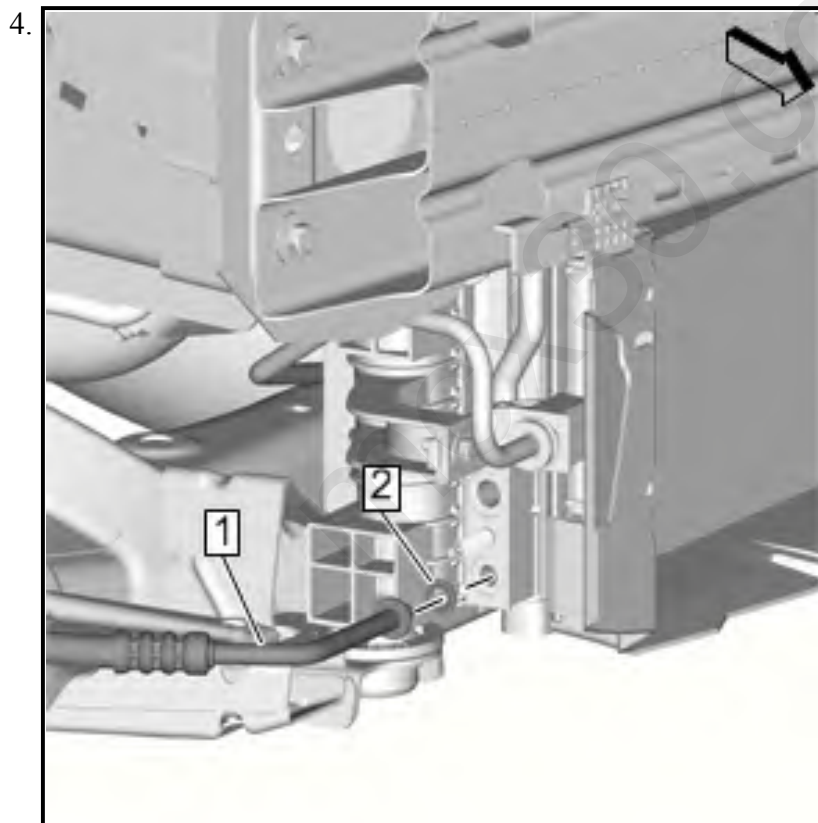


Air Conditioning Refrigerant Heat Exchanger (1) @ Front Compartment Side Rail - Install





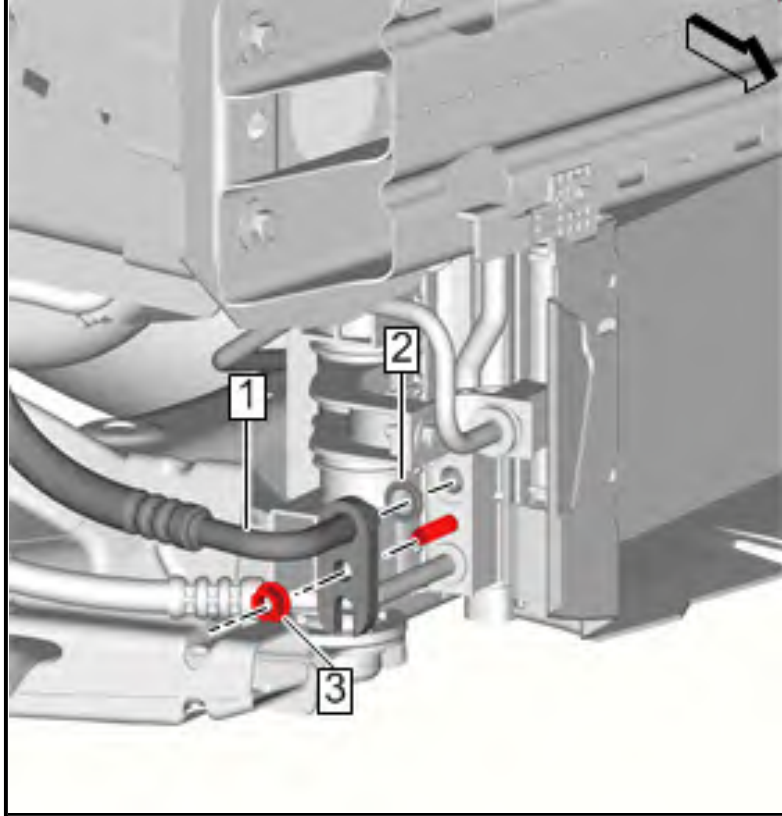
Air Conditioning Refrigerant Heat Exchanger (1) @ Front Compartment Side Rail - Install



Install a NEW sealing washer. (2) [Air Conditioning System Seal Replacement](#)

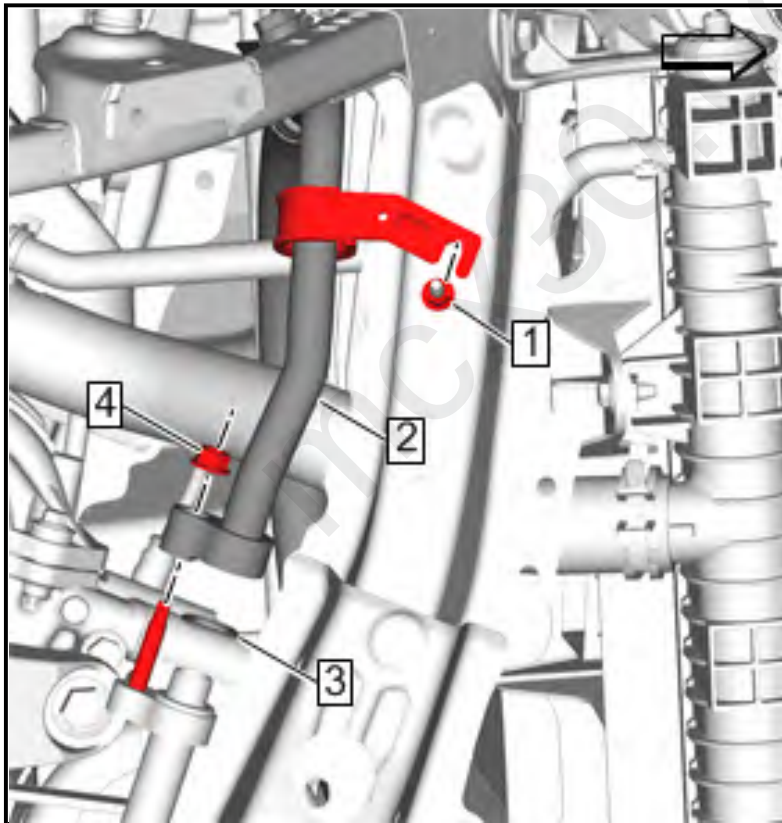
5. Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Condenser - Install





Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Install - [Air Conditioning Compressor and Condenser Hose Replacement \(LFY\)](#)

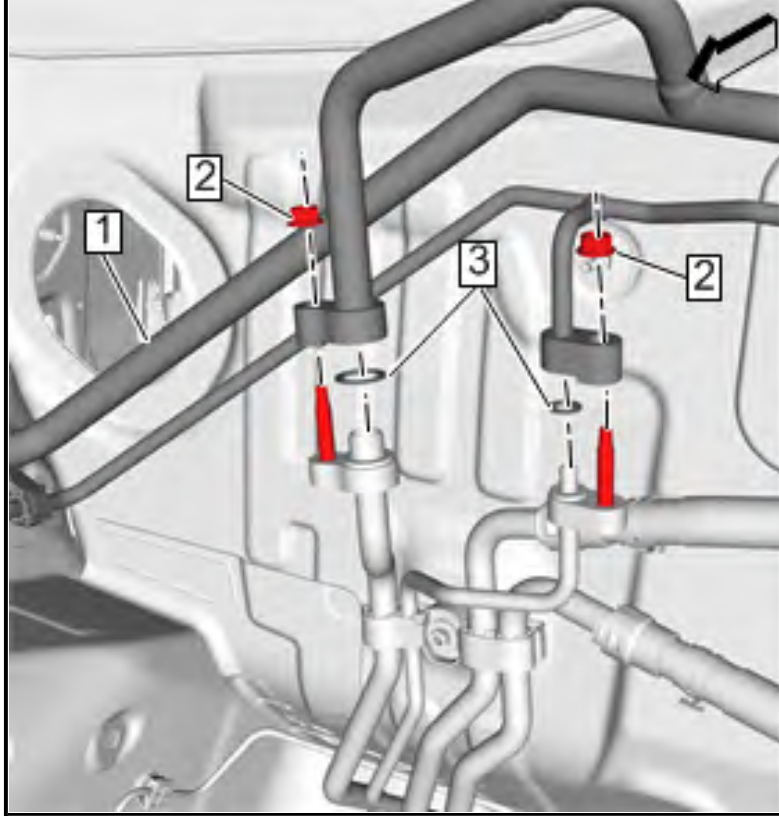
7.



Air Conditioning Compressor and Condenser Hose (2) @ Air Conditioning Refrigerant Heat Exchanger - Install - [Air Conditioning Compressor and Condenser Hose Replacement \(LFY\)](#)

8.





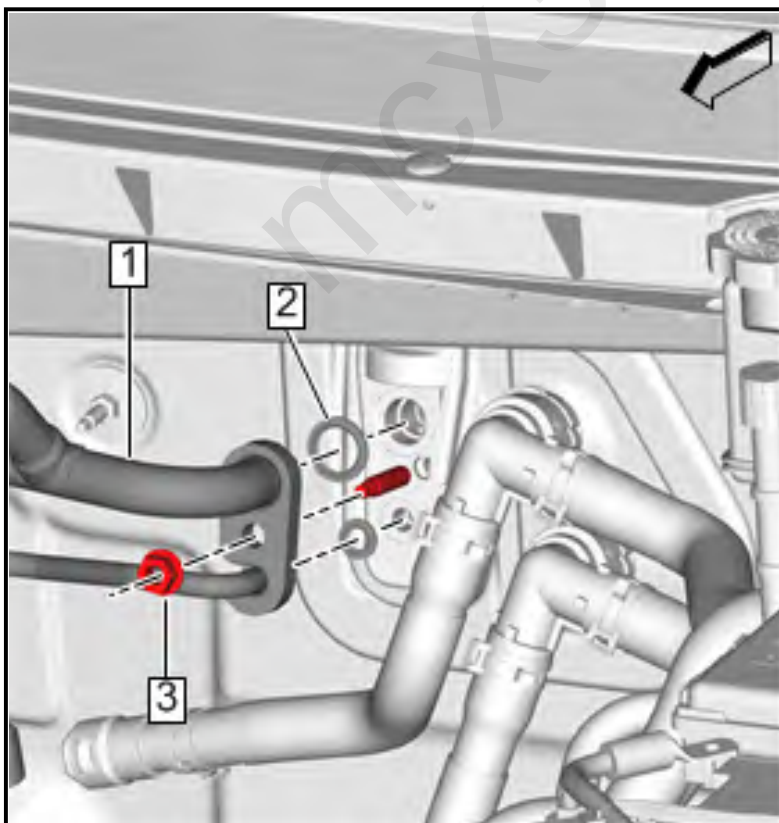
Install a NEW sealing washer. (3) [2x]

9. Air Conditioning Refrigerant Heat Exchanger (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Install

CAUTION: Refer to [Fastener Caution](#) .

10. Air Conditioning Refrigerant Heat Exchanger Nut (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - [2x] Install and tighten 22 N.m (16 lb ft)

11.



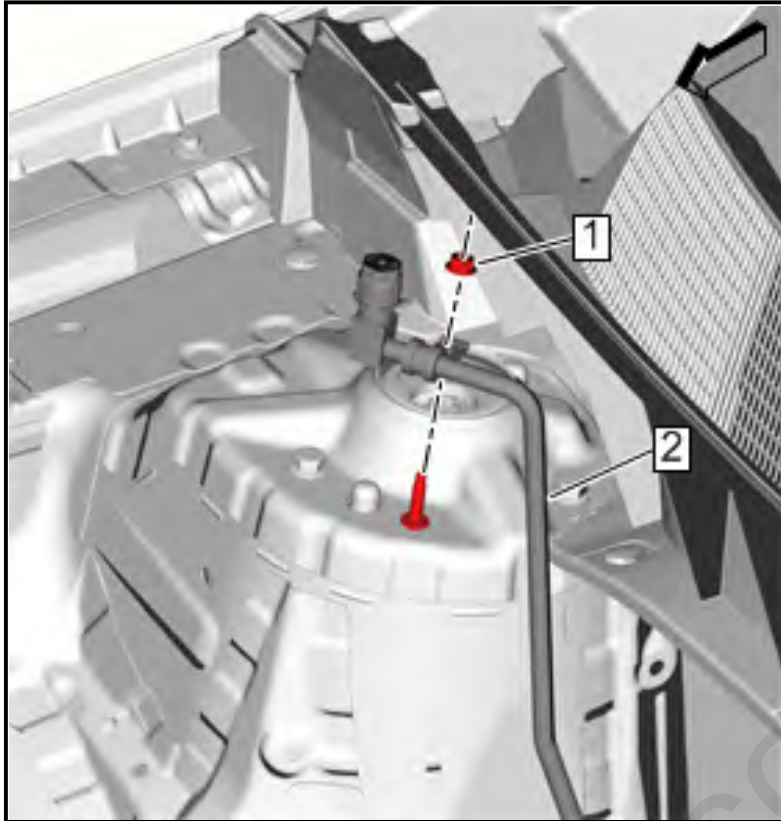
Install a NEW sealing washer. (2) [2x]

12. Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Evaporator Thermal Expansion Valve - Install

CAUTION: Refer to [Fastener Caution](#) .

13. Air Conditioning Refrigerant Heat Exchanger Nut (3) @ Air Conditioning Evaporator Thermal Expansion Valve - Install and tighten 22 N.m (16 lb ft)

14.

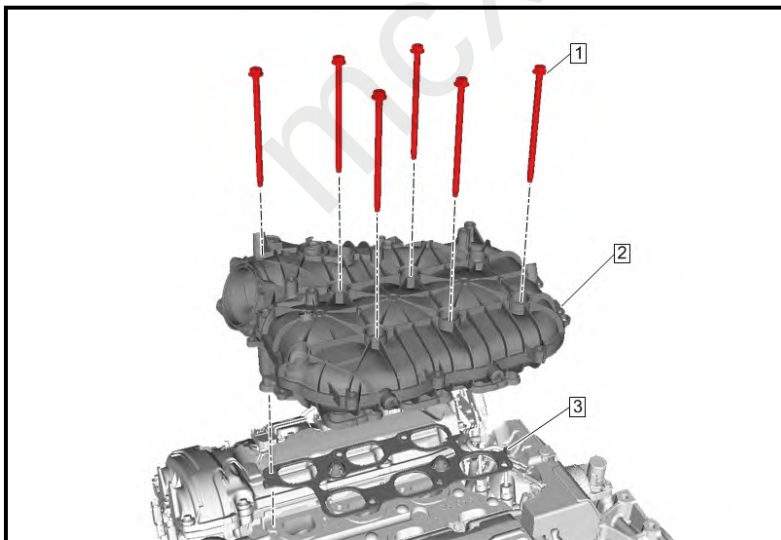


Air Conditioning Refrigerant Heat Exchanger (2) @ Front Wheelhouse Panel - Install

CAUTION: Refer to [Fastener Caution](#) .

15. Air Conditioning Refrigerant Heat Exchanger Nut (1) @ Front Wheelhouse Panel - Install and tighten 9 N.m (80 lb in)

16.



Upper Intake Manifold (2) - Install - [Upper Intake Manifold Replacement](#)

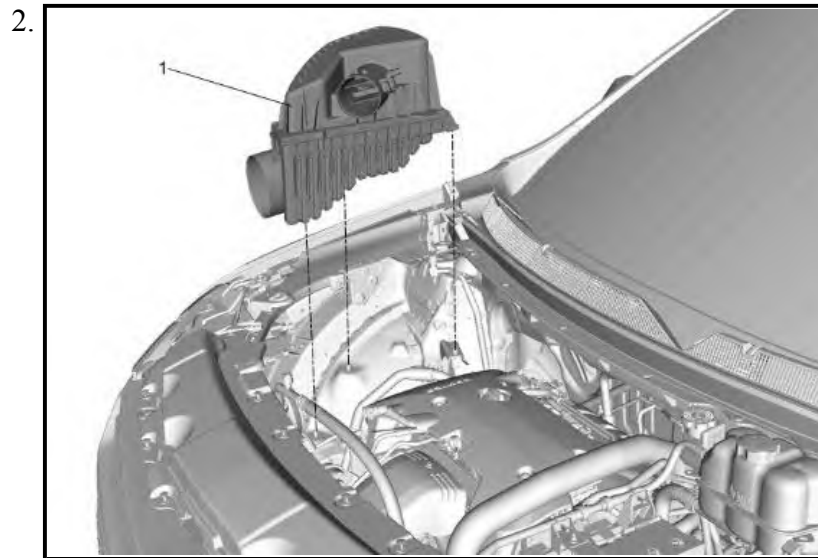
17. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
18. Check for refrigerant leaks.

AIR CONDITIONING REFRIGERANT HEAT EXCHANGER REPLACEMENT (LTG)

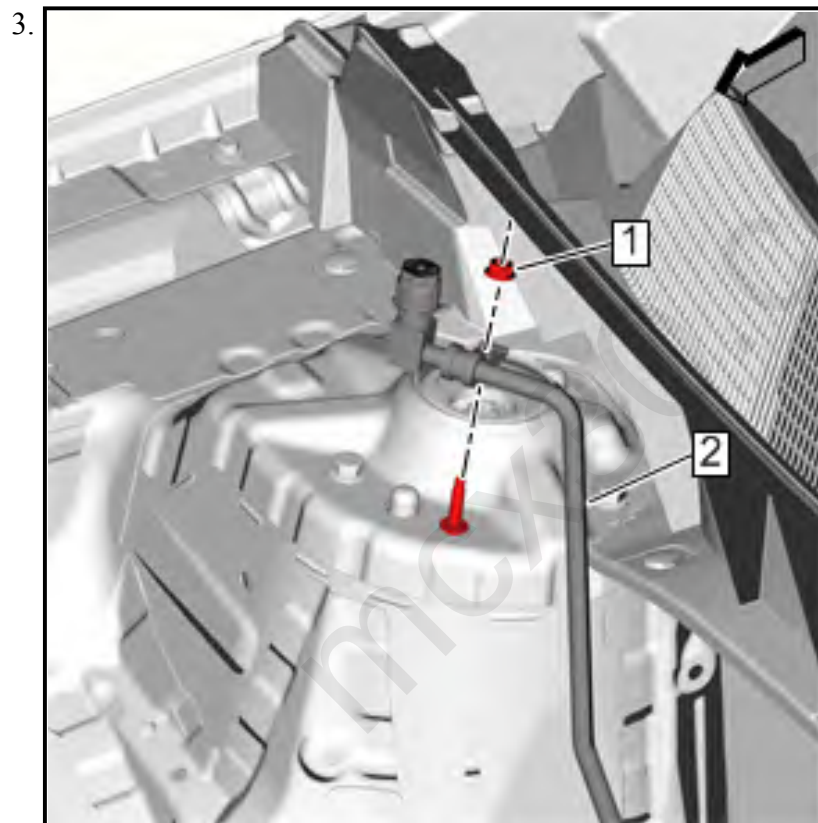
Removal Procedure

WARNING: Refer to [R-1234yf Proper Service Procedures Warning](#) .

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)



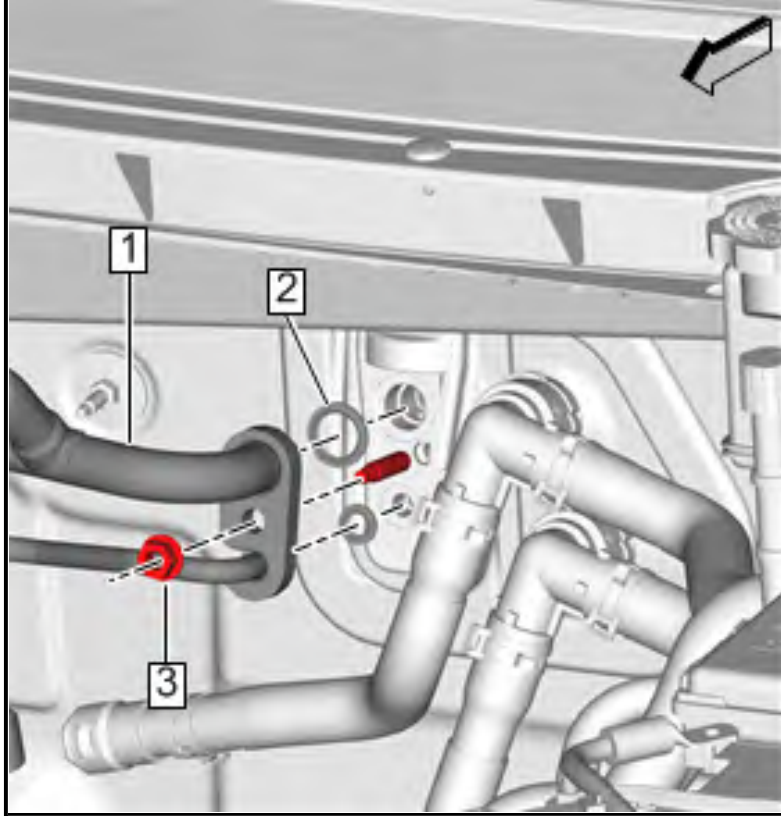
Air Cleaner Assembly (1) - Remove - [Air Cleaner Assembly Replacement](#)



Air Conditioning Refrigerant Heat Exchanger Nut (1) @ Front Wheelhouse Panel - Remove

4. Air Conditioning Refrigerant Heat Exchanger (2) @ Front Wheelhouse Panel - Remove

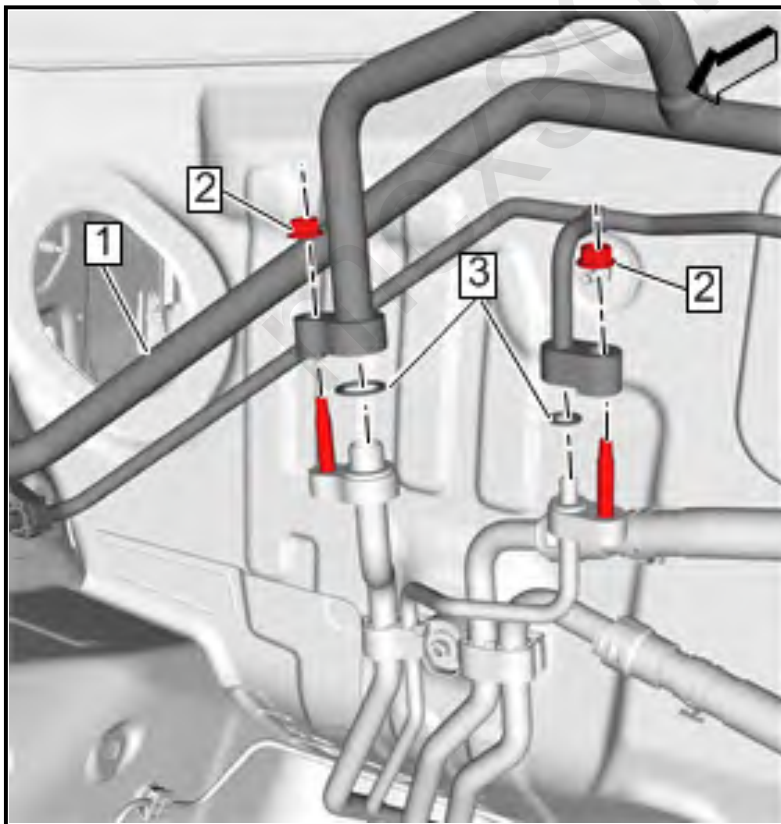




Air Conditioning Refrigerant Heat Exchanger Nut (3) @ Air Conditioning Evaporator Thermal Expansion Valve - Remove

6. Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Evaporator Thermal Expansion Valve - Remove
7. Remove and DISCARD the sealing washer. (2) [2x] [Air Conditioning System Seal Replacement](#)

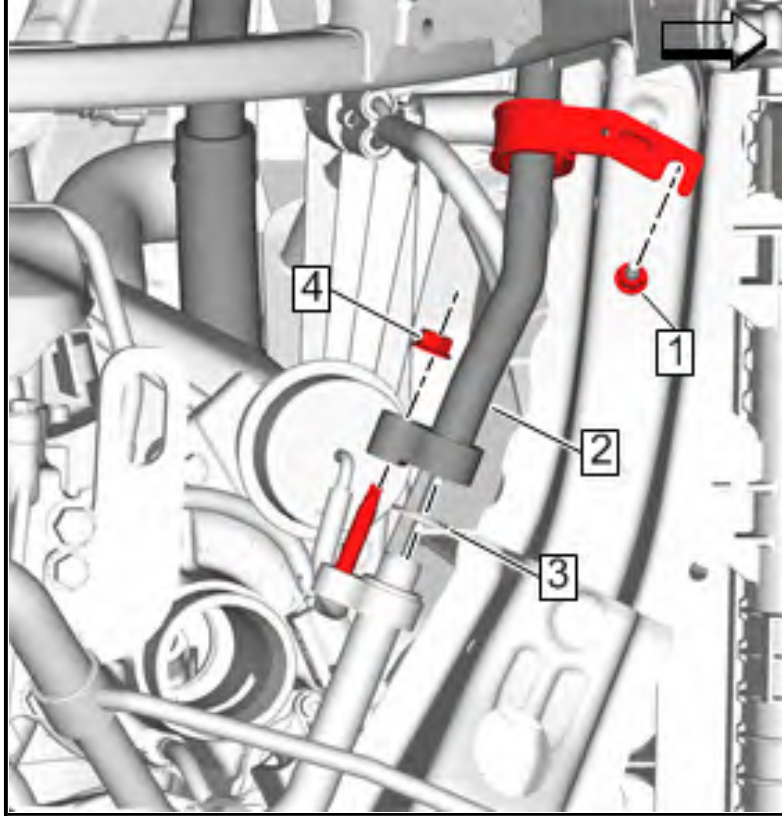
8.



Air Conditioning Refrigerant Heat Exchanger Nut (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Remove [2x]

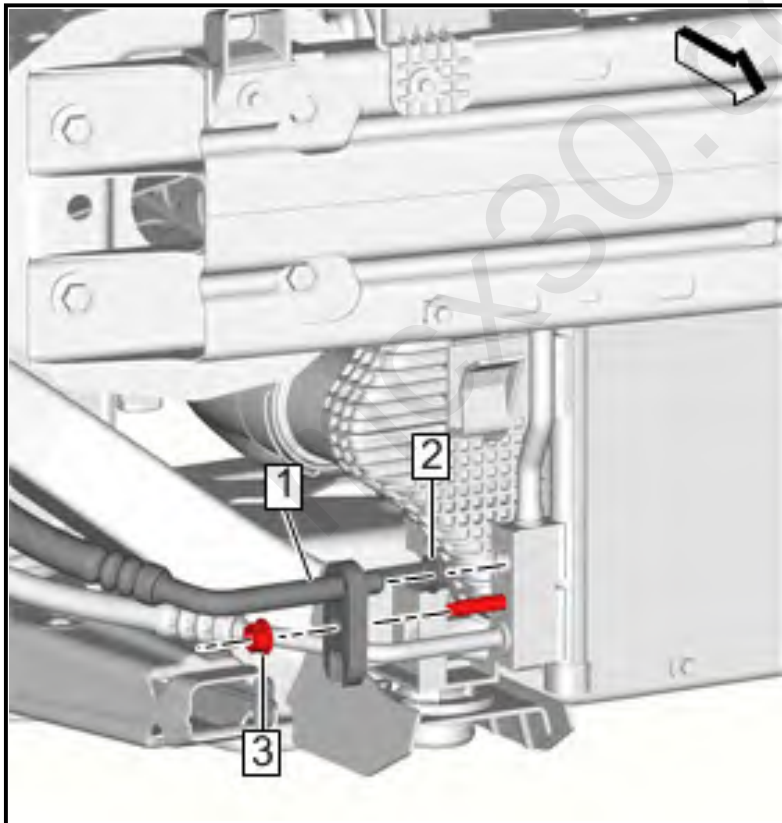
9. Air Conditioning Refrigerant Heat Exchanger (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Remove
10. Remove and DISCARD the sealing washer. (3) [2x]

11.



Air Conditioning Compressor and Condenser Hose (2) @ Air Conditioning Refrigerant Heat Exchanger - Remove - [Air Conditioning Compressor and Condenser Hose Replacement \(LTG\)](#)

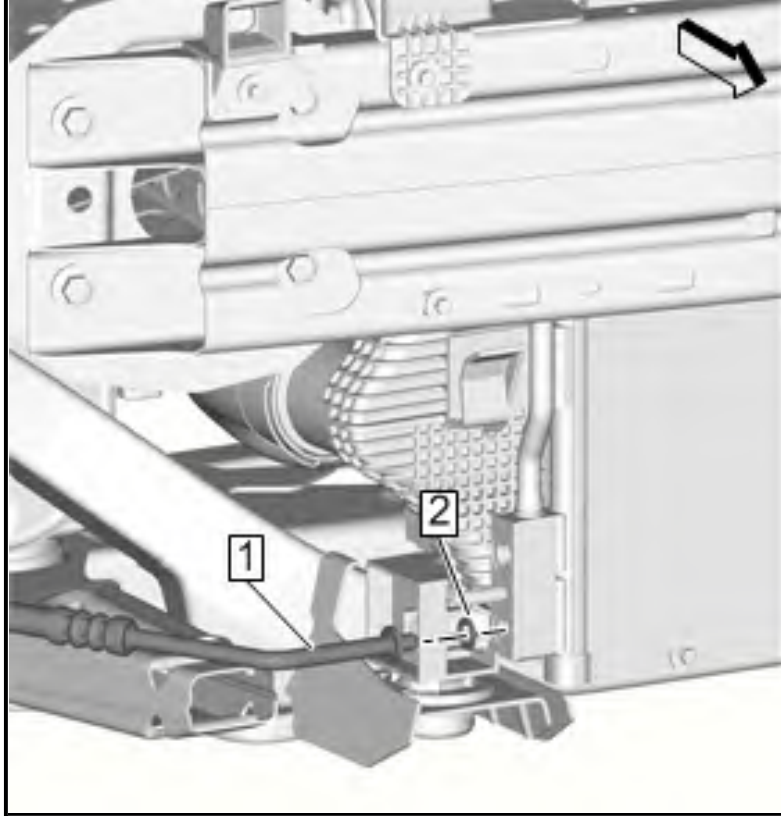
12.



Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Remove - [Air Conditioning Compressor and Condenser Hose Replacement \(LTG\)](#)

13.

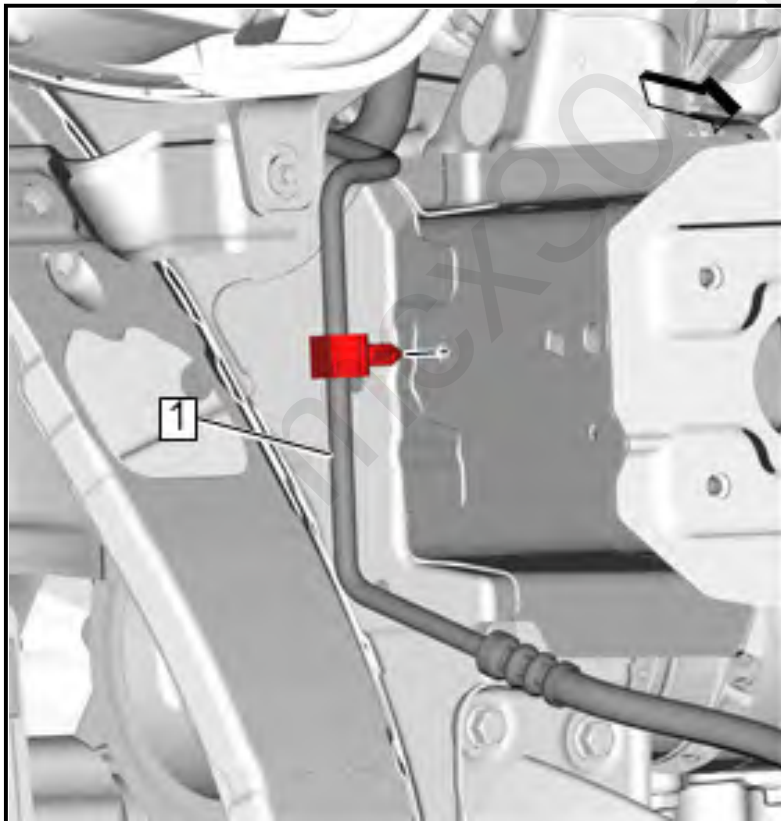




Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Condenser - Remove

14. Remove and DISCARD the sealing washer. (2)

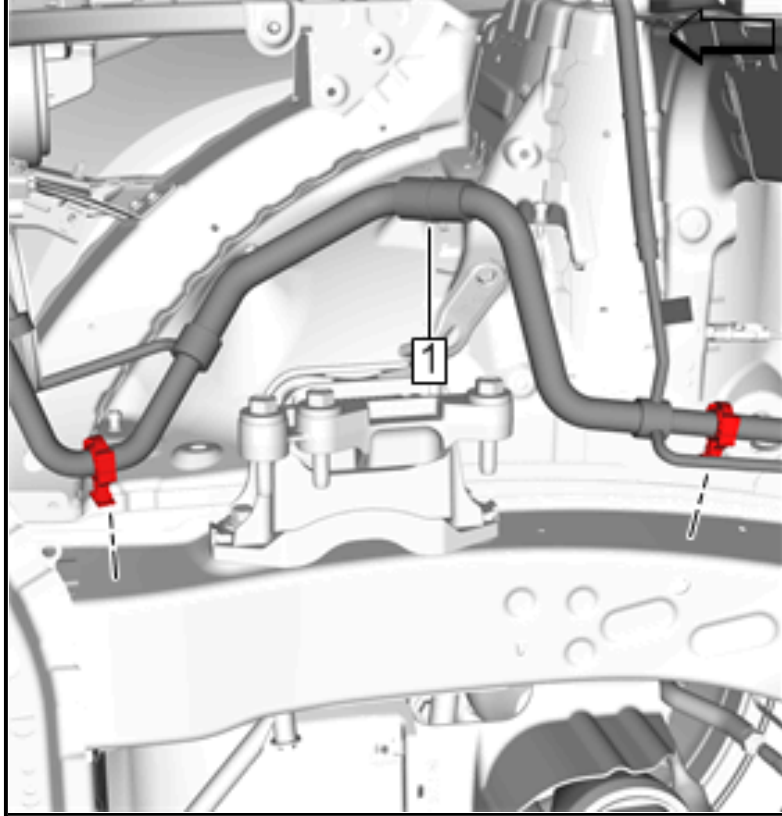
15.



Air Conditioning Refrigerant Heat Exchanger (1) @ Front Compartment Side Rail - Remove

16.





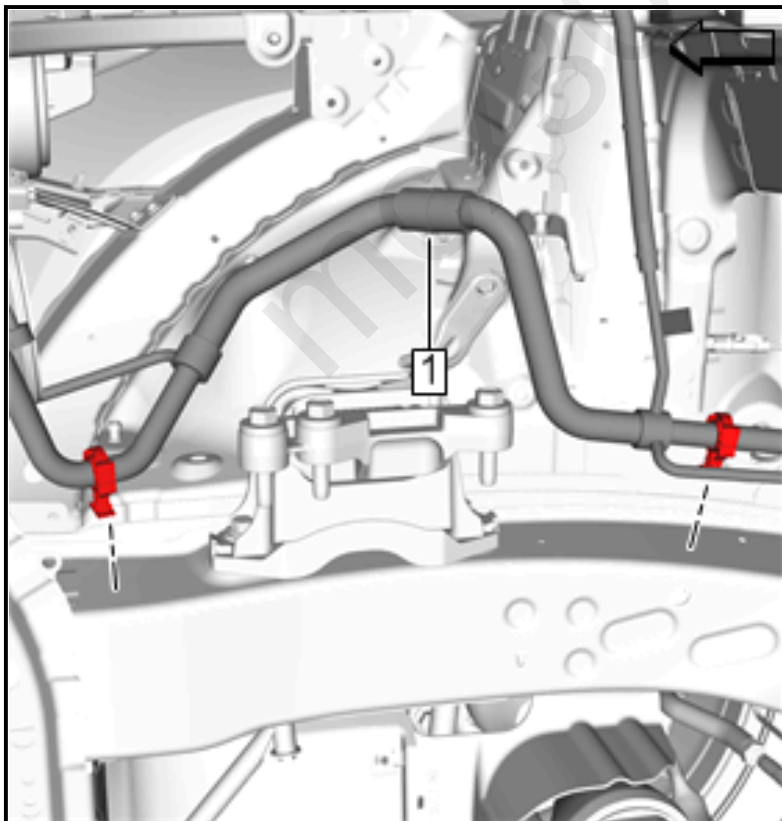
Air Conditioning Refrigerant Heat Exchanger (1) @ Front Compartment Side Rail - Remove

17. Remove the air conditioning refrigerant heat exchanger from the vehicle.

Installation Procedure

1. Install the air conditioning refrigerant heat exchanger to the vehicle.

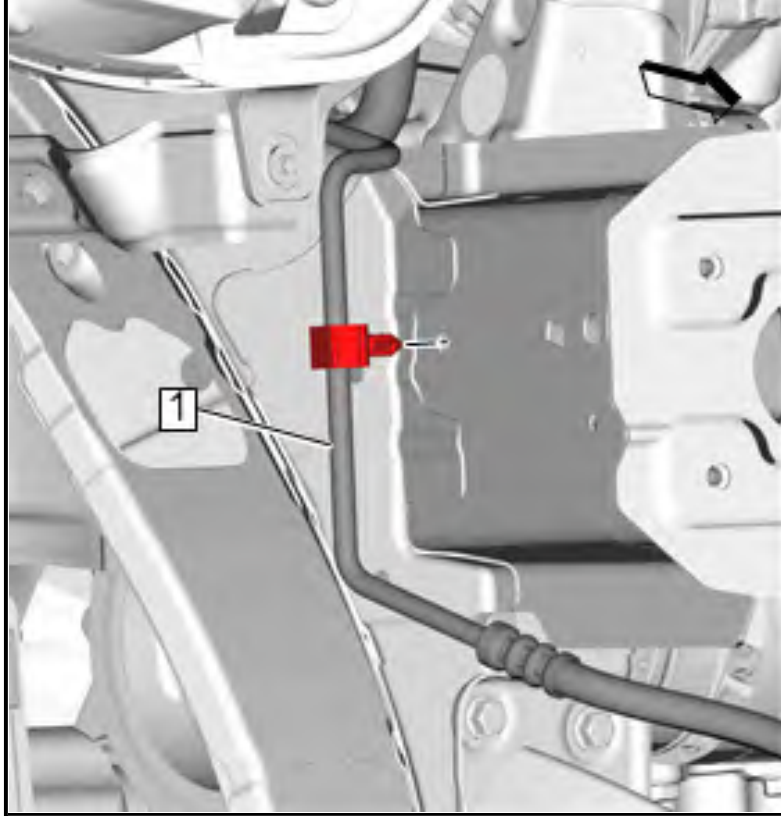
2.



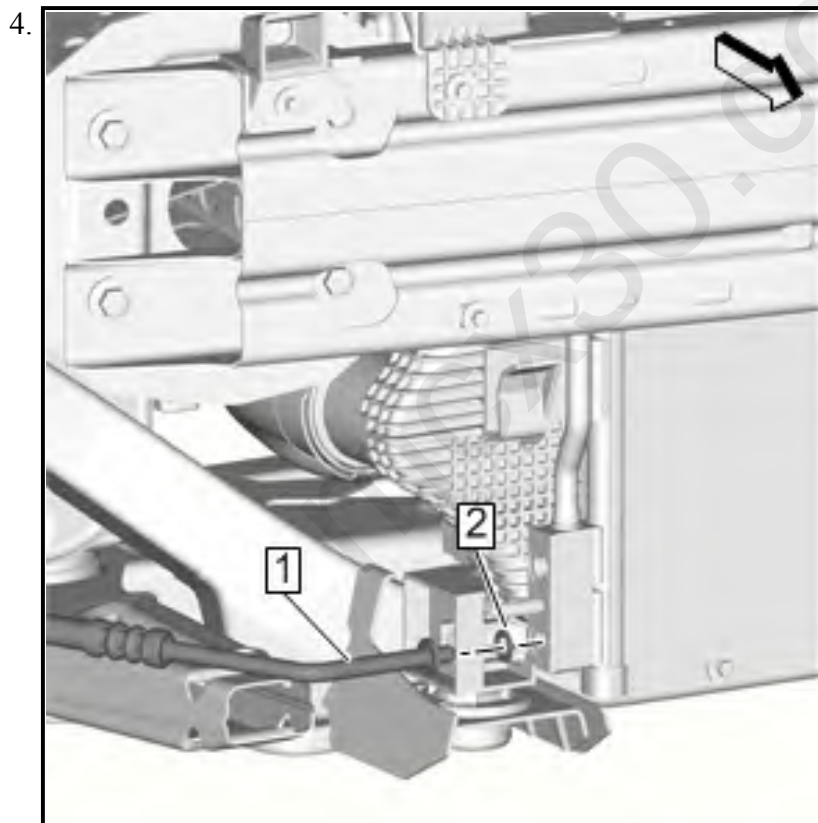
Air Conditioning Refrigerant Heat Exchanger (1) @ Front Compartment Side Rail - Install

3.





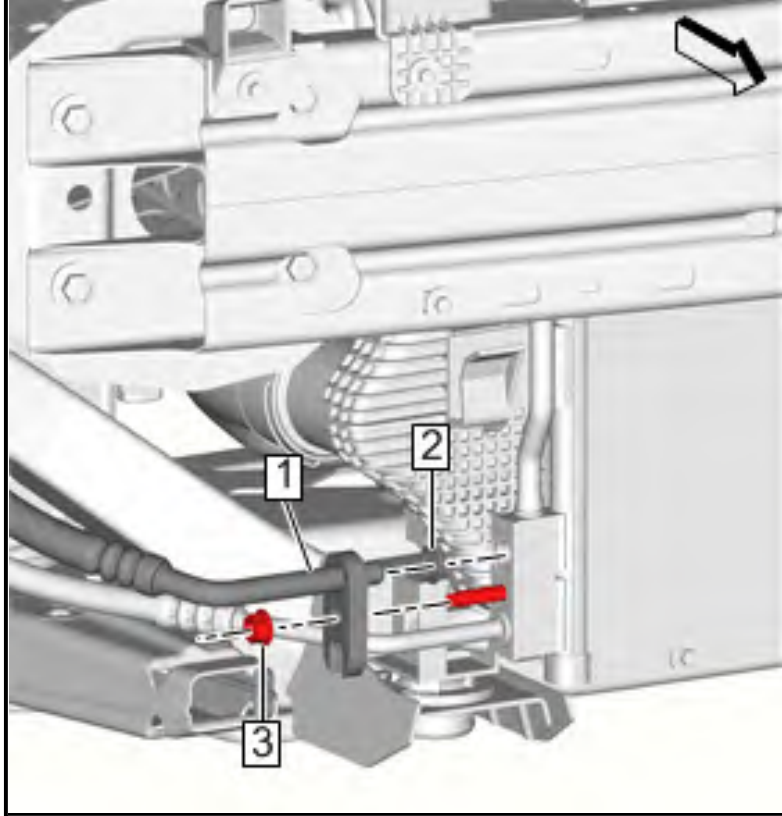
Air Conditioning Refrigerant Heat Exchanger (1) @ Front Compartment Side Rail - Install



Install a NEW sealing washer. (2) [Air Conditioning System Seal Replacement](#)

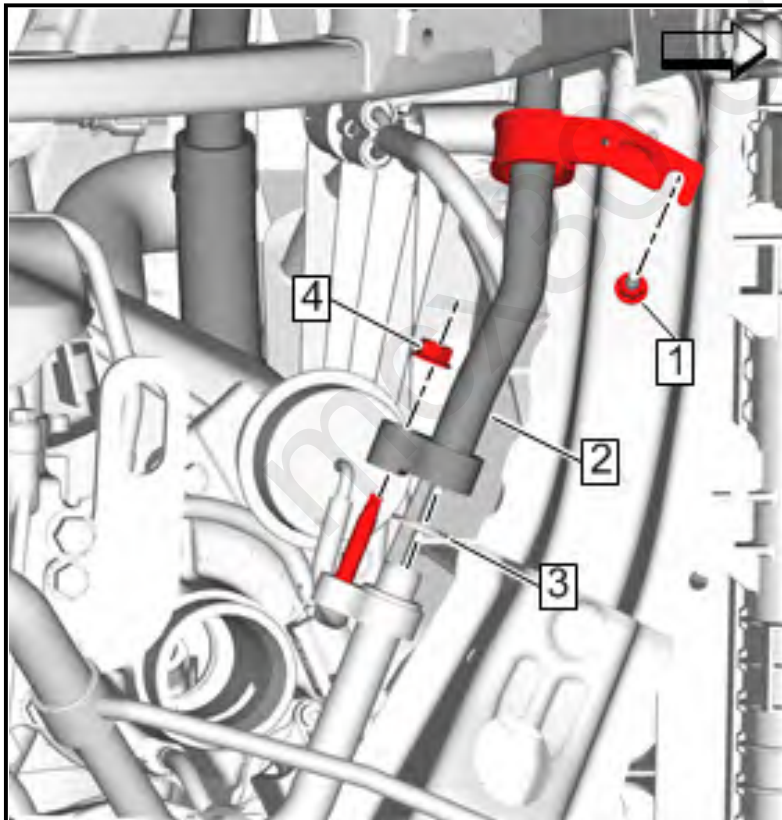
5. Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Condenser - Install





Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Install - [Air Conditioning Compressor and Condenser Hose Replacement \(LTG\)](#)

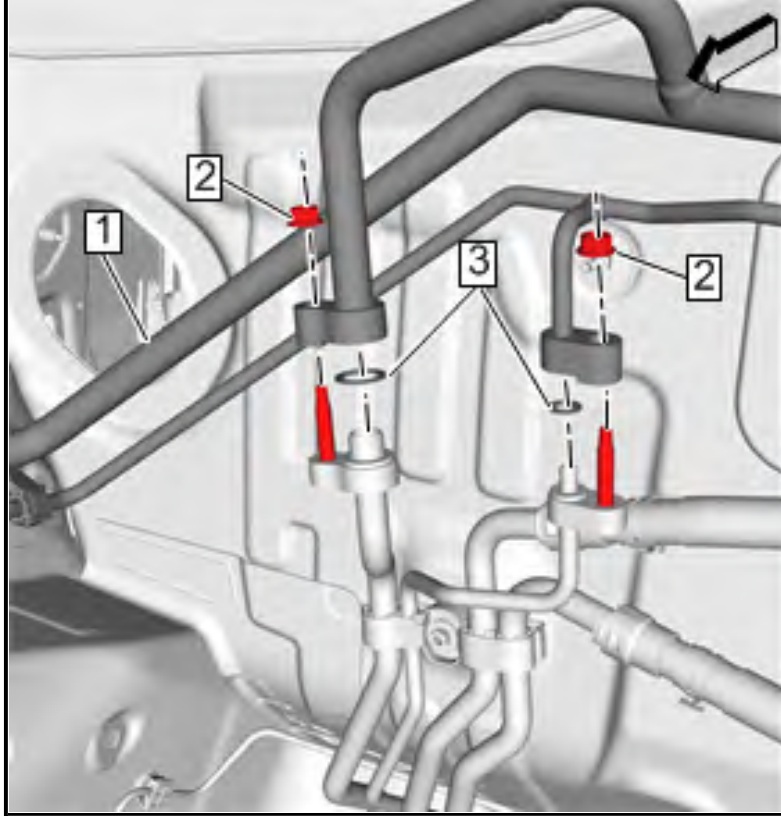
7.



Air Conditioning Compressor and Condenser Hose (2) @ Air Conditioning Refrigerant Heat Exchanger - Install - [Air Conditioning Compressor and Condenser Hose Replacement \(LTG\)](#)

8.





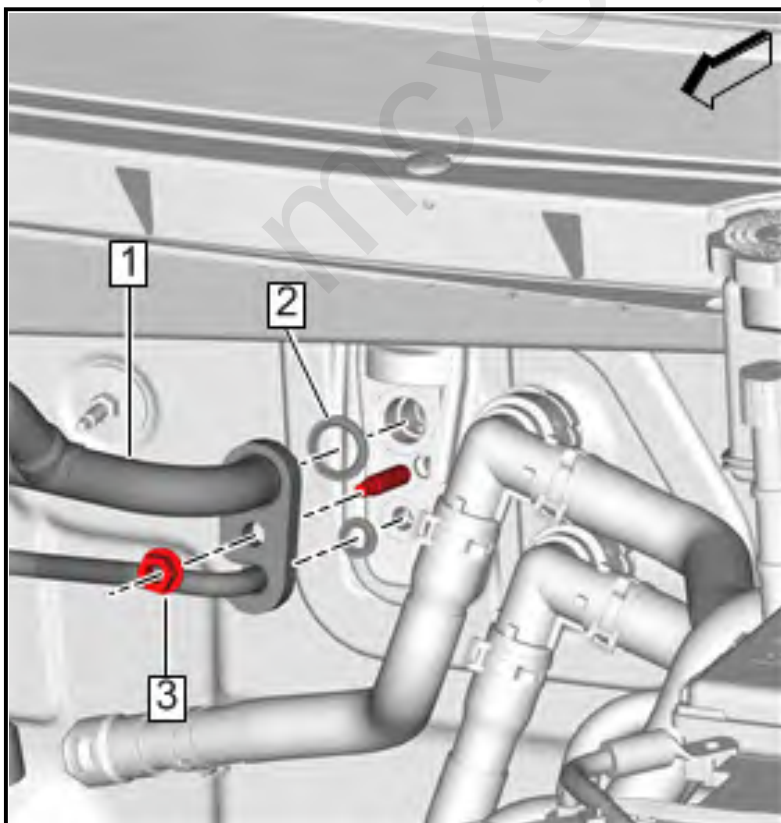
Install a NEW sealing washer. (3) [2x]

9. Air Conditioning Refrigerant Heat Exchanger (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Install

CAUTION: Refer to **Fastener Caution** .

10. Air Conditioning Refrigerant Heat Exchanger Nut (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Install and tighten [2x] 22 N.m (16 lb ft)

11.



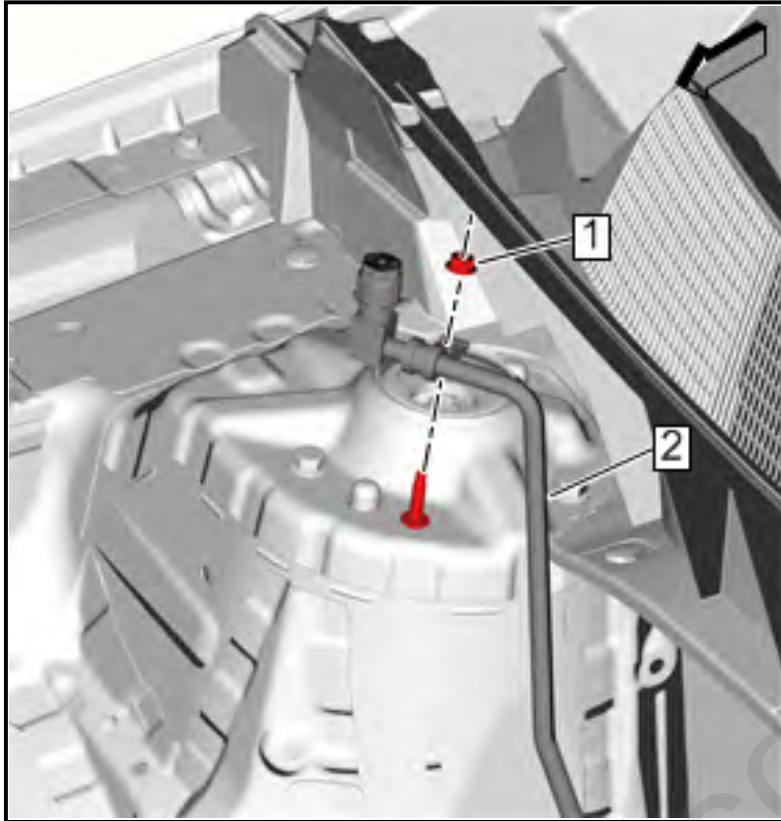
Install a NEW sealing washer. (2) [2x]

12. Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Evaporator Thermal Expansion Valve - Install

CAUTION: Refer to [Fastener Caution](#) .

13. Air Conditioning Refrigerant Heat Exchanger Nut (3) @ Air Conditioning Evaporator Thermal Expansion Valve - Install and tighten 22 N.m (16 lb ft)

14.

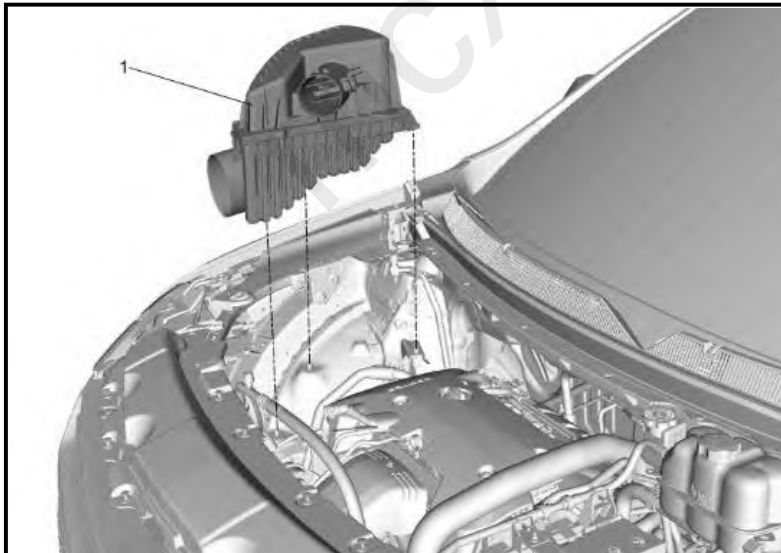


Air Conditioning Refrigerant Heat Exchanger (2) @ Front Wheelhouse Panel - Install

CAUTION: Refer to [Fastener Caution](#) .

15. Air Conditioning Refrigerant Heat Exchanger Nut (1) @ Front Wheelhouse Panel - Install and tighten 9 N.m (80 lb in)

16.



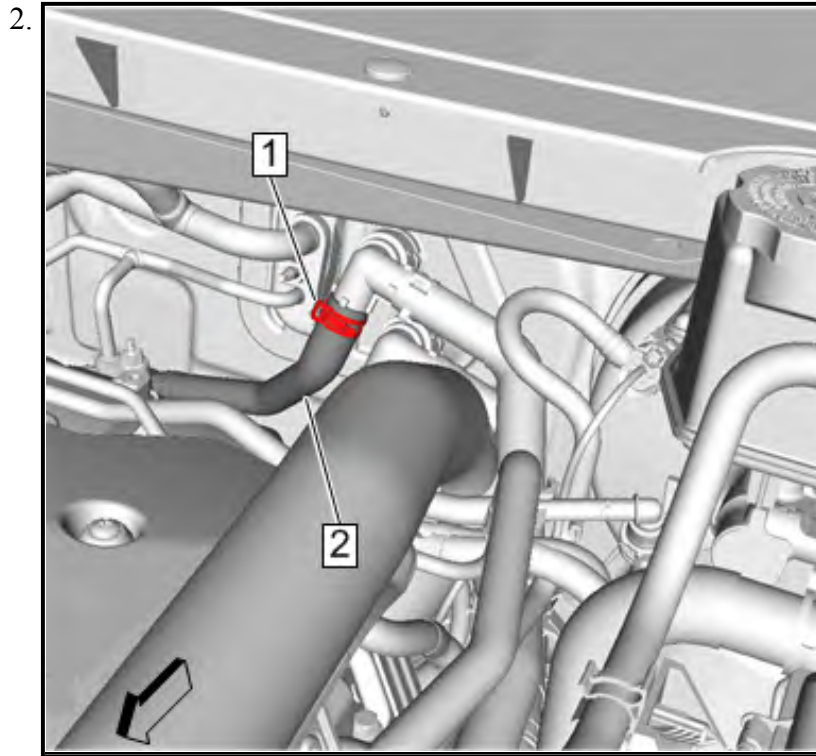
Air Cleaner Assembly (1) - Install - [Air Cleaner Assembly Replacement](#)

17. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
18. Check for refrigerant leaks.

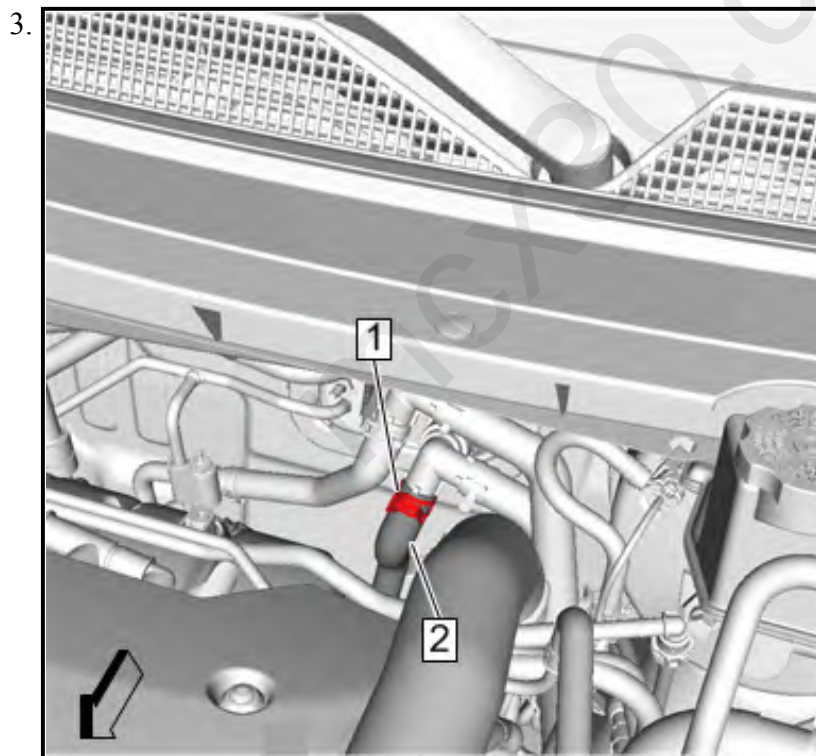
AUXILIARY AIR CONDITIONING EVAPORATOR INTERMEDIATE TUBE REPLACEMENT

Removal Procedure

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)

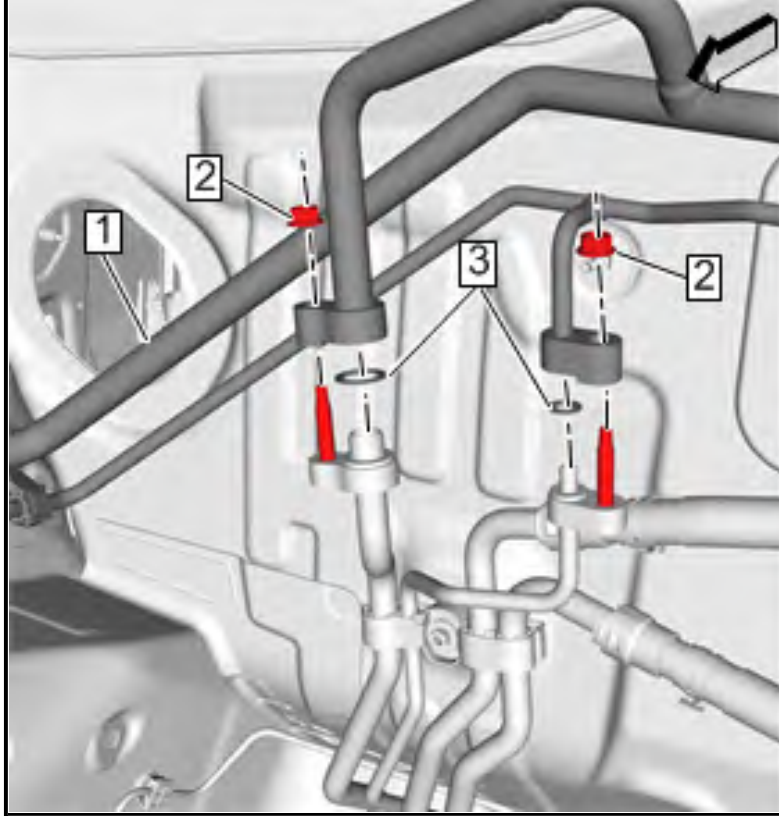


Heater Inlet Hose (2) @ Heater Inlet Hose Connector - Remove - [Heater Inlet Hose Replacement \(Engine Coolant Thermostat Housing to Heater Outlet Hose Connector\)](#)[Heater Inlet Hose Replacement \(Heater Outlet Hose Connector to Auxiliary Air Conditioning Evaporator Intermediate Tube\)](#)



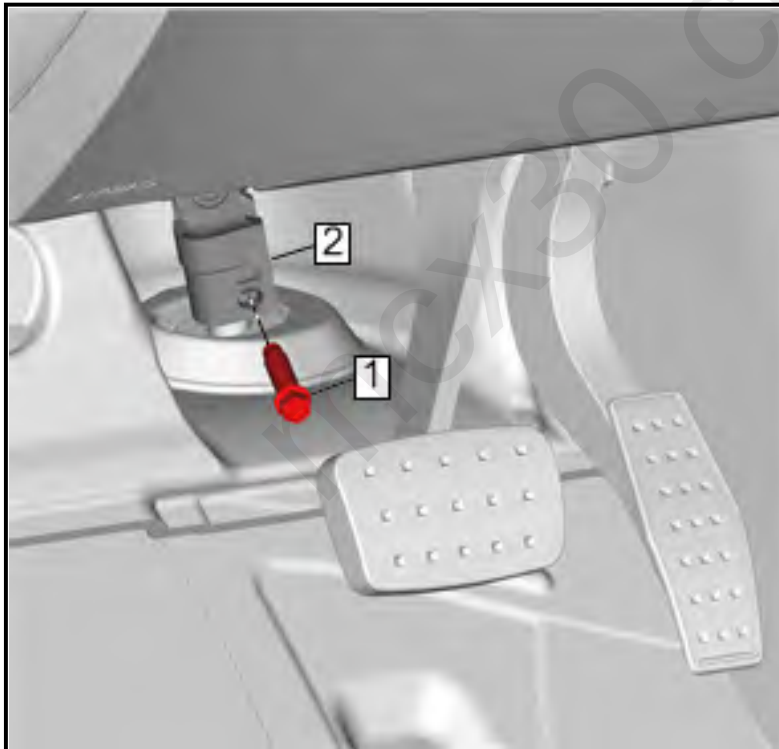
Heater Coolant Heater Inlet Hose (2) @ Heater Outlet Hose Connector - Remove - [Heater Outlet Hose Connector Replacement \(LFY\)](#)[Heater Outlet Hose Connector Replacement \(LTG at Heater Inlet Hose Bracket\)](#)[Heater Outlet Hose Connector Replacement \(LTG At Heater Core Outlet Tube\)](#)





Air Conditioning Refrigerant Heat Exchanger (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube
 - Remove - [Air Conditioning Refrigerant Heat Exchanger Replacement \(LFY\)](#) [Air Conditioning Refrigerant Heat Exchanger Replacement \(LTG\)](#).

5.

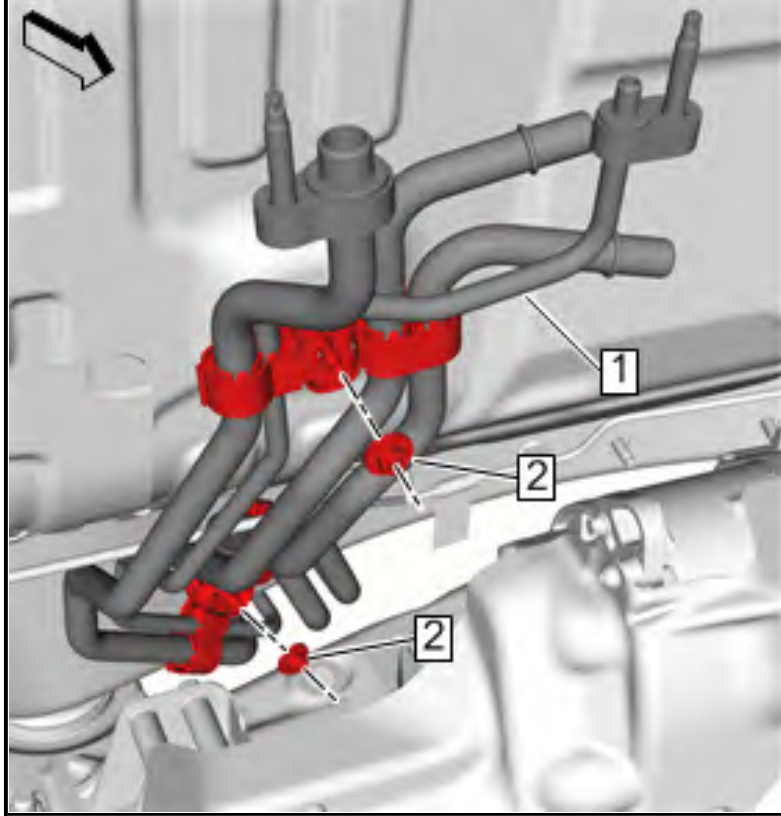


Intermediate Steering Shaft (2) @ Steering Gear - Separate - [Intermediate Steering Shaft Replacement](#)

6. Exhaust Front Pipe - Remove - [Exhaust Front Pipe Replacement \(LTG\)](#) [Exhaust Front Pipe Replacement \(LFY\)](#).
7. Lower the rear section of the drivetrain and front suspension cradle to create enough clearance for the removal of the auxiliary air conditioning evaporator intermediate tube. [Drivetrain and Front Suspension Cradle Removal and Installation \(All Wheel Drive\)](#) [Drivetrain and Front Suspension Cradle Removal and Installation \(Front Wheel Drive\)](#).

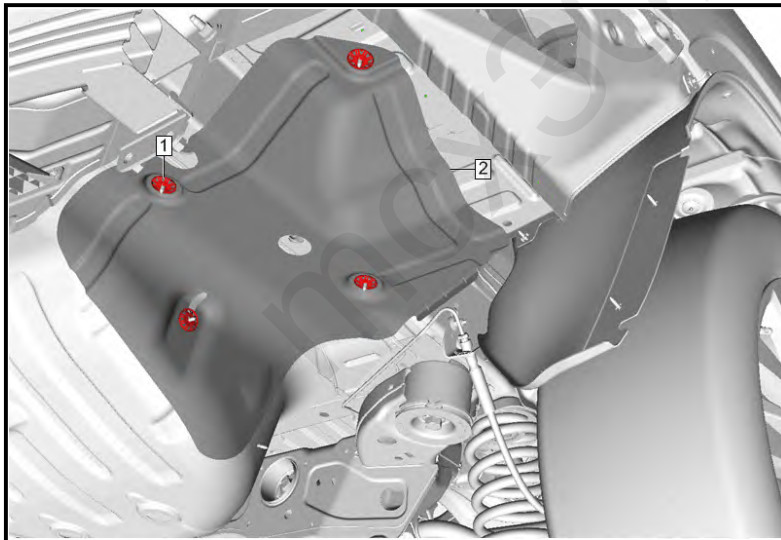
8.





Auxiliary Air Conditioning Evaporator Intermediate Tube Nut (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (1) - Remove [2x]

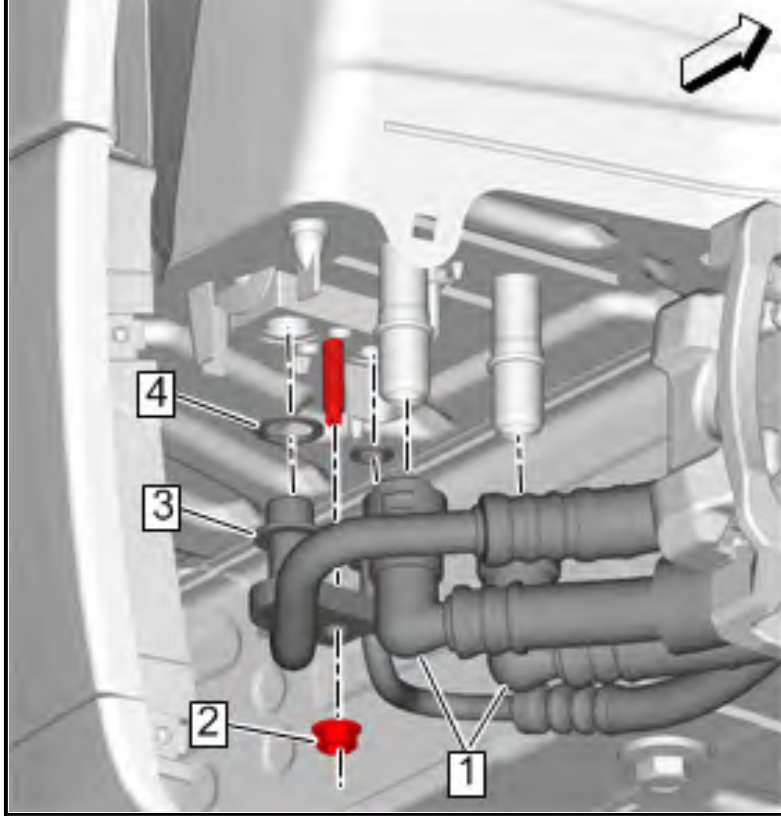
9. Exhaust Front Underbody Heat Shield - Remove - [Exhaust Front Underbody Heat Shield Replacement](#)
10. Rear Wheelhouse Liner-Right Side (3) - Remove - [Rear Wheelhouse Liner Replacement](#)
11. Rear Cradle Mount Bolt Bracket-Right Side (3) - Remove - [Rear Cradle Mount Bolt Bracket Replacement](#)
- 12.



Exhaust Muffler Heat Shield (2) - Remove - [Exhaust Muffler Heat Shield Replacement](#)

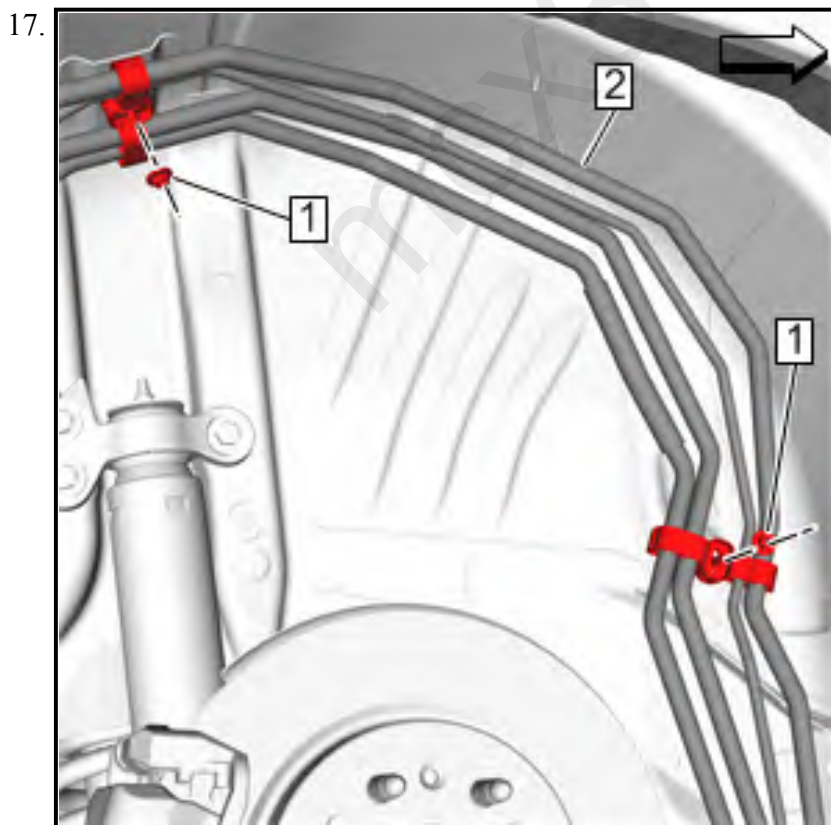
- 13.





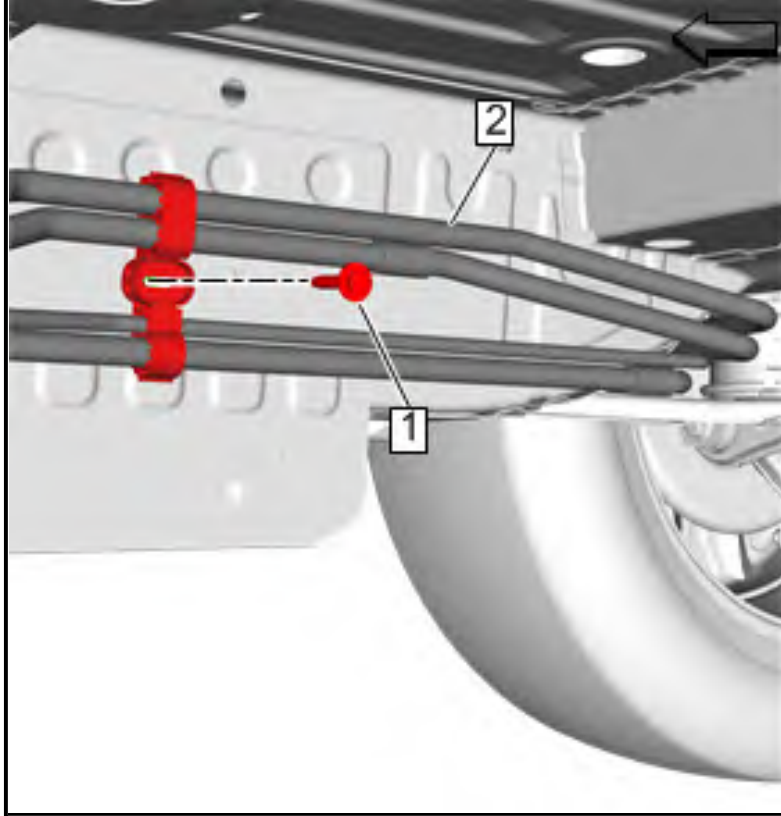
Auxiliary Air Conditioning Evaporator Intermediate Tube Nut (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (3) - Remove

14. Auxiliary Air Conditioning Evaporator Intermediate Tube (3) @ Auxiliary Air Conditioning Evaporator Thermal Expansion Valve - Remove
15. Remove and DISCARD the sealing washer. (4) [2x] - [Air Conditioning System Seal Replacement](#)
16. Auxiliary Air Conditioning Evaporator Intermediate Tube Quick Connect (1) @ Auxiliary Air Conditioning Evaporator and Blower Module - Disengage [2x]



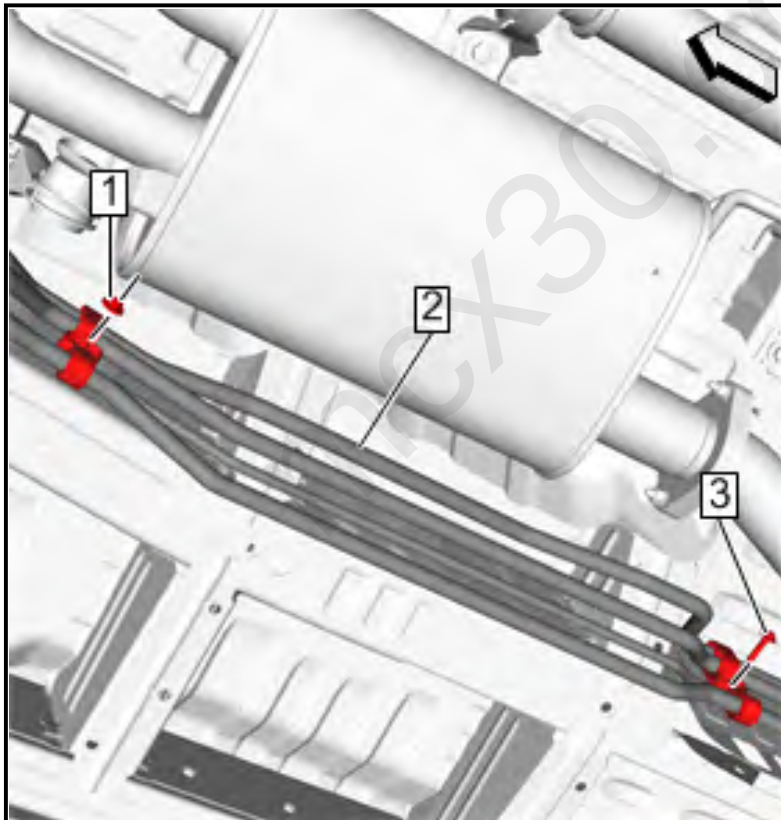
Auxiliary Air Conditioning Evaporator Intermediate Tube Nut (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (2) - Remove [2x]

18. 



Auxiliary Air Conditioning Evaporator Intermediate Tube Bolt (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (2) - Remove

19.



Auxiliary Air Conditioning Evaporator Intermediate Tube Bolt (3) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (2) - Remove

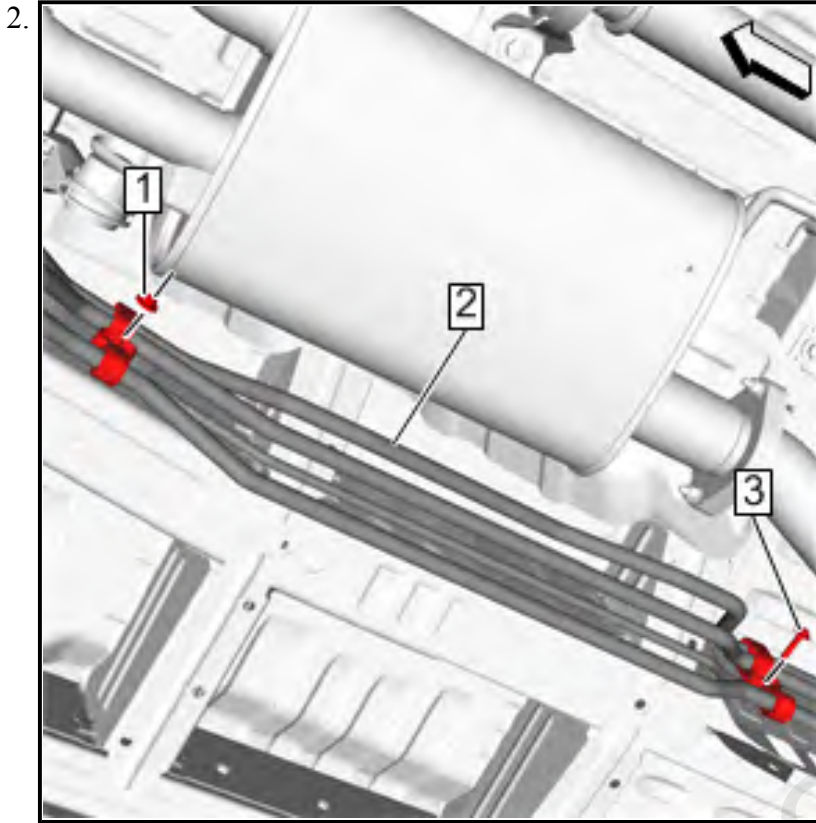
20. Auxiliary Air Conditioning Evaporator Intermediate Tube Nut (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (2) - Remove

NOTE: Use an assistant to remove the auxiliary air conditioning evaporator intermediate tube.

21. Remove the auxiliary air conditioning evaporator intermediate tube (2) from the vehicle.
22. Transfer parts as necessary.

Installation Procedure

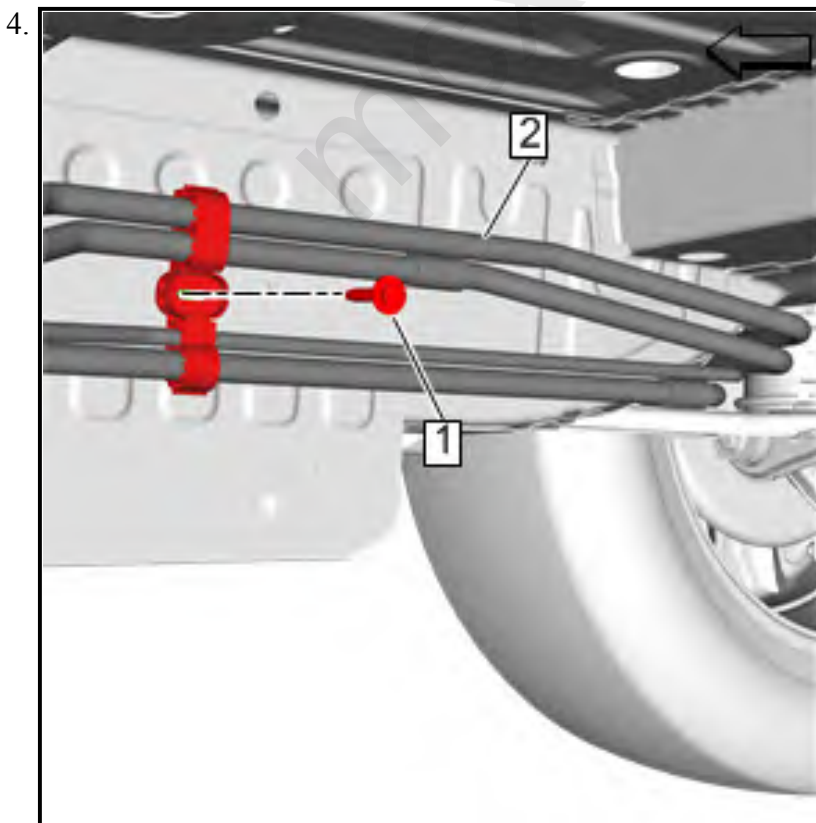
1. Install the auxiliary air conditioning evaporator intermediate tube to the vehicle.



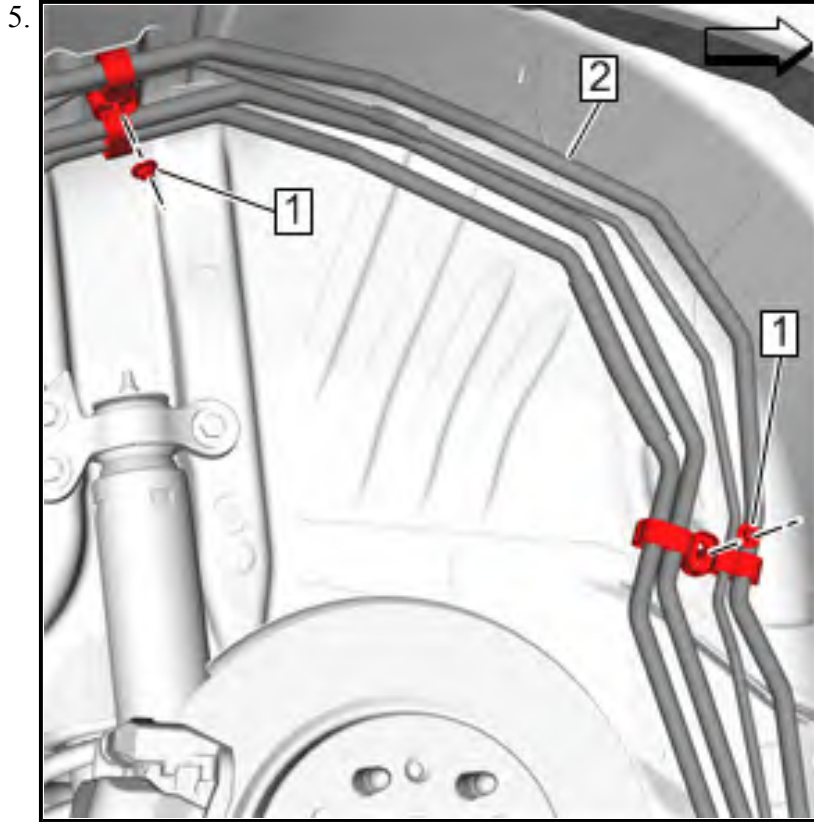
CAUTION: Refer to [Fastener Caution](#) .

Auxiliary Air Conditioning Evaporator Intermediate Tube Bolt (3) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (2) - Install and tighten 4.5 N.m (40 lb in)

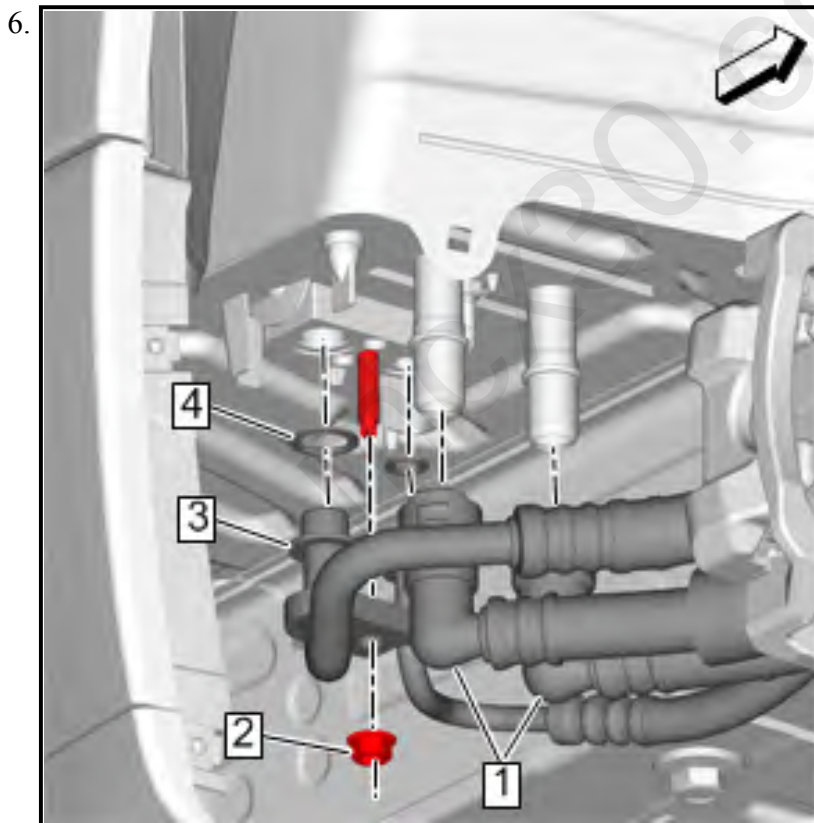
3. Auxiliary Air Conditioning Evaporator Intermediate Tube Nut (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (2) - Install and tighten 4.5 N.m (40 lb in)



Auxiliary Air Conditioning Evaporator Intermediate Tube Bolt (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (2) - Install and tighten 4.5 N.m (40 lb in)



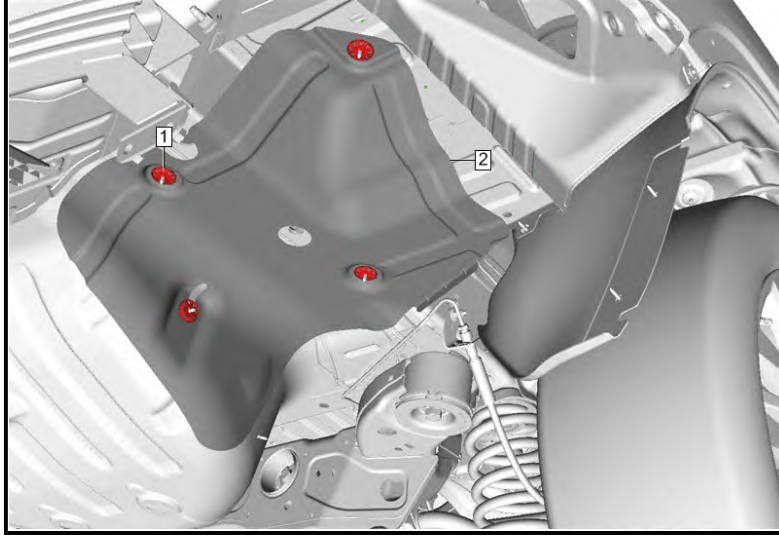
Auxiliary Air Conditioning Evaporator Intermediate Tube Nut (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (2) - Install and tighten [2x] 4.5 N.m (40 lb in)



Install a NEW sealing washer. (4) [2x] [Air Conditioning System Seal Replacement](#)

7. Auxiliary Air Conditioning Evaporator Intermediate Tube (3) @ Auxiliary Air Conditioning Evaporator Thermal Expansion Valve - Install
8. Auxiliary Air Conditioning Evaporator Intermediate Tube Nut (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (3) - Install and tighten 22 N.m (16 lb ft)
9. Auxiliary Air Conditioning Evaporator Intermediate Tube Quick Connect (1) @ Auxiliary Air Conditioning Evaporator and Blower Module - Engage [2x]

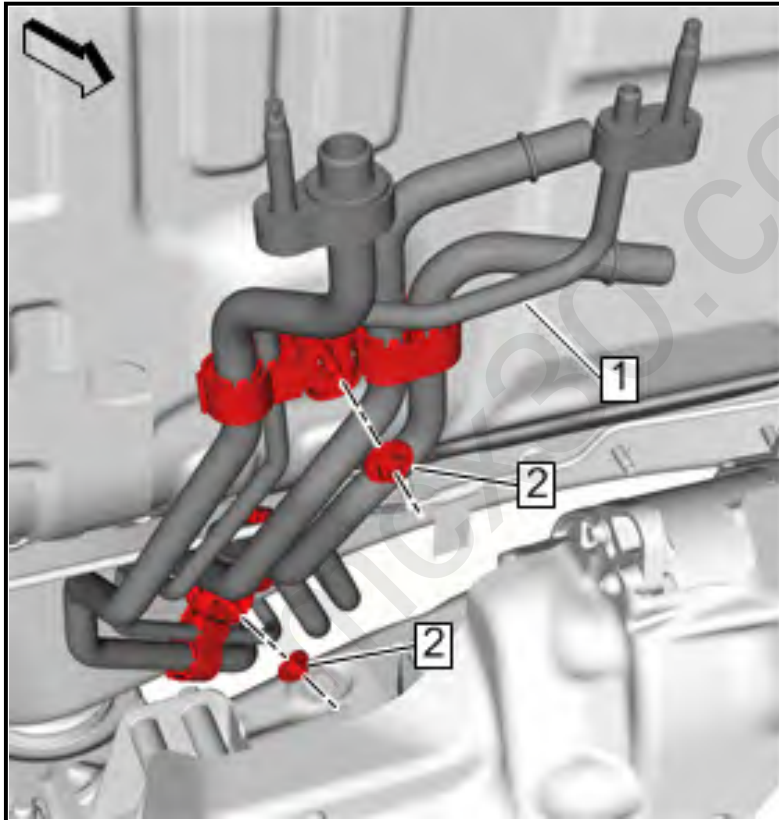




Exhaust Muffler Heat Shield (2) - Install - [Exhaust Muffler Heat Shield Replacement](#)

11. Rear Cradle Mount Bolt Bracket-Right Side - Install - [Rear Cradle Mount Bolt Bracket Replacement](#)
12. Rear Wheelhouse Liner-Right Side - Install - [Rear Wheelhouse Liner Replacement](#)
13. Exhaust Front Underbody Heat Shield - Install - [Exhaust Front Underbody Heat Shield Replacement](#)

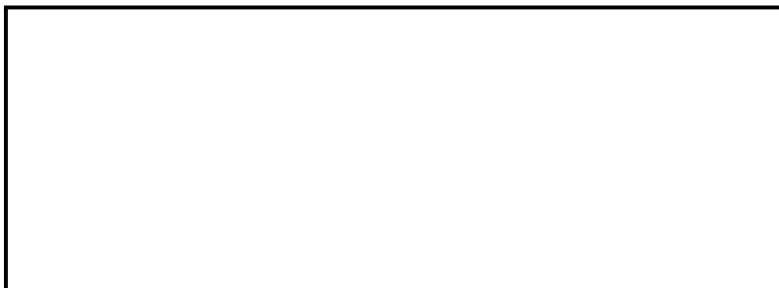
14.

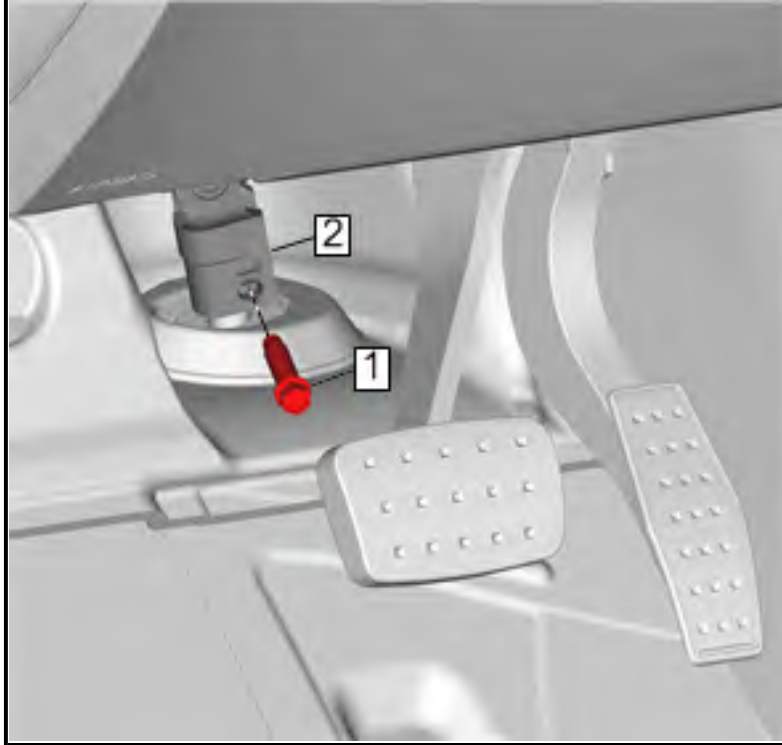


Auxiliary Air Conditioning Evaporator Intermediate Tube Nut (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube (1) - Install and tighten [2x] 4.5 N.m (40 lb in)

15. Drivetrain and Front Suspension Cradle - Install - [Drivetrain and Front Suspension Cradle Removal and Installation \(All Wheel Drive\)](#) [Drivetrain and Front Suspension Cradle Removal and Installation \(Front Wheel Drive\)](#)
16. Exhaust Front Pipe - Install - [Exhaust Front Pipe Replacement \(LTG\)](#) [Exhaust Front Pipe Replacement \(LFY\)](#)

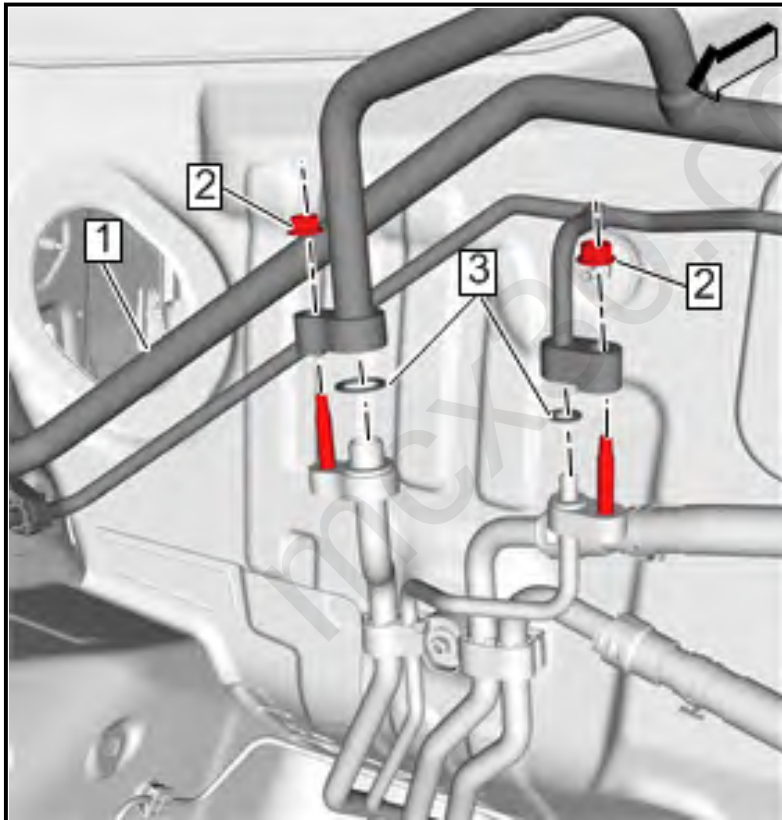
17.





Intermediate Steering Shaft (2) @ Steering Gear - Install - [Intermediate Steering Shaft Replacement](#)

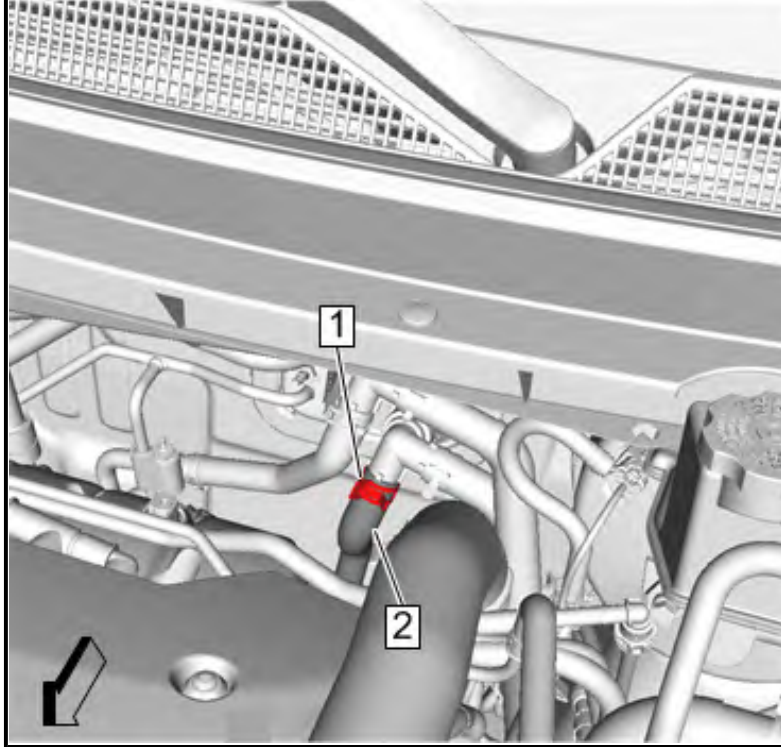
18.



Air Conditioning Refrigerant Heat Exchanger (1) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Install - [Air Conditioning Refrigerant Heat Exchanger Replacement \(LFY\)](#)[Air Conditioning Refrigerant Heat Exchanger Replacement \(LTG\)](#)

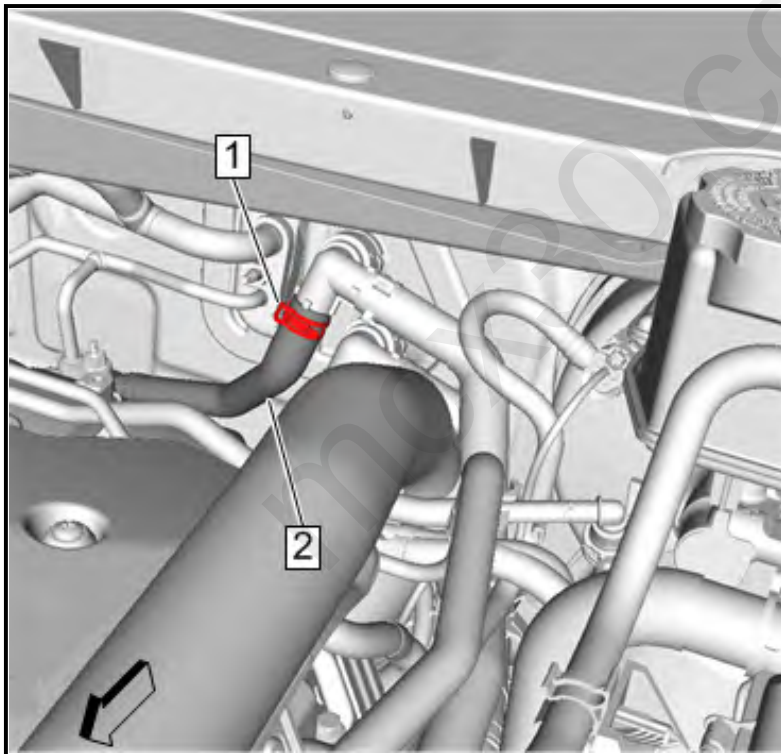
19.





Heater Coolant Heater Inlet Hose (2) @ Heater Outlet Hose Connector - Install - [Heater Outlet Hose Connector Replacement \(LFY\)](#)[Heater Outlet Hose Connector Replacement \(LTG at Heater Inlet Hose Bracket\)](#)[Heater Outlet Hose Connector Replacement \(LTG At Heater Core Outlet Tube\)](#)

20.

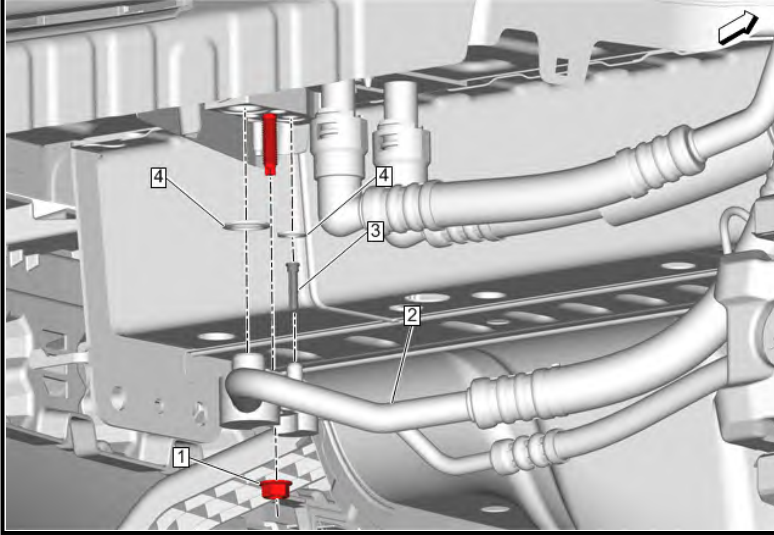


Heater Inlet Hose (2) @ Heater Inlet Hose Connector - Install - [Heater Inlet Hose Replacement \(Engine Coolant Thermostat Housing to Heater Outlet Hose Connector\)](#)[Heater Inlet Hose Replacement \(Heater Outlet Hose Connector to Auxiliary Air Conditioning Evaporator Intermediate Tube\)](#)

21. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
22. Check for refrigerant leaks.

AIR CONDITIONING (AC) REFRIGERANT FILTER REPLACEMENT (C69)





Callout	Component Name
WARNING: Technicians must only use a SAE J2913 certified electronic leak detector when checking for leaks in an R-1234yf A/C refrigerant system. Other, non - certified, leak detection devices could serve as ignition sources in the presence of hydrocarbons or other flammable refrigerants. Failure to follow these precautions may cause personal injury and/or damage to the vehicle or its components.	
Preliminary Procedures 1. Refrigerant Recovery and Recharging (R-134a) Refrigerant Recovery and Recharging (R-1234yf) 2. Exhaust Muffler Heat Shield Replacement	
1	Auxiliary Air Conditioning Evaporator Intermediate Tube Nut CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Auxiliary Air Conditioning Evaporator Intermediate Tube
3	Air Conditioning Refrigerant Filter
4	Air Conditioning Sealing Washer Procedure Remove and DISCARD the sealing washer. Air Conditioning System Seal Replacement

AIR CONDITIONING REFRIGERANT SERVICE VALVE CORE REPLACEMENT

Tools Required

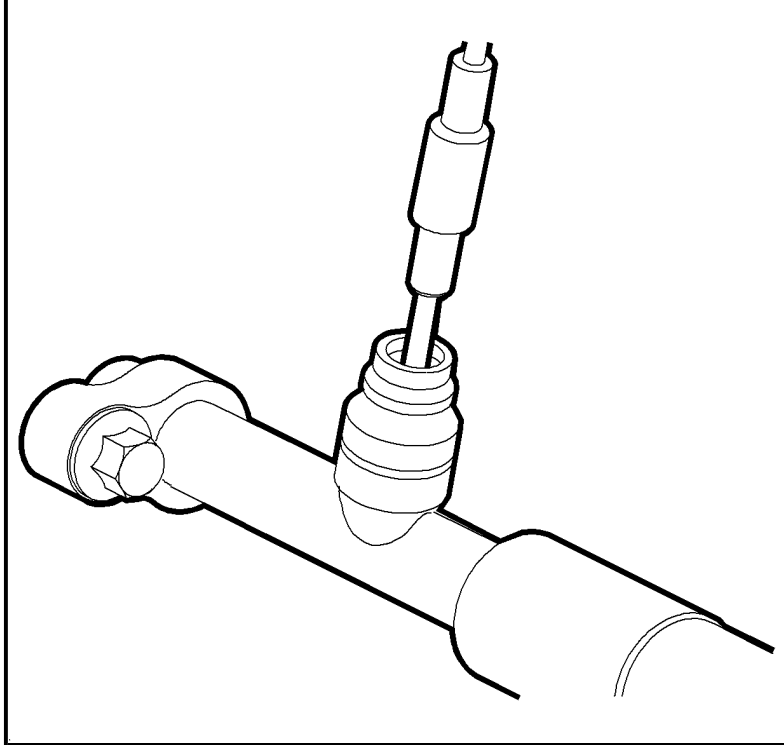
- J 39400-A Halogen Leak Detector
- J 46246 Valve Core Removal Tool

Removal Procedure

1. Recover the refrigerant. Refer to [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#).

2.

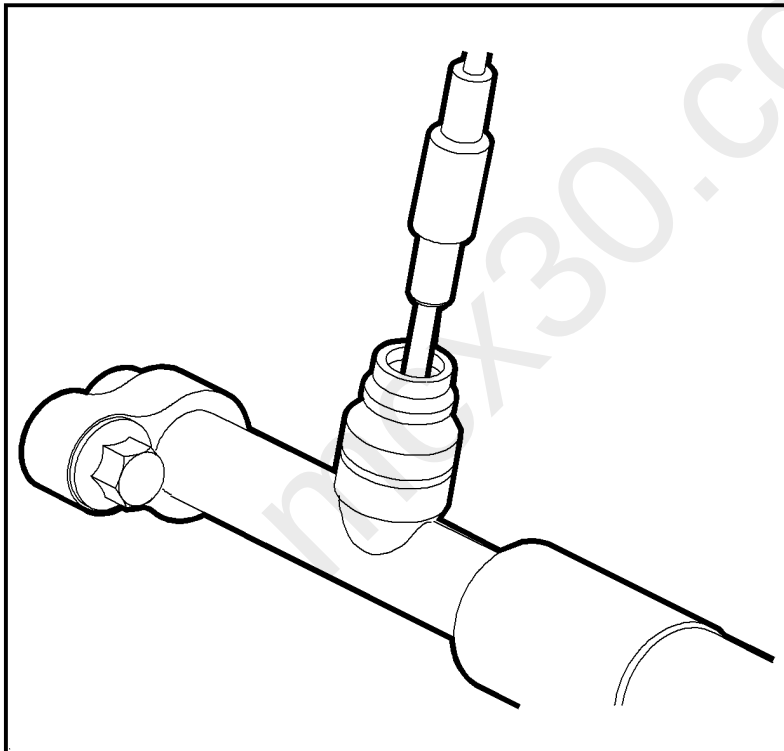




Use **J 46246** valve core removal tool or equivalent to remove the valve core.

Installation Procedure

1.



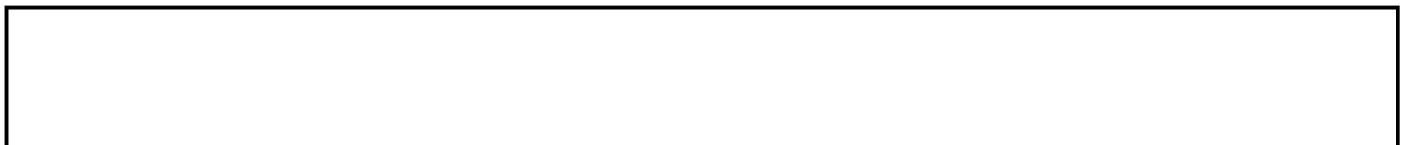
Use **J 46246** valve core removal tool or equivalent to install and tighten the valve core.

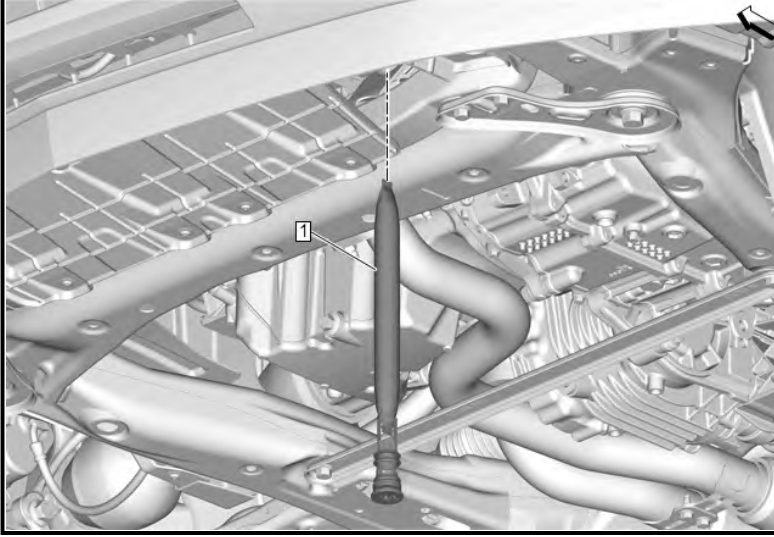
2. Evacuate and charge the A/C system. Refer to [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#).

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** halogen leak detector.

RECEIVER AND DEHYDRATOR REPLACEMENT (LFY)





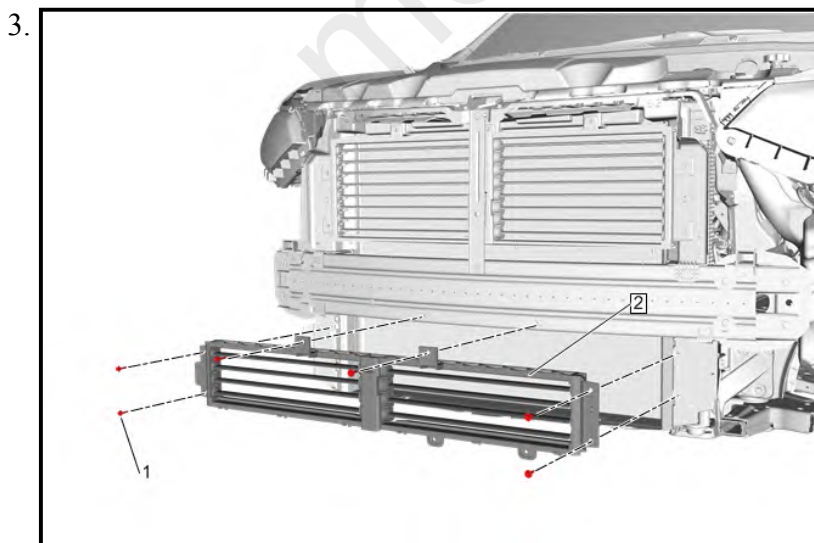
Callout	Component Name
Preliminary Procedures Refrigerant Recovery and Recharging (R-134a)Refrigerant Recovery and Recharging (R-1234yf)	
1	Air Conditioning Receiver and Dehydrator CAUTION: Refer to Component Fastener Tightening Caution . Tighten 7 N.m (62 lb in)

RECEIVER AND DEHYDRATOR REPLACEMENT (LTG)

Removal Procedure

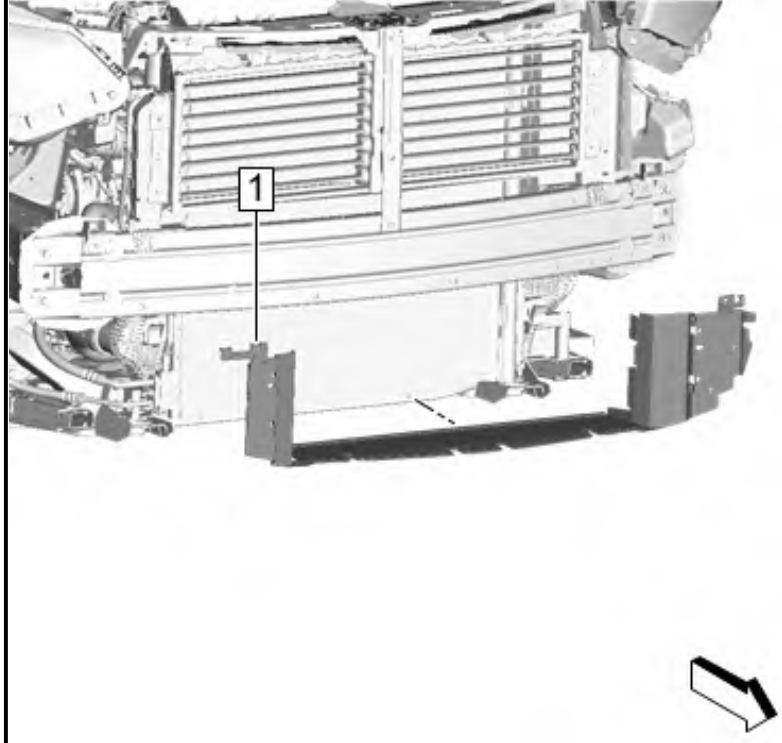
WARNING: Refer to **R-1234yf Proper Service Procedures Warning** .

1. Recover the refrigerant. **Refrigerant Recovery and Recharging (R-134a)Refrigerant Recovery and Recharging (R-1234yf)**
2. Front Bumper Fascia - Remove - **Front Bumper Fascia Replacement**



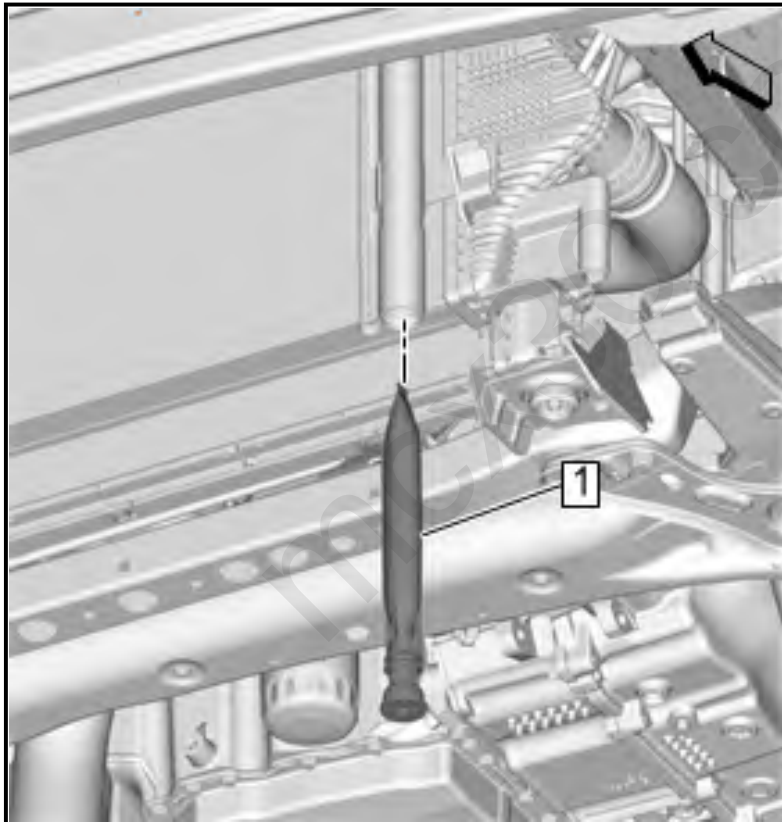
{If equipped} Front Bumper Shutter - Lower (2) - Remove - **Front Bumper Shutter Replacement (Lower)**





Radiator Air Lower Baffle (1) - Remove - [Radiator Air Lower Baffle Replacement \(LTG\)](#)

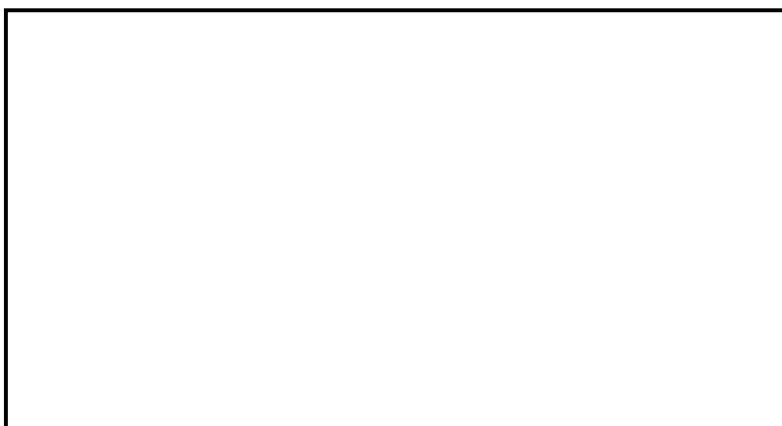
5.

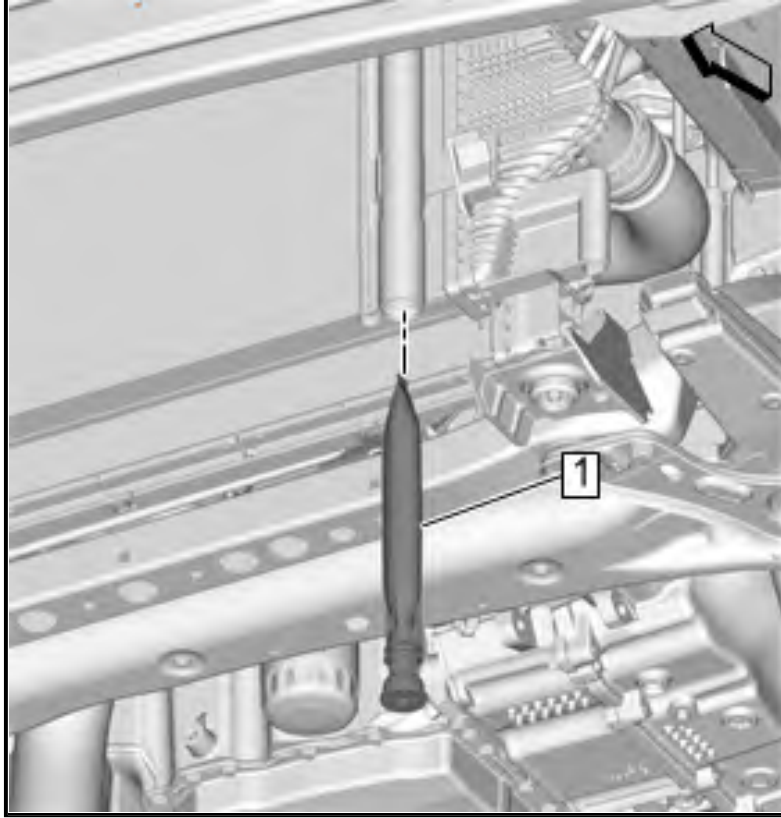


Air Conditioning Receiver and Dehydrator (1) - Remove

Installation Procedure

1.

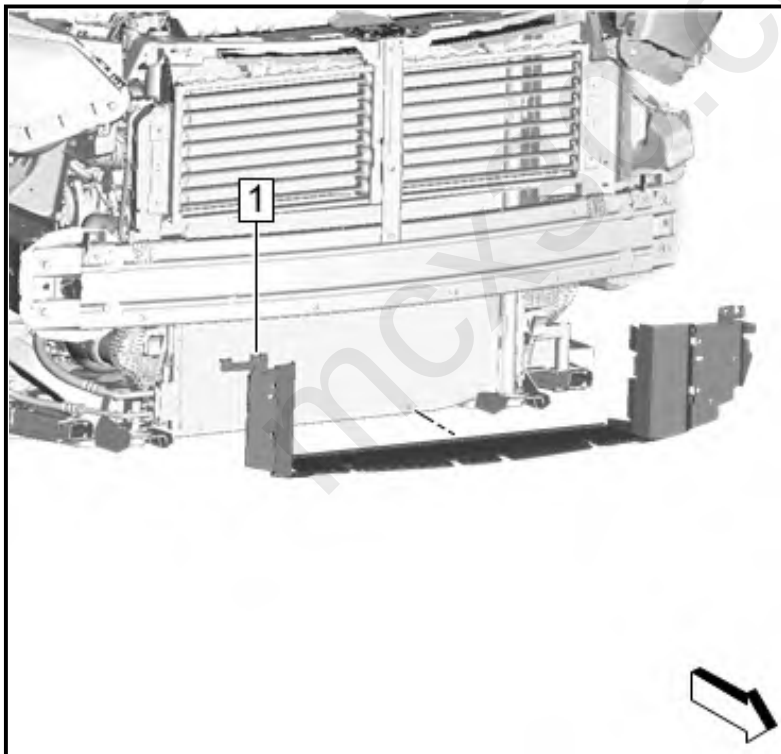




CAUTION: Refer to [Component Fastener Tightening Caution](#) .

Air Conditioning Receiver and Dehydrator (1) - Install and tighten 7 N.m (62 lb in)

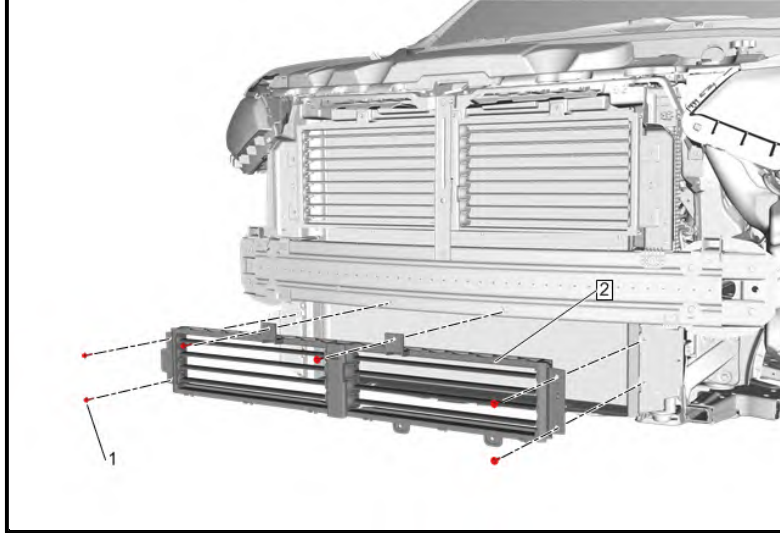
2.



Radiator Air Lower Baffle (1) - Install - [Radiator Air Lower Baffle Replacement \(LTG\)](#)

3.

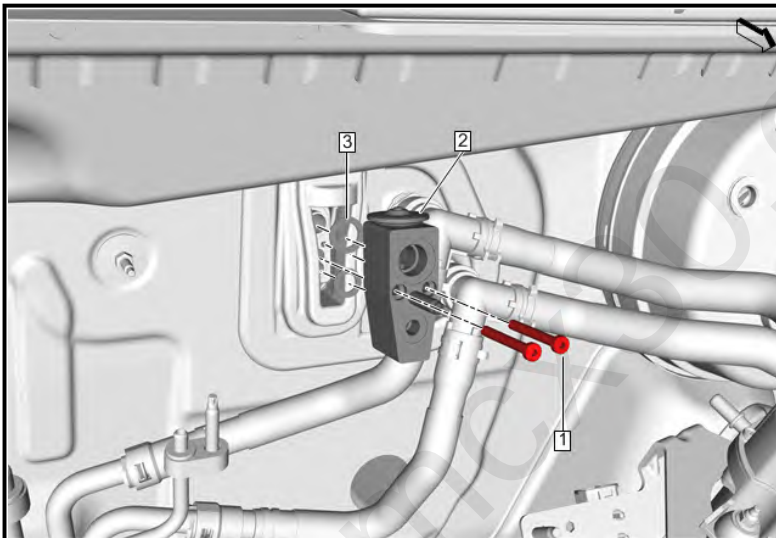




{If equipped} Front Bumper Shutter - Lower (2) - Install - [Front Bumper Shutter Replacement \(Lower\)](#)

4. Front Bumper Fascia - Install - [Front Bumper Fascia Replacement](#)
5. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
6. Check for refrigerant leaks.

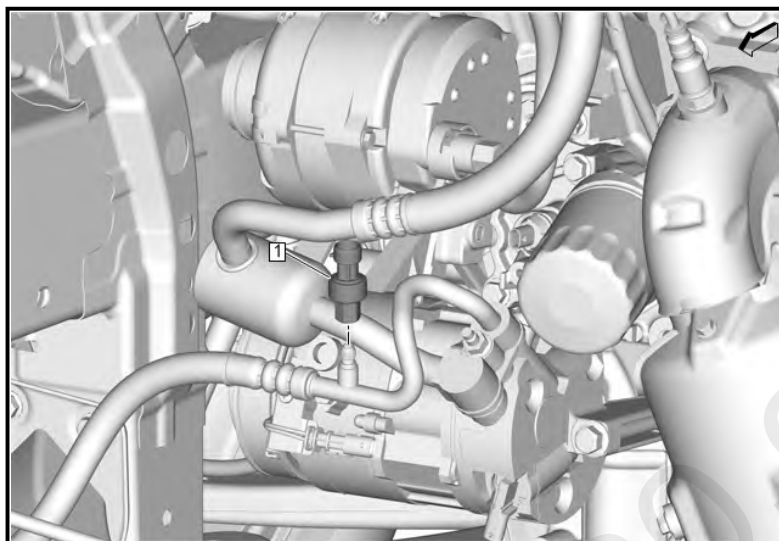
AIR CONDITIONING EVAPORATOR THERMAL EXPANSION VALVE REPLACEMENT



Callout	Component Name
WARNING: Technicians must only use a SAE J2913 certified electronic leak detector when checking for leaks in an R-1234yf A/C refrigerant system. Other, non-certified, leak detection devices could serve as ignition sources in the presence of hydrocarbons or other flammable refrigerants. Failure to follow these precautions may cause personal injury and/or damage to the vehicle or its components.	
Preliminary Procedures 1. Refrigerant Recovery and Recharging (R-134a)Refrigerant Recovery and Recharging (R-1234yf) 2. Air Conditioning Refrigerant Heat Exchanger @ Air Conditioning Evaporator Thermal Expansion Valve - Remove Auxiliary Air Conditioning Evaporator Intermediate Tube Replacement	

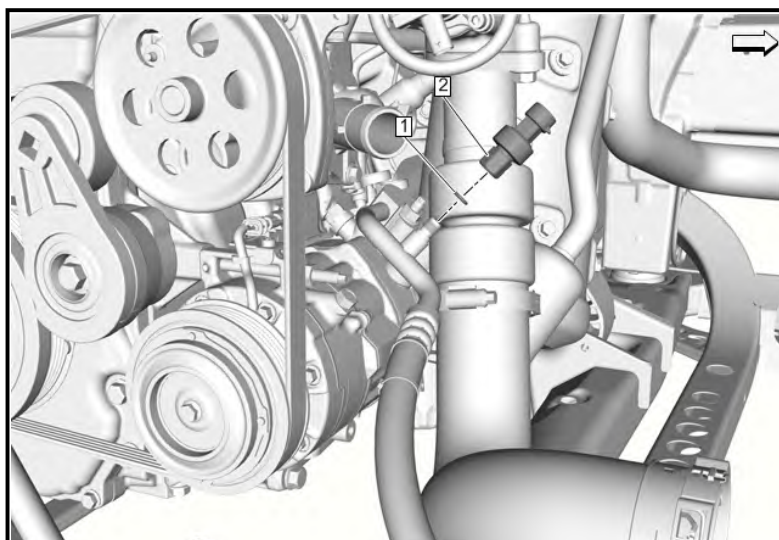
Callout	Component Name
1	Air Conditioning Evaporator Thermal Expansion Valve Bolt [2x] CAUTION: Refer to Fastener Caution . Tighten 6 N.m (53 lb in)
2	Air Conditioning Evaporator Thermal Expansion Valve
3	Air Conditioning Evaporator Thermal Expansion Valve Seal [2x] Procedure Remove and DISCARD the sealing washer. Air Conditioning System Seal Replacement.

AIR CONDITIONING (A/C) REFRIGERANT PRESSURE SENSOR REPLACEMENT (LFY)



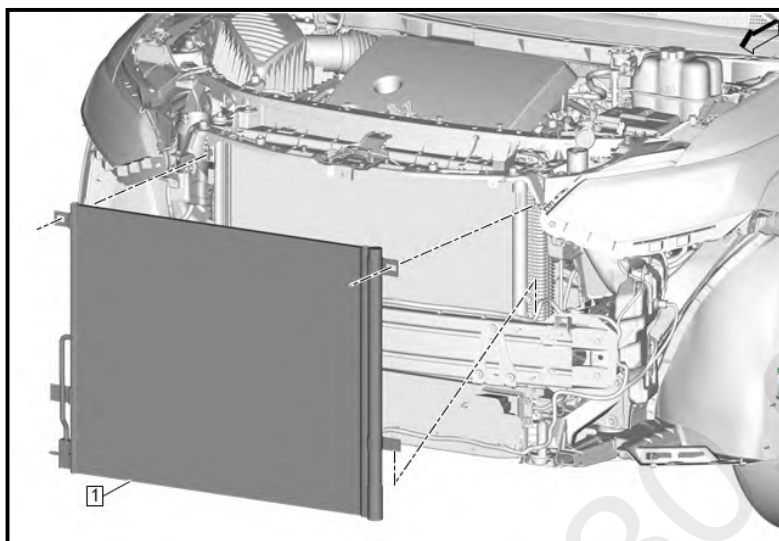
Callout	Component Name
Preliminary Procedure Disconnect the electrical connector.	
1	Air Conditioning Refrigerant Pressure Sensor CAUTION: Refer to Component Fastener Tightening Caution . Tighten 7 N.m (62 lb in)

AIR CONDITIONING (A/C) REFRIGERANT PRESSURE SENSOR REPLACEMENT (LTG)



Callout	Component Name
Preliminary Procedure Disconnect the electrical connector.	
1	Air Conditioning Refrigerant Pressure Sensor CAUTION: Refer to Component Fastener Tightening Caution . Tighten 7 N.m (62 lb in)
2	Air Conditioning Refrigerant Pressure Sensor Seal Procedure Remove and DISCARD the O-ring seal.

AIR CONDITIONING CONDENSER REPLACEMENT (LFY)



Callout	Component Name
WARNING: Technicians must only use a SAE J2913 certified electronic leak detector when checking for leaks in an R-1234yf A/C refrigerant system. Other, non-certified, leak detection devices could serve as ignition sources in the presence of hydrocarbons or other flammable refrigerants. Failure to follow these precautions may cause personal injury and/or damage to the vehicle or its components.	
Preliminary Procedures 1. Air Conditioning Compressor and Condenser Hose @ Air Conditioning Condenser - Remove - Air Conditioning Compressor and Condenser Hose Replacement (LFY). 2. Air Conditioning Refrigerant Heat Exchanger @ Air Conditioning Condenser - Remove - Air Conditioning Refrigerant Heat Exchanger Replacement (LFY). 3. Transmission Fluid Auxiliary Cooler Replacement (LFY). 4. Radiator Air Upper Baffle Replacement	
1	Air Conditioning Condenser

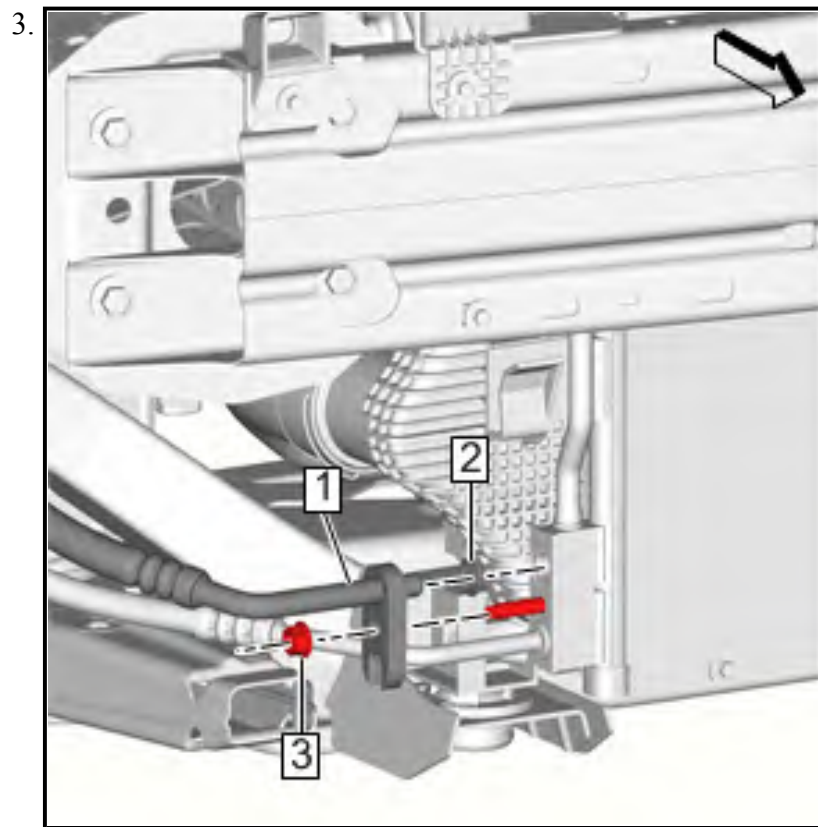
AIR CONDITIONING CONDENSER REPLACEMENT (LTG)

Removal Procedure

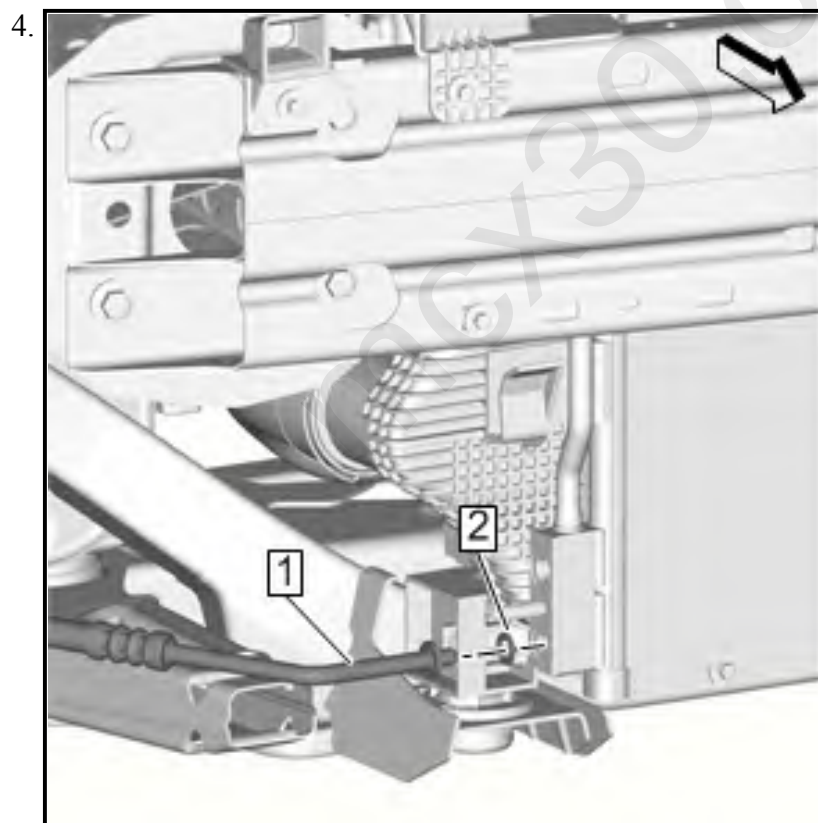
WARNING: Refer to [R-1234yf Proper Service Procedures Warning](#) .

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#).

2. Front Bumper Fascia - Remove - [Front Bumper Fascia Replacement](#)

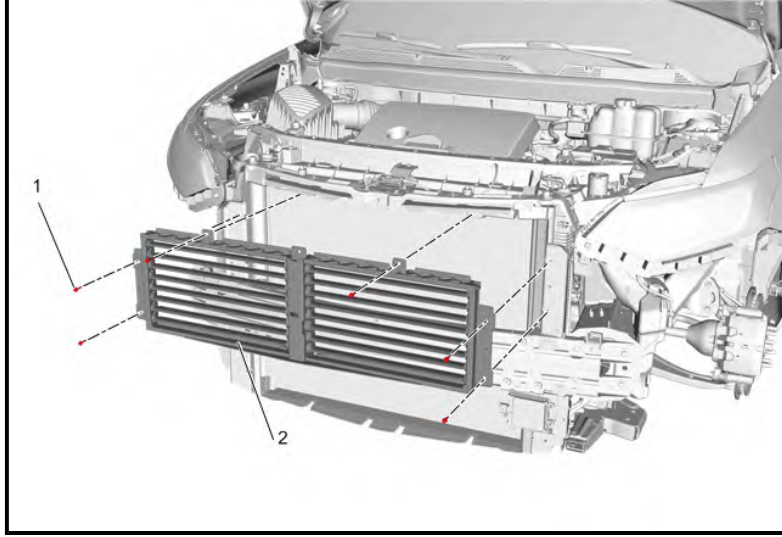


Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Remove - [Air Conditioning Compressor and Condenser Hose Replacement \(LTG\)](#)

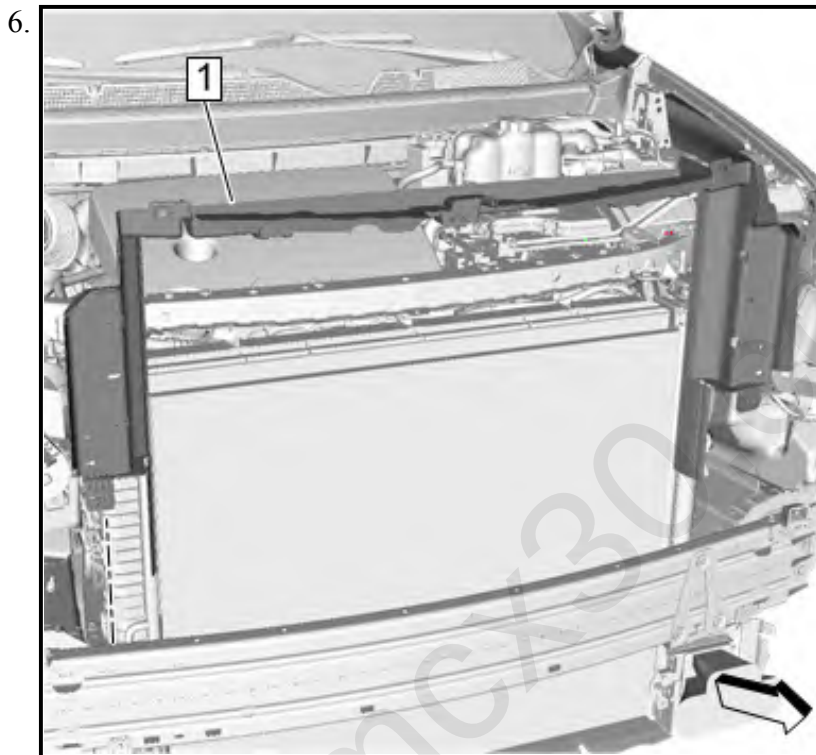


Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Condenser - Remove - [Air Conditioning Refrigerant Heat Exchanger Replacement \(LTG\)](#)

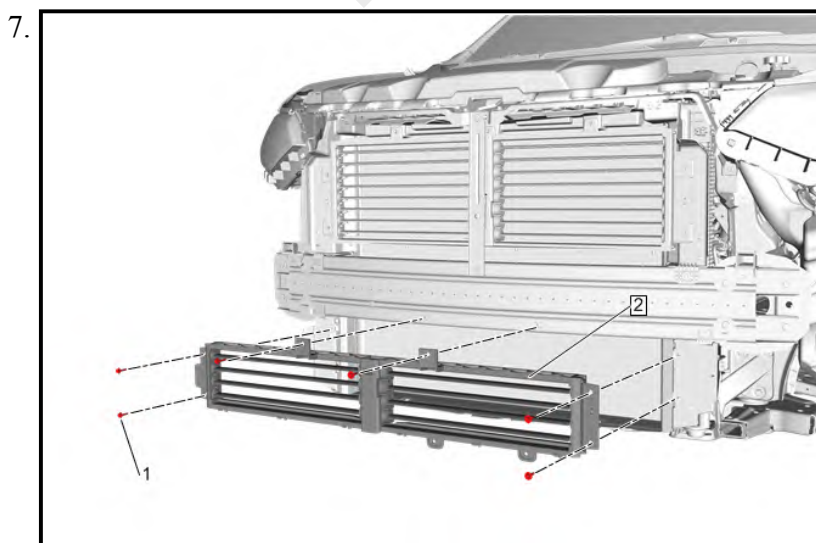




{If equipped} Front Bumper Shutter- Upper (2) - Remove - [Front Bumper Shutter Replacement \(Upper\)](#)

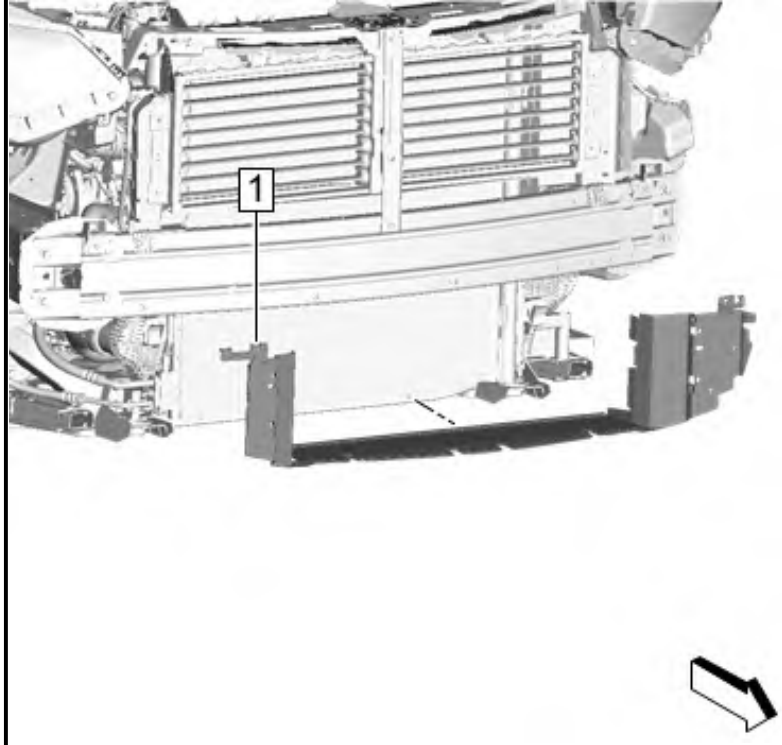


Radiator Air Upper Baffle (1) - Remove - [Radiator Air Upper Baffle Replacement](#)

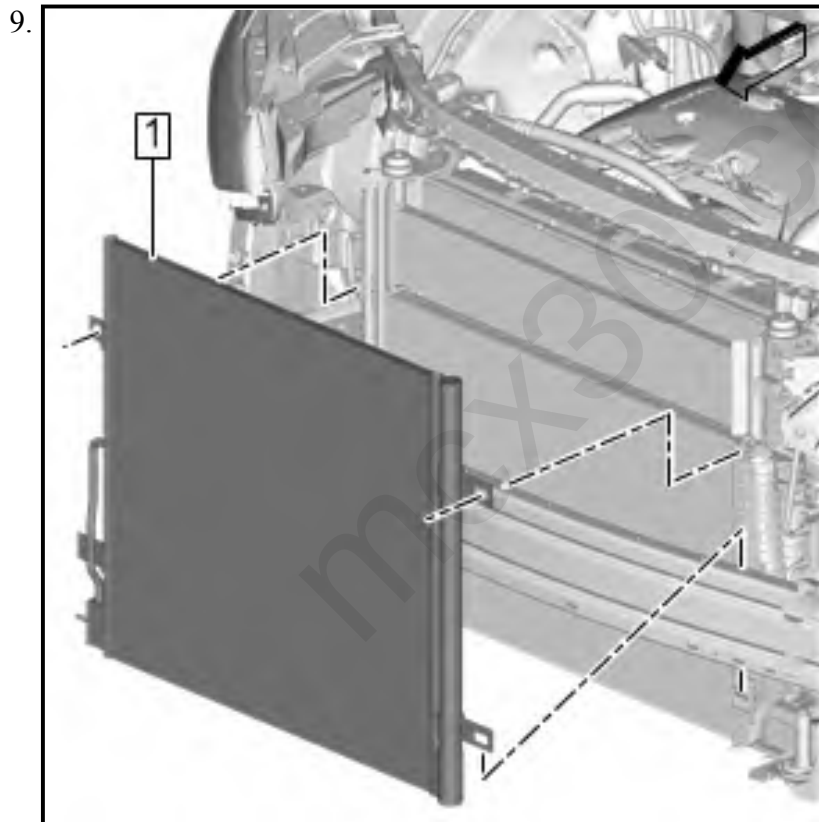


{If equipped} Front Bumper Shutter - Lower (2) - Remove - [Front Bumper Shutter Replacement \(Lower\)](#)





Radiator Air Lower Baffle (1) - Remove - [Radiator Air Lower Baffle Replacement \(LTG\)](#)

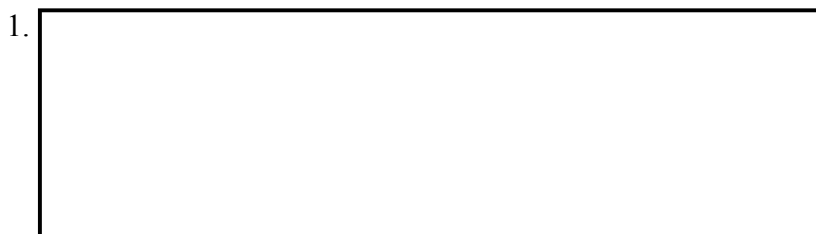


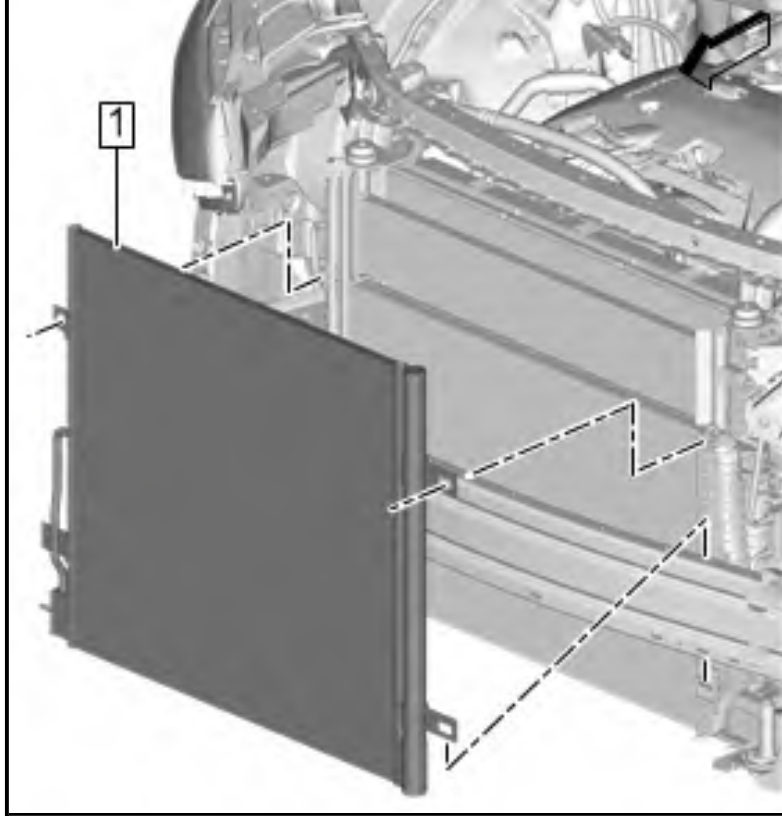
NOTE: Depress tabs and lift to disengage air conditioning condenser.

Air Conditioning Condenser (1) - Disengage

10. Remove the air conditioning condenser (1) from the vehicle.
11. Transfer components as necessary.

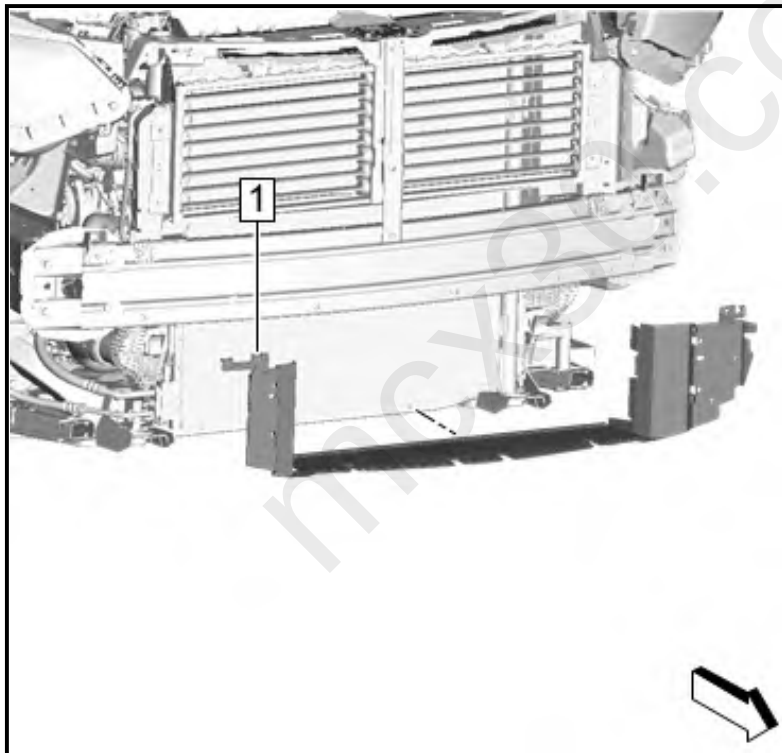
Installation Procedure





Air Conditioning Condenser (1) - Install

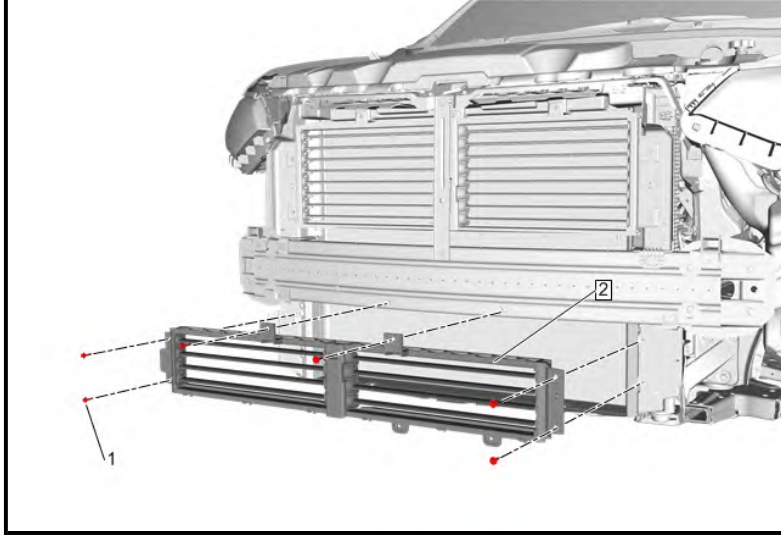
2.



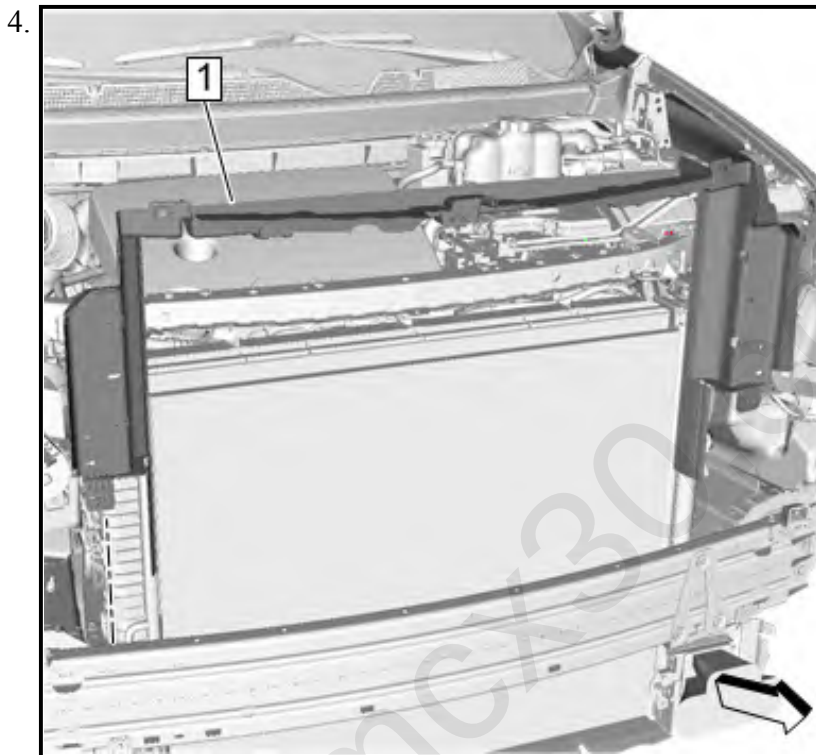
Radiator Air Lower Baffle (1) - Install - [Radiator Air Lower Baffle Replacement \(LTG\)](#)

3.

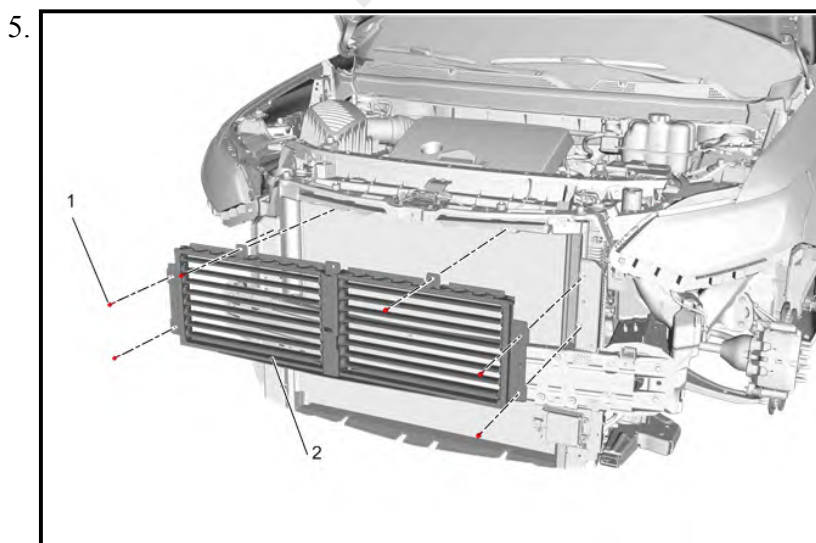




{If equipped} Front Bumper Shutter - Lower (2) - Install - [Front Bumper Shutter Replacement \(Lower\)](#).

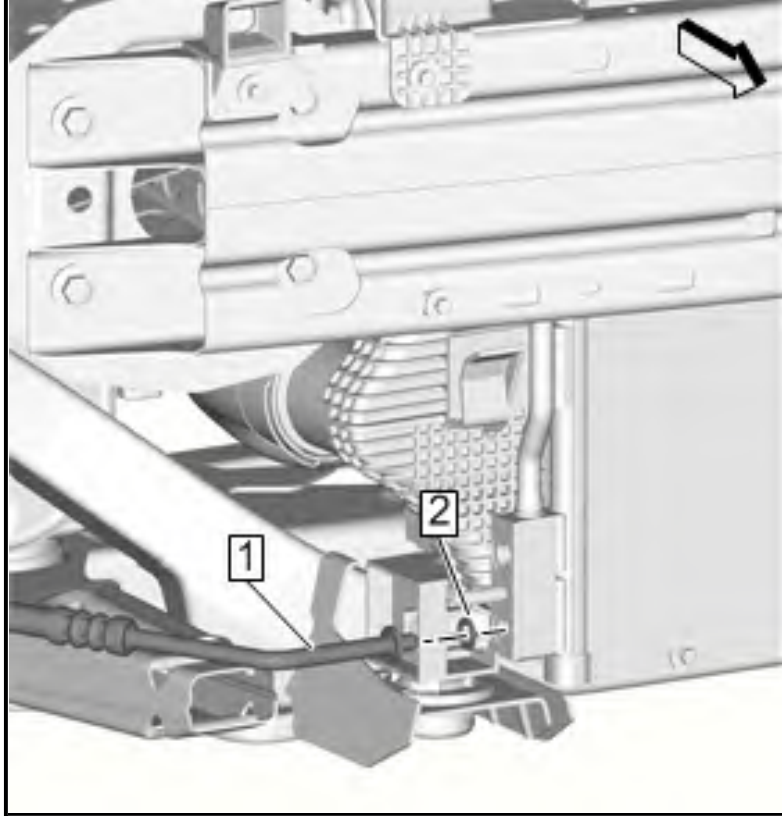


Radiator Air Upper Baffle (1) - Install - [Radiator Air Upper Baffle Replacement](#)



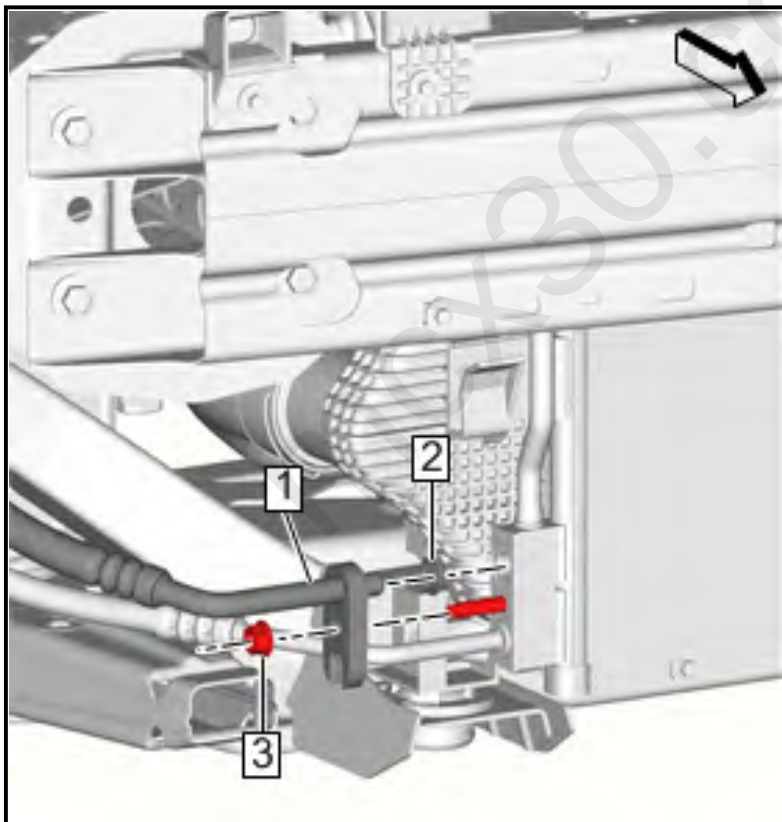
{If equipped} Front Bumper Shutter- Upper (2) - Install - [Front Bumper Shutter Replacement \(Upper\)](#)





Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Condenser - Install - [Air Conditioning Refrigerant Heat Exchanger Replacement \(LTG\)](#).

7.



Air Conditioning Compressor and Condenser Hose (1) @ Air Conditioning Condenser - Install - [Air Conditioning Compressor and Condenser Hose Replacement \(LTG\)](#).

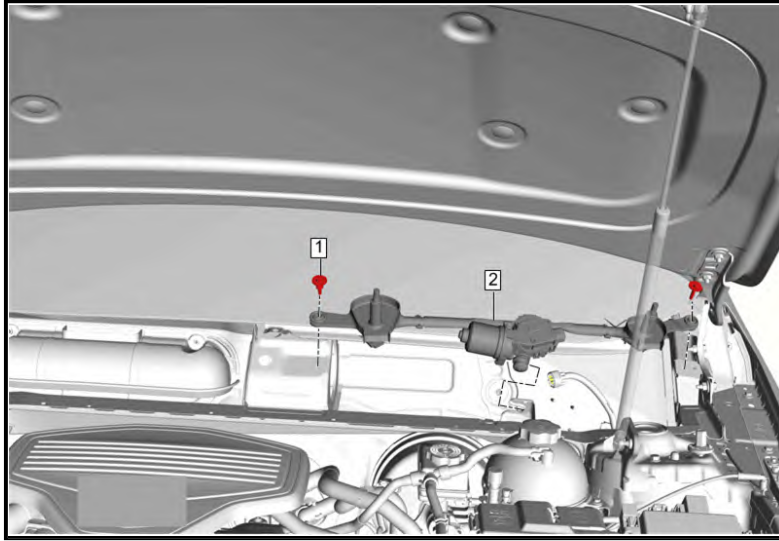
8. Front Bumper Fascia - Install - [Front Bumper Fascia Replacement](#)
9. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
10. Check for refrigerant leaks.

HEATER AND AIR CONDITIONING EVAPORATOR AND BLOWER MODULE REMOVAL AND INSTALLATION (LFY)

Removal Procedure

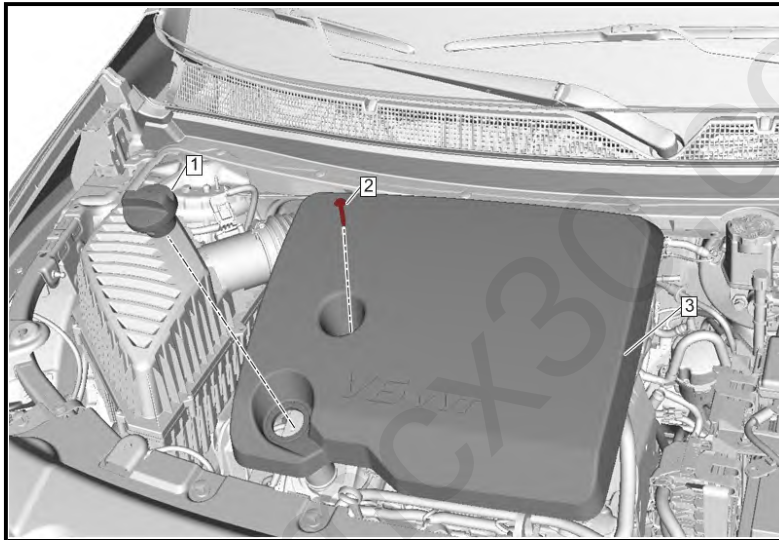
1. Disconnect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
2. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
3. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\)](#) [Cooling System Draining and Filling \(Static Fill\)](#)

4.



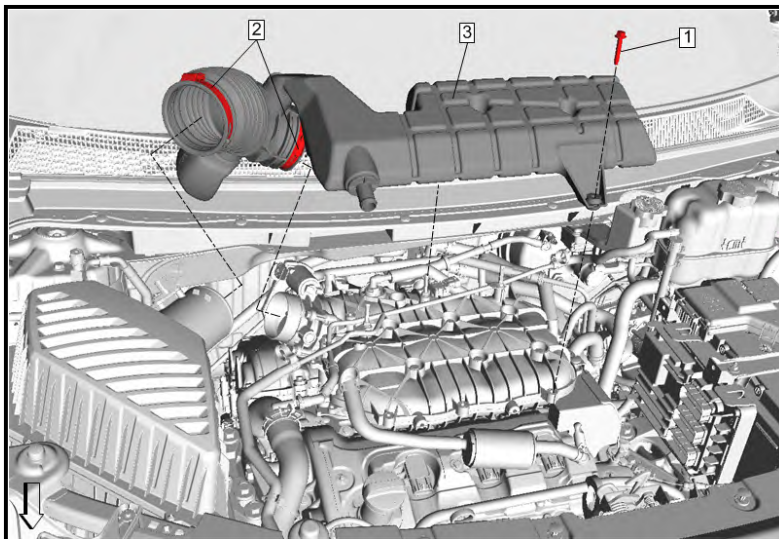
Windshield Wiper Transmission (2) - Remove - [Windshield Wiper Transmission Replacement](#)

5.



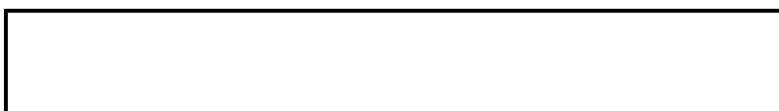
Intake Manifold Cover (3) - Remove - [Intake Manifold Cover Replacement](#)

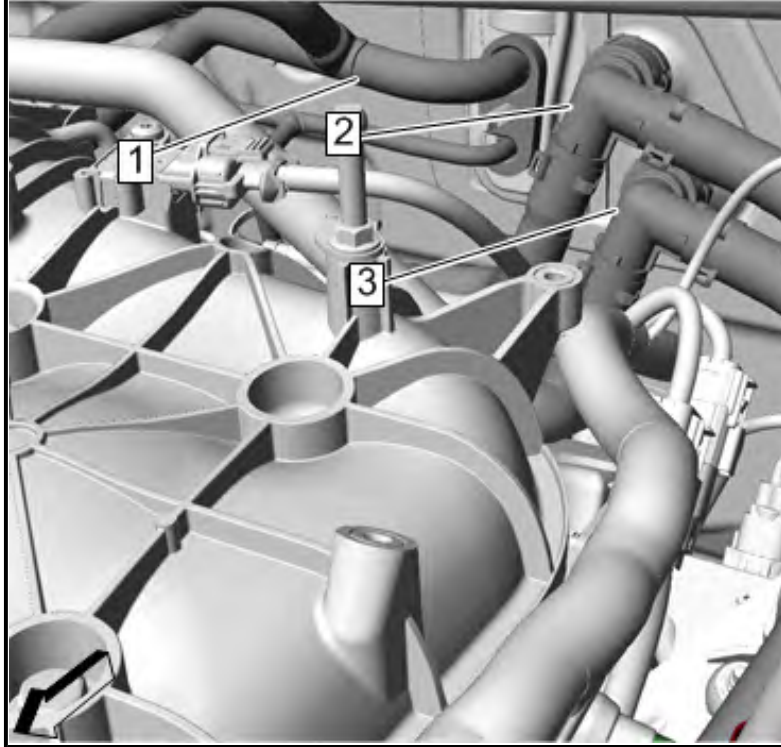
6.



Air Cleaner Outlet Duct (3) - Remove - [Air Cleaner Outlet Duct Replacement](#)

7.



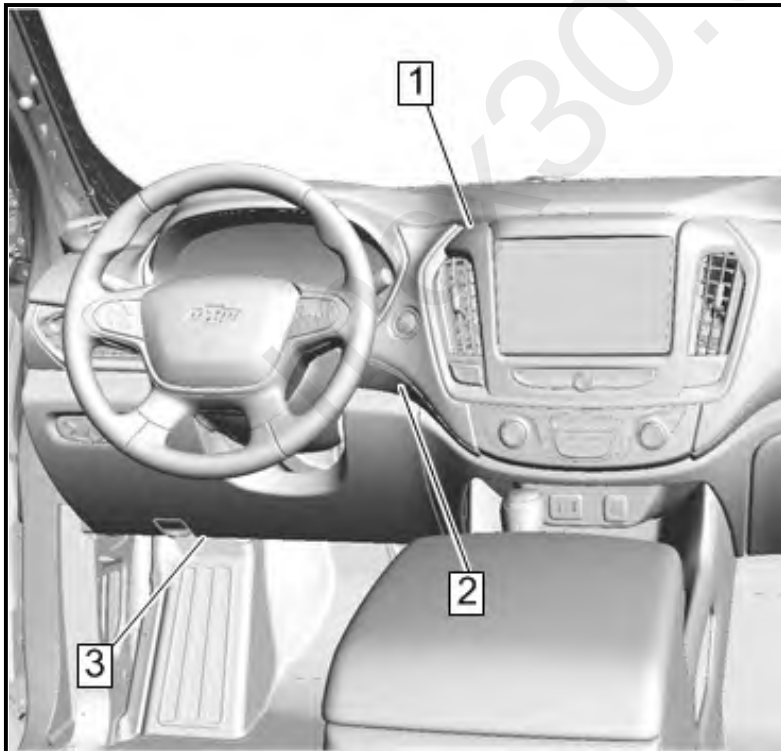


Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Evaporator Thermal Expansion Valve - Remove - [**Air Conditioning Refrigerant Heat Exchanger Replacement \(LFY\)**](#).

8. Heater Inlet Hose Connector (2) @ Heater Core Inlet Tube - Remove - [**Heater Inlet Hose Connector Replacement \(LFY\)**](#).

9. Heater Outlet Hose Connector (3) @ Heater Core Outlet Tube - Remove - [**Heater Outlet Hose Connector Replacement \(LFY\)**](#).

10.



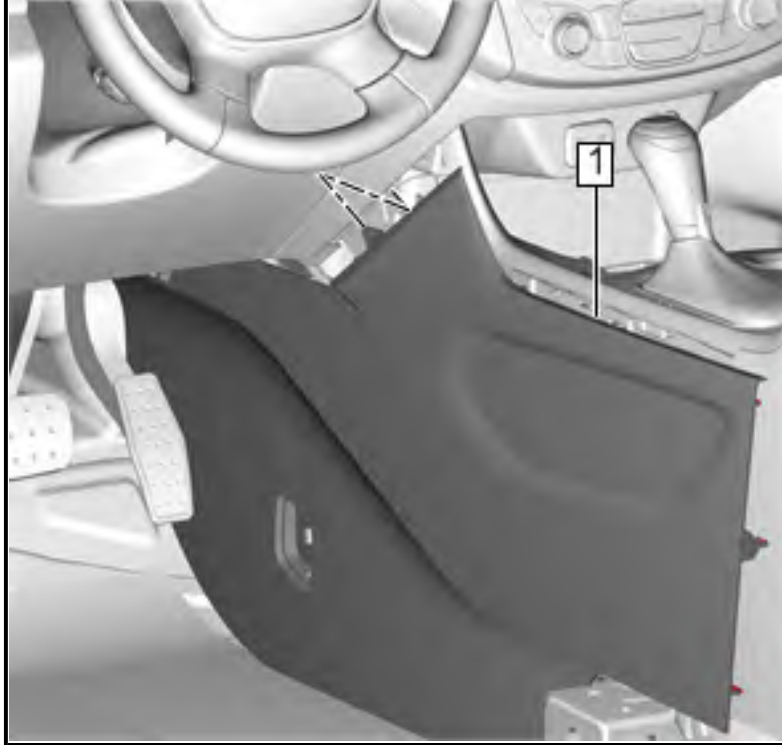
Instrument Panel Radio Front Trim Plate (1) - Remove - [**Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)**](#) [**Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)**](#).

11. Instrument Panel Trim Pad - Left Side (2) - Remove - [**Instrument Panel Trim Pad Replacement - Left Side**](#)

12. Instrument Panel Knee Bolster (3) - Remove - [**Instrument Panel Knee Bolster Replacement**](#)

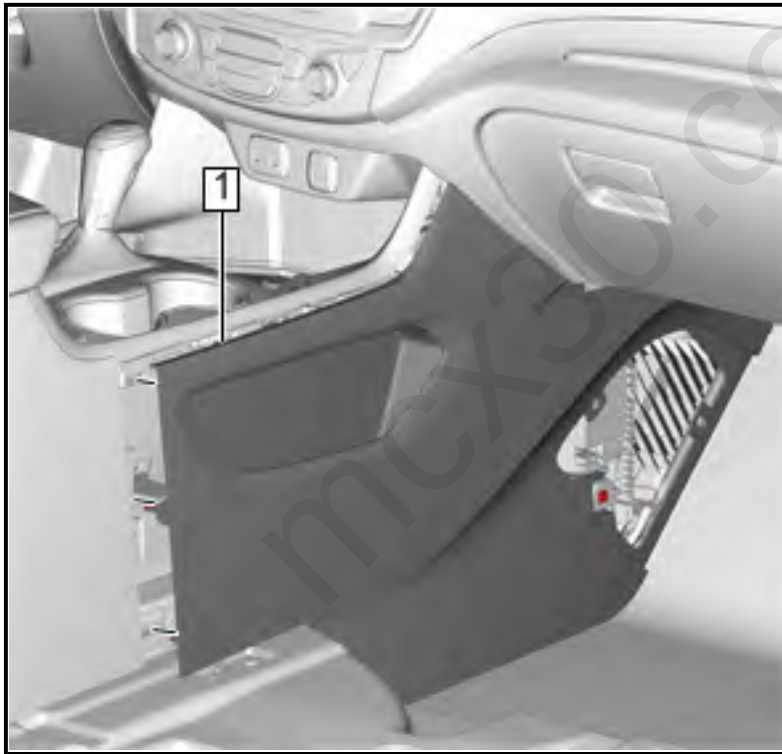
13.





Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)

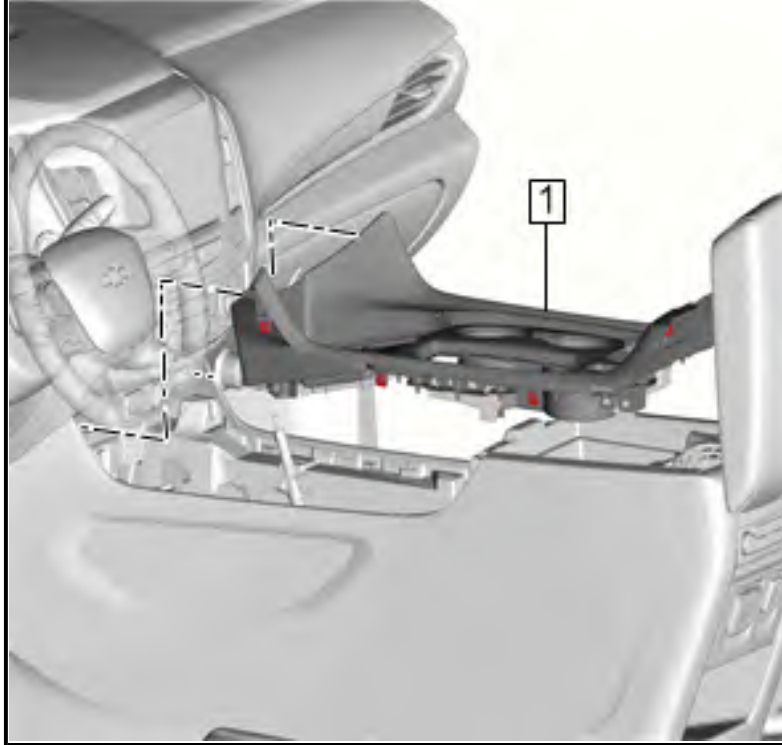
14.



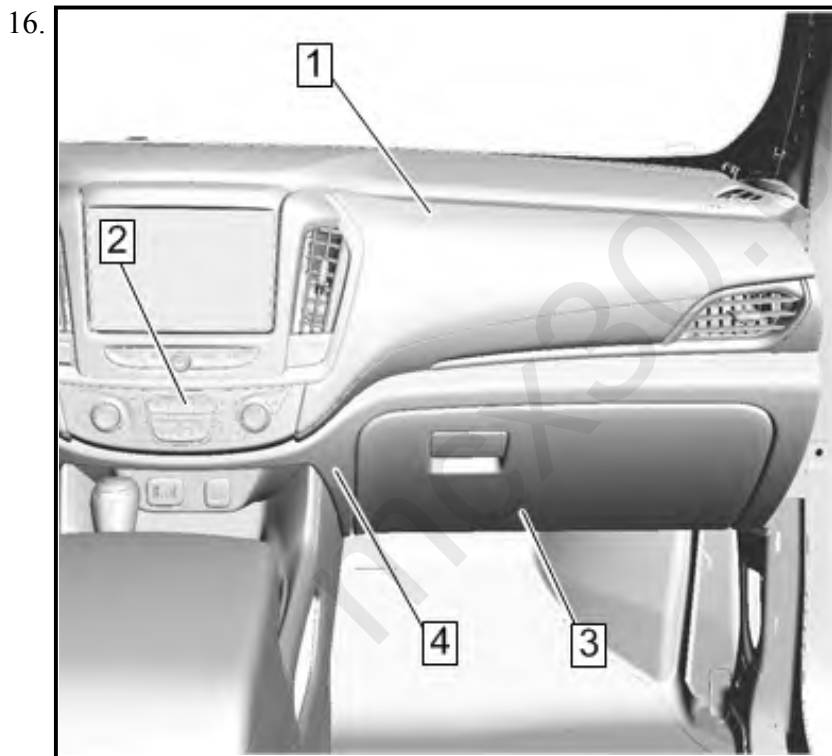
Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

15.





Front Floor Console Cup Holder Plate (1) - Remove - [Front Floor Console Cup Holder Plate Replacement](#)



Instrument Panel Trim Pad - Right Side (1) - Remove - [Instrument Panel Trim Pad Replacement - Right Side](#)

17. Heater and Air Conditioning User Interface Control (2) - Remove - [Heater and Air Conditioning User Interface Control Replacement](#)

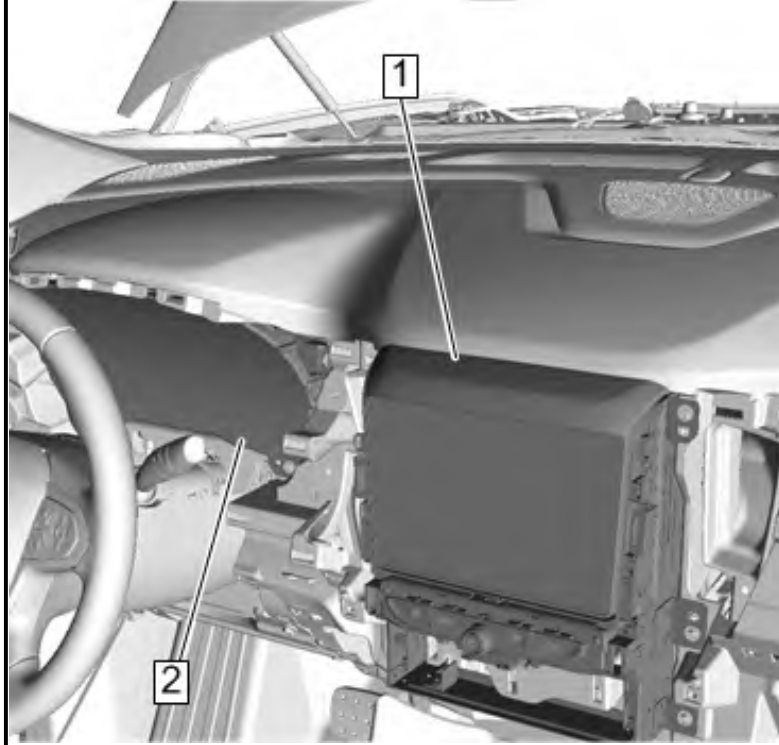
18. Disconnect all electrical connectors.

19. Instrument Panel Compartment Door (3) - Remove - [Instrument Panel Compartment Door Replacement](#)

20. Instrument Panel Compartment Door Opening Frame (4) - Remove - [Instrument Panel Compartment Door Opening Frame Replacement](#)



21.

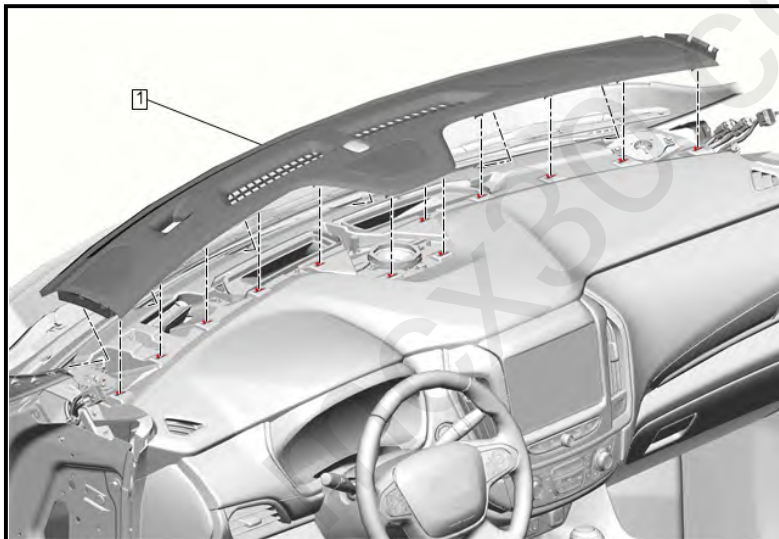


Radio Control (1) - Remove - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

22. Instrument Cluster (2) - Remove - [Instrument Cluster Replacement](#)

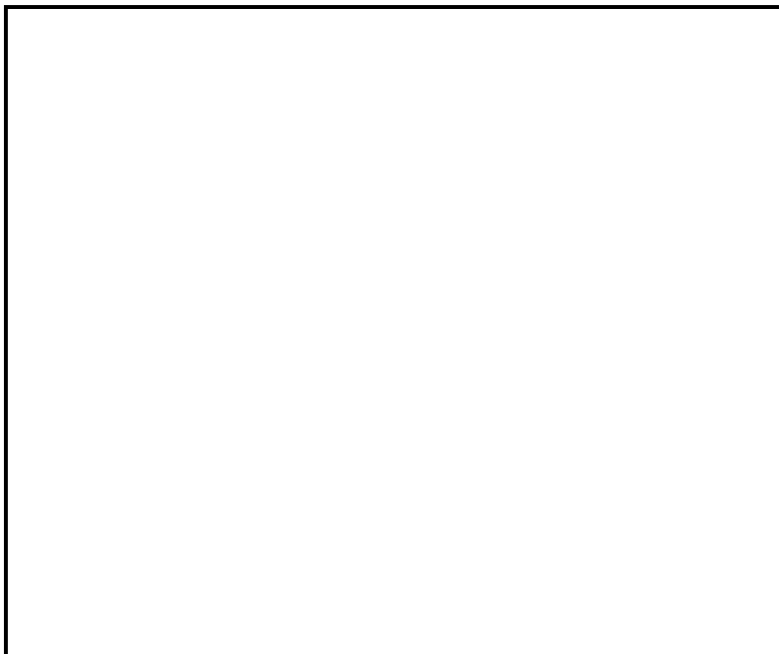
23. Disconnect the electrical connectors.

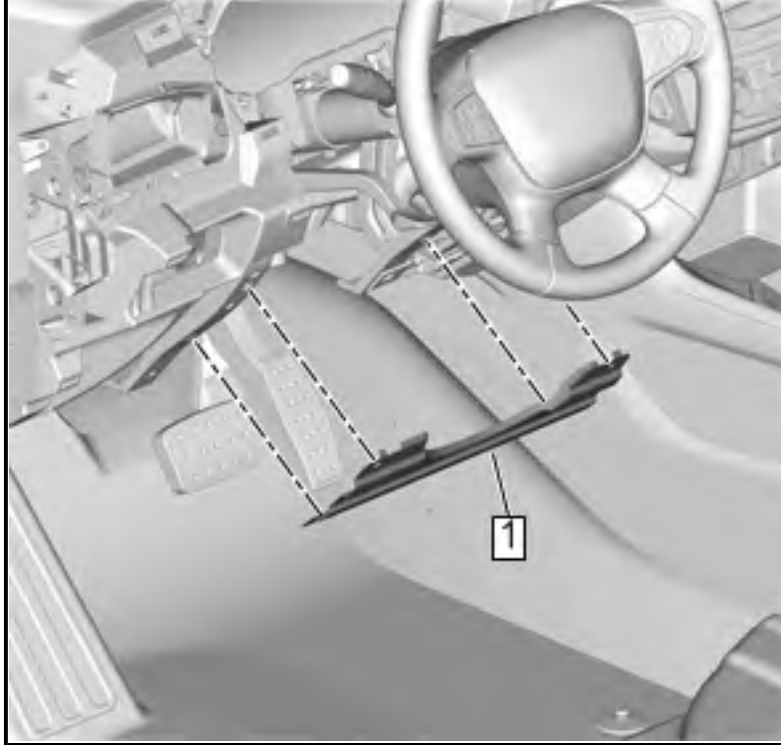
24.



Instrument Panel Extension (1) - Remove - [Instrument Panel Extension Replacement](#)

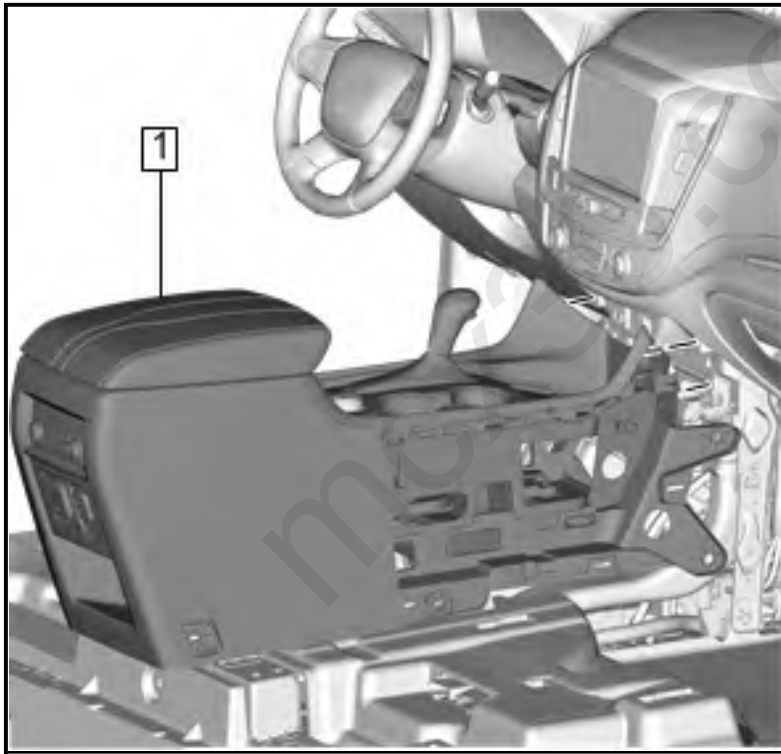
25.





Instrument Panel Knee Bolster Bracket (1) - Remove - [Instrument Panel Knee Bolster Bracket Replacement](#)

26.

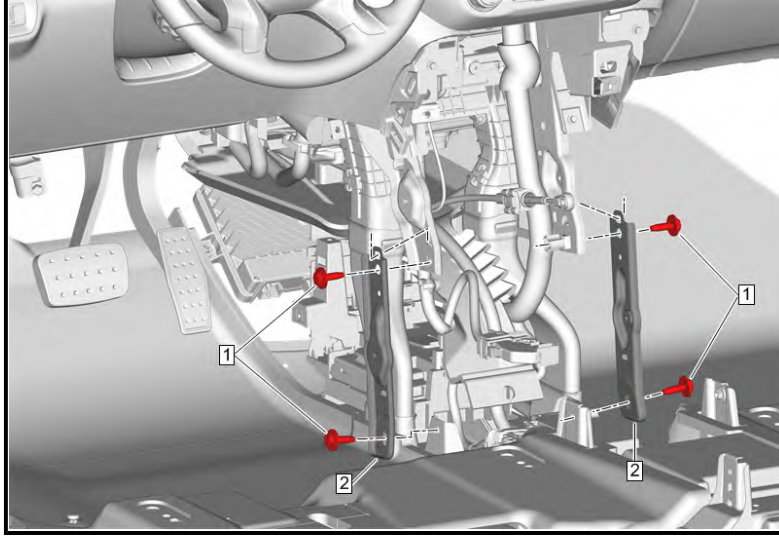


Front Floor Console (1) - Remove - [Front Floor Console Replacement](#)

27. Disconnect the electrical connectors.

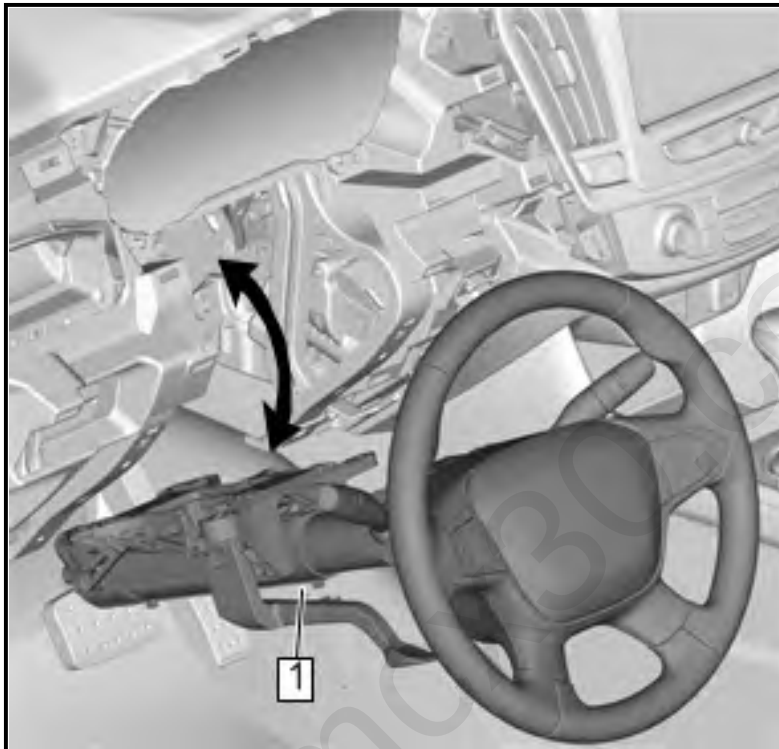
28.





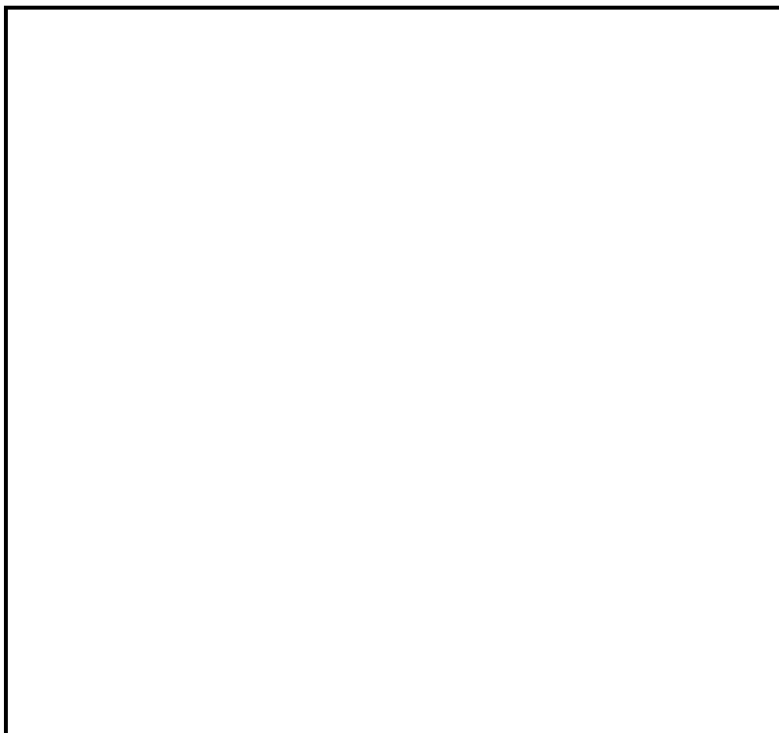
Instrument Panel Tie Bar Brace (2) - Remove - [Instrument Panel Tie Bar Brace Replacement](#)

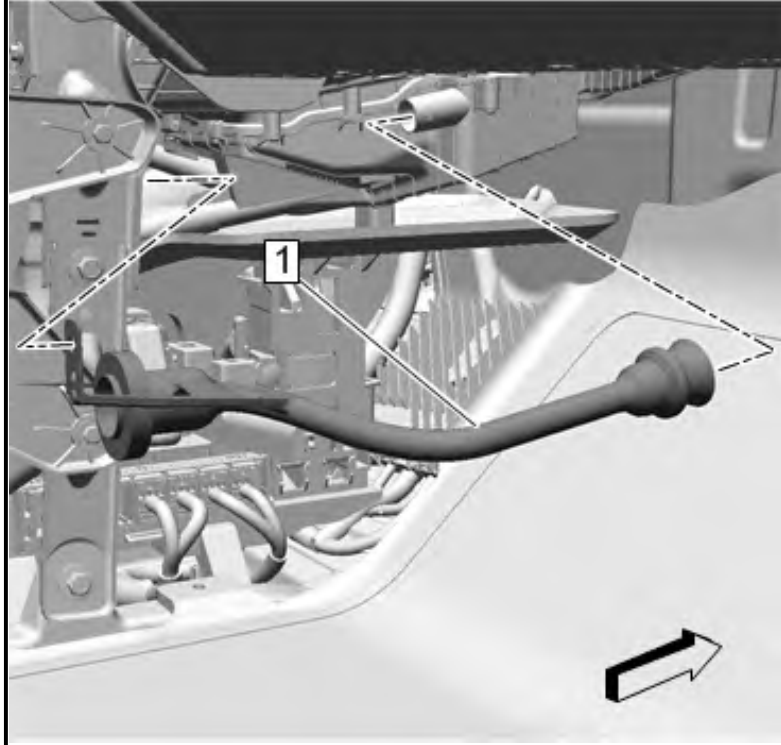
29.



Steering Column (1) - Remove - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

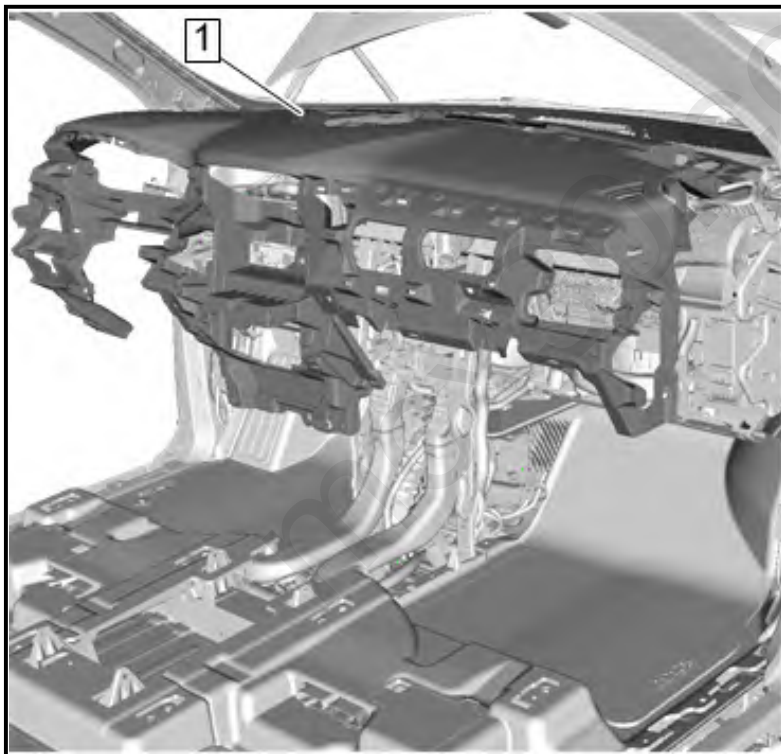
30.





Front Floor Console Auxiliary Cooling Intermediate Duct (1) - Remove - [Front Floor Console Auxiliary Cooling Intermediate Duct Replacement](#)

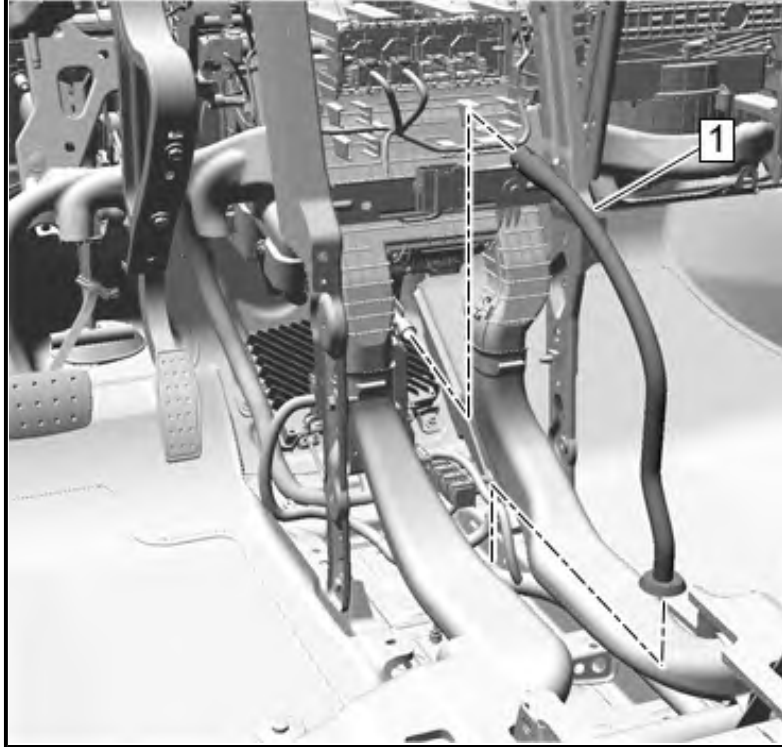
31.



Instrument Panel (1) - Remove - [Instrument Panel Assembly Replacement](#)

32.

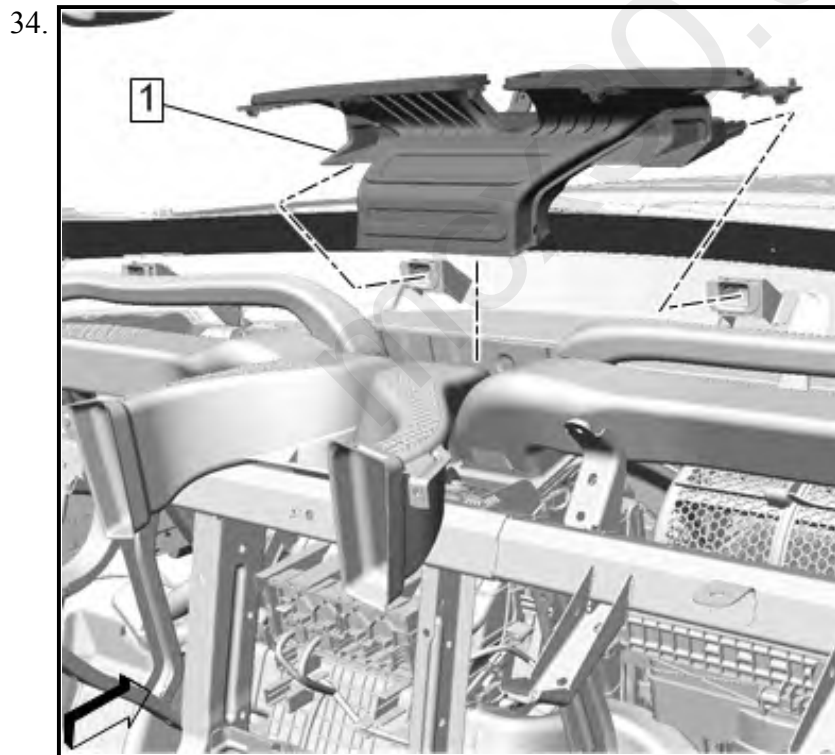




CAUTION: Refer to [HVAC Module Drain Tube Caution](#) .

Prior to removing the air conditioning evaporator and blower module drain tube/hose, use clean and absorbent shop clothes/towels to cover the electrical components protecting the electrical components from water damage.

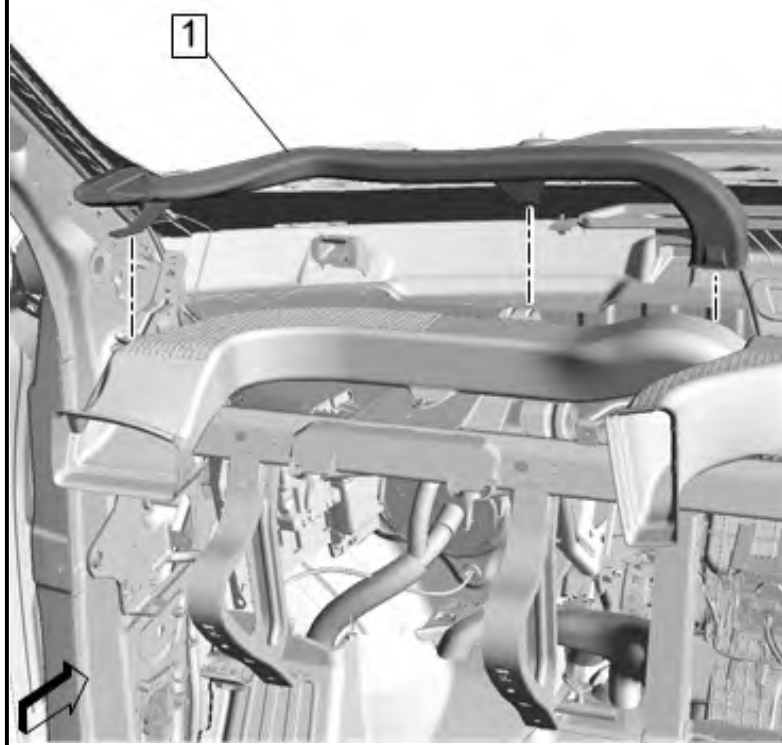
33. Air Conditioning Evaporator and Blower Module Drain Hose (1) - Remove



Windshield Defroster Outlet Duct (1) - Remove - [Windshield Defroster Outlet Duct Replacement](#)

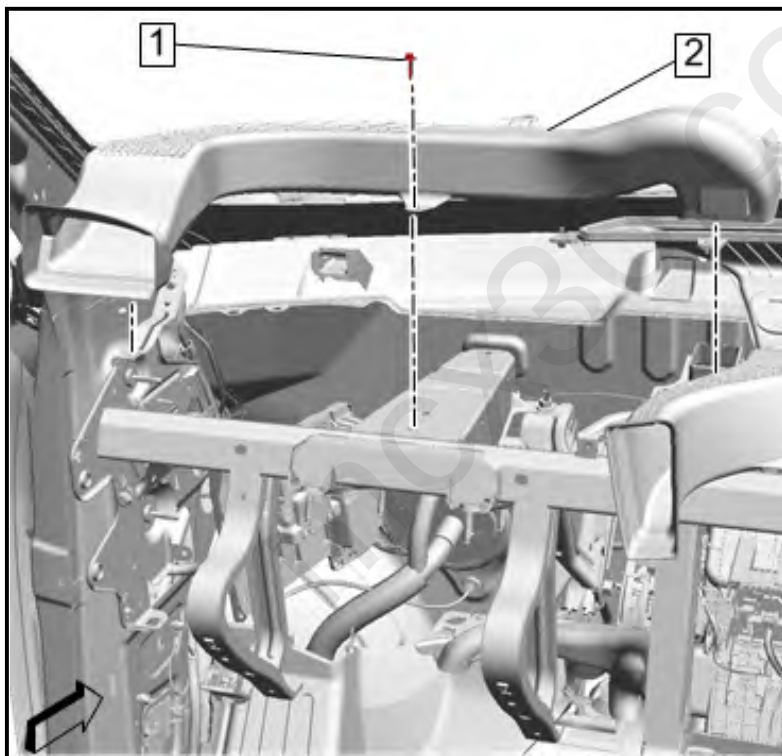
35.





Side Window Defogger Outlet Duct - Left Side (1) - Remove - [Side Window Defogger Outlet Duct Replacement - Left Side](#)

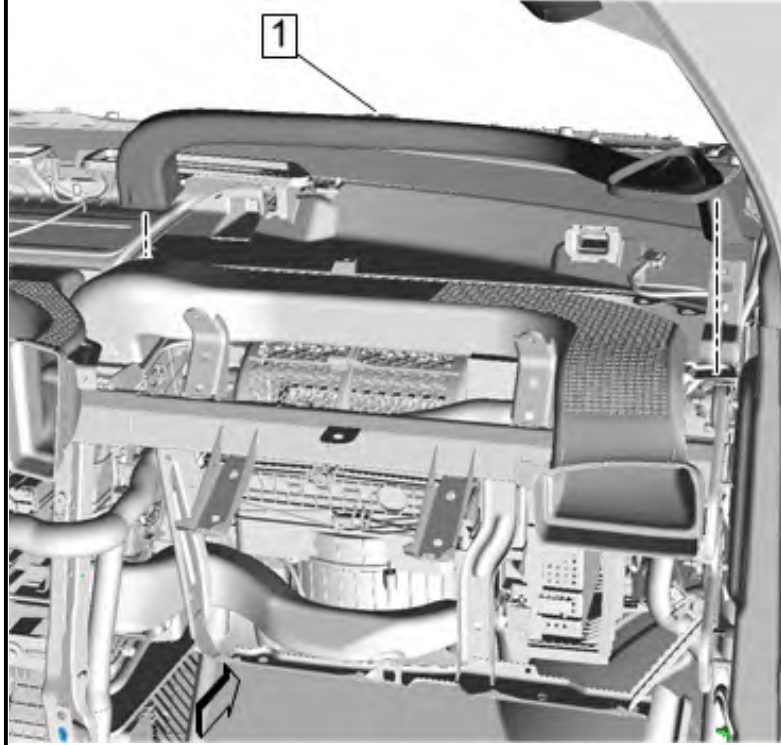
36.



Instrument Panel Outer Air Outlet Duct - Left Side (2) - Remove - [Instrument Panel Outer Air Outlet Duct Replacement - Left Side](#)

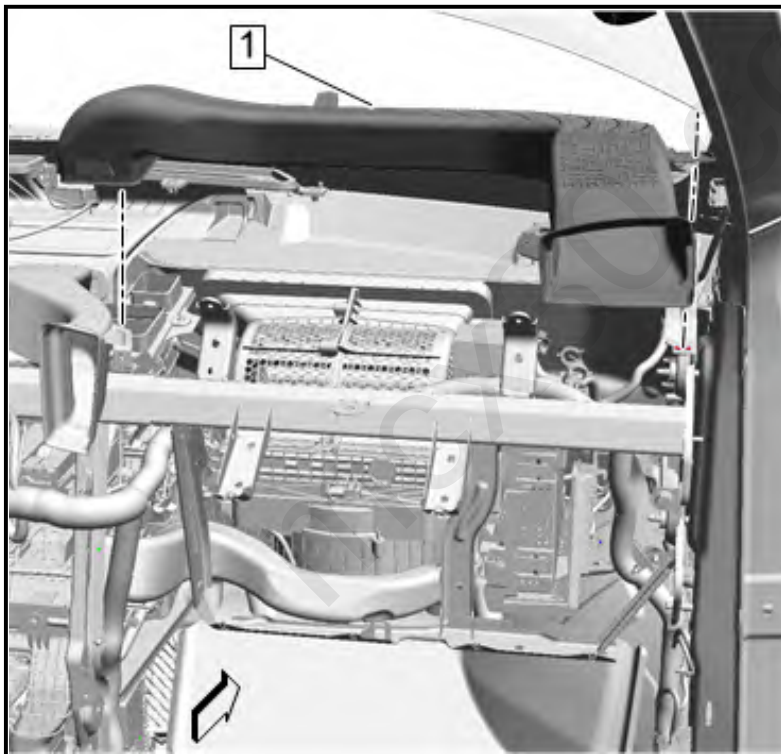
37.





Side Window Defogger Outlet Duct - Right Side (1) - Remove - [Side Window Defogger Outlet Duct Replacement - Right Side](#)

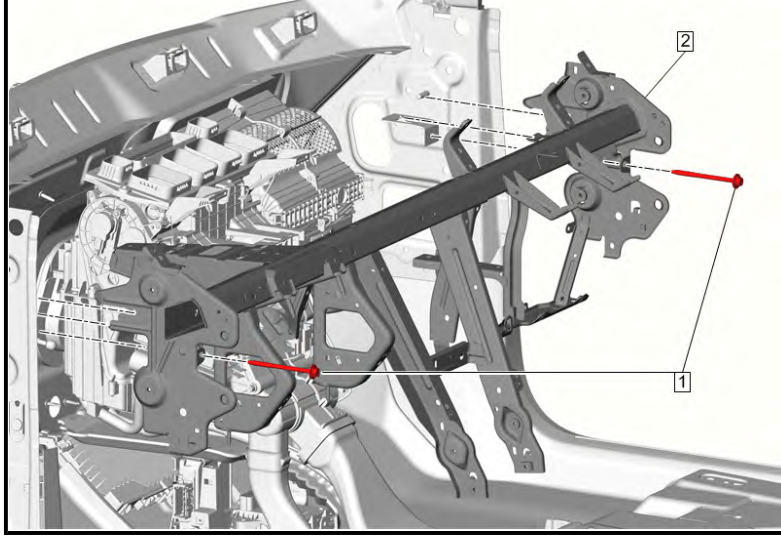
38.



Instrument Panel Outer Air Outlet Duct - Right Side (1) - Remove - [Instrument Panel Outer Air Outlet Duct Replacement - Right Side](#)

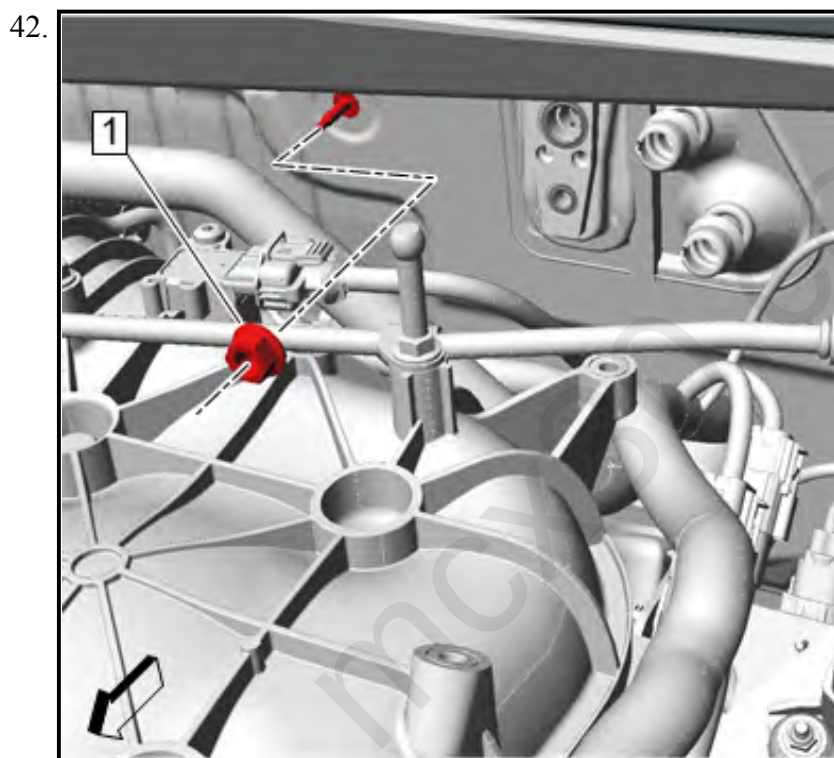
39.





Support the Heater and Air Conditioning Evaporator and Blower Module.

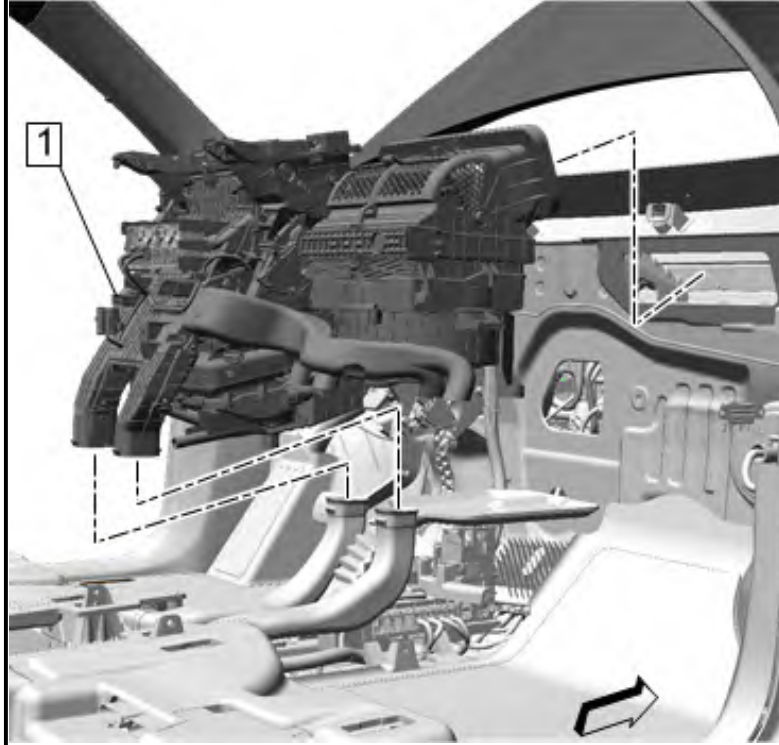
40. Instrument Panel Tie Bar (2) - Remove - [Instrument Panel Tie Bar Replacement](#)
41. Disconnect the instrument panel wiring connectors.



Heater and Air Conditioning Evaporator and Blower Module Nut (1) @ Cowl Panel - Remove



- 43.

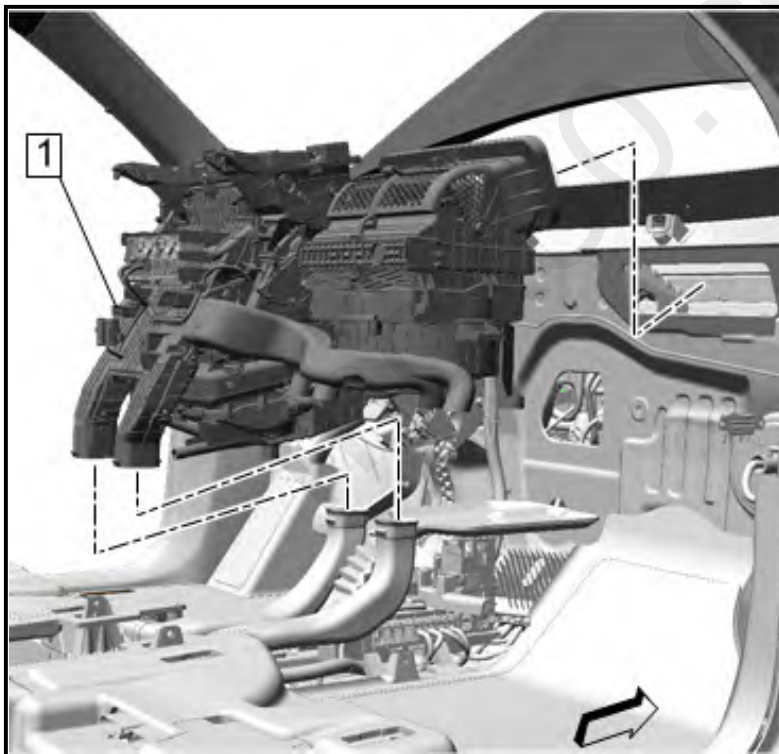


Heater and Air Conditioning Evaporator and Blower Module (1) - Remove

44. Transfer all necessary components.

Installation Procedure

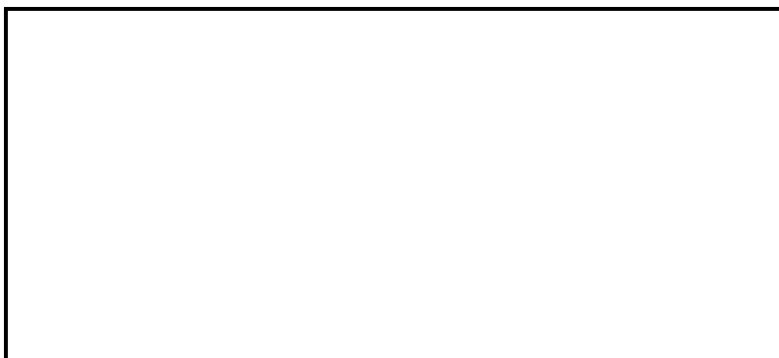
1.

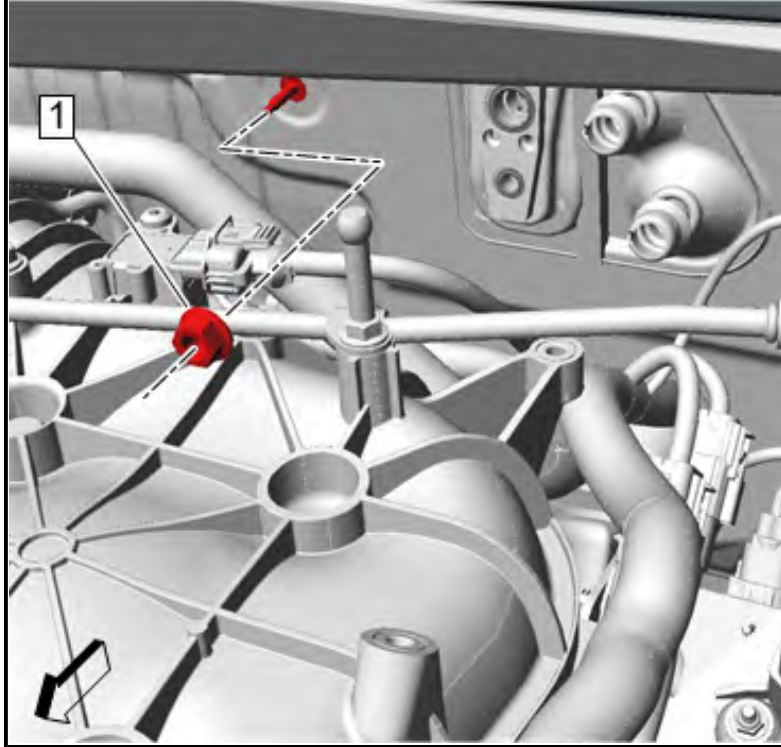


Heater and Air Conditioning Evaporator and Blower Module (1) - Install onto the vehicle.

2. Support the Heater and Air Conditioning Evaporator and Blower Module.

3.



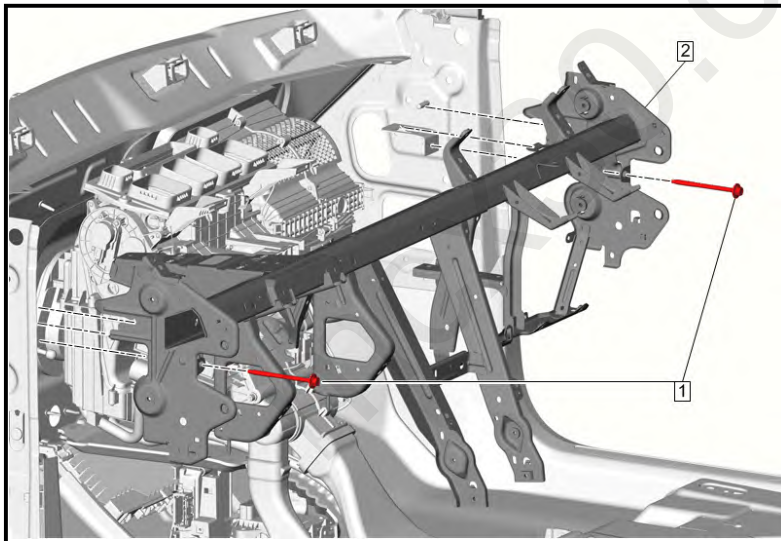


CAUTION: Refer to [Fastener Caution](#) .

Heater and Air Conditioning Evaporator and Blower Module Nut (1) @ Cowl Panel - Install and tighten 9.0 N.m (80 lb in)

4. Remove the support from the Heater and Air Conditioning Evaporator and Blower Module.

5.

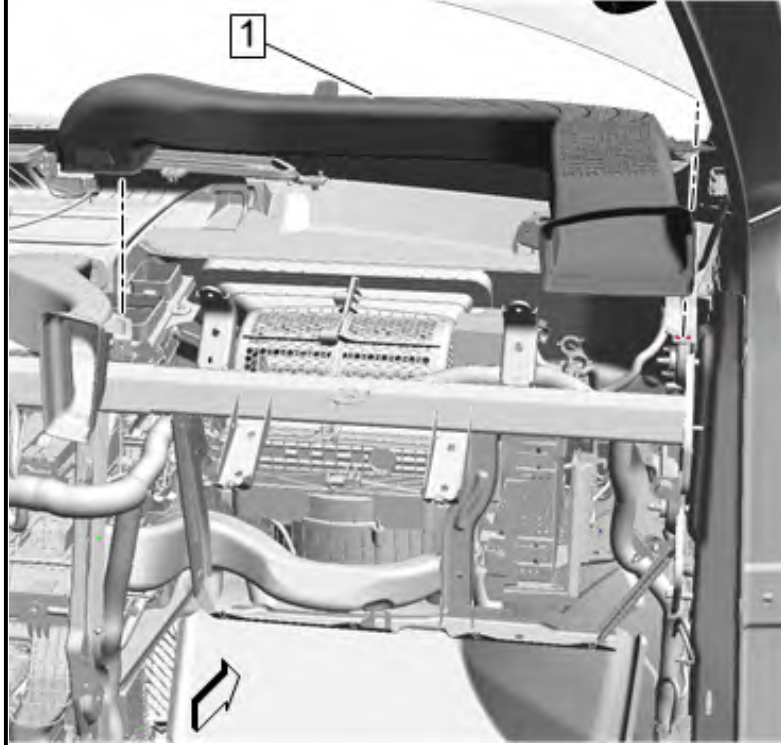


Instrument Panel Tie Bar (2) - Install - [Instrument Panel Tie Bar Replacement](#)

6. Connect the instrument panel wiring connectors.

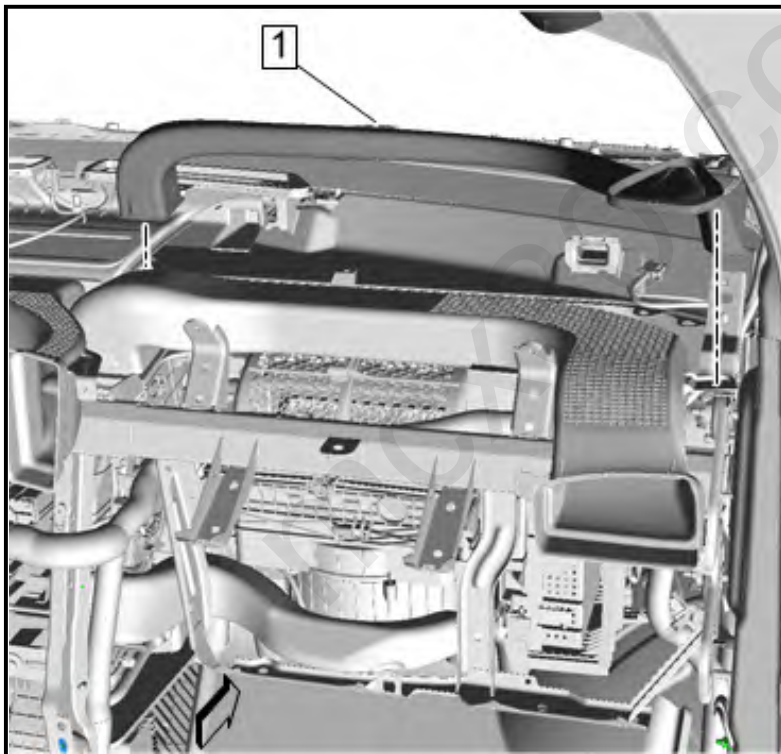
7.





Instrument Panel Outer Air Outlet Duct - Right Side (1) - Install - [Instrument Panel Outer Air Outlet Duct Replacement - Right Side](#)

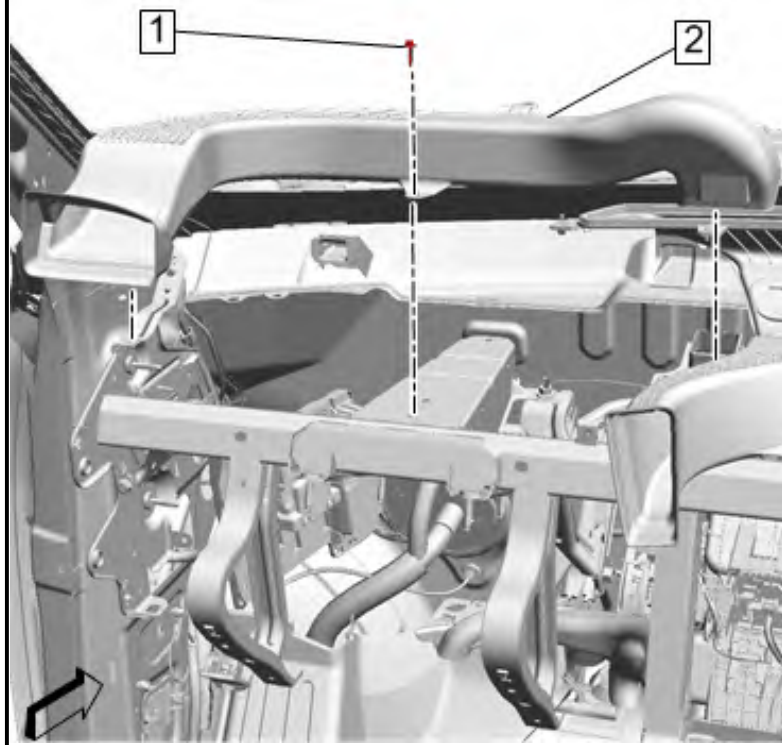
8.



Side Window Defogger Outlet Duct - Right Side (1) - Install - [Side Window Defogger Outlet Duct Replacement - Right Side](#)

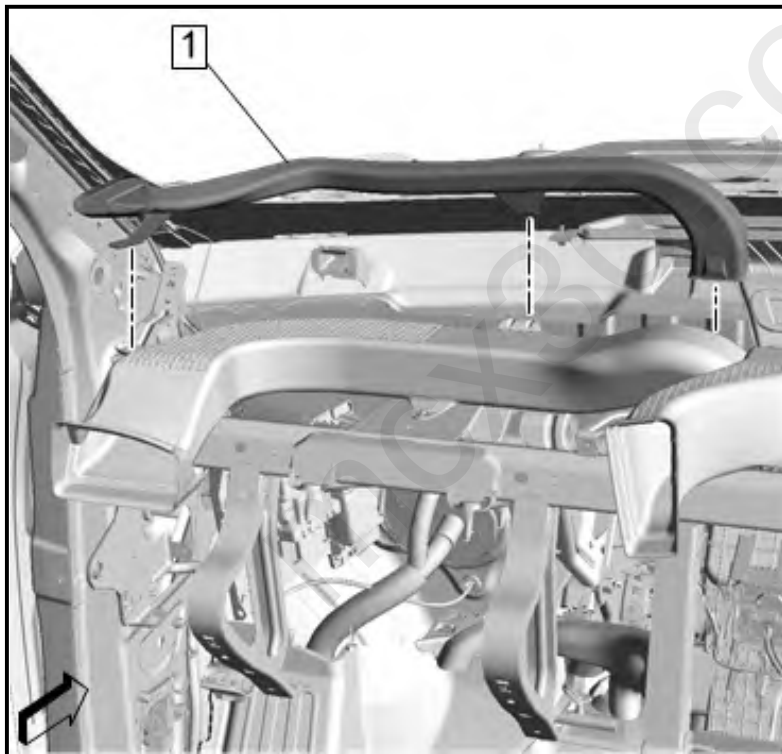
9.





Instrument Panel Outer Air Outlet Duct - Left Side (2) - Install - [Instrument Panel Outer Air Outlet Duct Replacement - Left Side](#)

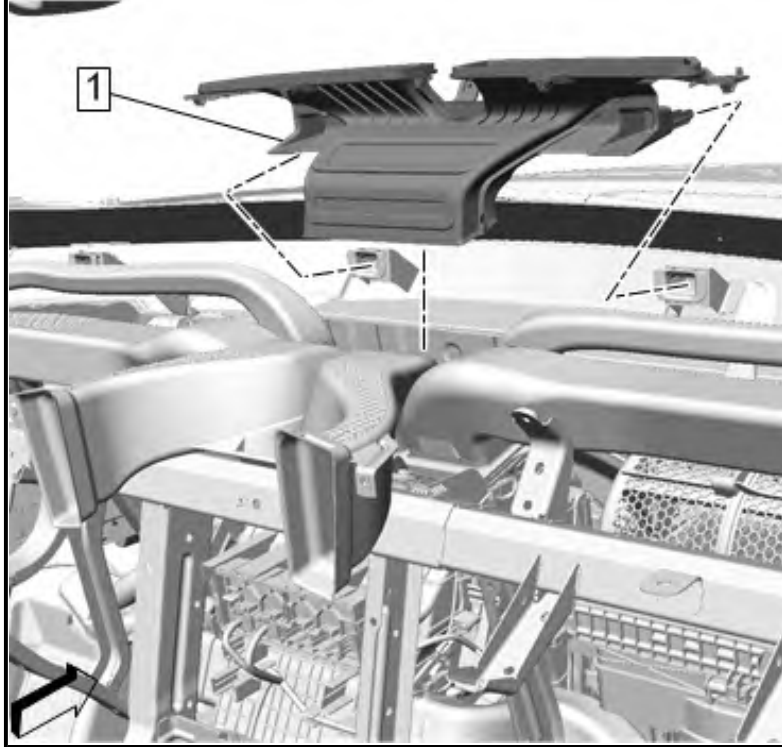
10.



Side Window Defogger Outlet Duct - Left Side (1) - Install - [Side Window Defogger Outlet Duct Replacement - Left Side](#)

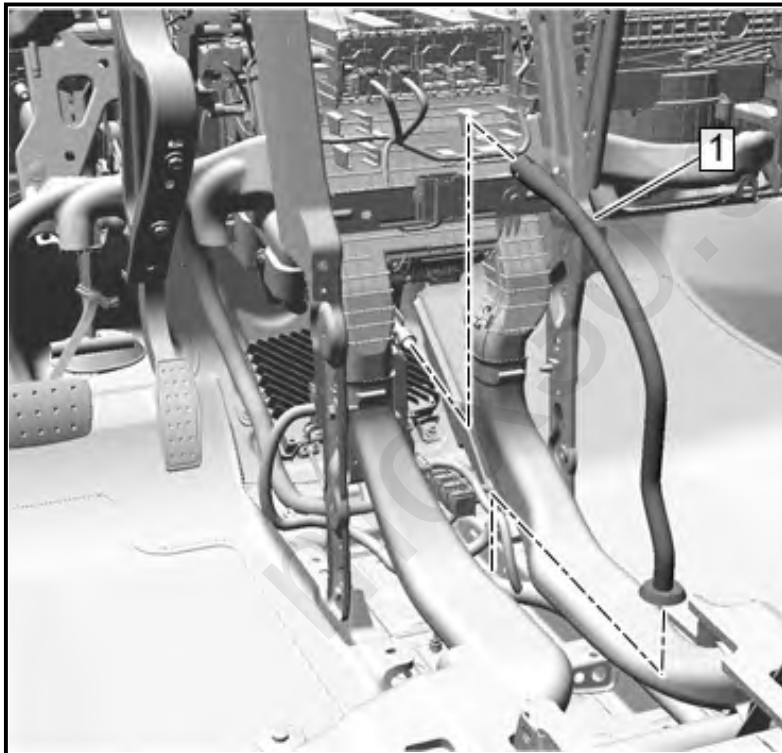
11.





Windshield Defroster Outlet Duct (1) - Install - [Windshield Defroster Outlet Duct Replacement](#)

12.



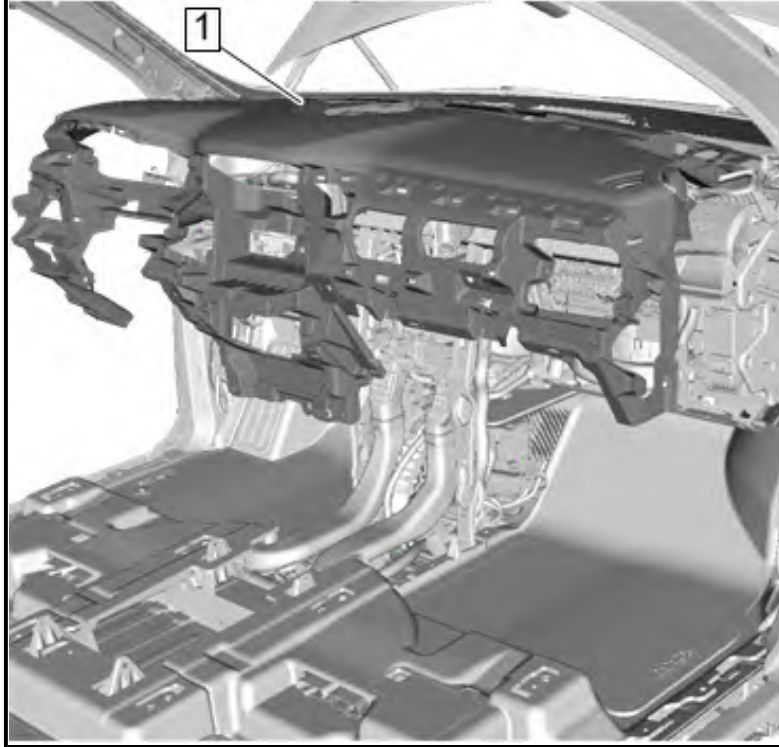
CAUTION: Refer to [HVAC Module Drain Tube Caution](#) .

Air Conditioning Evaporator and Blower Module Drain Hose (1) - Install

13. Remove the absorbent shop clothes/towels covering the electrical components.

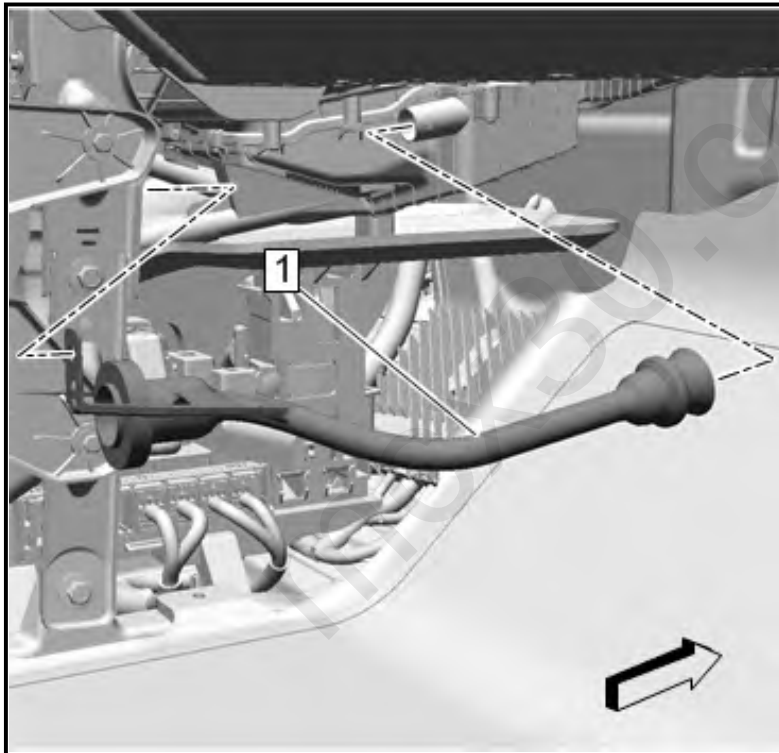
14.





Instrument Panel (1) - Install - [Instrument Panel Assembly Replacement](#)

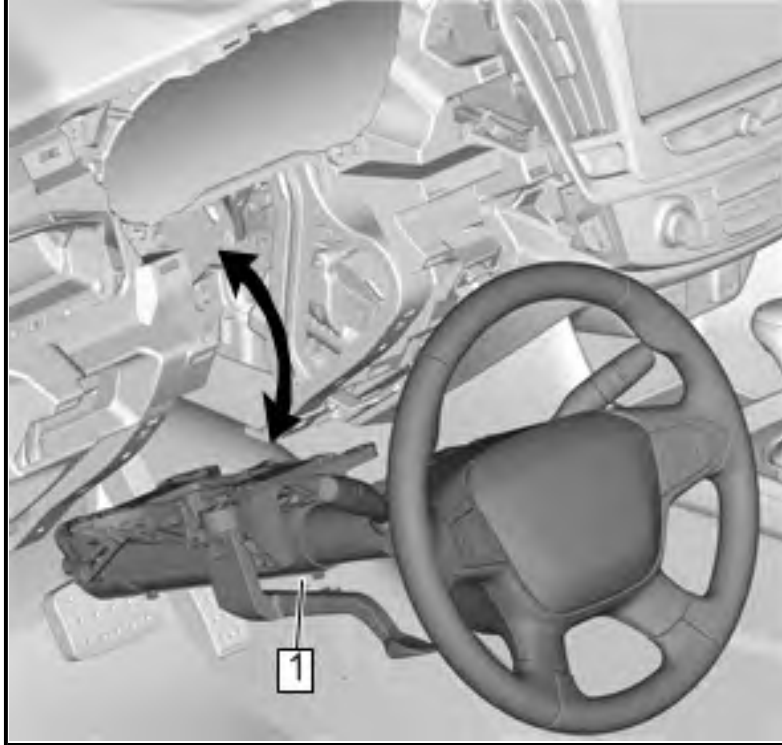
15.



Front Floor Console Auxiliary Cooling Intermediate Duct (1) - Install - [Front Floor Console Auxiliary Cooling Intermediate Duct Replacement](#)

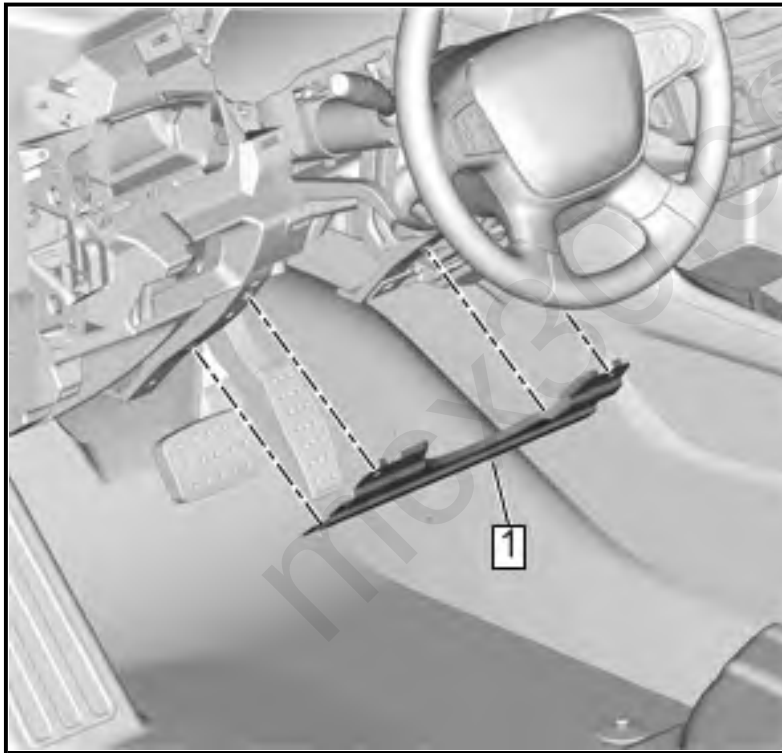
16.





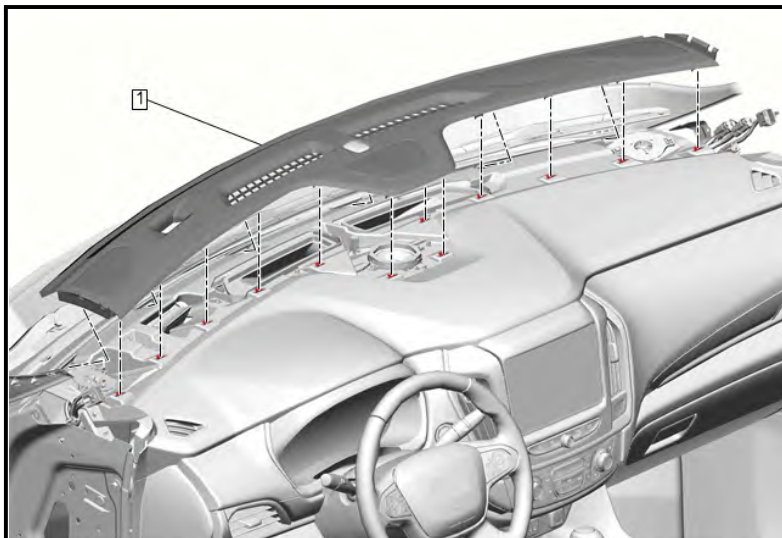
Steering Column (1) - Install - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

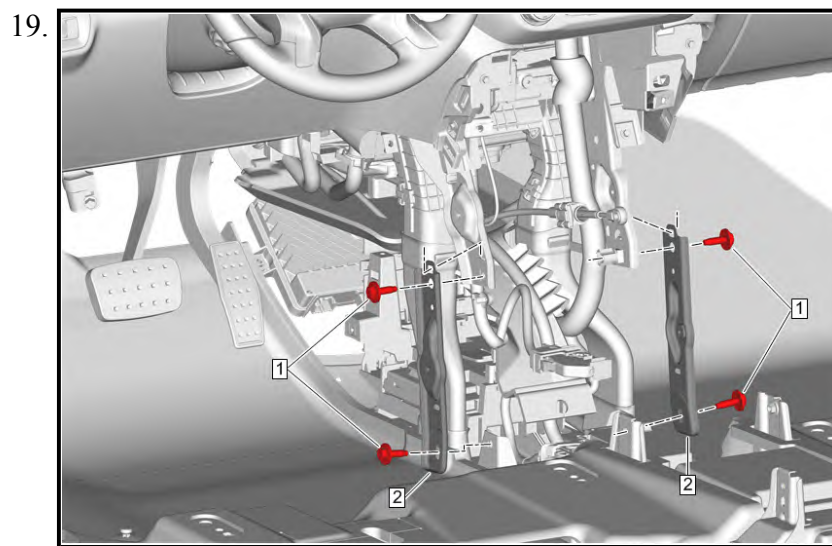
17.



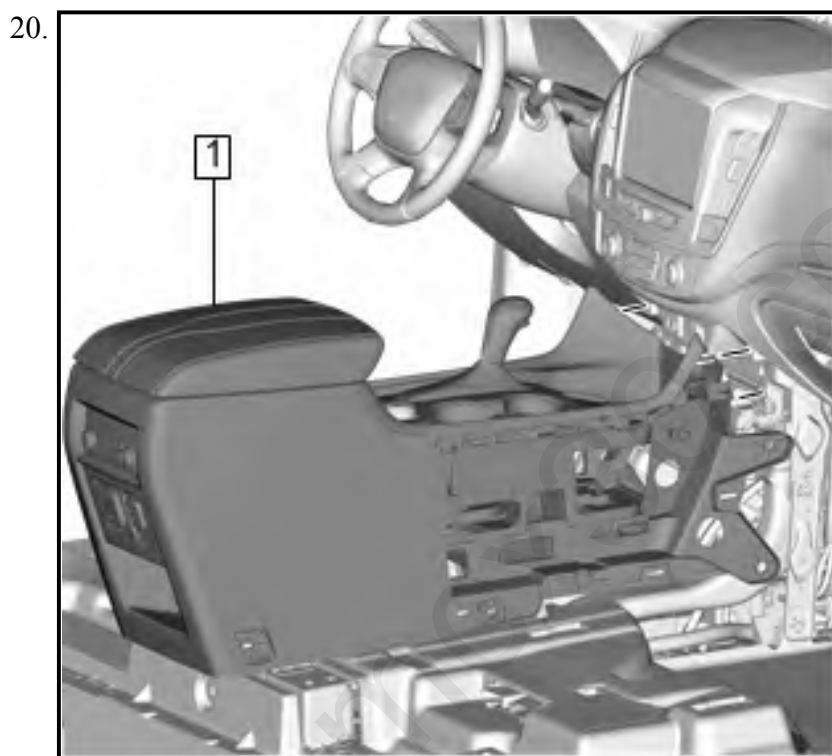
Instrument Panel Knee Bolster Bracket (1) - Install - [Instrument Panel Knee Bolster Bracket Replacement](#)

18.





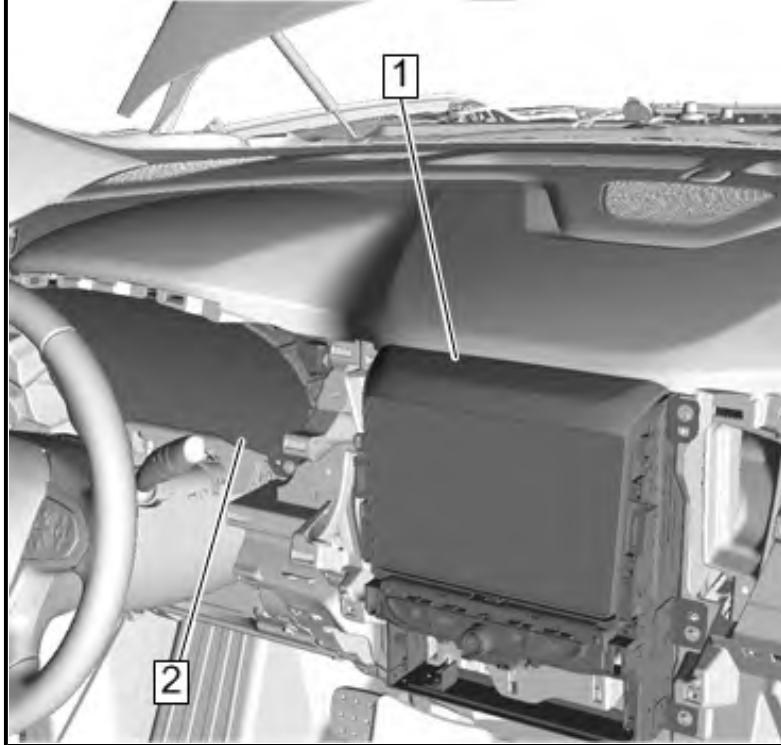
Instrument Panel Tie Bar Brace (2) - Install - [Instrument Panel Tie Bar Brace Replacement](#)



Connect the electrical connectors.

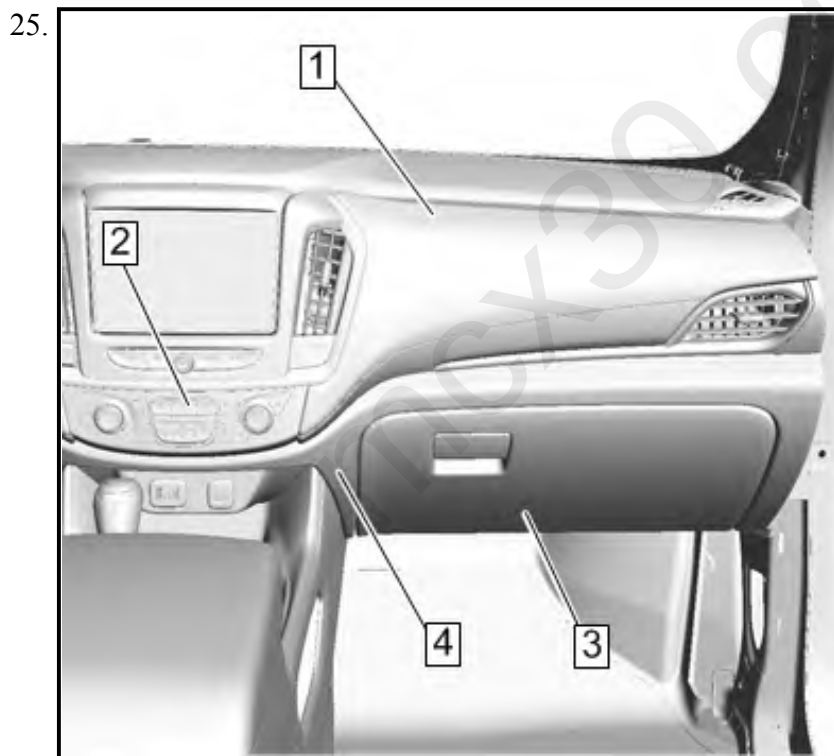
21. Front Floor Console (1) - Install - [Front Floor Console Replacement](#)





Connect the electrical connectors.

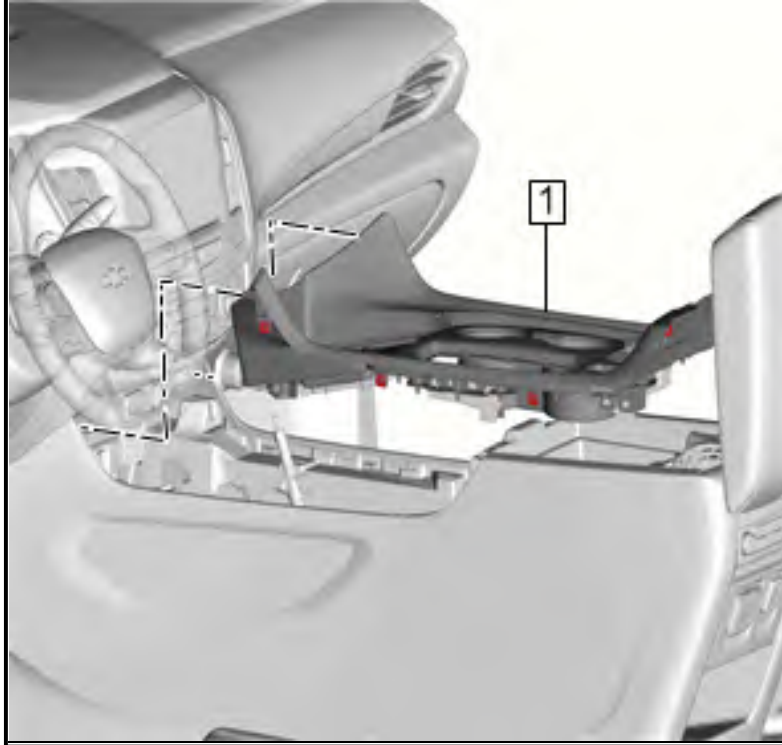
- 23. Instrument Cluster (2) - Install - [Instrument Cluster Replacement](#)
- 24. Radio Control (1) - Install - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)



Instrument Panel Compartment Door Opening Frame (4) - Install - [Instrument Panel Compartment Door Opening Frame Replacement](#)

- 26. Instrument Panel Compartment Door (3) - Install - [Instrument Panel Compartment Door Replacement](#)
- 27. Connect the electrical connectors.
- 28. Heater and Air Conditioning User Interface Control (2) - Install - [Heater and Air Conditioning User Interface Control Replacement](#)
- 29. Instrument Panel Trim Pad - Right Side (1) - Install - [Instrument Panel Trim Pad Replacement - Right Side](#)





Front Floor Console Cup Holder Plate (1) - Install - [Front Floor Console Cup Holder Plate Replacement](#)

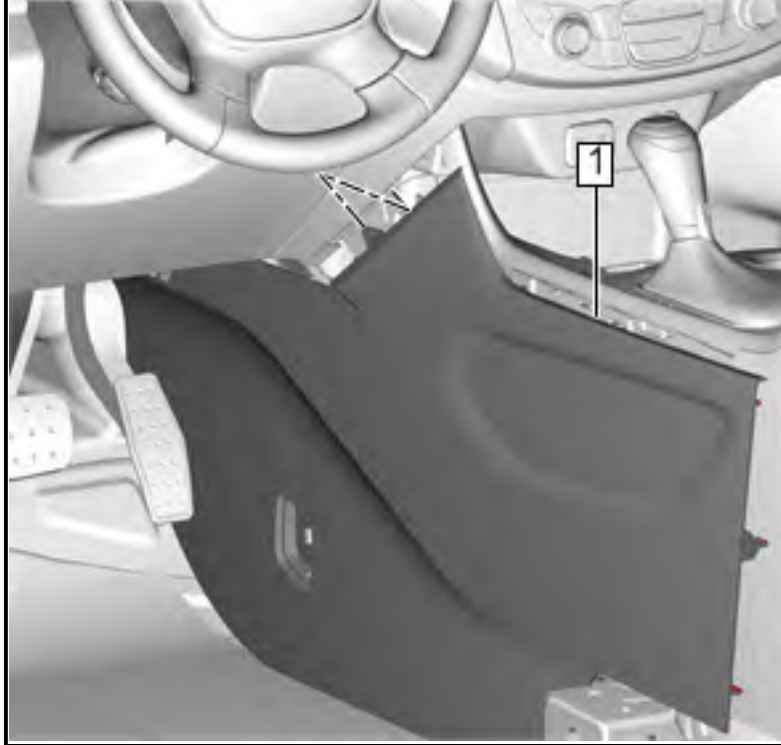
31.



Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

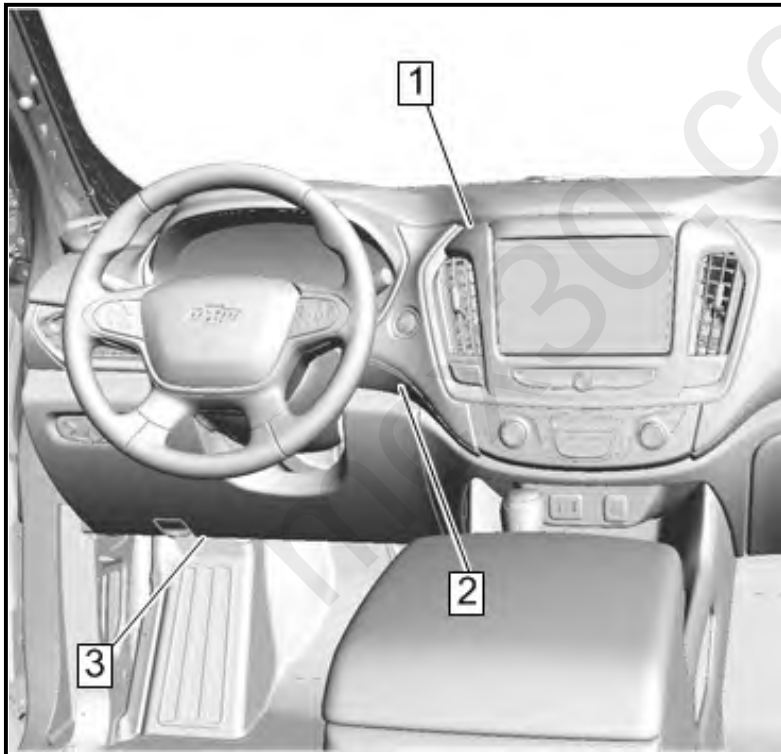
32.





Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

33.



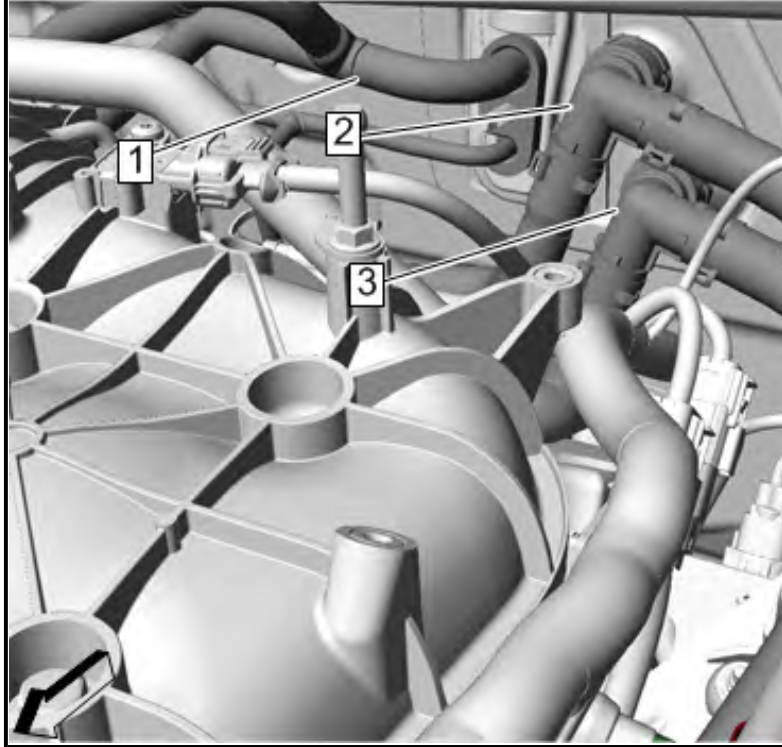
Instrument Panel Trim Pad - Left Side (2) - Install - [Instrument Panel Trim Pad Replacement - Left Side](#)

34. Instrument Panel Radio Front Trim Plate (1) - Install - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\) Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)

35. Instrument Panel Knee Bolster (3) - Install - [Instrument Panel Knee Bolster Replacement](#)

36.

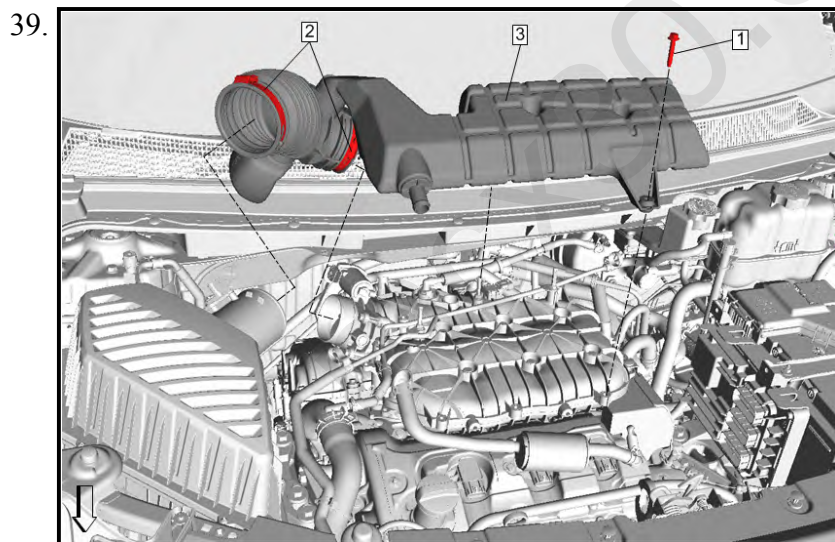




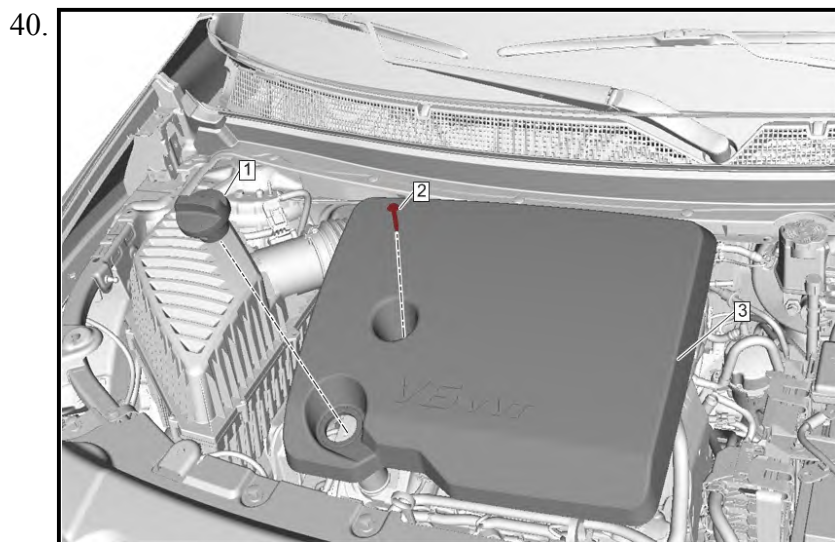
Heater Outlet Hose Connector (3) @ Heater Core Outlet Tube - Install - [Heater Outlet Hose Connector Replacement \(LFY\)](#)

37. Heater Inlet Hose Connector (2) @ Heater Core Inlet Tube - Install - [Heater Inlet Hose Connector Replacement \(LFY\)](#)

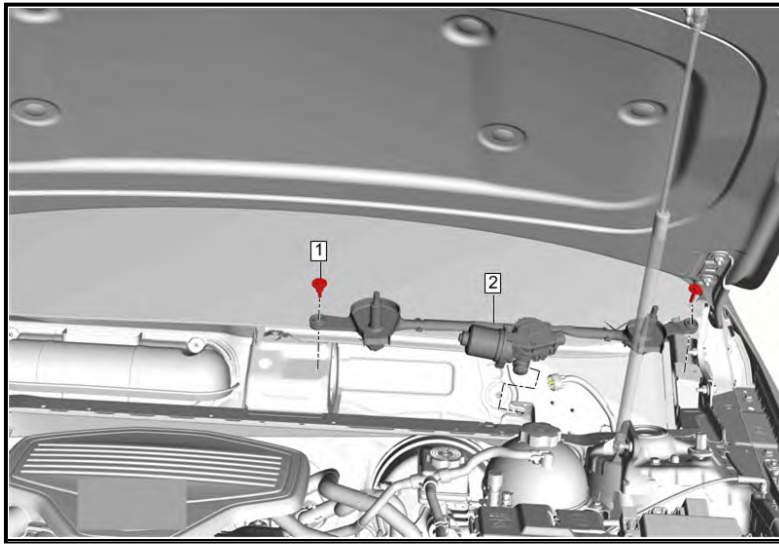
38. Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Evaporator Thermal Expansion Valve - Install - [Air Conditioning Refrigerant Heat Exchanger Replacement \(LFY\)](#)



Air Cleaner Outlet Duct (3) - Install - [Air Cleaner Outlet Duct Replacement](#)



41.



Windshield Wiper Transmission (2) - Install - [Windshield Wiper Transmission Replacement](#)

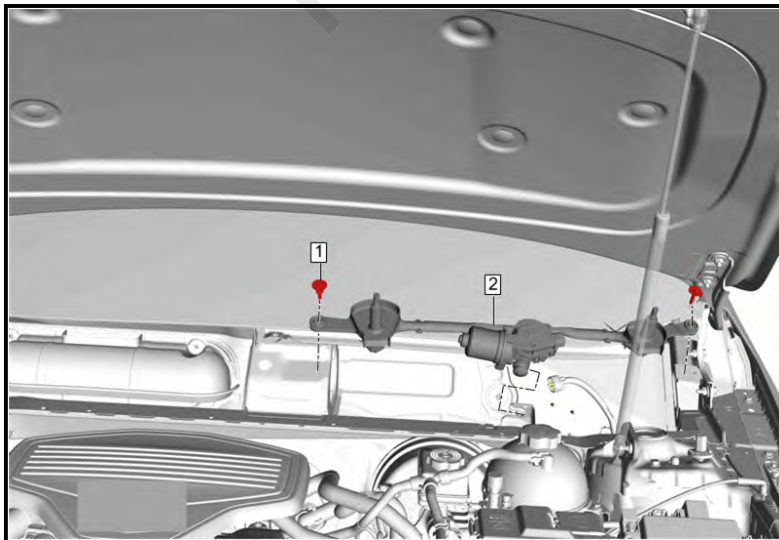
42. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#) .
43. Evacuate and charge the refrigerant system. [Refrigerant Recovery and Recharging \(R-134a\) Refrigerant Recovery and Recharging \(R-1234yf\)](#)
44. Connect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
45. Inspect for coolant leaks.
46. Visually inspect for air conditioning system refrigerant leaks.
47. Clear the DTCs from the heater and air conditioning remote control module.

HEATER AND AIR CONDITIONING EVAPORATOR AND BLOWER MODULE REMOVAL AND INSTALLATION (LTG)

Removal Procedure

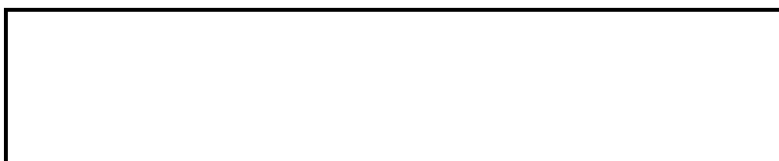
1. Disconnect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
2. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\) Refrigerant Recovery and Recharging \(R-1234yf\)](#)
3. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#)

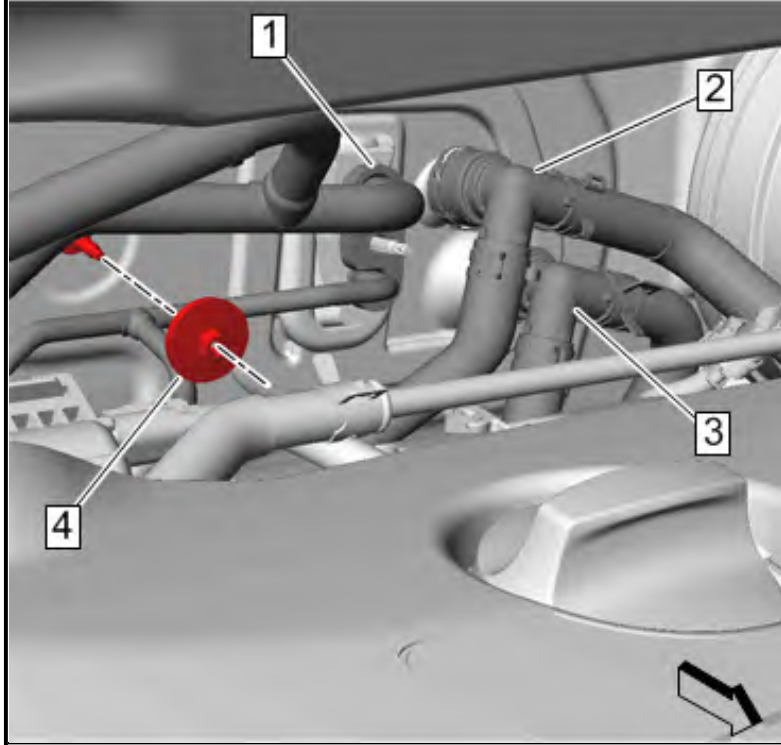
4.



Windshield Wiper Transmission (2) - Remove - [Windshield Wiper Transmission Replacement](#)

5.

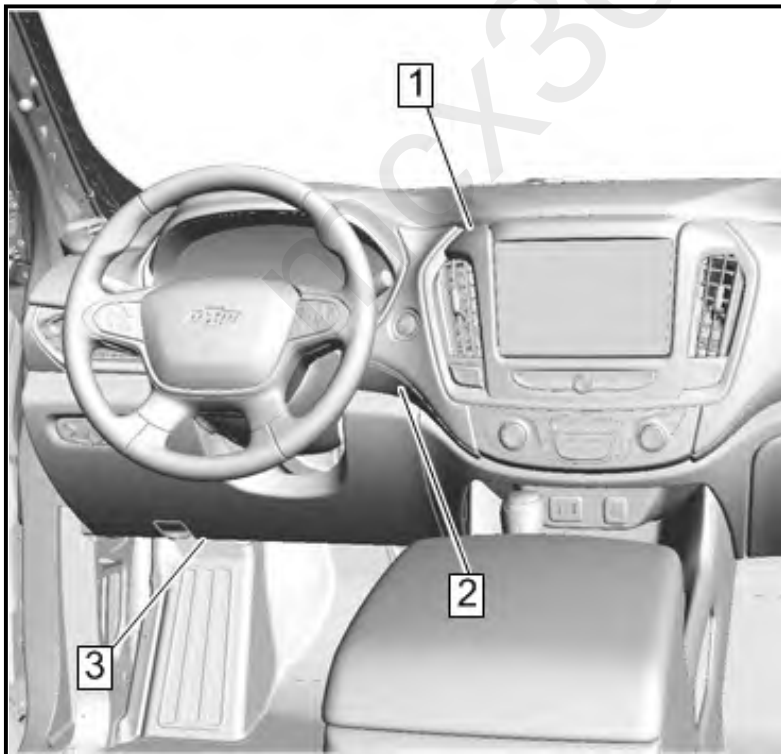




Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Evaporator Thermal Expansion Valve - Remove - [Air Conditioning Refrigerant Heat Exchanger Replacement \(LTG\)](#).

6. Heater Inlet Hose Connector (2) @ Heater Core Inlet Tube - Remove - [Heater Inlet Hose Connector Replacement \(LTG\)](#).
7. Heater Outlet Hose Connector (3) @ Heater Core Outlet Tube - Remove - [Heater Outlet Hose Connector Replacement \(LTG at Heater Inlet Hose Bracket\)](#)[Heater Outlet Hose Connector Replacement \(LTG At Heater Core Outlet Tube\)](#).
8. Heater and Air Conditioning Evaporator and Blower Module Nut (4) @ Cowl Panel - Remove

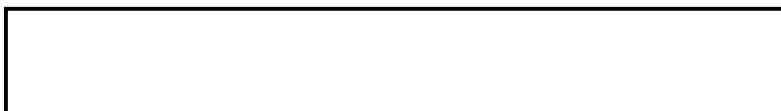
9.

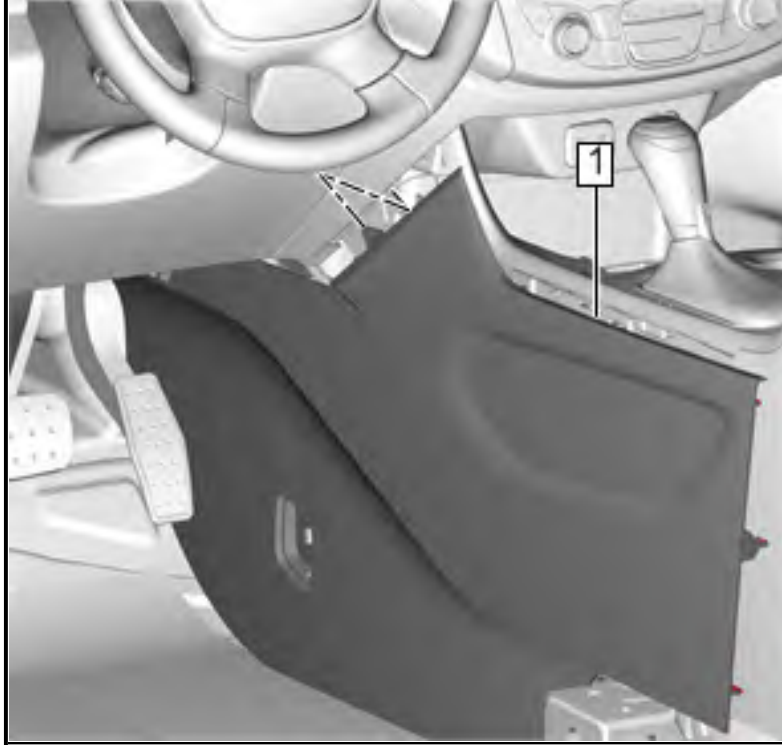


Instrument Panel Radio Front Trim Plate (1) - Remove - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#).

10. Instrument Panel Trim Pad - Left Side (2) - Remove - [Instrument Panel Trim Pad Replacement - Left Side](#)
11. Instrument Panel Knee Bolster (3) - Remove - [Instrument Panel Knee Bolster Replacement](#)

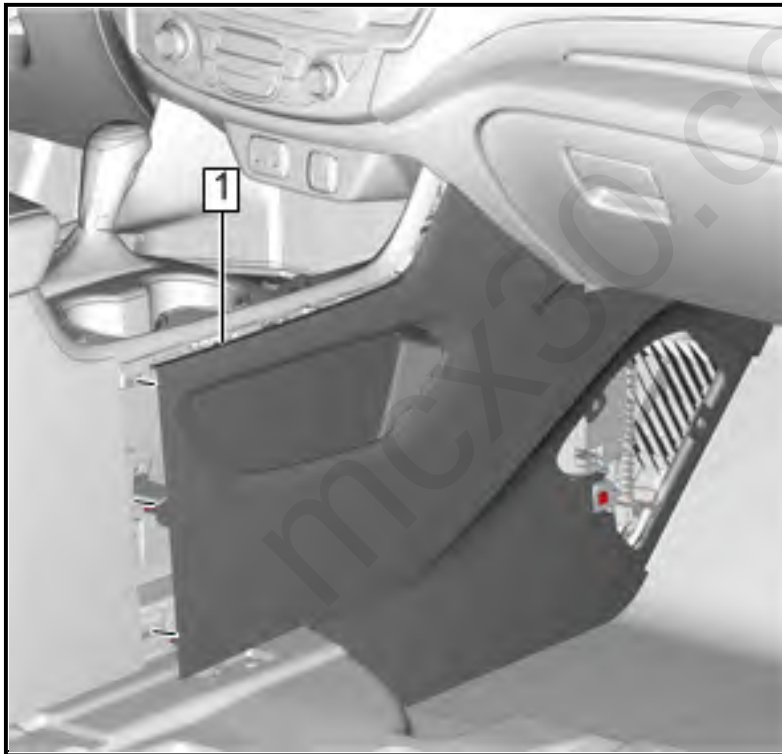
12.





Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)

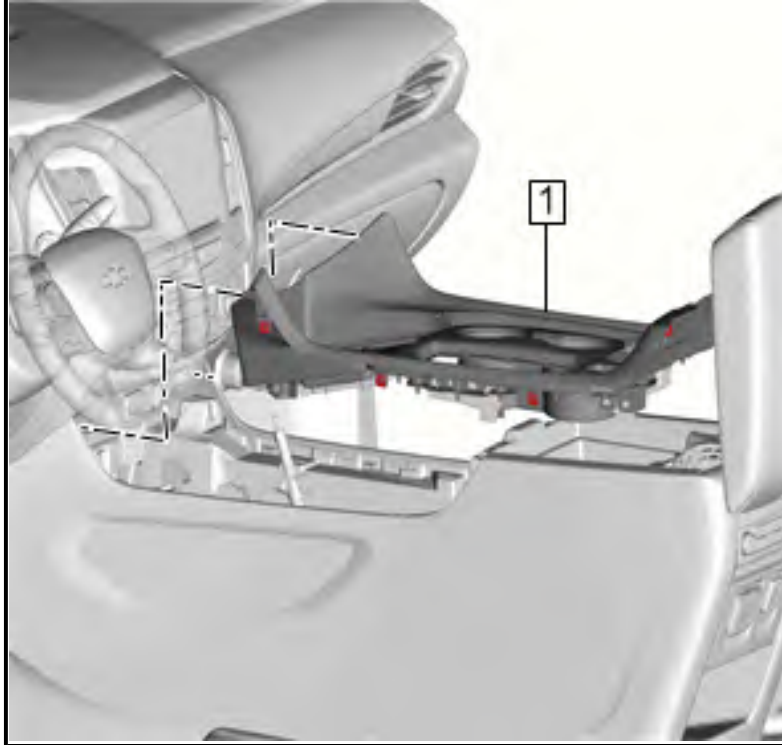
13.



Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

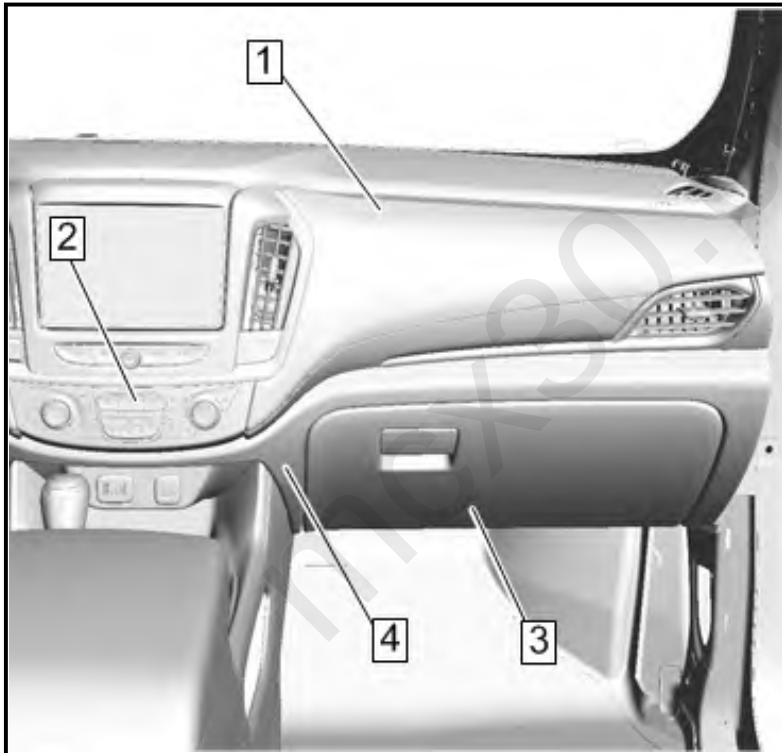
14.





Front Floor Console Cup Holder Plate (1) - Remove - [Front Floor Console Cup Holder Plate Replacement](#)

15.



Instrument Panel Trim Pad - Right Side (1) - Remove - [Instrument Panel Trim Pad Replacement - Right Side](#)

16. Heater and Air Conditioning User Interface Control (2) - Remove - [Heater and Air Conditioning User Interface Control Replacement](#)

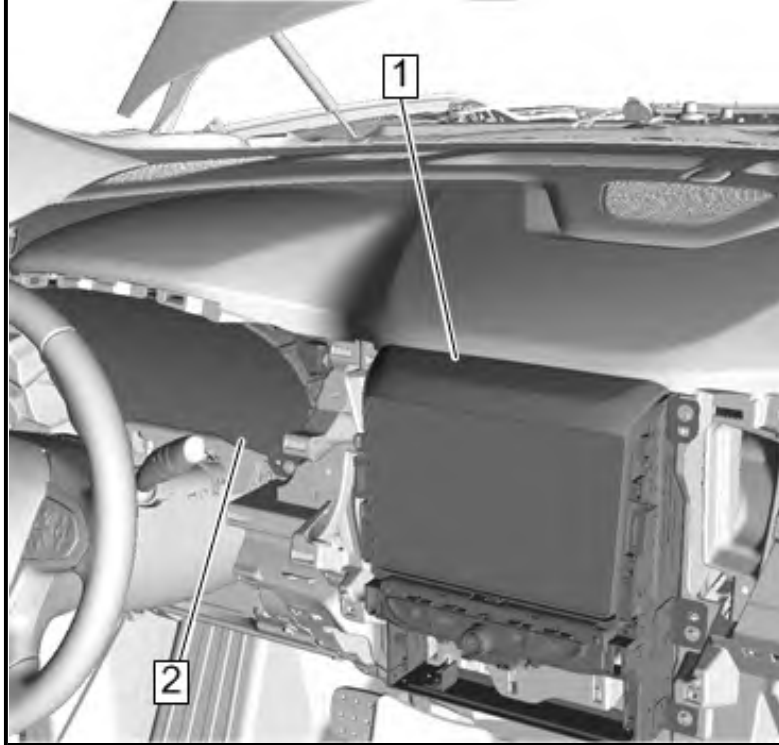
17. Disconnect all electrical connectors.

18. Instrument Panel Compartment Door (3) - Remove - [Instrument Panel Compartment Door Replacement](#)

19. Instrument Panel Compartment Door Opening Frame (4) - Remove - [Instrument Panel Compartment Door Opening Frame Replacement](#)

20.



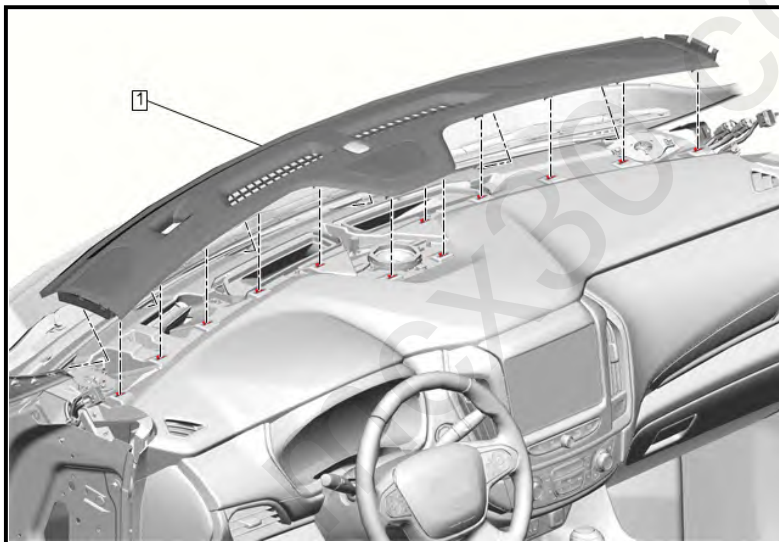


Radio Control (1) - Remove - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

21. Instrument Cluster (2) - Remove - [Instrument Cluster Replacement](#)

22. Disconnect the electrical connectors.

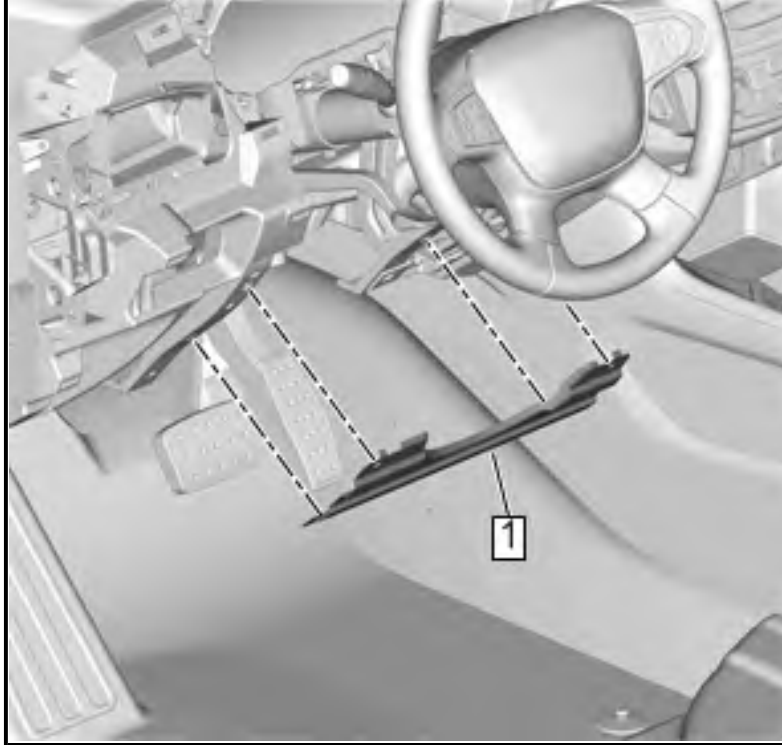
23.



Instrument Panel Extension (1) - Remove - [Instrument Panel Extension Replacement](#)

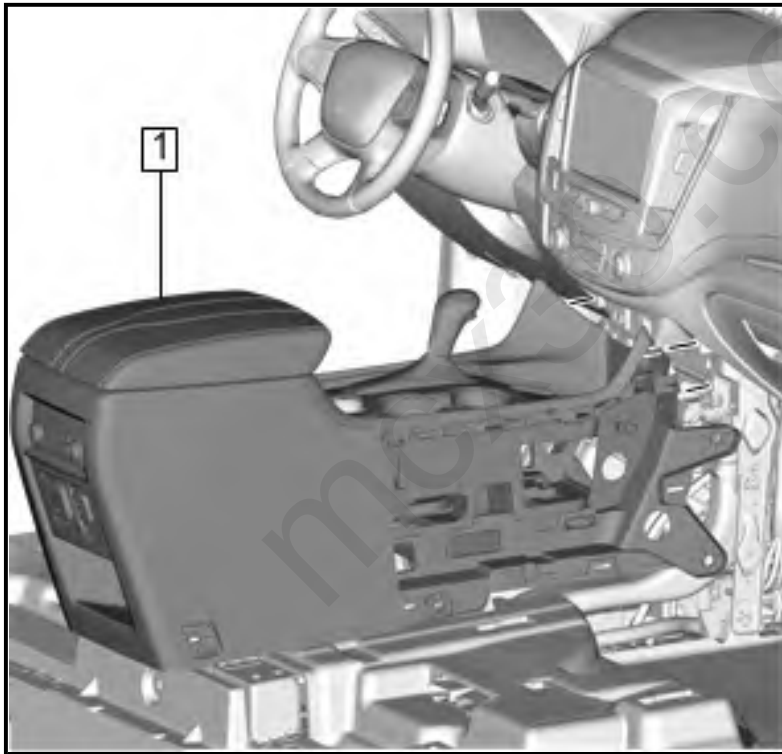
24.





Instrument Panel Knee Bolster Bracket (1) - Remove - [Instrument Panel Knee Bolster Bracket Replacement](#)

25.

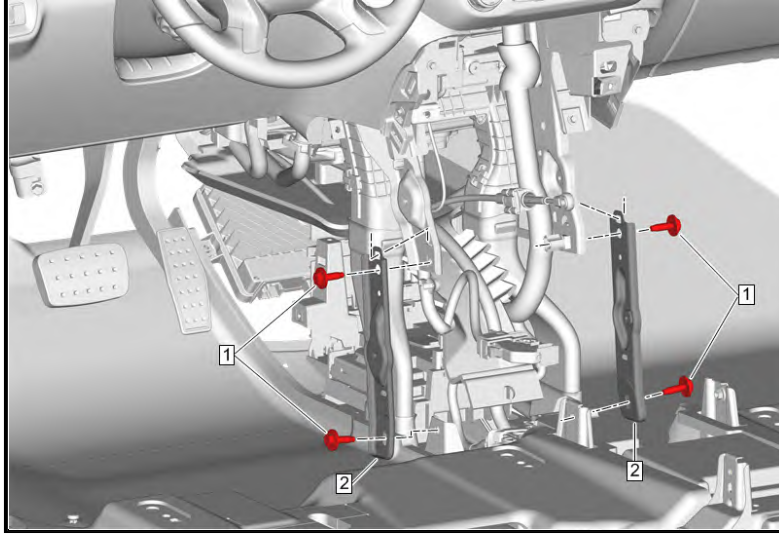


Front Floor Console (1) - Remove - [Front Floor Console Replacement](#)

26. Disconnect the electrical connectors.

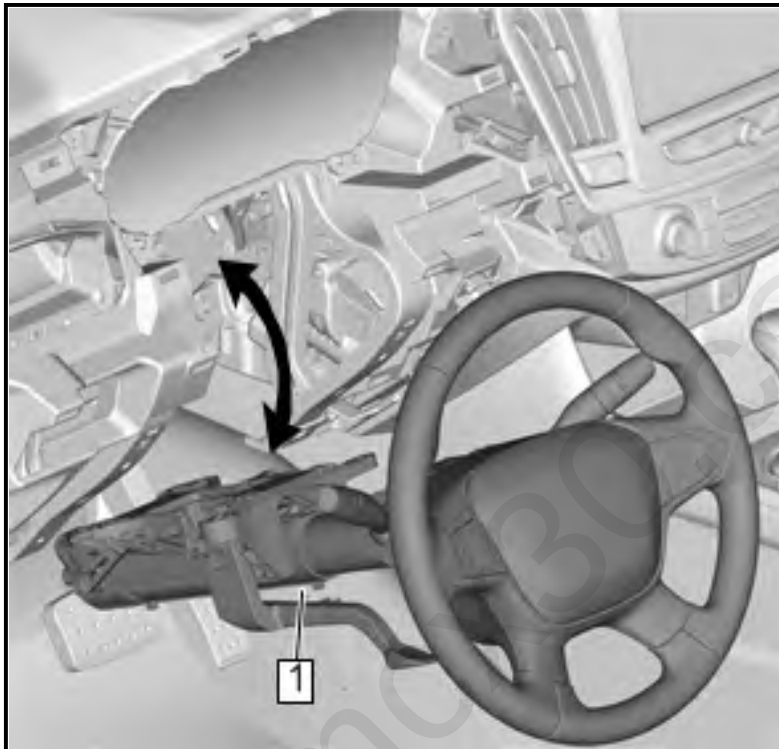
27.





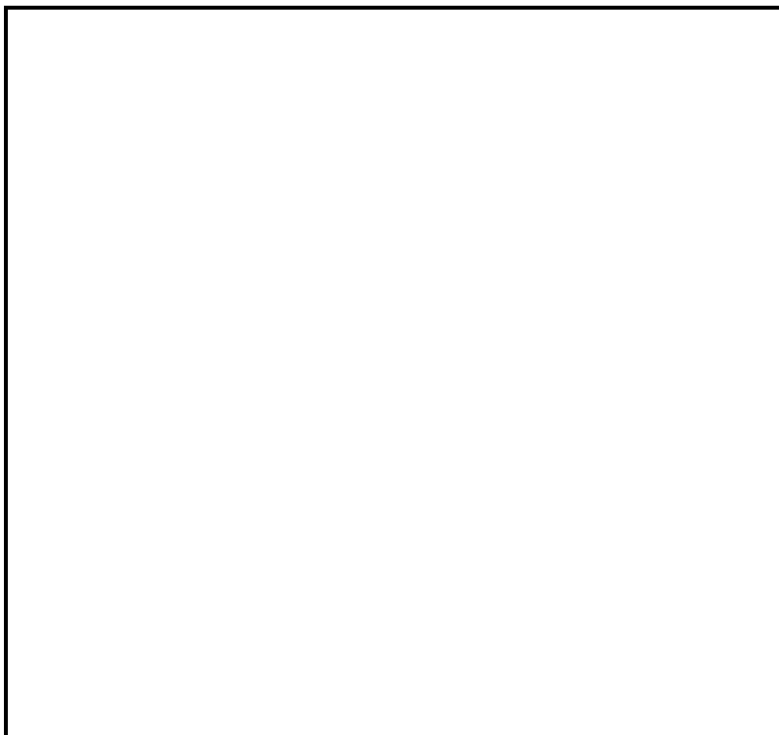
Instrument Panel Tie Bar Brace (2) - Remove - [Instrument Panel Tie Bar Brace Replacement](#)

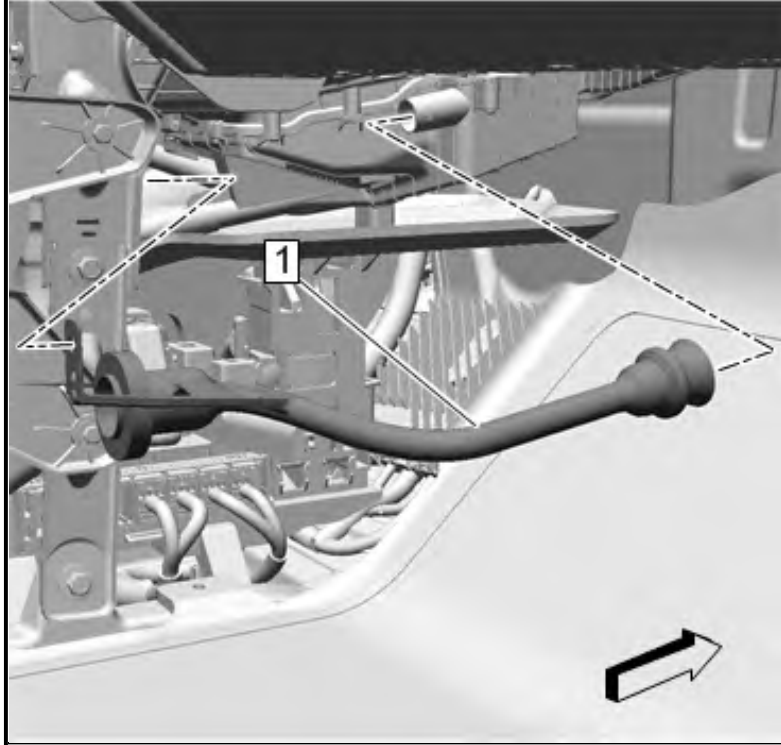
28.



Steering Column (1) - Remove - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

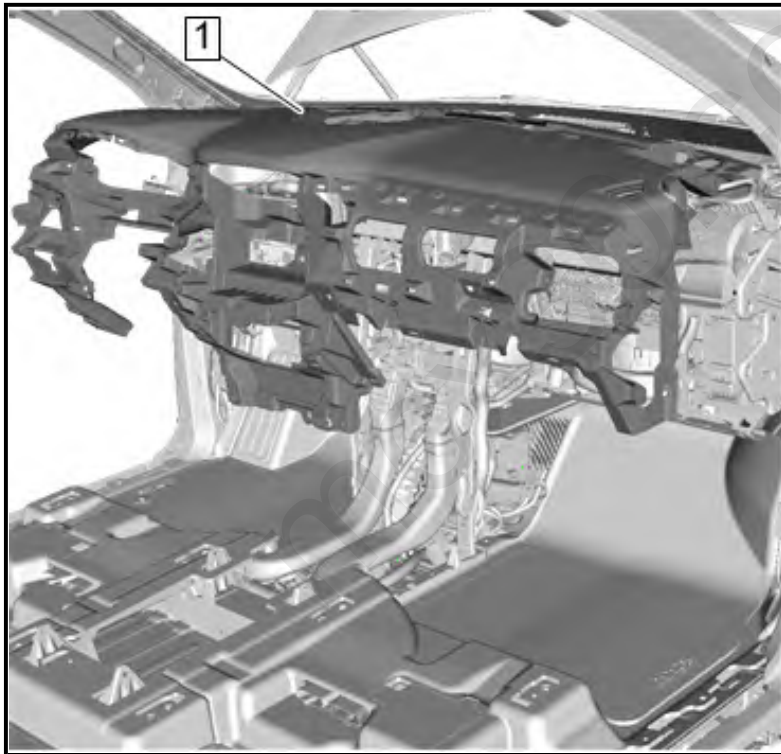
29.





Front Floor Console Auxiliary Cooling Intermediate Duct (1) - Remove - [Front Floor Console Auxiliary Cooling Intermediate Duct Replacement](#)

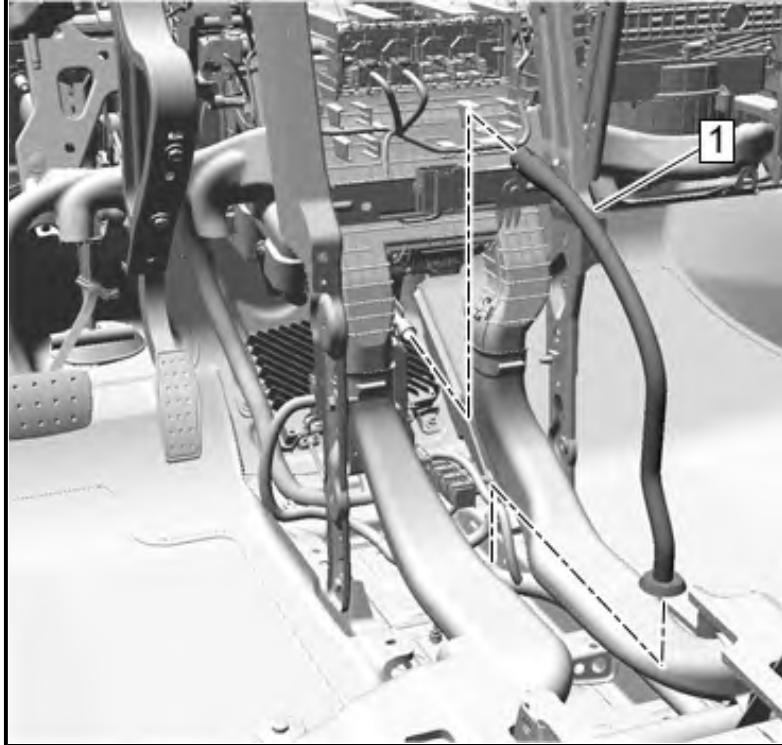
30.



Instrument Panel (1) - Remove - [Instrument Panel Assembly Replacement](#)

31.

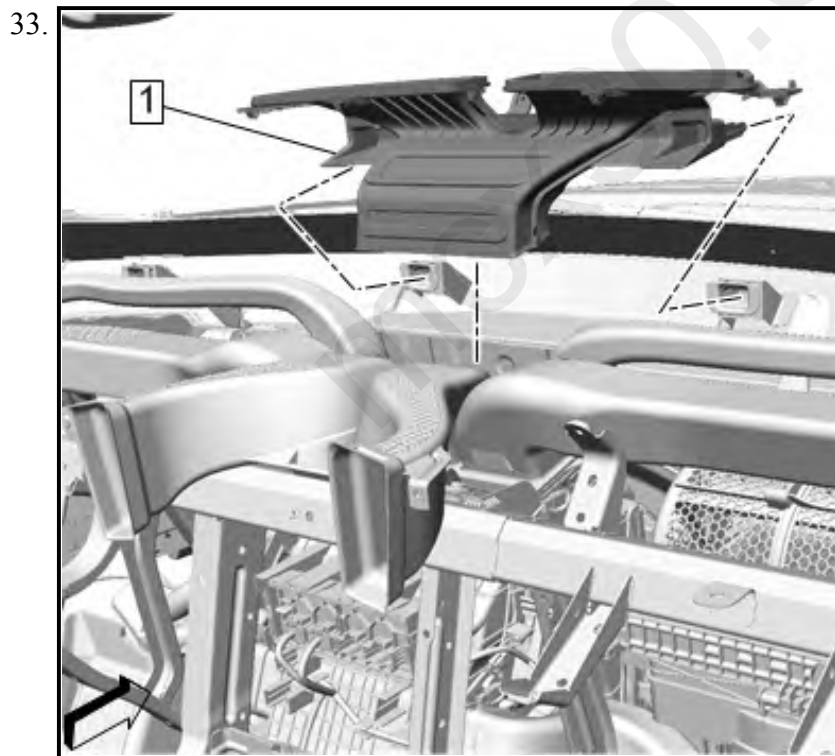




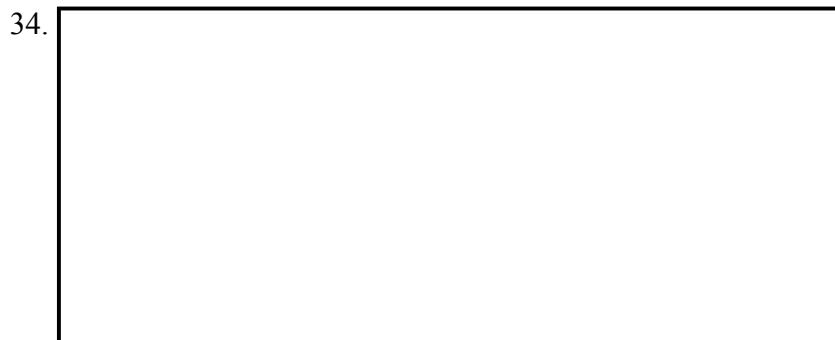
CAUTION: Refer to [HVAC Module Drain Tube Caution](#) .

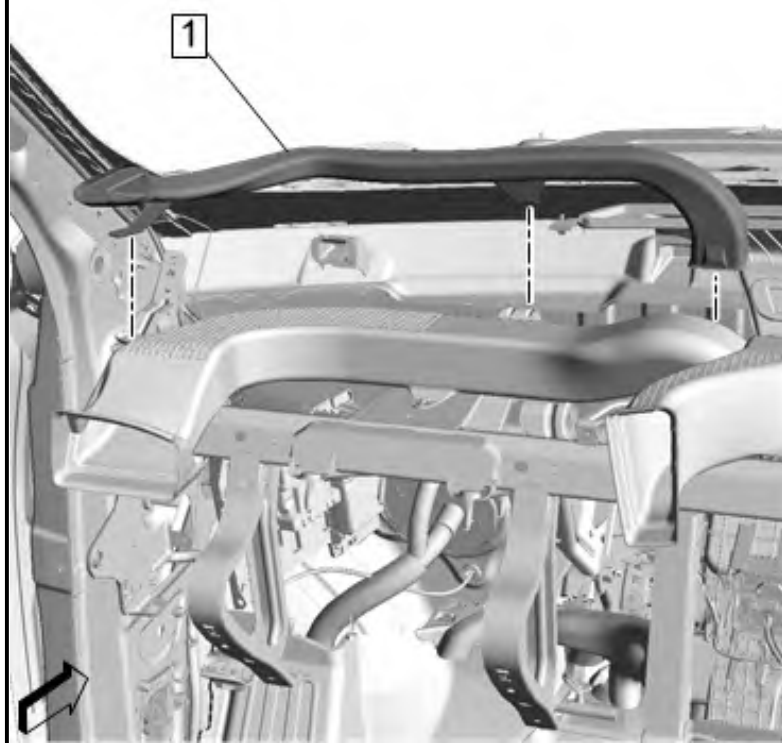
Prior to removing the air conditioning evaporator and blower module drain tube/hose, use clean and absorbent shop cloths/towels to cover the electrical components protecting the electrical components from water damage.

32. Air Conditioning Evaporator and Blower Module Drain Hose (1) - Remove

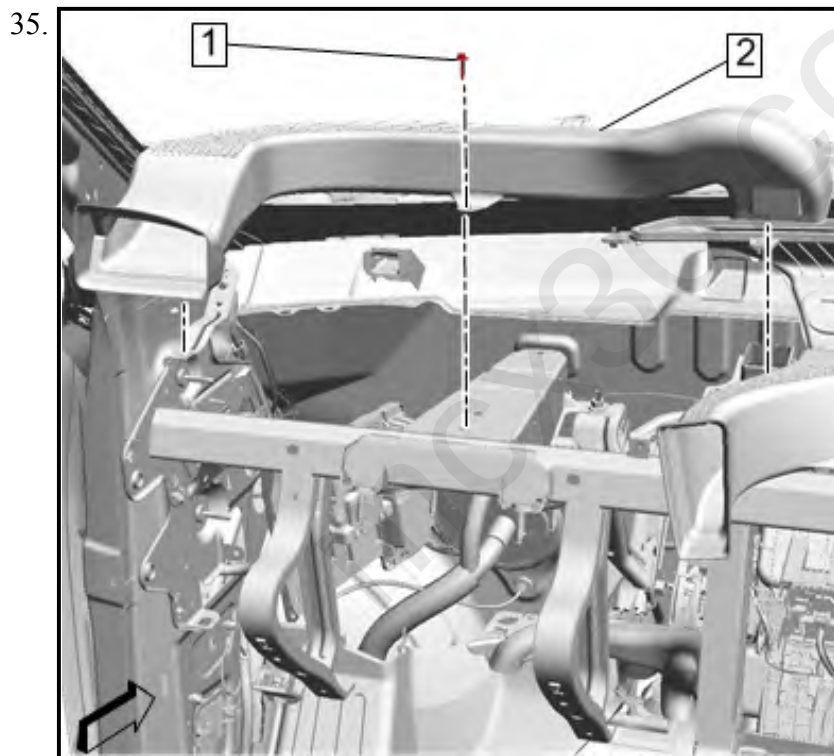


Windshield Defroster Outlet Duct (1) - Remove - [Windshield Defroster Outlet Duct Replacement](#)



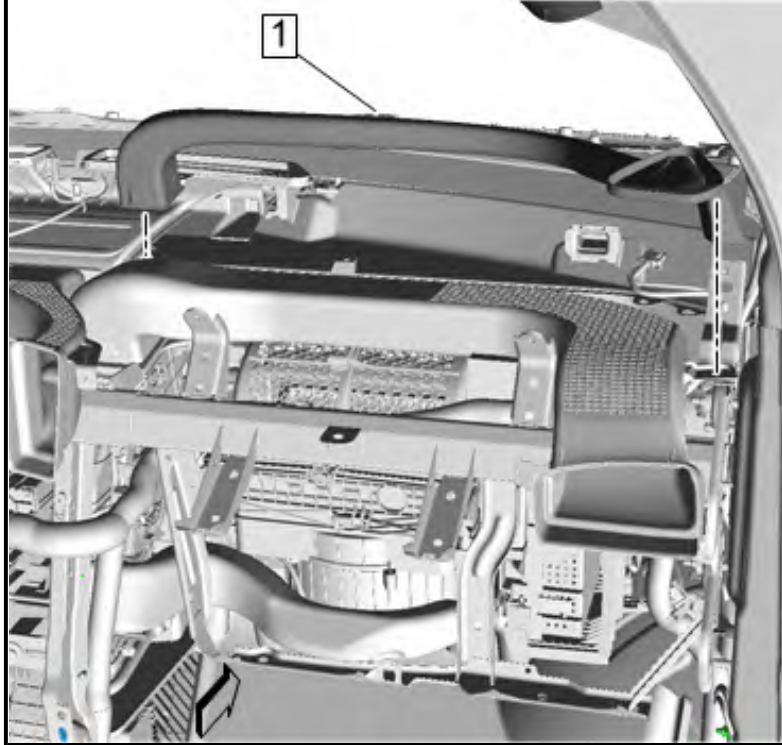


Side Window Defogger Outlet Duct - Left Side (1) - Remove - [Side Window Defogger Outlet Duct Replacement - Left Side](#)



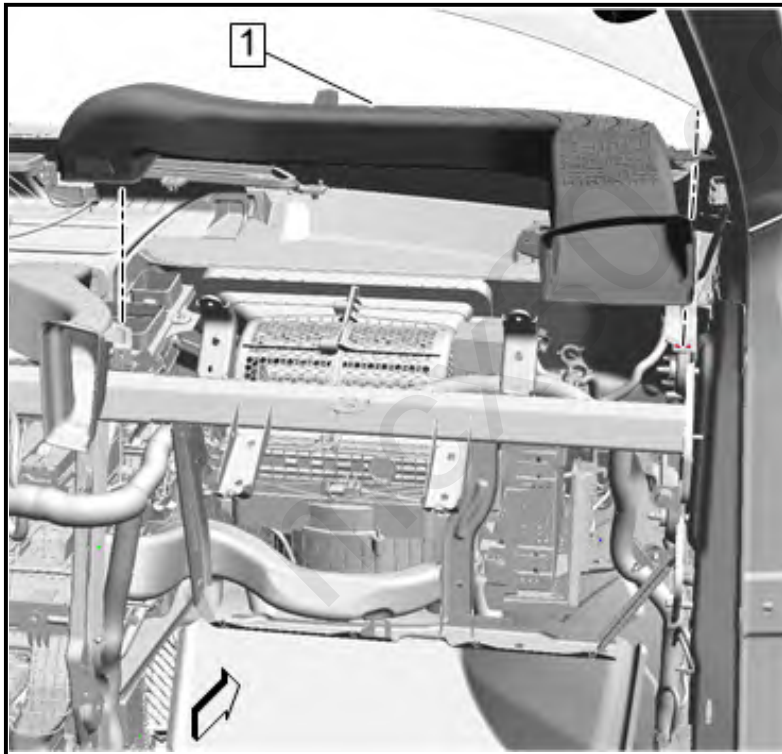
Instrument Panel Outer Air Outlet Duct - Left Side (2) - Remove - [Instrument Panel Outer Air Outlet Duct Replacement - Left Side](#)





Side Window Defogger Outlet Duct - Right Side (1) - Remove - [Side Window Defogger Outlet Duct Replacement - Right Side](#)

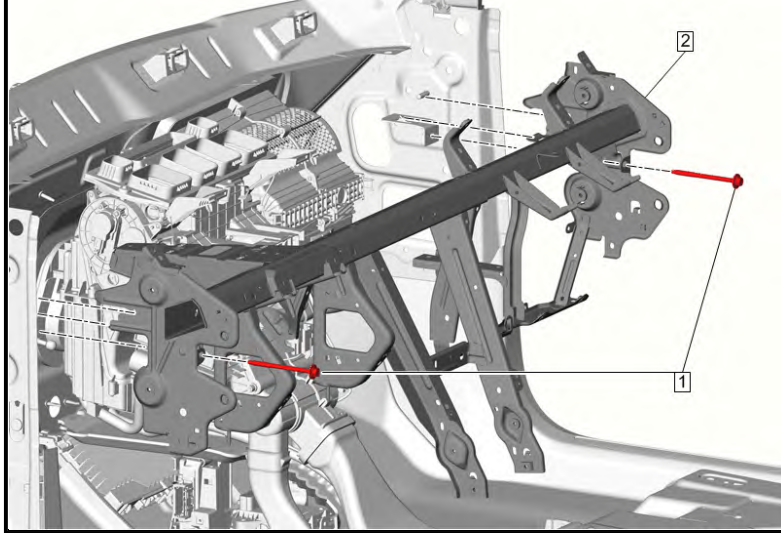
37.



Instrument Panel Outer Air Outlet Duct - Right Side (1) - Remove - [Instrument Panel Outer Air Outlet Duct Replacement - Right Side](#)

38.

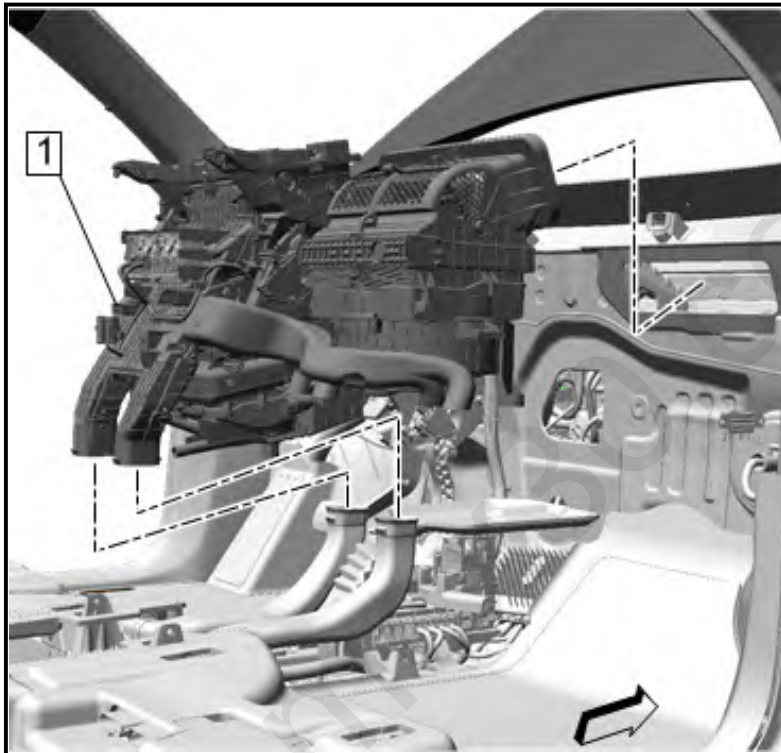




Instrument Panel Tie Bar (2) - Remove - [Instrument Panel Tie Bar Replacement](#)

39. Disconnect the instrument panel wiring connectors.

40.

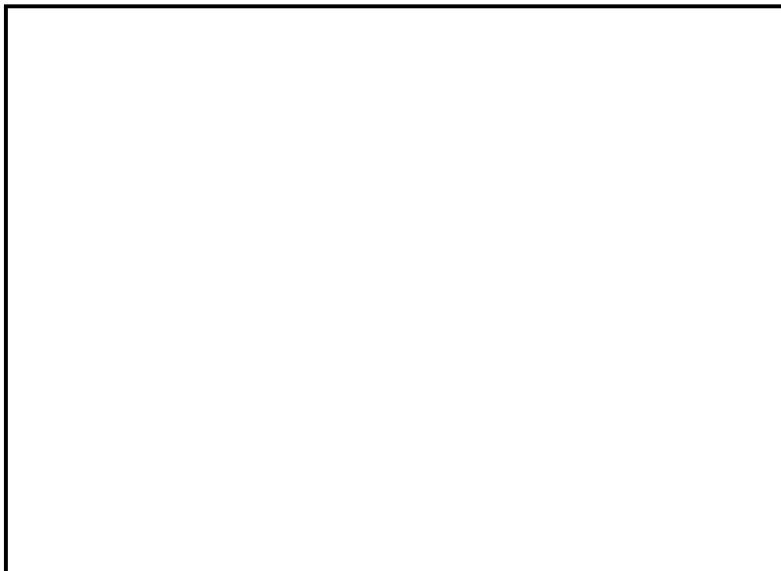


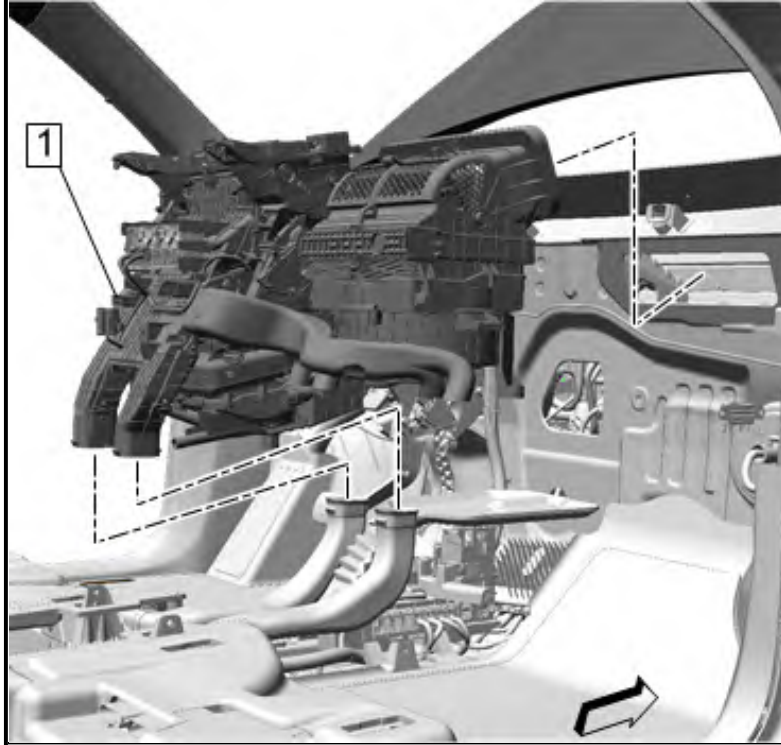
Heater and Air Conditioning Evaporator and Blower Module (1) - Remove

41. Transfer all necessary components.

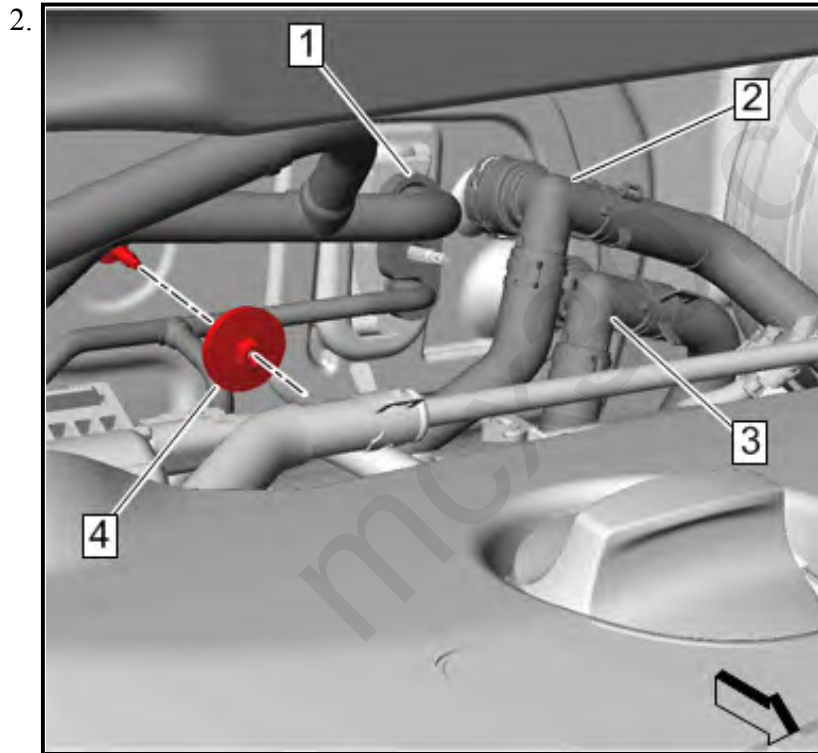
Installation Procedure

1.



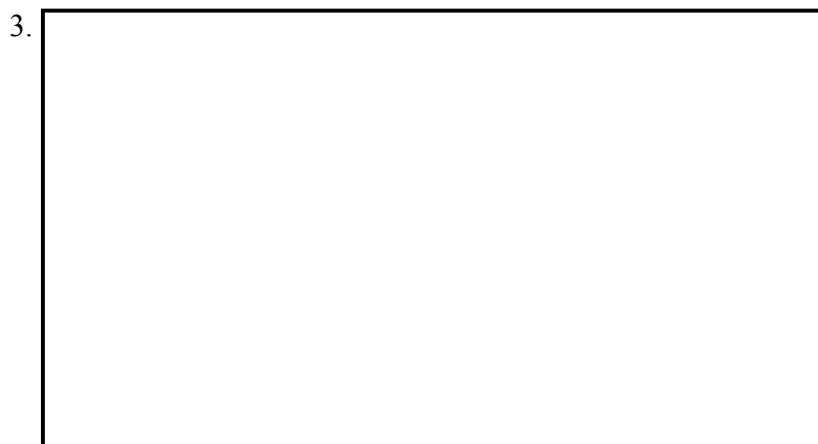


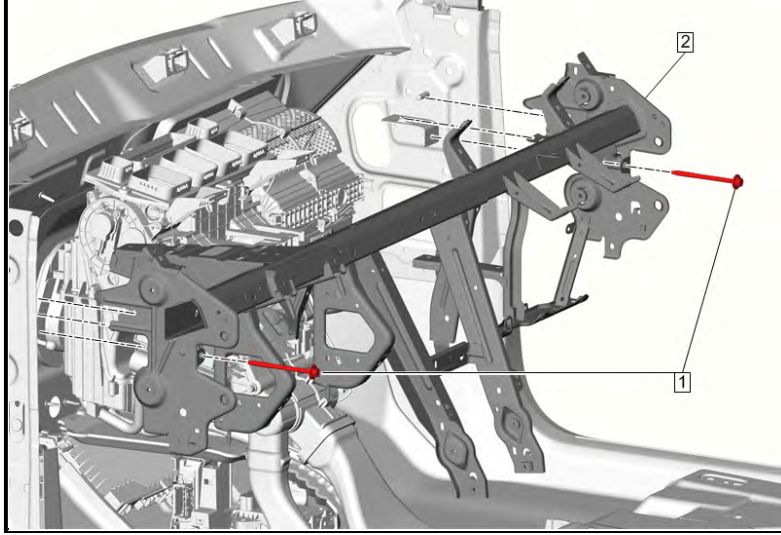
Heater and Air Conditioning Evaporator and Blower Module (1) - Install onto the vehicle.



CAUTION: Refer to [Fastener Caution](#) .

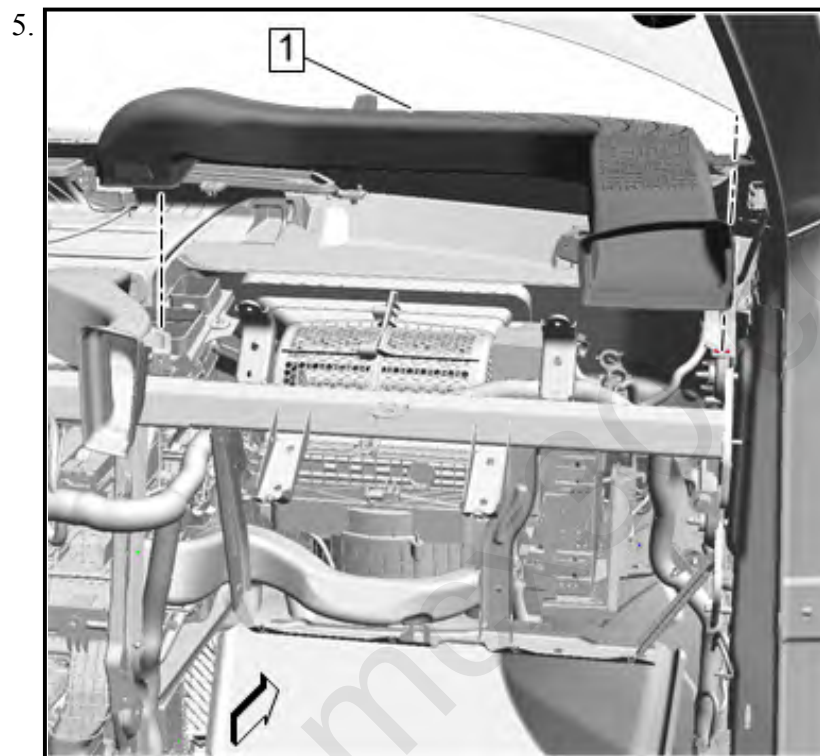
Heater and Air Conditioning Evaporator and Blower Module Nut (4) @ Cowl Panel - Install and tighten 9.0 N.m (80 lb in)





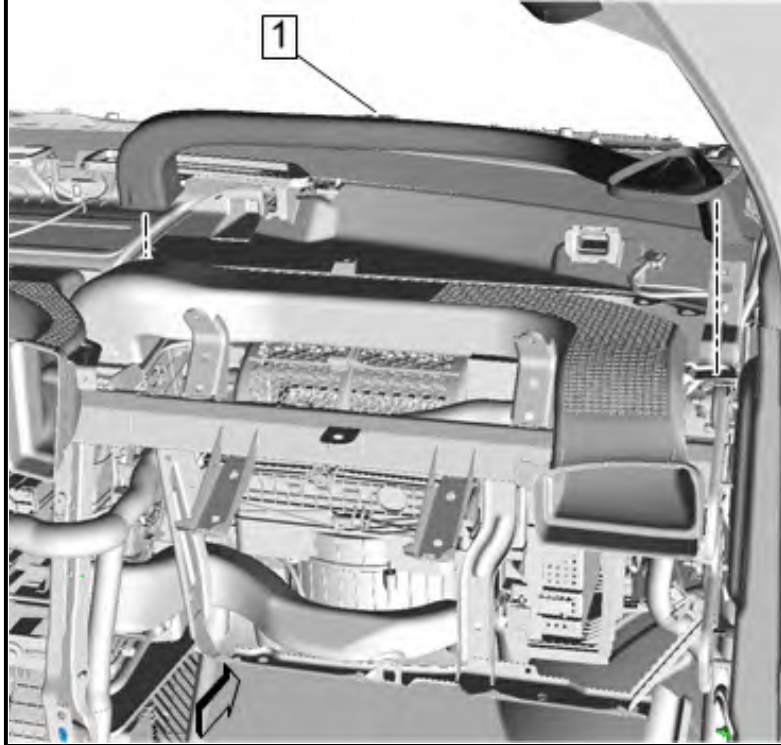
Instrument Panel Tie Bar (2) - Install - [Instrument Panel Tie Bar Replacement](#)

4. Connect the instrument panel wiring connectors.

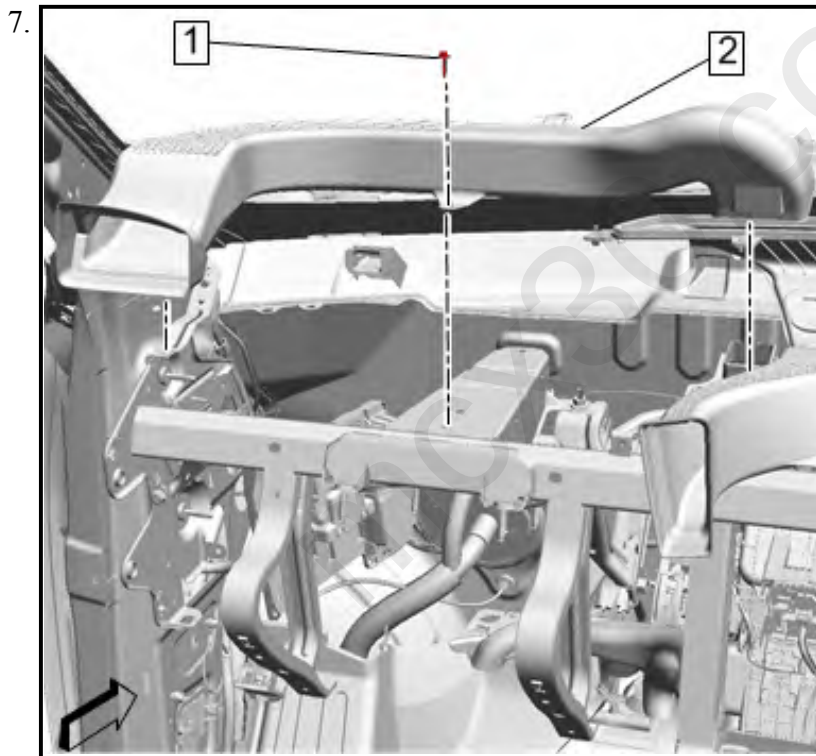


Instrument Panel Outer Air Outlet Duct - Right Side (1) - Install - [Instrument Panel Outer Air Outlet Duct Replacement - Right Side](#)





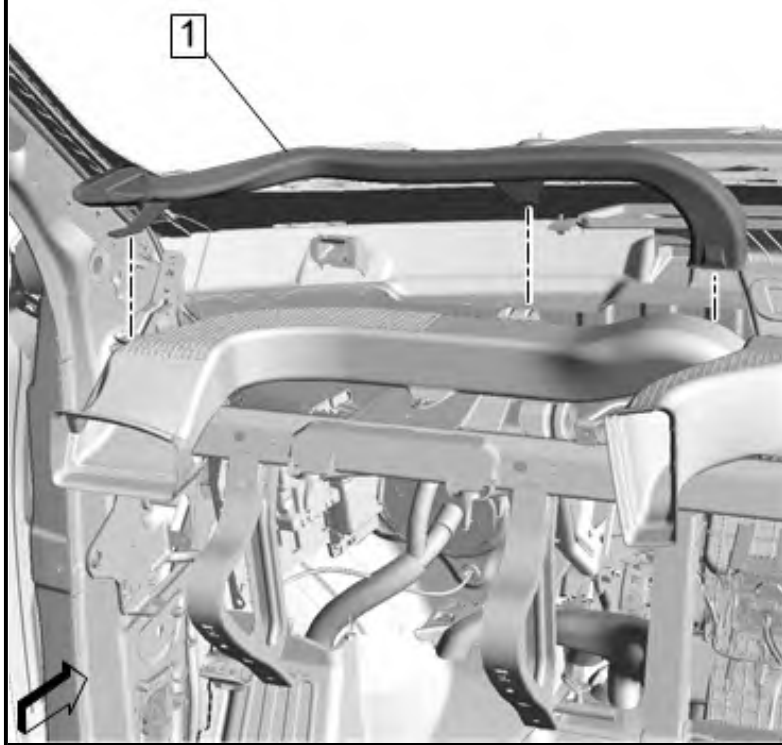
Side Window Defogger Outlet Duct - Right Side (1) - Install - [Side Window Defogger Outlet Duct Replacement - Right Side](#)



Instrument Panel Outer Air Outlet Duct - Left Side (2) - Install - [Instrument Panel Outer Air Outlet Duct Replacement - Left Side](#)

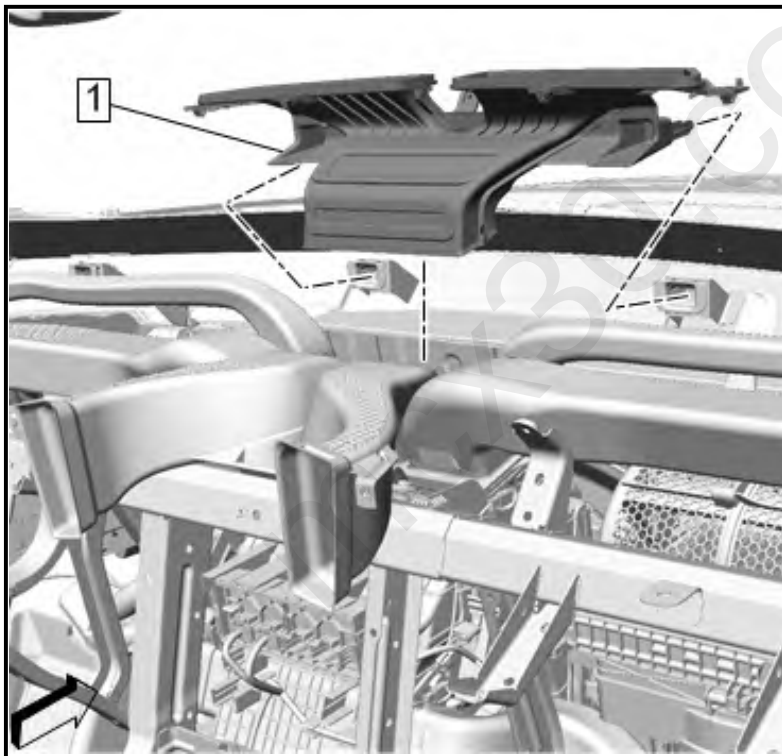


8.



Side Window Defogger Outlet Duct - Left Side (1) - Install - [Side Window Defogger Outlet Duct Replacement - Left Side](#)

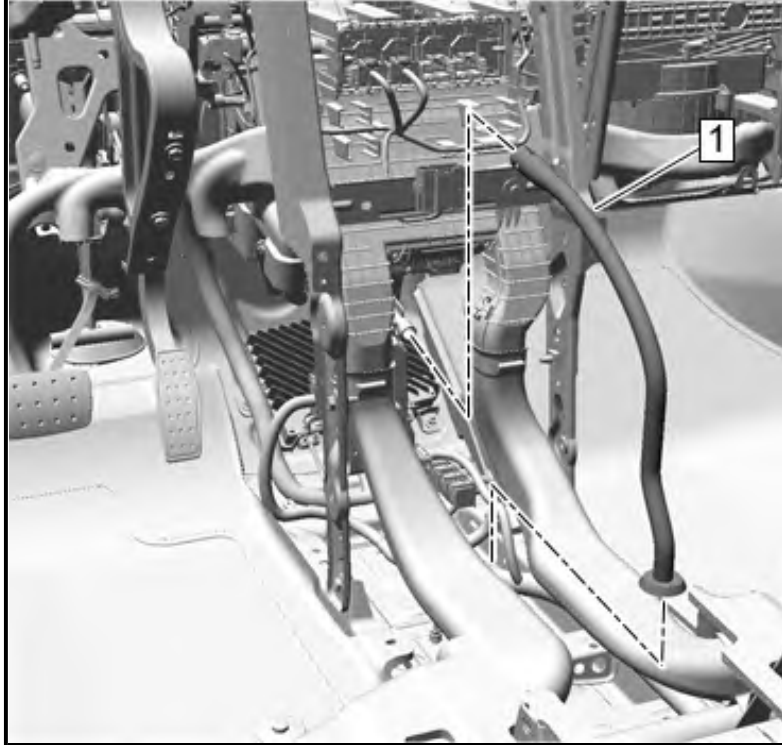
9.



Windshield Defroster Outlet Duct (1) - Install - [Windshield Defroster Outlet Duct Replacement](#)

10.



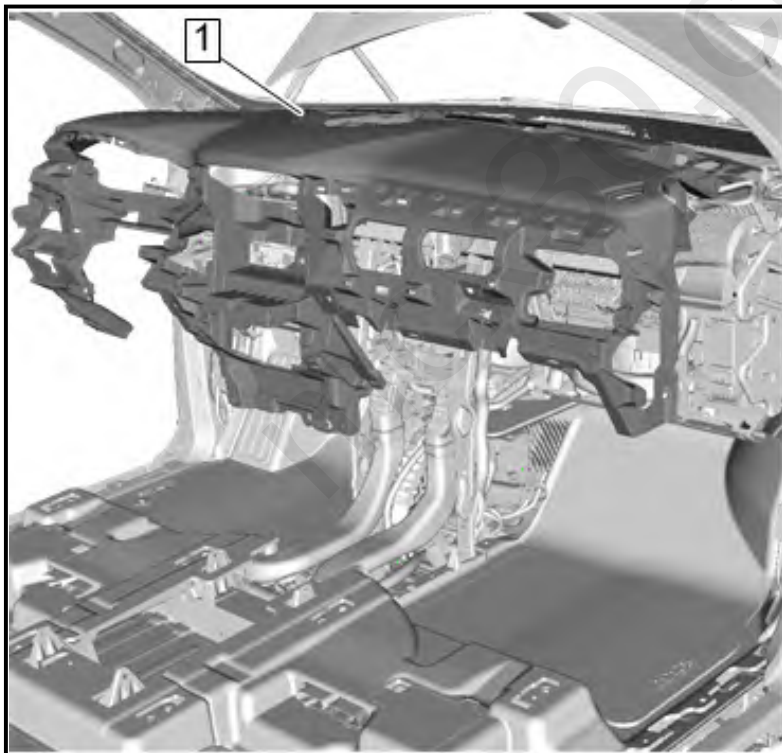


CAUTION: Refer to [HVAC Module Drain Tube Caution](#) .

Air Conditioning Evaporator and Blower Module Drain Hose (1) - Install

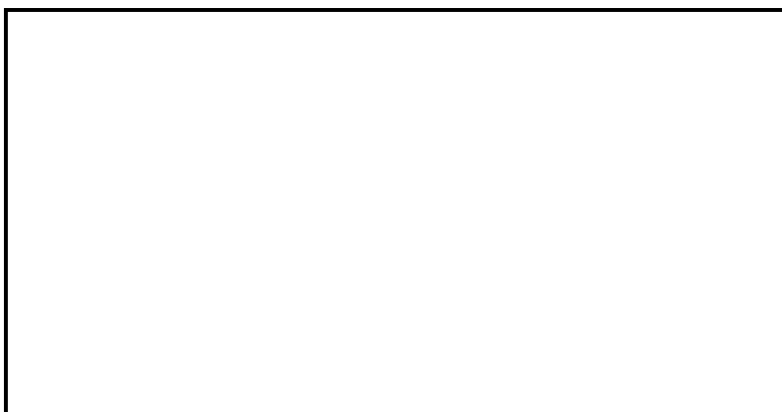
11. Remove the absorbent shop cloths/towels covering the electrical components.

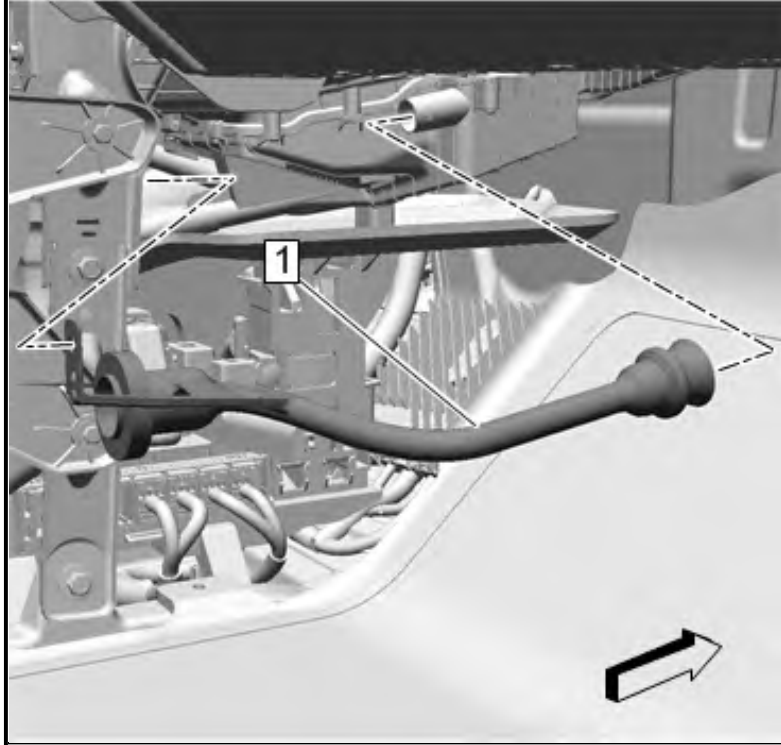
12.



Instrument Panel (1) - Install - [Instrument Panel Assembly Replacement](#)

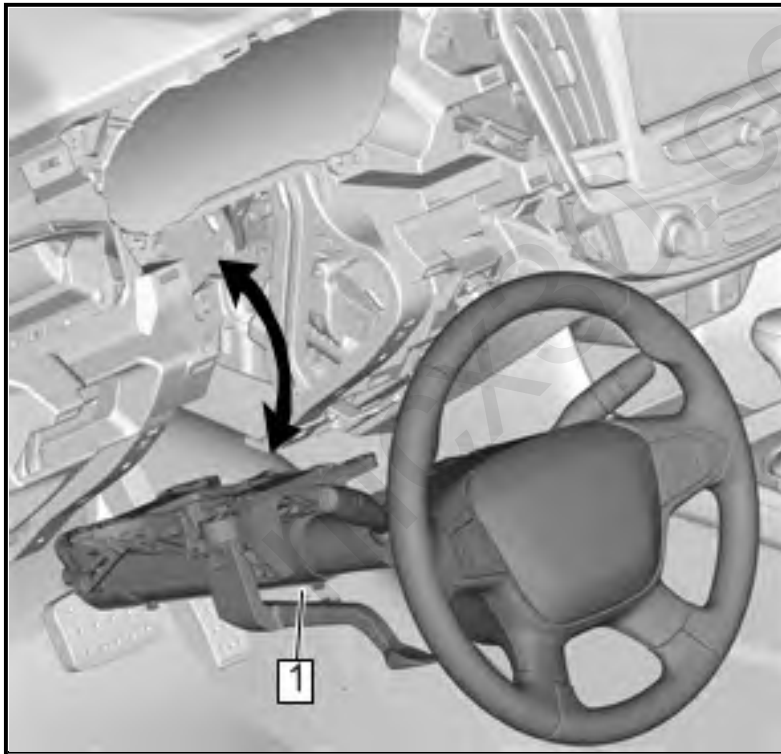
13.





Front Floor Console Auxiliary Cooling Intermediate Duct (1) - Install - [Front Floor Console Auxiliary Cooling Intermediate Duct Replacement](#)

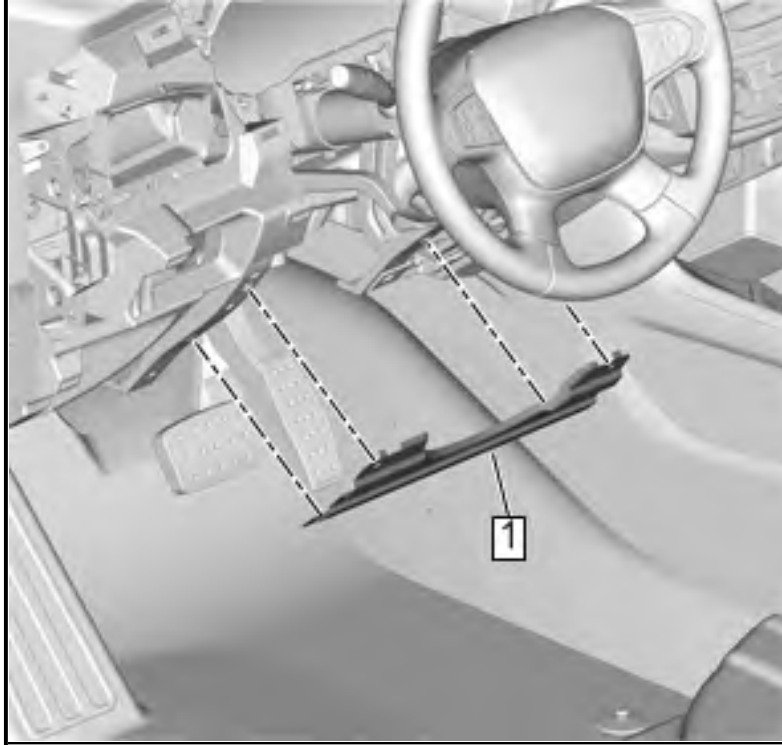
14.



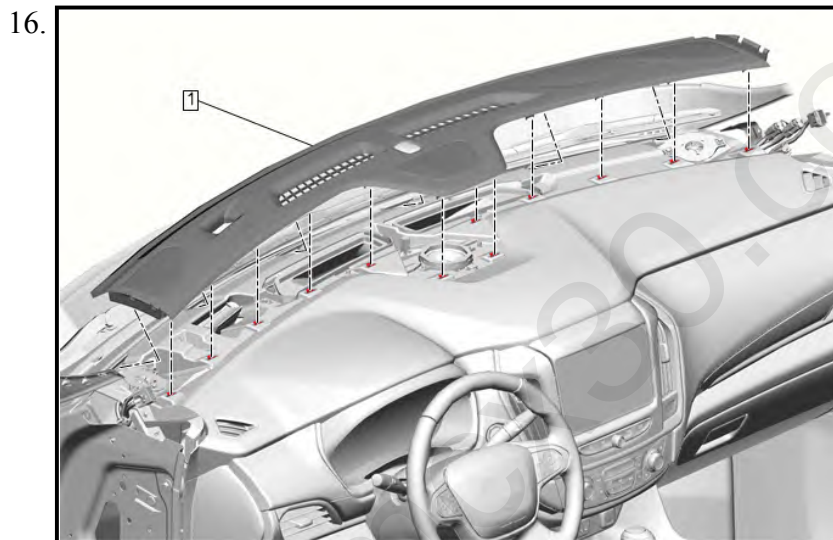
Steering Column (1) - Install - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

15.

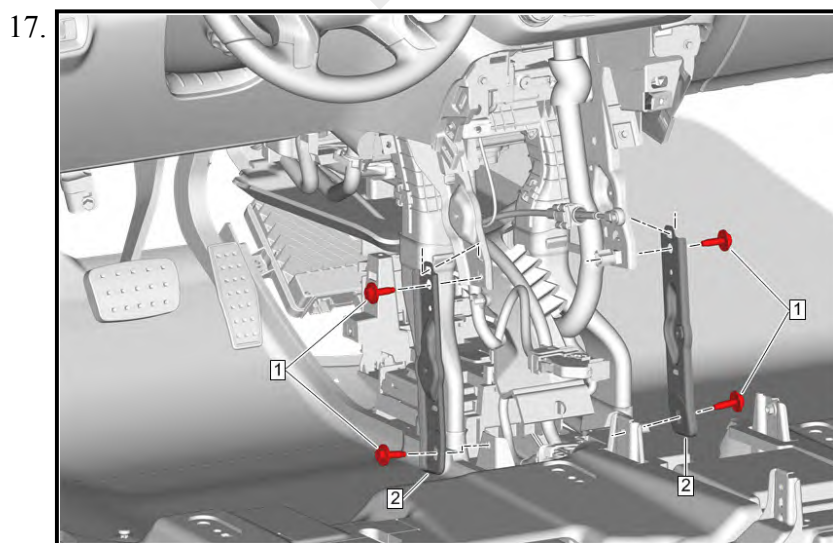




Instrument Panel Knee Bolster Bracket (1) - Install - [Instrument Panel Knee Bolster Bracket Replacement](#)

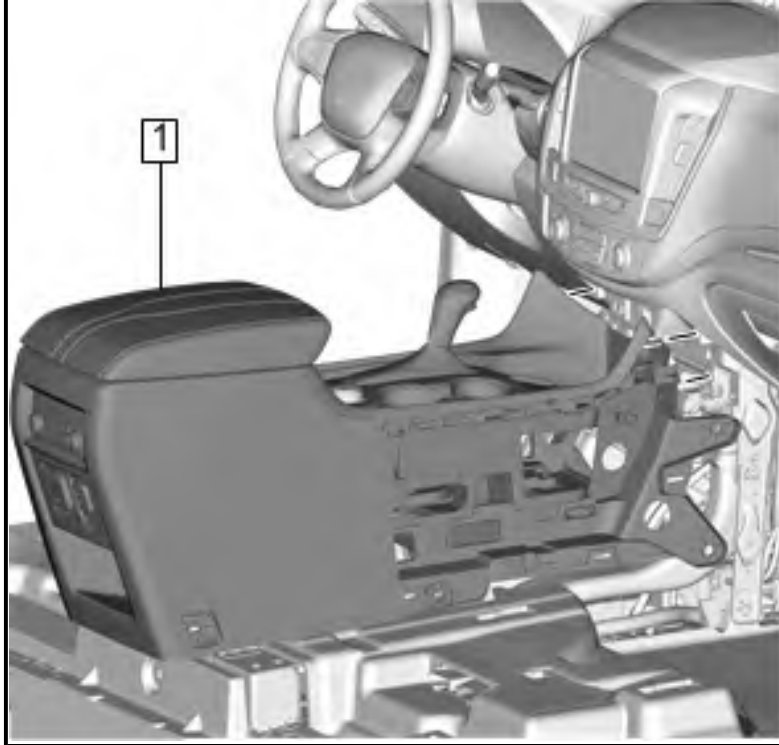


Instrument Panel Extension (1) - Install - [Instrument Panel Extension Replacement](#)



Instrument Panel Tie Bar Brace (2) - Install - [Instrument Panel Tie Bar Brace Replacement](#)

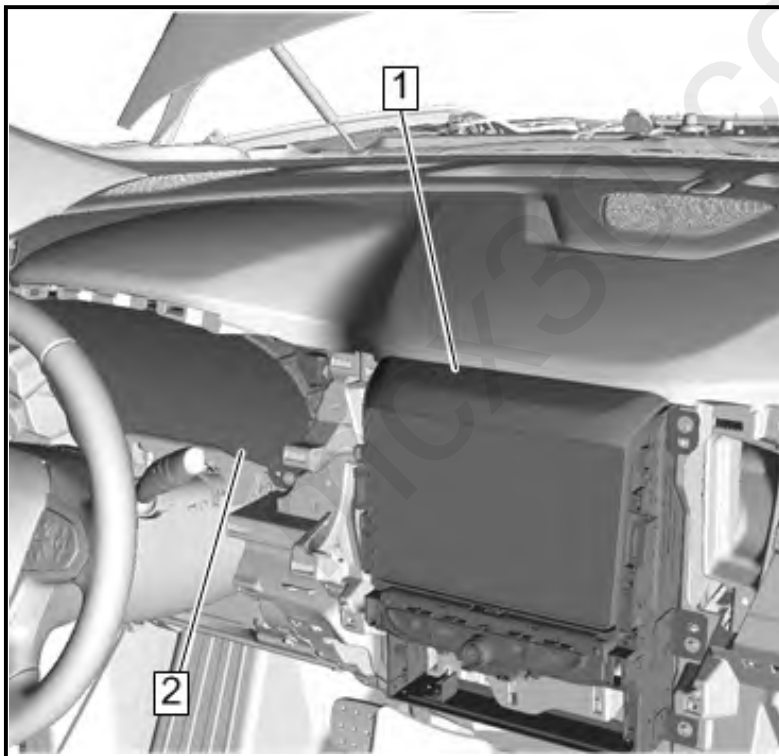




Connect the electrical connectors.

19. Front Floor Console (1) - Install - [Front Floor Console Replacement](#)

20.



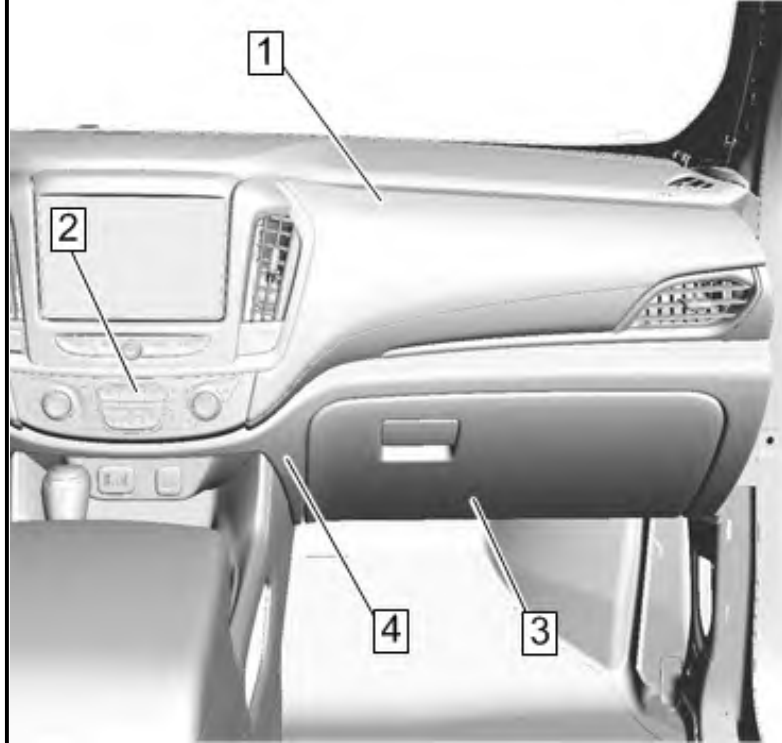
Connect the electrical connectors.

21. Instrument Cluster (2) - Install - [Instrument Cluster Replacement](#)

22. Radio Control (1) - Install - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

23.





Instrument Panel Compartment Door Opening Frame (4) - Install - [Instrument Panel Compartment Door Opening Frame Replacement](#)

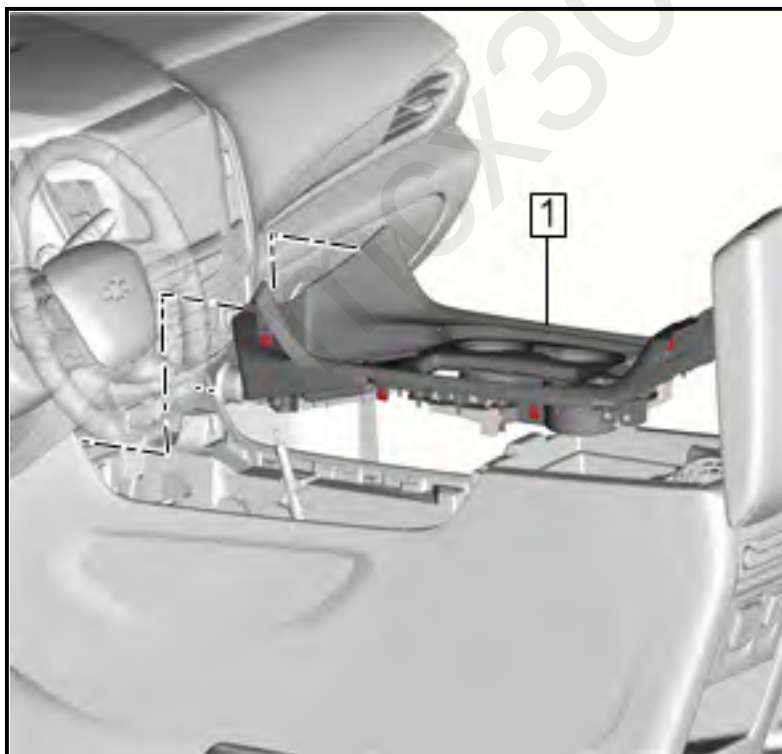
24. Instrument Panel Compartment Door (3) - Install - [Instrument Panel Compartment Door Replacement](#)

25. Connect the electrical connectors.

26. Heater and Air Conditioning User Interface Control (2) - Install - [Heater and Air Conditioning User Interface Control Replacement](#)

27. Instrument Panel Trim Pad - Right Side (1) - Install - [Instrument Panel Trim Pad Replacement - Right Side](#)

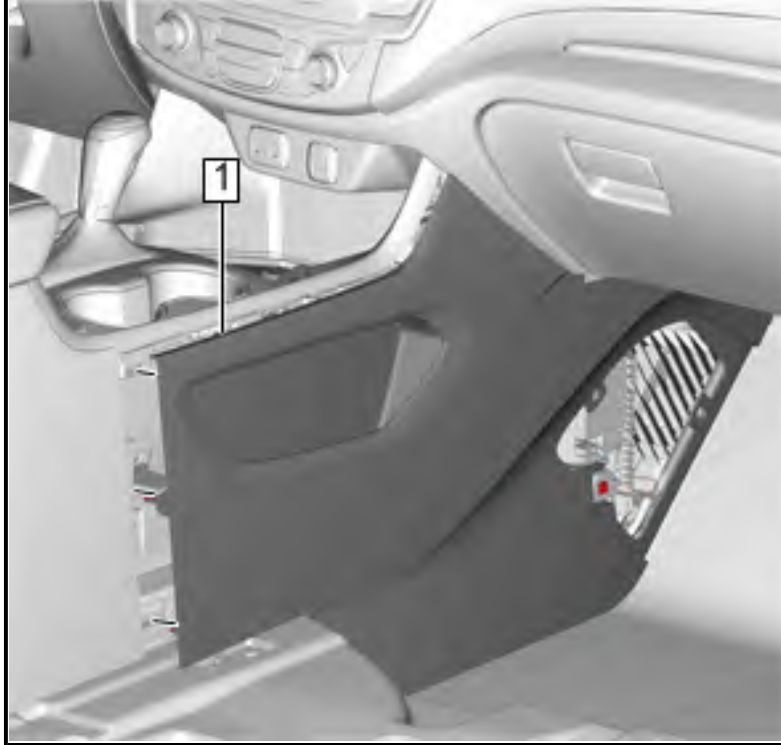
28.



Front Floor Console Cup Holder Plate (1) - Install - [Front Floor Console Cup Holder Plate Replacement](#)

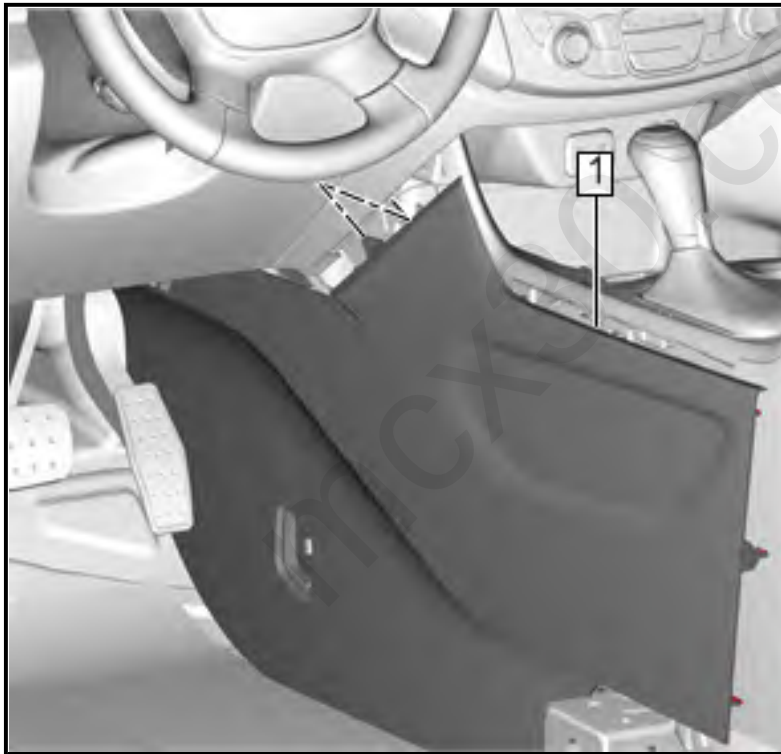
29.





Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

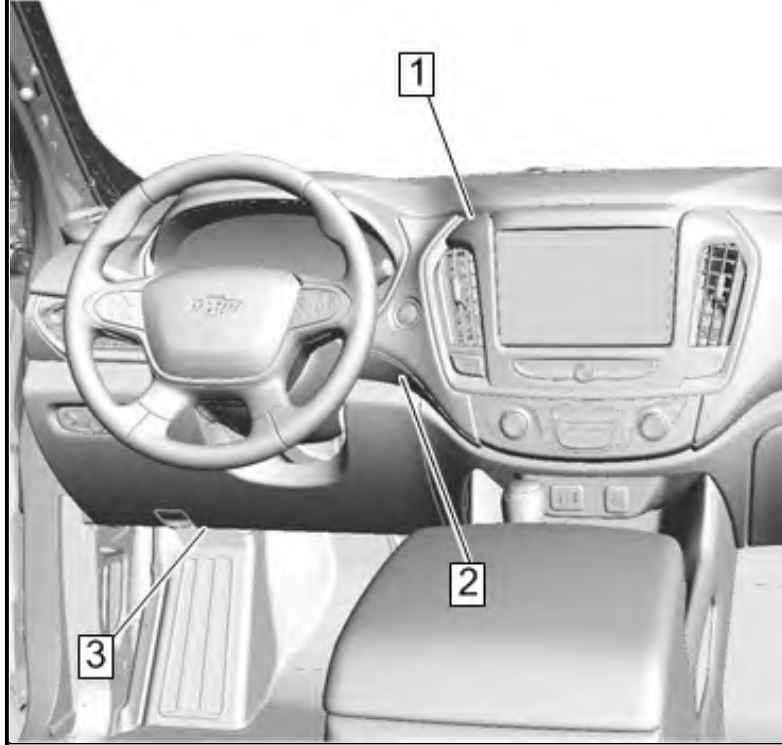
30.



Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

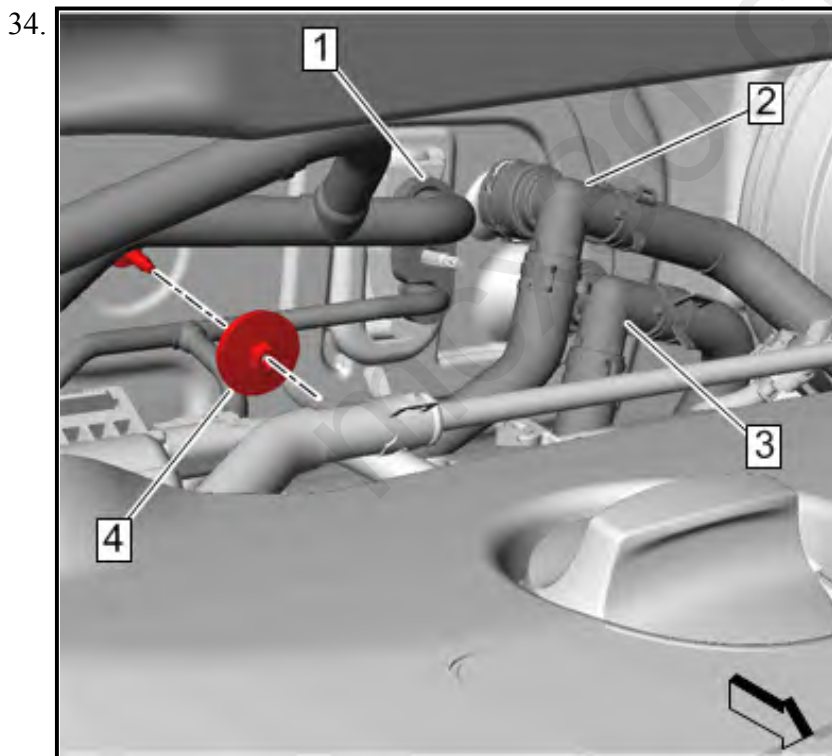
31.





Instrument Panel Trim Pad - Left Side (2) - Install - [Instrument Panel Trim Pad Replacement - Left Side](#)

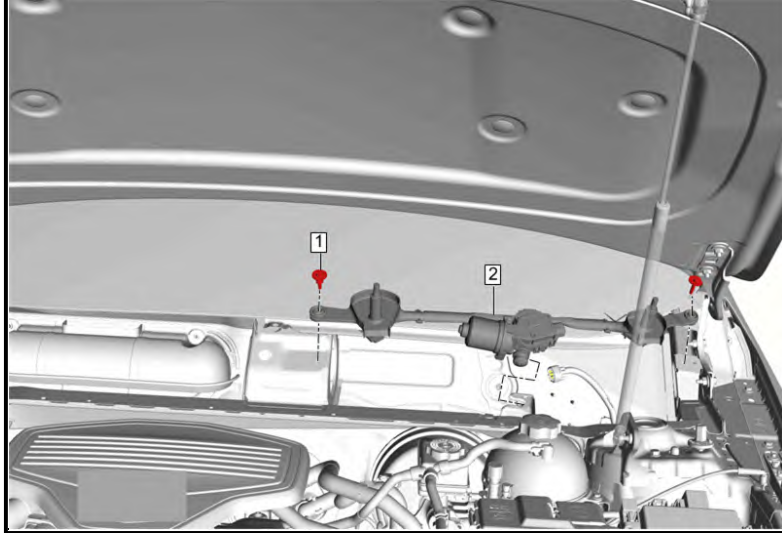
32. Instrument Panel Radio Front Trim Plate (1) - Install - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)
33. Instrument Panel Knee Bolster (3) - Install - [Instrument Panel Knee Bolster Replacement](#)



Heater Outlet Hose Connector (3) @ Heater Core Outlet Tube - Install - [Heater Outlet Hose Connector Replacement \(LTG at Heater Inlet Hose Bracket\)](#) [Heater Outlet Hose Connector Replacement \(LTG At Heater Core Outlet Tube\)](#)

35. Heater Inlet Hose Connector (2) @ Heater Core Inlet Tube - Install - [Heater Inlet Hose Connector Replacement \(LTG\)](#)
36. Air Conditioning Refrigerant Heat Exchanger (1) @ Air Conditioning Evaporator Thermal Expansion Valve - Install - [Air Conditioning Refrigerant Heat Exchanger Replacement \(LTG\)](#)



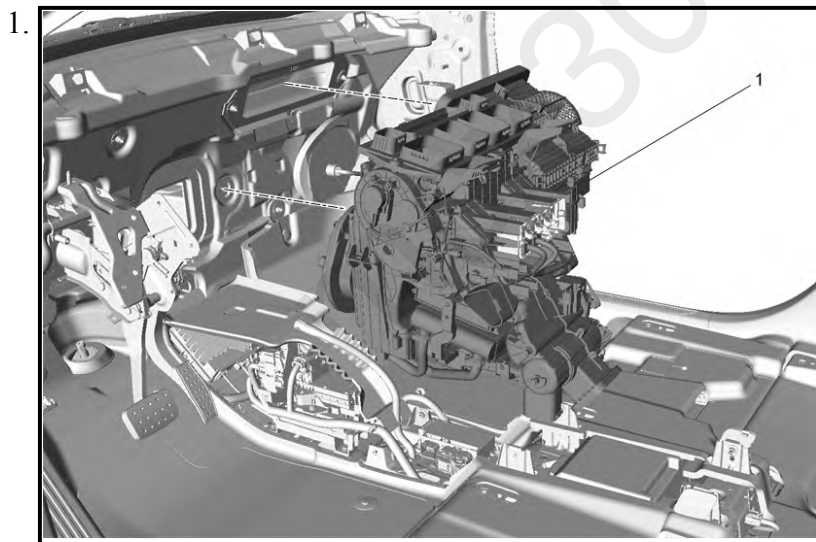


Windshield Wiper Transmission (2) - Install - [Windshield Wiper Transmission Replacement](#)

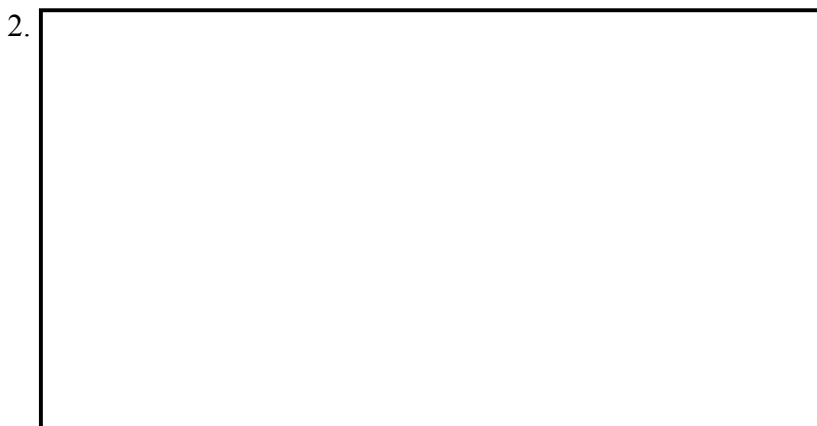
38. Connect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
39. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\)](#). [Cooling System Draining and Filling \(Static Fill\)](#) .
40. Evacuate and charge the refrigerant system. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
41. Inspect for coolant leaks.
42. Visually inspect for air conditioning system refrigerant leaks.
43. Clear the DTCs from the heater and air conditioning remote control module.

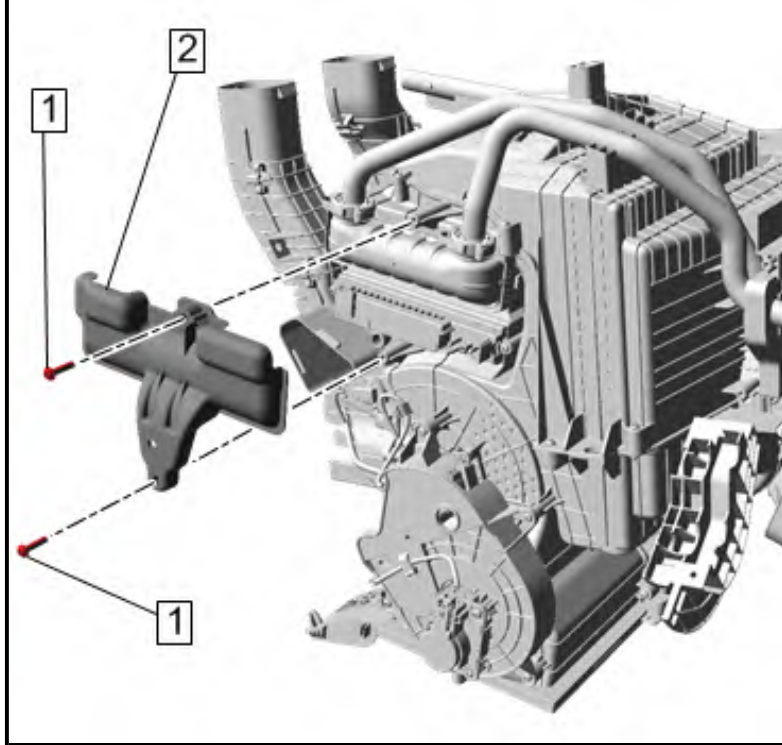
BLOWER LOWER CASE REPLACEMENT

Removal Procedure



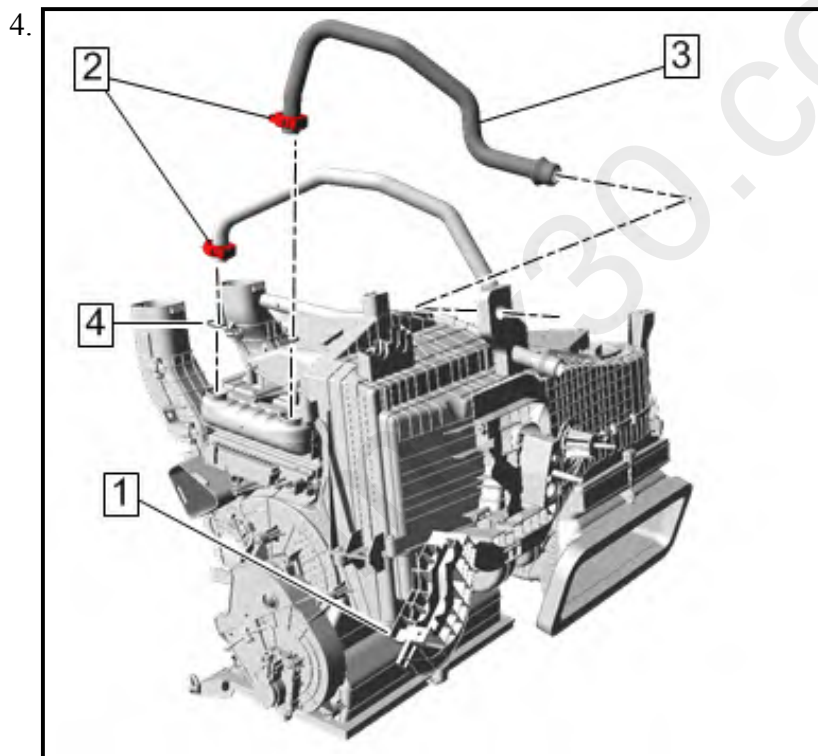
Heater and Air Conditioning Evaporator and Blower Module (1) - Remove - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#)[Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#)



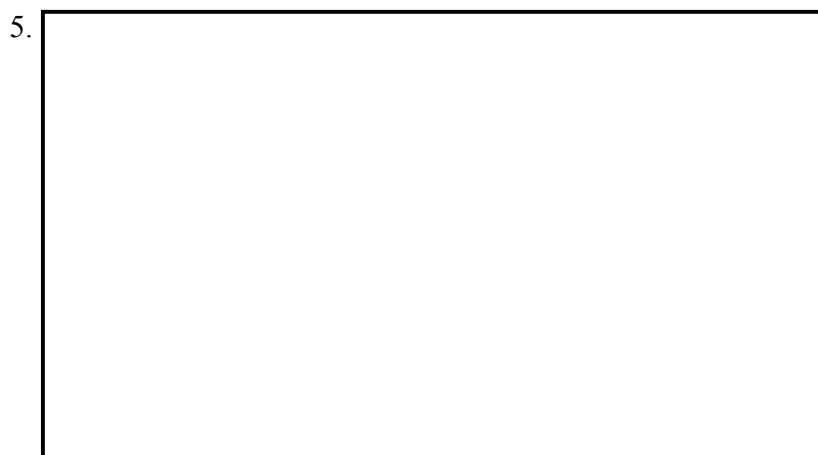


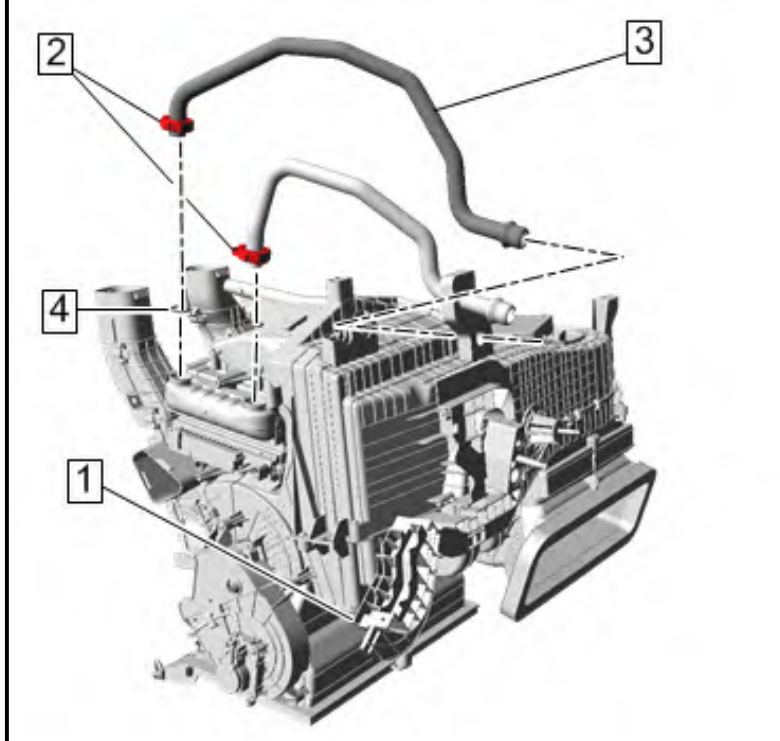
Heater Core Cover Screw (1) - Remove [2x]

3. Heater Core Cover (2) - Remove

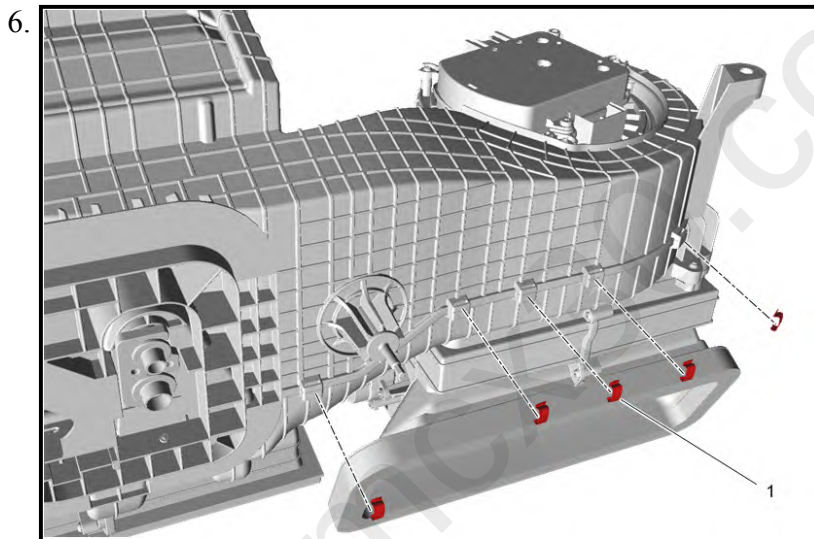


Heater Core Outlet Tube (3) - Remove - [Heater Core Outlet Tube Replacement \(C69\) Heater Core Outlet Tube Replacement](#)

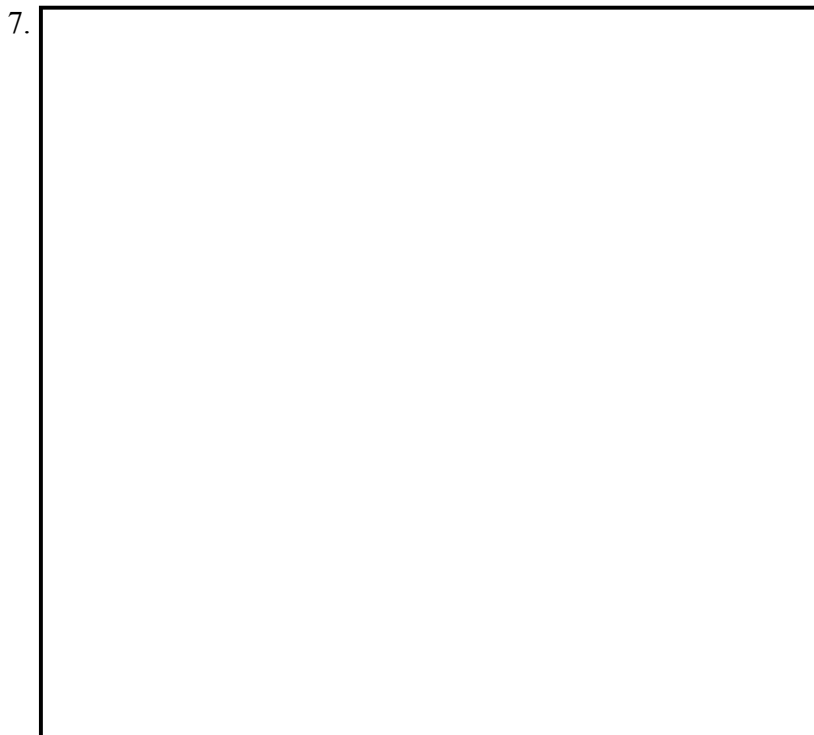


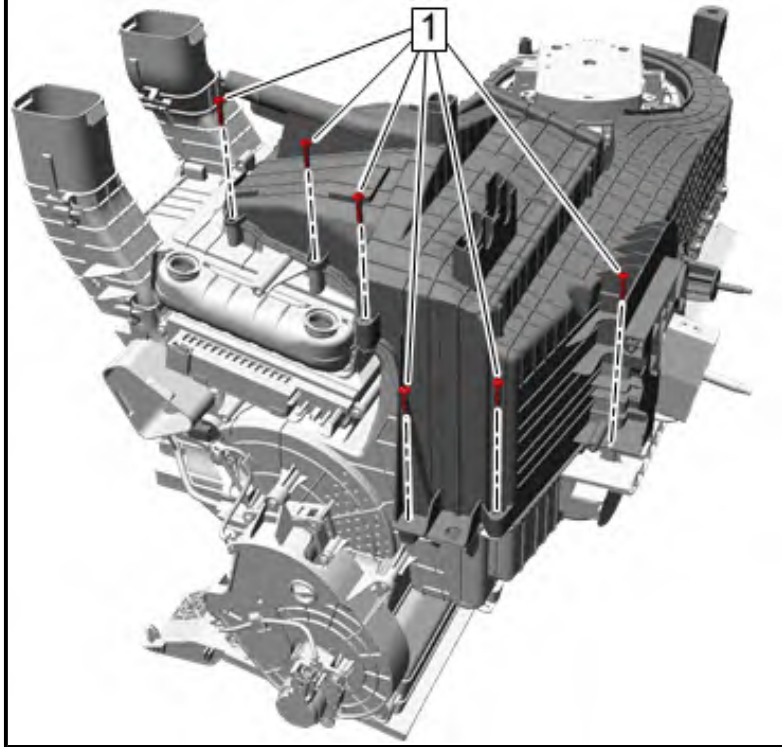


Heater Core Inlet Tube (3) - Remove - [Heater Core Inlet Tube Replacement \(C69\) Heater Core Inlet Tube Replacement](#)

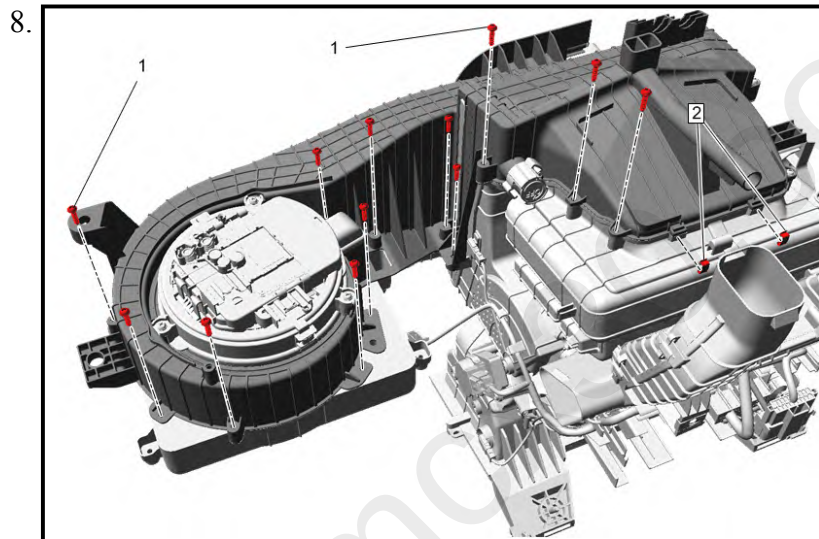


Retainer Clip (1) - Remove [5x]





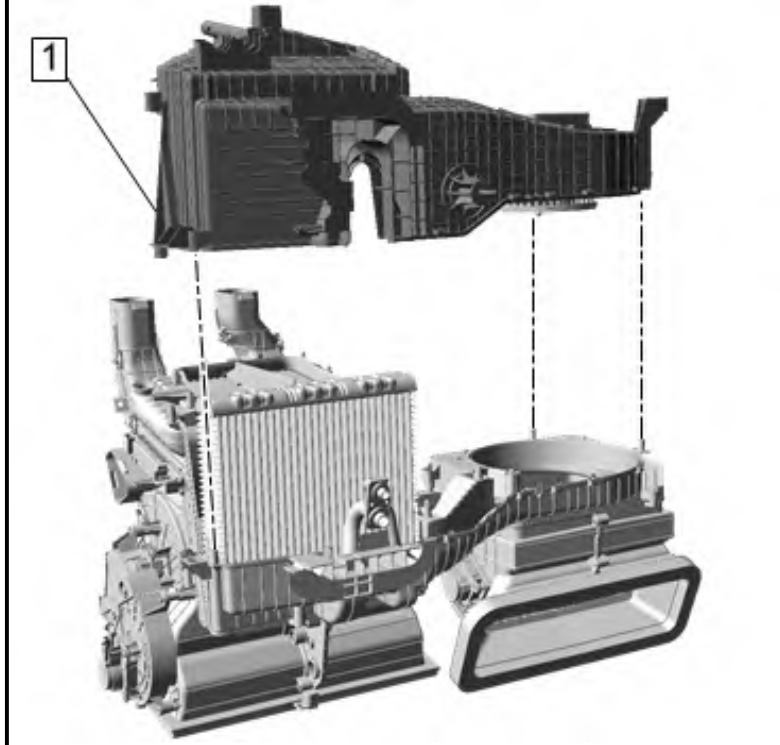
Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Remove [6x]



Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Remove [12x]

9. Retainer Clip (2) - Remove [2x]



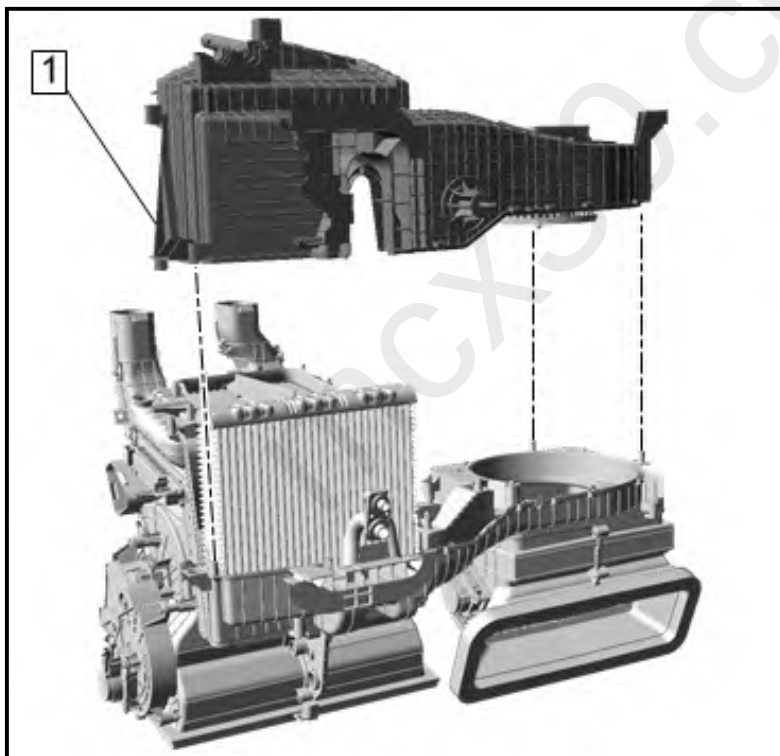


Blower Lower Case (1) - Remove

11. Transfer components as necessary.

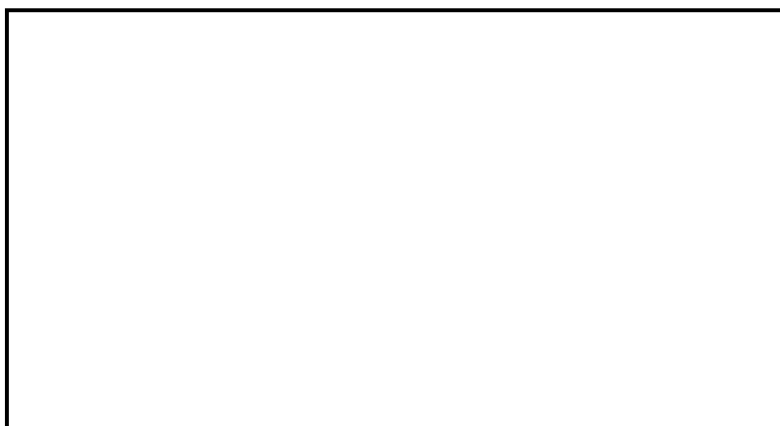
Installation Procedure

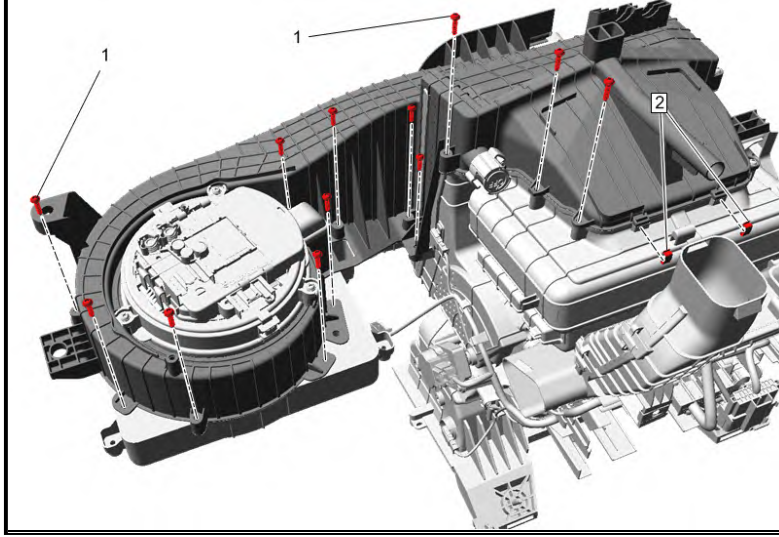
- 1.



Blower Lower Case (1) - Install

- 2.

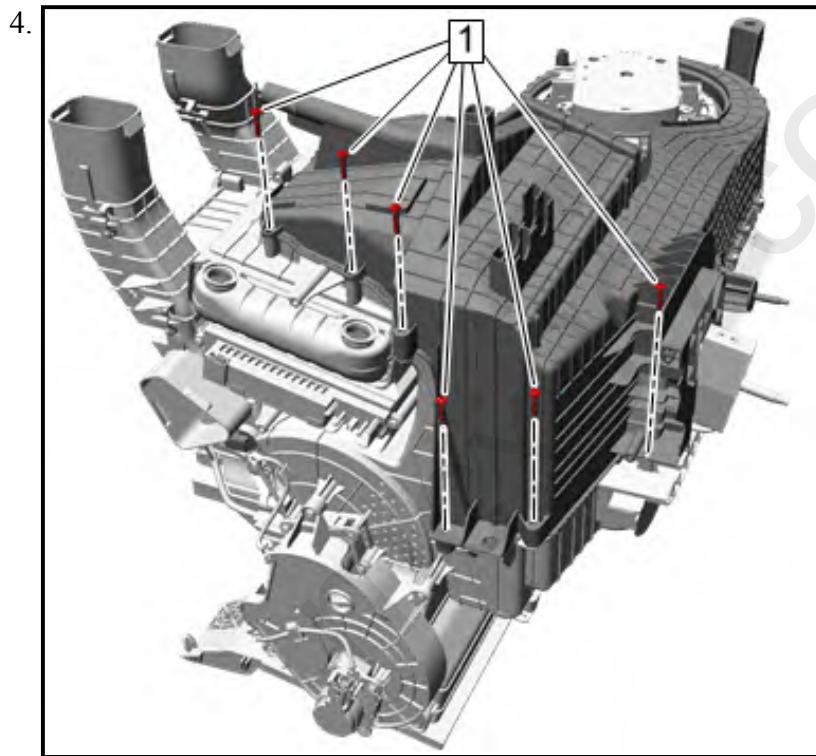




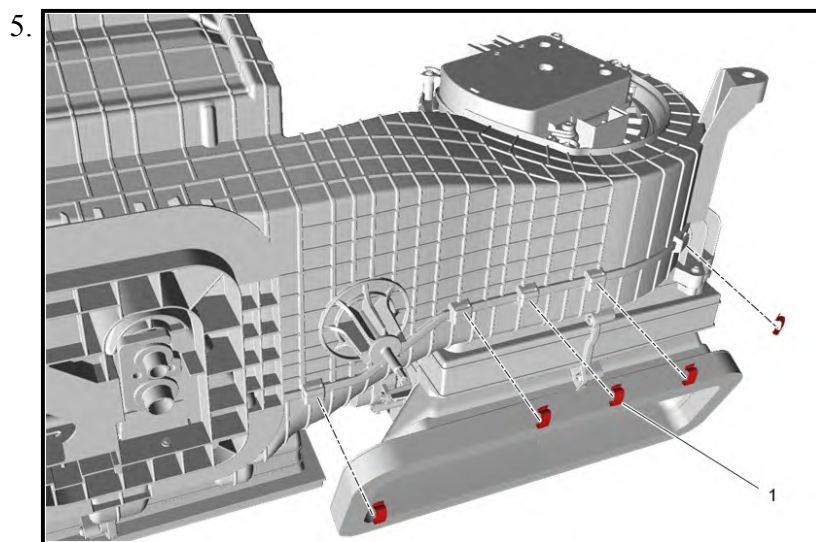
CAUTION: Refer to **Fastener Caution** .

Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Install and tighten [12x] 2.5 N.m (22 lb in)

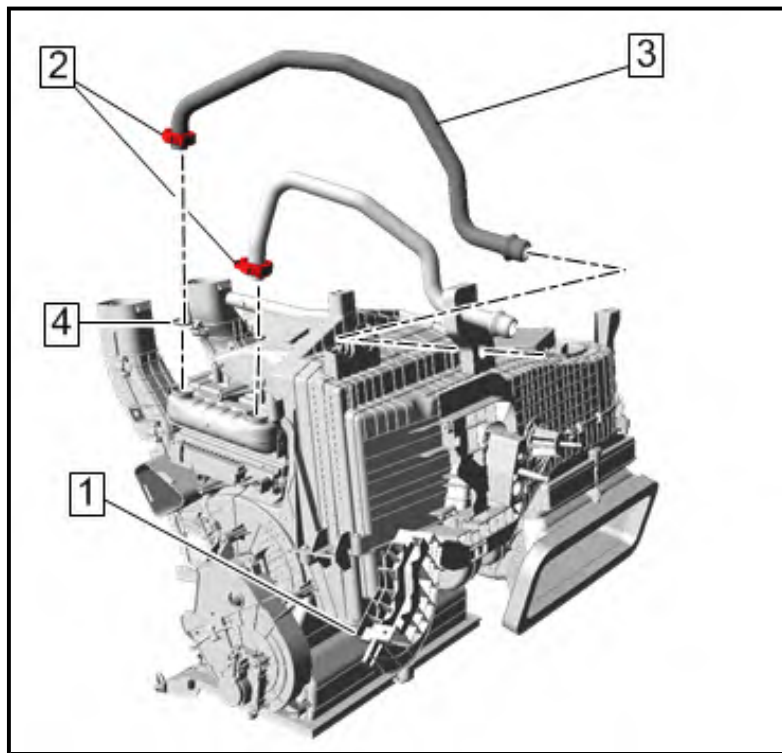
3. Retainer Clip (2) - Install [2x]



Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Install and tighten [6x] 2.5 N.m (22 lb in)

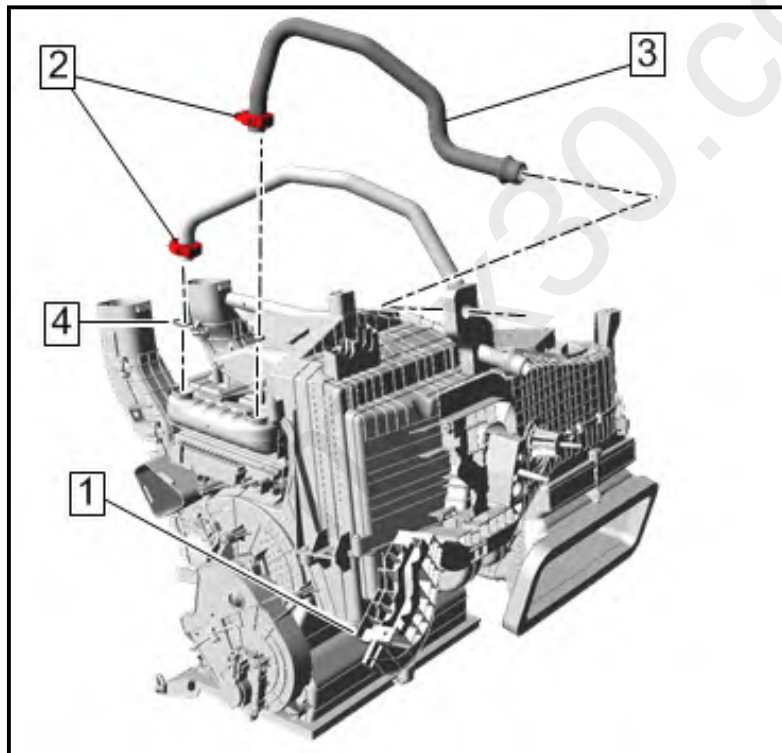


6.



Heater Core Inlet Tube (3) - Install - [Heater Core Inlet Tube Replacement \(C69\)](#)[Heater Core Inlet Tube Replacement](#)

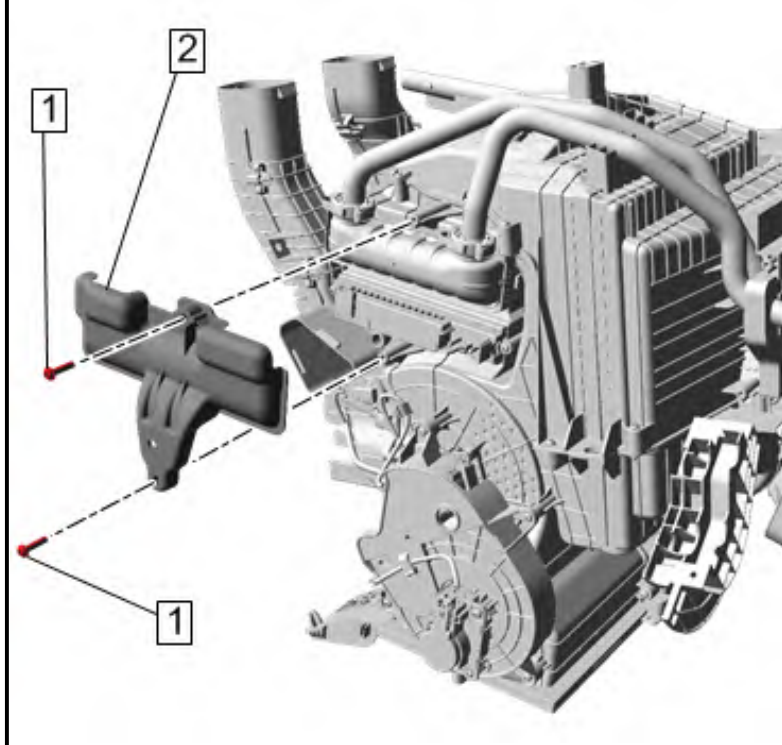
7.



Heater Core Outlet Tube (3) - Install - [Heater Core Outlet Tube Replacement \(C69\)](#)[Heater Core Outlet Tube Replacement](#)

8.

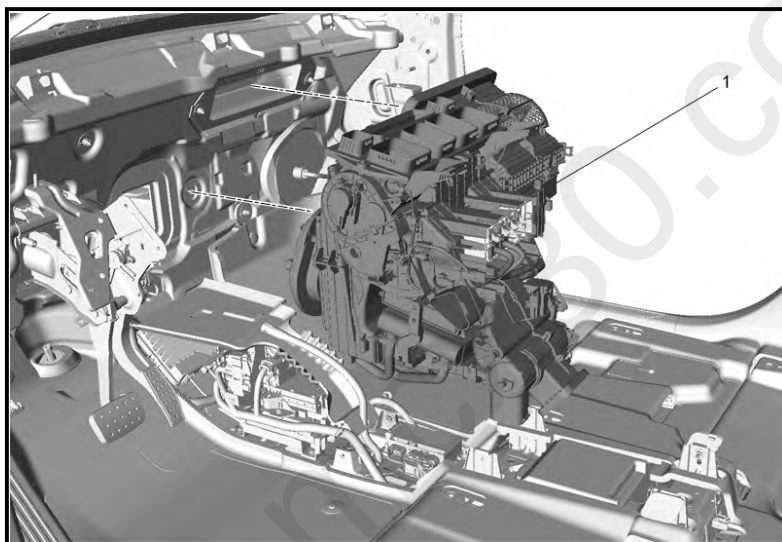




Heater Core Cover (2) - Install

9. Heater Core Cover Screw (1) - Install and tighten [2x] 2.5 N.m (22 lb in)

10.



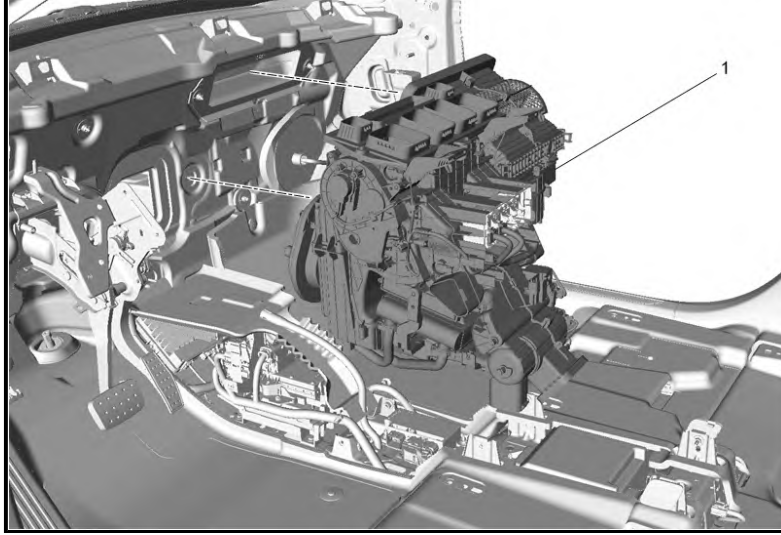
Heater and Air Conditioning Evaporator and Blower Module (1) - Install - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#)[Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#)

BLOWER UPPER CASE REPLACEMENT

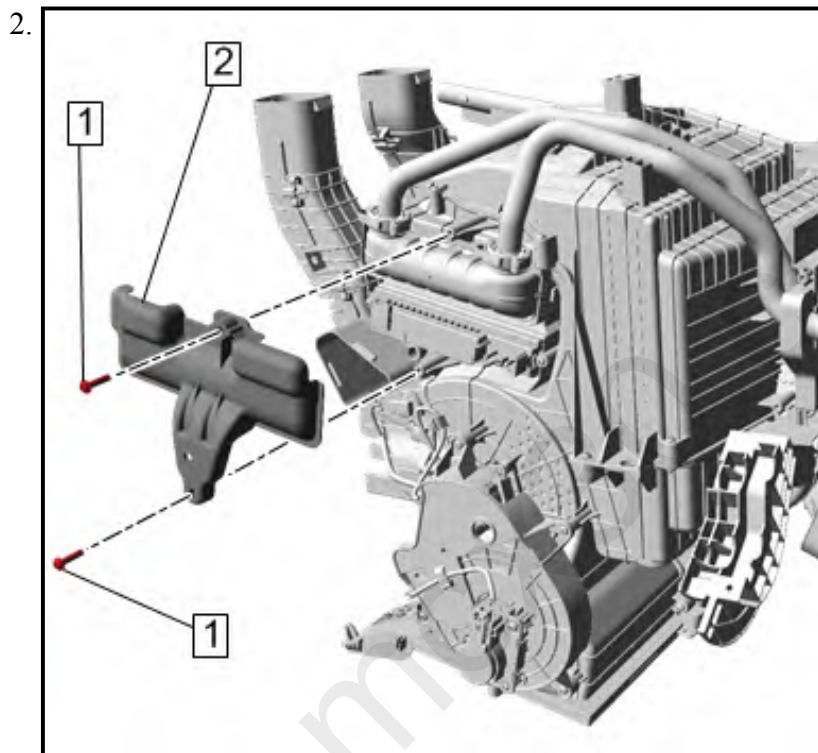
Removal Procedure

1.





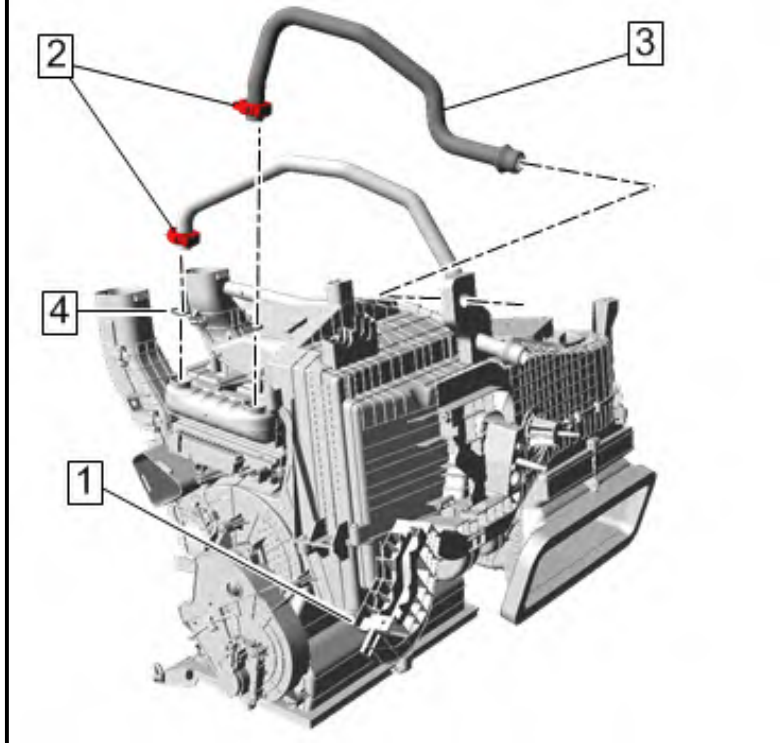
Heater and Air Conditioning Evaporator and Blower Module (1) - Remove - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#)[Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#).



Heater Core Cover Screw (1) - Remove [2x]

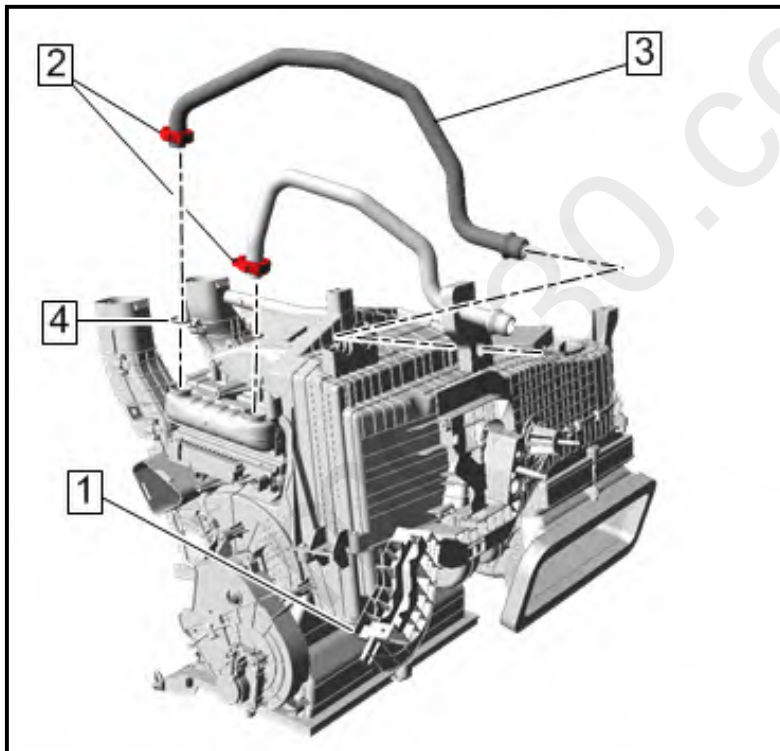
3. Heater Core Cover (2) - Remove





Heater Core Outlet Tube (3) - Remove - [Heater Core Outlet Tube Replacement \(C69\)](#)[Heater Core Outlet Tube Replacement](#)

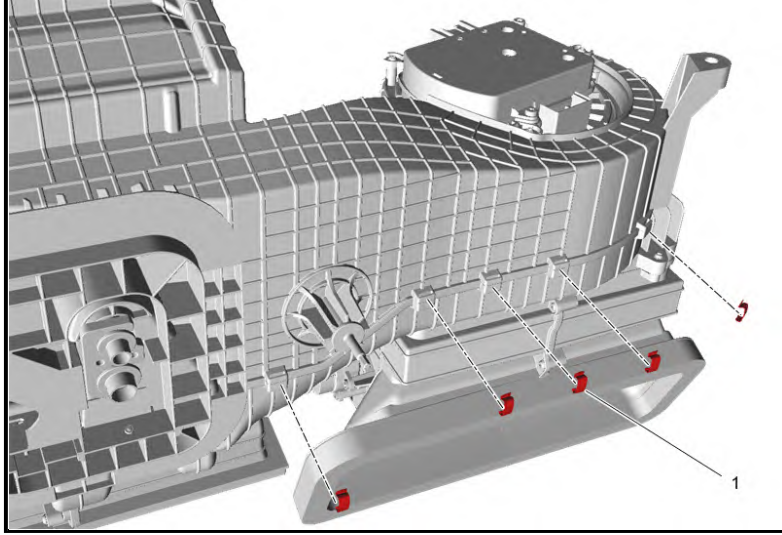
5.



Heater Core Inlet Tube (3) - Remove - [Heater Core Inlet Tube Replacement \(C69\)](#)[Heater Core Inlet Tube Replacement](#)

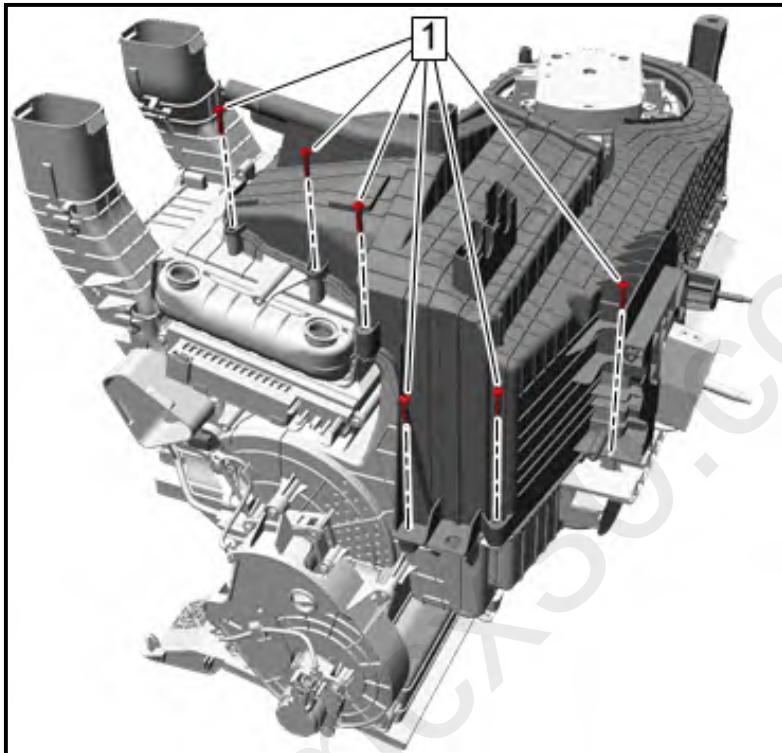
6.





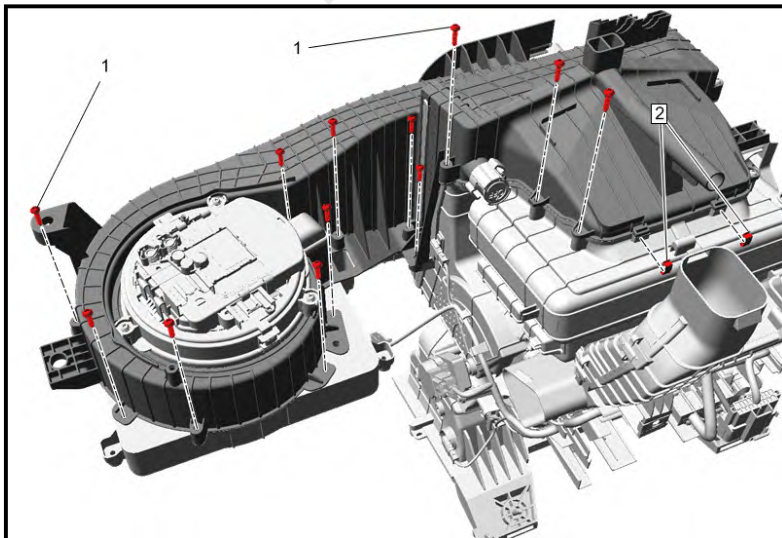
Retainer Clip (1) - Remove [5x]

7.



Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Remove [6x]

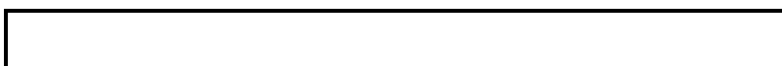
8.

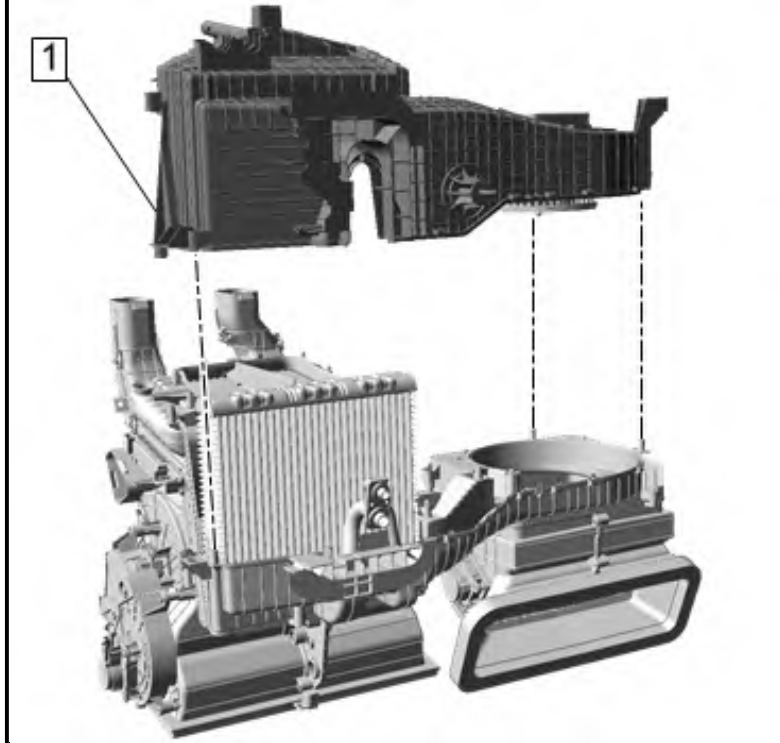


Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Remove [12x]

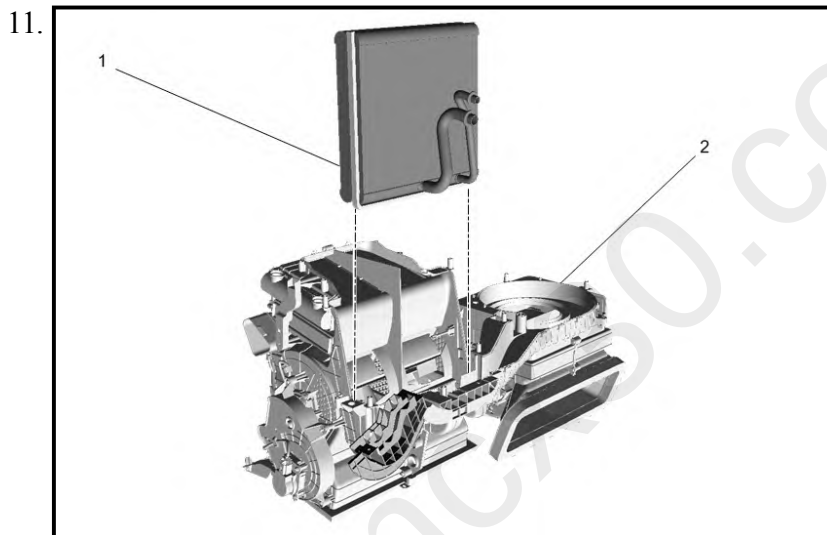
9. Retainer Clip (2) - Remove [2x]

10.

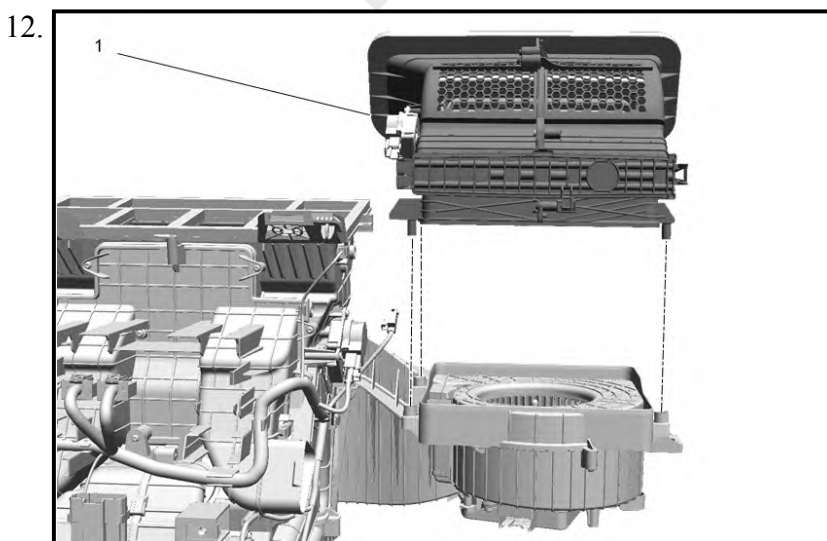




Blower Lower Case (1) - Remove

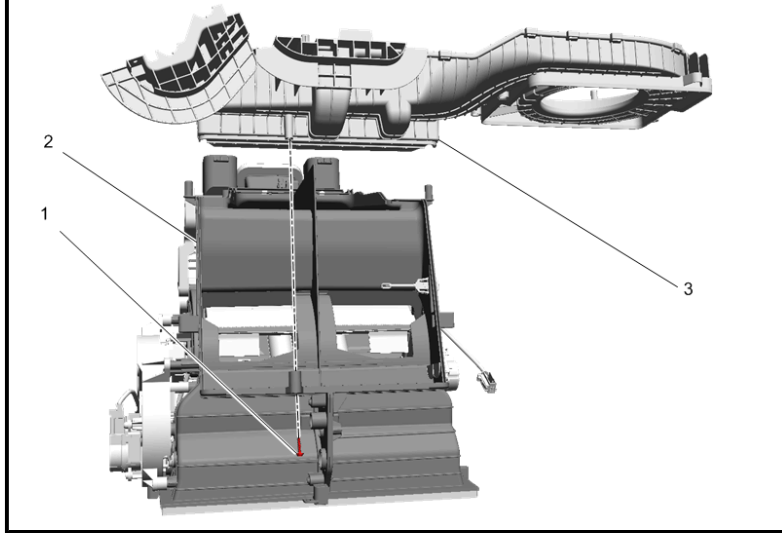


Air Conditioning Evaporator (1) @ Blower Upper Case (2) - Remove



Air Inlet Housing (1) - Remove - [Air Inlet Housing Replacement](#)



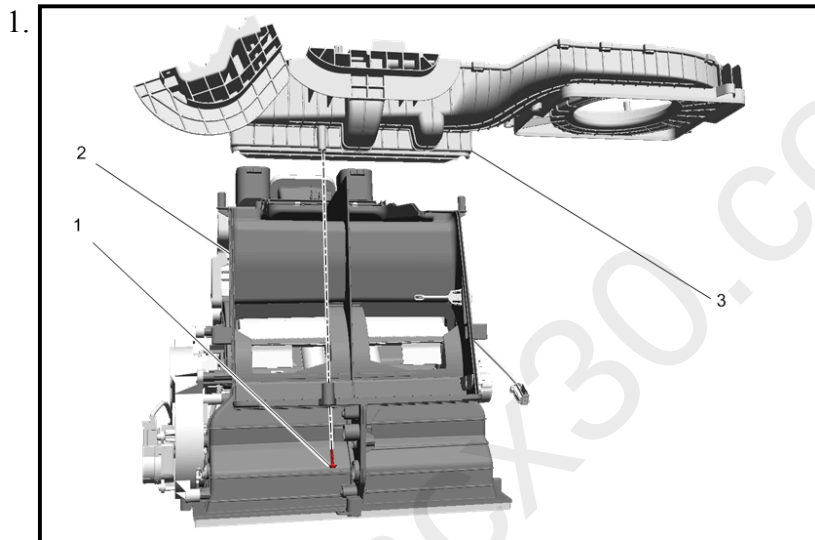


Heater and Air Conditioning Evaporator and Blower Upper Case Bolt (1) - Remove

14. Blower Upper Case (3) @ Air Distributor Case (2) - Remove

15. Transfer components as necessary.

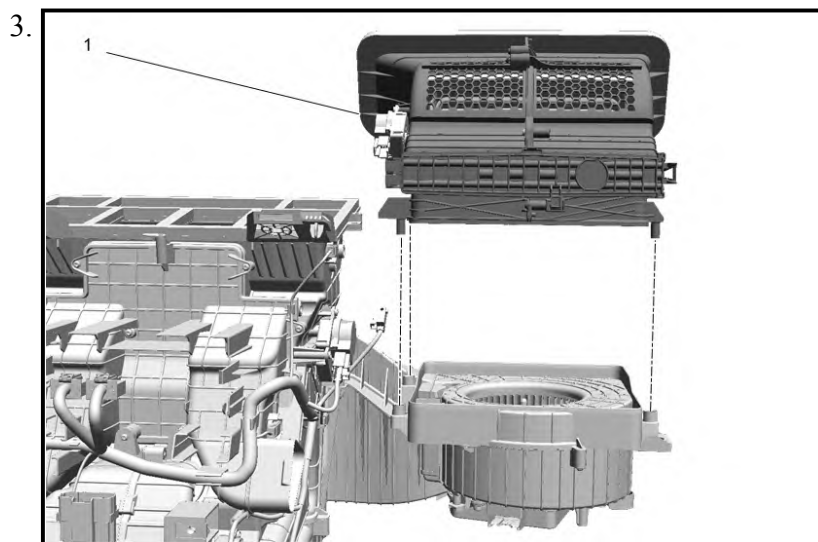
Installation Procedure



Blower Upper Case (3) @ Air Distributor Case (2) - Install

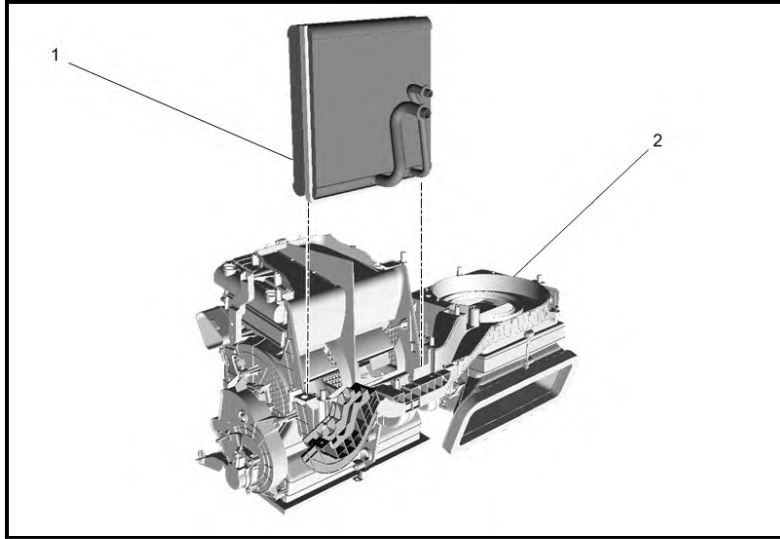
CAUTION: Refer to **Fastener Caution** .

2. Heater and Air Conditioning Evaporator and Blower Upper Case Bolt (1) - Install and tighten 2.5 N.m (22 lb in)



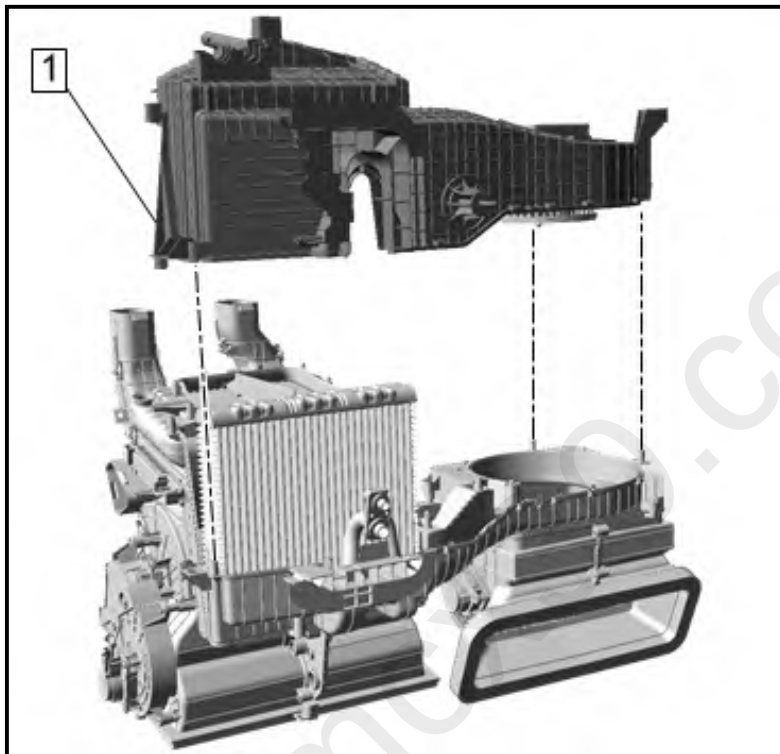
Air Inlet Housing (1) - Install - [Air Inlet Housing Replacement](#)

4.



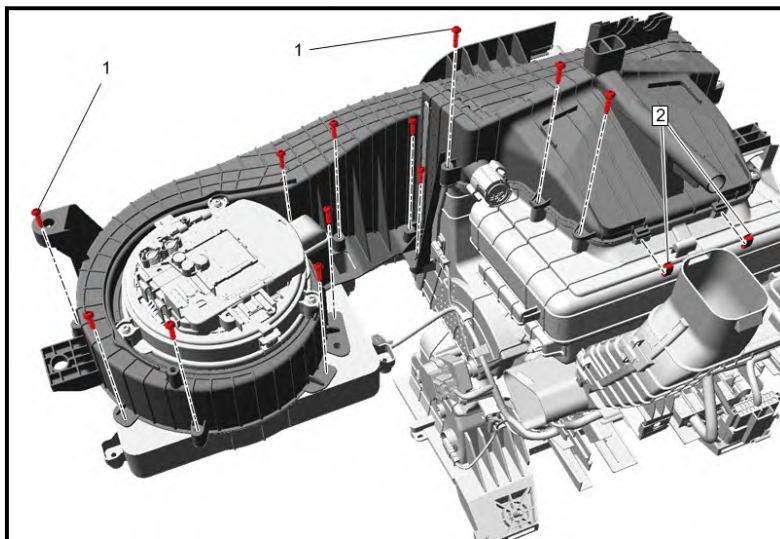
Air Conditioning Evaporator (1) @ Blower Upper Case (2) - Install

5.



Blower Lower Case (1) - Install

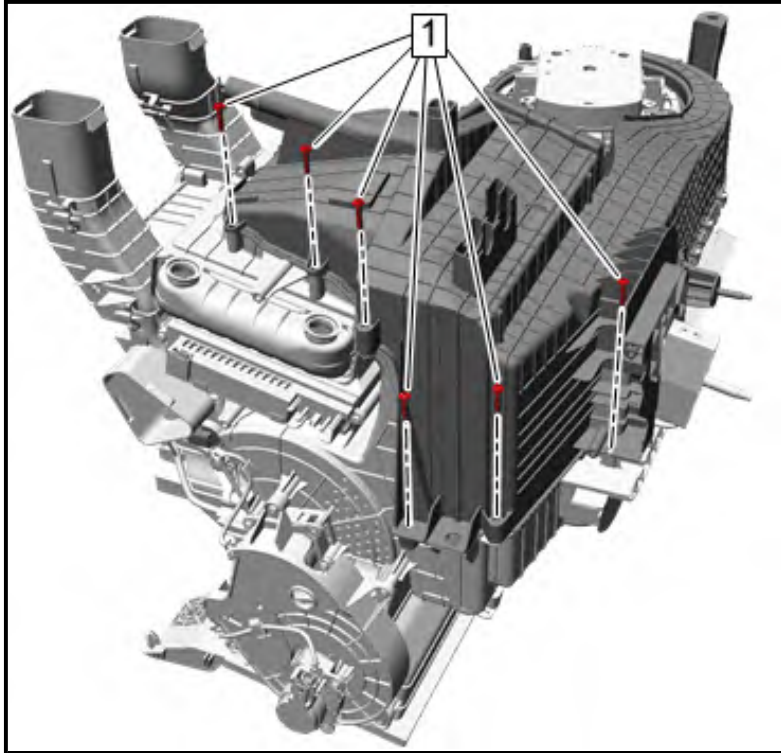
6.



Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Install and tighten [12x] 2.5 N.m (22 lb in)

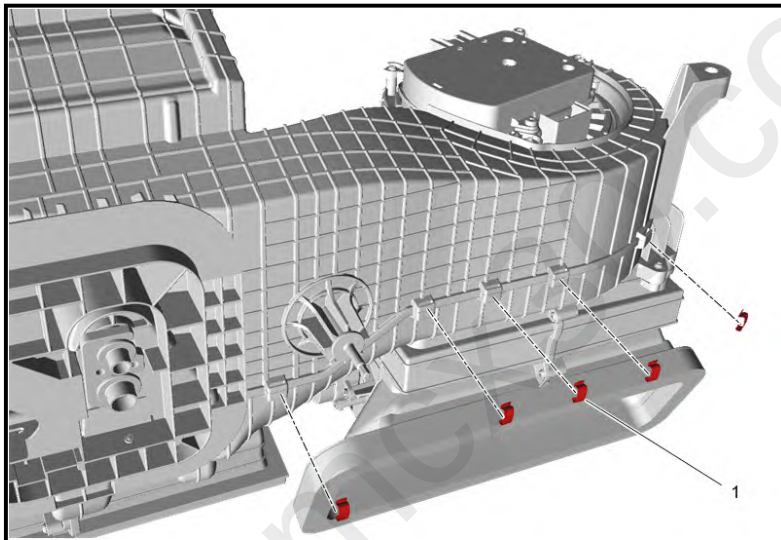
7. Retainer Clip (2) - Install [2x]

8.



Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Install and tighten [6x] 2.5 N.m (22 lb in)

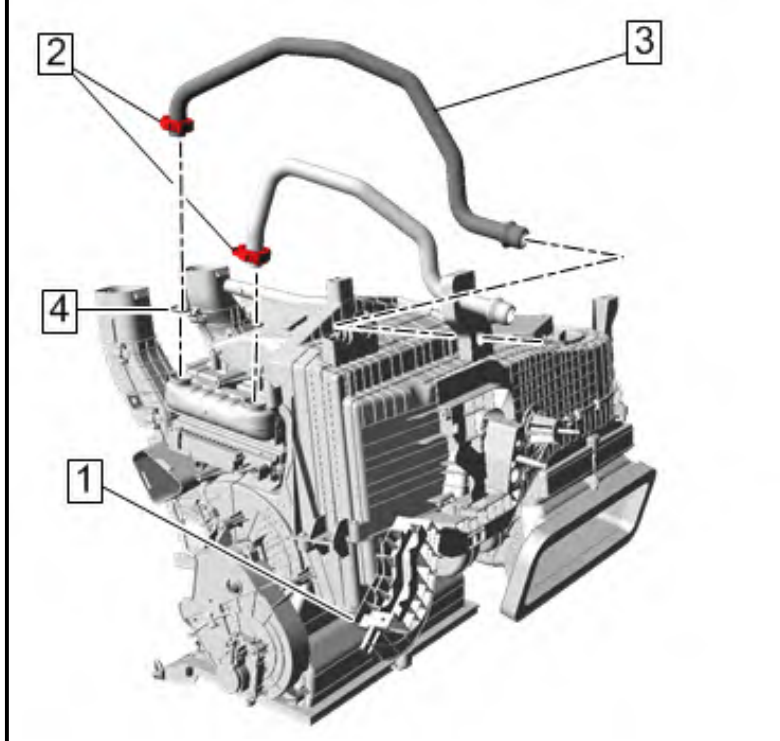
9.



Retainer Clip (1) - Install [5x]

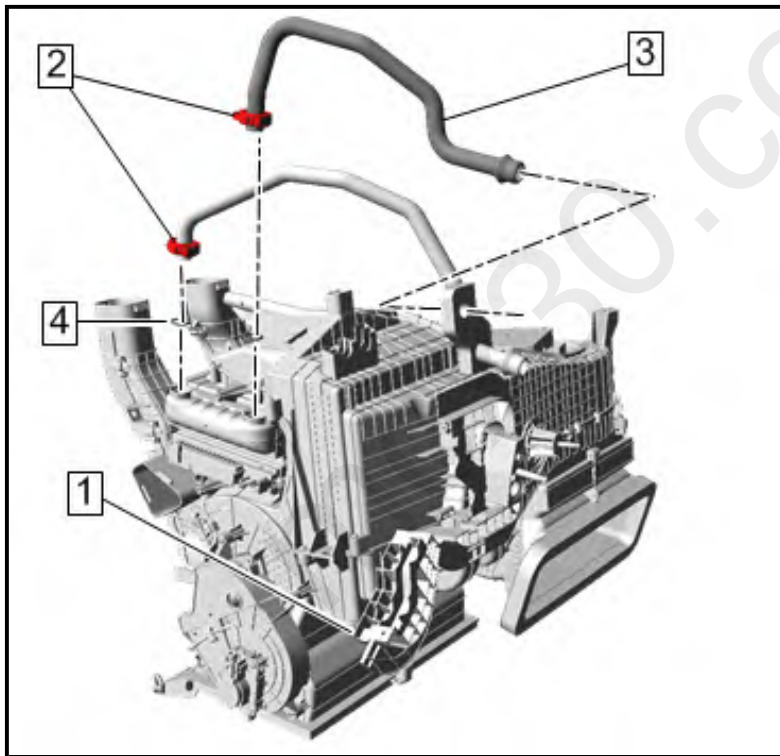
10.





Heater Core Inlet Tube (3) - Install - [Heater Core Inlet Tube Replacement \(C69\)](#)[Heater Core Inlet Tube Replacement](#)

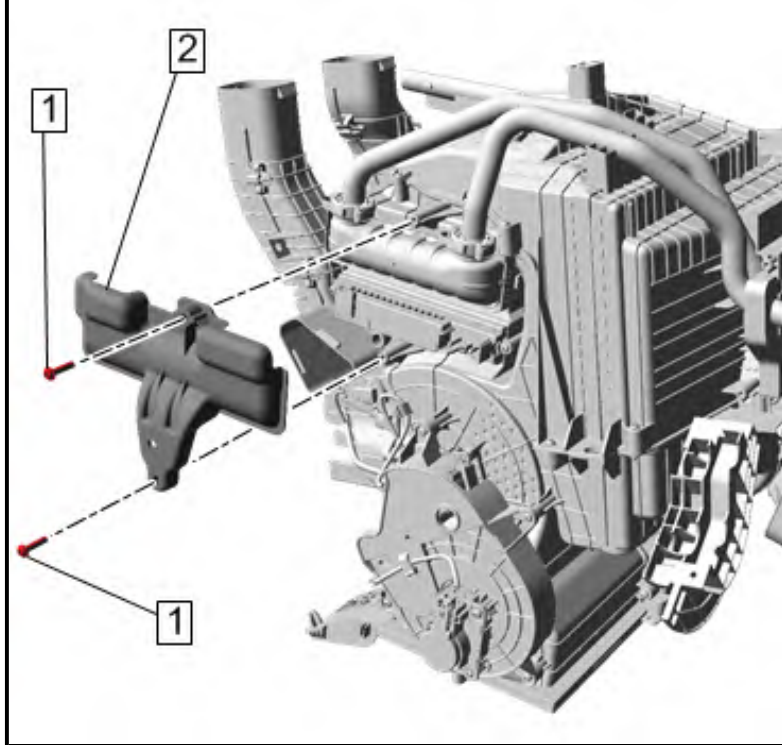
11.



Heater Core Outlet Tube (3) - Install - [Heater Core Outlet Tube Replacement \(C69\)](#)[Heater Core Outlet Tube Replacement](#)

12.

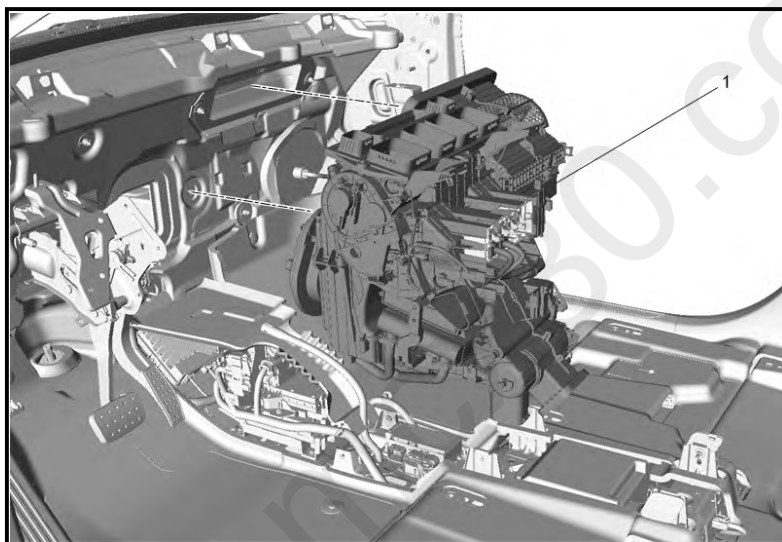




Heater Core Cover (2) - Install

13. Heater Core Cover Screw (1) - Install and tighten [2x] 2.5 N.m (22 lb in)

14.



Heater and Air Conditioning Evaporator and Blower Module (1) - Install - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#) [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#)

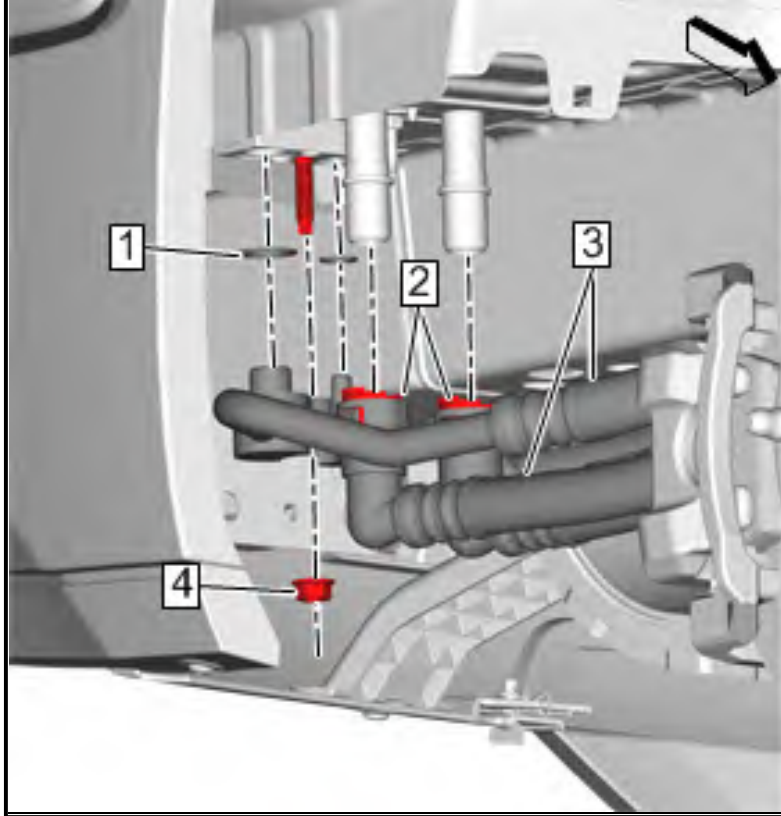
AUXILIARY HEATER AND AIR CONDITIONING WIRING HARNESS REPLACEMENT (C69)

Removal Procedure

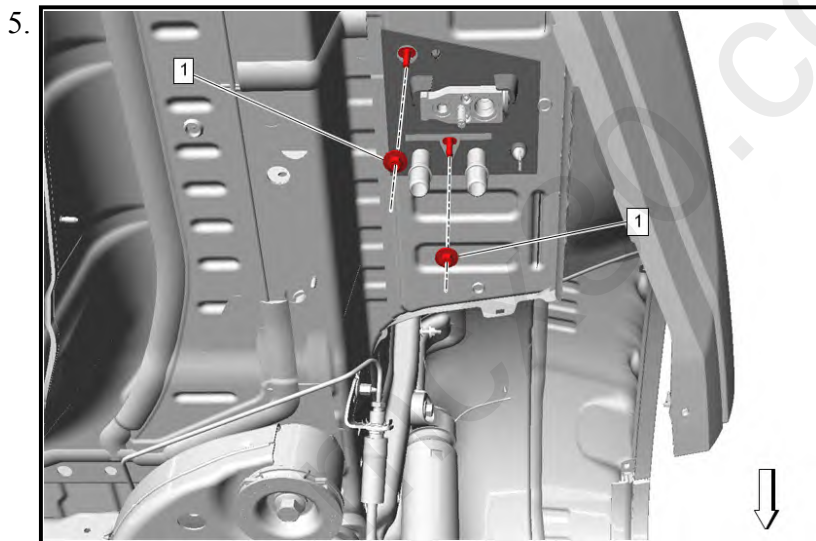
1. Disconnect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
2. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#) [Refrigerant Recovery and Recharging \(R-1234yf\)](#)
3. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\)](#) [Cooling System Draining and Filling \(Static Fill\)](#)

4.





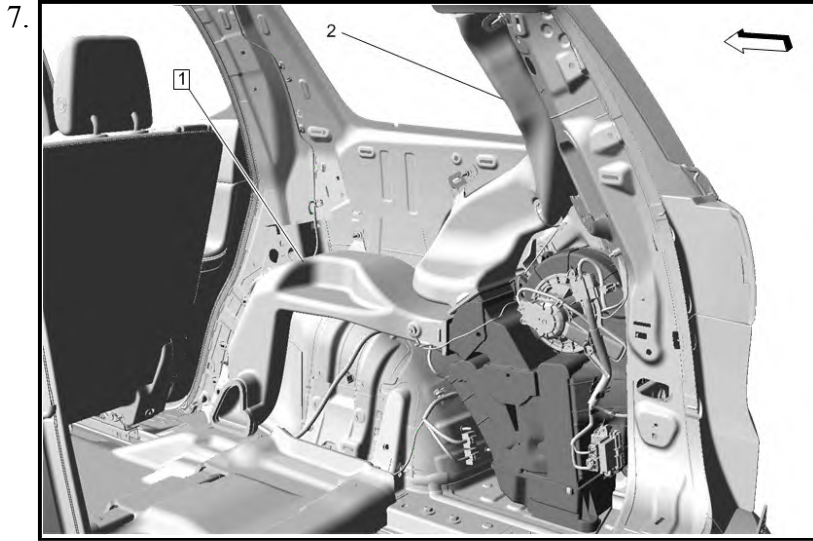
Auxiliary Air Conditioning Evaporator Intermediate Tube (3) @ Auxiliary Air Conditioning Evaporator and Blower Module - Remove - **Auxiliary Air Conditioning Evaporator Intermediate Tube Replacement**



Auxiliary Air Conditioning Evaporator and Blower Module Nut (1) - Remove [2x]

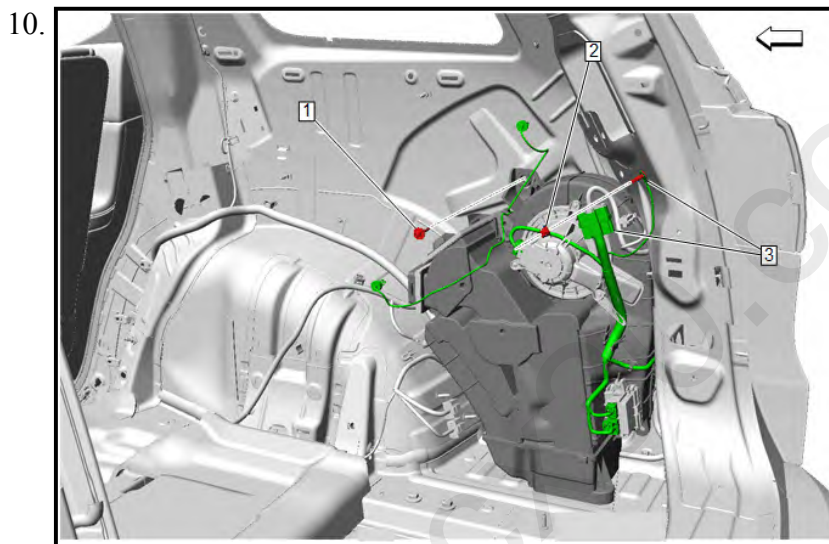


Quarter Lower Rear Trim Panel (1) - Remove - **Quarter Lower Rear Trim Panel Replacement (Right Side)**



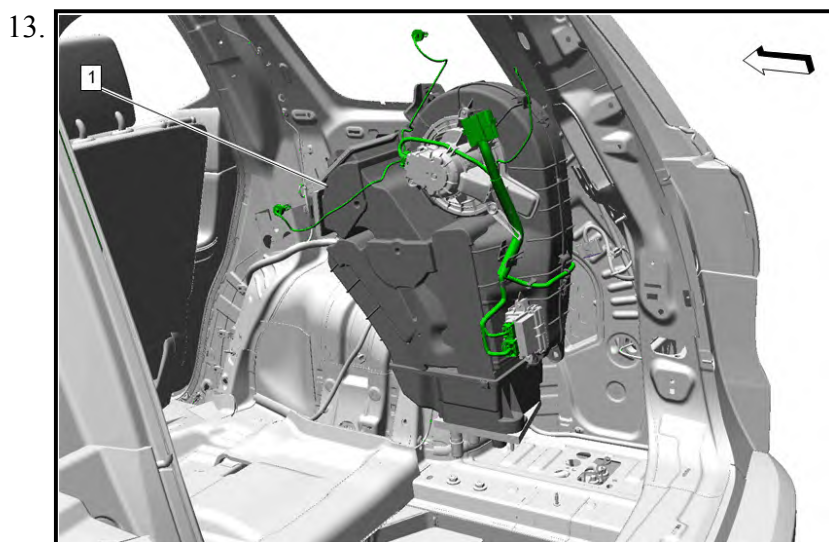
Remove the duct temperature sensors from the ducts.

8. Auxiliary Heater Air Outlet Duct (1) - Remove - [Auxiliary Heater Air Outlet Duct Replacement](#)
 9. Auxiliary Air Conditioning Air Lower Duct (2) - Remove - [Auxiliary Air Conditioning Air Lower Duct Replacement](#)

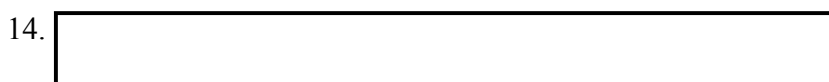


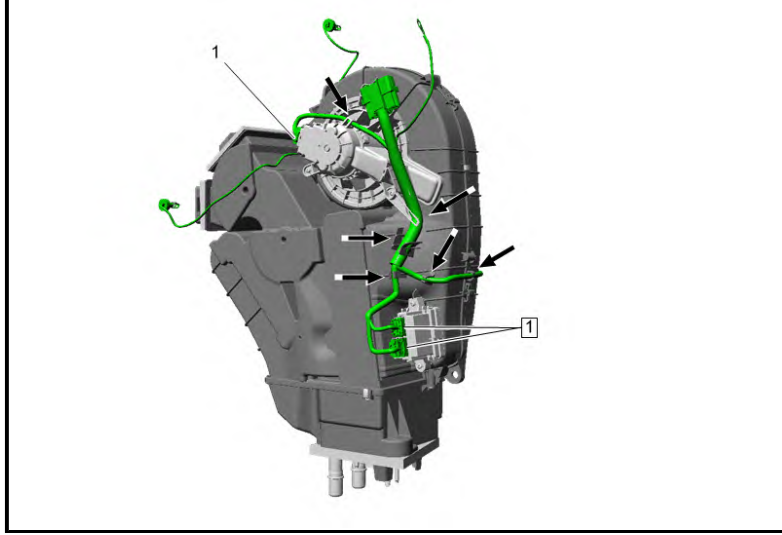
Auxiliary Air Conditioning Evaporator and Blower Module Bolt (1) - Remove

11. Ground Nut (2) - Remove
 12. Disconnect the auxiliary heater and air conditioning wiring harness connector and ground terminal (3).



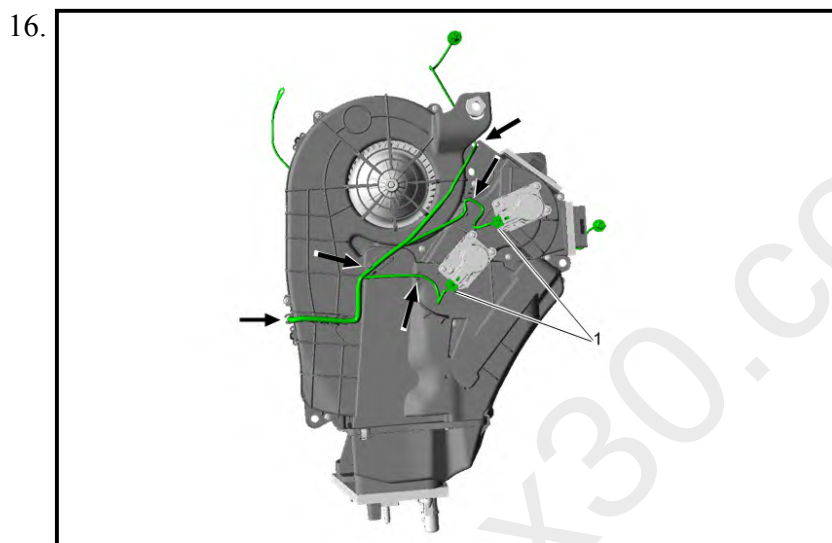
Auxiliary Air Conditioning Evaporator and Blower Module (1) - Remove





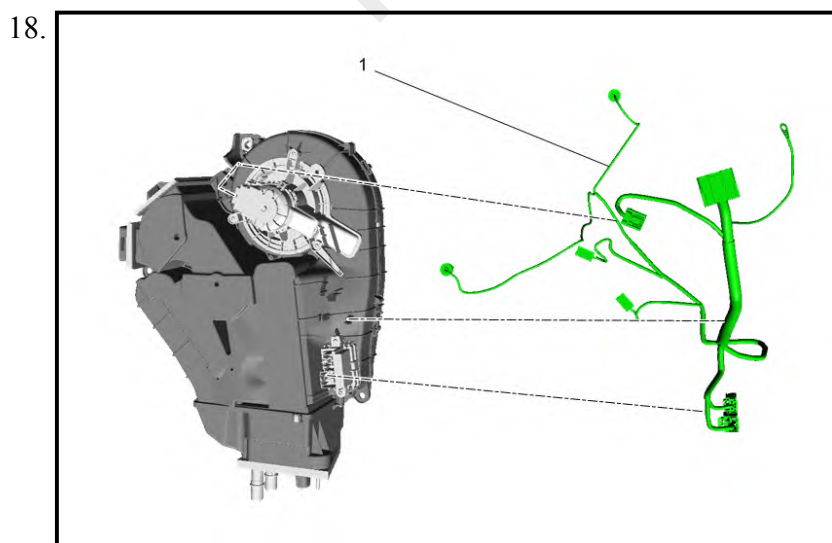
Disconnect the electrical connectors. (1) [3x]

15. Unfasten the auxiliary heater and air conditioning wiring harness from the auxiliary air conditioning evaporator and blower module indicated by the arrows.



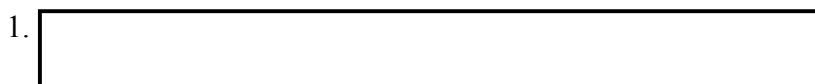
Disconnect the electrical connectors. (1) [2x]

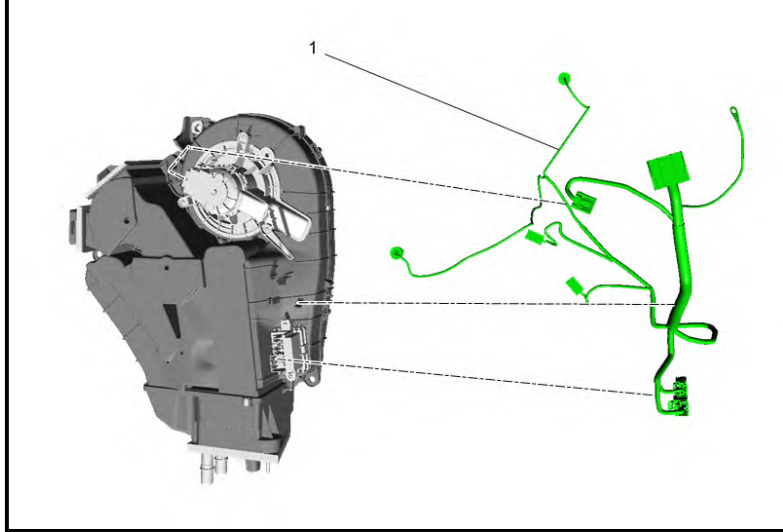
17. Unfasten the auxiliary heater and air conditioning wiring harness from the auxiliary air conditioning evaporator and blower module indicated by the arrows.



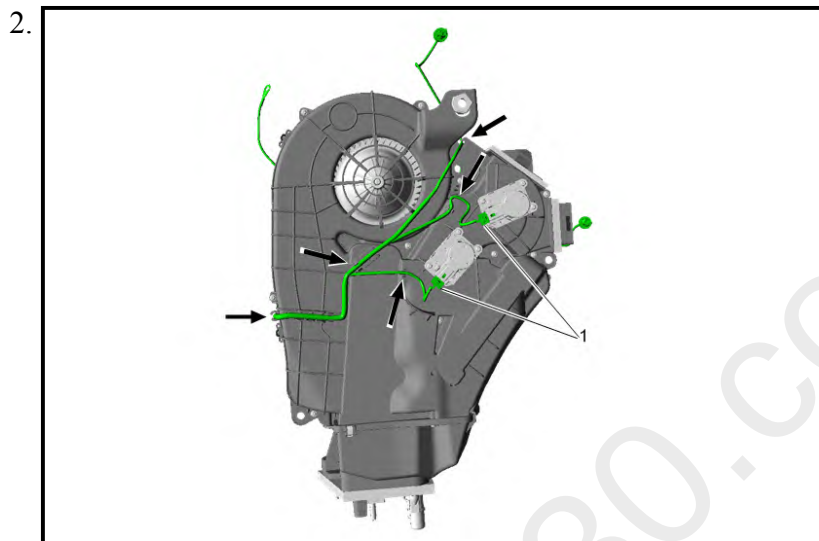
Auxiliary Heater and Air Conditioning Wiring Harness (1) - Remove

Installation Procedure



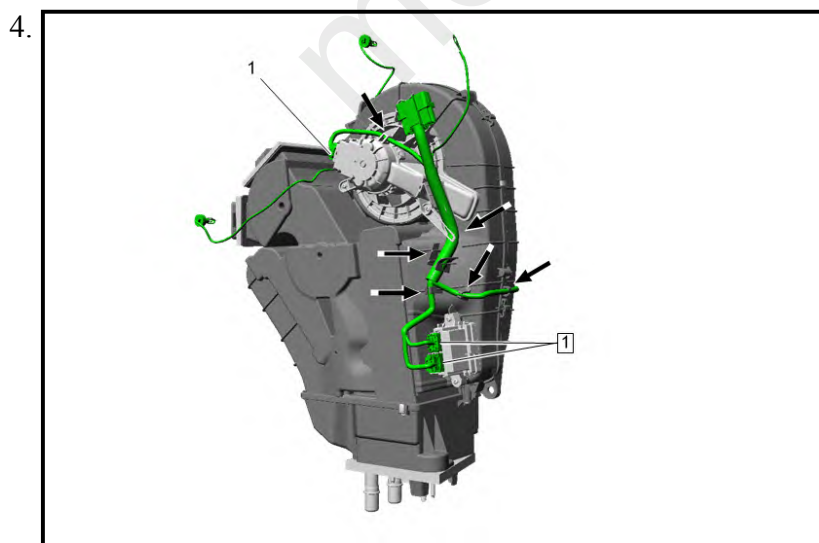


Auxiliary Heater and Air Conditioning Wiring Harness (1) - Install



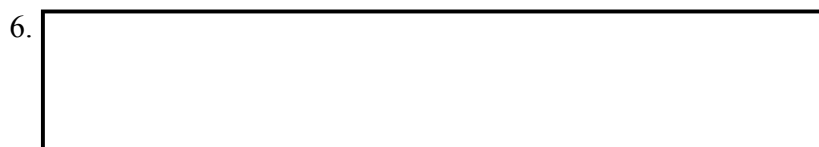
Connect the electrical connectors. (1) [2x]

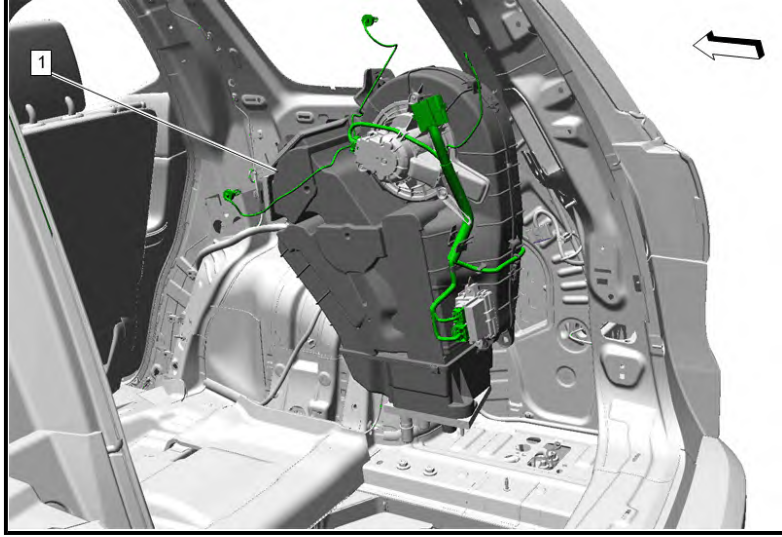
3. Fasten the auxiliary heater and air conditioning wiring harness onto the auxiliary air conditioning evaporator and blower module indicated by the arrows.



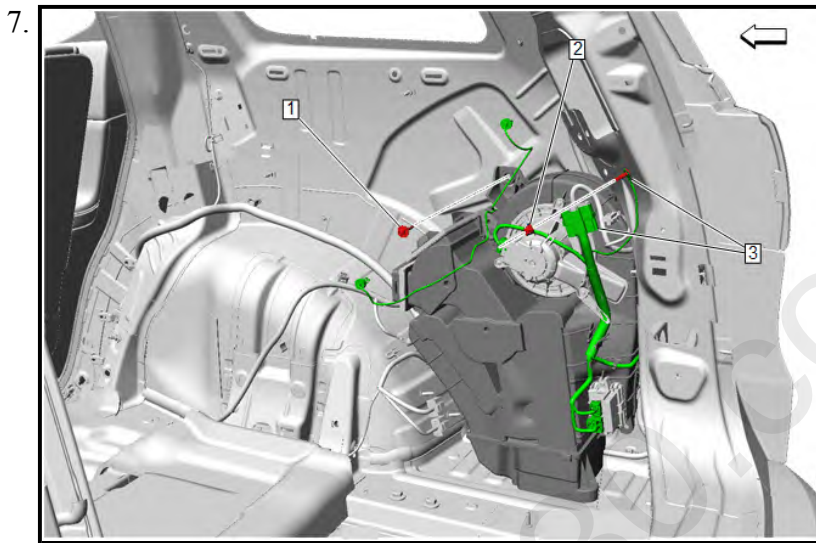
Connect the electrical connectors. (1) [3x]

5. Fasten the auxiliary heater and air conditioning wiring harness onto the auxiliary air conditioning evaporator and blower module indicated by the arrows.





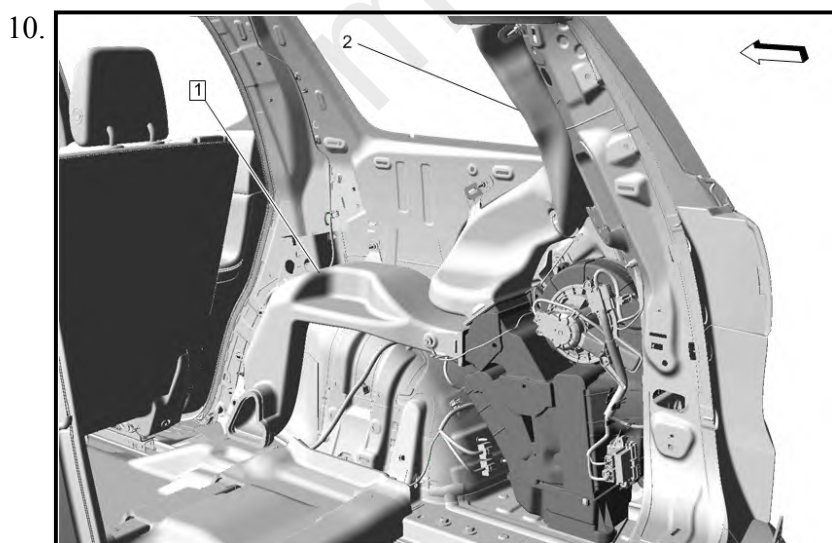
Auxiliary Air Conditioning Evaporator and Blower Module (1) - Install



Auxiliary Air Conditioning Evaporator and Blower Module Bolt (1) - Install and tighten 2.5 N.m (22 lb in)

8. Connect the auxiliary heater and air conditioning wiring harness connector and ground terminal (3).

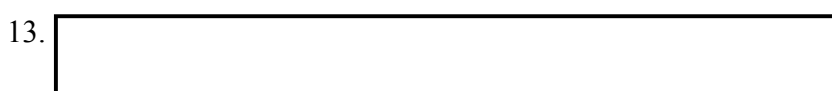
9. Ground Nut (2) - Install and tighten 9 N.m (80 lb in)



Auxiliary Air Conditioning Air Lower Duct (2) - Install - [Auxiliary Air Conditioning Air Lower Duct Replacement](#)

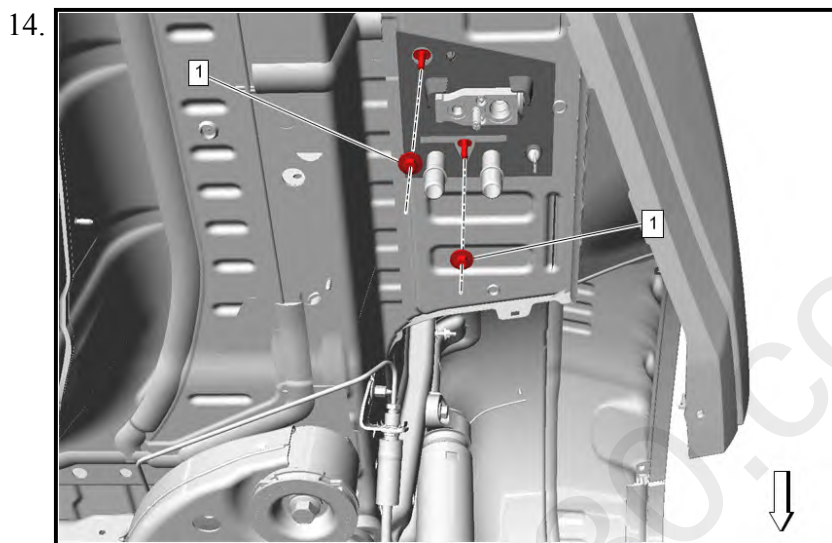
11. Auxiliary Heater Air Outlet Duct (1) - Install - [Auxiliary Heater Air Outlet Duct Replacement](#)

12. Install the duct temperature sensors into the ducts.

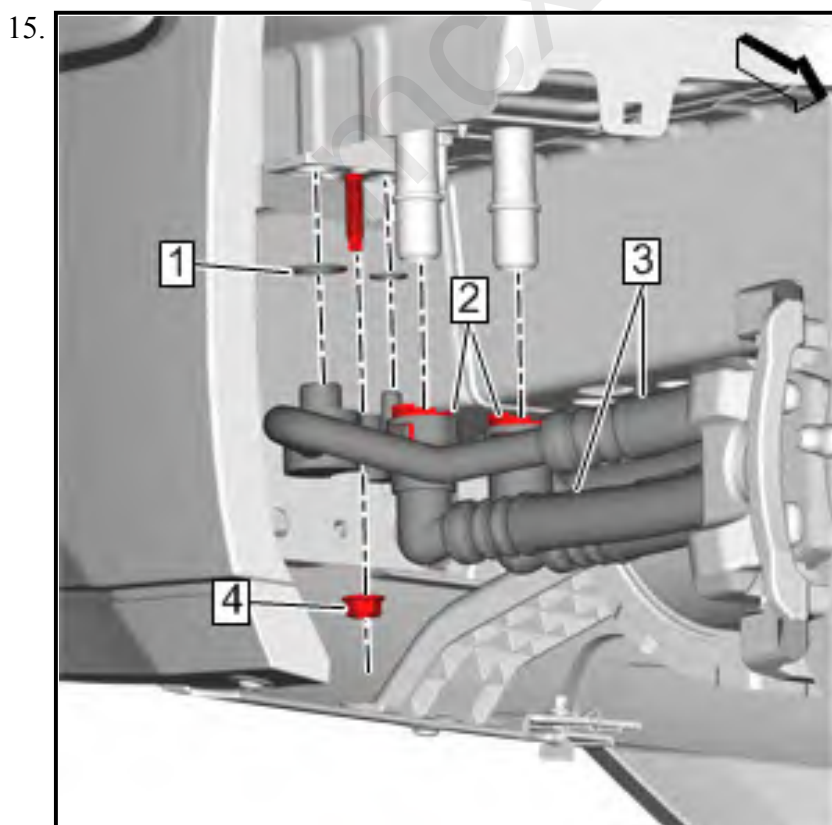




Quarter Lower Rear Trim Panel (1) - Install - [Quarter Lower Rear Trim Panel Replacement \(Right Side\)](#)



Auxiliary Air Conditioning Evaporator and Blower Module Nut (1) - Install and tighten [2x] 9 N.m (80 lb in)

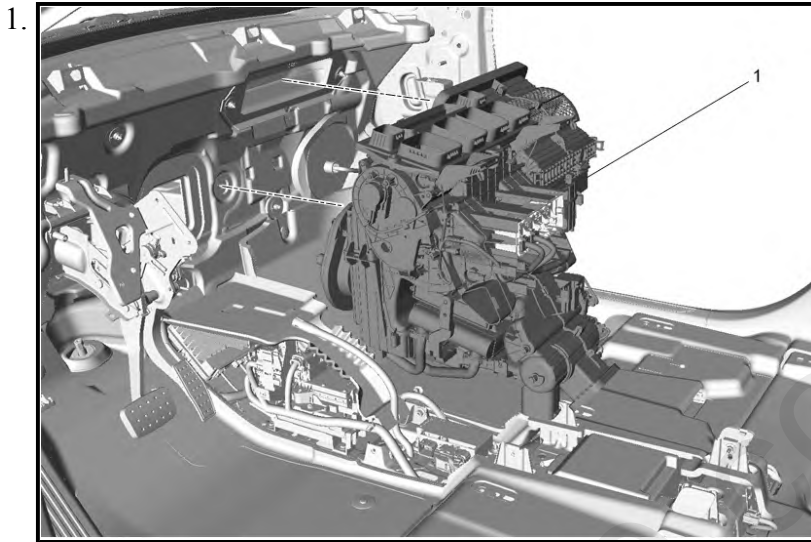


Auxiliary Air Conditioning Evaporator Intermediate Tube (3) @ Auxiliary Air Conditioning Evaporator and Blower Module - Install - [Auxiliary Air Conditioning Evaporator Intermediate Tube Replacement](#)

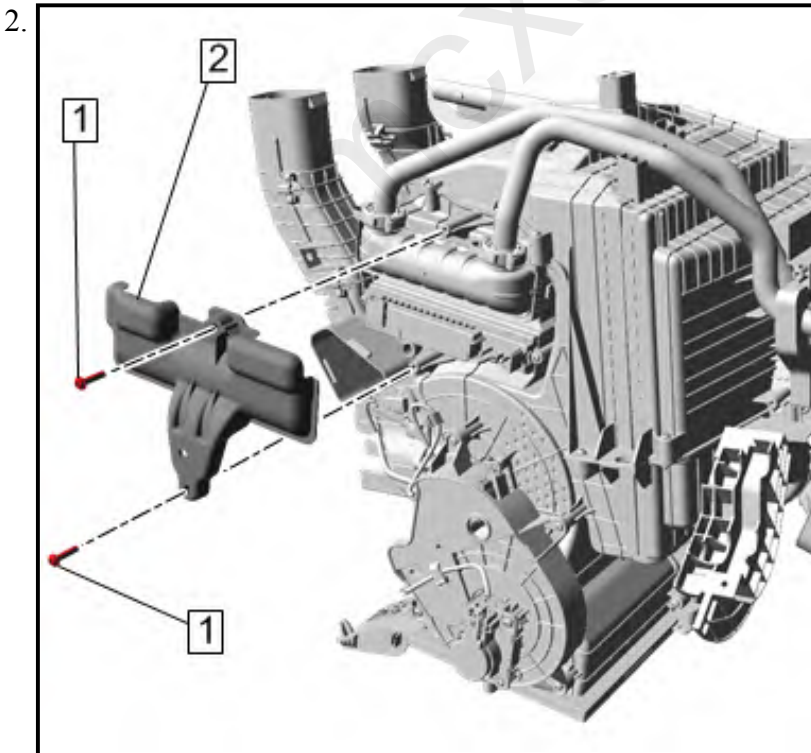
16. Connect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#).
17. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\)](#) [Cooling System Draining and Filling \(Static Fill\)](#).
18. Evacuate and charge the refrigerant system. [Refrigerant Recovery and Recharging \(R-134a\)](#) [Refrigerant Recovery and Recharging \(R-1234yf\)](#).
19. Clear the DTCs from the heater and air conditioning remote control module.
20. Perform the actuator calibration procedure. [Actuator Recalibration](#)
21. Inspect for coolant leaks.
22. Inspect for refrigerant leaks.

AIR CONDITIONING EVAPORATOR REPLACEMENT (R134A)

Removal Procedure

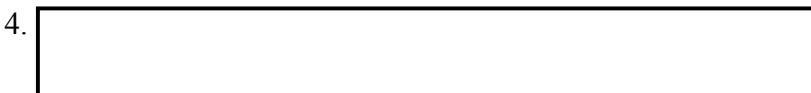


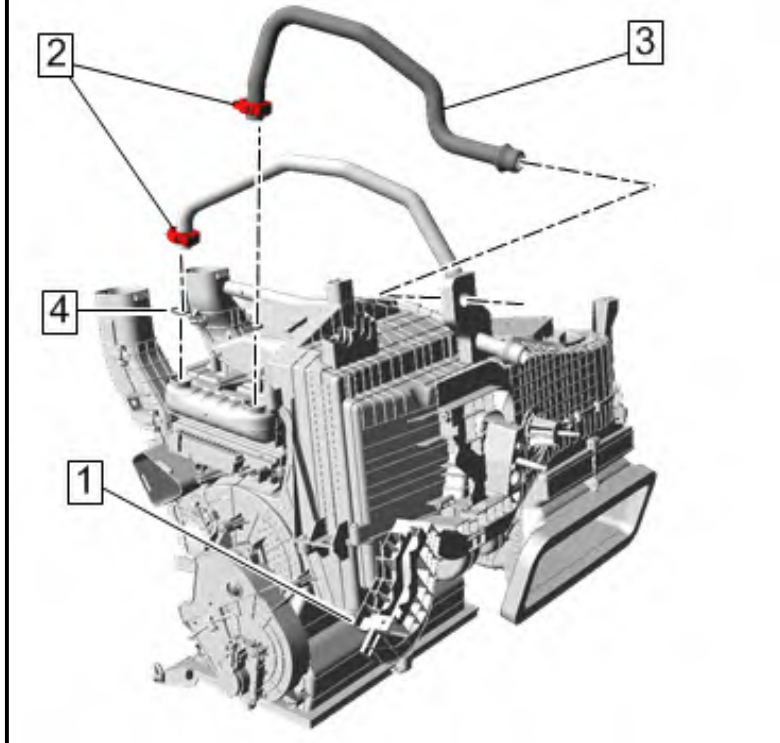
Heater and Air Conditioning Evaporator and Blower Module (1) - Remove - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#) [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#).



Heater Core Cover Screw (1) - Remove [2x]

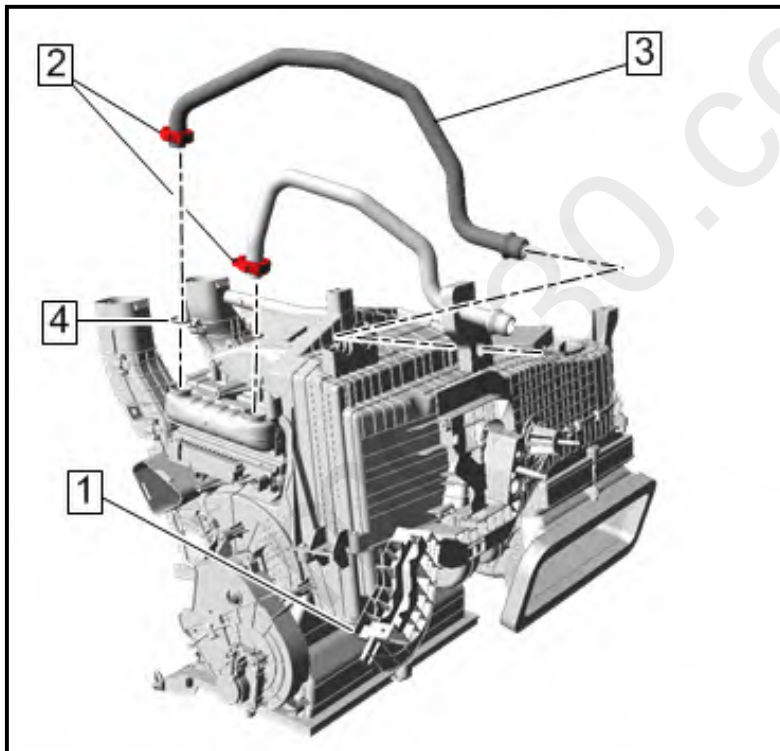
3. Heater Core Cover (2) - Remove





Heater Core Outlet Tube (3) - Remove - [Heater Core Outlet Tube Replacement \(C69\)](#)[Heater Core Outlet Tube Replacement](#)

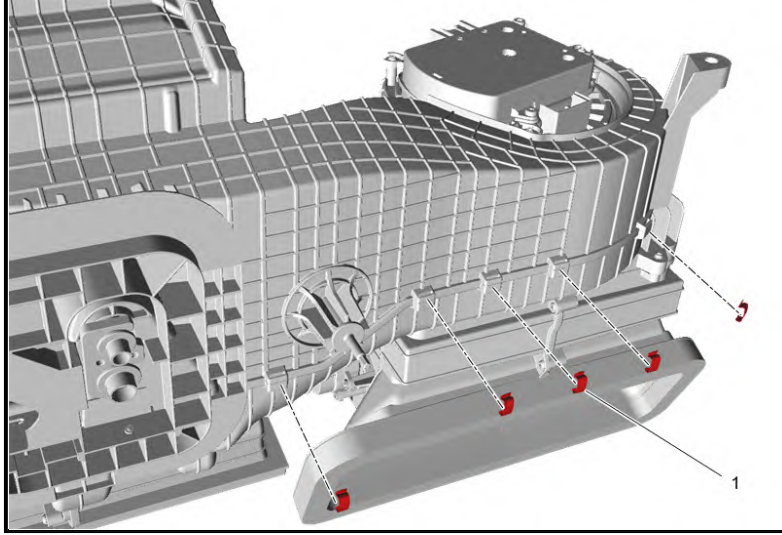
5.



Heater Core Inlet Tube (3) - Remove - [Heater Core Inlet Tube Replacement \(C69\)](#)[Heater Core Inlet Tube Replacement](#)

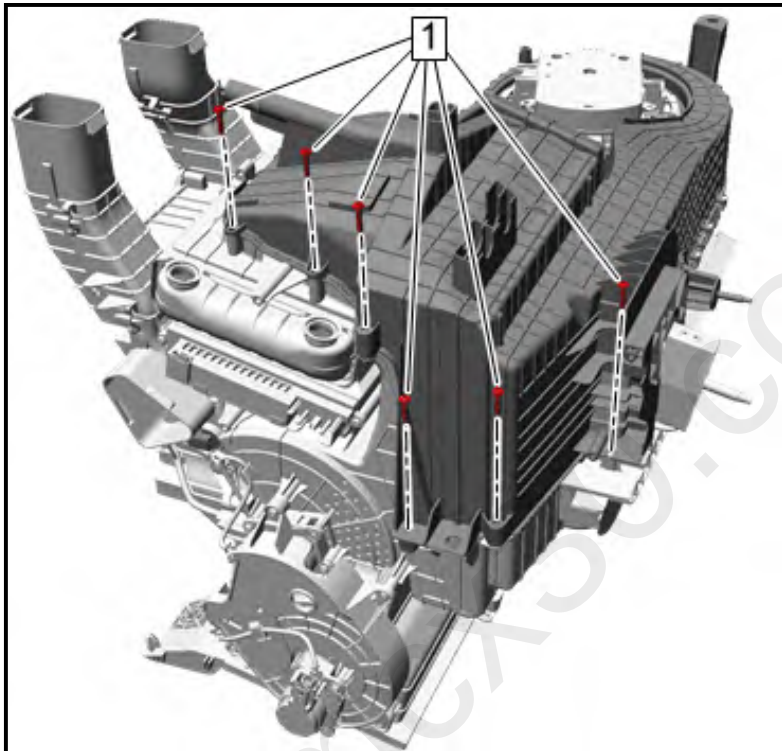
6.





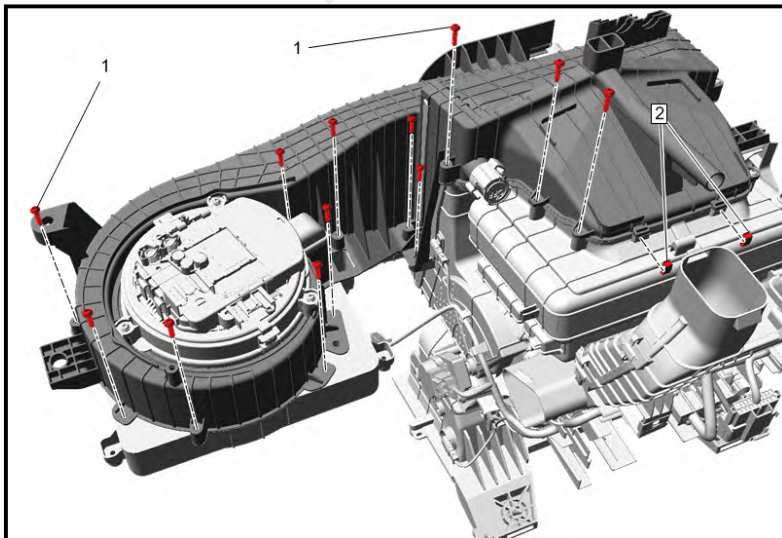
Retainer Clip (1) - Remove [5x]

7.



Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Remove [6x]

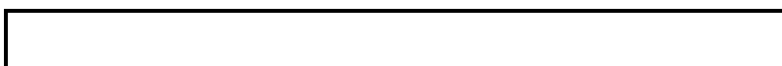
8.

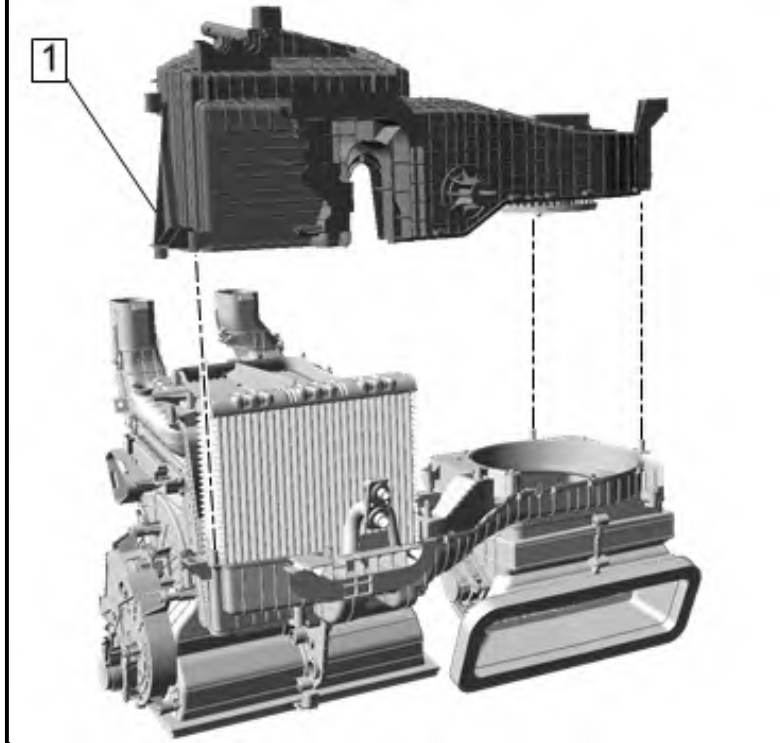


Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Remove [12x]

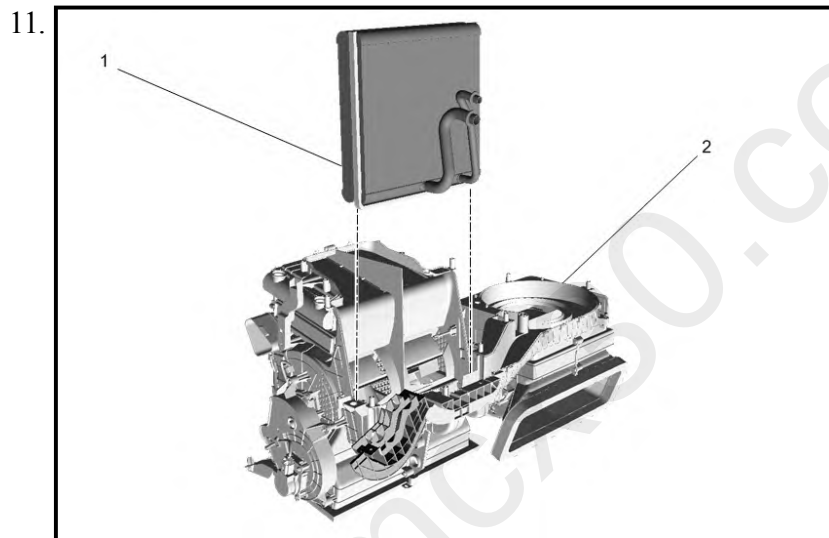
9. Retainer Clip (2) - Remove [2x]

10.





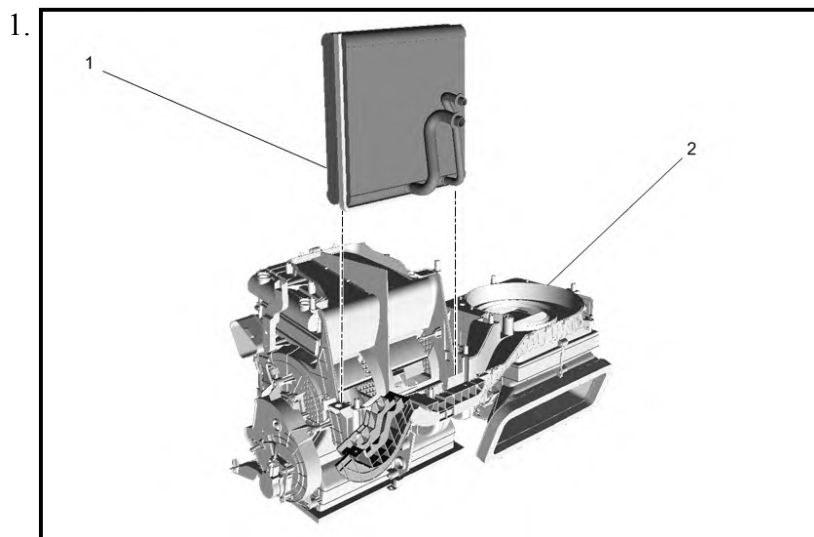
Blower Lower Case (1) - Remove



Air Conditioning Evaporator (1) @ Blower Upper Case (2) - Remove

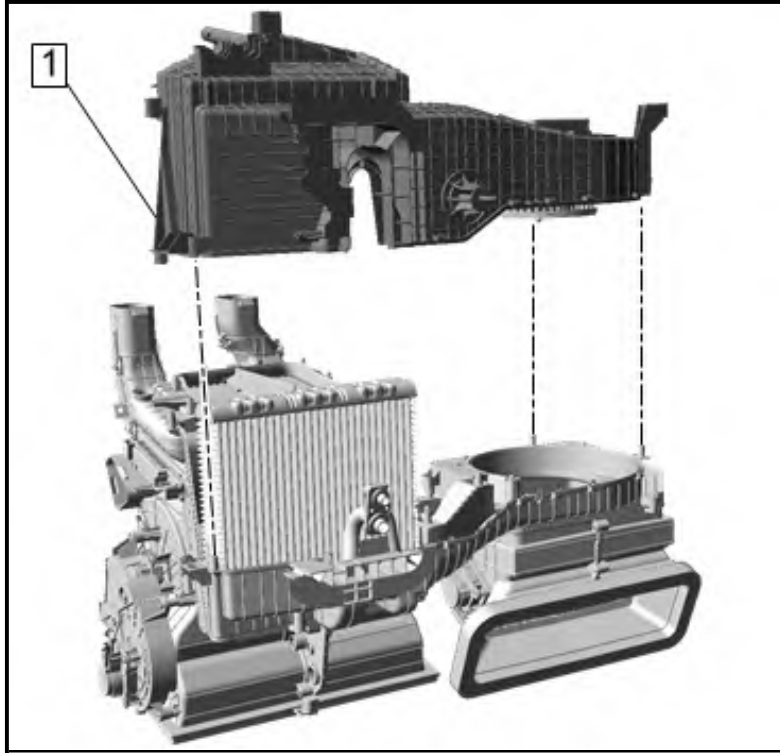
12. Transfer components as necessary.

Installation Procedure



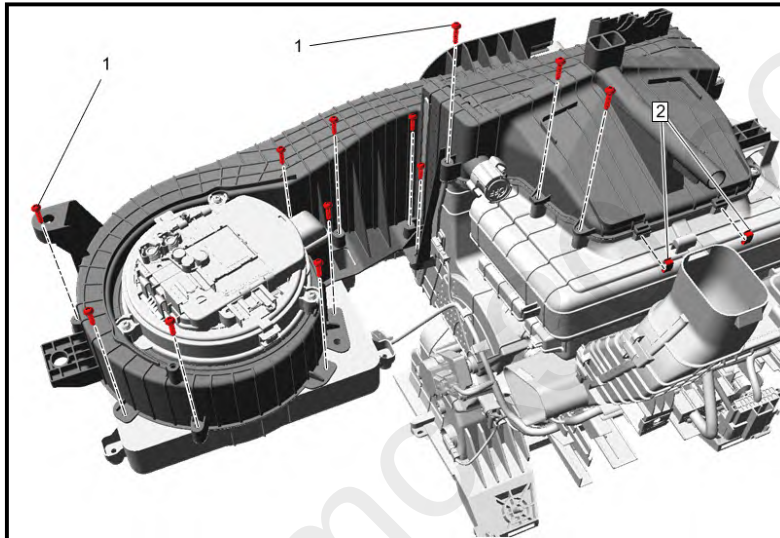
Air Conditioning Evaporator (1) @ Blower Upper Case (2) - Install

2.



Blower Lower Case (1) - Install

3.

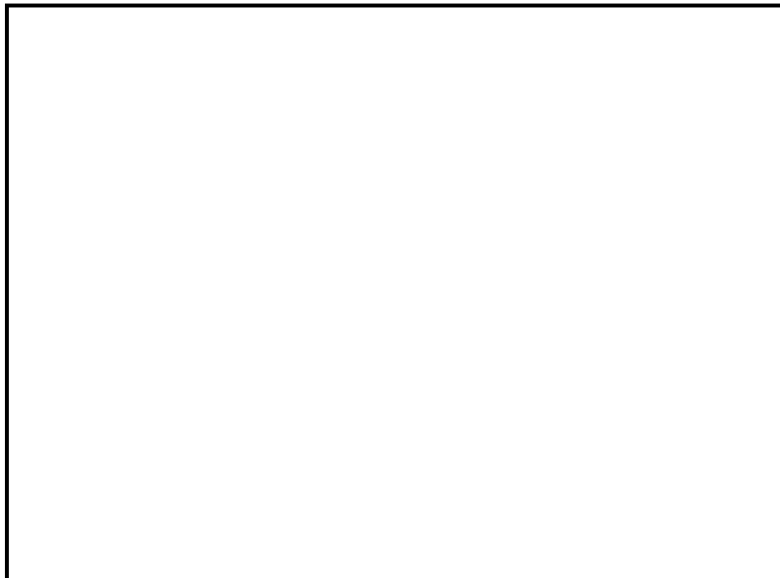


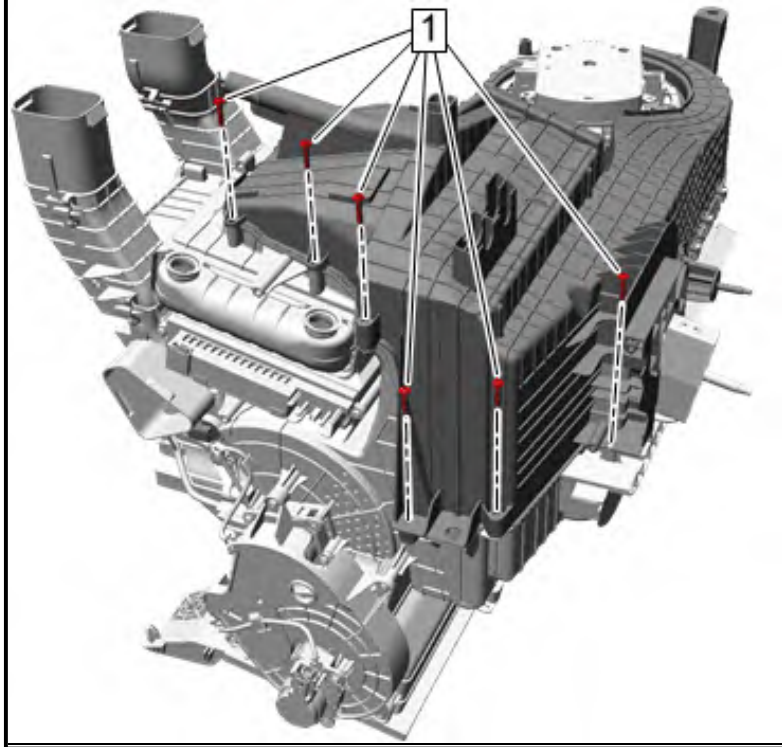
CAUTION: Refer to [Fastener Caution](#) .

Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Install and tighten [12x] 2.5 N.m (22 lb in)

4. Retainer Clip (2) - Install [2x]

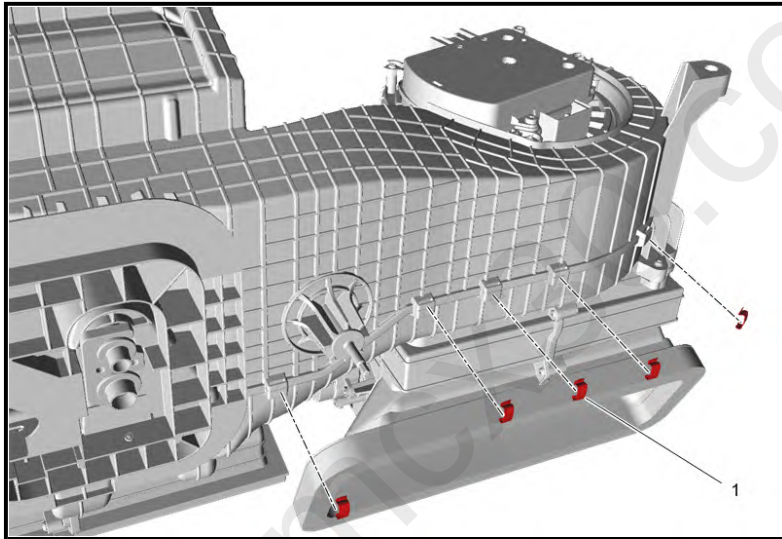
5.





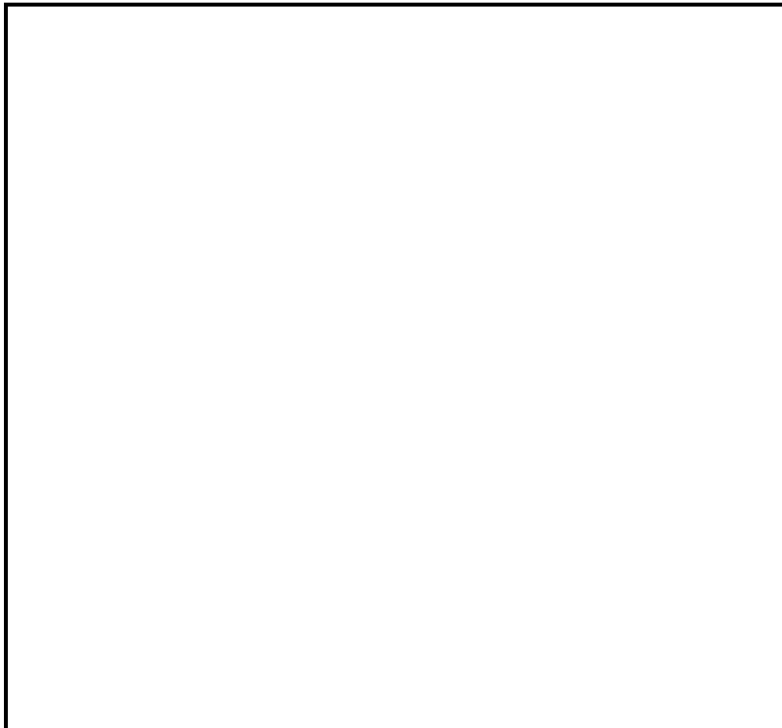
Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Install and tighten [6x] 2.5 N.m (22 lb in)

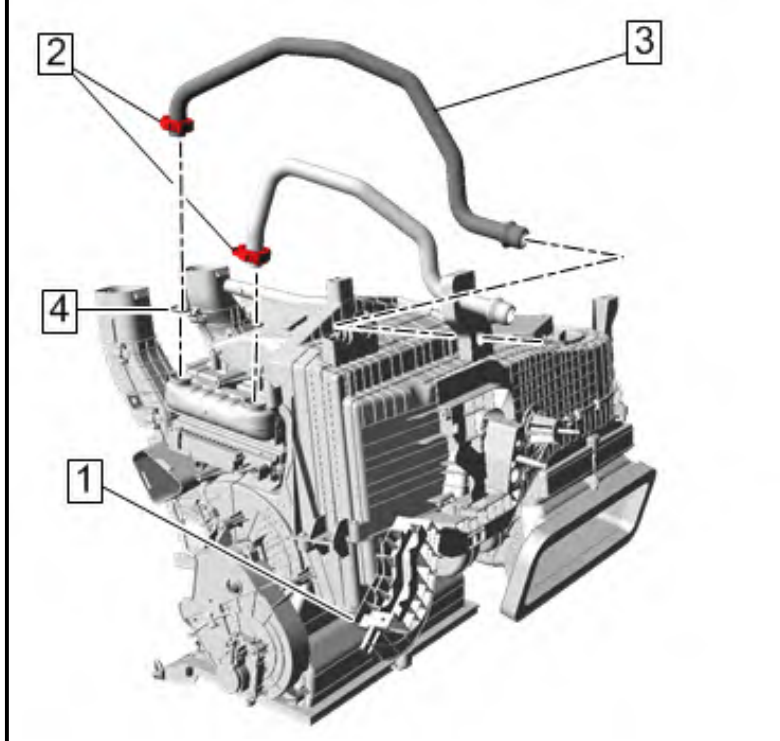
6.



Retainer Clip (1) - Install [5x]

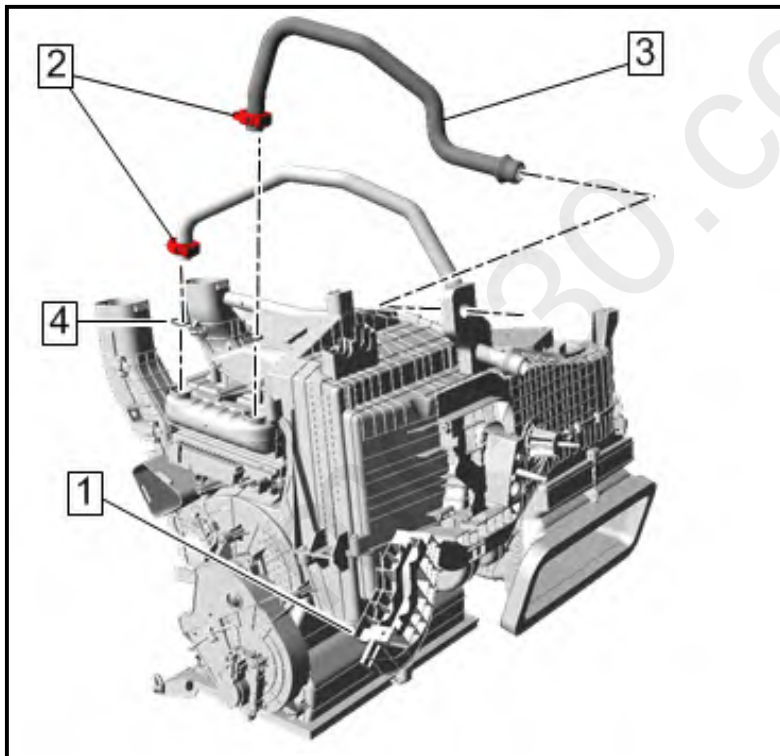
7.





Heater Core Inlet Tube (3) - Install - [Heater Core Inlet Tube Replacement \(C69\)Heater Core Inlet Tube Replacement](#)

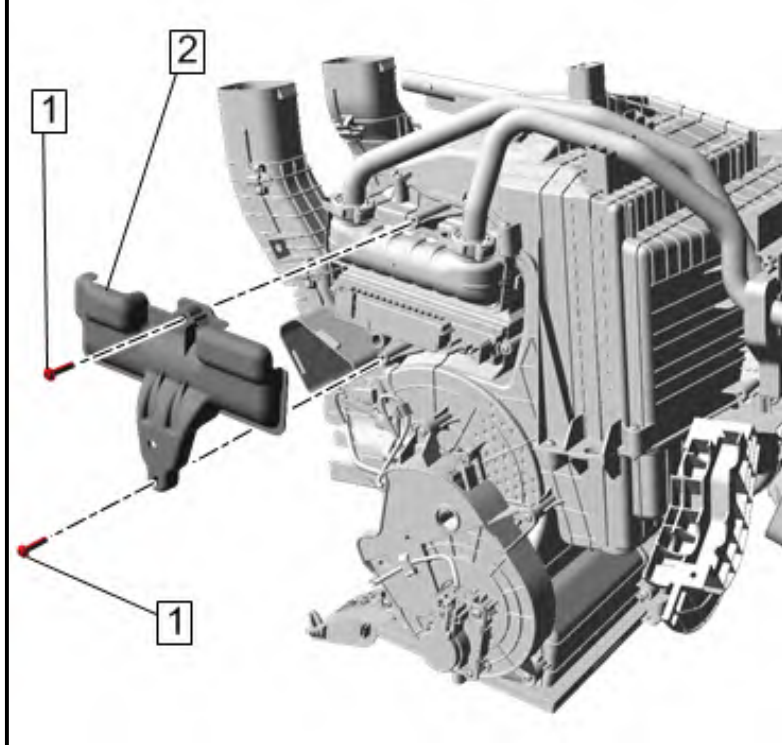
8.



Heater Core Outlet Tube (3) - Install - [Heater Core Outlet Tube Replacement \(C69\)Heater Core Outlet Tube Replacement](#)

9.

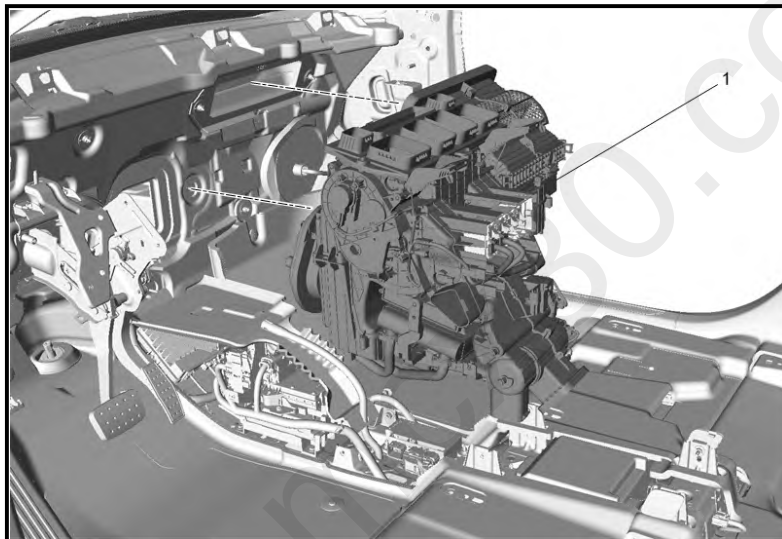




Heater Core Cover (2) - Install

10. Heater Core Cover Screw (1) - Install and tighten [2x] 2.5 N.m (22 lb in)

11.



Heater and Air Conditioning Evaporator and Blower Module (1) - Install - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#) [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#)

AIR CONDITIONING EVAPORATOR REPLACEMENT (R-1234YF)

WARNING: Refer to [R-1234yf Proper Service Procedures Warning](#) .

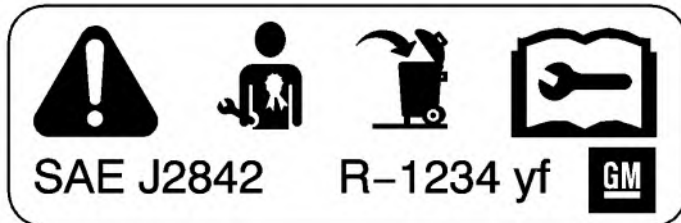
CAUTION: Evaporators in vehicles equipped with R-1234yf refrigerant systems, shall never be repaired or replaced with one removed from another or salvage. Only new, SAE J2842 certified and labeled evaporator (s) shall be used as replacement parts. Failure to follow the above guidelines could result in EPA Penalties and/or fines.

WARNING: Refer to [R-1234yf Refrigerant Evaporator Caution](#) .

WARNING: Evaporators in vehicles equipped with R-1234yf refrigerant systems must never be repaired or replaced with an evaporator removed from another or salvage vehicle. Use only new SAE J2842 certified and labeled evaporator (s) as replacement parts. Failure to follow this guideline could pose a health and/or safety risk to the vehicle occupant (s).

NOTE:

Technicians repairing or servicing motor vehicle air conditioning (MVAC) systems must be trained and certified by an EPA approved organization. Certification is obtained by passing an EPA approved examination.
(<http://www.epa.gov/ozone/title6/609/technicians/609certs.html>)

Replacement Evaporator Label Requirements

Replacement evaporators shall have a permanent marking (label, stamp, or etching) that indicates that this evaporator design meets SAE J2842 and shall include the wording below or optionally the symbols as shown:

Text Only - Label Wording - "Conforms to SAE J2842 (Evaporator Manufacturer's Name or Trademark) Replace only with new evaporator certified to meet SAE J2842".

Leak Free Joints Inside the Passenger Compartment

If a refrigerant joint/connection is made or disturbed inside the passenger cabin the following steps shall be followed by the technician to ensure the joint/connection is leak free.

1. Shall clean all dirt, grease and debris from and around connection joints before disassembly/assembly of refrigerant connections.
2. Shall be advised to carefully inspect the joint/connection seal surfaces for signs of deformation, contamination or damage after disassembly.
3. Shall be advised that Seals/O-rings shall never be reused, but replaced with all new parts.
4. Shall be advised to ensure proper alignment of male/female portions and seal so there is no misalignment and stress on the fitting connection.
5. Shall tighten the joint using the proper torque.
6. With full refrigerant charge installed and the vehicles HVAC blower motor set on its lowest speed, A/C switch off and air distribution set to floor. The technician shall insert a SAE J2913 compliant electronic leak detector set to high sensitivity (4 grams/year leak rate) into the center of a floor duct outlet, as far as possible. The technician shall monitor the electronic leak detector for 5 minutes or until the detector alarms.
 - If electronic leak detector alarms, recover the refrigerant and repair the leak.
 - If after 5 minutes there is no alarm, there is no indication of a leak in the passenger compartment and the repair can be completed.
7. If vehicle is equipped with an auxiliary evaporator, monitor the air downstream from the evaporator at the outlet duct closest to the auxiliary unit under the same conditions and set up as step 6.

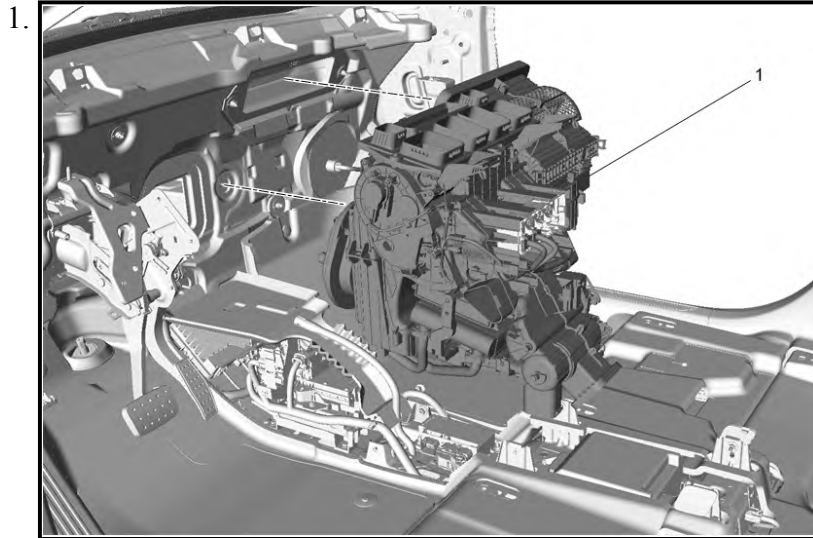
Proper Disposal of the Replaced Evaporator

The replaced evaporator shall be disabled to ensure that it never be repaired or reused.

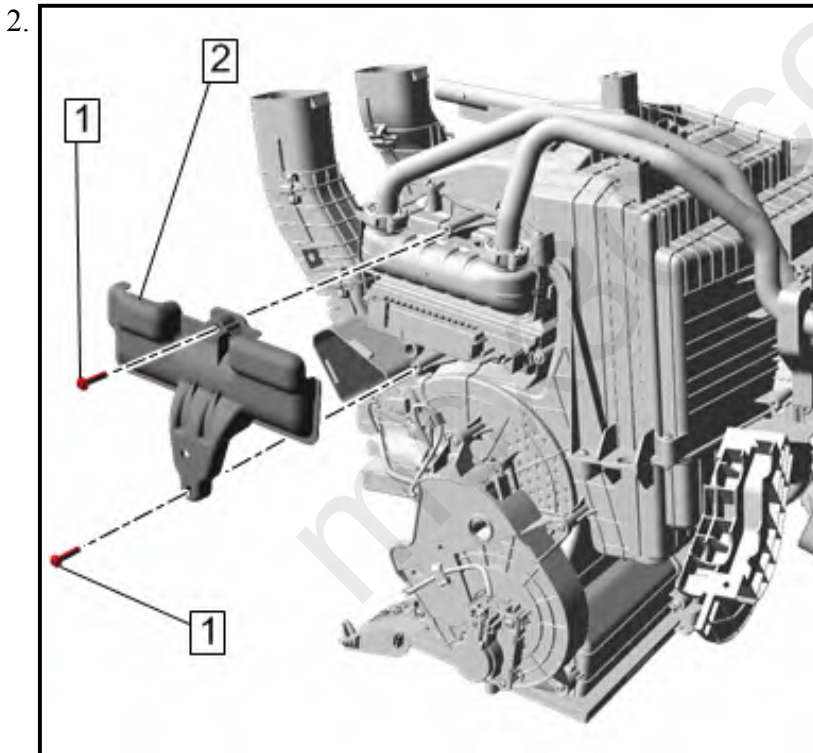
Disable the replaced evaporator by completing one of the following steps:

- Using tin snips sever a minimum of 3 of the evaporators tubes.
- Drill or Punch a minimum of two 25 mm (.25 inch) holes in each end tank.

Removal Procedure



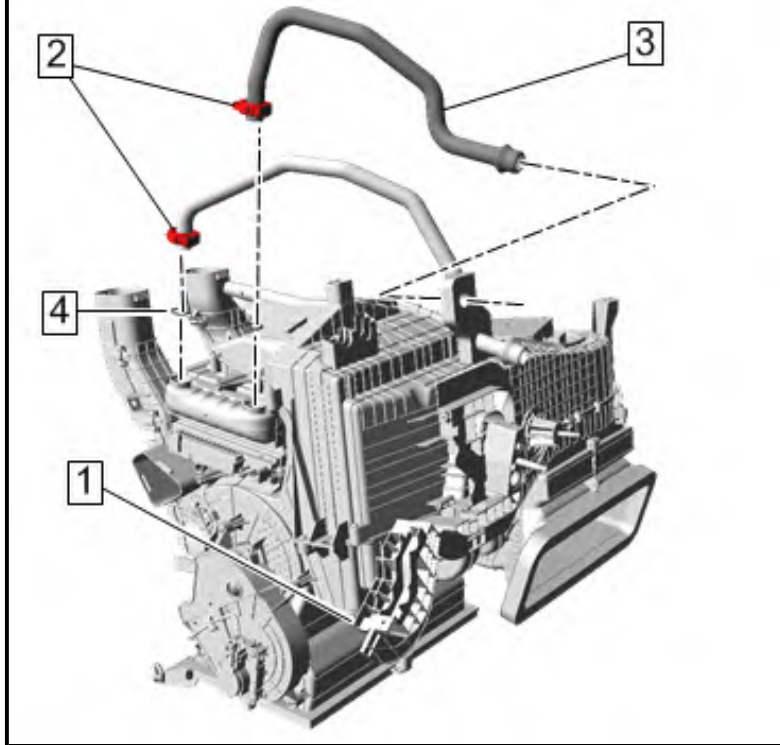
Heater and Air Conditioning Evaporator and Blower Module (1) - Remove - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#)[Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#)



Heater Core Cover Screw (1) - Remove [2x]

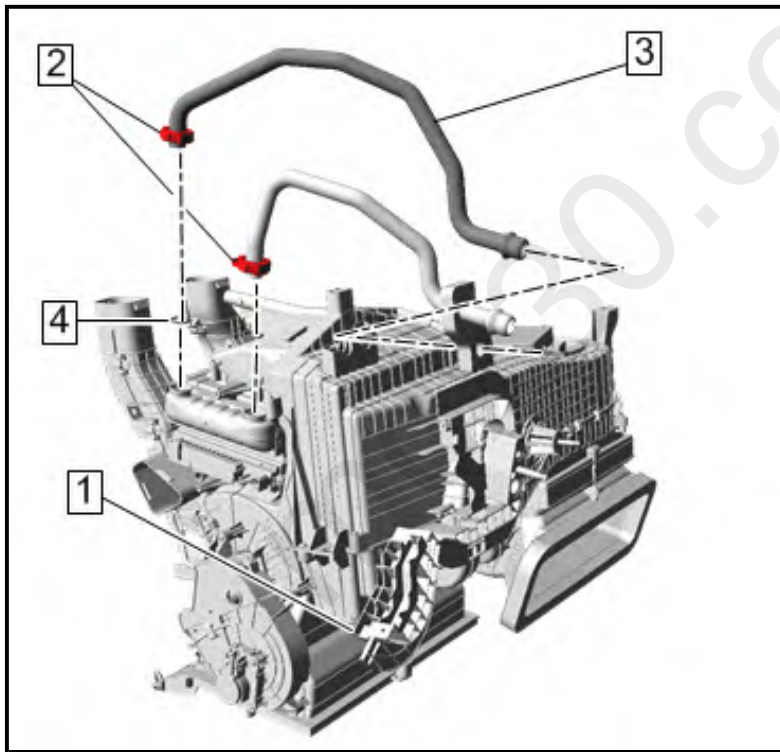
3. Heater Core Cover (2) - Remove





Heater Core Outlet Tube (3) - Remove - [Heater Core Outlet Tube Replacement \(C69\)](#)[Heater Core Outlet Tube Replacement](#)

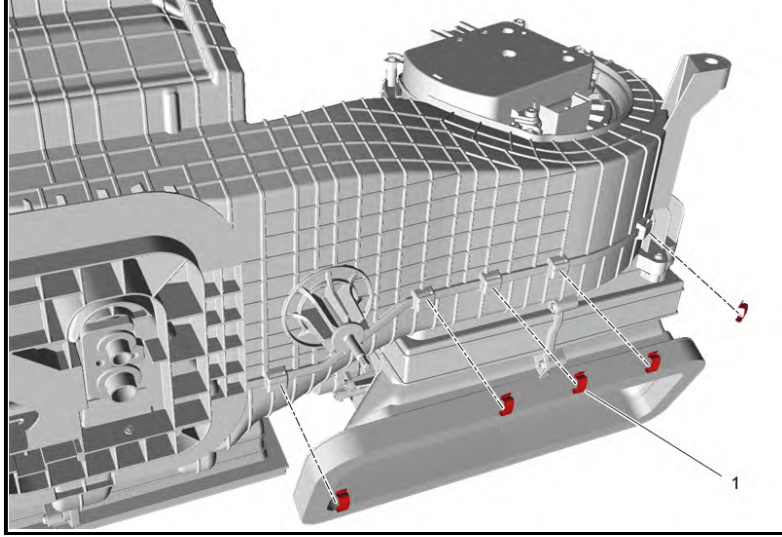
5.



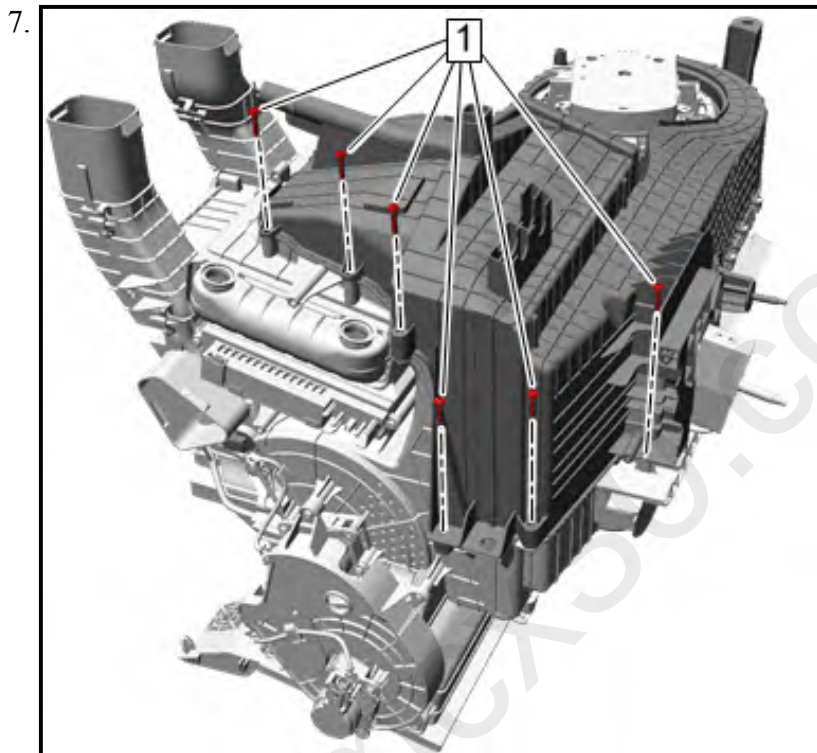
Heater Core Inlet Tube (3) - Remove - [Heater Core Inlet Tube Replacement \(C69\)](#)[Heater Core Inlet Tube Replacement](#)

6.

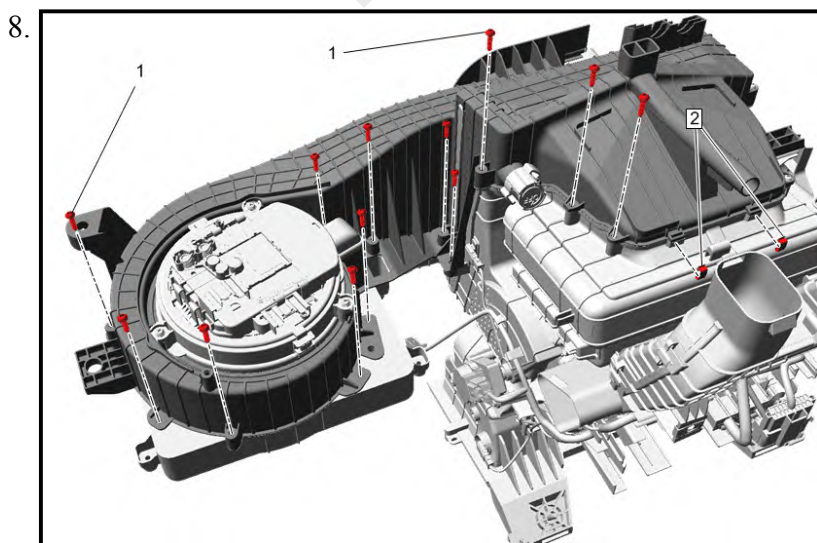




Retainer Clip (1) - Remove [5x]

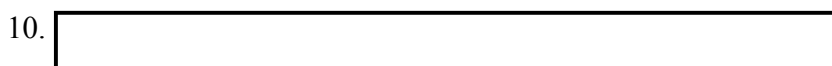


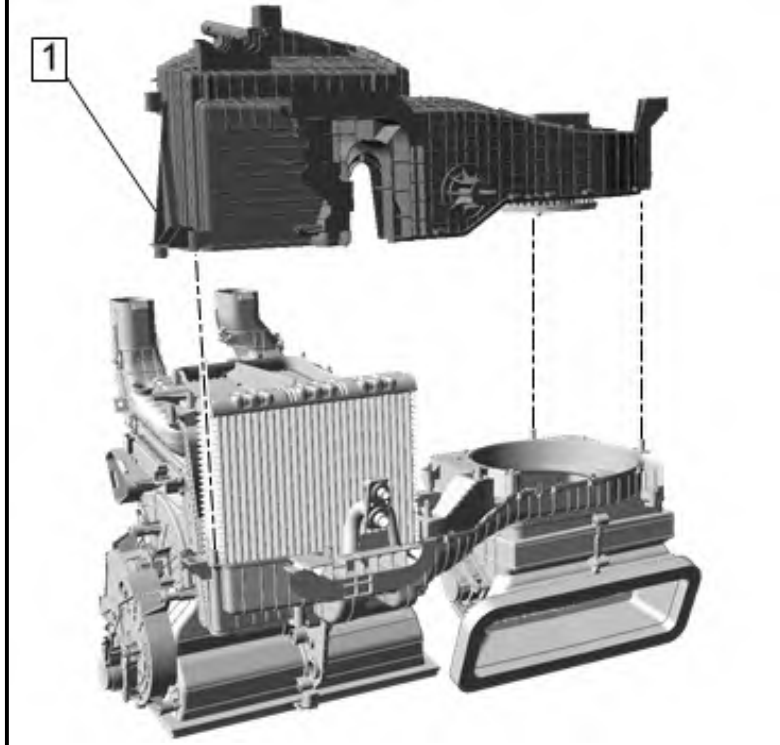
Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Remove [6x]



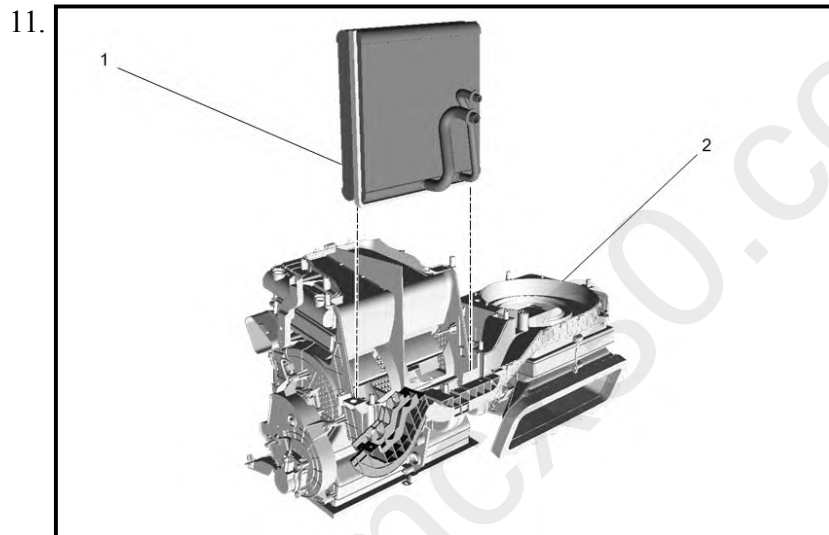
Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Remove [12x]

9. Retainer Clip (2) - Remove [2x]





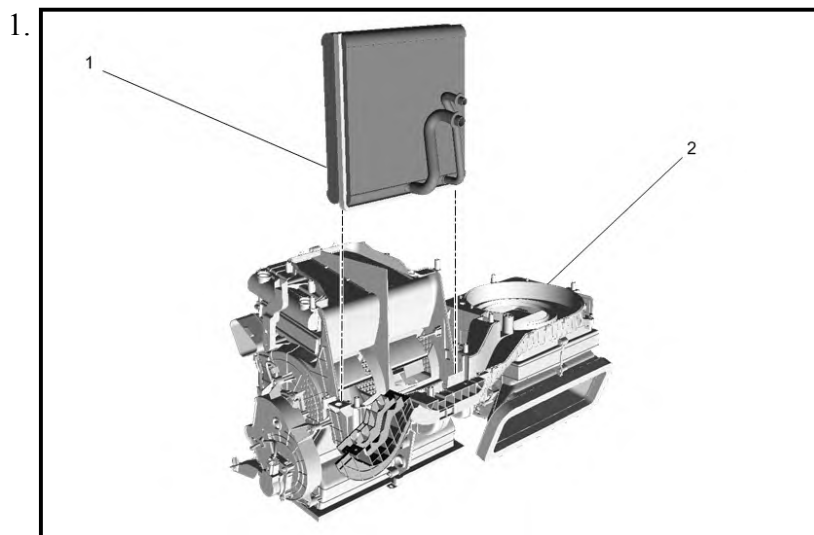
Blower Lower Case (1) - Remove



Air Conditioning Evaporator (1) @ Blower Upper Case (2) - Remove

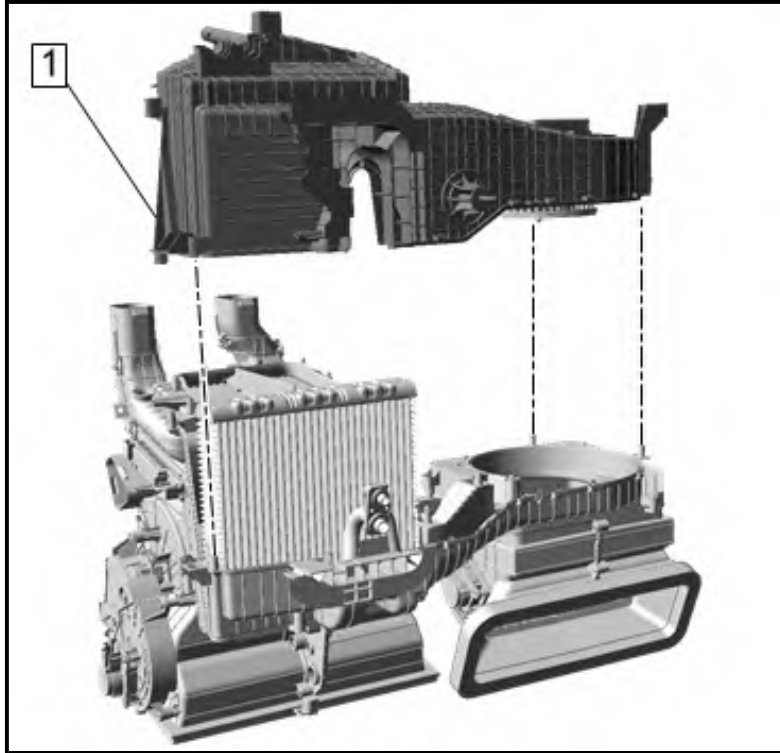
12. Transfer components as necessary.

Installation Procedure



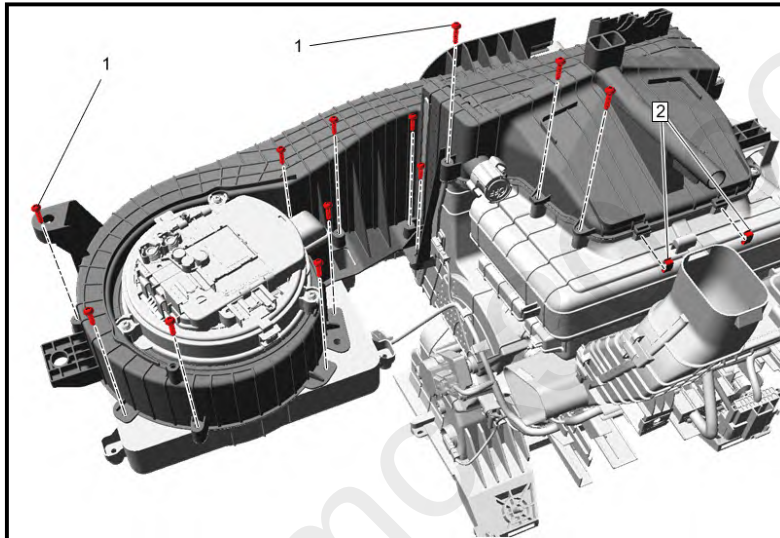
Air Conditioning Evaporator (1) @ Blower Upper Case (2) - Install

2.



Blower Lower Case (1) - Install

3.

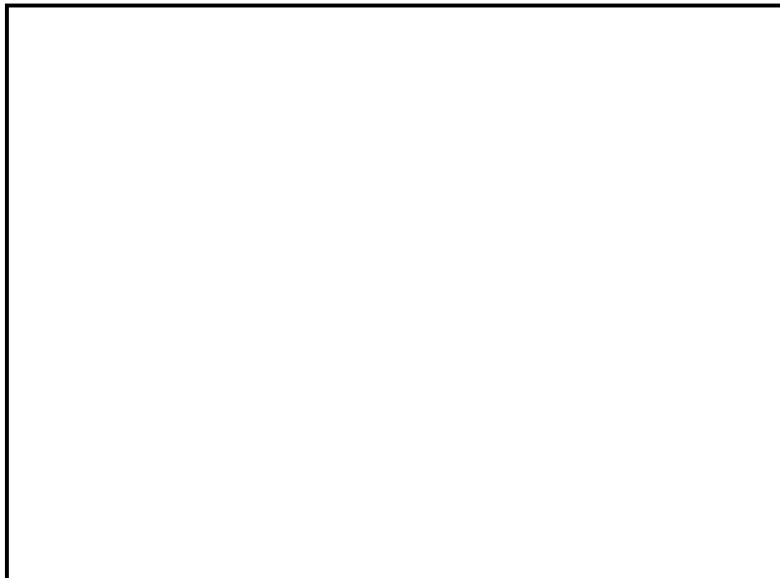


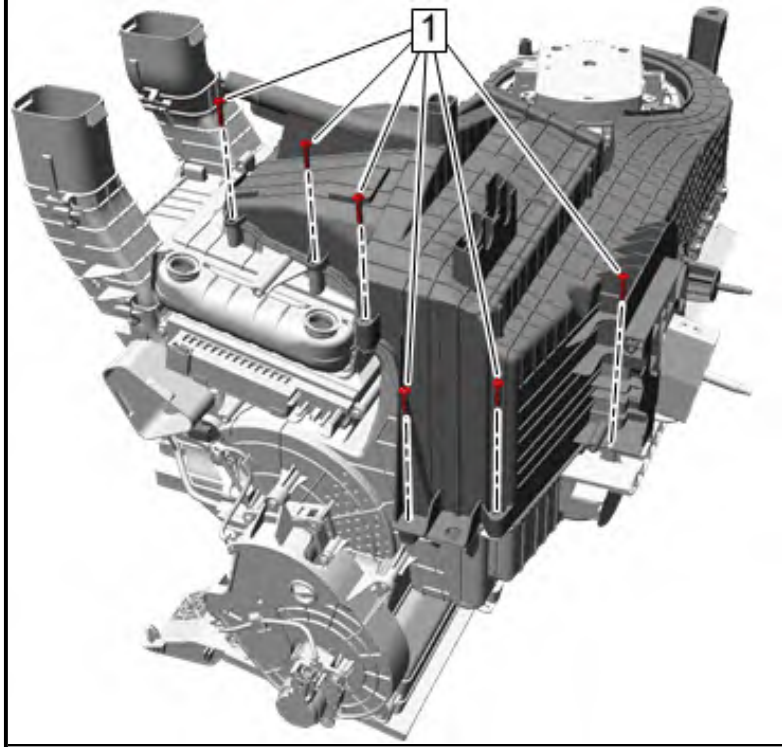
CAUTION: Refer to [Fastener Caution](#) .

Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Install and tighten [12x] 2.5 N.m (22 lb in)

4. Retainer Clip (2) - Install [2x]

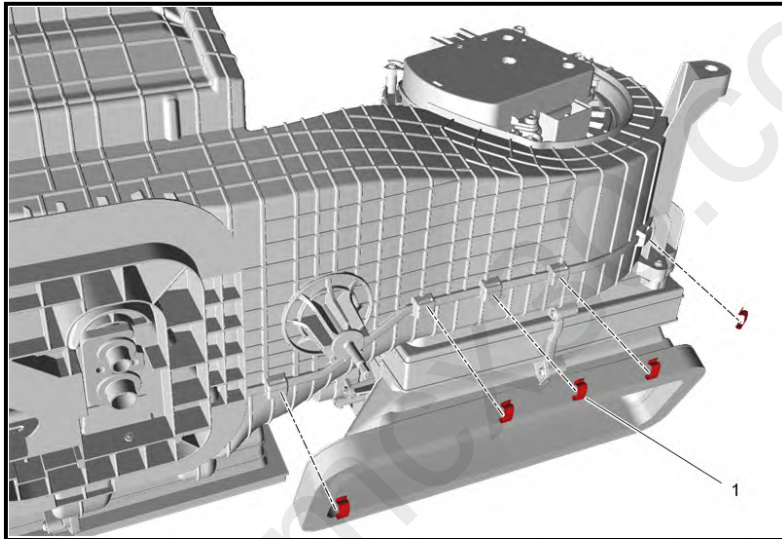
5.





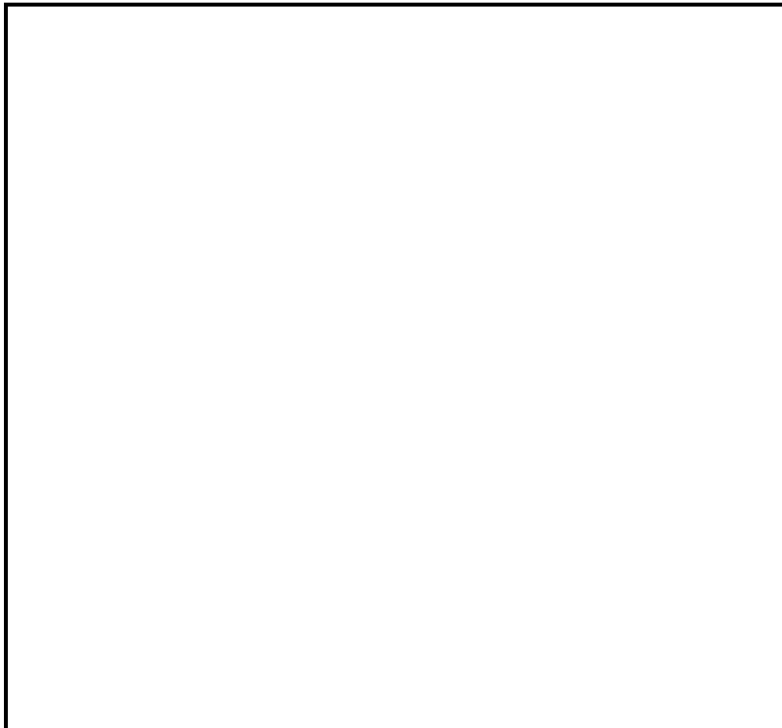
Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Install and tighten [6x] 2.5 N.m (22 lb in)

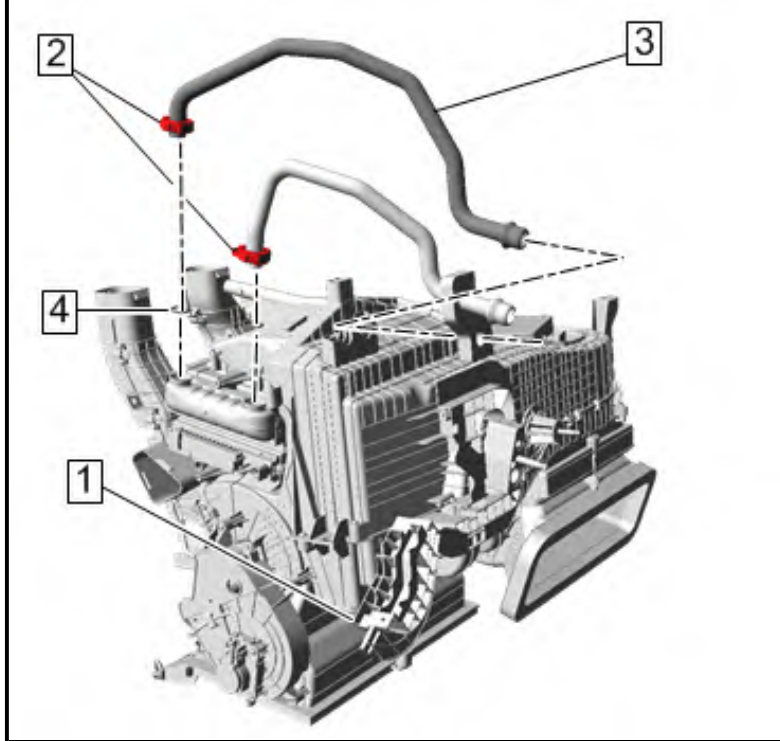
6.



Retainer Clip (1) - Install [5x]

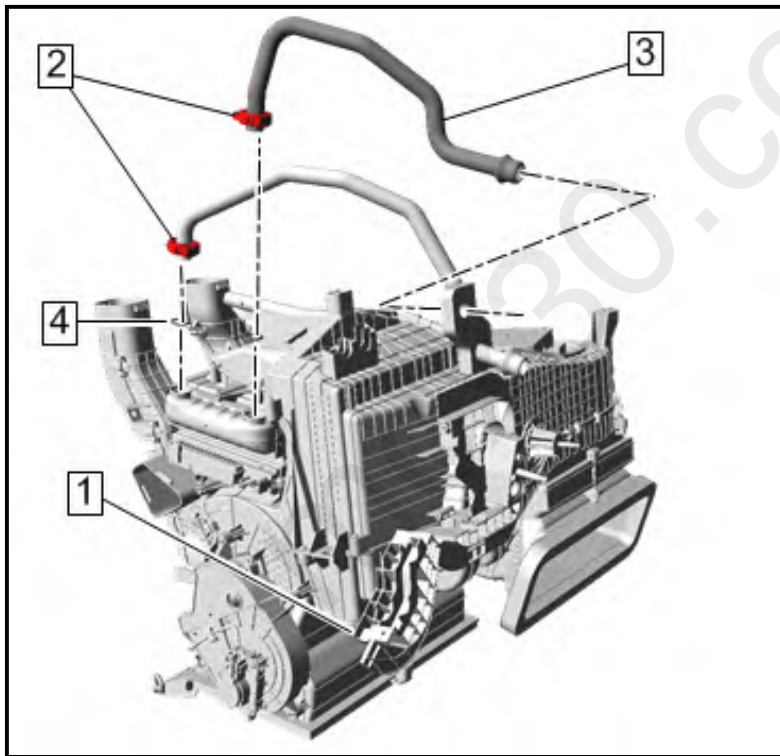
7.





Heater Core Inlet Tube (3) - Install - [Heater Core Inlet Tube Replacement \(C69\)Heater Core Inlet Tube Replacement](#)

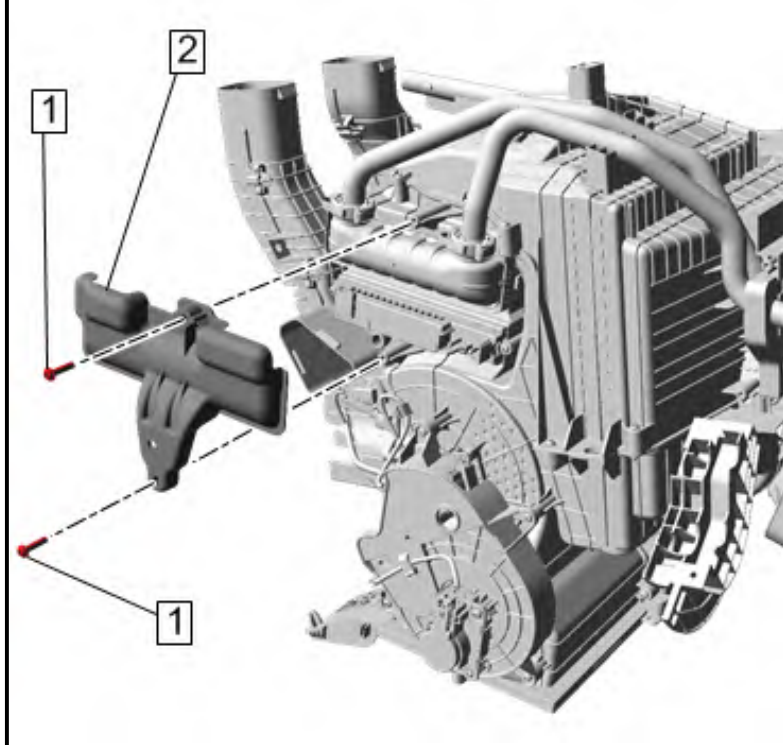
8.



Heater Core Outlet Tube (3) - Install - [Heater Core Outlet Tube Replacement \(C69\)Heater Core Outlet Tube Replacement](#)

9.

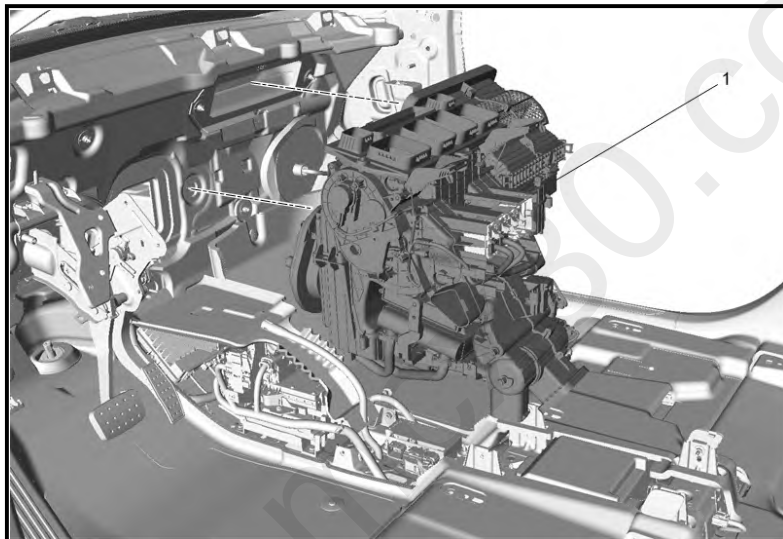




Heater Core Cover (2) - Install

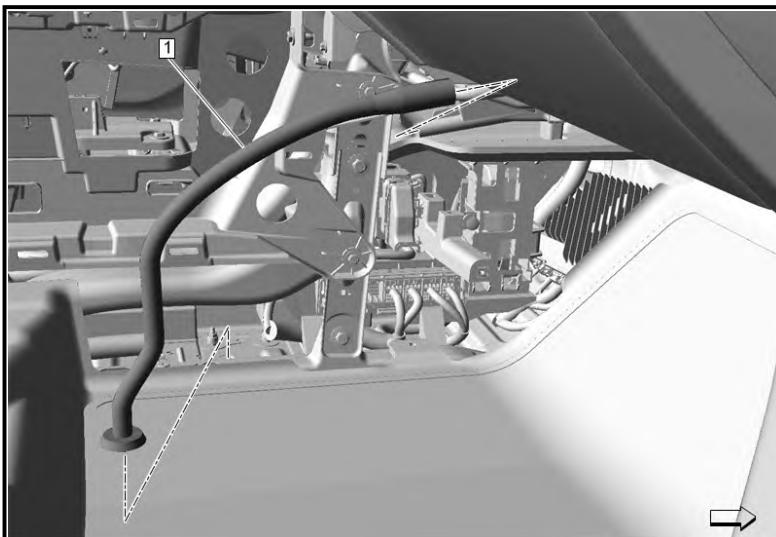
10. Heater Core Cover Screw (1) - Install and tighten [2x] 2.5 N.m (22 lb in)

11.



Heater and Air Conditioning Evaporator and Blower Module (1) - Install - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#) [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#)

AIR CONDITIONING EVAPORATOR AND BLOWER MODULE DRAIN HOSE REPLACEMENT

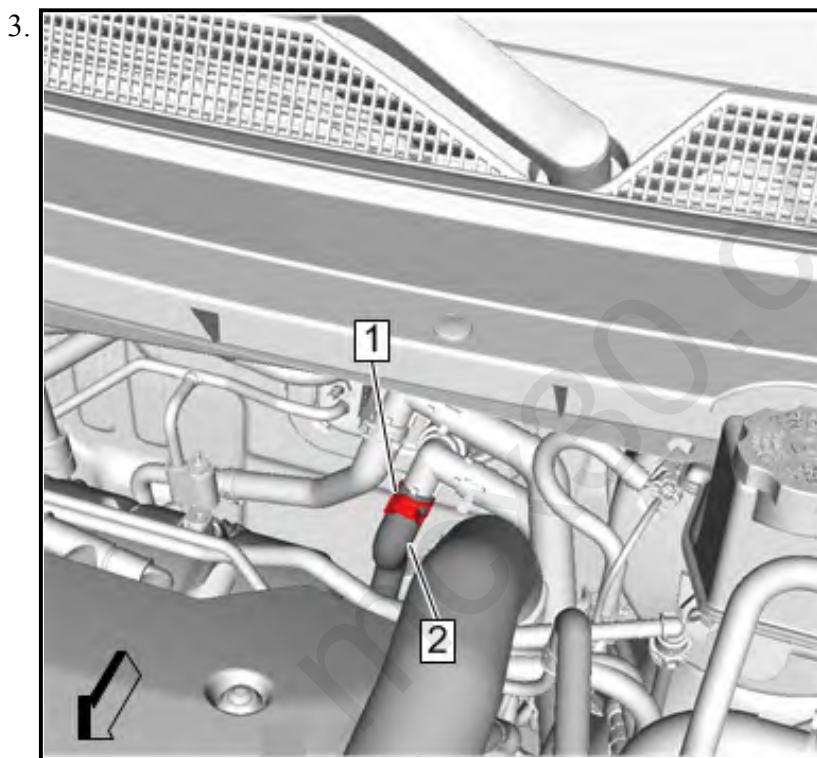


Callout	Component Name
Preliminary Procedure Front Floor Console Extension Panel Replacement - Right Side	
CAUTION: Refer to HVAC Module Drain Tube Caution .	
1	Air Conditioning Evaporator and Blower Module Drain Hose Procedure Maneuver the air conditioning evaporator and blower module drain hose out from under the front floor console.

HEATER COOLANT HEATER INLET HOSE REPLACEMENT (LTG HEATER OUTLET HOSE CONNECTOR TO AUXILIARY AIR CONDITIONING EVAPORATOR INTERMEDIATE TUBE)

Removal Procedure

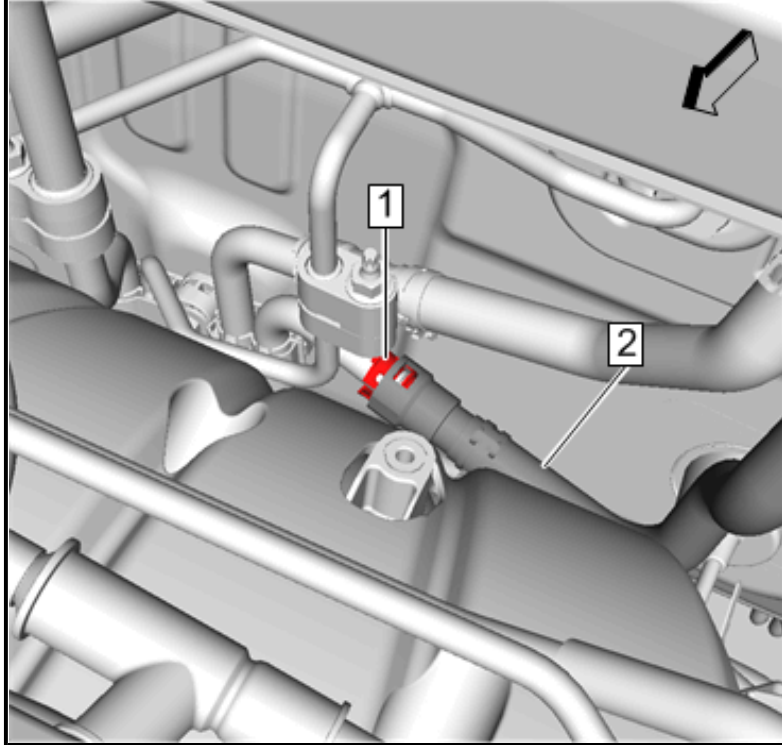
1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\)](#). [Cooling System Draining and Filling \(Static Fill\)](#).
2. Reposition the wiring harness.



Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

4. Engine Coolant Heater Inlet Hose (2) @ Heater Outlet Hose Connector - Remove



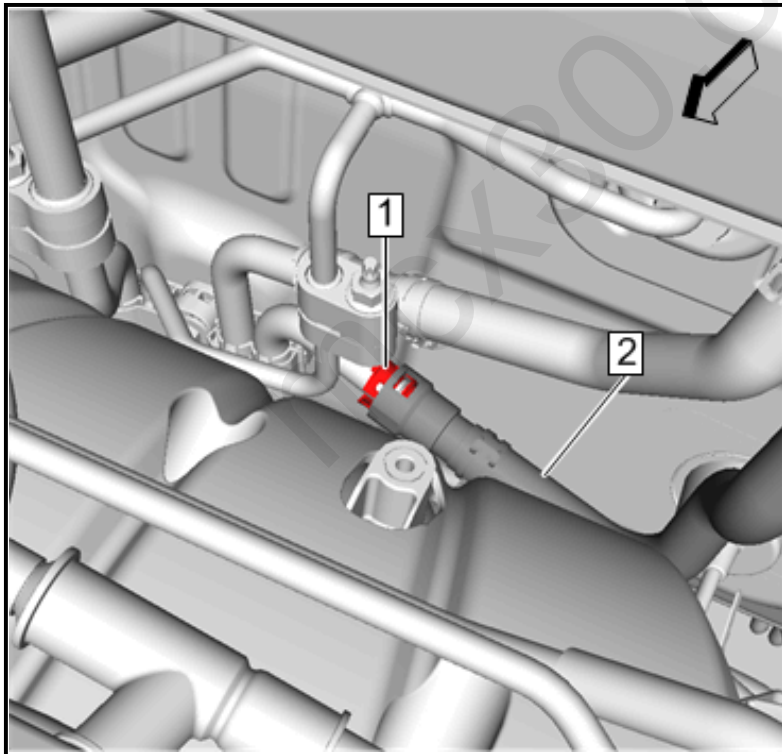


Retainer (1) - Disengage

6. Engine Coolant Heater Inlet Hose (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Remove
7. Engine Coolant Heater Inlet Hose (2) - Remove

Installation Procedure

1.

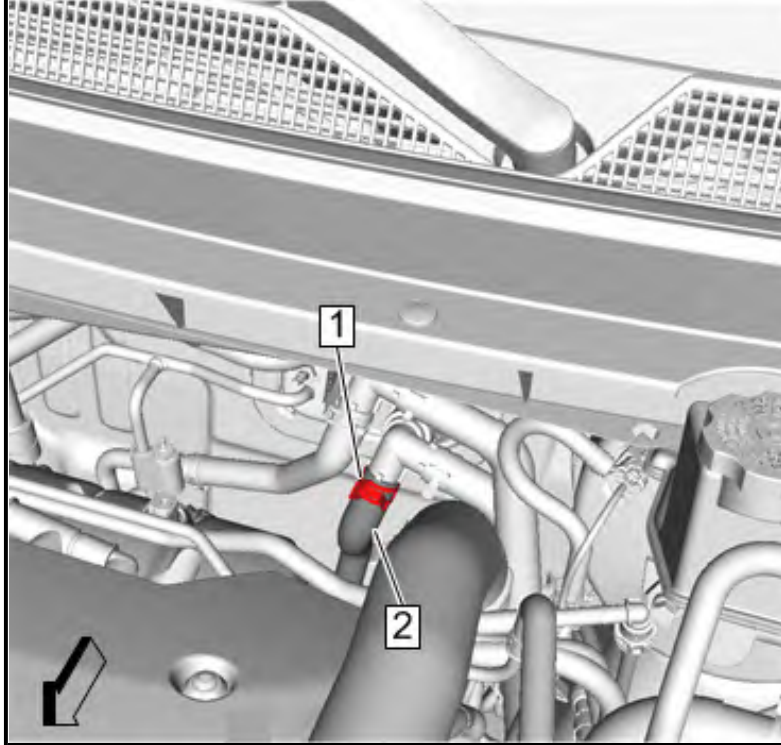


Engine Coolant Heater Inlet Hose (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Install

2. Retainer (1) - Engage

3.





Engine Coolant Heater Inlet Hose (2) @ Heater Outlet Hose Connector - Install

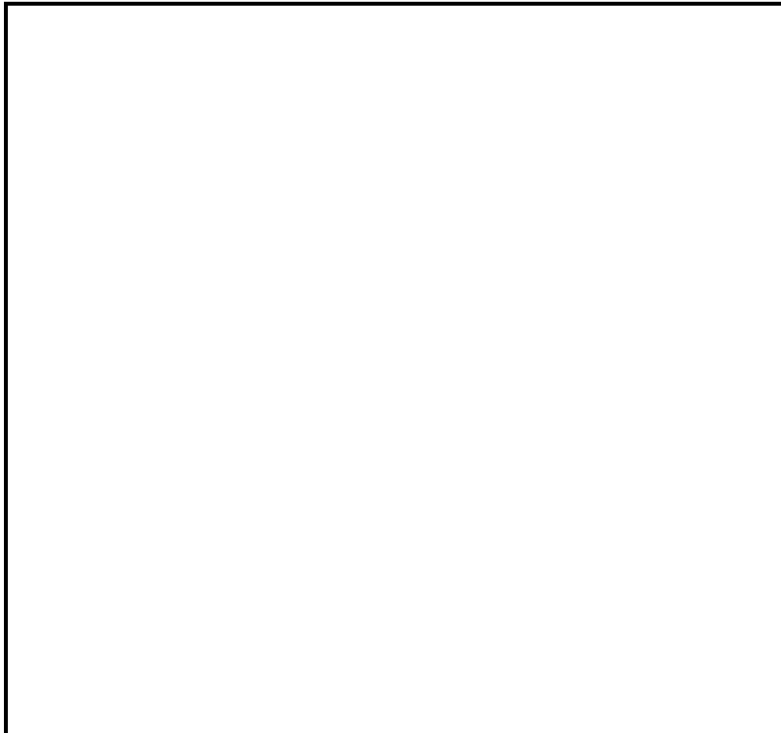
4. Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)
5. Reposition the wiring harness.
6. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#)
7. Start the engine and inspect for leaks.

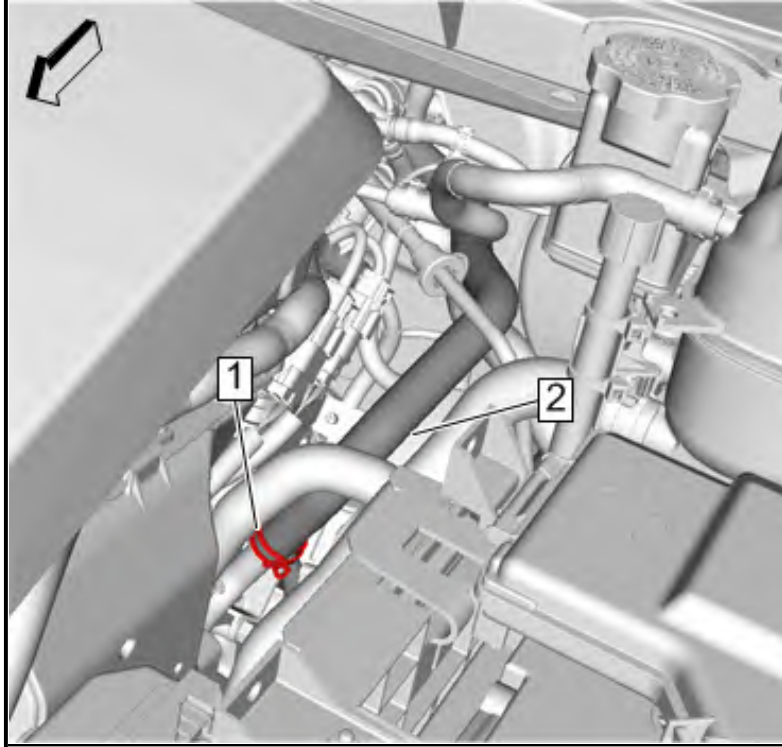
HEATER INLET HOSE REPLACEMENT (ENGINE COOLANT THERMOSTAT HOUSING TO HEATER OUTLET HOSE CONNECTOR)

Removal Procedure

1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#)
2. Lower the vehicle.
3. {If equipped} Power Brake Booster Vacuum Hose - Reposition - [Power Brake Booster Vacuum Hose Replacement \(LTG\) Power Brake Booster Vacuum Hose Replacement \(LFY\)](#)
4. Reposition the wiring harness.

5.

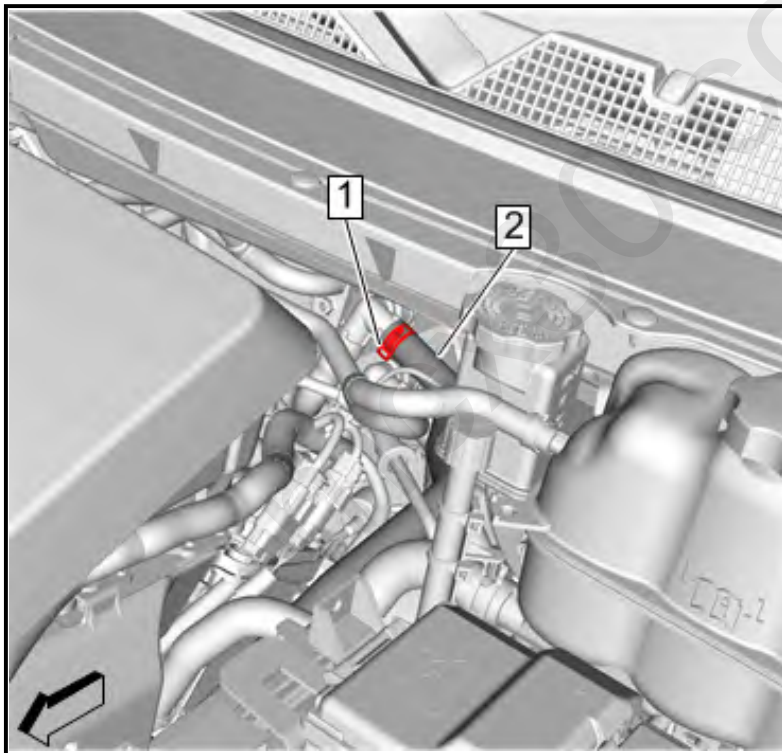




Heater Inlet Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

6. Heater Inlet Hose (2) @ Engine Coolant Thermostat Housing - Remove

7.



Heater Inlet Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

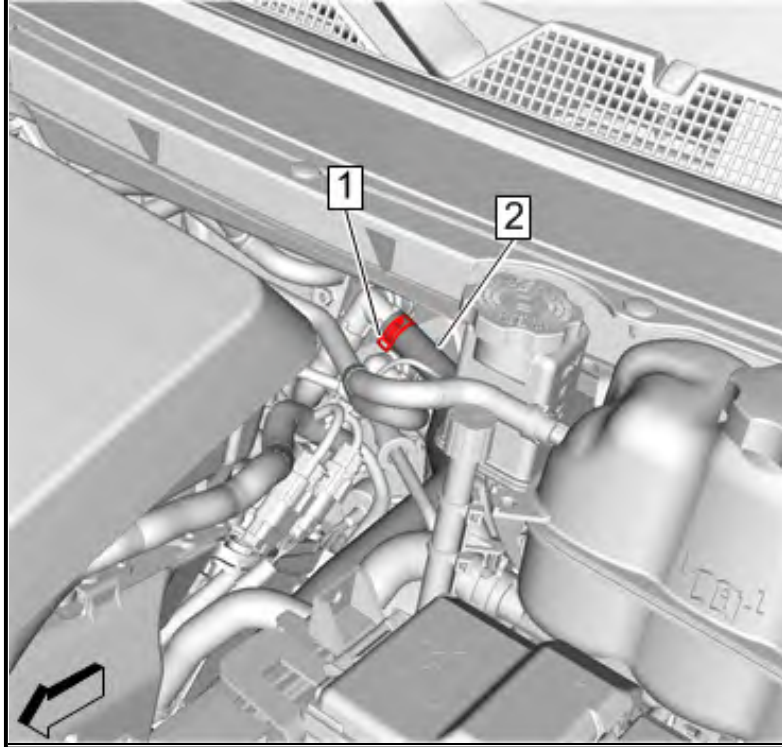
8. Heater Inlet Hose (2) @ Heater Outlet Hose Connector - Remove

9. Heater Inlet Hose (2) - Remove

Installation Procedure

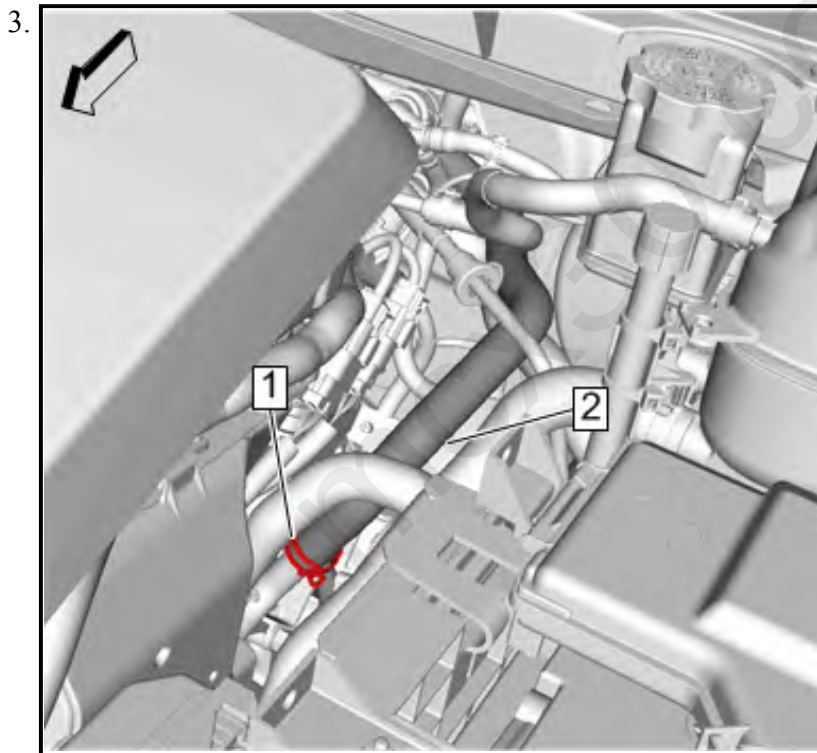
1.





Heater Inlet Hose (2) @ Heater Outlet Hose Connector - Install

2. Heater Inlet Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)



Heater Inlet Hose (2) @ Engine Coolant Thermostat Housing - Install

4. Heater Inlet Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)

5. Reposition the wiring harness.

6. {If equipped} Power Brake Booster Vacuum Hose - Reposition - [Power Brake Booster Vacuum Hose Replacement \(LTG\)](#) [Power Brake Booster Vacuum Hose Replacement \(LFY\)](#)

7. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\)](#) [Cooling System Draining and Filling \(Static Fill\)](#)

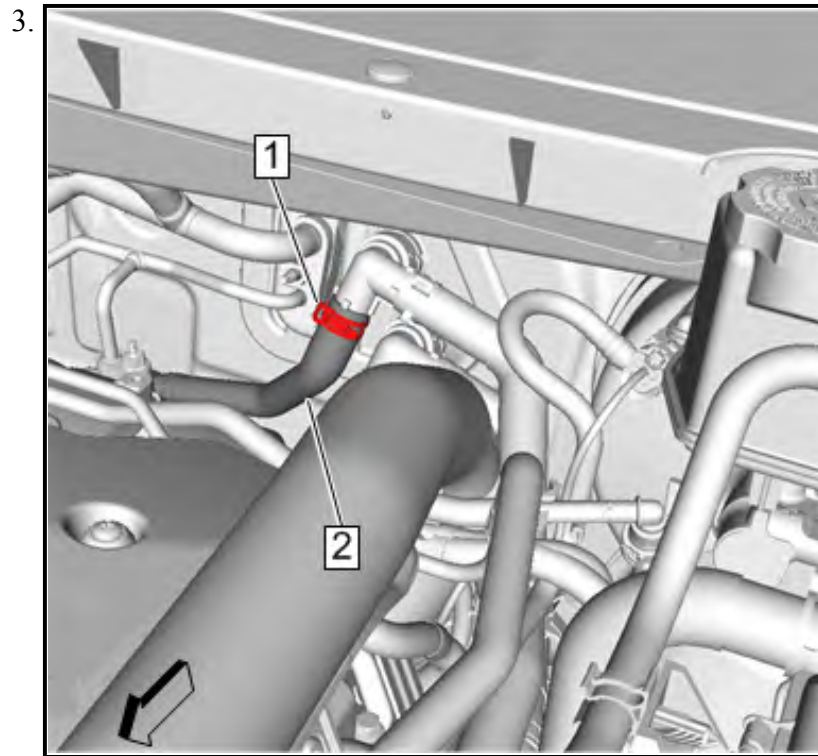
8. Start the engine and inspect for leaks.

HEATER INLET HOSE REPLACEMENT (HEATER OUTLET HOSE CONNECTOR TO AUXILIARY AIR CONDITIONING EVAPORATOR INTERMEDIATE TUBE)

Removal Procedure

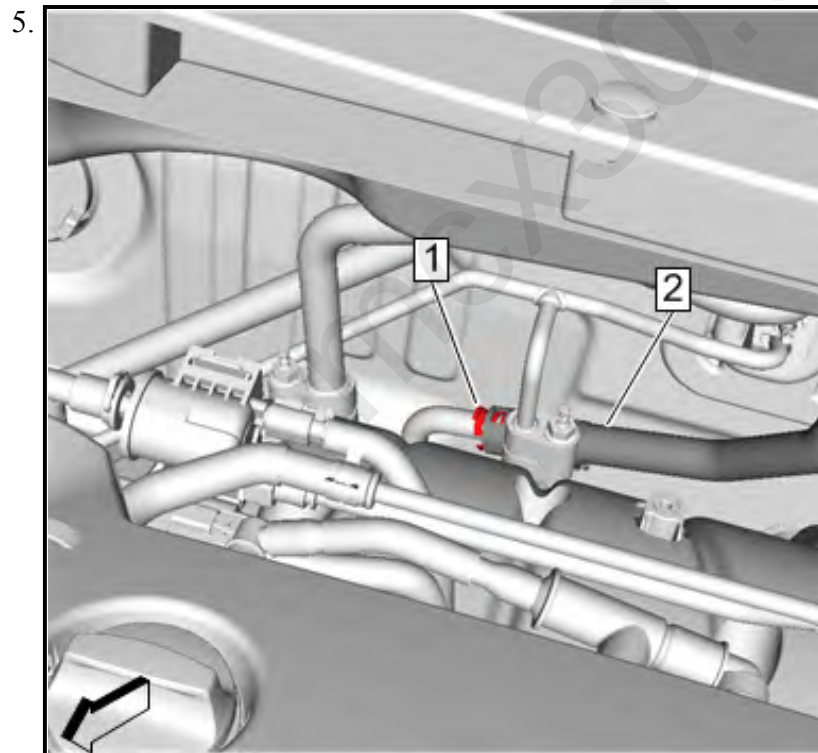
1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\)](#) [Cooling System Draining and Filling \(Static Fill\)](#)

2. Reposition the wiring harness.



Heater Inlet Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

4. Heater Inlet Hose (2) @ Heater Outlet Hose Connector - Remove



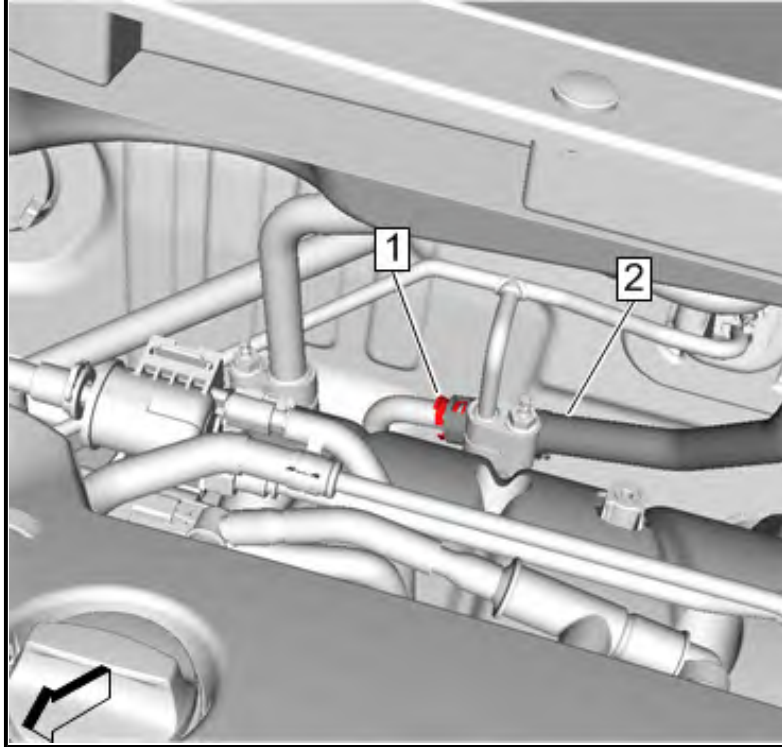
Heater Inlet Hose Retainer (1) - Disengage

6. Heater Inlet Hose (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Remove

7. Heater Inlet Hose (2) - Remove

Installation Procedure

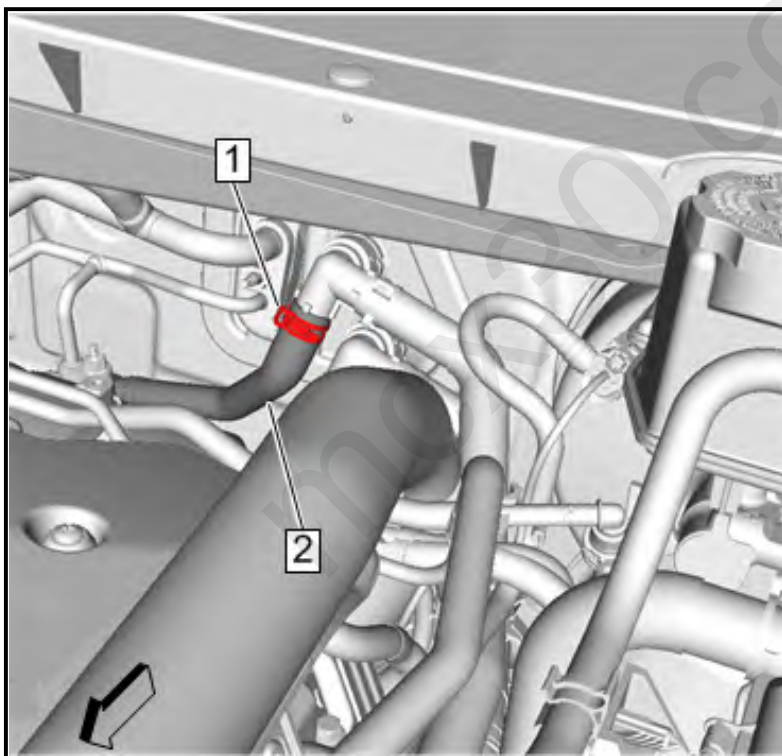




Heater Inlet Hose (2) @ Auxiliary Air Conditioning Evaporator Intermediate Tube - Install

2. Heater Inlet Hose Retainer (1) - Engage

3.



Heater Inlet Hose (2) @ Heater Outlet Hose Connector - Install

4. Heater Inlet Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)

5. Reposition the wiring harness.

6. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\)](#). [Cooling System Draining and Filling \(Static Fill\)](#).

7. Start the engine and inspect for leaks.

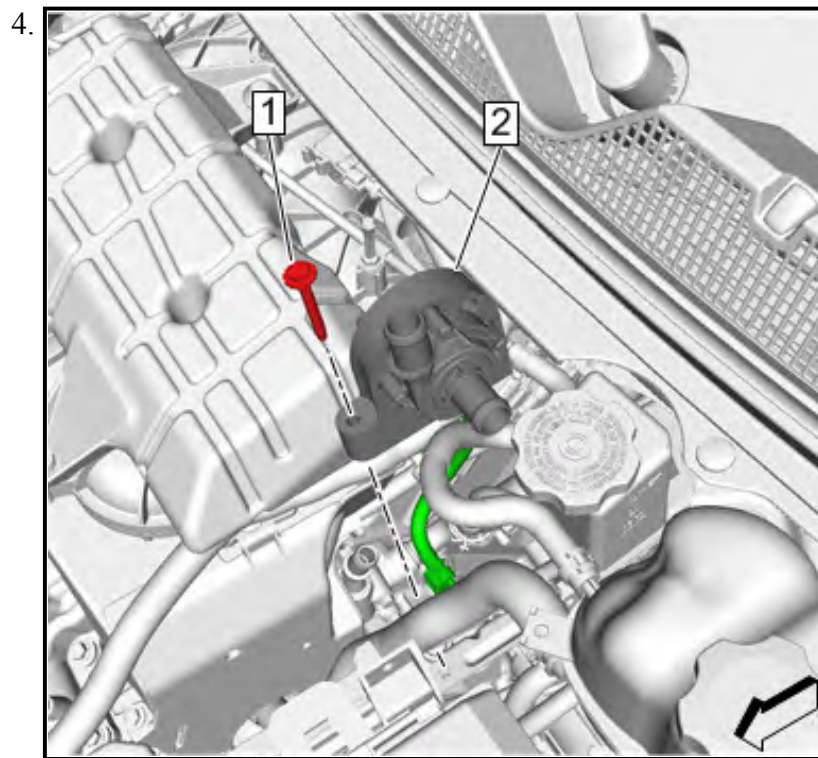
HEATER INLET HOSE BRACKET REPLACEMENT (LFY)

Removal Procedure

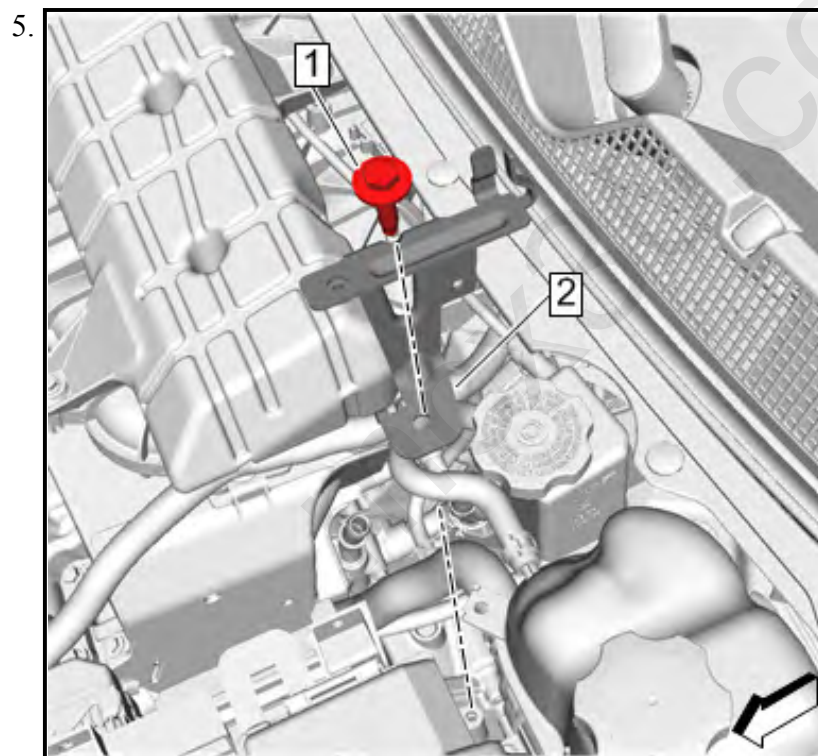
1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\)](#). [Cooling System Draining and Filling \(Static Fill\)](#).

2. Lower the vehicle.

3. Intake Manifold Cover - Remove - [Intake Manifold Cover Replacement](#)



Heater Coolant Pump (2) - Remove - [Heater Coolant Pump Replacement \(LFY\)](#)

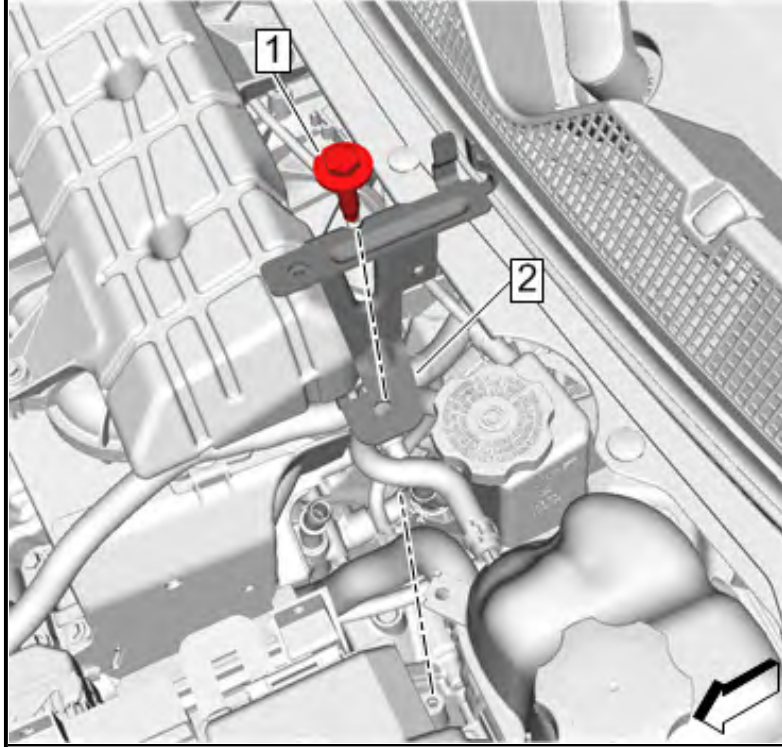


Heater Inlet Hose Bracket Bolt (1) - Remove

6. Heater Inlet Hose Bracket (2) - Remove

Installation Procedure



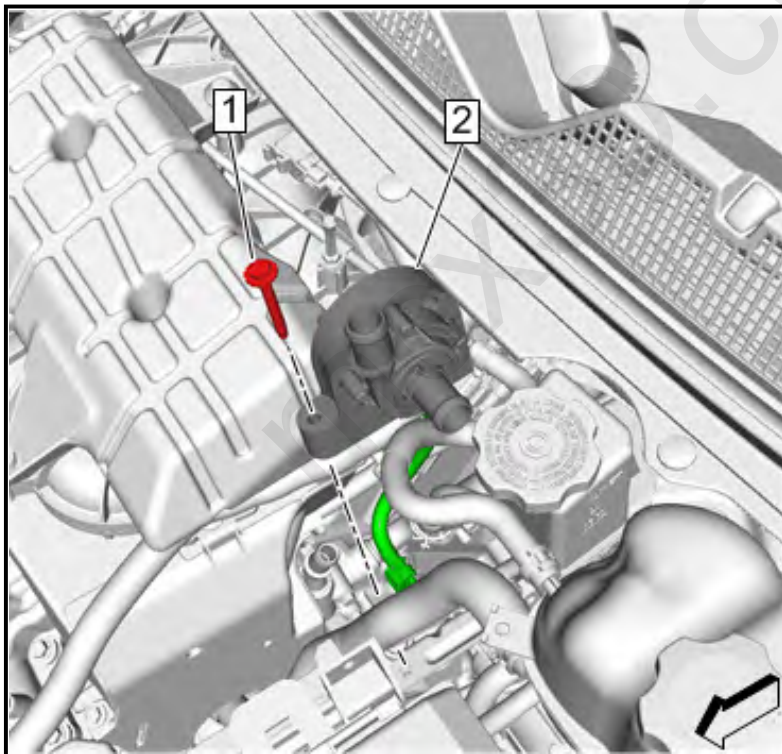


Heater Inlet Hose Bracket (2) - Install

CAUTION: Refer to [Fastener Caution](#) .

2. Heater Inlet Hose Bracket Bolt (1) - Install and tighten 22 N.m (16 lb ft)

3.



Heater Coolant Pump (2) - Install - [Heater Coolant Pump Replacement \(LFY\)](#)

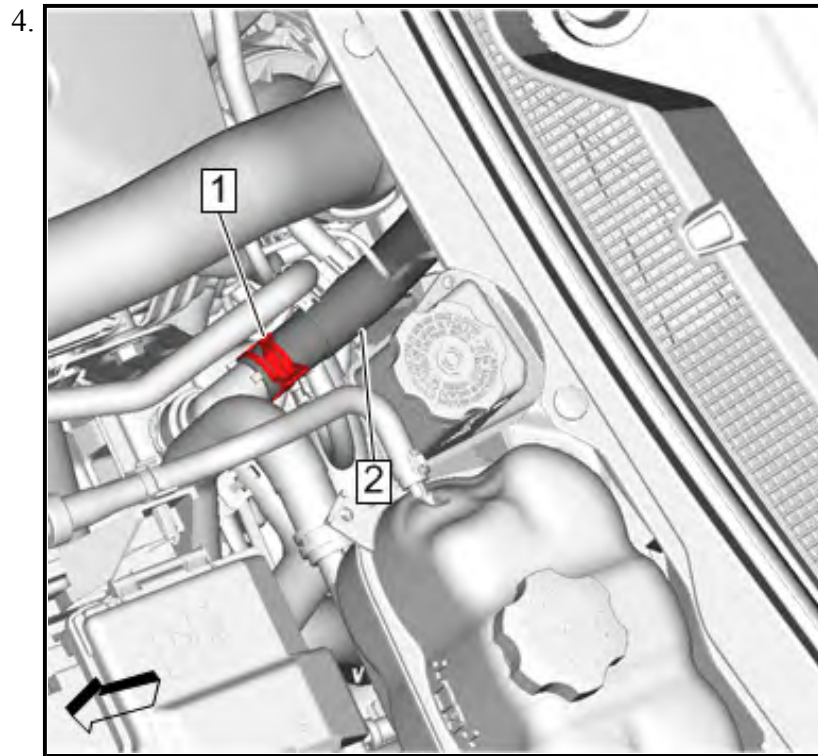
4. Intake Manifold Cover - Install - [Intake Manifold Cover Replacement](#)
5. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\)](#). [Cooling System Draining and Filling \(Static Fill\)](#).
6. Check the cooling system for leaks.

HEATER INLET HOSE BRACKET REPLACEMENT (LTG)

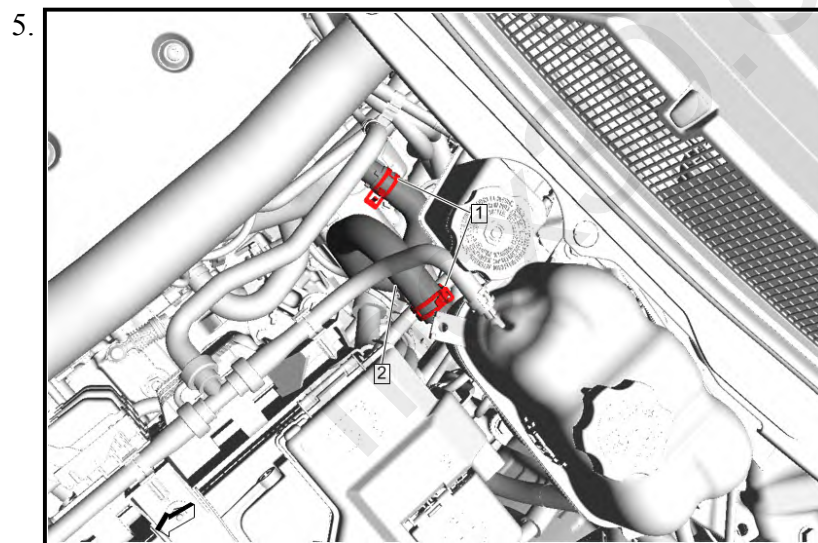
Removal Procedure

1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\)](#). [Cooling System Draining and Filling \(Static Fill\)](#).

2. Reposition the wiring harness.
3. Heater Vent Hose - Remove - [Heater Vent Hose Replacement \(LTG Water Outlet to Heater Outlet Hose Connector\)](#)

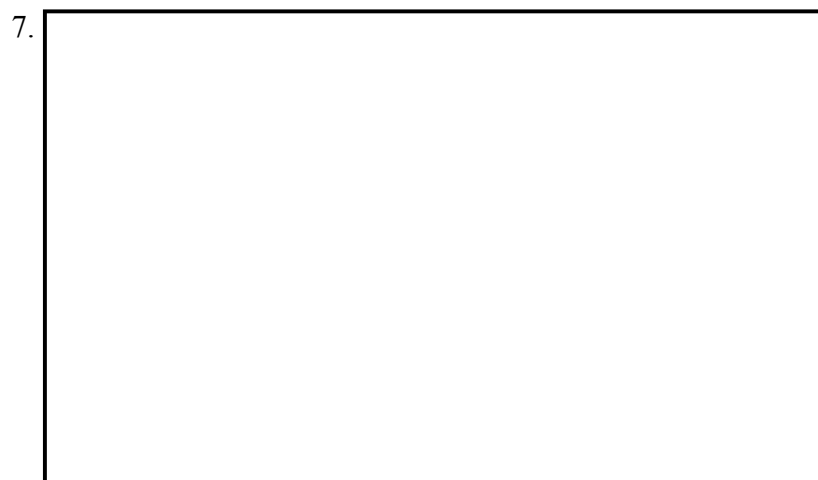


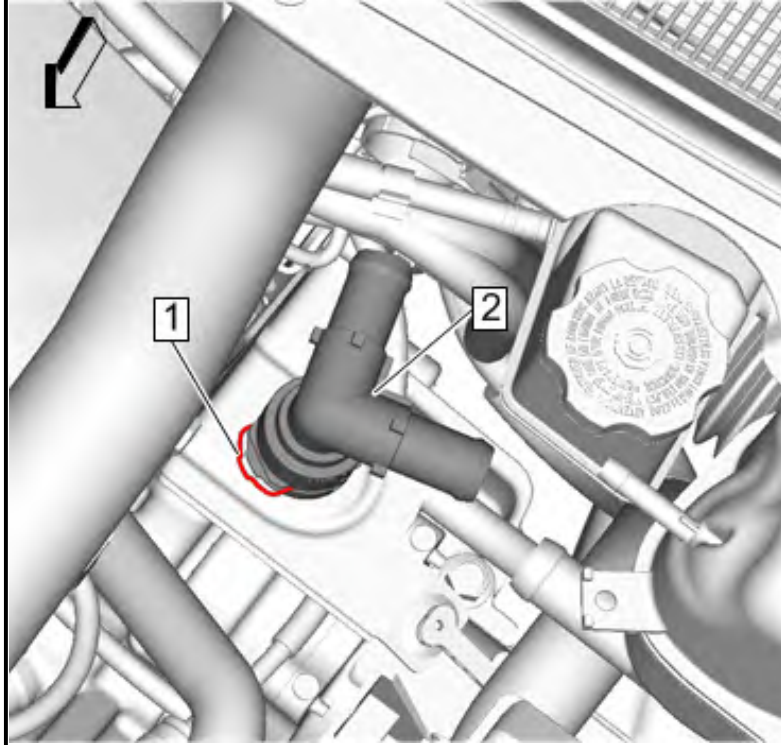
Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Remove - [Heater Coolant Heater Air Supply Hose Replacement \(LTG\)](#)



Heater Outlet Hose (2) - Remove - [Heater Outlet Hose Replacement \(LTG Radiator Surge Tank to Heater Outlet Hose Connector\)](#)

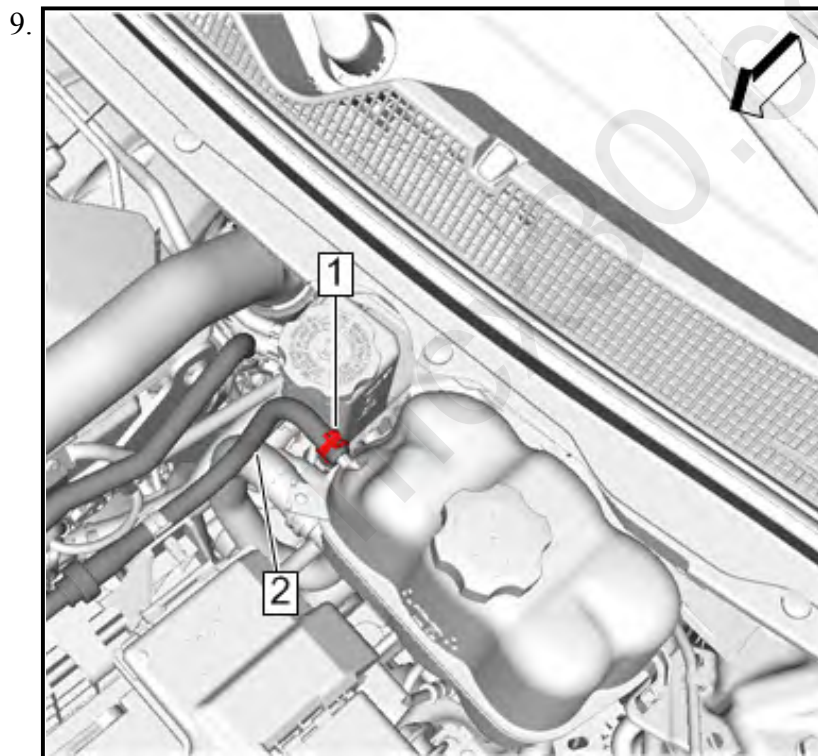
6. Intake Manifold Cover - Remove - [Intake Manifold Cover Replacement](#)





Heater Outlet Hose Connector (2) - Remove - [Heater Outlet Hose Connector Replacement \(LTG at Heater Inlet Hose Bracket\)](#)[Heater Outlet Hose Connector Replacement \(LTG At Heater Core Outlet Tube\)](#)

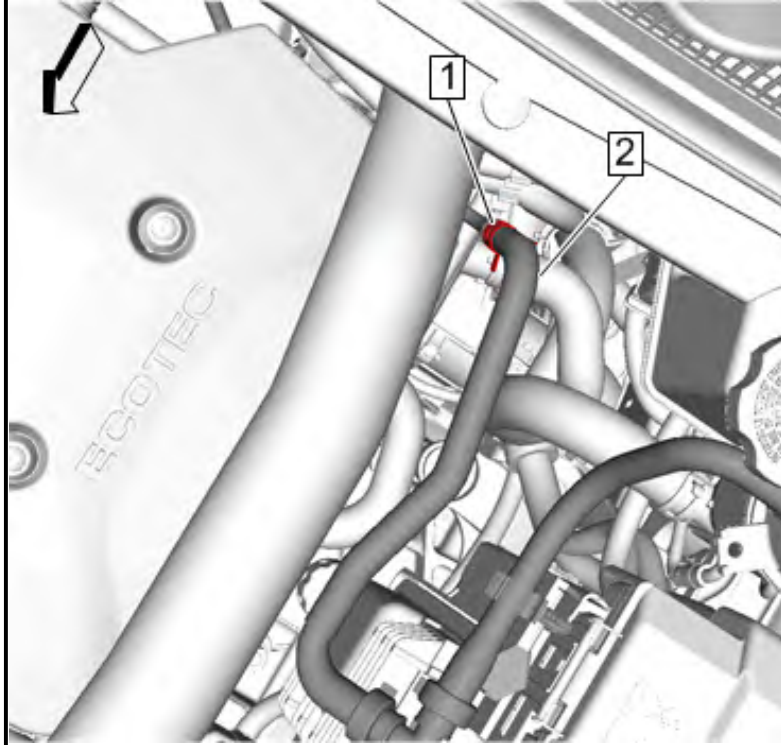
8. Wiring Harness Retainer @ Heater Inlet Hose Bracket - Remove [2x]



Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank - Remove - [Radiator Surge Tank Overflow Hose Replacement \(LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator\)](#)

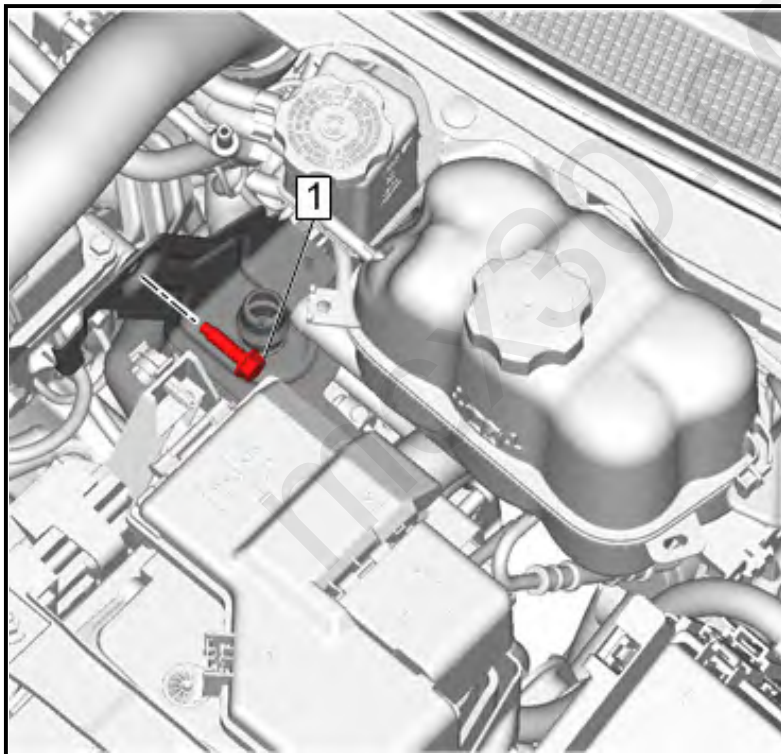
10.





Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank Outlet Pipe - Remove - [Radiator Surge Tank Overflow Hose Replacement \(LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator\)](#)

11.

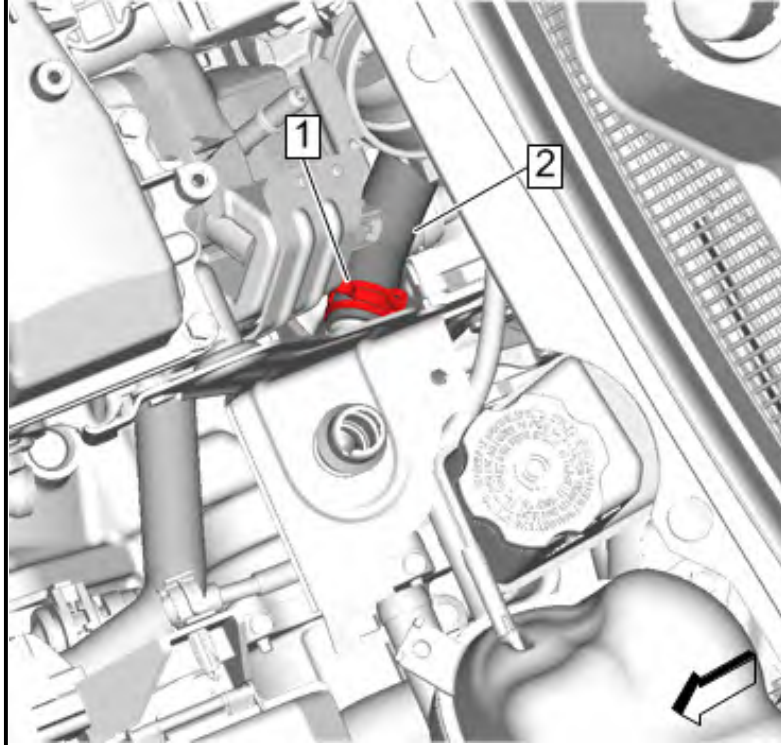


Heater Inlet Hose Bracket Bolt (1) - Remove

12. Charge Air Cooler Outlet Air Hose - Remove - [Charge Air Cooler Outlet Air Hose Replacement](#)

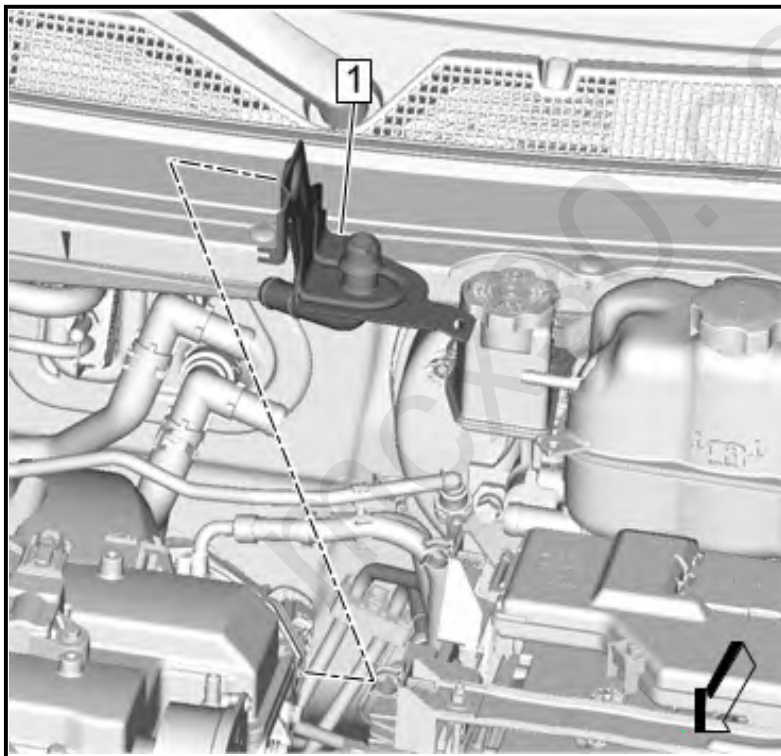
13.





Auxiliary Heater Inlet Hose (2) @ Heater Inlet Hose Bracket - Remove - [Auxiliary Heater Inlet Hose Replacement \(LTG\)](#)

14.

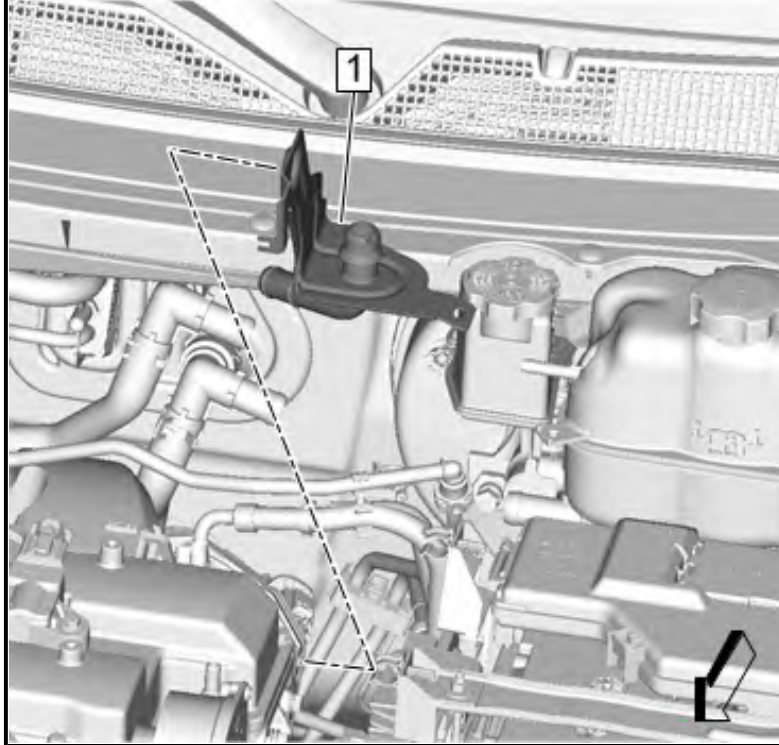


Heater Inlet Hose Bracket (1) - Remove

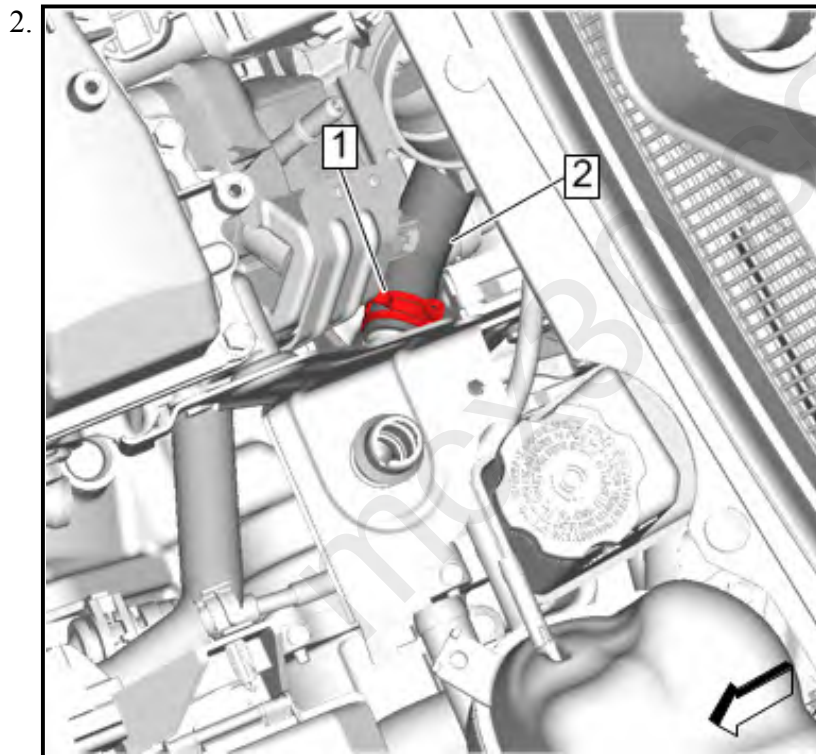
Installation Procedure

1.



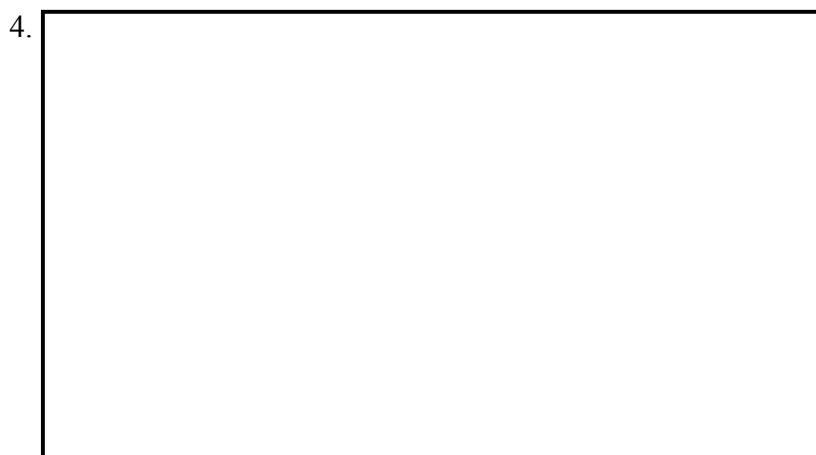


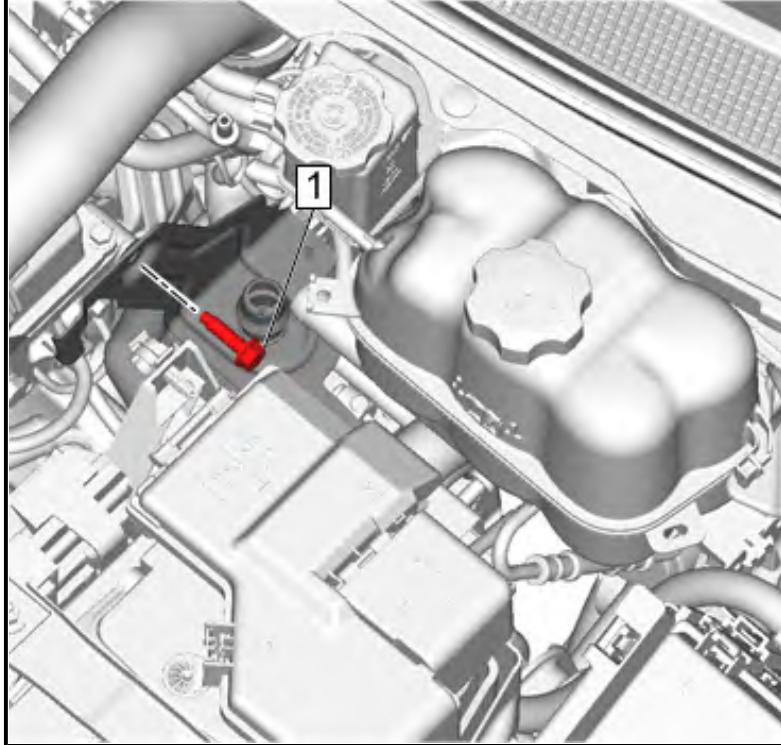
Heater Inlet Hose Bracket (1) - Install



Auxiliary Heater Inlet Hose (2) @ Heater Inlet Hose Bracket - Install - [Auxiliary Heater Inlet Hose Replacement \(LTG\)](#)

3. Charge Air Cooler Outlet Air Hose - Install - [Charge Air Cooler Outlet Air Hose Replacement](#)

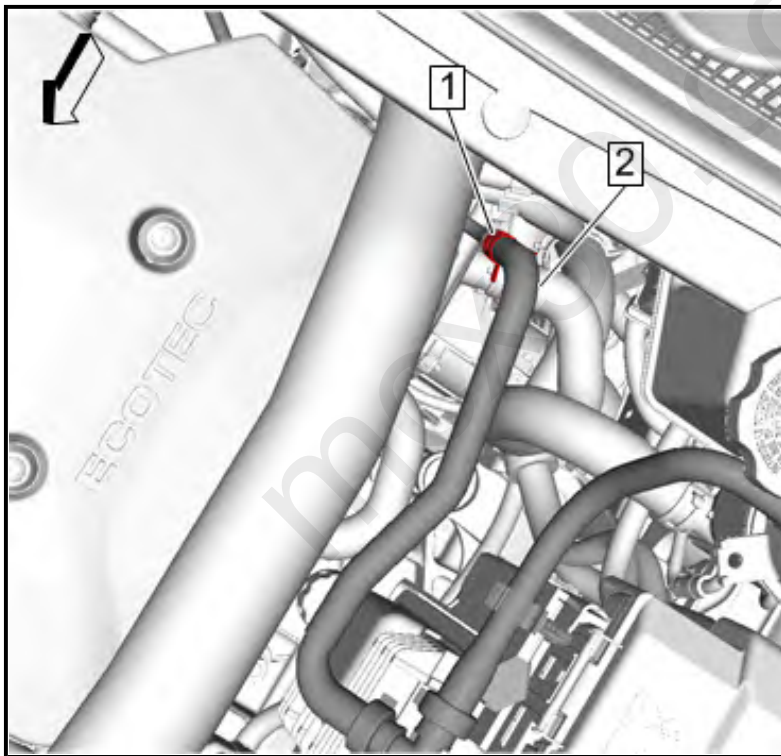




CAUTION: Refer to [Fastener Caution](#) .

Heater Inlet Hose Bracket Bolt (1) - Install and tighten 22 N.m (16 lb ft)

5.

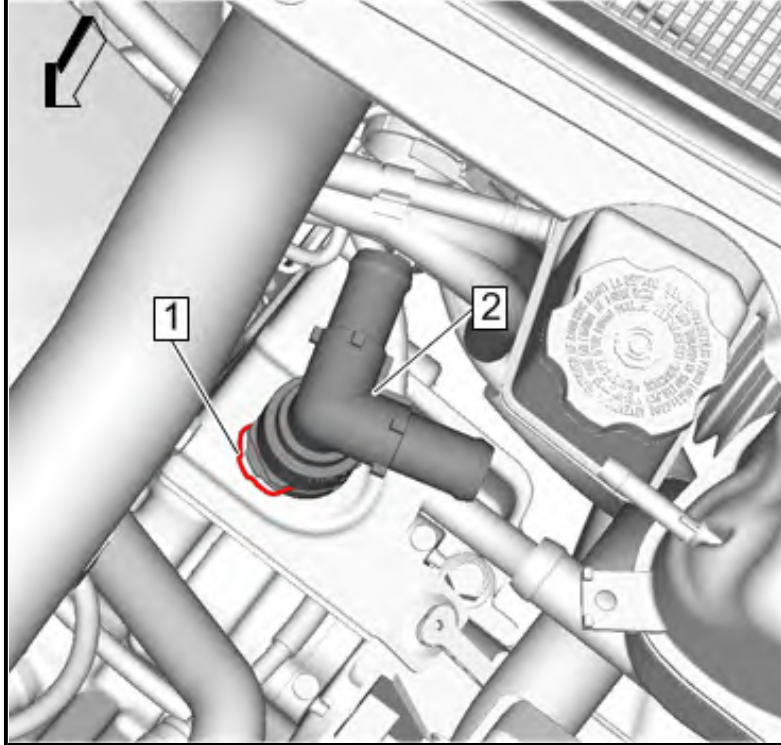


Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank Outlet Pipe - Install - [Radiator Surge Tank Overflow Hose Replacement \(LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator\)](#)

6. Wiring Harness Retainer @ Heater Inlet Hose Bracket - Install [2x]

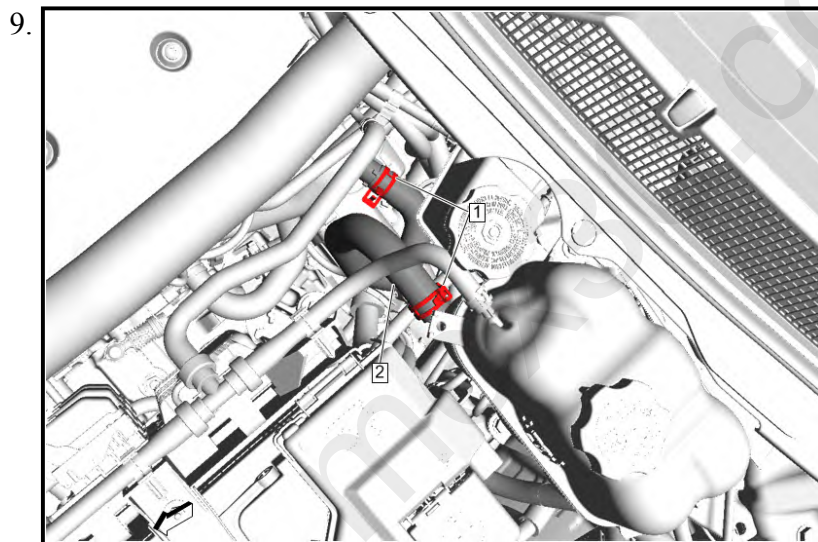
7.





Heater Outlet Hose Connector (2) - Install - [Heater Outlet Hose Connector Replacement \(LTG at Heater Inlet Hose Bracket\)](#)[Heater Outlet Hose Connector Replacement \(LTG At Heater Core Outlet Tube\)](#)

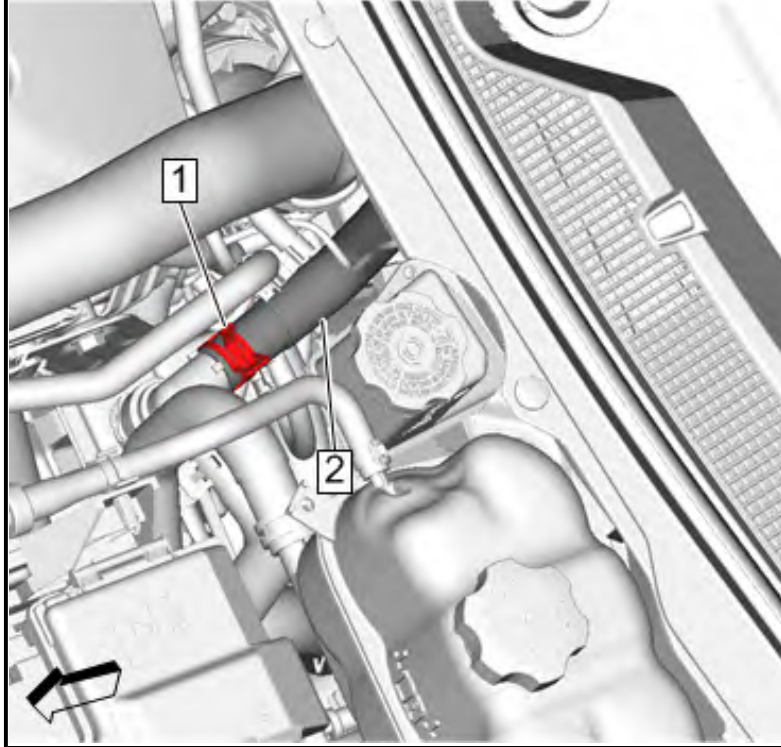
8. Intake Manifold Cover - Install - [Intake Manifold Cover Replacement](#)



Heater Outlet Hose (2) - Install - [Heater Outlet Hose Replacement \(LTG Radiator Surge Tank to Heater Outlet Hose Connector\)](#)

10.





Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Install - [Heater Coolant Heater Air Supply Hose Replacement \(LTG\)](#).

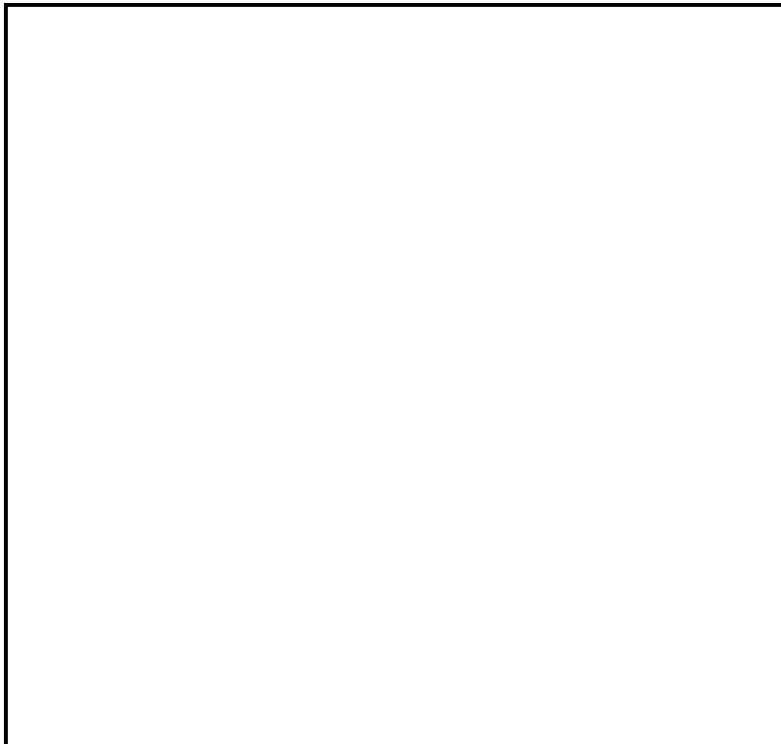
11. Heater Vent Hose - Install - [Heater Vent Hose Replacement \(LTG Water Outlet to Heater Outlet Hose Connector\)](#).
12. Reposition the wiring harness.
13. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#).
14. Start the engine and inspect for leaks.

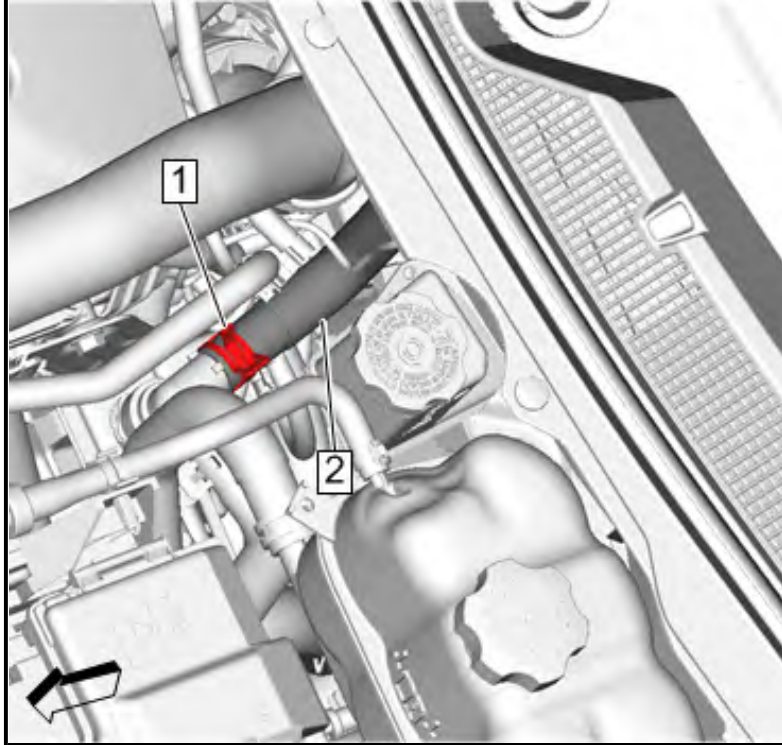
AUXILIARY HEATER INLET HOSE REPLACEMENT (LTG)

Removal Procedure

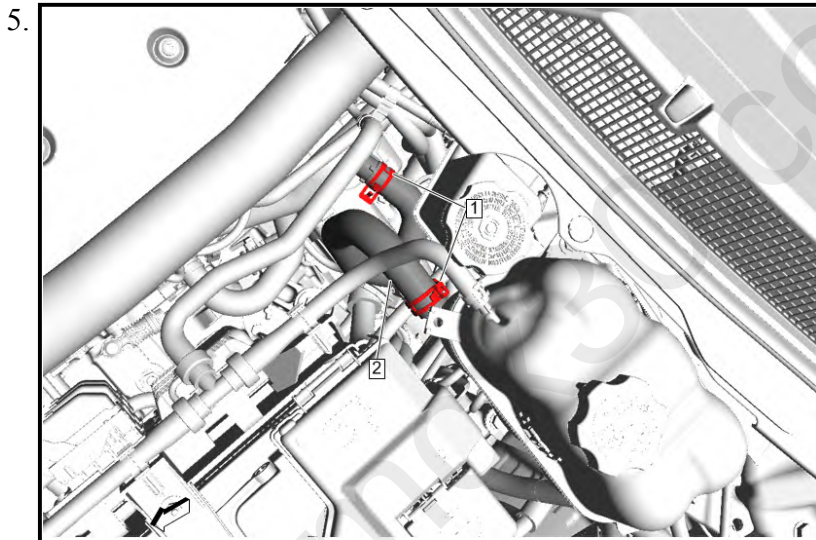
1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#).
2. Reposition the wiring harness.
3. Heater Vent Hose - Remove - [Heater Vent Hose Replacement \(LTG Water Outlet to Heater Outlet Hose Connector\)](#).

4.



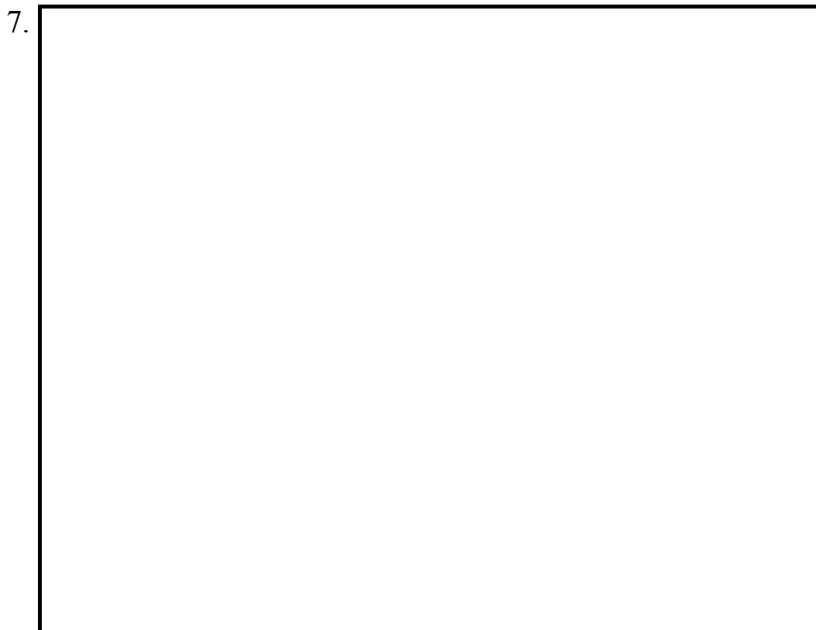


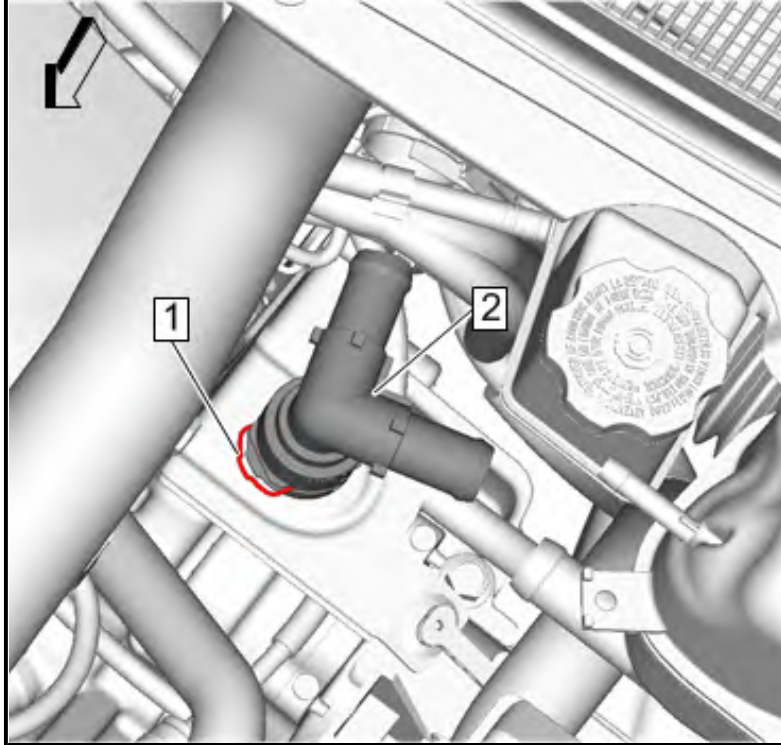
Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Remove - [Heater Coolant Heater Air Supply Hose Replacement \(LTG\)](#)



Heater Outlet Hose (2) - Remove - [Heater Outlet Hose Replacement \(LTG Radiator Surge Tank to Heater Outlet Hose Connector\)](#)

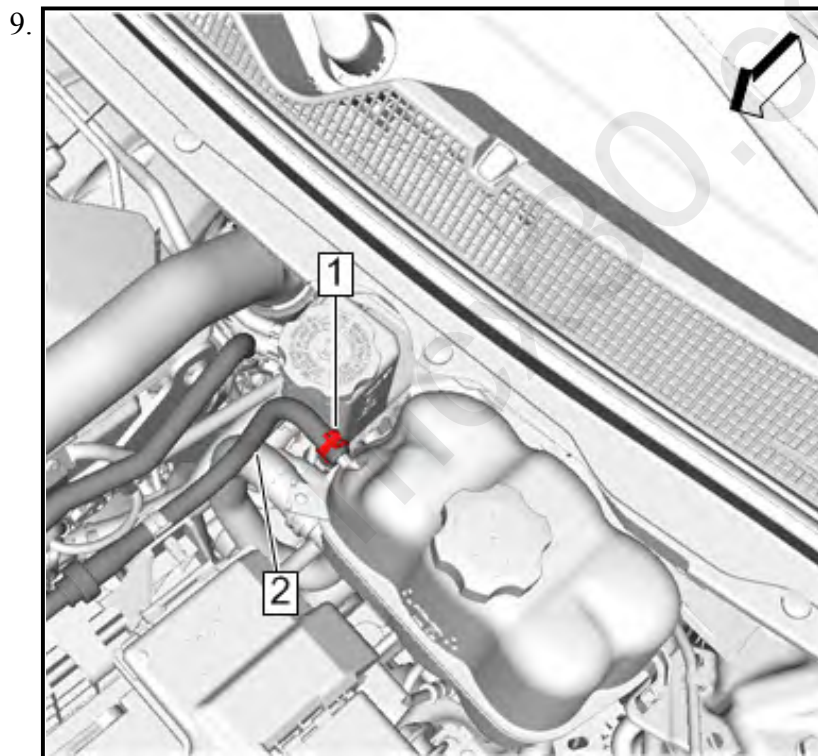
6. Intake Manifold Cover - Remove - [Intake Manifold Cover Replacement](#)





Heater Outlet Hose Connector (2) - Remove - Heater Outlet Hose Connector Replacement (LTG at Heater Inlet Hose Bracket) Heater Outlet Hose Connector Replacement (LTG At Heater Core Outlet Tube)

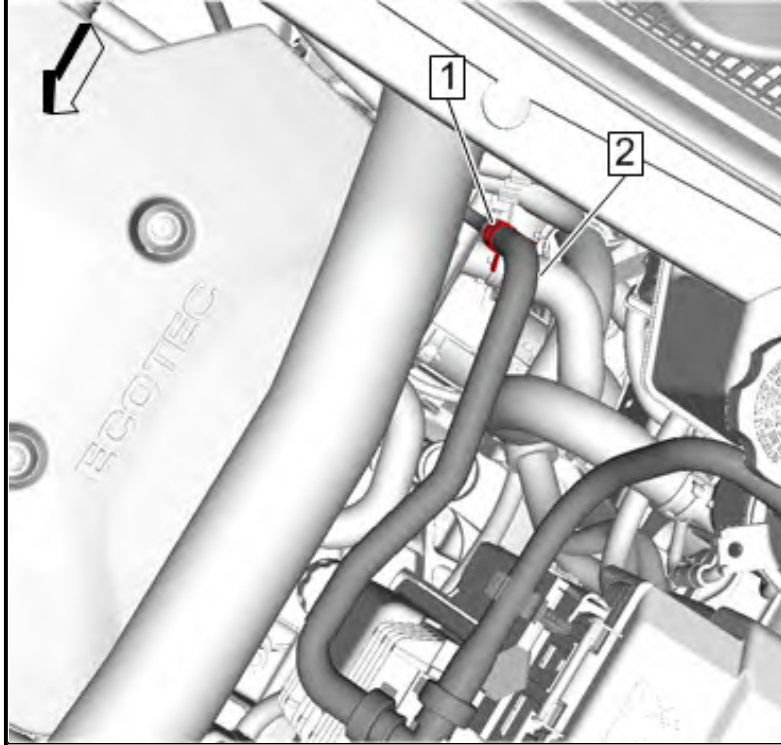
8. Wiring Harness Retainer @ Heater Inlet Hose Bracket - Remove [2x]



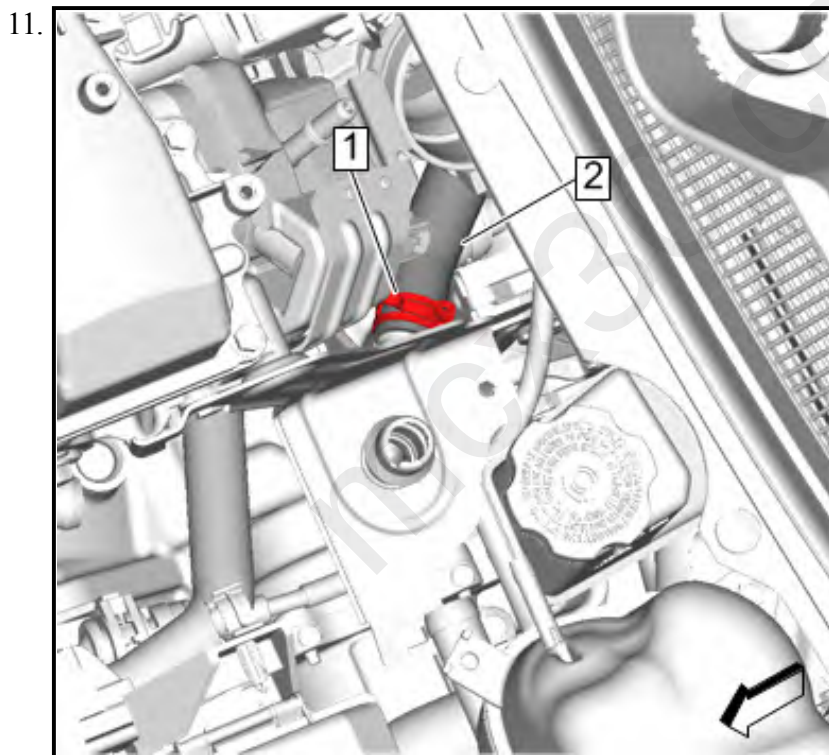
Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank - Remove - Radiator Surge Tank Overflow Hose Replacement (LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator)

10.





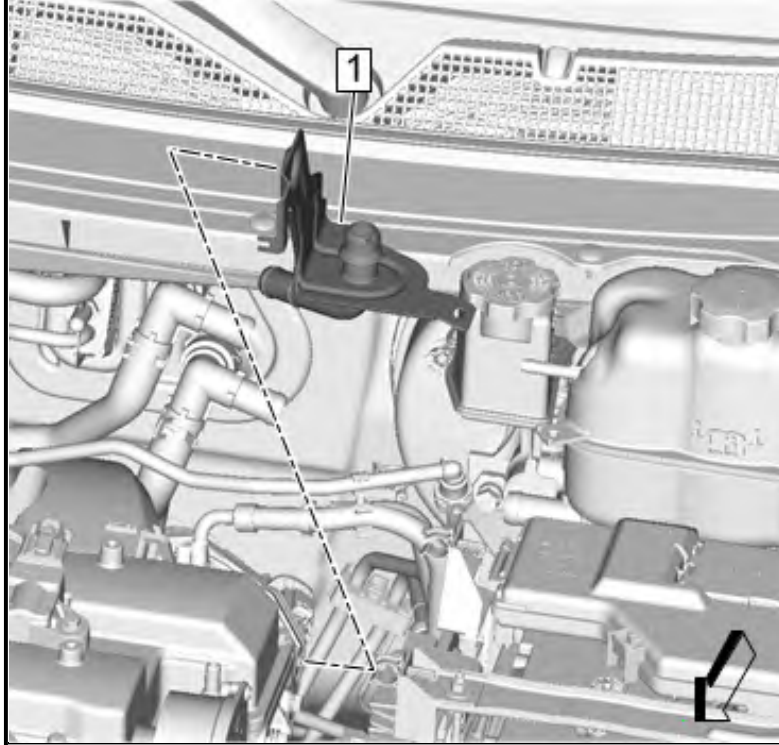
Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank Outlet Pipe - Remove - **Radiator Surge Tank Overflow Hose Replacement (LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator)**



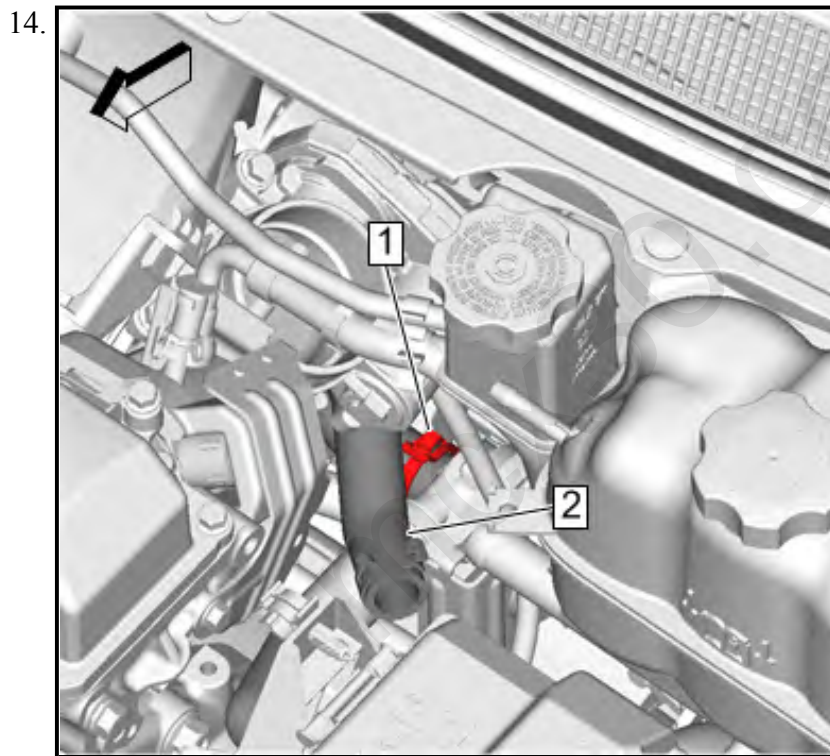
Auxiliary Heater Inlet Hose Clamp (1) - Disengage - **Hose Clamp Replacement Guidelines - Spring Type**

12. Auxiliary Heater Inlet Hose (2) @ Heater Inlet Hose Bracket - Remove





Heater Inlet Hose Bracket (1) - Remove - [Heater Inlet Hose Bracket Replacement \(LTG\)](#)



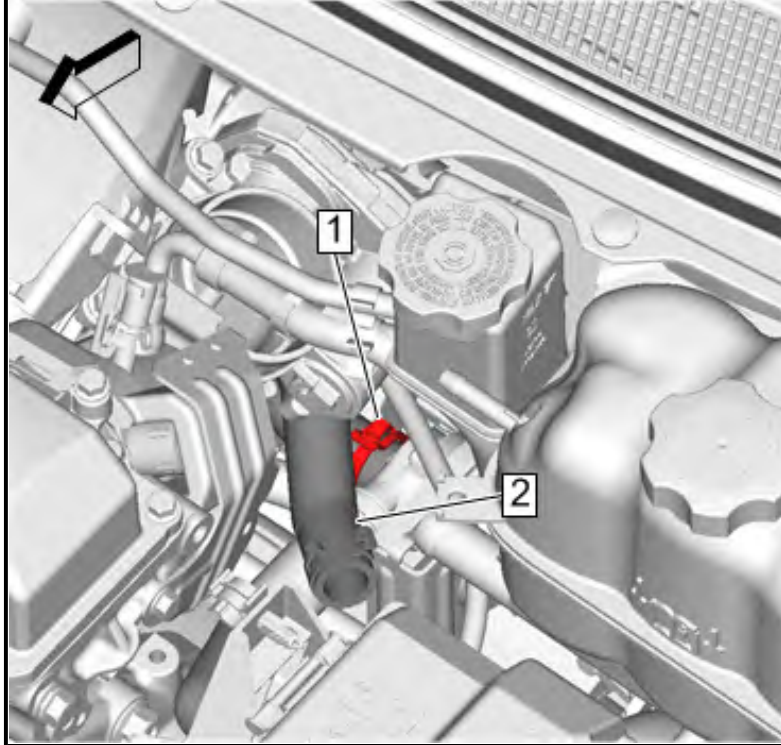
Auxiliary Heater Inlet Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

15. Auxiliary Heater Inlet Hose (2) @ Auxiliary Water Pump - Remove

16. Auxiliary Heater Inlet Hose (2) - Remove

Installation Procedure

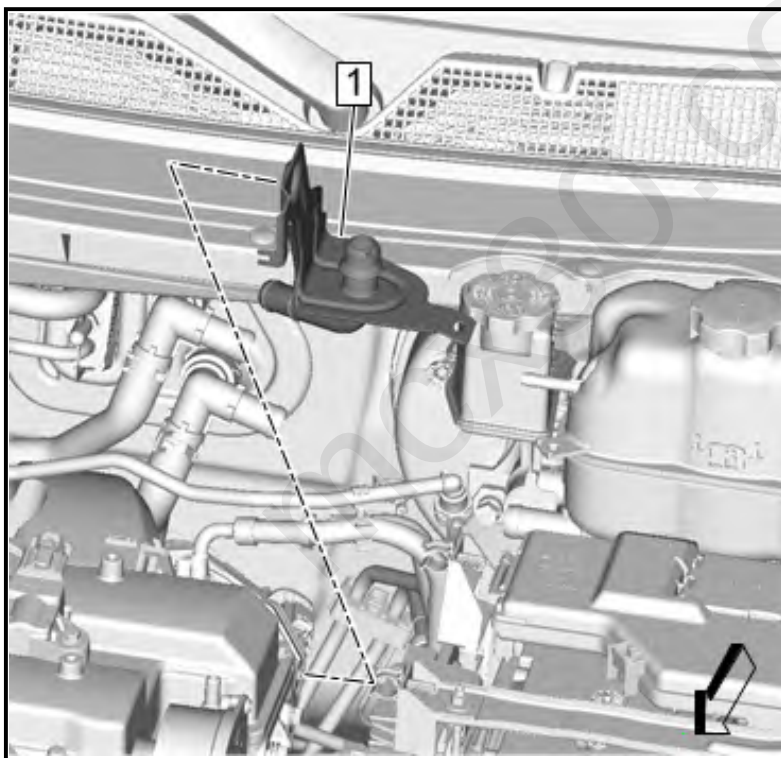




Auxiliary Heater Inlet Hose (2) @ Auxiliary Water Pump - Install

2. Auxiliary Heater Inlet Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)

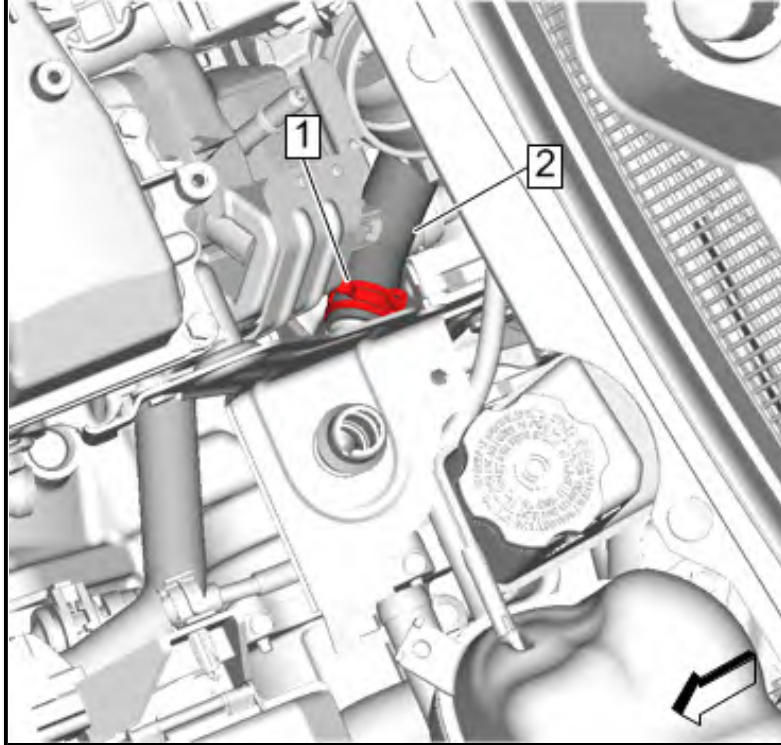
3.



Heater Inlet Hose Bracket (1) - Install - [Heater Inlet Hose Bracket Replacement \(LTG\)](#)

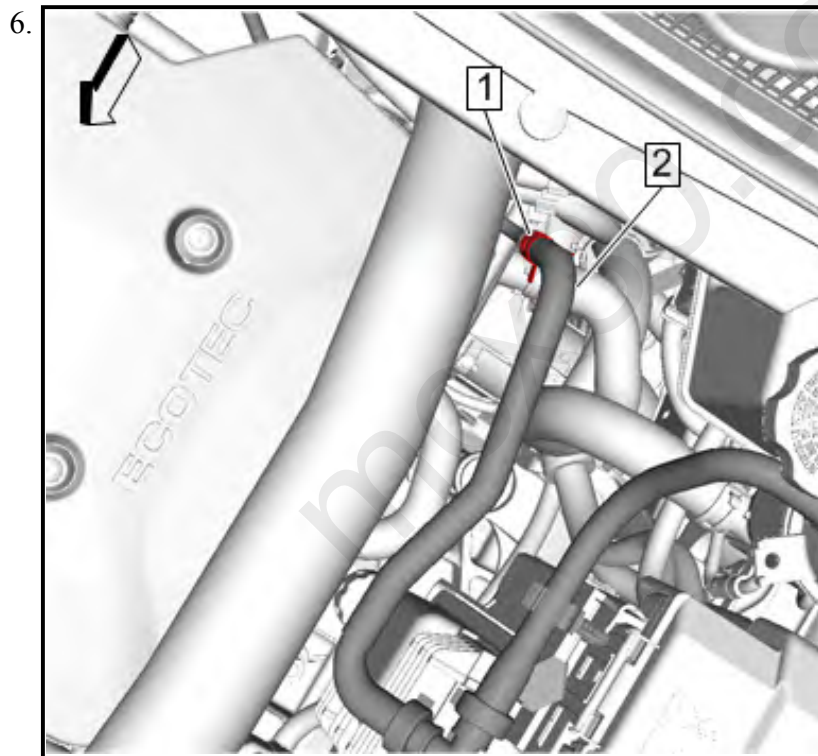
4.





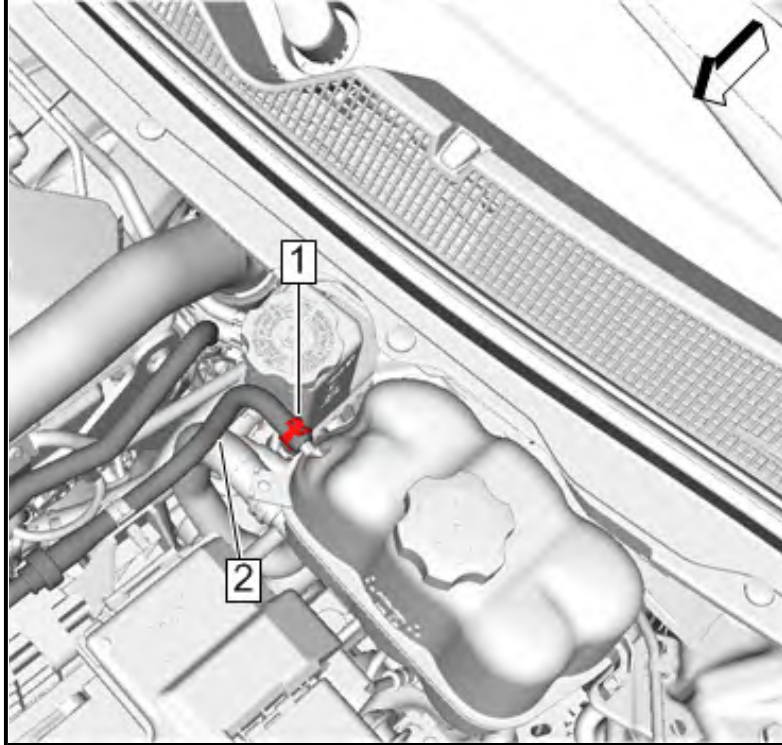
Auxiliary Heater Inlet Hose (2) @ Heater Inlet Hose Bracket - Install

5. Auxiliary Heater Inlet Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)



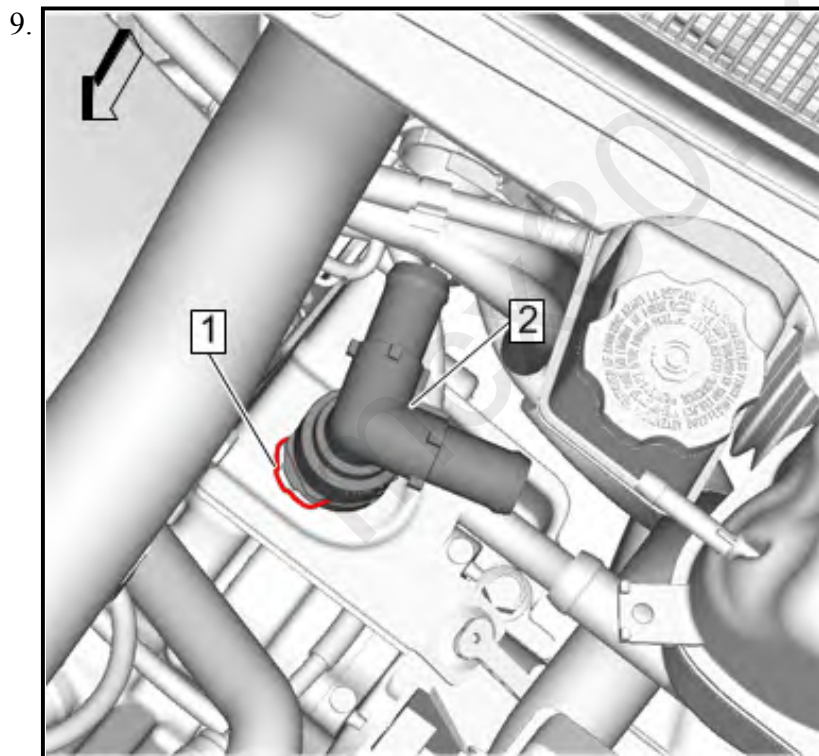
Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank Outlet Pipe - Install - [Radiator Surge Tank Overflow Hose Replacement \(LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator\)](#)





Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank - Install - [Radiator Surge Tank Overflow Hose Replacement \(LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator\)](#)

8. Wiring Harness Retainer @ Heater Inlet Hose Bracket - Install [2x]

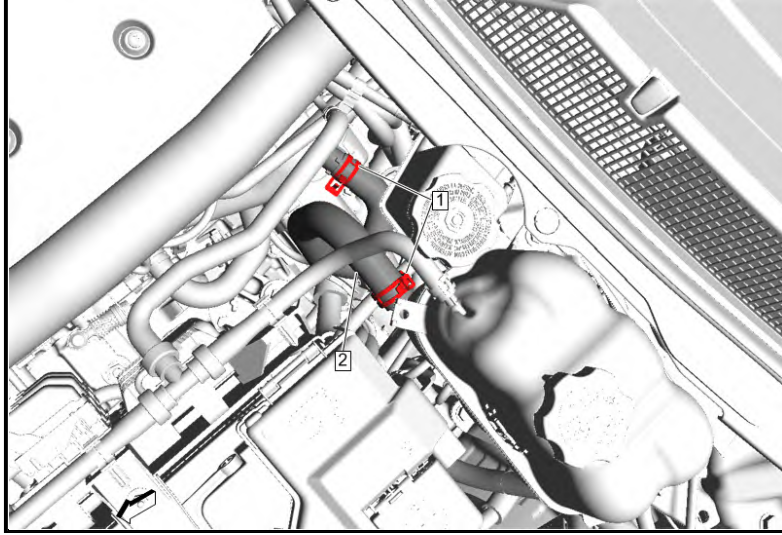


Heater Outlet Hose Connector (2) - Install - [Heater Outlet Hose Connector Replacement \(LTG at Heater Inlet Hose Bracket\) Heater Outlet Hose Connector Replacement \(LTG At Heater Core Outlet Tube\)](#)

10. Intake Manifold Cover - Install - [Intake Manifold Cover Replacement](#)

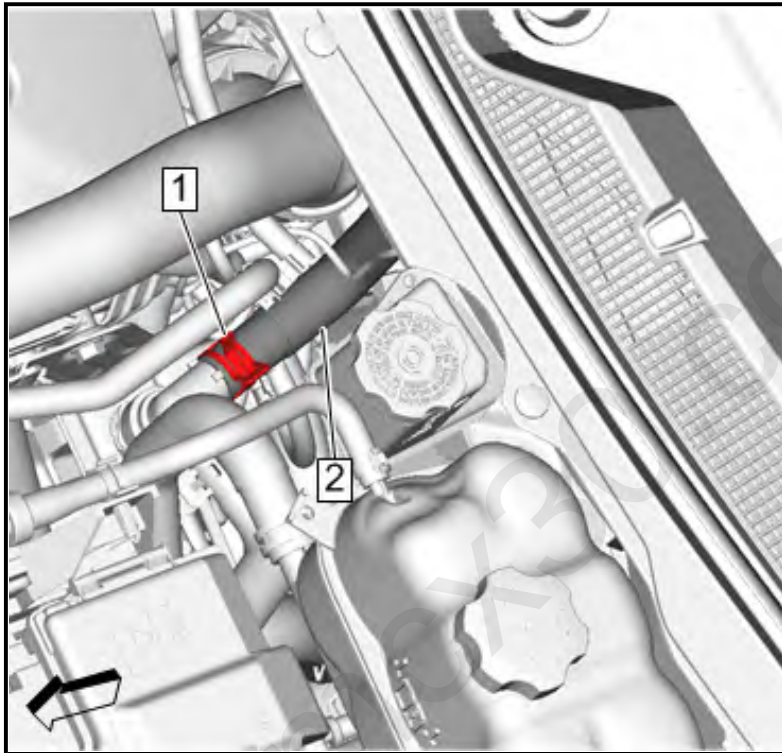
11.





Heater Outlet Hose (2) - Install - [Heater Outlet Hose Replacement \(LTG Radiator Surge Tank to Heater Outlet Hose Connector\)](#).

12.



Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Install - [Heater Coolant Heater Air Supply Hose Replacement \(LTG\)](#).

13. Heater Vent Hose - Install - [Heater Vent Hose Replacement \(LTG Water Outlet to Heater Outlet Hose Connector\)](#).
14. Reposition the wiring harness.
15. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#).
16. Start the engine and inspect for leaks.

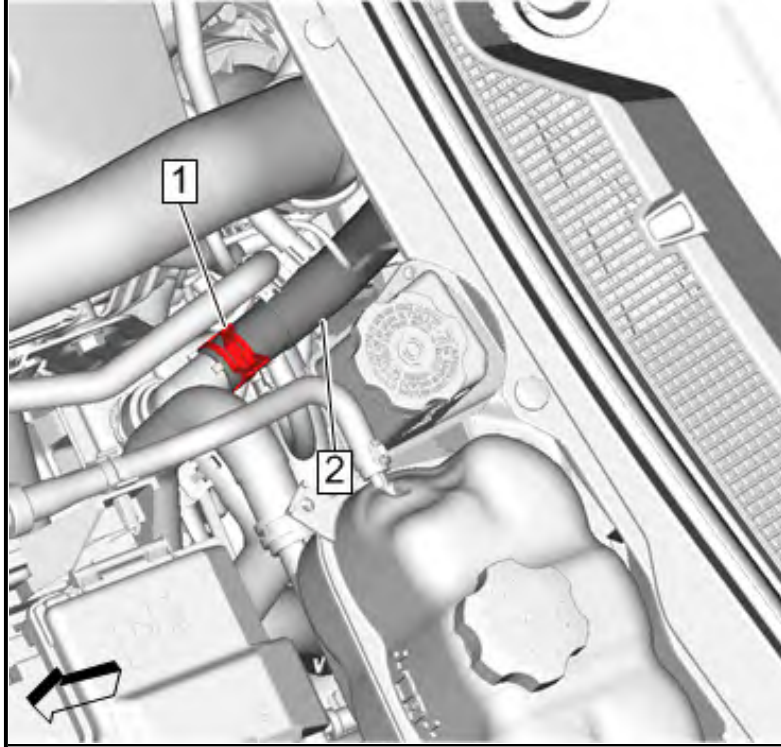
AUXILIARY HEATER OUTLET HOSE REPLACEMENT (LTG)

Removal Procedure

1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#).
2. Reposition the wiring harness.
3. Heater Vent Hose - Remove - [Heater Vent Hose Replacement \(LTG Water Outlet to Heater Outlet Hose Connector\)](#).

4.





Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Remove - [Heater Coolant Heater Air Supply Hose Replacement \(LTG\)](#).

5.

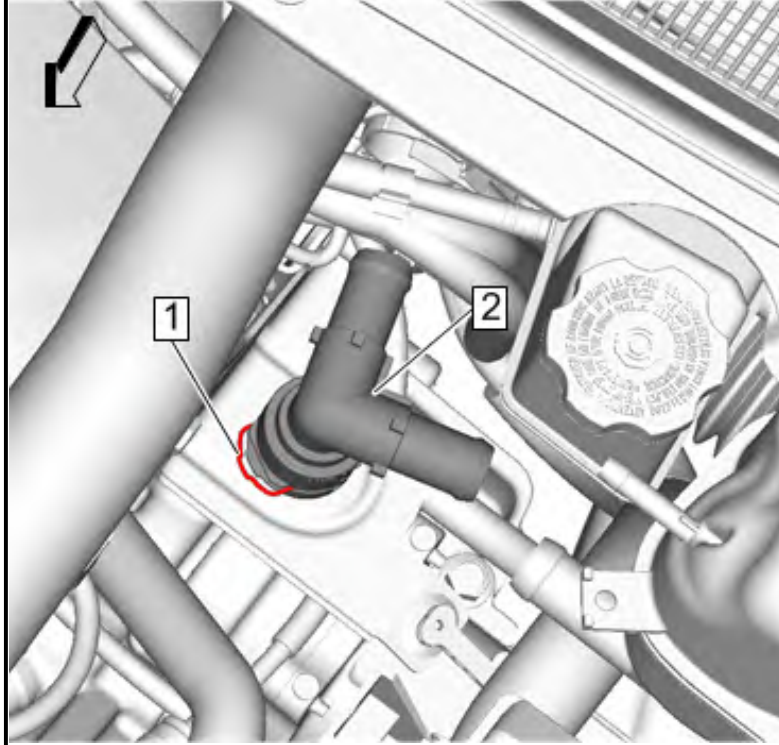


Heater Outlet Hose (2) - Remove - [Heater Outlet Hose Replacement \(LTG Radiator Surge Tank to Heater Outlet Hose Connector\)](#).

6. Intake Manifold Cover - Remove - [Intake Manifold Cover Replacement](#)

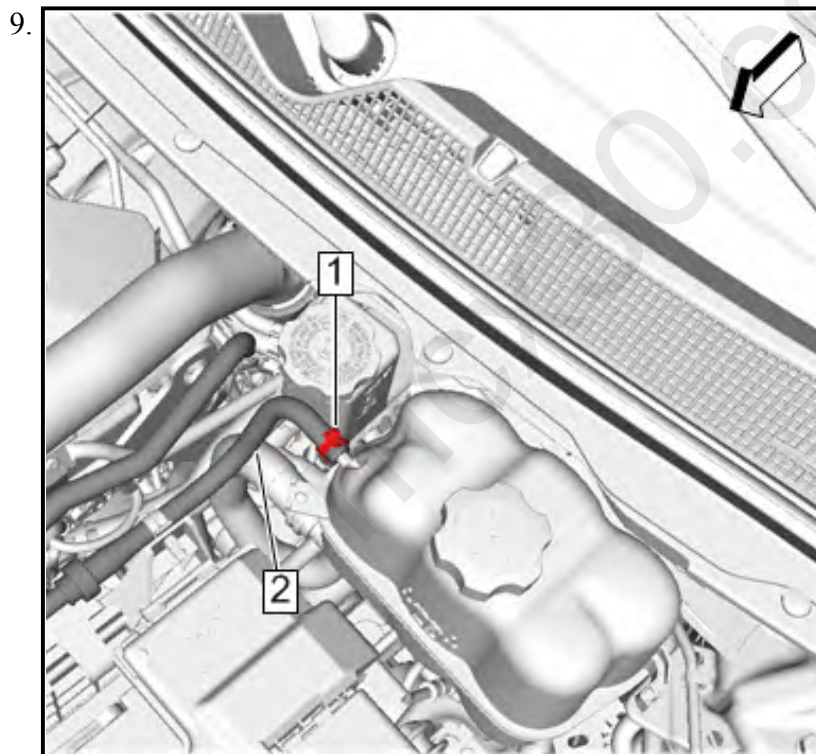
7.





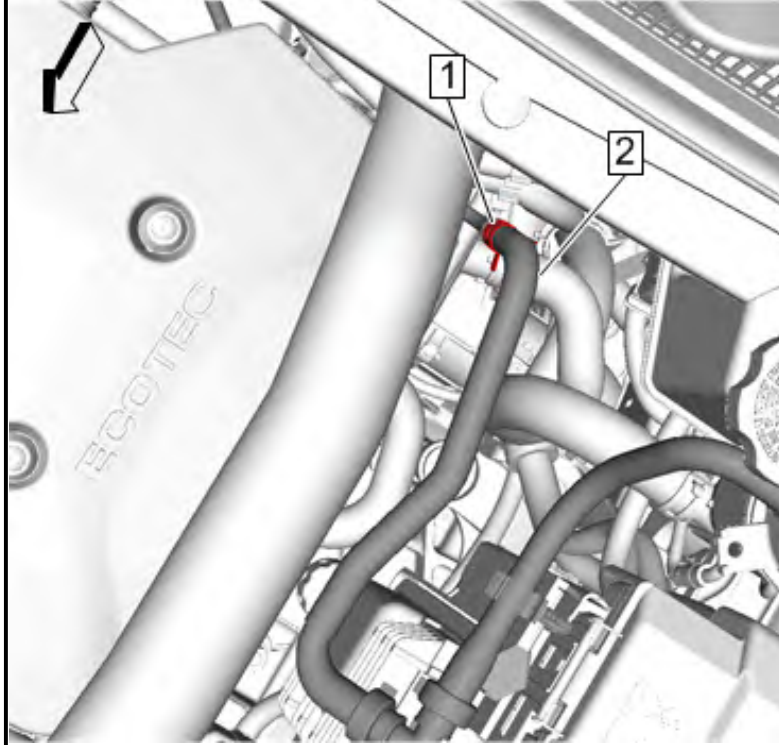
Heater Outlet Hose Connector (2) - Remove - [Heater Outlet Hose Connector Replacement \(LTG at Heater Inlet Hose Bracket\)](#)[Heater Outlet Hose Connector Replacement \(LTG At Heater Core Outlet Tube\)](#)

8. Wiring Harness Retainer @ Heater Inlet Hose Bracket - Remove [2x]



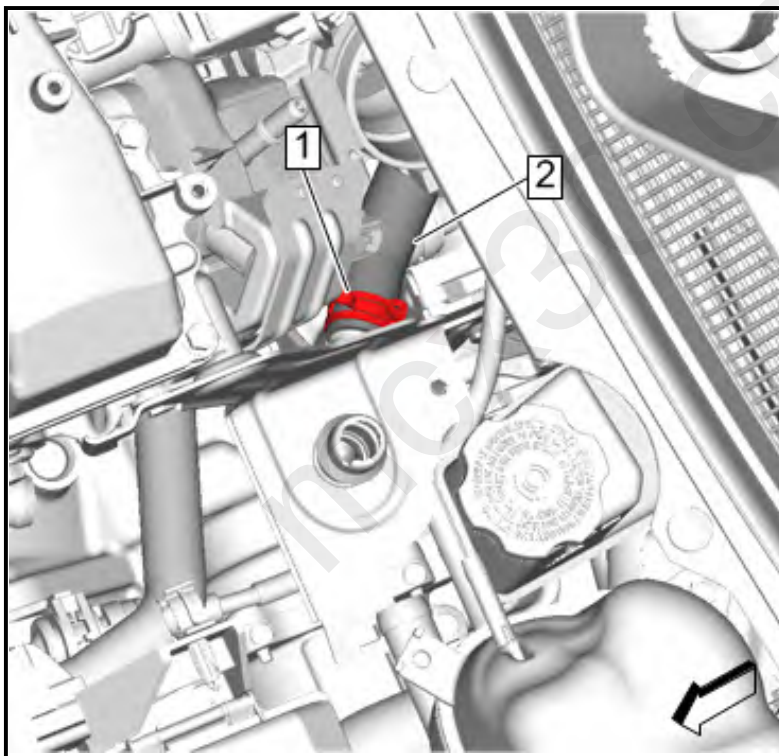
Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank - Remove - [Radiator Surge Tank Overflow Hose Replacement \(LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator\)](#)





Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank Outlet Pipe - Remove - [Radiator Surge Tank Overflow Hose Replacement \(LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator\)](#)

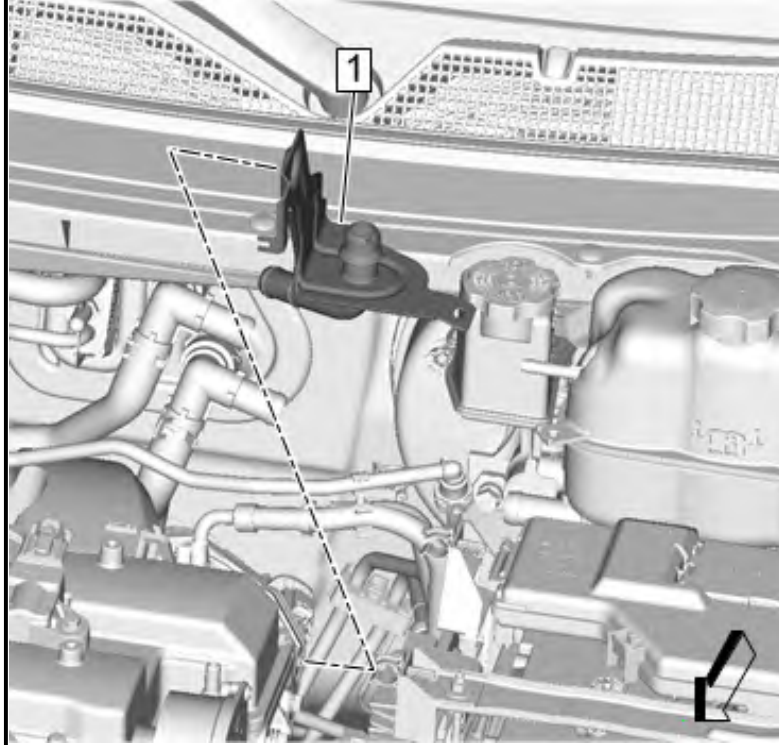
11.



Auxiliary Heater Inlet Hose (2) @ Heater Inlet Hose Bracket - Remove - [Auxiliary Heater Inlet Hose Replacement \(LTG\)](#)

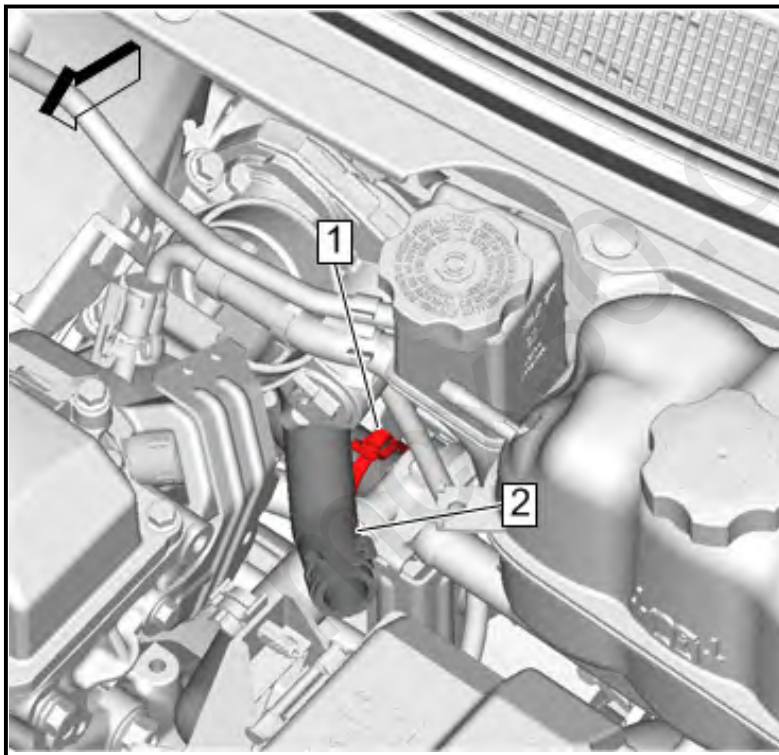
12.





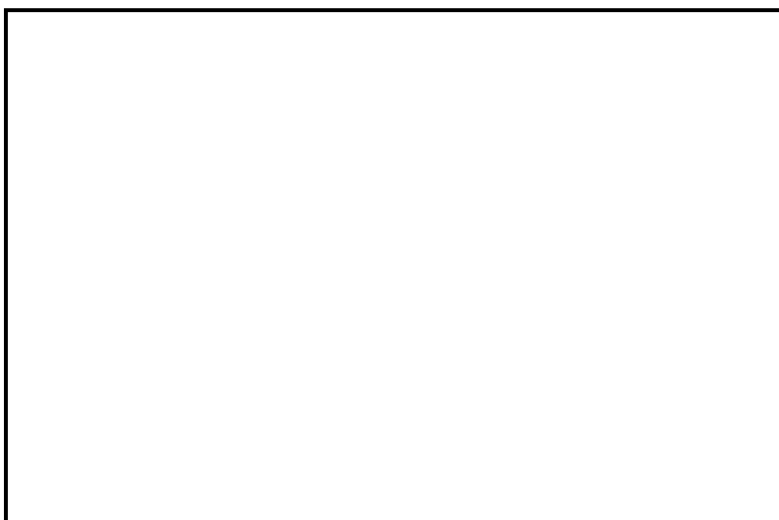
Heater Inlet Hose Bracket (1) - Remove - [Heater Inlet Hose Bracket Replacement \(LTG\)](#)

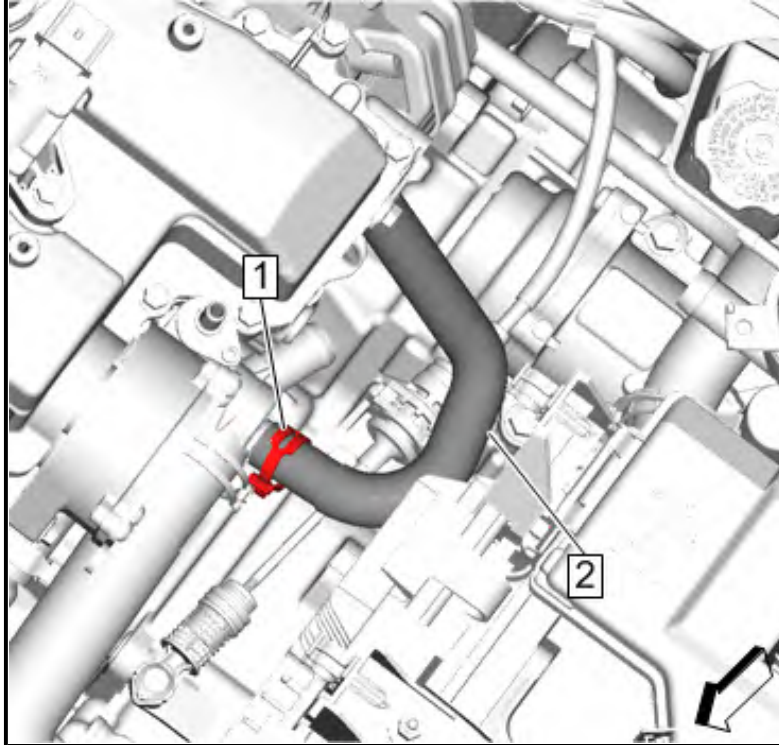
13.



Auxiliary Heater Inlet Hose (2) @ Auxiliary Water Pump - Remove - [Auxiliary Heater Inlet Hose Replacement \(LTG\)](#)

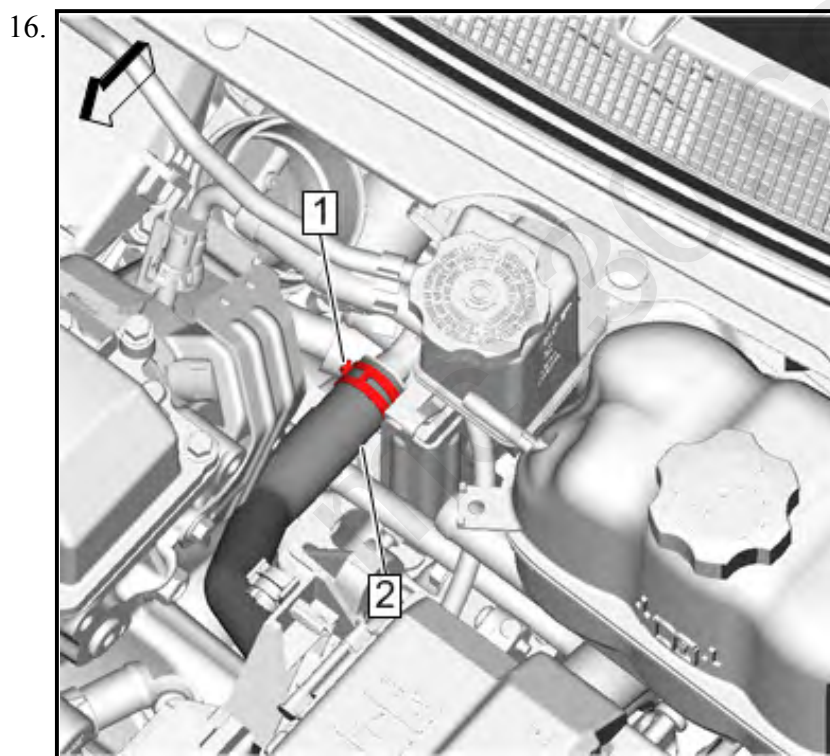
14.





Auxiliary Heater Outlet Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

15. Auxiliary Heater Outlet Hose (2) @ Water Outlet - Remove



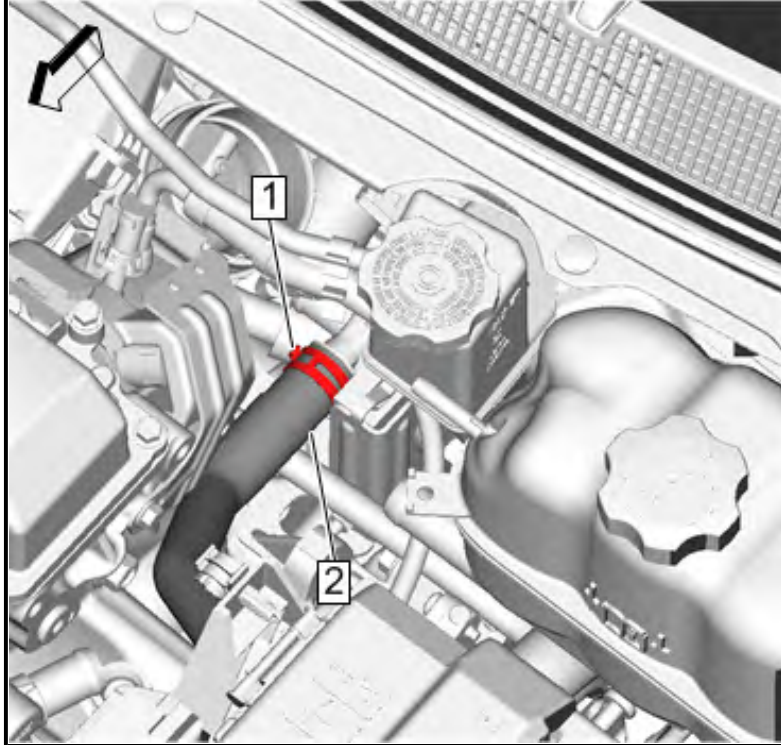
Auxiliary Heater Outlet Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

17. Auxiliary Heater Outlet Hose (2) @ Auxiliary Water Pump - Remove

18. Auxiliary Heater Outlet Hose (2) - Remove

Installation Procedure

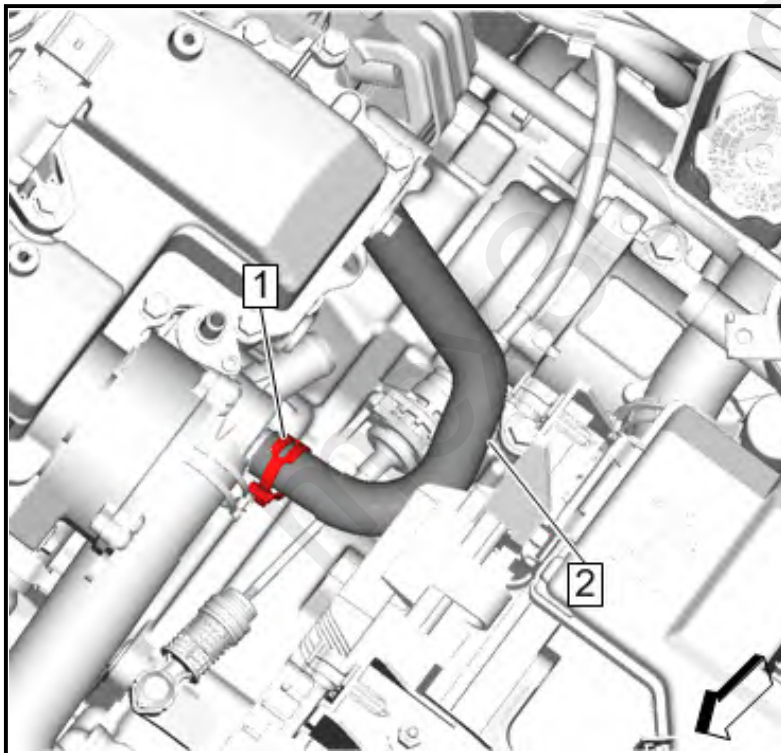
1.



Auxiliary Heater Outlet Hose (2) @ Auxiliary Water Pump - Install

2. Auxiliary Heater Outlet Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)

3.

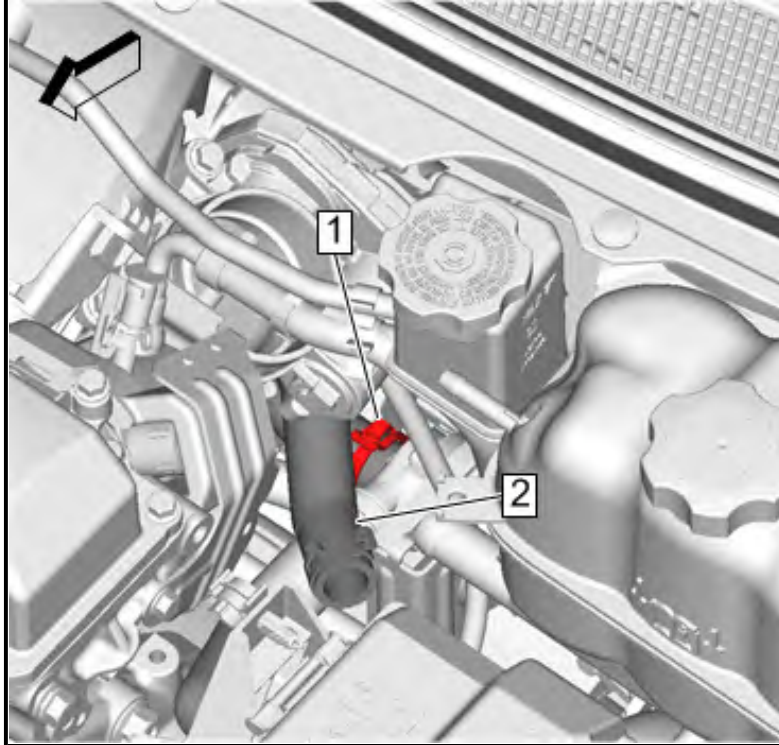


Auxiliary Heater Outlet Hose (2) @ Water Outlet - Install

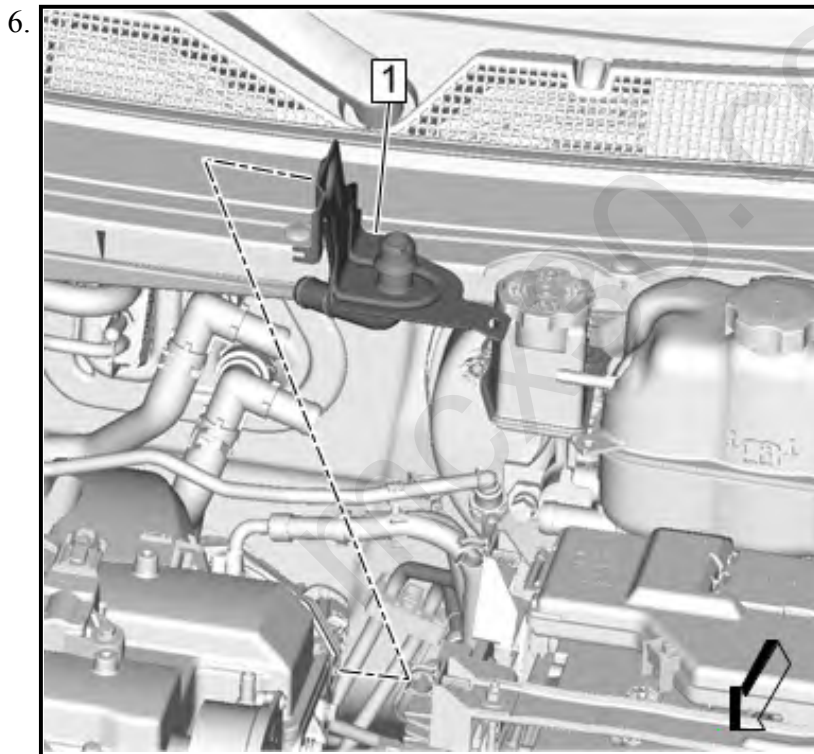
4. Auxiliary Heater Outlet Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)

5.

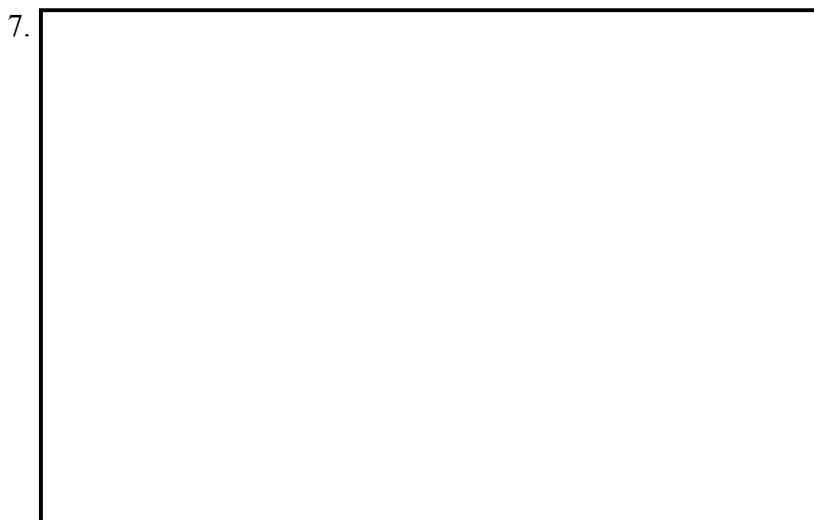


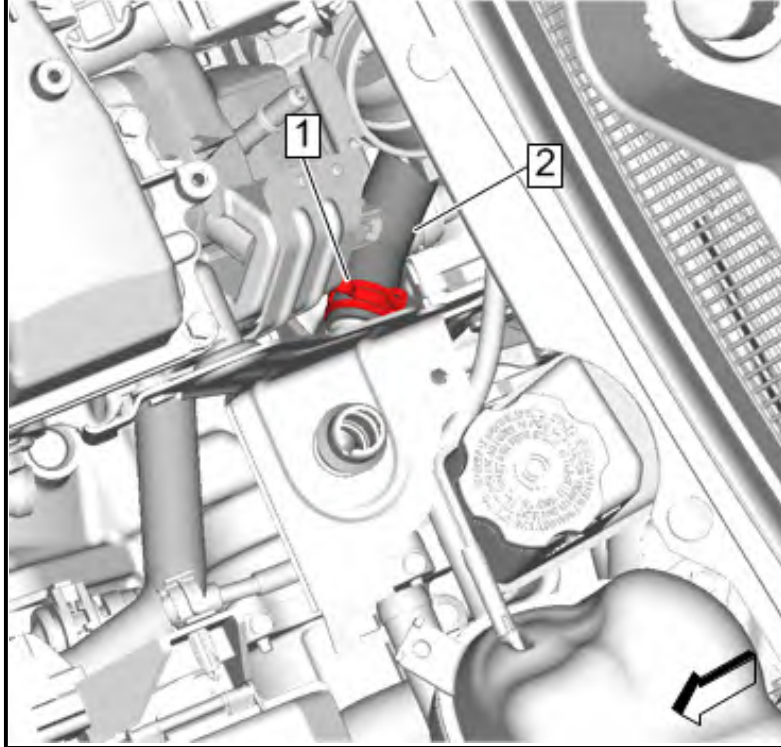


Auxiliary Heater Inlet Hose (2) @ Auxiliary Water Pump - Install - [Auxiliary Heater Inlet Hose Replacement \(LTG\)](#)



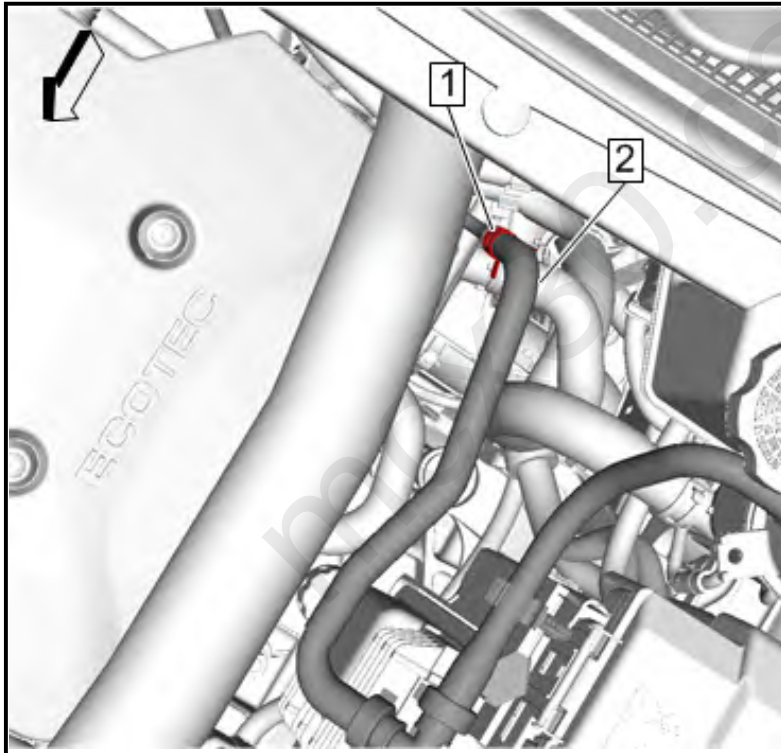
Heater Inlet Hose Bracket (1) - Install - [Heater Inlet Hose Bracket Replacement \(LTG\)](#)





Auxiliary Heater Inlet Hose (2) @ Heater Inlet Hose Bracket - Install - [Auxiliary Heater Inlet Hose Replacement \(LTG\)](#)

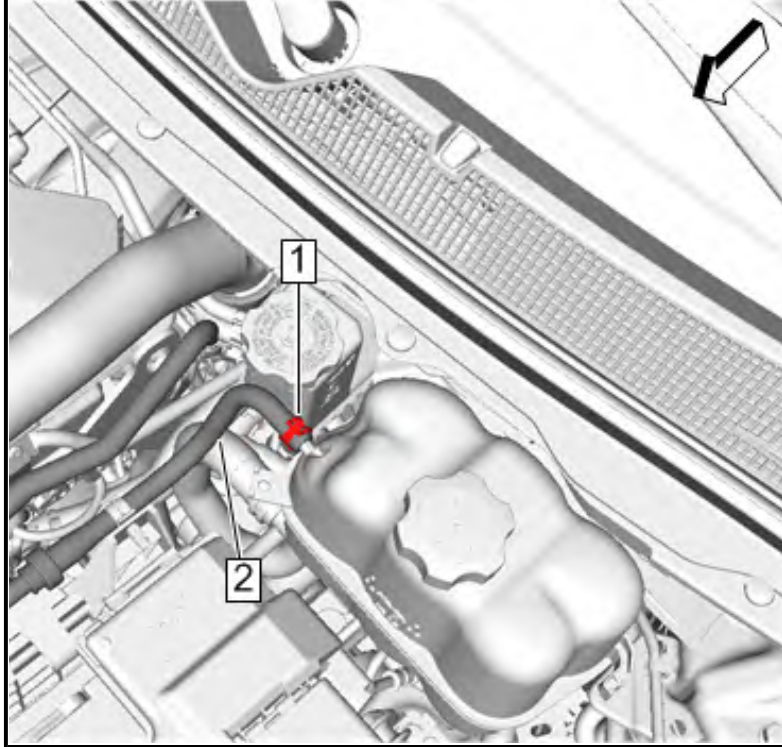
8.



Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank Outlet Pipe - Install - [Radiator Surge Tank Overflow Hose Replacement \(LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator\)](#)

9.

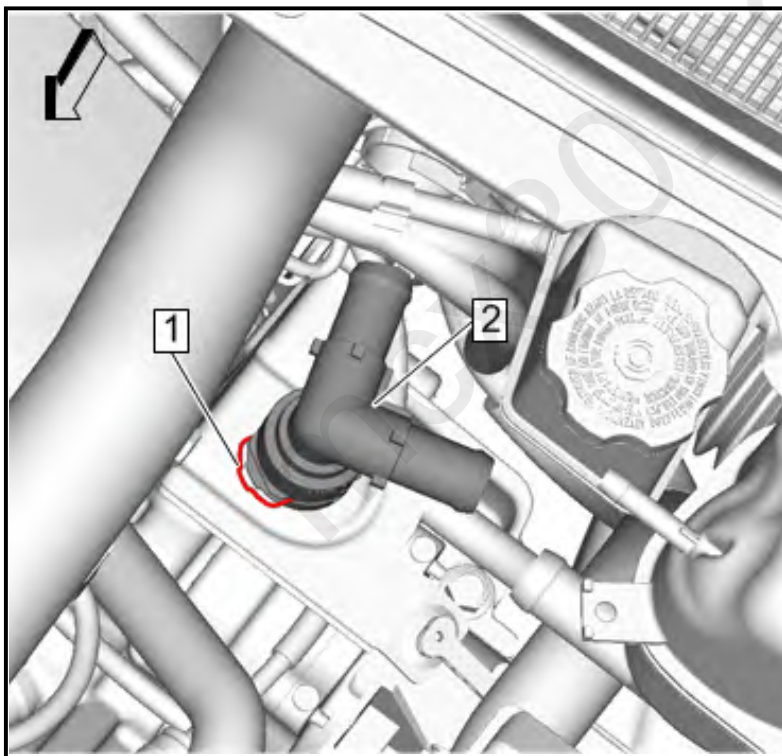




Radiator Surge Tank Overflow Hose (2) @ Radiator Surge Tank - Install - [Radiator Surge Tank Overflow Hose Replacement \(LTG Radiator Surge Tank to Engine Coolant Air Bleed Pipe to Radiator\)](#)

10. Wiring Harness Retainer @ Heater Inlet Hose Bracket - Install [2x]

11.



Heater Outlet Hose Connector (2) - Install - [Heater Outlet Hose Connector Replacement \(LTG at Heater Inlet Hose Bracket\) Heater Outlet Hose Connector Replacement \(LTG At Heater Core Outlet Tube\)](#)

12. Intake Manifold Cover - Install - [Intake Manifold Cover Replacement](#)

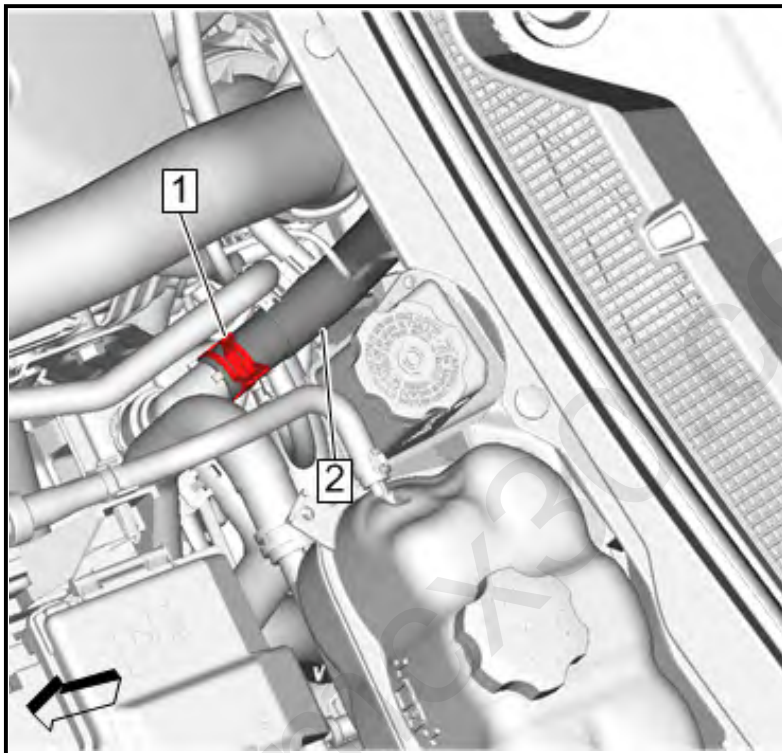
13.





Heater Outlet Hose (2) - Install - [Heater Outlet Hose Replacement \(LTG Radiator Surge Tank to Heater Outlet Hose Connector\)](#).

14.



Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Install - [Heater Coolant Heater Air Supply Hose Replacement \(LTG\)](#).

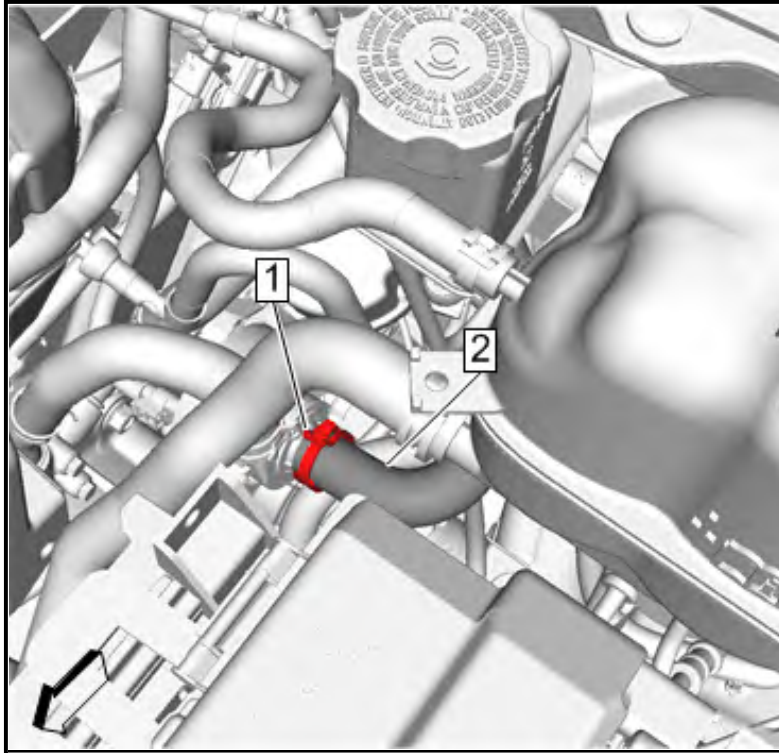
15. Heater Vent Hose - Install - [Heater Vent Hose Replacement \(LTG Water Outlet to Heater Outlet Hose Connector\)](#).
16. Reposition the wiring harness.
17. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#).
18. Start the engine and inspect for leaks.

HEATER OUTLET HOSE REPLACEMENT (LFY HEATER COOLANT PUMP TO CONNECTOR)

Removal Procedure

1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#).
2. Lower the vehicle.
3. {If equipped} Power Transfer Unit Vent Hose @ Radiator Surge Tank - Reposition - [Power Transfer Unit Vent Replacement](#)
4. Power Brake Booster Vacuum Hose - Reposition - [Power Brake Booster Vacuum Hose Replacement \(LFY\)](#)
5. Reposition the wiring harness.

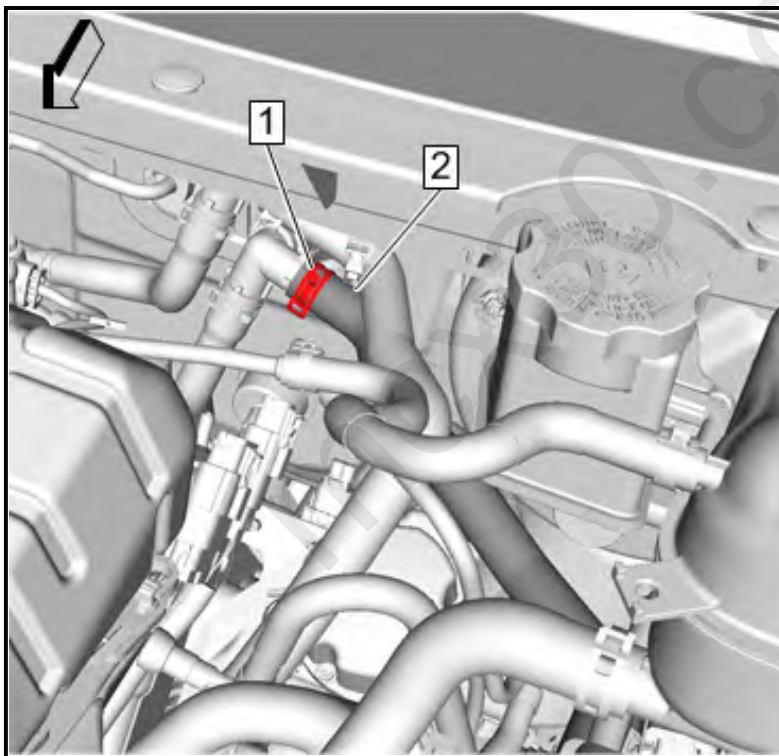
6.



Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

7. Heater Outlet Hose (2) @ Heater Coolant Pump - Remove

8.



Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

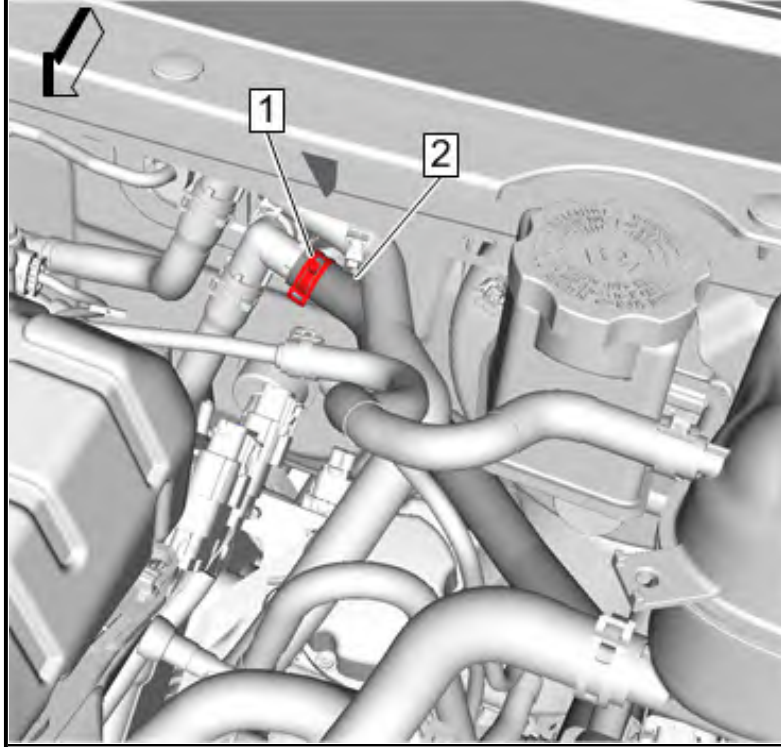
9. Heater Outlet Hose (2) @ Heater Outlet Hose Connector - Remove

10. Heater Outlet Hose (2) - Remove

Installation Procedure

1.

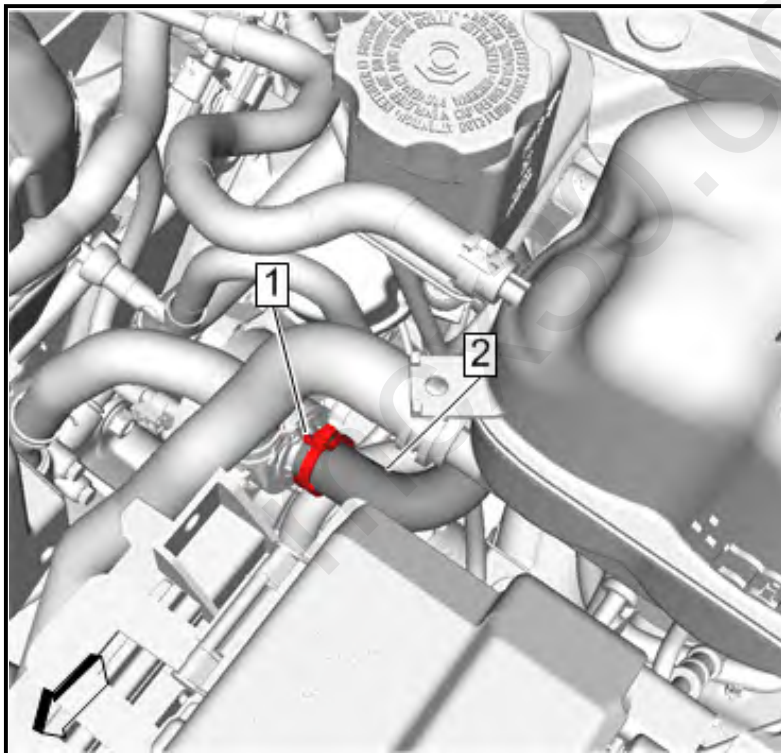




Heater Outlet Hose (2) @ Heater Outlet Hose Connector - Install

2. Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

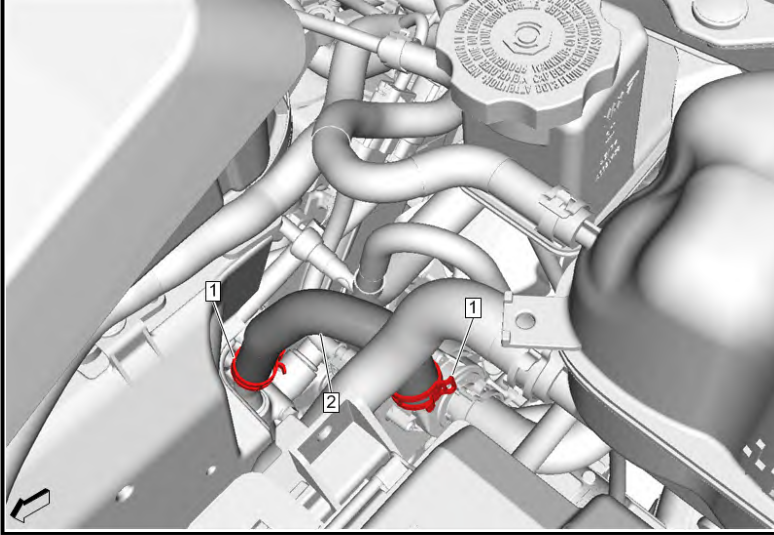
3.



Heater Outlet Hose (2) @ Heater Coolant Pump - Install

4. Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)
5. Reposition the wiring harness.
6. Power Brake Booster Vacuum Hose - Reposition - [Power Brake Booster Vacuum Hose Replacement \(LFY\)](#)
7. {If equipped} Power Transfer Unit Vent Hose @ Radiator Surge Tank - Reposition - [Power Transfer Unit Vent Replacement](#)
8. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\)](#). [Cooling System Draining and Filling \(Static Fill\)](#).
9. Start the engine and inspect for leaks.

HEATER OUTLET HOSE REPLACEMENT (LFY HEATER COOLANT PUMP TO ENGINE COOLANT THERMOSTAT HOUSING)



Callout	Component Name
Preliminary Procedures 1. Drain the cooling system. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. {If equipped} Power Transfer Unit Vent Hose @ Radiator Surge Tank - Reposition - Power Transfer Unit Vent Replacement	
1	Hose Clamp [2x] Procedure Hose Clamp Replacement Guidelines - Spring Type
2	Heater Outlet Hose Procedure 1. Fill the cooling system to the proper level. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. Start the engine and check for coolant leaks.

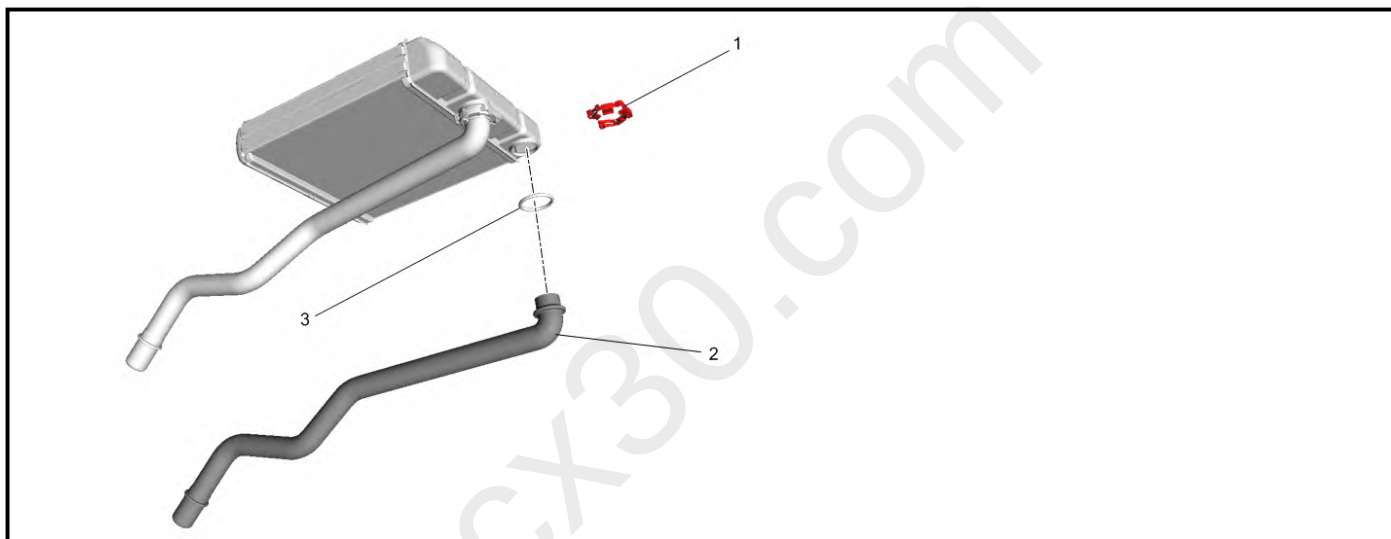
HEATER OUTLET HOSE REPLACEMENT (LTG RADIATOR SURGE TANK TO HEATER OUTLET HOSE CONNECTOR)



Callout	Component Name

Callout	Component Name
Preliminary Procedures 1. Drain the cooling system. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. {If equipped} Power Transfer Unit Vent Hose @ Radiator Surge Tank - Reposition - Power Transfer Unit Vent Replacement	
1	Hose Clamp [2x] Procedure Hose Clamp Replacement Guidelines - Spring Type
2	Heater Outlet Hose Procedure 1. Fill the cooling system to the proper level. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. Start the engine and check for coolant leaks.

HEATER CORE OUTLET TUBE REPLACEMENT (C69)

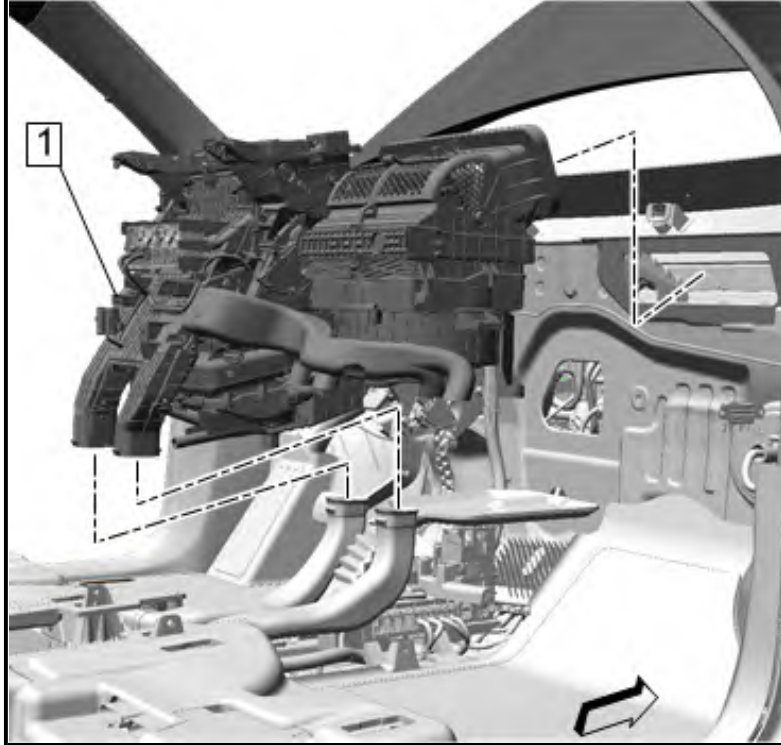


Callout	Component Name
Preliminary Procedure Auxiliary Heater Core Replacement (C69)	
1	Heater Core Tube Clamp
2	Heater Core Outlet Tube
3	Heater Core Pipe Seal Procedure DISCARD the O-ring seal.

HEATER CORE OUTLET TUBE REPLACEMENT

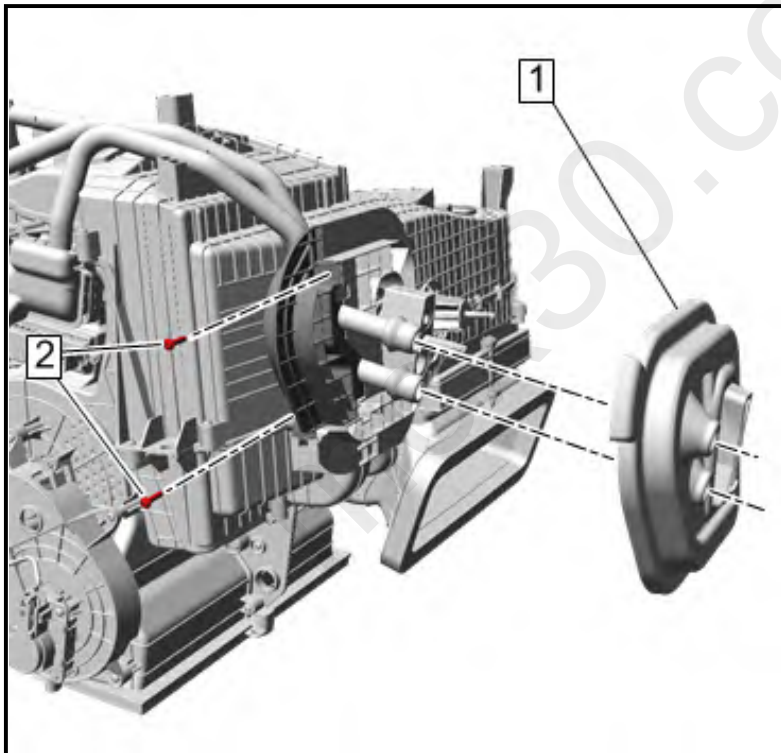
Removal Procedure

1.



Heater and Air Conditioning Evaporator and Blower Module (1) - Remove - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#)[Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#)

2.

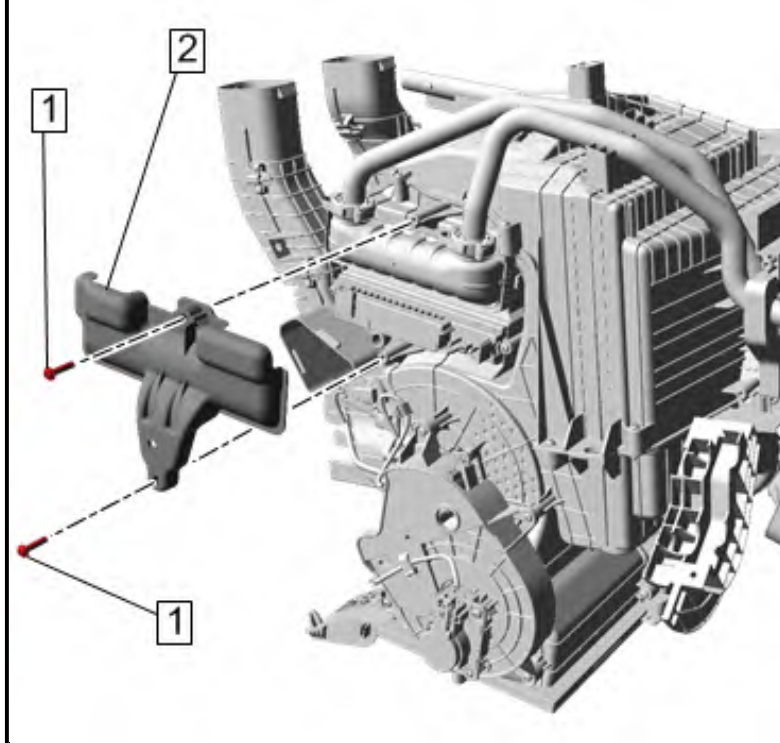


Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Remove [2x]

3. Heater Core Tube Bracket Bolt (2) - Remove

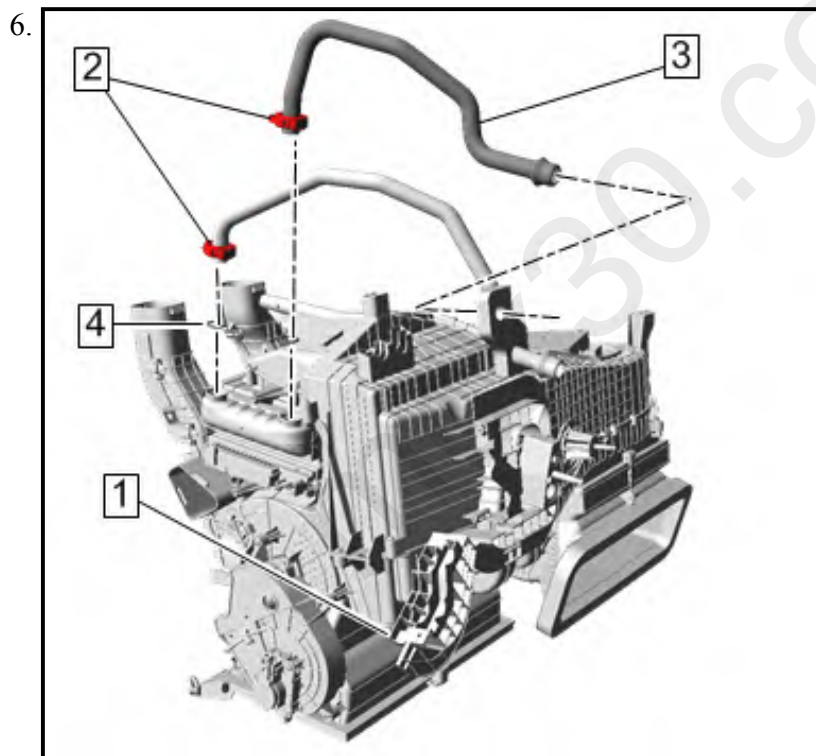
4.





Heater Core Cover Screw (1) - Remove [2x]

5. Heater Core Cover (2) - Remove



Rotate the heater core tube bracket (1) to the open position.

7. Heater Core Tube Clamp (2) - Disengage [2x]

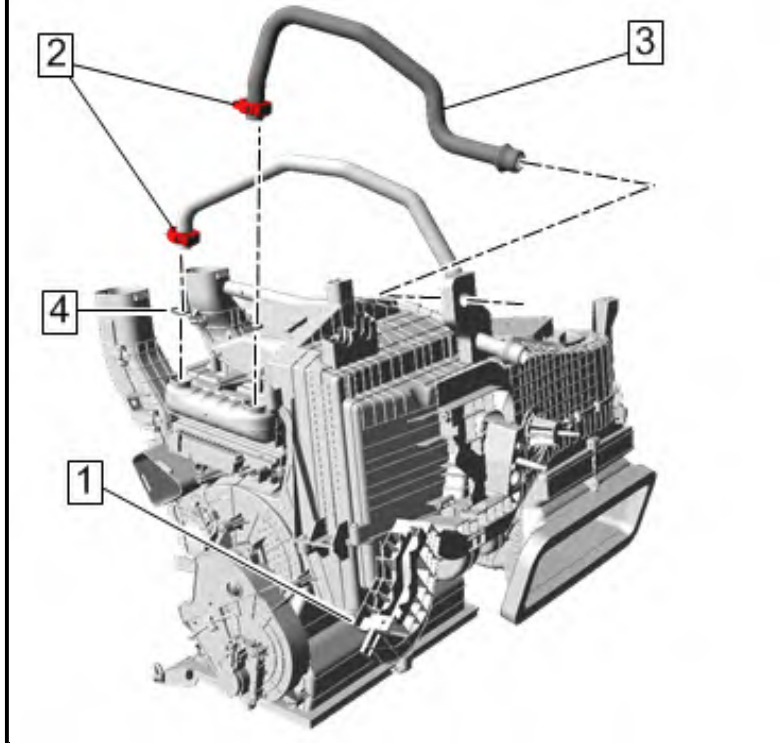
8. Remove both heater core tubes from the heater core.

9. Heater Core Outlet Tube (3) - Remove

10. DISCARD the O-ring seal. (4) [2x]

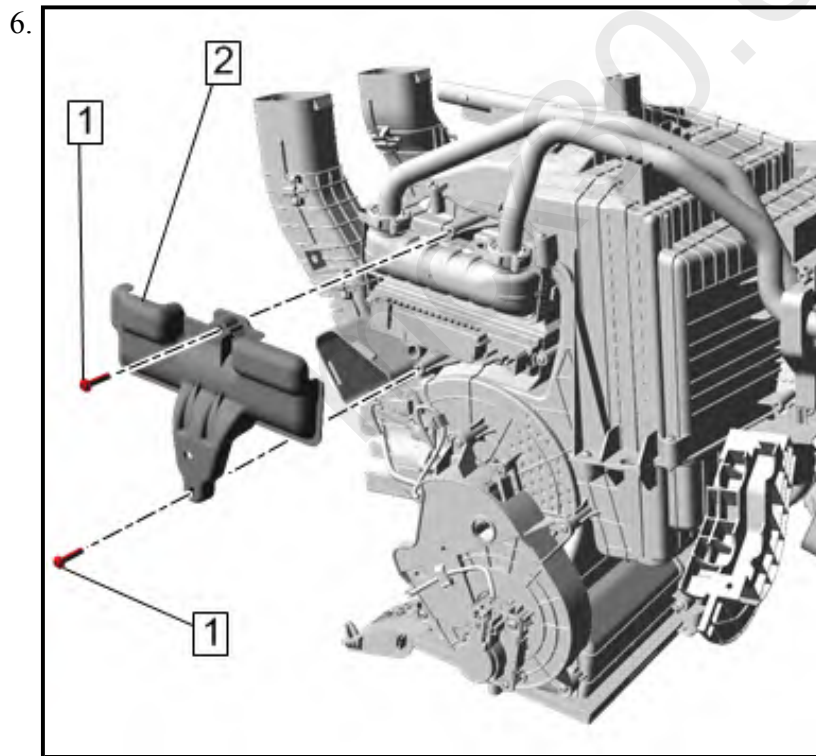
Installation Procedure





Install a NEW O-ring seal. (4) [2x]

2. Heater Core Outlet Tube (3) - Install
3. Install both heater core tubes onto the heater core.
4. Heater Core Tube Clamp (2) - Engage [2x]
5. Rotate the heater core tube bracket (1) to the close position.

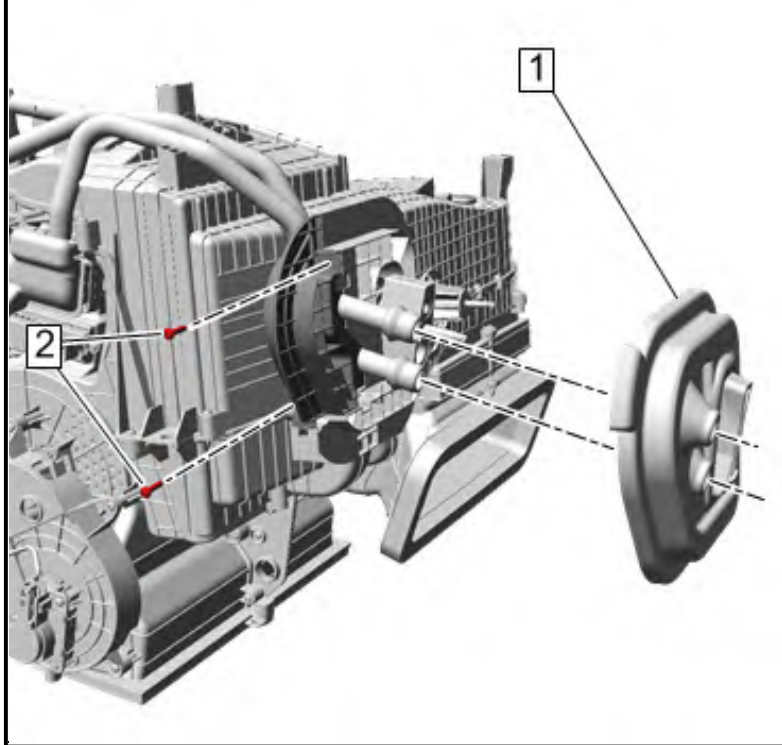


Heater Core Cover (2) - Install

CAUTION: Refer to [Fastener Caution](#) .

7. Heater Core Cover Screw (1) - Install and tighten [2x] 2.5 N.m (22 lb in)

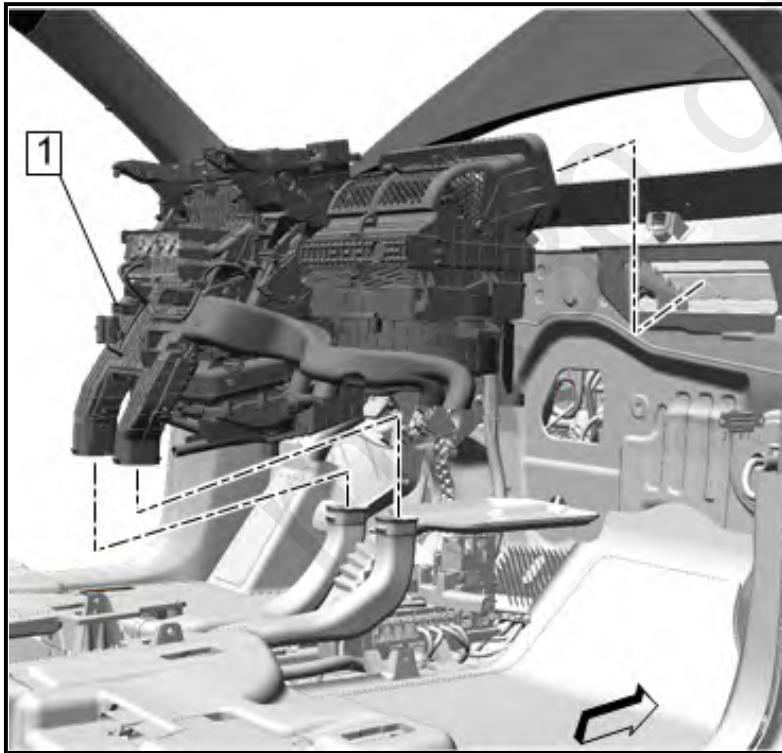




Heater Core Tube Bracket Bolt (2) - Install and tighten [2x] 2.5 N.m (22 lb in)

9. Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Install

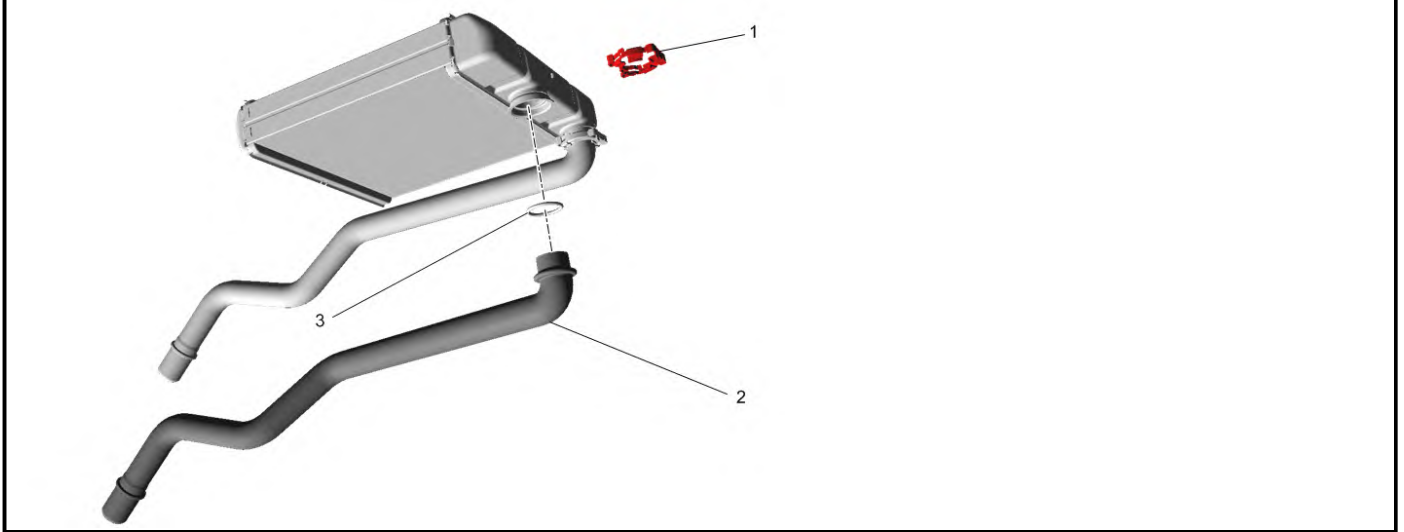
10.



Heater and Air Conditioning Evaporator and Blower Module (1) - Install - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#)[Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#)

HEATER CORE INLET TUBE REPLACEMENT (C69)

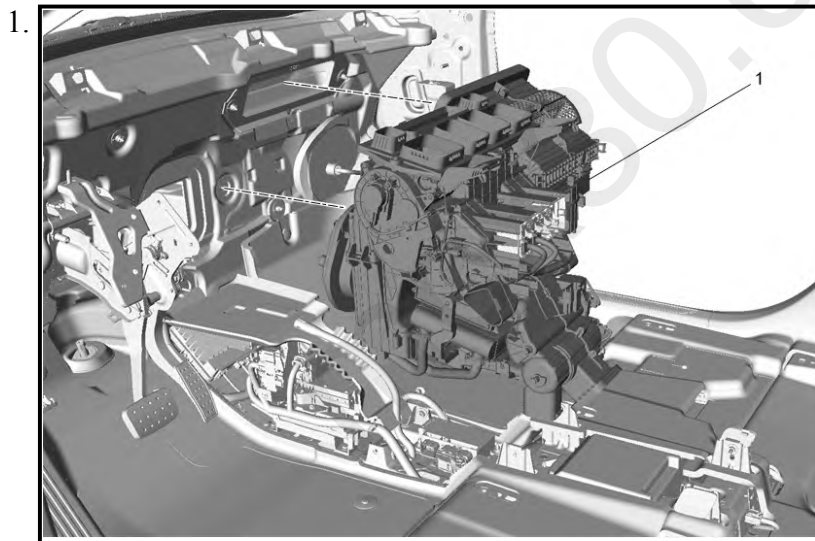




Callout	Component Name
Preliminary Procedure	
<u>Auxiliary Heater Core Replacement (C69)</u>	
1	Heater Core Tube Clamp
2	Heater Core Inlet Tube
3	Heater Core Pipe Seal Procedure DISCARD the O-ring seal.

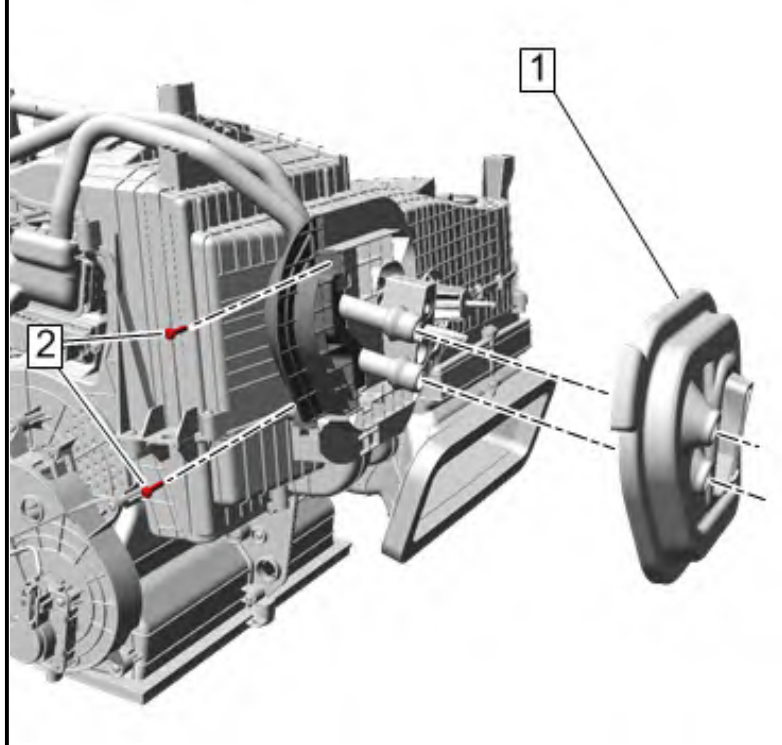
HEATER CORE INLET TUBE REPLACEMENT

Removal Procedure



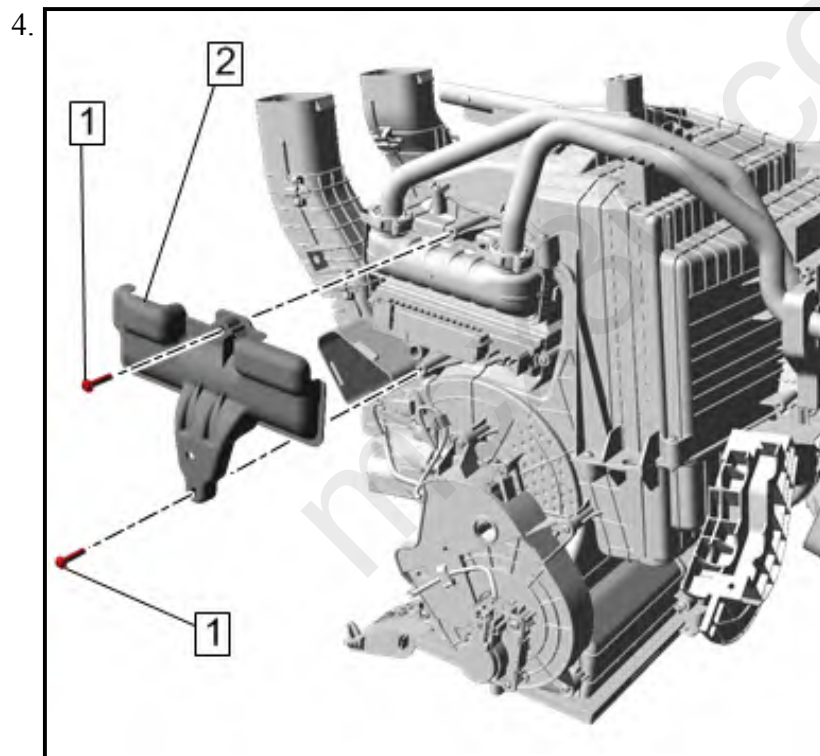
Heater and Air Conditioning Evaporator and Blower Module (1) - Remove - **Heater and Air Conditioning Evaporator and Blower Module Removal and Installation (LFY)****Heater and Air Conditioning Evaporator and Blower Module Removal and Installation (LTG)**





Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Remove [2x]

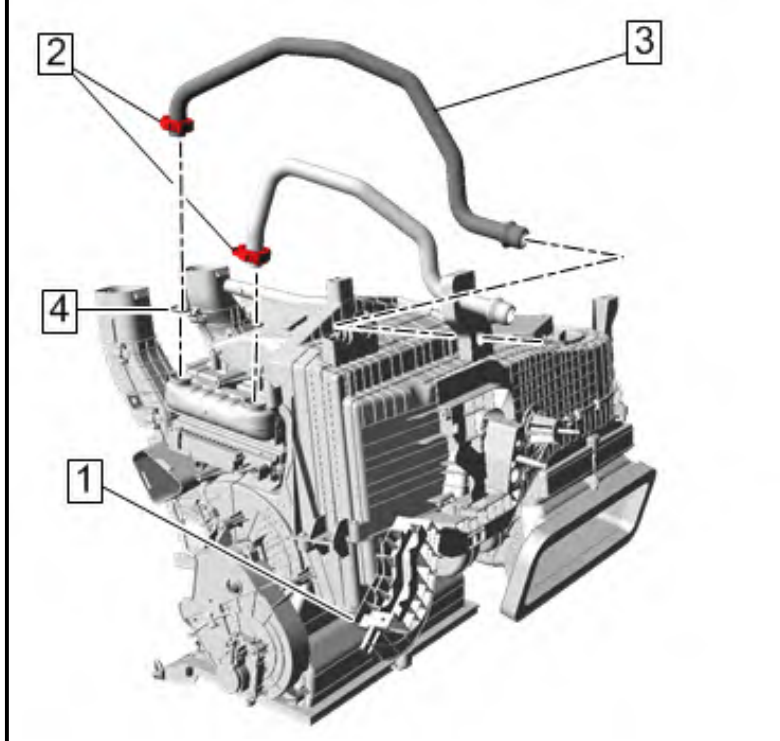
3. Heater Core Tube Bracket Bolt (2) - Remove



Heater Core Cover Screw (1) - Remove [2x]

5. Heater Core Cover (2) - Remove



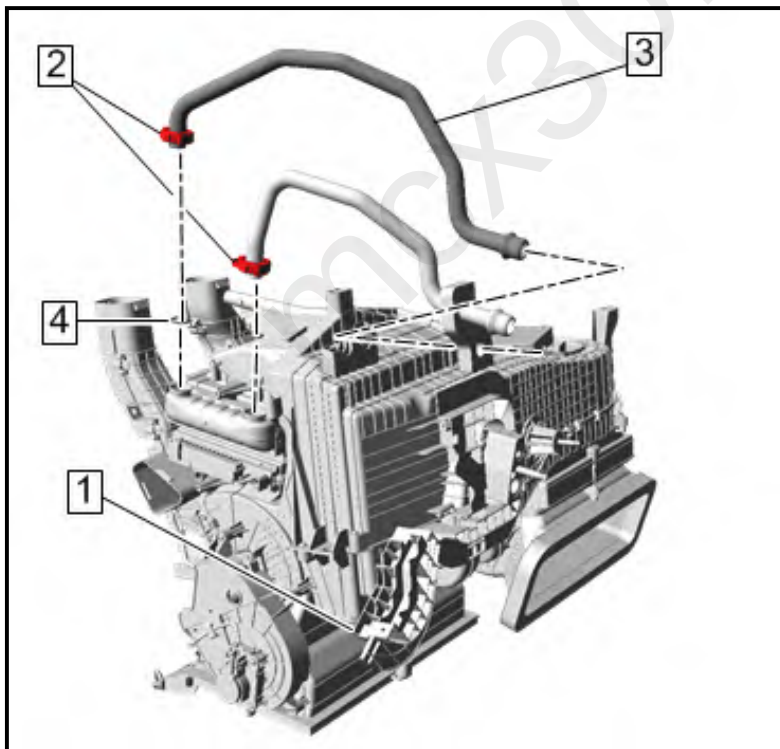


Rotate the heater core tube bracket (1) to the open position.

7. Heater Core Tube Clamp (2) - Disengage [2x]
8. Remove both heater core tubes from the heater core.
9. Heater Core Inlet Tube (3) - Remove
10. DISCARD the O-ring seal. (4) [2x]

Installation Procedure

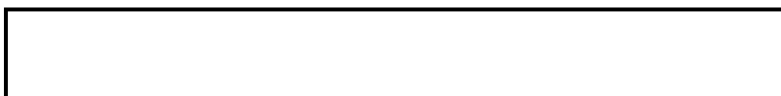
1.

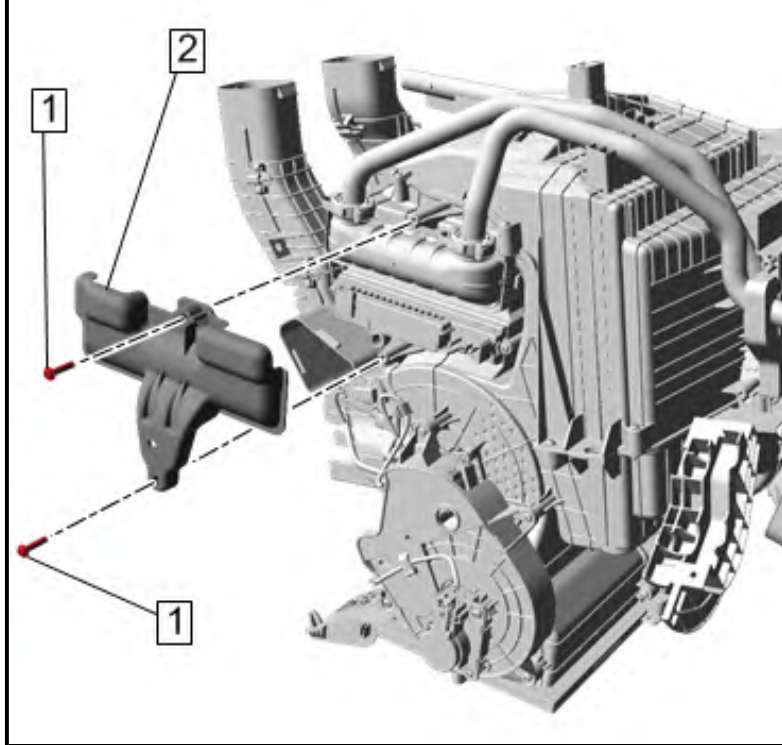


Install a NEW O-ring seal. (4) [2x]

2. Heater Core Inlet Tube (3) - Install
3. Install both heater core tubes onto the heater core.
4. Heater Core Tube Clamp (2) - Engage [2x]
5. Rotate the heater core tube bracket (1) to the close position.

6.



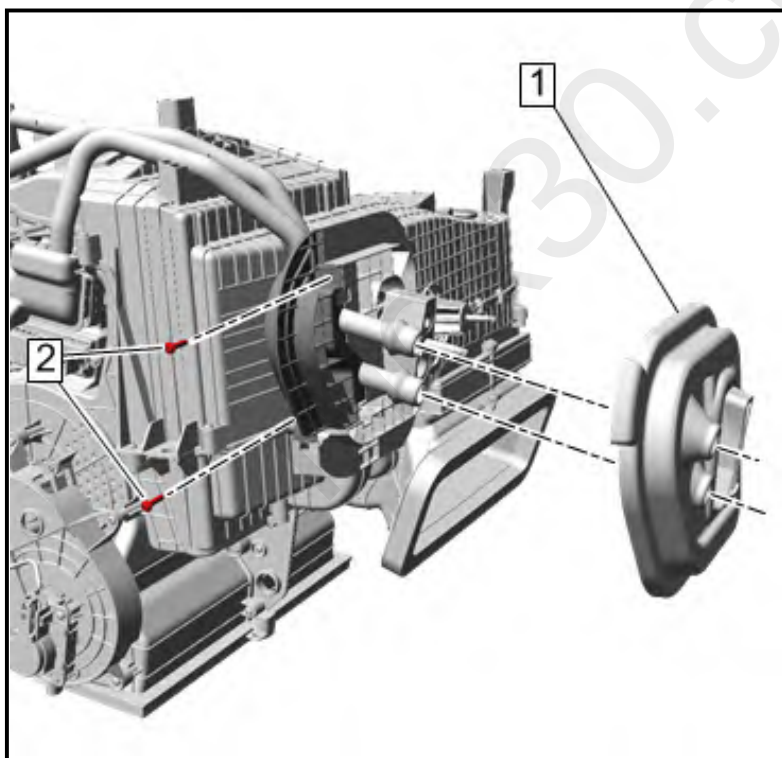


Heater Core Cover (2) - Install

CAUTION: Refer to [Fastener Caution](#) .

7. Heater Core Cover Screw (1) - Install and tighten [2x] 2.5 N.m (22 lb in)

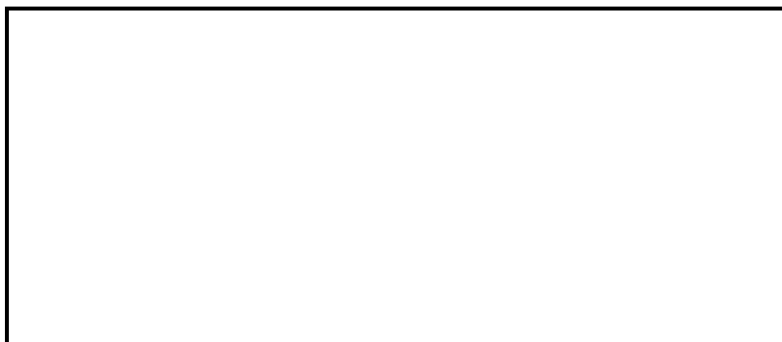
8.

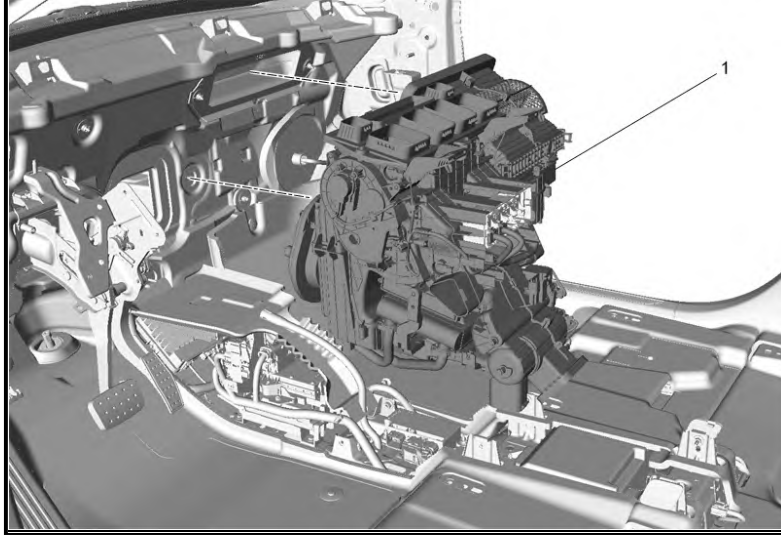


Heater Core Tube Bracket Bolt (2) - Install and tighten [2x] 2.5 N.m (22 lb in)

9. Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Install

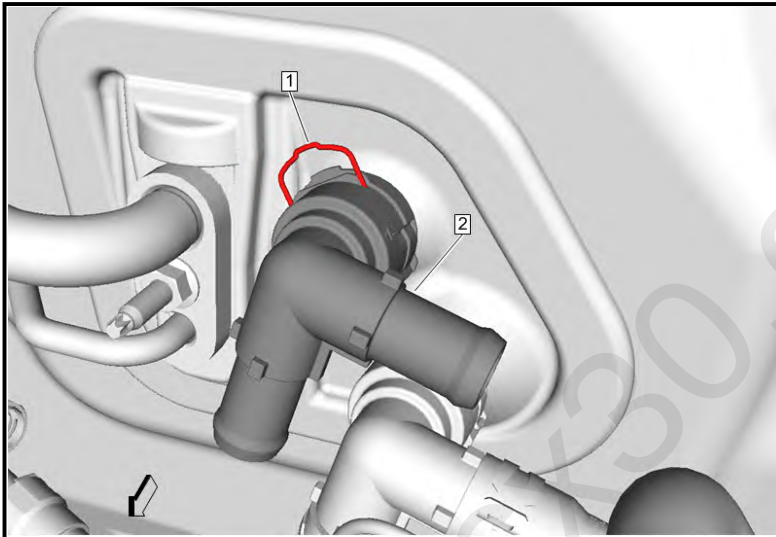
10.





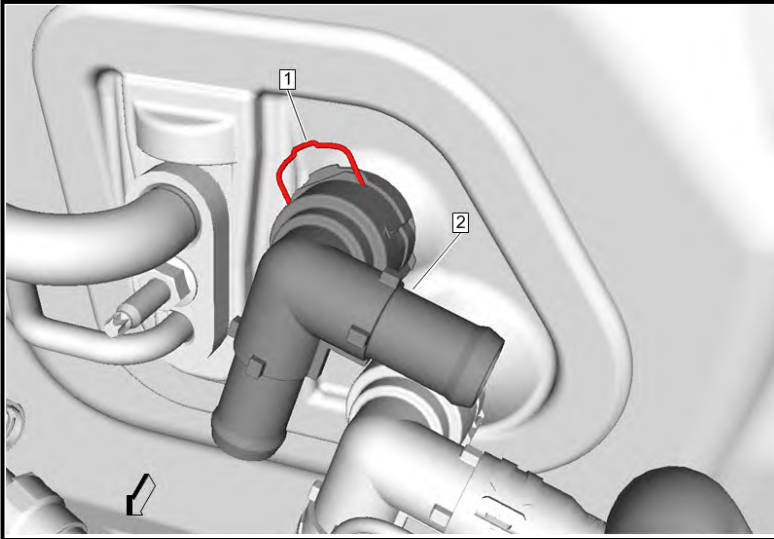
Heater and Air Conditioning Evaporator and Blower Module (1) - Install - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#)[Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#).

HEATER INLET HOSE CONNECTOR REPLACEMENT (LFY)



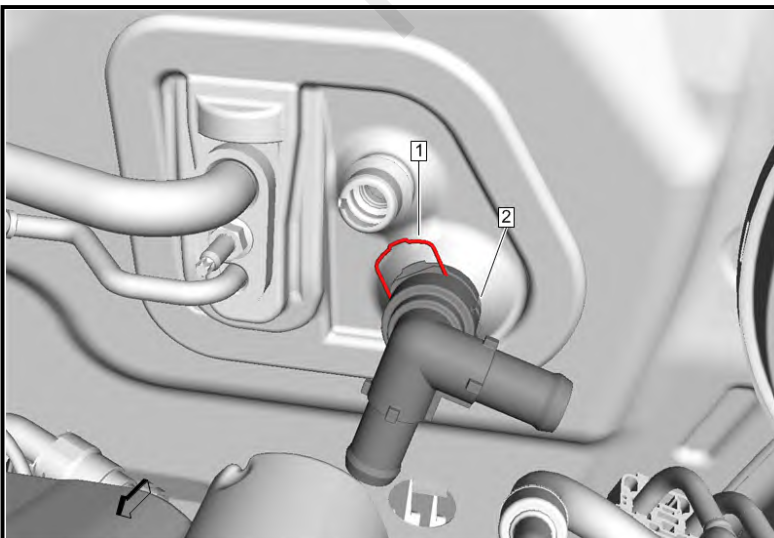
Callout	Component Name
Preliminary Procedures 1. Drain the cooling system. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. Heater Inlet Hose @ Heater Inlet Hose Connector - Remove - Heater Inlet Hose Replacement (Engine Coolant Thermostat Housing to Heater Outlet Hose Connector)Heater Inlet Hose Replacement (Heater Outlet Hose Connector to Auxiliary Air Conditioning Evaporator Intermediate Tube) 3. Heater Water Bypass Outlet Hose @ Heater Inlet Hose Connector - Remove - Heater Water Bypass Outlet Hose Replacement (LFY Auxiliary Air Conditioning Evaporator Intermediate Tube To Connector)	
1	Heater Inlet Hose Connector Retainer
2	Heater Inlet Hose Connector Procedure 1. Fill the cooling system to the proper level. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. Start the engine and check for coolant leaks.

HEATER INLET HOSE CONNECTOR REPLACEMENT (LTG)



Callout	Component Name
Preliminary Procedures 1. Drain the cooling system. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. Heater Inlet Hose @ Heater Inlet Hose Connector - Remove - Heater Inlet Hose Replacement (Engine Coolant Thermostat Housing to Heater Outlet Hose Connector) Heater Inlet Hose Replacement (Heater Outlet Hose Connector to Auxiliary Air Conditioning Evaporator Intermediate Tube) 3. Heater Vent Hose @ Heater Inlet Hose Connector - Remove - Heater Vent Hose Replacement (LTG Water Outlet to Heater Outlet Hose Connector)	
1	Heater Inlet Hose Connector Retainer
2	Heater Inlet Hose Connector Procedure 1. Fill the cooling system to the proper level. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. Start the engine and check for coolant leaks.

HEATER OUTLET HOSE CONNECTOR REPLACEMENT (LFY)



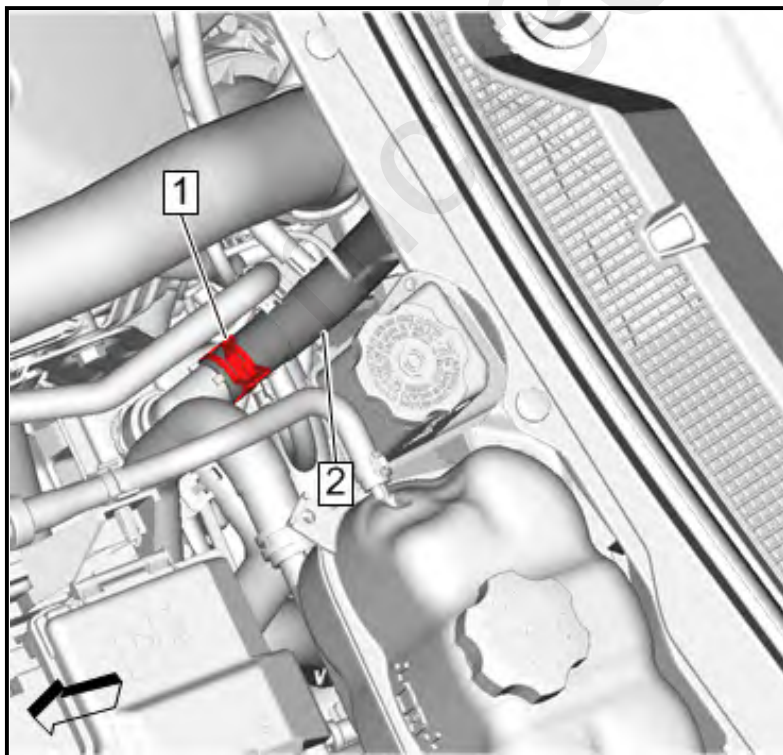
Callout	Component Name

Callout	Component Name
Preliminary Procedures	
1. Drain the cooling system. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. Heater Outlet Hose @ Heater Outlet Hose Connector - Remove - Heater Outlet Hose Replacement (LFY Heater Coolant Pump to Connector) Heater Outlet Hose Replacement (LFY Heater Coolant Pump to Engine Coolant Thermostat Housing) 3. Heater Water Bypass Inlet Hose @ Heater Outlet Hose Connector - Remove - Heater Water Bypass Inlet Hose Replacement (Auxiliary Air Conditioning Evaporator Intermediate Tube to Connector)	
1	Heater Outlet Hose Connector Retainer
2	Heater Outlet Hose Connector Procedure 1. Fill the cooling system to the proper level. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. Start the engine and check for coolant leaks.

HEATER OUTLET HOSE CONNECTOR REPLACEMENT (LTG AT HEATER INLET HOSE BRACKET)

Removal Procedure

1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#)
2. Reposition the wiring harness.
3. Heater Vent Hose - Remove - [Heater Vent Hose Replacement \(LTG Water Outlet to Heater Outlet Hose Connector\)](#)
- 4.



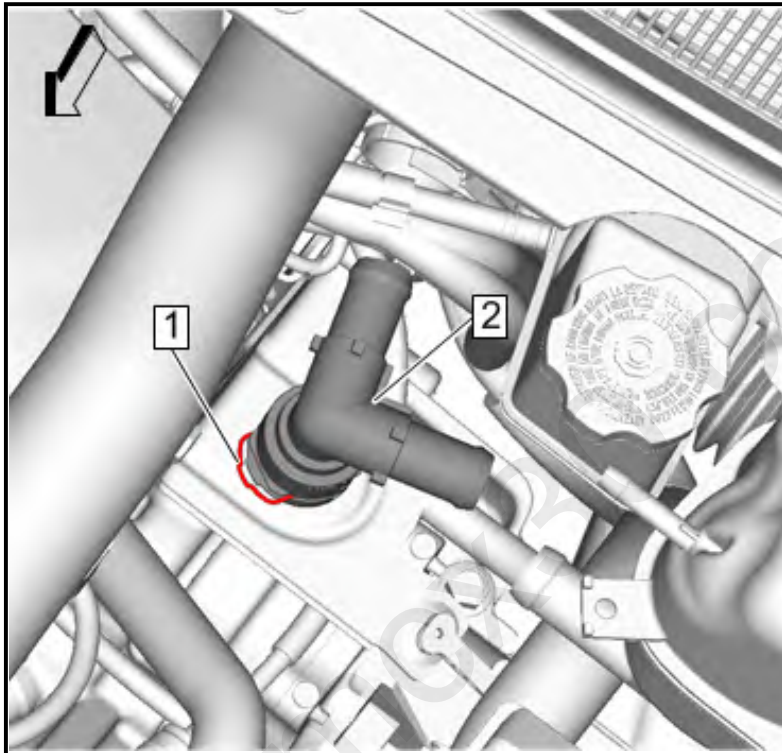
Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Remove - [Heater Coolant Heater Air Supply Hose Replacement \(LTG\)](#)

- 5.



Heater Outlet Hose (2) - Remove - [Heater Outlet Hose Replacement \(LTG Radiator Surge Tank to Heater Outlet Hose Connector\)](#)

6.

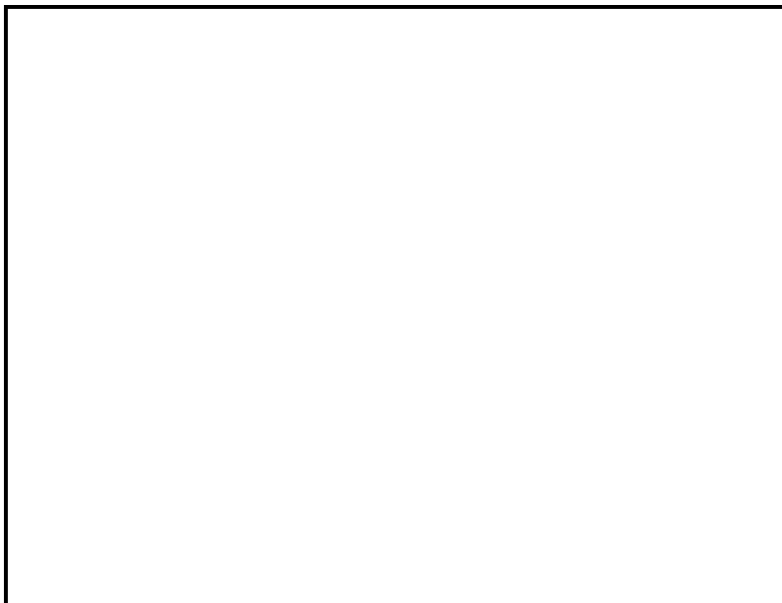


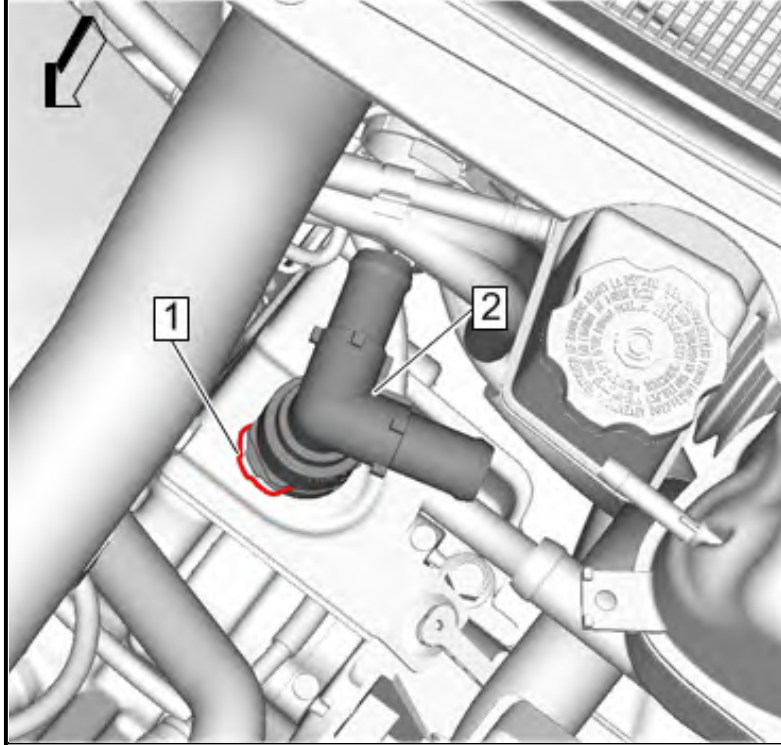
Heater Outlet Hose Connector Retainer (1) - Disengage

7. Heater Outlet Hose Connector (2) - Remove

Installation Procedure

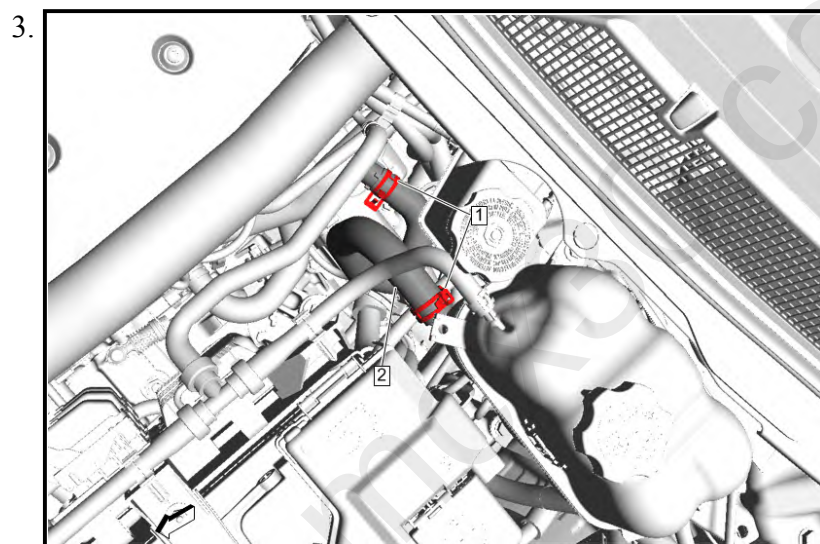
1.





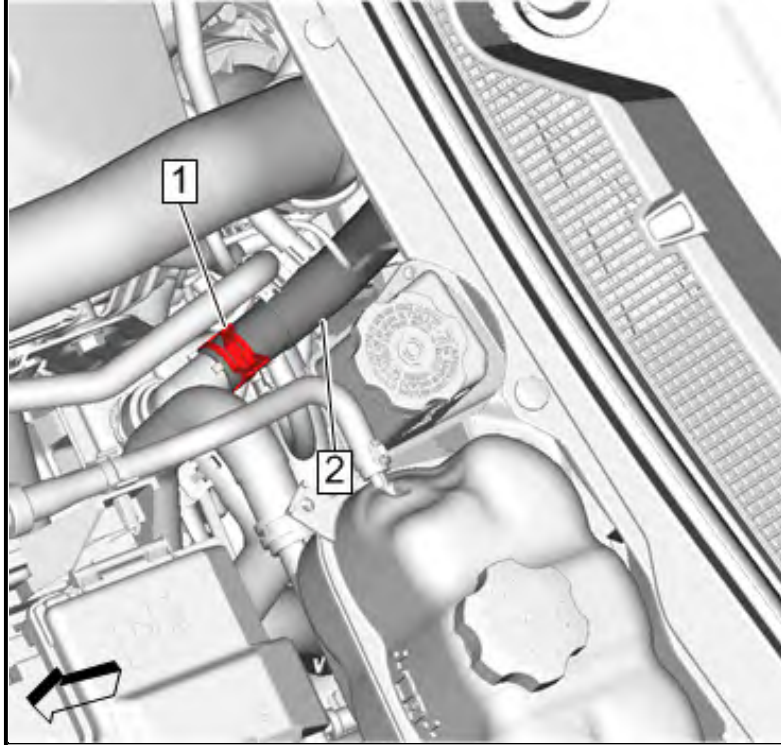
Heater Outlet Hose Connector (2) - Install

2. Heater Outlet Hose Connector Retainer (1) - Engage



Heater Outlet Hose (2) - Install - [Heater Outlet Hose Replacement \(LTG Radiator Surge Tank to Heater Outlet Hose Connector\)](#)

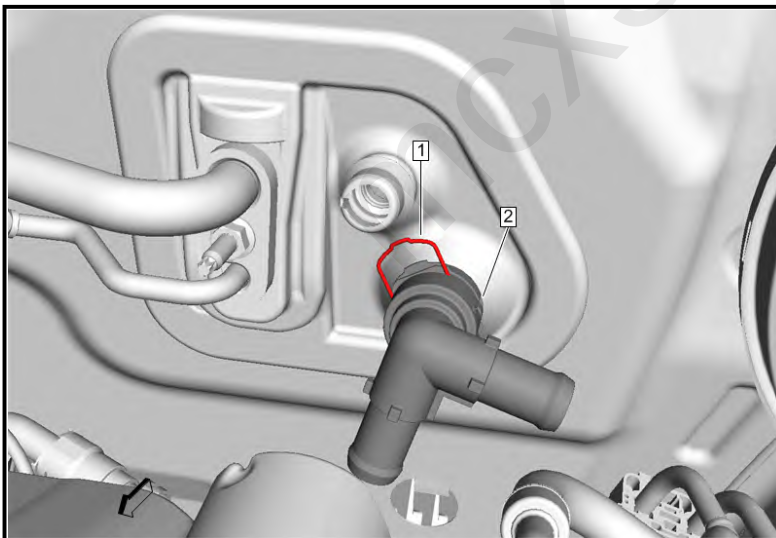




Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Install - [Heater Coolant Heater Air Supply Hose Replacement \(LTG\)](#).

5. Heater Vent Hose - Install - [Heater Vent Hose Replacement \(LTG Water Outlet to Heater Outlet Hose Connector\)](#).
6. Reposition the wiring harness.
7. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#).
8. Start the engine and inspect for leaks.

HEATER OUTLET HOSE CONNECTOR REPLACEMENT (LTG AT HEATER CORE OUTLET TUBE)



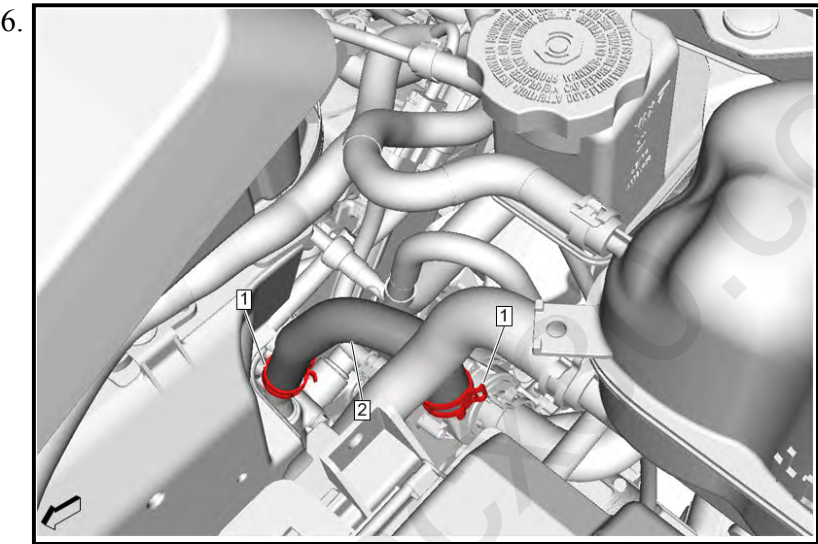
Callout	Component Name
Preliminary Procedures	
1.	Drain the cooling system. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) .
2.	Engine Coolant Heater Inlet Hose @ Heater Outlet Hose Connector - Remove - Heater Coolant Heater Inlet Hose Replacement (LTG Heater Outlet Hose Connector to Auxiliary Air Conditioning Evaporator Intermediate Tube) .
3.	Heater Coolant Heater Air Supply Hose @ Heater Outlet Hose Connector - Remove - Heater Coolant Heater Air Supply Hose Replacement (LTG) .

Callout	Component Name
1	Heater Outlet Hose Connector Retainer
2	Heater Outlet Hose Connector Procedure 1. Fill the cooling system to the proper level. Cooling System Draining and Filling (GE 47716) Cooling System Draining and Filling (Static Fill) 2. Start the engine and check for coolant leaks.

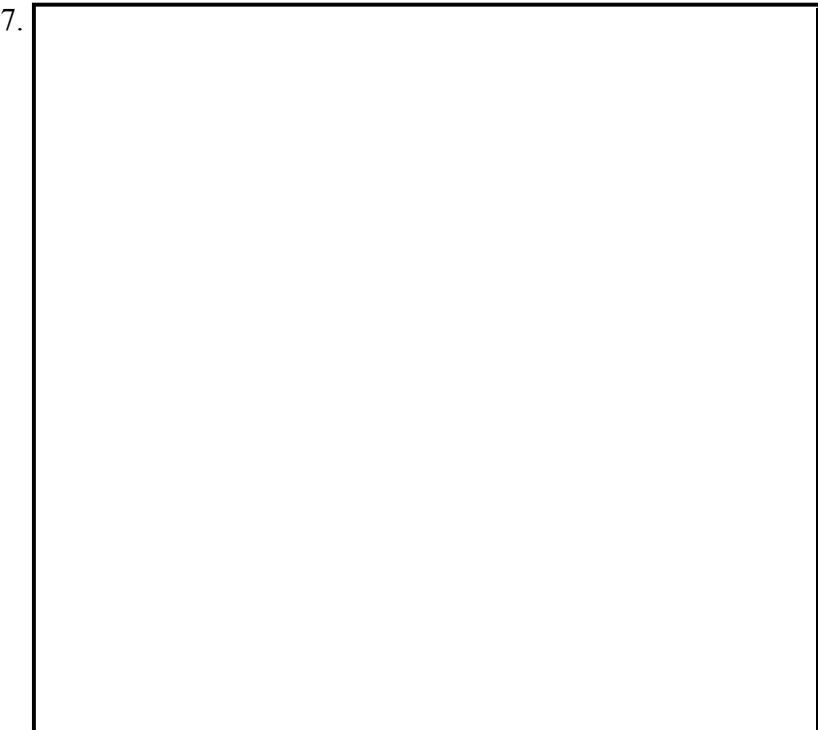
HEATER COOLANT PUMP REPLACEMENT (LFY)

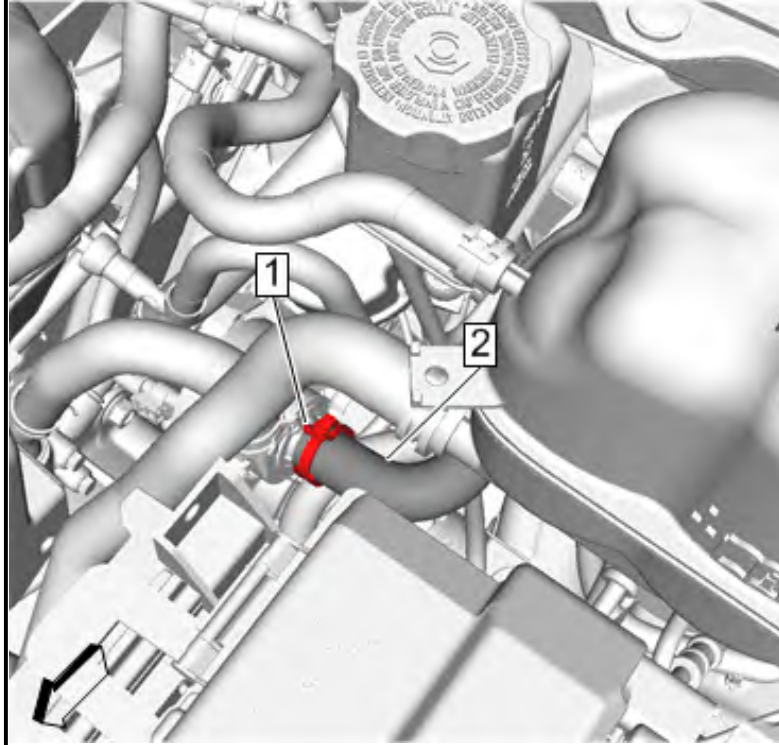
Removal Procedure

1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#)
2. Lower the vehicle.
3. Intake Manifold Cover - Remove - [Intake Manifold Cover Replacement](#)
4. Reposition the wiring harness.
5. Power Brake Booster Vacuum Hose - Reposition - [Power Brake Booster Vacuum Hose Replacement \(LFY\)](#)



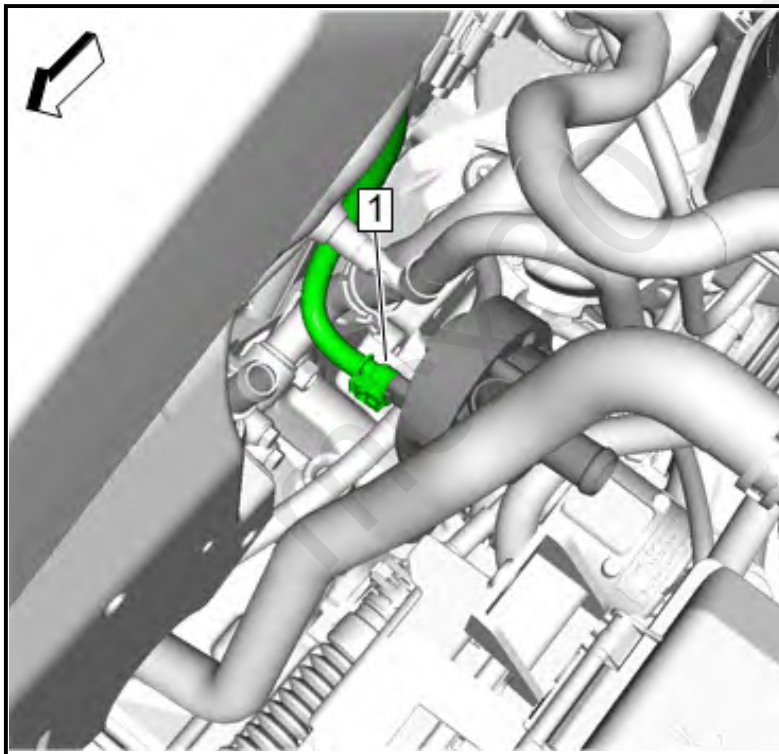
Heater Outlet Hose (2) @ Heater Coolant Pump - Remove - [Heater Outlet Hose Replacement \(LFY Heater Coolant Pump to Connector\)](#)[Heater Outlet Hose Replacement \(LFY Heater Coolant Pump to Engine Coolant Thermostat Housing\)](#)





Heater Outlet Hose (2) @ Heater Coolant Pump - Remove - [Heater Outlet Hose Replacement \(LFY Heater Coolant Pump to Connector\)](#)[Heater Outlet Hose Replacement \(LFY Heater Coolant Pump to Engine Coolant Thermostat Housing\)](#)

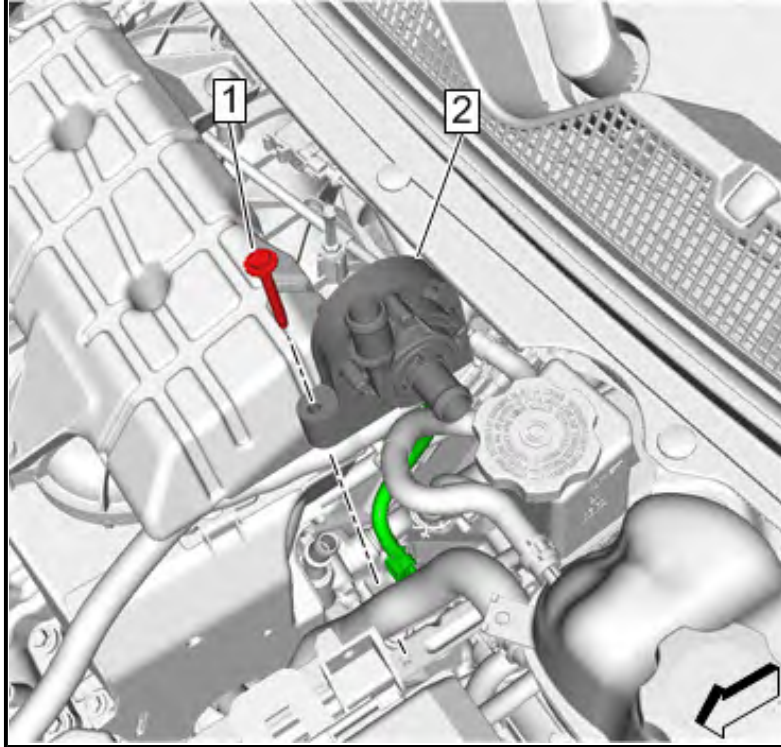
8.



Electrical Connector (1) @ Heater Coolant Pump - Remove

9.



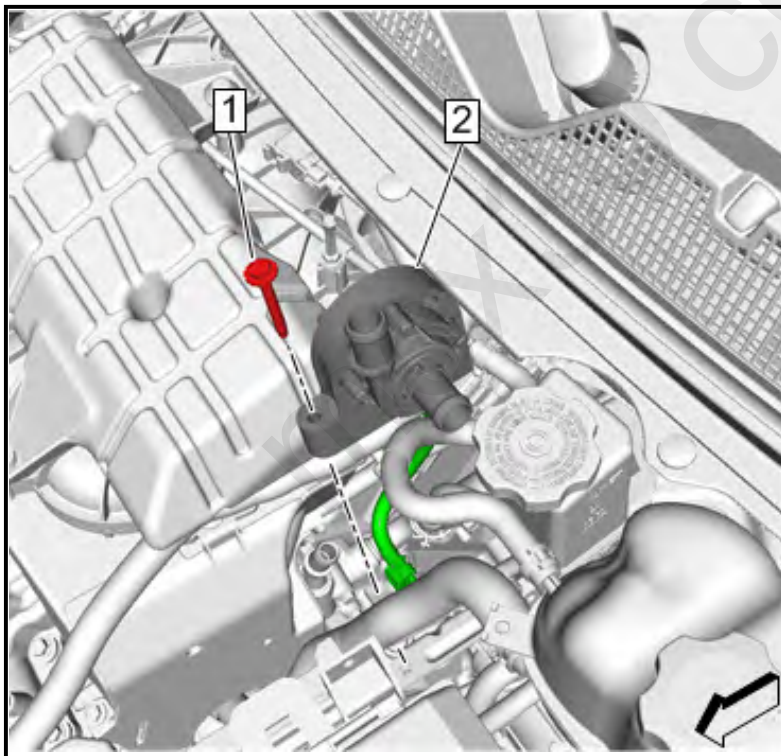


Heater Coolant Pump Bolt (1) - Remove

10. Heater Coolant Pump (2) - Remove

Installation Procedure

1.



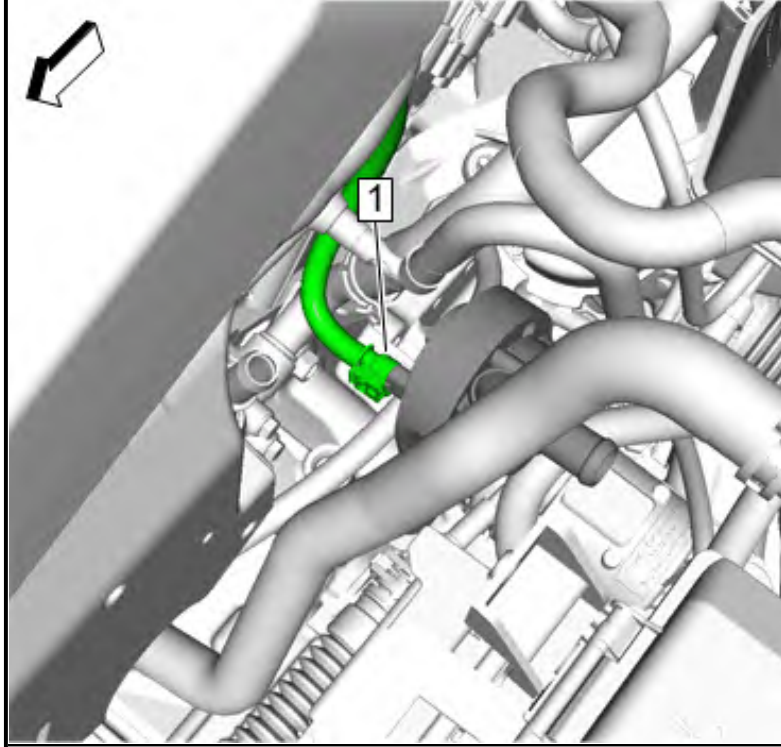
Heater Coolant Pump (2) - Install

CAUTION: Refer to Fastener Caution .

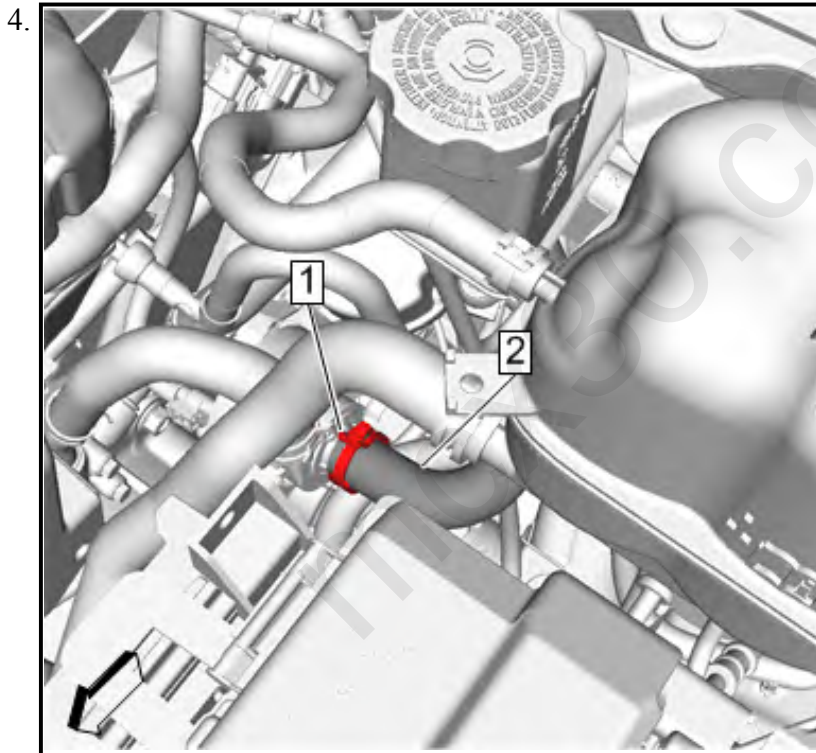
2. Heater Coolant Pump Bolt (1) - Install and tighten 9 N.m (80 lb in)

3.



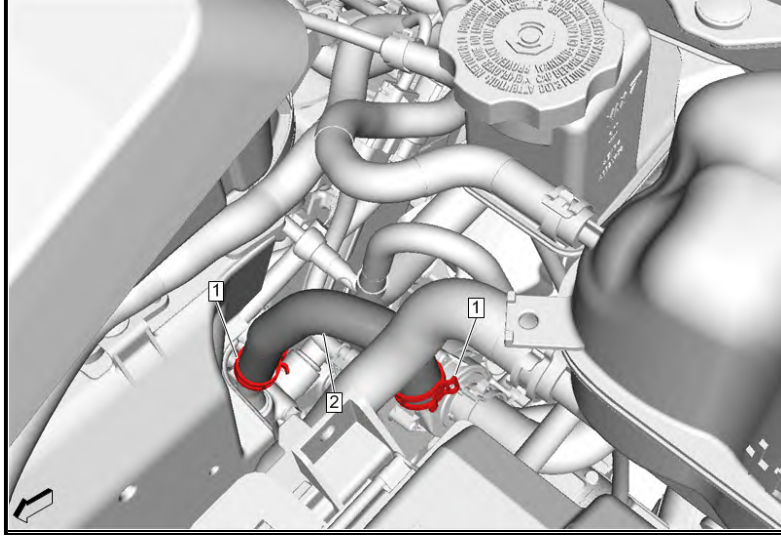


Electrical Connector (1) @ Heater Coolant Pump - Install



Heater Outlet Hose (2) @ Heater Coolant Pump - Install - [Heater Outlet Hose Replacement \(LFY Heater Coolant Pump to Connector\)](#)[Heater Outlet Hose Replacement \(LFY Heater Coolant Pump to Engine Coolant Thermostat Housing\)](#)

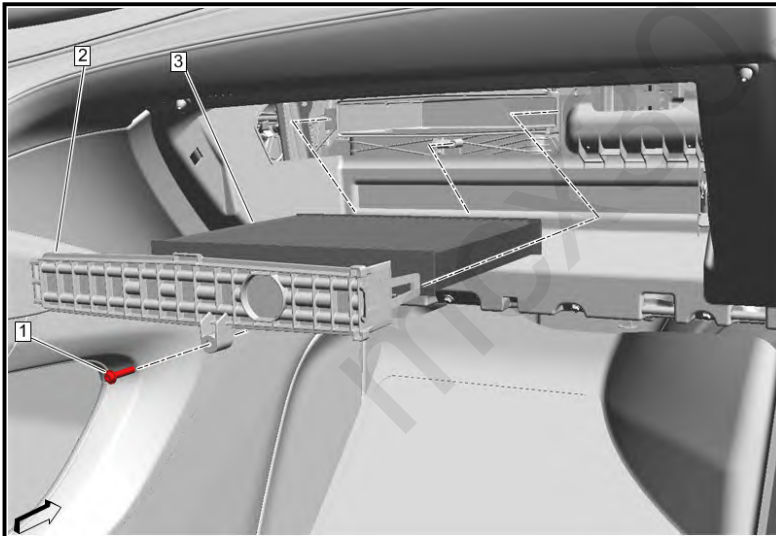




Heater Outlet Hose (2) @ Heater Coolant Pump - Install - [Heater Outlet Hose Replacement \(LFY Heater Coolant Pump to Connector\)](#)[Heater Outlet Hose Replacement \(LFY Heater Coolant Pump to Engine Coolant Thermostat Housing\)](#).

6. Power Brake Booster Vacuum Hose - Reposition - [Power Brake Booster Vacuum Hose Replacement \(LFY\)](#)
7. Reposition the wiring harness.
8. Intake Manifold Cover - Install - [Intake Manifold Cover Replacement](#)
9. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\)](#) [Cooling System Draining and Filling \(Static Fill\)](#).
10. Check the cooling system for leaks.

PASSENGER COMPARTMENT AIR FILTER REPLACEMENT

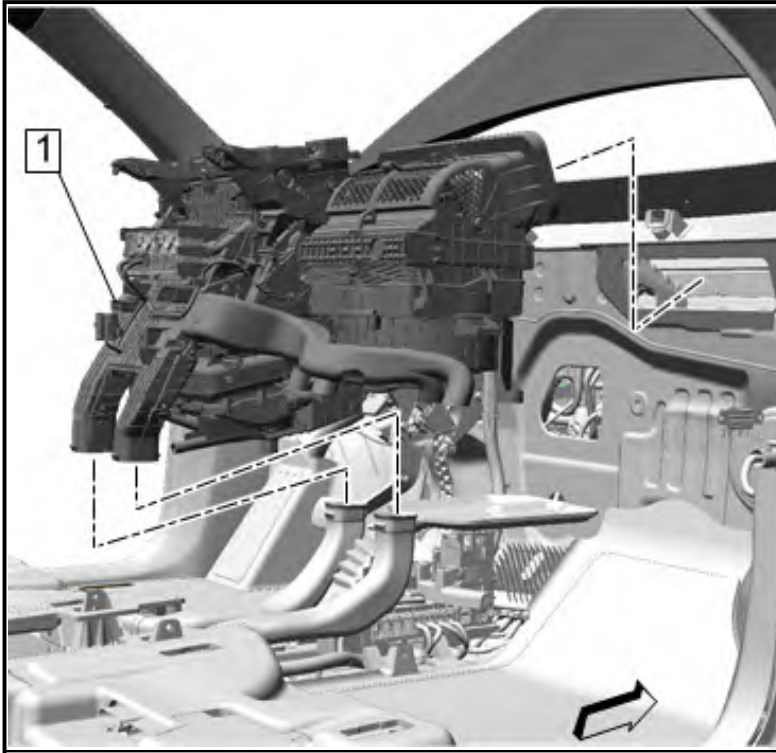


Callout	Component Name
Preliminary Procedure 1. Open the instrument panel compartment door. 2. Disconnect the instrument panel compartment door dampener from the instrument panel compartment. 3. Squeeze the sides of the instrument panel compartment door and lower the instrument panel compartment door past the stops.	
1	Passenger Compartment Air Filter Access Hole Cover Screw CAUTION: Refer to Fastener Caution . Tighten 2.5 N.m (22 lb in)

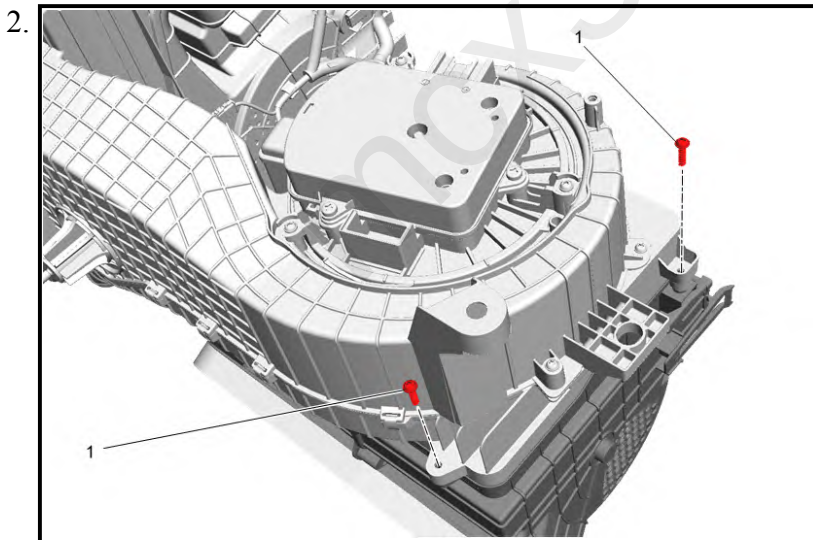
Callout	Component Name
2	Passenger Compartment Air Filter Access Hole Cover
3	Passenger Compartment Air Filter

AIR INLET HOUSING REPLACEMENT

Removal Procedure

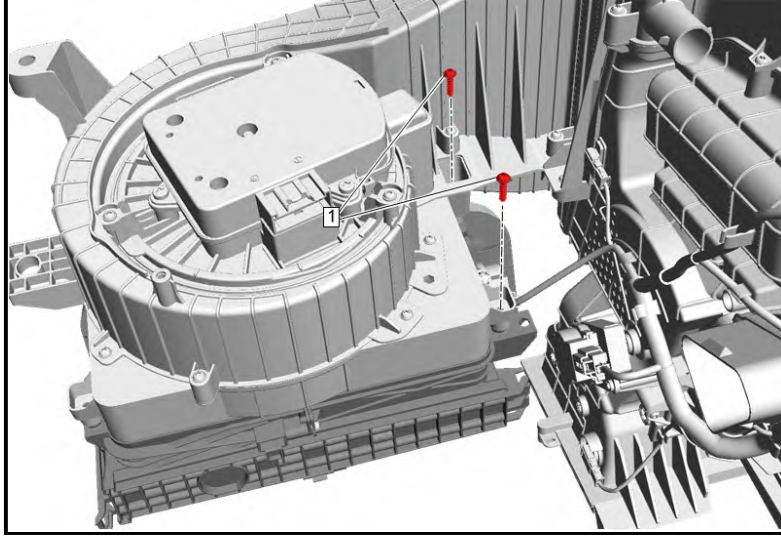


1. Heater and Air Conditioning Evaporator and Blower Module (1) - Remove - Heater and Air Conditioning Evaporator and Blower Module Removal and Installation (LFY) Heater and Air Conditioning Evaporator and Blower Module Removal and Installation (LTG).

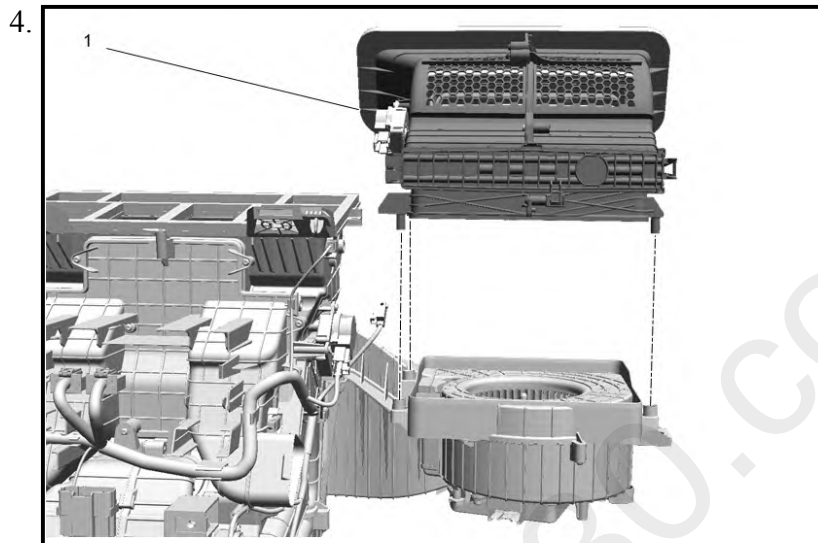


Air Inlet Housing Bolt (1) - Remove [2x]





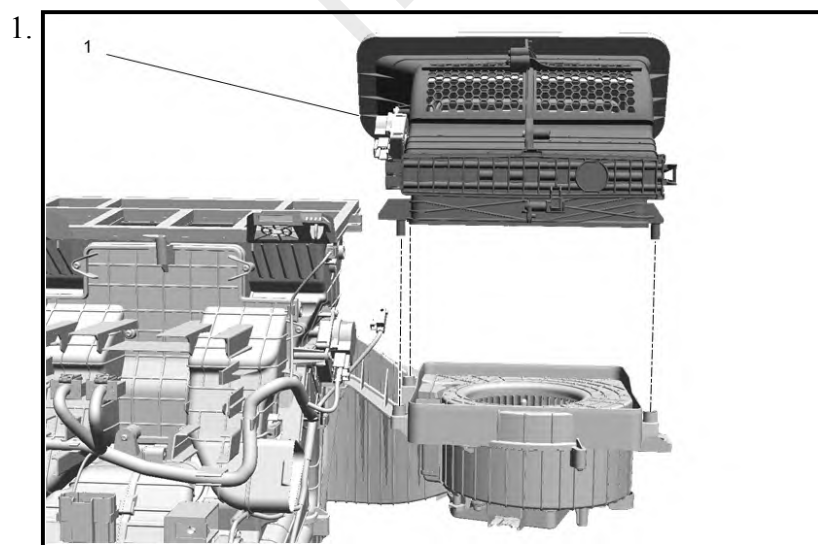
Air Inlet Housing Bolt (1) - Remove [2x]



Air Inlet Housing (1) - Remove

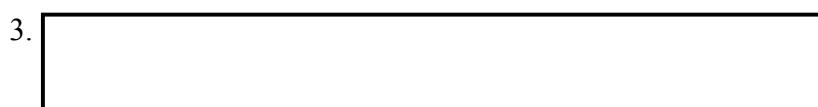
5. Disconnect the electrical connector.
6. Transfer components as necessary.

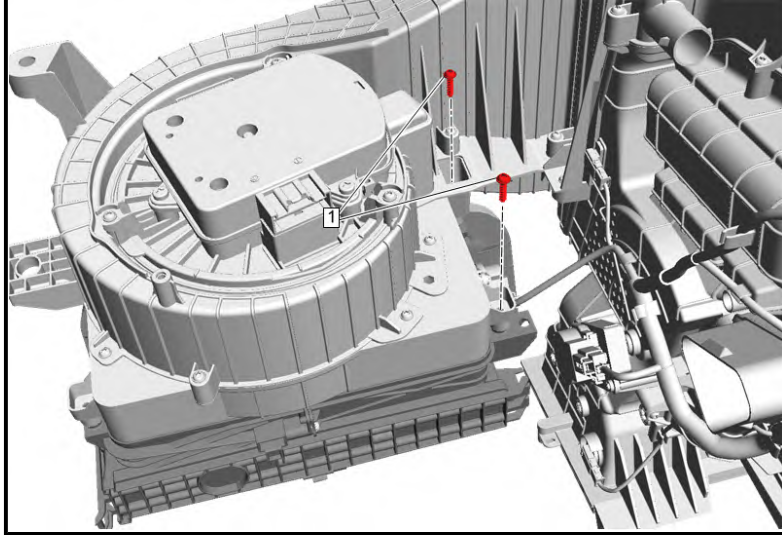
Installation Procedure



Air Inlet Housing (1) - Install

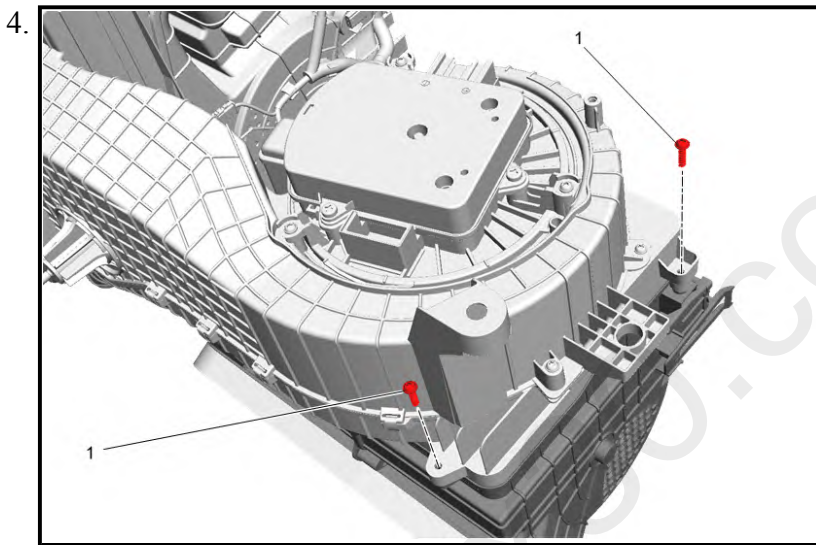
2. Connect the electrical connector.



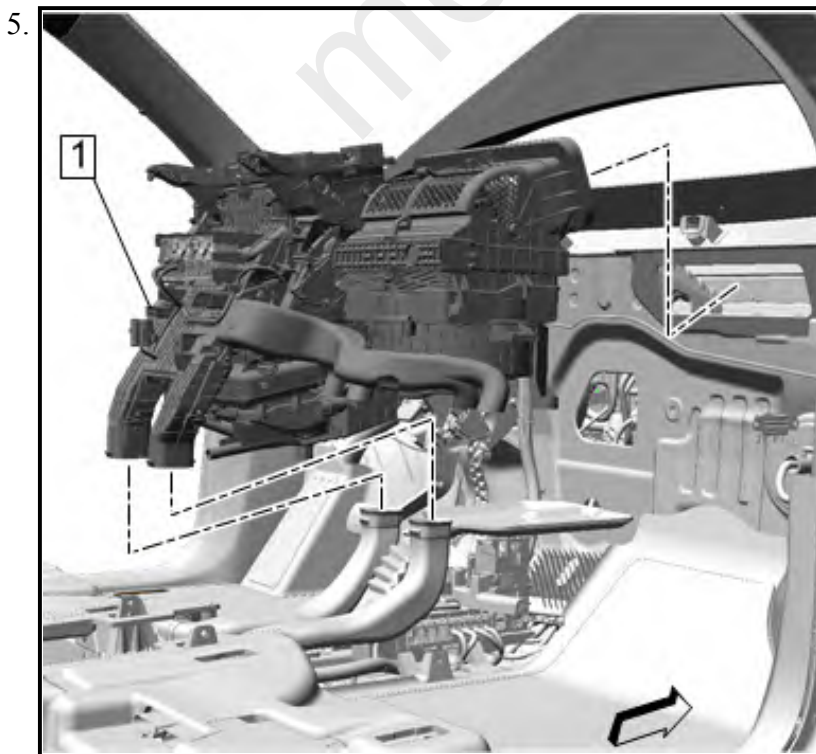


CAUTION: Refer to [Fastener Caution](#) .

Air Inlet Housing Bolt (1) - Install and tighten 2.5 N.m (22 lb in) [2x]

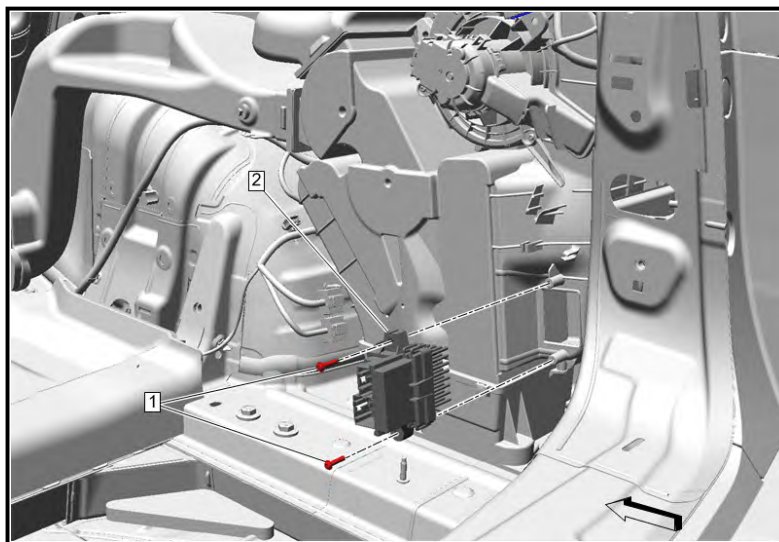


Air Inlet Housing Bolt (1) - Install and tighten 2.5 N.m (22 lb in) [2x]



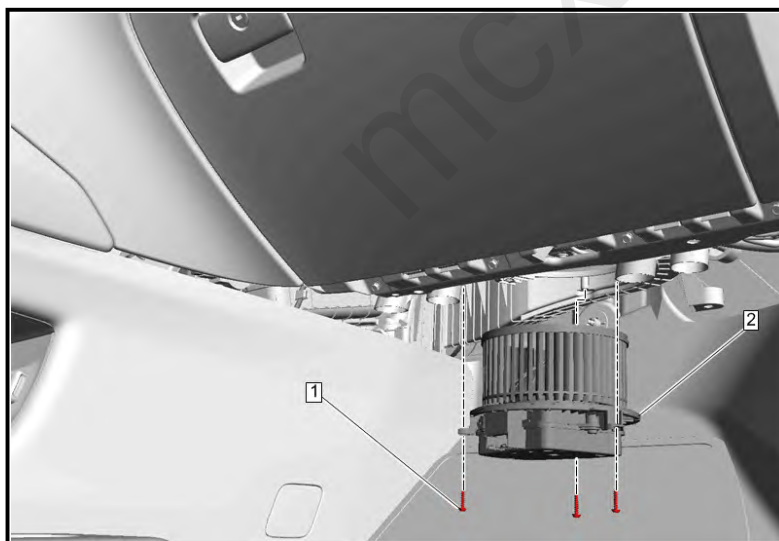
Heater and Air Conditioning Evaporator and Blower Module (1) - Install - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#)[Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#).

BLOWER MOTOR CONTROL MODULE REPLACEMENT (C69)



Call out	Component Name
Preliminary Procedure <u>Quarter Lower Rear Trim Panel Replacement (Right Side)</u>	
1	Blower Motor Control Module Bolt [2x] CAUTION: Refer to <u>Fastener Caution</u> . Tighten 2.0 N.m (18 lb in)
2	Blower Motor Control Module Procedure Disconnect the electrical connectors.

BLOWER MOTOR REPLACEMENT

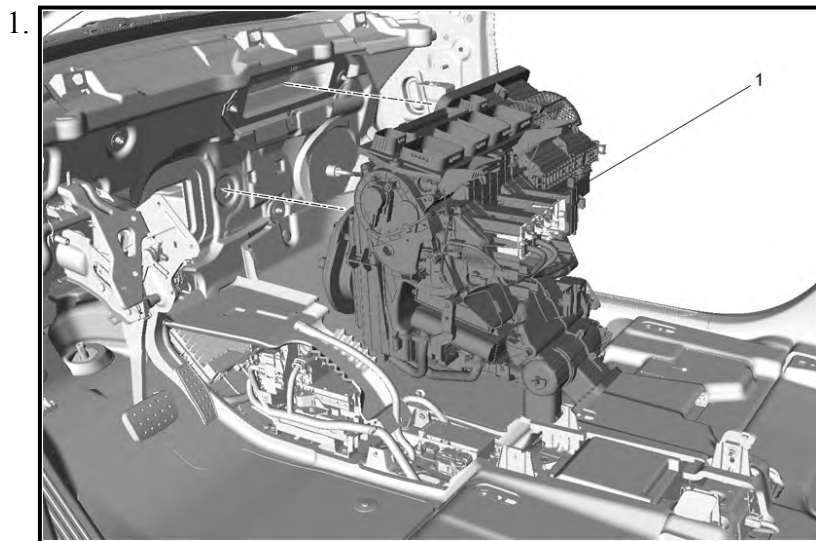


Callout	Component Name
1	Blower Motor Bolt [3x] CAUTION: Refer to <u>Fastener Caution</u> . Tighten 2.5 N.m (22 lb in)

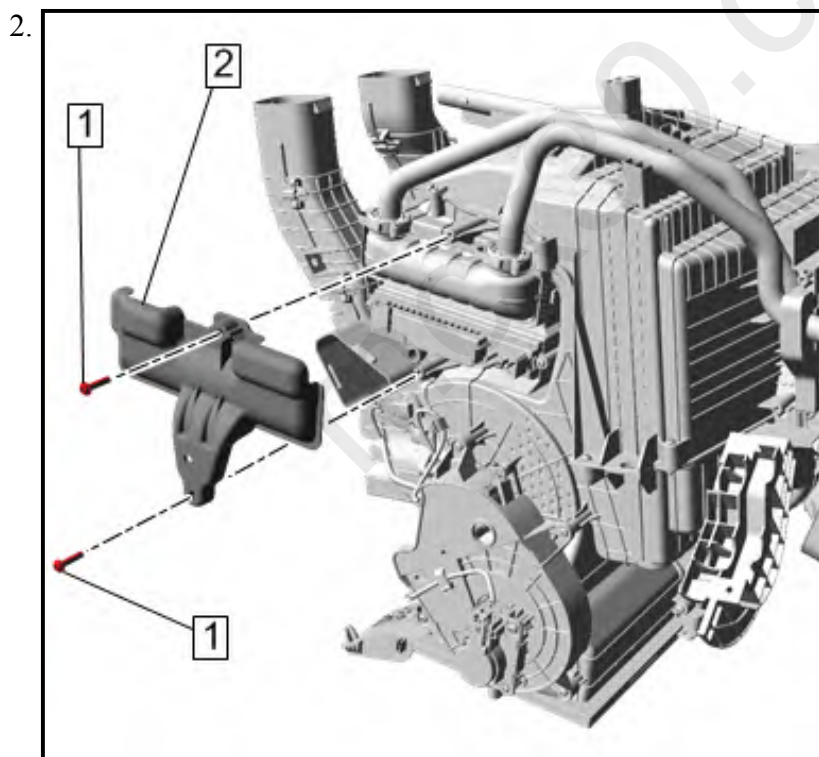
Callout	Component Name
2	Blower Motor Procedure Disconnect the electrical connector.

AIR DISTRIBUTOR CASE REPLACEMENT

Removal Procedure



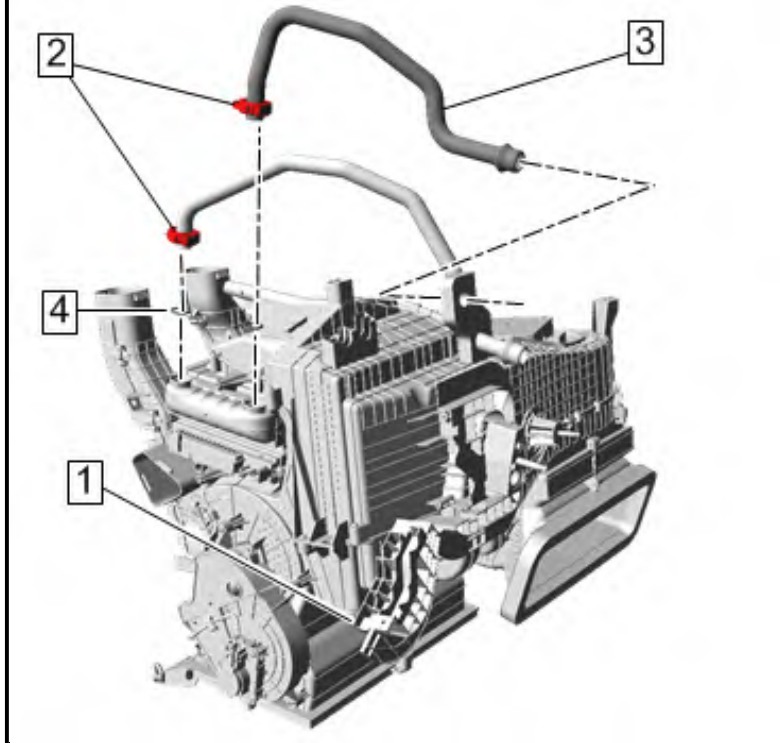
Heater and Air Conditioning Evaporator and Blower Module (1) - Remove - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#)[Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#).



Heater Core Cover Screw (1) - Remove [2x]

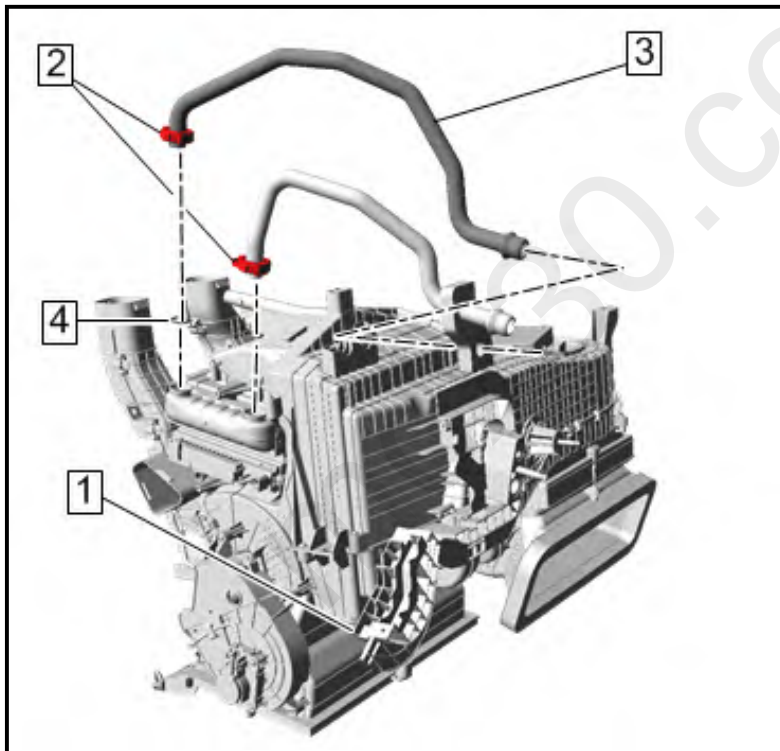
3. Heater Core Cover (2) - Remove





Heater Core Outlet Tube (3) - Remove - [Heater Core Outlet Tube Replacement \(C69\)Heater Core Outlet Tube Replacement](#)

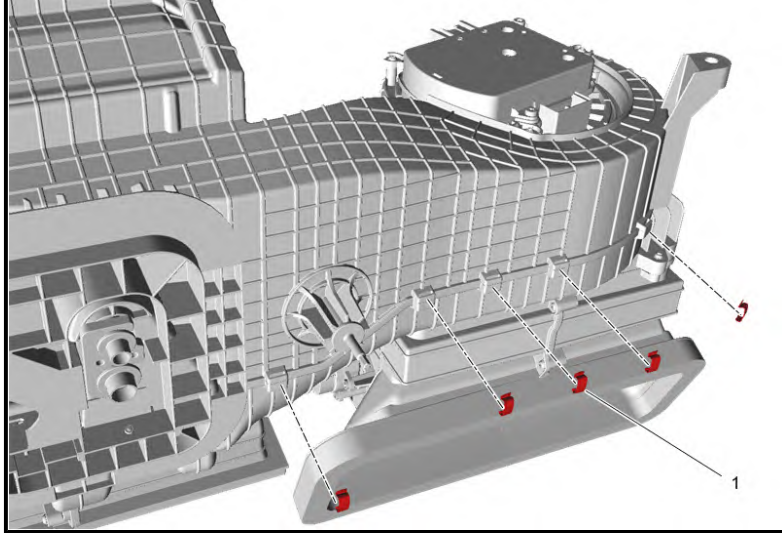
5.



Heater Core Inlet Tube (3) - Remove - [Heater Core Inlet Tube Replacement \(C69\)Heater Core Inlet Tube Replacement](#)

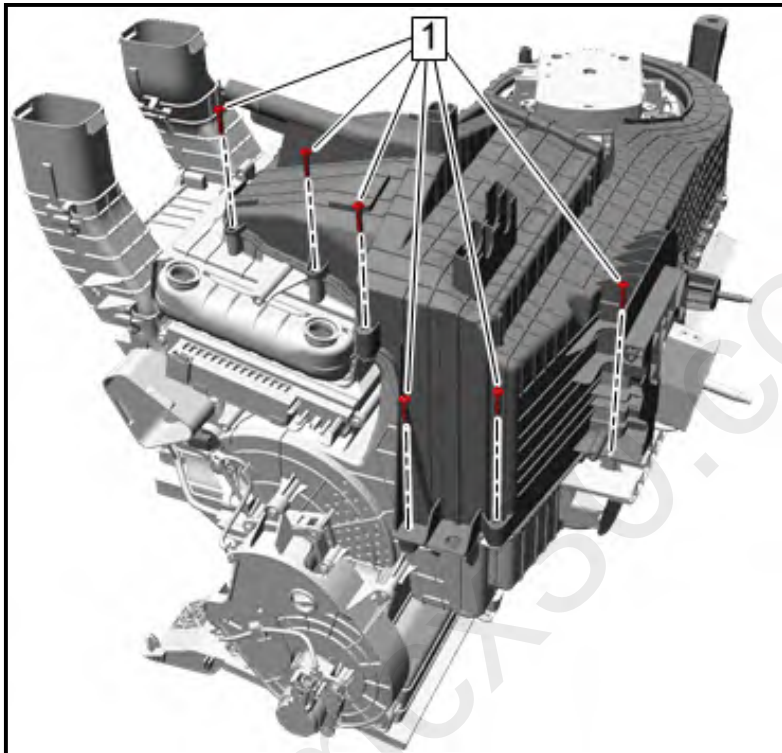
6.





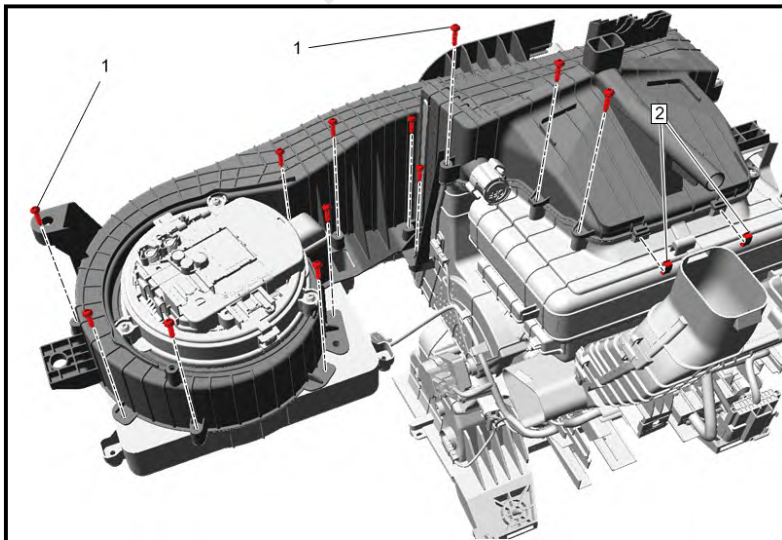
Retainer Clip (1) - Remove [5x]

7.



Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Remove [6x]

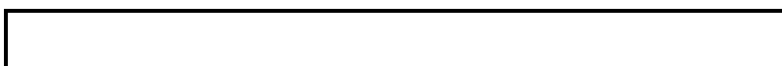
8.

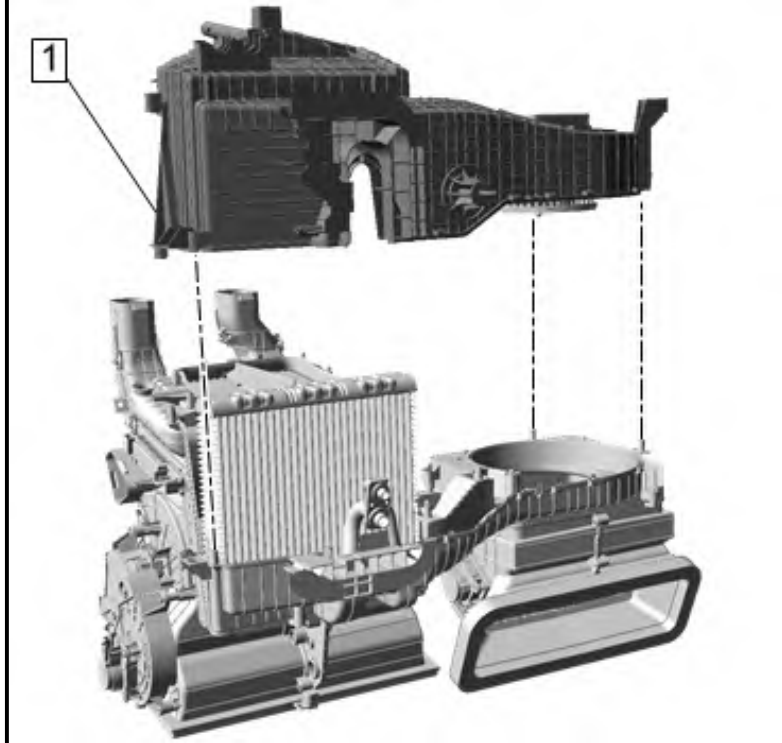


Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Remove [12x]

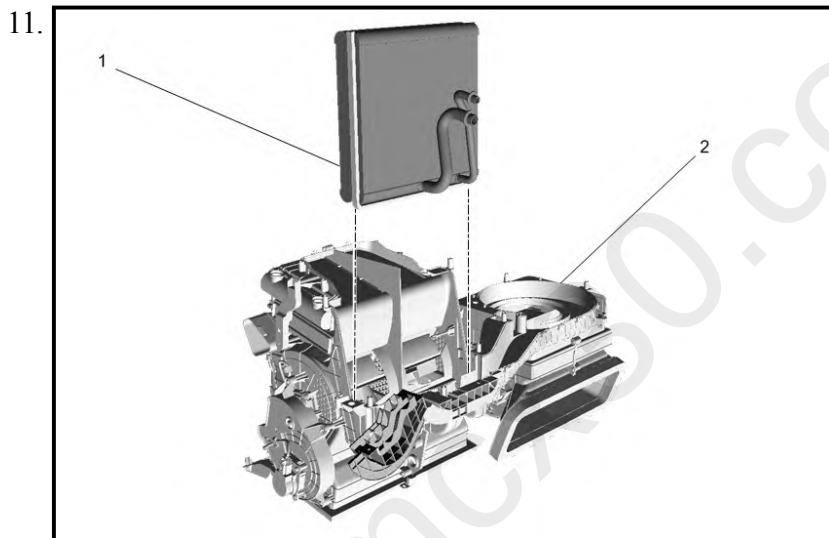
9. Retainer Clip (2) - Remove [2x]

10.

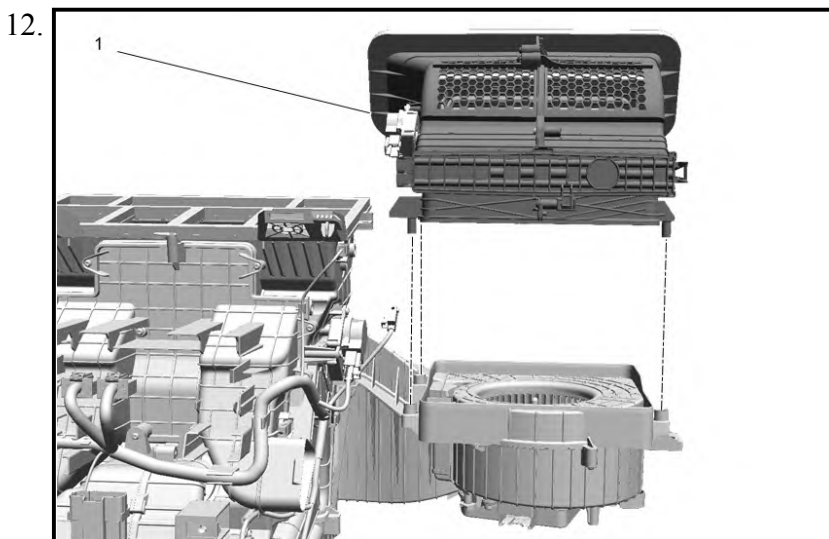




Heater and Air Conditioning Evaporator and Blower Lower Case (1) - Remove

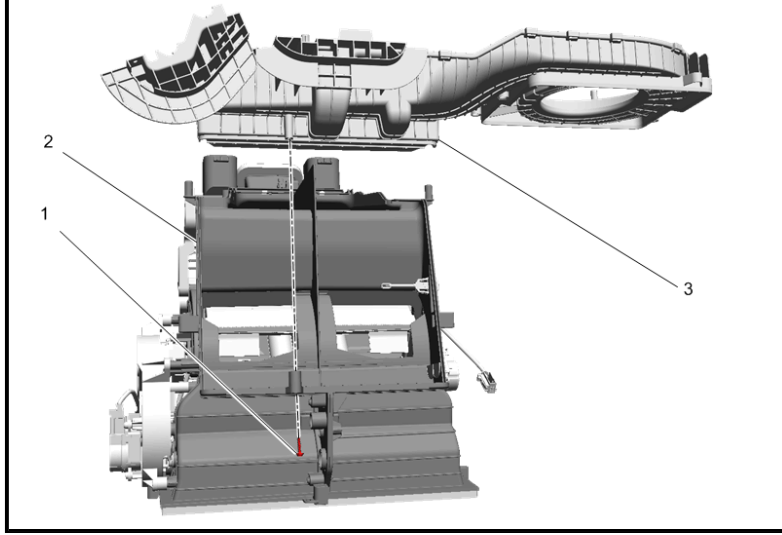


Air Conditioning Evaporator (1) @ Heater and Air Conditioning Evaporator and Blower Upper Case (2) - Remove



Air Inlet Housing (1) - Remove - [Air Inlet Housing Replacement](#)

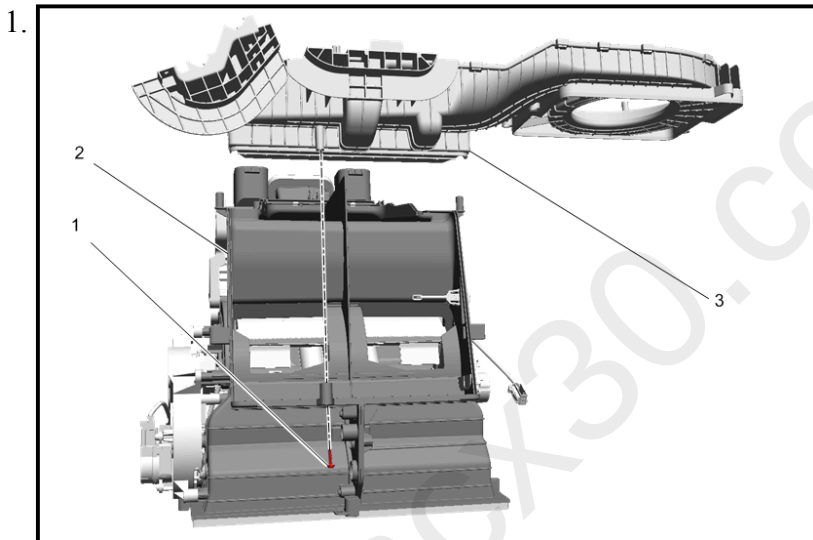




Heater and Air Conditioning Evaporator and Blower Upper Case Bolt (1) - Remove

14. Air Distributor Case (2) @ Heater and Air Conditioning Evaporator and Blower Upper Case (3) - Remove
15. Transfer components as necessary.

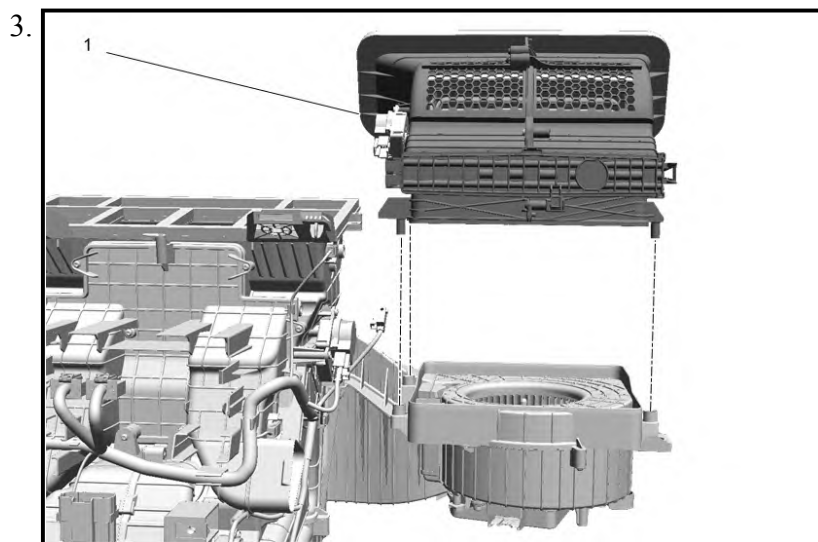
Installation Procedure



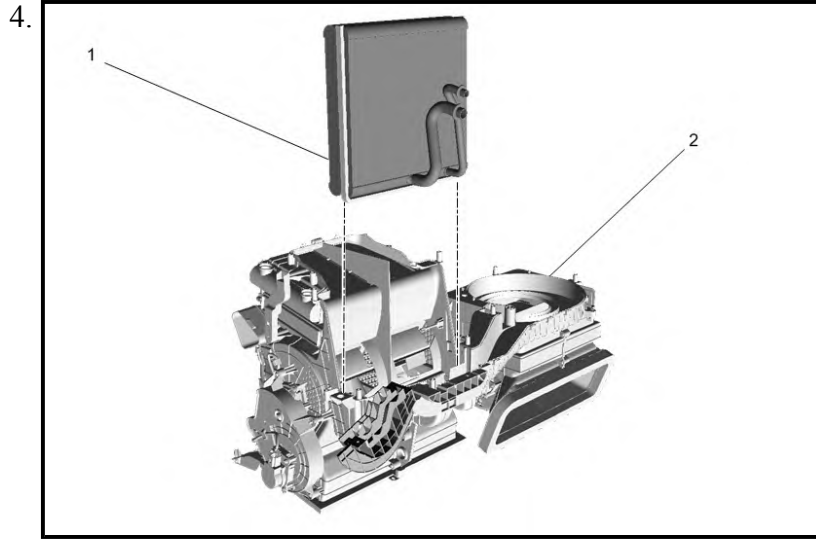
Air Distributor Case (2) @ Heater and Air Conditioning Evaporator and Blower Upper Case (3) - Install

CAUTION: Refer to [Fastener Caution](#) .

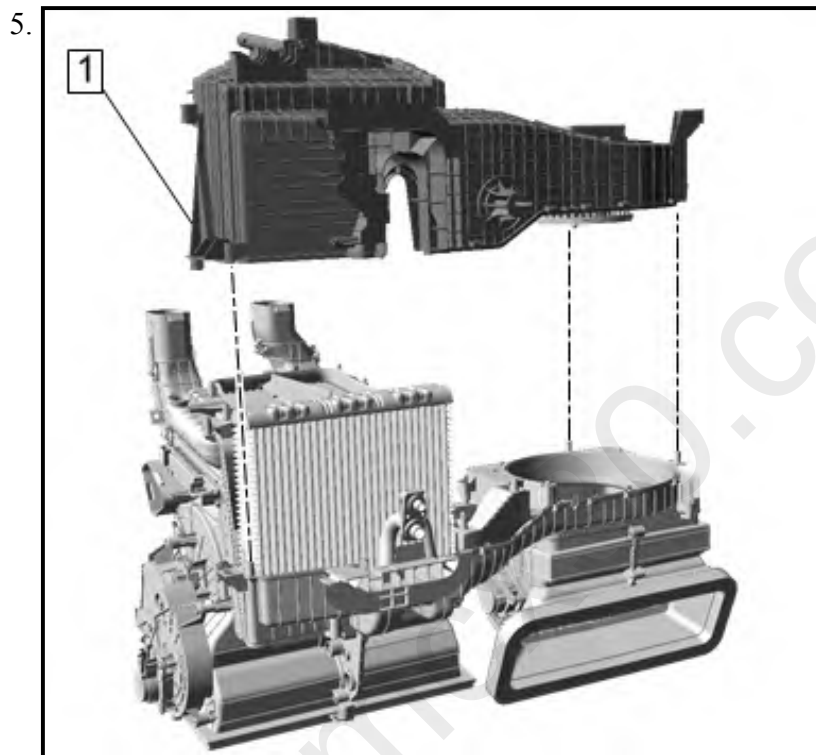
2. Heater and Air Conditioning Evaporator and Blower Upper Case Bolt (1) - Install and tighten 2.5 N.m (22 lb in)



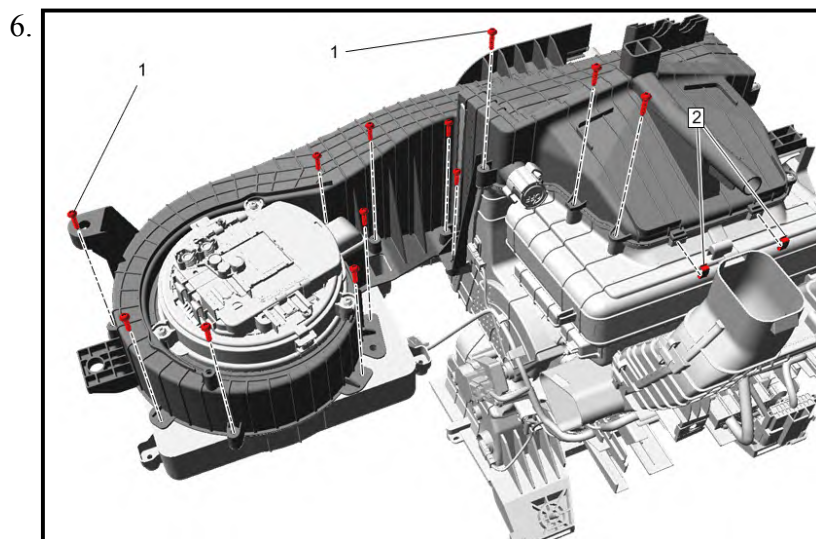
Air Inlet Housing (1) - Install - [Air Inlet Housing Replacement](#)



Air Conditioning Evaporator (1) @ Heater and Air Conditioning Evaporator and Blower Upper Case (2) - Install



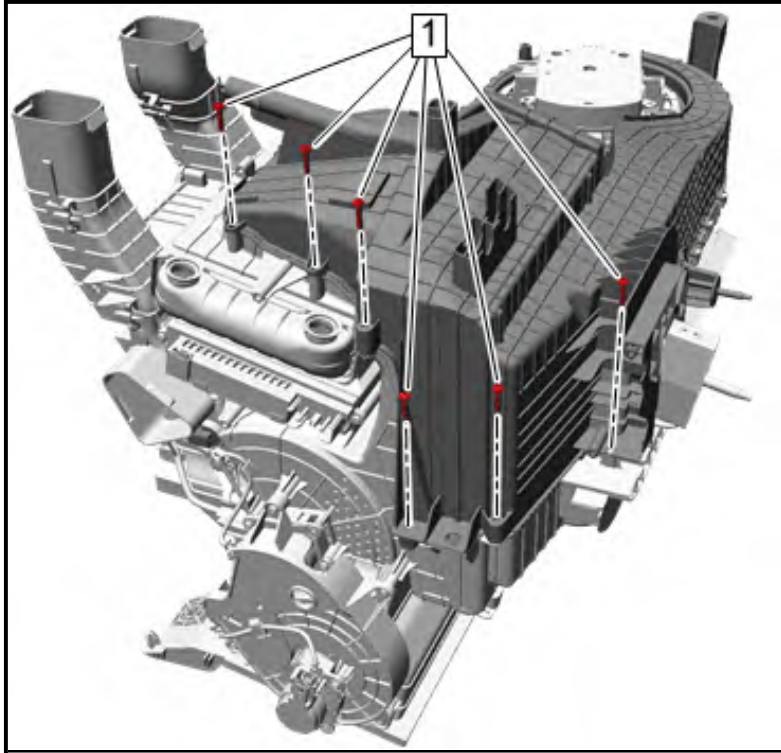
Heater and Air Conditioning Evaporator and Blower Lower Case (1) - Install



Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Install and tighten [12x] 2.5 N.m (22 lb in)

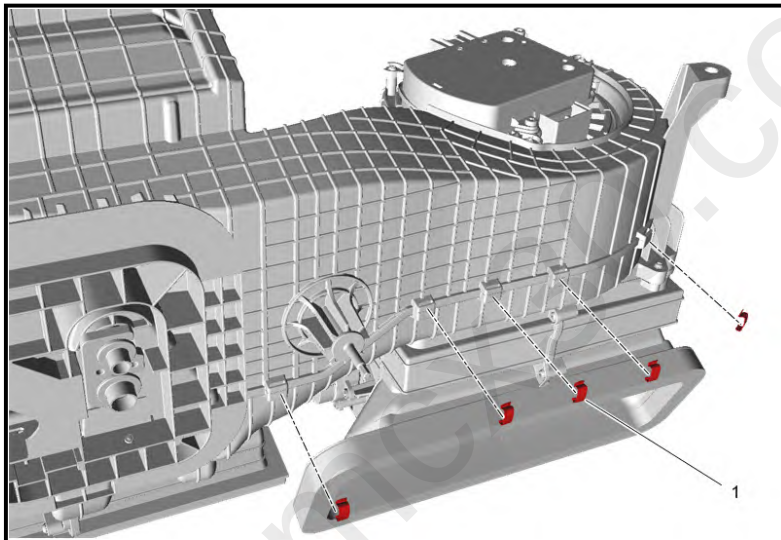
7. Retainer Clip (2) - Install [2x]

8.



Heater and Air Conditioning Evaporator and Blower Lower Case Bolt (1) - Install and tighten [6x] 2.5 N.m (22 lb in)

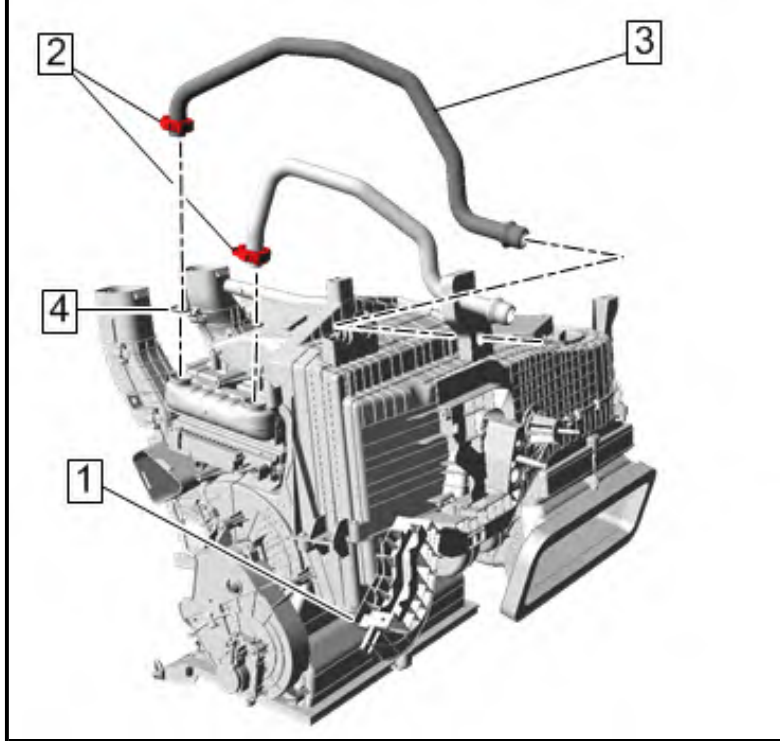
9.



Retainer Clip (1) - Install [5x]

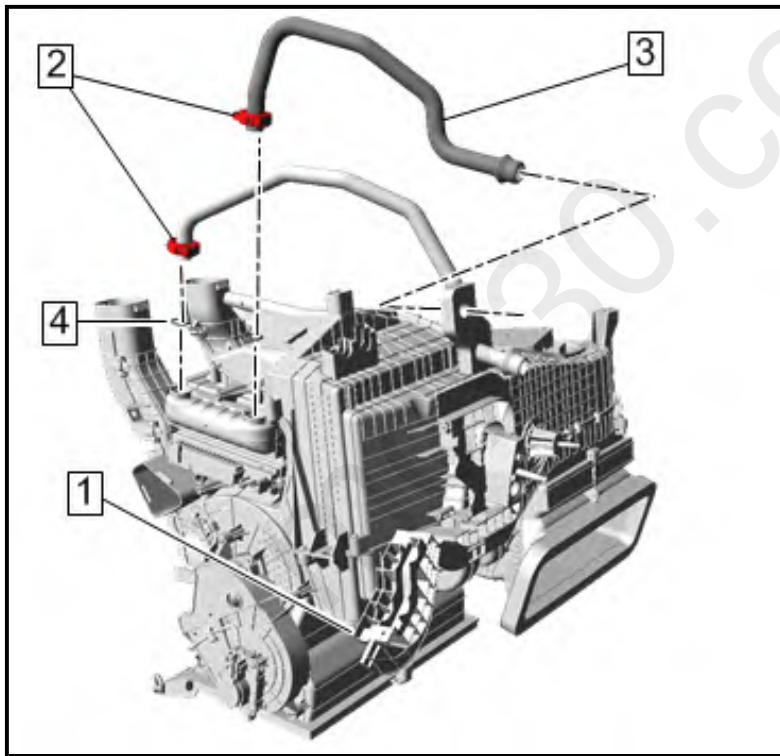
10.





Heater Core Inlet Tube (3) - Install - [Heater Core Inlet Tube Replacement \(C69\)](#)[Heater Core Inlet Tube Replacement](#)

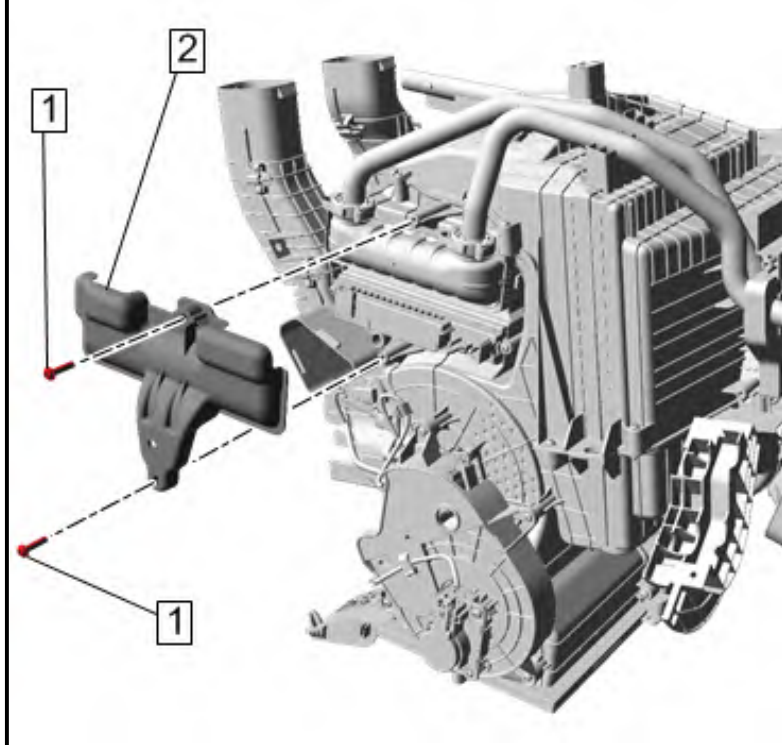
11.



Heater Core Outlet Tube (3) - Install - [Heater Core Outlet Tube Replacement \(C69\)](#)[Heater Core Outlet Tube Replacement](#)

12.

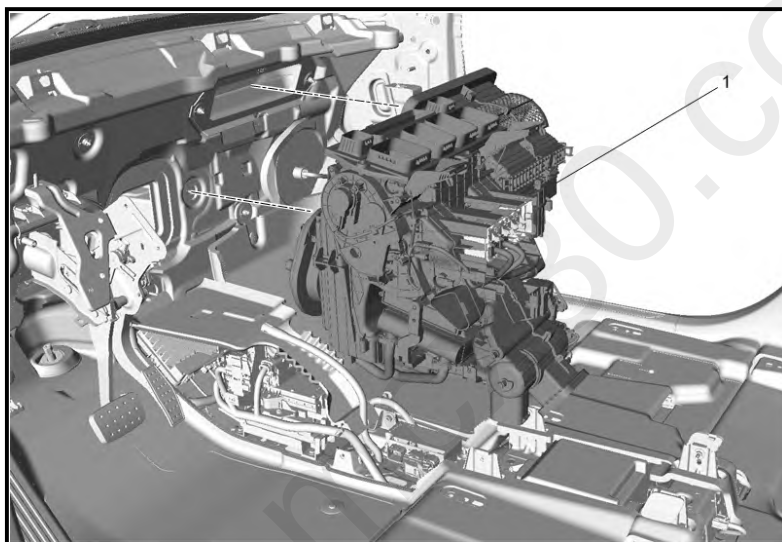




Heater Core Cover (2) - Install

13. Heater Core Cover Screw (1) - Install and tighten [2x] 2.5 N.m (22 lb in)

14.



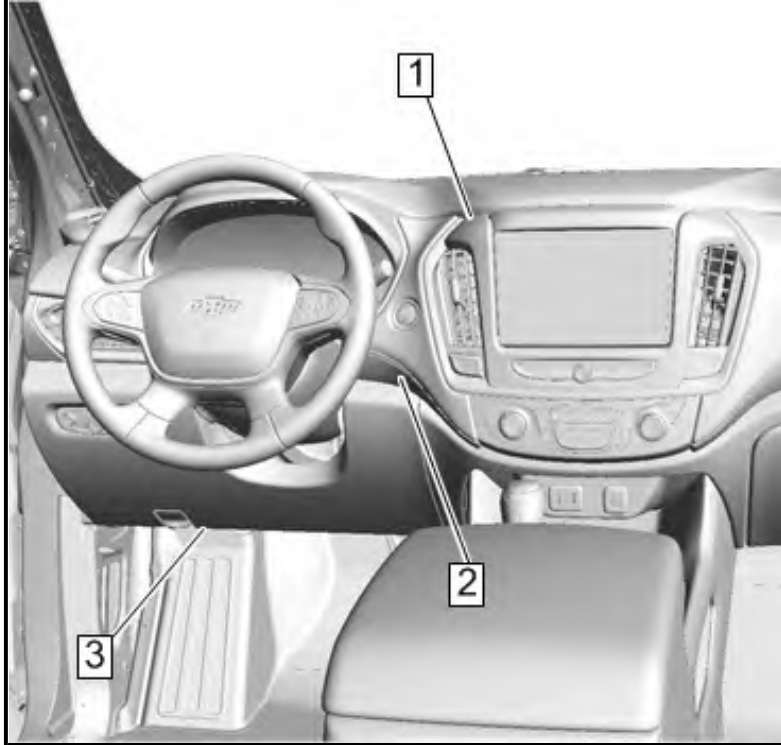
Heater and Air Conditioning Evaporator and Blower Module (1) - Install - [Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LFY\)](#)[Heater and Air Conditioning Evaporator and Blower Module Removal and Installation \(LTG\)](#)

AIR DISTRIBUTOR DUCT ADAPTER REPLACEMENT

Removal Procedure

1.

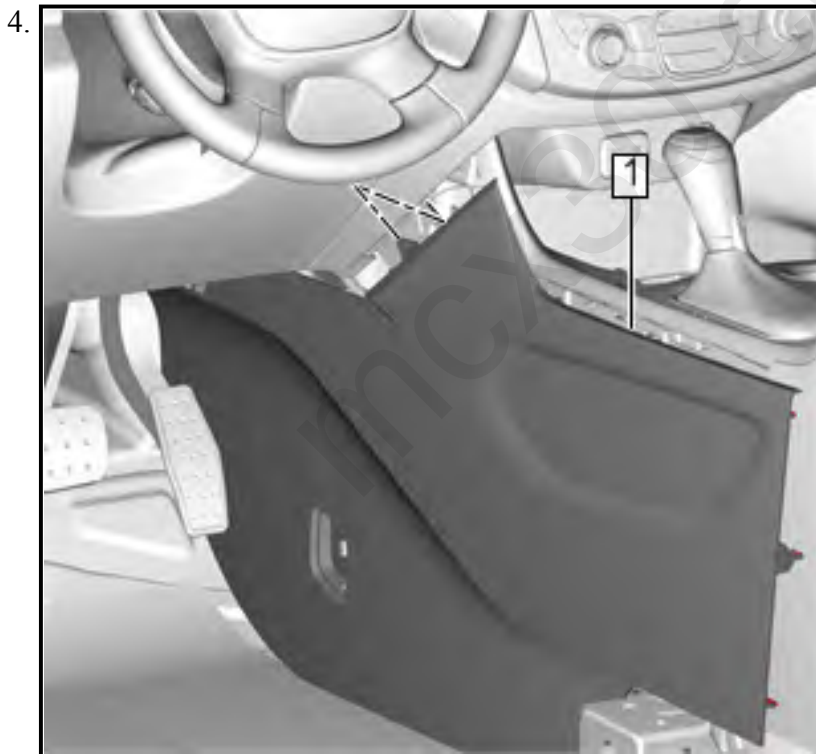




Instrument Panel Radio Front Trim Plate (1) - Remove - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)

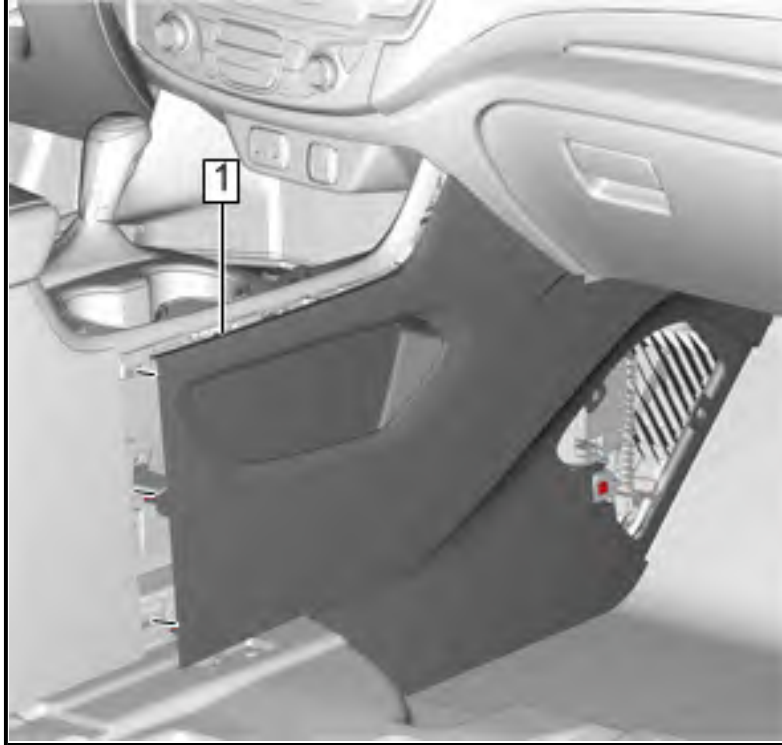
2. Instrument Panel Trim Pad - Left Side (2) - Remove - [Instrument Panel Trim Pad Replacement - Left Side](#)

3. Instrument Panel Knee Bolster (3) - Remove - [Instrument Panel Knee Bolster Replacement](#)



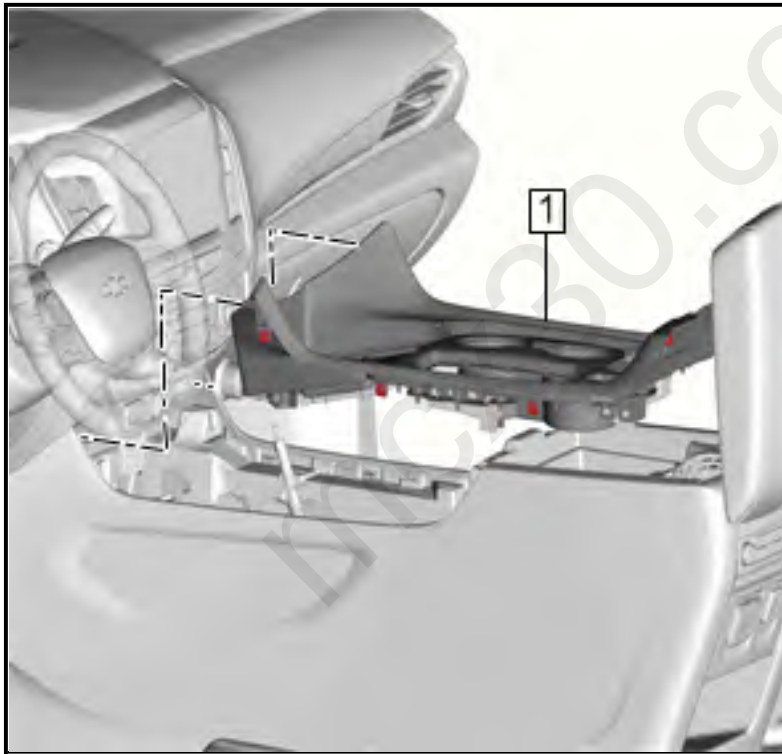
Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)





Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

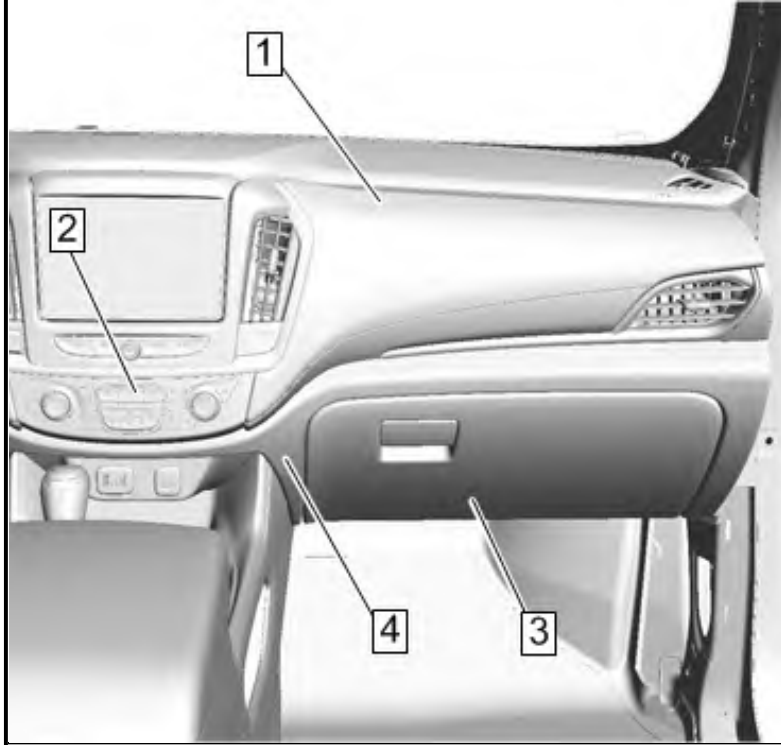
6.



Front Floor Console Cup Holder Plate (1) - Remove - [Front Floor Console Cup Holder Plate Replacement](#)

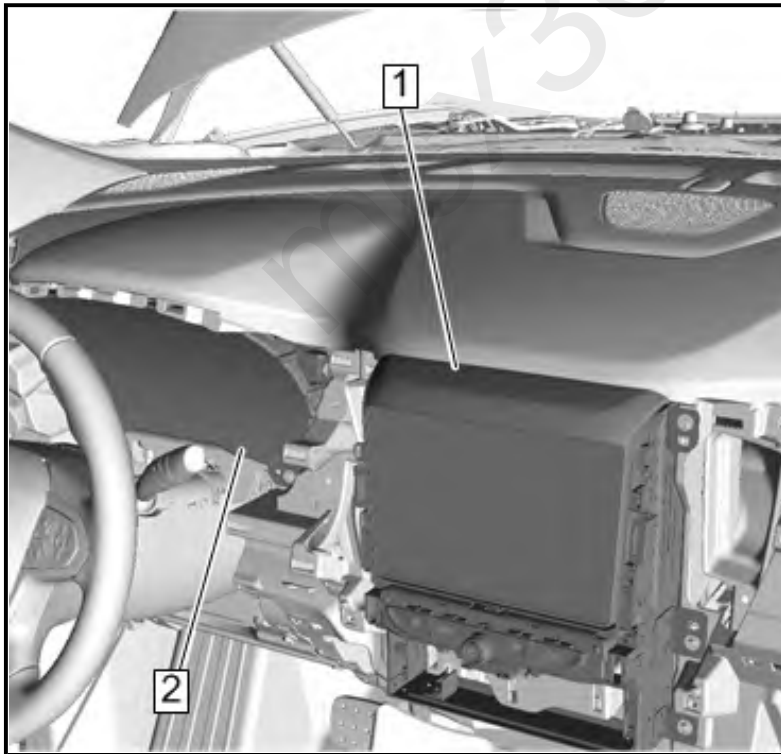
7.





Instrument Panel Trim Pad - Right Side (1) - Remove - [Instrument Panel Trim Pad Replacement - Right Side](#)

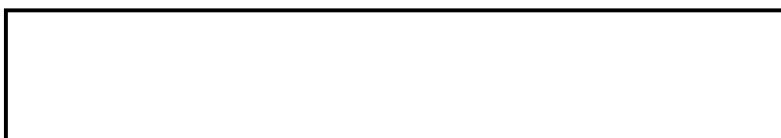
8. Heater and Air Conditioning User Interface Control (2) - Remove - [Heater and Air Conditioning User Interface Control Replacement](#)
9. Disconnect all electrical connectors.
10. Instrument Panel Compartment Door (3) - Remove - [Instrument Panel Compartment Door Replacement](#)
11. Instrument Panel Compartment Door Opening Frame (4) - Remove - [Instrument Panel Compartment Door Opening Frame Replacement](#)
- 12.

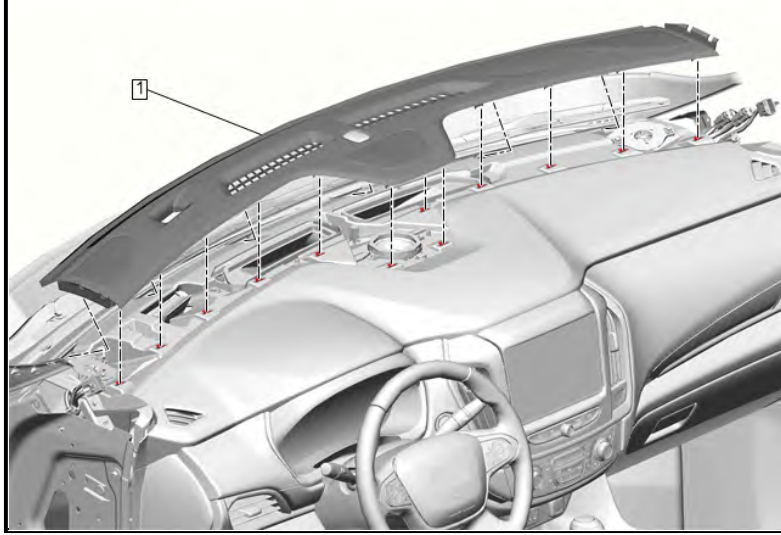


Radio Control (1) - Remove - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

13. Instrument Cluster (2) - Remove - [Instrument Cluster Replacement](#)
14. Disconnect the electrical connectors.

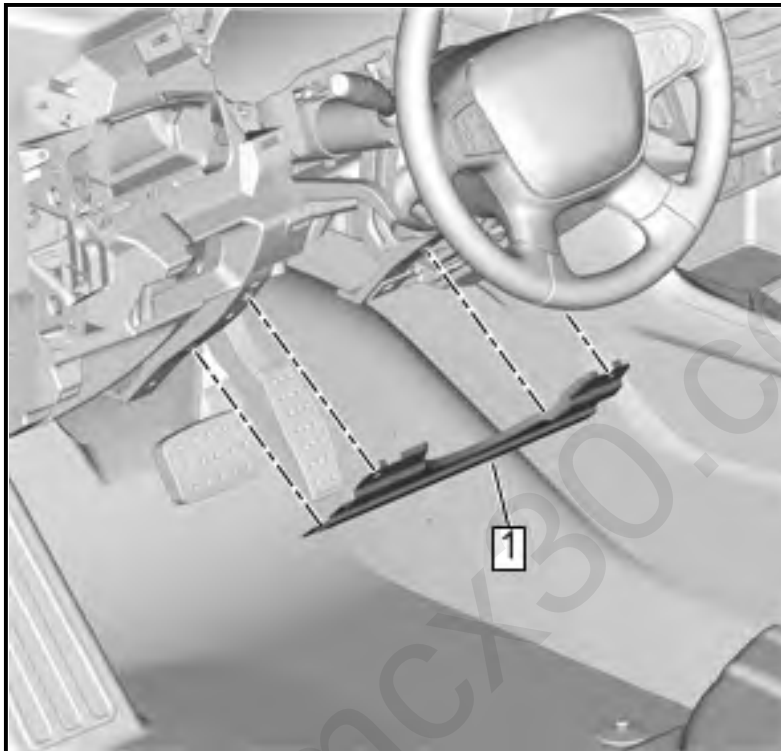
15.





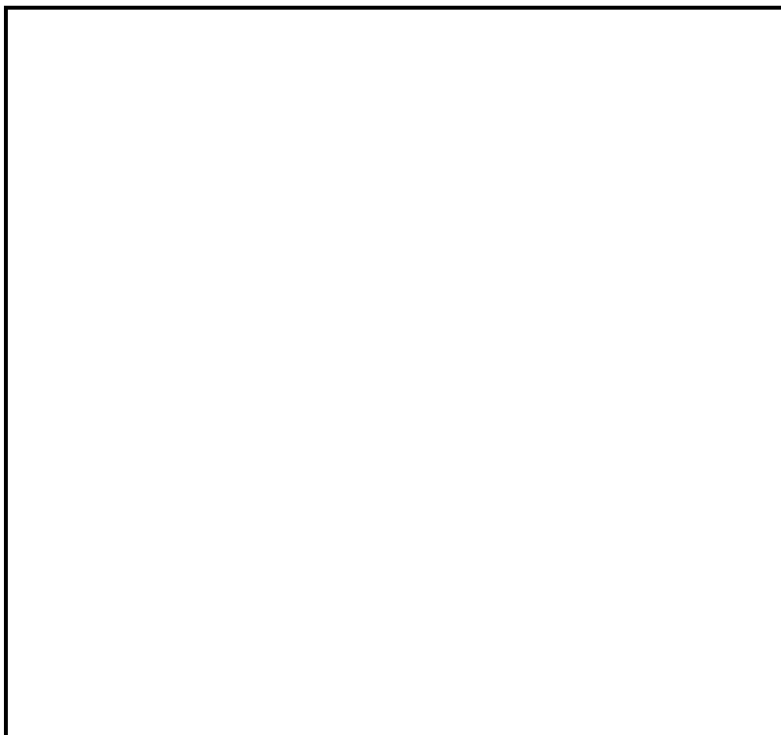
Instrument Panel Extension (1) - Remove - [Instrument Panel Extension Replacement](#)

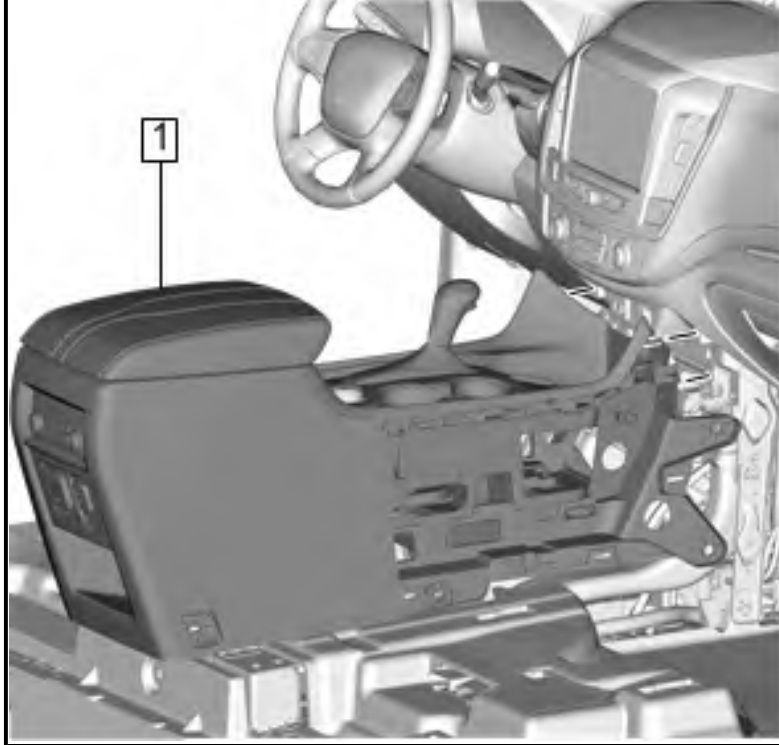
16.



Instrument Panel Knee Bolster Bracket (1) - Remove - [Instrument Panel Knee Bolster Bracket Replacement](#)

17.

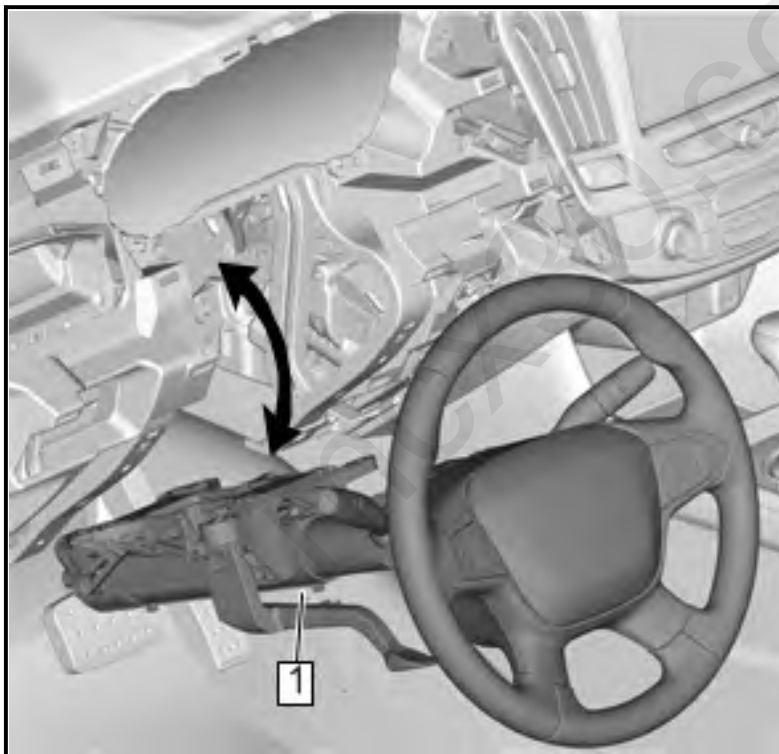




Front Floor Console (1) - Remove - [Front Floor Console Replacement](#)

18. Disconnect the electrical connectors.

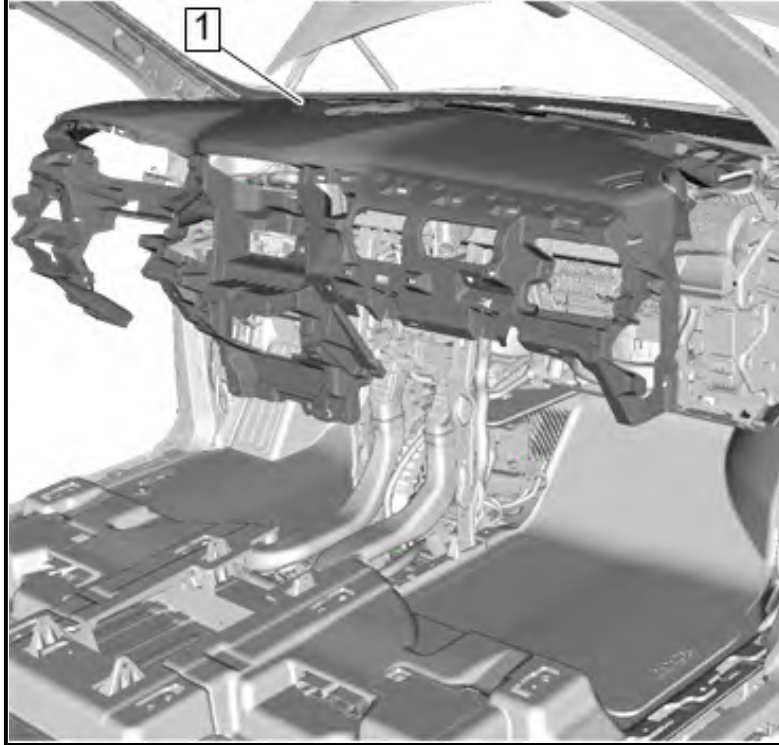
19.



Steering Column (1) - Remove - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

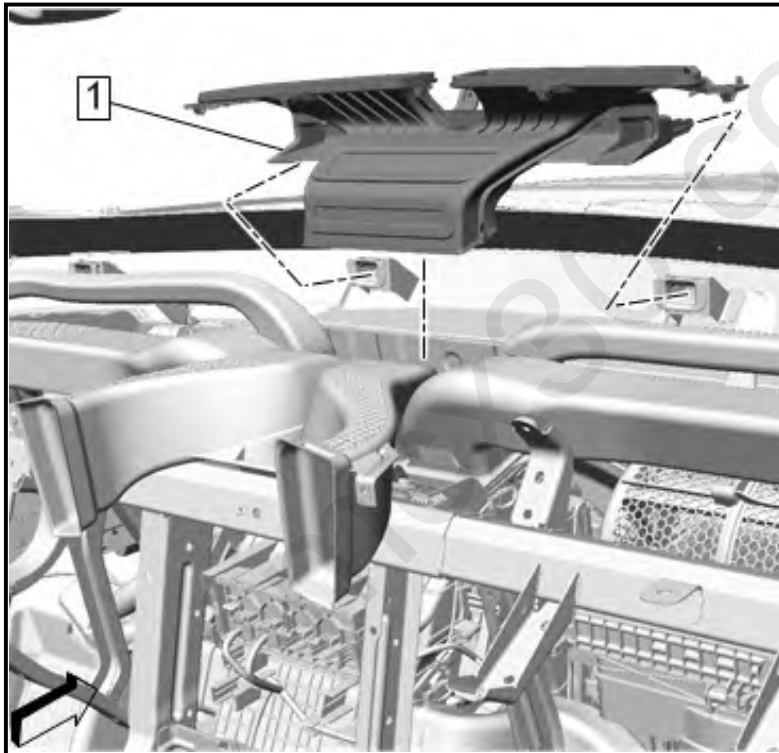
20.





Instrument Panel (1) - Remove - [Instrument Panel Assembly Replacement](#)

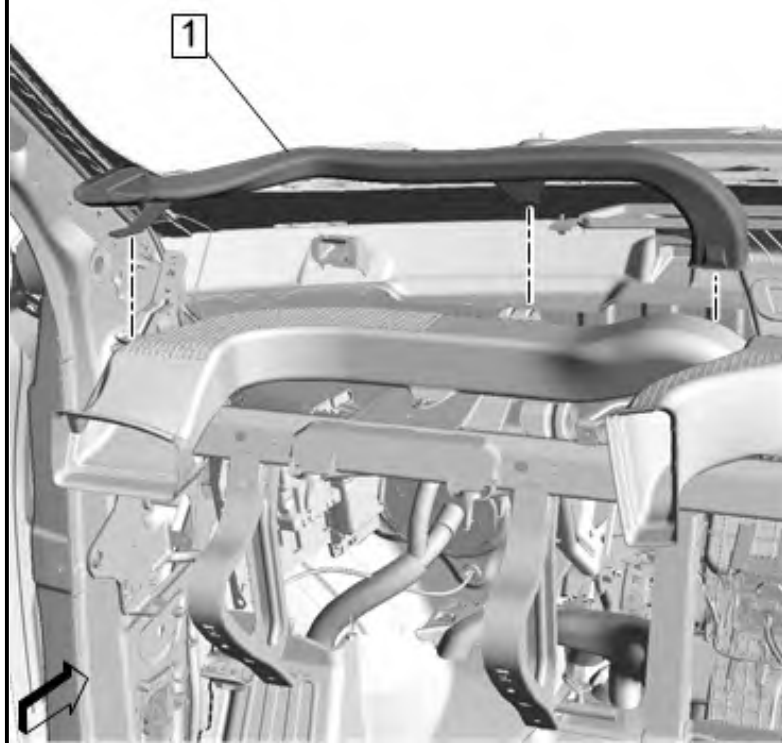
21.



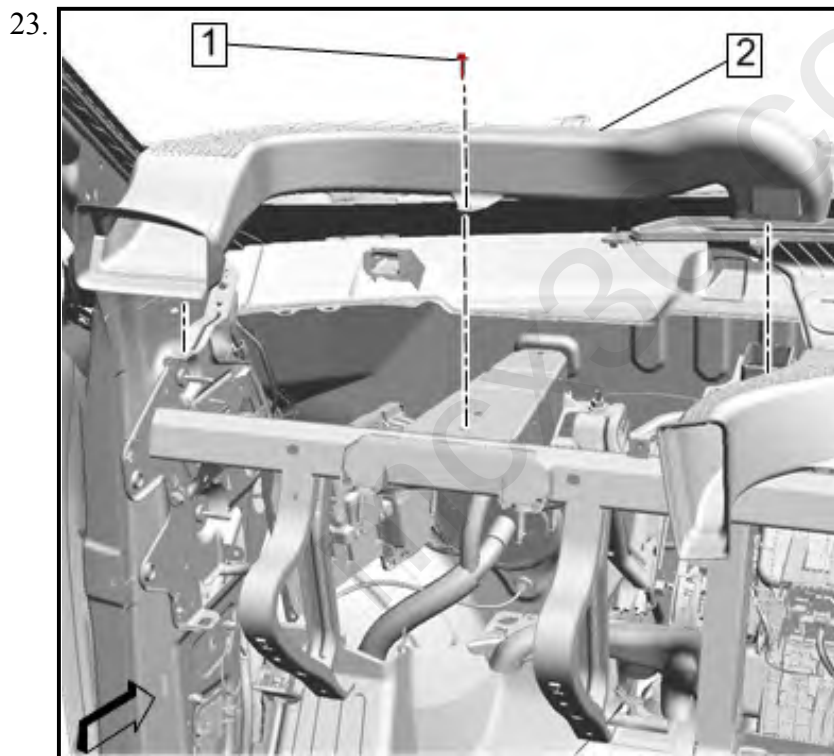
Windshield Defroster Outlet Duct (1) - Remove - [Windshield Defroster Outlet Duct Replacement](#)

22.



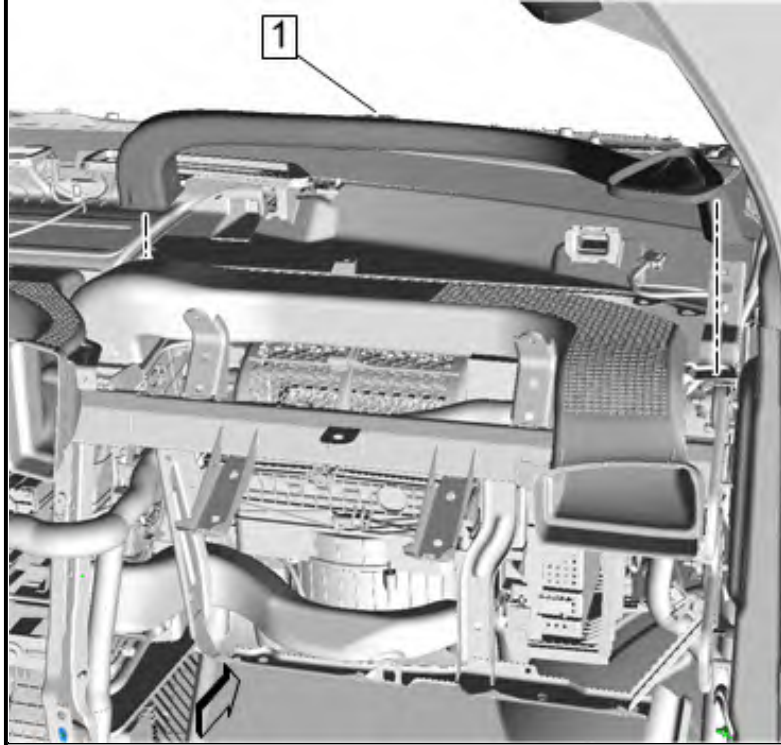


Side Window Defogger Outlet Duct - Left Side (1) - Remove - [Side Window Defogger Outlet Duct Replacement - Left Side](#)



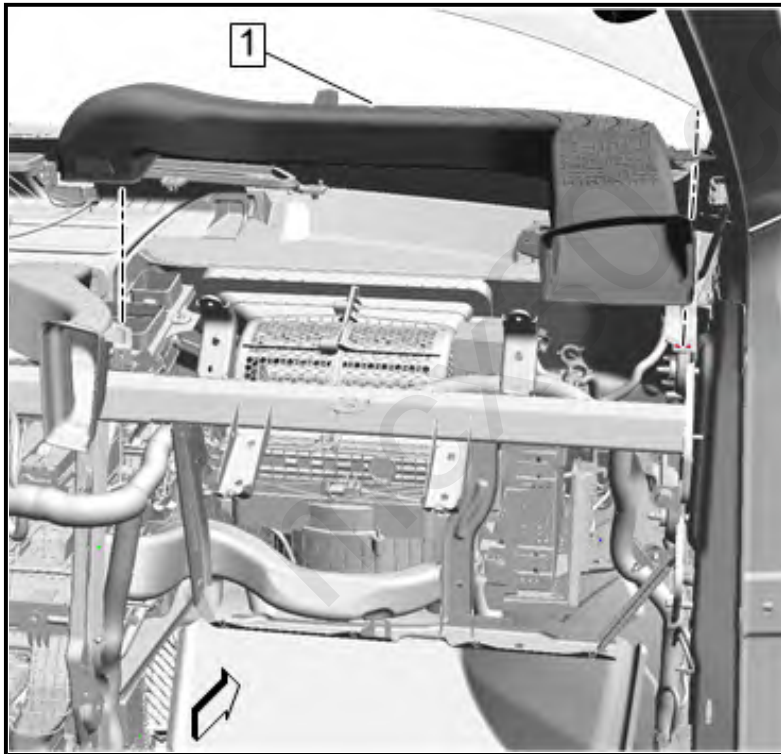
Instrument Panel Outer Air Outlet Duct - Left Side (2) - Remove - [Instrument Panel Outer Air Outlet Duct Replacement - Left Side](#)





Side Window Defogger Outlet Duct - Right Side (1) - Remove - [Side Window Defogger Outlet Duct Replacement - Right Side](#)

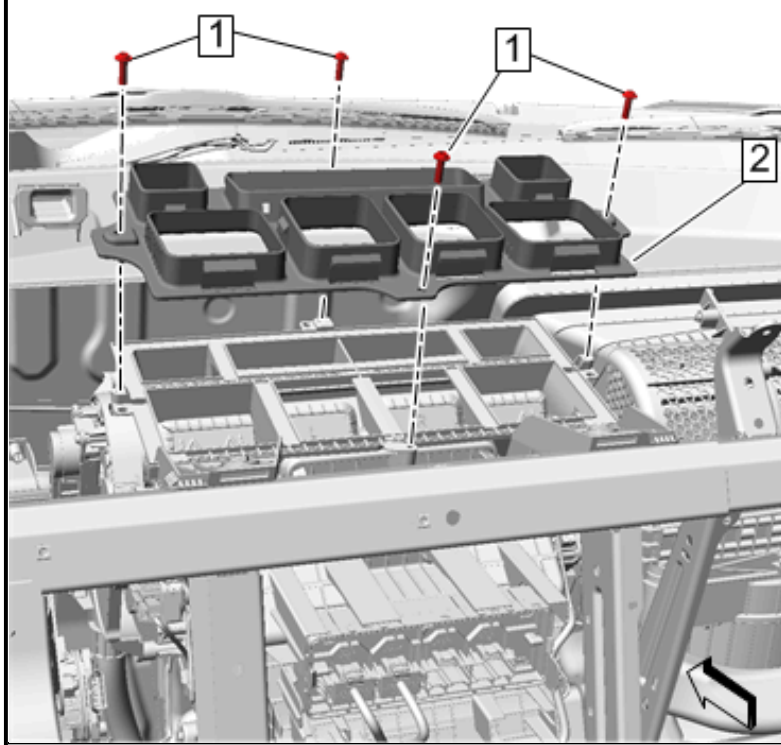
25.



Instrument Panel Outer Air Outlet Duct - Right Side (1) - Remove - [Instrument Panel Outer Air Outlet Duct Replacement - Right Side](#)

26.

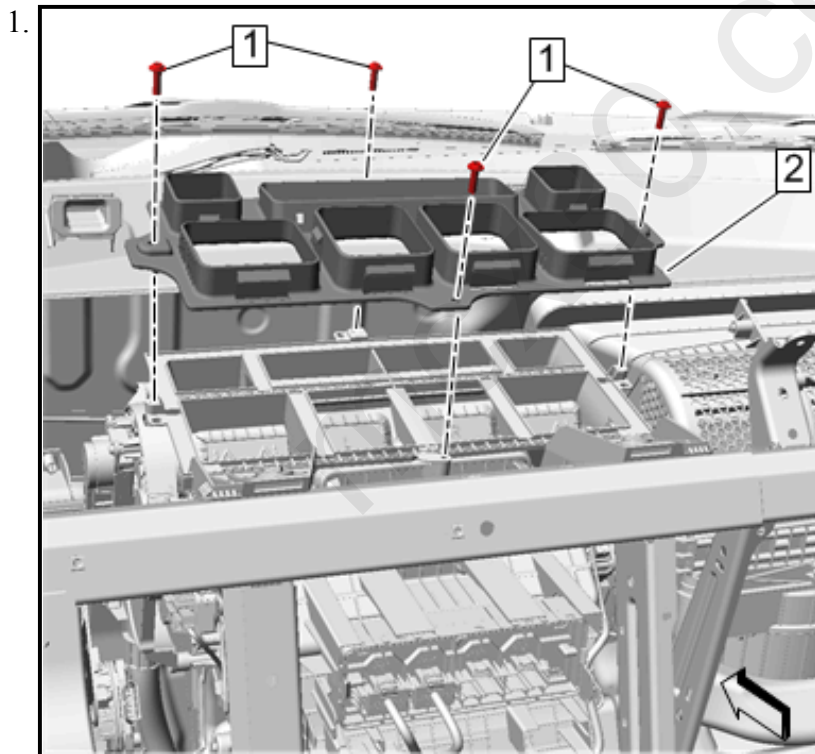




Air Distributor Duct Adapter Bolt (1) - Remove [4x]

27. Air Distributor Duct Adapter (2) - Remove

Installation Procedure

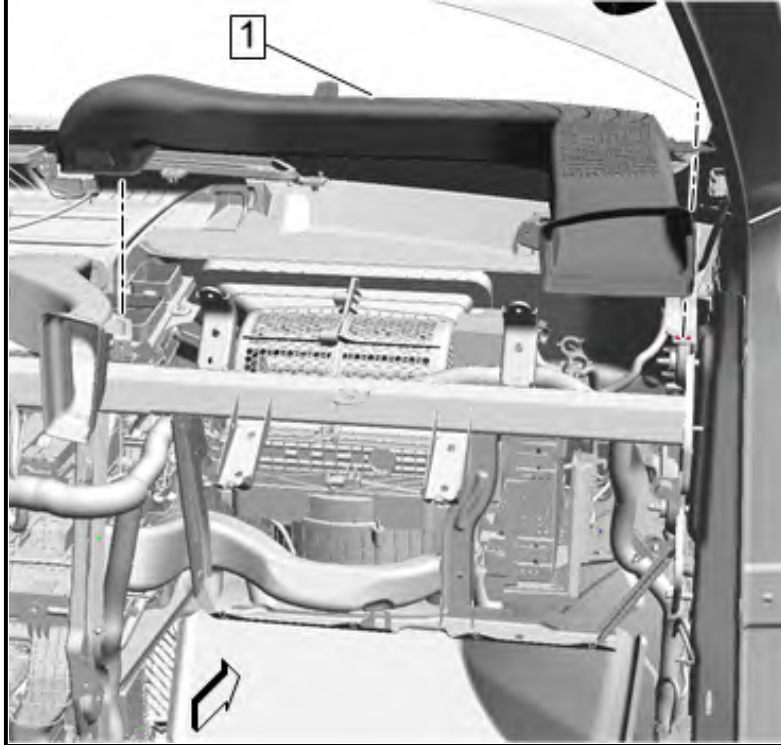


Air Distributor Duct Adapter (2) - Install

CAUTION: Refer to [Fastener Caution](#) .

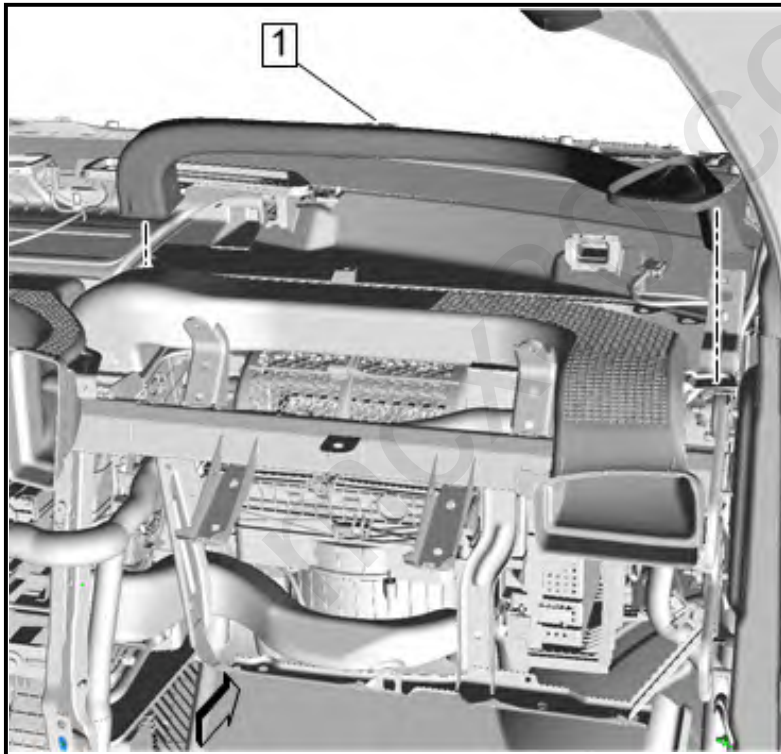
2. Air Distributor Duct Adapter Bolt (1) - Install and tighten [4x] 2.5 N.m (22 lb in)





Instrument Panel Outer Air Outlet Duct - Right Side (1) - Install - [Instrument Panel Outer Air Outlet Duct Replacement - Right Side](#)

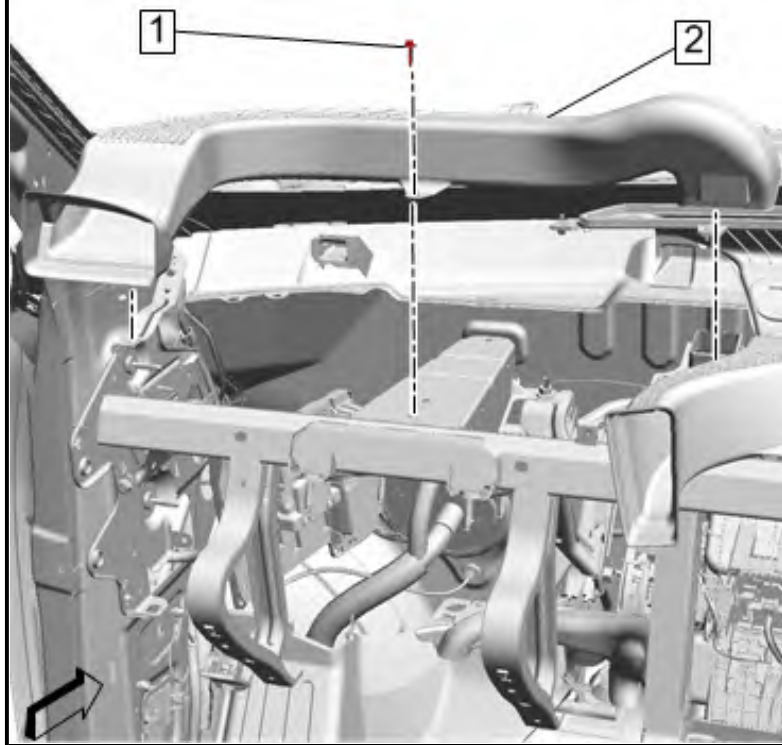
4.



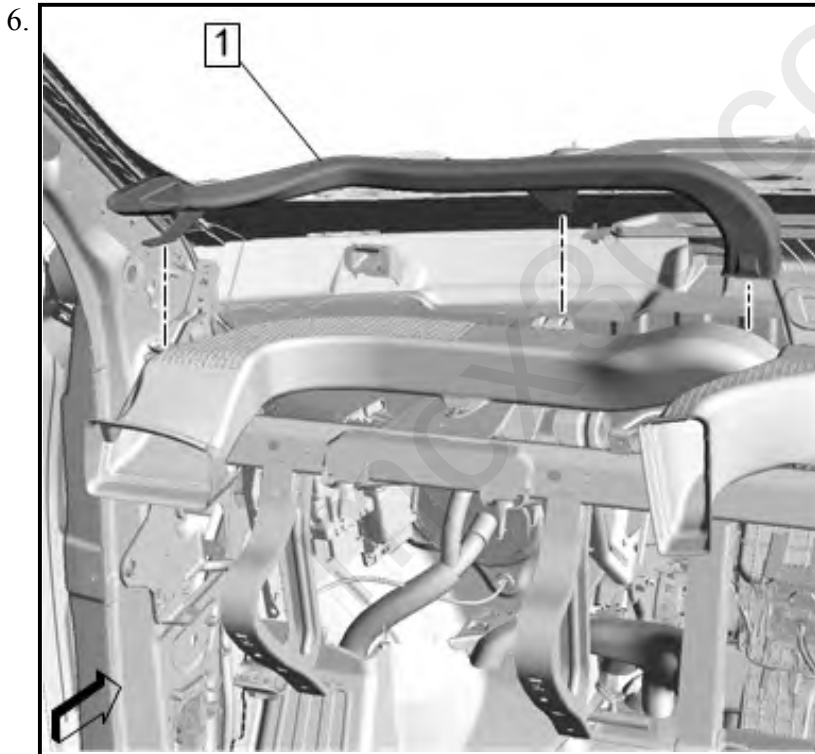
Side Window Defogger Outlet Duct - Right Side (1) - Install - [Side Window Defogger Outlet Duct Replacement - Right Side](#)

5.



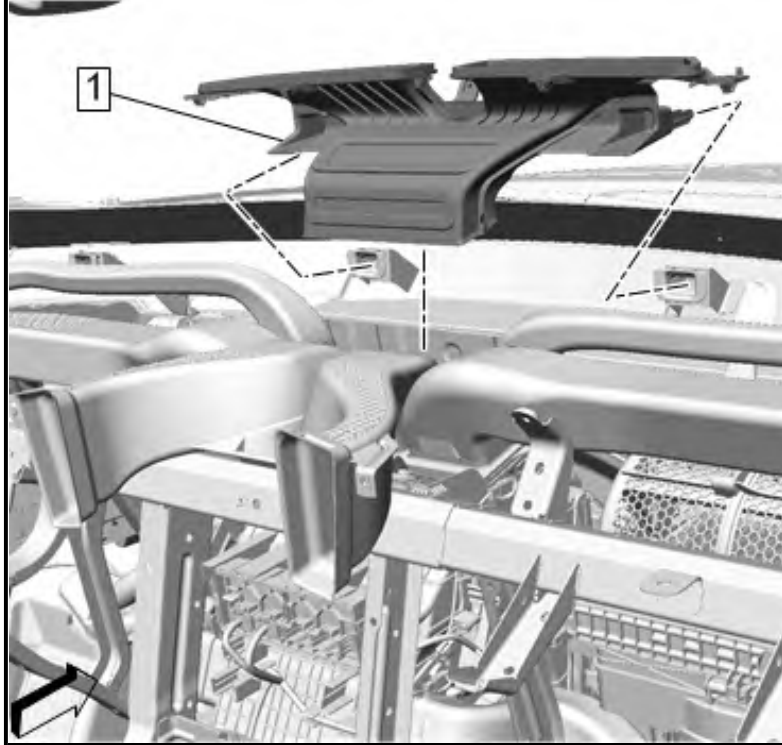


Instrument Panel Outer Air Outlet Duct - Left Side (2) - Install - [Instrument Panel Outer Air Outlet Duct Replacement - Left Side](#)



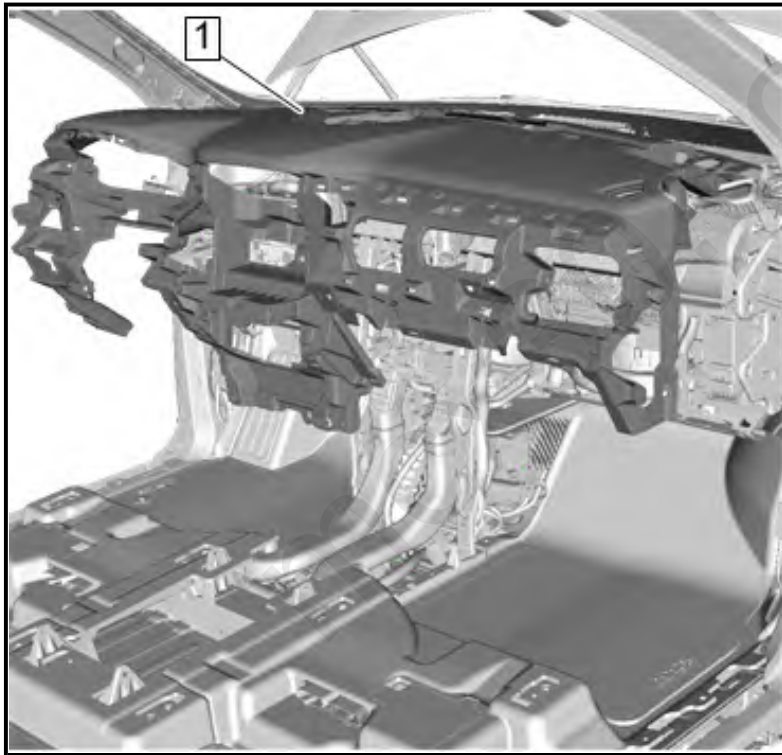
Side Window Defogger Outlet Duct - Left Side (1) - Install - [Side Window Defogger Outlet Duct Replacement - Left Side](#)





Windshield Defroster Outlet Duct (1) - Install - [Windshield Defroster Outlet Duct Replacement](#)

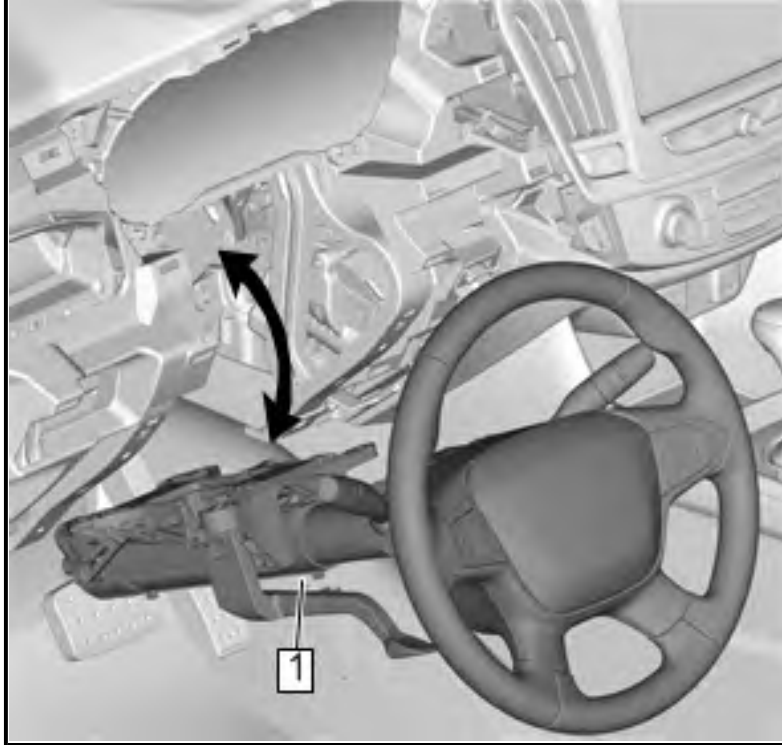
8.



Instrument Panel (1) - Install - [Instrument Panel Assembly Replacement](#)

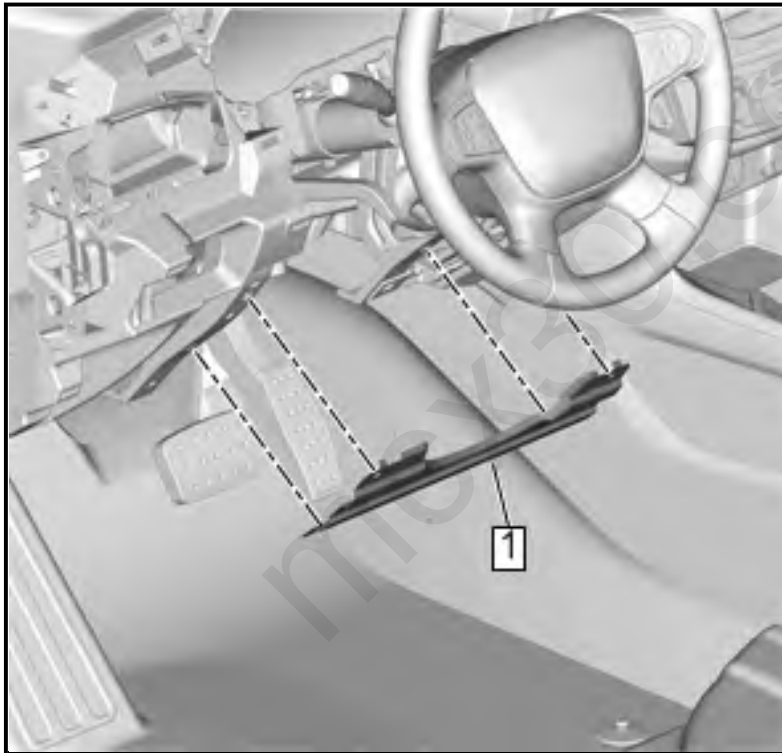
9.





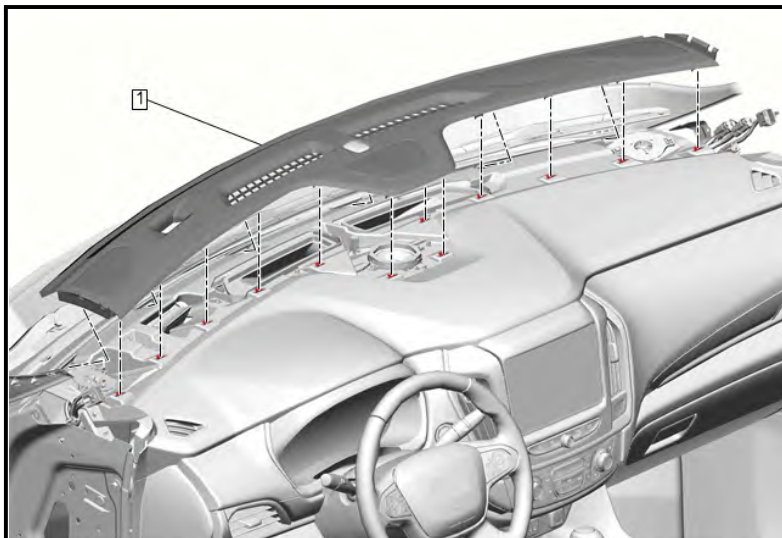
Steering Column (1) - Install - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

10.

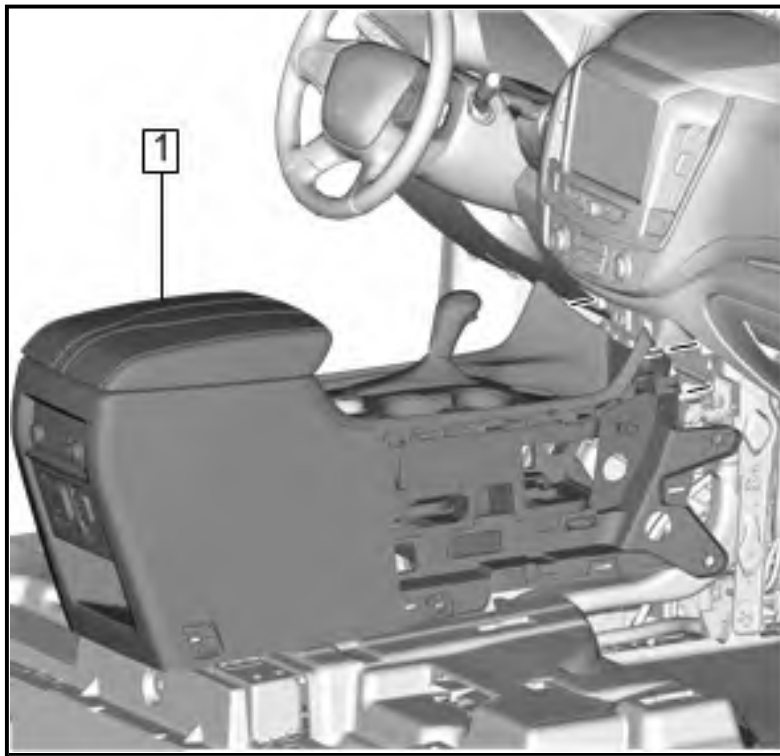


Instrument Panel Knee Bolster Bracket (1) - Install - [Instrument Panel Knee Bolster Bracket Replacement](#)

11.



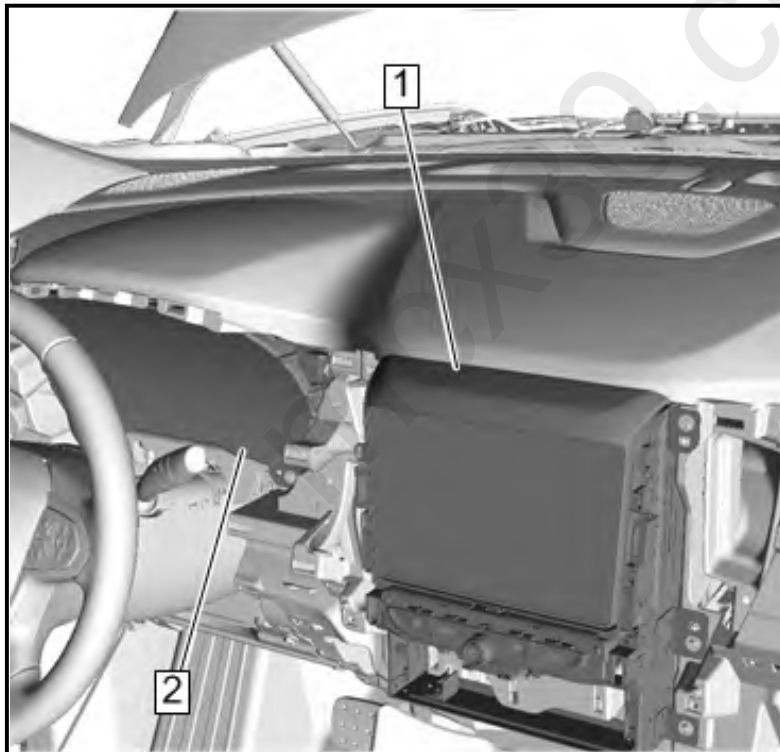
12.



Connect the electrical connectors.

13. Front Floor Console (1) - Install - [Front Floor Console Replacement](#)

14.



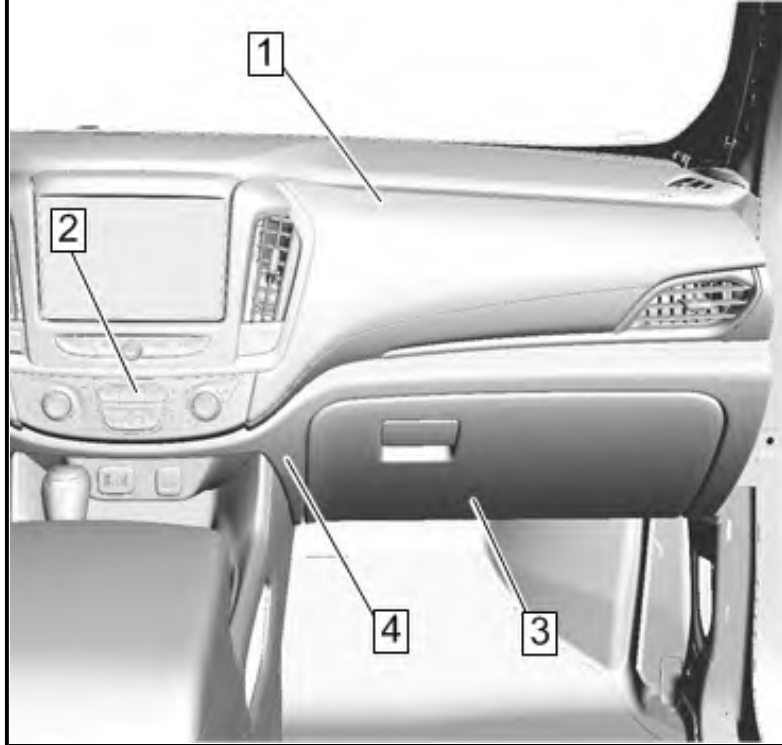
Connect the electrical connectors.

15. Instrument Cluster (2) - Install - [Instrument Cluster Replacement](#)

16. Radio Control (1) - Install - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

17.





Instrument Panel Compartment Door Opening Frame (4) - Install - [Instrument Panel Compartment Door Opening Frame Replacement](#)

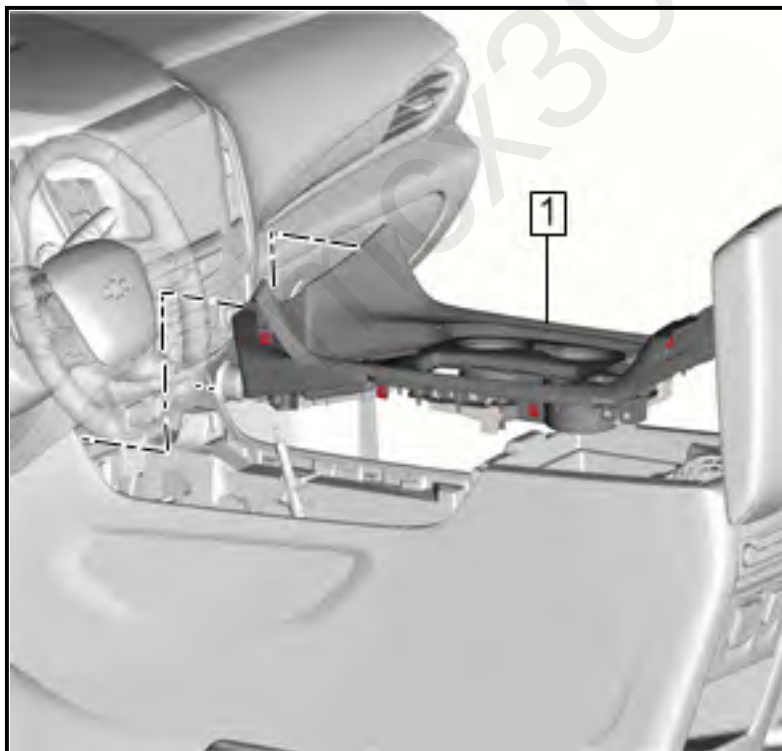
18. Instrument Panel Compartment Door (3) - Install - [Instrument Panel Compartment Door Replacement](#)

19. Connect the electrical connectors.

20. Heater and Air Conditioning User Interface Control (2) - Install - [Heater and Air Conditioning User Interface Control Replacement](#)

21. Instrument Panel Trim Pad - Right Side (1) - Install - [Instrument Panel Trim Pad Replacement - Right Side](#)

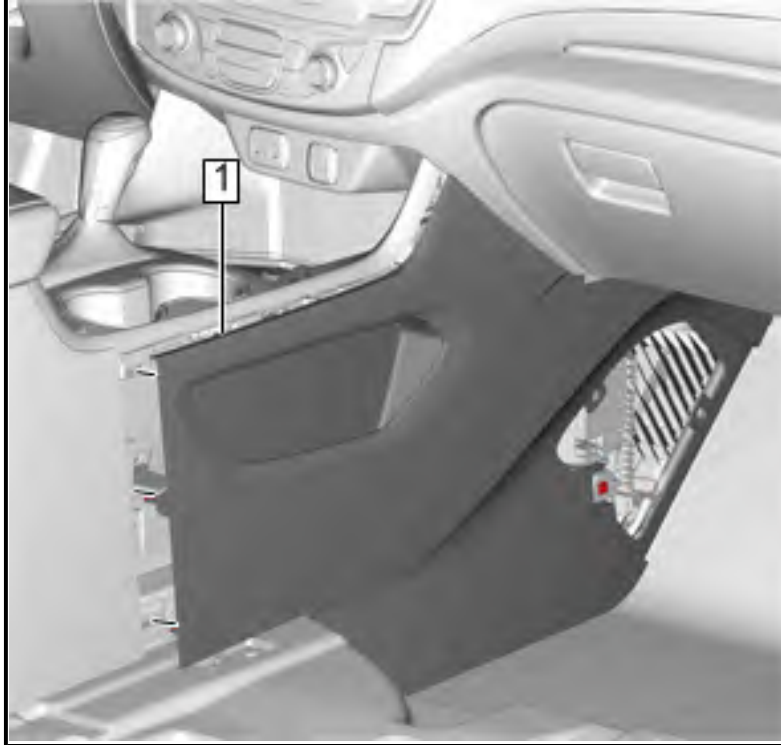
22.



Front Floor Console Cup Holder Plate (1) - Install - [Front Floor Console Cup Holder Plate Replacement](#)

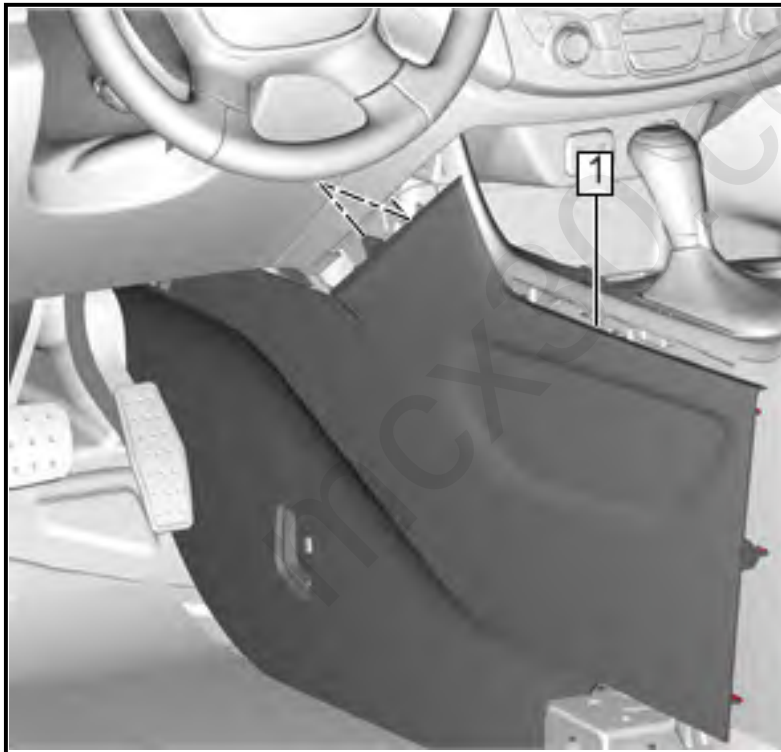
23.





Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

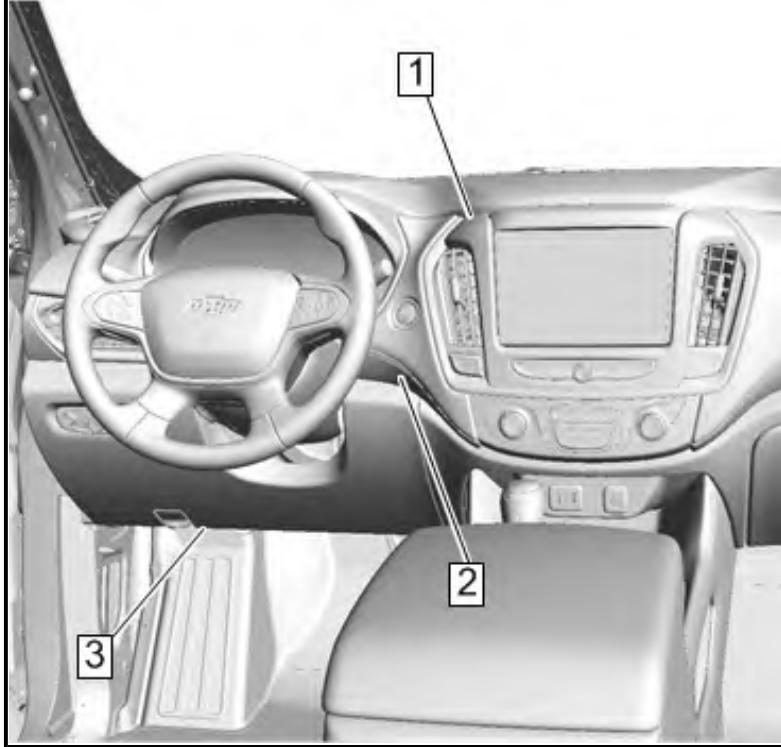
24.



Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

25.



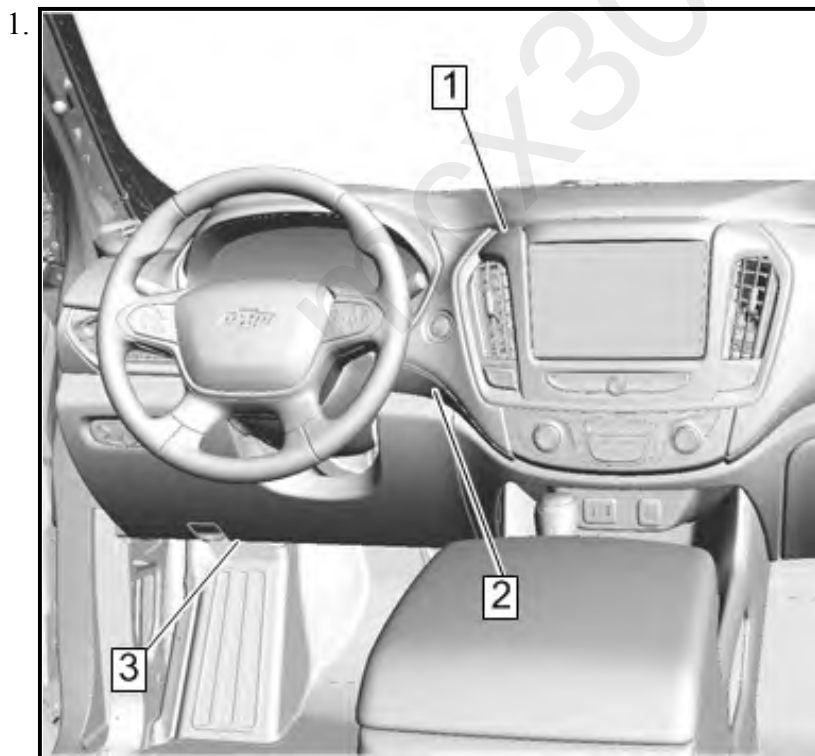


Instrument Panel Trim Pad - Left Side (2) - Install - [Instrument Panel Trim Pad Replacement - Left Side](#)

26. Instrument Panel Radio Front Trim Plate (1) - Install - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)
27. Instrument Panel Knee Bolster (3) - Install - [Instrument Panel Knee Bolster Replacement](#)

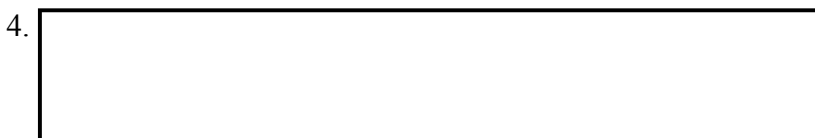
INSTRUMENT PANEL AIR OUTLET DUCT REPLACEMENT

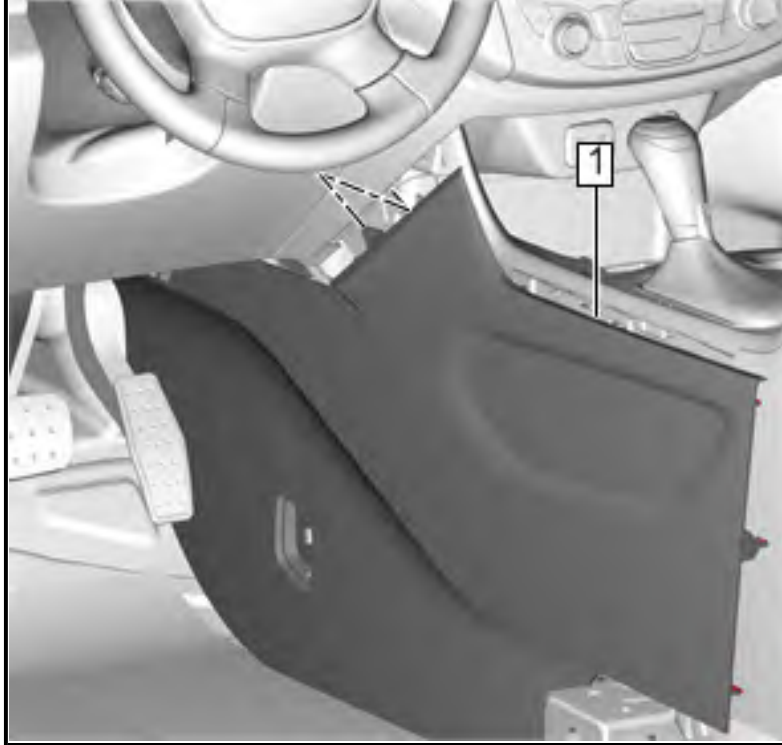
Removal Procedure



Instrument Panel Radio Front Trim Plate (1) - Remove - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)

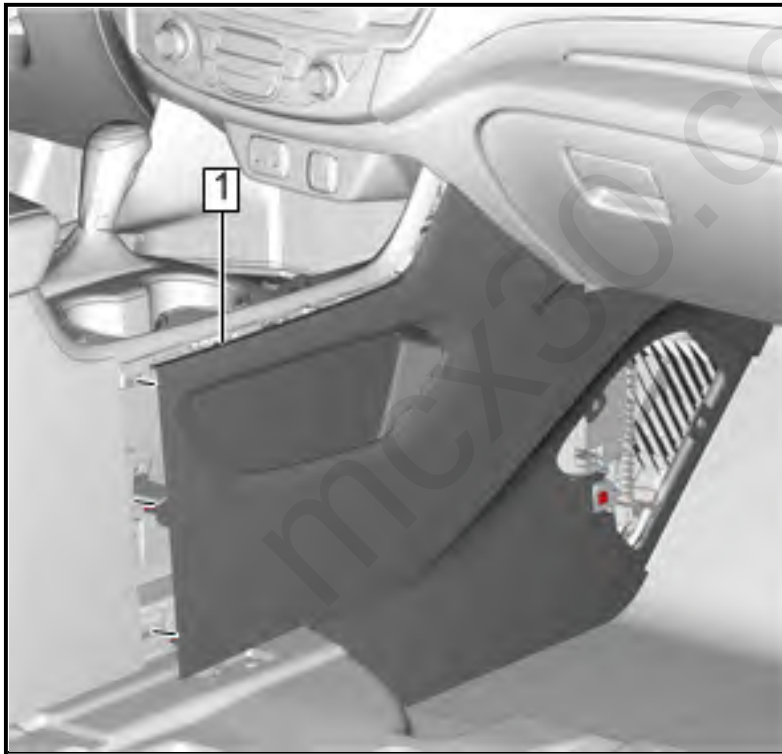
2. Instrument Panel Trim Pad - Left Side (2) - Remove - [Instrument Panel Trim Pad Replacement - Left Side](#)
3. Instrument Panel Knee Bolster (3) - Remove - [Instrument Panel Knee Bolster Replacement](#)





Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)

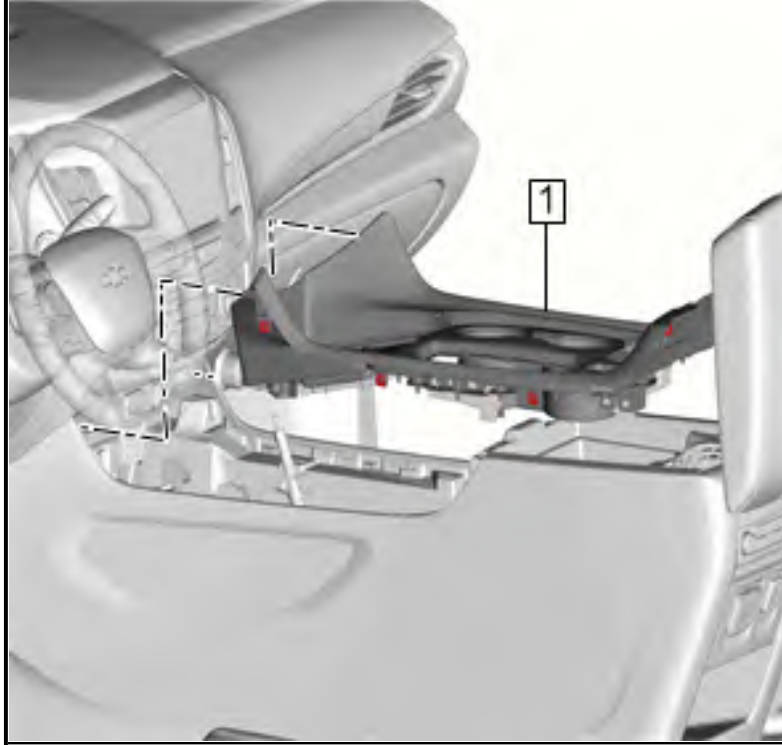
5.



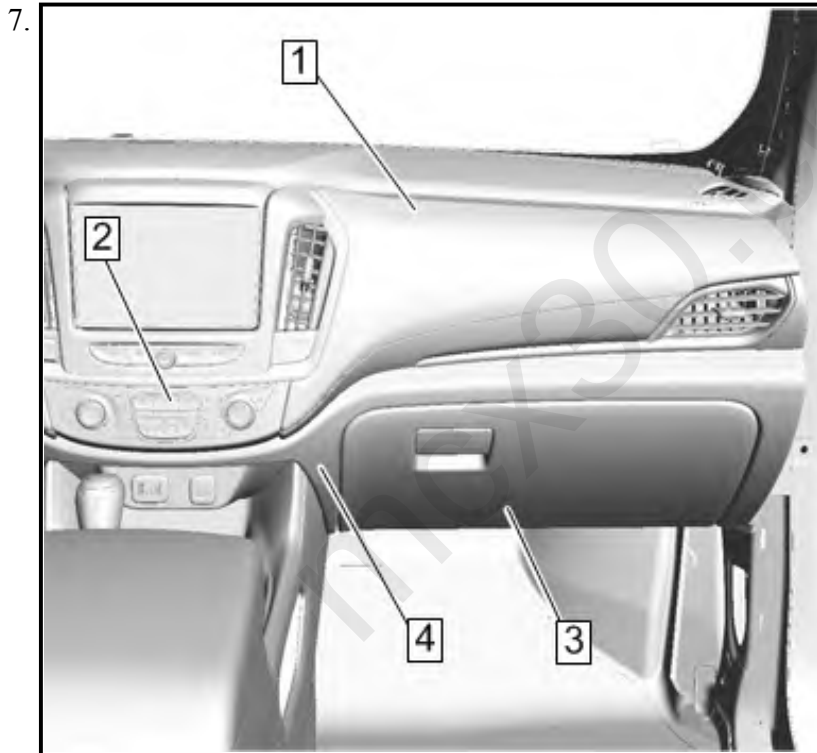
Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

6.





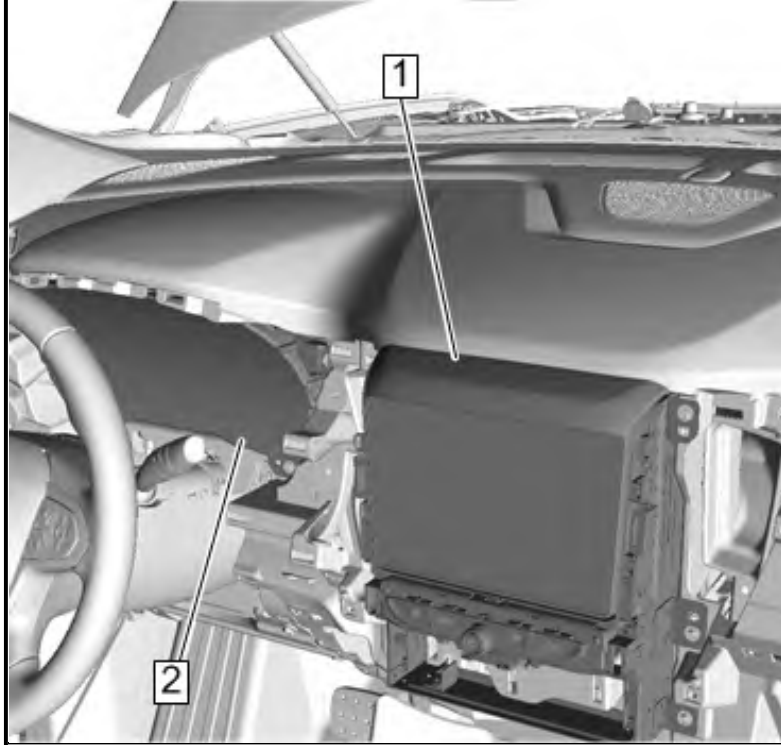
Front Floor Console Cup Holder Plate (1) - Remove - [Front Floor Console Cup Holder Plate Replacement](#)



Instrument Panel Trim Pad - Right Side (1) - Remove - [Instrument Panel Trim Pad Replacement - Right Side](#)

8. Heater and Air Conditioning User Interface Control (2) - Remove - [Heater and Air Conditioning User Interface Control Replacement](#)
9. Disconnect all electrical connectors.
10. Instrument Panel Compartment Door (3) - Remove - [Instrument Panel Compartment Door Replacement](#)
11. Instrument Panel Compartment Door Opening Frame (4) - Remove - [Instrument Panel Compartment Door Opening Frame Replacement](#)



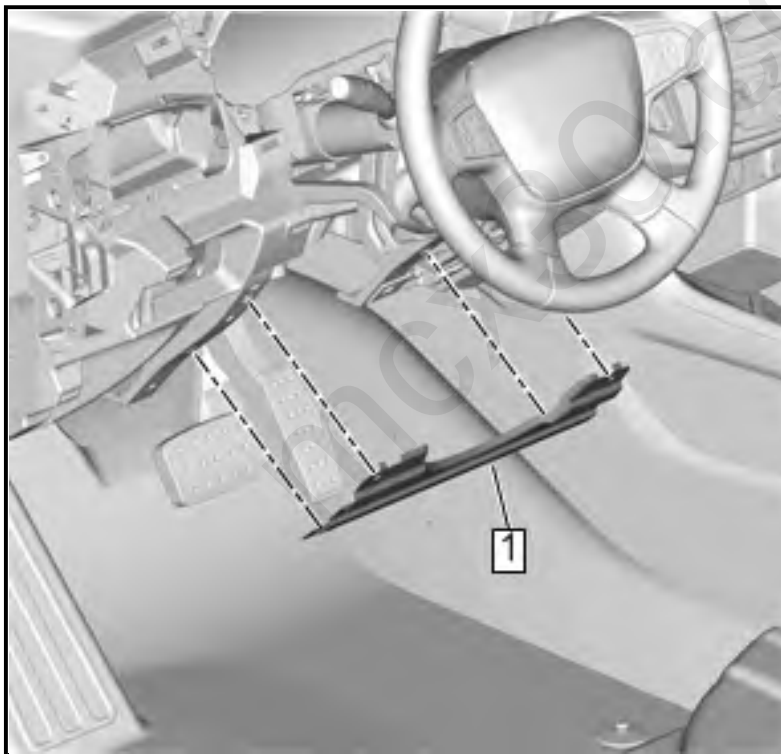


Radio Control (1) - Remove - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

13. Instrument Cluster (2) - Remove - [Instrument Cluster Replacement](#)

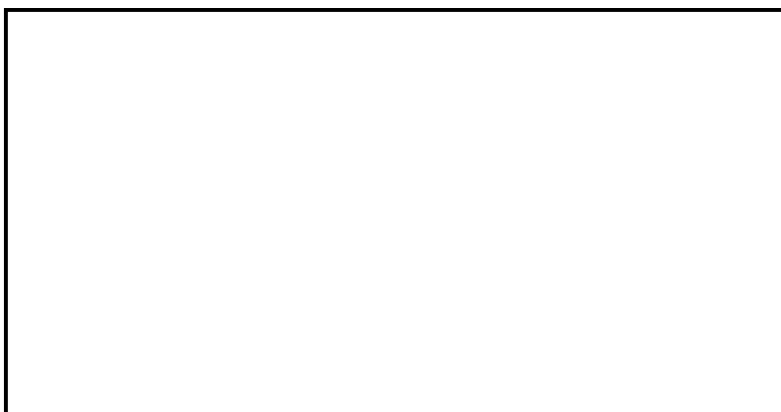
14. Disconnect the electrical connectors.

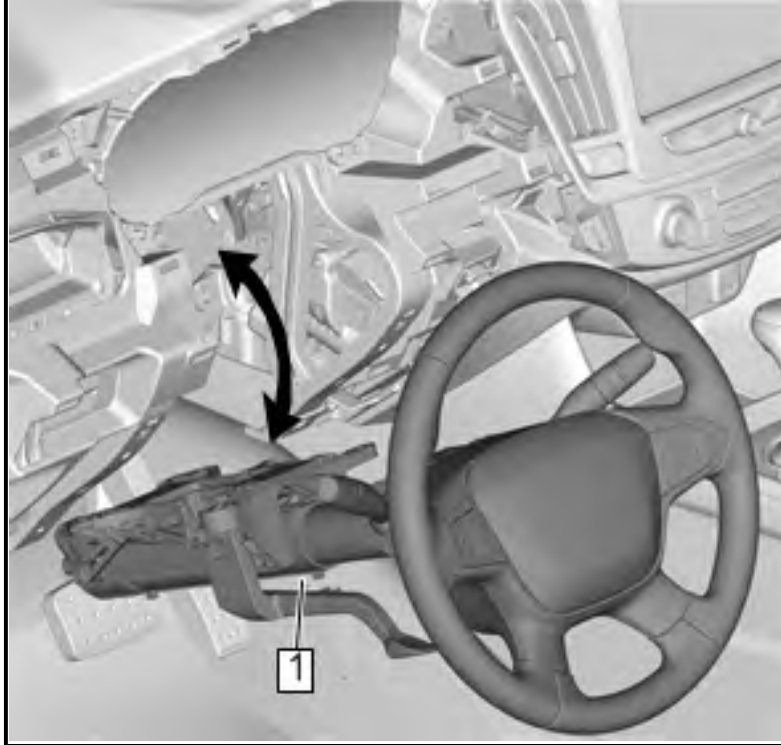
15.



Instrument Panel Knee Bolster Bracket (1) - Remove - [Instrument Panel Knee Bolster Bracket Replacement](#)

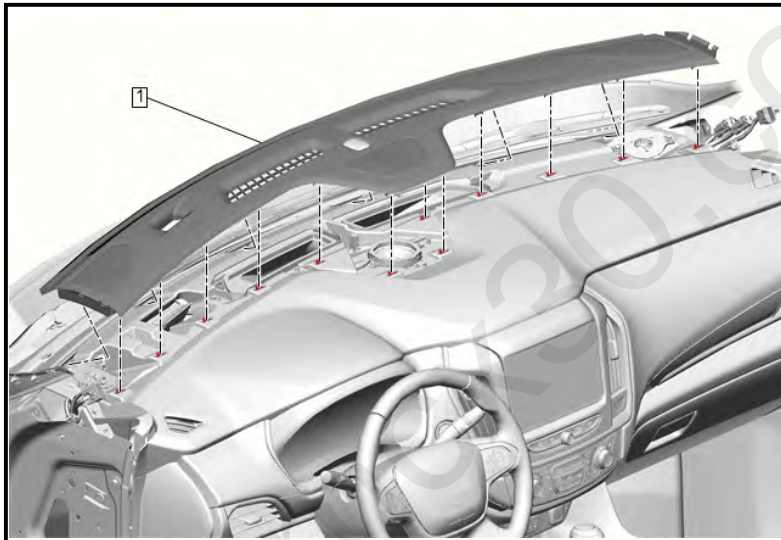
16.





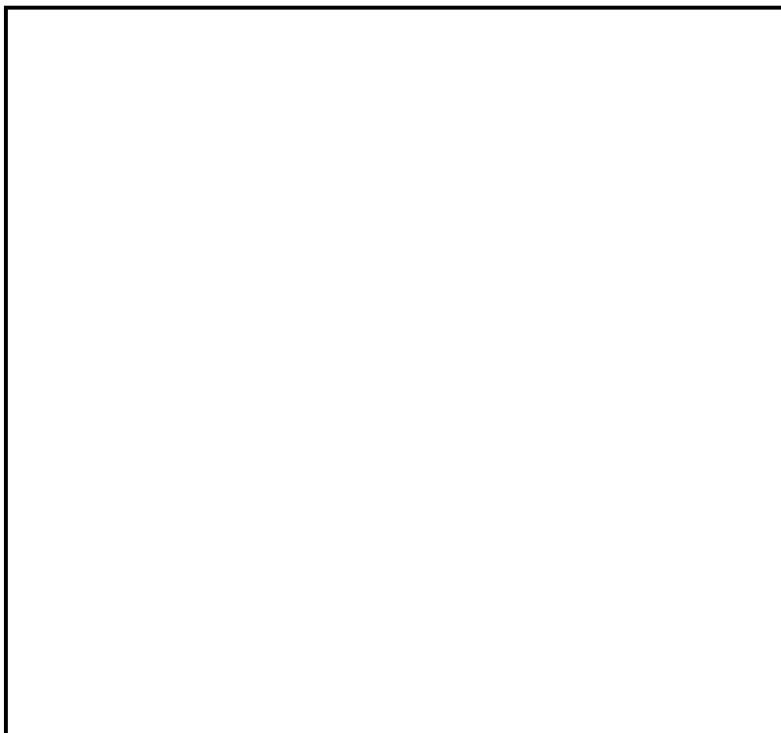
Steering Column (1) - Remove - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

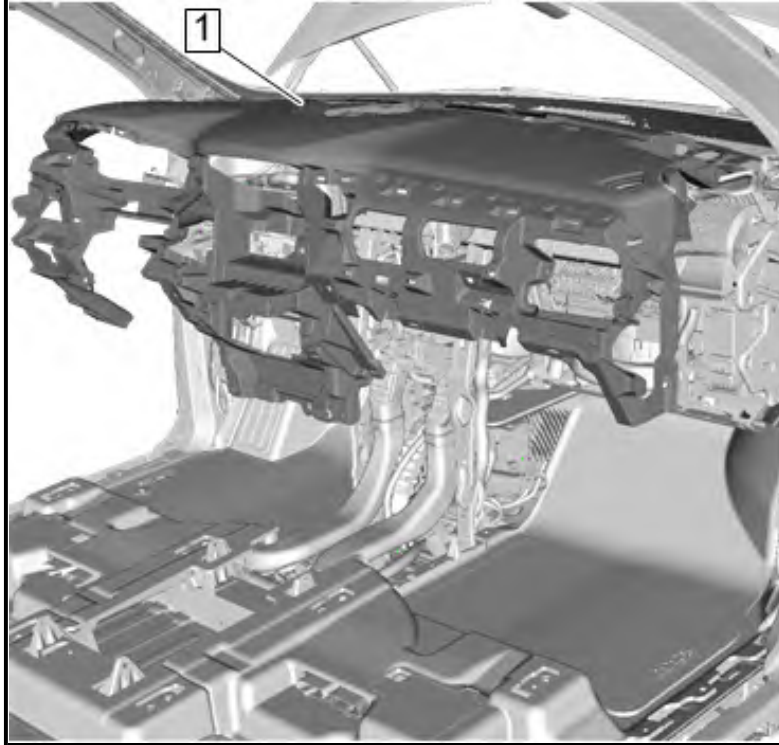
17.



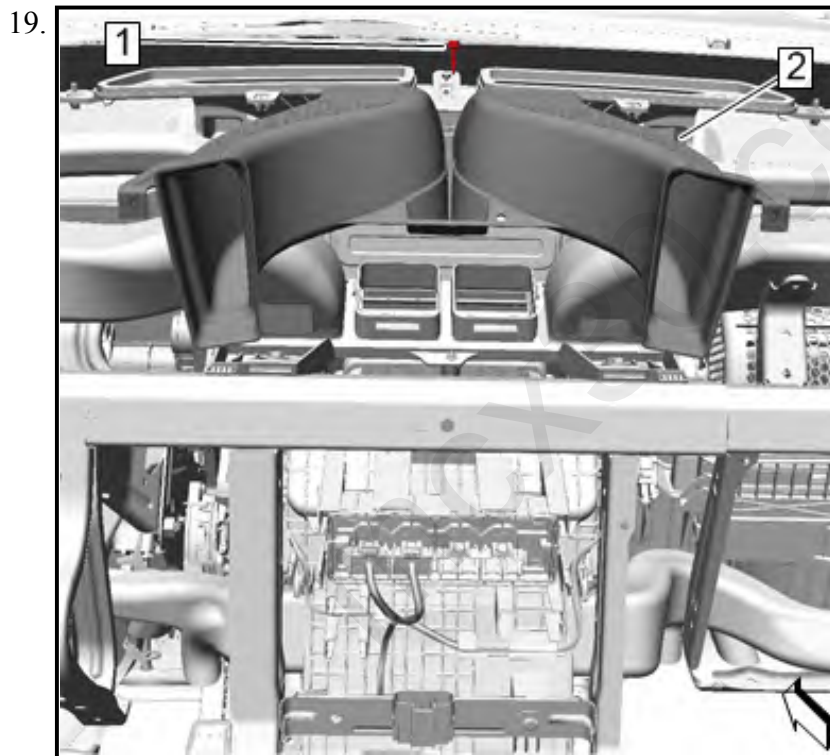
Instrument Panel Extension (1) - Remove - [Instrument Panel Extension Replacement](#)

18.





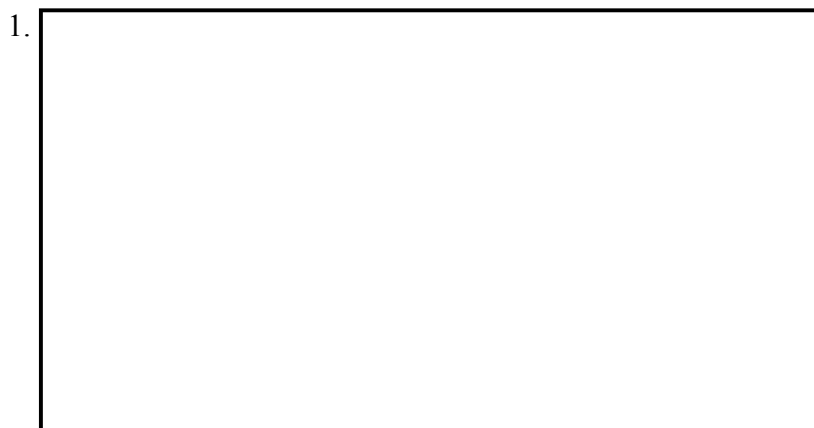
Instrument Panel (1) - Remove - [Instrument Panel Assembly Replacement](#)

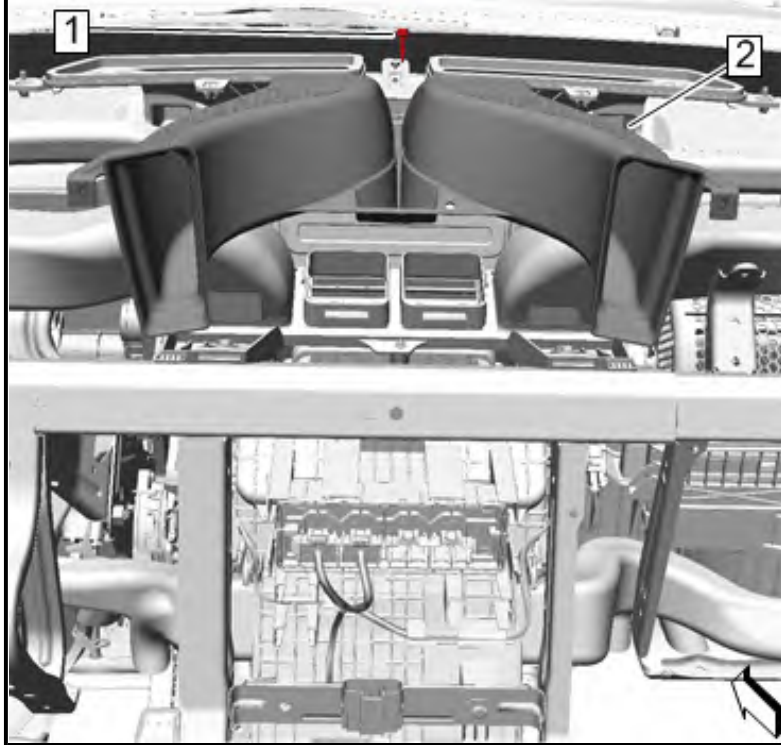


Instrument Panel Outer Air Outlet Duct Bolt (1) - Remove

20. Instrument Panel Outer Air Outlet Duct (2) - Remove

Installation Procedure

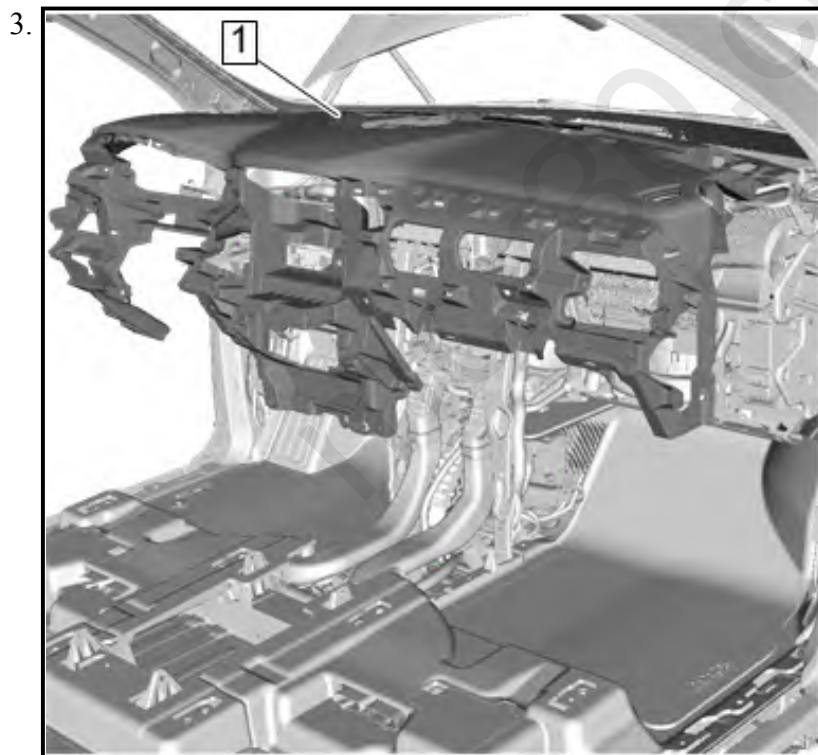




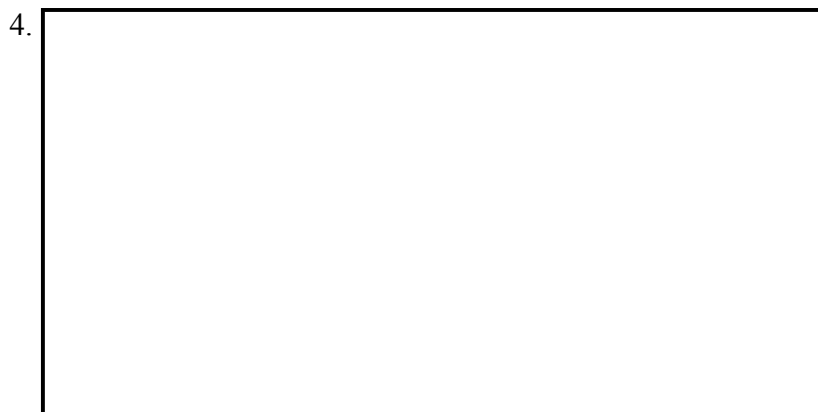
Instrument Panel Outer Air Outlet Duct (2) - Install

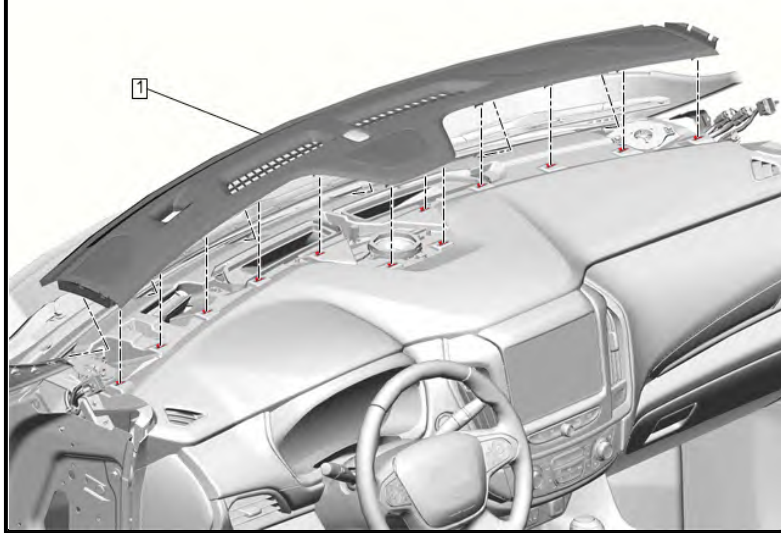
CAUTION: Refer to [Fastener Caution](#) .

2. Instrument Panel Outer Air Outlet Duct Bolt (1) - Install and tighten 2.5 N.m (22 lb in)



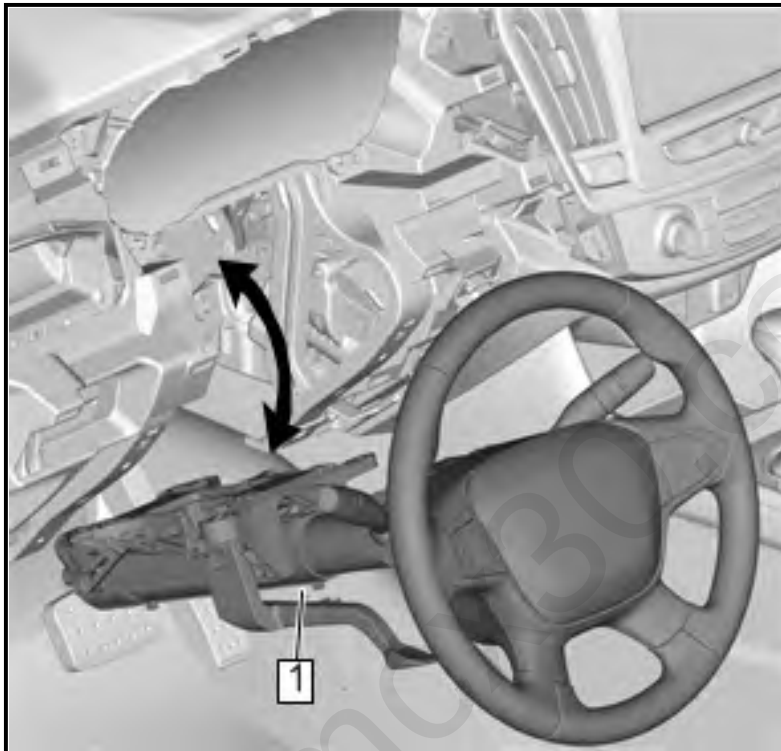
Instrument Panel (1) - Install - [Instrument Panel Assembly Replacement](#)





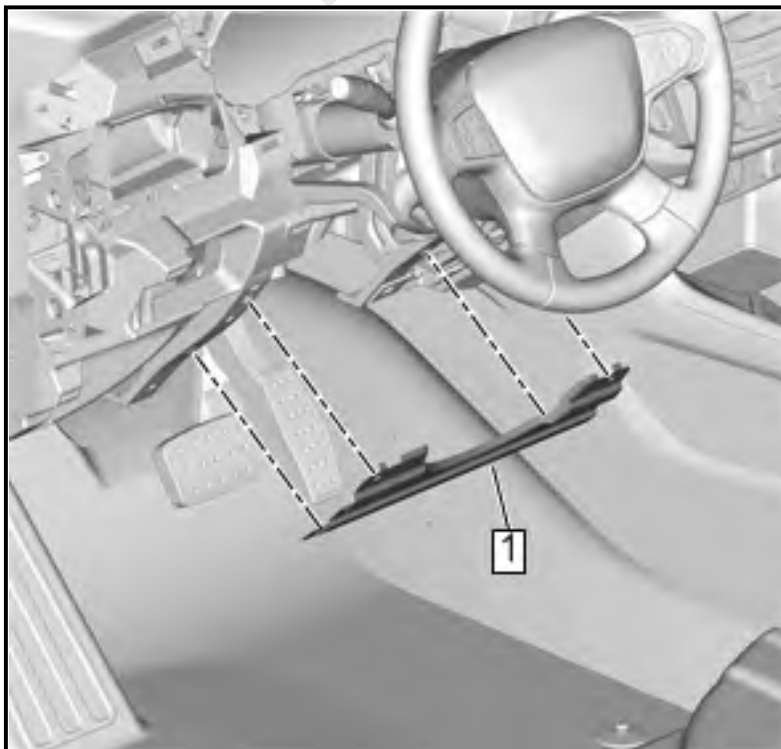
Instrument Panel Extension (1) - Install - [Instrument Panel Extension Replacement](#)

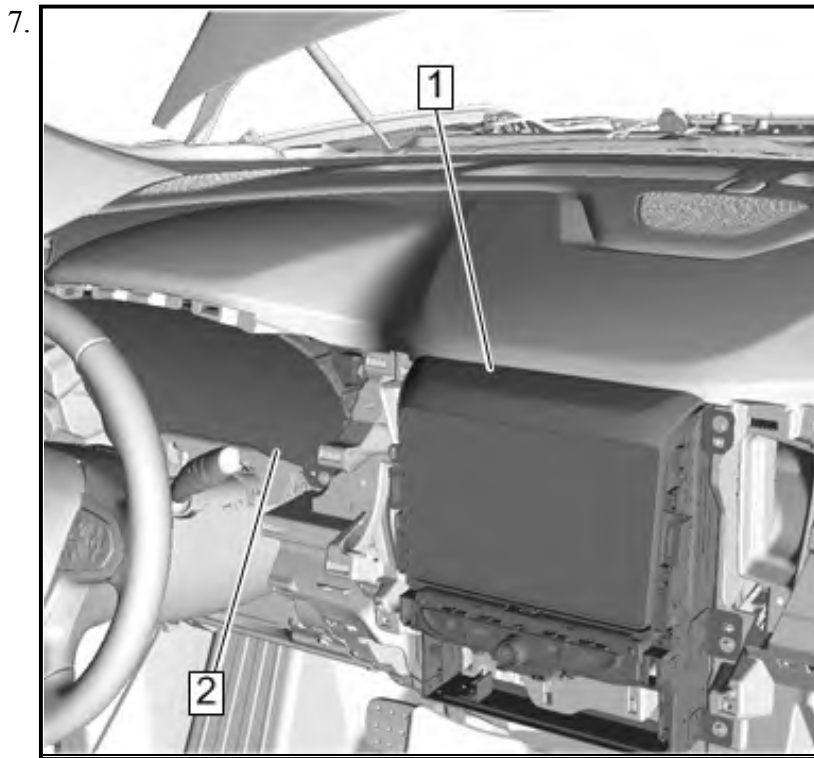
5.



Steering Column (1) - Install - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

6.

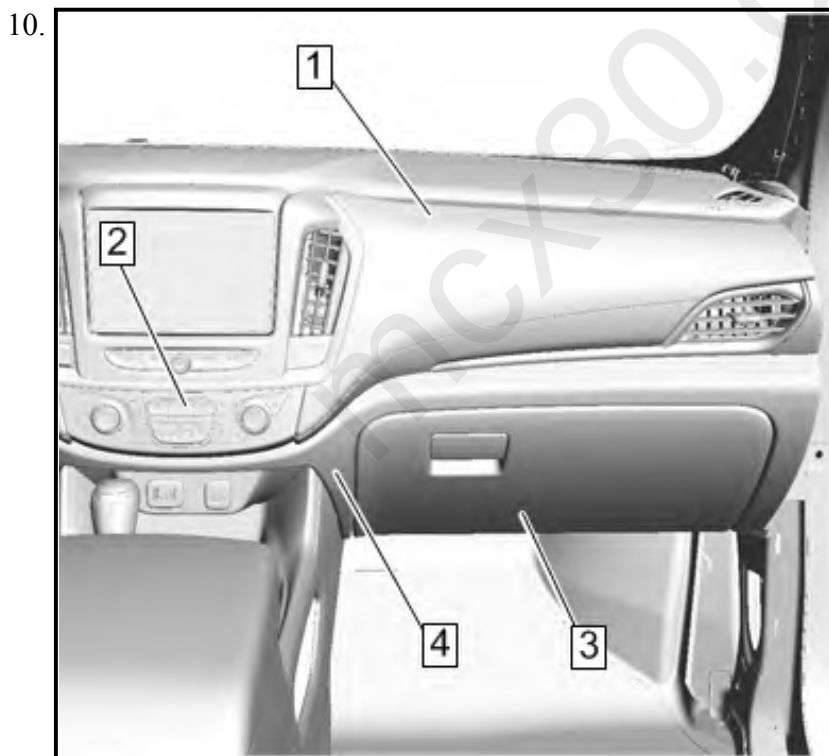




Connect the electrical connectors.

8. Instrument Cluster (2) - Install - [Instrument Cluster Replacement](#)

9. Radio Control (1) - Install - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)



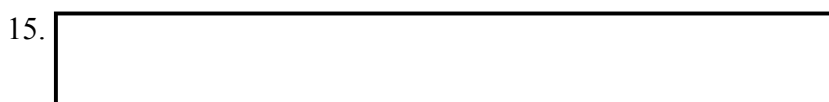
Instrument Panel Compartment Door Opening Frame (4) - Install - [Instrument Panel Compartment Door Opening Frame Replacement](#)

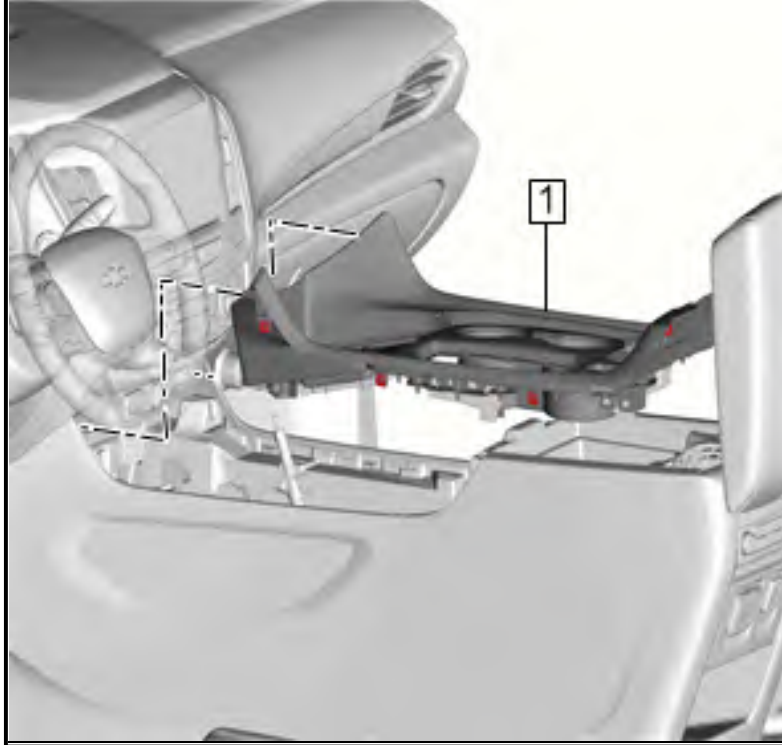
11. Instrument Panel Compartment Door (3) - Install - [Instrument Panel Compartment Door Replacement](#)

12. Connect the electrical connectors.

13. Heater and Air Conditioning User Interface Control (2) - Install - [Heater and Air Conditioning User Interface Control Replacement](#)

14. Instrument Panel Trim Pad - Right Side (1) - Install - [Instrument Panel Trim Pad Replacement - Right Side](#)





Front Floor Console Cup Holder Plate (1) - Install - [Front Floor Console Cup Holder Plate Replacement](#)

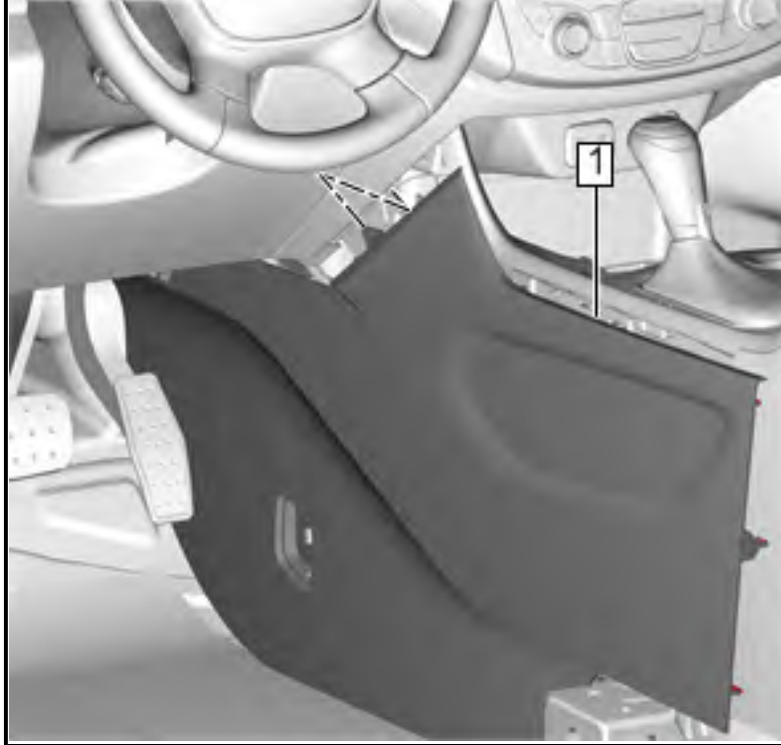
16.



Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

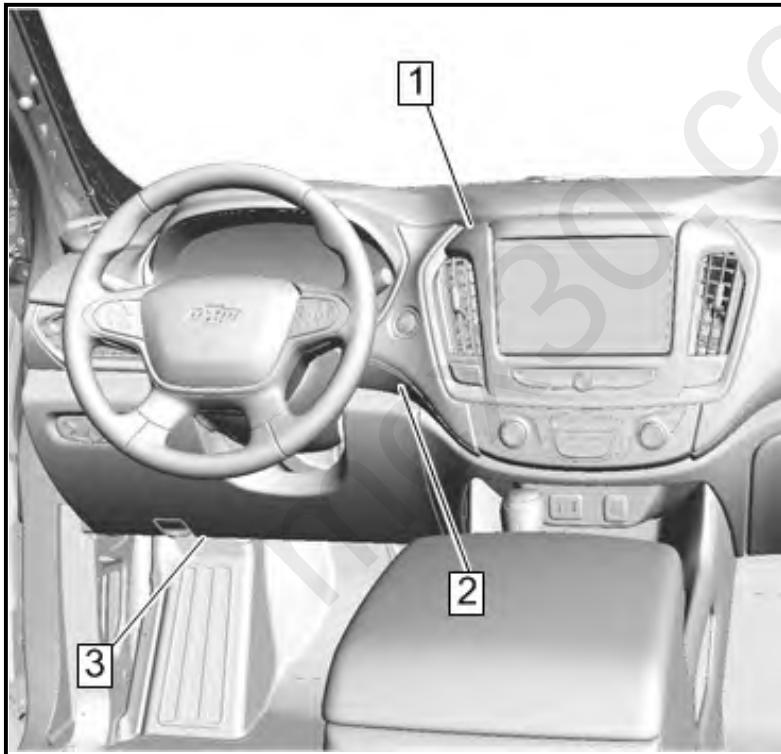
17.





Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

18.



Instrument Panel Trim Pad - Left Side (2) - Install - [Instrument Panel Trim Pad Replacement - Left Side](#)

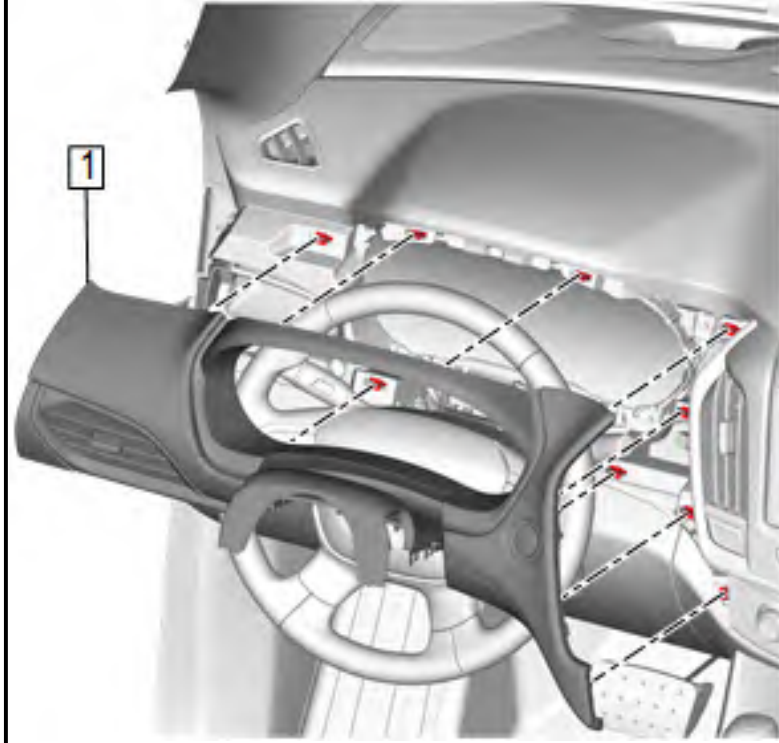
19. Instrument Panel Radio Front Trim Plate (1) - Install - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\) Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)
20. Instrument Panel Knee Bolster (3) - Install - [Instrument Panel Knee Bolster Replacement](#)

INSTRUMENT PANEL OUTER AIR OUTLET REPLACEMENT - LEFT SIDE

Removal Procedure

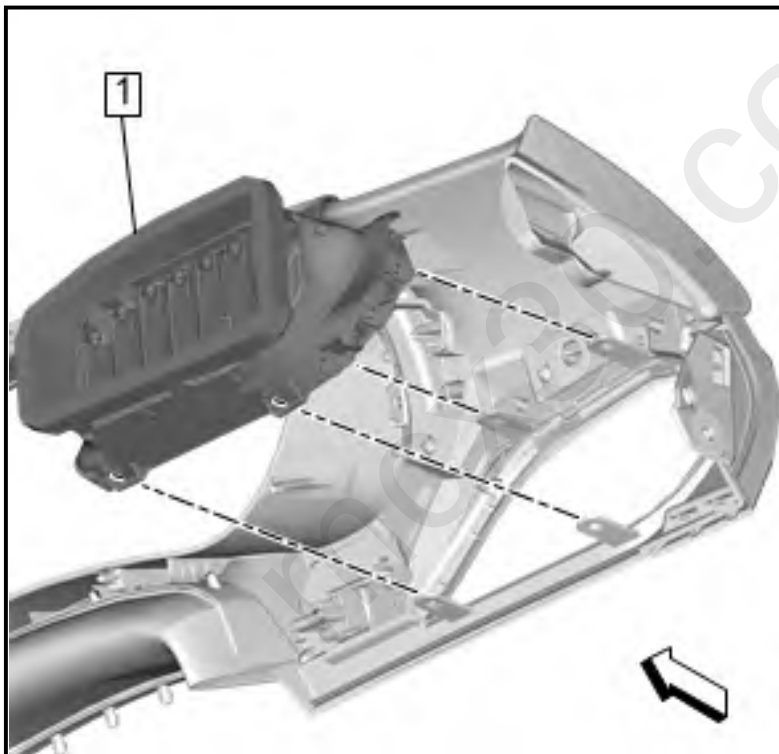
1.





Instrument Panel Trim Pad - Left Side (1) - Remove - [Instrument Panel Trim Pad Replacement - Left Side](#)

2.

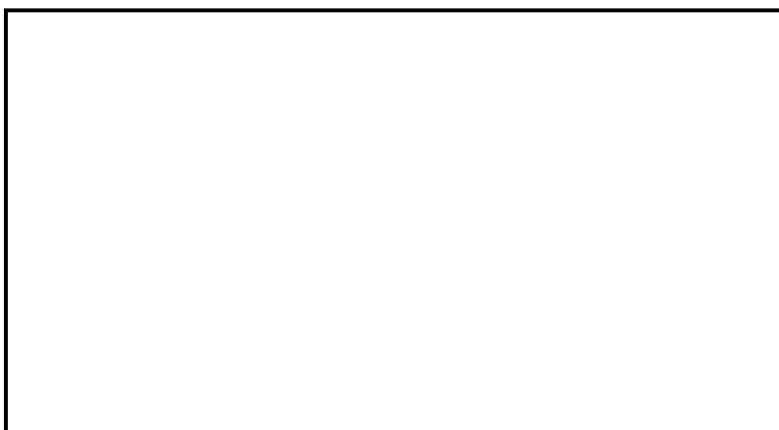


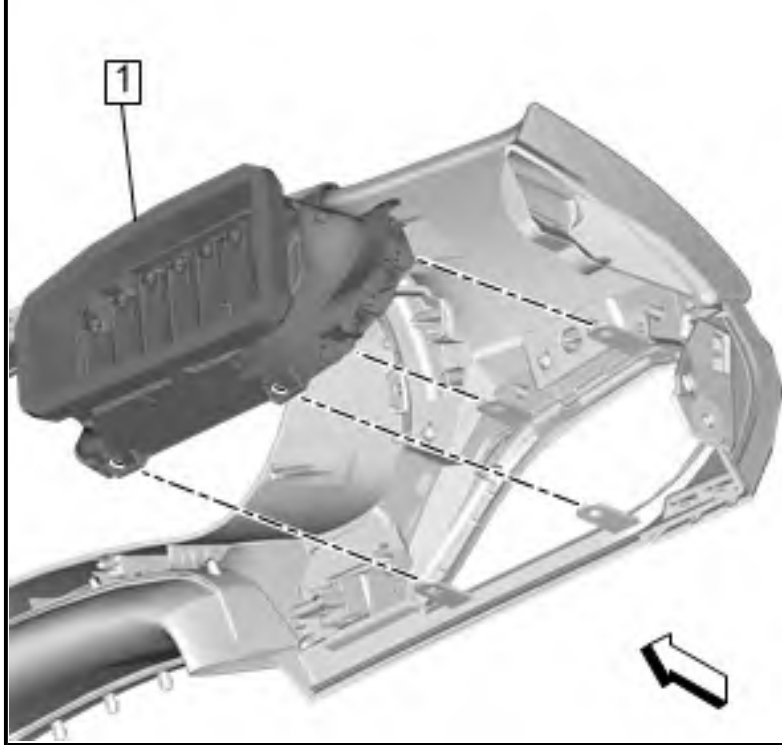
Instrument Panel Outer Air Outlet - Left Side (1) - Remove

3. Release the plastic retaining tabs.

Installation Procedure

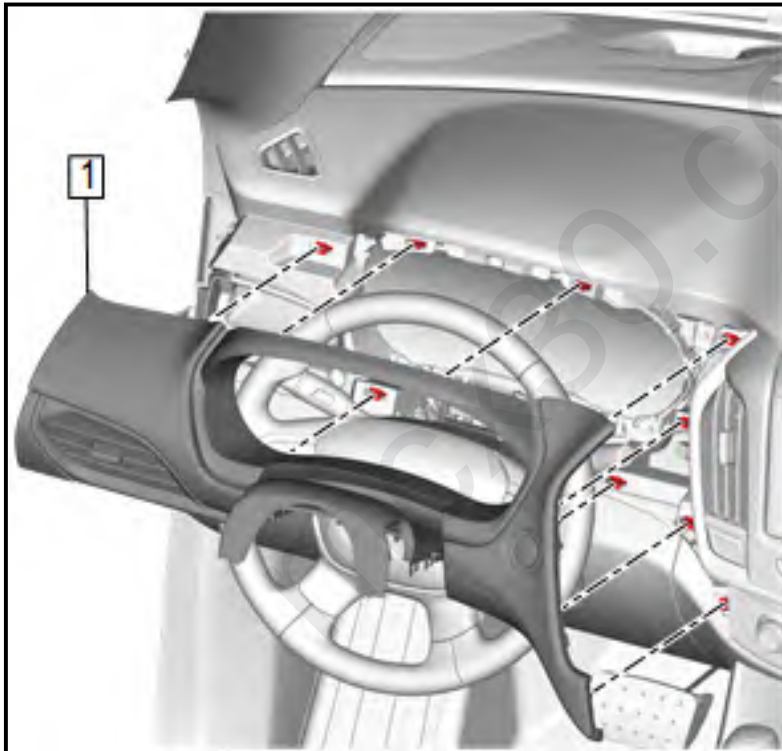
1.





Instrument Panel Outer Air Outlet - Left Side (1) - Install

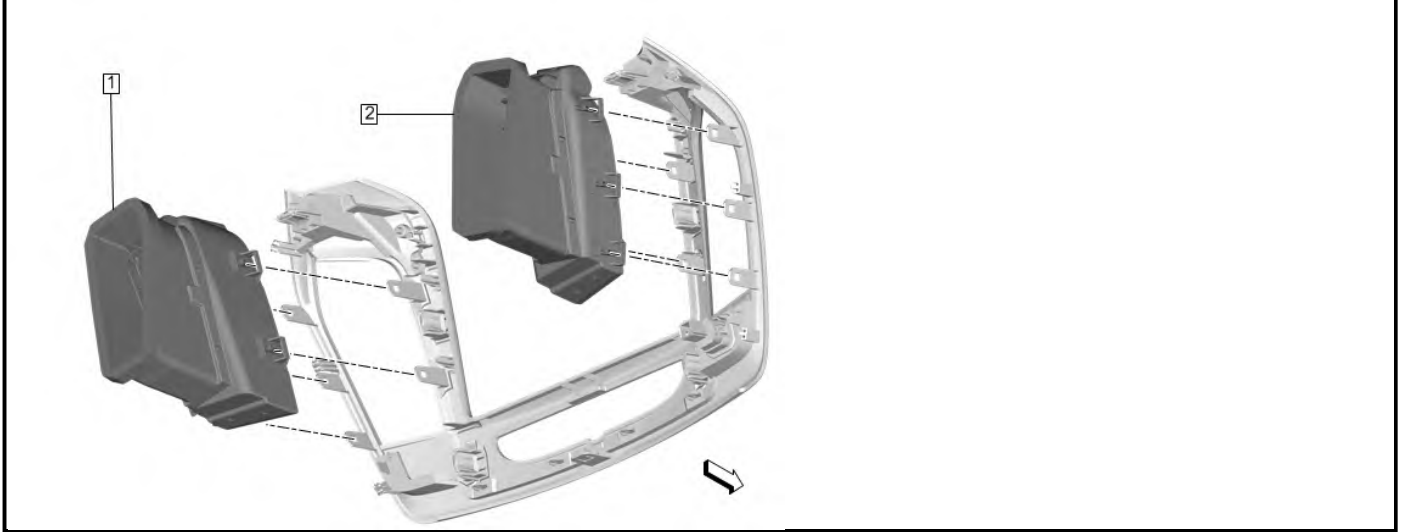
2.



Instrument Panel Trim Pad - Left Side (1) - Install - [Instrument Panel Trim Pad Replacement - Left Side](#)

INSTRUMENT PANEL CENTER AIR OUTLET REPLACEMENT



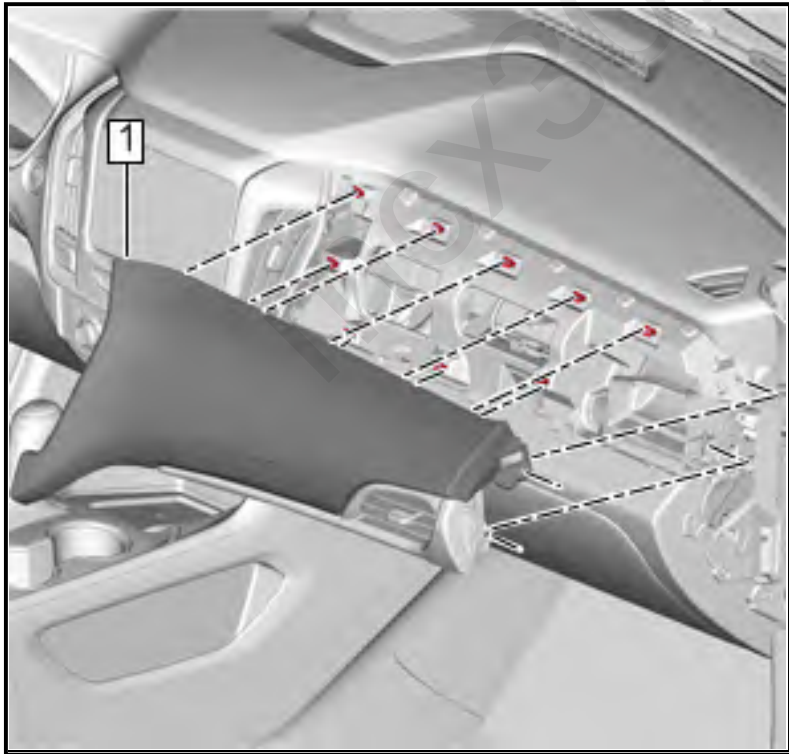


Callout	Component Name
Preliminary Procedure <u>Instrument Panel Radio Front Trim Plate Replacement (RPO IOA)</u> <u>Instrument Panel Radio Front Trim Plate Replacement (RPO IO5, IO6)</u>	
1	Instrument Panel Center Air Outlet - Right Side Procedure Release the retaining tabs.
2	Instrument Panel Center Air Outlet - Left Side Procedure Release the retaining tabs.

INSTRUMENT PANEL OUTER AIR OUTLET REPLACEMENT - RIGHT SIDE

Removal Procedure

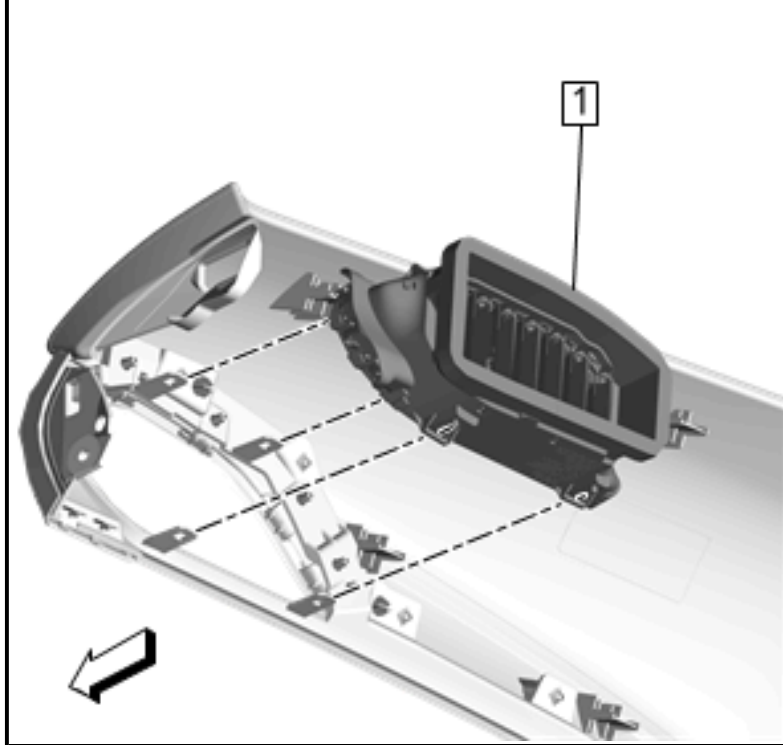
1.



Instrument Panel Trim Pad - Right Side (1) - Remove - Instrument Panel Trim Pad Replacement - Right Side

2.



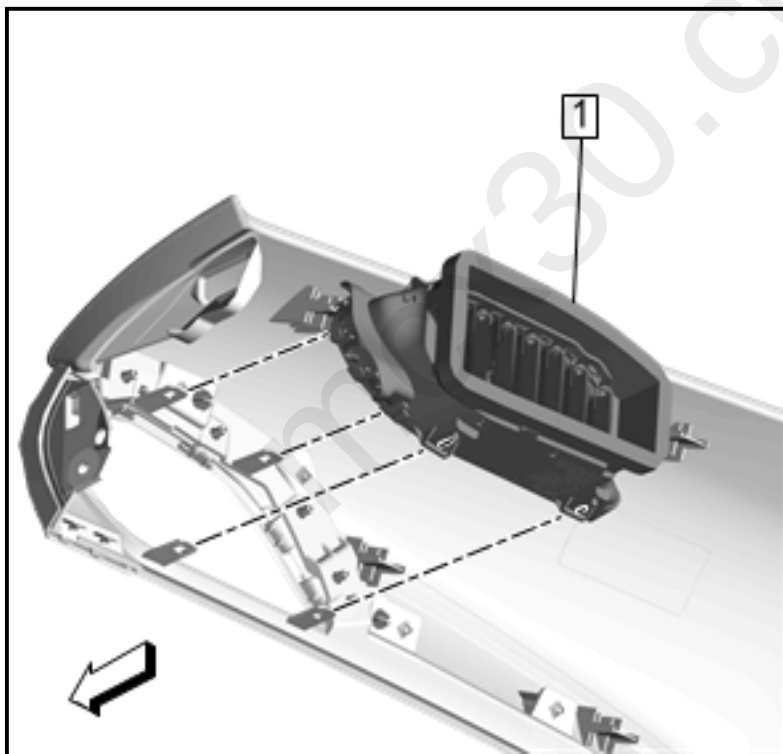


Instrument Panel Outer Air Outlet - Right Side (1) - Remove

3. Release the plastic retaining tabs.

Installation Procedure

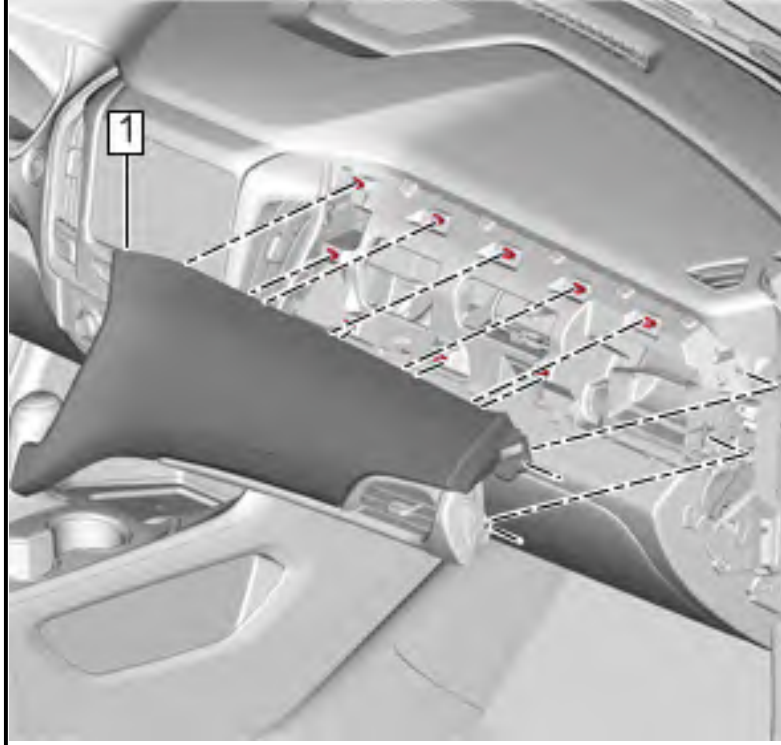
- 1.



Instrument Panel Outer Air Outlet - Right Side (1) - Install

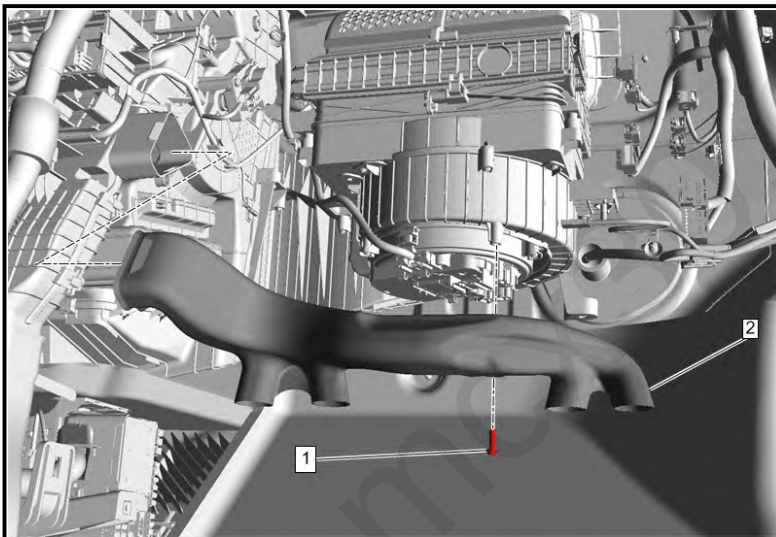
- 2.





Instrument Panel Trim Pad - Right Side (1) - Install - [Instrument Panel Trim Pad Replacement - Right Side](#)

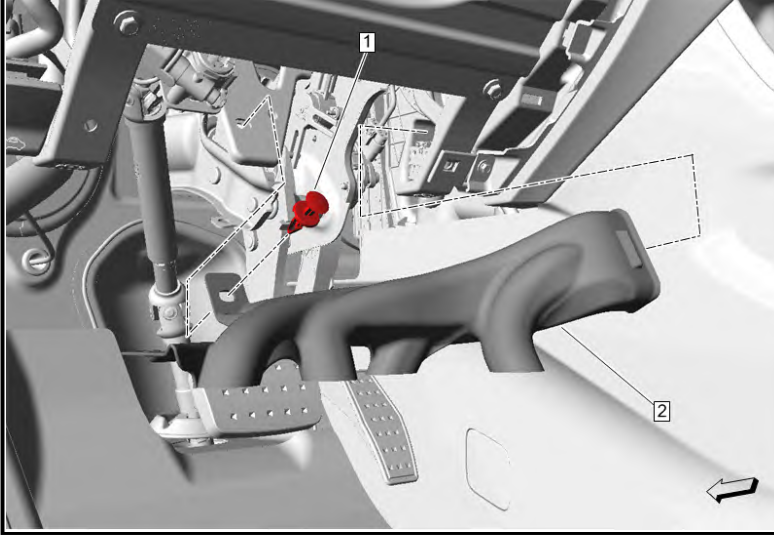
FLOOR FRONT AIR OUTLET DUCT REPLACEMENT - RIGHT SIDE



Call out	Component Name
Preliminary Procedure Instrument Panel Tie Bar Replacement	
1	Floor Front Air Outlet Duct Bolt CAUTION: Refer to Fastener Caution . Tighten 2.5 N.m (22 lb in)
2	Floor Front Air Outlet Duct - Right Side

FLOOR FRONT AIR OUTLET DUCT REPLACEMENT - LEFT SIDE

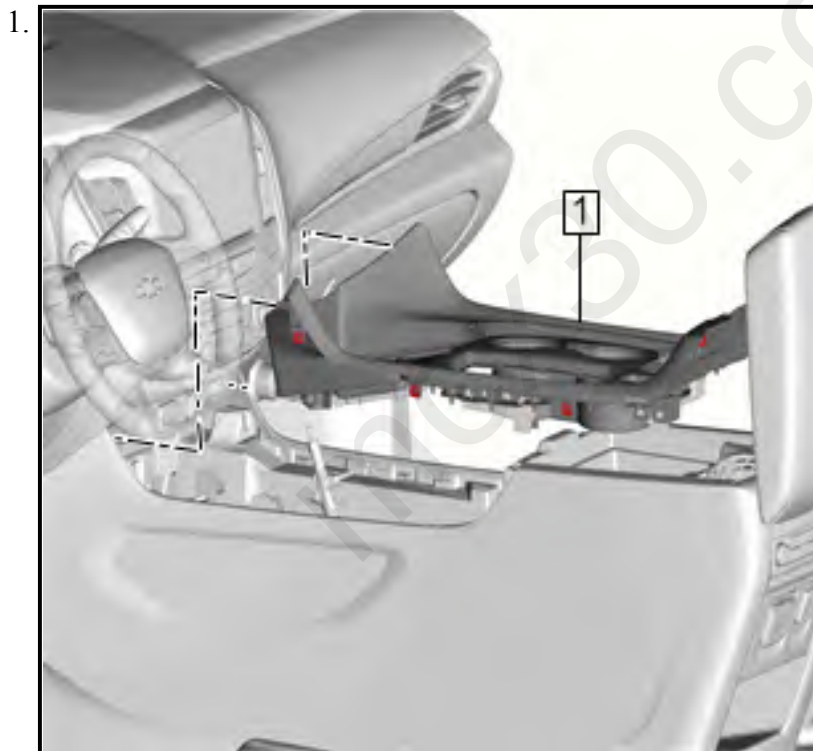




Callout	Component Name
Preliminary Procedure	
<u>Instrument Panel Knee Bolster Replacement</u>	
1	Push Pin
2	Floor Front Air Outlet Duct - Left Side

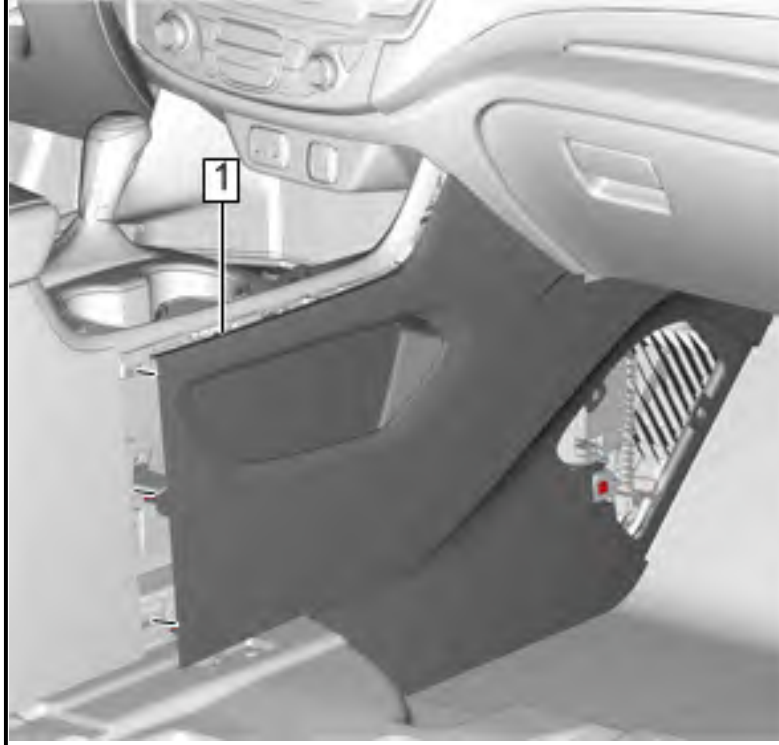
FRONT FLOOR CONSOLE AUXILIARY COOLING INTERMEDIATE DUCT REPLACEMENT

Removal Procedure



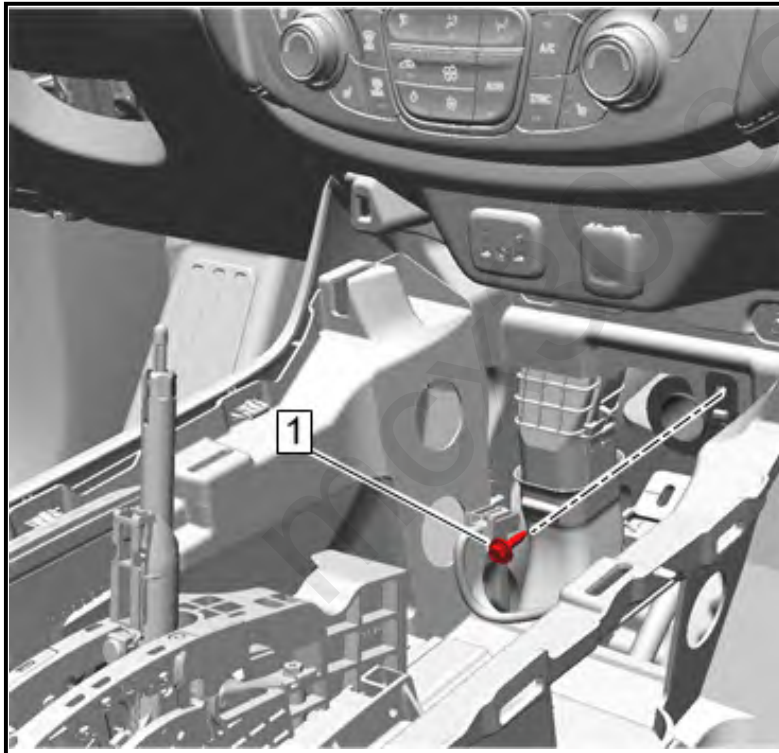
Front Floor Console Cup Holder Plate (1) - Remove - **Front Floor Console Cup Holder Plate Replacement**





Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

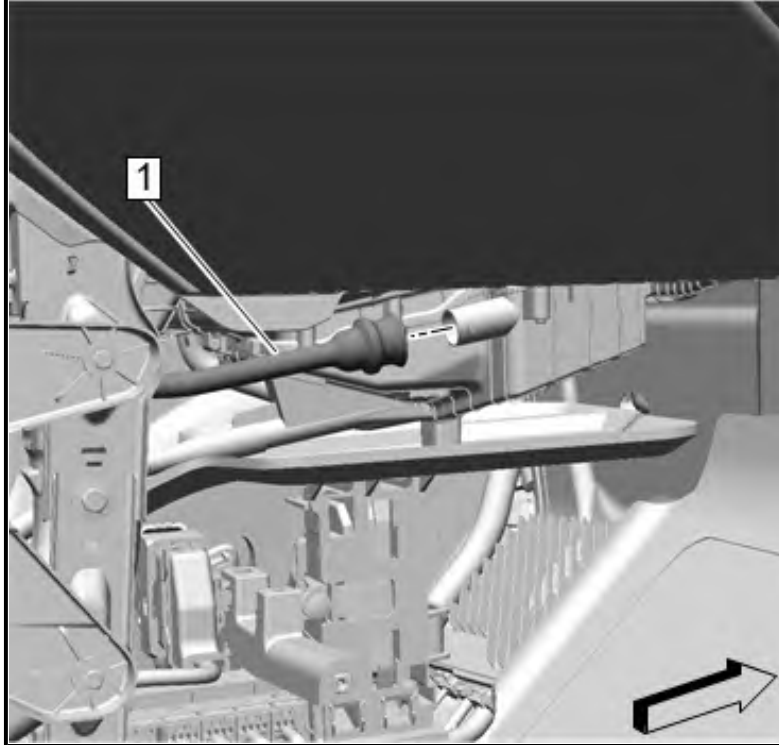
3.



Front Floor Console Auxiliary Cooling Intermediate Duct Bolt (1) - Remove

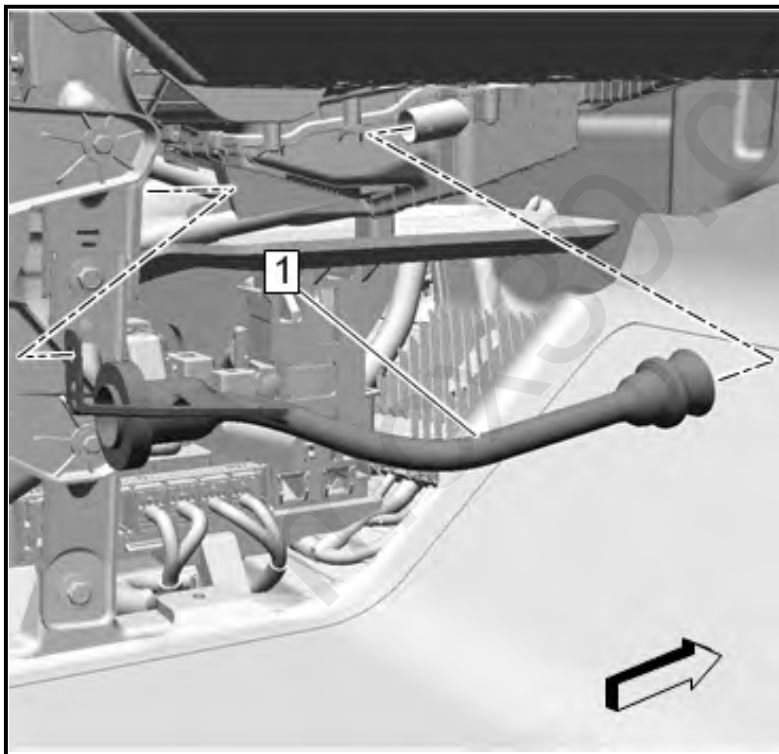
4.





Front Floor Console Auxiliary Cooling Intermediate Duct (1) @ Heater and Air Conditioning Evaporator and Blower Module - Remove

5.

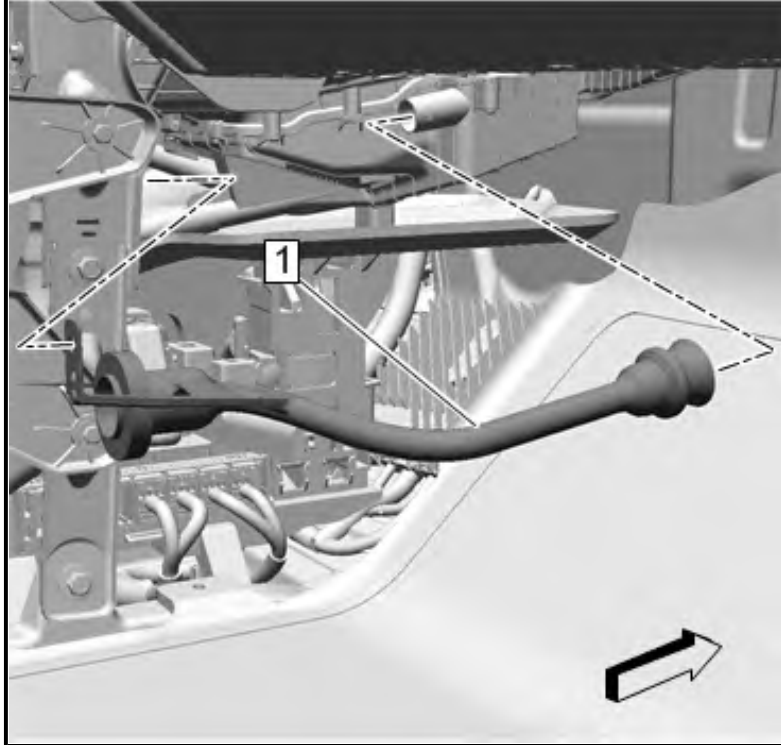


Front Floor Console Auxiliary Cooling Intermediate Duct (1) - Remove

Installation Procedure

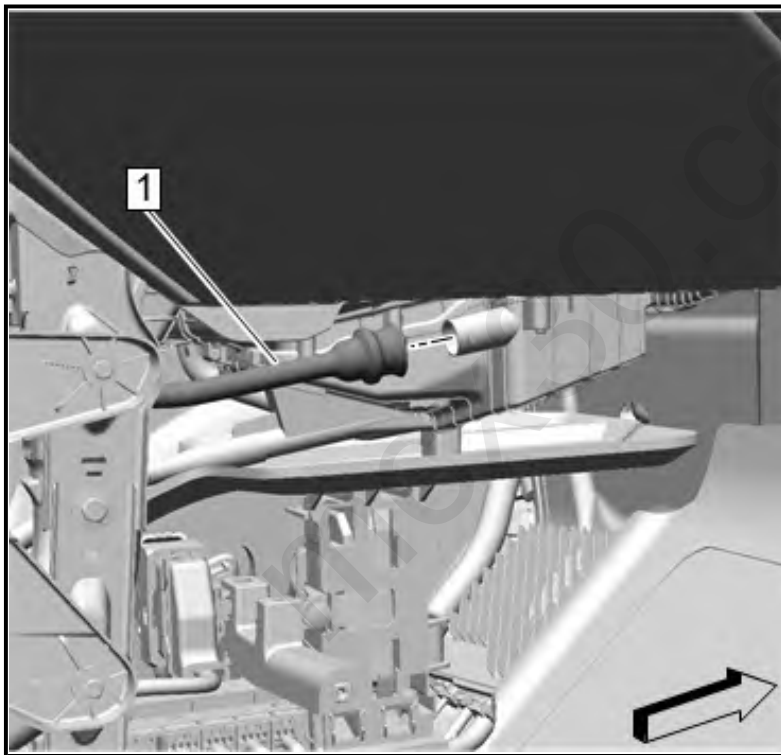
1.





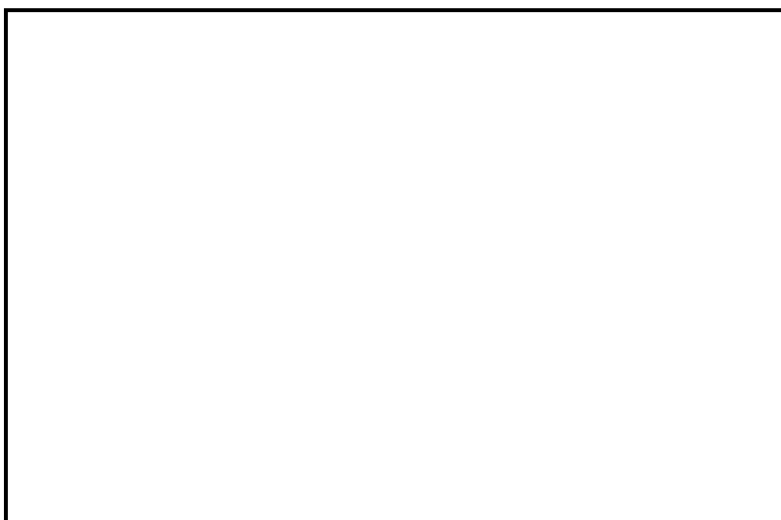
Front Floor Console Auxiliary Cooling Intermediate Duct (1) - Install

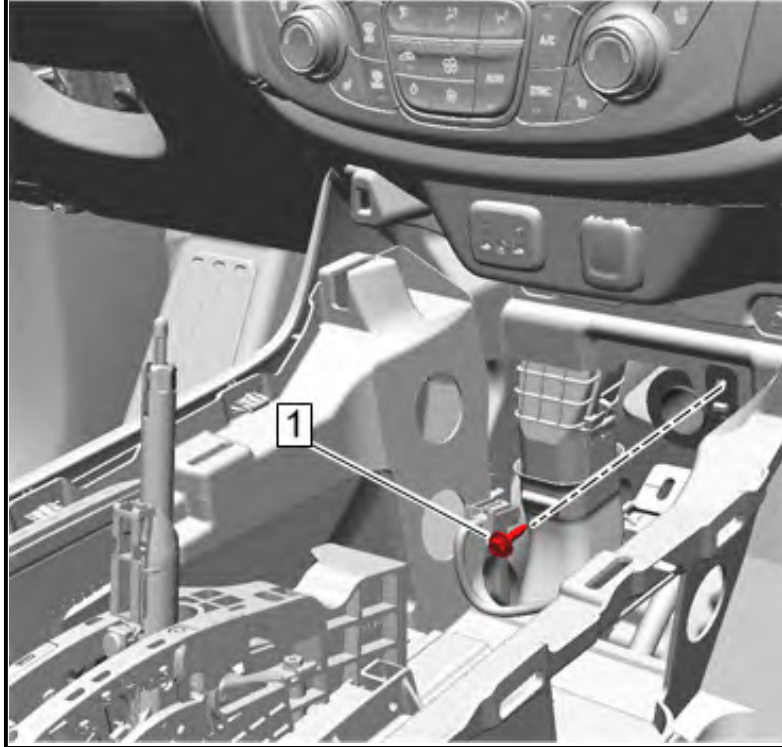
2.



Front Floor Console Auxiliary Cooling Intermediate Duct (1) @ Heater and Air Conditioning Evaporator and Blower Module - Install

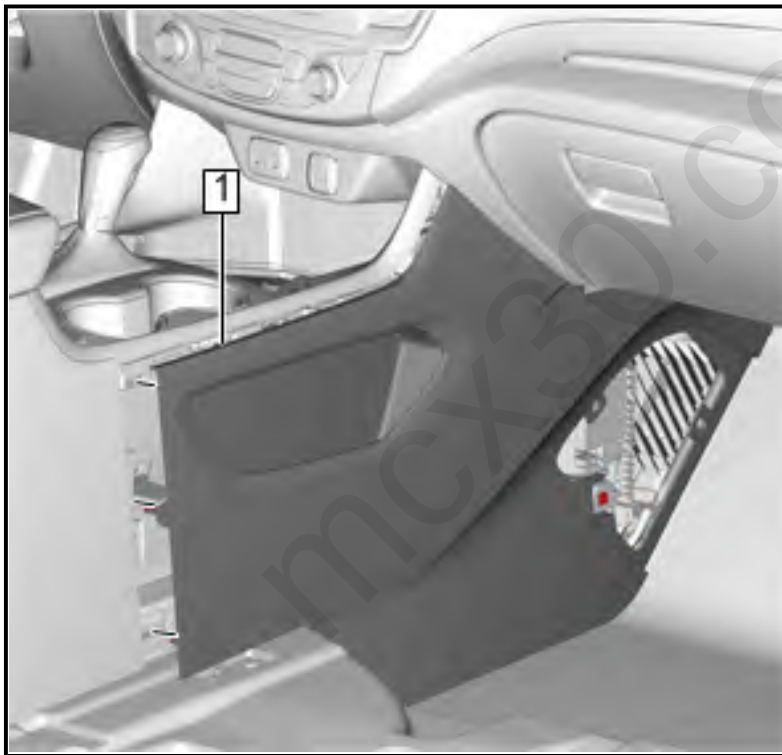
3.





Front Floor Console Auxiliary Cooling Intermediate Duct Bolt (1) - Install and tighten 2.5 N.m (22 lb in)

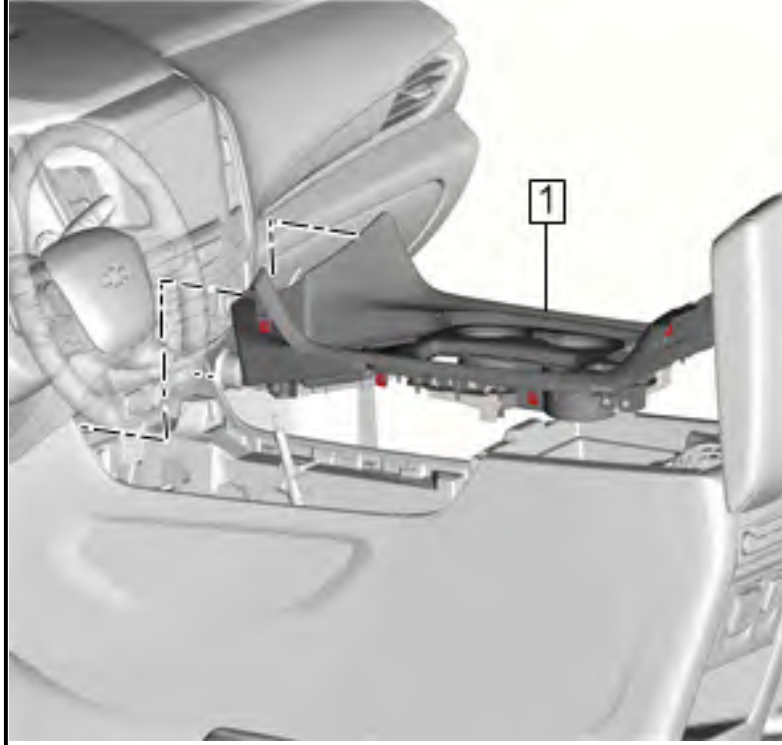
4.



Front Floor Console Extension Panel - Right Side (1) - Install - **Front Floor Console Extension Panel Replacement - Right Side**

5.



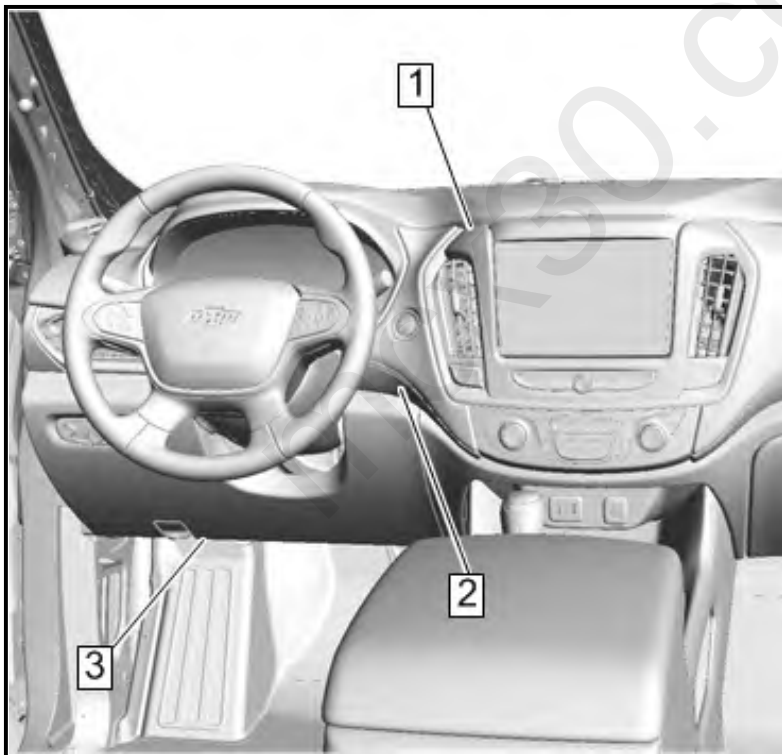


Front Floor Console Cup Holder Plate (1) - Install - [Front Floor Console Cup Holder Plate Replacement](#)

INSTRUMENT PANEL OUTER AIR OUTLET DUCT REPLACEMENT - LEFT SIDE

Removal Procedure

1.



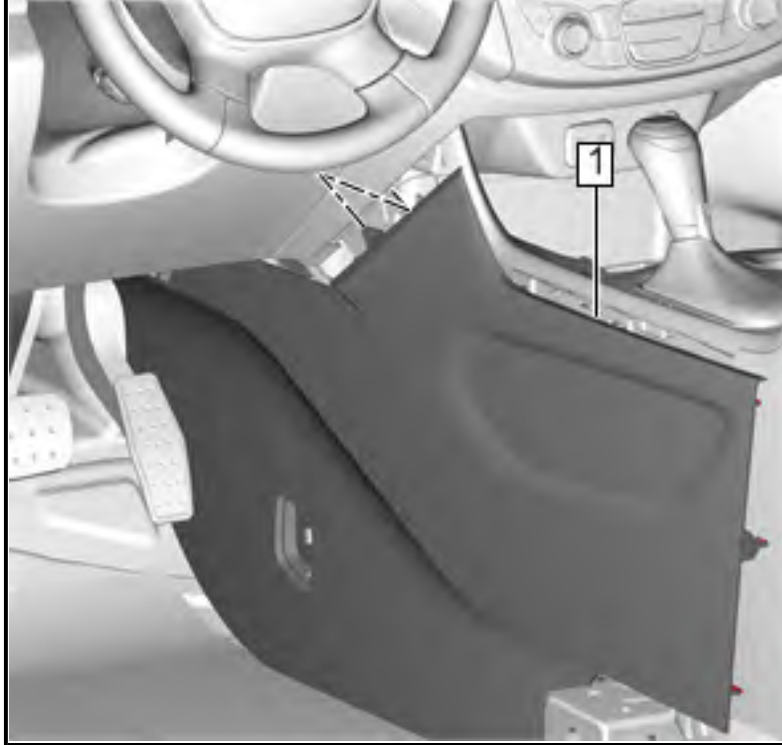
Instrument Panel Radio Front Trim Plate (1) - Remove - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)

2. Instrument Panel Trim Pad - Left Side (2) - Remove - [Instrument Panel Trim Pad Replacement - Left Side](#)

3. Instrument Panel Knee Bolster (3) - Remove - [Instrument Panel Knee Bolster Replacement](#)

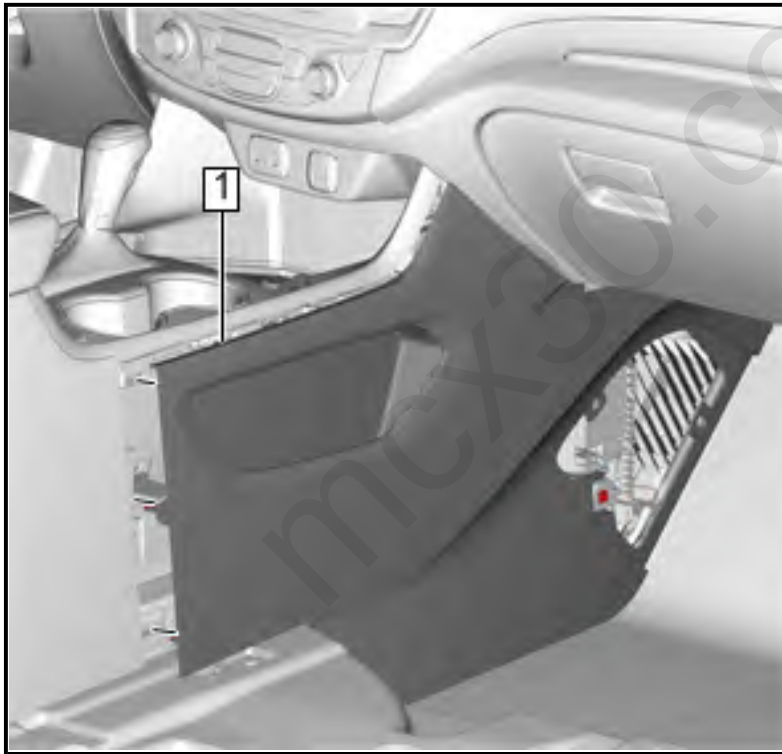
4.





Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)

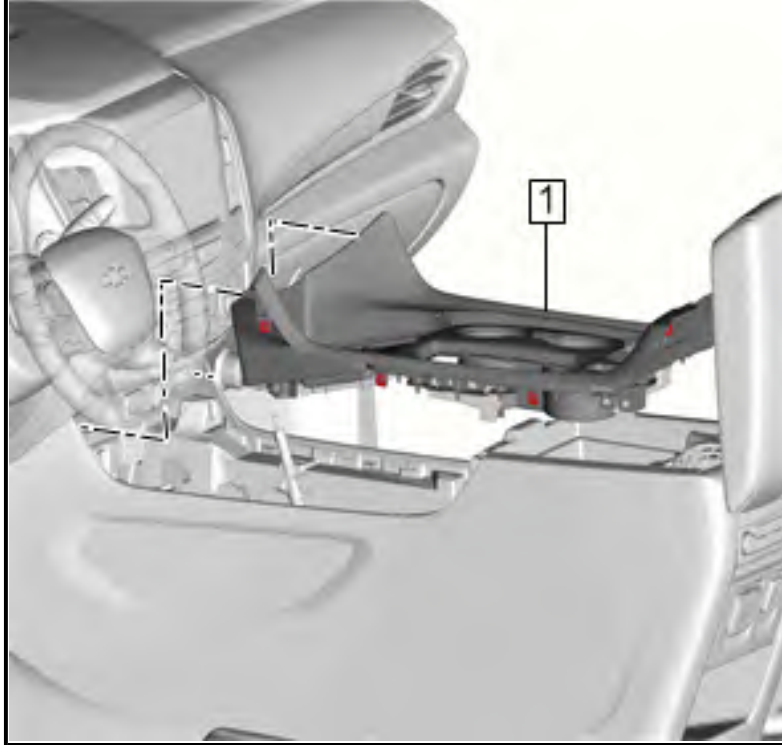
5.



Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

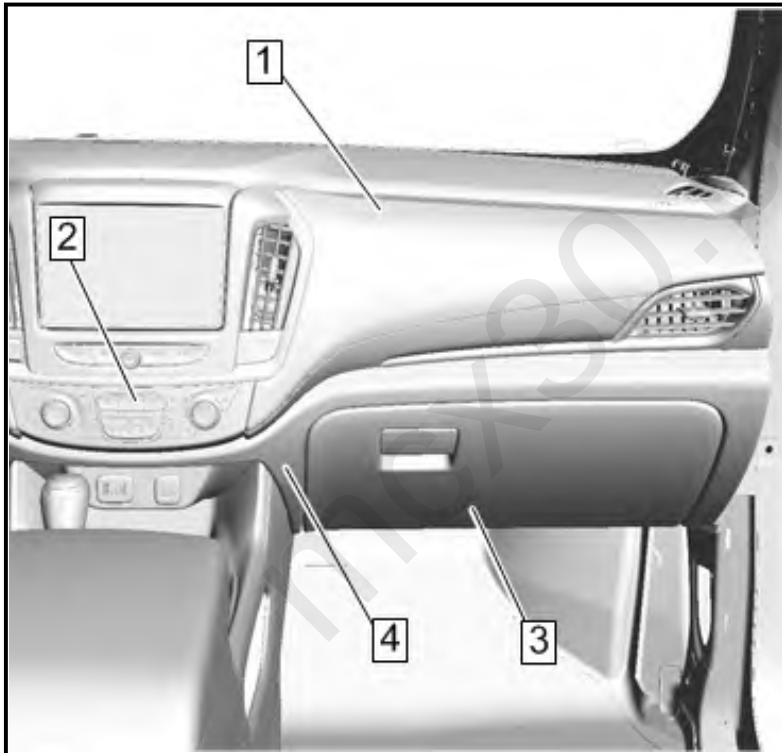
6.





Front Floor Console Cup Holder Plate (1) - Remove - [Front Floor Console Cup Holder Plate Replacement](#)

7.



Instrument Panel Trim Pad - Right Side (1) - Remove - [Instrument Panel Trim Pad Replacement - Right Side](#)

8. Heater and Air Conditioning User Interface Control (2) - Remove - [Heater and Air Conditioning User Interface Control Replacement](#)

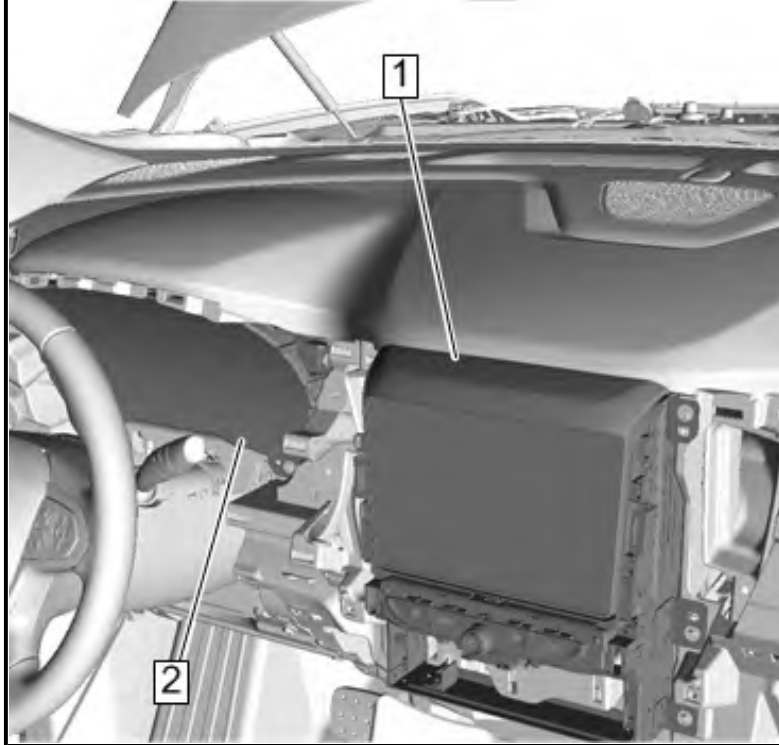
9. Disconnect all electrical connectors.

10. Instrument Panel Compartment Door (3) - Remove - [Instrument Panel Compartment Door Replacement](#)

11. Instrument Panel Compartment Door Opening Frame (4) - Remove - [Instrument Panel Compartment Door Opening Frame Replacement](#)

12.



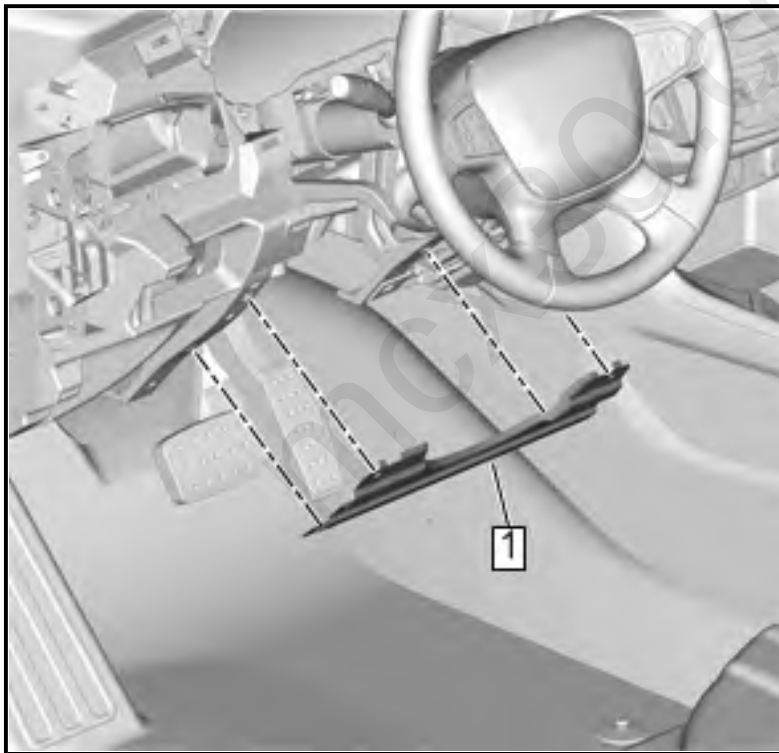


Radio Control (1) - Remove - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

13. Instrument Cluster (2) - Remove - [Instrument Cluster Replacement](#)

14. Disconnect the electrical connectors.

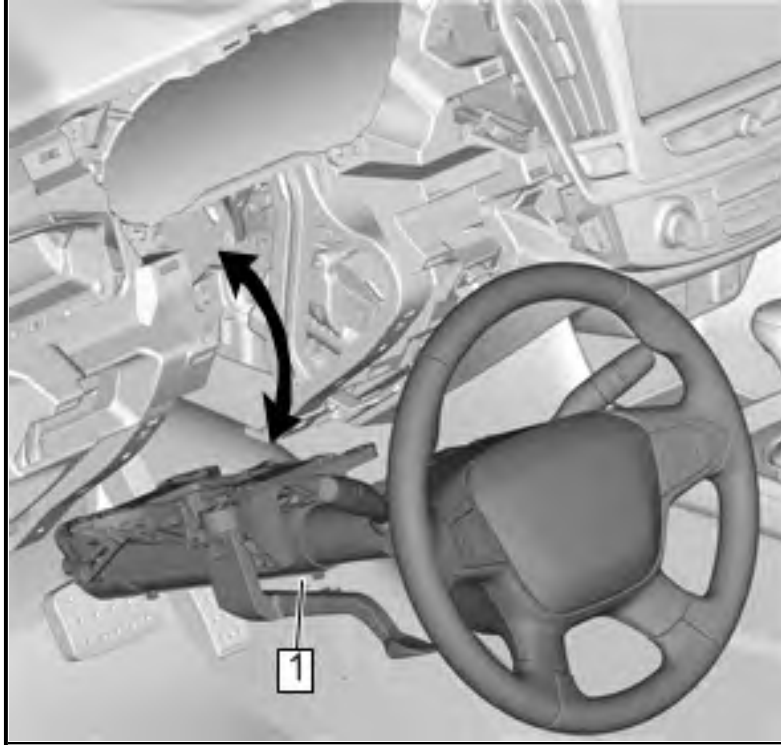
15.



Instrument Panel Knee Bolster Bracket (1) - Remove - [Instrument Panel Knee Bolster Bracket Replacement](#)

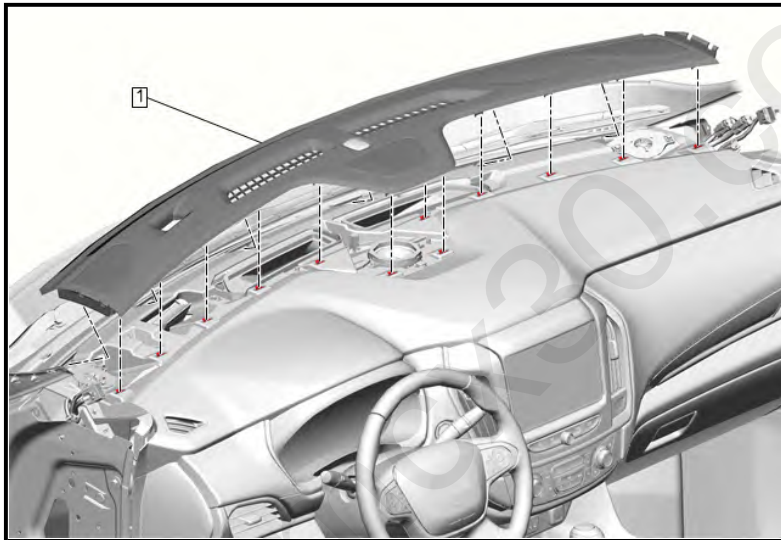
16.





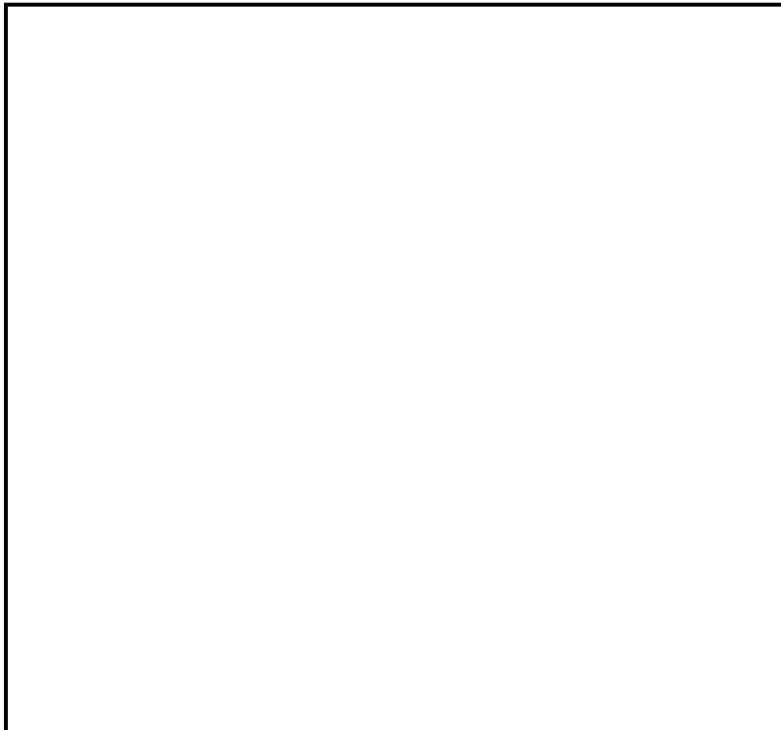
Steering Column (1) - Remove - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

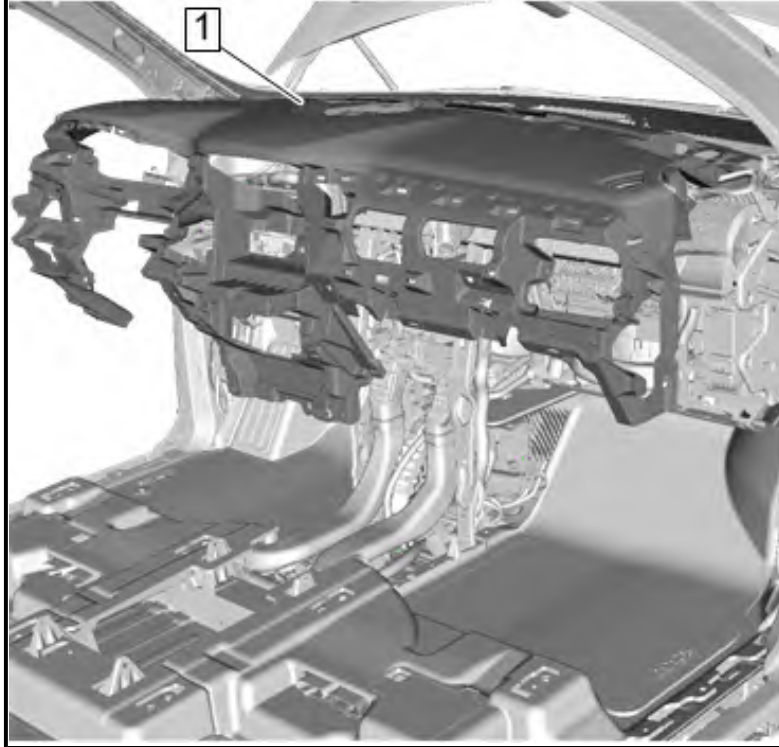
17.



Instrument Panel Extension (1) - Remove - [Instrument Panel Extension Replacement](#)

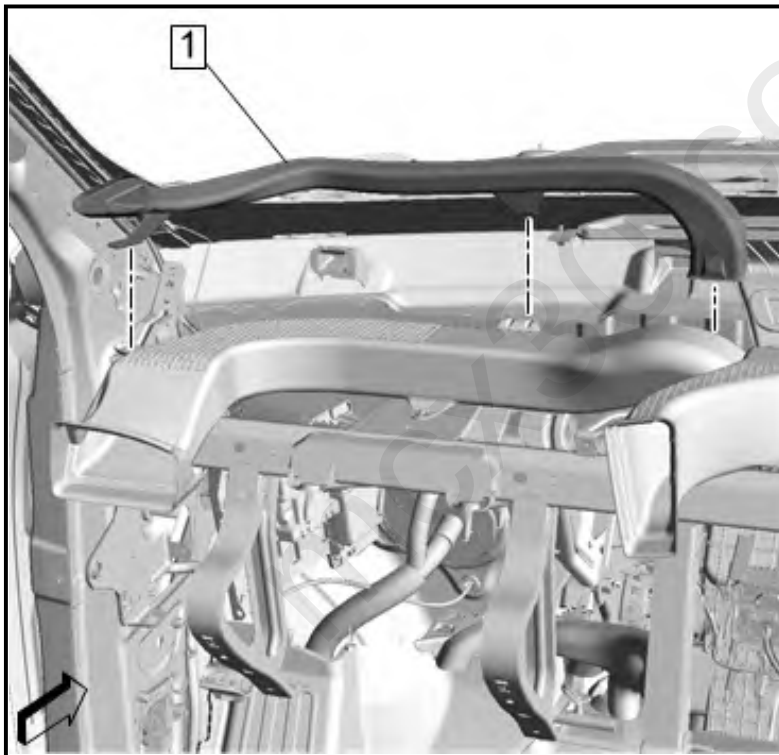
18.





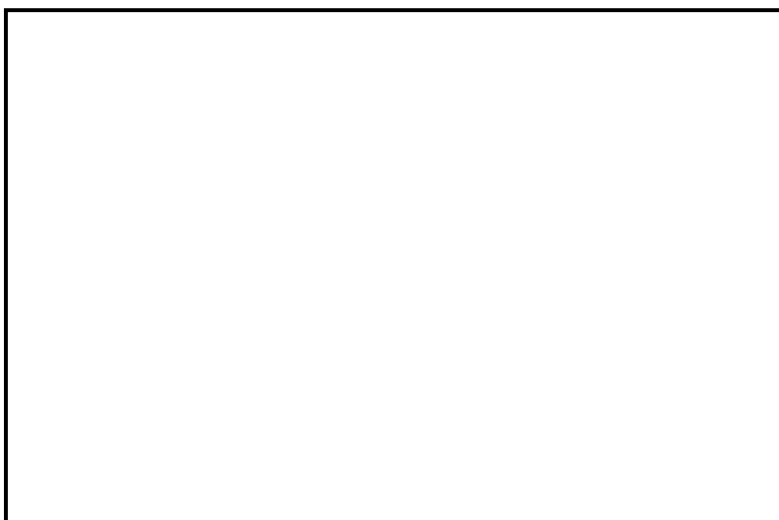
Instrument Panel (1) - Remove - [Instrument Panel Assembly Replacement](#)

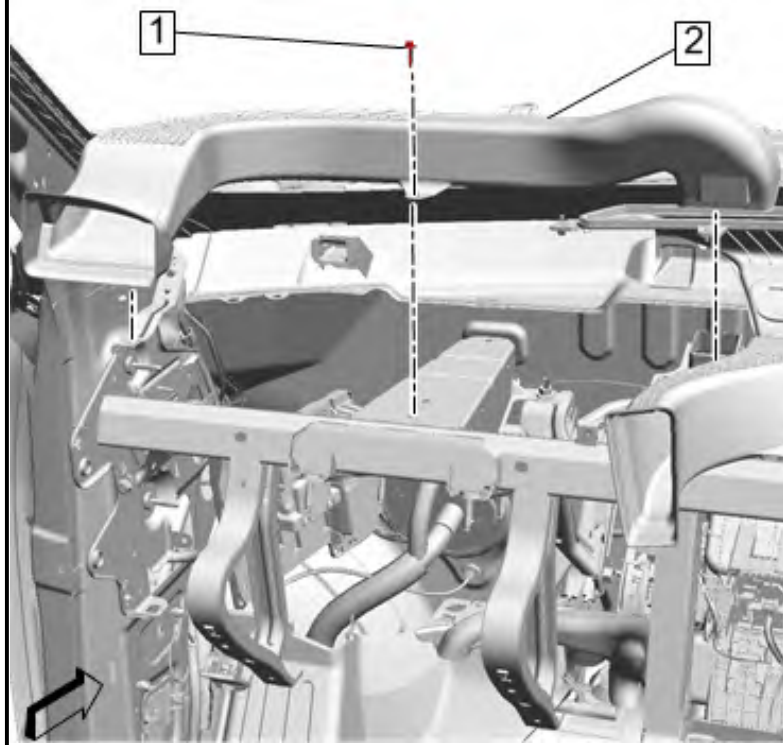
19.



Side Window Defogger Outlet Duct - Left Side (1) - Remove - [Side Window Defogger Outlet Duct Replacement - Left Side](#)

20.

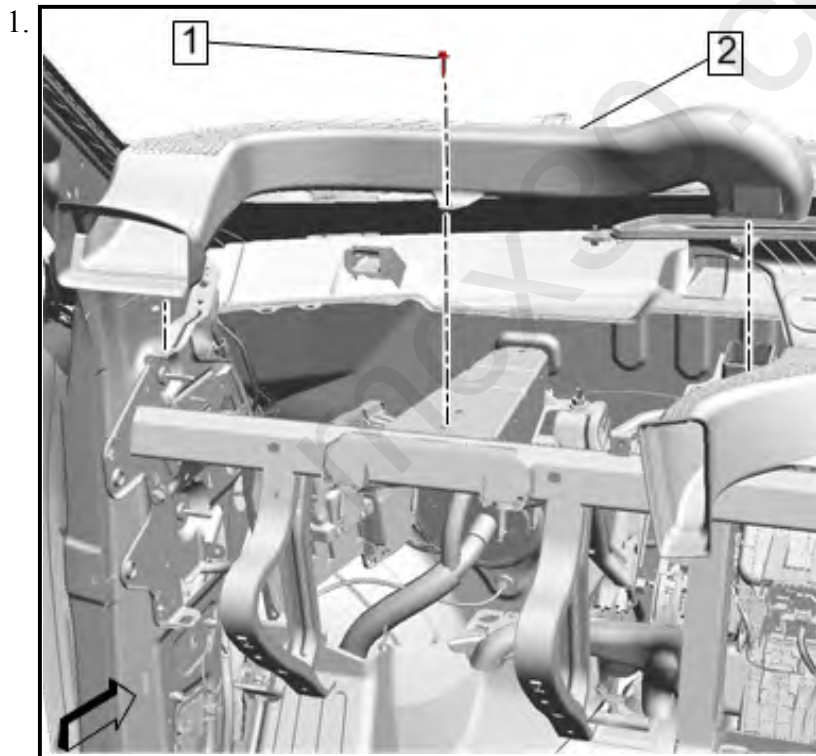




Instrument Panel Outer Air Outlet Duct Bolt (1) - Remove

21. Instrument Panel Outer Air Outlet Duct - Left Side (2) - Remove

Installation Procedure

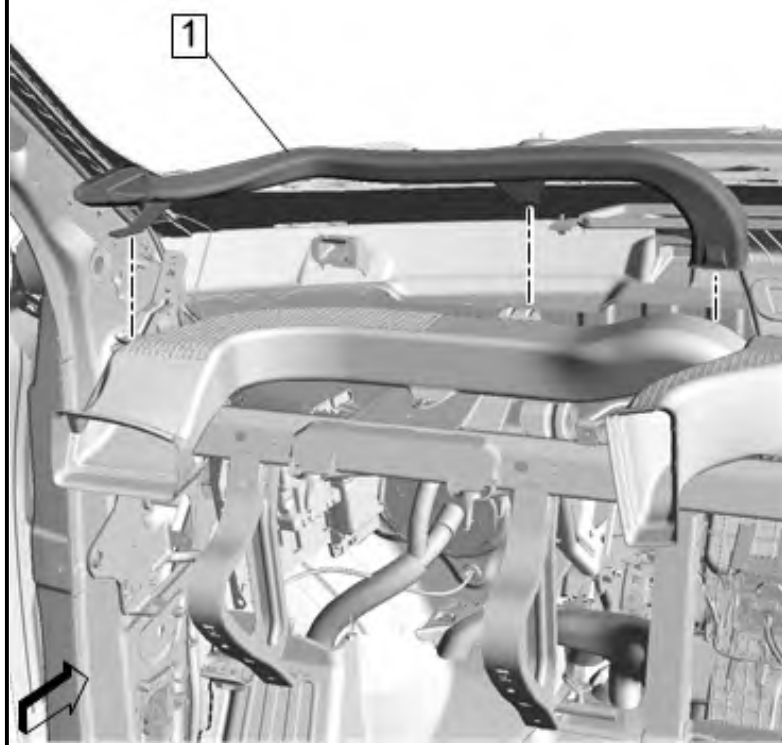


Instrument Panel Outer Air Outlet Duct - Left Side (2) - Install

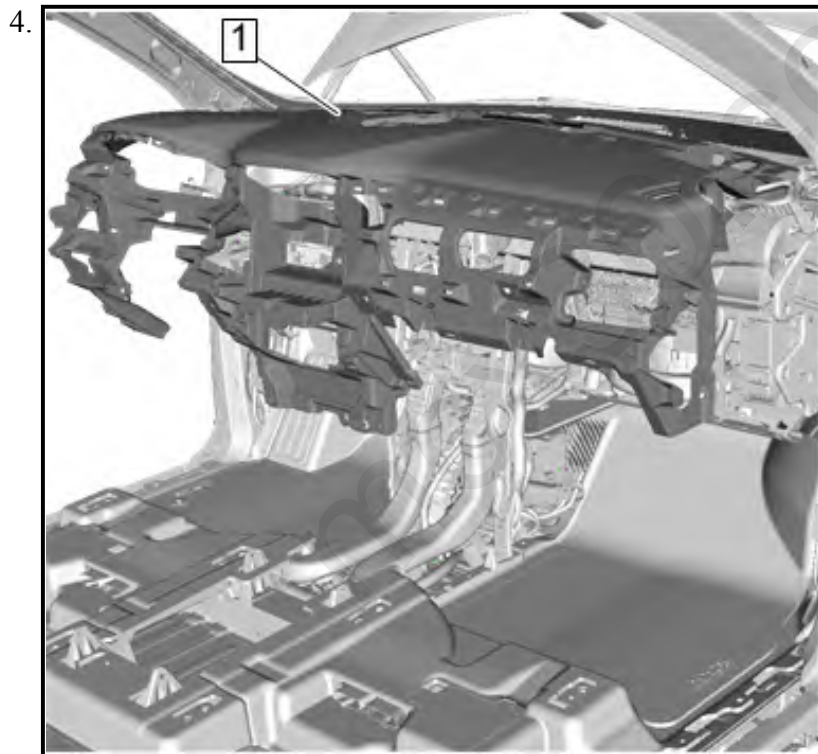
CAUTION: Refer to Fastener Caution .

2. Instrument Panel Outer Air Outlet Duct Bolt (1) - Install and tighten 2.5 N.m (22 lb in)

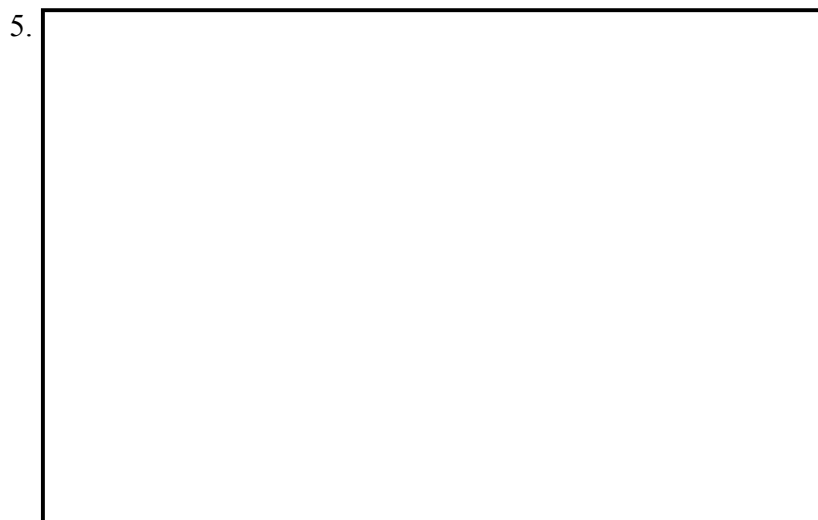


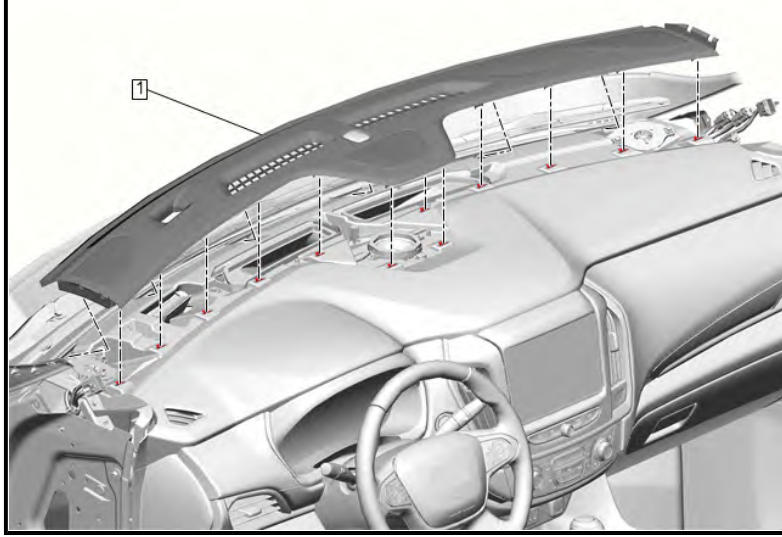


Side Window Defogger Outlet Duct - Left Side (1) - Install - [Side Window Defogger Outlet Duct Replacement - Left Side](#)



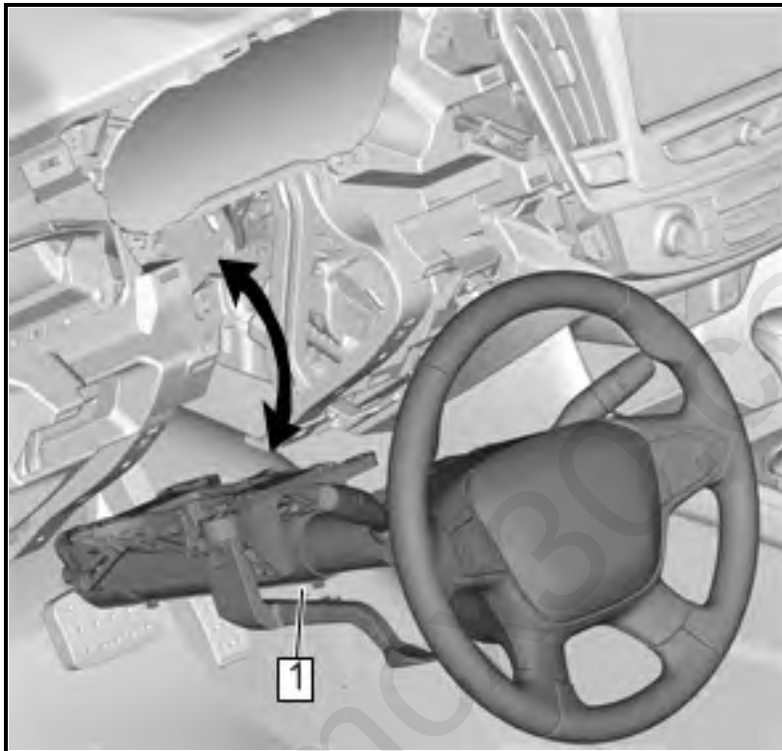
Instrument Panel (1) - Install - [Instrument Panel Assembly Replacement](#)





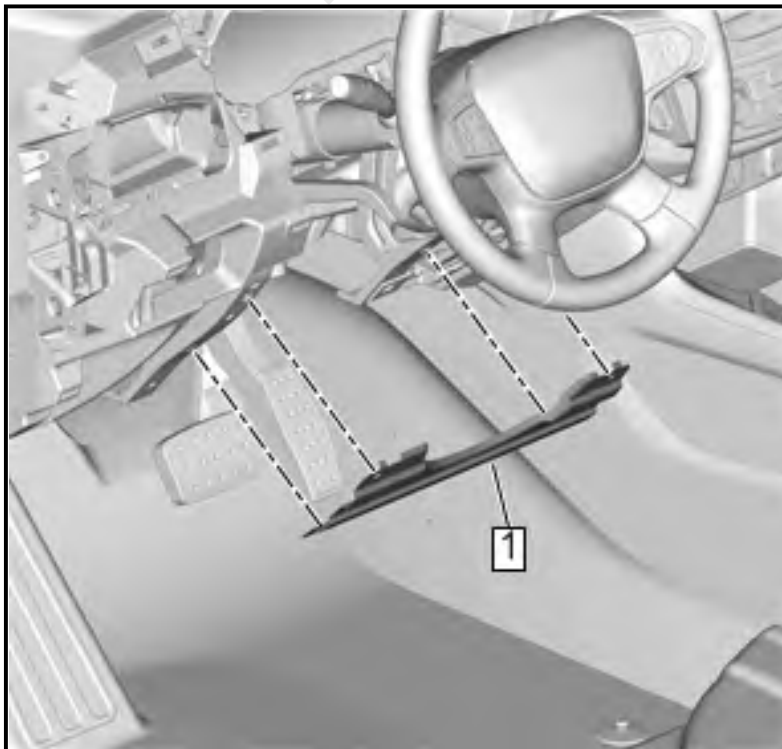
Instrument Panel Extension (1) - Install - [Instrument Panel Extension Replacement](#)

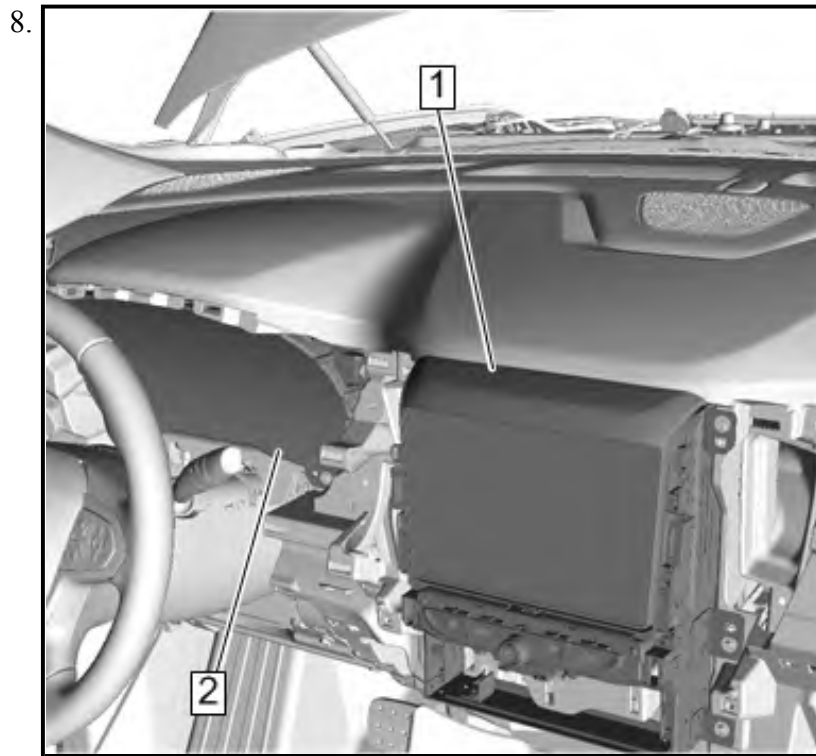
6.



Steering Column (1) - Install - [Steering Column Replacement \(N37\)](#). [Steering Column Replacement \(N38\)](#)

7.

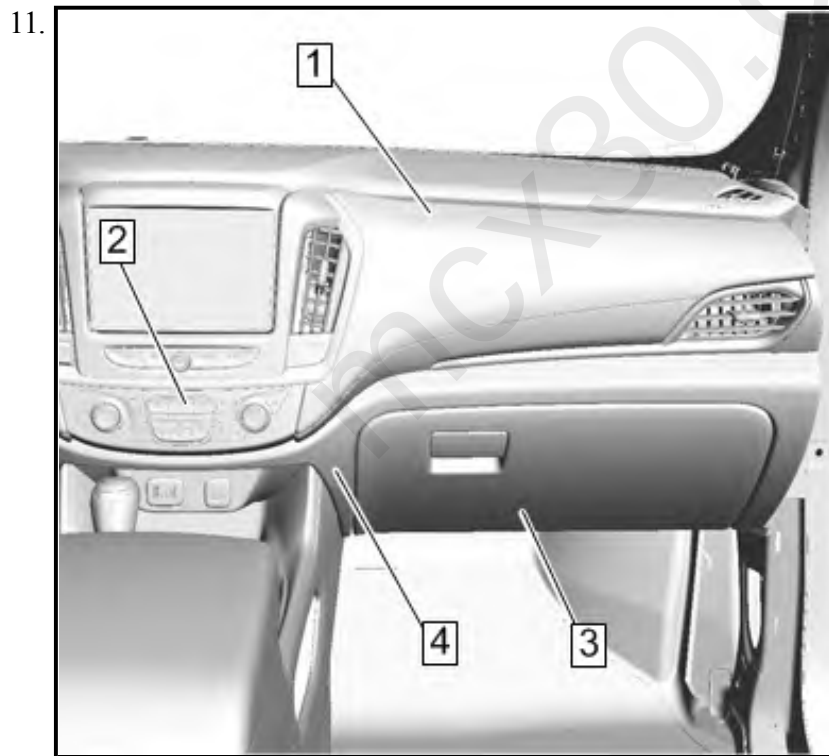




Connect the electrical connectors.

9. Instrument Cluster (2) - Install - [Instrument Cluster Replacement](#)

10. Radio Control (1) - Install - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)



Instrument Panel Compartment Door Opening Frame (4) - Install - [Instrument Panel Compartment Door Opening Frame Replacement](#)

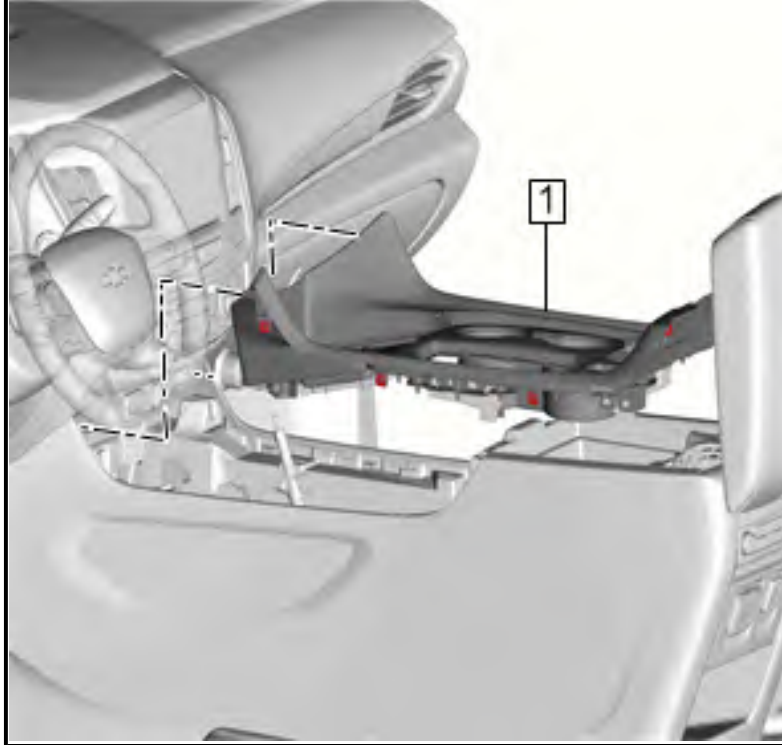
12. Instrument Panel Compartment Door (3) - Install - [Instrument Panel Compartment Door Replacement](#)

13. Connect the electrical connectors.

14. Heater and Air Conditioning User Interface Control (2) - Install - [Heater and Air Conditioning User Interface Control Replacement](#)

15. Instrument Panel Trim Pad - Right Side (1) - Install - [Instrument Panel Trim Pad Replacement - Right Side](#)





Front Floor Console Cup Holder Plate (1) - Install - [Front Floor Console Cup Holder Plate Replacement](#)

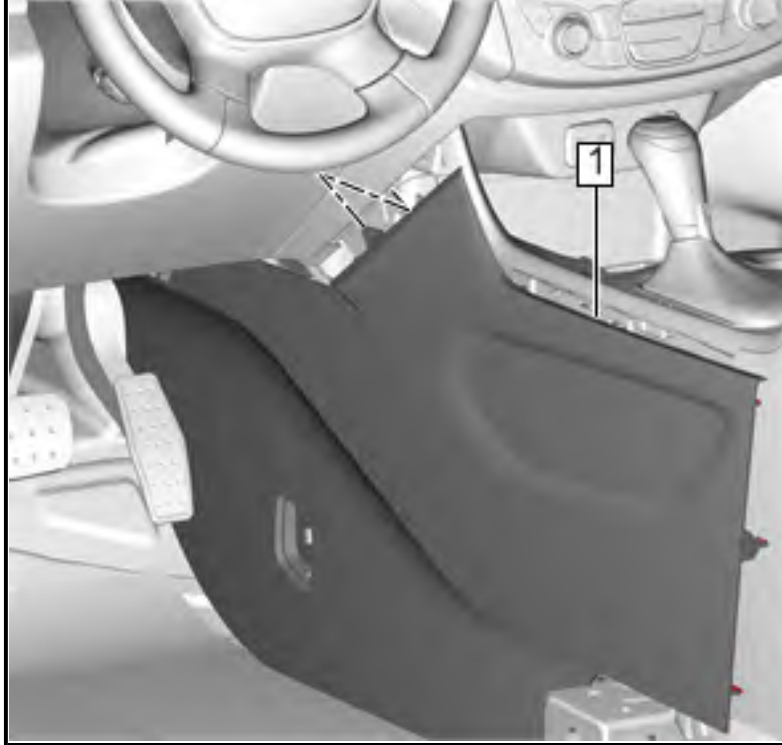
17.



Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

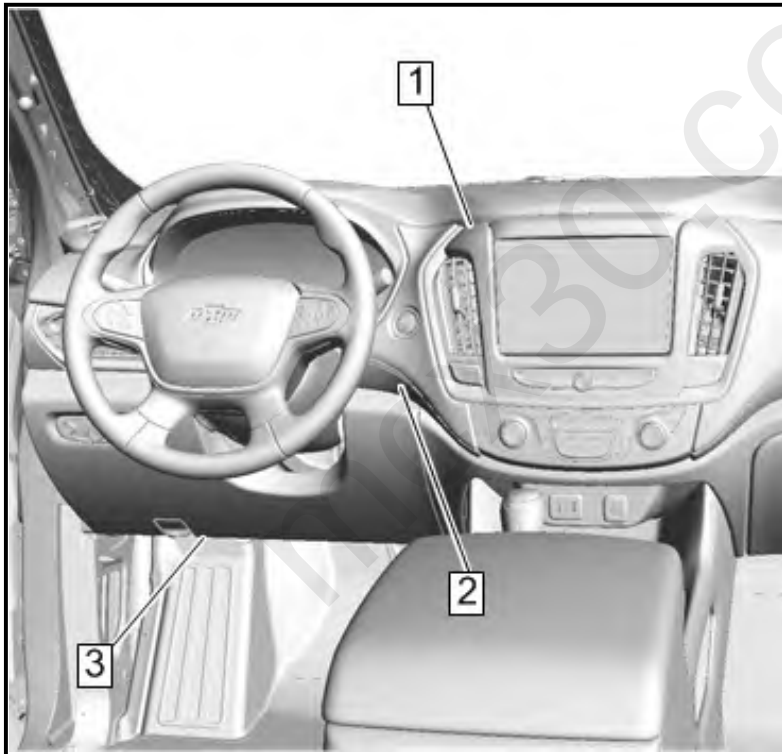
18.





Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

19.



Instrument Panel Trim Pad - Left Side (2) - Install - [Instrument Panel Trim Pad Replacement - Left Side](#)

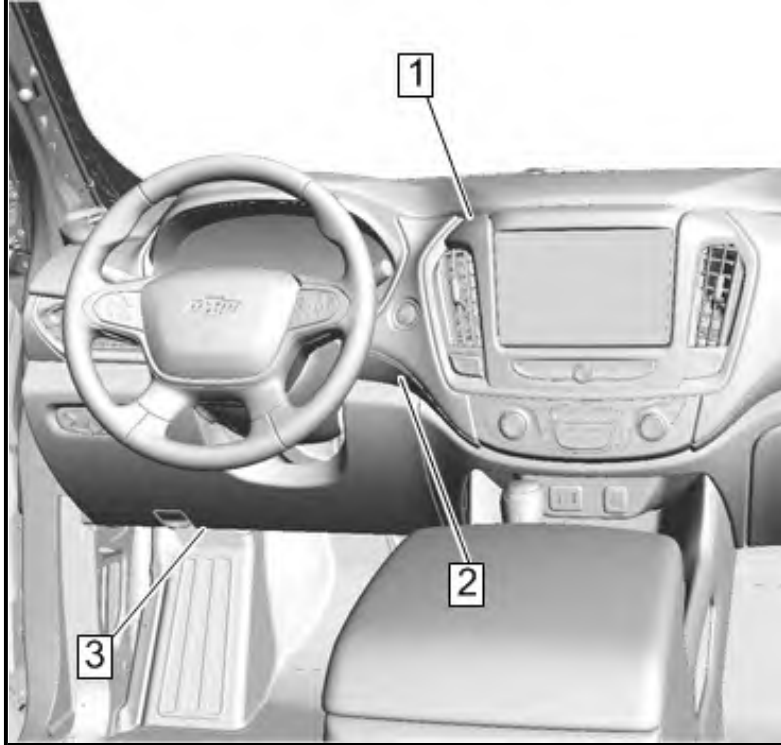
20. Instrument Panel Radio Front Trim Plate (1) - Install - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\) Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)
21. Instrument Panel Knee Bolster (3) - Install - [Instrument Panel Knee Bolster Replacement](#)

INSTRUMENT PANEL OUTER AIR OUTLET DUCT REPLACEMENT - RIGHT SIDE

Removal Procedure

1.

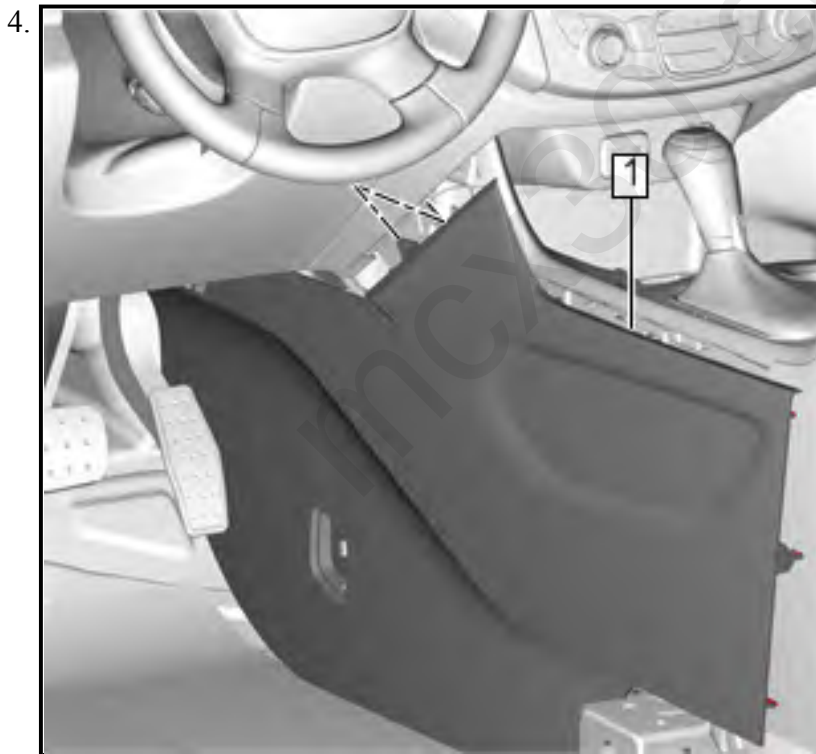




Instrument Panel Radio Front Trim Plate (1) - Remove - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)

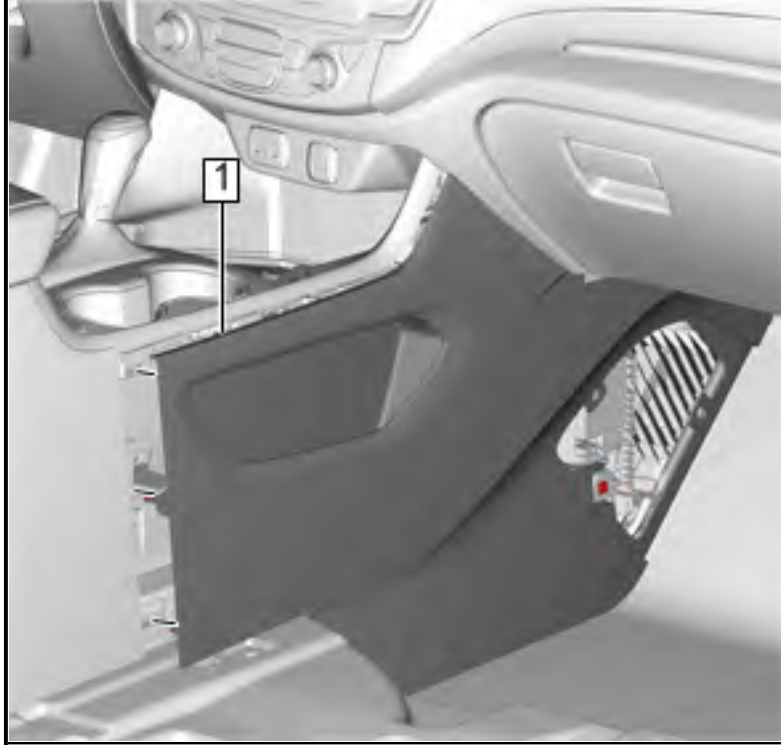
2. Instrument Panel Trim Pad - Left Side (2) - Remove - [Instrument Panel Trim Pad Replacement - Left Side](#)

3. Instrument Panel Knee Bolster (3) - Remove - [Instrument Panel Knee Bolster Replacement](#)



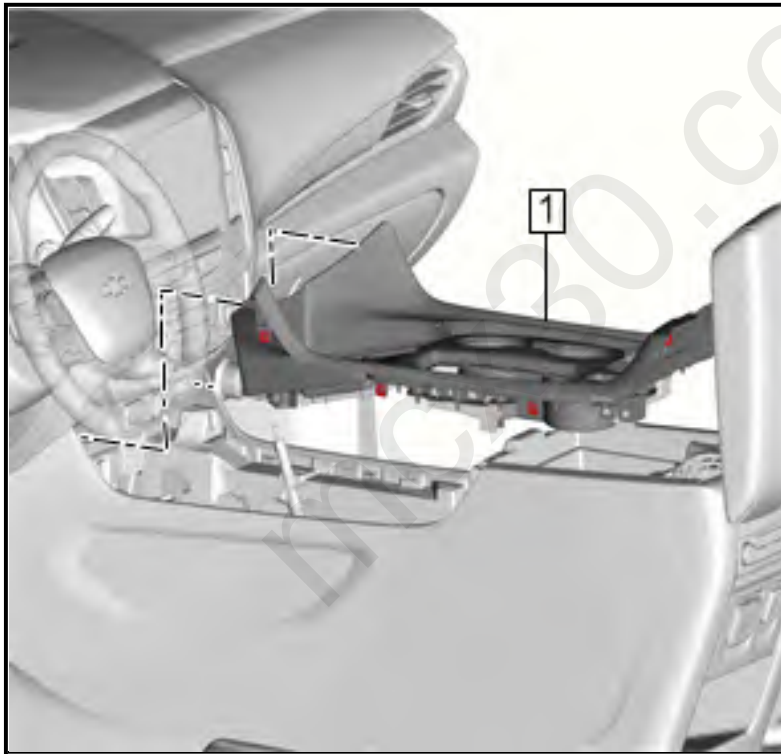
4. Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)





Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

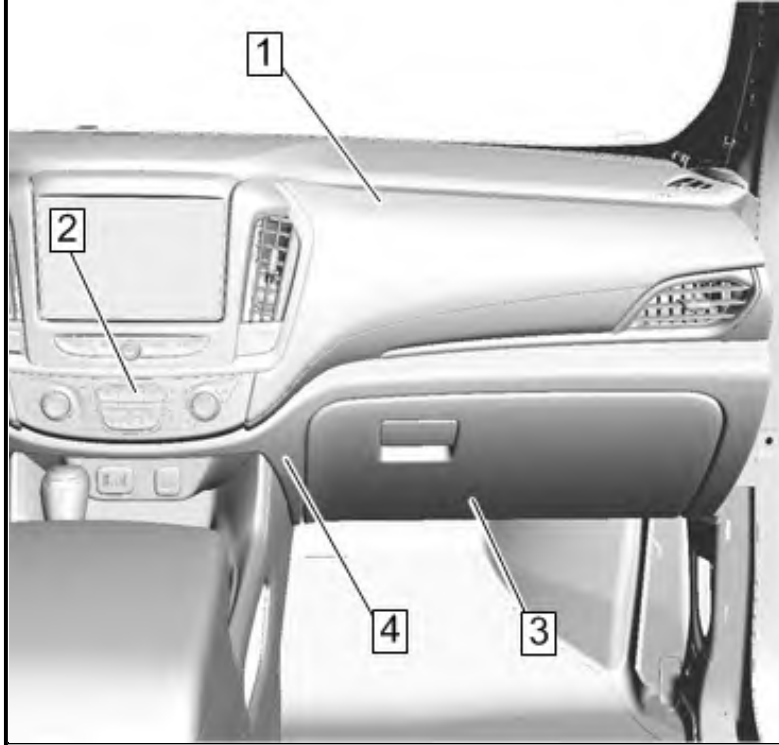
6.



Front Floor Console Cup Holder Plate (1) - Remove - [Front Floor Console Cup Holder Plate Replacement](#)

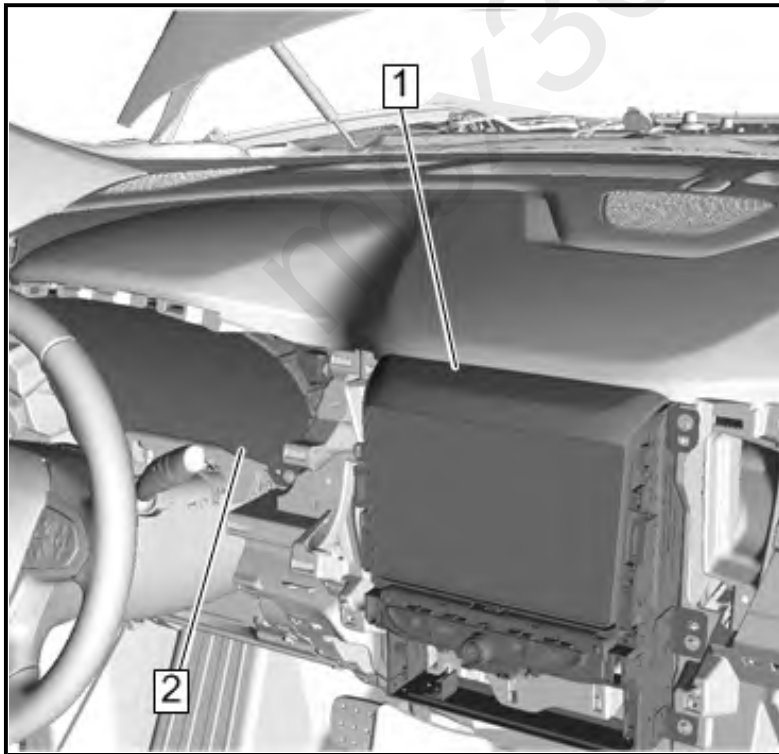
7.





Instrument Panel Trim Pad - Right Side (1) - Remove - [Instrument Panel Trim Pad Replacement - Right Side](#)

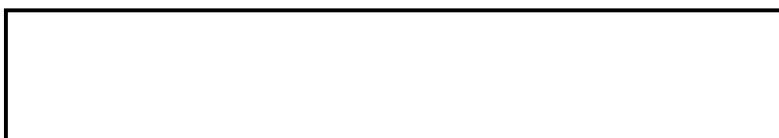
8. Heater and Air Conditioning User Interface Control (2) - Remove - [Heater and Air Conditioning User Interface Control Replacement](#)
9. Disconnect all electrical connectors.
10. Instrument Panel Compartment Door (3) - Remove - [Instrument Panel Compartment Door Replacement](#)
11. Instrument Panel Compartment Door Opening Frame (4) - Remove - [Instrument Panel Compartment Door Opening Frame Replacement](#)
- 12.

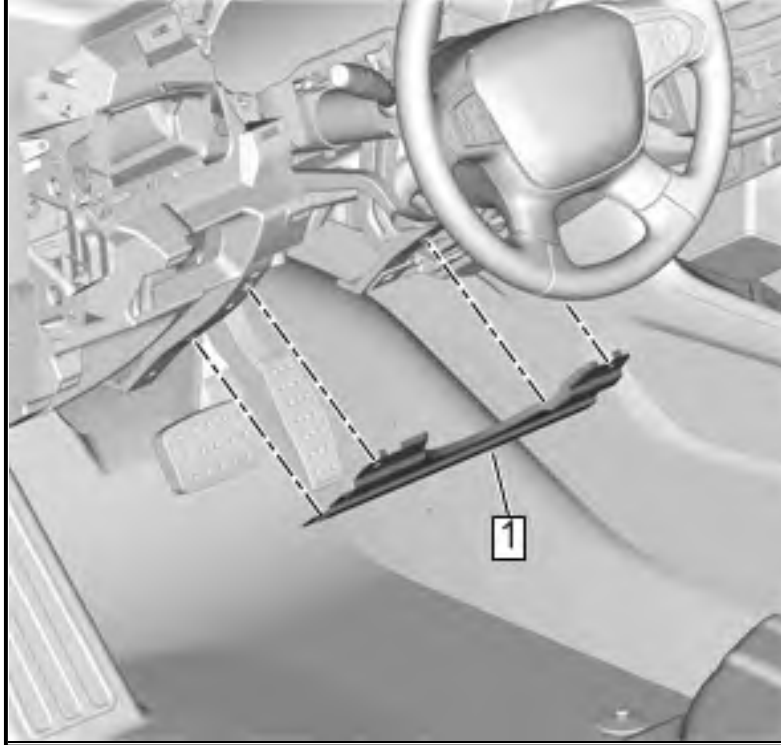


Radio Control (1) - Remove - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

13. Instrument Cluster (2) - Remove - [Instrument Cluster Replacement](#)
14. Disconnect the electrical connectors.

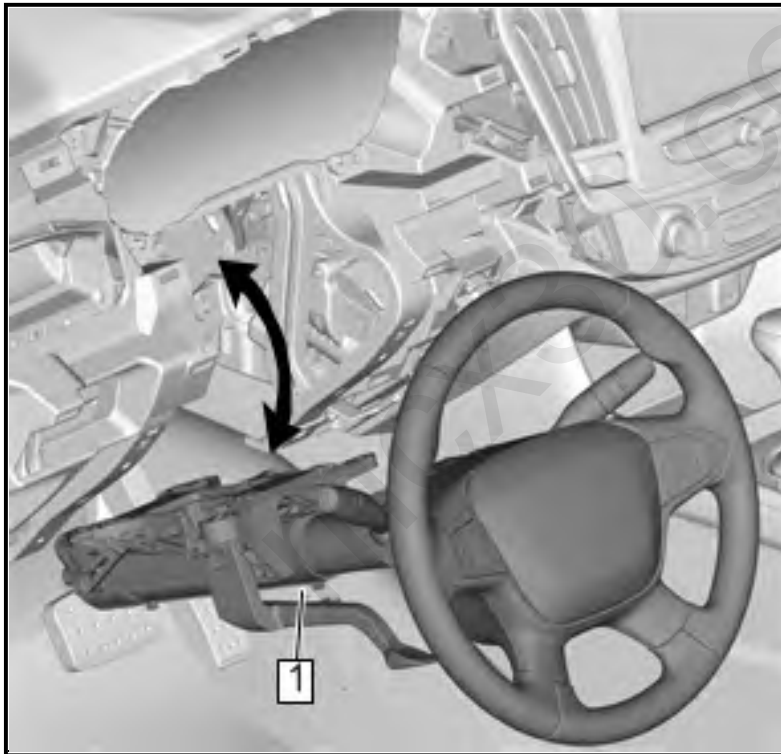
15.





Instrument Panel Knee Bolster Bracket (1) - Remove - [Instrument Panel Knee Bolster Bracket Replacement](#)

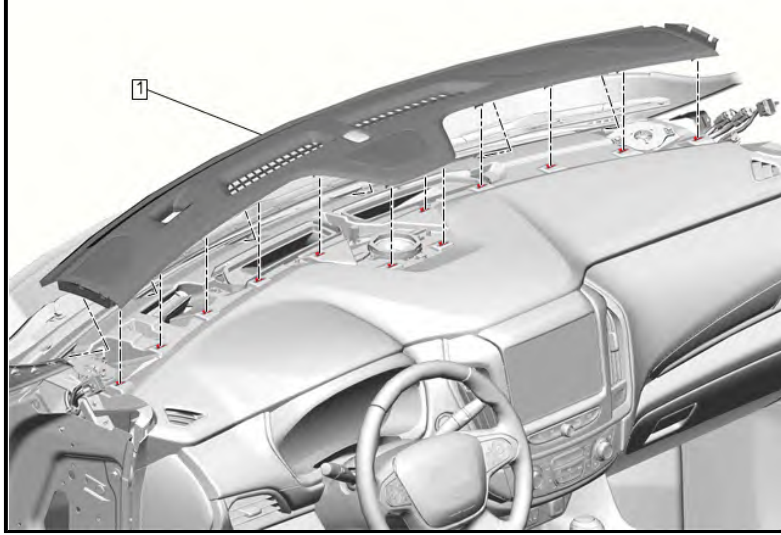
16.



Steering Column (1) - Remove - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

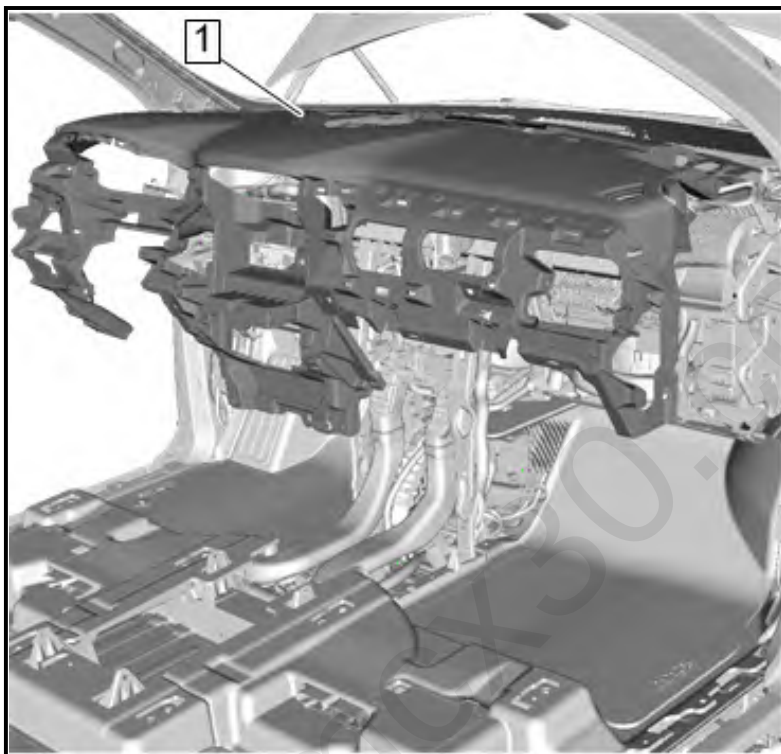
17.





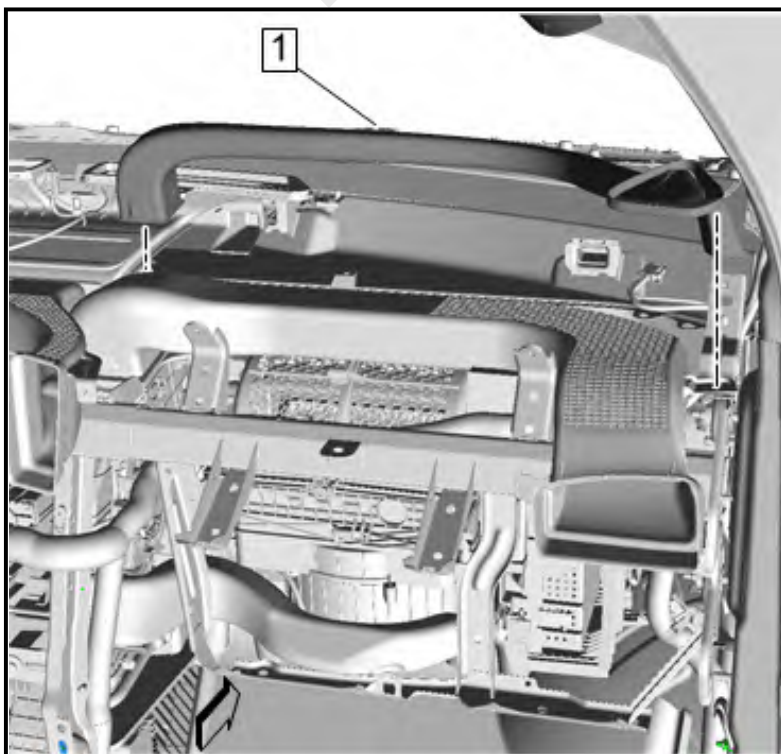
Instrument Panel Extension (1) - Remove - [Instrument Panel Extension Replacement](#)

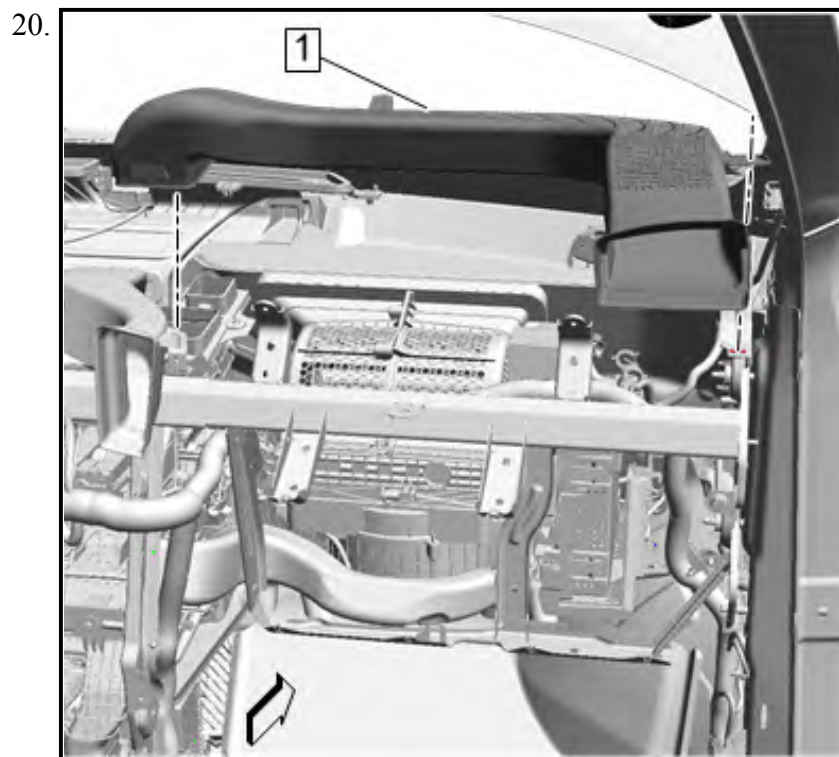
18.



Instrument Panel (1) - Remove - [Instrument Panel Assembly Replacement](#)

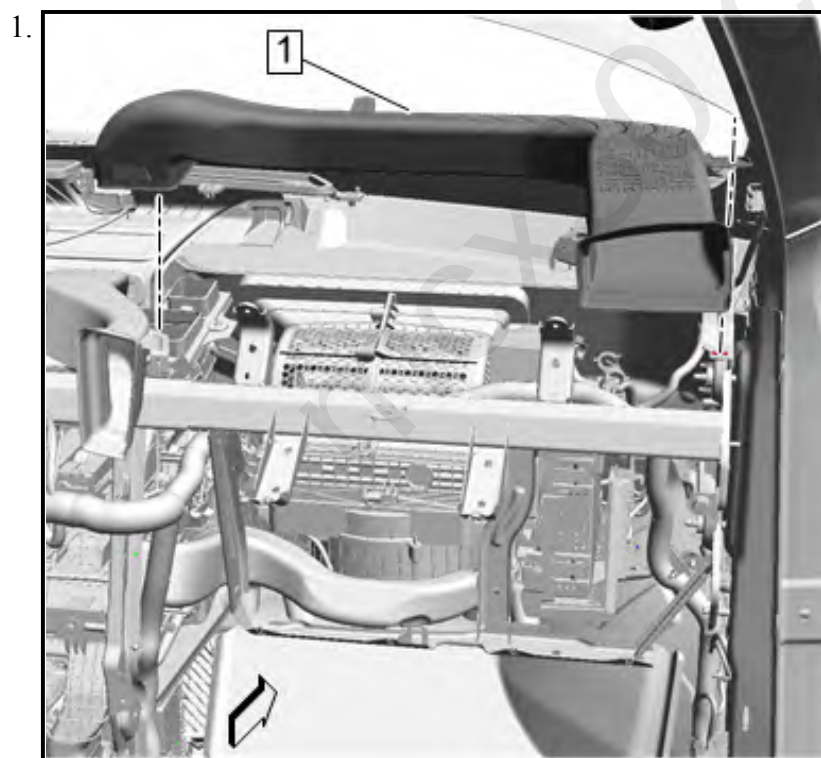
19.





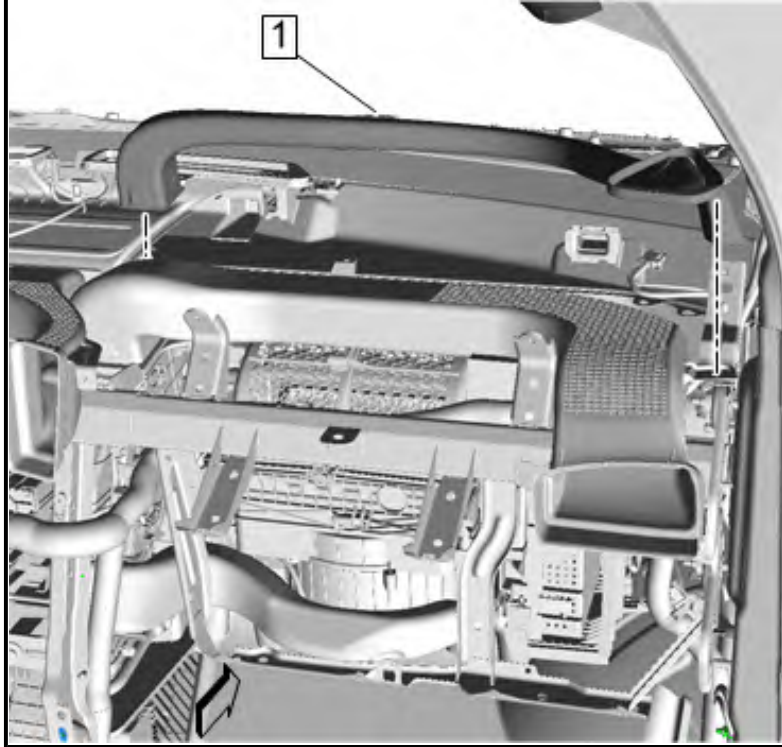
Instrument Panel Outer Air Outlet Duct - Right Side (1) - Remove

Installation Procedure



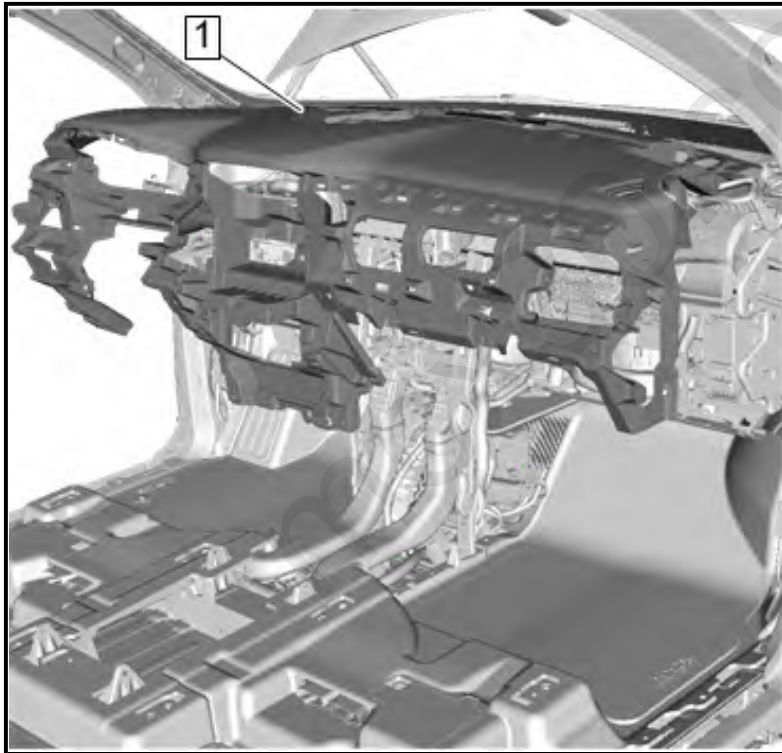
Instrument Panel Outer Air Outlet Duct - Right Side (1) - Install





Side Window Defogger Outlet Duct - Right Side (1) - Install - [Side Window Defogger Outlet Duct Replacement - Right Side](#)

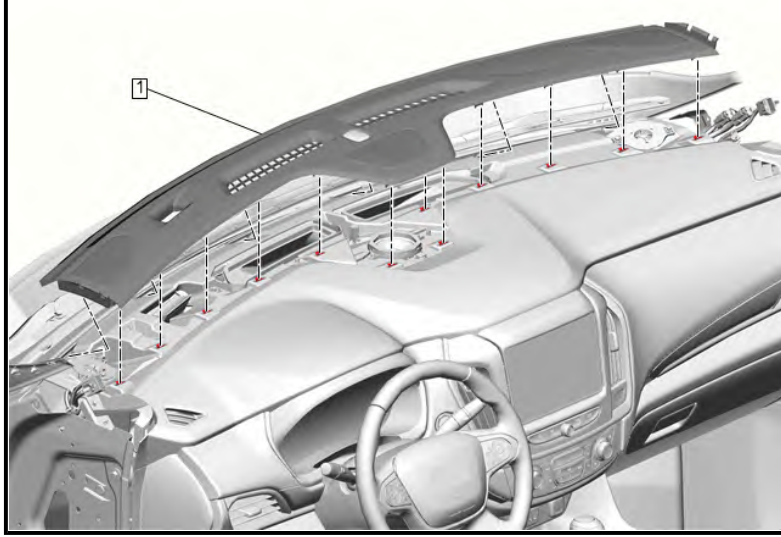
3.



Instrument Panel (1) - Install - [Instrument Panel Assembly Replacement](#)

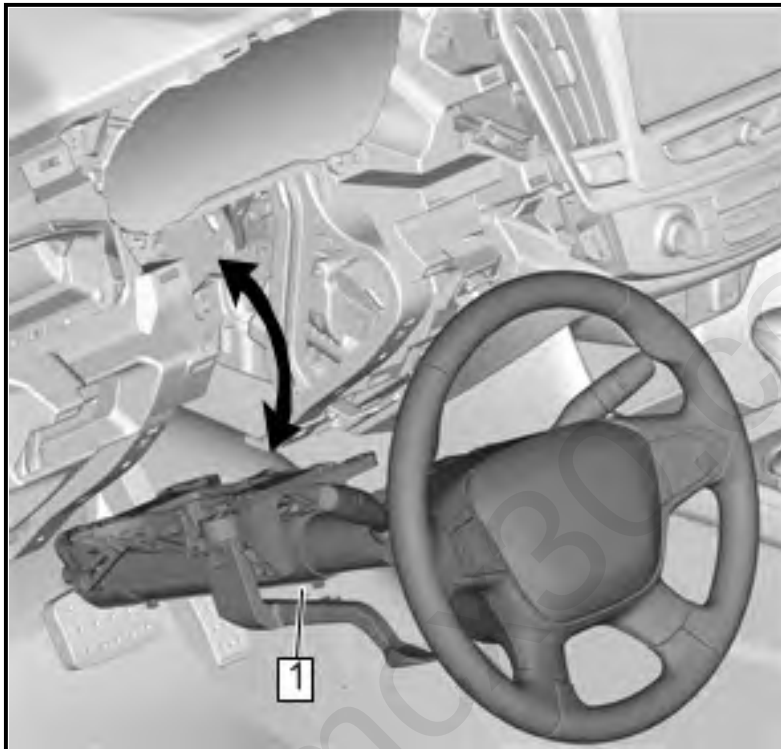
4.





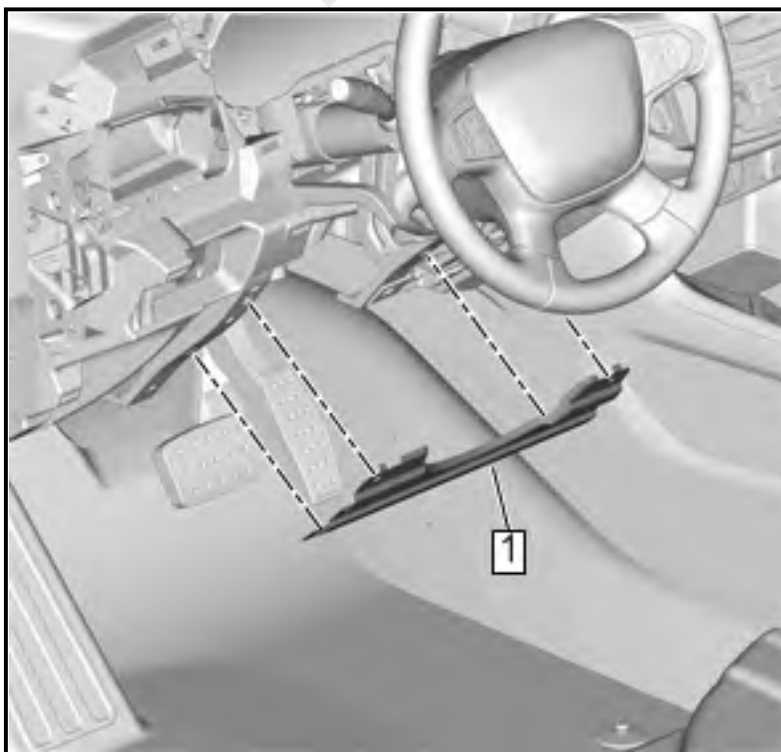
Instrument Panel Extension (1) - Install - [Instrument Panel Extension Replacement](#)

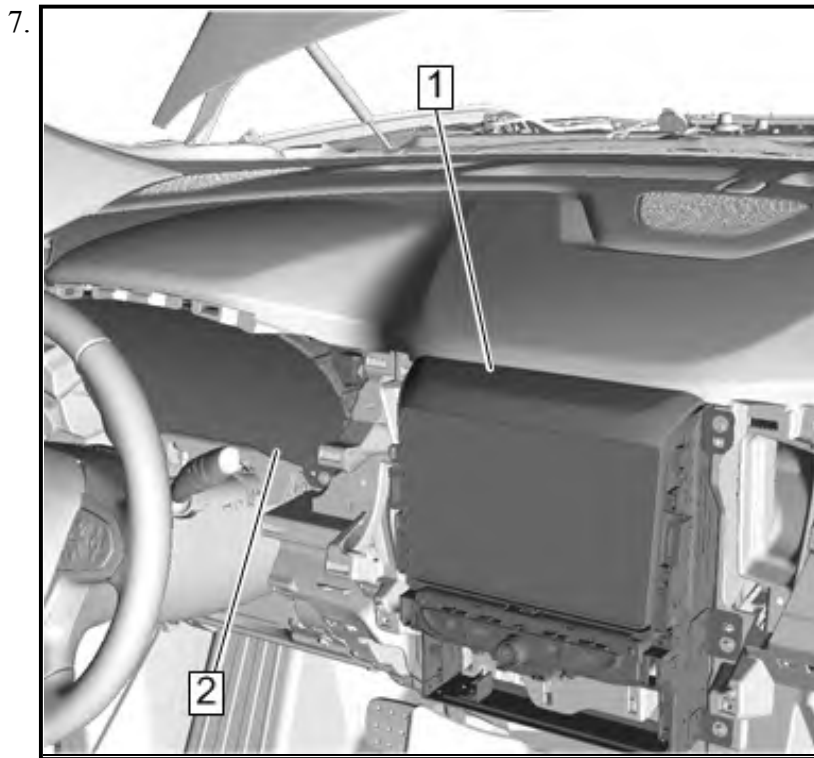
5.



Steering Column (1) - Install - [Steering Column Replacement \(N37\)](#), [Steering Column Replacement \(N38\)](#)

6.

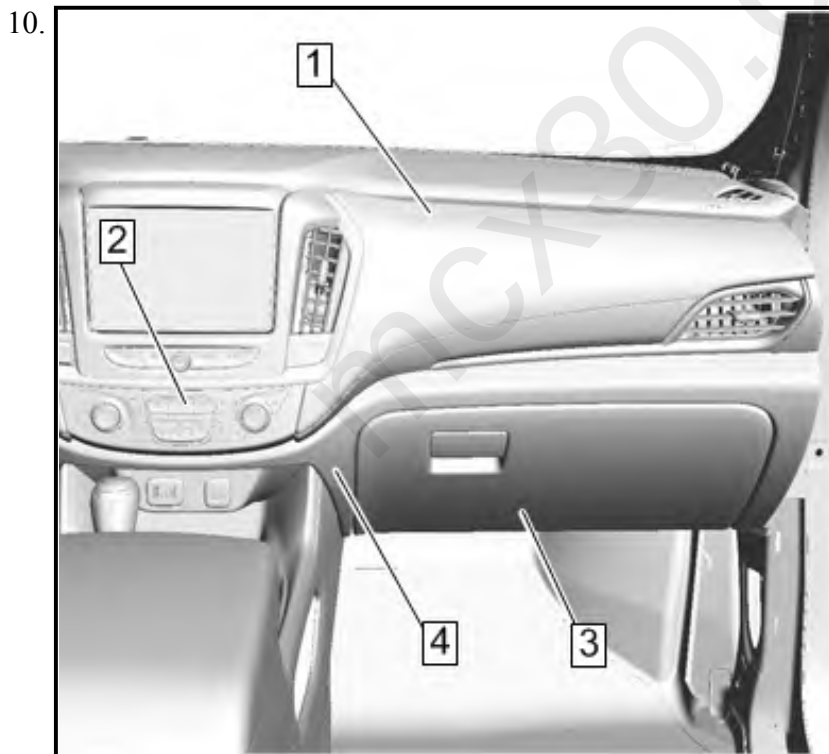




Connect the electrical connectors.

8. Instrument Cluster (2) - Install - [Instrument Cluster Replacement](#)

9. Radio Control (1) - Install - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)



Instrument Panel Compartment Door Opening Frame (4) - Install - [Instrument Panel Compartment Door Opening Frame Replacement](#)

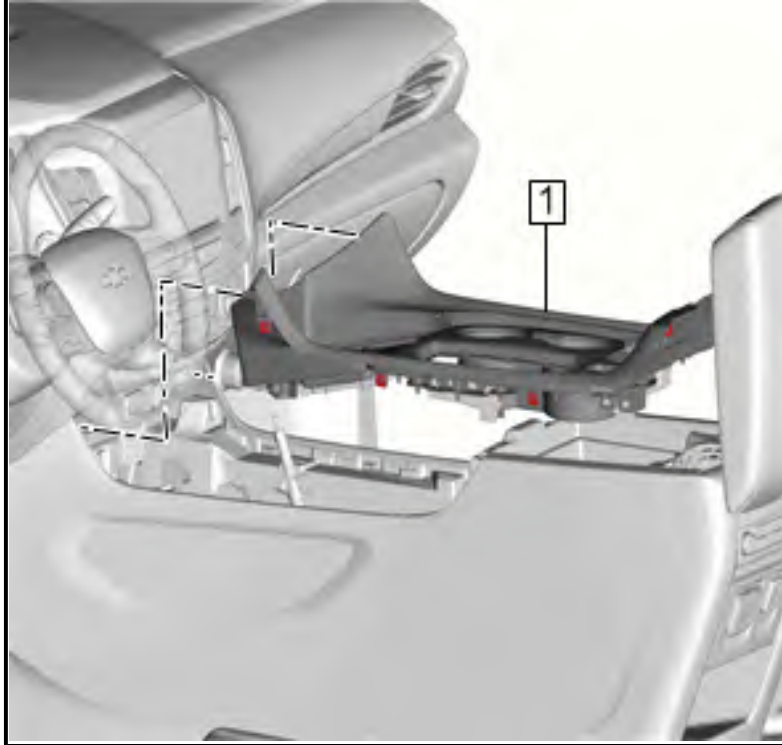
11. Instrument Panel Compartment Door (3) - Install - [Instrument Panel Compartment Door Replacement](#)

12. Connect the electrical connectors.

13. Heater and Air Conditioning User Interface Control (2) - Install - [Heater and Air Conditioning User Interface Control Replacement](#)

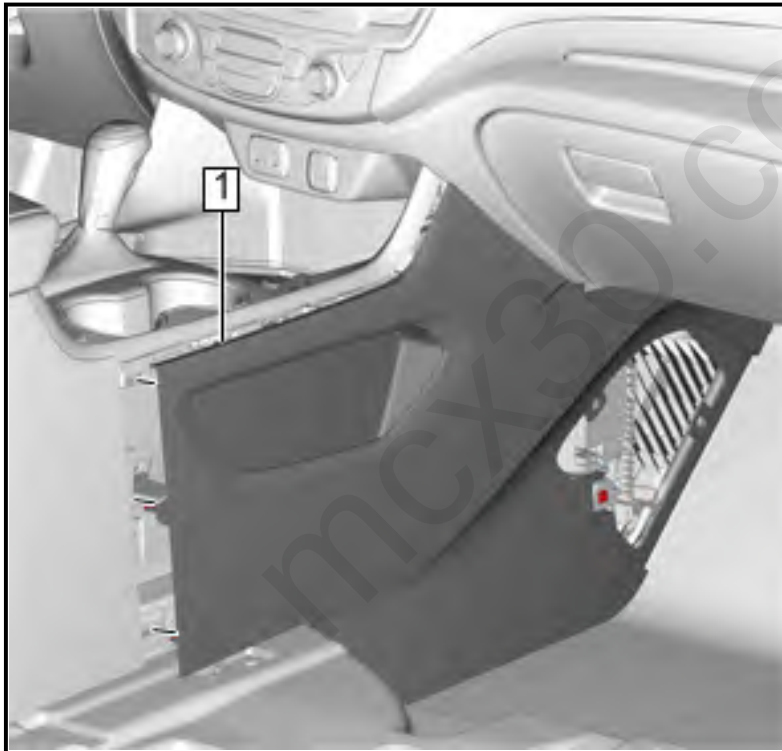
14. Instrument Panel Trim Pad - Right Side (1) - Install - [Instrument Panel Trim Pad Replacement - Right Side](#)





Front Floor Console Cup Holder Plate (1) - Install - [Front Floor Console Cup Holder Plate Replacement](#)

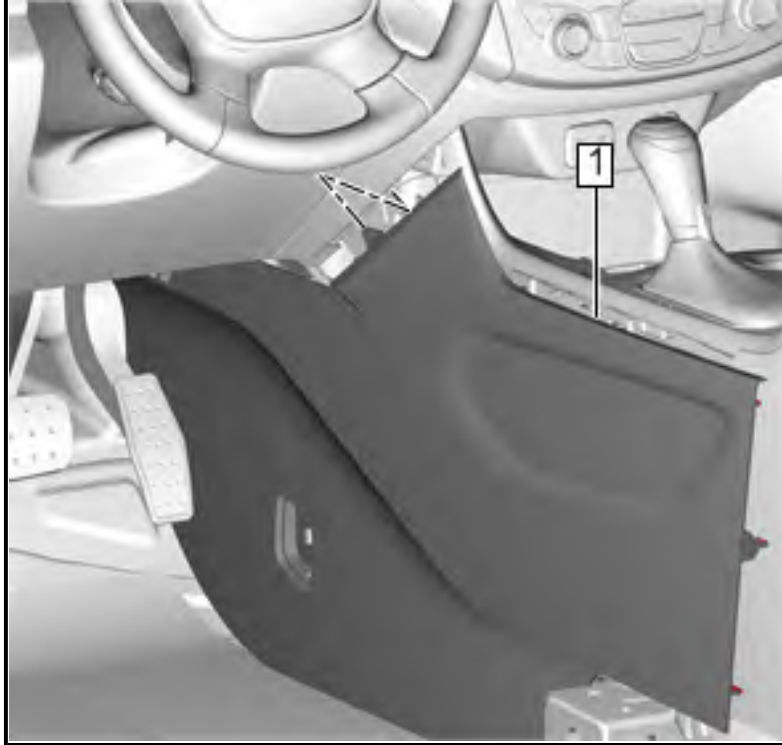
16.



Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

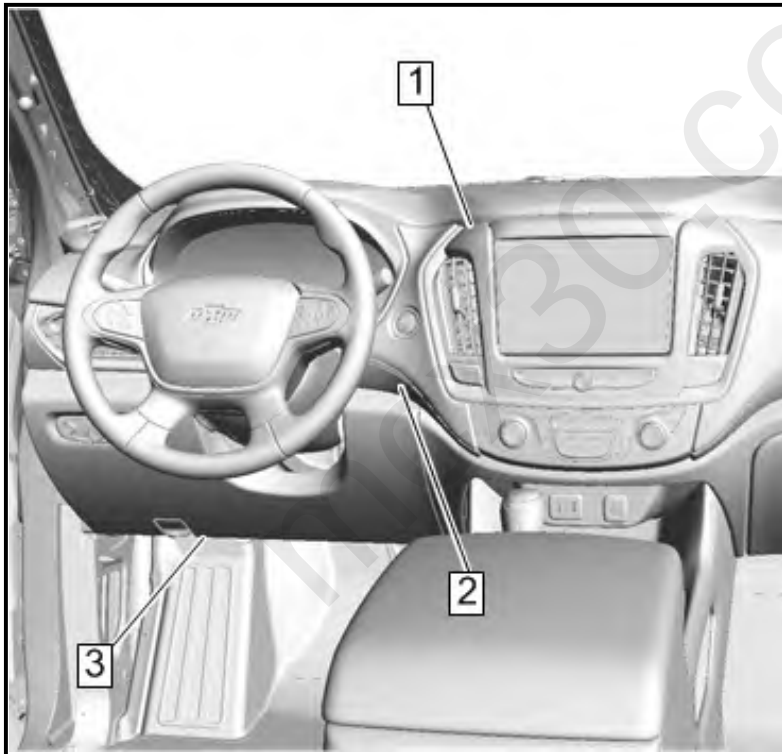
17.





Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

18.



Instrument Panel Trim Pad - Left Side (2) - Install - [Instrument Panel Trim Pad Replacement - Left Side](#)

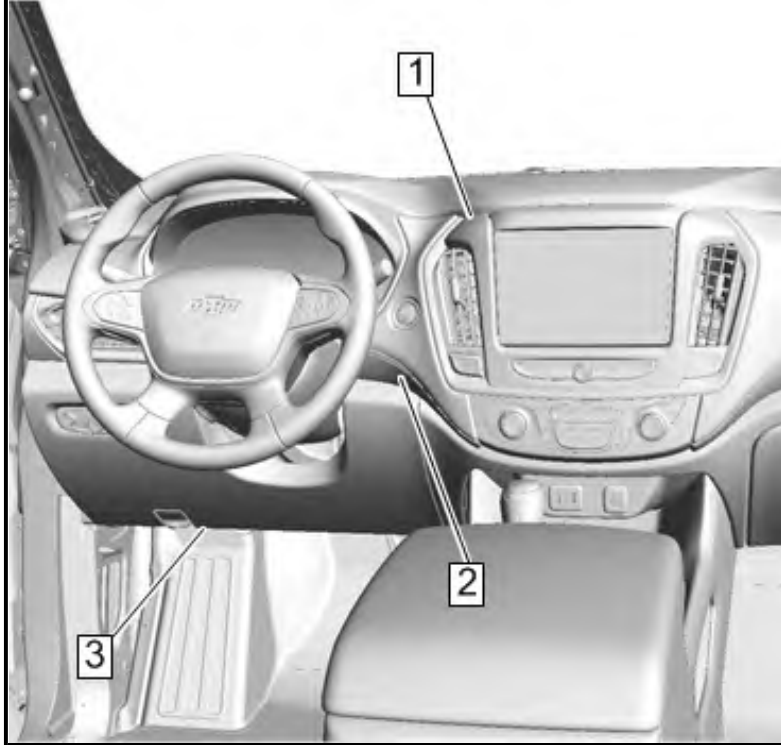
19. Instrument Panel Radio Front Trim Plate (1) - Install - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)
20. Instrument Panel Knee Bolster (3) - Install - [Instrument Panel Knee Bolster Replacement](#)

WINDSHIELD DEFROSTER OUTLET DUCT REPLACEMENT

Removal Procedure

1.

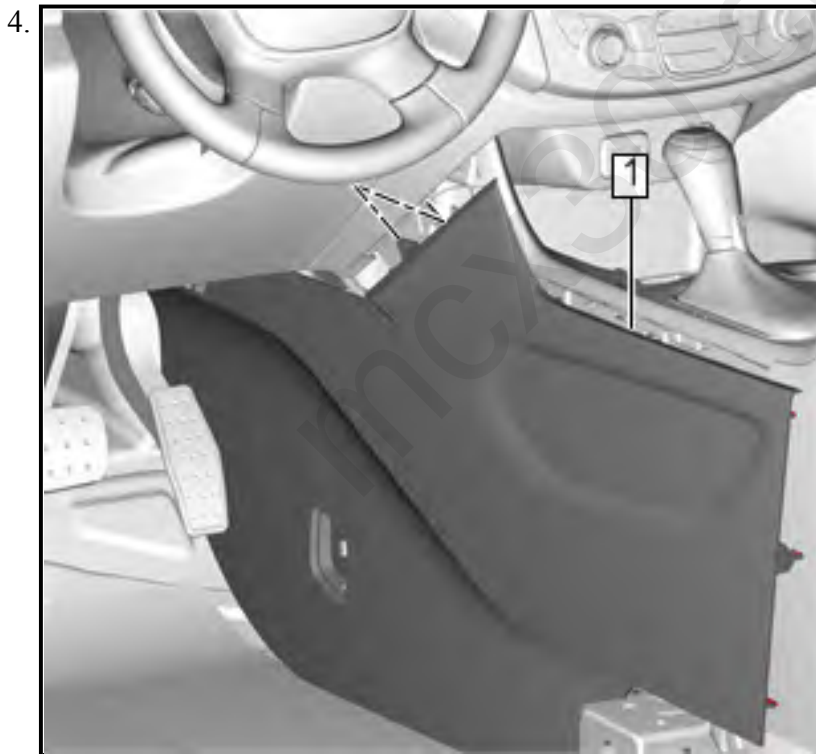




Instrument Panel Radio Front Trim Plate (1) - Remove - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)

2. Instrument Panel Trim Pad - Left Side (2) - Remove - [Instrument Panel Trim Pad Replacement - Left Side](#)

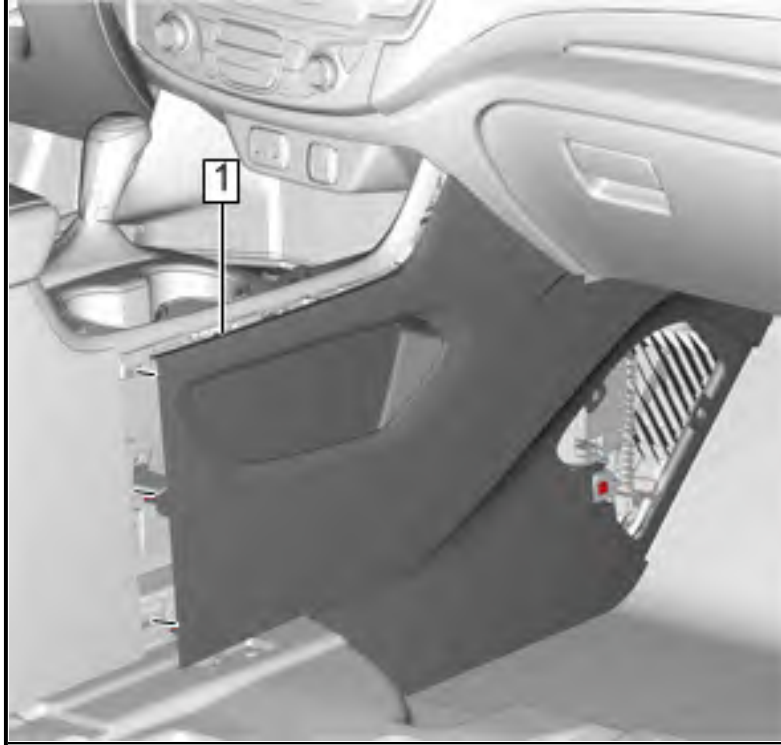
3. Instrument Panel Knee Bolster (3) - Remove - [Instrument Panel Knee Bolster Replacement](#)



4. Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)

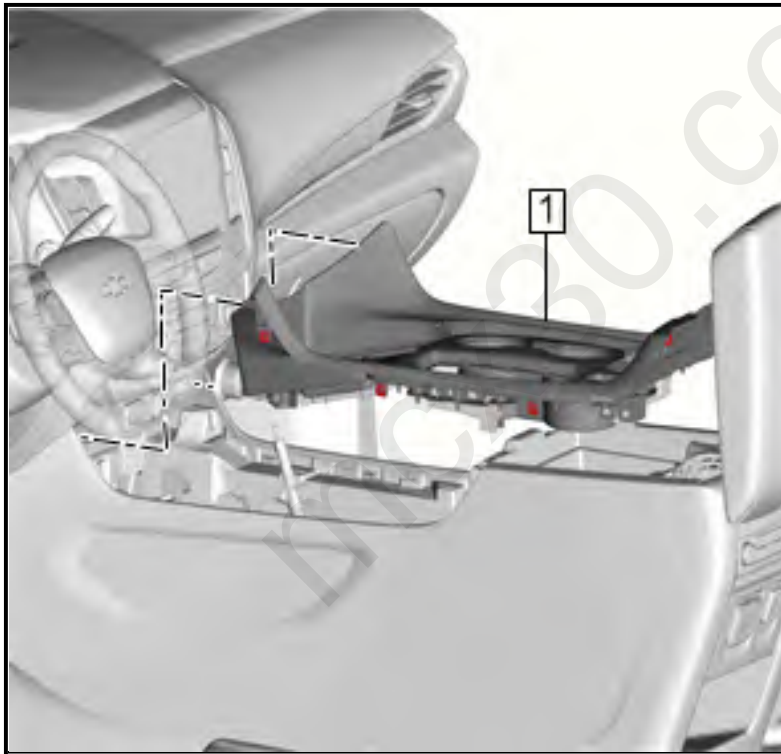


5.



Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

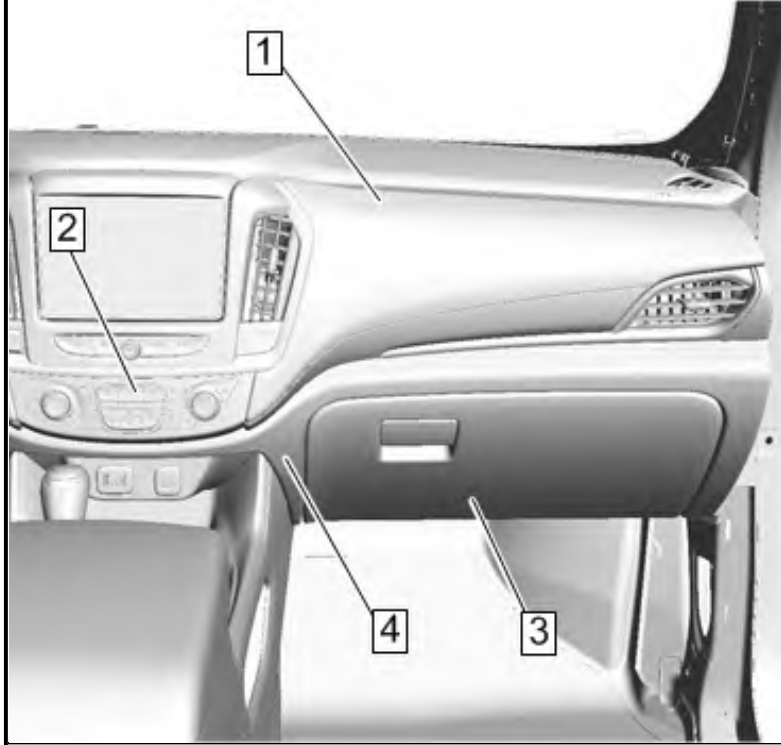
6.



Front Floor Console Cup Holder Plate (1) - Remove - [Front Floor Console Cup Holder Plate Replacement](#)

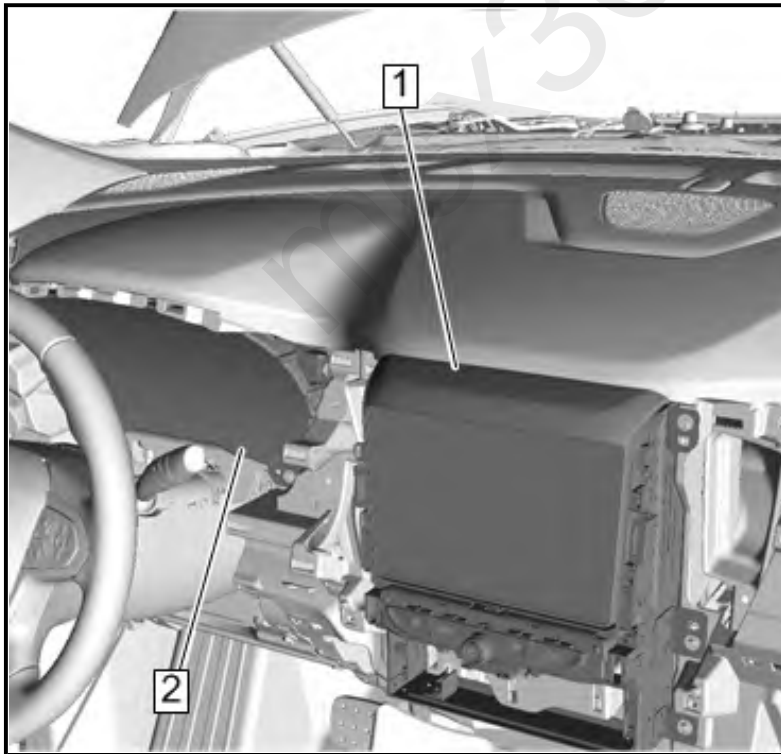
7.





Instrument Panel Trim Pad - Right Side (1) - Remove - [Instrument Panel Trim Pad Replacement - Right Side](#)

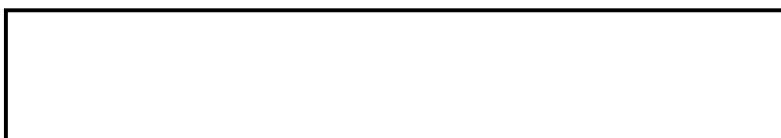
8. Heater and Air Conditioning User Interface Control (2) - Remove - [Heater and Air Conditioning User Interface Control Replacement](#)
9. Disconnect all electrical connectors.
10. Instrument Panel Compartment Door (3) - Remove - [Instrument Panel Compartment Door Replacement](#)
11. Instrument Panel Compartment Door Opening Frame (4) - Remove - [Instrument Panel Compartment Door Opening Frame Replacement](#)
- 12.

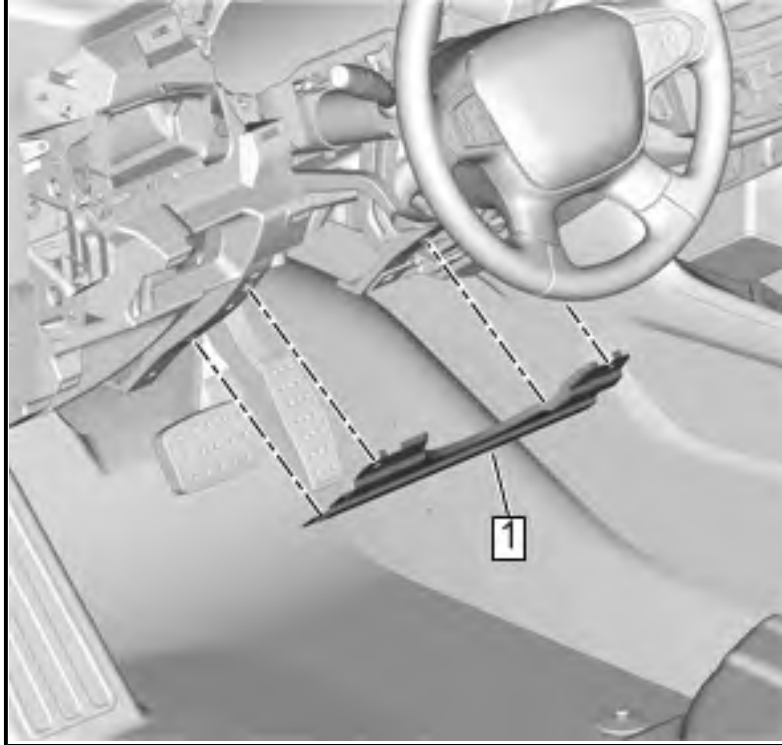


Radio Control (1) - Remove - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

13. Instrument Cluster (2) - Remove - [Instrument Cluster Replacement](#)
14. Disconnect the electrical connectors.

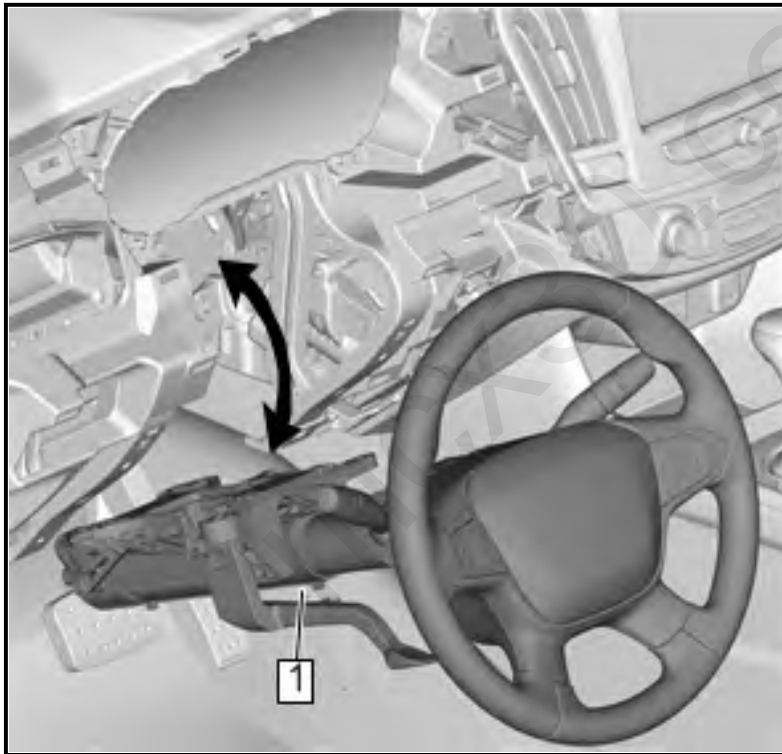
15.





Instrument Panel Knee Bolster Bracket (1) - Remove - [Instrument Panel Knee Bolster Bracket Replacement](#)

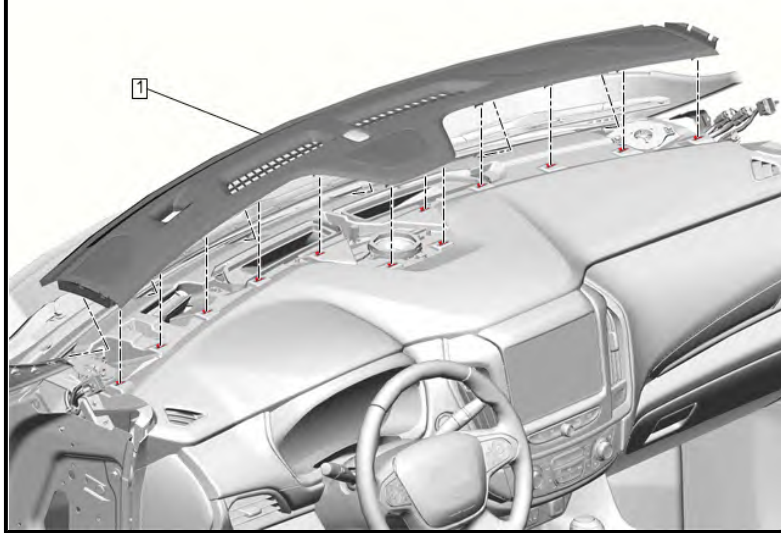
16.



Steering Column (1) - Remove - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

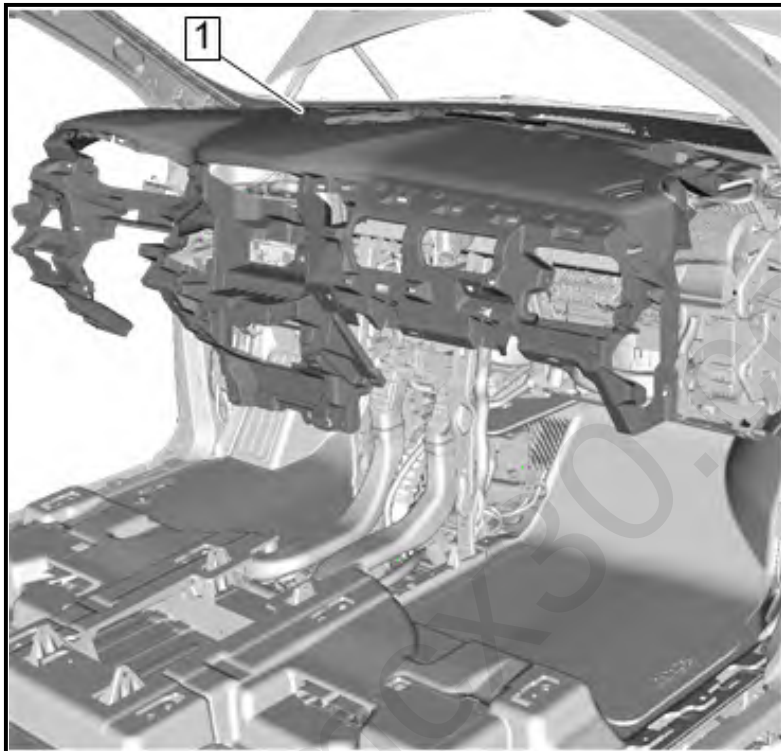
17.





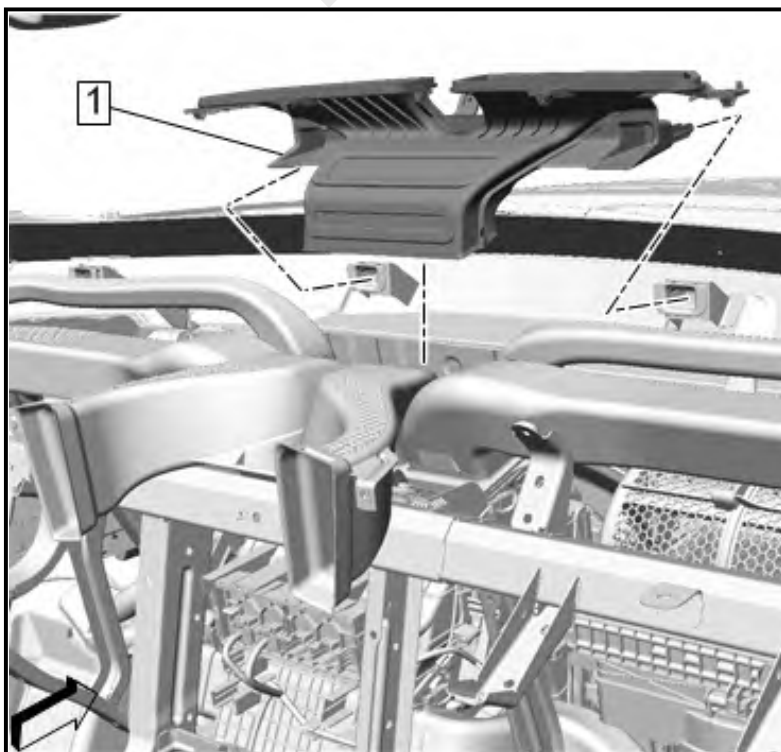
Instrument Panel Extension (1) - Remove - [Instrument Panel Extension Replacement](#)

18.



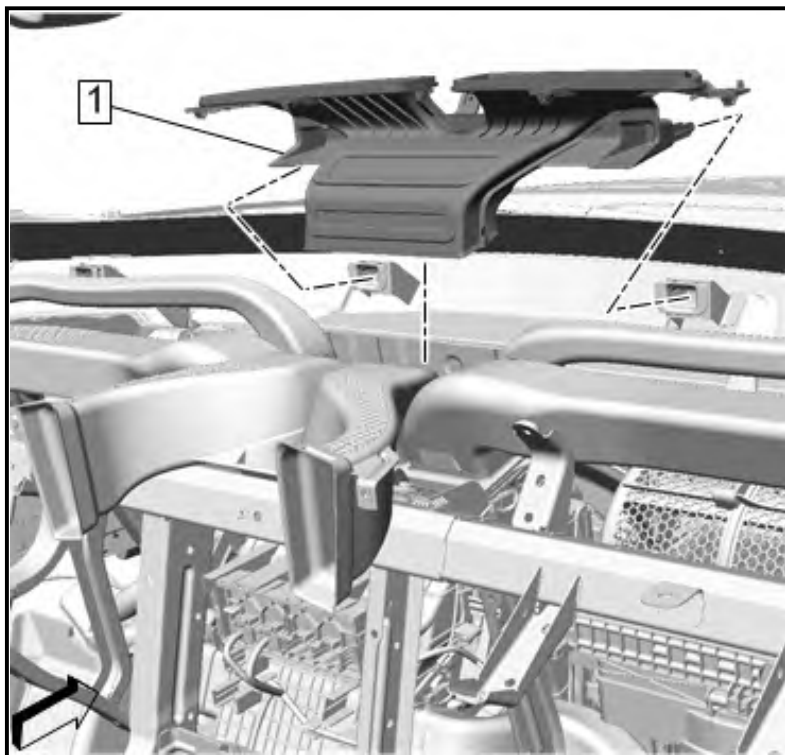
Instrument Panel (1) - Remove - [Instrument Panel Assembly Replacement](#)

19.



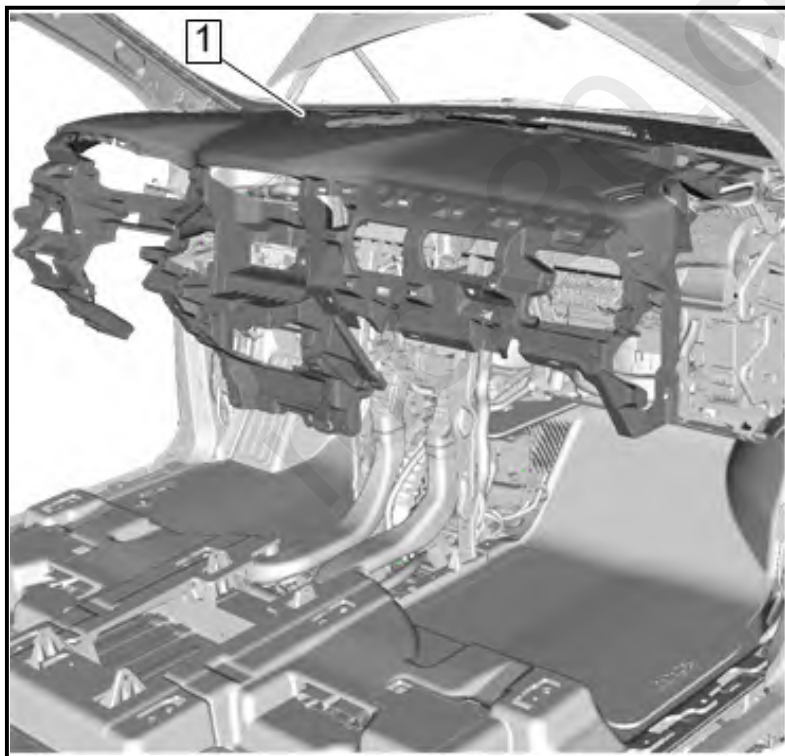
Installation Procedure

1.



Windshield Defroster Outlet Duct (1) - Install

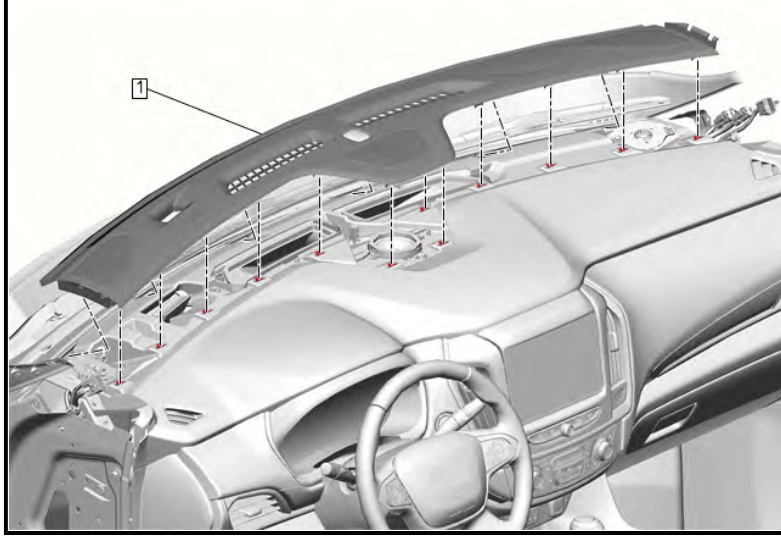
2.



Instrument Panel (1) - Install - [Instrument Panel Assembly Replacement](#)

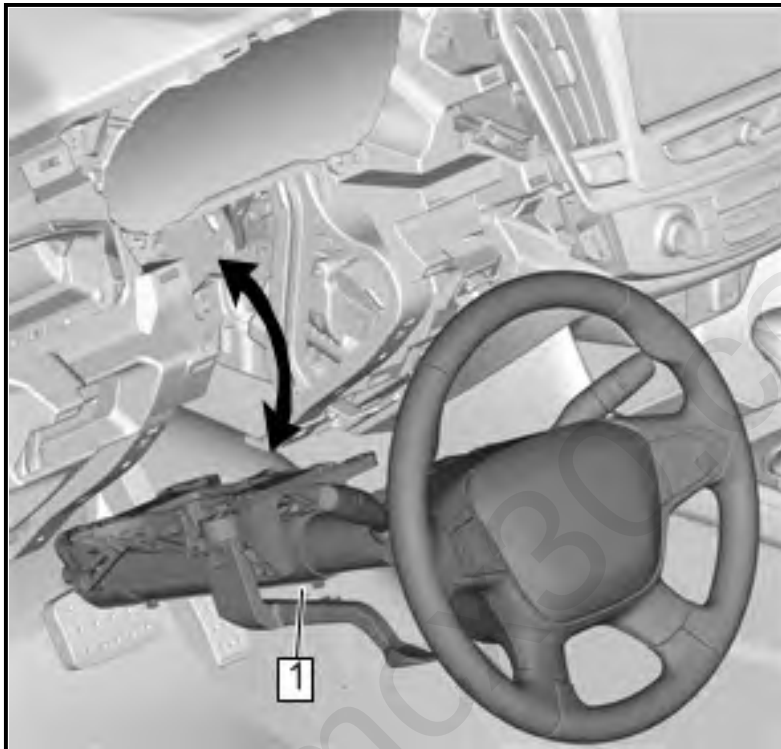
3.





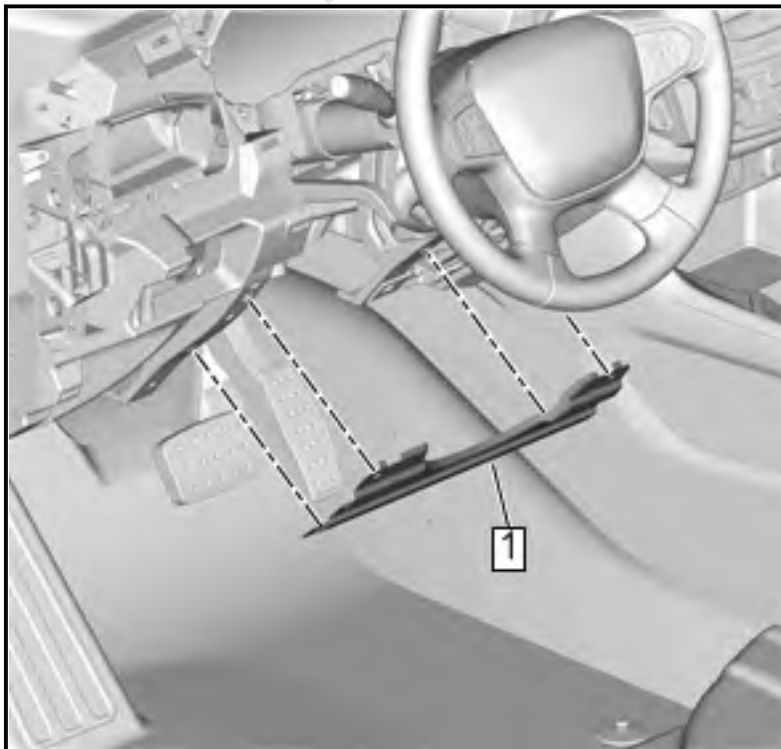
Instrument Panel Extension (1) - Install - [Instrument Panel Extension Replacement](#)

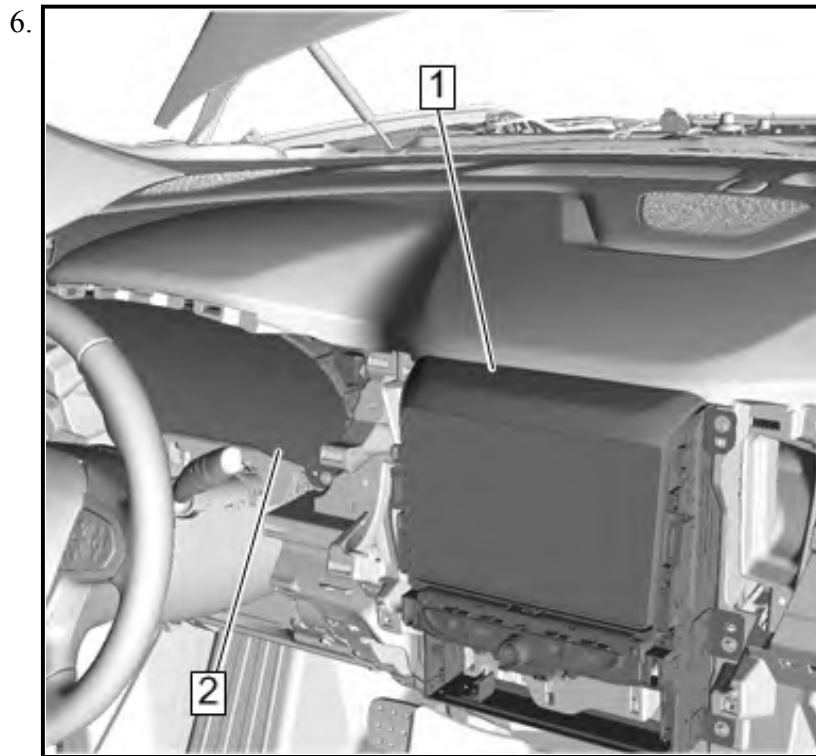
4.



Steering Column (1) - Install - [Steering Column Replacement \(N37\)](#), [Steering Column Replacement \(N38\)](#)

5.

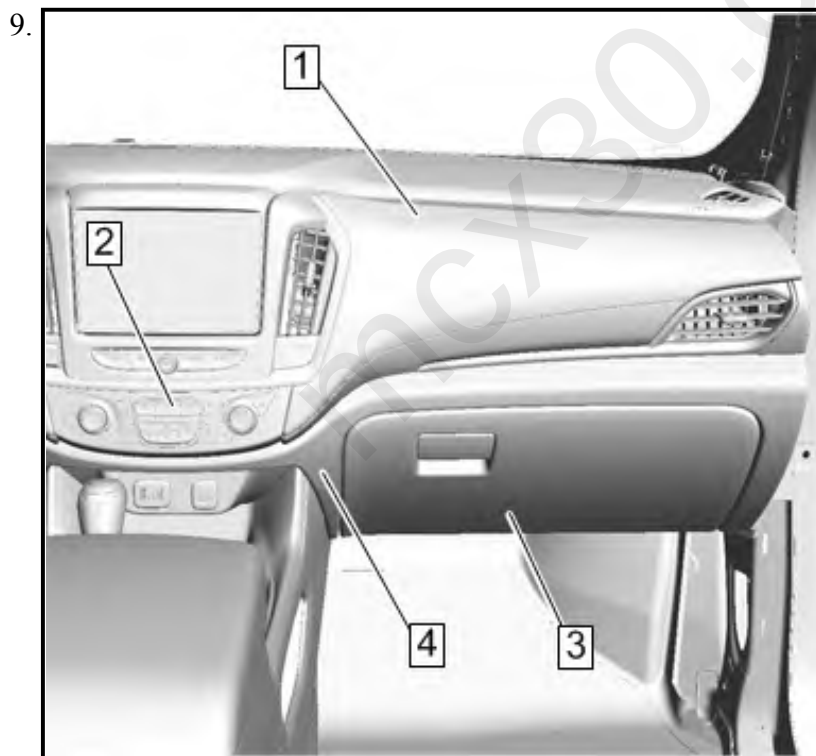




Connect the electrical connectors.

7. Instrument Cluster (2) - Install - [Instrument Cluster Replacement](#)

8. Radio Control (1) - Install - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)



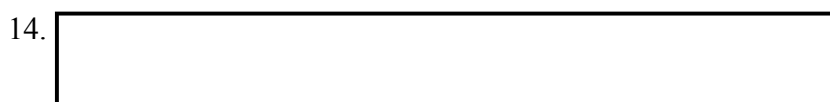
Instrument Panel Compartment Door Opening Frame (4) - Install - [Instrument Panel Compartment Door Opening Frame Replacement](#)

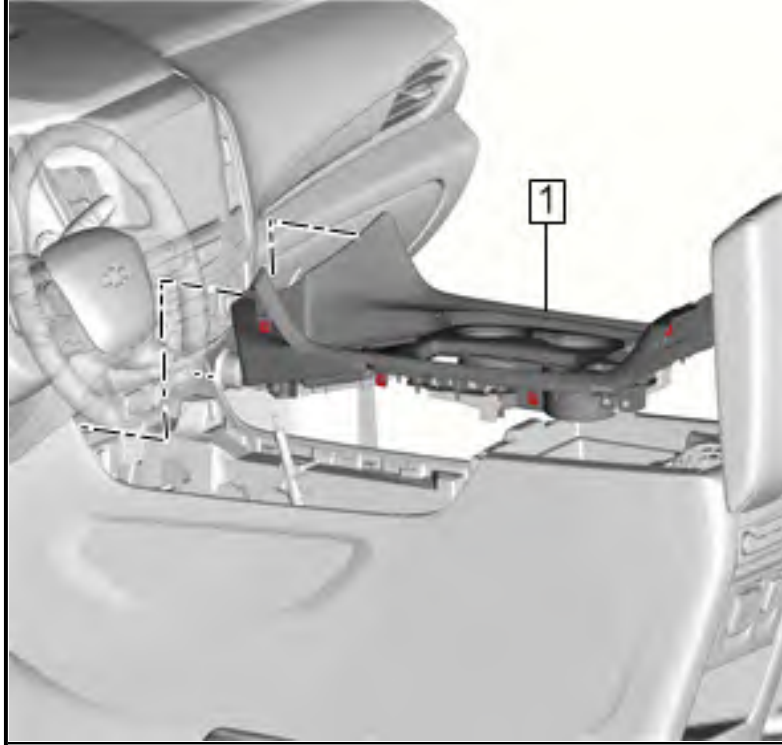
10. Instrument Panel Compartment Door (3) - Install - [Instrument Panel Compartment Door Replacement](#)

11. Connect the electrical connectors.

12. Heater and Air Conditioning User Interface Control (2) - Install - [Heater and Air Conditioning User Interface Control Replacement](#)

13. Instrument Panel Trim Pad - Right Side (1) - Install - [Instrument Panel Trim Pad Replacement - Right Side](#)





Front Floor Console Cup Holder Plate (1) - Install - [Front Floor Console Cup Holder Plate Replacement](#)

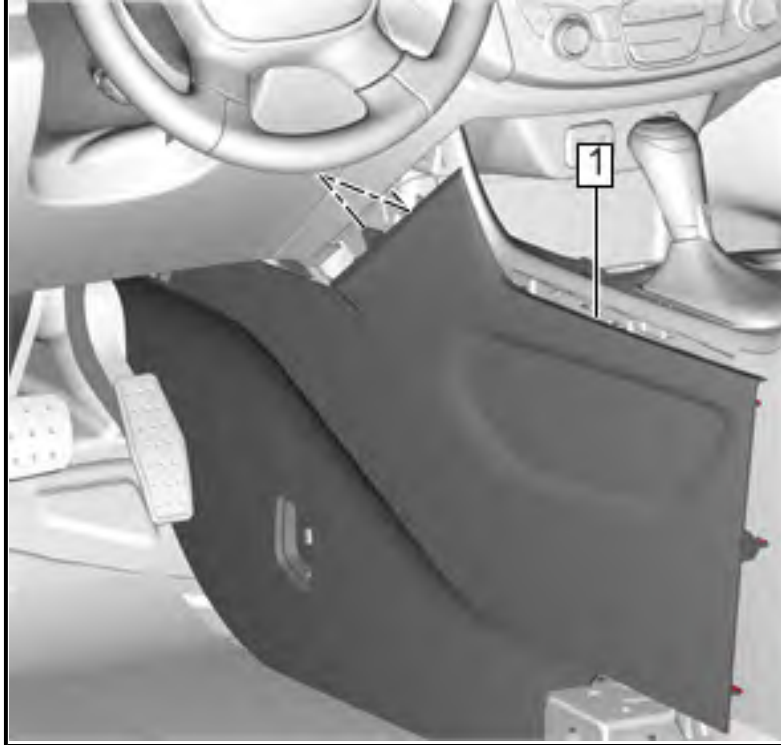
15.



Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

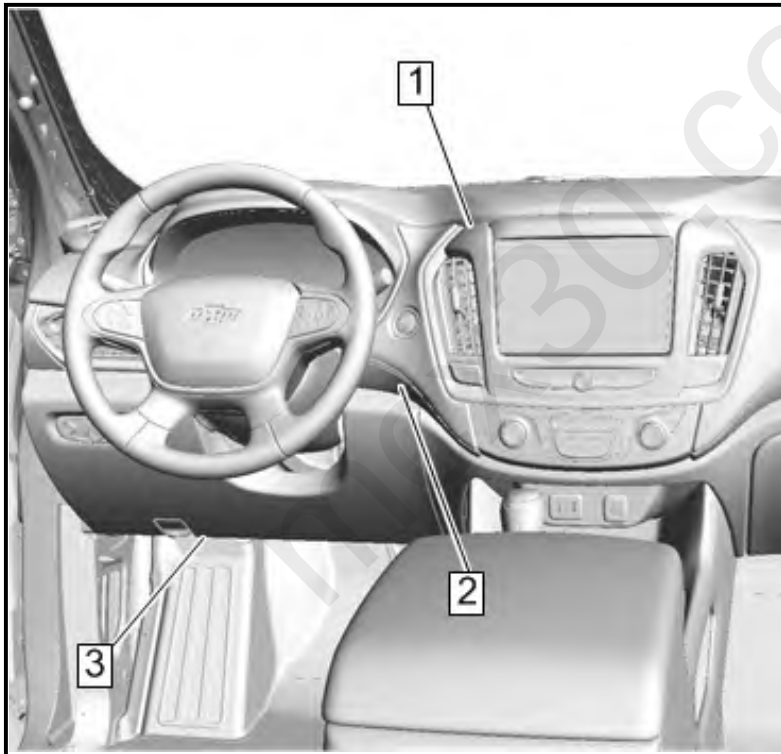
16.





Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

17.



Instrument Panel Trim Pad - Left Side (2) - Install - [Instrument Panel Trim Pad Replacement - Left Side](#)

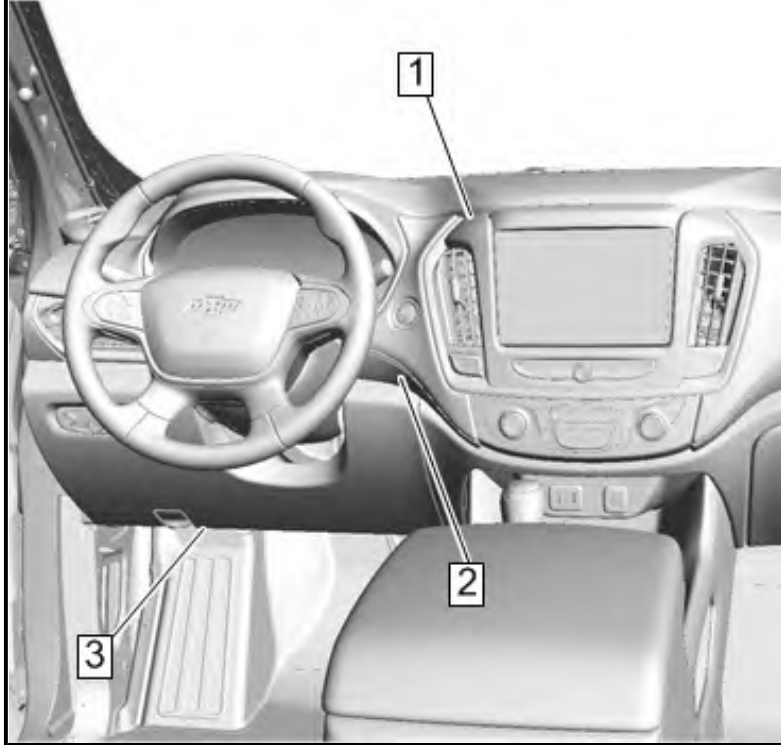
18. Instrument Panel Radio Front Trim Plate (1) - Install - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\) Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)
19. Instrument Panel Knee Bolster (3) - Install - [Instrument Panel Knee Bolster Replacement](#)

SIDE WINDOW DEFOGGER OUTLET DUCT REPLACEMENT - LEFT SIDE

Removal Procedure

1.

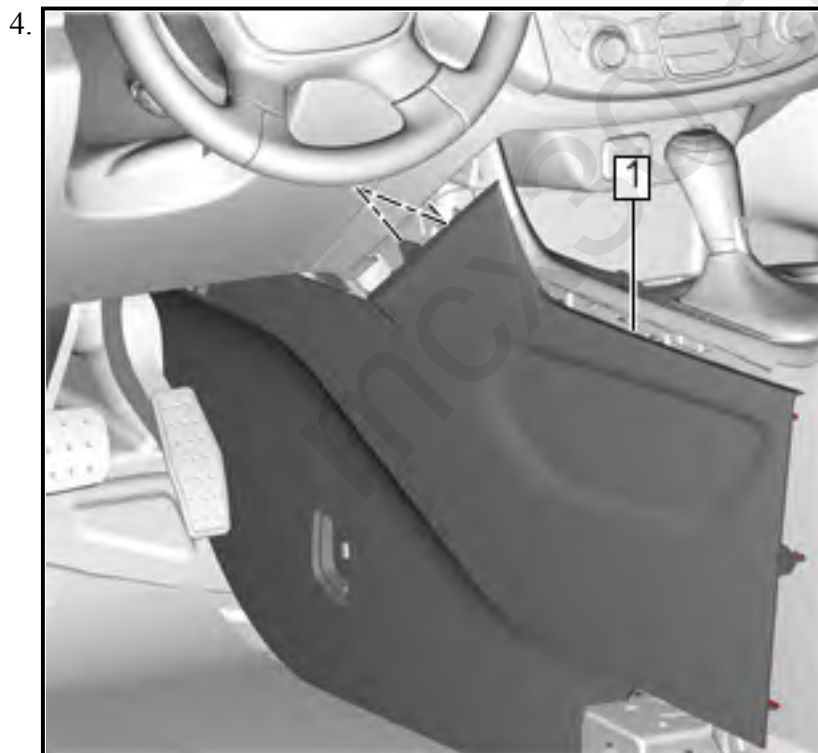




Instrument Panel Radio Front Trim Plate (1) - Remove - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)

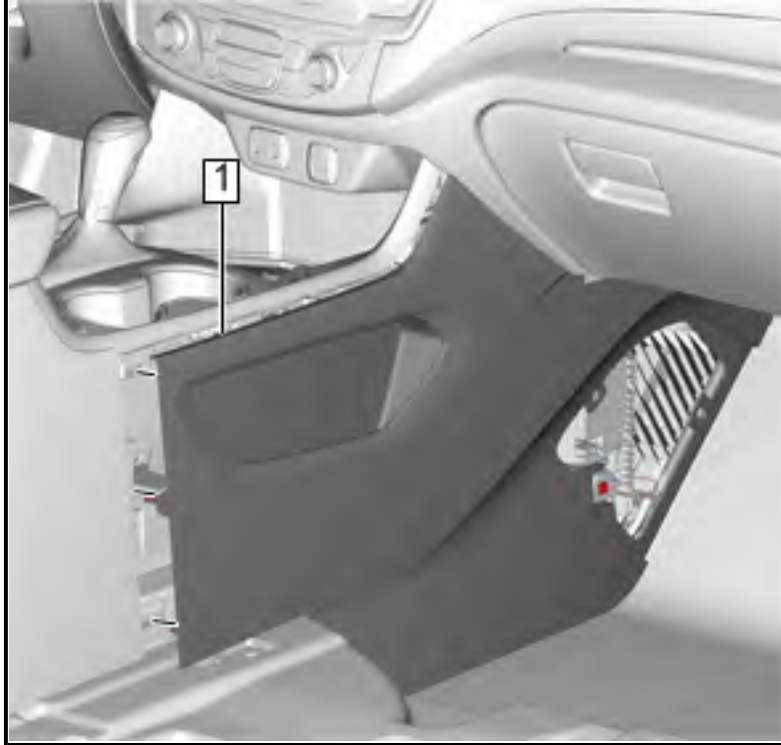
2. Instrument Panel Trim Pad - Left Side (2) - Remove - [Instrument Panel Trim Pad Replacement - Left Side](#)

3. Instrument Panel Knee Bolster (3) - Remove - [Instrument Panel Knee Bolster Replacement](#)



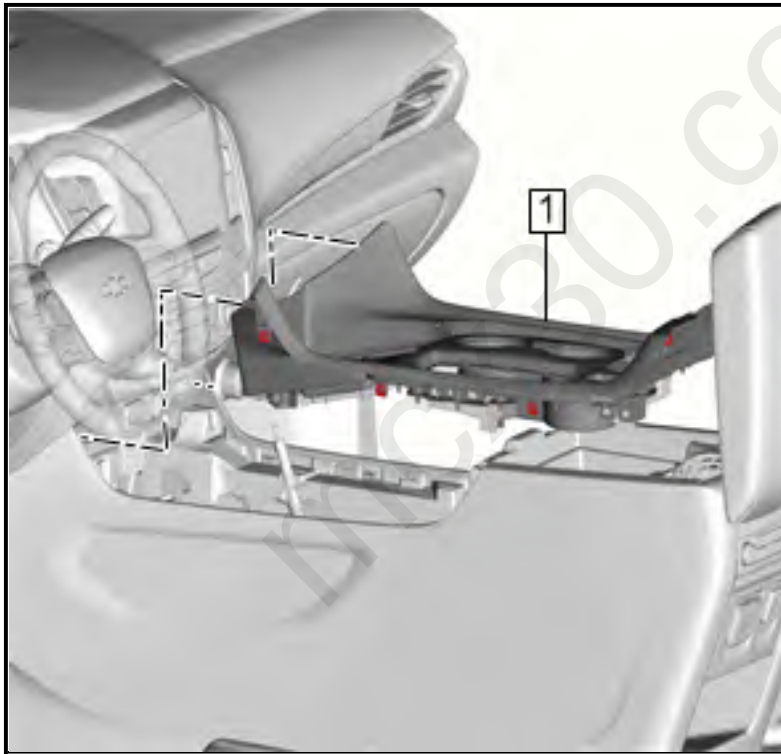
Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)





Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

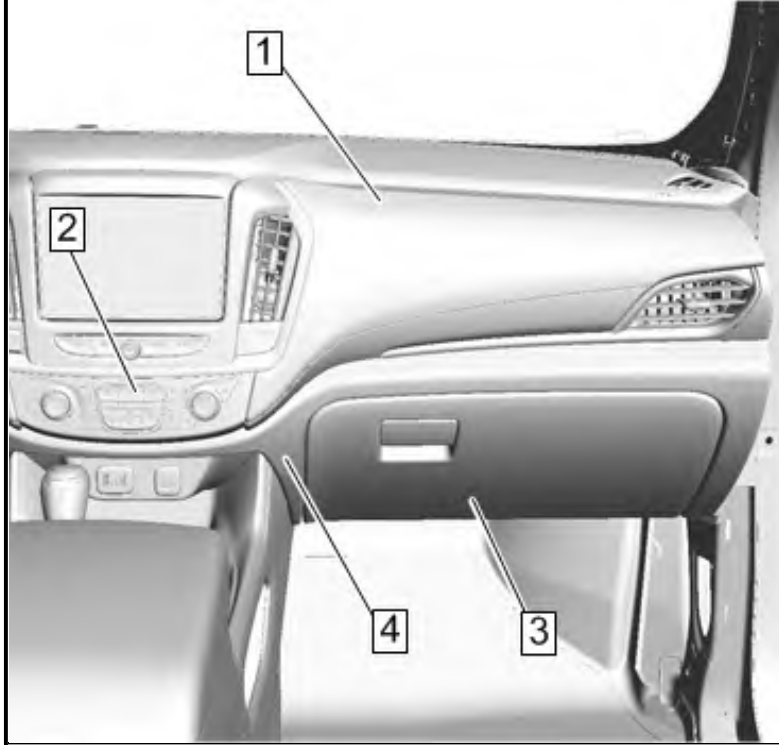
6.



Front Floor Console Cup Holder Plate (1) - Remove - [Front Floor Console Cup Holder Plate Replacement](#)

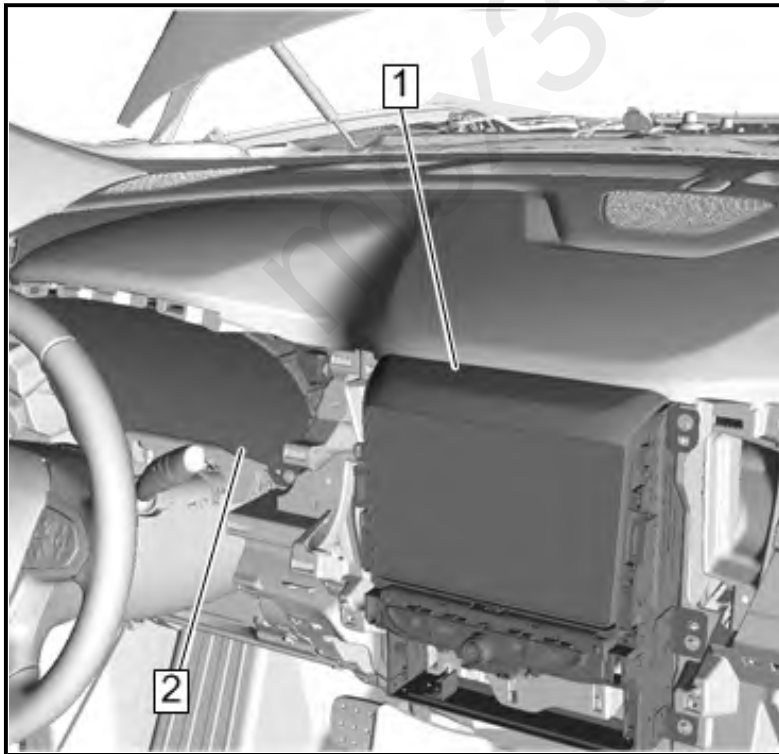
7.





Instrument Panel Trim Pad - Right Side (1) - Remove - [Instrument Panel Trim Pad Replacement - Right Side](#)

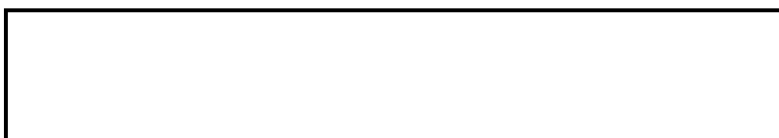
8. Heater and Air Conditioning User Interface Control (2) - Remove - [Heater and Air Conditioning User Interface Control Replacement](#)
9. Disconnect all electrical connectors.
10. Instrument Panel Compartment Door (3) - Remove - [Instrument Panel Compartment Door Replacement](#)
11. Instrument Panel Compartment Door Opening Frame (4) - Remove - [Instrument Panel Compartment Door Opening Frame Replacement](#)
- 12.

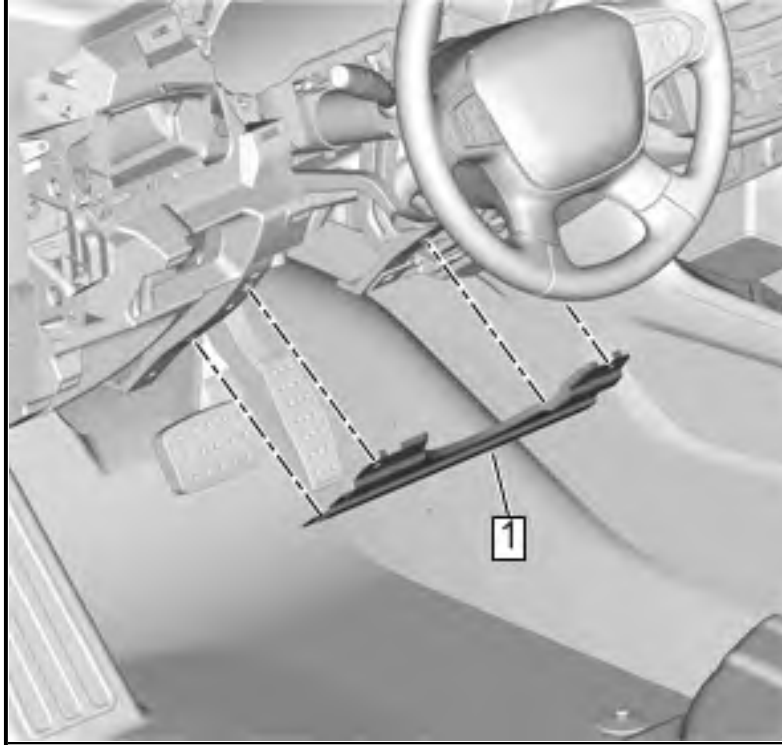


Radio Control (1) - Remove - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

13. Instrument Cluster (2) - Remove - [Instrument Cluster Replacement](#)
14. Disconnect the electrical connectors.

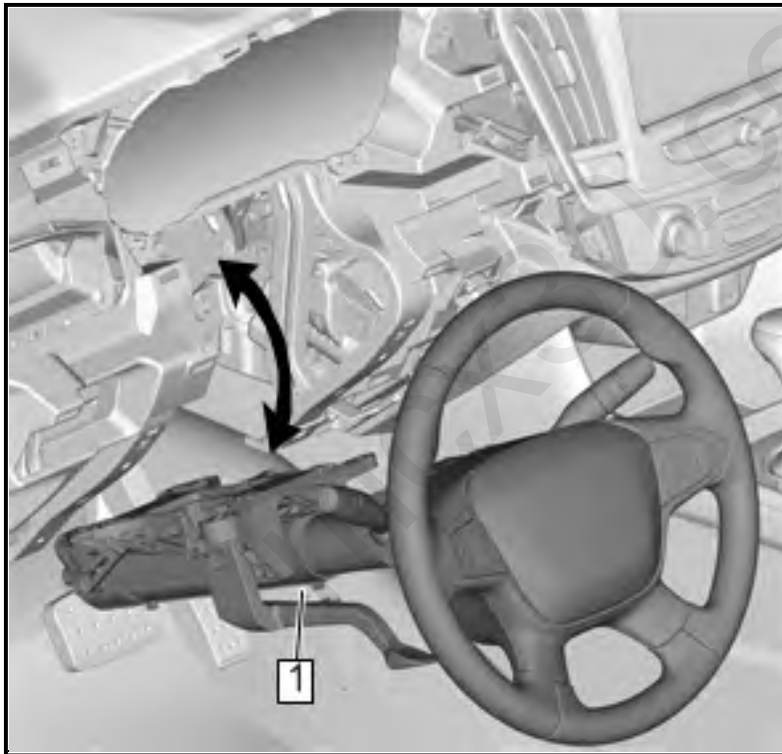
15.





Instrument Panel Knee Bolster Bracket (1) - Remove - [Instrument Panel Knee Bolster Bracket Replacement](#)

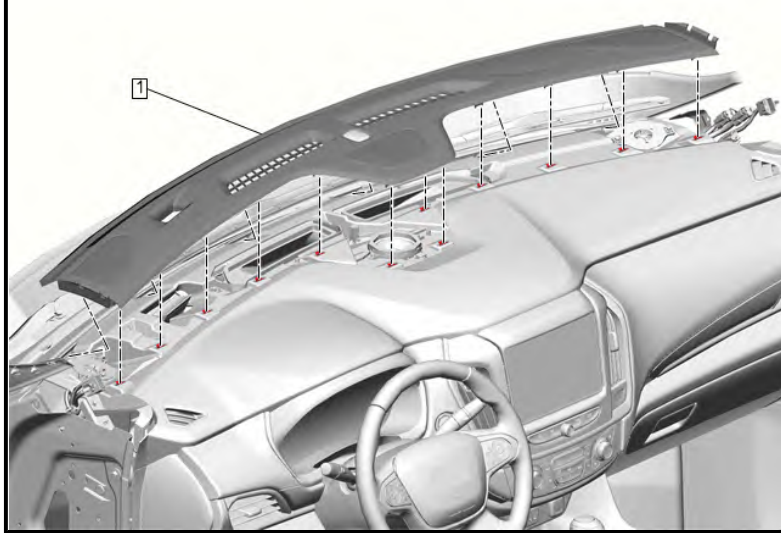
16.



Steering Column (1) - Remove - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

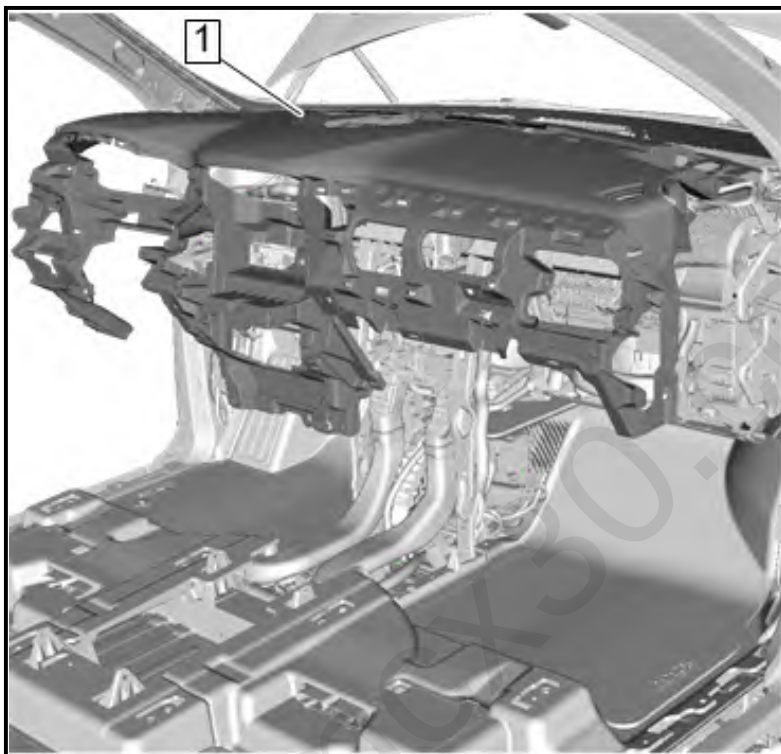
17.





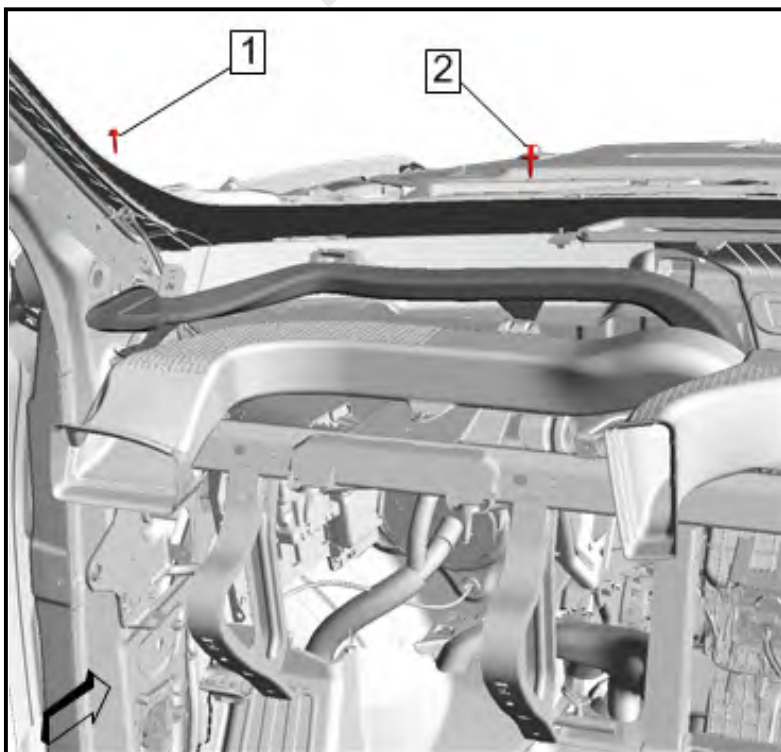
Instrument Panel Extension (1) - Remove - [Instrument Panel Extension Replacement](#)

18.



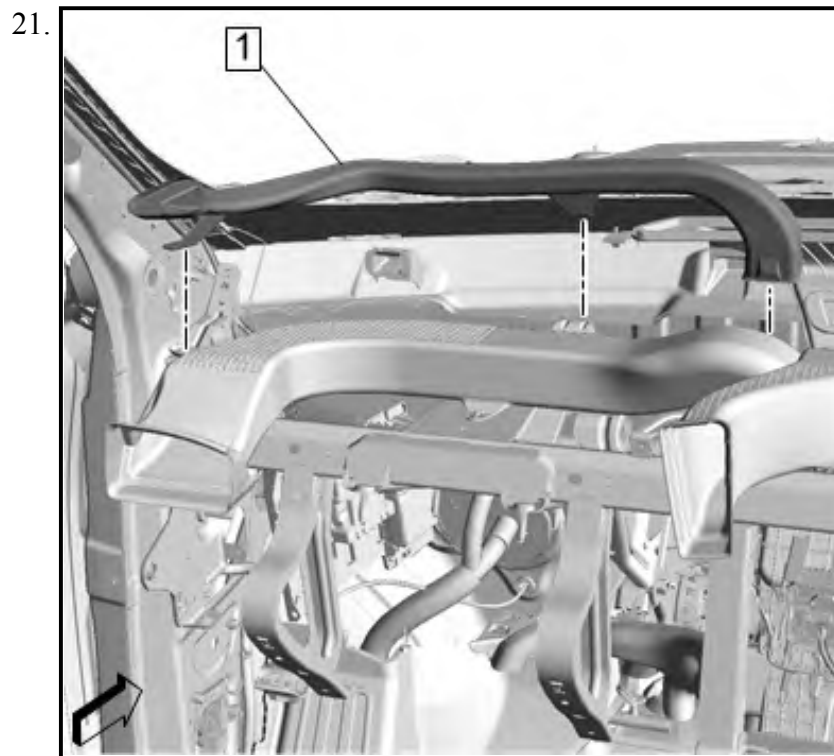
Instrument Panel (1) - Remove - [Instrument Panel Assembly Replacement](#)

19.



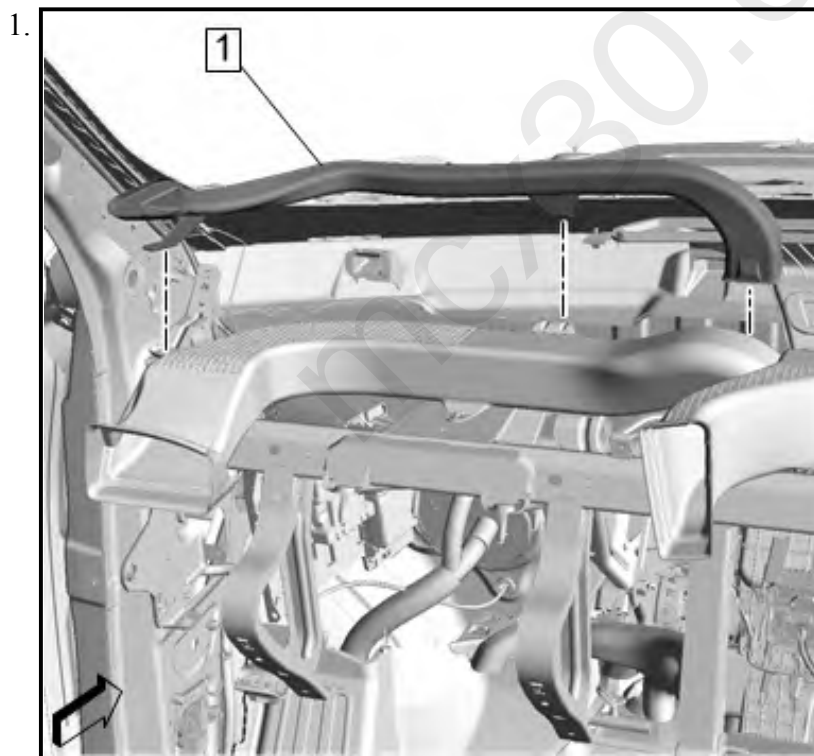
Side Window Defogger Outlet Duct Bolt (1) - Remove

20. Side Window Defogger Outlet Duct Retainer (2) - Remove



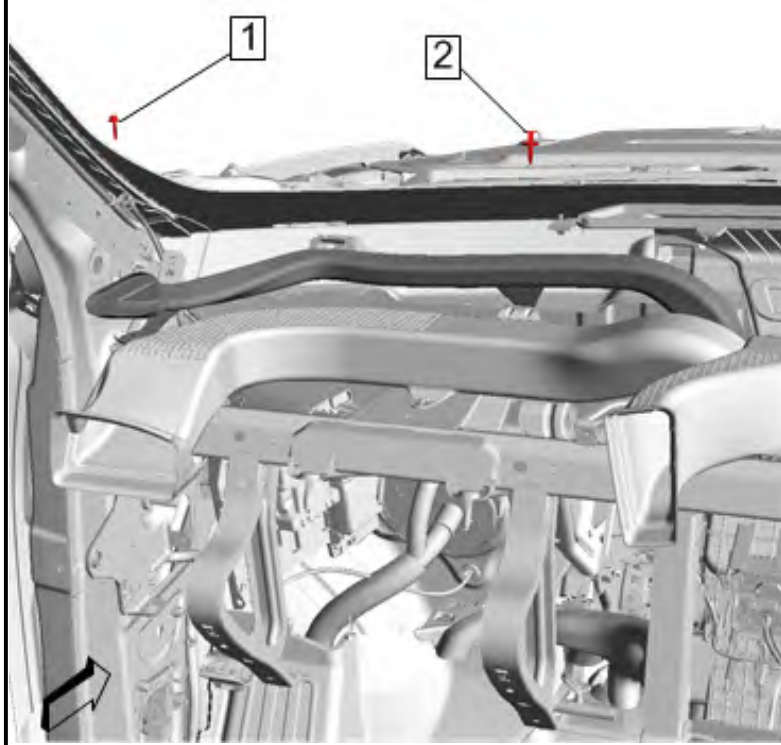
Side Window Defogger Outlet Duct - Left Side (1) - Remove

Installation Procedure



Side Window Defogger Outlet Duct - Left Side (1) - Install

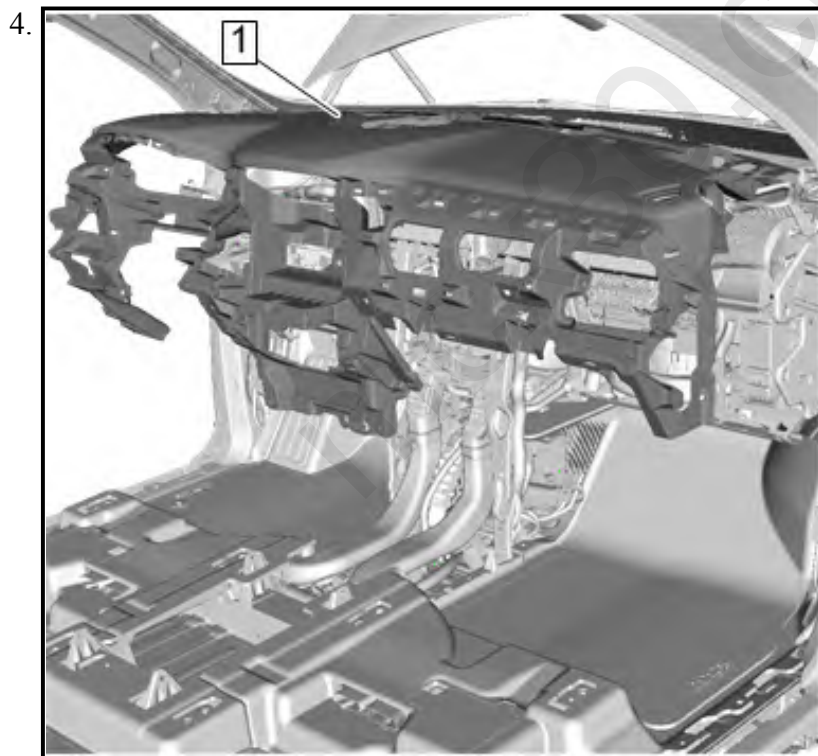




Side Window Defogger Outlet Duct Retainer (2) - Install

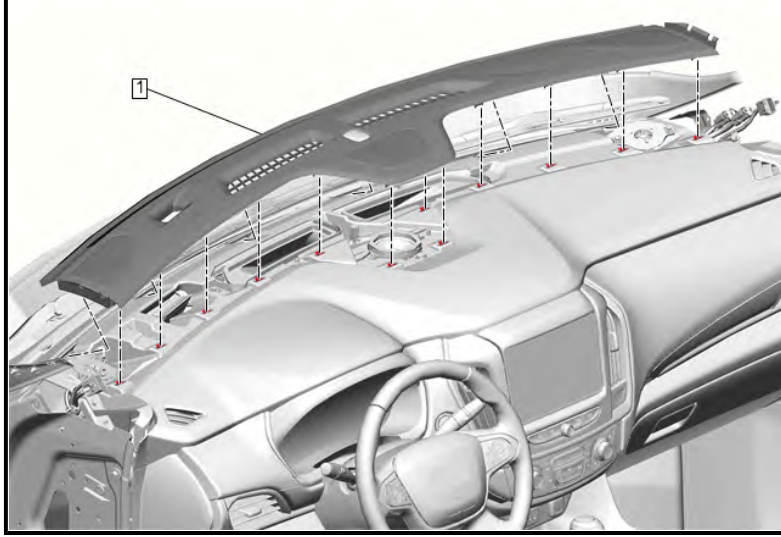
CAUTION: Refer to [Fastener Caution](#) .

3. Side Window Defogger Outlet Duct Bolt (1) - Install and tighten 2.5 N.m (22 lb in)

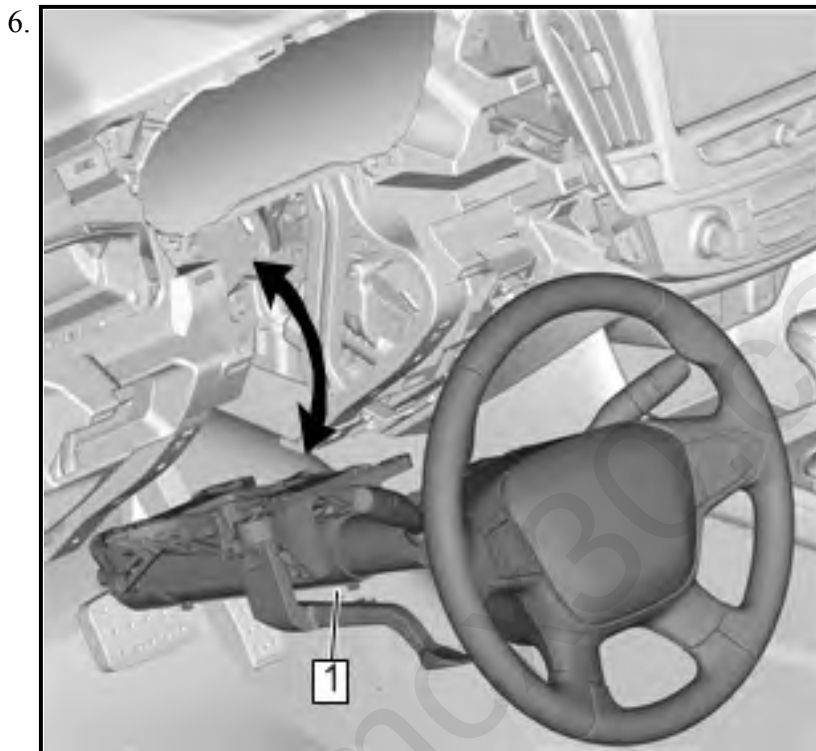


Instrument Panel (1) - Install - [Instrument Panel Assembly Replacement](#)

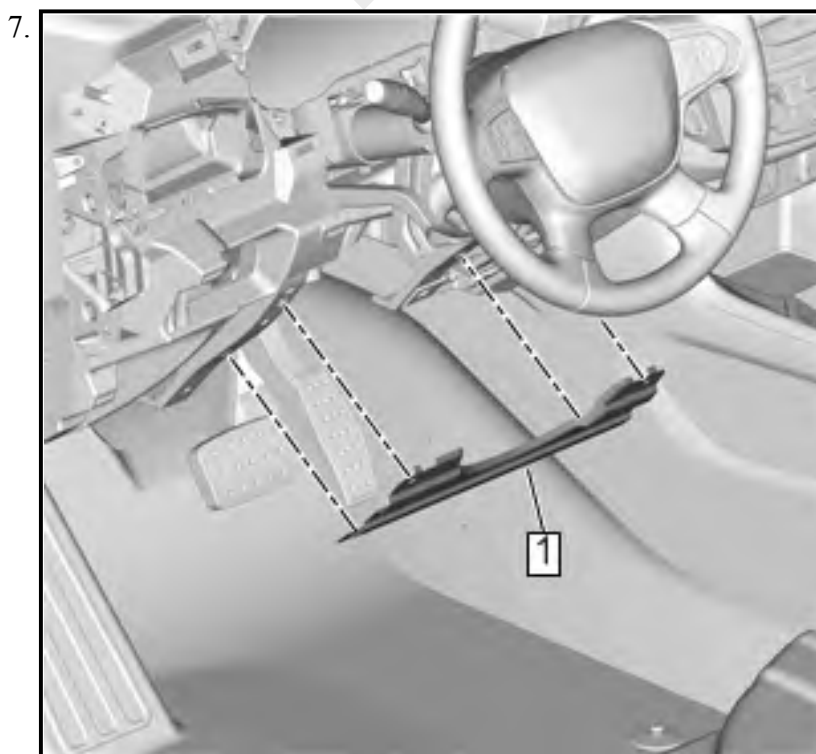


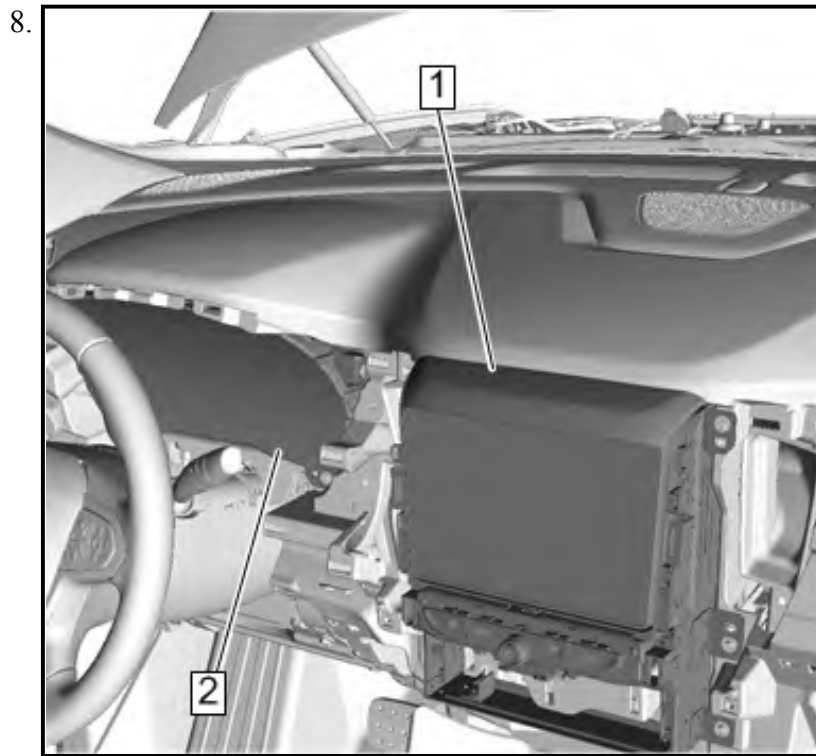


Instrument Panel Extension (1) - Install - [Instrument Panel Extension Replacement](#)



Steering Column (1) - Install - [Steering Column Replacement \(N37\)](#). [Steering Column Replacement \(N38\)](#)

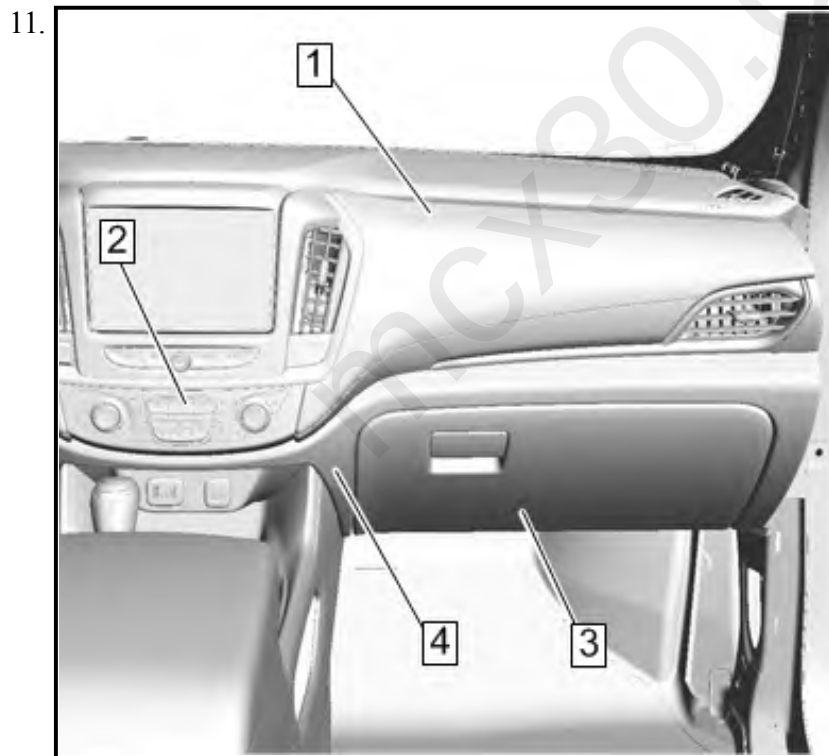




Connect the electrical connectors.

9. Instrument Cluster (2) - Install - [Instrument Cluster Replacement](#)

10. Radio Control (1) - Install - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)



Instrument Panel Compartment Door Opening Frame (4) - Install - [Instrument Panel Compartment Door Opening Frame Replacement](#)

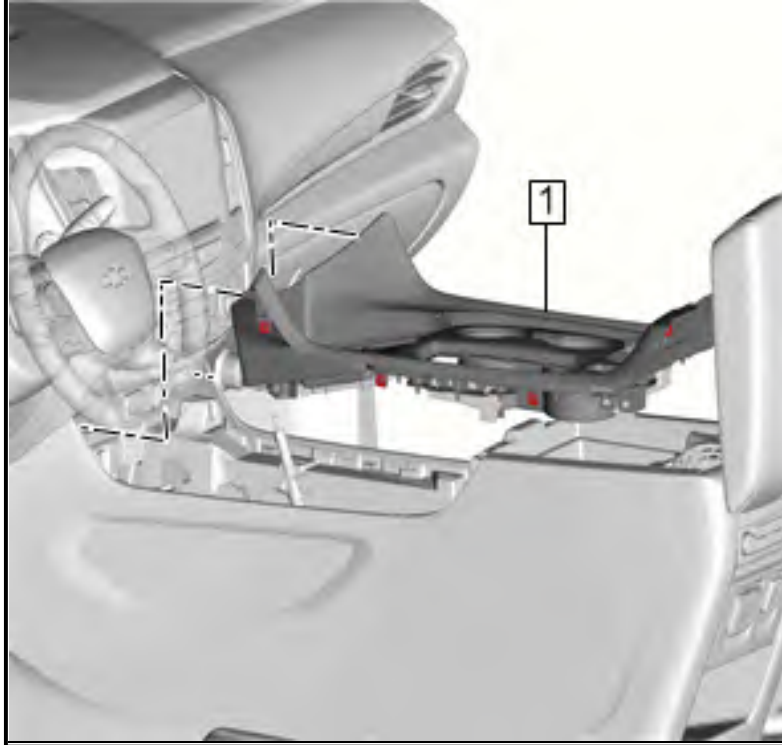
12. Instrument Panel Compartment Door (3) - Install - [Instrument Panel Compartment Door Replacement](#)

13. Connect the electrical connectors.

14. Heater and Air Conditioning User Interface Control (2) - Install - [Heater and Air Conditioning User Interface Control Replacement](#)

15. Instrument Panel Trim Pad - Right Side (1) - Install - [Instrument Panel Trim Pad Replacement - Right Side](#)





Front Floor Console Cup Holder Plate (1) - Install - [Front Floor Console Cup Holder Plate Replacement](#)

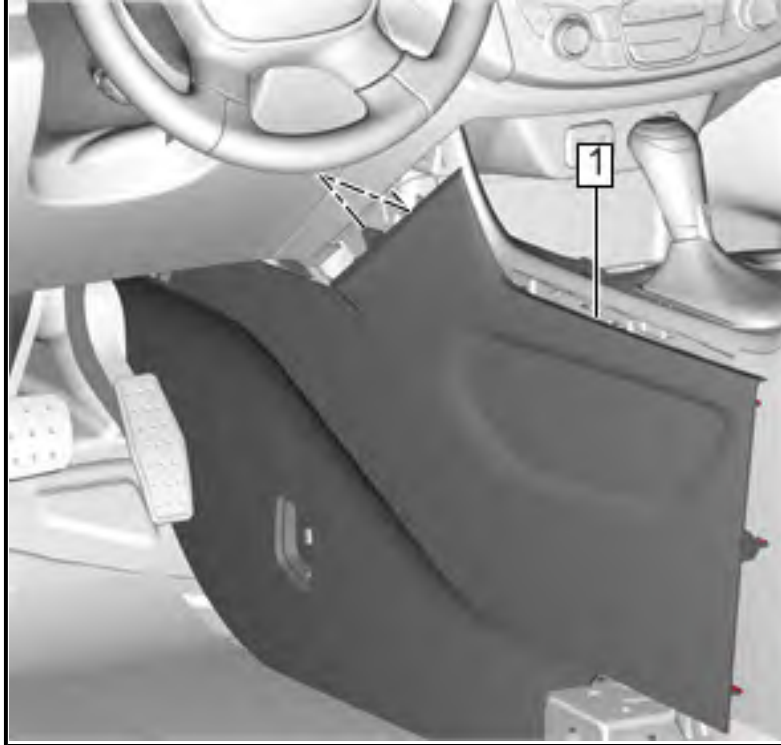
17.



Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

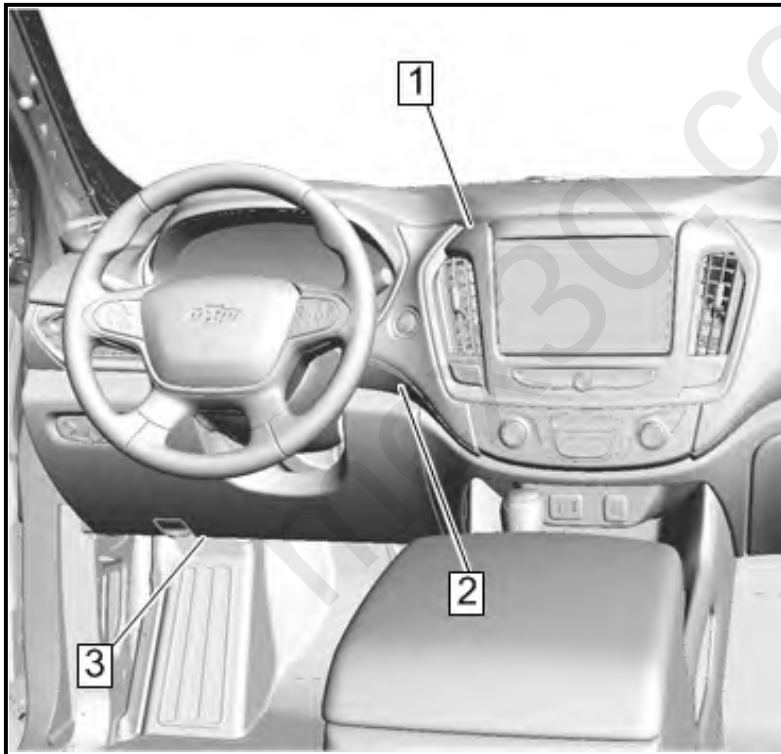
18.





Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

19.



Instrument Panel Trim Pad - Left Side (2) - Install - [Instrument Panel Trim Pad Replacement - Left Side](#)

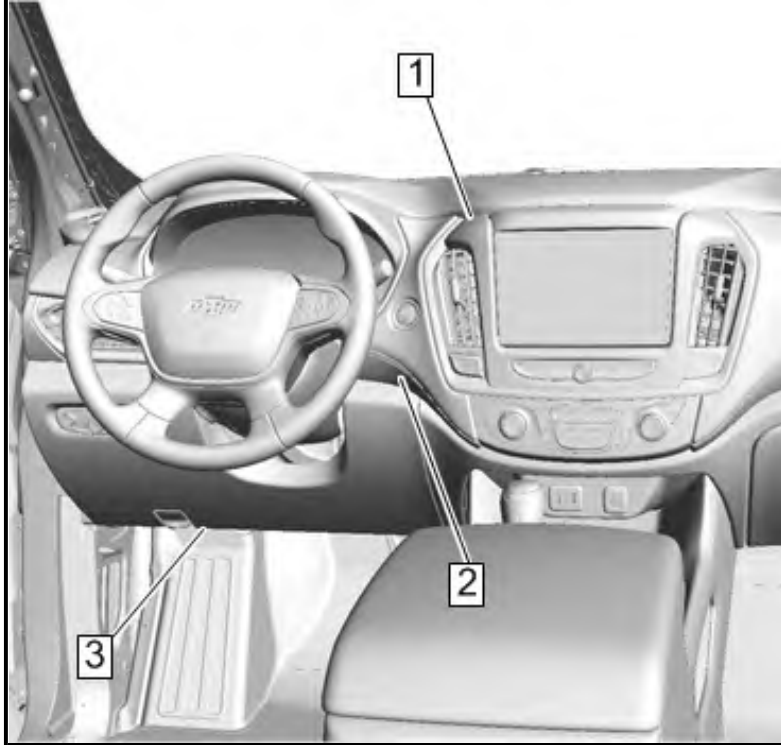
20. Instrument Panel Radio Front Trim Plate (1) - Install - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\) Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)
21. Instrument Panel Knee Bolster (3) - Install - [Instrument Panel Knee Bolster Replacement](#)

SIDE WINDOW DEFOGGER OUTLET DUCT REPLACEMENT - RIGHT SIDE

Removal Procedure

1.

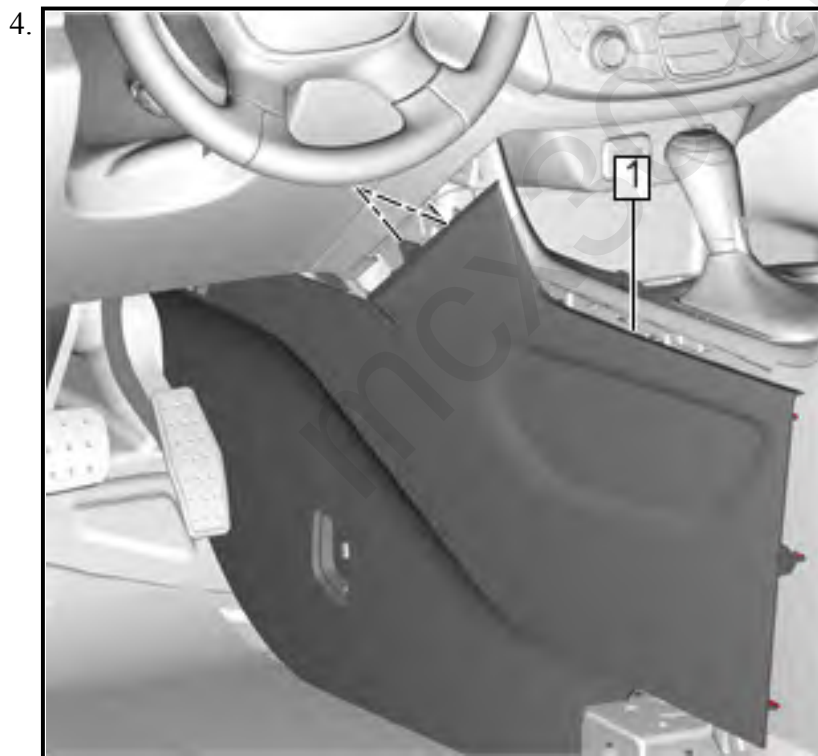




Instrument Panel Radio Front Trim Plate (1) - Remove - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\)](#) [Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)

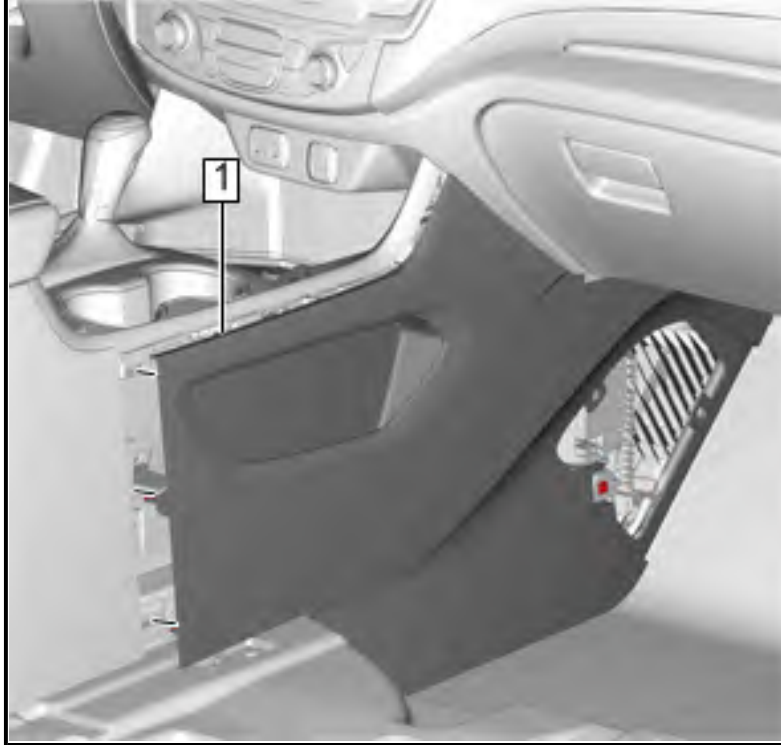
2. Instrument Panel Trim Pad - Left Side (2) - Remove - [Instrument Panel Trim Pad Replacement - Left Side](#)

3. Instrument Panel Knee Bolster (3) - Remove - [Instrument Panel Knee Bolster Replacement](#)



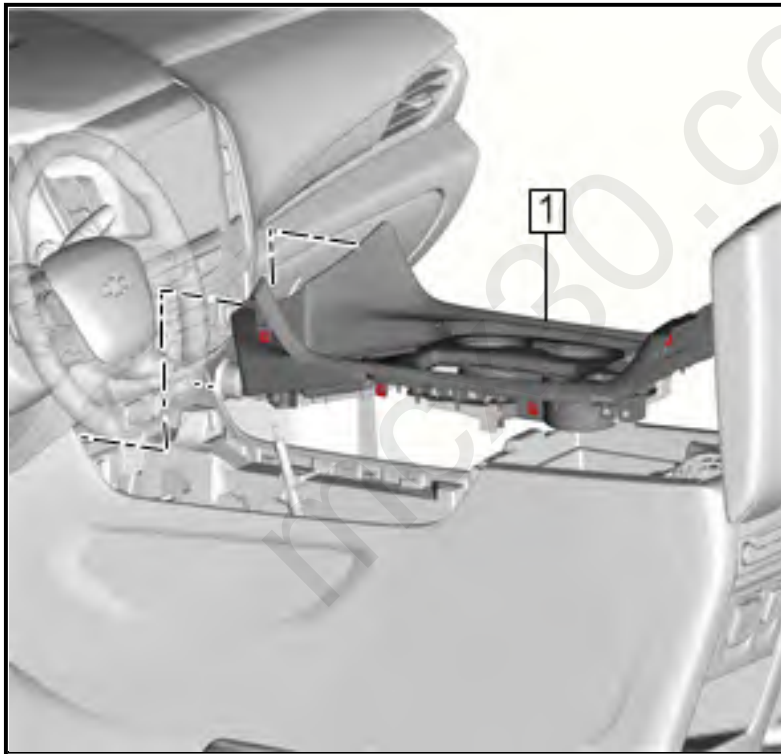
Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)





Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

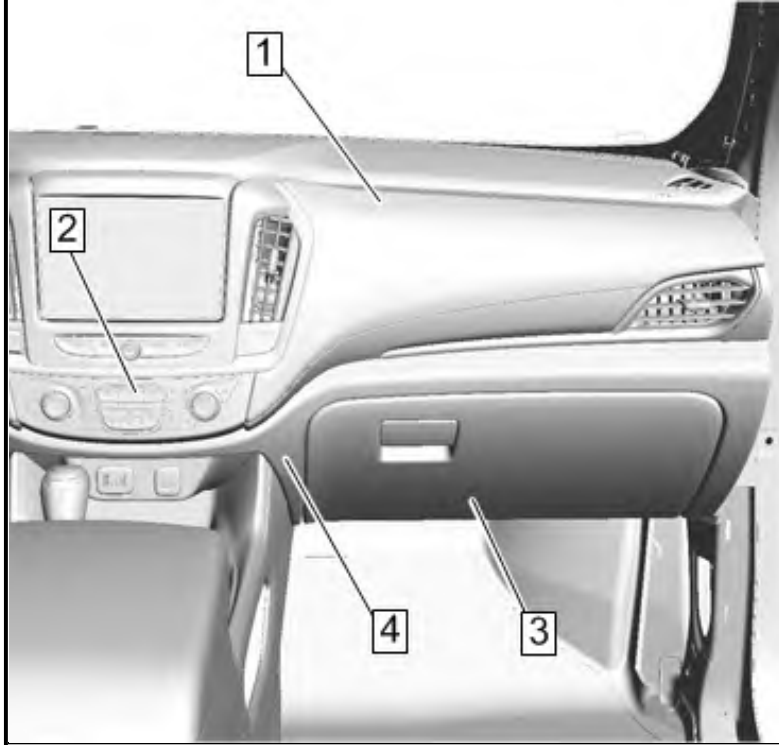
6.



Front Floor Console Cup Holder Plate (1) - Remove - [Front Floor Console Cup Holder Plate Replacement](#)

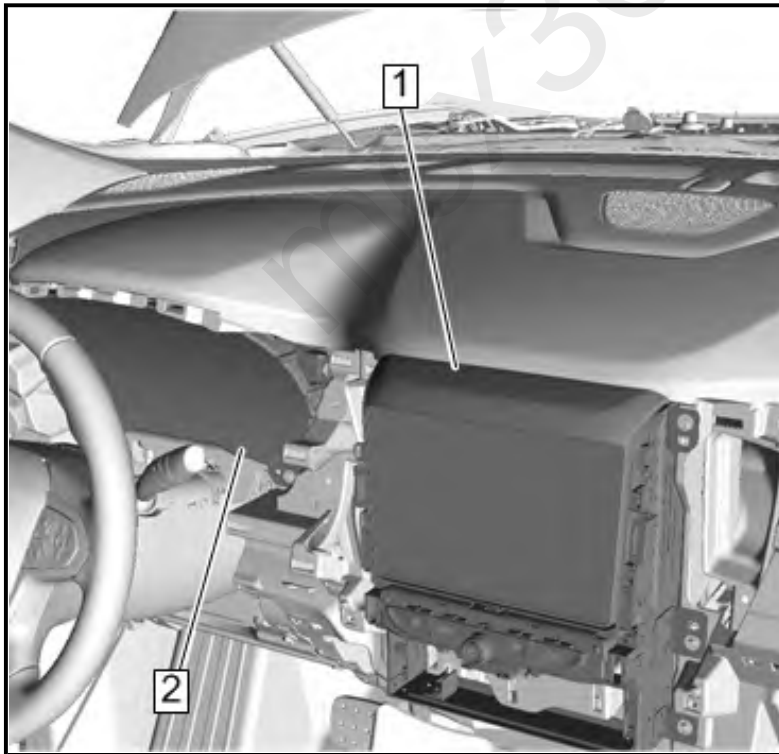
7.





Instrument Panel Trim Pad - Right Side (1) - Remove - [Instrument Panel Trim Pad Replacement - Right Side](#)

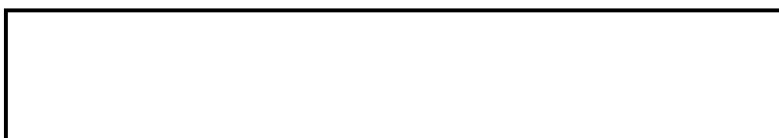
8. Heater and Air Conditioning User Interface Control (2) - Remove - [Heater and Air Conditioning User Interface Control Replacement](#)
9. Disconnect all electrical connectors.
10. Instrument Panel Compartment Door (3) - Remove - [Instrument Panel Compartment Door Replacement](#)
11. Instrument Panel Compartment Door Opening Frame (4) - Remove - [Instrument Panel Compartment Door Opening Frame Replacement](#)
- 12.

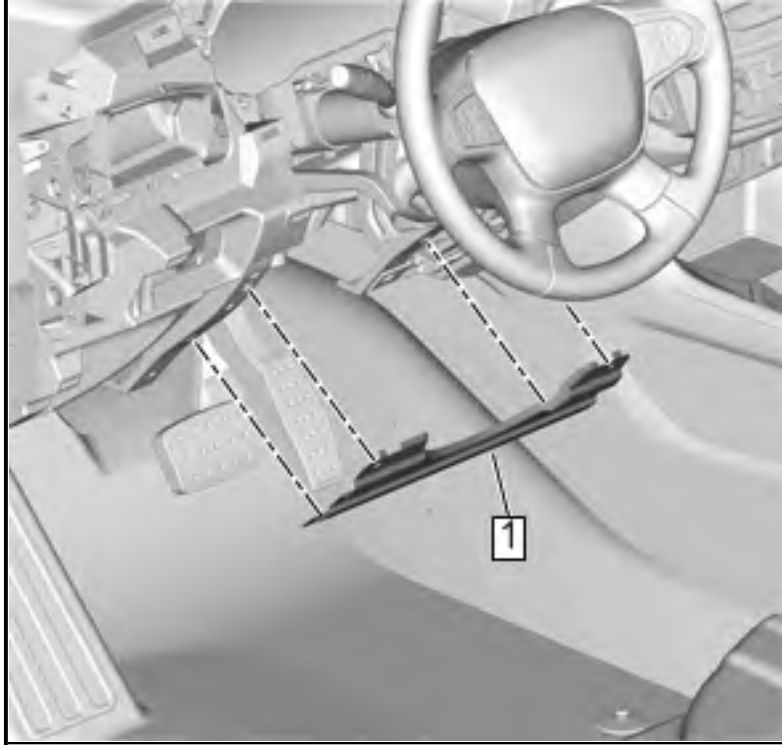


Radio Control (1) - Remove - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)

13. Instrument Cluster (2) - Remove - [Instrument Cluster Replacement](#)
14. Disconnect the electrical connectors.

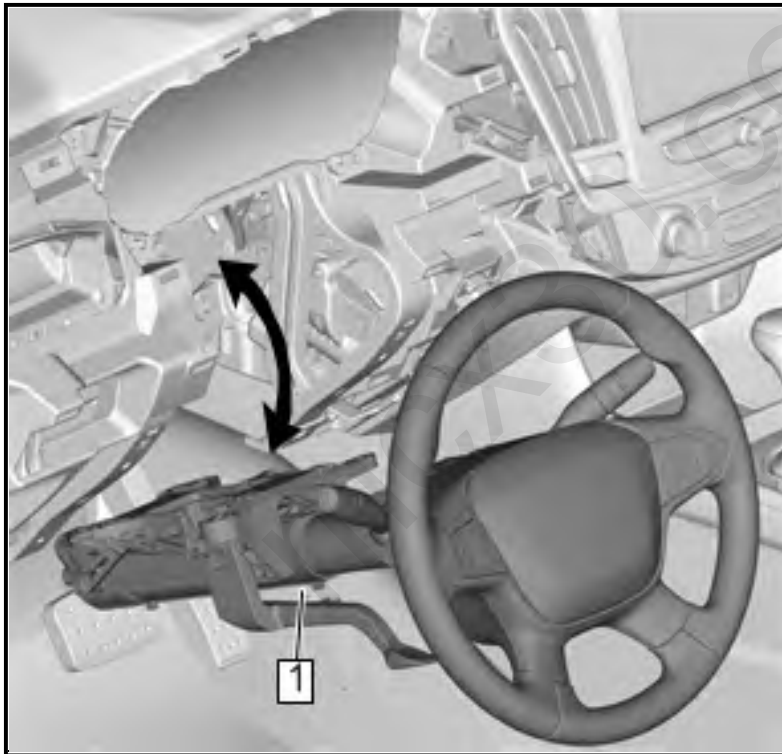
15.





Instrument Panel Knee Bolster Bracket (1) - Remove - [Instrument Panel Knee Bolster Bracket Replacement](#)

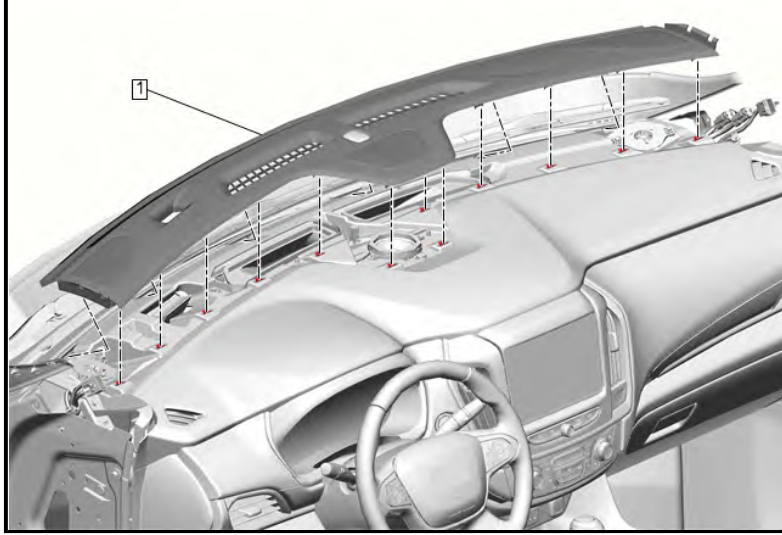
16.



Steering Column (1) - Remove - [Steering Column Replacement \(N37\)](#) [Steering Column Replacement \(N38\)](#)

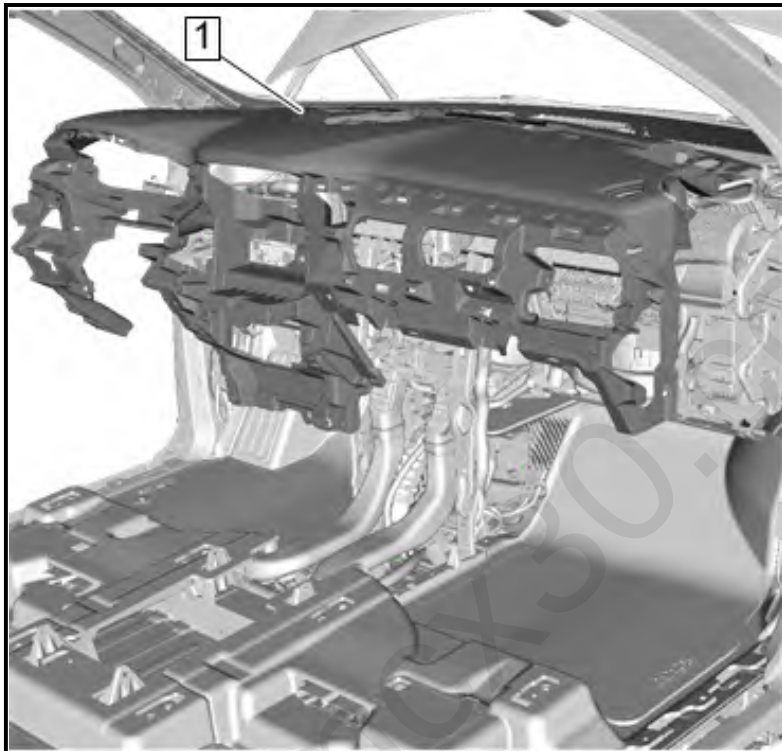
17.





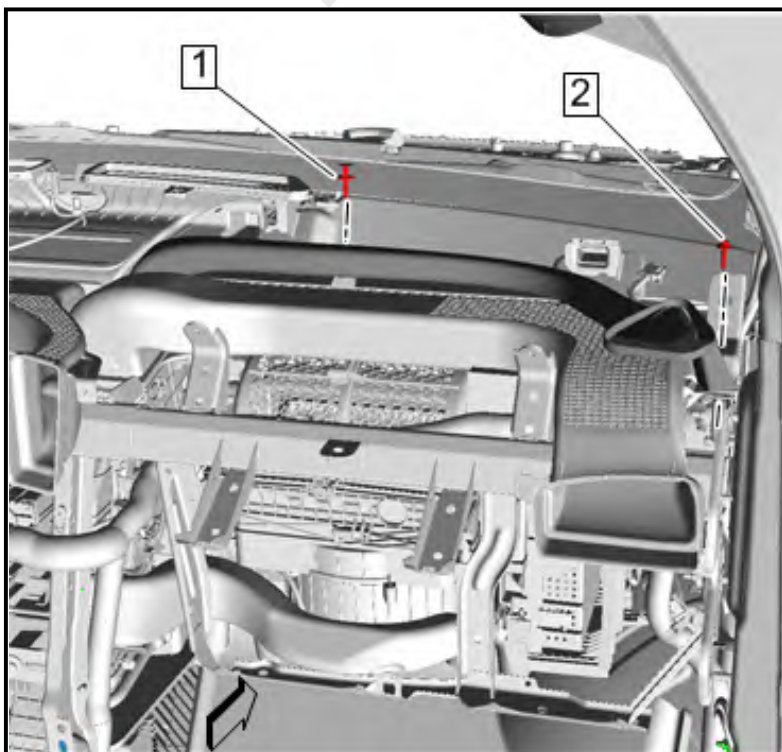
Instrument Panel Extension (1) - Remove - [Instrument Panel Extension Replacement](#)

18.



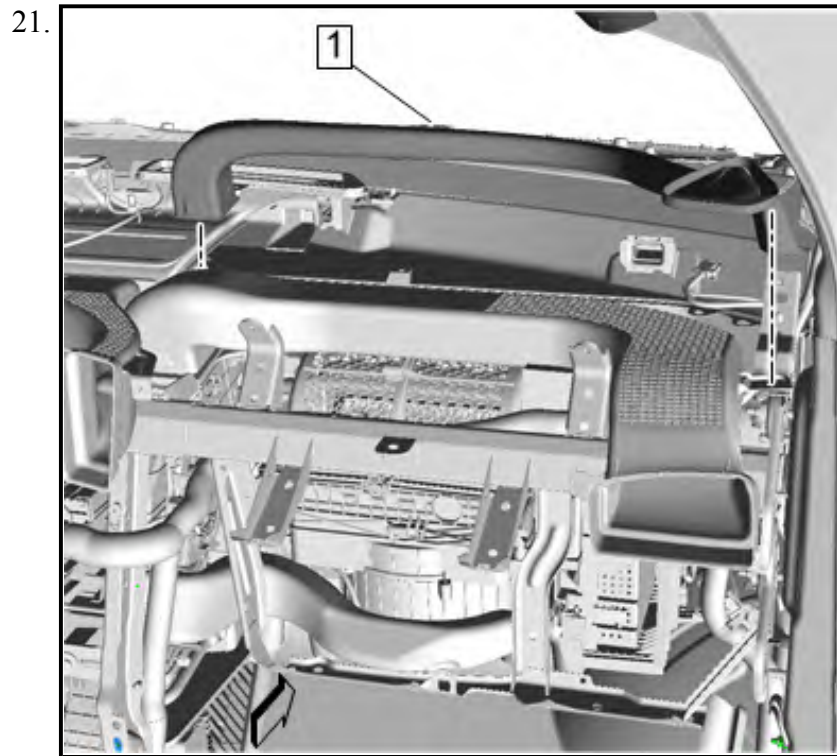
Instrument Panel (1) - Remove - [Instrument Panel Assembly Replacement](#)

19.



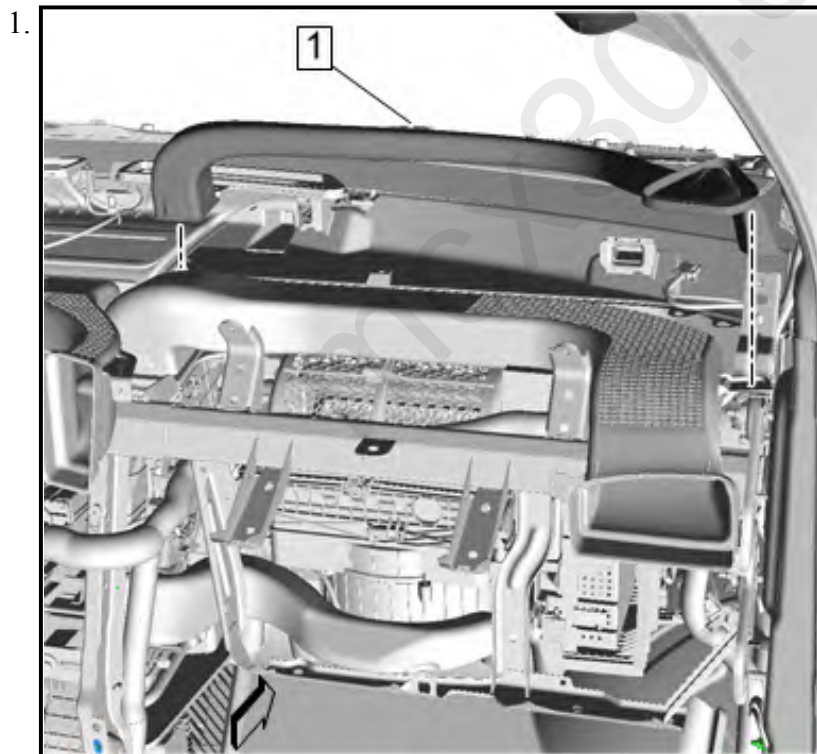
Side Window Defogger Outlet Duct Retainer (1) - Remove

20. Side Window Defogger Outlet Duct Bolt (2) - Remove



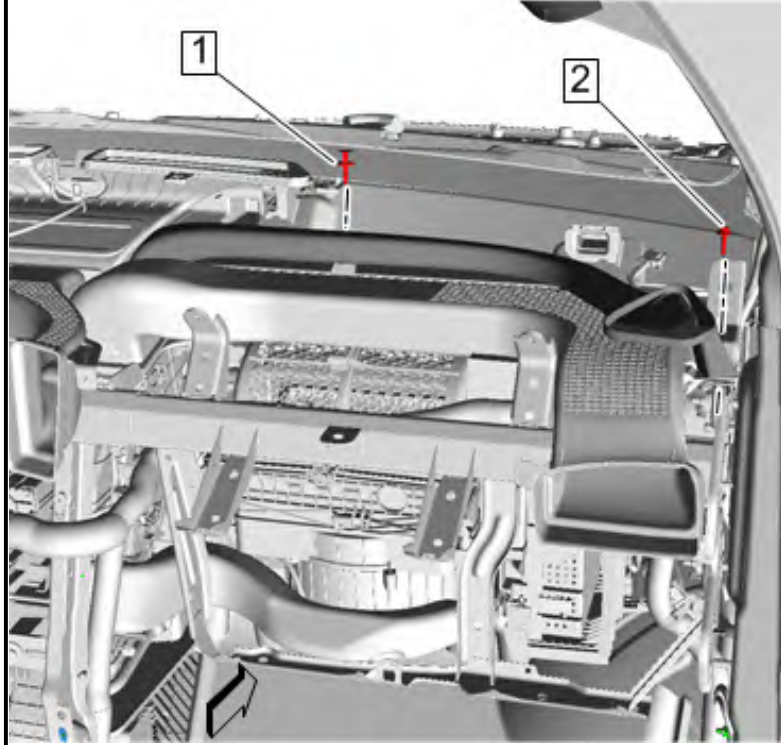
Side Window Defogger Outlet Duct - Right Side (1) - Remove

Installation Procedure



Side Window Defogger Outlet Duct - Right Side (1) - Install

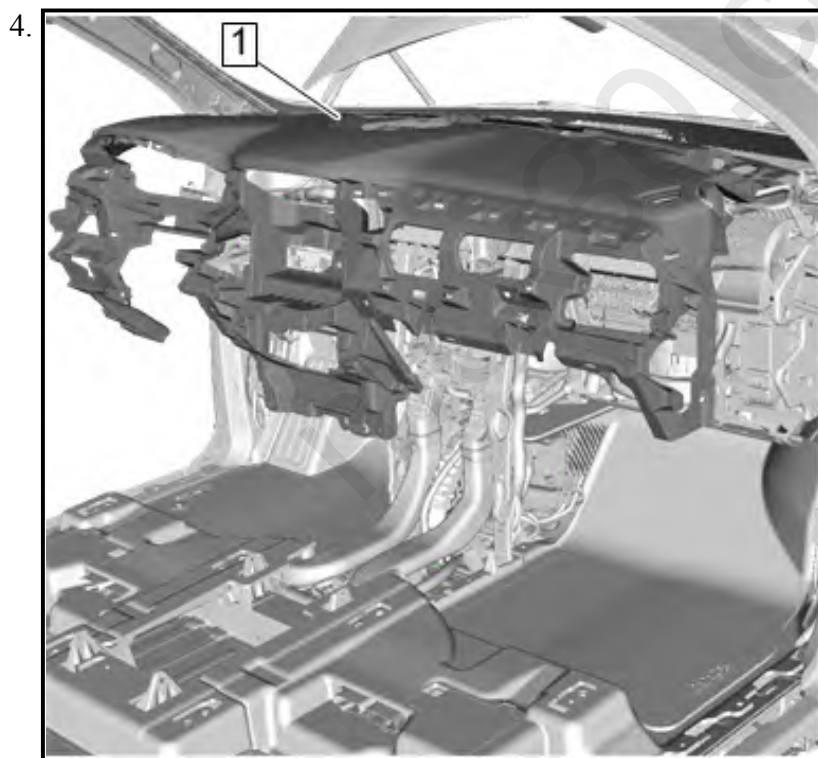




CAUTION: Refer to [Fastener Caution](#) .

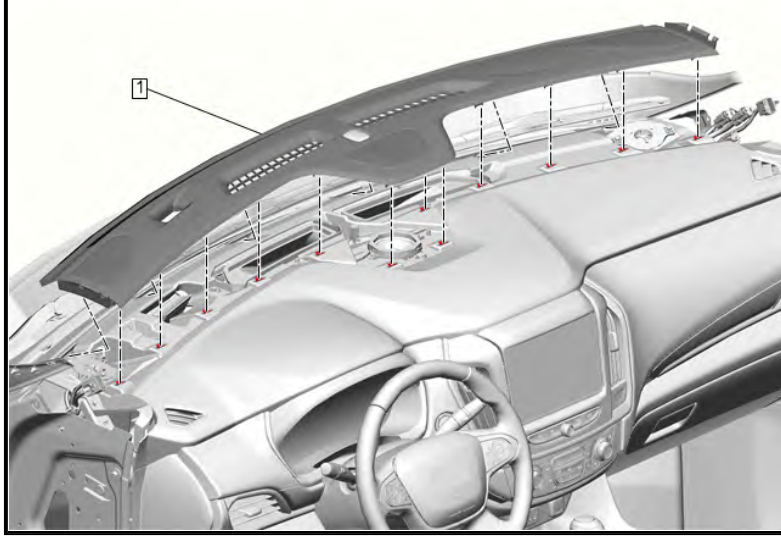
Side Window Defogger Outlet Duct Bolt (2) - Install and tighten 2.5 N.m (22 lb in)

3. Side Window Defogger Outlet Duct Retainer (1) - Install



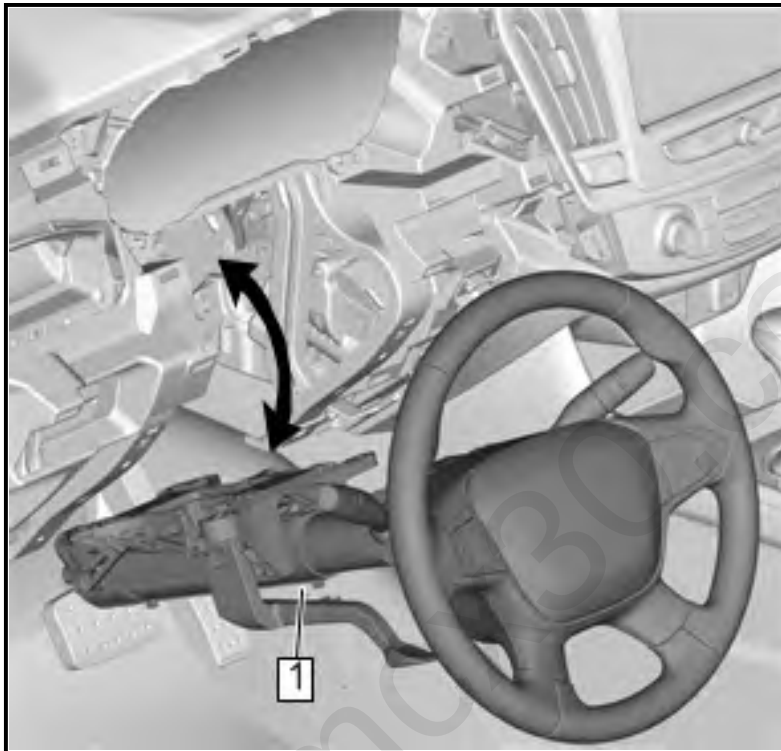
Instrument Panel (1) - Install - [Instrument Panel Assembly Replacement](#)





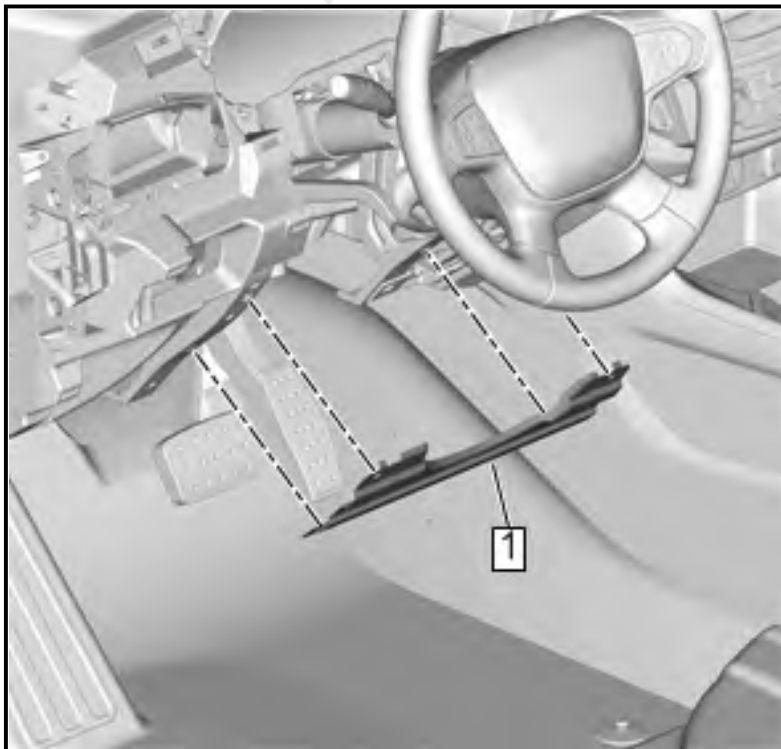
Instrument Panel Extension (1) - Install - [Instrument Panel Extension Replacement](#)

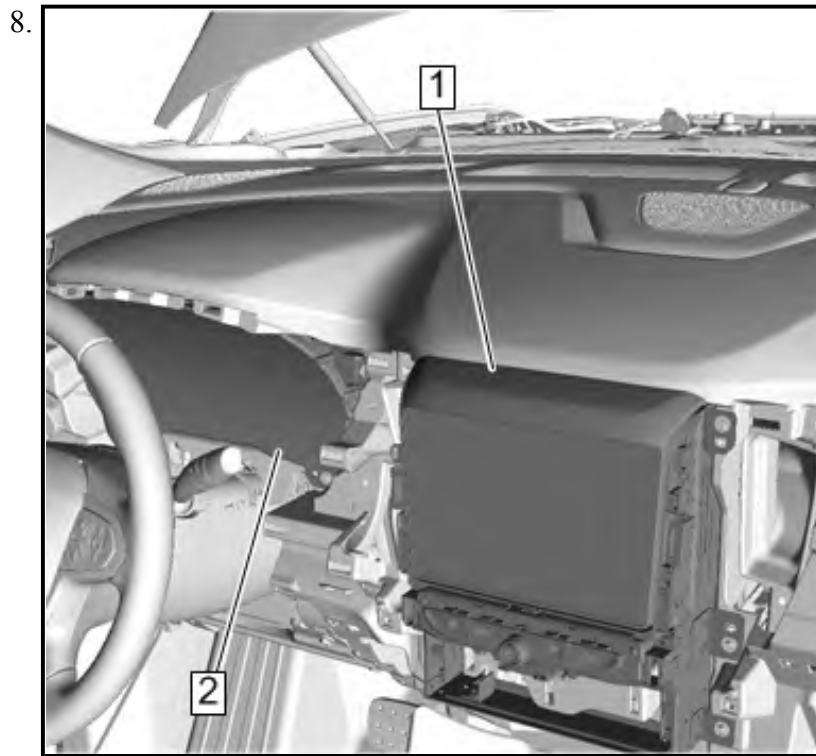
6.



Steering Column (1) - Install - [Steering Column Replacement \(N37\)](#), [Steering Column Replacement \(N38\)](#)

7.

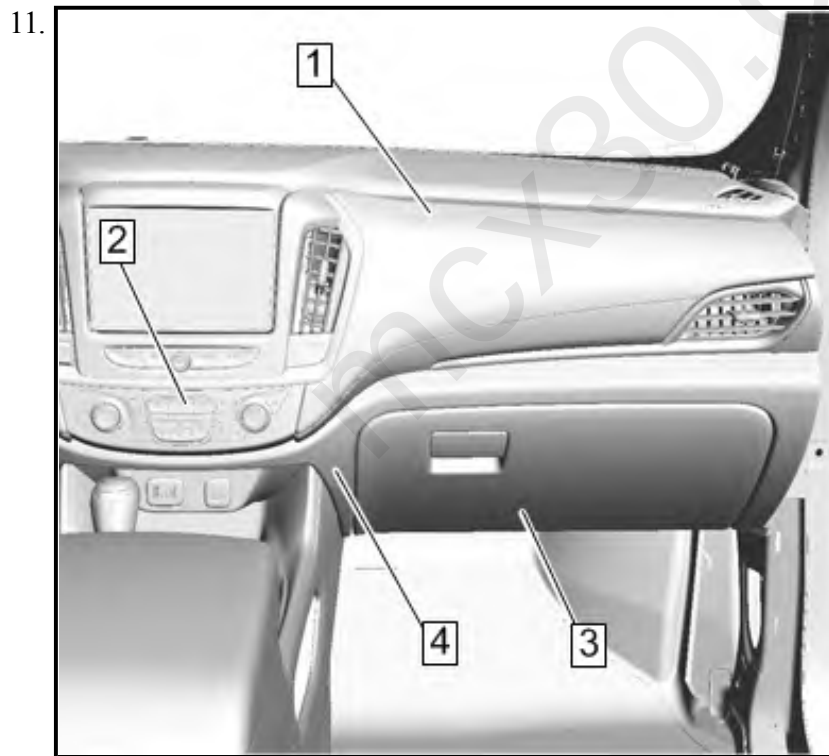




Connect the electrical connectors.

9. Instrument Cluster (2) - Install - [Instrument Cluster Replacement](#)

10. Radio Control (1) - Install - [Radio Control Assembly Replacement \(With IO5, IO6\)](#)



Instrument Panel Compartment Door Opening Frame (4) - Install - [Instrument Panel Compartment Door Opening Frame Replacement](#)

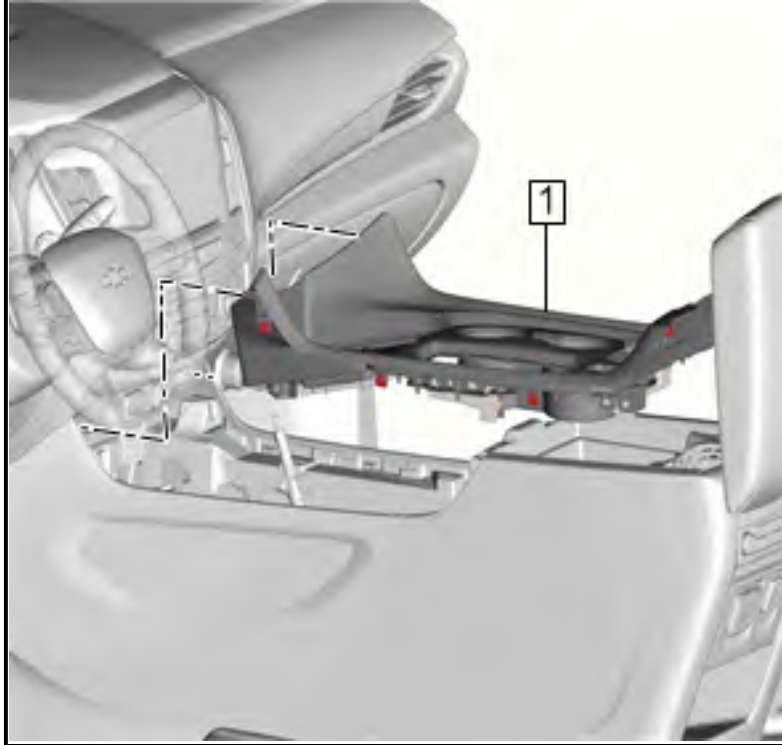
12. Instrument Panel Compartment Door (3) - Install - [Instrument Panel Compartment Door Replacement](#)

13. Connect the electrical connectors.

14. Heater and Air Conditioning User Interface Control (2) - Install - [Heater and Air Conditioning User Interface Control Replacement](#)

15. Instrument Panel Trim Pad - Right Side (1) - Install - [Instrument Panel Trim Pad Replacement - Right Side](#)





Front Floor Console Cup Holder Plate (1) - Install - [Front Floor Console Cup Holder Plate Replacement](#)

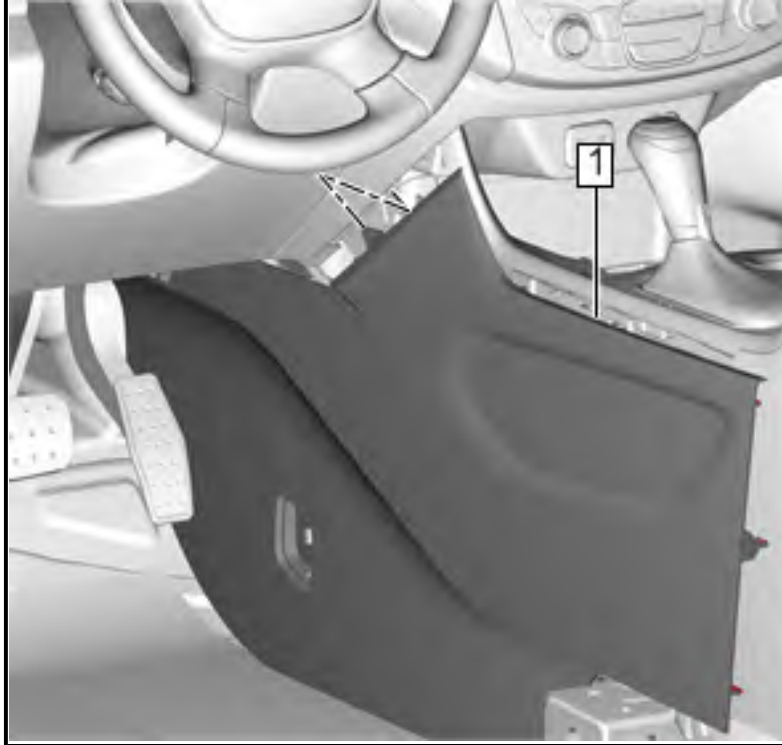
17.



Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

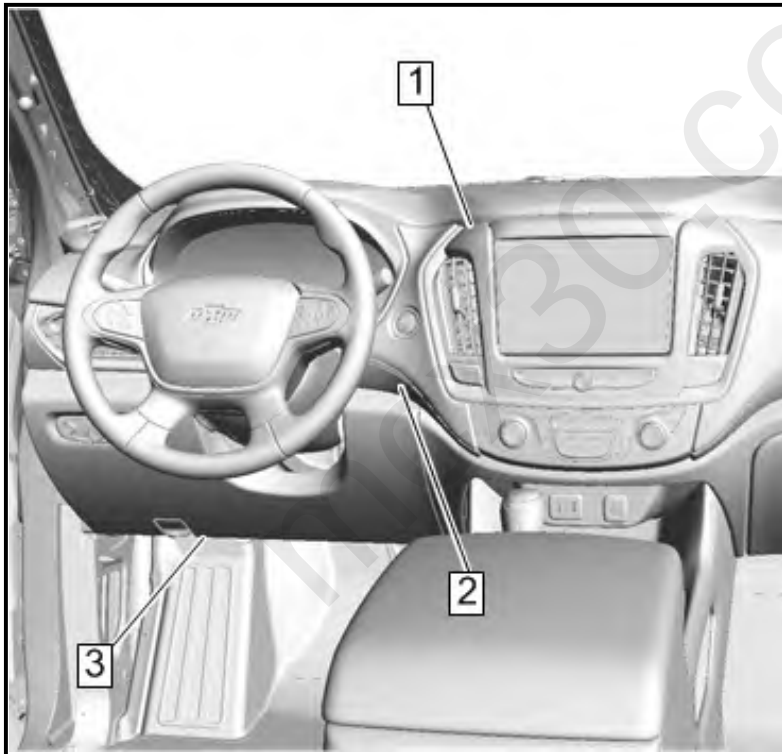
18.





Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

19.



Instrument Panel Trim Pad - Left Side (2) - Install - [Instrument Panel Trim Pad Replacement - Left Side](#)

20. Instrument Panel Radio Front Trim Plate (1) - Install - [Instrument Panel Radio Front Trim Plate Replacement \(RPO IOA\) Instrument Panel Radio Front Trim Plate Replacement \(RPO IO5, IO6\)](#)
21. Instrument Panel Knee Bolster (3) - Install - [Instrument Panel Knee Bolster Replacement](#)

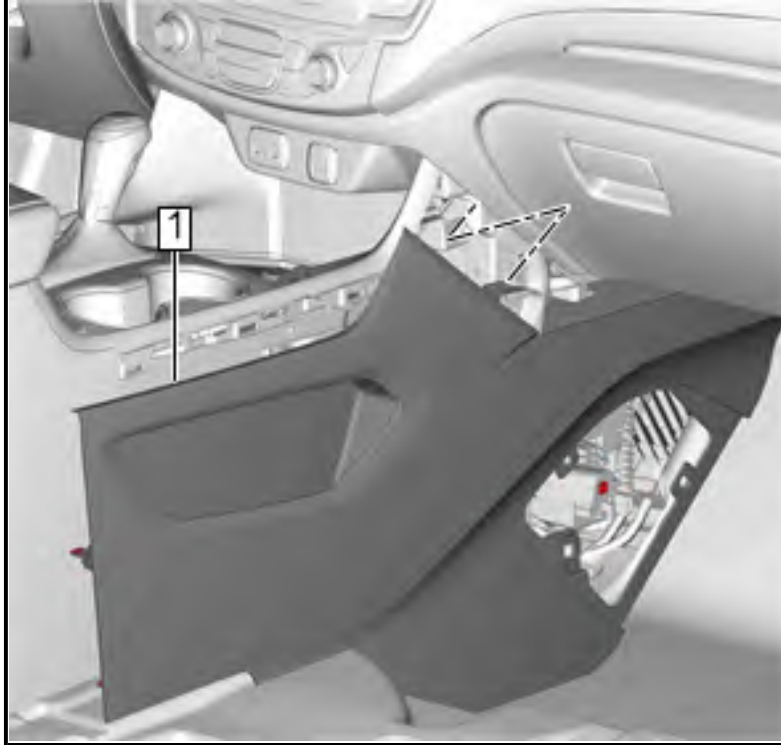
FLOOR REAR AIR OUTLET DUCT REPLACEMENT - LEFT SIDE

Removal Procedure

1. Drivers Seat and Passengers Seat - Remove - [Driver or Passenger Seat Removal and Installation](#)

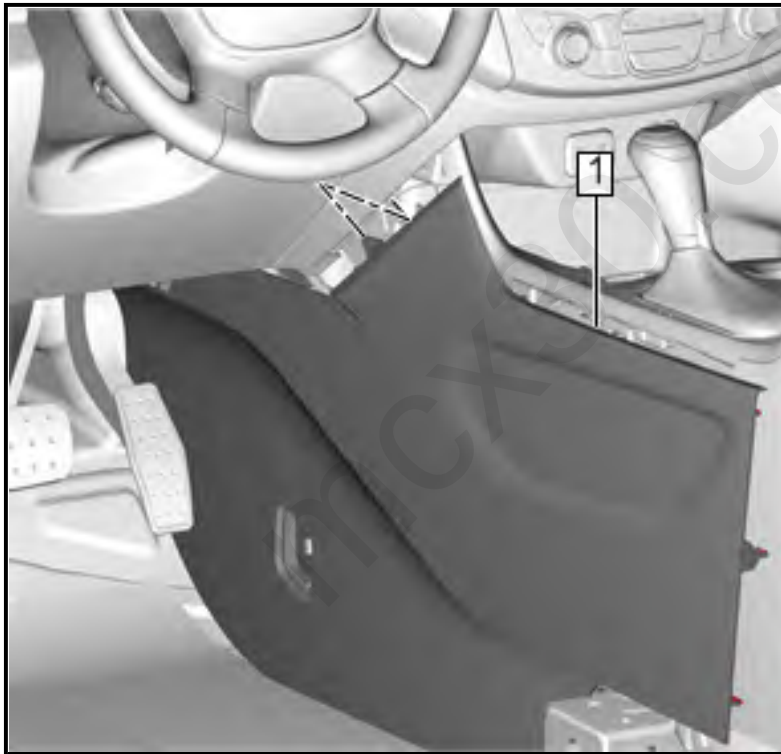
2.





Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

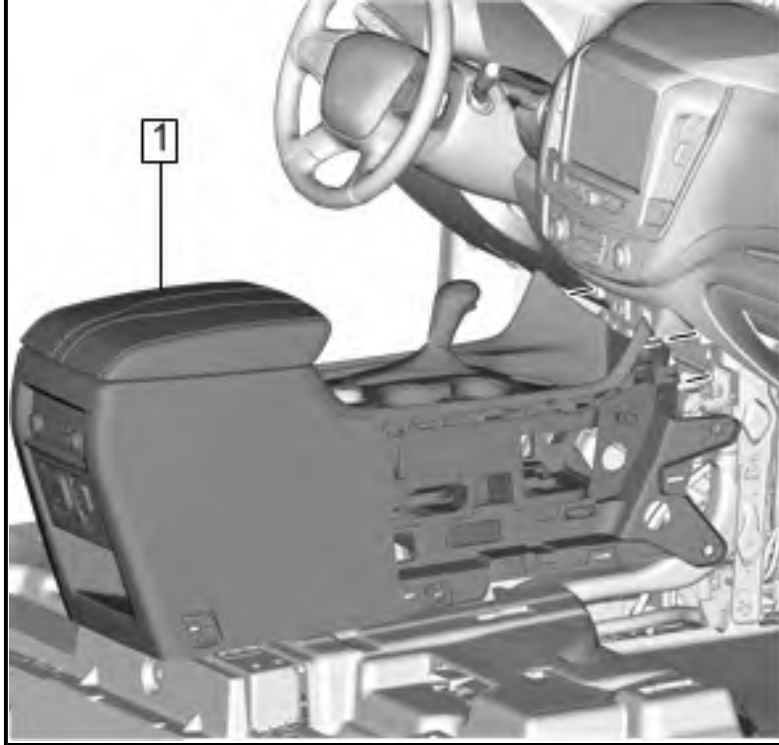
3.



Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)

4.

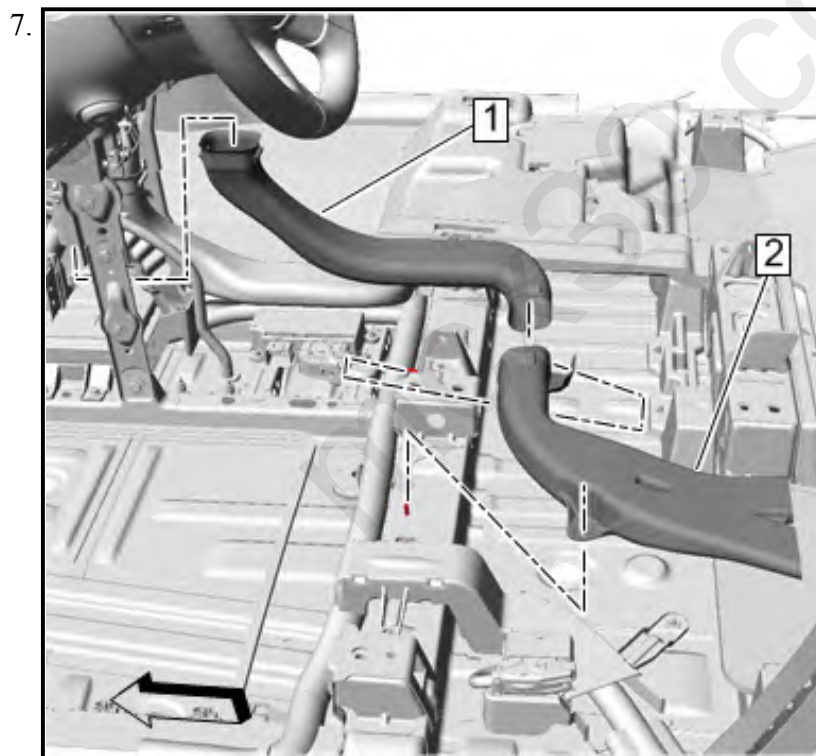




Front Floor Console (1) - Remove - [Front Floor Console Replacement](#)

5. Disconnect the electrical connectors.

6. Front Floor Panel Carpet - Left Side - Remove - [Front Floor Panel Carpet Replacement - Left Side](#)

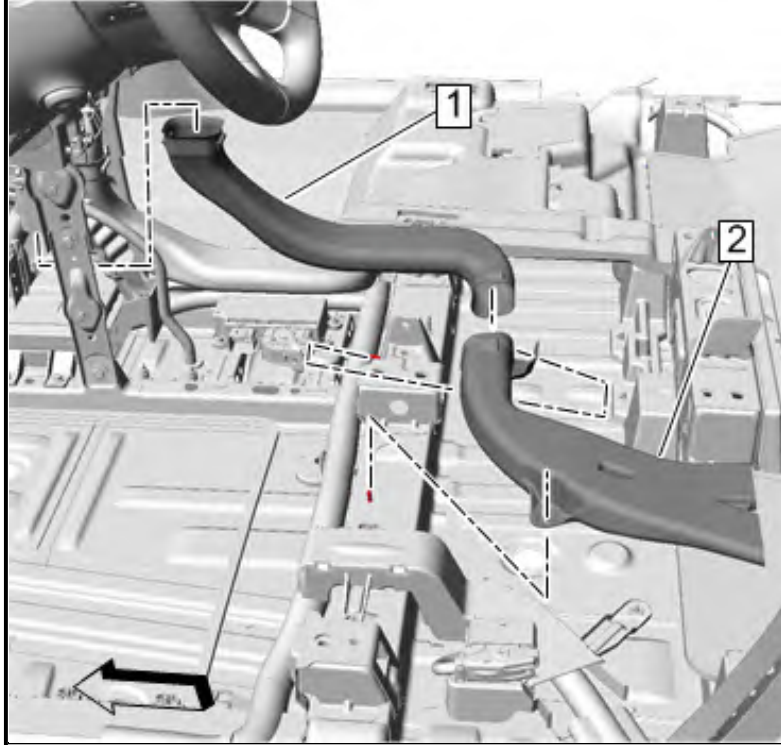


Remove the floor rear air outlet duct and the floor rear air outlet adapter as an assembly.

8. Floor Rear Air Outlet Duct Adapter (1) @ Floor Rear Air Outlet Duct - Left Side (2) - Remove

Installation Procedure

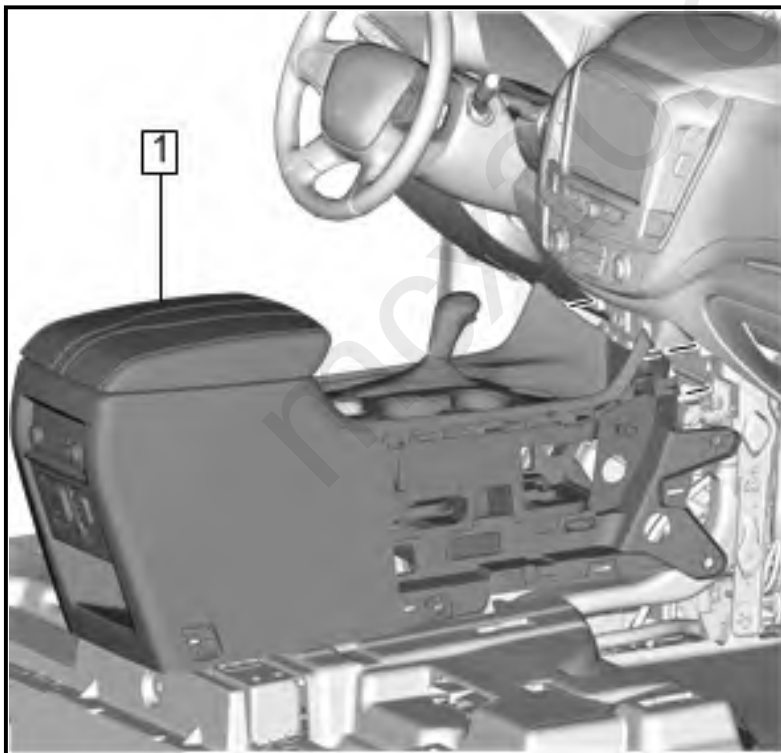




Floor Rear Air Outlet Duct Adapter (1) @ Floor Rear Air Outlet Duct - Left Side (2) - Install

2. Install the floor rear air outlet duct and the floor rear air outlet adaptor as an assembly.
3. Front Floor Panel Carpet - Left Side - Install - [Front Floor Panel Carpet Replacement - Left Side](#)
4. Connect the electrical connectors.

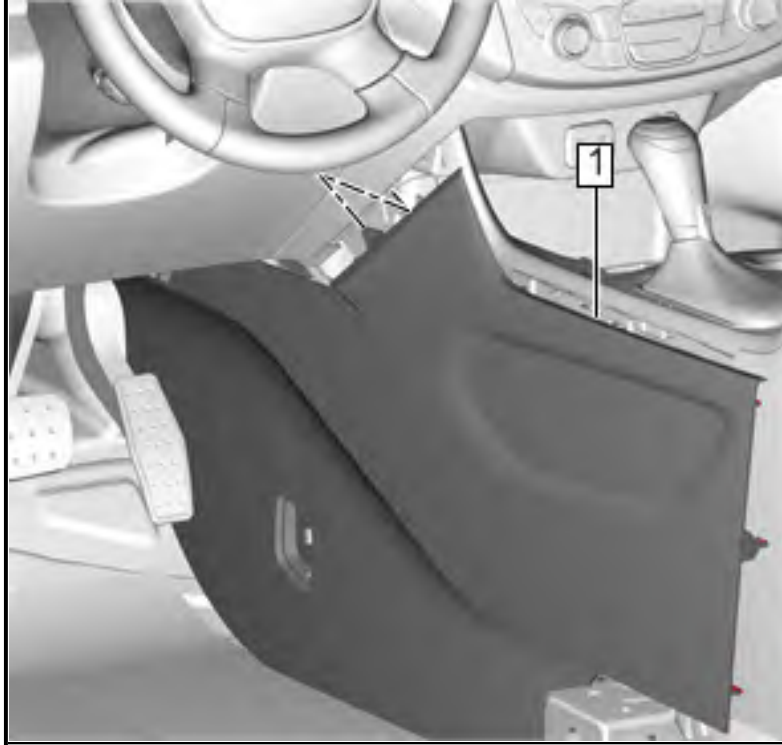
5.



Front Floor Console (1) - Install - [Front Floor Console Replacement](#)

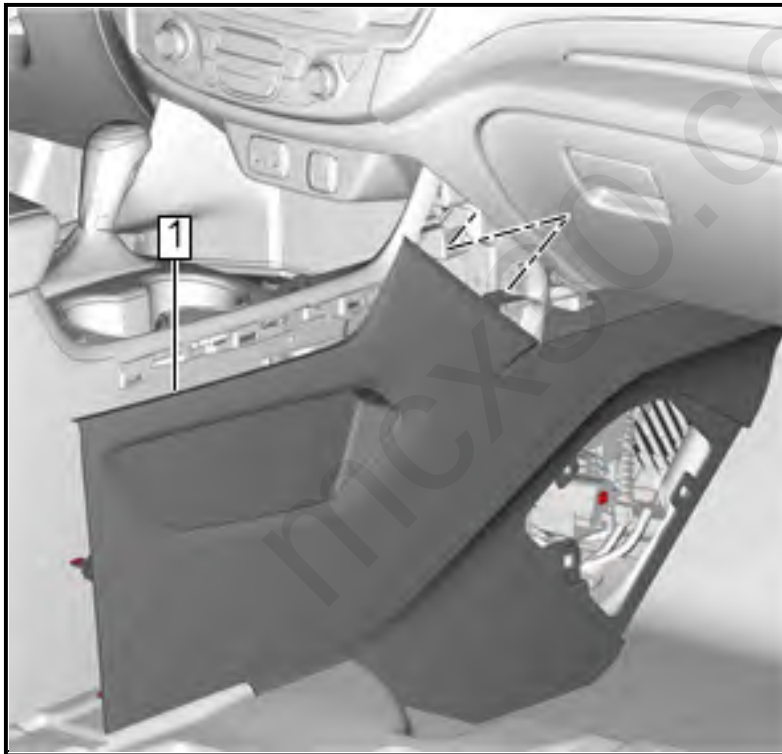
6.





Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

7.



Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

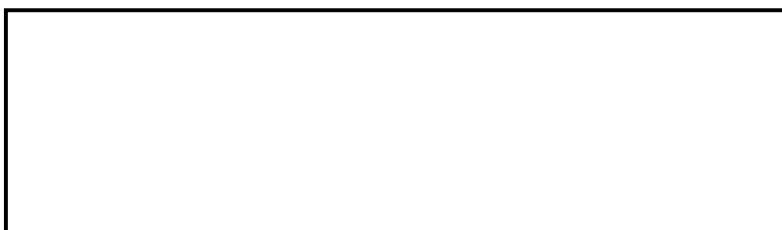
8. Drivers Seat and Passengers Seat - Install - [Driver or Passenger Seat Removal and Installation](#)

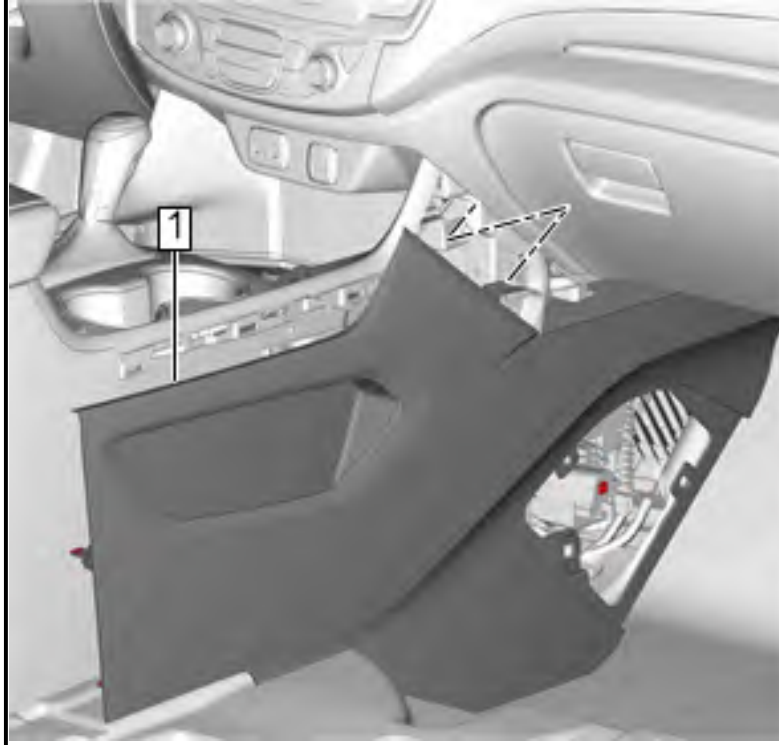
FLOOR REAR AIR OUTLET DUCT REPLACEMENT - RIGHT SIDE

Removal Procedure

1. Drivers Seat and Passengers Seat - Remove - [Driver or Passenger Seat Removal and Installation](#)

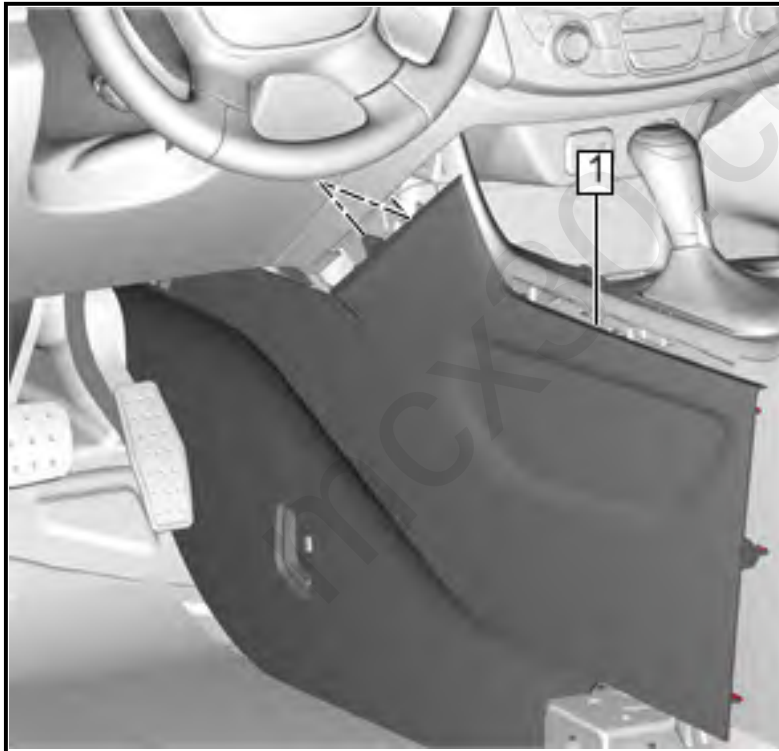
2.





Front Floor Console Extension Panel - Right Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Right Side](#)

3.



Front Floor Console Extension Panel - Left Side (1) - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)

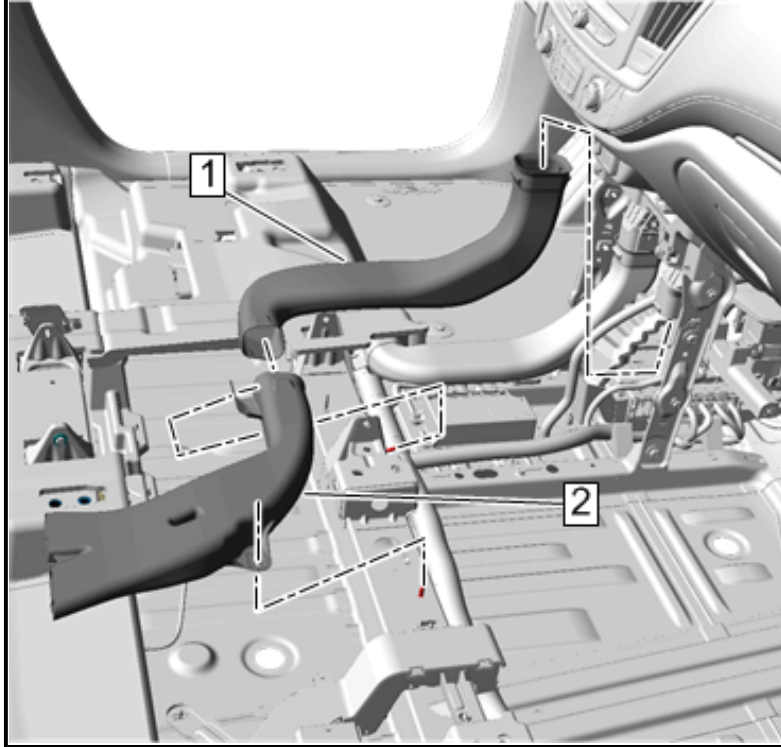
4. Front Floor Console - Remove - [Front Floor Console Replacement](#)

5. Disconnect the electrical connectors.

6. Front Floor Panel Carpet - Right Side - Remove - [Front Floor Panel Carpet Replacement - Right Side](#)

7.

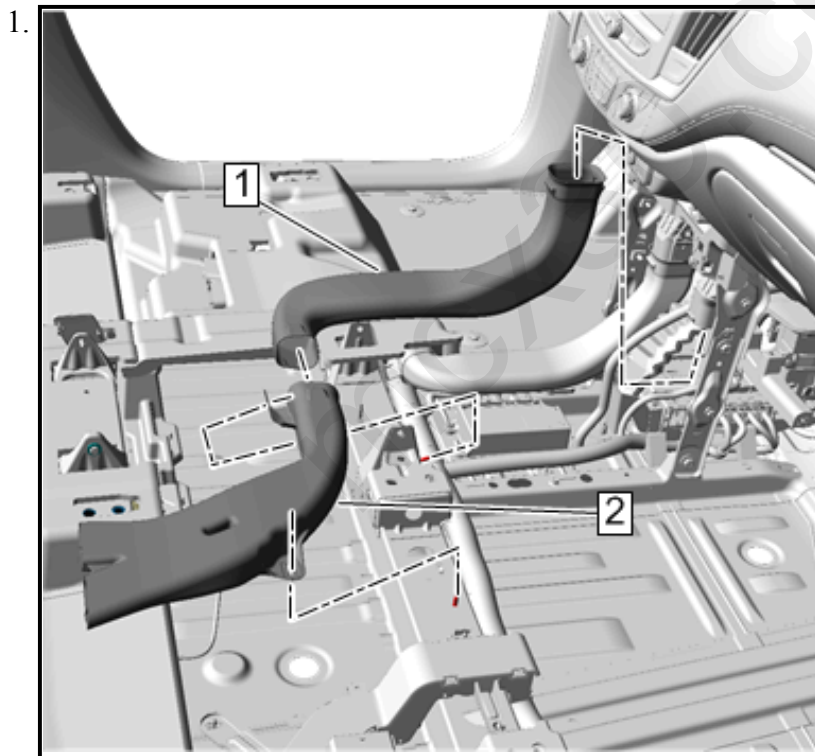




Remove the floor rear air outlet duct and the floor rear air outlet adapter as an assembly.

8. Floor Rear Air Outlet Duct Adapter (1) @ Floor Rear Air Outlet Duct - Right Side (2) - Remove

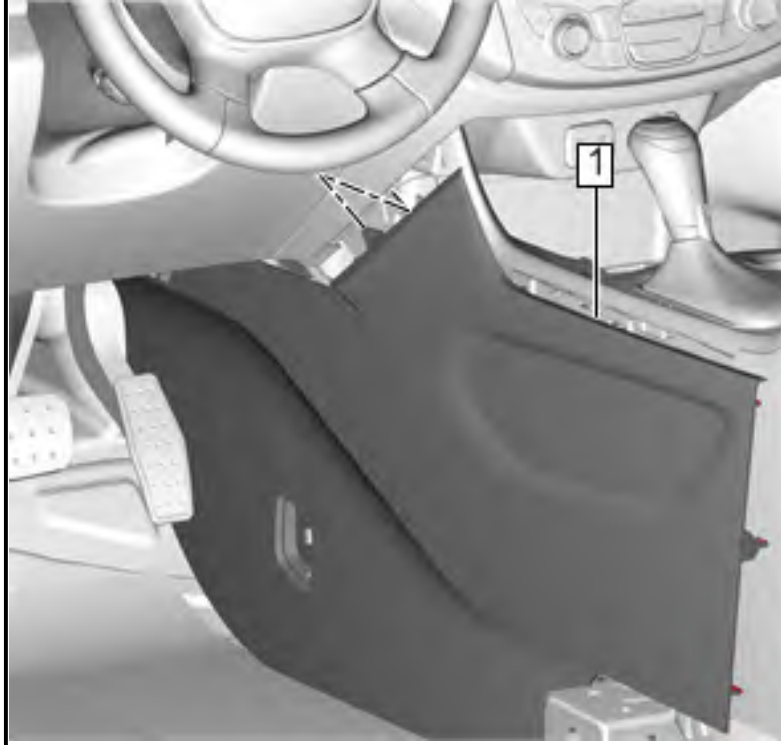
Installation Procedure



Floor Rear Air Outlet Duct Adapter (1) @ Floor Rear Air Outlet Duct - Right Side (2) - Install

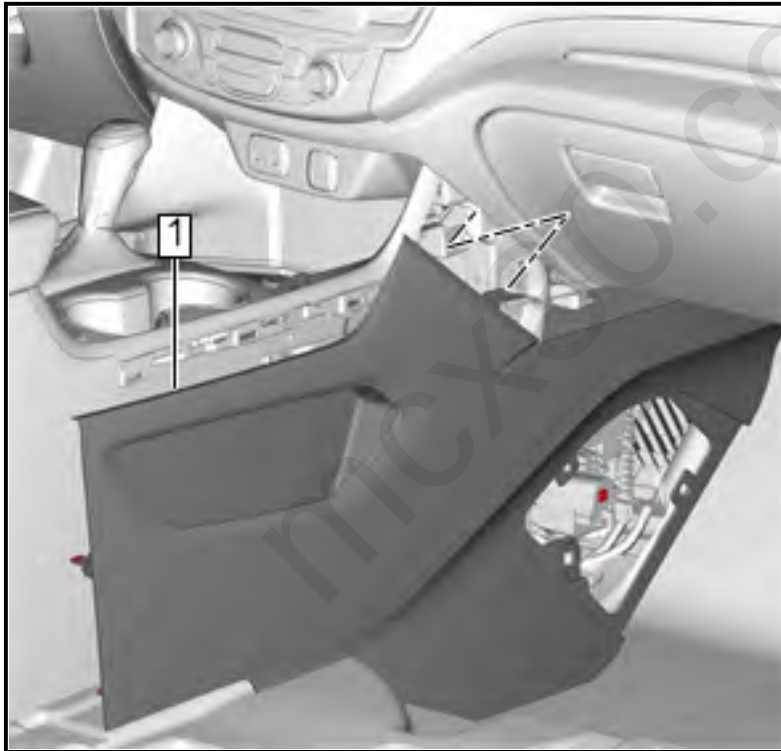
2. Install the floor rear air outlet duct and the floor rear air outlet adaptor as an assembly.
3. Front Floor Panel Carpet - Right Side - Install - [Front Floor Panel Carpet Replacement - Right Side](#)
4. Connect the electrical connectors.
5. Front Floor Console - Install - [Front Floor Console Replacement](#)





Front Floor Console Extension Panel - Left Side (1) - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

7.



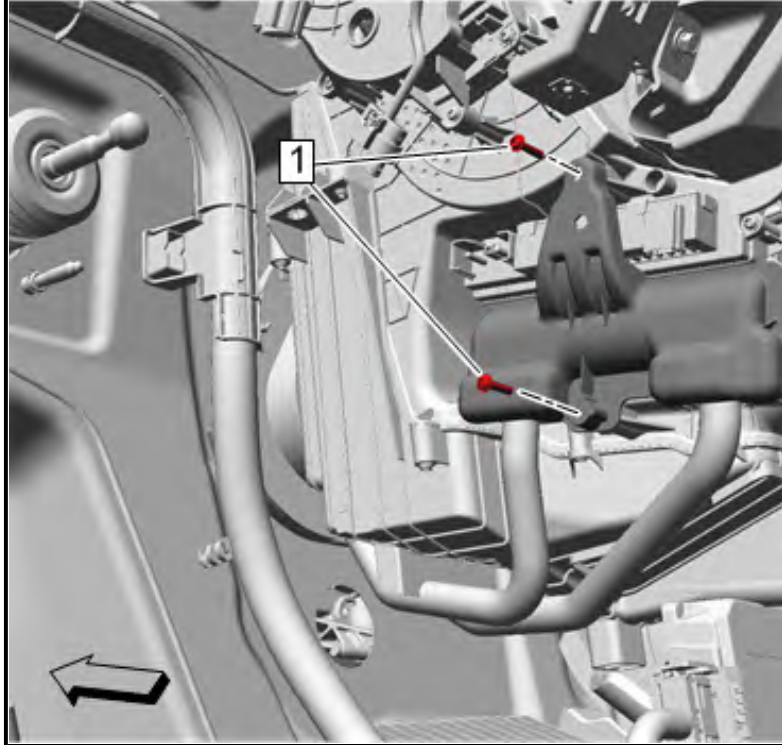
Front Floor Console Extension Panel - Right Side (1) - Install - [Front Floor Console Extension Panel Replacement - Right Side](#)

8. Drivers Seat and Passengers Seat - Install - [Driver or Passenger Seat Removal and Installation](#)

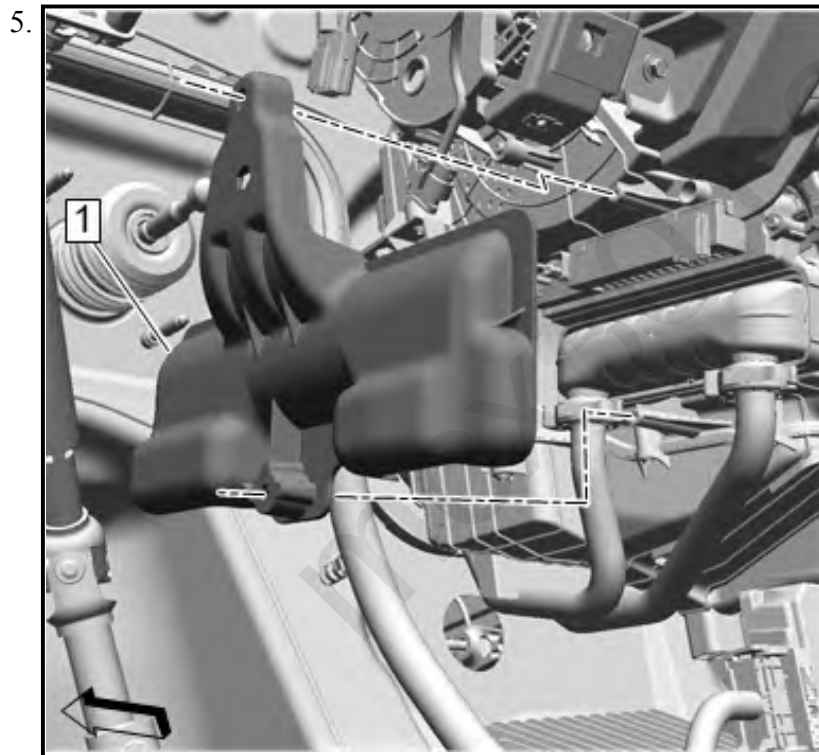
HEATER CORE REPLACEMENT

Removal Procedure

1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#)
2. Front Floor Console Extension Panel - Left Side - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)
3. Brake and Accelerator Pedal Assembly - Remove - [Brake and Accelerator Pedal Assembly Replacement](#)
4. 

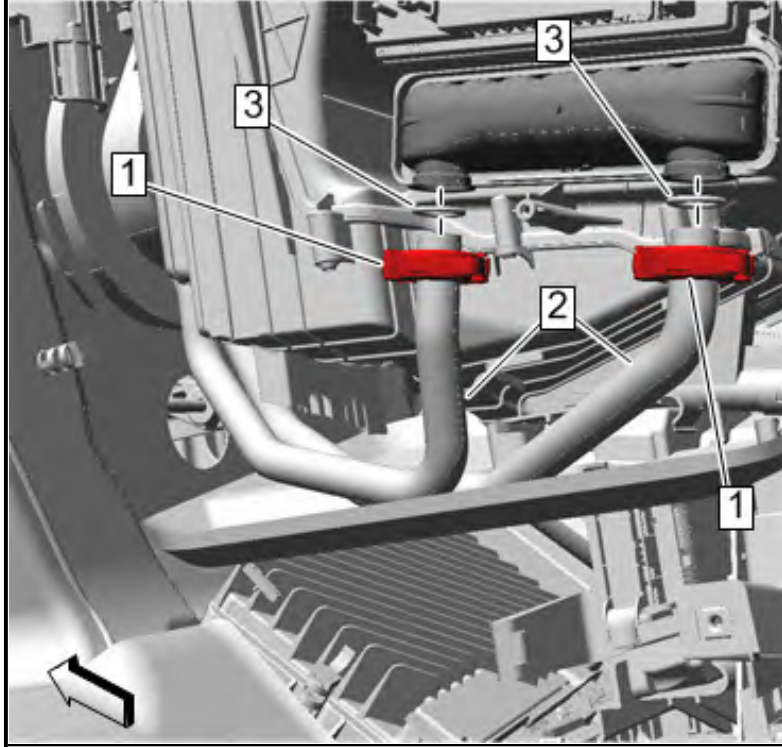


Heater Core Cover Screw (1) - Remove [2x]



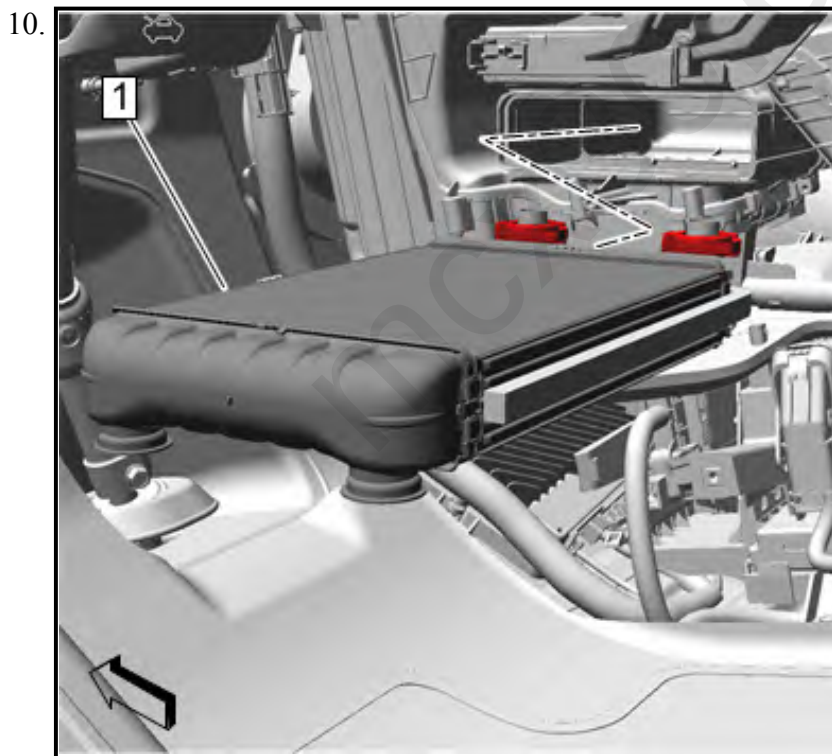
Heater Core Cover (1) - Remove





Prior to removing the heater core tubes, use clean and absorbent shop clothes/towels to cover the electrical components protecting the electrical components from water damage.

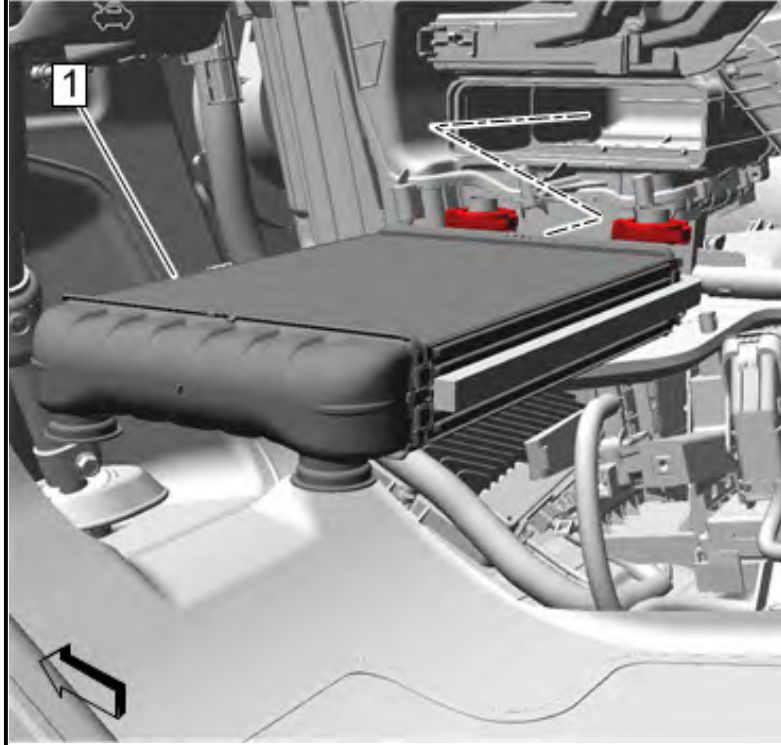
7. Heater Core Tube Clamp (1) - Disengage [2x]
8. Heater Core Tube (2) @ Heater Core - Remove [2x]
9. DISCARD the O-ring seal. (3) [2x]



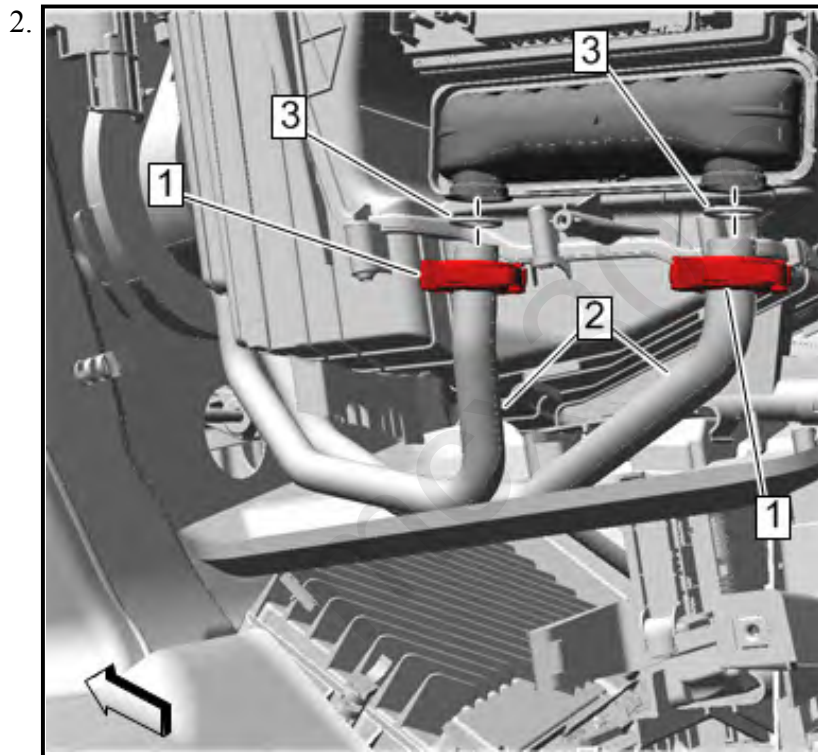
Heater Core (1) - Remove

Installation Procedure

1.



Heater Core (1) - Install



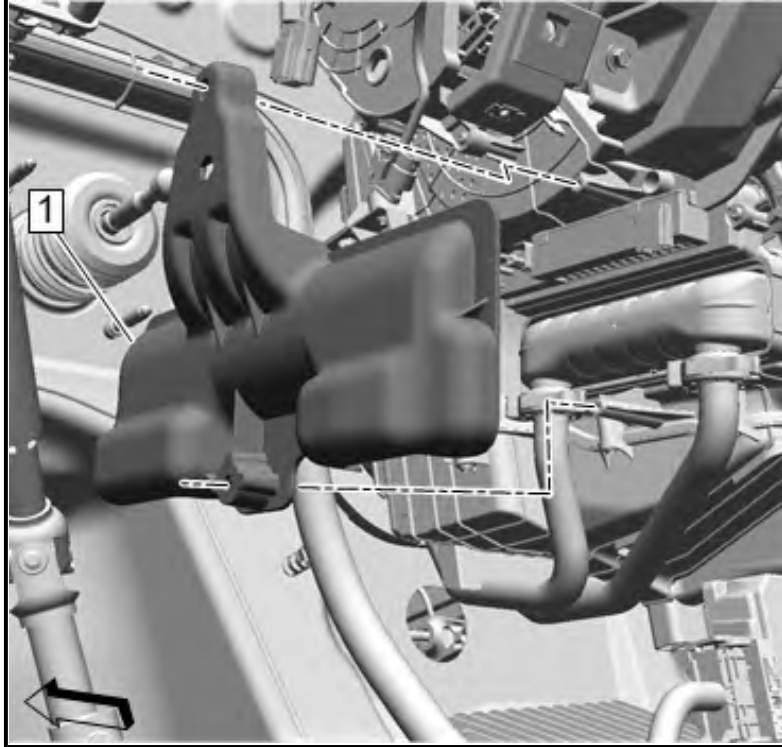
Install NEW O-ring seal. (3) [2x]

3. Heater Core Tube (2) @ Heater Core - Install [2x]

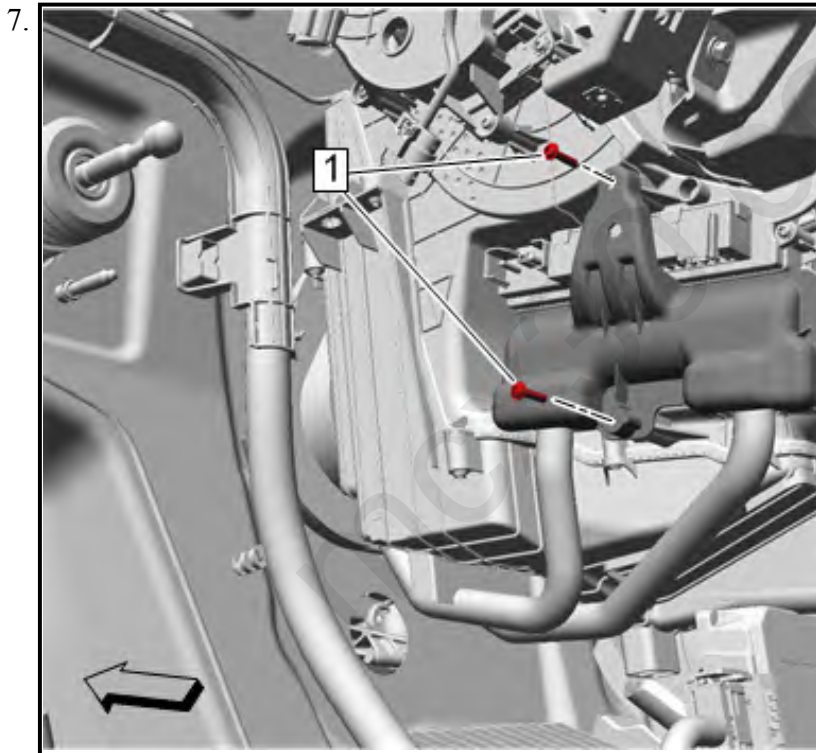
4. Heater Core Tube Clamp (1) - Install [2x]

5. Remove the absorbent shop clothes/towels covering the electrical components.





Heater Core Cover (1) - Install



CAUTION: Refer to [Fastener Caution](#) .

Heater Core Cover Screw (1) - Install and tighten [2x] 2.5 N.m (22 lb in)

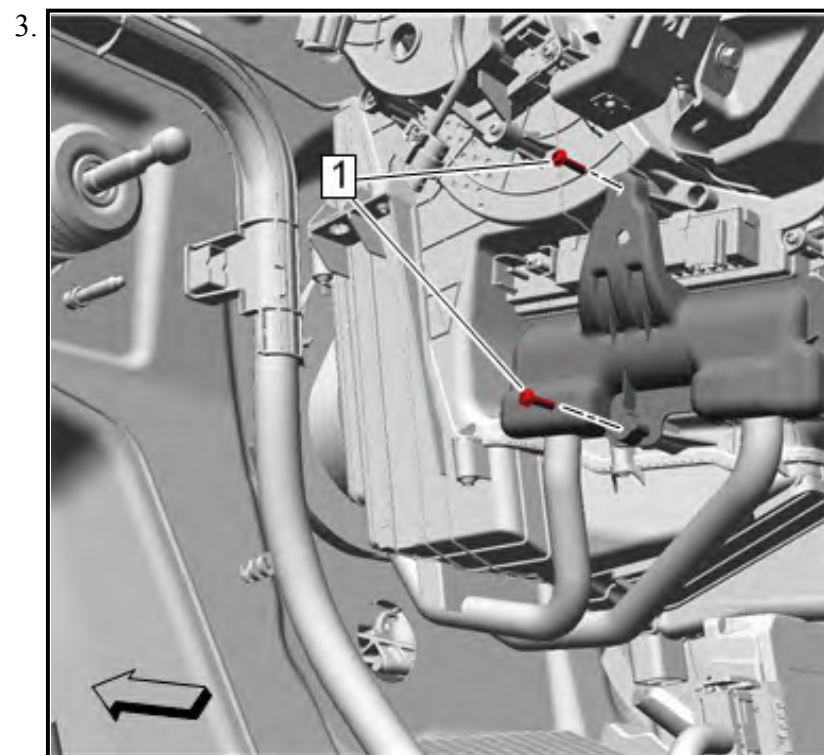
8. Brake and Accelerator Pedal Assembly - Install - [Brake and Accelerator Pedal Assembly Replacement](#)
9. Front Floor Console Extension Panel - Left Side - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)
10. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#)
11. Start the engine and check for coolant leaks.

AIR HEATER REPLACEMENT (C32)

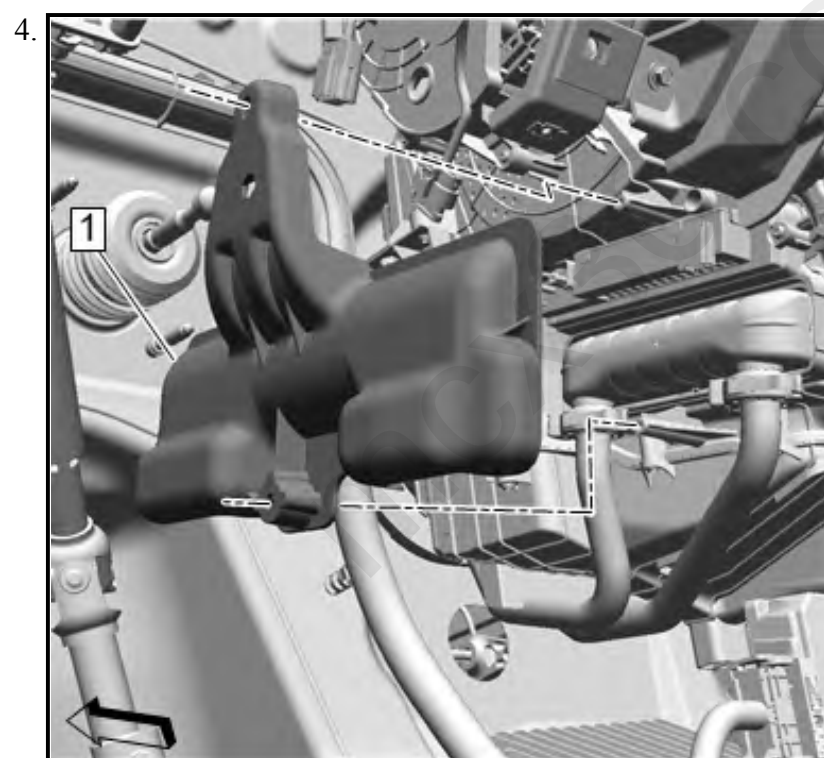
Removal Procedure

1. Front Floor Console Extension Panel - Left Side - Remove - [Front Floor Console Extension Panel Replacement - Left Side](#)

2. Disconnect the electrical connectors.

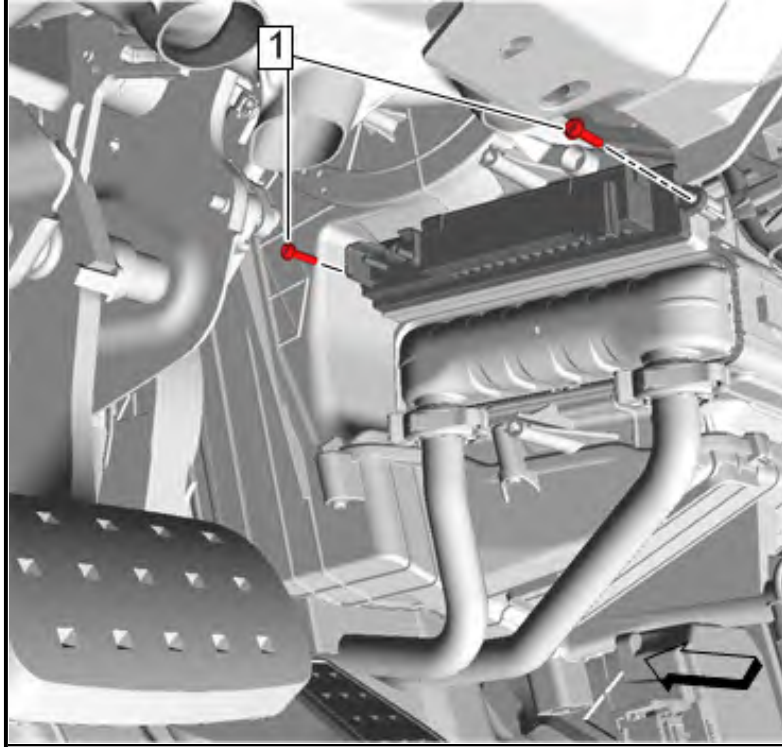


Heater Core Cover Screw (1) - Remove [2x]

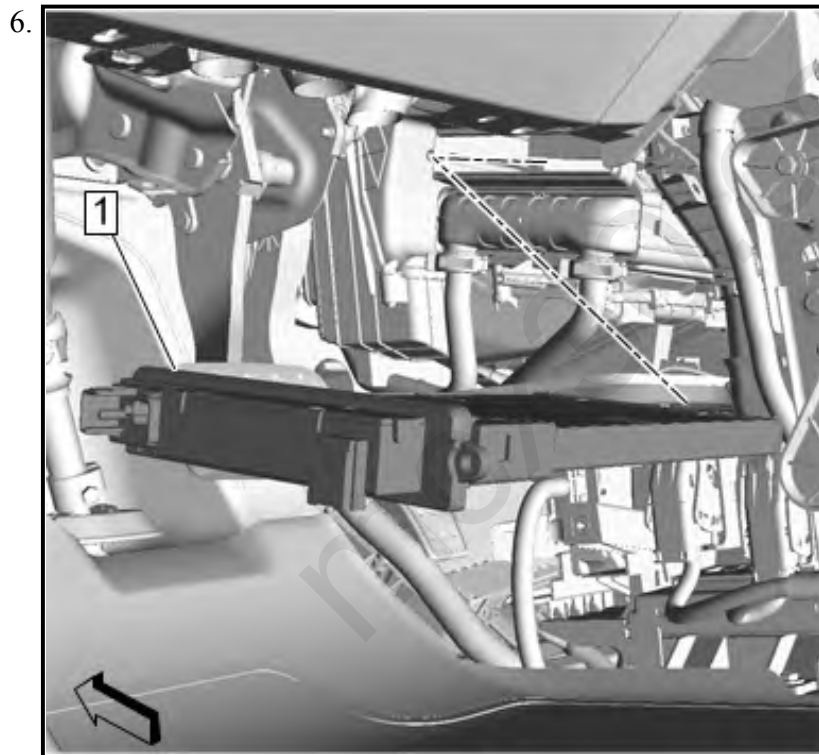


Heater Core Cover (1) - Remove





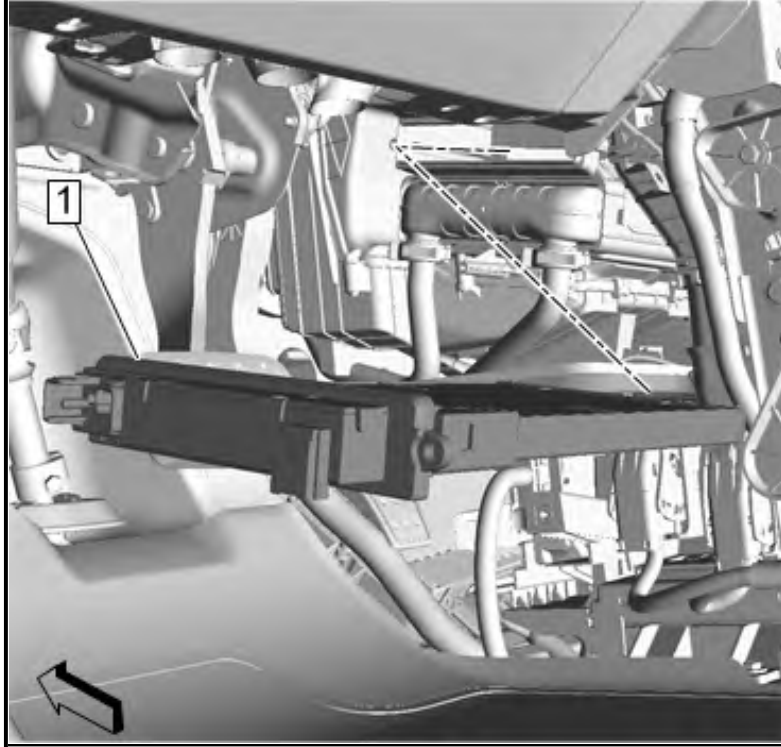
Air Heater Screw (1) - Remove [2x]



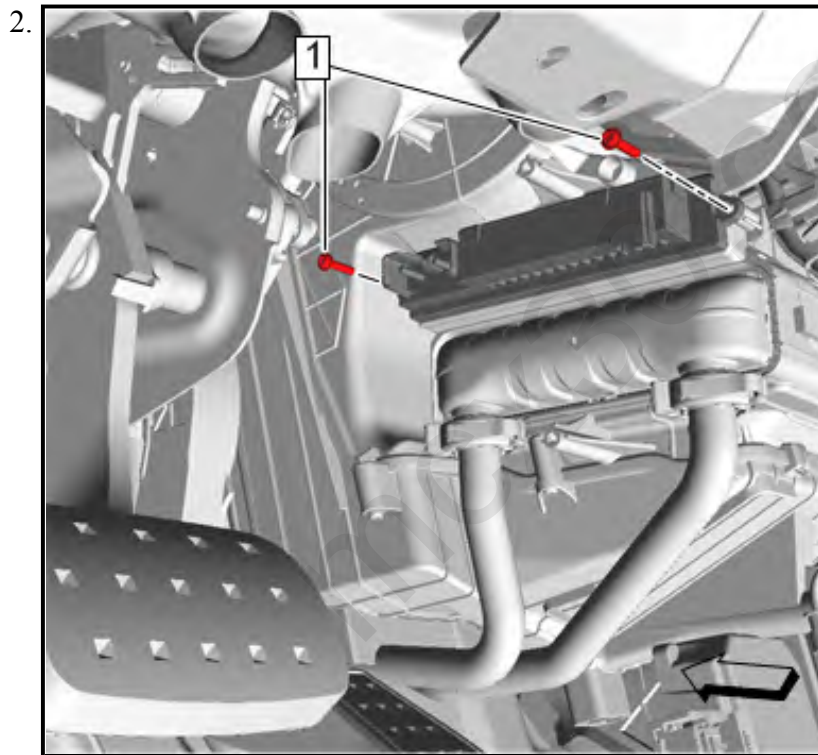
Air Heater - Remove

Installation Procedure





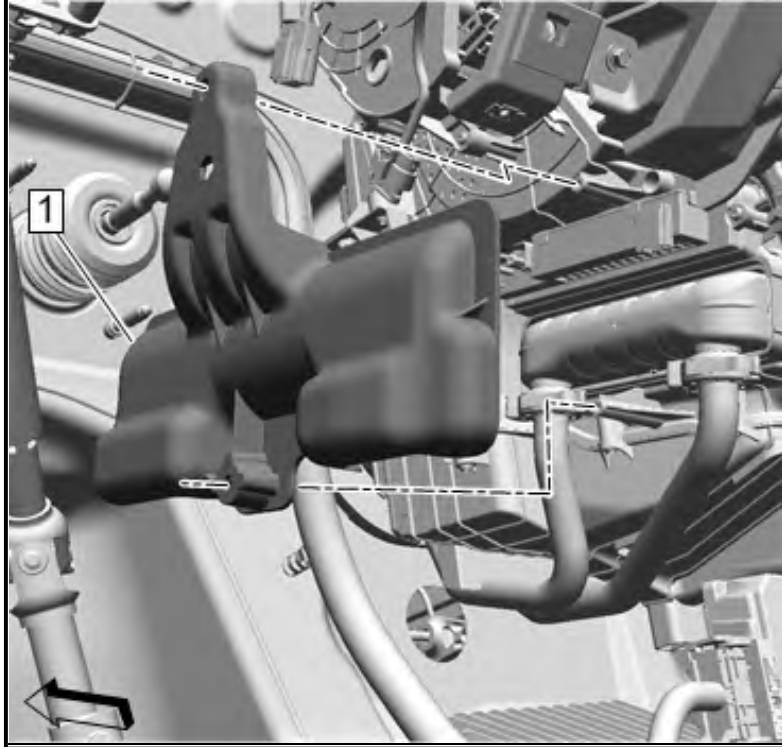
Air Heater - Install



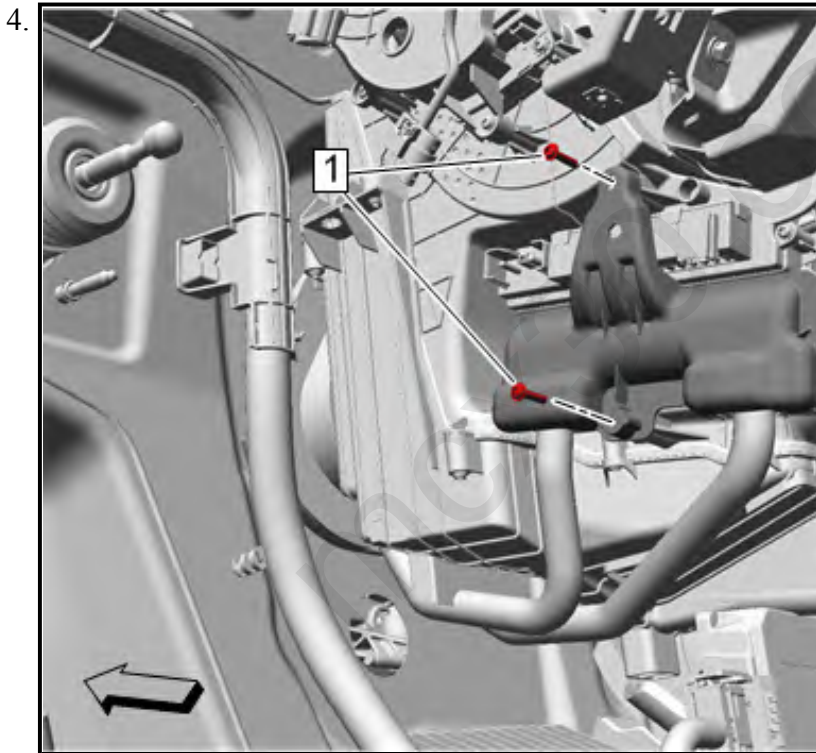
CAUTION: Refer to [Fastener Caution](#) .

Air Heater Screw (1) - Install and tighten [2x] 2.5 N.m (22 lb in)





Heater Core Cover (1) - Install

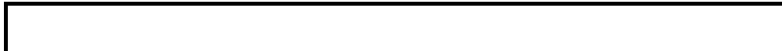


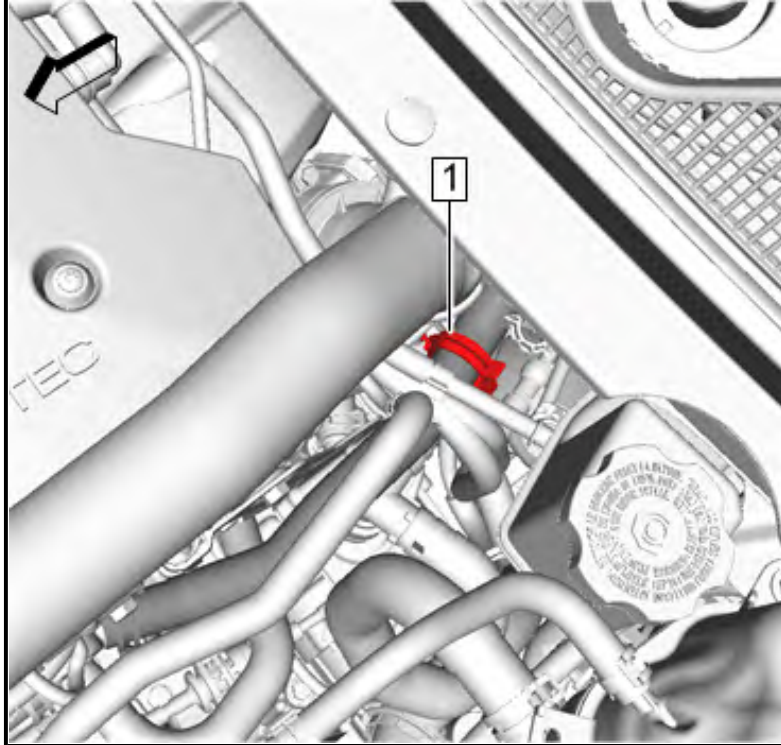
Heater Core Cover Screw (1) - Install and tighten [2x] 2.5 N.m (22 lb in)

5. Connect the electrical connectors.
6. Front Floor Console Extension Panel - Left Side - Install - [Front Floor Console Extension Panel Replacement - Left Side](#)

HEATER COOLANT HEATER AIR SUPPLY HOSE REPLACEMENT (LTG)

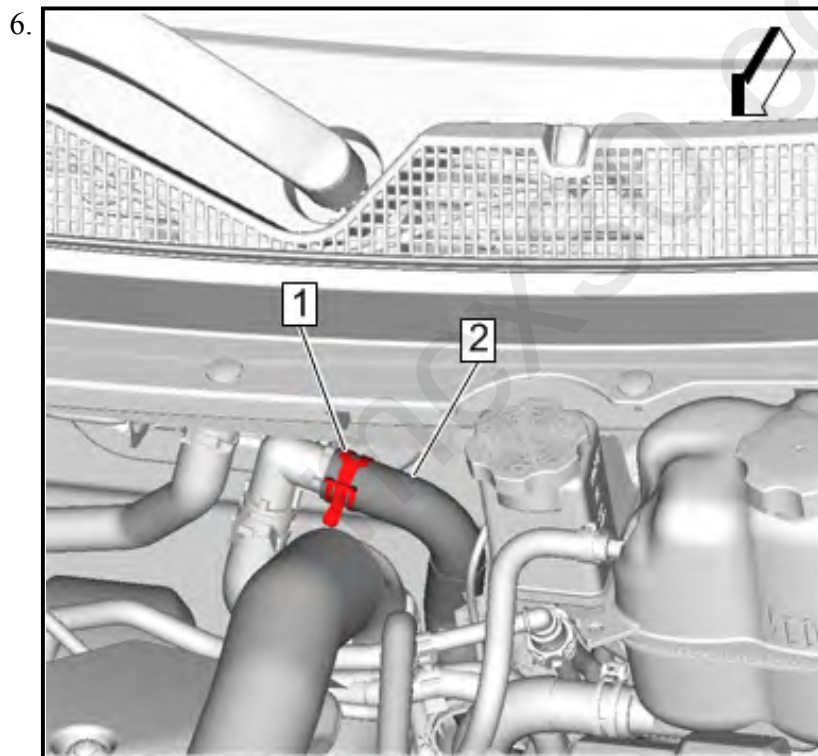
Removal Procedure

1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#)
2. Reposition the wiring harness.
3. Power Brake Booster Vacuum Hose - Reposition away - [Power Brake Booster Vacuum Hose Replacement \(LTG\)](#)
4. 



Heater Outlet Hose Clip (1) @ Heater Vent Hose - Remove

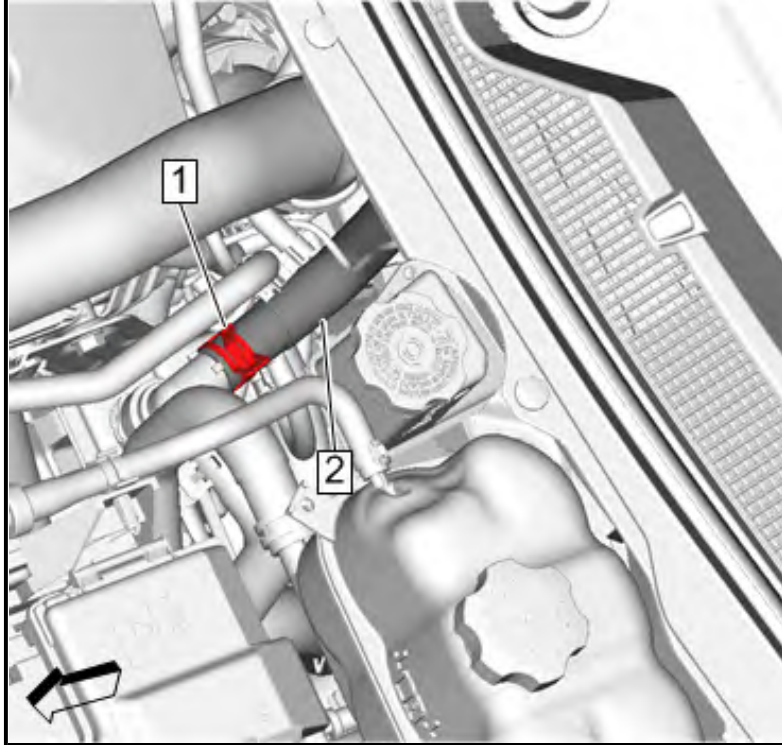
5. Heater Vent Hose - Remove - [Heater Vent Hose Replacement \(LTG Water Outlet to Heater Outlet Hose Connector\)](#)



Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

7. Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Remove

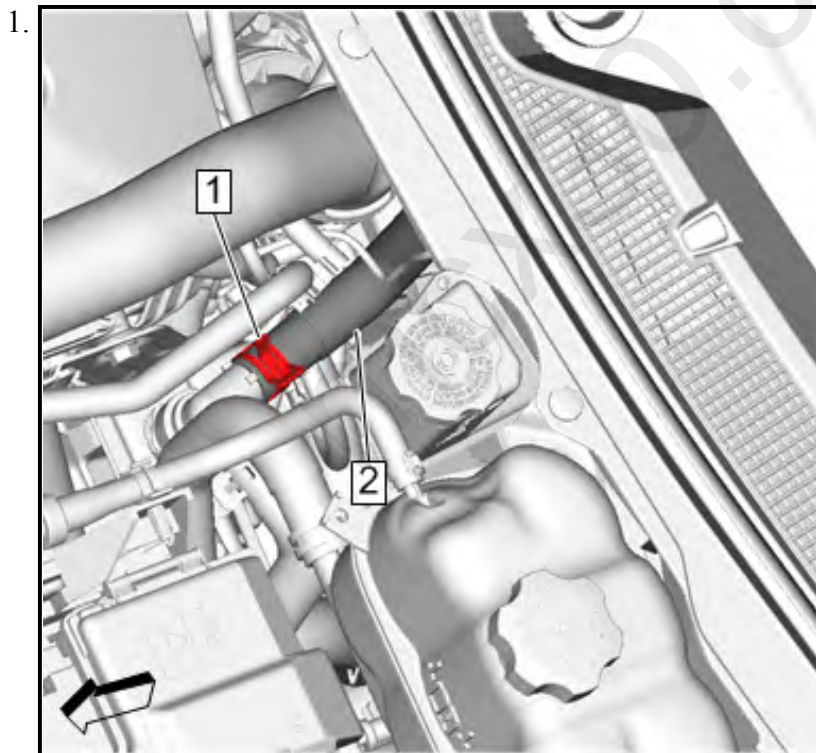




Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

9. Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Remove
10. Heater Coolant Heater Air Supply Hose (2) - Remove

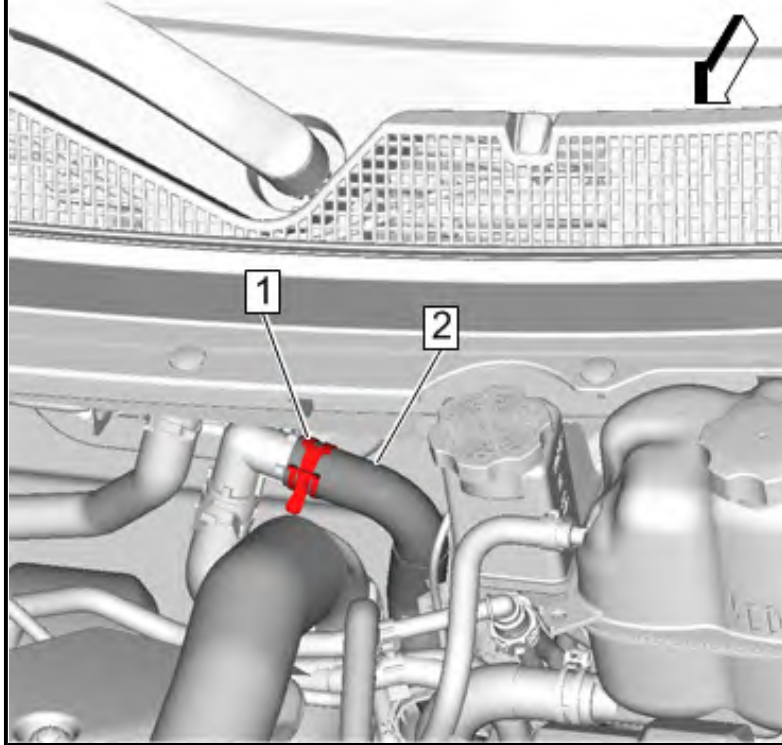
Installation Procedure



Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Install

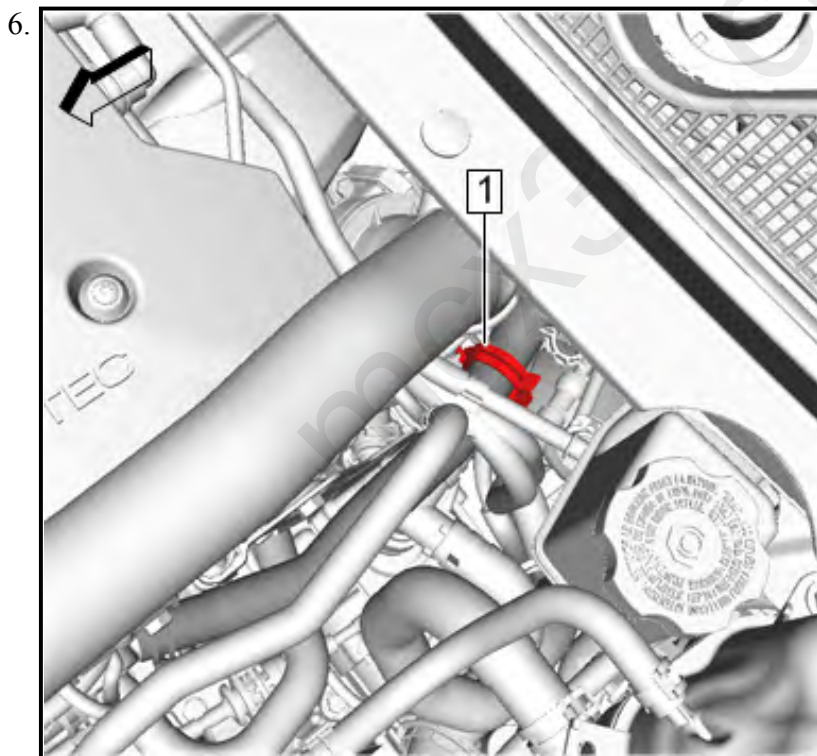
2. Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)





Heater Coolant Heater Air Supply Hose (2) @ Heater Outlet Hose Connector - Install

4. Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)
5. Heater Vent Hose - Install - [Heater Vent Hose Replacement \(LTG Water Outlet to Heater Outlet Hose Connector\)](#)



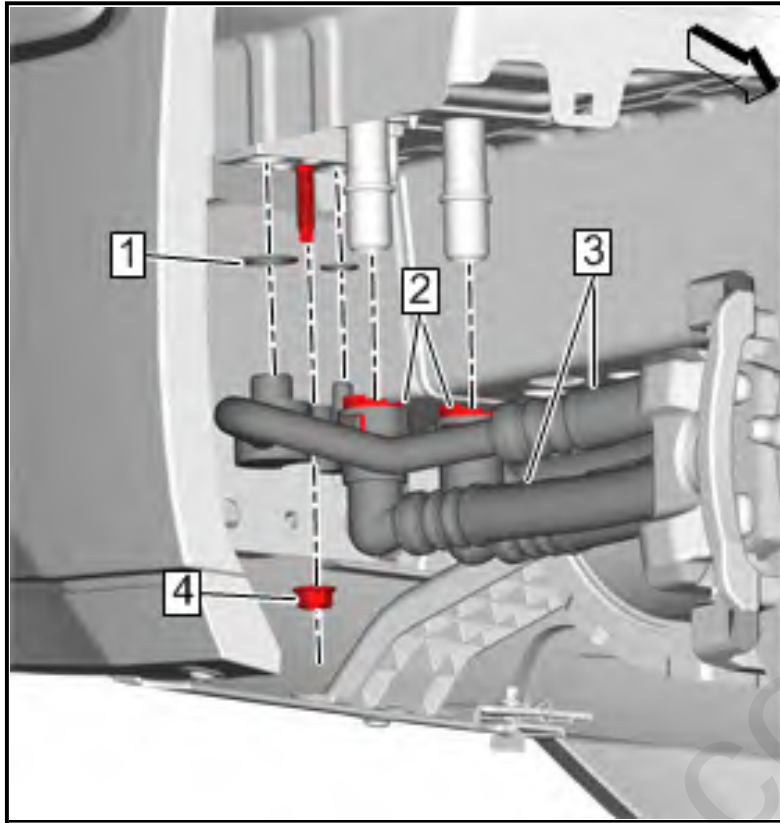
Heater Outlet Hose Clip (1) @ Heater Vent Hose - Install

7. Power Brake Booster Vacuum Hose - Reposition - [Power Brake Booster Vacuum Hose Replacement \(LTG\)](#)
8. Reposition the wiring harness.
9. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#)
10. Start the engine and inspect for leaks.

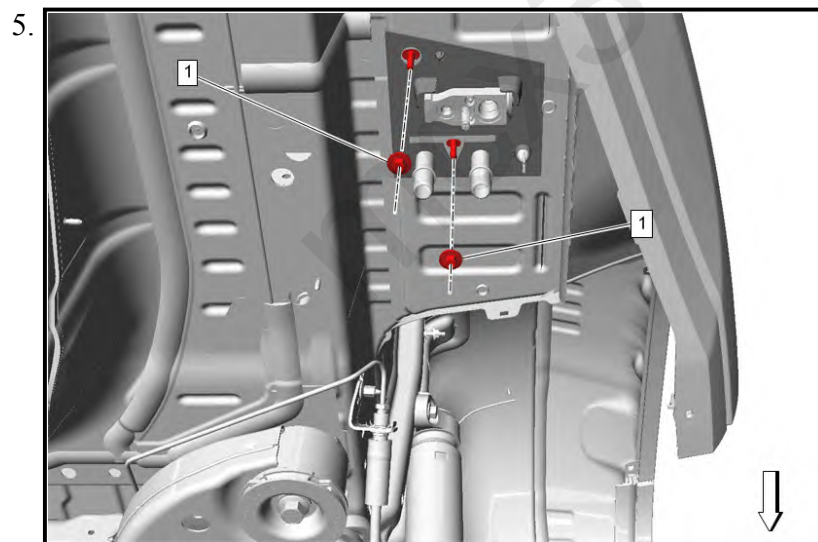
AUXILIARY AIR CONDITIONING (A/C) EVAPORATOR AND BLOWER MODULE ASSEMBLY REMOVAL AND INSTALLATION (C69)

Removal Procedure

1. Disconnect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
2. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
3. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\)](#) [Cooling System Draining and Filling \(Static Fill\)](#)
- 4.



Auxiliary Air Conditioning Evaporator Intermediate Tube (3) @ Auxiliary Air Conditioning Evaporator and Blower Module - Remove - [Auxiliary Air Conditioning Evaporator Intermediate Tube Replacement](#)

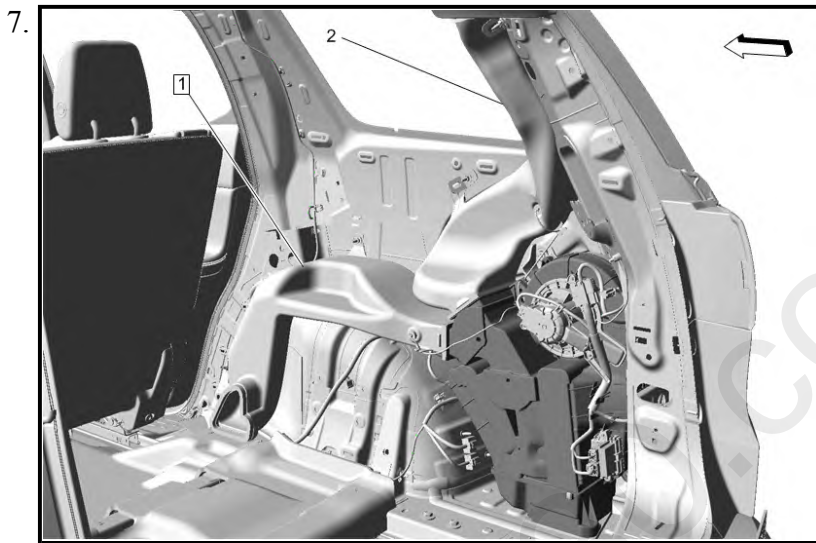


Auxiliary Air Conditioning Evaporator and Blower Module Nut (1) - Remove [2x]





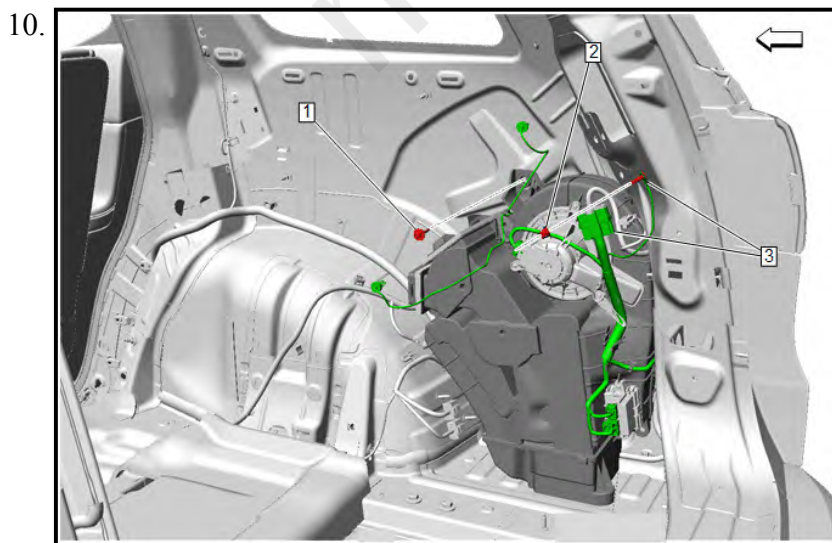
Quarter Lower Rear Trim Panel (1) - Remove - [Quarter Lower Rear Trim Panel Replacement \(Right Side\)](#).



Remove the duct temperature sensors from the ducts.

8. Auxiliary Heater Air Outlet Duct (1) - Remove - [Auxiliary Heater Air Outlet Duct Replacement](#)

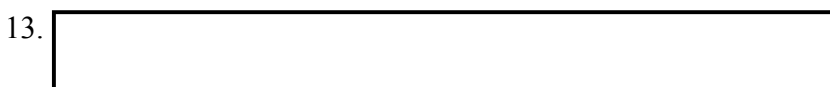
9. Auxiliary Air Conditioning Air Lower Duct (2) - Remove - [Auxiliary Air Conditioning Air Lower Duct Replacement](#)

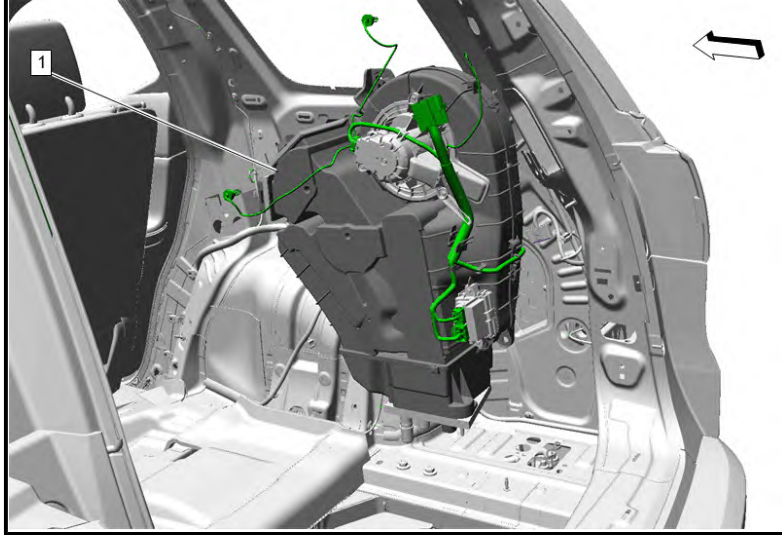


Auxiliary Air Conditioning Evaporator and Blower Module Bolt (1) - Remove

11. Ground Nut (2) - Remove

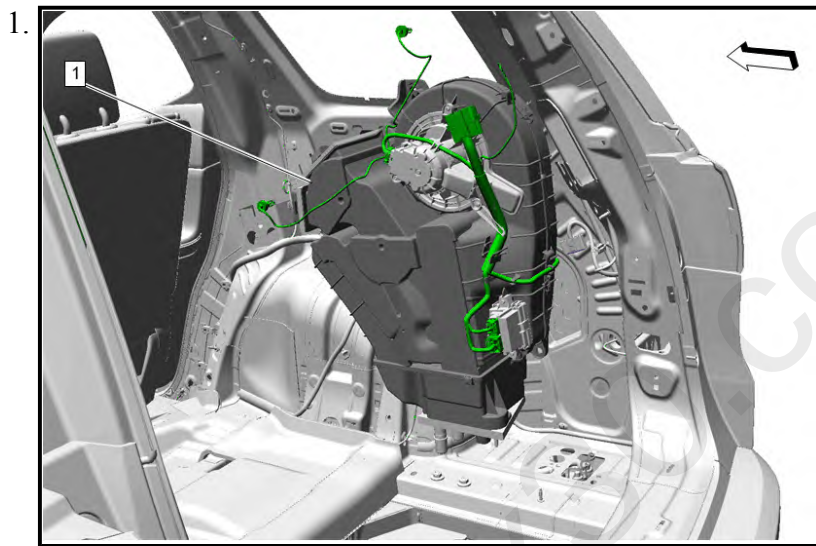
12. Disconnect the auxiliary heater and air conditioning wiring harness connector and ground terminal (3).



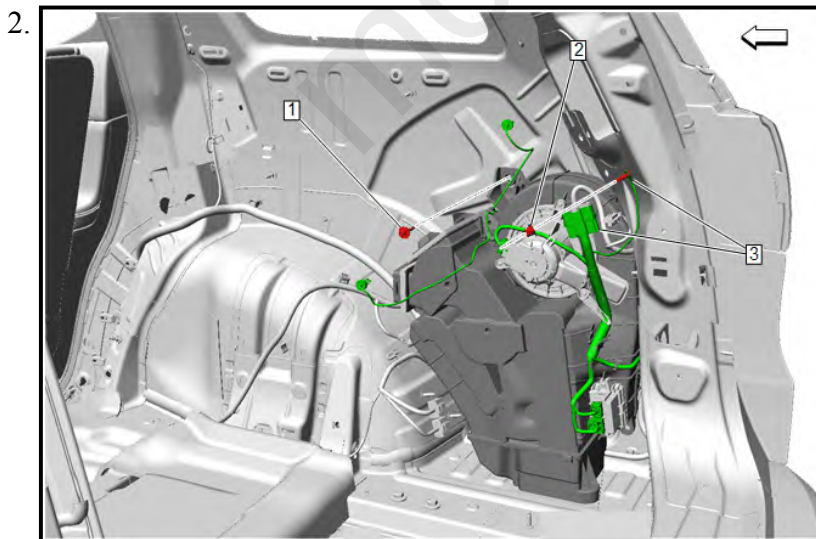


Auxiliary Air Conditioning Evaporator and Blower Module (1) - Remove

Installation Procedure



Auxiliary Air Conditioning Evaporator and Blower Module (1) - Install



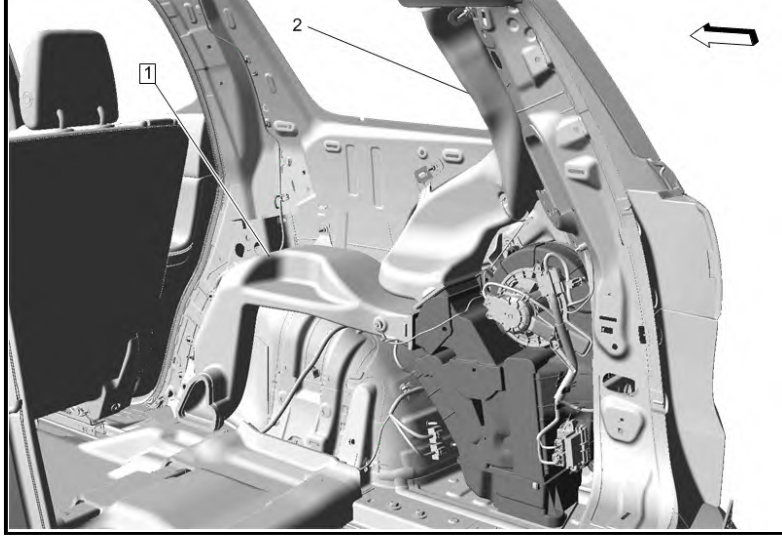
CAUTION: Refer to [Fastener Caution](#) .

Auxiliary Air Conditioning Evaporator and Blower Module Bolt (1) - Install and tighten 2.5 N.m (22 lb in)

3. Connect the auxiliary heater and air conditioning wiring harness connector and ground terminal (3).

4. Ground Nut (2) - Install and tighten 9 N.m (80 lb in)



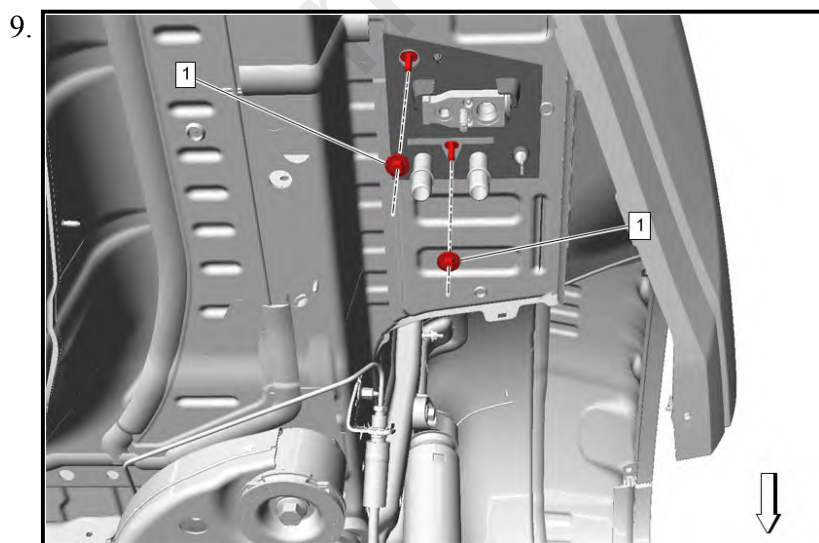


Auxiliary Air Conditioning Air Lower Duct (2) - Install - [Auxiliary Air Conditioning Air Lower Duct Replacement](#)

6. Auxiliary Heater Air Outlet Duct (1) - Install - [Auxiliary Heater Air Outlet Duct Replacement](#)
7. Install the duct temperature sensors into the ducts.

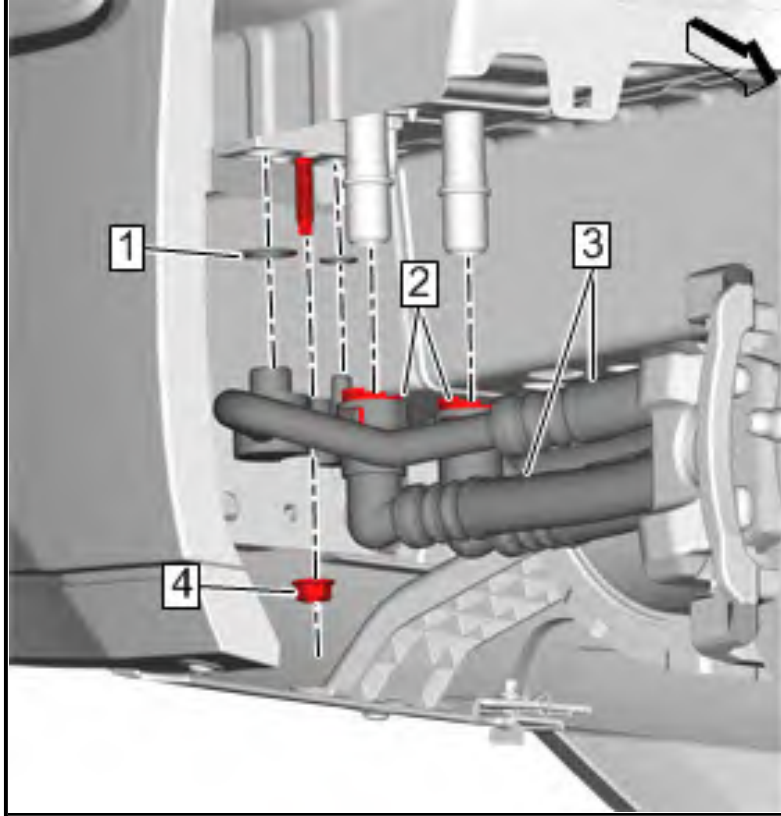


Quarter Lower Rear Trim Panel (1) - Install - [Quarter Lower Rear Trim Panel Replacement \(Right Side\)](#)



Auxiliary Air Conditioning Evaporator and Blower Module Nut (1) - Install and tighten [2x] 9 N.m (80 lb in)

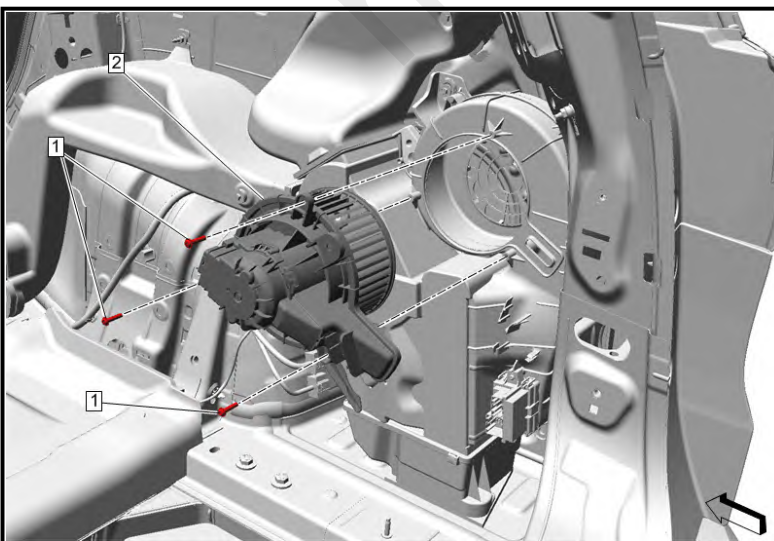




Auxiliary Air Conditioning Evaporator Intermediate Tube (3) @ Auxiliary Air Conditioning Evaporator and Blower Module - Install - [Auxiliary Air Conditioning Evaporator Intermediate Tube Replacement](#)

11. Connect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(KL9\)](#)
12. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\)](#). [Cooling System Draining and Filling \(Static Fill\)](#)
13. Evacuate and charge the refrigerant system. [Refrigerant Recovery and Recharging \(R-134a\)](#)[Refrigerant Recovery and Recharging \(R-1234yf\)](#)
14. Clear the DTCs from the heater and air conditioning remote control module.
15. Perform the actuator calibration procedure. [Actuator Recalibration](#)
16. Inspect for coolant leaks.
17. Inspect for refrigerant leaks.

AUXILIARY BLOWER MOTOR REPLACEMENT (C69)

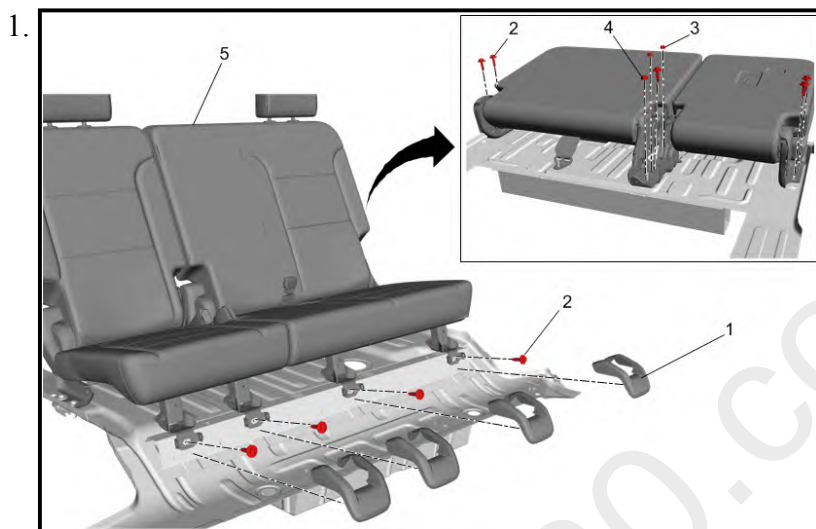


Call out	Component Name
Preliminary Procedure	
Quarter Lower Rear Trim Panel Replacement (Right Side)	

Call out	Component Name
1	Auxiliary Blower Motor Bolt [3x] CAUTION: Refer to Fastener Caution . Tighten 2.0 N.m (18 lb in)
2	Auxiliary Blower Motor Procedure Disconnect the electrical connector.

AUXILIARY HEATER AIR OUTLET DUCT REPLACEMENT

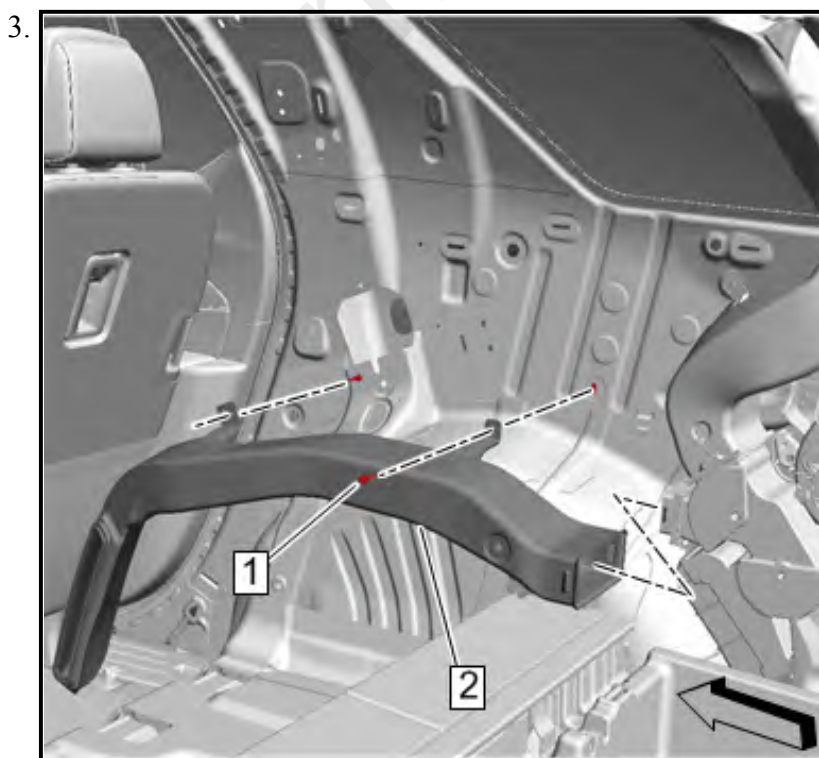
Removal Procedure



NOTE: Only remove the 40% 3rd row seat.

3rd Row Seat (5) - Remove - [3rd Row Seat Removal and Installation \(Power\)](#) [3rd Row Seat Removal and Installation \(Manual\)](#)

2. Quarter Lower Rear Trim Panel - Remove [Quarter Lower Rear Trim Panel Replacement \(Right Side\)](#)

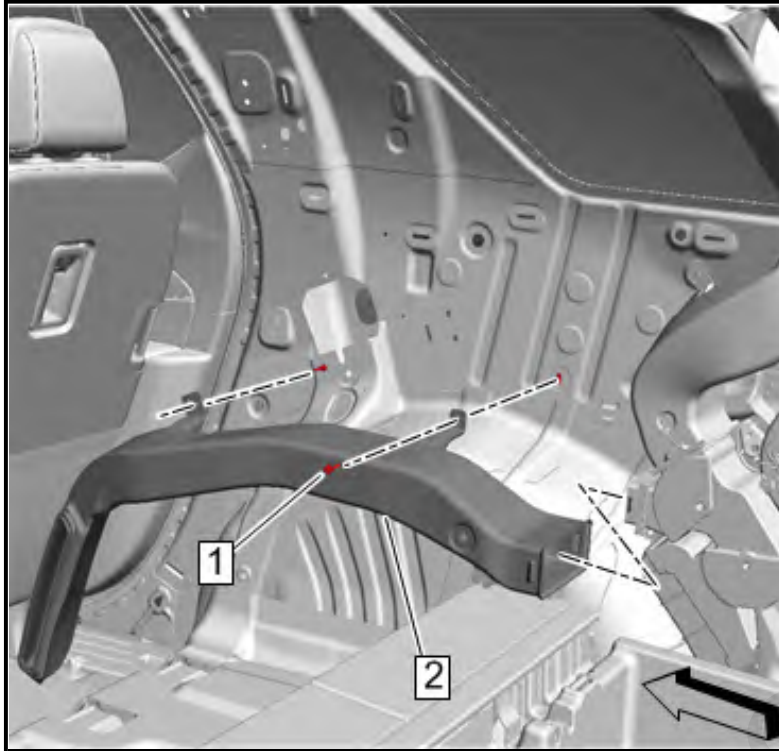


Auxiliary Heater Air Outlet Duct Bolt (1) - Remove

4. Remove the auxiliary heater and air outlet duct air temperature sensor from the auxiliary heater and air outlet duct.
5. Auxiliary Heater Air Outlet Duct (2) - Remove

Installation Procedure

1.

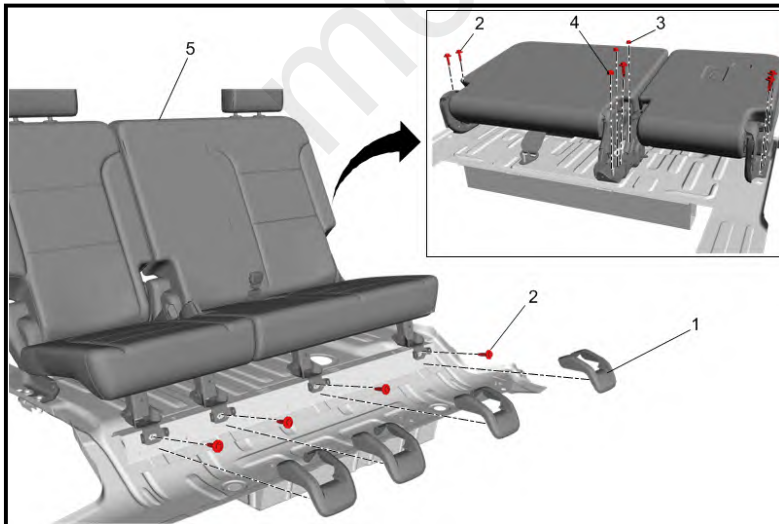


Auxiliary Heater Air Outlet Duct (2) - Install

CAUTION: Refer to [Fastener Caution](#) .

2. Auxiliary Heater Air Outlet Duct Bolt (1) - Install and tighten 2.5 N.m (22 lb in)
3. Install the auxiliary heater and air outlet duct air temperature sensor into the auxiliary heater and air outlet duct.
4. Quarter Lower Rear Trim Panel - Install [Quarter Lower Rear Trim Panel Replacement \(Right Side\)](#)

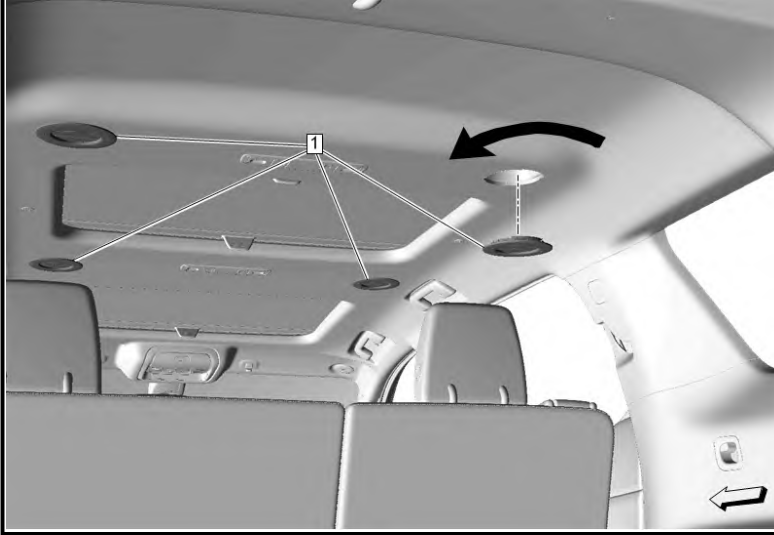
5.



3rd Row Seat (5) - Install - [3rd Row Seat Removal and Installation \(Power\)](#) [3rd Row Seat Removal and Installation \(Manual\)](#)

AUXILIARY AIR CONDITIONING AIR OUTLET REPLACEMENT (DEFLECTOR)

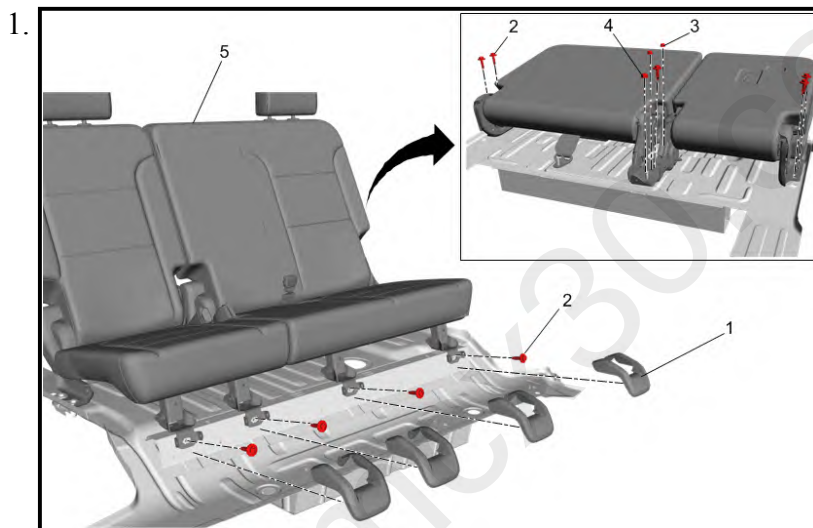




Callout	Component Name
1	Auxiliary Air Conditioning Air Outlet [4x] Procedure Rotate the auxiliary air conditioning air outlet counter clockwise to remove from the headliner.

AUXILIARY AIR CONDITIONING AIR LOWER DUCT REPLACEMENT

Removal Procedure

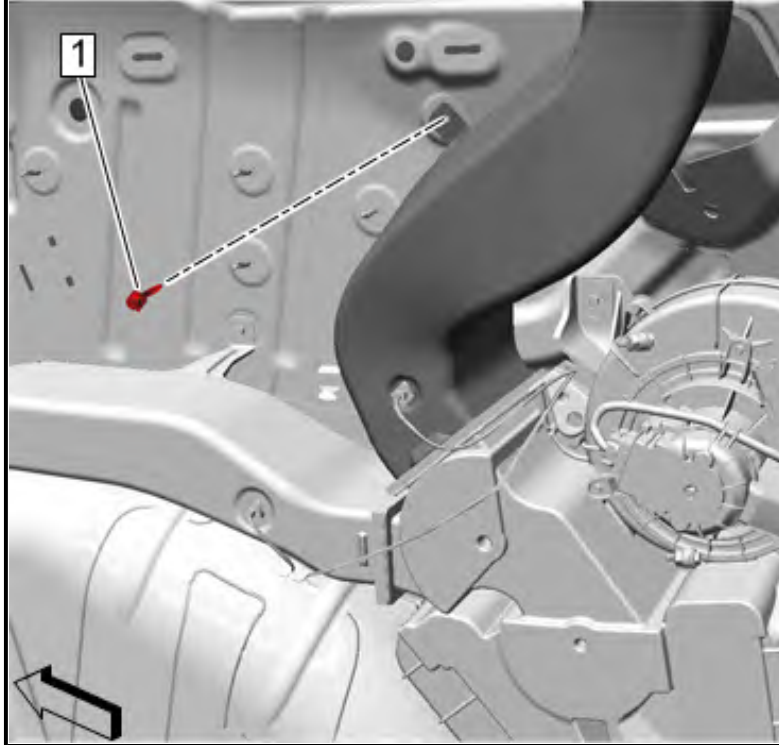


NOTE: Only remove the 40% 3rd row seat.

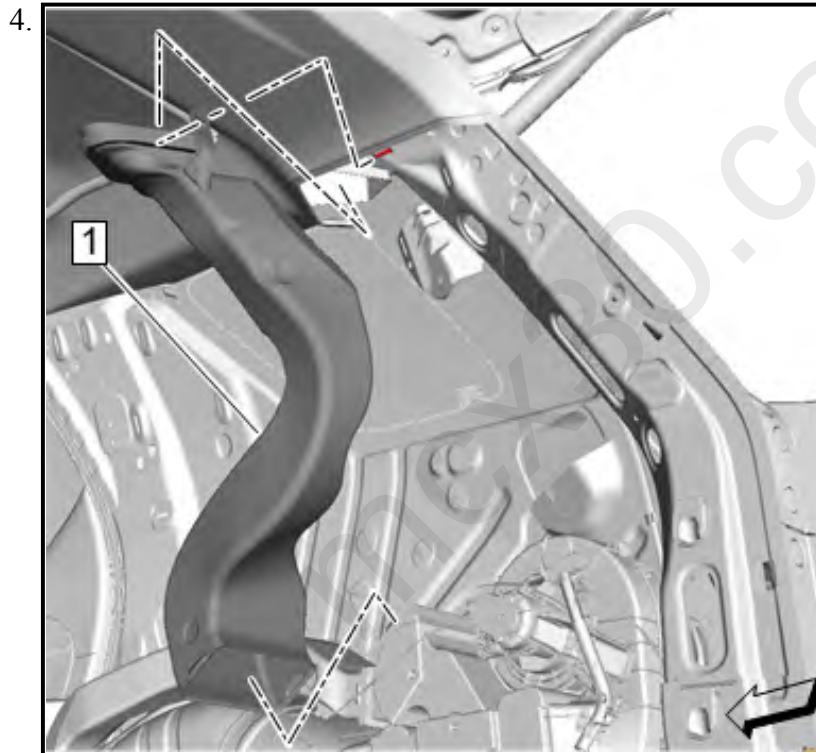
3rd Row Seat (5) - Remove - [3rd Row Seat Removal and Installation \(Power\)](#), [3rd Row Seat Removal and Installation \(Manual\)](#)

2. Quarter Lower Rear Trim Panel - Remove [Quarter Lower Rear Trim Panel Replacement \(Right Side\)](#)





Auxiliary Air Conditioning Air Lower Duct Bolt (1) - Remove

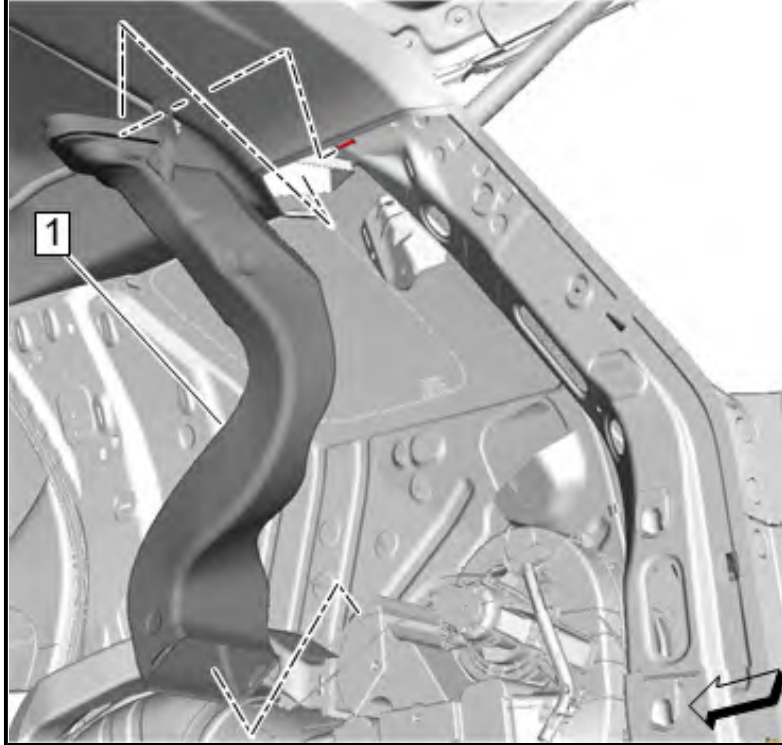


Remove the auxiliary air conditioning air lower duct air temperature sensor from the auxiliary air conditioning air lower duct.

5. Auxiliary Air Conditioning Air Lower Duct (1) - Remove

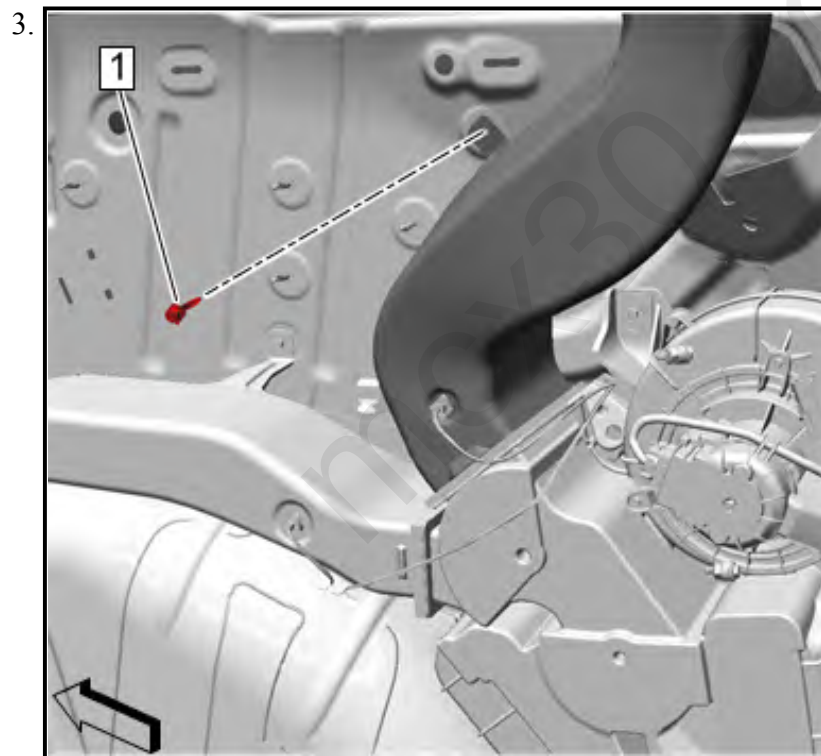
Installation Procedure





Auxiliary Air Conditioning Air Lower Duct (1) - Install

2. Install the auxiliary air conditioning air lower duct air temperature sensor into the auxiliary air conditioning air lower duct.

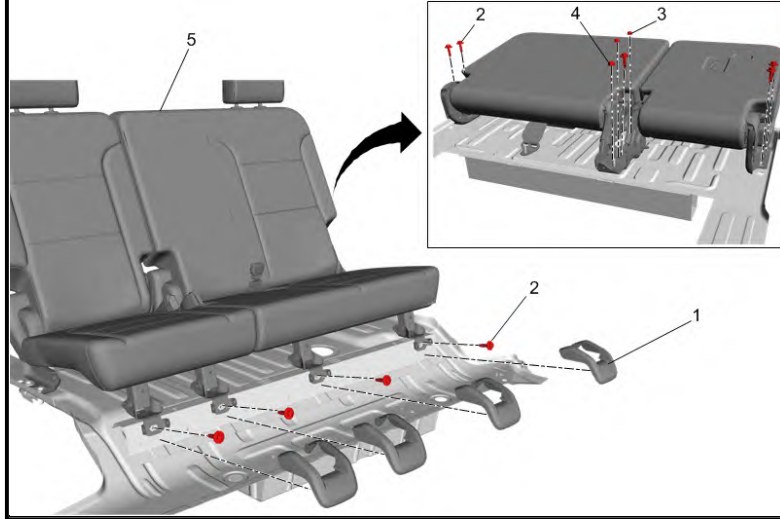


CAUTION: Refer to [Fastener Caution](#) .

Auxiliary Air Conditioning Air Lower Duct Bolt (1) - Install and tighten 2.5 N.m (22 lb in)

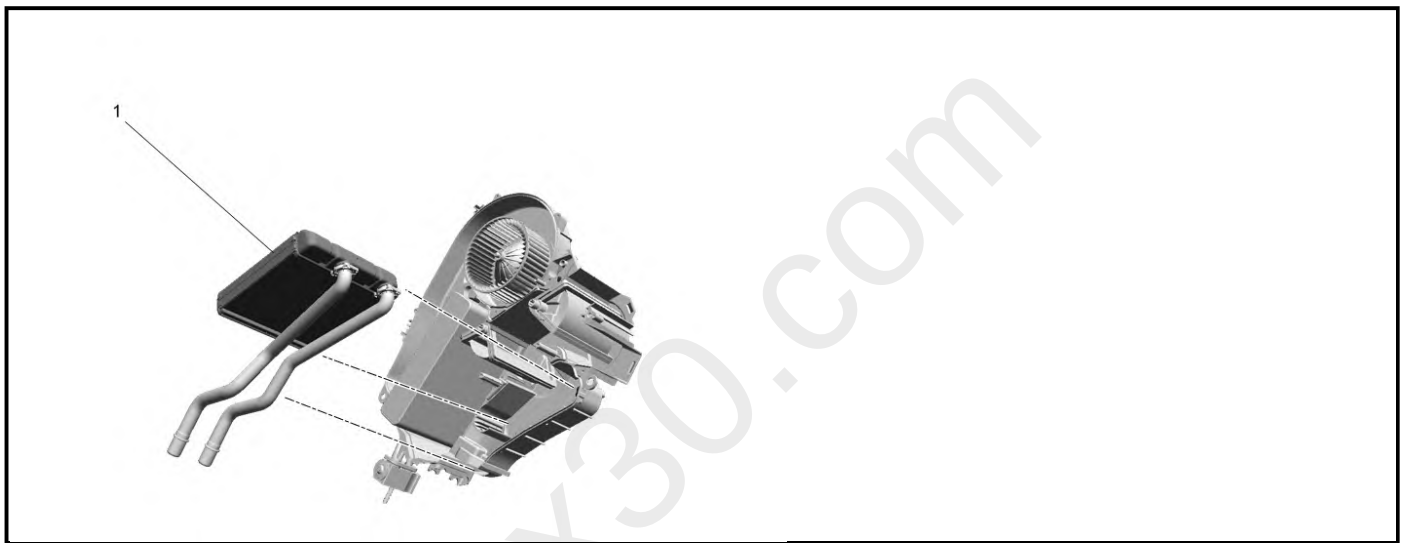
4. Quarter Lower Rear Trim Panel - Install [Quarter Lower Rear Trim Panel Replacement \(Right Side\)](#)





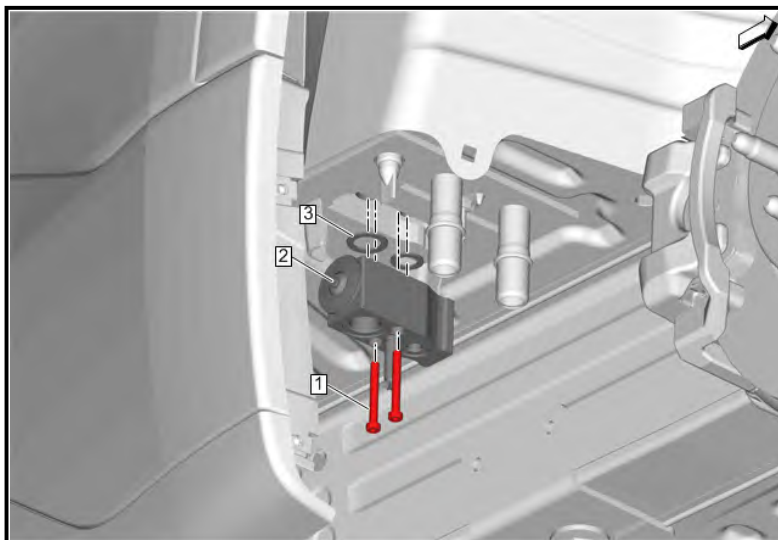
3rd Row Seat (5) - Install - [3rd Row Seat Removal and Installation \(Power\)](#) [3rd Row Seat Removal and Installation \(Manual\)](#)

AUXILIARY HEATER CORE REPLACEMENT (C69)



Callout	Component Name
Preliminary Procedure Auxiliary Air Conditioning Evaporator and Blower Case Replacement - Outboard (C69)	
1	Auxiliary Heater Core Procedure Transfer components as necessary.

AUXILIARY AIR CONDITIONING EVAPORATOR THERMAL EXPANSION VALVE REPLACEMENT (C69)



Callout	Component Name
WARNING: Technicians must only use a SAE J2913 certified electronic leak detector when checking for leaks in an R-1234yf A/C refrigerant system. Other, non - certified, leak detection devices could serve as ignition sources in the presence of hydrocarbons or other flammable refrigerants. Failure to follow these precautions may cause personal injury and/or damage to the vehicle or its components.	
Preliminary Procedures <u>Refrigerant Recovery and Recharging (R-134a) Refrigerant Recovery and Recharging (R-1234yf)</u> - Auxiliary Air Conditioning Evaporator Intermediate Tube @ Auxiliary Air Conditioning Evaporator Thermal Expansion Valve - Remove <u>Auxiliary Air Conditioning Evaporator Intermediate Tube Replacement</u>	
1	Air Conditioning Evaporator Thermal Expansion Valve Bolt [2x] CAUTION: Refer to <u>Fastener Caution</u> . Tighten 6 N.m (53 lb in)
2	Air Conditioning Evaporator Thermal Expansion Valve
3	Air Conditioning Evaporator Thermal Expansion Valve Seal [2x] Procedure Remove and DISCARD the sealing washer. <u>Air Conditioning System Seal Replacement.</u>

AUXILIARY AIR CONDITIONING EVAPORATOR REPLACEMENT (C69 R1234YF)

WARNING: Refer to R-1234yf Proper Service Procedures Warning .

WARNING: Evaporators in vehicles equipped with R-1234yf refrigerant systems must never be repaired or replaced with an evaporator removed from another or salvage vehicle. Use only new SAE J2842 certified and labeled evaporator (s) as replacement parts. Failure to follow this guideline could pose a health and/or safety risk to the vehicle occupant (s).

NOTE: Technicians repairing or servicing motor vehicle air conditioning (MVAC) systems must be trained and certified by an EPA approved organization. Certification is obtained by passing an EPA approved examination.
(<http://www.epa.gov/ozone/title6/609/technicians/609certs.html>)

Replacement Evaporator Label Requirements



Replacement evaporators shall have a permanent marking (label, stamp, or etching) that indicates that this evaporator design meets SAE J2842 and shall include the wording below or optionally the symbols as shown:

Text Only - Label Wording - "Conforms to SAE J2842 (Evaporator Manufacturer's Name or Trademark) Replace only with new evaporator certified to meet SAE J2842".

Leak Free Joints Inside the Passenger Compartment

If a refrigerant joint/connection is made or disturbed inside the passenger cabin the following steps shall be followed by the technician to ensure the joint/connection is leak free.

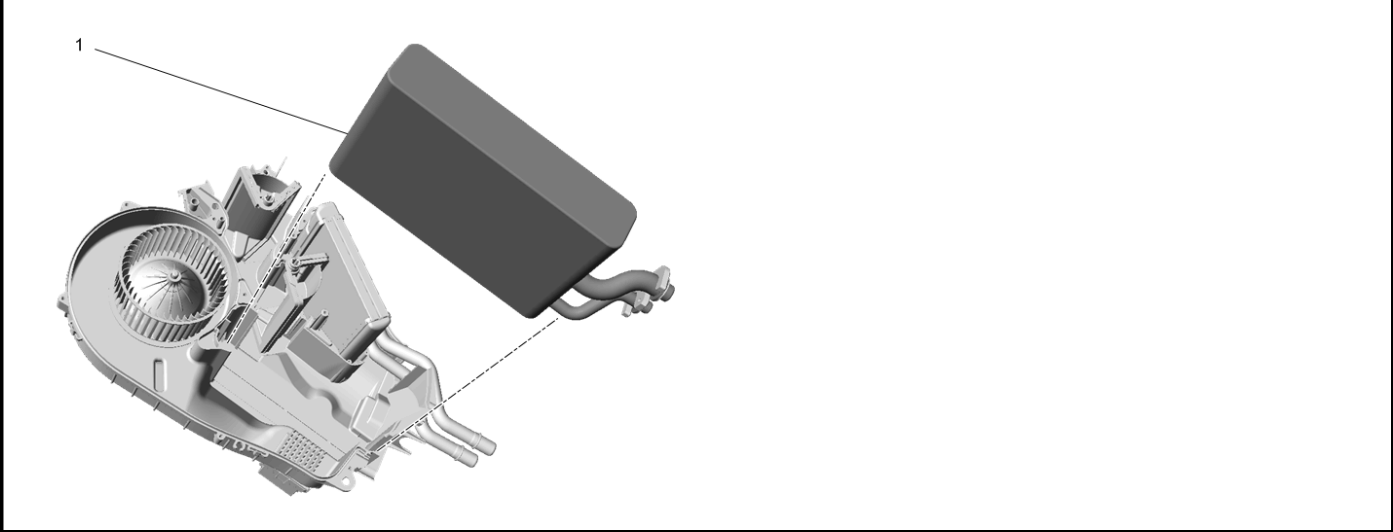
1. Shall clean all dirt, grease and debris from and around connection joints before disassembly/assembly of refrigerant connections.
2. Shall be advised to carefully inspect the joint/connection seal surfaces for signs of deformation, contamination or damage after disassembly.
3. Shall be advised that Seals/O-rings shall never be reused, but replaced with all new parts.
4. Shall be advised to ensure proper alignment of male/female portions and seal so there is no misalignment and stress on the fitting connection.
5. Shall tighten the joint using the proper torque.
6. With full refrigerant charge installed and the vehicles HVAC blower motor set on its lowest speed, A/C switch off and air distribution set to floor. The technician shall insert a SAE J2913 compliant electronic leak detector set to high sensitivity (4 grams/year leak rate) into the center of a floor duct outlet, as far as possible. The technician shall monitor the electronic leak detector for 5 minutes or until the detector alarms.
 - If electronic leak detector alarms, recover the refrigerant and repair the leak.
 - If after 5 minutes there is no alarm, there is no indication of a leak in the passenger compartment and the repair can be completed.
7. If vehicle is equipped with an auxiliary evaporator, monitor the air downstream from the evaporator at the outlet duct closest to the auxiliary unit under the same conditions and set up as step 6.

Proper Disposal of the Replaced Evaporator

The replaced evaporator shall be disabled to ensure that it never be repaired or reused.

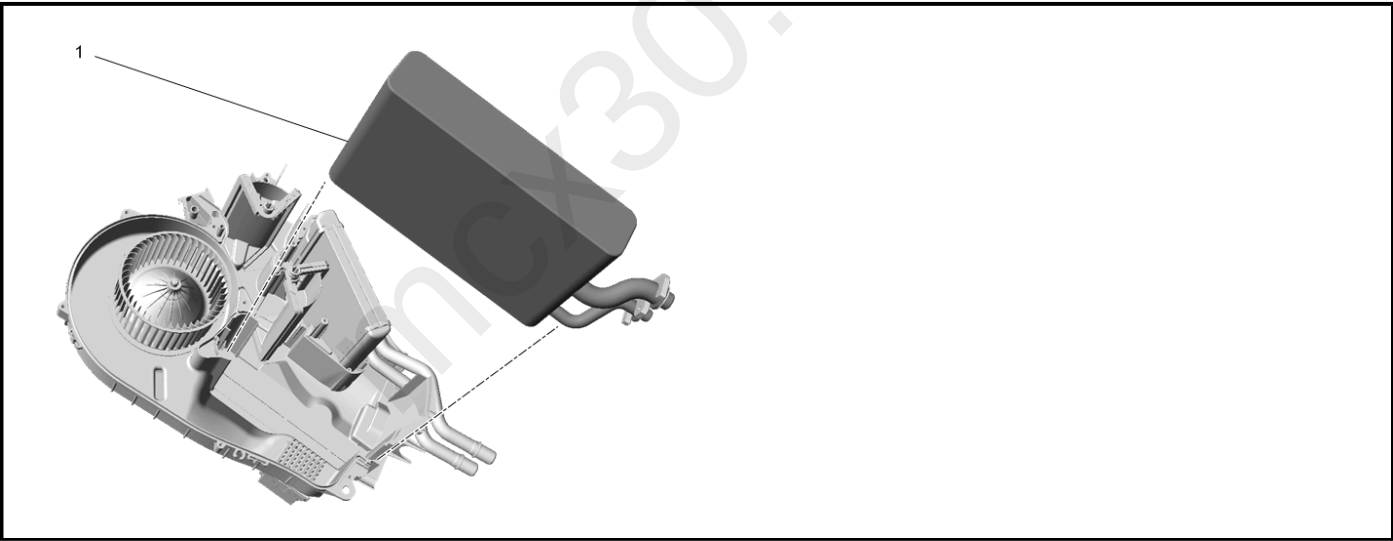
Disable the replaced evaporator by completing one of the following steps:

- Using tin snips sever a minimum of 3 of the evaporators tubes.
- Drill or Punch a minimum of two 25 mm (.25 inch) holes in each end tank.



Callout	Component Name
Preliminary Procedure <u>Auxiliary Air Conditioning Evaporator and Blower Case Replacement - Outboard (C69)</u>	
1	Auxiliary Air Conditioning Evaporator Procedure 1. Auxiliary Air Conditioning Evaporator Thermal Expansion Valve - Remove - <u>Auxiliary Air Conditioning Evaporator Thermal Expansion Valve Replacement (C69)</u> 2. Transfer components as necessary.

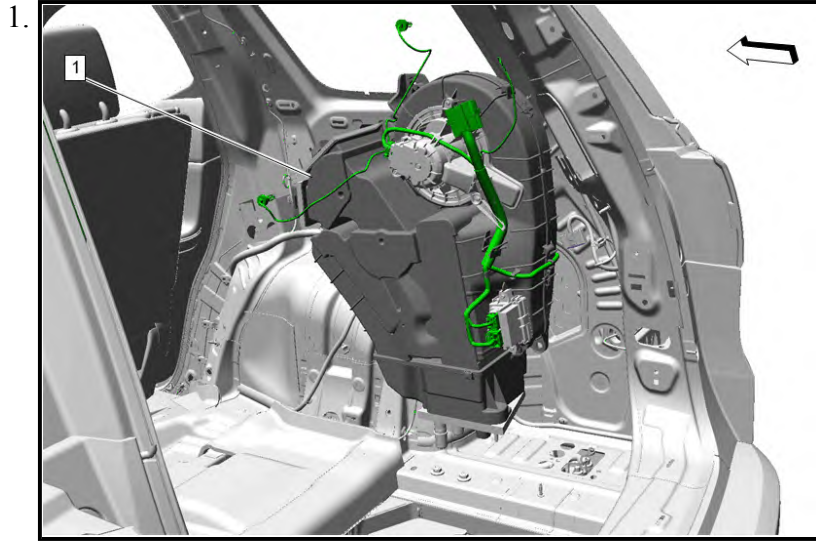
AUXILIARY AIR CONDITIONING EVAPORATOR REPLACEMENT (C69 R134A)



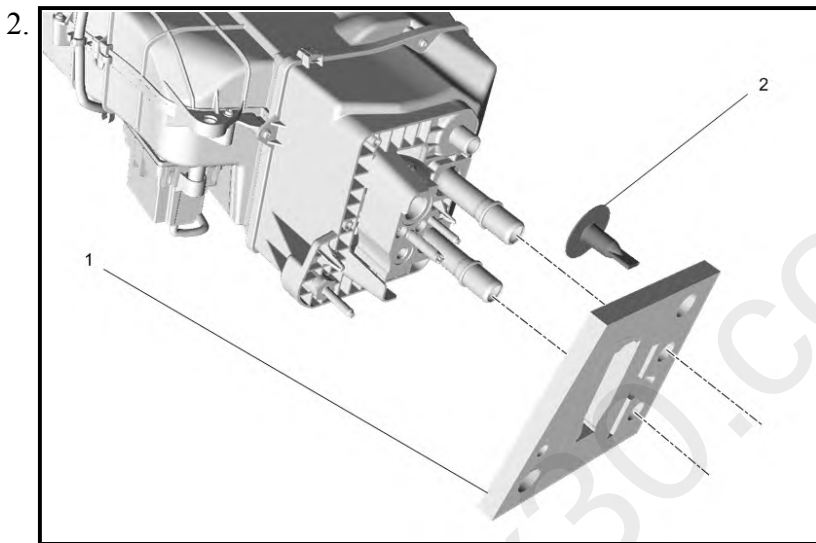
Callout	Component Name
Preliminary Procedure <u>Auxiliary Air Conditioning Evaporator and Blower Case Replacement - Outboard (C69)</u>	
1	Auxiliary Air Conditioning Evaporator Procedure 1. Auxiliary Air Conditioning Evaporator Thermal Expansion Valve - Remove - <u>Auxiliary Air Conditioning Evaporator Thermal Expansion Valve Replacement (C69)</u> 2. Transfer components as necessary.

AUXILIARY AIR CONDITIONING EVAPORATOR AND BLOWER CASE REPLACEMENT - INBOARD (C69)

Removal Procedure

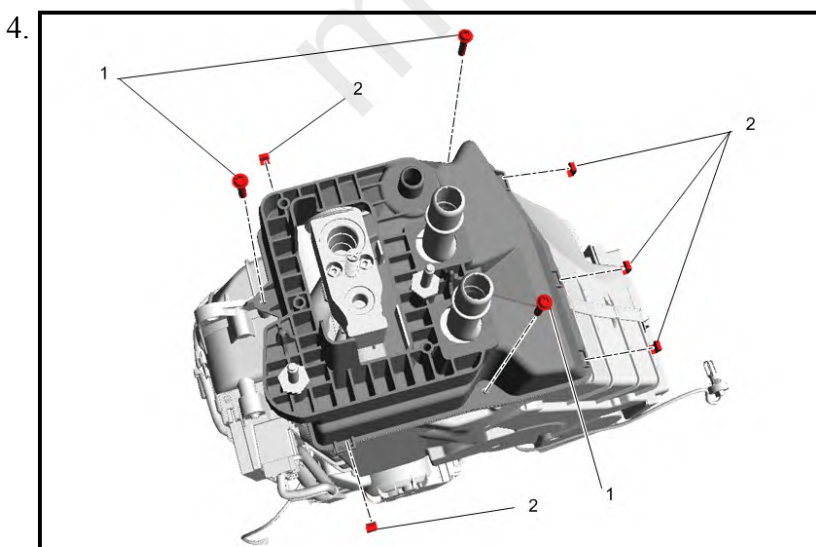


Auxiliary Air Conditioning Evaporator and Blower Module (1) - Remove - Auxiliary Air Conditioning (A/C) Evaporator and Blower Module Assembly Removal and Installation (C69).



Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Remove

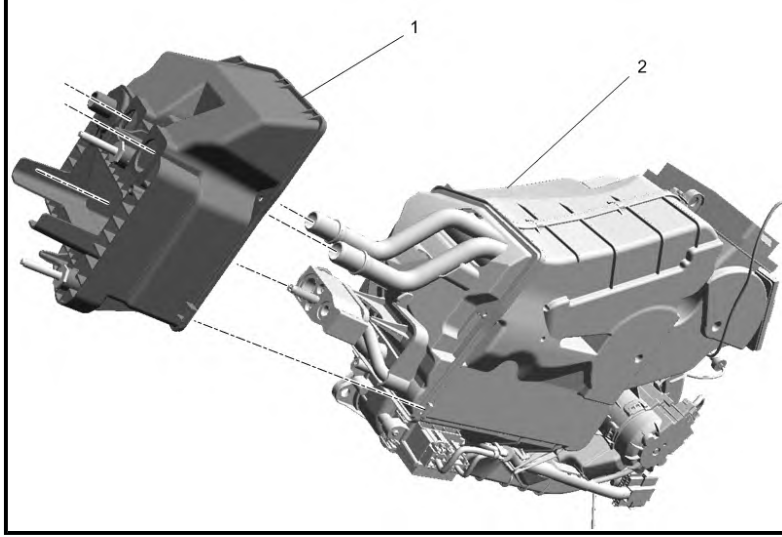
3. Auxiliary Air Conditioning Evaporator and Blower Module Drain Valve (2) - Remove



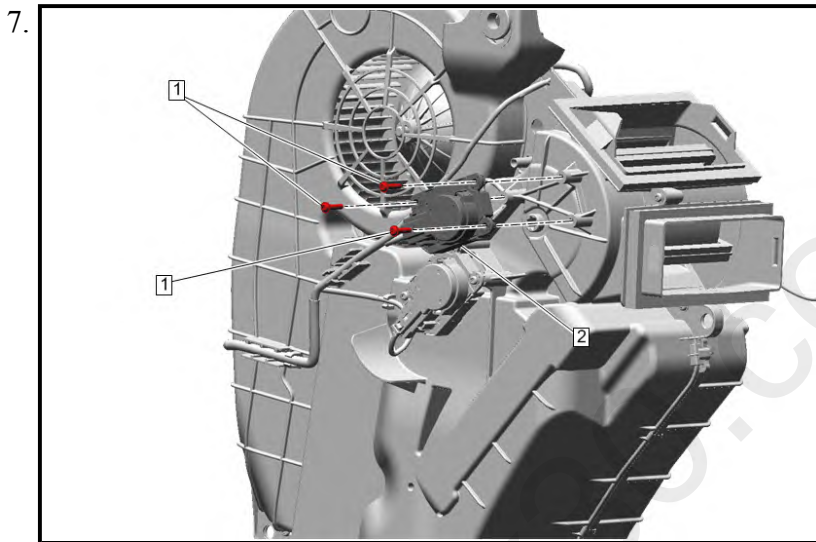
Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Remove [3x]

5. Air Conditioning Evaporator Case Clip (2) - Remove [5x]

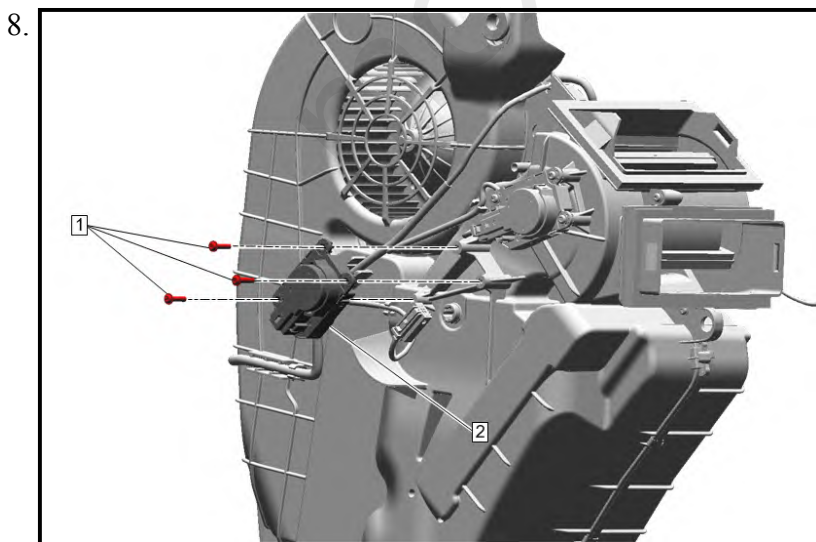




Auxiliary Air Conditioning Evaporator and Blower Lower Case (1) @ Auxiliary Air Conditioning Evaporator and Blower Module (2) - Remove

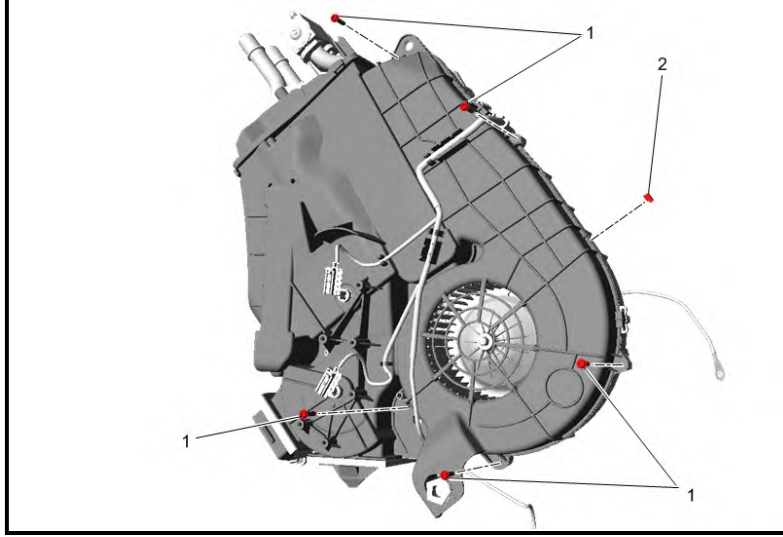


Auxiliary Mode Valve Actuator (2) - Remove - [Mode Valve Actuator Replacement \(Auxiliary C69\)](#)



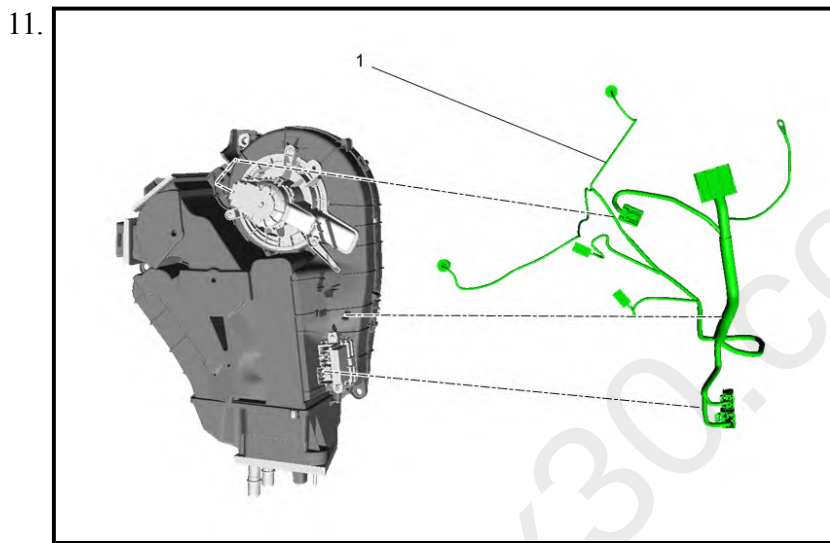
Auxiliary Temperature Valve Actuator (2) - Remove - [Temperature Valve Actuator Replacement \(Auxiliary C69\)](#)



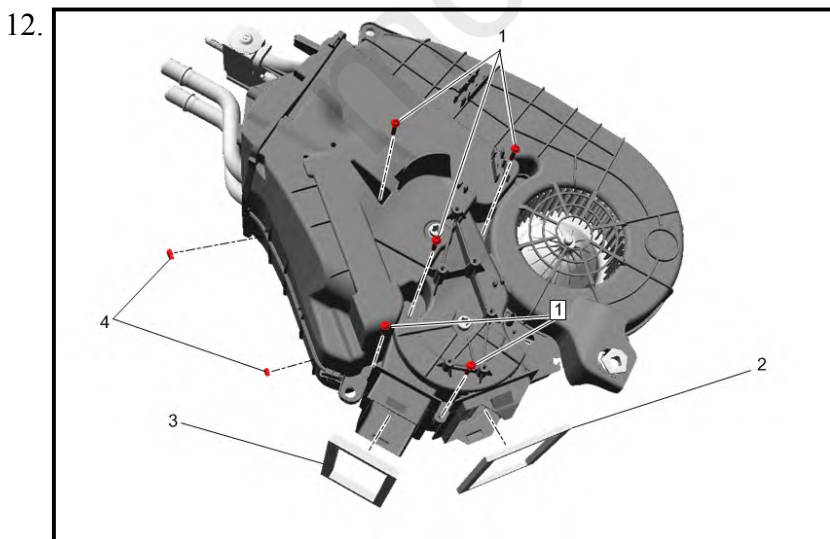


Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Remove [5x]

10. Air Conditioning Evaporator Case Clip (2) - Remove



Auxiliary Heater and Air Conditioning Wiring Harness (1) - Remove



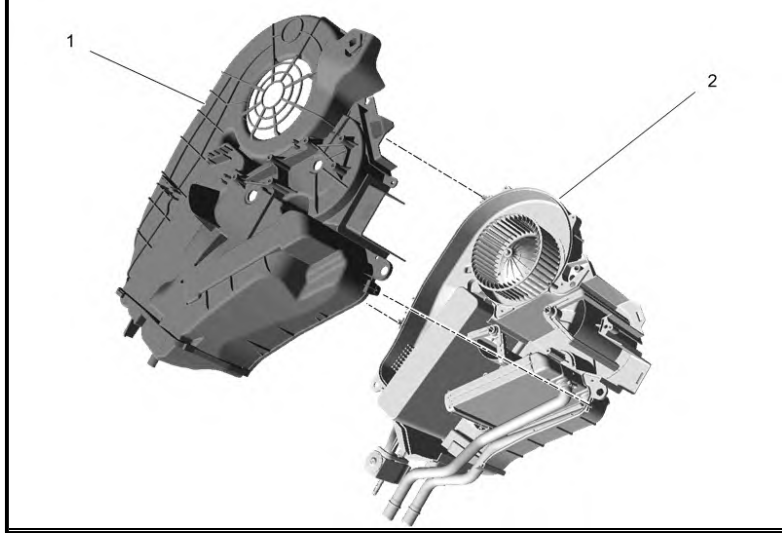
Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Remove [5x]

13. Auxiliary Heater Air Outlet Duct Seal (2) - Remove

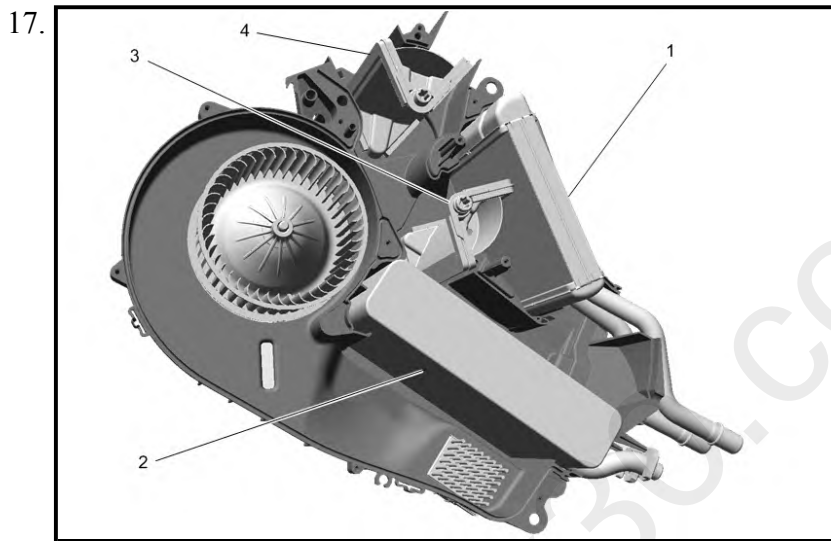
14. Air Distributor Seal (3) - Remove

15. Air Conditioning Evaporator Case Clip (4) - Remove





Auxiliary Air Conditioning Evaporator and Blower Case (1) - Outboard @ Auxiliary Air Conditioning Evaporator and Blower Case (2) - Inboard - Remove

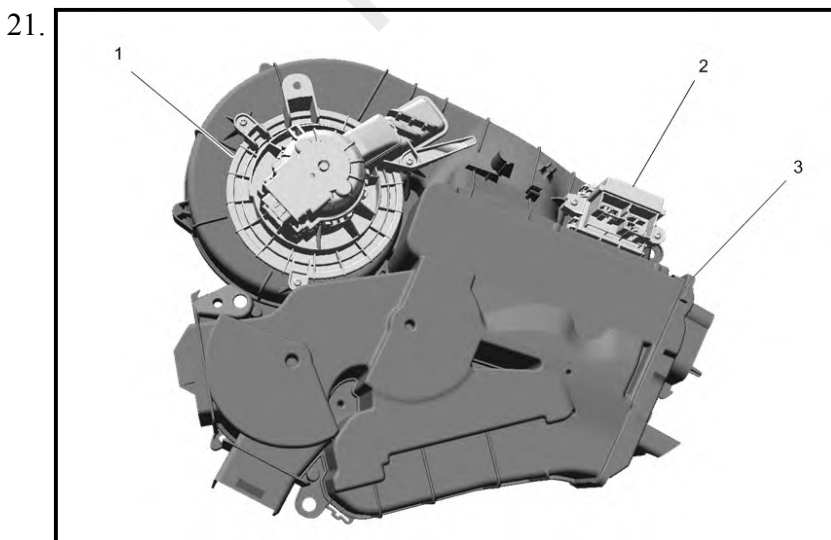


Auxiliary Heater Core (1) - Remove

18. Auxiliary Air Conditioning Evaporator (2) - Remove

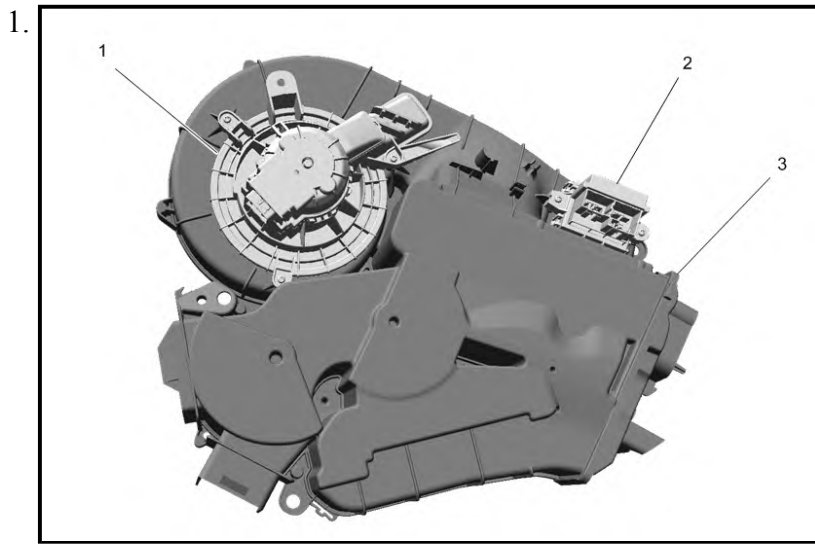
19. Temperature Valve (3) - Remove

20. Mode Valve (4) - Remove



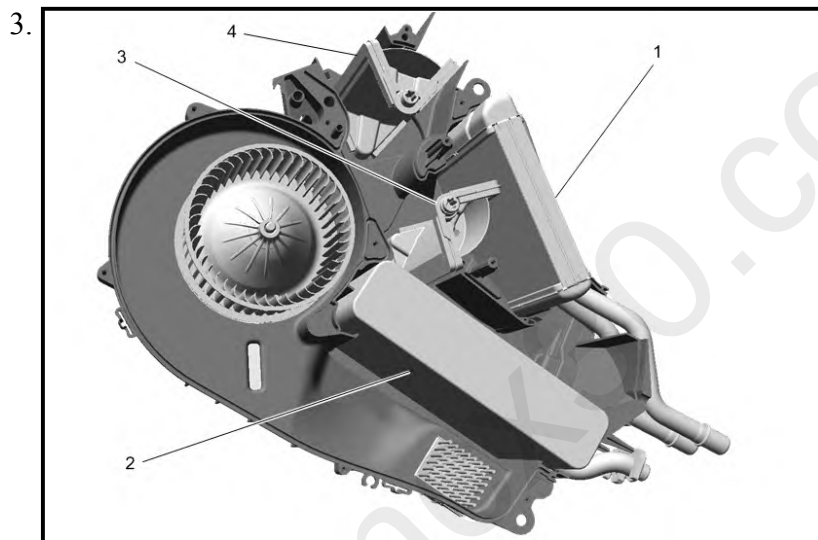
Auxiliary Blower Motor (1) @ Auxiliary Air Conditioning Evaporator and Blower Case (3) - Inboard - Remove - [Auxiliary Blower Motor Replacement \(C69\)](#)

22. Blower Motor Control Module (1) @ Auxiliary Air Conditioning Evaporator and Blower Case (3) - Inboard - Remove - [Blower Motor Control Module Replacement \(C69\)](#)



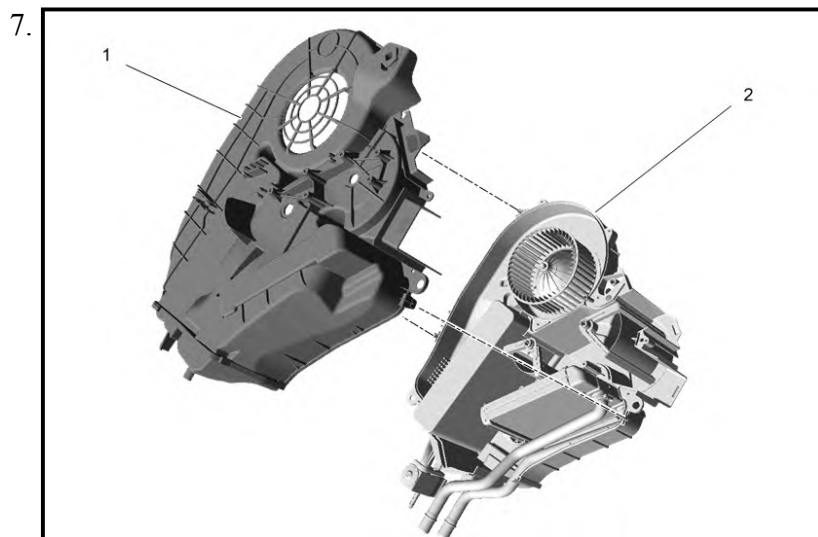
Blower Motor Control Module (1) @ Auxiliary Air Conditioning Evaporator and Blower Case (3) - Inboard - Install - **Blower Motor Control Module Replacement (C69)**

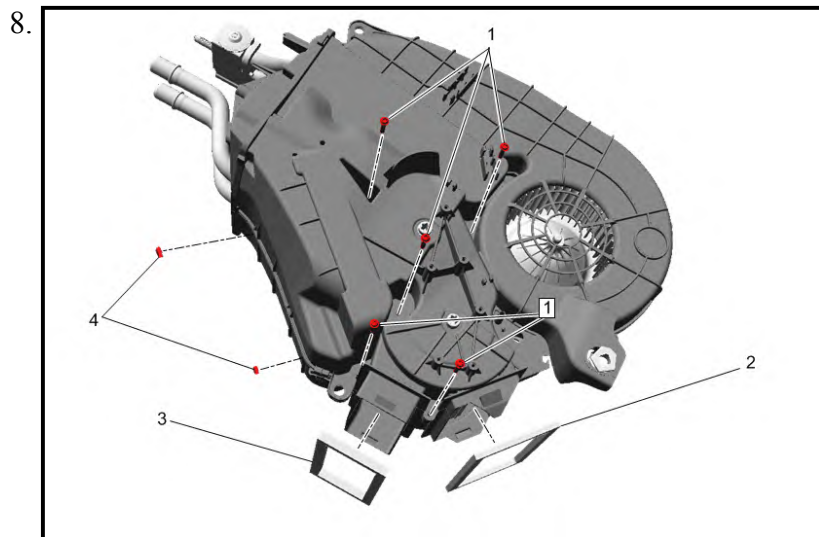
2. Auxiliary Blower Motor (1) @ Auxiliary Air Conditioning Evaporator and Blower Case (3) - Inboard - Install - **Auxiliary Blower Motor Replacement (C69)**



Mode Valve (4) - Install

4. Temperature Valve (3) - Install
5. Auxiliary Air Conditioning Evaporator (2) - Install
6. Auxiliary Heater Core (1) - Install





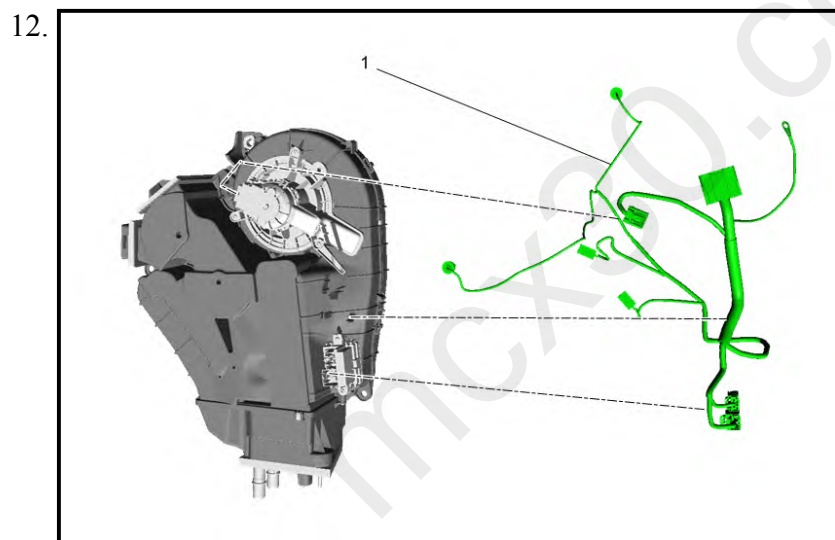
CAUTION: Refer to [Fastener Caution](#) .

Air Conditioning Evaporator Case Clip (4) - Install

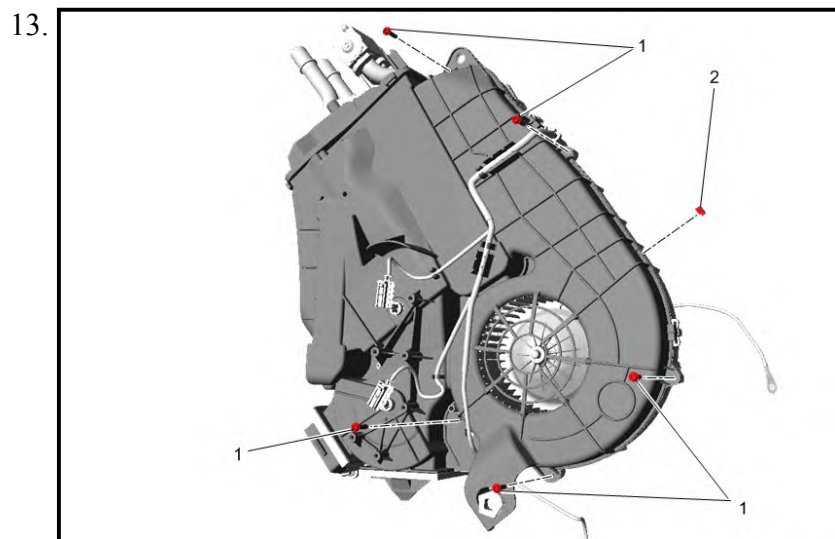
9. Air Distributor Seal (3) - Install

10. Auxiliary Heater Air Outlet Duct Seal (2) - Install

11. Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Install and tighten [5x] 1.5 N.m (13 lb in)

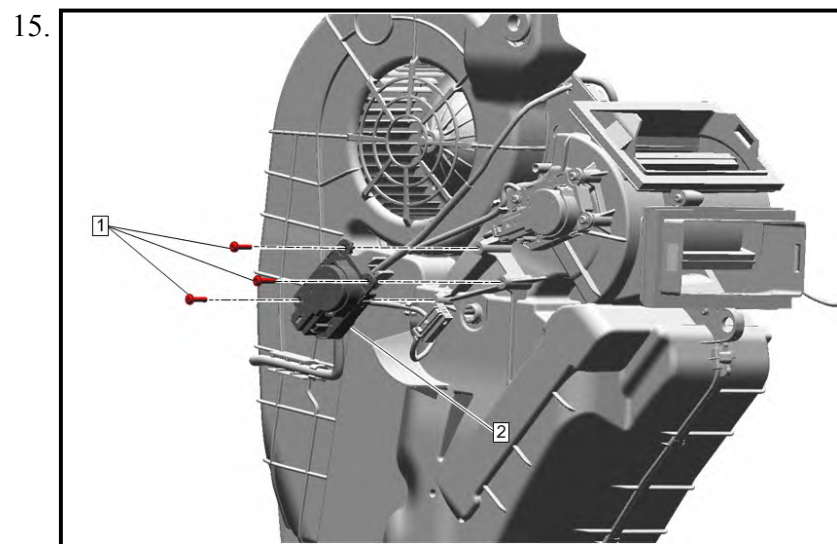


Auxiliary Heater and Air Conditioning Wiring Harness (1) - Install

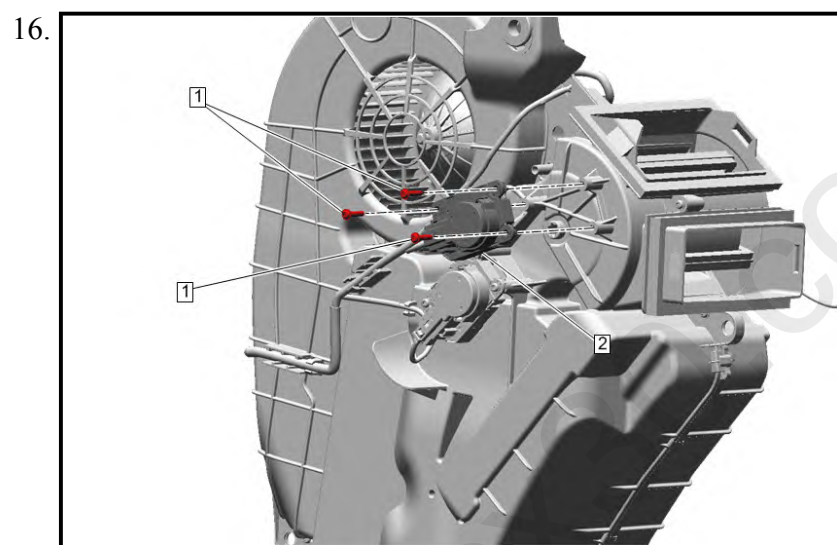


Air Conditioning Evaporator Case Clip (2) - Install

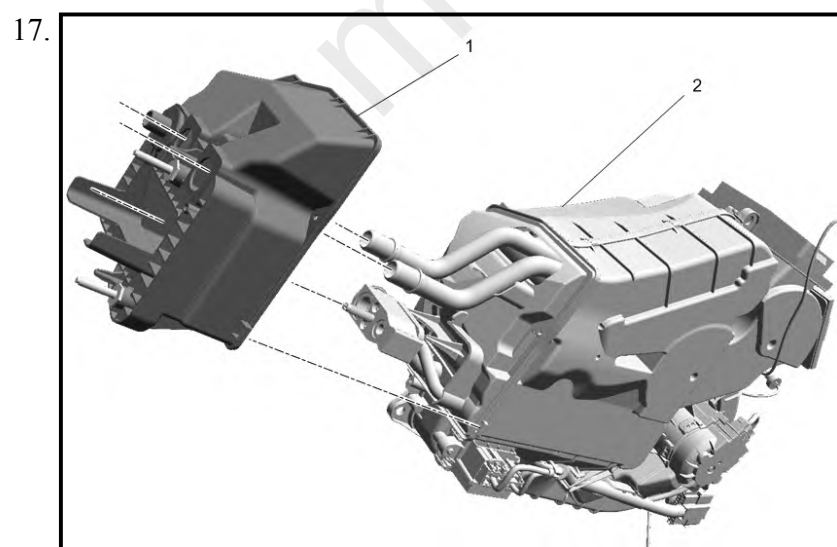
14. Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Install and tighten [5x] 1.5 N.m (13 lb in)



Auxiliary Temperature Valve Actuator (2) - Install - [Temperature Valve Actuator Replacement \(Auxiliary C69\)](#).

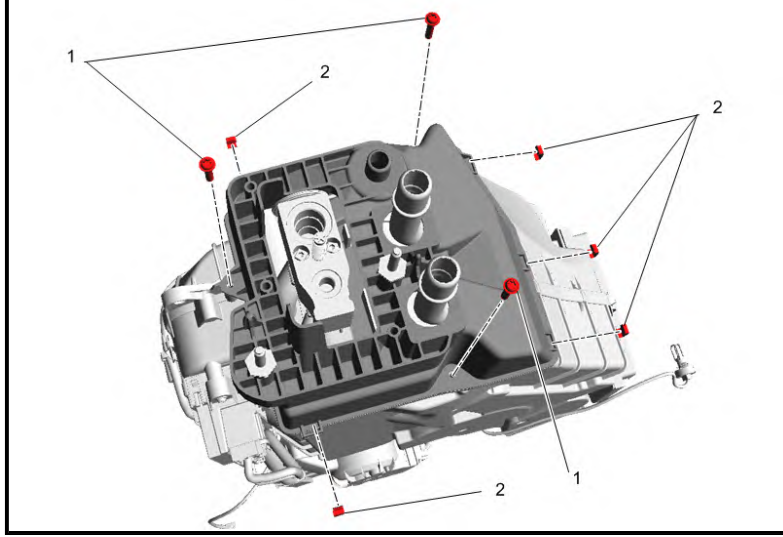


Auxiliary Mode Valve Actuator (2) - Install - [Mode Valve Actuator Replacement \(Auxiliary C69\)](#).



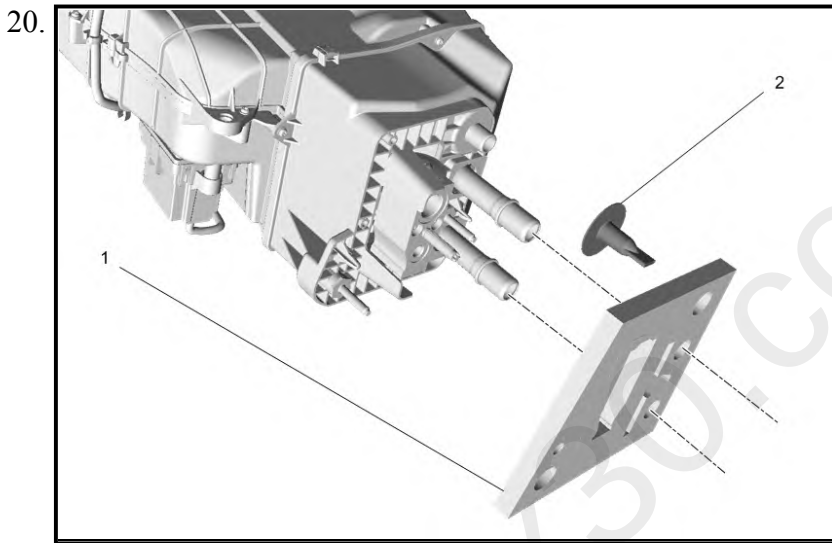
Auxiliary Air Conditioning Evaporator and Blower Lower Case (1) @ Auxiliary Air Conditioning Evaporator and Blower Module (2) - Install





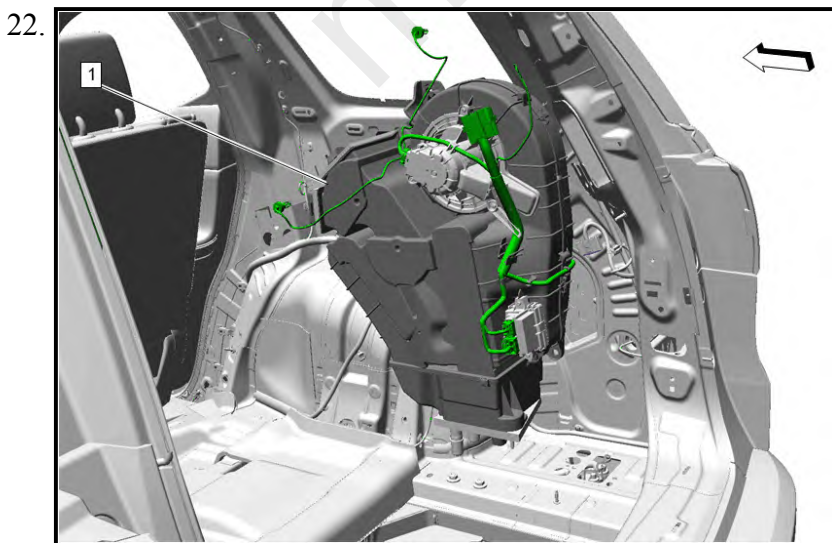
Air Conditioning Evaporator Case Clip (2) - Install [5x]

19. Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Install and tighten [3x] 1.5 N.m (13 lb in)



Auxiliary Air Conditioning Evaporator and Blower Module Drain Valve (2) - Install

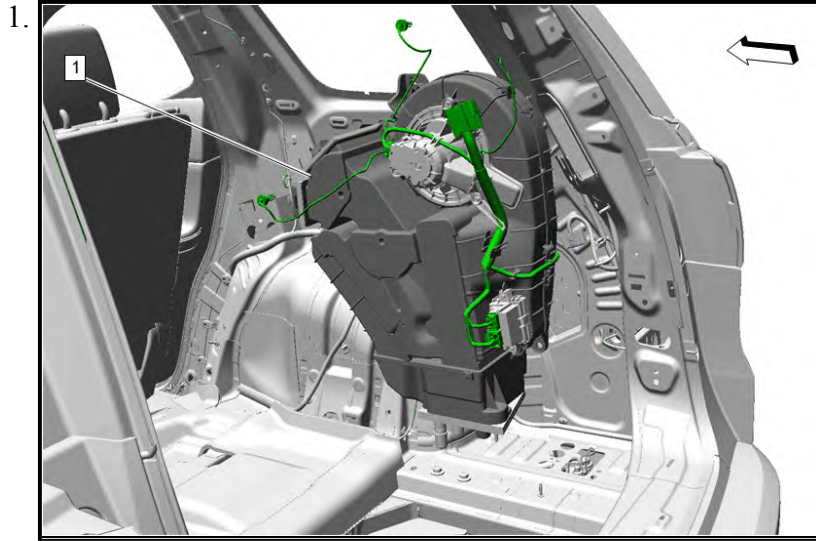
21. Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Install



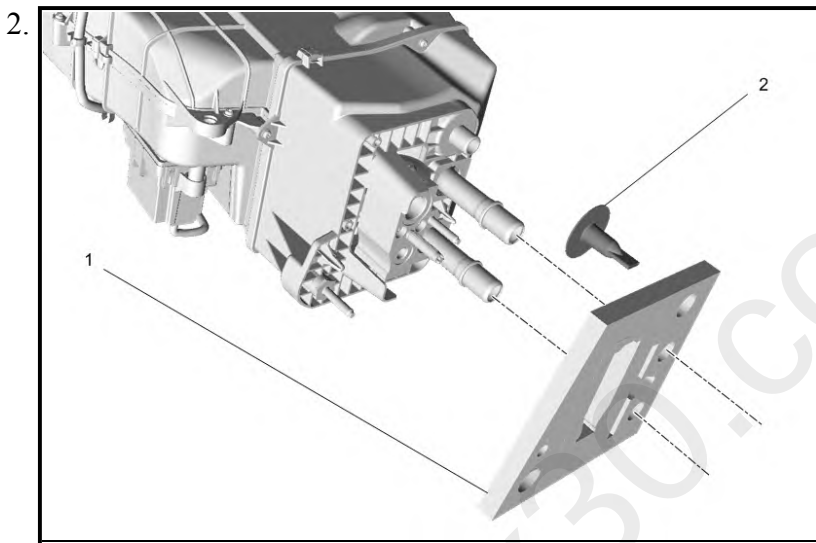
Auxiliary Air Conditioning Evaporator and Blower Module (1) - Install - [Auxiliary Air Conditioning \(A/C\) Evaporator and Blower Module Assembly Removal and Installation \(C69\)](#)

AUXILIARY AIR CONDITIONING EVAPORATOR AND BLOWER CASE REPLACEMENT - OUTBOARD (C69)

Removal Procedure

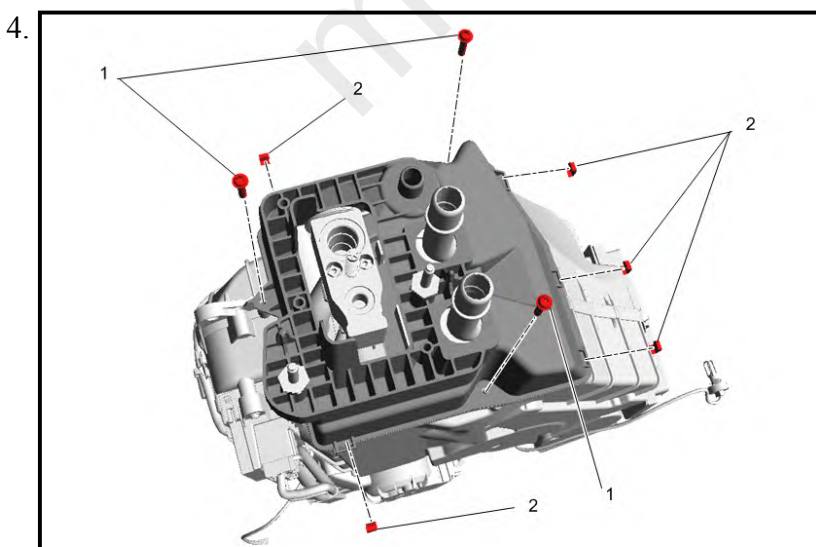


Auxiliary Air Conditioning Evaporator and Blower Module (1) - Remove - Auxiliary Air Conditioning (A/C) Evaporator and Blower Module Assembly Removal and Installation (C69).



Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Remove

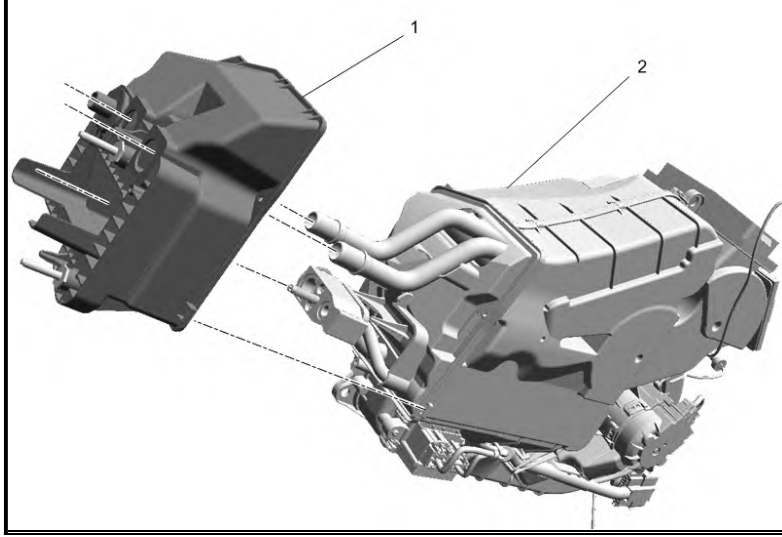
3. Auxiliary Air Conditioning Evaporator and Blower Module Drain Valve (2) - Remove



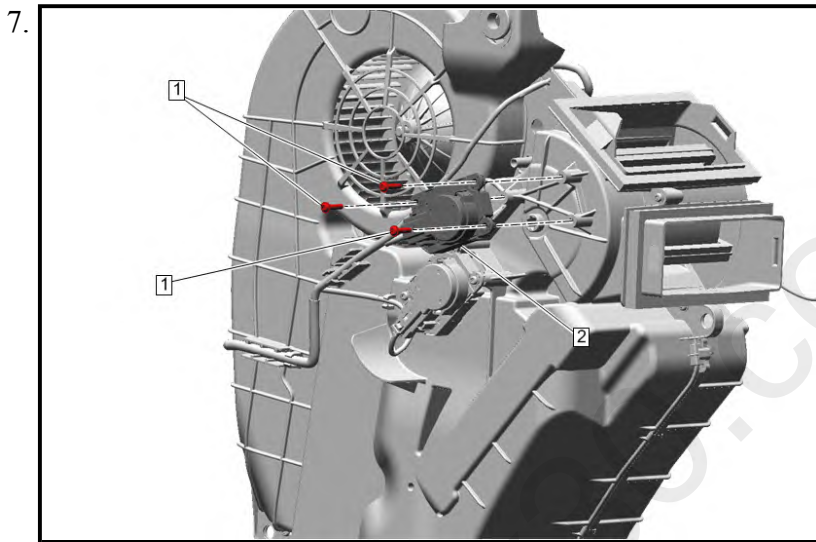
Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Remove [3x]

5. Air Conditioning Evaporator Case Clip (2) - Remove [5x]

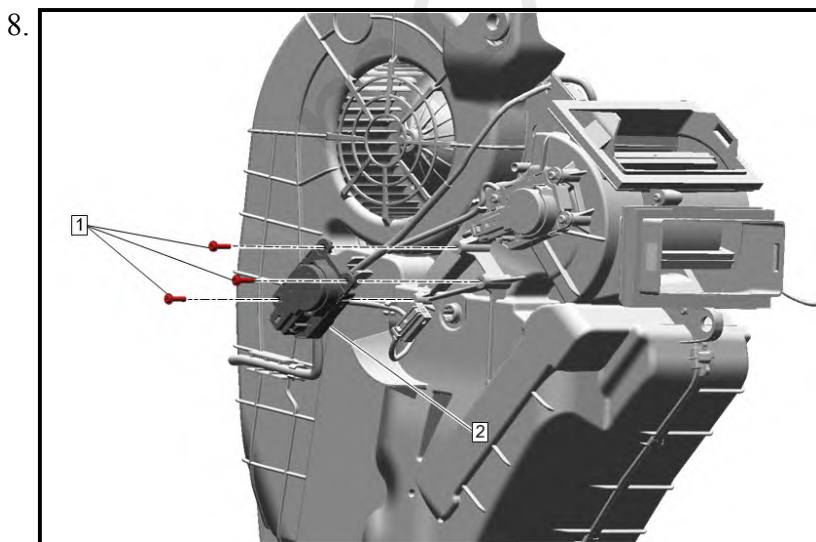




Auxiliary Air Conditioning Evaporator and Blower Lower Case (1) @ Auxiliary Air Conditioning Evaporator and Blower Module (2) - Remove

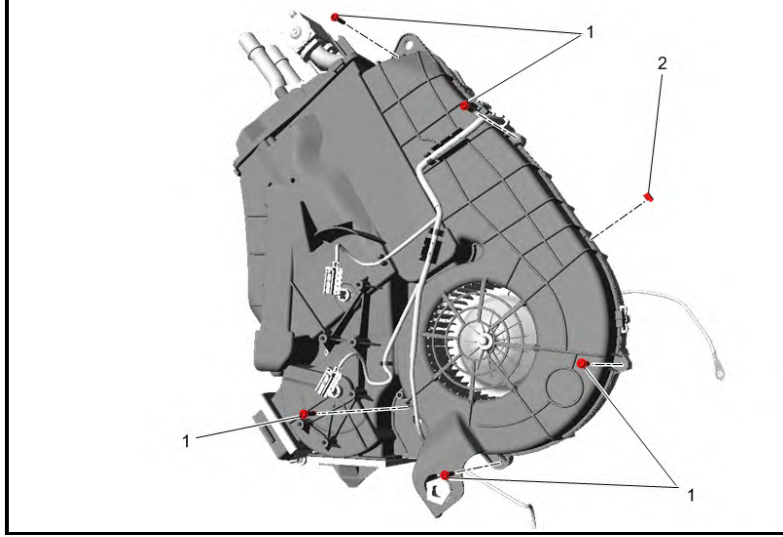


Auxiliary Mode Valve Actuator (2) - Remove - [Mode Valve Actuator Replacement \(Auxiliary C69\)](#)



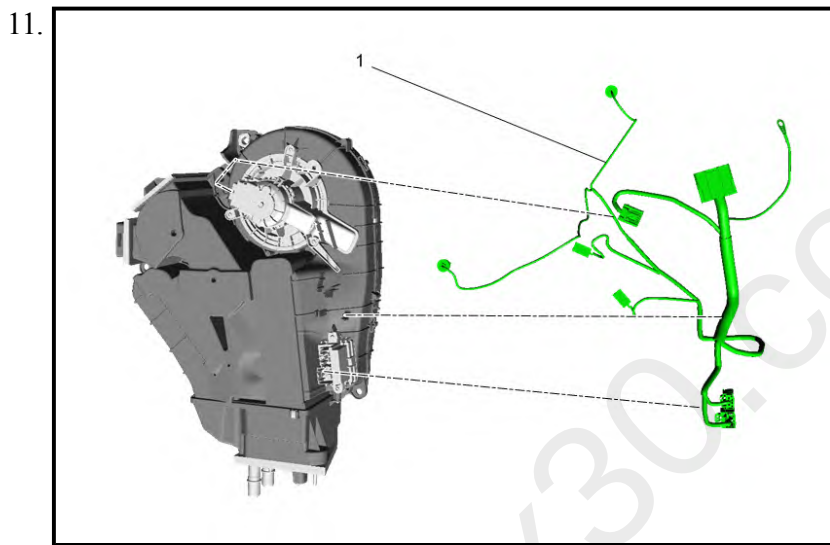
Auxiliary Temperature Valve Actuator (2) - Remove - [Temperature Valve Actuator Replacement \(Auxiliary C69\)](#)



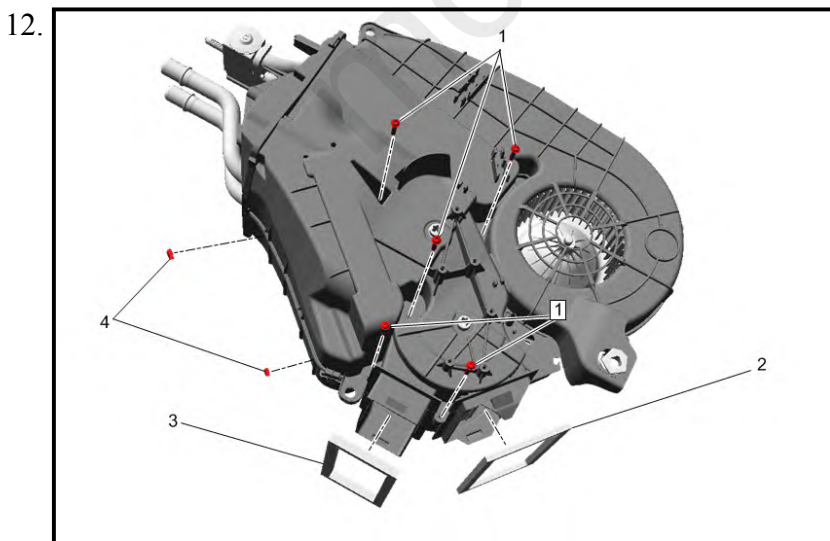


Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Remove [5x]

10. Air Conditioning Evaporator Case Clip (2) - Remove



Auxiliary Heater and Air Conditioning Wiring Harness (1) - Remove



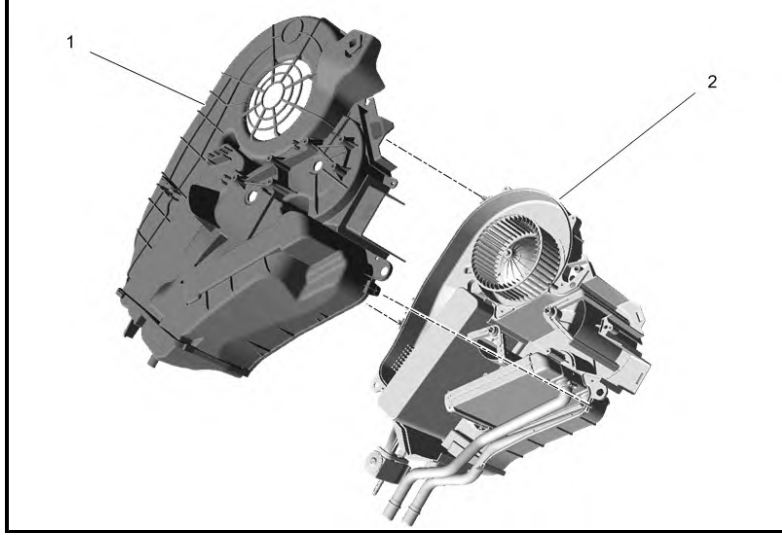
Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Remove [5x]

13. Auxiliary Heater Air Outlet Duct Seal (2) - Remove

14. Air Distributor Seal (3) - Remove

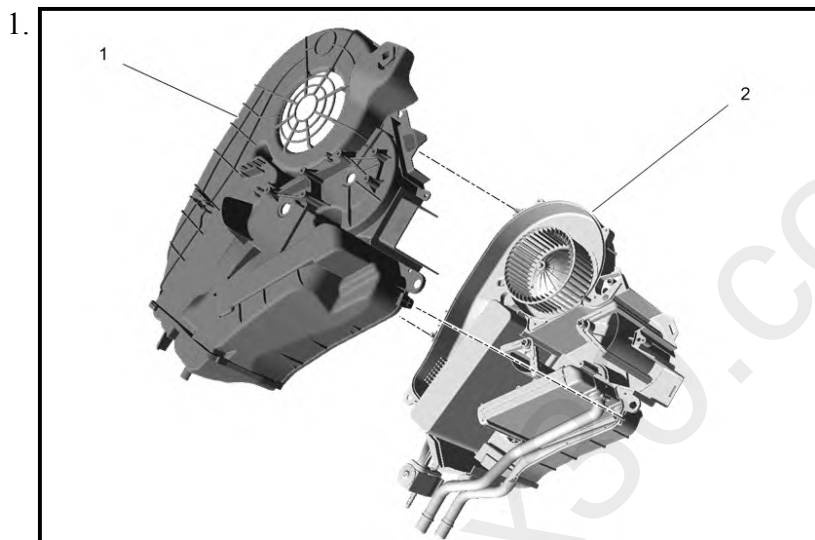
15. Air Conditioning Evaporator Case Clip (4) - Remove



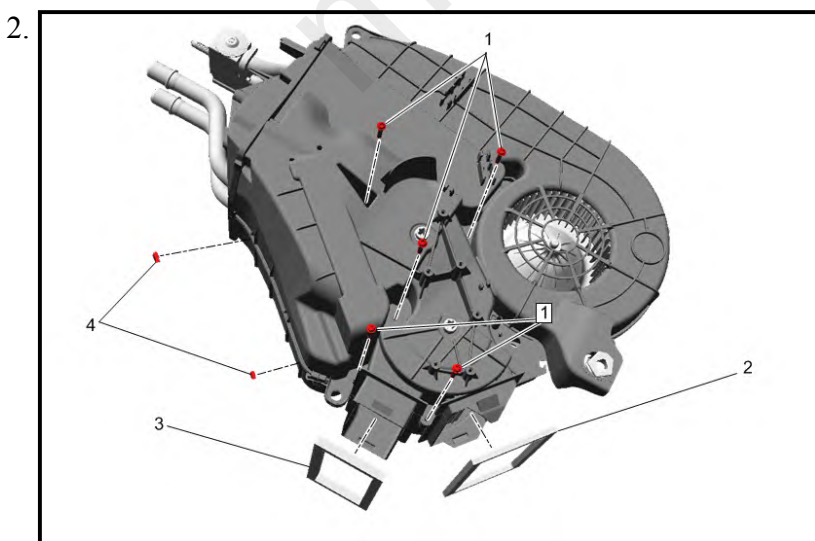


Auxiliary Air Conditioning Evaporator and Blower Case (1) - Outboard @ Auxiliary Air Conditioning Evaporator and Blower Case (2) - Inboard - Remove

Installation Procedure



Auxiliary Air Conditioning Evaporator and Blower Case (1) - Outboard @ Auxiliary Air Conditioning Evaporator and Blower Case (2) - Inboard - Install



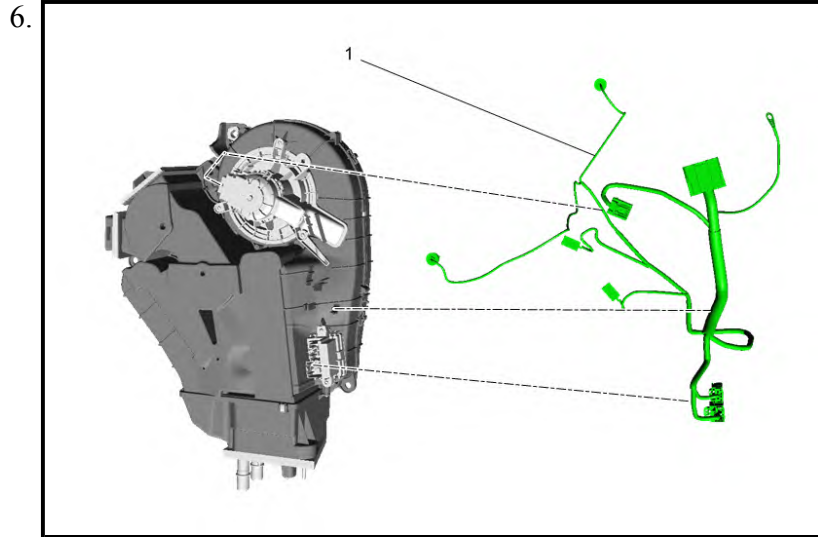
CAUTION: Refer to [Fastener Caution](#) .

Air Conditioning Evaporator Case Clip (4) - Install

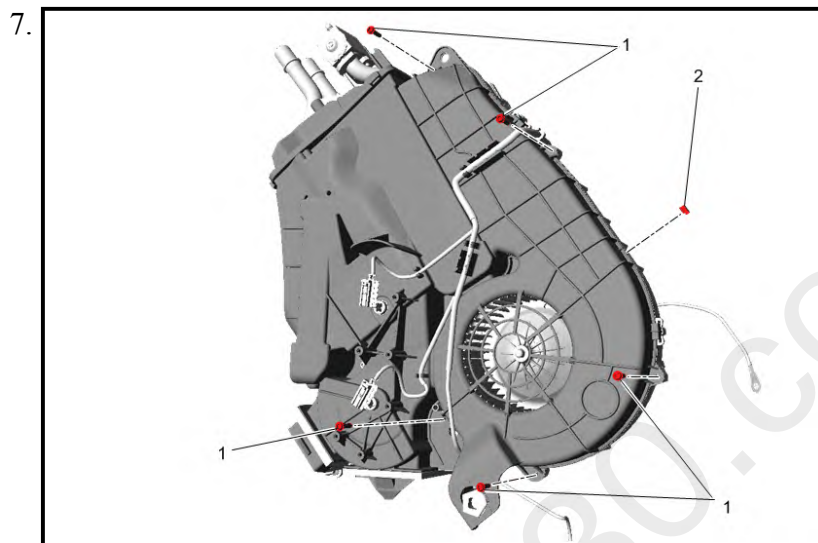
3. Air Distributor Seal (3) - Install

4. Auxiliary Heater Air Outlet Duct Seal (2) - Install

5. Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Install and tighten [5x] 1.5 N.m (13 lb in)

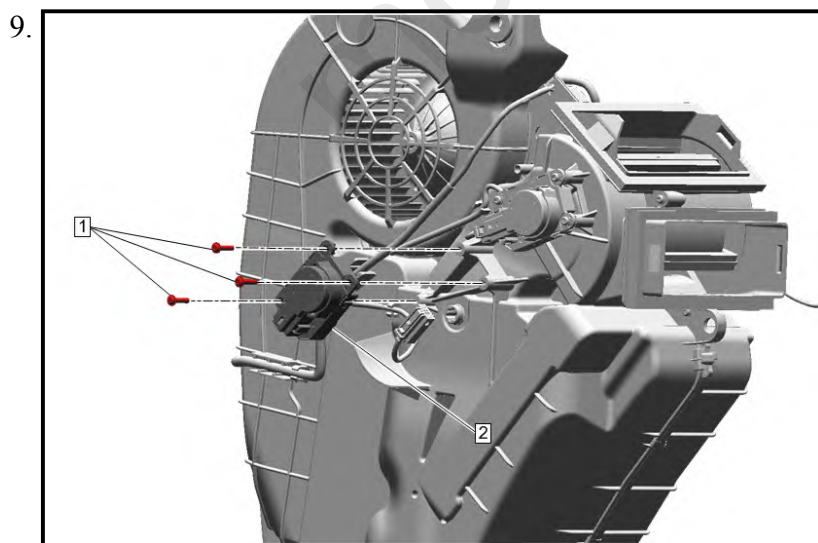


Auxiliary Heater and Air Conditioning Wiring Harness (1) - Install



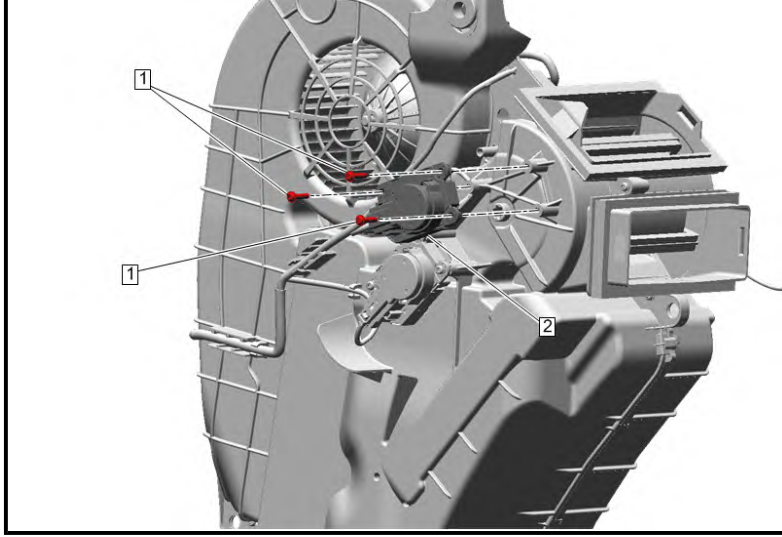
Air Conditioning Evaporator Case Clip (2) - Install

8. Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Install and tighten [5x] 1.5 N.m (13 lb in)



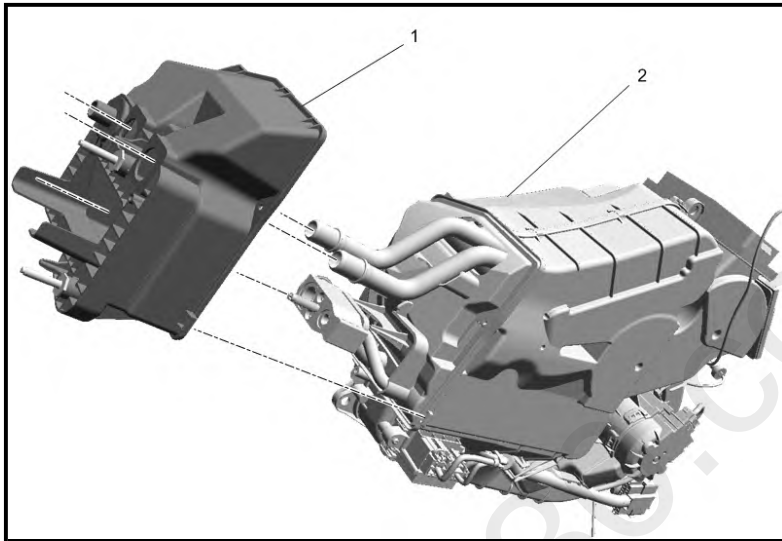
Auxiliary Temperature Valve Actuator (2) - Install - [Temperature Valve Actuator Replacement \(Auxiliary C69\)](#)





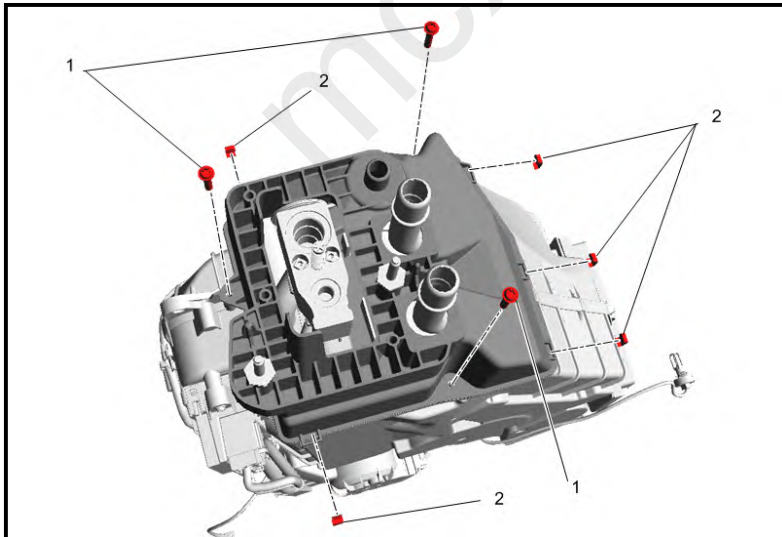
Auxiliary Mode Valve Actuator (2) - Install - [Mode Valve Actuator Replacement \(Auxiliary C69\)](#)

11.



Auxiliary Air Conditioning Evaporator and Blower Lower Case (1) @ Auxiliary Air Conditioning Evaporator and Blower Module (2) - Install

12.

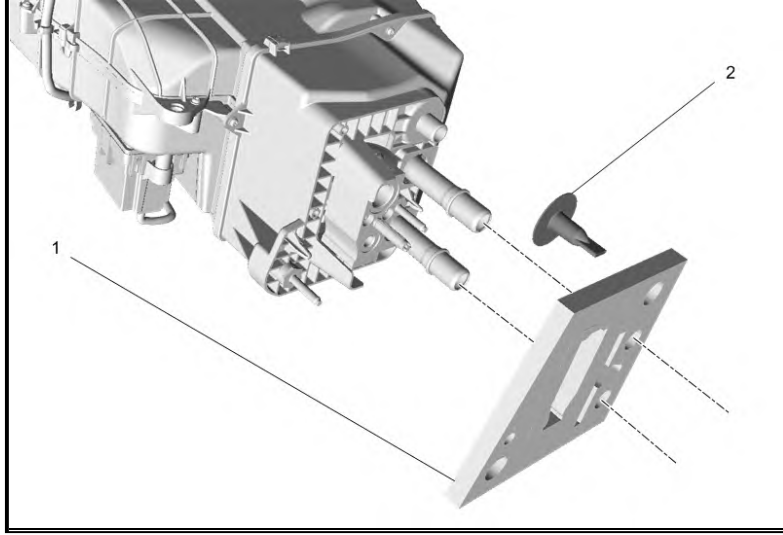


Air Conditioning Evaporator Case Clip (2) - Install [5x]

13. Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Install and tighten [3x] 1.5 N.m (13 lb in)

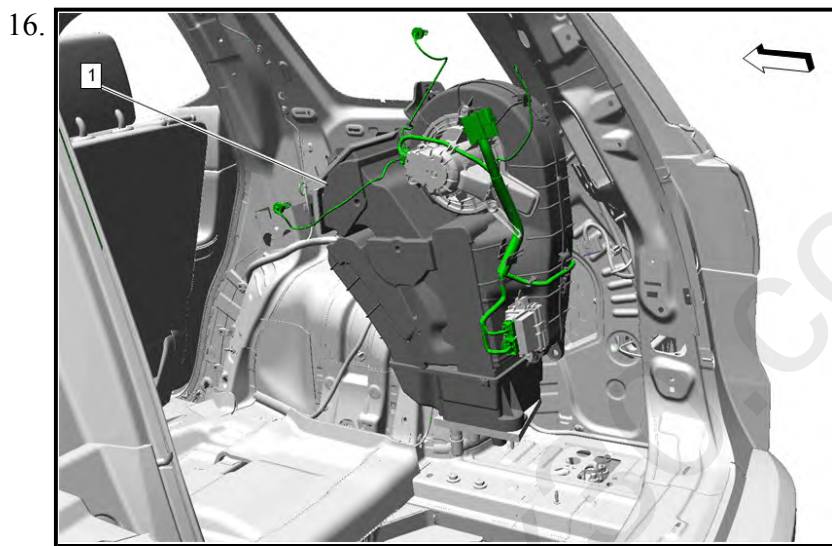
14.





Auxiliary Air Conditioning Evaporator and Blower Module Drain Valve (2) - Install

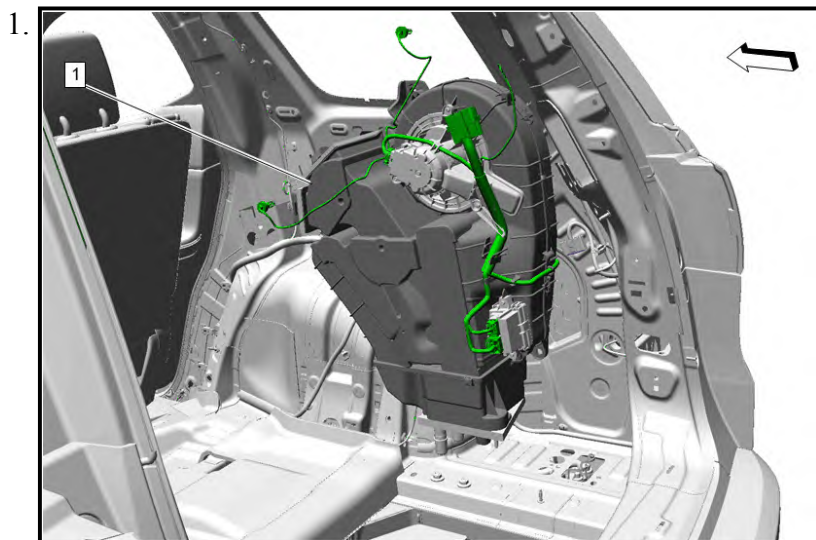
15. Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Install



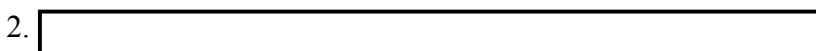
Auxiliary Air Conditioning Evaporator and Blower Module (1) - Install - [Auxiliary Air Conditioning \(A/C\) Evaporator and Blower Module Assembly Removal and Installation \(C69\)](#)

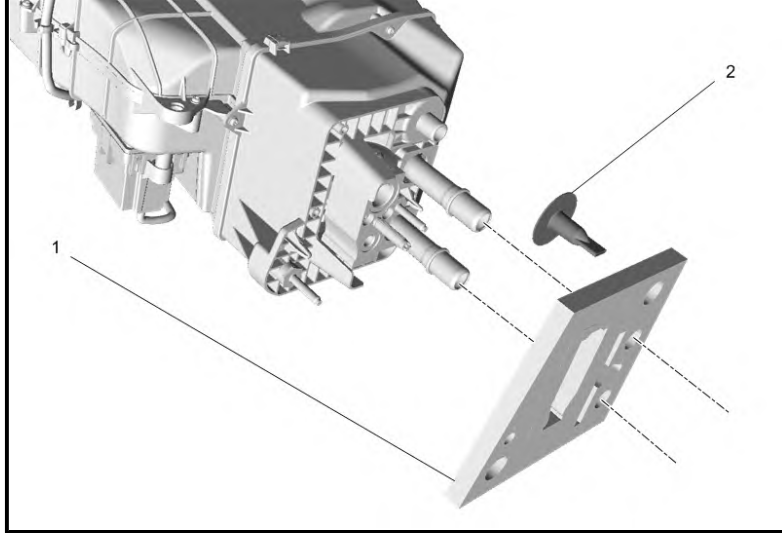
AUXILIARY AIR CONDITIONING EVAPORATOR AND BLOWER LOWER CASE REPLACEMENT (C69)

Removal Procedure



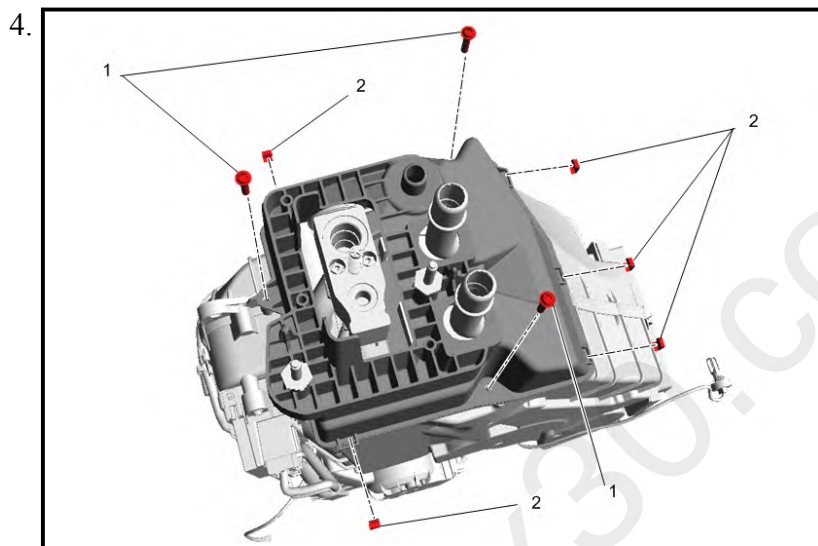
Auxiliary Air Conditioning Evaporator and Blower Module (1) - Remove - [Auxiliary Air Conditioning \(A/C\) Evaporator and Blower Module Assembly Removal and Installation \(C69\)](#)





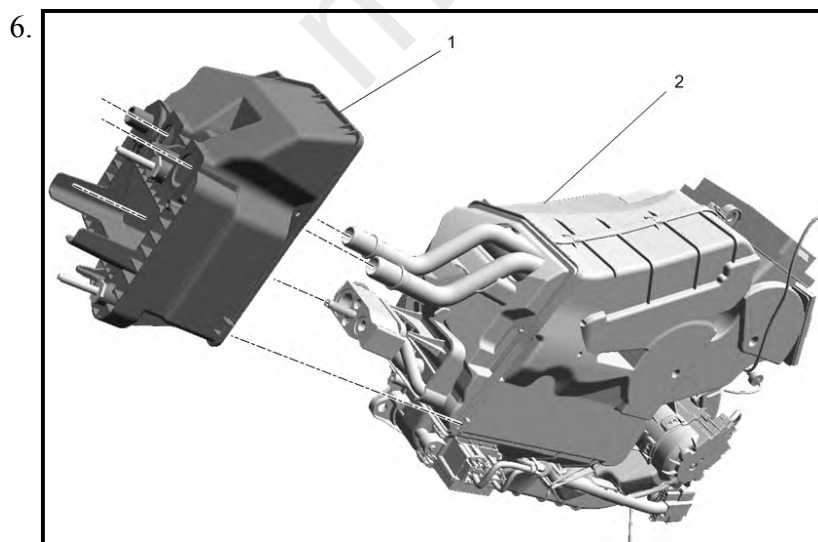
Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Remove

3. Auxiliary Air Conditioning Evaporator and Blower Module Drain Valve (2) - Remove



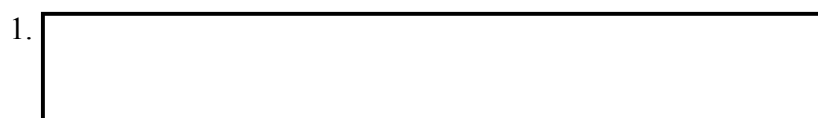
Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Remove [3x]

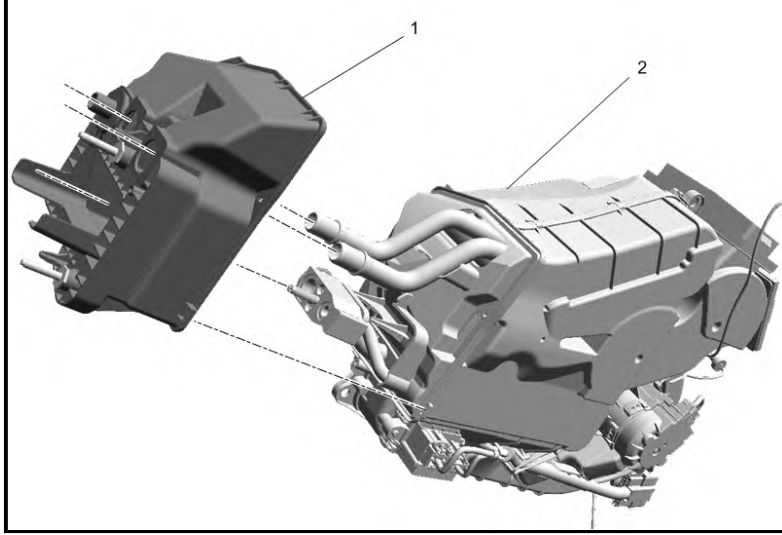
5. Air Conditioning Evaporator Case Clip (2) - Remove [5x]



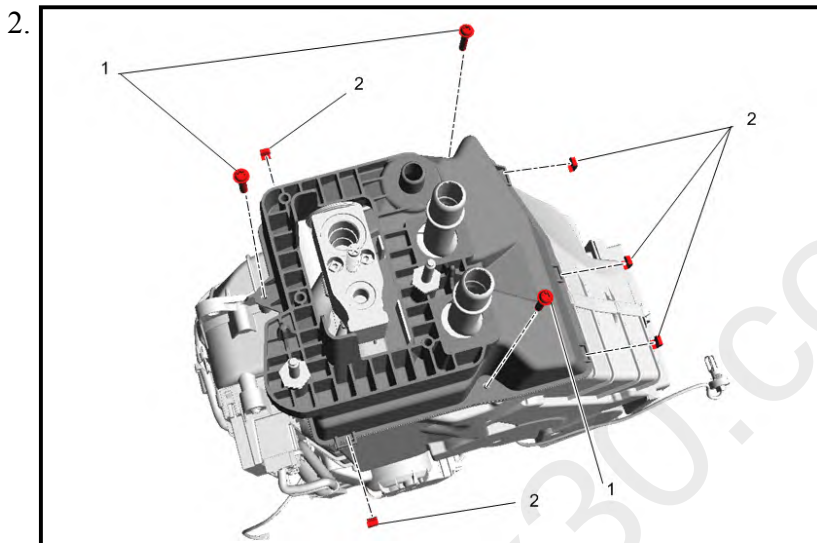
Auxiliary Air Conditioning Evaporator and Blower Lower Case (1) @ Auxiliary Air Conditioning Evaporator and Blower Module (2) - Remove

Installation Procedure





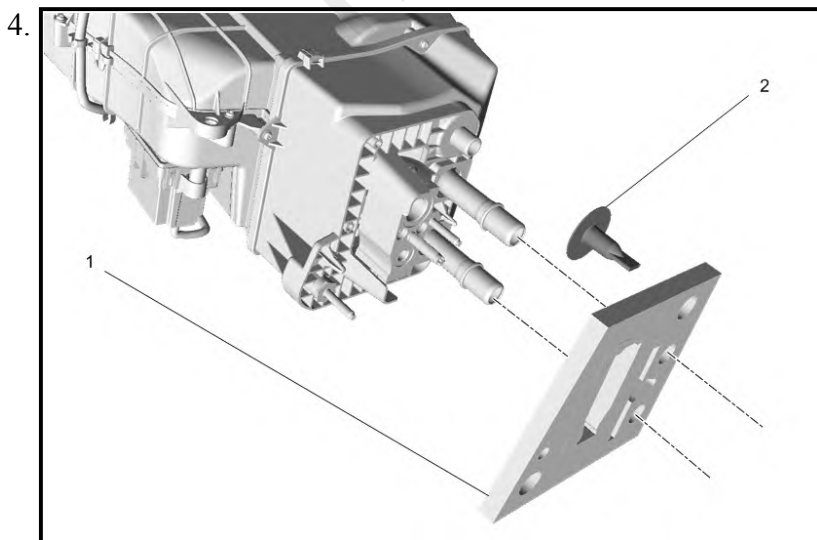
Auxiliary Air Conditioning Evaporator and Blower Lower Case (1) @ Auxiliary Air Conditioning Evaporator and Blower Module (2) - Install



CAUTION: Refer to [Fastener Caution](#) .

Air Conditioning Evaporator Case Clip (2) - Install [5x]

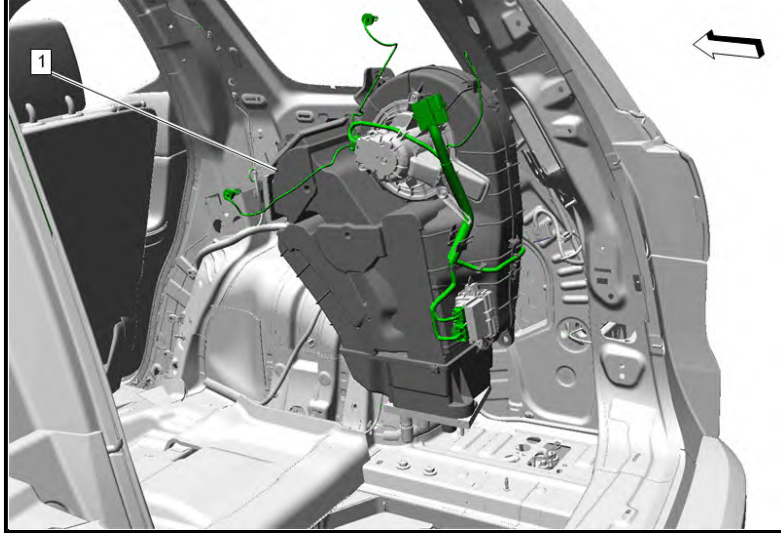
3. Auxiliary Air Conditioning Evaporator and Blower Case Bolt (1) - Install and tighten [3x] 1.5 N.m (13 lb in)



Auxiliary Air Conditioning Evaporator and Blower Module Drain Valve (2) - Install

5. Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Install





Auxiliary Air Conditioning Evaporator and Blower Module (1) - Install - [Auxiliary Air Conditioning \(A/C\) Evaporator and Blower Module Assembly Removal and Installation \(C69\)](#).

AUXILIARY HEATER AND AIR CONDITIONING PIPE REPLACEMENT/REPAIR

Auxiliary Heater and Air Conditioning Pipe Replacement/Repair

The auxiliary air conditioning evaporator intermediate tube can be repaired in rear service or front service sections.

The auxiliary air conditioning evaporator intermediate tube service sections contain all 4 lines in two sections.

Air conditioner tube repair kits are available in the GM Parts Catalog, and can be used when any of the following actions damage the rear air conditioning or heater lines:

- Rub-through
- Collision damage
- Leakage in the system

NOTE: Only use A/C Tube Repair Kits on straight sections, long enough to accommodate coupler length. Stagger the splices if repairing more than one line.

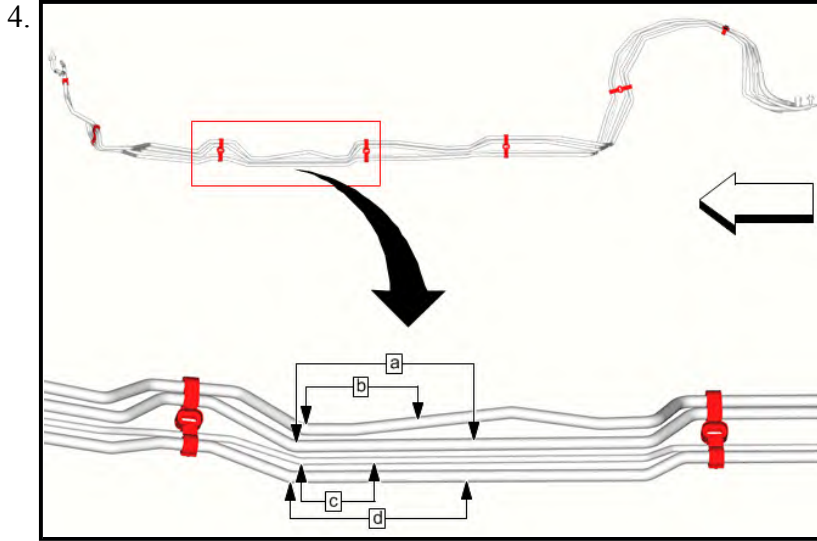
A/C Tube Repair Kit Specification

A/C Tube Repair Kits require a specific length of tube/pipe removed to accommodate the length added by the coupler body. The length removed at the service cut location varies for each kit size. See the chart below for specifications

Kit Size/Pipe "Outside Diameter"	Pipe Length Removed to Install Kit Coupler	Required Torque for Kit Coupler Nuts
5/16 in	4 mm	20-24 N.m (15-18 lb ft)
3/8 in	7 mm	20-24 N.m (15-18 lb ft)
1/2 in	10 mm	20-24 N.m (15-18 lb ft)
5/8 in	11 mm	24-27 N.m (18-20 lb ft)
3/4 in	31 mm	24-27 N.m (18-20 lb ft)
8 mm	4 mm	20-24 N.m (15-18 lb ft)
10 mm	4 mm	20-24 N.m (15-18 lb ft)
12 mm	10 mm	20-24 N.m (15-18 lb ft)
16 mm	11 mm	24-27 N.m (18-20 lb ft)

Straight Line Repair

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\) Refrigerant Recovery and Recharging \(R-1234yf\)](#).
2. Drain the coolant. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#).
3. Raise and support the vehicle. [Lifting and Jacking the Vehicle](#).

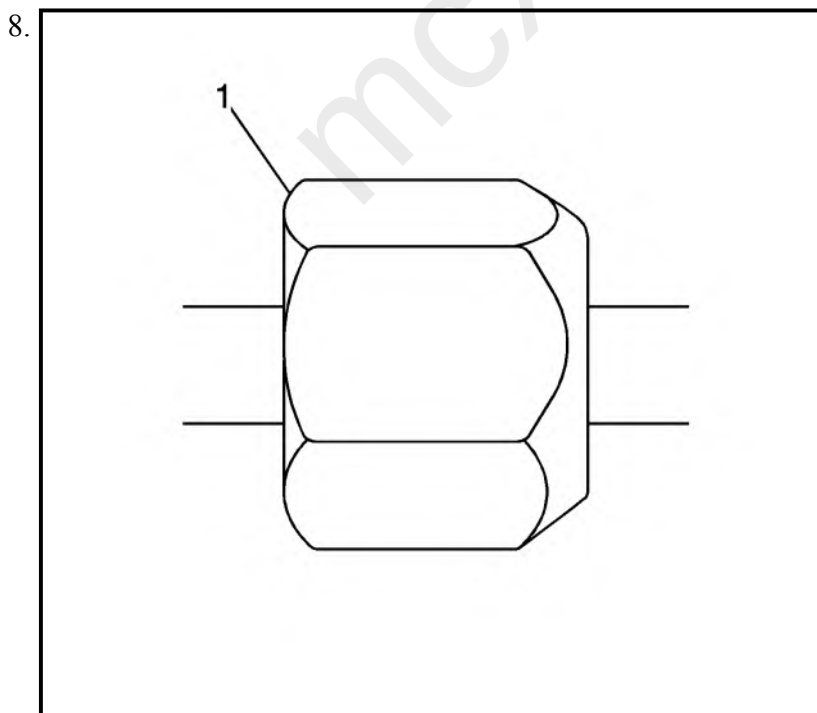


Using a tubing cutter, cut each line of the auxiliary air conditioning evaporator intermediate tube from the bend of the front section rearward.

1. Cut the auxiliary heater inlet tube (a) 220 mm (9 in) from the bend of the front section rearward.
2. Cut the auxiliary heater outlet tube (b) 167 mm (7 in) from the bend of the front section rearward.
3. Cut the auxiliary air conditioning evaporator inlet tube (c) 103 mm (4 in) from the bend of the front section rearward.
4. Cut the auxiliary air conditioning evaporator outlet tube (d) 227 mm (9 in) from the bend of the front section rearward.
5. Remove the corresponding auxiliary air conditioning evaporator intermediate tube section by performing the appropriate steps. **Auxiliary Air Conditioning Evaporator Intermediate Tube Replacement**
6. Install the corresponding auxiliary air conditioning evaporator intermediate tube section by performing the appropriate steps. **Auxiliary Air Conditioning Evaporator Intermediate Tube Replacement**

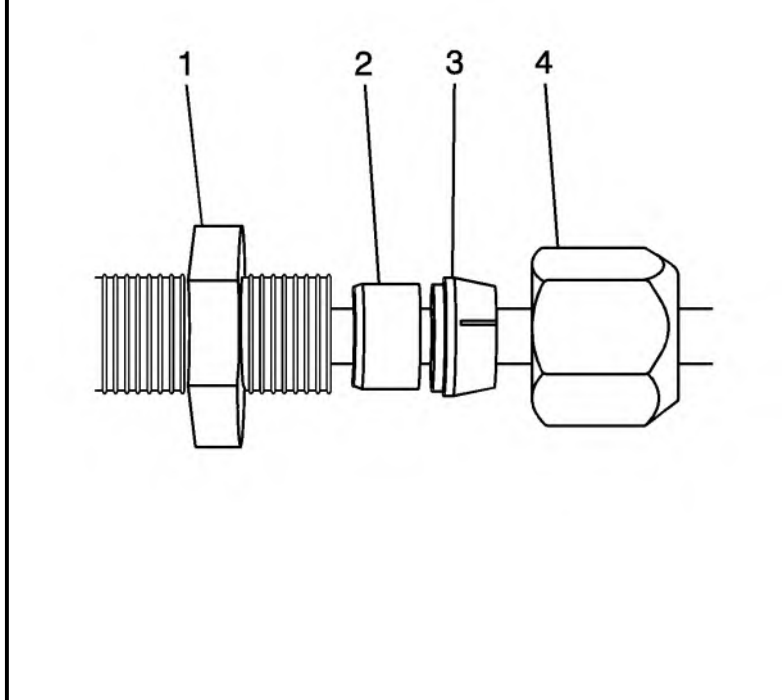
NOTE: A/C Tube Repair Kits add to overall line length. Refer to kit specifications above to accommodate the appropriate coupler body length.

7. Clean away any burrs and remove oxidation, scale or other surface contamination.



Assemble coupler nuts (1) on each tube end.





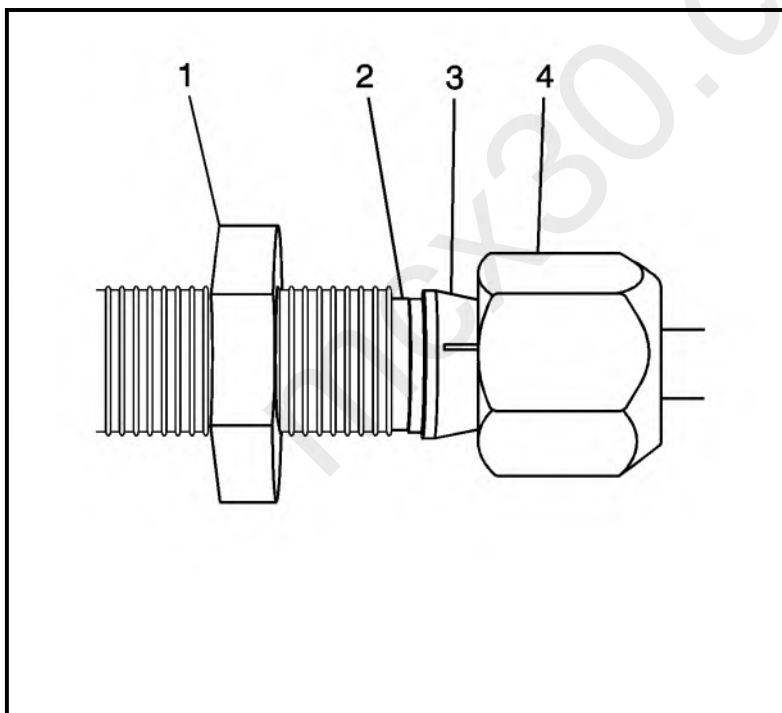
Lubricate both tube ends and green sealing sleeves (2) with mineral oil.

10. Install the brass tension ring (3) with the tapered end facing the coupler nut (4) on each tube end.

NOTE: Tension ring inside diameter must match tubing outside diameter.

11. Install the sealing sleeve (2) on the tube end with tapered side facing the coupler body (1).

12.

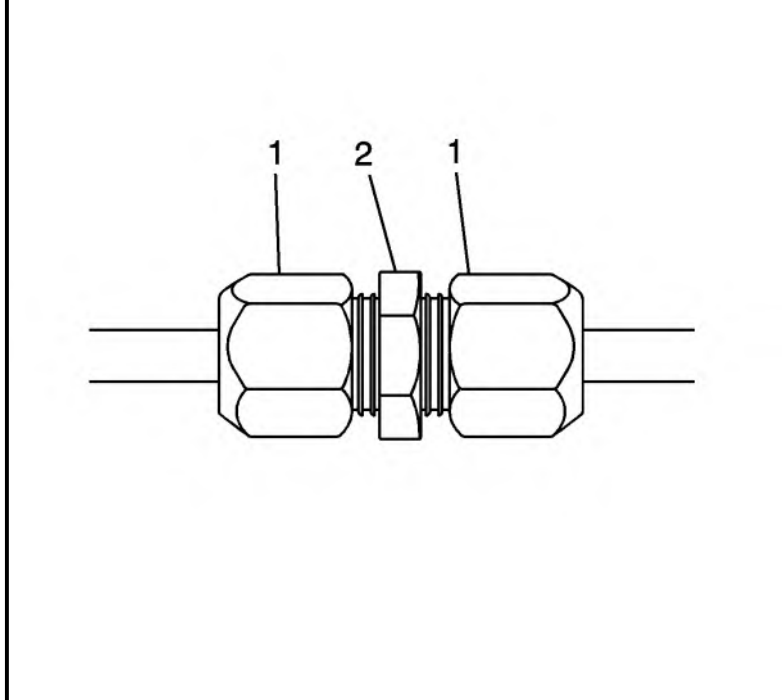


Press each tube end into the coupler body (1), ensuring both the sealing sleeve (2) and the tube end are fully seated within the coupler body (1).

13. Slide the brass tension ring (3) and coupler nut (4) against the sealing sleeve (3) and hand tighten.

14.





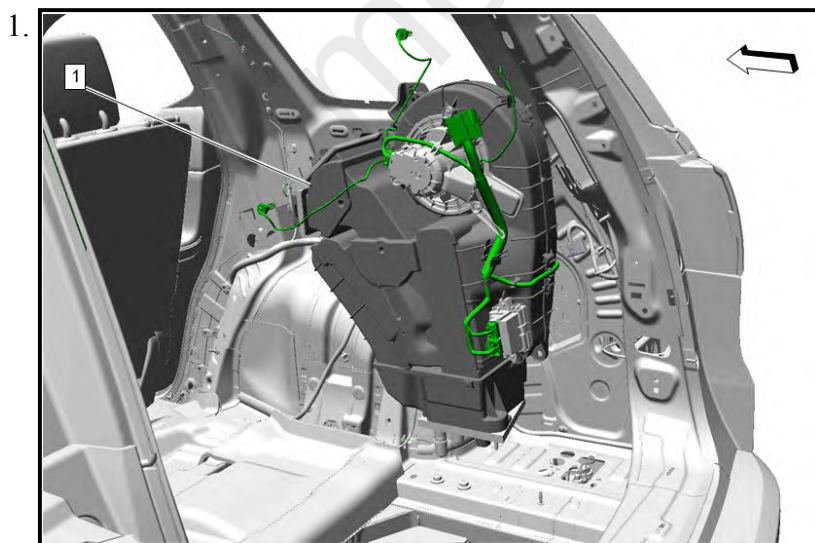
CAUTION: Refer to [Fastener Caution](#) .

Tighten each coupler nut (1) separately, against the coupler body (2) using the proper torque from the chart above.

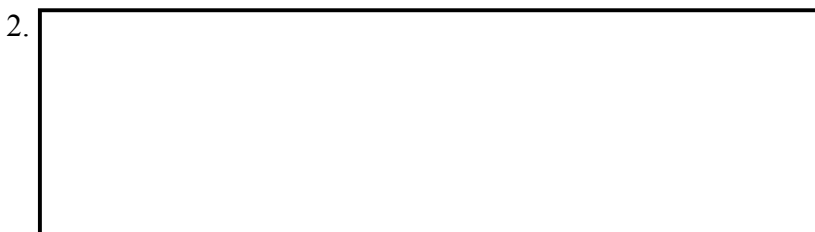
15. Lower the vehicle.
16. Refill the coolant. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#) .
17. Evacuate and recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\) Refrigerant Recovery and Recharging \(R-1234yf\)](#).
18. Verify that all coupler kits are installed properly and not leaking.

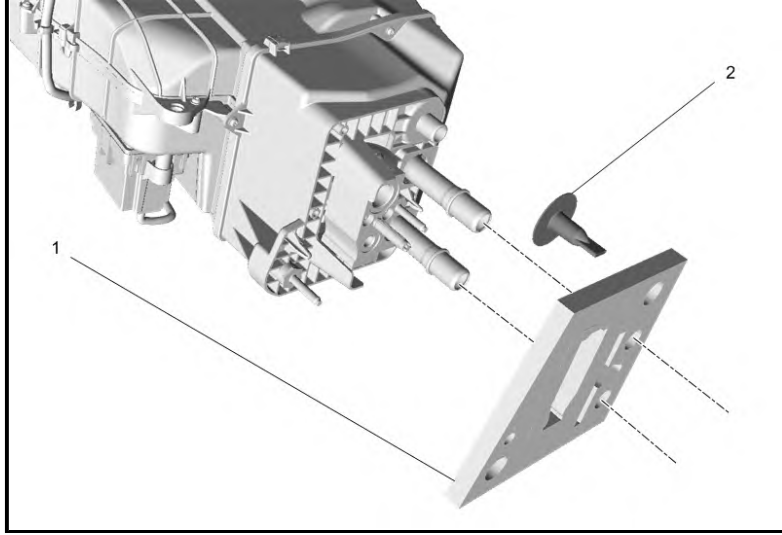
AUXILIARY AIR CONDITIONING EVAPORATOR AND BLOWER MODULE DRAIN VALVE REPLACEMENT (C69)

Removal Procedure



Auxiliary Air Conditioning Evaporator and Blower Module (1) - Remove - [Auxiliary Air Conditioning \(A/C\) Evaporator and Blower Module Assembly Removal and Installation \(C69\)](#).

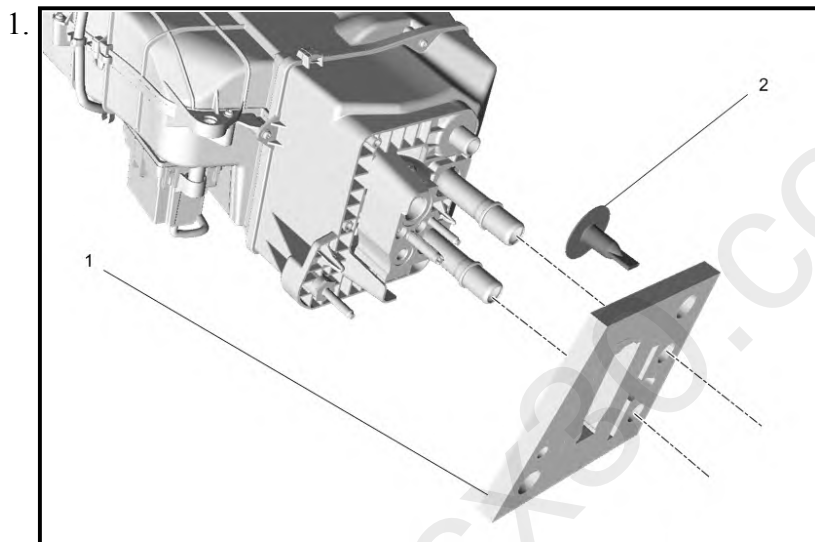




Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Remove

3. Auxiliary Air Conditioning Evaporator and Blower Module Drain Valve (2) - Remove

Installation Procedure



Auxiliary Air Conditioning Evaporator and Blower Module Drain Valve (2) - Install

2. Heater and Air Conditioning Evaporator and Blower Module Seal (1) - Install

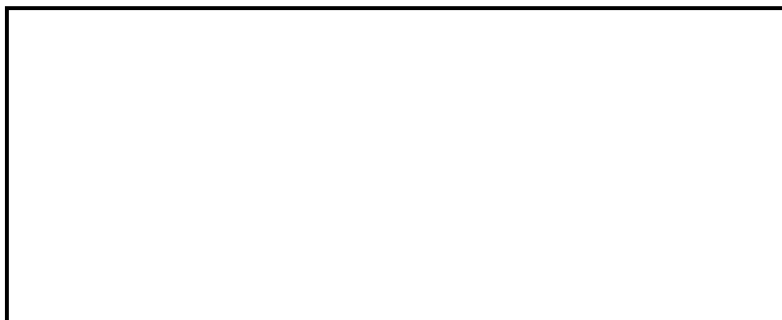
3. Auxiliary Air Conditioning Evaporator and Blower Module (1) - Install - [Auxiliary Air Conditioning \(A/C\) Evaporator and Blower Module Assembly Removal and Installation \(C69\)](#)

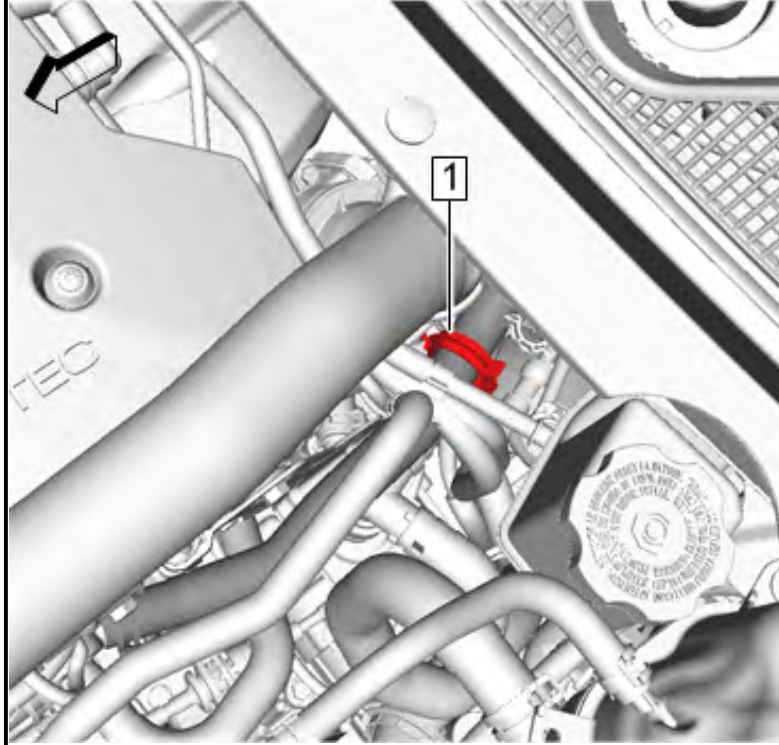
HEATER VENT HOSE REPLACEMENT (LTG WATER OUTLET TO HEATER OUTLET HOSE CONNECTOR)

Removal Procedure

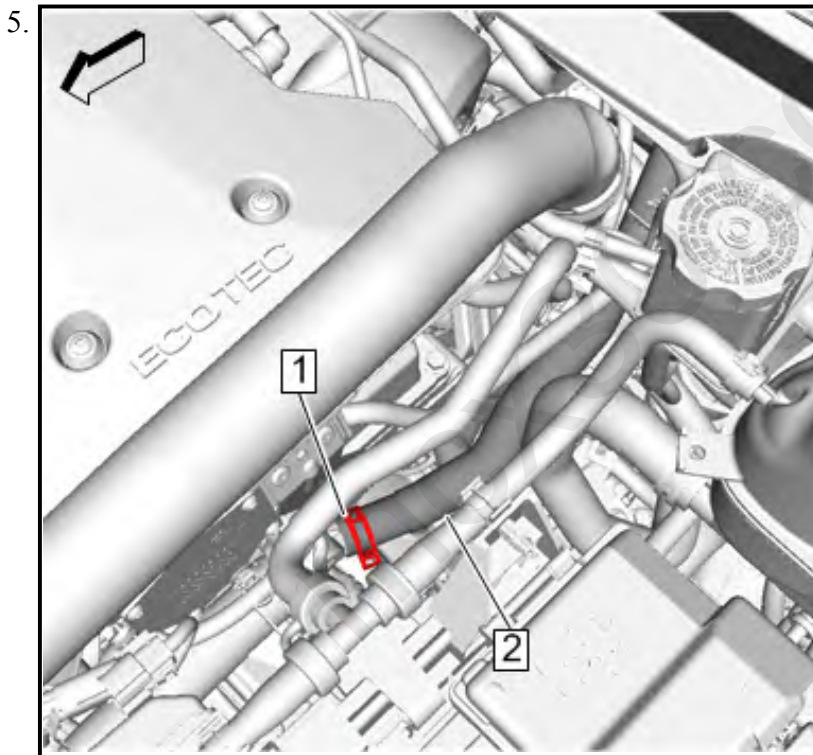
1. Drain the cooling system. [Cooling System Draining and Filling \(GE 47716\) Cooling System Draining and Filling \(Static Fill\)](#)
2. Reposition the wiring harness.
3. Power Brake Booster Vacuum Hose - Reposition away - [Power Brake Booster Vacuum Hose Replacement \(LTG\)](#)

4.





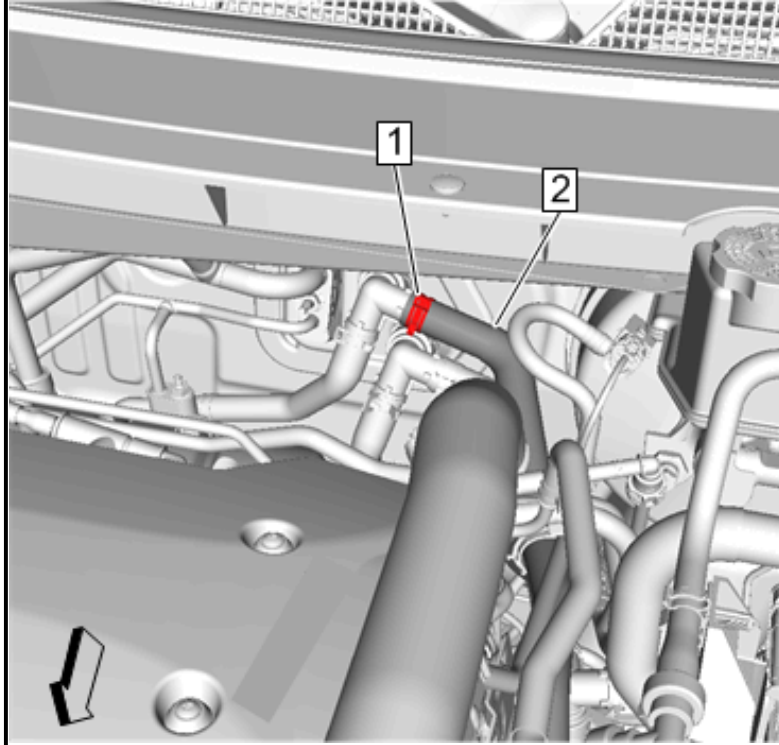
Heater Outlet Hose Clip (1) @ Heater Vent Hose - Remove



Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

6. Heater Vent Hose (2) @ Water Outlet - Remove

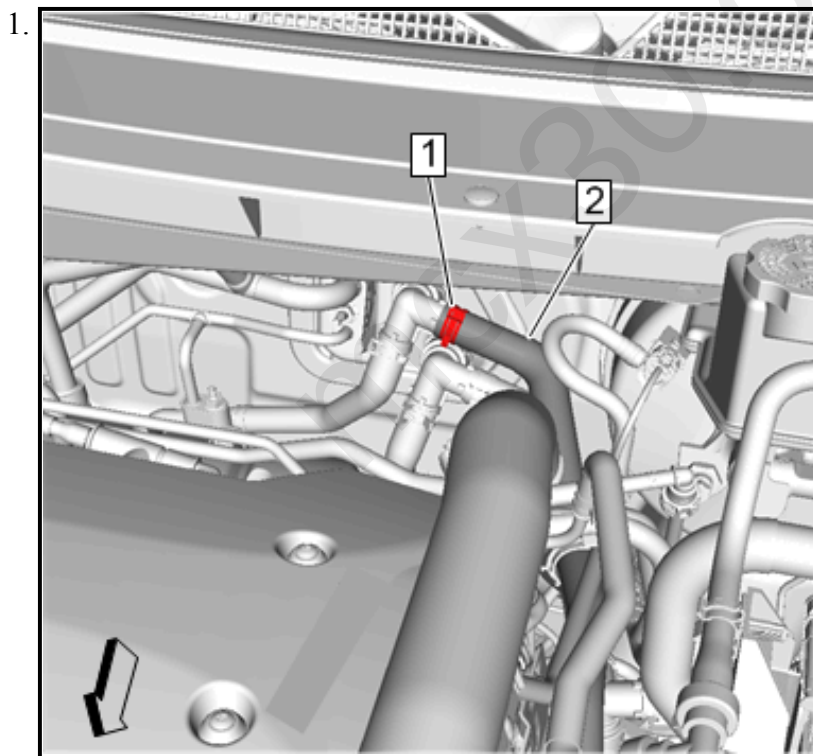




Hose Clamp (1) - Disengage - [Hose Clamp Replacement Guidelines - Spring Type](#)

8. Heater Vent Hose (2) @ Heater Outlet Hose Connector - Remove
9. Heater Vent Hose (2) - Remove

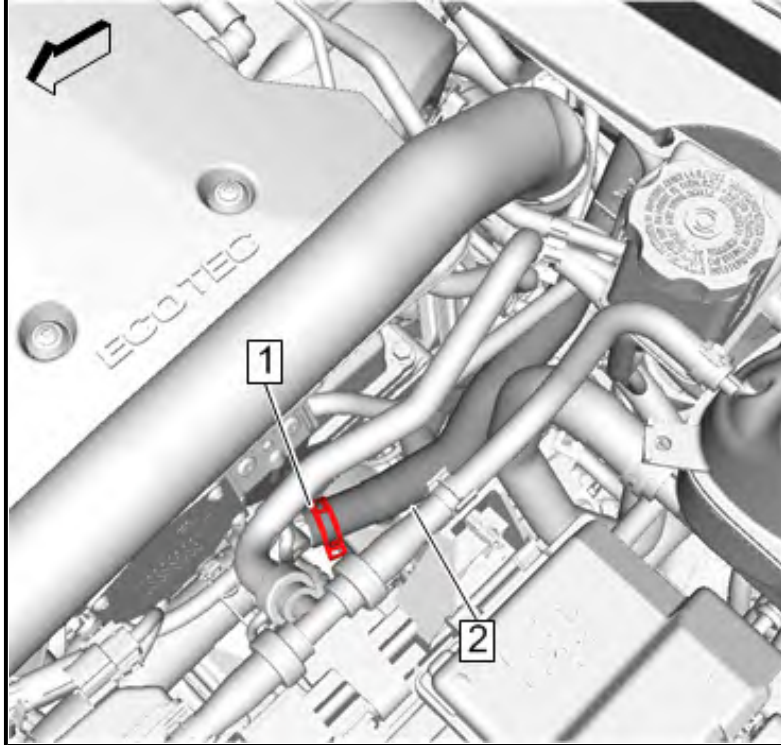
Installation Procedure



Heater Vent Hose (2) @ Heater Outlet Hose Connector - Install

2. Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)

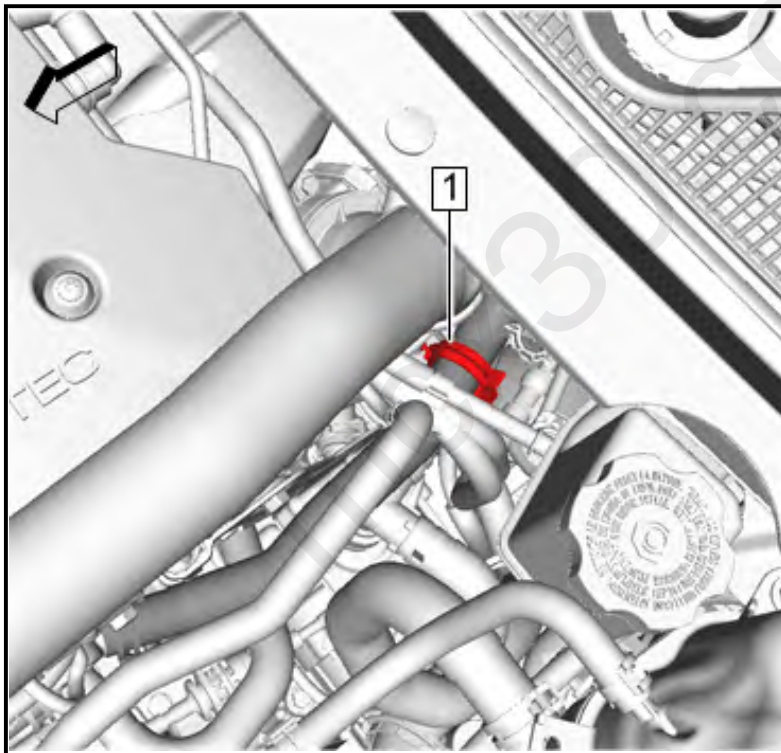




Heater Vent Hose (2) @ Water Outlet - Install

4. Hose Clamp (1) - Engage - [Hose Clamp Replacement Guidelines - Spring Type](#)

5.



Heater Outlet Hose Clip (1) @ Heater Vent Hose - Install

6. Power Brake Booster Vacuum Hose - Reposition - [Power Brake Booster Vacuum Hose Replacement \(LTG\)](#)
7. Reposition the wiring harness.
8. Fill the cooling system to the proper level. [Cooling System Draining and Filling \(GE 47716\)](#). [Cooling System Draining and Filling \(Static Fill\)](#).
9. Start the engine and inspect for leaks.

DESCRIPTION AND OPERATION

HEATING AND AIR CONDITIONING SYSTEM DESCRIPTION AND OPERATION

Engine Coolant

Engine coolant is the key element of the heating system. The engine thermostat controls the normal engine operating coolant temperature. The thermostat also creates a restriction for the cooling system that promotes a positive coolant flow and helps prevent cavitation. Coolant enters the heater core through the inlet heater hose, in a pressurized state. The heater core is located inside the HVAC module. The ambient air drawn through the HVAC module absorbs the heat of the coolant flowing through the heater core. The HVAC module distributes heated air to the passenger compartment for consistent passenger comfort. Opening or closing the HVAC module temperature door controls the amount of heat delivered to the passenger compartment. The coolant exits the heater core through the return heater hose and is recirculated back through the engine cooling system.

A/C Cycle

The auxiliary A/C system operates from the vehicles primary A/C system. The front or primary A/C system must be ON to allow the rear A/C system to function.

Refrigerant is the key element in an air conditioning system. R-134a and R-1234yf are very low temperature gases that can transfer the undesirable heat and moisture from the passenger compartment to the outside air.

The A/C compressor is belt driven and operates when the magnetic clutch is engaged. The compressor builds pressure on the vapor refrigerant. Compressing the refrigerant also adds heat to the refrigerant. The refrigerant is discharged from the compressor, through the discharge hose, and forced to flow to the condenser and then through the balance of the A/C system. The A/C system is mechanically protected with the use of a high pressure relief valve. If the high pressure switch were to fail or if the refrigerant system becomes restricted and refrigerant pressure continued to rise, the high pressure relief will pop open and release refrigerant from the system.

Compressed refrigerant enters the condenser in a high temperature, high pressure vapor state. As the refrigerant flows through the condenser, the heat of the refrigerant is transferred to the ambient air passing through the condenser. Cooling the refrigerant causes the refrigerant to condense and change from a vapor to a liquid state.

The condenser is located in front of the radiator for maximum heat transfer. The condenser is made of aluminum and aluminum cooling fins, which allows rapid heat transfer for the refrigerant. The semi-cooled liquid refrigerant exits the condenser and flows through the liquid line. The liquid line is split and the liquid refrigerant flows to both the front and rear thermal expansion valves.

There is a front and rear thermal expansion valve that is attached to the front and rear evaporators. The thermal expansion valve is the dividing point for the high and the low pressure sides of the A/C system. As the refrigerant passes through the thermal expansion valve, the pressure of the refrigerant is lowered. Due to the pressure differential of the liquid refrigerant, the refrigerant will begin to vaporize at the thermal expansion valve. The thermal expansion valve also meters the amount of liquid refrigerant that can flow into the evaporator.

Refrigerant exiting the thermal expansion valve flows into the evaporator core in a low pressure, liquid state. Ambient air is drawn through the HVAC module and passes through the evaporator core. Warm and moist air will cause the liquid refrigerant boil inside of the evaporator core. The boiling refrigerant absorbs heat from the ambient air and draws moisture onto the evaporator. The refrigerant exits the evaporator back through the thermal expansion valve and into the suction line and back to the compressor, in a vapor state completing the A/C cycle of heat removal. At the compressor, the refrigerant is compressed again and the cycle of heat removal is repeated.

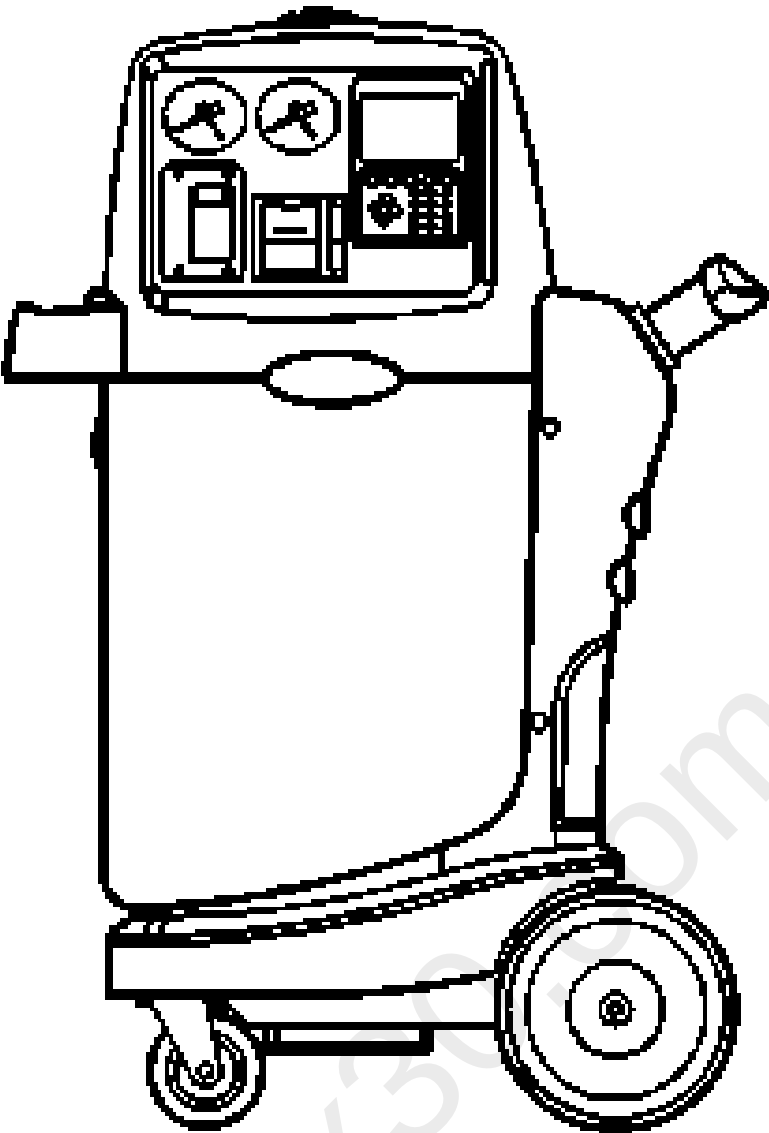
The conditioned air is distributed through the HVAC module for passenger comfort. The heat and moisture removed from the passenger compartment will also change form, or condense, and is discharged from the HVAC module as water under the vehicle.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/Description

Illustration	Tool Number/Description
 A 3D illustration of a pair of blue hose clamp pliers. The tool consists of two long, tapered handles that meet at a central pivot point. The handles are made of a solid material, likely steel, and are painted blue. The jaws of the pliers are designed to grip and adjust the tension of a hose clamp. A large, semi-transparent watermark 'mcx30.com' is overlaid diagonally across the image.	BO-38185 J-38185 Hose Clamp Pliers

Illustration	Tool Number/Description
	GE-8800 J-43600 ACR2000 Air Conditioning Service Center

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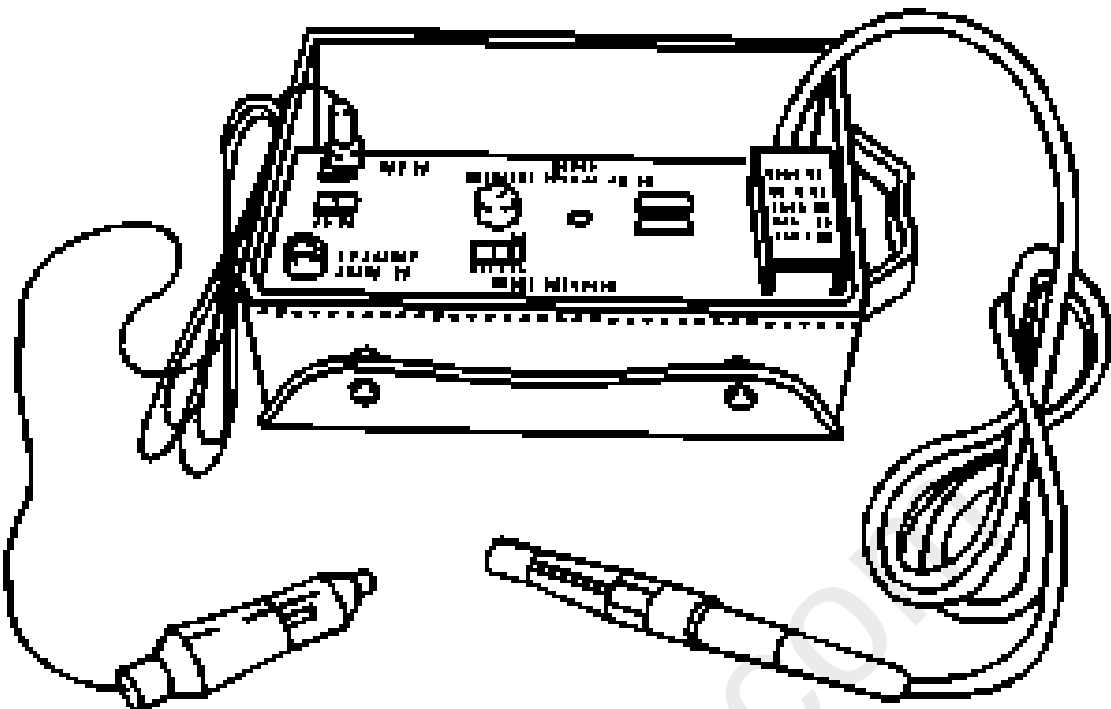
Illustration	Tool Number/Description
	GE-39400-A J-39400-A Halogen Leak Detector
	GE-41447 J-41447 R-134a A/C Tracer Dye - Box of 24

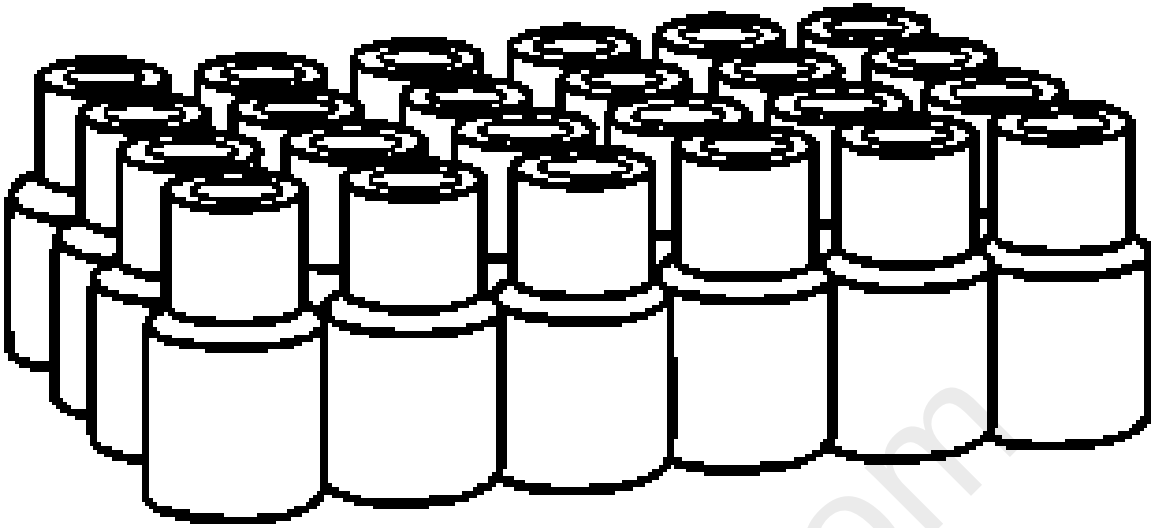
Illustration	Tool Number/Description
	

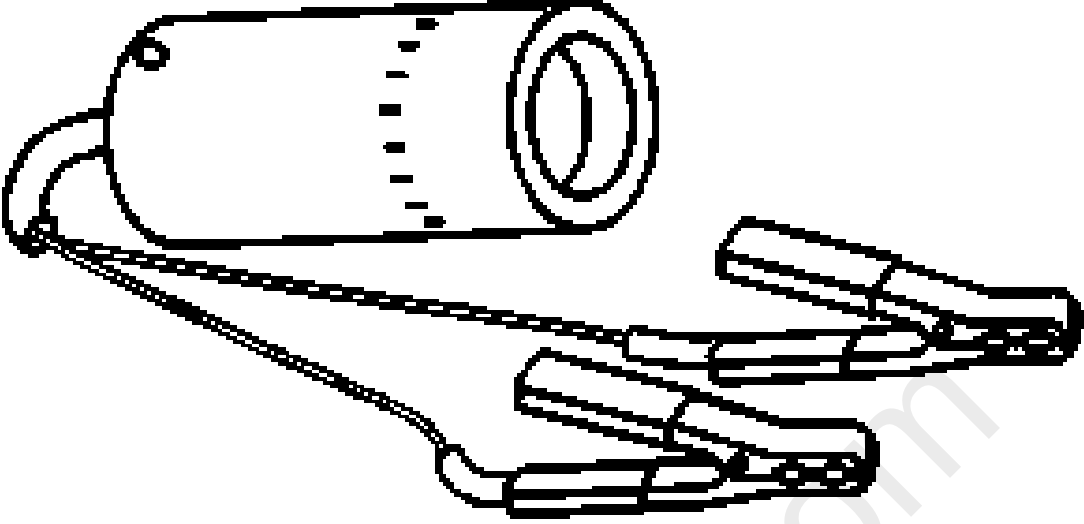
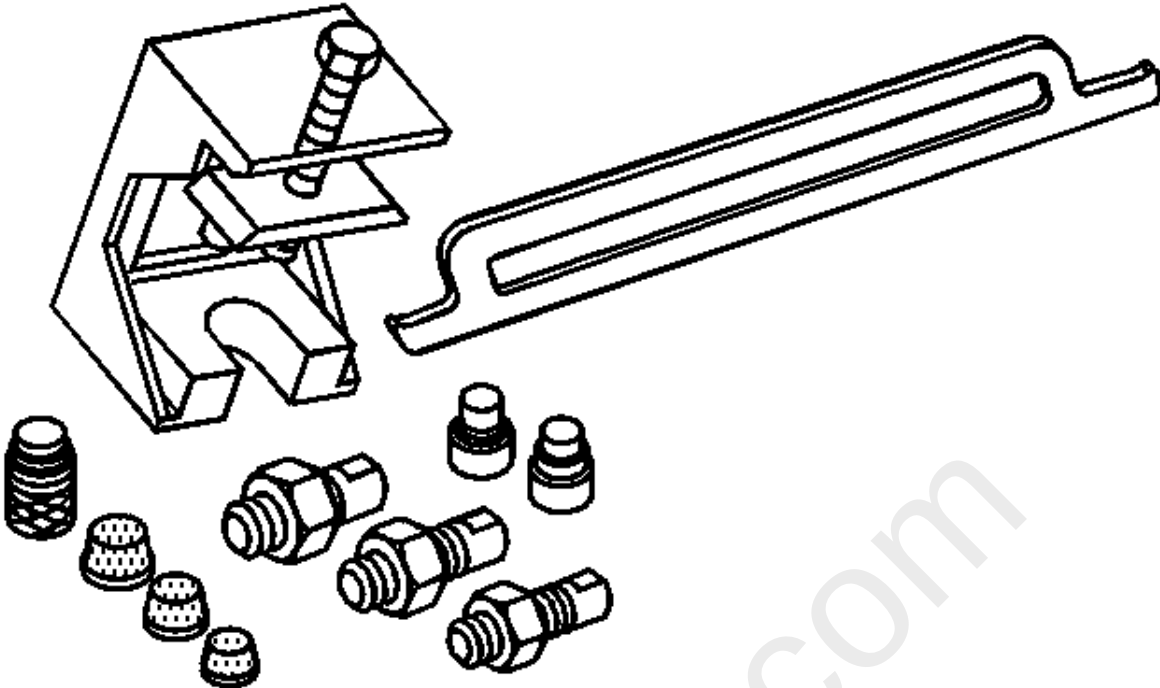
Illustration	Tool Number/Description
 A line drawing of a cylindrical leak detection lamp. The lamp has a coiled cable extending from one end, which terminates in two alligator clips. The lamp itself has a lens at the other end. A diagonal watermark 'mcx30.com' is visible across the illustration.	GE-42220 J-42220 Universal 12V Leak Detection Lamp

Illustration	Tool Number/Description
	GE-43872 J-43872 Fluorescent Dye Cleaner

Illustration	Tool Number/Description
	GE-44551 J-44551 Suction Screen Installation/Removal Kit

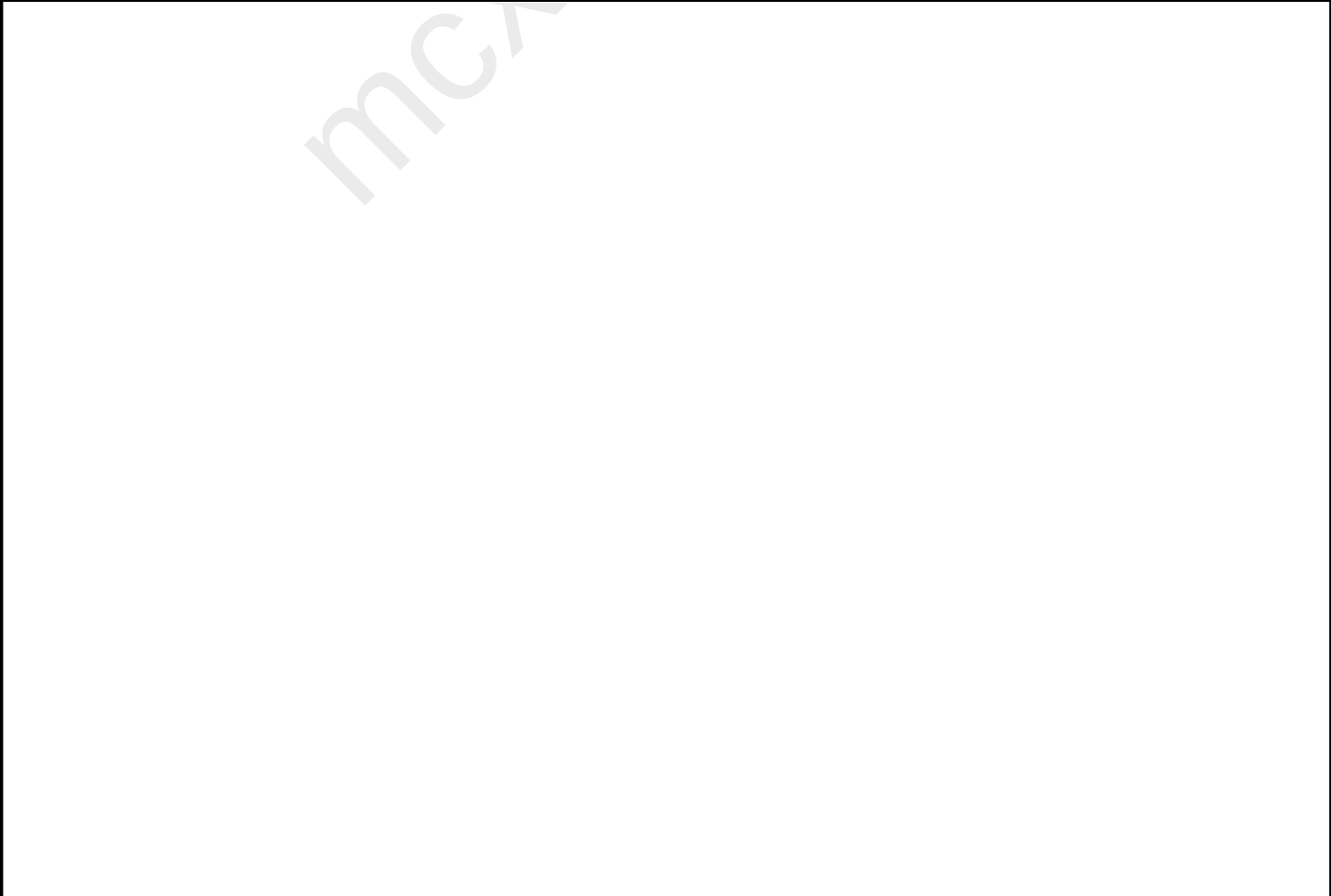
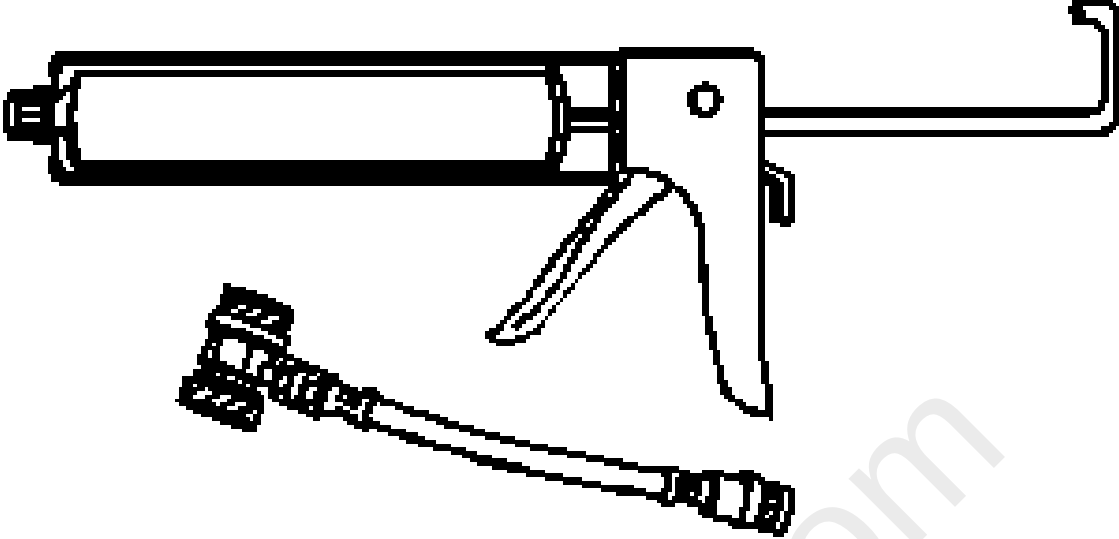


Illustration	Tool Number/Description
	GE-45037 J-45037 A/C Oil Injector

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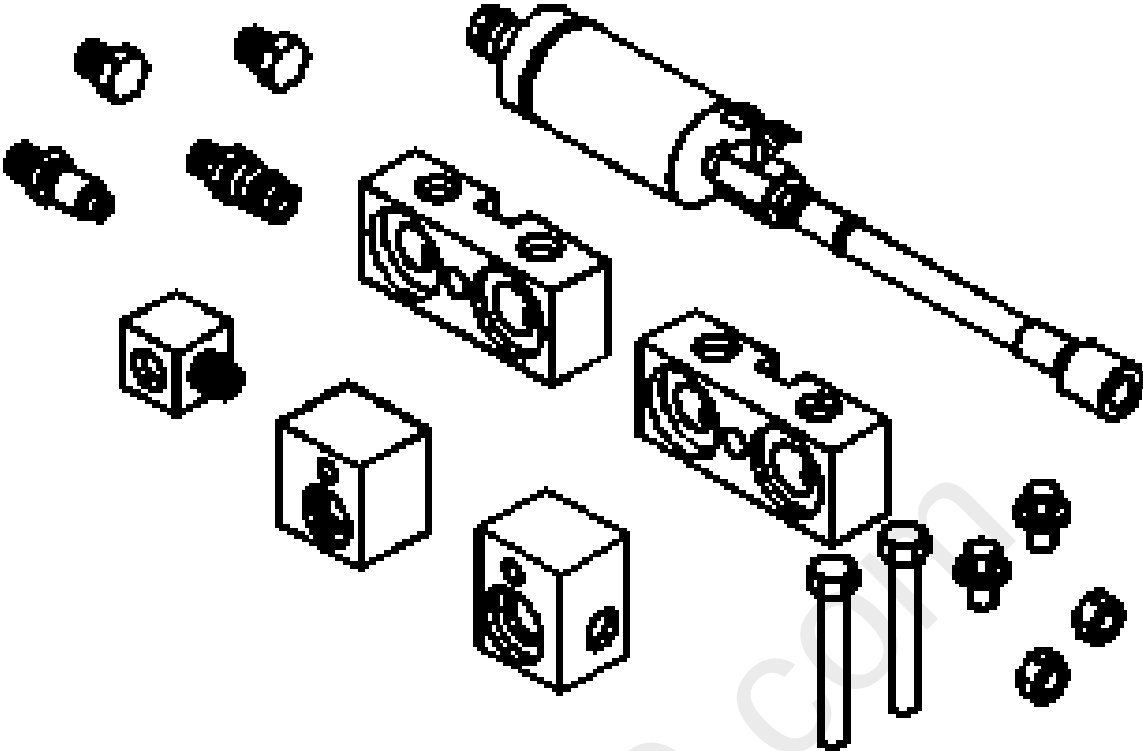
Illustration	Tool Number/Description
	GE-45268 J-45268 A/C Flushing Adapter Kit

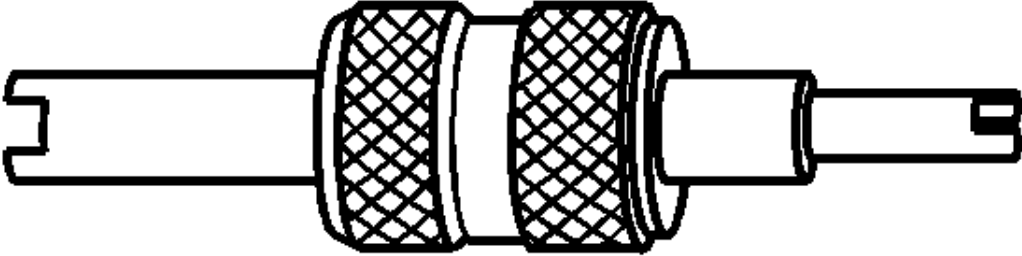
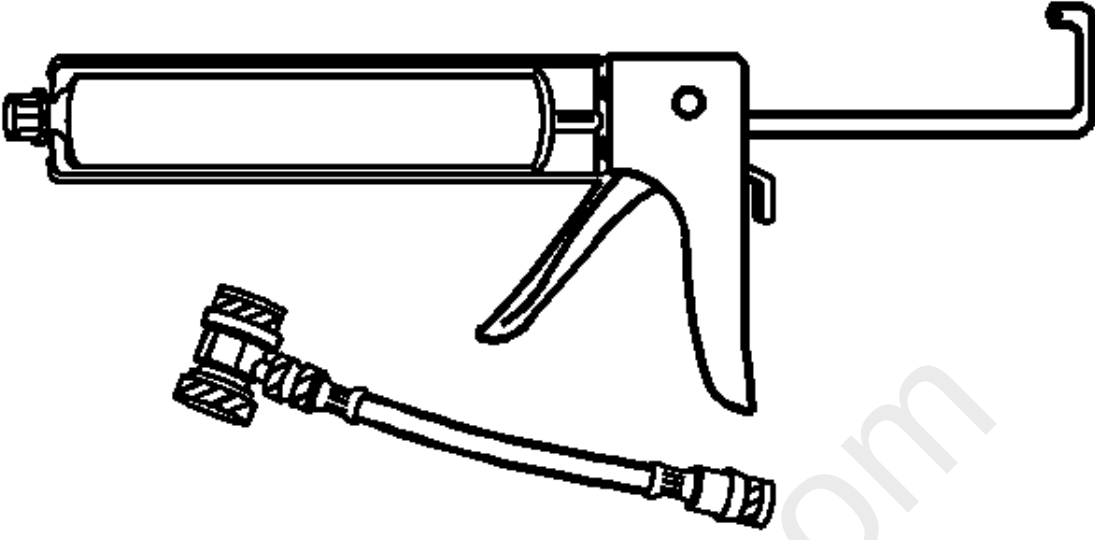
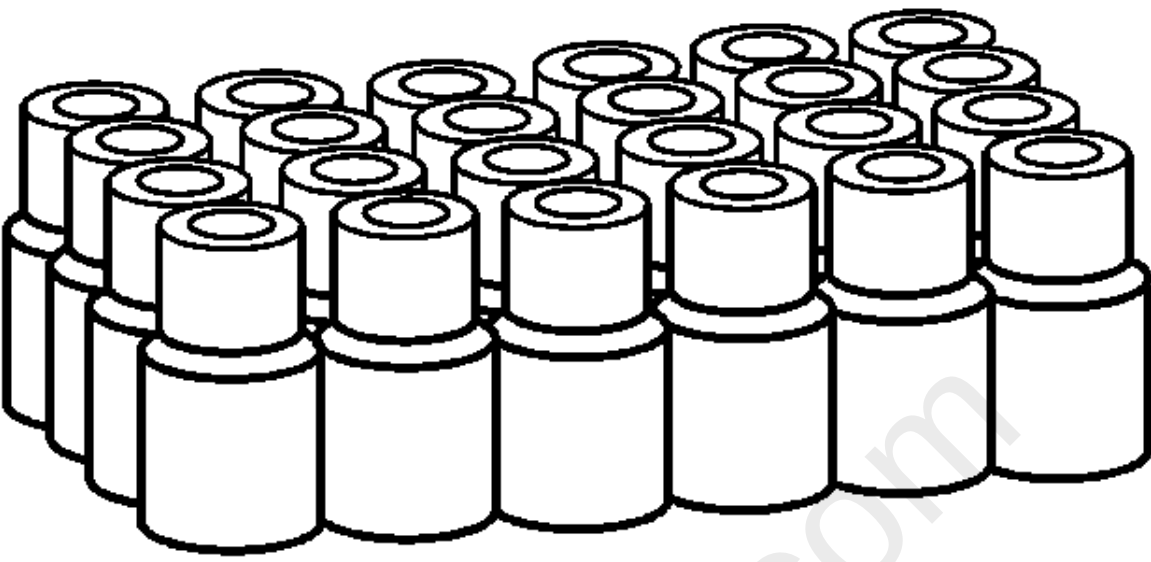
Illustration	Tool Number/Description
	GE-46246 J-46246 Valve Core Tool

Illustration	Tool Number/Description
	GE-46297 J-46297 A/C Dye Injector Kit

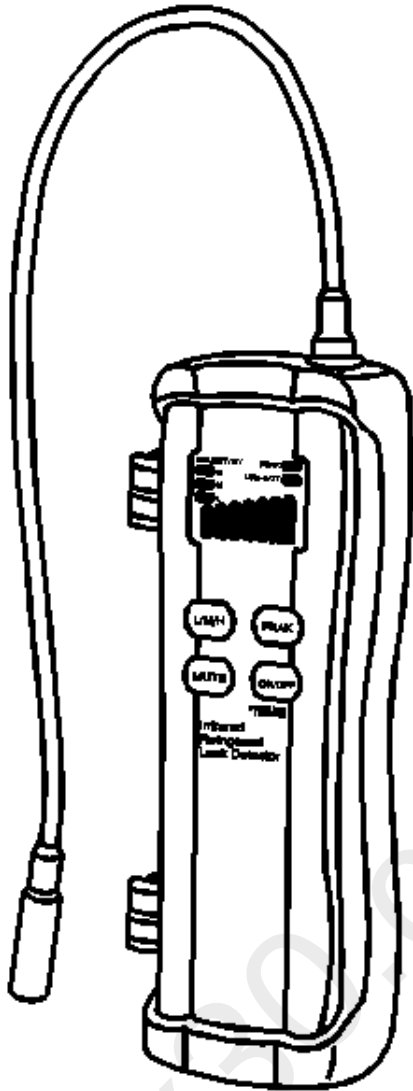
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Illustration	Tool Number/Description
	GE-46297-12 J-46297-12 Replacement Dye Cartridges

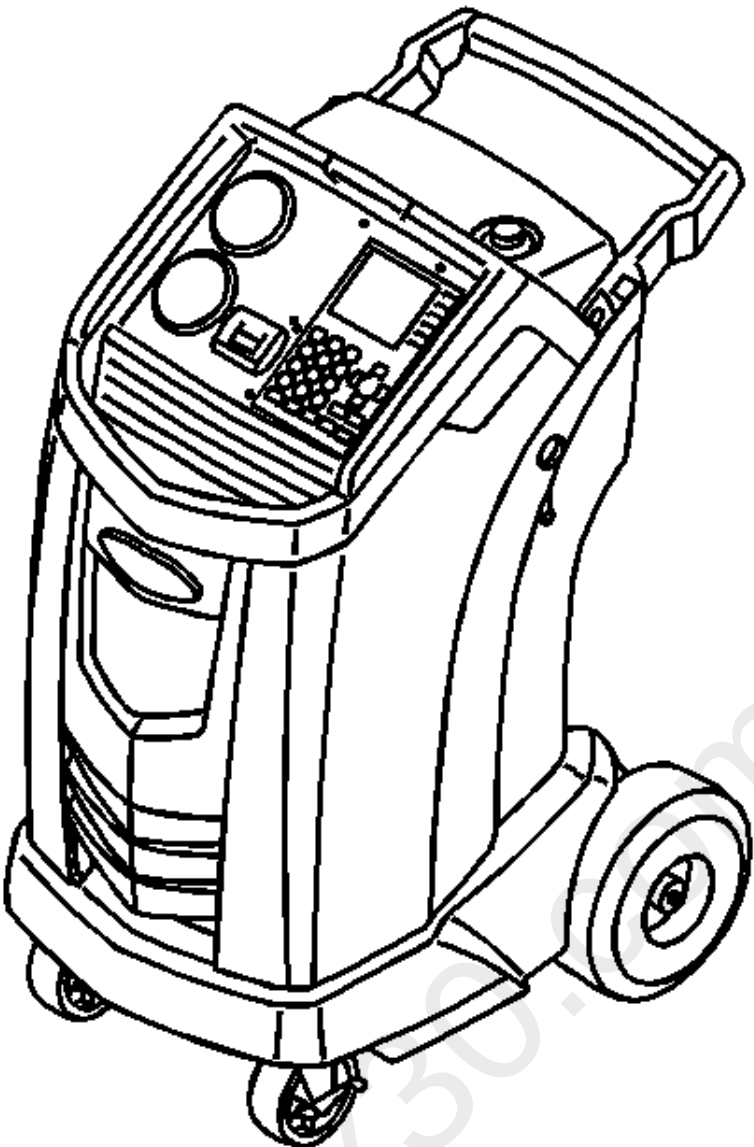
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Illustration	Tool Number/Description
	GE-48800 CoolTech A/C Recharge Machine

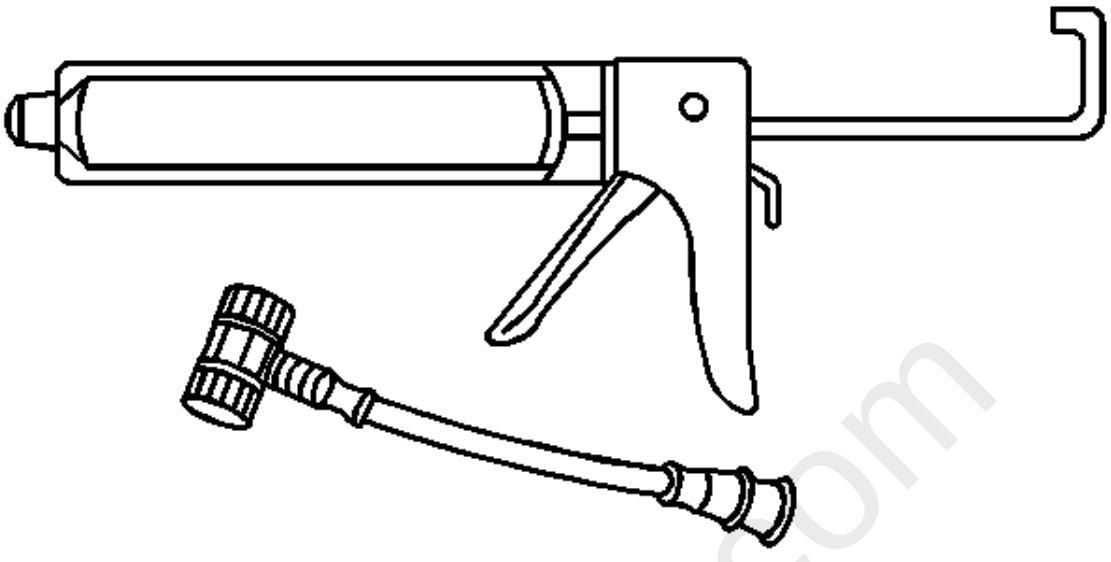
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Illustration	Tool Number/Description
	GE-50078 Electronic Leak Detector

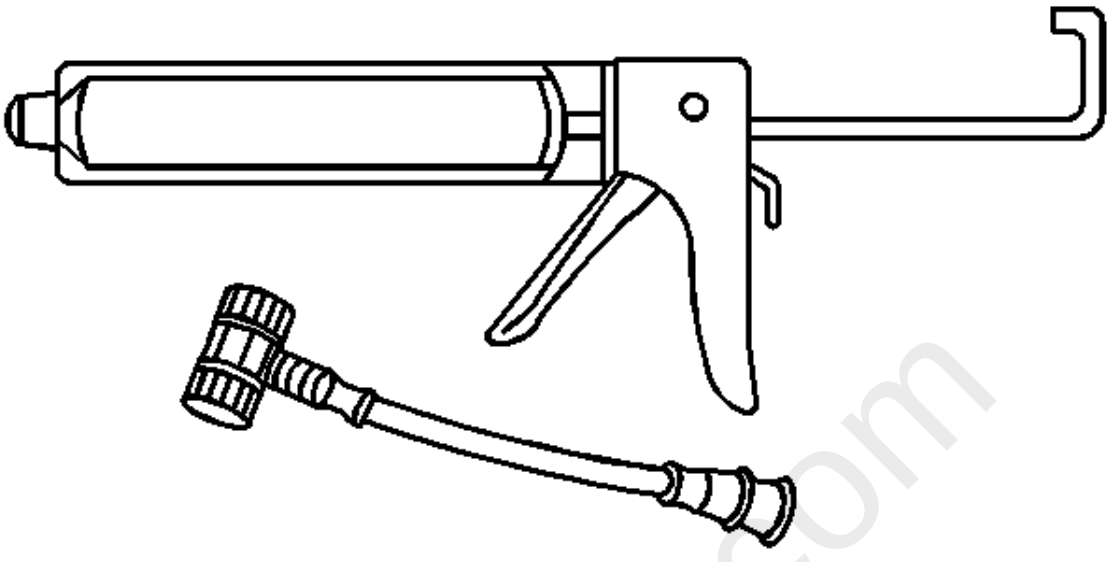
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Illustration	Tool Number/Description
 A line drawing of a refrigerant recovery/recharge cart. The cart is a rectangular unit with a handle on top and four casters at the base. The front panel features a large circular gauge on the left, a digital display in the center, and a control panel with several buttons and a small keypad on the right. The unit is shown from a three-quarter perspective.	GE-50300-A R-1234yf A/C Refrigerant Recovery/Recharge Cart

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Illustration	Tool Number/Description
	GE-50744 R-1234yf PAG Oil Injector Hose

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Illustration	Tool Number/Description
	GE-50745 R-1234yf POG Oil Injector Hose

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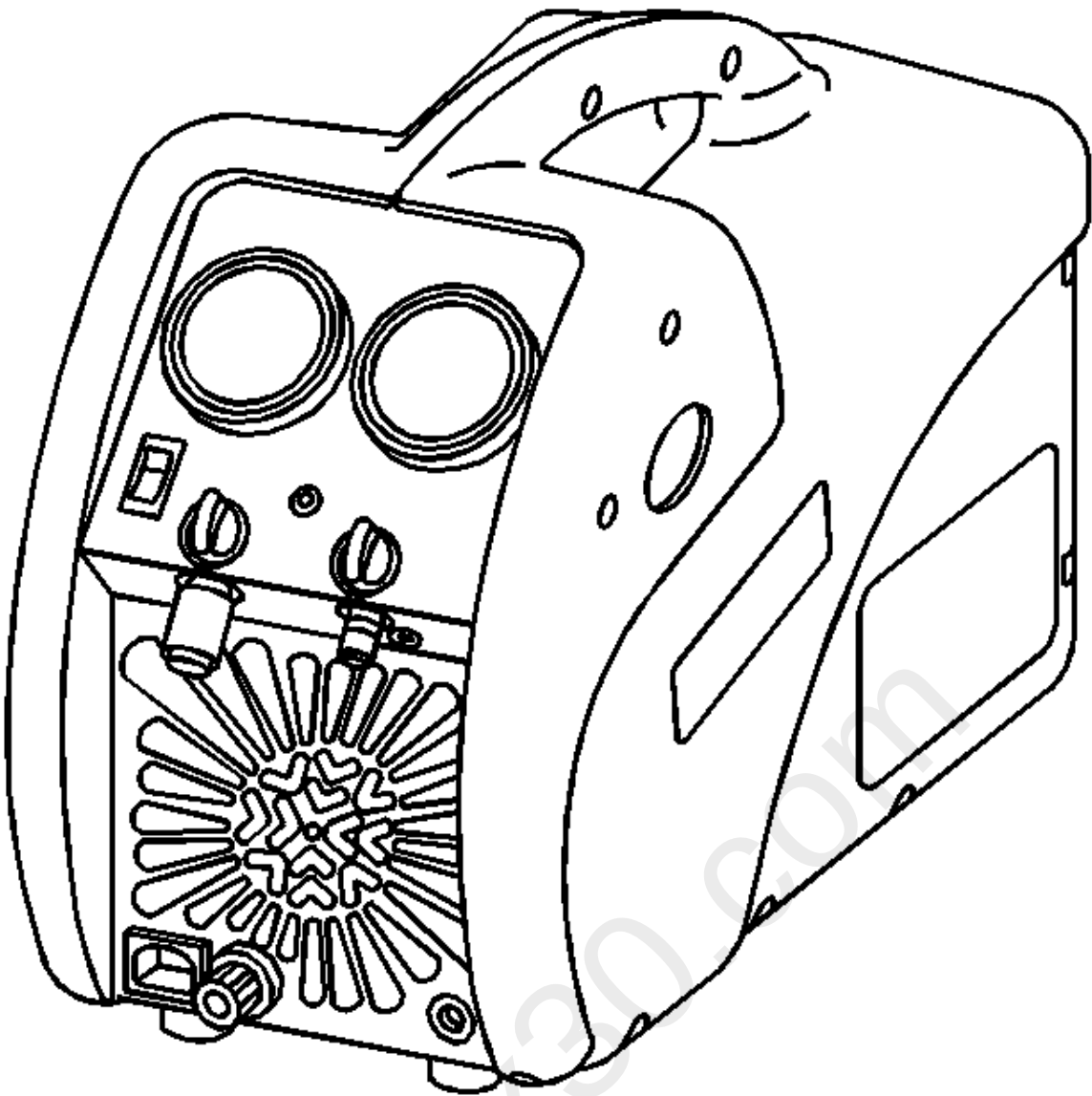
Illustration	Tool Number/Description
	GE-50957 Machine R-1234yf Contaminated Refrigerant
	7000086I Scan Tool Used for diagnosis of vehicle electrical system.

Illustration	Tool Number/Description
