

2017 HVAC**Heating, Ventilation, and Air Conditioning - Encore, Trax****SPECIFICATIONS****FASTENER SPECIFICATIONS****Single Use Non-Threaded Fasteners/Components****NOTE:**

All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.

Application

Air Conditioning System Sealing Washer

Reusable Threaded Fastener Tightening Specifications**NOTE:**

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

Application	Specification
	Metric (English)
Air Conditioning Compressor Bolt	22 N.m (16 lb ft)
Air Conditioning Compressor Bracket Bolt	22 N.m (16 lb ft)
Air Conditioning Compressor Clutch Nut	18 N.m (13 lb ft)
Air Conditioning Compressor Hose Bolt	22 N.m (16 lb ft)
Air Conditioning Compressor Hose Nut	22 N.m (16 lb ft)
Air Conditioning Compressor Nut	22 N.m (16 lb ft)
Air Conditioning Compressor Pressure Relief Valve	8 N.m (71 lb in)
Air Conditioning Compressor Stud	9 N.m (80 lb in)
Air Conditioning Condenser Bolt	6 N.m (53 lb in)
Air Conditioning Condenser Hose Assembly Bolt	22 N.m (16 lb ft)
Air Conditioning Condenser Hose Assembly Nut	2 N.m (18 lb in)
Air Conditioning Condenser Hose Bolt	22 N.m (16 lb ft)
Air Conditioning Evaporator Hose Assembly Nut	22 N.m (16 lb ft)
Air Conditioning Refrigerant Pressure Sensor	8 N.m (71 lb in)
Air Conditioning Refrigerant Pressure Sensor (2HO, LUV)	6 N.m (53 lb in)
Air Conditioning Refrigerant Pressure Sensor (LE2)	8 N.m (71 lb in)
Air Distributor Case Fastener	2 N.m (18 lb in)
Air Inlet Assembly Nut	4 N.m (35 lb in)
Air Inlet Valve Actuator Screw	2 N.m (18 lb in)
Heater and Air Conditioning Evaporator and Blower Case Bolt	2 N.m (18 lb in)
Heater and Air Conditioning Evaporator and Blower Case Screw	2 N.m (18 lb in)
Heater Case Fasteners	2 N.m (18 lb in)
HVAC Module Assembly Nut	22 N.m (16 lb ft)
Instrument Panel Center Air Outlet Fasteners (Chevrolet)	2.5 N.m (22 lb in)
Instrument Panel Outer Air Outlet Duct Bolt	2.5 N.m (22 lb in)
Receiver and Dehydrator Cover	12 N.m (106 lb in)
Receiver and Dehydrator Cover	12 N.m (106 lb in)

NOTE:

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

Application	Specification
	Metric (English)
Side Window Defogger Outlet Duct Bolt	2.5 N.m (22 lb in)
Temperature Valve Gear Cam Retainer Screw	2 N.m (18 lb in)
Thermal Expansion Valve Bolt (2HO, LUV)	6 N.m (53 lb in)
Thermal Expansion Valve Bolt (LE2)	8 N.m (71 lb in)
Windshield Defroster Outlet Duct Fastener	2.5 N.m (22 lb in)

APPROXIMATE FLUID CAPACITIES**Refrigerant System Capacities**

Application	Specification	
	Metric	English
Compressor Replacement		
NOTE: Compressor failure can occur if the oil removed during refrigerant recovery is not replaced. The service compressor is precharged with the following amount of PAG oil. Refer to the instruction sheet included with the service compressor.	40 ml ¹	1.4 oz ¹
Condenser Replacement	20-25 ml ¹	0.7-0.88 oz ¹
Evaporator Replacement	15-20 ml ¹	0.53-0.7 oz ¹
Any Line Set (Hose/Tube or Tube Assembly) Replacement	10-15 ml ¹	0.3-0.5 oz ¹
Total System PAG Oil Capacity	70 ml	2.5 oz
R-134a		
Refrigerant Charge (KDAC CRFM (Condenser Radiator Fan Module))	0.57 kg	1.26 lb
Refrigerant Charge (Denso CRFM (Condenser Radiator Fan Module))	0.44 kg	0.97 lb
¹ If more than the specified amount of PAG oil was drained from a component, add the amount drained.		

ADHESIVES, FLUIDS, LUBRICANTS, AND SEALERS

Application	Type of Material	GM Part Number
PAG Oil (R-134a)	Lubricant	Refer to Electronic Parts Catalog
PAG-PSD1 Oil (R-1234yf)	Lubricant	Refer to Electronic Parts Catalog

DIAGNOSTIC INFORMATION AND PROCEDURES

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. [Symptoms - HVAC Systems - Automatic](#) , or [Symptoms - HVAC Systems - Manual](#) .

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the HVAC System. [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. [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 R-134A A/C Tracer Dye-Box of 24
- GE-42220 Universal 12V Leak Detection Lamp
- GE-43872 Fluorescent Dye Cleaner
- GE-46297 A/C Dye Injector Kit
- GE-46297-12 Replacement Dye Cartridges
- GE-50078 Electric Leak Detector

Refrigerant Leak Testing

NOTE: All A/C system repairs must be verified using electronic leak detection. Dye detection may take up 2 or 3 days to be reliable.

NOTE: General Motors vehicles are now manufactured with fluorescent dye installed directly into the air conditioning (A/C) system.

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

Verifying some passive leaks may require using the **GE-50078** Electric Leak Detector , even though the A/C system contains fluorescent dye.

The only time that adding additional fluorescent dye is required, is after flushing the A/C system.

Visual Inspection

Visually trace the entire refrigerant system and look for signs of lubricant leakage, damage, and corrosion on all lines hoses and components (Oil can be an indication of a leak). Each questionable area should be checked for leaks using an electric leak detector.

Fluorescent Leak Detector

NOTE: Always use UV protective eyewear when working with UV light.

Fluorescent dye will assist in locating any leaks in the A/C system.

NOTE: Air conditioning oil is water soluble.

- Condensation on the evaporator core or the refrigerant lines may wash the air conditioning oil and fluorescent dye away from the actual leak. Condensation may also carry dye through the HVAC module drain.
- Leaks in the A/C 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 A/C components
- The A/C compressor shaft seal
- The A/C 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.

- Follow the instructions supplied with the **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.

- **GE-41447 R-134A A/C Tracer Dye-Box of 24** can be poured directly into a removed A/C component.
- **GE-46297-12 Replacement Dye Cartridges** is injected into the low side port using **GE-46297 A/C Dye Injector Kit**.

- 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.
- R-134A 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.

NOTE: Do NOT overcharge the A/C system with dye. Use only one 7.39 ml (0.25 oz) charge.

- To prevent false diagnosis, thoroughly clean any residual dye from the service port with a rag and the approved fluorescent dye cleaner **GE-43872** Fluorescent Dye Cleaner.

Electric Leak Detector

WARNING: Do not operate the detector in a combustible atmosphere since its sensor operates at high temperatures or personal injury and/or damage to the equipment may result.

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

NOTE: Electronic leak detectors are sensitive to the following items:

- Windshield washing solutions
- Many solvents and cleaners
- Some adhesives used in the vehicle

Clean and dry all surfaces in order to prevent a false warning. Liquids will damage the detector.

Do not use:

- Soap solutions (not effective for leak detection)
- Shop air (will introduce contamination to the refrigerant system)

Air movement from the engine cooling fan can affect the detectors ability to detect leaks. Always leak test with engine off and if possible after engine has reached normal operating temperature.

- All fittings and components should be checked.
- Take care not to contaminate the probe tip if the part being tested is contaminated.
- No cleaners containing solvents should be used prior to using electronic leak detector.
- Always follow the refrigerant system around in a continuous path so that no areas of potential leaks are missed. Move the tip along the refrigerant system at a rate of no more than 3 inches per second and a distance of 3/8 inch from the surface being tested. If a leak is found, always continue to test the remainder of the system.

Follow the instructions supplied with the **GE-50078** Electric 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 ACR 2000 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

Step	Action	Values	Yes	No
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
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 or Go to Symptoms - HVAC Systems - Manual

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%	151-199 kPa (22-29 psi)	1012-1088 kPa (147-158 psi)	10Â°C (50Â°F)
19-24Â°C (66-75Â°F)	Below 40%	172-234 kPa (25-34 psi)	1240-1378 kPa (180-200 psi)	12Â°C (52Â°F)
	Above 40%	172-248 kPa (25-36 psi)	1136-1302 kPa (165-189 psi)	13Â°C (55Â°F)
25-29Â°C (76-85Â°F)	Below 35%	192-254 kPa (28-37 psi)	1350-1522 kPa (196-221 psi)	13Â°C (55Â°F)
	35-50%	192-261 kPa (28-38 psi)	1309-1508 kPa (190-219 psi)	13Â°C (55Â°F)
	Above 50%	199-275 kPa (29-40 psi)	1281-1481 kPa (186-215 psi)	14Â°C (57Â°F)
30-35Â°C (86-95Â°F)	Below 30%	206-275 kPa (30-40 psi)	1460-1667 kPa (212-242 psi)	14Â°C (57Â°F)
	30-50%	213-289 kPa (31-42 psi)	1440-1681 kPa (209-244 psi)	15Â°C (59Â°F)
	Above 50%	220-310 kPa (32-45 psi)	1433-1688 kPa (208-245 psi)	17Â°C (61Â°F)
36-41Â°C (96-105Â°F)	Below 20%	227-296 kPa (33-43 psi)	1577-1798 kPa (229-261 psi)	15Â°C (59Â°F)
	20-40%	234-310 kPa (34-45 psi)	1577-1832 kPa (229-266 psi)	17Â°C (61Â°F)
	Above 40%	241-323 kPa (35-47 psi)	1591-1867 kPa (231-271 psi)	18Â°C (64Â°F)

Ambient Temperature	Relative Humidity	Low Side Service Port Pressure	High Side Service Port Pressure	Maximum Left Center Discharge Air Temperature
42-46Â°C (106-115Â°F)	Below 20%	248-316 kPa (36-46 psi)	1701-1908 kPa (247-277 psi)	18Â°C (64Â°F)
	Above 20%	254-330 kPa (37-48 psi)	1722-1970 kPa (250-286 psi)	18Â°C (64Â°F)
47-49Â°C (116-120Â°F)	Below 30%	275-344 kPa (40-50 psi)	1832-2060 kPa (266-299 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
		EAT Malfunction
		HVAC Controls Malfunction
Normal	Normal	Temperature Actuator Malfunction
		Temperature Door Malfunction
Low	Low	Low Refrigerant Charge
		Restriction between the Compressor Outlet and Low Side Port
	Low/Normal	Evaporator Freezing/EAT Malfunction
	High	Compressor Stuck at Maximum Displacement/EAT Malfunction
Normal/High	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

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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 , or Symptoms - HVAC Systems - Manual
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	1. Allow the engine to idle. 2. Select the FLOOR mode. 3. Select the minimum blower speed. 4. Select the warmest temperature setting. 5. Feel the temperature of the inlet and outlet heater hoses near the heater core. Does the inlet heater hose feel warmer than the outlet heater hose?	Go to Step 7	Go to Step 4
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 two 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 Heating and Air Conditioning System Description and Operation. 2. Perform any necessary repairs. Are the repairs complete?	Go to Step 10	-

Step	Action	Yes	No
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 near 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 Heater Core Replacement . Is the repair complete?	Go to Step 10	-
9	Repair the low engine temperature concern. Refer to Engine Fails To Reach Normal Operating Temperature . 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.			
1	Were you sent here from Symptoms or another diagnostic table?	Go to Step 2	Go to Symptoms - HVAC Systems - Automatic , or Symptoms - HVAC Systems - Manual
2	1. Start the engine. 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 9
3	Measure the engine operating temperature. Does engine reach a normal operating temperature?	Go to Step 4	Go to Step 7
4	1. Select the minimum blower speed. 2. Select the maximum temperature setting. 3. Feel the temperature of the inlet and outlet hoses near the heater core. Does the inlet hose feel warmer than the outlet hose?	Go to Step 10	Go to Step 5
5	Test the operation of the A/C compressor clutch. Does the A/C compressor clutch engage?	Go to Step 8	Go to Step 6
6	Repair the A/C compressor clutch concern. Refer to DTC P0645, P0646, or P0647 . Is the repair complete?	Go to Step 12	-
7	Repair the low engine temperature concern. Refer to Engine Fails To Reach Normal Operating Temperature . Is the repair complete?	Go to Step 12	-

Step	Action	Yes	No
8	Inspect for correct operation of the air inlet door. Is the air inlet door operating correctly?	Go to Step 12	Go to Step 11
9	Repair the air delivery concern. Refer to Diagnostic Starting Point - Vehicle . Is the repair complete?	Go to Step 12	-
10	Repair the heating concern. Refer to Heating Performance Diagnostic . Is the repair complete?	Go to Step 12	-
11	Repair the air inlet door concern. Refer to Diagnostic Starting Point - Vehicle . Is the repair complete?	Go to Step 12	-
12	Operate the system in order to verify the repair. Did you find and correct the problem?	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 Symptoms - HVAC Systems - Automatic , or Symptoms - HVAC Systems - Manual
2	Inspect the air inlet grille for debris. Is debris present?	Go to Step 8	Go to Step 3
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 Blower Motor Replacement . 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

Step	Action	Yes	No
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 Blower Motor Replacement . Is the repair complete?	Go to Step 11	-
10	Install the blower motor. Refer to Blower Motor Replacement . 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 PAG or POE oil is used during A/C servicing of R-134a or R-1234YF systems. Failure to use the correct PAG or POE 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.
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.

Condition	Corrective Action
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 - Manual
2	1. A/C system noises can be generally categorized into 3 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
3	With the engine OFF, inspect the drive belt for excessive wear. Is the drive belt excessively worn?	Go to Step 18	Go to Step 4
4	Inspect the drive belt tension. 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

Step	Action	Yes	No
8	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. Refer to 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. Refer to Refrigerant Recovery and Recharging (R-134a) . Is the abnormal compressor noise still present?	Go to Step 24	Go to Step 26
17	Repair the oil leak. Is the repair complete?	Go to Step 18	-
18	Replace the drive belt. Refer to Drive Belt Replacement , for 1.2L or 1.4L or Drive Belt Replacement for 1.6L or 1.8L. Is the replacement complete?	Go to Step 26	-
19	Replace the drive belt tensioner. Refer to Drive Belt Tensioner Replacement , for 1.2L or 1.4L or Drive Belt Tensioner Replacement for 1.6L or 1.8L. . 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	-

Step	Action	Yes	No
23	Replace the A/C compressor clutch. Refer to Air Conditioning Clutch Assembly Replacement (LUV) Air Conditioning Clutch Assembly Replacement (2H0) Air Conditioning Clutch Assembly Replacement (LE2) . Is the repair complete?	Go to Step 26	-
24	Replace the A/C compressor. Refer to Air Conditioning Compressor Replacement (LE2) Air Conditioning Compressor Replacement (2H0) Air Conditioning Compressor Replacement (LUV) . Is the repair complete?	Go to Step 26	-
25	The concern may be caused by an engine related component. Refer to 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 - Manual , or Symptoms - HVAC Systems - Automatic
2	- Start the engine. - Cycle through all of the following: - Blower motor speeds - HVAC modes - Temperature control settings - 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
6	Remove the I/P Assembly. Refer to Instrument Panel Tie Bar Replacement (Buick) Instrument Panel Tie Bar Replacement (Chevrolet) . Is the action complete?	Go to Step 7	-

Step	Action	Yes	No
7	1. Inspect the mode valve assembly for proper operation. 2. 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 valve assembly and temperature doors and seals for warping or cracking. Are the mode valve assembly and temperature doors in normal condition?	Go to Step 11	Go to Step 9
9	Replace the appropriate component. 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 assembly. Refer to Instrument Panel Tie Bar Replacement (Buick) , Instrument Panel Tie Bar Replacement (Chevrolet) . 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 , or Symptoms - HVAC Systems - Manual
2	1. Sit inside the vehicle. 2. Close all of the doors and windows. 3. Start Turn ignition to on. 4. Select the maximum blower speed. 5. Select the PANEL air outlet mode. 6. Select the coldest temperature setting. 7. 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. 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 8

Step	Action	Yes	No
6	Inspect for the following conditions: 1. Water leaks around the windshield 2. Blockage of the HVAC module drain 3. Leaks around the door seals Is a leak present?	Go to Step 7	Go to Step 15
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. Refer to 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. Refer to 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. Refer to the following procedures: • Oil Leak Diagnosis • Fluid Leak Diagnosis 2. Repair any oil leaks. Is the repair complete?	Go to Step 15	-
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. Refer to 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 Odor

- Odors may be emitted from the air conditioning system primarily at start up in hot, humid climates. The following conditions may cause the odor:
 - Debris is present in the HVAC module assembly.
 - Microbial growth on the evaporator core.
- When the blower motor fan is turned on, the microbial growth may release an unpleasant musty odor into the passenger compartment. To remove odors of this type, the microbial growth must be addressed. Perform the following procedure:
 - Remove evaporator core. Refer to [Air Conditioning Evaporator Replacement](#).
 - Clean evaporator core with a solution of 40% vinegar and 60% water.
 - Refit evaporator core. Refer to [Air Conditioning Evaporator Replacement](#).

REFRIGERANT RECOVERY AND RECHARGING (R-134A)

WARNING: To prevent personal injury, avoid breathing A/C Refrigerant and lubricant

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

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

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

CAUTION: Use only Polyalkylene Glycol Synthetic Refrigerant Oil (PAG) for internal circulation through the R-134a A/C system and only 525 viscosity mineral oil on fitting threads and O-rings. If lubricants other than those specified are used, compressor failure and/or fitting seizure may result.

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

The A/C service station is a complete air conditioning service center for refrigerant. The service station recovers, recycles, evacuates and recharges A/C refrigerant quickly, accurately and automatically. The unit has a display screen that contains the function controls and displays prompts that will lead the technician through the recover, recycle, evacuate and recharge operations. A/C refrigerant is recovered into and charged out of an internal storage vessel.

The A/C service station 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 station will not recover the refrigerant from the A/C system.

For information on the actual equipment, please refer to the manual of the equipment in question.

Always recharge the A/C System with the proper amount of refrigerant. Refer to [Approximate Fluid Capacities](#) for the correct amount.

A/C Refrigerant System Oil Charge Replenishing

If oil was removed from the A/C system during the recovery process or due to component replacement, the oil must be replenished. Oil can be injected into a charged system. For the proper quantities of oil to add to the A/C refrigerant system, refer to [Approximate Fluid Capacities](#).

AIR CONDITIONING COMPRESSOR OIL BALANCING

Draining Procedure

NOTE: Drain and measure as much of the refrigerant oil as possible from the rear head ports of the removed air conditioning compressor.

1. Before draining oil, position the compressor vertically, (clutch facing upwards) and let the air conditioning compressor sit for 1 minute.
2. Position the air conditioning compressor horizontally with the ports facing downward, rotate the clutch and shake the air conditioning compressor in order to remove as much oil from the air conditioning compressor as possible.
3. Drain the oil from both the suction and discharge ports of the removed air conditioning compressor into a clean, graduated container. Rotate the air conditioning compressor shaft to assist in draining the air conditioning compressor.

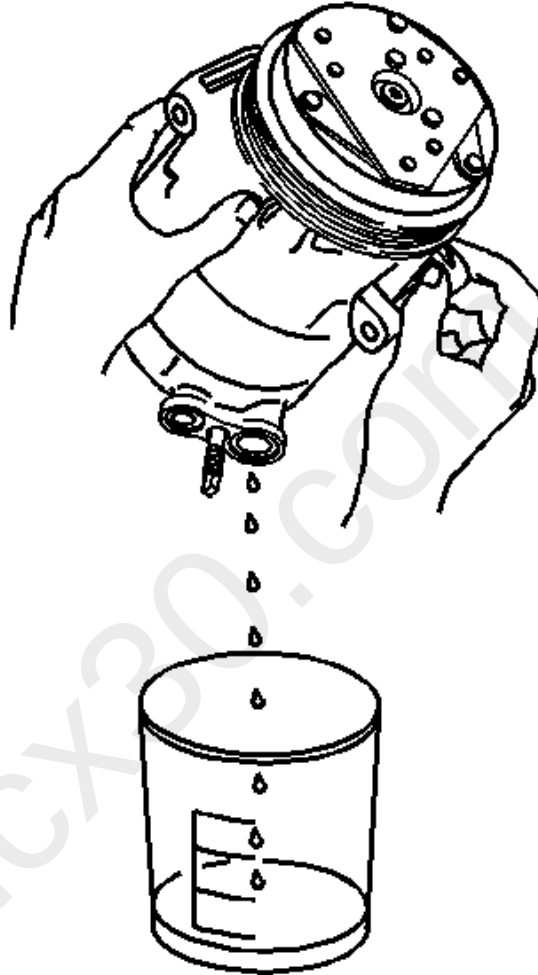


Fig. 1: Draining A/C Refrigerant Oil From Compressor
Courtesy of GENERAL MOTORS COMPANY

4. Measure and record the amount of oil drained from the removed air conditioning compressor. This measurement will be used during installation of the replacement air conditioning compressor. Inspect oil drained from removed air conditioning compressor. Refer to [Air Conditioning Compressor Oil Diagnosis](#).
5. Properly discard the used refrigerant oil.

Balancing Procedure

NOTE: The refrigerant oil in the air conditioning system must be balanced during air conditioning compressor replacement.

1. Before installing the air conditioning compressor, the refrigerant oil will have to be fully drained.

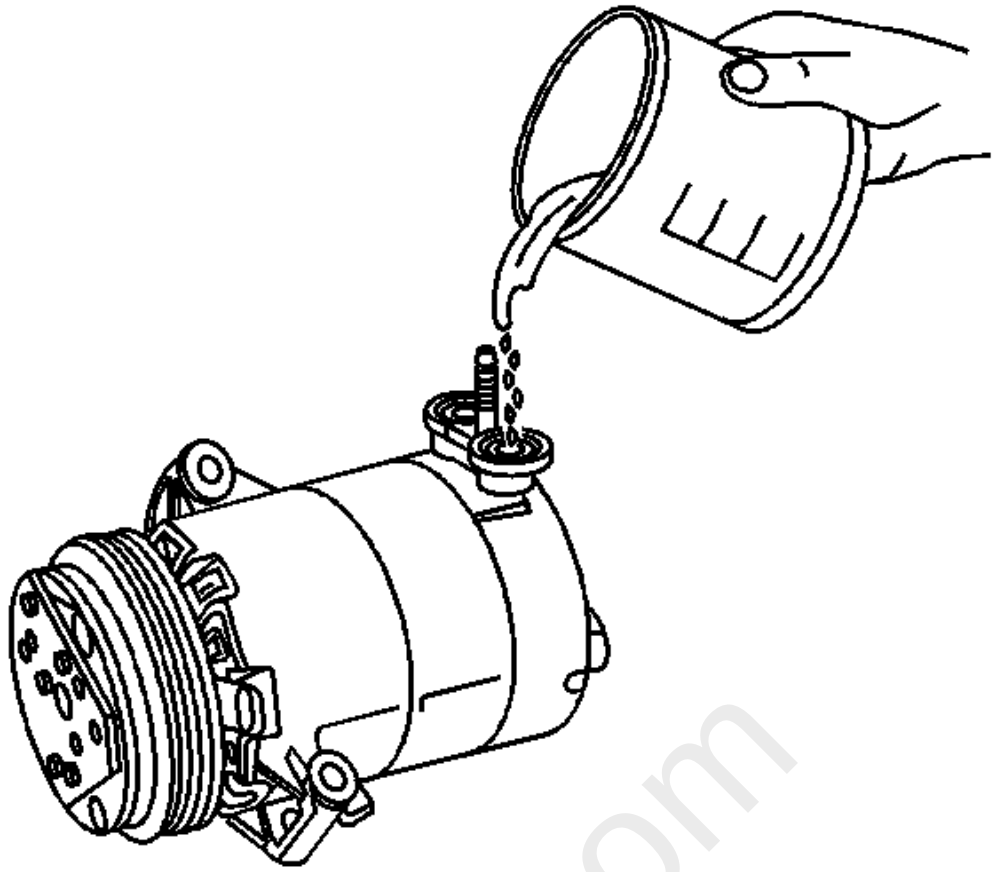


Fig. 2: Replacing Measured Compressor Oil
Courtesy of GENERAL MOTORS COMPANY

2. Add back the same quantity of polyalkylene glycol (PAG) oil as drained from the removed air conditioning compressor. Refer to the amount of refrigerant oil recorded during the air conditioning compressor removal.

AIR CONDITIONING COMPRESSOR REPLACEMENT (LE2)

Removal Procedure

1. Recover the refrigerant. **Refrigerant Recovery and Recharging (R-134a)**.
2. Drive Belt@Air Conditioning Compressor - Remove - **Drive Belt Replacement**

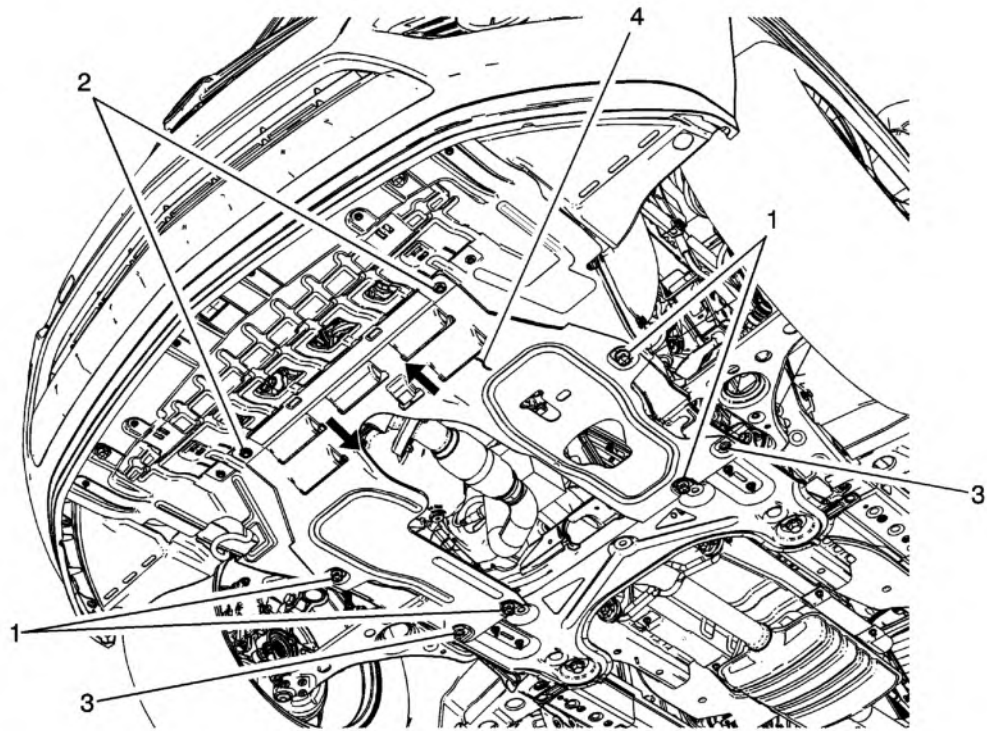


Fig. 3: Front Compartment Front Center Insulator
 Courtesy of GENERAL MOTORS COMPANY

3. Front Compartment Insulator 4 - Remove - **Front Compartment Front Center Insulator Replacement**

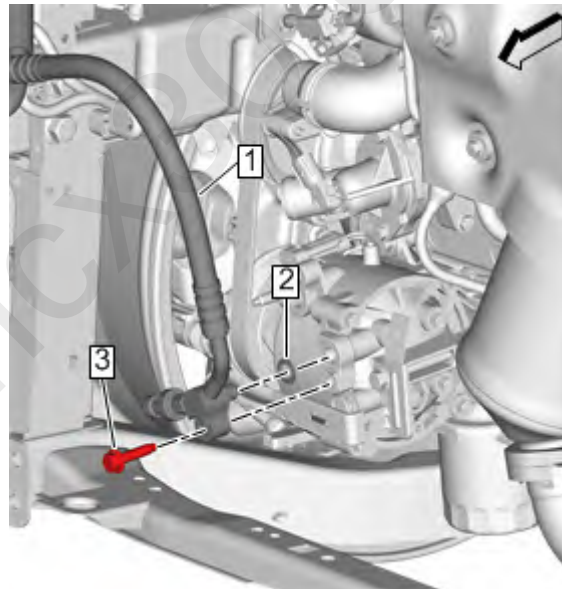


Fig. 4: Air Conditioning Condenser Hose And Sealing Washer
 Courtesy of GENERAL MOTORS COMPANY

4. Air Conditioning Condenser Hose 1 @Air Conditioning Compressor - Remove - **Air Conditioning Condenser Hose Replacement (LE2)**

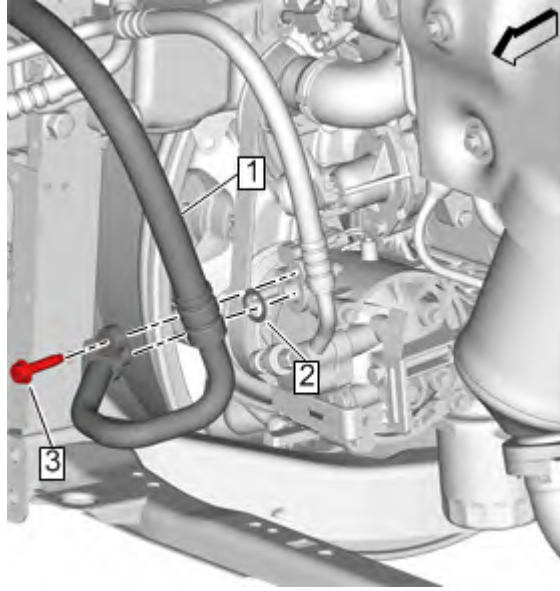


Fig. 5: Air Conditioning Compressor Hose And Bolt
 Courtesy of GENERAL MOTORS COMPANY

5. Air Conditioning Compressor Hose 1 @Air Conditioning Compressor - Remove - [Air Conditioning Compressor Hose Replacement \(LE2\)](#)

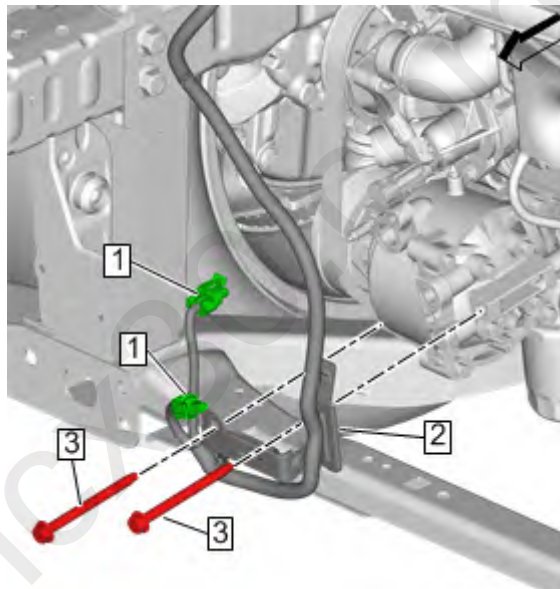


Fig. 6: Air Conditioning Compressor Bolt And Engine Wiring Harness Bracket
 Courtesy of GENERAL MOTORS COMPANY

6. Electrical Connector 1 - Disconnect
7. Air Conditioning Compressor Bolt 3 - Remove
8. Engine Wiring Harness Bracket 2 - Remove

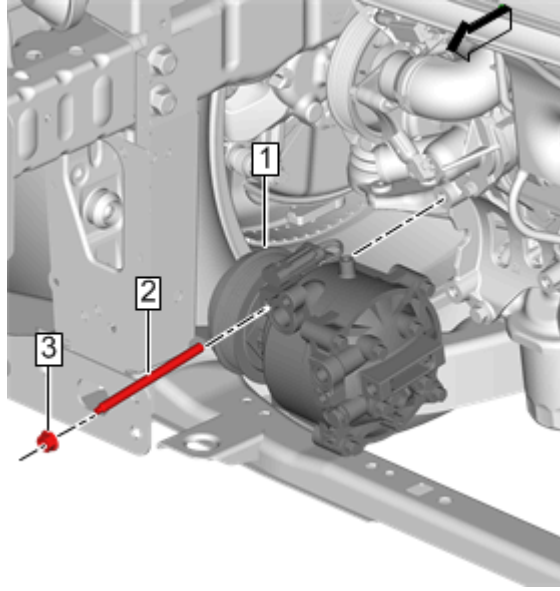


Fig. 7: Air Conditioning Compressor Nut
 Courtesy of GENERAL MOTORS COMPANY

9. Air Conditioning Compressor Nut 3 - Remove
10. Air Conditioning Compressor Stud 3 - Remove
11. Air Conditioning Compressor 1 - Remove

Installation Procedure

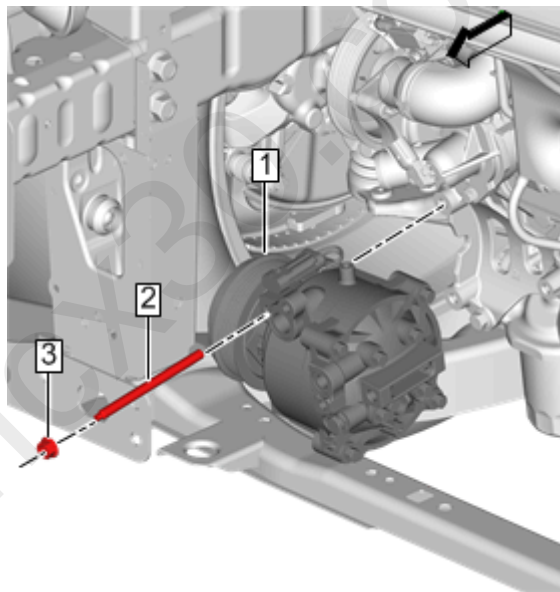


Fig. 8: Air Conditioning Compressor
 Courtesy of GENERAL MOTORS COMPANY

1. Air Conditioning Compressor 1 - Install

CAUTION: Refer to **Fastener Caution** .

2. Air Conditioning Compressor Stud 2 - Install and tighten 9 N.m (80 lb in)
3. Air Conditioning Compressor Nut 3 - Install and tighten 22 N.m (16 lb ft)

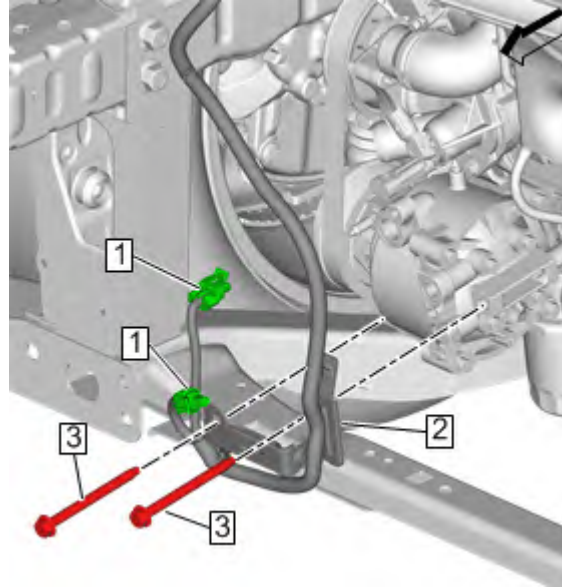


Fig. 9: Air Conditioning Compressor Bolt And Engine Wiring Harness Bracket
Courtesy of GENERAL MOTORS COMPANY

4. Engine Wiring Harness Bracket 2 - Install
5. Air Conditioning Compressor Bolt 3 - Install and tighten 22 N.m (16 lb ft)
6. Electrical Connector 1 - Connect

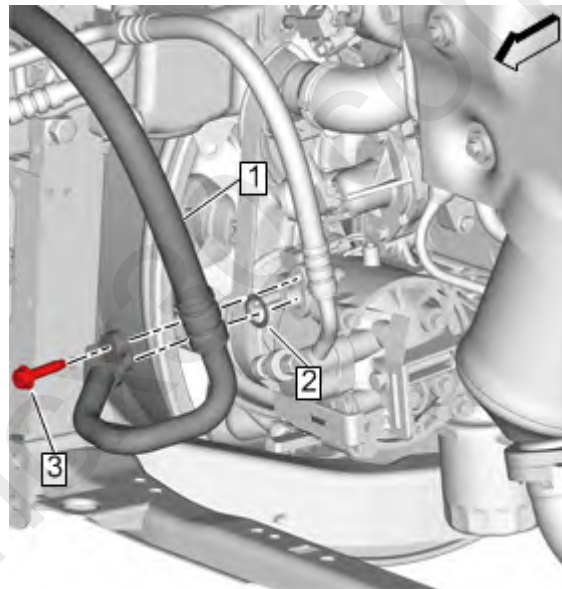


Fig. 10: Air Conditioning Compressor Hose And Bolt
Courtesy of GENERAL MOTORS COMPANY

7. Air Conditioning Compressor Hose 1 @Air Conditioning Compressor - Install - [Air Conditioning Compressor Hose Replacement \(LE2\)](#)

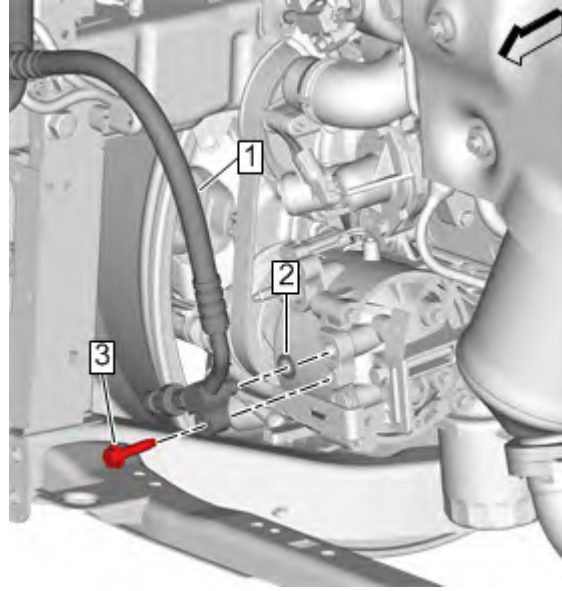


Fig. 11: Air Conditioning Condenser Hose And Sealing Washer
 Courtesy of GENERAL MOTORS COMPANY

8. Air Conditioning Condenser Hose 1 @Air Conditioning Compressor - Install - [Air Conditioning Condenser Hose Replacement \(LE2\)](#).

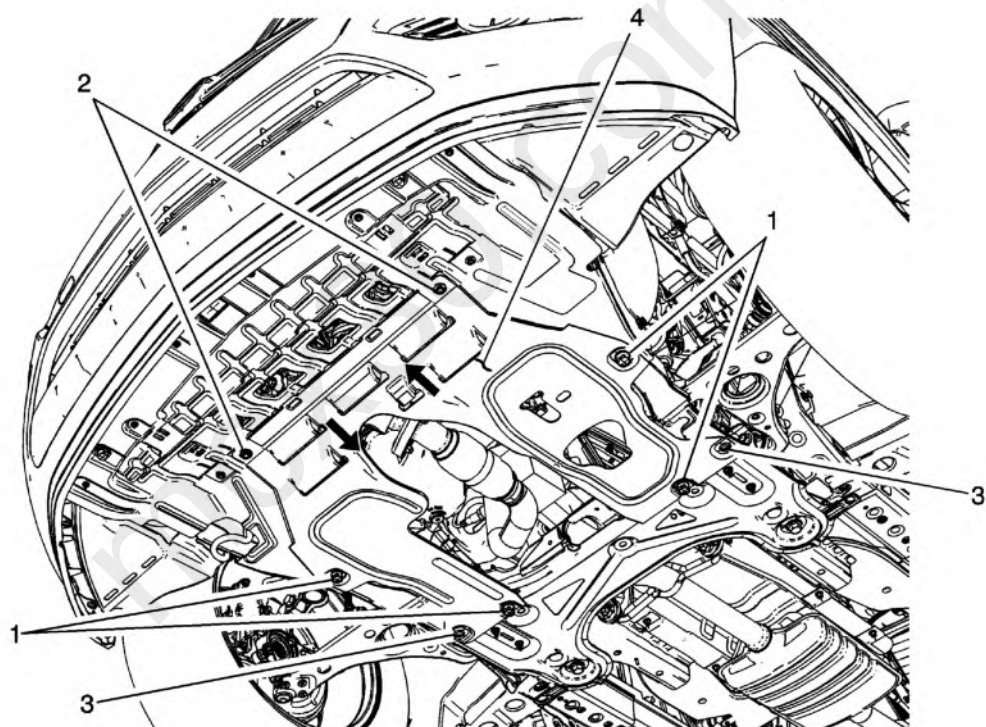


Fig. 12: Front Compartment Front Center Insulator
 Courtesy of GENERAL MOTORS COMPANY

9. Front Compartment Insulator 4 - Install - [Front Compartment Front Center Insulator Replacement](#)
10. Drive Belt@Air Conditioning Compressor - Install - [Drive Belt Replacement](#)
11. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#).

AIR CONDITIONING COMPRESSOR REPLACEMENT (2H0)

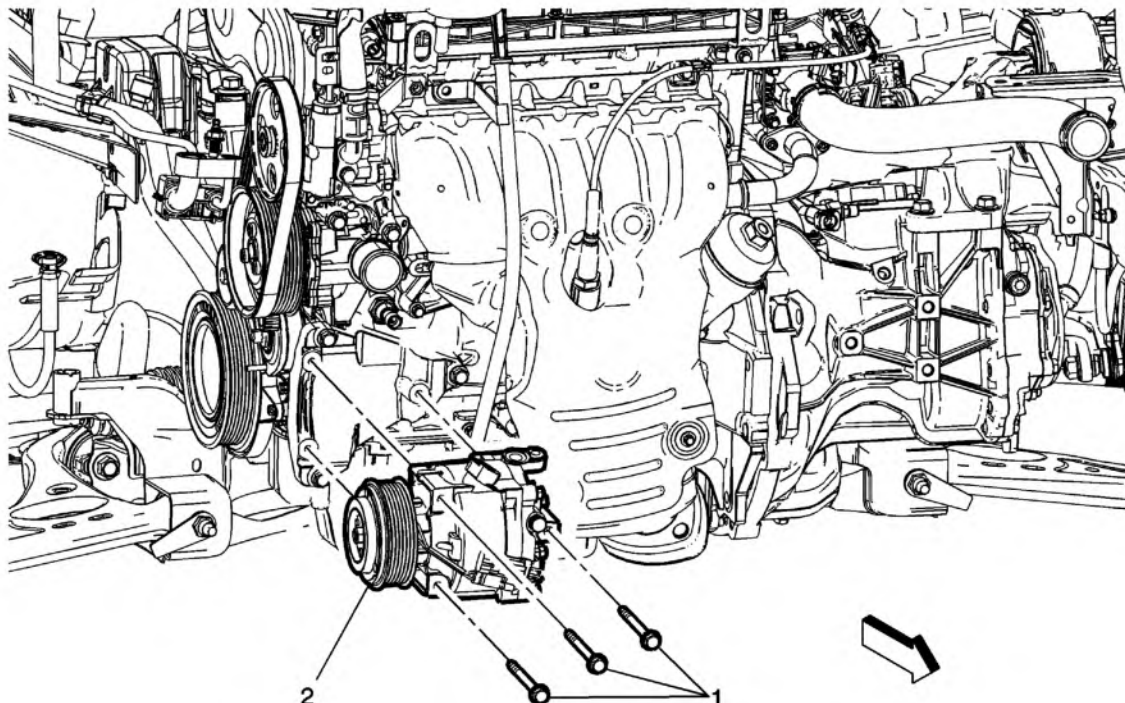


Fig. 13: Air Conditioning Compressor (2H0).
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Drive Belt@Air Conditioning Compressor - Remove - Drive Belt Replacement 2. Air Conditioning Compressor Hose@Air Conditioning Compressor - Remove - Air Conditioning Compressor Hose Replacement (2H0) 3. Air Conditioning Condenser Hose@Air Conditioning Compressor - Remove - Air Conditioning Condenser Hose Replacement (2H0) 4. Underbody Front Air Deflector Replacement	
1	Air Conditioning Compressor Bolt CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Air Conditioning Compressor Procedure When replacing the A/C compressor, balance the compressor oil. Air Conditioning Compressor Oil Balancing

AIR CONDITIONING COMPRESSOR REPLACEMENT (LUV)

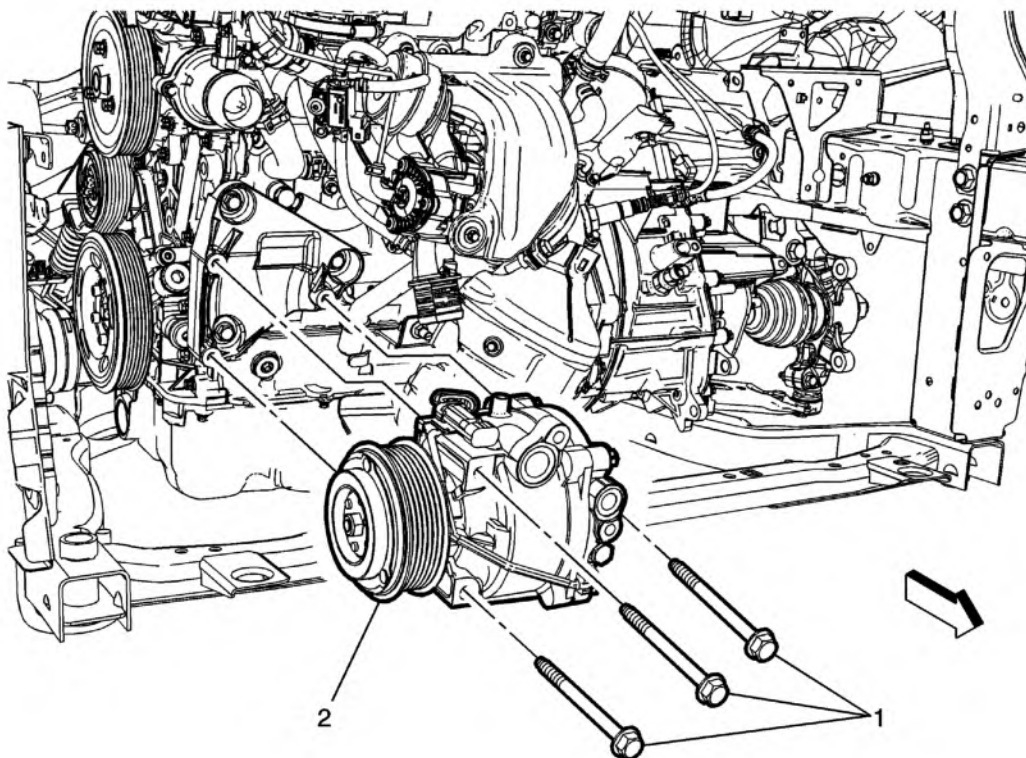


Fig. 14: Air Conditioning Compressor (LUV)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Drive Belt@Air Conditioning Compressor - Remove - Drive Belt Replacement 2. Air Conditioning Compressor Hose@Air Conditioning Compressor - Remove - Air Conditioning Compressor Hose Replacement (LUV) 3. Air Conditioning Condenser Hose@Air Conditioning Compressor - Remove - Air Conditioning Condenser Hose Replacement (LUV) 4. Underbody Front Air Deflector Replacement	
1	Air Conditioning Compressor Bolt CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Air Conditioning Compressor Procedure When replacing the A/C compressor, balance the compressor oil. Air Conditioning Compressor Oil Balancing

COMPRESSOR LEAK TESTING (R-134A)

Special Tools

- GE-39400-A Halogen Leak Detector
- GE-41447 R-134A A/C Tracer Dye-Box of 24
- GE-42220 Universal 12V Leak Detection Lamp
- GE-43872 Fluorescent Dye Cleaner
- GE-46297 A/C Dye Injector Kit
- GE-46297-12 Replacement Dye Cartridges

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

Refrigerant Leak Testing

NOTE: General Motors vehicles are now manufactured with fluorescent dye installed directly into the air conditioning (A/C) system.

The fluorescent dye mixes and flows with the polyalkylene glycol (PAG) oil throughout the refrigerant system.

Verifying some passive leaks may require using the **GE-39400-A** Halogen Leak Detector, even though the A/C system contains fluorescent dye.

The only time that adding additional fluorescent dye is required is after flushing the A/C system.

Fluorescent Leak Detector

Fluorescent dye will assist in locating any leaks in the A/C system.

NOTE: PAG oil is water soluble.

- Condensation on the evaporator core or the refrigerant lines may wash the PAG oil and fluorescent dye away from the actual leak. Condensation may also carry dye through the HVAC module drain.
- Leaks in the A/C 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 A/C components
- The A/C compressor shaft seal
- The A/C 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.

- Follow the instructions supplied with the **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.

- **GE-41447 R-134A A/C Tracer Dye-Box of 24** can be poured directly into a removed A/C component.
- **GE-46297-12 Replacement Dye Cartridges** is injected into the low side port using **GE-46297 A/C Dye Injector Kit**.
- Not all of the fluorescent dyes are compatible with PAG oil. Some types of dye decrease the oil viscosity or may chemically react with the oil.
- R-134A 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.

NOTE: Do NOT overcharge the A/C system with dye. Use only one 7.39 ml (0.25 oz) charge.

- To prevent false diagnosis, thoroughly clean any residual dye from the service port with a rag and the approved fluorescent dye cleaner **GE-43872** Fluorescent Dye Cleaner.

WARNING: Do not operate the detector in a combustible atmosphere since its sensor operates at high temperatures or personal injury and/or damage to the equipment may result.

Ensure that the vehicle has at least 0.45 kg (1 lb) of refrigerant in the A/C refrigeration system in order to perform a leak test. Refer to [Refrigerant Recovery and Recharging \(R-134a\)](#) for recharging the A/C system.

NOTE: Halogen leak detectors are sensitive to the following items:

- Windshield washing solutions
- Many solvents and cleaners
- Some adhesives used in the vehicle

Clean and dry all surfaces in order to prevent a false warning. Liquids will damage the detector.

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 instructions supplied with the GE-39400-A Halogen Leak Detector.

AIR CONDITIONING CLUTCH ASSEMBLY REPLACEMENT (LUV)

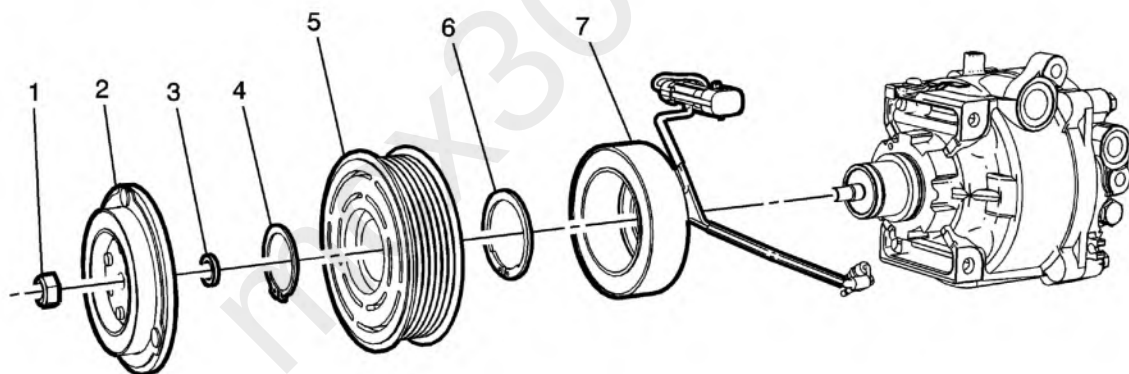


Fig. 15: Air Conditioning Clutch Assembly (LUV).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
Remove the air conditioning compressor. Refer to Air Conditioning Compressor Replacement (LUV) .	

Callout	Component Name
1	Air Conditioning Compressor Clutch Nut CAUTION: Refer to Fastener Caution . Procedure Use the GE-48965 holder to hold the compressor clutch plate from turning when removing the nut. Special Tools GE-48965 Clutch Plate Holder For equivalent regional tools, refer to Special Tools .
2	Air Conditioning Compressor Clutch
3	Air Conditioning Compressor Clutch Shim (Qty: 5)
4	Retaining Ring
5	Air Conditioning Compressor Pulley
6	Retaining Ring
7	Air Conditioning Compressor Coil

AIR CONDITIONING CLUTCH ASSEMBLY REPLACEMENT (2H0)

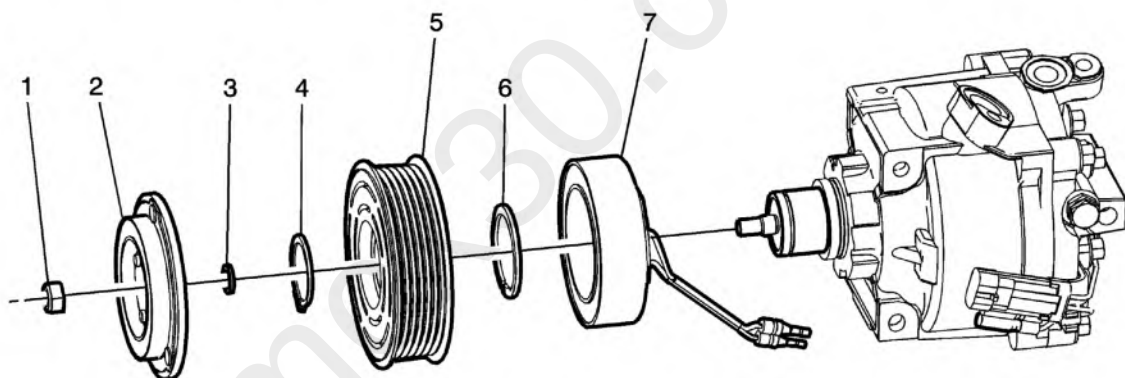


Fig. 16: Air Conditioning Clutch Assembly (2H0)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the air conditioning compressor. Refer to Air Conditioning Compressor Replacement (2H0) .	

Callout	Component Name
1	Air Conditioning Compressor Clutch Nut CAUTION: Refer to Fastener Caution . Procedure Use the GE-48965 holder to hold the compressor clutch plate from turning when removing the nut. Special Tools GE-48965 Clutch Plate Holder For equivalent regional tools, refer to Special Tools .
2	Air Conditioning Compressor Clutch
3	Air Conditioning Compressor Clutch Shim (Qty: 5)
4	Retaining Ring
5	Air Conditioning Compressor Pulley
6	Retaining Ring
7	Air Conditioning Compressor Coil

AIR CONDITIONING CLUTCH ASSEMBLY REPLACEMENT (LE2)

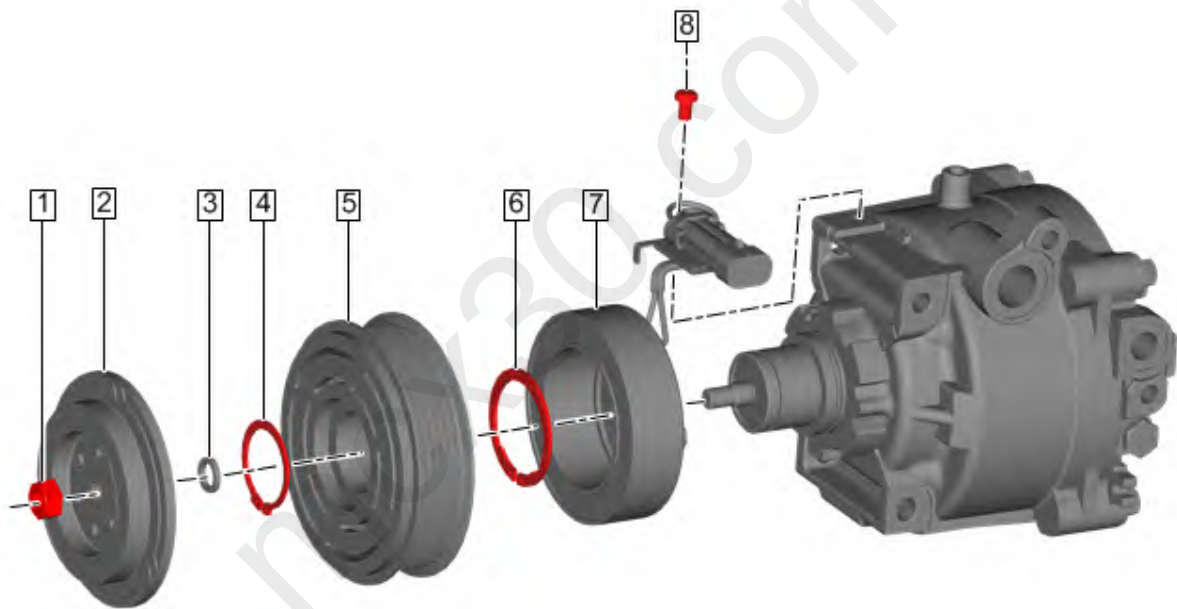


Fig. 17: Air Conditioning Clutch Assembly (LE2).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Air Conditioning Compressor Replacement (LE2).	

Callout	Component Name
1	Air Conditioning Compressor Clutch Nut CAUTION: Refer to Fastener Caution . Procedure Use the GE-48965 holder to hold the compressor clutch plate from turning when removing the nut. Tighten 18 N.m (13 lb ft) Special Tools GE-48965 Clutch Plate Holder Equivalent regional tools; Special Tools
2	Air Conditioning Compressor Clutch
3	Air Conditioning Compressor Clutch Drive Plate Adjustment Shim
4	Air Conditioning Compressor Clutch Pulley Snap Ring
5	Air Conditioning Compressor Clutch Pulley
6	Air Conditioning Compressor Clutch Coil Snap Ring
7	Air Conditioning Compressor Clutch Coil
8	Air Conditioning Compressor Bracket Bolt

COMPRESSOR PRESSURE RELIEF VALVE REPLACEMENT (2H0)

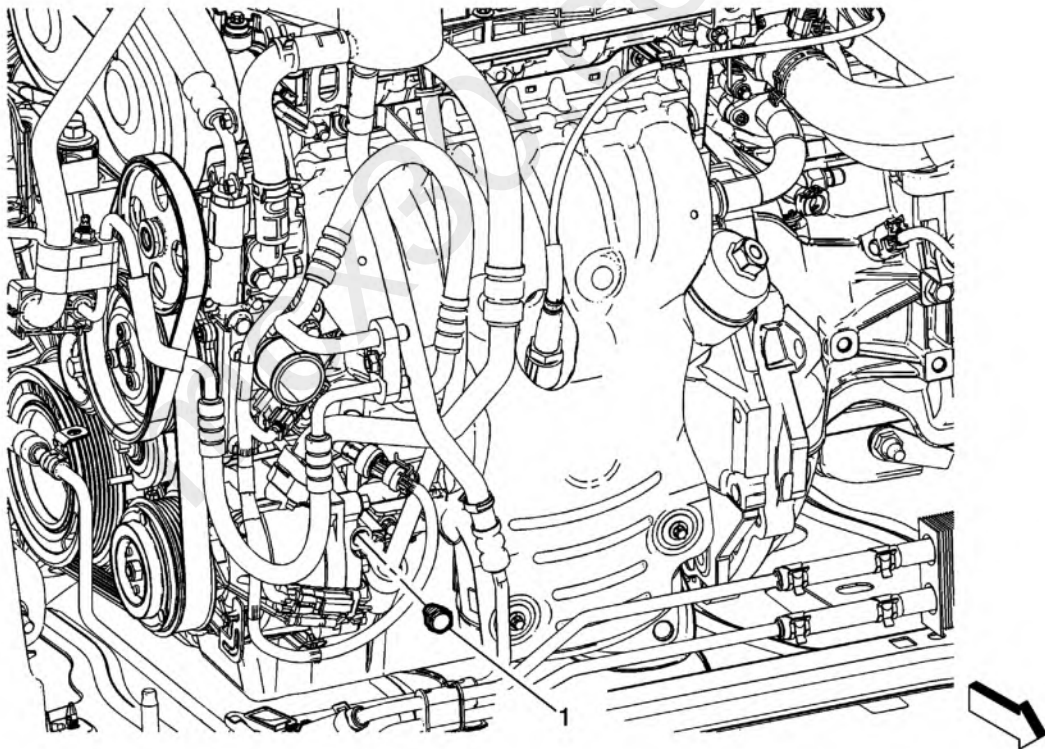


Fig. 18: Compressor Pressure Relief Valve (2H0).
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging (R-134a). 2. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .	

Callout	Component Name
1	Air Conditioning Compressor Pressure Relief Valve CAUTION: Refer to Fastener Caution . Procedure Discard the old O-ring and replace with a NEW O-ring.

COMPRESSOR PRESSURE RELIEF VALVE REPLACEMENT (LUV)

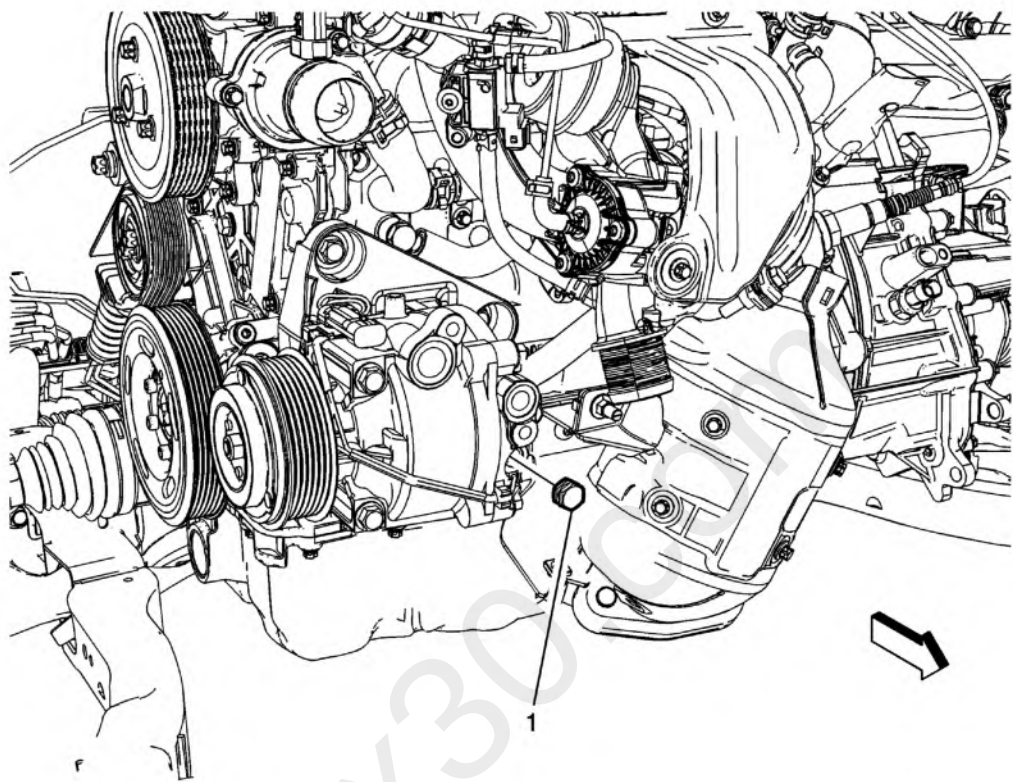


Fig. 19: Compressor Pressure Relief Valve (LUV).
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Recover the air conditioning system refrigerant. Refer to Refrigerant Recovery and Recharging (R-134a). 2. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle . 3. Remove the front compartment front center insulator. Refer to Front Compartment Front Center Insulator Replacement .	
1	Air Conditioning Compressor Pressure Relief Valve CAUTION: Refer to Fastener Caution . Procedure Discard the old O-ring and replace with a NEW O-ring.

COMPRESSOR PRESSURE RELIEF VALVE REPLACEMENT (LE2)

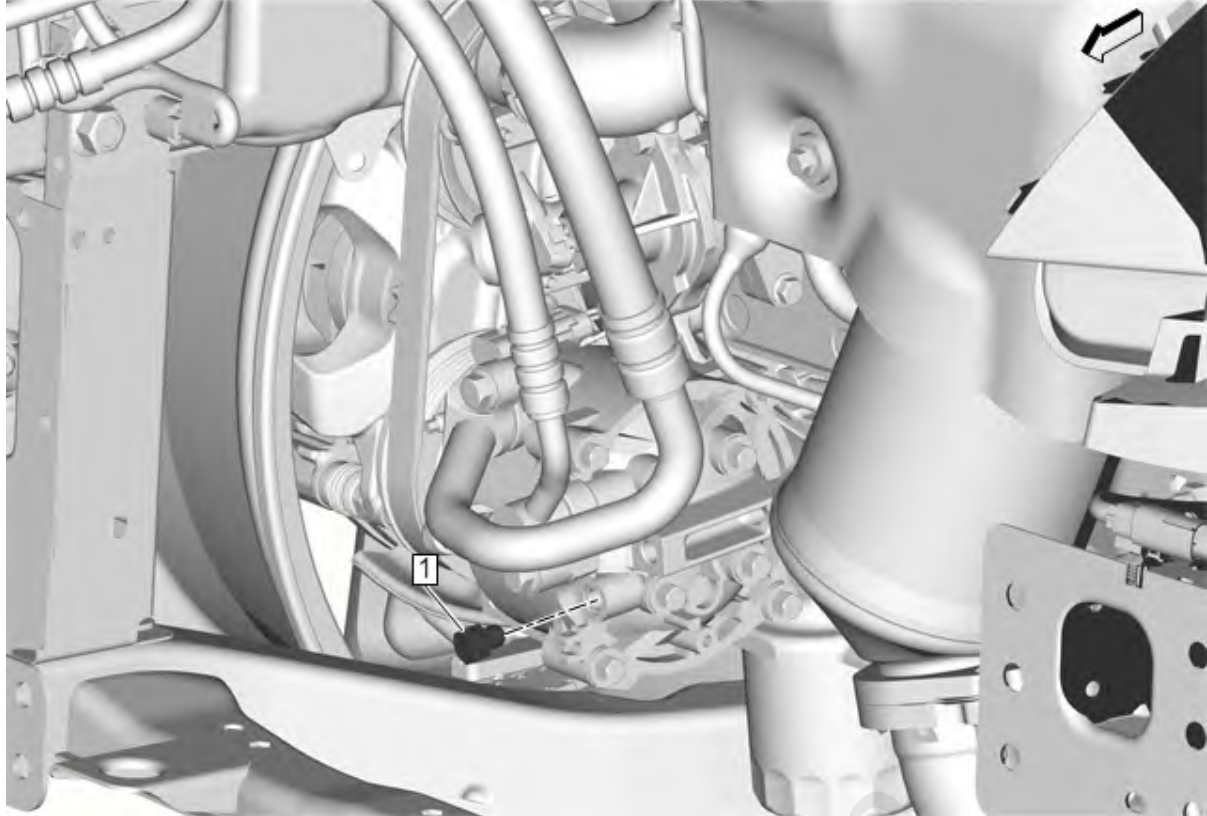


Fig. 20: Compressor Pressure Relief Valve (LE2).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Refrigerant Recovery and Recharging (R-134a)</u> - Engine Wiring Harness Bracket@Air Conditioning Compressor - Remove - <u>Air Conditioning Compressor Replacement (LE2)</u>	
1	Air Conditioning Compressor Pressure Relief Valve CAUTION: Refer to <u>Component Fastener Tightening Caution</u> . Procedure Remove and discard sealing washers. <u>Air Conditioning System Seal Replacement</u> Tighten 8 N.m (70 lb in)

AIR CONDITIONING COMPRESSOR BRACKET REPLACEMENT (LUV)

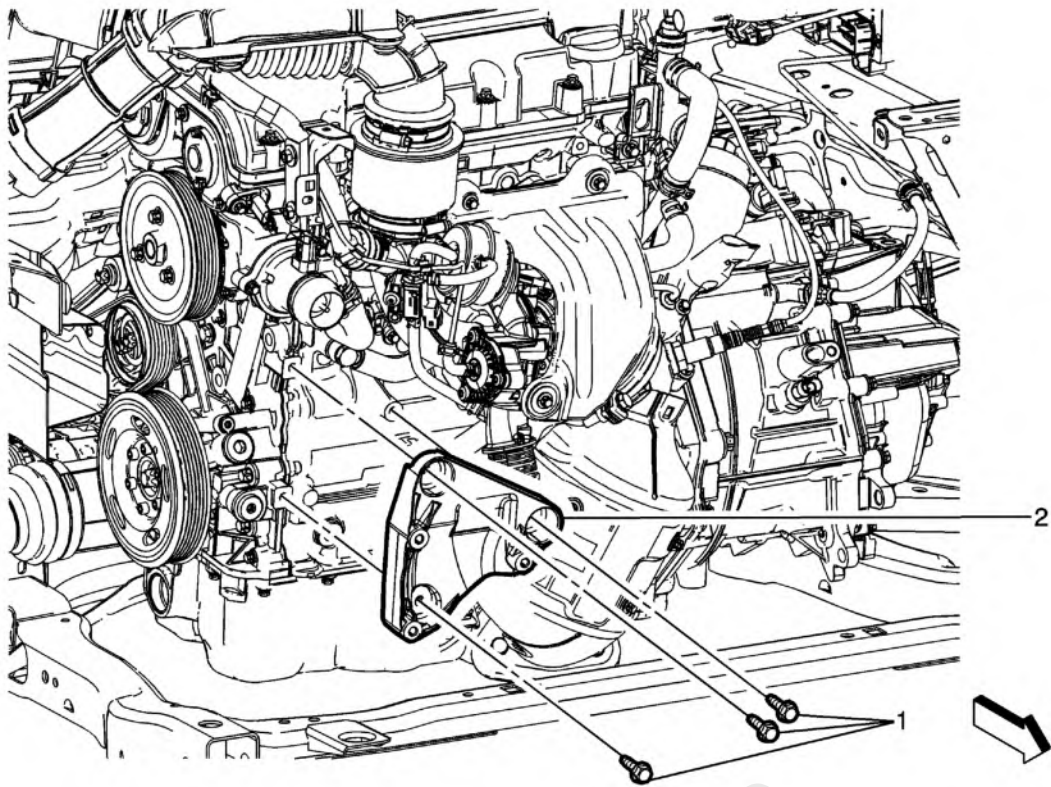


Fig. 21: Air Conditioning Compressor Bracket Replacement (LUV)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Remove air conditioning compressor. Refer to Air Conditioning Compressor Replacement (LUV) .	
1	Air Conditioning Compressor Bracket Bolt (Qty: 3) CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Air Conditioning Compressor Bracket

AIR CONDITIONING COMPRESSOR BRACKET REPLACEMENT (2H0)

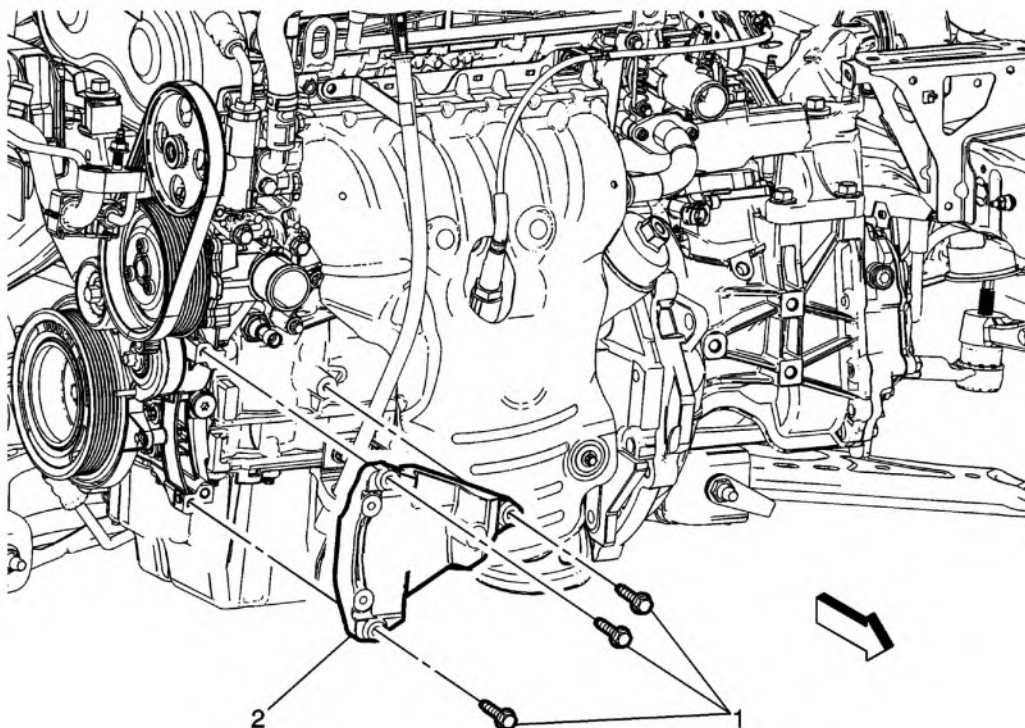


Fig. 22: Air Conditioning Compressor Bracket (2H0).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Remove air conditioning compressor. Refer to Air Conditioning Compressor Replacement (2H0) .	
1	Air Conditioning Compressor Bracket Bolt (Qty: 3) CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Air Conditioning Compressor Bracket

AIR CONDITIONING COMPRESSOR BRACKET REPLACEMENT (LE2)

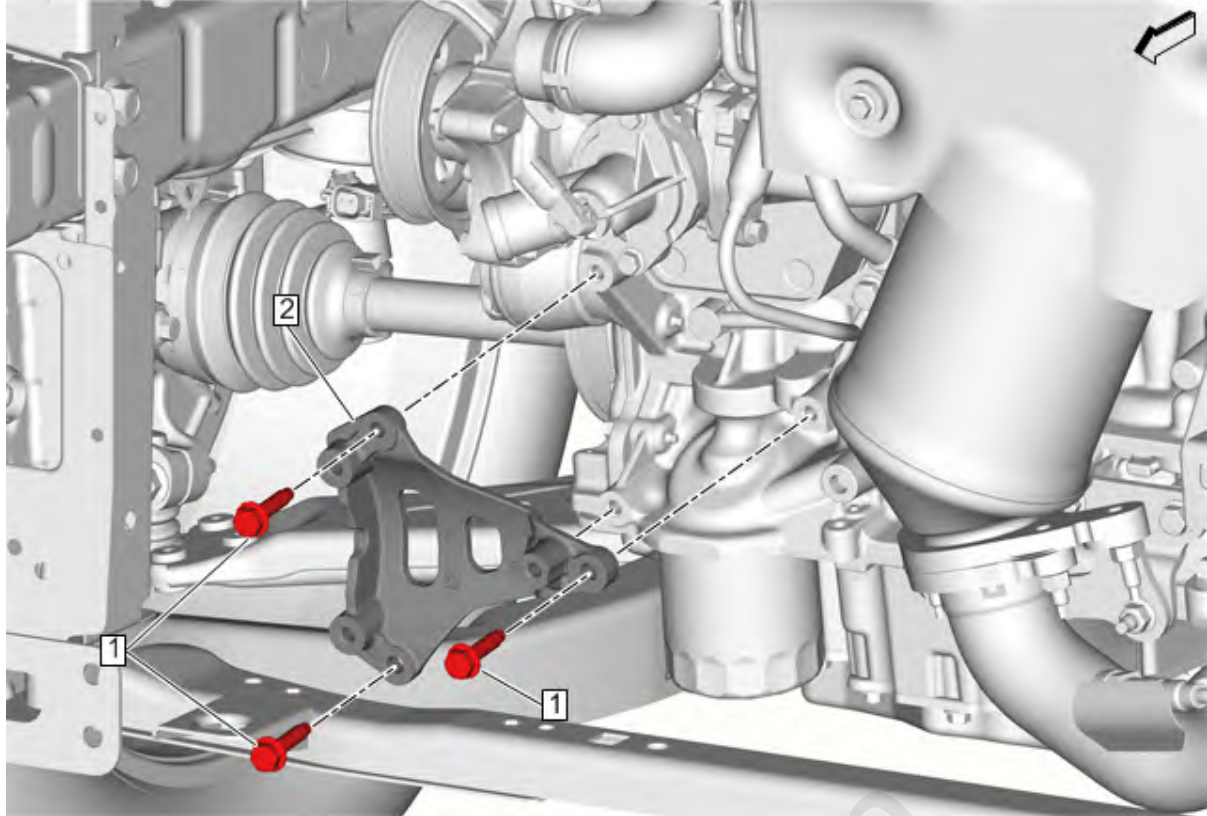


Fig. 23: Air Conditioning Compressor Bracket (LE2).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Air Conditioning Compressor Replacement (LE2)</u>	
1	Air Conditioning Compressor Bracket Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 22 (16 lb ft)
2	Air Conditioning Compressor Bracket

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.

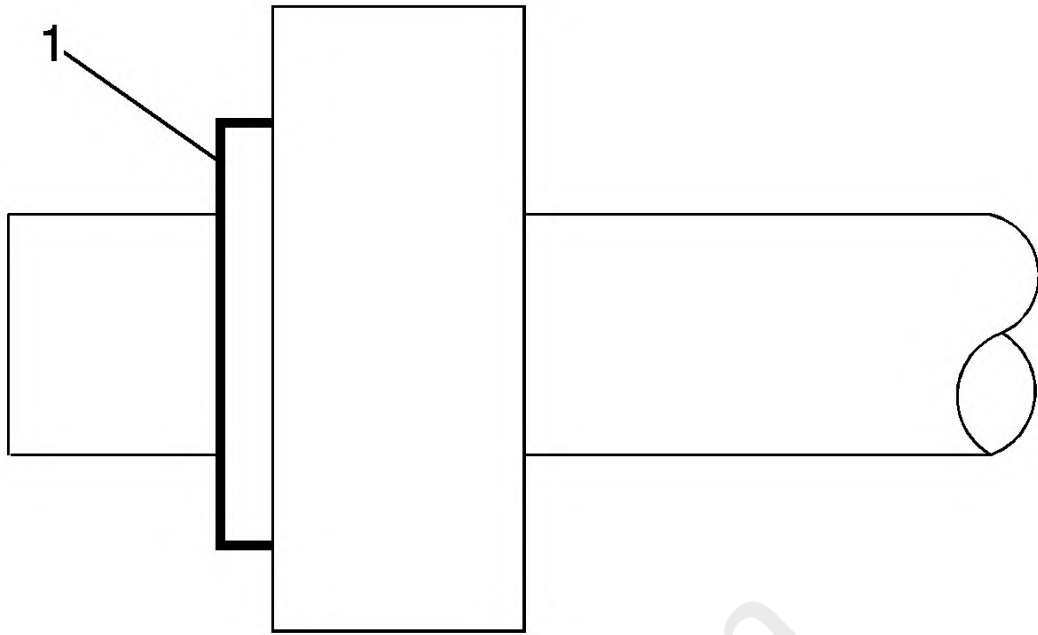


Fig. 24: A/C Refrigerant Sealing Washer
Courtesy of GENERAL MOTORS COMPANY

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.

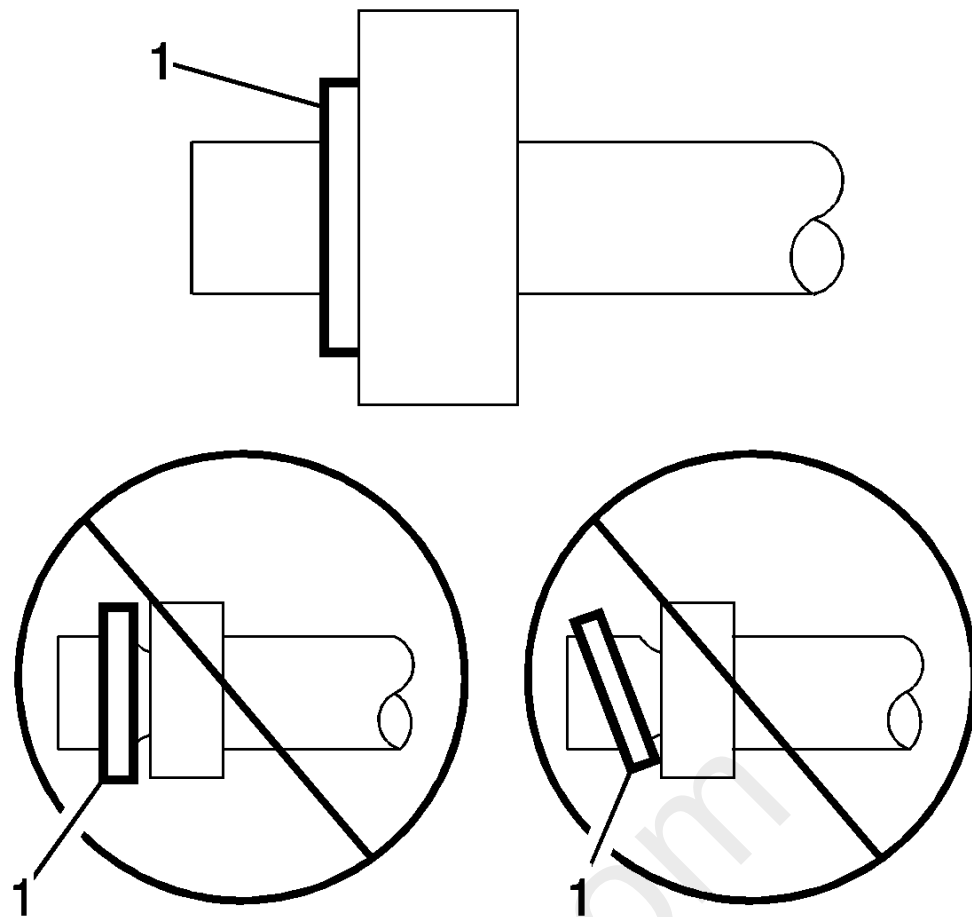


Fig. 25: Identifying Proper Seating Of A/C Refrigerant O-Ring
 Courtesy of GENERAL MOTORS COMPANY

3. 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.
2. Remove the O-ring seal from the A/C refrigerant component.
3. Inspect the O-ring seal for signs of damage to help determine the root cause of the failure.
4. Inspect the A/C components for damage or burrs. Repair if necessary.

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

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

Installation Procedure

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

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

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

NOTE: DO NOT reuse O-ring seals.

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

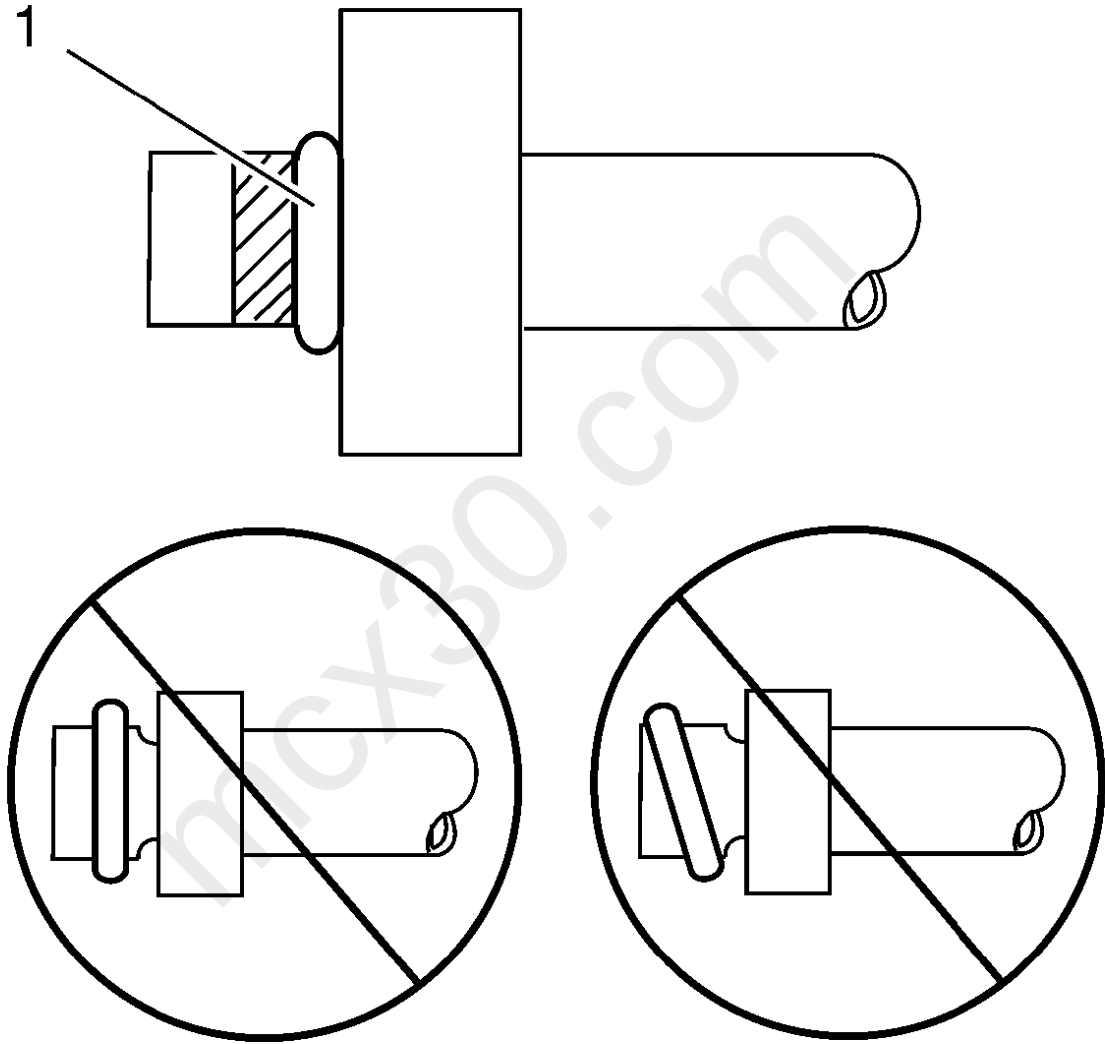


Fig. 26: A/C Refrigerant Component O-ring
Courtesy of GENERAL MOTORS COMPANY

6. The O-ring seal (1) must be fully seated.
7. Assemble the A/C components.

AIR CONDITIONING COMPRESSOR HOSE REPLACEMENT (2H0)

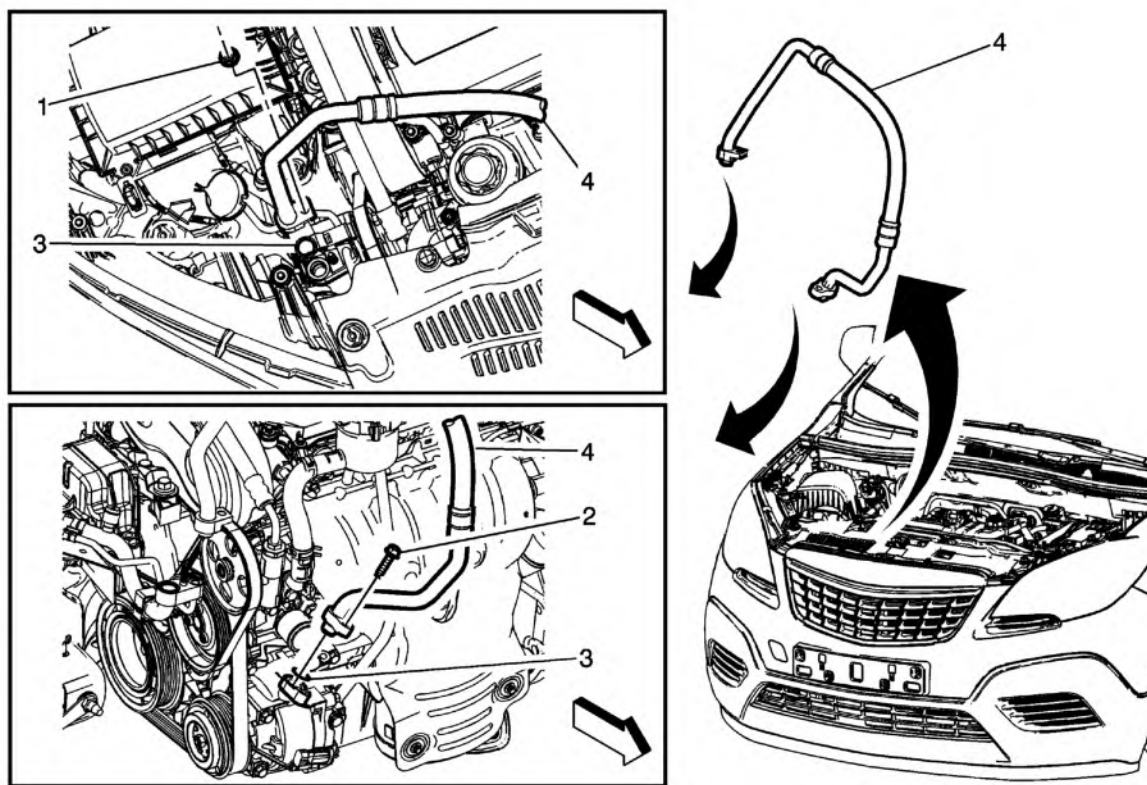


Fig. 27: Air Conditioning Compressor Hose (2H0)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging (R-134a). 2. Remove the air cleaner inlet duct. Refer to Air Cleaner Inlet Duct Replacement (2H0).	
1	Air Conditioning Compressor Hose Nut CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Air Conditioning Compressor Hose Bolt CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
3	Air Conditioning Compressor Hose Sealing Washer (Qty: 2) Procedure Remove and discard the old sealing washers and replace with NEW sealing washers. Refer to Air Conditioning System Seal Replacement .
4	Air Conditioning Compressor Hose

AIR CONDITIONING COMPRESSOR HOSE REPLACEMENT (LE2)

Removal Procedure

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#).
2. [Air Cleaner Outlet Duct Replacement](#) - Remove

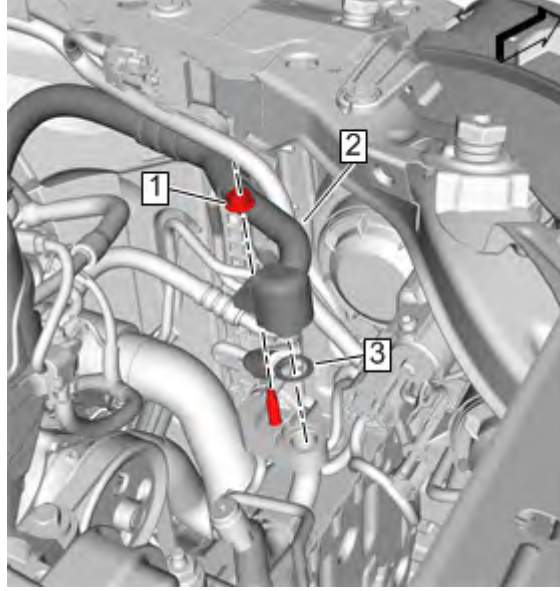


Fig. 28: Air Conditioning Compressor Hose At Air Conditioning Condenser Hose
 Courtesy of GENERAL MOTORS COMPANY

3. Air Conditioning Compressor Hose Nut 1 - Remove
4. Air Conditioning Compressor Hose 2 - Remove
5. Remove and DISCARD the sealing washer.3

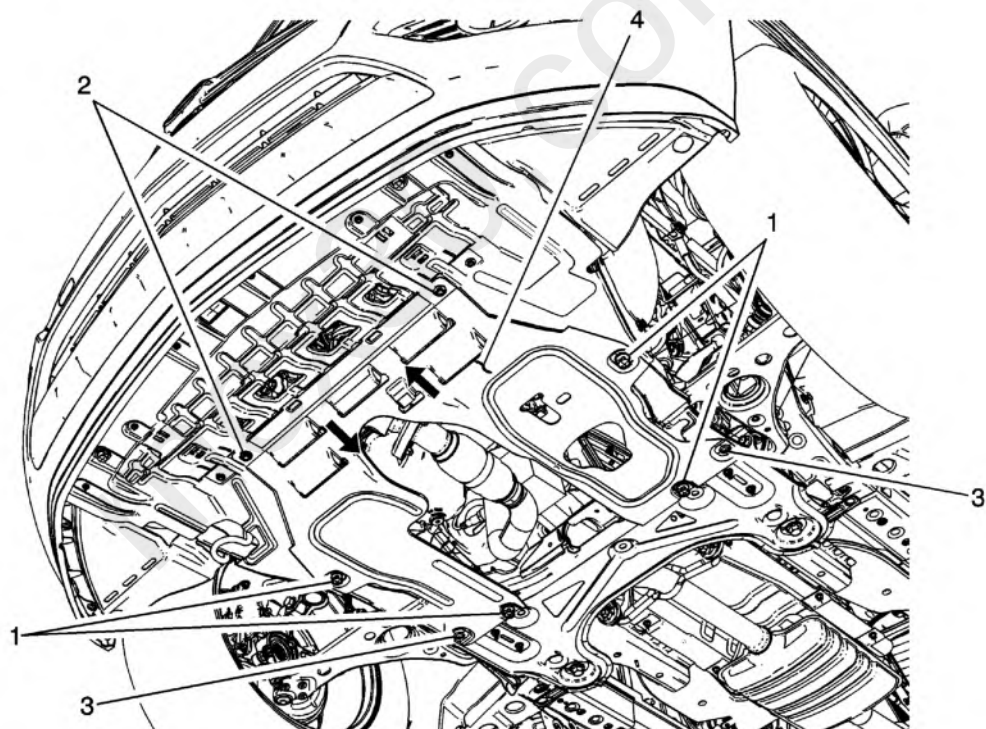


Fig. 29: Front Compartment Front Center Insulator
 Courtesy of GENERAL MOTORS COMPANY

6. **Front Compartment Front Center Insulator Replacement** 4 - Remove

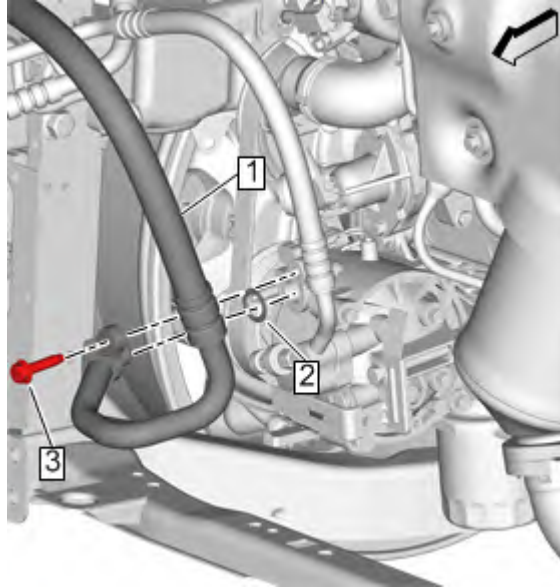


Fig. 30: Air Conditioning Compressor Hose And Bolt
Courtesy of GENERAL MOTORS COMPANY

7. Air Conditioning Compressor Hose Bolt 3 - Remove
8. Air Conditioning Compressor Hose 1 - Remove
9. Remove and DISCARD the sealing washer. 2
10. Remove the air conditioning compressor hose from the vehicle.

Installation Procedure

1. Install air conditioning compressor hose to the vehicle.

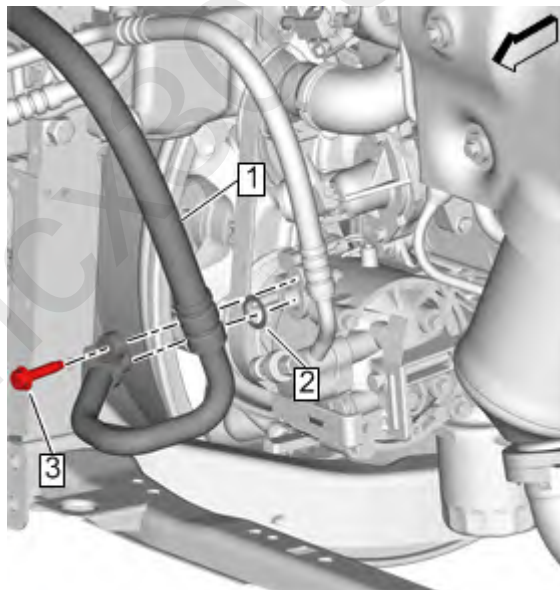


Fig. 31: Air Conditioning Compressor Hose And Bolt
Courtesy of GENERAL MOTORS COMPANY

2. Install NEW sealing washers. 2 - [Air Conditioning System Seal Replacement](#)
3. Air Conditioning Compressor Hose 1 - Install

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

4. Air Conditioning Compressor Hose Bolt 3 - Install and tighten 22 N.m (16 lb ft)

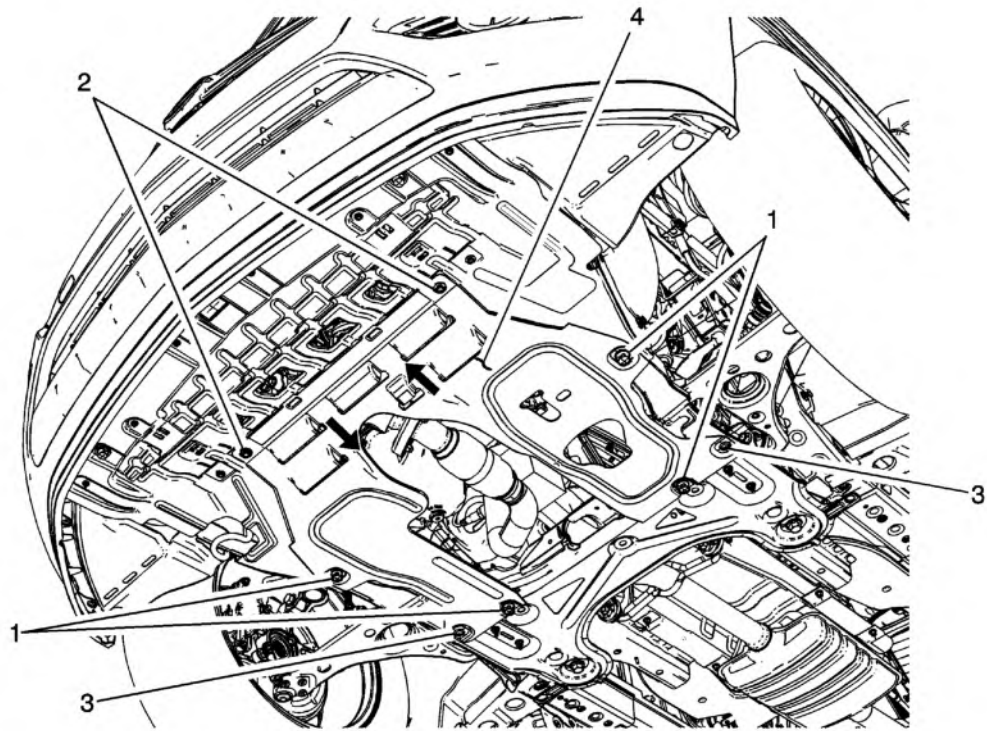


Fig. 32: Front Compartment Front Center Insulator
 Courtesy of GENERAL MOTORS COMPANY

5. **Front Compartment Front Center Insulator Replacement** 4 - Install

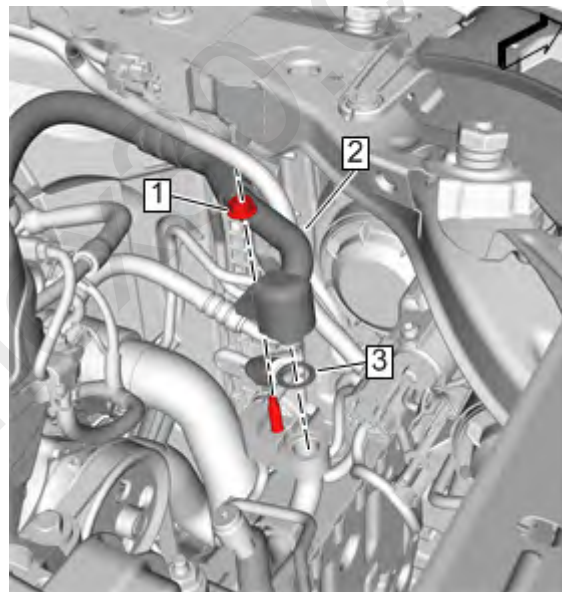


Fig. 33: Air Conditioning Compressor Hose At Air Conditioning Condenser Hose
 Courtesy of GENERAL MOTORS COMPANY

6. Install NEW sealing washers. 3
7. Air Conditioning Compressor Hose 2 - Install
8. Air Conditioning Compressor Hose Nut 1 Install and tighten 22 N.m (16 lb ft)
9. **Air Cleaner Outlet Duct Replacement** - Install
10. Recharge the refrigerant. **Refrigerant Recovery and Recharging (R-134a)**

AIR CONDITIONING COMPRESSOR HOSE REPLACEMENT (LUV)

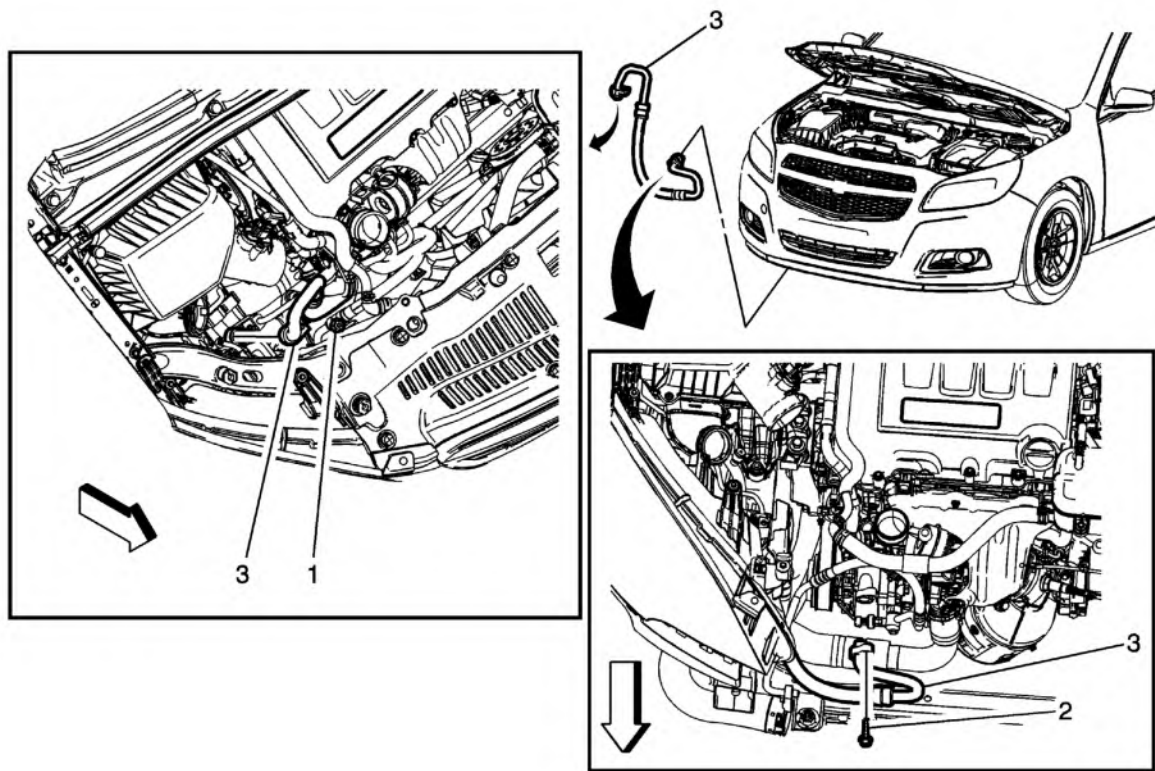


Fig. 34: Air Conditioning Compressor Hose (LUV).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Refrigerant Recovery and Recharging (R-134a). 2. Air Cleaner Assembly Replacement 3. Front Compartment Front Center Insulator Replacement 4. Underbody Front Air Deflector Replacement	
1	Air Conditioning Compressor Hose Nut CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Air Conditioning Compressor Hose Bolt CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
3	Air Conditioning Compressor Hose Procedure Remove and DISCARD the sealing washer. Air Conditioning System Seal Replacement

AIR CONDITIONING CONDENSER HOSE REPLACEMENT (2H0)

Removal Procedure

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

2. Remove the air cleaner inlet duct. Refer to [**Air Cleaner Inlet Duct Replacement \(2H0\)**](#).

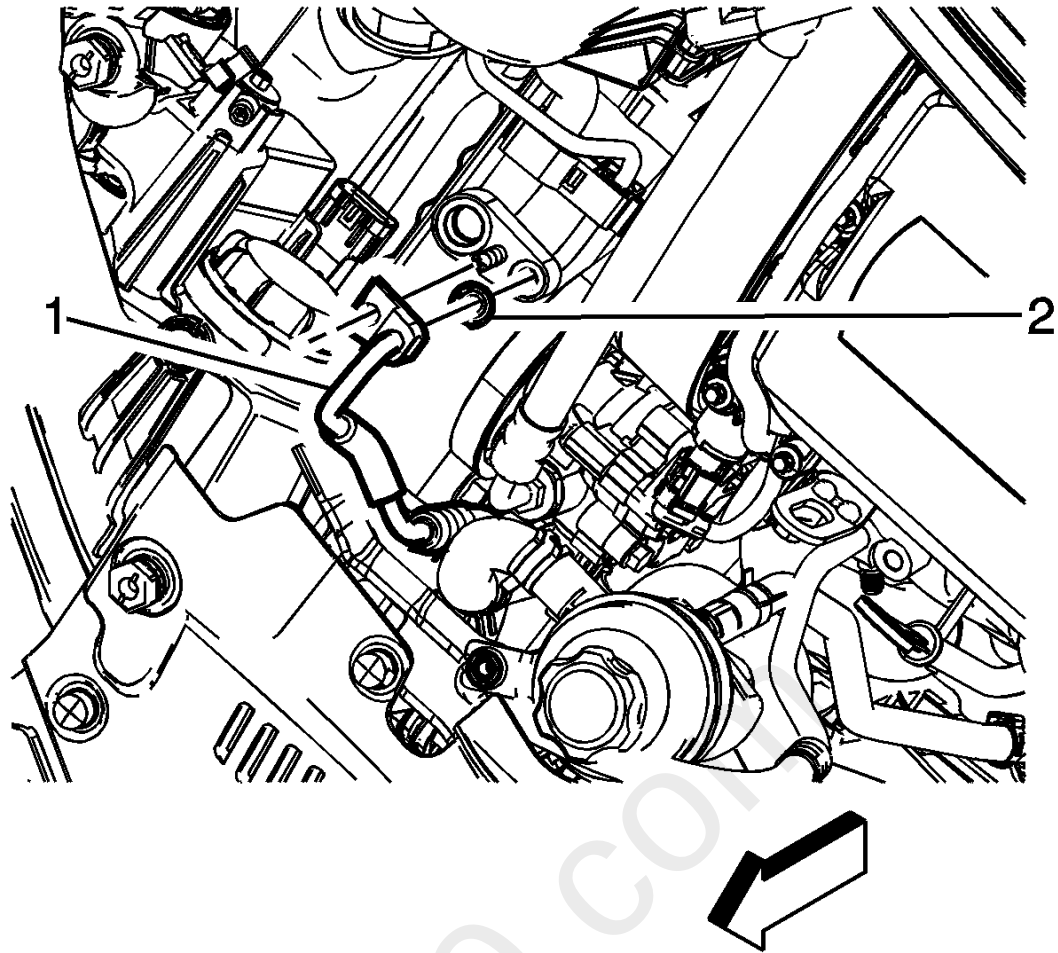


Fig. 35: Condenser Hose Assembly And Evaporator Hose Assembly.

Courtesy of GENERAL MOTORS COMPANY

3. Remove the air conditioning compressor hose assembly from the air conditioning condenser hose at the evaporator hose assembly and position out of the way. Refer to **Air Conditioning Compressor Hose Replacement (2H0)**.
4. Remove the air conditioning condenser hose assembly (1) from the evaporator hose assembly.
5. Remove and discard the old sealing washers (2) and replace with NEW sealing washers.

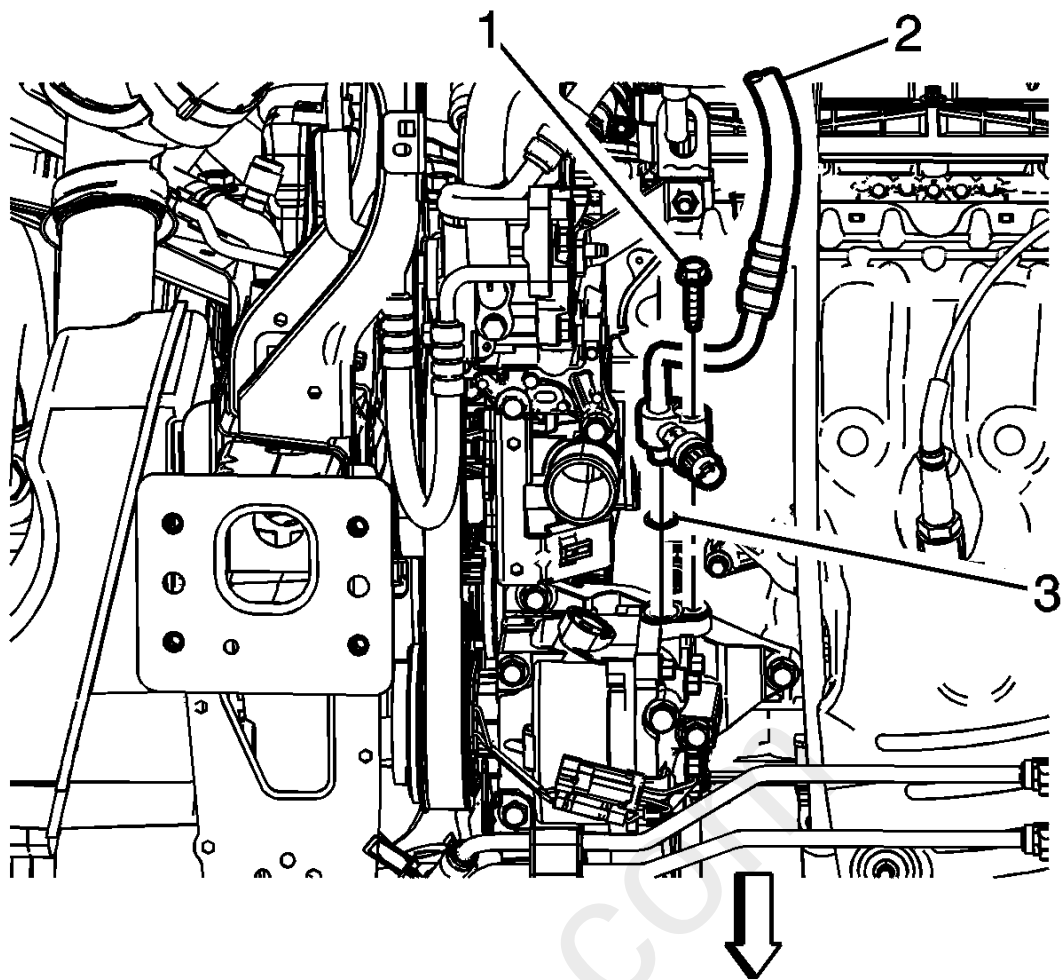


Fig. 36: Air Conditioning Condenser Hose Assembly.

Courtesy of GENERAL MOTORS COMPANY

6. Disconnect the electrical connector from the air conditioning refrigerant pressure sensor.
7. Remove air conditioning condenser hose assembly bolt (1) from the air conditioning compressor.
8. Remove air conditioning condenser hose assembly (2) from the air conditioning compressor.
9. Remove and discard the old sealing washers (3) and replace with NEW sealing washers.

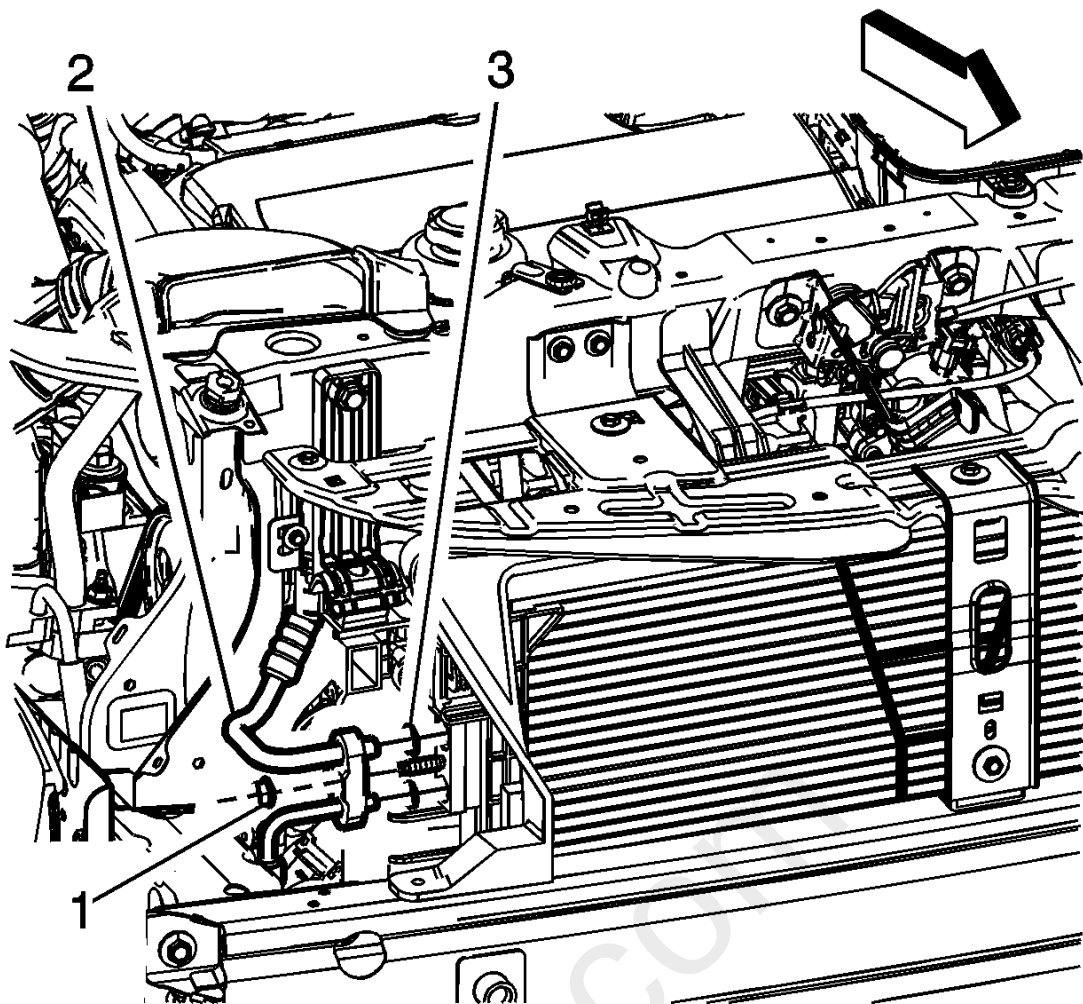


Fig.37: Condenser Hose Assembly And Sealing Washers

Courtesy of GENERAL MOTORS COMPANY

10. Remove the front bumper fascia. Refer to [**Front Bumper Fascia Replacement \(Chevrolet\)**](#), [**Front Bumper Fascia Replacement \(Buick\)**](#).
11. Remove air conditioning condenser hose assembly nut (1) from the air conditioning condenser.
12. Remove air conditioning condenser hose assembly (2) from air conditioning condenser.
13. Remove and discard the old sealing washers (3) and replace with NEW sealing washers.

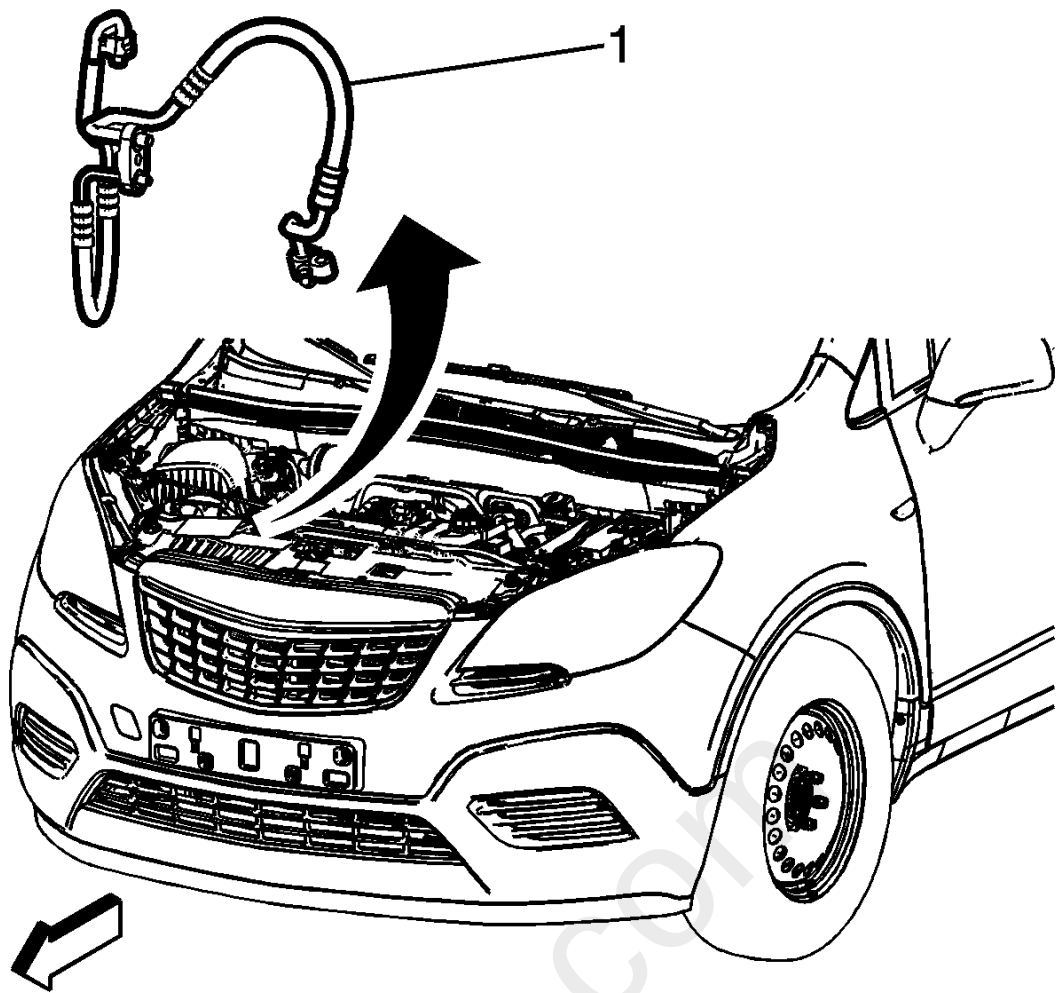


Fig. 38: Air Conditioning Condenser Hose
Courtesy of GENERAL MOTORS COMPANY

14. Remove air conditioning condenser hose assembly (1) from the vehicle.
15. Transfer all required parts

Installation Procedure

NOTE: Install NEW air conditioning sealing washers to the air conditioning condenser hose assembly. Refer to [Air Conditioning System Seal Replacement](#).

1. Install the air conditioning refrigerant pressure sensor if removed. Refer to [Air Conditioning \(A/C\) Refrigerant Pressure Sensor Replacement \(2H0\)](#).
2. Install air conditioning condenser hose assembly into the vehicle.

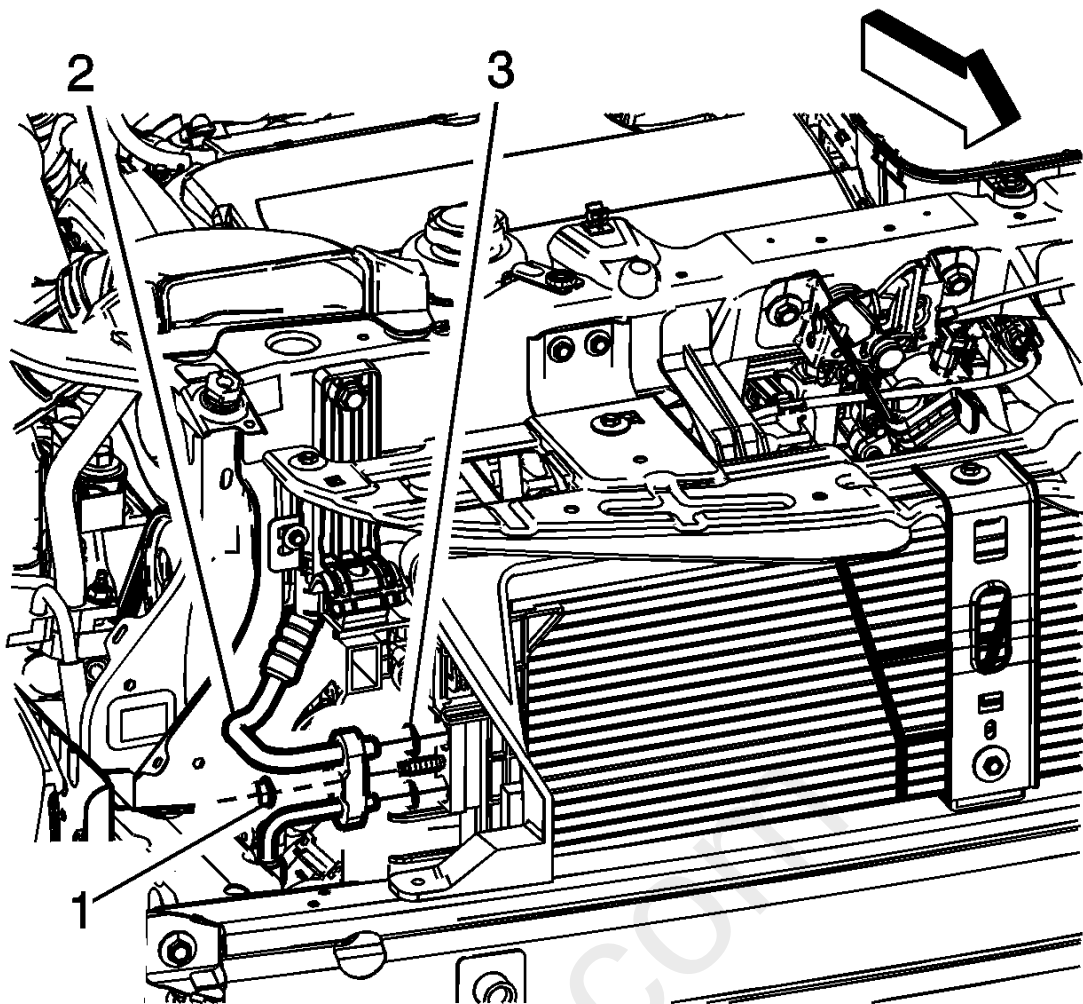


Fig. 39: Condenser Hose Assembly And Sealing Washers

Courtesy of GENERAL MOTORS COMPANY

3. Install NEW air conditioning sealing washer (3) to the air conditioning condenser hose assembly (2).
4. Install the air conditioning condenser hose assembly (2) to the air conditioning condenser assembly.

CAUTION: Refer to **Fastener Caution** .

5. Install air conditioning condenser hose assembly nut (1) and tighten the nut to 22 N.m (16 lb ft).
6. Install the front bumper fascia. Refer to **Front Bumper Fascia Replacement (Chevrolet)**, **Front Bumper Fascia Replacement (Buick)** .

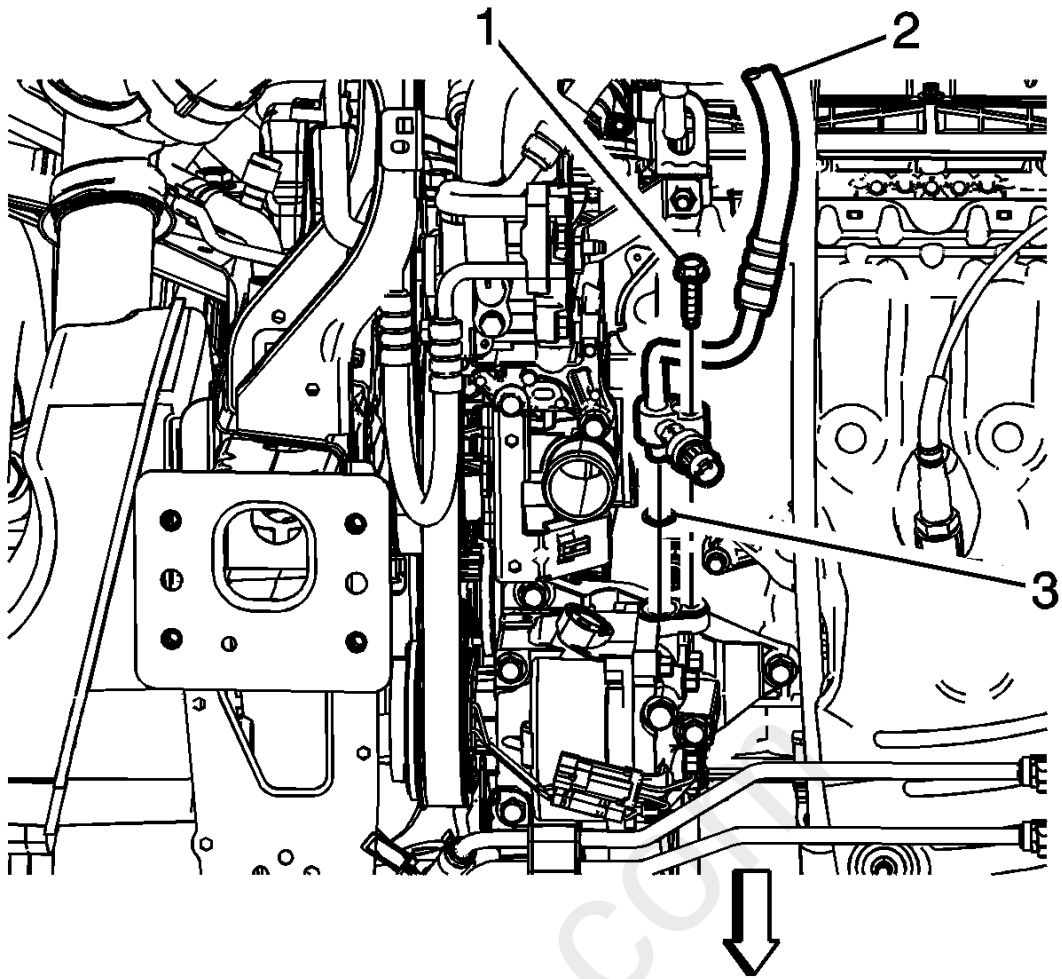


Fig. 40: Air Conditioning Condenser Hose Assembly.

Courtesy of GENERAL MOTORS COMPANY

7. Install NEW air conditioning sealing washers (3) to the air conditioning condenser hose assembly.
8. Install the air conditioning condenser hose assembly (2) to the air conditioning compressor assembly.
9. Install the air conditioning condenser hose assembly bolt (1) and tighten the bolt to 22 N.m (16 lb ft).
10. Connect the electrical connector to the air conditioning refrigerant pressure sensor.

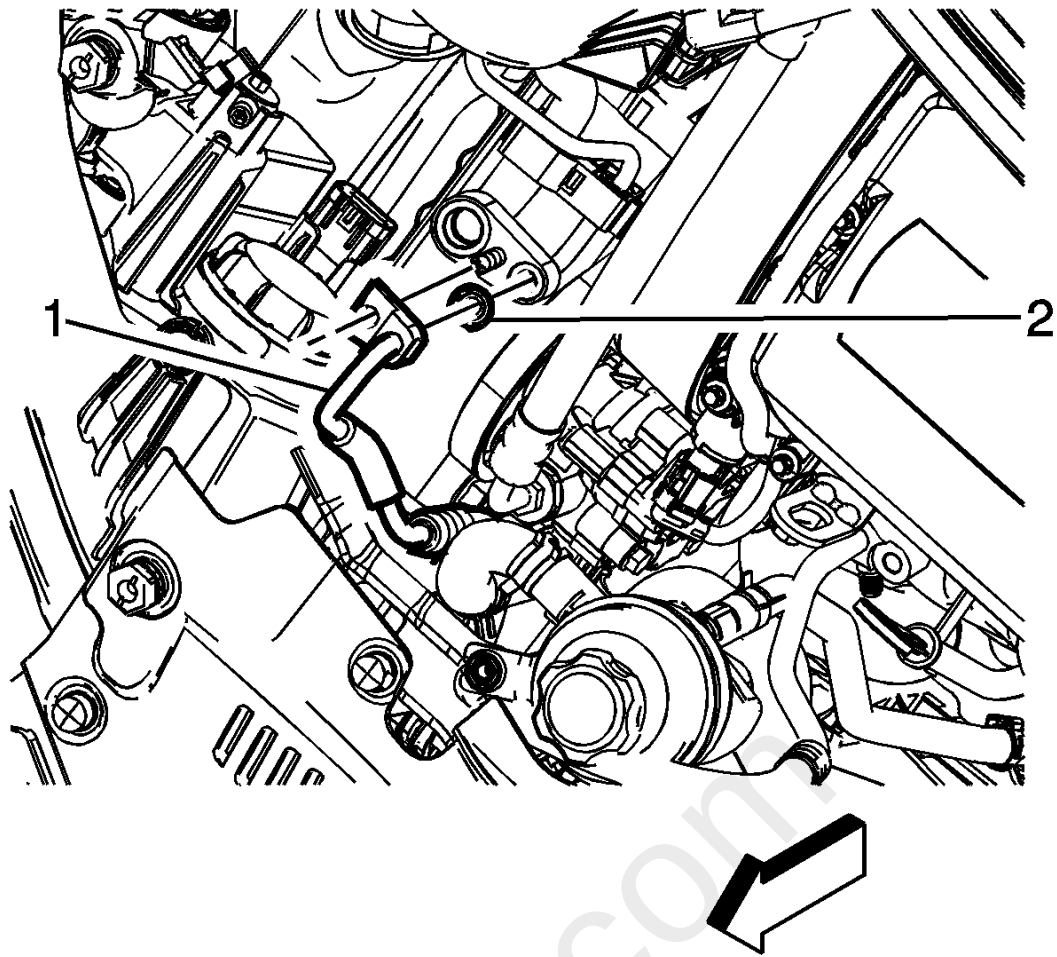


Fig. 41: Condenser Hose Assembly And Evaporator Hose Assembly.

Courtesy of GENERAL MOTORS COMPANY

11. Install NEW air conditioning sealing washer (2) to the air conditioning condenser hose assembly (1).
12. Install the air conditioning condenser hose assembly (1) to the evaporator hose assembly.
13. Install the air compressor hose assembly to the air conditioning condenser hose assembly. Refer to [Air Conditioning Compressor Hose Replacement \(2H0\).](#)
14. Install the air cleaner inlet duct. Refer to [Air Cleaner Inlet Duct Replacement \(2H0\)](#) .
15. Charge the refrigerant system. Refer to [Refrigerant Recovery and Recharging.\(R-134a\).](#)

AIR CONDITIONING CONDENSER HOSE REPLACEMENT (LUV)

Removal Procedure

1. Recover the refrigerant. Refer to [Refrigerant Recovery and Recharging \(R-134a\).](#)
2. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#) .
3. Disconnect the electrical connector from the air conditioning refrigerant pressure sensor.

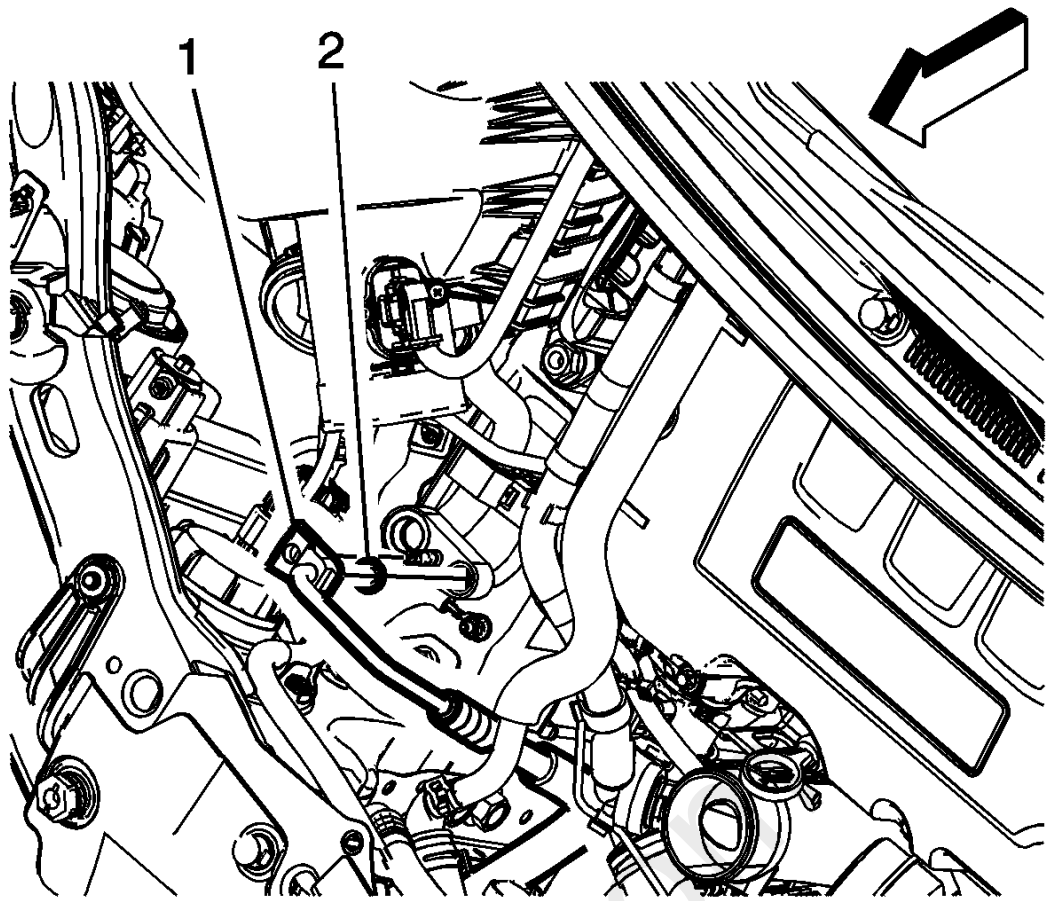


Fig. 42: Air Conditioning Condenser Hose

Courtesy of GENERAL MOTORS COMPANY

4. Remove the air conditioning compressor hose assembly (1) from the air conditioning condenser hose at the evaporator hose assembly and position out of the way. Refer to [Air Conditioning Compressor Hose Replacement \(LUV\)](#).
5. Remove and discard the old sealing washer (2) and replace with a NEW sealing washer.

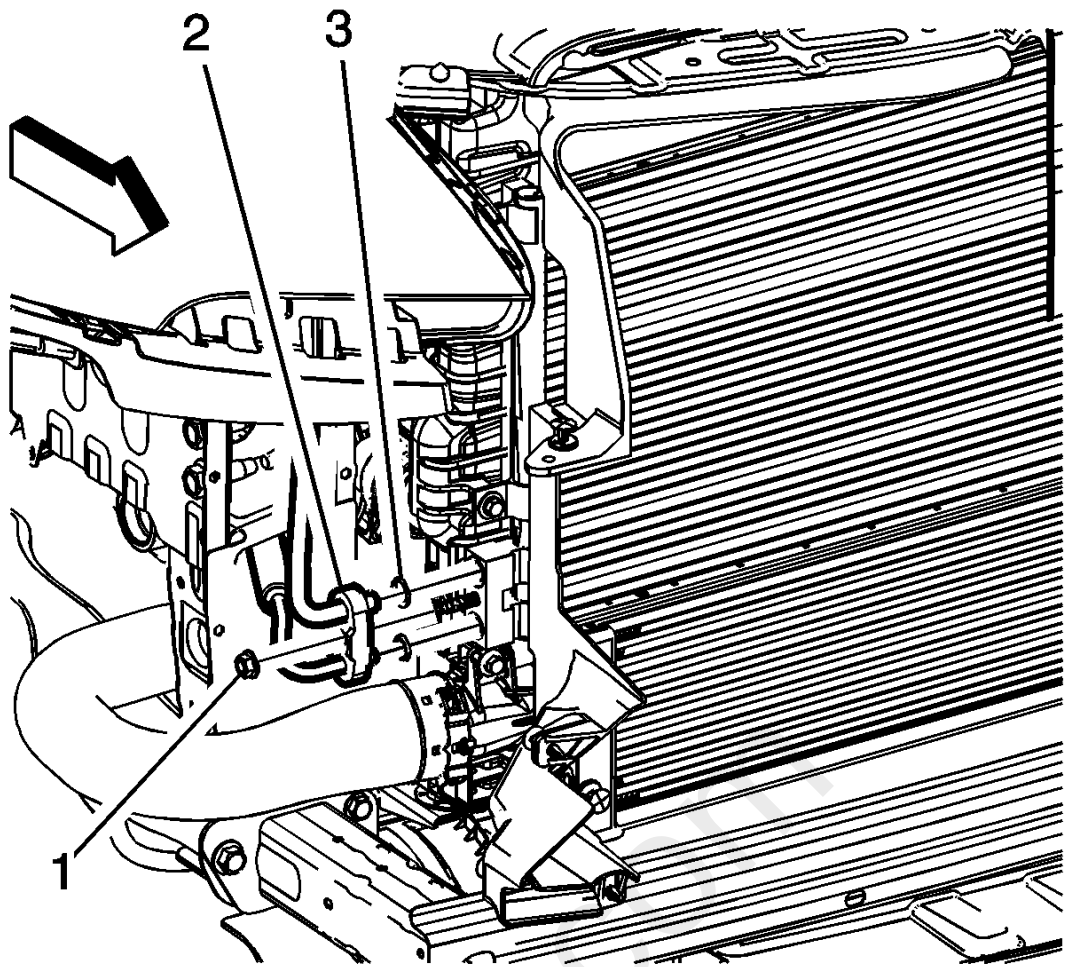


Fig. 43: Air Conditioning Condenser Hose And Sealing Washers

Courtesy of GENERAL MOTORS COMPANY

6. Remove the front bumper fascia assembly. Refer to [**Front Bumper Fascia Replacement \(Chevrolet\)**](#).
[**Front Bumper Fascia Replacement \(Buick\)**](#).
7. Remove air conditioning condenser hose assembly nut (1) from the air conditioning condenser.
8. Remove air conditioning condenser hose assembly (2) from air conditioning condenser.
9. Remove and discard the old sealing washers (3) and replace with NEW sealing washers.

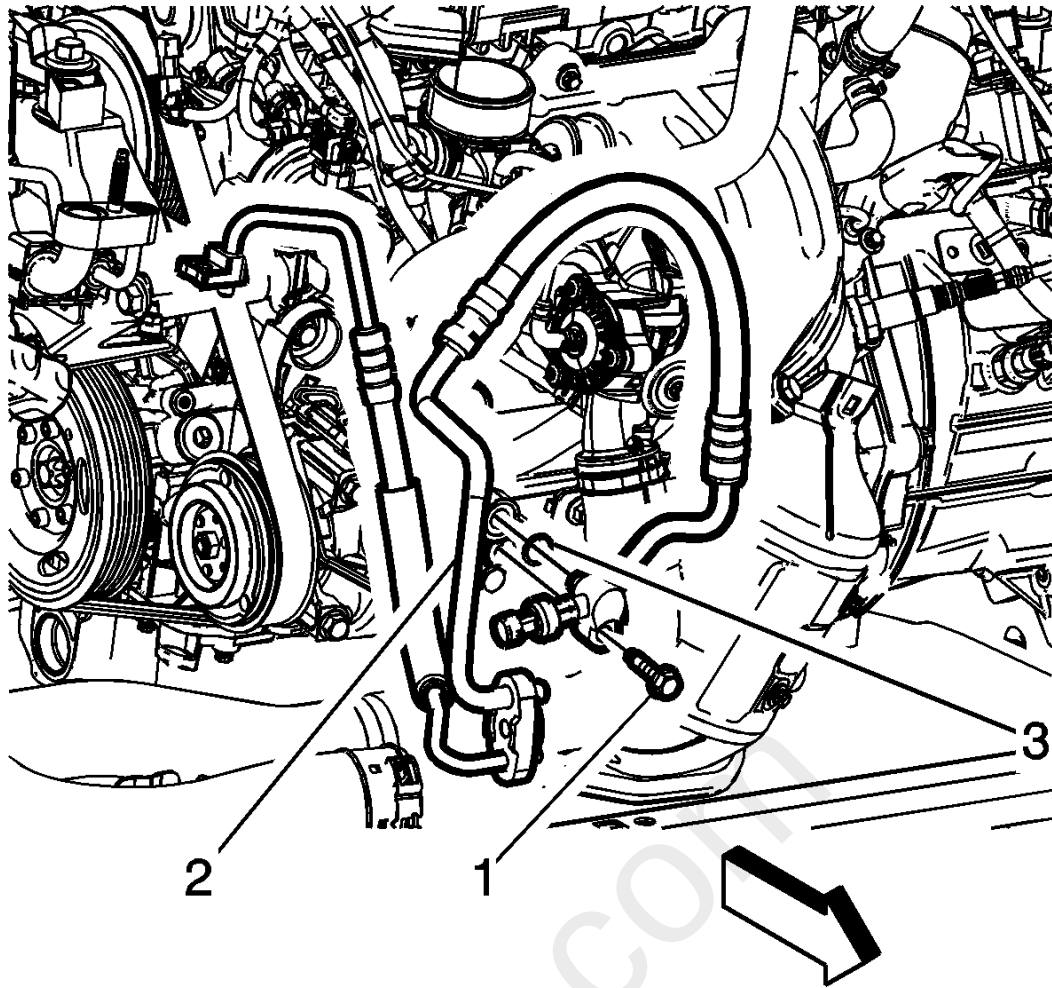


Fig. 44: Air Conditioning Condenser Hose At Compressor

Courtesy of GENERAL MOTORS COMPANY

10. Remove air conditioning condenser hose assembly bolt (1) from the air conditioning compressor assembly.
11. Remove air conditioning condenser hose assembly (2) from air conditioning compressor assembly.
12. Remove and discard the old sealing washers (3) and replace with a NEW sealing washers.

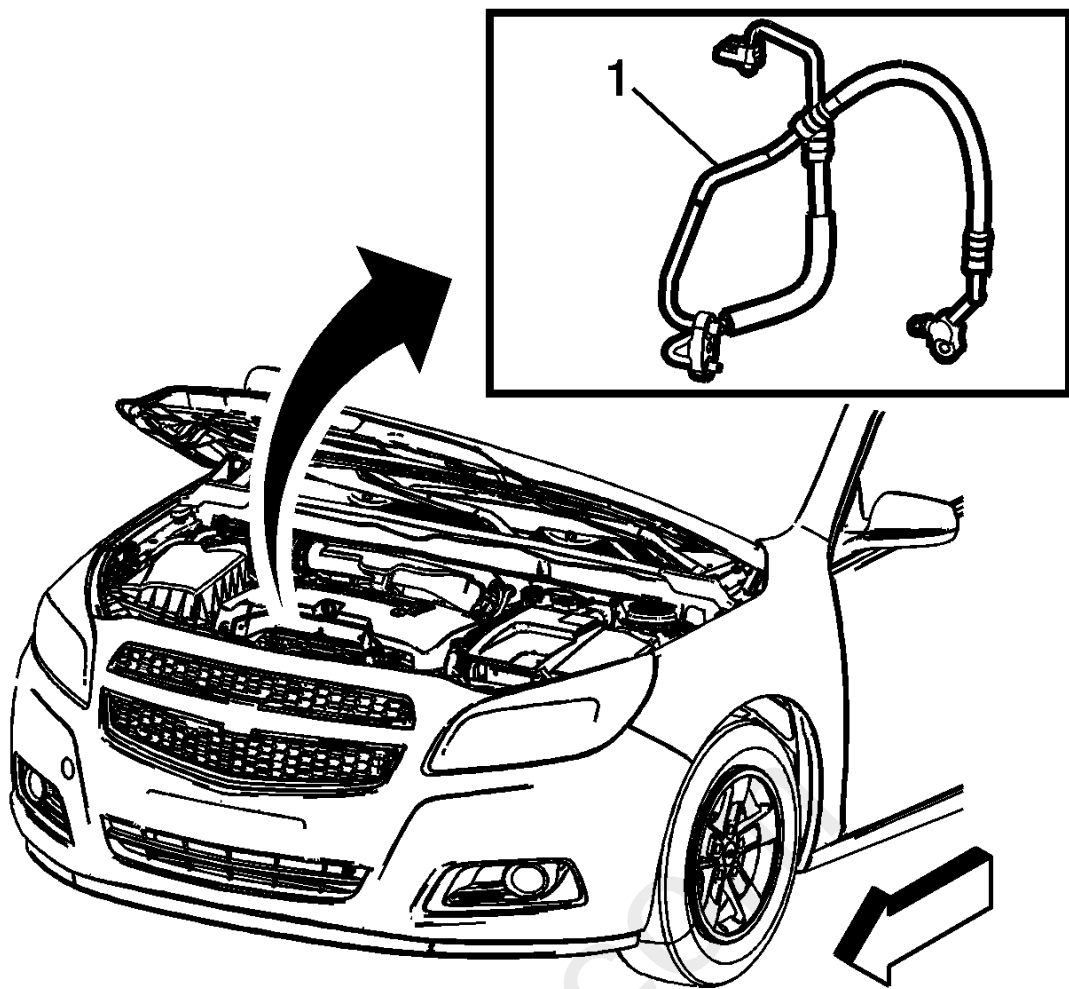


Fig. 45: Air Conditioning Condenser Hose
Courtesy of GENERAL MOTORS COMPANY

13. Remove air conditioning condenser hose assembly (1) from the vehicle.

NOTE: Remove and discard the old air conditioning sealing washers and replace with a NEW sealing washers.

14. Transfer all required parts

Installation Procedure

NOTE: Install NEW air conditioning sealing washers to the air conditioning condenser hose assembly. Refer to [Air Conditioning System Seal Replacement](#).

1. Install air conditioning condenser hose assembly into the vehicle.
2. Install the air conditioning refrigerant pressure sensor. Refer to [Air Conditioning \(A/C\) Refrigerant Pressure Sensor Replacement \(LUV\)](#).

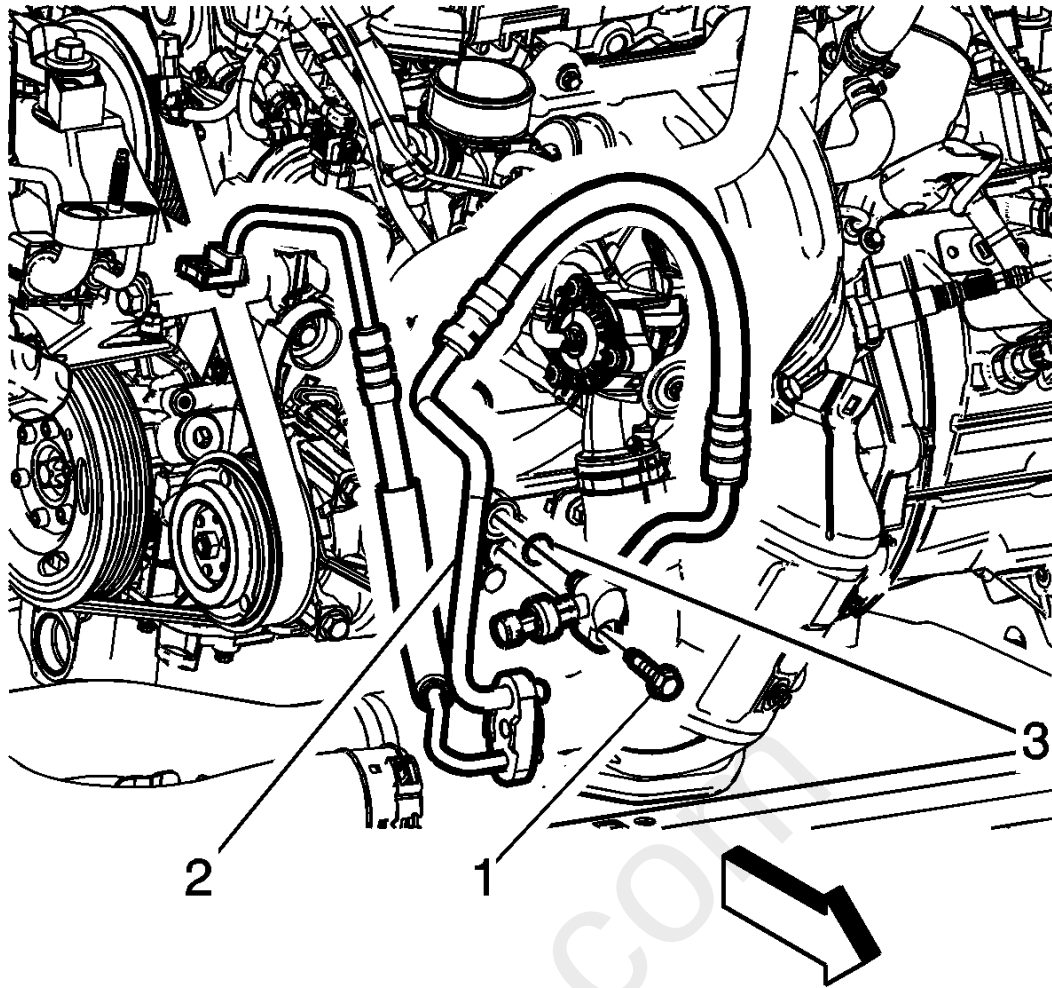


Fig. 46: Air Conditioning Condenser Hose At Compressor

Courtesy of GENERAL MOTORS COMPANY

3. Install NEW air conditioning sealing washer (3) to the air conditioning condenser hose assembly.
4. Install the air conditioning condenser hose assembly (2) to the air conditioning compressor assembly.

CAUTION: Refer to **Fastener Caution** .

5. Install air conditioning condenser hose assembly bolt (1) and tighten the bolt to 22 N.m (16 lb ft).

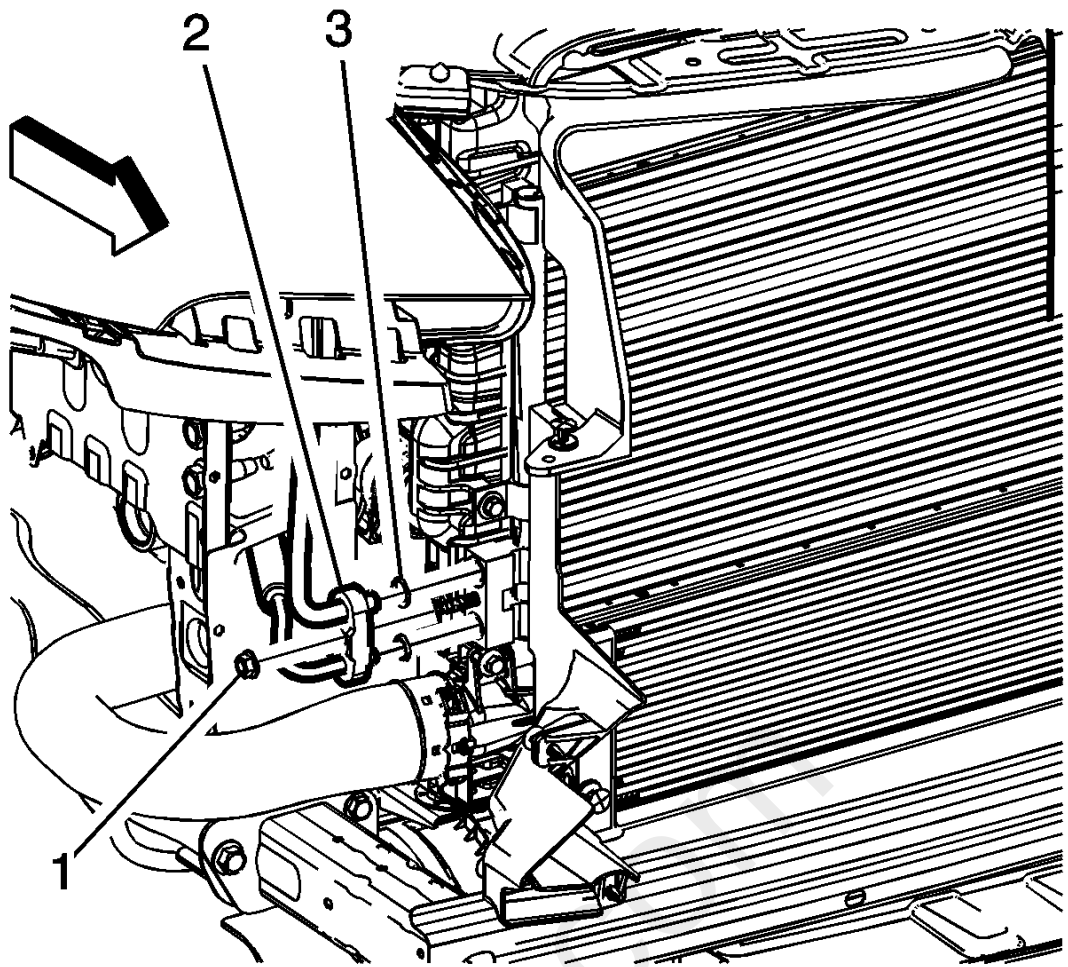


Fig. 47: Air Conditioning Condenser Hose And Sealing Washers

Courtesy of GENERAL MOTORS COMPANY

6. Install NEW air conditioning sealing washers (3) to the air conditioning condenser hose assembly.
7. Install the air conditioning condenser hose assembly (2) to the air conditioning condenser.
8. Install the air conditioning condenser hose assembly nut (1) and tighten the nut to 22 N.m (16 lb ft).
9. Install the front fascia assembly. Refer to [Front Bumper Fascia Replacement \(Chevrolet\)](#), [Front Bumper Fascia Replacement \(Buick\)](#).

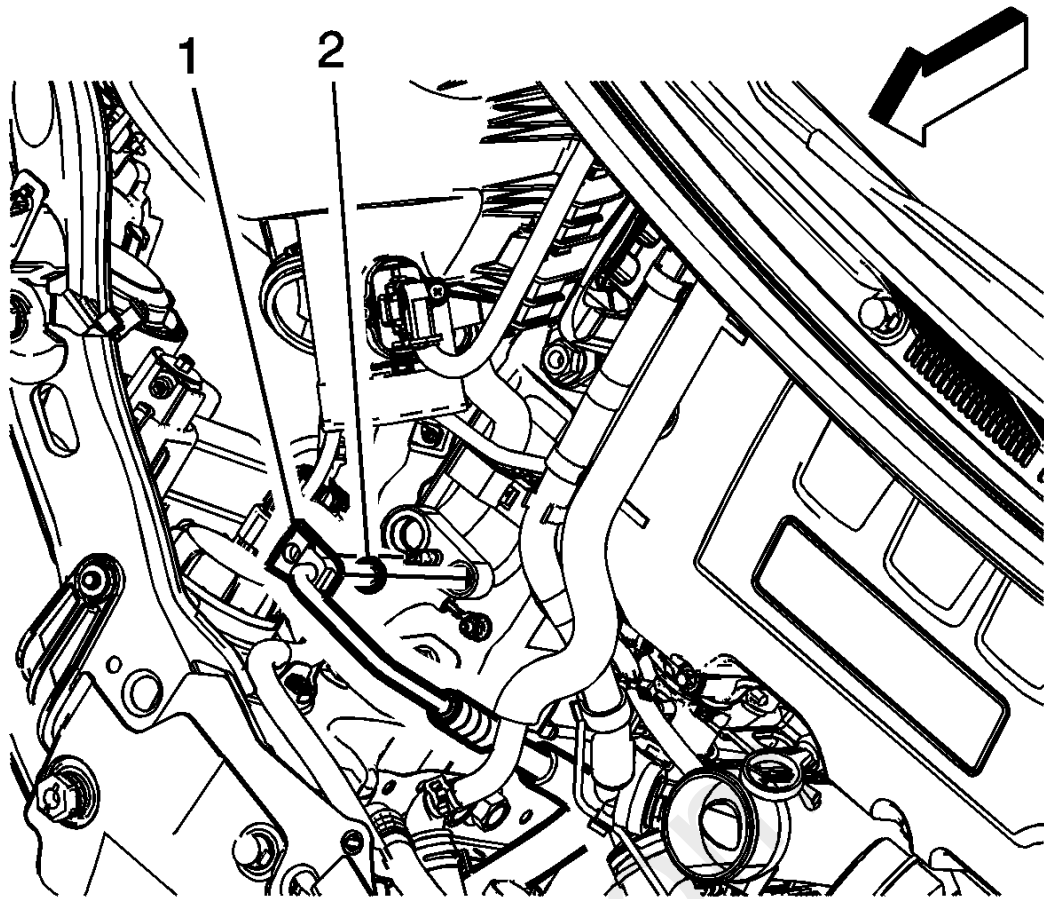


Fig. 48: Air Conditioning Condenser Hose

Courtesy of GENERAL MOTORS COMPANY

10. Install NEW air conditioning sealing washer (2) to the air conditioning condenser hose assembly.
11. Install the air conditioning condenser hose assembly (1) to the evaporator hose assembly.
12. Install the air compressor hose assembly to the air conditioning condenser hose assembly (1). Refer to [Air Conditioning Compressor Hose Replacement \(LUV\)](#).
13. Connect the A/C refrigerant pressure sensor electrical connector.
14. Install the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).
15. Charge the refrigerant system. Refer to [Refrigerant Recovery and Recharging \(R-134a\)](#).

AIR CONDITIONING CONDENSER HOSE REPLACEMENT (LE2)

Removal Procedure

1. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#).
2. [Air Cleaner Outlet Duct Replacement](#) - Remove
3. [Front Bumper Fascia Replacement \(Chevrolet\)](#), [Front Bumper Fascia Replacement \(Buick\)](#) - Remove

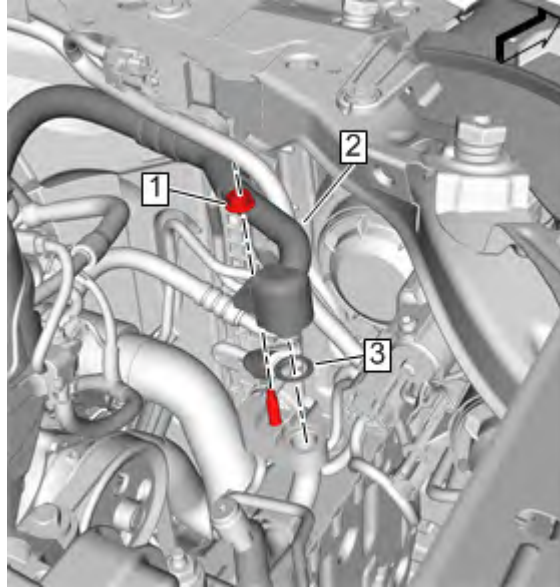


Fig. 49: Air Conditioning Compressor Hose At Air Conditioning Condenser Hose
 Courtesy of GENERAL MOTORS COMPANY

4. Air Conditioning Compressor Hose 2 @Air Conditioning Condenser Hose - Remove - **Air Conditioning Compressor Hose Replacement (LE2)**

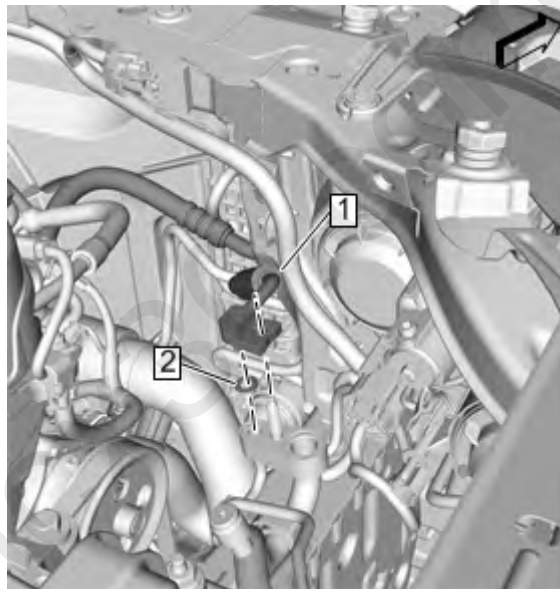


Fig. 50: Air Conditioning Condenser Hose At Evaporator Hose
 Courtesy of GENERAL MOTORS COMPANY

5. Air Conditioning Condenser Hose 1 - Remove
6. Remove and DISCARD the sealing washer. 2

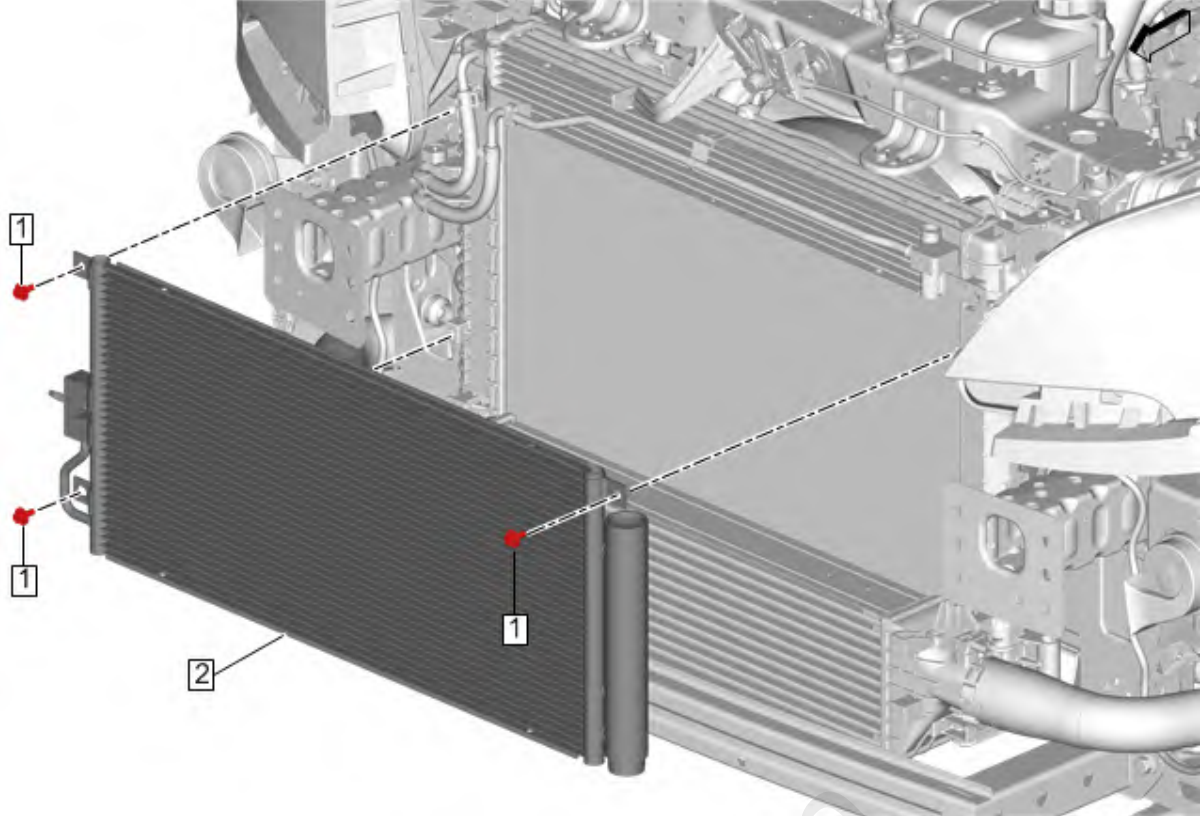


Fig. 51: Air Conditioning Condenser
 Courtesy of GENERAL MOTORS COMPANY

7. Remove the air conditioning condenser bolts (1) and reposition air conditioning condenser to allow removal of the air conditioning condenser hose. **Air Conditioning Condenser Replacement (LE2)**

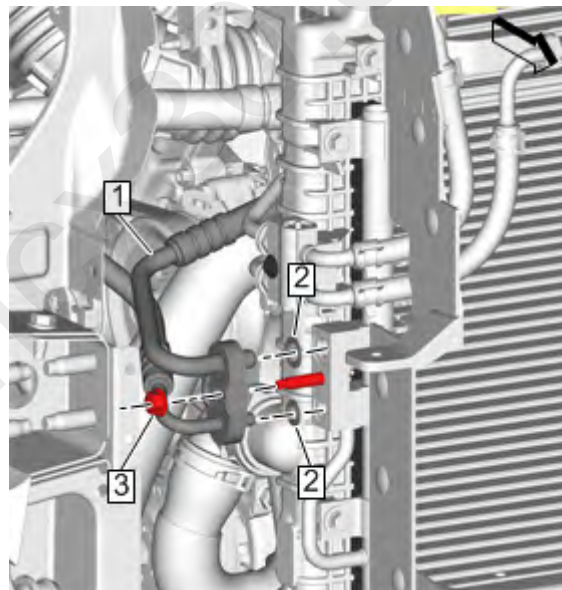


Fig. 52: Air Conditioning Condenser Hose, Nut And Sealing Washer
 Courtesy of GENERAL MOTORS COMPANY

8. Air Conditioning Condenser Hose Nut 3 - Remove
9. Air Conditioning Condenser Hose 1 - Remove
10. Remove and DISCARD the sealing washer. 2

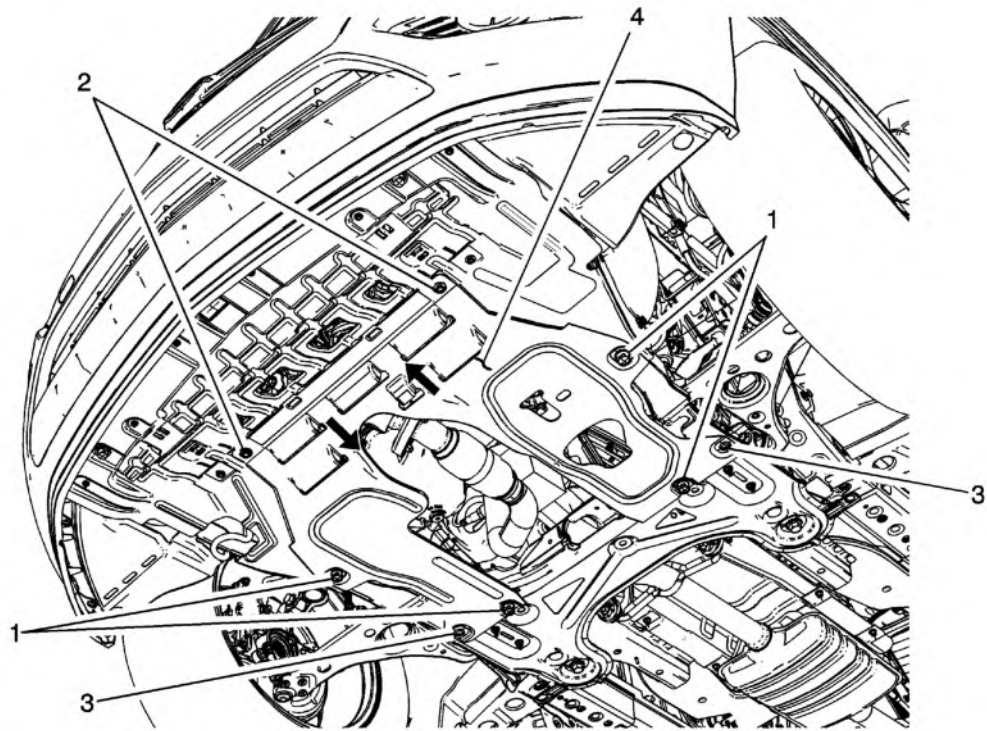


Fig. 53: Front Compartment Front Center Insulator
 Courtesy of GENERAL MOTORS COMPANY

11. **Front Compartment Front Center Insulator Replacement** 4 - Remove

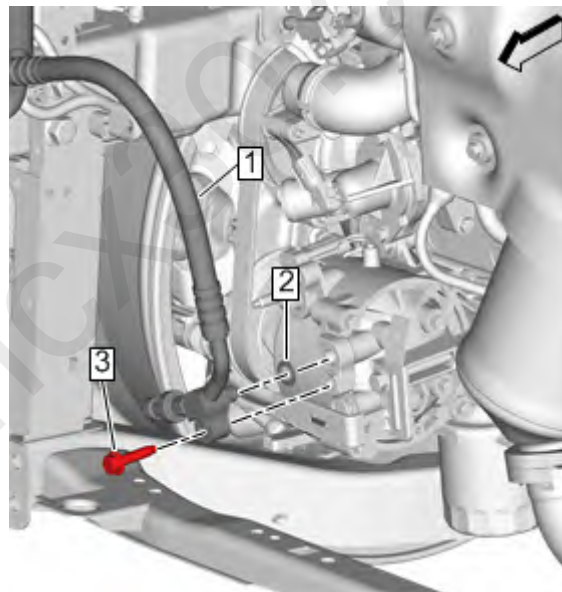


Fig. 54: Air Conditioning Condenser Hose And Sealing Washer
 Courtesy of GENERAL MOTORS COMPANY

12. Air Conditioning Condenser Hose Bolt 3 - Remove
13. Air Conditioning Condenser Hose 1 - Remove
14. Remove and DISCARD the sealing washer. 2
15. Remove the air conditioning condenser hose from the vehicle.

Installation Procedure

1. Install air conditioning condenser hose to the vehicle.

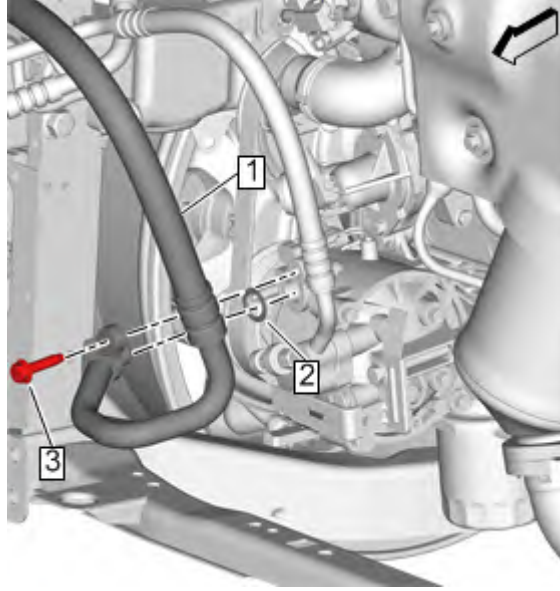


Fig. 55: Air Conditioning Compressor Hose And Bolt
Courtesy of GENERAL MOTORS COMPANY

2. Install NEW sealing washers. 2 [Air Conditioning System Seal Replacement](#)
3. Air Conditioning Condenser Hose 1 - Install

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

4. Air Conditioning Condenser Hose Bolt 3 - Install and tighten 22 N.m (16 lb ft)

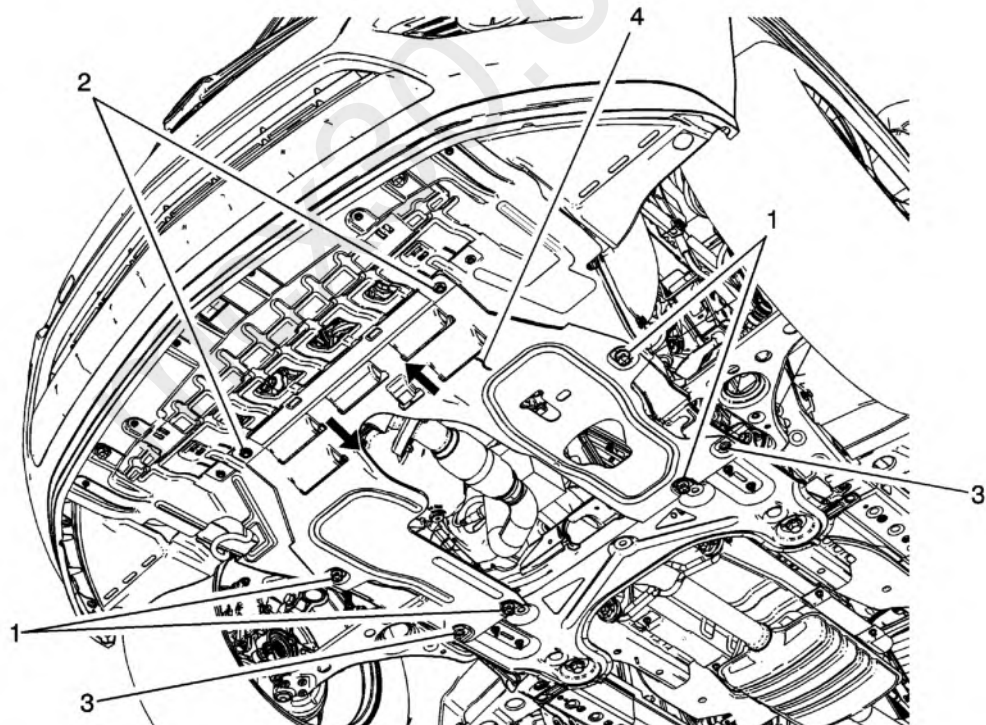


Fig. 56: Front Compartment Front Center Insulator
Courtesy of GENERAL MOTORS COMPANY

5. [Front Compartment Front Center Insulator Replacement](#) 4 - Install

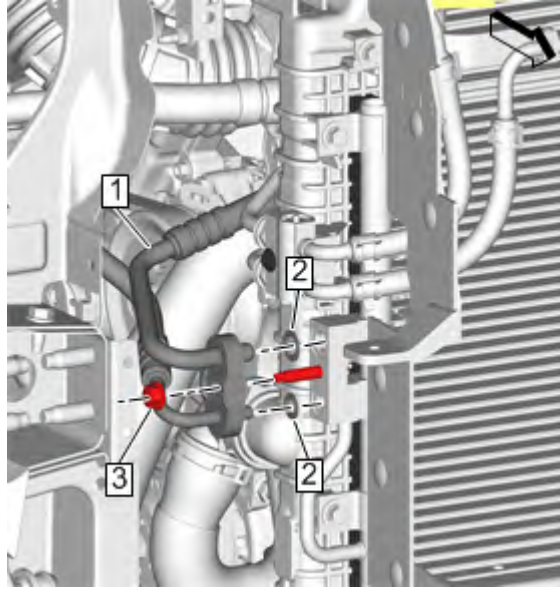


Fig. 57: Air Conditioning Condenser Hose, Nut And Sealing Washer
Courtesy of GENERAL MOTORS COMPANY

6. Install NEW sealing washers. 2
7. Air Conditioning Condenser Hose 1 - Install
8. Air Conditioning Condenser Hose Nut 3 - Install and tighten 22 N.m (16 lb ft)

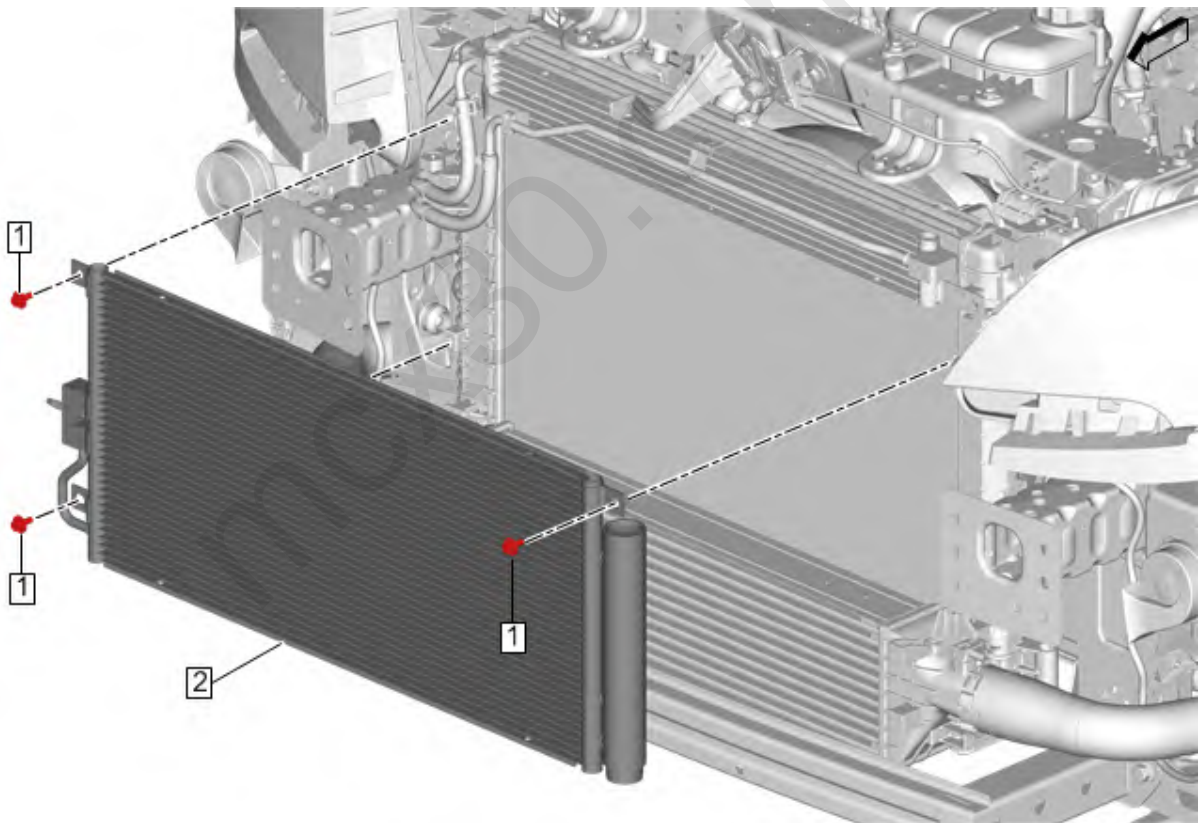


Fig. 58: Air Conditioning Condenser
Courtesy of GENERAL MOTORS COMPANY

9. Air Conditioning Condenser 2 - Install - [Air Conditioning Condenser Replacement \(LE2\)](#)

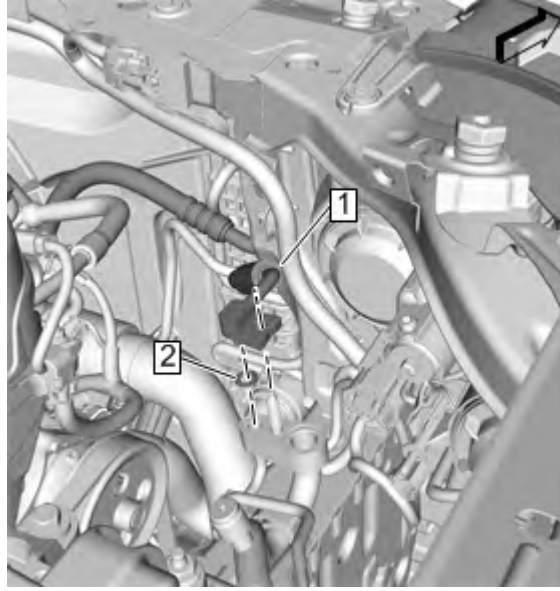


Fig. 59: Air Conditioning Condenser Hose At Evaporator Hose
Courtesy of GENERAL MOTORS COMPANY

10. Install NEW sealing washers. 2
11. Air Conditioning Condenser Hose 1 - Install

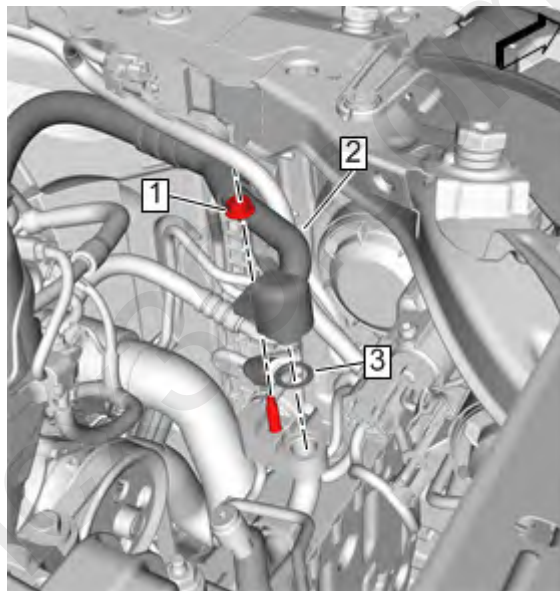


Fig. 60: Air Conditioning Compressor Hose At Air Conditioning Condenser Hose
Courtesy of GENERAL MOTORS COMPANY

12. Air Conditioning Compressor Hose 2 @Air Conditioning Condenser Hose - Install - [Air Conditioning Compressor Hose Replacement \(LE2\)](#).
13. [Front Bumper Fascia Replacement \(Chevrolet\)](#), [Front Bumper Fascia Replacement \(Buick\)](#). - Install
14. [Air Cleaner Outlet Duct Replacement](#) - Install
15. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#).

AIR CONDITIONING EVAPORATOR HOSE ASSEMBLY REPLACEMENT (2H0)

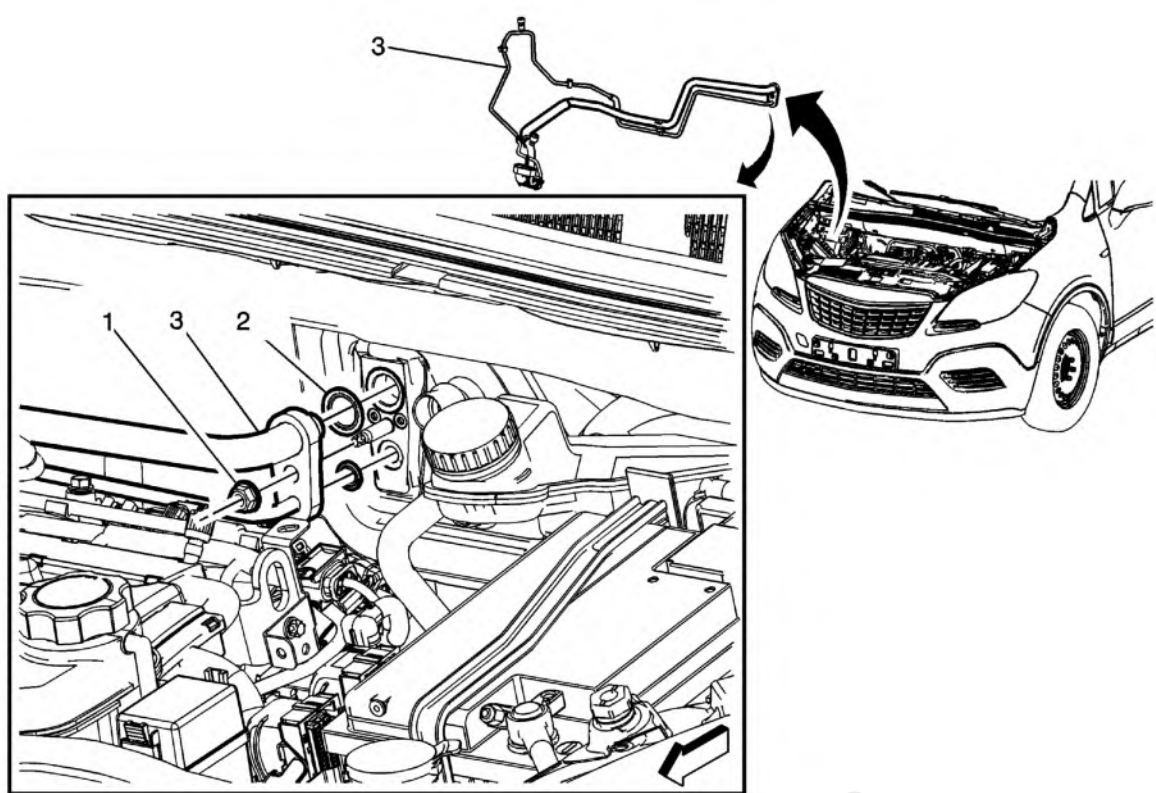


Fig. 61: Air Conditioning Evaporator Hose Assembly_(2H0).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging (R-134a). 2. Remove the air conditioning compressor and condenser hose assemblies from the evaporator hose assembly. Refer to Air Conditioning Compressor Hose Replacement (2H0), and Air Conditioning Condenser Hose Replacement (2H0). 3. Remove the air cleaner assembly. Refer to Air Cleaner Assembly Replacement (2H0).	
1	Air Conditioning Evaporator Hose Assembly Nut CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Air Conditioning Evaporator Hose Seals (Qty: 2) Procedure Remove and discard the old sealing washers and replace with NEW sealing washers. Refer to Air Conditioning System Seal Replacement .
3	Air Conditioning Evaporator Hose Assembly Procedure Remove the air conditioning evaporator hose assembly from the hose retainers.

AIR CONDITIONING EVAPORATOR HOSE ASSEMBLY REPLACEMENT (LUV)

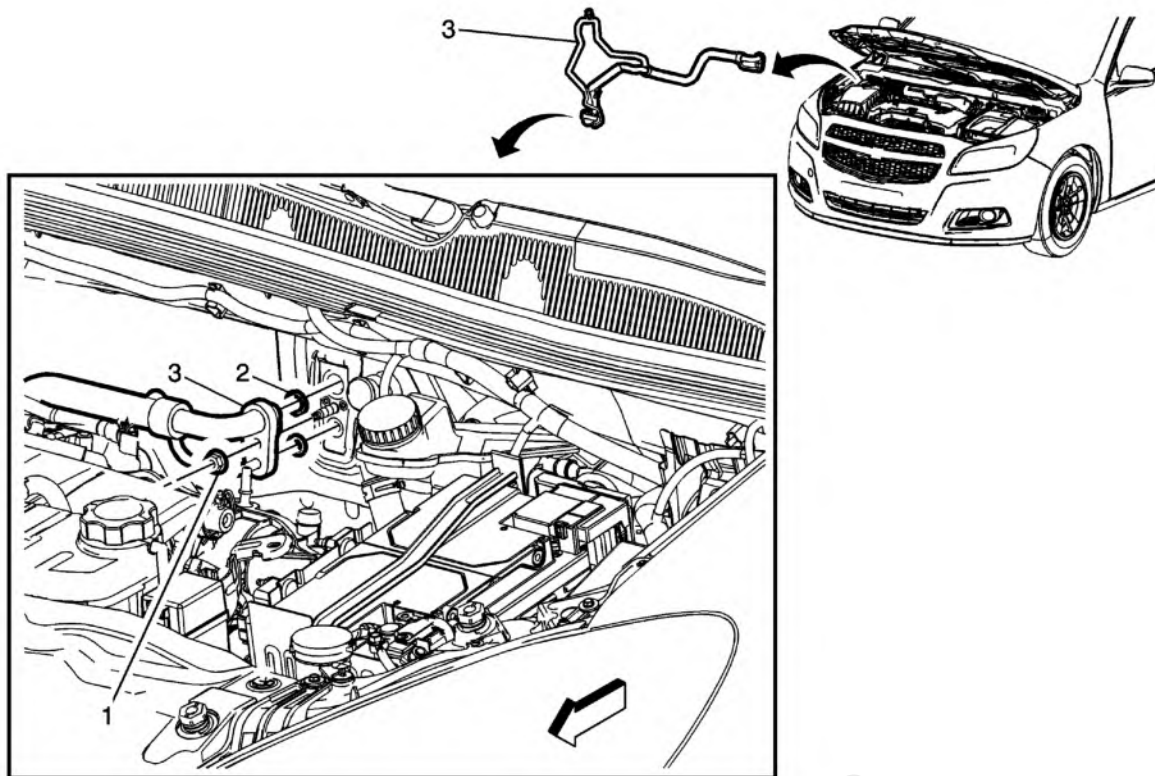


Fig. 62: Air Conditioning Evaporator Hose Assembly_(LUV)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging (R-134a). 2. Remove the air conditioning compressor and condenser hose assemblies from the evaporator hose assembly. Refer to Air Conditioning Compressor Hose Replacement (LUV), and Air Conditioning Condenser Hose Replacement (LUV). 3. Remove the air cleaner assembly. Refer to Air Cleaner Assembly Replacement.	
1	Air Conditioning Evaporator Hose Assembly Nut. CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Air Conditioning Evaporator Hose Seals (Qty: 2) Procedure Discard and replace all sealing washers. Refer to Air Conditioning System Seal Replacement .
3	Air Conditioning Evaporator Hose Assembly Procedure Remove the air conditioning evaporator hose assembly from the hose retainers.

AIR CONDITIONING EVAPORATOR HOSE ASSEMBLY REPLACEMENT (LE2)

Removal Procedure

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

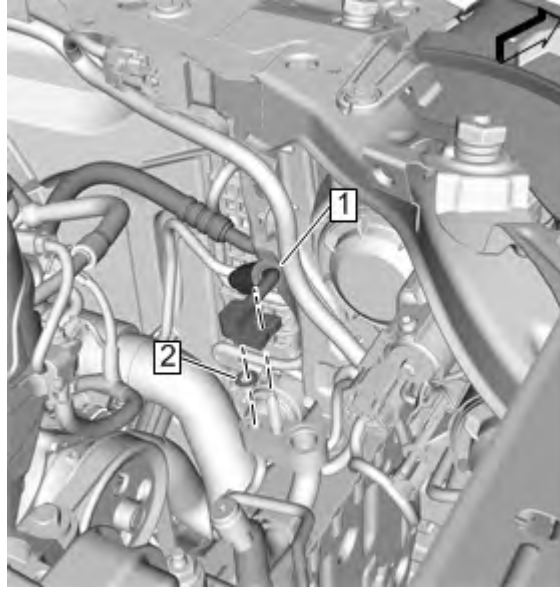


Fig. 63: Air Conditioning Condenser Hose At Evaporator Hose
 Courtesy of GENERAL MOTORS COMPANY

2. Air Conditioning Condenser Hose 1 @Air Conditioning Evaporator Hose - Remove - [Air Conditioning Condenser Hose Replacement \(LE2\)](#).

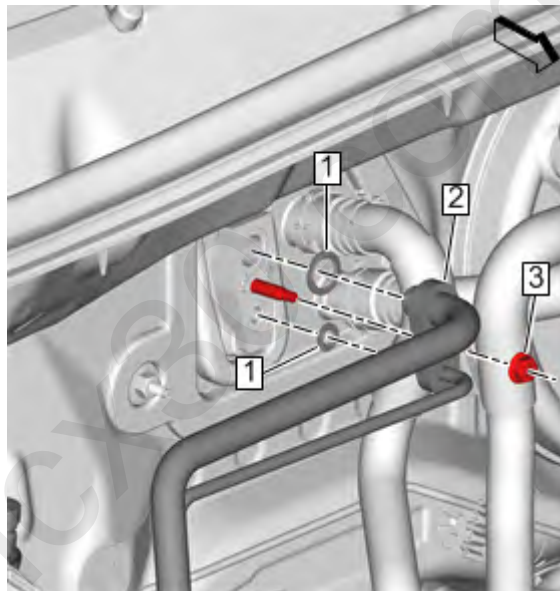


Fig. 64: Air Conditioning Evaporator Hose And Sealing Washer
 Courtesy of GENERAL MOTORS COMPANY

3. Air Conditioning Evaporator Hose Nut 3 - Remove
4. Air Conditioning Evaporator Hose 2 - Remove
5. Remove and DISCARD the sealing washer. 1

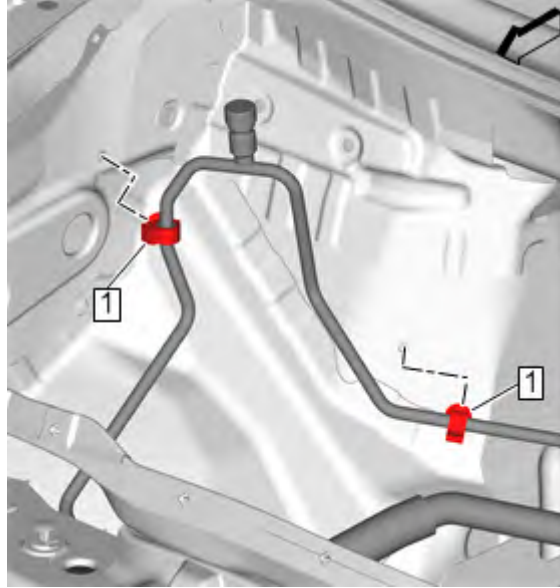


Fig. 65: Air Conditioning Evaporator Tube Clip At Front Wheelhouse Panel
Courtesy of GENERAL MOTORS COMPANY

6. Air Conditioning Evaporator Tube Clip 1 @Front Wheelhouse Panel - Disengage

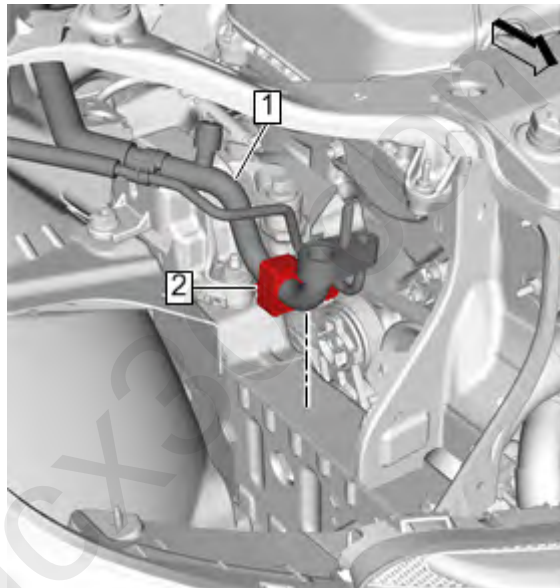


Fig. 66: Air Conditioning Evaporator Tube Clip At Front Compartment Inner Side Rail
Courtesy of GENERAL MOTORS COMPANY

7. Air Conditioning Evaporator Tube Clip 2 @Front Compartment Inner Side Rail - Disengage

8. Remove the air conditioning condenser hose (1) from the vehicle.

Installation Procedure

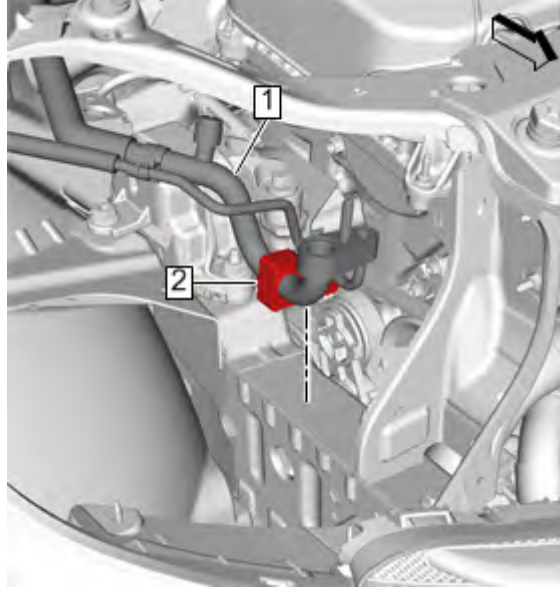


Fig. 67: Air Conditioning Evaporator Tube Clip At Front Compartment Inner Side Rail
 Courtesy of GENERAL MOTORS COMPANY

1. Install the air conditioning condenser hose (1) to the vehicle.
2. Air Conditioning Evaporator Tube Clip 2 @Front Compartment Inner Side Rail - Engage

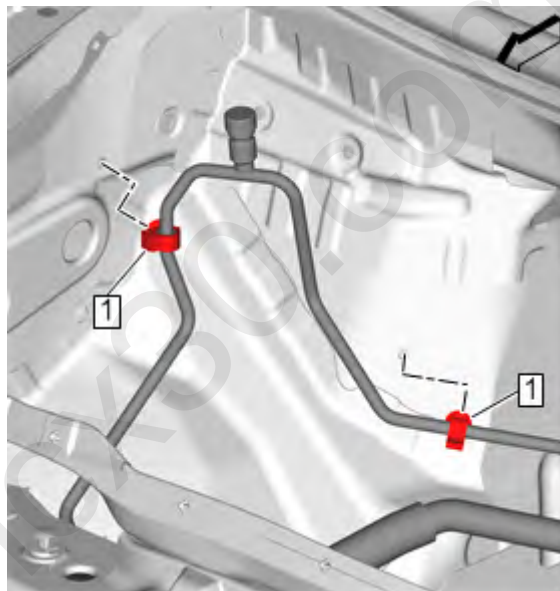


Fig. 68: Air Conditioning Evaporator Tube Clip At Front Wheelhouse Panel
 Courtesy of GENERAL MOTORS COMPANY

3. Air Conditioning Evaporator Tube Clip 1 @Front Wheelhouse Panel - Engage

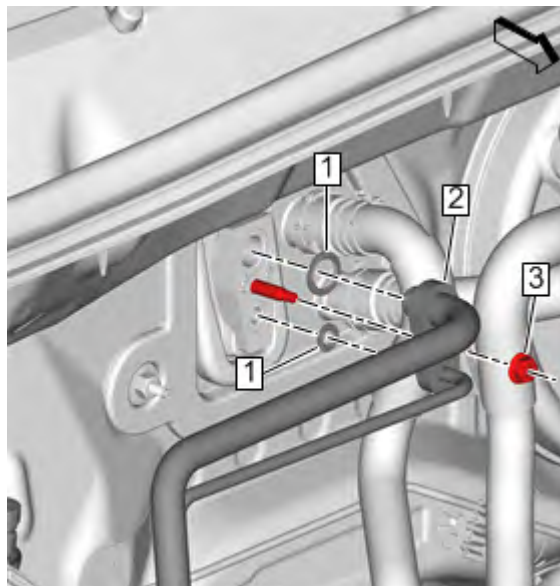


Fig. 69: Air Conditioning Evaporator Hose And Sealing Washer
Courtesy of GENERAL MOTORS COMPANY

4. Install NEW sealing washers. 1
5. Air Conditioning Evaporator Hose 2 - Install

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

6. Air Conditioning Evaporator Hose Nut 3 - Install and tighten 22 N.m (16 lb ft)

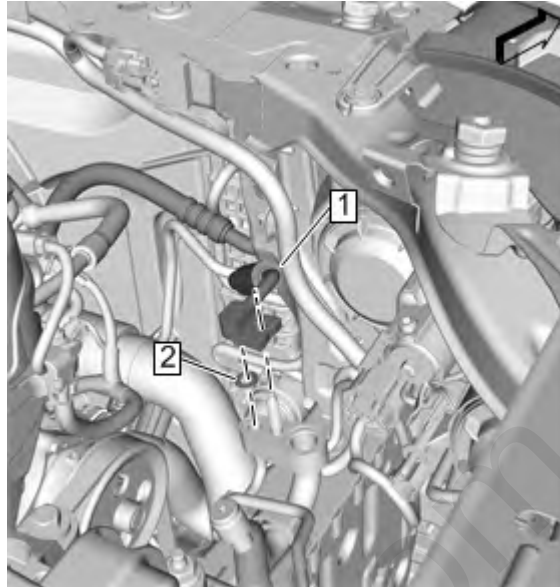


Fig. 70: Air Conditioning Condenser Hose At Evaporator Hose
Courtesy of GENERAL MOTORS COMPANY

7. Air Conditioning Condenser Hose 1 @Air Conditioning Evaporator Hose - Install - [Air Conditioning Condenser Hose Replacement \(LE2\)](#) - Install
8. Recharge the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#).

AIR CONDITIONING REFRIGERANT SERVICE VALVE CORE REPLACEMENT

Special Tools

- **GE 50078** Electronic Leak Detector
- **GE 46246** Valve Core Tool

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

Removal Procedure

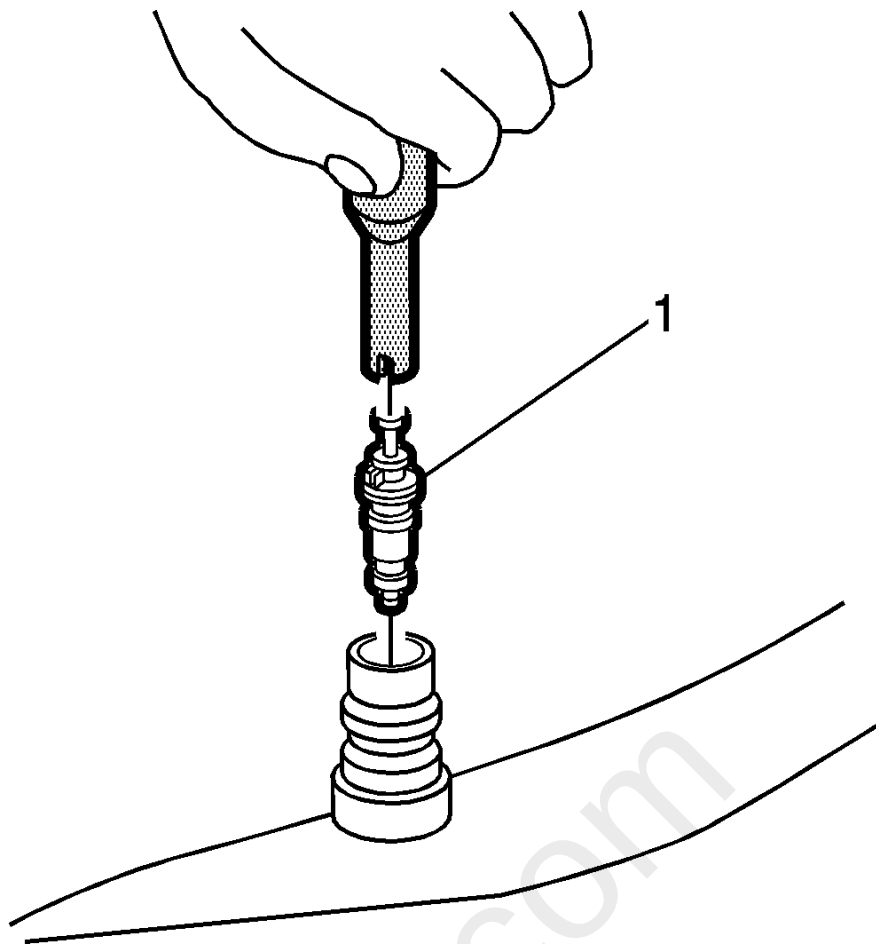


Fig. 71: Valve Core

Courtesy of GENERAL MOTORS COMPANY

1. Recover the refrigerant from the A/C system. Refer to [Refrigerant Recovery and Recharging \(R-134a\)](#).
2. Using the **GE 46246** Valve Core Tool , remove the valve core (1) from the service port.

Installation Procedure

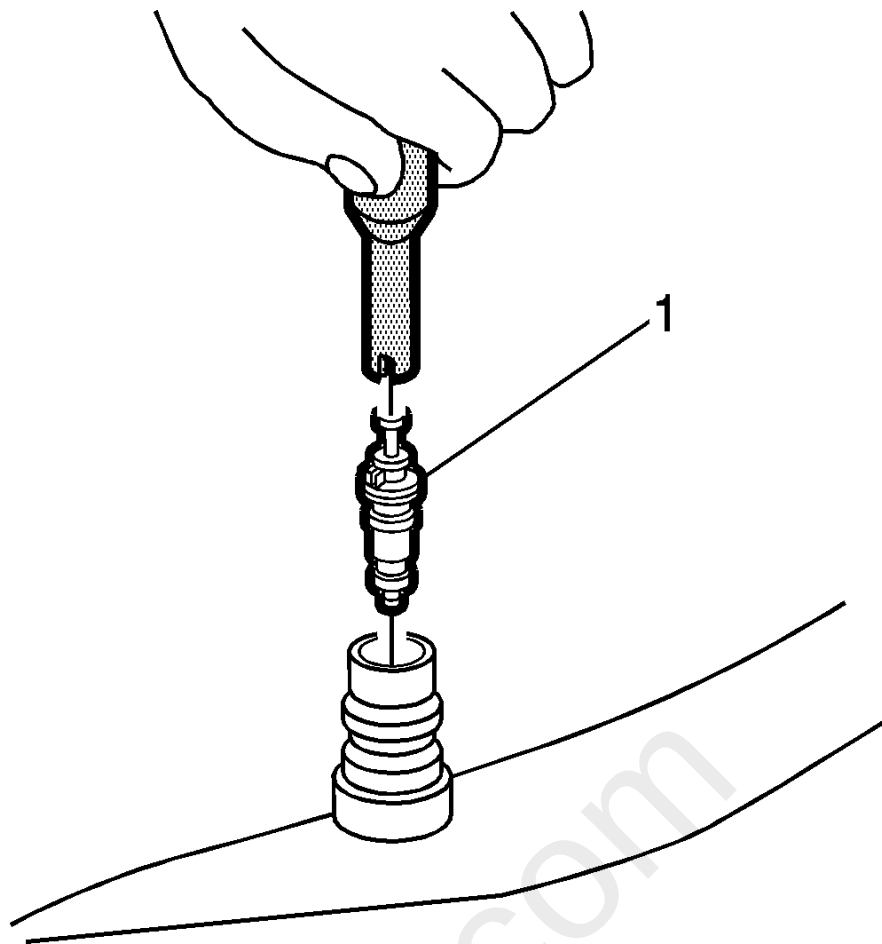


Fig. 72: Valve Core

Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

1. Install the valve core (1) to the service port.
2. Using the **GE 46246** Valve Core Tool , tighten the valve core.
3. Evacuate and recharge the A/C system. Refer to Refrigerant Recovery and Recharging (R-134a).
4. Leak test the fittings of the component using **GE 50078** Electronic Leak Detector.

AIR CONDITIONING REFRIGERANT DESICCANT REPLACEMENT (LUV)

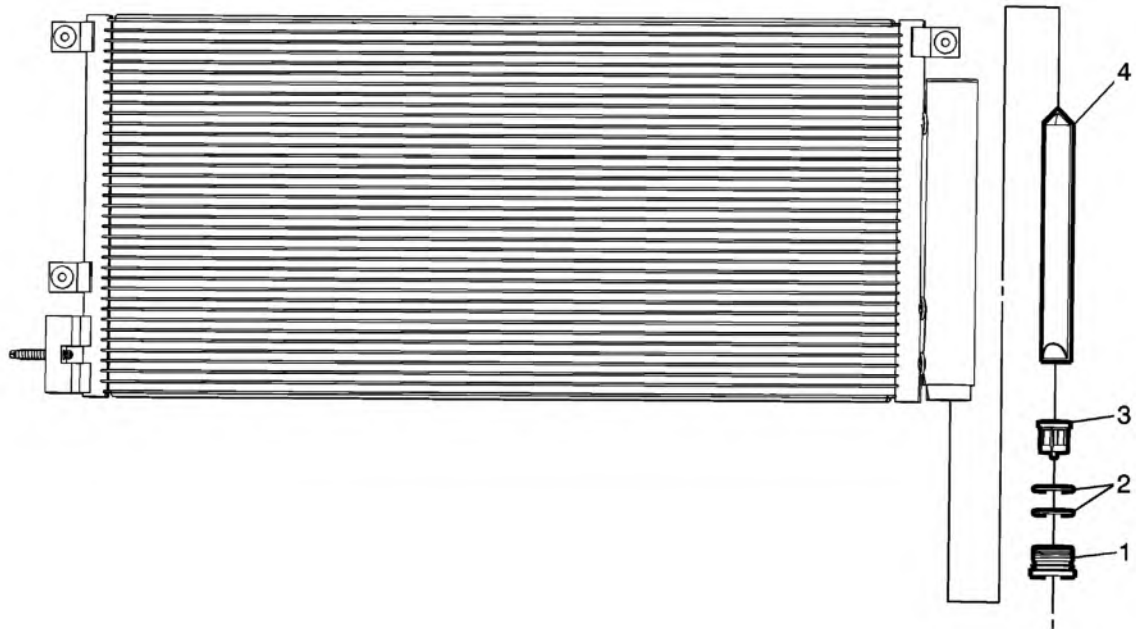


Fig. 73: Air Conditioning Refrigerant Desiccant (LUV).
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the air conditioning condenser. Refer to Air Conditioning Condenser Replacement (LUV) .	
1	Receiver and Dehydrator Cover CAUTION: Refer to Fastener Caution . Tighten 12 N.m (106 lb in)
2	Receiver and Dehydrator O-ring (Qty: 2)
3	Air Conditioning Refrigerant Filter
4	Air Conditioning Refrigerant Desiccant

AIR CONDITIONING REFRIGERANT DESICCANT REPLACEMENT (2H0)

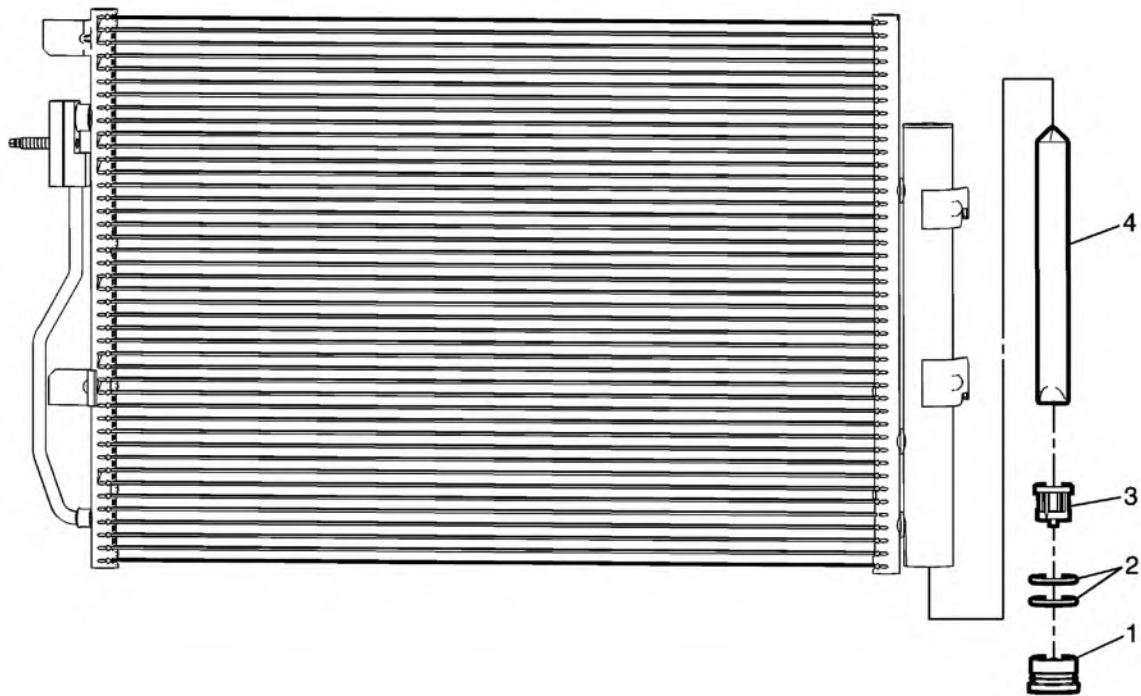


Fig. 74: Air Conditioning Refrigerant Desiccant (2H0).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the air conditioning condenser.	
1	Receiver and Dehydrator Cover CAUTION: Refer to Fastener Caution . Tighten 12 N.m (9 lb ft)
2	Receiver and Dehydrator O-ring (Qty: 2)
3	Air Conditioning Refrigerant Filter
4	Air Conditioning Refrigerant Desiccant

AIR CONDITIONING EVAPORATOR THERMAL EXPANSION VALVE REPLACEMENT (LUV)

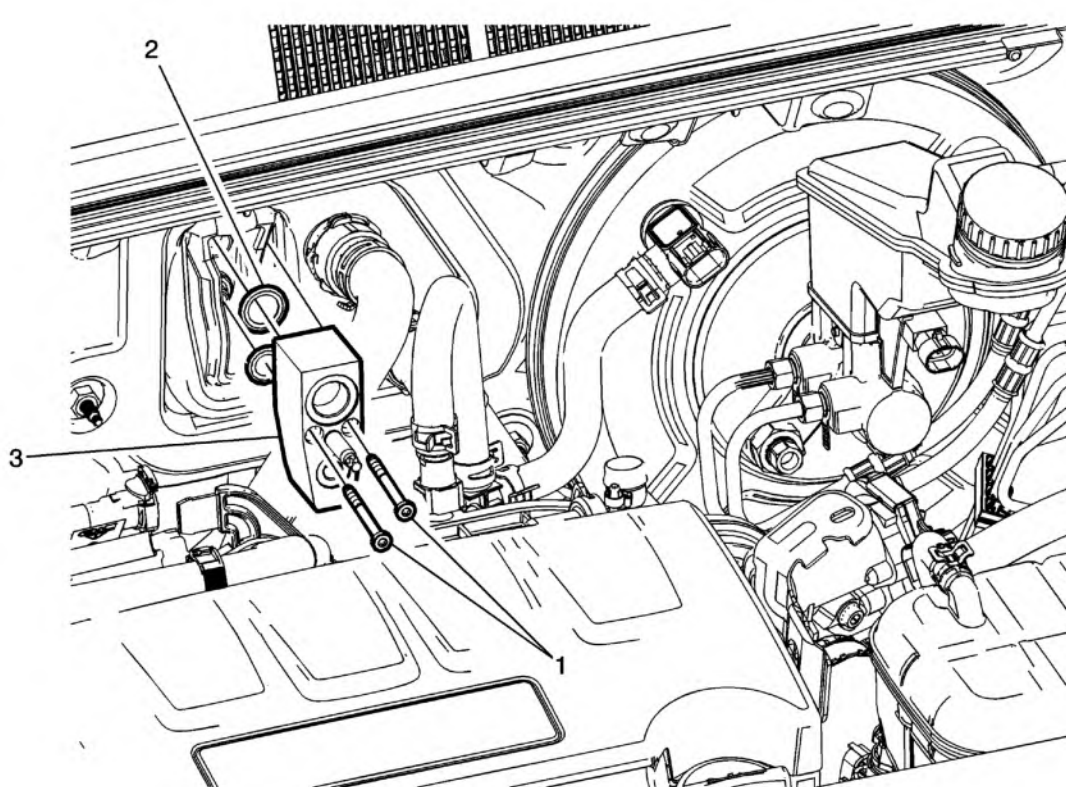


Fig. 75: Air Conditioning Evaporator Thermal Expansion Valve (LUV).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging (R-134a). 2. Remove the air conditioning evaporator hose assembly from the thermal expansion valve. Refer to Air Conditioning Evaporator Hose Assembly Replacement (LUV).	
1	Thermal Expansion Valve Bolt (Qty: 2) CAUTION: Refer to Fastener Caution . Tighten 6 N.m (53 lb in)
2	Thermal Expansion Valve Sealing Washer (Qty: 2) NOTE: Remove and discard the sealing washers. Refer to Air Conditioning System Seal Replacement .
3	Thermal Expansion Valve

AIR CONDITIONING EVAPORATOR THERMAL EXPANSION VALVE REPLACEMENT (2H0)

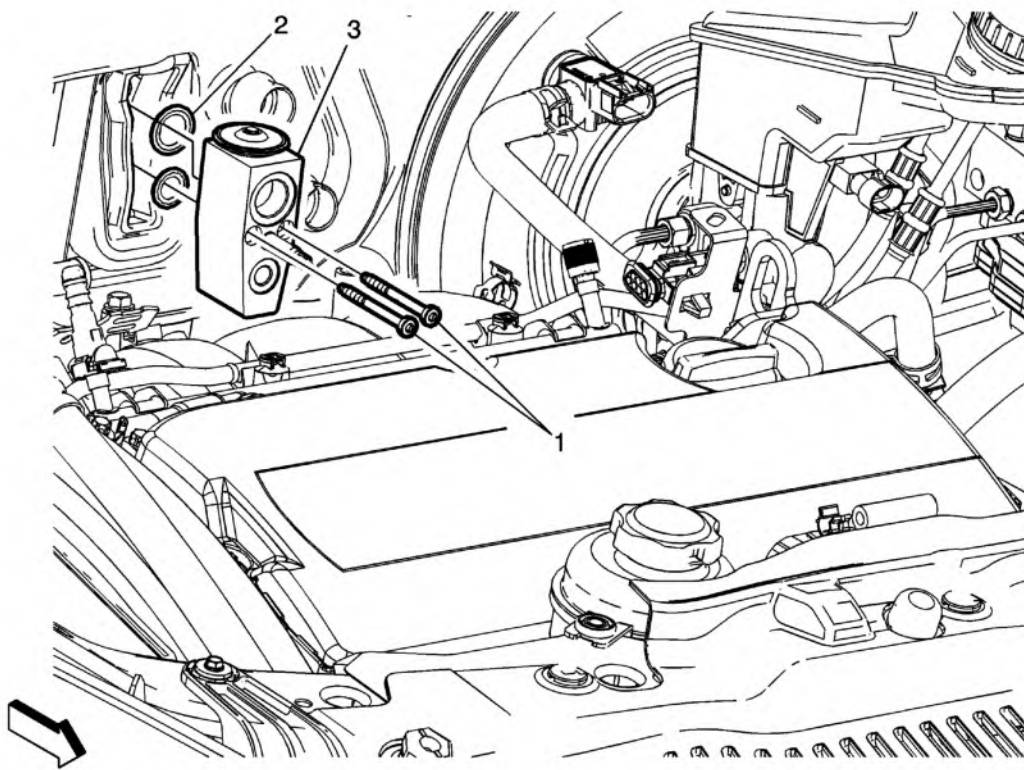


Fig. 76: Air Conditioning Evaporator Thermal Expansion Valve (2H0).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Recover the refrigerant. Refer to Refrigerant Recovery and Recharging (R-134a). 2. Remove the air conditioning evaporator hose assembly from the thermal expansion valve. Refer to Air Conditioning Evaporator Hose Assembly Replacement (2H0).	
1	Thermal Expansion Valve Bolt (Qty: 2) CAUTION: Refer to Fastener Caution . Tighten 6 N.m (53 lb in)
2	Thermal Expansion Valve Sealing Washer (Qty: 2) NOTE: Remove and discard the sealing washers. Refer to Air Conditioning System Seal Replacement .
3	Thermal Expansion Valve

AIR CONDITIONING EVAPORATOR THERMAL EXPANSION VALVE REPLACEMENT (LE2)

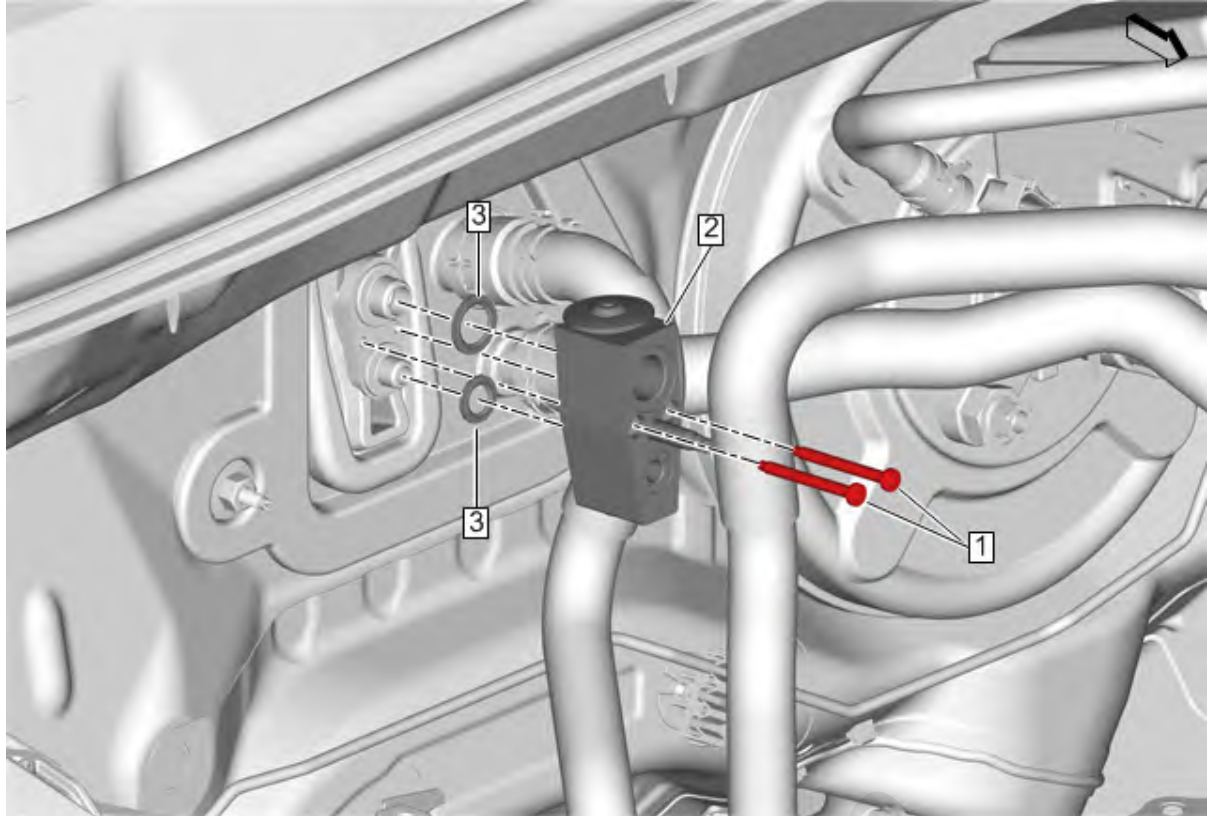


Fig. 77: Air Conditioning Evaporator Thermal Expansion Valve (LE2).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Air Conditioning Evaporator Hose@Air Conditioning Evaporator Thermal Expansion Valve - Remove - <u>Air Conditioning Evaporator Hose Assembly Replacement (LE2)</u>	
1	Air Conditioning Evaporator Thermal Expansion Valve Bolt CAUTION: Refer to <u>Component Fastener Tightening Caution</u> . Tighten 8 N.m (71 lb in)
2	Air Conditioning Evaporator Thermal Expansion Valve
3	Sealing Washer Procedure Remove and DISCARD the sealing washer. <u>Air Conditioning System Seal Replacement</u>

AIR CONDITIONING (A/C) REFRIGERANT PRESSURE SENSOR REPLACEMENT (2H0)

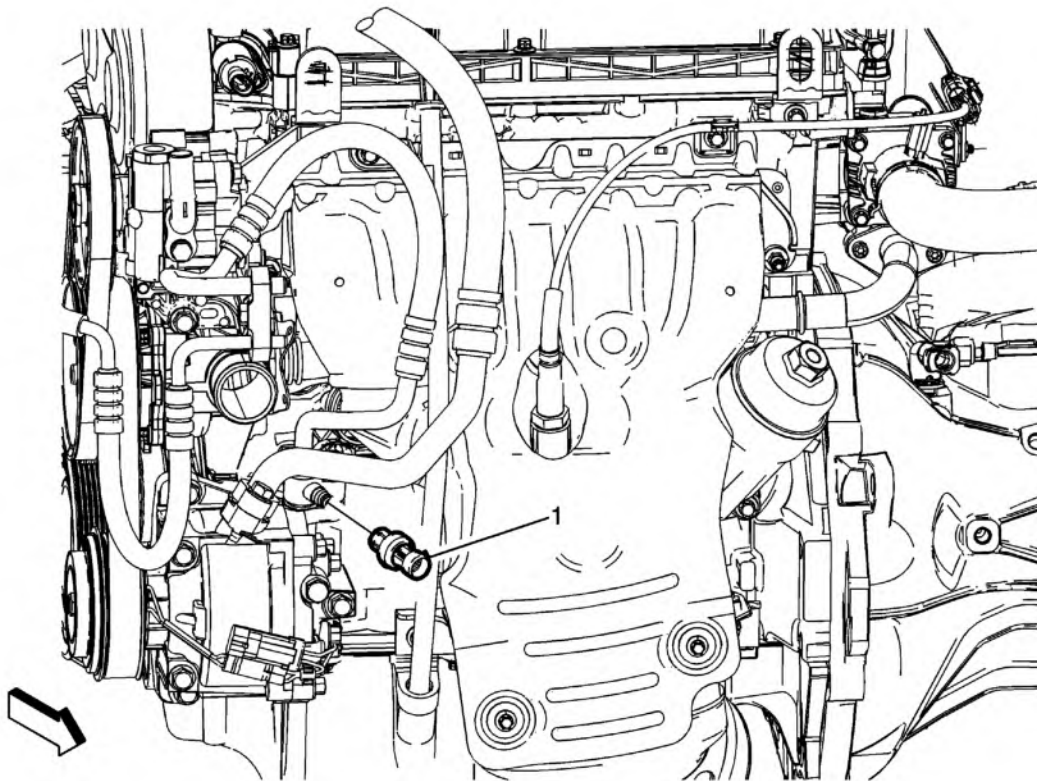


Fig. 78: Air Conditioning (A/C) Refrigerant Pressure Sensor (2H0).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .	
1	Air Conditioning Refrigerant Pressure Sensor CAUTION: Refer to Fastener Caution . Procedure Disconnect the electrical connector from the pressure sensor. NOTE: Remove and discard the O-ring and replace with NEW only. Refer to Air Conditioning O-Ring Seal Replacement . Tighten 6 N.m (53 lb in)

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

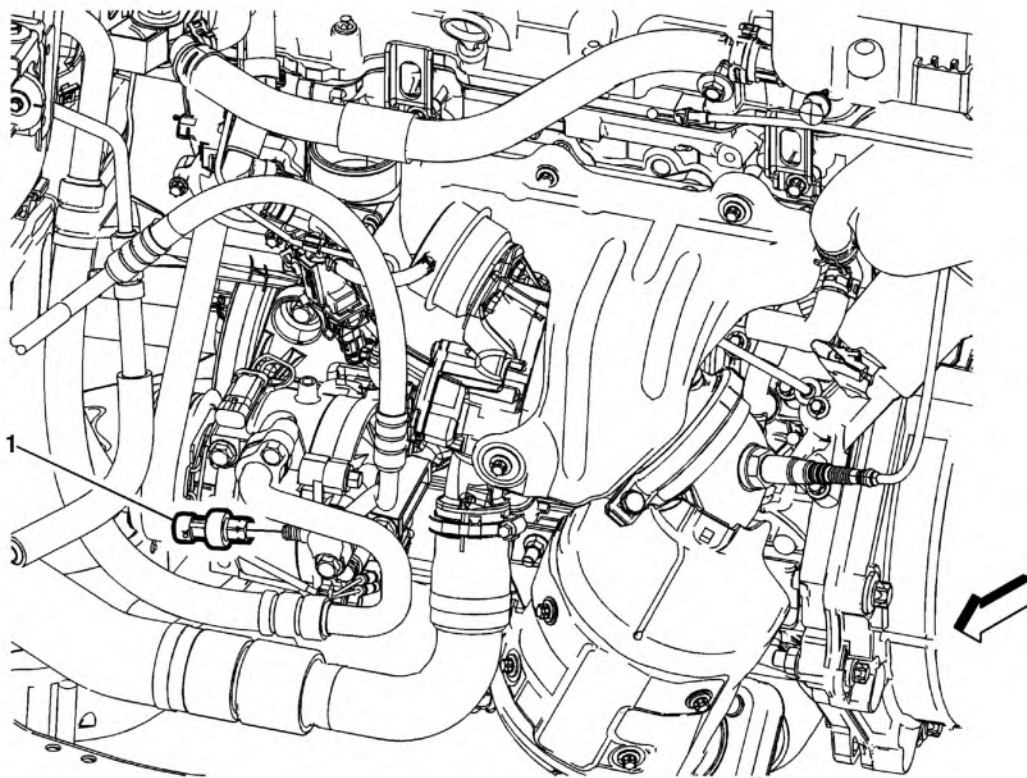


Fig. 79: Air Conditioning (A/C) Refrigerant Pressure Sensor (LUV).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Remove the right side front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement (Chevrolet) , Front Wheelhouse Liner Replacement (Buick) .	
1	Air Conditioning Refrigerant Pressure Sensor CAUTION: Refer to Fastener Caution . Procedure Disconnect the electrical connector from the pressure sensor. NOTE: Remove and discard the O-ring and replace with NEW only. Refer to Air Conditioning O-Ring Seal Replacement . Tighten 6 N.m (53 lb in)

AIR CONDITIONING (A/C) REFRIGERANT PRESSURE SENSOR REPLACEMENT (LE2)

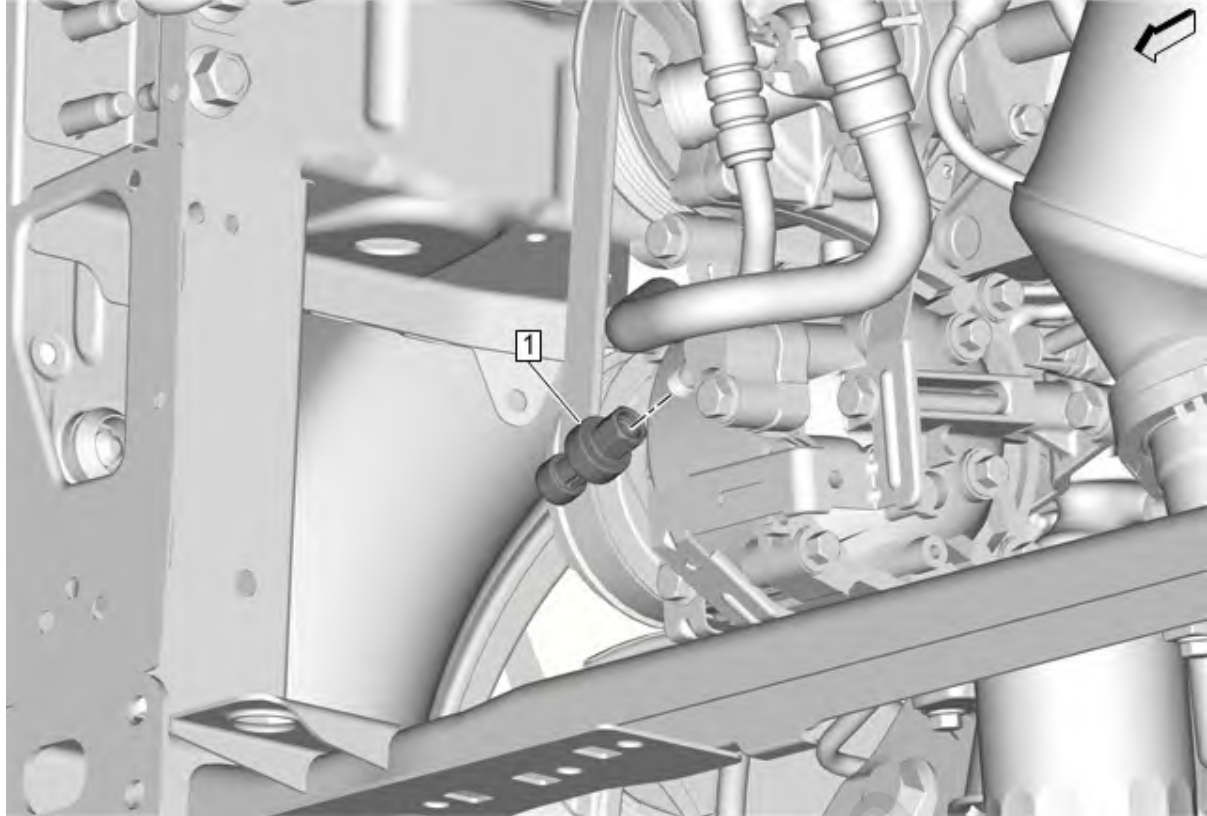


Fig. 80: Air Conditioning (A/C) Refrigerant Pressure Sensor (LE2).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Front Compartment Front Center Insulator Replacement</u> - Air Conditioning Compressor Hose@Air Conditioning Compressor - Remove - <u>Air Conditioning Compressor Hose Replacement (LE2)</u>	
1	Air Conditioning Refrigerant Pressure Sensor CAUTION: Refer to <u>Component Fastener Tightening Caution</u> . Procedure 1. Disconnect the electrical connector. 2. Remove and DISCARD the O-ring seal. <u>Air Conditioning System Seal Replacement</u> Tighten 8 N.m (71 lb in)

AIR CONDITIONING EVAPORATOR TEMPERATURE SENSOR REPLACEMENT (CJ2 C60 C67 LHD EVAPORATOR CORE)

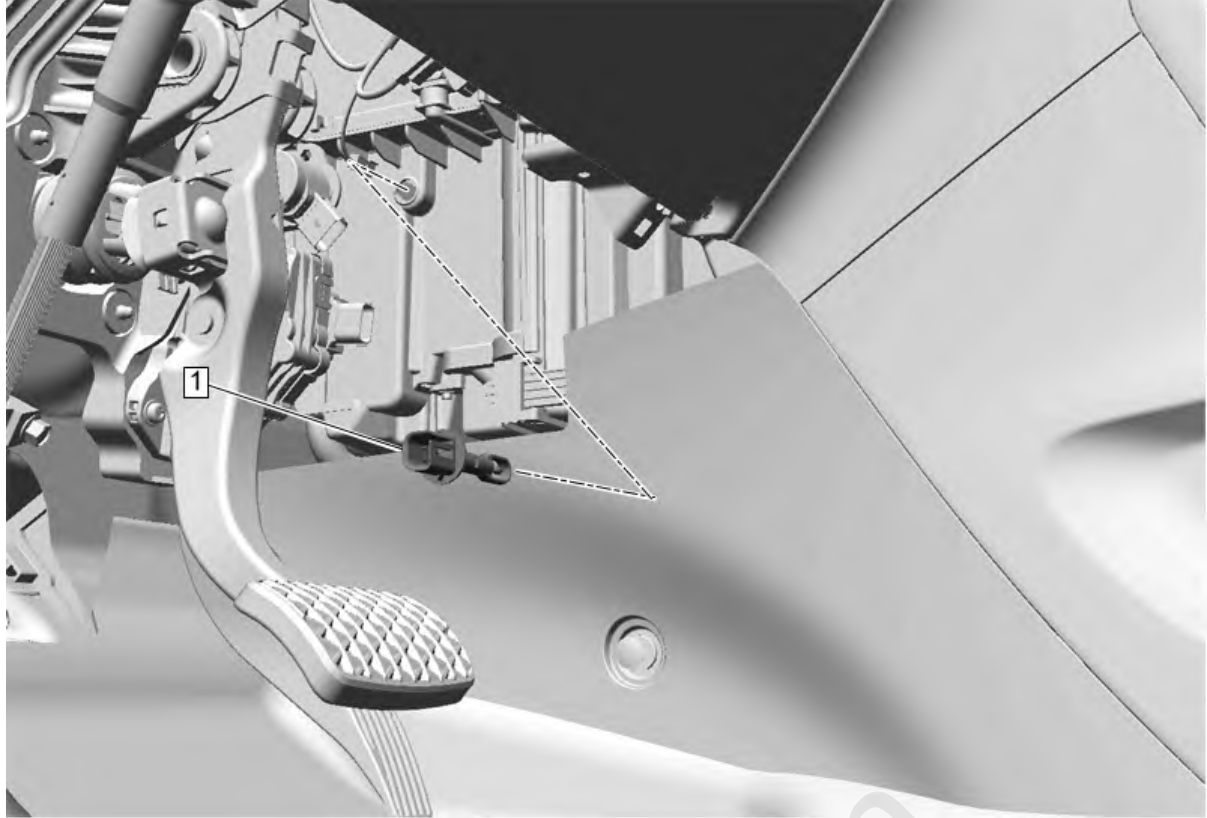


Fig. 81: Air Conditioning Evaporator Temperature Sensor (CJ2 C60 C67 LHD Evaporator Core).
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Floor Front Air Outlet Duct Replacement - Left Side (Chevrolet)</u> <u>Floor Front Air Outlet Duct Replacement - Left Side (Buick)</u>	
1	Air Conditioning Evaporative Temperature Sensor Procedure 1. Disconnect the electrical connector. 2. To remove the air conditioning evaporative temperature sensor, turn the air conditioning evaporative temperature sensor counter clock wise a quarter of a turn.

AIR CONDITIONING EVAPORATOR TEMPERATURE SENSOR REPLACEMENT (UPPER LEFT DUCT)

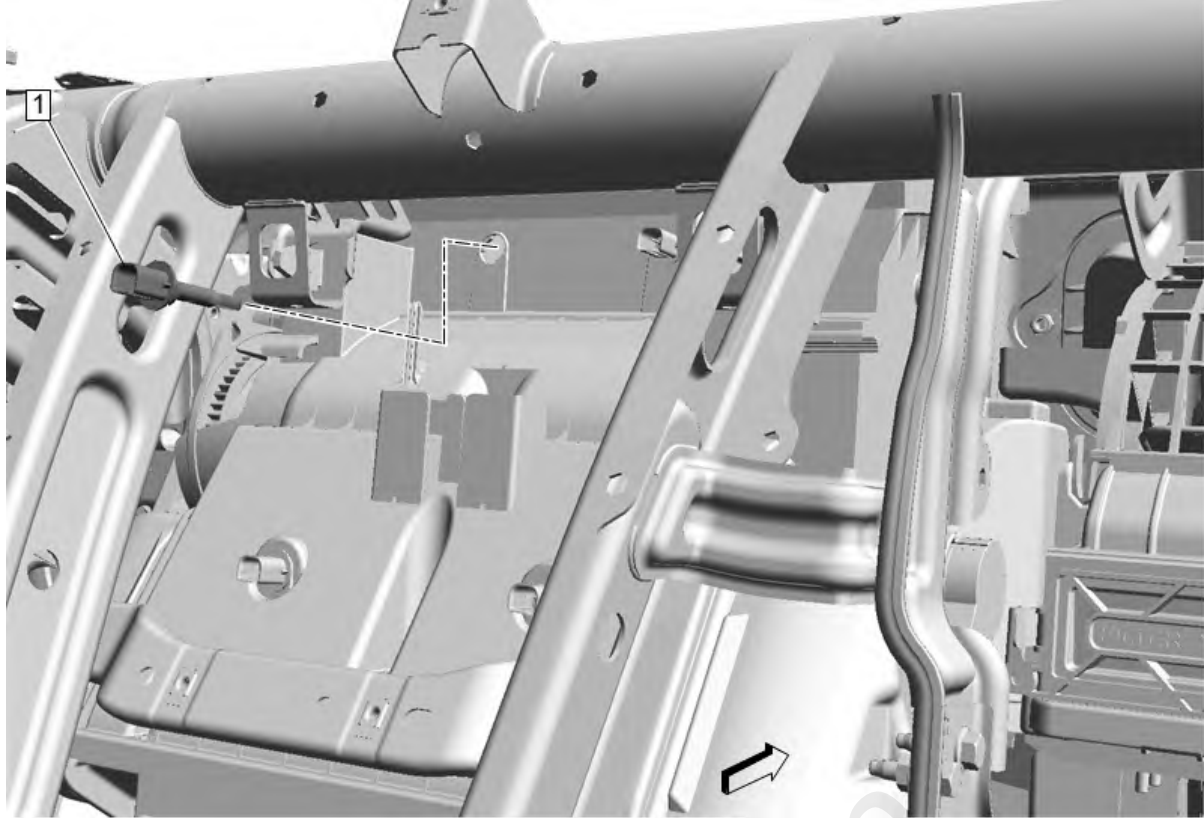


Fig. 82: Air Conditioning Evaporator Temperature Sensor (Upper Left Duct).

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Instrument Panel Assembly Replacement (Buick)</u> <u>Instrument Panel Assembly Replacement (Chevrolet)</u>	
1	Air Conditioning Evaporative Temperature Sensor Procedure 1. Disconnect the electrical connector. 2. To remove the air conditioning evaporative temperature sensor, turn the air conditioning evaporative temperature sensor counter clock wise a quarter of a turn.

AIR CONDITIONING EVAPORATOR TEMPERATURE SENSOR REPLACEMENT (UPPER RIGHT DUCT)

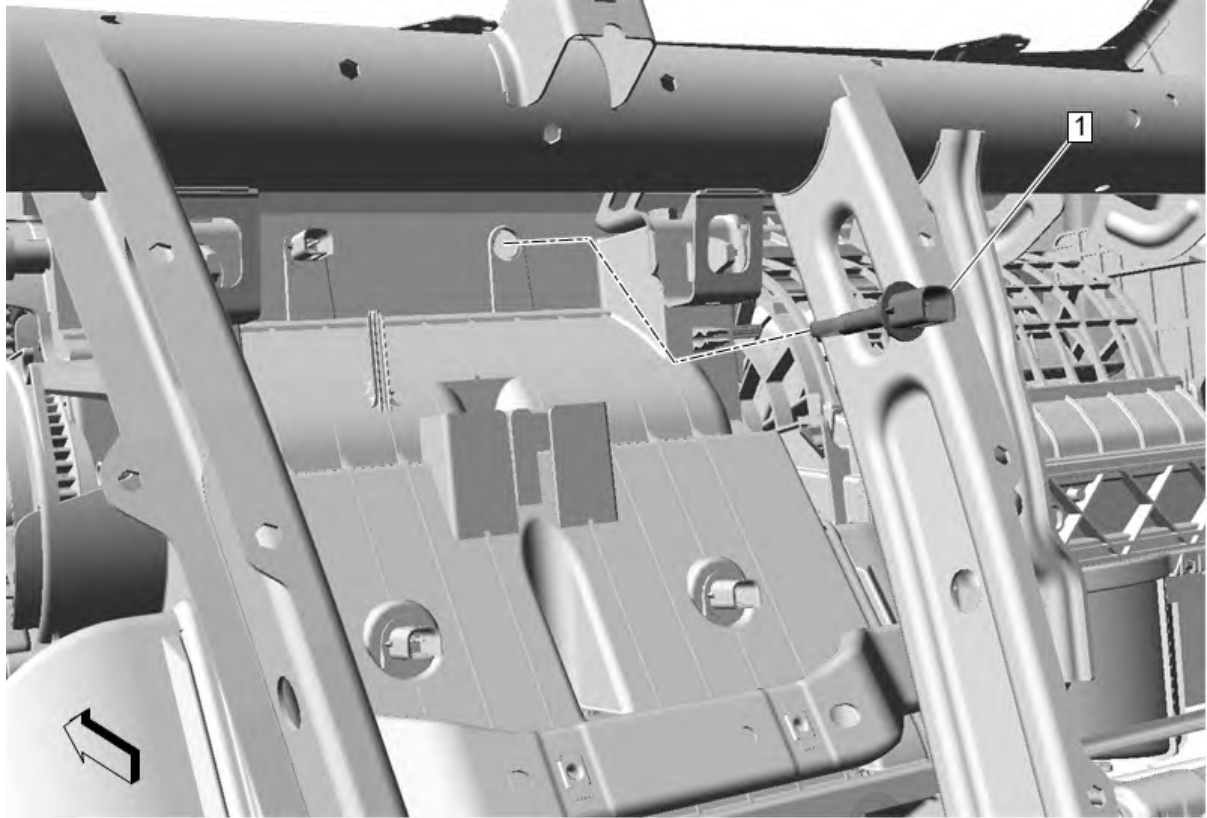


Fig. 83: Air Conditioning Evaporator Temperature Sensor (Upper Right Duct)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Instrument Panel Assembly Replacement (Buick)</u> <u>Instrument Panel Assembly Replacement (Chevrolet)</u>	
1	Air Conditioning Evaporative Temperature Sensor Procedure 1. Disconnect the electrical connector. 2. To remove the air conditioning evaporative temperature sensor, turn the air conditioning evaporative temperature sensor counter clock wise a quarter of a turn.

AIR CONDITIONING EVAPORATOR TEMPERATURE SENSOR REPLACEMENT (LEFT LOWER DUCT)

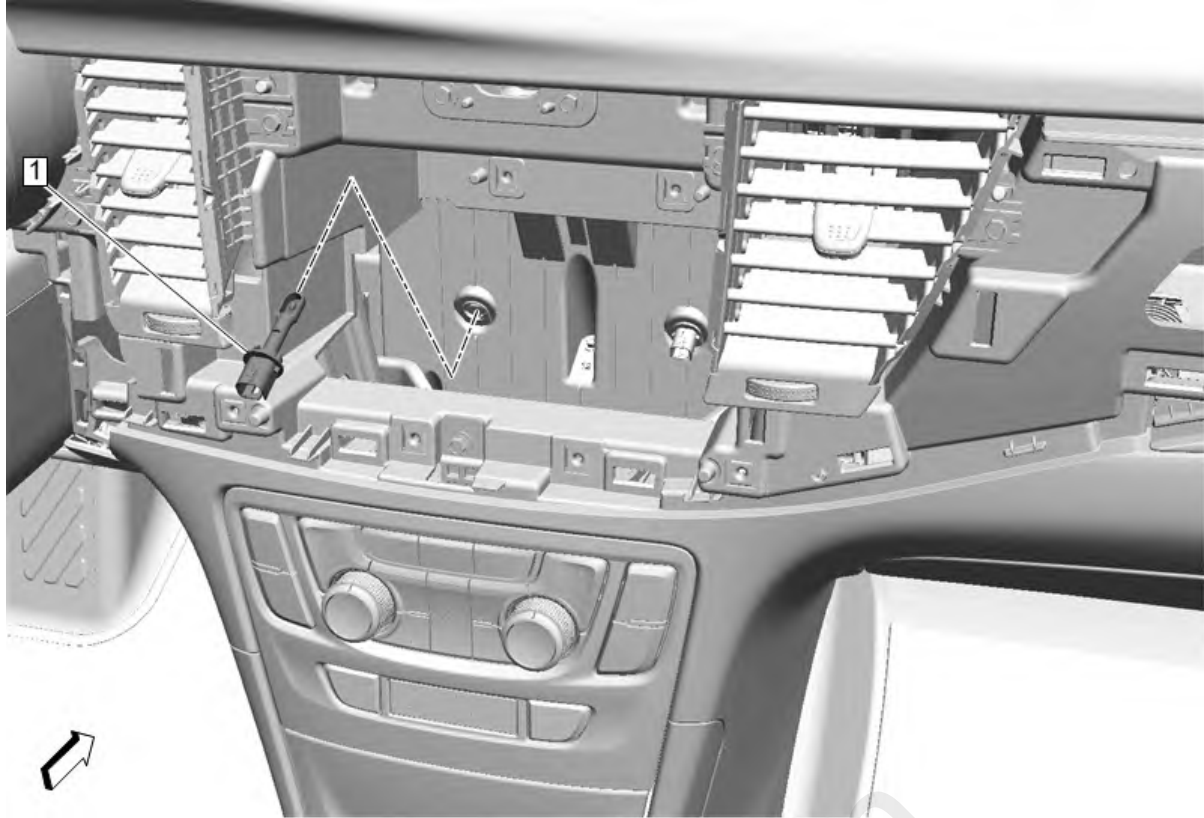


Fig. 84: Air Conditioning Evaporator Temperature Sensor (Left Lower Duct)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Human Machine Interface Control Module Bracket Replacement</u>	
1	Air Conditioning Evaporative Temperature Sensor Procedure 1. Disconnect the electrical connector. 2. To remove the air conditioning evaporative temperature sensor, turn the air conditioning evaporative temperature sensor counter clock wise a quarter of a turn.

AIR CONDITIONING EVAPORATOR TEMPERATURE SENSOR REPLACEMENT (RIGHT LOWER DUCT)

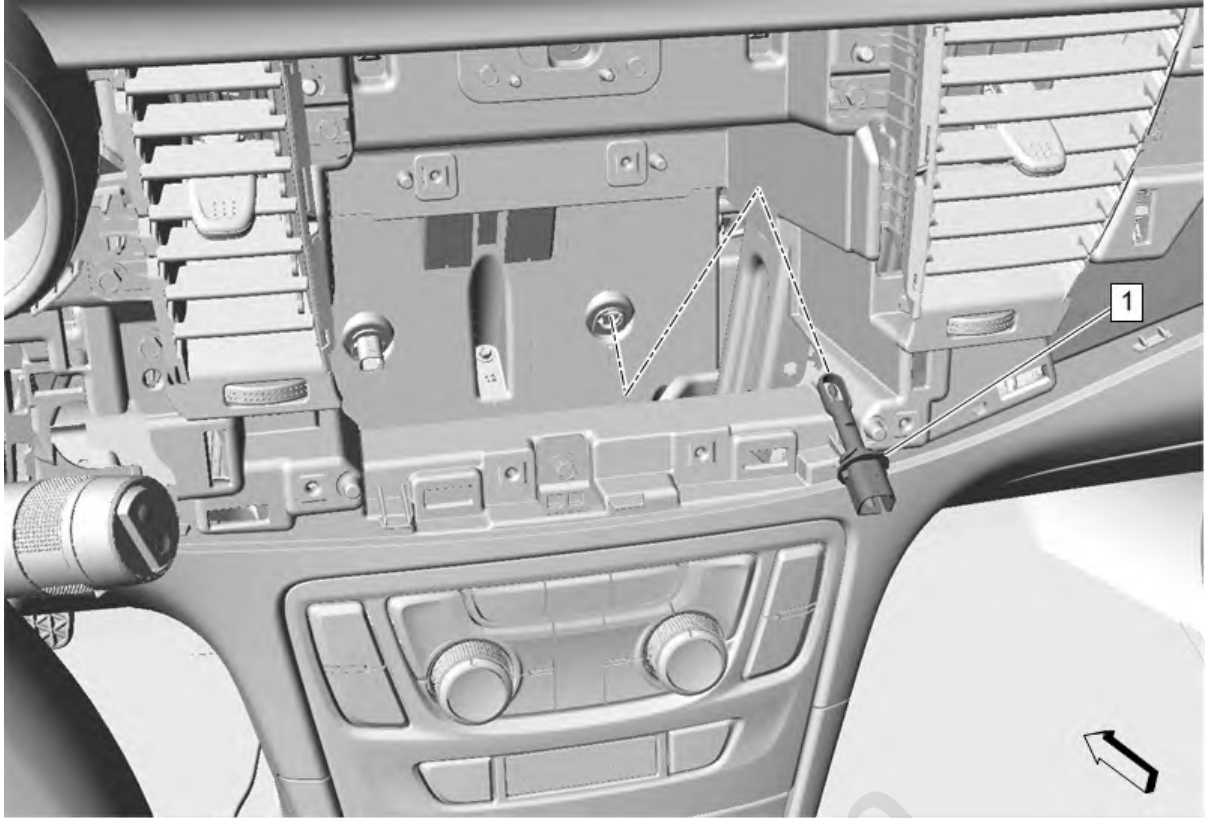


Fig. 85: Air Conditioning Evaporator Temperature Sensor (Right Lower Duct)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Human Machine Interface Control Module Bracket Replacement</u>	
1	Air Conditioning Evaporative Temperature Sensor Procedure 1. Disconnect the electrical connector. 2. To remove the air conditioning evaporative temperature sensor, turn the air conditioning evaporative temperature sensor counter clock wise a quarter of a turn.

AIR CONDITIONING CONDENSER REPLACEMENT (LUV)

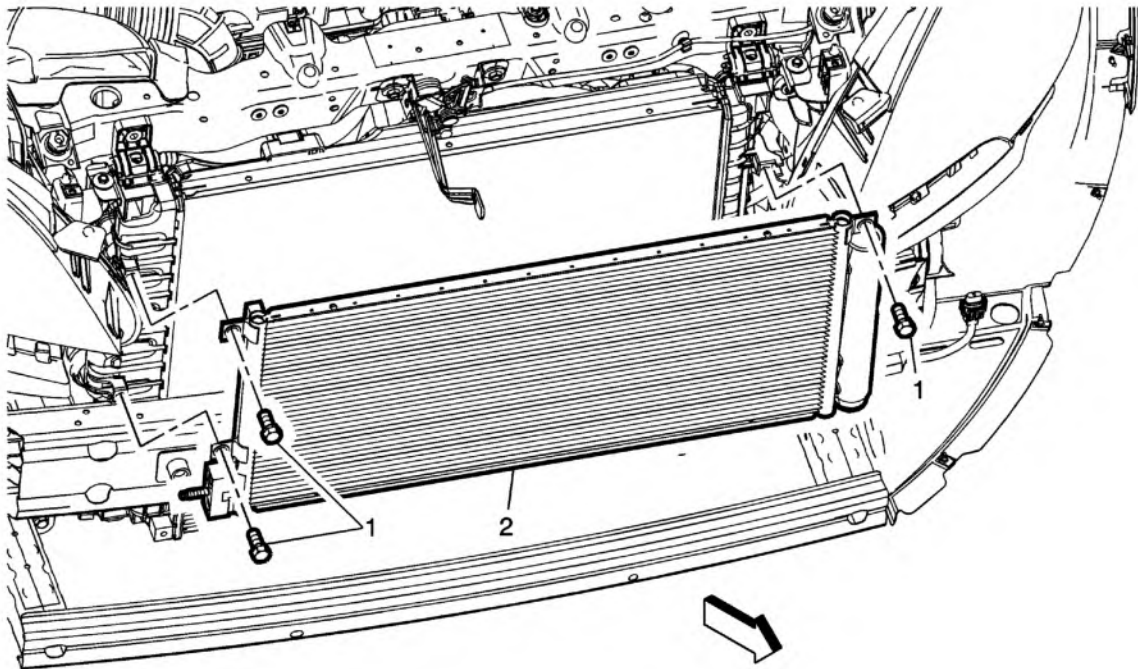


Fig. 86: Air Conditioning Condenser (LUV)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Recover refrigerant. Refer to Refrigerant Recovery and Recharging (R-134a). 2. Remove the front bumper fascia assembly. Refer to Front Bumper Fascia Replacement (Chevrolet) Front Bumper Fascia Replacement (Buick). 3. Remove the radiator air lower and upper baffles. Refer to Radiator Air Lower Baffle and Deflector Replacement (LUV), and Radiator Air Upper Baffle and Deflector Replacement (LE2 LUV). 4. Remove air conditioning condenser hose assembly from the condenser and position out of the way. Refer to Air Conditioning Condenser Hose Replacement (LUV).	
1	Air Conditioning Condenser Assembly Bolt (Qty: 3) CAUTION: Refer to Fastener Caution .
2	Air Conditioning Condenser Assembly Procedure Transfer all necessary components.

AIR CONDITIONING CONDENSER REPLACEMENT (LE2)

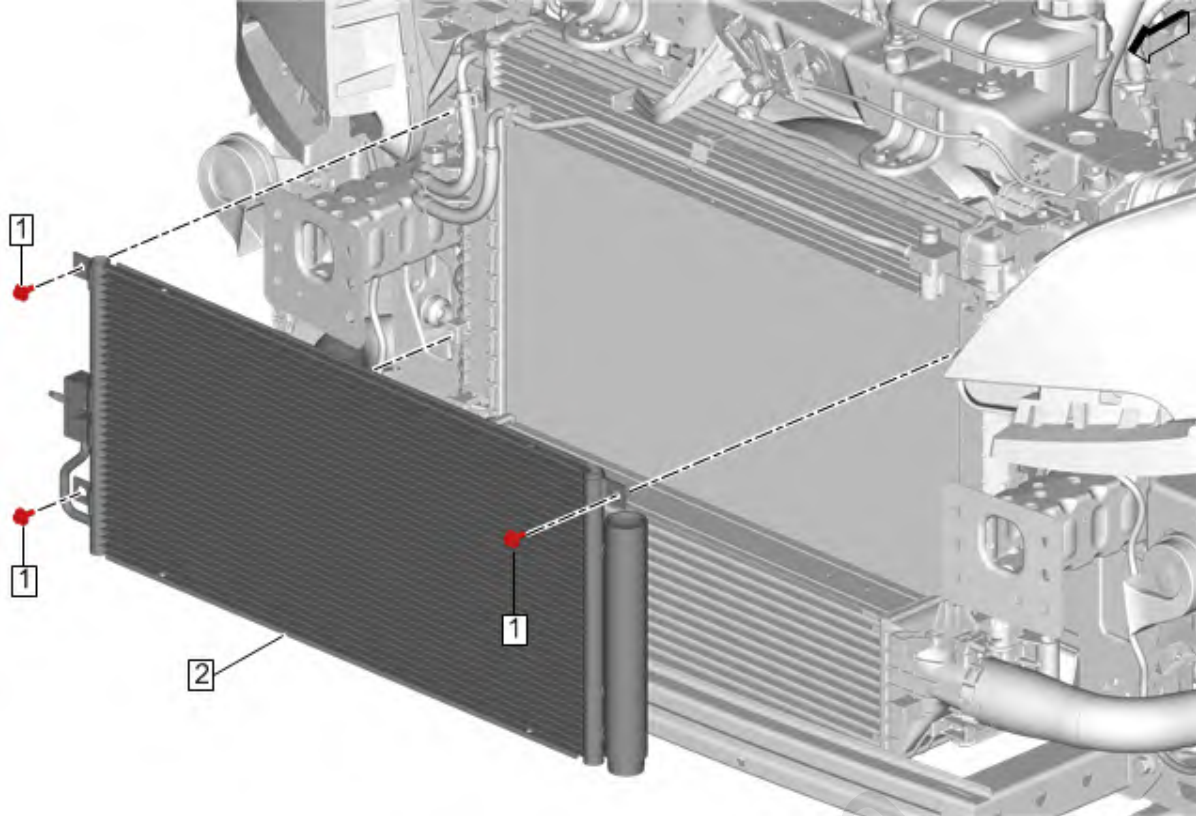


Fig. 87: Air Conditioning Condenser (LE2)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Radiator Air Upper Baffle and Deflector Replacement (LE2 LUY). 2. Air Conditioning Condenser Hose@Air Conditioning Condenser - Remove - Air Conditioning Condenser Hose Replacement (LE2). 3. Transmission Fluid Auxiliary Cooler@Air Conditioning Condenser - Position aside - Transmission Fluid Auxiliary Cooler Replacement (LE2).	
1	Air Conditioning Condenser Bolt CAUTION: Refer to Component Fastener Tightening Caution . Tighten 6 N.m (53 lb in)
2	Air Conditioning Condenser

HEATER AND AIR CONDITIONING EVAPORATOR AND BLOWER MODULE REMOVAL AND INSTALLATION

Removal Procedure

1. Disconnect the negative battery cable. [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#).
2. Recover the refrigerant. [Refrigerant Recovery and Recharging \(R-134a\)](#).
3. Drain the cooling system. [Cooling System Draining and Filling](#)
4. Heater Inlet Hose@Heater Core Inlet Tube - Remove - [Heater Inlet Hose Replacement \(2H0\)](#)[Heater Inlet Hose Replacement \(LUY\)](#)[Heater Inlet Hose Replacement \(LE2\)](#).
5. Heater Outlet Hose@Heater Core Outlet Tube - Remove - [Heater Outlet Hose Replacement \(2H0\)](#)[Heater Outlet Hose Replacement \(LUY\)](#)[Heater Outlet Hose Replacement \(LUY Rear\)](#)[Heater Outlet Hose Replacement \(LE2\)](#).

6. Air Conditioning Evaporator Hose Assembly@Air Conditioning Evaporator Thermal Expansion Valve - Remove - [Air Conditioning Evaporator Hose Assembly Replacement \(2H0\)](#)[Air Conditioning Evaporator Hose Assembly Replacement \(LUV\)](#)[Air Conditioning Evaporator Hose Assembly Replacement \(LE2\)](#).
7. [Floor Front Air Outlet Duct Replacement - Right Side](#) - Remove
8. [Floor Front Air Outlet Duct Replacement - Left Side \(Chevrolet\)](#)[Floor Front Air Outlet Duct Replacement - Left Side \(Buick\)](#) - Remove
9. [Instrument Panel Tie Bar Replacement \(Buick\)](#)[Instrument Panel Tie Bar Replacement \(Chevrolet\)](#) - Remove

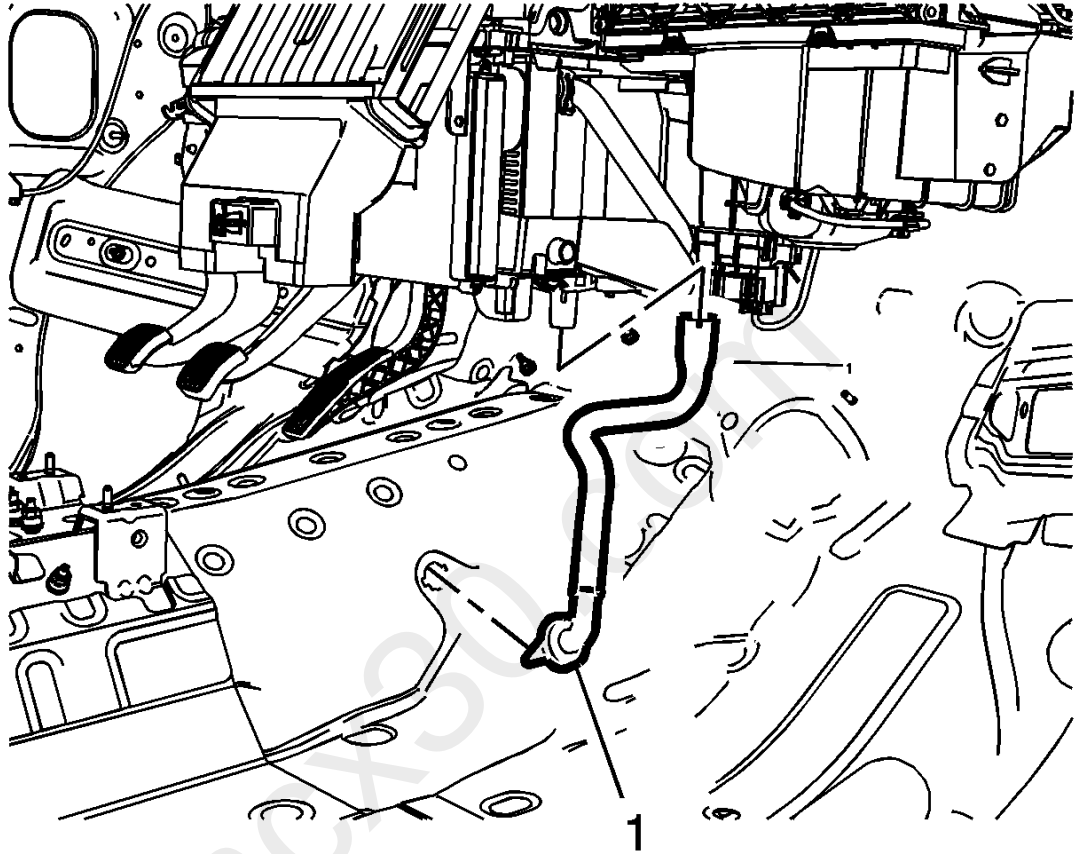


Fig. 88: HVAC Module Assembly Drain Tube
Courtesy of GENERAL MOTORS COMPANY

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

10. Remove the heating ventilation and air conditioning (HVAC) module assembly drain (1) from the HVAC module assembly.

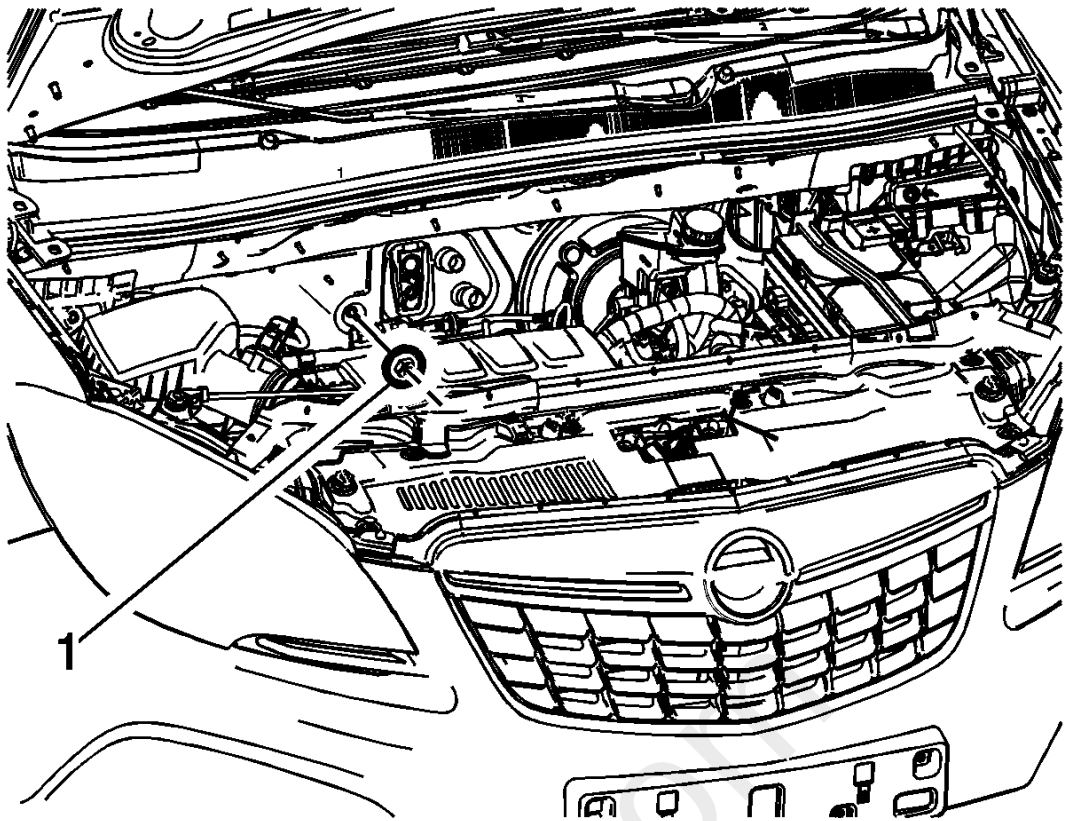


Fig. 89: HVAC Module Assembly And Cowl Panel

Courtesy of GENERAL MOTORS COMPANY

11. From within the engine compartment, remove the HVAC module assembly nut (1) securing the HVAC module assembly to the cowl panel.

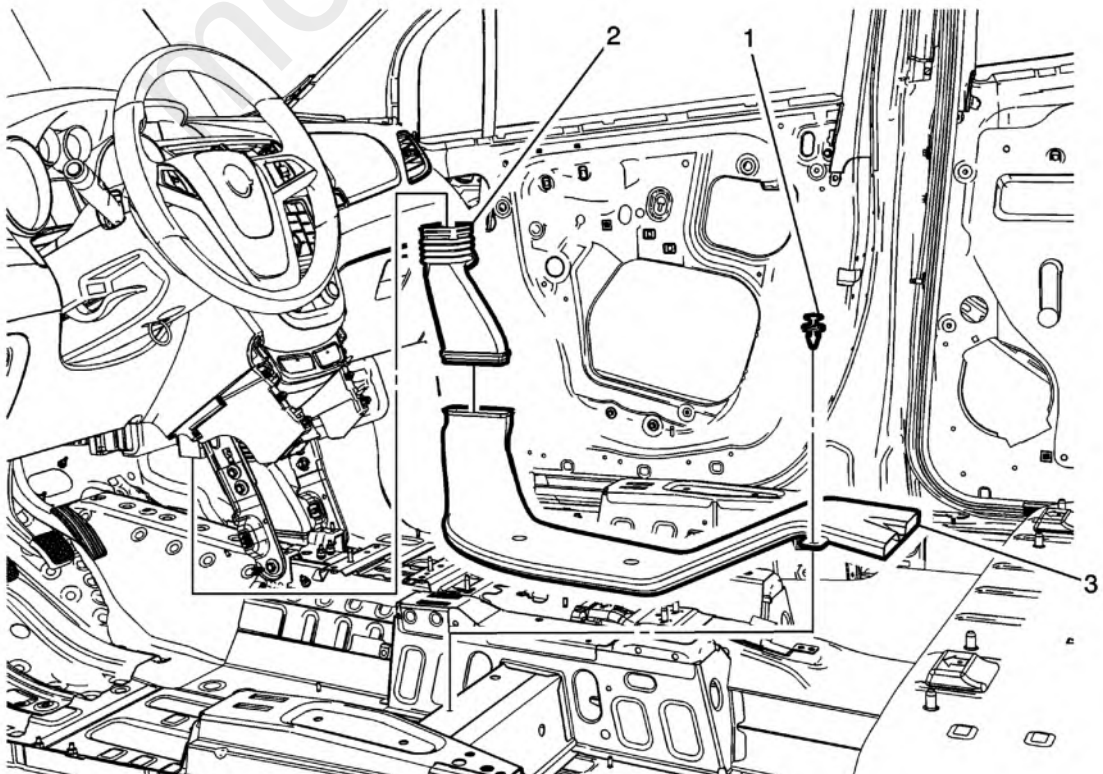


Fig. 90: Floor Rear Air Outlet Duct - Left Side

Courtesy of GENERAL MOTORS COMPANY

12. Floor Rear Air Outlet Duct 3 - Left Side

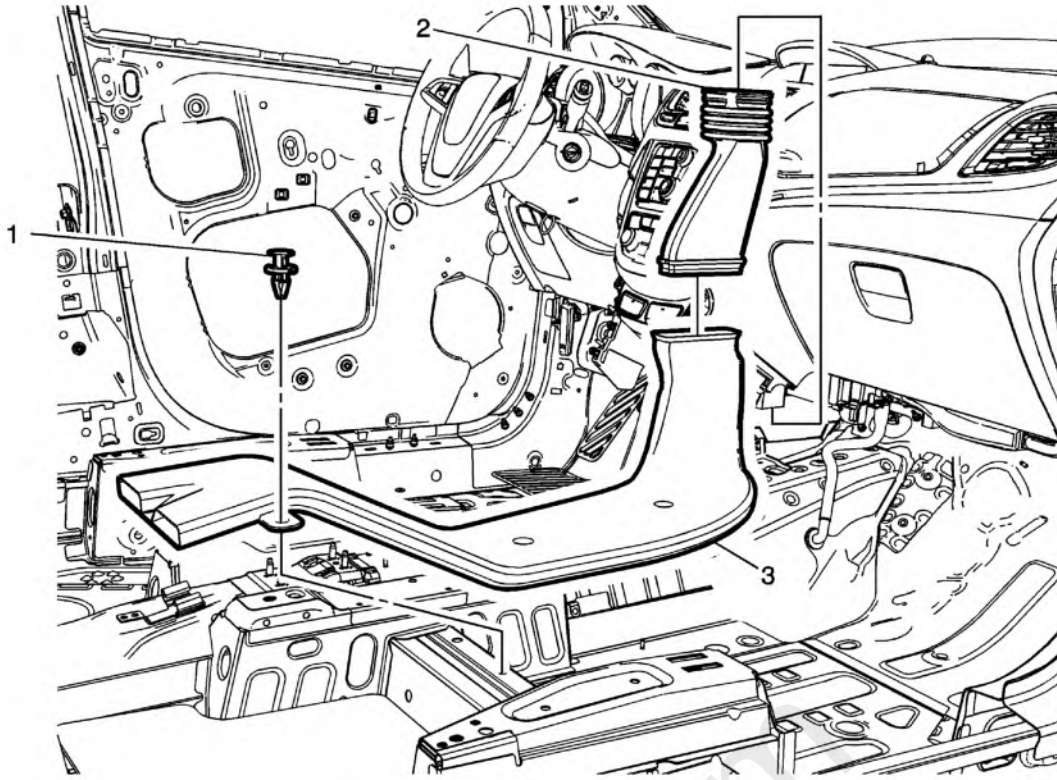


Fig. 91: Floor Rear Air Outlet Duct - Right Side
Courtesy of GENERAL MOTORS COMPANY

13. Floor Rear Air Outlet Duct 3 - Right Side@Heater and Air Conditioning Evaporator and Blower ModuleDisconnect{ If equipped } - **Floor Rear Air Outlet Duct Replacement - Right Side**

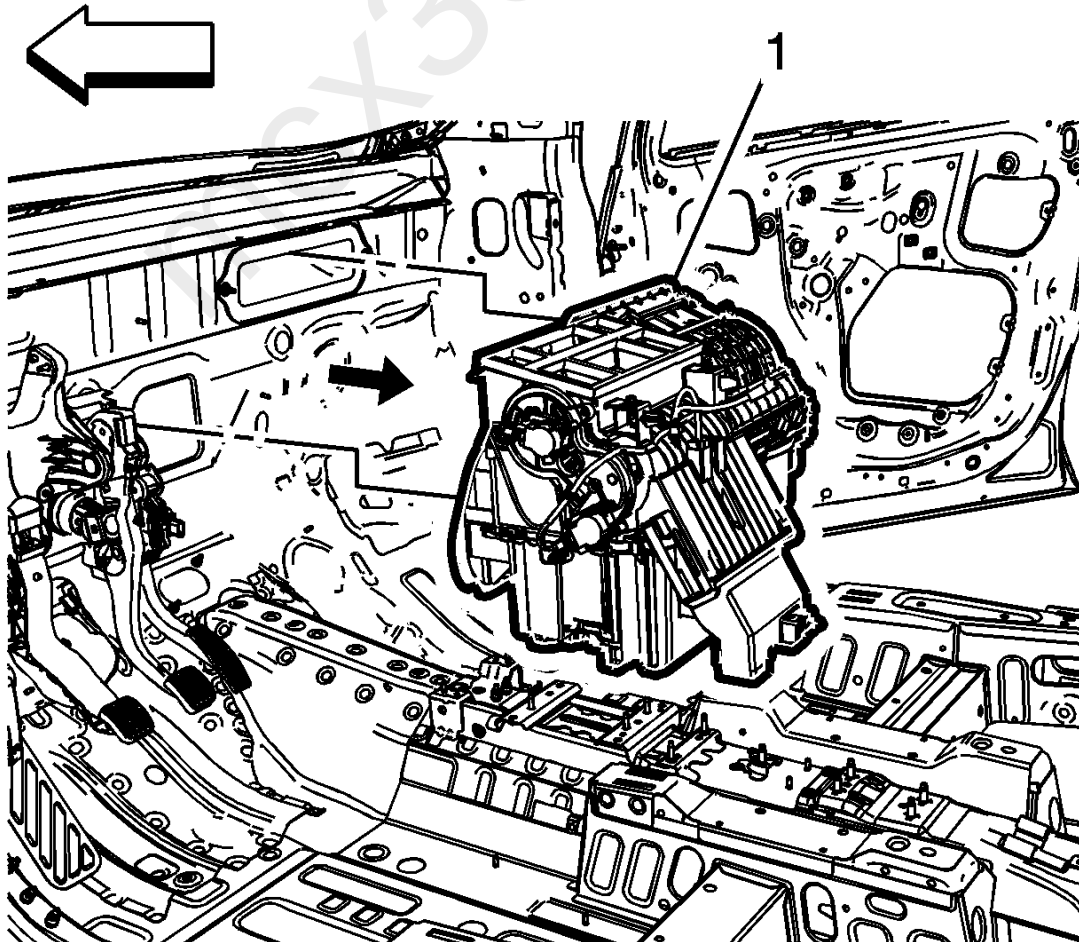


Fig. 92: HVAC Module Assembly.
Courtesy of GENERAL MOTORS COMPANY

14. Remove the HVAC module assembly (1) from the vehicle.
15. Transfer components as necessary.

Installation Procedure

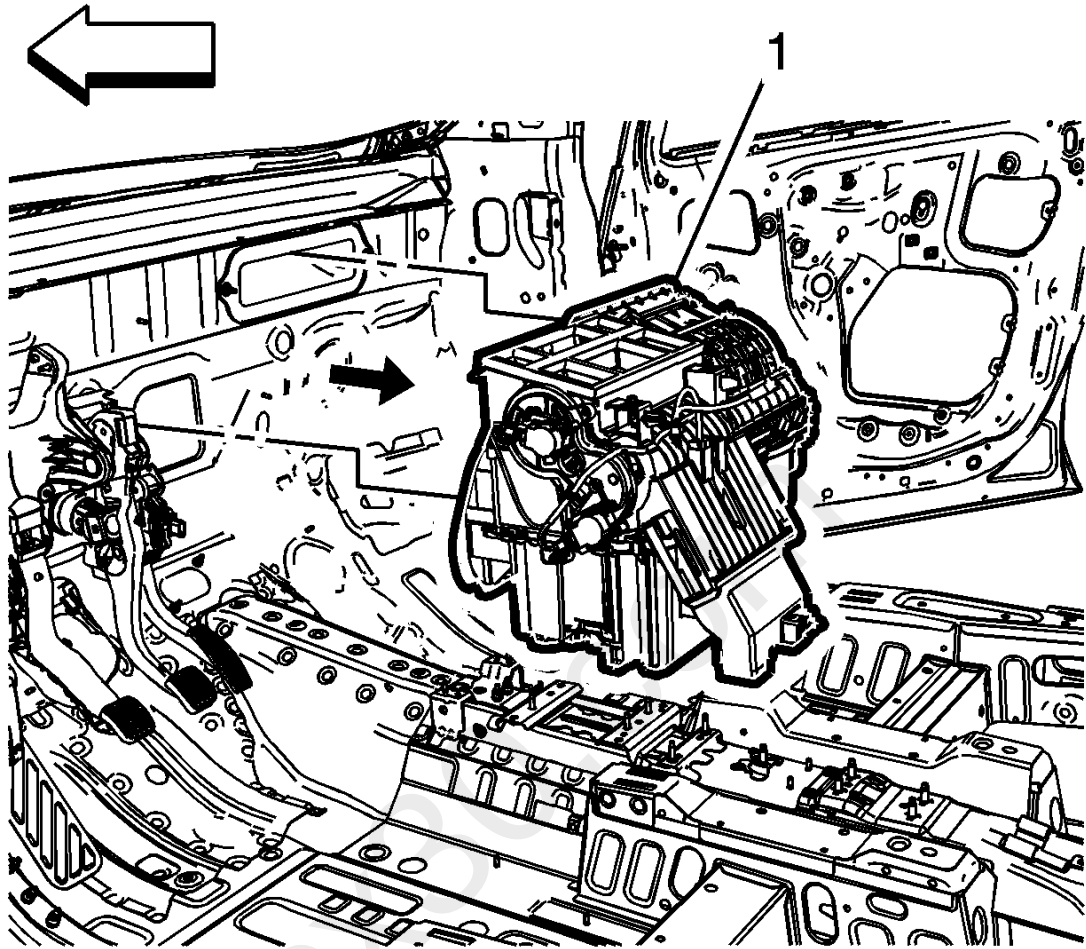


Fig. 93: HVAC Module Assembly.
Courtesy of GENERAL MOTORS COMPANY

1. Position the HVAC module assembly (1) into the vehicle and temporarily support it.

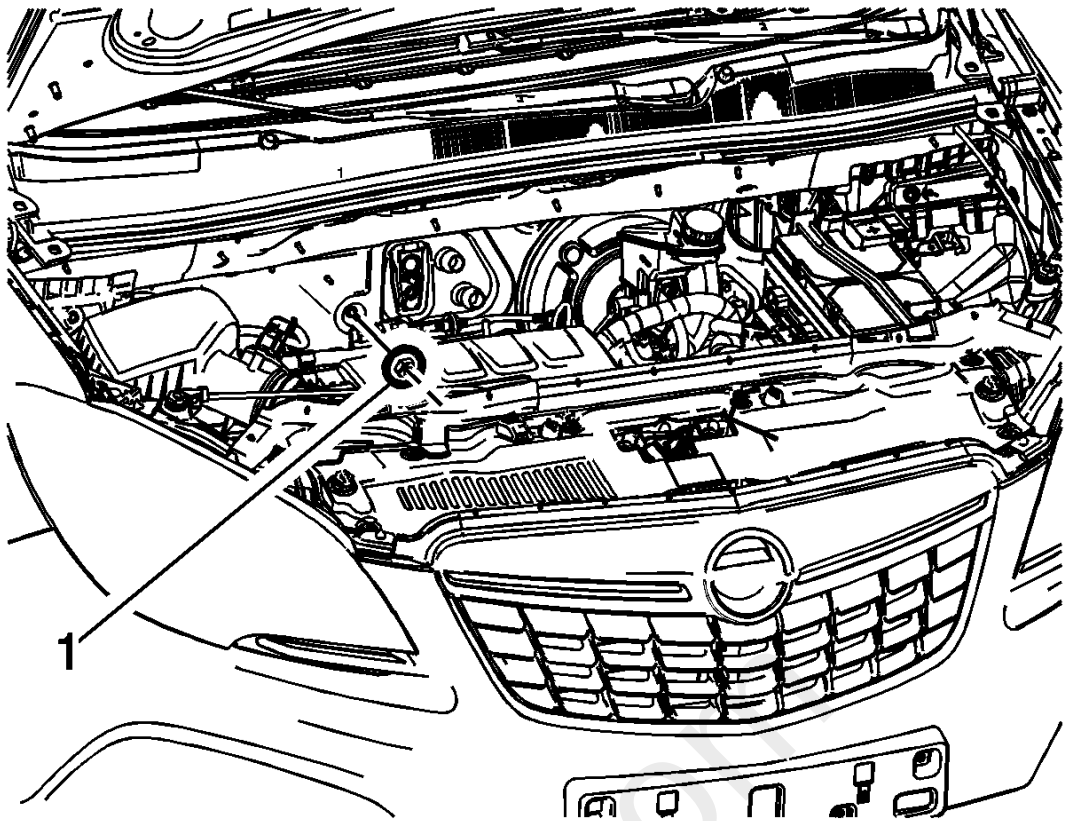


Fig. 94: HVAC Module Assembly And Cowl Panel

Courtesy of GENERAL MOTORS COMPANY

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

2. From within the engine compartment, install the HVAC module assembly nut (1) securing the HVAC module assembly to the cowl panel, and tighten to 22 N.m (16 lb ft)

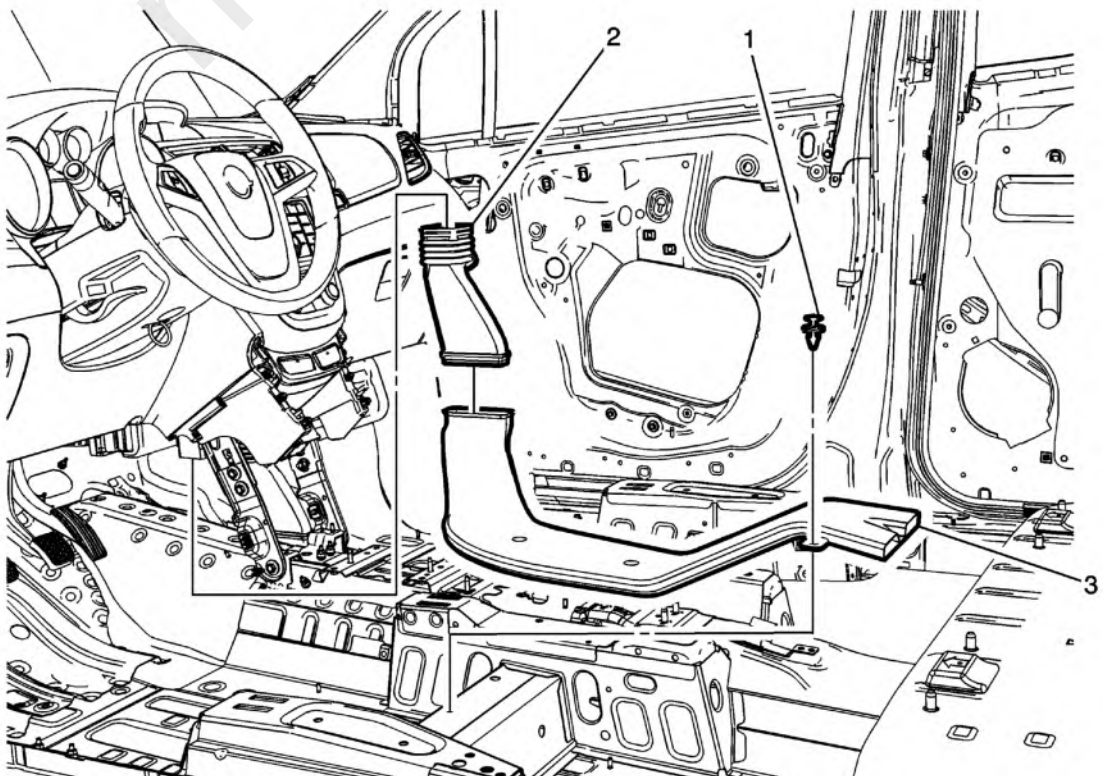


Fig. 95: Floor Rear Air Outlet Duct - Left Side
Courtesy of GENERAL MOTORS COMPANY

3. Floor Rear Air Outlet Duct 3 - Left Side@Heater and Air Conditioning Evaporator and Blower ModuleConnect { If equipped } - **Floor Rear Air Outlet Duct Replacement - Left Side**

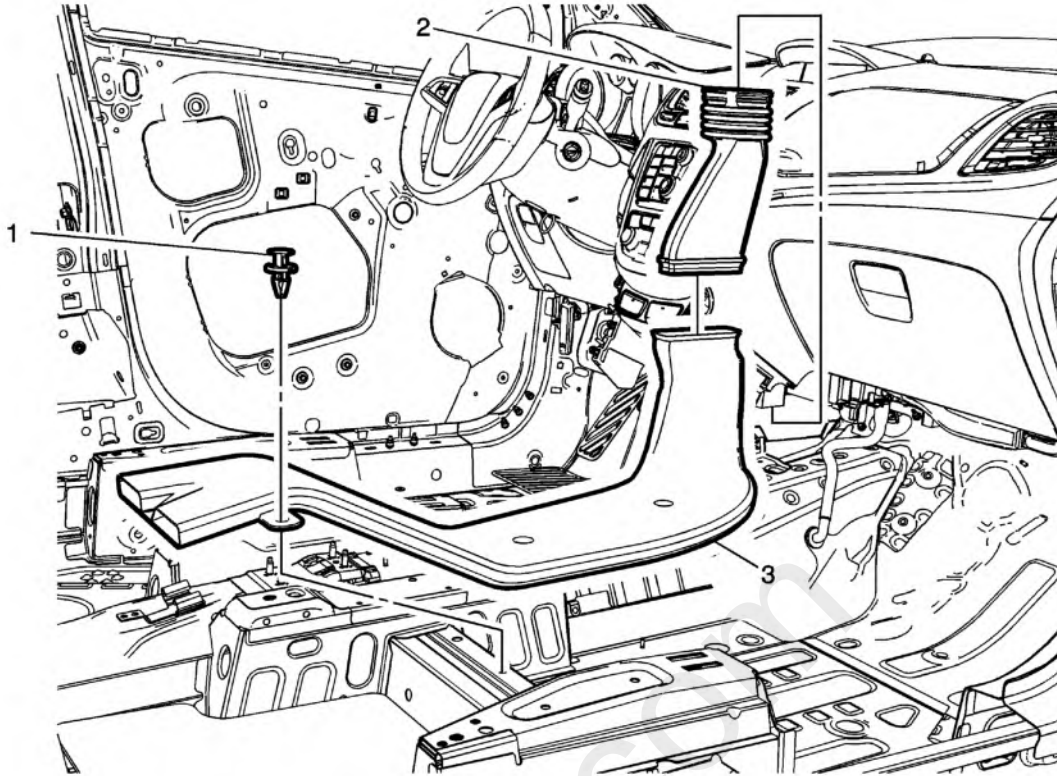


Fig. 96: Floor Rear Air Outlet Duct - Right Side
Courtesy of GENERAL MOTORS COMPANY

4. Floor Rear Air Outlet Duct 3 - Right Side@Heater and Air Conditioning Evaporator and Blower ModuleConnect { If equipped } - **Floor Rear Air Outlet Duct Replacement - Right Side**

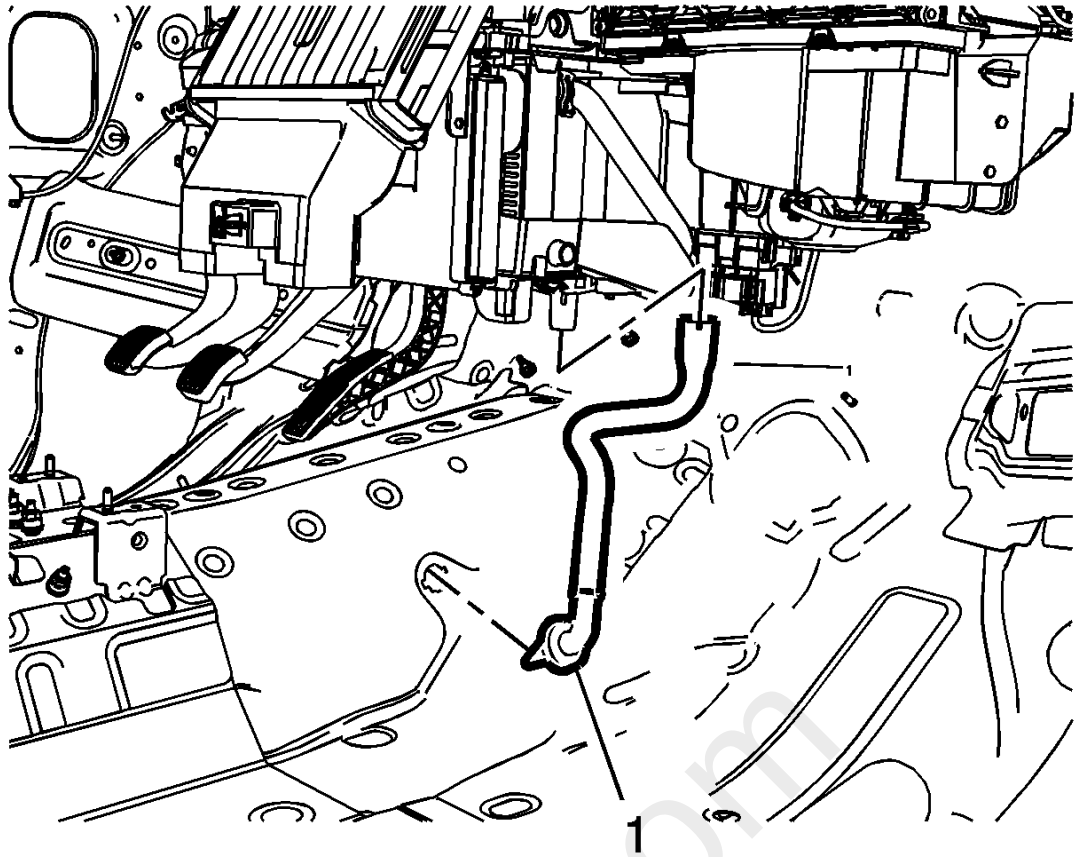


Fig. 97: HVAC Module Assembly Drain Tube
 Courtesy of GENERAL MOTORS COMPANY

5. Install the HVAC module assembly drain tube (1) to the HVAC module assembly.
6. [Instrument Panel Tie Bar Replacement \(Buick\)](#) [Instrument Panel Tie Bar Replacement \(Chevrolet\)](#) - Install
7. [Floor Front Air Outlet Duct Replacement - Left Side \(Chevrolet\)](#) [Floor Front Air Outlet Duct Replacement - Left Side \(Buick\)](#) - Install
8. [Floor Front Air Outlet Duct Replacement - Right Side](#) - Install
9. Air Conditioning Evaporator Hose Assembly@Air Conditioning Evaporator Thermal Expansion Valve - Install - [Air Conditioning Evaporator Hose Assembly Replacement \(2H0\)](#) [Air Conditioning Evaporator Hose Assembly Replacement \(LUV\)](#) [Air Conditioning Evaporator Hose Assembly Replacement \(LE2\)](#).
10. Heater Outlet Hose@Heater Core Outlet Tube - Install - [Heater Outlet Hose Replacement \(2H0\)](#) [Heater Outlet Hose Replacement \(LUV\)](#) [Heater Outlet Hose Replacement \(LUV Rear\)](#) [Heater Outlet Hose Replacement \(LE2\)](#)
11. Heater Inlet Hose@Heater Core Inlet Tube - Install - [Heater Inlet Hose Replacement \(2H0\)](#) [Heater Inlet Hose Replacement \(LUV\)](#) [Heater Inlet Hose Replacement \(LE2\)](#)
12. Fill the cooling system. [Cooling System Draining and Filling](#)
13. Evacuate and charge the refrigerant system. [Refrigerant Recovery and Recharging \(R-134a\)](#)
14. Connect the battery negative cable. [Battery Negative Cable Disconnection and Connection \(without KL9\)](#) [Battery Negative Cable Disconnection and Connection \(with KL9\)](#)

HEATER AND AIR CONDITIONING EVAPORATOR AND BLOWER UPPER CASE REPLACEMENT

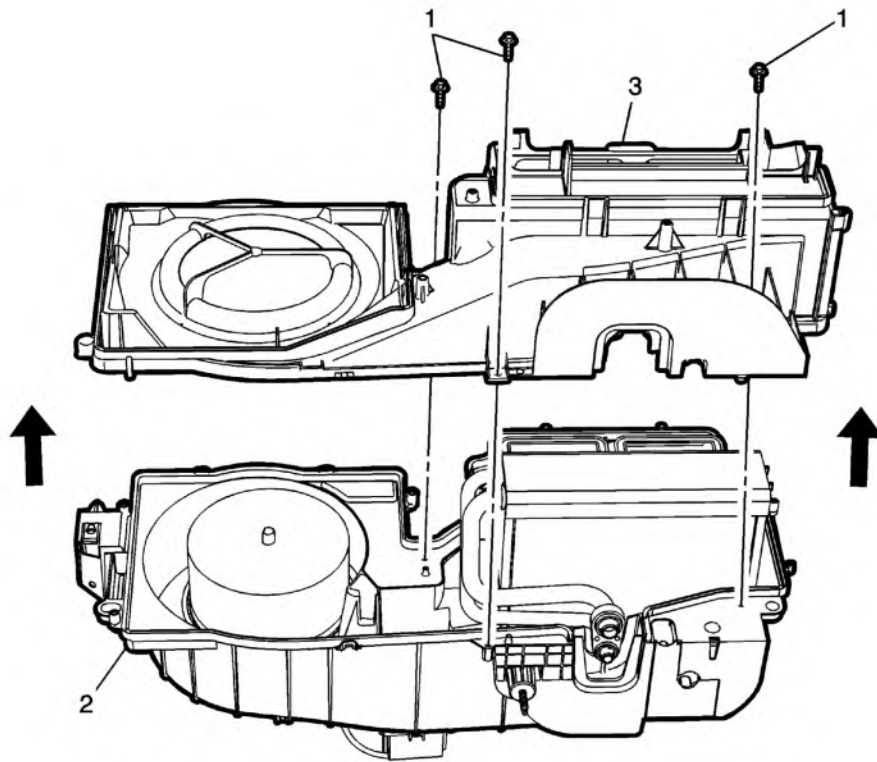


Fig. 98: Heater And Air Conditioning Evaporator And Blower Upper Case
 Courtesy of GENERAL MOTORS COMPANY

Call out	Component Name
Preliminary Procedure Remove the air conditioning evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement .	
1	Heater and Air Conditioning Evaporator and Blower Case Screw (Qty: 3) CAUTION: Refer to Fastener Caution . Tighten 2.0 N.m (18 lb in)
2	Heater and Air Conditioning Evaporator and Blower Lower Case
3	Heater and Air Conditioning Evaporator and Blower Upper Case Procedure Transfer all the components.

HEATER AND AIR CONDITIONING EVAPORATOR AND BLOWER LOWER CASE REPLACEMENT

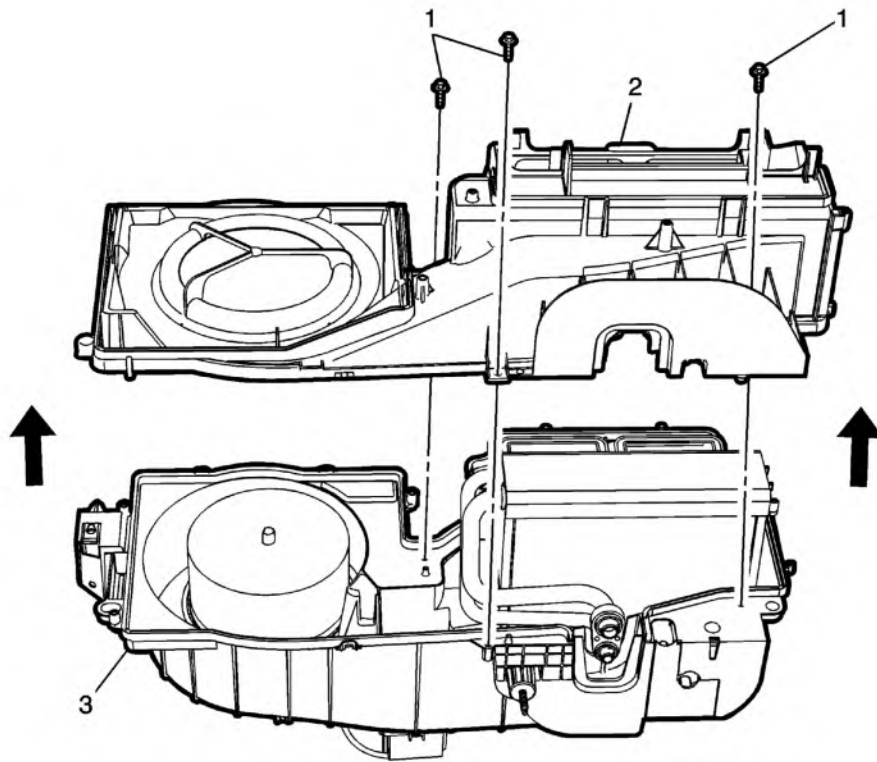


Fig. 99: Heater And Air Conditioning Evaporator And Blower Lower Case
 Courtesy of GENERAL MOTORS COMPANY

Call out	Component Name
Preliminary Procedures 1. Remove the air distributor case. Refer to Air Distributor Case Replacement. 2. Remove the air conditioning evaporator case assembly. Refer to Air Conditioning (A/C) Evaporator Case Assembly Replacement.	
1	Heater and Air Conditioning Evaporator and Blower Case Screws (Qty: 3) CAUTION: Refer to Fastener Caution . Tighten 2.0 N.m (18 lb in)
2	Heater and Air Conditioning Evaporator and Blower Upper Case
3	Heater and Air Conditioning Evaporator and Blower Lower Case Procedure Transfer all the components.

AIR CONDITIONING (A/C) EVAPORATOR CASE ASSEMBLY REPLACEMENT

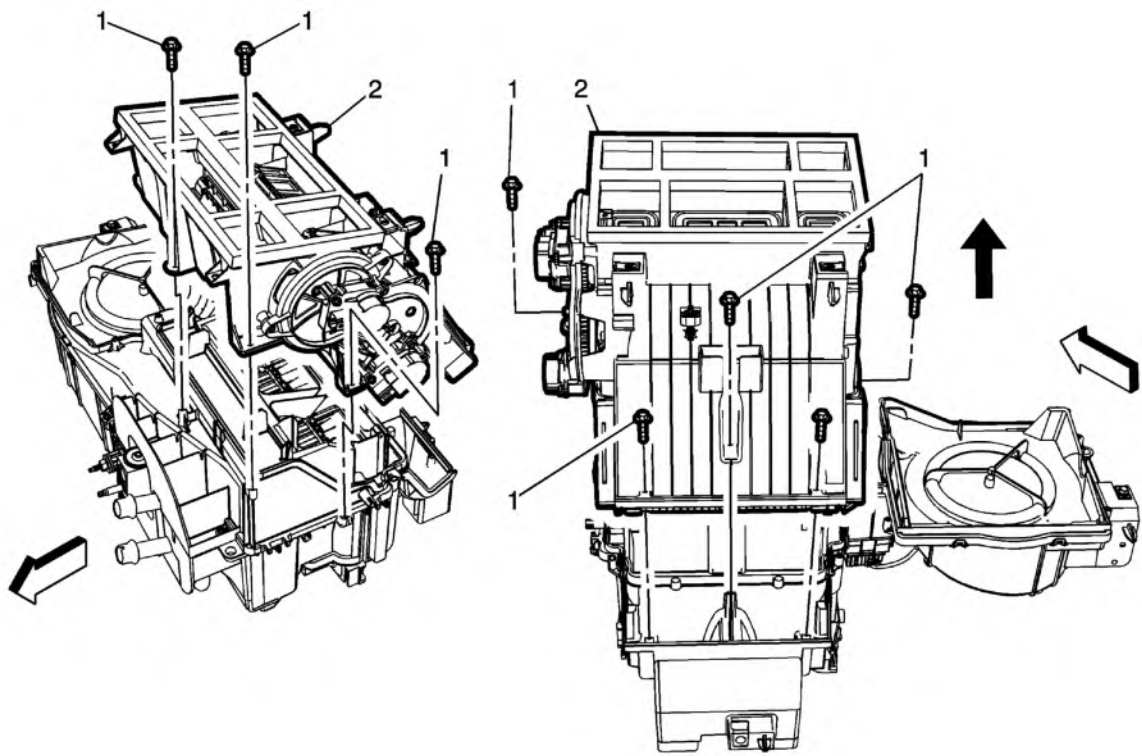


Fig. 100: Air Conditioning (A/C) Evaporator Case Assembly.

Courtesy of GENERAL MOTORS COMPANY

Call out	Component Name
Preliminary Procedures 1. Remove the air distributor case assembly. Refer to Air Distributor Case Replacement. 2. Remove the mode control cam actuator, if equipped. 3. Remove the mode control cable, if equipped.	
1	Air Conditioning Evaporator and Blower Module Bolt (Qty: 8) CAUTION: Refer to Fastener Caution .
2	Air Conditioning Evaporator Case Assembly Procedure Transfer all the components.

AIR CONDITIONING EVAPORATOR REPLACEMENT

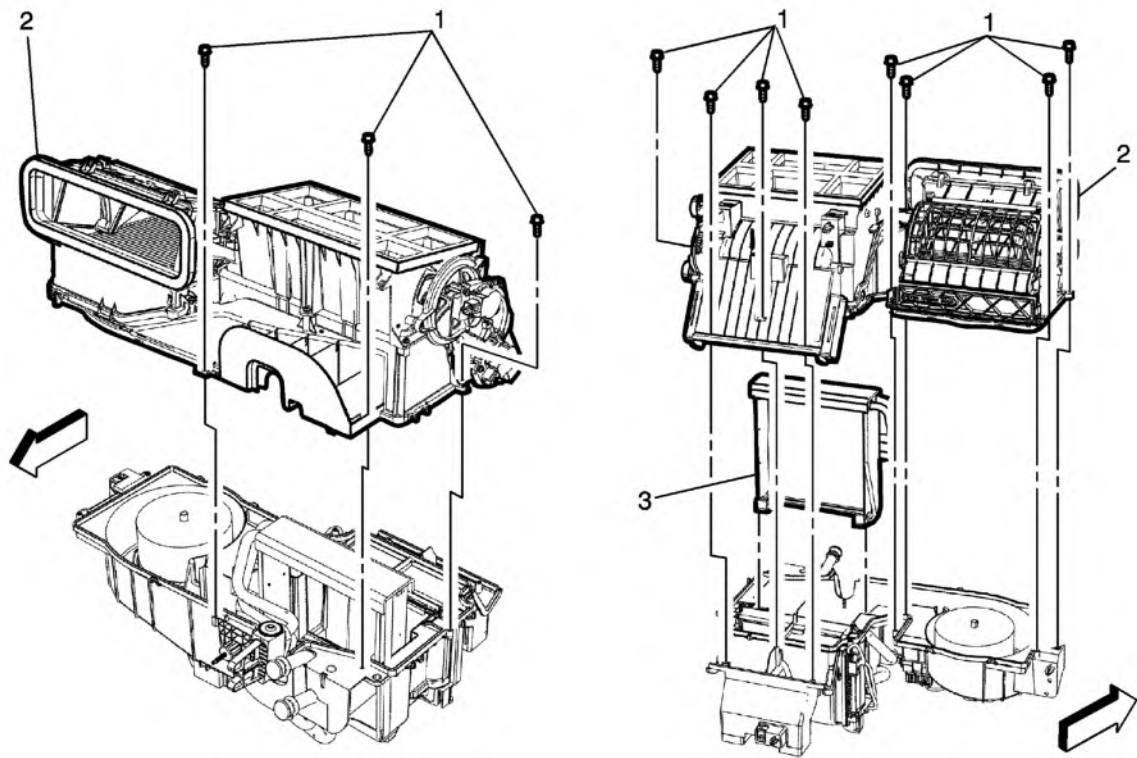


Fig. 101: Air Conditioning Evaporator
Courtesy of GENERAL MOTORS COMPANY

Call out	Component Name
Preliminary Procedure Remove the heater and air conditioning evaporator and blower module assembly. Refer to Heater and Air Conditioning Evaporator and Blower Module Removal and Installation .	
1	Heater and Air Conditioning Evaporator and Blower Case Bolt (Qty :11) CAUTION: Refer to Fastener Caution . Tighten 2.0 N.m (18 lb in)
2	Heater and Air Conditioning Evaporator and Blower Upper Case
3	Air Conditioning Evaporator Core Procedure Lift the air conditioning evaporator core out of the heater and air conditioning evaporator and blower lower case assembly.

AIR CONDITIONING EVAPORATOR MODULE DRAIN HOSE REPLACEMENT

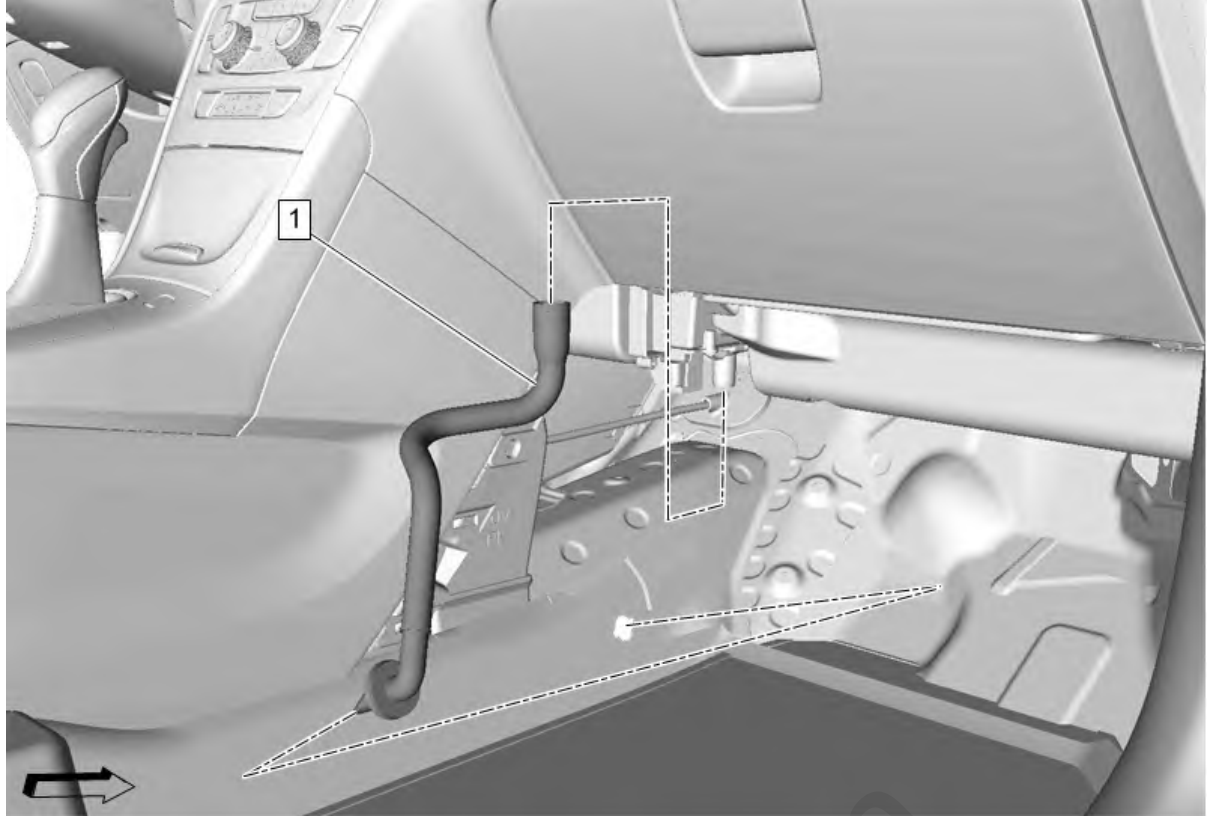


Fig. 102: Air Conditioning Evaporator Module Drain Hose
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures <u>Front Floor Console Extension Replacement - Right Side</u> - Pull the right front carpet back away from the right center of the vehicle.	
CAUTION: Refer to <u>HVAC Module Drain Tube Caution</u> .	
1	Air Conditioning Evaporator Module Drain Hose

HEATER INLET HOSE REPLACEMENT (2H0)

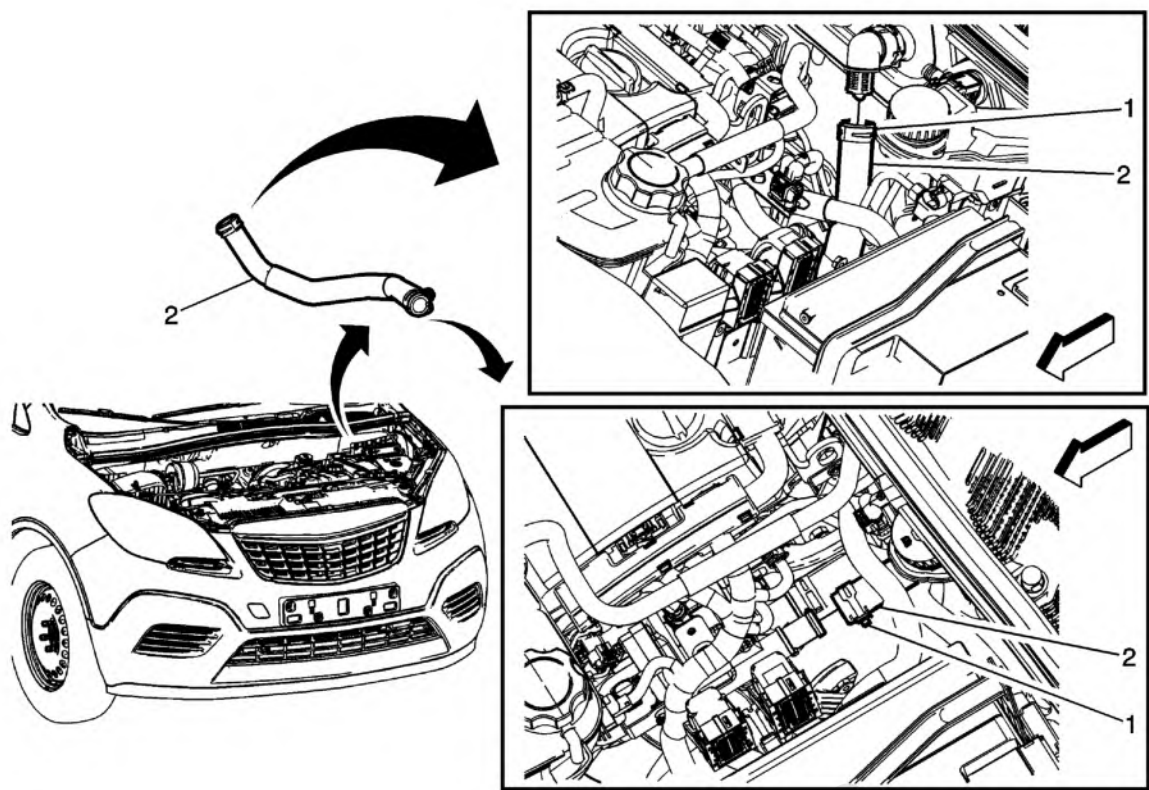


Fig. 103: Heater Inlet Hose (2H0)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
Drain the engine coolant. Cooling System Draining and Filling .	
1	Heater Inlet Hose Clamp (Qty: 2) Special Tools BO-38185 Hose Clamp Pliers For equivalent regional tools Special Tools .
2	Heater Inlet Hose

HEATER INLET HOSE REPLACEMENT (LUV)

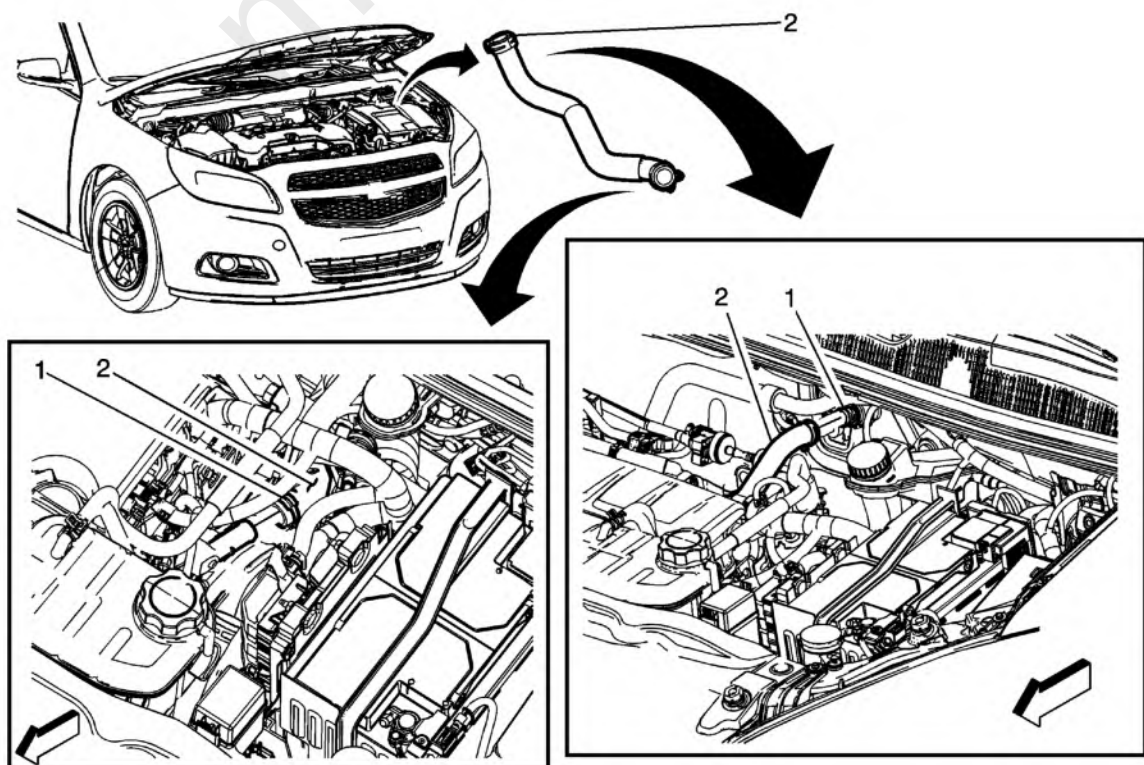


Fig. 104: Heater Inlet Hose (LUV)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Drain the engine coolant system. Refer to Cooling System Draining and Filling . 2. Remove the charge air cooler outlet air hose from the throttle body an reposition out of the way. Refer to Charge Air Cooler Outlet Air Hose Replacement .	
1	Heater Inlet Hose Clamp (Qty: 2) Special Tools BO-38185 Hose Clamp Pliers For equivalent regional tools, refer to Special Tools .
2	Heater Inlet Hose Procedures 1. Fill the engine coolant to the proper level. Refer to Cooling System Draining and Filling . 2. Inspect the engine cooling system for leaks. Refer to Cooling System Leak Testing .

HEATER INLET HOSE REPLACEMENT (LE2)

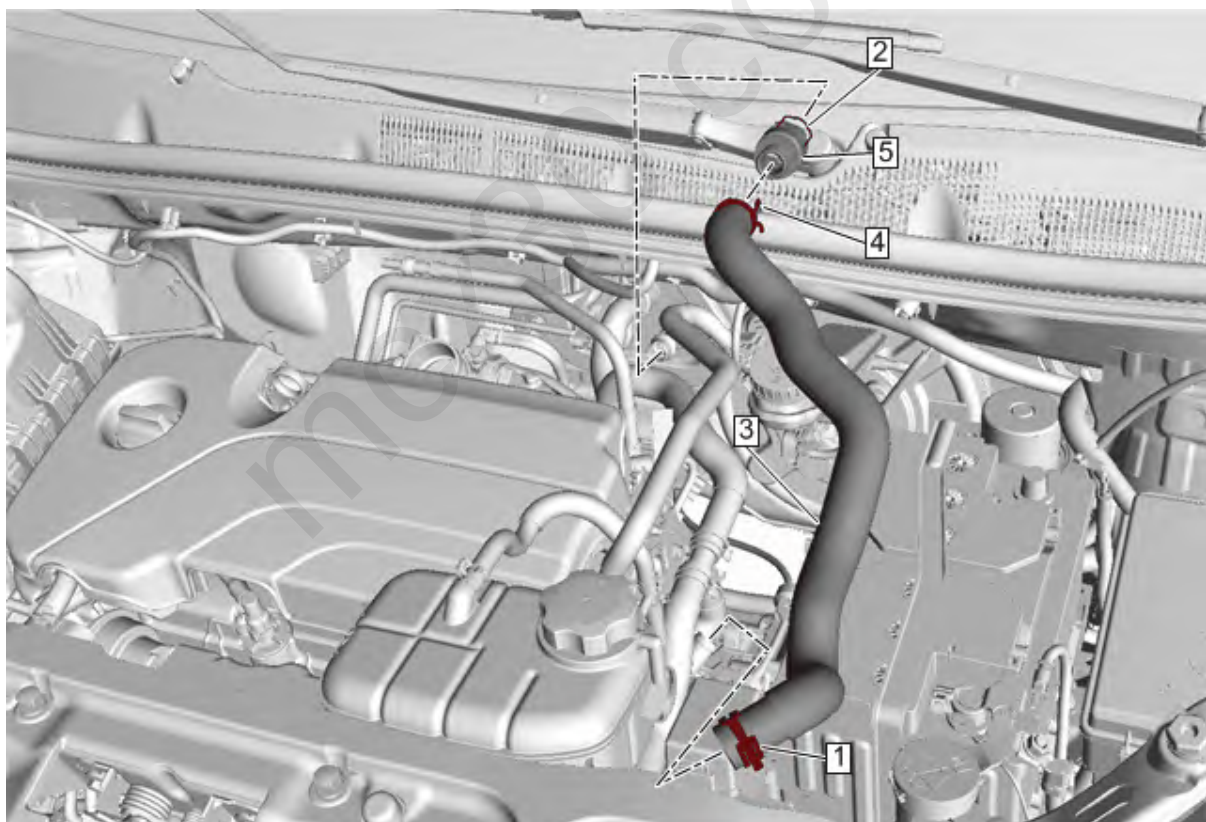


Fig. 105: Heater Inlet Hose (LE2)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Cooling System Draining and Filling . 2. Charge Air Cooler Inlet Air Hose Replacement 3. Engine Control Module Replacement	

Callout	Component Name
1	Heater Inlet Hose Clamp Special Tools Use the GE-47622 Hose Clamp Pliers For equivalent regional tools, refer to Special Tools .
2	Heater Inlet Hose Retainer
3	Heater Inlet Hose
4	Heater Inlet Hose Clamp Special Tools Use the GE-47622 Hose Clamp Pliers For equivalent regional tools, refer to Special Tools .
5	Heater Inlet Hose Quick Connect Procedure 1. Fill the engine coolant to the proper level. Cooling System Draining and Filling 2. Check the cooling system for leaks.

HEATER OUTLET HOSE REPLACEMENT (2H0)

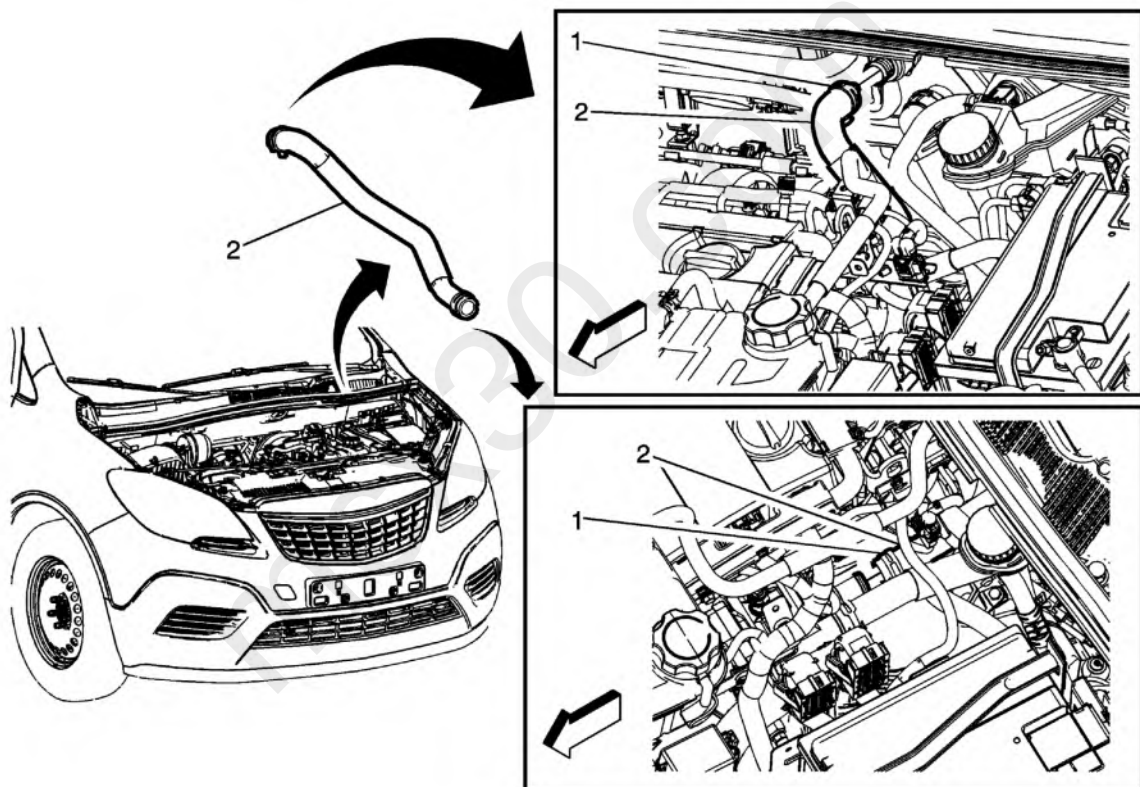


Fig. 106: Heater Outlet Hose (2H0)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Drain the engine coolant. Refer to Cooling System Draining and Filling .	
1	Heater Outlet Hose Clamp (Qty: 2) Special Tools BO-38185 Hose Clamp Pliers For equivalent regional tools, refer to Special Tools .
2	Heater Outlet Hose

HEATER OUTLET HOSE REPLACEMENT (LUV)

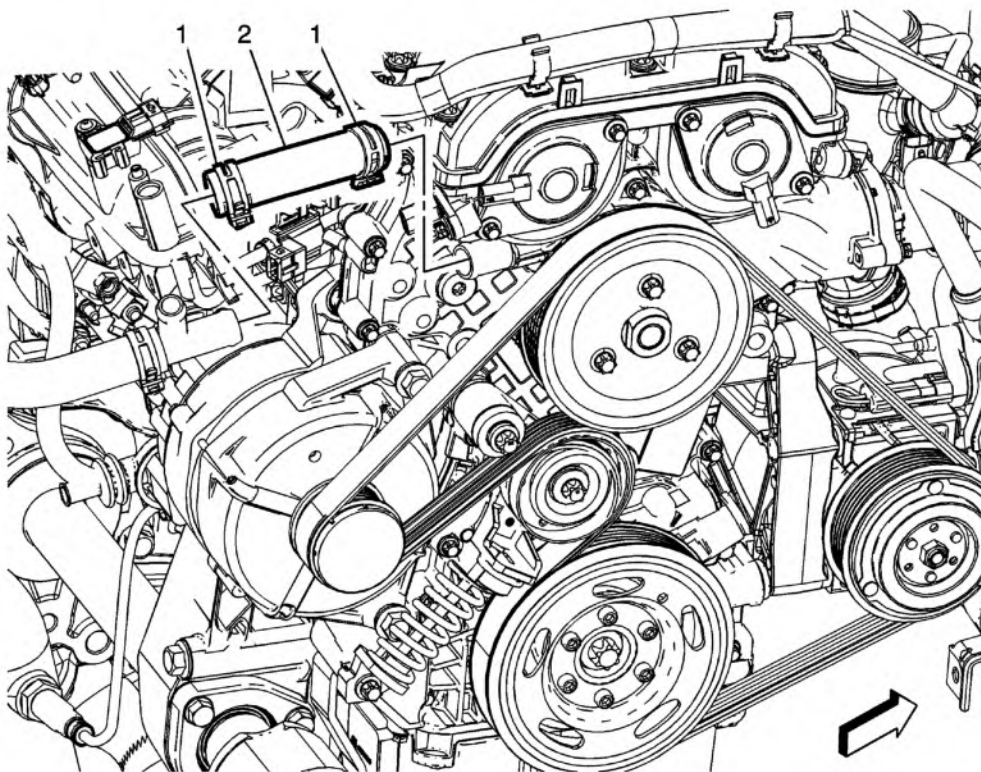


Fig. 107: Heater Outlet Hose (LUV)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Drain the cooling system. Refer to Cooling System Draining and Filling . 2. Remove the air cleaner assembly. Refer to Air Cleaner Assembly Replacement . 3. Remove the air cleaner outlet duct assembly. Refer to Air Cleaner Outlet Duct Replacement . 4. Remove the radiator surge tank outlet upper hose from the heater outlet hose tee. Refer to Radiator Surge Tank Outlet Hose Replacement (LUV) . 5. Remove the heater outlet rear hose and tee from the heater outlet hose.	
1	Heater Outlet Hose Clamp (Qty: 2) Procedure Using BO-38185 Hose Clamp Pliers , reposition the heater outlet hose clamps on the heater outlet hose. Special Tools BO-38185 Hose Clamp Pliers For equivalent regional tools, refer to Special Tools .
2	Heater Outlet Hose Procedure 1. Fill the cooling system to the proper level. Refer to Cooling System Draining and Filling . 2. Check the cooling system for leaks. Refer to Cooling System Leak Testing .

HEATER OUTLET HOSE REPLACEMENT (LUV REAR)

Special Tools

BO-38185 Hose Clamp Pliers

Removal Procedure

1. Drain the cooling system. Refer to [Cooling System Draining and Filling](#).
2. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#).

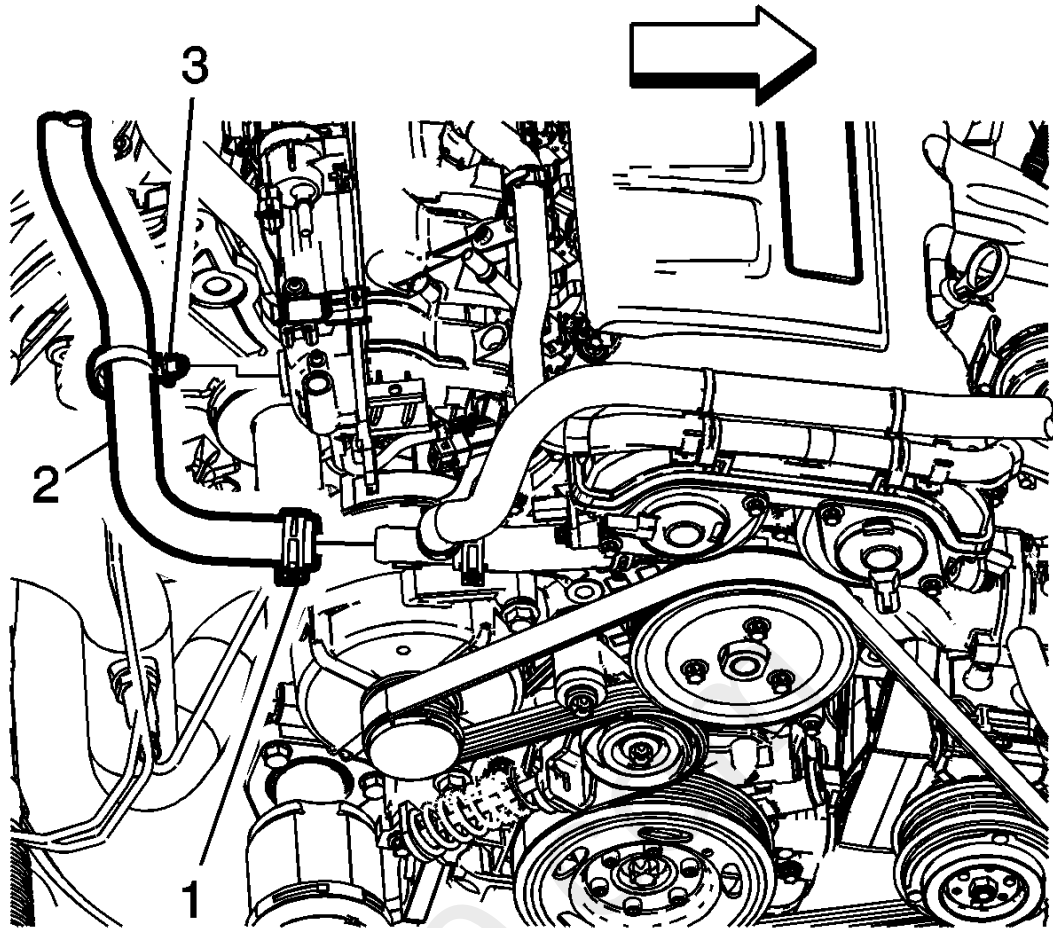


Fig. 108: Heater Outlet Rear Hose

Courtesy of GENERAL MOTORS COMPANY

3. Using **BO-38185** Hose Clamp Pliers , reposition the heater outlet rear hose clamp (1) on the heater outlet rear hose (2).
4. Remove the heater outlet rear hose (2) from the heater outlet rear hose tee.
5. Remove the heater outlet rear hose retainer (3) from the engine.

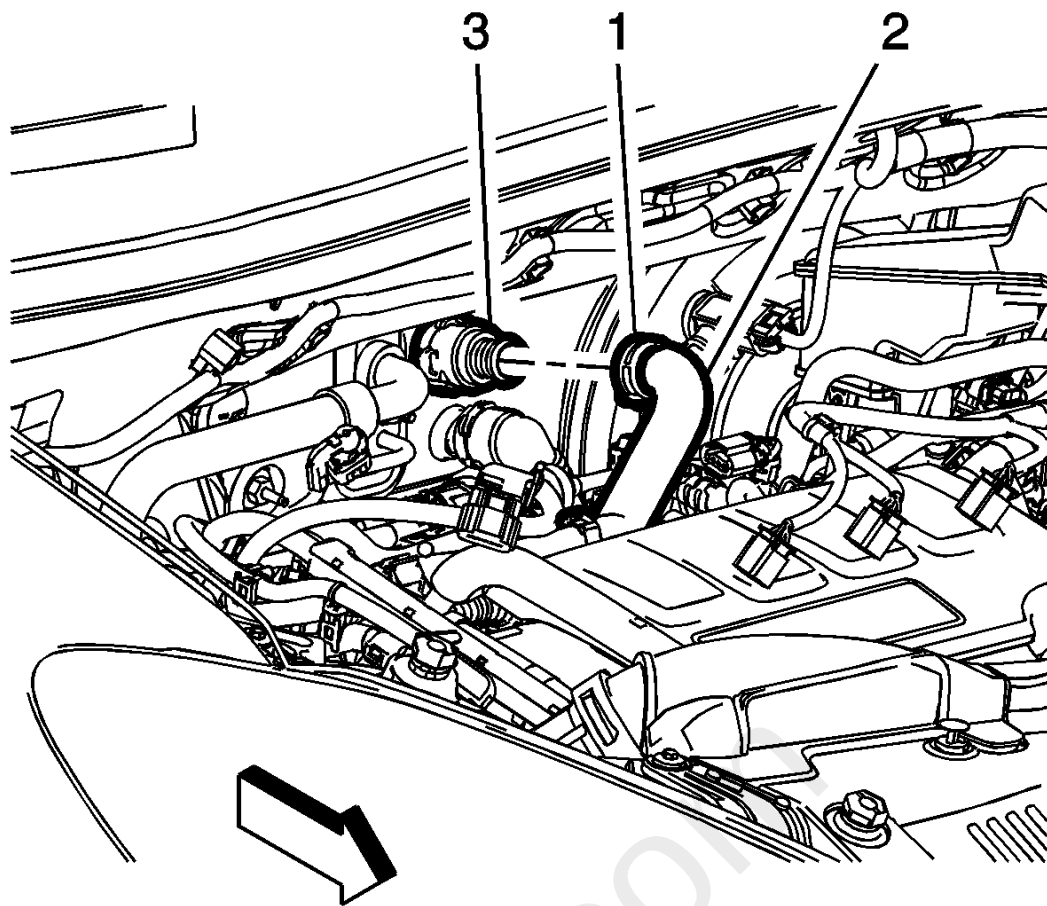


Fig. 109: Heater Outlet Hose Assembly.

Courtesy of GENERAL MOTORS COMPANY

6. Using **BO-38185** Hose Clamp Pliers , reposition the heater outlet rear hose clamp (1) on the heater outlet rear hose (2).
7. Remove the heater outlet rear hose (2) from the heater outlet hose connector (3).
8. Remove the heater outlet hose assembly (2) from the vehicle.

Installation Procedure

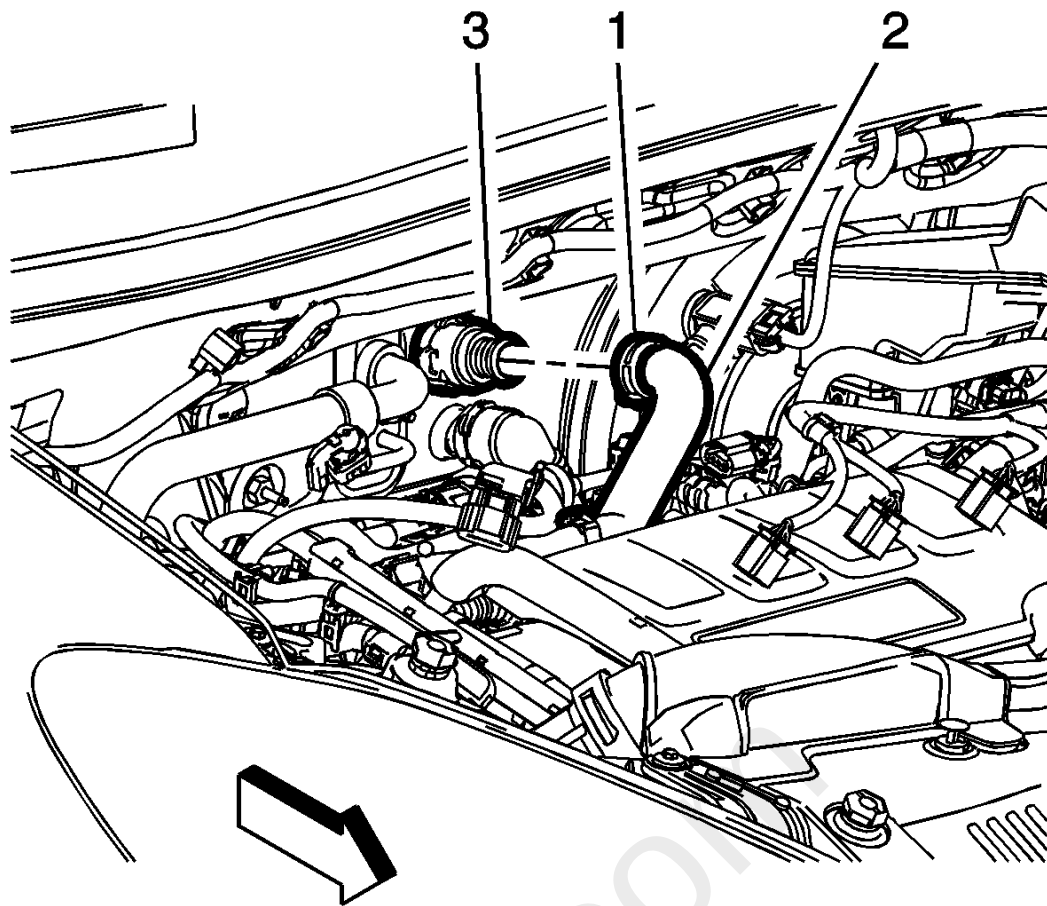


Fig. 110: Heater Outlet Hose

Courtesy of GENERAL MOTORS COMPANY

1. Install the heater outlet rear hose (2) into the heater outlet hose connector (3).
2. Using **BO-38185** Hose Clamp Pliers , reposition the heater outlet rear hose clamp (1) on the heater outlet rear hose (2).

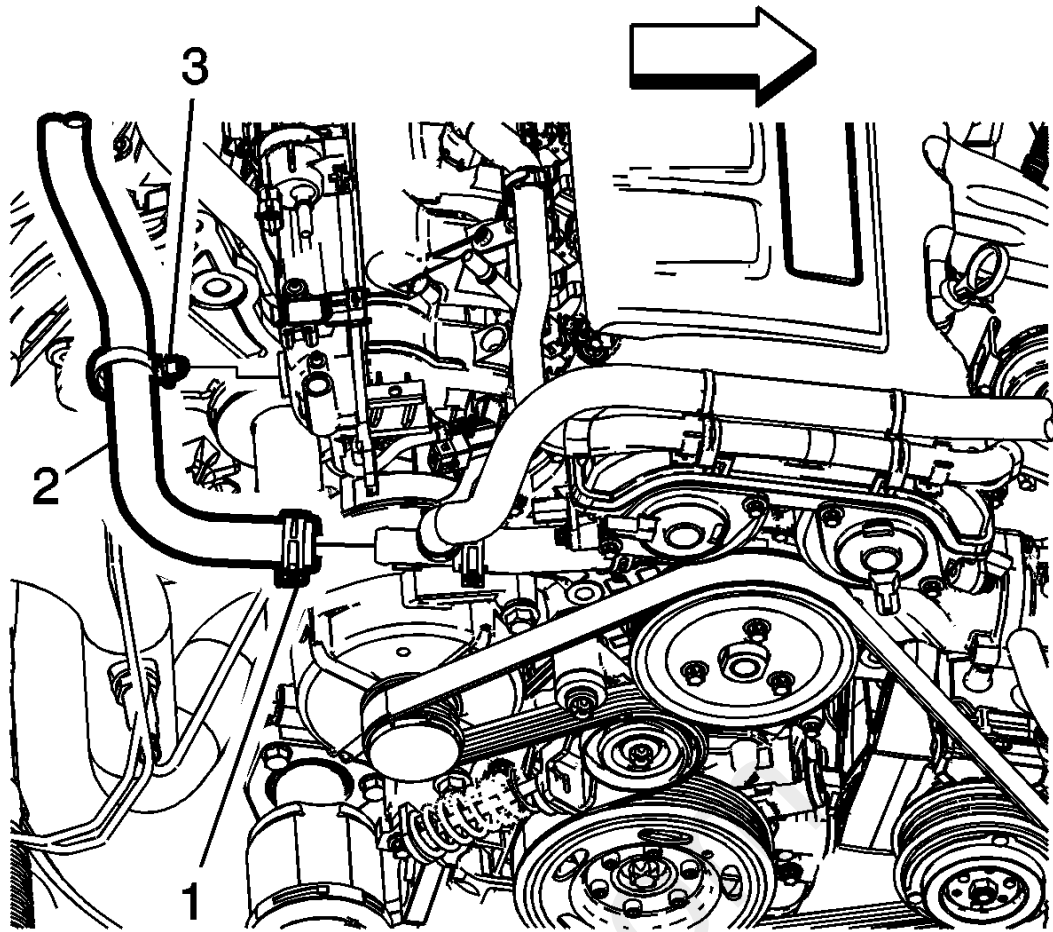


Fig. 111: Heater Outlet Rear Hose

Courtesy of GENERAL MOTORS COMPANY

3. Install the heater outlet rear hose retainer (3) to the engine.
4. Install the heater outlet rear hose (2) to the heater outlet rear hose tee.
5. Using **BO-38185** Hose Clamp Pliers , reposition the heater outlet rear hose clamp (1), on the heater outlet rear hose (2).
6. Install the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#) .
7. Fill the cooling system. Refer to [Cooling System Draining and Filling](#) .
8. Check the cooling system for leaks.

HEATER OUTLET HOSE REPLACEMENT (LE2)

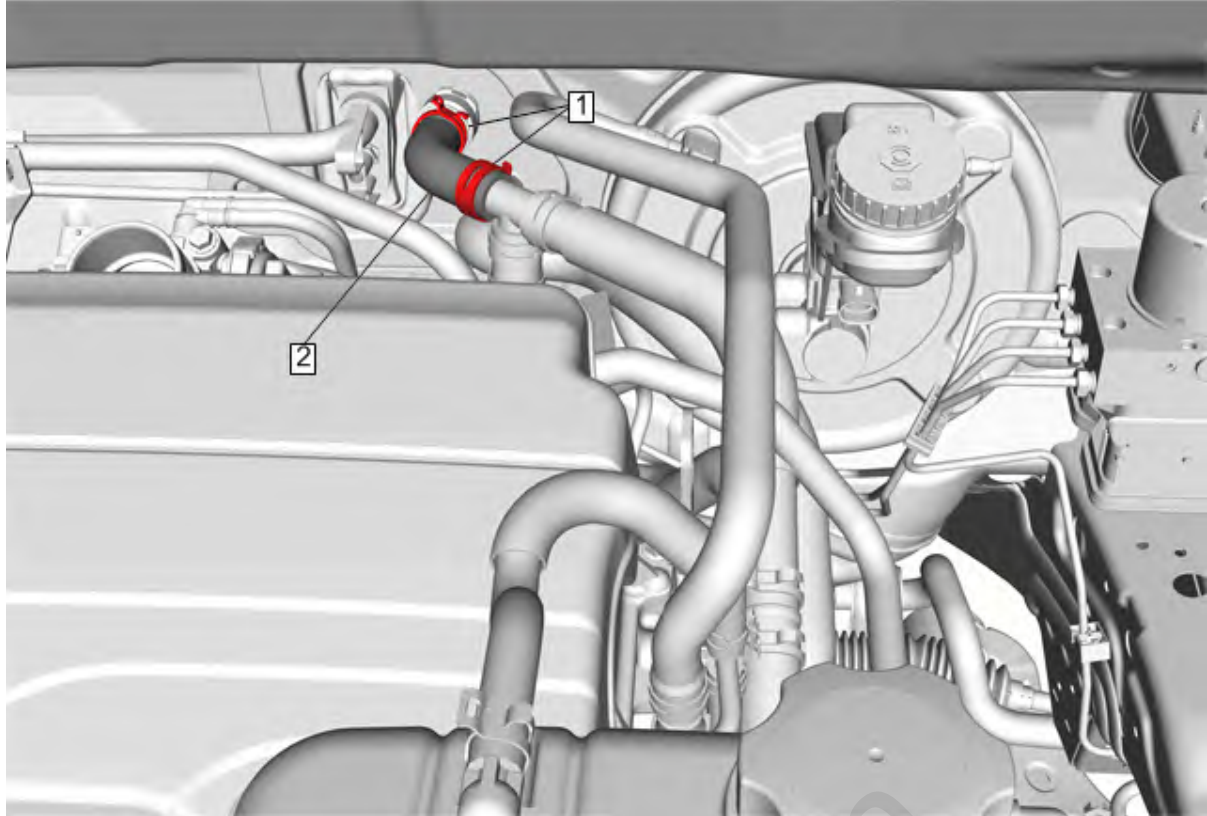


Fig. 112: Heater Outlet Hose (LE2)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures <u>Cooling System Draining and Filling</u> - Charge Air Cooler Outlet Air Hose@Throttle Body - Reposition away - <u>Charge Air Cooler Outlet Air Hose Replacement</u>	
1	Heater Outlet Hose Clamp Procedure Reposition the heater outlet hose clamps using GE-47622 Hose Clamp Pliers. Special Tools GE-47622 Hose Clamp Pliers
2	Heater Outlet Hose Procedures - Heater Outlet Hose - RemoveRemove - Fill the cooling system to the proper level. <u>Cooling System Draining and Filling</u> - Start the engine and check for coolant leaks.

HEATER CORE OUTLET TUBE REPLACEMENT

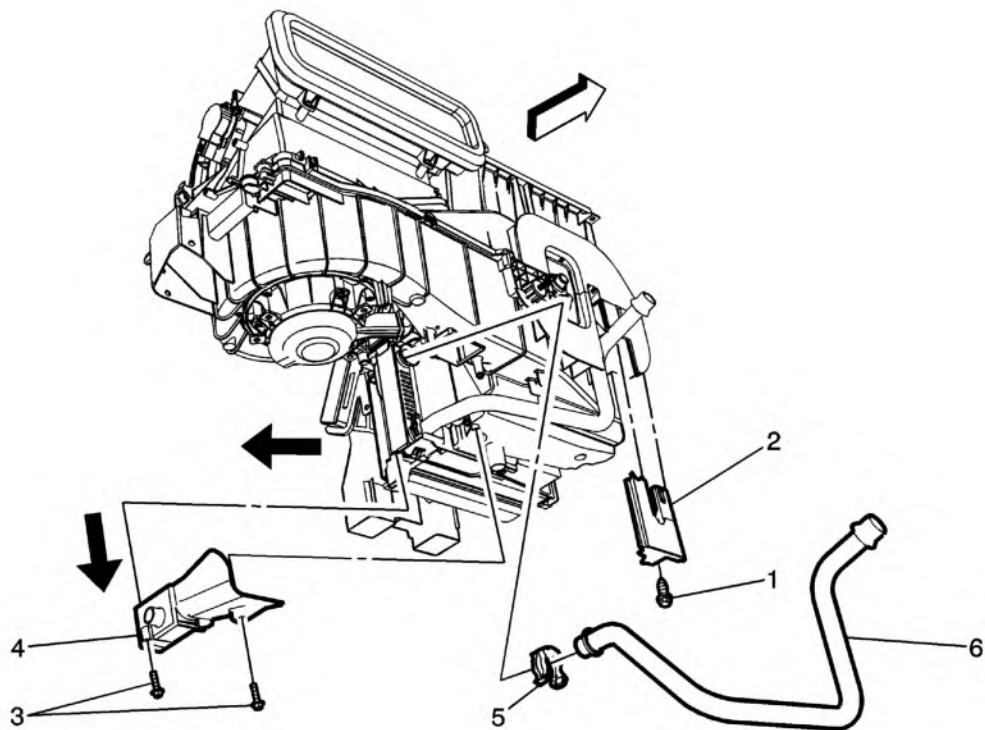


Fig. 113: Heater Core Outlet Tube
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the heater and air conditioning evaporator and blower module assembly. Refer to Heater and Air Conditioning Evaporator and Blower Module Removal and Installation .	
1	Heater and Air Conditioning Evaporator Case Clip Fastener CAUTION: Refer to Fastener Caution .
2	Heater and Air Conditioning Evaporator Case Clip
3	Heater Core Tube Cover Fastener (QTY: 2)
4	Heater Core Tube Cover
5	Heater Core Outlet Tube Clamp
6	Heater Core Outlet Tube

HEATER CORE INLET TUBE REPLACEMENT

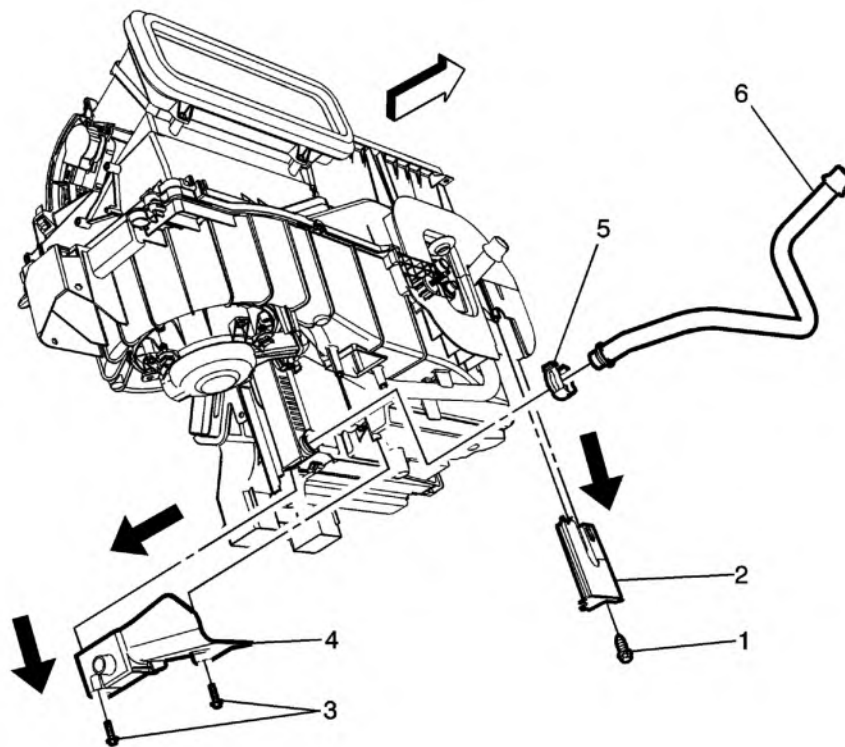


Fig. 114: Heater Core Inlet Tube
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the heater and air conditioning evaporator and blower module assembly. Refer to Heater and Air Conditioning Evaporator and Blower Module Removal and Installation .	
1	Heater and Air Conditioning Evaporator Case Clip Fastener CAUTION: Refer to Fastener Caution .
2	Heater and Air Conditioning Evaporator Case Clip
3	Heater Core Tube Cover Fastener (QTY: 2)
4	Heater Core Tube Cover
5	Heater Core Inlet Tube Clamp
6	Heater Core Inlet Tube

HEATER INLET HOSE CONNECTOR REPLACEMENT

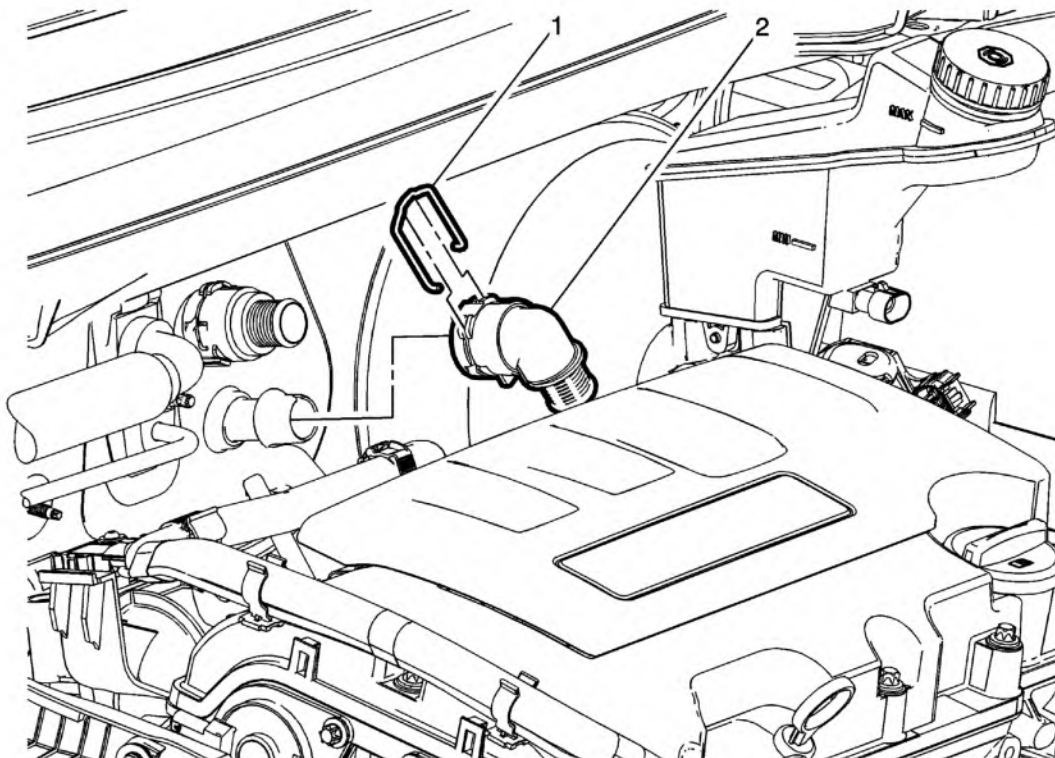


Fig. 115: Heater Inlet Hose Connector
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Drain the engine coolant. Refer to Cooling System Draining and Filling . 2. Remove the heater inlet hose. Refer to Heater Inlet Hose Replacement (2H0)Heater Inlet Hose Replacement (LUV)Heater Inlet Hose Replacement (LE2)	
1	Heater Inlet Hose Connector Retaining Clip
2	Heater Inlet Hose Connector

HEATER INLET HOSE CONNECTOR REPLACEMENT (LE2)

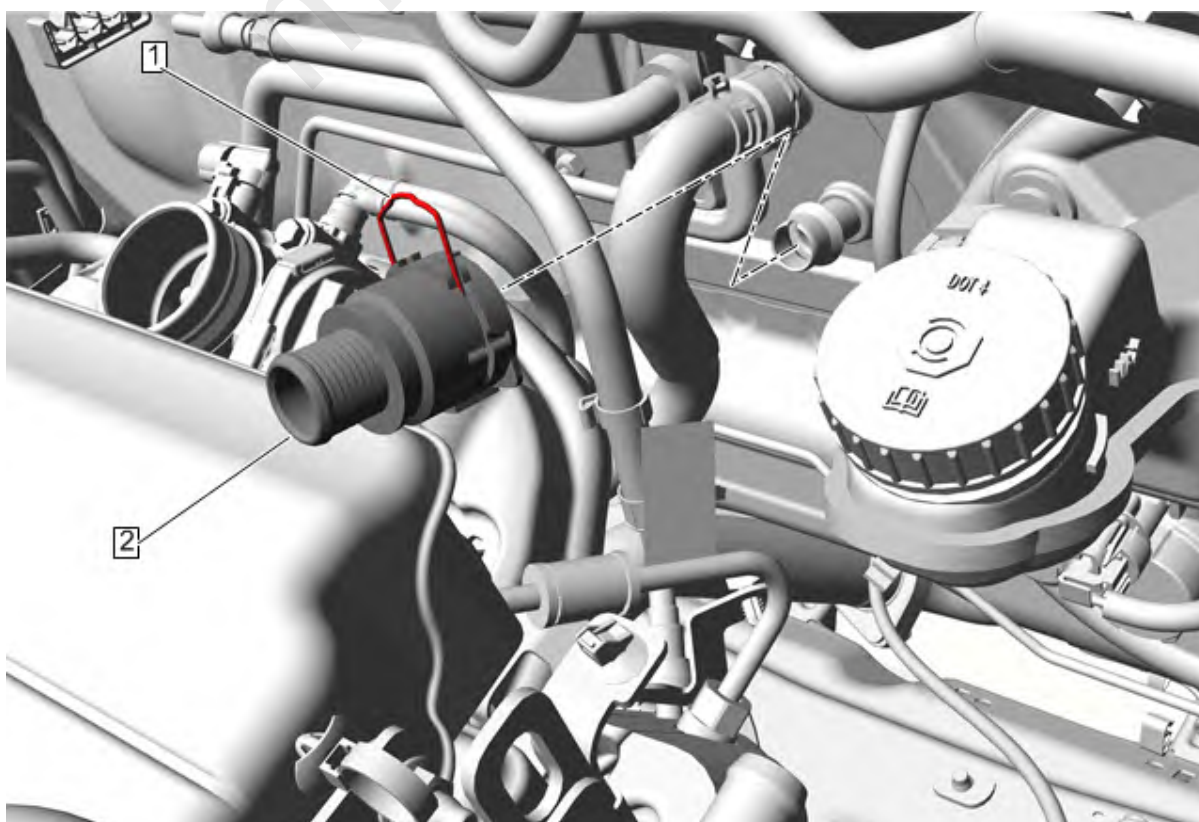


Fig. 116: Heater Inlet Hose Connector (LE2).
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Cooling System Draining and Filling</u>	
1	Heater Inlet Hose Connector Retaining Clip Procedure Pull out to Release the retainer.
2	Heater Inlet Hose Connector Procedures 1. Heater Inlet Hose@Heater Inlet Hose Quick Connect - Remove - <u>Heater Inlet Hose Replacement (LE2)</u>. 2. Fill the cooling system to the proper level. <u>Cooling System Draining and Filling</u> 3. Inspect for coolant leaks.

HEATER OUTLET HOSE CONNECTOR REPLACEMENT

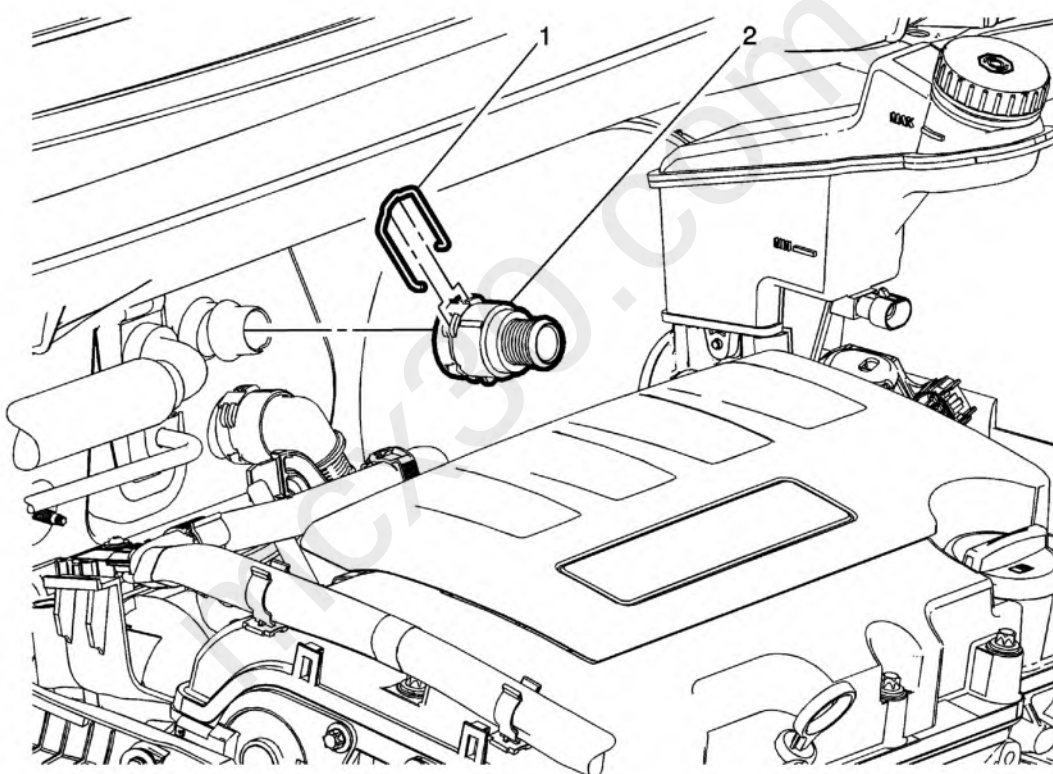


Fig. 117: Heater Outlet Hose Connector
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Drain the engine coolant. Refer to <u>Cooling System Draining and Filling</u> . 2. Remove the heater outlet hose. Refer to <u>Heater Outlet Hose Replacement (2H0)Heater Outlet Hose Replacement (LUV)Heater Outlet Hose Replacement (LUV Rear)Heater Outlet Hose Replacement (LE2)</u>.	
1	Heater Outlet Hose Connector Retaining Clip
2	Heater Outlet Hose Connector

PASSENGER COMPARTMENT AIR FILTER REPLACEMENT

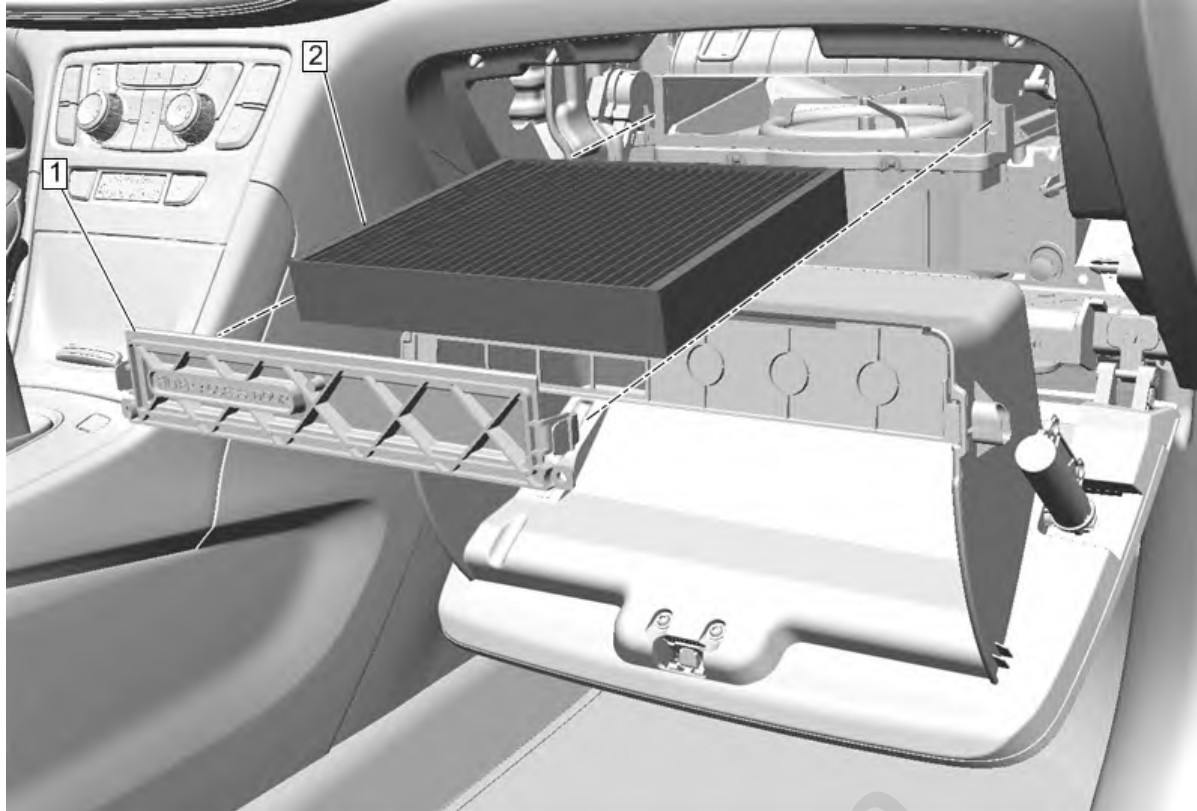


Fig. 118: Passenger Compartment Air Filter
 Courtesy of GENERAL MOTORS COMPANY

Call out	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 Door
2	Passenger Compartment Air Filter

AIR INLET ASSEMBLY REPLACEMENT

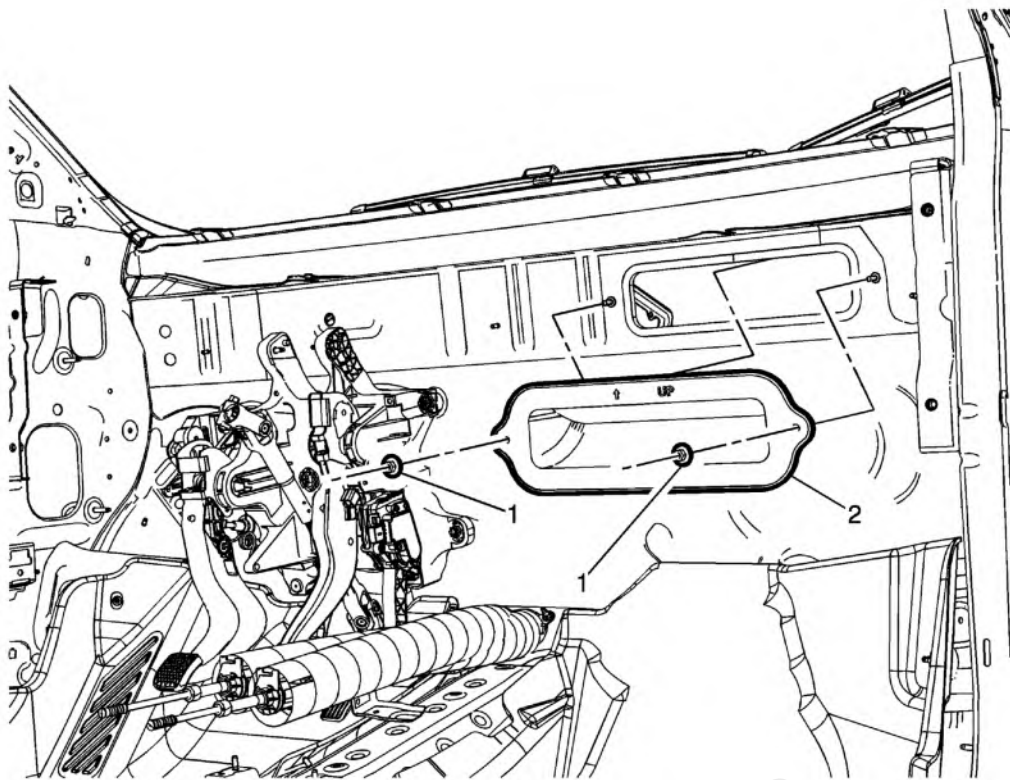


Fig. 119: Air Inlet Assembly.

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the air conditioning evaporator and blower module assembly. Refer to Heater and Air Conditioning Evaporator and Blower Module Removal and Installation .	
1	Air Inlet Assembly Nut (Qty: 2) CAUTION: Refer to Fastener Caution . Tighten 4 N.m (35 lb in)
2	Air Inlet Assembly

BLOWER MOTOR CONTROL MODULE REPLACEMENT (WITH RPO C67 CJ2)

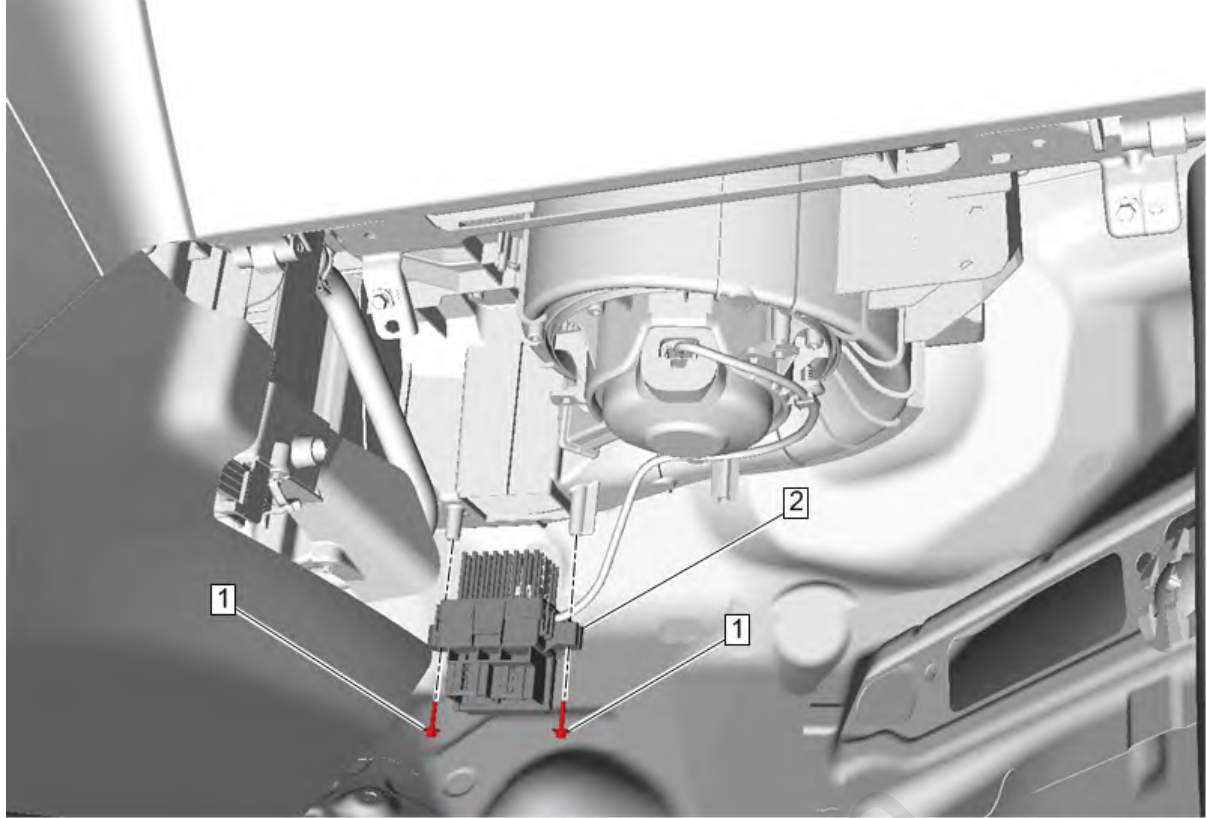


Fig. 120: Blower Motor Control Module (With RPO C67 CJ2)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Instrument Panel Lower Trim Panel Insulator Replacement (Chevrolet)</u> , <u>Instrument Panel Lower Trim Panel Insulator Replacement (Buick)</u>	
1	Blower Motor Control Module Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 1.5 N.m (13 lb in)
2	Blower Motor Control Module Procedure Disconnect the electrical connectors.

BLOWER MOTOR REPLACEMENT

Removal Procedure - Production Blower Motor

1. Floor Front Air Outlet Duct - Right Side - Remove - Floor Front Air Outlet Duct Replacement - Right Side

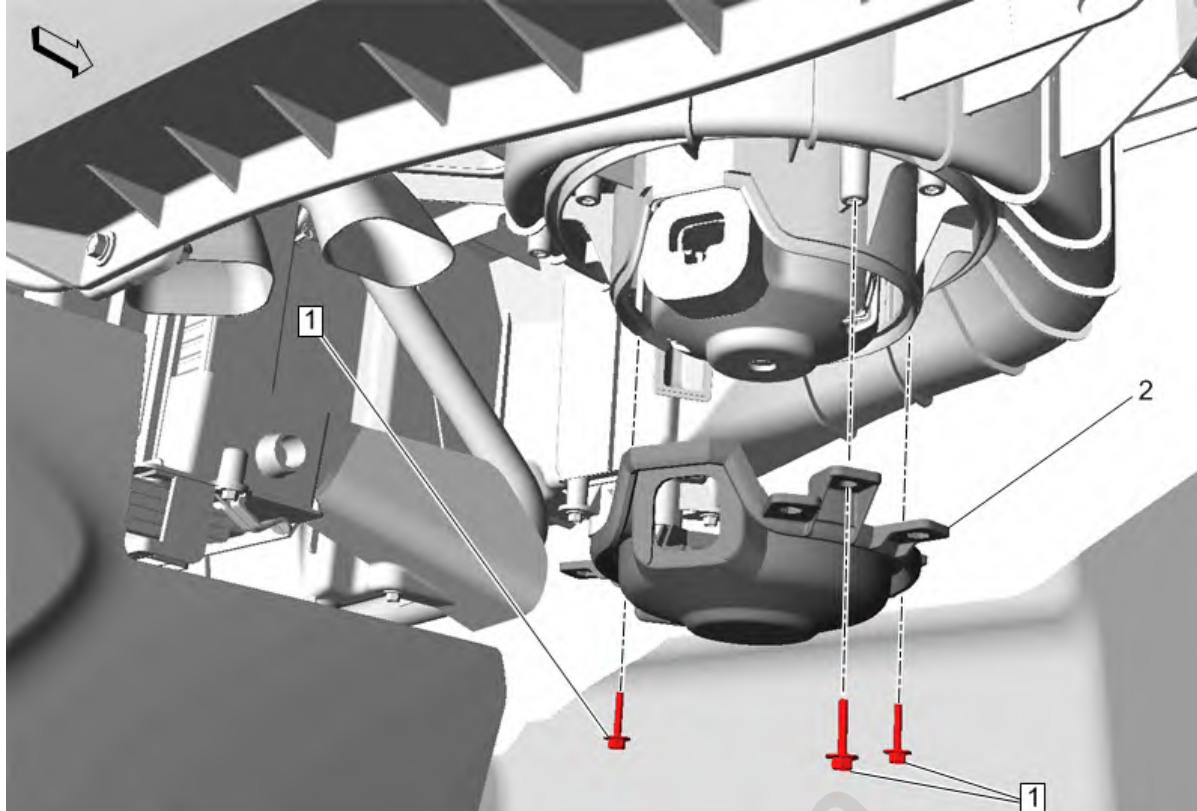
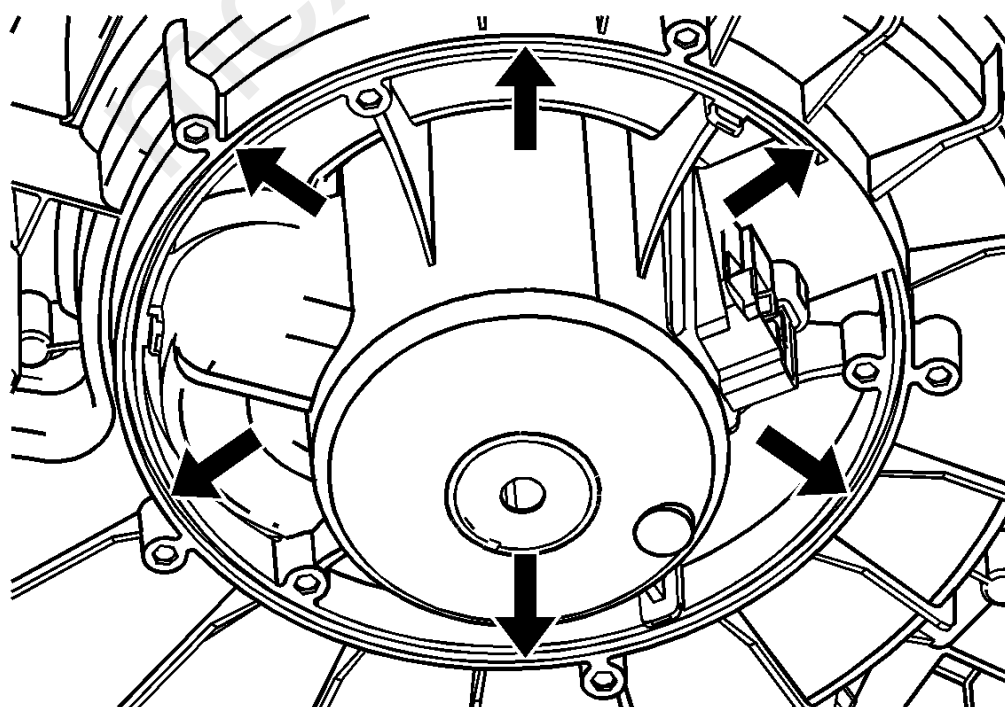


Fig. 121: Blower Motor Cover

Courtesy of GENERAL MOTORS COMPANY

2. Disconnect the electrical connector.
3. Blower Motor Cover Screw 1 - Remove
4. Blower Motor Cover 2 - Remove



NOTE: Blower motor is molded into heater and air conditioning evaporator and blower module lower case during manufacturing process, therefore heater and air conditioning evaporator and blower module lower case must be cut to remove blower motor assembly. Cut through the case as straight as possible, because the blower motor cup must be reused. In order to prevent damage to the component, do not cut any deeper than necessary to remove the blower motor cup.

5. Cut out the blower motor using a utility knife, following the narrow groove around the blower motor assembly in the lower case.

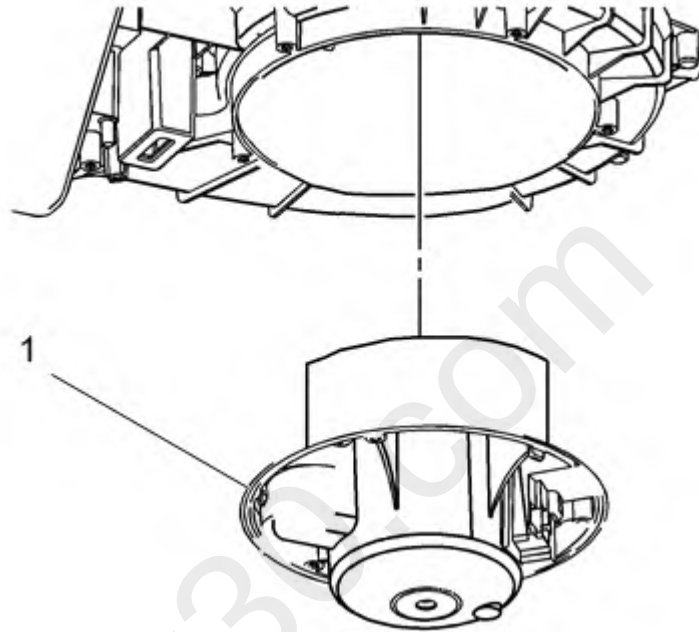


Fig. 123: Blower Motor
Courtesy of GENERAL MOTORS COMPANY

6. Blower Motor Assembly 1 - Remove

Removal Procedure - Service Blower Motor

1. Floor Front Air Outlet Duct - Right Side - Remove **Floor Front Air Outlet Duct Replacement - Right Side**
2. Disconnect the electrical connector.

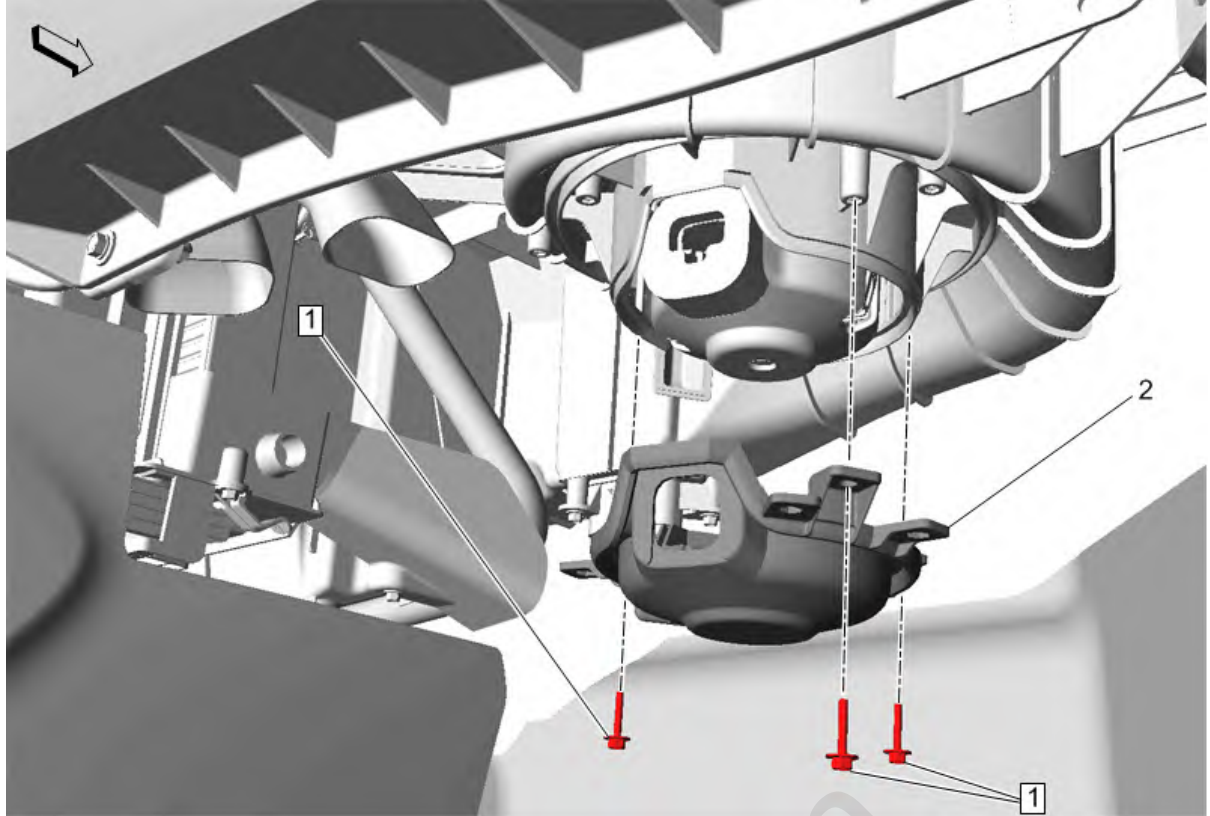


Fig.124: Blower Motor Cover

Courtesy of GENERAL MOTORS COMPANY

3. { If equipped } Blower Motor Cover 2 - Remove

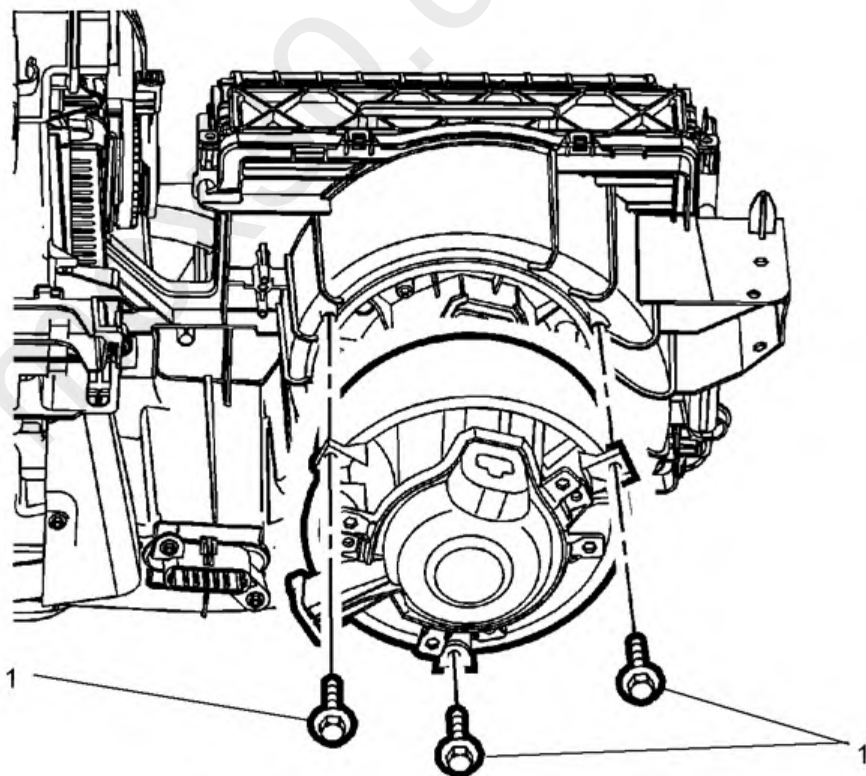


Fig.125: 3 Outer Most Screws

Courtesy of GENERAL MOTORS COMPANY

4. Remove the 3 outer most screws (1) from blower service ring or blower integrated ring.

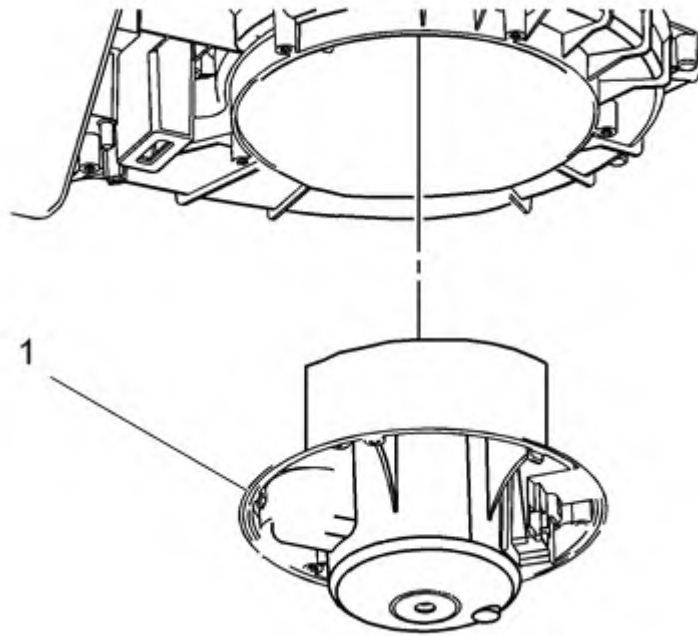


Fig. 126: Blower Motor

Courtesy of GENERAL MOTORS COMPANY

5. Blower Motor Assembly 1 - Remove

Installation Procedure

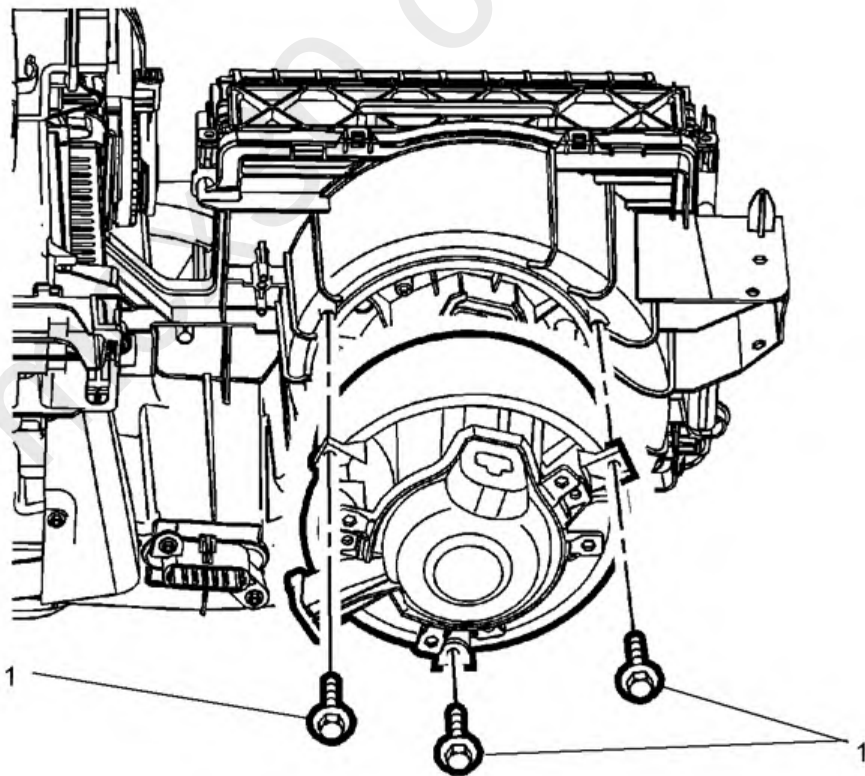


Fig. 127: 3 Outer Most Screws

Courtesy of GENERAL MOTORS COMPANY

1. Clean and smooth the rough edges, and remove any burs of plastic from heater and air conditioning evaporator and blower lower module case, where the original blower motor assembly was cut out of the heater and air conditioning evaporator and blower lower module case.

CAUTION: Refer to **Fastener Caution** .

2. Attach the blower service ring to the blower motor assembly using service screws (1).

3. When using the original blower motor assembly that has been cut out of the lower case, install the blower motor assembly with the service ring assembly to the heater and air conditioning evaporator and blower module lower case, with the additional service screws (1), and tighten the screws.
4. When using the service blower motor kit, install the service blower motor assembly to the heater and air conditioning evaporator and blower lower module case, with additional service screws (1), and tighten the screws.

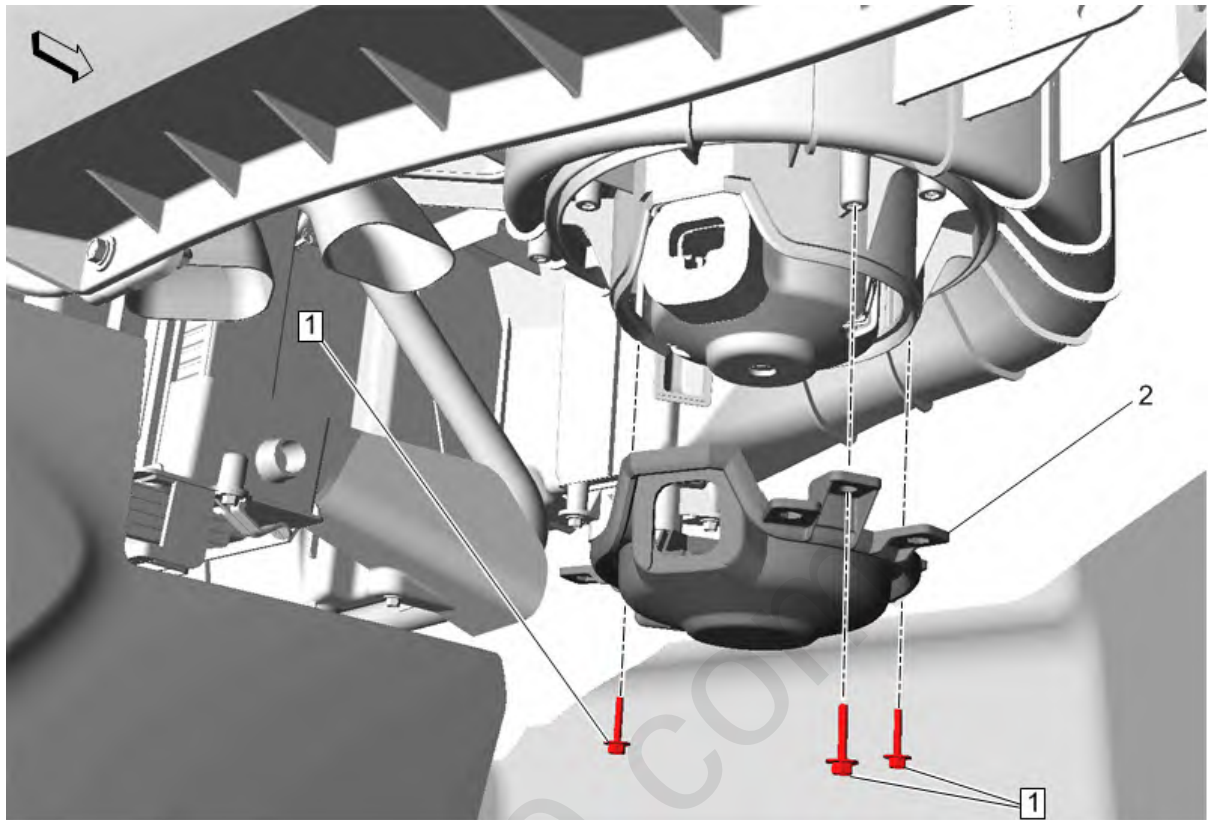


Fig. 128: Blower Motor Cover

Courtesy of GENERAL MOTORS COMPANY

5. { If equipped } Blower Motor Cover 2 - Install
6. Blower Motor Cover Screw 1 - Install and tighten 1.5 N.m (13 lb in)
7. Connect the electrical connector.
8. Floor Front Air Outlet Duct - Right Side - Install - **Floor Front Air Outlet Duct Replacement - Right Side**

AIR DISTRIBUTOR CASE REPLACEMENT

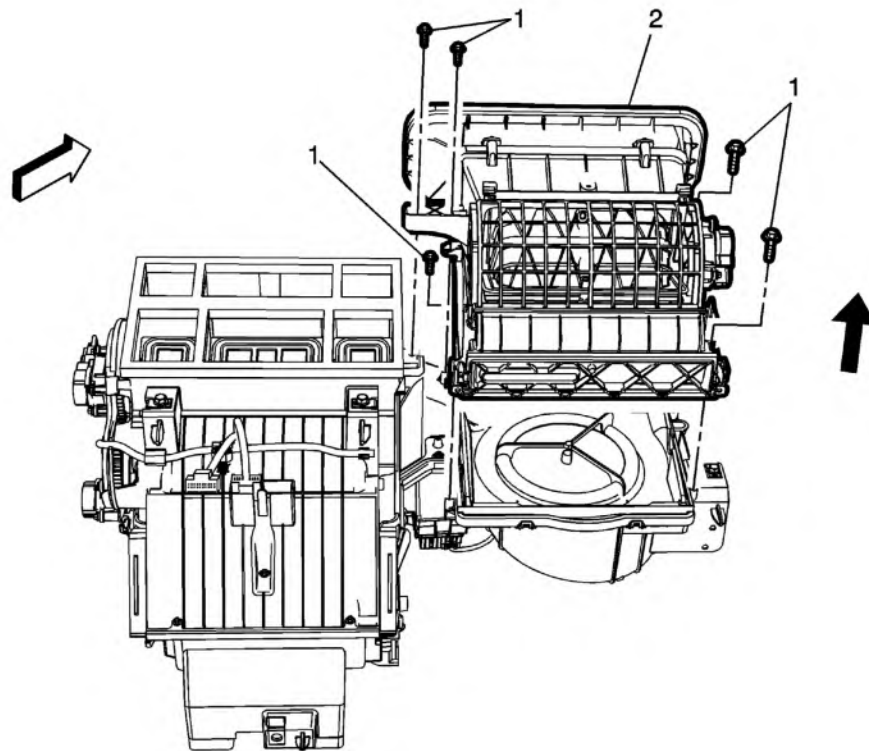


Fig. 129: Air Distributor Case

Courtesy of GENERAL MOTORS COMPANY

Call out	Component Name
Preliminary Procedures 1. Remove the heater and air conditioning evaporator and blower module assembly. Refer to Heater and Air Conditioning Evaporator and Blower Module Removal and Installation. 2. Disconnect the electrical connectors as necessary.	
1	Air Distributor Case Fastener (Qty: 5) CAUTION: Refer to Fastener Caution . Tighten 2.0 N.m (18 lb in)
2	Air Distributor Case Procedure Transfer all part as necessary.

INSTRUMENT PANEL OUTER AIR OUTLET REPLACEMENT - LEFT SIDE (BUICK)

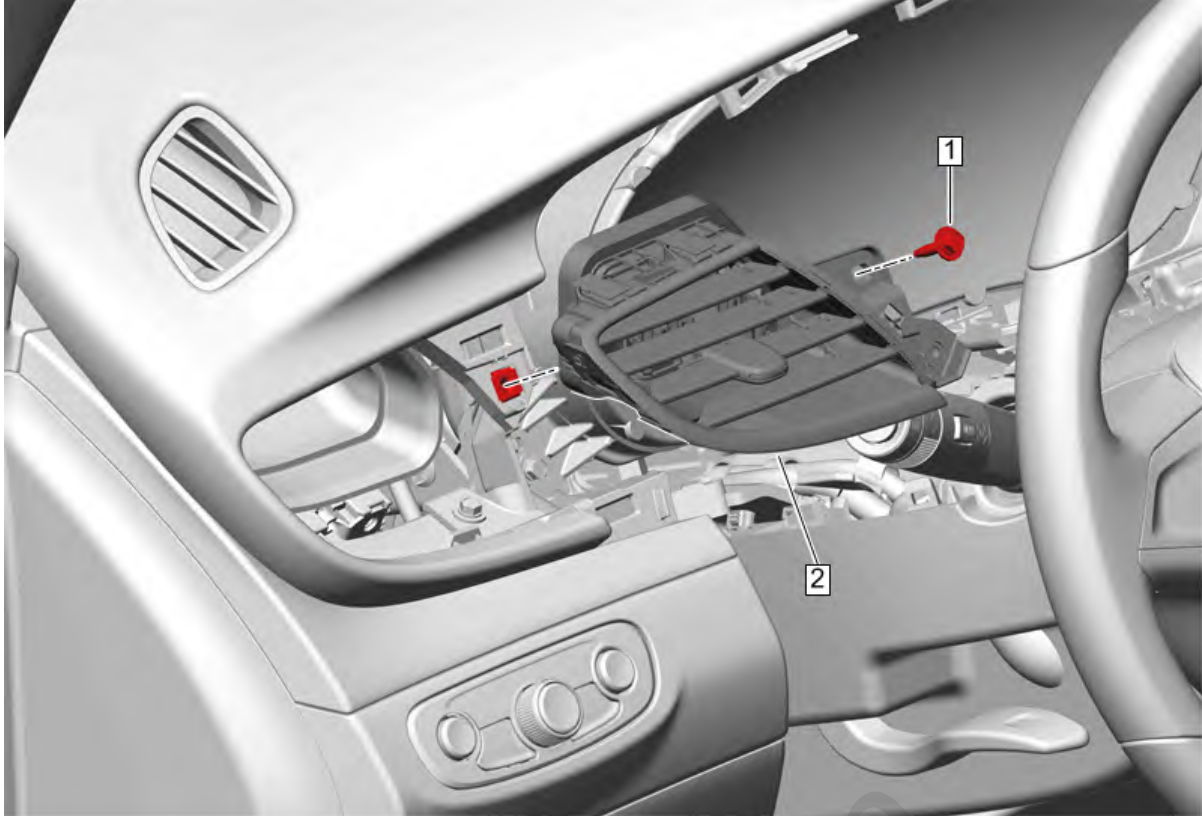


Fig. 130: Instrument Panel Outer Air Outlet - Left Side (Buick).
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Steering Column Upper Trim Cover Replacement (Buick, With BTM)</u>	
1	Instrument Panel Outer Air Outlet Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 2.5 N.m (22 lb in)
2	Instrument Panel Outer Air Outlet - Left Side

INSTRUMENT PANEL OUTER AIR OUTLET REPLACEMENT - LEFT SIDE (CHEVROLET)

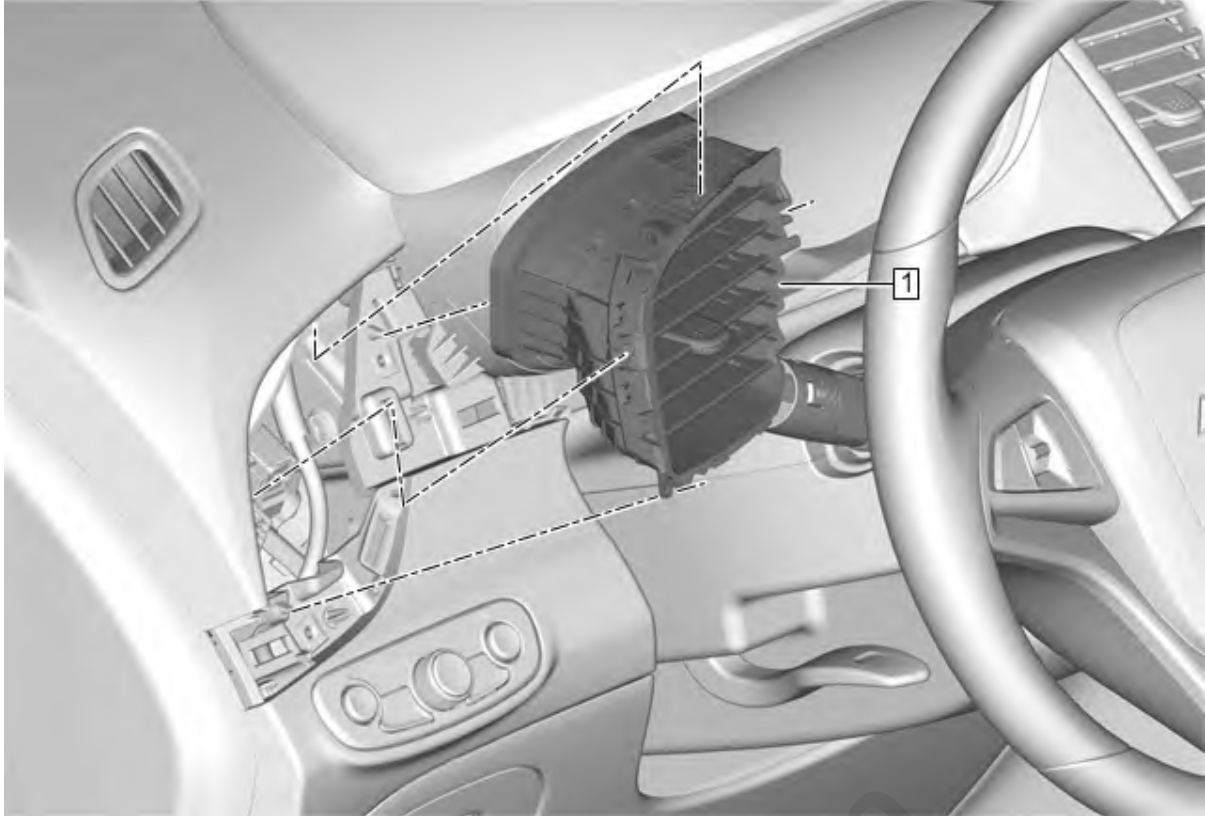


Fig. 131: Instrument Panel Outer Air Outlet - Left Side (Chevrolet)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
<u>Instrument Panel Trim Plate Applique Replacement - Left Side (Chevrolet)</u>	
1	Instrument Panel Outer Air Outlet - Left Side

INSTRUMENT PANEL CENTER AIR OUTLET REPLACEMENT - LEFT SIDE (BUICK)

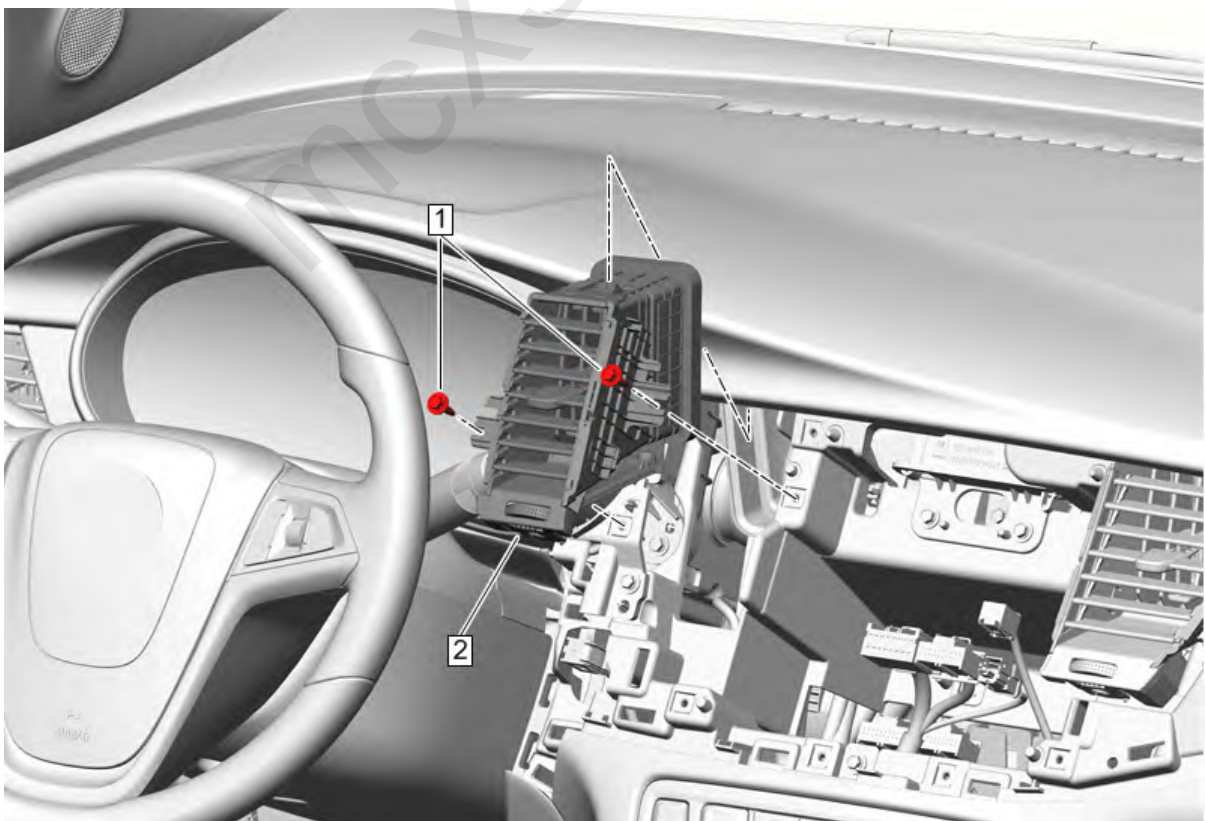


Fig. 132: Instrument Panel Center Air Outlet - Left Side (Buick)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

Callout	Component Name
Preliminary Procedure <u>Radio Control Assembly Replacement (Buick)</u>	
1	Instrument Panel Center Air Outlet Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 2.5 N.m (22 lb in)
2	Instrument Panel Center Air Outlet - Left Side

INSTRUMENT PANEL CENTER AIR OUTLET REPLACEMENT - LEFT SIDE (CHEVROLET)

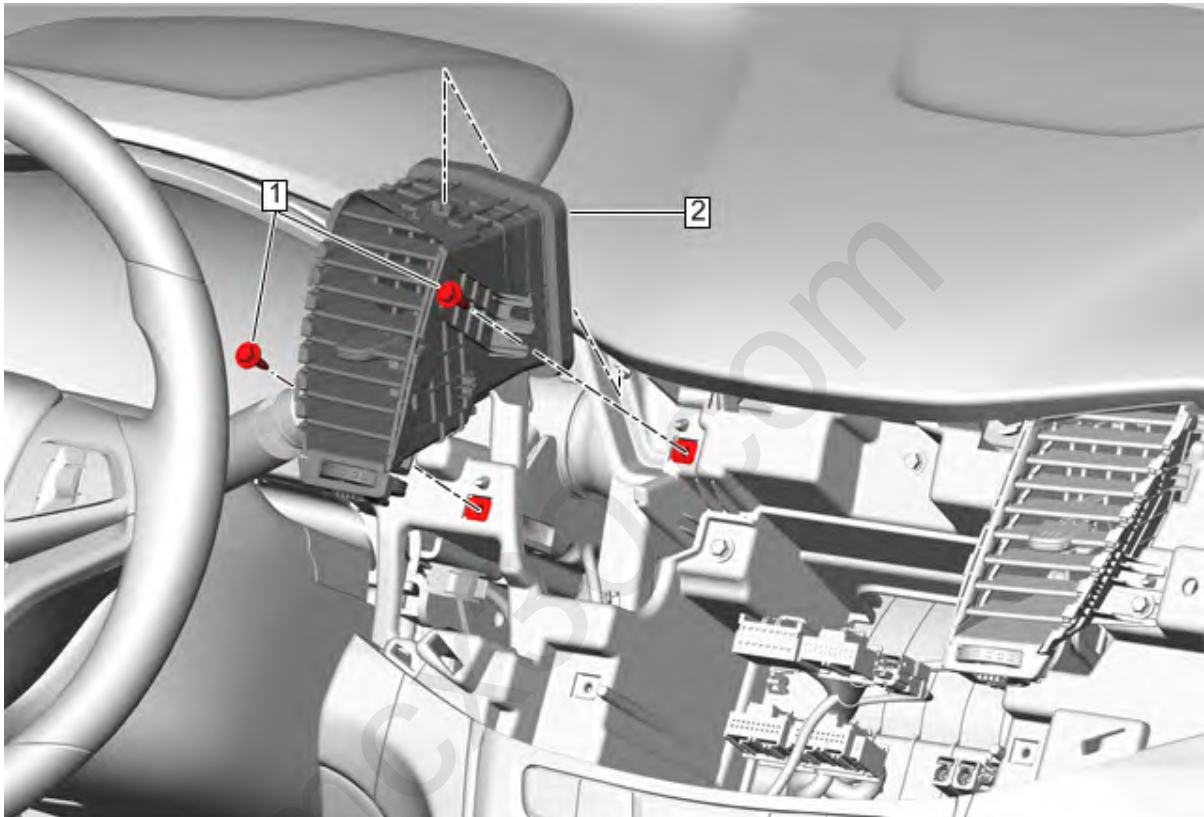


Fig. 133: Instrument Panel Center Air Outlet - Left Side (Chevrolet).
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. <u>Instrument Panel Radio Rear Trim Plate Replacement (Chevrolet)</u> 2. <u>Radio Bracket Replacement (Chevrolet)</u>	
1	Instrument Panel Center Air Outlet Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 2.5 N.m (22 lb in)
2	Instrument Panel Center Air Outlet - Left Side

INSTRUMENT PANEL CENTER AIR OUTLET REPLACEMENT - RIGHT SIDE (BUICK)

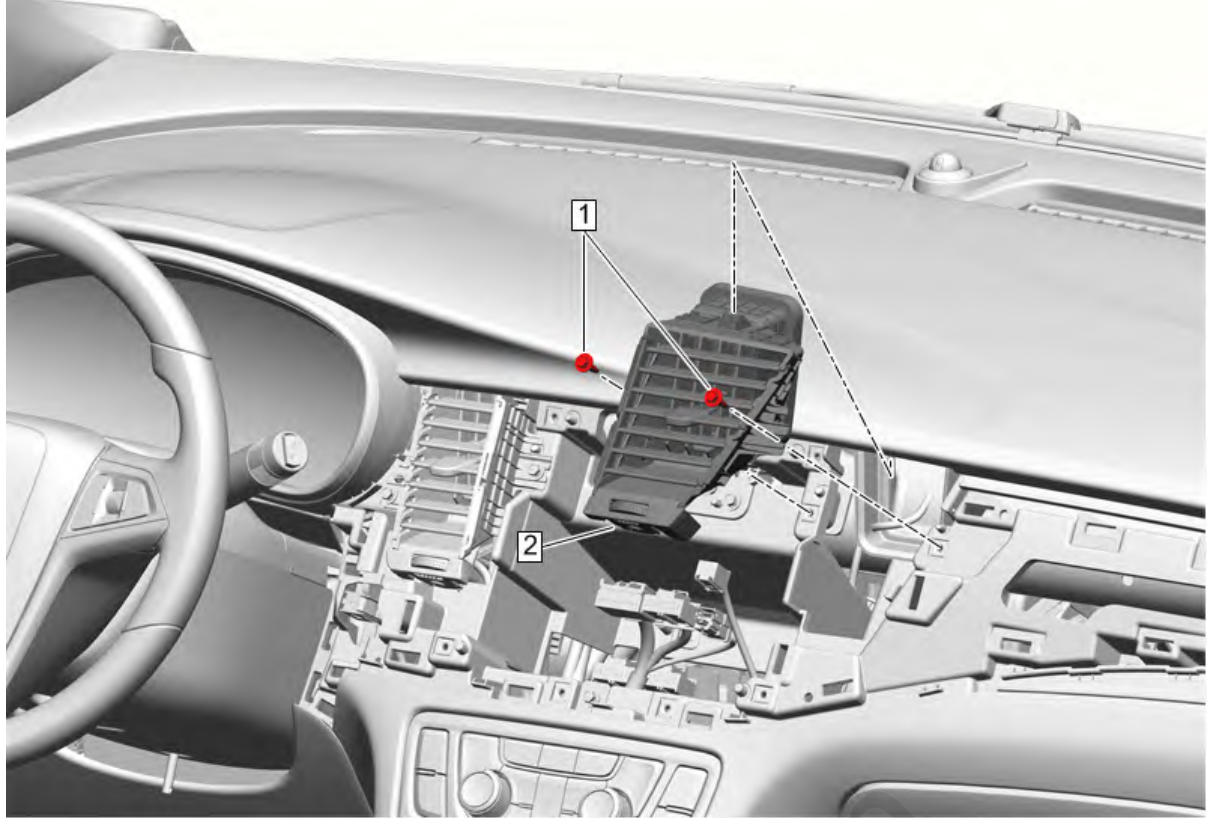


Fig. 134: Instrument Panel Center Air Outlet - Right Side (Buick)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Radio Control Assembly Replacement (Buick)</u>	
1	Instrument Panel Center Air Outlet Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 2.5 N.m (22 lb in)
2	Instrument Panel Center Air Outlet - Right Side

INSTRUMENT PANEL CENTER AIR OUTLET REPLACEMENT - RIGHT SIDE (CHEVROLET)

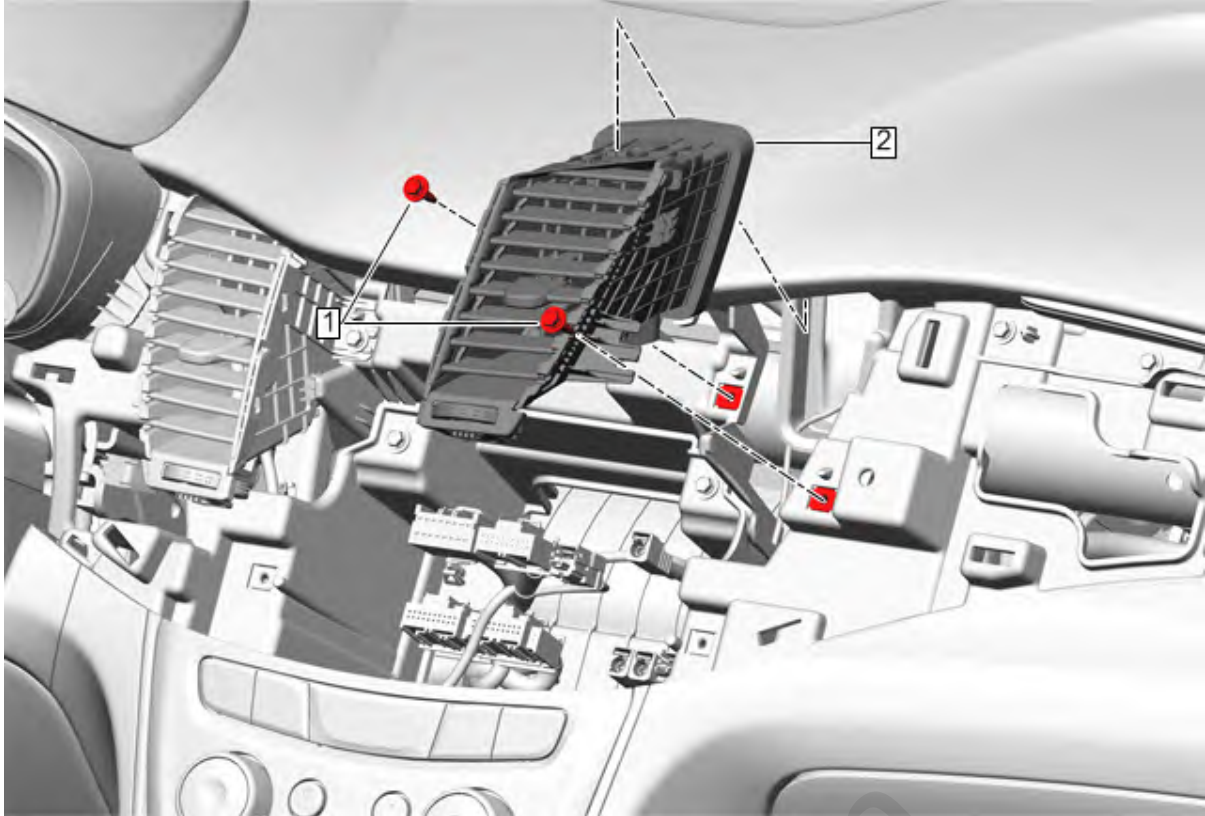


Fig. 135: Instrument Panel Center Air Outlet - Right Side (Chevrolet)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Instrument Panel Radio Rear Trim Plate Replacement (Chevrolet)</u> <u>Radio Bracket Replacement (Chevrolet)</u>	
1	Instrument Panel Center Air Outlet Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 2.5 N.m (22 lb in)
2	Instrument Panel Center Air Outlet - Right Side

INSTRUMENT PANEL OUTER AIR OUTLET REPLACEMENT - RIGHT SIDE (BUICK)

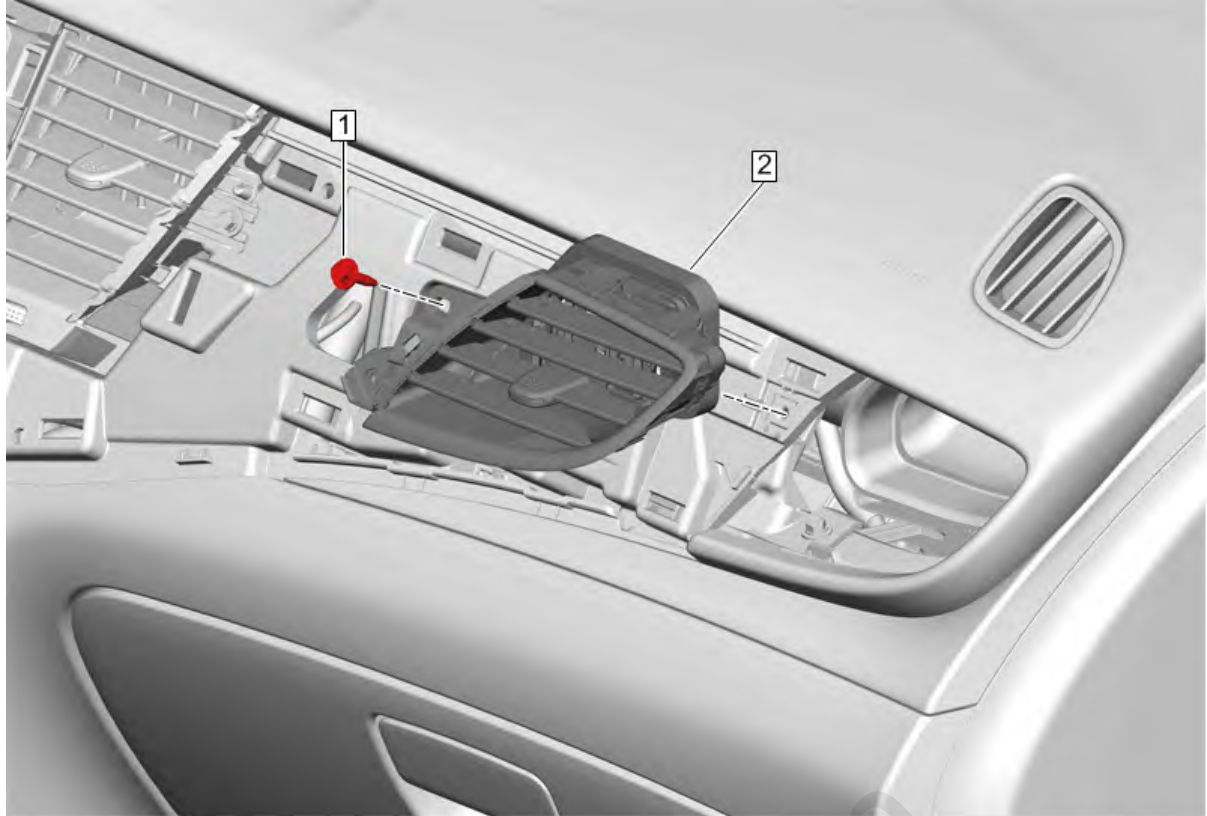


Fig. 136: Instrument Panel Outer Air Outlet - Right Side (Buick)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Instrument Panel Lower Trim Plate Applique Replacement - Right Side (Buick)</u>	
1	Instrument Panel Outer Air Outlet Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 2.5 N.m (22 lb in)
2	Instrument Panel Outer Air Outlet - Right Side

INSTRUMENT PANEL OUTER AIR OUTLET REPLACEMENT - RIGHT SIDE (CHEVROLET)

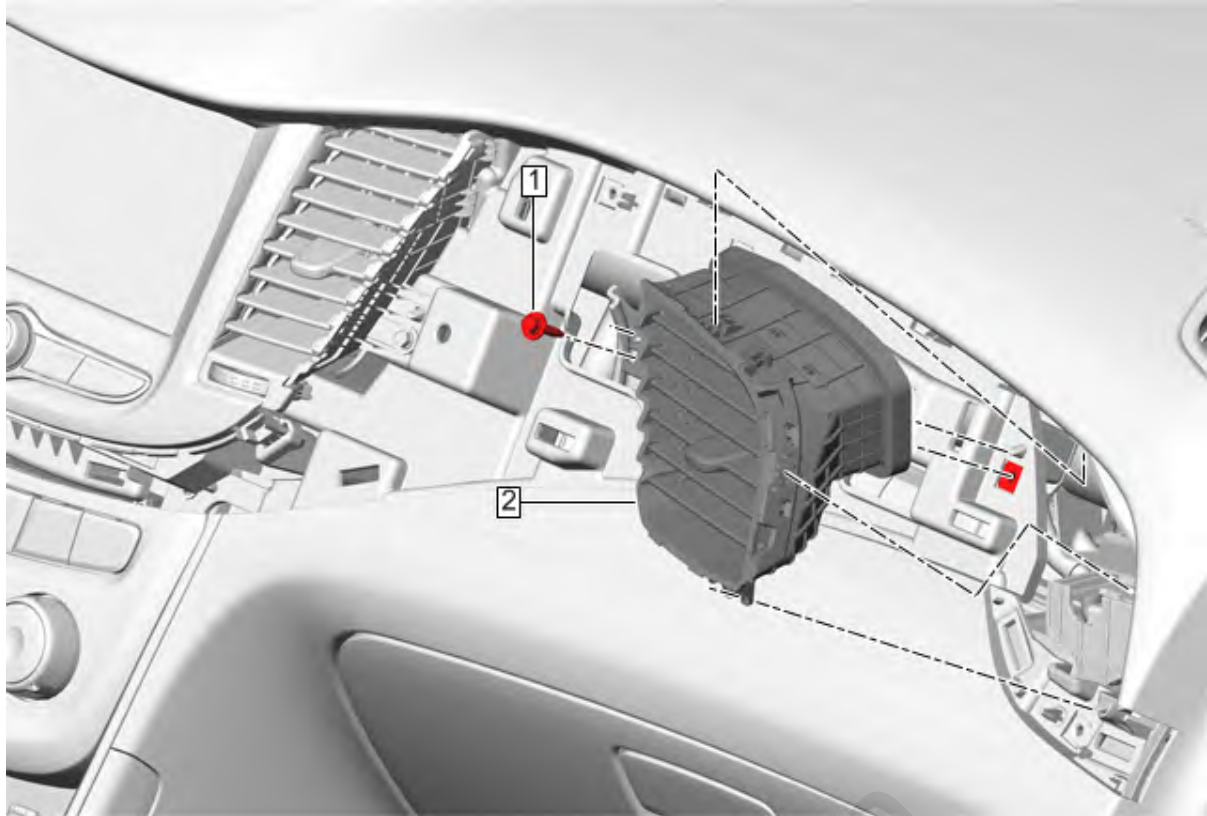


Fig. 137: Instrument Panel Outer Air Outlet - Right Side (Chevrolet).
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Instrument Panel Trim Plate Applique Replacement - Right Side (Chevrolet).</u>	
1	Instrument Panel Outer Air Outlet Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 2.5 N.m (22 lb in)
2	Instrument Panel Outer Air Outlet - Right Side

FLOOR FRONT AIR OUTLET DUCT REPLACEMENT - RIGHT SIDE

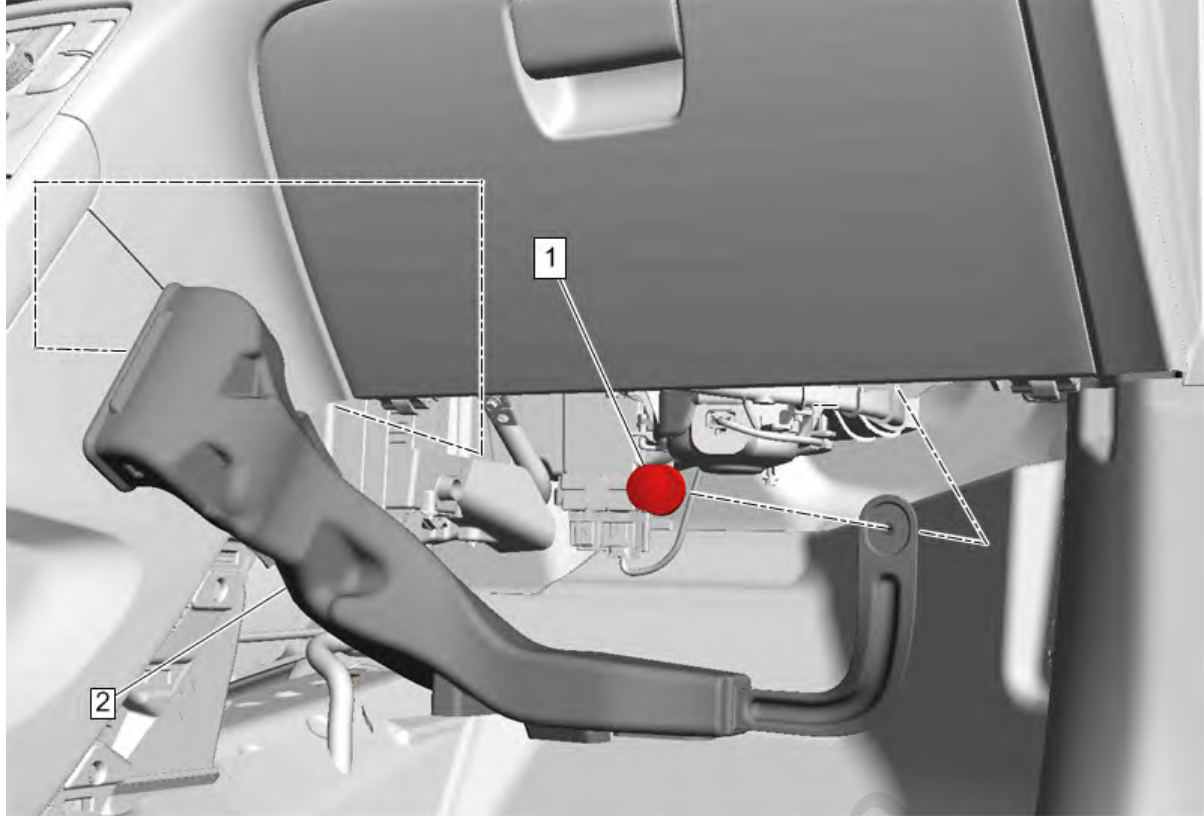


Fig. 138: Floor Front Air Outlet Duct - Right Side
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures <u>Instrument Panel Lower Trim Panel Insulator Replacement (Chevrolet), Instrument Panel Lower Trim Panel Insulator Replacement (Buick)</u> <u>Front Floor Console Extension Replacement - Right Side</u>	
1	Floor Front Air Outlet Duct Retainer
2	Floor Front Air Outlet Duct - Right Side

FLOOR FRONT AIR OUTLET DUCT REPLACEMENT - LEFT SIDE (CHEVROLET)

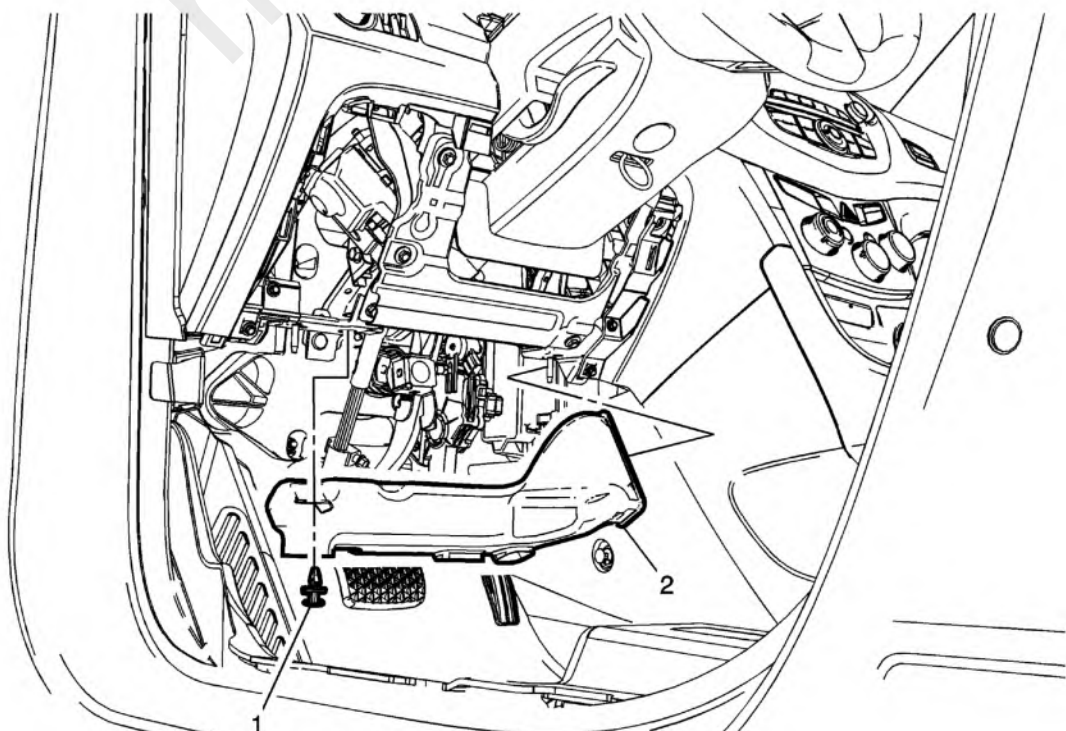


Fig. 139: Floor Front Air Outlet Duct - Left Side (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the Instrument Panel Knee Bolster. Refer to Instrument Panel Knee Bolster Replacement (Chevrolet) .	
1	Floor Air Outlet Duct Fastener
2	Floor Air Outlet Duct - Left Side

FLOOR FRONT AIR OUTLET DUCT REPLACEMENT - LEFT SIDE (BUICK)

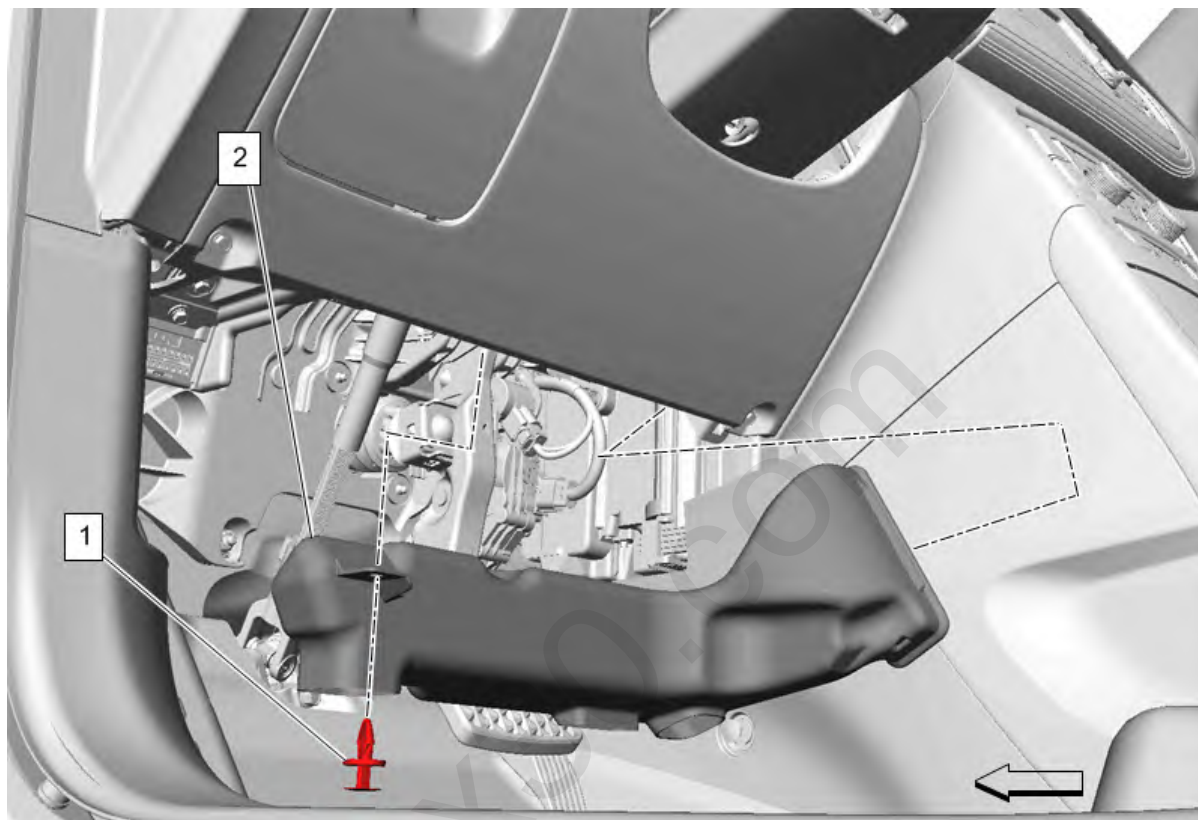


Fig. 140: Floor Front Air Outlet Duct - Left Side (Buick)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Floor Front Air Outlet Duct Retainer
2	Floor Rear Air Outlet Duct - Left Side

INSTRUMENT PANEL OUTER AIR OUTLET DUCT REPLACEMENT (BUICK)

Removal Procedure

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

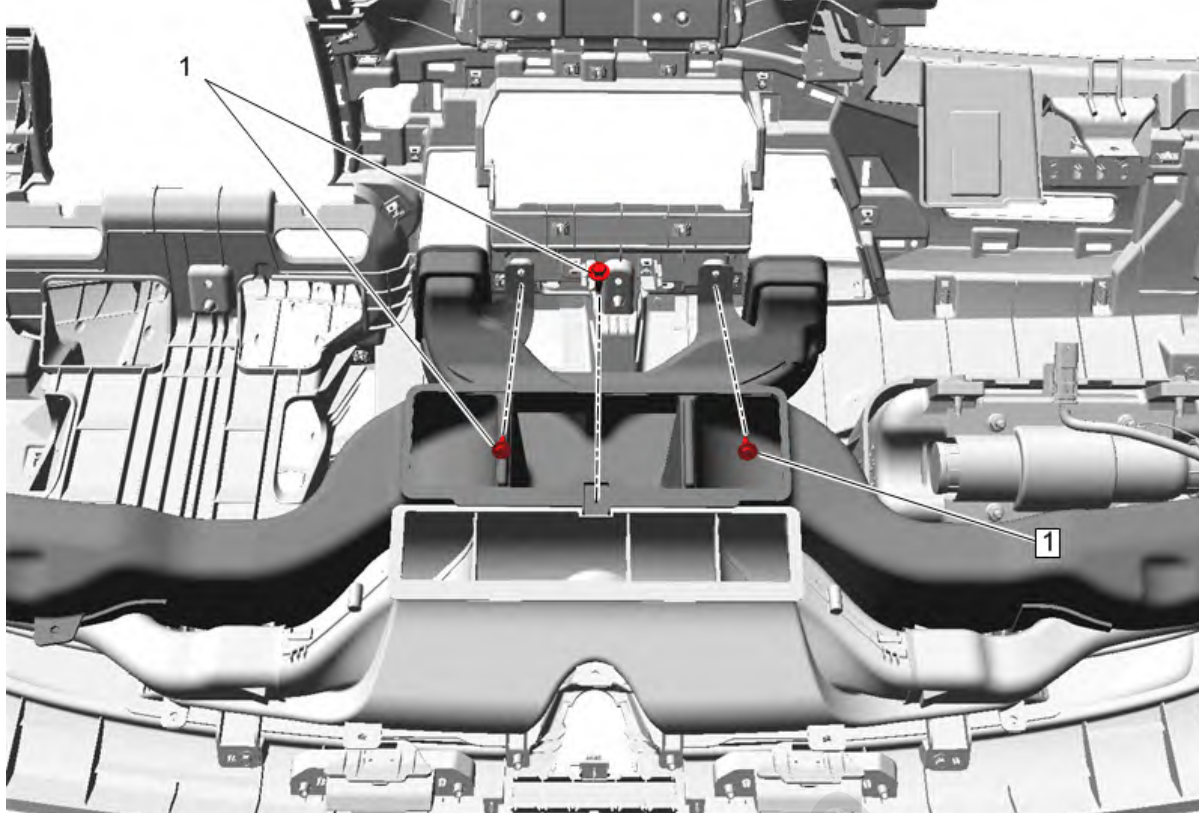


Fig. 141: Instrument Panel Outer Air Outlet Duct Bolt
 Courtesy of GENERAL MOTORS COMPANY

2. Instrument Panel Outer Air Outlet Duct Bolt 1 - Remove

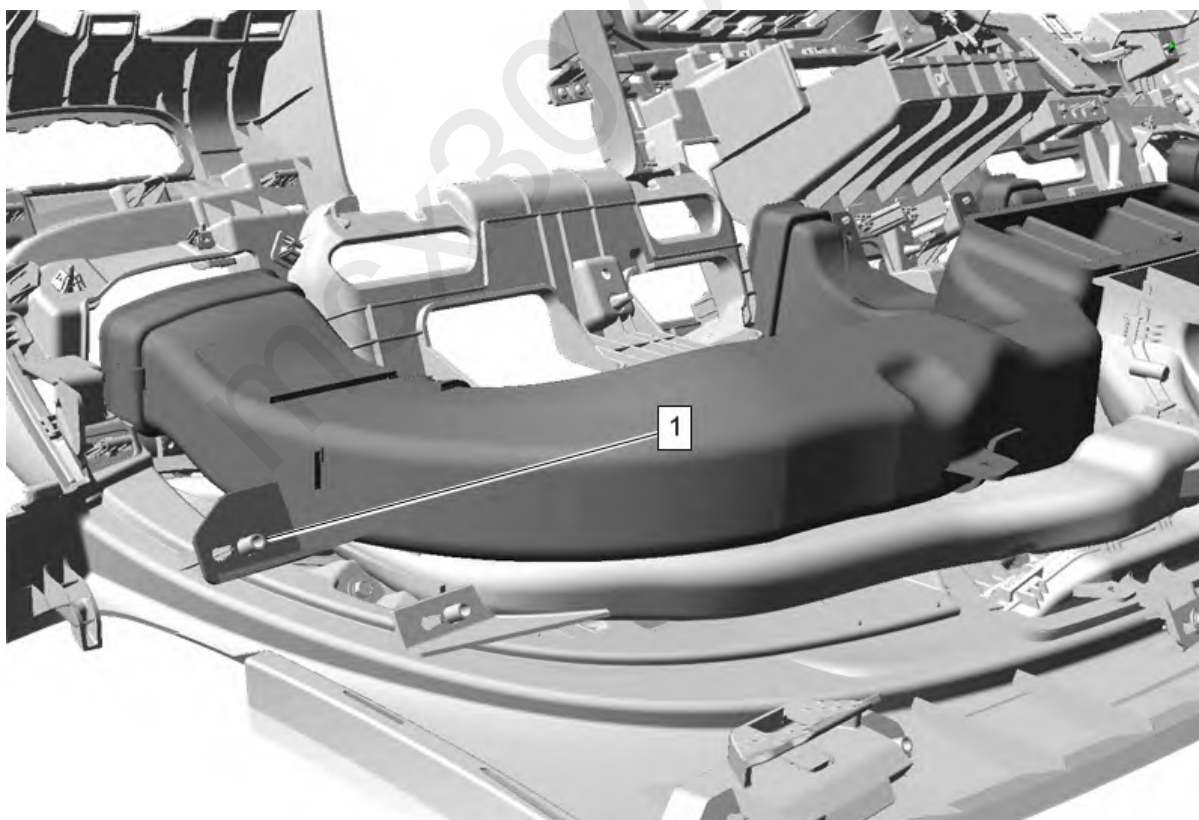


Fig. 142: Heat Stake
 Courtesy of GENERAL MOTORS COMPANY

NOTE: Both ends of the instrument panel outer air outlet duct are fastened onto the instrument panel by the heat staking method. For the re-securing instrument panel outer air outlet duct refer to the installation procedure.

3. Using the appropriate tool, remove the heat stake (1) securing the left side of the instrument panel outer air outlet duct to the instrument panel.

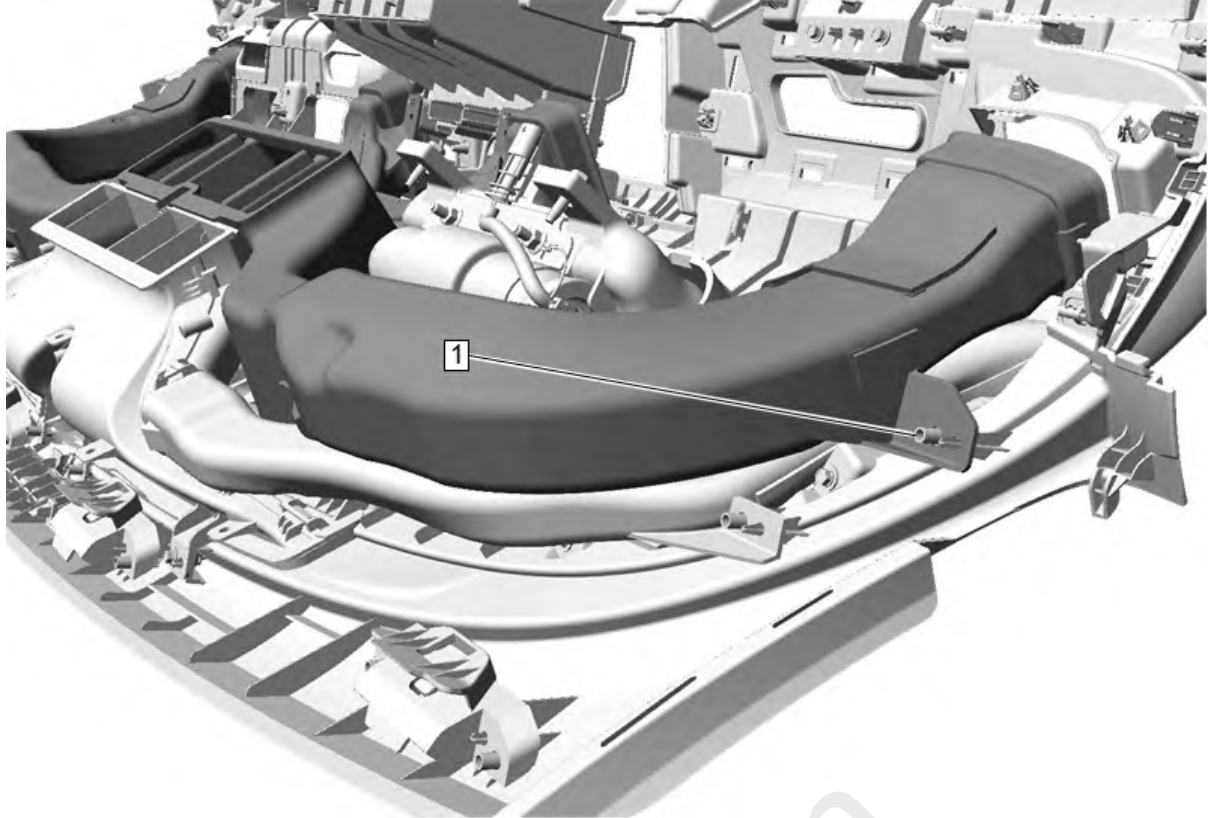


Fig. 143: Heat Stake

Courtesy of GENERAL MOTORS COMPANY

4. Using the appropriate tool, remove the heat stake (1) securing the right side of the instrument panel outer air outlet duct to the instrument panel.

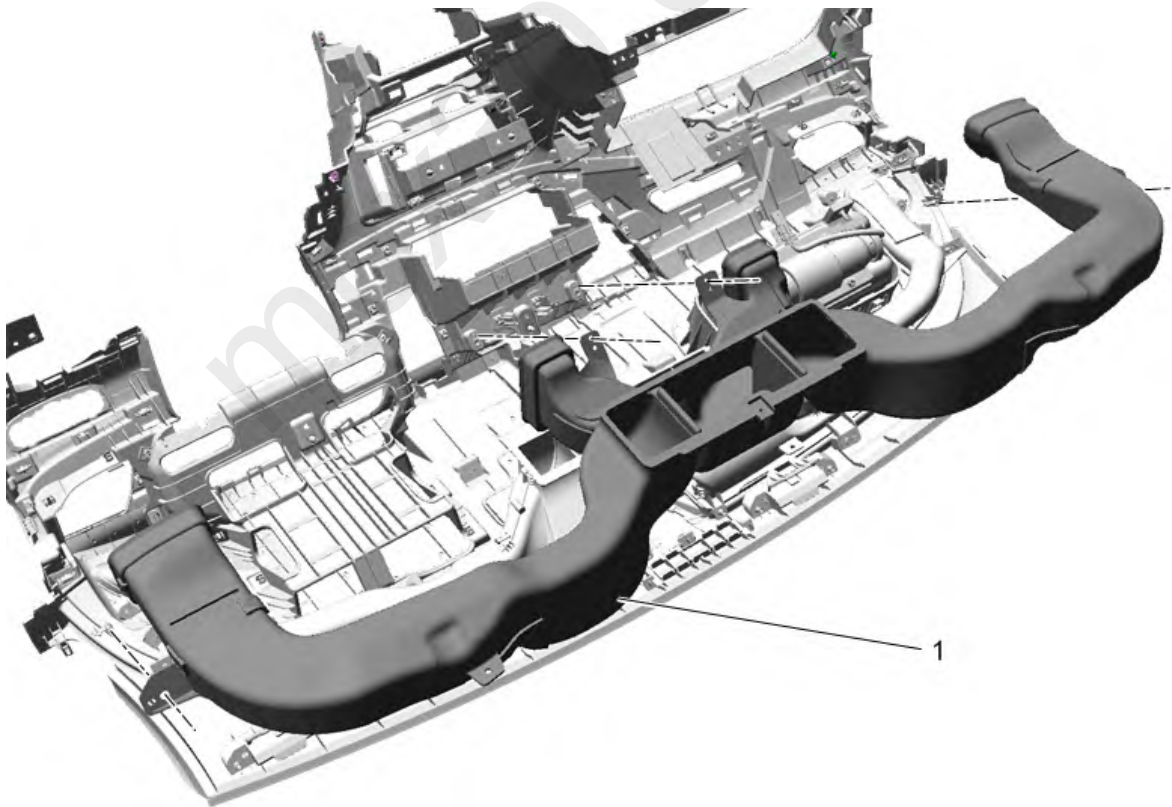


Fig. 144: Instrument Panel Outer Air Outlet Duct

Courtesy of GENERAL MOTORS COMPANY

5. Instrument Panel Outer Air Outlet Duct 1 - Remove

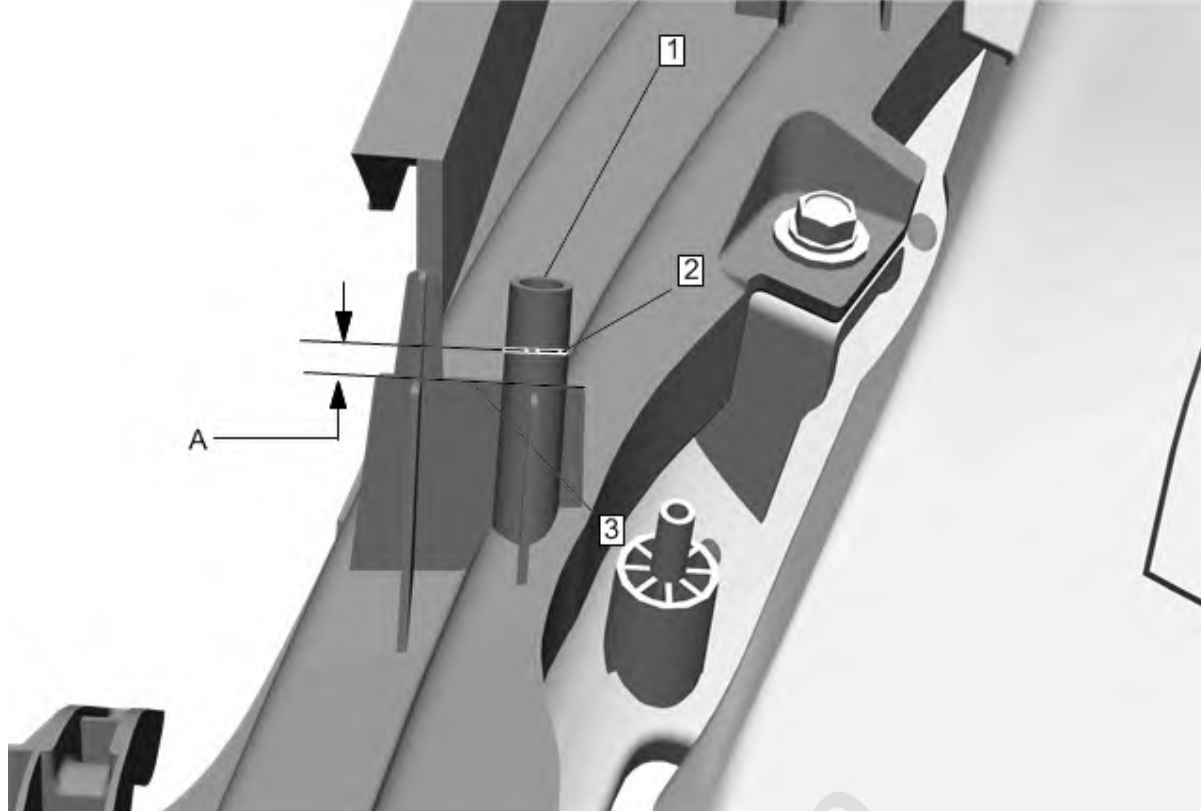


Fig. 145: Measuring Distance From Mounting Point Web

Courtesy of GENERAL MOTORS COMPANY

NOTE:

When instrument panel is being replaced with a new one cut the left and right side outer bosses on the new instrument panel in order to install mounting bolt into instrument panel outer air outlet duct. If original instrument panel is being used proceed to step 2.

1. Measure distance from mounting point web (3) to point (2) and scribe a line, leaving excess material (A) 3- 4mm (0.12- 0.16 in). Trim excess heat stake material boss (1) using appropriate tool.

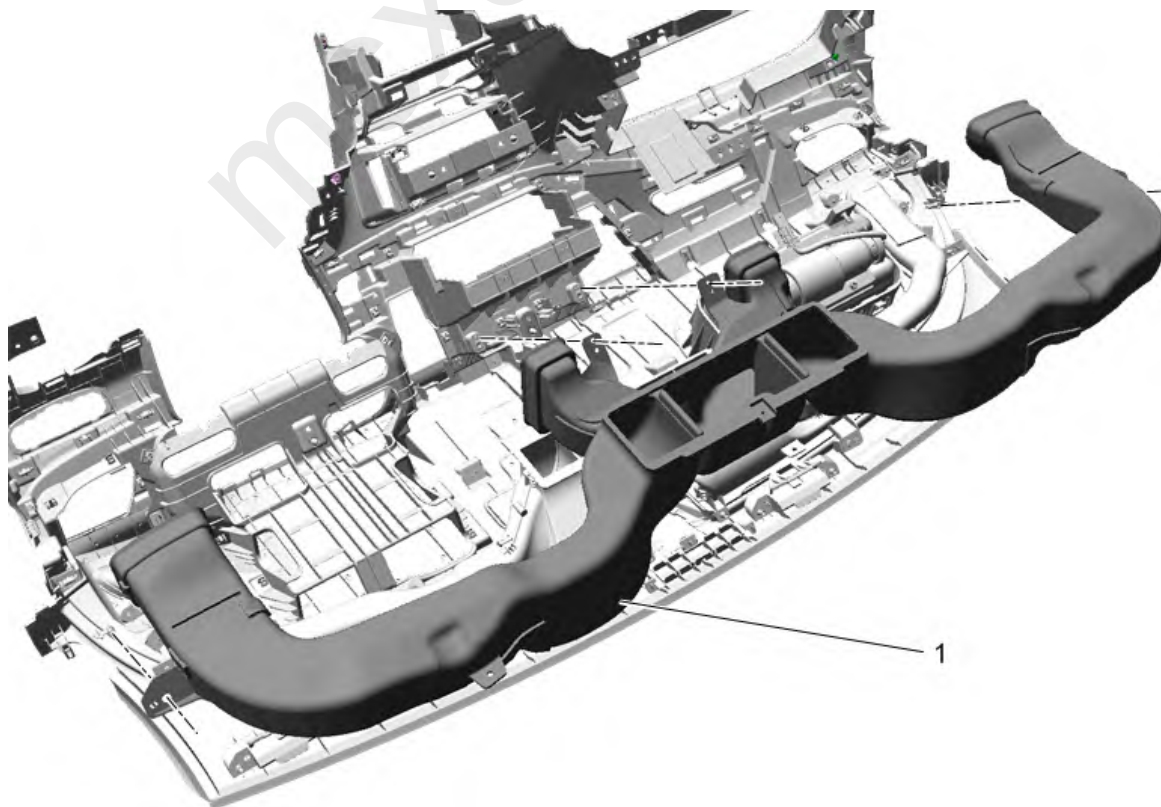


Fig. 146: Instrument Panel Outer Air Outlet Duct

Courtesy of GENERAL MOTORS COMPANY

2. Instrument Panel Outer Air Outlet Duct 1 - Install

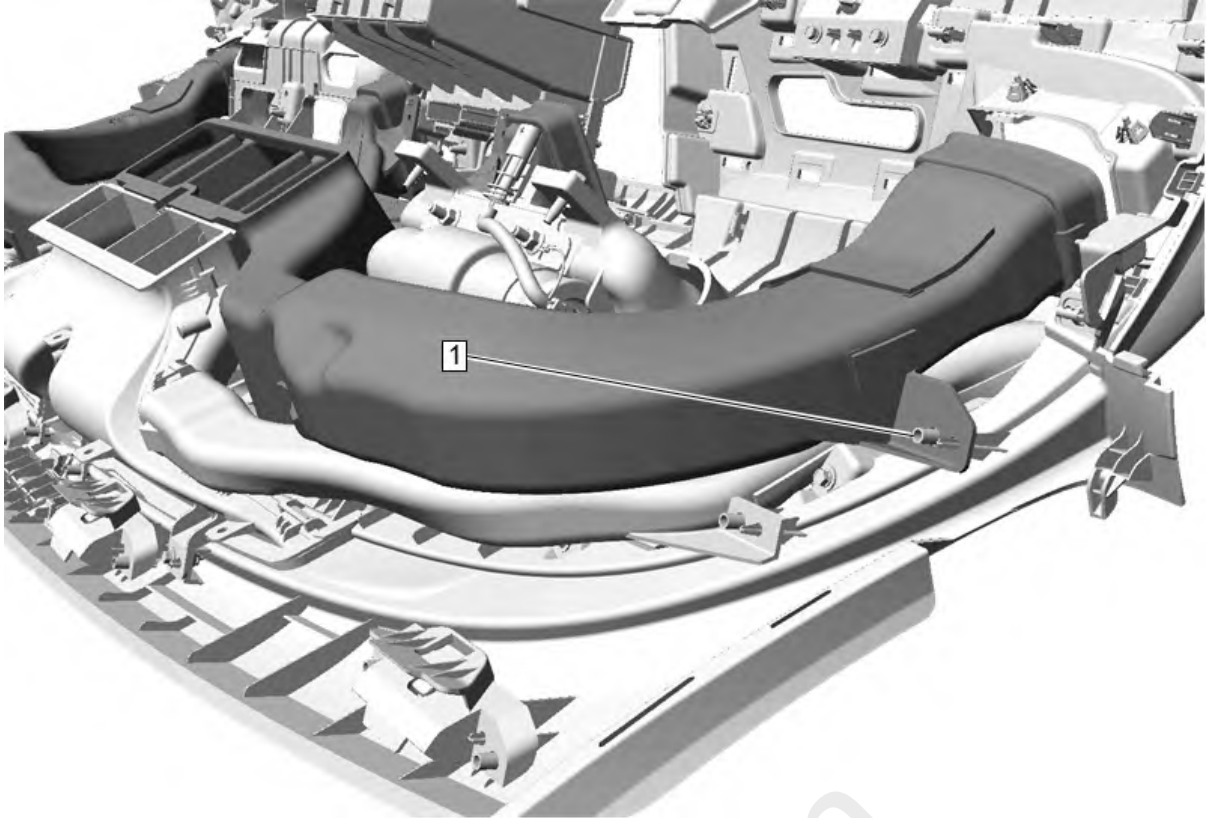


Fig. 147: Heat Stake

Courtesy of GENERAL MOTORS COMPANY

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

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

3. Instrument Panel Outer Air Outlet Duct Bolt 1 - Install and tighten 2.5 N.m (22 lb in)

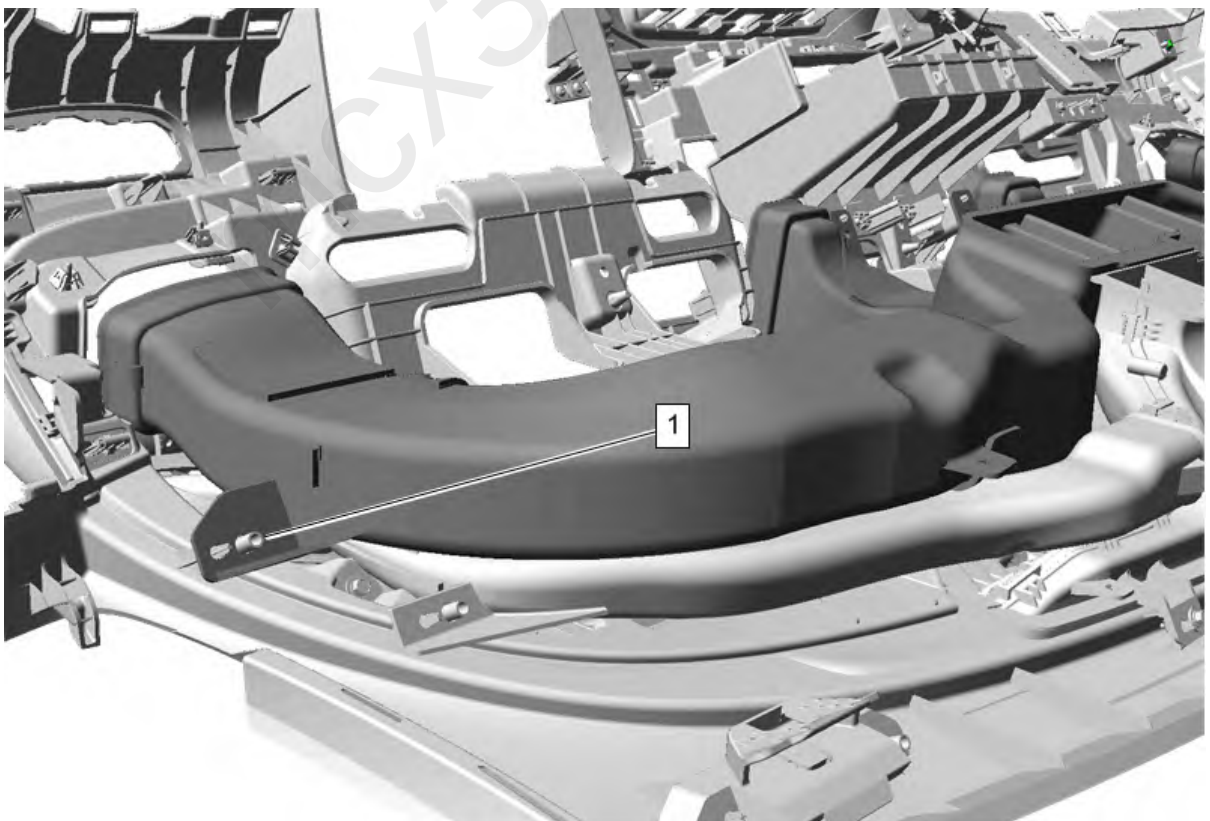


Fig. 148: Heat Stake

Courtesy of GENERAL MOTORS COMPANY

4. Instrument Panel Outer Air Outlet Duct Bolt 1 - Install and tighten 2.5 N.m (22 lb in)

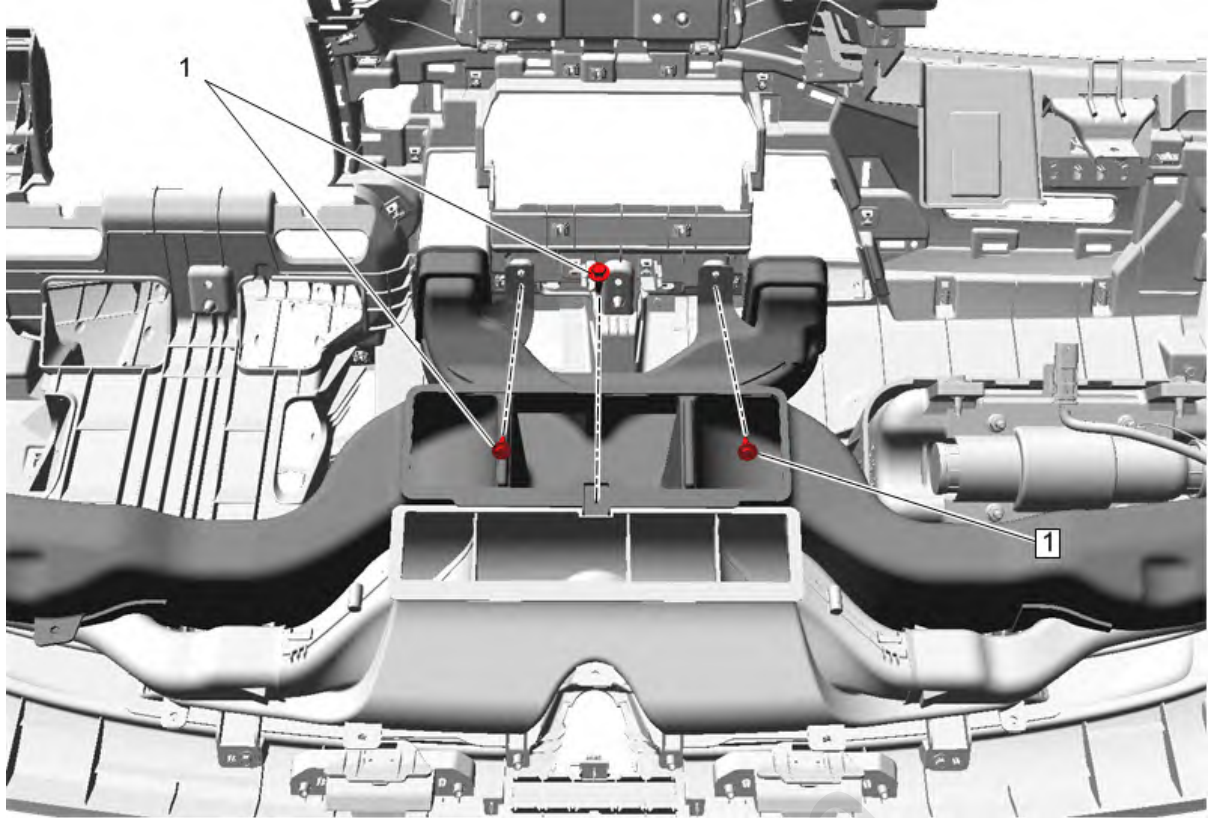


Fig. 149: Instrument Panel Outer Air Outlet Duct Bolt
 Courtesy of GENERAL MOTORS COMPANY

5. Instrument Panel Outer Air Outlet Duct Bolt 1 - Install and tighten 2.5 N.m (22 lb in)
6. Instrument Panel Assembly - Install - [Instrument Panel Assembly Replacement \(Buick\)](#)

INSTRUMENT PANEL OUTER AIR OUTLET DUCT REPLACEMENT (CHEVROLET)

Removal Procedure

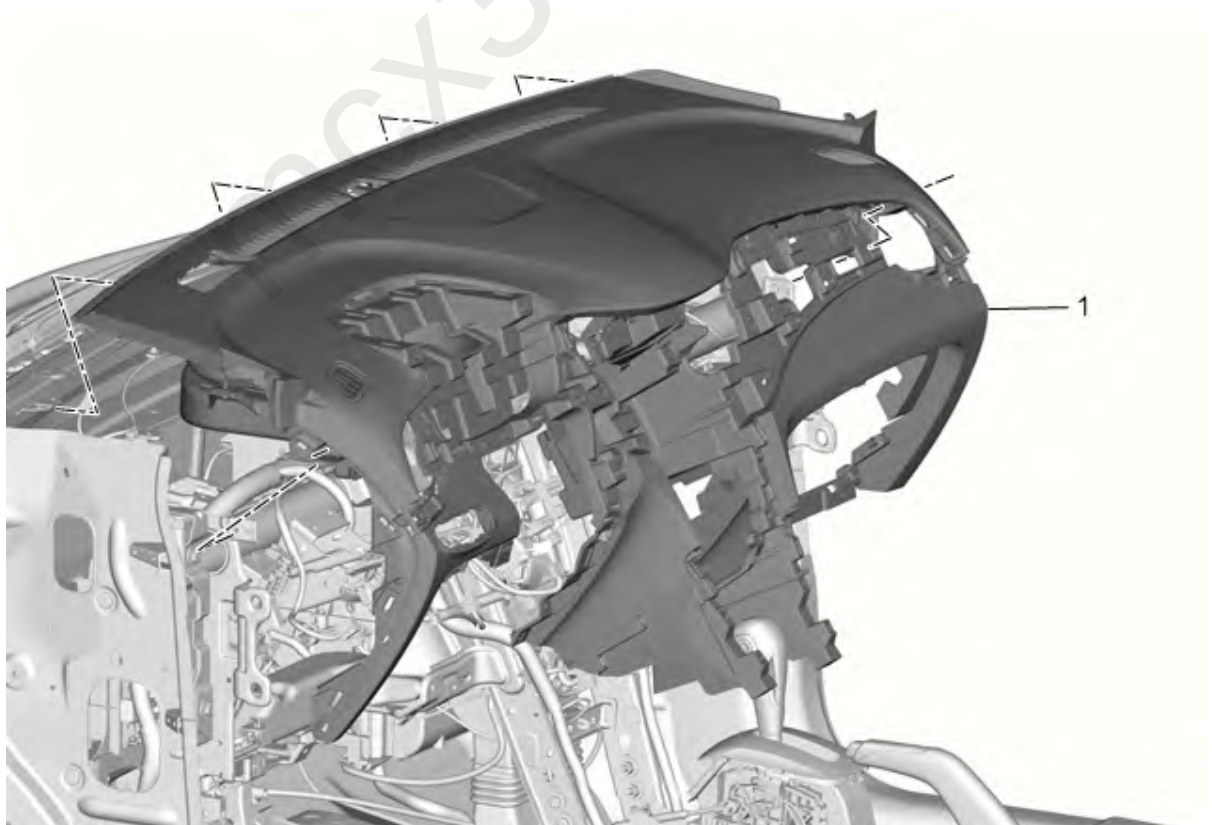


Fig. 150: Instrument Panel Assembly
 Courtesy of GENERAL MOTORS COMPANY

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

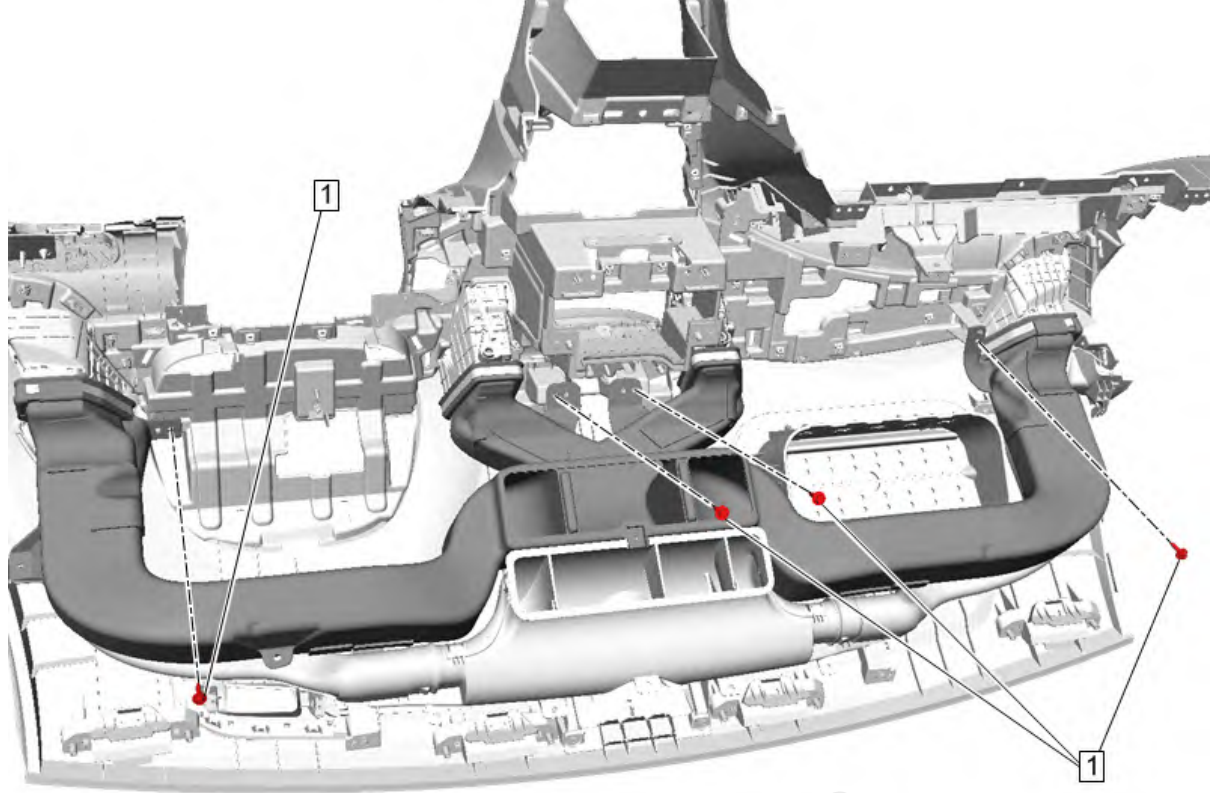


Fig. 151: Instrument Panel Outer Air Outlet Duct Bolt
 Courtesy of GENERAL MOTORS COMPANY

2. Instrument Panel Outer Air Outlet Duct Bolt 1 - Remove

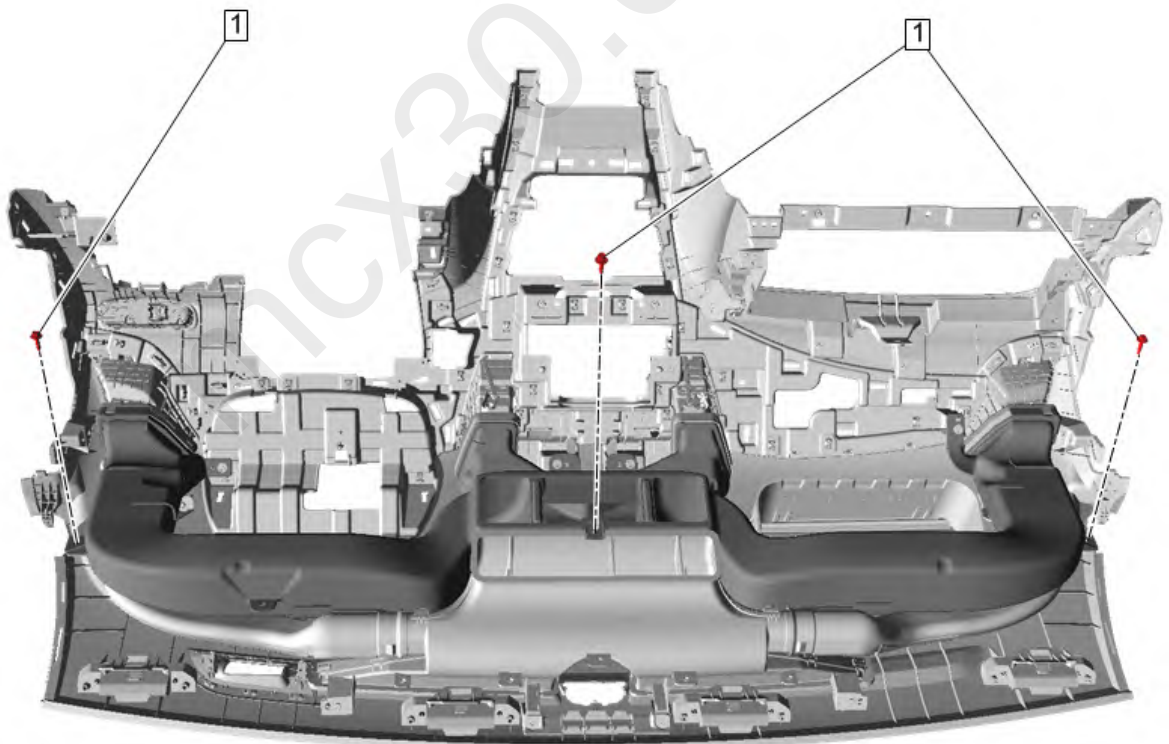


Fig. 152: Instrument Panel Outer Air Outlet Duct Bolt
 Courtesy of GENERAL MOTORS COMPANY

3. Instrument Panel Outer Air Outlet Duct Bolt 1 - Remove

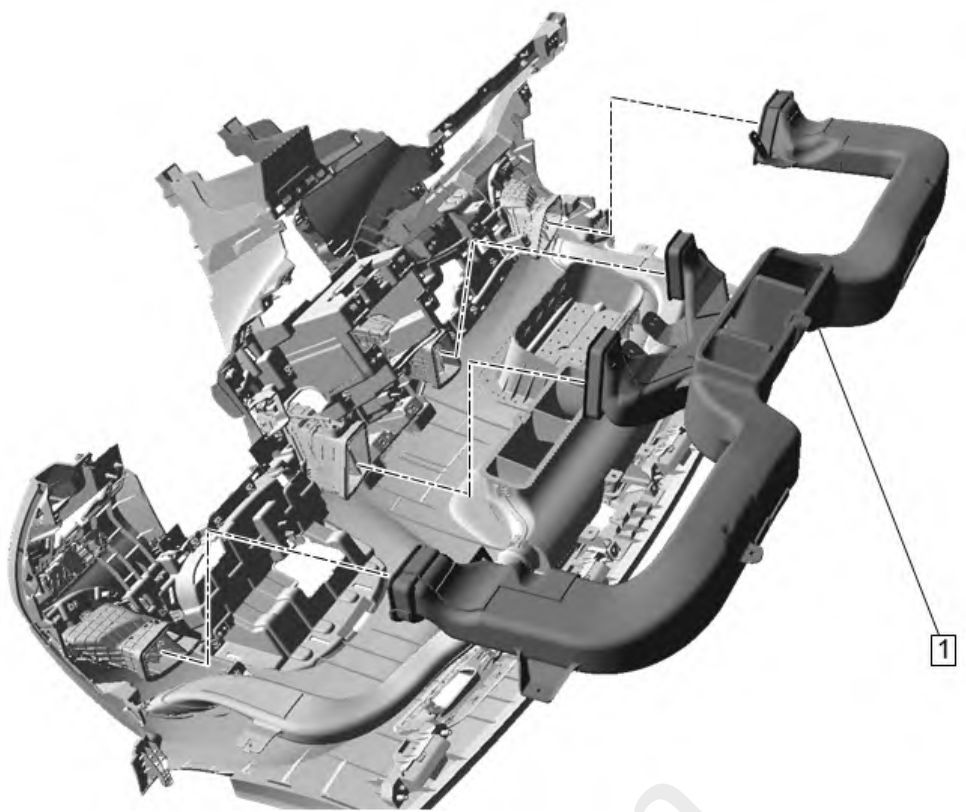


Fig. 153: Instrument Panel Outer Air Outlet Duct
 Courtesy of GENERAL MOTORS COMPANY

4. Instrument Panel Outer Air Outlet Duct 1 - Remove

Installation Procedure

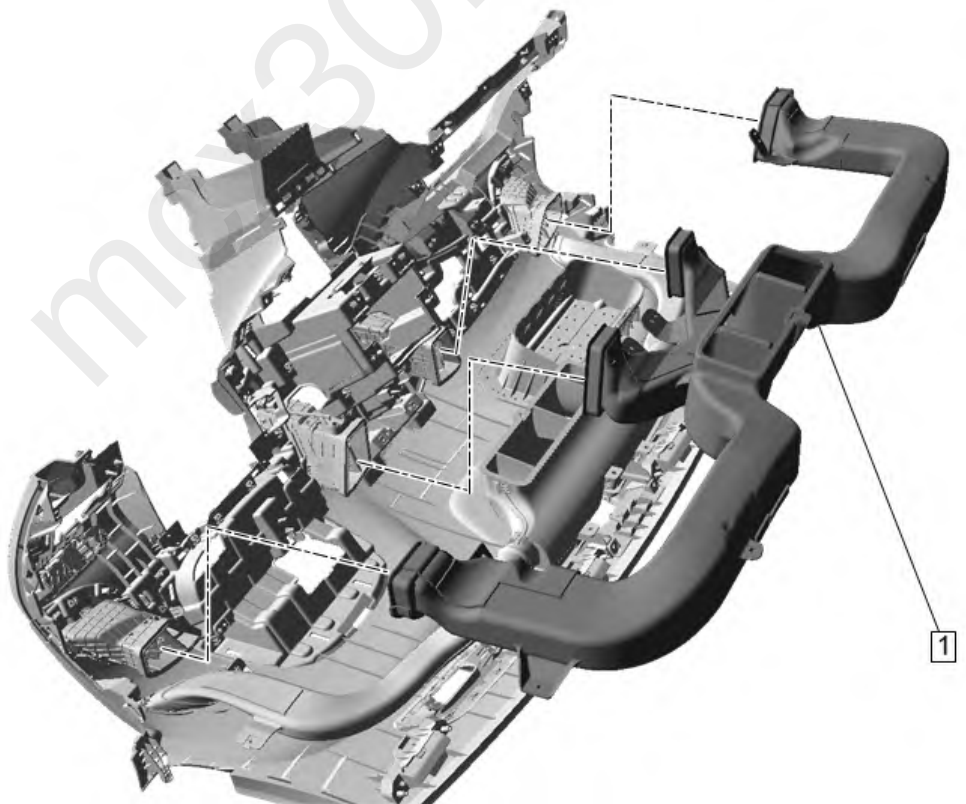


Fig. 154: Instrument Panel Outer Air Outlet Duct
 Courtesy of GENERAL MOTORS COMPANY

1. Instrument Panel Outer Air Outlet Duct 1 - Install

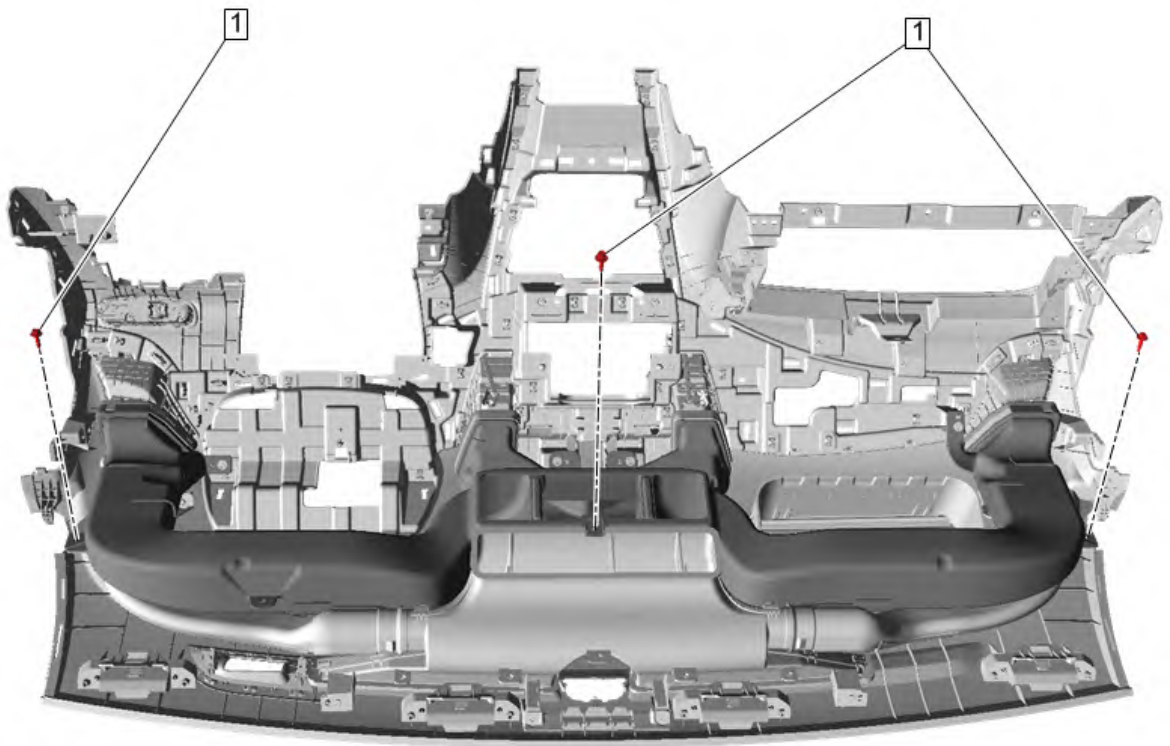


Fig. 155: Instrument Panel Outer Air Outlet Duct Bolt
 Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to **Fastener Caution** .

2. Instrument Panel Outer Air Outlet Duct Bolt 1 - Install and tighten 2.5 N.m (22 lb in)

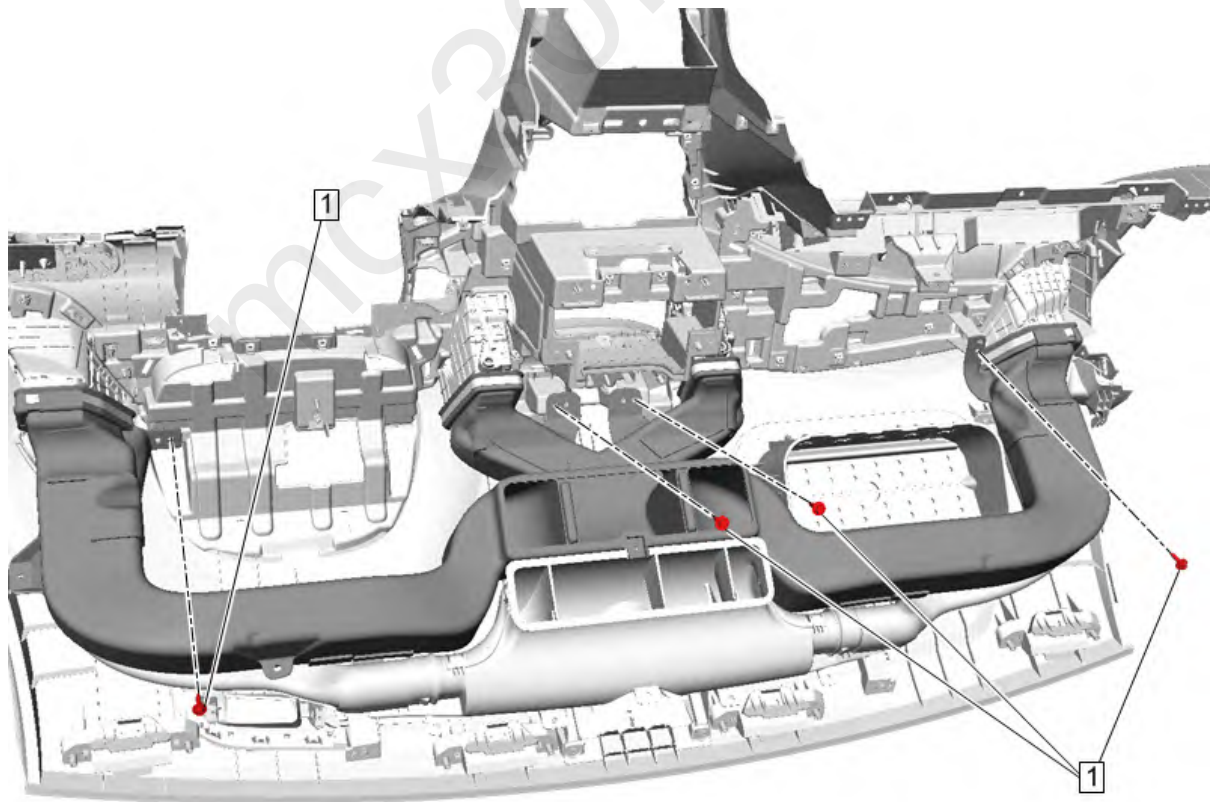


Fig. 156: Instrument Panel Outer Air Outlet Duct Bolt
 Courtesy of GENERAL MOTORS COMPANY

3. Instrument Panel Outer Air Outlet Duct Bolt 1 - Install and tighten 2.5 N.m (22 lb in)

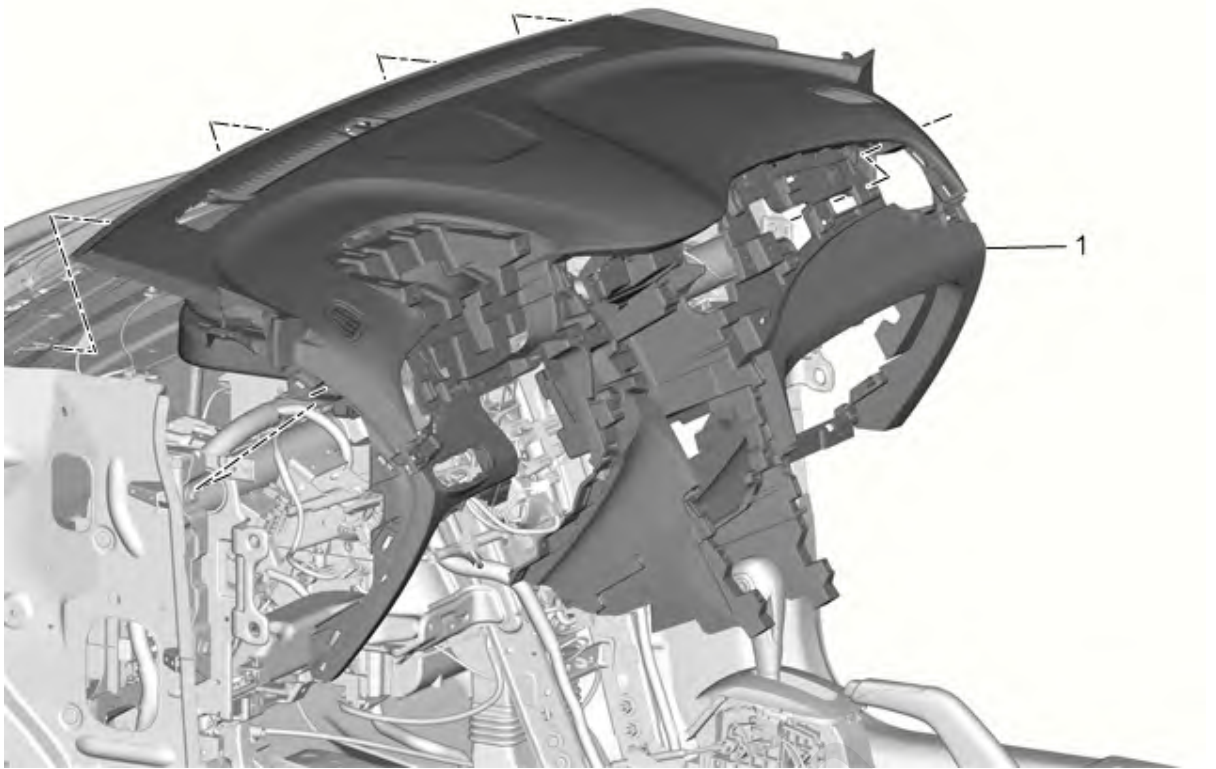


Fig. 157: Instrument Panel Assembly

Courtesy of GENERAL MOTORS COMPANY

4. Instrument Panel Assembly 1 - Install - [Instrument Panel Assembly Replacement \(Chevrolet\)](#)

WINDSHIELD DEFROSTER OUTLET DUCT REPLACEMENT (BUICK)

Removal Procedure

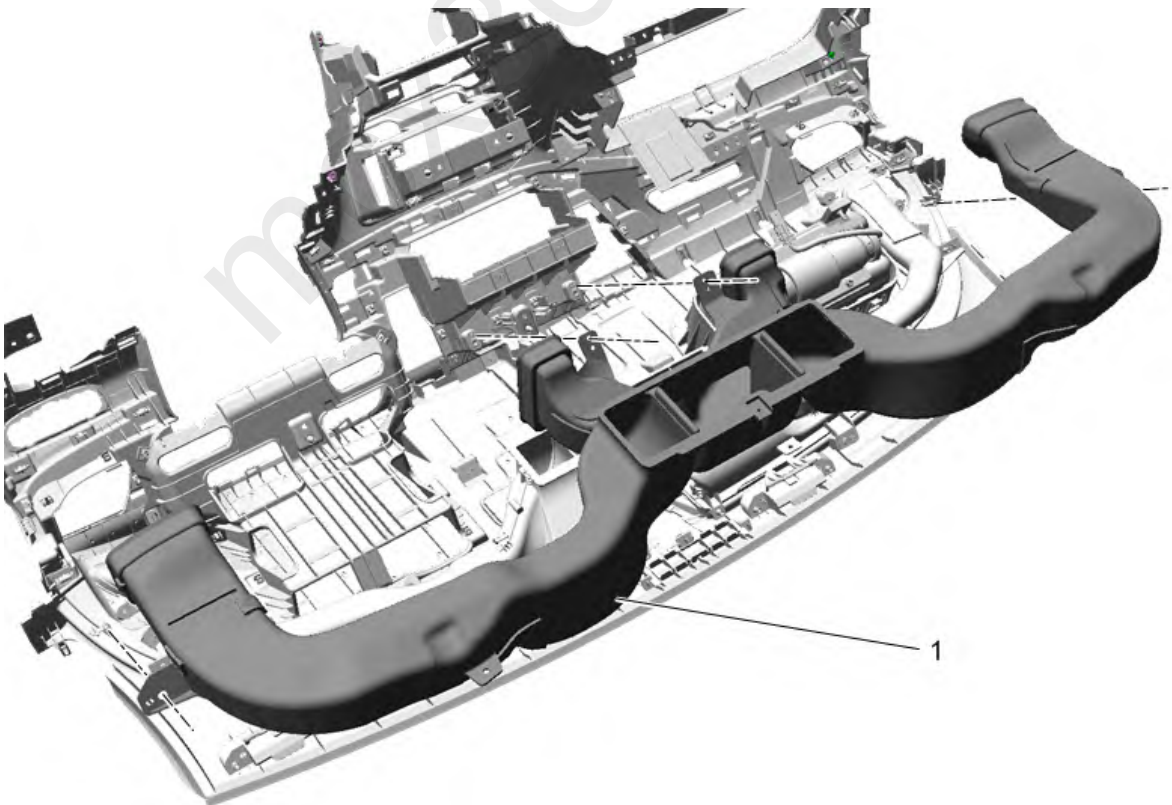


Fig. 158: Instrument Panel Outer Air Outlet Duct

Courtesy of GENERAL MOTORS COMPANY

1. Instrument Panel Outer Air Outlet Duct 1 - Remove - [Instrument Panel Outer Air Outlet Duct Replacement \(Buick\)](#)

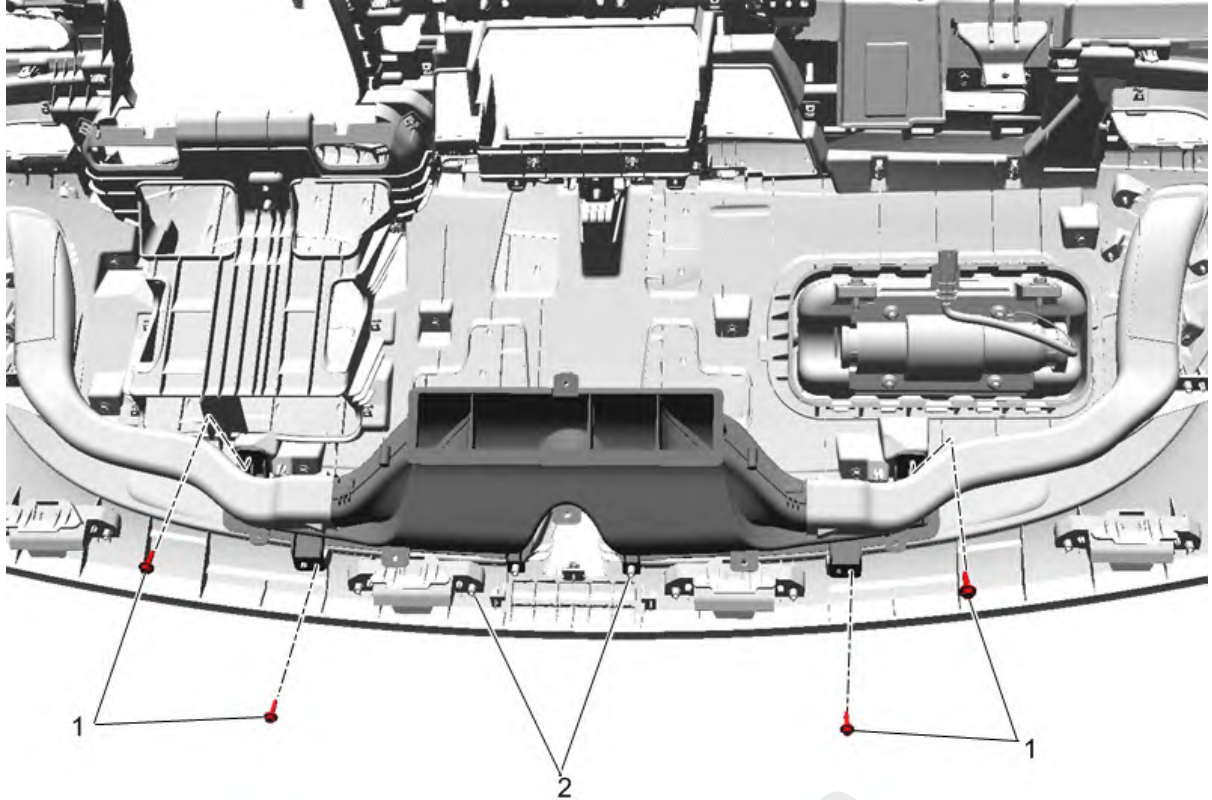


Fig. 159: Windshield Defroster Outlet Duct Bolt And Heat Stakes

Courtesy of GENERAL MOTORS COMPANY

NOTE: The windshield defroster outlet duct is fastened onto the instrument panel by the heat staking method. For the re-securing windshield defroster outlet duct refer to the installation procedure.

2. Windshield Defroster Outlet Duct Bolt 1 - Remove
3. Using the appropriate tool, remove the two heat stakes (2) securing the windshield defroster outlet duct to the instrument panel.

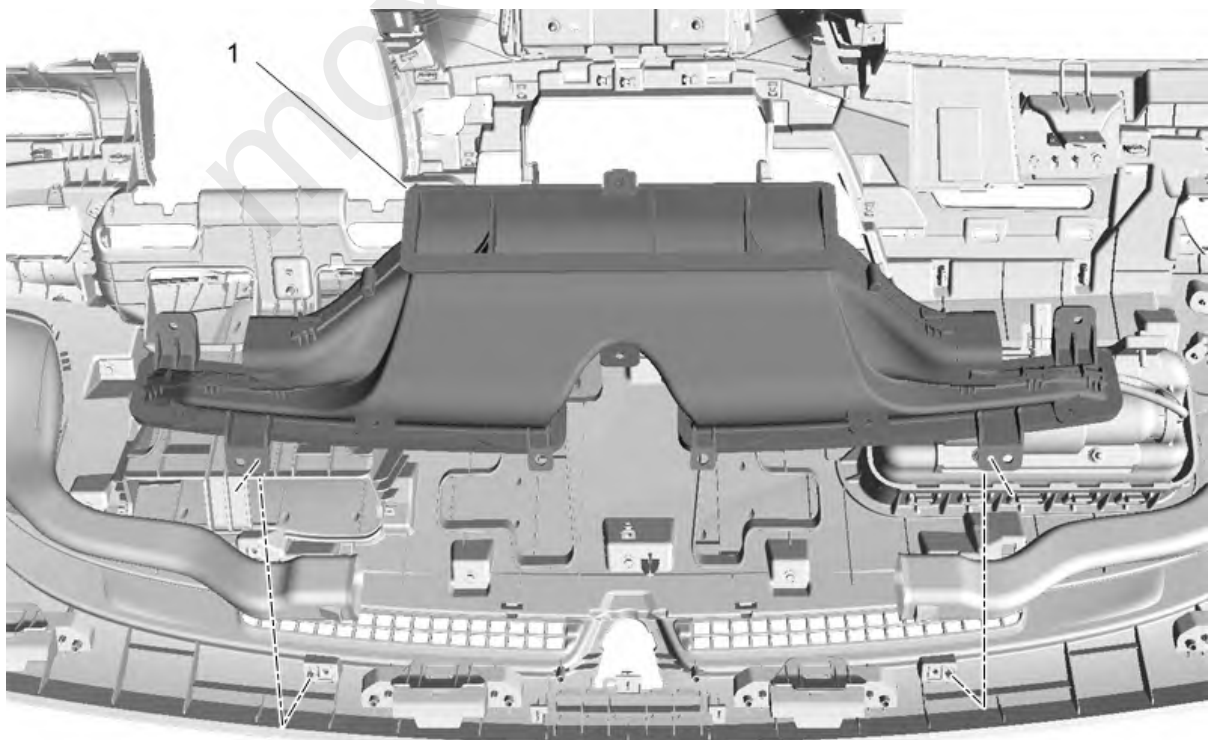


Fig. 160: Windshield Defroster Outlet Duct

Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to [HVAC Duct Heat Stake Caution](#) .

4. Disconnect the windshield defroster outlet duct from the right and left side window defroster outlet ducts.
5. Windshield Defroster Outlet Duct 1 - Remove

Installation Procedure

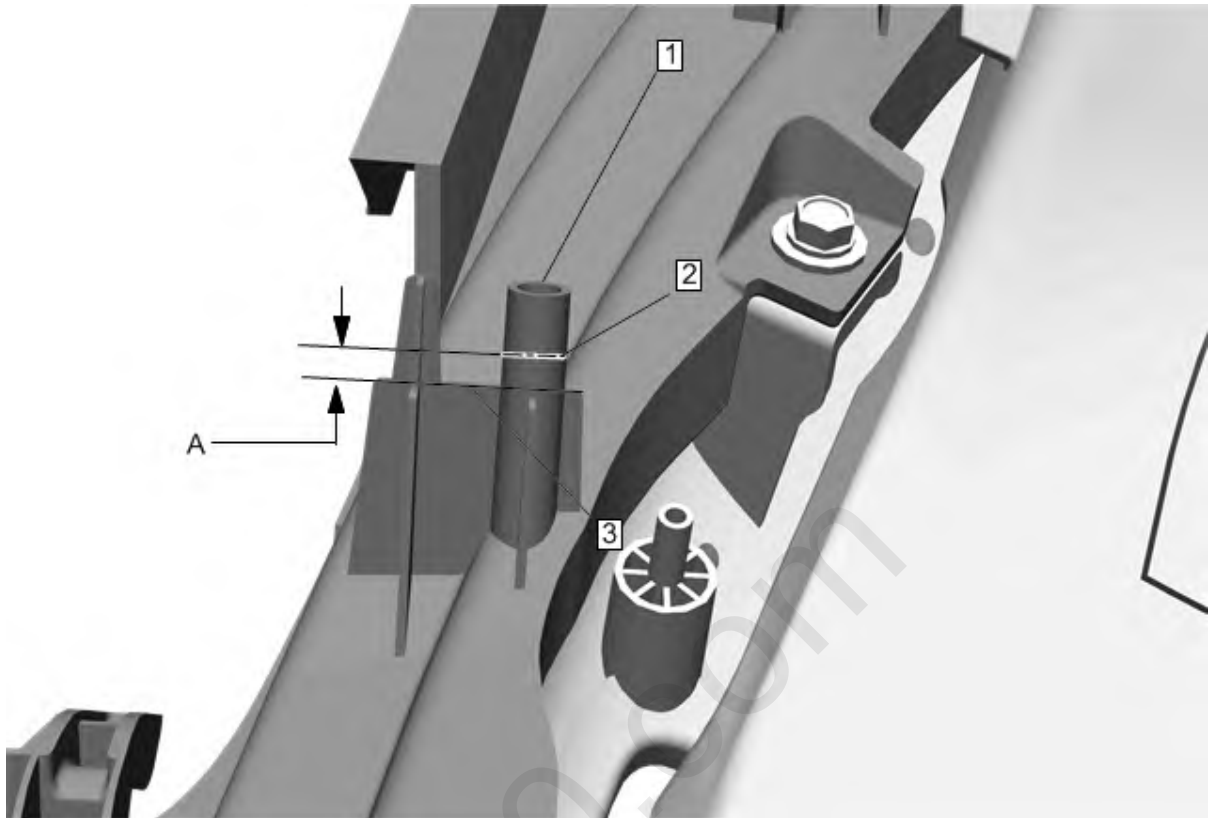


Fig. 161: Measuring Distance From Mounting Point Web

Courtesy of GENERAL MOTORS COMPANY

NOTE: When instrument panel is being replaced with a new one cut the left and right side bosses on the new instrument panel in order to install mounting bolt into the windshield defroster outlet duct. If original instrument panel is being used proceed to step 2.

1. Measure distance from mounting point web (3) to point (2) and scribe a line, leaving excess material (A) 3- 4mm (0.12- 0.16 in). Trim excess heat stake material boss (1) using appropriate tool.

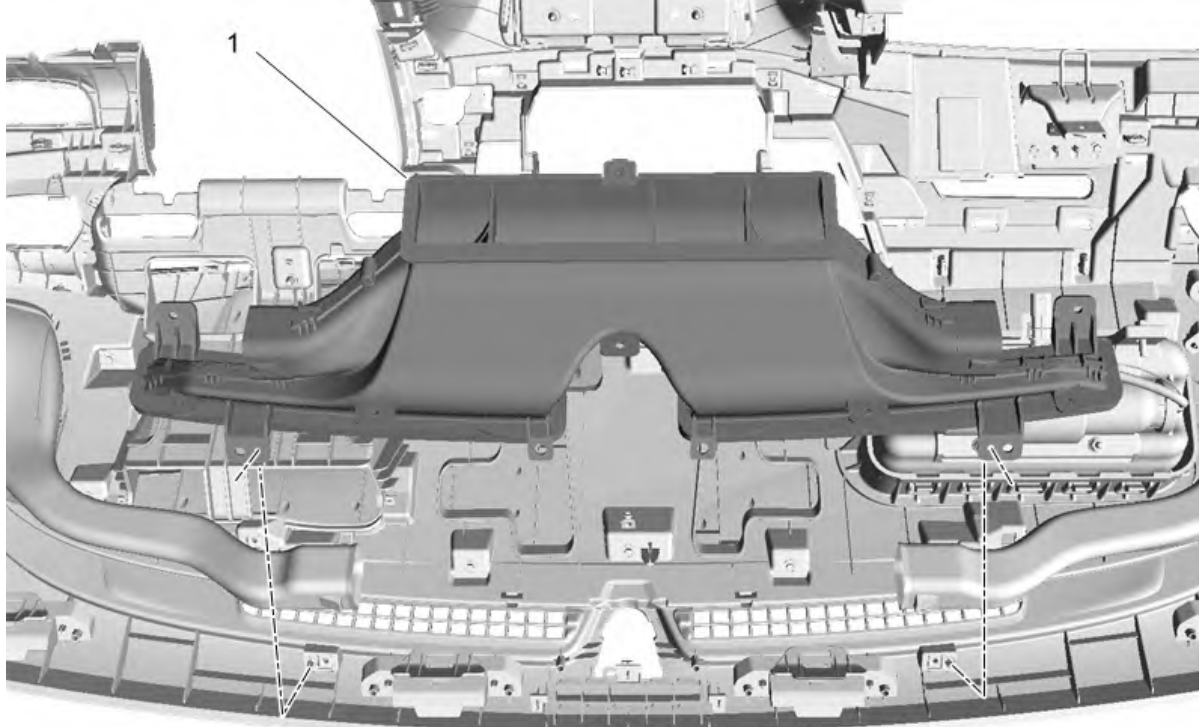


Fig. 162: Windshield Defroster Outlet Duct
 Courtesy of GENERAL MOTORS COMPANY

2. Windshield Defroster Outlet Duct 1 - Install
3. Connect the windshield defroster outlet duct to the right and left side window defroster outlet ducts

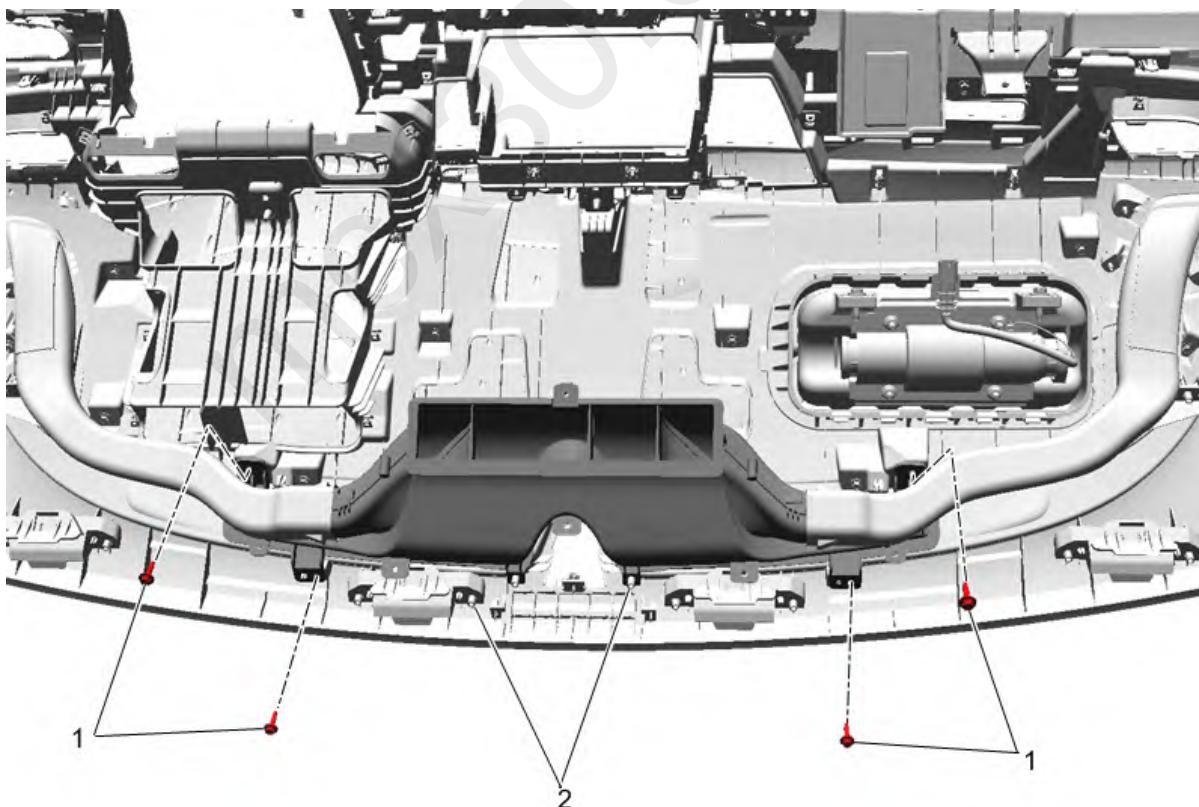


Fig. 163: Windshield Defroster Outlet Duct Bolt And Heat Stakes
 Courtesy of GENERAL MOTORS COMPANY

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

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

4. Windshield Defroster Outlet Duct Bolt 1 - Install and tighten 2.5 N.m (22 lb in)

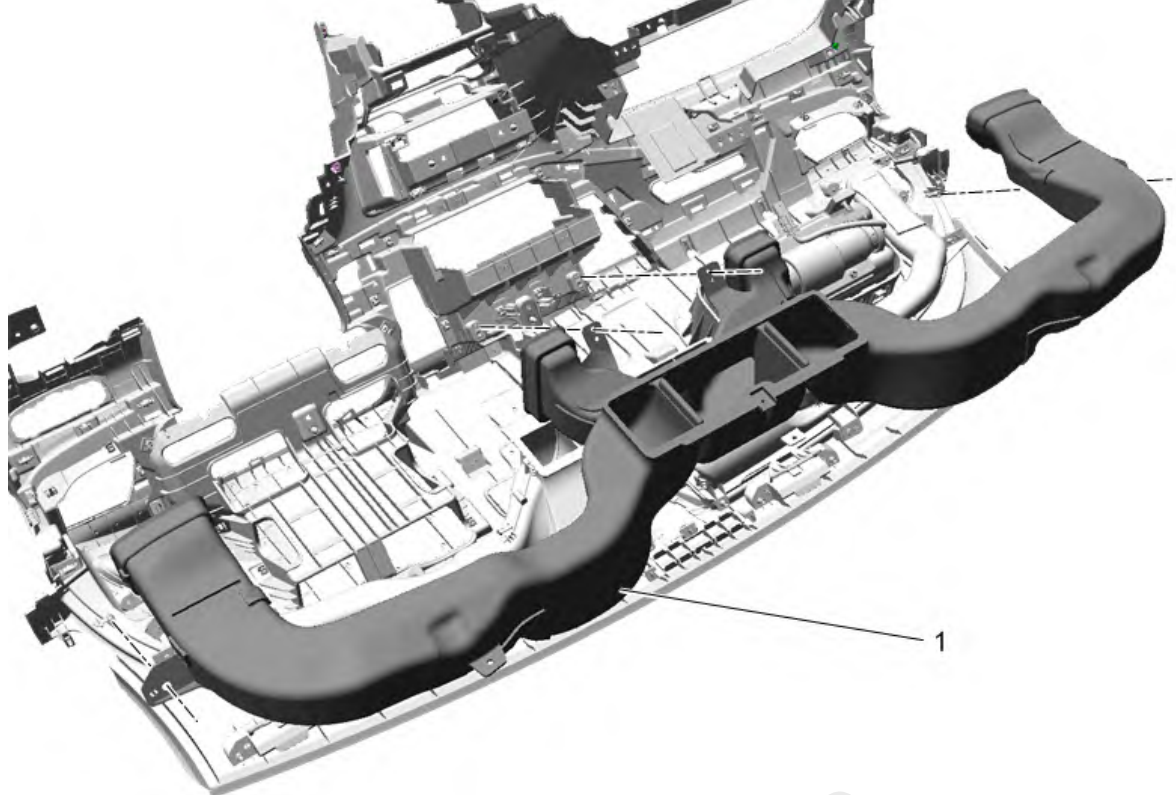


Fig. 164: Instrument Panel Outer Air Outlet Duct
 Courtesy of GENERAL MOTORS COMPANY

5. Instrument Panel Outer Air Outlet Duct 1 - Install - [Instrument Panel Outer Air Outlet Duct Replacement \(Buick\)](#)

WINDSHIELD DEFROSTER OUTLET DUCT REPLACEMENT (CHEVROLET)

Removal Procedure

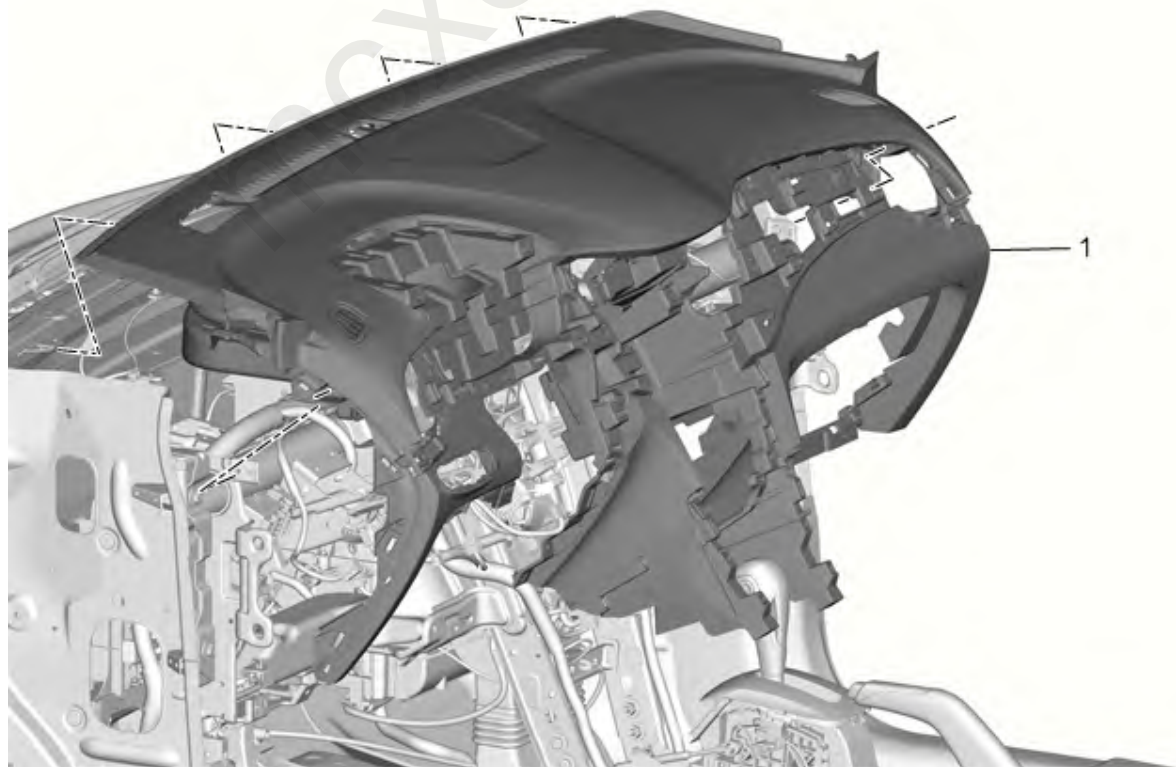


Fig. 165: Instrument Panel Assembly
 Courtesy of GENERAL MOTORS COMPANY

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

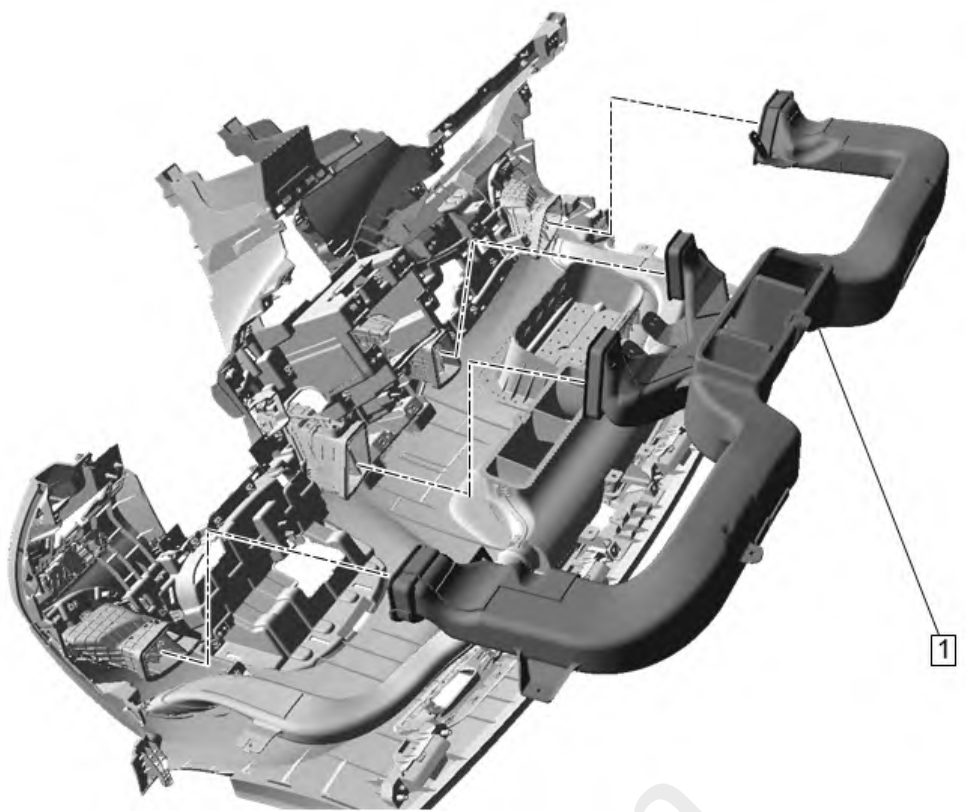


Fig.166: Instrument Panel Outer Air Outlet Duct
 Courtesy of GENERAL MOTORS COMPANY

2. Instrument Panel Outer Air Outlet Duct 1 - Remove - **Instrument Panel Outer Air Outlet Duct Replacement (Chevrolet)**

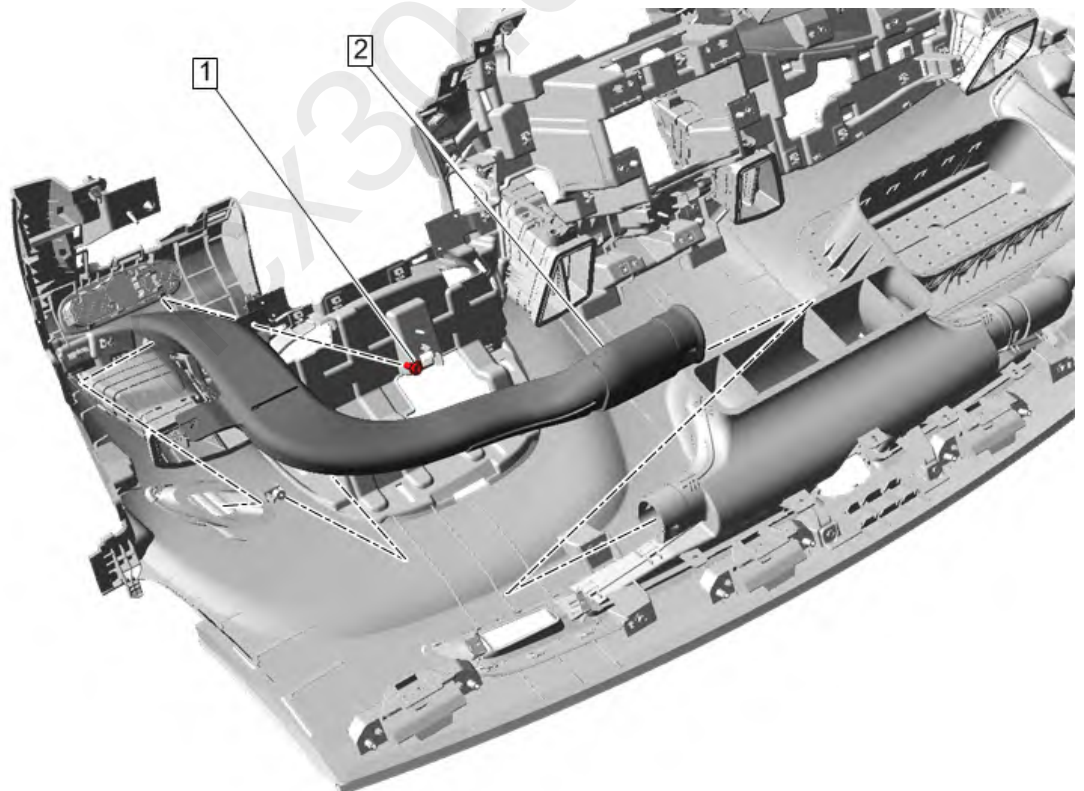


Fig.167: Side Window Defogger Outlet Duct - Left Side
 Courtesy of GENERAL MOTORS COMPANY

3. Side Window Defogger Outlet Duct - Left Side 2 - Remove - **Side Window Defogger Outlet Duct Replacement - Left Side (Chevrolet)**

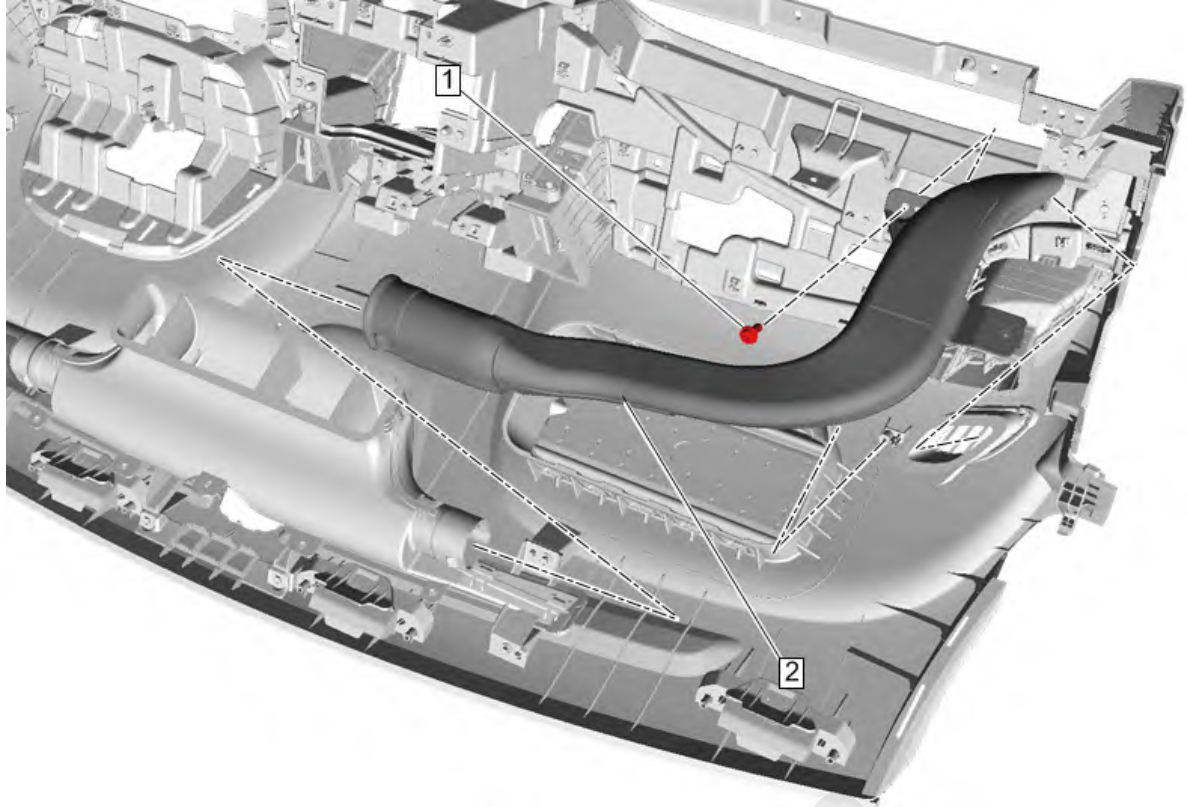


Fig.168: Side Window Defogger Outlet Duct - Right Side
 Courtesy of GENERAL MOTORS COMPANY

4. Side Window Defogger Outlet Duct - Right Side 2 - Remove **Side Window Defogger Outlet Duct Replacement - Right Side (Chevrolet)**

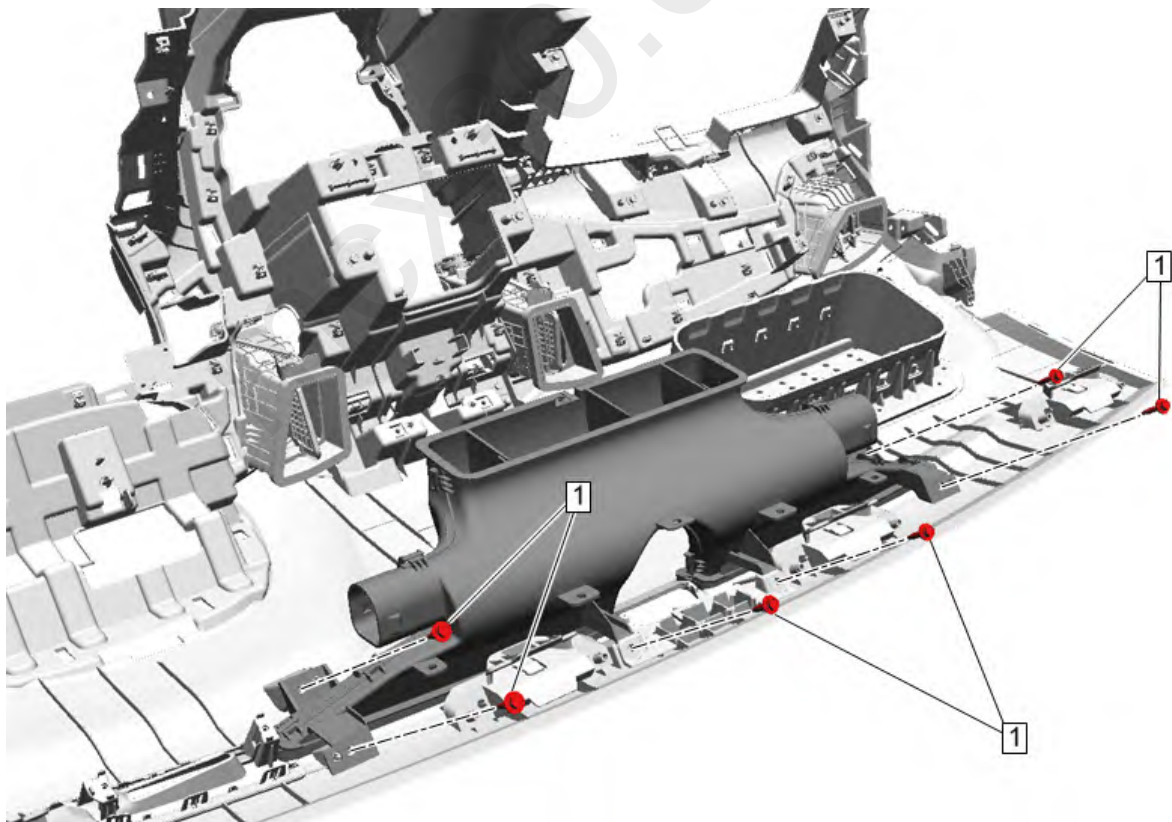


Fig.169: Windshield Defroster Outlet Duct Bolt
 Courtesy of GENERAL MOTORS COMPANY

5. Windshield Defroster Outlet Duct Bolt 1 - Remove

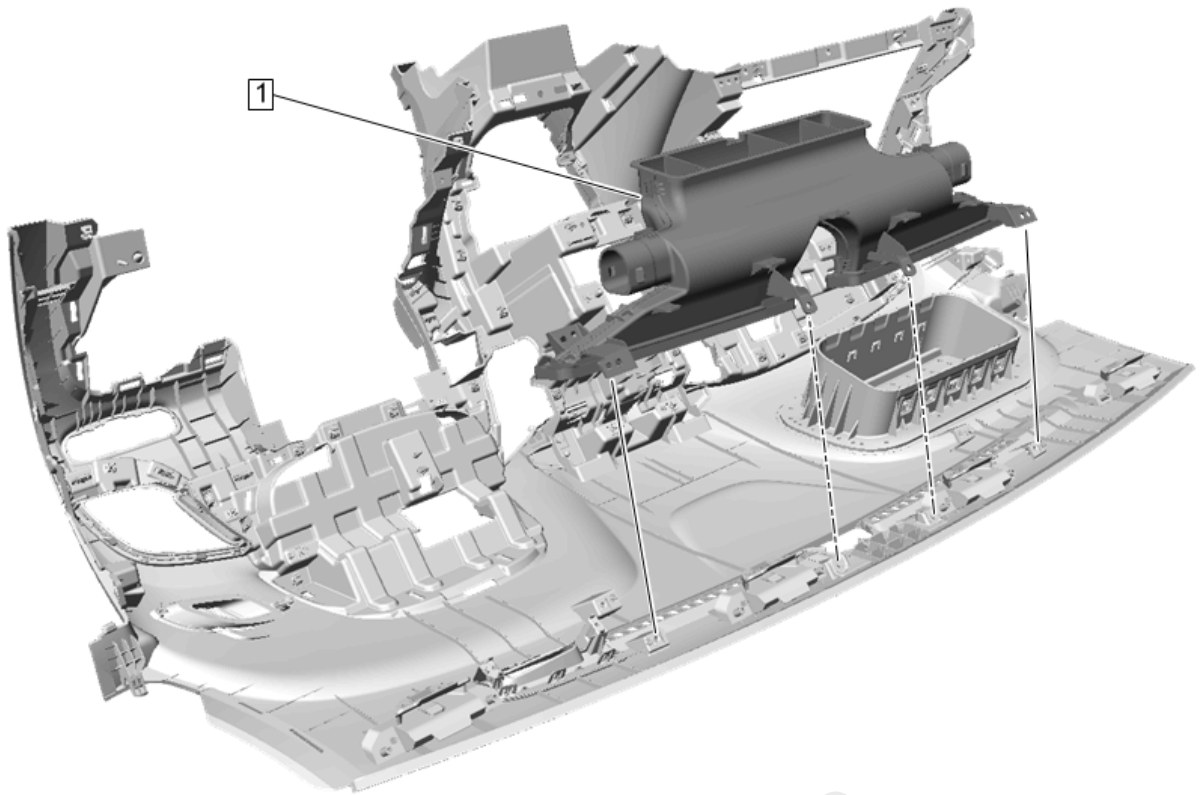


Fig. 170: Windshield Defroster Outlet Duct
Courtesy of GENERAL MOTORS COMPANY

6. Windshield Defroster Outlet Duct 1 - Remove

Installation Procedure

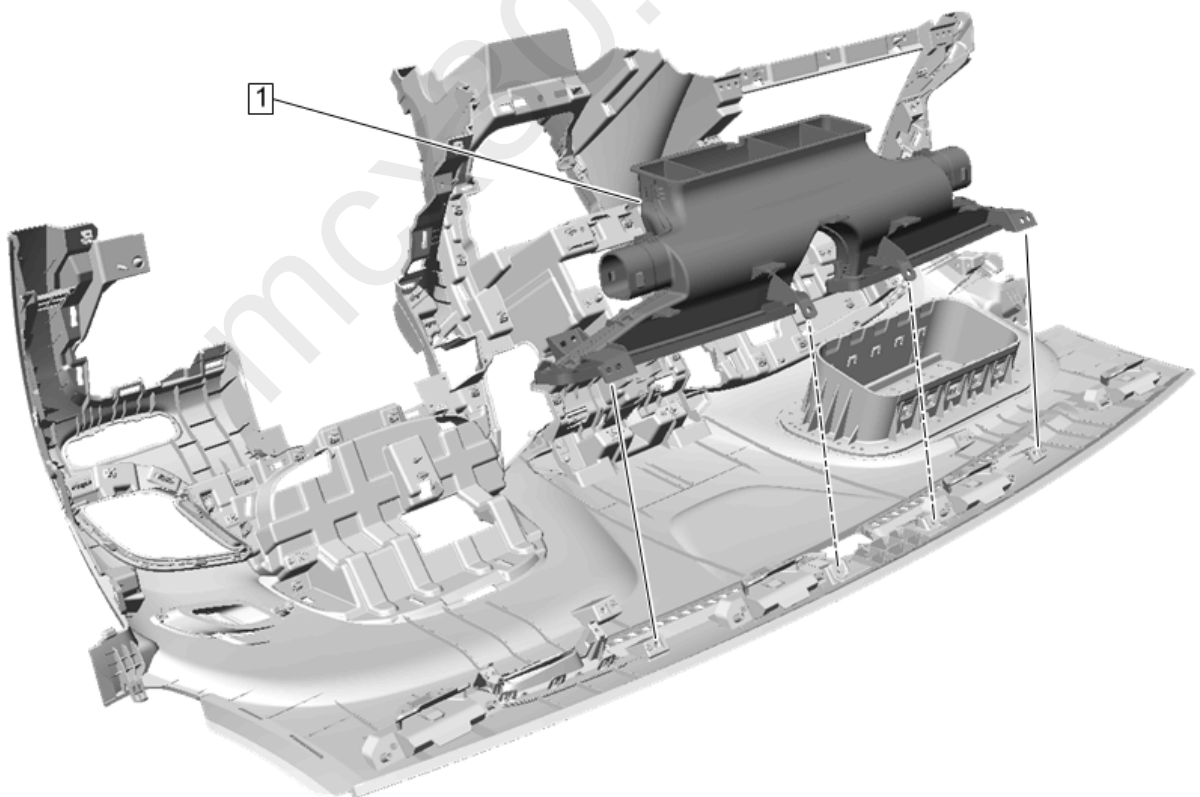


Fig. 171: Windshield Defroster Outlet Duct
Courtesy of GENERAL MOTORS COMPANY

1. Windshield Defroster Outlet Duct 1 - Install

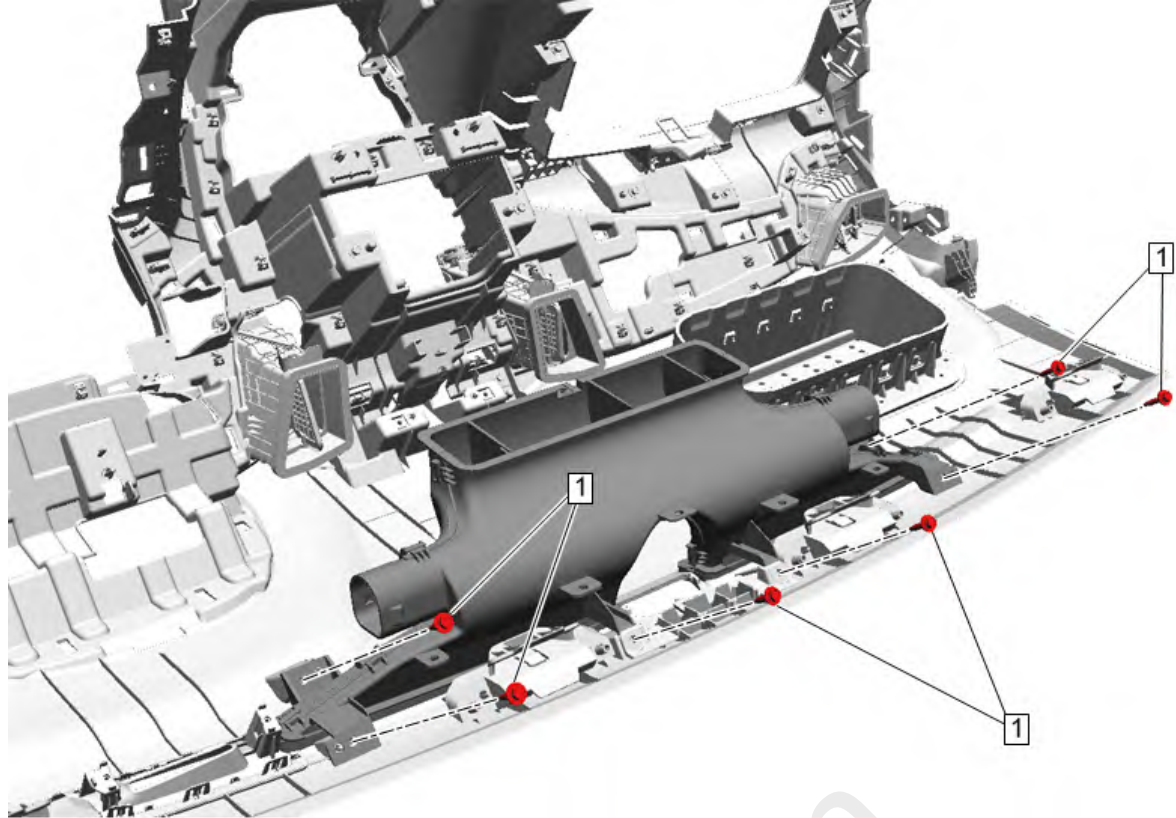


Fig. 172: Windshield Defroster Outlet Duct Bolt
 Courtesy of GENERAL MOTORS COMPANY

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

2. Windshield Defroster Outlet Duct Bolt 1 - Install and tighten 1.5 N.m (13 lb in)

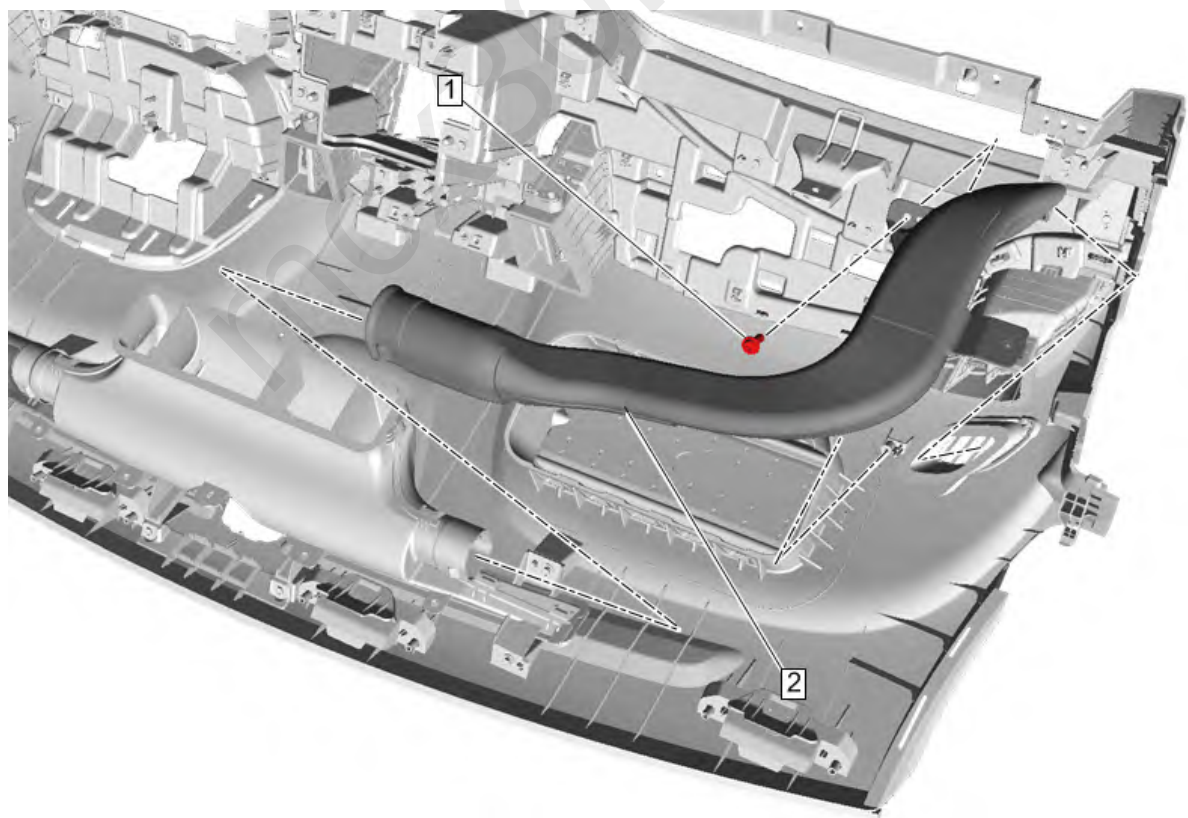


Fig. 173: Side Window Defogger Outlet Duct - Right Side
 Courtesy of GENERAL MOTORS COMPANY

3. Side Window Defogger Outlet Duct - Right Side 2 - Install - [Side Window Defogger Outlet Duct Replacement - Right Side \(Chevrolet\)](#)

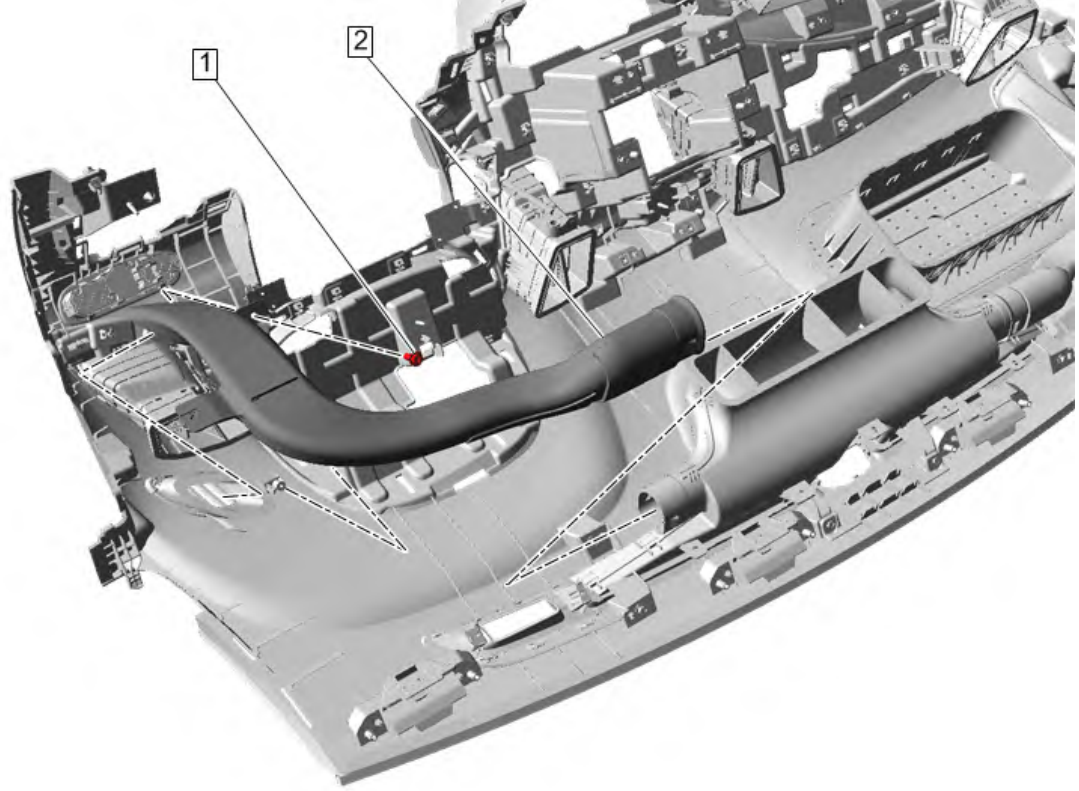


Fig. 174: Side Window Defogger Outlet Duct - Left Side
 Courtesy of GENERAL MOTORS COMPANY

4. Side Window Defogger Outlet Duct - Left Side 2 - Install - [Side Window Defogger Outlet Duct Replacement - Left Side \(Chevrolet\)](#)

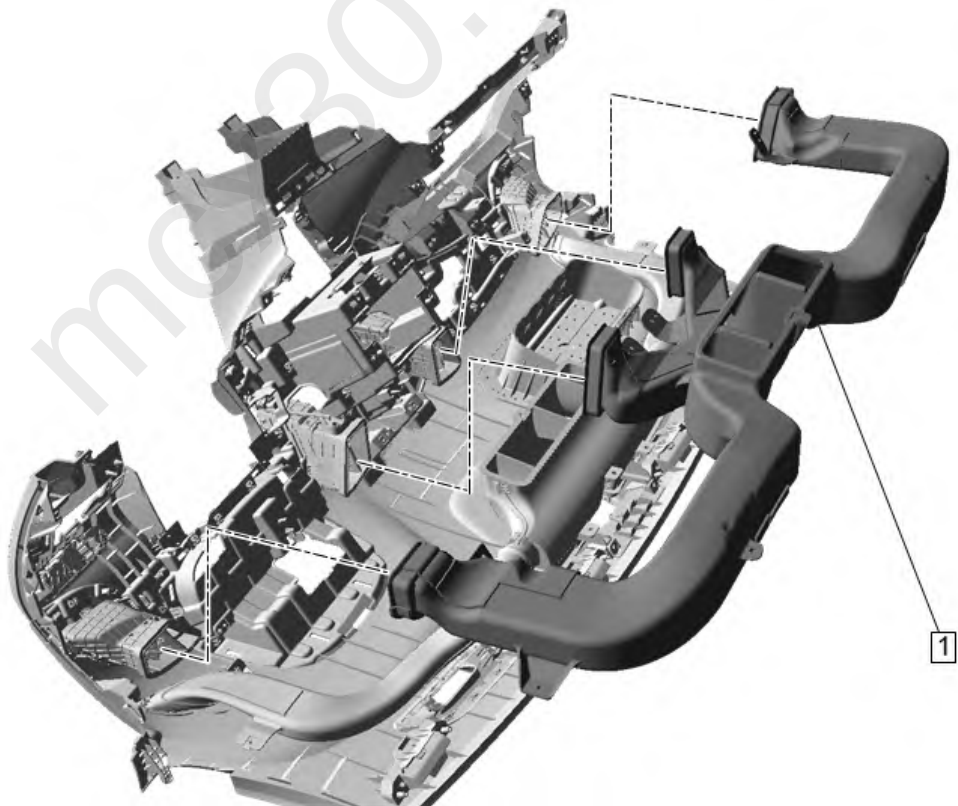


Fig. 175: Instrument Panel Outer Air Outlet Duct
 Courtesy of GENERAL MOTORS COMPANY

5. Instrument Panel Outer Air Outlet Duct 1 - Install - [Instrument Panel Outer Air Outlet Duct Replacement \(Chevrolet\)](#)

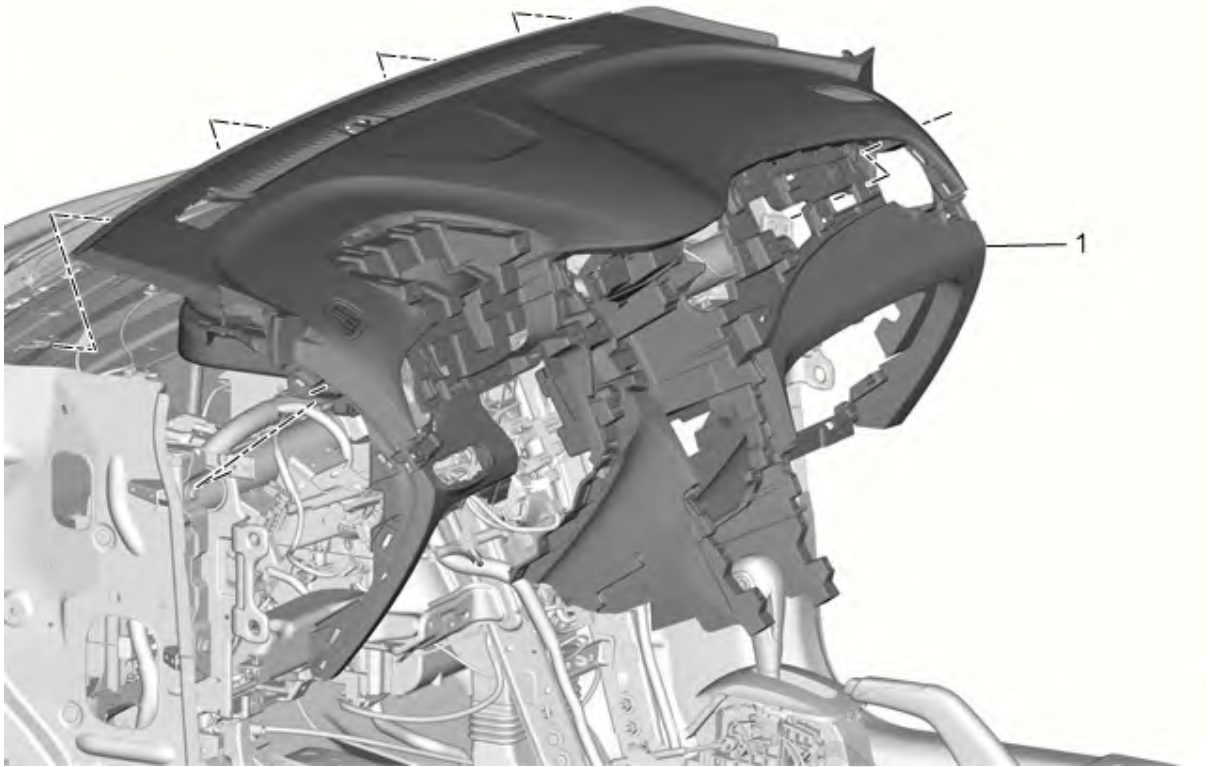


Fig. 176: Instrument Panel Assembly.

Courtesy of GENERAL MOTORS COMPANY

6. Instrument Panel Assembly 1 - Install - [Instrument Panel Assembly Replacement \(Chevrolet\)](#)

SIDE WINDOW DEFOGGER OUTLET DUCT REPLACEMENT - LEFT SIDE (BUICK)

Removal Procedure

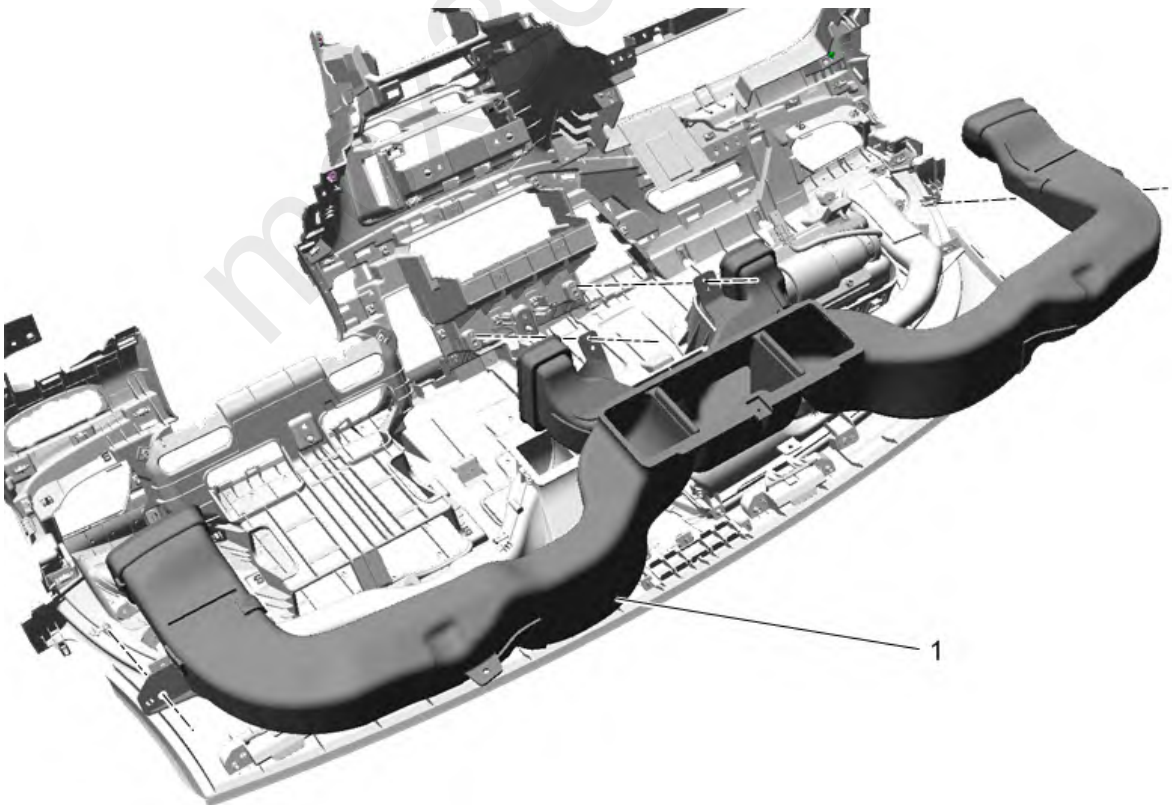


Fig. 177: Instrument Panel Outer Air Outlet Duct

Courtesy of GENERAL MOTORS COMPANY

1. Instrument Panel Outer Air Outlet Duct 1 - Remove - [Instrument Panel Outer Air Outlet Duct Replacement \(Buick\)](#)

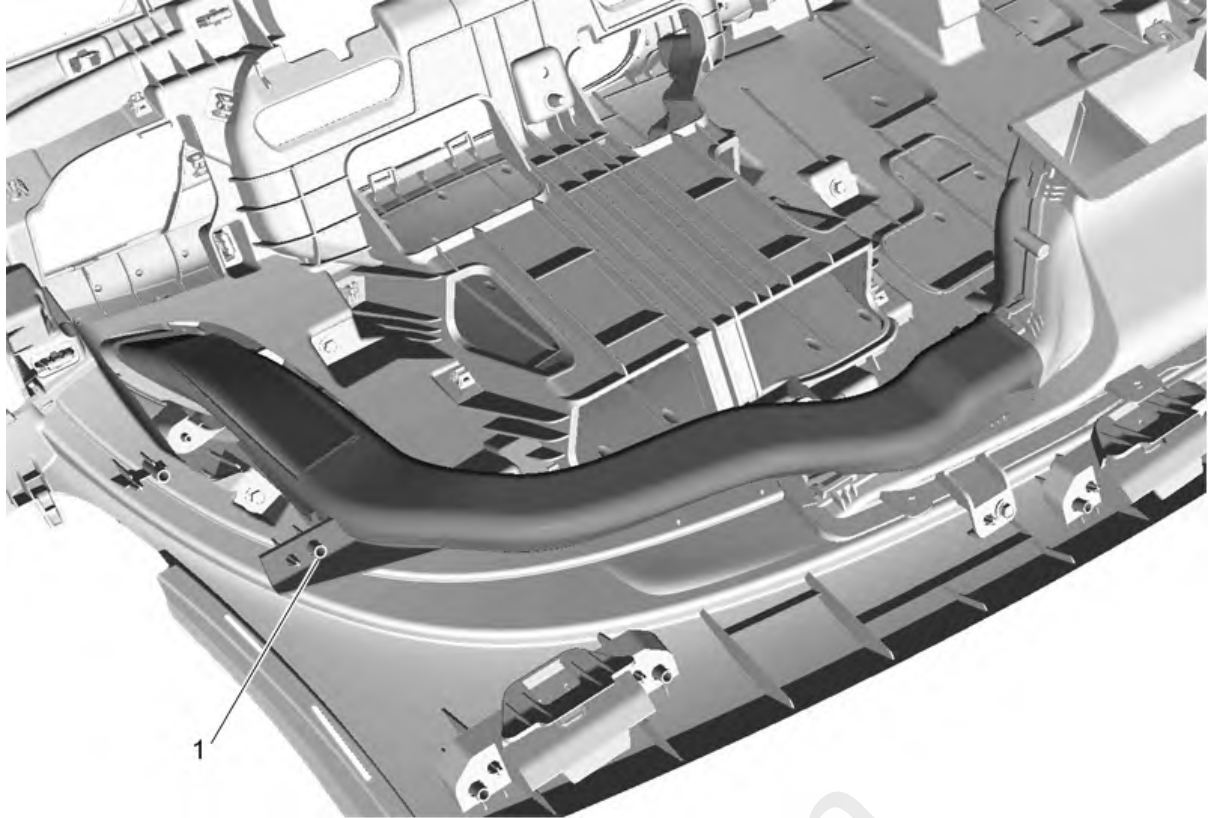


Fig. 178: Heat Stake

Courtesy of GENERAL MOTORS COMPANY

NOTE: The side window defogger outlet duct is fastened onto the instrument panel by the heat staking method. For the re-securing side window defogger outlet duct refer to the installation procedure.

2. Using the appropriate tool, remove the heat stake (1) securing the left side window defogger outlet duct to the instrument panel.

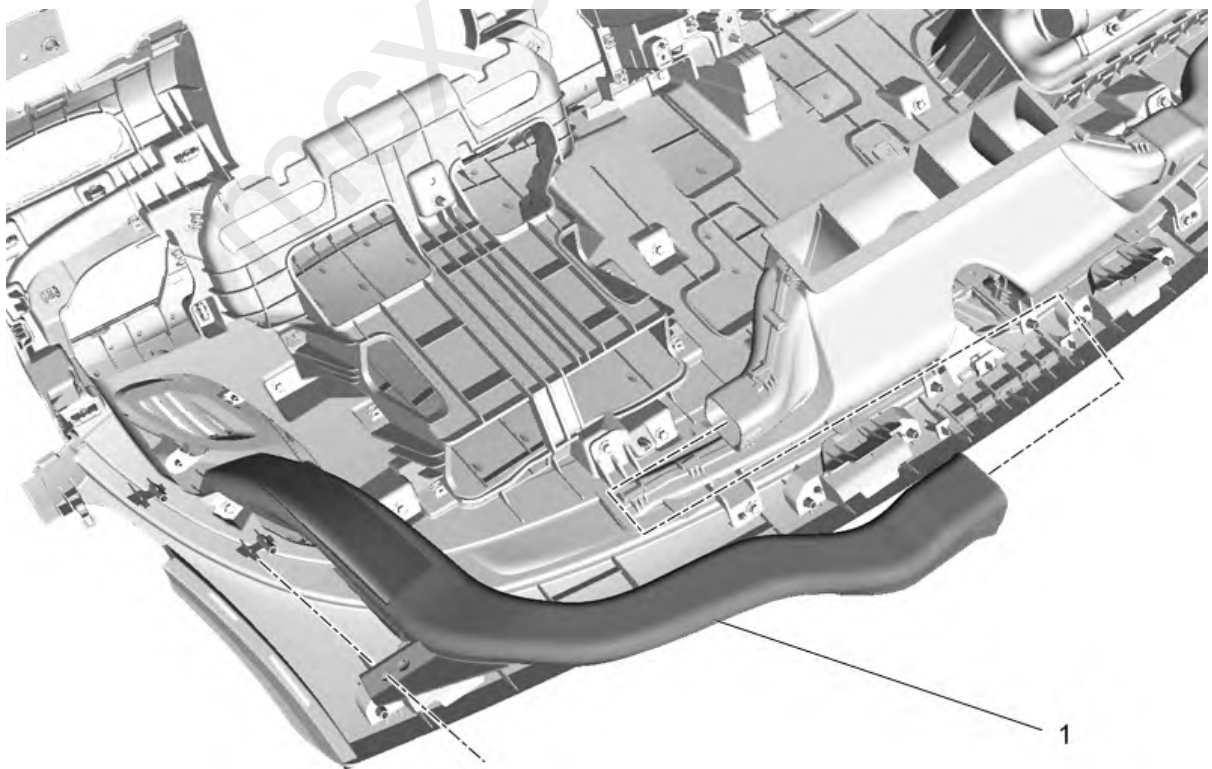


Fig. 179: Side Window Defogger Outlet Duct - Left Side

Courtesy of GENERAL MOTORS COMPANY

3. Side Window Defogger Outlet Duct - Left Side 1 - Remove

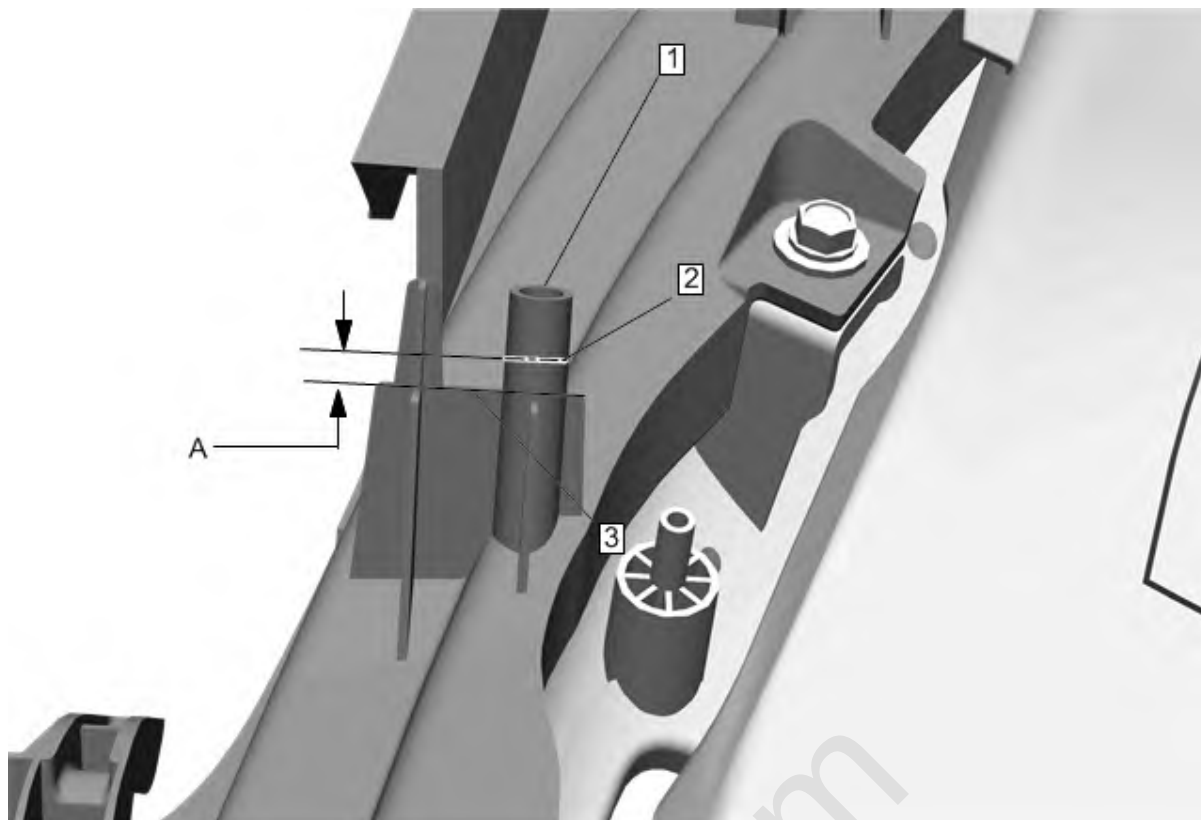


Fig. 180: Measuring Distance From Mounting Point Web

Courtesy of GENERAL MOTORS COMPANY

NOTE:

When instrument panel is being replaced with a new one cut the left and right side outer bosses on the new instrument panel in order to install mounting bolt into the side window defogger outlet duct. If original instrument panel is being used proceed to step 2.

1. Measure distance from mounting point web (3) to point (2) and scribe a line, leaving excess material (A) 3- 4mm (0.12- 0.16 in). Trim excess heat stake material boss (1) using appropriate tool.

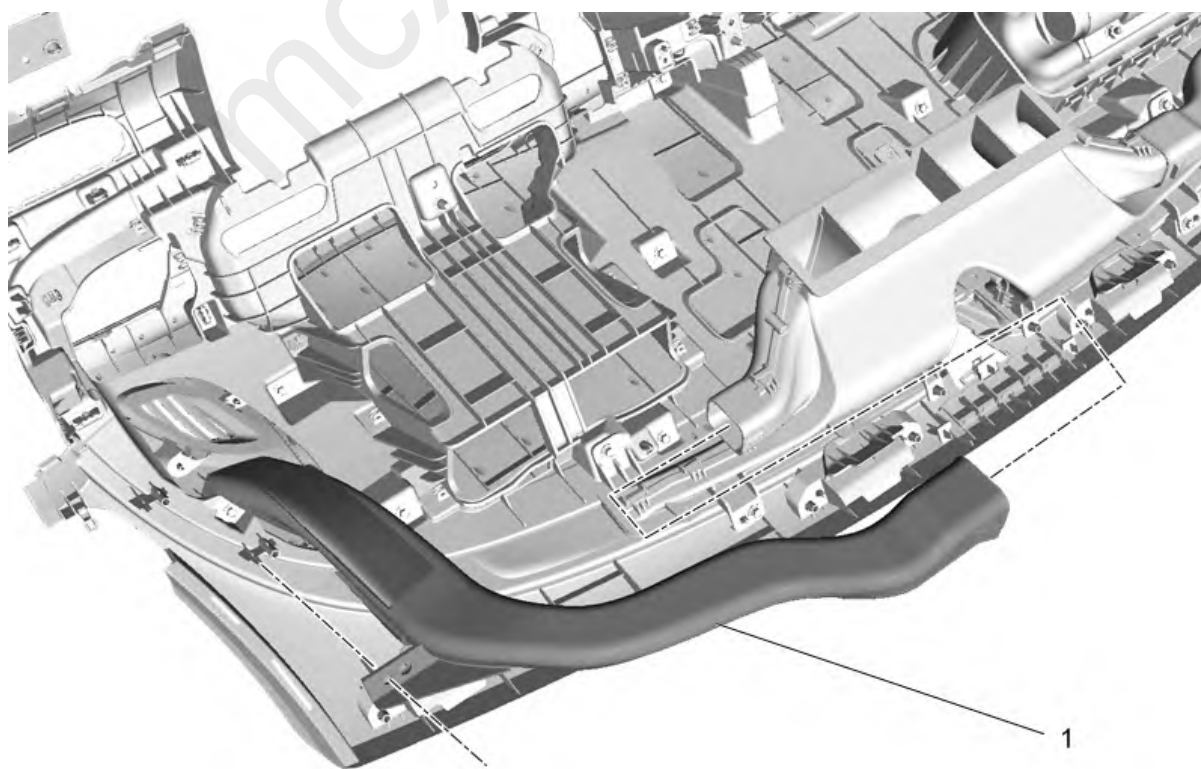


Fig. 181: Side Window Defogger Outlet Duct - Left Side

Courtesy of GENERAL MOTORS COMPANY

2. Side Window Defogger Outlet Duct - Left Side 1 - Install

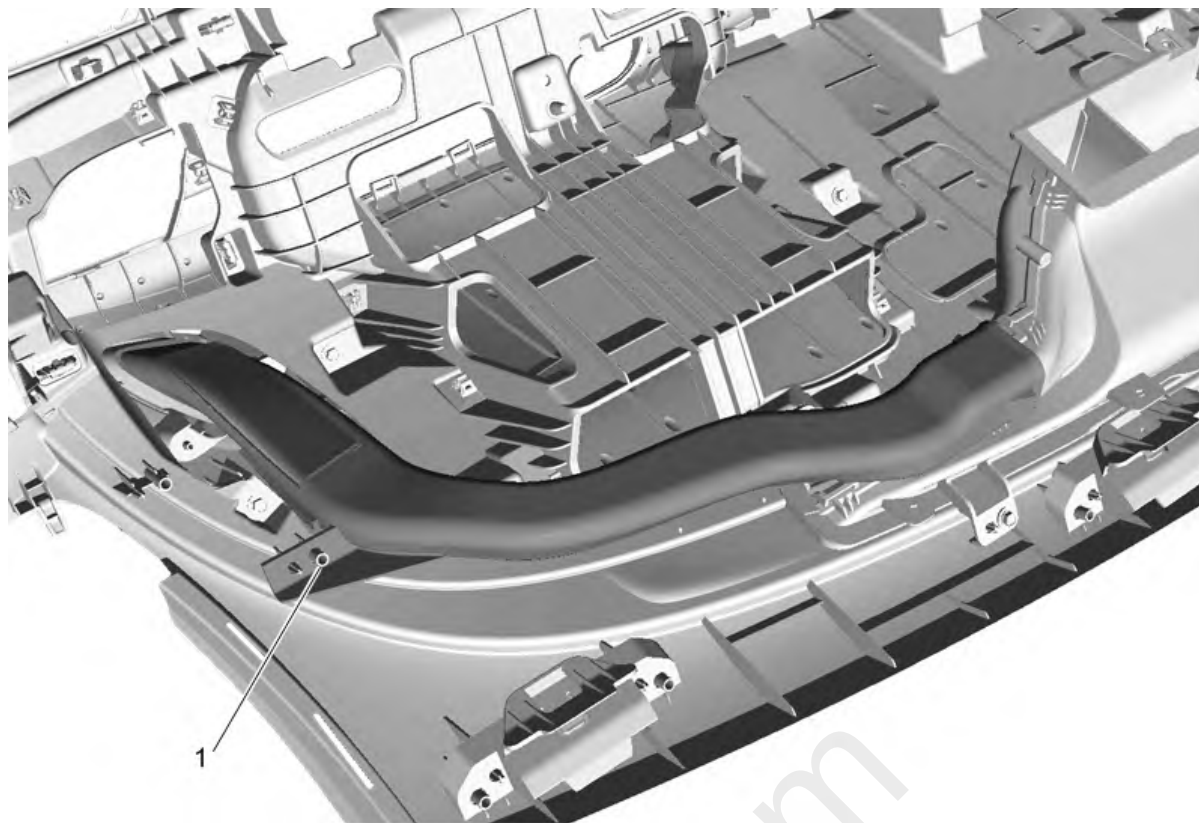


Fig.182: Heat Stake

Courtesy of GENERAL MOTORS COMPANY

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

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

3. Side Window Defogger Outlet Duct Bolt 1 - Install and tighten 2.5 N.m (22 lb in)

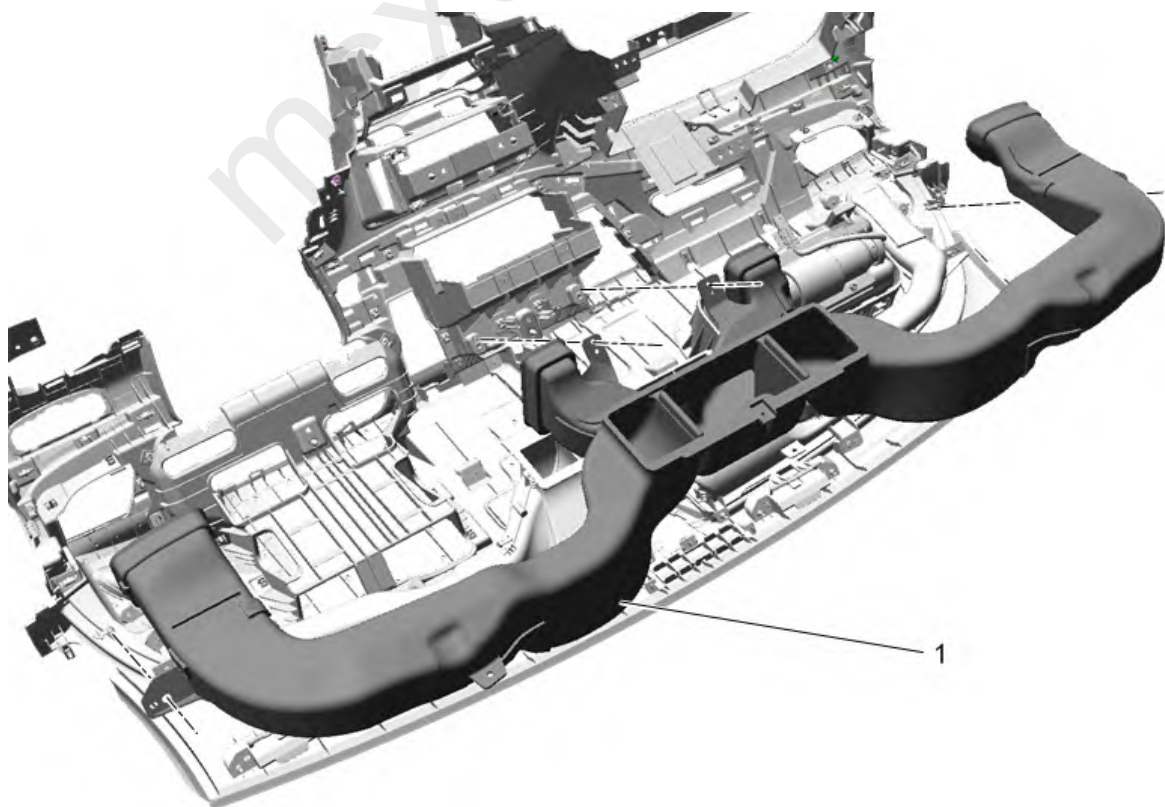


Fig.183: Instrument Panel Outer Air Outlet Duct

Courtesy of GENERAL MOTORS COMPANY

4. Instrument Panel Outer Air Outlet Duct 1 - Install - [Instrument Panel Outer Air Outlet Duct Replacement \(Buick\)](#).

SIDE WINDOW DEFOGGER OUTLET DUCT REPLACEMENT - LEFT SIDE (CHEVROLET)

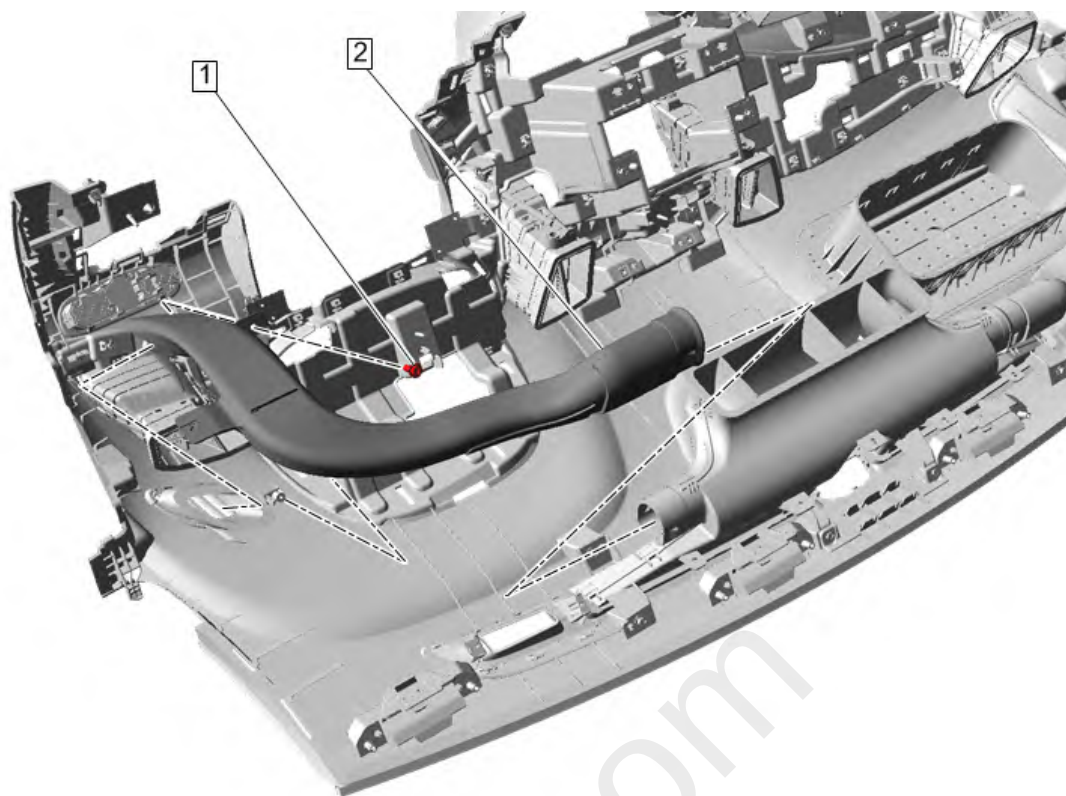


Fig. 184: Side Window Defogger Outlet Duct - Left Side (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure <u>Instrument Panel Outer Air Outlet Duct Replacement (Chevrolet)</u>	
1	Side Window Defogger Outlet Duct Bolt CAUTION: Refer to Fastener Caution . Tighten 1.5 N.m (13 lb in)
2	Side Window Defogger Outlet Duct - Left Side

SIDE WINDOW DEFOGGER OUTLET DUCT REPLACEMENT - RIGHT SIDE (BUICK)

Removal Procedure

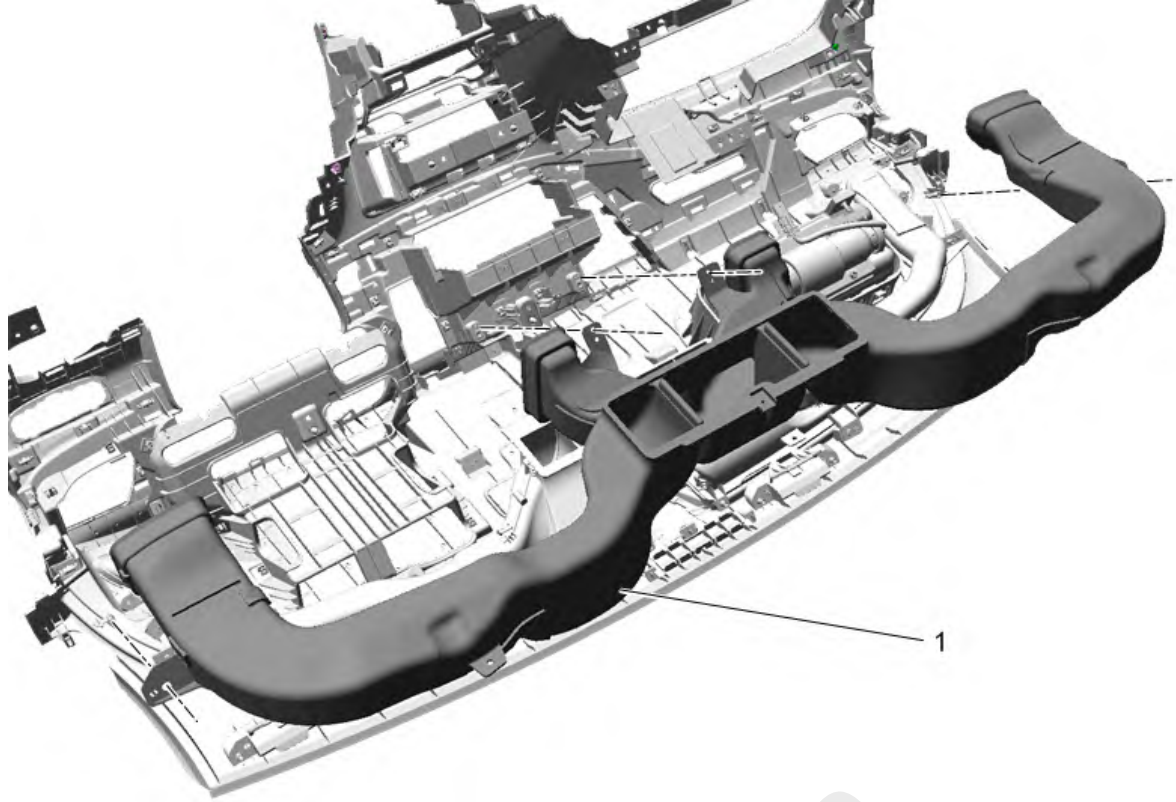


Fig. 185: Instrument Panel Outer Air Outlet Duct
 Courtesy of GENERAL MOTORS COMPANY

1. Instrument Panel Outer Air Outlet Duct 1 - Remove - **Instrument Panel Outer Air Outlet Duct Replacement (Buick)**

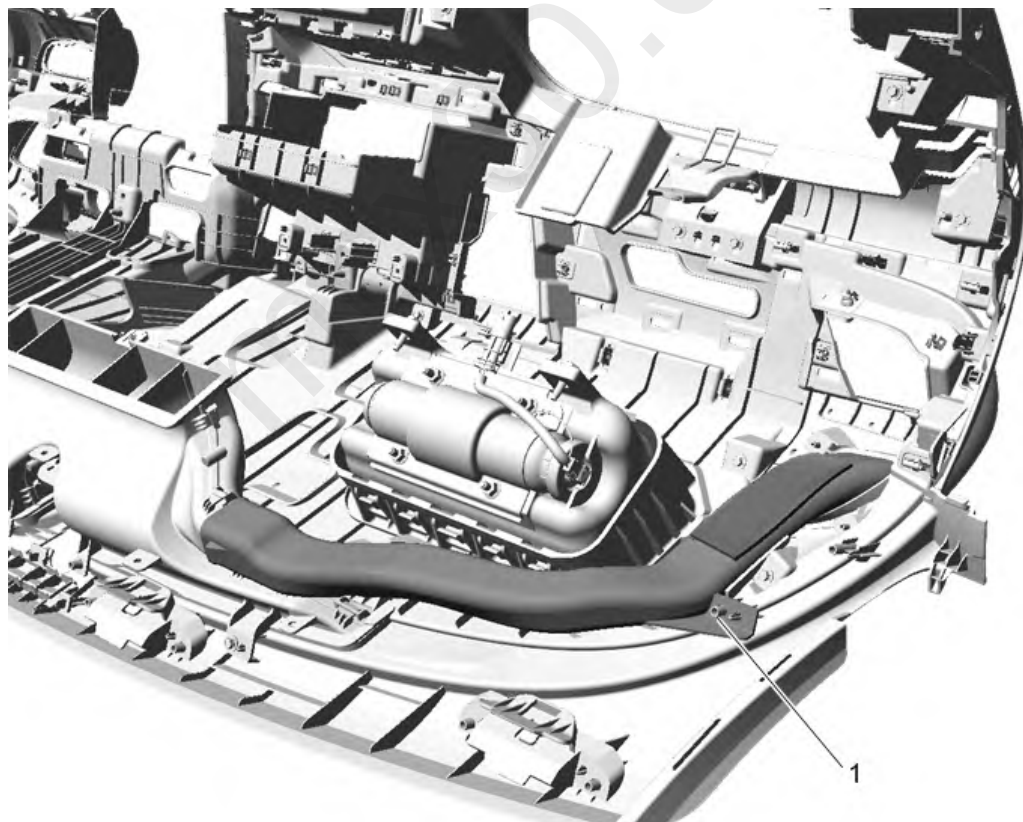


Fig. 186: Heat Stake
 Courtesy of GENERAL MOTORS COMPANY

NOTE: The side window defogger outlet duct is fastened onto the instrument panel by the heat staking method. For the re-securing side window defogger outlet duct refer to the installation procedure.

2. Using the appropriate tool, remove the heat stake (1) securing the right side window defogger outlet duct to the instrument panel.

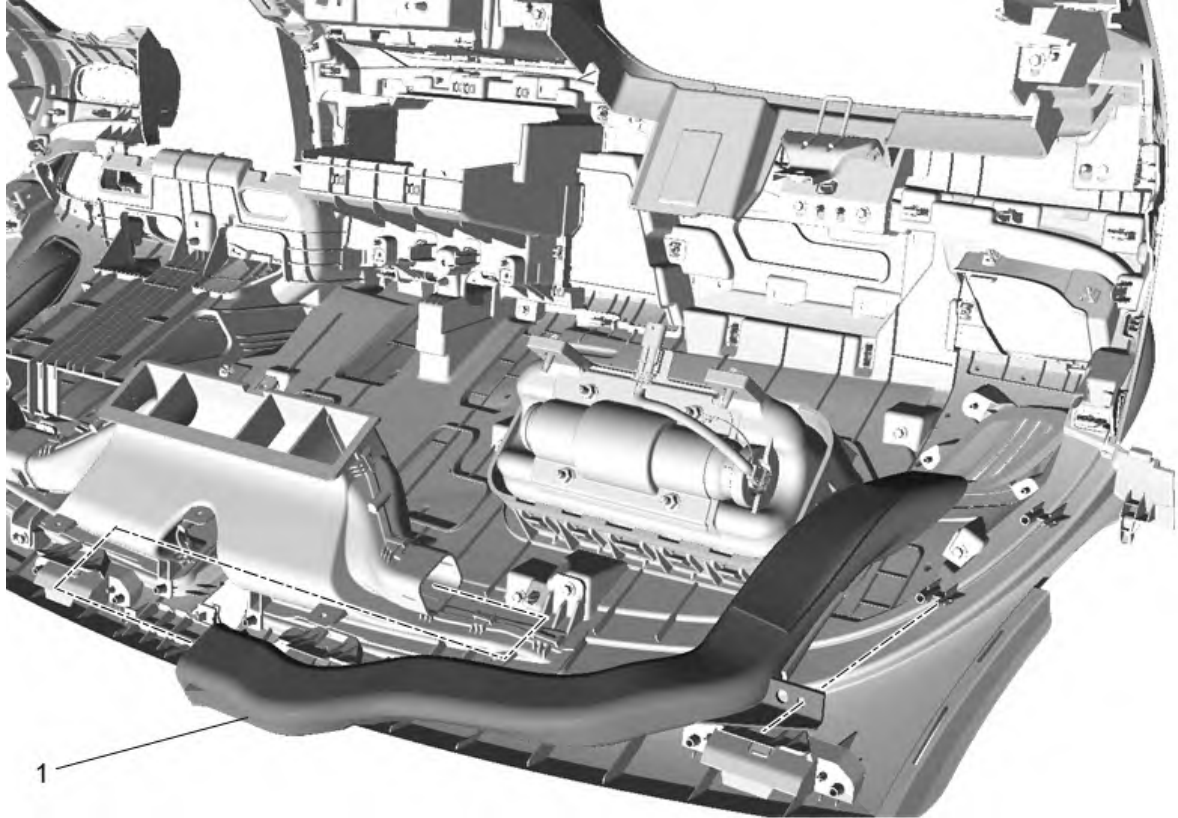


Fig. 187: Side Window Defogger Outlet Duct - Right Side
 Courtesy of GENERAL MOTORS COMPANY

3. Side Window Defogger Outlet Duct - Right Side 1 - Remove

Installation Procedure

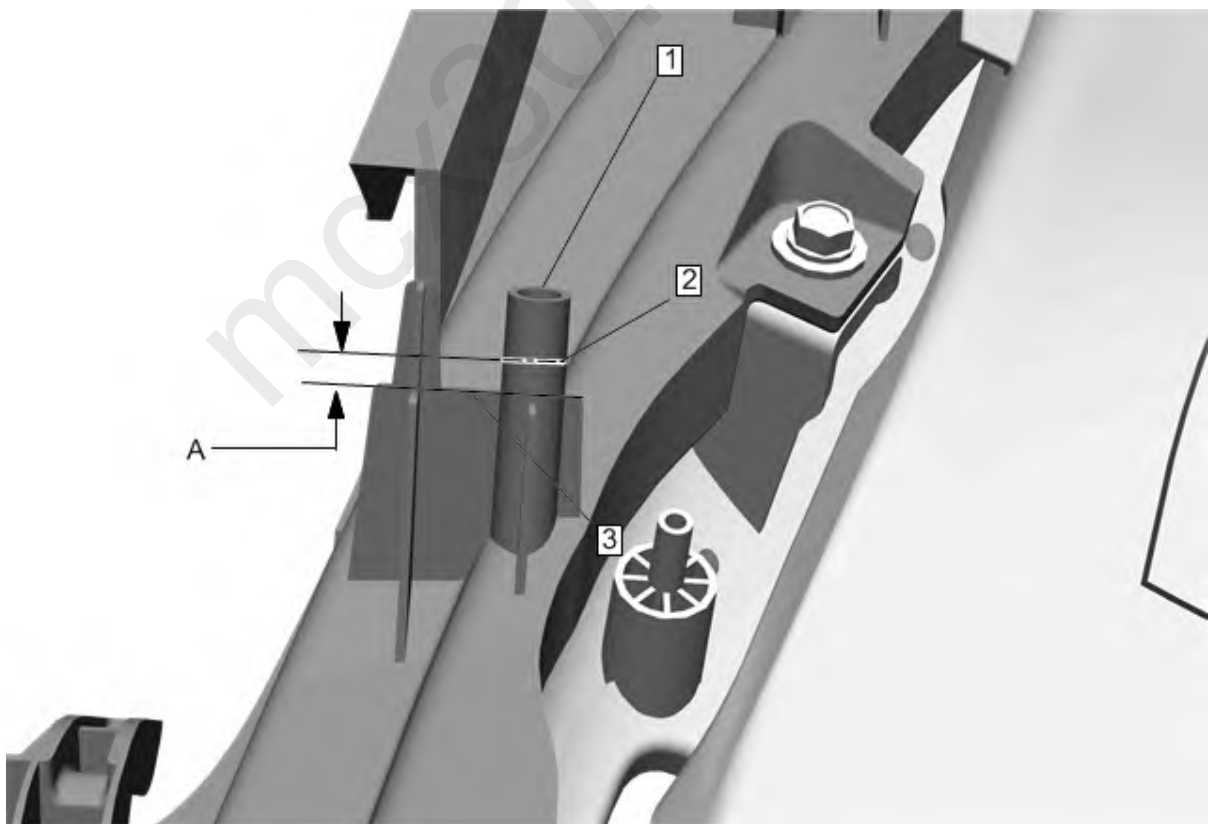


Fig. 188: Measuring Distance From Mounting Point Web
 Courtesy of GENERAL MOTORS COMPANY

NOTE: When instrument panel is being replaced with a new one cut the left and right side outer bosses on the new instrument panel in order to install mounting bolt into the side window defogger outlet duct. If original instrument panel is being used proceed to step 2.

1. Measure distance from mounting point web (3) to point (2) and scribe a line, leaving excess material (A) 3- 4mm (0.12- 0.16 in). Trim excess heat stake material boss (1) using appropriate tool.

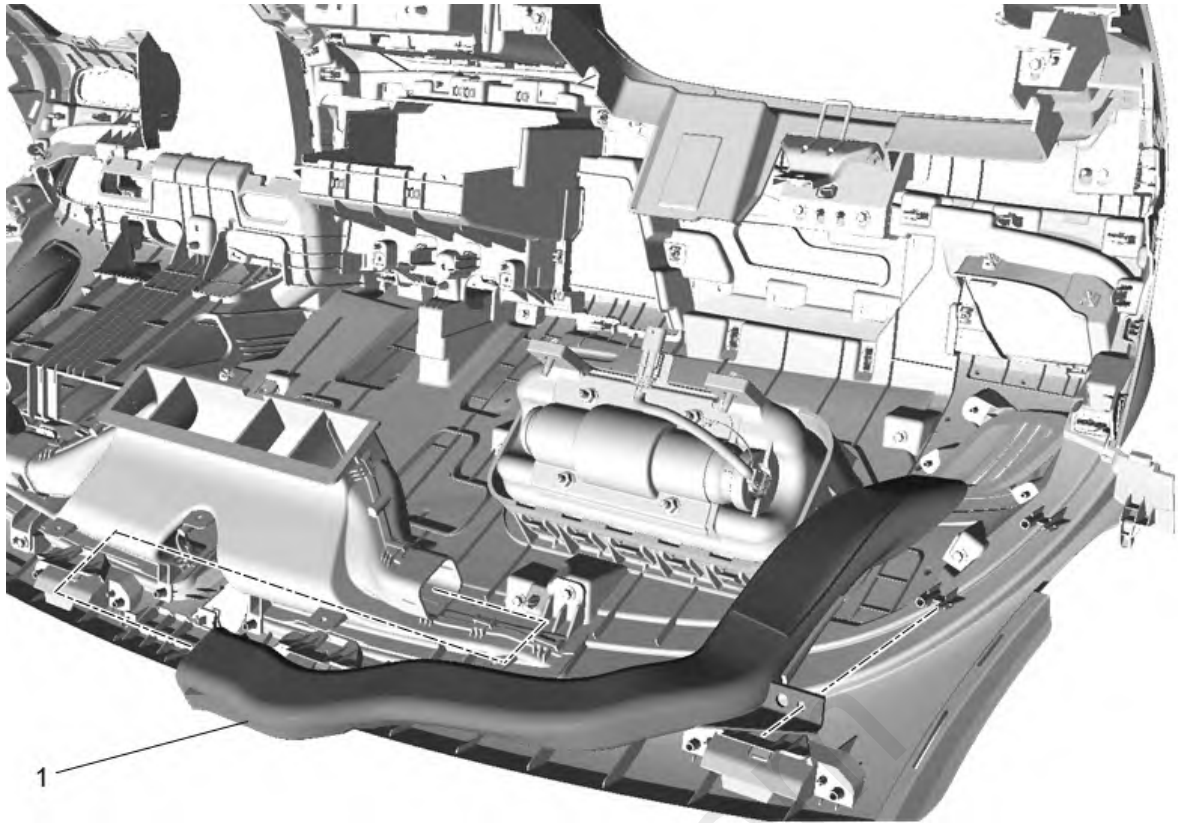


Fig. 189: Side Window Defogger Outlet Duct - Right Side
Courtesy of GENERAL MOTORS COMPANY

2. Side Window Defogger Outlet Duct - Right Side 1 - Install

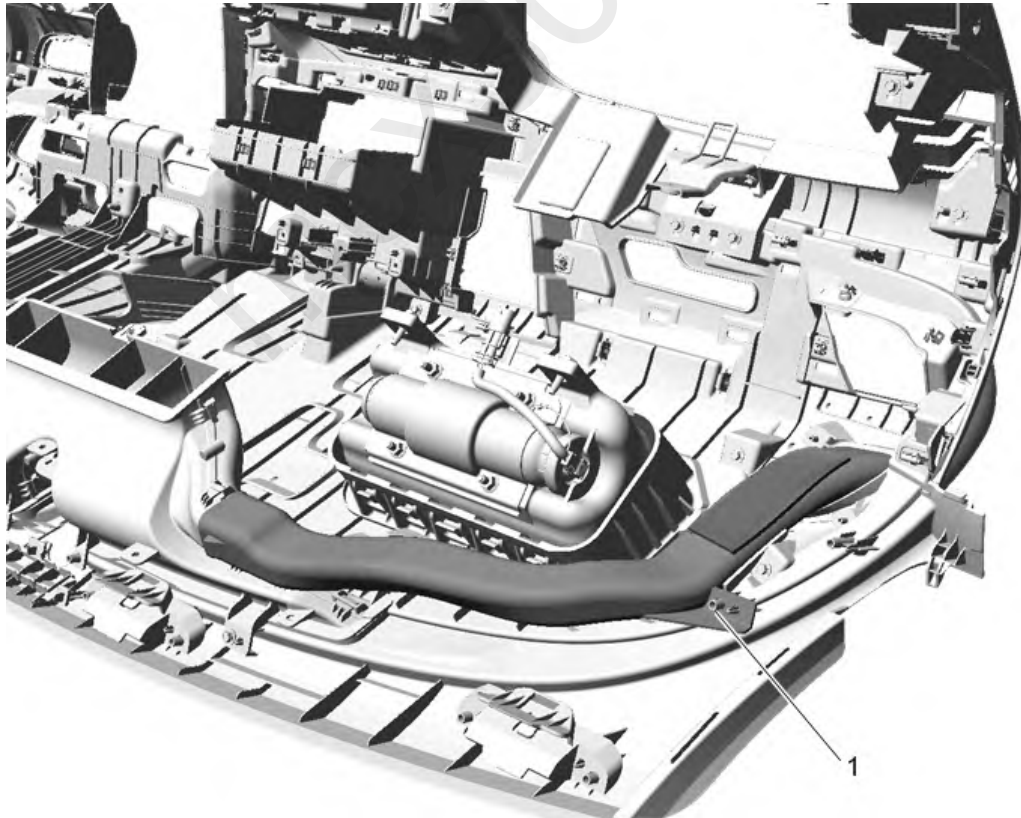


Fig. 190: Heat Stake
Courtesy of GENERAL MOTORS COMPANY

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

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

3. Side Window Defogger Outlet Duct Bolt 1 - Install and tighten 2.5 N.m (22 lb in)

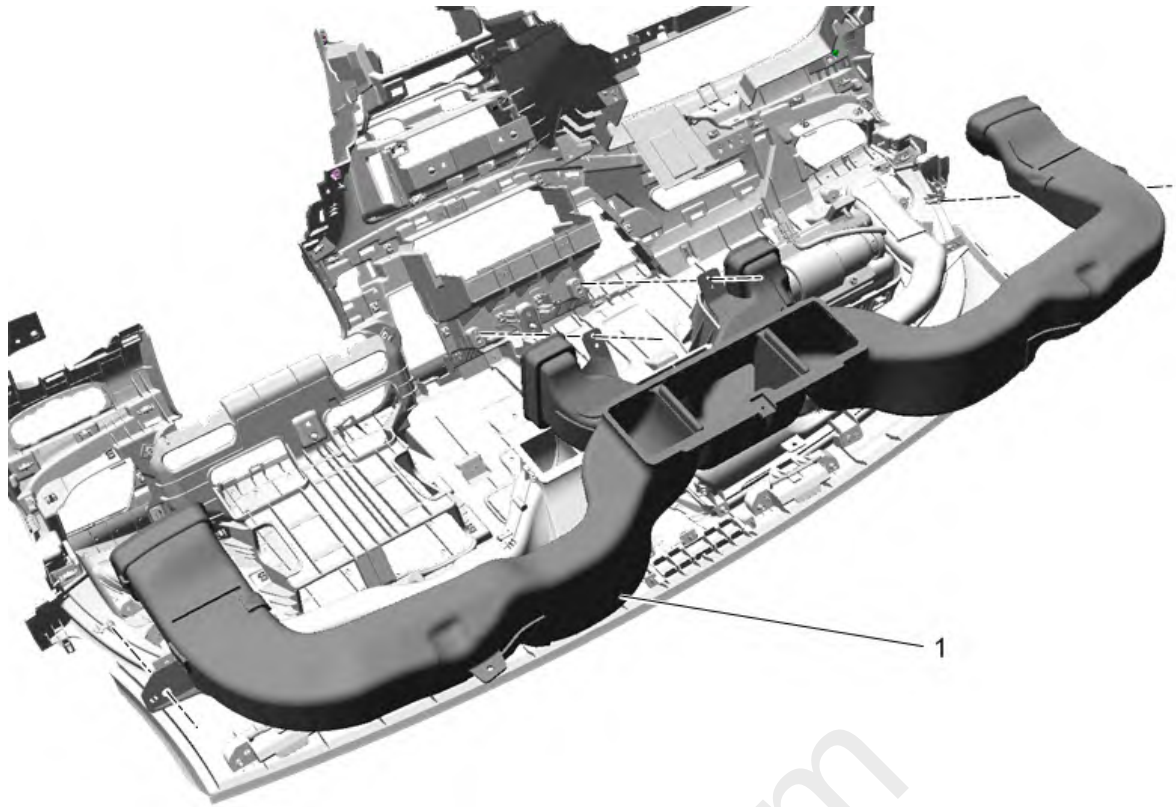


Fig. 191: Instrument Panel Outer Air Outlet Duct
Courtesy of GENERAL MOTORS COMPANY

4. Instrument Panel Outer Air Outlet Duct 1 - Install - [Instrument Panel Outer Air Outlet Duct Replacement \(Buick\)](#)

SIDE WINDOW DEFOGGER OUTLET DUCT REPLACEMENT - RIGHT SIDE (CHEVROLET)

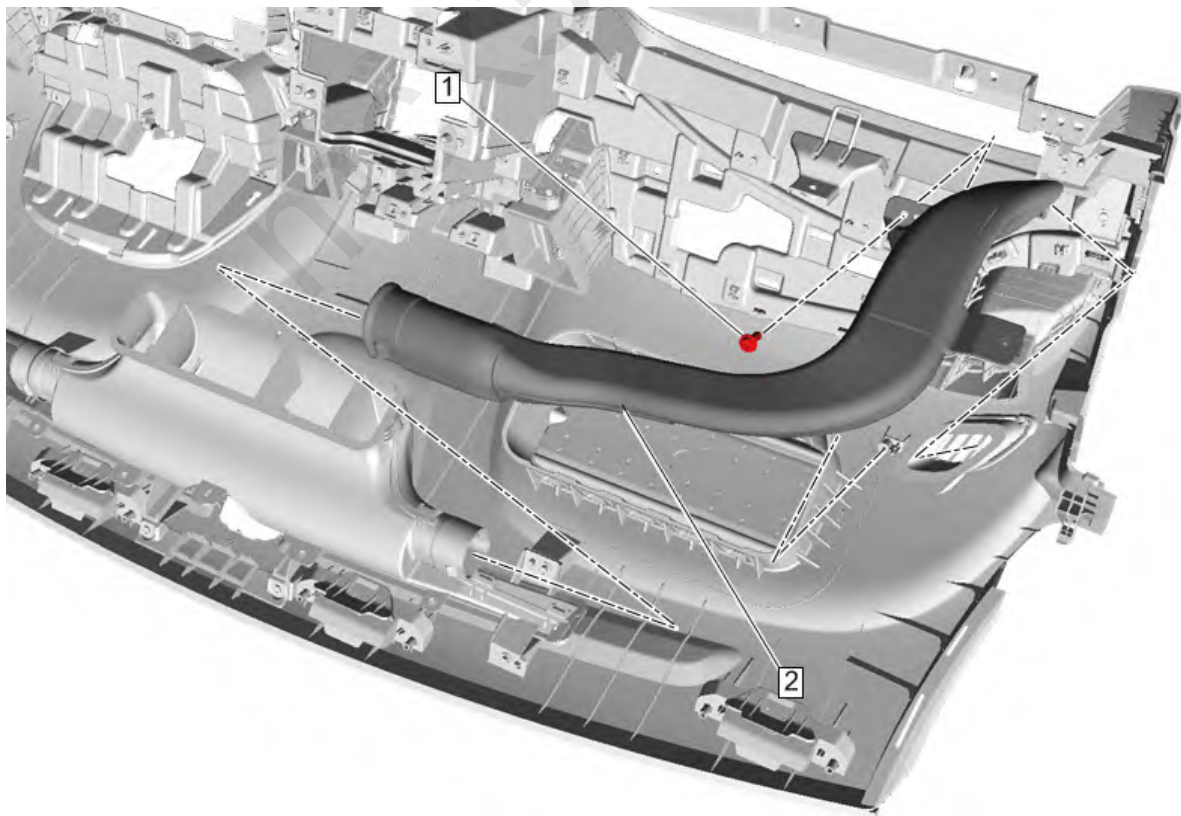


Fig. 192: Side Window Defogger Outlet Duct - Right Side (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

Callout	Component Name
Preliminary Procedure Instrument Panel Outer Air Outlet Duct Replacement (Chevrolet).	
1	Side Window Defogger Outlet Duct Bolt CAUTION: Refer to Fastener Caution . Tighten 1.5 N.m (13 lb in)
2	Side Window Defogger Outlet Duct - Right Side

FLOOR REAR AIR OUTLET DUCT REPLACEMENT - LEFT SIDE

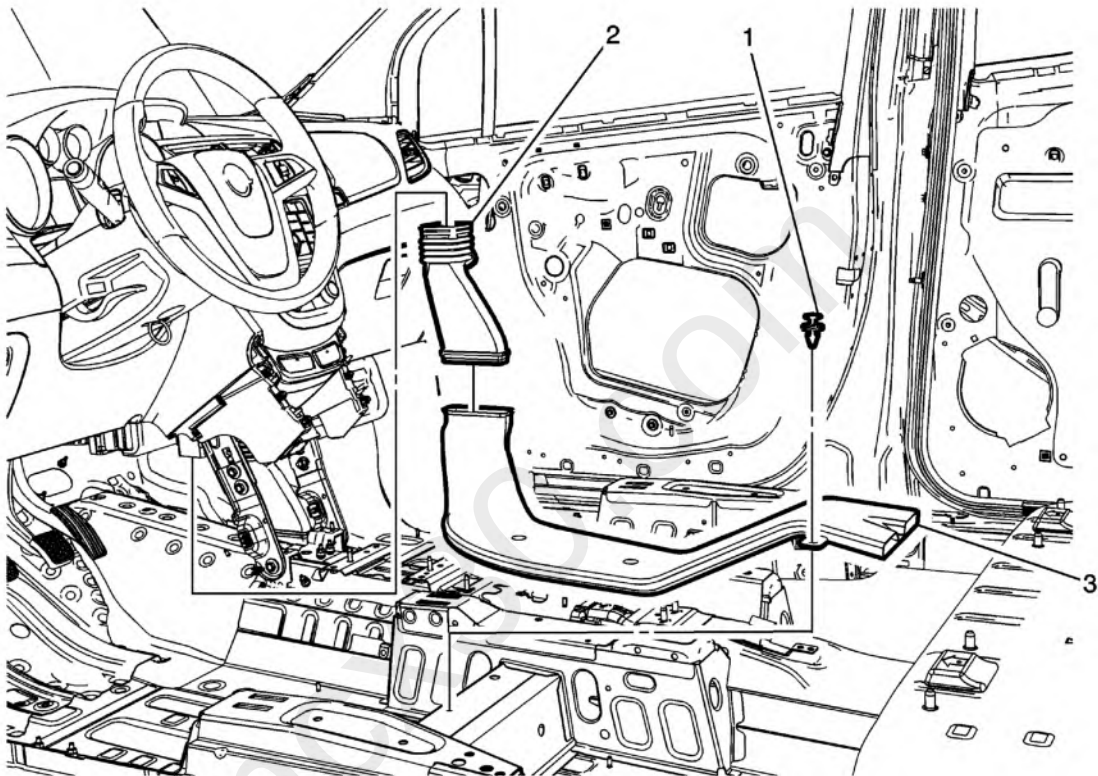


Fig. 193: Floor Rear Air Outlet Duct - Left Side
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the floor panel carpet . Refer to Floor Panel Carpet Replacement (Buick) Floor Panel Carpet Replacement (Chevrolet) .	
1	Floor Rear Air Outlet Duct Fastener
2	Floor Rear Air Outlet Duct Adaptor Procedure After removing the floor rear air outlet duct as an assembly, separate the adaptor from the duct.
3	Floor Rear Air Outlet Duct-Left Side Procedure Remove the floor rear air outlet duct and the floor rear air outlet adaptor as an assembly.

FLOOR REAR AIR OUTLET DUCT REPLACEMENT - RIGHT SIDE

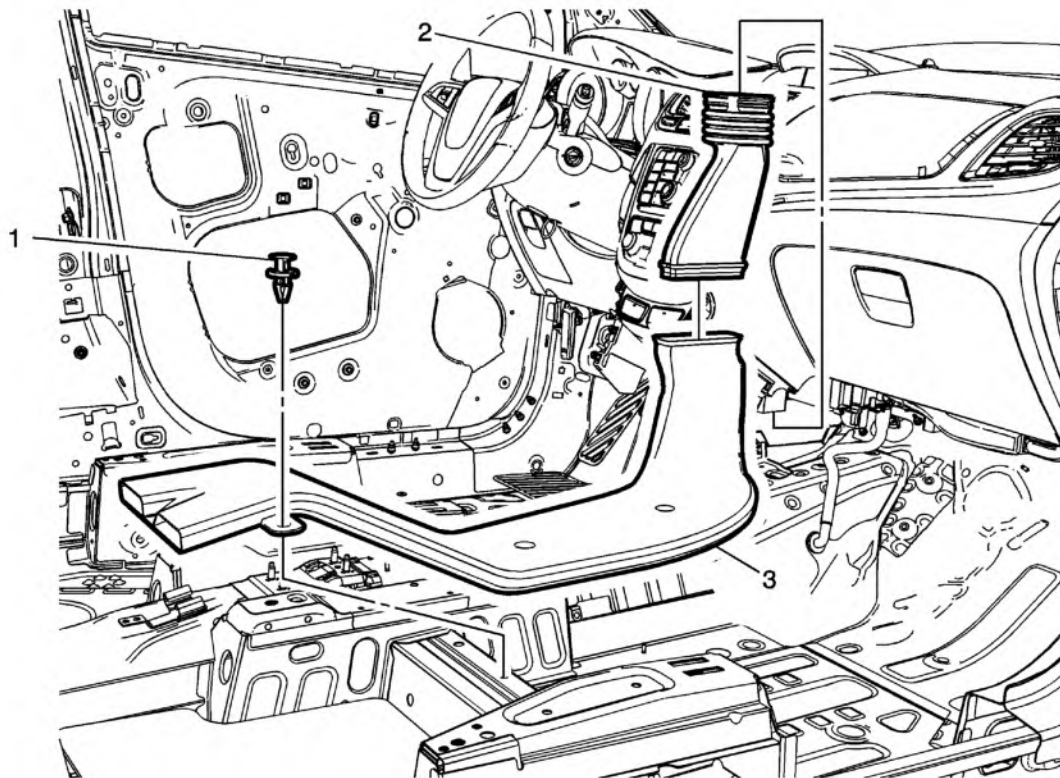


Fig.194: Floor Rear Air Outlet Duct - Right Side

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the floor panel carpet . Refer to Floor Panel Carpet Replacement (Buick) Floor Panel Carpet Replacement (Chevrolet) .	
1	Floor Rear Air Outlet Duct Fastener
2	Floor Rear Air Outlet Duct Adaptor Procedure After removing the floor rear air outlet duct as an assembly, separate the adaptor from the duct.
3	Floor Rear Air Outlet Duct - Right Side Procedure Remove the floor rear air outlet duct and the floor rear air outlet adaptor as an assembly.

TEMPERATURE VALVE GEAR REPLACEMENT (C60)

Removal Procedure

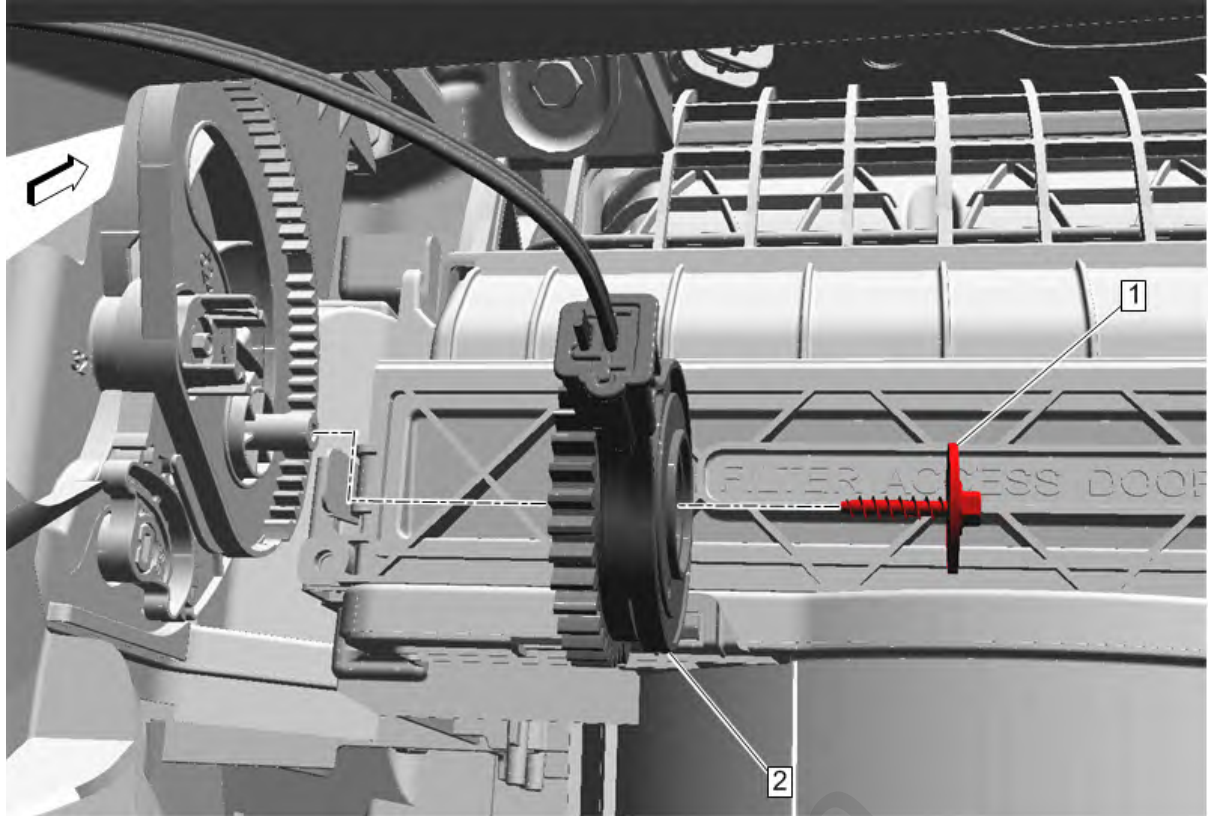


Fig. 195: Temperature Control Cable And Temperature Valve Gear
 Courtesy of GENERAL MOTORS COMPANY

1. Temperature Control Cable 2 @Temperature Valve Gear - Remove - [Temperature Control Cable Replacement \(C60\)](#)

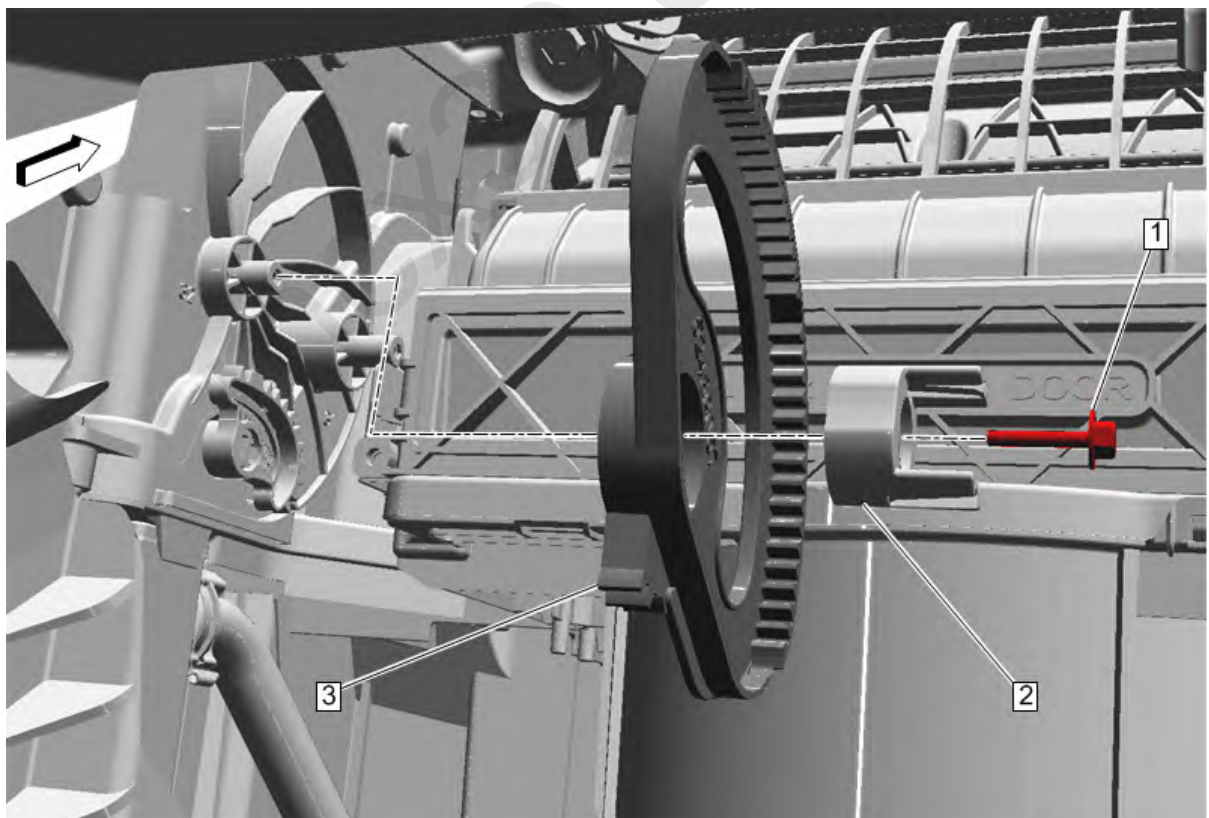


Fig. 196: Temperature Valve Gear
 Courtesy of GENERAL MOTORS COMPANY

2. Temperature Valve Gear Bolt 1 - Remove
3. Temperature Valve Gear Retainer 2 - Remove
4. Temperature Valve Gear 3 - Remove



Fig. 197: Temperature Valve Gear And Mode Valve Lever
 Courtesy of GENERAL MOTORS COMPANY

1. Upon re-assembly index the temperature valve gear (1) large female tooth to the mode valve lever (2) large male tooth as indicated by the arrows for proper alignment.

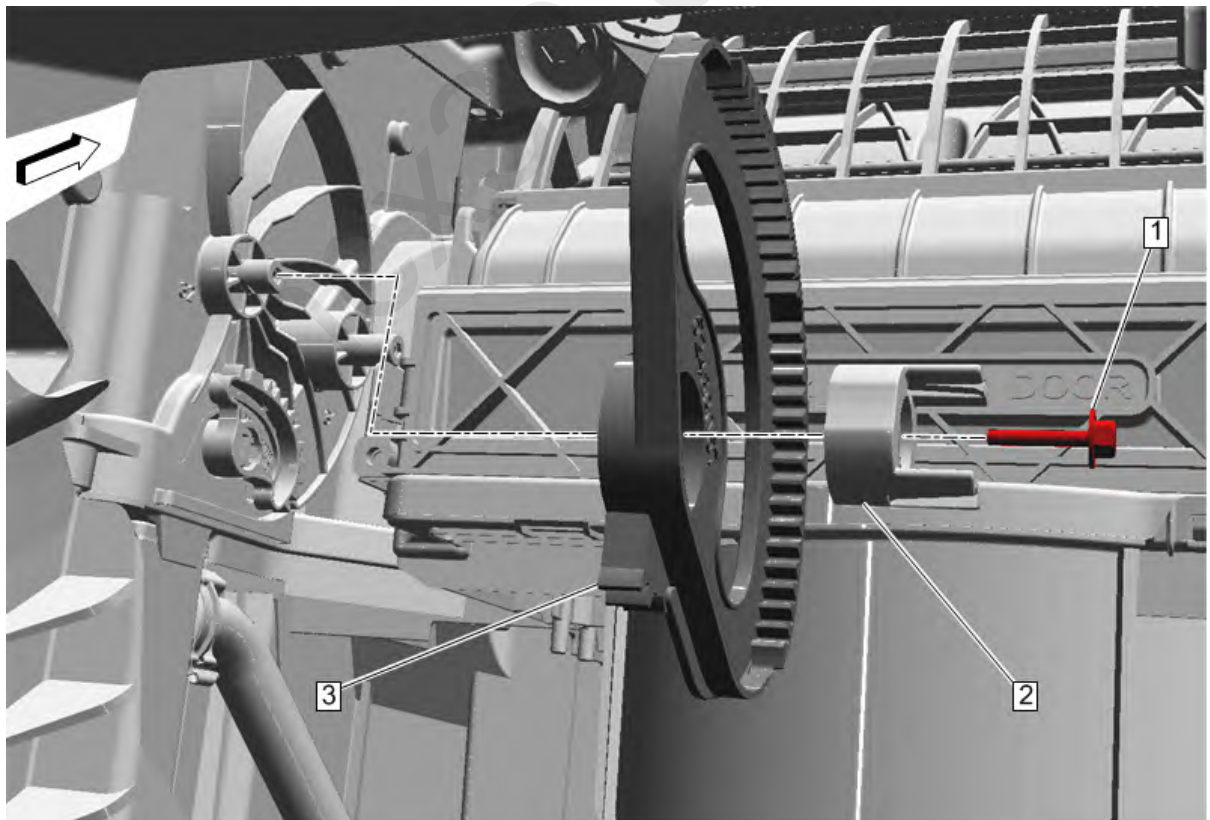


Fig. 198: Temperature Valve Gear
 Courtesy of GENERAL MOTORS COMPANY

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

2. Temperature Valve Gear 3 - Install
3. Temperature Valve Gear Retainer 2 - Install
4. Temperature Valve Gear Bolt 1 - Install and tighten 1.5 N.m (13 lb in)

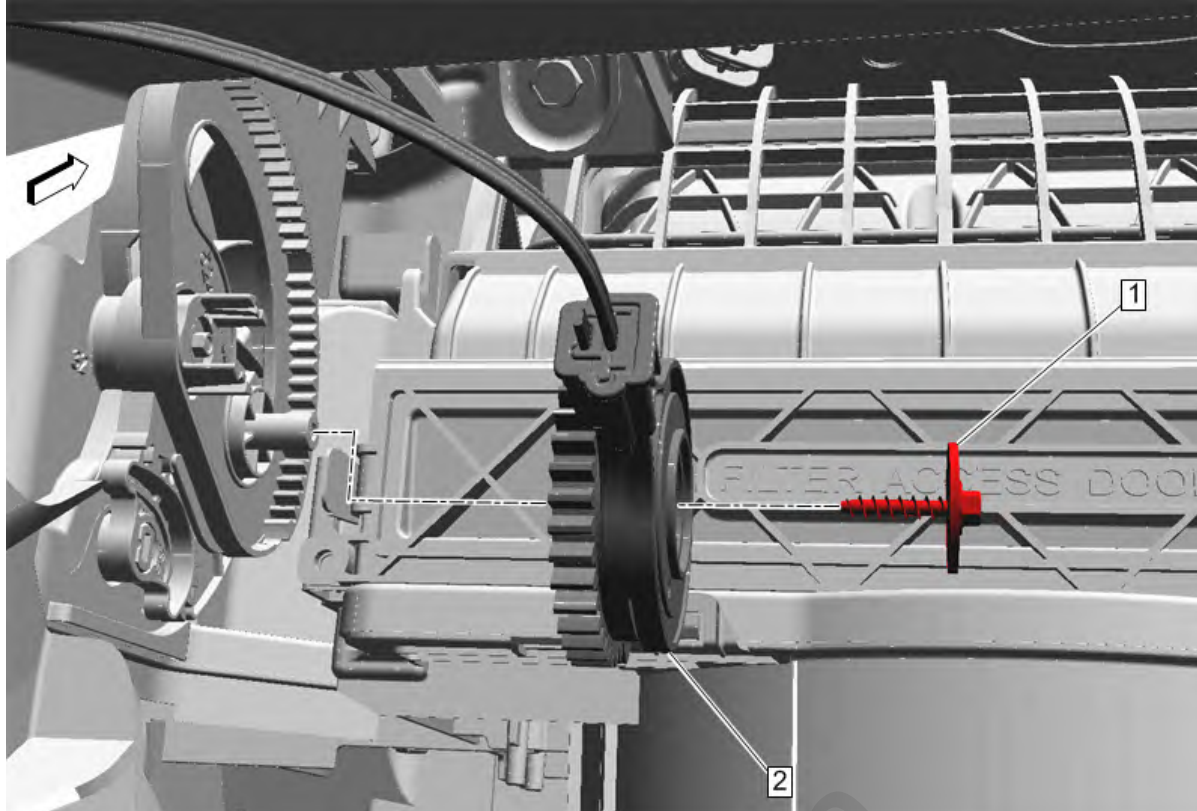


Fig. 199: Temperature Control Cable And Temperature Valve Gear
 Courtesy of GENERAL MOTORS COMPANY

5. Temperature Control Cable 2 @Temperature Valve Gear - Install - [Temperature Control Cable Replacement \(C60\)](#).

HEATER CORE REPLACEMENT

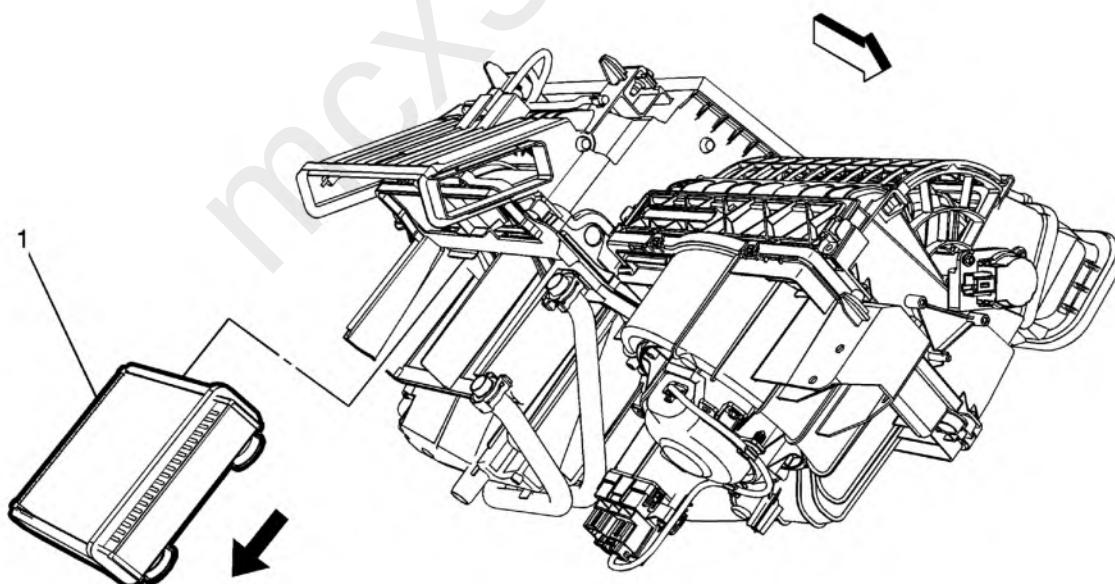


Fig. 200: Heater Core
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

Callout	Component Name
Preliminary Procedure	
1. Remove the heater case. Refer to Heater Case Replacement. 2. Disconnect the heater core outlet tube. Refer to Heater Core Outlet Tube Replacement. 3. Disconnect the heater core inlet tube. Refer to Heater Core Inlet Tube Replacement.	
1	Heater Core Assembly

AUXILIARY HEATER CORE REPLACEMENT (BUICK WITH C32)

Removal Procedure

1. Front Floor Console Extension Panel - Right - Remove - [Front Floor Console Extension Replacement - Right Side](#)
2. Instrument Panel Lower Trim Panel Insulator - Remove - [Instrument Panel Lower Trim Panel Insulator Replacement \(Buick\)](#)
3. Instrument Panel Compartment - Remove - [Instrument Panel Compartment Replacement](#)
4. Floor Front Air Outlet Duct - Remove - [Floor Front Air Outlet Duct Replacement - Right Side](#), or [Floor Front Air Outlet Duct Replacement - Left Side \(Buick\)](#).

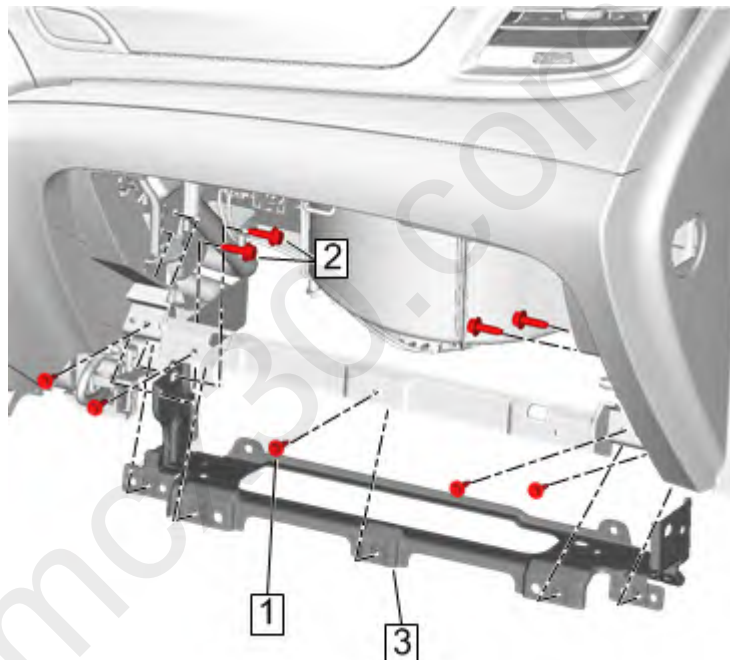


Fig. 201: Instrument Panel Lower Air Bag Bracket
Courtesy of GENERAL MOTORS COMPANY

5. Remove the instrument panel lower air bag bracket front bolts (1) [5x].
6. Remove the instrument panel lower air bag bracket side bolts (2) [4x].
7. Remove the instrument panel lower air bag bracket (3).

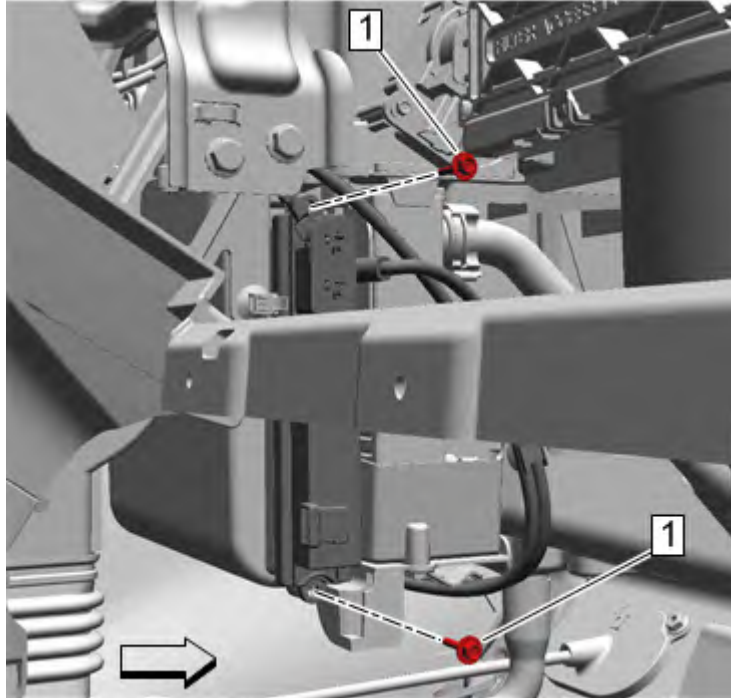


Fig. 202: Auxiliary Heater Core Screw

Courtesy of GENERAL MOTORS COMPANY

8. Un-clip the auxiliary heater core electrical harness from the heater core tube cover.
9. Disconnect the auxiliary heater core electrical connectors.
10. Auxiliary Heater Core Screw 1 - Remove

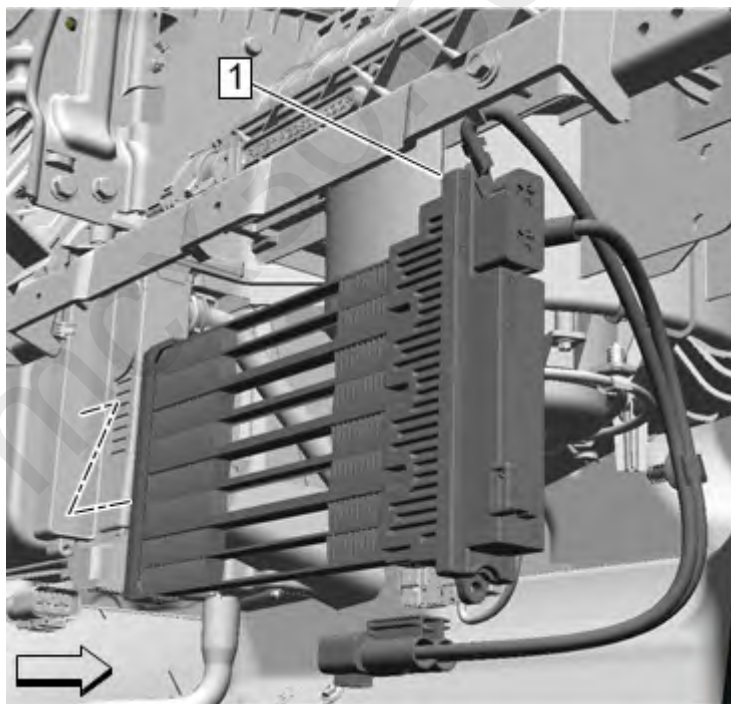


Fig. 203: Auxiliary Heater Core

Courtesy of GENERAL MOTORS COMPANY

11. Auxiliary Heater Core 1 - Remove

Installation Procedure

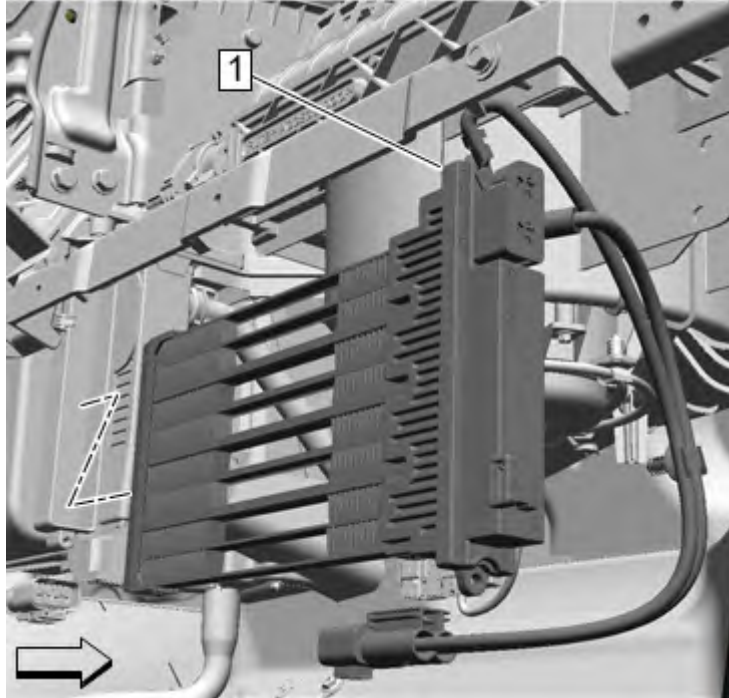


Fig. 204: Auxiliary Heater Core
 Courtesy of GENERAL MOTORS COMPANY

1. Auxiliary Heater Core 1 - Install

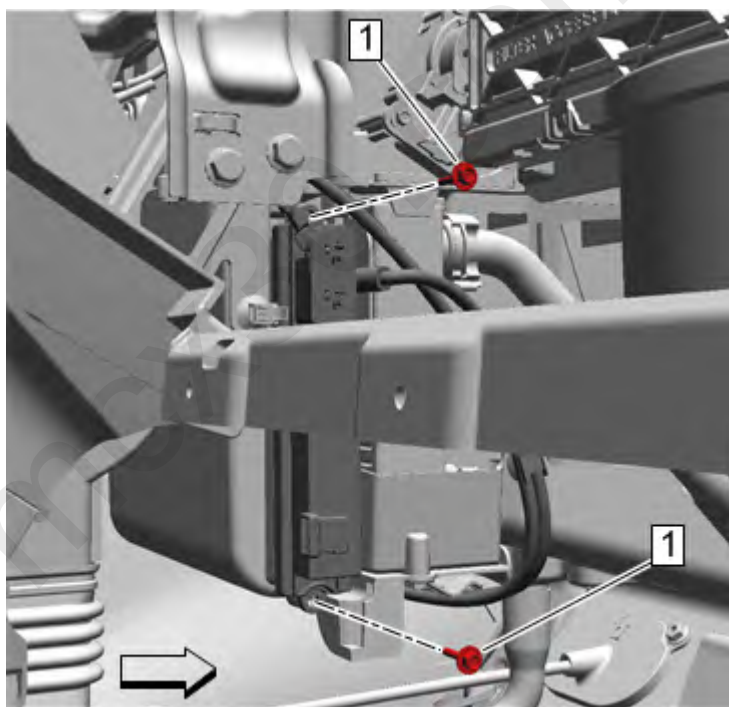


Fig. 205: Auxiliary Heater Core Screw
 Courtesy of GENERAL MOTORS COMPANY

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

2. Auxiliary Heater Core Screw 1 - Install and tighten 2.5 N.m (22 lb in)
3. Connect the auxiliary heater core electrical connectors.
4. Clip the auxiliary heater core electrical harness to the heater core tube cover.

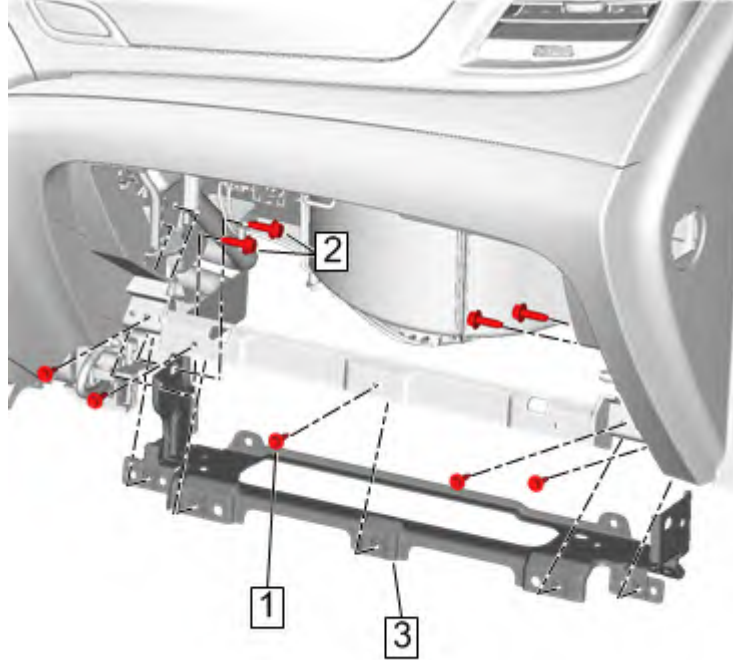


Fig. 206: Instrument Panel Lower Air Bag Bracket
Courtesy of GENERAL MOTORS COMPANY

- 5.
6. Install the instrument panel lower air bag bracket (3).
7. Install and tighten the instrument panel lower air bag bracket side bolts (2) [4x] to 10 N.m (89 lb in).
8. Install and tighten the instrument panel lower air bag bracket front bolts (1) [5x] to 2.5 N.m (22 lb in).
9. Floor Front Air Outlet Duct - Install - [Floor Front Air Outlet Duct Replacement - Right Side](#), or [Floor Front Air Outlet Duct Replacement - Left Side \(Buick\)](#).
10. Instrument Panel Compartment - Install - [Instrument Panel Compartment Replacement](#)
11. Instrument Panel Lower Trim Panel Insulator - Install - [Instrument Panel Lower Trim Panel Insulator Replacement \(Buick\)](#).
12. Front Floor Console Extension Panel - Right - Install - [Front Floor Console Extension Replacement - Right Side](#)

AUXILIARY HEATER CORE REPLACEMENT (CHEVROLET C32)

Removal Procedure

1. Floor Front Air Outlet Duct - Right Side - Remove - [Floor Front Air Outlet Duct Replacement - Right Side](#)
2. Front Floor Console Extension Panel - Right - Remove - [Front Floor Console Extension Replacement - Right Side](#)
3. Instrument Panel Lower Airbag Bracket - Remove - [Instrument Panel Lower Airbag Bracket Replacement](#)
4. Disconnect the electrical connector.

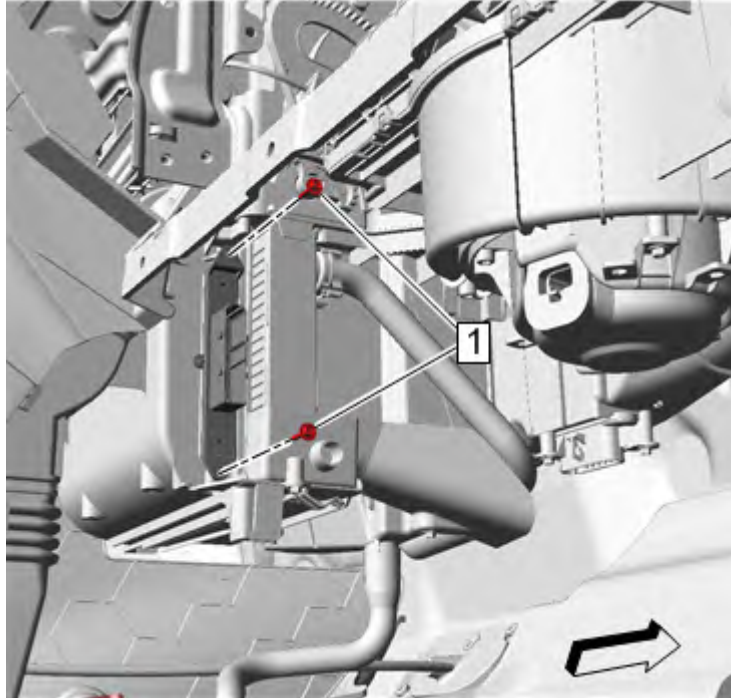


Fig. 207: Auxiliary Heater Core Screw
 Courtesy of GENERAL MOTORS COMPANY

5. Auxiliary Heater Core Screw 1 - Remove

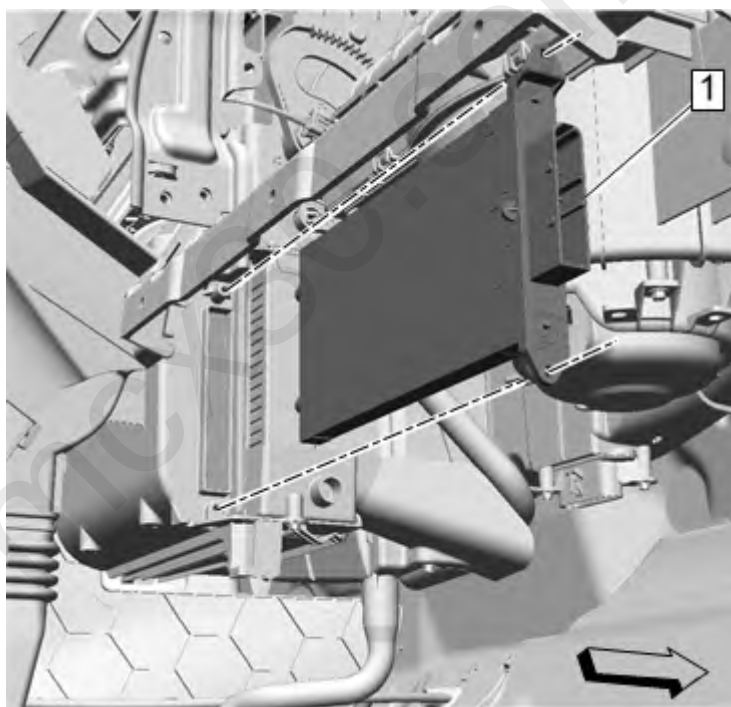


Fig. 208: Auxiliary Heater Core
 Courtesy of GENERAL MOTORS COMPANY

6. Auxiliary Heater Core 1 - Remove

Installation Procedure

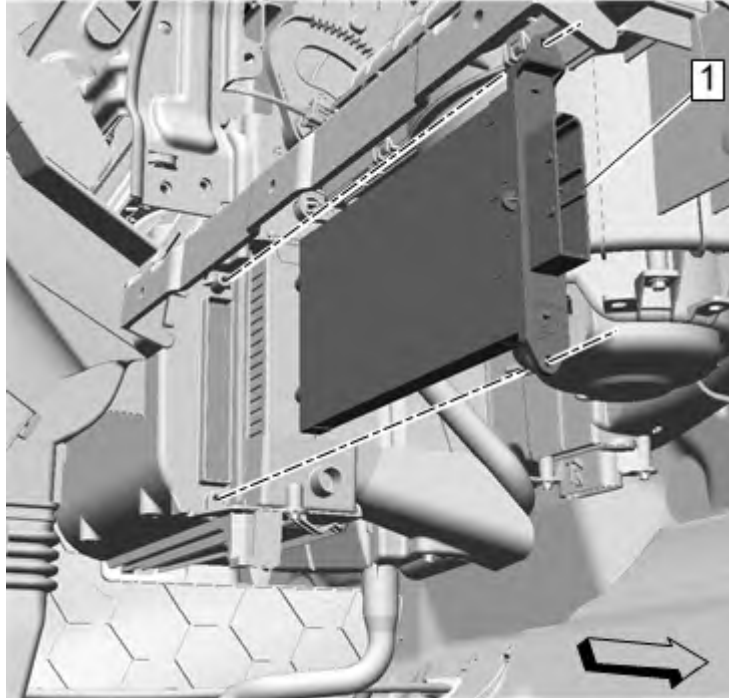


Fig. 209: Auxiliary Heater Core

Courtesy of GENERAL MOTORS COMPANY

1. Auxiliary Heater Core 1 - Install

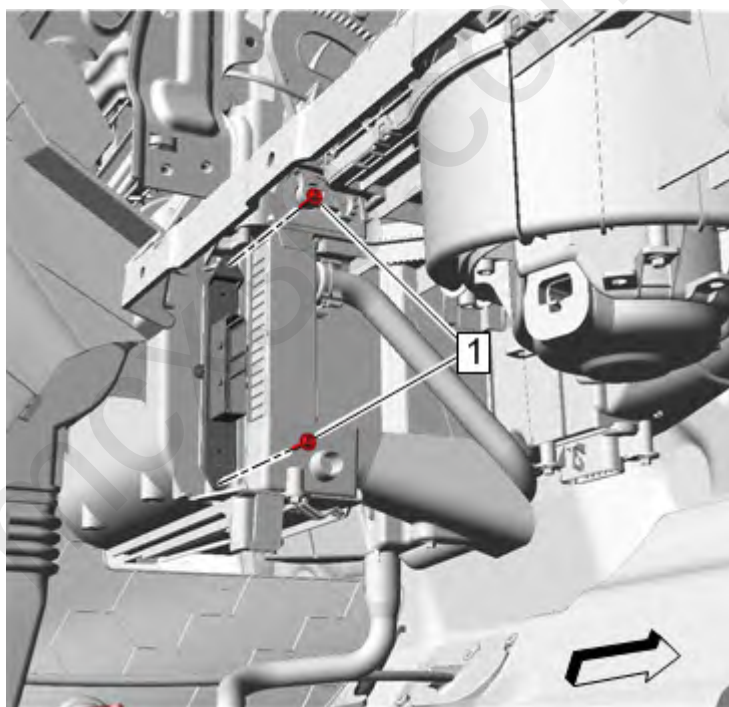


Fig. 210: Auxiliary Heater Core Screw

Courtesy of GENERAL MOTORS COMPANY

2. Auxiliary Heater Core Screw 1 - Install and tighten 2.0 N.m (18 lb in)
3. Connect the electrical connector.
4. Instrument Panel Lower Airbag Bracket - Install - [Instrument Panel Lower Airbag Bracket Replacement](#)
5. Front Floor Console Extension Panel - Right - Install - [Front Floor Console Extension Replacement - Right Side](#)
6. Floor Front Air Outlet Duct - Right Side - Install - [Floor Front Air Outlet Duct Replacement - Right Side](#)

HEATER WATER AUXILIARY PUMP INLET HOSE REPLACEMENT (LE2)

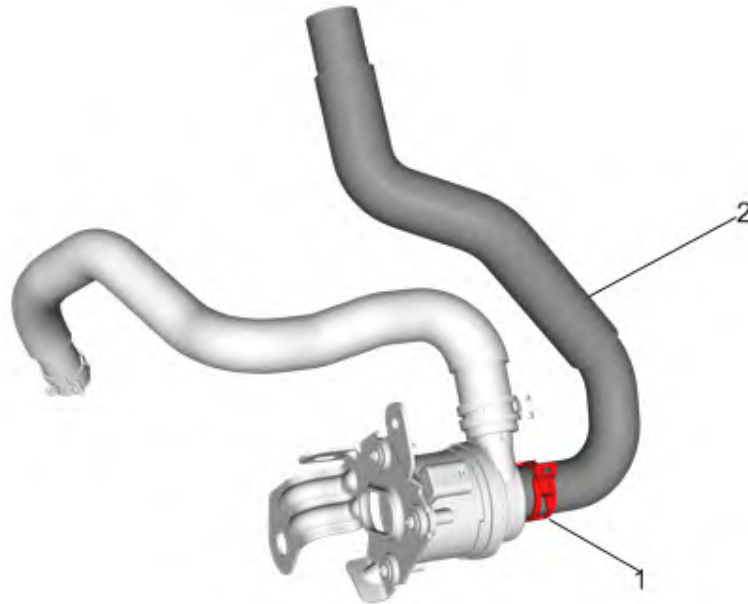


Fig. 211: Heater Water Auxiliary Pump Inlet Hose (LE2).
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1. <u>Auxiliary Water Pump Replacement (LE2).</u>	
1	Heater Water Auxiliary Pump Inlet Hose Clamp Procedure <u>Hose Clamp Replacement Guidelines - Spring Type</u>
2	Heater Water Auxiliary Pump Inlet Hose Procedure 1. Fill the cooling system to the proper level. <u>Cooling System Draining and Filling</u> 2. Inspect for coolant leaks.

HEATER WATER AUXILIARY PUMP OUTLET HOSE REPLACEMENT

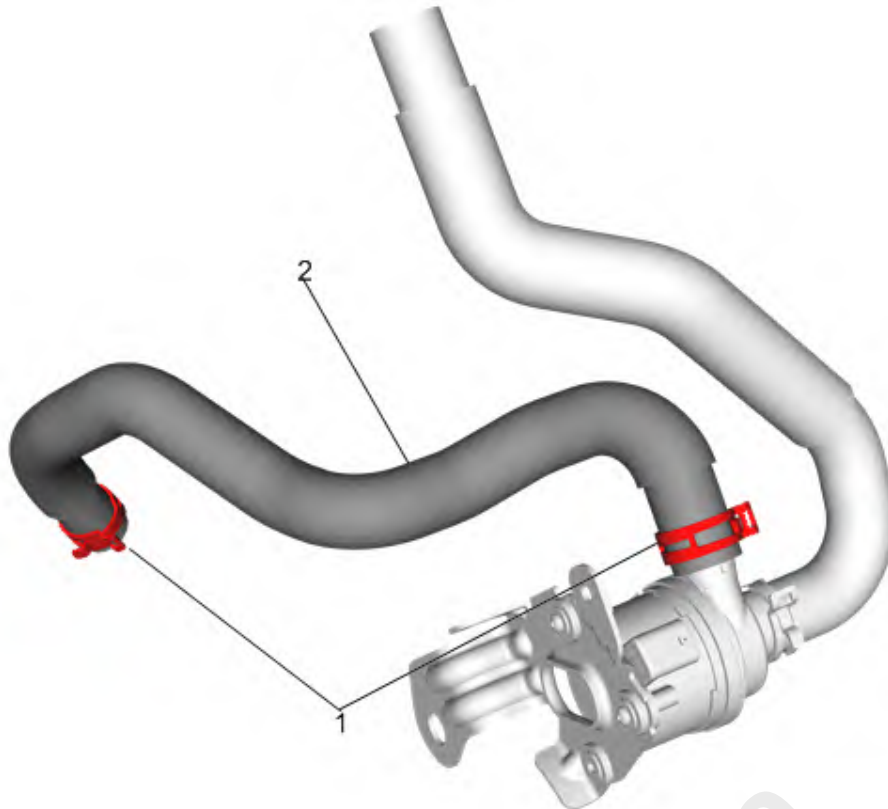


Fig. 212: Heater Water Auxiliary Pump Outlet Hose
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1. Auxiliary Water Pump Replacement (LE2)	
1	Heater Water Auxiliary Pump Outlet Hose Clamp[2x] Procedure Hose Clamp Replacement Guidelines - Spring Type
2	Heater Water Auxiliary Pump Outlet Hose Procedure 1. Fill the cooling system to the proper level. Cooling System Draining and Filling 2. Inspect for coolant leaks.

HEATER CASE REPLACEMENT

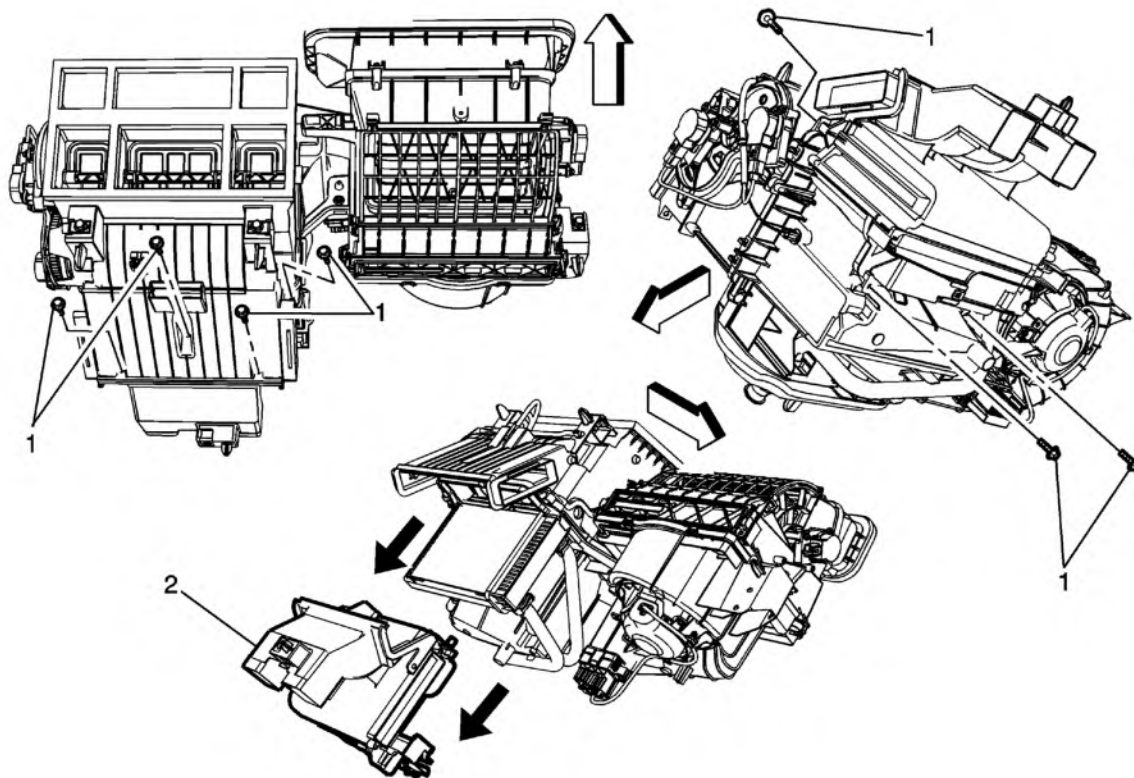


Fig. 213: Heater Case

Courtesy of GENERAL MOTORS COMPANY

Call out	Component Name
Preliminary Procedure Remove the air conditioning evaporator and blower module assembly. Refer to Heater and Air Conditioning Evaporator and Blower Module Removal and Installation .	
1	Heater Case Fasteners (QTY: 7) CAUTION: Refer to Fastener Caution . Tighten 2.0 N.m (18 lb in)
2	Heater Case Assembly

DESCRIPTION AND OPERATION

HEATING AND AIR CONDITIONING SYSTEM DESCRIPTION AND OPERATION

Engine Coolant

Engine coolant is the key element of the heating system. The thermostat controls 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 heat of the coolant flowing through the heater core is absorbed by the ambient air drawn through the HVAC module. Heated air is distributed to the passenger compartment, through the HVAC module, for passenger comfort.

The amount of heat delivered to the passenger compartment is controlled by opening or closing the HVAC module air temperature door. The coolant exits the heater core through the return heater hose and recirculated back through the engine cooling system.

A/C Cycle

Refrigerant is the key element in an air conditioning system. R-134a is a very low temperature gas 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 evaporator hose, to the thermal expansion valve.

The thermal expansion valve is attached between the evaporator tubes and evaporator hose. 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 to 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, through the outlet line of the evaporator hose, 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
	BO 38185 J 38185 Hose Clamp Pliers

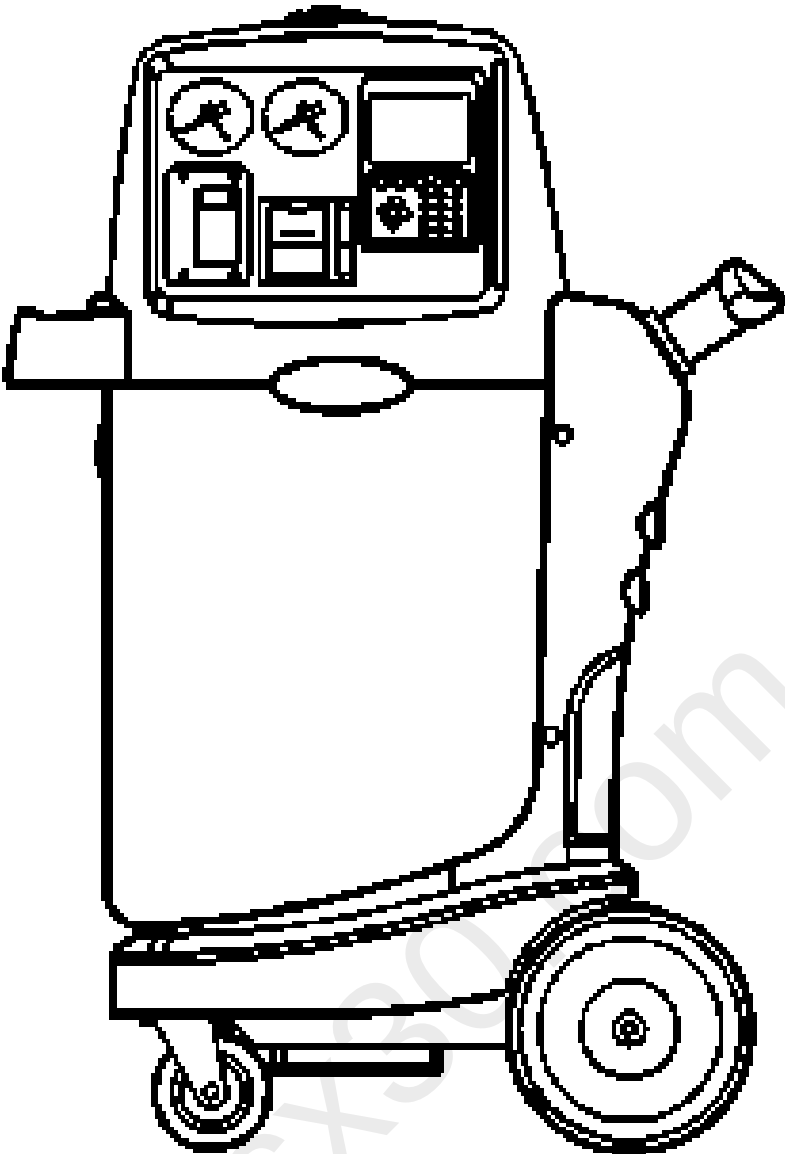
Illustration	Tool Number / Description
 A line drawing of a mobile air conditioning service center. The unit is rectangular with a control panel on top featuring two analog gauges, a digital display, and several buttons. It has a large oval handle on the front and a vertical pipe on the right side. The unit is mounted on a frame with two large rear wheels and a smaller front wheel.	GE 8800 J 43600 ACR 2000 Air Conditioning Service Center

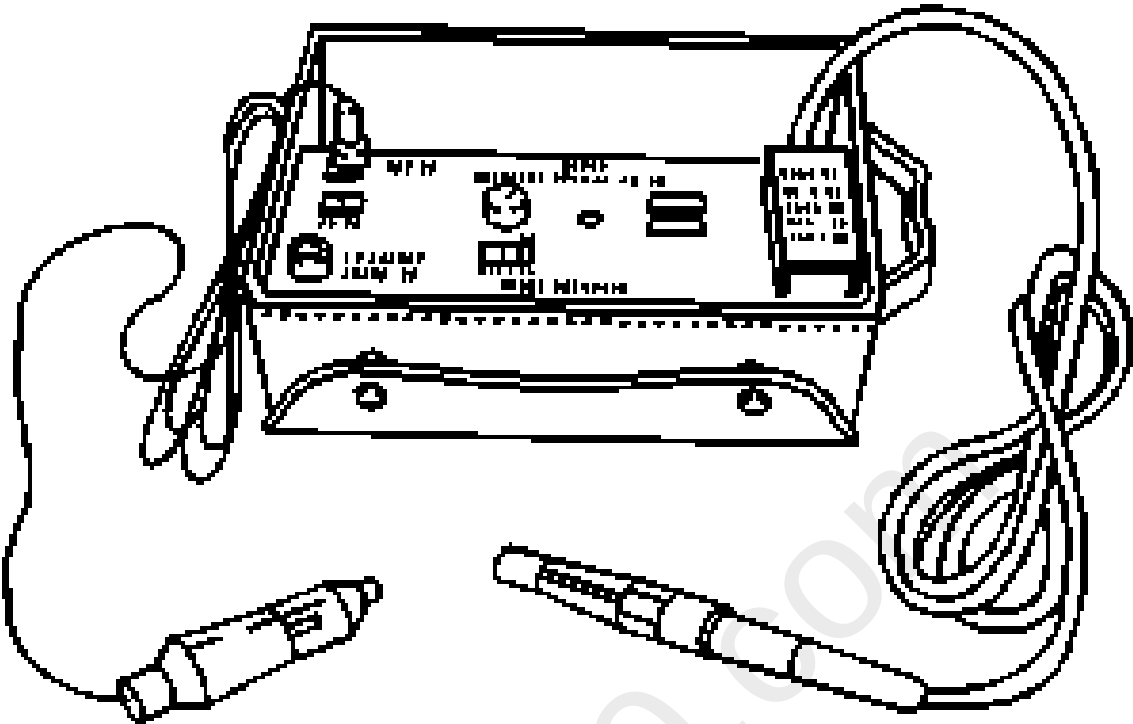
Illustration	Tool Number / Description
	GE 39400-A J 39400-A Halogen Leak Detector
	GE 41447 J 41447 R-134a A/C Tracer Dye - Box of 24

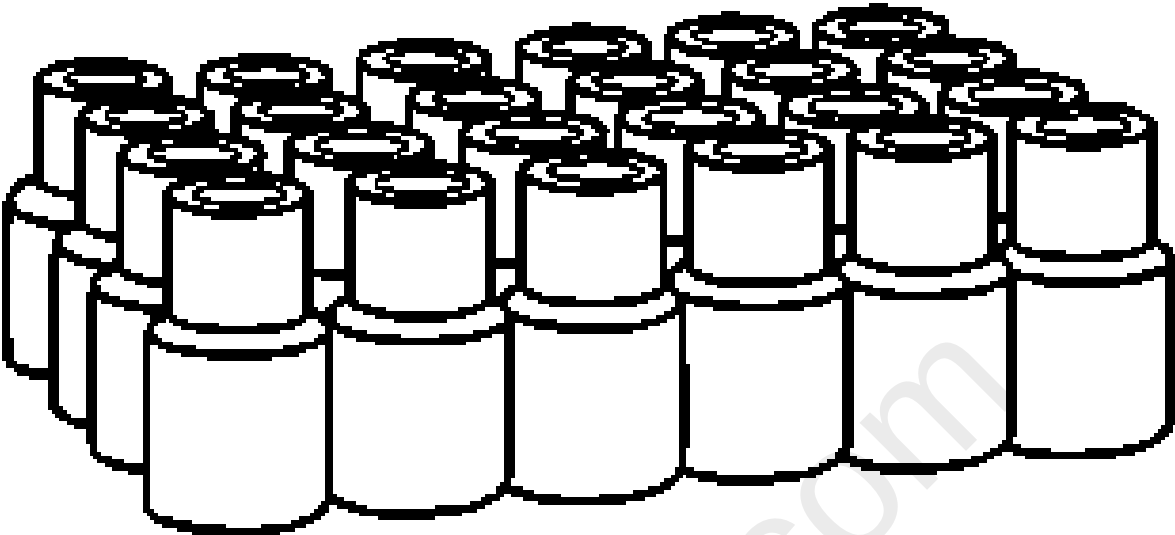
Illustration	Tool Number / Description
	

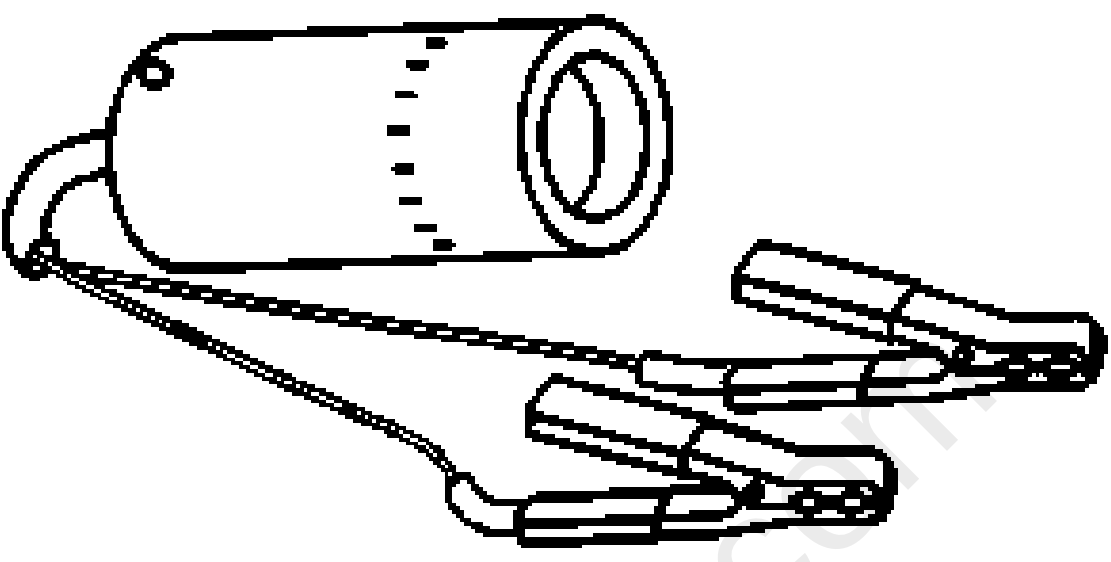
Illustration	Tool Number / Description
	GE 42220 J 42220 Universal 12V Leak Detection Lamp

Illustration	Tool Number / Description
	GE 43872 J 43872 Fluorescent Dye Cleaner

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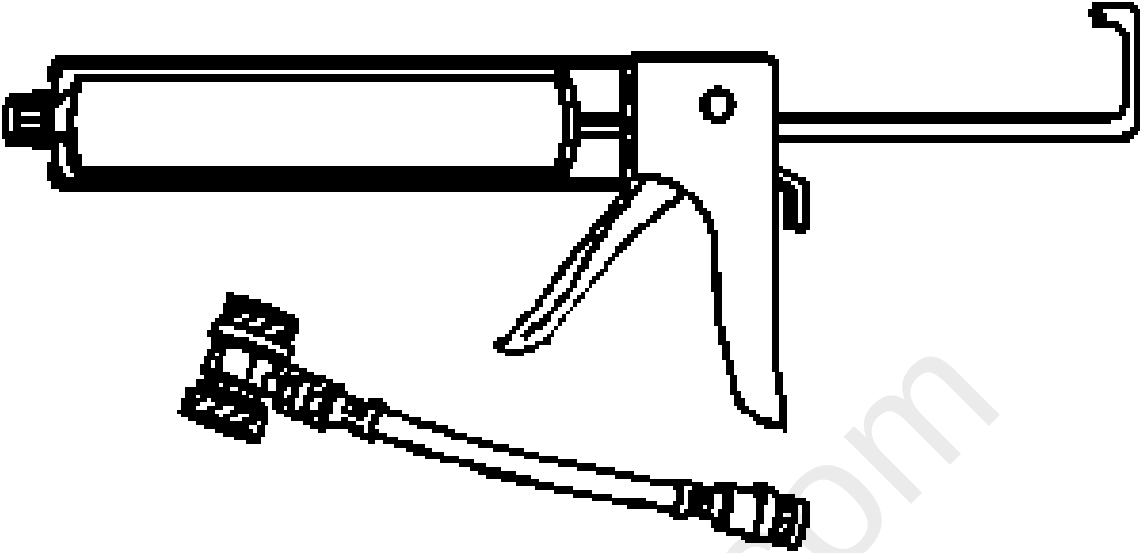
Illustration	Tool Number / Description
	GE 45037 J 45037 A/C Oil Injector

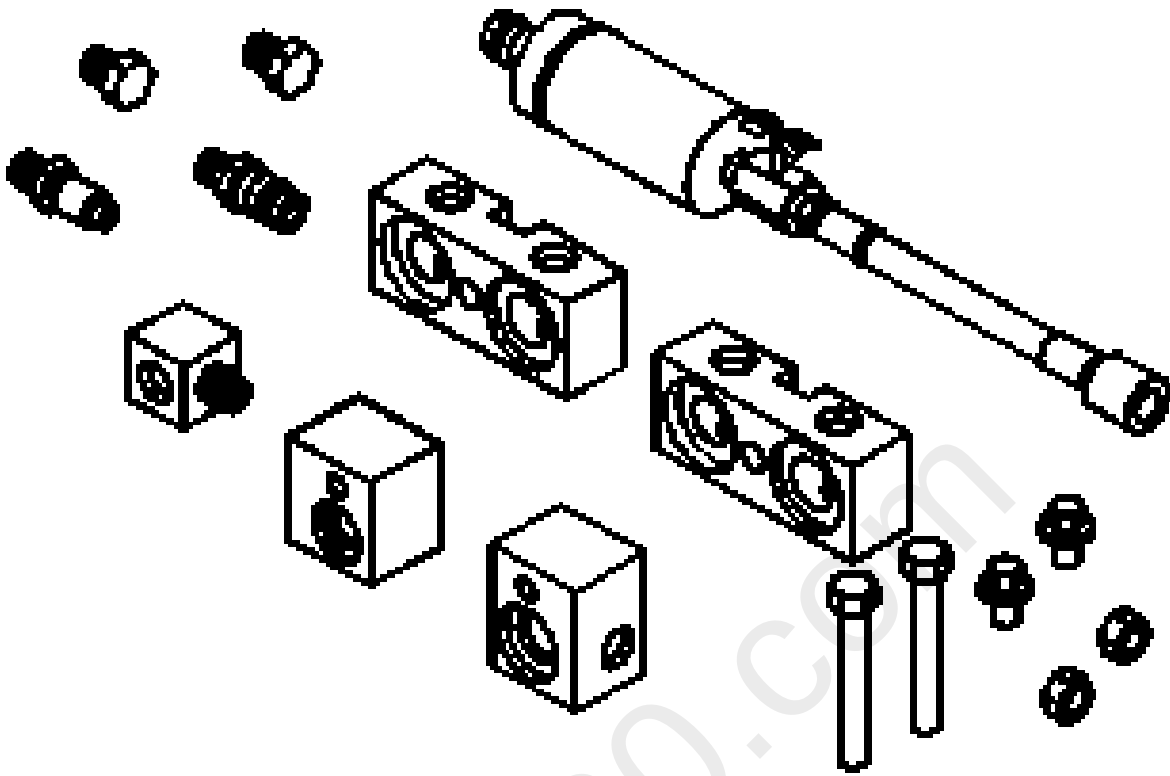
Illustration	Tool Number / Description
	GE 45268 J 45268 A/C Flushing Adapter Kit

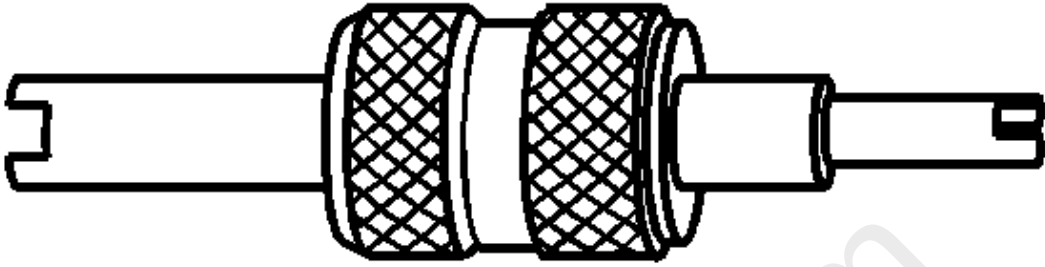
Illustration	Tool Number / Description
	GE 46246 J 46246 Valve Core Tool

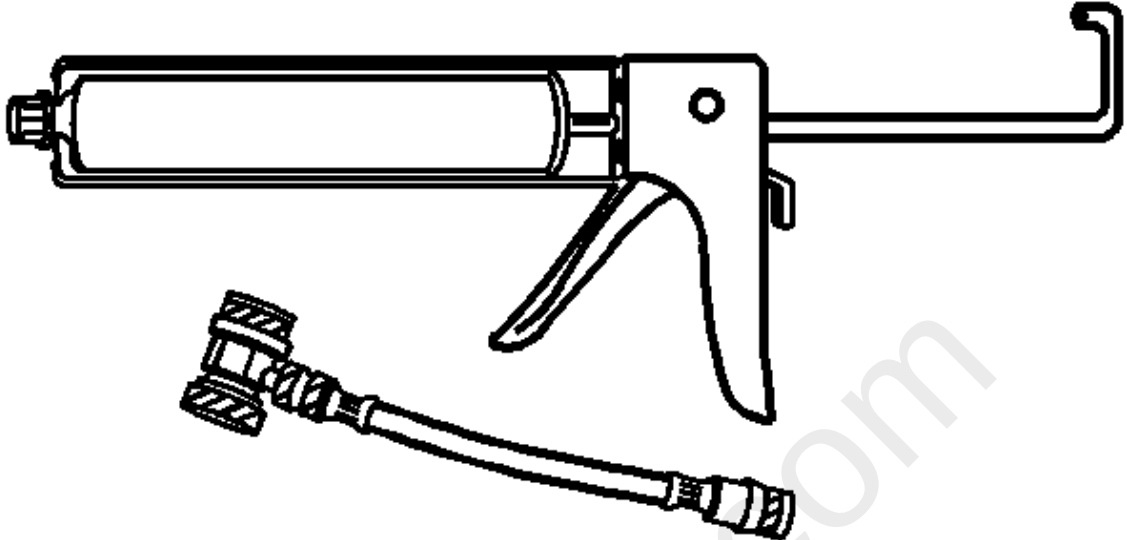
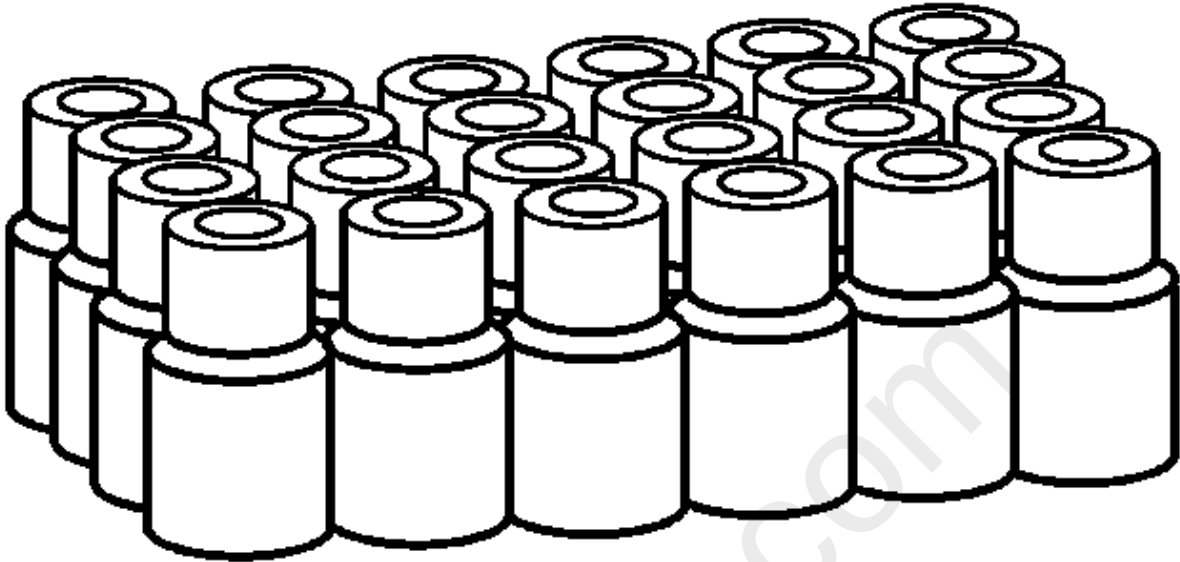
Illustration	Tool Number / Description
	GE 46297 J 46297 A/C Dye Injector Kit

Illustration	Tool Number / Description
	GE 46297-12 J 46297-12 Replacement Dye Cartridges

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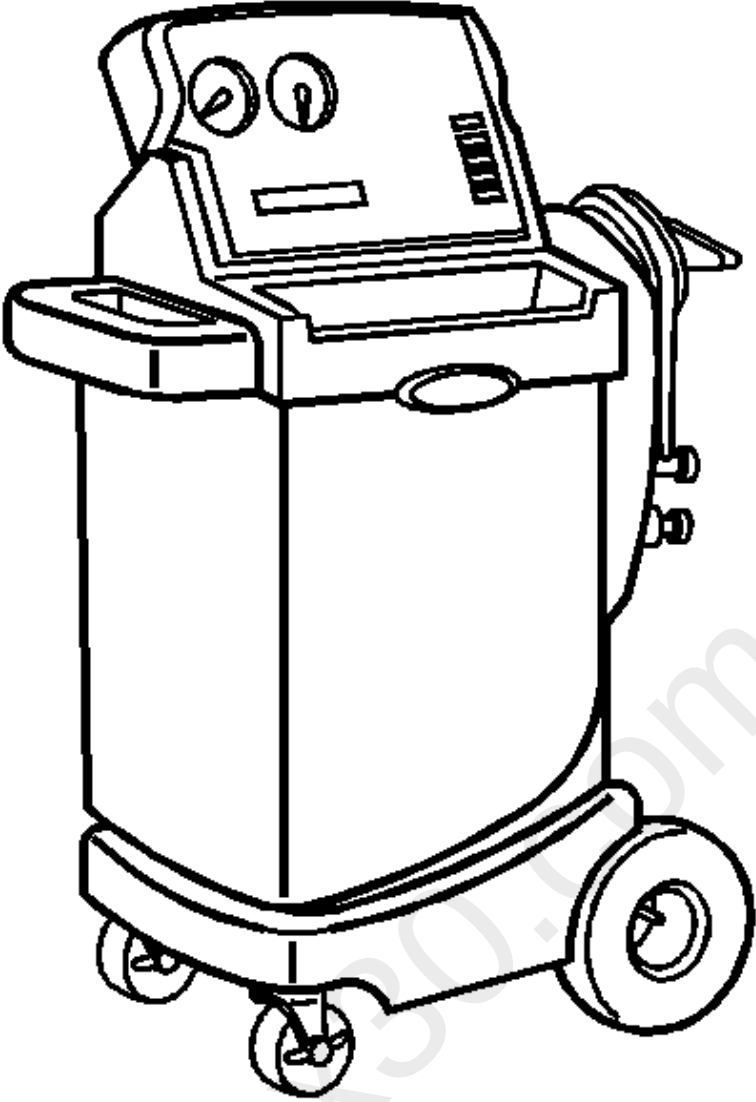
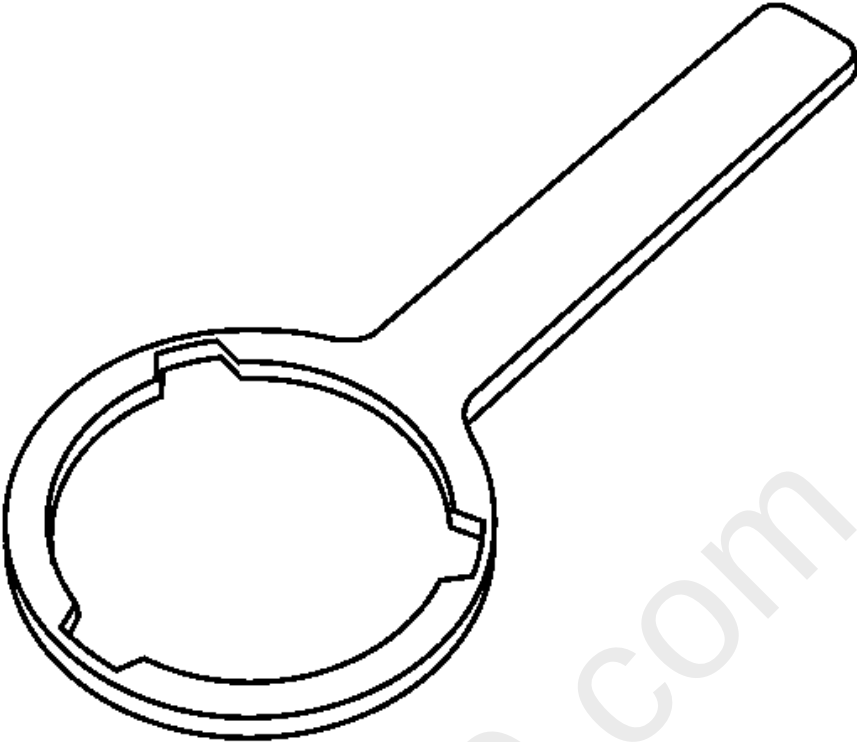
Illustration	Tool Number / Description
	GE 48800 CoolTech A/C Recharge Machine

Illustration	Tool Number / Description
	J 37872 GE 48965 CH 50198 Clutch Plate Holder

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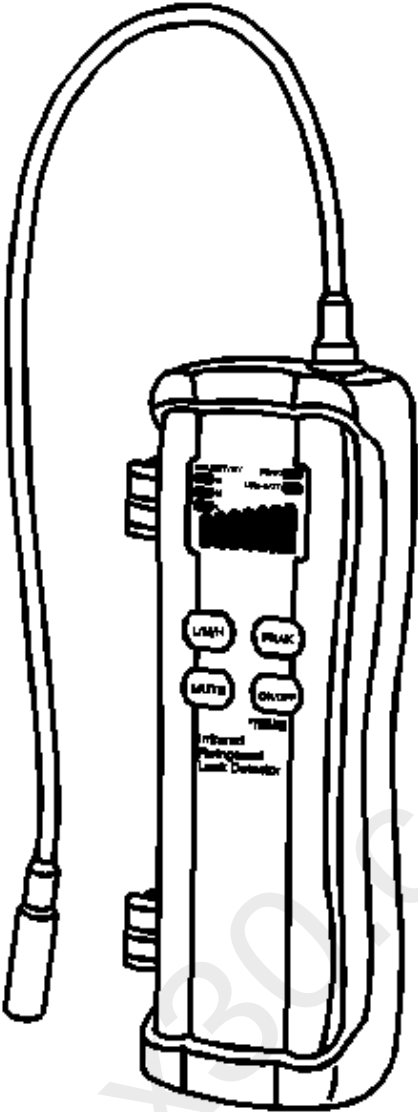
Illustration	Tool Number / Description
	GE 50078 Electronic Leak Detector
	70000861 Scan Tool Used for diagnosis of vehicle electrical system.

Illustration	Tool Number / Description
