

TRANSMISSION

Transmission Cooling - Corvette

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Auxiliary Engine Coolant Fan Bolt	7 N.m	62 lb in
Fan Control Module Bolt	7 N.m	62 lb in
Rear Wheel Drive Module Nut	9 N.m	80 lb in
Transmission Fluid Auxiliary Cooler Bolt	9 N.m	80 lb in
Transmission Fluid Auxiliary Cooler Nut	9 N.m	80 lb in
Transmission Fluid Cooler Baffle Nut	7 N.m	62 lb in
Transmission Fluid Cooler Inlet and Outlet Pipe Bolt	22 N.m	16 lb ft
Transmission Fluid Cooler Inlet and Outlet Pipe Bracket Bolt	22 N.m	16 lb ft
Transmission Fluid Cooler Inlet and Outlet Pipe Clamp Nut	22 N.m	16 lb ft
Transmission Fluid Cooler Inlet and Outlet Pipe Nut	9 N.m	80 lb in
Transmission Fluid Cooler Inlet and Outlet Pipe Stud	12 N.m	106 lb in

SCHEMATIC WIRING DIAGRAMS

TRANSMISSION COOLING WIRING SCHEMATICS

Transmission Cooling (KNP) Wiring Schematics

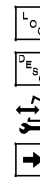
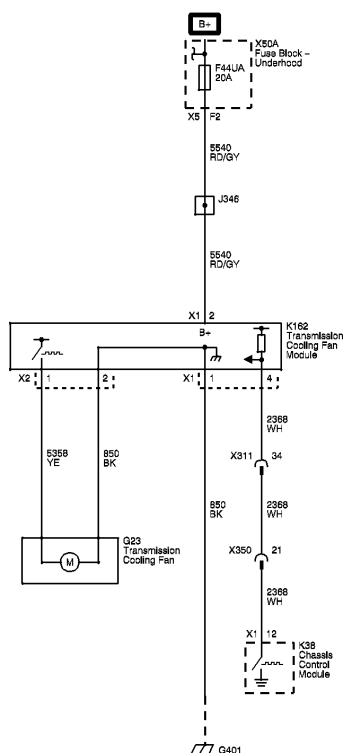


Fig. 1: Transmission Cooling (KNP) Wiring Schematic
 Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
<u>DTC P184C</u>	DTC P184C Transmission Cooling Fan Control Circuit
<u>DTC P184F</u>	DTC P184F Transmission Cooling Fan Performance

DTC P184C: TRANSMISSION COOLING FAN CONTROL CIRCUIT

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC P184C

Transmission Cooling Fan Control Circuit

Circuit/System Description

The primary purpose of the transmission cooling fan is to control the air flow moving across the transmission heat exchangers. The transmission cooling fan control system resides in the K38 Chassis Control Module. The chassis control module receives transmission oil temperature and vehicle speed data to control the Pulse Width Modulated (PWM) duty cycle of the cooling fan. The chassis control module communicates on the High Speed GM Local Area Network (HS-GMLAN) serial data bus.

Conditions for Running the DTC

- The engine speed is between 400-7, 500 RPM for 5 s.
- Ignition voltage is between 8.6-32 V.

Conditions for Setting the DTC

The chassis control module detects an open or short to ground on the transmission cooling fan control circuit.

Action Taken When the DTC Sets

DTC P184C is a Type C DTC.

Conditions for Clearing the DTC

DTC P184C is a Type C DTC.

Reference Information

Schematic Reference

Transmission Cooling Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Transmission Cooling Fan Description and Operation

- Circuit Testing
- Connector Repairs
- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Circuit/System Testing

1. Ignition OFF and all vehicle systems OFF, disconnect the X1 harness connector at the K 162 Transmission Cooling Fan Module.
2. Test for less than 10 ohms between the ground circuit terminal 1 and ground.
 - **If 10 ohms or greater**
 1. Ignition OFF.
 2. Test for less than 2 ohms in the ground circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, repair the open/high resistance in the ground connection.
 - **If less than 10 ohms**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 2 and ground.
 - **If the test lamp does not illuminate and the circuit fuse is good**
 1. Ignition OFF, remove the test lamp.
 2. Test for less than 2 ohms in the B+ circuit end to end.
 - If 2 ohms or greater, repair the open/high resistance in the circuit.
 - If less than 2 ohms, verify the fuse is not open and there is voltage at the fuse.
 - **If the test lamp does not illuminate and the circuit fuse is open**
 1. Ignition OFF, remove the test lamp.
 2. Test for infinite resistance between the B+ circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the K162 Transmission Cooling Fan Module.
 - **If the test lamp illuminates**
5. Connect a test lamp between the control circuit terminal 4 and the B+ circuit terminal 2.
6. Verify the test lamp turns ON and OFF when commanding the G23 Transmission Cooling Fan On and Off with a scan tool.
 - **If the test lamp is always OFF**
 1. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.

- If less than 1 V

2. Ignition OFF.

3. Test for less than 2 ohms in the control circuit end to end.

- If 2 ohms or greater, repair the open/high resistance in the circuit.
- If less than 2 ohms, replace the K38 Chassis Control Module.

- **If the test lamp is always ON**

1. Ignition OFF, remove the test lamp, disconnect the harness connector at the K38 Chassis Control Module.

2. Test for infinite resistance between the control circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the K38 Chassis Control Module.

- **If the test lamp turns ON and OFF**

7. Ignition OFF and all vehicle systems OFF, disconnect the X2 harness connector at the K162 Transmission Cooling Fan Module, ignition ON.

8. Test for less than 1 V between the K162 Transmission Cooling Fan Module X2 harness connector terminals listed below and ground:

1. K162 Transmission Cooling Fan Module terminal 1
2. K162 Transmission Cooling Fan Module terminal 2

- **If 1 V or greater**

Repair the short to voltage on the circuit.

- **If less than 1 V**

9. Ignition OFF.

10. Test for infinite resistance between the K162 Transmission Cooling Fan Module X2 harness connector terminals listed below and ground:

- K162 Transmission Cooling Fan Module terminal 1
- K162 Transmission Cooling Fan Module terminal 2

- **If less than infinite resistance**

Repair the short to ground on the circuit.

- **If infinite resistance**

11. Replace the G23 Transmission Cooling Fan.

12. Verify the G23 Transmission Cooling Fan operates while operating the vehicle within the Conditions for Running the DTC.

- **If the G23 Transmission Cooling Fan does not operate**

Replace the K162 Transmission Cooling Fan Module.

○

13. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

- **Auxiliary Fan Control Module Replacement (MYC), Auxiliary Fan Control Module Replacement (MEL, MEP)**
- **Chassis Control Module Replacement**
- **Transmission Fluid Auxiliary Cooler Fan Replacement (MYC), Transmission Fluid Auxiliary Cooler Fan Replacement (MEL, MEP)**
- **Control Module References** for chassis control module replacement, programming and setup.

DTC P184F: TRANSMISSION COOLING FAN CONTROL CIRCUIT

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptor

DTC P184F

Transmission Cooling Fan Performance

Circuit/System Description

The transmission fluid temperature sensor is located inside of the Transmission Control Module assembly which has no serviceable parts. The transmission fluid temperature sensor provides transmission fluid temperature information to the Transmission Control Module and Chassis Control Module.

Conditions for Running the DTC

- DTC P184F is not set.
- The engine speed is between 400-7, 500 RPM for 5 s.
- Ignition voltage is between 8.6-32 V.

Conditions for Setting the DTC

The transmission fluid temperature is above 160°C (320°F) for 5 s.

Action Taken When the DTC Sets

DTC P184F is a Type C DTC.

Conditions for Clearing the DTC

DTC P184F is a Type C DTC.

Diagnostic Aids

During a road test, the transmission fluid temperature should steadily increase to a normal operating temperature and then stabilize.

Reference Information

Schematic Reference

Automatic Transmission Controls Schematics

Connector End View Reference

- **COMPONENT CONNECTOR END VIEWS - INDEX**
- **INLINE HARNESS CONNECTOR END VIEWS - INDEX**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Verify with a scan tool, there are no other Q8 Control Solenoid Valve Assembly or K38 Chassis Control Module DTCs set.
 - **If a DTC is set**

Refer to **Diagnostic Trouble Code (DTC) List - Vehicle** .
 - **If a DTC is not set**

2. Verify the transmission fluid level and condition is correct. Refer to **Transmission Fluid Level and Condition Check** .

- **If the transmission fluid level and condition is not correct**

Repair as necessary.

- **If the transmission fluid level and condition is correct**

3. Verify the transmission line pressures are within the specified ranges. Refer to **Line Pressure Check** .

- **If pressures are not within range**

Refer to **Fluid Pressure High or Low** .

- **If pressures are within range**

4. Verify the transmission assembly, transmission fluid cooler lines and cooler fluid assembly is not leaking transmission fluid. Refer to **Fluid Leak Diagnosis** .

- **If the transmission assembly, the transmission fluid cooler lines or cooler fluid assembly is leaking fluid**

Repair or replace as necessary.

- **If the transmission assembly, the transmission fluid cooler lines or cooler fluid assembly is not leaking fluid**

5. Verify the transmission fluid cooler lines are not pinched, misrouted or damaged.

- **If the cooler fluid lines are not OK**

Repair or replace as necessary.

- **If the cooler fluid lines are OK**

6. Verify the transmission fluid cooler assembly is mounted correctly and not damaged.

- **If the transmission fluid cooler is not OK**

Repair or replace as necessary.

- **If the transmission fluid cooler is OK**

7. Verify the transmission fluid cooler assembly duct work, seals, cooling fan blades and shrouding are intact and in the correct position.

- **If the transmission fluid cooler duct work, seals, cooling fan blades and shrouding are not OK**

Repair or replace as necessary.

- **If the transmission fluid cooler duct work, seals, cooling fan blades and shrouding are OK**

8. Perform the Transmission Fluid Cooler Flushing and Flow Test. Refer to **Transmission Fluid Cooler Flushing and Flow Test (6L80)**, **Transmission Fluid Cooler Flushing and Flow Test (Tremec 7-Speed)**.

- If the transmission fluid cooler does not pass the flow test

Replace the Transmission Fluid Cooler assembly.

- If the transmission fluid cooler does pass the flow test

9. Road test the vehicle. Refer to **Road Test**.
10. Verify the scan tool Transmission Fluid Temperature parameter is between -35 and +160°C (-31 and +320°F).
 - If not between -35 and +160°C (-31 and +320°F).

Refer to **DTC P184C** Transmission Cooling Fan Control Circuit.

- If between -35 and +160°C (-31 and +320°F).

11. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

-
- **Transmission Fluid Cooler Inlet and Outlet Pipe Replacement (MEL, MEP)**, **Transmission Fluid Cooler Inlet and Outlet Pipe Replacement (MYC)**, **Transmission Fluid Cooler Inlet and Outlet Pipe Replacement (MEL Convertible)**, **Transmission Fluid Cooler Inlet and Outlet Pipe Replacement (MYC Convertible)**
- **Transmission Fluid Auxiliary Cooler Replacement (MYC)**, **Transmission Fluid Auxiliary Cooler Replacement (MEL, MEP)**, **Transmission Fluid Auxiliary Cooler Replacement (MEP Convertible)**, **Transmission Fluid Auxiliary Cooler Replacement (MYC Convertible)**
- Perform the **Reset Transmission Adapts** following all transmission related repairs.
- **Control Module References** for control solenoid valve assembly replacement, programming and setup.

TRANSMISSION FLUID COOLER FLUSHING AND FLOW TEST (6L80)

GM studies indicate that plugged or restricted transmission oil coolers and pipes cause insufficient transmission lubrication and elevated operating temperatures which can lead to premature transmission failure. Many repeat repair cases could have been prevented by following published procedures for transmission oil cooler flushing and flow checking. This procedure includes flow checking and flushing the auxiliary transmission oil cooler, if equipped.

NOTE: Use the J 45096 flush and flow test tool or equivalent to flush and flow test the transmission oil cooler and the oil cooler pipes after the transaxle is removed

for repairs.

Only GM Goodwrench DEXRON®VI automatic transmission fluid should be used when doing a repair on a GM transmission.

Time allowance for performing the cooler flow checking and flushing procedure has been included in the appropriate labor time guide operations since the 1987 model year. The service procedure steps for oil cooler flushing and flow testing are as follows:

Cooler Flow Check and Flushing Steps

1. Machine Set-up
2. Determine Minimum Flow Rate
3. Back Flush
4. Forward Flush
5. Flow Test
6. Code Recording Procedure
7. Clean-up

Special Tools

- **DT 45096** Transmission Oil Cooling System Flush and Flow Test Tool
- **DT 45096-30** Transmission Cooler Flush Adapter
- Shop air supply with water/oil filters, regulator and pressure gauge - minimum 90 psi
- Eye protection
- Rubber gloves

For equivalent regional tools, refer to **Special Tools** .

Machine Set-up

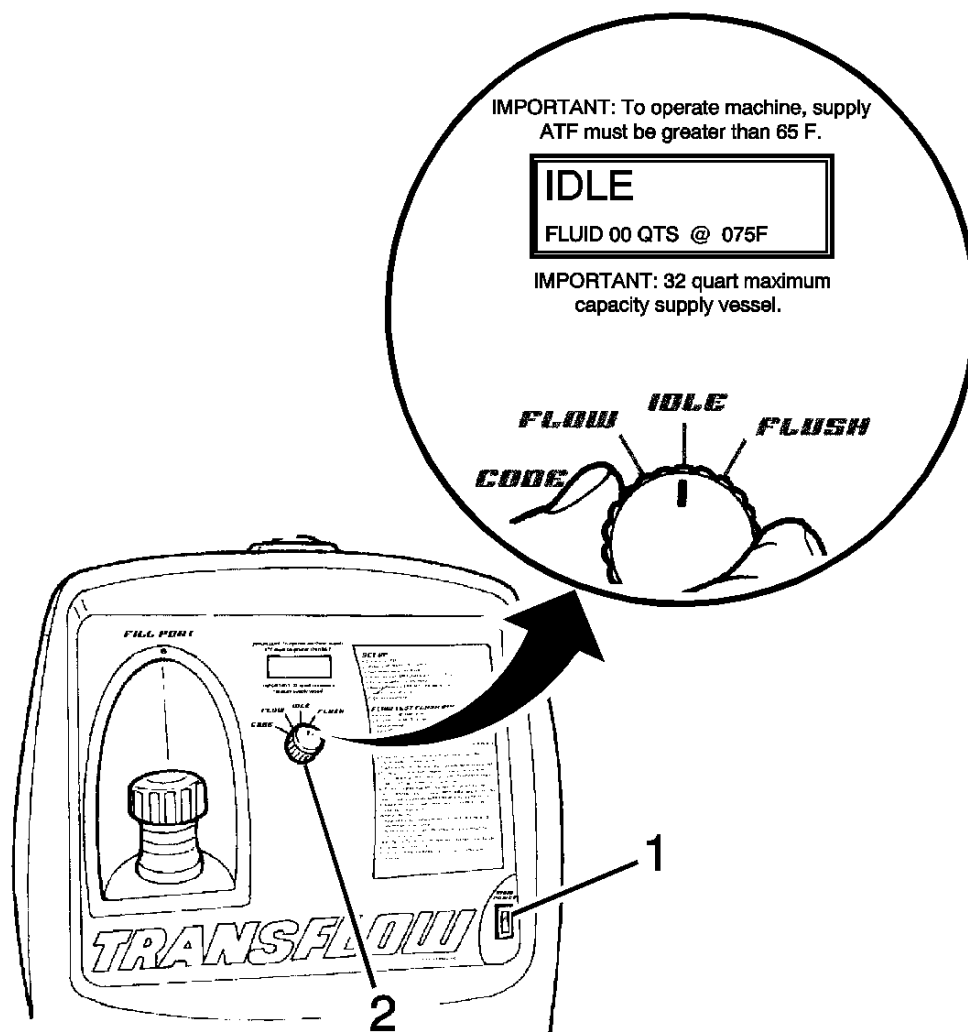


Fig. 2: View Of Main Power Switch & Main Function Switch
Courtesy of GENERAL MOTORS COMPANY

1. Verify that the main power switch (1) is in the OFF position.
2. Place the main function switch (2) in the IDLE position.

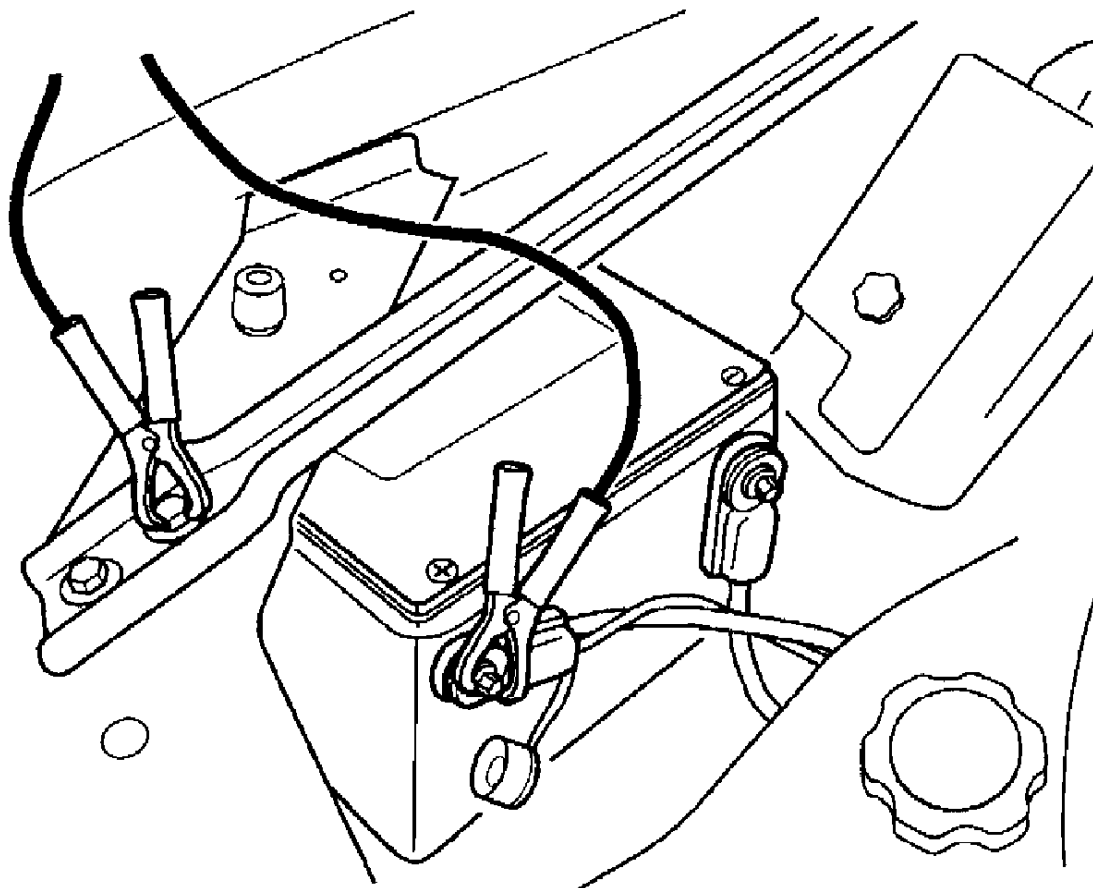


Fig. 3: Connecting To 12V DC Power Source
Courtesy of GENERAL MOTORS COMPANY

3. Connect **DT 45096** flush and flow test tool to the vehicle 12V DC power source by connecting the red battery clip to the positive, +, battery post on the vehicle and connect the negative lead to a known good chassis ground.
4. Turn the main power switch to the ON position.

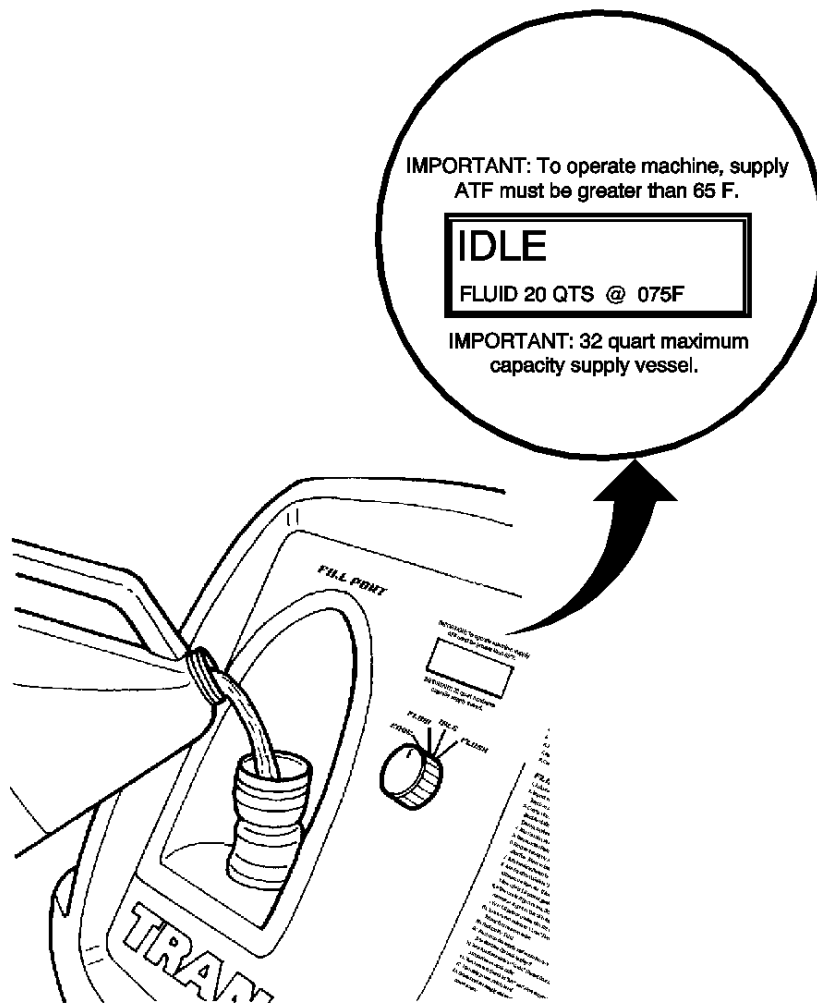


Fig. 4: Filling Supply Tank With Transmission Fluid
 Courtesy of GENERAL MOTORS COMPANY

CAUTION: Do not overfill the supply vessel. Damage to the unit may result. To verify the fluid level, view the LCD screen display while filling the unit, to ensure the fluid level does not exceed 30 L (32 qt).

5. Fill the supply tank with Dexron®VI through the fill port.
6. Reinstall and tighten the fill cap.

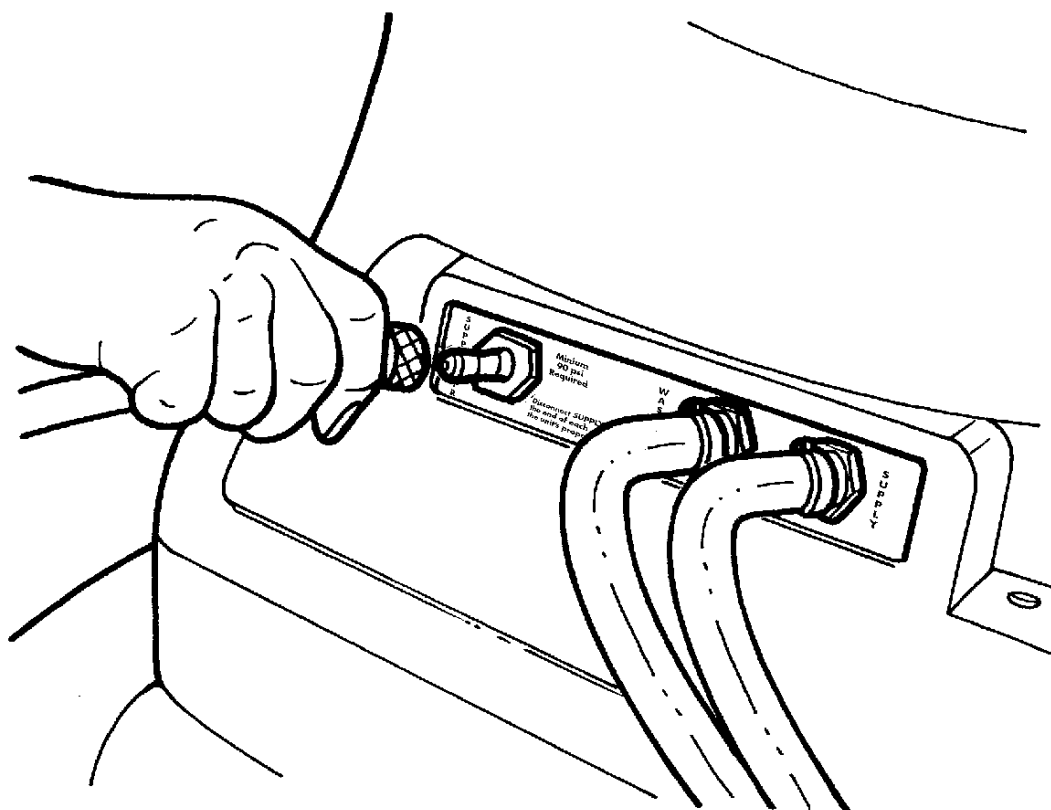


Fig. 5: Applying Shop Air Supply Hose To Quick-Disconnect
Courtesy of GENERAL MOTORS COMPANY

7. Connect a shop air supply hose to the quick-disconnect on the rear panel marked SUPPLY AIR.

Determine Minimum Flow Rate

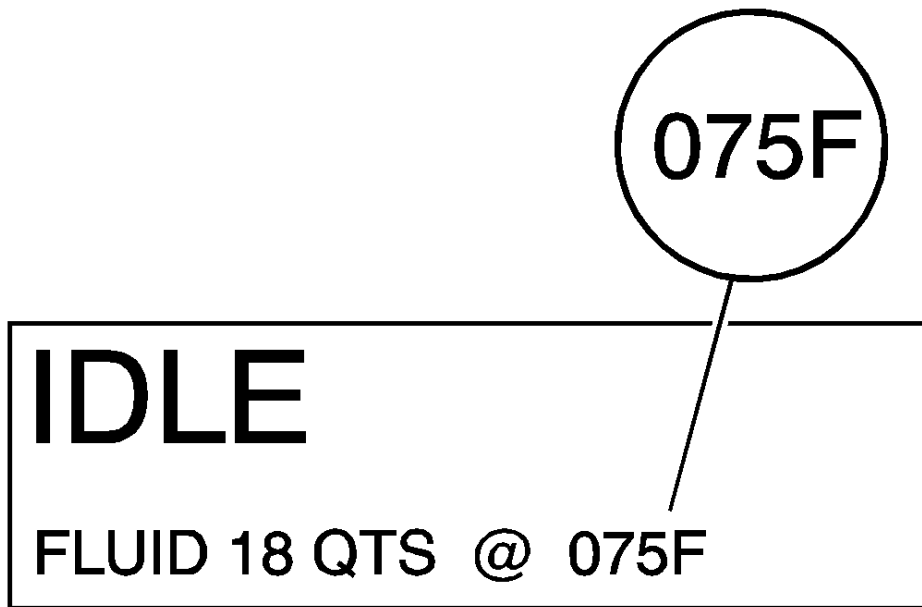


Fig. 6: Identifying Machine Display Of Automatic Transmission Fluid Temperature
Courtesy of GENERAL MOTORS COMPANY

1. From the machine display, identify the temperature of the automatic transmission fluid that is stored in the supply vessel of **DT 45096** flush and flow test tool.

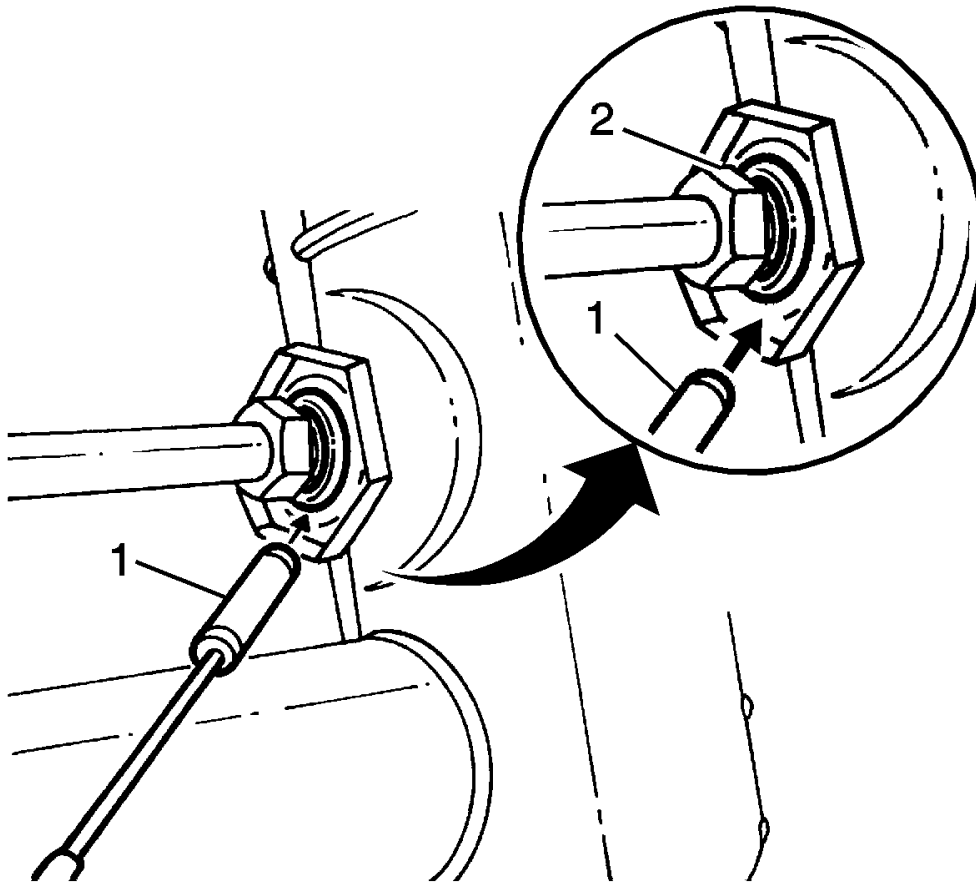


Fig. 7: Identifying Transmission Oil Cooler Metal Composition
Courtesy of GENERAL MOTORS COMPANY

2. Determine whether the transmission oil cooler is steel or aluminum by using a magnet (1) at the cooler flange (2) at the radiator.
3. Refer to the table below. Using the temperature from step 1, locate on either the Steel MINIMUM Flow Rate table or the Aluminum MINIMUM Flow Rate table the minimum flow rate in gallons per minutes (GPM). Record the minimum flow rate in GPMs and the supply fluid temperature for further reference.

Example

- Fluid temperature: 75°F
- Cooler type: Steel

The MINIMUM flow rate for this example would be 0.8 GPM.

4. Inspect transmission oil cooler lines for damage or kinks that could cause restricted oil flow.

Repair as needed and refer to the appropriate GM service manual procedures.

Minimum Flow Rate in Gallons Per Minute (gpm)

Temperature Range	Steel	Aluminum
65 - 66°F	0.6 gpm	0.5 gpm
67 - 70°F	0.7 gpm	0.6 gpm
71 - 75°F	0.8 gpm	0.7 gpm
76 - 80°F	0.9 gpm	0.8 gpm
81 - 84°F	1.0 gpm	0.9 gpm
85 - 89°F	1.1 gpm	1.0 gpm
90 - 94°F	1.2 gpm	1.1 gpm
95 - 98°F	1.3 gpm	1.2 gpm
99 - 103°F	1.4 gpm	1.3 gpm
104 - 108°F	1.5 gpm	1.4 gpm
109 - 112°F	1.6 gpm	1.5 gpm
113 - 117°F	1.7 gpm	1.6 gpm
118 - 120°F	1.8 gpm	1.7 gpm

Back Flush Procedure

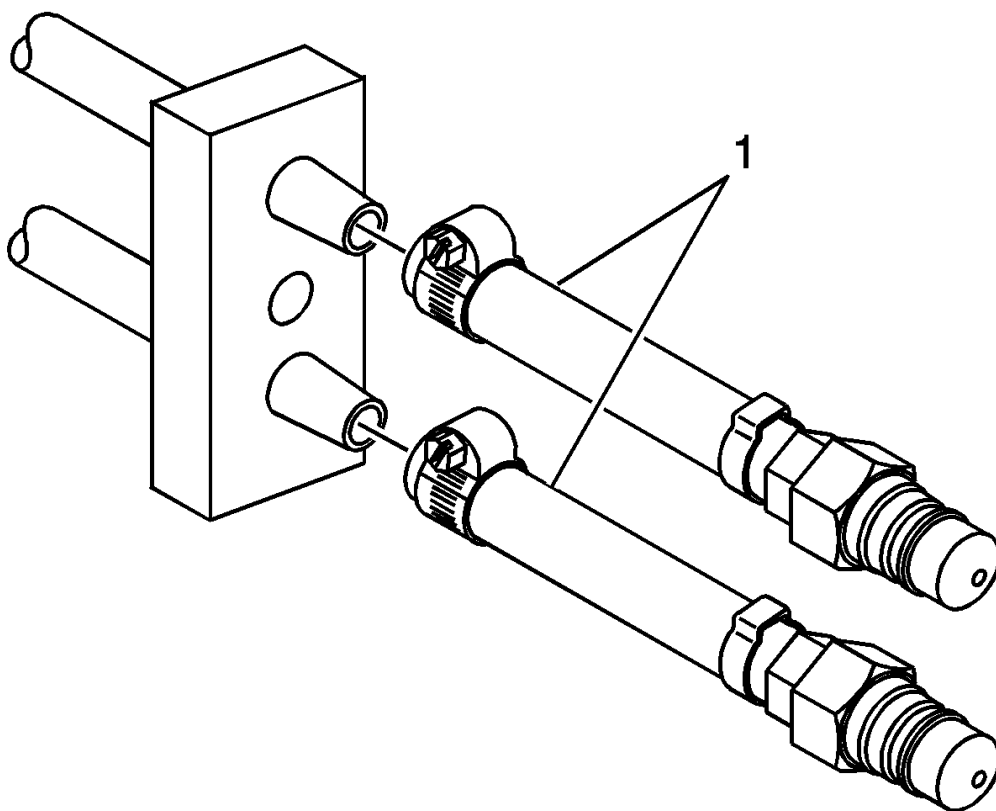


Fig. 8: Identifying J 45096-30

Courtesy of GENERAL MOTORS COMPANY

1. Connect the **DT 45096-30** cooler flush adapter (1) to the vehicle transmission oil cooler supply and return lines at the transmission.

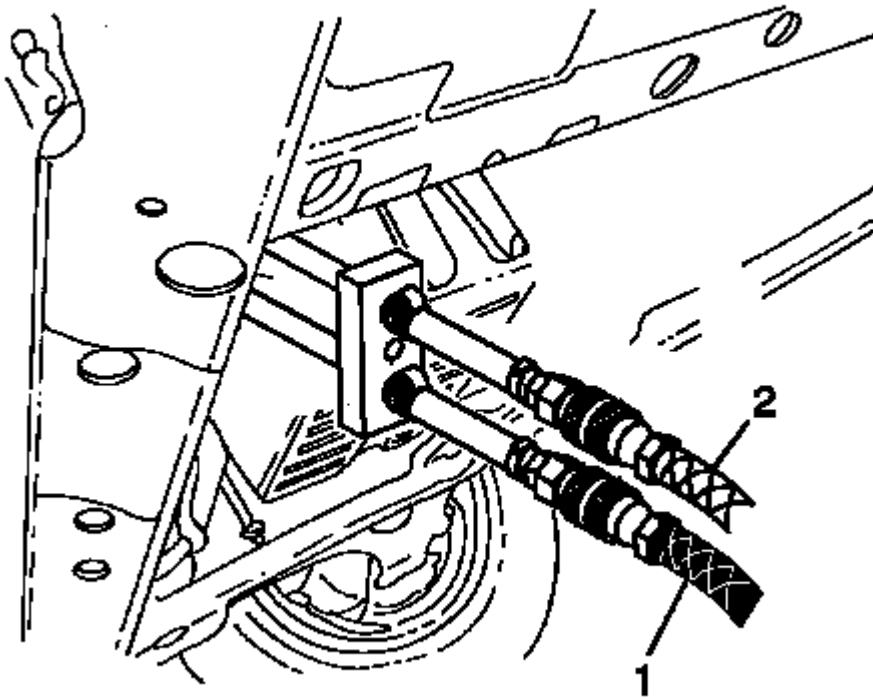


Fig. 9: Identifying Black Supply Hose & Clear Waste Hose
Courtesy of GENERAL MOTORS COMPANY

2. Connect the black supply hose (1) to the return line, bottom connector of the transmission and the clear waste hose (2) to the feed line, top connector of the transmission, to the vehicle cooler lines. This is the reverse flow - backflush direction.

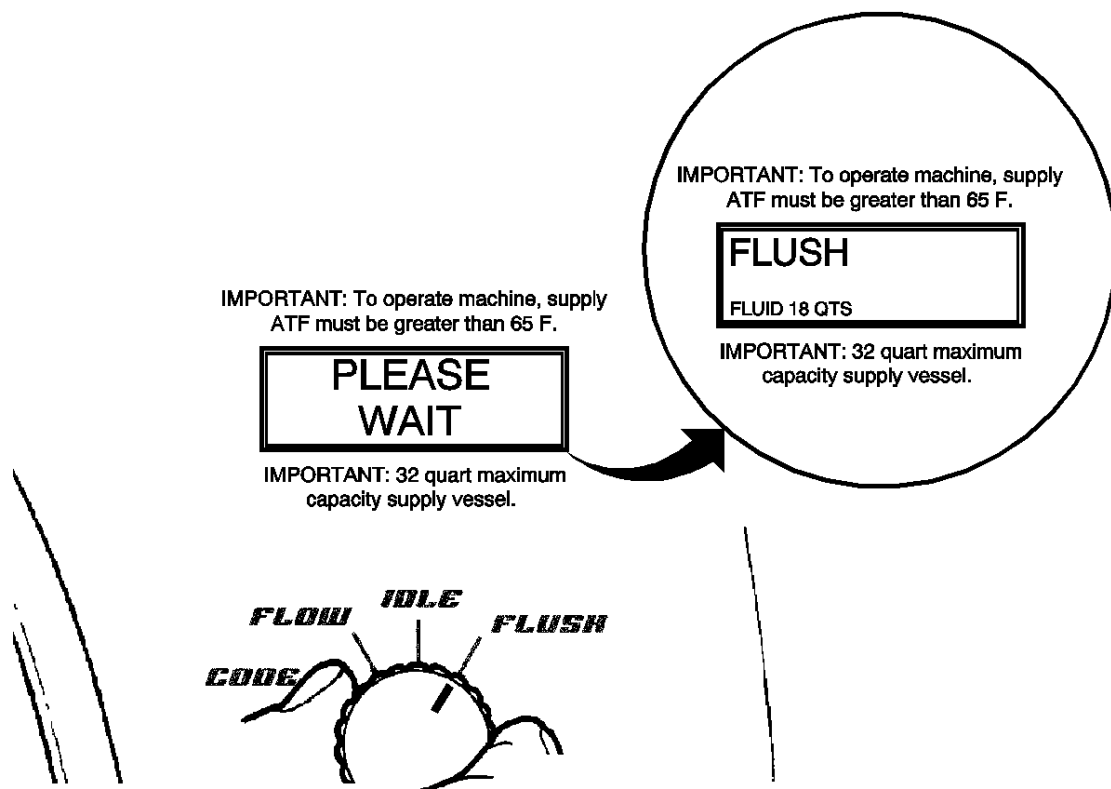


Fig. 10: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

3. Turn the main function switch to the FLUSH position. Allow the machine to operate for 30 seconds.

IMPORTANT: To operate machine, supply
ATF must be greater than 65 F.

IDLE

FLUID 16 QTS @ 075F

IMPORTANT: 32 quart maximum
capacity supply vessel.

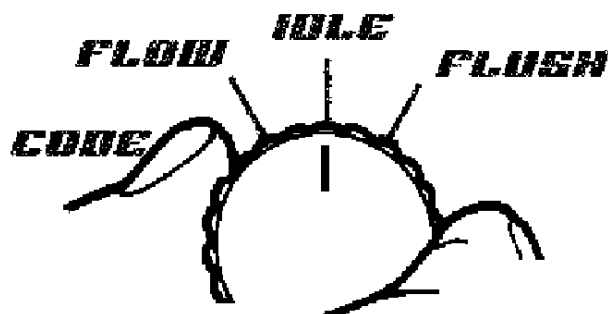


Fig. 11: View Of Main Function Switch IDLE Position
Courtesy of GENERAL MOTORS COMPANY

4. Turn the main function switch to the IDLE position and allow the supply vessel pressure to dissipate.

Forward Flush

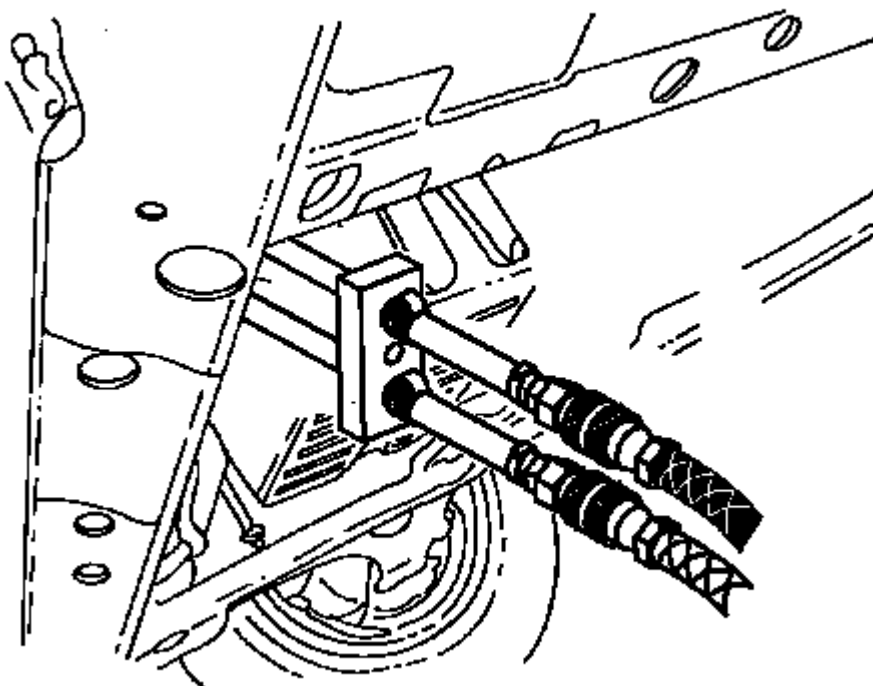


Fig. 12: Identifying Black Supply Hose & Clear Waste Hose
Courtesy of GENERAL MOTORS COMPANY

1. Disconnect the supply and waste hoses from the vehicle cooler lines. Reverse the supply and waste hoses to provide a normal flow direction.

IMPORTANT: To operate machine, supply
ATF must be greater than 65 F.

FLUSH

FLUID 18 QTS

IMPORTANT: 32 quart maximum
capacity supply vessel.

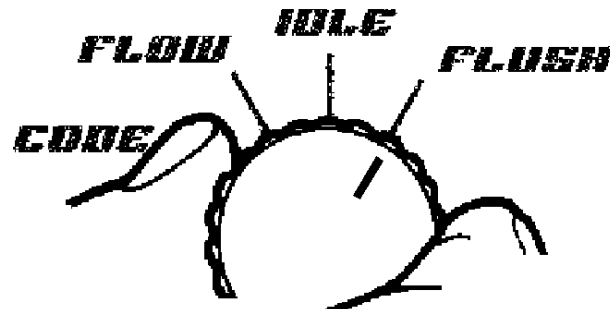


Fig. 13: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

2. Turn the main function switch to the FLUSH position and allow machine to operate for 30 seconds.

Flow Test

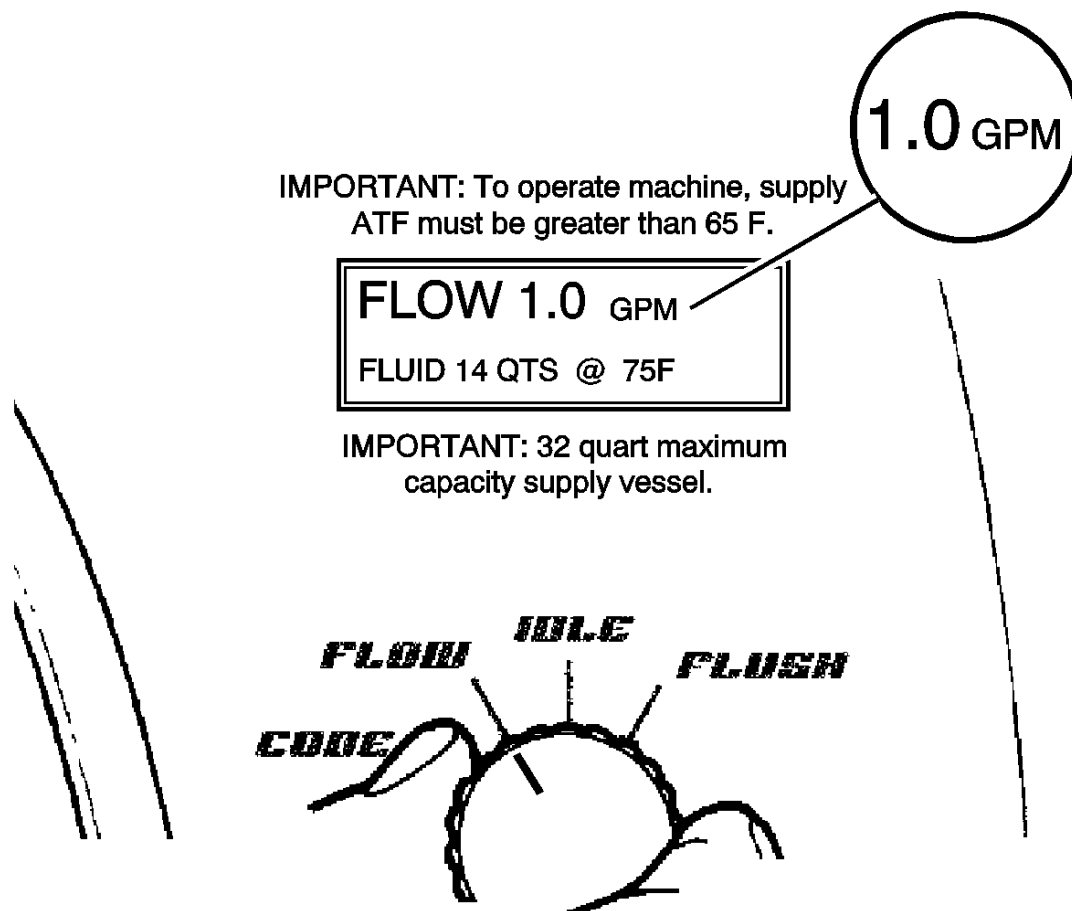


Fig. 14: View Of Main Function Switch FLOW Position
Courtesy of GENERAL MOTORS COMPANY

NOTE: If the flow rate is less than 0.5 gpm, the LCD displays an error message. Refer to the Troubleshooting section of the operation manual.

1. Turn the main function switch to the FLOW position and allow the oil to flow for 15 seconds. Observe and note the flow rate; this is the TESTED flow rate.
2. Compare the TESTED flow rate to the MINIMUM flow rate information previously recorded.
 - If the TESTED flow rate is equal to or greater than the MINIMUM flow rate recorded, the oil cooling system is functioning properly. Perform Code Recording Procedure.
 - If the TESTED flow rate is less than the MINIMUM flow rate previously recorded, repeat the back flush and forward flush procedures.
3. If the TESTED flow rate is less than the MINIMUM flow rate after the second test, perform Code Recording Procedure.

1. Replace the transmission oil cooler.
2. Reconnect supply and waste hoses to the cooler lines in the normal flow direction.
Perform Flow Test.
3. Perform Code Recording Procedure.

Code Recording Procedure

IMPORTANT: To operate machine, supply
ATF must be greater than 65 F.

FLOW 1.0 @ 75F CYCLE 6

A10DFB2

IMPORTANT: 32 quart maximum
capacity supply vessel.

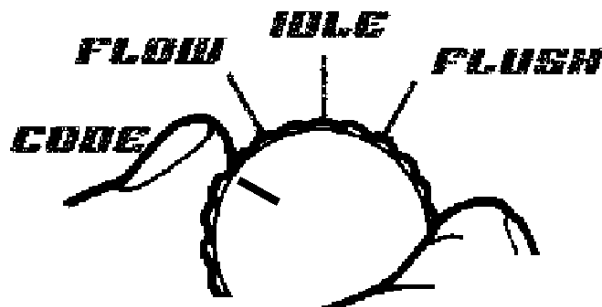


Fig. 15: View Of Main Function Switch CODE Position
Courtesy of GENERAL MOTORS COMPANY

1. Turn the main function switch to the CODE position.

NOTE:

- If power is interrupted prior to the recording of the seven-character code, the code will be lost and the flow rate test will need to be repeated.

- The flow test must run for a minimum of 8-10 seconds and be above 0.5 GPM for a code to be generated.

2. Record TESTED flow rate, temperature, cycle and seven-character flow code information on repair order.

Clean-up

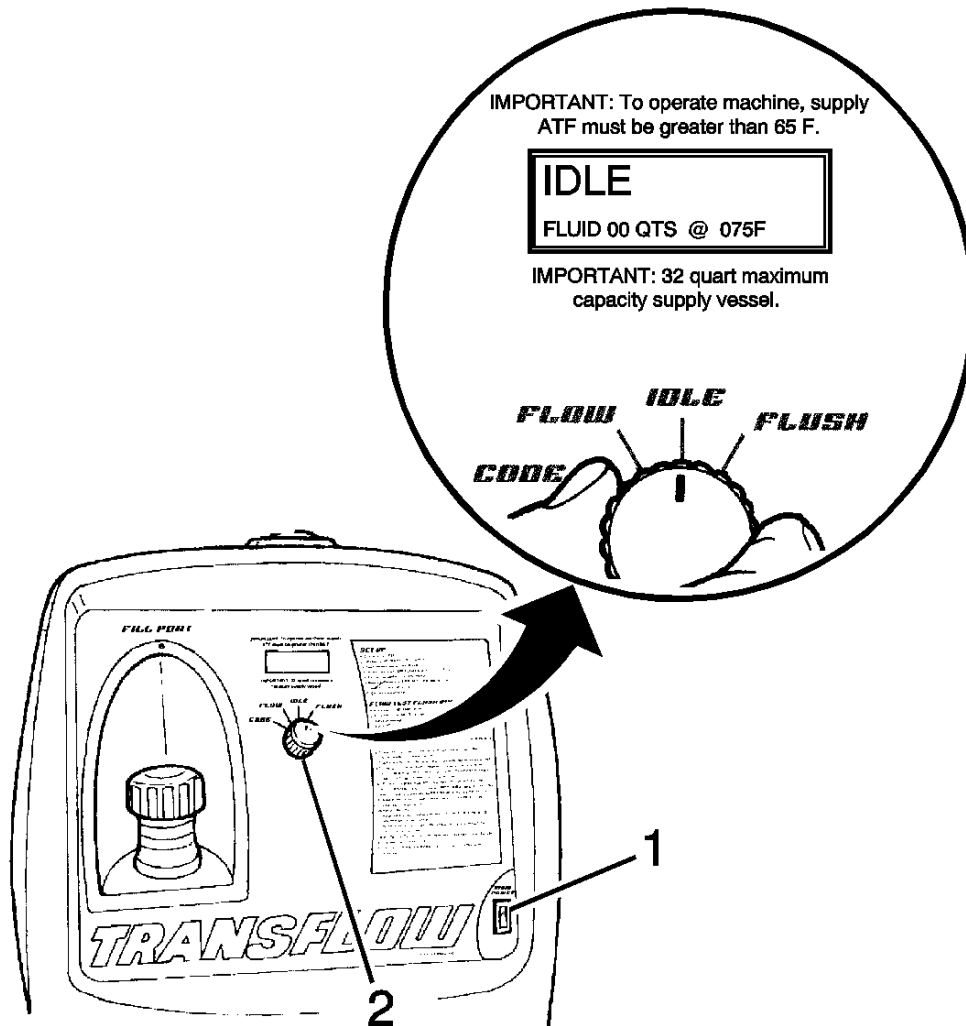


Fig. 16: View Of Main Power Switch & Main Function Switch
Courtesy of GENERAL MOTORS COMPANY

1. Turn the main function switch (2) to the IDLE position and allow the supply vessel pressure to dissipate.
2. Turn the main power switch (1) to the OFF position.

NOTE: A small amount of water may drain from the bottom of the unit when the air supply is disconnected. This is a normal operation of the built-in water separator.

3. Disconnect the supply and waste hoses and the 12-volt power source from the vehicle.

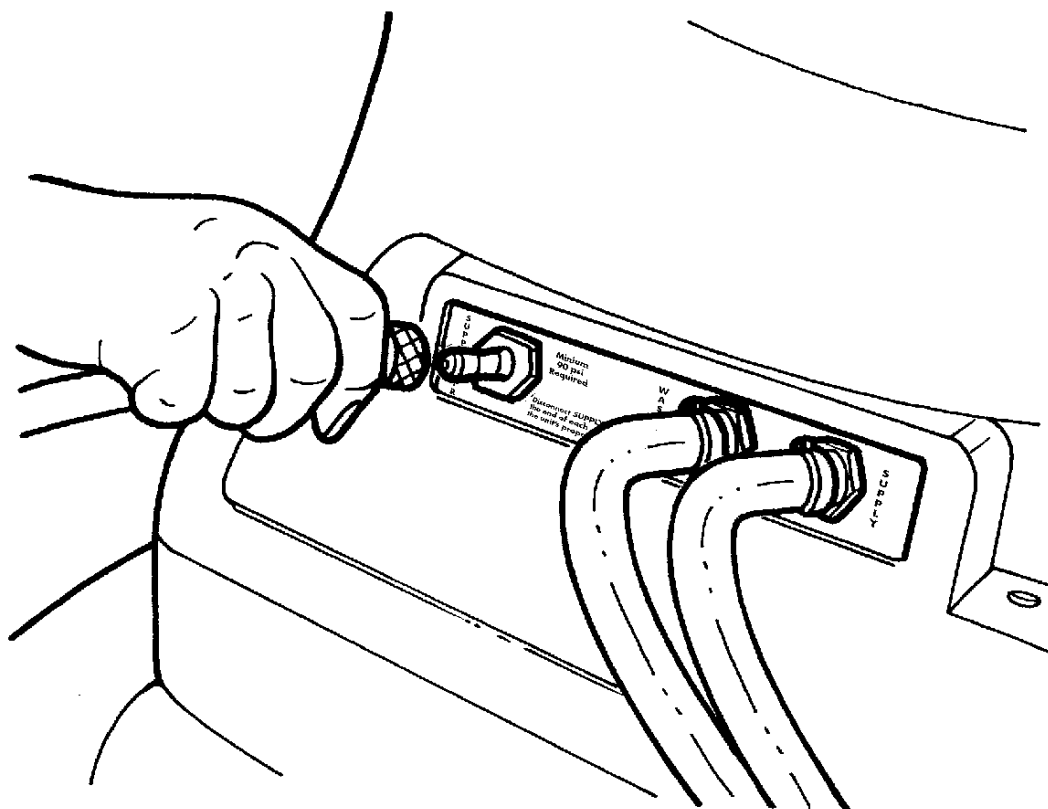


Fig. 17: Applying Shop Air Supply Hose To Quick-Disconnect
Courtesy of GENERAL MOTORS COMPANY

4. Disconnect the air supply hose from **J 45096** flush and flow test tool.
5. Dispose of the waste ATF in accordance with all applicable federal, state and local requirements.

TRANSMISSION FLUID COOLER FLUSHING AND FLOW TEST (TREMEC 7-SPEED)

transmission lubrication and elevated operating temperatures which can lead to premature transmission failure. Many repeat repair cases could have been prevented by following published procedures for transmission oil cooler flushing and flow checking. This procedure includes flow checking and flushing the auxiliary transmission oil cooler, if equipped.

NOTE: **Use the DT 45096 flow test tool or equivalent to flush and flow test the transmission oil cooler and the oil cooler pipes after the transmission is removed for repairs.**

Only GM transmission fluid should be used when doing a repair on a GM transmission. Refer to **Adhesives, Fluids, Lubricants and Sealers** .

Time allowance for performing the cooler flow checking and flushing procedure has been included in the appropriate labor time guide operations since the 1987 model year. The service procedure steps for oil cooler flushing and flow testing are as follows:

Cooler Flow Check and Flushing Steps

1. Machine Set-up
2. Determine Minimum Flow Rate
3. Back Flush
4. Forward Flush
5. Flow Test
6. Code Recording Procedure
7. Clean-up

Special Tools

- **DT 35944-200A** Cooler Flushing Adapter
- **DT 45096** Transmission Oil Cooling System Flush and Flow Test Tool
- **DT 45096-21** Cooler Flushing Adapter
- Shop air supply with water/oil filters, regulator and pressure gauge-minimum 90 psi
- Eye protection
- Rubber gloves

Machine Set-up

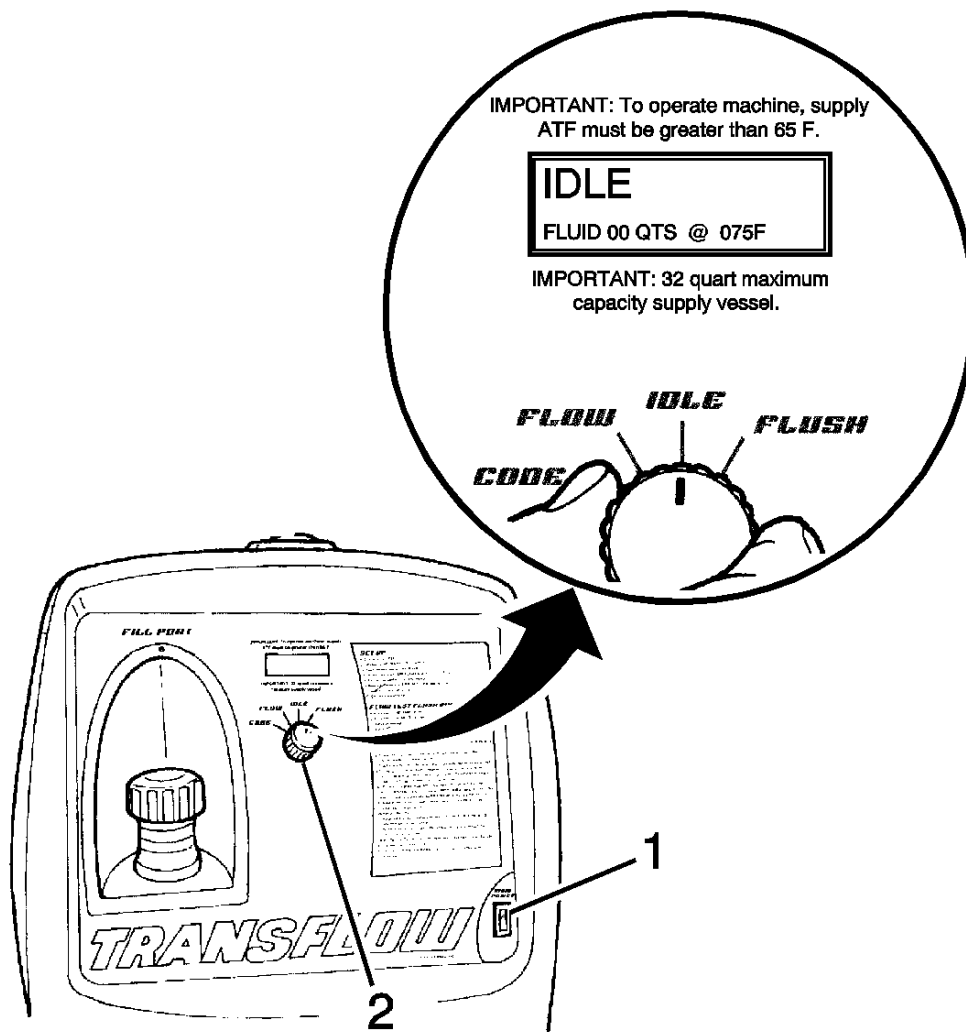


Fig. 18: View Of Main Power Switch & Main Function Switch
Courtesy of GENERAL MOTORS COMPANY

1. Verify that the main power switch (1) is in the OFF position.
2. Place the main function switch (2) in the IDLE position.

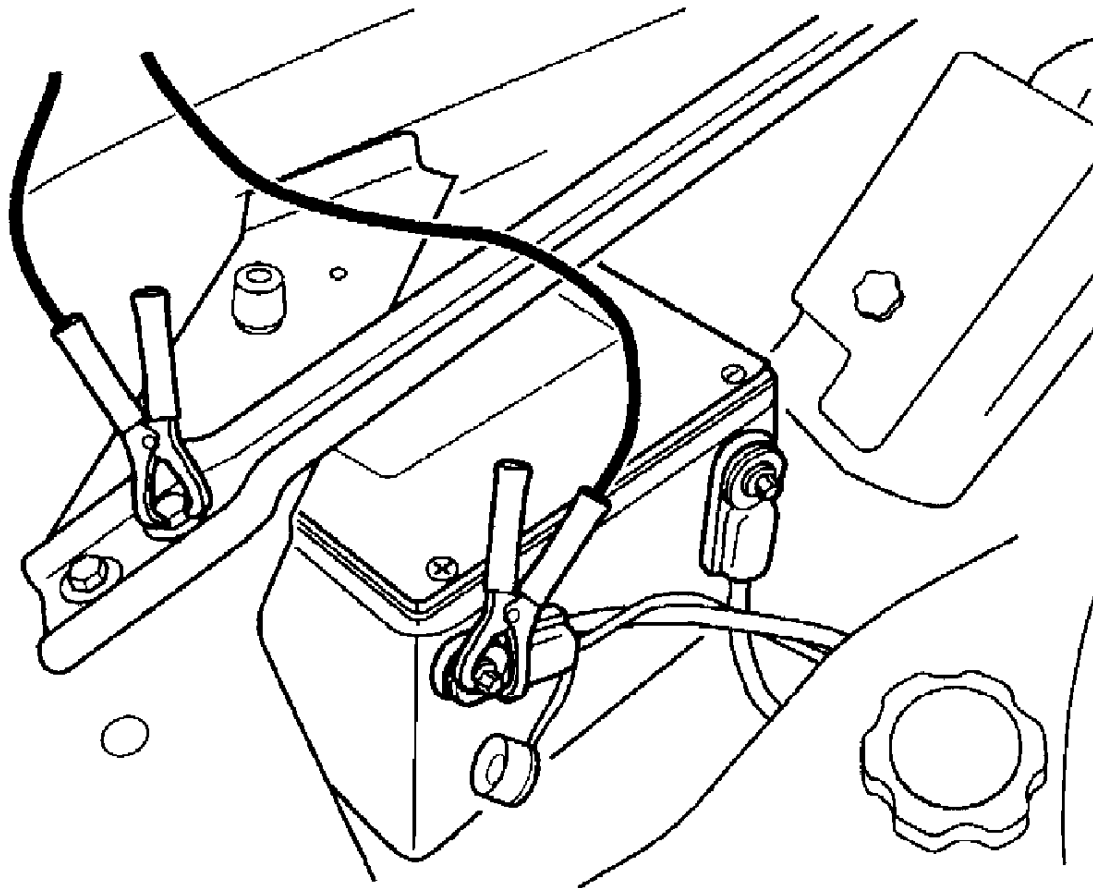


Fig. 19: Connecting To 12V DC Power Source
Courtesy of GENERAL MOTORS COMPANY

3. Connect **DT 45096** flow test tool to the vehicle 12-volt DC power source by connecting the red battery clip to the positive (+) battery post on the vehicle and connect the negative (-) lead to a known good chassis ground.
4. Turn the main power switch to the ON position.

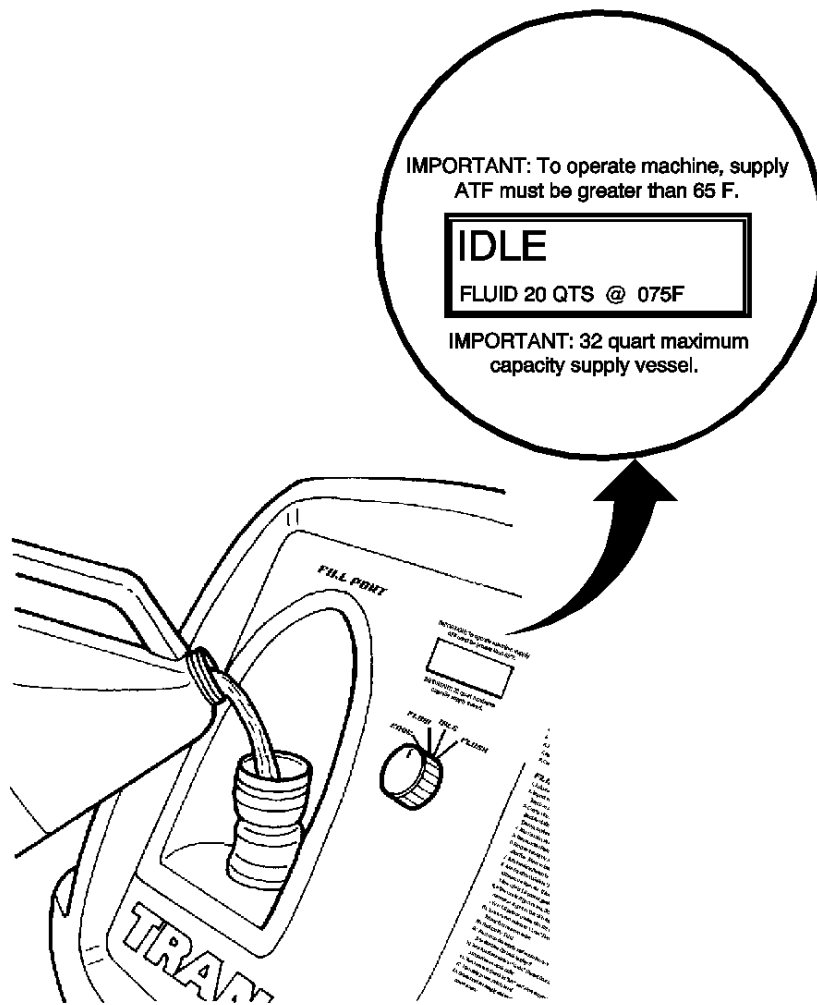


Fig. 20: Filling Supply Tank With Transmission Fluid
 Courtesy of GENERAL MOTORS COMPANY

CAUTION: Do not overfill the supply vessel. Damage to the unit may result. To verify the fluid level, view the LCD screen display while filling the unit, to ensure the fluid level does not exceed 30 L (32 qt).

5. Fill the supply tank with transmission fluid through the fill port. Refer to **Adhesives, Fluids, Lubricants and Sealers** .
6. Install and tighten the fill cap.

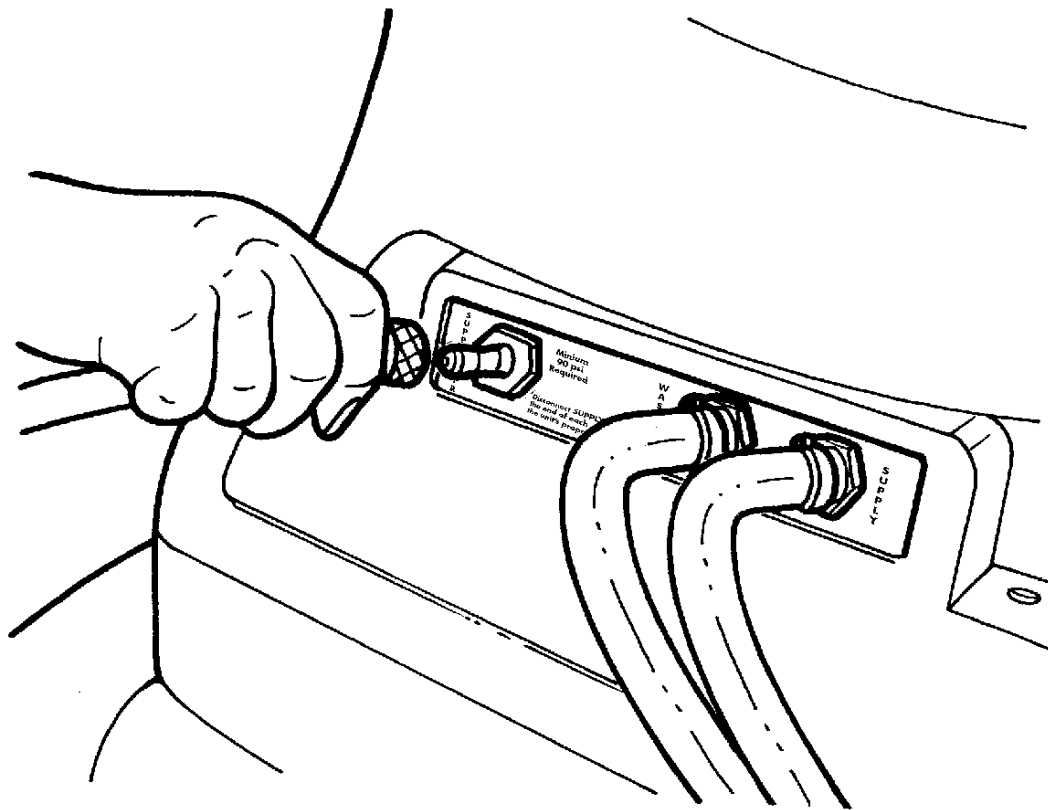


Fig. 21: Applying Shop Air Supply Hose To Quick-Disconnect
Courtesy of GENERAL MOTORS COMPANY

7. Connect a shop air supply hose to the quick-disconnect on the rear panel marked SUPPLY AIR.

Determine Minimum Flow Rate

The minimum flow rate is 0.5 gpm regardless of fluid temperature.

Back Flush Procedure

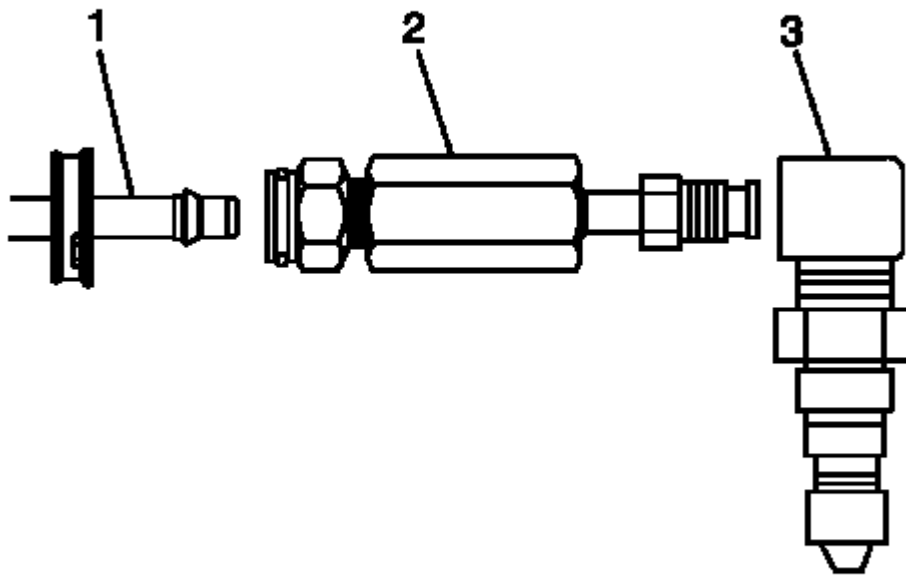


Fig. 22: Adapters to Vehicle Transmission Oil Cooler Supply & Return Lines
Courtesy of GENERAL MOTORS COMPANY

1. Connect the **DT 45096-21** adapter (3) and **DT 35944-200A** adapter (2) to the vehicle transmission oil cooler supply and return lines (1) at the transmission.

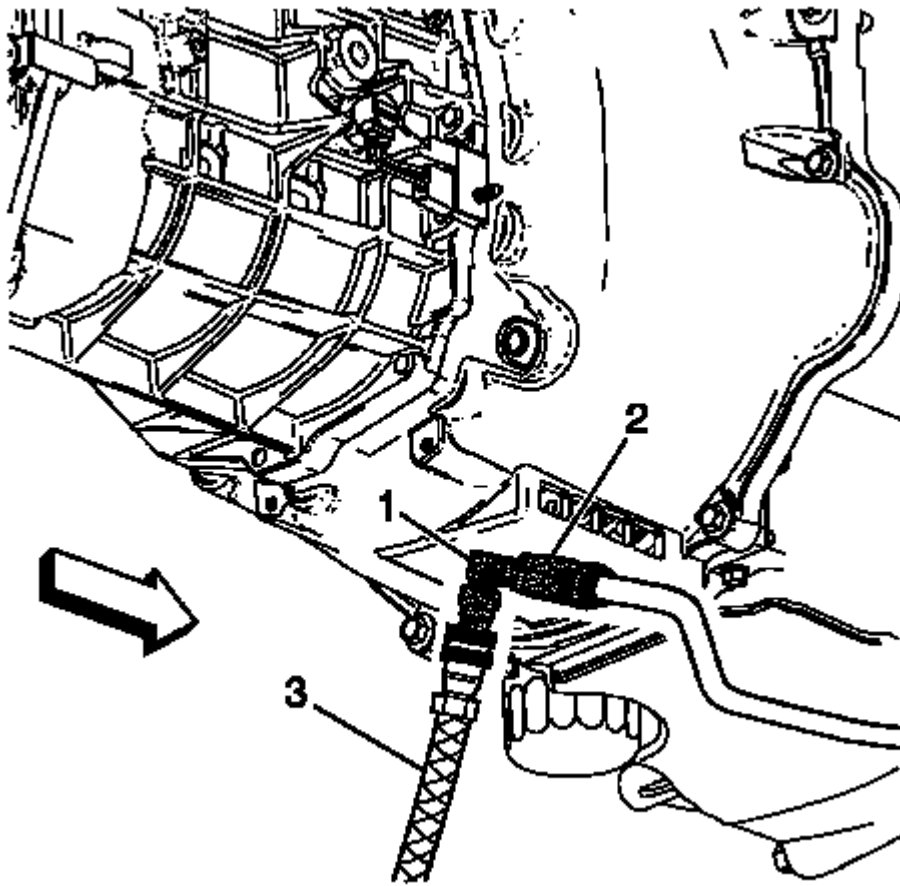


Fig. 23: Adapters, Clear Waste Hose & Feed Line
Courtesy of GENERAL MOTORS COMPANY

2. Connect the clear waste hose (3) to **DT 45096-21** adapter (1) and **DT 35944-200A** adapter (2) connected to the feed line.

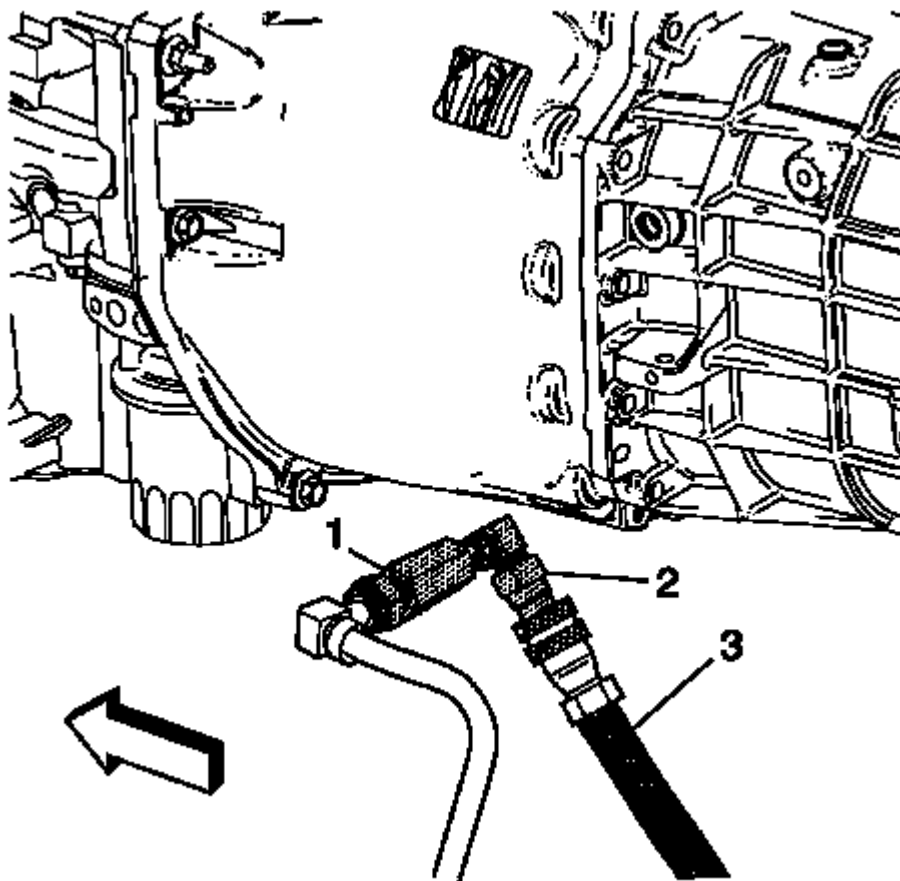


Fig. 24: Adapters, Black Supply Hose & Return Line
Courtesy of GENERAL MOTORS COMPANY

3. Connect the black supply hose (3) to **DT 45096-21** adapter (2) and **DT 35944-200A** adapter (1) connected to the return line. The clear waste hose and black supply hose are now connected in the reverse flow backflush direction.

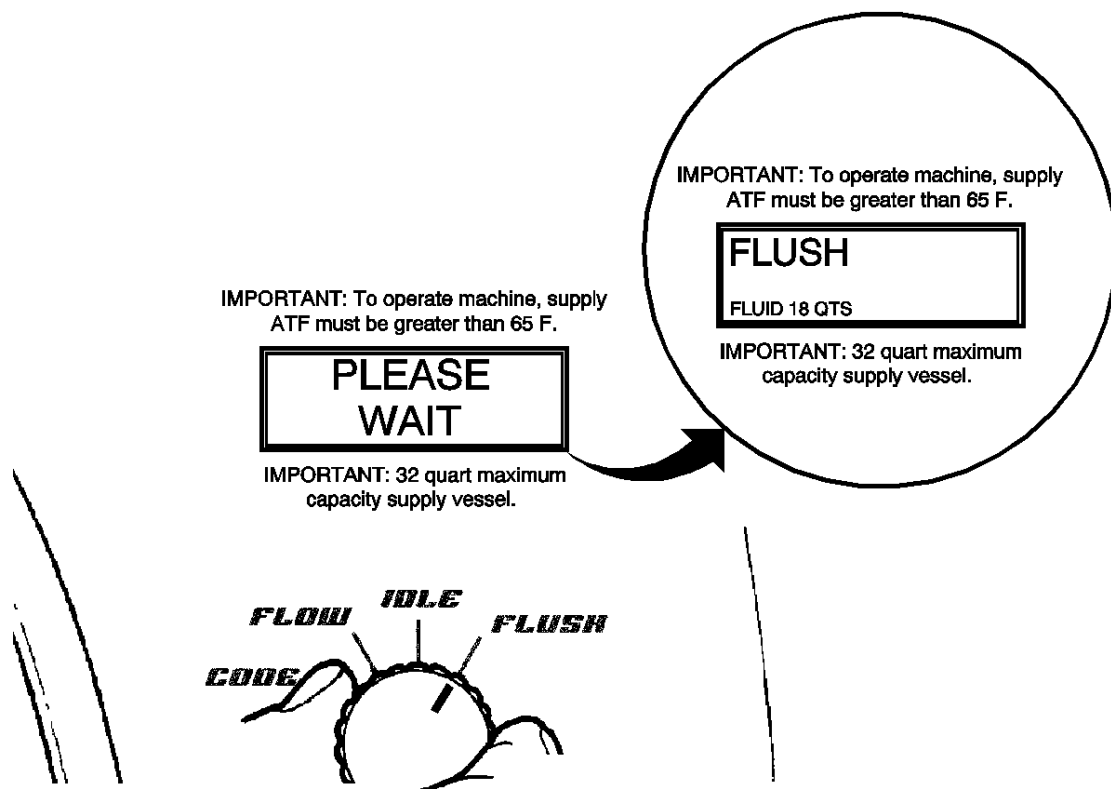


Fig. 25: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

4. Turn the main function switch to the FLUSH position. Allow the machine to operate for 30 seconds.

IMPORTANT: To operate machine, supply
ATF must be greater than 65 F.

IDLE

FLUID 16 QTS @ 075F

IMPORTANT: 32 quart maximum
capacity supply vessel.

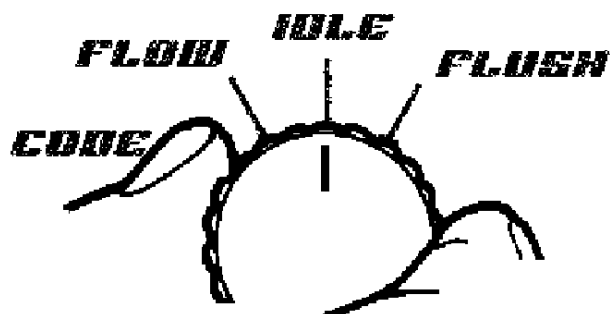


Fig. 26: View Of Main Function Switch IDLE Position
Courtesy of GENERAL MOTORS COMPANY

5. Turn the main function switch to the IDLE position and allow the supply vessel pressure to dissipate.

Forward Flush

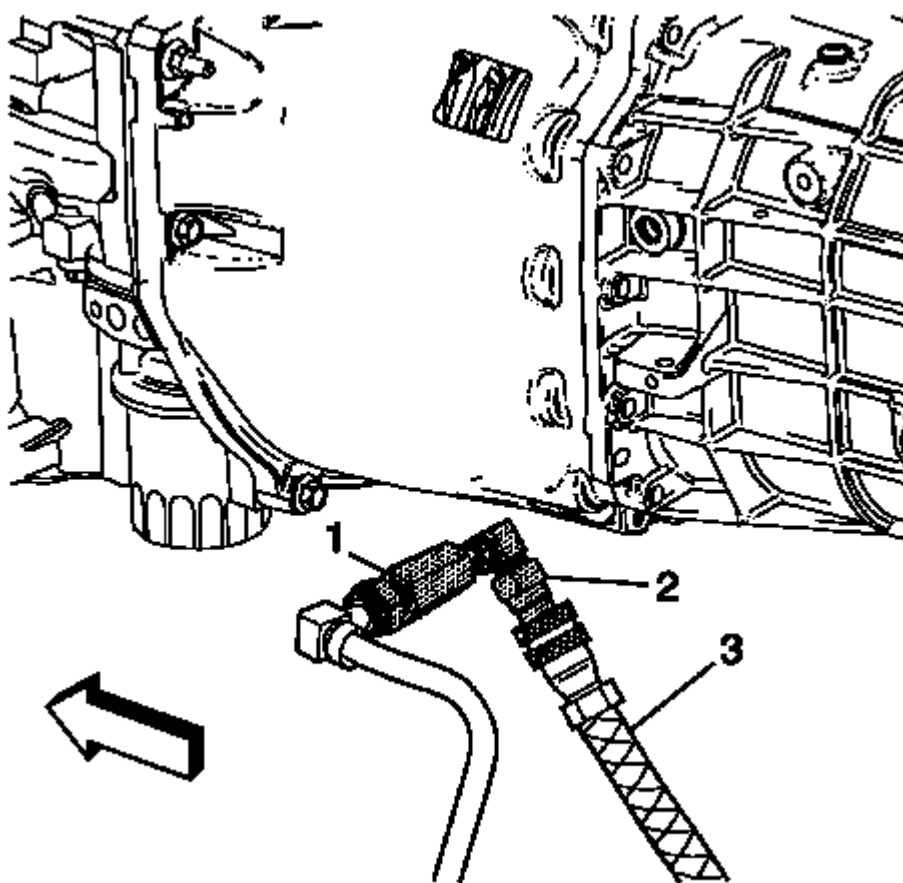


Fig. 27: Reversing Clear Waste Hose Connection
Courtesy of GENERAL MOTORS COMPANY

1. Disconnect the clear waste hose from the **DT 45096-21** adapter at the feed line.
2. Disconnect the black supply hose from the **DT 45096-21** adapter at the return line.
3. Reverse the supply and waste hoses to provide a normal flow direction. Connect the clear waste hose (3) to **DT 45096-21** adapter (2) and **DT 35944-200A** adapter (1) connected to the return line.

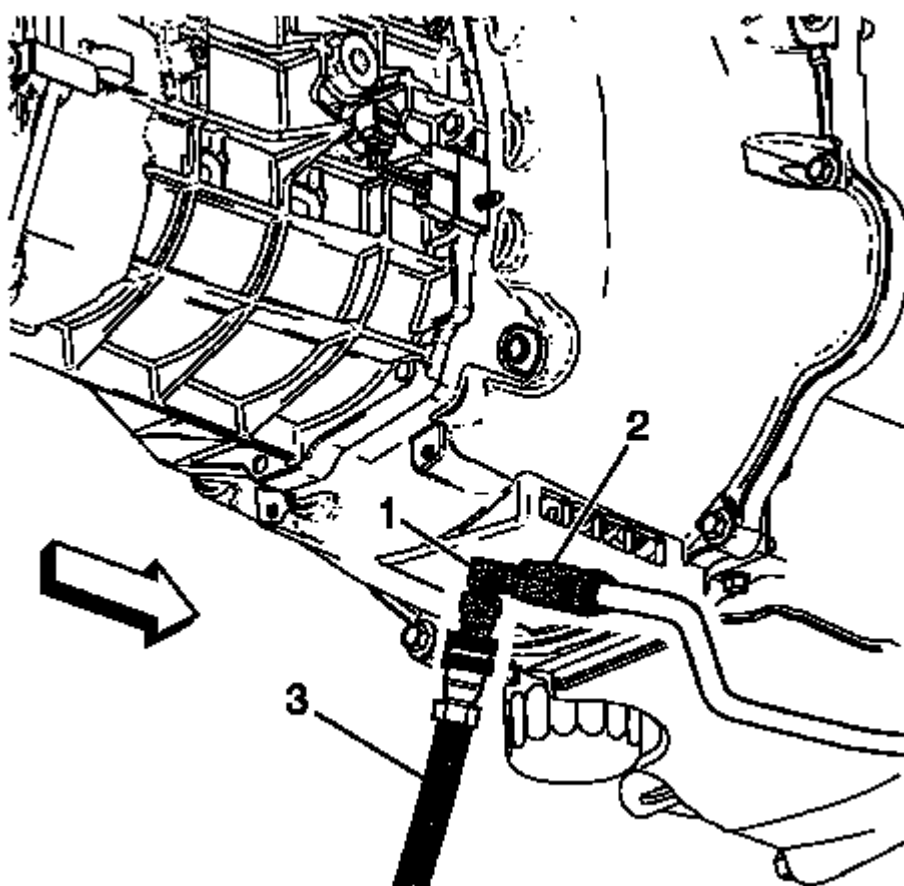


Fig. 28: Reversing Black Supply Hose Connection
Courtesy of GENERAL MOTORS COMPANY

4. Connect the black supply hose (3) to **DT 45096-21** adapter (1) and **DT 35944-200A** adapter (2) connected to the feed line. The clear waste hose and black supply hose are now connected in the normal flow direction.

IMPORTANT: To operate machine, supply
ATF must be greater than 65 F.

FLUSH

FLUID 18 QTS

IMPORTANT: 32 quart maximum
capacity supply vessel.

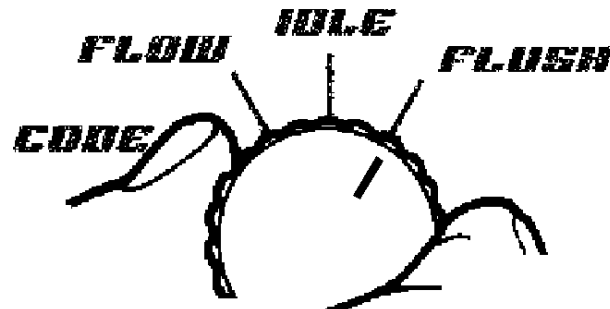


Fig. 29: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

5. Turn the main function switch to the FLUSH position and allow the machine to operate for 30 seconds.

Flow Test

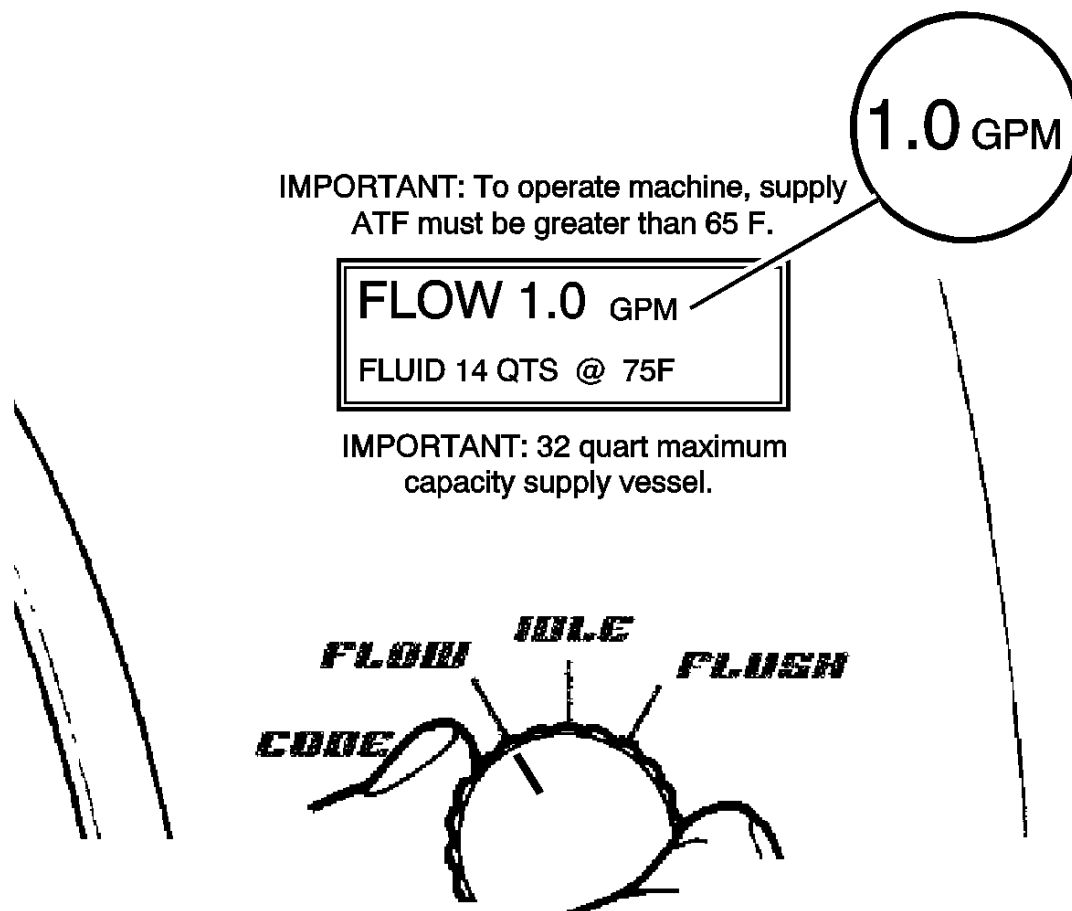


Fig. 30: View Of Main Function Switch FLOW Position
Courtesy of GENERAL MOTORS COMPANY

NOTE: If the flow rate is less than 0.5 gpm, the LCD displays an error message. Refer to the Troubleshooting section of the operation manual.

1. Turn the main function switch to the FLOW position and allow the oil to flow for 15 seconds. Observe and note the flow rate. This is the TESTED flow rate.
2. Compare the TESTED flow rate to the MINIMUM flow rate of 0.5 gpm.
 - If the TESTED flow rate is equal to or greater than the MINIMUM flow rate, the oil cooling system is functioning properly. Perform Code Recording Procedure.
 - If the TESTED flow rate is less than the MINIMUM flow rate, repeat the back flush and forward flush procedures.
3. If the TESTED flow rate is less than the MINIMUM flow rate after the second test, perform the Code Recording Procedure.

1. Replace the transmission oil cooler.
2. Connect the supply and waste hoses to the cooler lines in the normal flow direction.
Perform the Flow Test.
3. Perform the Code Recording Procedure.

Code Recording Procedure

IMPORTANT: To operate machine, supply
ATF must be greater than 65 F.

FLOW 1.0 @ 75F CYCLE 6

A10DFB2

IMPORTANT: 32 quart maximum
capacity supply vessel.

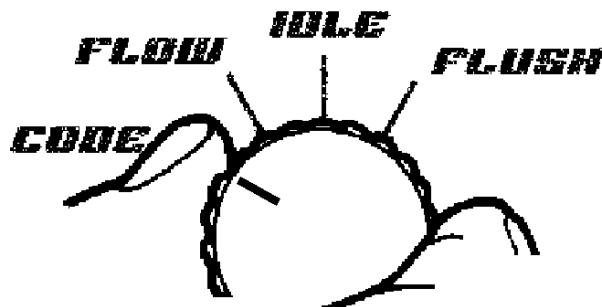


Fig. 31: View Of Main Function Switch CODE Position
Courtesy of GENERAL MOTORS COMPANY

1. Turn the main function switch to the CODE position.

NOTE:

- If power is interrupted prior to the recording of the 7-character code, the code will be lost and the flow rate test will need to be repeated.
- The flow test must run for a minimum of 8-10 seconds and be above

0.5 gpm for a code to be generated.

2. Record TESTED flow rate, temperature, cycle and seven-character flow code information on the repair order.

Clean-Up

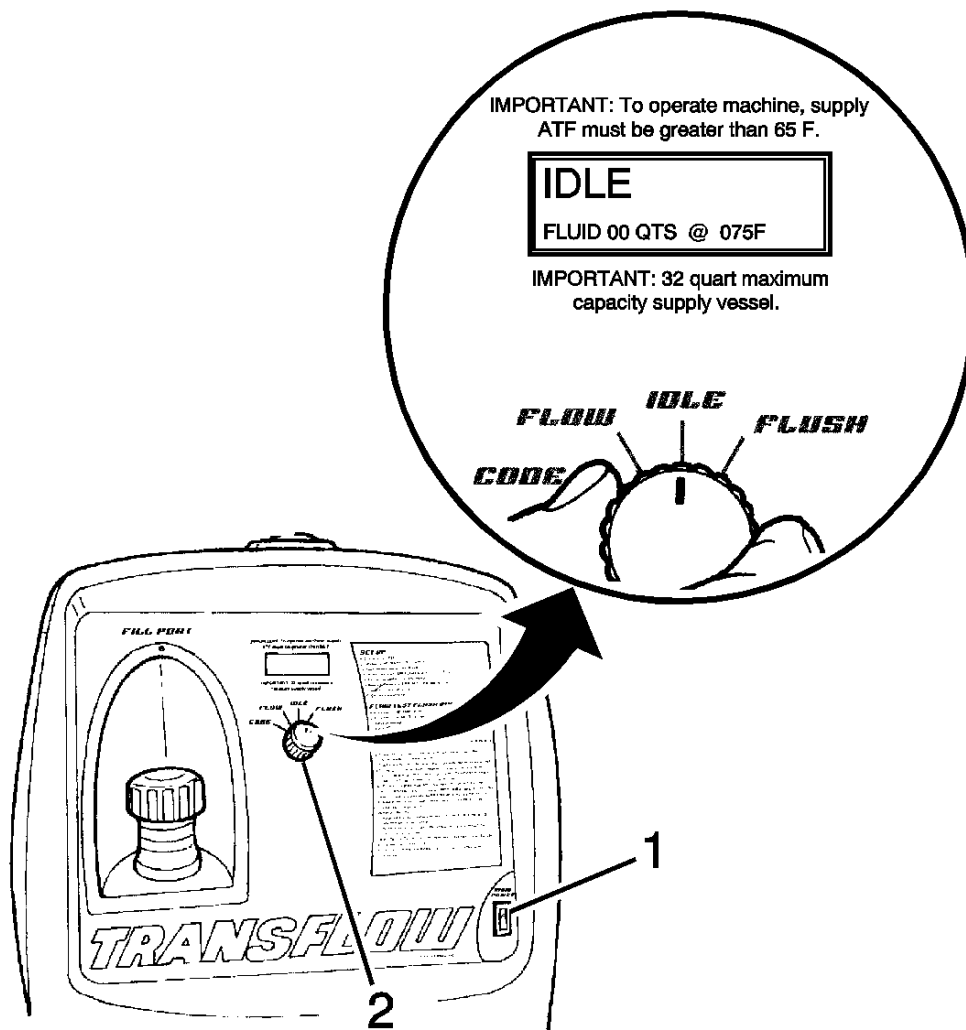


Fig. 32: View Of Main Power Switch & Main Function Switch
Courtesy of GENERAL MOTORS COMPANY

1. Turn the main function switch (2) to the IDLE position and allow the supply vessel pressure to dissipate.
2. Turn the main power switch (1) to the OFF position.

NOTE: A small amount of water may drain from the bottom of the unit when the

air supply is disconnected. This is a normal operation of the built-in water separator.

3. Disconnect the supply and waste hoses and the 12-volt power source from the vehicle.

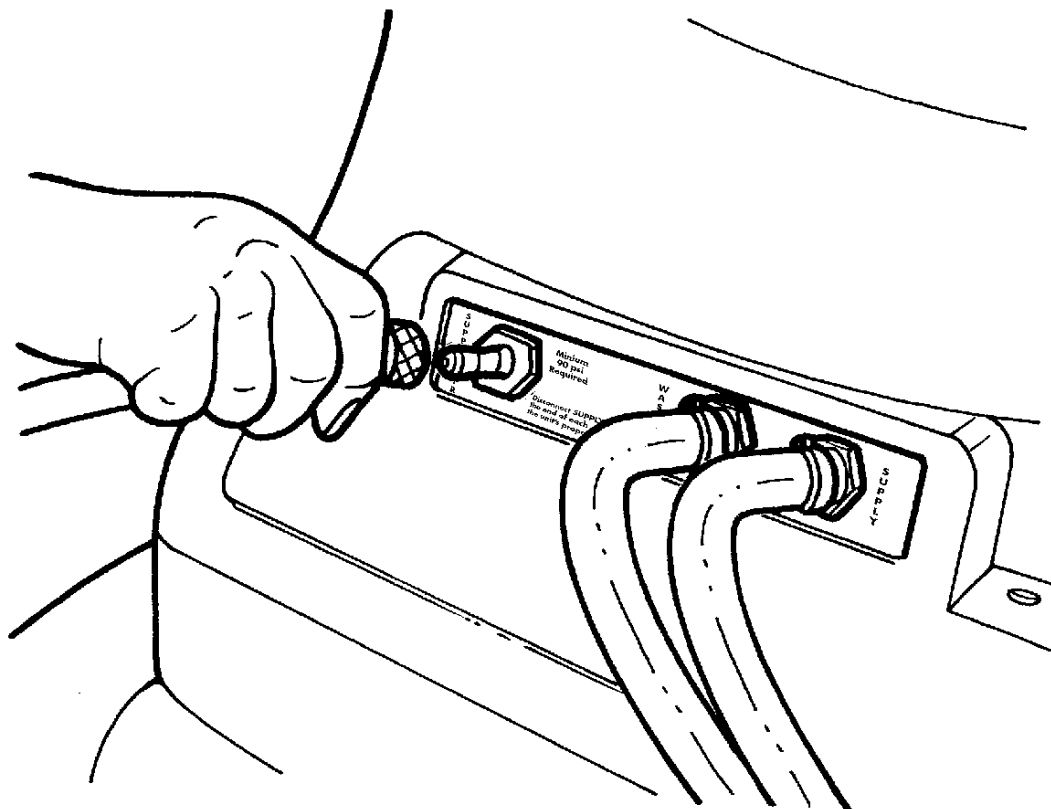


Fig. 33: Applying Shop Air Supply Hose To Quick-Disconnect
Courtesy of GENERAL MOTORS COMPANY

4. Disconnect the air supply hose from **DT 45096** flow test tool.
5. Dispose of the waste oil in accordance with all applicable federal, state and local requirements.

REPAIR INSTRUCTIONS

AUXILIARY FAN CONTROL MODULE REPLACEMENT (MYC)

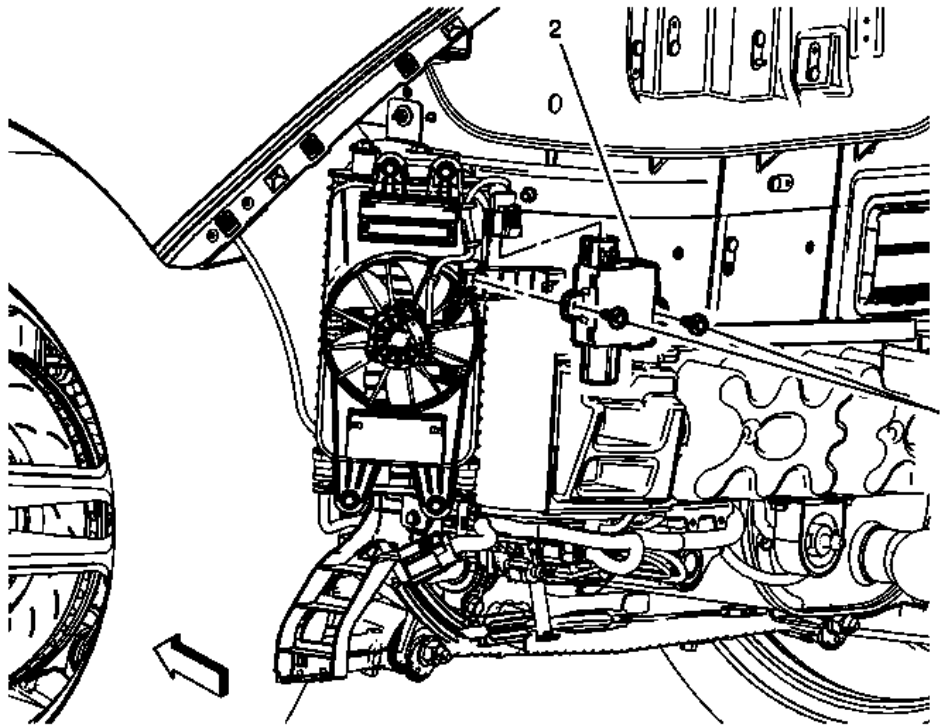


Fig. 34: Auxiliary Fan Control Module (MYC)
Courtesy of GENERAL MOTORS COMPANY

Auxiliary Fan Control Module Replacement (MYC)

Callout	Component Name
Preliminary Procedures	
1. Remove the rear bumper fascia. Refer to <u>Rear Bumper Fascia Replacement</u> . 2. Disconnect the electrical connectors from the fan control module.	
1	Fan Control Module Bolt (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 7 (62 lb in)
2	Fan Control Module

AUXILIARY FAN CONTROL MODULE REPLACEMENT (MEL, MEP)

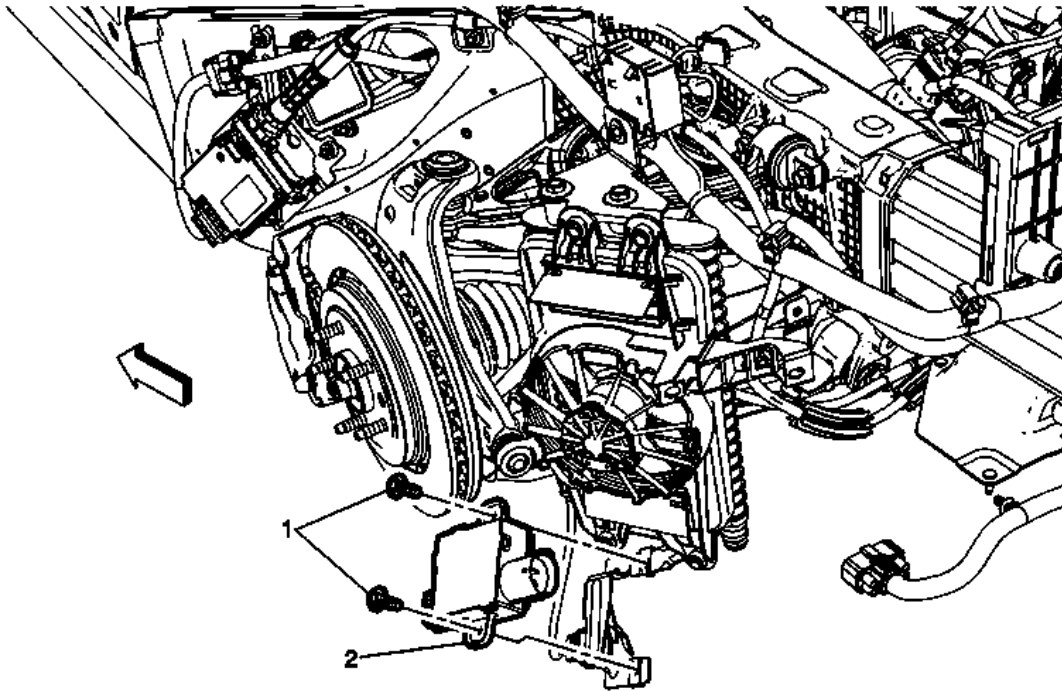


Fig. 35: Auxiliary Fan Control Module (MEL, MEP)
Courtesy of GENERAL MOTORS COMPANY

Auxiliary Fan Control Module Replacement (MEL, MEP)

Callout	Component Name
Preliminary Procedures	
1. Remove the rear bumper fascia. Refer to <u>Rear Bumper Fascia Replacement</u> . 2. Disconnect the electrical connectors from the fan control module.	
1	Fan Control Module Bolt (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 7 (62 lb in)
2	Fan Control Module

TRANSMISSION FLUID COOLER PIPE SEAL REPLACEMENT

Special Tools

- **DT-45201** Cooler Line Seal Remover

- **DT-47770** Seal Installer

For equivalent regional tools, refer to **Special Tools** .

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Remove the left catalytic converter. Refer to **Catalytic Converter Replacement - Left Side** .

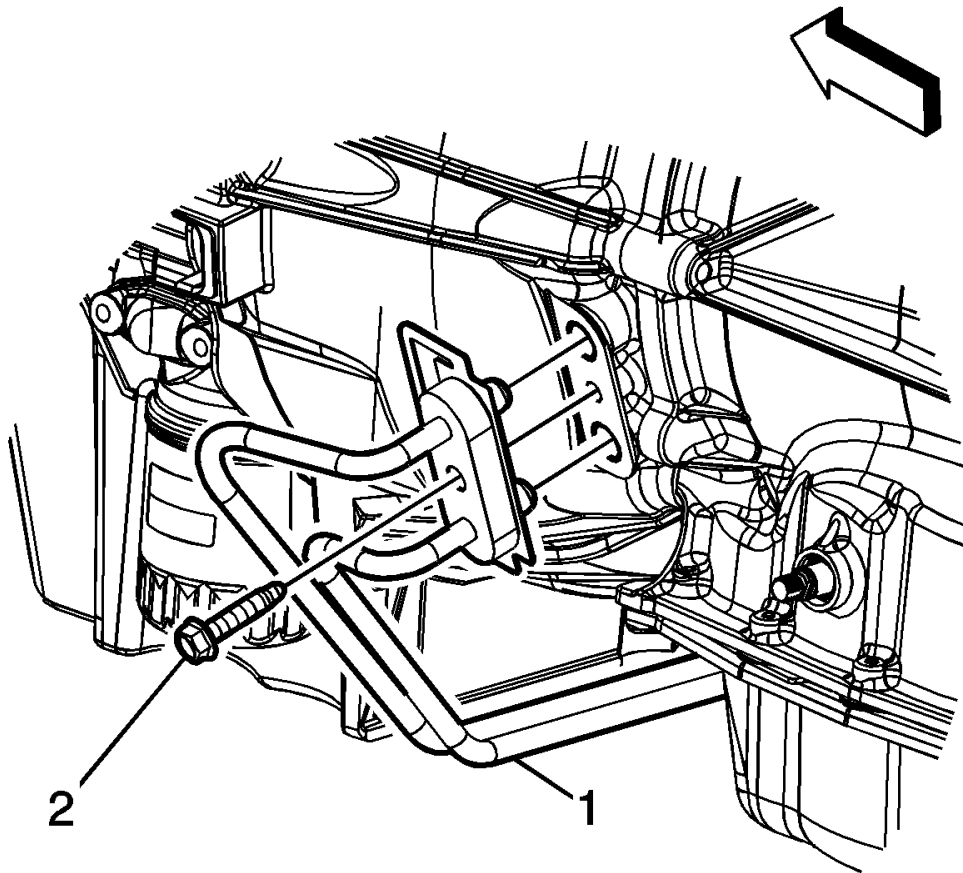


Fig. 36: View Of Oil Cooling Lines & Bolt
Courtesy of GENERAL MOTORS COMPANY

3. Remove the transmission fluid cooler pipe bolt (2) from the transmission.
4. Remove the transmission fluid cooler pipes from the transmission.

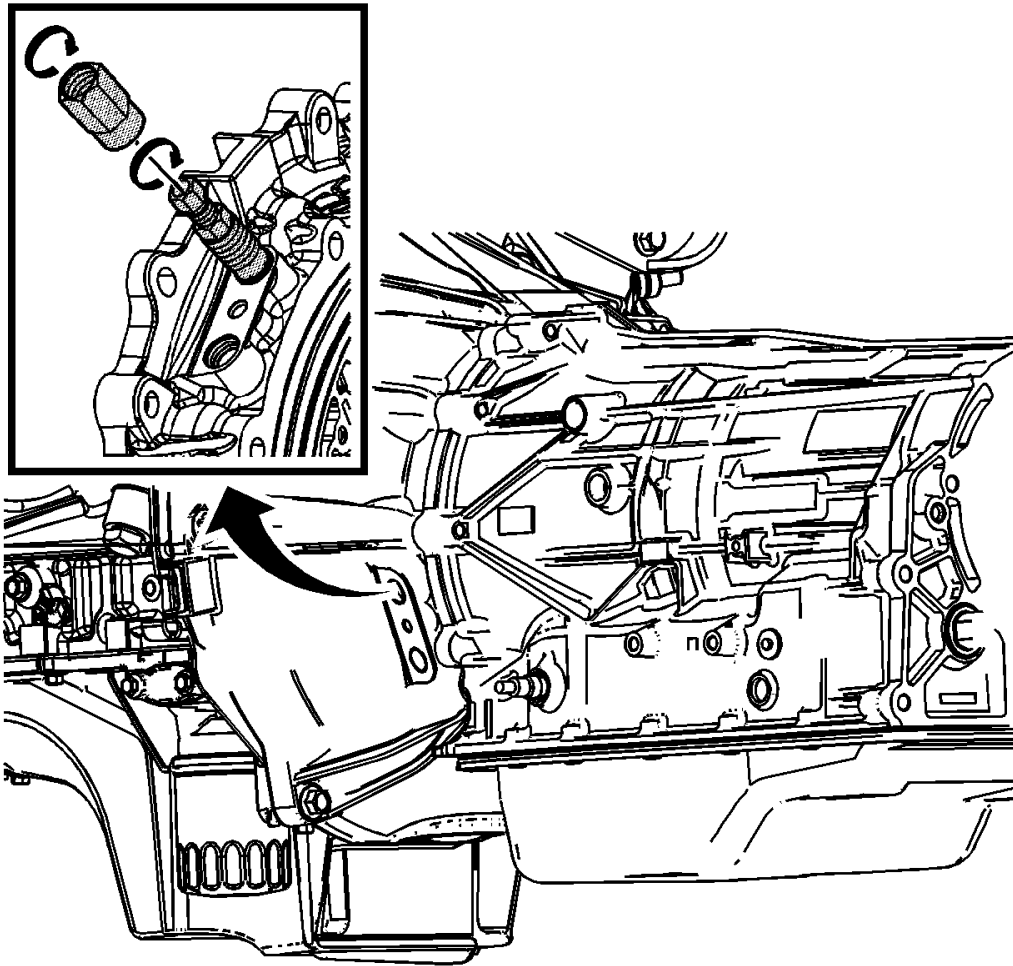


Fig. 37: Transmission Fluid Cooler Pipe Seals
Courtesy of GENERAL MOTORS COMPANY

5. Using **DT-45201** remover, remove the transmission fluid cooler pipe seals from the transmission.

Installation Procedure

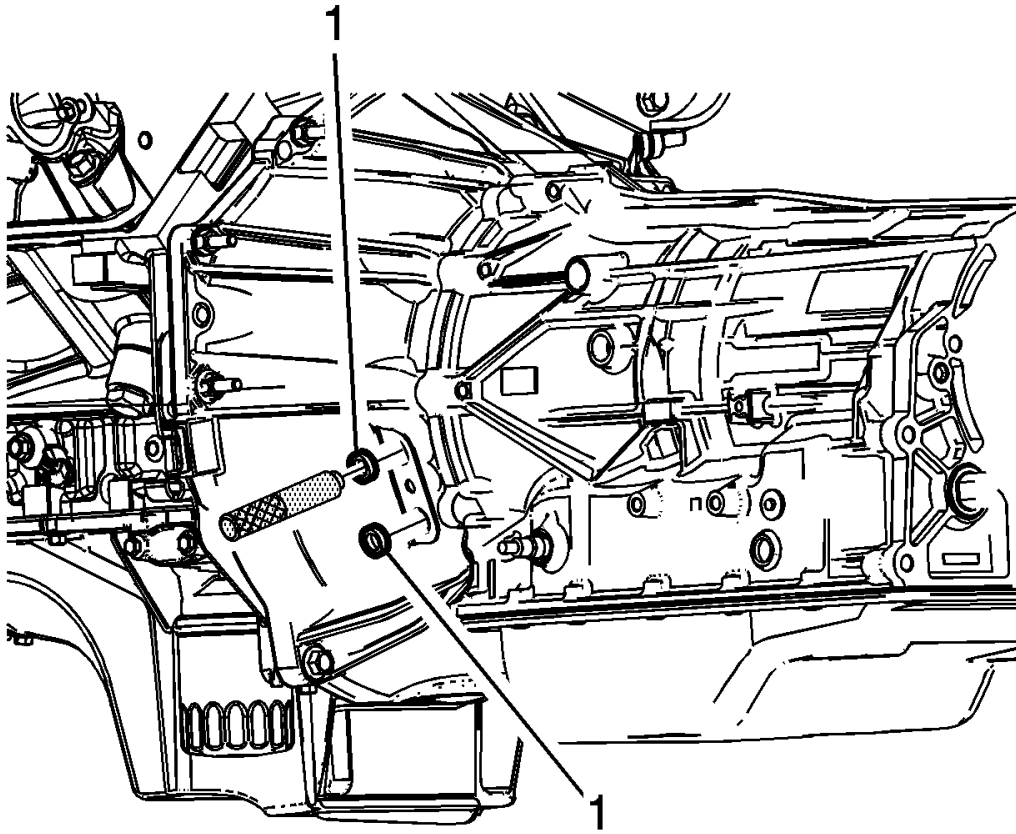


Fig. 38: Transmission Fluid Cooler Pipe Seals
Courtesy of GENERAL MOTORS COMPANY

1. Using **DT-47770** installer, install the transmission fluid cooler pipe seals (1) in the transmission.

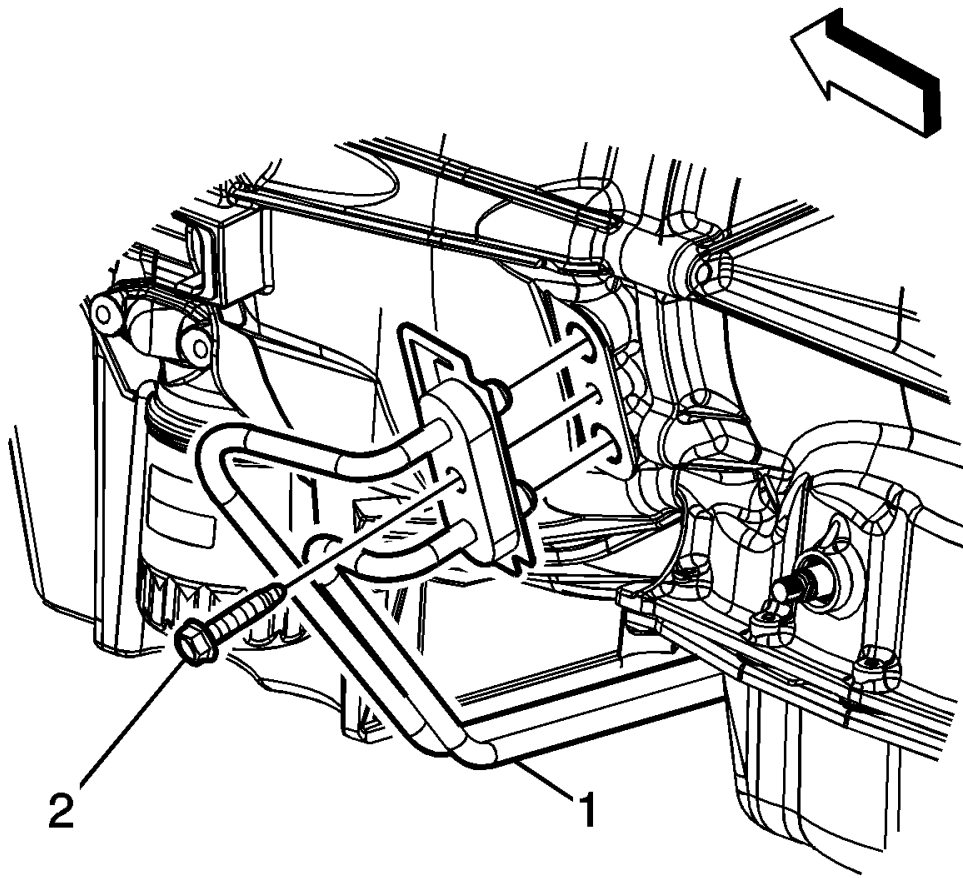


Fig. 39: View Of Oil Cooling Lines & Bolt
Courtesy of GENERAL MOTORS COMPANY

2. Install transmission fluid cooler pipes (1) the to the transmission.

CAUTION: Refer to Fastener Caution .

3. Install the transmission fluid cooler pipe bolt (2) to the transmission and tighten to 22 (16 lb ft).
4. Install the left catalytic converter. Refer to **Catalytic Converter Replacement - Left Side** .
5. Lower the vehicle.
6. Check the transmission fluid level.

TRANSMISSION FLUID AUXILIARY COOLER REPLACEMENT (MYC)

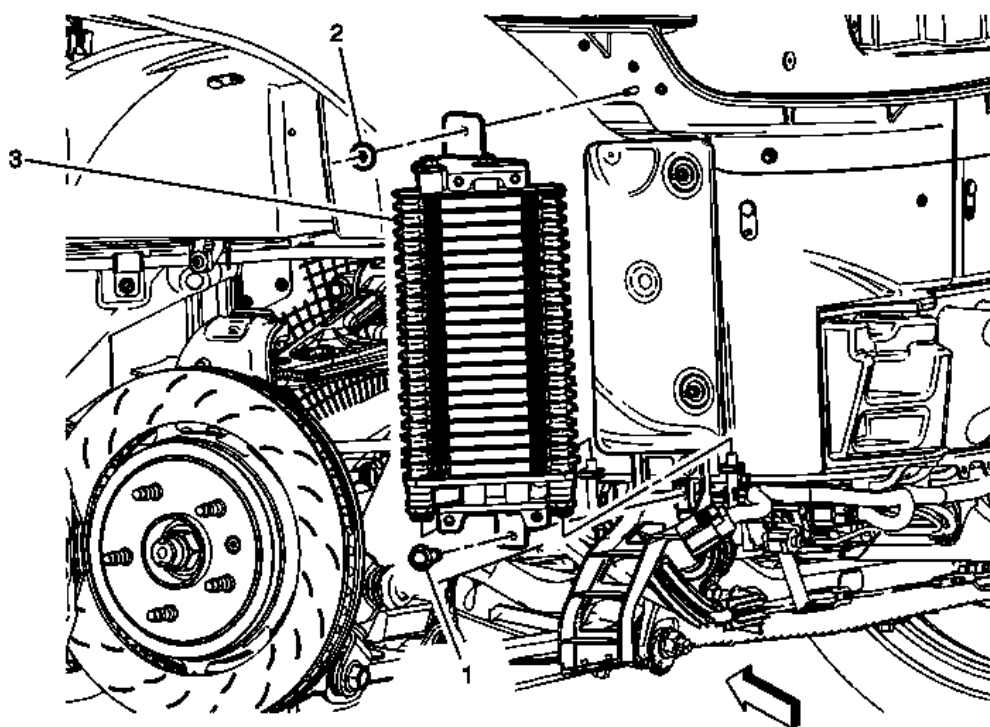


Fig. 40: Transmission Fluid Auxiliary Cooler (MYC)
Courtesy of GENERAL MOTORS COMPANY

Transmission Fluid Auxiliary Cooler Replacement (MYC)

Callout	Component Name
Preliminary Procedures	
1. Remove the transmission fluid auxiliary cooler fan. Refer to <u>Transmission Fluid Auxiliary Cooler Fan Replacement (MYC)</u>. 2. Remove the transmission fluid cooler inlet and outlet pipe. Refer to <u>Transmission Fluid Cooler Inlet and Outlet Pipe Replacement (MYC)</u>.	
1	Transmission Fluid Auxiliary Cooler Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 (80 lb in)
2	Transmission Fluid Auxiliary Cooler Nut Tighten 9 (80 lb in)

Procedures	
3	1. Fill the transmission to the proper fluid level. Refer to <u>Transmission Fluid Fill Procedure</u> . 2. Inspect for fluid leaks.

TRANSMISSION FLUID AUXILIARY COOLER REPLACEMENT (MEL, MEP)

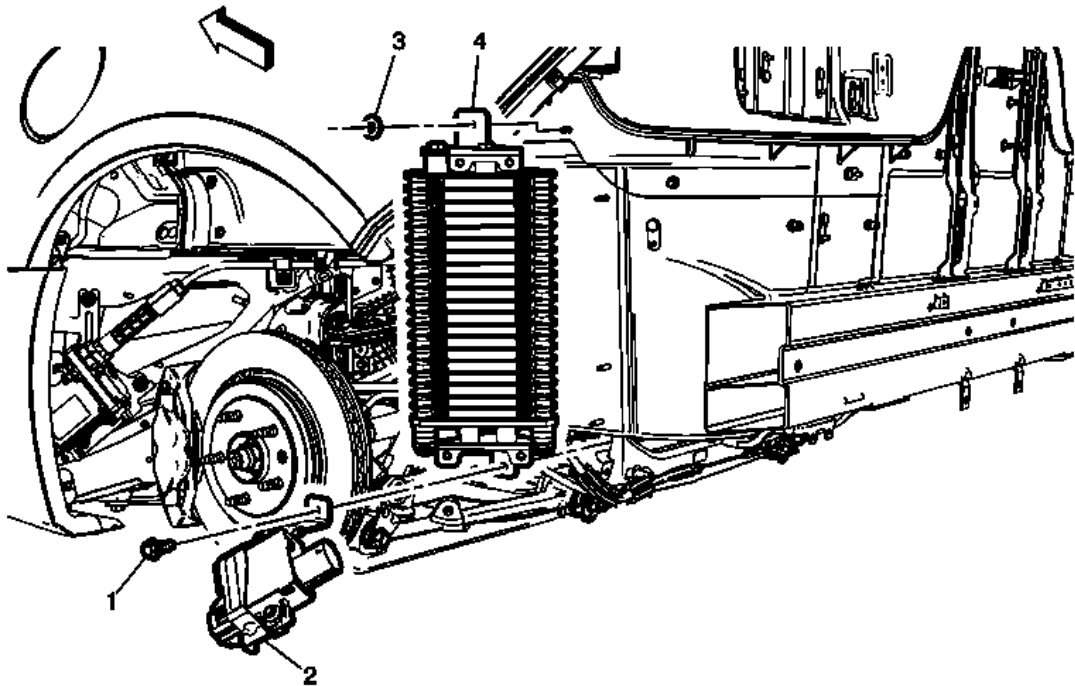


Fig. 41: Transmission Fluid Auxiliary Cooler (MEL, MEP)
Courtesy of GENERAL MOTORS COMPANY

Transmission Fluid Auxiliary Cooler Replacement (MEL, MEP)

Callout	Component Name
Preliminary Procedures	
1. Remove the transmission fluid auxiliary cooler fan. Refer to <u>Transmission Fluid Auxiliary Cooler Fan Replacement (MEL, MEP)</u>. 2. Remove the transmission fluid cooler inlet and outlet pipe. Refer to <u>Transmission Fluid Cooler Inlet and Outlet Pipe Replacement (MEL, MEP)</u>.	
1	Transmission Fluid Auxiliary Cooler Bolt CAUTION:

	Tighten 9 (80 lb in)
2	Fan Control Module and Bracket
3	Transmission Fluid Auxiliary Cooler Nut Tighten 9 (80 lb in)
4	Transmission Fluid Auxiliary Cooler Procedures 1. Fill the transmission to the proper fluid level. Refer to <u>Transmission Fluid Fill Procedure</u> . 2. Inspect for fluid leaks.

TRANSMISSION FLUID AUXILIARY COOLER REPLACEMENT (MEP CONVERTIBLE)

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Remove the left exhaust muffler. Refer to **Exhaust Muffler Replacement - Left Side** .
3. Install a drain pan under the transmission fluid auxiliary cooler.

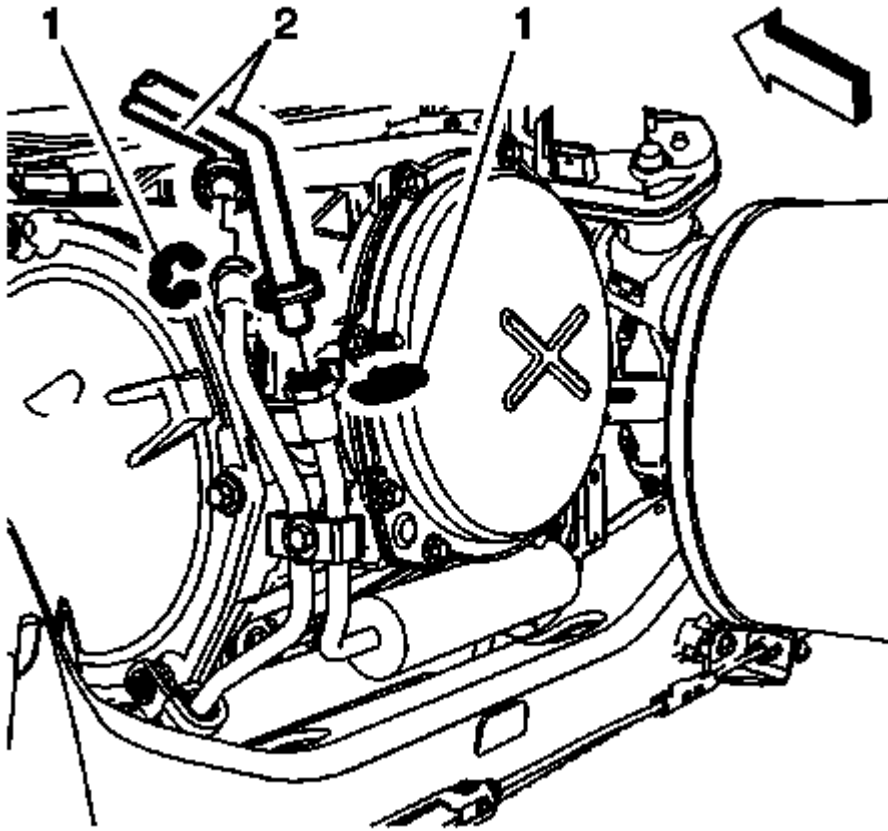


Fig. 42: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

4. Remove the transmission fluid cooler inlet and outlet pipe retaining clips (1) from the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection.**
5. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission fluid auxiliary cooler.

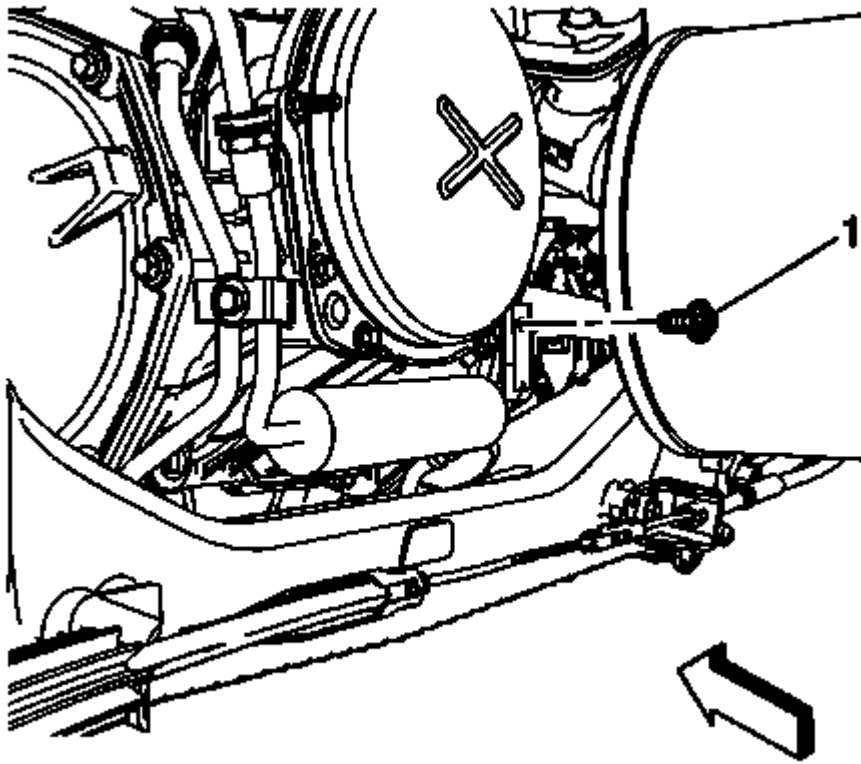


Fig. 43: Transmission Fluid Auxiliary Cooler Bolt
Courtesy of GENERAL MOTORS COMPANY

6. Remove the transmission fluid auxiliary cooler bolt (1) from the transmission fluid auxiliary cooler bracket.

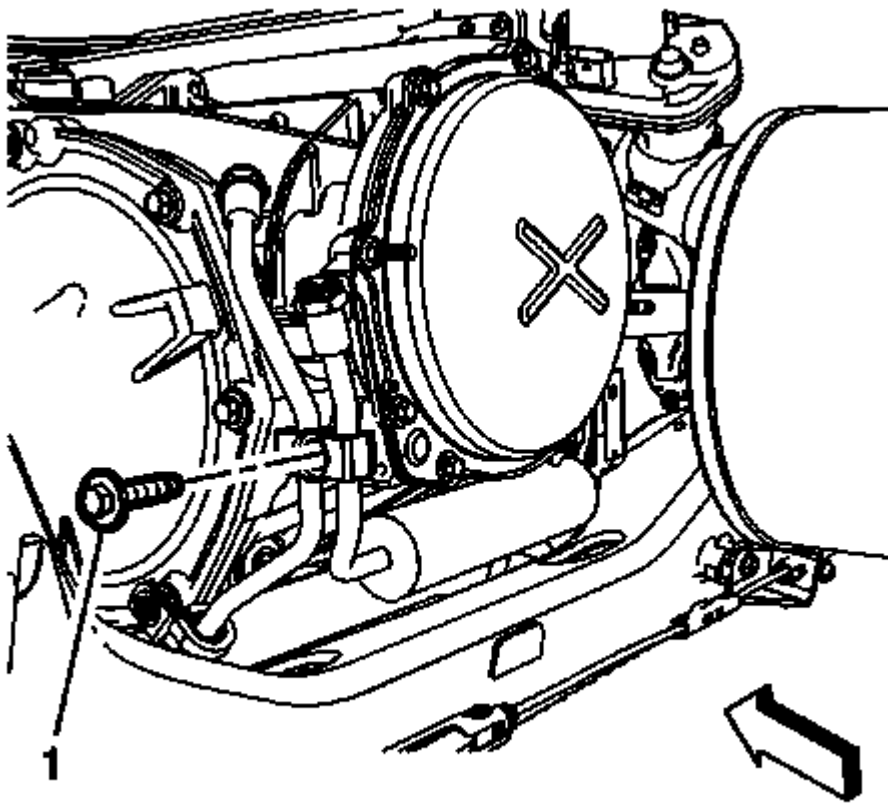


Fig. 44: Transmission Fluid Auxiliary Cooler Bolt
Courtesy of GENERAL MOTORS COMPANY

7. Remove the transmission fluid auxiliary cooler bolt (1).

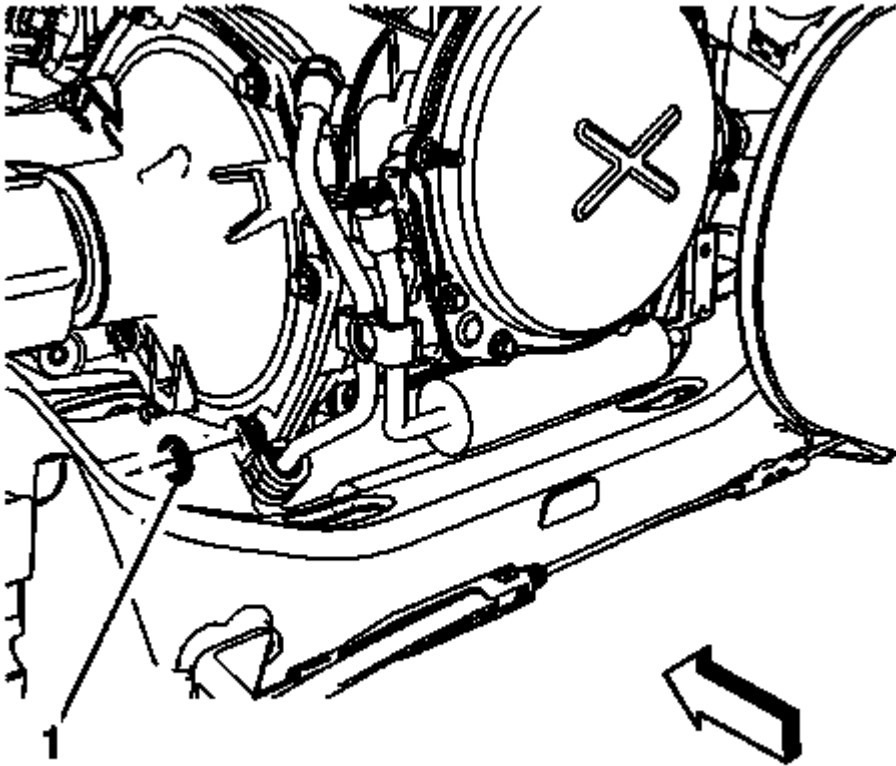


Fig. 45: Transmission Fluid Auxiliary Cooler Retainer Clip
Courtesy of GENERAL MOTORS COMPANY

8. Remove the transmission fluid auxiliary cooler retainer clip (1).

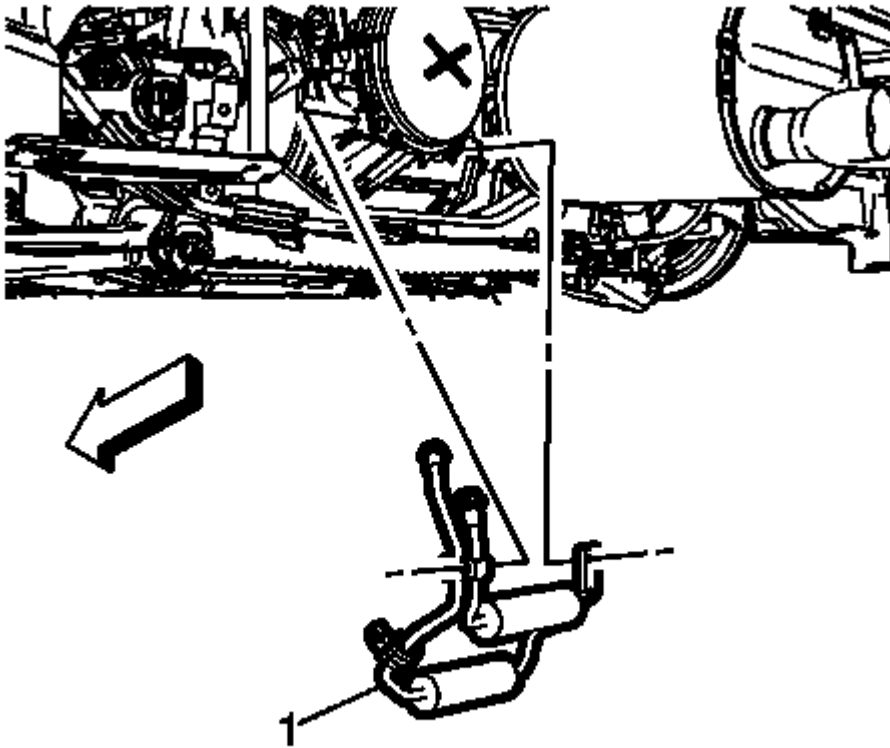


Fig. 46: Transmission Fluid Auxiliary Cooler
Courtesy of GENERAL MOTORS COMPANY

9. Remove the transmission fluid auxiliary cooler (1) from the vehicle.

Installation Procedure

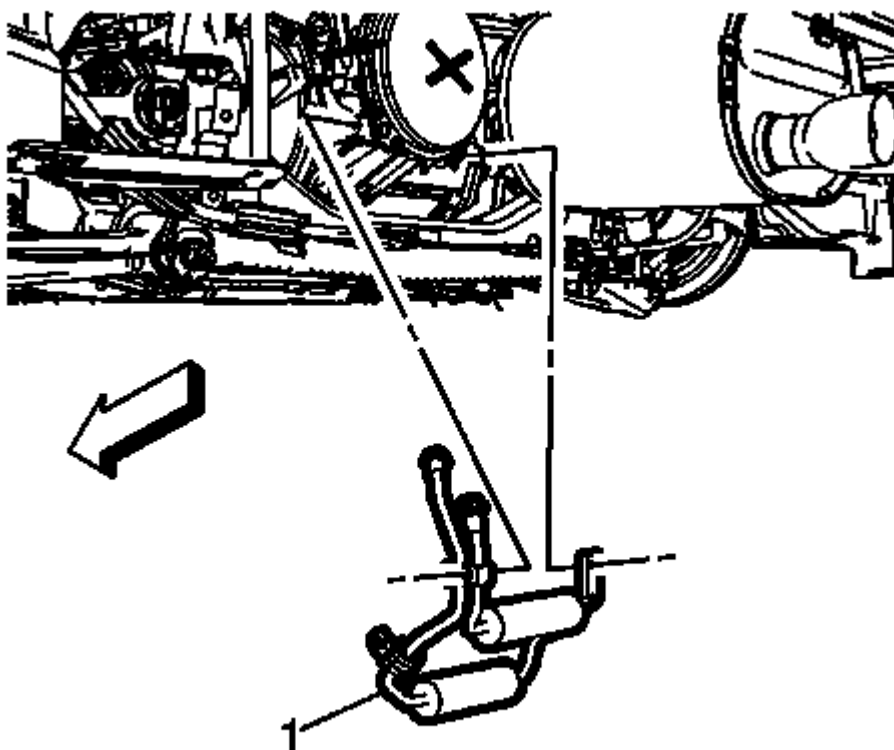


Fig. 47: Transmission Fluid Auxiliary Cooler
Courtesy of GENERAL MOTORS COMPANY

1. Install the transmission fluid auxiliary cooler (1) to the vehicle.

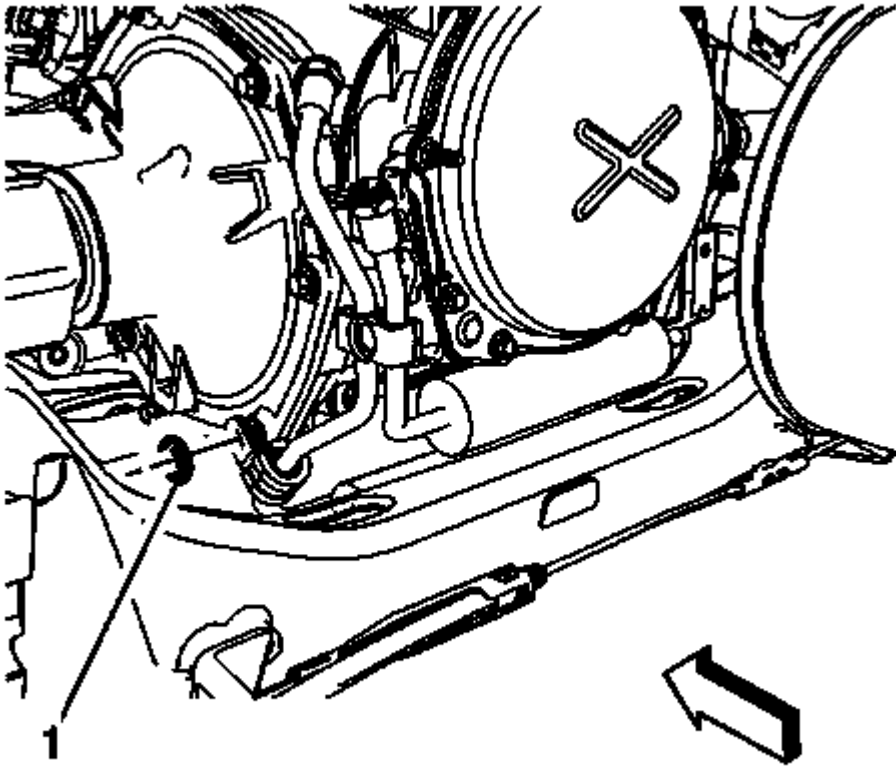


Fig. 48: Transmission Fluid Auxiliary Cooler Retainer Clip
Courtesy of GENERAL MOTORS COMPANY

2. Install the transmission fluid auxiliary cooler retainer clip (1).

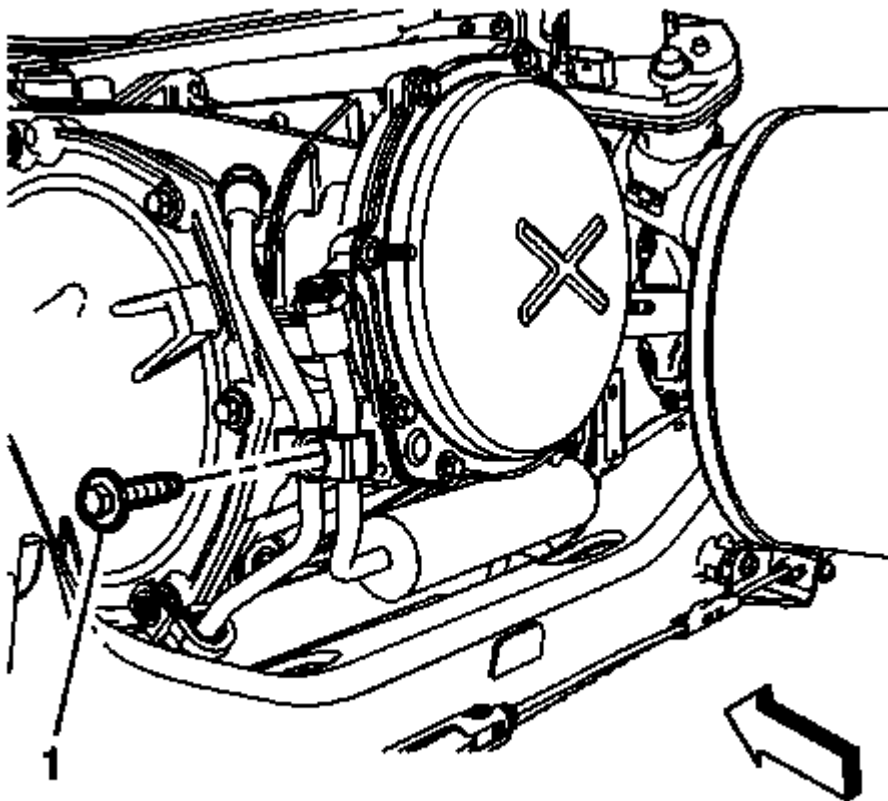


Fig. 49: Transmission Fluid Auxiliary Cooler Bolt
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

3. Install the transmission fluid auxiliary cooler bolt (1) and tighten to 9 (80 lb in).

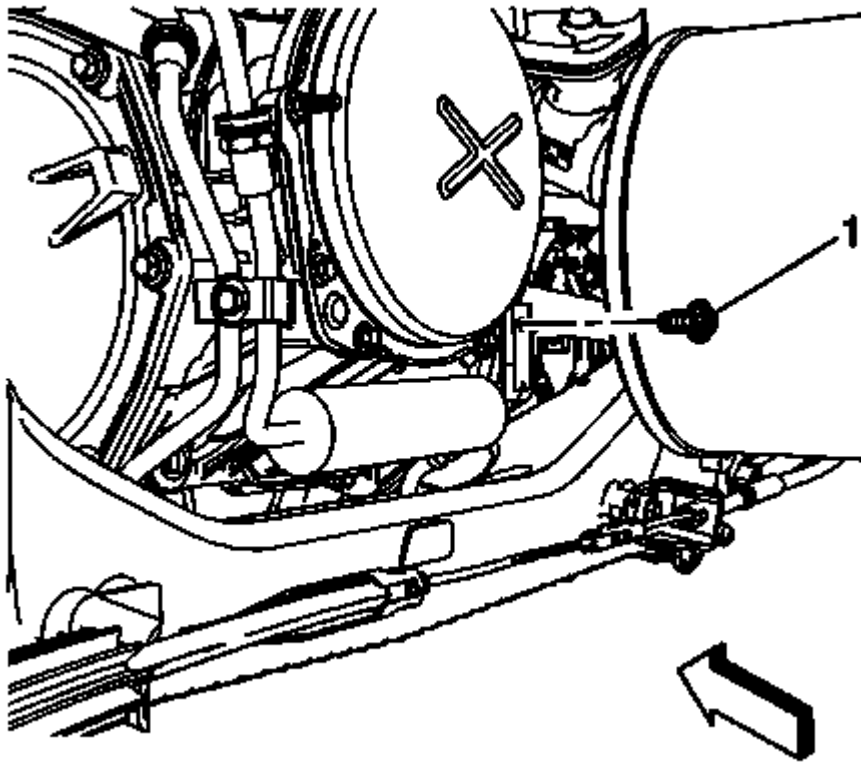


Fig. 50: Transmission Fluid Auxiliary Cooler Bolt
Courtesy of GENERAL MOTORS COMPANY

4. Install the transmission fluid auxiliary cooler bolt (1) to the transmission fluid auxiliary cooler bracket and tighten to 9 (80 lb in).

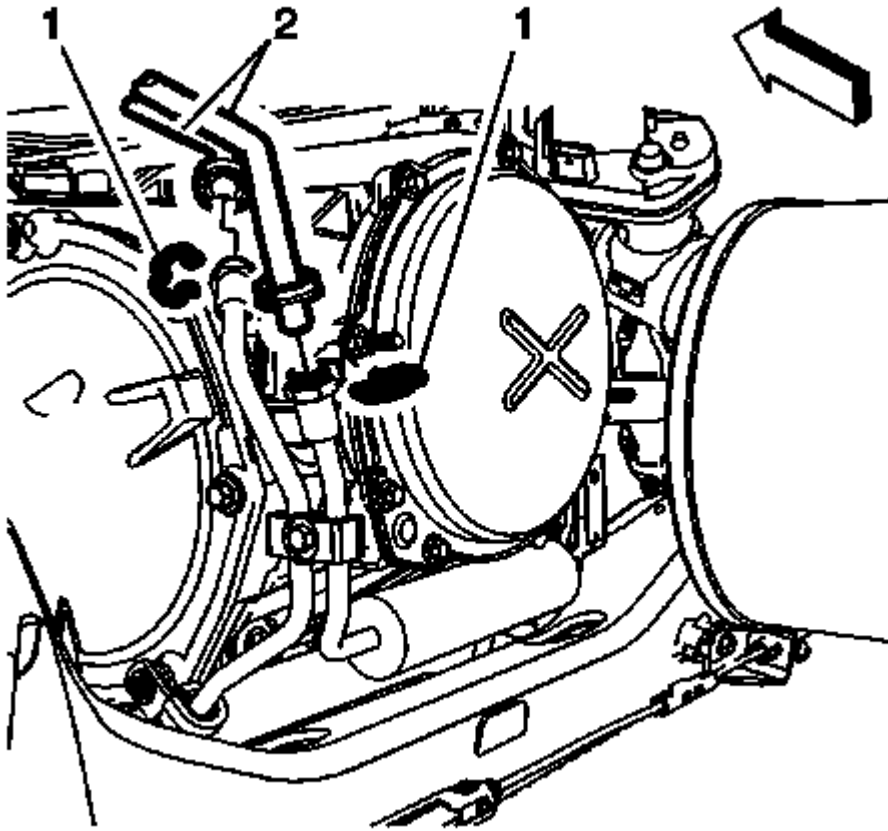


Fig. 51: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

5. Install the transmission fluid cooler inlet and outlet pipe (2) to the transmission fluid auxiliary cooler.
6. Install the transmission fluid cooler inlet and outlet pipe retaining clips (1) to the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
7. Remove the drain pan from under the transmission fluid auxiliary cooler.
8. Install the left exhaust muffler. Refer to **Exhaust Muffler Replacement - Left Side** .
9. Lower the vehicle. Refer to **Lifting and Jacking the Vehicle** .
10. Fill the transmission to the proper fluid level. Refer to **Transmission Fluid Fill Procedure** .
11. Inspect for fluid leaks.

TRANSMISSION FLUID AUXILIARY COOLER REPLACEMENT (MYC CONVERTIBLE)

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Remove the left exhaust muffler. Refer to **Exhaust Muffler Replacement - Left Side** .

3. Install a drain pan under the transmission fluid auxiliary cooler.

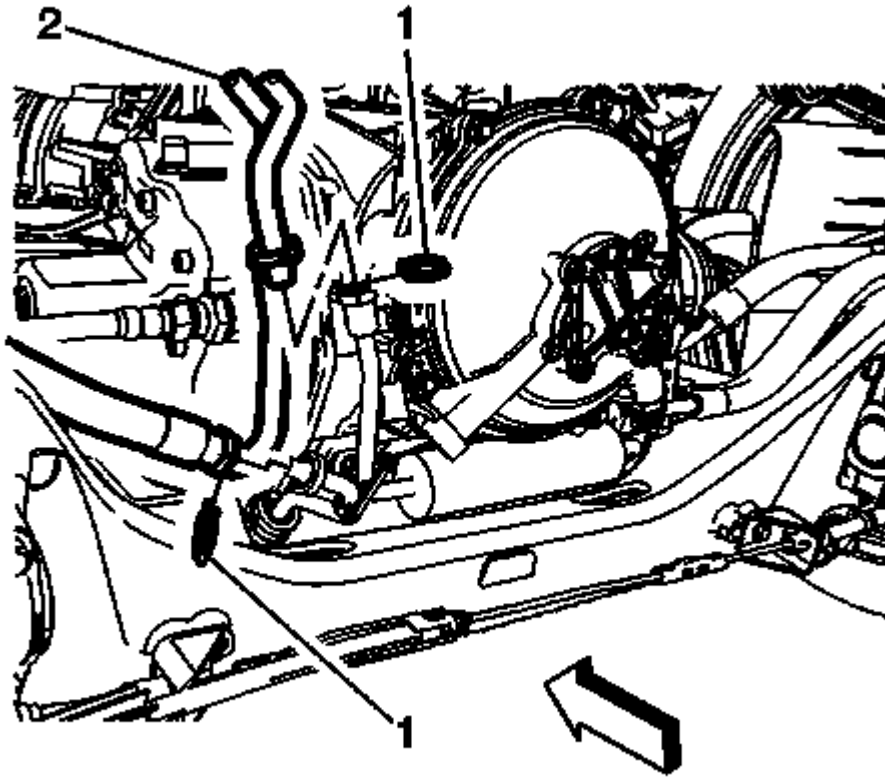


Fig. 52: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

4. Remove the transmission fluid cooler inlet and outlet pipe retaining clips (1) from the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
5. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission fluid auxiliary cooler.

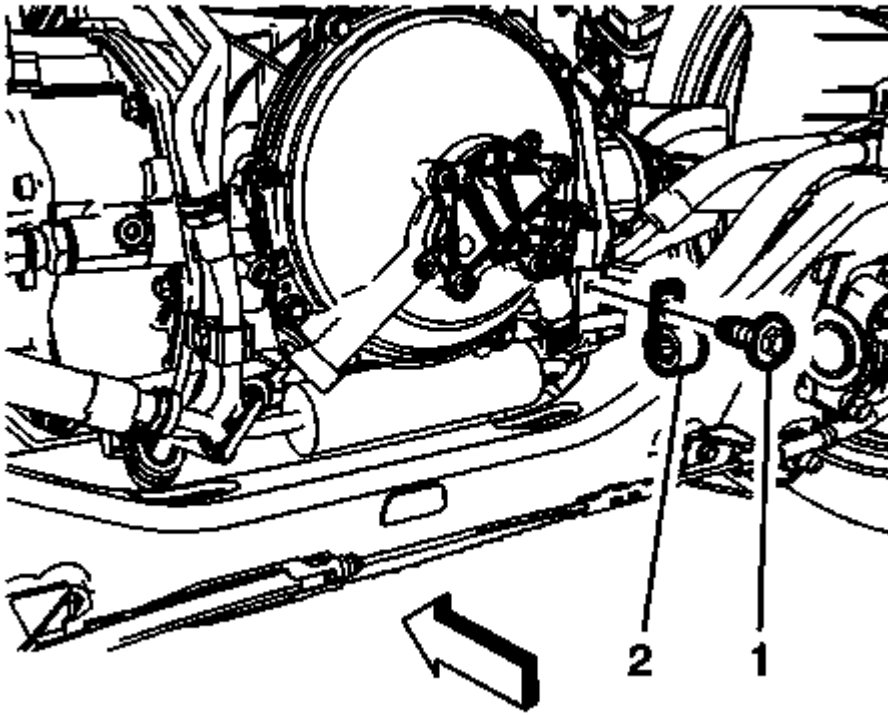


Fig. 53: Transmission Fluid Auxiliary Cooler Bolt
Courtesy of GENERAL MOTORS COMPANY

6. Remove the transmission fluid auxiliary cooler bolt (1).
7. Remove the differential oil cooler hose bracket (2) from the differential oil cooler hose.

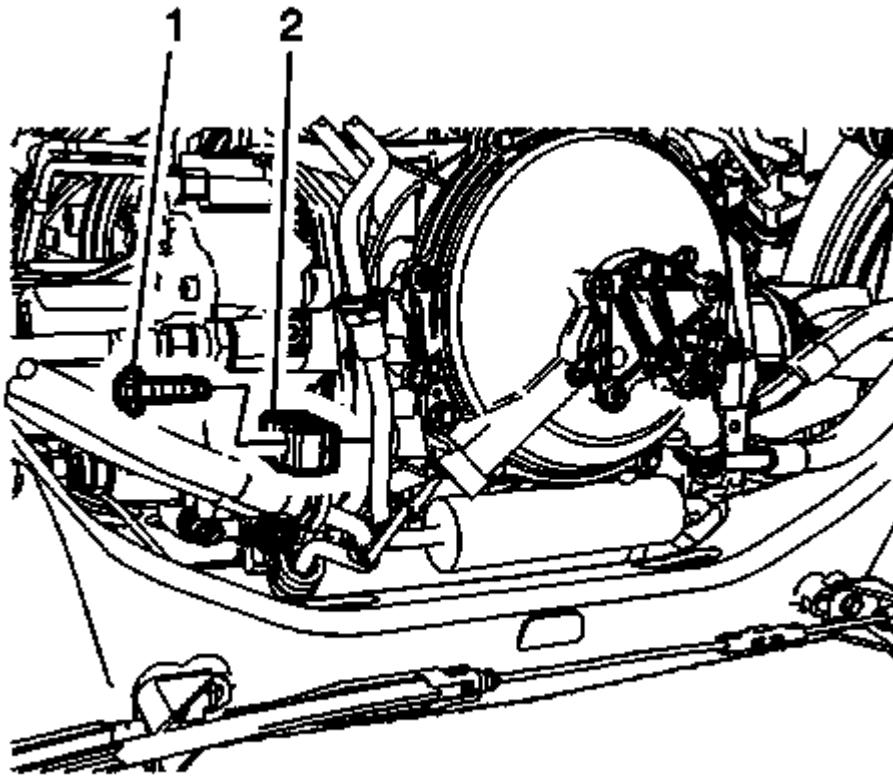


Fig. 54: Transmission Fluid Auxiliary Cooler Bolt
Courtesy of GENERAL MOTORS COMPANY

8. Remove the transmission fluid auxiliary cooler bolt (1).
9. Remove the transmission fluid auxiliary cooler bracket (2) from the transmission fluid auxiliary cooler and the transmission fluid cooler inlet and outlet pipe.

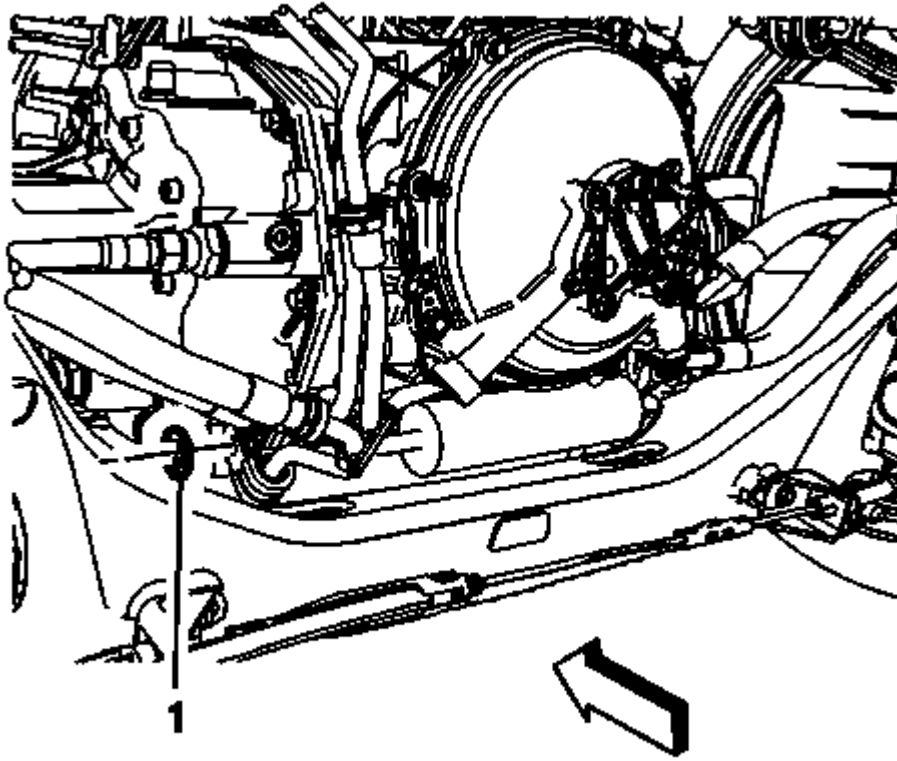


Fig. 55: Transmission Fluid Auxiliary Cooler Retainer Clip
Courtesy of GENERAL MOTORS COMPANY

10. Remove the transmission fluid auxiliary cooler retainer clip (1).

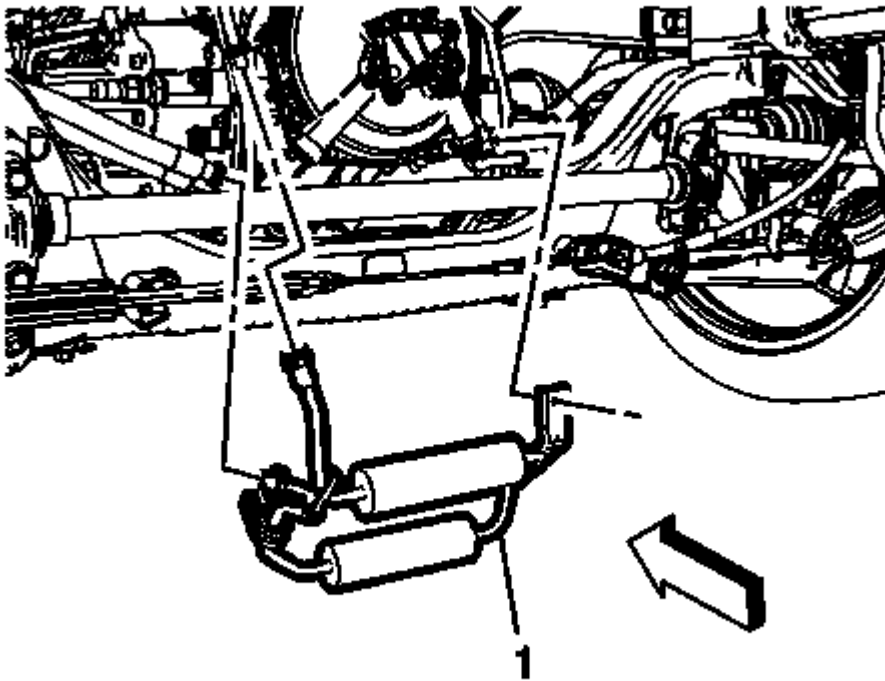


Fig. 56: Transmission Fluid Auxiliary Cooler
Courtesy of GENERAL MOTORS COMPANY

11. Remove the transmission fluid auxiliary cooler (1) from the vehicle.

Installation Procedure

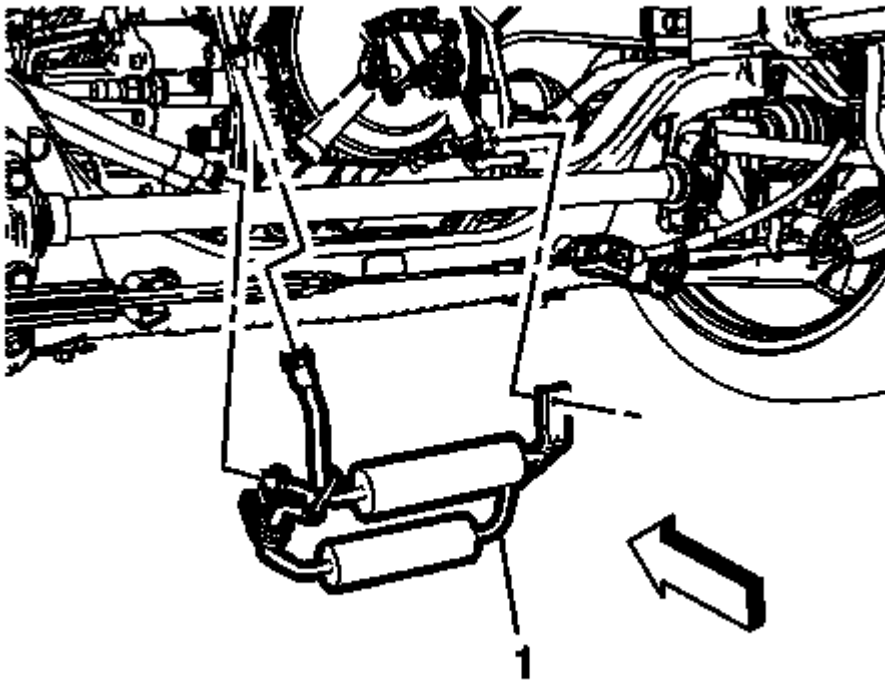


Fig. 57: Transmission Fluid Auxiliary Cooler
Courtesy of GENERAL MOTORS COMPANY

1. Install the transmission fluid auxiliary cooler (1) to the vehicle.

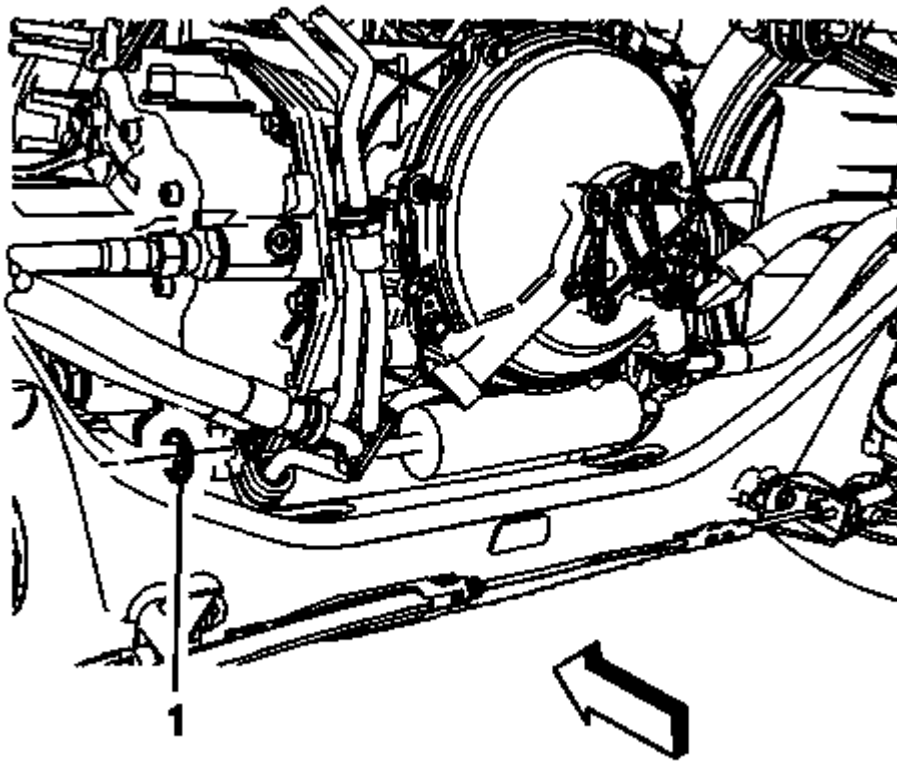


Fig. 58: Transmission Fluid Auxiliary Cooler Retainer Clip
Courtesy of GENERAL MOTORS COMPANY

2. Install the transmission fluid auxiliary cooler retainer clip (1).

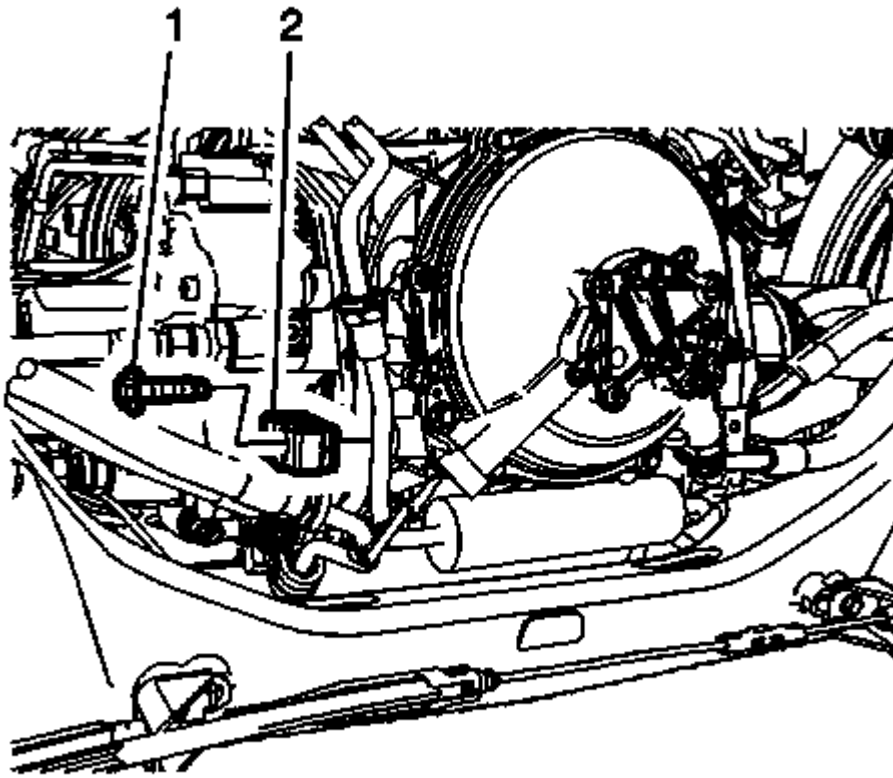


Fig. 59: Transmission Fluid Auxiliary Cooler Bolt
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

3. Install the transmission fluid auxiliary cooler bracket (2) to the transmission fluid auxiliary cooler and the transmission fluid cooler inlet and outlet pipe.
4. Install the transmission fluid auxiliary cooler bolt (1) and tighten to 9 (80 lb in).

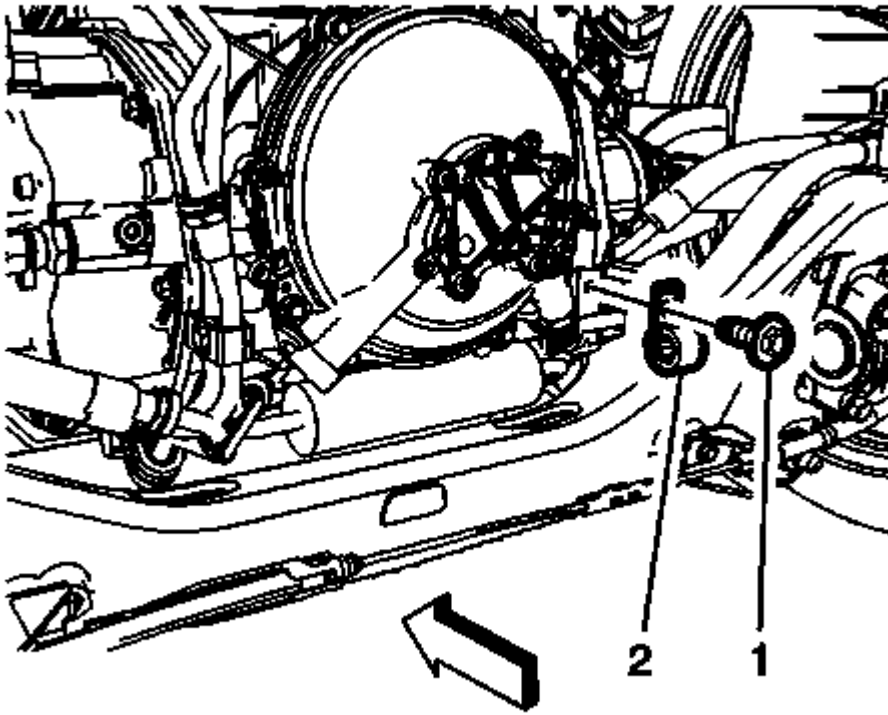


Fig. 60: Transmission Fluid Auxiliary Cooler Bolt
Courtesy of GENERAL MOTORS COMPANY

5. Install the differential oil cooler hose bracket (2) to the differential oil cooler hose.
Install the transmission fluid auxiliary cooler bolt (1) and tighten to 9 (80 lb in).

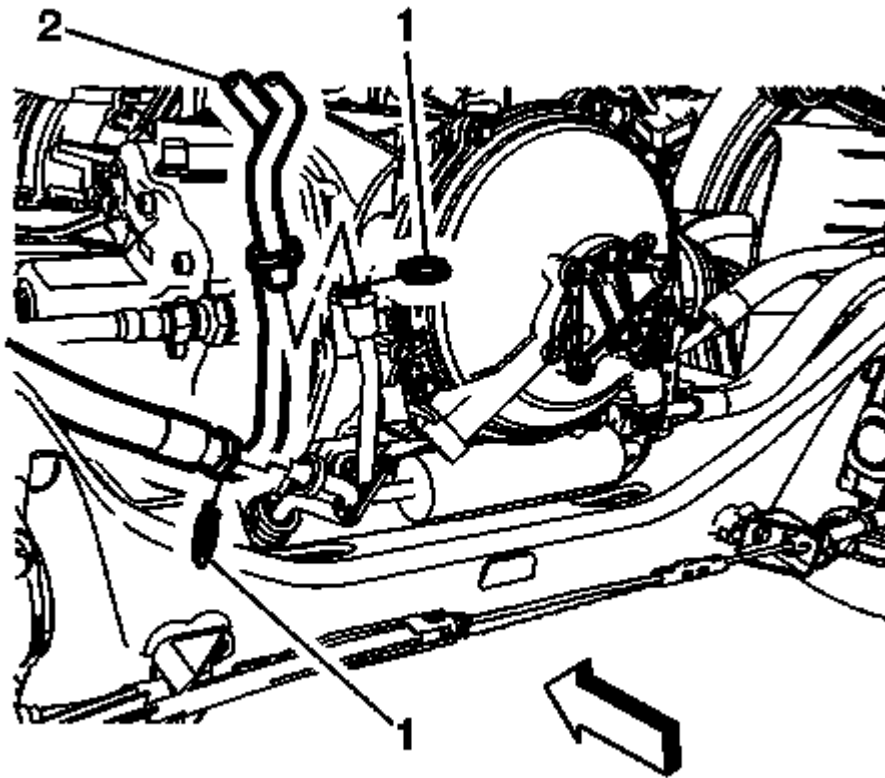


Fig. 61: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

6. Install the transmission fluid cooler inlet and outlet pipe (2) to the transmission fluid auxiliary cooler.
7. Install the transmission fluid cooler inlet and outlet pipe retaining clips (1) to the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
8. Remove the drain pan from under the transmission fluid auxiliary cooler.
9. Install the left exhaust muffler. Refer to **Exhaust Muffler Replacement - Left Side** .
10. Lower the vehicle. Refer to **Lifting and Jacking the Vehicle** .
11. Fill the transmission to the proper fluid level. Refer to **Transmission Fluid Fill Procedure** .
12. Inspect for fluid leaks.

TRANSMISSION FLUID AUXILIARY COOLER FAN REPLACEMENT (MYC)

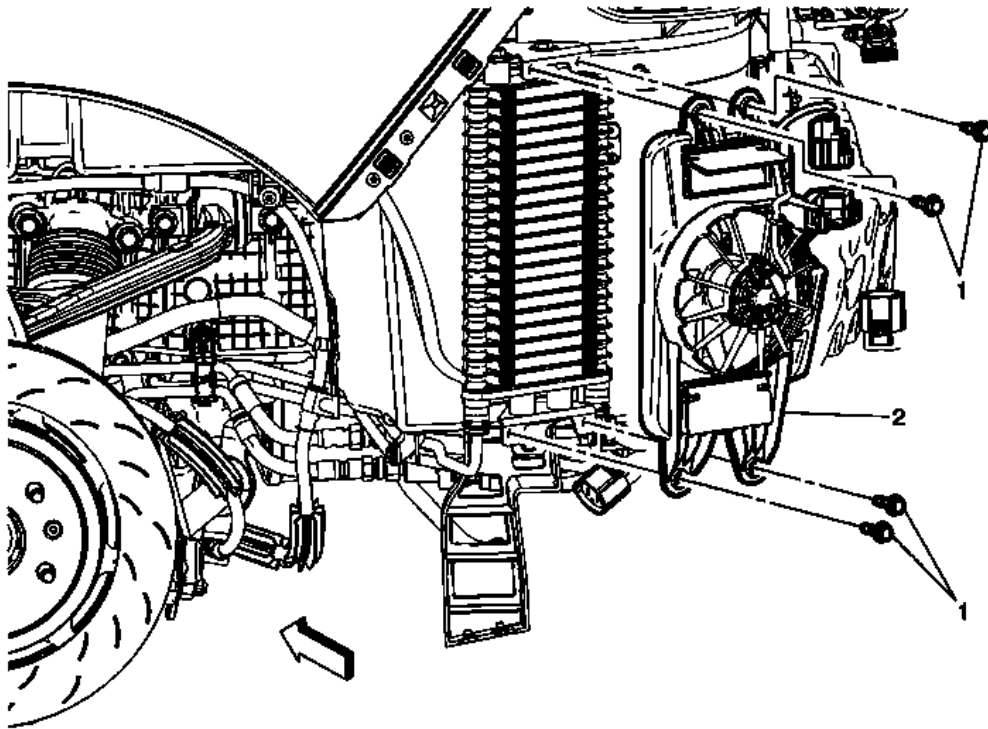


Fig. 62: Transmission Fluid Auxiliary Cooler Fan (MYC)
Courtesy of GENERAL MOTORS COMPANY

Transmission Fluid Auxiliary Cooler Fan Replacement (MYC)

Callout	Component Name
Preliminary Procedures 1. Remove the rear bumper fascia. Refer to <u>Rear Bumper Fascia Replacement</u> . 2. Remove the auxiliary fan control module. Refer to <u>Auxiliary Fan Control Module Replacement (MYC)</u>.	
1	Auxiliary Engine Coolant Fan Bolt (Qty: 4) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 7 (62 lb in)
2	Auxiliary Engine Coolant Fan

TRANSMISSION FLUID AUXILIARY COOLER FAN REPLACEMENT (MEL, MEP)

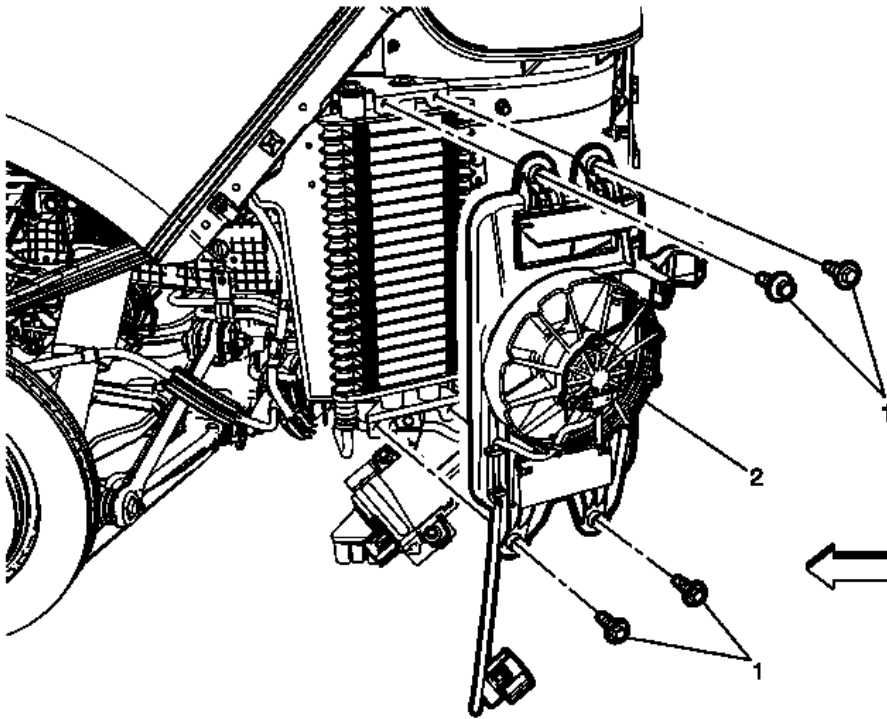


Fig. 63: Transmission Fluid Auxiliary Cooler Fan (MEL, MEP)
Courtesy of GENERAL MOTORS COMPANY

Transmission Fluid Auxiliary Cooler Fan Replacement (MEL, MEP)

Callout	Component Name
Preliminary Procedures 1. Remove the rear bumper fascia. Refer to <u>Rear Bumper Fascia Replacement</u> . 2. Disconnect the electrical connector from the auxiliary fan control module. Refer to <u>Auxiliary Fan Control Module Replacement (MEL, MEP)</u>.	
1	Auxiliary Engine Coolant Fan Bolt (Qty: 4) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 7 (62 lb in)
2	Auxiliary Engine Coolant Fan

TRANSMISSION FLUID COOLER HOSE/PIPE QUICK-CONNECT FITTING DISCONNECTION AND CONNECTION

Special Tools

- **DT-28585** Universal Snap Ring Remover for the 5/8 inch Line
- **DT-41623-B** 3/8 inch Line Quick Release Tool

Removal Procedure

1. Remove the plastic caps from the quick connect fittings by pulling the caps back along the pipe before installation.

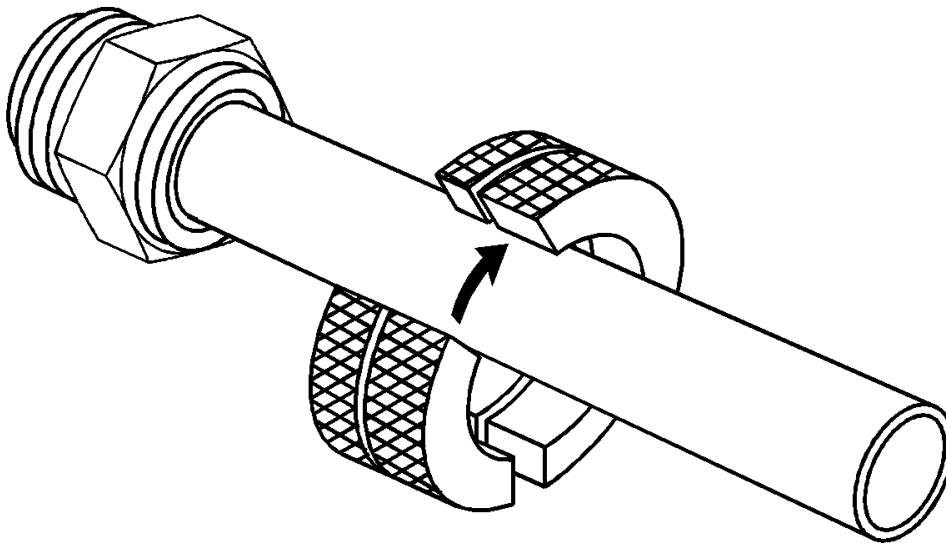


Fig. 64: View Of J 41623-B & Generator Cooling Inlet Pipe
Courtesy of GENERAL MOTORS COMPANY

2. Install the **DT-41623-B** 3/8 inch line quick release tool onto the transmission oil cooler (TOC) pipe or use the **DT-28585** universal snap ring remover for the 5/8 inch line.

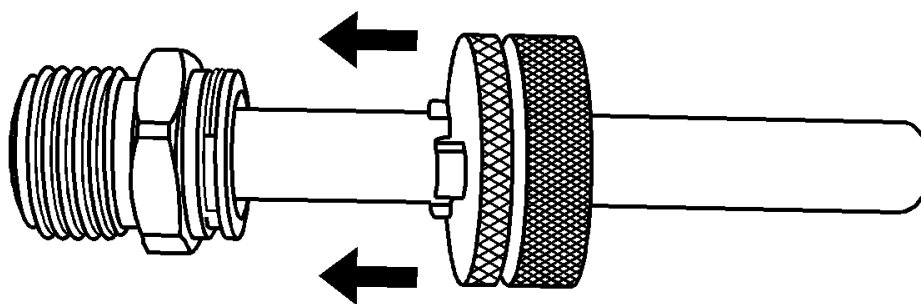


Fig. 65: Sliding J 41623-B Toward Generator Cooling Inlet Pipe Fitting
Courtesy of GENERAL MOTORS COMPANY

3. Slide the **DT-41623-B** 3/8 inch line quick release tool toward the TOC pipe fitting or use the **DT-28585** universal snap ring remover for the 5/8 inch line.

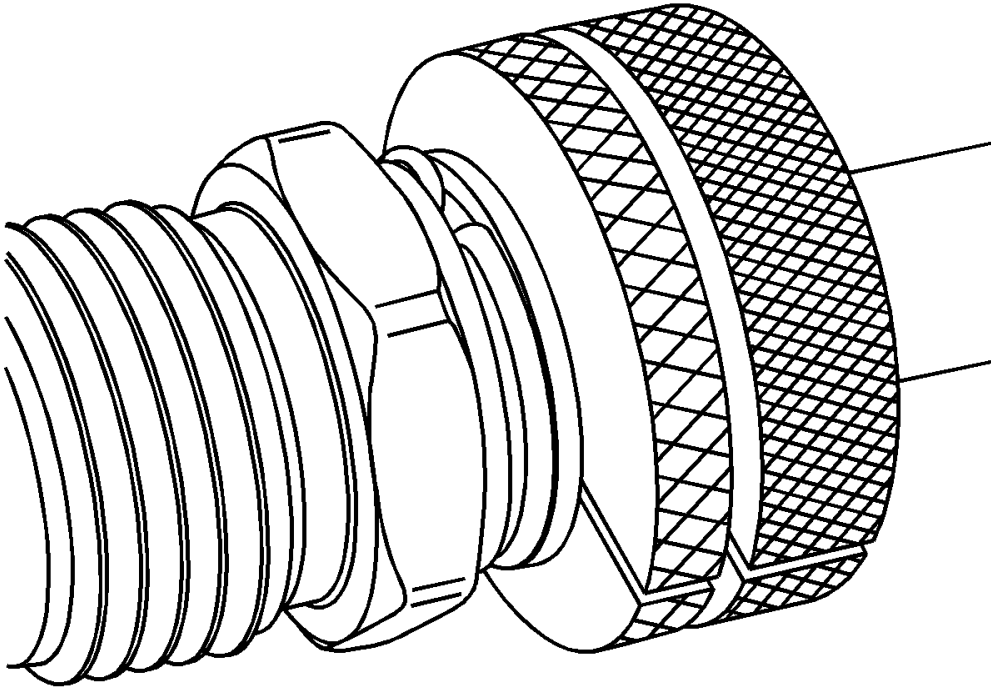


Fig. 66: Rotating Quick-Connect On Coolant Pipe
Courtesy of GENERAL MOTORS COMPANY

NOTE: Rotate the DT-41623-B 3/8 inch line quick release tool to engage the TOC pipe fitting's retainer slots.

The DT-41623-B 3/8 inch line quick release tool should be nearly flush with the fitting.

4. Connect the **DT-41623-B** 3/8 inch line quick release tool onto the TOC pipe fitting.

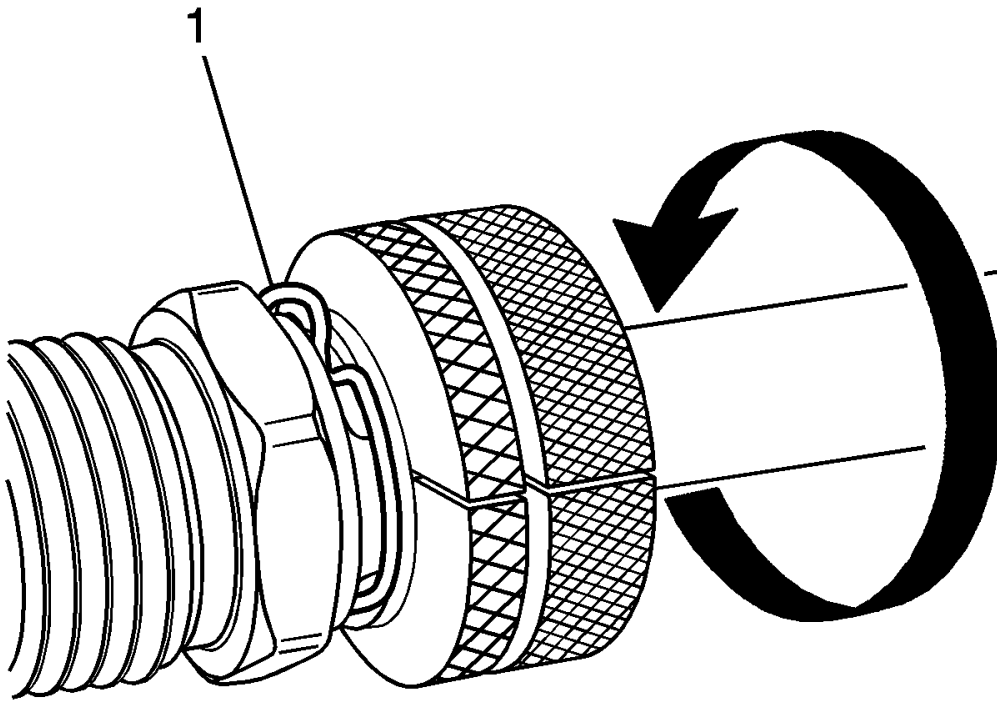


Fig. 67: Rotating Quick-Connect Until Retainer Clip Rises Above Fitting Retainer Seat
Courtesy of GENERAL MOTORS COMPANY

5. Rotate the **DT-41623-B** 3/8 inch line quick release tool or use the **DT-28585** universal snap ring remover for the 5/8 inch line until the retainer clip (1) rises above the fitting retainer seat.

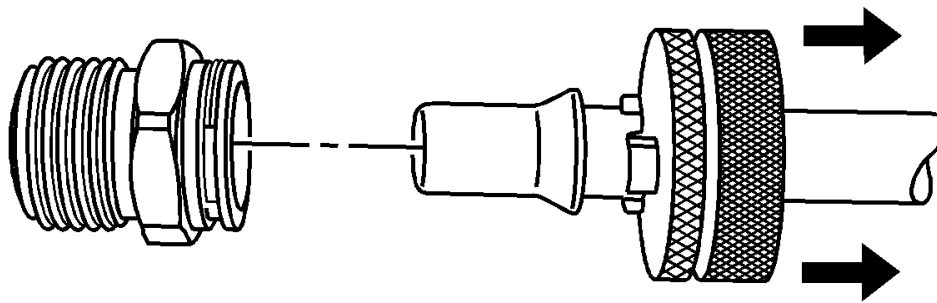


Fig. 68: View Of J 41623-B & Generator Cooling Inlet Pipe
Courtesy of GENERAL MOTORS COMPANY

6. Pull back on the TOC pipe to disengage the pipe from the TOC pipe fitting.
7. Remove the **DT-41623-B** 3/8 inch line quick release tool or the **DT-28585** universal snap ring remover for the 5/8 inch line from the TOC pipe.

Installation Procedure

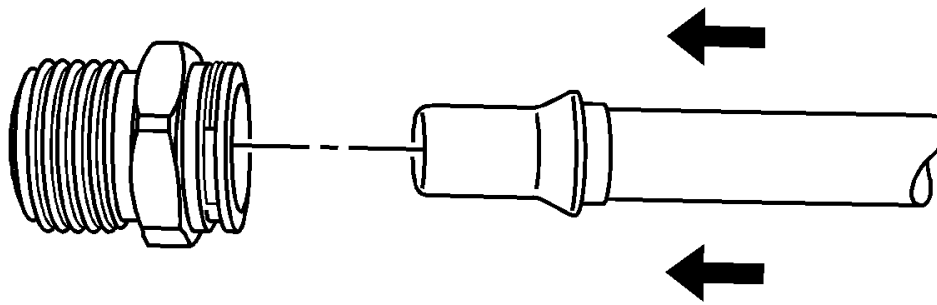


Fig. 69: View Of Generator Cooling Inlet Pipe & Generator Cooling Inlet Pipe Fitting
Courtesy of GENERAL MOTORS COMPANY

NOTE: Discard the TOC retaining clip and install a new retaining clip.

1. Install the TOC pipe into the TOC pipe fitting.

A distinct snap should be heard or felt when assembling the TOC pipe to the fitting.

2. To ensure the cooler line is properly installed, give the cooler pipe a gentle pull.

TRANSMISSION FLUID COOLER INLET AND OUTLET PIPE REPLACEMENT (MEL, MEP)

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement** .
3. Remove the Intermediate pipe. Refer to **Intermediate Pipe Replacement** .

4. Remove the left exhaust muffler. Refer to **Exhaust Muffler Replacement - Left Side** .
5. Install a drain pan under the vehicle.

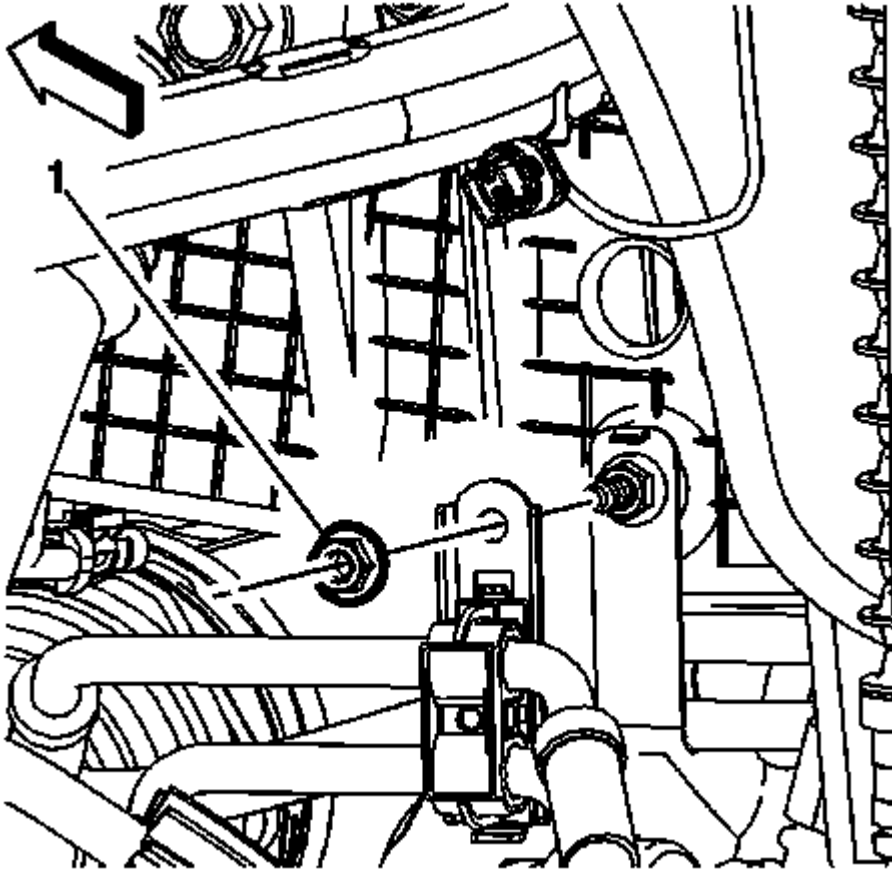


Fig. 70: Rear Wheel Drive Module Nut
Courtesy of GENERAL MOTORS COMPANY

6. Remove the rear wheel drive module nut (1) from the transmission fluid cooler inlet and outlet pipe stud if equipped.

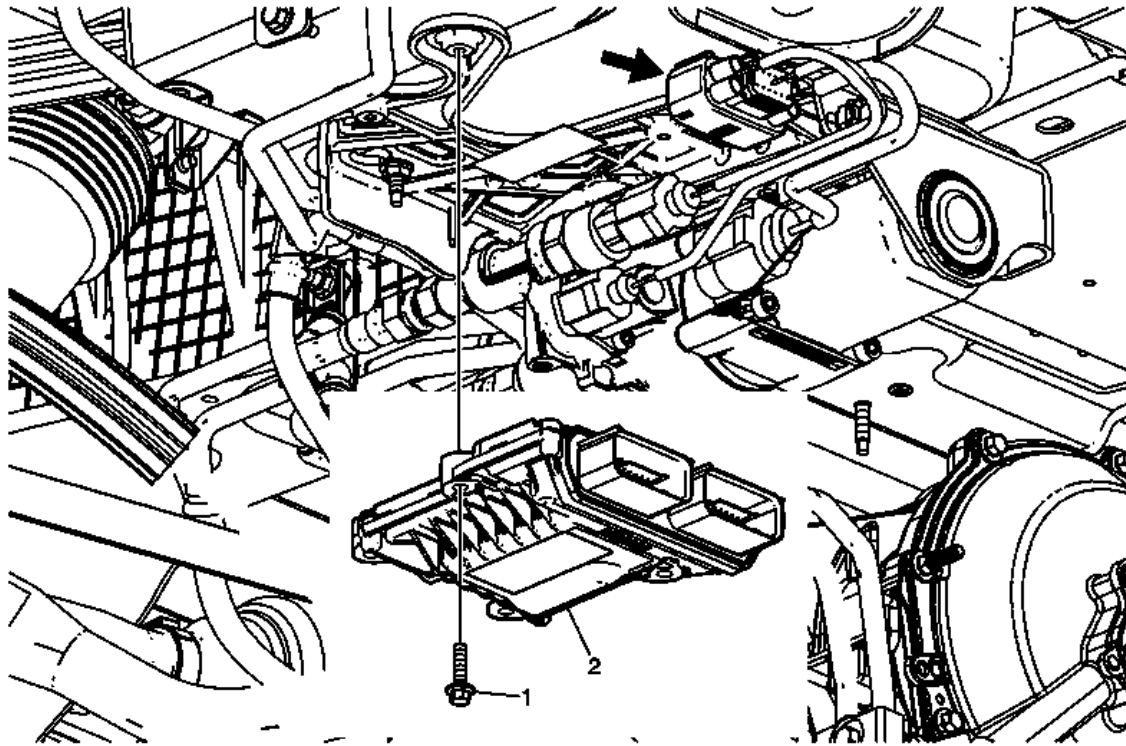


Fig. 71: Rear Wheel Drive Module
Courtesy of GENERAL MOTORS COMPANY

7. Without disconnecting the rear wheel drive module lines, remove the rear wheel drive module (2) and reposition out of the way if equipped. Refer to **Rear Wheel Drive Module Replacement** .

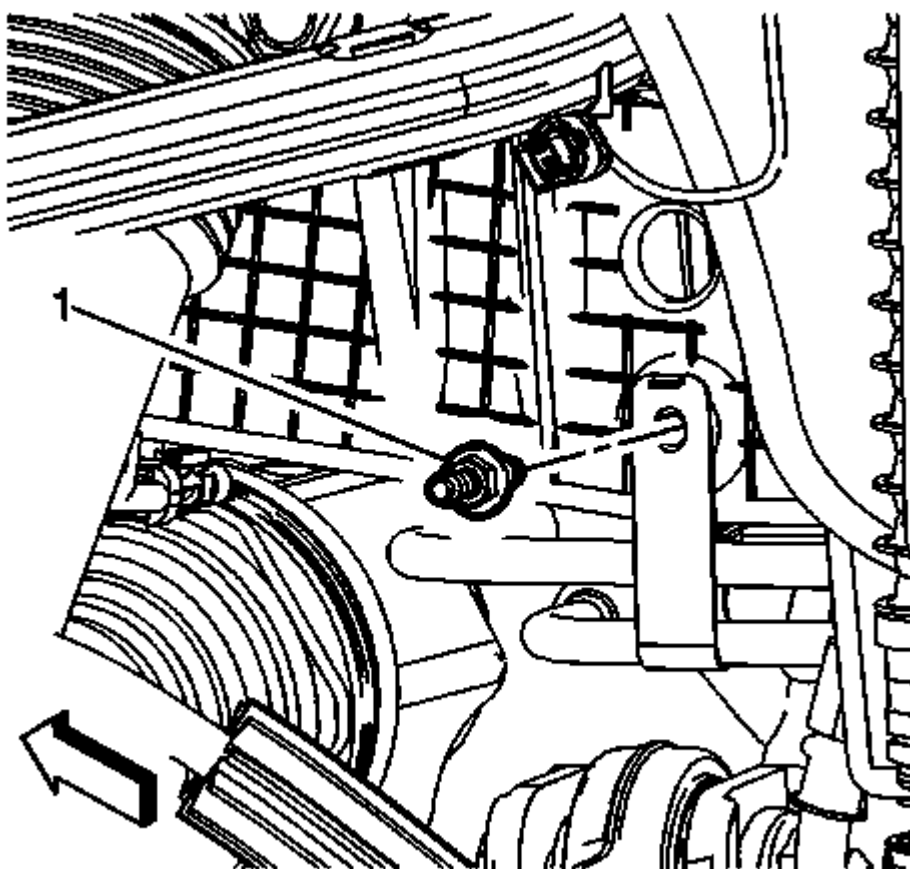


Fig. 72: Transmission Fluid Cooler Inlet And Outlet Pipe Stud
Courtesy of GENERAL MOTORS COMPANY

8. Remove transmission fluid cooler inlet and outlet pipe stud (1) from the frame.

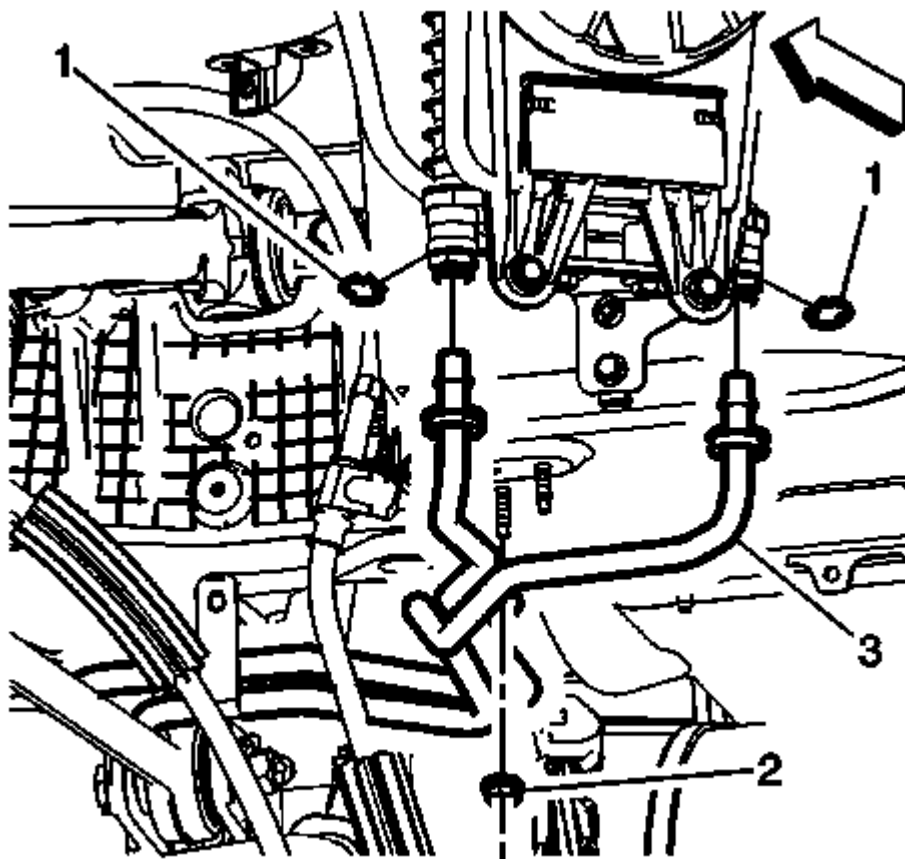


Fig. 73: Transmission Fluid Auxiliary Cooler Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

9. Remove the transmission fluid auxiliary cooler retaining clips (1) from the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
10. Remove the transmission fluid cooler inlet and outlet pipe nut (2).
11. Remove the transmission fluid cooler inlet and outlet pipe (3) from the transmission fluid auxiliary cooler.

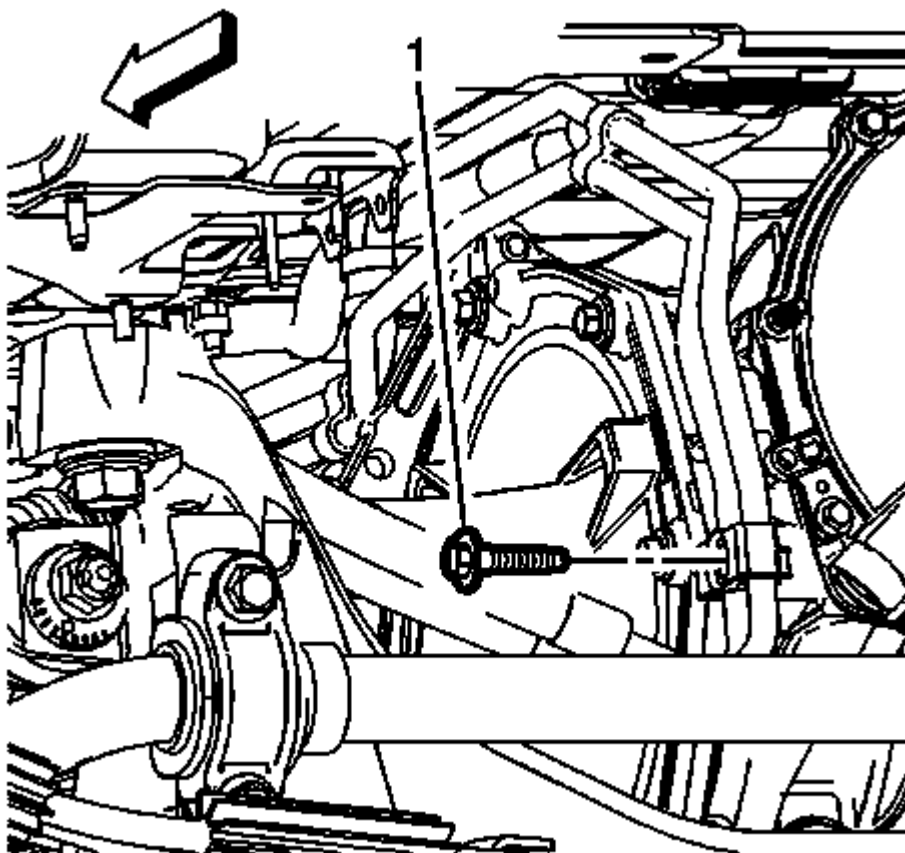


Fig. 74: Transmission Fluid Cooler Inlet And Outlet Pipe Bracket Bolt
Courtesy of GENERAL MOTORS COMPANY

12. Remove the transmission fluid cooler inlet and outlet pipe bracket bolt (1) from the rear differential.

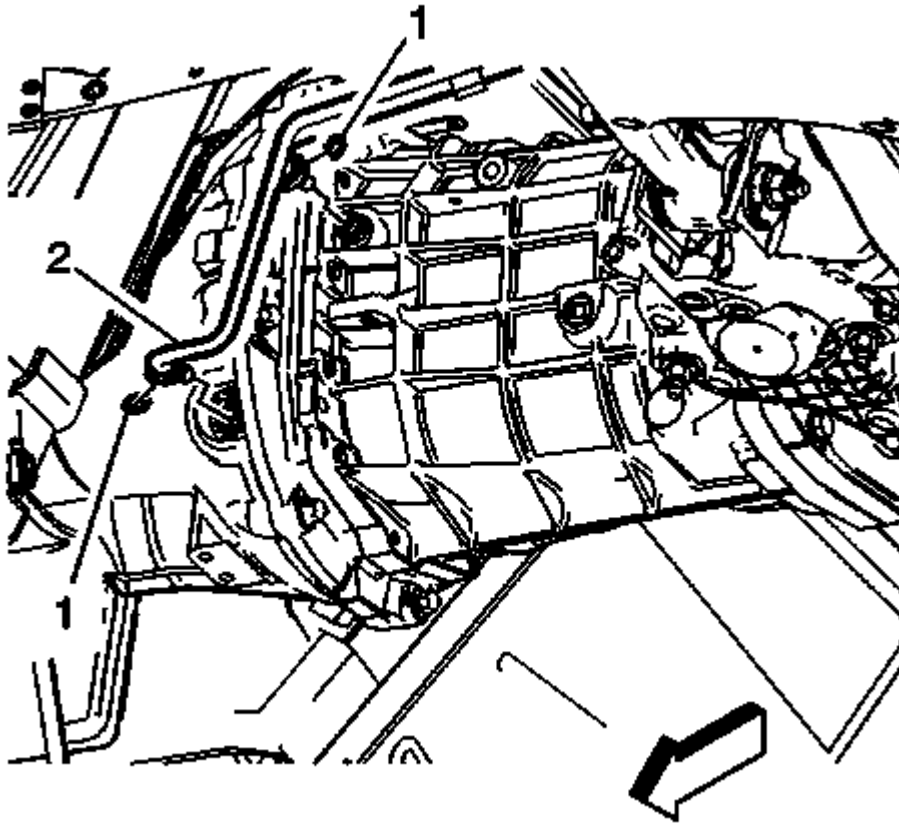


Fig. 75: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

13. Remove the transmission fluid cooler inlet and outlet pipe retaining clips (1) from the transmission. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
14. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission.
15. Remove the transmission fluid cooler inlet and outlet pipe (2) from the retaining clip.
16. Remove the transmission fluid cooler inlet and outlet pipe (2) from the vehicle.

Installation Procedure

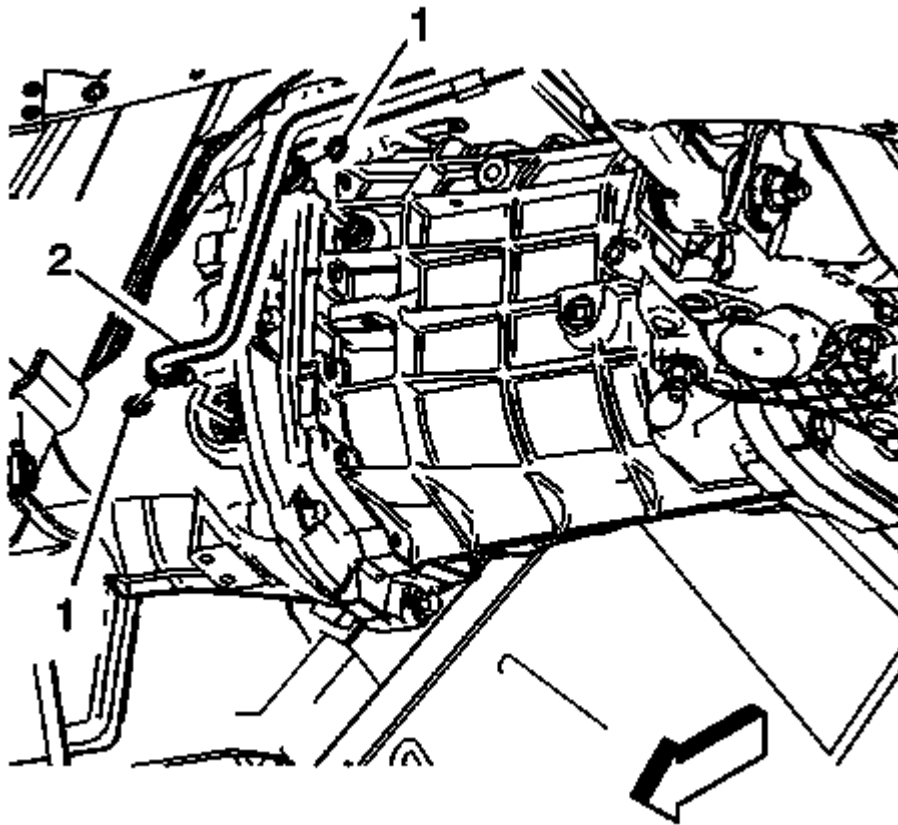


Fig. 76: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

1. Install the fluid cooler inlet and outlet pipe (2) to the vehicle.
2. Install the transmission fluid cooler inlet and outlet pipe (2) to the retaining clip.
3. Install the transmission fluid cooler inlet and outlet pipe (2) to the transmission.
4. Install the transmission fluid cooler inlet and outlet pipe retaining clips (1) to the transmission.
Refer to Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection.

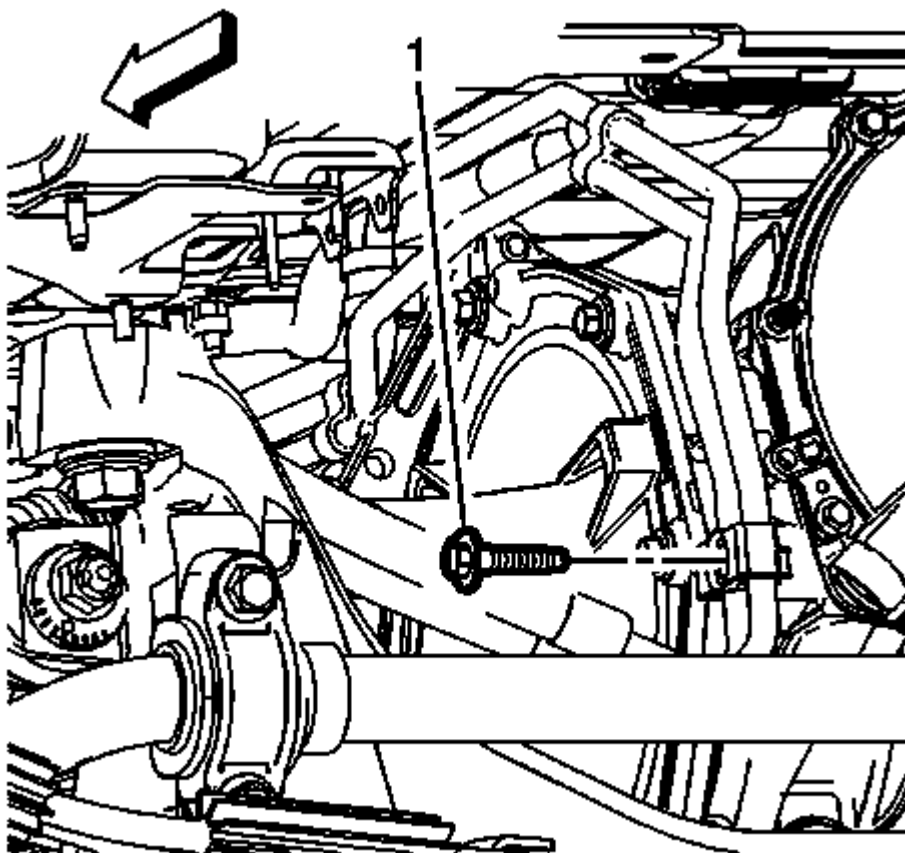


Fig. 77: Transmission Fluid Cooler Inlet And Outlet Pipe Bracket Bolt
Courtesy of GENERAL MOTORS COMPANY

5. Install the transmission fluid cooler inlet and outlet pipe bracket bolt (1) to the rear differential and tighten to 22 (16 lb ft).

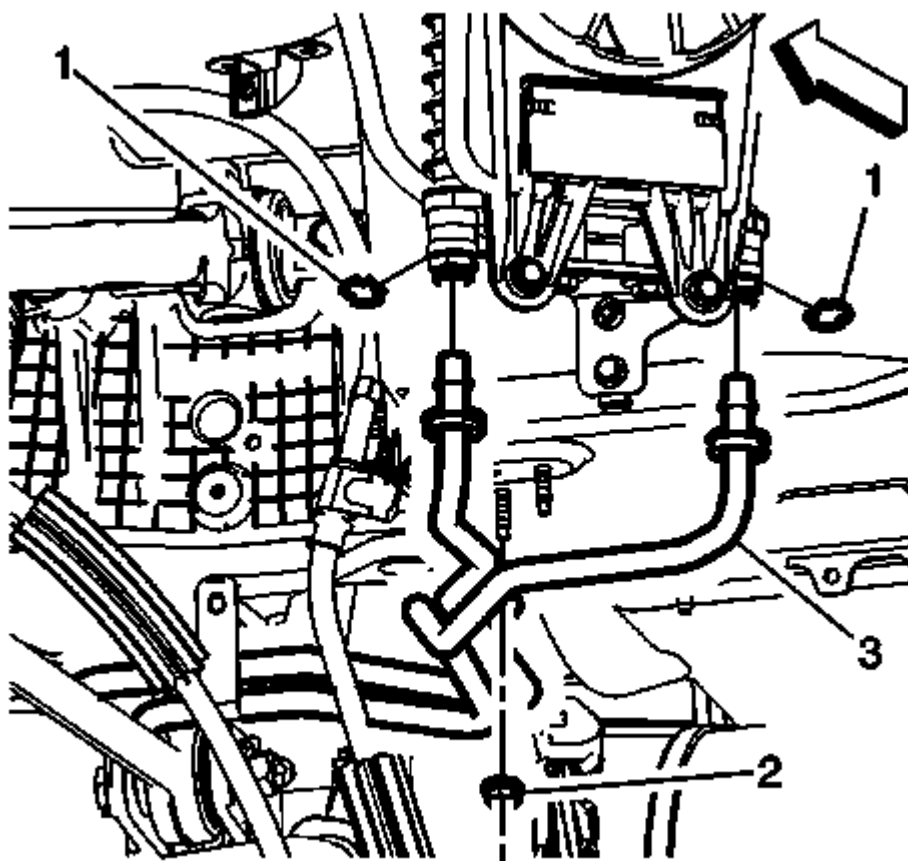


Fig. 78: Transmission Fluid Auxiliary Cooler Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

6. Install the transmission fluid auxiliary cooler retaining clips (1) to the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
7. Install the transmission fluid cooler inlet and outlet pipe (3) to the transmission fluid auxiliary cooler.
8. Install the transmission fluid cooler inlet and outlet pipe nut (2) and tighten to 9 (80 lb in).

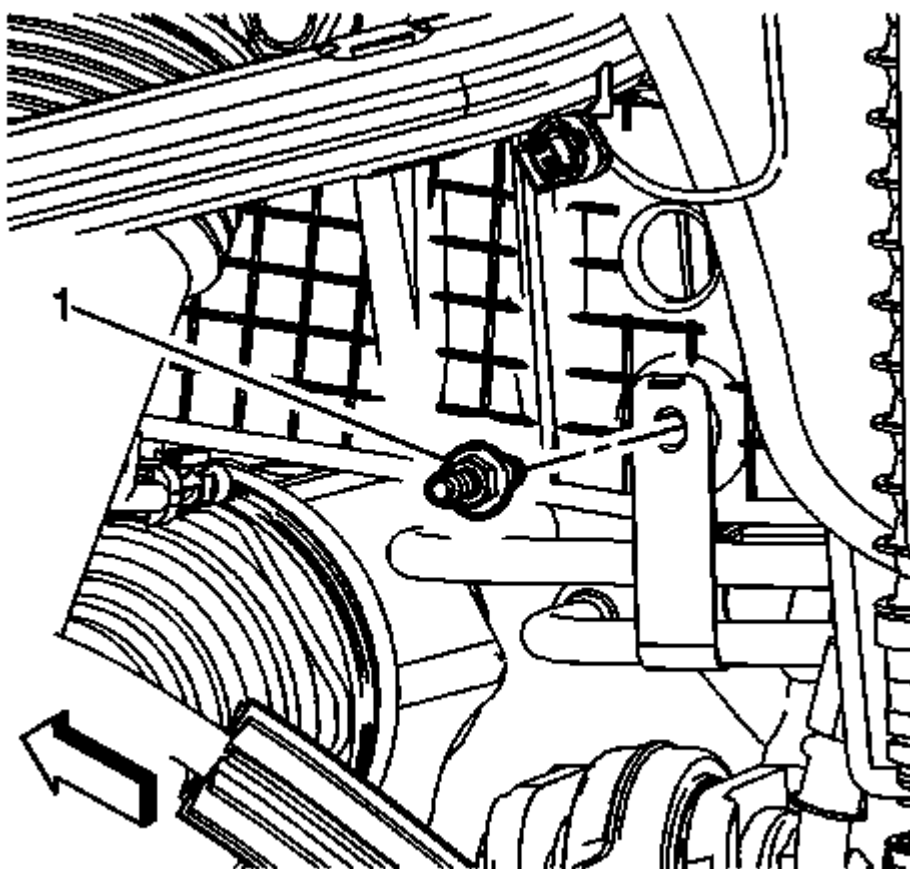


Fig. 79: Transmission Fluid Cooler Inlet And Outlet Pipe Stud
Courtesy of GENERAL MOTORS COMPANY

9. Install transmission fluid cooler inlet and outlet pipe stud (1) to the frame and tighten to 12 (106 lb in).

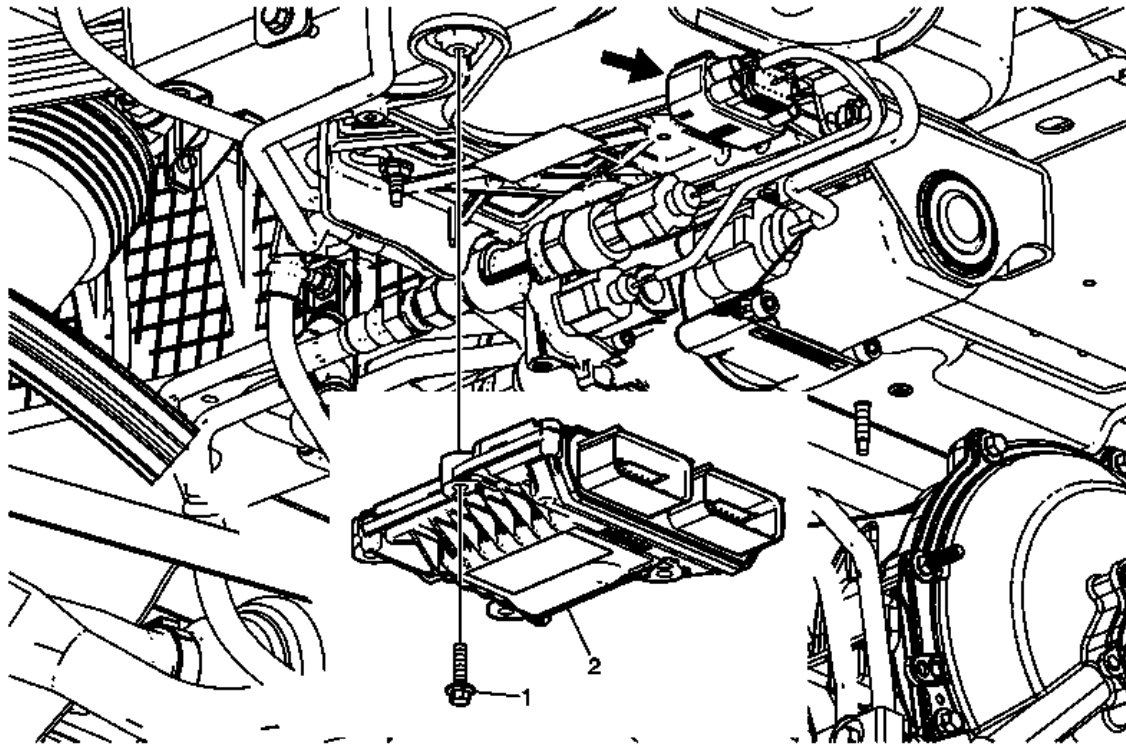


Fig. 80: Rear Wheel Drive Module
Courtesy of GENERAL MOTORS COMPANY

10. Install the rear wheel drive module (2) if equipped. Refer to **Rear Wheel Drive Module Replacement** .

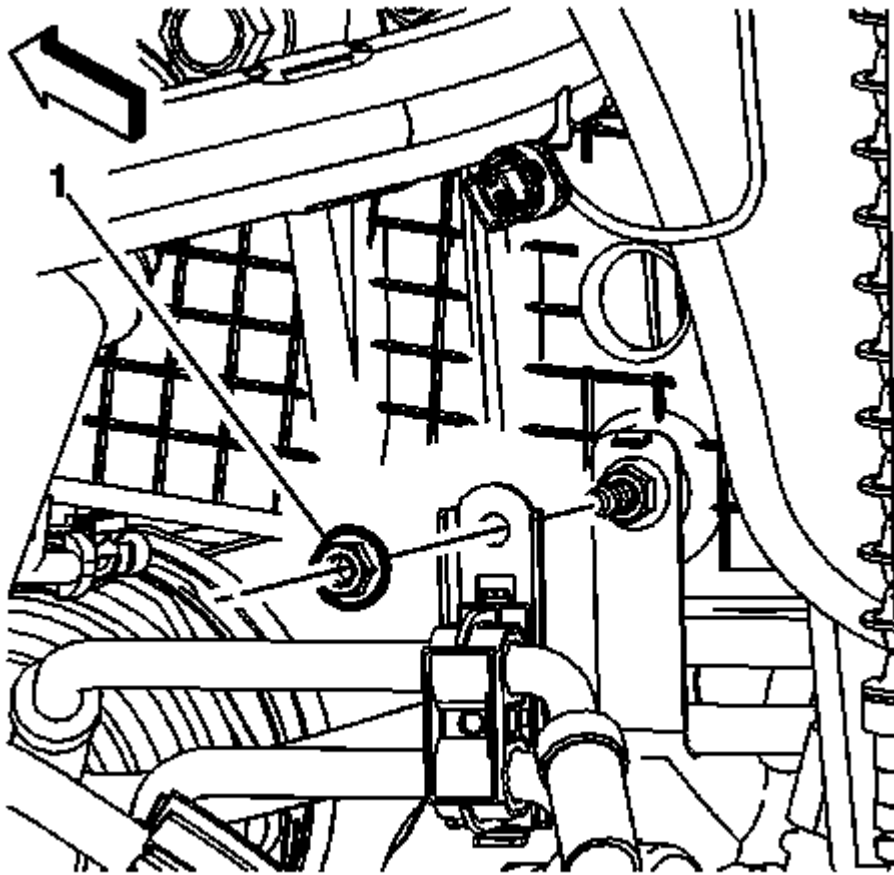


Fig. 81: Rear Wheel Drive Module Nut
Courtesy of GENERAL MOTORS COMPANY

11. Install the rear wheel drive module nut (1) to the rear wheel drive module line retainer and tighten to 9 (80 lb in) if equipped.
12. Remove the drain pan from under the vehicle.
13. Install the left exhaust muffler. Refer to **Exhaust Muffler Replacement - Left Side** .
14. Install the Intermediate pipe. Refer to **Intermediate Pipe Replacement** .
15. Install the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement** .
16. Lower the vehicle.
17. Fill the transmission to the proper fluid level. Refer to **Transmission Fluid Fill Procedure** .
18. Inspect for fluid leaks.

TRANSMISSION FLUID COOLER INLET AND OUTLET PIPE REPLACEMENT (MYC)

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
2. Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement** .

3. Remove the Intermediate pipe. Refer to Intermediate Pipe Replacement .
4. Remove the left exhaust muffler. Refer to Exhaust Muffler Replacement - Left Side .
5. Install a drain pan under the vehicle.

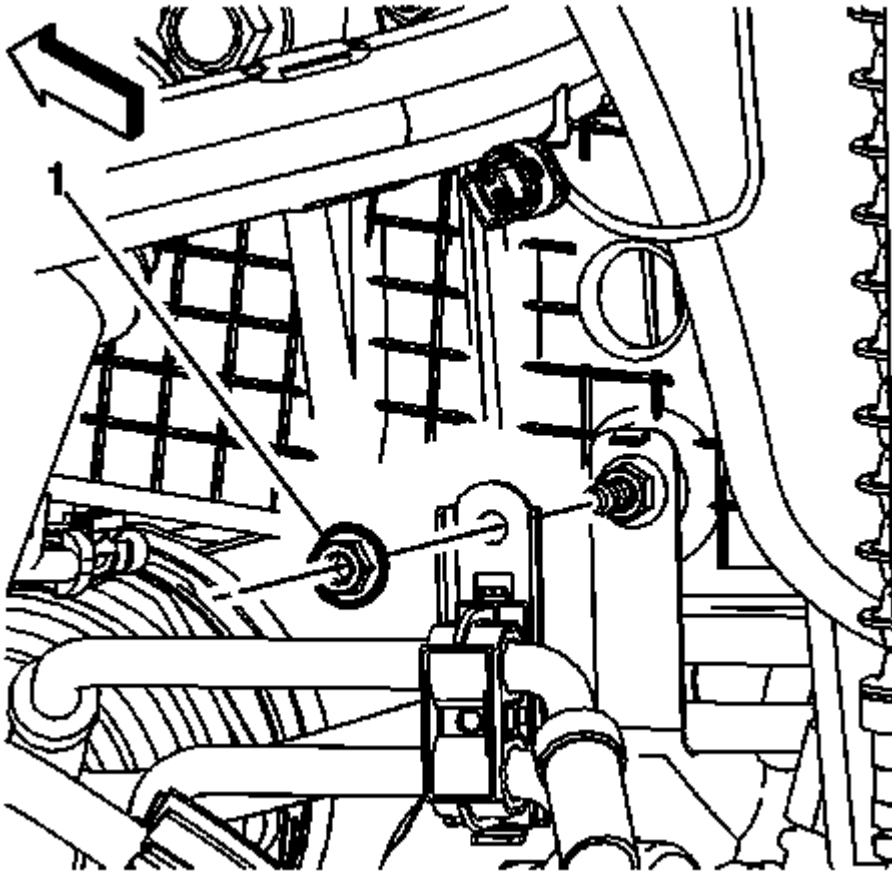


Fig. 82: Rear Wheel Drive Module Nut
Courtesy of GENERAL MOTORS COMPANY

6. Remove the rear wheel drive module nut (1) from the transmission fluid cooler inlet and outlet pipe stud if equipped.

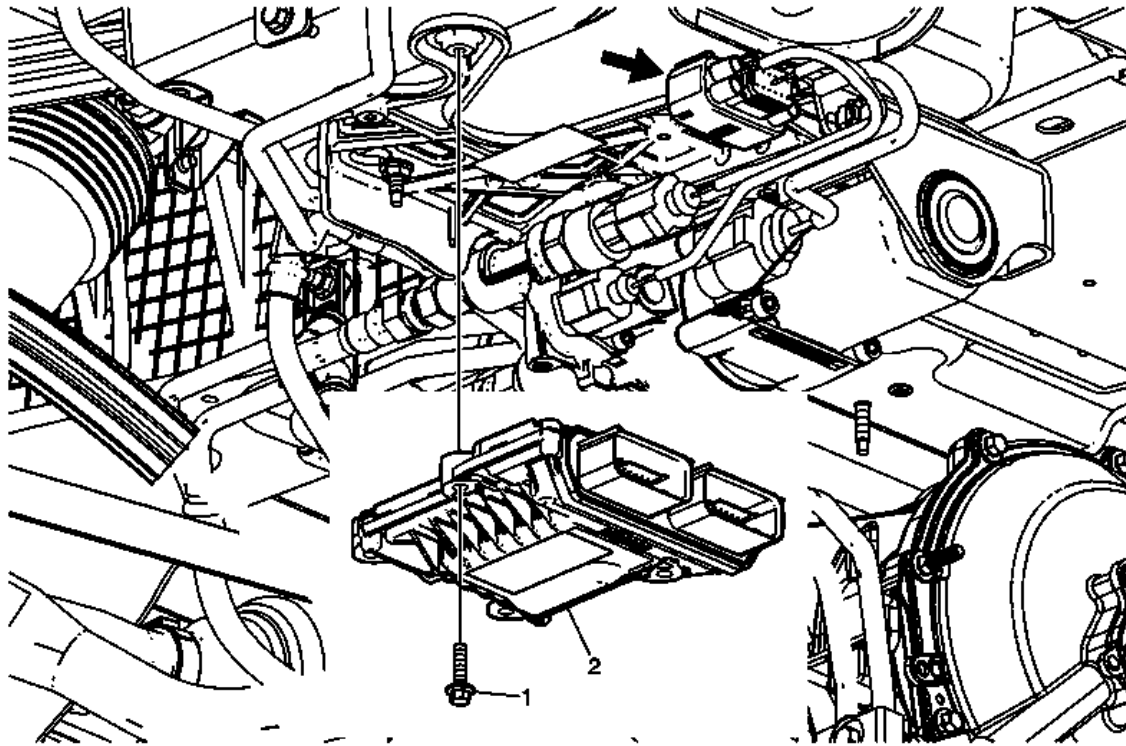


Fig. 83: Rear Wheel Drive Module
Courtesy of GENERAL MOTORS COMPANY

7. Without disconnecting the rear wheel drive module lines, remove the rear wheel drive module (2) and reposition out of the way if equipped. Refer to **Rear Wheel Drive Module Replacement** .

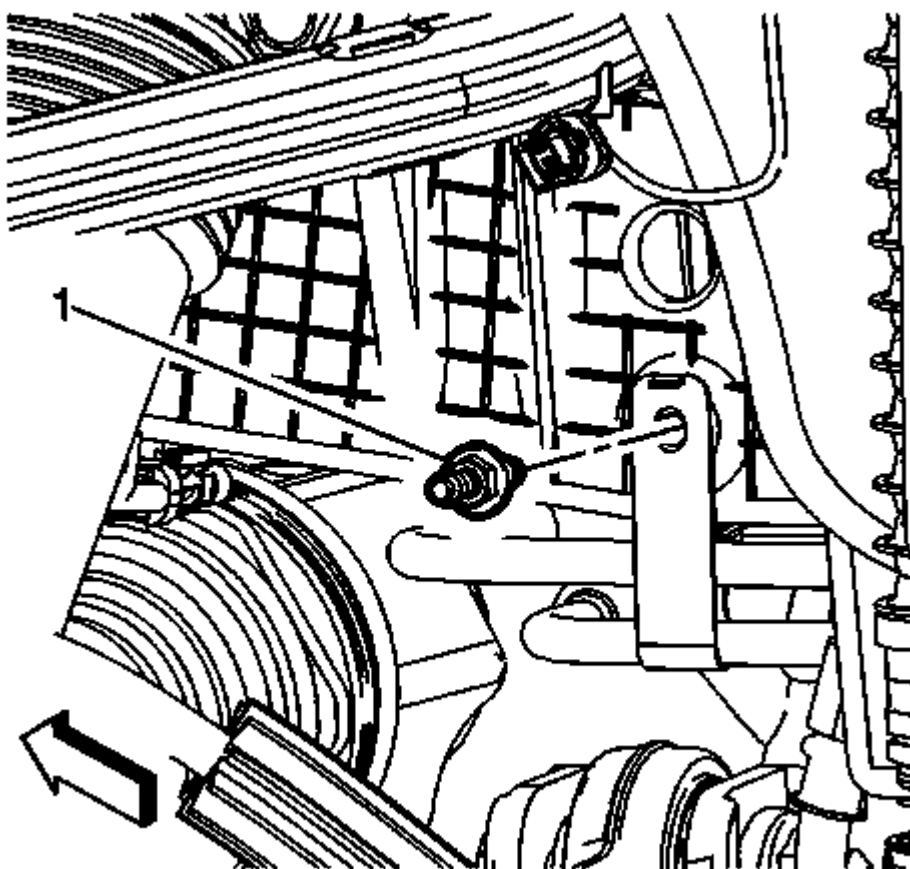


Fig. 84: Transmission Fluid Cooler Inlet And Outlet Pipe Stud
Courtesy of GENERAL MOTORS COMPANY

8. Remove transmission fluid cooler inlet and outlet pipe stud (1) from the frame.

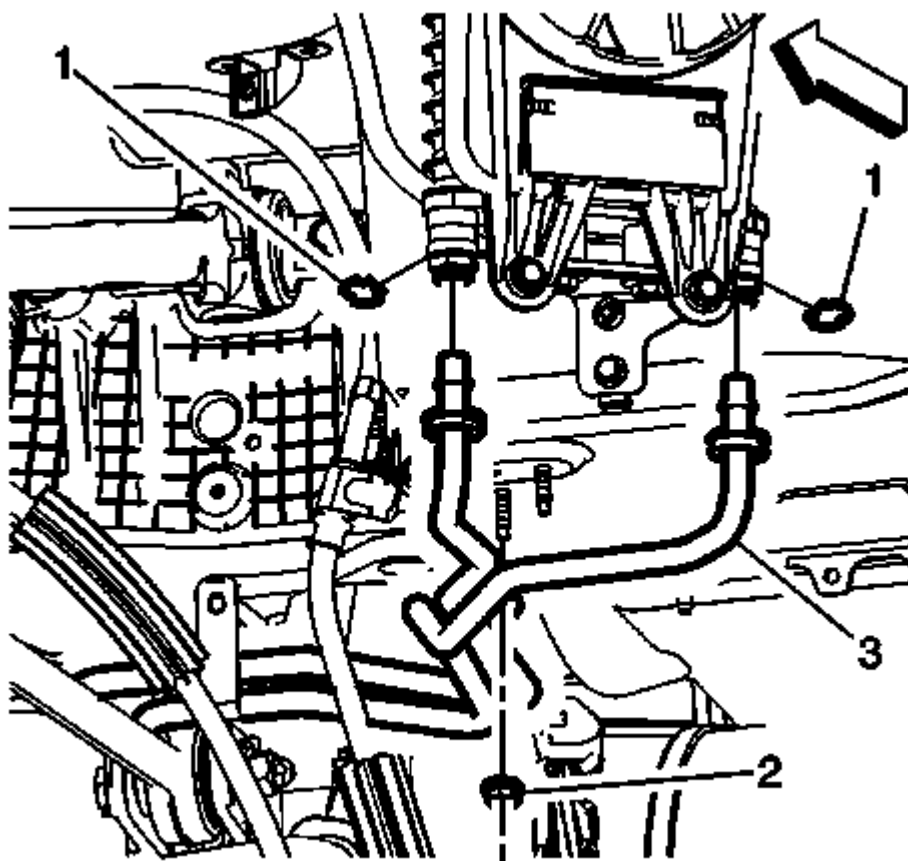


Fig. 85: Transmission Fluid Auxiliary Cooler Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

9. Remove the transmission fluid auxiliary cooler retaining clips (1) from the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
10. Remove the transmission fluid cooler inlet and outlet pipe nut (2).
11. Remove the transmission fluid cooler inlet and outlet pipe (3) from the transmission fluid auxiliary cooler.

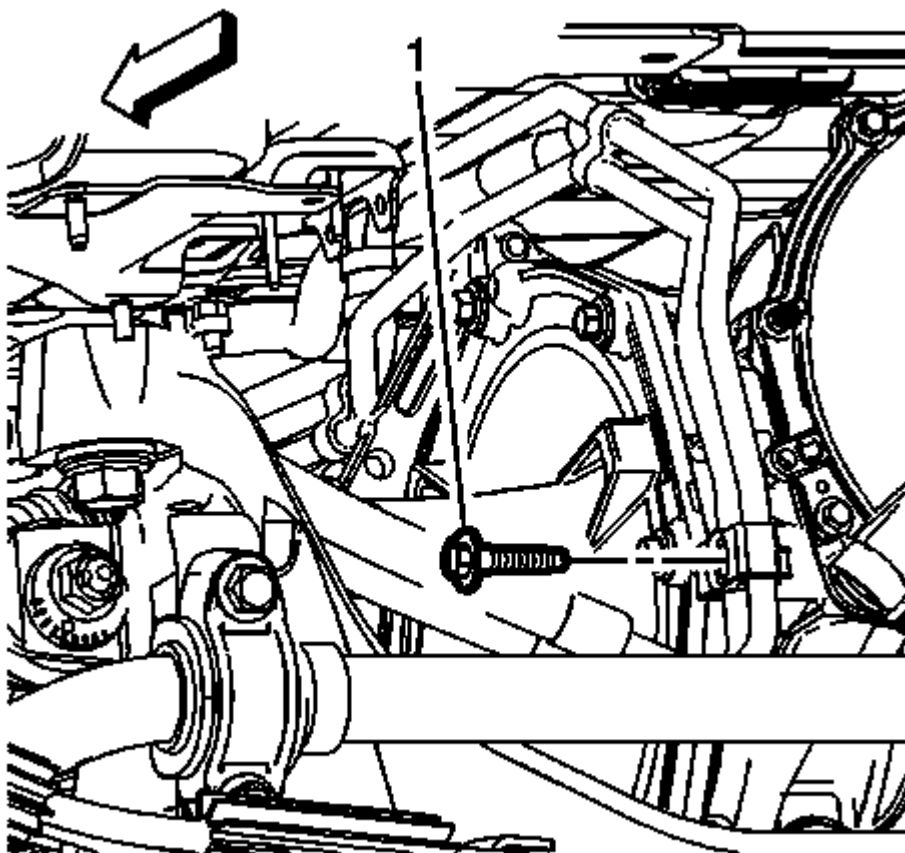


Fig. 86: Transmission Fluid Cooler Inlet And Outlet Pipe Bracket Bolt
Courtesy of GENERAL MOTORS COMPANY

12. Remove the transmission fluid cooler inlet and outlet pipe bracket bolt (1) from the rear differential.

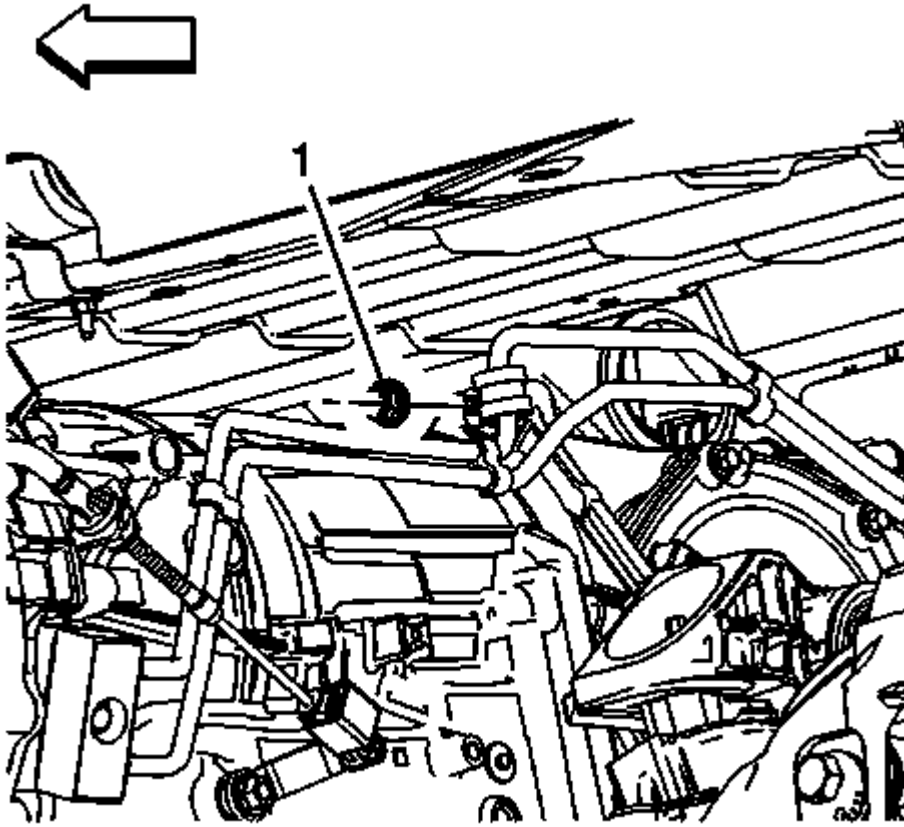


Fig. 87: Transmission Fluid Cooler Inlet And Outlet Pipe Clamp Nut
Courtesy of GENERAL MOTORS COMPANY

13. Remove the transmission fluid cooler inlet and outlet pipe clamp nut (1) from the transmission stud.

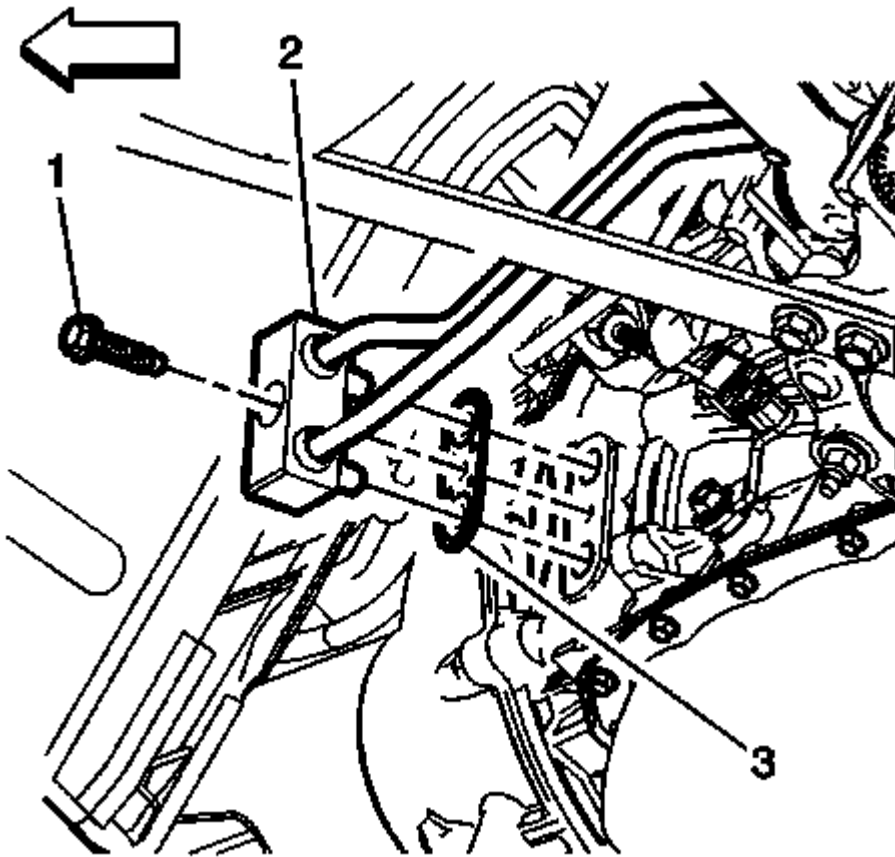


Fig. 88: Transmission Fluid Cooler Inlet And Outlet Pipe Bolt
Courtesy of GENERAL MOTORS COMPANY

14. Remove the transmission fluid cooler inlet and outlet pipe bolt (1) from the transmission.
15. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission.
16. Remove the transmission fluid cooler inlet and outlet pipe seal (3) from the transmission.
17. Remove the transmission fluid cooler inlet and outlet pipe (2) from the vehicle.

Installation Procedure

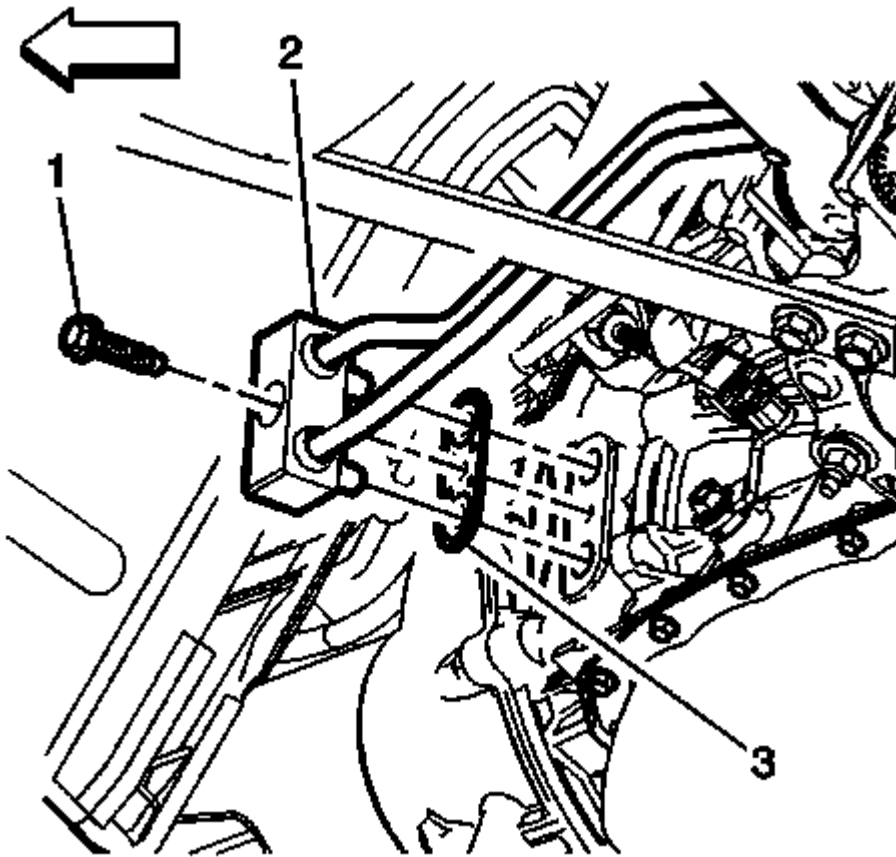


Fig. 89: Transmission Fluid Cooler Inlet And Outlet Pipe Bolt
Courtesy of GENERAL MOTORS COMPANY

1. Install the fluid cooler inlet and outlet pipe (2) to the vehicle.
2. Install the transmission fluid cooler inlet and outlet pipe seal (3) to the transmission.
3. Install the transmission fluid cooler inlet and outlet pipe (2) to the transmission.

CAUTION: Refer to Fastener Caution .

4. Install the transmission fluid cooler inlet and outlet pipe bolt (1) to the transmission and tighten to 22 (16 lb ft).

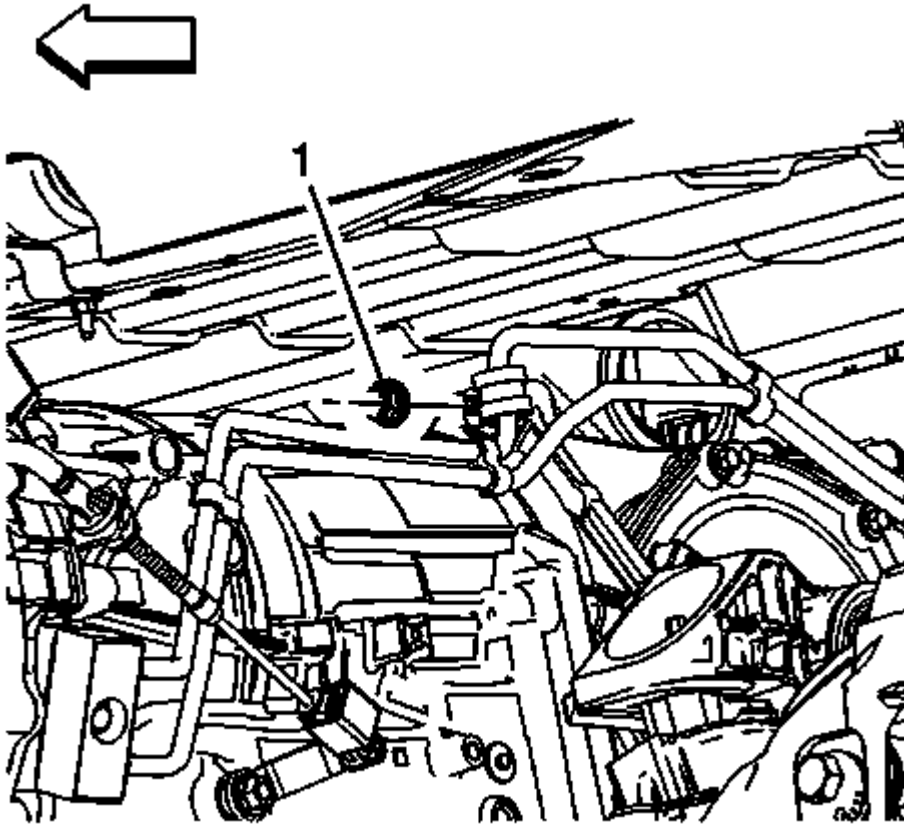


Fig. 90: Transmission Fluid Cooler Inlet And Outlet Pipe Clamp Nut
Courtesy of GENERAL MOTORS COMPANY

5. Install the transmission fluid cooler inlet and outlet pipe clamp nut (1) to the transmission stud and tighten to 22 (16 lb ft).

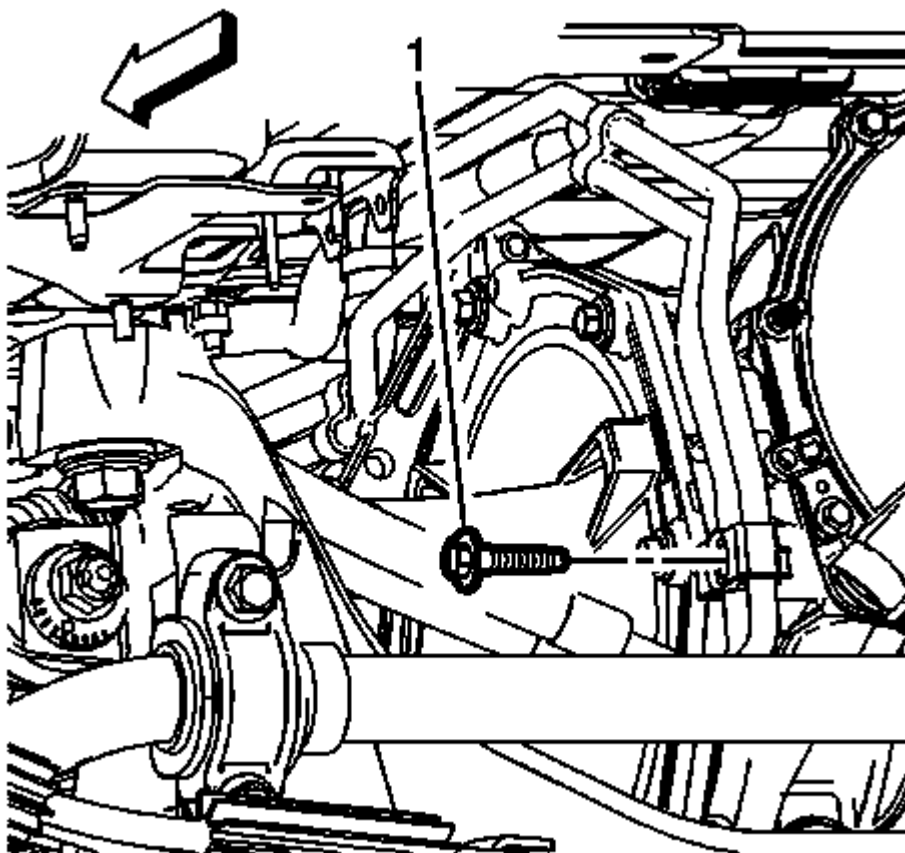


Fig. 91: Transmission Fluid Cooler Inlet And Outlet Pipe Bracket Bolt
Courtesy of GENERAL MOTORS COMPANY

6. Install the transmission fluid cooler inlet and outlet pipe bracket bolt (1) to the rear differential and tighten to 22 (16 lb ft).

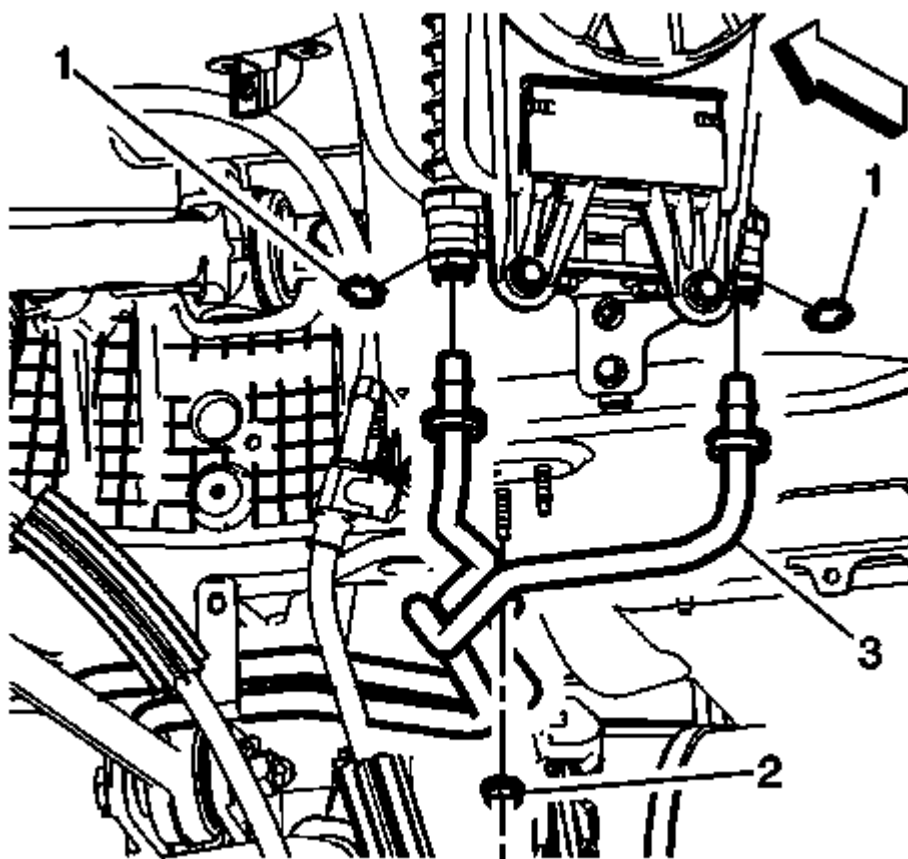


Fig. 92: Transmission Fluid Auxiliary Cooler Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

7. Install the transmission fluid auxiliary cooler retaining clips (1) to the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
8. Install the transmission fluid cooler inlet and outlet pipe (3) to the transmission fluid auxiliary cooler.
9. Install the transmission fluid cooler inlet and outlet pipe nut (2) and tighten to 9 (80 lb in).

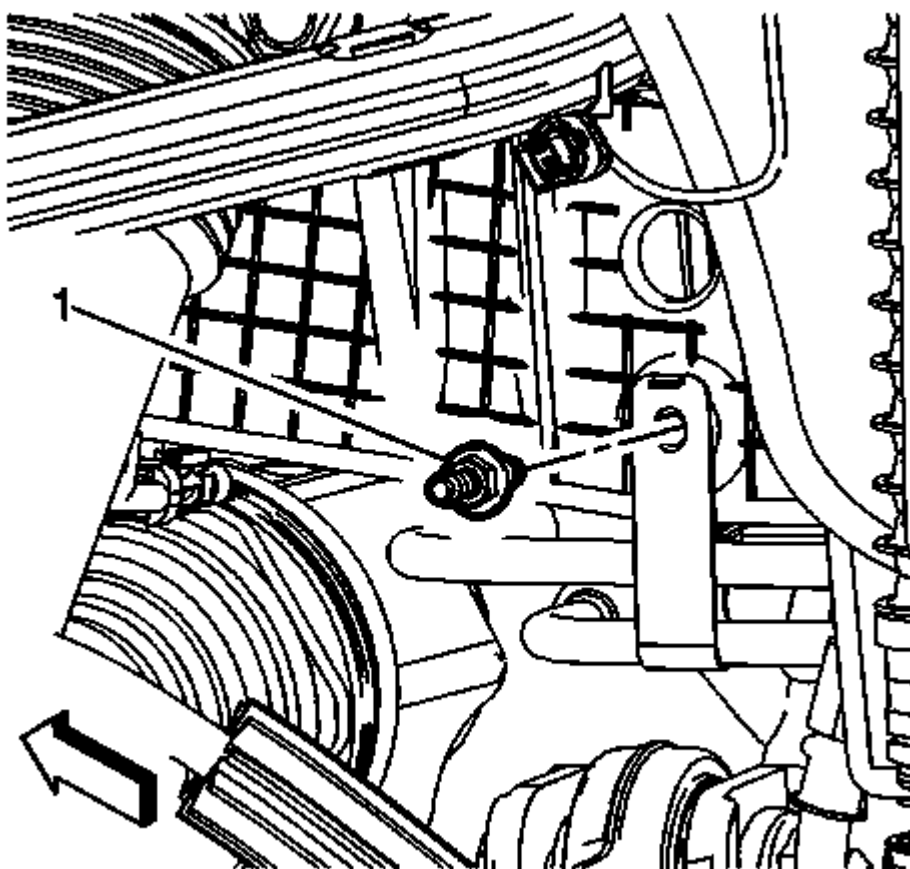


Fig. 93: Transmission Fluid Cooler Inlet And Outlet Pipe Stud
Courtesy of GENERAL MOTORS COMPANY

10. Install transmission fluid cooler inlet and outlet pipe stud (1) to the frame and tighten to 12 (106 lb in).

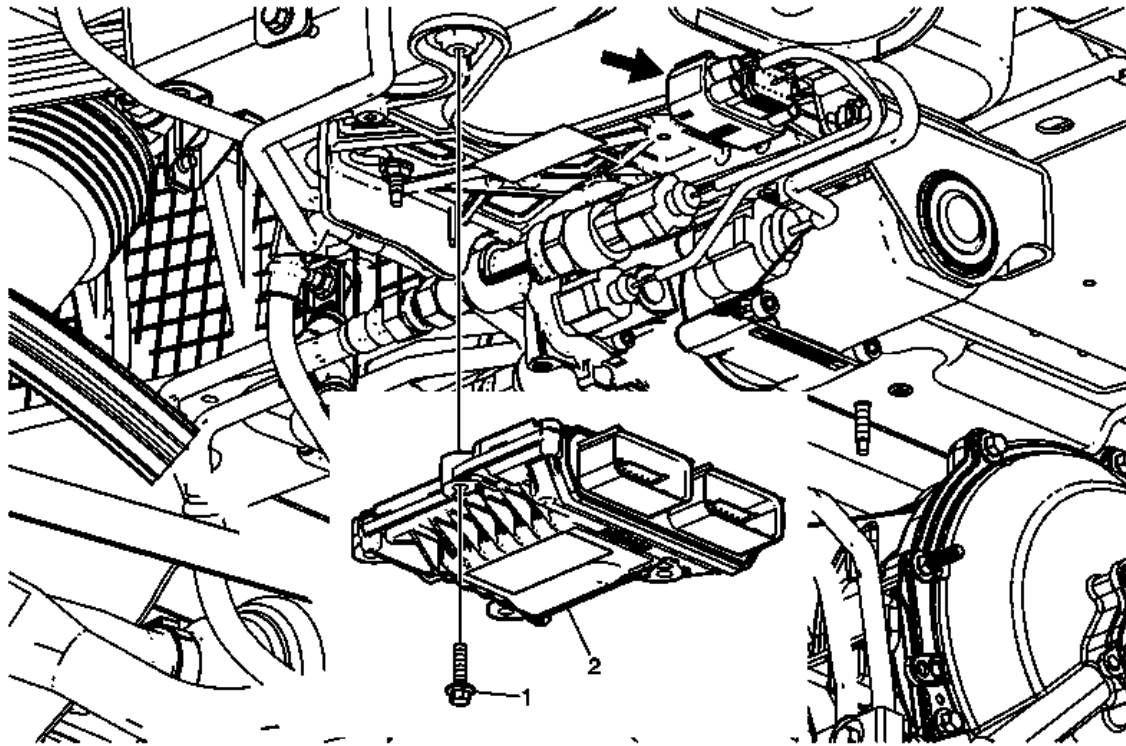


Fig. 94: Rear Wheel Drive Module
Courtesy of GENERAL MOTORS COMPANY

11. Install the rear wheel drive module (2) if equipped. Refer to **Rear Wheel Drive Module Replacement** .

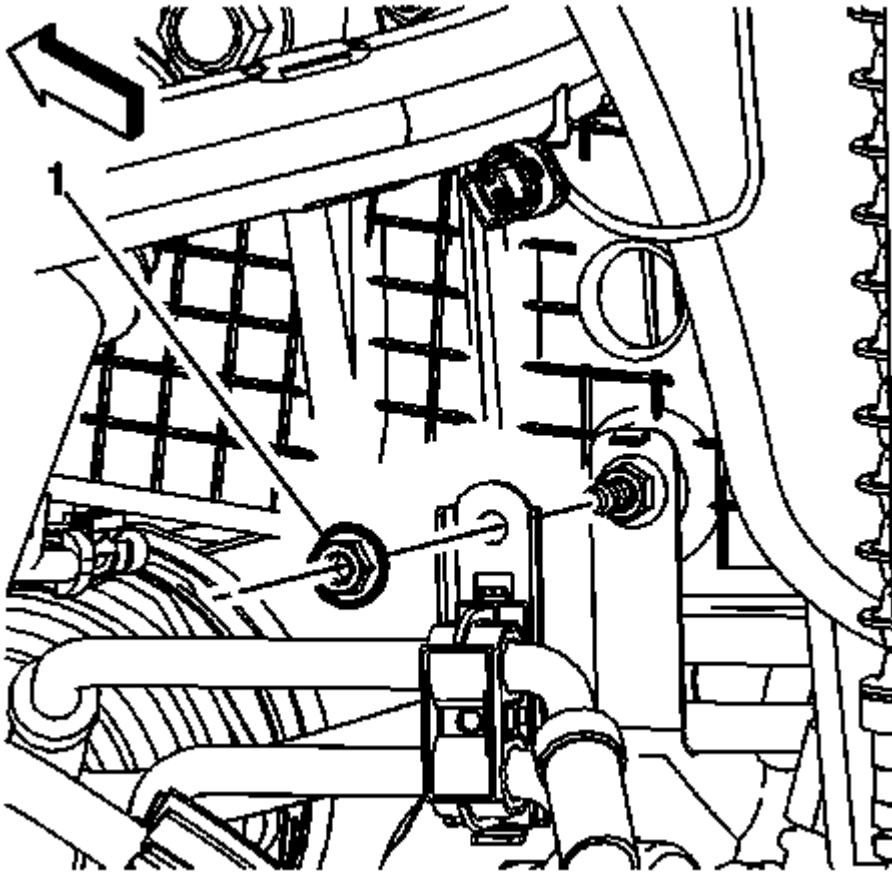


Fig. 95: Rear Wheel Drive Module Nut
Courtesy of GENERAL MOTORS COMPANY

12. Install the rear wheel drive module nut (1) to the rear wheel drive module line retainer and tighten to 9 (80 lb in) if equipped.
13. Remove the drain pan from under the vehicle.
14. Install the left exhaust muffler. Refer to **Exhaust Muffler Replacement - Left Side** .
15. Install the Intermediate pipe. Refer to **Intermediate Pipe Replacement** .
16. Install the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement** .
17. Lower the vehicle.
18. Fill the transmission to the proper fluid level. Refer to **Transmission Fluid Fill Procedure** .
19. Inspect for fluid leaks.

TRANSMISSION FLUID COOLER INLET AND OUTLET PIPE REPLACEMENT (MEL CONVERTIBLE)

Removal Procedure

1. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .

3. Remove the Intermediate pipe. Refer to Intermediate Pipe Replacement .
4. Remove the left exhaust muffler. Refer to Exhaust Muffler Replacement - Left Side .
5. Install a drain pan under the vehicle.

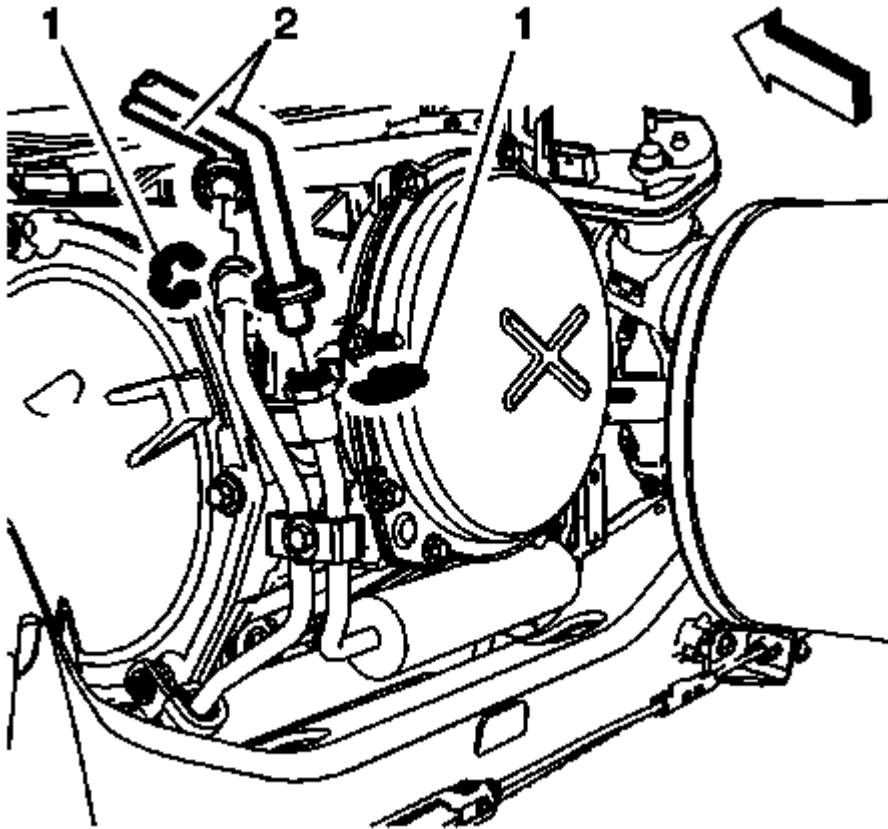


Fig. 96: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

6. Remove the transmission fluid cooler inlet and outlet pipe retaining clips (1) from the transmission fluid auxiliary cooler. Refer to Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection.
7. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission fluid auxiliary cooler.

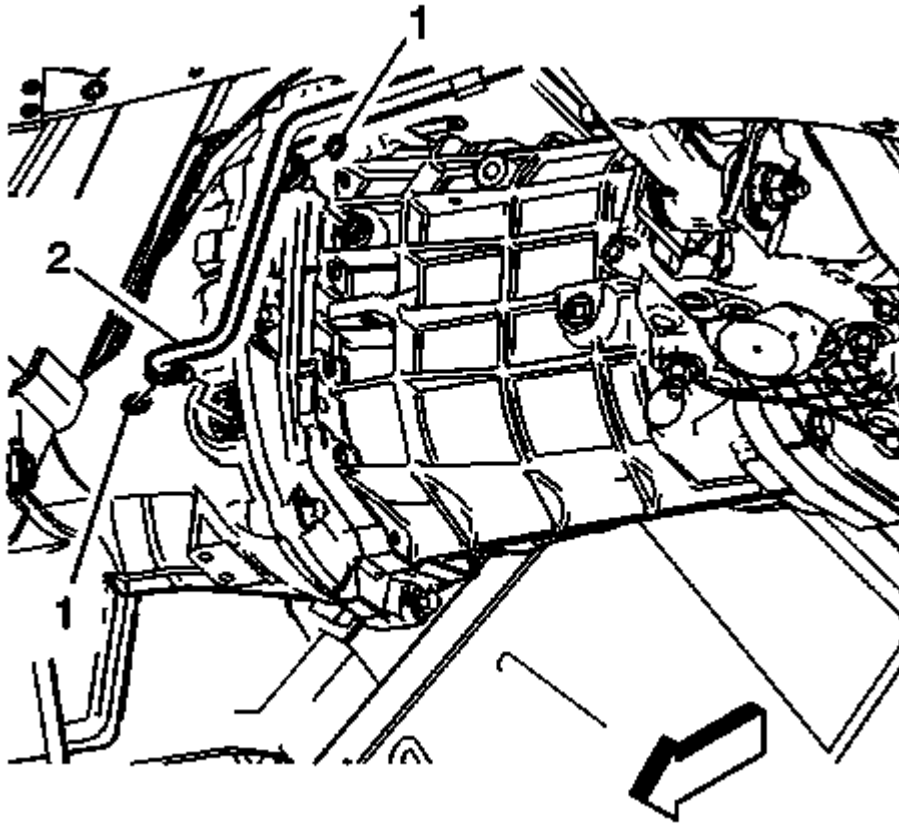


Fig. 97: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

8. Remove the transmission fluid cooler inlet and outlet pipe retaining clips (1) from the transmission. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
9. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission.
10. Remove the transmission fluid cooler inlet and outlet pipe (2) from the retaining clip.
11. Remove the transmission fluid cooler inlet and outlet pipe (2) from the vehicle.

Installation Procedure

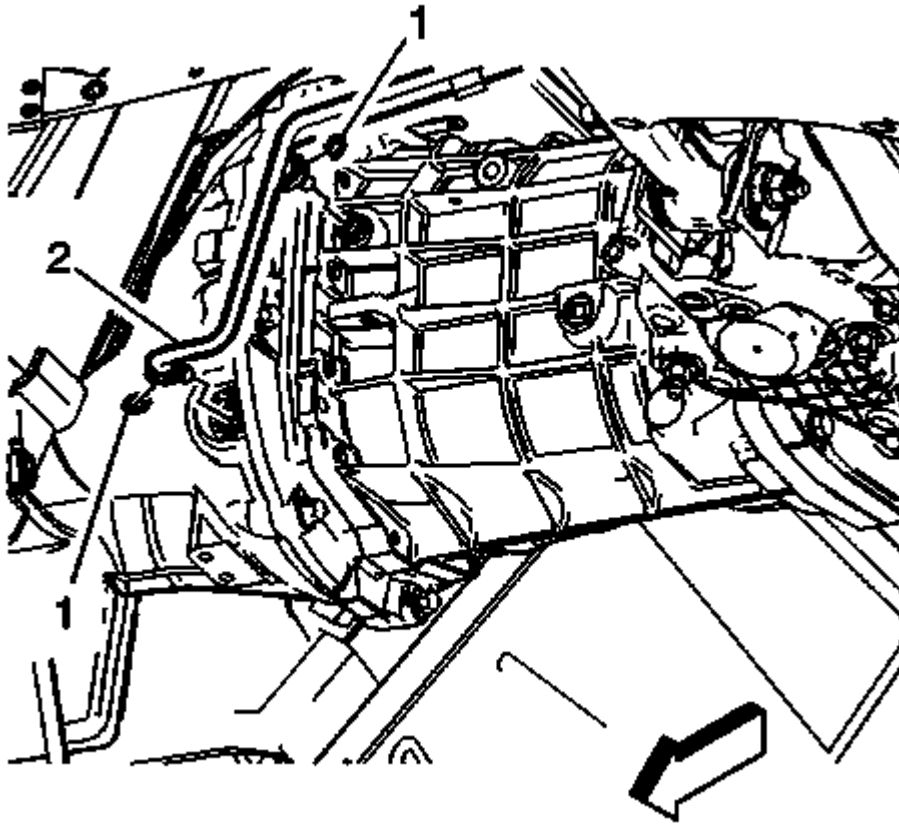


Fig. 98: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

1. Install the fluid cooler inlet and outlet pipe (2) to the vehicle.
2. Install the transmission fluid cooler inlet and outlet pipe (2) to the retaining clip.
3. Install the transmission fluid cooler inlet and outlet pipe (2) to the transmission.
4. Install the transmission fluid cooler inlet and outlet pipe retaining clips (1) to the transmission.
Refer to Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection.

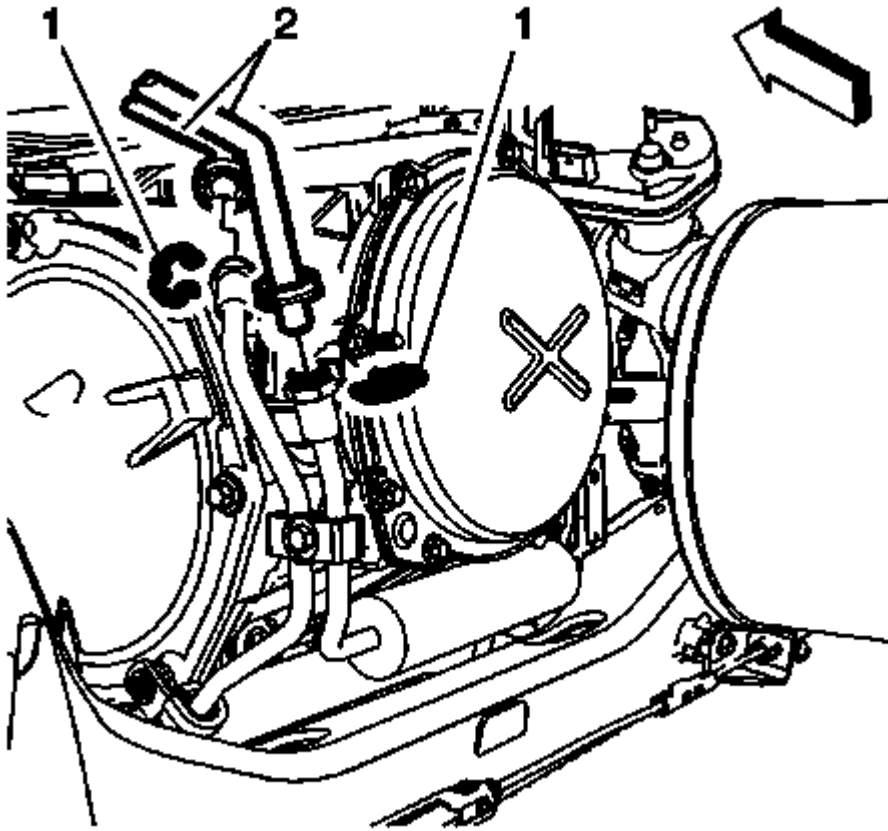


Fig. 99: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

5. Install the transmission fluid cooler inlet and outlet pipe (2) to the transmission fluid auxiliary cooler.
6. Install the transmission fluid cooler inlet and outlet pipe retaining clips (1) to the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
7. Remove the drain pan from under the vehicle.
8. Install the left exhaust muffler. Refer to **Exhaust Muffler Replacement - Left Side** .
9. Install the Intermediate pipe. Refer to **Intermediate Pipe Replacement** .
10. Install the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement** .
11. Lower the vehicle.
12. Fill the transmission to the proper fluid level. Refer to **Transmission Fluid Fill Procedure** .
13. Inspect for fluid leaks.

TRANSMISSION FLUID COOLER INLET AND OUTLET PIPE REPLACEMENT (MYC CONVERTIBLE)

1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .
2. Remove the rear bumper fascia. Refer to Rear Bumper Fascia Replacement .
3. Remove the Intermediate pipe. Refer to Intermediate Pipe Replacement .
4. Remove the left exhaust muffler. Refer to Exhaust Muffler Replacement - Left Side .
5. Install a drain pan under the vehicle.

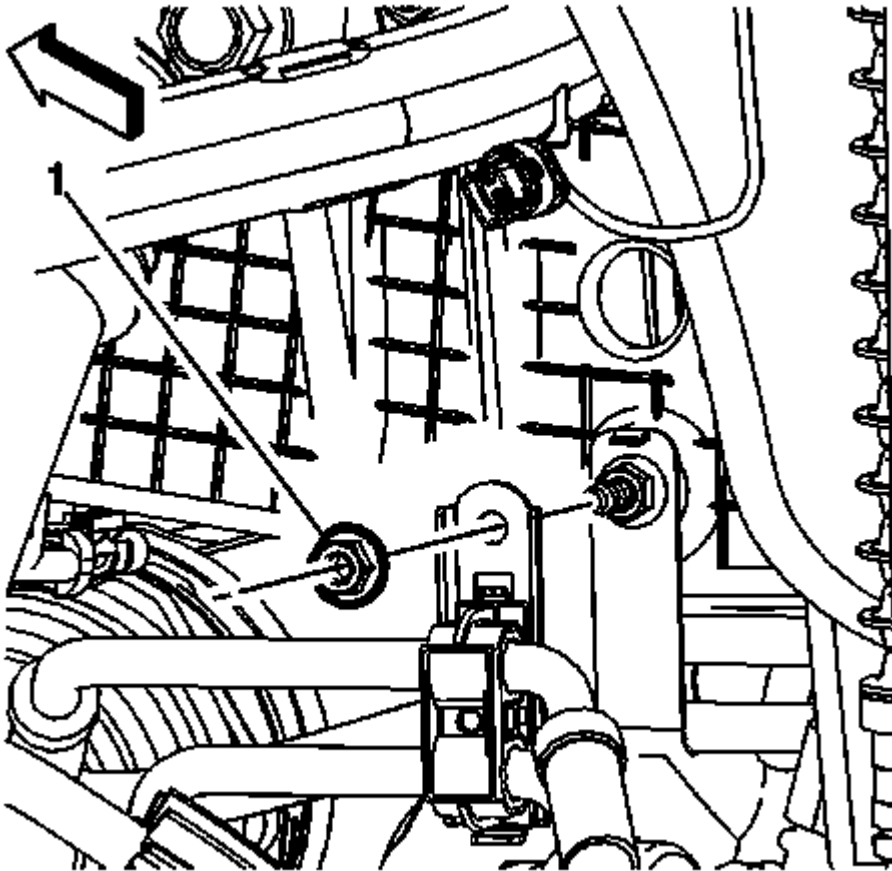


Fig. 100: Rear Wheel Drive Module Nut
Courtesy of GENERAL MOTORS COMPANY

6. Remove the rear wheel drive module nut (1) from the transmission fluid cooler inlet and outlet pipe stud if equipped.

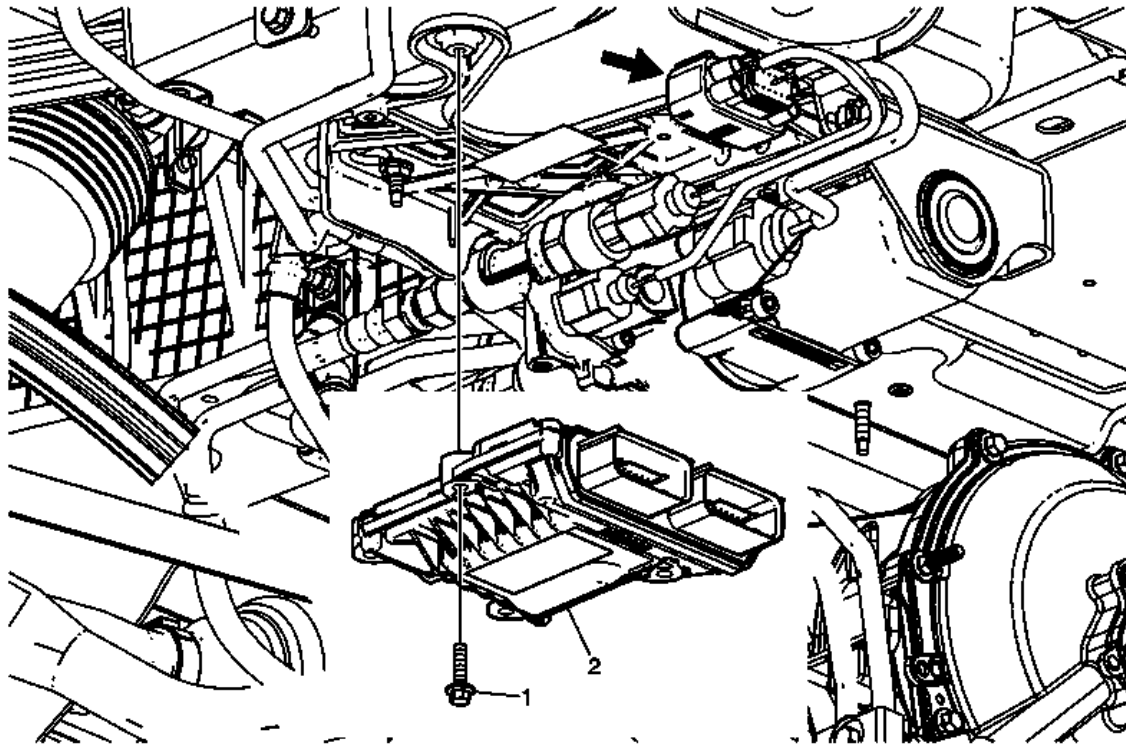


Fig. 101: Rear Wheel Drive Module
Courtesy of GENERAL MOTORS COMPANY

7. Without disconnecting the rear wheel drive module lines, remove the rear wheel drive module (2) and reposition out of the way if equipped. Refer to **Rear Wheel Drive Module Replacement**.

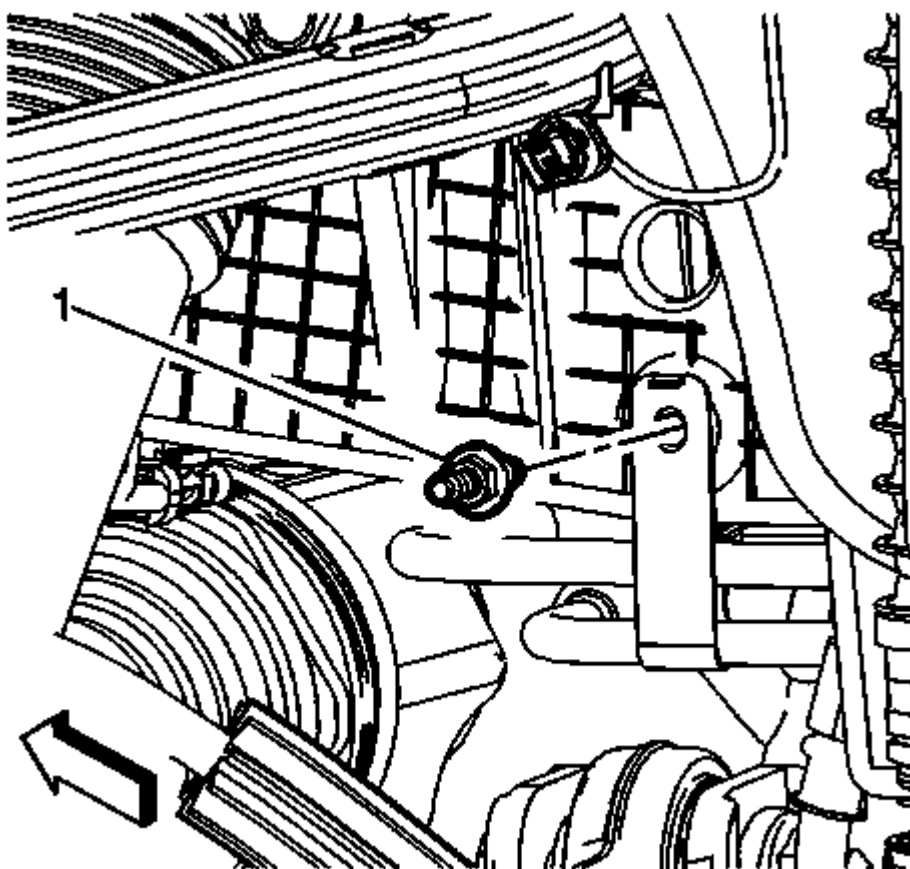


Fig. 102: Transmission Fluid Cooler Inlet And Outlet Pipe Stud
Courtesy of GENERAL MOTORS COMPANY

8. Remove transmission fluid cooler inlet and outlet pipe stud (1) from the frame.

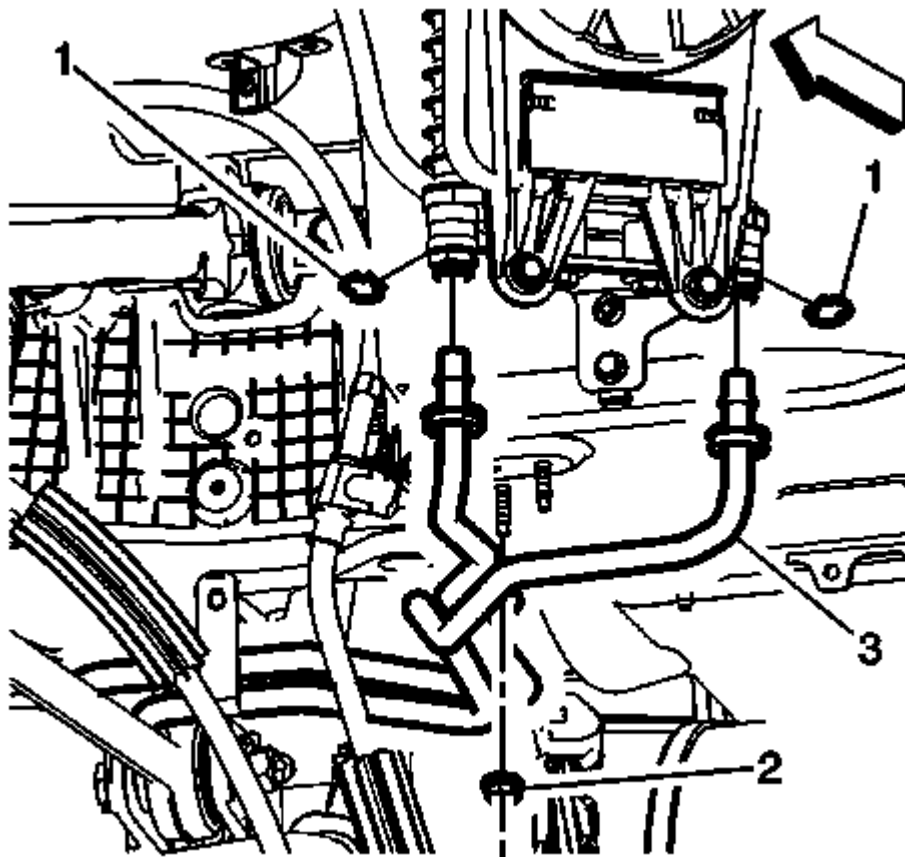


Fig. 103: Transmission Fluid Auxiliary Cooler Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

9. Remove the transmission fluid auxiliary cooler retaining clips (1) from the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
10. Remove the transmission fluid cooler inlet and outlet pipe nut (2).
11. Remove the transmission fluid cooler inlet and outlet pipe (3) from the transmission fluid auxiliary cooler.

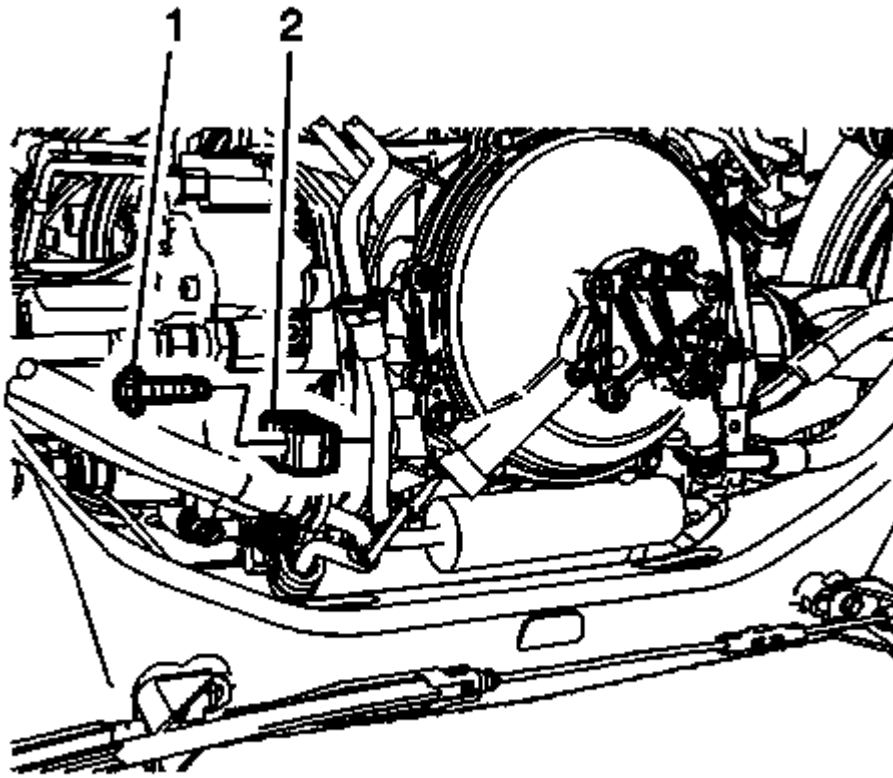


Fig. 104: Transmission Fluid Auxiliary Cooler Bolt
Courtesy of GENERAL MOTORS COMPANY

12. Remove the transmission fluid cooler inlet and outlet pipe bracket bolt (1) and bracket (2) from the rear differential and transmission fluid cooler inlet and outlet pipe.

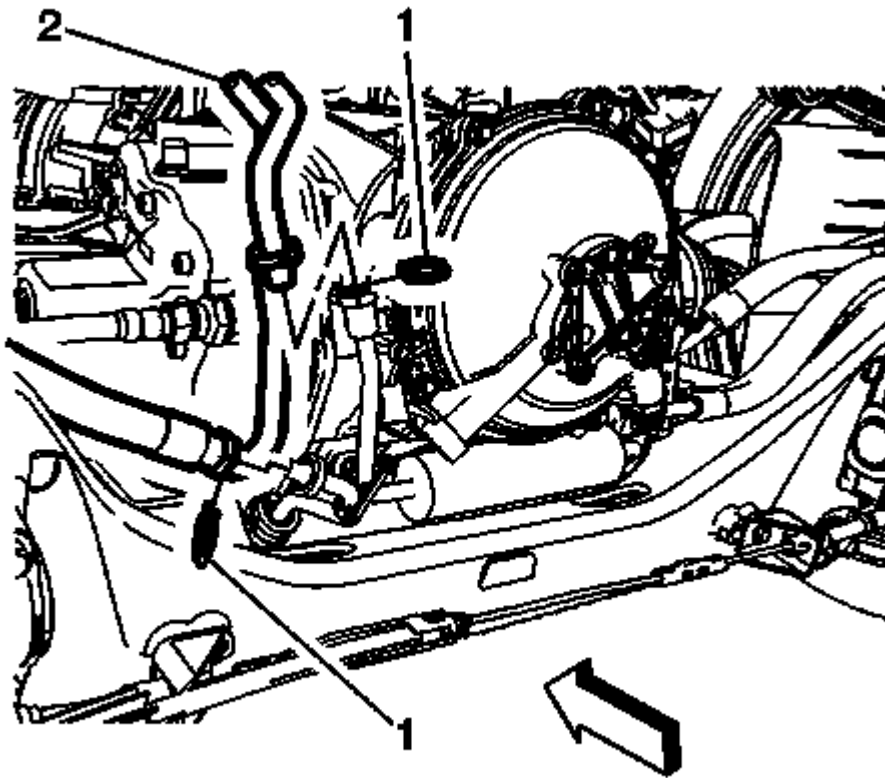


Fig. 105: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

13. Remove the transmission fluid cooler inlet and outlet pipe retaining clips (1) from the transmission fluid auxiliary cooler and the transmission fluid cooler inlet and outlet pipe. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection.**
14. Remove the transmission fluid cooler inlet and outlet pipe from the transmission fluid auxiliary cooler.

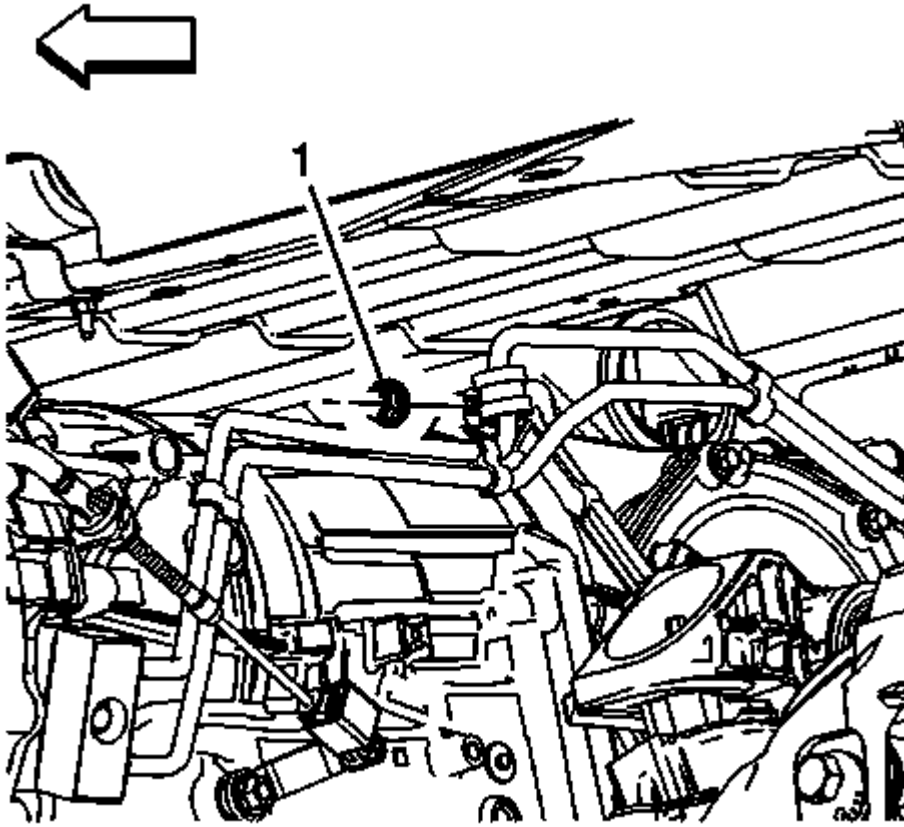


Fig. 106: Transmission Fluid Cooler Inlet And Outlet Pipe Clamp Nut
Courtesy of GENERAL MOTORS COMPANY

15. Remove the transmission fluid cooler inlet and outlet pipe clamp nut (1) from the transmission stud.

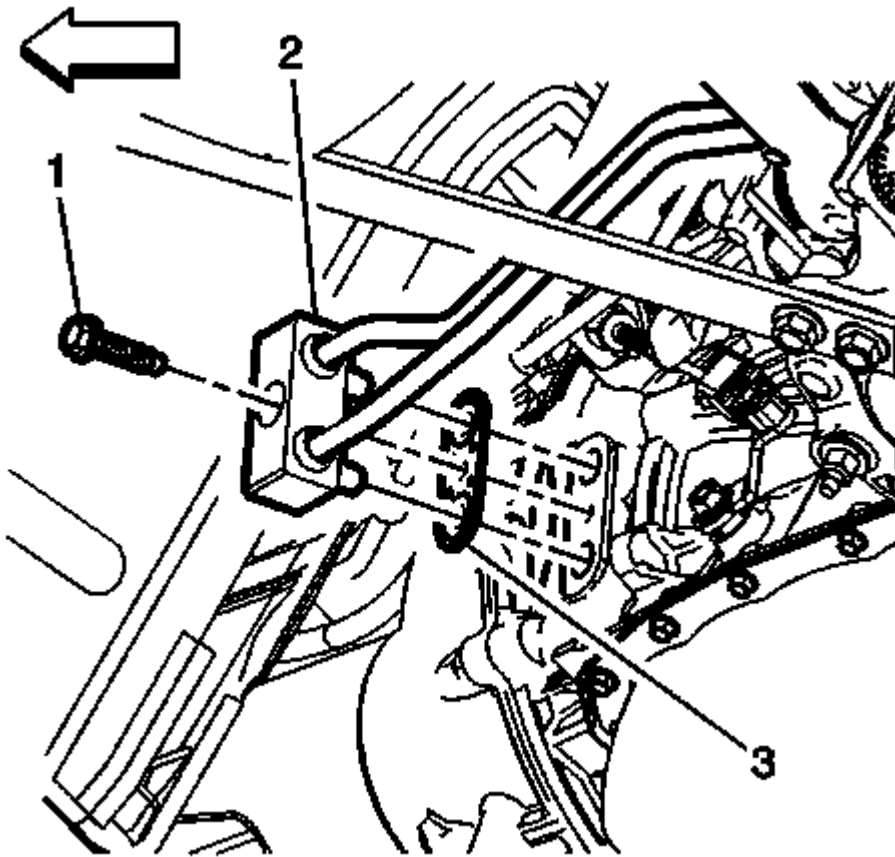


Fig. 107: Transmission Fluid Cooler Inlet And Outlet Pipe Bolt
Courtesy of GENERAL MOTORS COMPANY

16. Remove the transmission fluid cooler inlet and outlet pipe bolt (1) from the transmission.
17. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission.
18. Remove the transmission fluid cooler inlet and outlet pipe seal (3) from the transmission.
19. Remove the transmission fluid cooler inlet and outlet pipe (2) from the vehicle.

Installation Procedure

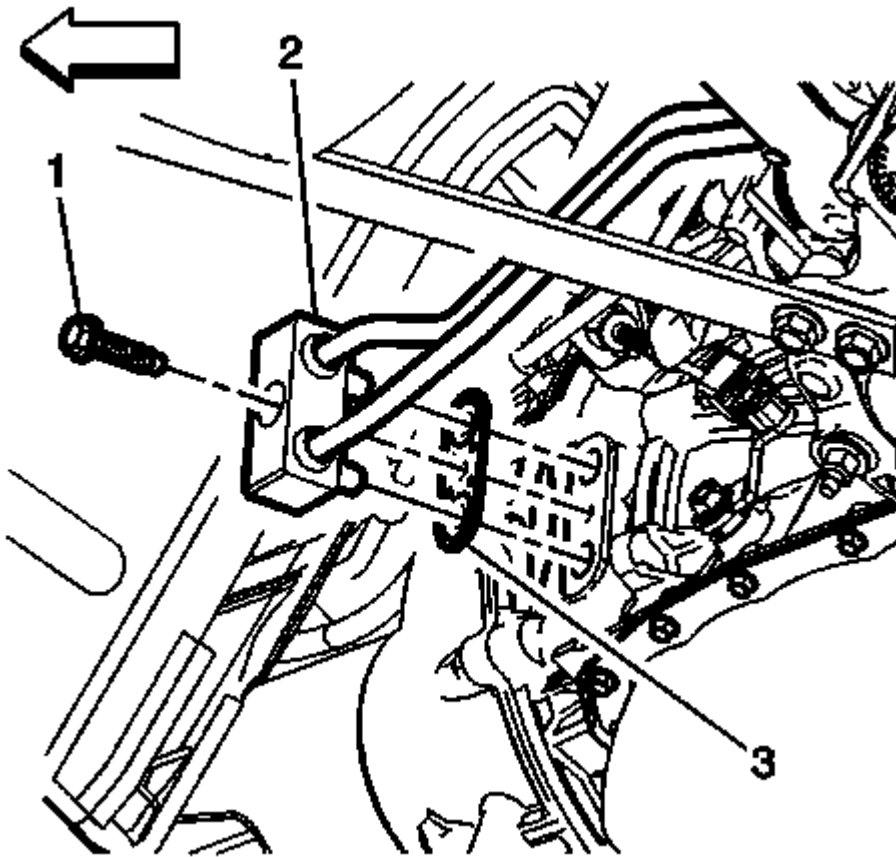


Fig. 108: Transmission Fluid Cooler Inlet And Outlet Pipe Bolt
Courtesy of GENERAL MOTORS COMPANY

1. Install the fluid cooler inlet and outlet pipe (2) to the vehicle.
2. Install the transmission fluid cooler inlet and outlet pipe seal (3) to the transmission.
3. Install the transmission fluid cooler inlet and outlet pipe (2) to the transmission.

CAUTION: Refer to Fastener Caution .

4. Install the transmission fluid cooler inlet and outlet pipe bolt (1) to the transmission and tighten to 22 (16 lb ft).

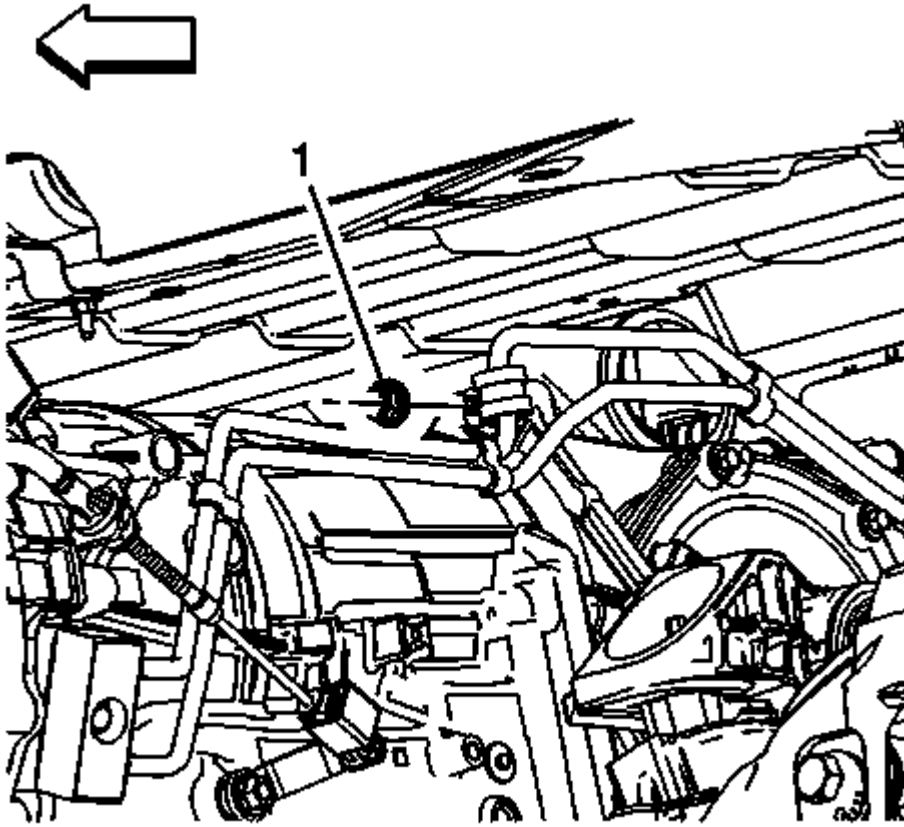


Fig. 109: Transmission Fluid Cooler Inlet And Outlet Pipe Clamp Nut
Courtesy of GENERAL MOTORS COMPANY

5. Install the transmission fluid cooler inlet and outlet pipe clamp nut (1) to the transmission stud and tighten to 22 (16 lb ft).

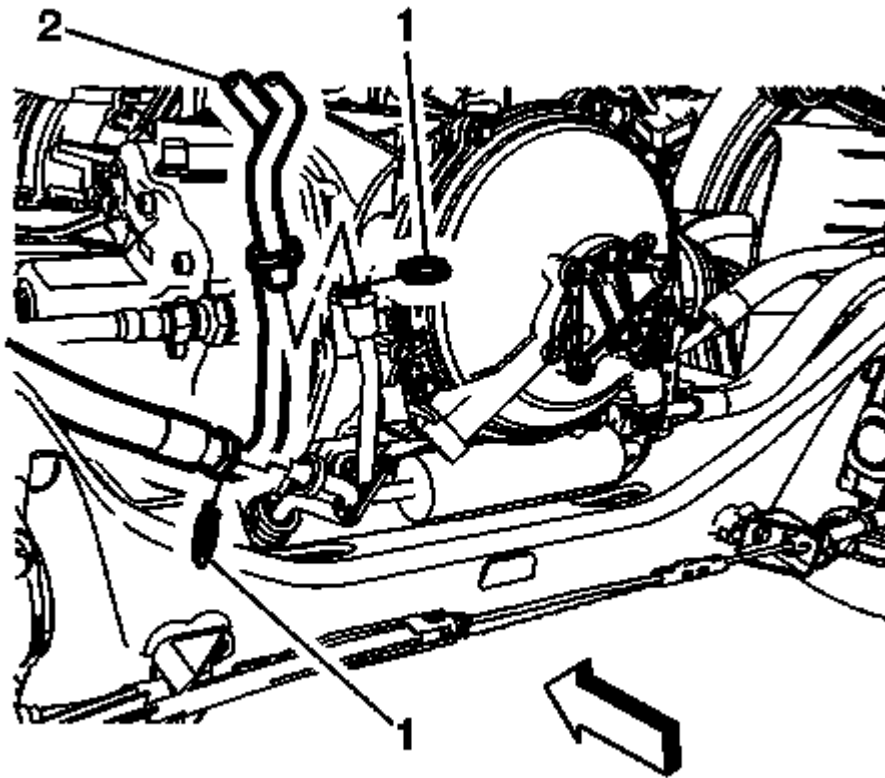


Fig. 110: Transmission Fluid Cooler Inlet And Outlet Pipe Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

6. Install the transmission fluid cooler inlet and outlet pipe to the transmission fluid auxiliary cooler.
7. Install the transmission fluid cooler inlet and outlet pipe retaining clips (1) to the transmission fluid auxiliary cooler and the transmission fluid cooler inlet and outlet pipe. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection.**

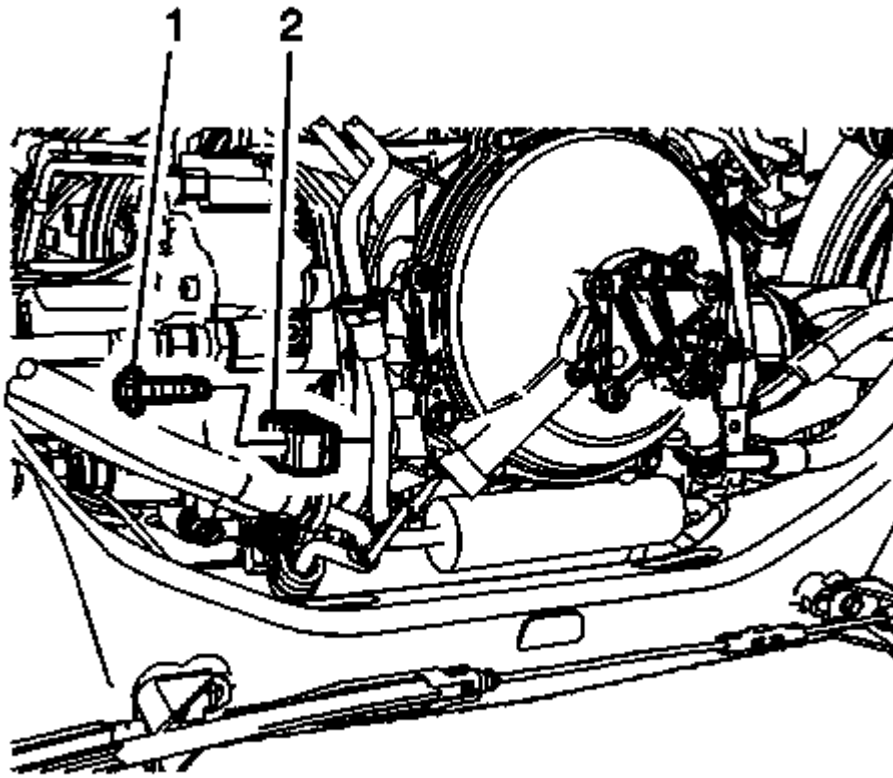


Fig. 111: Transmission Fluid Auxiliary Cooler Bolt
Courtesy of GENERAL MOTORS COMPANY

8. Install the transmission fluid cooler inlet and outlet pipe bracket to the rear differential and transmission fluid cooler inlet and outlet pipe.
9. Install the transmission fluid cooler inlet and outlet pipe bracket bolt (1) and tighten to 9 (80 lb in).

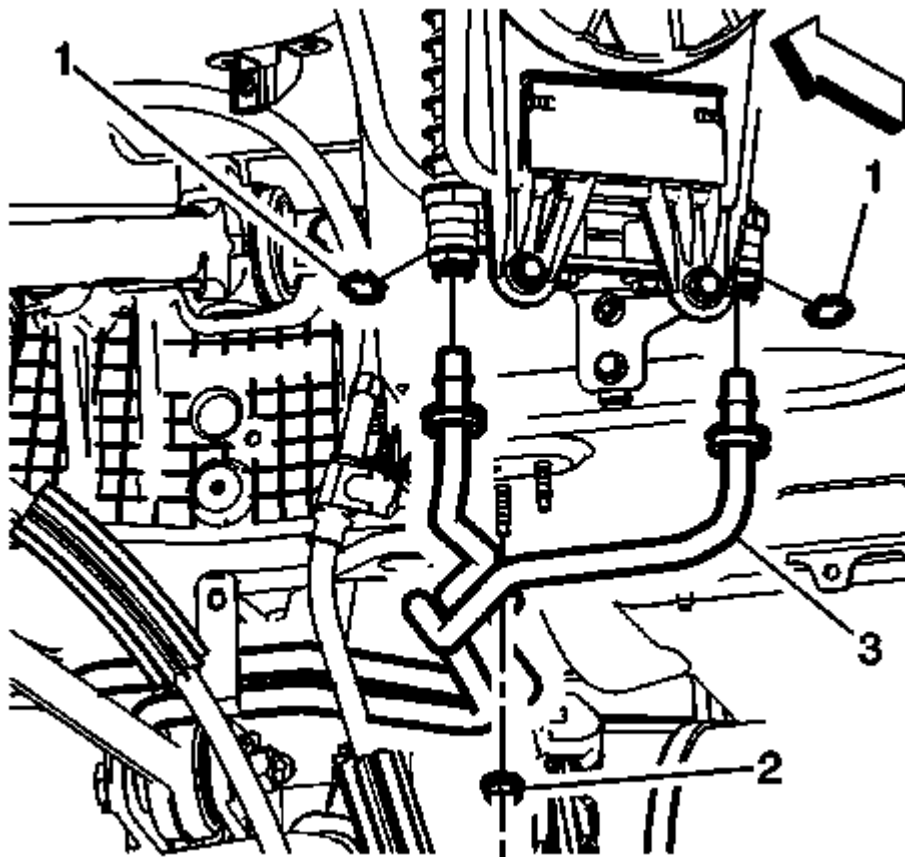


Fig. 112: Transmission Fluid Auxiliary Cooler Retaining Clips
Courtesy of GENERAL MOTORS COMPANY

10. Install the transmission fluid auxiliary cooler retaining clips (1) to the transmission fluid auxiliary cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
11. Install the transmission fluid cooler inlet and outlet pipe (3) to the transmission fluid auxiliary cooler.
12. Install the transmission fluid cooler inlet and outlet pipe nut (2) and tighten to 9 (80 lb in).

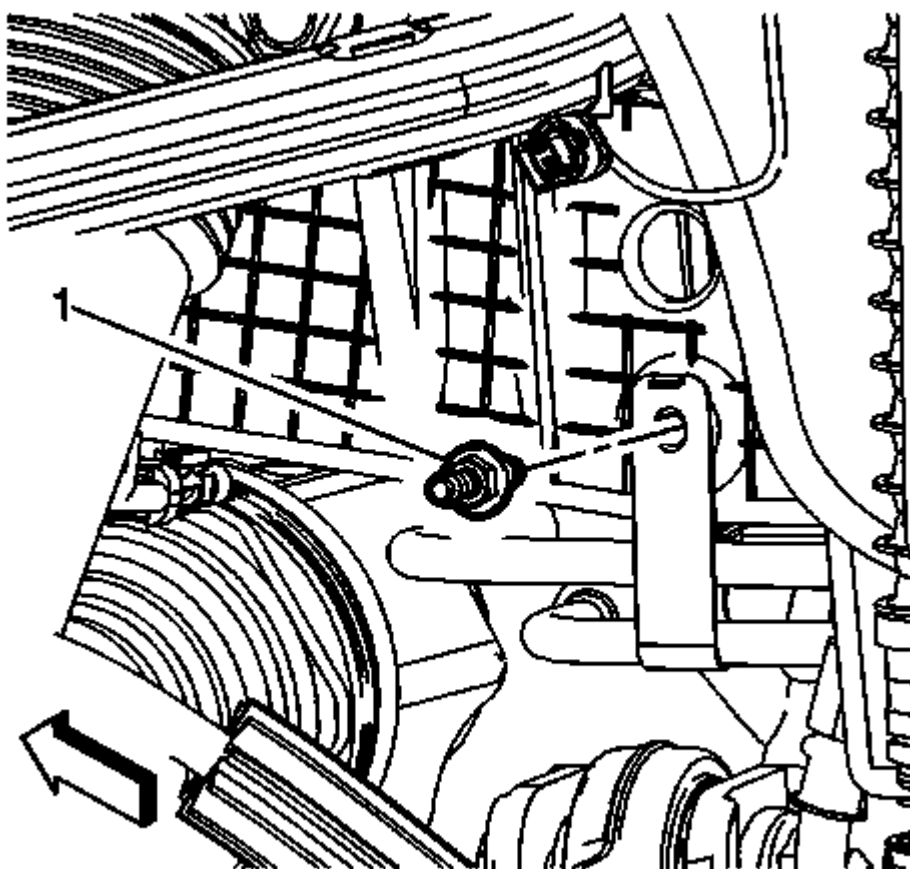


Fig. 113: Transmission Fluid Cooler Inlet And Outlet Pipe Stud
Courtesy of GENERAL MOTORS COMPANY

13. Install transmission fluid cooler inlet and outlet pipe stud (1) to the frame and tighten to 12 (106 lb in).

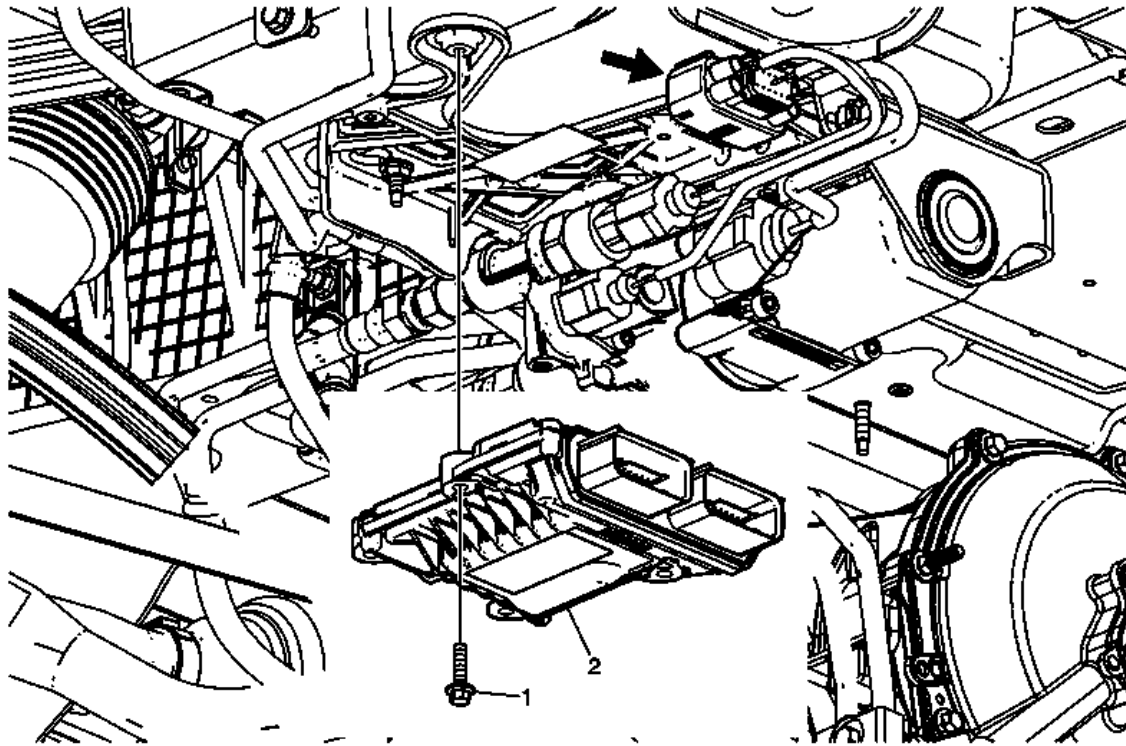


Fig. 114: Rear Wheel Drive Module
Courtesy of GENERAL MOTORS COMPANY

14. Install the rear wheel drive module (2) if equipped. Refer to **Rear Wheel Drive Module Replacement**.

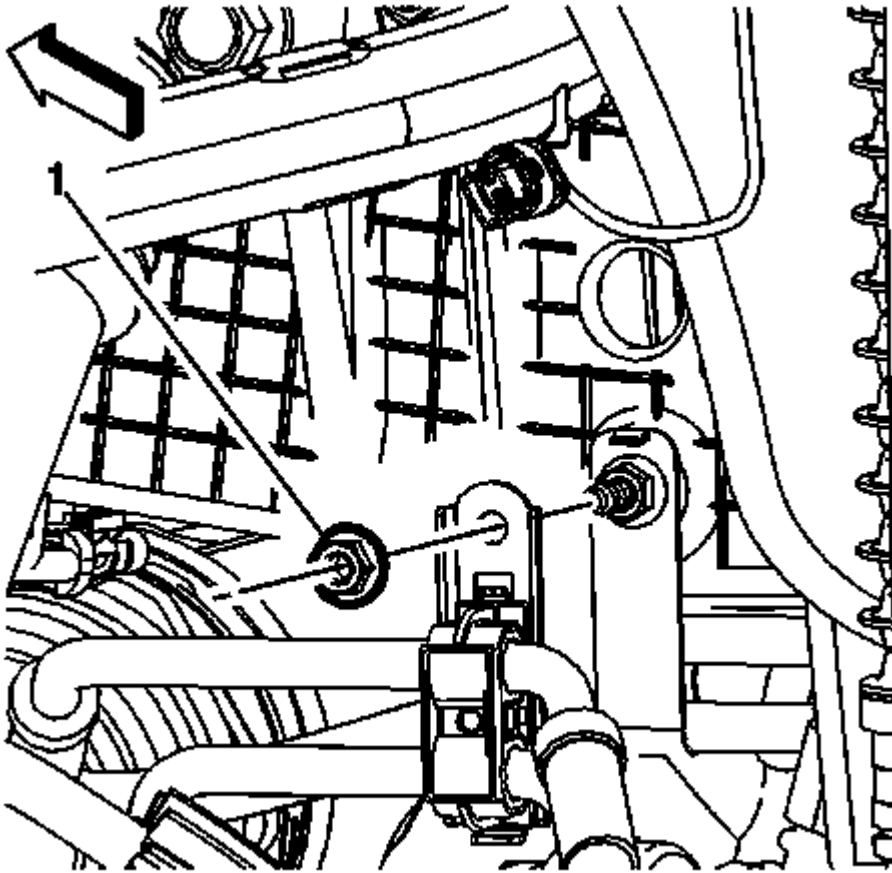


Fig. 115: Rear Wheel Drive Module Nut
Courtesy of GENERAL MOTORS COMPANY

15. Install the rear wheel drive module nut (1) to the rear wheel drive module line retainer and tighten to 9 (80 lb in) if equipped.
16. Remove the drain pan from under the vehicle.
17. Install the left exhaust muffler. Refer to **Exhaust Muffler Replacement - Left Side** .
18. Install the Intermediate pipe. Refer to **Intermediate Pipe Replacement** .
19. Install the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement** .
20. Lower the vehicle.
21. Fill the transmission to the proper fluid level. Refer to **Transmission Fluid Fill Procedure** .
22. Inspect for fluid leaks.

TRANSMISSION FLUID COOLER BAFFLE REPLACEMENT (MEL, MEP, MYC COUPE)

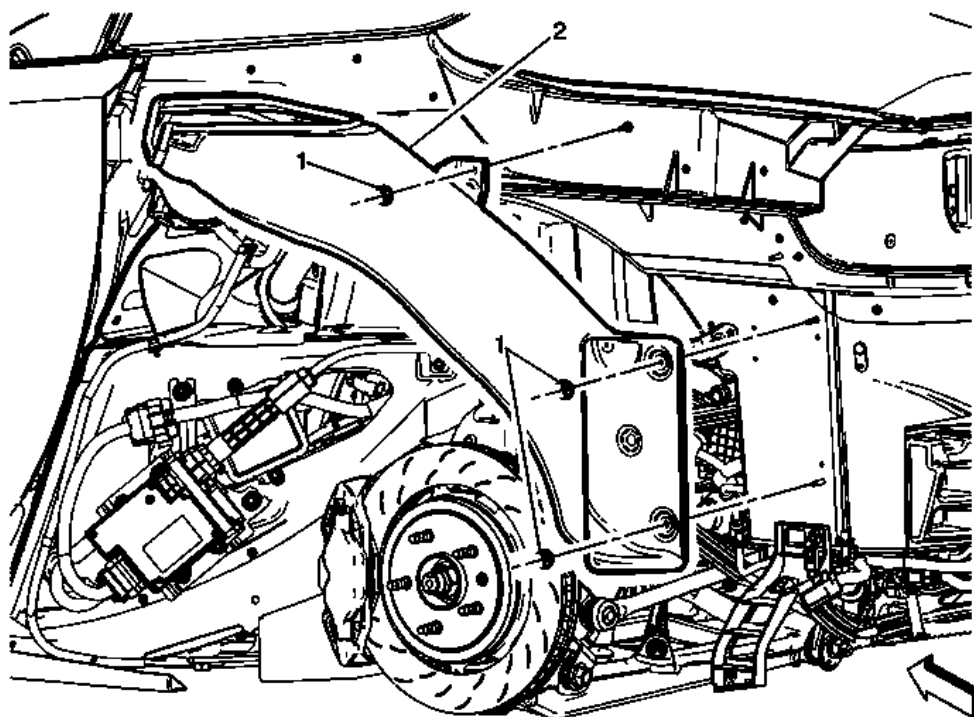


Fig. 116: Transmission Fluid Cooler Baffle (MEL, MEP, MYC Coupe)
Courtesy of GENERAL MOTORS COMPANY

Transmission Fluid Cooler Baffle Replacement (MEL, MEP, MYC Coupe)

Callout	Component Name
Preliminary Procedures 1. Remove the left quarter outer panel. Refer to <u>Quarter Outer Panel Replacement - Left Side (Coupe)</u> . 2. Remove the quarter panel air scoop. Refer to <u>Quarter Panel Air Scoop Replacement</u> . 3. Remove the transmission fluid auxiliary cooler. Refer to <u>Transmission Fluid Auxiliary Cooler Replacement (MYC)</u>, <u>Transmission Fluid Auxiliary Cooler Replacement (MEL, MEP)</u>.	
1	Transmission Fluid Cooler Baffle Nut (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 7 (62 lb in)
2	Transmission Fluid Cooler Baffle

TRANSMISSION FLUID COOLER BAFFLE REPLACEMENT (MYC CONVERTIBLE)

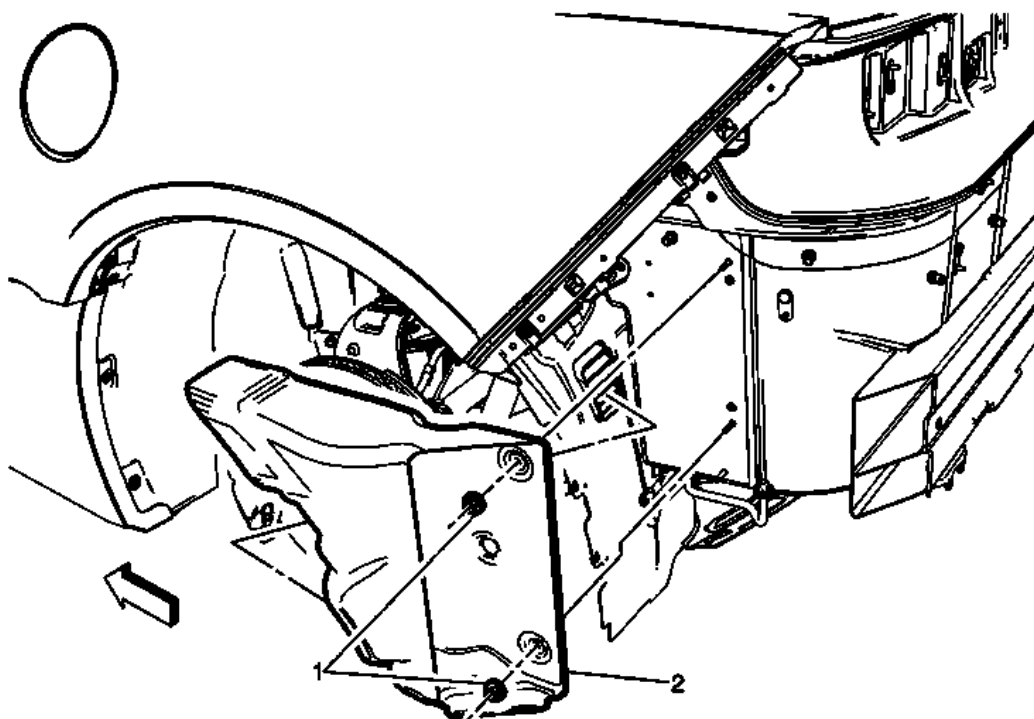


Fig. 117: Transmission Fluid Cooler Baffle (MYC Convertible)
 Courtesy of GENERAL MOTORS COMPANY

Transmission Fluid Cooler Baffle Replacement (MYC Convertible)

Callout	Component Name
Preliminary Procedures	
1. Remove the transmission fluid auxiliary cooler. Refer to <u>Transmission Fluid Auxiliary Cooler Replacement (MYC Convertible)</u> .	
1	Transmission Fluid Cooler Baffle Nut (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Tighten 7 (62 lb in)
2	Transmission Fluid Cooler Baffle Procedure Unclip the transmission fluid cooler baffle from the left rear wheelhouse liner.

DESCRIPTION AND OPERATION

TRANSMISSION COOLING FAN DESCRIPTION AND OPERATION

The primary purpose of the transmission cooling fan is to control the air flow moving across the transmission heat exchangers. The transmission cooling fan control system resides in the K38 Chassis Control Module. The chassis control module receives transmission oil temperature and vehicle speed data to control the Pulse Width Modulated (PWM) duty cycle of the cooling fan. The chassis control module communicates on the High Speed GM Local Area Network (HS-GMLAN) serial data bus.

Due to fan power and proximity to the passenger compartment, the cooling fan cannot be run at full power when the vehicle speed is low. At different vehicle speeds, the PWM cooling fan control is ramped up and down. At high vehicle speeds, the PWM cooling fan control is ramped up to maximum speed.

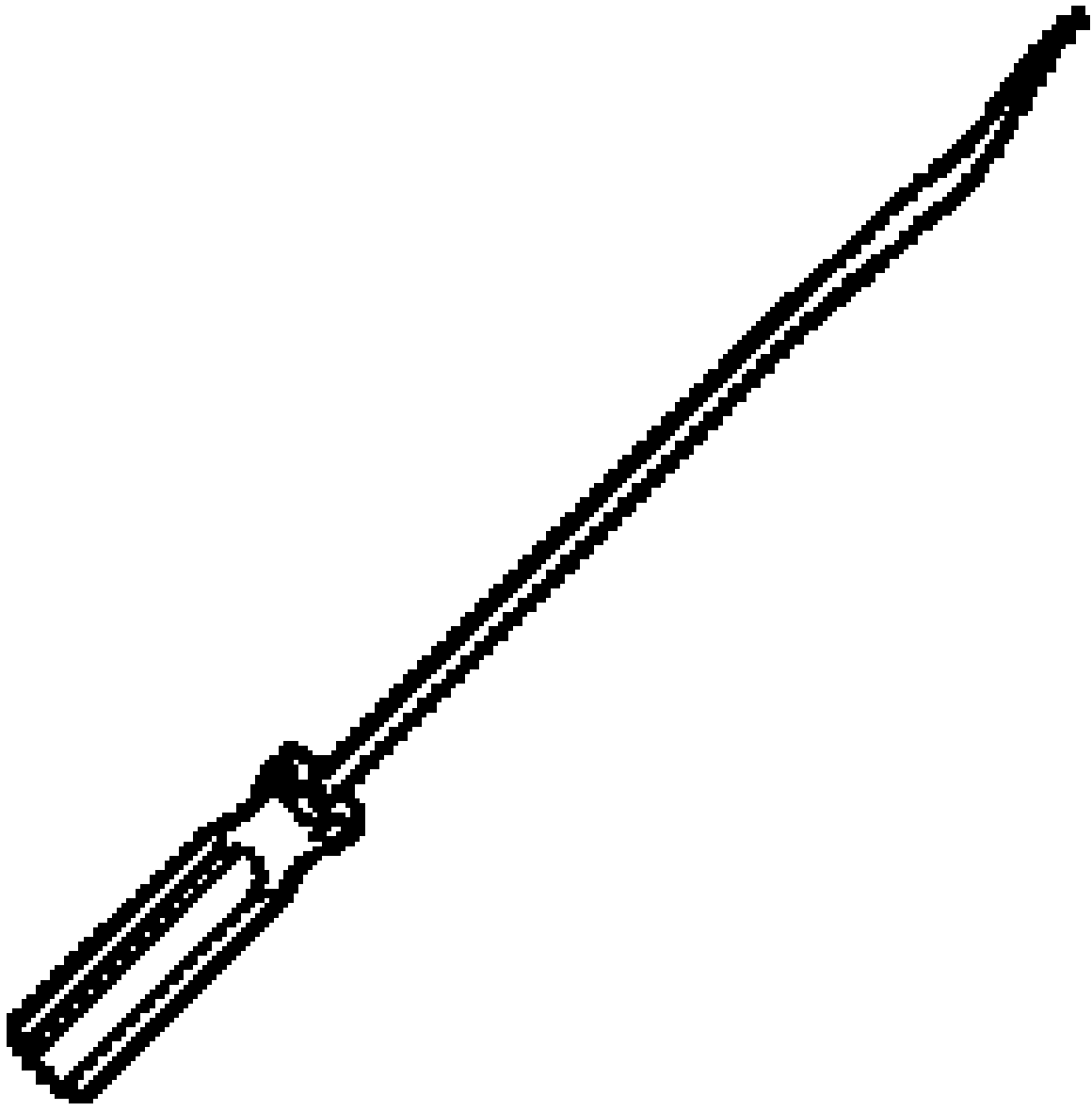
TRANSMISSION FLUID TEMPERATURE SENSOR DESCRIPTION AND OPERATION

The temperature sensor is a safety feature that triggers a warning light within the dashboard's instrument panel in the event the manual transmission is operating in temperatures above 163°C (325°F). This feature is provided to preserve oil viscosity.

SPECIAL TOOLS AND EQUIPMENT

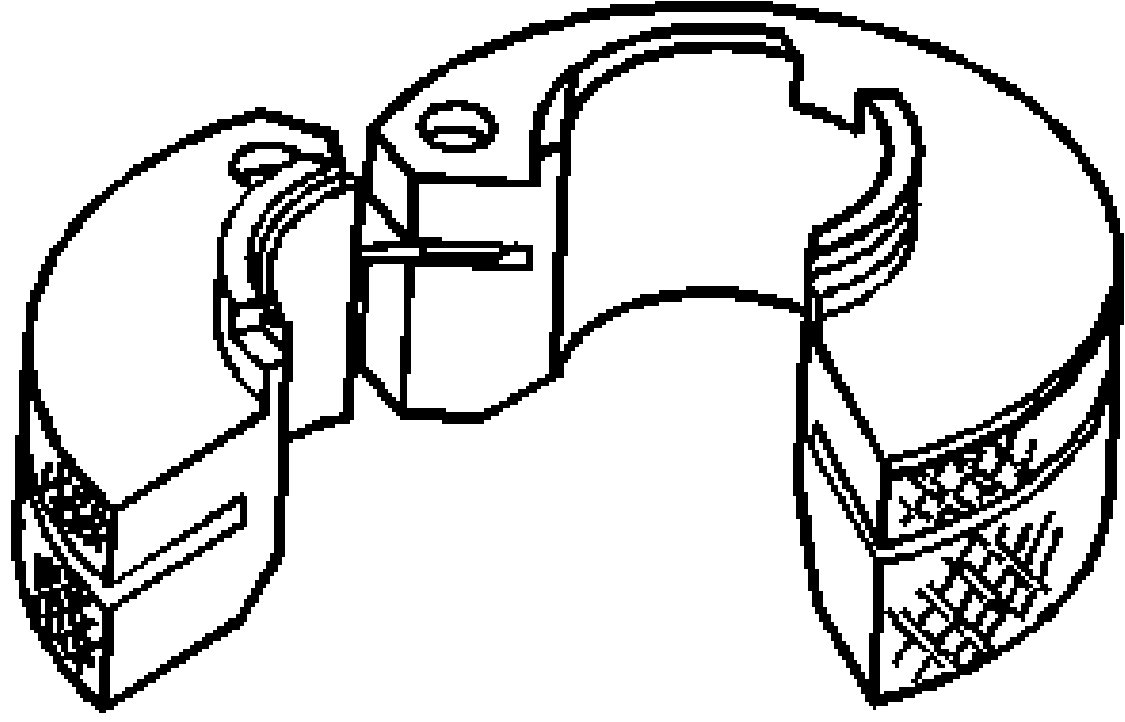
SPECIAL TOOLS

Illustration	Tool Number/ Description
	DT 28585 J 28585 Snap Ring Remover



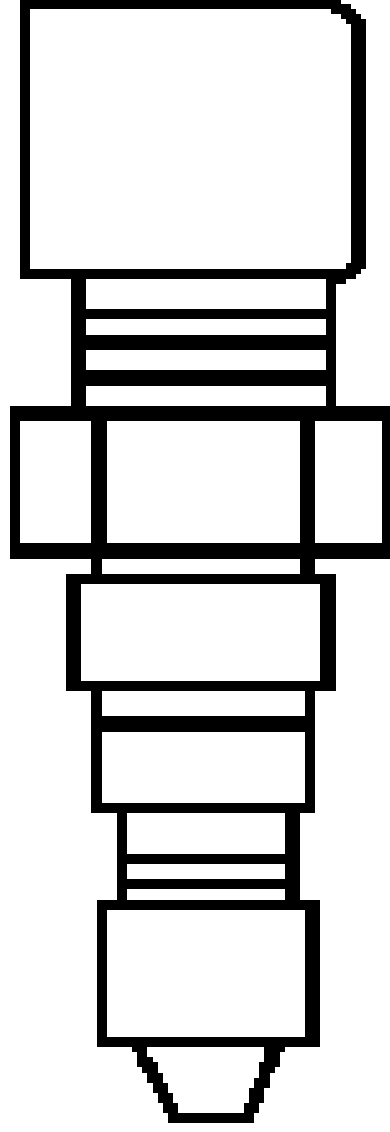
DT 35944-
200A
J 35944-
200A
Cooler
Flushing
Adapter

DT 41623-B
J 41623-B
Cooler Quick
Connect Tool



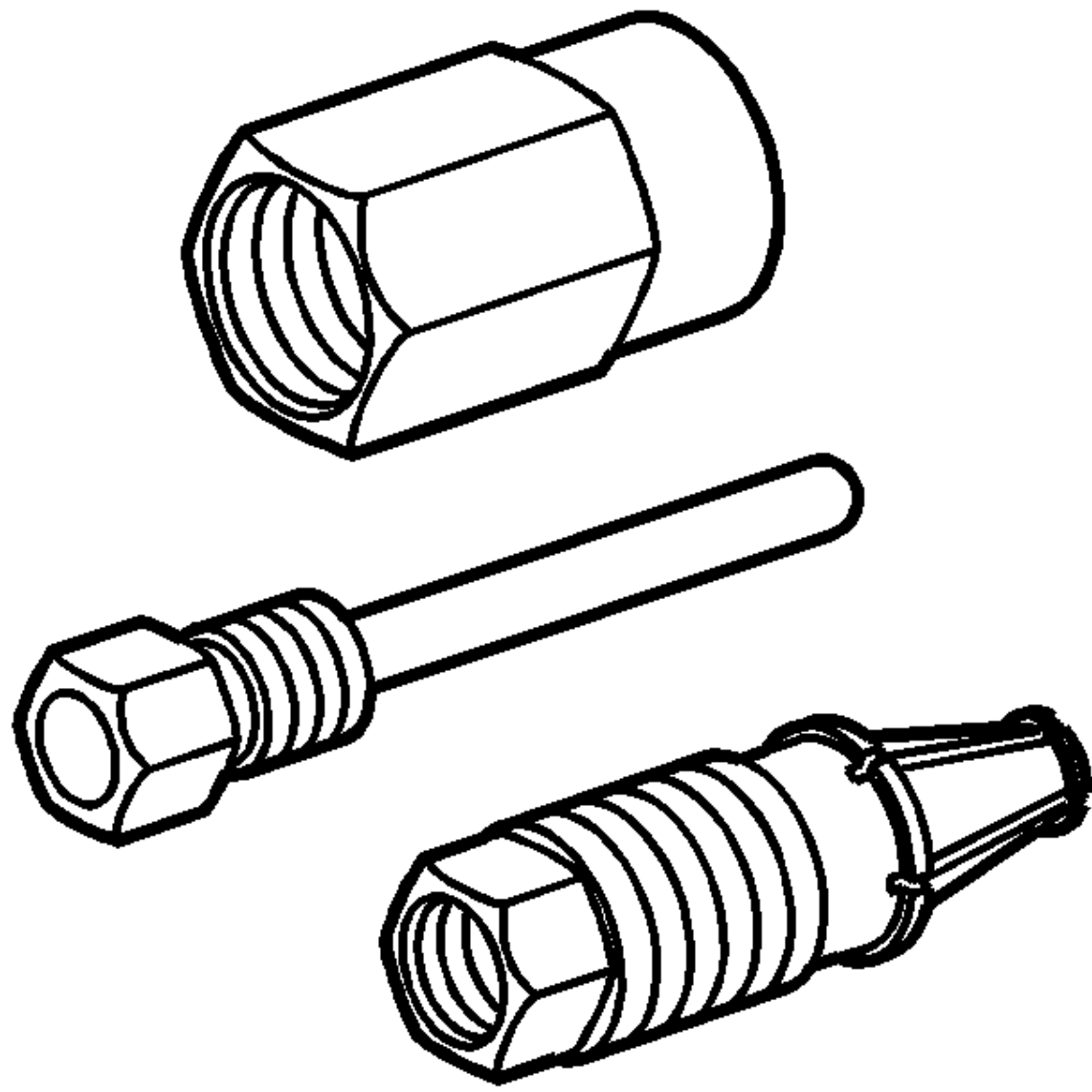
J 45096
Transmission
Oil Cooling
System
Flush and
Flow Test
Tool

DT 45096-21
J 45096-21
Cooler
Flushing
Adapter



DT 45096-30
J 45096-30
Cooler
Flushing
Adapter

DT 45201
J 45201
Cooler Line
Seal
Remover



DT 47770
Seal Installer