

2017 TRANSMISSION

Transmission Cooling - Encore, Trax

SPECIFICATIONS

FASTENER SPECIFICATIONS

Single Use Non-Threaded Fasteners/Components

NOTE: <i>All fasteners/components listed in this table MUST BE DISCARDED and replaced with NEW after removal.</i>
Application
Transmission Fluid Cooler Pipe Fitting Retainer
Transmission Fluid Cooler Pipe Fitting Seal

Reusable Threaded Fastener Tightening Specifications

NOTE: <i>All fasteners listed in this table can be reused after removal.</i>	
Application	Specification
	Metric (English)
Transmission Fluid Auxiliary Cooler Fastener@Transmission Fluid Cooler Thermal Bypass Valve	8 N.m (6 lb ft)
Transmission Fluid Auxiliary Cooler Fastener	6 N.m (4 lb ft)
Transmission Fluid Cooler Pipe Connector@Radiator	20 N.m (15 lb ft)
Transmission Fluid Cooler Pipe Nut	22 N.m (16 lb ft)

DIAGNOSTIC INFORMATION AND PROCEDURES

TRANSMISSION FLUID COOLER FLOW TEST AND FLUSHING (6T40)

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 DT-45096 transmission oil cooling system flush and flow test tool to flush and flow test the transmission oil cooler and the oil cooler pipes after the transmission is removed for repairs.

Only use the appropriate GM automatic transmission fluid when doing a repair on a GM transmission.

If the fluid in the DT-45096 transmission oil cooling system flush and flow test tool is different than what is used in the transmission, after performing the flush and flow test, use compressed air to blow the residual transmission fluid out of the oil cooler and lines.

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-45096-50** Transmission Cooler Flush Adapter
- Shop air supply with water/oil filters, regulator and pressure gauge - minimum 90 psi
- Eye protection
- Rubber gloves

Machine Set-up

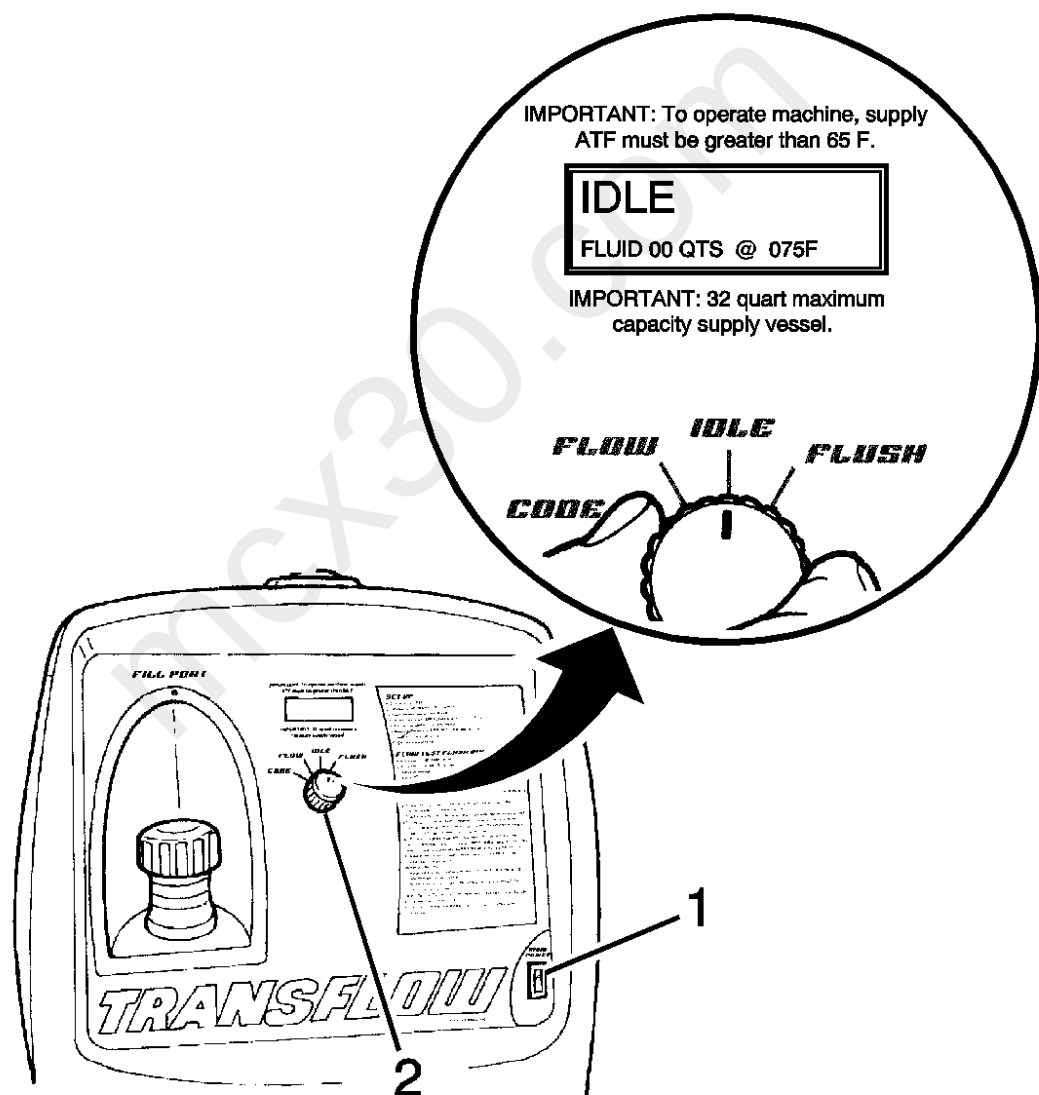


Fig. 1: View Of Main Power Switch & Main Function Switch
Courtesy of GENERAL MOTORS COMPANY

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

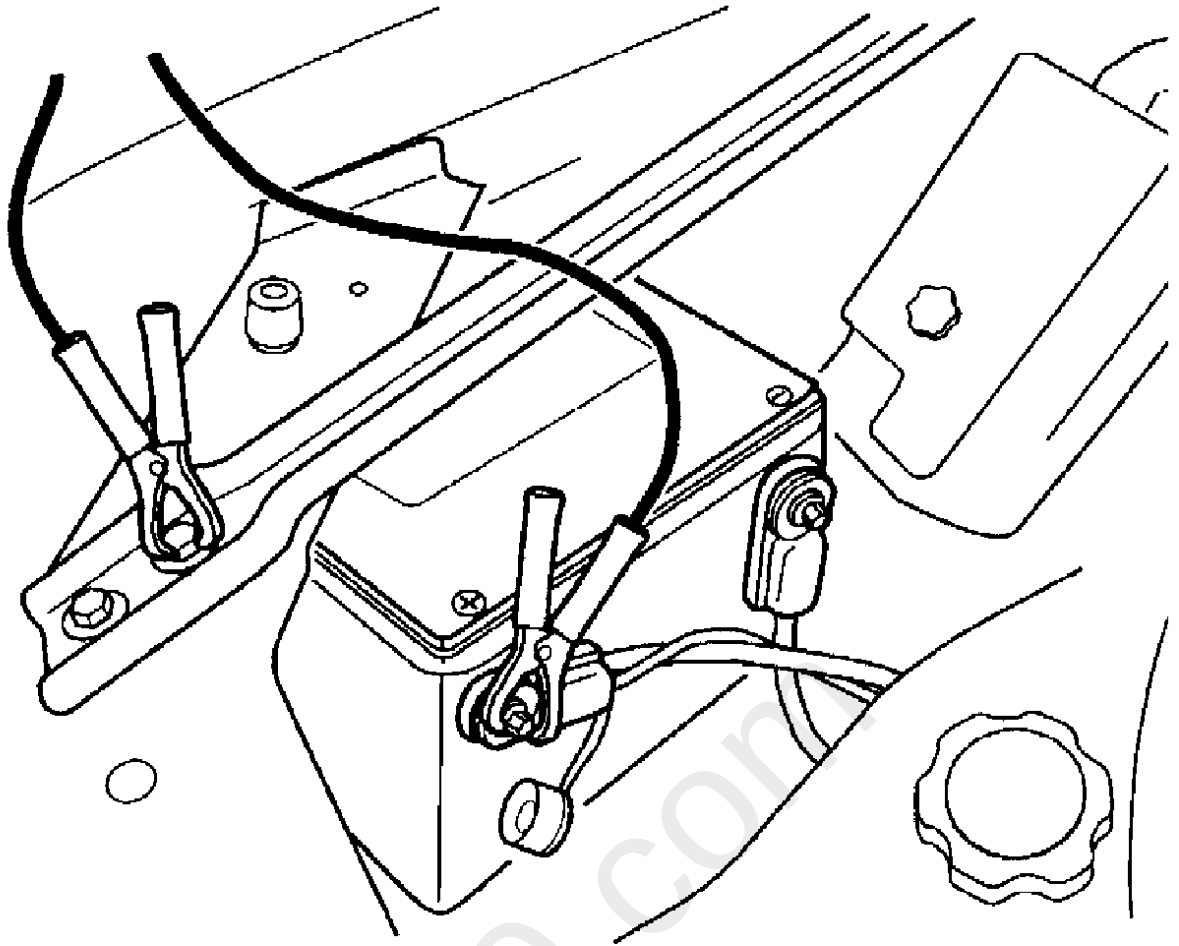


Fig. 2: Connecting To 12V DC Power Source
Courtesy of GENERAL MOTORS COMPANY

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.

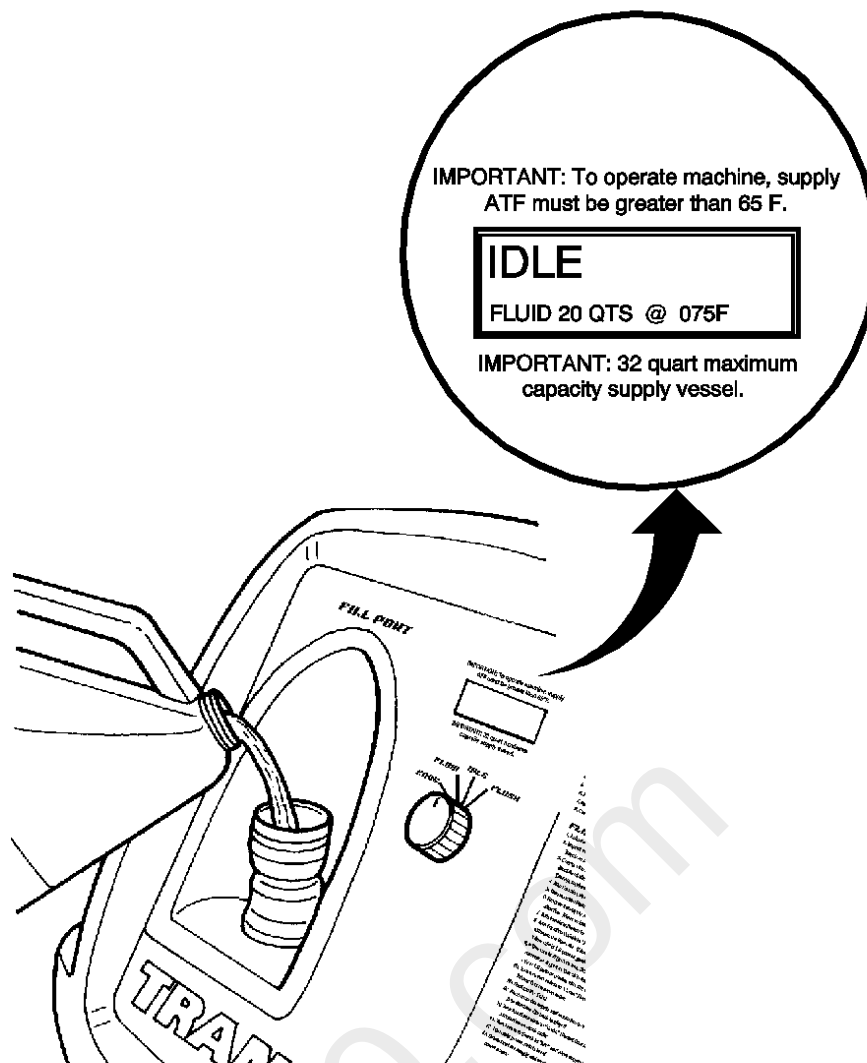


Fig. 3: Filling Supply Tank With Transmission Fluid
Courtesy of GENERAL MOTORS COMPANY

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 the appropriate GM automatic transmission fluid through the fill port.
6. Reinstall and tighten the fill cap.

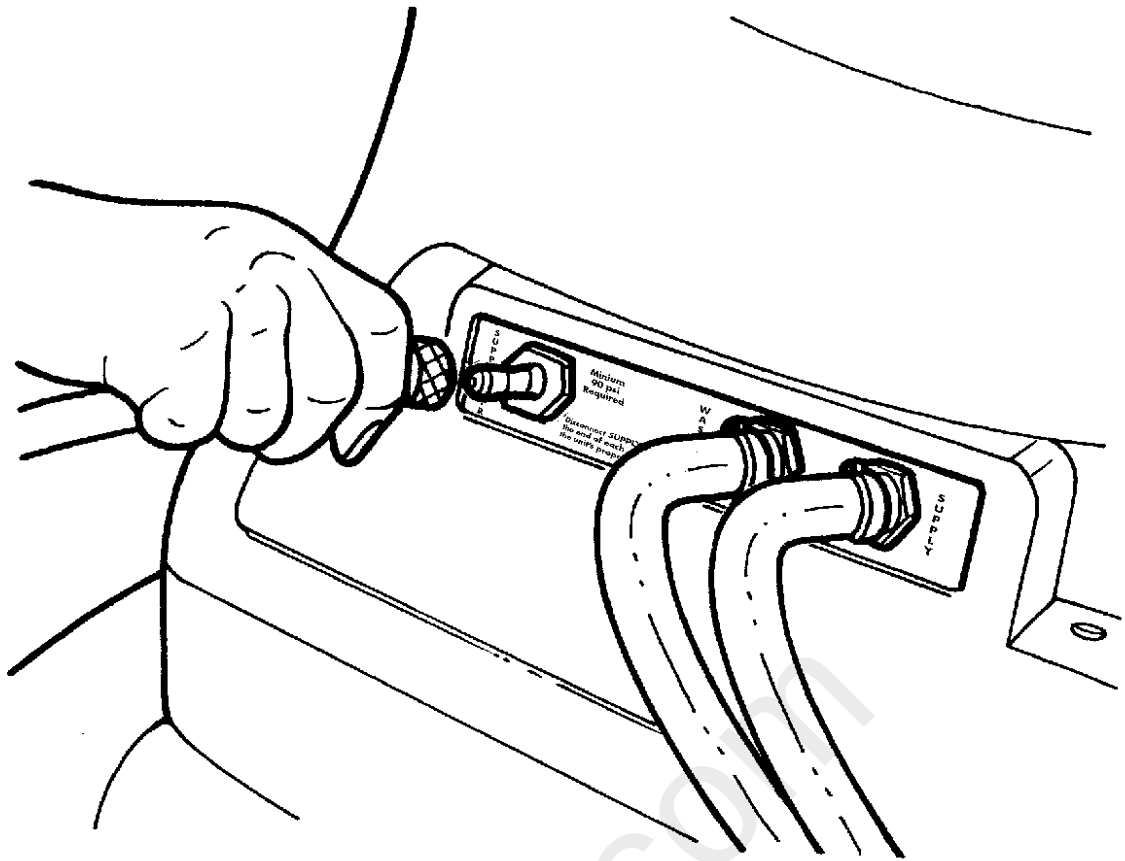


Fig. 4: Applying Shop Air Supply Hose To Quick-Disconnect
Courtesy of GENERAL MOTORS COMPANY

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

Determine Minimum Flow Rate

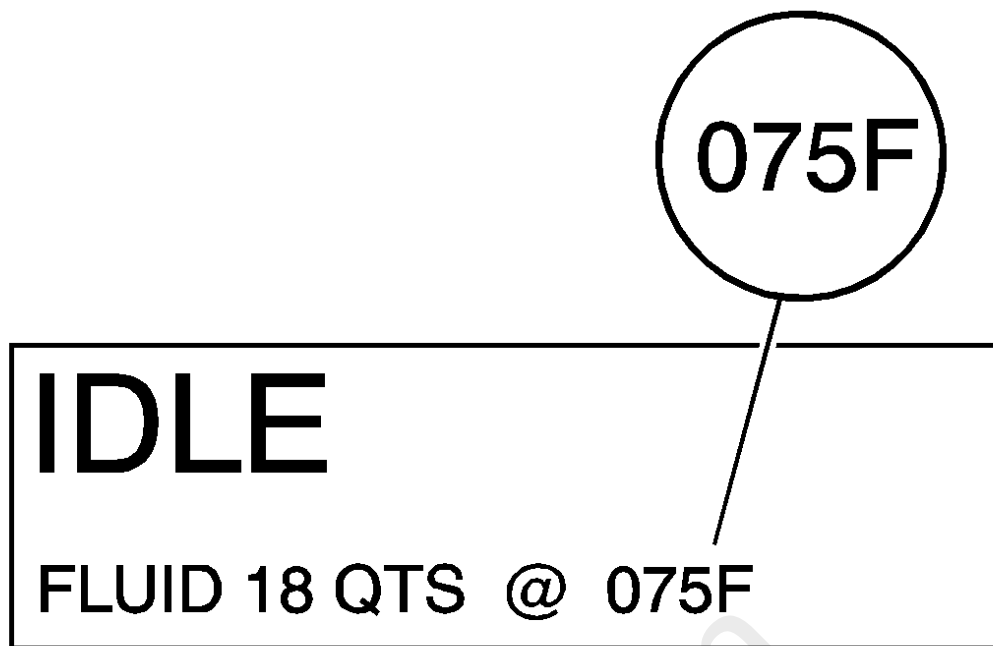


Fig. 5: Identifying Machine Display Of Automatic Transmission Fluid Temperature
Courtesy of GENERAL MOTORS COMPANY

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.

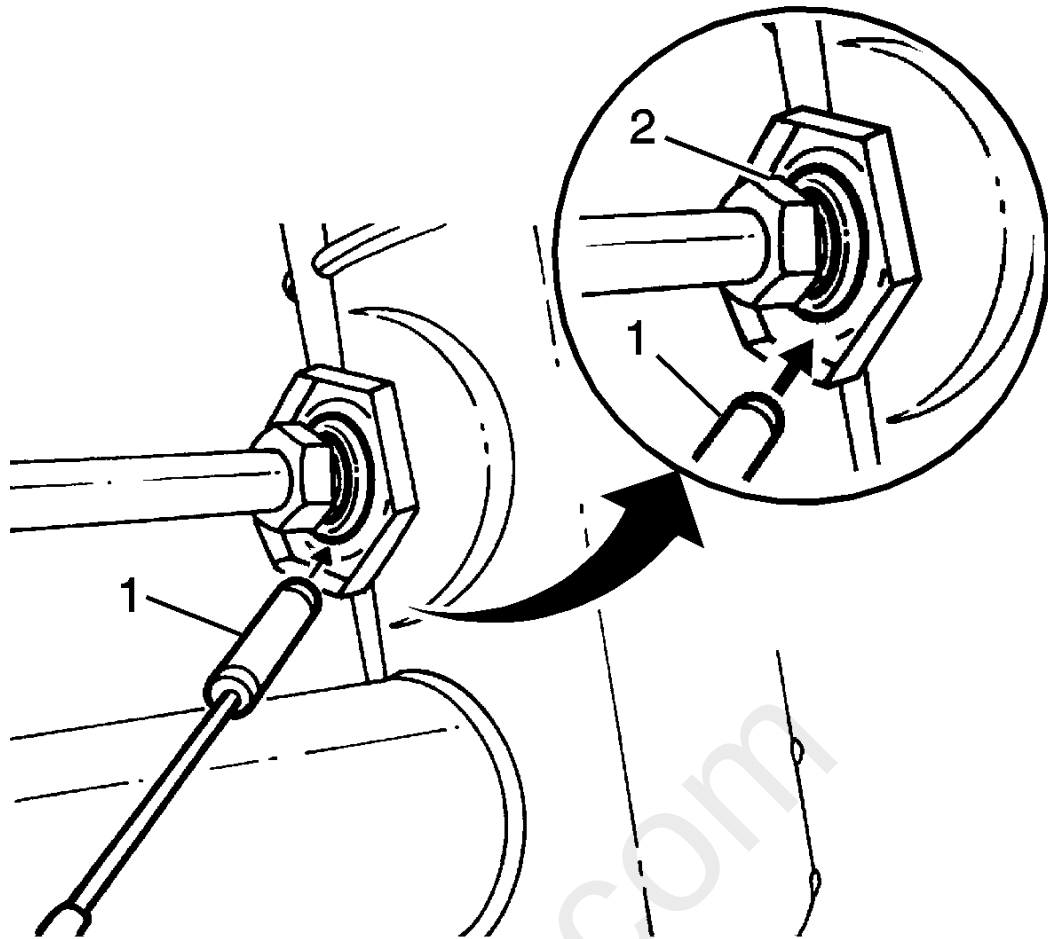


Fig. 6: Identifying Transmission Oil Cooler Metal Composition

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

Temperature Range	Steel	Aluminum
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

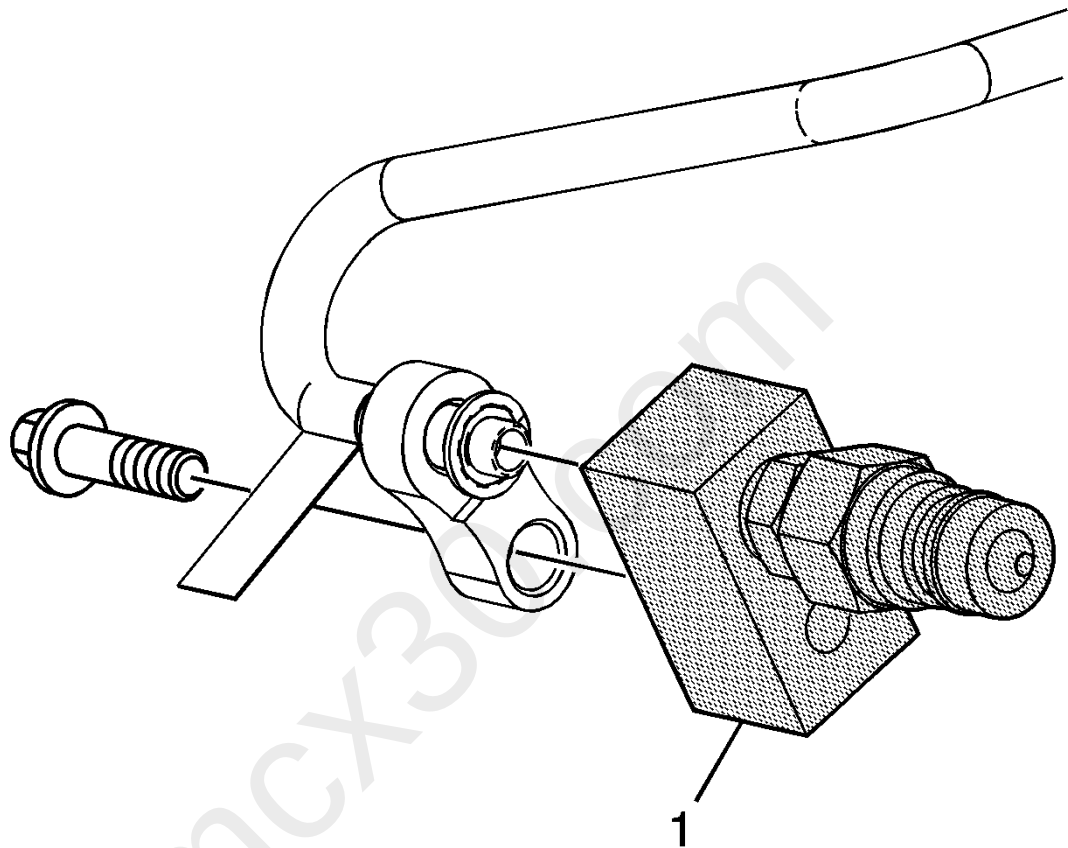


Fig. 7: Cooler Flush Adapter

Courtesy of GENERAL MOTORS COMPANY

1. Connect the **DT-45096-50** cooler flush adapter (1) to the vehicle transmission oil cooler supply and return lines at the transmission.

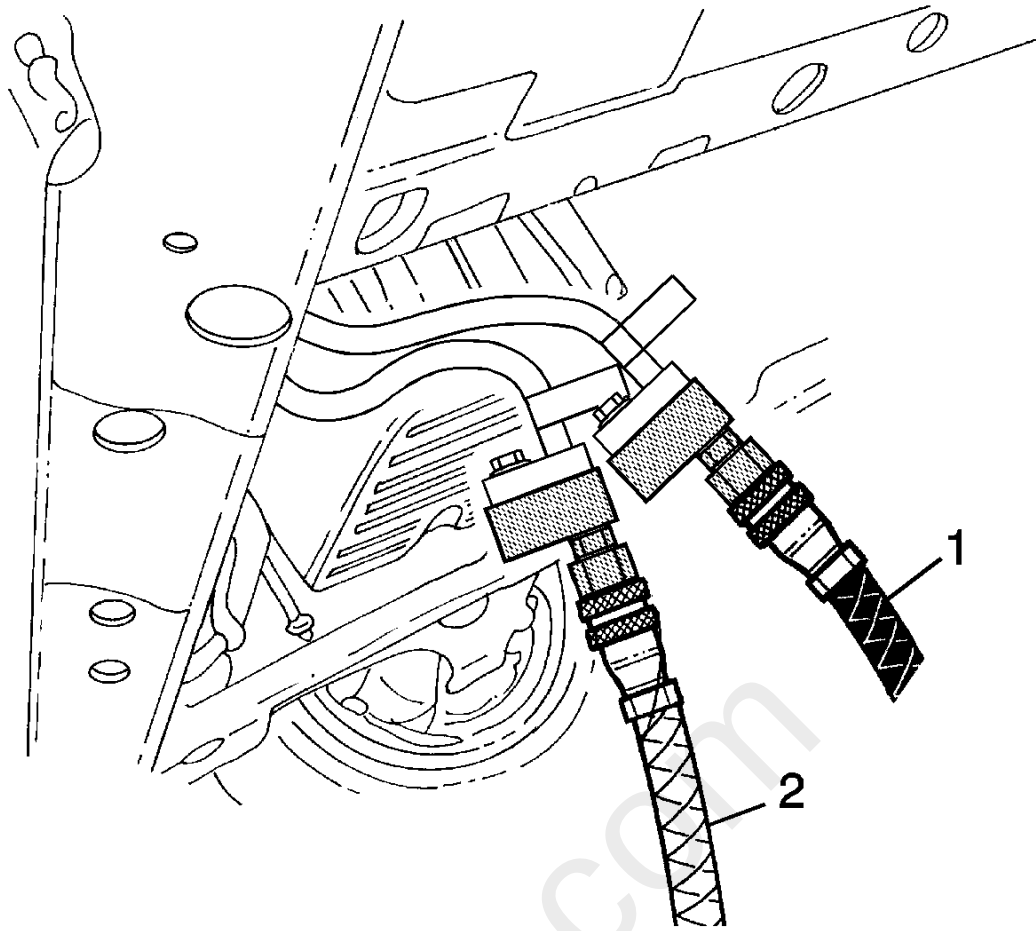


Fig. 8: View Of Black Supply Hose And Clear Waste Hose
Courtesy of GENERAL MOTORS COMPANY

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

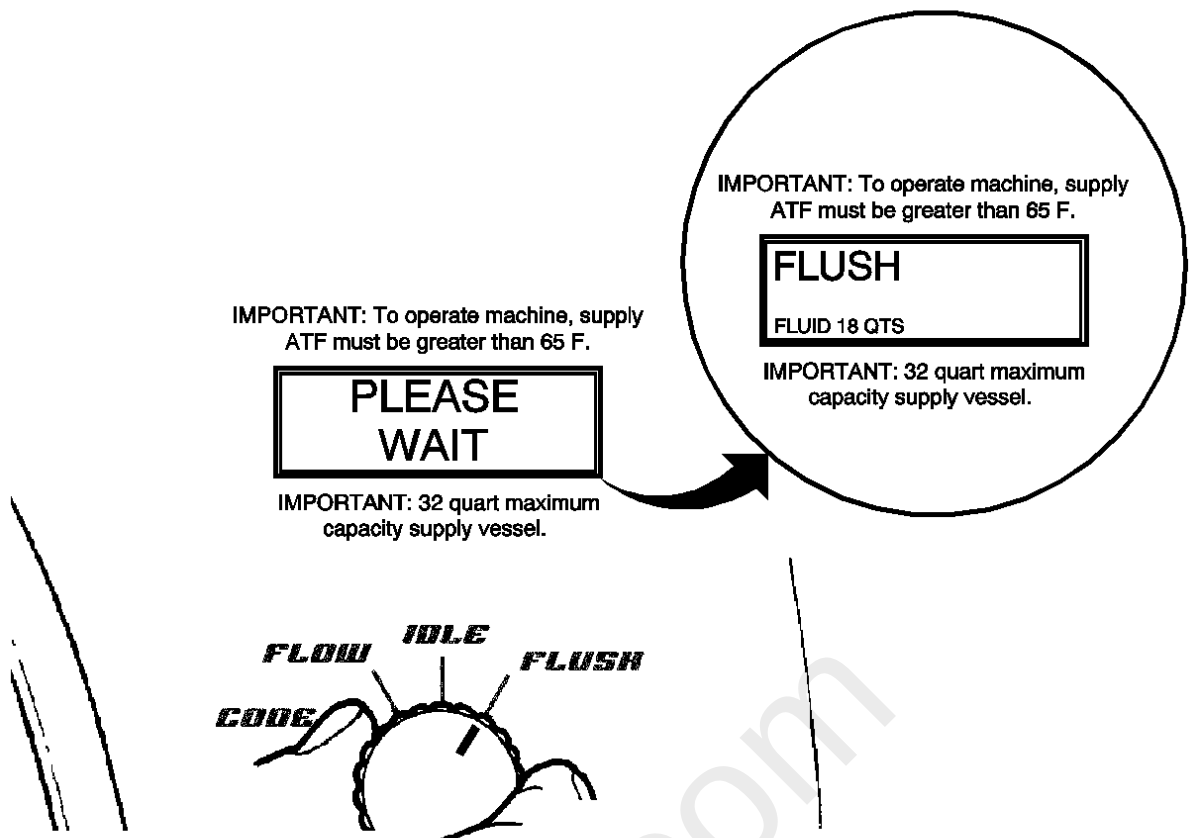


Fig. 9: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

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. 10: 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

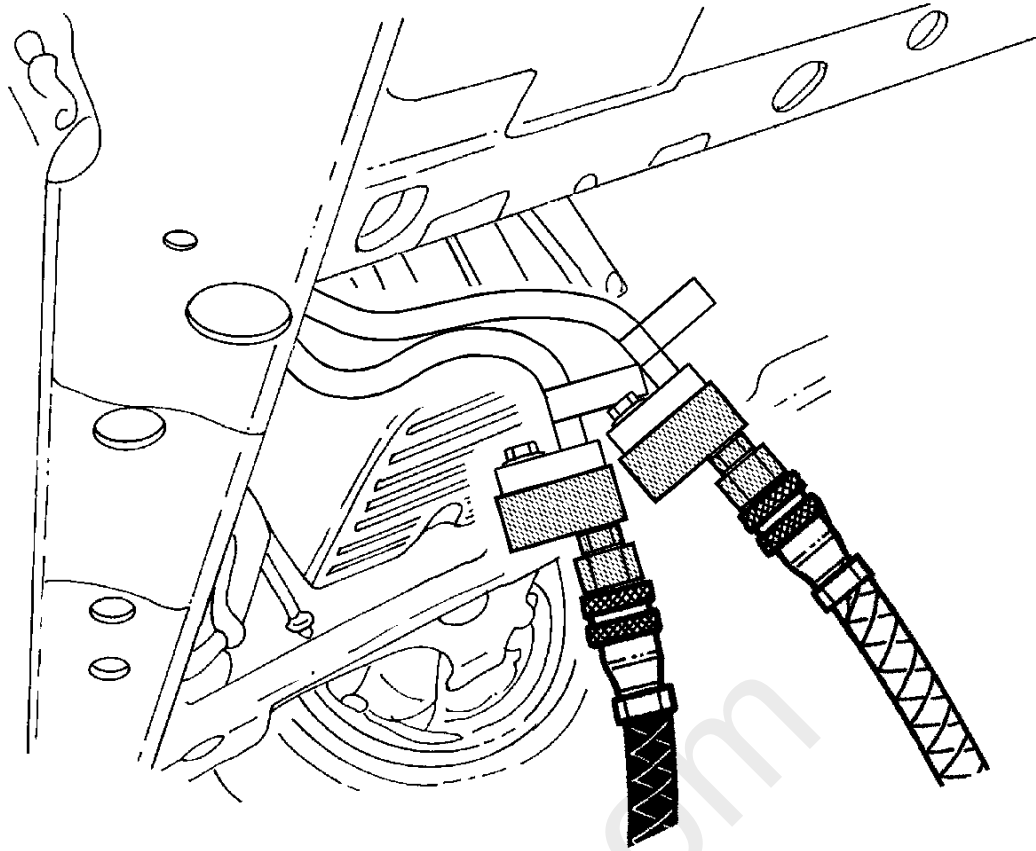


Fig. 11: Identifying Supply And Waste Hoses

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.

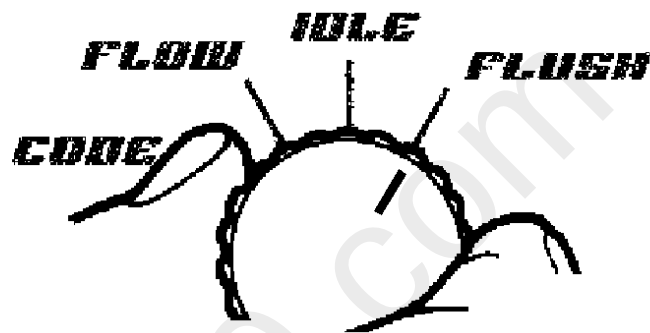


Fig. 12: View Of Main Function Switch FLUSH Position

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

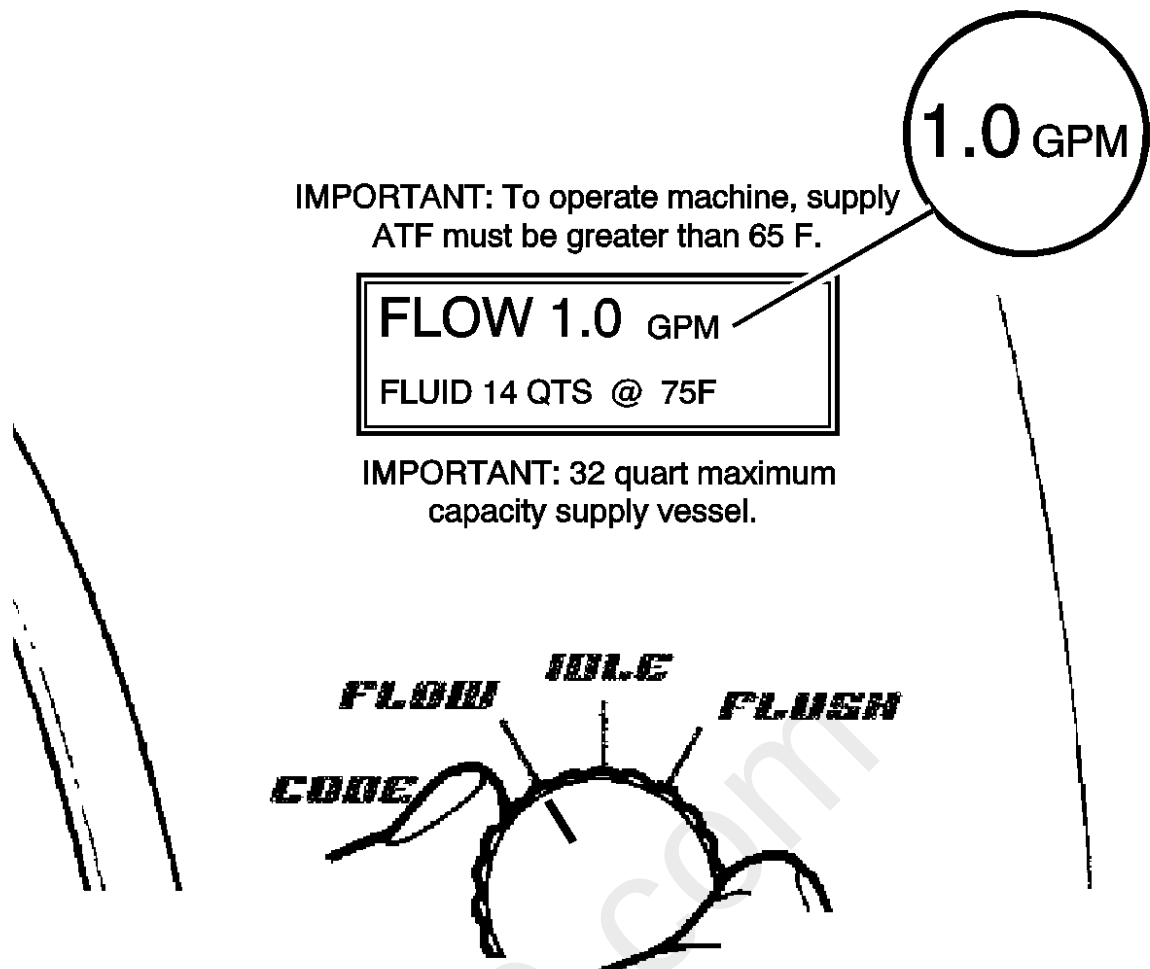


Fig. 13: View Of Main Function Switch FLOW Position

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. 14: 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

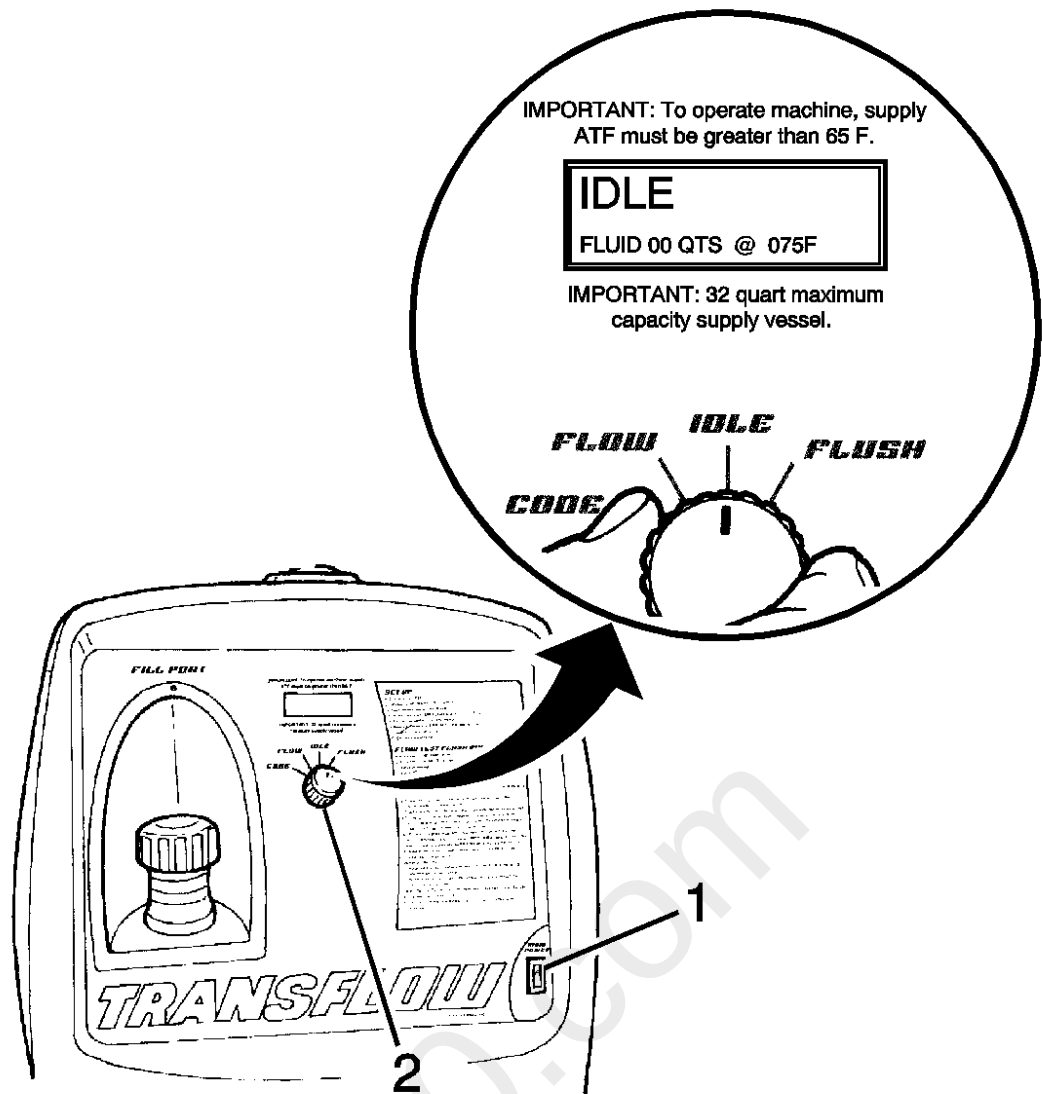


Fig. 15: View Of Main Power Switch & Main Function Switch

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.
- If the fluid in the DT-45096 transmission oil cooling system flush and flow test tool is different than what is used in the transmission, use compressed air to blow the residual transmission fluid out of the oil cooler and lines.

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

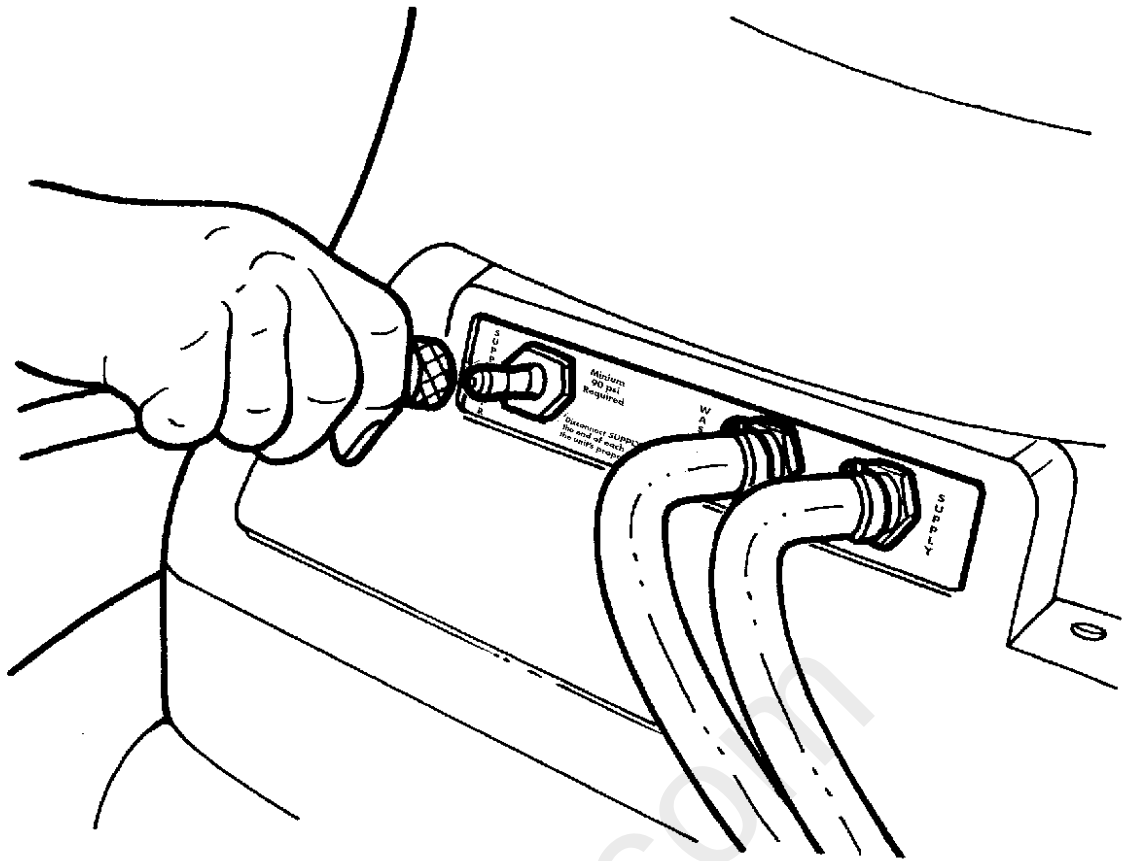


Fig. 16: Applying Shop Air Supply Hose To Quick-Disconnect
Courtesy of GENERAL MOTORS COMPANY

4. Disconnect the air supply hose from **DT-45096** flush and flow test tool.
5. Remove the **DT-45096-50** adapters.
6. Dispose of the waste automatic transmission fluid in accordance with all applicable federal, state, and local requirements.

REPAIR INSTRUCTIONS

TRANSMISSION FLUID AUXILIARY COOLER REPLACEMENT

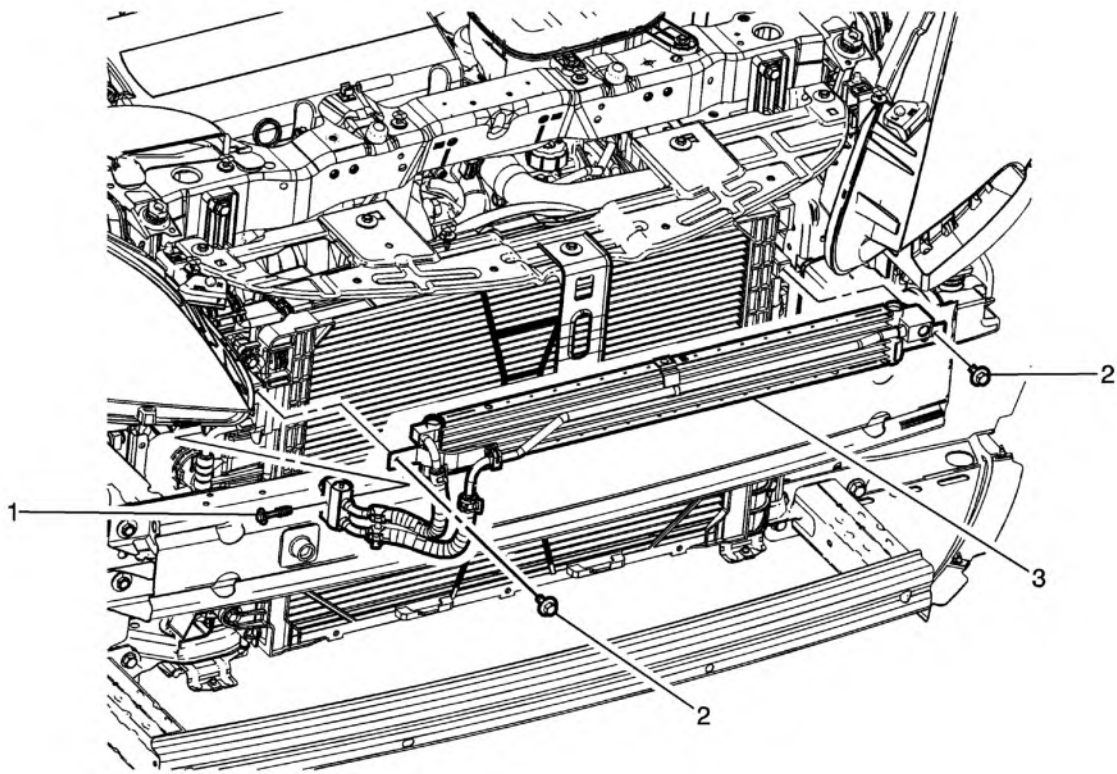


Fig. 17: Transmission Fluid Auxiliary Cooler
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the front bumper fascia assembly. Refer to Front Bumper Fascia Replacement (Chevrolet), Front Bumper Fascia Replacement (Buick). 2. Remove the air cleaner inlet duct. Refer to Air Cleaner Inlet Duct Replacement (2H0). 3. Disconnect the transmission fluid cooler outlet pipe from the transmission fluid auxiliary cooler. Refer to Transmission Fluid Cooler Outlet Pipe Replacement (2H0). 4. Remove the transmission fluid cooler inlet pipe from the transmission fluid auxiliary cooler. Refer to Transmission Fluid Cooler Inlet Pipe Replacement (2H0). 5. Remove the radiator air upper baffle and deflector. Refer to Radiator Air Upper Baffle and Deflector Replacement (2H0), Radiator Air Upper Baffle and Deflector Replacement (LE2 LUV).	
1	Transmission Fluid Auxiliary Cooler Fastener CAUTION: Refer to Fastener Caution . Tighten 8 N.m (71 lb in)
2	Transmission Fluid Auxiliary Cooler Fastener (Qty: 2) Tighten 6 N.m (53 lb in)
3	Transmission Fluid Auxiliary Cooler Procedure 1. Adjust the transmission fluid level. Refer to Transmission Fluid Level and Condition Check . 2. Inspect for fluid leaks.

TRANSMISSION FLUID AUXILIARY COOLER REPLACEMENT (LE2)

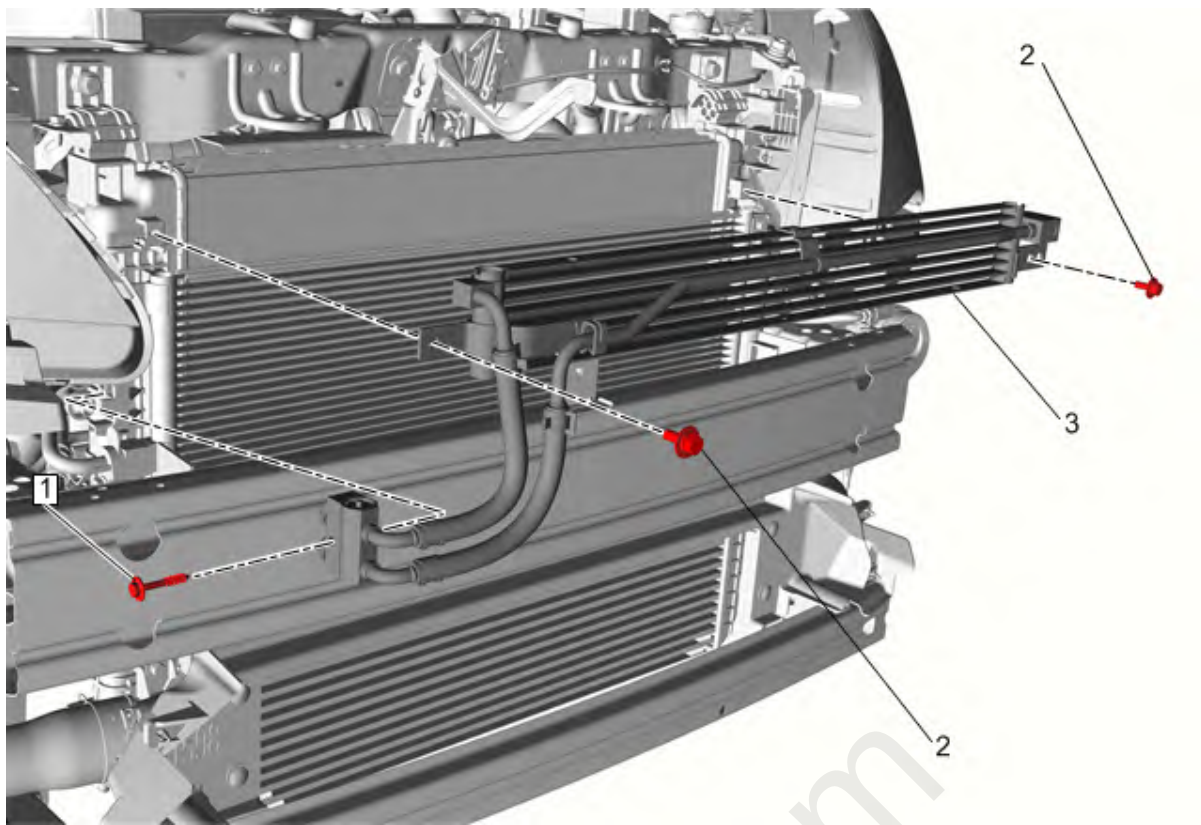


Fig. 18: Transmission Fluid Auxiliary Cooler (LE2 MNH)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1. Radiator Air Upper Baffle and Deflector Replacement (2H0) Radiator Air Upper Baffle and Deflector Replacement (LE2 LUV). 2. Headlamp Replacement (SBM) Headlamp Replacement (T4L, Buick) Headlamp Replacement (SBV, Chevrolet) - Right Side 3. Remove Transmission Fluid Cooler Outlet Pipe@Transmission Fluid Auxiliary Cooler - Transmission Fluid Cooler Outlet Pipe Replacement (2H0). 4. Remove Transmission Fluid Cooler Inlet and Outlet Pipe@Transmission Fluid Auxiliary Cooler - Transmission Fluid Cooler Hose/Pipe Replacement (2H0).	
1	Transmission Fluid Cooler Thermal Bypass Valve Bolt CAUTION: Refer to Fastener Caution . Tighten 8 N.m (71 lb in)
2	Radiator Bolt (Qty: 2) Tighten 6 N.m (53 lb in)
3	Transmission Fluid Auxiliary Cooler Procedure 1. Fill the transmission to the proper level with NEW transmission fluid. Transmission Fluid Level and Condition Check 2. Inspect for transmission fluid leaks.

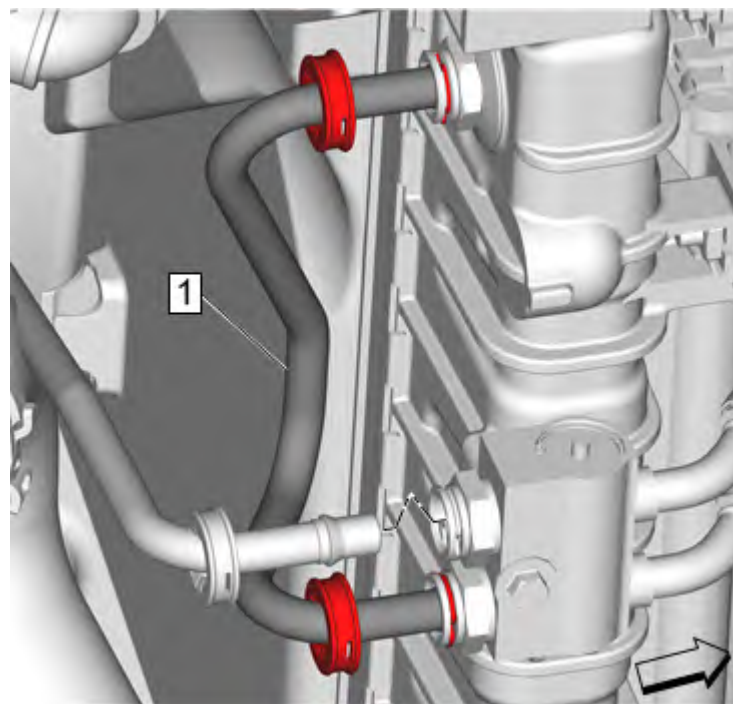


Fig. 19: Transmission Fluid Auxiliary Cooler Inlet Pipe

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures <u>Air Cleaner Inlet Duct Replacement</u> <u>Air Cleaner Outlet Duct Replacement</u> - Remove Transmission Fluid Cooler Pipe@Transmission Fluid Cooler Thermal Bypass Valve - <u>Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection</u>	
1	Transmission Fluid Auxiliary Cooler Inlet Pipe Procedure - Disconnect Transmission Fluid Auxiliary Cooler Inlet Pipe@Radiator - <u>Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection</u> - Disconnect Transmission Fluid Auxiliary Cooler Inlet Pipe@Transmission Fluid Cooler Thermal Bypass Valve - <u>Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection</u> - Check the transmission fluid level. - Inspect for transmission fluid leaks.

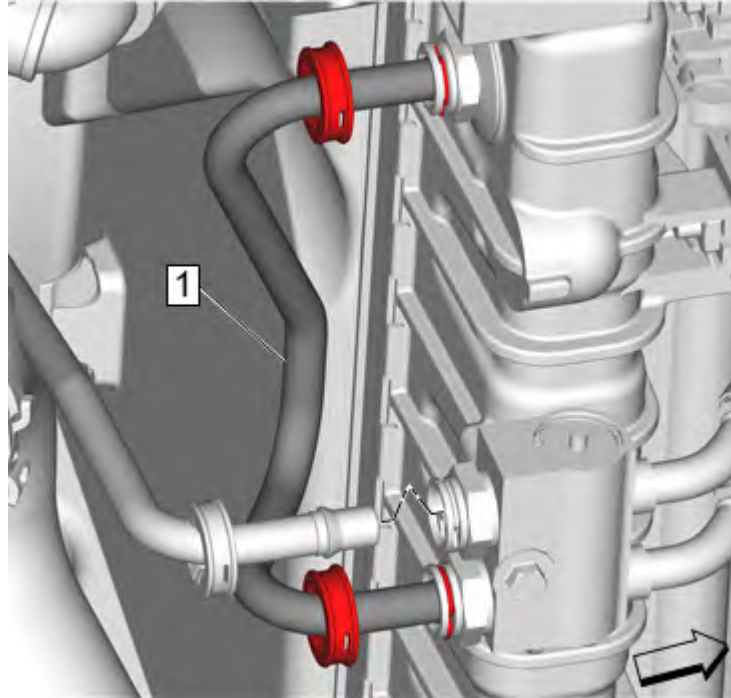


Fig. 20: Transmission Fluid Auxiliary Cooler Inlet Pipe

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. <u>Air Cleaner Inlet Duct Replacement</u> 2. <u>Air Cleaner Outlet Duct Replacement</u> 3. Remove Transmission Fluid Cooler Pipe@Transmission Fluid Cooler Thermal Bypass Valve - <u>Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection</u>	
1	Transmission Fluid Auxiliary Cooler Inlet Pipe Procedure 1. Disconnect Transmission Fluid Auxiliary Cooler Inlet Pipe@Radiator - <u>Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection</u> 2. Disconnect Transmission Fluid Auxiliary Cooler Inlet Pipe@Transmission Fluid Cooler Thermal Bypass Valve - <u>Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection</u> 3. Check the transmission fluid level. 4. Inspect for transmission fluid leaks.

TRANSMISSION FLUID COOLER PIPE CONNECTOR REPLACEMENT - RADIATOR

Removal Procedure

1. Drain the cooling system. [Cooling System Draining and Filling](#) .
2. Remove Transmission Fluid Cooler Pipe - [Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection](#).

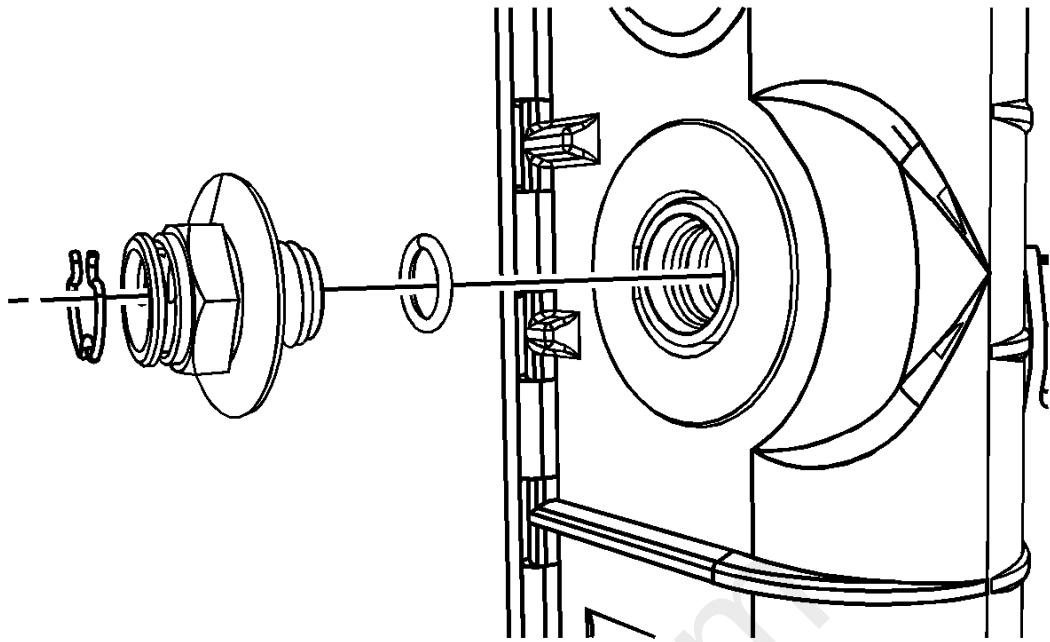


Fig. 21: View Of Oil Cooler Fitting At Radiator

Courtesy of GENERAL MOTORS COMPANY

NOTE: Do not remove the upper and lower transaxle oil cooler fittings from the radiator at the same time otherwise the transaxle oil cooler will fall inside the radiator end tank.

3. Remove Transmission Fluid Cooler Pipe Connector
4. Remove and DISCARD the O-ring seal.

Installation Procedure

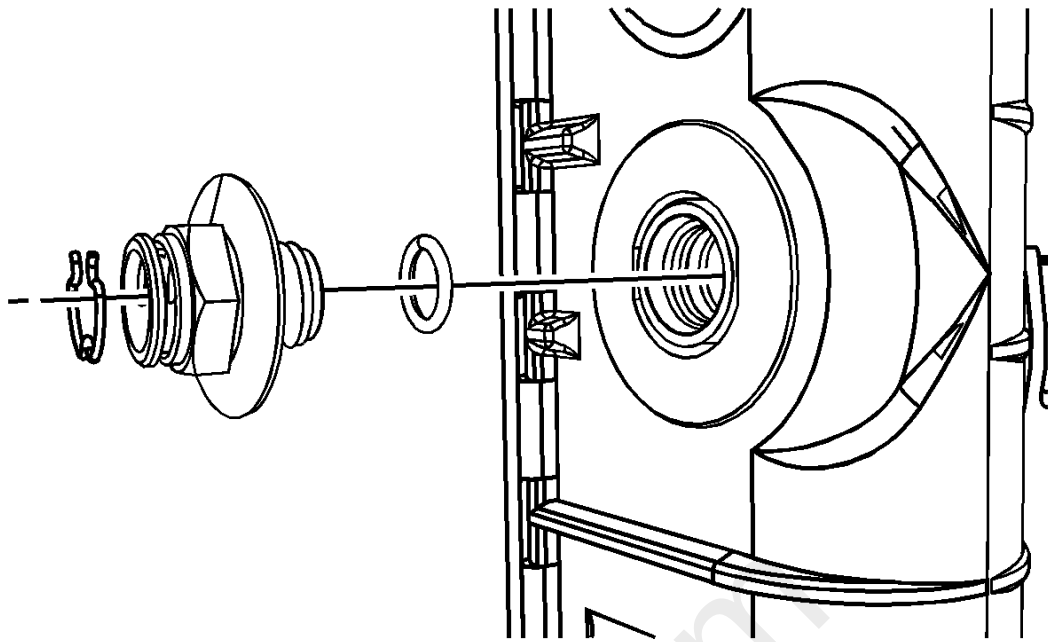


Fig. 22: View Of Oil Cooler Fitting At Radiator
Courtesy of GENERAL MOTORS COMPANY

1. Install a NEW O-ring seal.

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

NOTE: The correct thread engagement is critical. Cross-threaded fittings can achieve proper tightness and still leak.

2. Install Transmission Fluid Cooler Pipe Connector and tighten 20 N.m (15 lb ft).
3. Install Transmission Fluid Cooler Pipe [Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection](#)
4. Fill the cooling system. [Cooling System Draining and Filling](#) .
5. Check the transmission fluid level. [Transmission Fluid Level and Condition Check](#)

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

Removal Procedure

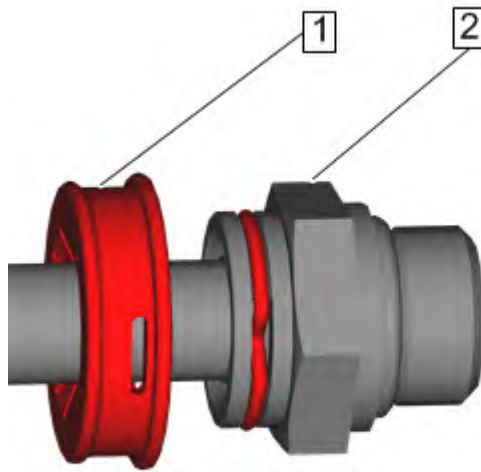


Fig. 23: Quick Connect Fitting And Plastic Cap
Courtesy of GENERAL MOTORS COMPANY

1. Pull the plastic cap (1) back from the quick connect fitting (2) and down along the cooler pipe enough to expose the transmission fluid cooler pipe fitting retainer.

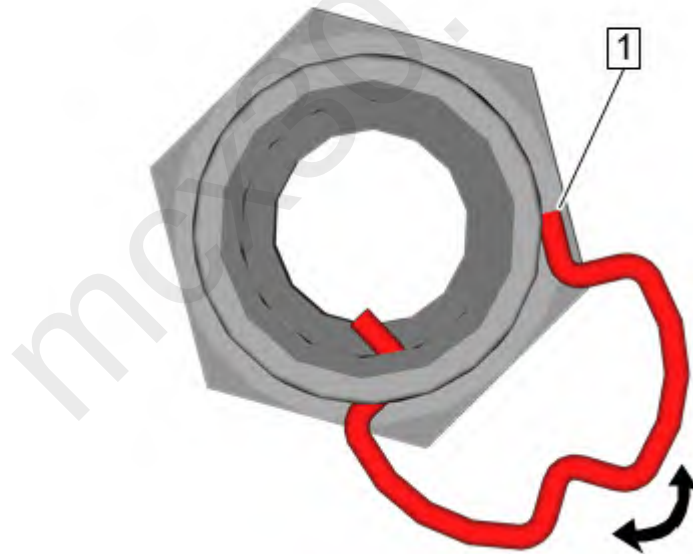


Fig. 24: Retaining Ring
Courtesy of GENERAL MOTORS COMPANY

2. Using a small flat bladed tool, small pick or other suitable tool, lift one of the open ends of the retaining ring (1) in order to rotate the retaining ring around the quick connect fitting until the retaining ring is out of position and can be completely removed.
3. Remove the transmission fluid cooler pipe fitting retainer from the quick connect fitting.
4. Discard the retainer.

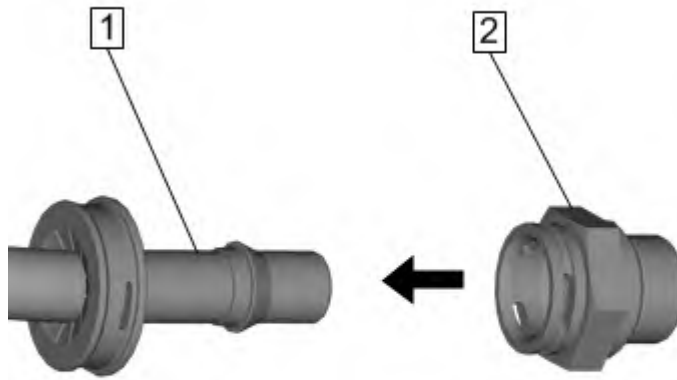


Fig. 25: Cooler Pipe And Quick Connect Fitting
Courtesy of GENERAL MOTORS COMPANY

5. Pull the cooler pipe (1) straight out from the quick connect fitting (2).

Installation Procedure

NOTE:

- Do not reuse any of the existing transmission fluid cooler pipes or transmission fluid cooler pipe fittings if there is excessive corrosion.
- Do not reuse any transmission fluid cooler pipe fitting retainer that was removed from the quick connect fittings. Always install NEW transmission fluid cooler pipe fitting retainers.
- Ensure the following procedures are performed when installing the new retainer onto the fittings.

1. Install a new retainer into the quick connect fitting using the following procedure:

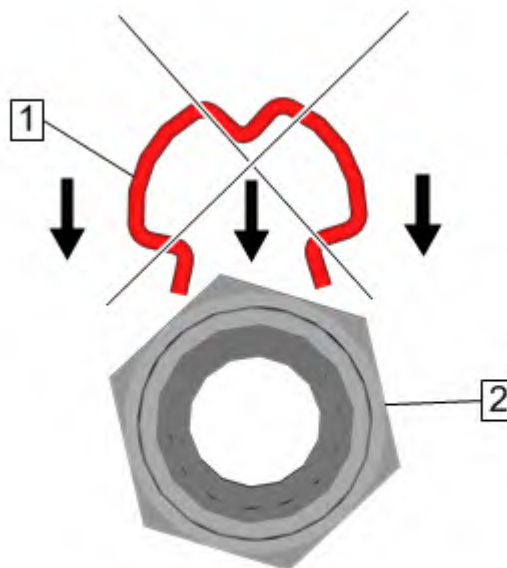


Fig. 26: Quick Connect Fitting And Retainer
Courtesy of GENERAL MOTORS COMPANY

1. Do not install the new retainer (1) onto the quick connect fitting (2) by forcing the retainer over the fitting causing the retainer to expand.

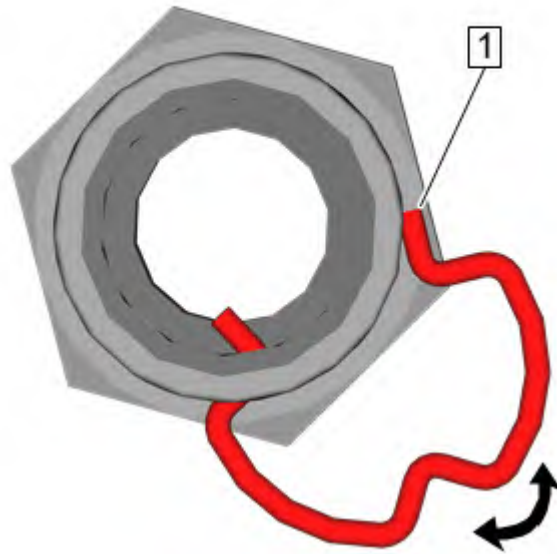


Fig. 27: Retaining Ring

Courtesy of GENERAL MOTORS COMPANY

2. Hook one of the open ends of the retainer (1) in one of the slots in the quick connect fitting.

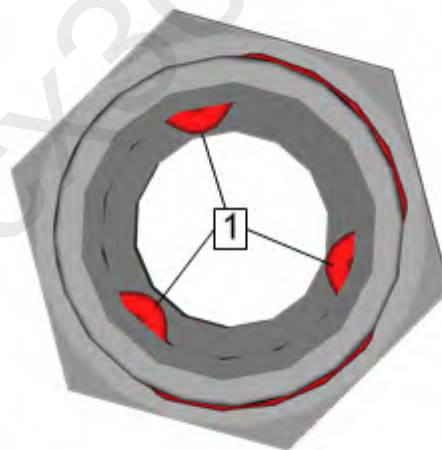


Fig. 28: Retainer And Retainer Ears

Courtesy of GENERAL MOTORS COMPANY

3. Rotate the retainer (1) around the fitting until the retainer is positioned with all three ears through the three slots on the fitting.
4. Ensure that the three retainer ears (1) are seen from inside the fitting and that the retainer moves freely in the fitting slots.

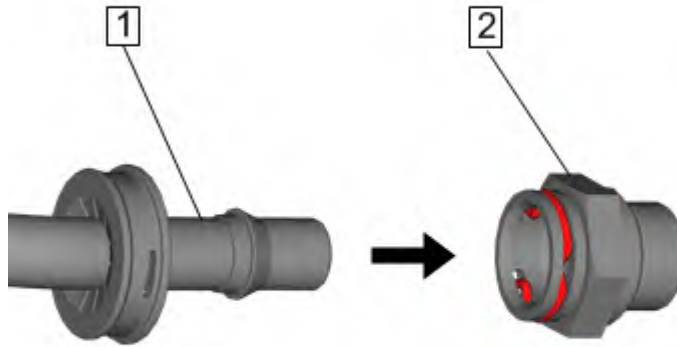


Fig. 29: Cooler Pipe And Quick Connect Fitting
 Courtesy of GENERAL MOTORS COMPANY

2. Install the cooler pipe (1) into the quick connect fitting (2) until a click is either heard or felt.

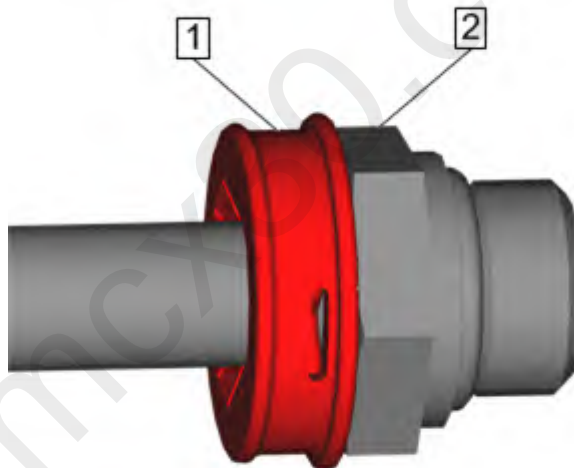


Fig. 30: Plastic Cap And Quick Connect Fitting
 Courtesy of GENERAL MOTORS COMPANY

- 3.
4. Pull back sharply on the cooler pipe in order to ensure that the cooler pipe is fastened into the quick connect fitting.

NOTE: Do not manually depress the retaining clip when installing the plastic cap.

5. Position (snap) the plastic cap (1) onto the fitting. Do not manually depress the retainer when installing the plastic cap onto the quick connect fitting.
6. Ensure that the plastic cap (1) is fully seated against the fitting.
7. Ensure that no gap is present between the plastic cap (1) and the fitting (2).

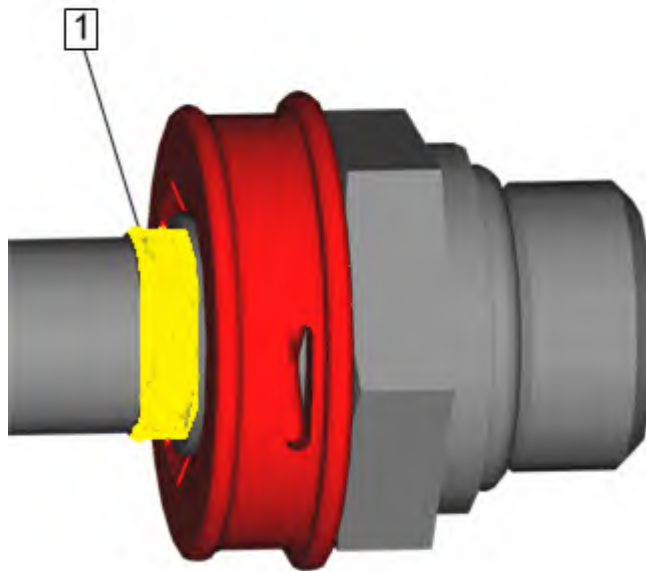


Fig. 31: Yellow Identification Band

Courtesy of GENERAL MOTORS COMPANY

8. A visible yellow identification band (1) indicates an improper joint seating. make sure that the yellow indicator band **IS NOT** present when completely installed.
9. Fill the transmission to the proper level.

TRANSMISSION FLUID COOLER HOSE/PIPE REPLACEMENT (2H0)

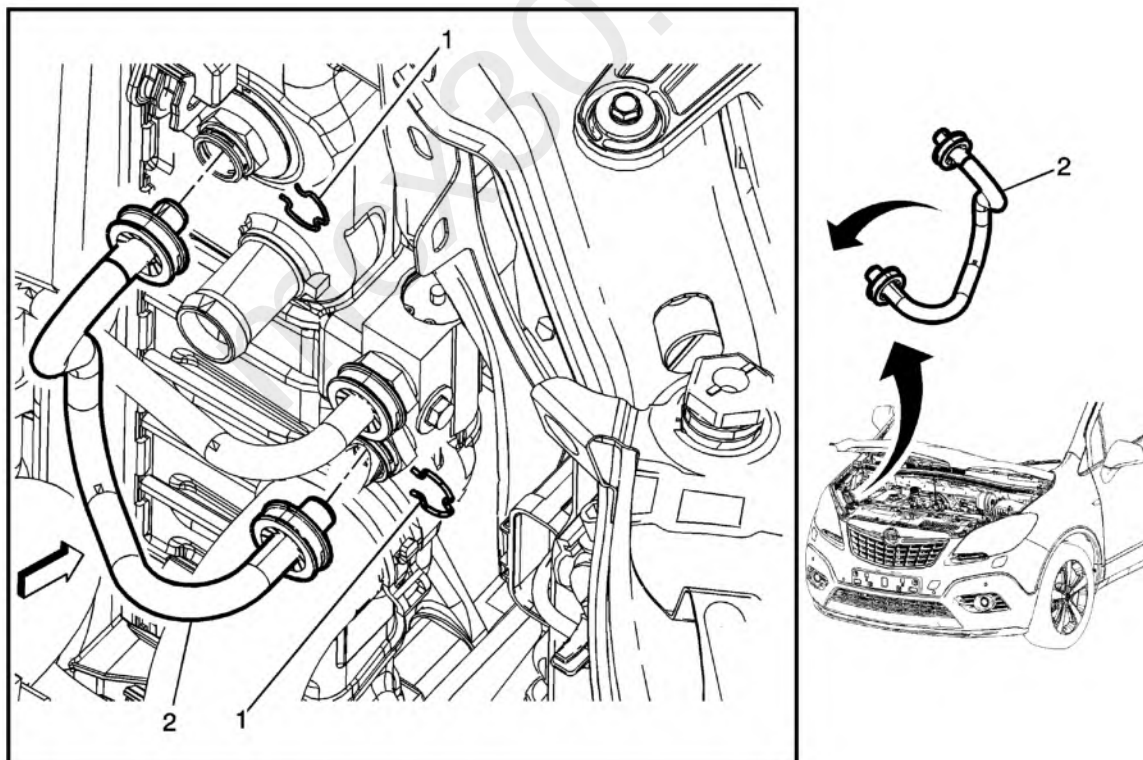


Fig. 32: Transmission Fluid Cooler Hose/Pipe

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1.	Remove the air cleaner inlet duct. Refer to Air Cleaner Inlet Duct Replacement (2H0) .
2.	Remove the power steering pump, if equipped. Refer to Power Steering Pump Replacement .

Callout	Component Name
1	Transmission Fluid Cooler Pipe Quick Disconnect Retaining Clip (Qty: 2) Procedure Remove the retaining clip from the quick connect fitting. Refer to Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection .
2	Transmission Fluid Cooler Pipe Procedure 1. Adjust the transmission fluid level. Refer to Transmission Fluid Level and Condition Check. 2. Inspect for fluid leaks.

TRANSMISSION FLUID COOLER INLET PIPE REPLACEMENT (2HO)

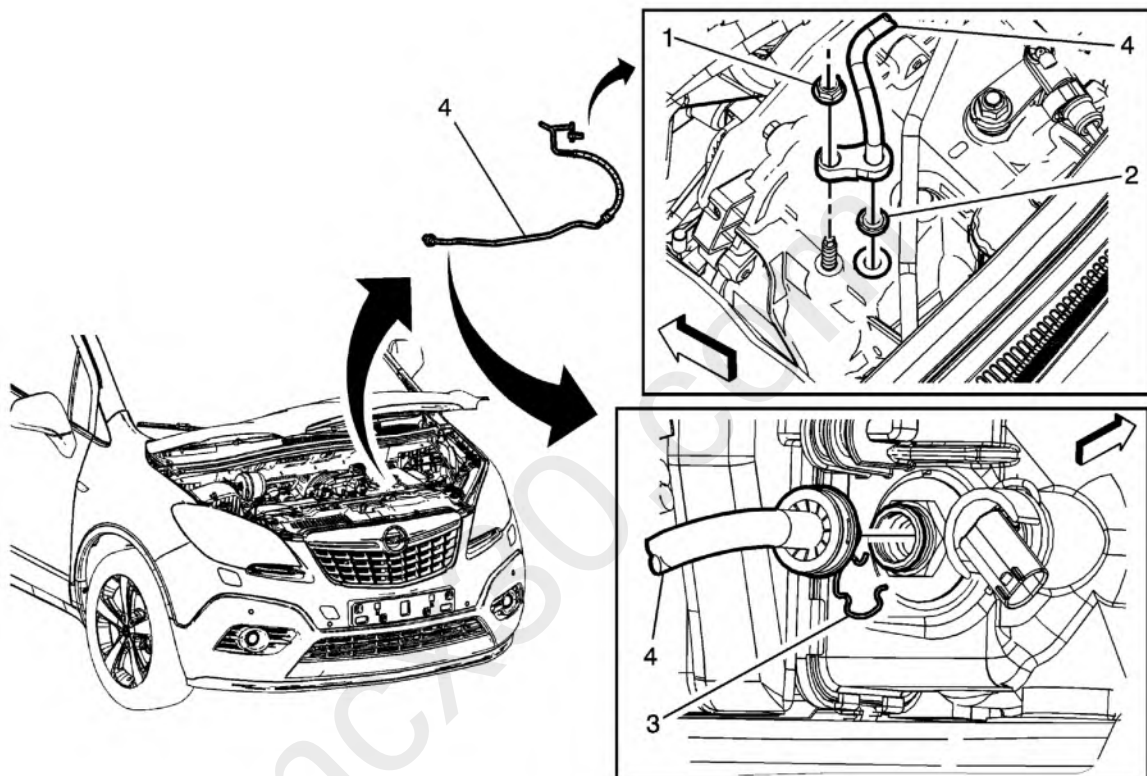


Fig. 33: Transmission Fluid Cooler Inlet Pipe
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Battery Tray Replacement. 2. Front Wheelhouse Liner Replacement (Chevrolet) Front Wheelhouse Liner Replacement (Buick). 3. Underbody Front Air Deflector Replacement. 4. Cap the fittings and plug the holes when removing the transmission fluid cooler inlet pipe.	
1	Transmission Fluid Cooler Inlet Pipe Nut CAUTION: Refer to Fastener Caution . Tighten 22 N.m (16 lb ft)

Callout	Component Name
2	Transmission Fluid Cooler Inlet Pipe Seal Procedure 1. Remove and DISCARD 2. Install a NEW seal.
3	Transmission Fluid Cooler Inlet Pipe Quick Disconnect Retaining Clip Procedure <u>Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection.</u>
4	Transmission Fluid Cooler Inlet Pipe Procedure 1. Note the routing of the transmission line to ensure proper installation. 2. Remove Transmission Fluid Cooler Inlet Pipe@Retainers 3. Adjust the transmission fluid level <u>Transmission Fluid Level and Condition Check</u> 4. Inspect for fluid leaks

TRANSMISSION FLUID COOLER OUTLET PIPE REPLACEMENT (2HO)

Removal Procedure

1. Remove Battery Tray Replacement

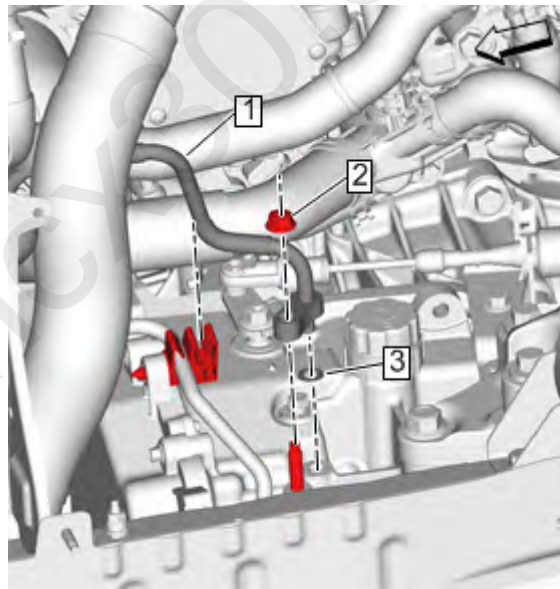


Fig. 34: Transmission Fluid Cooler Pipe

Courtesy of GENERAL MOTORS COMPANY

2. Remove Transmission Fluid Cooler Pipe Nut (2)

NOTE: Cover or plug all open transmission fluid cooler pipe connection points to help avoid any accidental contamination.

3. Remove Transmission Fluid Cooler Pipe (1) @Transmission
4. Remove and DISCARD the sealing washer.(3)
5. Disengage Transmission Fluid Cooler Pipe (1) @Transmission Fluid Cooler Hose Clip
6. Remove Underbody Front Air Deflector Replacement

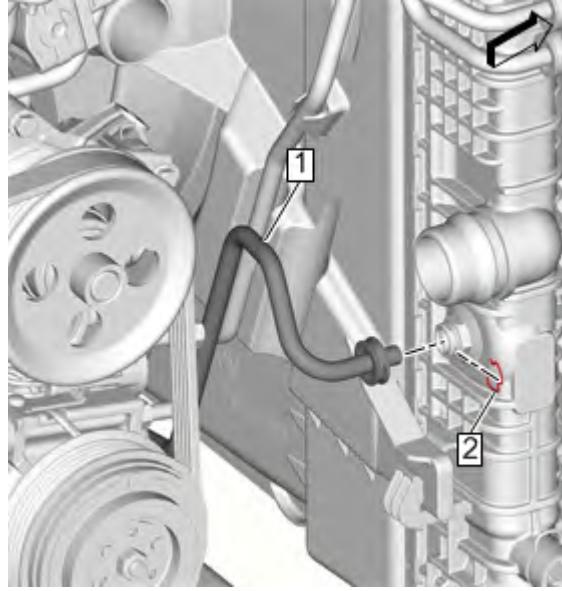


Fig. 35: Transmission Fluid Cooler Inlet Pipe
Courtesy of GENERAL MOTORS COMPANY

7. Remove Transmission Fluid Cooler Pipe Clip (2) @Radiator - **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**
8. Remove Transmission Fluid Cooler Pipe (1) @Radiator
9. Remove the transmission fluid cooler pipe (1) from the vehicle.

Installation Procedure

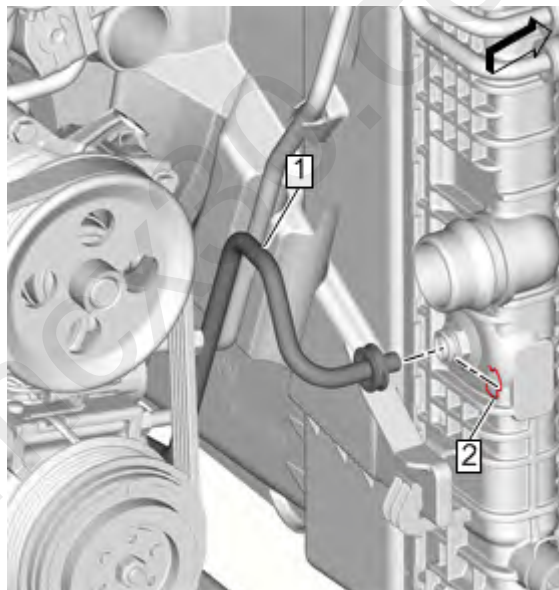


Fig. 36: Transmission Fluid Cooler Inlet Pipe
Courtesy of GENERAL MOTORS COMPANY

1. Install the transmission fluid cooler pipe (1) to the vehicle.
2. Install Transmission Fluid Cooler Pipe (1) @Radiator
3. Install Transmission Fluid Cooler Pipe Clip (2) @Radiator - **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**
4. Install **Underbody Front Air Deflector Replacement**

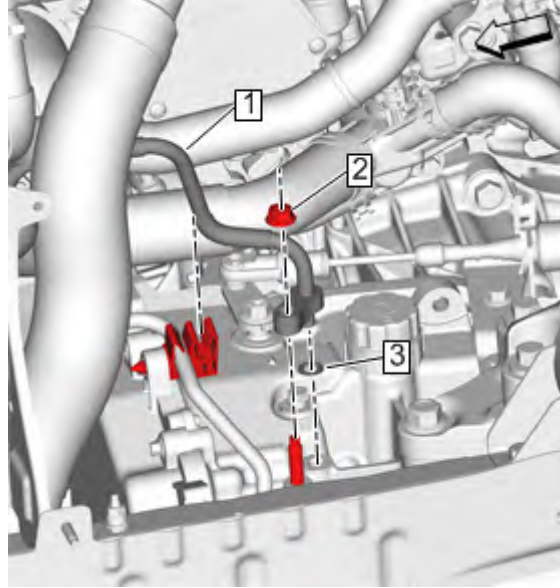


Fig. 37: Transmission Fluid Cooler Pipe

Courtesy of GENERAL MOTORS COMPANY

5. Install a NEW transmission fluid cooler inlet and outlet pipe fitting seal (3).
6. Install Transmission Fluid Cooler Pipe (1) @Transmission
7. Engage Transmission Fluid Cooler Pipe (1) @Transmission Fluid Cooler Hose Clip

CAUTION: Refer to Fastener Caution .

8. Install Transmission Fluid Cooler Pipe Nut (2) and tighten 22 N.m (16 lb ft)
9. Install Battery Tray Replacement
10. Check the transmission fluid level. Transmission Fluid Level and Condition Check
11. Inspect for transmission fluid leaks.

TRANSMISSION FLUID COOLER INLET AND OUTLET PIPE REPLACEMENT (LE2)

Removal Procedure

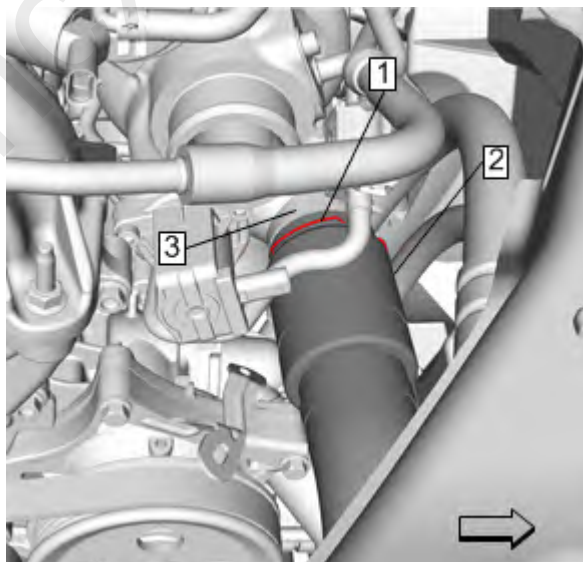


Fig. 38: Charge Air Cooler Inlet Air Hose

Courtesy of GENERAL MOTORS COMPANY

1. Remove Charge Air Cooler Inlet Air Hose (2)Charge Air Cooler Inlet Air Hose Replacement

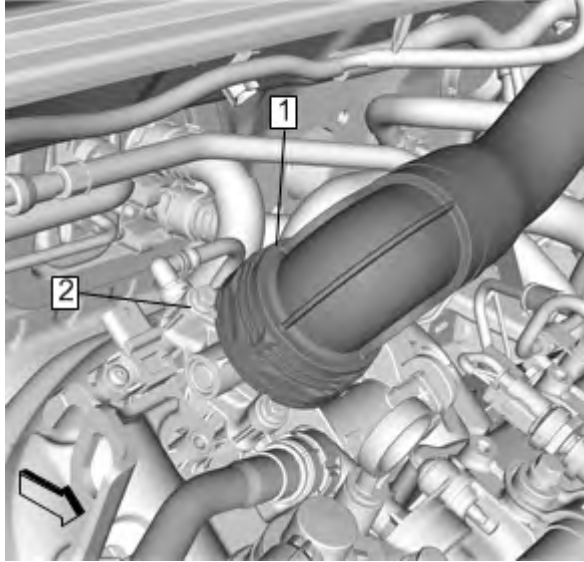


Fig. 39: Charge Air Cooler Outlet Air Hose At Throttle Body.
 Courtesy of GENERAL MOTORS COMPANY

2. Remove Charge Air Cooler Outlet Air Hose (1) [Charge Air Cooler Outlet Air Hose Replacement](#)
3. Remove Battery Tray [Battery Tray Replacement](#)

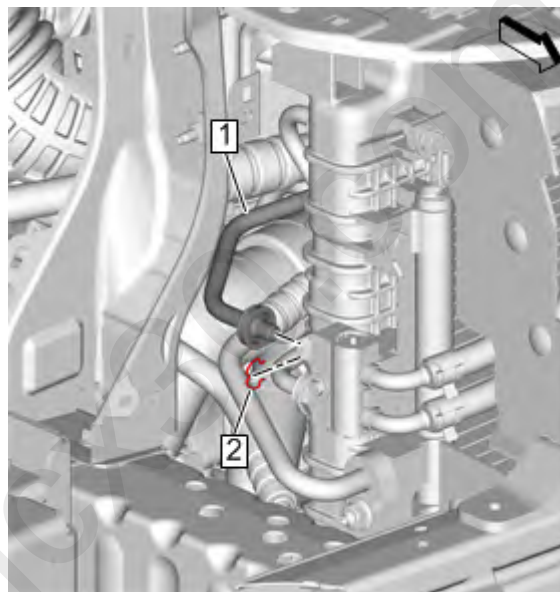


Fig. 40: Transmission Fluid Cooler Hose Clip And Outlet Pipe
 Courtesy of GENERAL MOTORS COMPANY

NOTE: Cover or plug all open transmission fluid cooler pipe connection points to help avoid any accidental contamination.

4. Remove Transmission Fluid Cooler Pipe (1) @Transmission Fluid Cooler Thermal Bypass Valve [Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection](#)

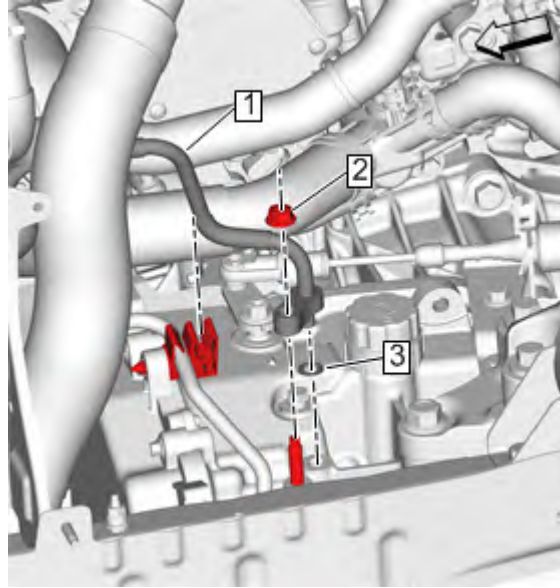


Fig. 41: Transmission Fluid Cooler Pipe
Courtesy of GENERAL MOTORS COMPANY

5. Remove Transmission Fluid Cooler Pipe Nut (2)
6. Remove Transmission Fluid Cooler Pipe (1) @Transmission
7. Sealing Washer (3) and DISCARD
8. Partially raise the vehicle. **Lifting and Jacking the Vehicle**
9. Remove Front Wheelhouse Liner- Left **Front Wheelhouse Liner Replacement (Chevrolet)**. **Front Wheelhouse Liner Replacement (Buick)**.

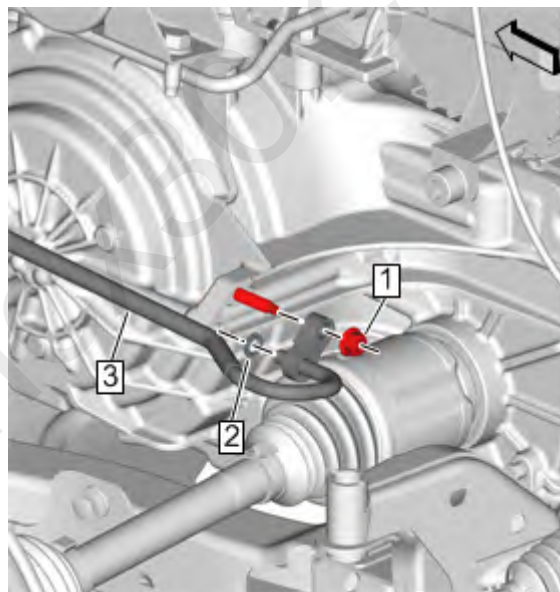


Fig. 42: Transmission Fluid Cooler Pipe Nut
Courtesy of GENERAL MOTORS COMPANY

10. Remove Transmission Fluid Cooler Pipe Nut (1)
11. Remove Transmission Fluid Cooler Pipe (3) @Transmission
12. Remove Transmission Fluid Cooler Pipe Fitting Seal (2) and DISCARD
13. Raise and support the vehicle. **Lifting and Jacking the Vehicle**
14. Remove Front Compartment Insulator **Front Compartment Front Center Insulator Replacement**

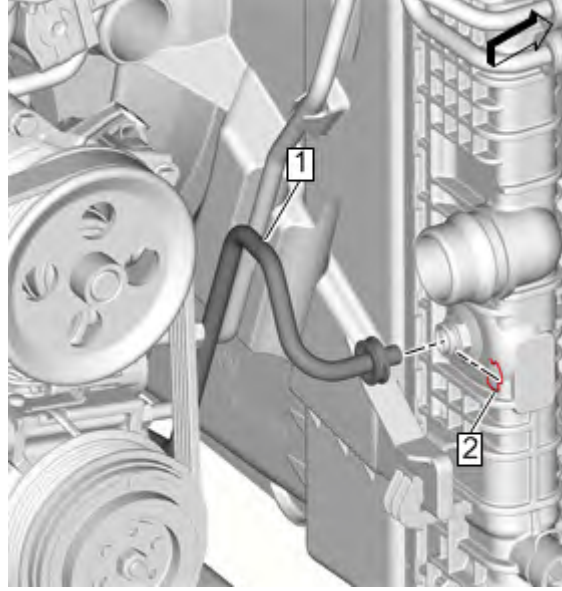


Fig. 43: Transmission Fluid Cooler Inlet Pipe
Courtesy of GENERAL MOTORS COMPANY

15. Remove Transmission Fluid Cooler Pipe (1) @Transmission Fluid Cooler Pipe Fitting **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**

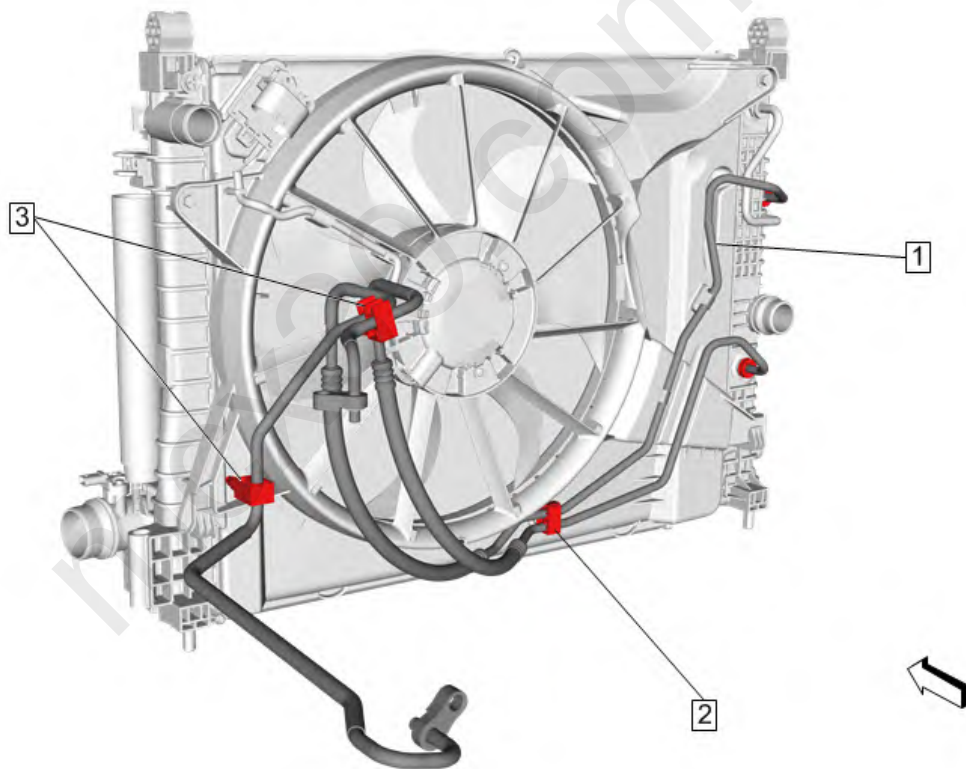


Fig. 44: Transmission Fluid Cooler Pipe And Clip
Courtesy of GENERAL MOTORS COMPANY

16. Disengage Transmission Fluid Cooler Pipe Clip (2) @Engine Coolant Fan Shroud
17. Remove Transmission Fluid Cooler Pipe Clip (3) @Transmission
18. Unclip Transmission Fluid Cooler Outlet Pipe (1) @Engine Coolant Fan Shroud
19. Remove Transmission Fluid Cooler Inlet and Outlet Pipe

Installation Procedure

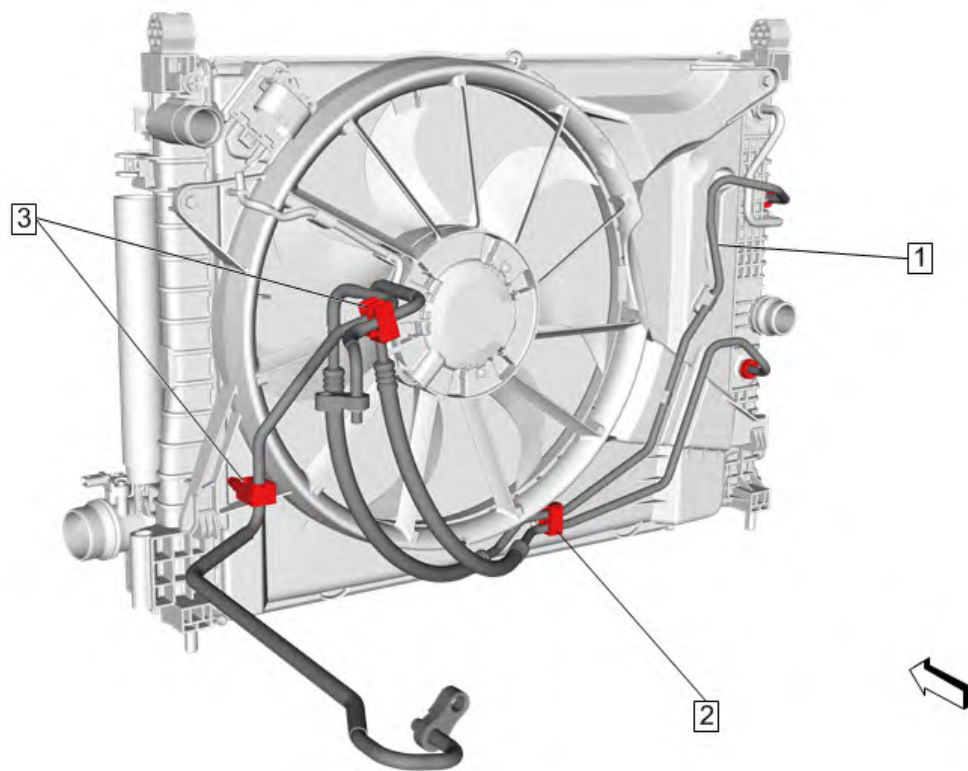


Fig. 45: Transmission Fluid Cooler Pipe And Clip
 Courtesy of GENERAL MOTORS COMPANY

NOTE: Remove the caps from the fittings and plugs from the holes before installing the transmission fluid cooler pipes.

1. Transmission Fluid Cooler Outlet Pipe (1) @Engine Coolant Fan Shroud
2. Transmission Fluid Cooler Pipe Clip (3) @Transmission
3. Install Transmission Fluid Cooler Pipe Clip (2) @Engine Coolant Fan Shroud

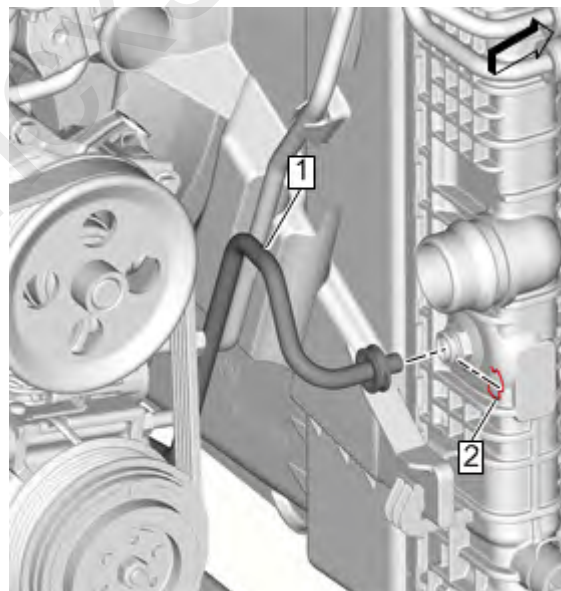


Fig. 46: Transmission Fluid Cooler Inlet Pipe
 Courtesy of GENERAL MOTORS COMPANY

4. Install Transmission Fluid Cooler Pipe (1) @Transmission Fluid Cooler Pipe Fitting [Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection](#)
5. Install Front Compartment Insulator. [Front Compartment Front Center Insulator Replacement](#)
6. Partially lower the vehicle.

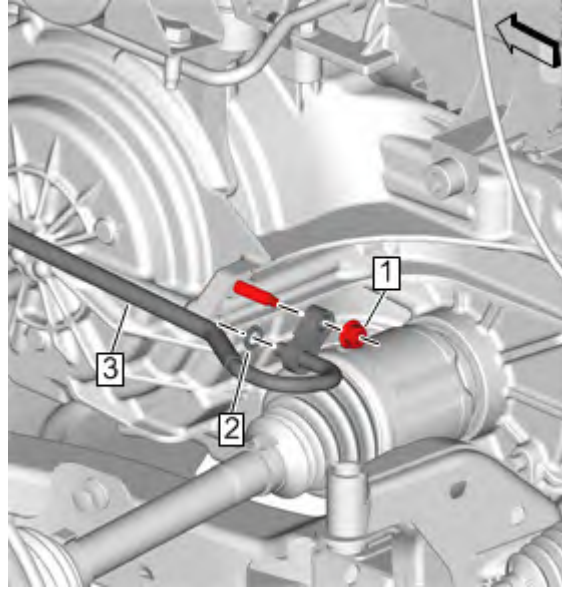


Fig. 47: Transmission Fluid Cooler Pipe Nut
Courtesy of GENERAL MOTORS COMPANY

- 7.
8. Install a New Transmission Fluid Cooler Pipe Fitting Seal (2)
9. Install Transmission Fluid Cooler Pipe (2) @Transmission

CAUTION: Refer to **Fastener Caution** .

10. Install Transmission Fluid Cooler Pipe Nut (1) and tighten 22 N.m (16 lb ft)
11. Install Front Wheelhouse Liner- Left **Front Wheelhouse Liner Replacement (Chevrolet) Front Wheelhouse Liner Replacement (Buick)**.
12. Remove the supports and lower the vehicle.



Fig. 48: Transmission Fluid Cooler Pipe
Courtesy of GENERAL MOTORS COMPANY

13. Install Transmission Fluid Cooler Pipe Fitting Seal (3)
14. Install Transmission Fluid Cooler Pipe (1) @Transmission
15. Install Transmission Fluid Cooler Pipe Nut (2) and tighten 22 N.m (16 lb ft)

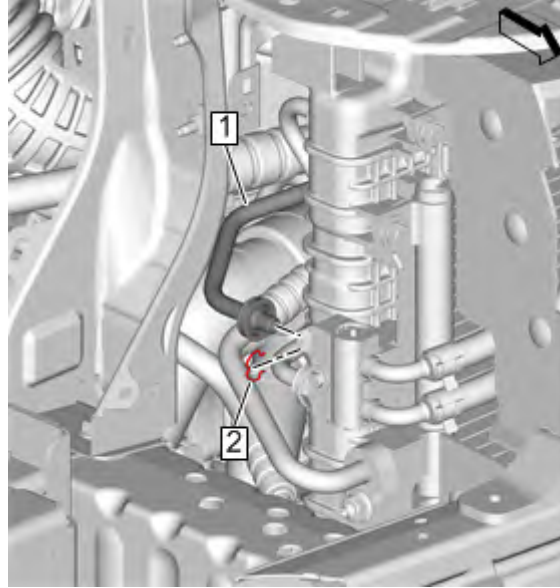


Fig. 49: Transmission Fluid Cooler Hose Clip And Outlet Pipe
 Courtesy of GENERAL MOTORS COMPANY

16. Install Transmission Fluid Cooler Pipe (1) @Transmission Fluid Cooler Thermal Bypass Valve
Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection
17. Install Battery Tray Battery Tray Replacement

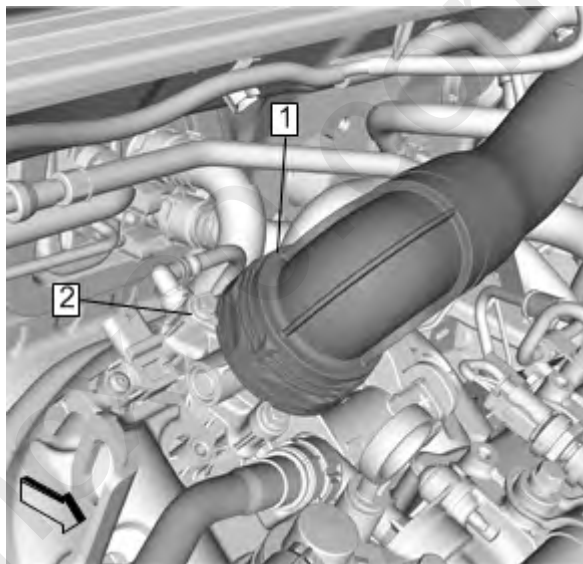


Fig. 50: Charge Air Cooler Outlet Air Hose At Throttle Body
 Courtesy of GENERAL MOTORS COMPANY

18. Install Charge Air Cooler Outlet Air Hose (1) Charge Air Cooler Outlet Air Hose Replacement

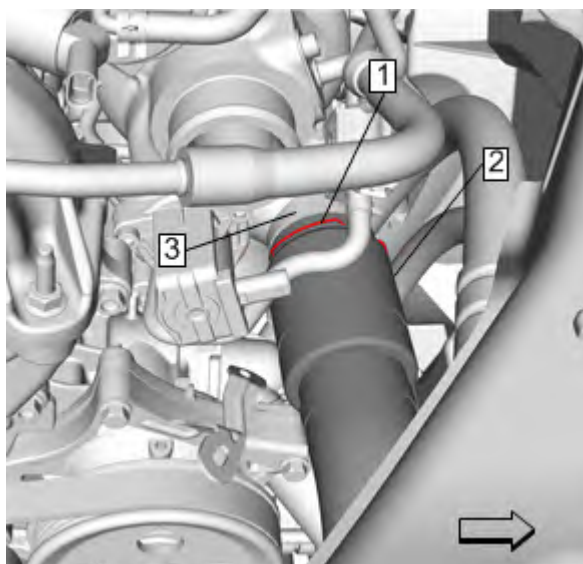


Fig. 51: Charge Air Cooler Inlet Air Hose
Courtesy of GENERAL MOTORS COMPANY

19. Install Charge Air Cooler Inlet Air Hose (2)[Charge Air Cooler Inlet Air Hose Replacement](#)
20. Fill and inspect the transmission fluid level. [Transmission Fluid Level and Condition Check](#)
21. Inspect for transmission fluid leaks.

TRANSMISSION FLUID COOLER INLET AND OUTLET PIPE REPLACEMENT (LUV)

Removal Procedure

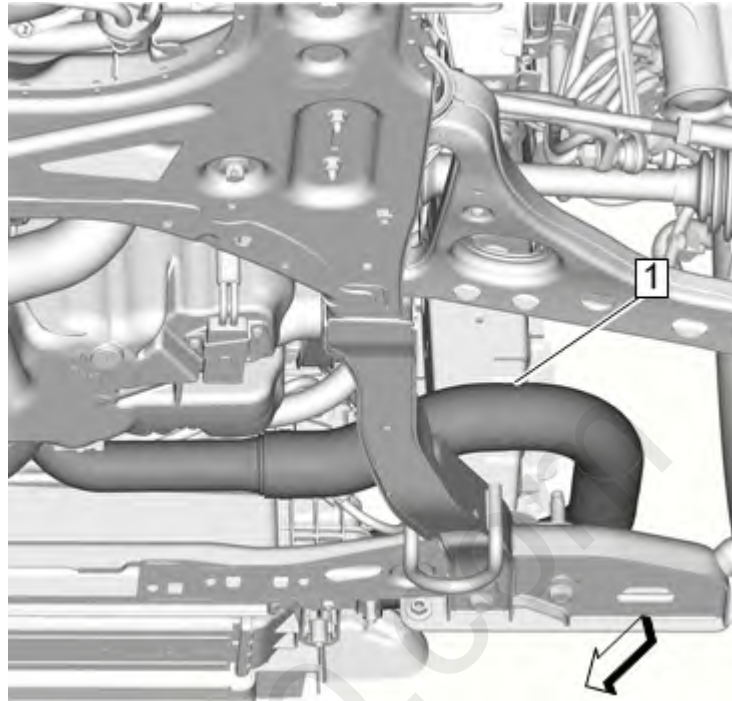


Fig. 52: Charge Air Cooler Inlet Air Hose
Courtesy of GENERAL MOTORS COMPANY

1. Remove Charge Air Cooler Inlet Air Hose (1)[Charge Air Cooler Inlet Air Hose Replacement](#)

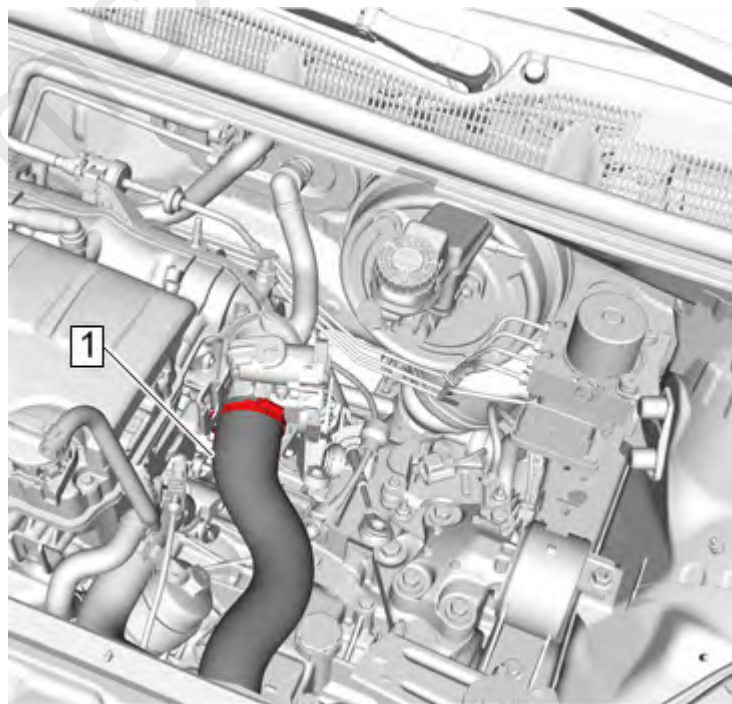


Fig. 53: Charge Air Cooler Outlet Air Hose
Courtesy of GENERAL MOTORS COMPANY

2. Remove Charge Air Cooler Outlet Air Hose (1)[Charge Air Cooler Outlet Air Hose Replacement](#)

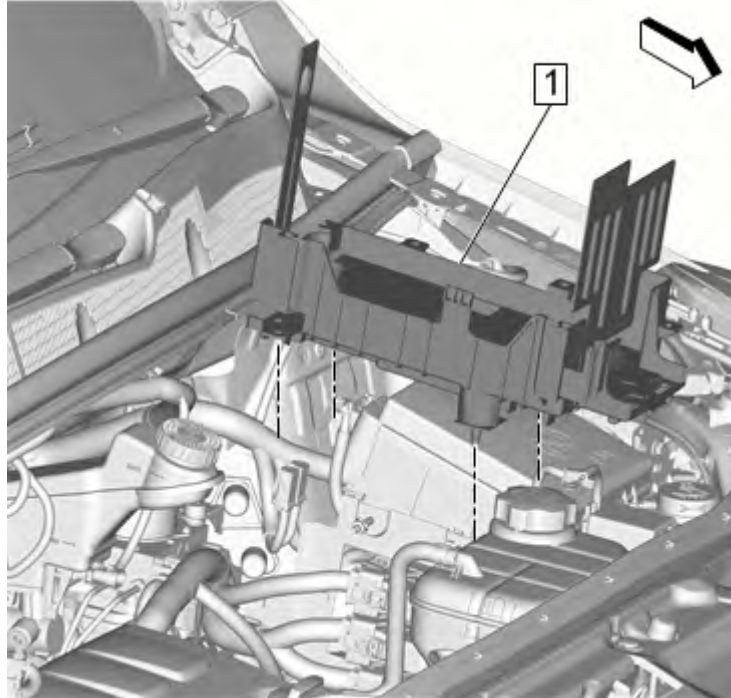


Fig. 54: Battery Tray.

Courtesy of GENERAL MOTORS COMPANY

3. Remove Battery Tray (1) **Battery Tray Replacement**

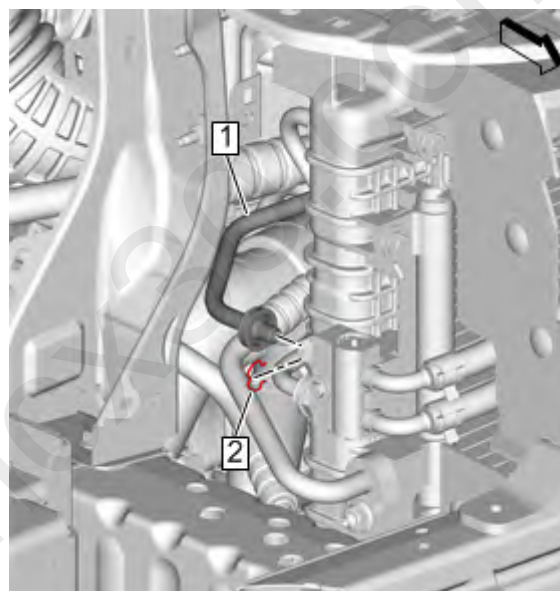


Fig. 55: Transmission Fluid Cooler Hose Clip And Outlet Pipe

Courtesy of GENERAL MOTORS COMPANY

NOTE: Cover or plug all open transmission fluid cooler pipe connection points to help avoid any accidental contamination.

4. Remove Transmission Fluid Cooler Pipe (1) @Transmission Fluid Cooler Thermal Bypass Valve **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**

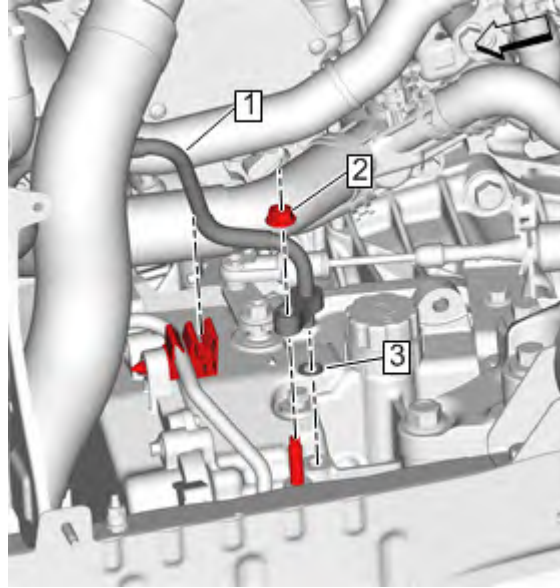


Fig. 56: Transmission Fluid Cooler Pipe
Courtesy of GENERAL MOTORS COMPANY

5. Remove Transmission Fluid Cooler Pipe Nut (2)
6. Remove Transmission Fluid Cooler Pipe (1) @Transmission
7. Remove Sealing Washer (3) and DISCARD
8. Partially raise the vehicle. **Lifting and Jacking the Vehicle**
9. Remove Front Wheelhouse Liner- Left **Front Wheelhouse Liner Replacement (Chevrolet)**, **Front Wheelhouse Liner Replacement (Buick)**

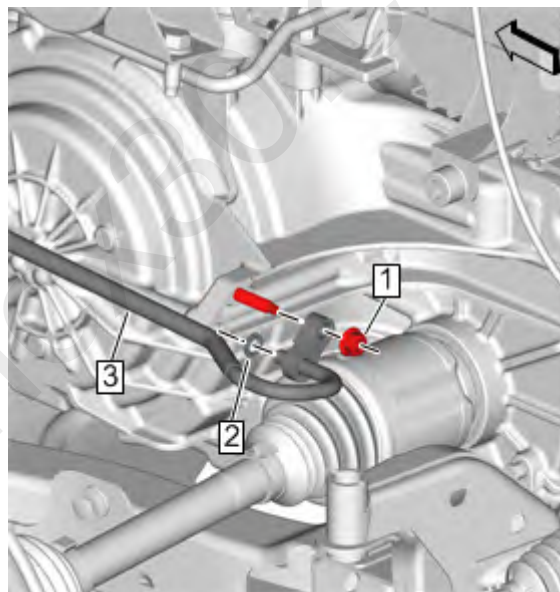


Fig. 57: Transmission Fluid Cooler Pipe Nut
Courtesy of GENERAL MOTORS COMPANY

10. Remove Transmission Fluid Cooler Pipe Nut (1)
11. Remove Transmission Fluid Cooler Pipe (3) @Transmission
12. Remove Transmission Fluid Cooler Pipe Fitting Seal (2) and DISCARD
13. Raise and support the vehicle. **Lifting and Jacking the Vehicle**

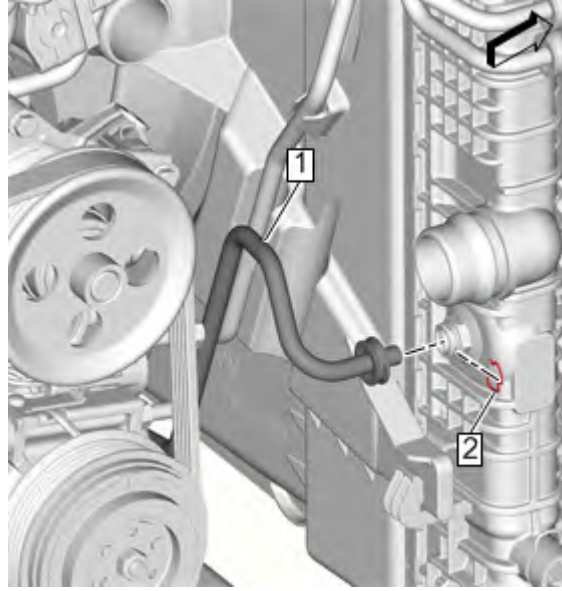


Fig. 58: Transmission Fluid Cooler Inlet Pipe
 Courtesy of GENERAL MOTORS COMPANY

14. Remove Transmission Fluid Cooler Pipe (1) @Transmission Fluid Cooler Pipe Fitting **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**

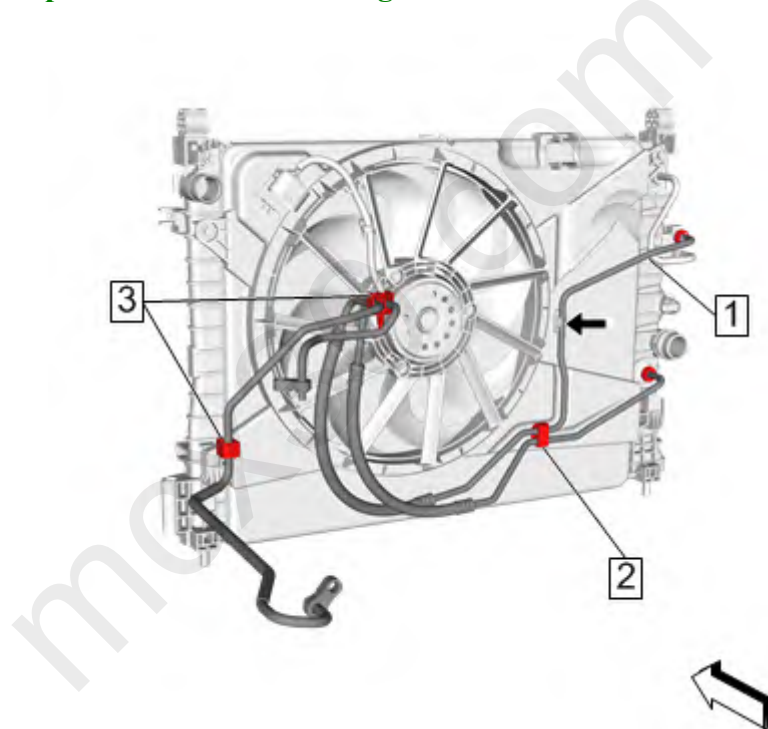


Fig. 59: Transmission Fluid Cooler Pipe And Clip
 Courtesy of GENERAL MOTORS COMPANY

15. Disengage Transmission Fluid Cooler Pipe Clip (2) @Engine Coolant Fan Shroud
16. Remove Transmission Fluid Cooler Pipe Clip (3) @Transmission
17. Unclip Transmission Fluid Cooler Outlet Pipe (1) @Engine Coolant Fan Shroud
18. Remove Transmission Fluid Cooler Inlet and Outlet Pipe

Installation Procedure

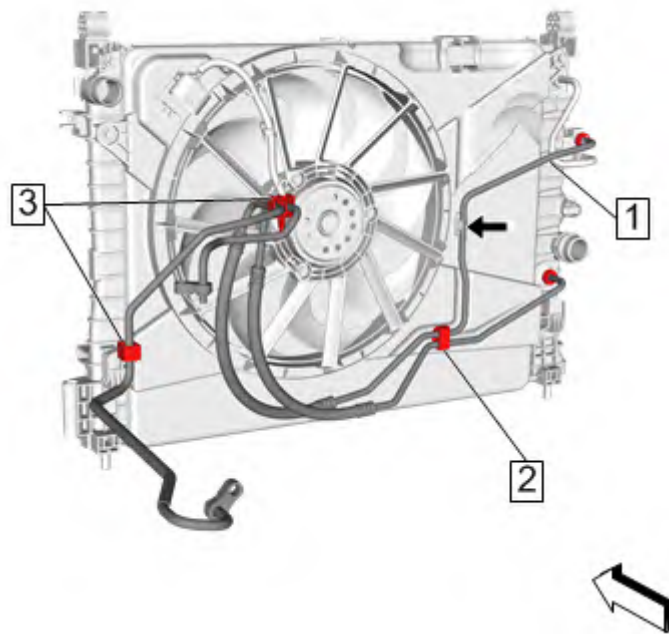


Fig. 60: Transmission Fluid Cooler Pipe And Clip
 Courtesy of GENERAL MOTORS COMPANY

NOTE: Remove the caps from the fittings and plugs from the holes before installing the transmission fluid cooler pipes.

1. Insert Transmission Fluid Cooler Outlet Pipe (1) @Engine Coolant Fan Shroud
2. Install Transmission Fluid Cooler Pipe Clip (3) @Transmission
3. Install Transmission Fluid Cooler Pipe Clip (2) @Engine Coolant Fan Shroud

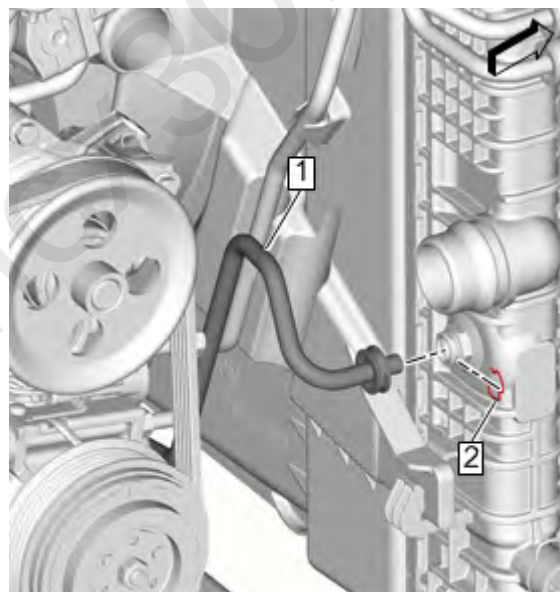


Fig. 61: Transmission Fluid Cooler Inlet Pipe
 Courtesy of GENERAL MOTORS COMPANY

4. Install Transmission Fluid Cooler Pipe (1) @Transmission Fluid Cooler Pipe Fitting **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**
5. Partially lower the vehicle.

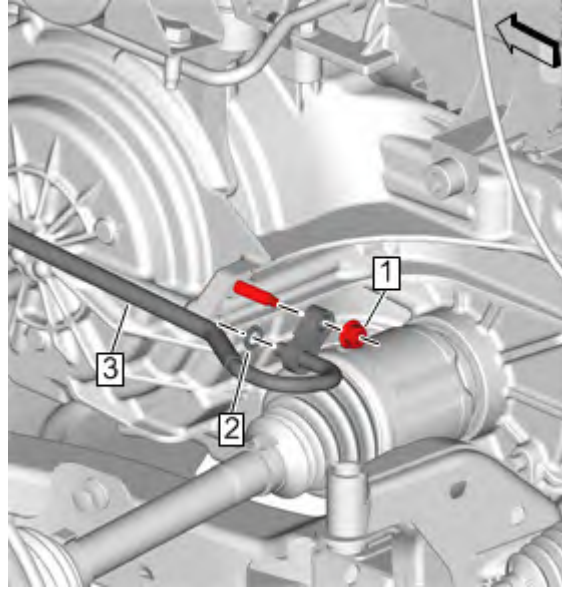


Fig. 62: Transmission Fluid Cooler Pipe Nut
Courtesy of GENERAL MOTORS COMPANY

- 6.
7. Install Transmission Fluid Cooler Pipe Fitting Seal (2)
8. Install Transmission Fluid Cooler Pipe (3) @Transmission

CAUTION: Refer to **Fastener Caution** .

9. Install Transmission Fluid Cooler Pipe Nut (1) and tighten 22 N.m (16 lb ft)
10. Install Front Wheelhouse Liner- Left **Front Wheelhouse Liner Replacement (Chevrolet) Front Wheelhouse Liner Replacement (Buick)**.
11. Remove the supports and lower the vehicle.



Fig. 63: Transmission Fluid Cooler Pipe
Courtesy of GENERAL MOTORS COMPANY

12. Install a New Transmission Fluid Cooler Pipe Fitting Seal (3).
13. Install Transmission Fluid Cooler Pipe (1) @Transmission
14. Install Transmission Fluid Cooler Pipe Nut (2) and tighten 22 N.m (16 lb ft)

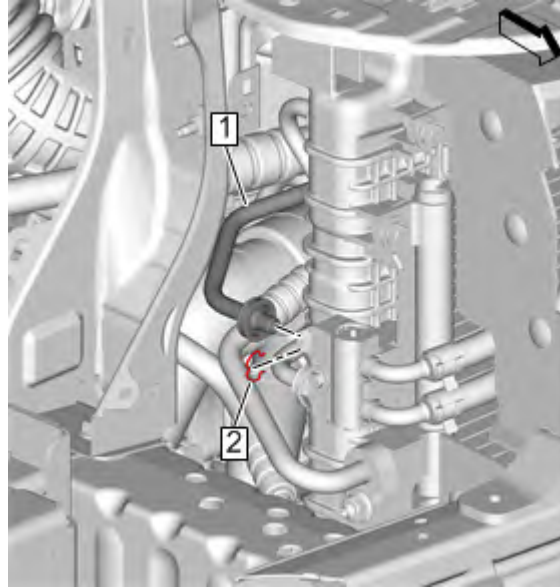


Fig. 64: Transmission Fluid Cooler Hose Clip And Outlet Pipe
 Courtesy of GENERAL MOTORS COMPANY

15. Install Transmission Fluid Cooler Pipe (1) @Transmission Fluid Cooler Thermal Bypass Valve
Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection
16. Install Battery Tray Battery Tray Replacement

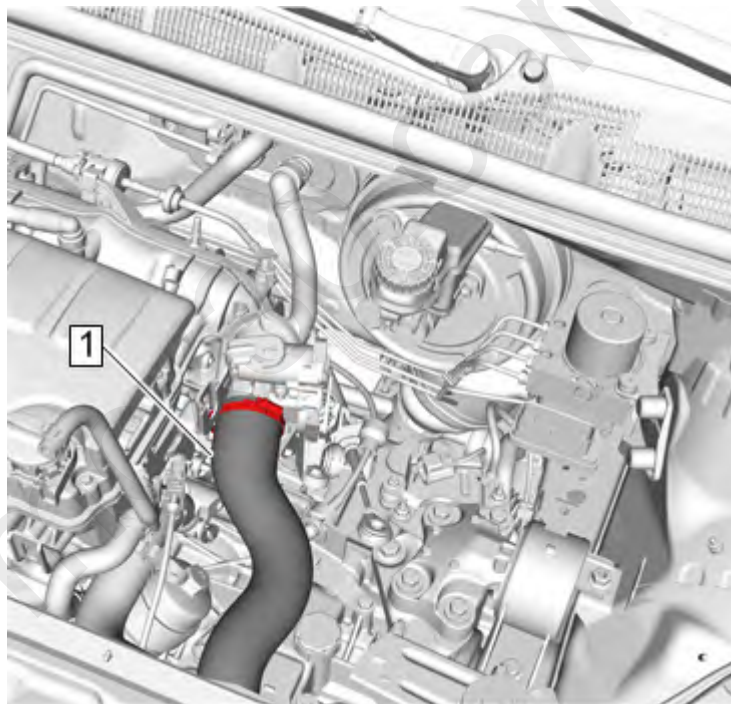


Fig. 65: Charge Air Cooler Outlet Air Hose
 Courtesy of GENERAL MOTORS COMPANY

17. Charge Air Cooler Outlet Air Hose (1)Charge Air Cooler Outlet Air Hose Replacement

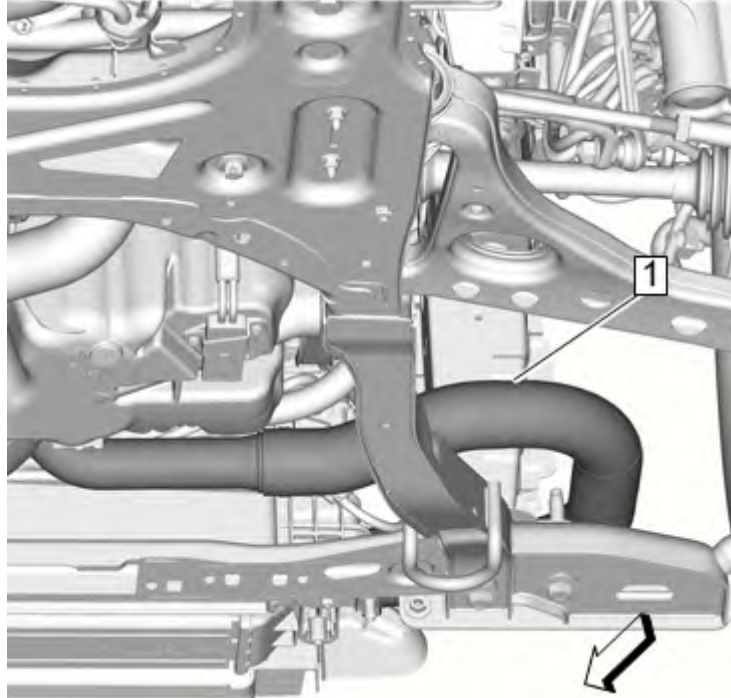


Fig. 66: Charge Air Cooler Inlet Air Hose
Courtesy of GENERAL MOTORS COMPANY

18. Charge Air Cooler Inlet Air Hose (2)[Charge Air Cooler Inlet Air Hose Replacement](#)
19. Check the transmission fluid level. [Transmission Fluid Level and Condition Check](#)
20. Inspect for transmission fluid leaks.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/ Description
	DT 45096 J 45096 Transmission Oil Cooling System Flush and Flow Test Tool

Illustration

Tool
Number/
Description



Illustration	Tool Number/ Description
	DT 45096-50 J 45096-50 Transmission Cooler Flush Adapter