TRANSMISSION

Transmission Cooling - Escalade, Suburban, Tahoe, Yukon

SPECIFICATIONS

FASTENER SPECIFICATIONS

Application	Specification	
	Metric	English
Transmission Fluid Cooler Pipe Connector Bolt	22 N.m	16 lb ft
Transmission Fluid Cooler Pipe Connector	20 N.m	15 lb ft
Transmission Oil Cooler Fitting	24 N.m	18 lb ft

DIAGNOSTIC INFORMATION AND PROCEDURES

TRANSMISSION FLUID COOLER FLUSHING AND FLOW TEST (6L80 OR 6L90)

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 or equivalent 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

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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
- **J-35944-200A** Cooler Flushing Adapter
- Shop air supply with water/oil filters, regulator and pressure gauge - minimum 90 psi
- Eye protection
- Rubber gloves

Machine Set-up

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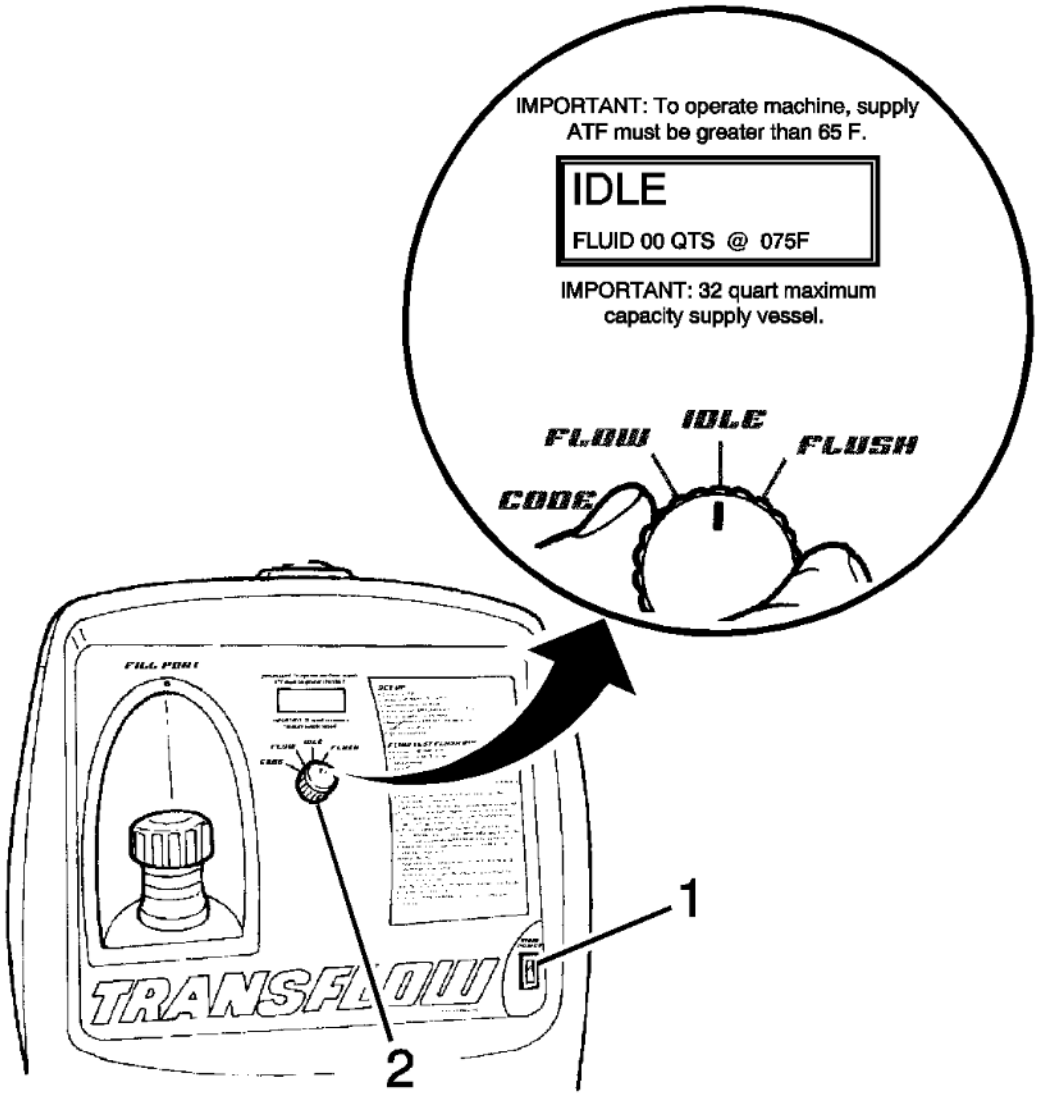


Fig. 1: View Of Main Power Switch & Main Function Switch
Courtesy of GENERAL MOTORS COMPANY

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

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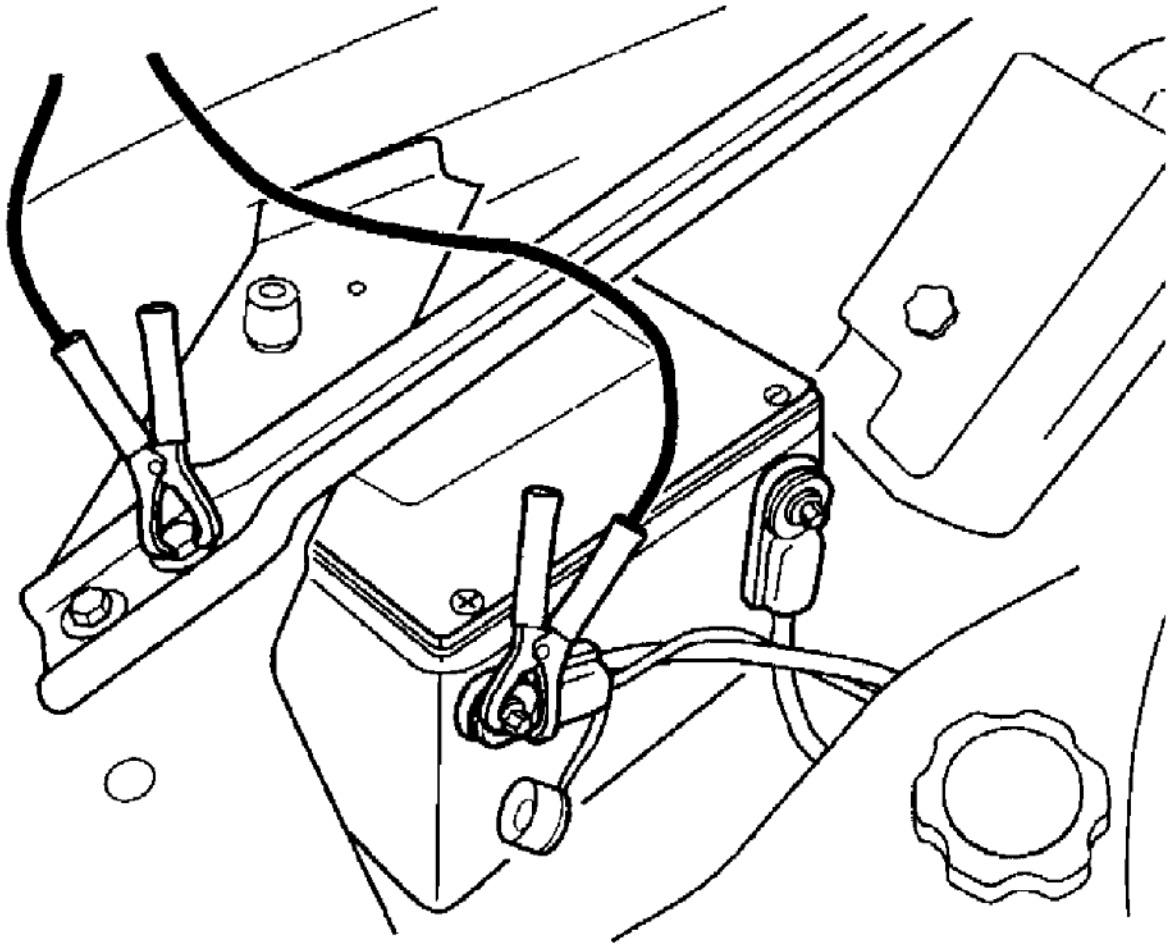


Fig. 2: Connecting To 12V DC Power Source
Courtesy of GENERAL MOTORS COMPANY

3. Connect **DT-45096** transmission oil cooling system 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.

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4. Turn the main power switch to the ON position.

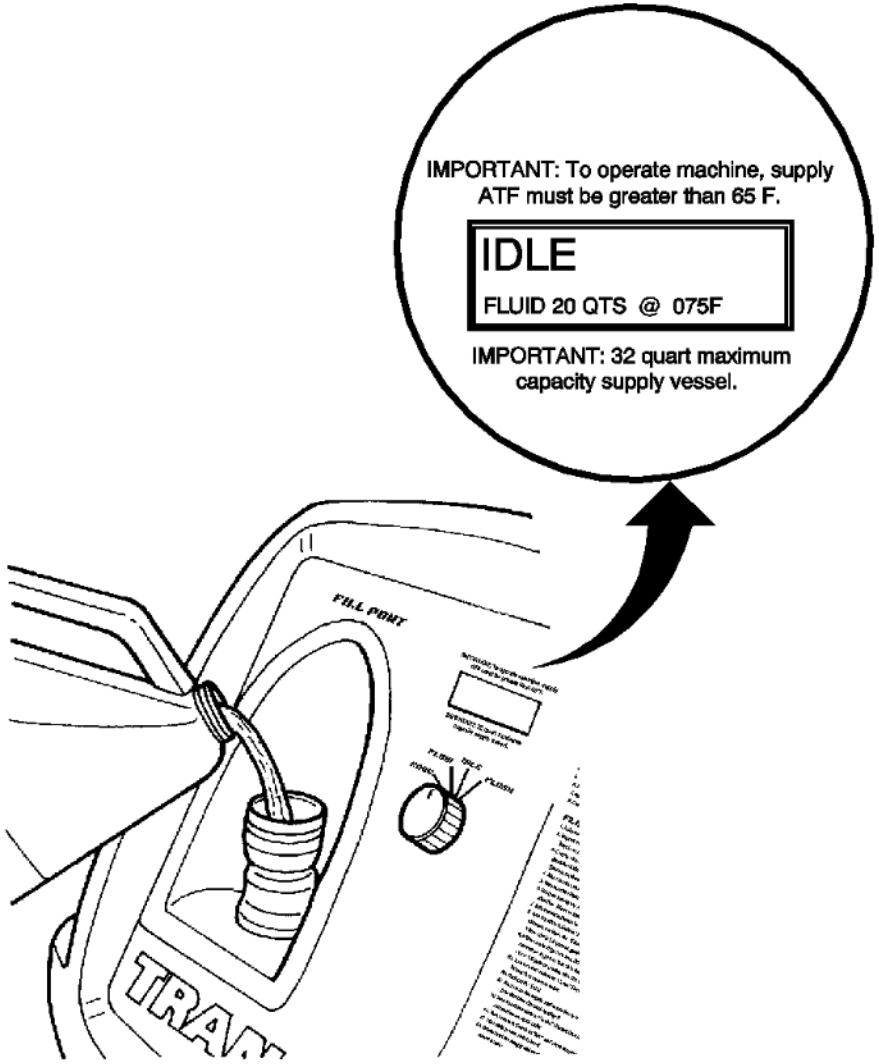
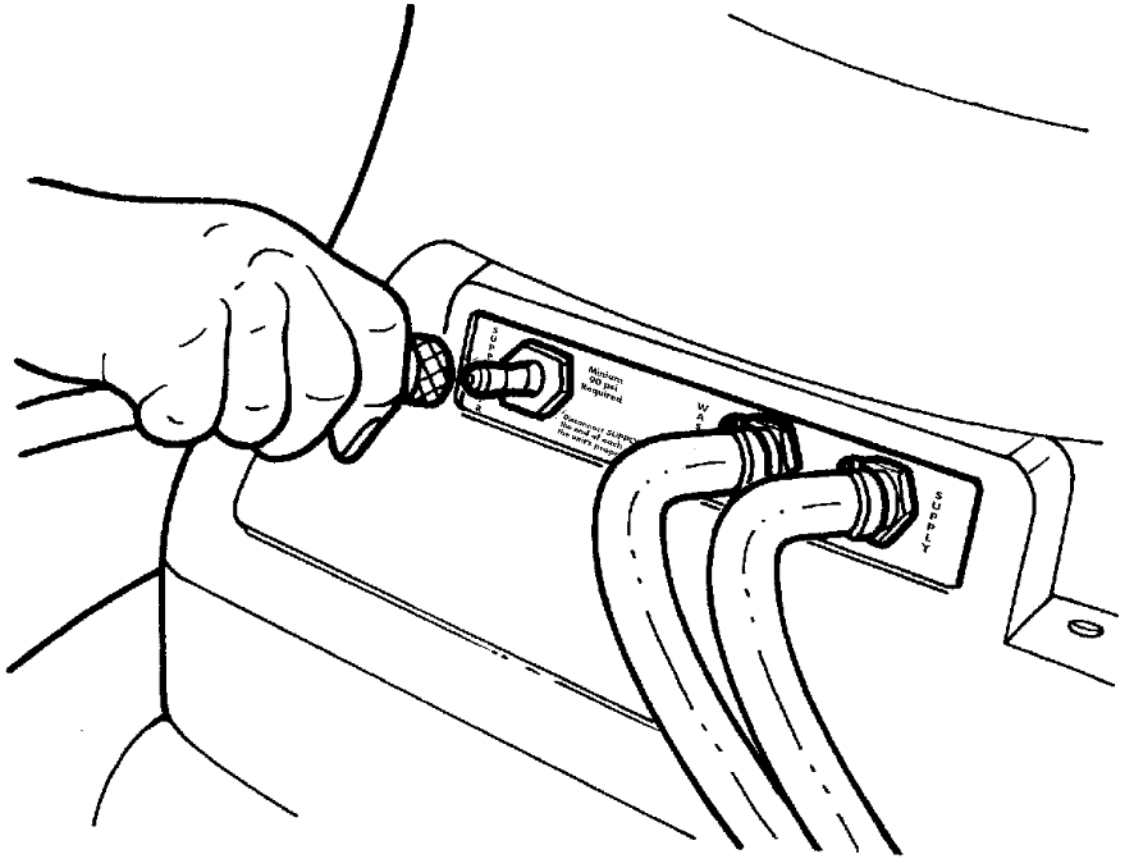


Fig. 3: Filling Supply Tank With Transmission Fluid
Courtesy of GENERAL MOTORS COMPANY

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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.



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Fig. 4: Applying Shop Air Supply Hose To J 45096 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

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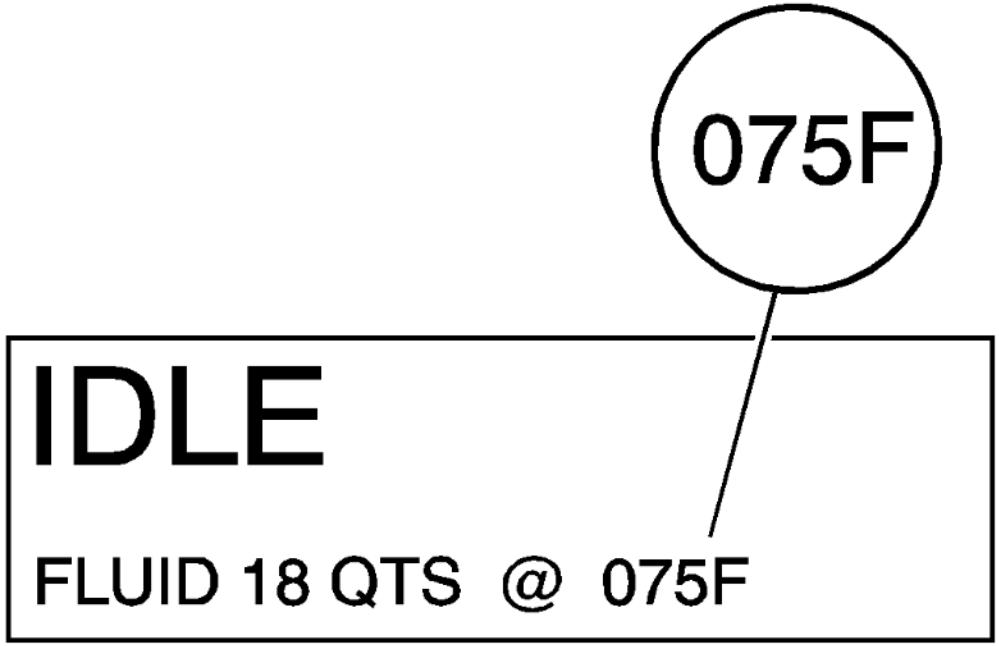


Fig. 5: Identifying Machine Display Of Automatic Transmission Fluid Temperature
Courtesy of GENERAL MOTORS COMPANY

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.

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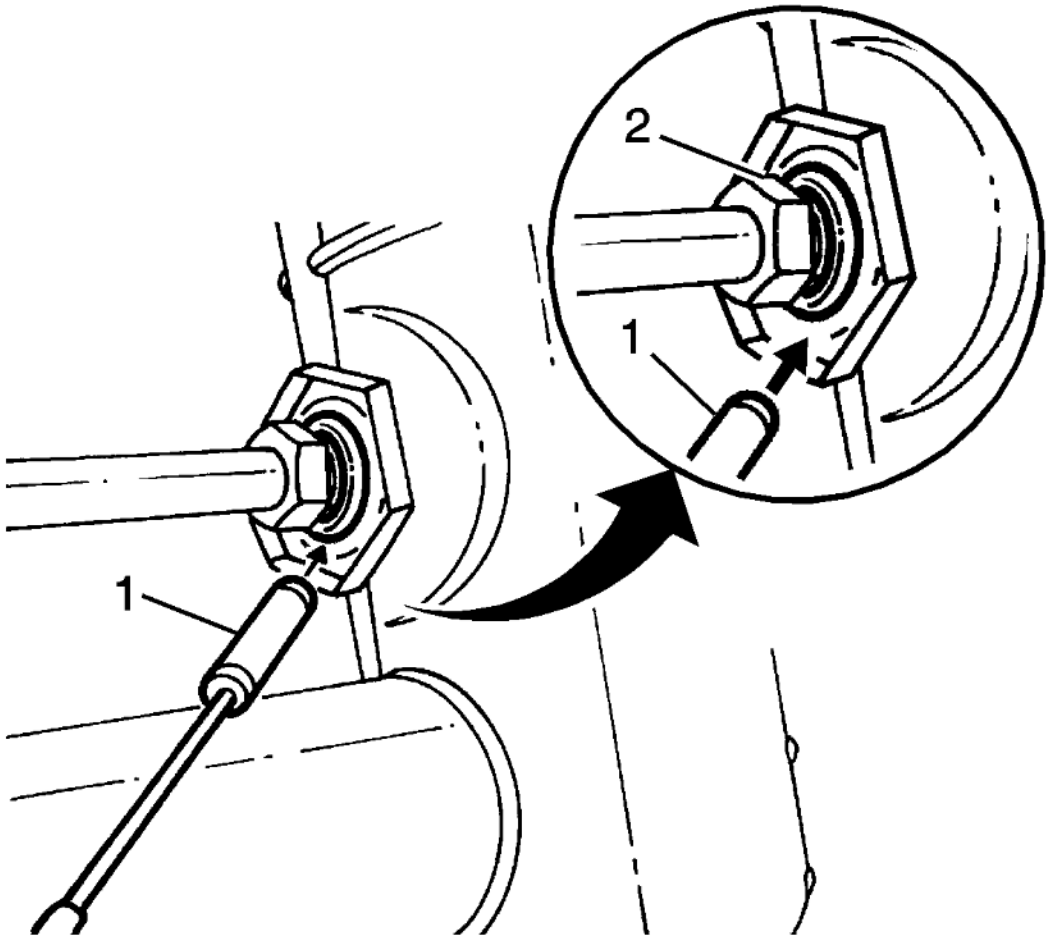


Fig. 6: Identifying Transmission Oil Cooler Metal Composition
Courtesy of GENERAL MOTORS COMPANY

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.

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Example

- Fluid temperature: 75Â°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	Aluminum
65 - 77Â°F	0.5 gpm
78 - 86Â°F	0.6 gpm
87 - 94Â°F	0.7 gpm
95 - 101Â°F	0.8 gpm
102 - 105Â°F	0.9 gpm
106 - 108Â°F	1.0 gpm
109 - 112Â°F	1.1 gpm
113 - 115Â°F	1.2 gpm
116 - 118Â°F	1.3 gpm
119 - 120Â°F	1.4 gpm

*A measured flow rate that is 0.1 gpm lower than the minimum flow rate specification does not necessarily indicate a failed cooling system. Variation in fluid temperature, air pressure and the tool rounding variation can cause a lower minimum flow reading.

Back Flush Procedure

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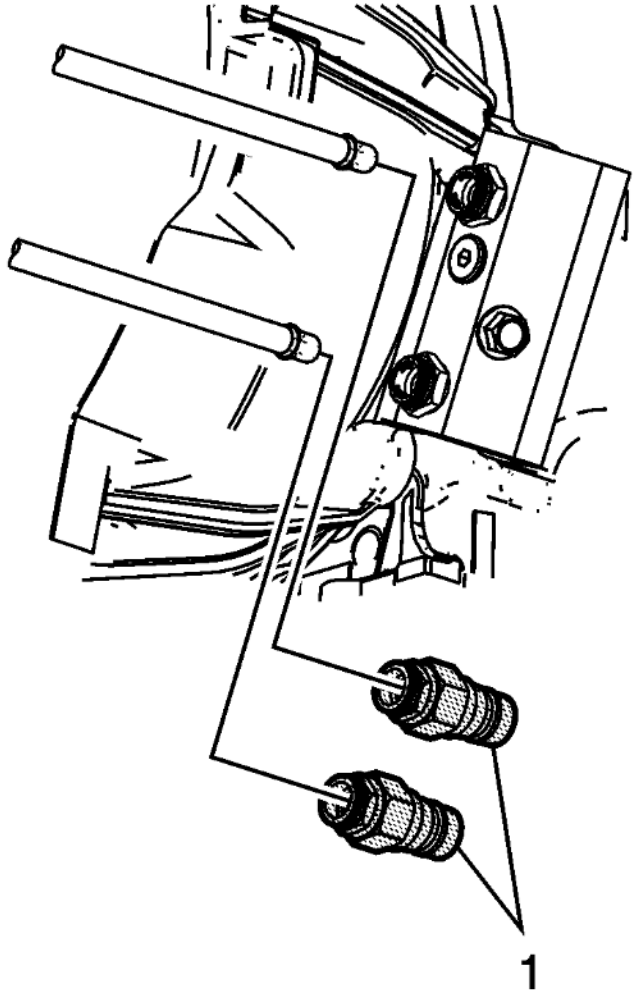


Fig. 7: Cooler Flushing Adapters
Courtesy of GENERAL MOTORS COMPANY

1. If equipped with bypass valve, disconnect the oil cooler lines from the bypass valve.
2. If equipped with bypass valve, connect the **J-35944-200A** cooler flushing adapter (1) to the vehicle transmission oil cooler supply and return lines at the transmission.

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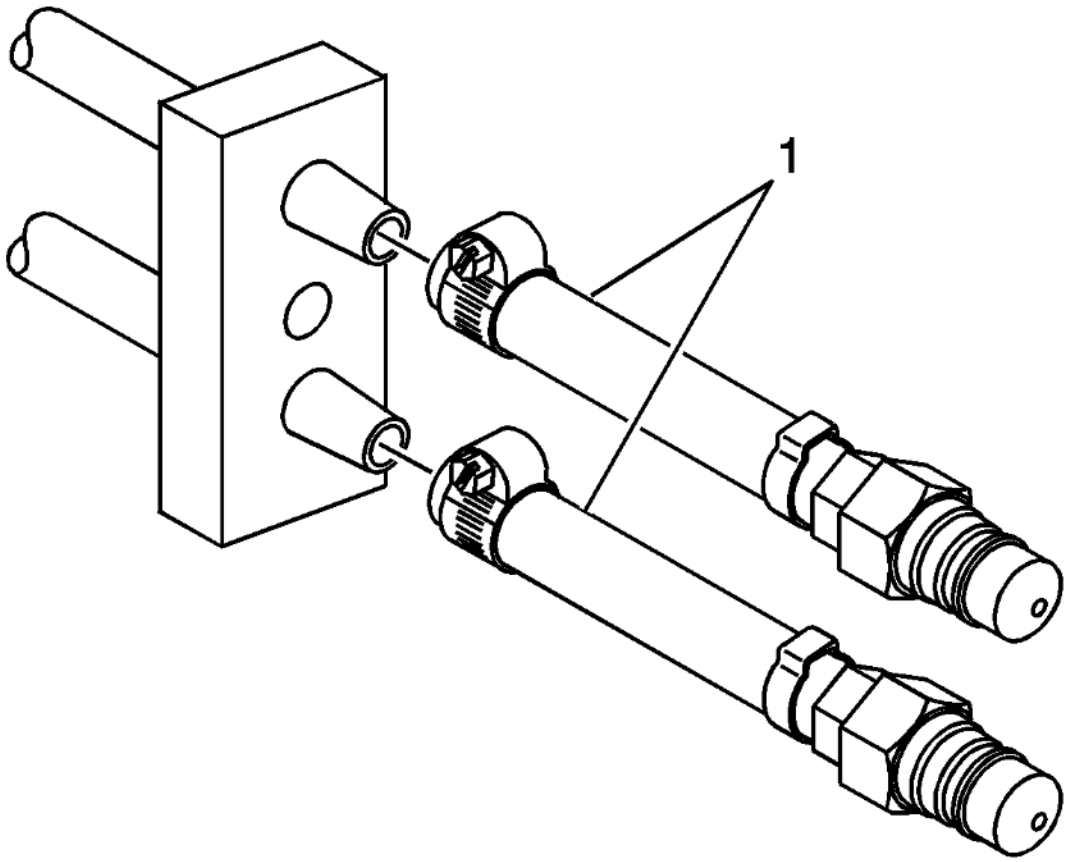


Fig. 8: Cooler Flush Adapters
Courtesy of GENERAL MOTORS COMPANY

3. If not equipped with the bypass valve, connect the **DT-45096-30** cooler flush adapter (1) to the vehicle transmission oil cooler supply and return lines at the transmission.

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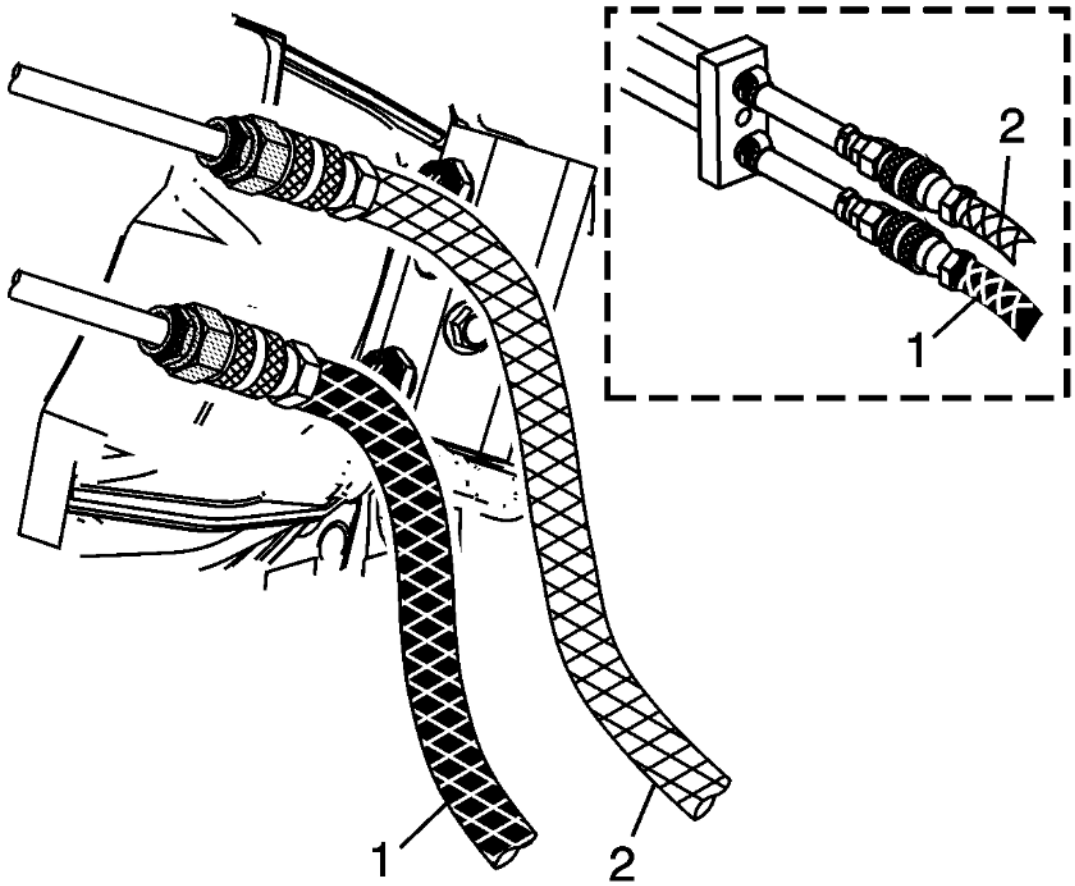


Fig. 9: Black Supply Hose
Courtesy of GENERAL MOTORS COMPANY

4. 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.

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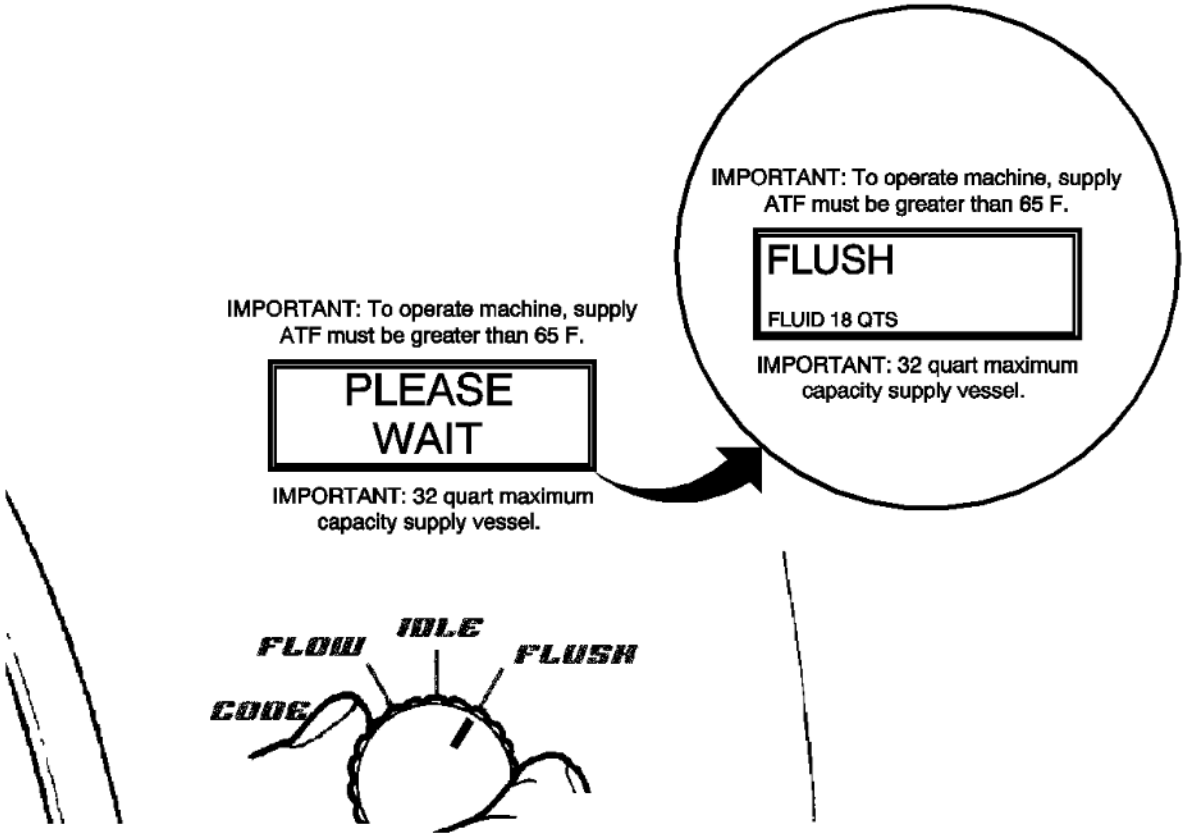


Fig. 10: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

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

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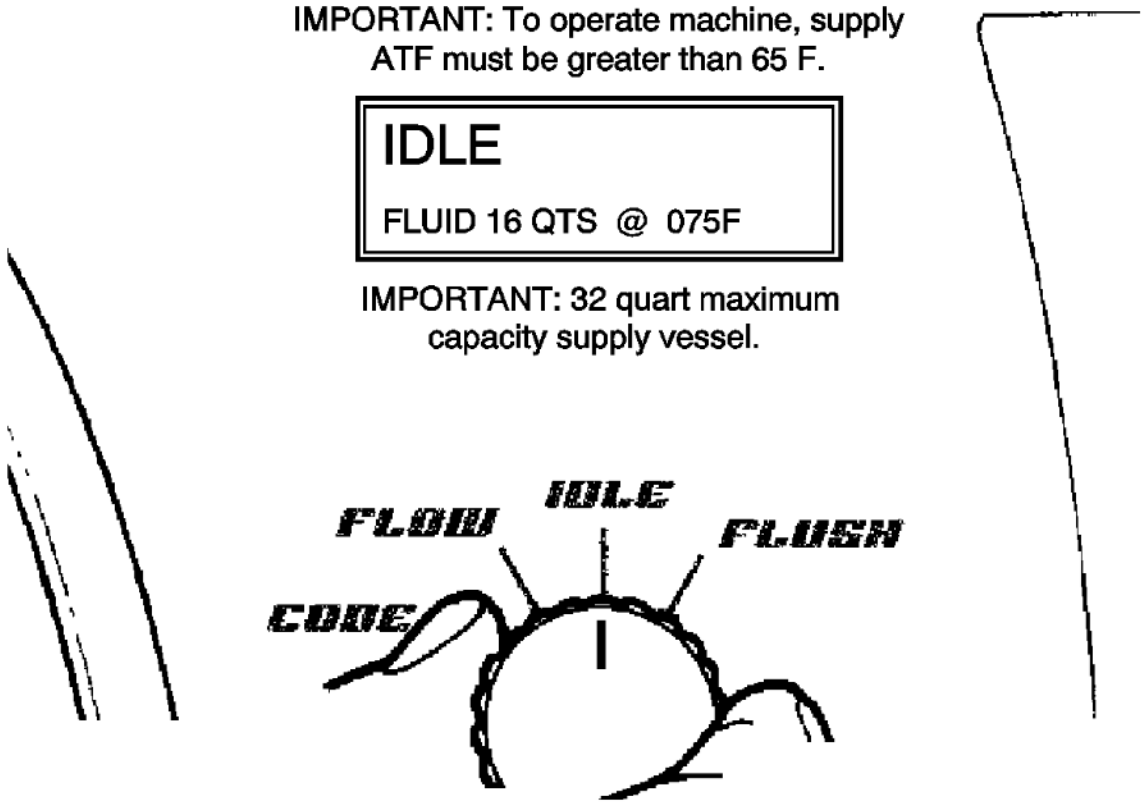


Fig. 11: View Of Main Function Switch IDLE Position
Courtesy of GENERAL MOTORS COMPANY

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

Forward Flush

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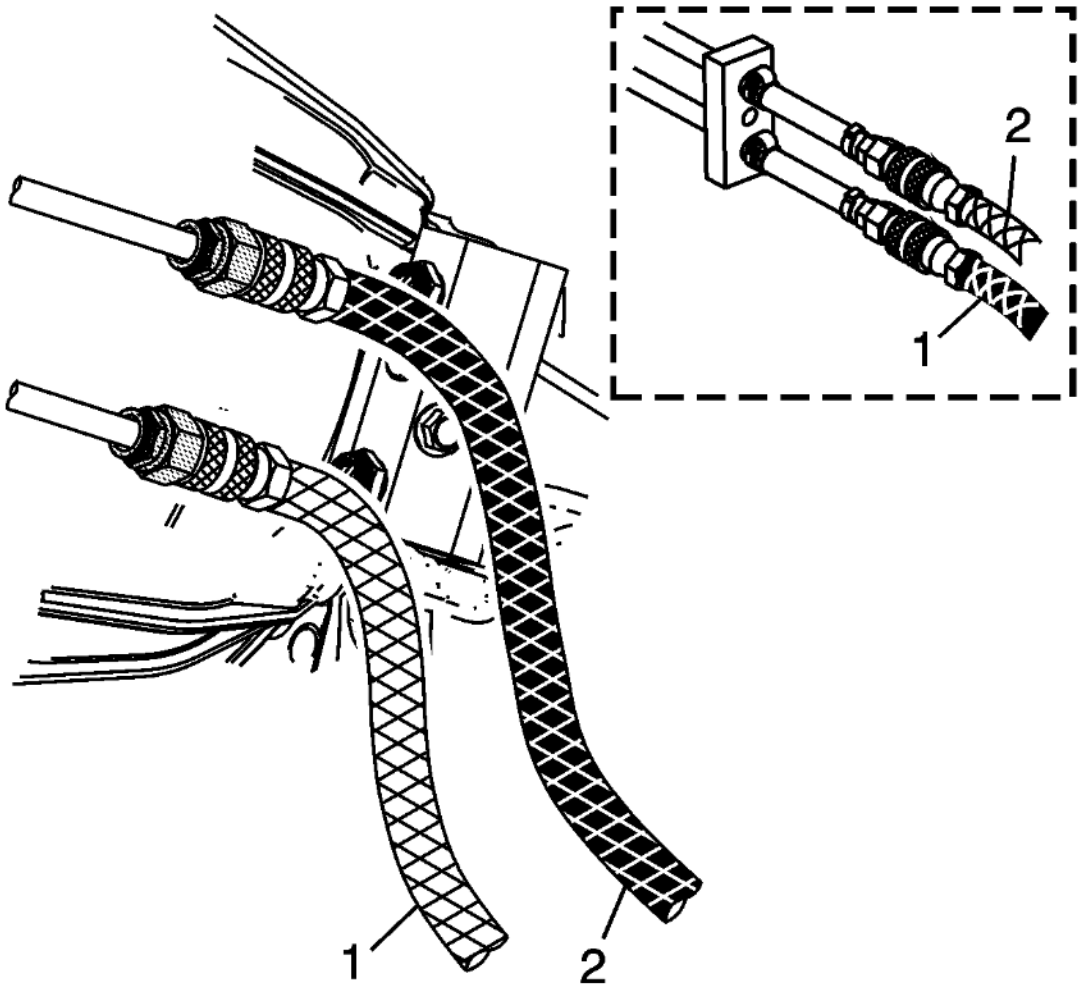


Fig. 12: Supply And Waste Hoses
Courtesy of GENERAL MOTORS COMPANY

1. Disconnect the supply and waste hoses from the vehicle cooler lines. Reverse the supply hose (2) and waste hose (1) to provide a normal flow direction.

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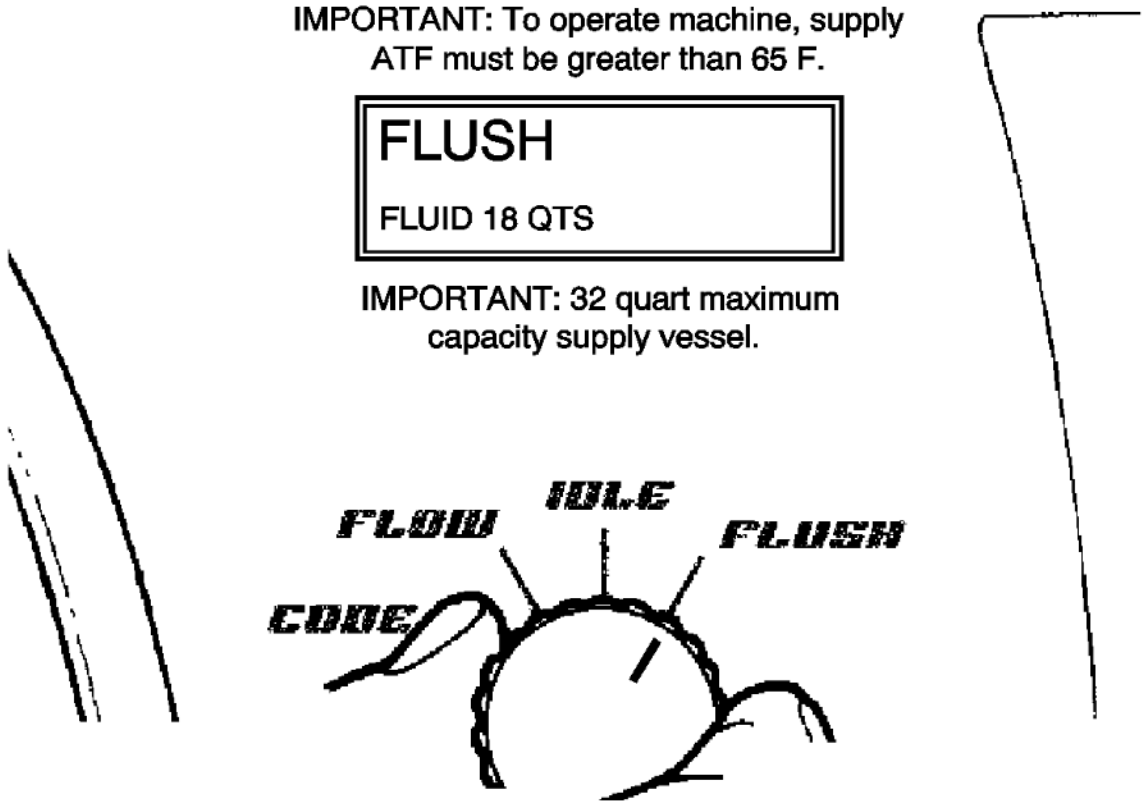


Fig. 13: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

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

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Flow Test

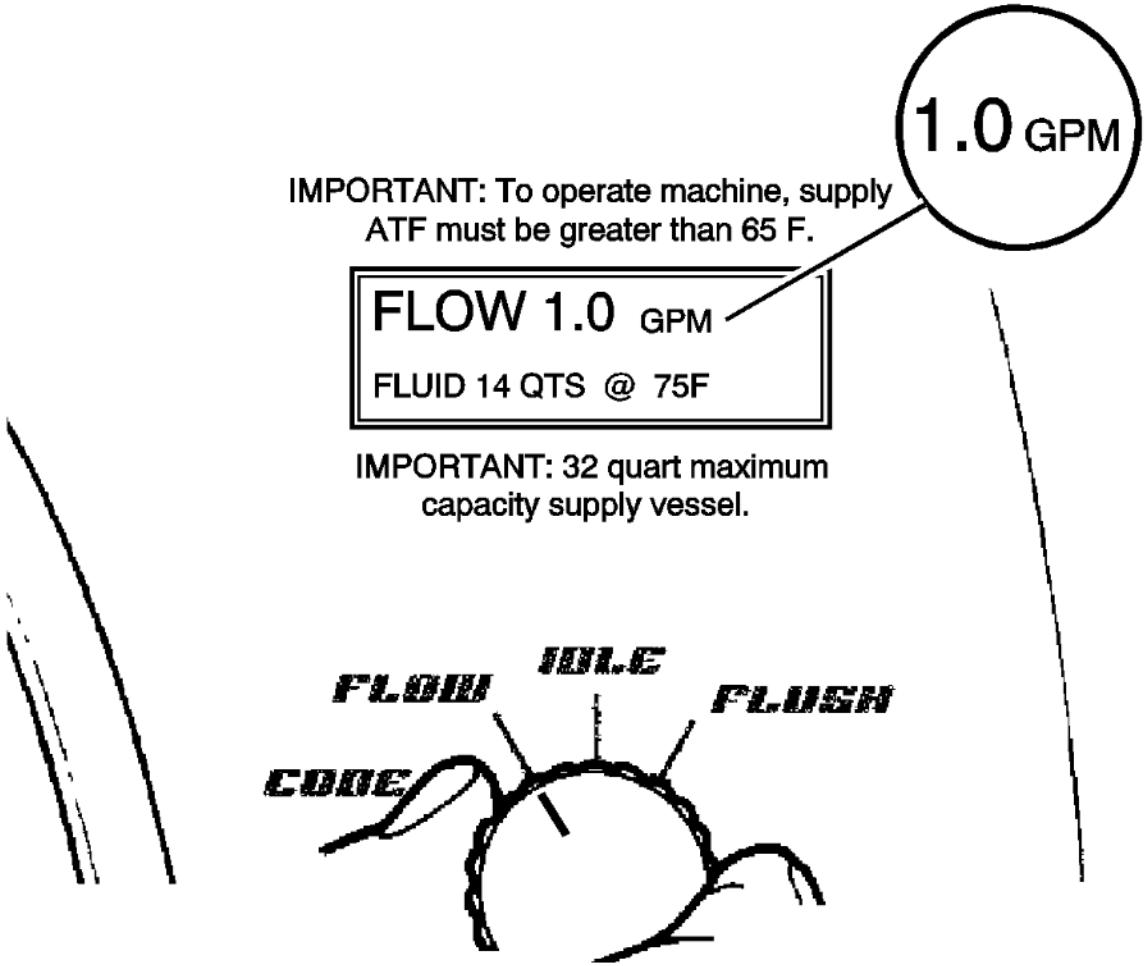


Fig. 14: View Of Main Function Switch FLOW Position
Courtesy of GENERAL MOTORS COMPANY

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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

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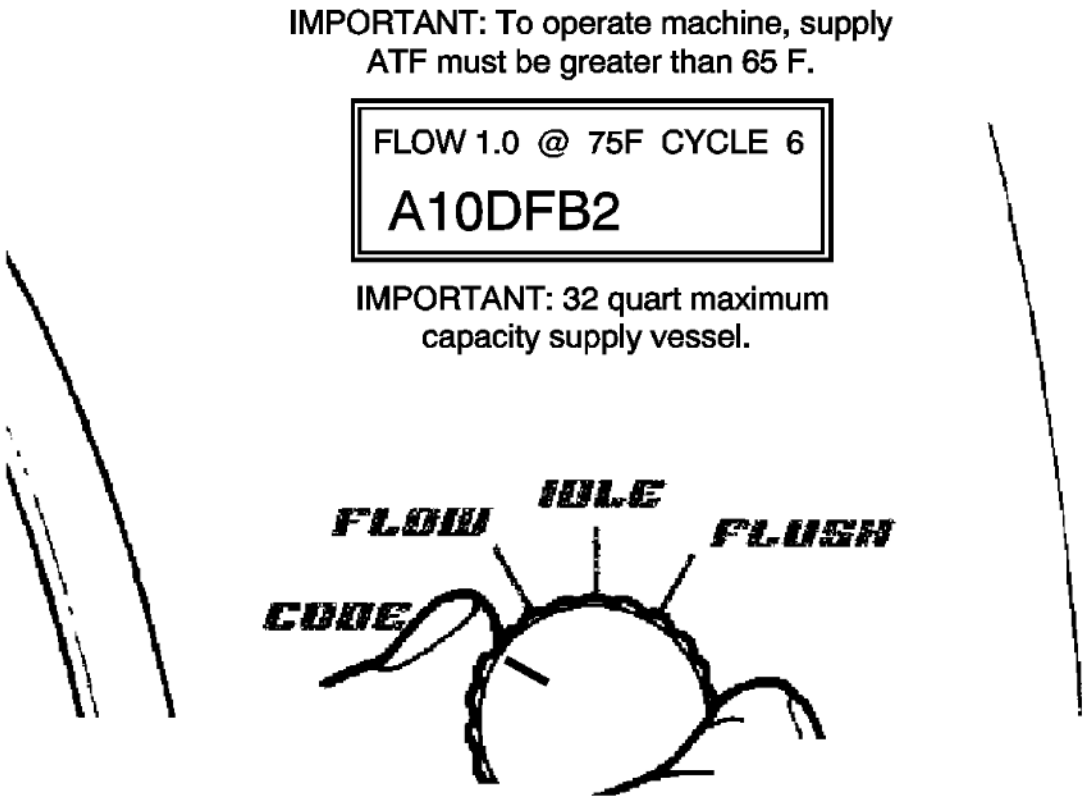


Fig. 15: View Of Main Function Switch CODE Position
Courtesy of GENERAL MOTORS COMPANY

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

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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

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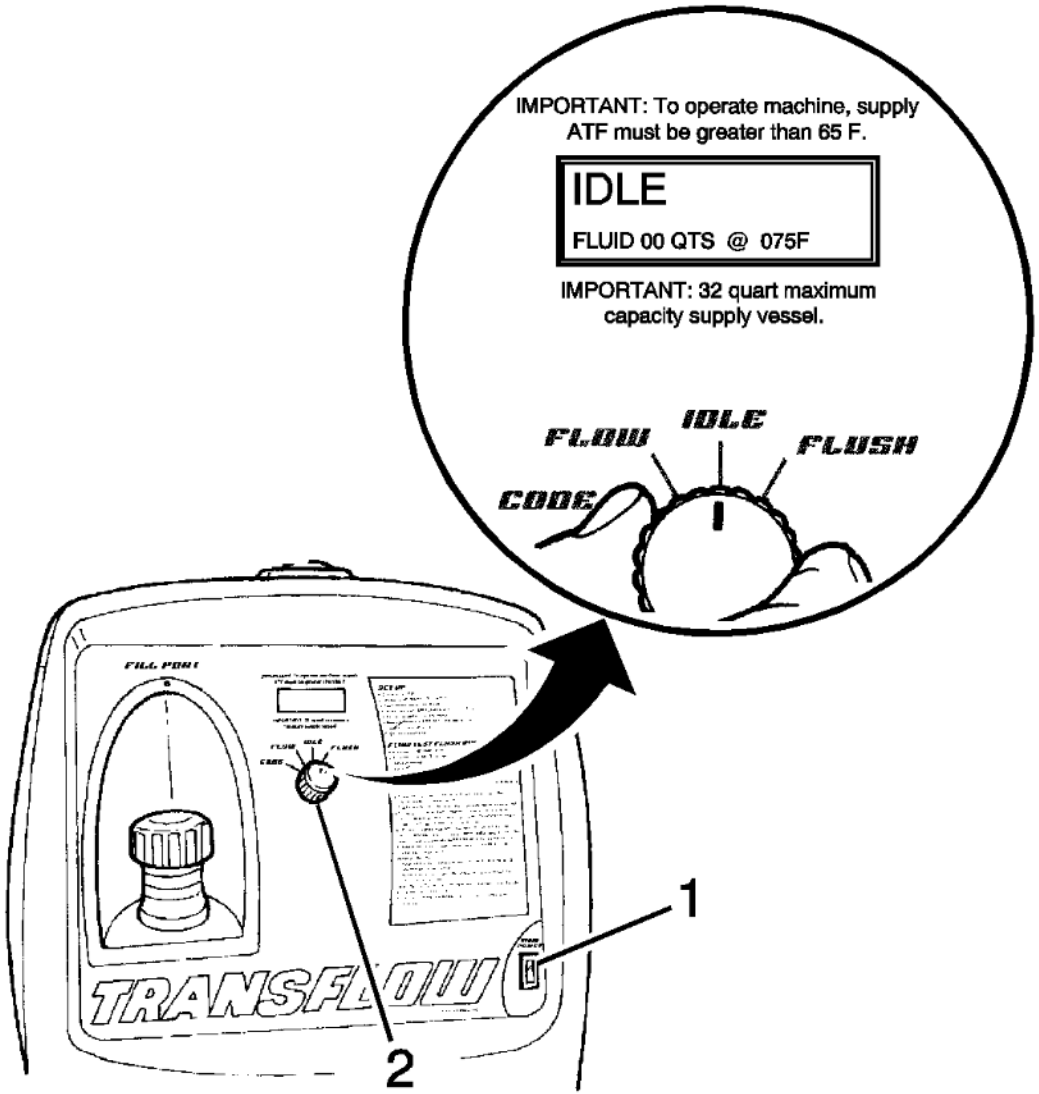


Fig. 16: View Of Main Power Switch & Main Function Switch
Courtesy of GENERAL MOTORS COMPANY

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.

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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.

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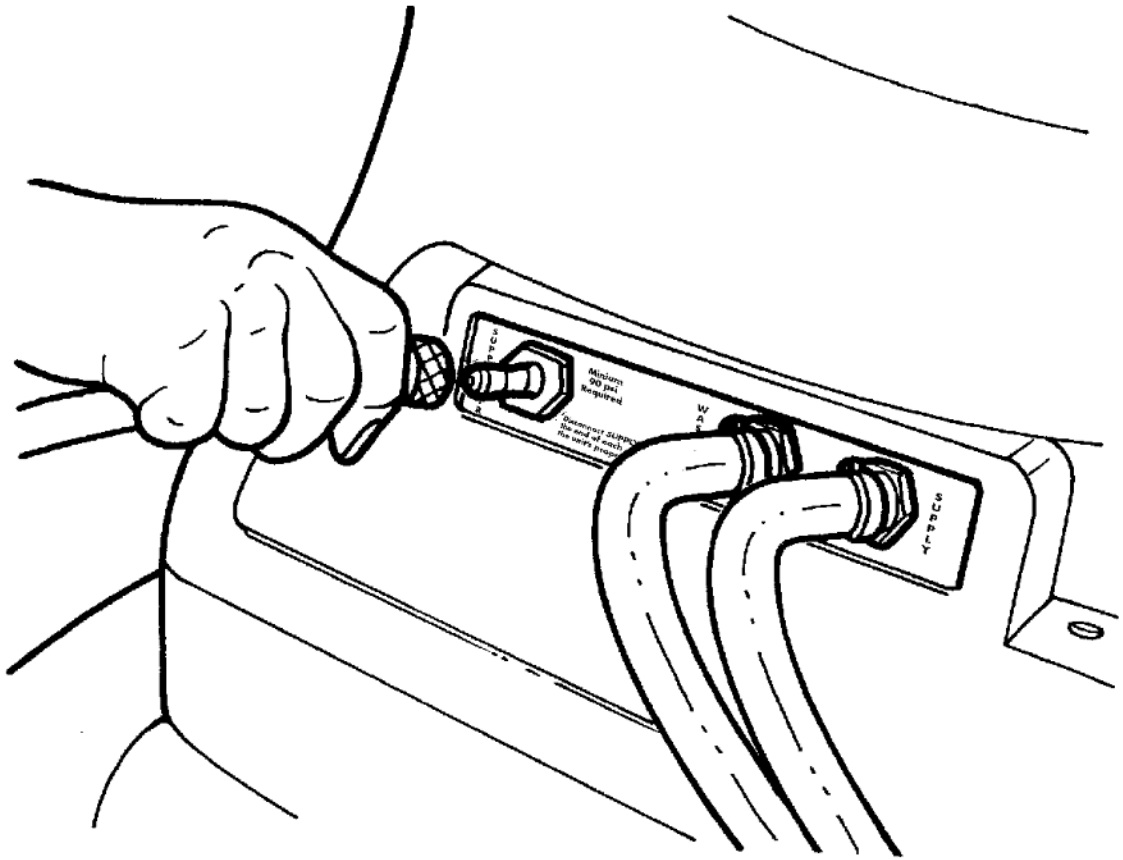


Fig. 17: Applying Shop Air Supply Hose To J 45096 Quick-Disconnect
Courtesy of GENERAL MOTORS COMPANY

4. Disconnect the air supply hose from **DT-45096** flush and flow test tool.
5. Remove the **DT-45096-30** or the **J-35944-200A** adapters.

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6. Dispose of the waste automatic transmission fluid in accordance with all applicable federal, state, and local requirements.

TRANSMISSION FLUID COOLER FLUSHING AND FLOW TEST (ALLISON)

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 or equivalent 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-45096-23** TransFlow Adapters or equivalent.
- Shop air supply with water/oil filters, regulator and pressure gauge - minimum 90 psi

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- Eye protection
- Rubber gloves

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

Machine Set-up

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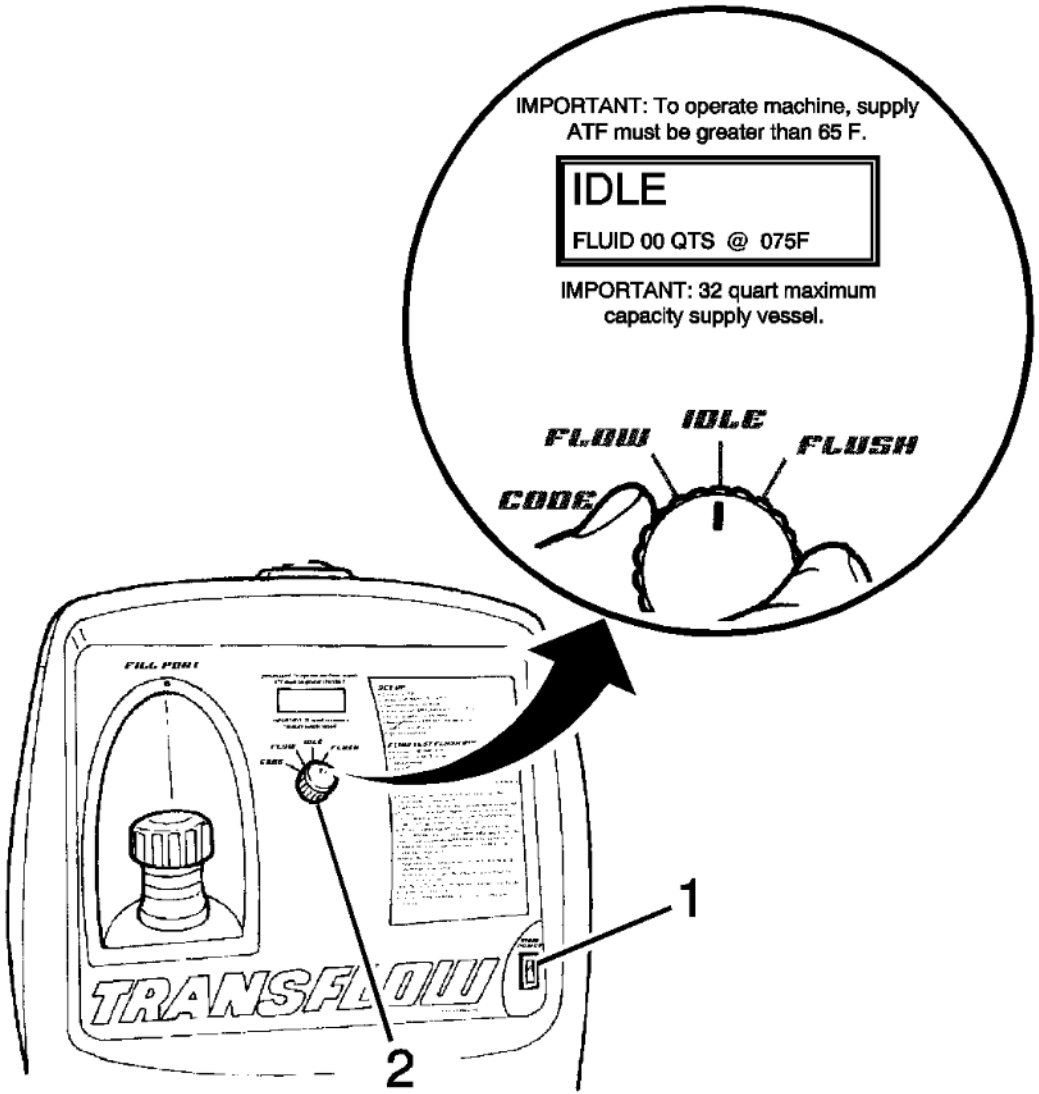


Fig. 18: View Of Main Power Switch & Main Function Switch
Courtesy of GENERAL MOTORS COMPANY

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

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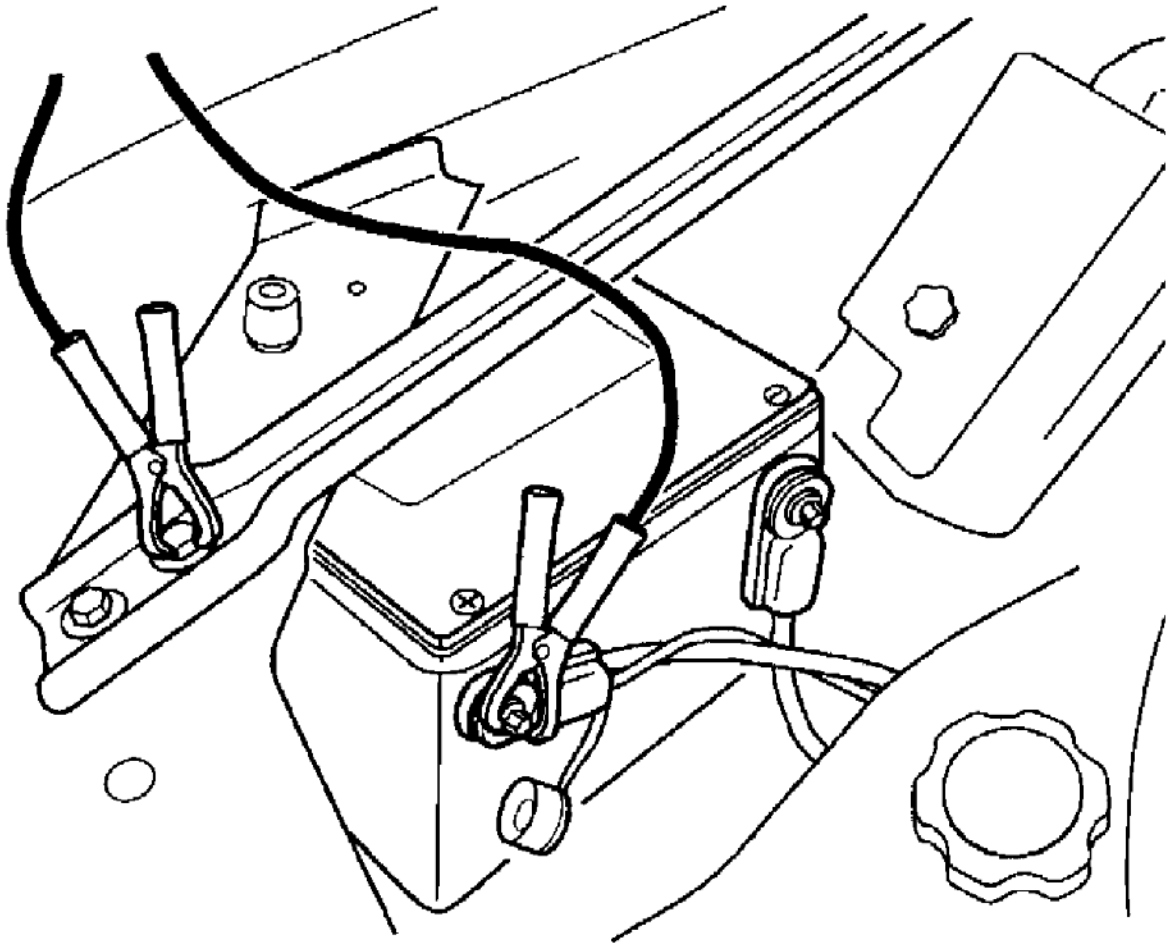


Fig. 19: Connecting To 12V DC Power Source
Courtesy of GENERAL MOTORS COMPANY

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.

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4. Turn the main power switch to the ON position.

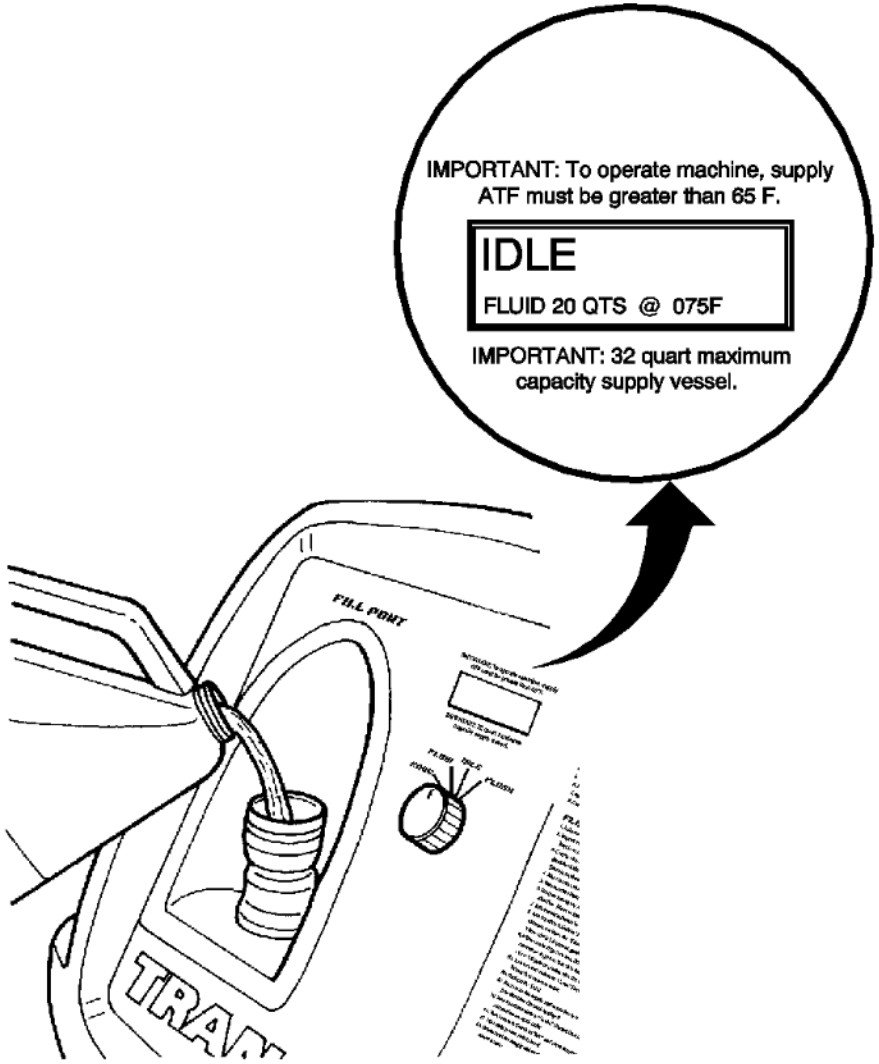
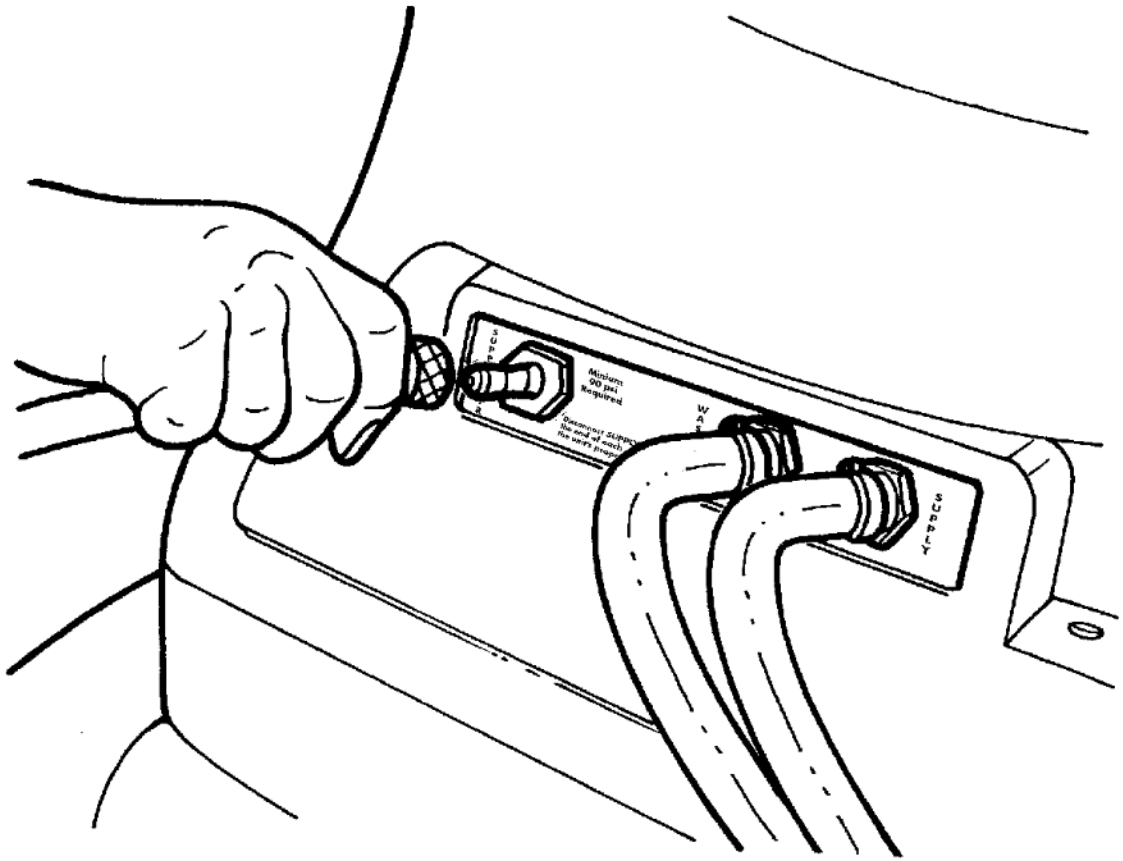


Fig. 20: Filling Supply Tank With Transmission Fluid
Courtesy of GENERAL MOTORS COMPANY

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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.



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Fig. 21: Applying Shop Air Supply Hose To J 45096 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

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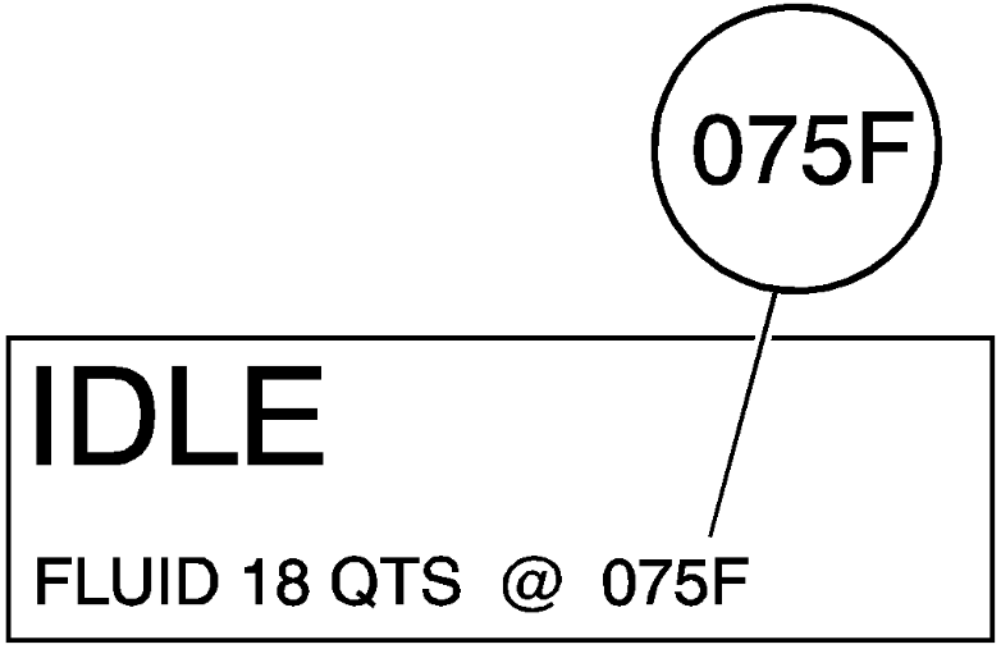


Fig. 22: Identifying Machine Display Of Automatic Transmission Fluid Temperature
Courtesy of GENERAL MOTORS COMPANY

NOTE: Due to the large size of the oil cooling system components and the flow capacity of the DT-45096 flush and flow test tool, the fluid temperature in excess of 100 degrees Fahrenheit can cause inaccurate flow

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readings.

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.
2. Refer to the table below. Using the temperature from step 1, locate on MINIMUM Flow Rate table the minimum flow rate in gallons per minute. Record the minimum flow rate in gallons per minute and the supply fluid temperature for further reference.

   Example

   - Fluid temperature: 75Â°F
   - The MINIMUM flow rate for this example would be 1.7 gpm.
3. 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**

Temperature Range	Steel
65 - 66Â°F	0.7 gpm
67 - 71Â°F	1.0 gpm
72 - 74Â°F	1.2 gpm
75 - 79Â°F	1.3 gpm
80 - 82Â°F	1.4 gpm
83 - 86Â°F	1.5 gpm
87 - 92Â°F	1.6 gpm
93 - 96Â°F	1.7 gpm
97 - 101Â°F	1.8 gpm
102 - 104Â°F	1.9 gpm
105 - 109Â°F	2.0 gpm
110 - 112Â°F	2.1 gpm
113 - 116Â°F	2.2 gpm
117 - 119Â°F	2.3 gpm
120 + Â°F	2.4 gpm

*A measured flow rate that is 0.1 gpm lower than the minimum flow rate specification does not necessarily indicate a failed cooling system.

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Variation in fluid temperature, air pressure and the tool rounding variation can cause a lower minimum flow reading.

Back Flush Procedure

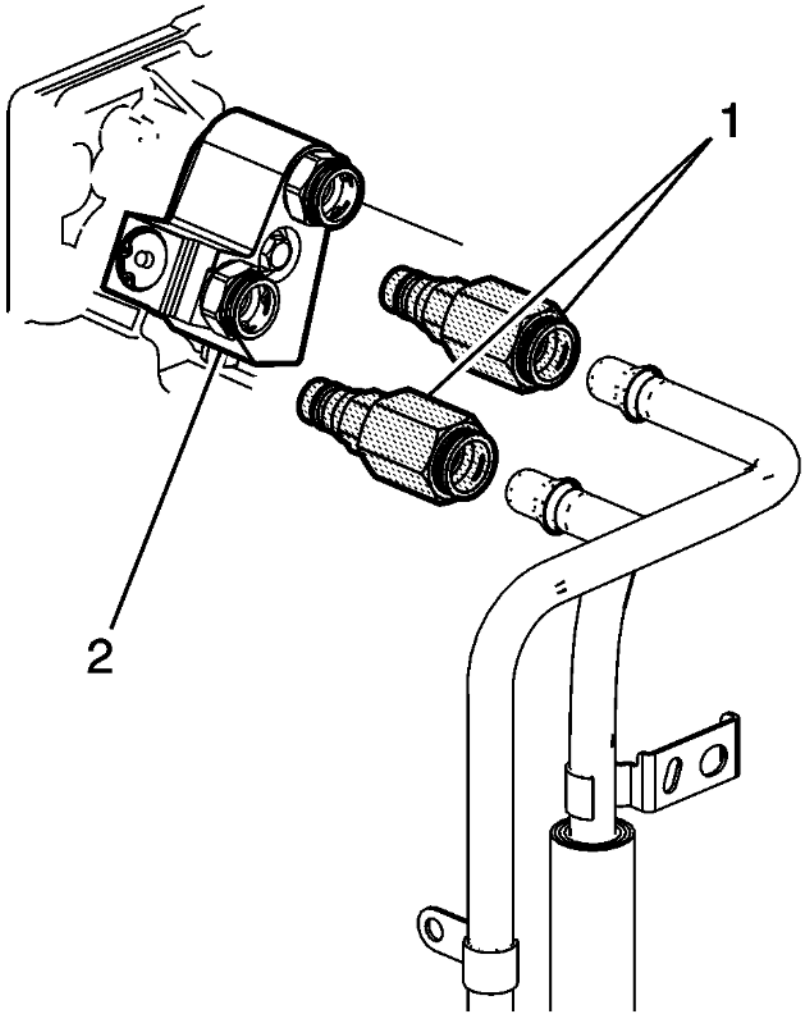


Fig. 23: Transmission Fluid Cooler Bypass Valve
Courtesy of GENERAL MOTORS COMPANY

1. Connect the **DT-45096-23** adapters (1) to the transmission fluid cooler supply and return lines at the transmission fluid cooler bypass valve (2),

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if equipped.

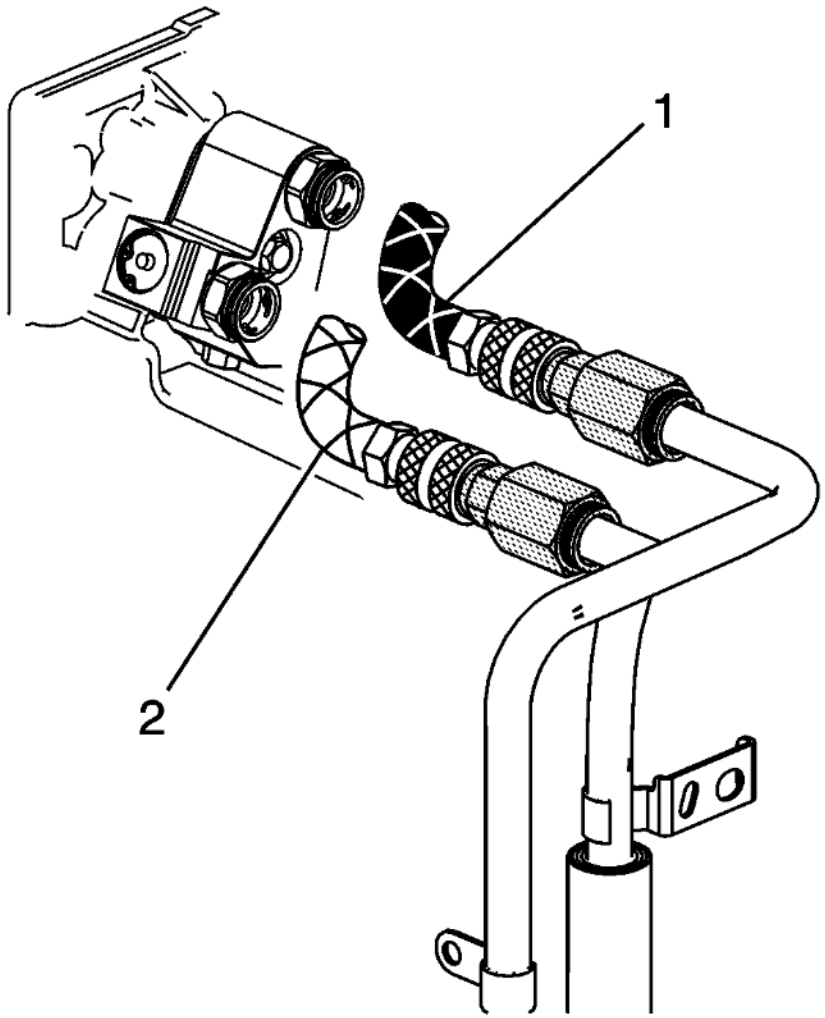


Fig. 24: Black Supply Hose And Clear Waste Hose
Courtesy of GENERAL MOTORS COMPANY

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

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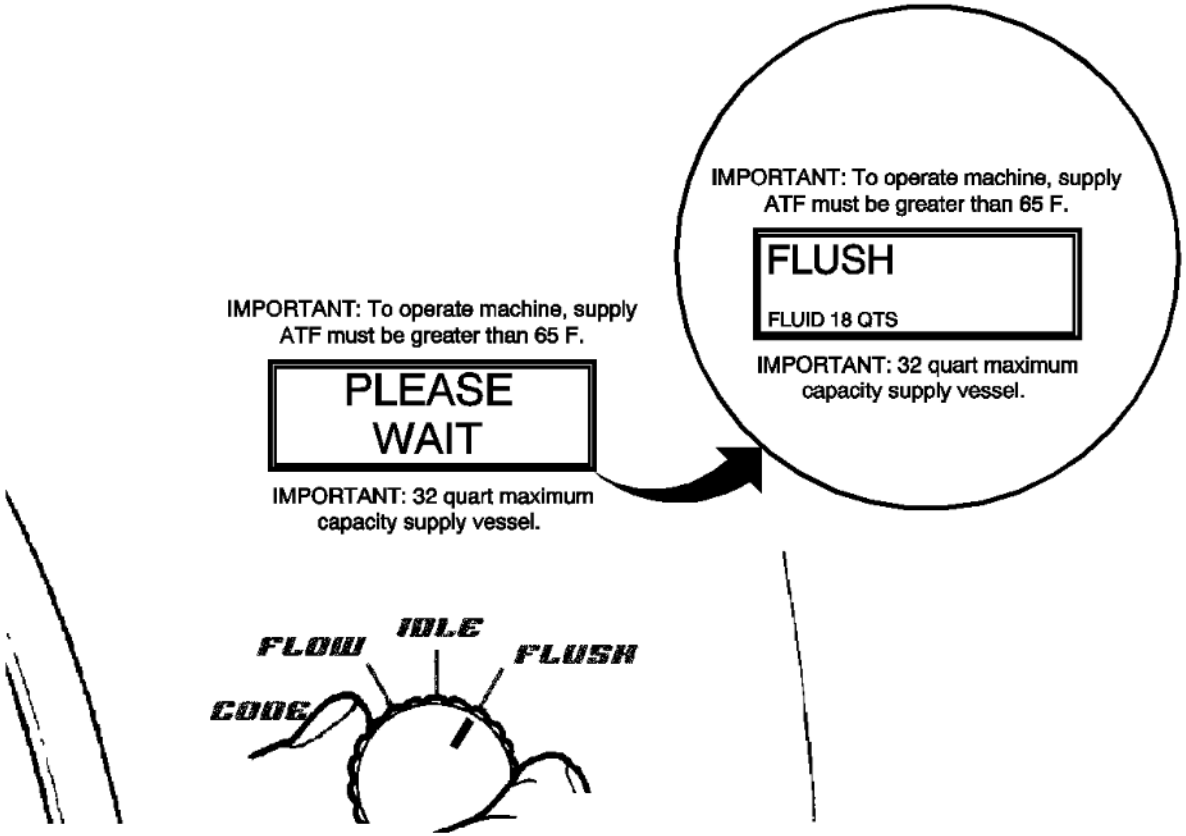


Fig. 25: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

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

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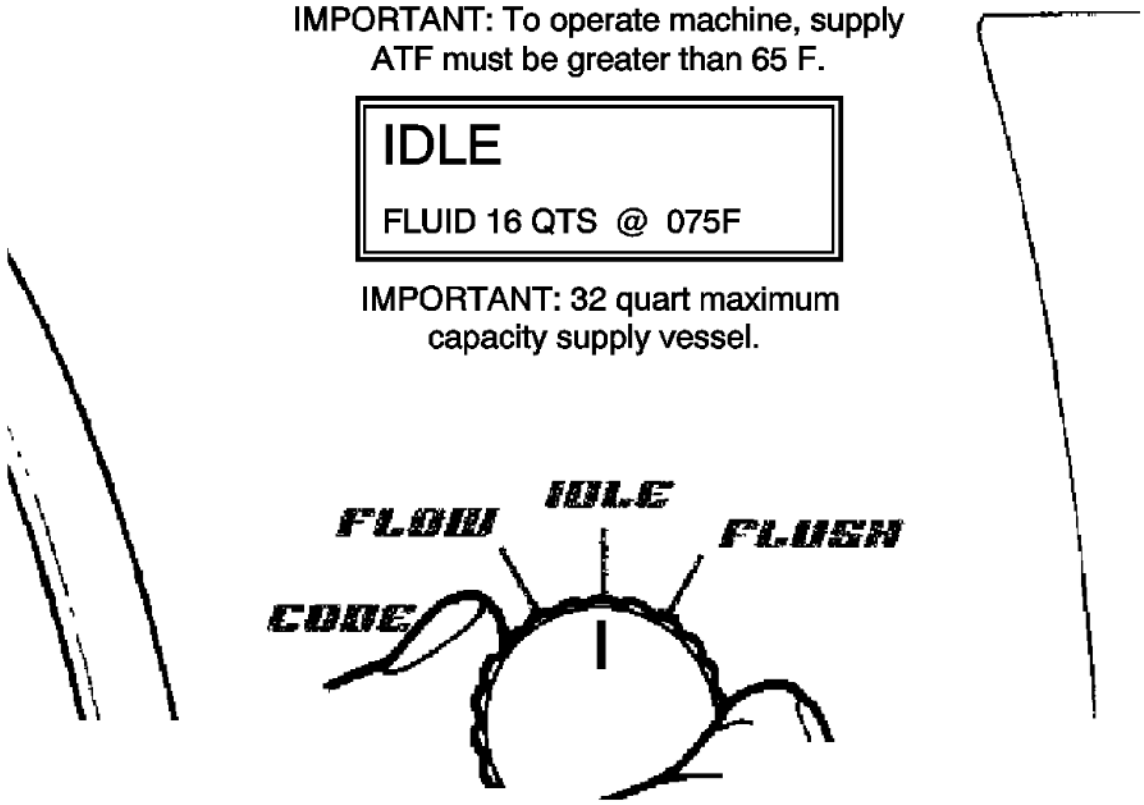


Fig. 26: View Of Main Function Switch IDLE Position
Courtesy of GENERAL MOTORS COMPANY

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

Forward Flush

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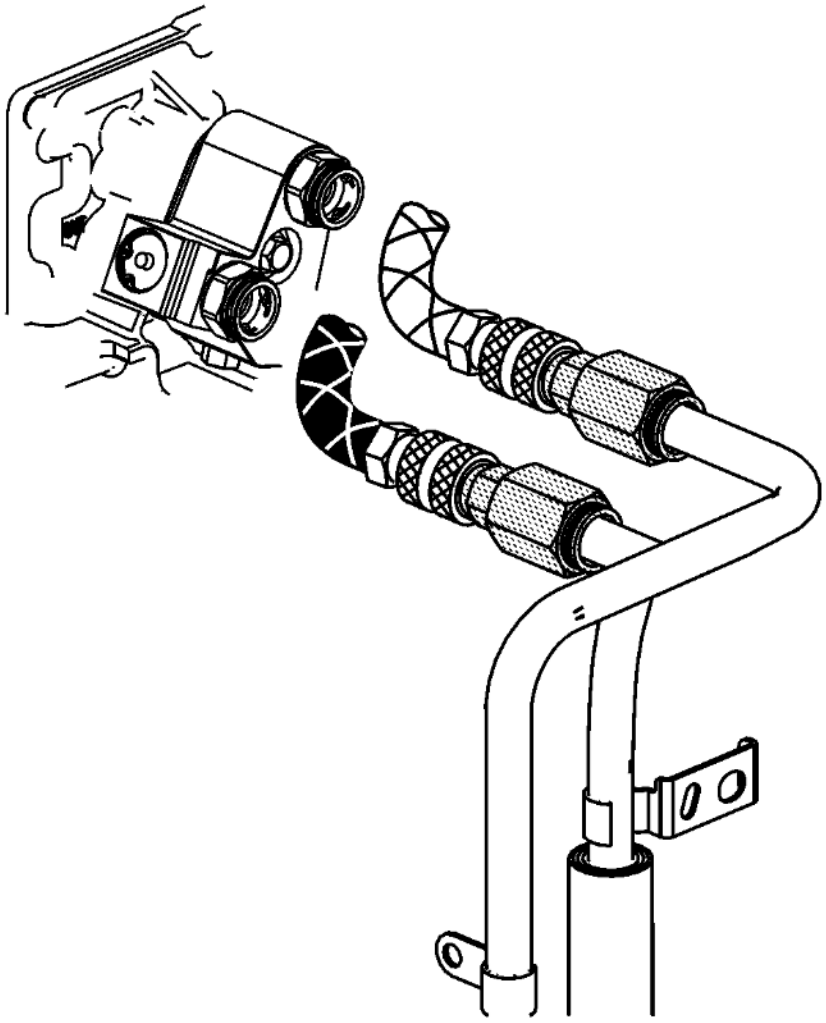


Fig. 27: Disconnecting Supply And Waste Hoses From Vehicle Cooler Line
Courtesy of GENERAL MOTORS COMPANY

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

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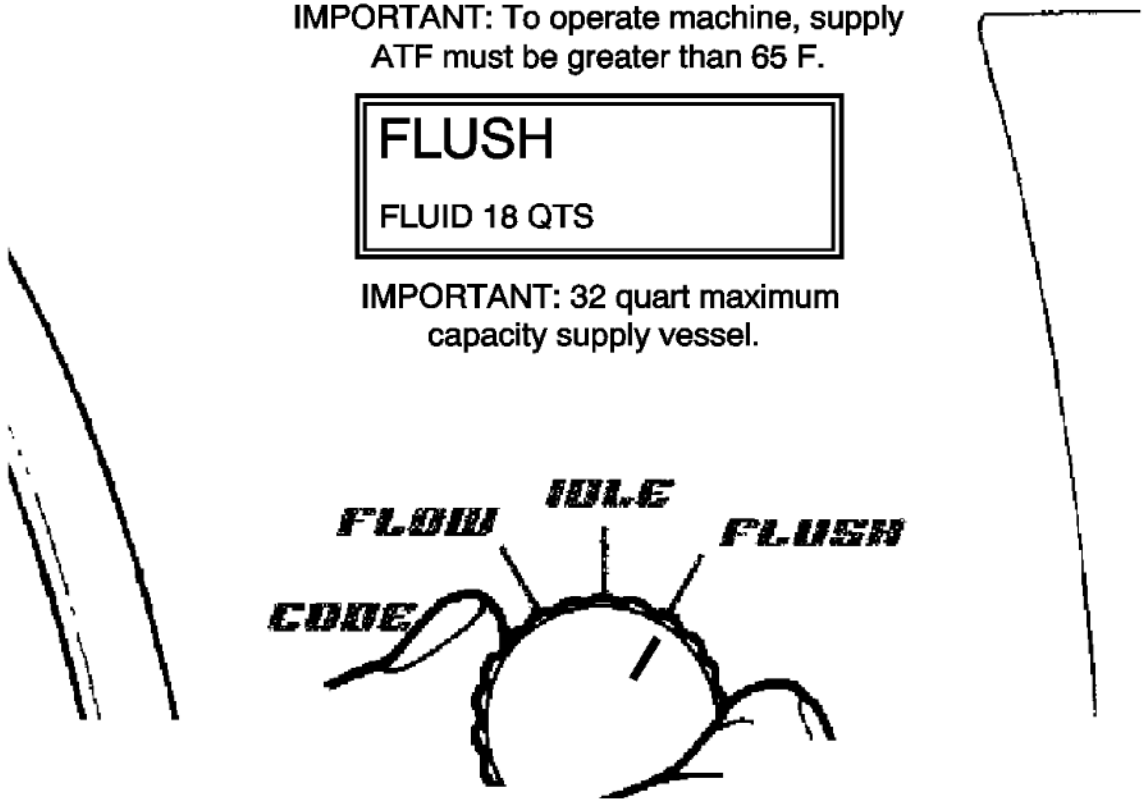


Fig. 28: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

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

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Flow Test

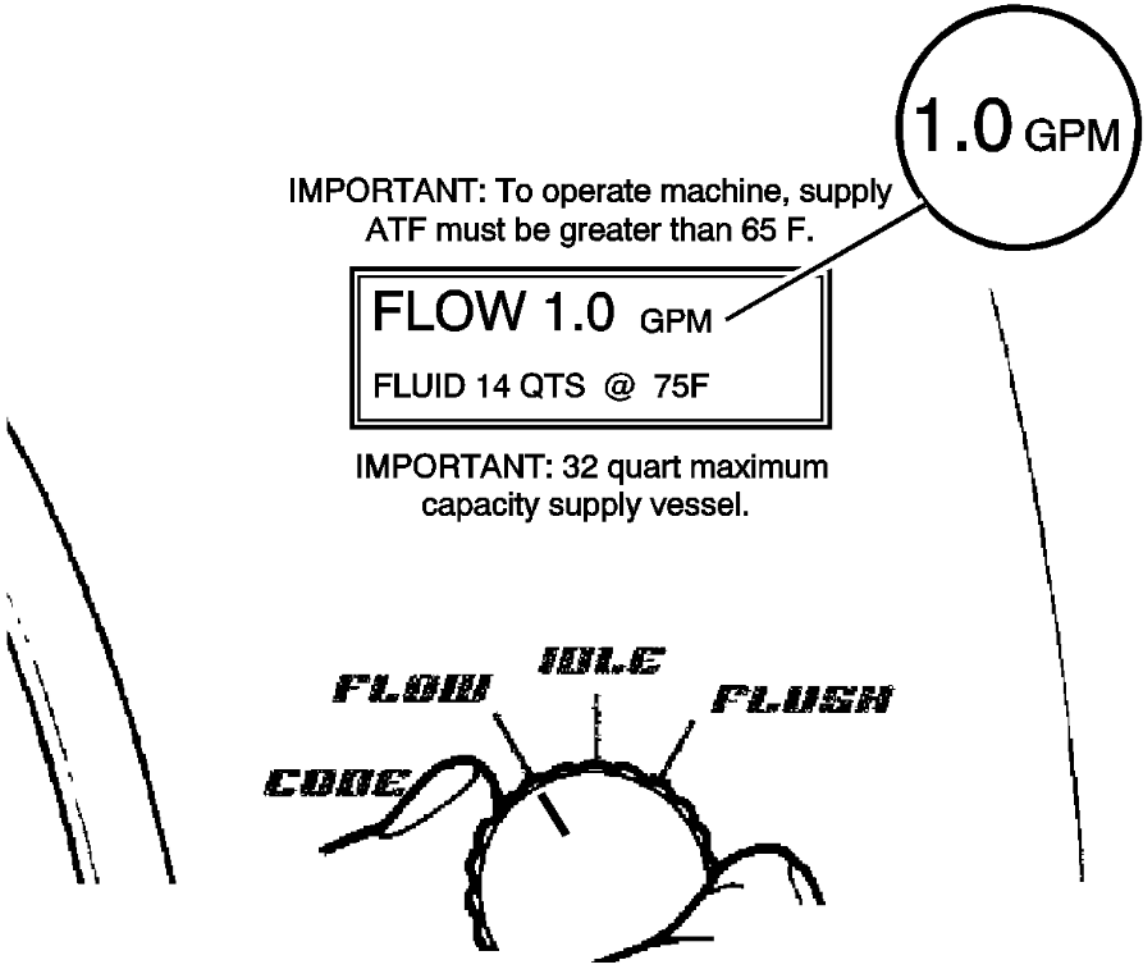


Fig. 29: View Of Main Function Switch FLOW Position
Courtesy of GENERAL MOTORS COMPANY

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NOTE: **If the flow rate is less than 0.5 gallons per minute, 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

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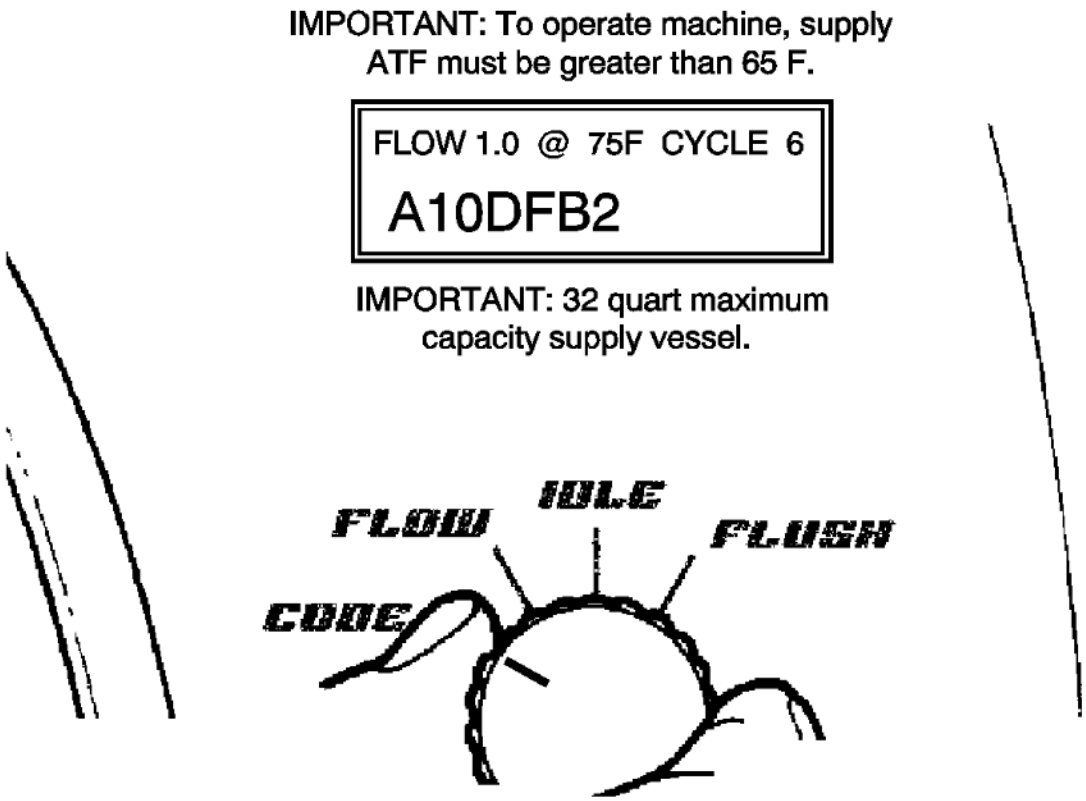


Fig. 30: View Of Main Function Switch CODE Position
Courtesy of GENERAL MOTORS COMPANY

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.**

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

1. Turn the main function switch to the CODE position.
2. Record TESTED flow rate, temperature, cycle and seven-character flow code information on repair order.

Clean-up

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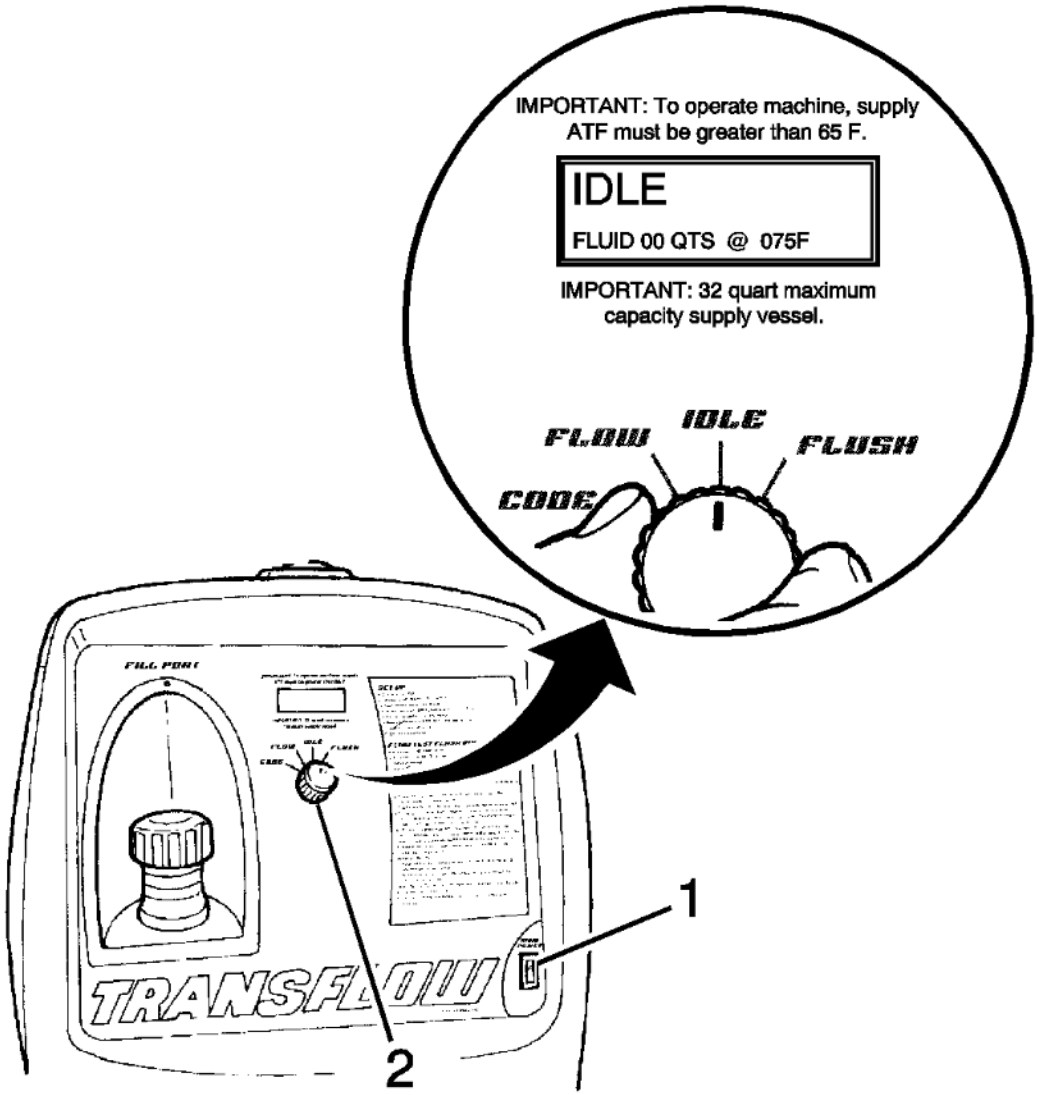


Fig. 31: View Of Main Power Switch & Main Function Switch
Courtesy of GENERAL MOTORS COMPANY

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.

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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.

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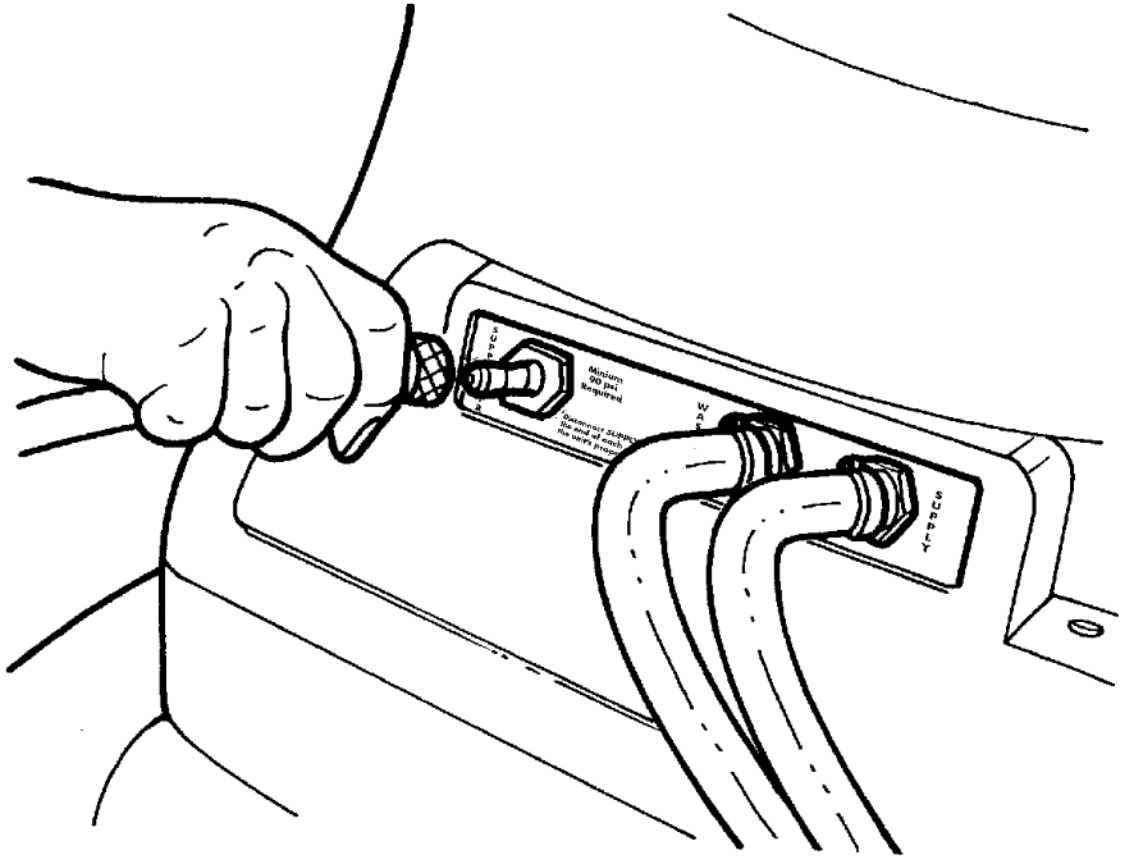


Fig. 32: Applying Shop Air Supply Hose To J 45096 Quick-Disconnect
Courtesy of GENERAL MOTORS COMPANY

4. Disconnect the air supply hose from **DT-45096** flush and flow test tool.
5. Remove the **DT-45096-23** adapters.

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6. Dispose of the waste automatic transmission fluid in accordance with all applicable federal, state, and local requirements.

TRANSMISSION FLUID COOLER FLUSHING AND FLOW TEST (8L90)

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 or equivalent 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

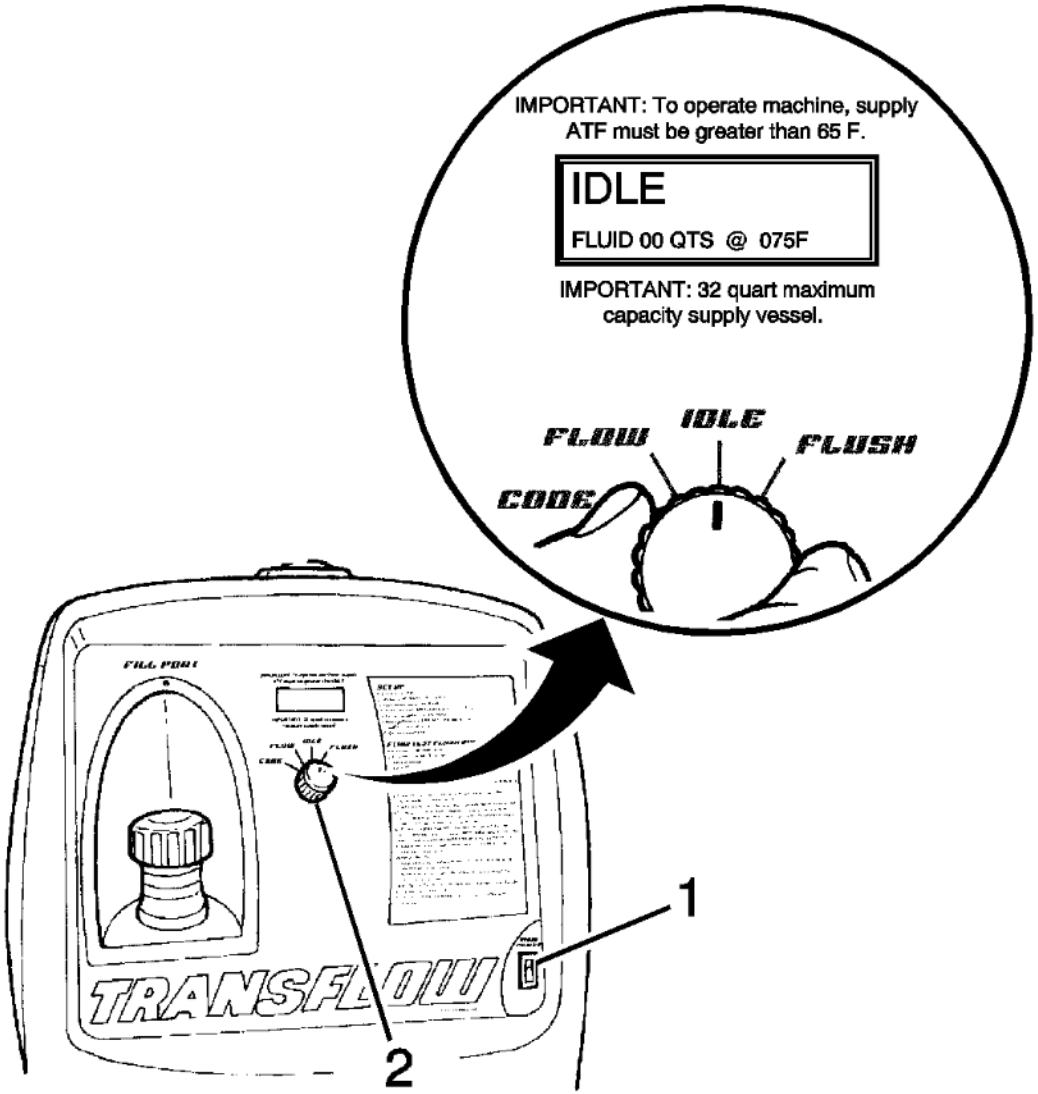
Special Tools

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

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- Eye protection
- Rubber gloves

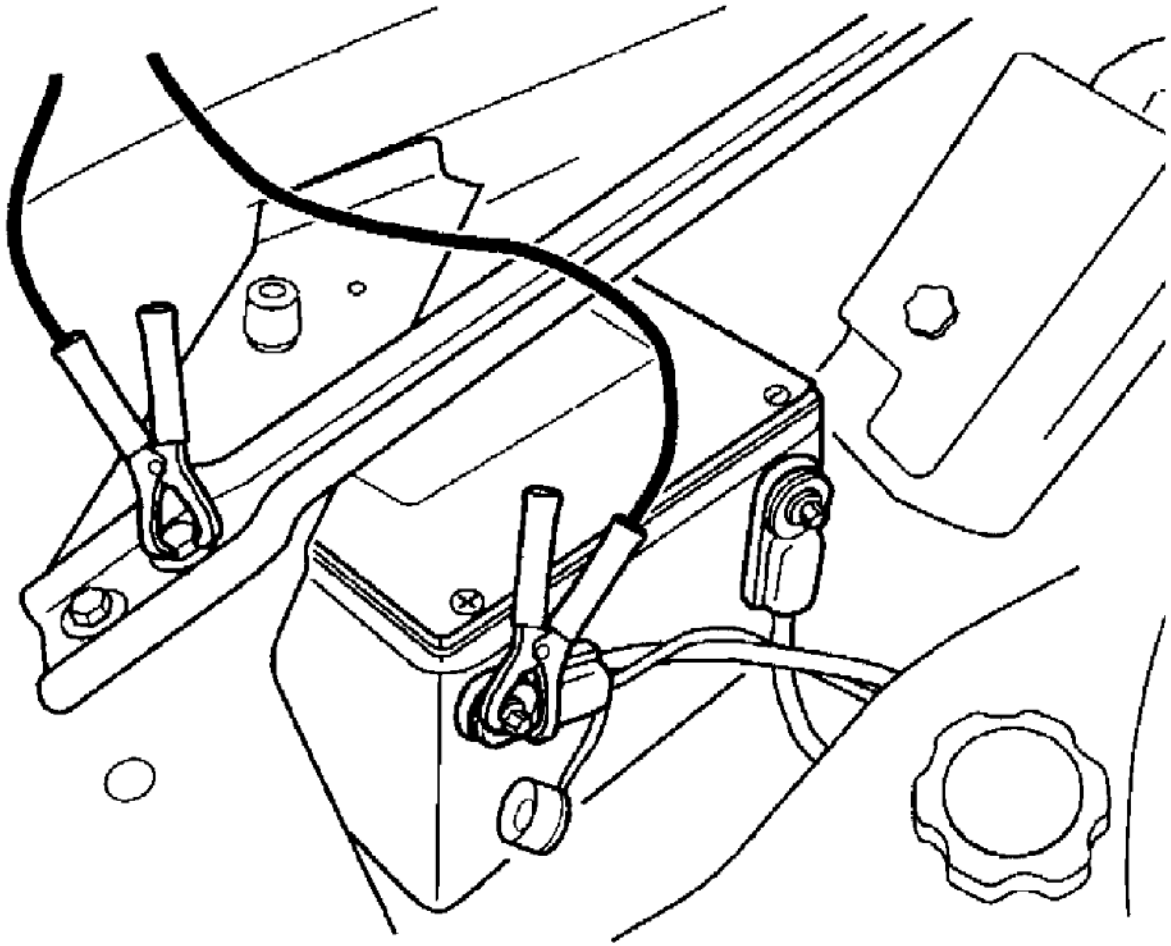
Machine Set-up



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Fig. 33: 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.



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Fig. 34: Connecting To 12V DC Power Source
Courtesy of GENERAL MOTORS COMPANY

3. Connect **DT-45096** transmission oil cooling system 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.

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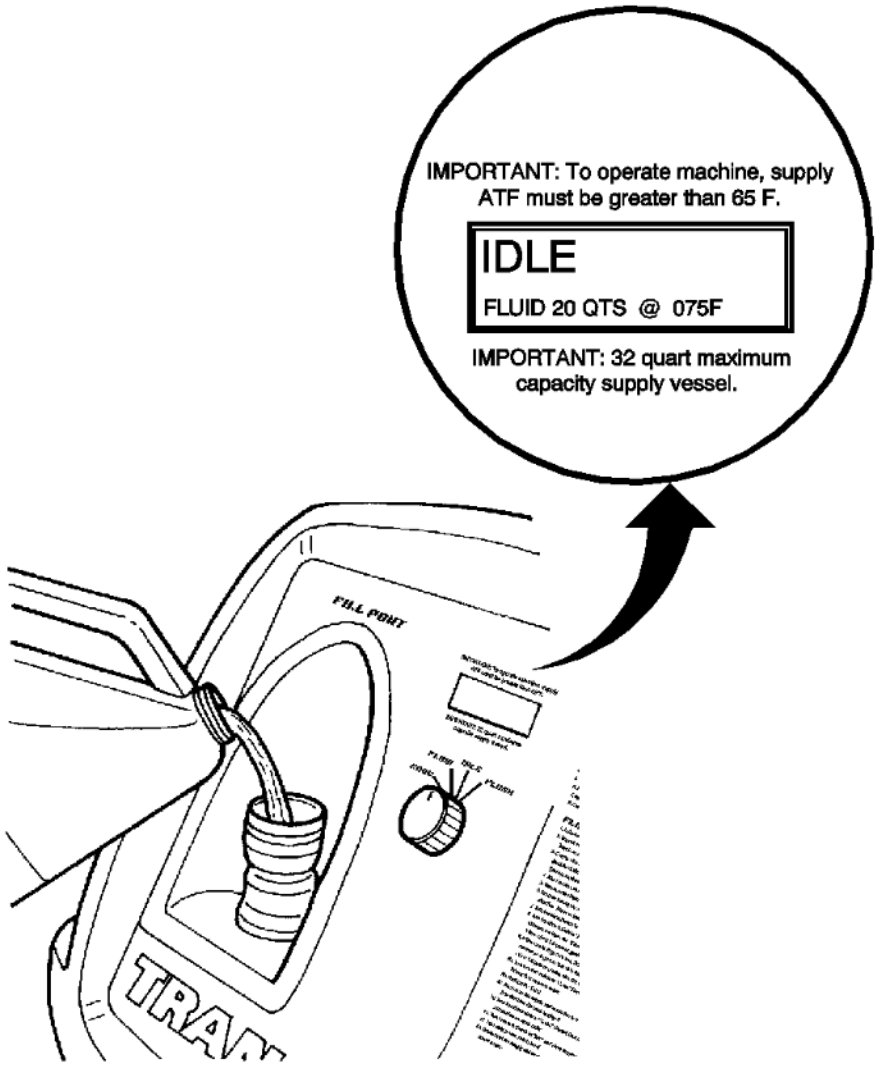


Fig. 35: Filling Supply Tank With Transmission Fluid
Courtesy of GENERAL MOTORS COMPANY

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).**

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5. Fill the supply tank with the appropriate GM automatic transmission fluid through the fill port.
6. Reinstall and tighten the fill cap.

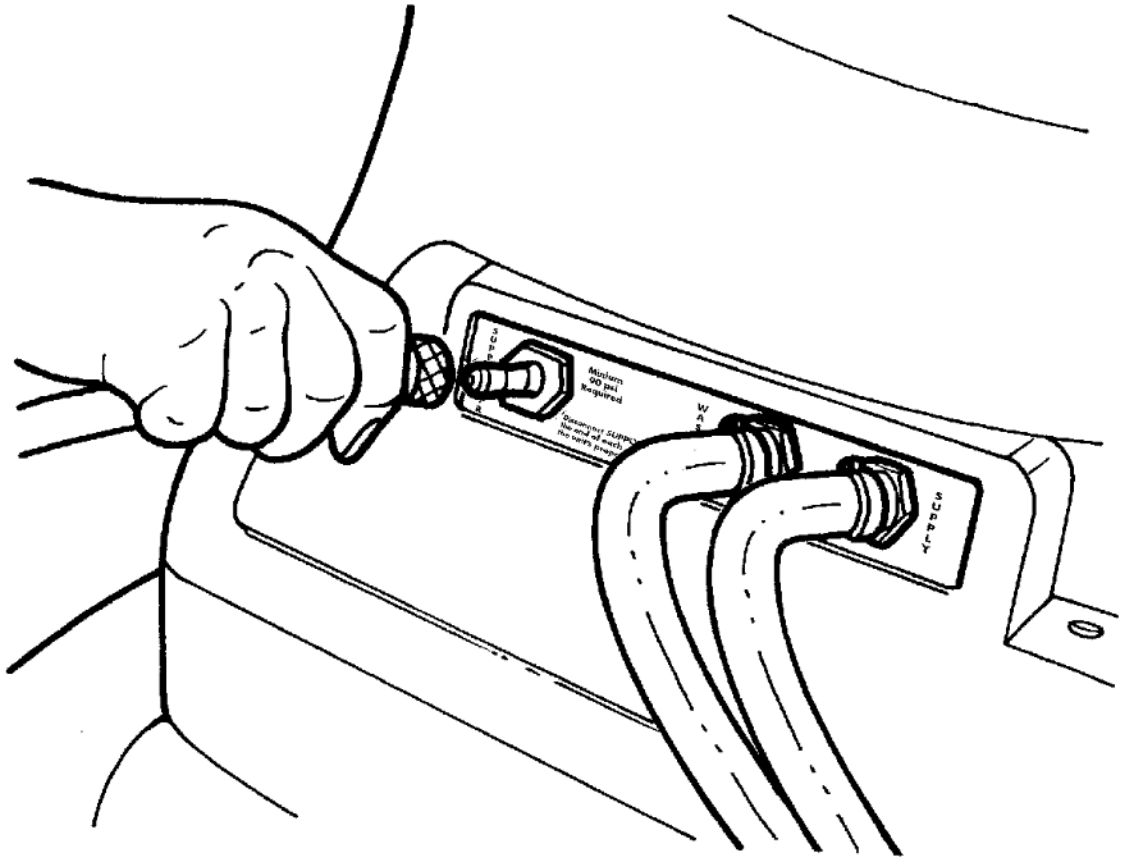


Fig. 36: Applying Shop Air Supply Hose To J 45096 Quick-Disconnect
Courtesy of GENERAL MOTORS COMPANY

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

Determine Minimum Flow Rate

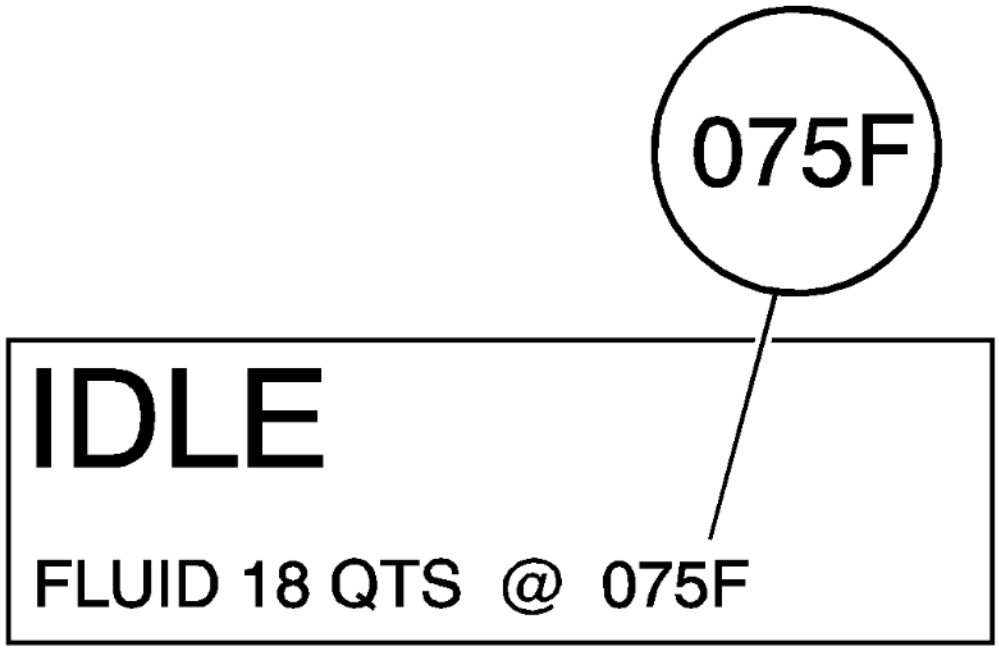


Fig. 37: Identifying Machine Display Of Automatic Transmission Fluid Temperature

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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.

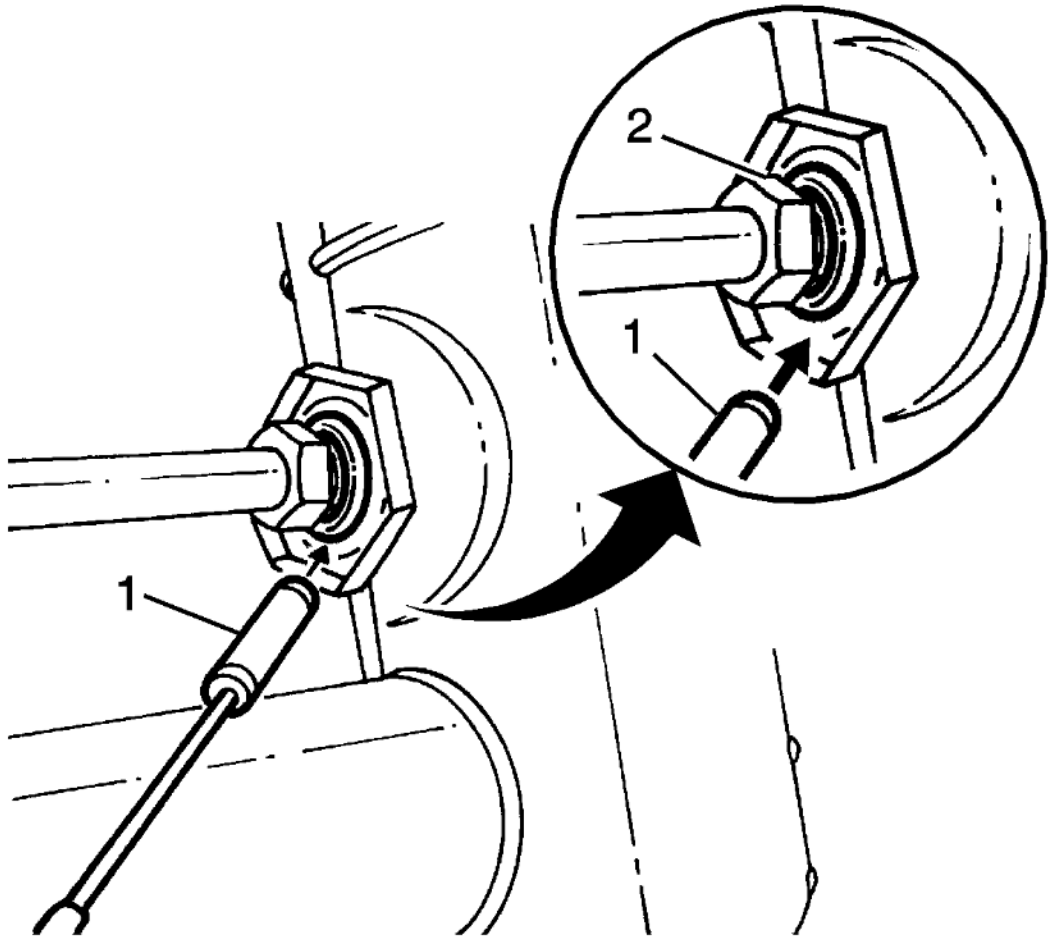


Fig. 38: Identifying Transmission Oil Cooler Metal Composition
Courtesy of GENERAL MOTORS COMPANY

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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: 75Â°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	Aluminum
65 - 77Â°F	0.5 gpm
78 - 86Â°F	0.6 gpm
87 - 94Â°F	0.7 gpm
95 - 101Â°F	0.8 gpm
102 - 105Â°F	0.9 gpm
106 - 108Â°F	1.0 gpm
109 - 112Â°F	1.1 gpm
113 - 115Â°F	1.2 gpm
116 - 118Â°F	1.3 gpm
119 - 120Â°F	1.4 gpm

*A measured flow rate that is 0.1 gpm lower than the minimum flow rate specification does not necessarily indicate a failed cooling system. Variation in fluid temperature, air pressure and the tool rounding variation can cause a lower minimum flow reading.

Back Flush Procedure

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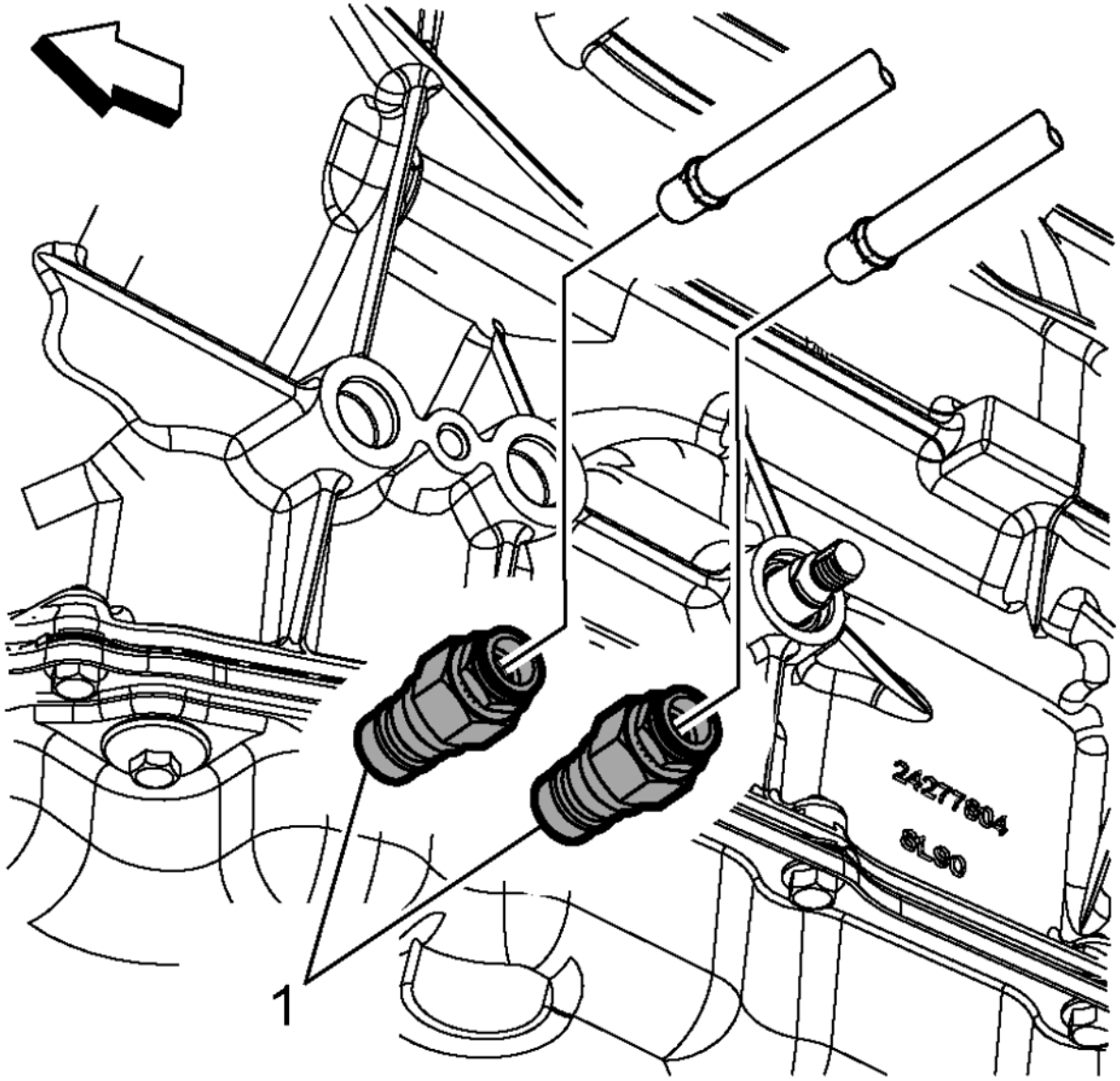


Fig. 39: Cooler Flushing Adapter
Courtesy of GENERAL MOTORS COMPANY

1. If equipped with bypass valve, disconnect the oil cooler lines from the bypass valve.
2. If equipped with bypass valve, connect a commercially available barbed fitting and 1/2 inch ID rubber hose to the vehicle transmission oil cooler supply and return lines at the transmission.

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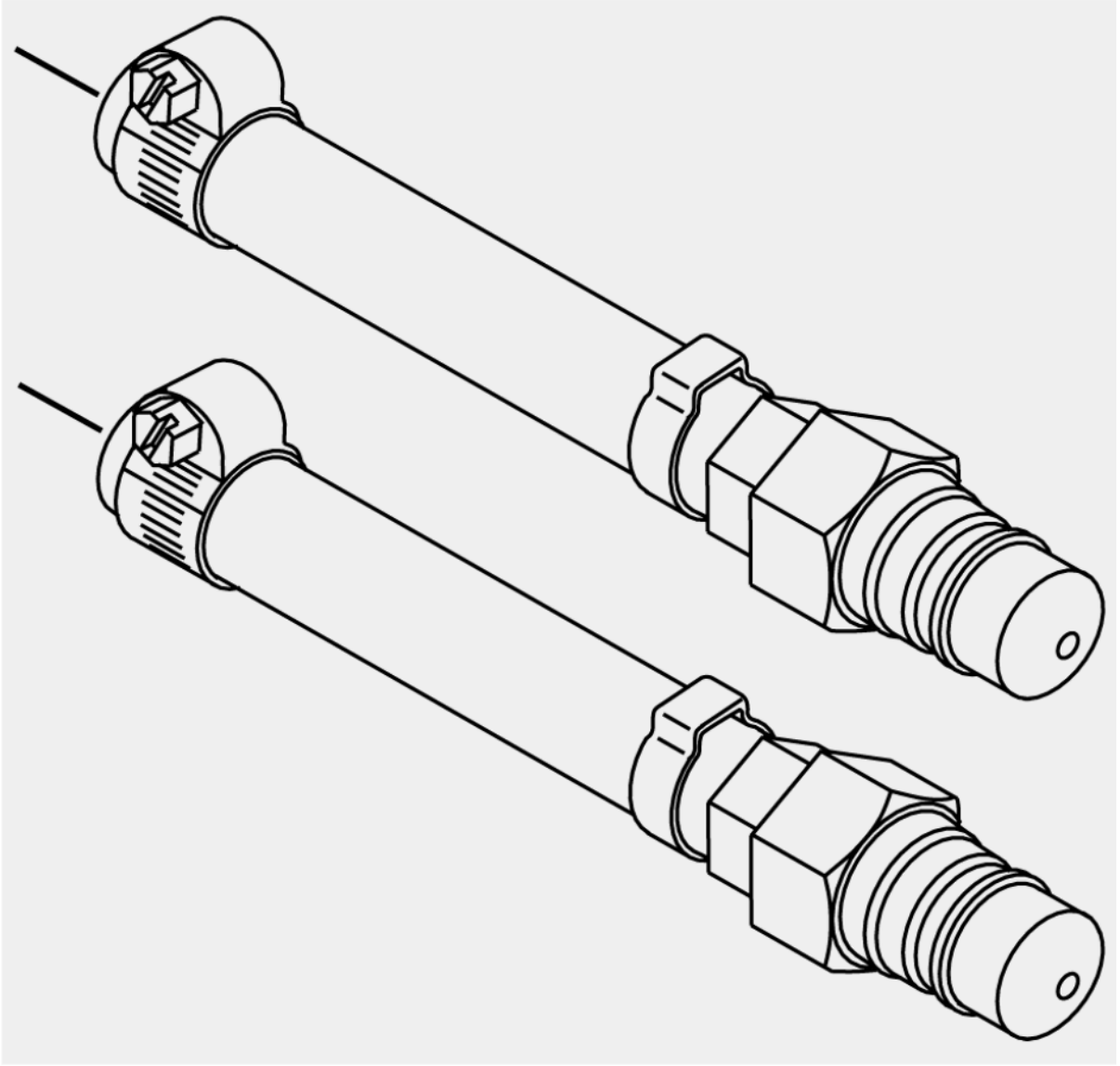


Fig. 40: Cooler Flush Adapter
Courtesy of GENERAL MOTORS COMPANY

3. If not equipped with the bypass valve, connect the **DT-45096-30** cooler flush adapter (1) to the vehicle transmission oil cooler supply and return lines at the transmission.

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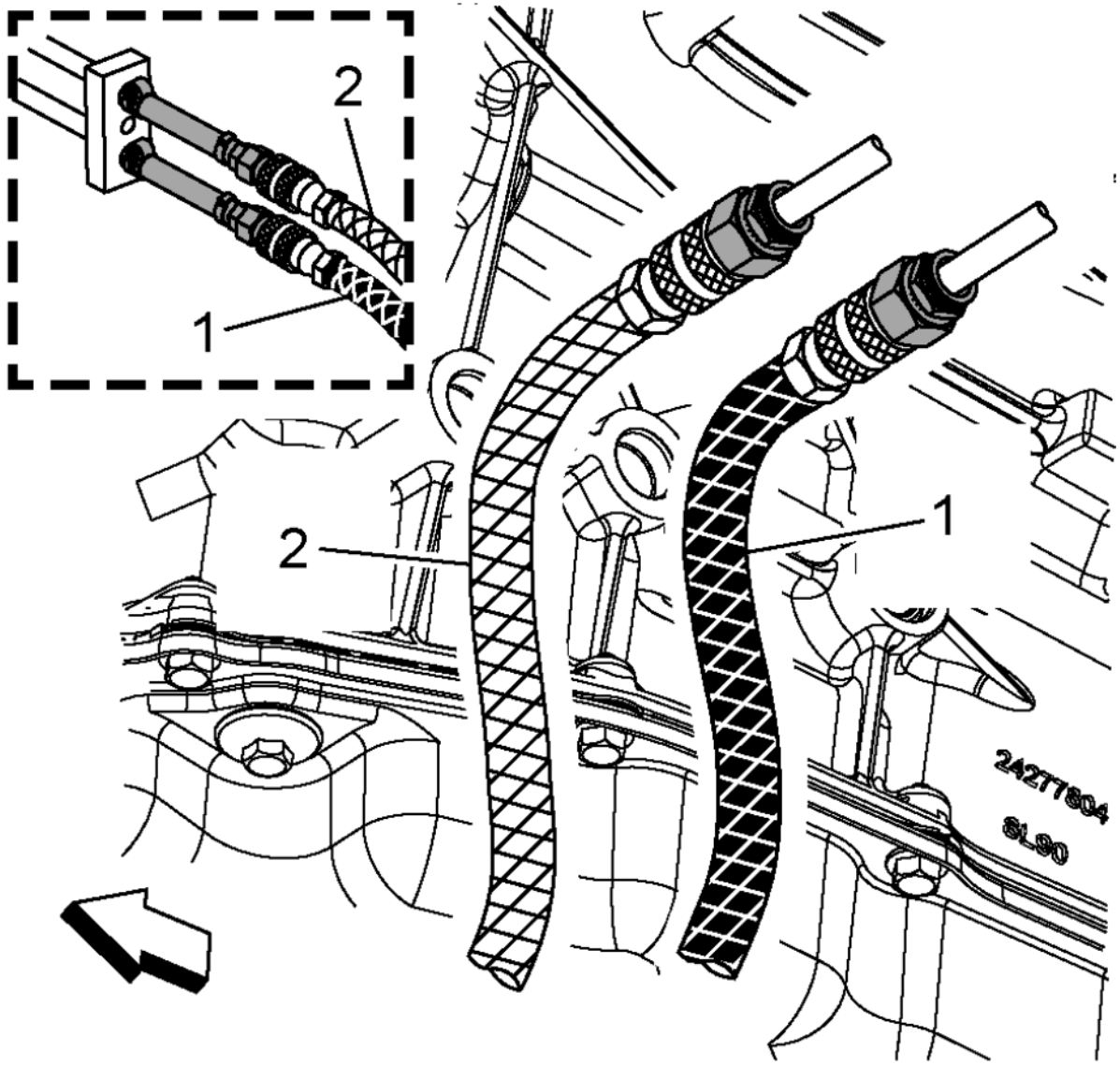


Fig. 41: Black Supply Hose Aand Clear Waste Hos
Courtesy of GENERAL MOTORS COMPANY

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

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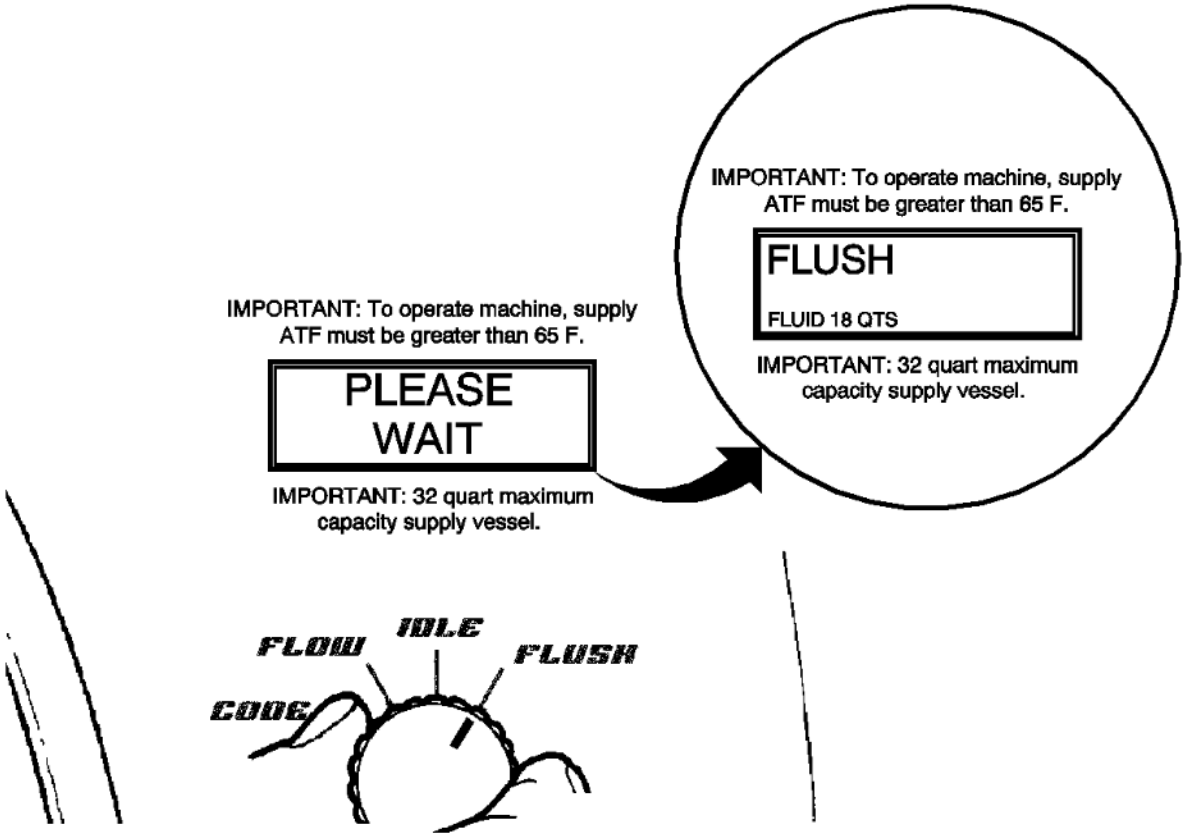


Fig. 42: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

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

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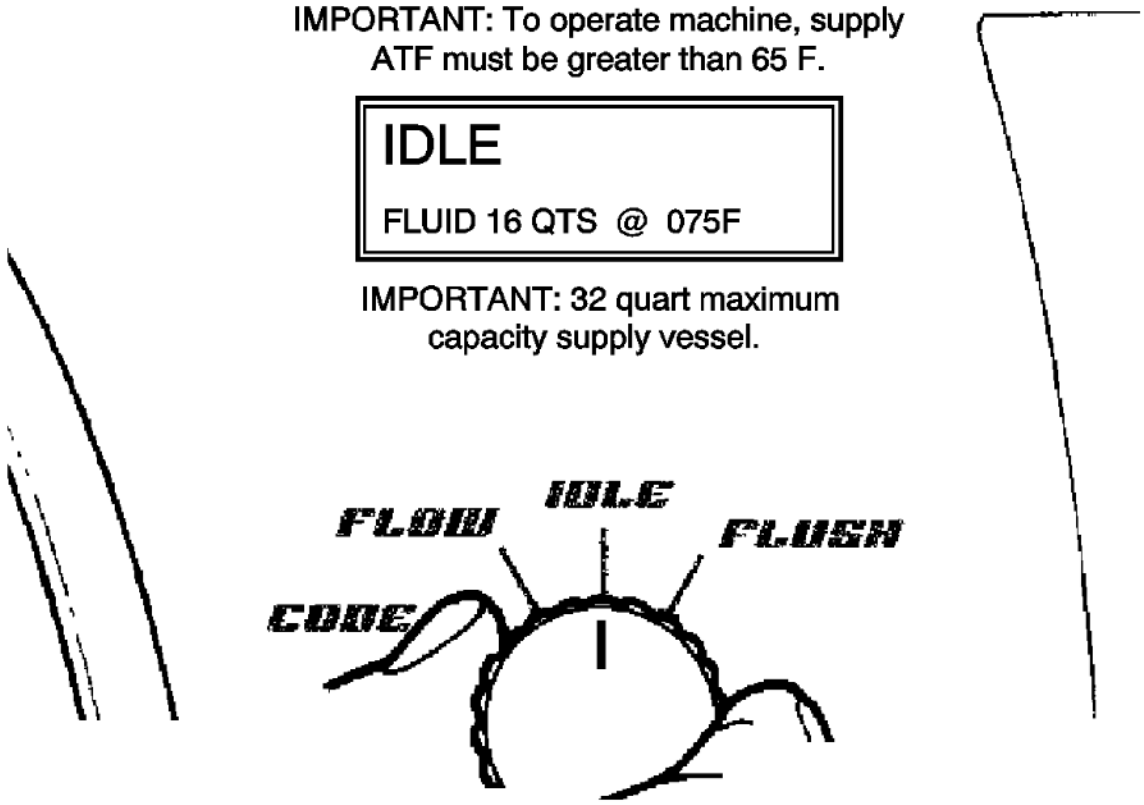


Fig. 43: View Of Main Function Switch IDLE Position
Courtesy of GENERAL MOTORS COMPANY

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

Forward Flush

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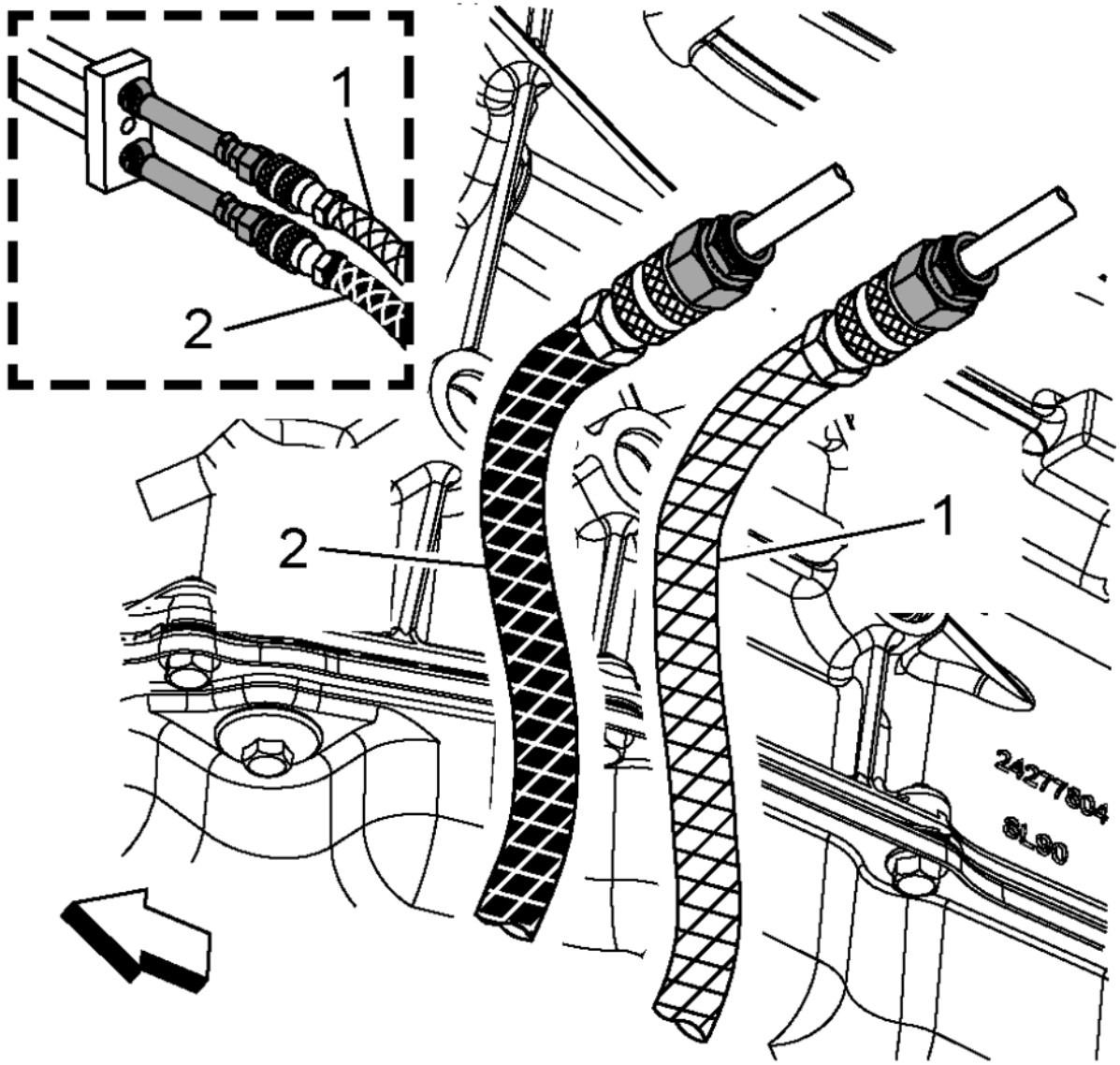


Fig. 44: Supply Hose And Waste Hose
Courtesy of GENERAL MOTORS COMPANY

1. Disconnect the supply and waste hoses from the vehicle cooler lines. Reverse the supply hose (2) and waste hose (1) to provide a normal flow direction.

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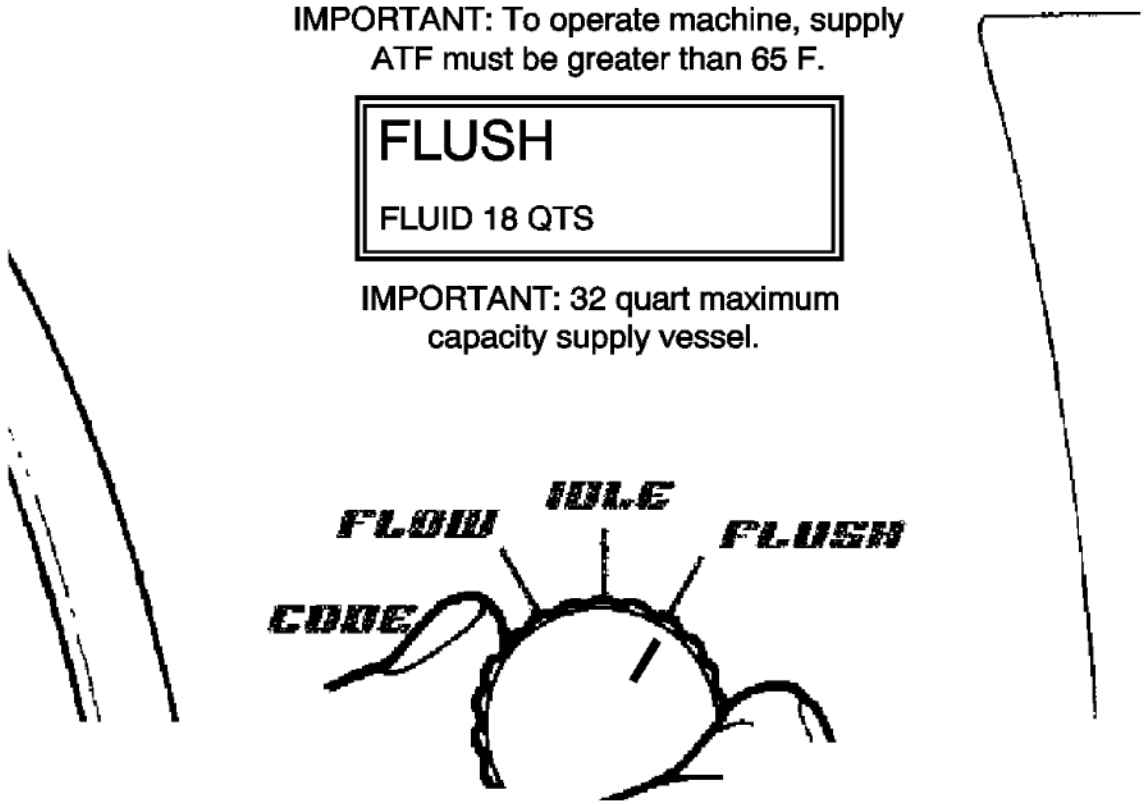


Fig. 45: View Of Main Function Switch FLUSH Position
Courtesy of GENERAL MOTORS COMPANY

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

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Flow Test

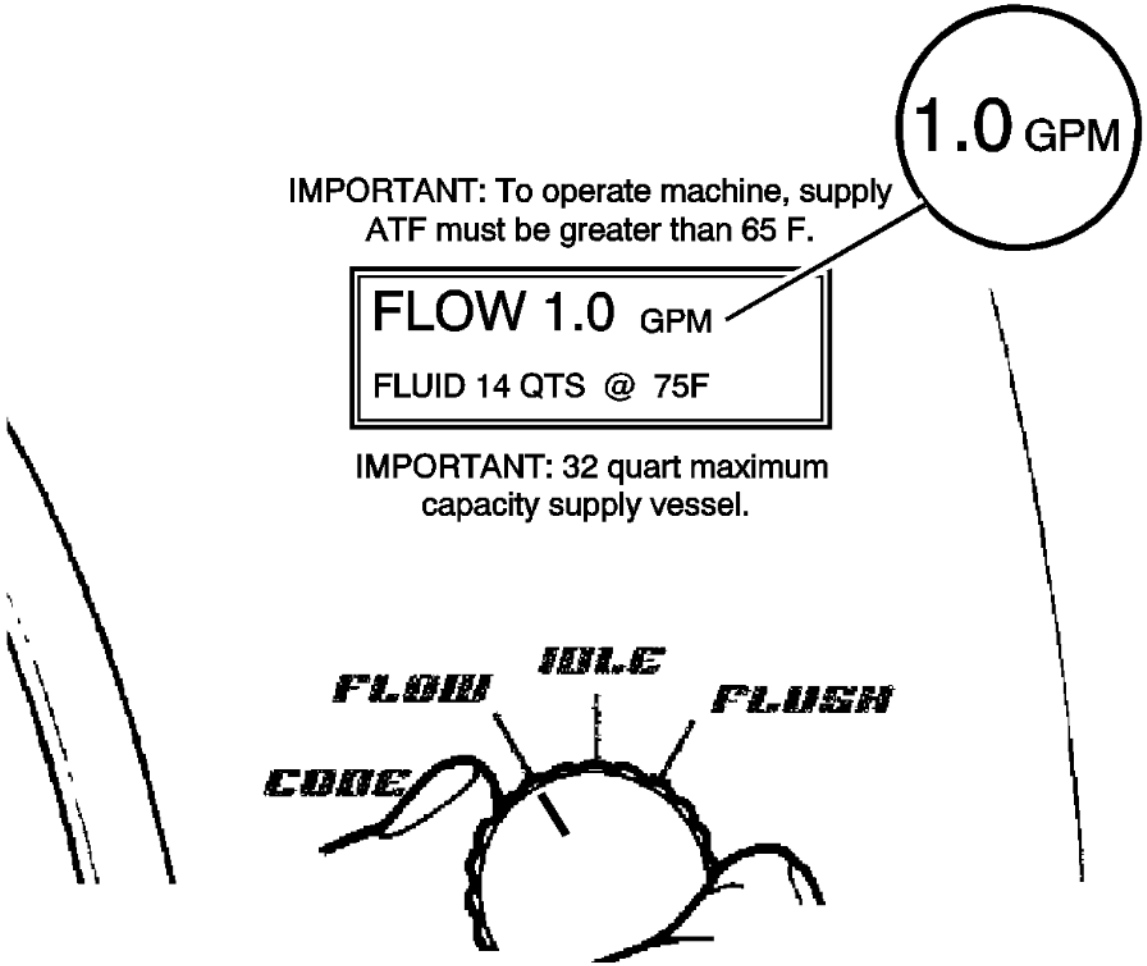


Fig. 46: View Of Main Function Switch FLOW Position
Courtesy of GENERAL MOTORS COMPANY

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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

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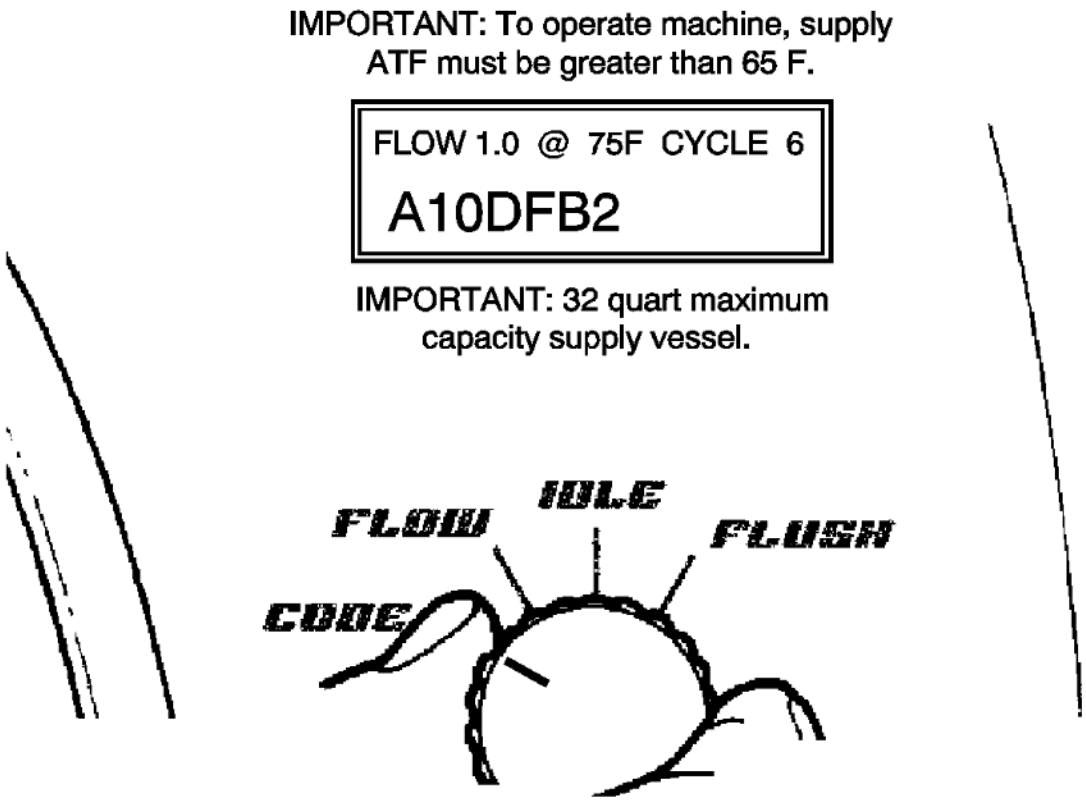


Fig. 47: View Of Main Function Switch CODE Position
Courtesy of GENERAL MOTORS COMPANY

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

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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

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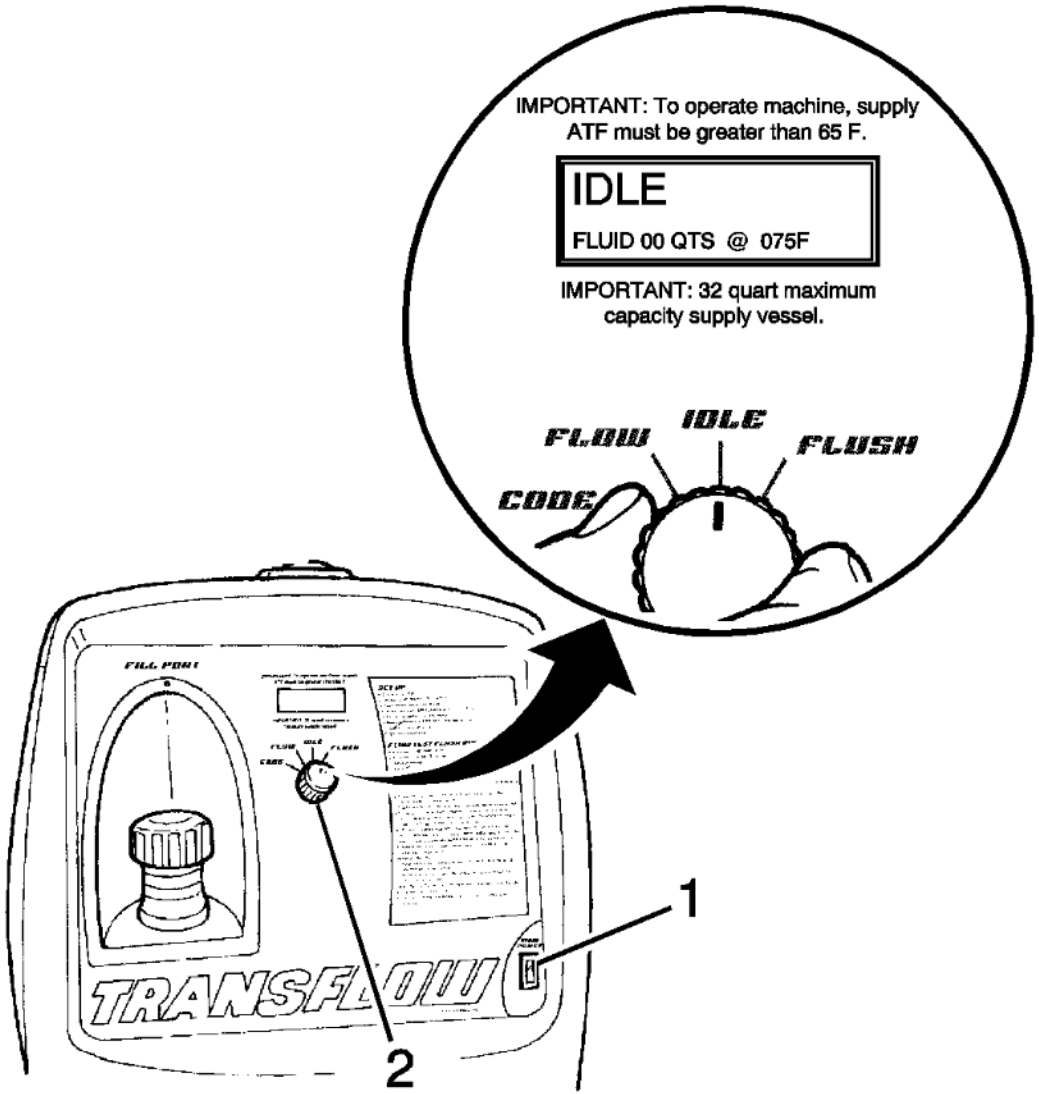


Fig. 48: View Of Main Power Switch & Main Function Switch
Courtesy of GENERAL MOTORS COMPANY

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.

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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.

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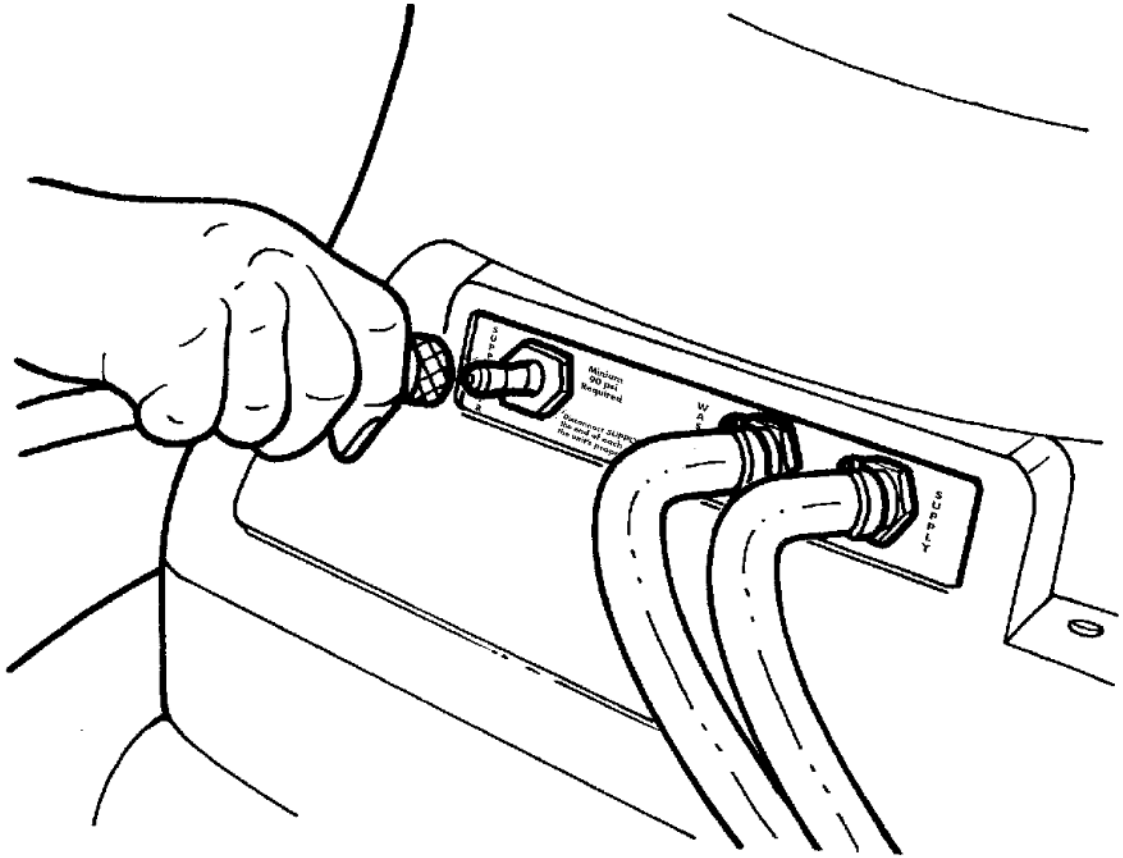


Fig. 49: Applying Shop Air Supply Hose To J 45096 Quick-Disconnect
Courtesy of GENERAL MOTORS COMPANY

4. Disconnect the air supply hose from **DT-45096** flush and flow test tool.
5. Remove the **DT-45096-30** or the hose adapters.

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6. Dispose of the waste automatic transmission fluid in accordance with all applicable federal, state, and local requirements.

REPAIR INSTRUCTIONS

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 Three-Way Catalytic Converter Replacement .

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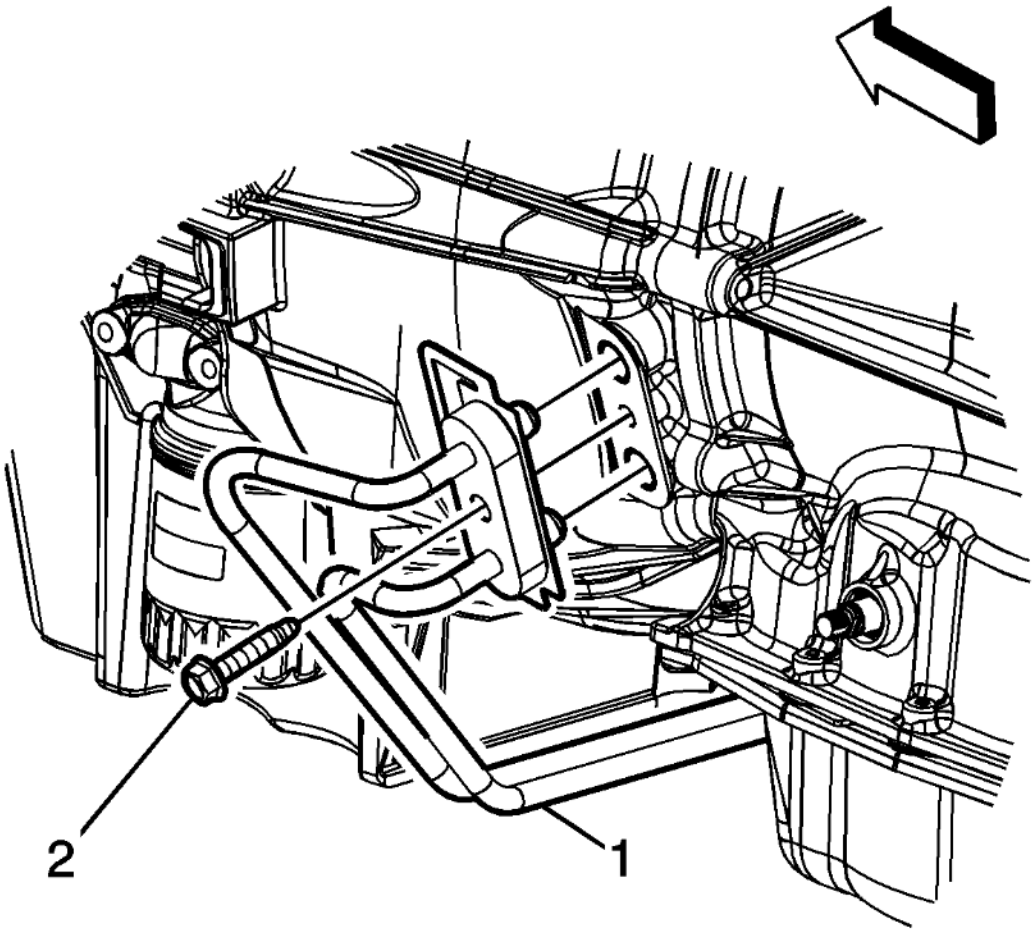


Fig. 50: View Of Oil Cooling Lines & Bolt
Courtesy of GENERAL MOTORS COMPANY

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

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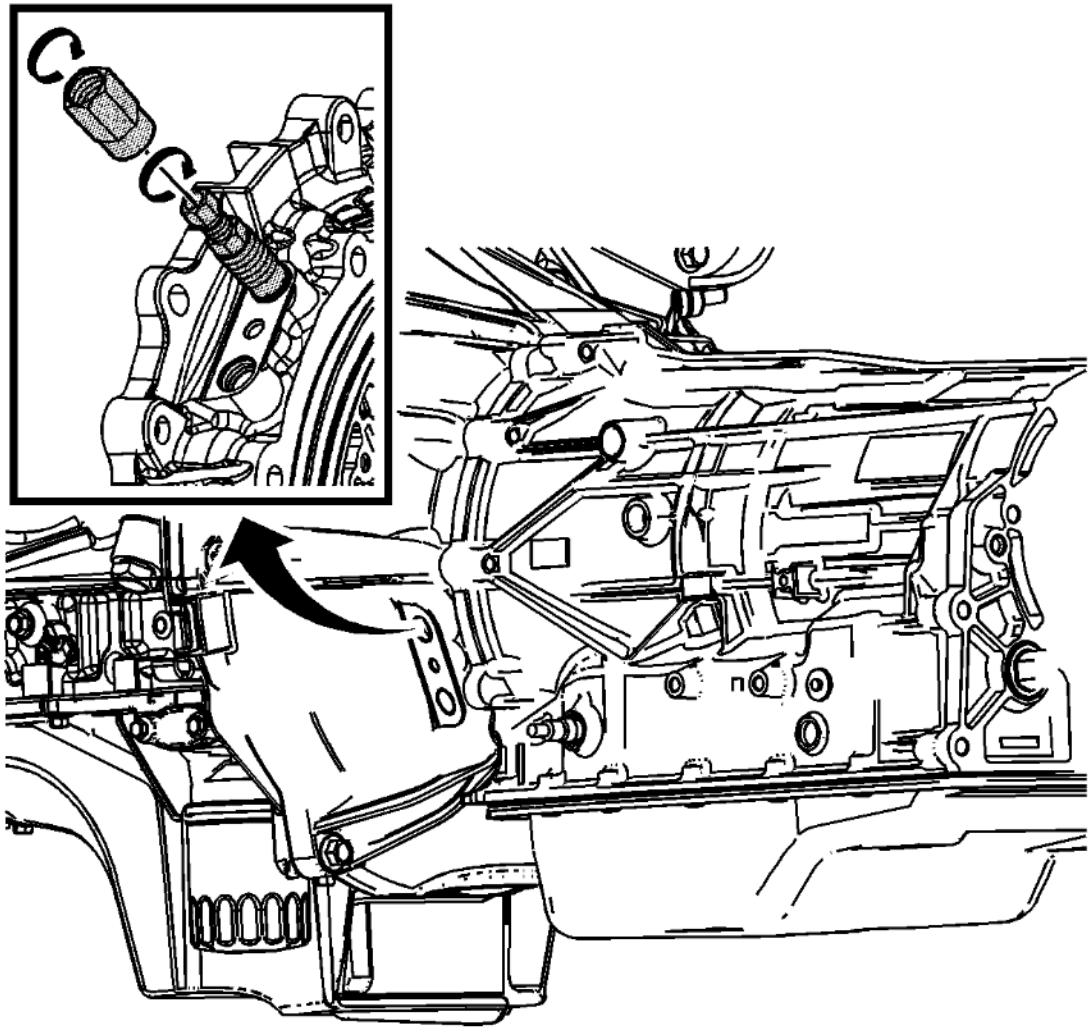


Fig. 51: Transmission Fluid Cooler Pipe Seals
Courtesy of GENERAL MOTORS COMPANY

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

Installation Procedure

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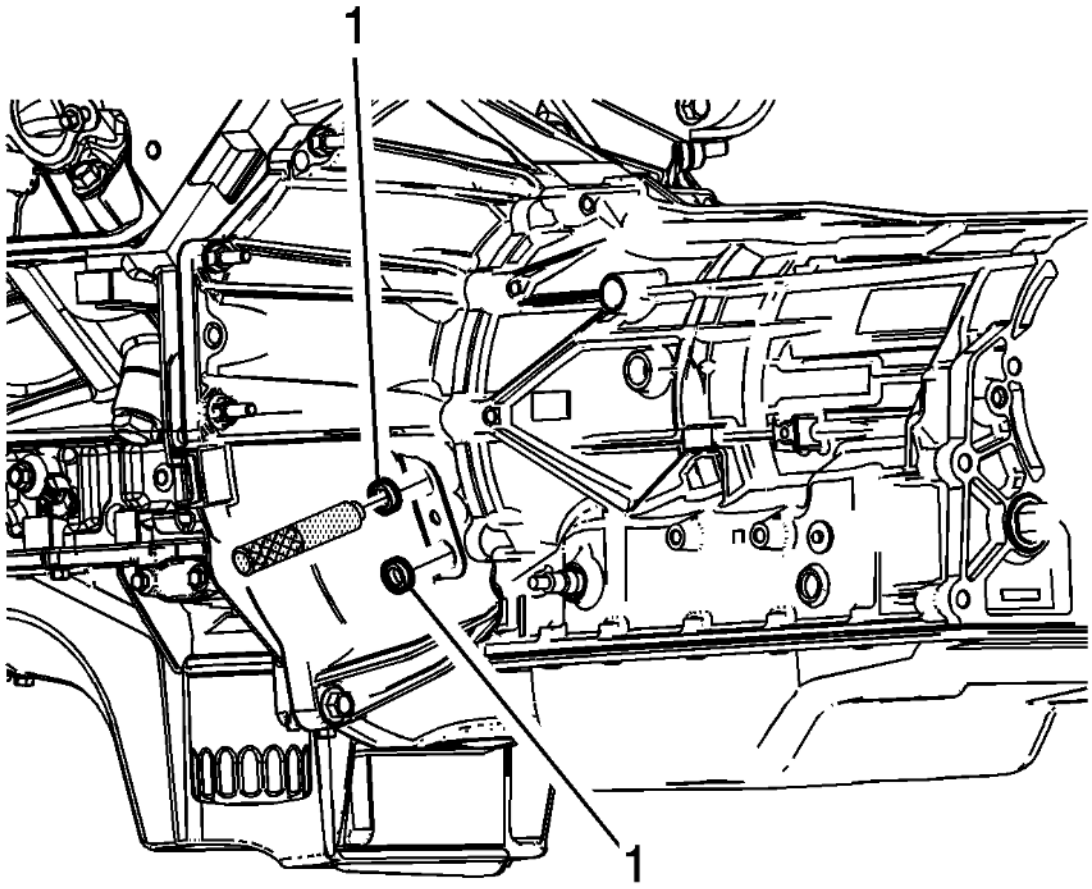


Fig. 52: Transmission Fluid Cooler Pipe Seals
Courtesy of GENERAL MOTORS COMPANY

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

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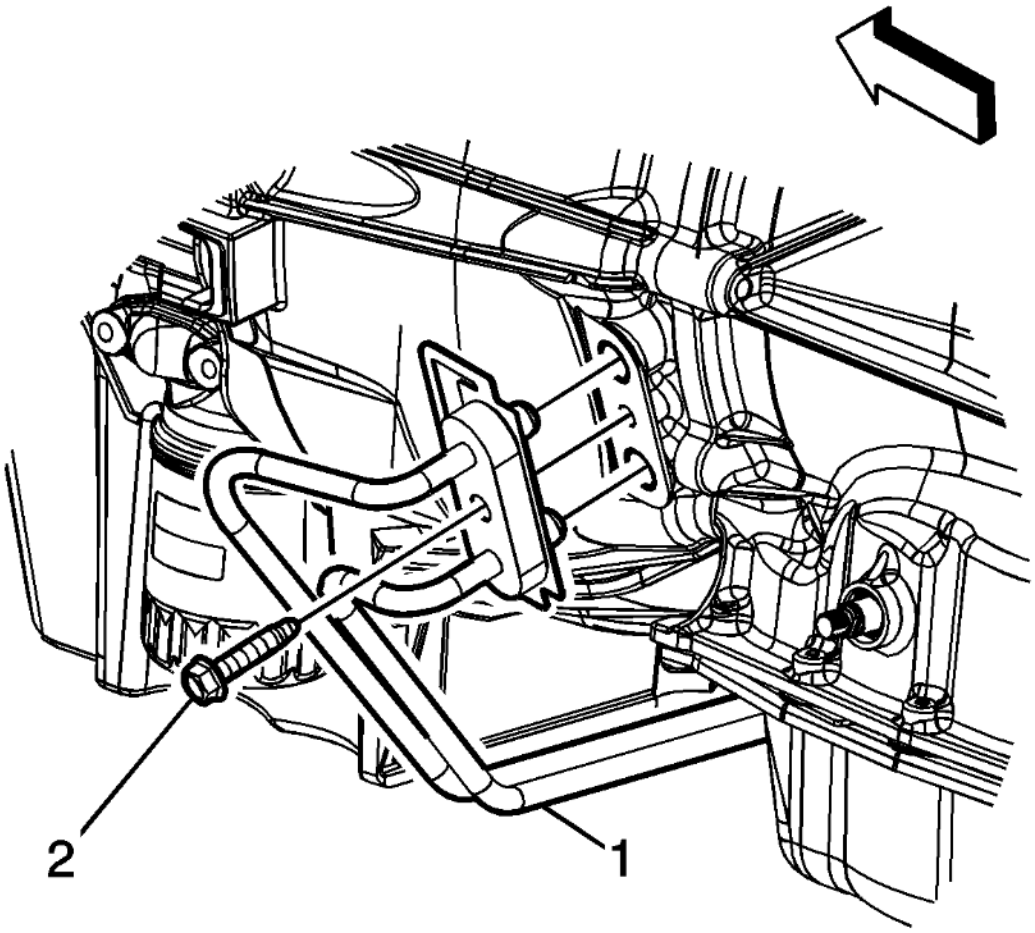


Fig. 53: View Of Oil Cooling Lines & Bolt
Courtesy of GENERAL MOTORS COMPANY

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 N.m (16 lb ft).

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4. Install the left catalytic converter. Refer to Three-Way Catalytic Converter Replacement .
5. Lower the vehicle.
6. Check the transmission fluid level.

TRANSMISSION FLUID AUXILIARY COOLER INLET PIPE REPLACEMENT (L83 L86)

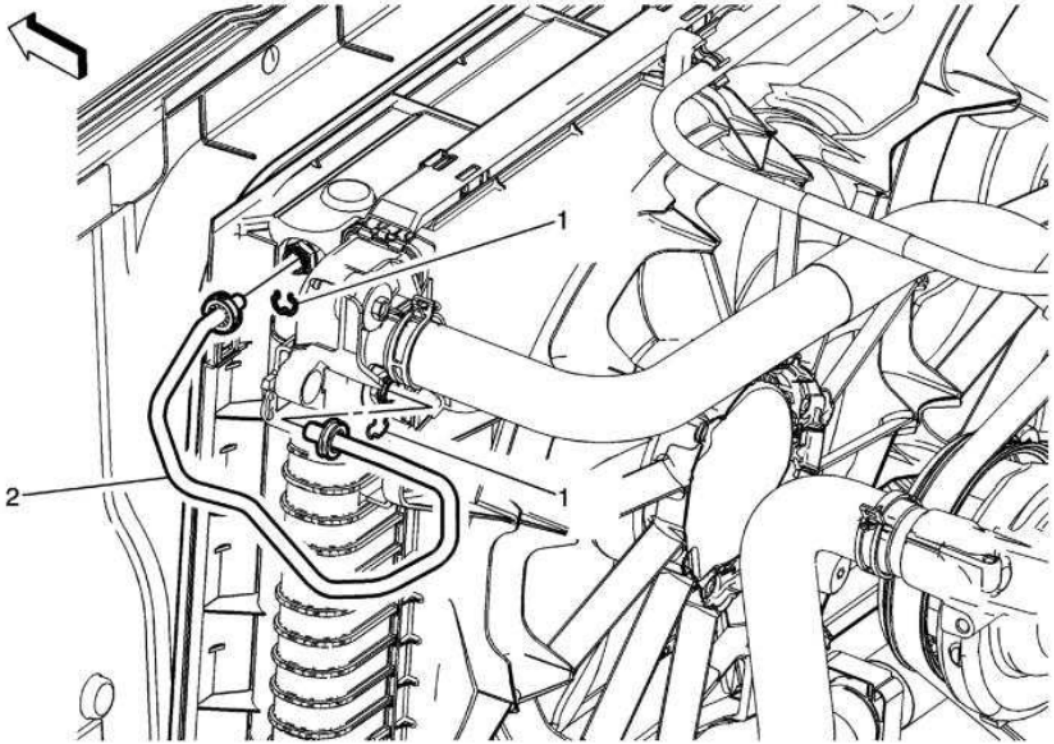


Fig. 54: Transmission Fluid Auxiliary Cooler Inlet Pipe (L83, L86)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	
1. Remove the front end upper tie bar support. Refer to **Front End Upper Tie Bar Support Replacement** . 2. Place a drain pan under the transmission fluid auxiliary cooler inlet pipes.	

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Callout	Component Name
3. Cap the fittings and plug the holes when removing the transmission fluid auxiliary cooler inlet pipe.	
1	Transmission Fluid Auxiliary Cooler Inlet Pipe Retaining Ring (Qty: 2) **Procedure** Disconnect the quick connect fittings from the transmission fluid auxiliary cooler inlet pipe. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
2	Transmission Fluid Auxiliary Cooler Inlet Pipe **Procedure** 1. Inspect the transmission fluid level. 2. Inspect for transmission fluid leaks.

TRANSMISSION FLUID AUXILIARY COOLER OUTLET PIPE REPLACEMENT (L83 L86)

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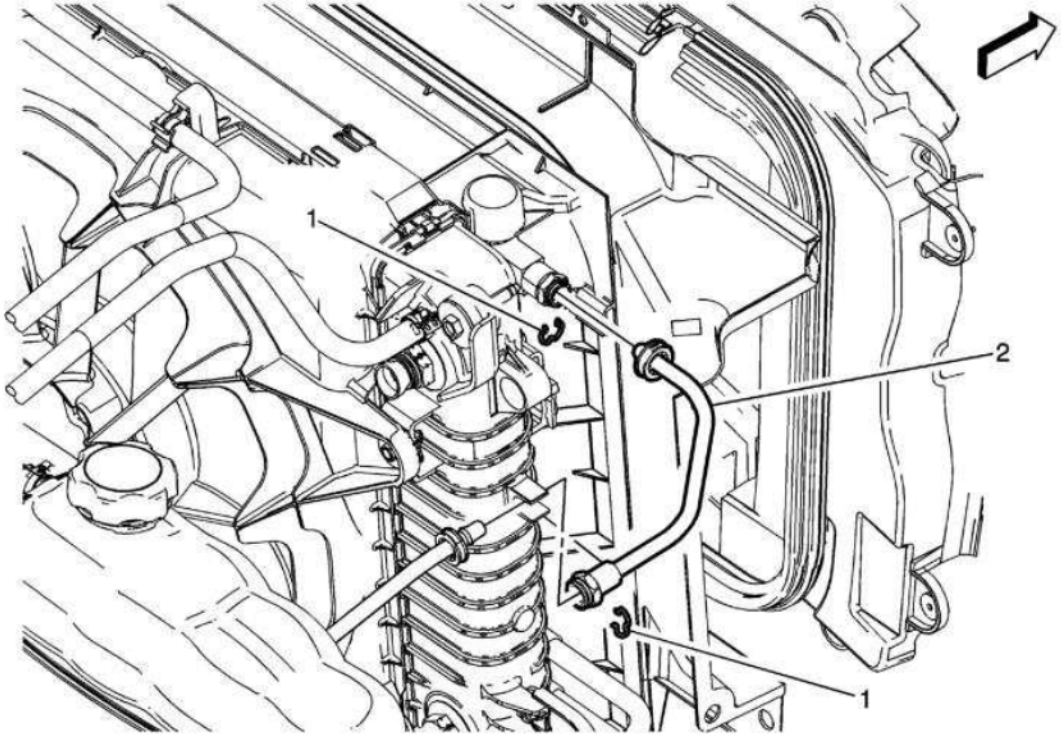


Fig. 55: Transmission Fluid Auxiliary Cooler Outlet Pipe (L83, L86)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the air cleaner assembly. Refer to **Air Cleaner Assembly Replacement** . 2. Remove the front end upper tie bar support. Refer to **Front End Upper Tie Bar Support Replacement** . 3. Place a drain pan under the transmission fluid auxiliary cooler outlet pipes. 4. Cap the fittings and plug the holes when removing the transmission fluid auxiliary cooler outlet pipe.	
1	Transmission Fluid Auxiliary Cooler Outlet Pipe Retaining Ring (Qty: 2) **Procedure** Disconnect the quick connect fittings from the transmission fluid auxiliary cooler outlet pipe. Refer to **Transmission Fluid**

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Callout	Component Name
	Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection.
2	Transmission Fluid Auxiliary Cooler Outlet Pipe **Procedure** 1. Inspect the transmission fluid level. 2. Inspect for transmission fluid leaks.

TRANSMISSION FLUID COOLER THERMAL BYPASS VALVE REPLACEMENT (L83 MYC)

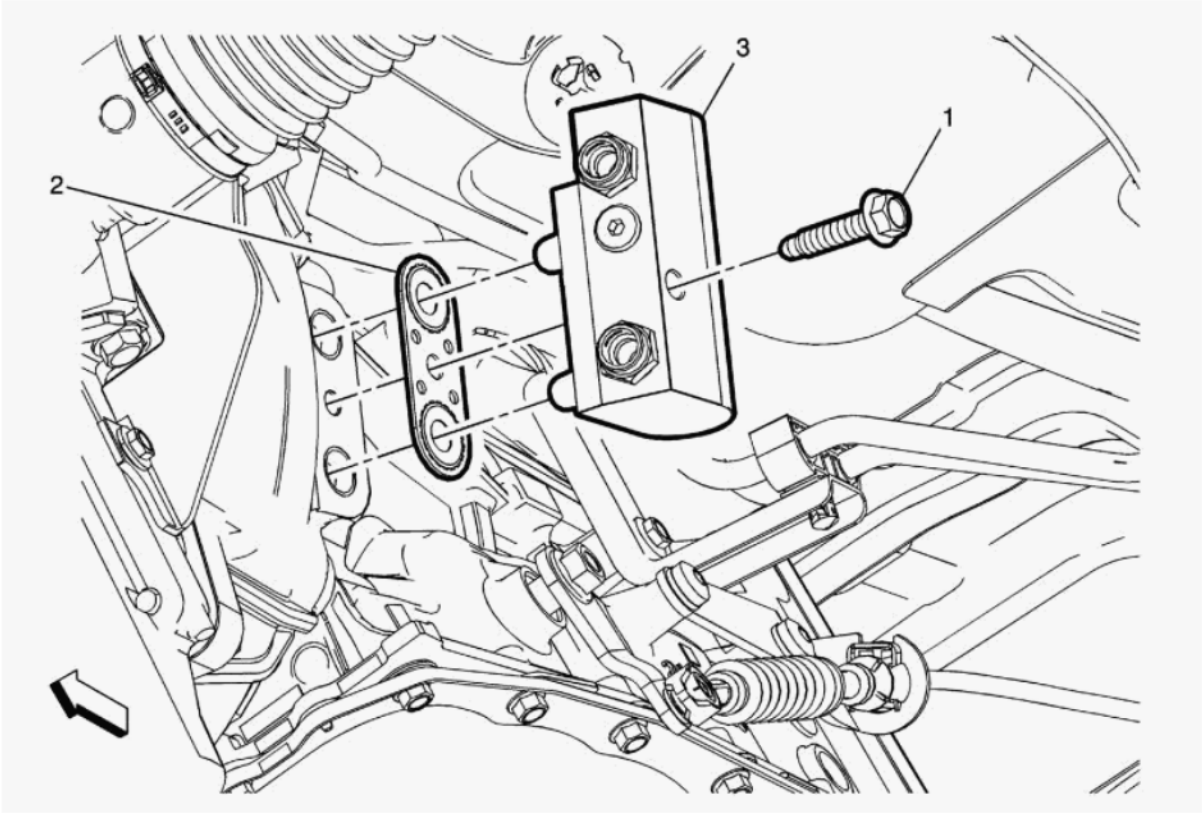


Fig. 56: Transmission Fluid Cooler Thermal Bypass Valve (L83 MYC)
Courtesy of GENERAL MOTORS COMPANY

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Callout	Component Name
Preliminary Procedures 1. **Lifting and Jacking the Vehicle** . 2. Place a drain pan under the Transmission Fluid Cooler Inlet and Outlet Pipe. 3. Remove the Transmission Fluid Cooler Inlet and Outlet Pipe from the bracket retainer at the right lower side of the transmission. 4. Transmission Fluid Cooler Inlet and Outlet Pipe@Transmission Fluid Cooler Thermal Bypass Valve -**Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection** 5. Cap the fittings and plug the holes when removing the Transmission Fluid Cooler Inlet and Outlet Pipefrom the Transmission Fluid Cooler Thermal Bypass Valve.	
1	Transmission Fluid Cooler Pipe Connector Bolt **CAUTION:** **Refer to** **Fastener Caution** . **Tighten** 22 N.m (16 lb ft)
2	Transmission Fluid Cooler Pipe Fitting Seal **Procedure** Remove and discard the old transmission fluid cooler pipe fitting seal and replace with a new transmission fluid cooler pipe fitting seal.
3	Transmission Fluid Cooler Thermal Bypass Valve 1. Inspect the transmission fluid level. 2. Inspect for transmission fluid leaks.

TRANSMISSION FLUID COOLER THERMAL BYPASS VALVE REPLACEMENT (M5U)

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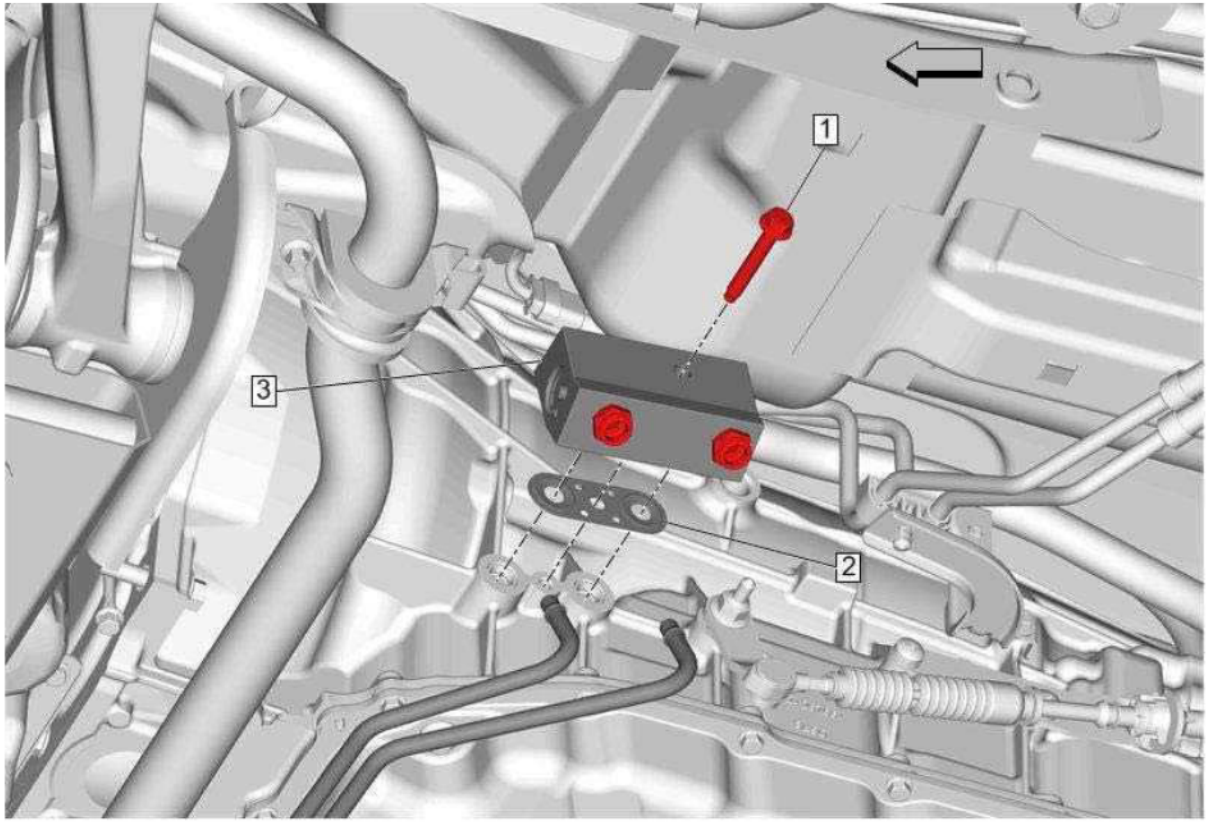


Fig. 57: Transmission Fluid Cooler Thermal Bypass Valve (M5U)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. **Lifting and Jacking the Vehicle** 2. Place a drain pan under the vehicle. 3. Remove Transmission Fluid Cooler Inlet and Outlet Pipe@Transmission Fluid Cooler Thermal Bypass Valve **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection** 4. Cap the opening to prevent contamination.	
1	Transmission Fluid Cooler Pipe Connector Bolt

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Callout	Component Name
	CAUTION: **Refer to** Fastener Caution . Tighten 22 N.m (16 lb ft)
2	Transmission Fluid Cooler Pipe Fitting Seal **Procedure** 1. Remove and DISCARD the gasket. 2. Use a NEW gasket.
3	Transmission Fluid Cooler Thermal Bypass Valve **Procedure** 1. Fill and inspect the transmission fluid level. 2. Inspect for transmission fluid leaks.

TRANSMISSION FLUID COOLER PIPE CONNECTOR REPLACEMENT - AUXILIARY COOLER

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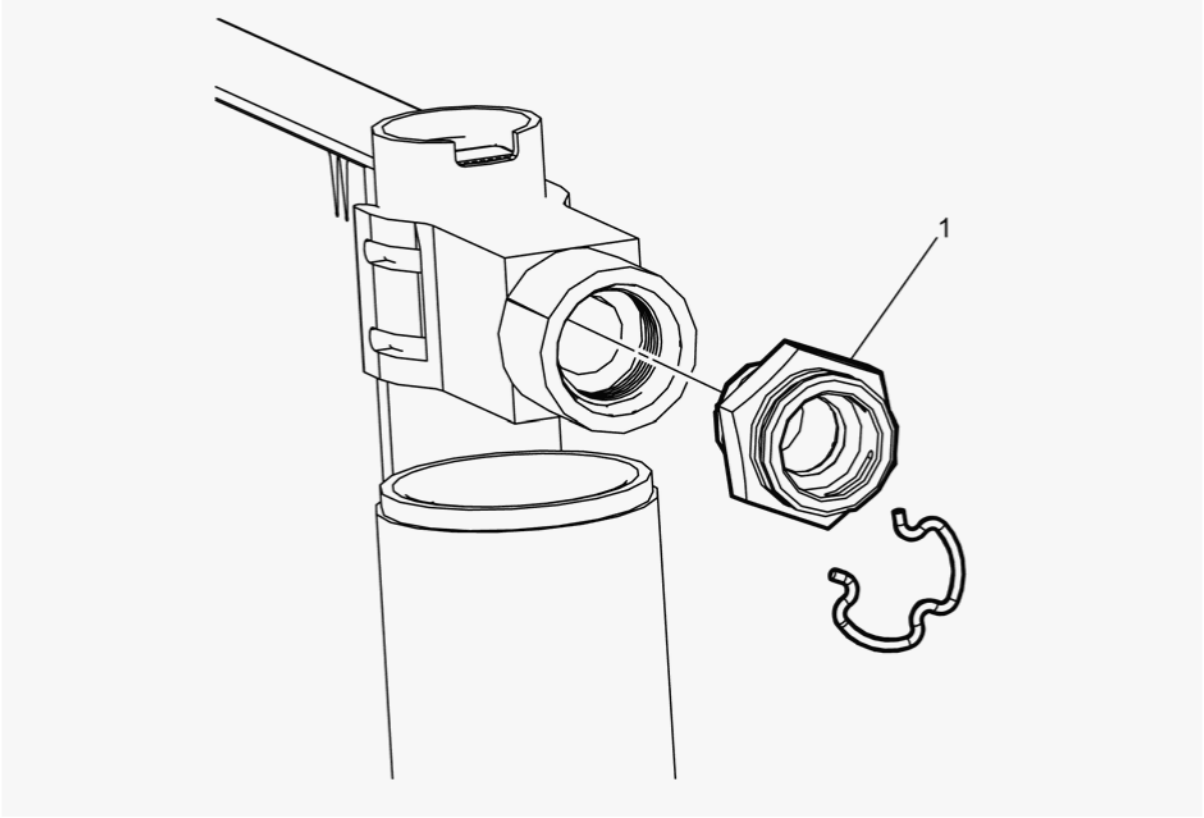


Fig. 58: Transmission Fluid Cooler Pipe Connector - Auxiliary Cooler
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Place a drain pan under the transmission fluid cooler pipe. 2. Remove the transmission fluid cooler pipe from the auxiliary oil cooler. Refer to **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**. 3. Cap the fittings and plug the holes when removing the transmission fluid cooler pipe from the auxiliary oil cooler.	
1	Transmission Fluid Cooler Pipe Connector **CAUTION:**

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Callout	Component Name
	Refer to Fastener Caution . **Procedure** 1. Inspect the transmission fluid level. 2. Inspect for transmission fluid leaks. **NOTE:** **The correct thread engagement is critical, hand start the fitting. Cross-threaded fittings can achieve proper tightness and still leak.** **Tighten** 20 N.m (15 lb ft)

TRANSMISSION FLUID COOLER PIPE CONNECTOR REPLACEMENT - RADIATOR (L83 L86)

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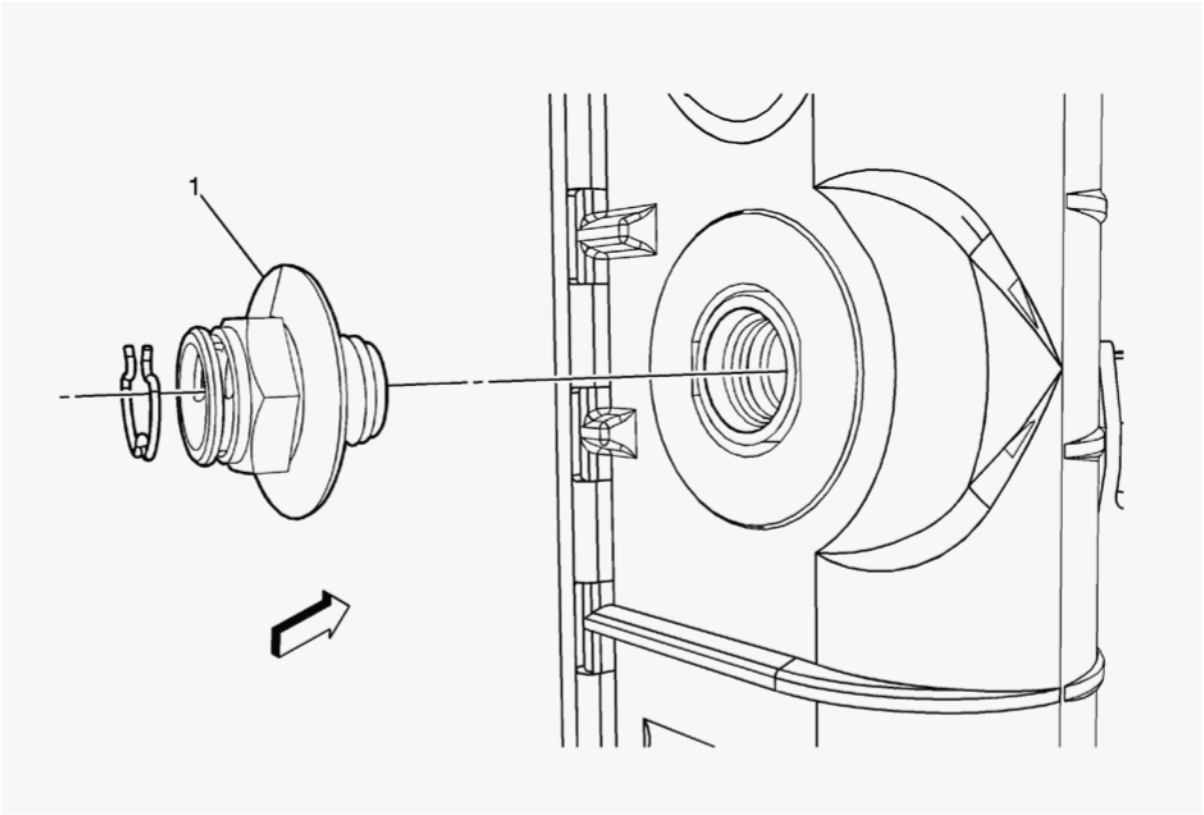


Fig. 59: View Of Transmission Fluid Cooler Hose/Pipe Connector
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures **NOTE:** Do not remove the upper and lower transmission fluid cooler inlet and	

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Callout	Component Name
	outlet pipe oil cooler fittings from the radiator at the same time other wise the transmission fluid cooler inlet and outlet pipe oil cooler may fall inside the radiator end tank. 1. Drain the cooling system. **Cooling System Draining and Filling (Static Fill L96)** **Cooling System Draining and Filling (Vac N Fill L96)** **Cooling System Draining and Filling (Vac N Fill L83 L86)** **Cooling System Draining and Filling (Static Fill L83 L86)** . 2. Place a drain pan under the transmission fluid cooler inlet and outlet pipe. 3. Unclip the transmission fluid cooler inlet and outlet pipe from the retainer on the engine coolant fan rear shroud. 4. Remove the transmission fluid cooler inlet and outlet pipe from the oil cooler fittings on the radiator. **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**. 5. Cap the fittings and plug the holes when removing the transmission fluid cooler pipes.
1	Transmission Oil Cooler Fitting **CAUTION:** **Refer to Fastener Caution .** **Procedure**

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Callout	Component Name
	1. Inspect the transmission fluid level. 2. Inspect for transmission fluid leaks. **NOTE:** **The correct thread engagement is critical, hand start the fitting. Cross-threaded fittings can achieve proper tightness and still leak.** **Tighten** 24 N.m (18 lb ft)

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 cap from the quick connect fitting by pulling the cap back along the pipe.

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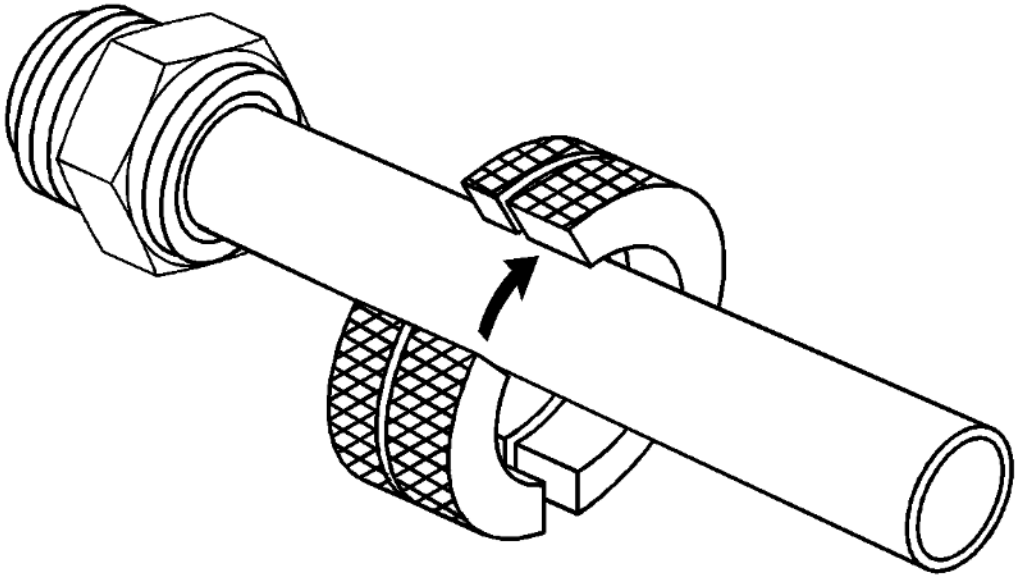


Fig. 60: Generator Cooling Inlet Pipe
Courtesy of GENERAL MOTORS COMPANY

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.

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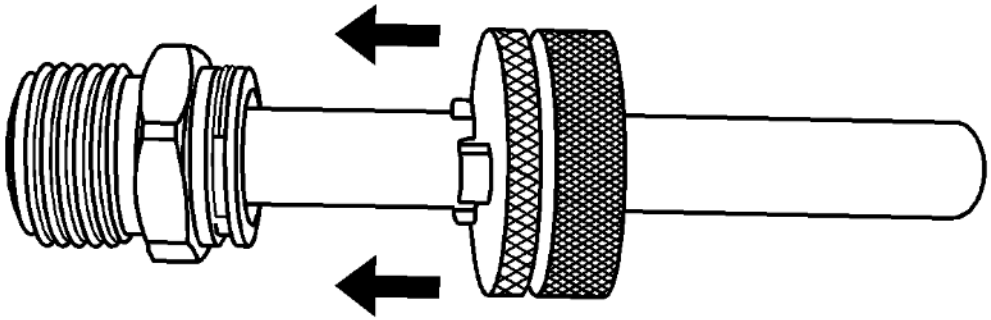


Fig. 61: Sliding J 41623-B Toward Generator Cooling Inlet Pipe Fitting
Courtesy of GENERAL MOTORS COMPANY

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.

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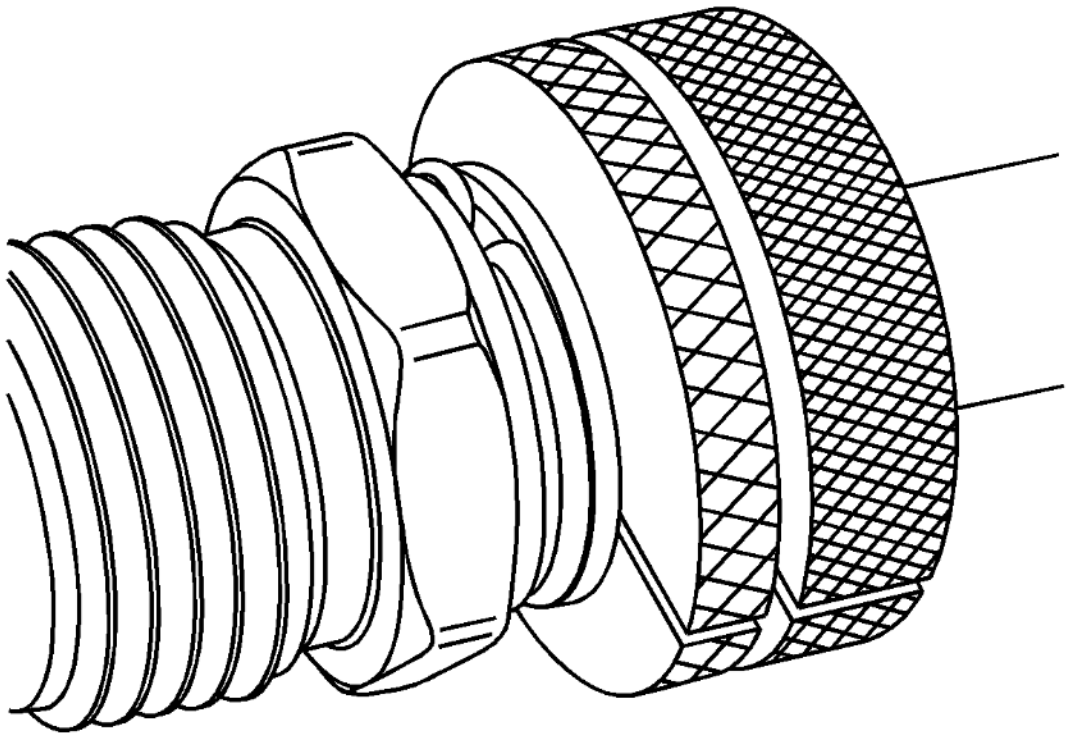


Fig. 62: Rotating J 41623-B On Coolant Pipe
Courtesy of GENERAL MOTORS COMPANY

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.

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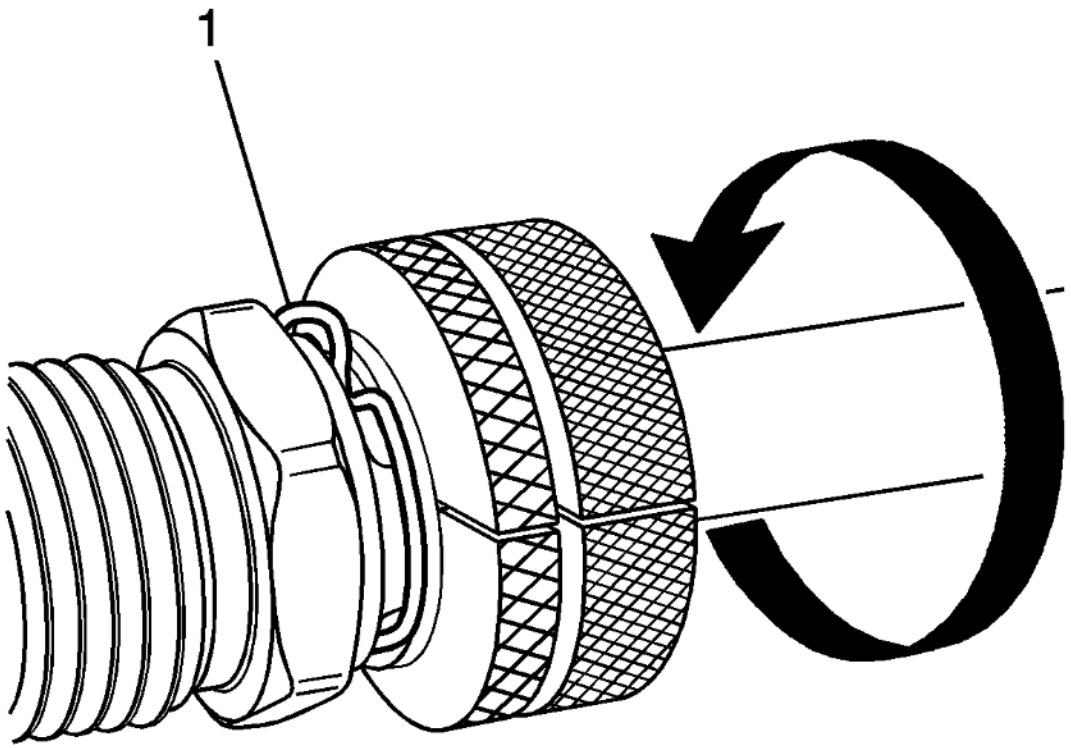


Fig. 63: Identifying Retainer Clip
Courtesy of GENERAL MOTORS COMPANY

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.

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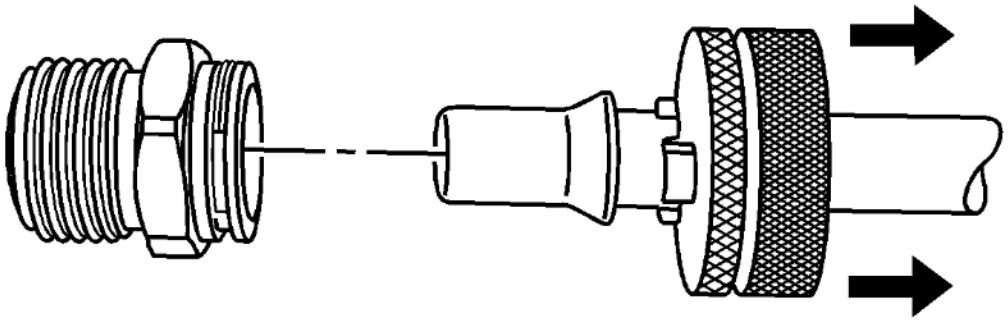


Fig. 64: Generator Cooling Inlet Pipe
Courtesy of GENERAL MOTORS COMPANY

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

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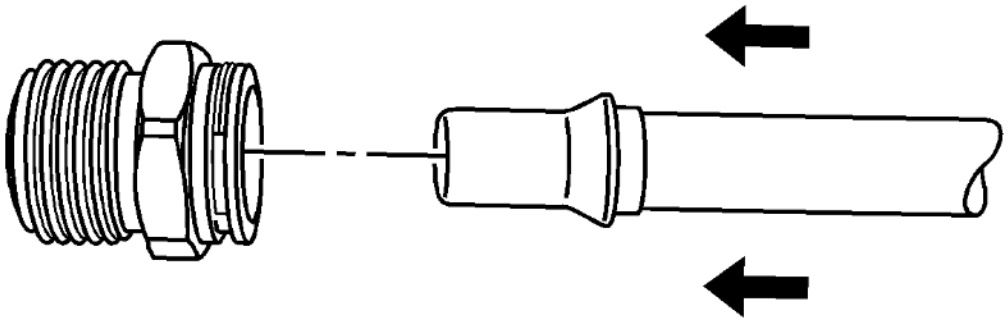


Fig. 65: View Of Generator Cooling Inlet Pipe & Generator Cooling Inlet Pipe Fitting
Courtesy of GENERAL MOTORS COMPANY

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.

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2. Install the plastic cap onto the quick connect fitting. The plastic cap should snap onto fitting and spin freely by hand.
3. To ensure the cooler line is properly installed, give the cooler pipe a gentle pull.

TRANSMISSION FLUID COOLER INLET AND OUTLET PIPE REPLACEMENT (L83 MYC)

Removal Procedure

1. Place a drain pan under the transmission fluid cooler inlet and outlet pipe.
2. Remove the air cleaner assembly. **Air Cleaner Assembly Replacement**

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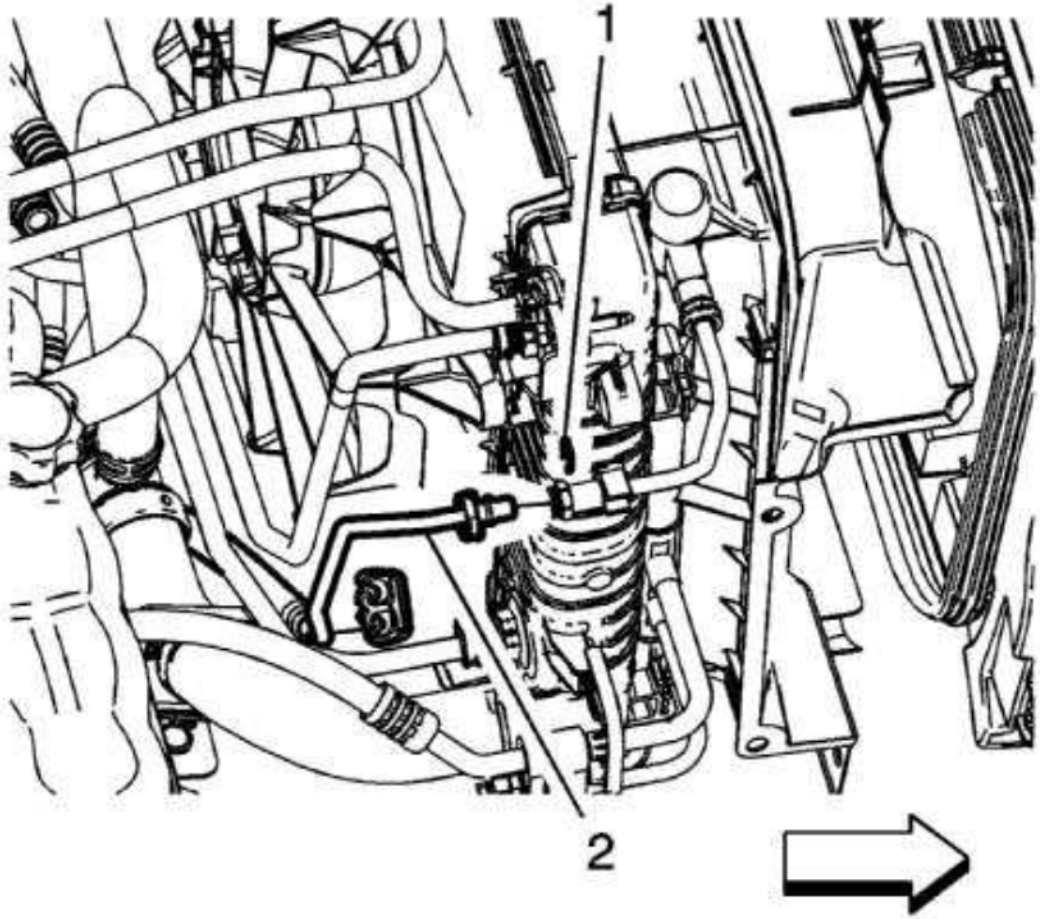


Fig. 66: Transmission Fluid Cooler Inlet And Outlet Pipe Retainer
Courtesy of GENERAL MOTORS COMPANY

3. Remove the transmission fluid cooler inlet and outlet pipe retainer (1) from transmission fluid auxiliary cooler outlet pipe. **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
4. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission fluid auxiliary cooler outlet pipe.
5. Unclip the transmission fluid cooler inlet and outlet pipe from the engine coolant fan rear shroud.

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6. Cap the fittings and plug the holes when removing the transmission fluid cooler inlet and outlet pipe.

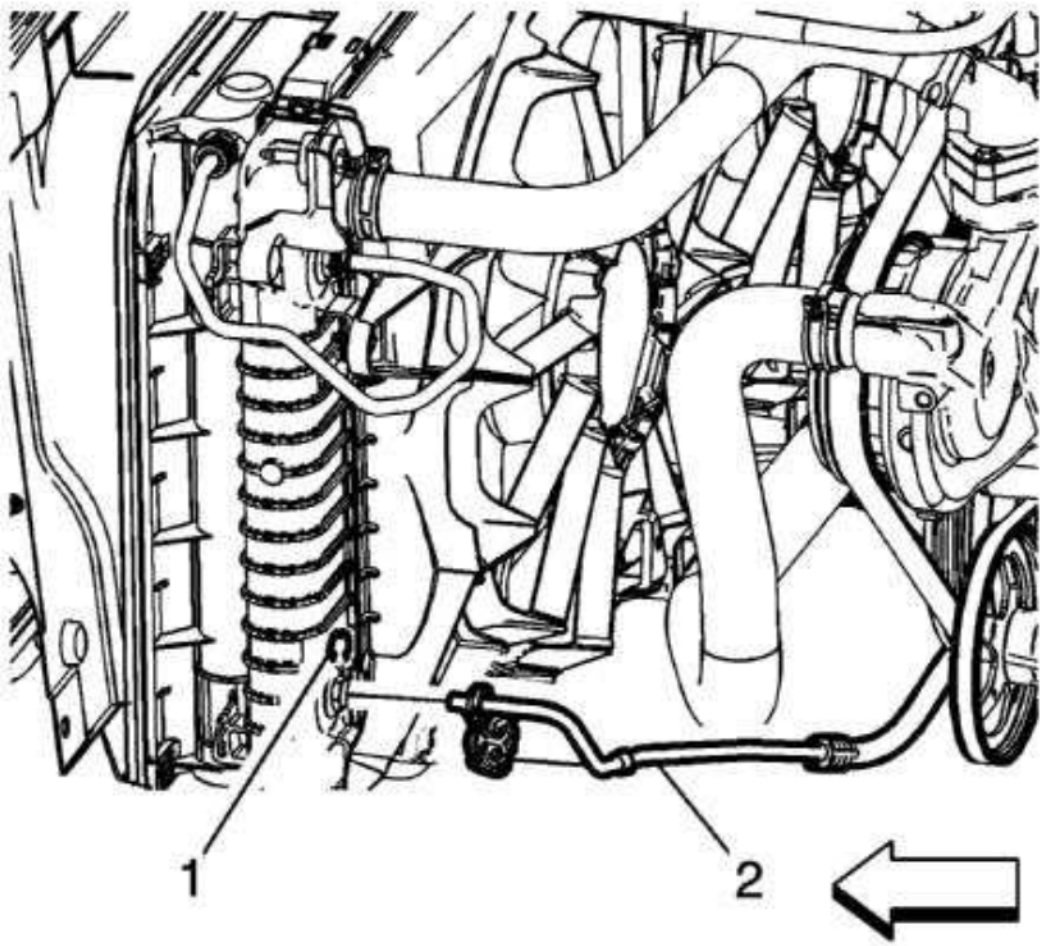


Fig. 67: Transmission Fluid Cooler Inlet And Outlet Pipe Retainer
Courtesy of GENERAL MOTORS COMPANY

7. Remove the transmission fluid cooler inlet and outlet pipe retainer (1) from the radiator. **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**.
8. Remove the transmission fluid cooler inlet and outlet pipe (2) from the radiator.

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9. Unclip the transmission fluid cooler inlet and outlet pipe from the engine coolant fan rear shroud.
10. Raise and support the vehicle. **Lifting and Jacking the Vehicle** .
11. Remove the steering gear skid shield. **Steering Gear Skid Shield Replacement**

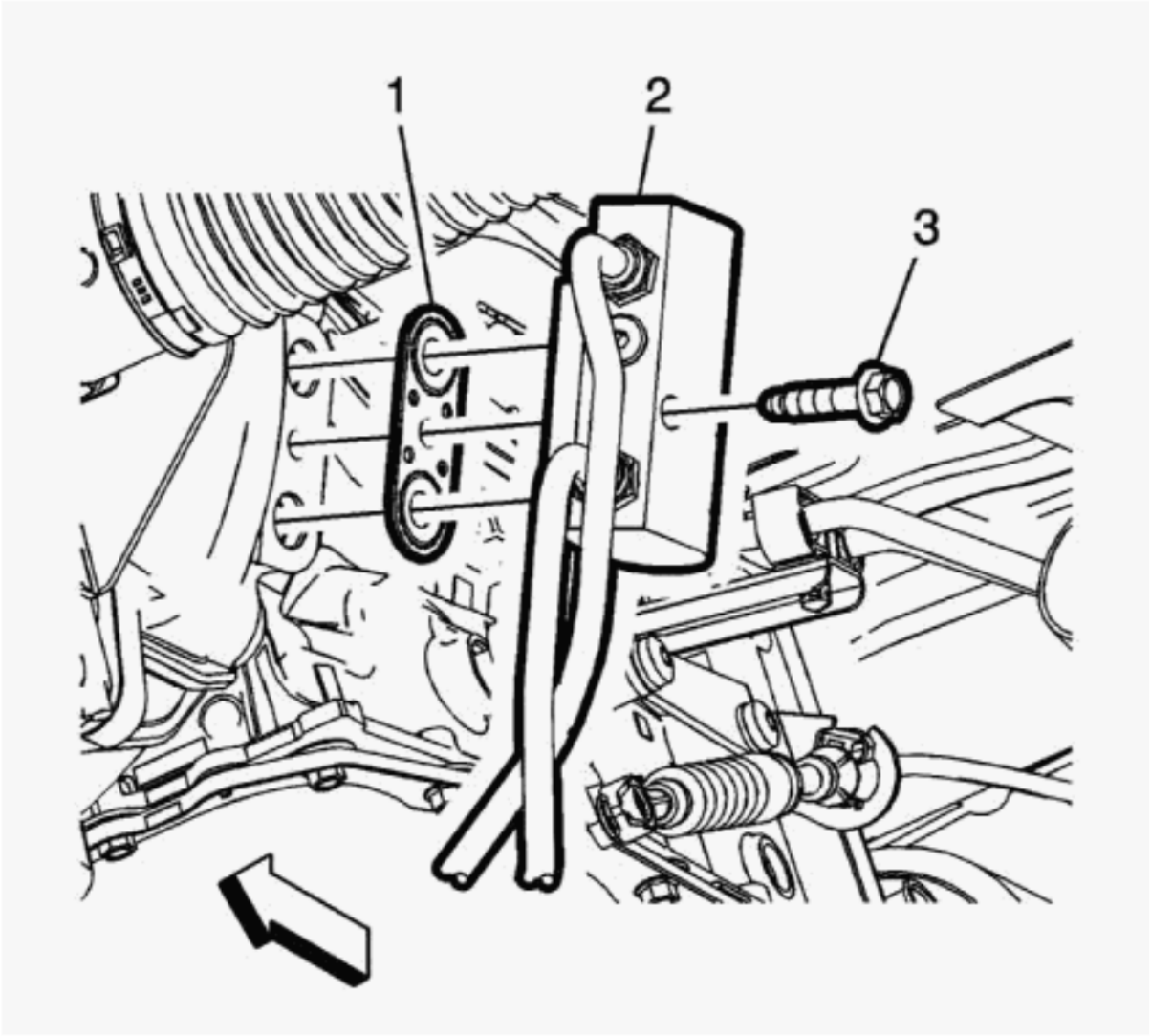


Fig. 68: Transmission Fluid Cooler Pipe Connector Bolt
Courtesy of GENERAL MOTORS COMPANY

12. Remove the transmission fluid cooler inlet and outlet pipe bolt (3) from the transmission.

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13. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission.
14. Remove and discard the old transmission fluid cooler pipe fitting seal (1) and replace with a new transmission fluid cooler pipe fitting seal.

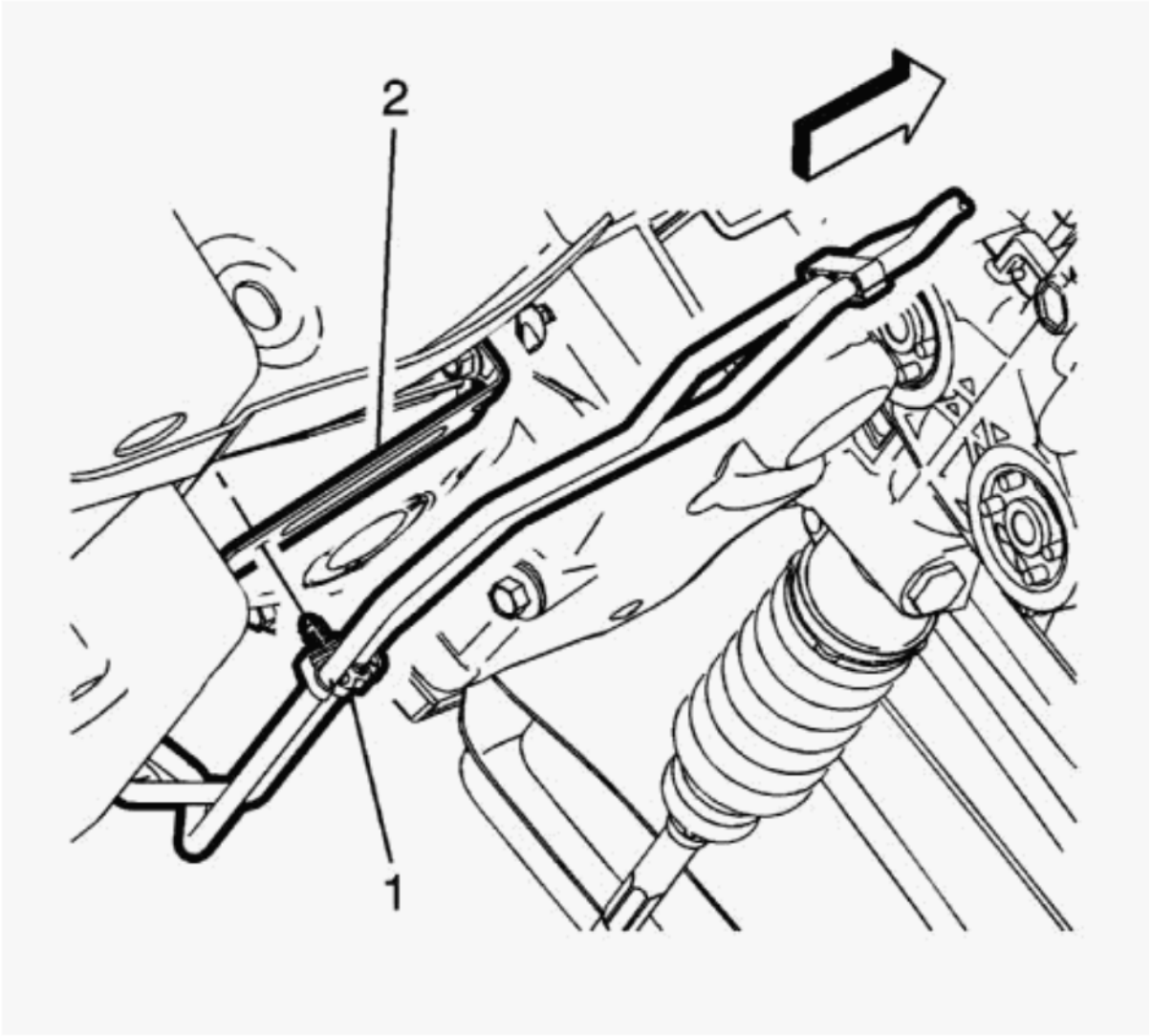


Fig. 69: Transmission Fluid Cooler Inlet And Outlet Pipe And Retainer
Courtesy of GENERAL MOTORS COMPANY

15. Remove the transmission fluid cooler inlet and outlet pipe and retainer (1) from the transmission fluid cooler bracket (2).

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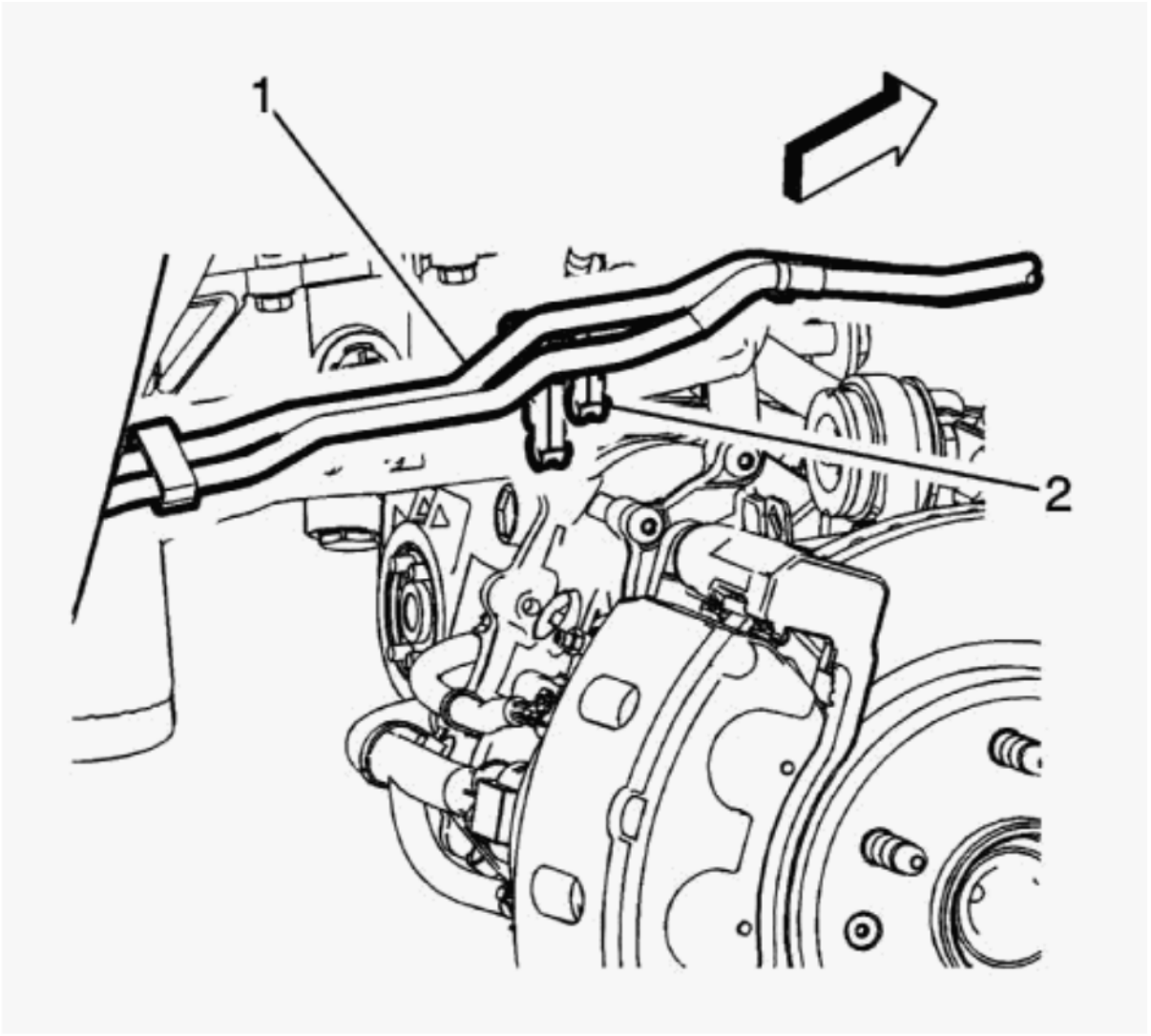


Fig. 70: Transmission Fluid Cooler Inlet And Outlet Pipe
Courtesy of GENERAL MOTORS COMPANY

16. Remove the transmission fluid cooler inlet and outlet pipe (1) from the transmission fluid cooler pipe clip (2).

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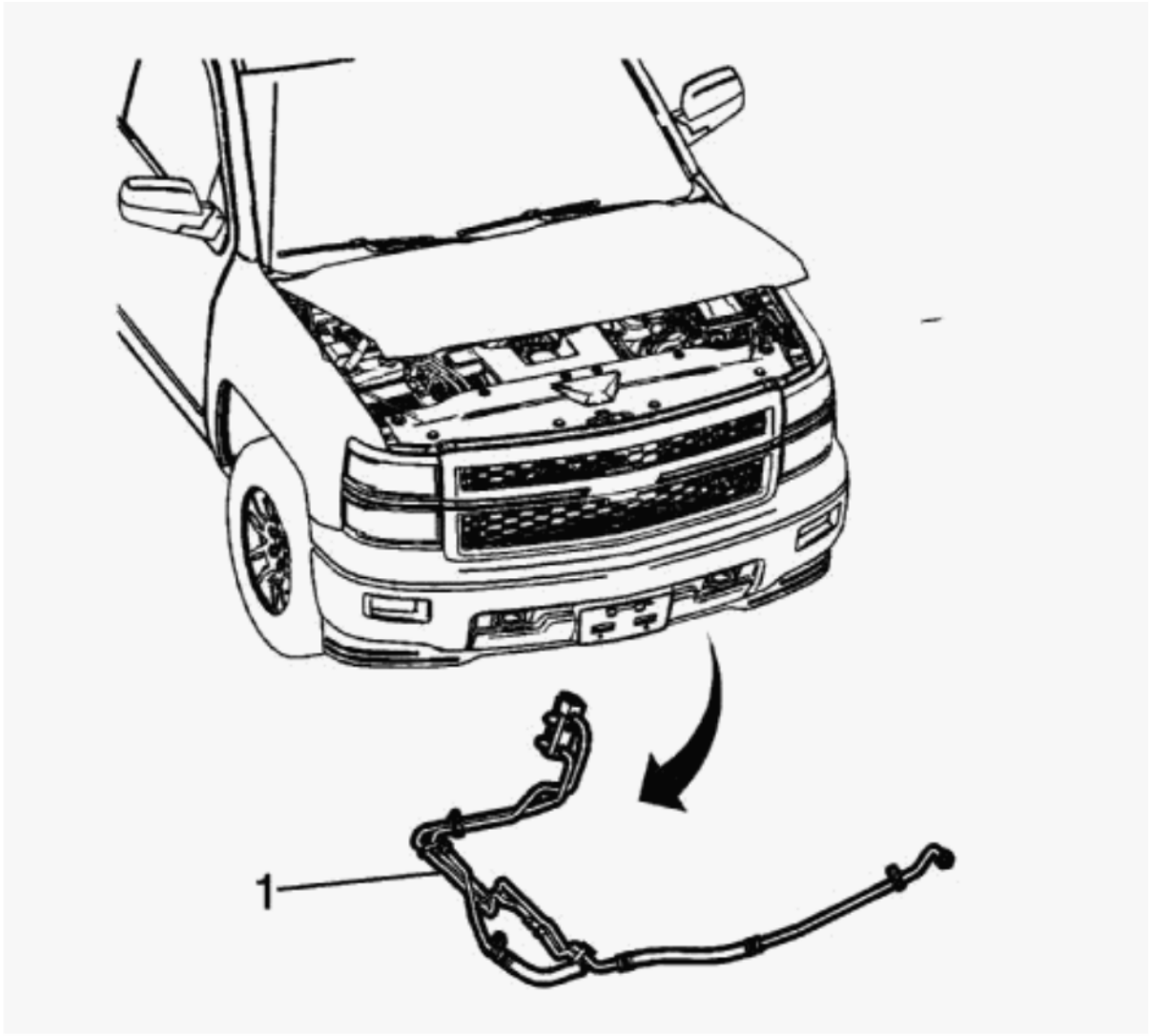


Fig. 71: Transmission Fluid Cooler Inlet And Outlet Pipe
Courtesy of GENERAL MOTORS COMPANY

17. Remove the transmission fluid cooler inlet and outlet pipe (1) from the vehicle.

Installation Procedure

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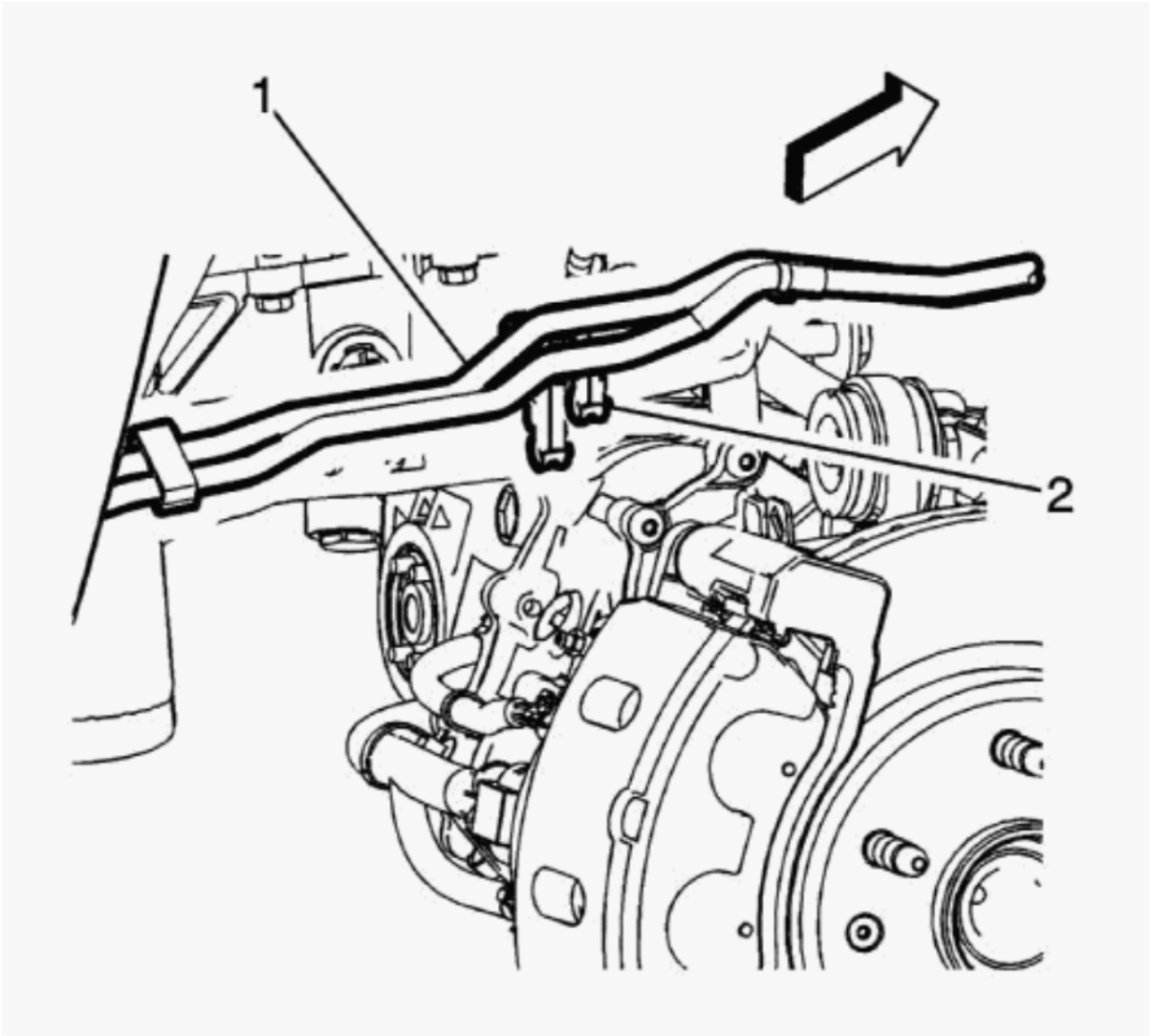


Fig. 72: Transmission Fluid Cooler Inlet And Outlet Pipe
Courtesy of GENERAL MOTORS COMPANY

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

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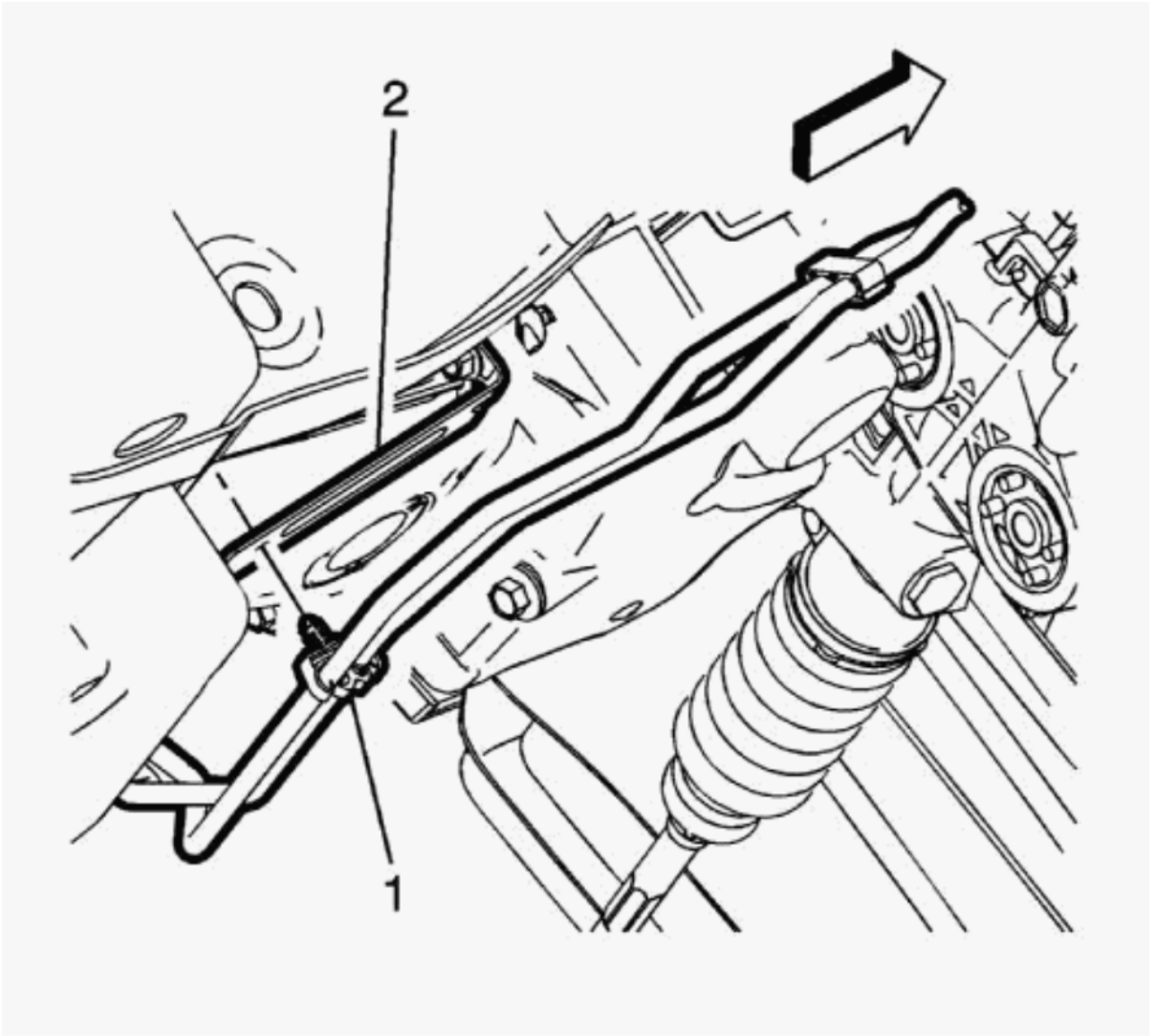


Fig. 73: Transmission Fluid Cooler Inlet And Outlet Pipe And Retainer
Courtesy of GENERAL MOTORS COMPANY

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

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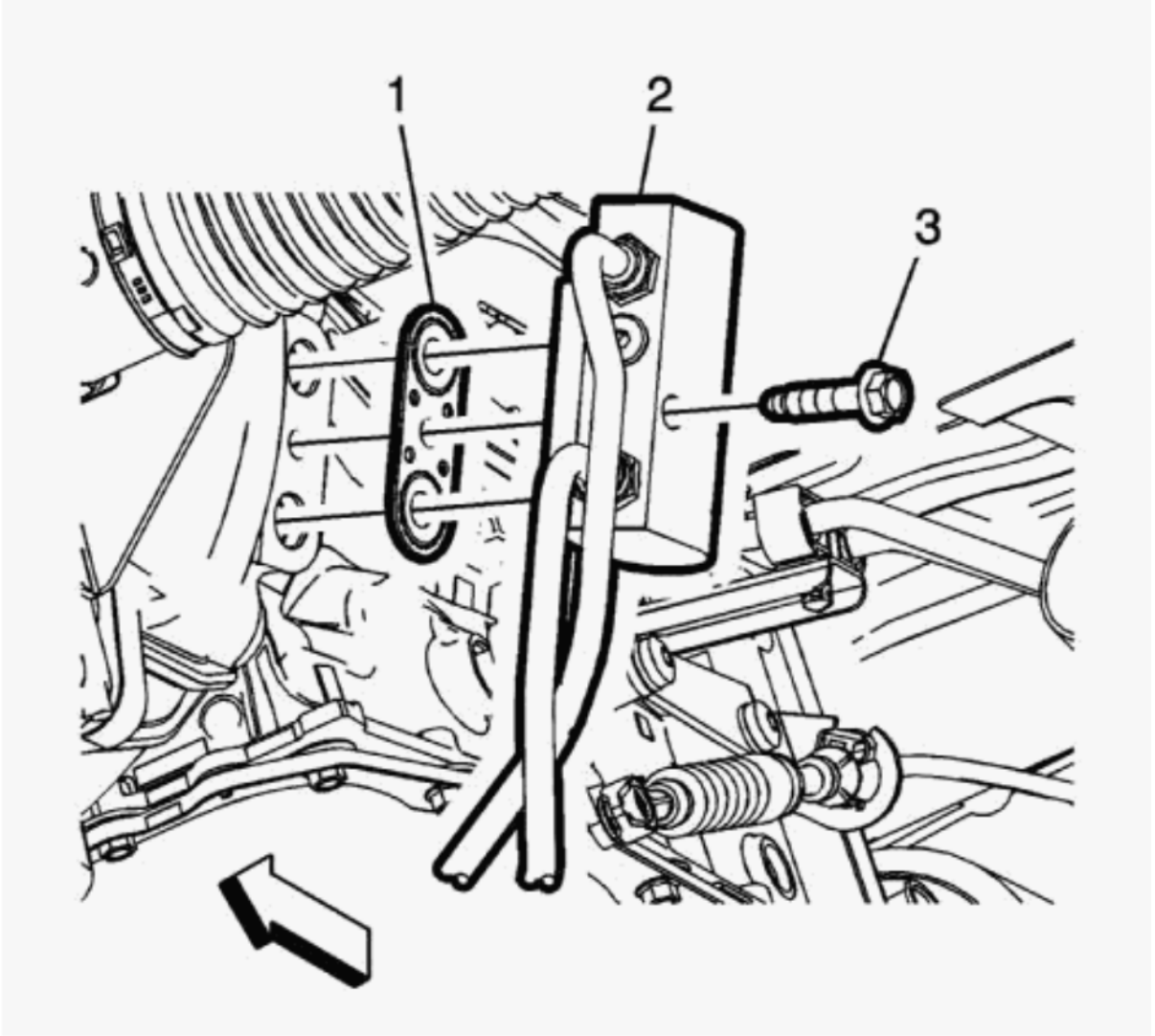


Fig. 74: Transmission Fluid Cooler Pipe Connector Bolt
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

4. Install a NEW transmission fluid cooler pipe fitting seal (1) to the transmission fluid cooler inlet and outlet pipe.
5. Install the transmission fluid cooler inlet and outlet pipe (2) to the transmission.

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6. Install the transmission fluid cooler inlet and outlet pipe bolt (3) to the transmission and tighten to 22 N.m (16 lb ft).
7. Install the steering gear skid shield. **Steering Gear Skid Shield Replacement**
8. Lower the vehicle. **Lifting and Jacking the Vehicle**

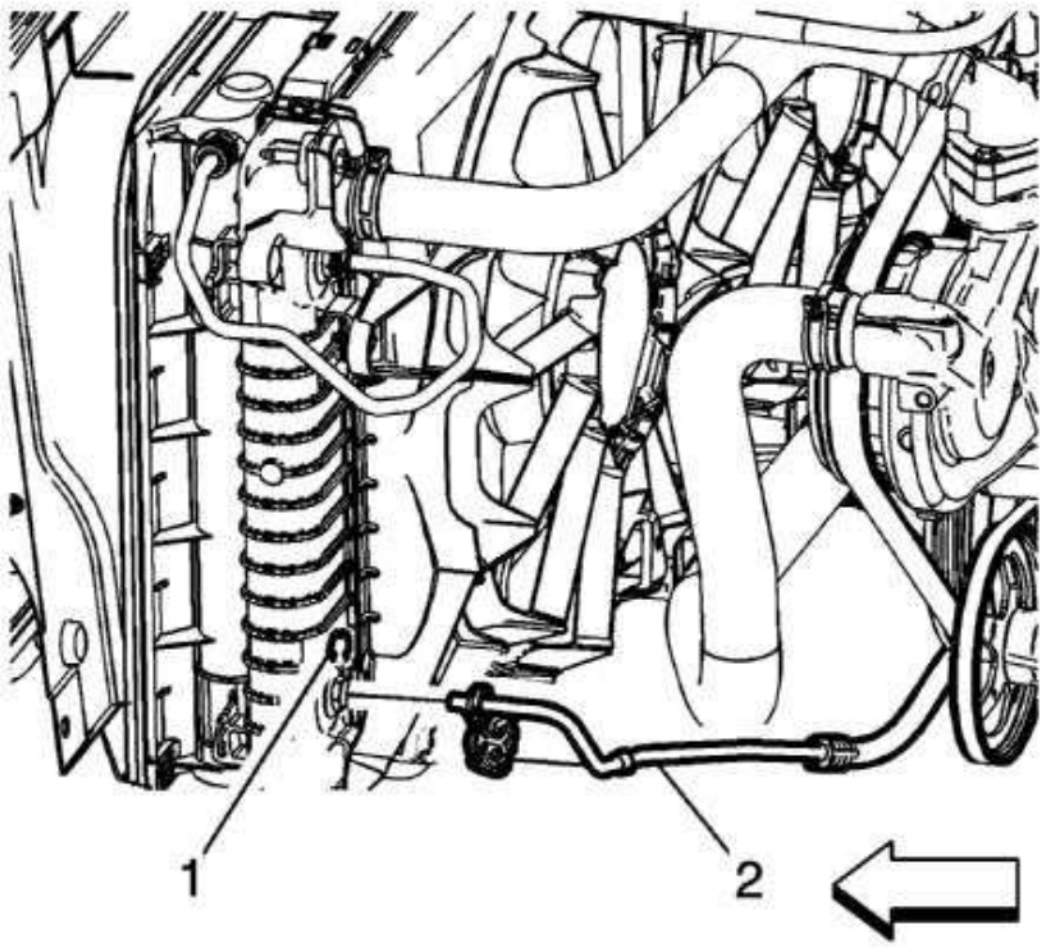


Fig. 75: Transmission Fluid Cooler Inlet And Outlet Pipe Retainer
Courtesy of GENERAL MOTORS COMPANY

9. Install the transmission fluid cooler inlet and outlet pipe (2) to the radiator.

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10. Clip the transmission fluid cooler inlet and outlet pipe to the engine coolant fan rear shroud.

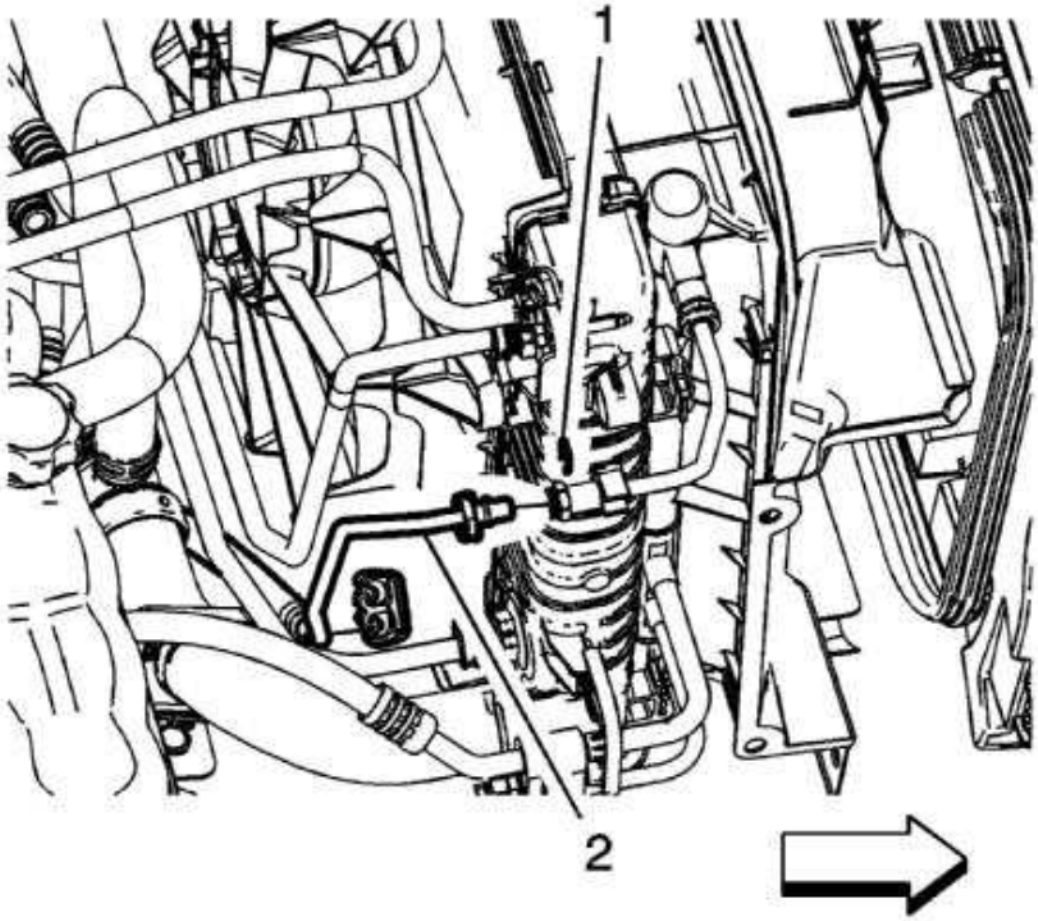


Fig. 76: Transmission Fluid Cooler Inlet And Outlet Pipe Retainer
Courtesy of GENERAL MOTORS COMPANY

11. Install the transmission fluid cooler inlet and outlet pipe (2) from the transmission fluid auxiliary cooler outlet pipe.
12. Clip the transmission fluid cooler inlet and outlet pipe to the engine coolant fan rear shroud.
13. Install the air cleaner assembly. **Air Cleaner Assembly Replacement**

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14. Inspect the transmission fluid level. **Transmission Fluid Level and Condition Check**
15. Inspect for transmission fluid leaks.

TRANSMISSION FLUID COOLER INLET AND OUTLET PIPE REPLACEMENT (L86 M5U)

Removal Procedure

1. Place a drain pan under the transmission fluid cooler inlet and outlet pipe.
2. Remove the air cleaner assembly. **Air Cleaner Assembly Replacement**

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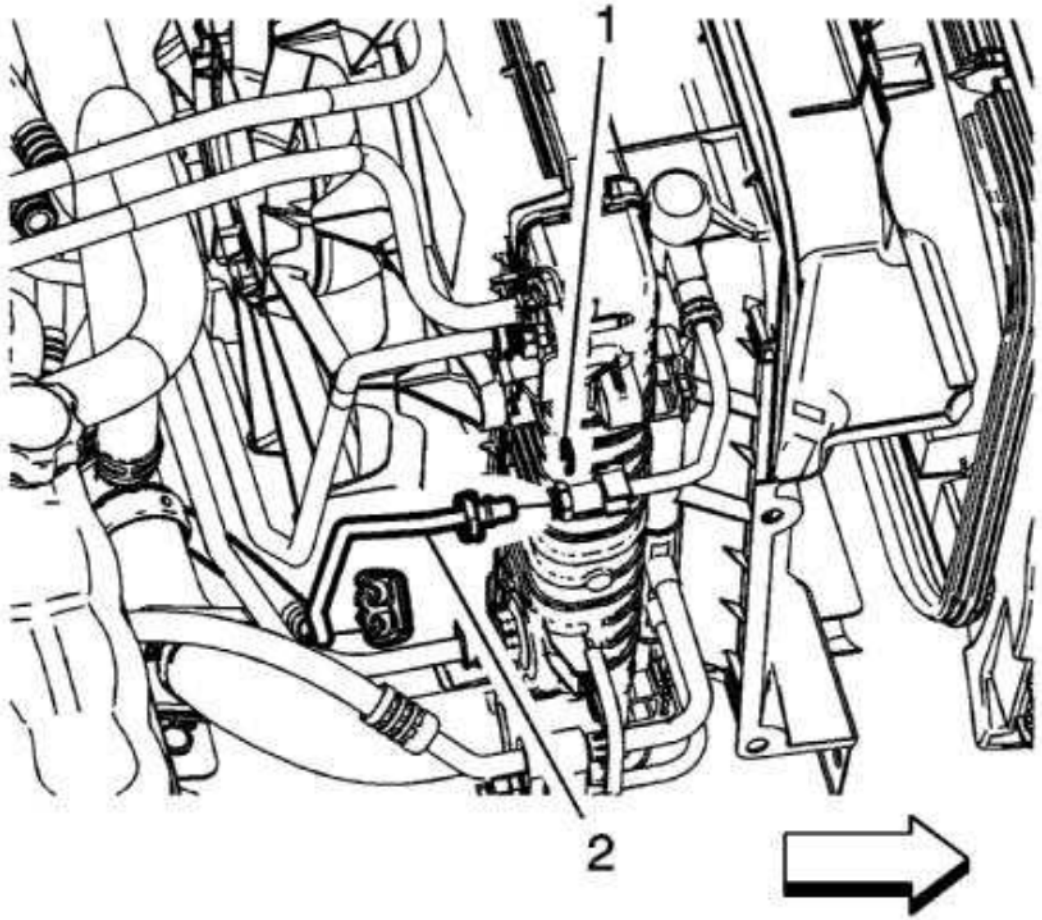


Fig. 77: Transmission Fluid Cooler Inlet And Outlet Pipe Retainer
Courtesy of GENERAL MOTORS COMPANY

3. Remove the transmission fluid cooler inlet and outlet pipe retainer (1) from transmission fluid auxiliary cooler outlet pipe. **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**
4. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission fluid auxiliary cooler outlet pipe.
5. Unclip the transmission fluid cooler inlet and outlet pipe from the engine coolant fan rear shroud.

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6. Cap the fittings and plug the holes when removing the transmission fluid cooler inlet and outlet pipe.

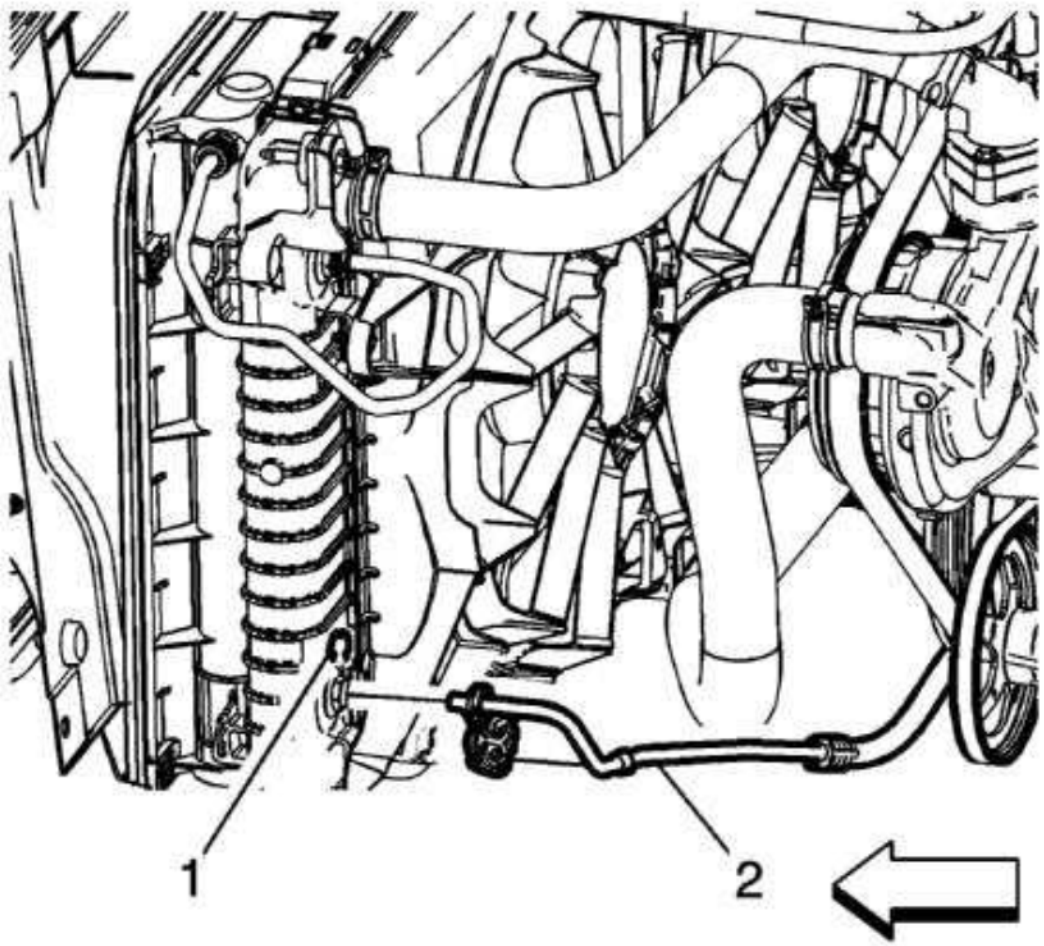


Fig. 78: Transmission Fluid Cooler Inlet And Outlet Pipe Retainer
Courtesy of GENERAL MOTORS COMPANY

7. Remove the transmission fluid cooler inlet and outlet pipe retainer (1) from the radiator. **Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection**
8. Remove the transmission fluid cooler inlet and outlet pipe (2) from the radiator.

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9. Unclip the transmission fluid cooler inlet and outlet pipe from the engine coolant fan rear shroud.
10. Raise and support the vehicle. **Lifting and Jacking the Vehicle**
11. Remove the steering gear skid shield. **Steering Gear Skid Shield Replacement**

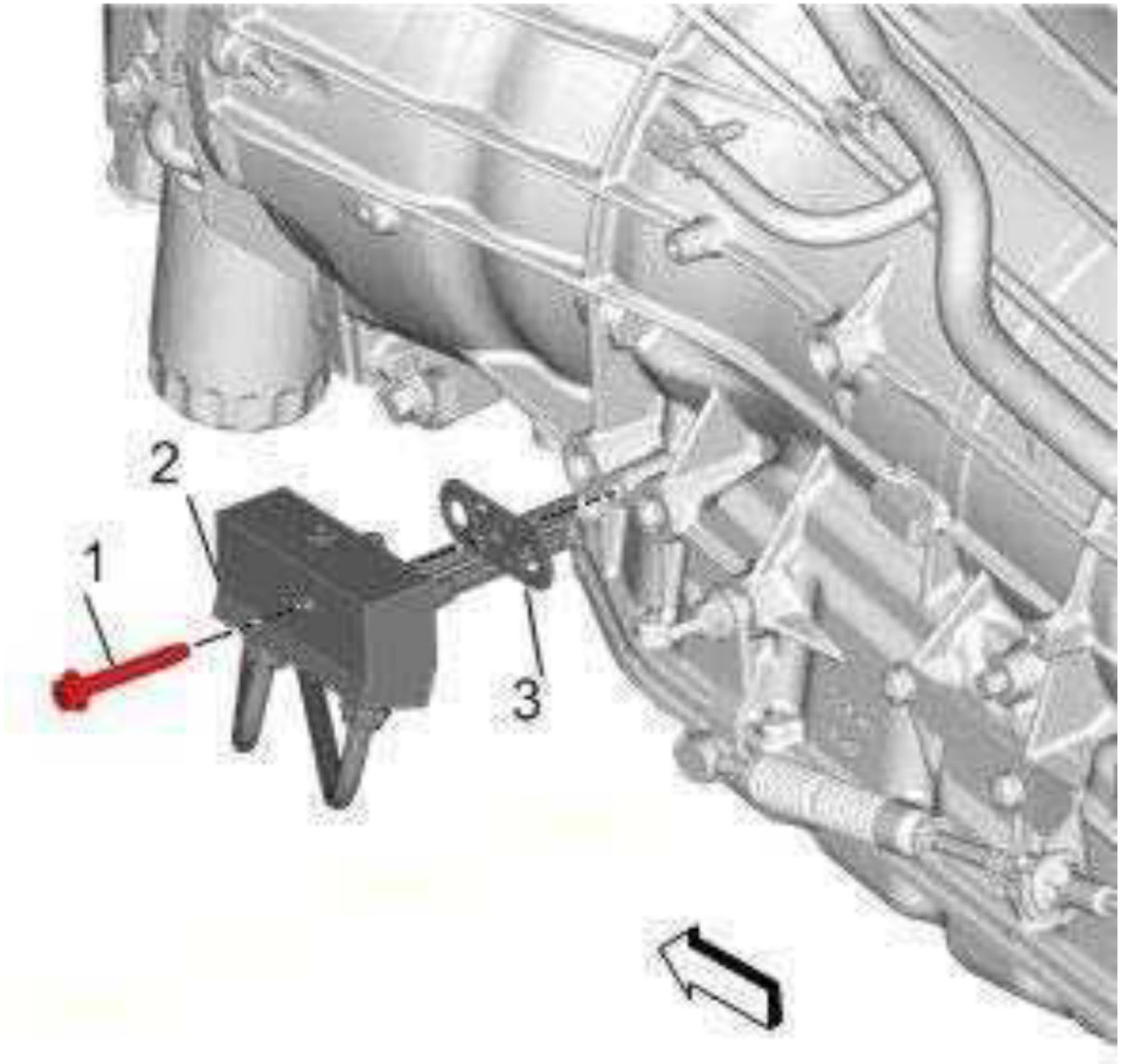


Fig. 79: Oil Cooler Lines
Courtesy of GENERAL MOTORS COMPANY

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12. Remove the transmission fluid cooler inlet and outlet pipe bolt (1) from the transmission.
13. Remove the transmission fluid cooler inlet and outlet pipe (2) from the transmission.
14. Remove and discard the old transmission fluid cooler pipe fitting seal (3) and replace with a NEW transmission fluid cooler pipe fitting seal.

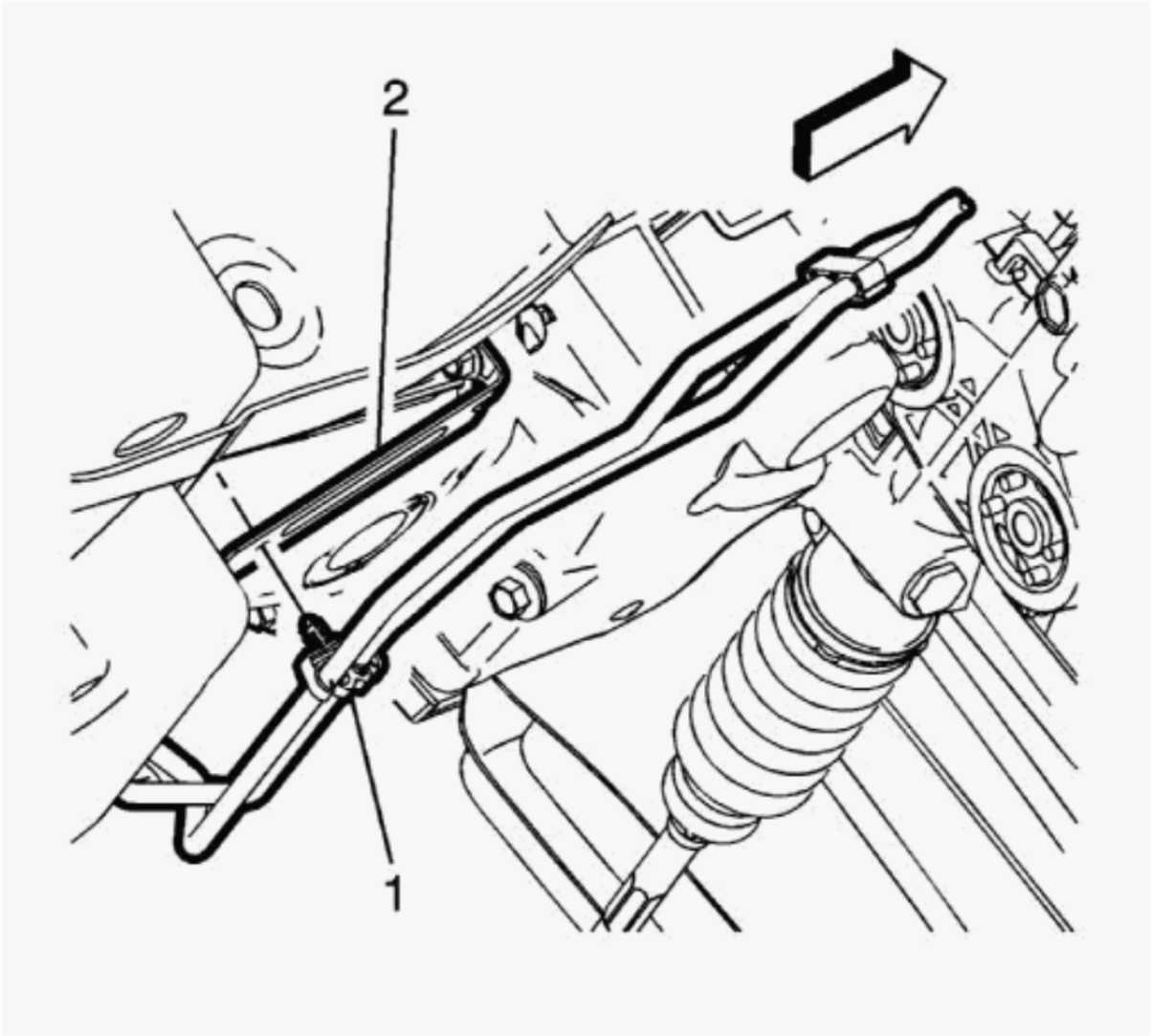


Fig. 80: Transmission Fluid Cooler Inlet And Outlet Pipe And Retainer
Courtesy of GENERAL MOTORS COMPANY

15. Remove the transmission fluid cooler inlet and outlet pipe and retainer (1) from the transmission fluid cooler bracket (2).

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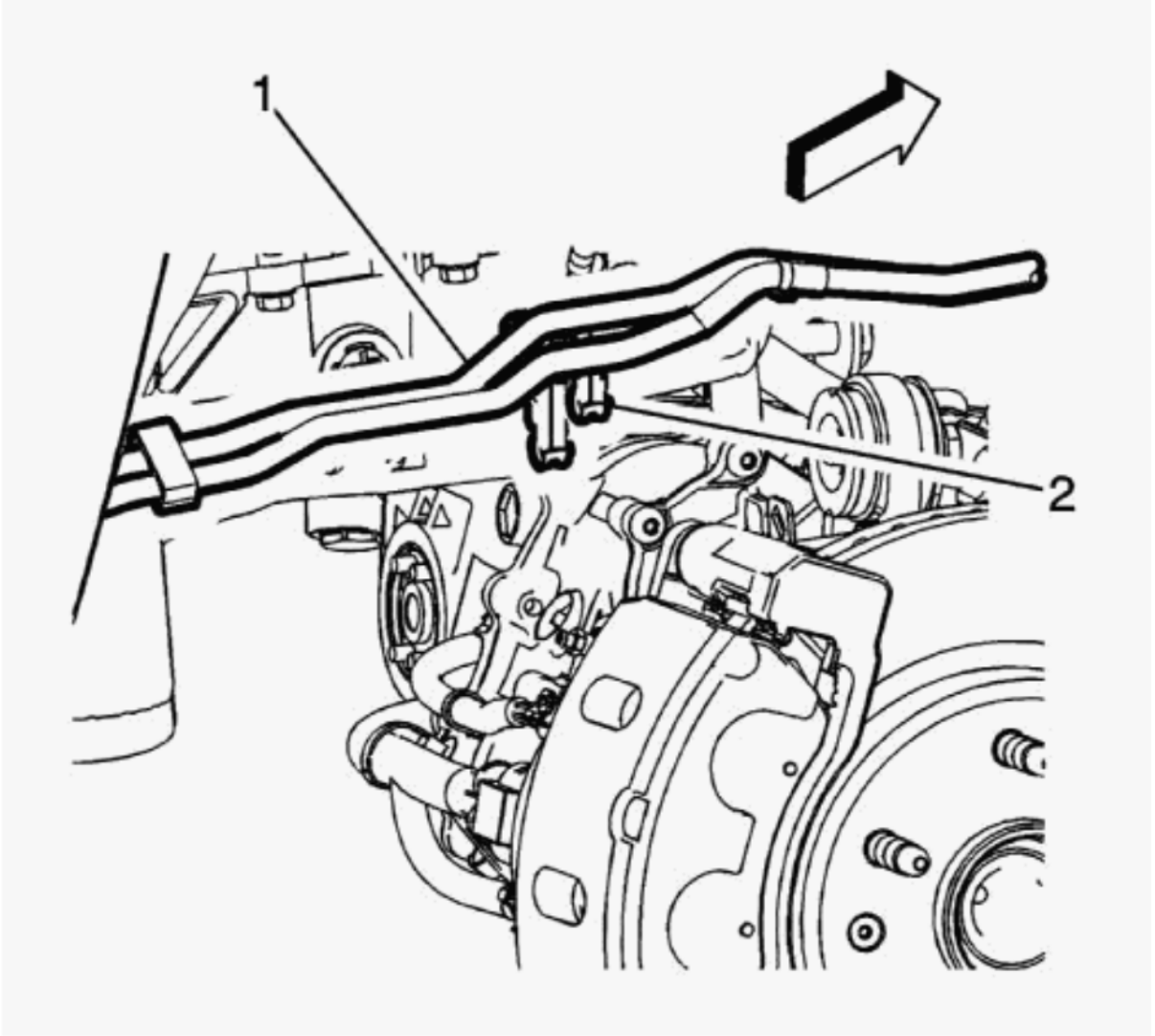


Fig. 81: Transmission Fluid Cooler Inlet And Outlet Pipe
Courtesy of GENERAL MOTORS COMPANY

16. Remove the transmission fluid cooler inlet and outlet pipe (1) from the transmission fluid cooler pipe clip (2).

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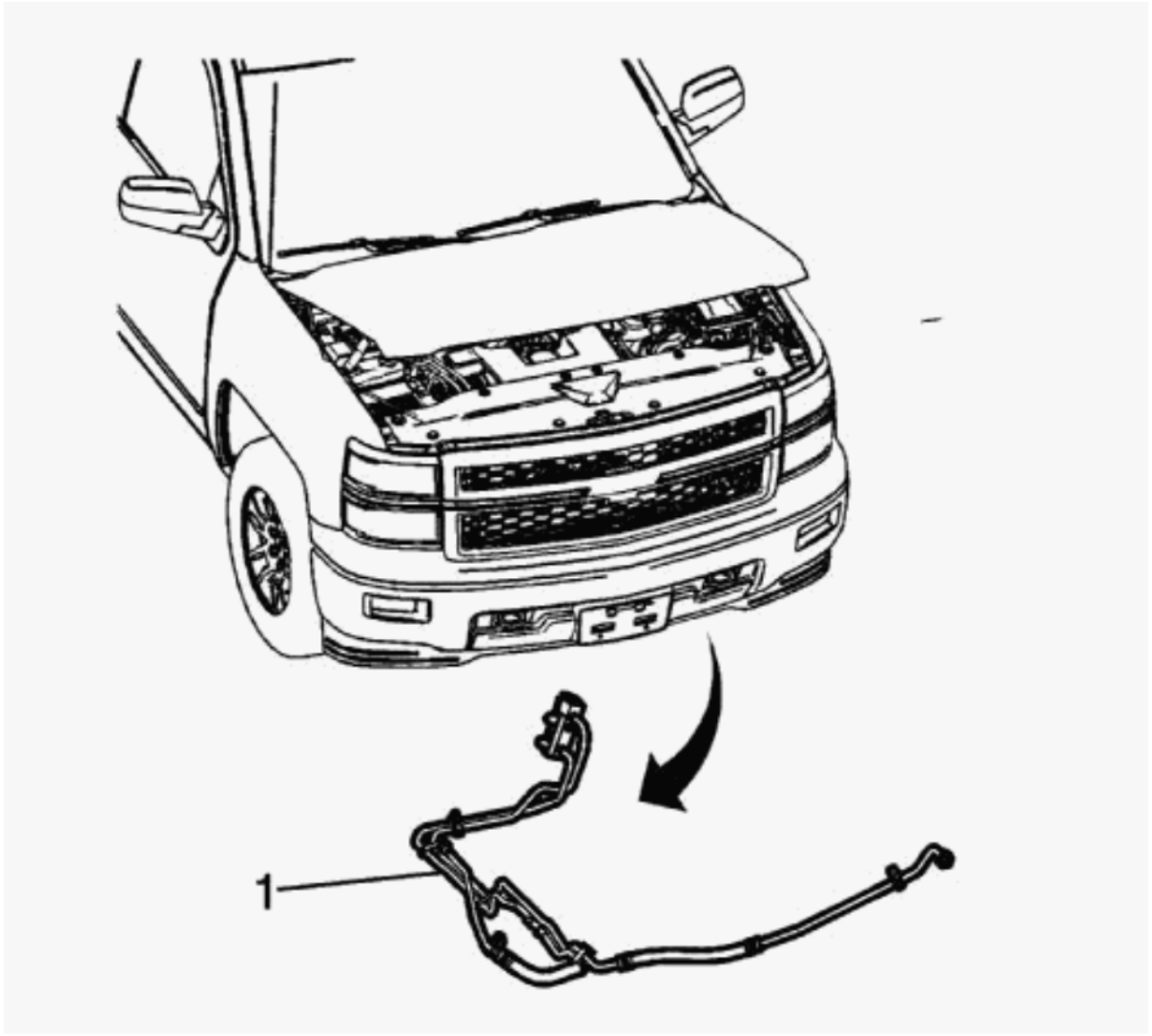


Fig. 82: Transmission Fluid Cooler Inlet And Outlet Pipe
Courtesy of GENERAL MOTORS COMPANY

17. Remove the transmission fluid cooler inlet and outlet pipe (1) from the vehicle.

Installation Procedure

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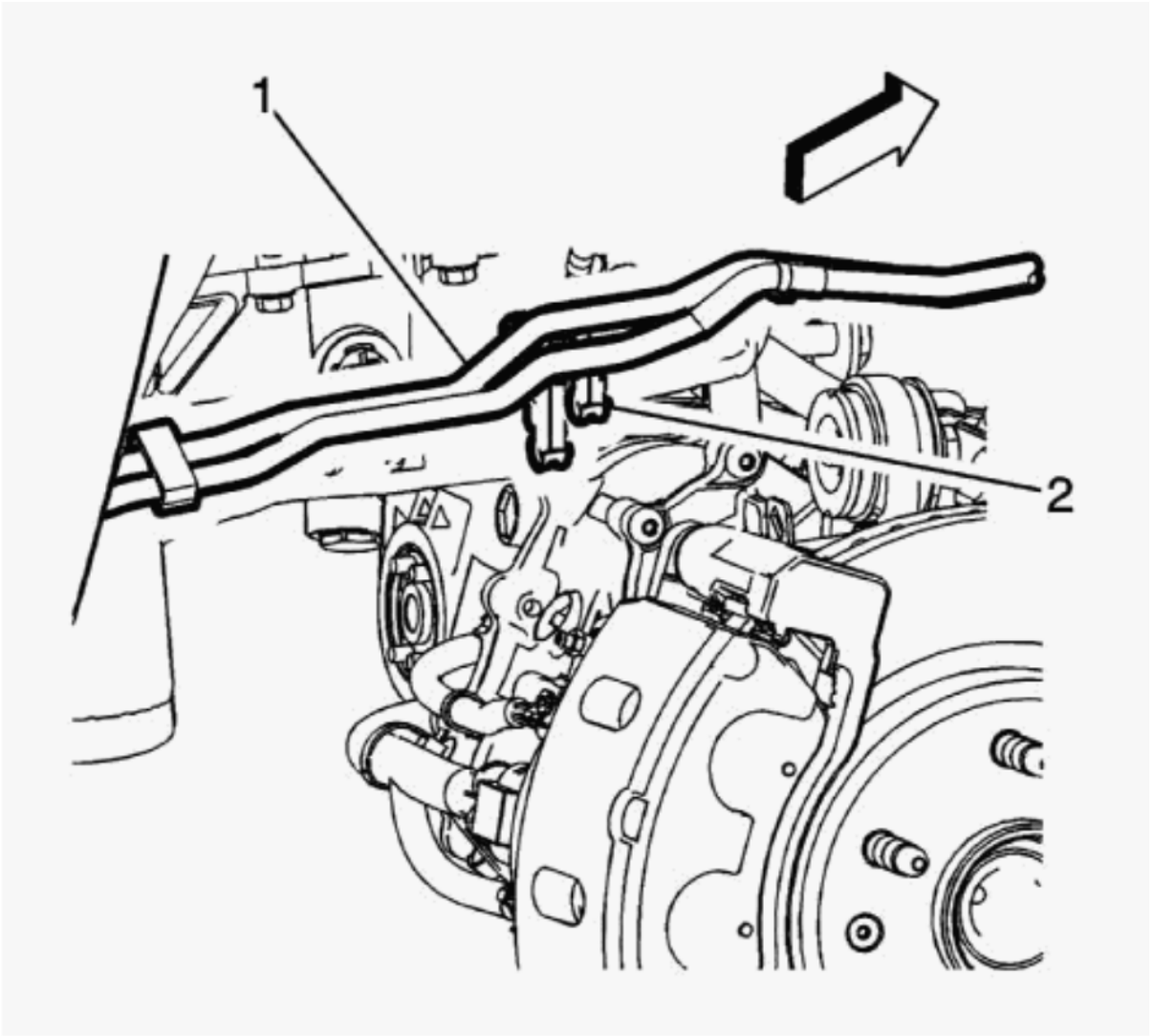


Fig. 83: Transmission Fluid Cooler Inlet And Outlet Pipe
Courtesy of GENERAL MOTORS COMPANY

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

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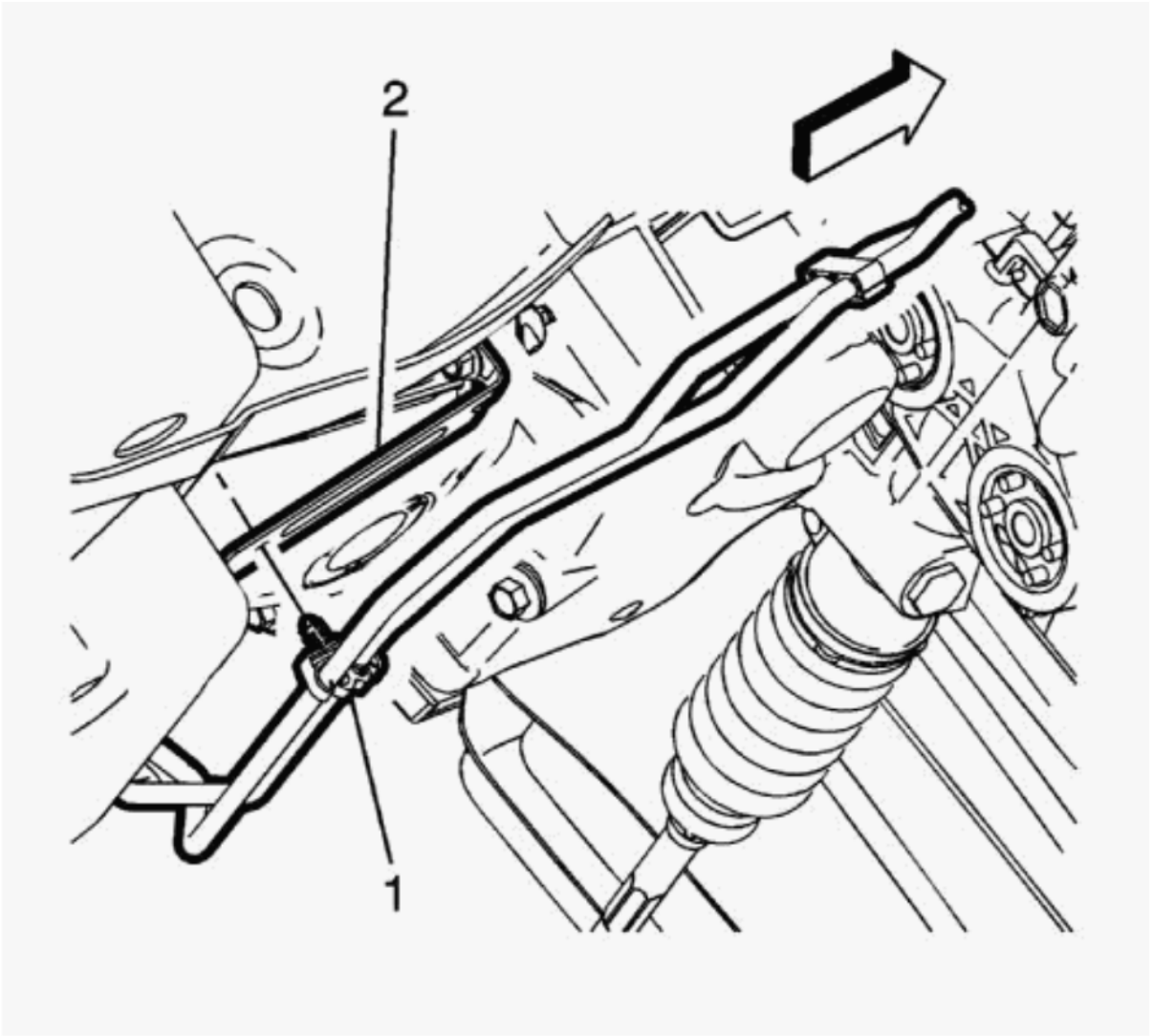


Fig. 84: Transmission Fluid Cooler Inlet And Outlet Pipe And Retainer
Courtesy of GENERAL MOTORS COMPANY

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

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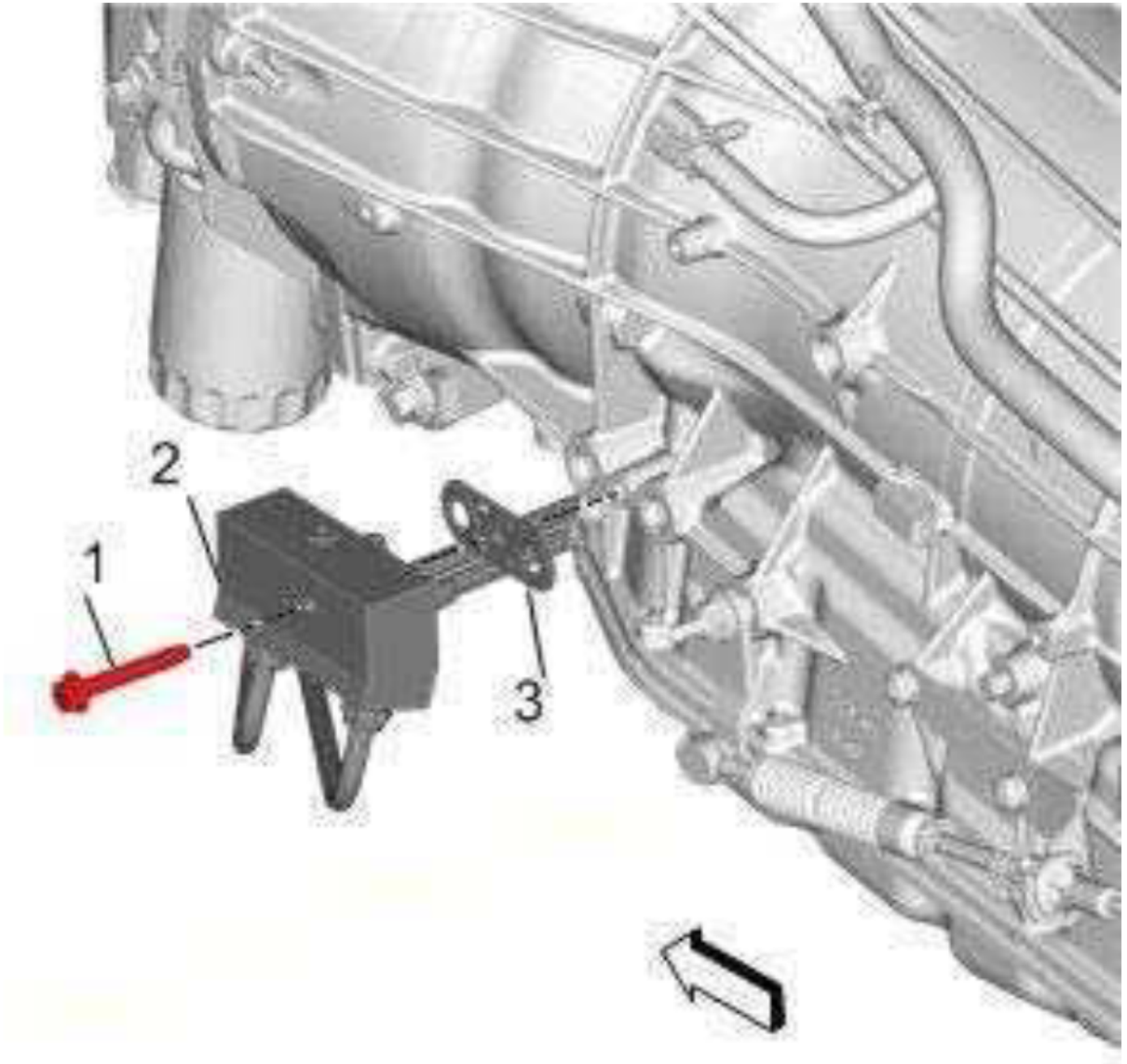


Fig. 85: Oil Cooler Lines
Courtesy of GENERAL MOTORS COMPANY

CAUTION: **Refer to Fastener Caution .**

4. Install a NEW transmission fluid cooler pipe fitting seal (3) to the transmission fluid cooler inlet and outlet pipe.

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5. Install the transmission fluid cooler inlet and outlet pipe (2) to the transmission.
6. Install the transmission fluid cooler inlet and outlet pipe bolt (1) to the transmission and tighten to 22 N.m (16 lb ft).
7. Install the steering gear skid shield. **Steering Gear Skid Shield Replacement**
8. Lower the vehicle. **Lifting and Jacking the Vehicle**

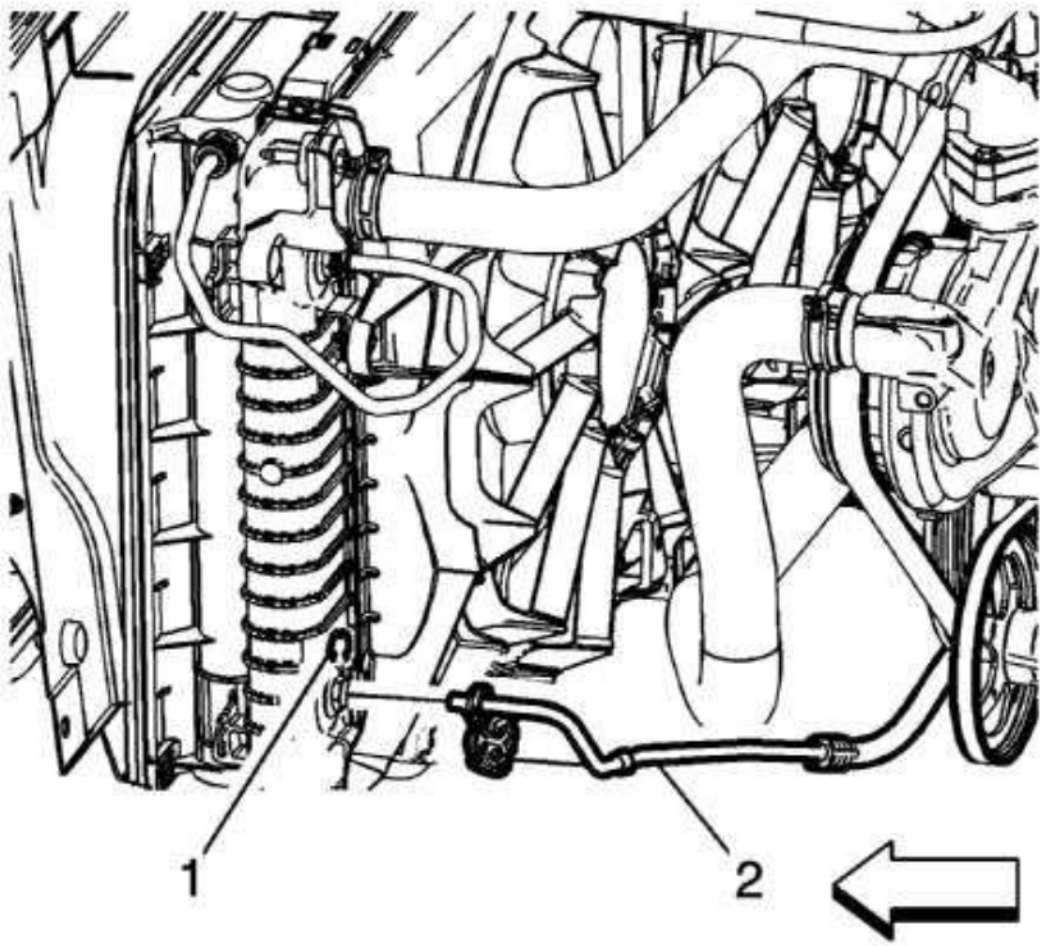


Fig. 86: Transmission Fluid Cooler Inlet And Outlet Pipe Retainer
Courtesy of GENERAL MOTORS COMPANY

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9. Install the transmission fluid cooler inlet and outlet pipe (2) to the radiator.
10. Clip the transmission fluid cooler inlet and outlet pipe to the engine coolant fan rear shroud.

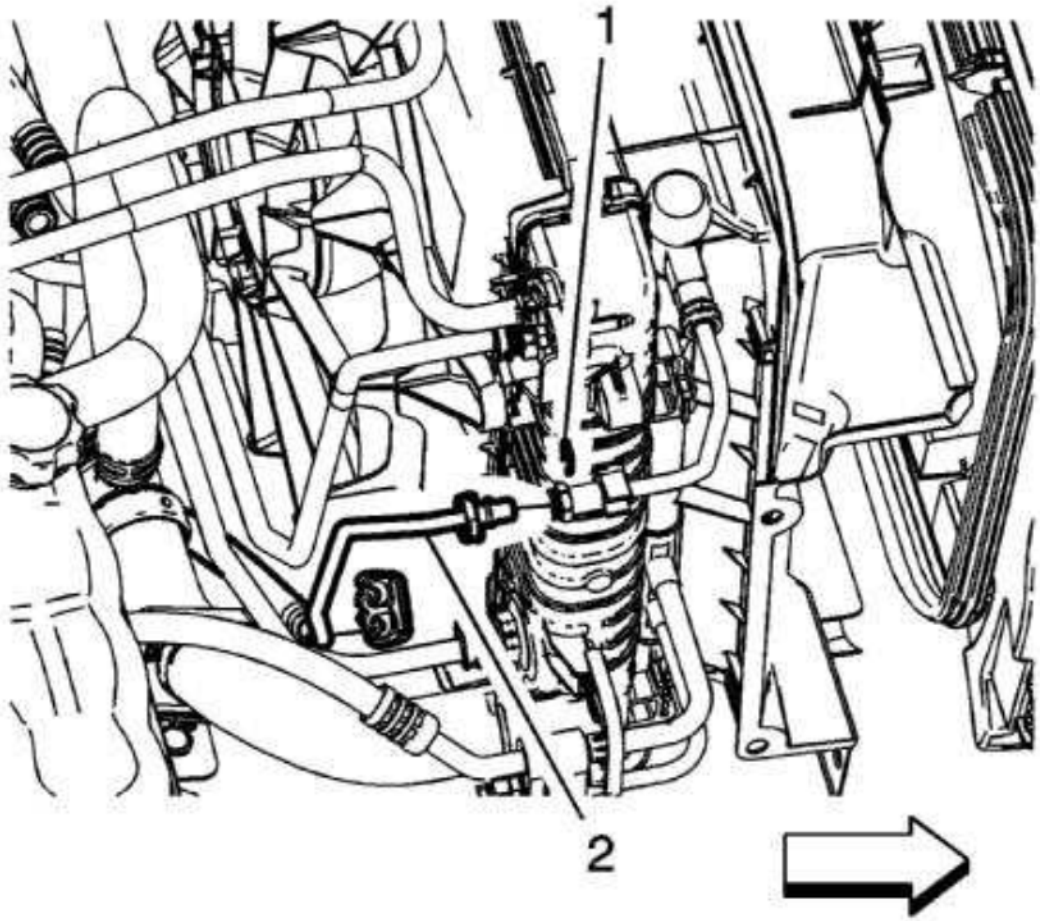


Fig. 87: Transmission Fluid Cooler Inlet And Outlet Pipe Retainer
Courtesy of GENERAL MOTORS COMPANY

11. Install the transmission fluid cooler inlet and outlet pipe (2) from the transmission fluid auxiliary cooler outlet pipe.
12. Clip the transmission fluid cooler inlet and outlet pipe to the engine coolant fan rear shroud.

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13. Install the air cleaner assembly. **Air Cleaner Assembly Replacement**
14. Inspect the transmission fluid level. **Transmission Fluid Level and Condition Check**
15. Inspect for transmission fluid leaks.

SPECIAL TOOLS AND EQUIPMENT

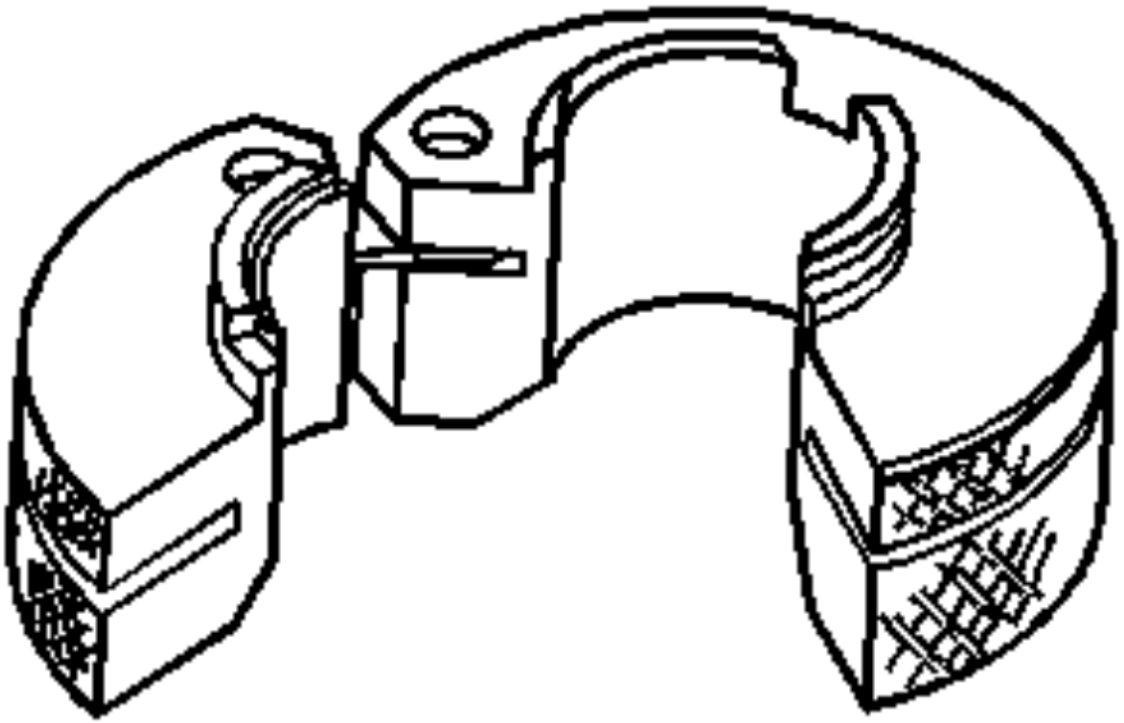
SPECIAL TOOLS

Illustration	Tool Number/ Description

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

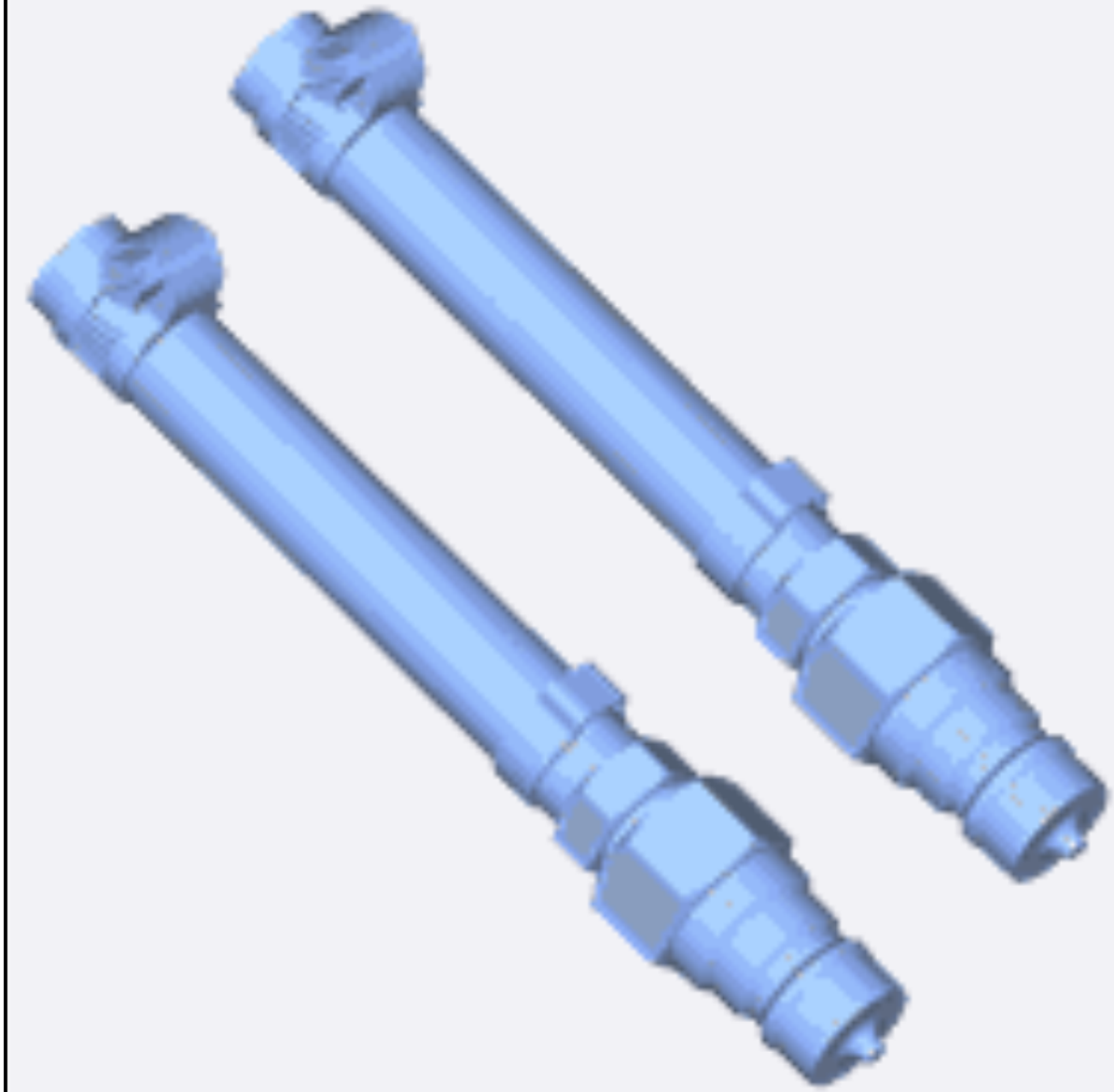
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Illustration	Tool Number/ Description
	DT 41623-B J 41623-B Cooler Quick Connect Tool

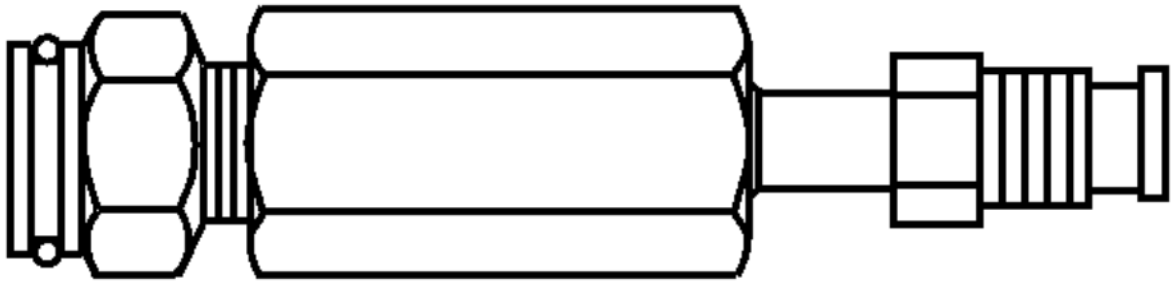
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Illustration	Tool Number/ Description
	DT 45096 J 45096 Transmission Oil Cooling System Flush and Flow Test Tool

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Illustration	Tool Number/ Description
	DT 45096-30 J 45096-30 Cooler Flushing Adapter

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Illustration	Tool Number/ Description
	J 35944-200A Cooler Flushing Adapter

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