

GENERAL PROCEDURES

TRANSMISSION FLUID COOLER - BACKFLUSHING AND CLEANING

Material

MATERIAL SPECIFICATION

Item	Specification
MERCON® V Automatic Transmission Fluid XT-5-QM	MERCON® V

CAUTION: Do not use any supplemental transmission fluid additives or cleaning agents. The use of these products could cause internal transmission components to fail; this will effect the operation of the transmission.

1. Conduct backflushing with a suitable torque converter/fluid cooler cleaner. Test your equipment to make sure that a vigorous fluid flow is present before proceeding. Install a new filter in the flush equipment if flow is weak or contaminated.
2. If equipped, remove and discard the transmission fluid in-line filter.



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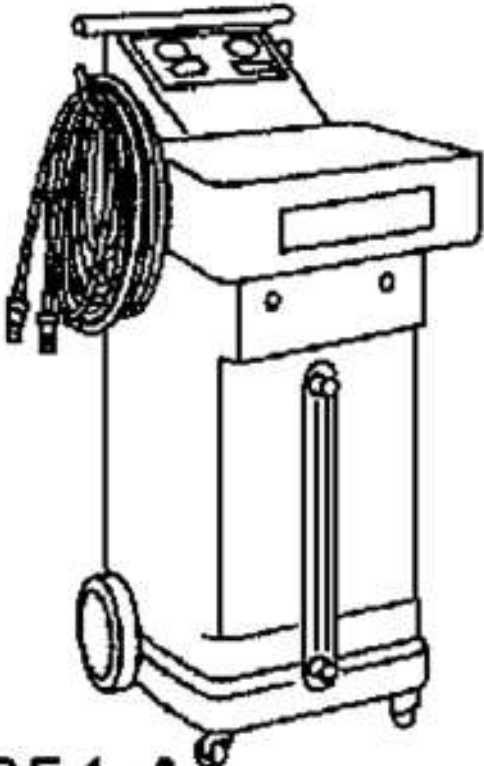
Fig. 66: Identifying Fluid In-Line Filter
Courtesy of FORD MOTOR CO.

3. Remove the transmission fluid cooler bypass valve and install rubber hoses in its place.
4. To aid in attaching the cleaner to the transmission steel cooler lines, connect 2 additional rubber hoses to the transmission end of the steel transmission cooler lines as described below.
 - Connect the cleaner tank pressure line to the steel transmission cooler return line (longest line).
 - Connect a tank return hose to the steel transmission cooler pressure line (shorter line). Place the outlet end of this hose in the tank reservoir.
5. Turn on the pump and allow the fluid to circulate a minimum of 5 minutes (cycling switch on and off will help dislodge contaminants in cooler system).
6. Switch off the pump and disconnect the pressure hose from the transmission cooler return line.
7. Use compressed air to blow out the cooler(s) and lines (blow air into the transmission cooler return line) until all fluid is removed.
8. Remove the rubber return hose from the remaining steel cooler line.
9. Remove the rubber hoses and reinstall the transmission fluid cooler bypass valve.

TRANSMISSION FLUID DRAIN AND REFILL

Special Tool(s)

SPECIAL TOOL(S) SPECIFICATION

 <p>ST2654-A</p>	<p>Automatic Transmission Flush and Fill Machine 211-00018 Automatic Transmission Flush and Fill Machine 199-00010 or equivalent</p>
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Material

MATERIAL SPECIFICATION

Item	Specification
MERCON® V Automatic Transmission Fluid XT-5-QM	MERCON® V

Draining, all vehicles using a suitable flush and fill machine

CAUTION: Always refer to the instructions supplied with the flush and fill machine.

NOTE: Draining fluid from the transmission by removing only the fluid pan is acceptable for normal or severe duty fluid maintenance.

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to **JACKING & LIFTING**.
2. Use a suitable flush and fill machine to change the fluid.
3. When connecting the flush and fill machine, connect the machine to the fluid cooler tube after the

fluid cooler on the cooler return line. This will help remove any foreign material trapped in the fluid coolers.

Refill

1. Use only clean automatic transmission fluid.
2. Once the fluid exchange has been completed, disconnect the flush and fill machine. Reconnect any disconnected fluid cooler tubes.
3. With the engine running and the transmission at normal operating temperature 66-77°C (150-170°F), check and adjust the transmission fluid level and check for any leaks. If fluid is needed, add fluid in increments of 0.24-liter (0.5-pint) until the correct level is achieved (fluid should be in the cross-hatched area of the fluid level indicator).

Draining, all vehicles not using a suitable flush and fill machine

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to **JACKING & LIFTING**.
2. Loosen the transmission fluid pan bolts and allow the fluid to drain.

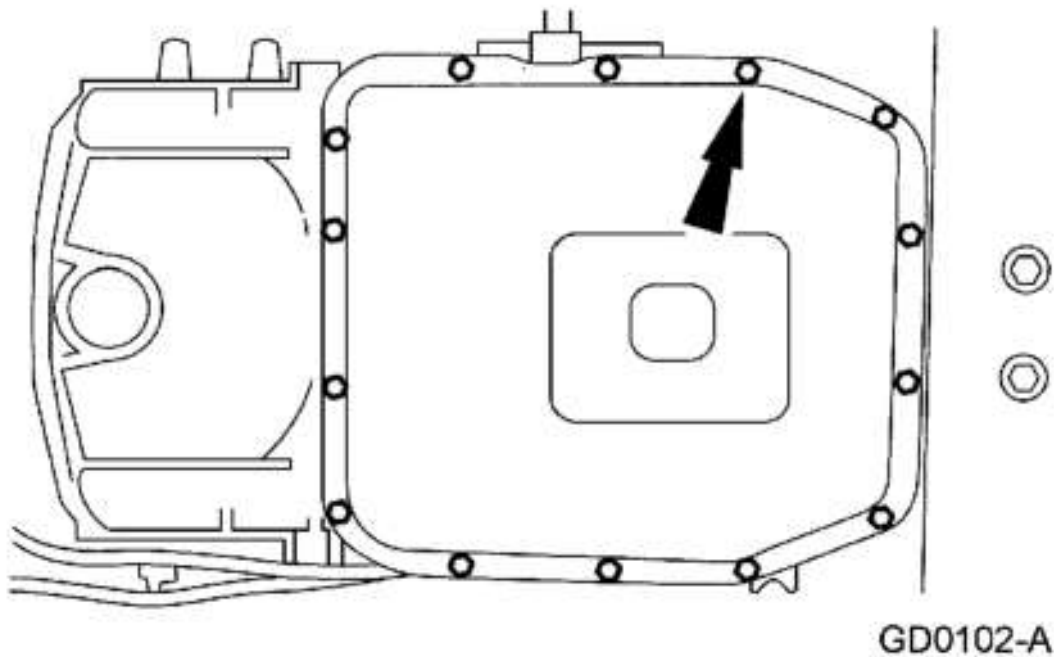


Fig. 67: Locating Transmission Fluid Pan Bolts
Courtesy of FORD MOTOR CO.

3. After the fluid has drained, remove the transmission fluid pan.

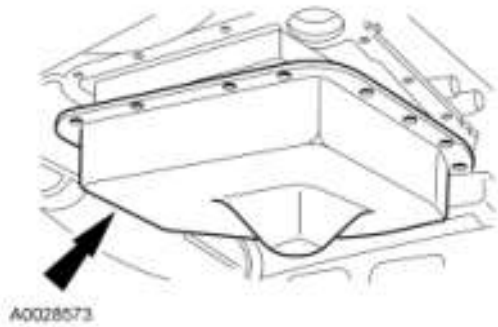


Fig. 68: Removing Transmission Fluid Pan
Courtesy of FORD MOTOR CO.

4. Do not remove the fluid filter. It is not necessary to change the fluid filter during a normal maintenance fluid change.
5. Clean and inspect the transmission fluid pan, transmission fluid pan gasket and magnet.

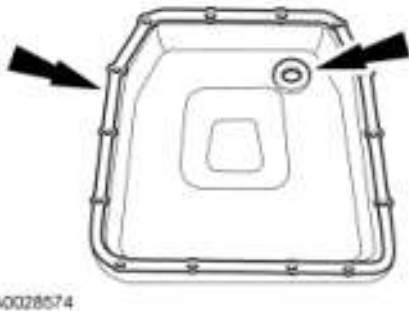


Fig. 69: Cleaning Transmission Fluid Pan, Transmissino Fluid Pan Gasket & Magnet
Courtesy of FORD MOTOR CO.

6. Thoroughly flush the cooler tubes. For additional information, refer to **TRANSMISSION FLUID COOLER - BACKFLUSHING AND CLEANING.**

Refill

1. Position the magnet into the transmission fluid pan.

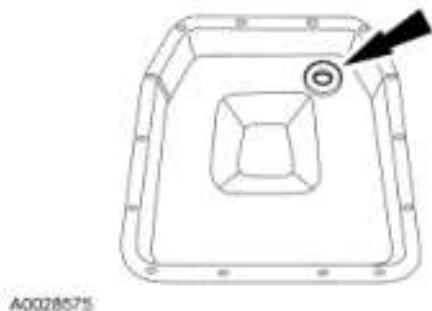


Fig. 70: Positioning Magnet Into Transmission Fluid Pan
Courtesy of FORD MOTOR CO.

NOTE: The fluid pan gasket is reusable, clean and inspect for damage. If not

damaged, the gasket should be reused.

2. Install the fluid pan and gasket.
 1. Position the fluid pan with the gasket in place.
 2. Install the bolts.

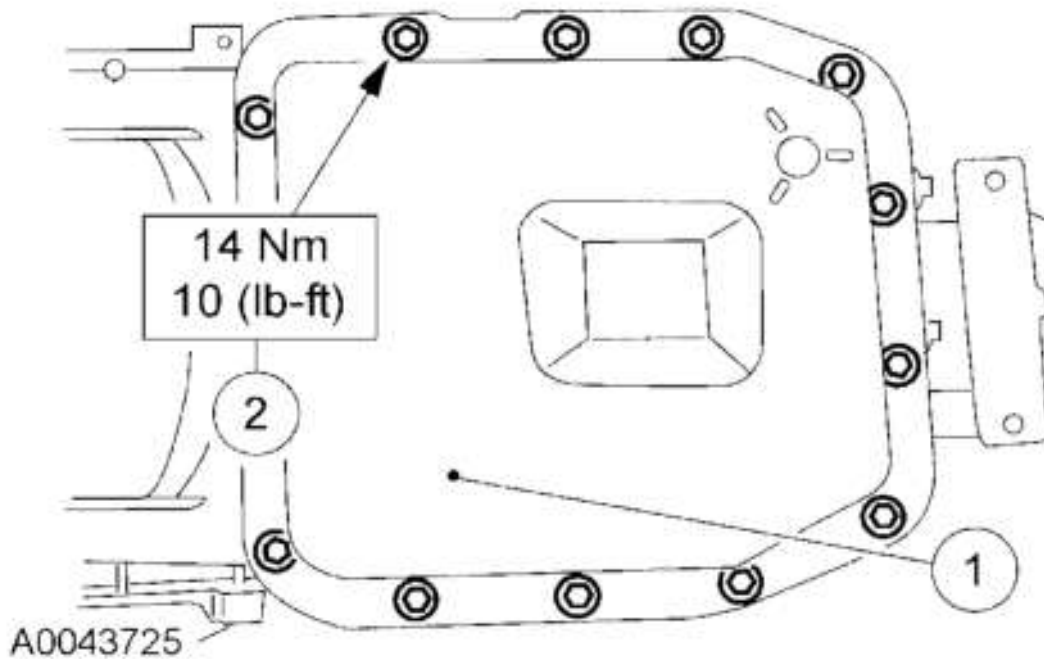


Fig. 71: Installing Fluid Pan & Gasket
Courtesy of FORD MOTOR CO.

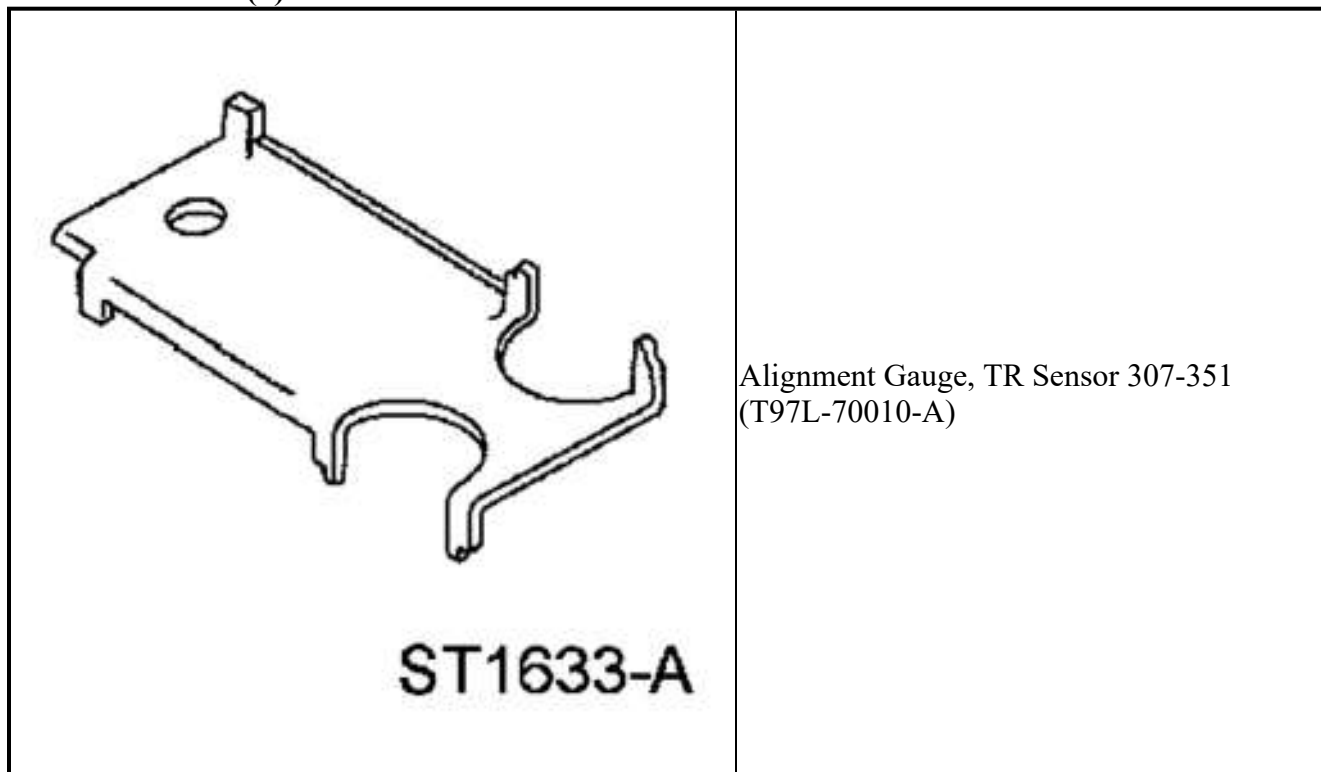
CAUTION: The use of any other transmission fluid can result in the transmission failing to operate in a normal manner or transmission failure.

3. Fill the transmission.
 - Add 4.7 liters (5 qts) of clean automatic transmission fluid to the transmission through the fluid filler tube.
4. Start the engine. Move the transmission range selector lever through all the gear ranges, checking for engagements.
5. With the engine running and the transmission at normal operating temperature 66-77°C (150-170°F), check and adjust the transmission fluid level and check for any leaks. If fluid is needed, add fluid in increments of 0.24-liter (0.5-pint) until the correct level is achieved (fluid should be in the cross-hatched area of the fluid level indicator).

TRANSMISSION RANGE (TR) SENSOR ADJUSTMENT

Special Tool(s)

SPECIAL TOOL(S) SPECIFICATION



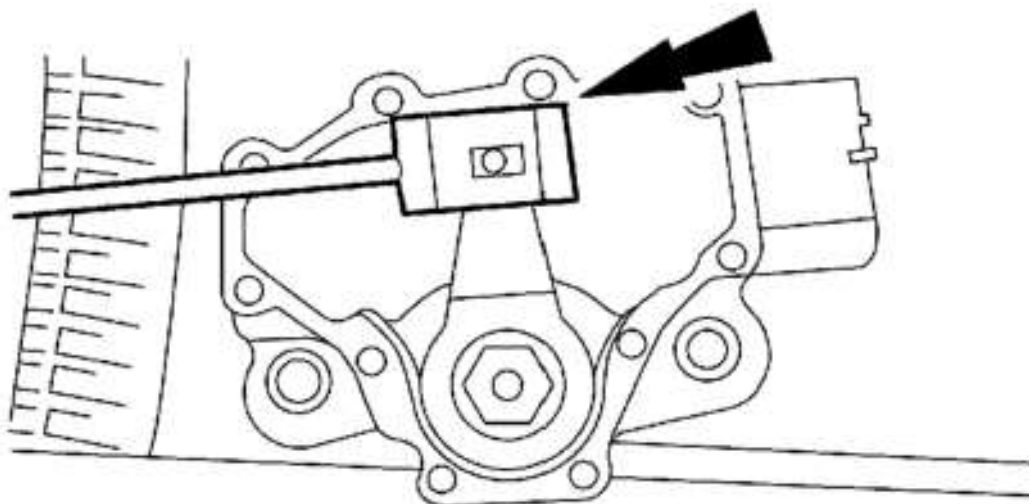
Material

MATERIAL SPECIFICATION

Item	Specification
High Strength Threadlocker TA-26	WSK-M2G351-A6

1. With the vehicle in NEUTRAL, position it on a hoist. For additional information, refer to **JACKING & LIFTING** .

CAUTION: Do not pry on the swivel tube to disconnect the transmission shift linkage.



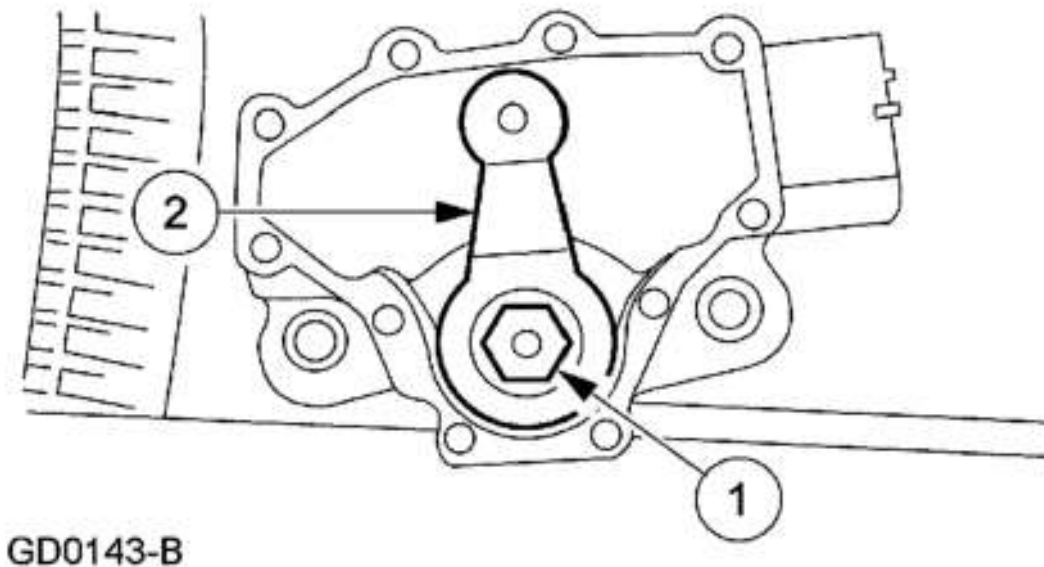
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Fig. 72: Disconnecting Manual Lever Shift Control Cable
Courtesy of FORD MOTOR CO.

2. Disconnect the manual lever shift control cable.

**CAUTION: Discard the outer manual control lever shaft nut. Do not reuse.
The old nut will not retain the torque specification.**

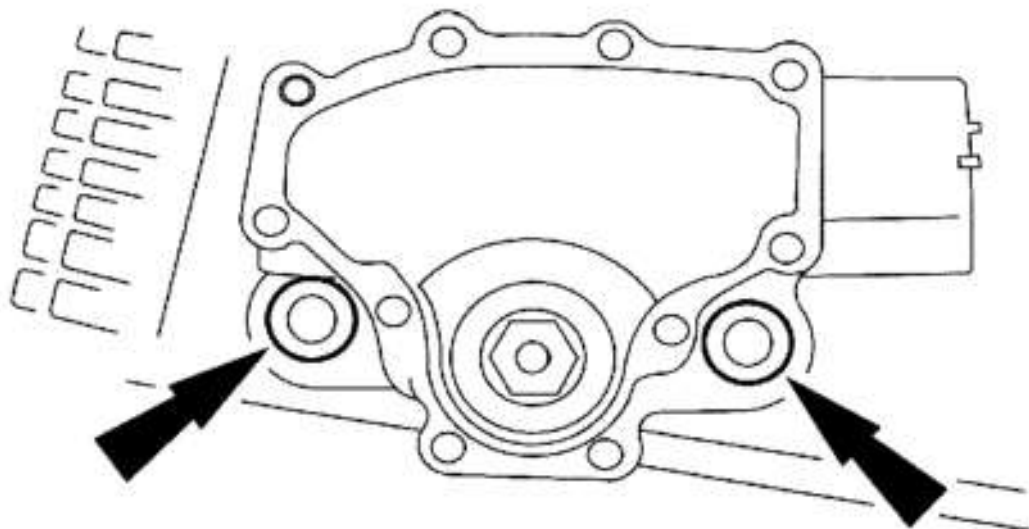
3. Remove the manual control lever.
 1. Remove the nut.
 2. Remove the lever.



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Fig. 73: Removing Nut And Manual Control Lever
Courtesy of FORD MOTOR CO.

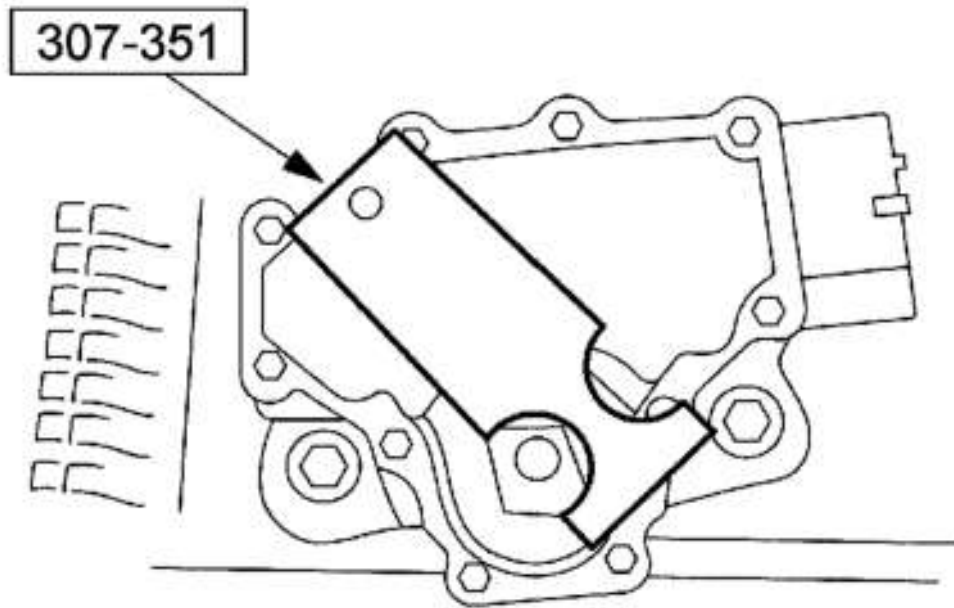
4. Loosen the digital TR sensor bolts.



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Fig. 74: Locating Digital TR Sensor Bolts
Courtesy of FORD MOTOR CO.

NOTE: The manual lever must be in the NEUTRAL position.



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Fig. 75: Aligning Digital TR Sensor Slots
Courtesy of FORD MOTOR CO.

5. Using the special tool, align the digital TR sensor slots. The tool is designed to fit snug.

CAUTION: Tightening one screw before tightening the other may cause the sensor to bind or become damaged.

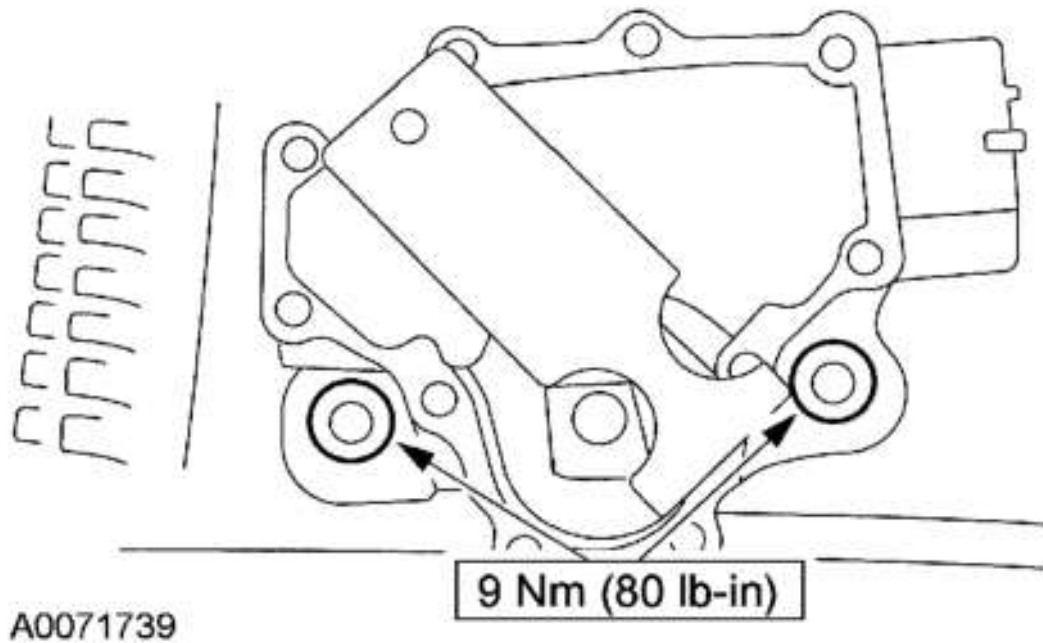


Fig. 76: Identifying Digital TR Sensor Bolts - With Torque Specifications
Courtesy of FORD MOTOR CO.

6. Using the special tool, align the digital TR sensor and tighten the screws in an alternating sequence.
7. Install the manual control lever.
 1. Position the manual control lever.
 2. Install a new manual lever shaft outer nut.

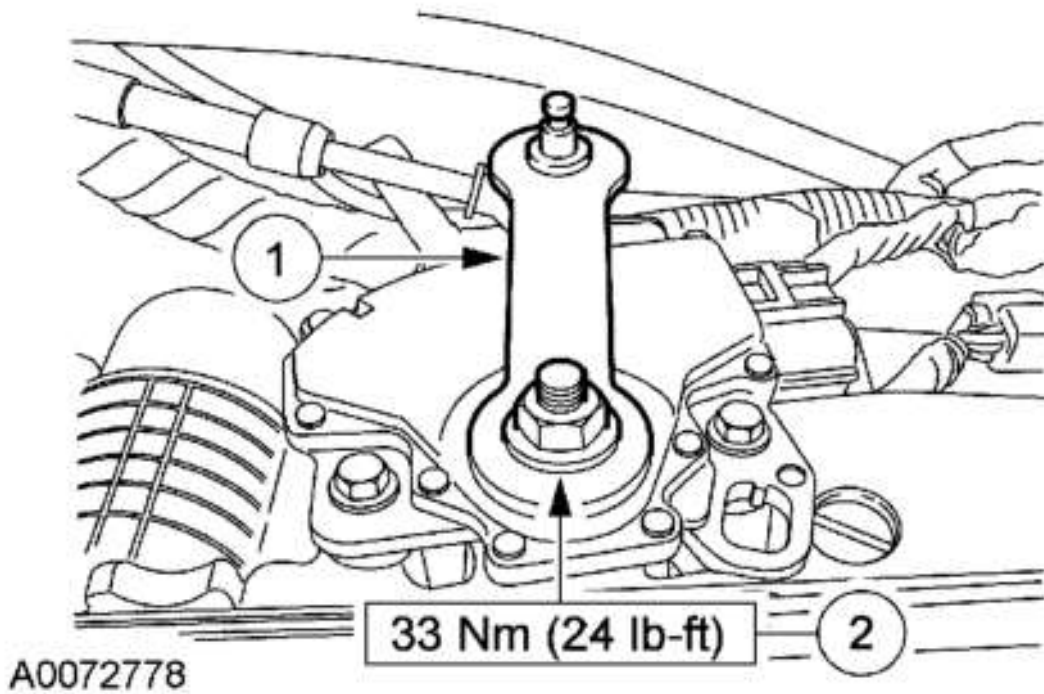
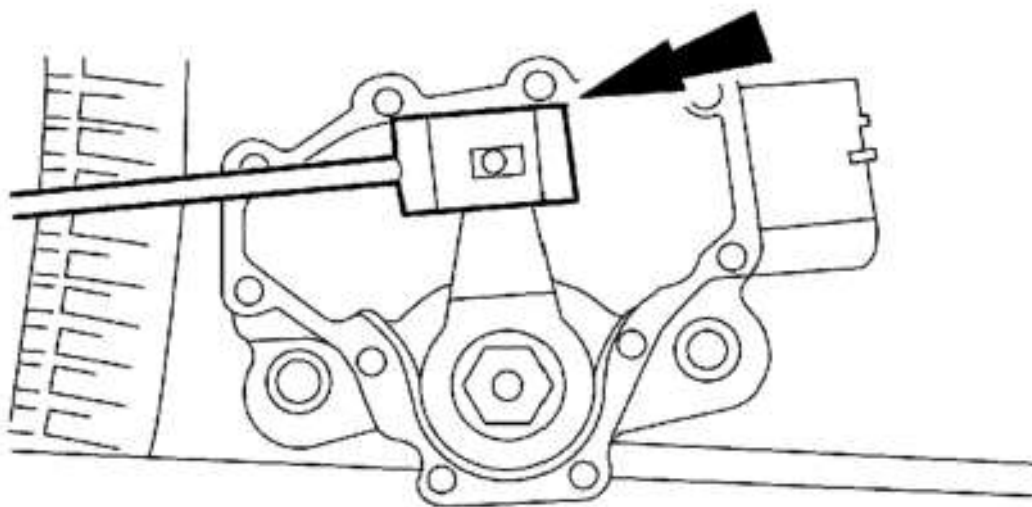


Fig. 77: Identifying Manual Control Lever - With Torque Specification
Courtesy of FORD MOTOR CO.

8. With the manual lever in overdrive connect the shift lever control cable.



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Fig. 78: Connecting Shift Lever Control Cable

Courtesy of FORD MOTOR CO.

9. Lower the vehicle.

TORQUE CONVERTER

1. A new or remanufactured torque converter must be installed if one or more of the following statements is true:
 - A torque converter malfunction has been determined based on complete diagnostic procedures.
 - Converter stud or studs, impeller hub or bushing are damaged.
 - Discoloration (due to overheating).
 - Evidence of transmission assembly or fluid contamination due to the following transmission or converter failure Modes:
 - Major metallic failure.
 - Multiple clutches or clutch plate failures.
 - Sufficient component wear which results in metallic contamination.
 - Internal torque converter contamination present. For additional information. Refer to Torque Converter Contamination Inspection .

TORQUE CONVERTER CONTAMINATION INSPECTION

CAUTION: Do not use water-based cleaners or mineral spirits to clean or flush the torque converter or transmission damage will occur. Use only clean automatic transmission fluid designated for the transmission and converter being serviced.

CAUTION: The torque converter drain plug and seal are not reusable. If equipped, discard the drain plug and seal, then install a new drain plug assembly.

1. If a new or remanufactured torque converter is not being installed, the following steps must be completed.
2. With the torque converter on a bench, pour a small amount of transmission fluid from the torque converter onto an absorbent white tissue or through a paper filter and examine the fluid.
3. Observe the color and odor of the fluid. The fluid should be red, not brown or black. Odor may indicate an overheating condition such as clutch disc or band failure.
4. Examine the stain on the tissue for evidence of particles (spec of any kind). Examine the fluid level indicator for signs of antifreeze (gum or varnish). If particles are present in the fluid or there is evidence of engine coolant or water, a new torque converter must be installed.
5. If there are no particles or contamination present, drain the remainder of the transmission fluid from the torque converter.
6. Add 1.9 liter (2 quarts) of clean automatic transmission fluid into the converter and agitate by hand.
7. Thoroughly drain the fluid.