

# AUTOMATIC TRANSMISSIONS

## Removal & Installation - Excursion & F250-F550 Super Duty Pickups

### APPLICATION

#### AUTOMATIC TRANSAXLE/TRANSMISSION APPLICATIONS

Application	Trans. Model
All Models	4R100 Or 5R110W

**NOTE:** The TorqShift transmission is also referred to as the 5R110W.

**NOTE:** For removal and installation of manual transmission, see MANUAL TRANSMISSION .

### REMOVAL & INSTALLATION (AUTOMATIC TRANSAXLE/TRANSMISSION)

**WARNING:** Deactivate air bag system before performing any service operation. For 2003 models, see AIR BAG RESTRAINT SYSTEMS . For 2004 models, see AIR BAG RESTRAINT SYSTEMS . On all models, do not apply electrical power to any component on steering column without first deactivating air bag system. Air bag may deploy.

**WARNING:** When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. Before disconnecting battery, see COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION.

#### 4R100

#### Removal

**NOTE:** Numbers in parenthesis refer to numbers in illustration.

1. Position the vehicle on a hoist. Place the transmission in Neutral.

**NOTE:** All gasoline vehicles will have new adaptive shift strategies. Whenever the vehicle's battery has been disconnected for any type of service or repair, the strategy parameters that are stored in the Keep Alive Memory (KAM) will be lost. The strategy will start to relearn once the battery is reconnected and the vehicle is driven. This is a temporary condition and will return to normal operating condition once the Powertrain Control Module (PCM) relearns all the parameters from the driving conditions. There is no set time frame for this process. If a concern is present during downshifts or converter clutch apply, it is not the fault of the shift strategy and will require diagnosis as outlined in

**the workshop manual. The customer needs to be notified that they may experience slightly different upshifts (either soft or firm) and that this is a temporary condition and will eventually return to normal operating condition.**

2. Disconnect the battery ground cable.
3. On 4x4 vehicles, remove the transfer case assembly. See **REMOVAL & INSTALLATION - EXCURSION, F450 & F550 SUPER DUTY** article.
4. On 4x2 vehicles, remove the driveshaft. See **REMOVAL & INSTALLATION** in **DRIVE SHAFTS - EXCURSION & F250-F550** article.

**CAUTION: Mixing the 4x2 and the 4x4 style transmission fluid filters and transmission pan assembly components can cause transmission damage.**

5. On all vehicles, if transmission disassembly is required, drain the transmission fluid. For vehicles equipped with a fluid pan drain plug, remove the drain plug and allow the fluid to drain. Install the drain plug. On vehicles not equipped with a fluid pan drain plug, remove the transmission fluid pan and gasket (do not discard the gasket unless damaged, this is a reusable gasket). Apply a light coat of petroleum jelly to hold the gasket to the fluid pan. Position the gasket onto the cleaned fluid pan. Make sure the magnet is positioned over the dimple in the fluid pan. Install the correct pan with gasket for this application. Alternately tighten the bolts.

**CAUTION: Make sure securing straps or the transmission jack adapter do not touch the Cooler Bypass Valve (CBV). Do not use the CBV as a handle. Damage to the CBV can cause a leak.**

6. Install a suitable transmission jack and support the transmission.
7. On 4x4 vehicles, remove the jack stand after installing a suitable transmission jack.
8. On 4x2 Excursion, disconnect the wire loom from the crossmember. See **Fig. 1**. Remove the crossmember bolts. Remove the crossmember bolts. Remove the transmission mount nuts and the crossmember.
9. On F-Super Duty and 4x2 vehicles, remove the right crossmember nuts. Remove the left crossmember nuts. Remove the nuts and the crossmember.
10. On all 4x2 vehicles, remove the transmission mount.
11. On vehicles equipped with a transmission-mounted parking brake, disconnect the parking brake lever return spring from the parking brake lever (1). Apply penetrating oil to the adjusting clevis, jam nut and the threads on the front parking brake cable and conduit (2). See **Fig. 2**. To disconnect the front parking brake cable and conduit, loosen the jam nut (1). Remove the clevis locking pin (2). Remove the clevis pin (3). Remove the adjusting clevis from the parking brake lever (4). See **Fig. 3**. Compress the retainer, and remove the front parking brake cable and conduit from the cable bracket. See **Fig. 4**.

**NOTE: If the vehicle is equipped with a power take-off unit, all or part of the PTO unit will need to be removed.**

12. On all vehicles, disconnect the shift cable from the transmission. Disconnect the shift cable from the manual lever. Remove the shift cable bracket from the transmission and position aside. Disconnect the digital Transmission Range (TR) sensor connector and the wire loom from the shift cable bracket.

Disconnect the solenoid body connector. See **Fig. 5**. Disconnect the Turbine Shaft Speed (TSS) sensor and the Output Shaft Speed (OSS) sensor. Remove the wiring harness from the transmission and position aside.

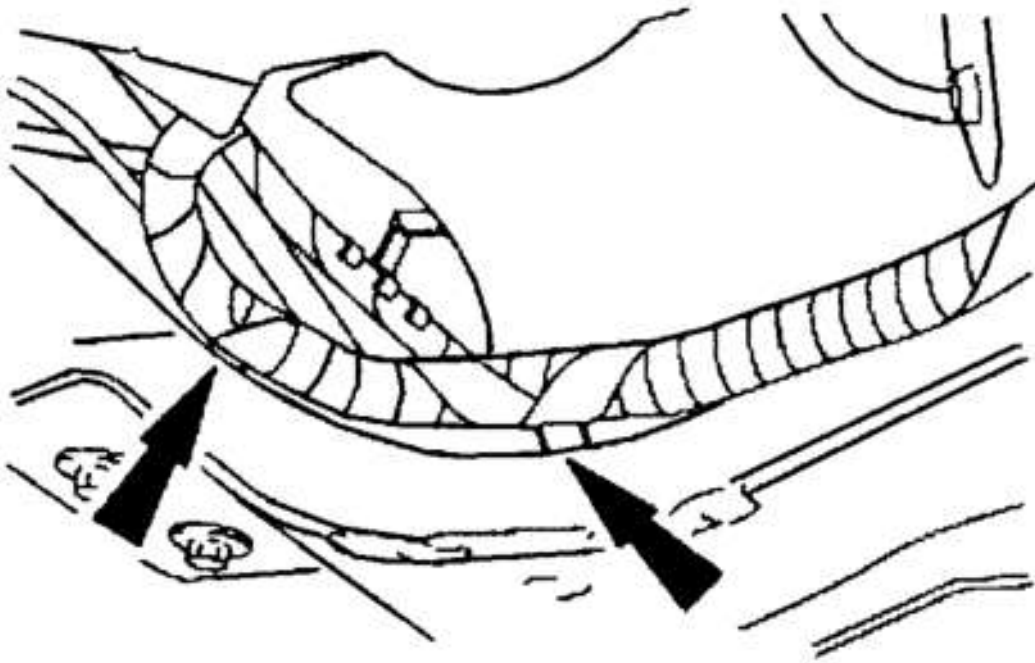
13. On gasoline engines, remove the bolts and remove the inspection plate. Remove the starter motor. Remove the cylinder block opening cover. See **Fig. 6**. Remove and discard the torque converter-to-flexplate nuts. 5.4L engine has 4 nuts. 6.8L engine has 6 nuts.
14. On diesel engines, remove the starter. Remove the bolts and remove the inspection cover. Remove and discard the torque converter-to-flexplate nuts.
15. On all vehicles, position a suitable drain pan and disconnect the transmission fluid cooler tubes from the cooler bypass valve. To remove the transmission, remove the transmission-to-engine mounting bolts (6 for diesel or 7 for gasoline). Gently rock the transmission side-to-side to disengage it from the locator dowels. Move the transmission and the transmission jack rearward to clear the engine flexplate.

**WARNING: The torque converter is heavy and can result in injury if it falls out of the transmission. Secure the torque converter in the transmission. If the torque converter is dropped, a new one must be installed.**

16. Using the special tool, hold the torque converter in place. See **Fig. 7**.

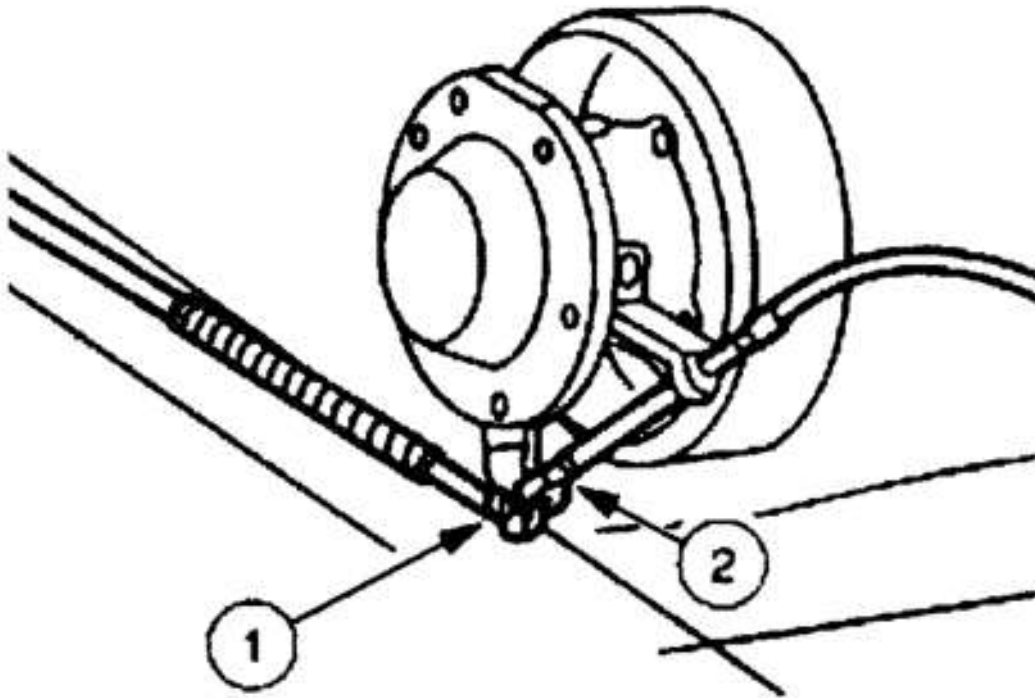
**CAUTION: Use care while removing the transmission to avoid obstructions. Do not use the cooler bypass valve as a handle. Damage to the cooler bypass valve assembly can occur or damage to the case can result. If a safety strap is being used to hold the transmission to the high-lift transmission jack, place the strap behind the Cooler Bypass Valve (CBV) to prevent damage to the cooler bypass valve.**

17. Lower the transmission out of the vehicle.
18. On vehicles equipped with a transmission-mounted parking brake, to remove the transmission-mounted parking brake, keep the parking brake vent in the upward position to prevent contamination of the brake shoes and linings. Remove the 6 bolts, parking brake assembly and the gasket from the extension housing. See **Fig. 8**. Discard the bolts and the gasket. Clean the mating surfaces.
19. On all vehicles, if the transmission is being overhauled or if installing a new transmission, carry out the transmission fluid cooler backflushing and cleaning. See **TRANSMISSION FLUID COOLER BACK FLUSHING & CLEANING** under LUBRICATION in SERVICING - BLACKWOOD, ECONOLINE, EXCURSION, EXPEDITION, "F" SERIES PICKUP & NAVIGATOR article.



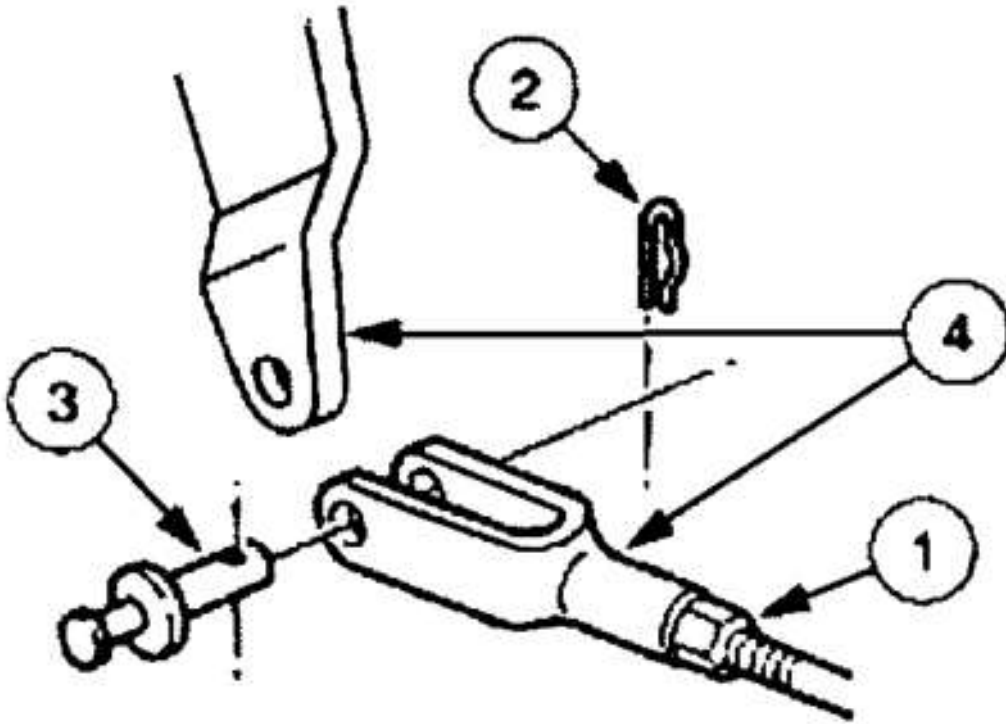
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**Fig. 1: Locating Wire Loom At Crossmember**  
Courtesy of FORD MOTOR CO.



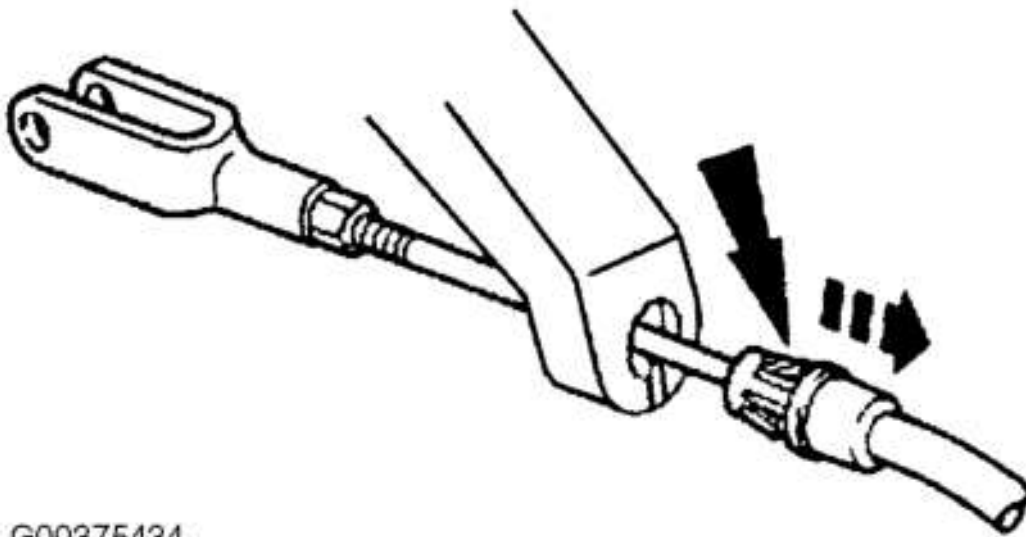
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**Fig. 2: Locating Lever Return Spring**  
Courtesy of FORD MOTOR CO.



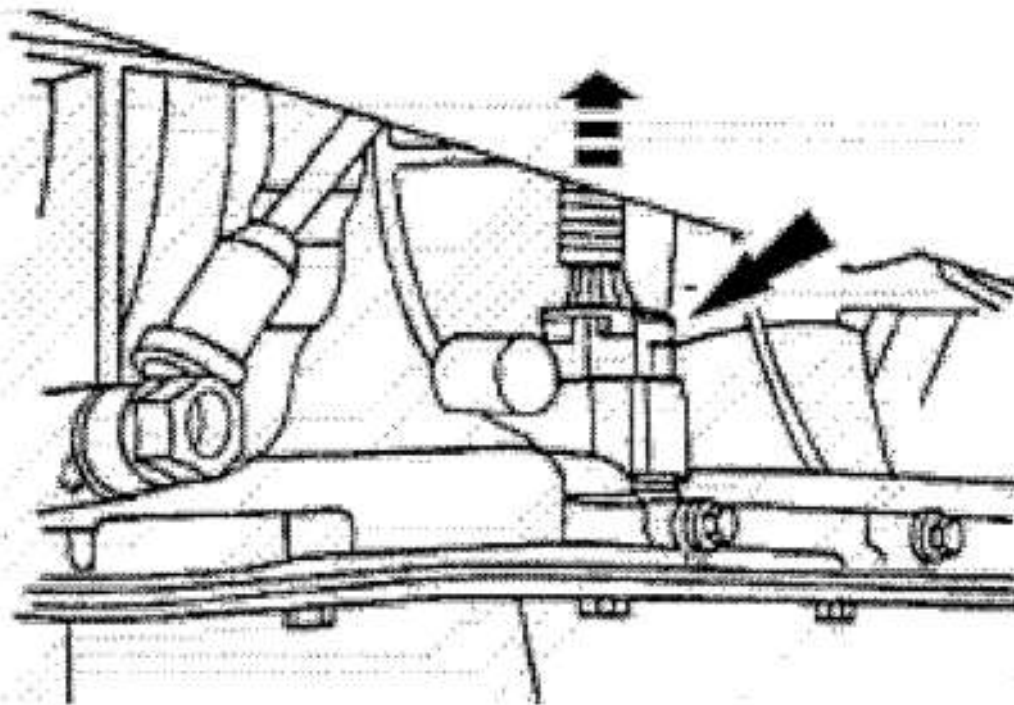
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**Fig. 3: Removing Adjusting Clevis**  
Courtesy of FORD MOTOR CO.



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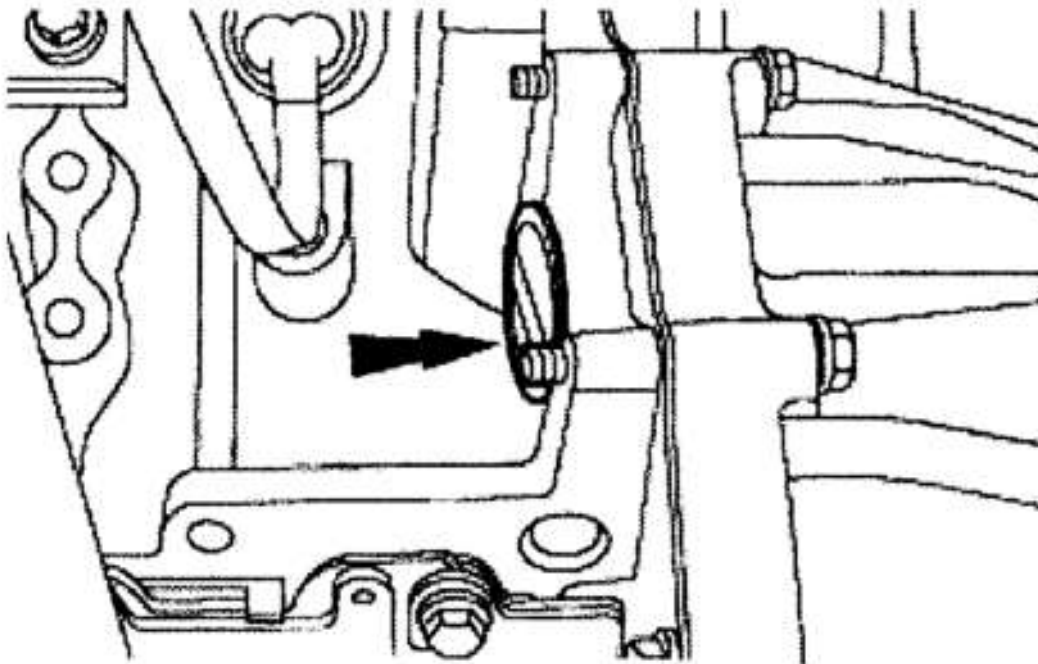
**Fig. 4: Removing Parking Brake Cable**  
Courtesy of FORD MOTOR CO.



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**Fig. 5: Locating Solenoid Body Connector**

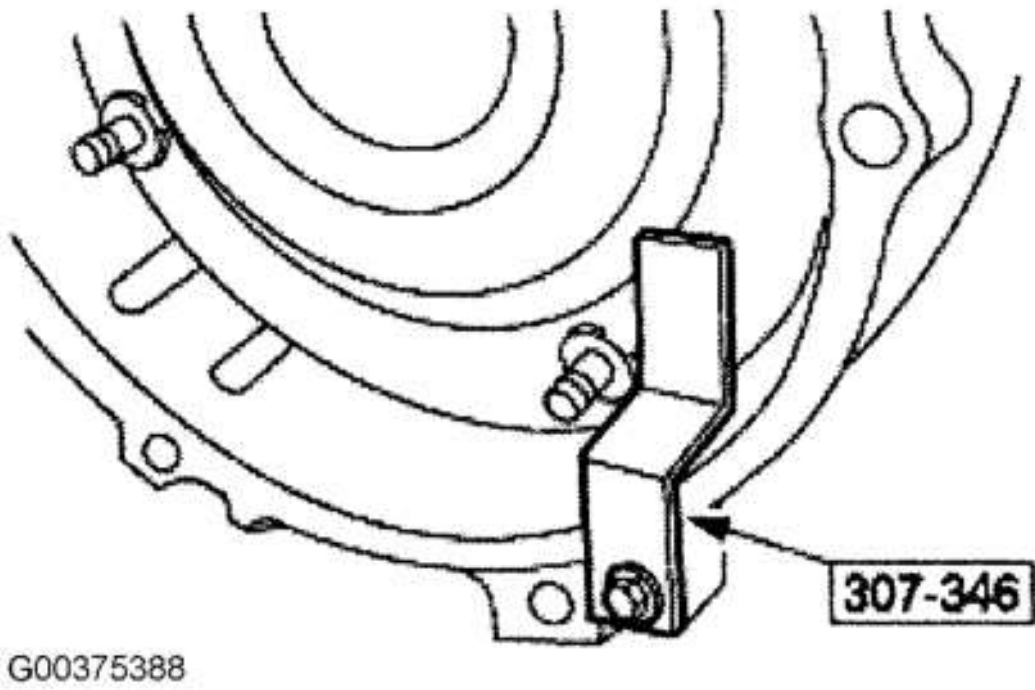
Courtesy of FORD MOTOR CO.



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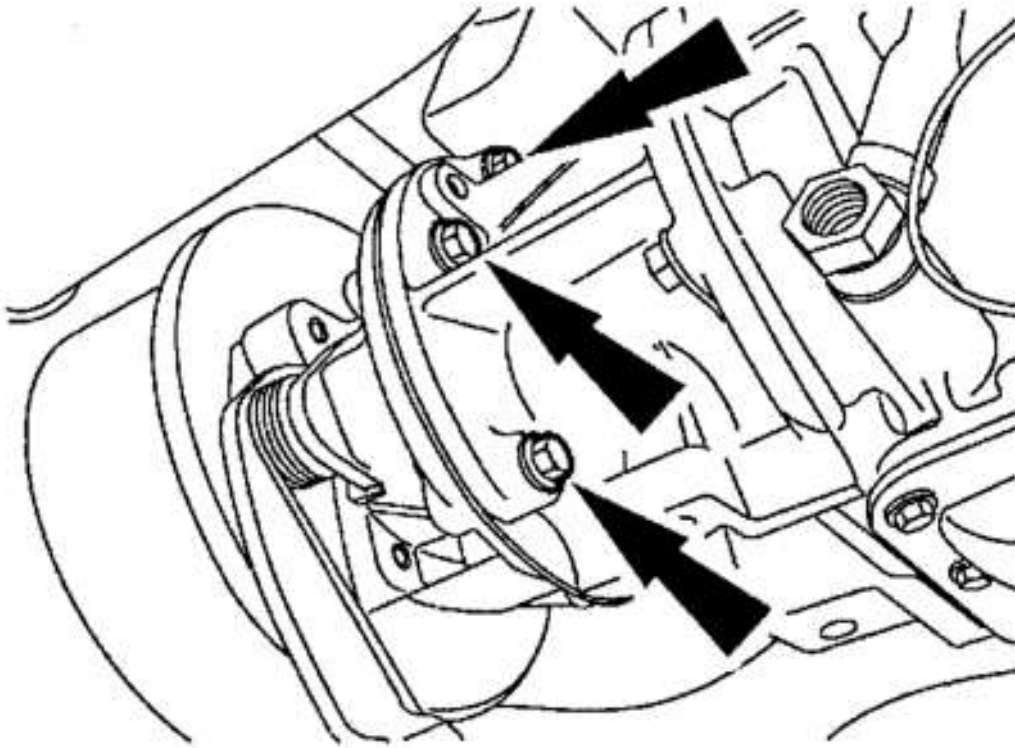
**Fig. 6: Locating Torque Converter Access Cover**  
Courtesy of FORD MOTOR CO.





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**Fig. 7: Identifying Torque Converter Holding Tool (307-346)**  
Courtesy of FORD MOTOR CO.



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**Fig. 8: Locating Parking Brake-To-Transmission Bolts**  
Courtesy of FORD MOTOR CO.

#### Installation

**CAUTION:** Prior to the installation of the transmission, the fluid, cooler lines and the cooler bypass valve must be cleaned. Transmission failure can occur if this procedure is not followed. A new transmission Oil-To-Air (OTA) cooler must be installed if the transmission was overhauled or exchanged due to a failure of the transmission. Transmission failure can occur if this procedure is not followed.

1. Inspect the wiring harness and the connectors for damage, terminal condition, corrosion and seal integrity. Repair or install new as required.
2. On vehicles equipped with a transmission-mounted parking brake, if removed, to install the parking brake, position the parking brake assembly with a new gasket on the transmission extension housing and install 6 new bolts. See **Fig. 8**.

**CAUTION:** Prior to the installation of the assembly, the torque converter pilot

**hub must be correctly lubricated or damage to the torque converter or the engine crankshaft can occur.**

3. On all vehicles, lubricate the torque converter pilot hub with multi-purpose grease. Raise the transmission into place.

**CAUTION: Do not use the cooler bypass valve as a handle. Damage to the cooler bypass valve assembly can occur or damage to the case can result. Be careful not to raise the transmission up too far. The sensors can make contact with the underbody of the vehicle and cause damage to the sensors. Sensor failure or leakage can occur.**

**NOTE: While raising the transmission up into the engine compartment, make sure to align the fluid filler tube with the stub tube on the transmission, using the dipstick as a guide. See Fig. 9.**

4. Position the transmission. Remove the special tool. See Fig. 7.

**CAUTION: Do not allow the torque converter drive flats to disengage from the pump gear. Use care not to damage the flexplate and the converter pilot. The torque converter must rest squarely against the flexplate, indicating the converter pilot is not binding in the crankshaft.**

5. While installing the transmission to the engine, align the torque converter studs with the mounting holes in the flexplate.
6. On gasoline engines, install 7 transmission-to-engine bolts. Install the new torque converter-to-flexplate nuts. 5.4L engines have 4 torque converter nuts. 6.8L engines have 6 torque converter nuts. Install the cylinder block opening cover. See Fig. 6. Install the flexplate inspection cover and bolts. Install the starter motor.
7. On diesel engines, install 6 transmission-to-engine bolts. Install new torque converter retaining nuts. Install the flexplate inspection cover. Install the flexplate inspection cover bolts. Install the starter motor.
8. On all engines, connect the solenoid pack electrical connector. See Fig. 5. Connect the digital TR sensor connector. Connect the Turbine Shaft Speed (TSS) sensor and the Output Shaft Speed (OSS) sensor. If the vehicle is equipped with a Power Take-Off (PTO) unit, all or part of the PTO unit will need to be installed. Connect the shift cable. Install the cable housing bracket. Install the shift cable to the manual lever. Install the transmission fluid cooler tubes to the cooler bypass valve.
9. On vehicles equipped with a transmission-mounted parking brake, position the front parking brake cable and conduit, and press the retainer into the cable bracket until it snaps into place. See Fig. 4. To set the adjusting clevis, loosen the jam nut several turns (1). Position the parking brake lever in the applied position (2). Tighten or loosen the adjusting clevis until the adjusting clevis hole lines up with the parking brake lever hole, then loosen the adjusting clevis to the specification (3). See Fig. 10. To install the pins, and tighten the jam nut, install the clevis pin (3) through the adjusting clevis and the parking brake lever (4). Install the locking pin in the clevis pin (2). Tighten the jam nut (1). See Fig. 3. Install the parking brake lever return spring. See Fig. 2.
10. On 4x4 vehicles, support the extension housing with a jack stand and remove the transmission jack. Install the transfer case. See **REMOVAL & INSTALLATION - EXCURSION, F450 & F550**

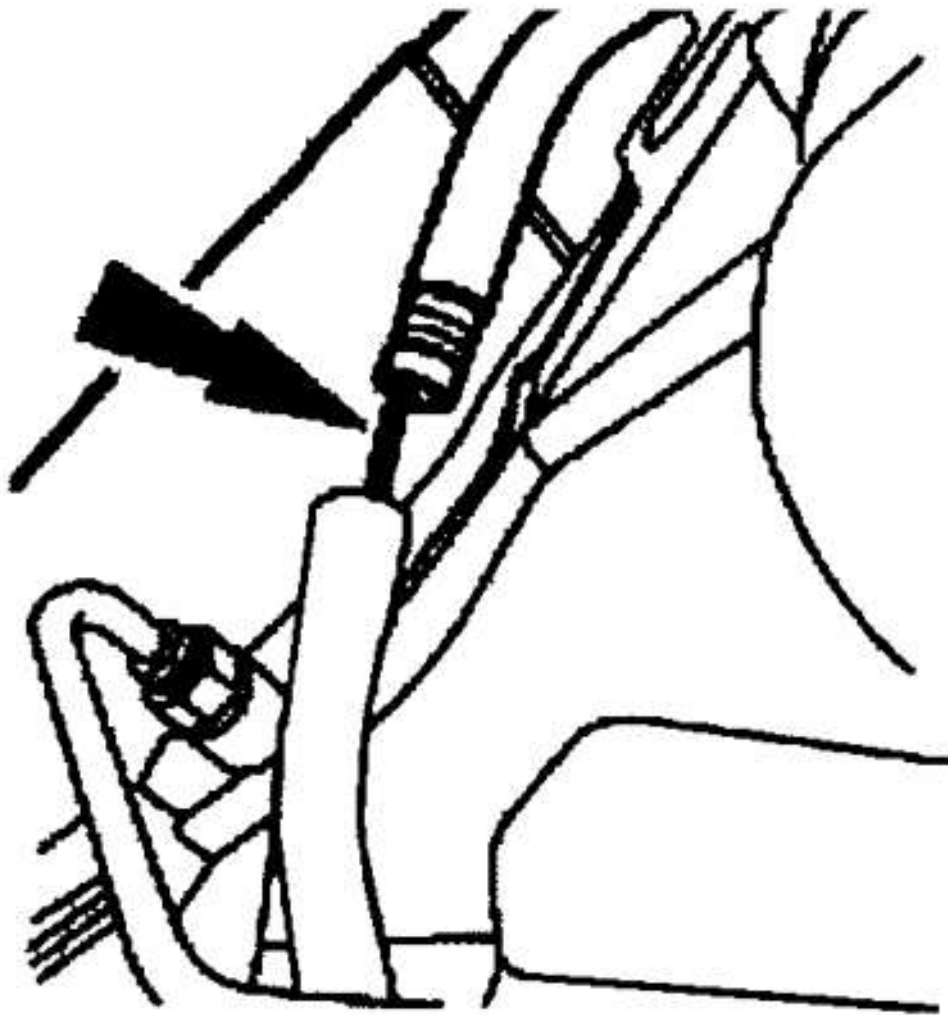
**SUPER DUTY** article.

11. On 4x2 vehicles, install the transmission mount. Position the crossmember to the transmission mount and loosely install the nuts.
12. On 4x2 Excursion, install the crossmember bolts. Install the crossmember bolts. Reconnect the wire harness to the frame. See **Fig. 1**.
13. On F-Super Duty vehicles, install the crossmember bolts. Install the nuts.
14. On 4x2 vehicles, remove the transmission jack. Tighten the nuts. Install the rear driveshaft. See REMOVAL & INSTALLATION in DRIVE SHAFTS - EXCURSION & F250-F550 article.
15. On all vehicles, use the following guidelines for the in-line transmission fluid filter:
  - If the transmission was overhauled and the vehicle was equipped with an in-line fluid filter, install a new in-line fluid filter.
  - If the transmission was overhauled and the vehicle was not equipped with an in-line fluid filter, install a new in-line fluid filter kit.
  - If the transmission is being installed for a non-internal repair, do not install an in-line filter or filter kit.
  - If installing a Ford-authorized remanufactured transmission, install the in-line transmission fluid filter that is supplied. Prior to lowering the vehicle, install a new in-line transmission filter or a filter kit.

**NOTE:**

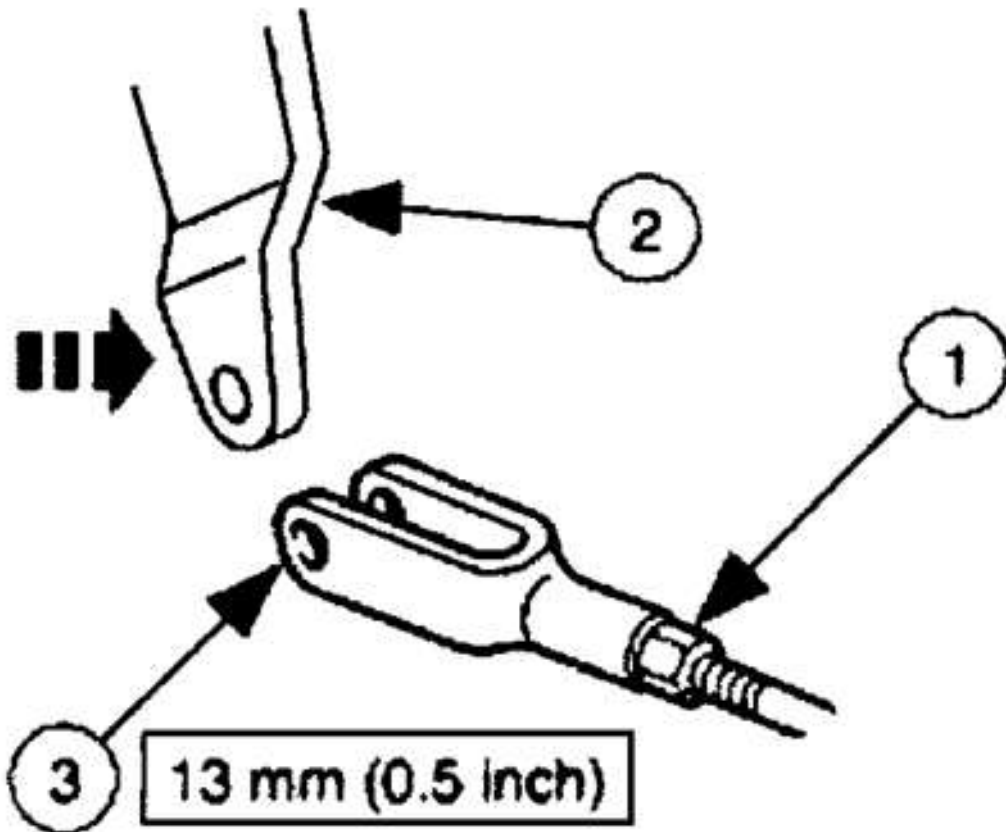
**All gasoline vehicles will have new adaptive shift strategies. Whenever the vehicle's battery has been disconnected for any type of service or repair, the strategy parameters stored in the Keep Alive Memory (KAM) will be lost. The strategy will start to relearn once the battery is reconnected and the vehicle is driven. This is a temporary condition and will return to normal operating condition once the Powertrain Control Module (PCM) relearns all the parameters from the driving conditions. There is no set time frame for this process. If a concern is present during downshifts or converter clutch apply, it is not the fault of the shift strategy and will require diagnosis as outlined in the workshop manual. The customer needs to be notified that they may experience slightly different upshifts (either soft or firm) and that this is a temporary condition and will eventually return to normal operating condition.**

16. Lower the vehicle. Connect the battery ground cable. Fill to correct level with clean automatic transmission fluid.



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**Fig. 9: Aligning Fluid Filler Tube**  
Courtesy of FORD MOTOR CO.



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**Fig. 10: Adjusting Clevis**

Courtesy of FORD MOTOR CO.

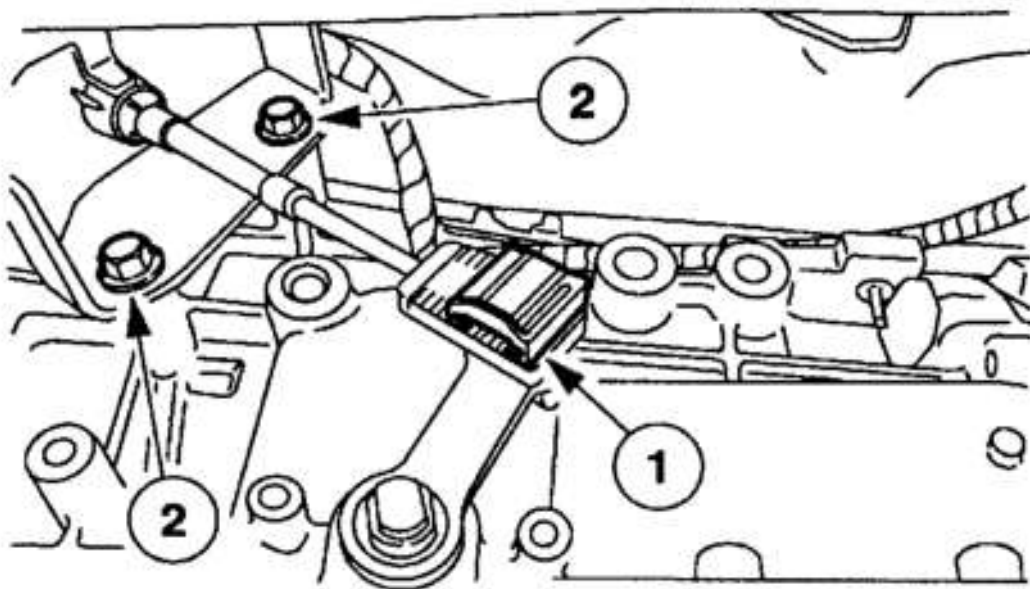
### 5R110W (TORQSHIFT)

#### Removal (Excursion)

**NOTE:** Numbers in parenthesis refer to numbers in illustration.

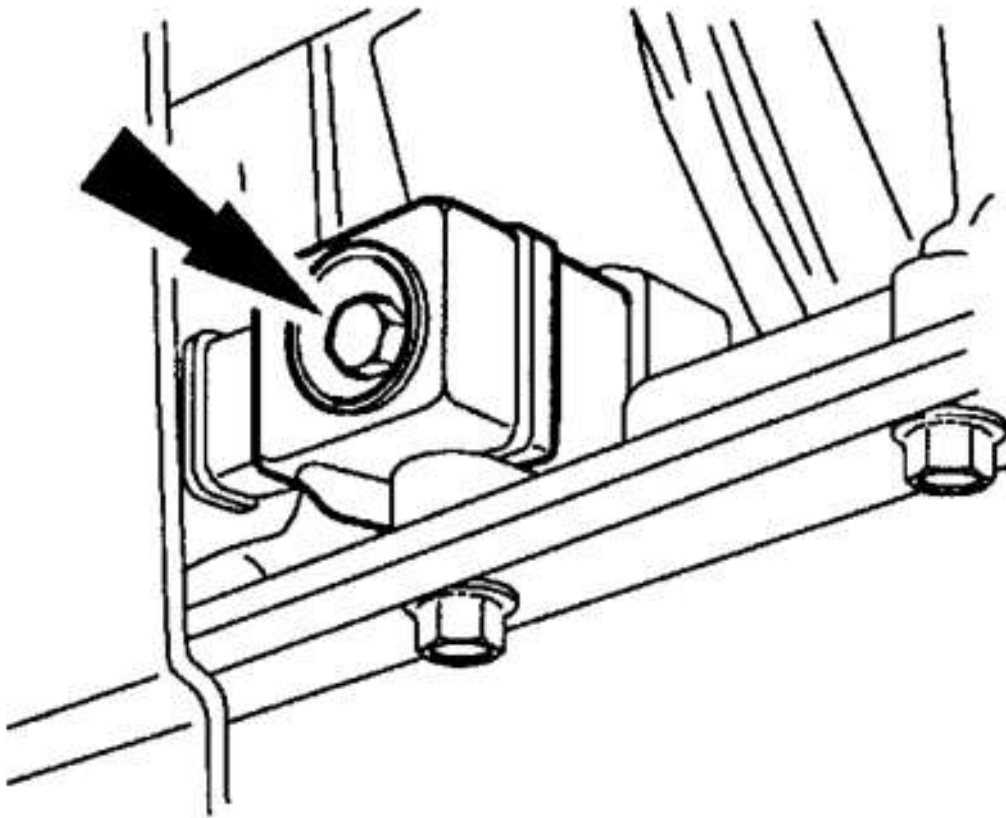
1. With the vehicle in Neutral, position it on a hoist. Disconnect the battery ground cable.
2. On 4x4 vehicles, remove the transfer case assembly. See **REMOVAL & INSTALLATION - EXCURSION, F450 & F550 SUPER DUTY** article.
3. On 4x2 vehicles, remove the driveshaft. See **REMOVAL & INSTALLATION** in **DRIVE SHAFTS - EXCURSION & F250-F550** article.
4. On all vehicles, if transmission disassembly is required, drain the transmission fluid. Remove the drain plug and allow the fluid to drain. Install the drain plug. Install a suitable high-lift transmission jack.

5. On 4x4 vehicles, install a suitable jack under the transmission and remove the jack stand from under the extension housing.
6. On 4x2 vehicles, remove the wire harness from the rear crossmember.
7. On all vehicles, remove the shift cable. Disconnect the shift cable from the manual lever (1). See **Fig. 11**. Remove the bolts (2) and position the shift cable and bracket out of the way. Loosen the bolt and disconnect the solenoid body electrical connector. See **Fig. 12**.
8. Disconnect the Output Shaft Speed (OSS) sensor electrical connector. Disconnect the turbine shaft and intermediate shaft combination speed sensor electrical connector. Disconnect the right and left wire harness from the side of the transmission. See **Fig. 13**.
9. On 4x2 vehicles, remove the left crossmember bolts. Remove the right crossmember bolts. Remove the transmission mount nuts and the crossmember. Remove the rear transmission mount from the extension housing.
10. On all vehicles, remove the cylinder block opening cover in order to gain access to the torque converter nuts. See **Fig. 14**. Using a suitable strap wrench, rotate the crankshaft pulley to gain access to the torque converter nuts. Remove and discard the 6 torque nuts.
11. While holding the case fitting, disconnect the rear fluid cooler tube nut and tube. While holding the case fitting, disconnect the front fluid cooler tube nut and tube.
12. Secure the transmission to a suitable transmission jack. Remove the 9 transmission-to-engine mounting bolts. Slide the transmission back enough to install the special tool.
13. If the transmission is being overhauled or if installing a new transmission, carry out the transmission fluid cooler backflushing and cleaning. See **TRANSMISSION FLUID COOLER BACK FLUSHING & CLEANING** under LUBRICATION in **SERVICING - BLACKWOOD, ECONOLINE, EXCURSION, EXPEDITION, "F" SERIES PICKUP & NAVIGATOR** article.



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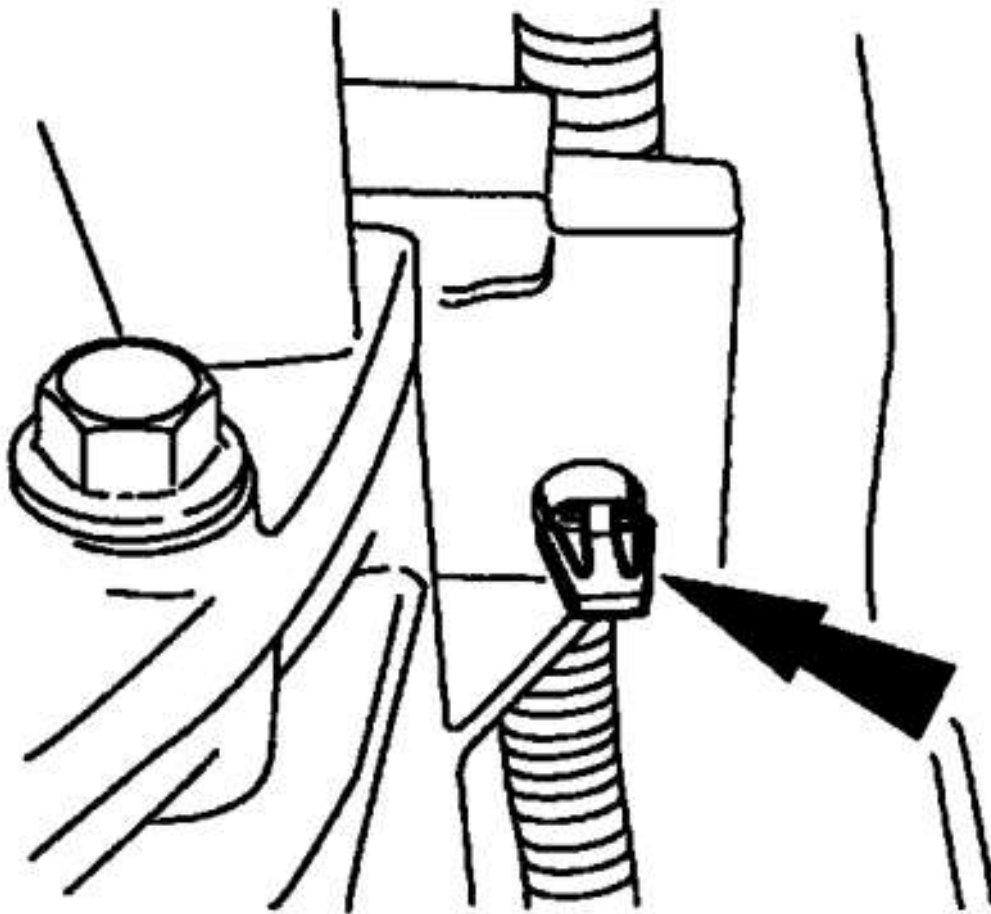
**Fig. 11: Removing Shift Cable**  
 Courtesy of FORD MOTOR CO.



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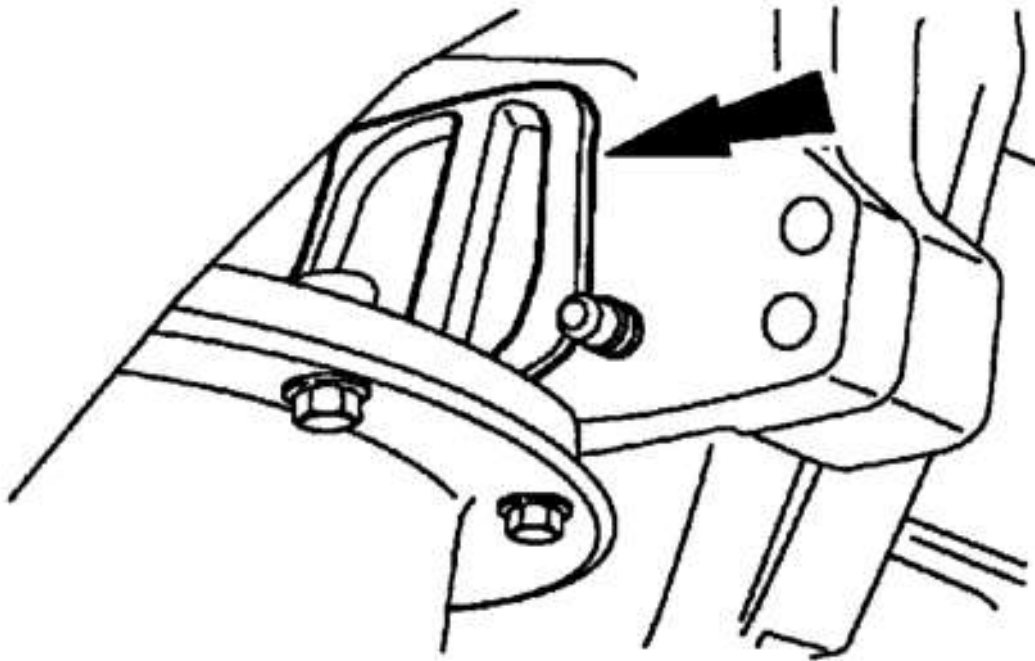
**Fig. 12: Locating Solenoid Body Electrical Connector**  
Courtesy of FORD MOTOR CO.





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**Fig. 13: Locating Wiring Harness**  
Courtesy of FORD MOTOR CO.



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**Fig. 14: Locating Cylinder Block Opening Cover**  
Courtesy of FORD MOTOR CO.

**Installation (Excursion)**

**NOTE:** Numbers in parenthesis refer to numbers in illustration.

**CAUTION:** Prior to the installation of the transmission, the fluid cooler lines must be cleaned. Otherwise transmission failure can occur.

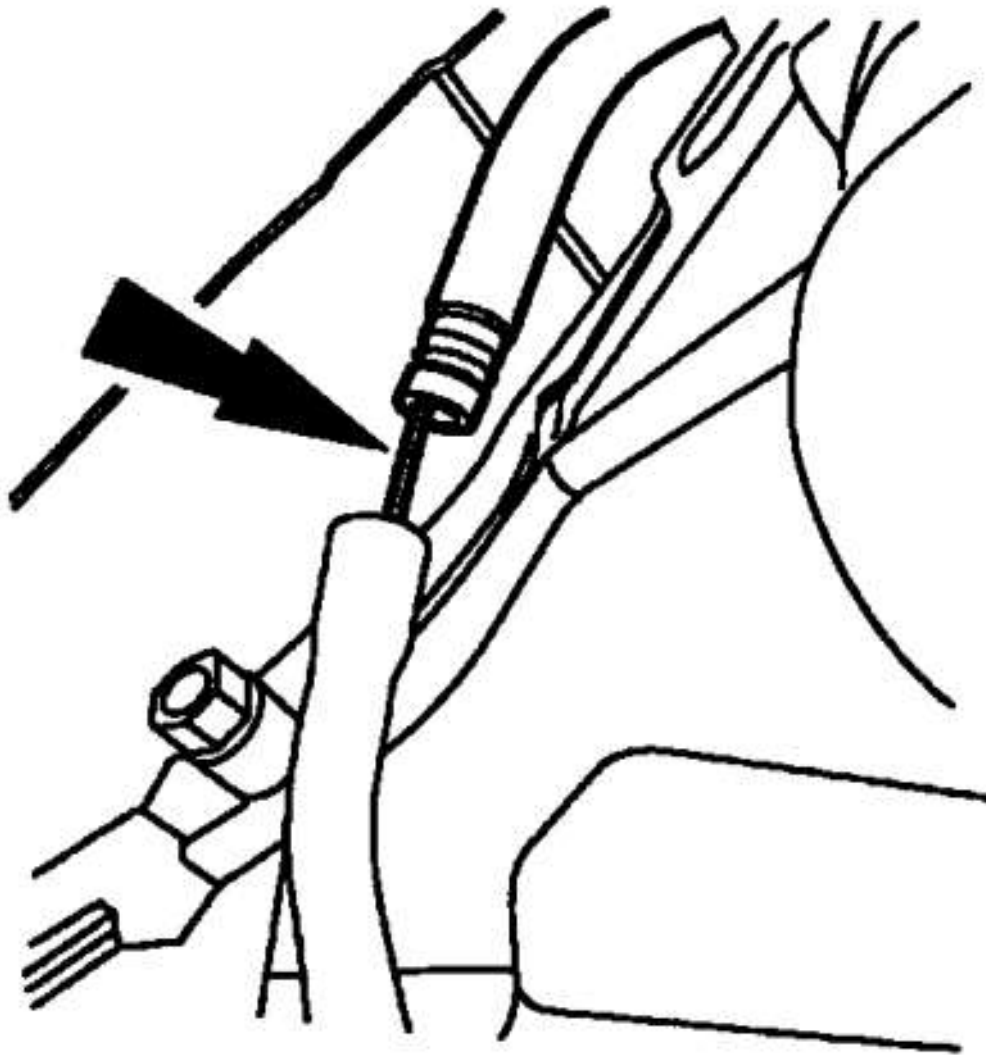
1. Clean the fluid cooler lines. See **TRANSMISSION FLUID COOLER BACK FLUSHING & CLEANING** under LUBRICATION in SERVICING - BLACKWOOD, ECONOLINE, EXCURSION, EXPEDITION, "F" SERIES PICKUP & NAVIGATOR article.

**CAUTION:** Prior to the installation of the transmission, a **NEW** transmission fluid cooler remote filter must be installed. Otherwise transmission failure can occur.

2. Install a **NEW** transmission fluid cooler remote filter.

**CAUTION:** Prior to the installation of the assembly, the torque converter pilot hub must be correctly lubricated or damage to the torque converter or the engine crankshaft can occur.

3. Lubricate the torque converter pilot hub with multi-purpose grease. If the special tool has not been installed during the assembly of the transmission, install the special tool to hold the torque converter in place while moving and positioning the transmission in place. See **Fig. 7**.
4. Once the transmission is in place and before bolting it to the engine remove the special tool. Position the transmission in place. While raising the transmission into the engine compartment, align the fluid filler tube with the stub tube on the transmission using the fluid level indicator as a guide. See **Fig. 15**.
5. While installing the transmission to the engine, align the torque converter studs with the mounting holes in the flexplate. Install 9 transmission-to-engine bolts.
6. Using a suitable strap wrench, rotate the crankshaft pulley to gain access to the torque converter nuts. Install 6 new torque converter-to-flexplate nuts. Install the cylinder block opening cover.
7. Install the front transmission fluid cooler tube. Install the rear transmission fluid cooler tube.
8. On 4x4 applications, support the extension housing with a jack stand and remove the transmission jack.
9. On 4x2 applications, install the transmission mount. Position the crossmember to the transmission mount and loosely install the nut. Install the left crossmember bolts. Install the right crossmember bolts. Tighten the rear insulator nuts. Connect the right and left wiring harness to the side of the transmission. See **Fig. 13**.
10. Connect the Output Shaft Speed (OSS) sensor electrical connector. Connect the intermediate shaft and turbine shaft combination speed sensor electrical connector. Connect the solenoid body electrical connector. See **Fig. 12**. Connect the shift cable. See **Fig. 11**. Install the cable housing bracket (2). Install the shift cable to the manual lever (1).
11. On 4x2 applications, reconnect the wire harness to the frame.
12. On 4x4 applications, if equipped, install the transfer case. See **REMOVAL & INSTALLATION - EXCURSION, F450 & F550 SUPER DUTY** article.
13. On 4x2 applications, install the rear driveshaft. See **REMOVAL & INSTALLATION in DRIVE SHAFTS - EXCURSION & F250-F550** article.
14. On all applications, connect the battery ground cable. Adjust the shift linkage. Verify that the vehicle starts in Park and Neutral and the reverse lamps illuminate in Reverse.
15. With the engine running and the transmission at normal operating temperature 150-170°F (66-77°C), check and adjust the transmission fluid level, and check for any leaks. If fluid is needed, add fluid in increments of 0.5-pint (0.24-liter) until the correct level is achieved (fluid should be in the cross-hatched area of the fluid level indicator).
16. Use the following guidelines for the in-line transmission fluid filter:
  - If the transmission was overhauled and the vehicle was equipped with an in-line fluid filter, install a new in-line fluid filter.
  - If the transmission was overhauled and the vehicle was not equipped with an in-line fluid filter, install a new in-line fluid filter kit.
  - If the transmission is being installed for non-internal repair, do not install an in-line filter or filter kit.
  - If installing a new or a Ford-authorized remanufactured transmission, install the in-line transmission fluid filter that is supplied. Prior to lowering the vehicle, install a new in-line transmission filter or a filter kit.



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**Fig. 15: Aligning Fluid Filler Tube**  
Courtesy of FORD MOTOR CO.

**Removal (F250-F550 Super Duty Pickup)**

**NOTE:** Numbers in parenthesis refer to numbers in illustration.

1. With the vehicle in Neutral, position it on a hoist. Disconnect both battery ground cables.
2. On 4x4 vehicles, remove the transfer case assembly. See **REMOVAL & INSTALLATION - EXCURSION, F450 & F550 SUPER DUTY** article.
3. On 4x2 vehicles, remove the driveshaft. See **REMOVAL & INSTALLATION** in **DRIVE SHAFTS -**

EXCURSION & F250-F550 article.

4. On all vehicles, if transmission disassembly is required, drain the transmission fluid. Remove the drain plug and allow the fluid to drain. Install the drain plug. Install a suitable high-lift transmission jack.
5. On 4x4 vehicles, remove the jack stand from under the extension housing after installing the transmission jack.
6. On 4x2 vehicles, remove the wire harness from the rear crossmember. Remove the rear transmission mount nuts.
7. On all vehicles, remove the shift cable. Disconnect the shift cable from the manual lever (1). See **Fig. 11**. Remove the bolts (2) and position the shift cable and bracket out of the way.
8. Loosen the bolt and disconnect the solenoid body electrical connector. See **Fig. 12**. Disconnect the Output Shaft Speed (OSS) sensor electrical connector. Disconnect the turbine shaft and intermediate shaft combination speed sensor electrical connector. Disconnect the right and left wire harness from the side of the transmission. See **Fig. 13**.
9. On 4x2 vehicles, remove the left crossmember bolts and nuts. Loosen, but do not remove, the bolt and nut indicated. Remove the right crossmember bracket bolts and nuts. Remove the bracket bolts and nuts. Remove the bracket. Remove the right crossmember bolts and nuts. Remove the left crossmember bolt, nut and the crossmember. Remove the bolt and nut. Remove the crossmember. Remove the rear transmission mount from the extension housing.
10. If equipped with dual generators, rotate the tensioner and remove the outer accessory drive belt from the crankshaft pulley.
11. On all vehicles, remove the cylinder block opening cover in order to gain access to the torque converter nuts. See **Fig. 14**. Using a suitable strap wrench, rotate the crankshaft pulley to gain access to the torque converter nuts. Remove and discard the torque converter nuts.
12. While holding the case fitting, disconnect the rear fluid cooler tube nut and tube. While holding the case fitting, disconnect the front fluid cooler tube nut and tube.
13. Remove the 9 transmission-to-engine mounting bolts. Slide the transmission back enough to install the special tool. See **Fig. 7**. If the transmission is being overhauled or if installing a new or remanufactured transmission, carry out the transmission fluid cooler backflushing and cleaning. See **TRANSMISSION FLUID COOLER BACK FLUSHING & CLEANING** under LUBRICATION in SERVICING - BLACKWOOD, ECONOLINE, EXCURSION, EXPEDITION, "F" SERIES PICKUP & NAVIGATOR article.

#### Installation (F250-F550 Super Duty Pickup)

**NOTE:** Numbers in parenthesis refer to numbers in illustration.

**CAUTION:** Prior to the installation of a new or overhauled transmission, a new transmission fluid cooler remote filter must be installed. Otherwise transmission failure can occur.

1. If necessary, install a new transmission fluid cooler remote filter.

**CAUTION:** Prior to the installation of the assembly, the torque converter pilot hub must be correctly lubricated or damage to the torque converter or the engine crankshaft can occur.

2. Lubricate the torque converter pilot hub with multi-purpose grease.

3. If the special tool has not been installed during the assembly of the transmission, install the special tool to hold the torque converter in place while moving and positioning the transmission in place. See **Fig. 7**. Once the transmission is in place, prior to bolting it to the engine, remove the special tool.
4. Position the transmission in place. While raising the transmission up into the engine compartment, align the fluid filler tube with the stub tube on the transmission using the fluid level indicator as a guide. See **Fig. 15**. While installing the transmission to the engine, align the torque converter studs with the mounting holes in the flexplate. Install 9 transmission-to-engine bolts.
5. Using a suitable strap wrench to rotate the crankshaft and pulley, install the new torque converter-to-flexplate nuts. Install the cylinder block opening cover. See **Fig. 14**. If equipped with dual generators, rotate the tensioner and install the outer accessory drive belt onto the crankshaft pulley.
6. On all applications, install the front transmission fluid cooler tube. Install the rear transmission fluid cooler tube.
7. On 4x4 applications, support the extension housing with a jack stand and remove the transmission jack.
8. On 4x2 applications, install the transmission mount. Position the crossmember to the transmission mount and loosely install the nut. Install the left crossmember bolts. Install the right crossmember bolts. Install the bracket and loosely install the bolts. Install the bracket. Loosely install the bolts. Tighten the right crossmember bolts. Tighten the rear insulator nuts.
9. On all applications, connect the right and left wiring harness to the side of the transmission. See **Fig. 13**. Connect the Output Shaft Speed (OSS) sensor electrical connector. Connect the intermediate shaft and turbine shaft combination speed sensor electrical connector. Connect the solenoid body electrical connector. See **Fig. 12**.
10. If the vehicle is equipped with a Power Take-Off (PTO) unit, all or part of the PTO unit will need to be installed. Connect the shift cable. Install the cable housing bracket (2). See **Fig. 11**. Install the shift cable to the manual lever (1).
11. On 4x2 applications, reconnect the wire harness to the frame.
12. On 4x4 applications, if equipped, install the transfer case. See **REMOVAL & INSTALLATION - EXCURSION, F450 & F550 SUPER DUTY** article.
13. On 4x2 applications, install the rear driveshaft. See **REMOVAL & INSTALLATION in DRIVE SHAFTS - EXCURSION & F250-F550** article.
14. On all applications, use the following guidelines for the in-line transmission filter:
  - If the transmission was overhauled and the vehicle was equipped with an in-line fluid filter, install a new in-line fluid filter.
  - If the transmission was overhauled and the vehicle was not equipped with the in-line fluid filter, install a new in-line fluid filter.
  - If the transmission is being installed for a non-internal repair, do not install an in-line filter or filter kit.
  - If installing a new or a Ford-authorized remanufactured transmission, install the in-line transmission fluid filter that is supplied. Prior to lowering the vehicle, install a new in-line transmission filter or a filter kit.
15. Connect the battery ground cable. Adjust the shift linkage. Verify that the vehicle starts in Park and Neutral and the reverse lamps illuminate in Reverse. With the engine running and the transmission at normal operating temperature 150-170°F (66-77°C), check and adjust the transmission fluid level, and check for any leaks. If fluid is needed, add fluid in increments of 0.5-pint (0.24-liter) until the correct level is achieved (fluid should be in the cross-hatched area of the fluid level indicator).

## TORQUE SPECIFICATIONS

**4R100****TORQUE SPECIFICATIONS (TRANSMISSION - 4R100)**

<b>Application</b>	<b>Ft. Lbs. (N.m)</b>
Auxiliary Cooler Tube	8-10 (11-14)
Auxiliary Cooler Tube	16-22 (22-30)
Control Assembly-To-Pump	18-23 (24-31)
Cooler Line Fitting-To-CBV	20 (27)
Cooler Bypass Valve Fitting-To-Case (Front)	22 (30)
Cooler Bypass Valve Fitting-To-Case (Rear)	27 (37)
Drive Shaft Bolt	
Except Excursion	26 (35)
Excursion	82 (111)
Extension Housing-To-Case	30-40 (41-54)
Flexplate Inspection Cover-To-Case (Diesel)	15 (20)
Flexplate Inspection Cover-To-Case (Gasoline)	25 (34)
Inner Manual Valve Detent Lever Nut	35 (47)
Intermediate/Overdrive Cylinder Fluid Feed Bolt (Front)	12 (16)
Line Pressure-To-Case Plug	6-12 (8-16)
Low/Reverse OWC Inner Race-To-Case	18-25 (24-34)
Pump Body-To-Case	18-23 (24-31)
Parking Pawl Abutment-To-Case	18 (25)
Parking Rod Guide Plate-To-Case	18 (25)
Radiator Nipple Connector	17-23 (23-31)
Radiator-To-Tube Connector	18-22 (24-30)
Starter Mounting Bolt	16-20 (22-28)
Torque Converter Drain Plug	18-20 (24-27)
Torque Converter-To-Flexplate Nut	26 (35)
Transmission Insulator & Retainer-To-Case	60-80 (81-108)
Transmission Insulator & Retainer-To-Crossmember Nut	69 (94)
Transmission Oil Pan Bolts	11 (15)
Transmission Support Crossmember-To-Frame Nut	60 (81)
Transmission-To-Engine Bolts	
Diesel	45 (61)
Gasoline	35 (48)
	<b>INCH Lbs. (N.m)</b>
Digital Transmission Range Sensor	75-85 (8-10)
Main Accumulator & Solenoid Body-To-Case	80-100 (9-11)
Main & Lower Control Body-To-Case	80-100 (9-11)
Manual Control Valve Detent Lever Spring-To-Case	89 (10)
Output Shaft Speed Sensor	70-88 (8-10)
Reinforcing Plate-To-Case	80-100 (9-11)
Stator Support-To-Pump Body	80-100 (9-11)
Turbine Shaft Speed Sensor	70-88 (8-10)

**5R110W****TORQUE SPECIFICATIONS (TRANSMISSION - 5R110W)**

<b>Application</b>	<b>Ft. Lbs. (N.m)</b>
Center Support Fluid Feed Bolts	24 (33)
Coast Clutch Hub-To-Overdrive Carrier	
Step 1	18 (25)
Step 2	Additional 90 Degrees
Cooler Line Fitting-To-Case	35 (48)
Extension Houding-To-Case	35 (47)
Fluid Pan Drain Plug	13 (18)
Front Support-To-Fluid Pump	21 (29)
Output Shaft Flange Bolt	110 (150)
Output Shaft Retaining Nut	148 (200)
Parking Pawl Abutment-To-Case	18 (25)
Parking Rod Guide Plate-To-Case	18 (25)
Power Take Off Plate-To-Case	30 (40)
Pump Body-To-Case	20 (27)
Shift Cable Bracket	30 (40)
Torque Converter-To-Flexplate Nuts	26 (35)
Transmission Flexplate Cover	26 (35)
Transmission Fluid Cooler Tube Nut At Case	30 (40)
Transmission Pan-To-Case	11 (15)
Transmission Rear Mount	69 (94)
Transmission Support Crossmember-To-Frame	60 (81)
Transmission-To-Engine	35 (47)
	<b>INCH Lbs. (N.m)</b>
Fill Tube-To-Engine	89 (10)
Line Pressure Plug-To-Case	108 (12)
Output Shaft Speed Sensor	80 (9)
Solenoid Body & Ditch Plate-To-Case	89 (10)
Solenoid Body-To-Case	89 (10)
Transmission Range Sensor-To-Case	89 (10)
Turbine Shaft & Intermediate Shaft Speed Sensor	80 (9)