

**banks**

with Installation Instructions

# Owner's Manual

## **Banks Billet™ Torque Converter**

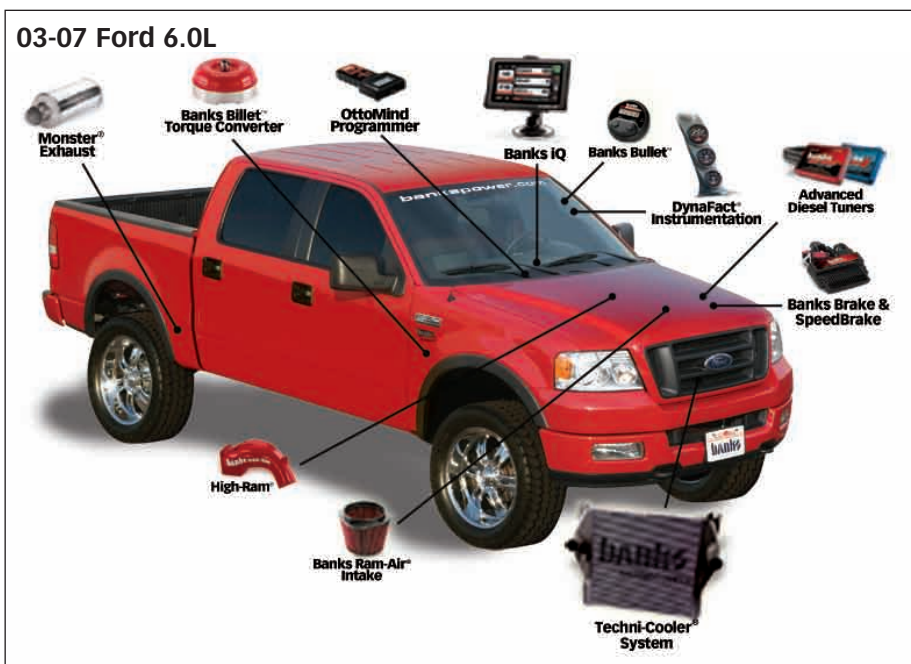
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**2003-2007 Ford Power Stroke 6.0L  
Turbo-Diesel Pickups  
Equipped with TorqShift™ Transmissions  
2005-2009 Ford 6.8L V10 Gas  
Pickup, SUV & Motorhome  
Equipped with 5R110 Transmissions**

THIS MANUAL IS FOR USE WITH KITS 72522

**banks**

# Also Available from Banks Power



03-07 Ford 6.0L

## **Banks IQ System (P/N 61151-61152)**

- 5" touchscreen interface that can control the Banks Diesel Tuner and/or SpeedBrake on the fly.
- Interchangeable gauge display, read and clear codes, monitor engine diagnostics, log data, time your vehicles runs and much more.

## **Banks Monster® Exhaust System Sport (P/N 48790-48793) Single and Dual (P/N 47285-47292, 47606-47609, 48783-48788)**

- Increases exhaust flow, cuts backpressure, lowers exhaust gas temperatures (EGTs) and increases power.

## **Banks Ram-Air Intake System (P/N 42155)**

- Increases your airflow over stock.
- Adds power, improves fuel economy, lowers EGTs and reduces smoke.

## **High-Ram Intake (P/N 42750-42751)**

- Increases flow and provides more uniform air distribution to the engine for more available power at a given boost level.

## **Banks Techni-Cooler® System (P/N 25974-25975)**

- Provides increased air flow to the engine by increasing air density for more increased power, lower EGTs and improved fuel economy.

## **Banks Brake (P/N 55467-55468)**

- Increases the stopping power of your truck and extends the service life of your brakes

## **Boost and Pyro Gauges (P/N 64507)**

- Keep your engine safe by monitoring vital engine parameters

### **Banks SpeedBrake**

**iQ Compatible (P/N 55455-55456)**

**PDA Compatible (P/N 55457-55458)**

- Allows for controlled hill decent at a user defined vehicle speed.

### **Banks Bullet**

**(P/N 66524-66525)**

- Adds power safely to your vehicle
- Displays critical engine functions
- Engine safeguards
- Change power levels on-the-fly

### **Banks Diesel Tuner**

**Six-Gun w/ switch (P/N 61023)**

**Six-Gun w/ iQ (P/N 63749)**

**EconoMind w/ switch (P/N 63743-63745)**

**EconoMind w/ iQ (P/N 63747-63748)**

- Adds power safely to your vehicle
- Engine and transmission safeguards
- Change power levels on-the-fly

### **Banks Speed-Loader**

**(P/N 62988)**

- Furthers the power output of the Banks Six-Gun and provides EGT limiting safety.

### **Thermocouple**

- Add a temperature limiting function to your Diesel Tuner

### **OttoMind Programmer**

**(P/N 66064)**

- Contains Banks tunes that boost your vehicles HP, Torque and MPG.
- Displays a host of critical engine functions
- Provides "service technician" diagnostic capabilities
- Has upgradeable functionality, so it will never be out of date

### **Banks Stinger Systems**

**(P/N 46465-46486)**

**Contains:**

- Ram-Air Intake system
- Monster Exhaust (single or dual)
- EconoMind Tuner w/ Banks iQ

### **Banks PowerPack Systems**

**(P/N 46497-46519)**

**Contains:**

- Ram-Air Intake system
- Monster Exhaust (single or dual)
- EconoMind Tuner w/ Banks iQ
- High-Ram
- Techni-Cooler System

### **Banks Six-Gun Bundle**

**(P/N 46594-46613)**

**Contains:**

- Ram-Air Intake system
- Monster Exhaust (single or dual)
- Six-Gun Tuner w/ Banks iQ

### **Banks Big Hoss Bundle**

**(P/N 46623-46643)**

**Contains:**

- Ram-Air Intake system
- Monster Exhaust (single or dual)
- Six-Gun Tuner w/ Banks iQ
- Big Head Wastegate Actuator
- High-Ram
- Techni-Cooler System

# General Installation Practices

1. Familiarize yourself with the installation procedure by reading the installation manual before starting work.
2. Throughout this manual, the left side of the vehicle refers to the driver's side, and the right side refers to the passenger's side.
3. Disconnect the negative (ground) cable from the battery (or batteries, if there are two) before beginning work.
4. Route and tie wires and hoses a minimum of 6 inches away from exhaust heat, moving parts and sharp edges. Clearance of 8 inches or more is recommended where possible.
5. During installation, keep your work area and tools clean to avoid possible entry of dirt into the drivetrain components.
6. When raising the vehicle, support it on properly weight-rated safety stands, ramps or a commercial hoist. Follow the manufacturer's safety precautions. Take care to balance the vehicle to prevent it from slipping or falling. When using ramps, be sure the front wheels are centered squarely on the topsides. When raising the front of

the vehicle, set the parking brake and block the rear wheels. When raising the back of the vehicle, be sure the vehicle is on level ground and the front wheels are securely blocked.

**Caution! Do not use floor jacks to support the vehicle while working under it. Do not support the vehicle using concrete blocks, masonry or any other item not intended specifically for this use.**

**7.** Installing the Banks Torque Converter requires removal of the transmission from the vehicle. Heavy tooling such as a transmission jack and an automotive hoist or ample-height jack stands are required. Professional installation by a properly equipped shop is recommended. Failure to follow all installation instructions during Torque Converter install can result in bodily injury and/or expensive damage to the transmission and surrounding components.

**8.** The transmission and torque converter must be removed as an assembly to avoid damage to the converter drive plate, pump bushing and oil seal.

**9.** Before installing the Banks Torque Converter, verify that your transmission is in good operating condition. Transmission problems such as harsh or delayed engagement when shifting into Drive or Reverse, no Drive or Reverse range, erratic shifting, grating or scraping noises, or lack of up and/or downshifting can lead to torque converter damage. If necessary, have your transmission repaired or overhauled before installing the converter.

**10.** If your transmission has just been rebuilt, make sure to flush all old fluid from the vehicle's transmission cooler and connecting lines before reinstalling your transmission.

**Tools Required:**

- 3/8" and 1/2" drive ratchets with metric sockets including 1/2" and 3/8" drive extension
- Metric box-end wrenches
- Standard and Phillips head screwdrivers
- Standard and needle-nose pliers
- Clean shop towels or rags
- Transmission hoist
- Floor jack
- Drain pan
- 320-400 grit sandpaper
- Measuring ruler
- Pry bar or channel lock pliers
- Grease pen
- Foot-pound torque wrenches
- Transgel Grease

**Highly recommended tools and supplies:**

- Flywheel rotating tool
- Penetrating oil or light lubricant spray
- For 4x4 models: Second transmission hoist
- Transmission hoist adapter
- Torque converter holding tool
- Transmission fluid filters
- Transmission pan gasket

**Notice To Installer:**

Banks recommends replacing your transmission fluid, transmission fluid filters, and transmission pan gasket. Failure to service transmission fluid may result in torque converter damage.

# Installation Procedure

## Banks Billet Torque Converter

**1.** Disconnect the negative (ground) cable from the battery (if there is more than one battery, disconnect both negative cables). Secure the cable so it cannot accidentally come in contact with the post.

**2.** Raise the vehicle high enough to remove the transmission and support it securely with properly weight-rated safety stands, ramps or a commercial hoist. Take care to balance the vehicle to prevent it from slipping or falling. When using ramps, be sure the wheels are centered squarely on the topsides. Set the parking brake and securely block the wheels that are on the ground.

**CAUTION: DO NOT WORK UNDER ANY VEHICLE SUPPORTED ONLY BY A JACK. SEVERE INJURY MAY RESULT.**

**3.** Remove the rear drive shaft.

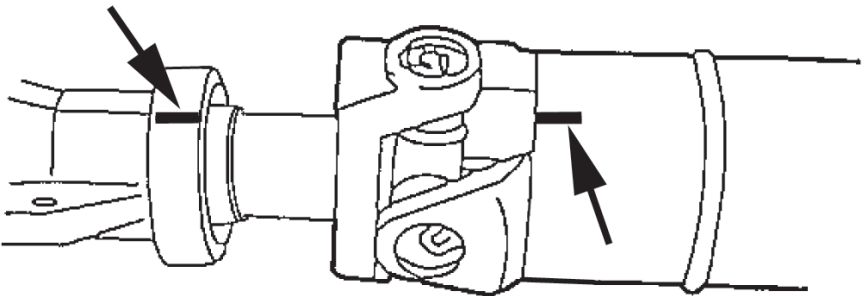
**A)** Mark the driveshaft and the transmission or transfer case output shaft/ circular flange and mark the driveshaft at the rear axle pinion flange to help with re-alignment during reassembly. See **Figure 1 & 2**.

**B)** For models with circular flange, loosen and remove the bolts connecting the driveshaft to the transmission or transfer case circular flange.

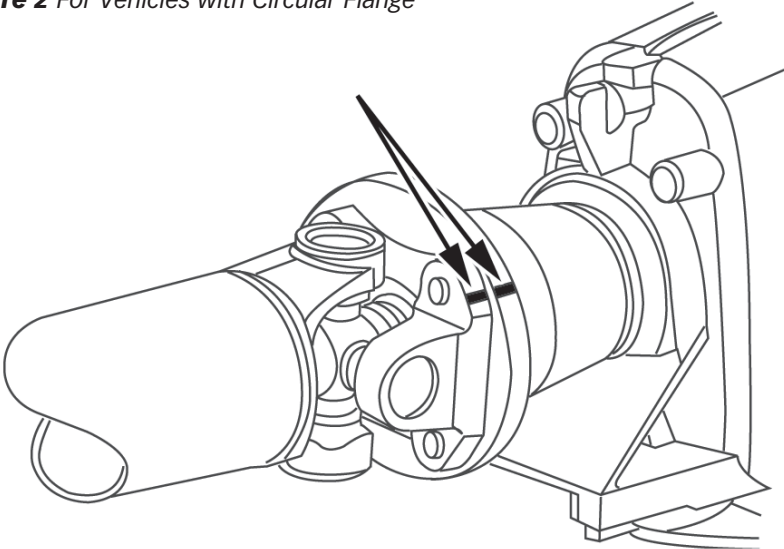
**C)** For models with three piece driveshaft, loosen and remove the bolts and u-joint retainers to disconnect the drive shaft from the coupling shaft.

**D)** For models with two and three piece driveshaft, remove the center bearing support bolts. See **Figure 3**.

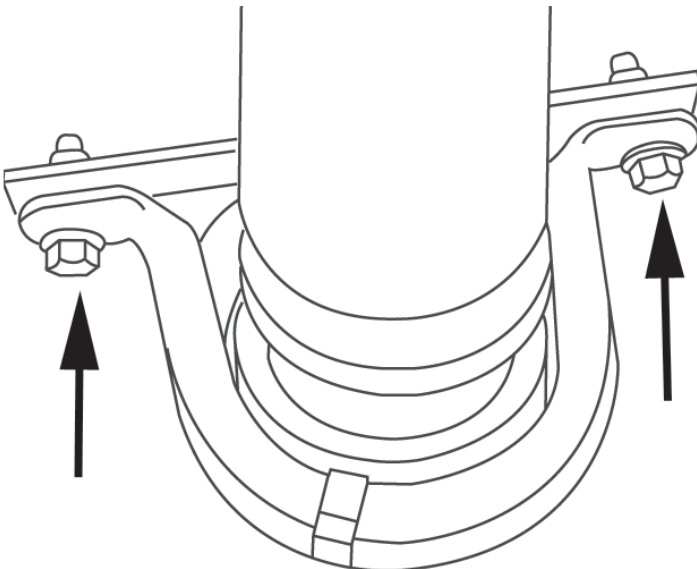
**Figure 1** For Vehicles Without Circular Flange



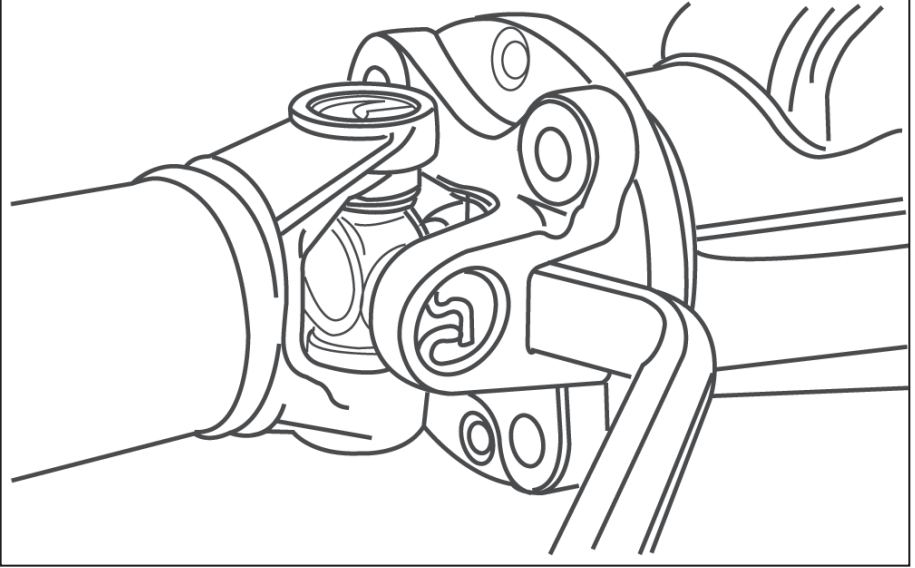
**Figure 2** For Vehicles with Circular Flange



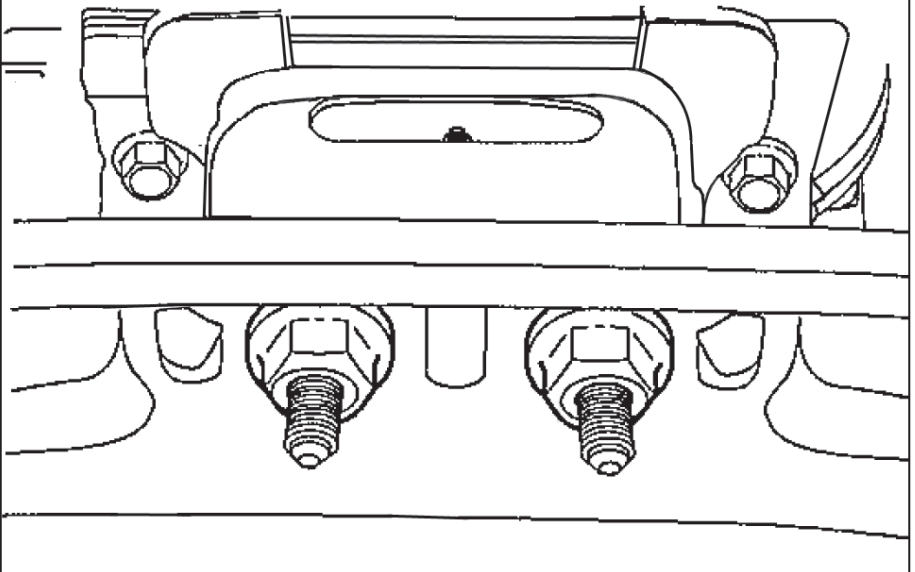
**Figure 3** For Two and Three Piece Driveshaft remove Center Support Bearing.



**Figure 4**

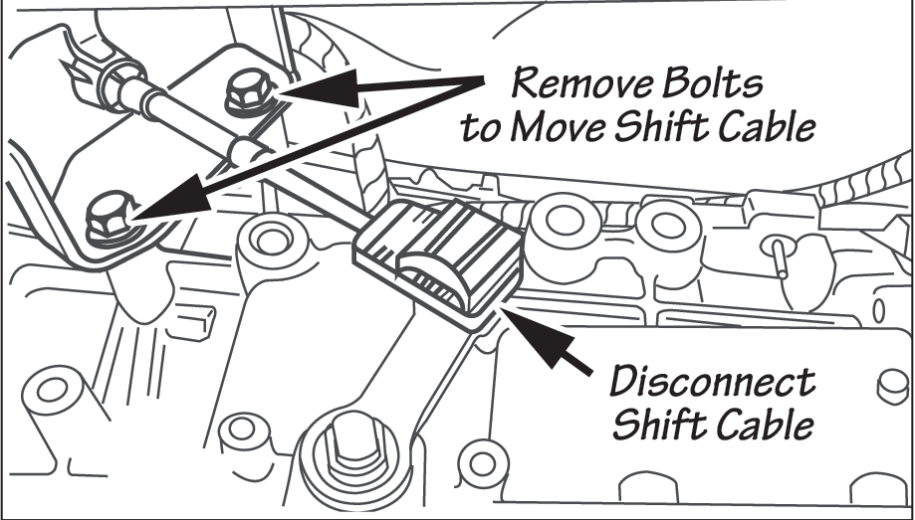


**Figure 5**





**Figure 6**



*NOTE: For models with three piece driveshaft, the coupling shaft will not be removed from the rear axle pinion flange. Support the coupling shaft with a length of wire from the chase and remove the driveshaft from the vehicle.*

**E)** Loosen and remove the bolts and u-joint retainers on the driveshaft to the rear axle pinion flange. For vehicles with circular flange drive shaft, loosen and remove the bolts on the rear axle pinion flange. Retain all hardware for reuse.

**F)** Lower the driveshaft from the rear axle pinion flange and slide it rearward off the transmission output shaft. For vehicles with a circular flange, use a small pry tool to help disconnect the driveshaft yoke to the rear axle pinion flange. See **Figure 4**.

**G)** Position the drain pan below the transmission/transfer case

output shaft to contain any fluid that may drain once the driveshaft is removed.

*NOTE: On models using strap-type (vs. flange) attachment, take care to keep the bearing caps on the U-joint spider when removing the driveshaft. Wrap the bearing caps with electrical tape or a similar material to keep the bearing caps from separating from the spider.*

**4.** Raise the transmission jack under the transmission.

**5.** Remove the wire harness from the rear crossmember.

**6.** Remove the rear transmission mount nuts. See **Figure 5**.

**7.** Disconnect and remove the shift cable from the manual lever. Loosen and remove the bolts to the shift cable housing bracket and secure the cable away from the transmission. See **Figure 6**.

**8.** Loosen the bolt and disconnect the solenoid body electrical connector. See **Figure 7**.

**9.** Disconnect the output shaft speed (OSS) sensor electrical connector and the turbine shaft and intermediate shaft combination speed sensor electrical connector. See **Figure 8**.

**10.** Disconnect the left and right hand wire harness from the sides of the transmission.

**11.** Remove the crossmember bracket bolts on the right side of the vehicle. Loosen the bolts on the crossmember and remove the crossmember from the vehicle. Retain all hardware for reassembly. See **Figure 9**.

**12.** Remove the exhaust components surrounding the transmission.

**13.** Remove the starter motor.

**14.** For 4x4 models, the transfer case will need to be removed.

**A)** Mark and disconnect the front driveshaft from the transfer case.

**B)** Remove the manual shift linkage.

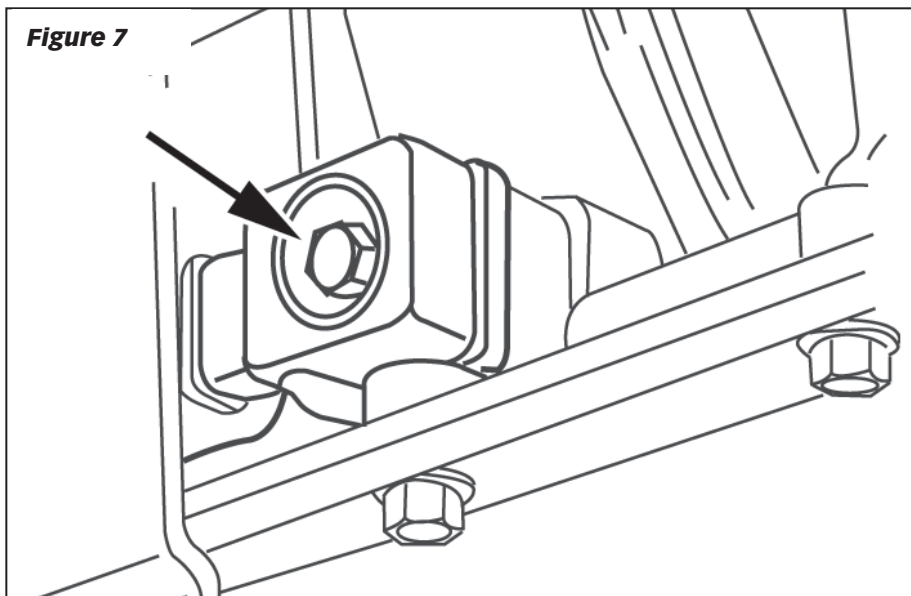
**C)** Disconnect the switch electrical connector, the gear motor encoder assembly electrical connector, and the gear motor electrical connector. Secure the connector harness away from the transmission.

**D)** Disconnect the vent hose from the transfer case.

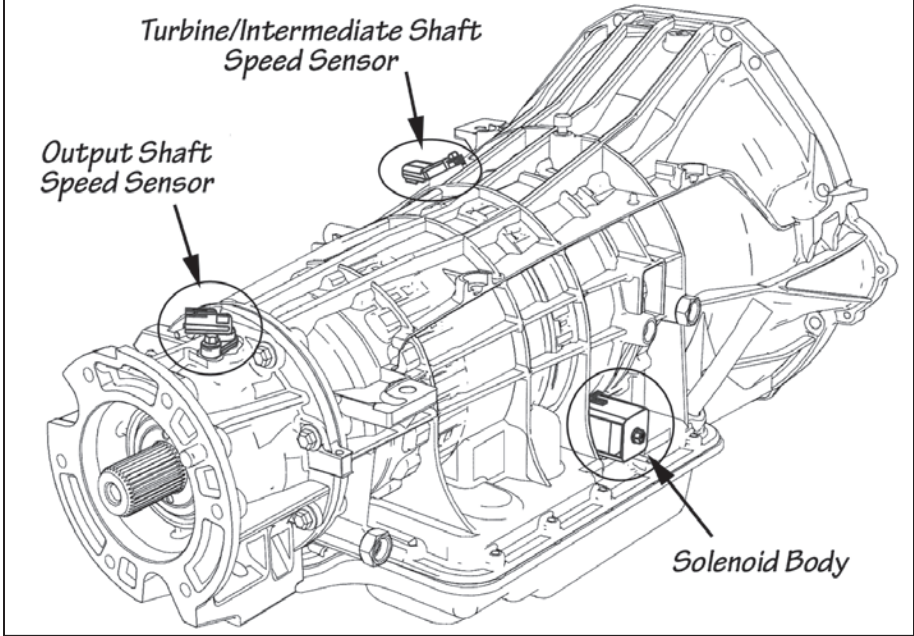
**E)** Position a transmission jack or equivalent under the transfer case and slightly lift the transfer case to release tension on the retaining bolts.

**F)** Remove the six (6) mounting bolts connecting the transfer case to the extension housing and retain for reassembly. Slide the transfer case rearward and remove the transfer case from the vehicle.

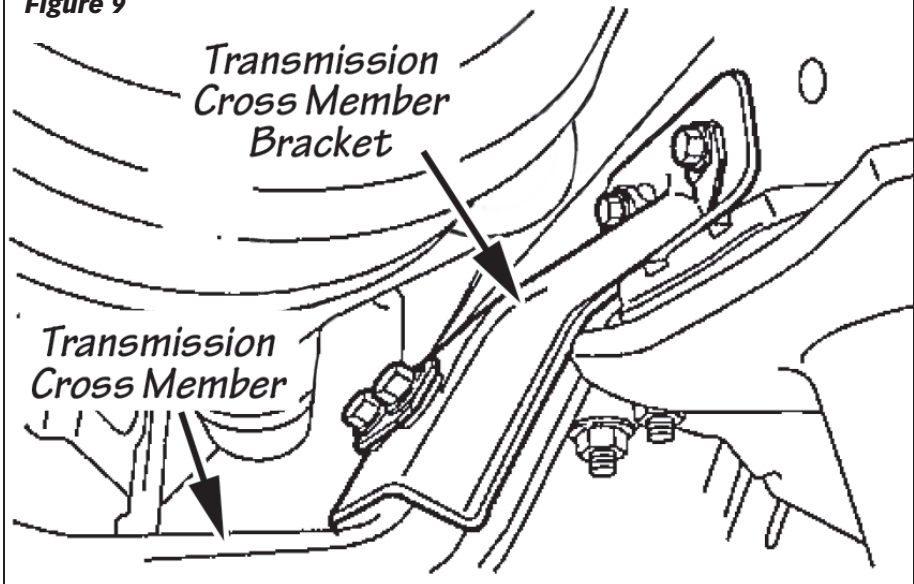
**Figure 7**



**Figure 8**



**Figure 9**



**15.** For models with dual generators, remove the outer accessory drive belt from the crankshaft pulley by rotating the tensioner.

**16.** To access the converter nuts, remove the cylinder block opening cover. See **Figure 10**.

**17.** Remove the torque converter nuts by rotating the crankshaft pulley.

*NOTE: A suitable strap wrench can be used to rotate the crankshaft pulley with the drive belt removed.*

**18.** A drain pan should be positioned under the working area. Disconnect the transmission fluid cooler tubes located on the right side of the transmission and allow them to drain into the drain pan. See **Figure 11**.

**21.** Remove the nine (9) transmission mounting bolts.

**22.** Carefully slide the transmission and torque converter assembly rearward.

**WARNING: Torque Converter can slide off the turbine shaft. Secure the converter when removing the transmission and torque converter assembly from the engine.**

*NOTE: The fluid filler tube will detach from the transmission when lowering the transmission.*

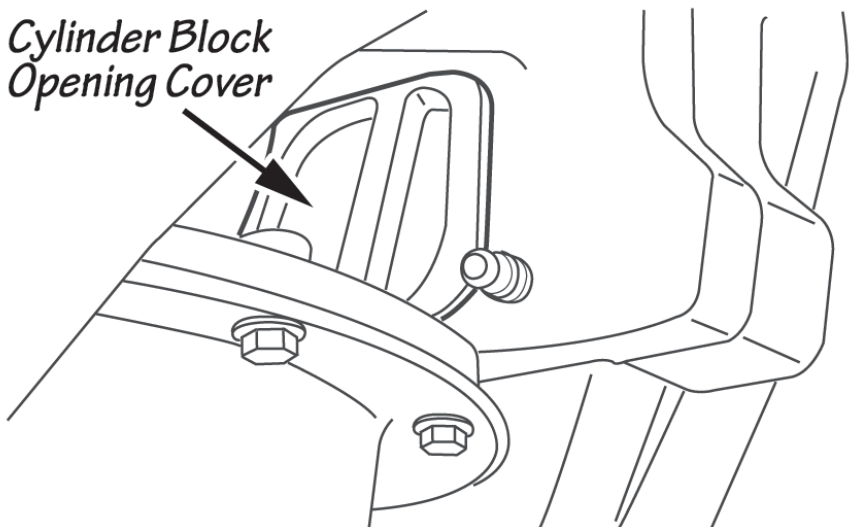
**23.** Lower the transmission and remove it from under the vehicle.

**24.** Once the transmission and torque converter assembly are removed, place a suitable drain pan under the converter housing end of the transmission.

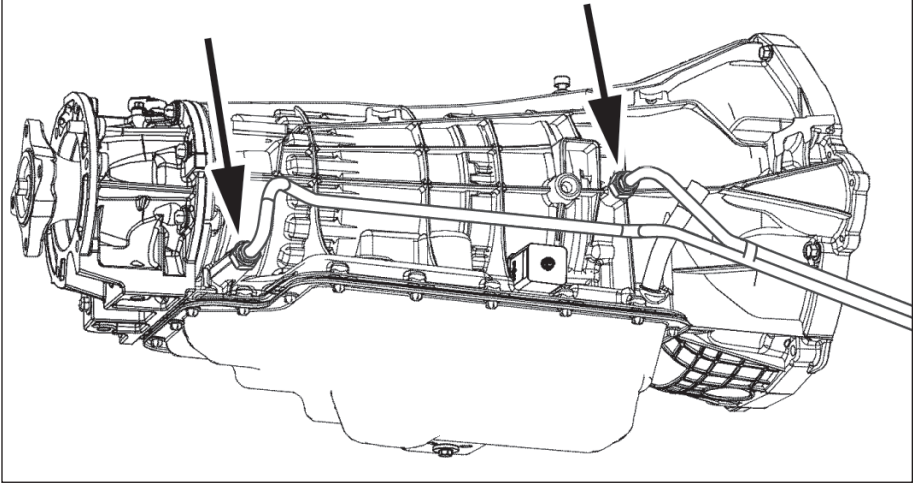
**CAUTION: Verify that the transmission is secured to the lifting device. When torque converter is removed, the transmission's center of gravity will shift and transmission may become unstable.**

**Figure 10**

*Cylinder Block  
Opening Cover*



**Figure 11** Disconnect Transmission Fluid cooler Tubes



**25.** Evenly pull on the torque converter to remove it - avoid wiggling or cocking the converter sideways as much as possible to prevent damage to the transmission input shaft and seals.

*NOTE: Inspect the oil seal on the front pump of the transmission. If there are signs of leakage or damage, the seal should be replaced prior to installing the new torque converter.*

**26.** Carefully remove the Banks Billet Torque converter from the shipping container. Be careful not to damage the shipping container, as it will be used to return the factory torque converter to Gale Banks Engineering.

**27.** To avoid pump seal damage during converter installation, inspect the Banks Billet Torque Converter hub and hub drive notches for sharp edges, burrs, scratches, or nicks. It may be necessary to polish the hub and/or notches with 320/400 grit sandpaper and crocus cloth. Clean the converter

afterwards to remove any foreign particles as necessary.

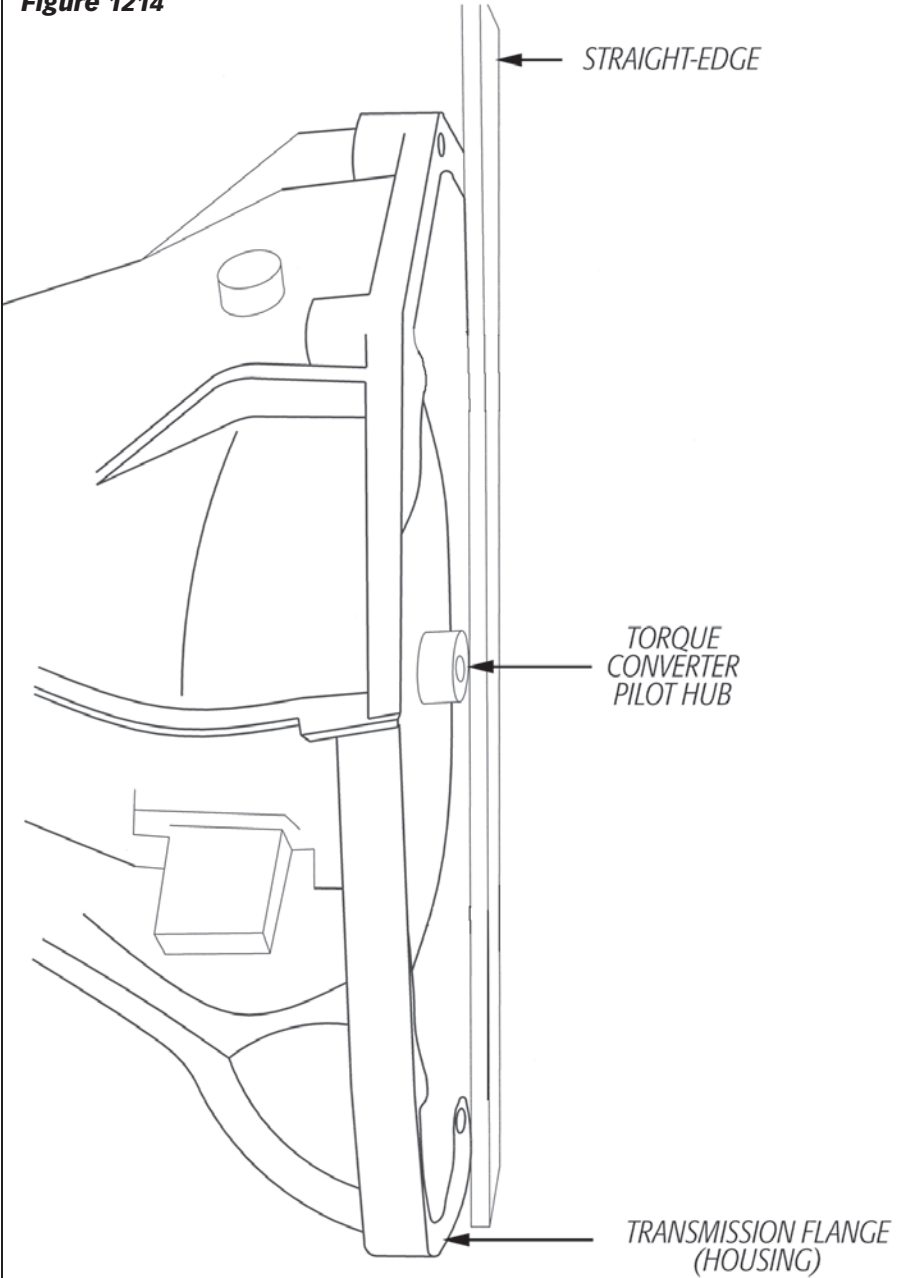
**28.** Position the Banks Billet Torque Converter with the drive hub up and pour one (1) quart of the manufacturer's specified transmission fluid into the drive hub. Use a small amount to coat the splines of the input shaft protruding from the transmission.

**CAUTION: When installing the Banks Billet Torque Converter, be careful to not damage the pump gear O-ring or hub seal.**

**29.** Before installing the Banks Billet Torque Converter, it is recommended to drain the transmission fluid, replace transmission oil filters and pan gasket, flushing and thoroughly cleaning the transmission cooler lines and bypass valve, and to lubricate the converter pilot hub with transgel grease.

**30.** Lift the Banks Billet Torque Converter and position it in front of the transmission input shaft. Turn the torque converter as needed to index

**Figure 1214**



properly and engage the transmission input shaft splines, then carefully work the torque converter onto the transmission input shaft until it is recessed behind the front transmission mounting flange.

**31.** Check converter seating with a ruler and straightedge to verify there is a gap between the converter pilot hub face and housing. See **Figure 12**. This ensures that the Torque Converter is fully engaged to the input shaft and the drive hub is sealed properly.

**32.** When raising the transmission align the fluid filler tube with the stub tube on the transmission using the fluid indicator as a guide.

**33.** Position the transmission near the engine and align the converter studs with the engine flexplate. Move the transmission towards the engine and install the transmission to the engine.

**WARNING: Torque Converter can slide off the turbine shaft. Secure the converter when installing the transmission and torque converter assembly from the engine.**

**34.** Reinstall the nine (9) transmission mounting bolts through the transmission mounting flange and into the engine. Torque evenly to 35 ft-lbs.

**37.** Reinstall the transmission cooler lines to the transmission. Torque the nuts to 30 ft-lbs

**38.** Rotate the torque converter and install the NEW (supplied) converter-to-flexplate 3/8"-24 nuts. Evenly torque the nuts to 26 ft-lbs.

**39.** Reinstall the cylinder block opening cover.

*NOTE: Reinstall the drive belt if previously removed.*

**40.** For models with dual generators, reinstall the outer accessory drive belt

to the crankshaft pulley by rotating the tensioner.

**41.** For 4x4 models, reinstall the transfer case.

**A)** Hoist the transfer case and align to the extension housing. Slide the transfer case into place and reinstall the six (6) mounting bolts. Torque evenly to 37 ft-lbs.

**B)** Reconnect the vent hose to the transfer case.

**C)** Reconnect the switch electrical connector, the gear motor encoder assembly electrical connector, and the gear motor electrical connector.

**D)** Reinstall the manual shift linkage.

**E)** Align and reinstall the front driveshaft to the transfer case.

**F)** Remove the transfer case hoist.

**42.** Reinstall the exhaust components surrounding the transmission.

**44.** Reinstall the crossmember to the vehicle. Reinstall the crossmember bracket bolts on the right side of the vehicle. Tighten all bolts to 60 ft-lbs.

**45.** Reconnect the left and right hand wire harness to the side of the transmission.

**46.** Reconnect the Turbine shaft and intermediate shaft combination speed sensor electrical connector and the output shaft speed (OSS) sensor electrical connector.

**47.** Reconnect the solenoid body electrical connector and secure with the factory bolt.

**48.** Reinstall the shift cable housing bracket to the transmission. Torque bolts to 18 ft-lbs. Reconnect the shift cable to the manual lever.



**49.** Reinstall the rear transmission mount nuts. Torque nuts to 60 ft-lbs.

**50.** Secure the rear wire harness to the crossmember.

**51.** Verify the transmission is secured to the crossmember and remove the transmission hoist.

**52.** Reinstall the rear drive shaft.

**A)** Re-align and re-attach the driveshaft to the transmission or transfer case output shaft/ flange. For flanged models only hand-tighten the attachment bolts.

**B)** Re-align and re-attach the rear of the driveshaft to the rear axle pinion flange. Torque the bolts to 76 ft-lbs. For models with strap-type rear axle pinion yokes, remove the electrical tape retaining the bearing caps on the rear of the driveshaft and re-attach it to the rear axle or coupling shaft ,for three piece driveshaft, using the u-joint retainer and bolts. Torque bolts to 26 ft-lbs.

**C)** For two and three piece driveshaft, connect the drive shaft center support bearing bolts. Torque the bolt to 47 ft-lbs.

**53.** Verify that all previously removed components are reconnected, all tools used are accounted for and all bolts are tightened to manufacture specifications.

**54.** Lower the vehicle and fill the transmission with manufacturer's specified transmission fluid.

**CAUTION: Do not overfill transmission fluid. Check the fluid level periodically during refilling.**

**55.** Reconnect the battery cable(s).

**56.** Start the vehicle and allow

engine to reach normal operating temperatures. With the vehicle lightly loaded, accelerate gently and allow the torque converter to lock and unlock a minimum of fifteen (15) times. This can be achieved by lightly accelerating from 20 MPH to 50 MPH multiple times. If possible, monitor transmission fluid temperature to verify proper torque converter and transmission operation. Fluid temperatures much higher than normal can be indicative of a malfunctioning transmission and/or torque converter. Check transmission fluid level and add the manufacturer's specified type of fluid as needed. Installation of the Banks Billet Torque Converter is now complete.

# To receive a core charge refund, complete the following steps.

**1.** You will notice that you have been charged a \$250.00 refundable core charge for your Banks Billet Torque Converter. In order to receive a refund on the core charge you must send us a good rebuildable core. Please follow these important instructions.

**2.** Do not discard or destroy the shipping container that your new torque converter came in.

**3.** After installation of your new torque converter, DRAIN ALL FLUID from your old torque converter by allowing it to sit upside-down in a suitable drain pan or container overnight.

**CAUTION: Failure to properly drain the converter may result in shipping refusal or other consequences related to shipping hazardous material.**

**4.** Install supplied plug on old torque converter input hub and wrap it in the supplied plastic bag.

**5.** Pack the torque converter into the Banks shipping container. If applicable, place the foam insulation around the torque converter to prevent damage during shipping.

**6.** Reseal the shipping container. Verify that the Torque Converter is secure in the shipping container.

**7.** Locate the return shipping label included in the Banks Billet Torque Converter package and affix it to the outside of the shipping container so that it completely covers the previous shipping label.