

**Owner's Manual**  
...with installation instructions

# **Banks Big Head<sup>®</sup> Wastegate Actuator**

**1999-2003 Ford Power Stroke 7.3L  
Turbo-Diesel F250/F350 Trucks**

THIS MANUAL IS FOR USE WITH KITS 24400 & 24401

Gale Banks Engineering  
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Product Information & Sales: (800) 438-7693  
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**bankspower.com**

**BANKS**

Dear Customer,

If you have any questions concerning the installation of your Banks Big Head Actuator, please call our Technical Service Hotline at (888) 839-2700 between 7:00 am and 4:00 pm (PT). If you have any questions relating to shipping or billing, please contact our Customer Service Department at (888) 839-5600.

Thank you.

## General Installation Practices

1. For ease of installation of your Banks system, familiarize yourself with the procedure by reading the entire manual before starting work.
2. The exploded view (page 3) provides only general guidance. Refer to each step and section diagram in this manual for proper instruction.
3. Throughout this manual, the left side of the vehicle refers to the driver's side, and the right side to the passenger's side.
4. Disconnect the ground cable from the battery (or batteries, if there are two) before beginning work.
5. Route and tie wires and hoses a minimum of 6" away from exhaust heat, moving parts and sharp edges. Clearance of 8" or more is recommended where possible.
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; put the transmission in park; set the hand brake; and place blocks behind the rear wheels. **Caution! Do not use floor jacks to support the vehicle while working under it. Do not raise the vehicle onto concrete blocks, masonry or any other**

**item not intended specifically for this use.**

7. During installation, keep the work area clean. Do not allow anything to be dropped into intake, exhaust, or lubrication system components while performing the installation, as foreign objects will cause immediate turbo-charger and/or engine damage upon start-up.

### Tools Required:

- $\frac{1}{2}$ " and  $\frac{3}{8}$ " drive ratchets with standard and metric sockets and  $\frac{1}{2}$ " and  $\frac{3}{8}$ " drive extension
- Standard and metric combination or open-end wrenches
- Small standard screwdriver
- Clean shop towels or rags

### Highly recommended tools and supplies:

- Penetrating oil or light lubricant spray

# Installation Instructions

1. Remove the decorative plastic cover directly over the engine.
2. Disconnect the boost line attached to the nipple on the wastegate actuator.

For ease of installation, Gale Banks Engineering recommends removing the turbocharger from the vehicle prior to installing the Banks Big Head wastegate actuator. If installing the Banks Big Head actuator without removing the turbocharger, proceed to **Step 8**.

3. Loosen the clamp holding the air intake hose at the turbocharger compressor inlet. Pull the hose free of the turbo compressor. Disconnect all

wiring and plastic tubing attached to components on the turbo compressor discharge plenum casting.

4. Loosen the four clamps on the hoses connecting the compressor discharge plenum casting to the intake manifolds. Loosen the clamp attaching the plenum to the turbocharger compressor outlet and the intercooler duct. Remove the compressor discharge plenum from the engine. Cover the two intake-manifold hose nipples with clean rags to prevent foreign objects from entering the engine.

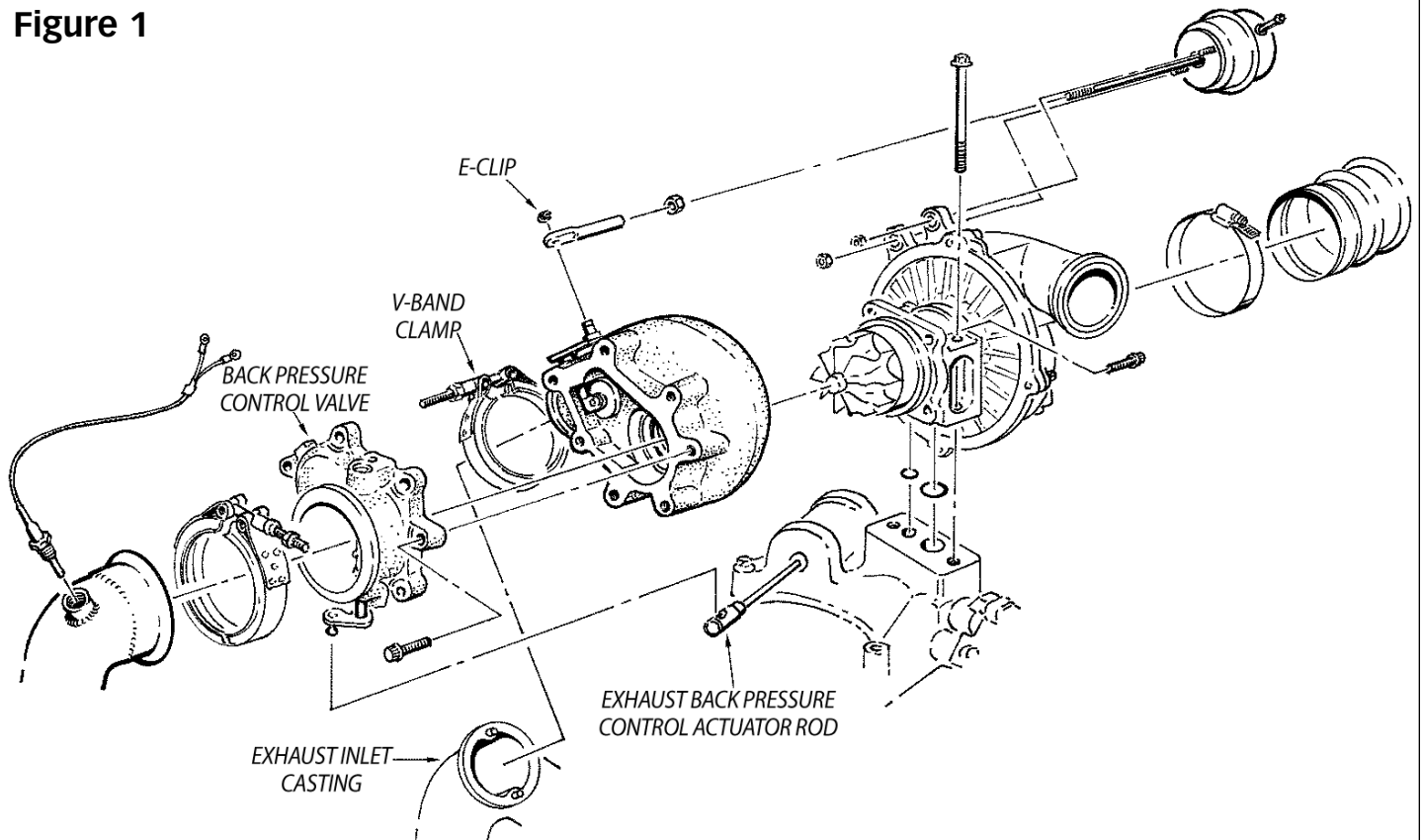
5. Disengage the exhaust-backpressure control actuator rod by sliding the cover on the end of the rod back toward the turbocharger and pulling the rod downward. This rod is below the turbine housing; it is not

the wastegate actuator rod that runs across the top of the turbocharger (see **Figure 1**).

6. At the rear of the turbine housing, loosen and remove the two V-band clamps attaching the turbine housing to the exhaust inlet casting and turbine outlet pipe. Remove the two bolts attaching the turbocharger bearing housing to the pedestal base mounted on the engine. Remove the turbocharger from the engine by lifting while lightly tapping the turbine housing with a hammer.

7. Remove the two O-rings from the junction of the turbocharger bearing housing and pedestal mount. Place a clean rag over the oil passages in the pedestal mount and the exhaust inlet casting to prevent foreign object entry. (continued on back)

Figure 1



**WARNING: At the outlet of each exhaust manifold, locate the short section of tubing that feeds exhaust up to the turbocharger. Check these tubes to ensure that they are not loose, as we have found several new vehicles with exhaust leaks in this area. Correct this condition now to eliminate dangerous exhaust leaks and poor turbocharger performance.**

**8.** At the back side of the turbocharger, locate the small e-clip that retains the actuator rod end on the wastegate arm. Using a small screwdriver, carefully pry the clip off of the wastegate arm and retain for reuse. **CAUTION: This clip is very small and is easy to lose. It may help to use a magnet to retain the clip as you remove it.** Loosen the two wastegate actuator nuts on the turbocharger compressor housing and remove the actuator.

**9.** Install the Banks Big Head actuator onto the turbocharger. Tighten the lock nuts on the mounting studs. Adjust the rod end until the hole aligns with the wastegate arm pin. Turn the rod end link clockwise an additional **four full turns**, such that it will add preload to the wastegate. Apply a regulated supply of air

pressure to the nipple on the actuator until the rod extends enough to slip over the wastegate arm pin. Install the e-clip onto the wastegate arm pin to retain the actuator rod. Tighten the jam nut down on the end link.

*If the Banks Big Head wastegate actuator was installed with the turbocharger on the engine, proceed to **Step 14**.*

**10.** Reinstall the turbocharger onto the pedestal assembly on the engine. Make sure the sealing area on the pedestal assembly and the bottom of the turbocharger are clean, and the new O-rings provided are in place, then bolt the turbocharger to the pedestal. Reinstall the V-band clamps attaching the turbine housing to the exhaust inlet casting and turbine outlet pipe. **IMPORTANT: Check the condition of the V-band clamps as over-tightening can cause the clamp to spread, allowing the T-bolt to become loose.** Replace the clamp if the clamp is damaged or will not tighten.

**11.** Reinstall the compressor discharge plenum on the engine. Reinstall the clamp attaching the plenum to the turbocharger compressor outlet and the intercooler duct. Reinstall the four clamps on the

hoses connecting the compressor discharge plenum casting to the intake manifolds.

**12.** Reinstall the air inlet hose to the turbocharger compressor air inlet.

**13.** To reconnect the exhaust backpressure control valve, hold the cover on the end of the rod back and have someone start the engine. When the rod extends after a few seconds, push it up onto the valve linkage and allow the cover to snap back into position. **WARNING! Stay clear of moving parts such as engine cooling fan and belts. Do not drive the vehicle until the remainder of the installation is complete.**

**14.** Reconnect the boost line to the nipple on the Banks Big Head wastegate actuator.

**15.** Reinstall the decorative plastic engine cover.

**16.** Start the engine and allow it to warm up. Drive the vehicle, listening for any exhaust leaks or rattles. Adjust and tighten any clamps removed during the installation process if necessary.

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