

**Important: Always refer to vehicle-specific service manual for exact removal/installation detail**

### **CLUTCH MASTER CYLINDER INSTALLATION**

1. Disconnect pushrod from pedal. Replace eyelet bushing if broken during removal.
2. Remove interlock switch, if attached, from the pushrod.
3. In some applications, it may be necessary to disconnect battery, reposition components, and/or remove inner fender to gain access to the clutch master cylinder.
4. Disconnect line fitting or drive out retaining pin holding hydraulic line to cylinder. If vehicle uses quick-connect coupling in line, clean and uncouple using the proper disconnect tool.
5. Remove mounting bolts/nuts. For "Twist and Lock" type, rotate cylinder about 45 degrees clockwise and remove. **NOTE:** some vehicles require counterclockwise rotation to remove.
6. Bench bleed new cylinder before installing. Block port, fill reservoir with DOT3 fluid, with cap removed. Using a blunt tool, depress piston into cylinder slowly about 3/4"-1" and slowly release. Repeat until bubbles no longer appear in reservoir or piston becomes hard to depress.
7. Repeat process in reverse order to install replacement cylinder.
8. Follow slave cylinder bleeding instructions below.

### **EXTERNAL CLUTCH SLAVE CYLINDER INSTALLATION**

**NOTE:** Some slave cylinders are shipped with a plastic pushrod-retaining strap. **DO NOT CUT OR REMOVE** this strap, as the bands are designed to break during the first clutch application. It then provides a non-metallic end for the pushrod to prevent wear and noise.

1. Disconnect line or drive out the pin that holds the hydraulic line to the cylinder. Remove line. If vehicle uses quick-connect fittings, use proper disconnect tool to uncouple.
2. Remove bolts or retainer holding cylinder to transmission. Remove cylinder.
3. Push in new cylinder's pushrod to disconnect retaining bands (if so equipped) and allow pushrod to fully extend. **DO NOT CUT OR DISCARD RETAINING STRAP.**
4. Tip cylinder at about 45 degrees and pour DOT 3 brake fluid into hydraulic port until air is expelled. Insert hydraulic line into port and carefully reconnect or drive in retaining pin.
5. Cylinders without bleeder screw: Hold slave cylinder vertically with pushrod facing down, making sure that slave is lower than master cylinder. Slowly depress pushrod into cylinder about an inch while watching the reservoir for air bubbles. Repeat process until air bubbles no longer appear, usually about 10-15 strokes. With reservoir lid removed, slowly depress pushrod in far enough to reconnect the bands of the retaining strap (if so equipped). Install slave cylinder on vehicle and replace lid on reservoir. Using slow short strokes, depress clutch pedal 10-20 times or until pedal is firm.
6. Cylinders with bleeder screw: Install slave cylinder on vehicle. With reservoir lid removed and reservoir filled, depress the clutch pedal with slow short strokes 10-20 times or until pedal is firm. Then depress pedal and hold it down. Open the bleed screw on the cylinder to allow air and fluid to escape. Torque the bleed screw, then release pedal (do not overtighten bleed screw). Repeat process until air is removed, clutch pedal is firm, and clutch engagement is satisfactory. Maintain fluid level in reservoir during the bleeding process. Step 5 may be used in difficult bleeding situations.

**Bleed screw torque for Plastic cylinder (3 to 5 Nm); Aluminum cylinder (15 to 20 Nm)**

#### **INSTALLATION TIPS**

- Be sure fluid supply and/or pressure lines are not kinked.
- Be sure pedal rod does not bind or stick. Lubricate at eyelet end.
- Do not allow lines to be closer than 4 inches from exhaust manifold/pipe (steel lines: 2 inches).
- Check quick-disconnect o-rings for cracking, splitting or contamination and replace if necessary.

#### **BLEEDING TIPS**

- Use only new brake fluid that meets DOT 3 or 4 specifications.
- Brake fluid absorbs moisture - keep container closed and do not reuse old fluid from the vehicle.
- Use caution in handling brake fluid. Prevent contact with skin, face, eyes, and painted surfaces. Use a container to catch fluid during bleeding process.
- Prevent contact of any petroleum-based fluid (gas, oil, transmission or power steering fluid, etc.) with hydraulic clutch system or brake fluid.
- If a damper exists in the hydraulic line, inlet and outlet ports must be vertical to properly bleed.

