BRUCE COUTURE'S MODERN DRIVELINE

"FIVE AND SIX SPEED CONVERSION SPECIALISTS"

F-100 '61-'66
Hydraulic Clutch Master Cylinder Installation Instructions

Read These Instructions Completely Before Beginning

These instructions are for hydraulic master cylinder installations using an external slave cylinder or a hydraulic throw-out bearing. If your truck has been modified from a stock configuration, certain steps may not apply. Existing alterations to your vehicle are your responsibility.

Note: Kitted parts may not be exactly the same as shown.

Tools and Notes

Drill motor, 21/64" drill bit, Sharpie marker, 3/16" Allen wrench, 3/8, (2) 1/2", 9/16", 5/8" wrenches and/or socket/ratchet, 1 3/8" hole saw, silicone sealant, Loctite, a second person.

Safety Equipment – Always wear ANSI approved safety goggles/glasses when working with metal and fluids. Wear proper gloves when working with hot surfaces and corrosive fluids.

1.0 Disassembly - If your Truck is already disassembled, skip to the Assembly Instructions. If you are converting an automatic car, some disassembly steps do not apply.

1.0 Remove all clutch linkage or automatic linkage from engine, transmission, frame and clutch pedal. From the clutch pedal, retain the keeper pin and spring washer. These two parts will be used on re-assembly.

1.1 Warning: Clutch pedal spring is under pressure. Use caution when removing. Remove the clutch pedal spring and all associated hardware. Do not remove the clutch pedal stop. The spring and spring attaching hardware will not be reinstalled.

2.0 Assembly

2.1 Position plate assy next to the support channel on the firewall and approximate height as shown. Verify clutch pedal actuation does not interfere with the plate. **Note: This is a multi-use plate and has extra holes.** The plate edges should be vertical, and the linkage also be vertical (do not scale the picture). Using a sharpie marker, mark two of the small mounting holes – the **upper outer** and the **lower inner.** Drill holes using a 5/16" drill bit. Create a hole for the Master Cylinder using a 1 3/8" hole saw as required. The Master cylinder will sit at a slight angle.

2.2 Clean surfaces of firewall and master cylinder spacer block. Apply silicone sealant to surface of block. Using a second person, Position the Master Cylinder with block through the hole and install cap screws with Loctite using a 3/16" Allen wrench. Temporarily install clevis pin and nylon washer.

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2.17 Verify actuation of the lever assy with master cylinder attached. The master cylinder will have 1.4" of total travel. Verify master cylinder does not bottom out on lever and verify the lever does not hit cap screw. Install e-clip on clevis pin. Install the bushing in the pedal and install balance of hardware as shown using a 1/2" wrench/ratchet. Make sure to install 5/16" flat washer between the rod-end and pedal to keep the bushing in place. Verify the clutch pedal rests against the stop when adjusting rod-ends.

2.18 Verify actuation – the clutch pedal should bottom out on the carpeting at the same time the master cylinder bottoms out. If you have no carpeting or insulation under the clutch pedal, a stop block is recommended so the master cylinder will not be damaged. If the pedal bottoms out on the carpeting without bottoming out the master cylinder no further adjustments are necessary until the hydraulic system is activated with the clutch. If the pedal stops before hitting the carpeting, loosen the stop nut on the master cylinder clevis, loosen lock nut and remove the rod end on the lever. Checking in ½ turn increments, adjust the master cylinder clevis until the pedal stops against the carpeting, reattaching hardware and adjusting the rod-end as required. Once adjustments are complete, tighten clevis jam nut and install plastic washer between lever and clevis and install C-clip on dowel pin. Re-install rod-end hardware and tighten jam nut between rod-ends. Verify no binding of rod-ends and clevis against lever and clutch pedal spacer. Actuation should be smooth. Verify the master cylinder rod travels the full stroke of 1.35" to 1.4" for proper clutch release.

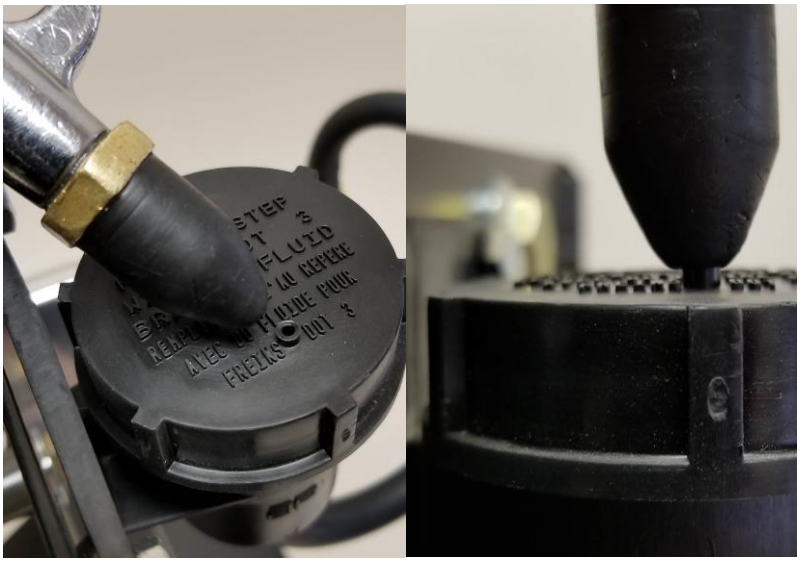
2.19 Do not over tighten fittings – this will cause damage to the seat of the hose end and fittings. Attach the steel braided line to the 90-degree elbow on the master cylinder and slave cylinder or hydraulic throw out bearing making sure line has clearance to exhaust system and will not interfere with any moving parts. Once steel braided line is positioned for routing and clearance, tighten jam nut on the 90-degree fitting in the master cylinder. Note: There is an o-ring under the jam nut. **Do not adjust 90-degree elbow more than ½ turn in either direction.**

2.20 Close the bleed screw on the slave cylinder or hydraulic throw out bearing. Remove the bladder & fill reservoir with **DOT 3** brake fluid. Do not install bladder at this time. Install cap tightly.

2.21 **Caution: Always wear ANSI approved goggles/glasses when working with fluids. Wear proper gloves when working with corrosive fluids.** Purging of air and filing the hydraulic system. Pressure bleeding is the only way to remove all the air from the system. Pedal pumping will not work as it causes air bubbles to be trapped in the line and will not pass.

2.21.1 Loosen the bleed screw on the slave cylinder or hydraulic throw-out bearing. Allow gravity to fill the system until fluid comes out the bleed screw then close. Top-off reservoir and re-install cap.

2.21.2 Using a second person, open the bleed screw and apply 5-10 psi thru the vent hole in the reservoir cap using a rubber tipped air nozzle. **Air pressure must be regulated to ~10 psi for safety**.



2.21.3 Since the reservoir is small, the bleed screw should only be open for about 5 seconds. You will see a solid stream of fluid come out, followed by air bubbles, followed by another solid stream of fluid. Immediately close the bleed screw when you see the second solid stream of fluid to prevent draining the reservoir.

2.21.4 Top off fluid to the step line in the reservoir and install bladder and cap. Do not overfill or brake fluid will spill over.

2.22 With the NOT running and system full of fluid, cycle the clutch pedal a few times. You should have clutch feel but it will not be a heavy clutch. If the slave cylinder does not move at the beginning of the clutch pedal movement, there is still air in the system. Repeat the above process as necessary.

2.23 Position rear wheels on jack stands (free to rotate). With transmission in neutral, start truck. Push in clutch pedal. Transmission should go into 1st gear easily. Slowly release clutch pedal. Pedal should start to engage the clutch at a comfortable level of the pedal travel (about 1.0”-1.5” from floor). Adjust slave cylinder first, master cylinder second, to change clutch engage/release point. A new or rebuilt transmission should have all the gears run thru (in the driveway, partially releasing clutch) before road testing the new hydraulic clutch.

2.24 Remove jack stands and test drive. Upon return, verify steel braided line clearance and support. The hydraulic lines should keep away from the exhaust and clutch assembly

2.25 If the clutch feels spongy or releases too close to the floor, repeat step 2.21. FYI – micro bubbles may be present in the system due to actuation, accumulation on rubber parts, and machining marks within the system. Repeating step 2.21 is recommended, before or after test driving

2.26 Further assistance and tech support is available by calling Modern Driveline at 208-453-9800 M-F 8-5 Mountain time or E-mail Tech@moderndriveline.com

2.27 Enjoy your new hydraulic system and Thank You for “Making it Modern” We appreciate your business.

Modern DriveLine offers a complete line of **Vehicle Specific** Hydraulic Kits and we’re adding more all the time.