BRUCE COUTURE'S MODERN DRIVELINE

"FIVE AND SIX SPEED CONVERSION SPECIALISTS"

66-Up Fairlane, Falcon, Torino, Comet, Maverick
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 car has been modified from a stock configuration, certain steps may not apply. Existing alterations to your vehicle are your responsibility.

1.0 Tools and Notes

1.1 Drill motor, #7 drill bit, 21/64" drill bit, Sharpie marker, 7/16" & 1/2" wrenches and/or socket/ratchet, small & medium flat-tip screw drivers, silicone sealant, a second person.

1.2 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.

1.3 Some components from our mock-up vehicle have been removed for clarity.

2.0 Optional Parts

2.1 Firewall Steering Column Gasket
2.2 Nylon Pedal Bushings – Available from Modern Driveline
2.3 Roller Bearing Kit – Available from Modern Driveline

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

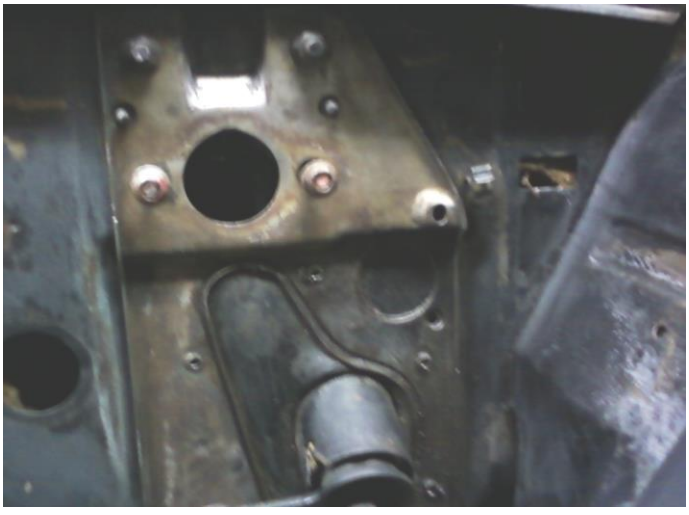
3.1 Remove all clutch linkage or automatic linkage from engine, transmission, frame and clutch pedal.

3.2 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. You may remove the clutch pedal for easier access.

3.3 Peel back your insulation, carpeting and steering column boot as required and remove the steering column block-off plates and retain. These will be trimmed later.

3.4 For automatic cars, punch out the original clutch rod perforation in the firewall. If there is no perforation… cut this hole as noted below in the assembly instructions.

3.5 Also for automatic cars, if it is equipped with a column shift you will need to remove the neutral safety switch selector from the steering column



4.0 Assembly

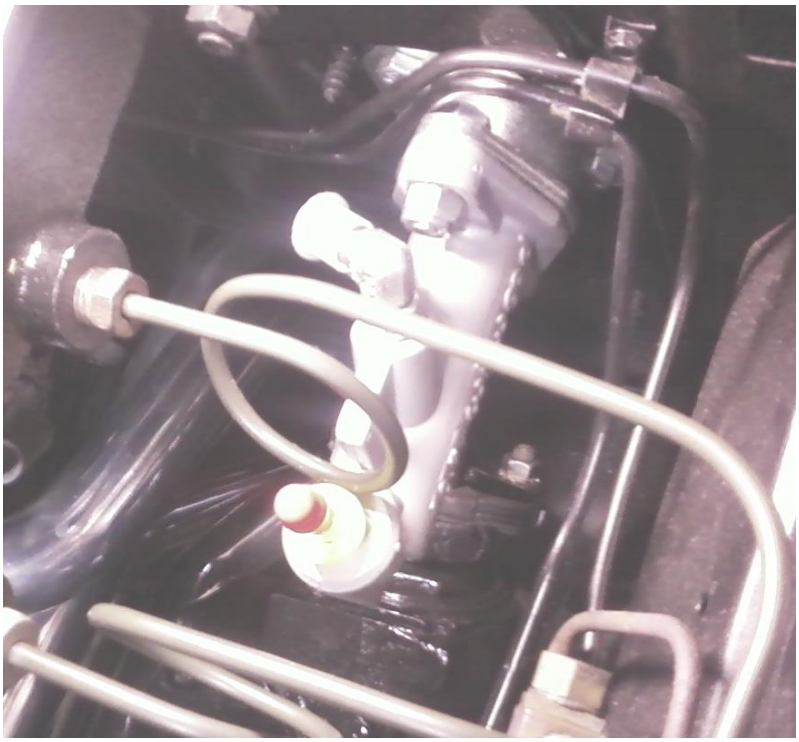
4.1 Note: You may install the clutch pedal after firewall plate is completely installed. Re-install the clutch pedal with all previously removed nylon bushings. Re-install the spring washer and keeper pin or spring clip on the end of the clutch pedal. Actuate clutch pedal for freedom of movement and press on brake pedal to verify smooth operation.

4.2 Remove any undercoating and sealants from the clutch rod opening area on both sides of the fire wall so the spacer block and firewall plate will sit flat. Orient the Master Cylinder Spacer Block so the wide lip is down and inboard. Position the Master Cylinder Spacer Block in the engine compartment sliding the outside edge up against the vertical leg and up to the ledge. Mark the (2) 21/64" holes with a Sharpie and drill holes in the firewall. Remove and deburr holes. Note: The spacer block will not be centered over the existing clutch rod hole opening.

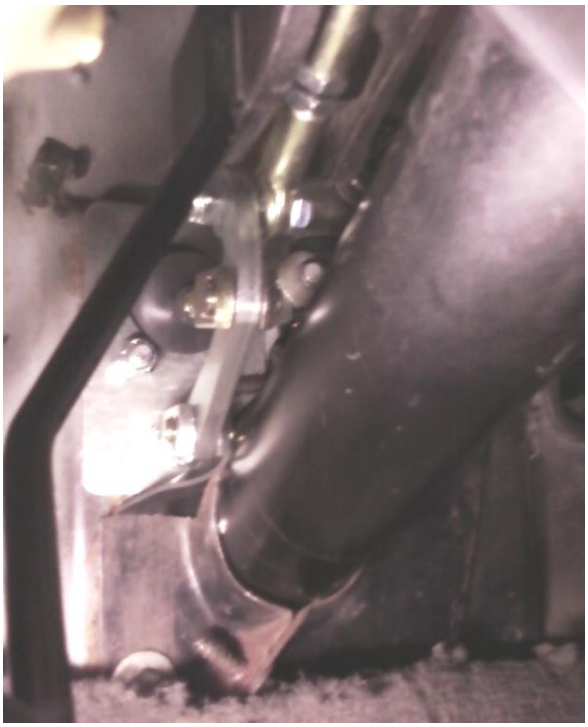
The wide lip in the picture on the left is shown "as installed" looking from the engine compartment side.

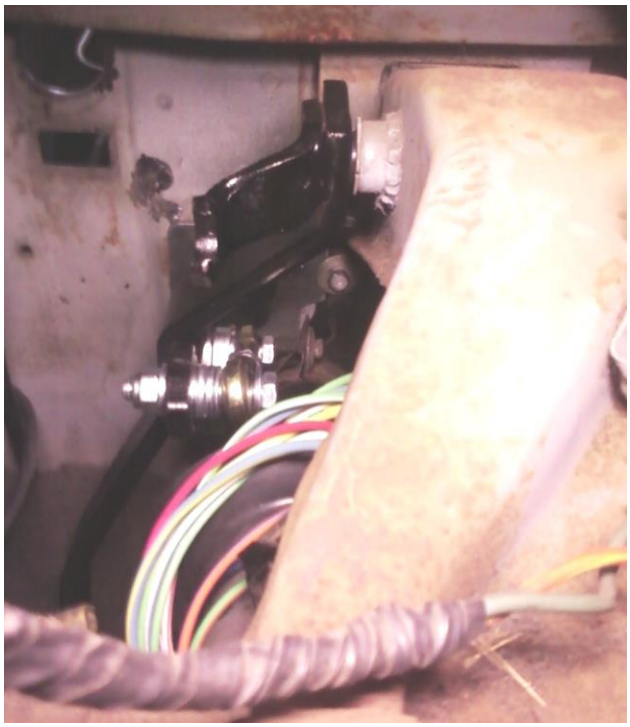
4.3 Attach the Clutch Master Cylinder to the Master Cylinder Spacer Block to each other with a thin layer of silicone sealant. Assemble using two 5/16-24 x 1" bolts and lock nuts. The fasteners will face opposite directions. As an option you may install the Spacer Block first and the master cylinder second making sure to position the top 1" long bolt before installing the Spacer Block.

4.4 Apply a thin layer of silicone sealant to the Firewall Plate and the Master Cylinder Spacer Block and install using two 5/16-24 x 1" bolts and lock nuts. Verify the supplied Firewall Plate, under the dash, sits level (horizontal/vertical) inside the car.



4.5 Install the clevis on the master cylinder until the threads end inside the clevis. Attach the hardware as shown in the pics. Attach clevis to the lever temporarily with clevis pin. Install 1 ¼" bolt thru the rod end, washer and lever and install a 5/16" lock nut. The washer goes between the lever & the rod end.





4.6 Install the bushing in the clutch pedal hole. Install the 1 ¾" bolt from the passenger side with one washer under the head, then the rod end, then a stack-up of 4 washers, install thru the pedal/bushing, then one washer, then lock nut. The stack-up of washers will be used as spacers to align the rod ends perpendicular to the clutch pedal and lever. Screw rod-ends together with a minimum of 5-6 threads on each end. Make sure two jam nuts are installed on the rod. Start by setting the clutch and brake pedal at the same height and install the second rod end on the bolt you just installed on the clutch pedal. Verify perpendicular alignment and adjust with washers accordingly. Install Lock nut and tighten.

4.7 Take your existing steering column block-off plates and trim to the bottom of the supplied firewall plate. Maintain the leg that wraps around the column. Install with silicone sealant and existing removed fasteners. You may add holes and fasteners to these plates if you wish. Note: the passenger side plate may not need trimming. Evaluate before trimming. Install the cross fasteners that support the steering column. If the upstanding leg has been trimmed off, use a hose clamp.

4.8 Trim your firewall steering column gasket and re-install with trimmed block off plates using silicone sealant.

4.9 Reset your insulation and carpeting, trimming to clear the new master cylinder location as required.

4.10 Verify actuation – the clutch pedal should bottom out on the carpeting at the same time the master cylinder bottoms out, or the pedal will bottom out on the cowling at the end of the pedal stroke. If you have no carpeting or insulation under the clutch pedal or the pedal has been modified, 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, remove the rod-end from the clutch pedal and pin from the clevis. Checking in ½ turn increments, adjust the master cylinder clevis until the pedal stops against the carpeting, reattaching hardware and adjusting the clutch pedal rod-end as required. Once adjustments are complete, install plastic washer between lever and clevis and install C-clip on dowel pin. Tighten all nuts. Verify no binding of rod-end and clevis against lever and clutch pedal. Actuation should be smooth. Re-install brake master cylinder and bleed brakes as required. **Note: to keep from having an "over-center" pedal pressure condition, the rod ends may be no lower than parallel to the steering column with the pedal in the returned position and the lever should end its stroke as close to the firewall as possible.** Verify the master cylinder rod travels the full stroke of 1.35" to 1.4" for proper clutch release.

4.11 Locate and mount the reservoir anywhere above the master cylinder. Mark the hole locations with a Sharpie. Using ¼" sheet metal screws, pre-drill holes using a #7 drill bit prior to attaching reservoir. Install reservoir using 3/8" wrench or socket/ratchet. Do not over-tighten. Attach the reservoir line to the barbed inlet fitting on the master cylinder cutting reservoir line to proper length as required. Make sure reservoir line does not interfere with any moving parts.

4.12 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

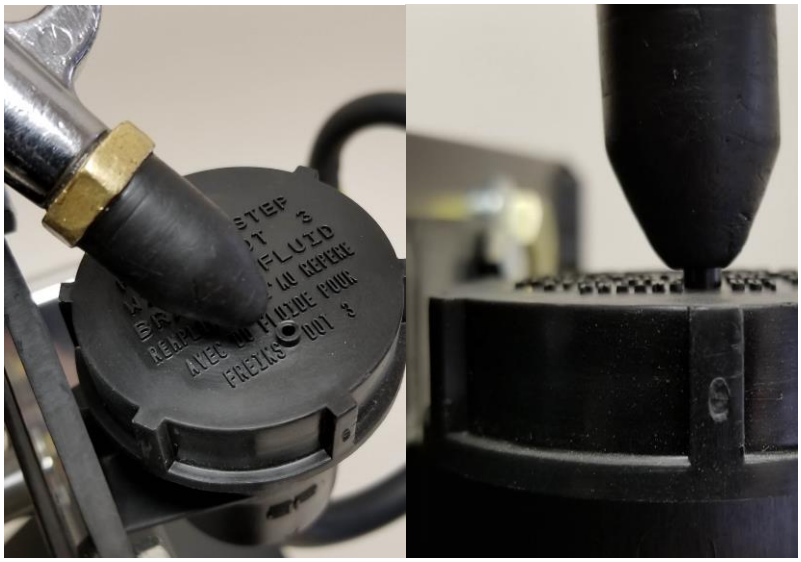
hydraulic throw out bearing making sure line has clearance to exhaust system and will not interfere with any moving parts. Once steel braided line is positioned for routing and clearance, tighten jam nut on the 90 degree fitting in the master cylinder. Note: There is an o-ring under the jam nut. **Do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

4.13 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.

4.14 **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.

4.14.1 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.

4.14.2 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.**



4.14.3 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.

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

4.15 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.

4.16 Position rear wheels on jack stands (free to rotate). With transmission in neutral, start car. 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.

4.17 Remove jack stands and test drive. Upon return, verify steel braided line clearance and support. The line should never come in contact with the exhaust.

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

4.19 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

4.20 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.