

BRUCE COUTURE'S MODERN DRIVELINE

"FIVE AND SIX SPEED CONVERSION SPECIALISTS"

Falcon 60-65 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. This system will not clear power brake boosters mounted directly to the firewall.

1.0 Tools and Notes

- 1.1 Drill motor, abrasive sanding disc, cut-off wheel, #7 drill bit, 1/4" & 5/16" drill bits, Sharpie marker, drift punch, hammer, X-acto knife or razor blade, 7/16" 1/2" 9/16" 5/8" wrenches and/or socket/ratchet, 3/16" Allen wrench, small & medium flat-tip screw drivers, pliers, tin snips, silicone sealant, vise, Loctite, 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.

2.0 Optional Parts

- 2.1 Firewall Steering Column Gasket
- 2.2 Nylon Pedal Bushings – Available from Modern Driveline

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

- 3.1 Note: our mock-up vehicle has certain items removed and cut away for clarity. You may remove the brake master cylinder as required for access.
- 3.2 Do not remove the firewall block-off plates at this time. Do not remove the clutch fork. 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.
- 3.3 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.
- 3.4 Note: Prior to removing clutch pedal, verify brake pedal operation. It should be smooth and should feel the same after re-installing the clutch pedal later in these instructions. Remove the clutch pedal. Retain all nylon bushings. Grind off the outboard side of the “pin” that previously pushed the linkage rod. Grind off the pin completely and drive out using a drift punch.



- 3.5 From the engine compartment side, prior to removing the steering column block-off plates, trim the existing gasket to the edge of the column opening. Do not trim the entire gasket to the edge of the opening. Trim down and cut horizontally 2 ½” from the top of the column cut-out in the firewall. Note: In the Hydraulic clutch kit the master cylinder spacer block is stepped to accommodate the firewall thickness *and* gasket. Not using a gasket will result in an un-even mounting surface.



- 3.6 Peel back your insulation, carpeting and steering column boot as required and remove the firewall block-off plates leaving the gasket in place. If the gasket comes off, re-adhere using some Duro spray adhesive, or equivalent. Retain the steering column block off plates, these will be trimmed later.

4.0 Assembly

- 4.1 Note: our mock-up vehicle has certain items removed and cut away for clarity. The pedal hangar must be installed in the vehicle to position the firewall plate correctly.
- 4.2 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 on the end of the clutch pedal. Actuate clutch pedal for freedom of movement and press on brake pedal to verify smooth operation (same as prior to removal).

- 4.3 Position the supplied plate inside the car, butting the top of the plate against the bottom of the pedal hangar assembly. With the bottom of the plate horizontal, slide the plate left to right so the inboard edge of the steering column cut-out is even with the edge of the large hole in the plate. Mark the top hole with a Sharpie and drill a 5/16" hole in the firewall (location of finger). Do not drill the lower holes at this time.



- 4.4 Using a second person, position the spacer block (backwards – studs in spacer block going thru holes) aligning the holes. Using a Sharpie, mark the firewall steering column cut-out to trim off the upstanding lip so the spacer block will sit flat when installed. Do not cut away the flat part of the firewall you drilled the hole thru.
- 4.5 Temporarily install the plate and spacer block. Make sure the step in the spacer block does not interfere with the flat part of firewall and enough of the firewall lip has been trimmed away.

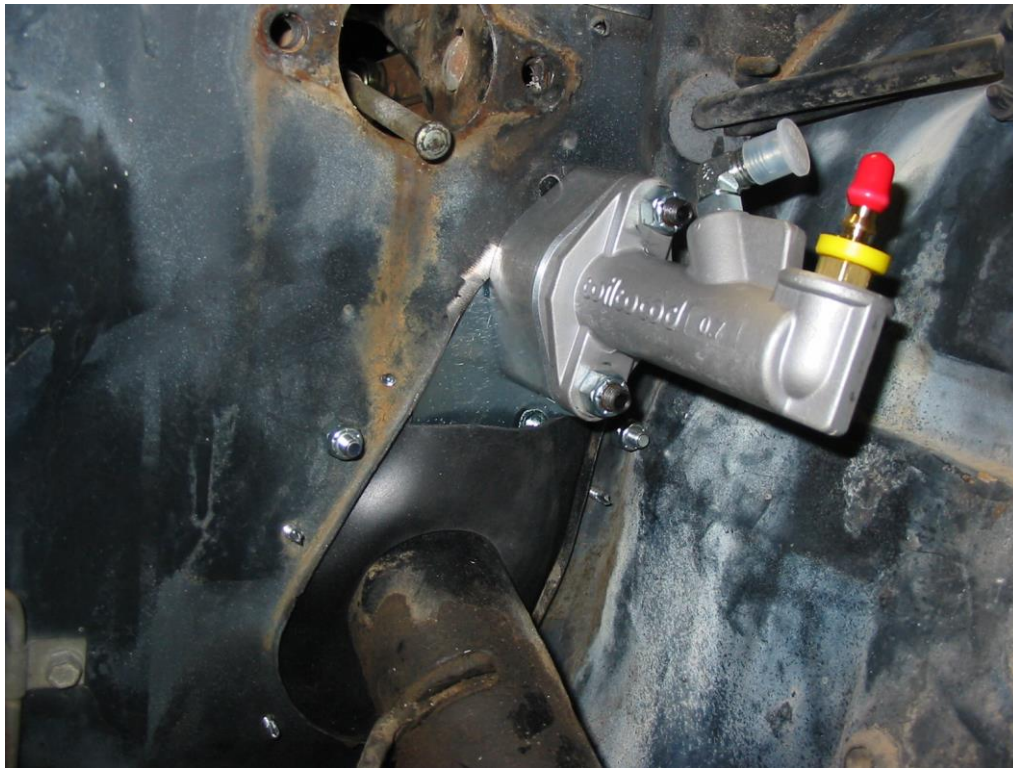


- 4.6 Back inside the vehicle, verify the bottom of the supplied plate is horizontal. Drill the bottom two 1/4" holes. For the 60-63 Falcon drill the outer hole in the left side of the plate. For the 64-65 Falcon drill the inner hole in the left side of the plate.
- 4.7 Remove plate. Touch-up and deburr as required.
- 4.8 Clean surfaces of gasket, supplied plate and spacer block. Apply a thin layer of silicone sealant around edges of plate and step surface of spacer block. Install spacer block using 5/16 cap screws with Loctite (thread locking compound) using a 3/16" Allen wrench. Install 1/4" hardware in lower two holes in plate. From engine compartment side, press gasket against plate to seal gasket and plate together.
- 4.9 Take your existing steering column block-off plates and trim to the bottom of the supplied plate. Install with silicone sealant and existing removed fasteners. You may add holes and fasteners to these plates if you wish.
- 4.10 Slide steering column boot back into position. Reset your insulation and carpeting, trimming to clear the new master cylinder location as required.
- 4.11 Verify the clutch pedal in the full up position is even with the brake pedal. Adjust the clutch pedal stop as required.



- 4.12 Apply a thin layer of silicone to the mating surface of the master cylinder and spacer block. Install master cylinder thru hole in spacer block and tighten nuts. Install clevis on master cylinder to the end of the threads. Temporarily install pin thru master cylinder clevis. Install studded rod-end on lever. Install non-studded rod end on pedal using 5/16-24 x 1.25" bolt and nylon lock nut.
- 4.13 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, 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. Also make sure the linkage pushes “**straight**”. Pushing to either side will cause components to bend and not function when hydraulic pressure is applied. Shim with washers/spacers if necessary.





- 4.14 Locate and mount the reservoir anywhere above the master cylinder. Mark the hole locations with a Sharpie. Using 1/4" 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.
- 4.15 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 1/2 turn in either direction.**
- 4.16 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.
- 4.17 **Caution: Always wear ANSI approved goggles/glasses when working with fluids. Wear proper gloves when working with corrosive fluids.** Purging the system – Pressure bleeding is the only way to remove all the air from the system. 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. 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 5-10 psi or you could damage components.** 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. Top off fluid to the step line in the reservoir and install bladder and cap. Do not overfill or brake fluid will spill over.

- 4.18 Do not start car at this time. With system full of fluid, test by actuating pedal a few times. You should have clutch *feel* but it will not be a *heavy clutch*. Repeat the above process if necessary.
- 4.19 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.
- 4.20 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.
- 4.21 If the clutch feels spongy or releases too close to the floor, repeat step 4.16. FYI – micro bubbles may be present in the system due to actuation, accumulation on rubber parts, and machining marks within the system. Repeating step 4.16 is recommended, before or after test driving.
- 4.22 Further assistance and tech support is available by calling Modern Driveline at 208-453-9800 M-F 8-5 Mountain time. Please call us first for any issues.
- 4.23 Enjoy your new hydraulic system and Thank You for choosing Modern Driveline. We appreciate your business.

FYI

Modern DriveLine offers the following **Vehicle Specific** Hydraulic Kits and we're adding more all the time.

MD-910-0002	65-66 Mustang
MD-910-0012	67-70 Mustang/Cougar
MD-910-0022	60-65 Falcon/Comet
MD-910-0032	62-65 Fairlane/Galaxie
MD-910-0042	66-71 Falcon, Fairlane, Torino, Comet, 70-79 Maverick, Granada
MD-910-0100	55-57 Chevy
MD-910-0102	67-69 Camaro
MD-910-0103	70-81 Camaro
MD-910-0500	Generic master with built in Reservoir
MD-910-0600	61-66 Ford F-100 Pickup

More in development.

