"FIVE AND SIX SPEED CONVERSION SPECIALISTS"

'67 Chevelle/GM A Body
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, Sharpie marker, 3/8" & 1/2" wrenches and/or socket/ratchet, Allen wrench set, pliers, silicone sealant, loc-tite, a second person.

1.2 This Hydraulic Master Cylinder Kit utilizes existing opening in the firewall.

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

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

2.1 Remove brake master cylinder and brake booster as required, disconnecting the brake lines.

2.2 Do not remove the clutch pedal. Remove all clutch linkage or automatic linkage from engine, transmission, frame and clutch pedal.

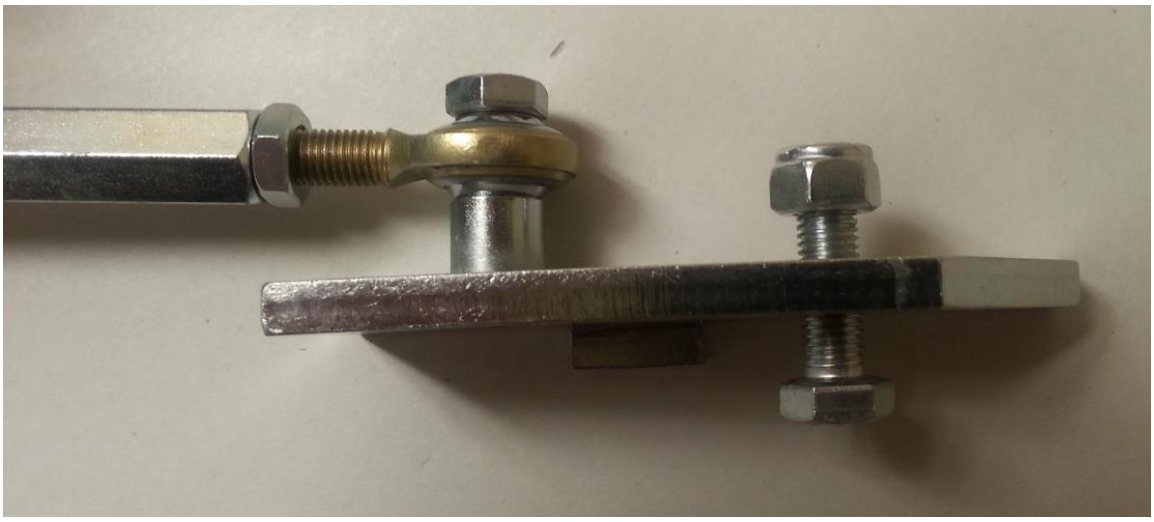
3.0 Assembly

3.1 Note: our mock-up vehicle has certain items removed for clarity.

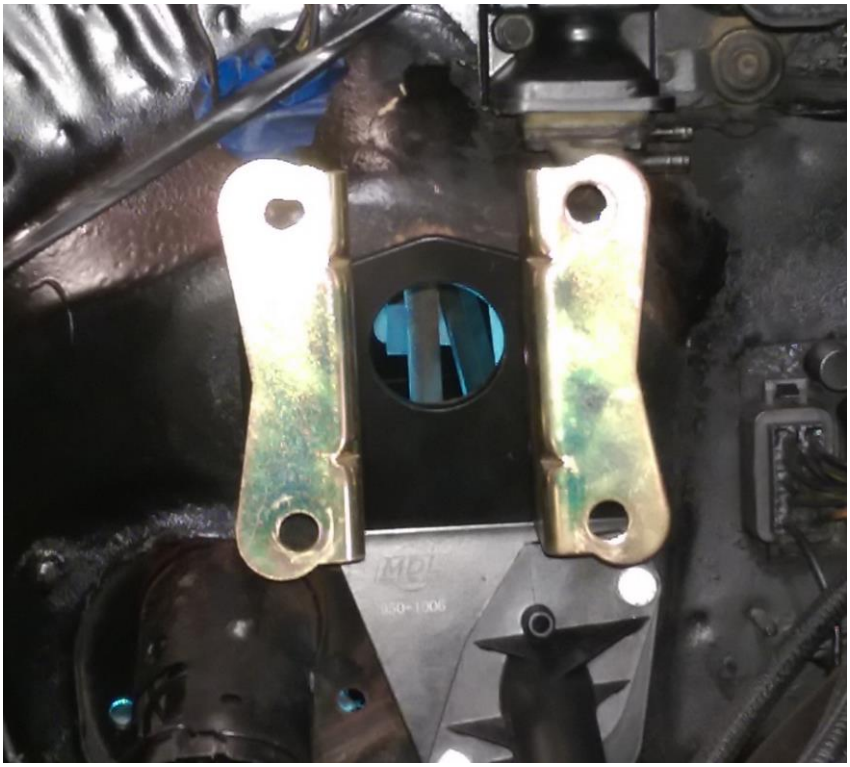
3.2 Pre-assemble the Master Cylinder and firewall plate assembly as shown. Temporarily fit-check by installing bracket and master assembly thru firewall opening. Remove any existing gaskets and sealants as necessary.
Caution: Do not rotate AN-4 elbow fitting without holding the roll pin from coming out.

3.3 Remove all components and clean mating surfaces.

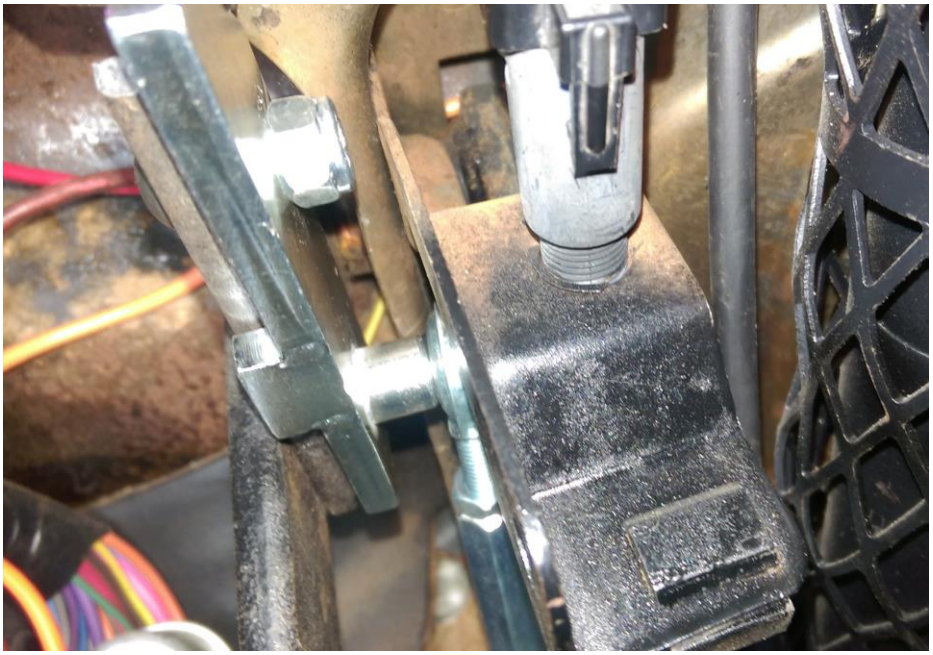
3.4 Install bracket on clutch pedal and tighten fastener with ny-lok nut.



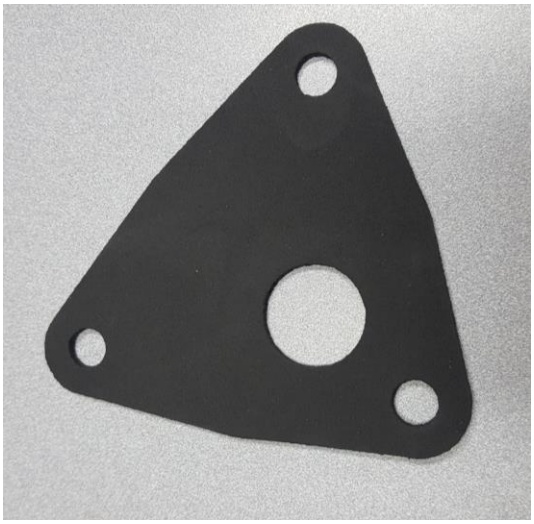
3.5 Temporarily install clutch master cylinder with plate and tighten all fasteners. Fluid reservoir may be removed to facilitate installation; protect opening from debris as req'd.



3.6 There is no adjustment on the rod/ladder joint, this has been put together with loc-tite. Install hardware thru rod end and clutch pedal bracket and tighten. Make sure there are atleast 5 full threads penetrating the rod end.



3.7 Verify actuation – Turn the below boot inside-out and stroke the pedal. There is a plastic washer that serves as a piston stop and limits the travel of the rod. Make sure the rod does not contact this washer during pedal actuation. Shimming and adjustments may be made on installation. 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, adjust male rod end to lower the clutch pedal. Adjust pedal stop as necessary and know the pedals may not be at the same height. Verify no binding of rod-end and clutch pedal. Verify parallel alignment of all the components. Actuation should be smooth. **Verify the master cylinder rod travels the full stroke of 1.4" for proper clutch release.** Return boot to natural position.



3.8 If you find the clutch pedal does not have enough travel… the "up stop" end of the bracket may be trimmed to accommodate more pedal stroke.

3.9 Once all adjustments are made… remove bracket and apply silicone sealant between bracket and firewall. Re-install Brake booster & brake master cylinder, brake lines and distribution block as required. Carefully install the **firewall gasket** & orient for best fit. Trimming may be required. Tighten all hardware including jam-nut on rod-end. Re-install firewall under-dash components using sealant as req'd for mating surfaces. We recommend applying removable loc-tite to threads of bolt for the rod-end going into the supplied pedal bracket.

3.10 Locate and mount the reservoir anywhere above the master cylinder. You may shorten the reservoir hose as req'd. 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. Make sure reservoir line does not interfere with any moving parts.

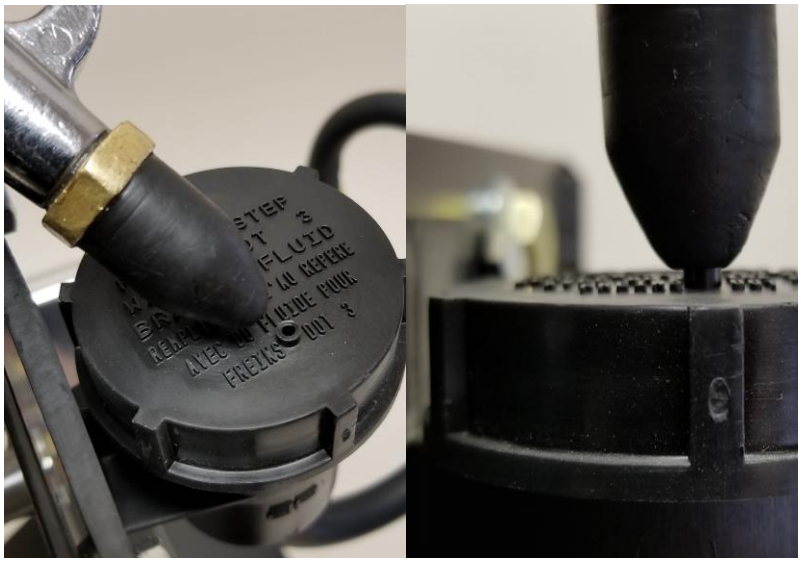
3.11 Do not over tighten fittings – this will cause damage to the seat of the hose end and fittings. Attach the steel braided line to the 90 degree elbow on the master cylinder and slave cylinder or hydraulic throw out bearing making sure line has clearance to exhaust system and will not interfere with any moving parts.

3.12 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.

3.13 **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.

3.13.1 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.

3.13.2 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.**



3.13.3 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.

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

3.14 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.

3.15 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.

3.16 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.

3.17 If the clutch feels spongy or releases too close to the floor, repeat step 3.13. FYI – micro bubbles may be present in the system due to actuation, accumulation on rubber parts, and machining marks within the system. Repeating step 3.13 is recommended, before or after test driving.

3.18 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

3.19 Enjoy your new hydraulic system and Thank You for choosing Modern Driveline. We appreciate your business.

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