



## Mustang 79-93 (Fox Body)

Includes: Capri, Continental, Fairmont, Futura, LTD II, Marquis, Zephyr  
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. These instructions assume your vehicle is already a manual shift.

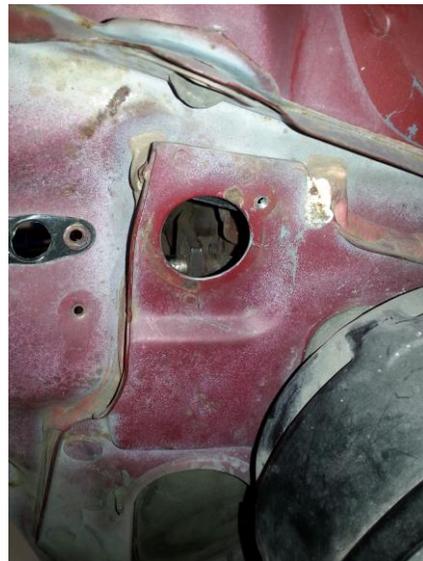


### Tools and Notes

Drill motor, 5/16" drill bit, SAE Allen wrench set, 10mm, 12mm, 13mm, 1/2" wrenches and/or socket/ratchet, vise-grips, small flat-tip screw driver, 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. Wheel Chocks & Jack Stands.

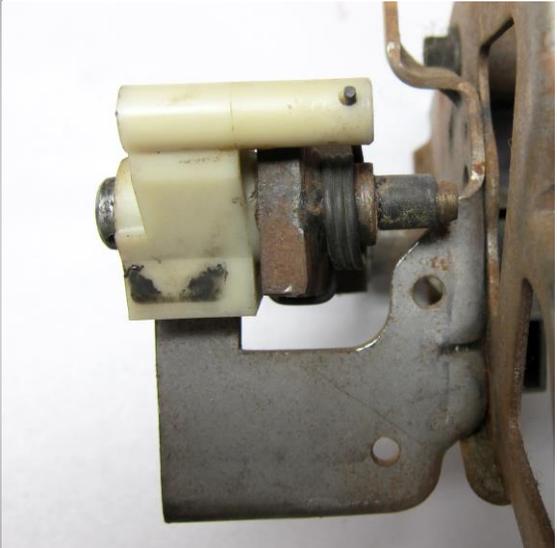
- 1.0 Disassembly - If your Vehicle is already disassembled, skip to the Assembly Instructions. Disconnect the battery cable, jack up the vehicle for access, use wheel chock and jack stands as applicable.
- 1.1 Removal of the pedal hangar assembly from the vehicle is not necessary.
- 1.2 Remove the clutch cable assembly - Have a second person firmly lift up on the clutch pedal until it stops and hold in this position. First person will remove the cable cover from the bell housing and push the clutch lever towards the rear of the vehicle and using a small pair of vice grips, clamp the cable where it exits the cable housing. Pull the fork forward and release the cable end from the clutch lever. Second person will push upward on the large plastic gear attached to the pedal under the dash. First person will release vise-grips and push the cable into the cable housing. Second person will remove the cable end from the large plastic gear. Release parts and remove the retention clip & fasteners on the firewall, bell, & frame, remove cable from vehicle.
- 1.3 \*\*\* Be careful not to damage the neutral start switch \*\*\* Remove (2) hair-pin clips, gears and springs from the clutch pedal arm, these parts will not be re-used. Remove the big gear first, see pictures below. The small gear will be cut with a hack saw blade from the engine compartment. Wrap the held end with duct tape to protect yourself and cut next to the spring. Remove small gear and spring.



Cable installed, Cable removed, pedal linkage left installed with all necessary parts removed.

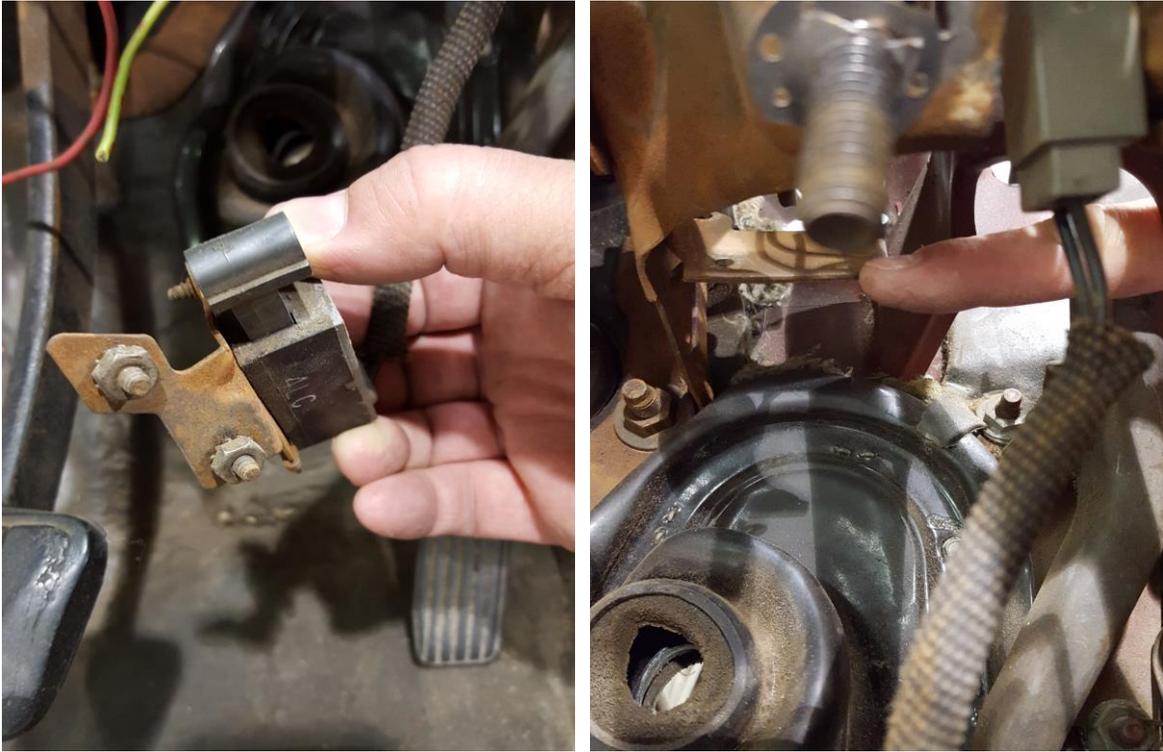


Use pliers or hook tool to remove clip. Push a screwdriver up between pedal arm and spring; it will spring loose and come off easily.



Use long skinny screwdriver to pry spring from arm. Cut plastic gear from engine compartment.

- 1.4 Un-mount the Neutral Start Switch using a 10mm wrench.  
Take your time... this can be done using your right hand only.



Shown are the Neutral Start Switch removed and the mounting bracket located under the dash.  
Note: Steering column parts are removed for clarity.

- 1.5 Trim away the plastic insulation liner and remove excess sealant from under the dash.  
This will allow clearance for the inner firewall bracket assy to sit flush.



Shown are the insulation liner and excess sealant removed.

## 2.0 Assembly

### 2.1 \*\*\* **DO NOT DRILL UPPER BLOCK HOLES TOO DEEP. DAMAGE TO THE COWLING WILL OCCUR AND WATER WILL DRAIN INTO THE VEHICLE**

**Using a drill stop is advised. Drill only 1/4" deep past the firewall.**

Open the existing cable mounting hole in the firewall to 5/16" diameter. Position the outer firewall block, centering the registration step over the opening. Position a bolt thru the 5/16" hole and drill (3) new 5/16" holes thru firewall block. Verify all fasteners align properly and easily. It is permissible to go up to 11/32" to ease fastener installation and maintain registration alignment of block. De-burr holes both sides.



Shown are the outer firewall block "registered" on large hole & held with fasteners, then the four drilled holes.

- 2.2 \* **DO NOT OVER-TIGHTEN FASTENERS IN ALUMINUM PARTS** \* Trial fit fasteners thru inner firewall block. For ease of installation... lower the clutch pedal to the floor. Pre-assemble the Inner Firewall Plate Assy, Custom Clevis, Shoulder Bolt, and small end of the Push Lever. Use removable Loc-tite on threads when installing. **This block must sit flat on firewall.** Trial fit both inner and outer blocks with ALL fasteners. Close the Inner Plate assy and position the large end of the push lever UP and feed in front of the forward pin.



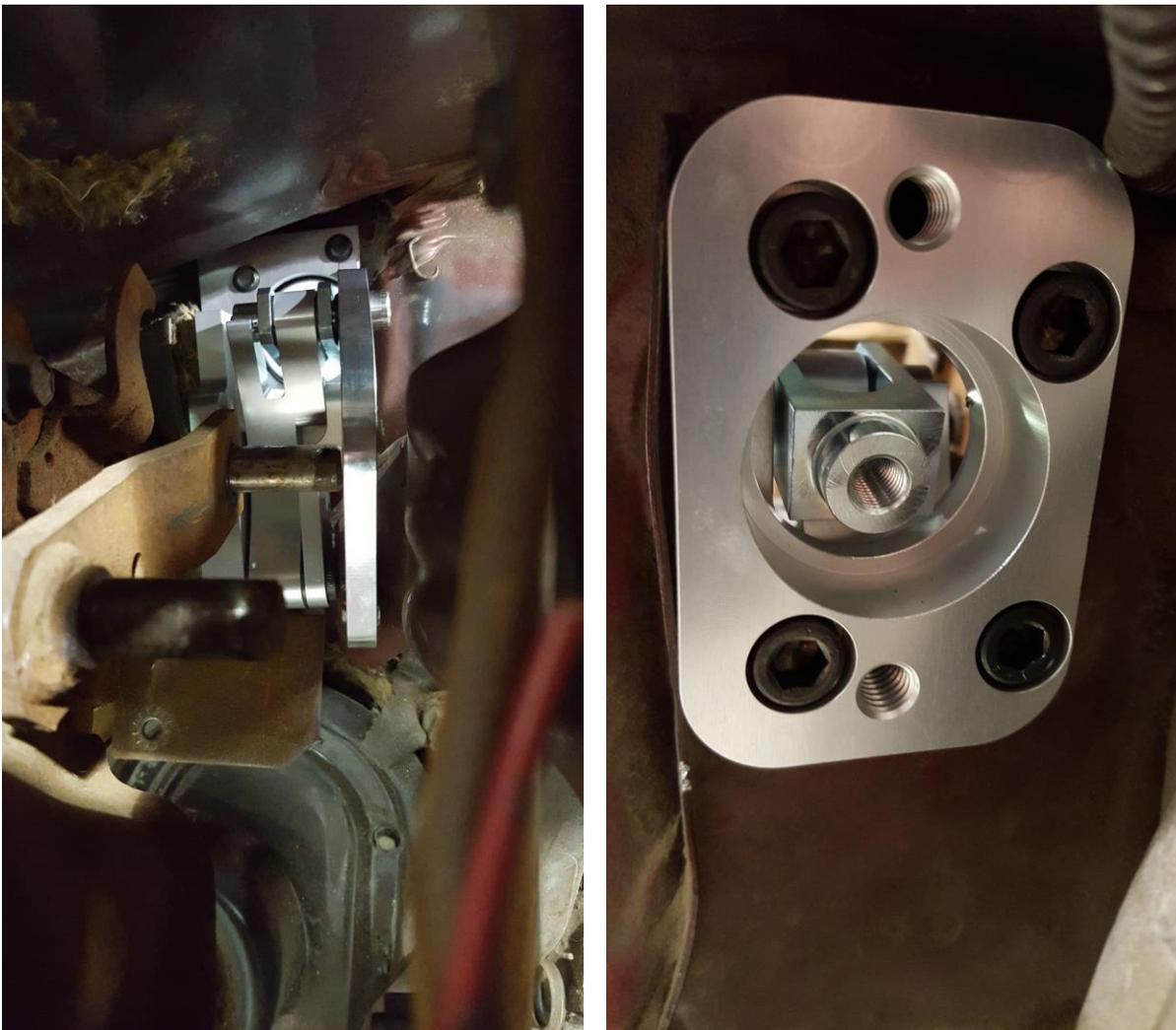
Pre-assembled inner firewall parts and initial position of the push lever shown.



Continue pushing up until plate falls into position.

- 2.3 Apply silicone sealant to outer firewall block and install (4) Allen head bolts from the engine compartment side and secure inner and outer firewall plates using Allen wrench. Blocks

must be registered on the stock unaltered cable housing hole location in firewall. A change in placement will result in failure. Remove excess sealant.

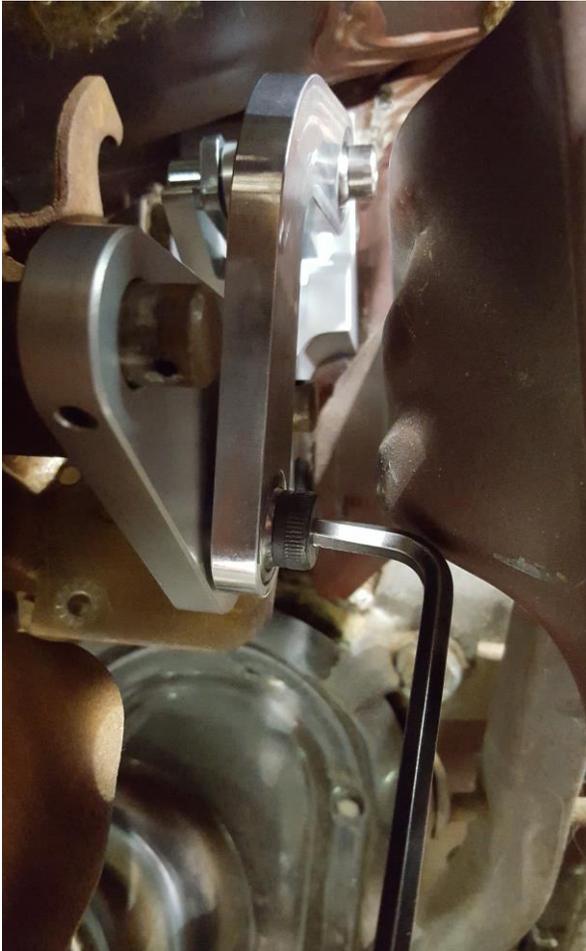


Inner and outer firewall parts installed.

2.4 The Clutch Pedal Plate has set screws pre-installed set until they almost protrude into holes; this will save installation time under the dash. For ease of tightening set screws, the clutch pedal will need to be placed in various positions. Note: the pins on the existing clutch pedal arm are not even. Position the plate with the threaded hole DOWN and loosely sit on

pedal pins. Raise the clutch pedal and attach the lower hole in the Push Lever to the threaded hole in the Clutch Pedal Plate using 3/8" shoulder bolt. Leave only enough room to use an Allen wrench on the shoulder bolt, do not push lever all the way on pins or preloading will occur. Assemble using removable Loc-tite on threads and tighten.

2.5 **It is important the forward end of the clutch plate does not interfere with the Push Lever (see pin-point).**



2.6 Align the Clutch Plate to be parallel with the inner edge of the Custom Clevis and tighten the set-screws in the Clutch Plate. Push the clutch pedal all the way down to tighten the rear set screw and all the way up to tighten the forward set screw. It is important the Push Lever be as straight as possible. **Do not scale the location of the Clutch Pedal Plate on the pins. Each car may be slightly different.**



Shown is clutch pedal down, tightening set-screw and a slight gap between the Push Lever and the Clutch Plate.



Shown is clutch pedal up tightening forward set-screw.

- 2.7 Push Spacer block all the way over master cylinder boot.



- 2.8 Be sure your carpet and floor mat are installed. Push and hold the clutch pedal all the way to the floor making sure the threaded end of the clevis is visible in the center of the outer block. The second person will thread the master cylinder rod into clevis. Make sure the 12mm gold nut is still on the master cylinder rod. First person will continue to hold the clutch pedal to the floor. The master cylinder has free-play between the rod and the piston inside the cylinder. Push the master cylinder towards the firewall to take-up the free play but do not compress the cylinder. Continue to turn silver  $\frac{1}{2}$ " nut with a wrench until 1.4" of gap is attained. Check this measurement top and bottom, and side to side, making sure the Spacer Block is pushed all the way against the master cylinder. Once the 1.4" gap is set, tighten the gold 12mm nut against the clevis. Note: It will be more than 1.4" if you "pull" on the master cylinder.



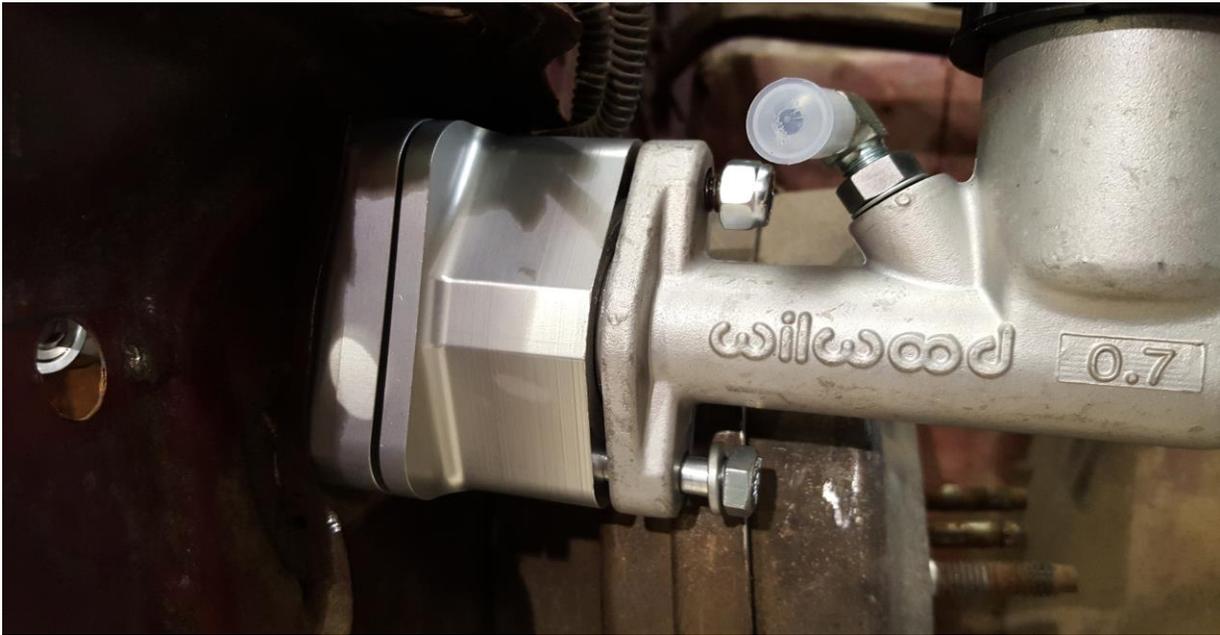
Silver nut used for adjusting 1.4" gap. Gold nut gets tightened once gap is set.



2.9 Position the stud in the upper hole as shown and start threads.



2.10 Pull out the master cylinder and rotate. Align and install nut on stud, and install lock washer and bolt in lower hole.



- 2.11 Tighten the nut on the stud. The locking feature of the nut will be engaged. Back out stud and apply removable Loc-tite to threads going into Firewall Plate. Re-thread stud into firewall plate and tighten upper and lower fasteners. Do not over-tighten in aluminum parts.



- 2.12 Re-attach neutral start switch using 10mm wrench.
- 2.13 Your installation and adjustment are now complete; less the elbow fitting in the master cylinder for the steel braided flex hose and bleeding operations.
- 2.14 Verify actuation – the clutch pedal should bottom out on the carpet 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 carpet without bottoming out the master cylinder no further adjustments are necessary. Verify no binding of push lever and clevis against lever and clutch pedal plate. Actuation should be smooth. Verify no insulation or plastic liner interference. **Verify clearance between the OE pedal pin-plate and idler lever. See upper r/h picture on pg 9. Interference caused by improper 1.4” adjustment.**

- 2.15 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 the 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.**
- 2.16 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.
- 2.17 **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.
- 2.18 Do not start car at this time. With the 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.
- 2.19 Position rear wheels on jack stands (free to rotate). With transmission in neutral, start car. Push in clutch pedal. Transmission should go into 1<sup>st</sup> 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). 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.
- 2.20 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.
- 2.21 If the clutch feels spongy or releases too close to the floor, repeat step 2.15. FYI – micro bubbles may be present in the system due to actuation, accumulation on rubber parts, and machining marks within the system. Repeating step 2.15 is recommended, before or after test driving.

- 2.22 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.
- 2.23 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-910-0052	79-93 Mustang, LTD, Futura, Fairmont, Monarch (Fox Body)
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.