



"FIVE AND SIX SPEED CONVERSION SPECIALISTS"

## MD-910-0106 Corvette 68-81 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, 3/8" & 1/2" wrenches and/or socket/ratchet, SAE Allen wrench set, silicone sealant, loc-tite.
- 1.2. This Hydraulic Master Cylinder Kit accommodates power and non-power brake applications. The clutch master cylinder is intended to mount directly thru the stock firewall clutch rod hole.
- 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.
- 1.4. A ground strap from the engine to the body, and body to frame, must be used. **Failure to install a ground strap from the engine to the body and frame will result in braided line failure. The braided line cannot be used as a ground strap.**

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 Disconnect the battery cable, jack up the vehicle for access, use wheel chock and jack stands as applicable.
- 2.2 Remove brake master cylinder and brake booster as required, disconnecting the brake lines.
- 2.3 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. Shown below are examples of power and non-power brake mounting.



3.2 Prefit the firewall plate to the firewall. Verify the hole pattern aligns and temporarily bolt in place using existing vehicle hardware.



3.3 Slip the m/c thru the hole in the firewall plate and verify it will clear in the opening. It may be necessary to loosen the firewall fasteners for best fit then re-tighten firewall fasteners.



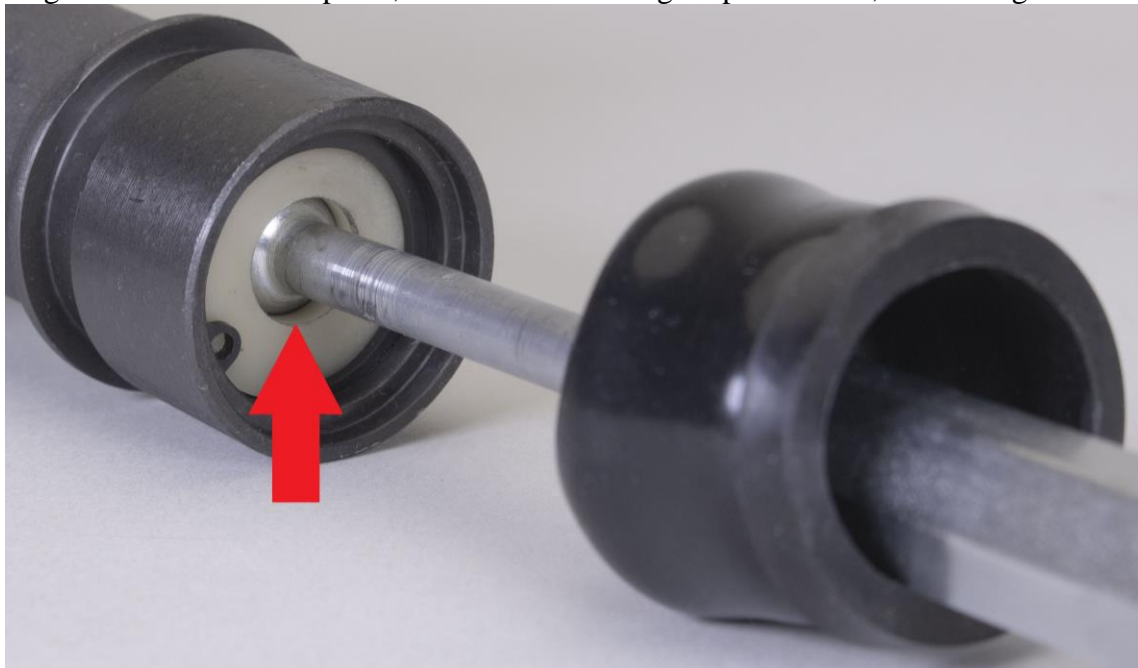
3.4 Temp install the supplied Allen head fasteners to hold the m/c.

3.5 Under the dash check alignment and clearance to the clutch pedal. Temporarily attach linkage to pedal.



Do not scale the picture – installed parts will be straight.

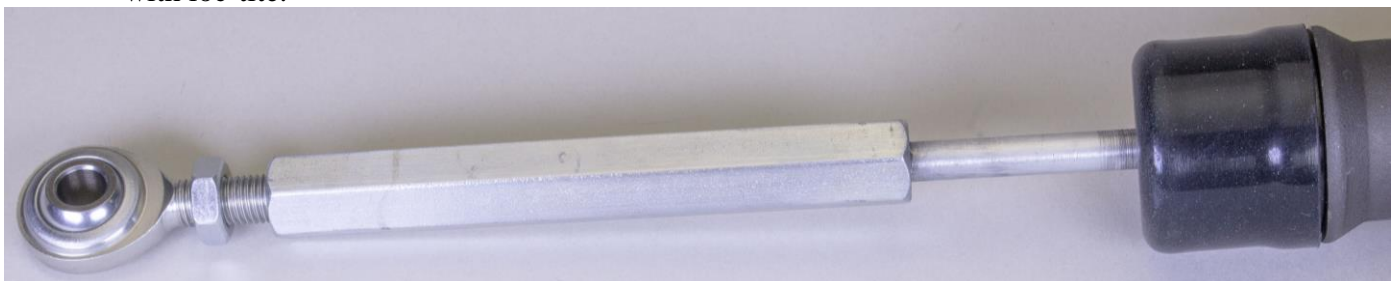
3.6 Invert the environmental boot on the master cylinder and with the linkage attached to the clutch pedal... stroke the pedal and check the master cylinder rod does not contact the washer. Check alignment of rod-end to pedal, make sure it is straight up and down, left and right.



- 3.7 At any time during this pre-fit process you may require a light trim of the firewall for clearance. At no time should you require major clearancing (more than 1/4"). Contact MDL for technical assistance if parts do not fit as designed.
- 3.8 Remove all temp installed parts once prefit is complete.
- 3.9 Pre-assemble the Master Cylinder and firewall plate assembly as shown. Tighten Allen head fasteners wrist tight. Verify m/c sits flat on plate. Medium strength loc-tite may be used. Washers are not required at this location.



- 3.10 Assemble the firewall plate and master cylinder to the firewall using existing vehicle hardware.
- 3.11 From under the dash apply sealant to master cylinder to form a fillet seal (bevel edge build-up), preventing moisture and debris from entering inside.
- 3.12 Assemble the rod-end to the hex-spacer. Make sure there are at least 5 full threads penetrating the hex-spacer. Note: There is no adjustment on the rod/ladder joint, this has been put together with loc-tite.



- 3.13 Hold clutch pedal against the up-stop and install 5/16"-24 long bolt thru rod end & clutch pedal. Adjust rod-end to align with hole in clutch pedal. Use washers to align the rod travel as straight as possible. Use remaining washers on opposite side and tighten ny-lok nut wrist tight using 1/2" wrench/ratchet/socket. **Do not preload the clutch master cylinder rod. If you preload the actuation system it will not bleed properly.**
- 3.14 Tighten jamb nut on m/c rod-end using 1/2" wrench.
- 3.15 Verify actuation **BY HAND** – 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. Verify no binding of rod-end, lever and clutch pedal hex spacer. Verify parallel alignment of all the components. Actuation should be smooth. Verify the master cylinder rod travels the full stroke of 1.35" to 1.4" for proper clutch release. The clutch master cylinder rod will have a natural up/down arc motion. If you hear scraping when actuating the pedal inspect the clutch master cylinder rod for contact. Invert the rubber boot to inspect.
- 3.16 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 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. Make sure reservoir line does not interfere with any moving parts.
- 3.17 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 12-15 ft/lbs (wrist tight). Note: There is an o-ring under the jamb nut. **Do not adjust 90-degree elbow more than 1/2 turn in either direction.**

## 4.0 The Bleed Procedure

- 4.1 In the master cylinder kit is a Bleeder Kit. Follow the *bleeder kit* instructions. If you have lost the bleeder kit instructions, they can be found on our web site [modern driveline.com](http://modern driveline.com).

## 5.0 Driveway Test and Test Drive

- 5.1 Position rear wheels on jack stands (free to rotate). With transmission in neutral, start vehicle. Push in clutch pedal and apply brake pressure. 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). **It is okay if the clutch pedal releases close to the floor while on jack stands. It will release higher when the vehicle is on the ground.** 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.

- 5.2 Remove jack stands and test drive. Upon return, verify steel braided line clearance and support. The hydraulic lines must be kept away from the exhaust and rotating clutch assembly.
- 5.3 If the clutch feels spongy or releases too close to the floor, repeat the bleed procedure. FYI – micro bubbles may be present in the system due to actuation, accumulation on rubber parts, and machining marks within the system.
- 5.4 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](mailto:Tech@moderndriveline.com)
- 5.5 Enjoy your new hydraulic system and Thank You for “Making it Modern” We appreciate your business.



ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	MD-900-0427	Master Cylinder GM 750' bore	1
2	MD-514-139027	Pfiring elbow, male roll pin to male AN4	1
3	MD-950-1000	Clutch reservoir with 30" hose	1
4	950-5010-4	Spacer, hex, 4" long	1
5	91355A300	Screw, button head 5/16-24 x 5/8	2
6	M58A-S	Roll end, male 5/16-24, 3/8" ID	1
7	13191	Nut, jam, 5/16-24	1
8	98436	5/16" flat washer	4
9	45229	Bolt, hex, 5/16-24 x 1.75	1
10	312	Lock Nut-5/16-24 nylock	1
11	950-1009	Hydraulic Plate, C3 Corvette	1
12	MD-GV1000-107	O-ring, Viton, Guseal	1
13	MCX Bleeder Kit	MCX Bleeder Kit	1
14	54027	Screw, hex, 1/4-14 x 3/4 Black	2

