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Five & Six Speed Conversion Specialists!

## MD-910-0104 Camaro 72-81 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, nibbler or grinding tip, Sharpie marker, 5/16" 7/16" 1/2" 9/16" wrenches and/or socket/ratchet, silicone sealant, loc-tite, a second person.
- 1.2 This Hydraulic Master Cylinder Kit utilizes the stock clutch push-rod hole location.
- 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 Remove brake master cylinder and brake booster as required, disconnecting the brake lines.

2.2 Remove the clutch rod cover from the firewall (automatic conversion only).



Shown is 67-69 Camaro

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.

Prefit the firewall plate to the fire wall. Depending on hole location, holes in firewall bracket may need to be slotted.



3.2 Pre-assemble the Master Cylinder and firewall plate assembly as shown.



Picture above shown with mock-up fasteners.

- 3.3 Temporarily install bracket and master assembly. Use the rubber plug to fill the remaining area of the hole. Trim to fit using scissors.
- 3.4 Remove all components and clean mating surfaces. Apply silicone sealant lightly to the master cylinder body where it penetrates the firewall, and on the cut surface of the rubber plug. Re-install plate assembly (making sure the rod end is on the inside of the clutch pedal), rubber plug, brake master cylinder/booster and tighten all four factory mounting nuts for plate assembly to factory specs. Tighten (2) 5/16-24 x 5/8" master cylinder fasteners 12-15 ft/lbs (wrist tight).
- 3.5 While the sealant is still wet, from under the dash apply sealant to edges of parts to form a fillet seal (bevel edge build-up), preventing moisture and debris from entering inside.
- 3.6 Reset your insulation and carpeting, trimming to clear the new clutch master cylinder location as required.
- 3.7 Adjust the rod-end to align with the hole in the clutch pedal. Be sure you are holding the pedal against the up-stop. Make sure there are at least 5 full threads penetrating the rod end. Note: There is no adjustment on the rod/ladder joint, this has been put together with loc-tite.

- 3.8 Install 5/16-24 x 1-3/4" long bolt thru rod end, clutch pedal, washer, and hat bushing and tighten using ny-lok nut to 12-15 ft/lbs (wrist tight). The hat bushing goes in the clutch pedal from the passenger side of the pedal and the fender washer supports the installation from the driver's side. **Do not preload the clutch master cylinder rod. If you preload the actuation system it will not bleed properly.**

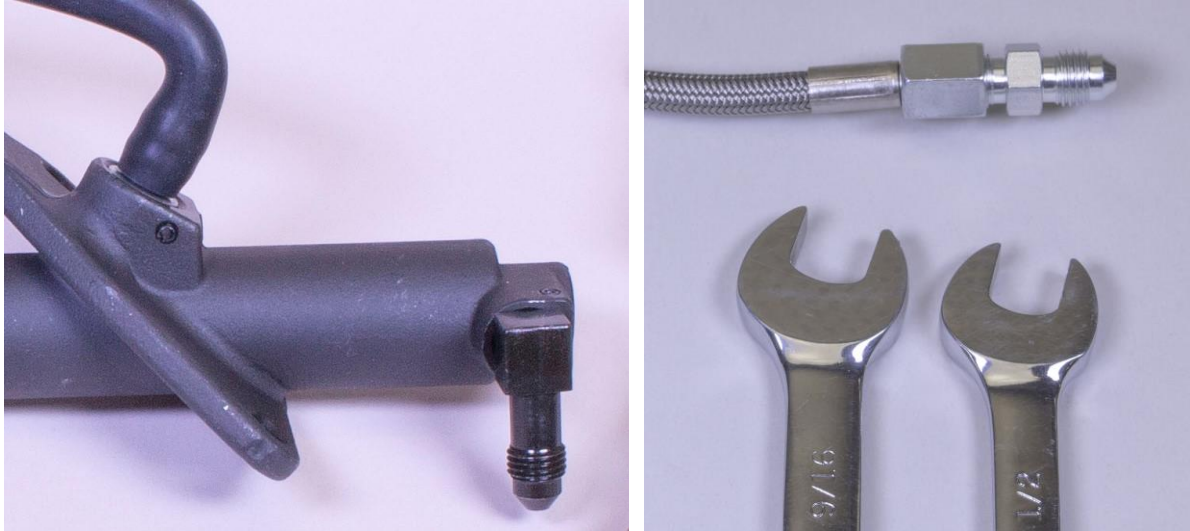


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- 3.9 Re-install brake lines and distribution block as required.
- 3.10 Verify actuation **BY HAND** – the clutch pedal should bottom out on the carpeting at the same time the master cylinder bottoms out. If you have no carpeting or insulation under 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. 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 1.3-1.4" for proper clutch release.
- 3.11 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.
- 3.12 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 the steel braided line is positioned for routing and clearance, tighten jamb 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.**



- 3.13 Tighten all braided line ends to their respective fittings. Support must be provided for all fitting connections, Failure to do so may result in damage to components. Torque to 20-25 ft/lbs.



## 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@modern driveline.com](mailto:Tech@modern driveline.com)
- 5.5 Enjoy your new hydraulic system and Thank You for “Making it Modern” We appreciate your business.



Pedal shown for reference only.