



MD-910-0610 Ford Truck 67-72 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 an internal hydraulic throw-out bearing. If your vehicle 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, 21/64" drill bit, Sharpie marker, 7/16", 1/2", 9/16", 5/8", 3/4", 12mm, wrenches and/or socket/ratchet, 1-3/8" hole saw, 5/16"-24 tap, 5/32" Allen wrench, silicone sealant, a second person.
- 1.2 This Hydraulic Master Cylinder Kit does not utilize the stock clutch push-rod hole location in the firewall. This system will utilize a flat spot on the firewall approximately 2" to the left of the clutch pedal.
- 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, verify all dis-assembly steps have been performed and skip to the Assembly Instructions. If you are converting an automatic vehicle, some disassembly steps do not apply.

- 2.1 Read all instruction steps before disassembly. Position parts prior to disassembly to confirm necessary steps apply, based on tool selection and accessibility.
- 2.2 Remove brake master cylinder and brake booster as required.
- 2.3 Remove all clutch linkage or automatic linkage from engine, transmission, frame and clutch pedal. The clutch pedal will be removed for modification and re-installed. **DO NOT remove the clutch pedal at this time.**
- 2.4 Warning: If equipped, clutch pedal spring is under pressure. Use caution when removing spring. Remove the clutch pedal spring and all associated hardware. Do not remove the clutch pedal up-stop. The spring and spring attaching hardware will not be reinstalled. **If you have a spring installed and do not remove it the clutch pedal may stick to the floor when pressed.**

3.0 Assembly

- 3.1 Note: our mock-up vehicle has certain items removed for clarity. Use a piece of masking tape to mark a location on the clutch pedal where the large hex spacer is installed in the below picture, approximately 3" down from the pivot point (cross shaft). **Before you drill any holes... the location of the mark you make on the masking tape should move 1.4" horizontally.** Leave room for carpet and pad if not installed. Pedal should be free to move all the way up from pedal stop, down to toe-board. **If you are unable to get the 1.4" of travel as instructed, there is something wrong. Correct travel limit prior to drilling holes.** Once located, remove the clutch pedal and drill a 7/16" hole in the pedal. De-burr hole and re-install clutch pedal.



This picture does not show the firewall bracket - reference for 7/16" hole position in clutch pedal.

- 3.2 Remove any/all insulation where the firewall bracket will be installed.
- 3.3 Position the firewall bracket to sit flat on the firewall and slide up/inboard to butt-up against the steering column support and the bottom of the dash. Mark all holes with a sharpie. Remove firewall bracket and drill (2) 21/64" holes in the firewall. Install and snug bracket to firewall using supplied fasteners. Verify the bracket butts-up against the steering column support and bottom of dash. **If the firewall bracket is not positioned correctly it will affect clutch master cylinder alignment.**



Alternate fastener shown for MDL bracket mounting next to steering column support

- 3.4 Drill (1) 3/8" hole in dash for firewall bracket. Remove firewall bracket. Drill (1) 1-3/8" hole in firewall for clutch master cylinder. De-burr all holes.
- 3.5 Check the threaded holes in the firewall bracket by installing fasteners before mounting. Powder coating may be on the threads. Chase threads as necessary using a 5/16-24 tap. Install the firewall bracket and *snugly* attach to the dash only using (1) 3/8"-24 x 3/4" bolt and locknut. *The 3/8" bolt and nut may be installed with the bolt head exposed to minimize under-dash protrusion. You may temporarily run a fastener in the bottom firewall bracket fastener hole backwards, extending a couple threads, to hold the bracket in-place.*



- 3.6 Install locknut and lock washer with 1-1/2" set screw thru top hole in master cylinder until the threads are even with the end of the nut. The locknut retains the set screw and the lock washer will keep this from backing out of the firewall bracket.



- 3.7 Clean surfaces of firewall and clutch master cylinder. Apply a thin layer of silicone sealant around edges of firewall and clutch master cylinder. Install clutch master cylinder using (1) 5/16-24 x 1-1/2" all-thread with lock-nut and lock washer in the top hole. **If performed, remove temporary bolt holding firewall bracket in position.** Install (1) 5/16-24 x 1-1/4" bolt and lock washer in the bottom hole. Tighten (2) fasteners 12-15 fl/lbs (wrist tight).



Alternate fasteners were used on our mock-up vehicle.
Shown with stainless Allen head fasteners.

- 3.8 Re-install brake master cylinder, booster, brake lines and distribution block as required following manufacturers recommended procedures and torque specifications.
- 3.9 Reset your insulation and carpeting, trimming to clear the new clutch master cylinder location as required.
- 3.10 Install the rod-end onto the clutch master cylinder rod and install the stud-end of the rod-end into the 3/4" hex spacer. Temporarily install hex spacer on the outboard side of clutch pedal, using 7/16-20 bolt and lock washer.
- 3.11 Additional 5/16" washers are provided for front/back alignment. Maintain minimum 7-threads into 3/4" hex spacer. Additional 7/16" washers are provided for front/back alignment to be used between 3/4" spacer and pedal. Maintain minimum 7-threads engagement.
- 3.12 Adjust clutch pedal placement against the up-stop by threading/un-threading the clutch master cylinder rod into the rod-end. **Do not preload the clutch master cylinder rod. If you preload the actuation system it will not bleed properly.**
- 3.13 Tighten the 7/16"-20 clutch pedal bolt 20-25 ft/lbs. (forearm tight).
- 3.14 Tighten the rod-end stud using a 7/16" wrench 12-15 ft/lbs. (wrist tight). NOTE: once alignment and function have ben verified use medium strength loc-tite.
- 3.15 Tighten the 12mm gold nut on the clutch master cylinder rod 12-15 ft/lbs. (wrist tight).
- 3.16 Tighten the 3/8"-24 lock-nut and bolt in the MDL firewall bracket to dash 18-22 ft/lbs.



Shown are the installed parts without any 5/16" or 7/16" washers for alignment. Notice the angle? This is wrong. Make this straight front/back.
 Note: The firewall bracket now has the nuts built-in.

- 3.17 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.

- 3.18 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 ½ turn in either direction.**
- 3.19 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 moderndriveline.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 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). 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 Apply loc-tite to stud-side of rod-end. Tighten using a 7/16" wrench 12-15 ft/lbs. (wrist tight).
- 5.4 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.
- 5.5 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
- 5.6 Enjoy your new hydraulic system and Thank You for “Making it Modern” We appreciate your business.

