



MAKE IT MODERN!
Five & Six Speed Conversion Specialists!

New LF Series Master Cylinder Kit for 67-70 Mustang MD-910-2012-B/C/P Installation Instructions



MD-910-2012-P Kit Shown.

Thank you for purchasing the Modern Driveline *New LF Series* Master Cylinder Kit.

This reduction linkage clutch master cylinder kit is designed to mount on the firewall to the original clutch rod hole and attach to the pedal hanger with an adjustable bracket. Remote reservoir options include billet Black, billet Clear, or original-equipment late-model appearance black Plastic.

Modern Driveline New LF Series... Better!

Read These Instructions Completely Before Beginning

1. Before You Begin

- 1.1. This kit will require some disassembly of the vehicle to install.
- 1.2. General vehicle mechanical knowledge and an understanding of the terminology are required to install this kit.
- 1.3. **DO NOT VACUUM OR PUMP BLEED THIS SYSTEM.** It is not brakes. Single seal push-pull systems will create micro bubbles in the fluid and in some instances harm the seals internally. The preferred method is to pressure bleed from the top down. Modern Driveline offers a hydraulic clutch system “bleeder kit”. The bleeder kit comes standard in all Modern Driveline master cylinder kits and is also available separately as a purchase item.
- 1.4. These systems are DOT 3 or DOT 4 brake fluid compatible. Do not use DOT 5 silicone based, or any high temperature resistant brake fluids designed for more than 550°F as some brands will cause the seals to swell.
- 1.5. If you are converting an automatic car this kit requires a clutch pedal, sold separately.
- 1.6. **Vacuum Boosters** – Only an 8” Bendix style booster, or smaller, will fit and work with this kit. A Midland style and some aftermarket vacuum boosters that are physically larger than 8” in diameter will have an interference condition with this kit. NOTE: Some vacuum boosters are advertised as 8” boosters but also have a crimped edge or clamp that has a larger than 8” overall diameter.

2. Pedal Height Matters

- 2.1. Our Master kit has 3 adjustable positions for fine-tune adjustments. It is always recommended the pedal uses full-travel: Up-stop, down to carpet/floor. This will prevent damage to the cylinder.
- 2.2. All parts in this kit are designed with nominal clutch pedal height in mind. The ideal clutch pedal position will re-engage the clutch about 1/3 to 1/2 total pedal travel, up from the carpet.
- 2.3. Complete travel of the master cylinder rod will be required to release most clutches.

3. Information about this kit

- 3.1 This cylinder can travel **up to** 1.4”. Most installations will use all the travel of this cylinder.
- 3.2 This cylinder has a 0.7” bore. Optional 0.75” bore cylinders are available for vehicles with pedal stroke limitations.
- 3.3 0.7” bore x 1.4” stroke = .54 cu/in fluid volume requirement.
- 3.4 0.75” bore x 1.4” stroke = .62 cu/in fluid volume requirement.
- 3.5 The existing aftermarket slave cylinders typically use 0.52 cu/in fluid volume and are considered compatible with this master cylinder kit.
- 3.6 Our mock-up firewall has certain items removed for clarity.
- 3.7 **No kit substitutions.** Additional or different parts may be purchased if you choose.
- 3.8 **Do not remove** the **red baffle** inside the optional billet reservoir.
- 3.9 This kit uses the original clutch rod linkage hole/grommet location on the firewall.
- 3.10 The plate assembly has multiple holes at the top and bottom. DO NOT try and use only left or only right holes. The master cylinder must always be centered on the plate.
- 3.11 The master cylinder may not sit straight up and down. See the **installation** section.
- 3.12 The plate assembly must be installed with the lever perfectly vertical.

4. **NON-Warrantable Conditions.**

- 4.1. Do not over-torque parts.
- 4.2. Do not over-tighten parts (non-torque valued locations).
- 4.3. Do not add parts to our kit.
- 4.4. Use all parts of this kit unless instructions are provided not to do so.
- 4.5. Do not substitute parts in this kit, contact MDL for assistance if necessary.
- 4.6. Required vehicle components are your responsibility.
- 4.7. Existing or new modifications to your vehicle from a stock firewall configuration are your responsibility.
- 4.8. Always check/test threads prior to installation into the vehicle. **Damaged threads are not warrantable.**

5. Tools, Shop Supplies, and Notes



- 5.1. Standard shop tools plus 1/8", 3/16", 7/32" & 3/8" Allen wrenches
- 5.2. DOT 3 brake fluid.
- 5.3. Anti-seize lubricant.
- 5.4. Silicone sealant.
- 5.5. Thread locking compound, medium strength.
- 5.6. Soapy water in a spray bottle (brake fluid clean-up).
- 5.7. 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.
- 5.8. 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. A braided line cannot be used as a ground strap.

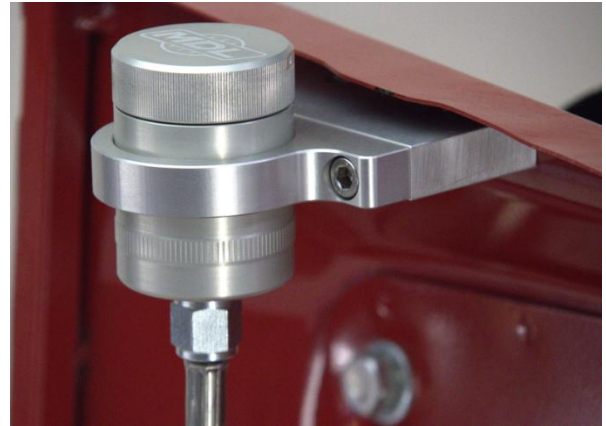
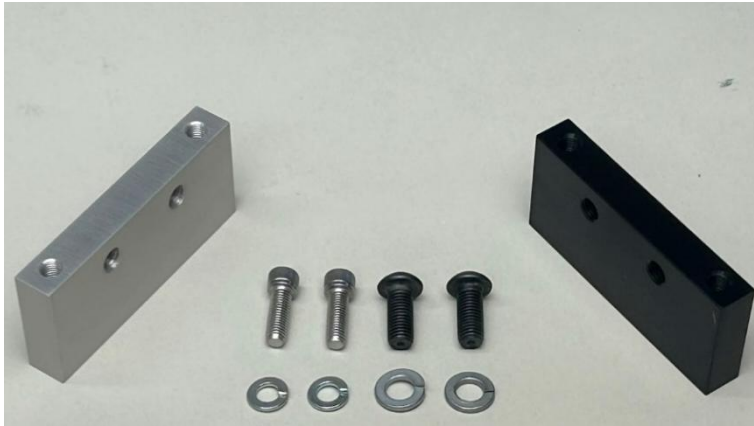
6. Provisional Parts – Some parts may not be required depending on pedal hanger and brake pedal configuration.

- 6.1. MDL billet reservoir kits will have some hardware that does not get used.

7. Options

7.1. You may be interested in the mounting block or mounting bracket to reach under a firewall cowl lip or attach to a brake booster / master cylinder mounting bolt.

- MDL offers a complementing or contrasting mounting block to clamp/reservoir color. Black and Silver options available. P/N MD-960-2004-B or MD-960-2004-C.



- MDL also offers a stainless-steel mounting bracket, P/N MD-960-2001, for mounting to brake master cylinders and vacuum boosters.



8. **Disassembly** – If your vehicle is already disassembled, verify all disassembly steps have been performed and skip to the Assembly Instructions. If you are converting from an automatic vehicle, some disassembly steps do not apply.

- 8.1. **Optional:** Remove the driver's seat and lay down some cardboard for convenience.
- 8.2. **This step applies to a vehicle with an existing mechanical linkage system.** Remove the clutch fork spring, Z-bar spring at the firewall (if equipped), frame fulcrum pivot and hardware, Z-bar, upper and lower Z-bar rods, engine fulcrum pivot and hardware. Remove the spring attached to the clutch pedal under the dash (if equipped). Retain the *clutch fork spring* if using MDL's Eliminator Slave system.
- 8.3. Disconnect and remove the brake pedal and clutch pedal for convenience of installation.
- 8.4. For automatic cars, trim down the brake pedal pad area to match the rubber pad, sold separately.

9. **Installation** - Clean as you go, use soapy water on spilled brake fluid, general cleanliness for all fitting and line-end ports.

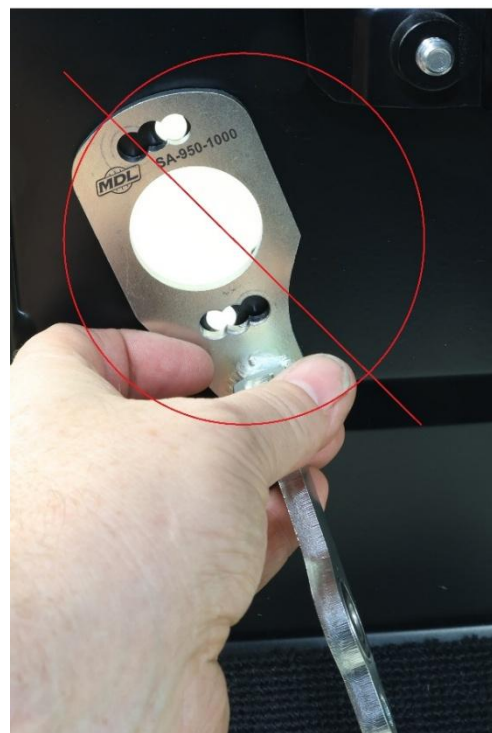
Caution: There is specific hardware required at the pedal location for a 1967 only original-equipment pedal compared to a 68, 69-70 original-equipment pedals and the MDL aftermarket pedals. Do not skip this step.

As you follow the instructions pay attention to inboard to outboard and outboard to inboard instructions.

- 9.1. Test bolts in all holes prior to installation. Ensure fasteners go through all holes properly.
- 9.2. Locate the plate assembly to the firewall over the existing clutch rod hole opening. The lever on the firewall plate assembly must be installed with the lever straight up and down, vertical. The supplied MDL firewall plate assembly must sit flat.



Correct



Incorrect

67-68 automatic cars will have a knock-out at this location. 69-70 automatic cars will have a dimple that will be used to locate and drill out. **Note: This is a multi-use firewall plate assembly and has extra holes.** Using a sharpie marker, mark two of the small mounting holes that are opposite the center of the large hole in the plate. **Do not try and use left only or right only holes in the plate.** For a Bendix-size power brake booster use the **upper outer** and the **lower inner** mounting holes. If you are not installing a vacuum power brake booster you may use the centered upper and lower holes so the master cylinder will sit straight up and down. Drilling the wrong holes will result in an interference with the vacuum booster. Drill the two small mounting holes using a 21/64" drill bit. Create a hole for the Master Cylinder using a 1-3/8" hole saw as required. Clean and deburr all holes, touch-up prime/paint as required.

- 9.3. Position the MDL logo on the spacer block as desired. Apply silicone sealant to spacer block mating surface to firewall. From the engine compartment feed the block studs through the mounting holes on the firewall and install the plate assembly under the dash. Install nylok nuts. Torque the nuts at this location to 15-18 ft/lbs, light wrist tight.

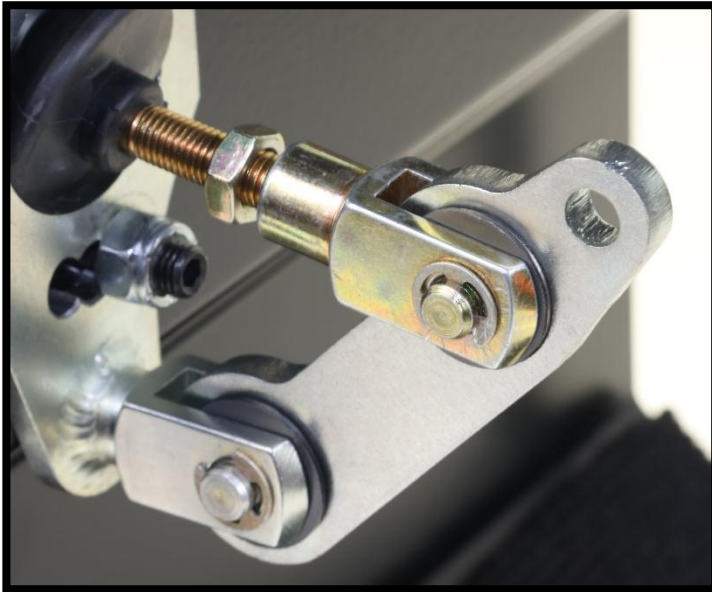


Drilled position shown for use with a brake booster for master cylinder clearance.

- 9.4. Install the SHORT gold clevis on the master cylinder rod so the threads are even with the inside edge of the clevis. Do not tighten the gold jamb nut at this time. Apply silicone sealant to the master cylinder mounting surface and feed the gold clevis through the actuation hole and mount the cylinder to the studs with nylok nuts. Torque the nuts at this location to 15-18 ft/lbs, light wrist tight.



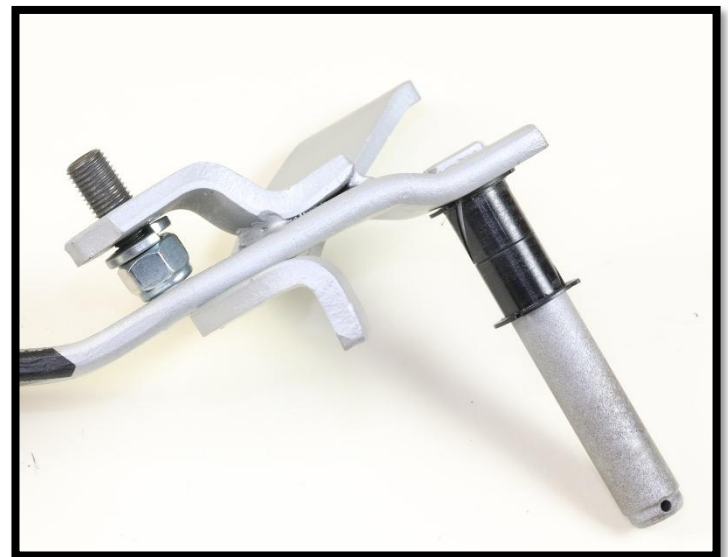
- 9.5. Swing the lever up and install the clevis pin, nylatron washer, and e-clip in the center hole of the lever. The nylatron washer must be installed on the same side as the washer installed in the lower hole. Orientation of the clevis pin and e-clip does not matter.



- 9.6. **1967 OE Pedal ONLY** – The factory 1967 clutch pedal has a welded tab and small offset. Your clutch pedal must not be damaged, altered, or have the tab mis-aligned with the parallel hole in the pedal itself. Sometimes this tab is bent and must be restored. If this tab is missing a new clutch pedal will be required.

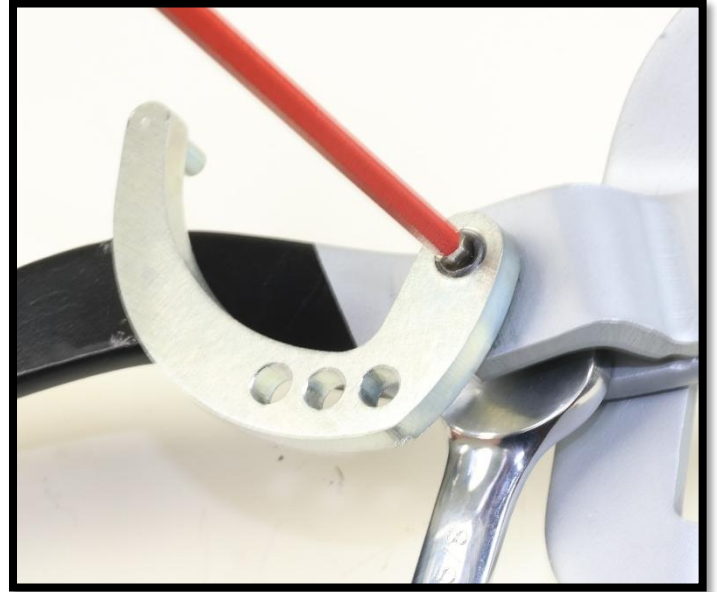
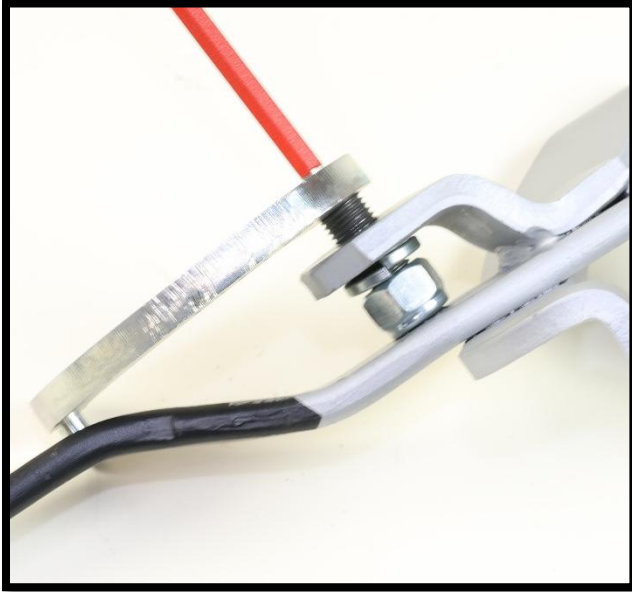
Inset the 7/16" x 1.5" long setscrew through the hole in the tab from the left side, through the 7/16" lock washer and thread into the 7/16" nylok nut. Nut and washer must be positioned before the stud will thread in.

Use the 7/32" Allen wrench to thread the set screw into the Nylok nut leaving about 3/8" threads exposed on the l/h side of the tab.

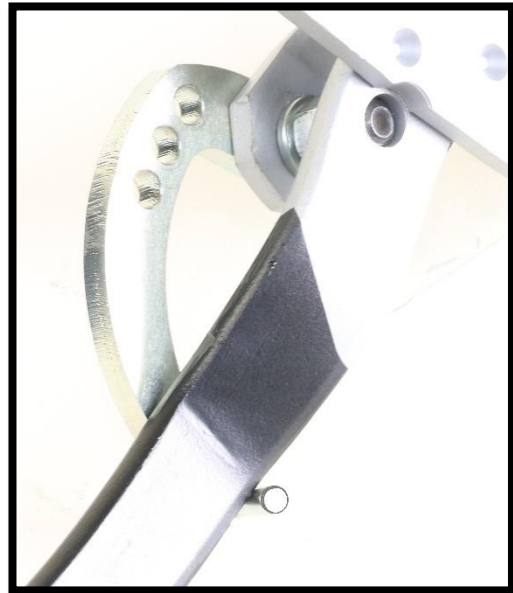


Position the pedal bracket to the set screw, insert the Allen wrench through the bracket, and thread the stud into the bracket rotating the Allen wrench counterclockwise until the threads are about even with the outside edge of the bracket. The bracket pin will rest against the forward side of the pedal.

Use the Allen wrench to hold the set screw and tighten the Nylok nut to the pedal tab until the lock washer is compressed flat, then cinch up wrist tight. Verify the bracket pin is resting against the forward side of the pedal (as installed in the vehicle).



Holding and tightening



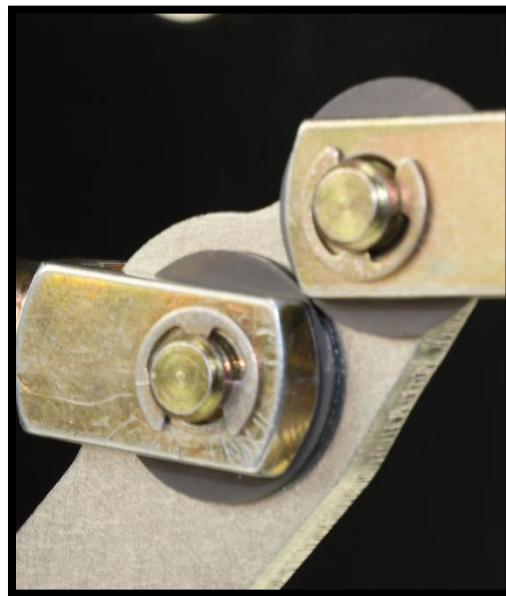
Pin resting against forward side of pedal

- 9.7. **68-70 OE Pedals and MDL Pedals ONLY** – These pedals have a larger offset and no tab. Position the Velociraptor bracket to the left side of the pedal and attach using the 7/16” socket-head cap screw using 3/8” Allen wrench. You may use the lock washer if it fits. Otherwise use medium strength thread locking compound to secure the bracket to the pedal. Rest the bracket pin to the forward side of the pedal and tighten the socket head fastener wrist tight.

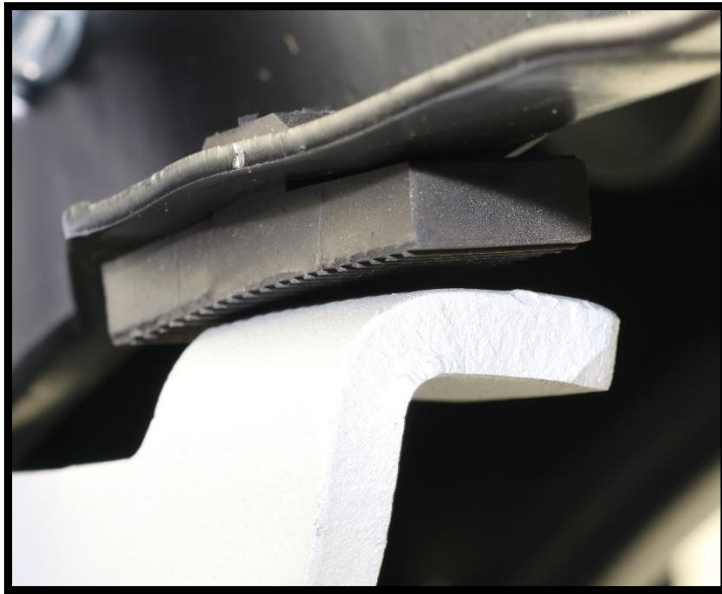


68 OE pedal shown, 69-70 pedals and all MDL pedals are similar

- 9.8. Install a jamb nut on the rod-end and thread the rod-end into the LONG gold clevis. Attach the long gold clevis to the top hole in the lever with the clevis pin, nylatron washer and e-clip. The nylatron washer must be installed on the same side as the washer installed in the middle and lower holes on the lever. Orientation of the clevis pin and e-clip does not matter.
- Note:** A short clevis is also provided in the kit for this location that may be required for a factory 1968 Mustang pedal. The minimum thread engagement in any clevis is 7 threads.

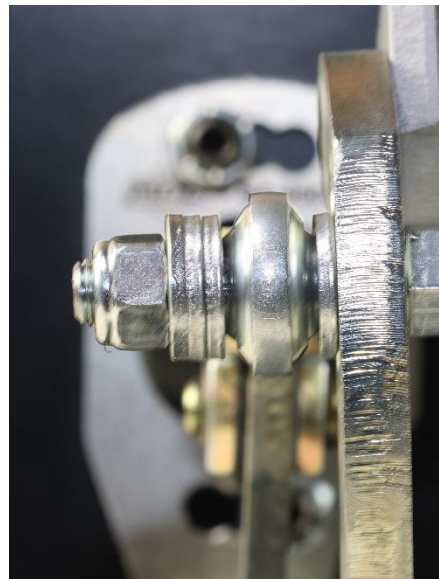
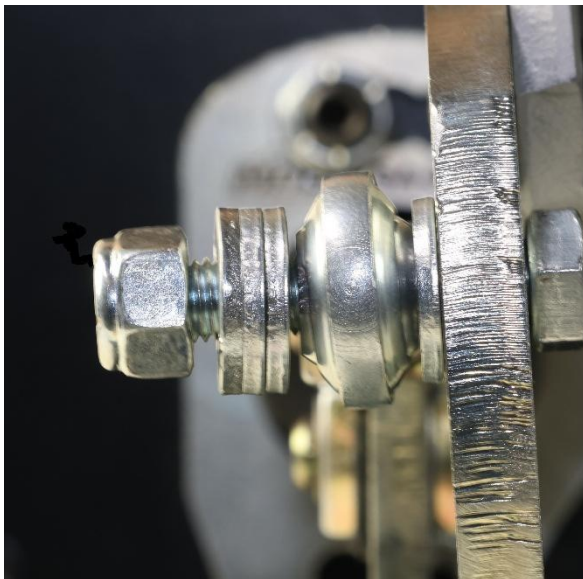


- 9.9. Hold the clutch pedal against the up-stop and thread the rod-end in/out to align with the center hole in the bracket. Attach the rod-end to the bracket using 5/16"-24 x 1.5" bolt, washer(s), and nylok nut. The order of washer stack-up is very important.



M/C at pedal - from *inboard to outboard*... bolt, bracket, flat washer(s), rod-end, balance of washers (if any), nylok nut.

The bolt and nut may be reversed but **there must be at least one washer between the bracket and rod-end.** Do not side-load the lever/clevis by putting too many washers in between. Stack the excess washer(s) between the rod-end and the nylok nut.



- 9.10. Torque the bolt/nut at the bracket/rod-end location to 15-18 ft/lbs, light wrist tight.
- 9.11. Torque the jamb nut on the rod-end to 12-15 ft/lbs, light wrist tight.
- 9.12. Torque the jamb nut on the master cylinder rod to 12-15 ft/lbs, light wrist tight.

- 9.13. Re-check for freedom of movement. The pedal should stroke completely to the floor and come against the up-stop. No further adjustments at this time.
- 9.14. **Pressure Port** – If installed... attach the braided line from your slave cylinder (external or internal) to the 90 degree elbow in the **angled port** (OUT) in the center of the master cylinder. Once steel braided line is positioned for routing and clearance, torque the jam nut on the 90-degree fitting in the master cylinder 15-18 ft/lbs, light wrist tight.



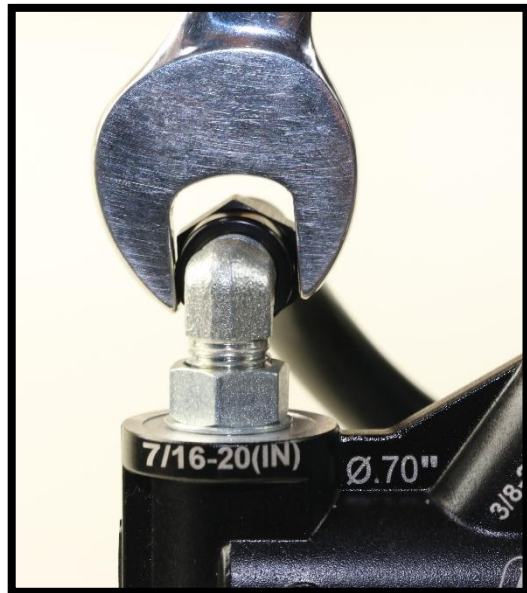
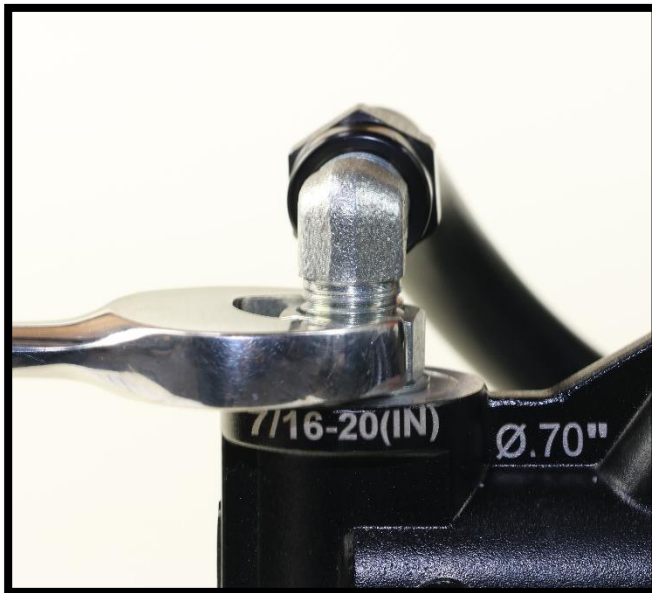
15-18 ft/lbs or light wrist tight at this location

- 9.15. If installed... torque the line-end to the 90 degree pressure port fitting (OUT) on the master cylinder to 25 ft/lbs, wrist tight. Be sure to hold the fitting while tightening the line-end.
- 9.16. **Billet Reservoir Installation** – refer to the instructions provided with the reservoir, IN-960-2100-B/C, and the indentured instructions below.
- 9.16.a Once the braided line is positioned for routing and clearance, torque the jam nut on the 90-degree fitting in the master cylinder reservoir port fitting (IN) to 15-18 ft/lbs, light wrist tight.
- 9.16.b Torque the line-end to the 90 degree **reservoir port** fitting (IN) at the **forward end of the master cylinder** to 25 ft/lbs, wrist tight. Be sure to hold the fitting while tightening the line-end.
- 9.17. **Plastic Reservoir Installation** – Follow the indentured instructions below.
Note: The reservoir rubber hose can be cut to any length using scissors.
Before committing to your reservoir location double check the following:
- Hood clearance
 - Hood HINGE clearance
 - Induction system clearance

- Routing of wiring, A/C lines, power steering lines
- Ability to service once installed.
- The reservoir line length from the master cylinder or bulkhead fitting will reach the mounted reservoir location.

9.17.a Locate and mount the reservoir anywhere above the master cylinder. Mark the hole locations with a Sharpie. Using the 1/4" sheet metal screws supplied with the reservoir, 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. Cut the reservoir line to desired length. Attach the reservoir line to the barbed inlet fitting on the master cylinder.

9.17.b Once the rubber line is positioned for routing and clearance, torque the jam nut on the 90-degree reservoir port fitting (IN) at the forward end of the master cylinder 15-18 ft/lbs, light wrist tight.



9.17.c Torque the barbed fitting to the 90 degree reservoir port fitting (IN) on the master cylinder to 15-20 ft/lbs, light wrist tight.

9.18. At this point the installation of the New LF Series master cylinder system is complete. You may be left with a single AN4 open port (angled port, OUT) for the line going to the slave cylinder of choice if it is not installed yet. Use the supplied red threaded cap to cover the open port. The red threaded plug is not used but supplied for your convenience.

9.19. Re-assemble your vehicle for all components removed.

10. Bleeding the System

10.1. 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.

Note: The RED BAFFLE in the billet reservoir is not a bladder, do not remove it. You may take the red baffle out temporarily to perform the bleed operations.

11. Driveway Test and Test Drive

- 11.1. 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 through (in the driveway, partially releasing clutch) before road testing the new hydraulic clutch.
- 11.2. 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.
- 11.3. 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.

12. Reminders

- 12.1. **DO NOT VACUUM OR PUMP BLEED THIS SYSTEM.**
- 12.2. Important: Once your new hydraulic system is active, the pedal will be immediately firm. It should not feel spongy or soft. Lack of immediate movement or a spongy feeling clutch pedal indicates air is still in the system.
- 12.3. Periodic adjustment is **not** required for this master cylinder system. The goal is for the clutch to re-engage in the bottom 1/3 to 1/2 of clutch pedal travel, otherwise, over-travel may occur. Once again, make sure the slave cylinder of choice is set up correctly.

13. Adjustments

- 13.1. Once you have confirmed all the air is out of the system it is time to discuss your adjustment options. NEVER do the steps below on jack stands; The behavior of clutch release is much different under driving conditions. Use the instructions above to make changes.
- 13.2. **If the pedal is re-engaging too high** up from the floor, move the clutch master cylinder attach location on the bracket to the upper hole. This will also make the pedal pressure a little softer.
- 13.3. **If the pedal is releasing too close to the floor**, or if you want assured release for racing applications, move the master cylinder attach location on the bracket to the lowest hole. This will also make the pedal pressure a little firmer.

Note: A pedal stop may be required to prevent damage to components. Always test the stroke of the pedal and set stops accordingly.

Further assistance and tech support is available by calling Modern Driveline at 208-453-9800 M-F 8-5 Mountain time. Email – Tech@ModernDriveline.com . Please contact us first for any issues.

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

ITEM NO.	DESCRIPTION	QTY.
1	Block Assy, Hyd Master 65-70 Mustang	1
2	Hyd Type 2 Master Sub-kit, LF Series w/fittings	1
3	Lock Nut-5/16-24 nylock	5
4	Plate Assy, 65-70 Mustang LF Series Master Kit	1
5	Retaining ring, 5/16", external E type	2
6	Clevis, 5/16", short	1
7	5/16-24 x 1.5 Hex Bolt	1
8	5/16" flat washer	4
9	Pin, Clevis, 5/16" OD, clip style	2
10	Nut, Jam, 5/16"-24	1
11	Rod end, male, 5/16"-24, 3/8" ID	1
12	Clevis, 5/16", long	1
13	Bracket assembly, Raptor	1
14	Screw, Socket head cap, 7/16-20 x 1.0	1
15	Lock washer 7/16"	1
16	Nylatron washer, .900 OD x .320 ID x .040 thk	2
17	Plug, AN4, LDPE, 7/16-20	1
18	Set screw, 7/16-20 x 1.5 long	1
19	Locknut, 7/16"-20, Nylok	1

