



**319-910 Hydraulic Clutch Conversion Kit**  
**Installation Guide**



**1967-1969 Chevrolet Camaro & Pontiac Firebird**

Thank you for purchasing your Holley Hydraulic Clutch Conversion Kit! Your system is composed of the highest quality components available. It should provide many miles of trouble-free performance when used correctly. If you have any questions regarding the performance of your system, call Holley Technical Service at 1-866-464-6553 or for online help, refer to the Tech Service section of our website: [www.holley.com](http://www.holley.com).

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**HAZARDS DEFINED**

This manual presents step-by-step instructions that describe the process of installing your hydraulic clutch conversion kit. These procedures provide a framework for the installation and operation of this kit. Within the instructions, you are advised of potential hazards, pitfalls, and problems to avoid. The following examples explain the various hazard levels:

**WARNING! Failure to comply with instructions may result in injury or death.**

**CAUTION! Failure to comply with instructions may result in damage to equipment.**

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Chapter 1 Introduction to Your Kit

1.1 General Information

These instructions will cover the installation and use of your hydraulic clutch conversion kit. This system was designed to work with vehicles that utilize an external slave cylinder or a hydraulic clutch release bearing. If your vehicle has been modified from its OEM drivetrain configuration, some of the following steps may not apply or will require modification to fit your application.

**NOTE:** Although this system is designed to utilize the OEM firewall passage, cutting of the firewall will be required for proper installation.

**CAUTION:** Alignment of the clutch master cylinder mount, master cylinder, and clutch pedal is critical to the proper operation and longevity of this system. Failure to properly align will result in poor pedal feel, possible disengagement issues, and premature system failures.

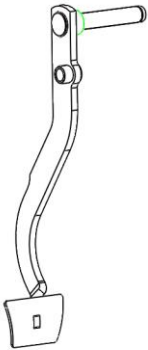
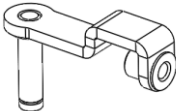
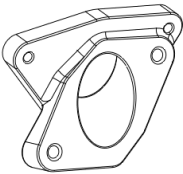
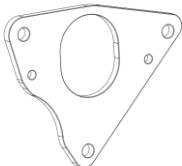
## 1.2 Kit Requirements

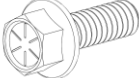
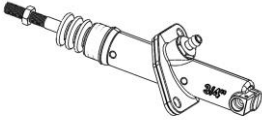
- Drill and drill bits, drum sander or grinder tip, marker, wrenches, sockets and ratchet, RTV, medium strength thread locker (blue), body saw, and a second person.
- Clutch adapter fitting (like Earl's LS641001ERL or LS641002ERL) depending on application.
- **DOT 3 or 4 brake fluid ONLY**
- Safety Equipment – Always wear approved ANSI safety goggles/glasses when working with metals and/or fluids. Also wear effective gloves when working with hot surfaces, corrosive fluids, and sharp objects.

## 1.3 Kit Components

Before beginning the installation of your kit, compare the components in your kit with those listed in Table 1. If any components are missing, please contact Technical Support at 1-866-464-6553.

**Table 1 – Kit Parts List**

| Image                                                                               | QTY | Description                                |
|-------------------------------------------------------------------------------------|-----|--------------------------------------------|
|   | 1   | Clutch Pedal Assembly                      |
|  | 1   | Clutch Rod Assembly                        |
|  | 1   | Clutch Master Cylinder Mount               |
|  | 1   | Clutch Master Cylinder Reinforcement Plate |

|                                                                                     |   |                                                 |
|-------------------------------------------------------------------------------------|---|-------------------------------------------------|
|    | 1 | Clutch Master Cylinder Reservoir Bracket        |
|    | 4 | Dry Running Flanged Sleeve Bearing              |
|    | 2 | PTFE Dry-Running Sleeve Bearing                 |
|    | 1 | 5/8" Nylon Plastic Washer                       |
|    | 1 | 10mm Clip-On External Retaining Ring            |
|    | 1 | 16mm Clip-On External Retaining Ring            |
|  | 1 | Wave Washer                                     |
|  | 2 | 5/16-18 X 3/4" Flanged Hex Head Screw 8.8 Grade |
|  | 3 | 1/4-20 X 3/4" Flanged Hex Head Screw 8.8 Grade  |
|  | 1 | 5/16-18 Thin Hex Nut                            |
|  | 1 | Clutch Master Cylinder                          |
|  | 1 | Clutch Pedal Pad                                |
|  | 1 | Clutch Master Cylinder Reservoir Kit            |

## Chapter 2 – Kit Installation

1. To begin the installation of your hydraulic clutch conversion kit, disconnect the negative side terminal of the battery.
2. You will need to remove the brake master cylinder/booster assembly. Disconnect the brake lines at the brake master cylinder. If your vehicle is equipped with a brake proportioning valve, disconnect the brake lines from that instead.

**NOTE:** Brake fluid will leak from the brake lines. Brake fluid is corrosive, so protect surfaces from direct contact. If brake fluid does leak on other parts or painted areas, simply wash it off with water.

3. Moving under the dash, disconnect the brake booster/brake master cylinder linkage at the brake pedal.
4. Remove the master cylinder/brake booster by unscrewing the (x4) bolts holding it to the firewall and set aside.
5. Remove all factory manual clutch linkage (if equipped).
6. Disconnect any switches (neutral safety switch, brake light switch, etc.).
7. Remove the factory pedal box. There are (x6) fasteners in total, which hold the pedal box to the vehicle. (x4) nuts were already removed for the brake master/booster. The others (x2) are under the dashboard.
8. Once the pedal box is loose, wiggle it out from under the dash taking attention not to damage the body or any wiring and set the box aside for now.
9. Remove the carpet guard and set aside.
10. Pull the carpet back and any padding that may be present to gain access to the bare firewall.
11. The master cylinder will mount to the area left of the steering column plate. Use the clutch master cylinder reinforcement plate to mark your mounting holes as shown in Figure 1.

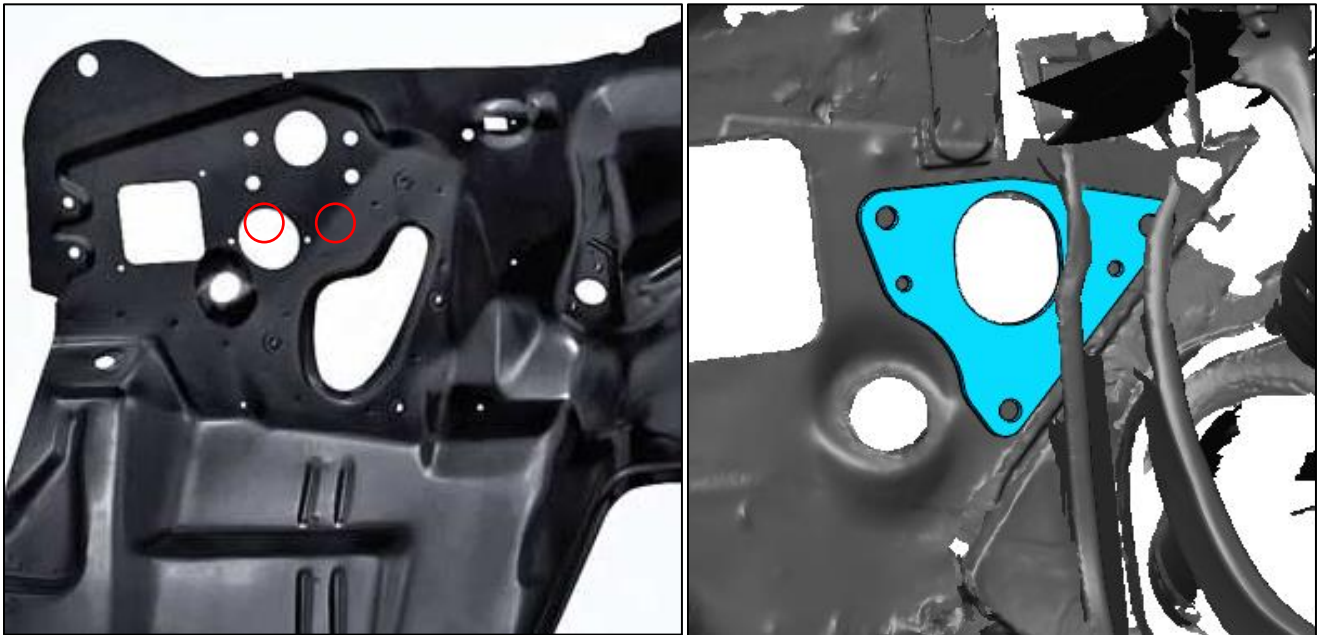


Figure 1: Firewall Mounting Hole

12. Align the (x2) holes in the firewall reinforcement plate with the holes in the firewall. (Use some screws to affix the plate to the firewall). Mark the three mounting holes and trace the oval for the clutch master cylinder.
13. Using a 17/64" drill bit, drill the (x3) holes through the firewall and enlarge the center passage to match the oval of the firewall reinforcement plate.
14. Clean the area of any metal shavings and/or burrs and protect the surface with paint.
15. Apply RTV to the outside of the firewall where the master cylinder will mount, as seen in Figure 2.
16. Next, assemble the clutch master cylinder and master cylinder mount using the supplied 5/16 bolts. Apply blue thread locker to the threads.

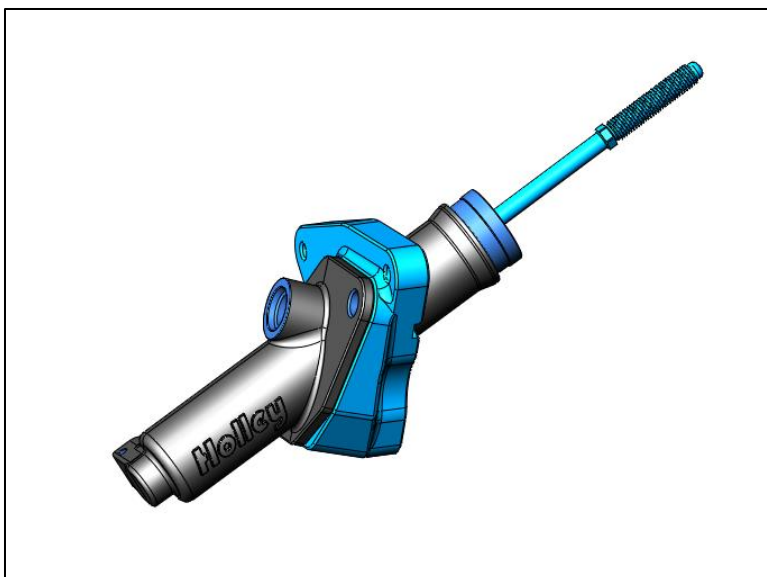


Figure 2: Clutch Master Cylinder/Mount Assembly

17. Guide the assembled clutch master cylinder/mount assembly through the passage in the firewall from the engine bay side. From the inside of the vehicle, align the mounting holes to one another and secure using the four 1/4" - 20 bolts. **Do not fully tighten the bolts at this step (to allow for later adjustment).**
18. Disassemble the pedal box. Remove the clip which holds the OEM clutch pedal on and slide the clutch pedal out.
19. Assemble the Holley clutch pedal as shown below.

**NOTE: The bearings are to be installed on both sides of the pedal.**

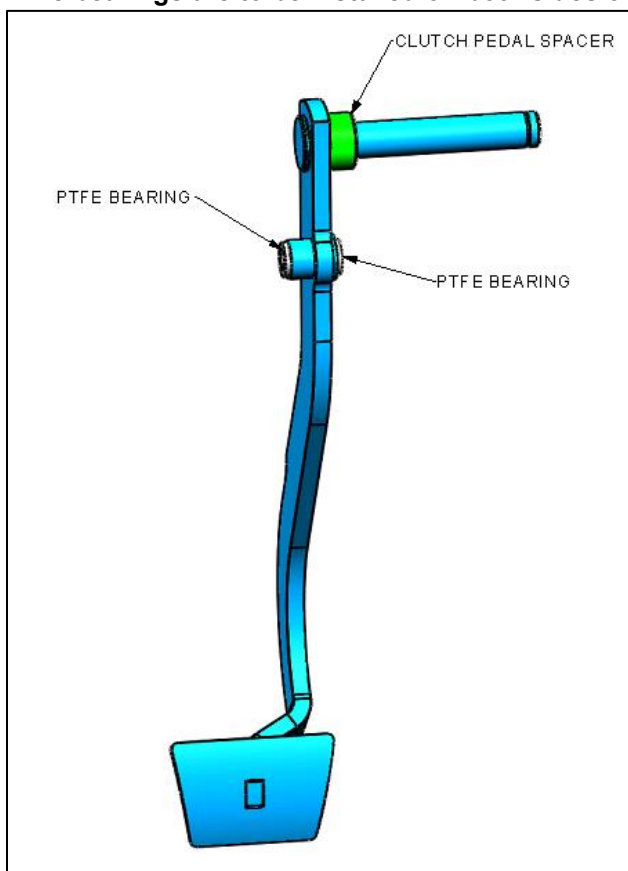


Figure 3: Clutch Pedal Assembly

20. Install the new clutch pedal assembly into the OEM pedal box as shown below and clip into place using the 16mm clip. Replace the bushings with the supplied set of PTFE bushings ON BOTH SIDES OF THE PEDAL.

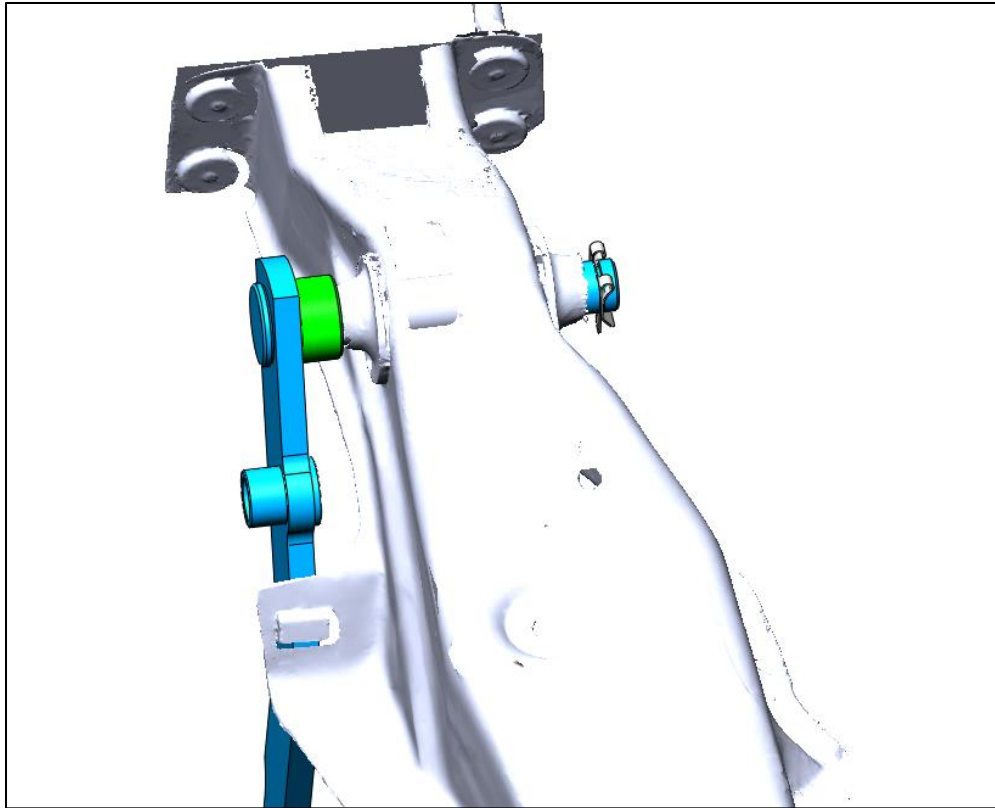


Figure 4: Installed Clutch Pedal

21. Install the 5/16" thin hex nut and clutch pedal linkage onto the clutch master cylinder as shown in Figure 5.

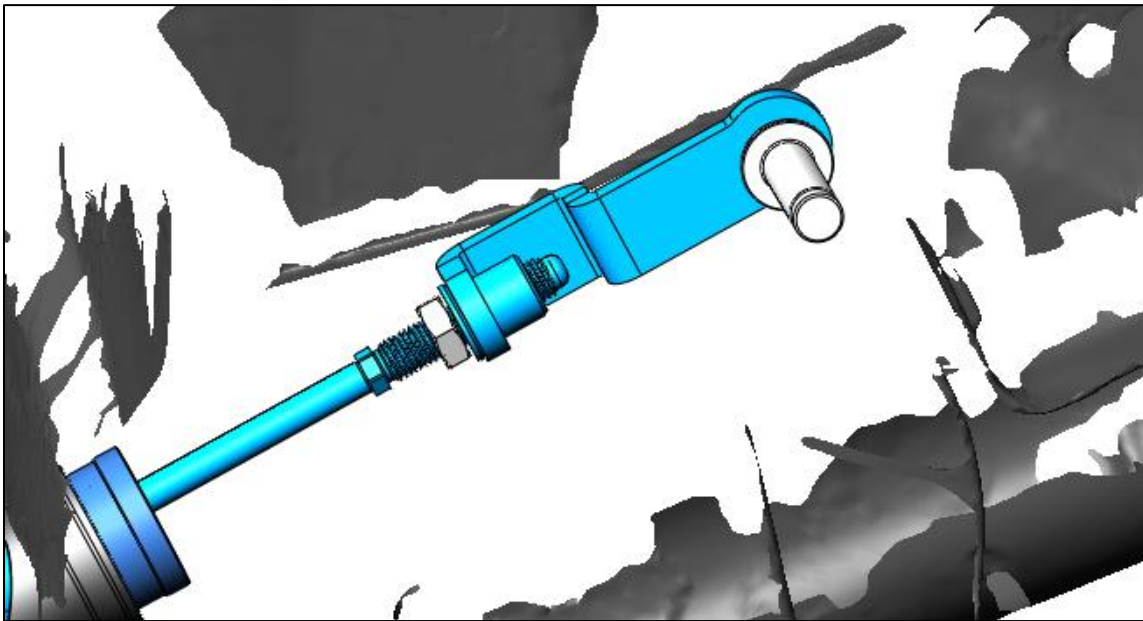


Figure 5: Clutch Rod Linkage Assembly

22. Install the assembled pedal box back into the vehicle and torque all bolts and nuts to their appropriate specifications.
23. Adjust the linkage to align with the hole in the clutch pedal. Install the wave washer, then M10 nylon washer, and clip as shown in Figure 6.



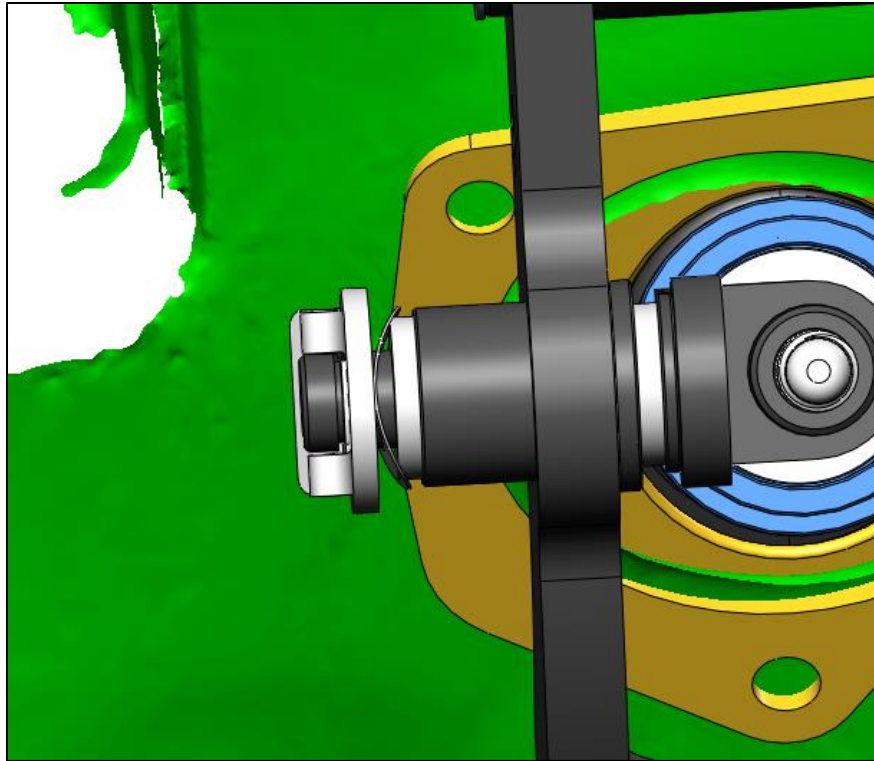


Figure 6: Clutch Rod Linkage Bushings

24. Reinstall the brake booster/master cylinder assembly and all brake lines.
25. The clutch master cylinder reservoir mount will mount to the brake booster bracket as shown in Figure 7.

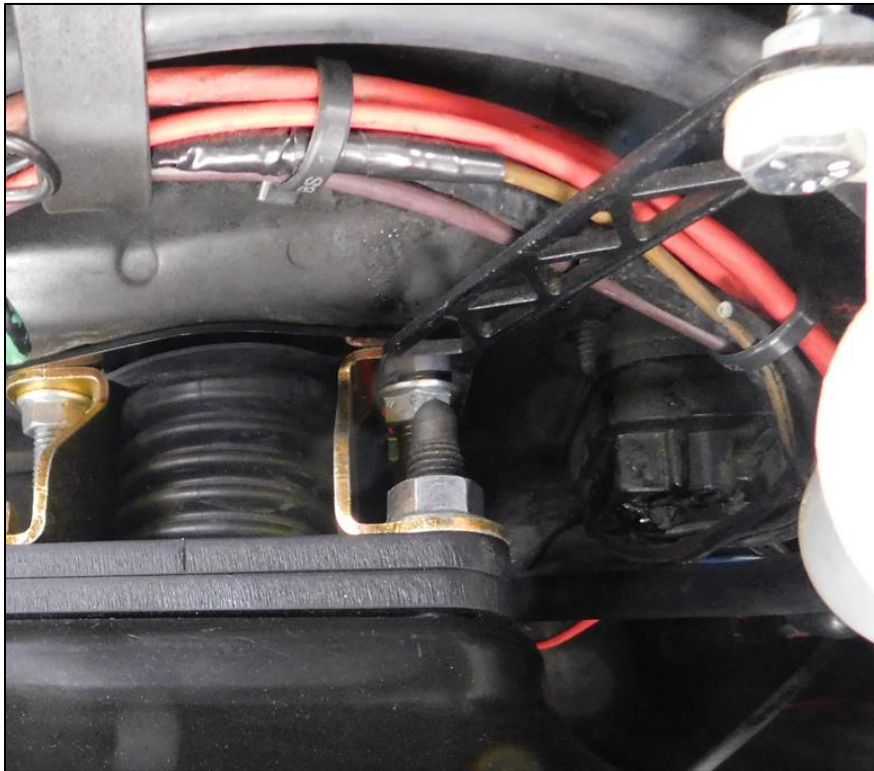


Figure 7: Reservoir Bracket

26. Reconnect the brake master cylinder/booster assembly linkage to the brake pedal.
27. Adjust the clutch pedal height to match the brake pedal by rotating the clutch push rod clockwise to raise the pedal or counterclockwise to lower the pedal. **NOTE:** Using a 5/16" wrench will aid in this process. Once satisfied with the pedal position, tighten the 5/16" thin hex nut.



28. Looking at the clutch master cylinder and linkage position, adjust the master cylinder mounting location until the linkage and the clutch master cylinder are in-line with one another as shown in Figure 8. Torque the 1/4"-20 bolts to 15 ft./lbs.

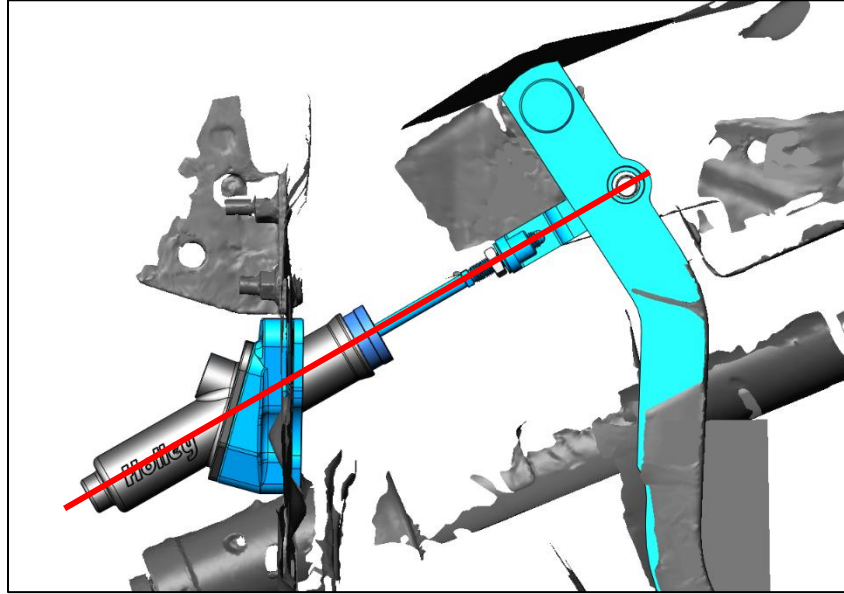


Figure 8: Clutch Linkage Positioning

29. Cycle the pedal by hand to ensure no binding is occurring. If binding does occur, readjust the master cylinder mount until no binding is present.
30. Check that all hardware is properly torqued. Place the carpet back in place and reinstall the carpet guard.
31. Reinstall all previously disconnected switches and the negative battery terminal.
32. Next, plumb your hydraulic system using the appropriate hoses, adapters, and hardware for your application.

**Figure 9 shows how this should be plumbed.**

- This kit uses “early” style clutch line adapters (Earl’s LS641001ERL or LS641002ERL)
- Holley recommends using a pressure switch teed into your hydraulic system to enable the neutral safety switch (LS641002ERL fitting shown). Appropriate switches can be found in the Holley catalog:

[www.holley.com/products/plumbing\\_an\\_fittings\\_and\\_hose/adapters/brake\\_system\\_adapters/brake\\_light\\_switch/](http://www.holley.com/products/plumbing_an_fittings_and_hose/adapters/brake_system_adapters/brake_light_switch/)



Figure 9: Neutral Safety Switch

33. **CAUTION! DO NOT FORGET TO BLEED YOU BRAKE SYSTEM AFTER REINSTALLATION OF THE BRAKE LINES.**

## Chapter 3 – Bleeding Procedure

Follow the steps below to properly bleed your hydraulic clutch system.

**NOTE:** This information is based on a Tremec T56 transmission & clutch release bearing combination.

**WARNING: DO NOT REUSE FLUID** which has been bled from a hydraulic clutch system to fill the clutch master cylinder reservoir; due to the possibility that the fluid may be aerated, have too much moisture content, or be contaminated and may cause system or vehicle damage.

**USE ONLY DOT 3 OR 4 HYDRAULIC CLUTCH FLUID FROM AN UNOPENED, SEALED CONTAINER.**

**BRAKE FLUID ABSORBS MOISTURE.** Replace brake fluid every 2 years. **DO NOT REUSE FLUID.**

1. Ensure the reservoir is filled to the full line.
2. Press the clutch pedal all the way down to the floor 3 times, then hold on the 4<sup>th</sup> time.
3. Open the bleeder on the clutch release bearing to purge the air.
4. Close the bleeder and release the clutch pedal.

**IMPORTANT: Ensure no air is drawn into the clutch system.**

5. Repeat steps 2, 3, and 4 until all air is out of the clutch system.
  - 5.1. Check and refill the reservoir as needed while bleeding.
  - 5.2. After bleeding, pump the clutch pedal several times. If the clutch engagement is not satisfactory, repeat the bleed procedure.
6. If the previous procedures are unsuccessful, perform the following steps:
  - 6.1. Pump the clutch pedal very fast for 30 seconds.
  - 6.2. Stop pumping and let the air escape into the reservoir.
  - 6.3. Repeat this procedure as necessary.

## Chapter 4 – Testing Procedure

Once you've successfully bled the clutch and have proper clutch pedal feel, the next step is to test your clutch engagement/disengagement points for correct operation.

1. **Do this on flat ground!** Raise the rear of the vehicle so that the rear tires are off the ground. Secure with jack stands. **CAUTION: Ensure both tires are off the ground completely, secured with jack stands, and the front wheels are chocked to keep the vehicle from moving.**
2. Depress the clutch pedal and place the vehicle into first gear. The shifter should go into gear with ease.
3. Start the vehicle.
4. Slowly release the clutch pedal and observe the wheels turning. Run through the series of gears with **no added throttle** each time taking note of where the clutch is releasing (should be about 1.0"-1.5" from the floor pan).
5. Place the vehicle in neutral and let go of the clutch. The wheels should not spin. If they do, the master cylinder is preloaded and the clutch rod will require adjustment. However, if the wheels **DO NOT** stop spinning when the clutch is depressed while in gear, then there is not enough pedal travel and the clutch linkage will need to be lengthened.
6. Once clutch operation has been verified, remove the vehicle from the jack stands and perform a test drive.

**Holley Performance Products**  
**Toll Free Technical Service: 1-866-464-6553**  
**Technical Service: 1-270-781-9741**

**For online help, please refer to the Technical Information section of our website: [www.holley.com](http://www.holley.com)**

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