IMPORTANT

Hydraulic clutch system vacuum bleed procedure

NOTE: You will need a hand held vacuum pump and fresh high quality DOT 3 or 4 brake fluid for this procedure.

1) Remove clutch fluid reservoir cap. Be sure the fluid level is at normal as marked.
2) Use athe enclosed round rubber reservoir gasket to create a temporary seal against the clutch master cylinder reservoir.
3) Using the enclosed vacuum line cup, attach the vacuum hand pump to the rubber gasket and introduce 10 to 15 in/Hg negative pressure to the clutch hydraulic system. IMPORTANT: you will be drawing a vacuum from the air gap above the fluid within the reservoir… DO NOT draw any fluid into the vacuum pump! If the system is sealed and done correctly, the negative pressure should hold for several minutes. This procedure will draw out any air contained within the hydraulic system. DO NOT depress the clutch pedal while there is a vacuum applied to the hydraulic clutch system.

4) Release vacuum pressure from the system and top off fluid as needed. Repeat step 3 several times. Then remove the vacuum pump and rubber reservoir gasket.
5) Top off the fluid reservoir as needed and check the hydraulic system for leaks.
6) Replace the reservoir cap.
7) Once the clutch hydraulic vacuum bleed procedure is complete, the clutch should engage and start to move the vehicle at approximately half of the clutch pedal travel up from the floor.

<u>Note</u>: It's common for small air bubbles to remain aerated within the clutch fluid for several hours. The clutch vacuum bleed procedure may need to be repeated after the vehicle sits overnight.

IMPORTANT

Jeep JL/JT Internal Hydraulics Installation

Original equipment Jeep JL/JT with manual transmission uses a hydraulic/mechanical combination clutch release system. This new Centerforce internal hydraulic kit converts your JL/JT clutch release system to full hydraulic operation. By utilizing a fully hydraulic system, this will eliminate mechanical wear points, improving clutch pedal feel and restore smooth, quiet clutch operation. IMPORTANT, you must use ALL the components from this kit in order for the system to work properly; Clutch master cylinder, stainless steel braded pressure hose and clutch release cylinder bearing. NOTE: you will be working in tight spaces under the dashboard and in the engine compartment. It is recommended to have at least 2 people available for the install process. Please read through these instructions entirely before starting. If you have questions, please contact our Tech Line (928) 771-8422 during regular business hours or see our website www.centerforce.com for installation videos.

Caution, the shift cable bracket should not be removed from the side of the transmission during the clutch change procedure. Centerforce recommends removing the shift cable retainer, made from heavy gauge wire located at the top rear of the transmission. Remove the single nut with a 10mm wrench or socket, remove the cable retainer and save everything for reinstallation. By removing the rear cable retainer, you will have enough slack in the shift cables to move the transmission back and down. Again, DO NOT remove the shifter cables from the transmission shift levers. DO NOT remove the shifter cable bracket from the side of the transmission. Once the transmission has been removed from the engine, properly support, block or otherwise secure the transmission in place and proceed with the clutch/flywheel removal. DO NOT allow the transmission to hang on the shift cables. DO NOT kink or bend the shift cables. If the shift cables have been distributed and/or you are having shifting issues, please see the enclosed tip sheet regarding the factory shift cable reset procedure or contact the Centerforce tech line at (928) 771-8422.

Jeep JL/JT uses a shared brake and clutch fluid reservoir. The reservoir features a single fill point – however there is an internal partition that keeps fluid separate from each system. Changing the clutch hydraulics will not affect the vehicle braking system.

You MUST use only fresh, clean factory Original Equipment (OE) or equivalent high-quality DOT 3 or 4 brake fluid in your Jeep. The use of any other fluid is NOT recommended and will void the clutch system warranty. Remember that brake fluid can harm painted surfaces, take steps to cover or otherwise protect any surface that might get damaged by splashed or spilled fluid. Immediately clean-up any brake fluid that is outside of the hydraulic system.

To help retain fluid in the brake/clutch reservoir, it is recommended to keep the fill cap tightly sealed on reservoir until the new clutch hydraulic system has been completely installed.

Installation of the upgraded hydraulic clutch components can be performed at any point of the clutch installation process.

CENTERFORCE
THE PERFORMANCE CLUTCH ®

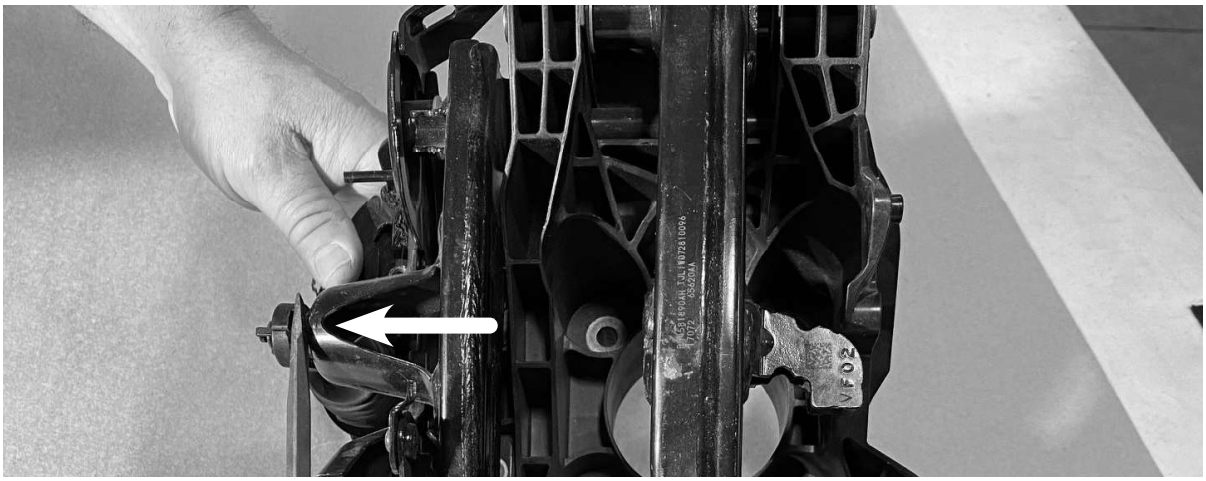
IMPORTANT

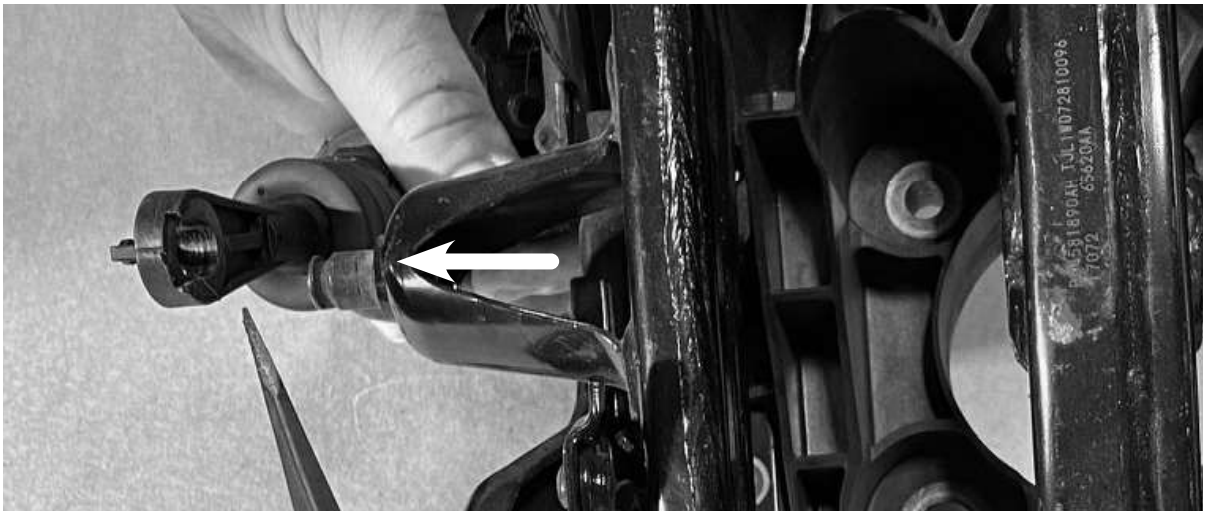
Jeep JL/JT Internal Hydraulics Installation

Step 1

Move the driver seat as far back as possible. From under the dashboard, locate where the Clutch Master Cylinder push rod attaches to the clutch pedal arm. This is a snap lock connector. Insert a medium length screwdriver, pry bar or forked tool (such as a trim removal tool) between the push rod and the clutch pedal arm at the snap connection. Twist the tool and push the connector away from the clutch pedal (towards to outside of the vehicle). NOTE: Examining the snap connector on your new Clutch Master Cylinder push rod may help you understand how it is connected to the clutch pedal arm. DO NOT operate the clutch pedal with the Clutch Master Cylinder disconnected. Leave the pedal in the full UP position.

NOTE: Pedal assembly shown removed from vehicle for demonstration only. DO NOT remove the pedal assembly from your Jeep!



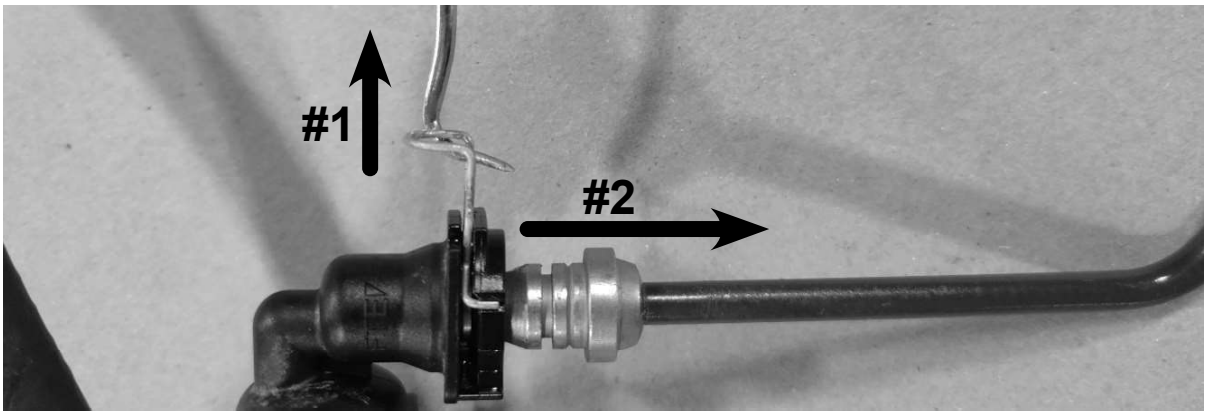


Step 2

From under the hood, remove the clutch safety switch wire connector from the Clutch Master Cylinder. The switch and connector are facing the driver side inner fender well. Press the connector lock tab and pull forward. Once disconnected, place the connector out of the way until it is reinstalled later.

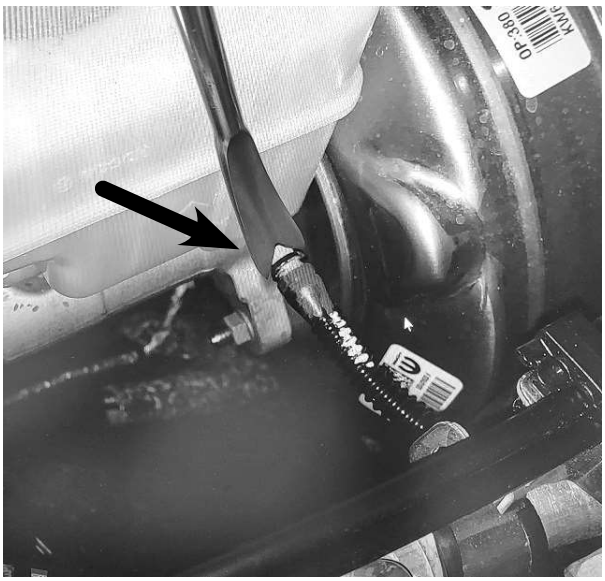
Step 3

Remove the stock OE pressure hose from the Clutch Master Cylinder. Using a small screwdriver or pick tool, pull the hose connection quick release lock wire towards the front of the vehicle (#1). It will move about a quarter inch and then stop. Push the pressure hose downward and out of the Master Cylinder (#2).



Step 4

Remove fluid supply hose from the reservoir. Remove clamp from rubber hose if applicable. Some Jeeps may have a factory corrugated plastic supply hose without a clamp. Twist the hose on the reservoir nipple to loosen the seal. The reservoir is plastic, so use gentle prying action to remove the hose from the reservoir. A forked tool, such as an automotive trim removal tool, works very well for this process. If your Jeep has the factory corrugated plastic hose, be sure to remove the rubber gasket sleeve from the reservoir nipple after the hose has been removed. Once the hose has been removed, immediately install the included rubber cap over the reservoir nipple to prevent fluid loss during the Clutch Master Cylinder installation.

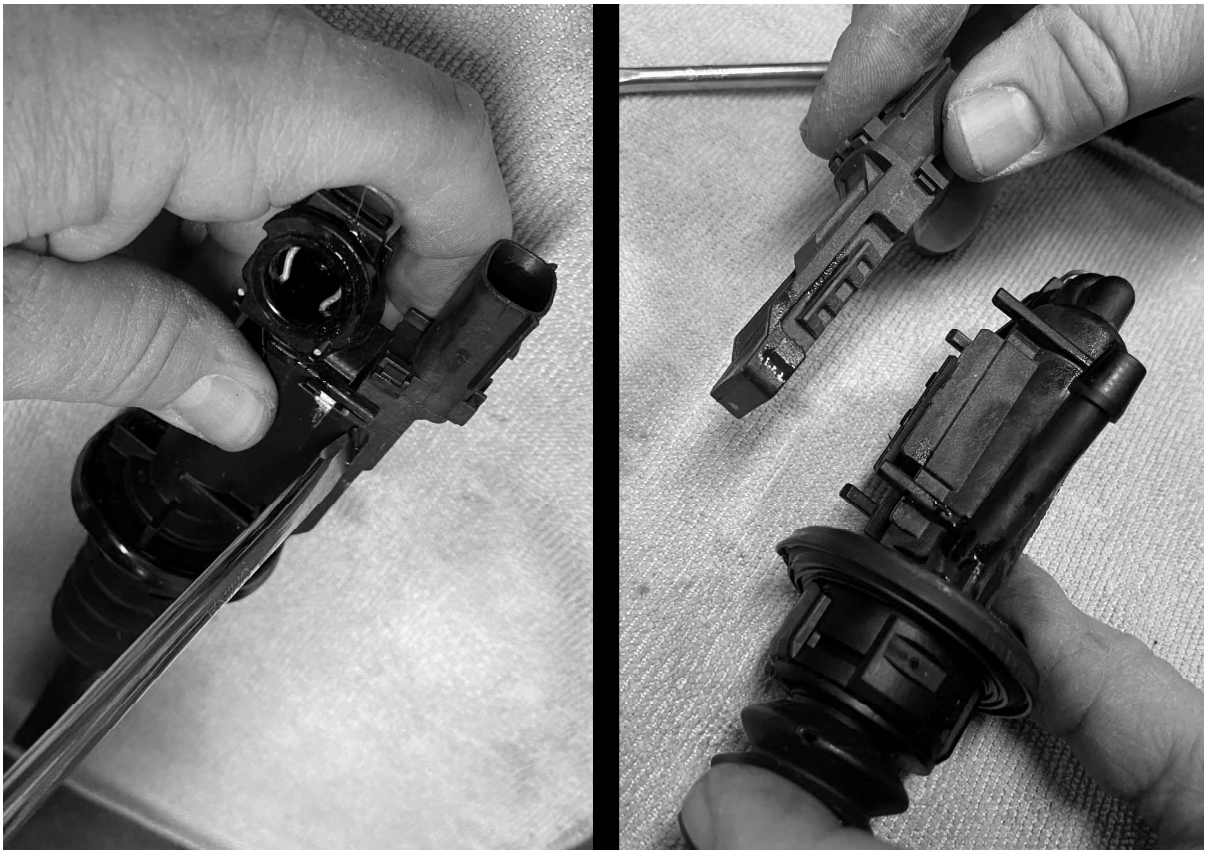


Step 5

From under the hood, facing the firewall, turn the Clutch Master Cylinder approximately one-eighth turn CLOCKWISE. This will release the Clutch Master Cylinder twist lock connection at the firewall. Remove the Clutch Master Cylinder from the vehicle. NOTE: It is helpful to have a second person under the dashboard to guide the Clutch Master Cylinder push rod out through the firewall.

Step 6

On a work bench, remove the clutch safety switch from the old Clutch Master Cylinder. Using a small screwdriver, gently pry the switch from the Clutch Master Cylinder.



Step 7

Install the clutch safety switch onto the new Clutch Master Cylinder. With the wire connector pointing forward, set the switch inside the 4 locator pins and snap into place.

Step 8

At the transmission, remove the old Clutch Release Cylinder and pressure hose together from the transmission. Remove the pressure hose from the transmission bracket and then the plastic retention clip(s) on the firewall, below the Master Cylinder. Be careful to not break the retention clip(s) as they will be reused to hold the new pressure line.

Step 9

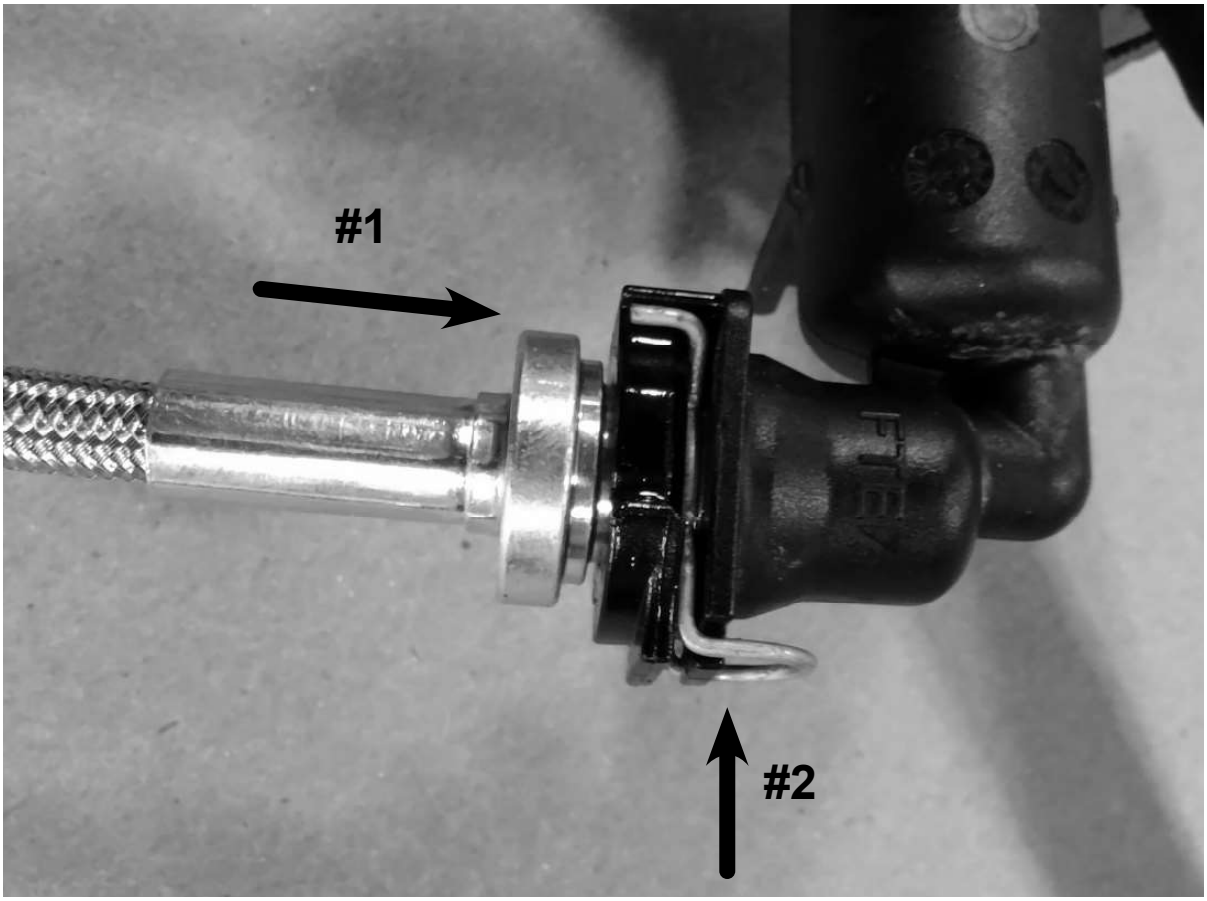
Install the new Clutch Master Cylinder. Apply a small amount of lubricant (such as WD-40) to the Clutch Master Cylinder rubber gasket where it meets the firewall. From under the hood, slide the new Clutch Master Cylinder into the firewall. Have a second person under the dashboard to help orient and guide the Clutch Master Cylinder push rod into position, but DO NOT connect the push rod to the clutch pedal arm at this time. Start with the reservoir hose at approximately the 1 o'clock position. Align the 4 slots on the Clutch Master Cylinder with the firewall twist lock tabs. Once the Clutch Master Cylinder rubber gasket is fully seated against the firewall, push rearward and twist lock the Master Cylinder into the firewall by turning approximately one-eighth turn COUNTER-CLOCKWISE until the reservoir hose is at the 12 o'clock position.

Step 10

From under the dashboard, snap lock the Clutch Master Cylinder push rod to the clutch pedal arm. DO NOT operate the clutch pedal at this time.

Step 11

Install the new pressure hose. Pull the Clutch Master Cylinder hose connection quick release lock wire towards the front of the vehicle. It will move about a quarter inch and then stop. The hose insulation sleeve will need to be positioned at the lower portion of the pressure hose around/near the exhaust system. Using a small amount of clean brake fluid, lubricate the pressure hose O-Ring and install the fitting into the Clutch Master Cylinder (#1). Once the fitting is fully seated into the Clutch Master Cylinder, push the lock wire in to retain the pressure hose (#2). Pull gently downward to check the connection.



Step 12

Install fluid supply hose on to reservoir. Remove rubber cap from the reservoir nipple and install the Clutch Master Cylinder rubber hose on to the reservoir nipple and then clamp the hose in place with the supplied clamp.

Step 13

Install the clutch safety switch wire connector on to the Clutch Master Cylinder. Push the connector until it clicks in place on the switch. Double-check the safety switch to ensure it is properly locked in place on the Clutch Master Cylinder and that it has not come loose during the installation process.

Step 14

Attach the new hydraulic pressure hose into the firewall retention clips. NOTE: Additional zip ties may be used to properly route the new pressure hose to the Clutch Release Cylinder. Avoid looping, sharp bends, kinks and heat sources.

IMPORTANT

15. Remove transmission.
16. Remove O.E. release bearing and release bearing arm from the Bellhousing.
NOTE: These components will not be used (Fig 1).
17. Remove 4 bolts holding the Release Bearing collar on the transmission.
NOTE: the clutch arm pivot ball stud can remain in place – no need to remove the ball stud.

Fig 1

18. Be sure surfaces within the Bellhousing are clean and then install the Centerforce Aluminum Bearing to Transmission Adapter usingthe 4 flat head screws included with this kit (Fig 2).
Be sure to orient the adapter so the release bearing hydraulic hose points towards the bellhousing slave cylinder opening (Fig 3). Tighten the adapter bolts snug using HAND TOOLS only….. torque specifications are 60 inch/lbs. DO NOT over tighten.

Fig 2

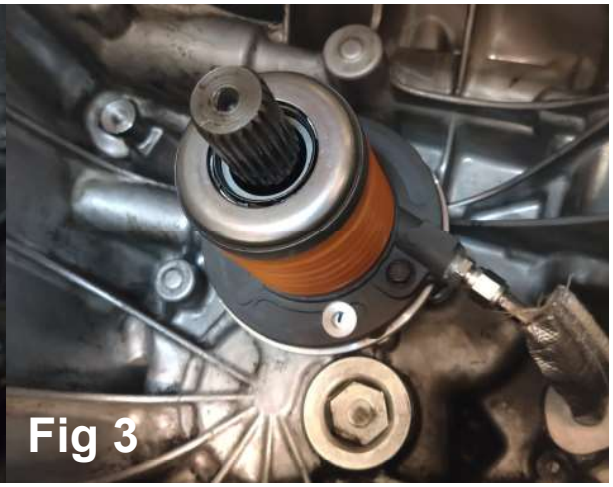


Fig 3

IMPORTANT

19. Remove the short hydraulic hose from the Release Bearing Cylinder. Install the Centerforce Hydraulic Release Cylinder and Bearing Assembly using the TWO included 6mm bolts. Again, be sure the release bearing hose fitting points to the outside of the bellhousing. Tighten the Bearing Assembly bolts snug using HAND TOOLS only….. torque specifications are 60 inch/lbs. DO NOT over tighten.
20. Install the short hydraulic hose from outside the bellhousing – the straight fitting goes inside to the release bearing base as shown (Fig 3). Tighten the fittings inside the bellhousing. The bellhousing cover plate located on the short hydraulic line installs over 2 studs where the OE external slave cylinder mounts. Use the 2 nuts from the OE external slave cylinder and secure in place as shown (Fig 4).

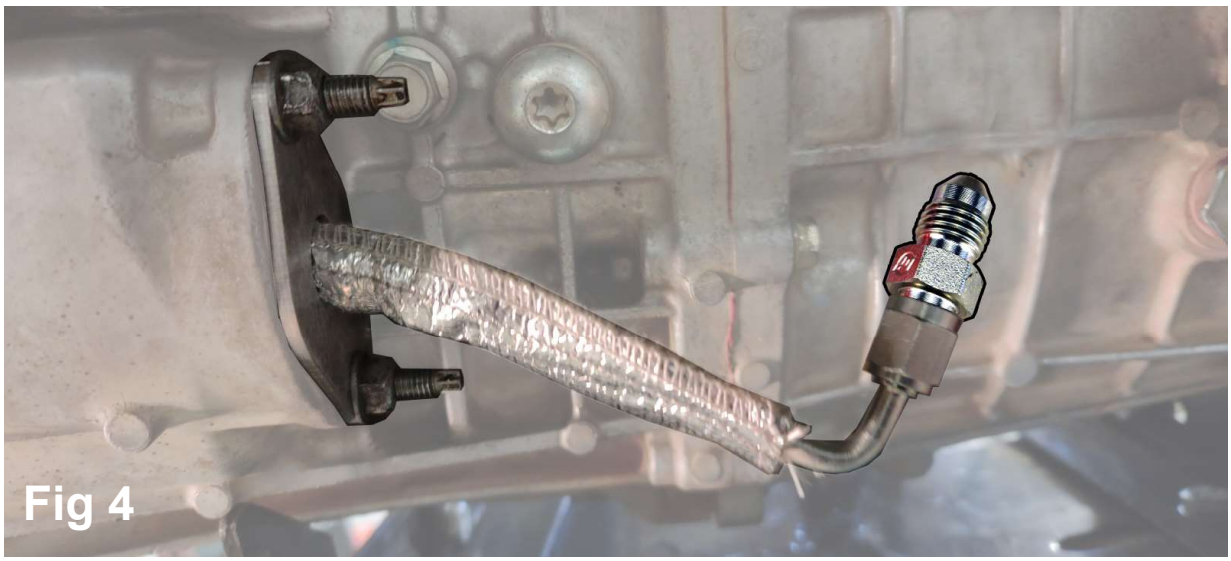


Fig 4

21. Once the transmission has been installed, tighten all external hydraulic fittings using suitable line wrenches. Route the pressure hose from the clutch master cylinder away from the exhaust system and secure with additional zip ties as needed.
22. Using a hand-held vacuum pump, follow the enclosed Hydraulic Clutch Vacuum bleed procedure instructions.
23. Once the clutch hydraulic system has been purged of air, pump the clutch pedal 50 times with the engine off to ensure proper operation. Check for fluid leaks and top off the reservoir as needed. Do not overfill.
24. Test clutch release with the engine off and wheels off the ground. With the transmission in gear fully depress the clutch pedal while a helper turns the rear driveshaft. The driveshaft should turn freely. Slowly let up on the clutch pedal until the driveshaft no longer turns. This static clutch engagement point should be at or just below the clutch pedal travel mid-point. If not, the vacuum bleed procedure should be repeated until all of the air is purged from the clutch hydraulic system. Test drive the vehicle.