

### General Installation Notes:

Please read these instructions completely before beginning the installation. If you have any questions please call.

Before beginning the installation, disconnect the negative battery cable and use wheel chocks to block the vehicle's wheels.

Make sure the engine, transmission, body and frame are properly grounded. We recommend using anti-seize lubricant on all aluminum threads.

### Tools and Materials Required:

- Standard Allen wrenches: 1/8", 5/32", 3/16"
- Wrench or Socket Sizes: 3/8", 7/16", 1/2"
- Tape Measure
- Metal cutting tool, such as a hacksaw or a die grinder with a cut-off wheel
- Drill and 5/16" drill bit
- Ohmmeter
- Wire cutters/strippers
- Wire crimping or soldering tools
- Automatic transmission fluid and a transmission filter and pan gasket
- A new selector shaft seal is recommended

Refer to Fig. 1 for the component names.

This Clayton Machine Works Shifter is designed to fit an aluminum cased GM Powerglide. Before installation, verify that you have the proper Shifter for your transmission. If your Shifter does not seem to connect to the transmission properly, do not make modifications during installation as this may void your warranty. Call for assistance.

The Clayton Machine Works Floor Mount Shifter must be installed to the rear of the transmission selector shaft.

The Shifter must be installed into the vehicle before attempting to make any adjustments.

**Step 1:** If your vehicle already has a shifter of any type installed, disconnect all shifter linkage and remove the shifter and its related hardware (neutral safety switch, back-up light switch, etc.).

**Step 2:** The first step is to replace the original selector shaft with the one that is supplied with the new Clayton Machine Works Shifter. If you are not comfortable performing this procedure, please consult a professional. A factory service manual may be helpful.

Drain the transmission fluid and remove the transmission pan and fluid filter.

**Step 3:** Remove the two 5/16" bolts from the selector guide plate, and remove the selector guide plate. **Fig. 2**

**Step 4:** Loosen the bolt on the throttle valve shaft clamp, but do not remove the bolt. Slide the throttle valve shaft out of the transmission and remove the throttle valve shaft clamp. **Fig. 3 and Fig. 4**

**Step 5:** Remove the detent spring. **Fig. 5** Loosen the bolt on the selector shaft clamp, but do not remove the bolt. Slide the selector shaft out of the transmission and remove the selector shaft clamp. **Fig. 6 and Fig. 7**

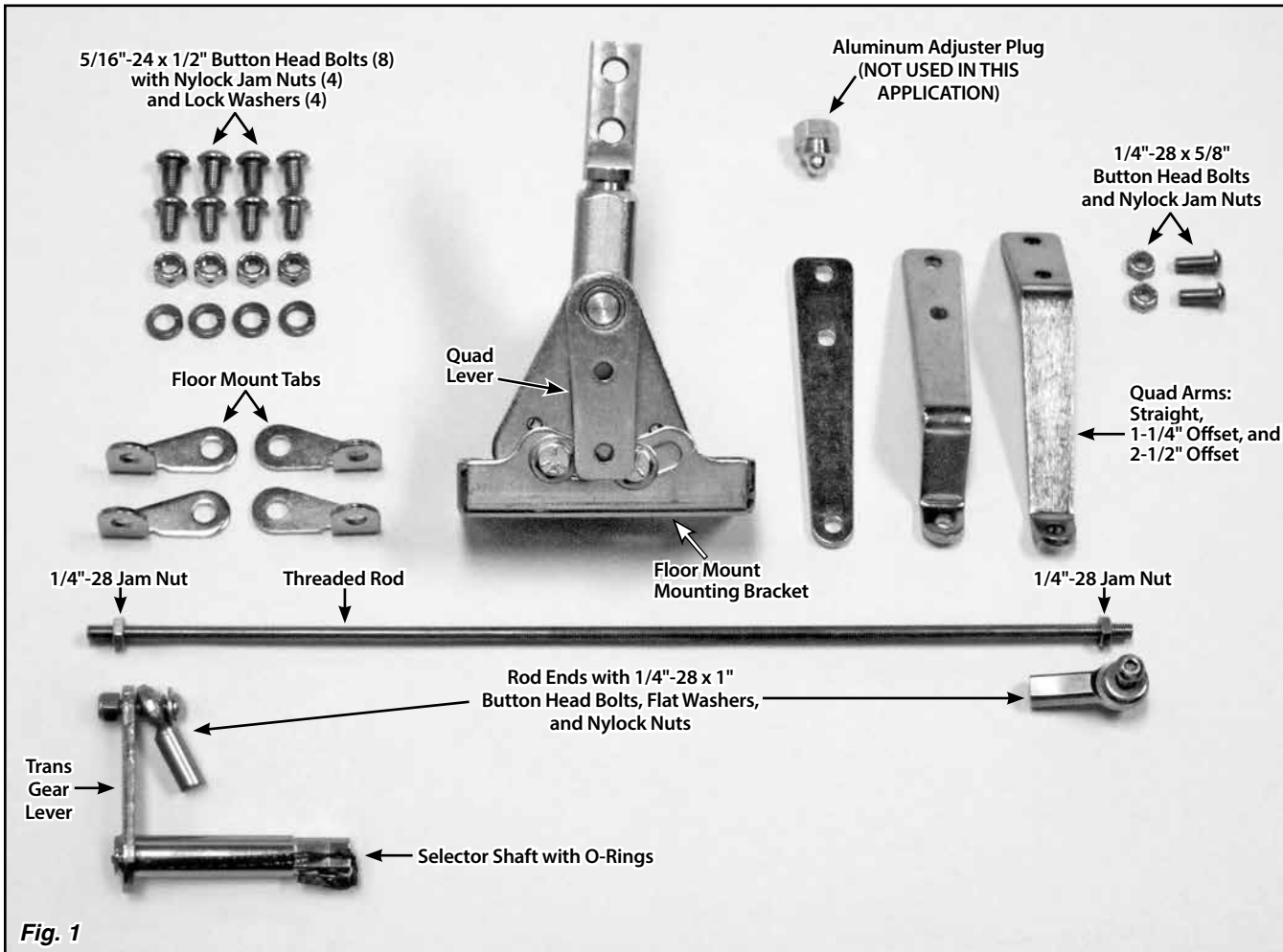
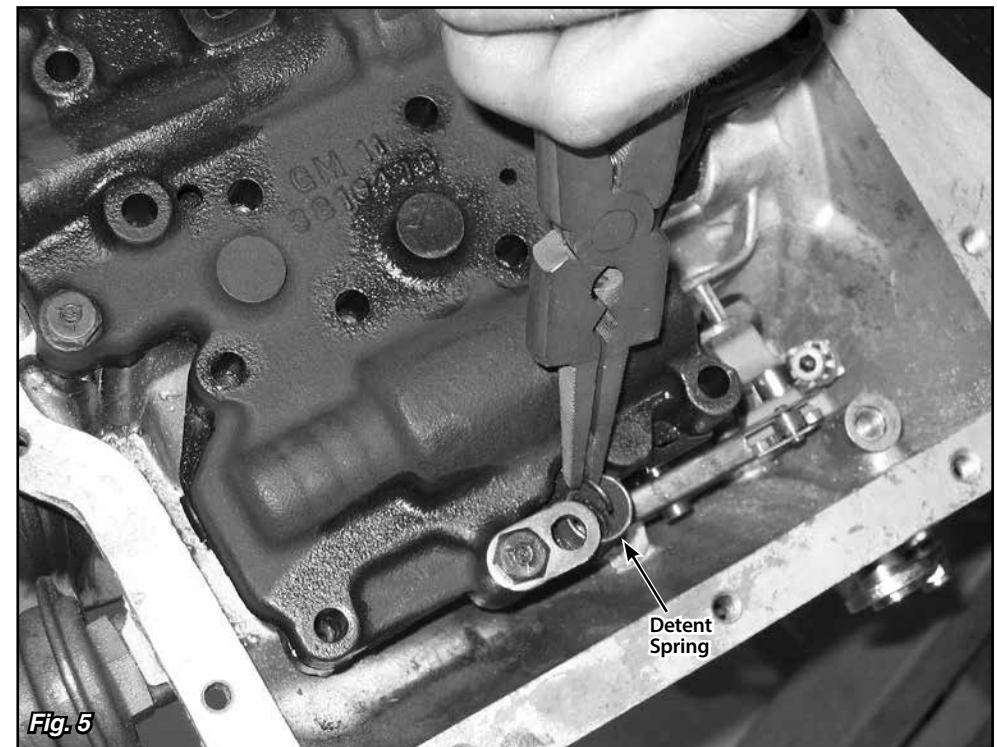
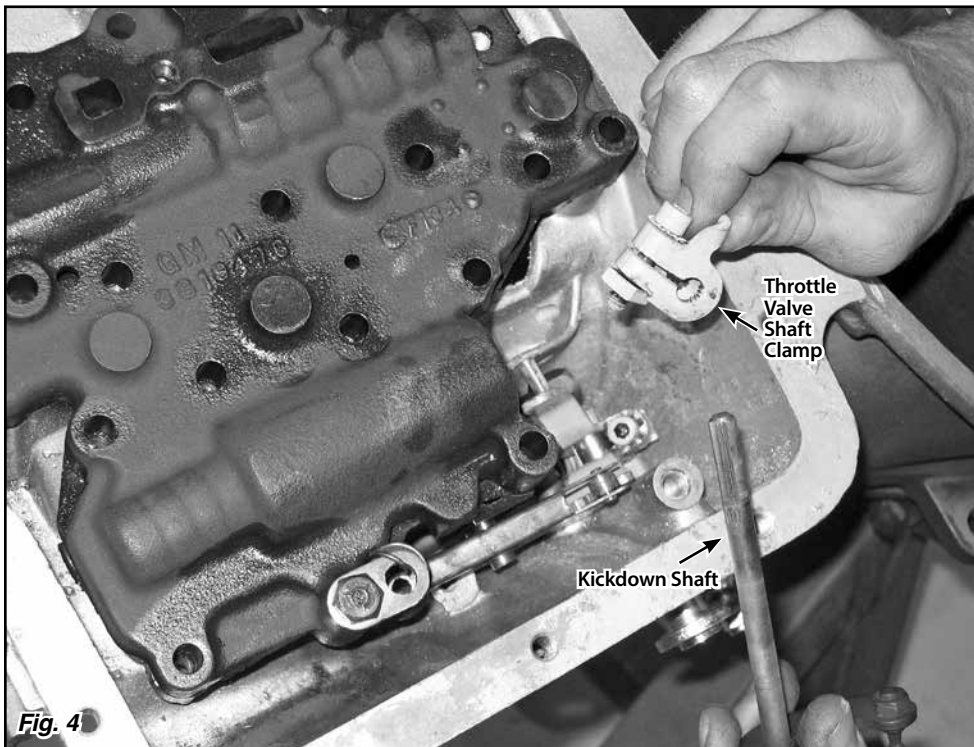
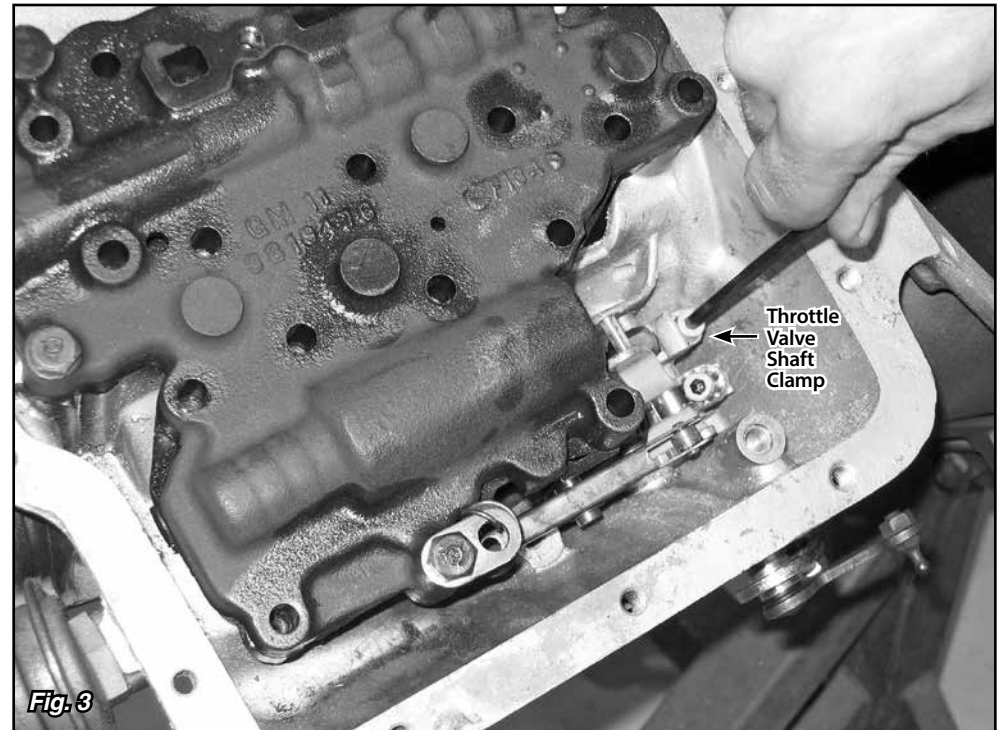
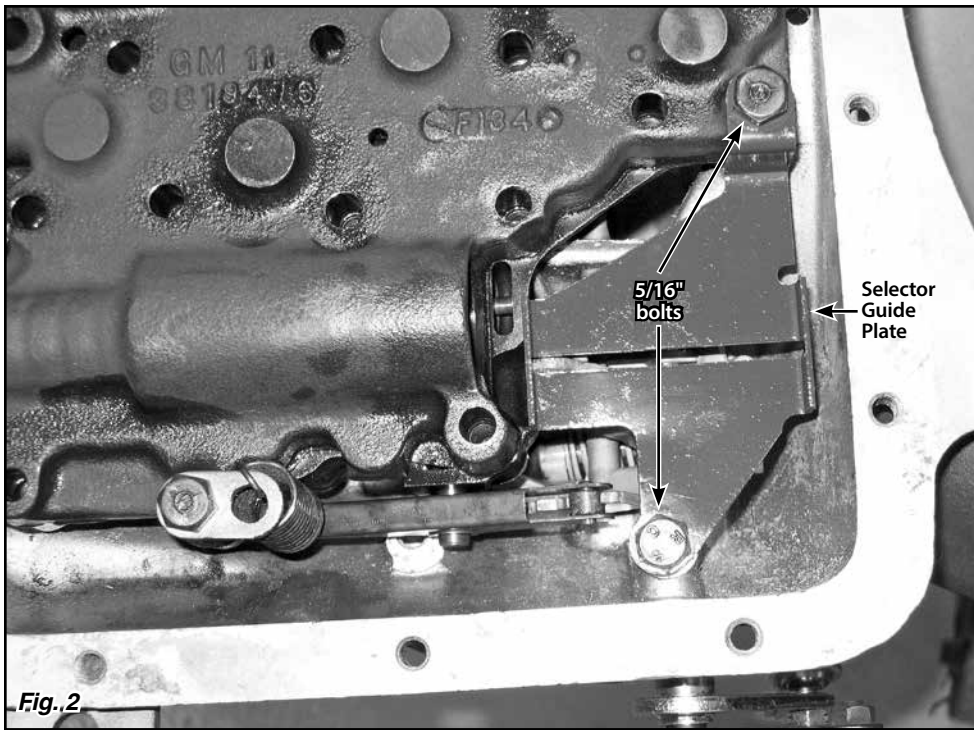


Fig. 1



**CLAYTON MACHINE WORKS**

Powerglide Floor Mount Automatic Transmission Shifter Installation Instructions



**Step 6:** Remove the twist tie and o-rings from the new selector shaft and set the o-rings aside. Check the fit of the detent plate to the new selector shaft. **Fig. 8** The original selector shaft had a small section of splines, and the new selector shaft has a flat machined in it instead.

**Step 7:** We recommend that you replace the selector shaft seal (not included) while you have the selector shaft out of the transmission. Install the new selector shaft and your original selector shaft clamp, and tighten the bolt on the selector shaft clamp. If installed correctly, the lever will be pointing up and slightly toward the rear of the transmission.

Reinstall the detent spring.

**Step 8:** Lubricate the new o-rings with clean automatic transmission fluid, and install them onto the throttle valve shaft. Install the throttle valve and throttle valve clamp, and tighten the bolt on the throttle valve clamp.

**Step 9:** Install the original selector guide plate and two original 5/16" bolts. Install a new fluid filter and pan gasket, and reinstall the pan. Fill the transmission with the recommended amount of fluid.

**Step 10:** Determine exactly where you want the Shifter to be located. The Shifter may be mounted either on top of the floor or underneath the floor. **The shifter must be mounted so that it is behind the transmission selector shaft.**

**NOTE:** For vehicles that had a floor shifter previously, determine if the existing hole(s) in the floor will be adequate for mounting and operating the Clayton Machine Works Shifter. If not, the floor will need to be modified.

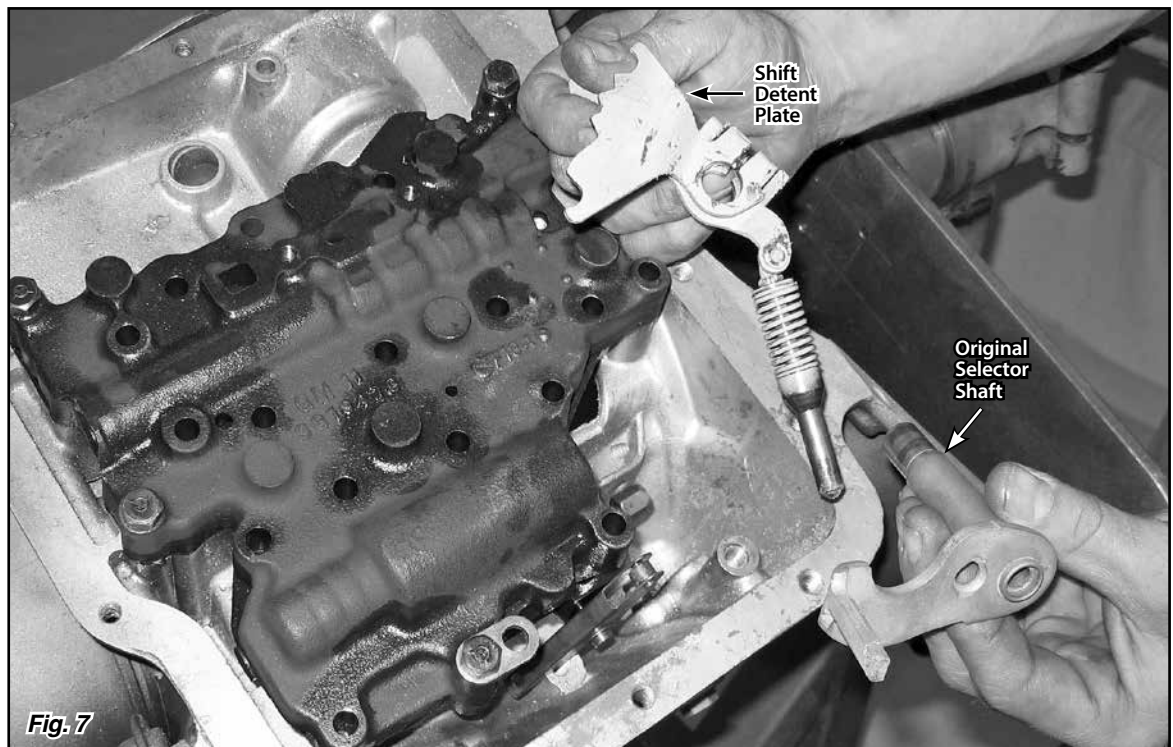
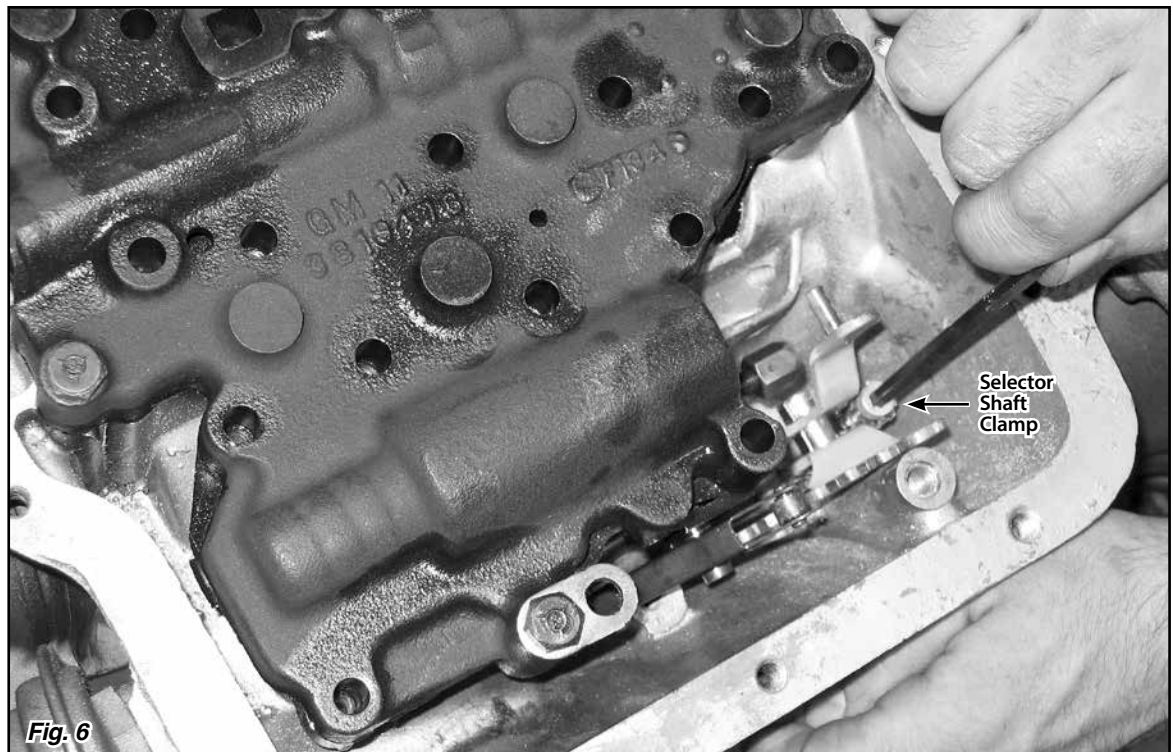
If you are mounting the Shifter on top of the floor, you will need a slot in the floor for the quad arm to pass through. If you are mounting the Shifter underneath the floor, the opening will need to be large enough for the floor mount mounting bracket also.

There are three different quad arms to choose from: straight, 1-1/4" offset or 2-1/2" offset. Choose the quad arm that aligns most closely to the trans gear lever on the transmission. It is not necessary that the quad arm be perfectly aligned with the trans gear lever. The rod ends allow for a certain amount of misalignment.

Be aware that the quad arm you choose will affect the size and location of the slot that will need to be cut in the floor.

**NOTE: Some round shifter boots and boot rings will NOT work with a Clayton Machine Works Floor Mount Shifter if the Shifter Boot and Boot Ring are also mounted directly on the floor.**

**Some shifter boots and boot rings will NOT work with the (largest) 2.5" offset quad arm on a Clayton Machine Works Floor Mount Shifter if the shifter boot and boot ring are also mounted directly on the floor.**



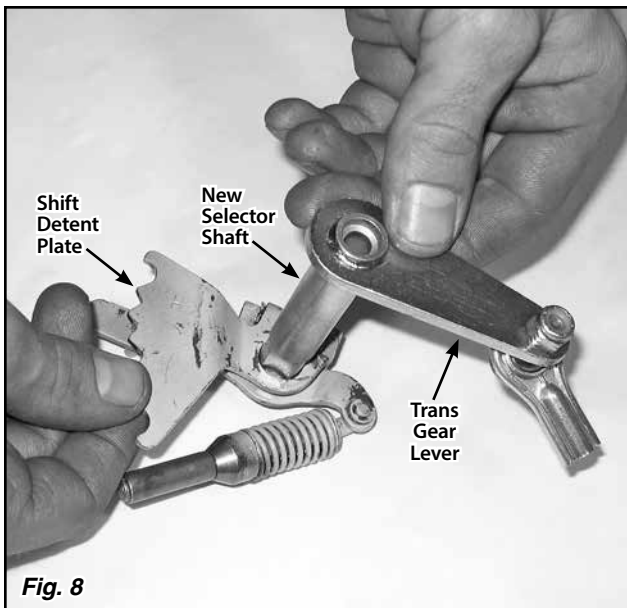


Fig. 8

**Step 11:** There are two pairs of floor mount tabs in the Shifter Kit. Which pair goes where will depend on if you are mounting the Shifter above or below the floor. See Fig. 9 to determine how the floor mount tabs need to be positioned for your particular application.

All four floor mount tabs should be installed pointing towards the rear of the vehicle. If necessary, the **front** floor mount tabs may be installed pointing forwards, but they may then interfere with a floor-mounted shifter boot ring. The rear floor mount tabs **must** point to the rear to prevent interference with the quad arm.

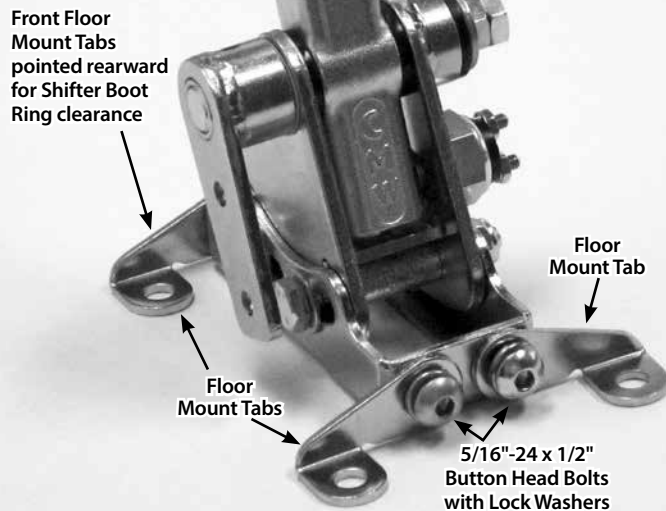
Attach the floor mount tabs to the floor mount mounting bracket as shown in Fig. 9 with the 5/16"-24 x 1/2" button head bolts and lock washers. Leave the bolts loose enough so that adjustments can be made later during the installation.

**Step 12:** Make sure the two 5/16"-24 x 2-1/4" hex head bolts and nylock nuts that are in the curved, slotted holes in the floor mount mounting bracket are tight. Place the Shifter in the desired location on the vehicle's floor. Make sure the shifter lever will not interfere with the dash when in Park, or with the seat when in low gear (you may need to temporarily install your shifter lever to verify). The shifter assembly may be tilted forward or backward if needed by loosening the nylock nuts on the two 5/16"-24 x 2-1/4" hex head bolts that are in the curved, slotted holes in the floor mount mounting bracket. Retighten the nylock nuts once you have the shifter assembly at the angle you want. Fig. 10

**Step 13:** Determine the size and location of any opening(s) that need to be cut in the floor in order to mount the shifter assembly and allow full travel of the quad arm you are going to use. It may be useful to temporarily mount the quad arm to the quad lever and move the shifter lever through its full range of motion, in order to help determine where the cuts need to be made.

Cut those openings now.

## Above Floor Installation



## Below Floor Installation

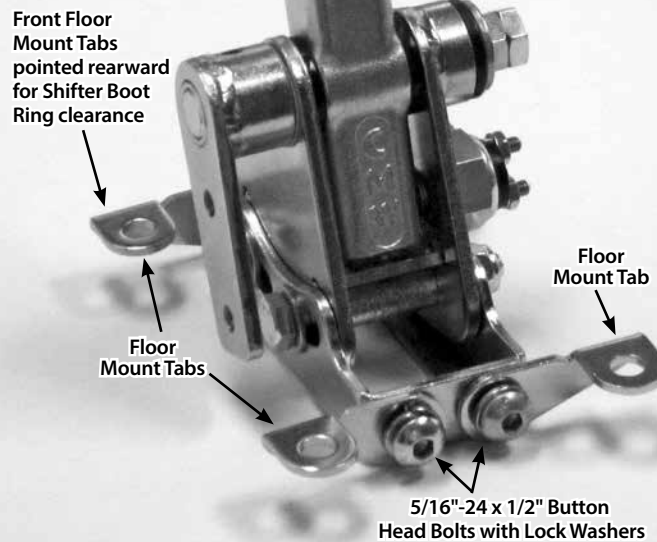


Fig. 9

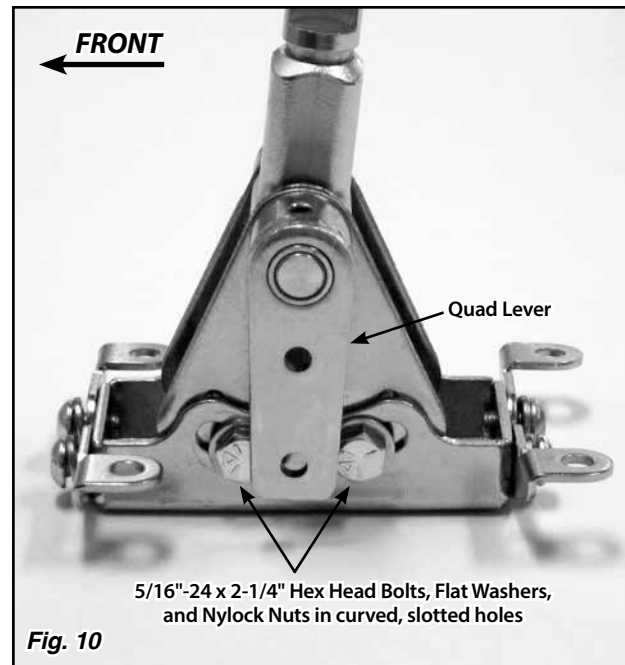


Fig. 10

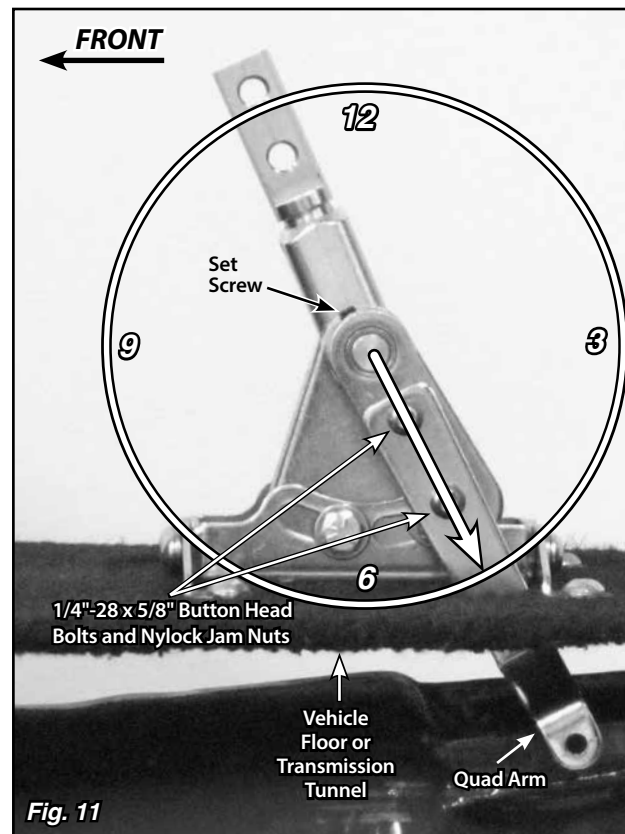


Fig. 11

**Step 14:** Place the shifter assembly in position on the vehicle. Push the floor mount tabs flush against the floor, and mark the center of the bolt holes in the floor mount tabs onto the floor. Center punch the marks, and drill four 5/16" diameter holes.

**Step 15:** Attach the floor mount tabs to the floor using four 5/16"-24 x 1/2" button head bolts and nylock jam nuts. Once the shifter assembly is mounted to the floor, tighten the floor mount tab to floor mount mounting bracket bolts.

**Step 16:** Make sure the shifter lever is in the Park position. Position the quad arm in place on the quad lever with the bolt holes aligned. Check for interference with the left rear floor mount tab or the vehicle floor. With the shifter lever in Park, you want the quad arm to be as close to the 4:30 – 5:00 position as the floor mount tab will allow, without the quad arm touching the floor mount tab or floor.

If the quad arm is not in the proper position, loosen the set screw in the top of the quad lever with a 1/8" Allen wrench and slide the quad lever off of the shaft. The shifter assembly may have to be removed to do this, depending on how it is mounted and how large the opening is in the tunnel. Reposition the quad lever on the shaft as close to 4:30 – 5:00 as the floor mount tab allows, and retighten the set screw. **Fig. 11**

Install the quad arm onto the quad lever using the two 1/4"-28 x 5/8" button head bolts and nylock jam nuts **Fig. 11**

**Step 17:** Remove the rod end from the new trans gear lever. Place the trans gear lever in the Park position. The top of the trans gear lever should be pointing up and slightly towards the rear of the transmission, at about the 1:00 position. **Fig.12**

**Step 18:** The threaded rod will connect the quad arm to the trans gear lever. Check to make sure that nothing will interfere with the travel of the threaded rod.

**If there is any interference, the threaded rod can be bent slightly as needed.**

Verify that both the shifter lever and the transmission are in the Park position. Measure center-to-center between the 1/4" holes in the trans gear lever on the transmission and the quad arm on the Shifter. Subtract 1-3/4". **Fig. 13** This is the length you will cut the threaded rod to. Use a hacksaw or cutoff wheel to shorten the threaded rod.

**Step 19:** Make sure that two 1/4"-28 jam nuts are installed on the threaded rod, one at each end. Install a rod end onto each end of the threaded rod. Position the rod ends on the inside or outside of the quad arm and trans gear lever so that the threaded rod is as straight as possible. Attach the threaded rod assembly to the quad arm and trans gear lever using the 1/4"-28 x 1" button head bolts, flat washers, and nylock nuts as shown in **Fig. 14**. The button head bolts can be installed from either direction, but make sure the rod ends are sandwiched between the flat washers and the quad arm or trans gear lever. **Fig. 15**

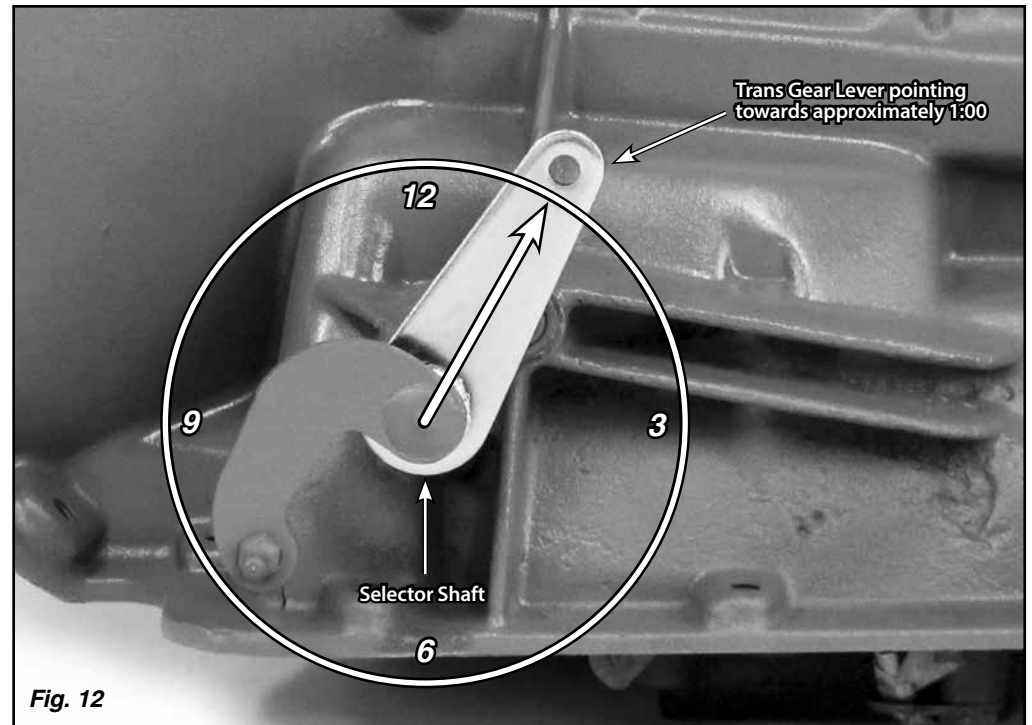
**Step 20:** Install your shifter lever (not included, available separately) using 3/8"-24 bolts (not included with Shifter, but come with a Clayton Machine Works Shifter Lever). **Fig. 16**

**Step 21:** Check the adjustment of the shifter linkage by placing the shifter lever all the way forward into the Park position. Make sure that the release button still moves up and down freely. The release button should be flush with the knob in Park and Neutral. In the Reverse position, you cannot pull the lever back into Neutral without depressing the release button.

While the shifter lever is in the Park position, make sure the transmission is firmly in the "Park" detent, with no tension on the threaded rod. You can verify this by removing the 1/4"-28 x 1" button head bolt with nylock nut that attaches the rod end to the quad arm or trans gear lever at either end of the threaded rod. Make sure the hole in the rod end exactly aligns with the hole in the quad arm or trans gear lever. The bolt should pass freely through both holes at the same time without binding. Do not force the holes to line up.

If the holes are not aligned, screw the rod end in or out just enough to be able to slide the bolt in and out without putting tension on the threaded rod. Make sure that the quad arm and trans gear lever do not move during the adjustment procedure. Use this adjustment routine until the bolt will pass freely in and out of both the rod end and the quad arm or trans gear lever. Reinstall the 1/4"-28 nylock nut and the flat washer in its proper position onto the bolt, and tighten.

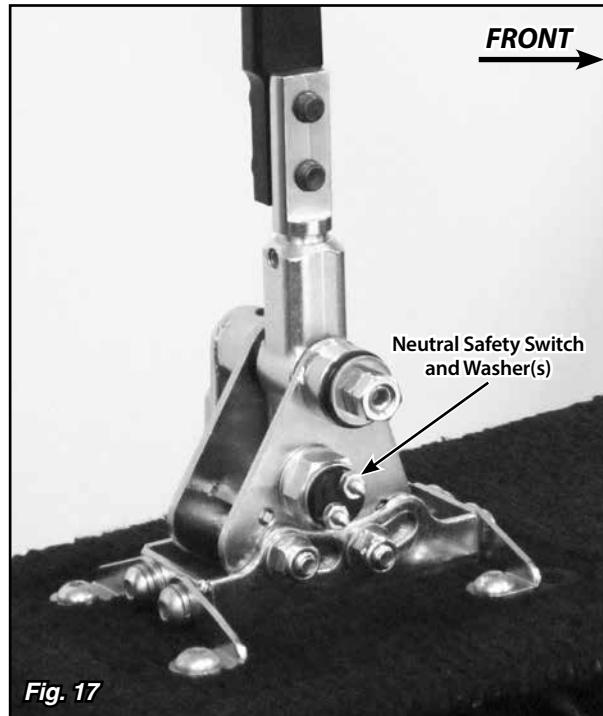
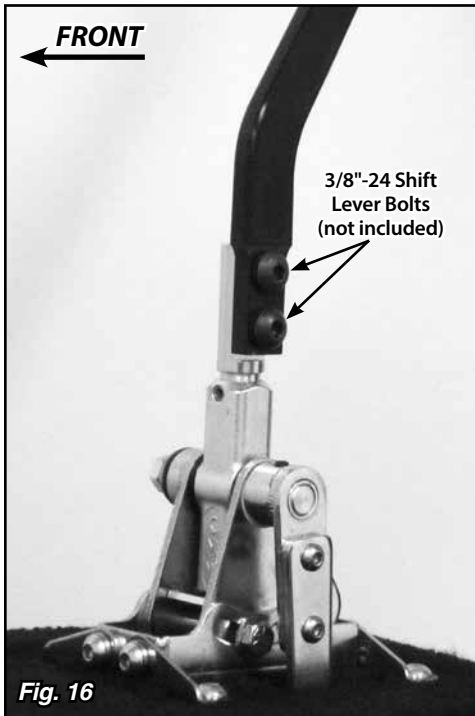
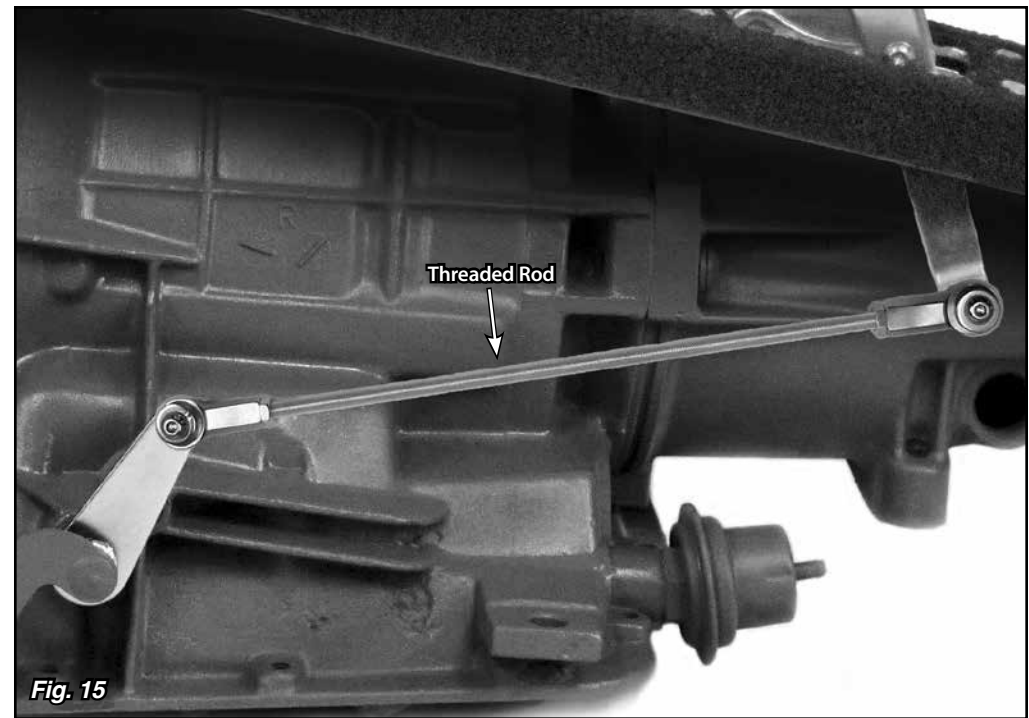
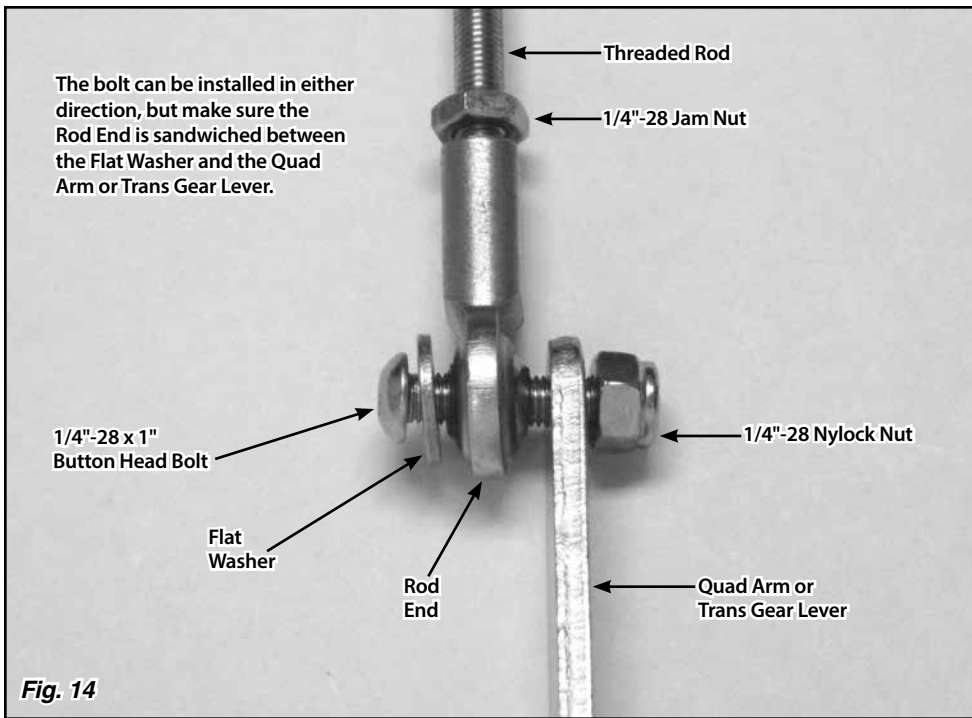
Once you have the shifter linkage adjusted correctly, tighten the jam nuts on the threaded rod.



**Fig. 12**



**Fig. 13**



### Neutral Safety Switch Wiring

**NOTE:** The Neutral Safety Switch will have one or more washers under it. The washer(s) are used to adjust the depth of the neutral safety switch for proper operation. If the neutral safety switch is ever removed for any reason, you **MUST** reinstall the same washer(s) with the neutral safety switch to maintain the adjustment. **Fig. 17**

**The shifter's Neutral Safety Switch is a simple on/off, non-directional switch. The switch passes current (turns on) when the ball is pushed in. It does not pass current (turns off) when the ball is out at its at-rest position.**

**Step 14:** Connect the neutral safety switch between your ignition switch and starter circuits. Check the wiring of your fuse panel:

- **If there are (2) connections for a neutral safety switch**, run a #12 (or heavier) stranded wire from these terminals in your fuse panel to the (2) terminals on the neutral safety switch. That completes the Neutral Safety Switch wiring.
- **If your fuse panel does not have neutral safety switch connections**, locate the wire going from the ignition switch to the starter. If GM color codes are used, this wire will usually be purple. After locating the wire, disconnect it from the starter. It must be cut and routed from the ignition switch to one of the neutral safety switch terminals, and from the other neutral safety switch terminal to the same stud on the starter where the original wire was removed. If the wire must be lengthened, be sure to use wire that is at least the same size or larger than the original.

**Step 15:** Reconnect the negative battery cable and check operation. Make sure that the engine will not start in reverse or a drive gear. If it does, try adding a thin washer or shim (any material is OK, such as gasket material) under the neutral safety switch. If the engine will not start in Park or Neutral, remove one of the washers from underneath the neutral safety switch, and try it again. Tighten all brackets and bolts correctly and securely and there should be no movement or maladjustment. If you have any questions after following this procedure, please call Clayton Machine Works Technical Support at **865-824-9778**.