Rebuilding the Corvair Shift Linkage
1965-69 Only
By Allan Lacki

Rebuilding Corvair shifters is one of my favorite Corvair activities! The following article is for 1965 to '69 Corvair cars with either 3 or 4 speed manual transmissions. The shift linkage on earlier Corvairs is actually a simpler design. The linkage on later Corvairs has an outer shift tube (called an "tube assembly in the shop manual) and an extra link, sometimes called a "stabilizer" to help keep the trans in gear. These are not present in early Corvair cars.

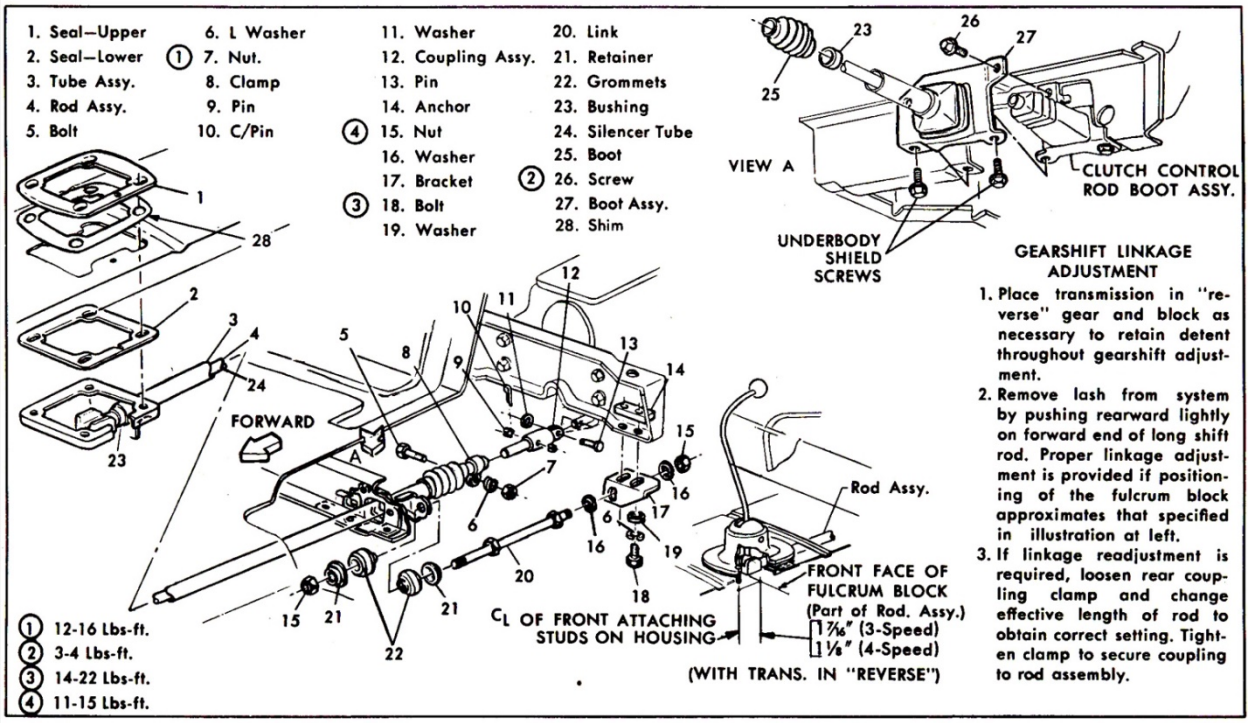

Fig. 13A—3 & 4-Speed Shift Linkage Installation & Adjustment

1. On a '65 to '69 Corvair, the shift tube consists of an outer tube and an inner tube. The shop manual refers to the inner tube as a "rod assembly", but it's really a tube – an inner shift tube - so that's what I call it in this article. Remove the tunnel pan covers and then remove the entire shift tube assembly from the bottom of the car. You will need to unfasten the rubber "boot assembly" at the rear end of the assembly first.

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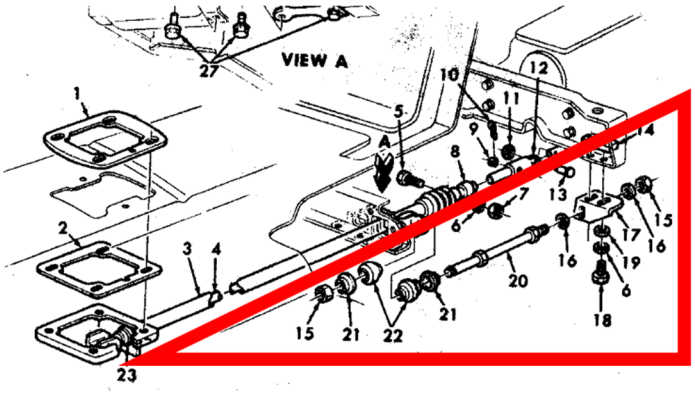
Left: Inner tube (rod). Right: Outer tube

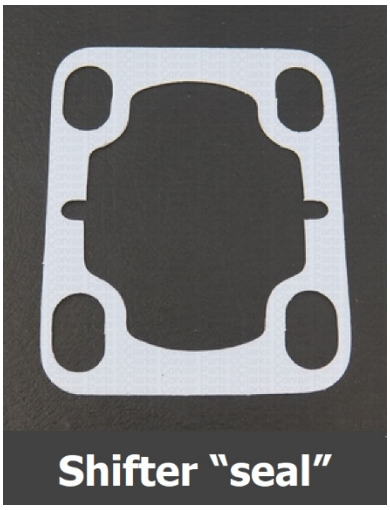
Top: Inner shift tube a.k.a. “rod assembly”.. Bottom: Outer shift tube a.k.a. “tube assembly” .

To remove the shift tube assembly from the car, you'll also need to detach the “link” at the rear of the tube. Often, the nuts that secure it are so rusty that you'll end up snapping off the threaded end of the rod, so be careful. But if you do, don't worry. You can buy a used replacement if you search around. Those links come in two lengths. The 1965 link is longer than the link used on 1966-69 Corvairs. Beware!



The "link", sometimes called a "stabilizer rod"

2. Inspect the flat plastic seals that were sandwiched between the front-end of the shifter tube and the floor of the car. They are often broken. If so, buy replacements from your favorite Corvair parts vendor. If they're in good shape, put them aside for now.



3. Remove the coupling assembly at the rear of the shift tube. It's often rusted in place, so use lots of rust penetrant to loosen it up. Measure how deeply it penetrated the inner tube. (The rust will be your guide!) Set aside that measurement. We'll use it later.

4. Remove the two plastic bushings located at the front and back ends of the outer shift tube. They're almost always cracked, broken or missing altogether. The inner shift tube is supposed to slide back and forth on these bushings inside the outer tube.

Don't be surprised if the bushings are completely gone or if they've been replaced with bronze bushings. It is possible that, sometime in the past, a prior owner already replaced the plastic bushings with metal ones, like the bronze bushings offered by Clark's Corvair Parts.

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Clark's Bronze Bushing Kit

An alternative: Hillman 882996 Bronze Flange Bearings 3/4 inch x 7/8 inch x 1-1/8 " Two required for 1965-69 Corvairs.

5. Remove the cardboard liner that's inside the outer shift tube, if it's still in there. They're usually smushed and that alone will cause plenty of binding. Chevy put the cardboard liner in there to dampen vibration, but there's no need to replace it. So leave it out during reassembly.

6. Check the inner tube. Sometimes they are bent. This happens when a mechanic removes the entire power train without watching what he's doing. If the inner tube is bent, find a replacement.

Usually, the entire length of the inner shift tube is rusty. Grind off the rust along its entire length with a wire wheel grinder. Or if you don't have a grinder, sand the shaft with of emery cloth or better yet, have it sand blasted clean.

You may be wondering why the entire length of the shaft must be free of rust. It's so that you can slide those two new bushings onto the shaft. Do a trial fit with the replacement bushings you already bought. If they hang up, grind off more rust. The original bushings were made of plastic. Most people replace them with bronze Oilite bushings. Again, Clarks sells them. You can find them in hardware stores, too.

7. For those of you who are replacing the plastic bushings with bronze bushings, you are likely to find that the bushings' I.D. is less than the O.D. of the inner shift tube, making it nearly impossible to slide the inner shift tube back and forth inside the outer shift like it should. If you encounter this situation, you'll need to ream the I.D. of the bushings just enough to let the tube slide as it should. I do this with a Dremel tool.

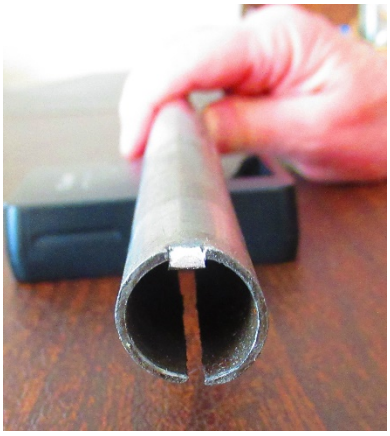
Install the two new bushings at the ends of the outer tube, one at each end.

The Clarks bushing kit includes four little set screws, but it you screw them in too far, they interfere with the inner tube which has to slide back and forth. (Another potential cause of binding). I don't use set screws. Instead, I solder the bushings into the ends of the outer tube with a torch. As an alternative, you can braze them in. Of course, this requires the ends of the outer tube to be especially clean.

8. The coupling assembly that connects the inner tube to the transmission shifter stub is often shot. Too much slop in the hole where the pin goes through. Buy a new or rebuilt one. Several of Corvair vendors sell them. Beware! Once again, they come in two lengths. A long one for 1960-65 Corvairs. A short one for 1966-69 Corvairs. Be Sure to buy the right one!

9. Important! The shaft of the coupling assembly has a groove that intersects with a tang at the rear end of the inner shift tube. The groove-and-tang arrangement orients the coupling assembly in the right position for all forward gears and reverse. If the tang is bent flat, bend it back so it protrudes inside the tube. If it was snapped off, you can make a new one by cutting slots deeper along the both edges of the gap and bending a new tang onto the inner shifter tube.

The tang-and-slot make the process of adjusting the shift so much easier!

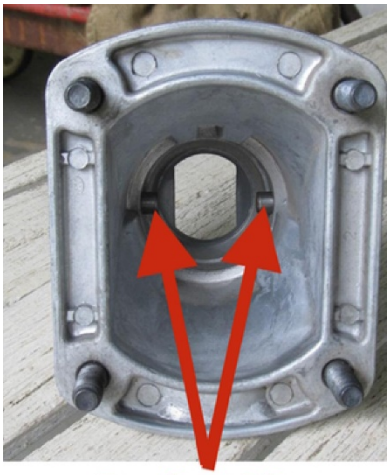


Inner shift tube showing the "tang"

The shift tube "tang" fits in the coupler groove

10. When you removed the outer shift tube from the bottom of the car, you removed the four nuts that hold the front end of the shift tube to the body of the car. But those four nuts also secure the shifter housing assembly to the floor of the interior of the car. (The shifter housing assembly is the aluminum casting where the shift lever attaches to the floor). So, now that you've removed the nuts, remove the shifter housing assembly from the interior of the car.

11. Remove the shift knob and flip the shifter housing assembly upside down. Put the housing in a vice. Remove the steel “seat” that retains the guts of the housing inside the casting. It has dimples that snap into detents in the bottom of the shifter housing casting. Much patience is required. I use a short length of plastic PVC pipe to get a grip on the rotate the steel seat enough to disengage it. Next, pull the shift lever out of the casting. Clean out the grease.



12. Inside the casting, you'll find two rocker pins that are not shown in the factory diagrams, but they are certainly there. They are almost always worn flat and that affects the precision of the shifter action. But you don't need to replace them. Simply tap them out with a punch, reverse them so that the unworn ends will serve as the new rocker ends, and press them back in with a big C-clamp. Lube it up and reassemble the shifter housing. Note that the housing includes a disk (another “seat” according to the shop manual) that, when oriented in the proper position, causes the shift lever to rock over to the gate between third and fourth gear to ease up-shifting.

13. Insert the inner shift tube into the outer tube. Insert the new coupling assembly into the rear of the inner shift tube and secure it lightly using the clamp. Remember the measurement that you took earlier? Use it to determine how deeply to insert the new coupling assembly into the tube before you tighten the clamp. But do not overtighten it now.

14. While having a helper sitting in the driver's seat, hold the shifter housing assembly in-place on the floor, install the shifter tube from the bottom of the car. Now is the time to reinstall those plastic shifter seals. One or more go on top of the floor from the interior and one or more go on the bottom of the floor, from underneath. The shop manual has a procedure for determining the number and thicknesses of the seals to install.

You can simplify this process by using self-locking nuts to secure the shift tube to the floor. Install the self-locking nuts on the four studs that protrude through the floor. Tighten them enough to enable the shifter tube to move back and forth just slightly.

If you don't tighten them enough, the whole shifter housing assembly (with shift lever) will wobble on the floor of the car and this will severely affect the shifting action. On the other hand, if you tighten those nuts too much, you'll lock the shift tube to the floor, making it impossible for the entire shift linkage to move backward and forward as the powertrain shifts on the trans and engine mounts. This could cause the transmission to pop out of gear when driving on a rough road.

15. With the pin you removed previously, (or a new pin if you prefer) attach the new coupling assembly to the little stub shaft that comes out of the front of the transmission. Secure the pin with either a cotter pin or hitch pin.

16. Reinstall the link (stabilizing rod) with new rubber bushings. Do not tighten the nuts.

17. Have your helper get into the car and, while pressing the clutch pedal, have that person shift through all the gears. He or she should have no problem finding them.

At this point, the only question is whether the shift lever rocks too far forward or backward for you to reach. Check it by putting the transmission in neutral and see if the knob falls ready to hand. This is best done with the transmission in reverse gear, for that's the longest reach. Adjust to suit by loosening the clamp that secures the coupling assembly to the inner shift tube and moving the coupling assembly in or out just slightly. Make sure not to ruin the tang that guides the coupling assembly into the inner shift tube!

When the shift knob falls to hand where you want it, tighten the coupling assembly clamp down - HARD. If you fail to do that, the coupling assembly will slide out of adjustment while you're rolling down the road and you won't be able to shift your transmission at all. This is from the voice of experience!

18. Loosen the nuts that secure the link (stabilizing rod) and readjust them so that the rubber bushings are snug but not interfering with the shift mechanism.

Your shifter should work just like new now. I may have left out something, but these instructions should get you there!