



TR250 & TR6 Brakes Overhauling Pedal Assembly

These notes describe what I did on my car for my personal use and are provided here for entertainment; they are not meant to be instructions for others to do maintenance on their vehicles.

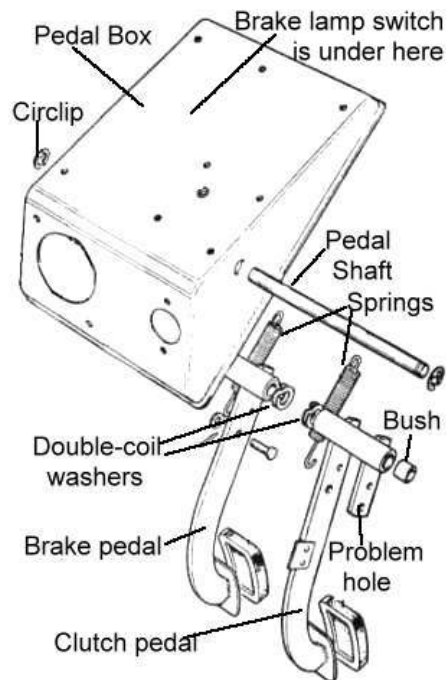
The pedal assembly is a fairly straightforward collection of steel components. I've found three areas that usually require attention on the pedals, the hole in the clutch pedal arm where the clutch master cylinder pushrod connects, the bushes at the top of the pedal arms and the paint that is usually screwed up from leaking hydraulic fluid. The other typical failure is the brake lamp switch that is mounted to the pedal box.

The sketch at the right below was taken from a TRF catalog and then processed. The unit is disassembled by removing the circlip from one end of the pedal shaft and sliding out the shaft.

The sketch shows bushes that are driven into the end of each side of each pedal. I've never had a problem with these bushes and have never replaced them. I tried to drive one of the (steel) bushes out so I could show what it looks like. I was able to get it one to move with considerable force but didn't go further as I was afraid I'd ruin the bush and I didn't have any replacements on hand. If I really wanted to replace the bushes and had as much trouble as I had here, I'd probably slid a hacksaw blade into the hole for the pedal in the pedal and slit one side of the bush. That should release some of the forces allowing the bush to come out easier. (See more on bushes below.)

The pedal shaft is 5/8 inch and the inside of the hole in the pedal appears to be a little less than 3/4 inches meaning that the bush wall thickness is ~1/16 inch or a little less. The TRF catalog says that the bushes were changed at CC 50,000 ('70?) and the later bush is now supplied for all applications. The pedal box I'm working on here came from a '73.

The sketch shows return springs for both the clutch and brake pedals. That is an error, only the clutch pedal has a return spring. If the brake pedal had a spring as shown, it would have to pass through the brake lamp switch.



Elongated Hole in Clutch Pedal Arm: This hole supports the clevis pin between their pedal arm and the clutch master cylinder pushrod. After considerable service the holes in both the push rod and master cylinder push rod tend to elongate as shown in photo on right. (This photo is of a different pedal, not the one overhauled here.) The clevis pins also wear but are easily replaced. The hole in the clutch pedal overhauled here was worn more than that shown on the right, but the bushes showed no wear. I've never seen a problem with the hole and clevis pin between the brake pedal arm and the servo pushrod.



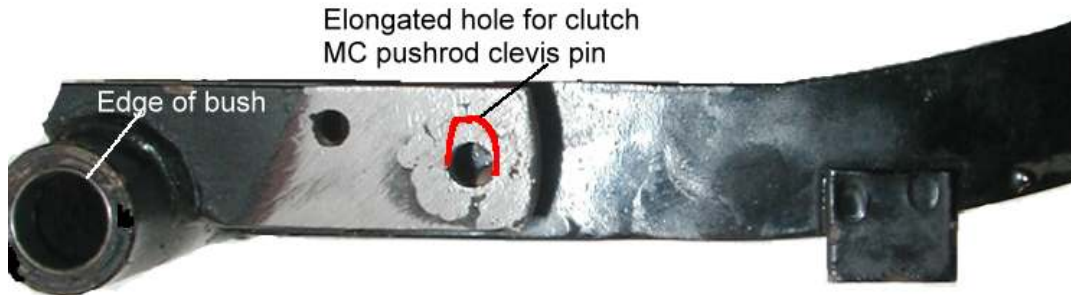
I hate to think of how many thousands of clutch hydraulic systems and clutches have been replaced to fix a "hard to shift into 1st or reverse gears problem" only to find no improvement. One thing nice about unnecessary repairs is that it keeps the parts volume up helping to hold down the cost of replacements when I really need them.

As far as I know neither new pedals nor new clutch master cylinder push rods are available. One can get a new push rod with a new master cylinder for > \$100. I won't go that route because I'm not going to replace my nice shiny powder coated MC with a crummy looking new one. So, I repaired both.

The clevis pin is 5/16-inch diameter. The holes are usually elongated to something like 7/16 inches. My first thought was to just drill out the holes with a 7/16-inch drill and make a set of bushes 7/16-inch OD and 5/16-inch ID. That way the next time I could just replace the bushes. **Bad Idea!** Fortunately, this time I thought before I wasted my time. The problem with that idea is the center of the 7/16-inch holes will be displaced from the center of the original holes because the holes elongate in only one direction. Using those centers will result in loss of pedal (and release bearing) motion. The solution I used was to weld pieces of 7/16-inch rod into the holes, grind the sides smooth and drill new holes at the location of the original holes. The original holes were in the center (front-to-back) of the pedal arm. If you look real

close at the hole in the photo below, the new hole appears to be off center toward the front of the arm (bottom of photo). In fact it is about .030 inches off center and will give about 1/8-inch additional pedal.

Once I had the center of the holes in the approximately correct position I could have drilled them over size and used the bushes mention above. Another option was to drill 3/8-inch holes and use a 3/8-inch clevis pin. I decided against all these schemes because they are non-standard. Also, this fix will last ~ 100 K miles, long beyond the expected time to expiration of the owner.



All parts except the pedal shaft and circlips were powder coated. The clutch return spring and brake lamp switch were missing from his unit. I purchased a new spring and found a switch in the junk box --- didn't powder coat the spring or switch. Before reassembly I ran a tap though all the threaded holes to remove and sand from the blasting and any other debris.

Reassembly: Reassembly was straightforward. I Packed some white grease in the pedal arms between the two bushes and lightly coated the pedal shaft before installing it. Note from the diagram above that the double coil washers go on the center side of each pedal arm. New clevis pins and cotter pins were then installed to complete the reassembly. The completed unit is shown on the right.



Blake Lamp Switch Adjustment: The position of the brake lamp can be adjusted by bending the mounting tab. I deferred this adjustment until the pedal assembly is mounted in the car because the released position of the brake pedal is controlled by the pushrod in the servo. Once that pedal assembly and servo are mounted and the pedal connected to the pushrod with the clevis pin, I will adjust the switch so that it is off when the pedal is released and operated when the pedal footpad is pushed in about 1/2 inch. Caution: if the brake pedal is not connected to the servo it is easy to pull the pedal against the switch hard enough to force some of the later design switches apart. Since there is a spring inside, the parts fly everywhere (been there, done that).

Rubber Pads: The final step was to install new rubber pedal pads.

More on Bushes: A couple days after finishing the pedal assembly above (originally from a '73) I pulled the pedal assembly from my '70 to give to a friend who had bad bushes in his '70. I was surprised to find that the bushes were bad in the unit from the '70. More interesting still was the fact that the hole for the clevis pin in the clutch pedal showed no wear. Strange --- all the other units I have had no bush problem but worn clutch clevis pin holes. When I took the assembly apart I found only one bush, the other three were gone. The remaining bush was made of plastic or nylon and heavily worn. From this I concluded that the early bushes were plastic and the later steel. However, the TRF Blue Catalog says the bushes were changed at CC50000 and my '70 is CC53270.

Hmmm, all kinds of possibilities --- maybe all my late pedal assemblies have been re-bushed. Or --- the '70 may have had the pedal assembly replaced at some time. TRF now only supplies the the later bush but I don't know whether it's the steel one or the plastic one. (If someone has purchased a new set of bushes, please let me know what type you received and from where.)



The workshop was full of my brake stuff and suspension stuff and the neighbor's gearbox and OD so I wanted to get this pedal assembly finished and out of the

Overhauling Pedal Assembly

way. Decided to fabricate new bushes from brass. The original plastic ones were ~ 0.4" long. I made these 0.5" long with 0.718" OD and 0.625" ID. The new bushes are shown in upper right photo. The lower photos show the bushes installed in the pedals. They worked great.



At least now I understand why so many of my friends have replaced the bushes. I was just lucky up to this point to have only the steel bushes.

John Denson of Sweden sent following on April 22, 2002.

I've just finished an overhaul of the pedal box of my 1970 TR6 and found your article on the Buckeye Triumphs site after I had completed it. This job needed doing to replace the bushes which had vanished completely on the clutch pedal and to make good paintwork both inside the car and in the engine bay. Your web page looks reasonably new so maybe its worth a couple of comments.

- 1. I did elect to bush the worn clutch clevis pin hole. My car is the PI version and has a VERY heavy clutch. Given the known problems with misspecified clutch> rates etc. I decided that the idea of providing a replaceable bush with better wear properties seemed attractive. I compensated for the wear by filing opposite 'wear' - an old clockmakers trick for rebushing worn holes (not especially accurate I agree). I then drilled (reaming would have been better) to accept a bronze bush made from a bronze TR6 exhaust valve guide. These are nominally 1/2 in OD> and 5/16 in ID i.e. just right! An expensive way to make a bush but I've got lots more left.....*
- 2. As stated above the clutch pedal bushes had vanished (lots of lost motion....) so I ordered a pair from Rimmer Bros in the UK. The replacements are steel backed 'white metal' and were reasonably cheap. I had inspected the greasy bore of the brake pedal and assumed from the appearance that they had been replaced with steel bushes but a quick poke with a screw driver and they fell out - plastic. Thus I had to order a second set from a company in Sweden who use Moss Europe as suppliers (not quite so cheap another middleman). This job at least takes care of the gear changes but I'd still like to know what clutch has been installed.....*

Hope this info helps.

Regards

John Denson

Thanks John. Neat trick for centering the pushrod bushes. Now I wish I'd have used bushes. I just looked up "Bronze Bearings" at the [McMaster-Carr website](#) and found 5/16" ID bronze bearings with 3/8", 7/16" and 1/2" OD and various lengths --- for less than \$1. I haven't installed that pedal box yet ... maybe I'll redo it.

Also, thanks for the good news on the replacement pedal shaft bushes -- they're steel backed, at least those supplied in Europe.