

Shorten Your Parking Brake Lever

Procedure by Paul Marcantonio
Text and pictures by Kevin De Angelis
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The NA is about as roomy as a Miata gets, but as we all know there are limits to how comfortable the car can be. In my case, the parking brake lever is a major source of discomfort – see Figure 1. I'm just of average height but I have fairly long legs, and the lever rubs against my thigh. It can really be irritating after a while, so I decided to shorten it. The procedure which follows was originally developed by Paul, but I altered it a bit. The pictures are of my '91 Miata. It took about four to five hours, but I'm a slowpoke and I was taking pictures. Without pictures, I could have done it in half that time.



Figure 1 – Ouch, that hurts!! ☹

Procedure:

1. Remove the screw (Figure 2) to separate the two halves of the side cover assembly from the lever assembly, and then remove the cover (Figure 3).



Figure 2 – Remove screw to separate cover halves



Figure 3 – Lever with cover assembly removed

2. Remove the plastic handle. It fits tightly and is glued on, so I used a pair of channel locks to twist it off. Wrap a towel around the handle to protect it as shown in Figure 4 (only necessary if you want to have the option of using the bottom of the handle – see Step 17). Figure 5 shows the lever with the plastic handle removed.



Figure 4 – Twist off plastic handle



Figure 5 – Lever with handle removed

3. Unscrew the release button from the end of the lever. Remove it and the spring (Figure 6). The release rod will then drop down from the tube (Figure 7).



Figure 6 – Remove the release button and spring



Figure 7 – Release rod drops down

4. Remove the lever assembly from the car before continuing. It's not absolutely necessary to remove it – Paul didn't – but I chose to do so for three reasons. First, it was easier to take pictures with the assembly on my workbench.☺ Second, I wasn't comfortable using a hacksaw inside my car. Third, it's much easier to reassemble the parts and ensure their proper operation on a bench. The lever assembly is mounted to the floor with three 12 mm bolts (Figure 8).
5. The brake cable adjustment screw, a retaining clip and an electrical connector also need to be removed (Figure 9). Don't lose the clip - it prevents the screw from turning. Depress the tab on the electrical connector (see Figure 23 to see what the connector looks like) and pull it off the spade contact. Before you remove the adjustment screw, use a screwdriver to scribe a mark at the top of the screw (Figure 10). That way you'll easily be able to return the screw to its original position when you reinstall the lever assembly.



Figure 8 – Parking lever assembly bolts (that's a socket wrench on the single bolt)

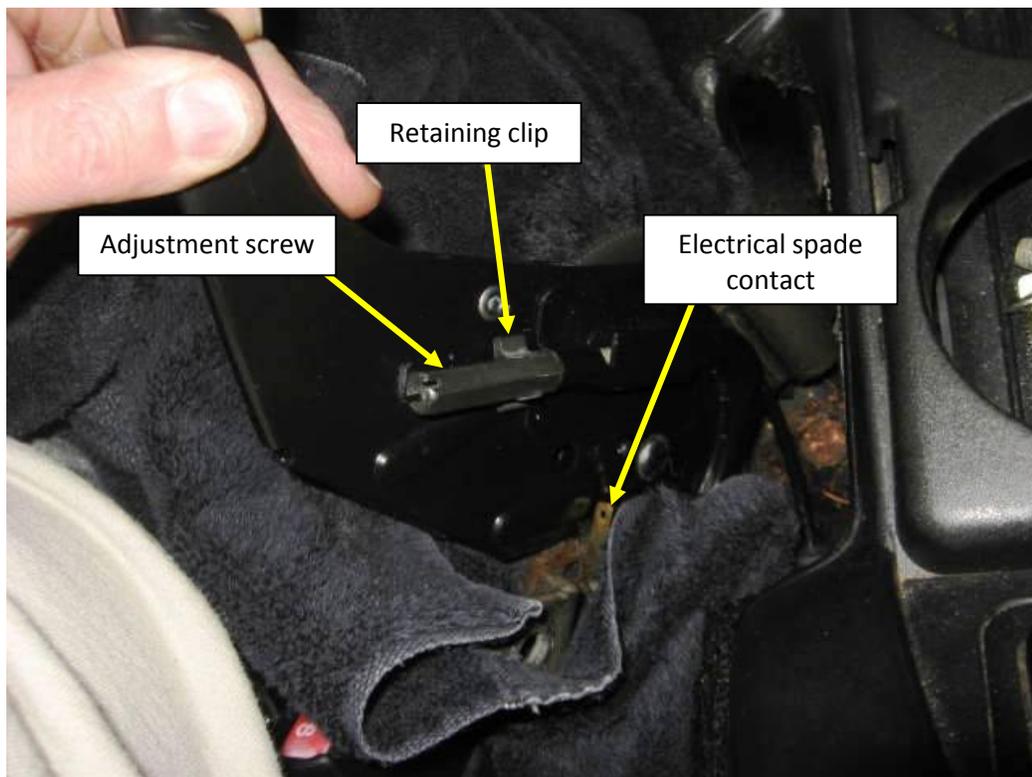


Figure 9 – Brake cable adjustment screw, retaining clip and electrical spade contact



Figure 10 – Adjustment screw scribe mark

6. Once the adjustment screw is removed, take the parking brake cable off the lever assembly and pull the assembly from the car (Figure 11).



Figure 11 – Remove brake cable and pull lever assembly from vehicle

7. With the lever assembly on the bench, look through the open section of the lever. There are three parts to note: The ratchet, locking tab and the release rod (Figure 12). It's difficult to describe in words, but what you should do is to figure out how the release rod and locking tab work before cutting

anything. Play with it a bit – let the tab engage the ratchet and pull on the release rod to disengage the tab a few times. The point is that you need to understand how these parts work together so that when you put everything back together the mechanism will function properly. If you choose not to remove the assembly from the car, this step is especially important. That's because you won't be able to see how the parts interact and it'll be a blind fit. Sure, you can use a mirror to see what's going on in there, but getting the parts to fit together and work properly will still be a trial-and-error process. Paul said that this was the hardest part of the mod for him. If you pull the lever assembly from the car, you can make sure that everything works properly before you reinstall it, so my recommendation is that you do remove the assembly and do the cutting on your workbench.

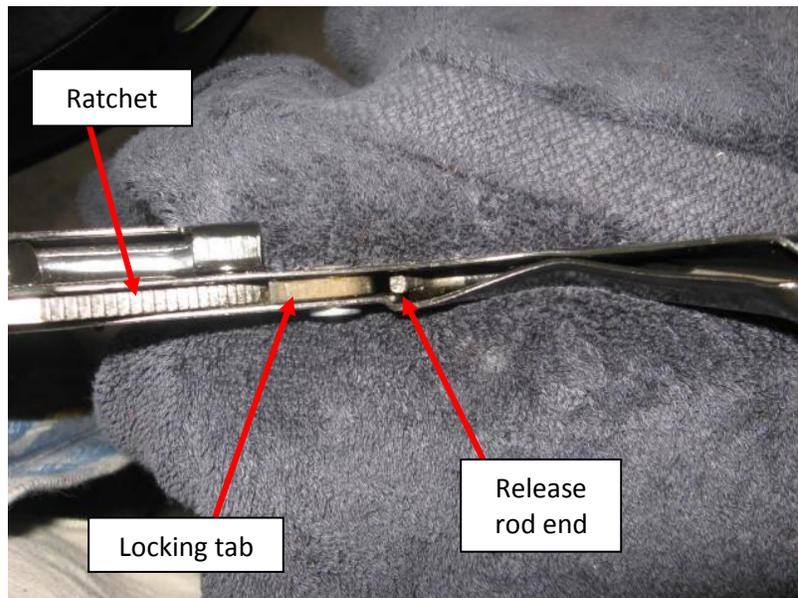


Figure 12 – Ratchet, locking tab and release rod end

8. When Paul did this mod, he figured out that $2 \frac{3}{4}$ inches is about as much as he could shorten the brake lever so this is what I did. The lever, release rod and plastic handle all must be shortened by the same amount. I attached a piece of duct tape $2 \frac{3}{4}$ inches from the end of the lever to indicate where the cut had to be made (Figure 13). I did the same thing for the plastic handle (Figure 14).



Figure 13 – Location at which to cut the lever

Figure 14 – Location at which to cut the handle

9. Clamp the lever assembly in a bench vise between two pieces of scrap wood, then cut the lever tube and release rod with a hacksaw (Figure 15). Remove burrs from the tube with a file or a drill motor and grinding point when finished.



Figure 15 – Cut the lever tube and release rod with a hacksaw

10. Now you'll need to cut threads into the end of the release rod for the release button with an M5 die. I picked up a metric tap and die set at Harbor Freight that was on sale for \$15, and it worked brilliantly. Before cutting the threads, use the file or a drill motor with a grinding point to chamfer (taper) the end of the release rod. This levels the die on the rod so that the threads will be straight. Spray the die and the rod end with WD-40 before cutting the threads. If you want a machine shop to cut the threads for you, you'll either have to drive the car there if you didn't remove the assembly from the car or take the assembly to them if you did.
11. Since the release rod is the same length as the tube, I wasn't able to use the die wrench because the tube interfered with it. So I pulled the rod as far out of the tube as I could without bending it, started the die by hand and then used a pair of channel locks to turn the die (Figure 16). I cut threads as far down the rod as I could before the edge of the die contacted the tube (Figure 17).



Figure 16 – Cut new threads with an M5 die and channel locks



Figure 17 – Newly threaded rod

12. Next, trim the plastic handle by the same length as the lever tube and rod. You should have already marked the cutting edge with a piece of duct tape (Figure 14); if not, do so now. Clamp the handle into the vise and cut it with the hacksaw (Figure 18).



Figure 18 – Cut the plastic handle

13. The last thing to cut is the spring. Figure 19 shows that the coils at each end of the spring are wound more tightly than the coils between the ends. Cut off one of these ends as shown in Figure 20.



Figure 19 – Spring before trimming



Figure 20 – Spring after trimming

14. Now it's time to reassemble everything. Since the tabs inside the tube which originally prevented the spring from getting pushed down the tube are gone, the only thing holding the spring in place is the flat part of the tube. The coils on the trimmed end of the spring will try to push down into the tube, but the untrimmed end will not, so locate the trimmed end of the spring toward the threaded end of the rod. Also, the "bump" on the tip of the plastic handle should be oriented toward the side of the lever assembly with the two mounting holes (Figure 21). Screw the release button onto the end of the rod and test the assembly to ensure that the mechanism works properly (Figure 22).



Figure 21 – Proper orientation of parts for reassembly



Figure 22 – Reassembled brake lever assembly.

15. Reinstall the brake release cable and adjusting screw, and then bolt the assembly to the floor of the vehicle. Turn the adjusting screw until it is flush with the scribe mark, snap the retaining clip onto the screw and reconnect the electrical connector to the spade contact (Figure 23). Refer to Figure 9 to see how the retaining clip fits.

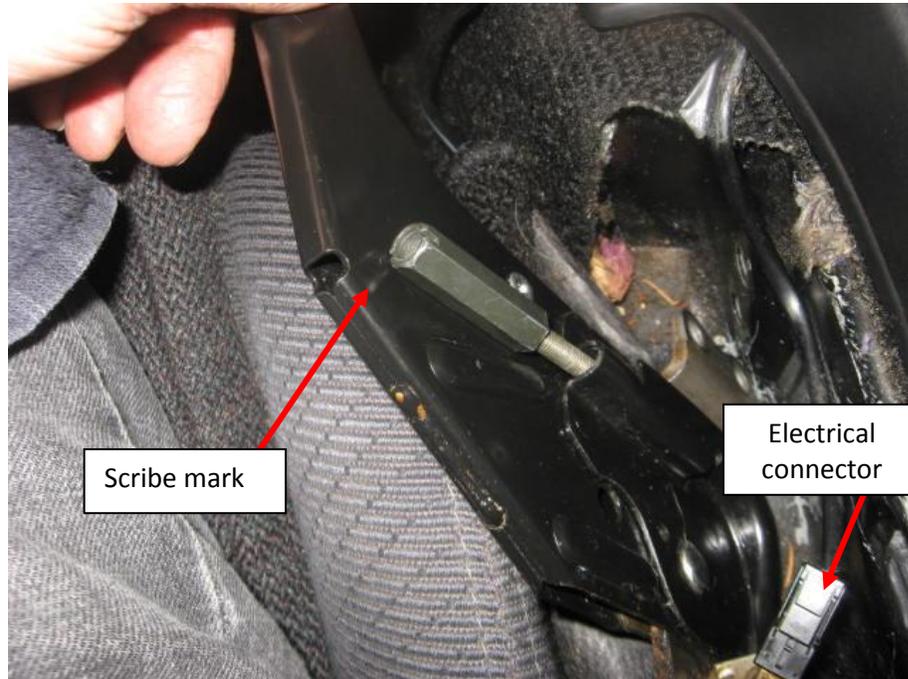


Figure 23 – Line up the top of the adjusting screw with the scribe mark and install the connector.

16. Reinstall the two halves of the plastic cover and push the carpet back into place (Figures 24 & 25).



Figure 24 – The finished product!



Figure 25 – Lookin' good!

17. Optional step: I noticed that the plastic cover pivoted on the screw and pulled away from the plastic handle, leaving a large gap between the handle and the cover. It bugged me, so I took a rubber garden hose o-ring (you can get these at Home Depot), cut it and jammed it into the gap. It works, but it looks kind of funky although that doesn't seem to bother me.

If the gap bothers you, you can use the base end of the plastic handle instead of the button end. The base end has a raised section (Figure 26) that fits into the plastic cover, and along with a plastic spacer it makes up the gap. I discarded the spacer since I didn't need it, so I don't have a picture of it.

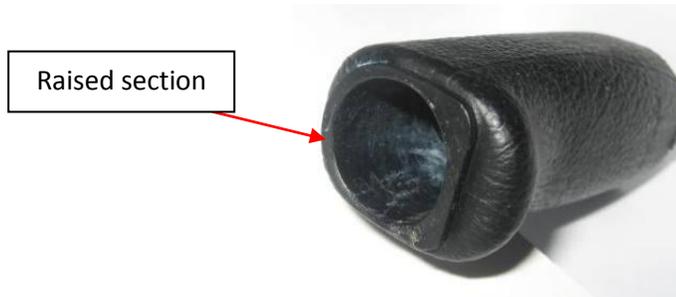


Figure 26 – Raised section at base end of plastic handle

18. Now you can sit in the driver's seat without the lever poking your leg (Figure 27). Isn't that better? 😊



Figure 27 – Relief at last!!

Caveat: For those of you in areas with periodic vehicle inspections, check with the appropriate agency to make sure that the mod will pass inspection. I can't imagine that an inspector would even notice that the lever was shortened, but you never know. Paul lives in Rhode Island and has had no problems. I live in Oregon, which does not require inspections other than for vehicle emissions.

If you can improve upon this method, please let us know! Paul goes by "wanna23t" on Miata.net and Kevin's alias is "Trail_Blazer".