TR4-TR6 Extra Storage Space

by Joel Justin

If you're like me and like to take road trips in your LBC, you're probably always fighting for enough space for your clothes, tools and spare parts. In my case, my clothes usually lose (Pam gets priority there!). While on the All Triumph Drive-In this last September with Jon & Claudia Korbin, Randy and Debbie Manes and Bill and Jeane Schniedewind, Randy showed me an ingenious way to gain some extra storage space. OK, it's not a lot – about 400 cubic inches – but it holds (2) 1-quart bottles of antifreeze and a half dozen shop rags, which frees up that space in the boot for more of Pam's stuff.

If you're familiar with the fuel tank on the TR4 thru TR6 models, you know that the lower-outside corners are cut diagonally. That leaves room between the two panels that separate the fuel tank from the boot and the interior. The question is how to best take advantage of that room.

Randy's solution was to use two pieces of 4" drain pipe with some PVC caps on the interior end and some plastic caps on the boot end that remove to gain access to the storage. Here's the parts list:

- 4" x 10' Triplewall Solid Drain Pipe (~$21): https://www.homedepot.com/p/Advanced-Drainage-Systems-4-in-x-10-ft-Triplewall-Solid-Drain-Pipe-4550010/100135310
- 4" PVC S&D End Caps (~$7): https://www.homedepot.com/p/NDS-PVC-S-D-Cap-4-in-4P06/100172701
- 5/16" x 3/4" Carriage Bolts
- (2) 5/16" Fender Washers
- (2) 5/16" Nuts (coarse threads)
- (2) 3D Printed Access Caps (~10): see below
- Weldon 600D Drain Adhesive (~$19): https://www.homedepot.com/p/Weld-On-16-oz-Clear-Adhesive-600D-Drainage-Adhesive-16203/333334273
- 4¼" Hole Saw (~$12): https://www.amazon.com/dp/B0CG3W3M7K?th=1 or ask to borrow mine
- Silicone Seal/Adhesive (~$6): https://www.homedepot.com/p/Permatex-3-oz-Clear-Silicone-Adhesive-Sealant-75151/302775054
- 12" square of felt or cheap indoor/outdoor carpet

Note: you can find this document on the club's website in the Tech Article section which will make clicking on the hyperlinks easier. Now one word of advice before you start. Read thru this entire document so you understand the process and are comfortable with your abilities to do it. Now let's begin.

1. The first step is to completely empty out the boot, including the spare tire and anything else you have stored down there. Then remove both the boot and interior covers to allow access to the fuel tank area from both sides. Neither is difficult and requires a Phillips screwdriver and a 5/16" hex nut driver.
2. Measure the distance between the panels, remembering to add the thickness of the boot panel to your measurement. My TR4 was in the 15" range. Cut the pipe about ½" longer than your measurement. Put the PVC S&D end caps on each pipe piece, but don't glue them on yet. With the cap seated on the pipe, measure ¾" from the cap and make a mark on each pipe. Drill a 5/16" hole in each pipe at that mark.
3. Slide the pipes into the triangular open space in the lower corners of the fuel tank, making sure the caps are snug against the brace that secures the interior panel and the holes are facing outward towards the wheel well. Using a Sharpie, mark the location of each hole in the inside of the wheel well. Now remove the pipes.

4. Using a 1/8” drill bit, drill two holes in the center of the marks you just made. Now using a 5/16” drill bit, drill larger holes from the outside where the 1/8” holes are. You’ll need to remove the rear wheels to do this.
5. Put the edge of the fender washer in a vise and using a rotary (i.e. Dremel) tool with a small metal bit, square the hole so it fits over the square part of the carriage bolt. Now with a pair of pliers and a hammer, curve the fender washer to approximate the inside curve of the pipe. Repeat with the other fender washer.
6. With a scrap piece of ¼” plywood or other wood that ¼” think, cut two 1½” square pieces. Drill a 5/16” hole in the center of each piece. Slide the pipes back into the space between the fuel tank, line up the holes and insert the carriage bolt with the fender washer thru the inside of the pipe, thru the wood spacers and then thru the fender well. Install the nut finger tight. This will position the pipes for the next important step of marking the boot panel for the 4¼” holes.
7. Install the boot panel with a couple of screws on the top. Let the bottom rest on the protruding pipes. They shouldn’t stick out too far such that the panel is too far away from the bottom brace. About ½” is perfect. If the pipes are too long cut them down a bit.
8. Press the panel against the pipes and with a sharp pencil, reach under the panel (in the footwell area) and trace around as much of the pipe as you can. Do this for both pipes. Remove the boot panel and check to see that your marks are clear and evenly spaced on either side. If needed, repeat until you get clear even semicircles.
9. Using a scrap piece of pipe, place it inside your semicircle. Once you’re satisfied with it’s placement, draw a complete circle on the panel around the pipe. Repeat for the other side. Now for a little geometry – finding the center of each circle.
    - The easiest way is to draw two chords across the circumference of the circle. I’d suggest making them each exactly 2” long. Now mark the center of each chord and draw a perpendicular line thru each center. Where those lines intersect is the center of the circle.

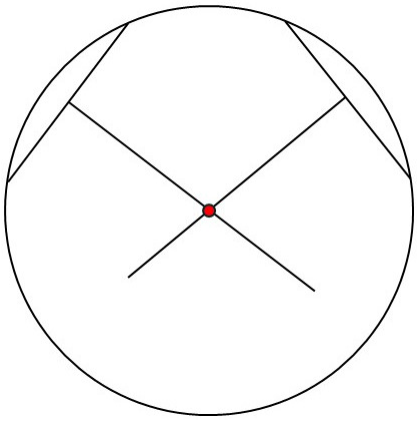

Figure 1: Circle with chords and perpendicular line to find the center of the circle.

10. Using a 1/8” drill bit, drill a hole in the center of each circle. If you have a drill press, insert the 4¼” hole saw into it. Place a scrap piece of wood under the panel and using the hole as a pilot, cut the circle out. If you don’t have a drill press, you can use a hand drill with a scrap piece of wood underneath, but you might need your navigator to help hold the panel while cutting the hole. Repeat for the other hole. Lightly sand the edges to remove any rough cuts.
11. Now for the moment of truth. Offer the panel up to the braces allowing the pipes to protrude from the holes. Do the pipes stick thru? Do things look centered? Is there minimal play between the pipes and the

holes? If you answered yes to these questions, congratulations! If you've read this far before starting and aren't sure you can successfully get these holes cut in the correct locations, start by making a template of the boot panel on a piece of cardboard and use that starting with step 7. Once you're happy with the results, you can proceed with your real boot panel.

12. Screw all the boot panel screws in place. Using a Sharpie, draw a line around each pipe that's flush with the boot panel. Now remove the panel and the pipes. Carefully cut each pipe on the line drawn. When reassembled, the result should be that each pipe if flush with the boot side of the panel. Trim the pipes as needed until they are flush. If they don't stick thru far enough, you've got plenty of leftover pipe to make a new one!
13. Using a scrap piece of pipe and a Sharpie, draw two circles on the felt or carpet that matches the inside diameter of the pipe. Cut each circle out with a pair of scissors.
14. Remove the boot panel and both pipes/carriage bolts/end caps. With some 60 or 80 grit sandpaper, rough up the outside of the pipe where the cap will go. Also rough up the inside edge of the cap. This allows the adhesive to get a better grip. Using the Weldon 600D Adhesive, glue each end cap onto each pipe. Be sure you glue it onto the end with the 5/16" hole. Wipe off any access adhesive on both the inside and outside of the pipe. This adhesive takes a while to fully cure, so set the pipes vertically on a bench with the end cap down and let it sit overnight.
15. Assuming you got adhesive on the inside bottom of the end cap (I did), place a piece of felt/carpet from step 14 in the bottom of each pipe. If you were neater than I was, you can either spread a little adhesive on the inside bottom of the end cap or use come contact spray adhesive to secure the felt/carpet.
16. In the meantime, use a small amount of the silicone adhesive around the underside of the head of the carriage bolt and slide the fender washer over it ensuring the curved side faces the right way. Now put some more silicone adhesive on the back of the fender washer and install it from the inside of the pipe thru the 5/16" hole. Put a fair amount of adhesive on the wood square and place it over the protruding carriage bolt. Wipe any silicone adhesive that squeezed thru the hole to the outside of the wood square and install a nut finger tight. Repeat for the other pipe. Let this dry overnight with the 600D pipe adhesive.
17. After a restful night's sleep dreaming about all the stuff you're going to put into your newly acquired storage space, put a small bead of silicone adhesive on each of the wood squares around the carriage bolt and carefully install each pipe so the carriage bolt protrudes the fender well. Thread the nut on the protruding bolt and tighten. You'll want to apply pressure to the carriage bolt head from the inside of the pipe to reduce the risk of it spinning. Get the nut as tight as you can. If the carriage bolt starts to spin, stop. Repeat for the other pipe. Why do I say carefully? It turns out that the pipe is made of HPDE which is like Teflon – nothing sticks to it well. By being careful, you'll avoid disrupting the silicone adhesive.
18. You can now reinstall the interior and boot panels.
19. The final step is to make the access caps. I bought several from Amazon that I thought might fit, but none of them were snug enough, so I designed my own and 3D printed them. If you have a 3D printer, I'd be happy so share my Autodesk Fusion 360 CAD file or my STL file. If that's all gibberish to you, implying your don't have a 3D printer, I'd be happy to print a set for you for $10 which covers the material. The caps I made have a finger hole to allow you to pull them off as well as an embossed "1961" on the left cap and "TR4" on the right cap.

I apologize for the lack of photos along the way, but I didn't think about writing this article until after I was done and wasn't about to empty the boot and disassemble everything. But here's a few photos of the finished project.

Photo 1: Finished projects with access caps installed. Yes, I made that custom boot panel out of a ¼" piece of quarter-sawn white oak plywood as my original panel was quite tatty.

Photo 2: Access cap removed showing what I fit in one of the tubes.