



UZ (1UZ, 2UZ, 3UZ) to R150, R151, R154, R155, AR5, W55, W56, W58, W59 Transmission Adaptation Guide

We recommend using the proper PPE when tackling this. We all remember Carol from the science lab...she didn't use her safety goggles, *and now she doesn't need to.*



Once you have all of your tools ready, plus the old transmission out of the vehicle and ready to work on, we can begin the conversion process.

First step is to remove the UZ's bellhousing from the automatic transmission. This bell will be retained. You can now find a creative use for the automatic transmission. Things we ***strongly do not recommend for the transmission include:***

- Dumping it in the ocean, as if it was a car battery or something
- Dressing it up and try to take it for walks
- Preheating the oven for 350* and cooking it for 10 hours with some light seasoning
- Cheating on your spouse with it. This is actually unforgivable.
- Vote for it in the upcoming election
- Send it into outer space in some weak effort to outdo Elon Musk

Possible uses include:

- Selling it to someone that could use a replacement automatic transmission. This transmission fits almost every RWD Toyota car from the 80s and 90s, as well as some others
- Junking it for scrap metal so that it may go on to become something else in life. Perhaps beer cans.
- Use as a trebuchet counterweight in areas where it is legal to build a full sized trebuchet
- Makeshift mailbox

Now you will need to remove the bellhousing from the donor transmission. This bellhousing *will not* fit the UZ engine. If it does, you have the wrong bellhousing for this application. Our kit uses as many OEM parts as we can get away with, including the original UZ automatic transmission bellhousing, instead of an aftermarket cast one.

You will also need to remove the front bearing retainer plate from the manual transmission you are adapting to. The XAT adapter plate will replace the front bearing retainer entirely. We recommend resealing the front of the transmission when you complete the swap with orange Toyota FIPG, part number 00295-01281, or Permatex Ultra Grey.



If you opted for the fittings and seals as the optional add-on, we will include a new input shaft seal to go with it.

Once you have finished installing the adapter plate to the transmission with the included hardware, the auto UZ bell housing gets mounted to the adapter plate. Unless you have skipped ahead and have an idea of what will need to be done, this will *not* be the last time you assemble everything together, as the bellhousing will have to be drilled for the lines.

Clock the throw out bearing (TOB) in the most convenient position for your application in the input shaft, ideally with the bellhousing mounted to the transmission. There are two tiny holes on the outer diameter of the TOB for bolts to secure the TOB to the plate. Our adapter plate is tapped and has an assortment of different positions that the TOB can be mounted in. **Ideally you want bleed fitting and line are pointing higher than 90° for the bleeding process.**

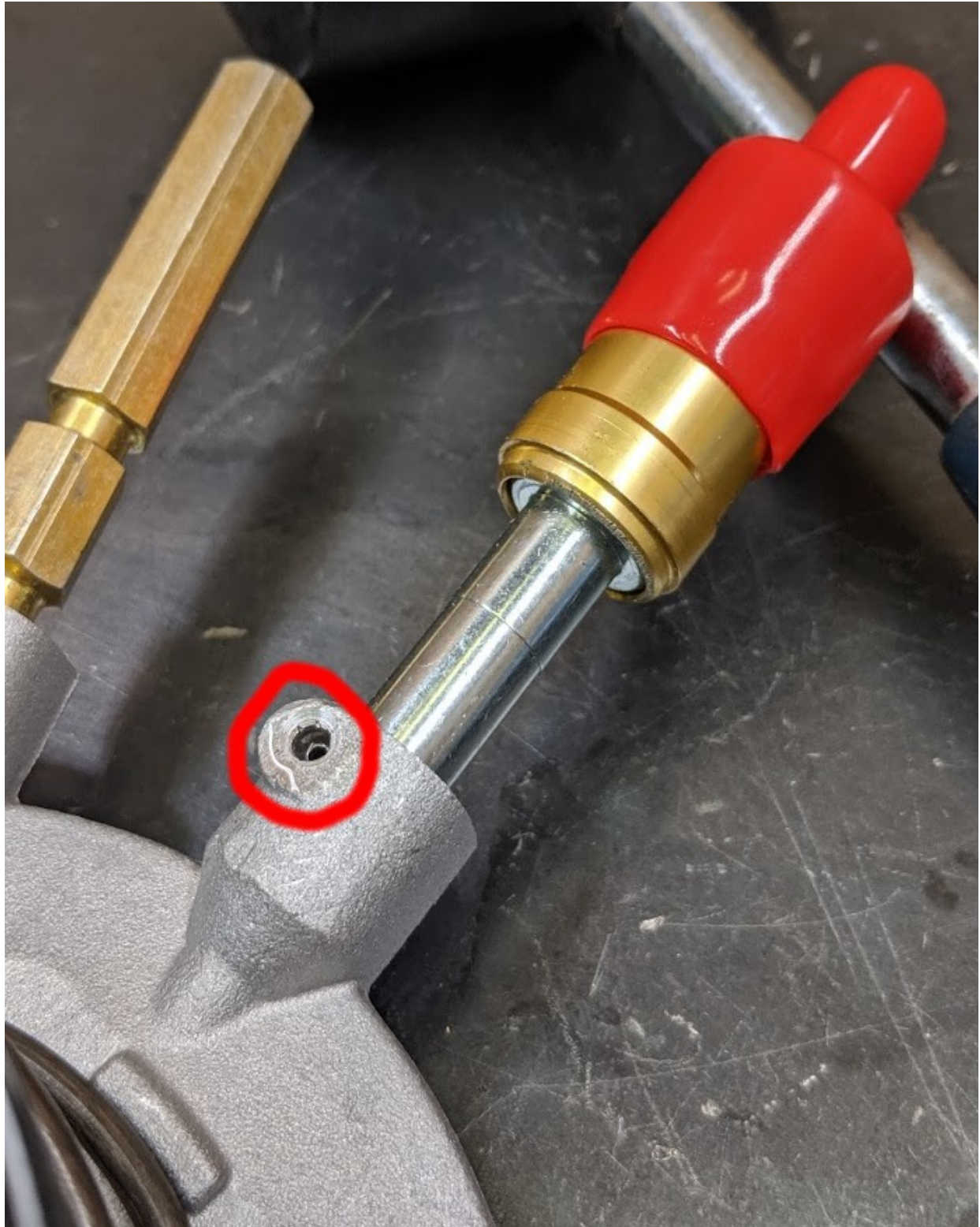
Make a note of where your final TOB mounting position will be on the bell housing. You will have to make a hole big enough for lines to run into the bellhousing. This new hole becomes our not-patented Bellhousing Hole™, or B-hole™ for short. You will definitely need to drill that B-hole™ and make to squeeze stuff in it.

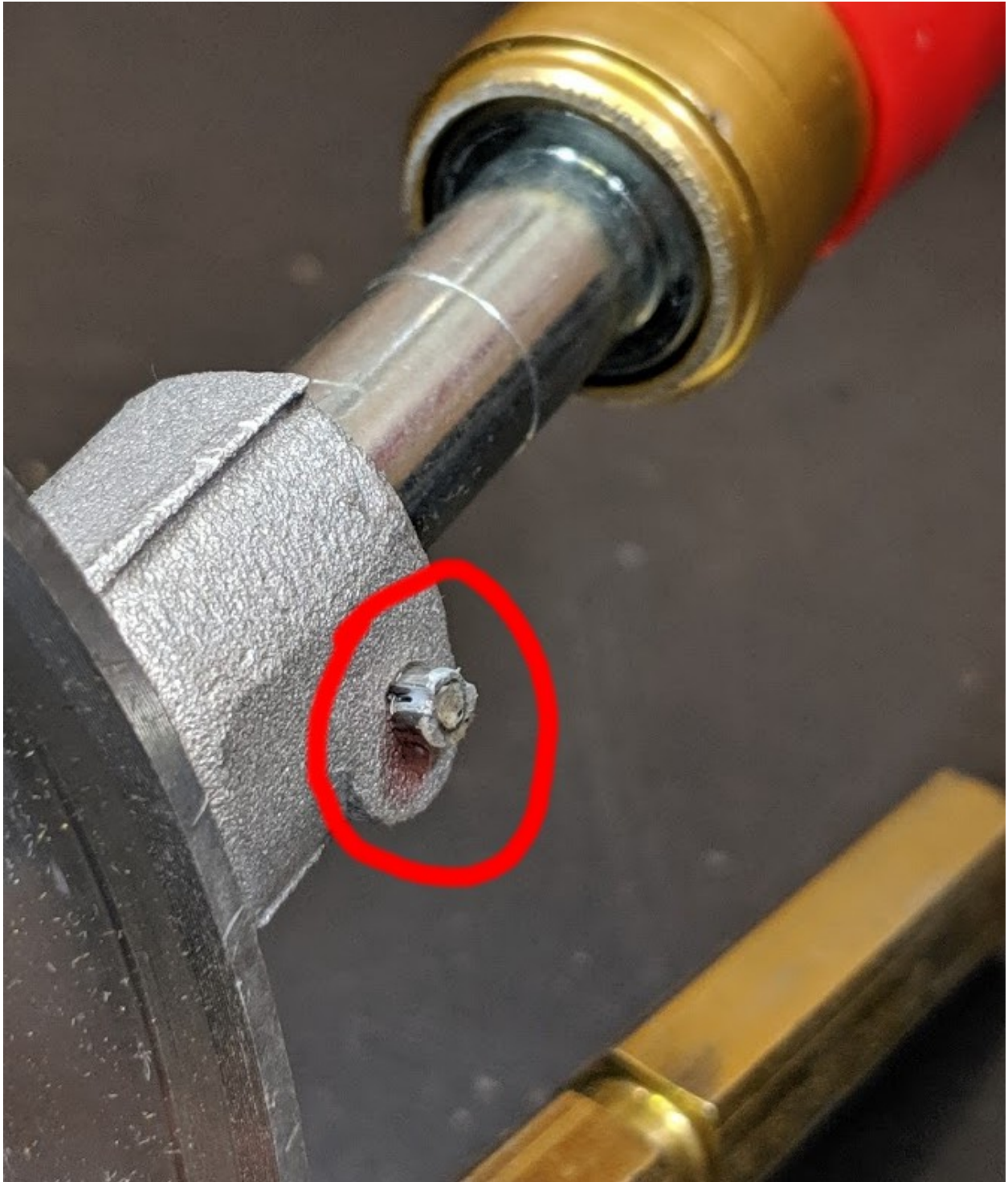
Next is the throw out bearing. This is an optional extra that can be ordered with the kit, but *will*

be required. We have supplied full color pictures for your viewing pleasure, and to make this as clear and concise as possible. The rest of this page is unintentionally left blank. Feel free to use it to draw a fun little picture of something that makes you happy, or take down notes during the installation process!

You will need to drive out the retaining pin for the GM style input into the TOB.





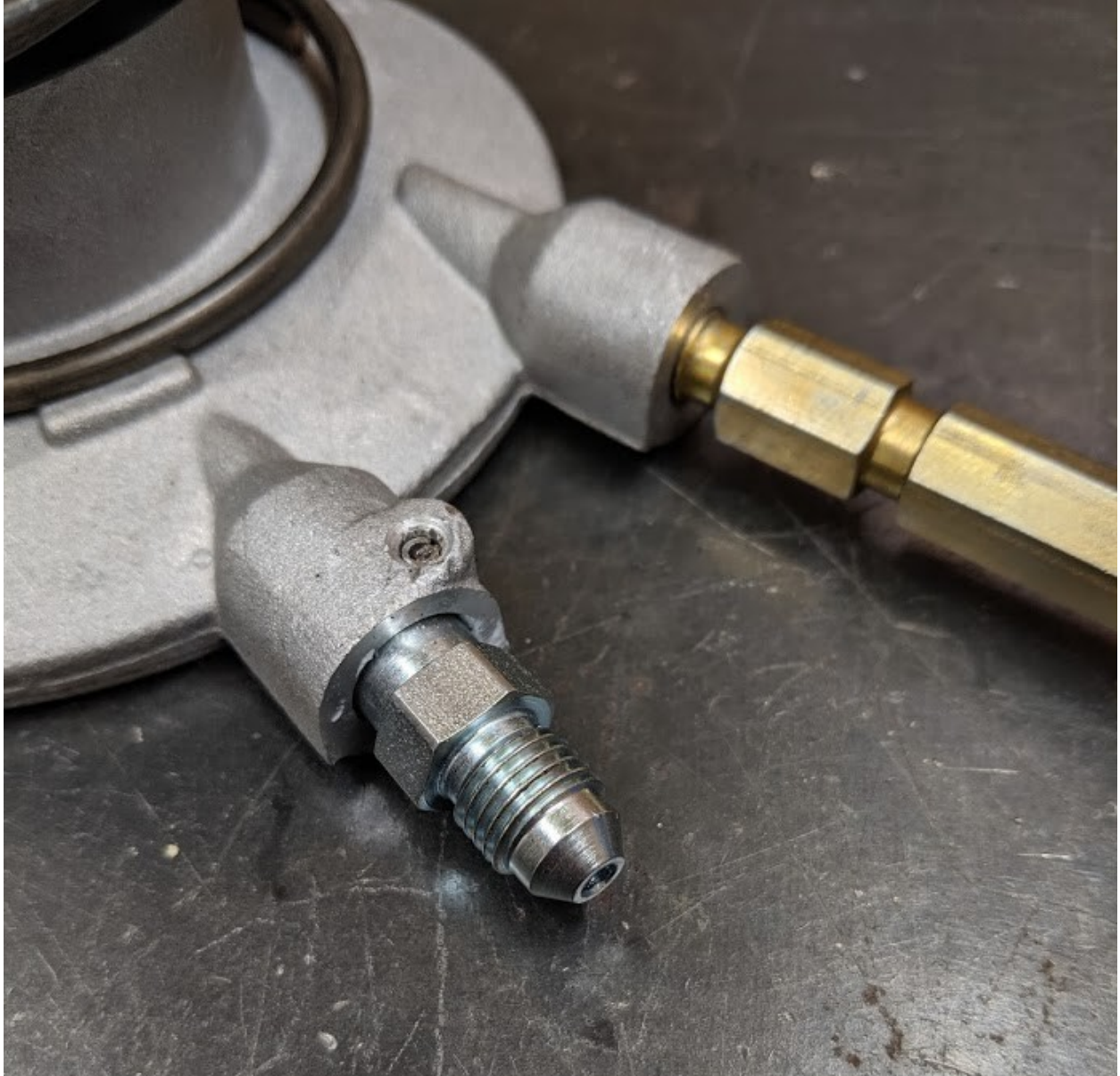


This GM fitting gets replaced with the silver -4 to quick disconnect fitting, and you will **reuse the retaining pin** that was driven out to hold this new fitting in place. The actual GM style fitting becomes a bonus part; it is superfluous.

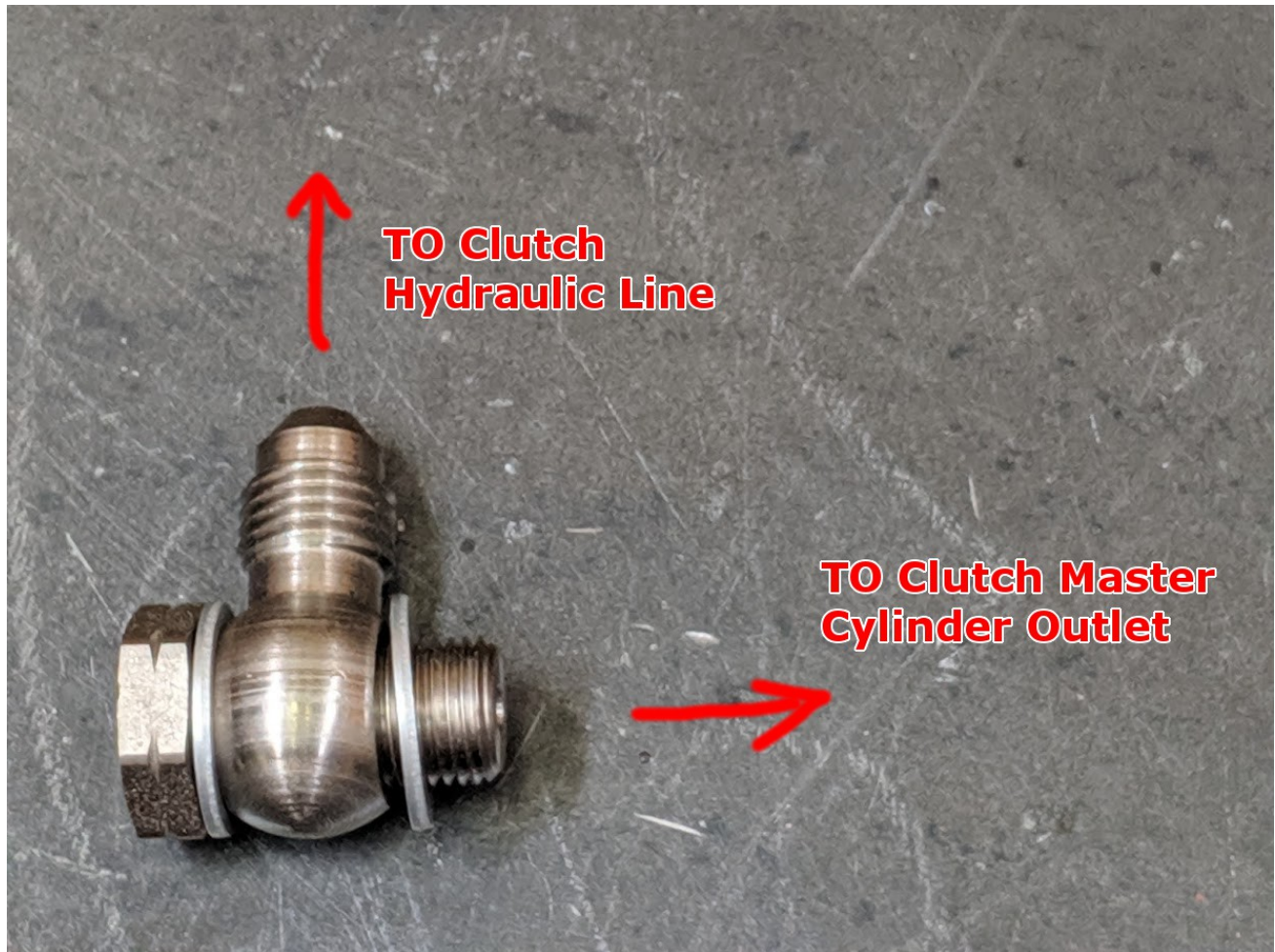


The side with the rubber seal goes in the TOB. The -4 side is for your hydraulic clutch line that goes up to your master cylinder.

Here's what the fitting looks like installed:



On the other end of this line, you will install the optional banjo bolt fitting into the clutch master cylinder. This M10x1.0 banjo bolt fits most Japanese applications, especially most Toyota swaps. The outlet for this is a -4 fitting, which connects directly to the -4 AN line going to the slave cylinder/throw out bearing.



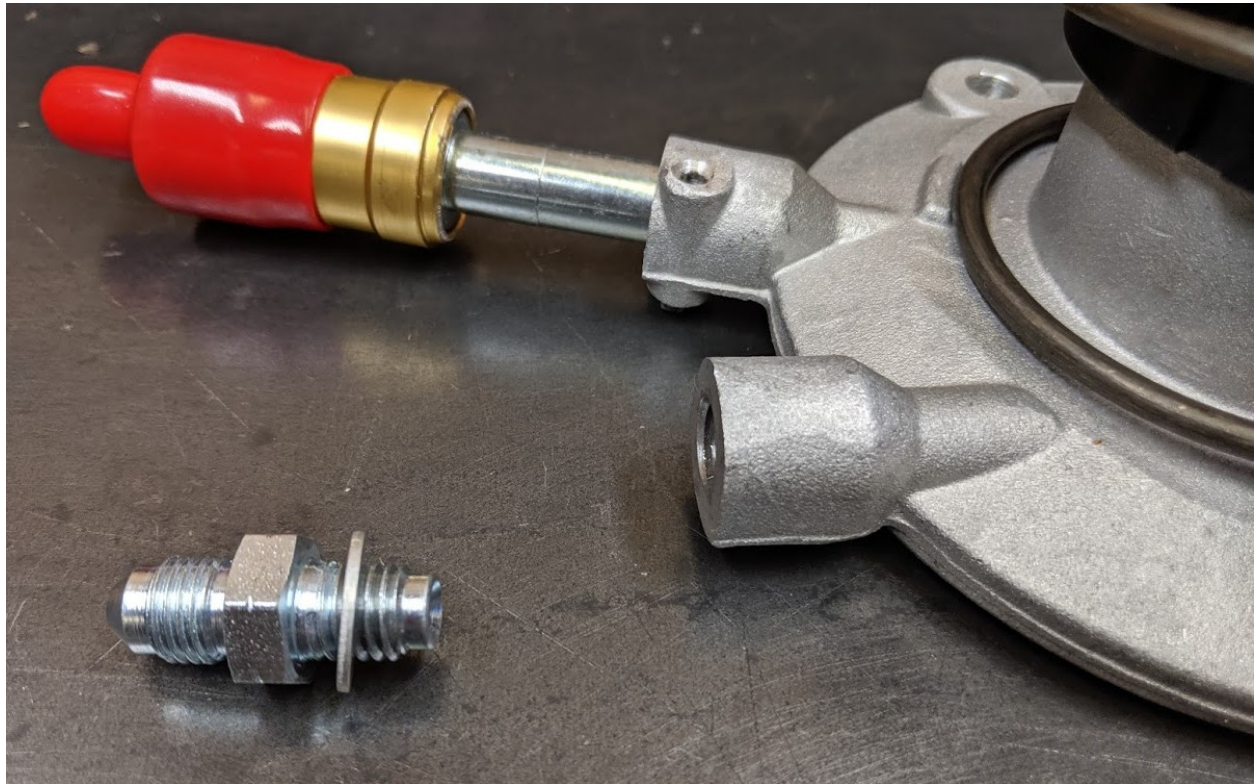
We offer options for these lines, however, we do not have a guaranteed-to-fit clutch line for every chassis on hand. **Please contact us with the length you need, and we can get a line made for you. This line is typically less than \$65 for a full length, stainless braided -4 line.** Once this has been done, the feed side will now be converted to -4 AN.

If you opt for the optional bleeder line kit, life will be much easier starting at this point. Remove the gold hex shaft from the TOB, as this will not be used. This should take a **7/16"** wrench or socket to remove, and will come right out.



The brass fitting becomes a bonus extra that can be sacrificed to any deity of your choice. It can also be used as a tiny hood prop, a miniature futuristic skyscraper for a scale model, a stubby “environment saving” makeshift straw (as long as it has been cleaned out first), or a shoddy projectile. The power is YOURS!

In any case, this fitting gets replaced by the M10x1.5 to -4 AN male/male fitting, and converts the bleed side to AN.



Then, attach the short (usually 10 inch) stainless braided bleed line to this end. You will install the $\frac{1}{8}$ NPT to -4 Aeroquip adapter fitting on the small bleeder screw (this is bronze colored, has the black top and the red thread locker compound male side), which goes on the other end of the 10" bleeder line, and through the bellhousing for ease of access.





This setup is designed to be flexible and bleed any air in the hydraulic system from a convenient, serviceable point with the transmission and clutch fully installed.

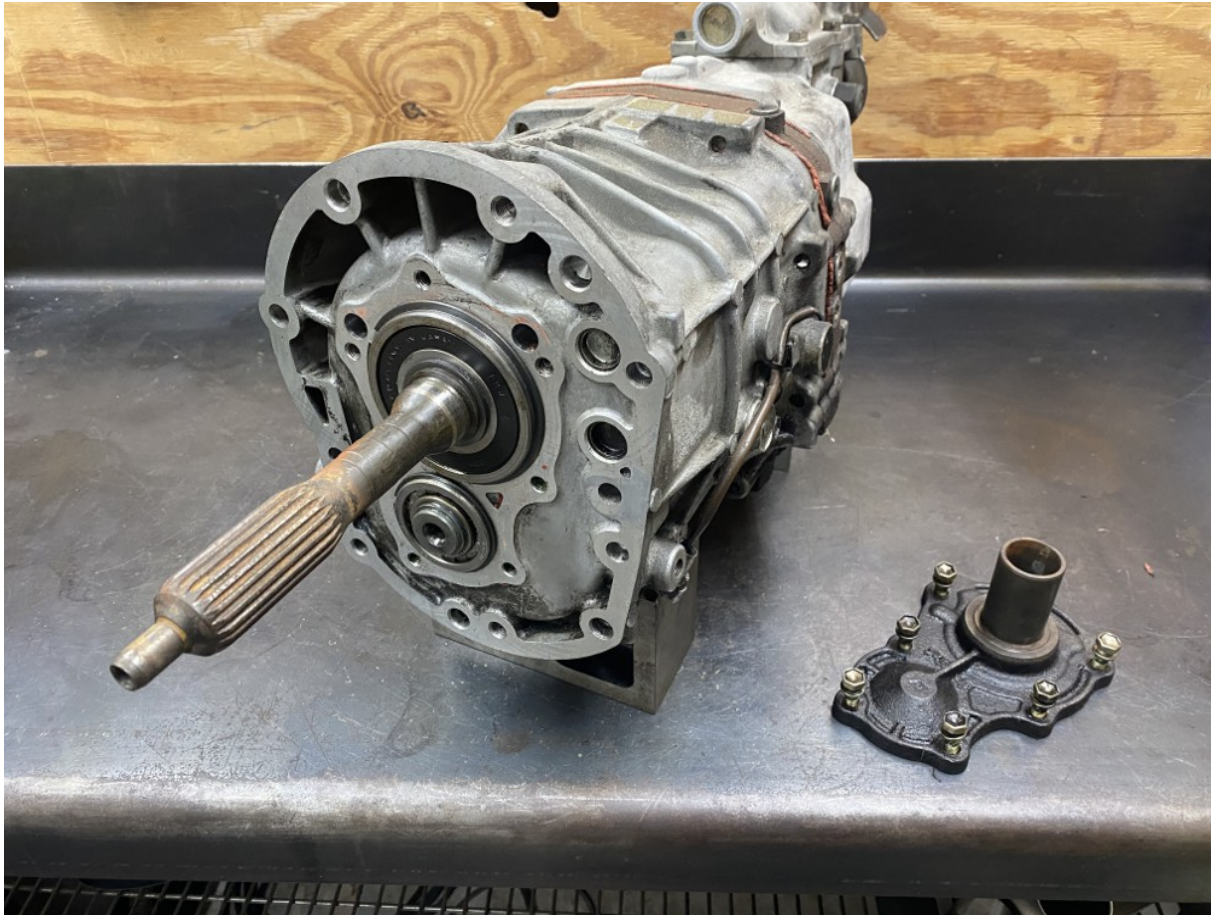


Once you have converted the TOB to -4 fittings, mount it to the plate with the 2 small screws, and run the lines through the B-Hole™. The transmission side of installation is now complete!





Now on to the transmission itself. Remove the bellhousing that is attached to the transmission. The next few pictures will be of a W55/W58 transmission, but the process is the same for the R series as well. The bolt pattern is completely different on the R series transmission, so they are not interchangeable. You will also need to remove the front bearing retainer as seen in the next picture. This is not reused, and is replaced by the XAT adapter plate.



Now is not a bad idea to double check your input shaft length to make sure you purchased the correct adapter for your transmission. If you have an R series or AR5 transmission, measure from the face of the transmission case with the bearing retainer off to the tip of the input shaft. If it comes out to be about 6.07" (as is the case on older truck R150s, R151s, etc. Before '96), you will need a short shaft plate. AR5s, all R154s, newer transmissions, etc. should all have an input shaft right about 7.25" long.

Our W adapter plate (W55-W59) should fit all aluminum case transmissions through the decades these transmissions were in production for.



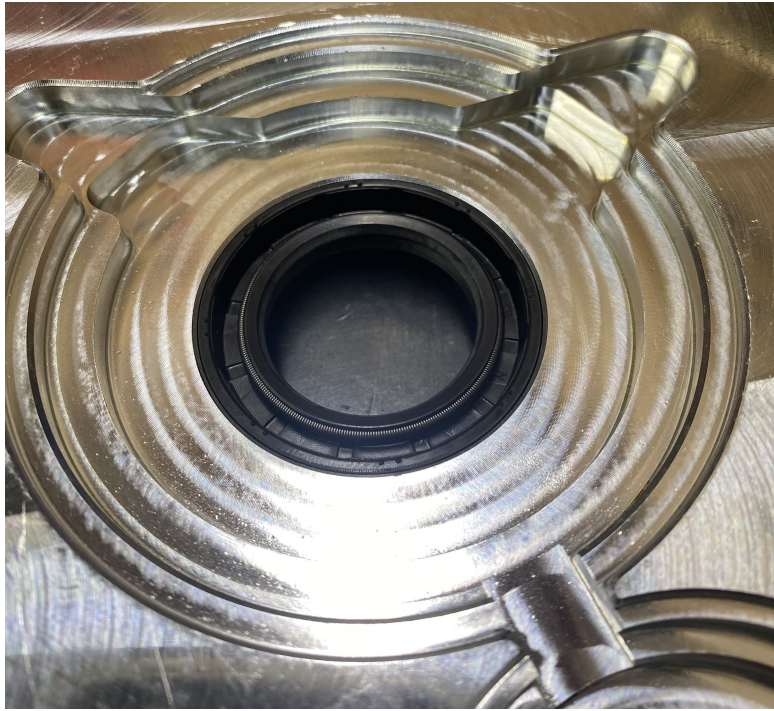
Make sure the mating surface of the plate/bearing retainer is completely flat and clean You can see where the old FIPG was that we scraped off.



Pictured above is the supplied installation hardware and a new input shaft bearing. Not sure if Timken is a trusted brand? It may reassure you to know that Toyota themselves acquired a portion of their business [Here is a link to their article selling to JTEKT](#). What is JTEKT? [JTEKT is the result of the Toyoda Machine works \(parent company Toyota group\) and Koyo \(bearings\) Seiko merger](#). At any rate, we have never had a seal failure reported in over 10 years of making and selling these.



The input shaft seal then gets pressed into the plate as seen below

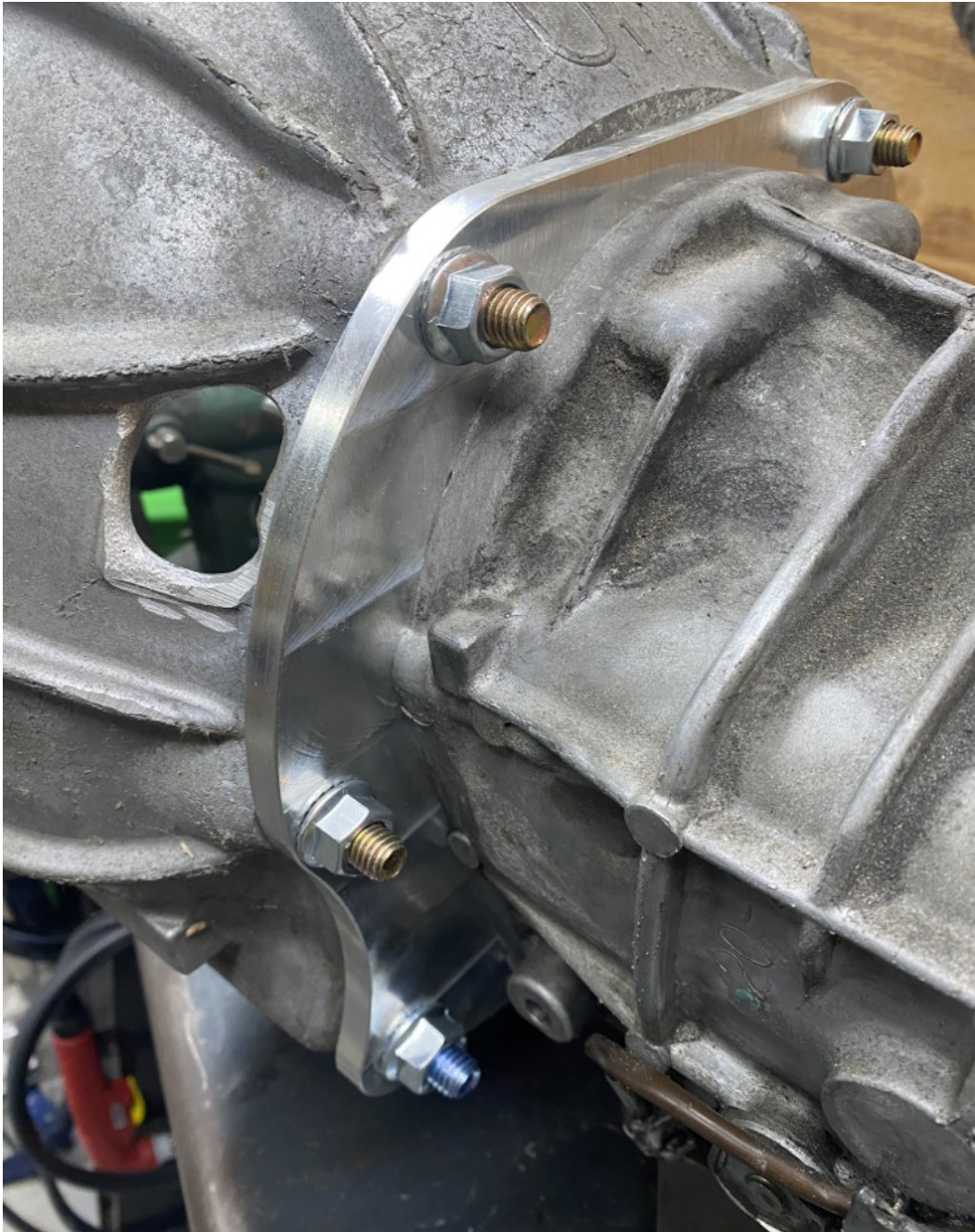


...and now you're ready to torque the plate using provided hardware to factory specs. Make sure the adapter plate is completely flat/flush with the transmission case. There should be no noticeable gap here



Note the 6 socket head screws at the top and the 3 countersunk bolts at the bottom. Mount the TOB with the two retaining screws to the plate, and make sure the lines are facing up. Multiple options are included depending on what is the easiest way to mount for your setup, including RHD options.

Use the zinc coated bolts to bolt the bellhousing to the adapter plates. For added security, we have included locking nuts to install on the back. These are *not* 100% necessary, especially if you prefer to use thread locker, however in the spirit of overbuilding things like Toyota, we have included them with every kit. Note the B-Hole™ as well for running clutch hydraulic lines through



Installation should now be complete!





Now you will run your lines through the B-Hole™, install your flywheel to your engine, install the clutch to the flywheel, and bolt the transmission to the engine as if it came that way from the factory! Don't forget to use thread *sealant* on the flywheel to crankshaft bolts, and grease the input shaft splines just enough for the clutch disc to easily glide on

If you have any questions, feel free to reach out to us at Sales@XAT Racing.com