Installation of the V3 Ecotec oilpan is fairly straightforward but there are a few nuances that need to be taken into consideration. This is meant to be a support document to the existing Ecotec Miata installation guide (please reference the complete swap guide as found in the “How To” section of the website).

In the package with your two piece oil pan you will find the following:

1 Billet Oil Pan Adapter

1 Stamped steel Oil Pan

1 Hardware Pack - containing all hardware to attach the billet oil pan adapter to the engine block, baffles to the adapter and the steel pan to the adapter. 16x m6 flange head hex bolts, 9x m8x40mm socket head cap screws, 4x m8 flange head bolts

1 Oil Pump Pickup Tube Assembly - 1x m8 counter sunk bolt, 1x m8 flange nylock nut, 1x Viton O-ring, 1x pickup tube.

1 Dipstick Assembly- 1x Dipstick, 1x stainless dipstick tube, 1x brass ⅜ npt to ½" OD compression fitting

1 Baffle Plate assembly

1 oil pan adapter to engine block gasket

1 lower oil pan to adapter gasket

Assembly:

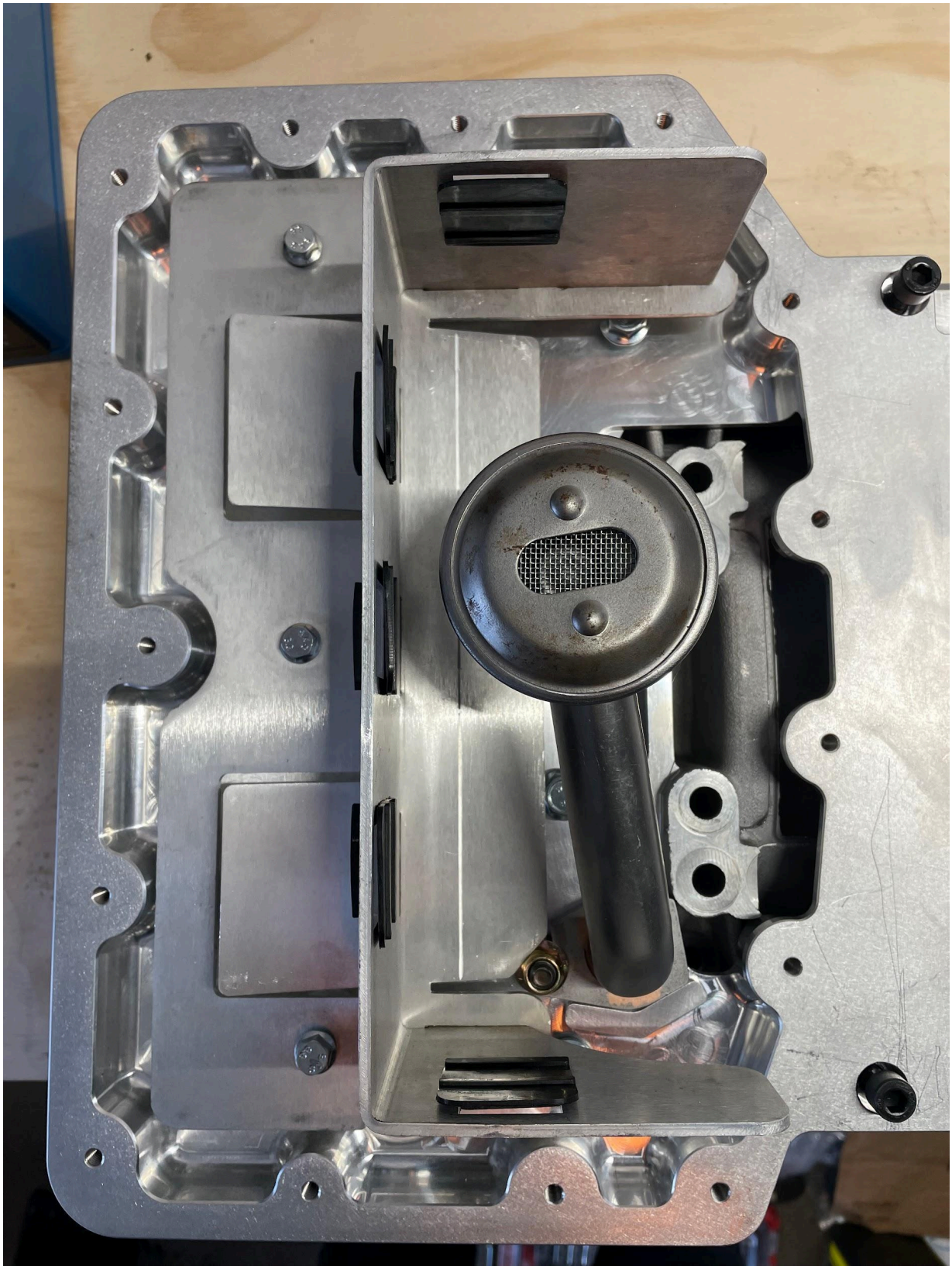
Step 1: Clean and Prep

Before we get started make sure all parts are accounted for. Next step is to make sure everything is clean and the block is ready to accept your new oil pan. Parts get dirty in shipping. Use soap and water to clean your baffle plate, do not use brake clean on the rubber baffles as this can dry out the rubber. Make sure you wipe down the flaps with a little oil so they don't stick to the aluminum baffle plate. Remove any RTV from the engine block, I found using a new rasor blade and scotch brite pad with a little elbow grease does the trick. Wipe the block surface with a little brake clean and you're ready for the next step.

Step 2: Pickup Tube Assembly

Now that everything is clean it's time to start the assembly. Grab the pickup tube assembly bag and remove the o-ring and mounting bolt and nut. With the adapter plate face up take the o-ring and LIGHTLY lubricate before placing in the o-ring groove on the billet adapter (figure 2a. Next, take the m8 countersunk bolt and smear some oil resistant RTV on the underside of the head or the counter sunk surface of the adapter. Now put the bolt through the hole. Begin threading the flange head nut to the bolt till you get resistance from the nylon insert. Next sneak the pickup tube into position (pictured in figure 2b) and tighten down the nut with a 13mm socket and Allen key (torque to 15-18 ft/lbs DO NOT OVER TIGHTEN). Grab your baffle plate quick, we are going to check fitment of the nut (Figure 2c).

(Figure 2a)

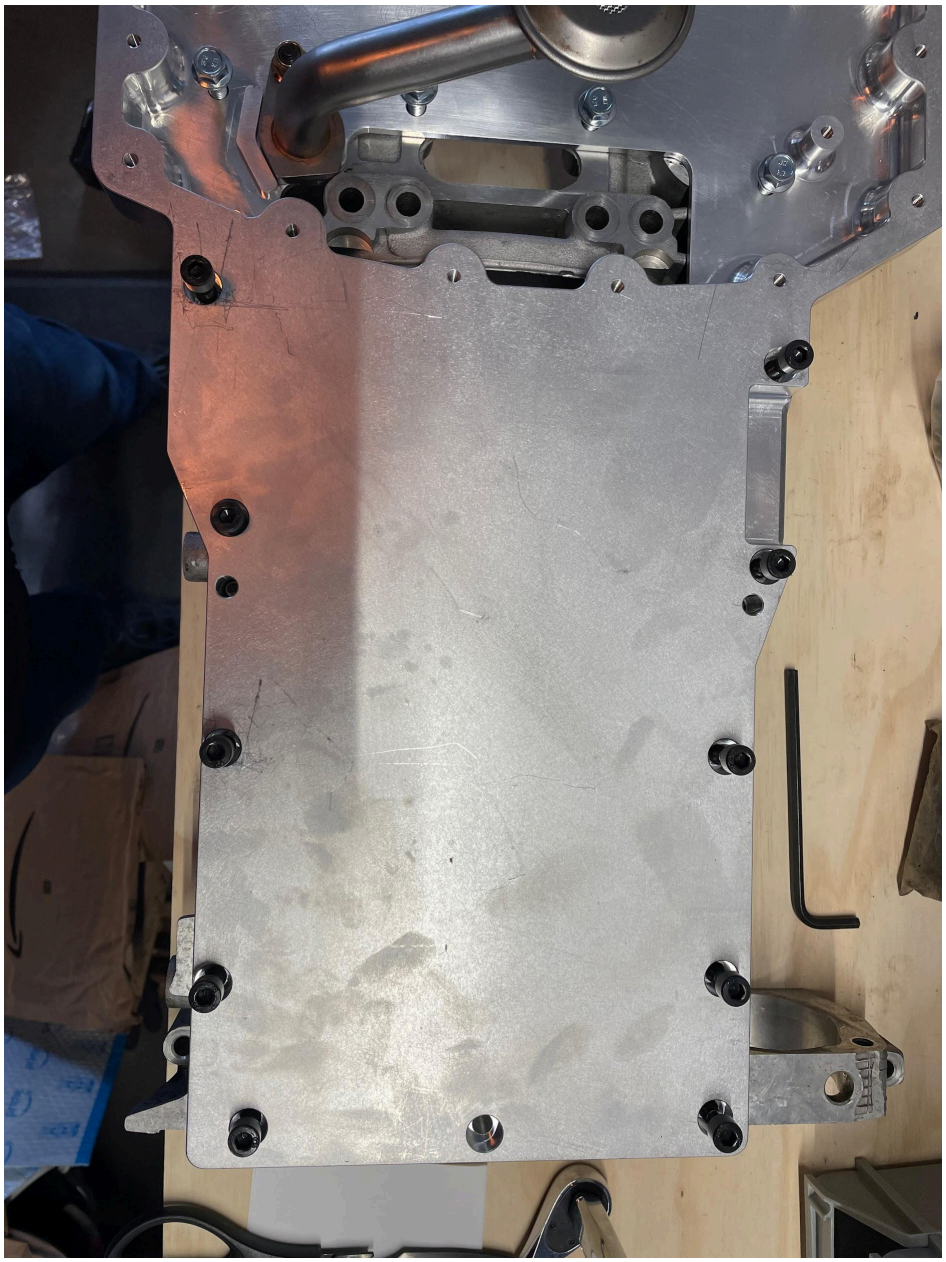


(Figure 2b)

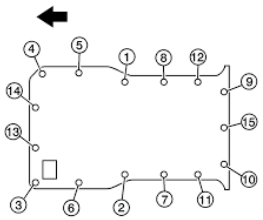
(Figure 2c)

Step 3: Assemble Adapter plate to Engine Block

Now that the pickup tube is on, we can put the billet adapter on the engine block. Place the provided gasket on the block. RTV should not be necessary but DDM Works does say to smear some on the gasket for added protection against leaks. This will make disassembly more difficult later, so user discretion on that. Next place the billet adapter/pickup tube assembly on the gasketed surface of the engine block and grab those M8 bolts. Begin by threading all bolts in just a few turns before tightening any bolt down (figure 3a). Follow the OEM sequence below (figure 3b) and torque to 18 ft/lbs.



(Figure 3a)



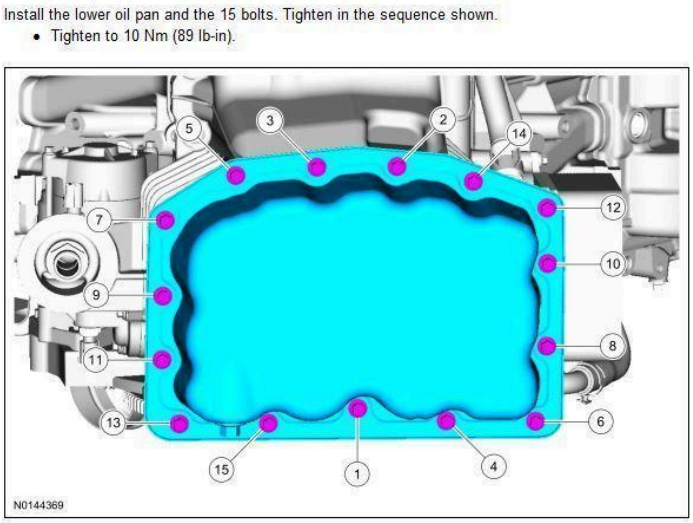
(Figure 3b)

Step 4: Install Baffle plate

Take 4 of the m6 bolts and install the baffle plate. It only goes on one way. Again, make sure the plate isn't touching the pickup tube nut (see figure 2b).

Step 5: Install lower Oil Pan

Grab the oil pan gasket and place it on the pan. This part can be a little frustrating due to the lack of alignment dowels (this might be a good time to put just a dab of RTV in the corners so the gasket doesn't slide around). Place the oil pan on top of the gasket and start installing the m6 flange head bolts. Torque to 7-8 ft/lbs (no more, you don't want to strip these). Torque sequence is in figure 5a.

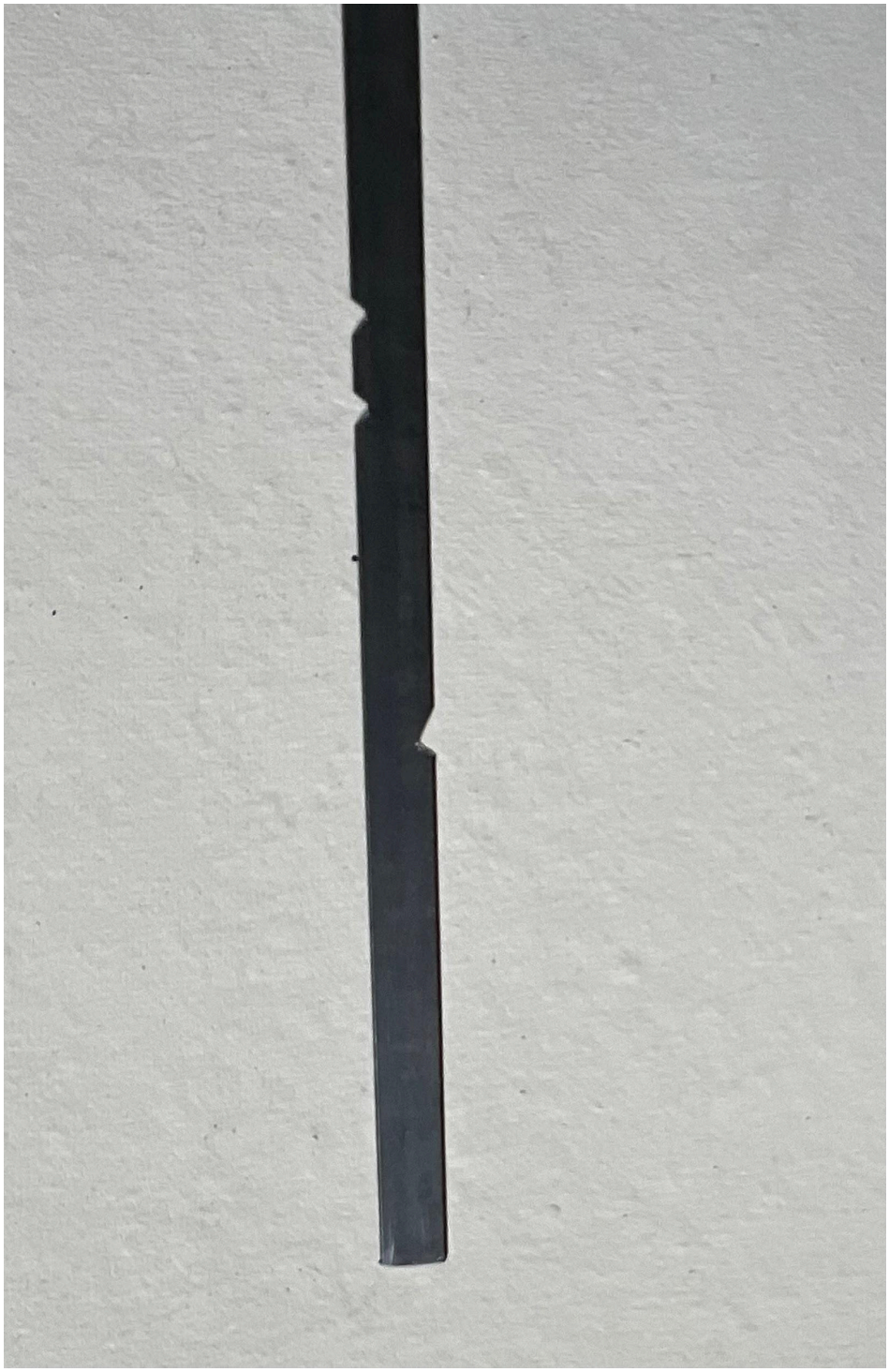


(Figure 5a)

Step 6: Install Dipstick Tube

Wrap the brass NPT fitting in plumbers tape and install to the pan. There is no recommended torque spec for NPT into aluminum. So tight doesn't leak and too tight will crack the pan. So thread by hand then then tighten with a wrench till it feels solid. Next insert the stainless tube into the compression fitting. You might need to put a slight bend in the tube to clear the front

cover of the engine. Before you tighten the compression fitting make sure the flats of the tube are squared up with the front of the car, the dip stick teeth clip to the flats and the pull ring should face forward. (See figure 6a)

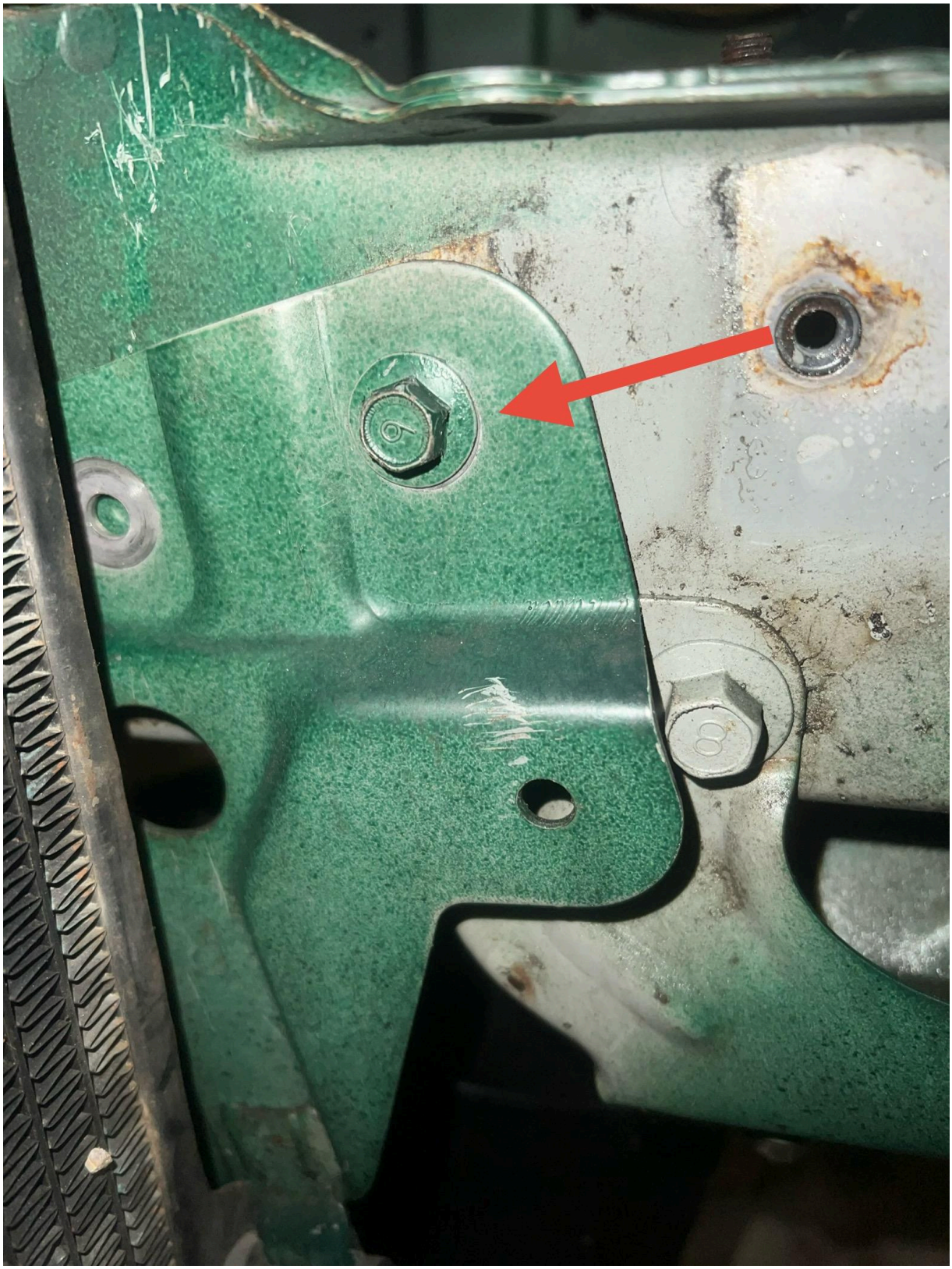


NOTE: There are three different grooves on the dipstick. The top mark is an overfill mark ~6.5qts which is common for track duty. The second from the top is ~6.0qts and the bottom mark is about ~4qrts and is extremely low. (See figure 6b)

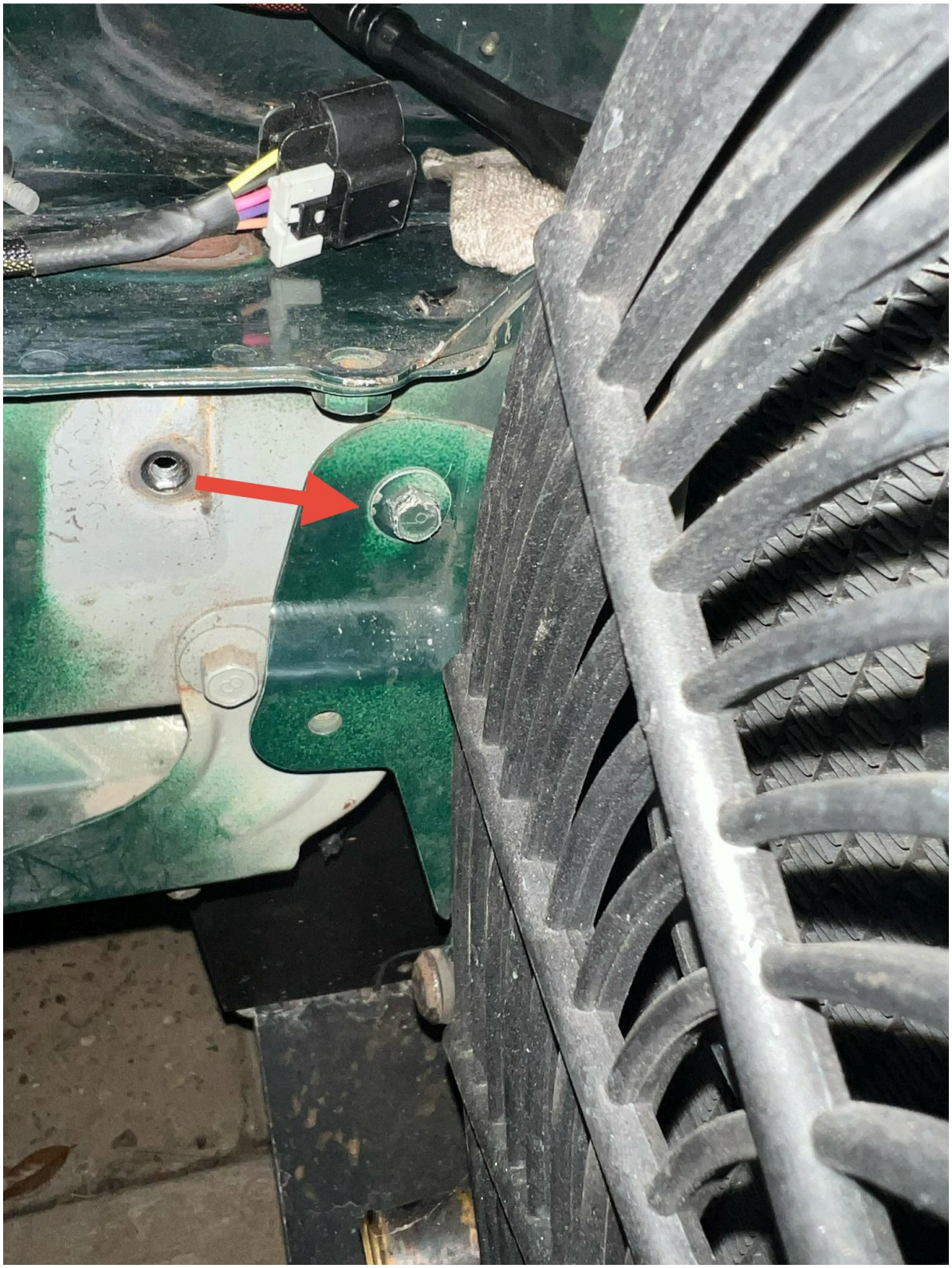
Step 7: Install the Engine

See complete swap kit instructions in the “How To’s”

NOTE: you might need to move your radiator forward depending on what radiator, model car, and if you have a custom mount. See photos below for interference fit and fix on a NA miata with an oem automatic radiator (worse case senario). Additionally the automatic transmission oil cooler lines might need to be removed (they can’t be used anyway). The fix is to relocate the lower bracket forward and Mazda provides a threaded insert which makes this a none issue. See photos in figure 7a and 7b.



(Figure 7a)



(Figure 7b)

Step 8: The Oil Change

For those of you who don’t already have an oil extractor (a requirement to remove the last quart of oil), a decent oil extractor needs to be obtained. The old design would take quite some time to drip empty. This will make changing the oil a 5 minute job.

Additional upside is that it is a cleaner way to change the oil, doesn’t require dropping a splitter or belly pan and disposal is easier.