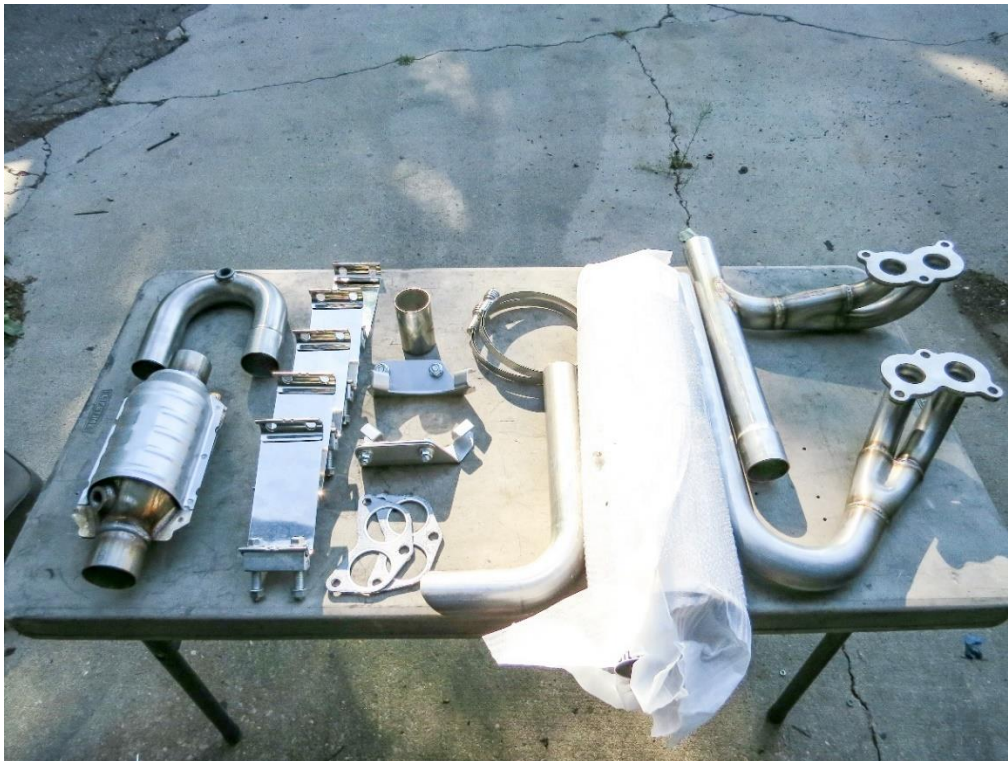


RMW Subaru-Vanagon Exhaust System Installation

1. The Rocky Mountain Westy exhaust system is a mandrel-bent, stainless steel system designed to give you years of service. We include all gaskets and hardware necessary to complete the install on your conversion. It's highly recommended that you read through the steps below before starting your install. Install the exhaust **after** the motor is in the van and the heat shield is installed.
2. Lay out the system as it will be installed on the van. The exhaust flow goes from the motor through two header collectors followed by a U-bend, followed by your catalytic converter, a short stub pipe, your muffler and then finally your tail pipe. You will also find muffler brackets and hardware, five band clamps, two header gaskets and stainless hardware to mount the header to the cylinder head.



3. Start by sliding the exhaust flange gaskets over the exhaust port studs.



4. Fit the right side header pipe onto the right side cylinder head studs and loosely hold it in place with the provided nuts. Start threading all the nuts while header flange is just barely over the end of the studs to ensure that all nuts can be installed without interference by the bend of the header.

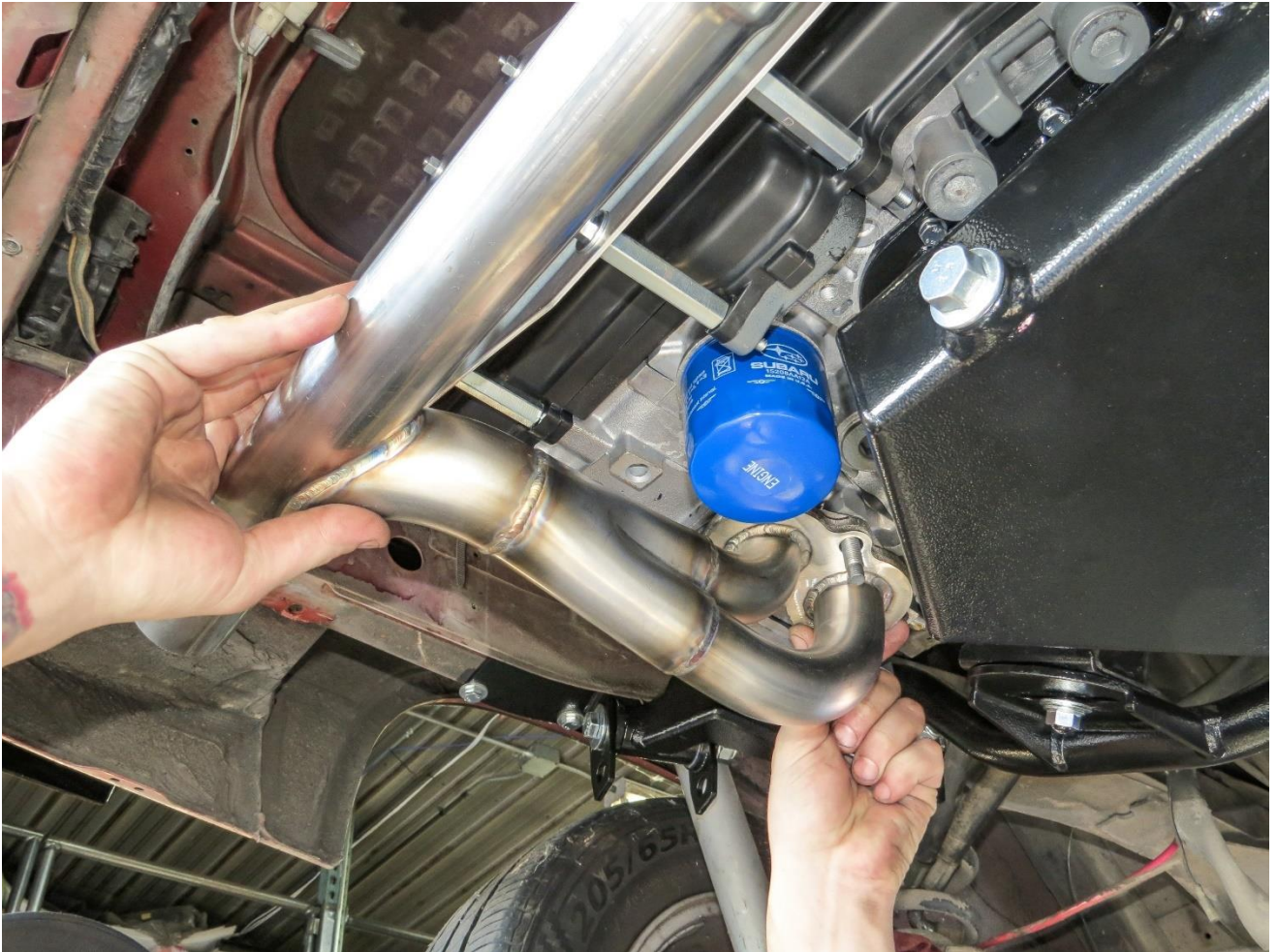


5. Fit the left side header pipe by inserting the straight end into the right-side header pipe...

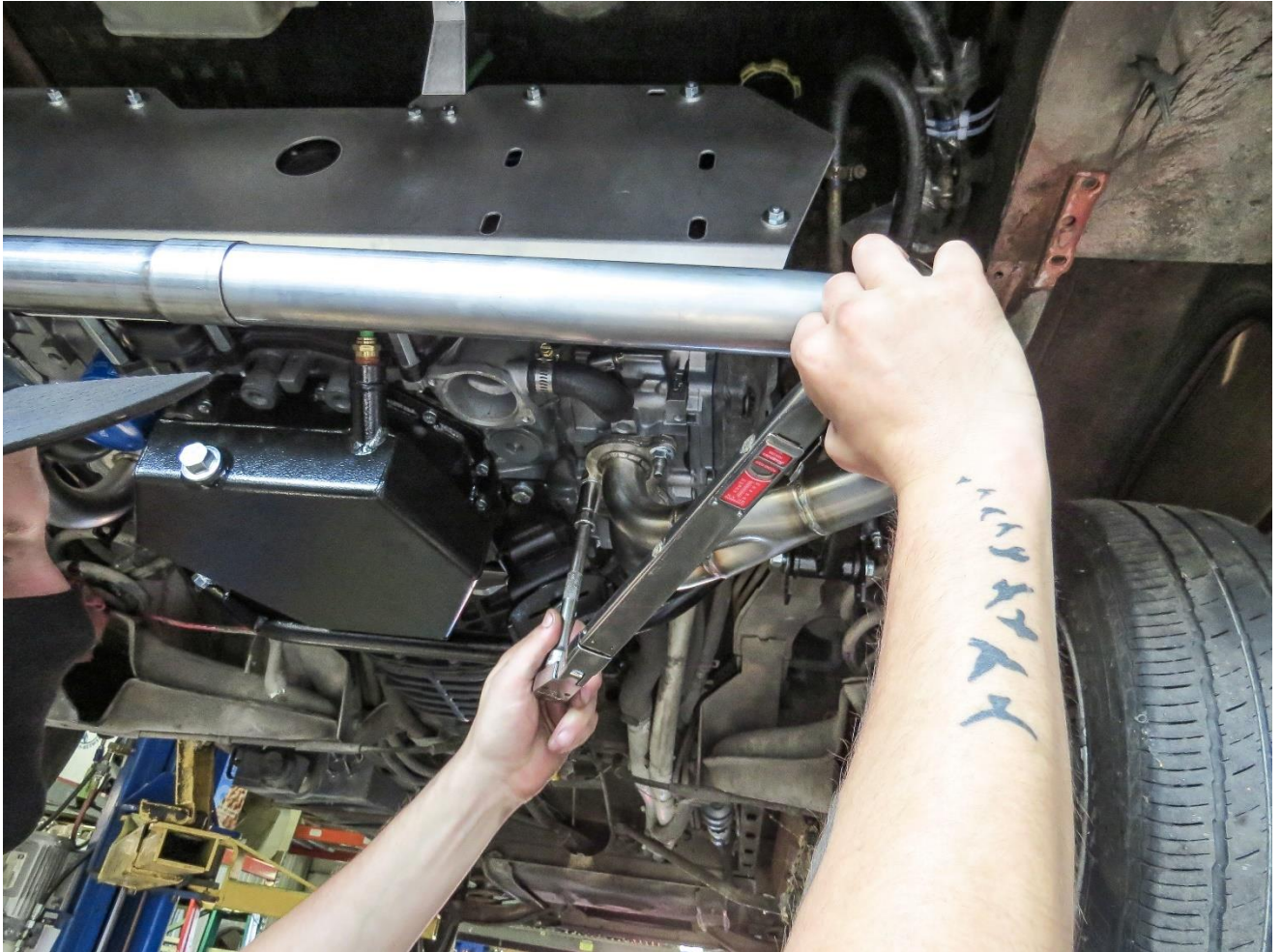


...and swiveling it up so the flange slides onto the left-side cylinder head exhaust studs.

Loosely install the included nuts.



6. Supporting the header pipes at the cylinder head, hand tighten the exhaust flange nuts against the exhaust flange. Once all nuts are snug, tighten to a final torque to 28 ft/lbs.



7. Install the U-bend onto the outlet of the right-side header pipe so that the oxygen sensor bung faces forward toward the front of the Van. The U-bend will curve **up** from the header pipe.



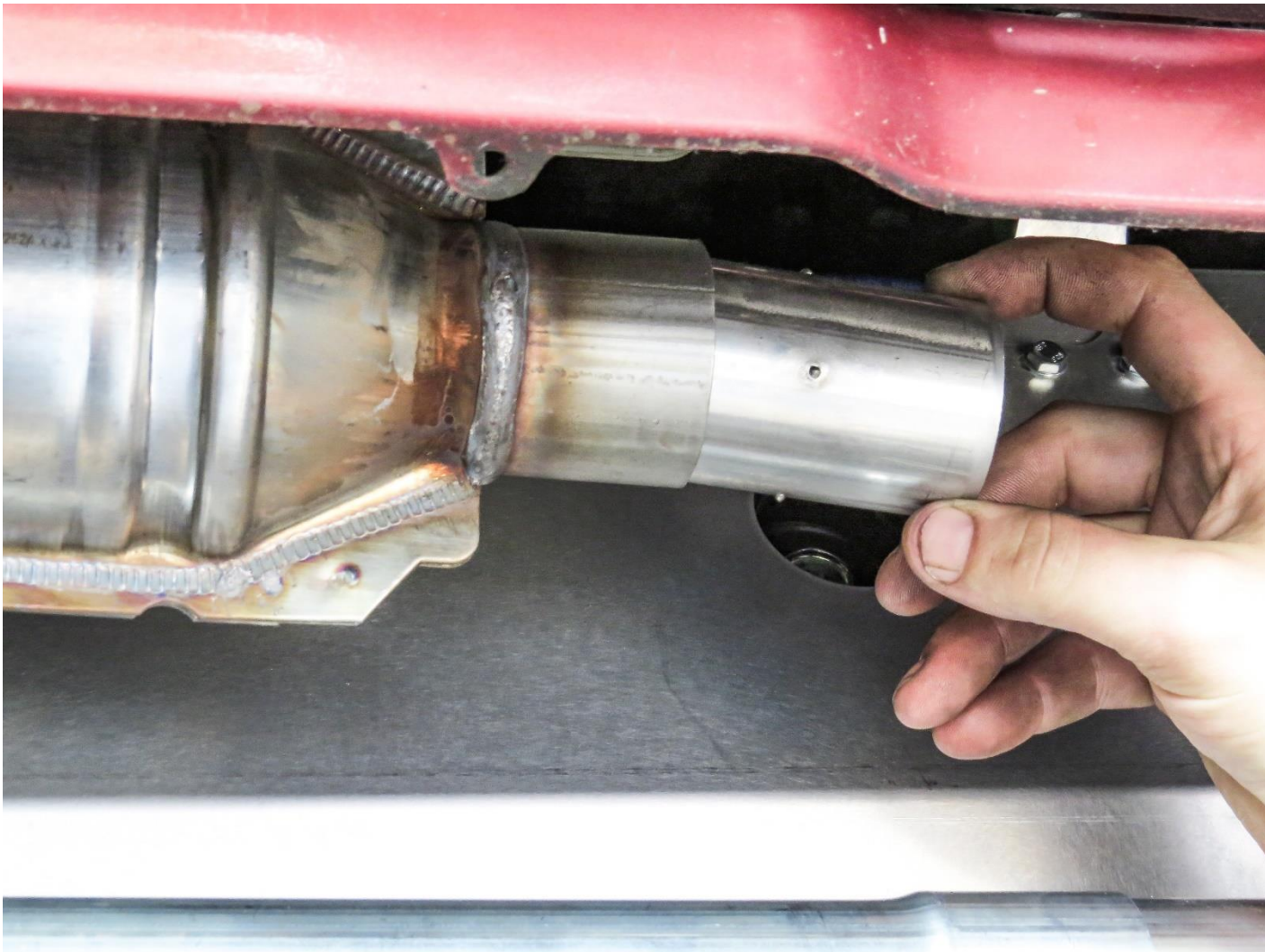
8. Slide the catalytic converter onto the U-bend. For OBD2 motors, the oxygen sensor bung should be oriented **after** the body of the cat.



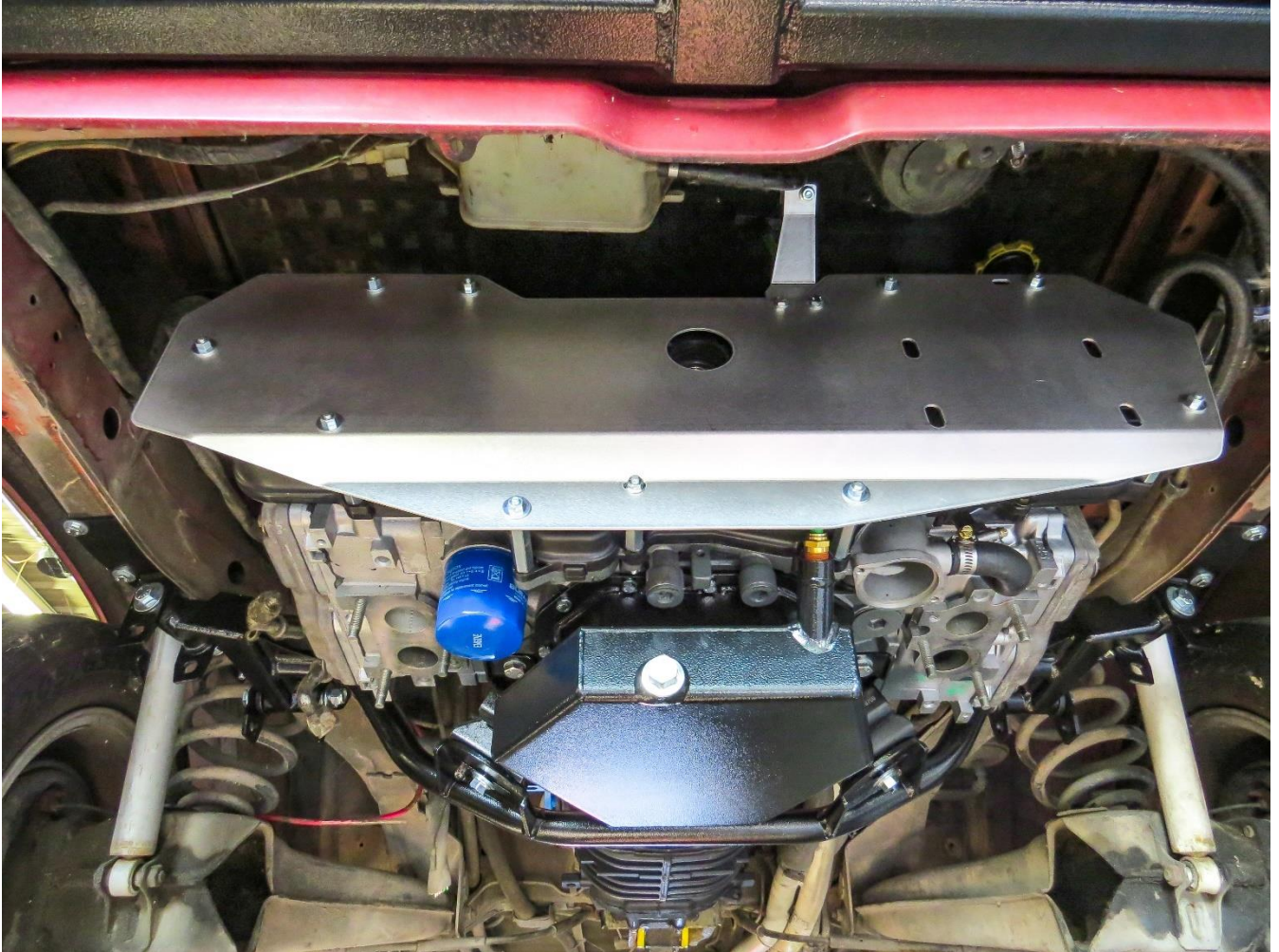
9. Rotate the catalytic converter until the oxygen sensor is oriented up and toward the heat shield while still allowing room to install the sensor and route the sensor wiring. We find that facing the bung at about the 11 o'clock position (or pointed approximately toward the top of the heat shield) is the ideal position.



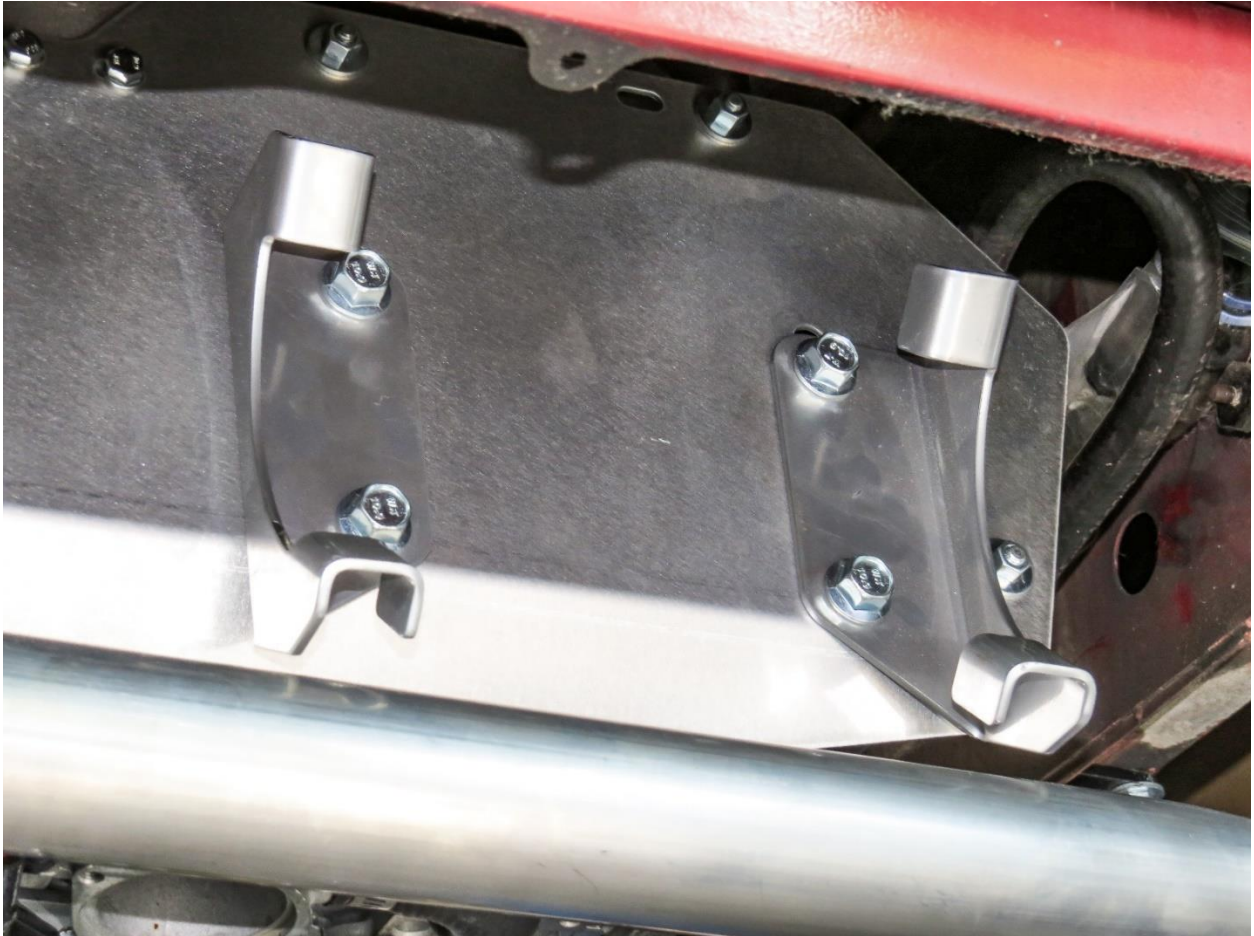
10. Slide the connector pipe into the catalytic converter. Note: Due to manufacturing variation, sometimes the connector pipe is loose in the catalytic converter outlet and/or muffler inlet. Sometimes by rotating the connector you will find a spot where it makes a tighter connection. You may also **gently** tap the pipe with a rubber mallet to seat it, but this should be done with caution. The band clamp will solve all loose connections when tightened.



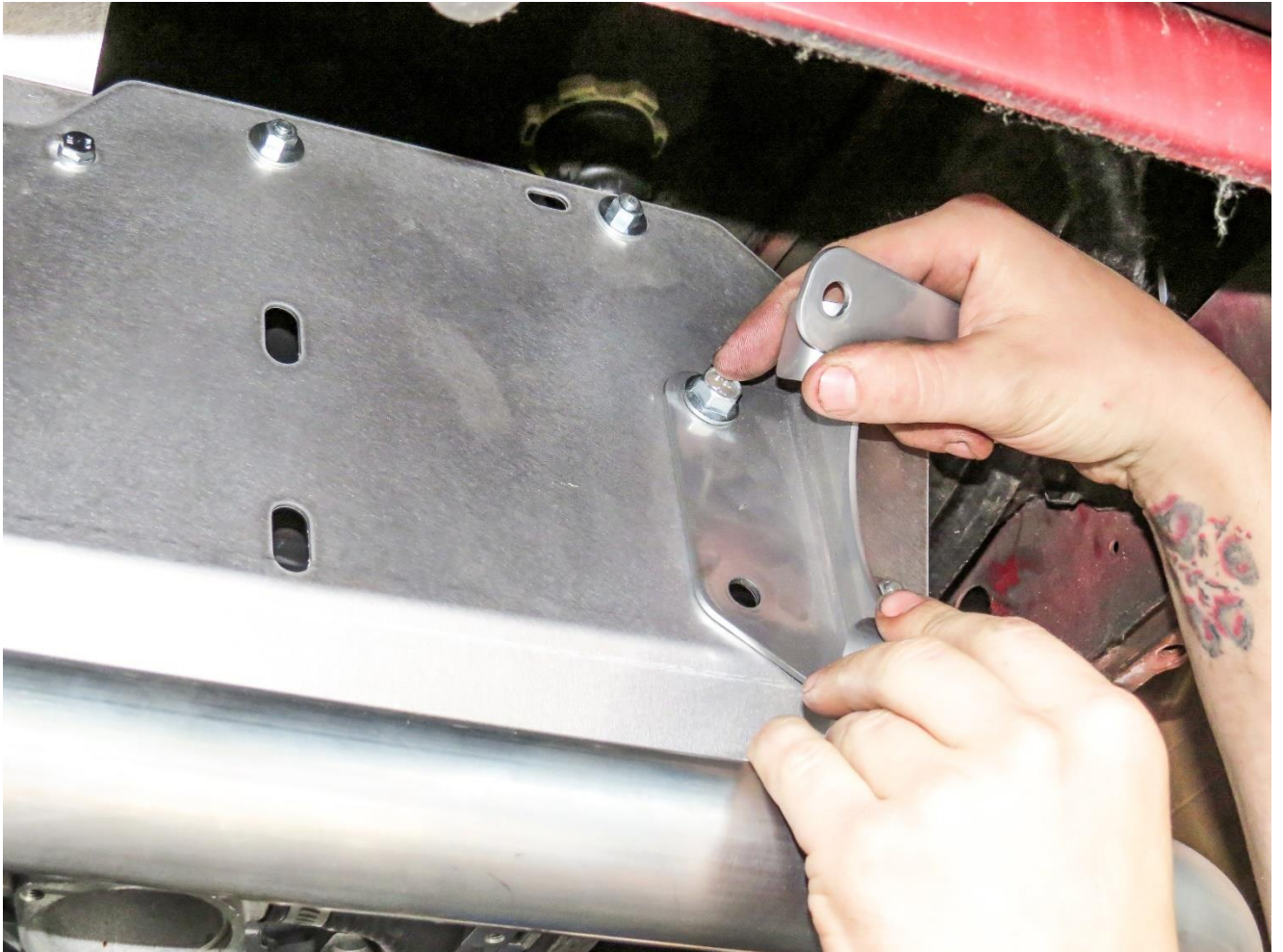
11. Now we'll install the muffler brackets onto the heat shield. Notice that the heat shield has four slotted holes on the mid-right side. The slots will allow positioning of the muffler so that it will sit straight relative to the engine and body of the van on final installation.



12. There is a left and a right muffler bracket included in the Rocky Mountain Westy kit. When the brackets are installed correctly, the tabs of the brackets will face each other – see this photo of the installed brackets for reference.



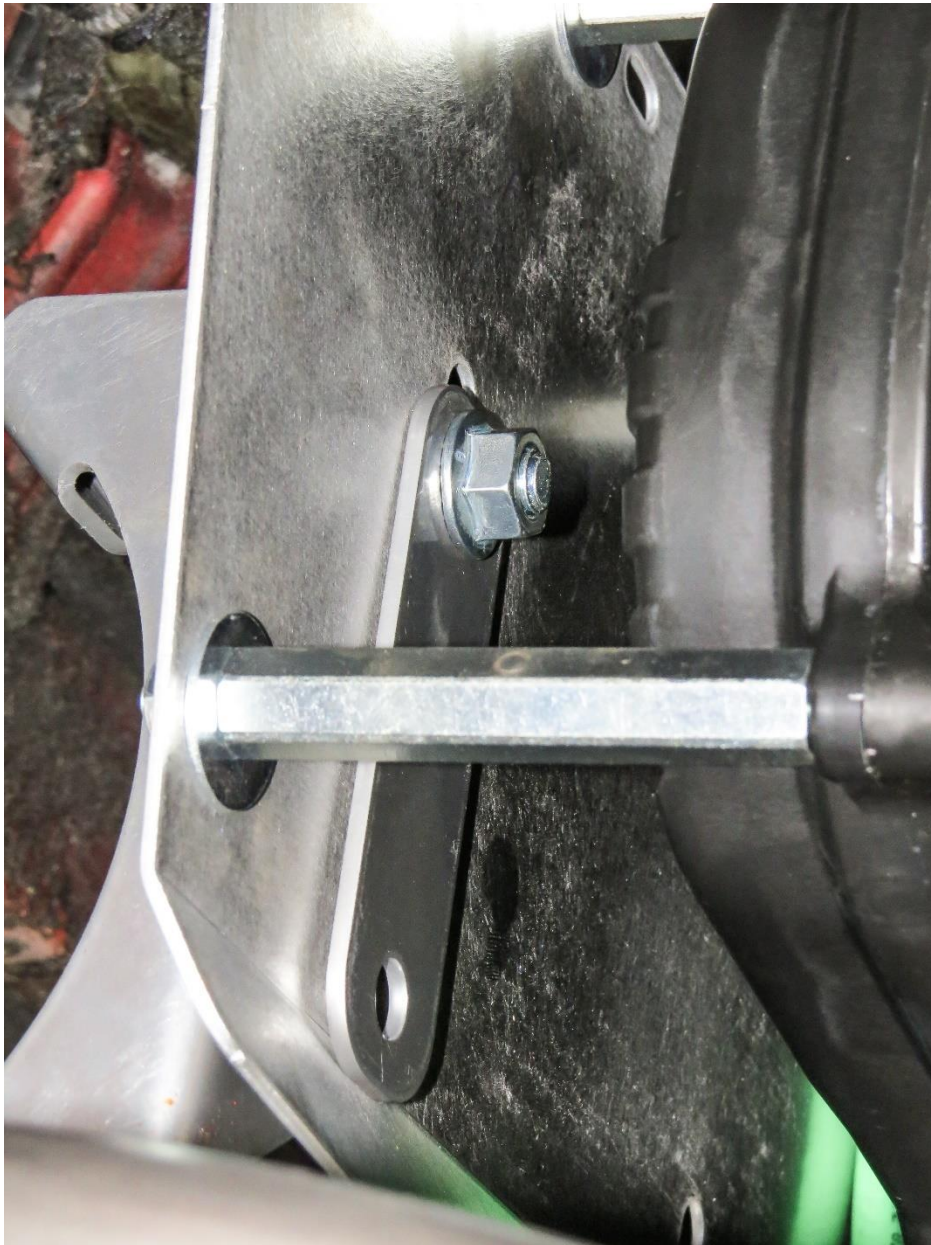
13. Each bracket consists of the main body and a backing support plate. To install the brackets, use the included bolts through the main body...



...and then through the heat shield and backing support plate on the opposite side of the heat shield.



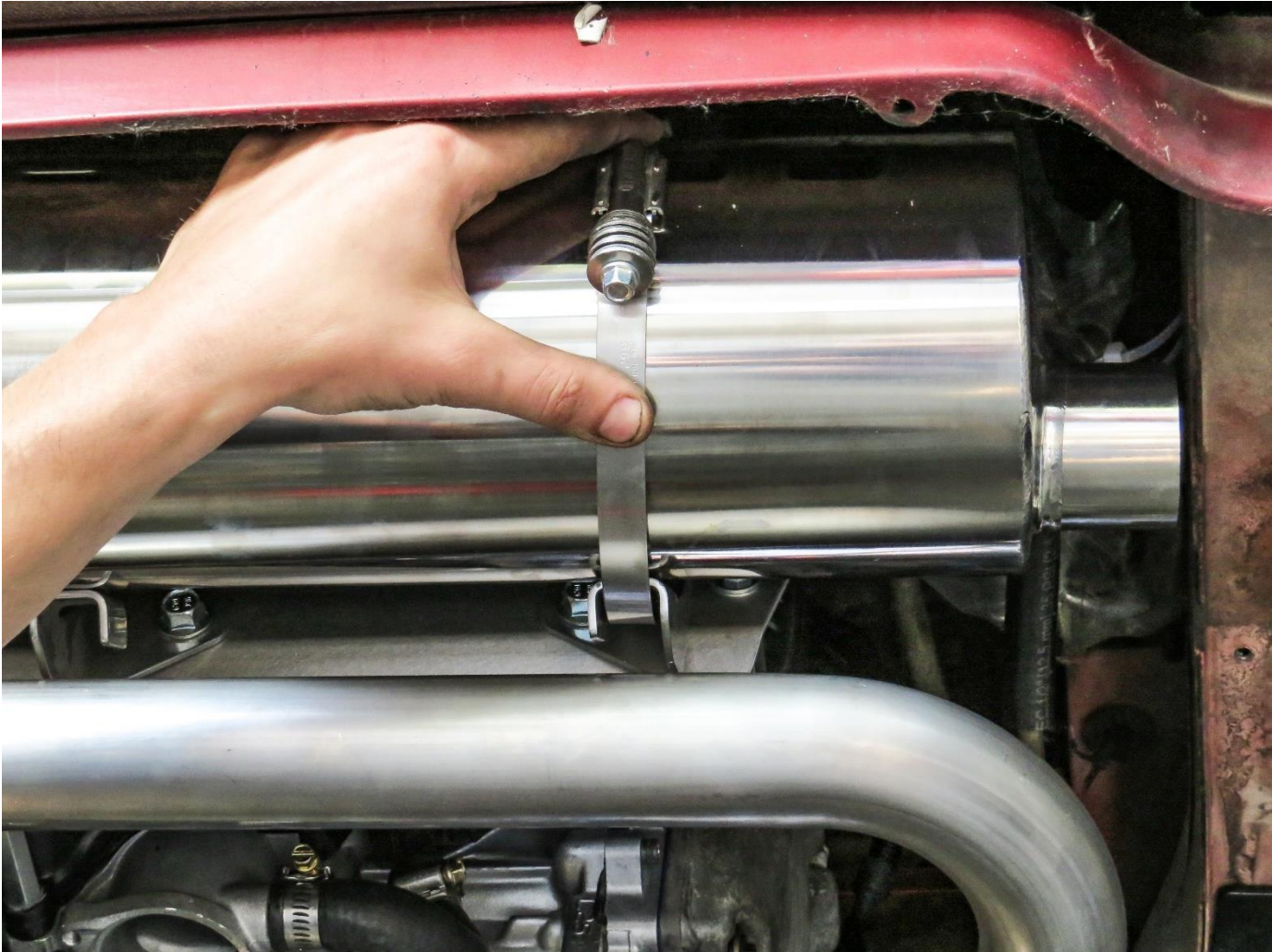
14. Loosely install a washer and thread a nut onto the bolt to hold the bracket assembly in place. Install the other three bolts and loosely thread the nuts. Tighten the nuts just until you can still move the brackets for aligning the muffler. Do not tighten fully at this time.



15. Once the brackets are in place, slide the muffler onto the short connector pipe coming out of the cat. You can let it hang temporarily suspended from this pipe while you ready the bracket to muffler clamps for installation.



16. Start the ends of a large muffler clamp in its threads so it forms a circle. Slide the clamp around the body of the muffler. Slide the clamp over the two “ears” on the bracket so that the clamp affixes the muffler to the bracket. Tip: installing the left side muffler clamp first allows you to more easily install the right side. Installing the right side first works fine but can be a little trickier.



17. Install the second bracket around the muffler and muffler bracket and tighten the clamps just until you can still move and rotate the muffler. Do not tighten the clamps fully at this point.



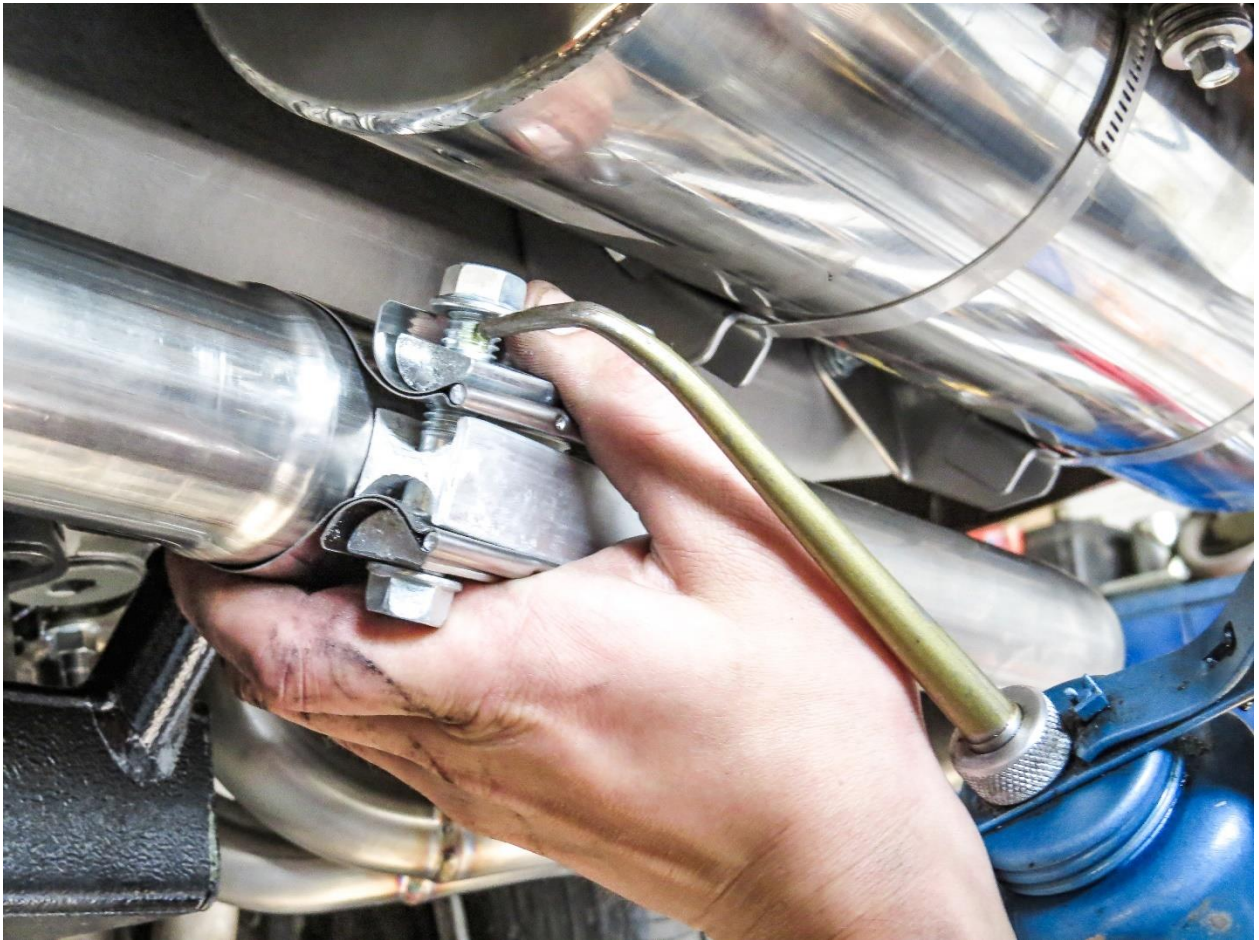
18. Now we'll be positioning the muffler in its final orientation. Slide the tail pipe into the muffler end to help reference its position relative to the body. The goal in this step is to align the muffler with the rear body lines of the van making for a clean-looking installation. Move the muffler clamps so that the muffler is straight relative to the body. Keep an eye on the angle of the pipe from the cat to the muffler as well. We're going for nice straight lines across the entire system. You can rotate any of the pipes from the u-bend to the tail pipe to achieve the desired orientation.



19. Once you have the system positioned where you want it, tighten the muffler clamps to the brackets. Tighten the muffler brackets to the heat shield noting that the orientation may change as you tighten. If it does, stop and reposition the muffler back to straight and then keep tightening the hardware. When you are satisfied with final position, tighten the muffler brackets to the heat shield.



20. Now we're going to be installing the band clamps to secure all the exhaust junctions. Note that these band clamps are designed to deform to the outer diameter of each pipe and should therefore be considered a single use clamp. Make sure you're happy with the orientation and connection of all of the junctions before tightening the clamps. Additionally, put a few drops of oil on the threads of the clamp hardware. These clamps are torqued to a relatively high specification and the oil will help protect the threads.



21. Start with the clamp at the catalytic converter to muffler junction. Loosely pre-form the clamp into a curve to mimic how it will sit on the pipes. Install the clamp as shown below but only tighten until the junction is secure – do not fully tighten at this time.



22. Work your way up the exhaust system toward the final connection at the header pipes. Install each clamp (don't forget to oil the threads!) tight enough to hold the joint but not fully torqued. Note that we install the clamps with the bolts heading up from the bottom and the nuts on top for a cleaner looking install. We will be doing a final torque at the end of the installation.



23. Position the tail pipe as shown in the photo below. Do not be tempted to rotate the tail pipe upwards in an attempt to gain ground clearance. The rotation of the engine and vibration allowed by the rubber engine mounts means that the engine will rotate slightly under load causing the tail pipe to hit the body. We've also found the recommended position to be the best angle to allow fumes to be drawn away from the vehicle. Install the last band clamp between the muffler outlet and tail pipe.



24. The last step of the exhaust installation is to torque the band clamps to a final torque of 50 ft/lbs. We recommend starting with an initial torque to 40 ft/lbs on all the clamp nuts and then moving up to 50 ft/lbs. You'll notice that the clamps deform to the outside diameter of the piping making for a leakproof installation.

