Rocky Mountain Westy

Automatic Transmission Cooler Kit

Installation Instructions

Introduction

Thank you for purchasing the Rocky Mountain Westy **Automatic Transmission Cooler Kit**. We pride ourselves in the products we develop and would not bring an item to market that we did not fully believe in. This **Automatic Transmission Cooler Kit** has been in development for some time and has been tested on many automatic transmissions with various engine configurations. It's proven successful on every one of them.

The stock automatic transmission in the Vanagon already has an Automatic Transmission Fluid (ATF) cooler that came from the factory. This stock cooler has two internal chambers. One chamber has ATF running through it and the other chamber has Coolant running through it in order to cool the ATF. These stock coolers have been known to leak internally which releases ATF fluid into the cooling system and introduces coolant into the transmission internals. This cross contamination pretty much ruins both systems entirely and can be very a expensive repair. Our **Automatic Transmission Cooler Kit** removes the stock cooler and in turn completely isolates both systems from each other so that there is no chance of having that disastrous event occur.

NOTE: Some of the photos in this instruction manual depict grey transmission hoses included in the kit. We have since upgraded to black braided lines to offer better abrasion resistance. Also, there is no longer a "T" attached to the thermostat.

Before You Get Started

It is recommended that you read through these instructions fully before beginning the installation process. This will help familiarize yourself with the entire process beforehand which will make the installation go smoothly.

Tools Needed for Installation:

- 10mm socket
- 11mm wrench
- 13mm socket and wrench
- 17mm socket and wrench
- 18mm wrench
- 19mm wrench
- 1” wrench
- 1-1/16” wrench
- 3/8” socket
- Ratchet
- Drill (short bodied)
- Philips screwdriver
- Torque wrench
- Flexible hose clamp pliers
- Hose pinch off pliers
- Funnel
- 1qt. ATF

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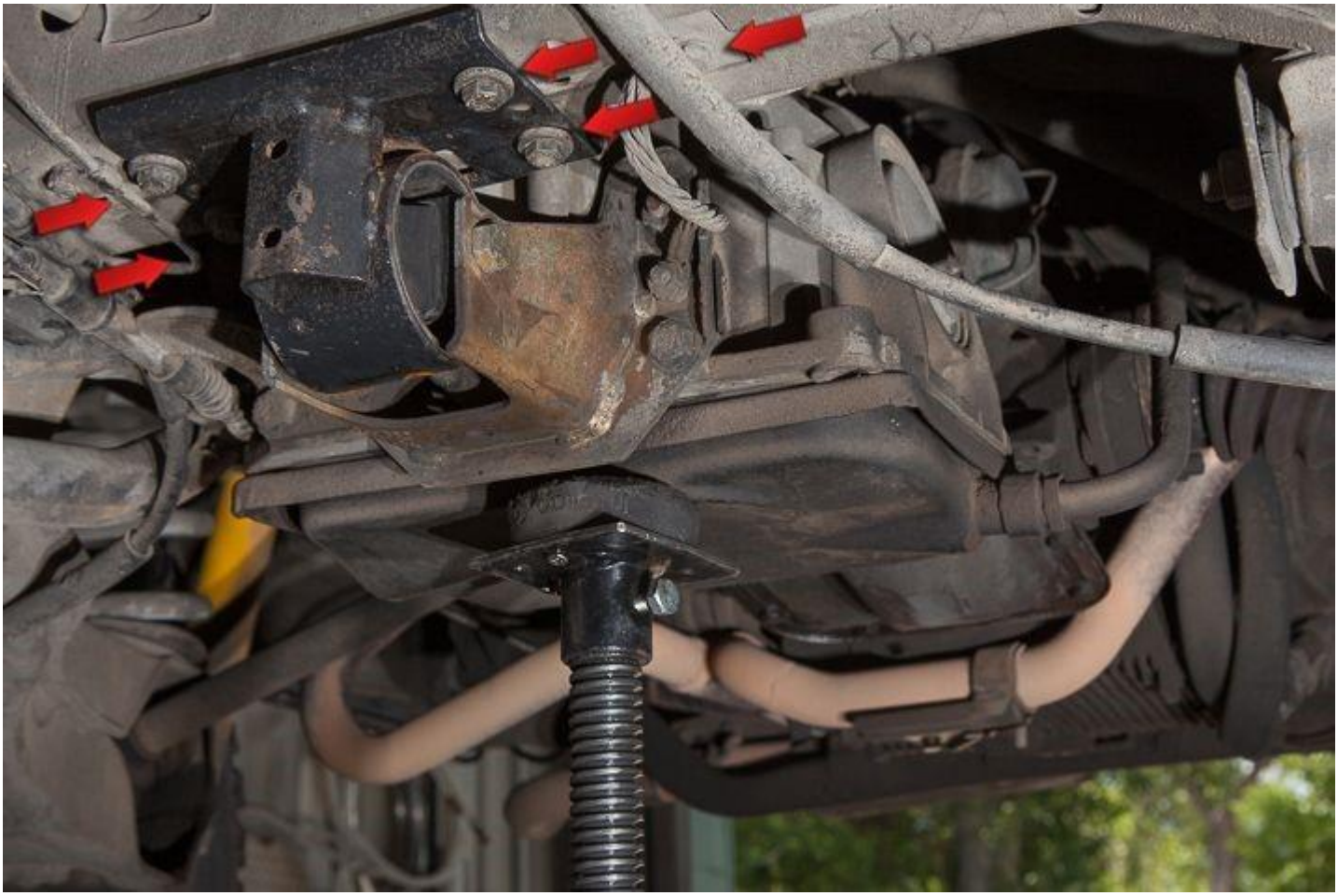
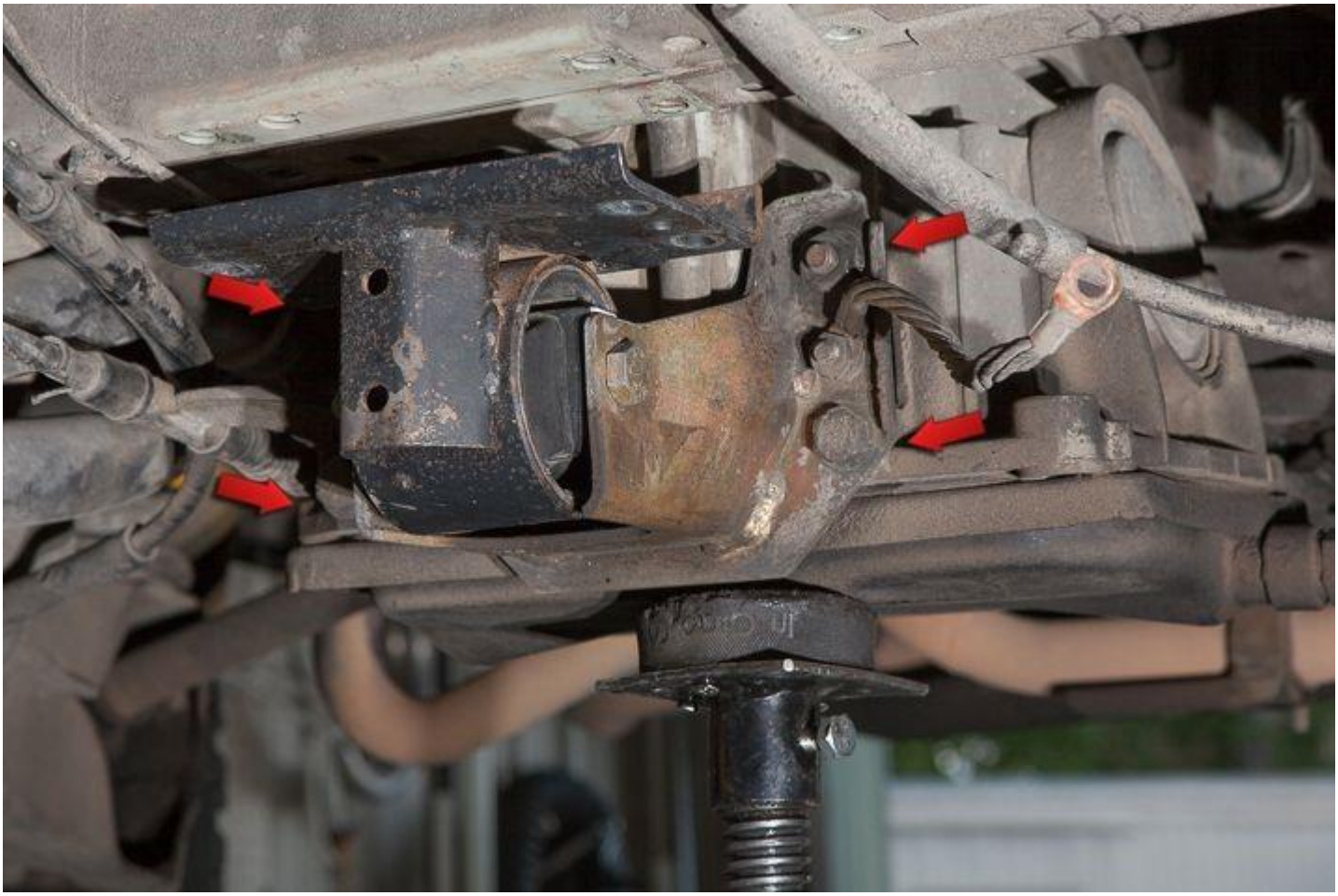
Stock ATF Cooler Removal

Support the Transaxle with a jack, you can easily use a bottle jack or floor jack for this also. Use a **13mm Socket & Ratchet** in order to remove the four bolts that attach the Transaxle Mount to the chassis. Also remove the one bolt that attaches the Ground Strap to the chassis.



Once the four bolts and Ground Strap are removed from the chassis, slowly lower your support jack in order to lower the Transaxle about 4". If your van is a 1984 or 1985 with a 1.9L it is important to disconnect the coolant bleeder hose in the engine bay on the H junction pipe. Use two **17mm Wrenches** to loosen the front transmission mount. This will come in handy later during the hose installation of the process.

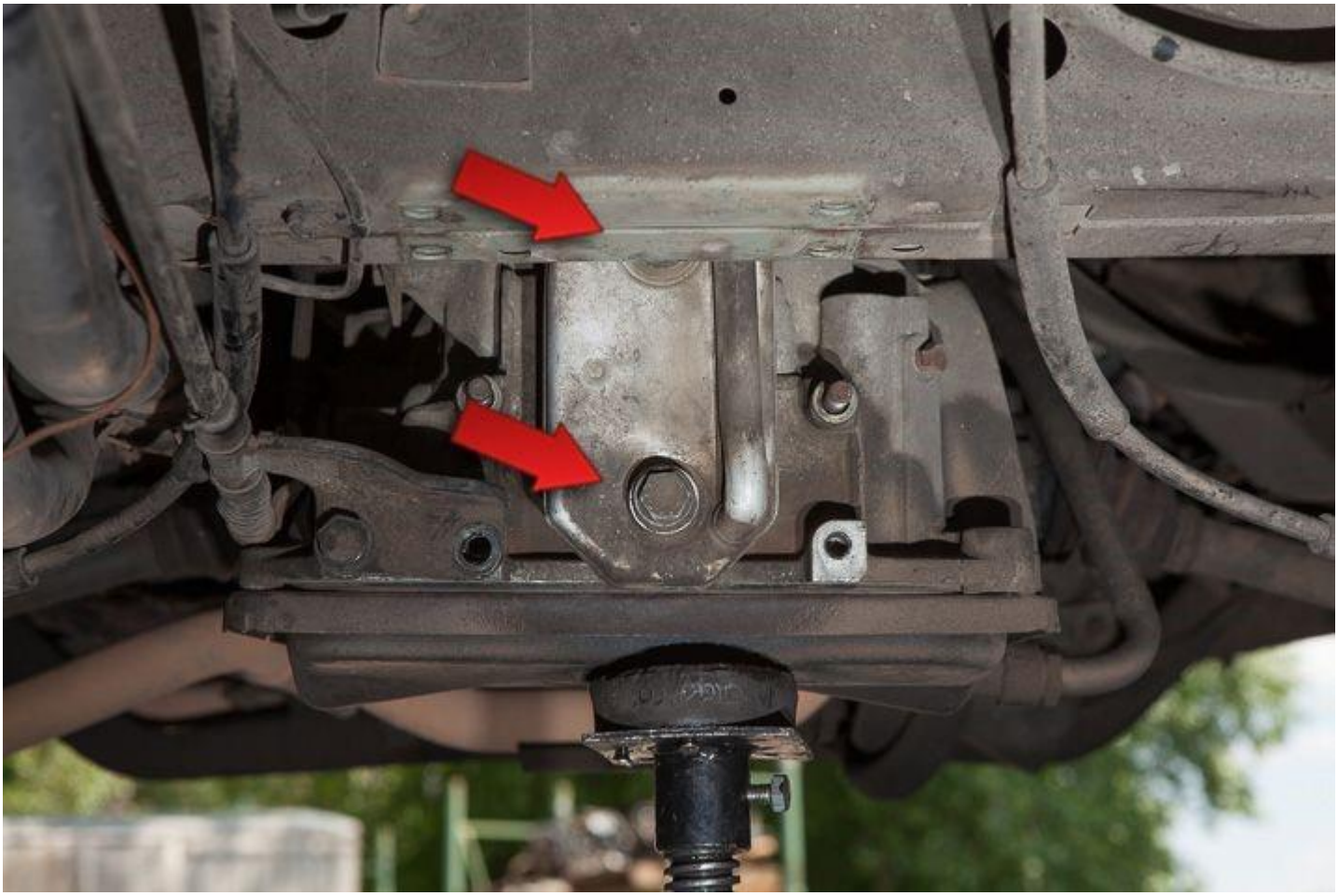
Use a **13mm Socket & Ratchet** in order to remove the two bolts and two nuts that keep the Transaxle Mount attached to the rear of the transmission.



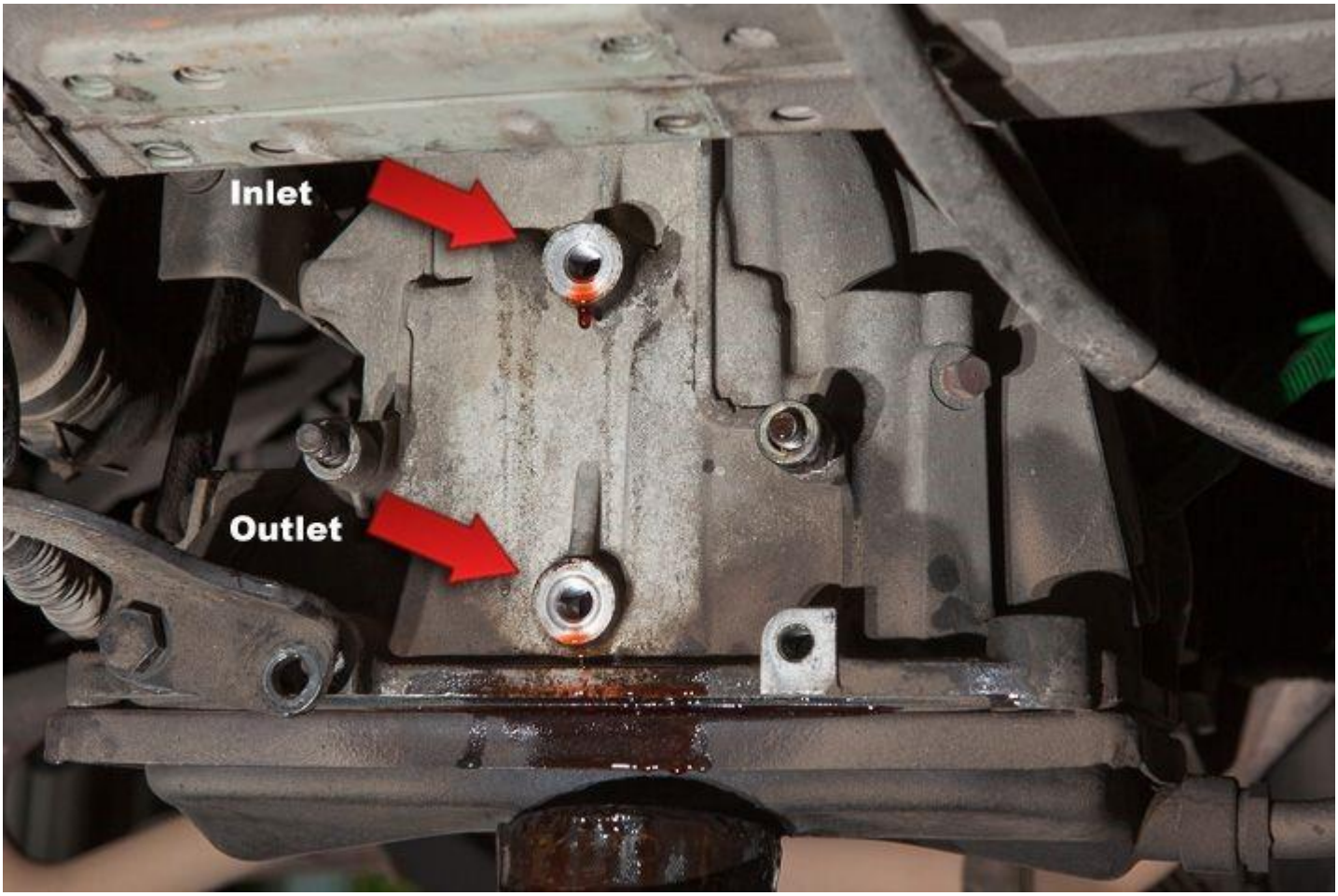
After the two bolts and two nuts are removed, remove the entire Transaxle Mount. Be careful not to lose or misplace the two metal spacers shown here.

Now that the front Transaxle Mount is removed we can prep the stock Oil Cooler for removal. Locate the two rubber coolant hoses that are clamped to the top portion of the Oil Cooler. Using two **Hose Pinch Off Pliers**, crimp and lock the pliers into place as shown. The further away from the hose clamp at the oil cooler, the more coolant you'll lose when disconnecting the hoses. So attach the pliers as close to the hose clamps as you can.

Use a **17mm Wrench** in order to remove the two bolts that attach the stock oil cooler to the front of the transmission. Once these bolts are loosened, the cooler and transmission will leak automatic transmission fluid so be sure to have a drain pan placed underneath to collect it.



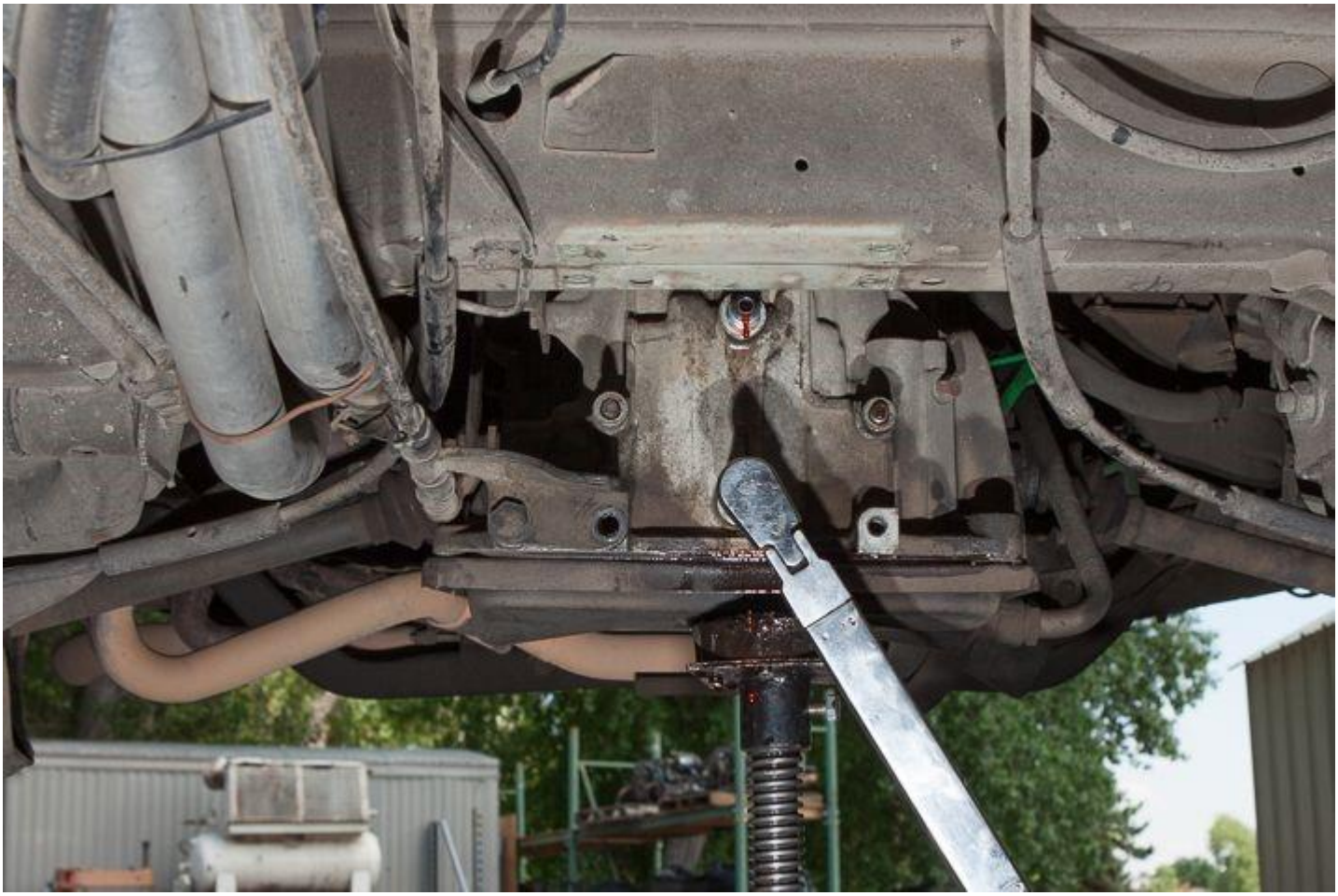
Remove the cooler and place it off to the side since the Coolant Hoses are still attached. Now's a good time to indicate that the **Top Port** is the **INLET** and the **Bottom Port** is the **OUTLET**. This is important when it comes time to plumb up the hoses. Clean the port surfaces well with a rag in order to rid them of any oil, residue and/or dirt.



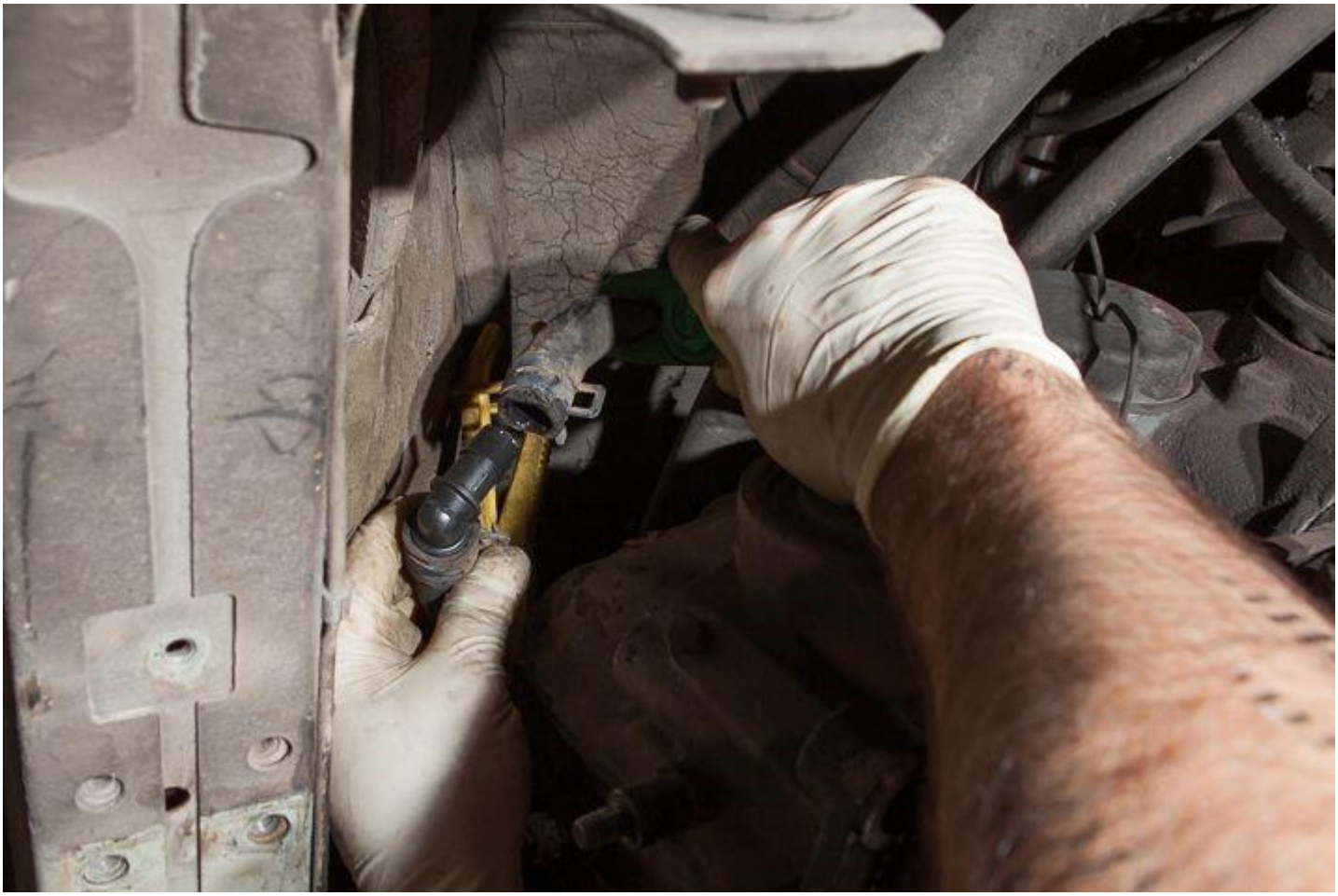
Now that the stock cooler is removed from the Transmission we need to install two **Flare Adapter Fittings** into the transmission. Make sure that each fitting contains either a crush washer and an o-ring prior to threading it into the transmission.

Thread both **Flare Adapter Fittings** by hand into the transmission while keeping the plastic protective caps in place. These caps will keep debris from entering the transmission while you continue the installation.

Use a **17mm Socket** and a **Torque Wrench** in order to tighten both **Flare Adapter Fittings** to **18ft lbs**.



It’s now time to remove the Stock Oil Cooler from the coolant hoses we pinched off earlier. Use a pair of **Flexible Hose Clamp Pliers** in order to remove the stock hose clamps that attach the hoses to the stock cooler nipples. You will reuse these hose clamps so just slide them down the hose a little towards the **Hose Pinch Off Pliers**. Slide the hoses off the oil cooler ports and let the coolant leak into a catch container below.



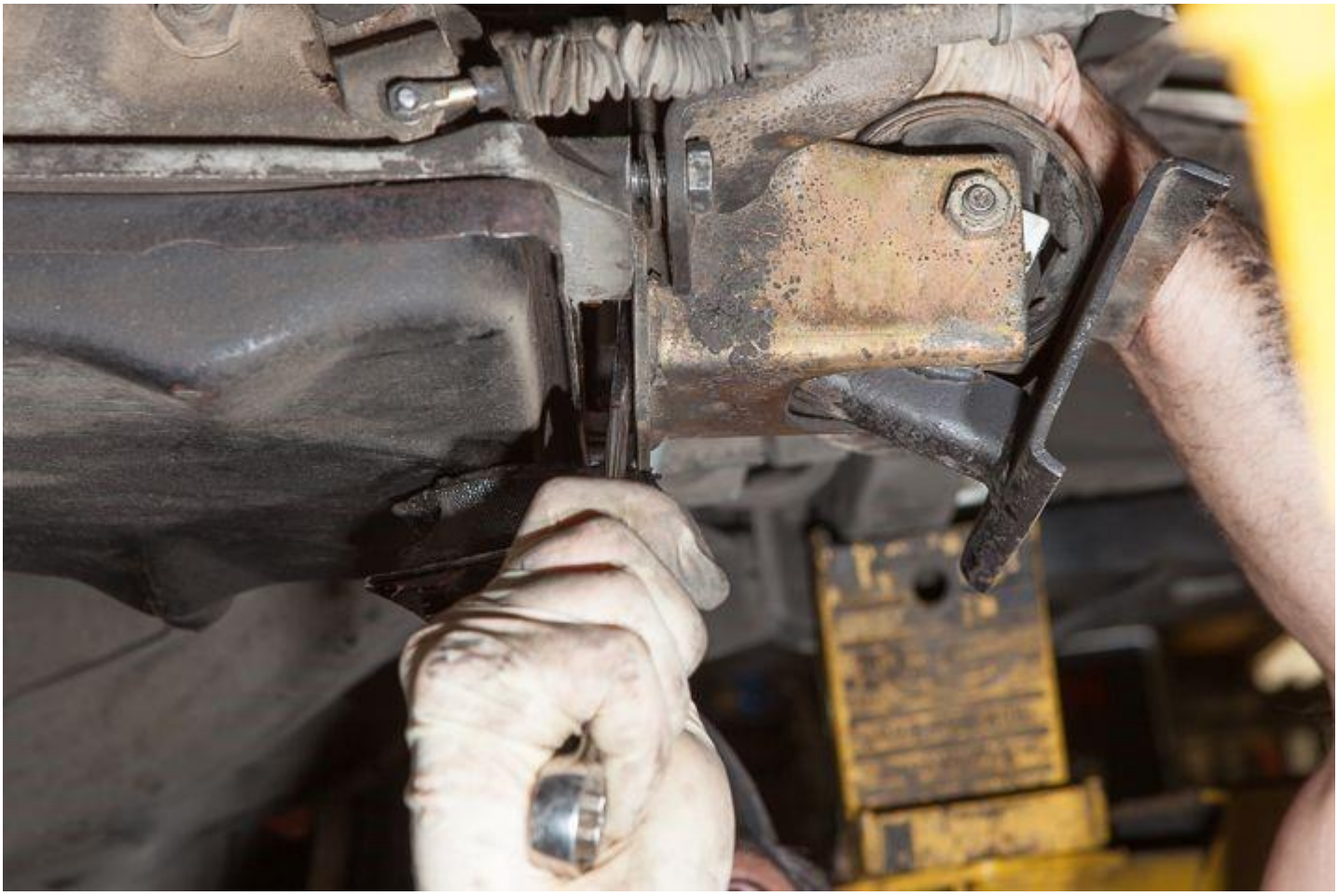
Place the open hose ends onto the supplied **5/8“ Plastic Elbow** and using **Flexible Hose Clamp Pliers** reposition the hose clamps so that the hoses are clamped to the **5/8“ Plastic Elbow**. This elbow isolates the cooling system from the chance of intermixing with automatic transmission fluid. Remove the **Flexible Hose Clamp Pliers**.

Installing Cooler Hoses (Transmission to Thermostat)

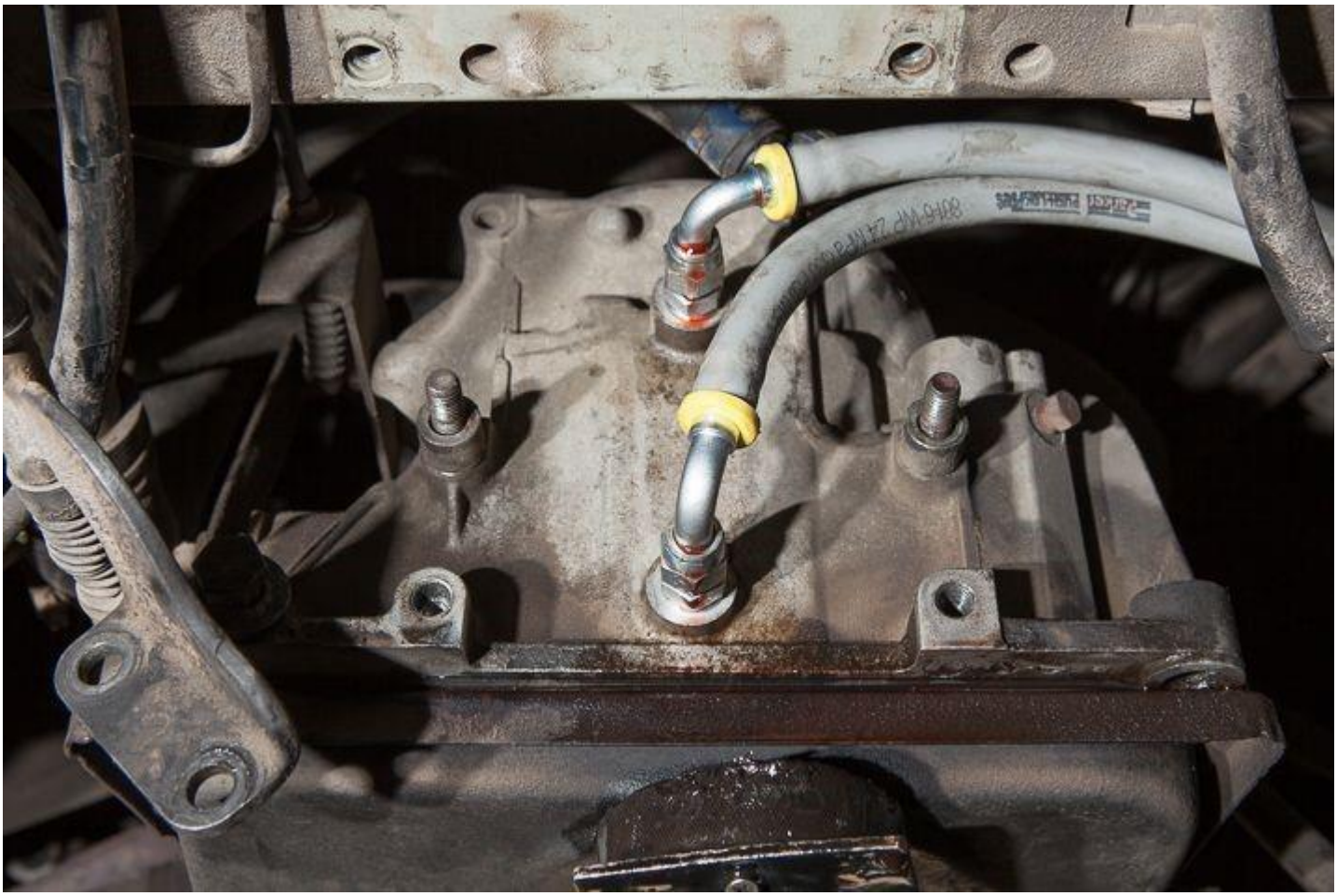
The two **25” Hoses** that are included have a 90° elbow on one end. Hand tighten these 90° elbows onto the **Flare Adapter Fittings** that are mounted to the Transmission. Route the loose ends of the hoses towards the driver’s side of the vehicle. We just want these hose fittings snug in order to help orientate the hoses so that they’re not pinched or interfere with any of the components nearby.

Temporarily bolt up the Transaxle Mount that we removed earlier. This does not have to be tightened down, hand tight is fine since we just need to see if everything clears ok. Raise the Transaxle slowly with the jack in order to position it back to it’s final bolted down location. This will help you identify if the orientation of the hoses is sufficient. If all is good, slowly lower the transaxle back down.

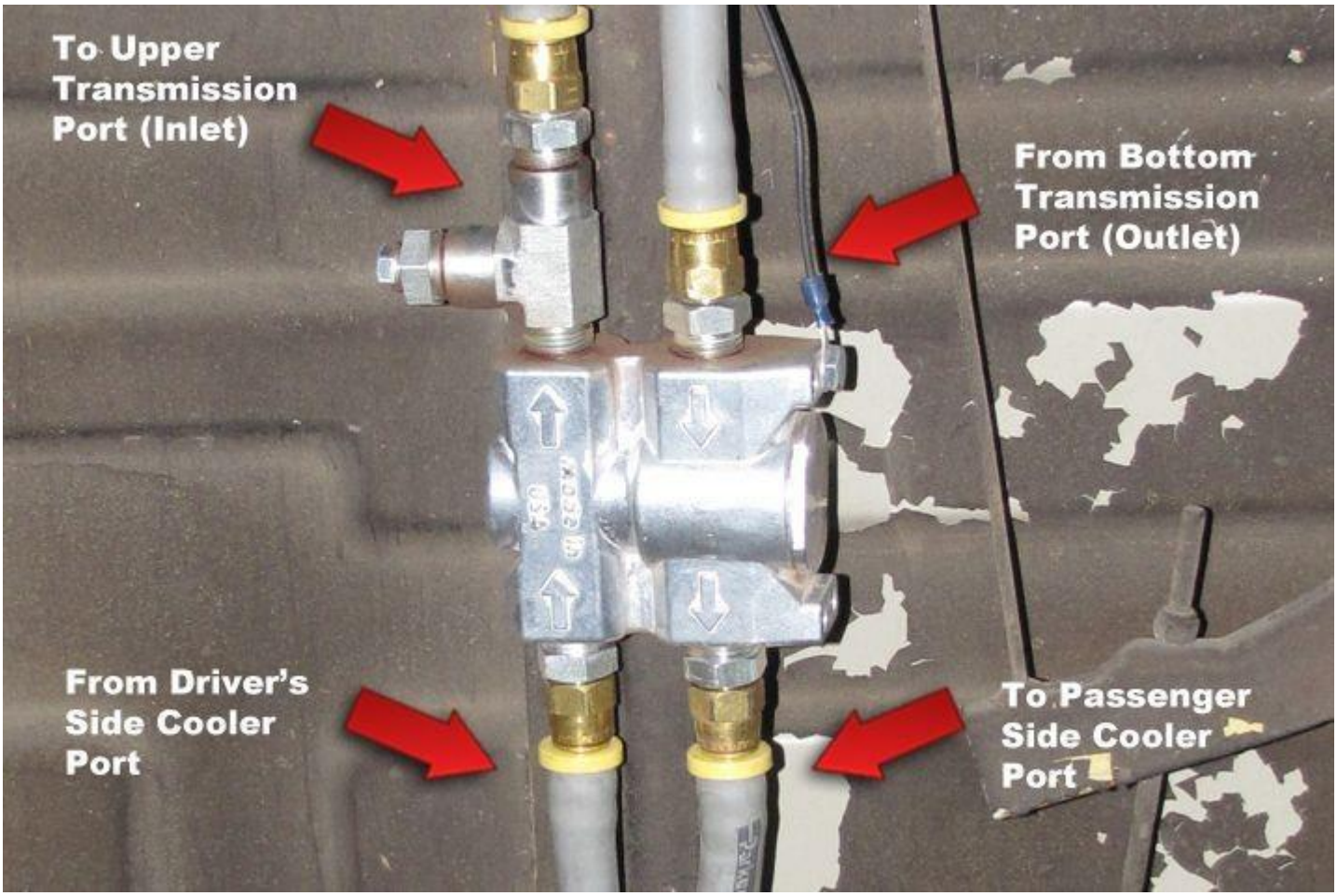
Once the hoses are orientated such that they don't interfere with the Transaxle Mount and/or any of the surrounding components, tighten the fittings down with a **17mm Wrench** locking them into position. The upper fitting is pretty easy to get to.



The lower fitting is a little tougher to reach. You can place a **17mm Wrench** in between the transmission and the Transaxle Mount in order to tighten down the lower fitting so it doesn't rotate out of position.



Remove the Transaxle Mount completely and fully tighten down the 90° fittings to about 10ft lbs. Note this final hose orientation as yours should be very similar. Use a Rag to clean off all of the excess automatic transmission fluid on and around the connections. This cleaning will help you identify leaks later on in the installation process.



NOTE: The "T" at the Upper Transmission Port Inlet is no longer necessary in this kit.

Thread the two hose fittings coming from the Transmission onto the **Fluid Controlled Thermostat**. Pay close attention to the flow arrows on the **Fluid Controlled Thermostat** and make sure the correct hose from the transmission connects to the correct port.

The flow direction is key in making this cooler kit function properly. If you have any of the lines mounted to the wrong port you could overheat the transmission and ruin it.

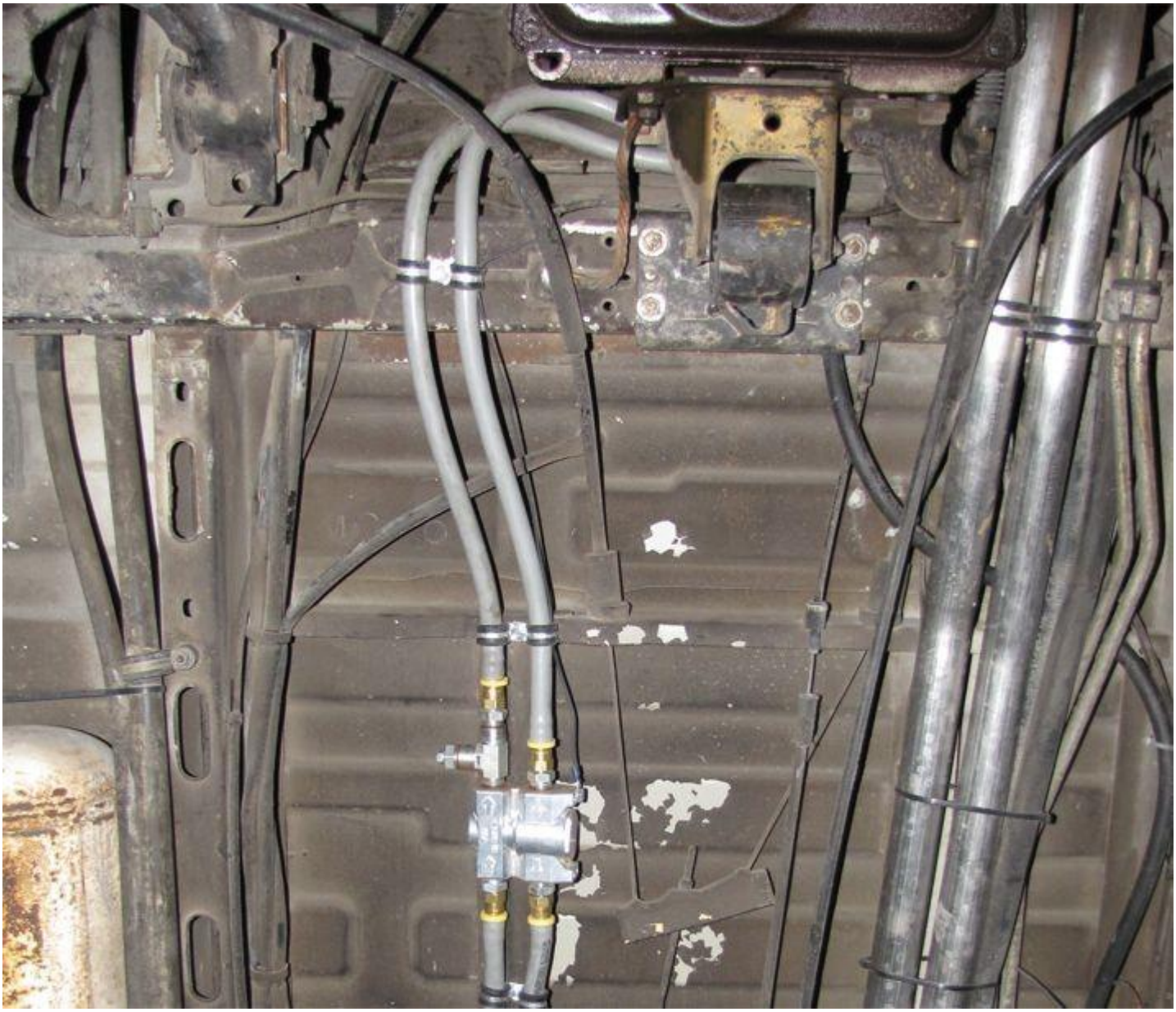
Once you've correctly plumbed up the hoses to the **Fluid Controlled Thermostat** use a **18mm & 19mm Wrench** in order to tighten the fittings.

Place one **Rubber Lined Hose Clamp** on each of the hoses, point the mounting ears inwards so that you only need one **Self Tapping Screw** in order to secure both clamps.

Use a **3/8“ Socket** and a **Drill** in order to drive the **Self Tapping Screw** through the flange of the crossmember shown. This will secure the **Fluid Controlled Thermostat** to the chassis of the van. Take note of the direction of the flow arrows on the **Fluid Controlled Thermostat** shown. Make sure you orientate yours in the same fashion.

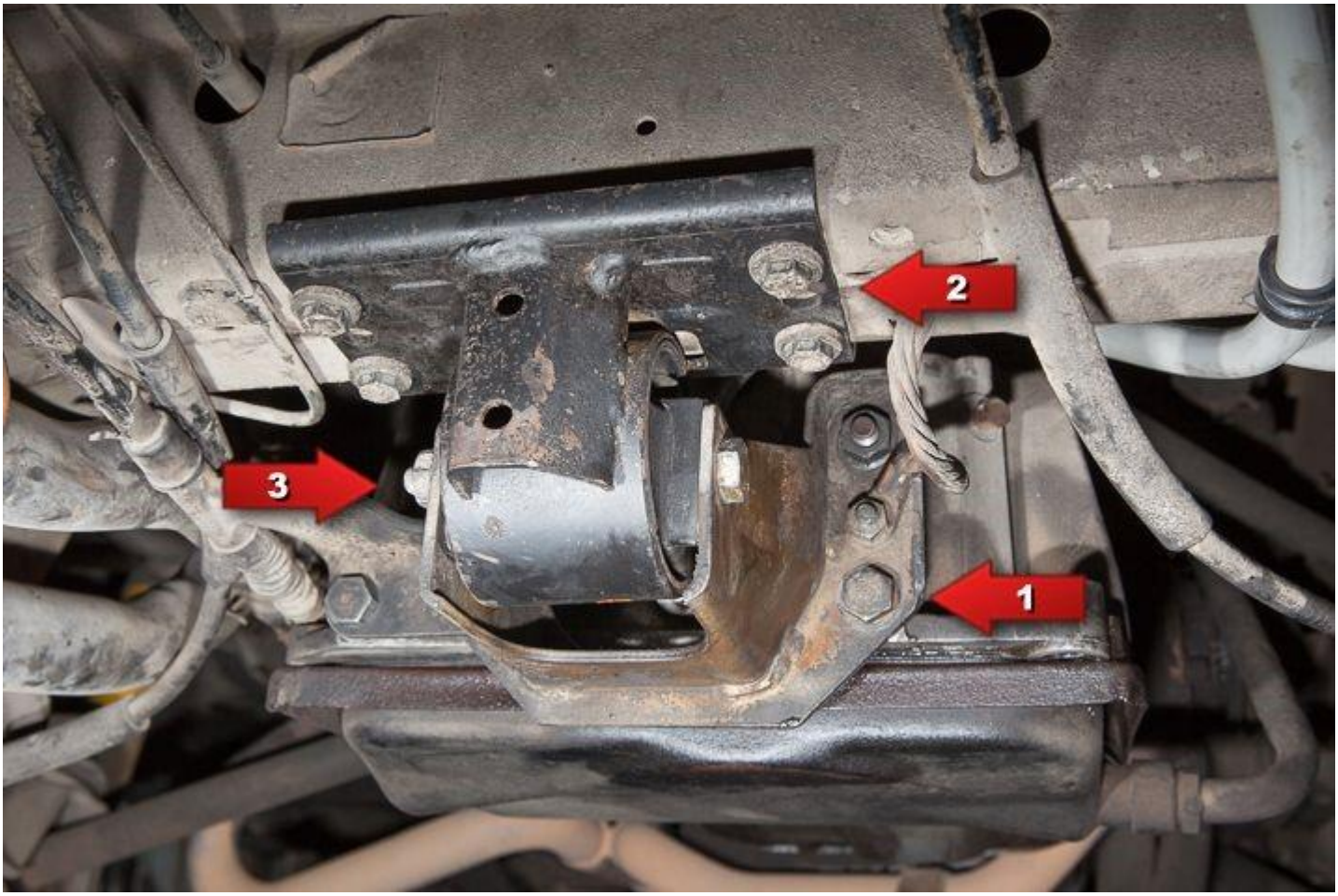
Place two **Rubber Lined Hose Clamps** on the hoses near the transmission. Line the **Self Tapping Screw** up so that it's in the center of the crossmember. This crossmember is double walled on the bottom but the center portion is single walled, this is where you want to drive the screw through since it'll be easier.

Use a **3/8" Socket** and a **Drill** in order to drive the **Self Tapping Screw** through the chassis crossmember.



This is how your installation should look at this point. Take note of the flow arrows on the **Fluid Controlled Thermostat**. **NOTE: The "T" at the Upper Transmission Port Inlet is no longer necessary in this kit.**

The flow arrow on the thick/wide side of the **Fluid Controlled Thermostat** should be pointing towards the **FRONT** of the van is on the **PASSENGER SIDE**. The flow arrow of the thin/narrow side of the **Fluid Controlled Thermostat** should be pointing towards the **REAR** of the van is on the **DRIVER SIDE**.



The transmission portion of the install is complete so you can now reinstall the Transaxle Mount to the Van's chassis. Use a **13mm Socket & Ratchet** to tighten the two bolts and two nuts that mount the Transaxle Mount back to the front the transmission.

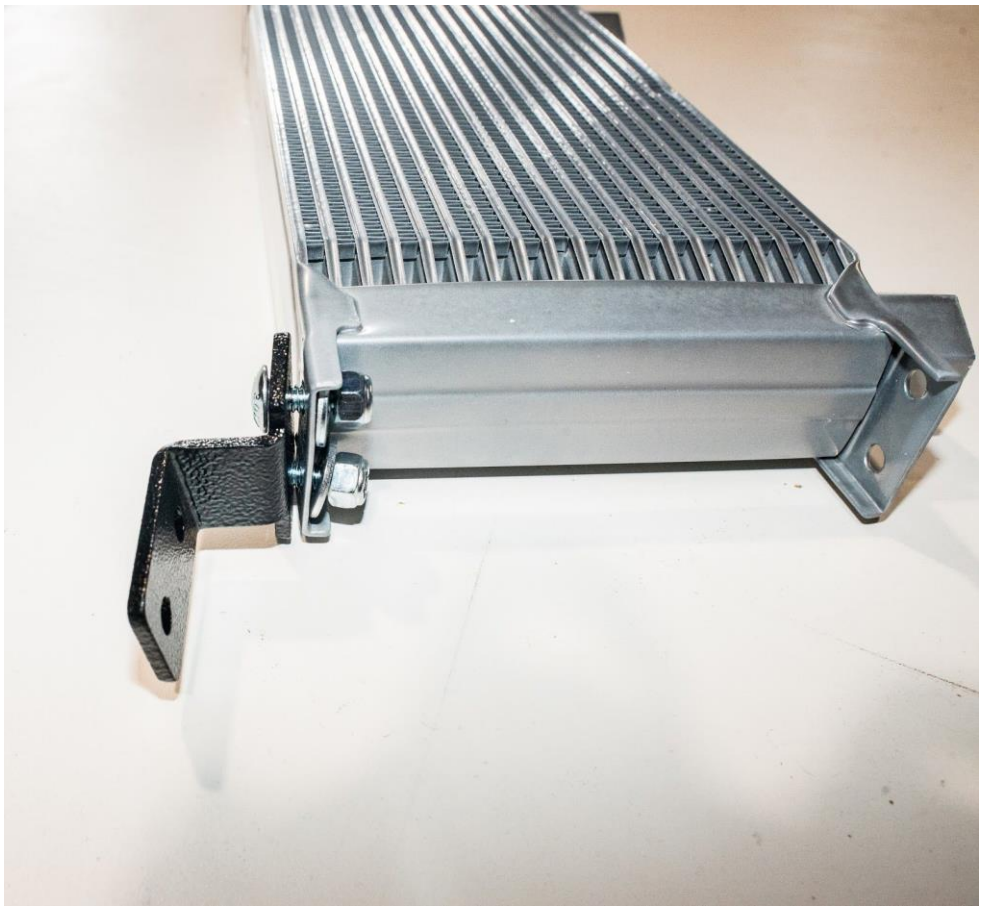
Slowly raise the Transaxle with your support jack so that the main plate of the Transaxle Mount makes contact to the main frame rail. Use a **13mm Socket & Ratchet** to reinstall the four bolts that attach the Transaxle Mount to the chassis. Leave the Ground Strap unattached for the time being.

Use two **17mm Wrenches** to tighten the front transmission mount.

Installing Stacked Plate Cooler

Remove the lower grill on the front of the van using a **Phillips Head Screwdriver**. This is where the **Aluminum Plate Cooler** will be installed, in front of the radiator and condenser (if present).

You'll also need to remove the spare tire clamshell or aftermarket front skid plate in order to install the cooler hoses.

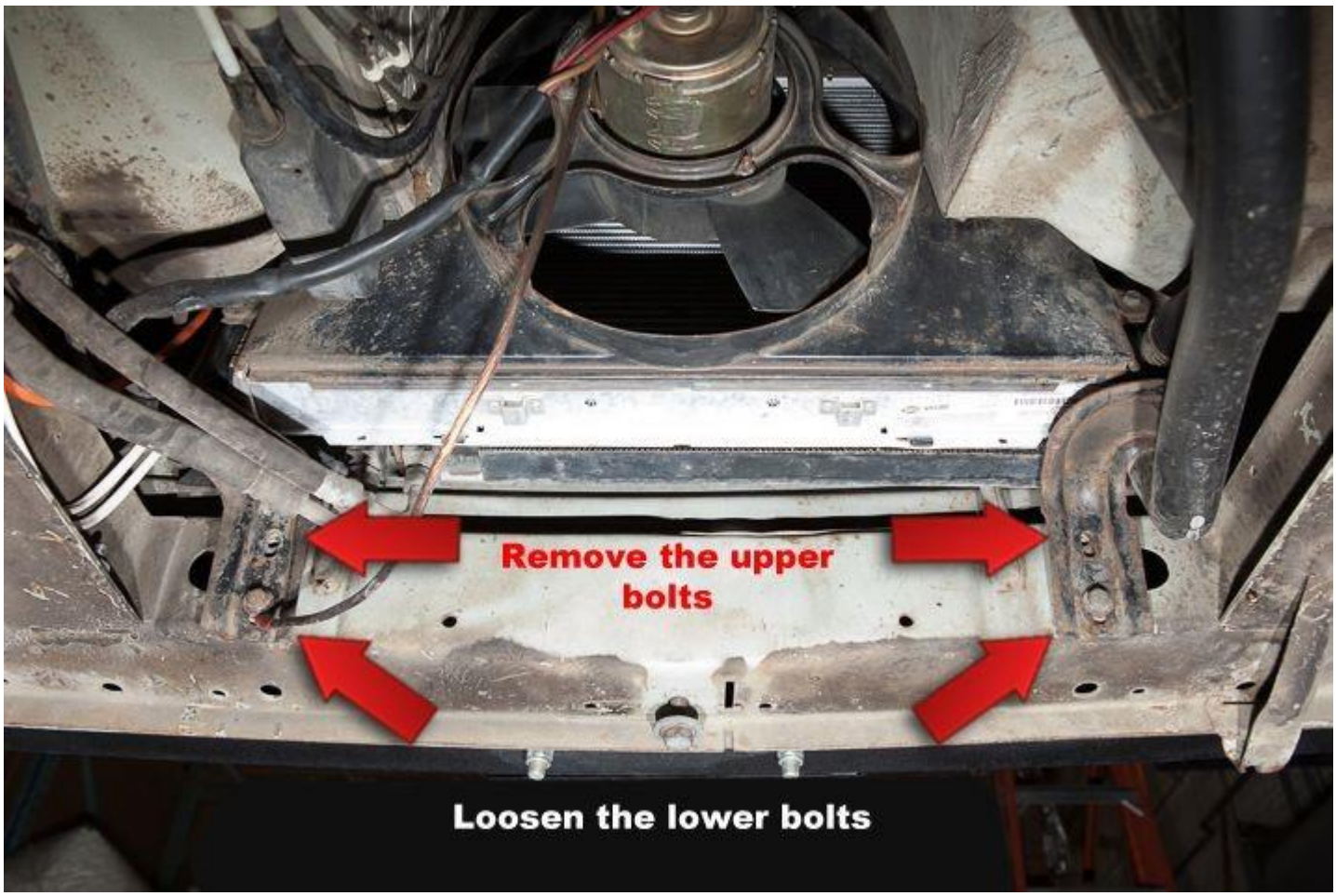


The **Aluminum Plate Cooler Kit** comes with two mounting brackets that need to be bolted to the top of the assembly. The high point of the bracket should point towards the **FRONT** of the van. This will make the lower side of the **Aluminum Plate Cooler** to be swept towards the rear allowing it to clear the grill opening.

Note the orientation of the brackets relative to the Van.

Locate and mark the center point of the **Aluminum Plate Cooler** in order to help you center the cooler into the front grill. You can use a **Self Tapping Screw** in order to score a small line locating the center like shown.

Drop the lower portion of the **Aluminum Plate Cooler** into the opening first, then slide the upper portion into place. This should be easily done on a Vanagon not equipped with an A/C Condenser up front. If you have an A/C Condenser you may have to loosen the lower radiator mounts in order to have enough clearance to get the **Aluminum Plate Cooler** into place.

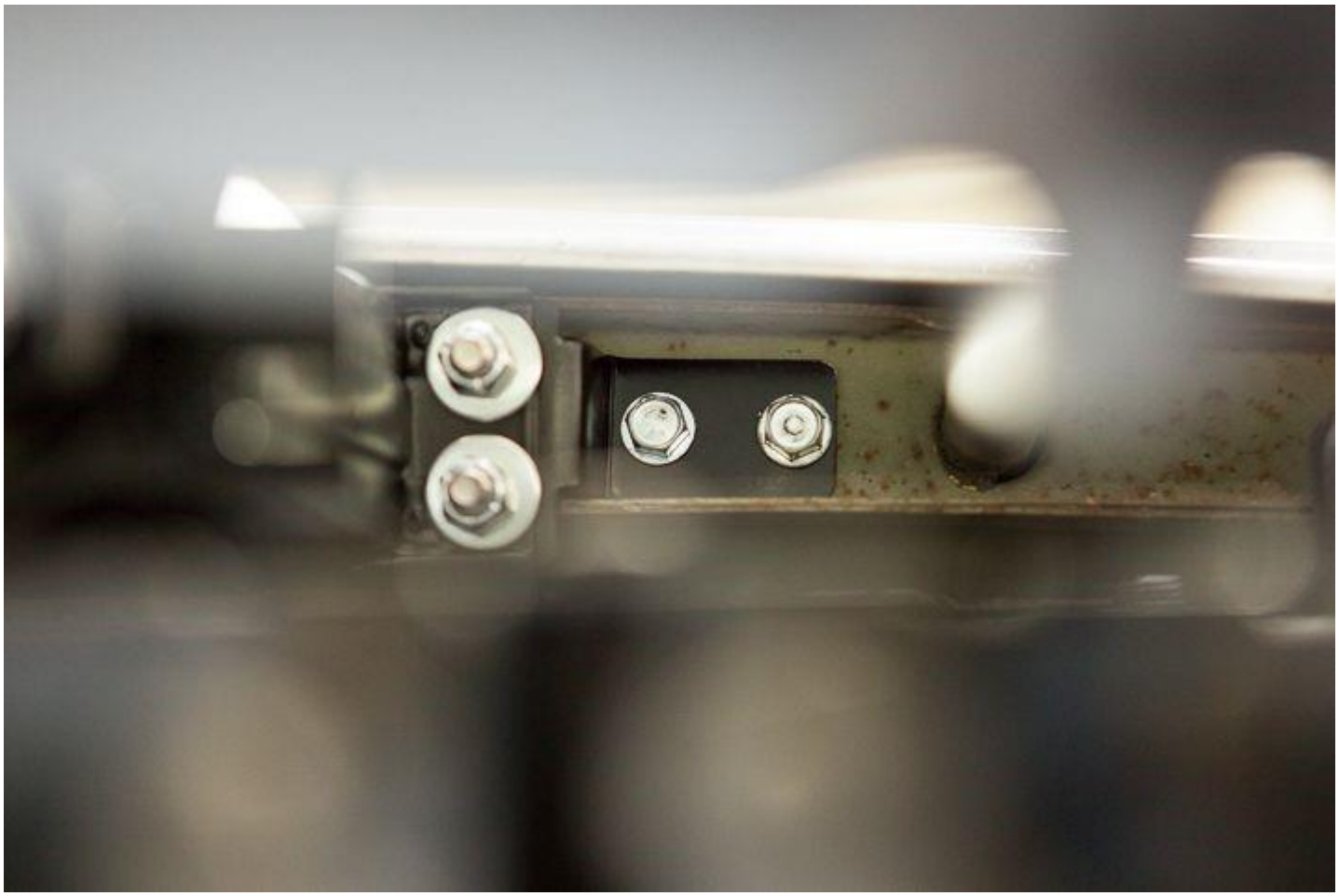


If you can't place the **Aluminum Plate Cooler** into the grill opening due to having an A/C Condenser you'll need to temporarily adjust the radiator mounts in order to get the extra clearance for the **Aluminum Plate Cooler.**

Use a **13mm Socket & Ratchet** to completely remove the two upper bolts on the radiator mounting plates. Only loosen the two lower bolts. Keeping the lower bolts still threaded into the van will support the weight of the radiator and A/C condenser while still allowing the assembly to rock backwards towards the rear of the van about half an inch or so. This should be plenty of extra clearance for you to slide the **Aluminum Plate Cooler** into place.

You can leave the radiator mount loosened until the **Aluminum Plate Cooler** is fully plumbed up.

Center the **Aluminum Plate Cooler** into the grill opening using the center mark that you made earlier. Use a **3/8“ Socket** and a **Drill** in order to drive four **Self Tapping Screws** through the cooler mounting brackets.



There are two **Self Tapping Screws** on each of the two **Aluminum Plate Cooler** mounting brackets. Final mounting should look like this.

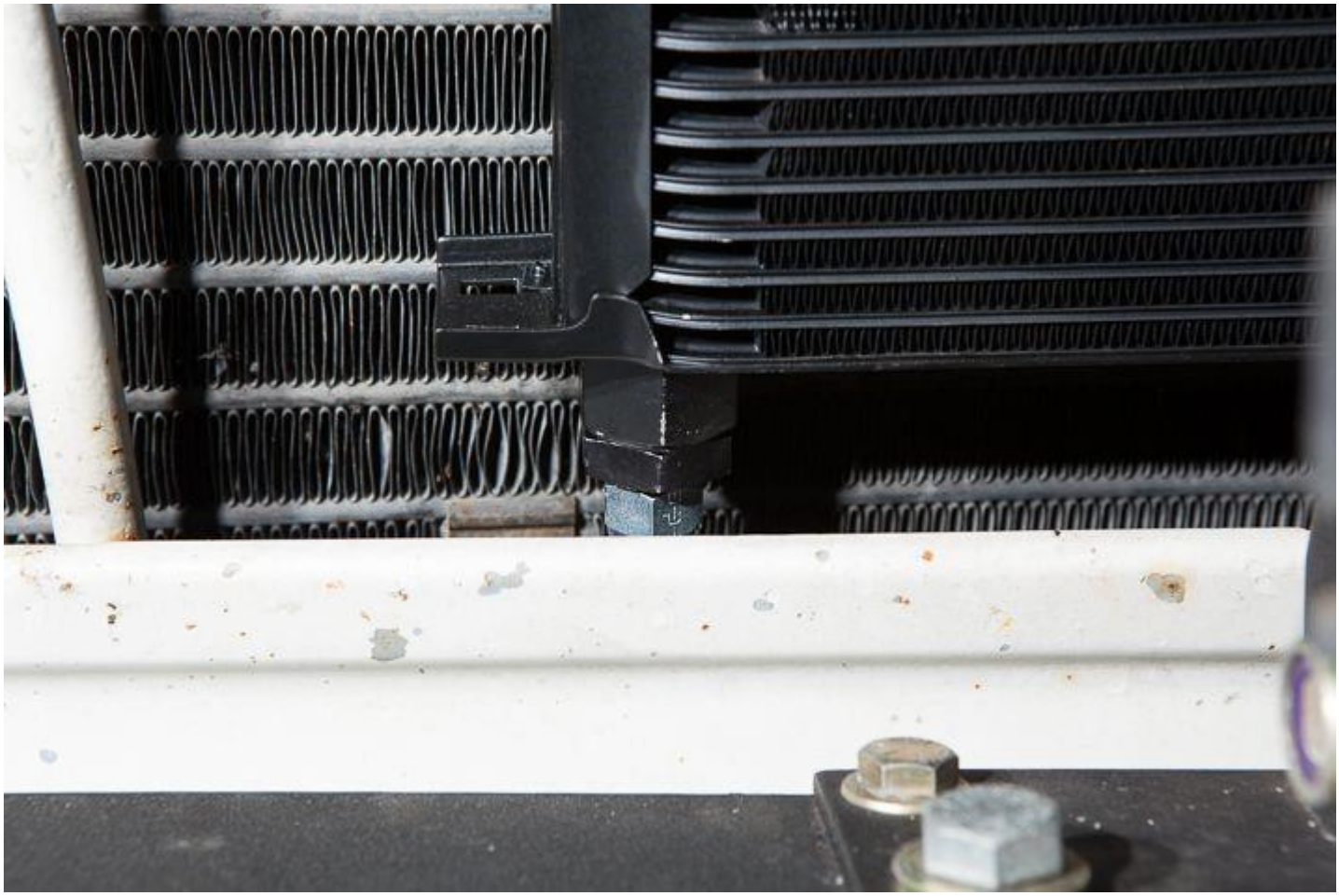
Hand thread the two **Flare Adapter Fittings** into the main ports of the **Aluminum Plate Cooler.**

Place a **1 1/16” Wrench** onto the hex port and use a **1” Wrench** to tighten the **Flare Adapter Fitting** into the **Aluminum Plate Cooler**. Do this for both **Flare Adapter Fittings.**

Installing Cooler Hoses (Plate Cooler to Thermostat)

Hand thread the 45° elbow of the **114" Hose (w/ one 45° & straight fitting)** to the **Aluminum Plate Cooler** port on the **Passenger Side** of the van. Hand thread the 90° elbow of the **120" Hose (w/ one 90° & straight fitting)** to the **Aluminum Plate Cooler** port on the **Driver Side** of the van.

Use a **13mm Socket & Ratchet** to reinstall the two upper bolts on the radiator mounting plates and tighten the two lower bolts while making sure the hoses are not pinched.



Once radiator support is securely fastened, use a **1” Wrench** and a **17 mm Wrench** in order to tighten down the hose fittings onto the **Aluminum Plate Cooler** port.

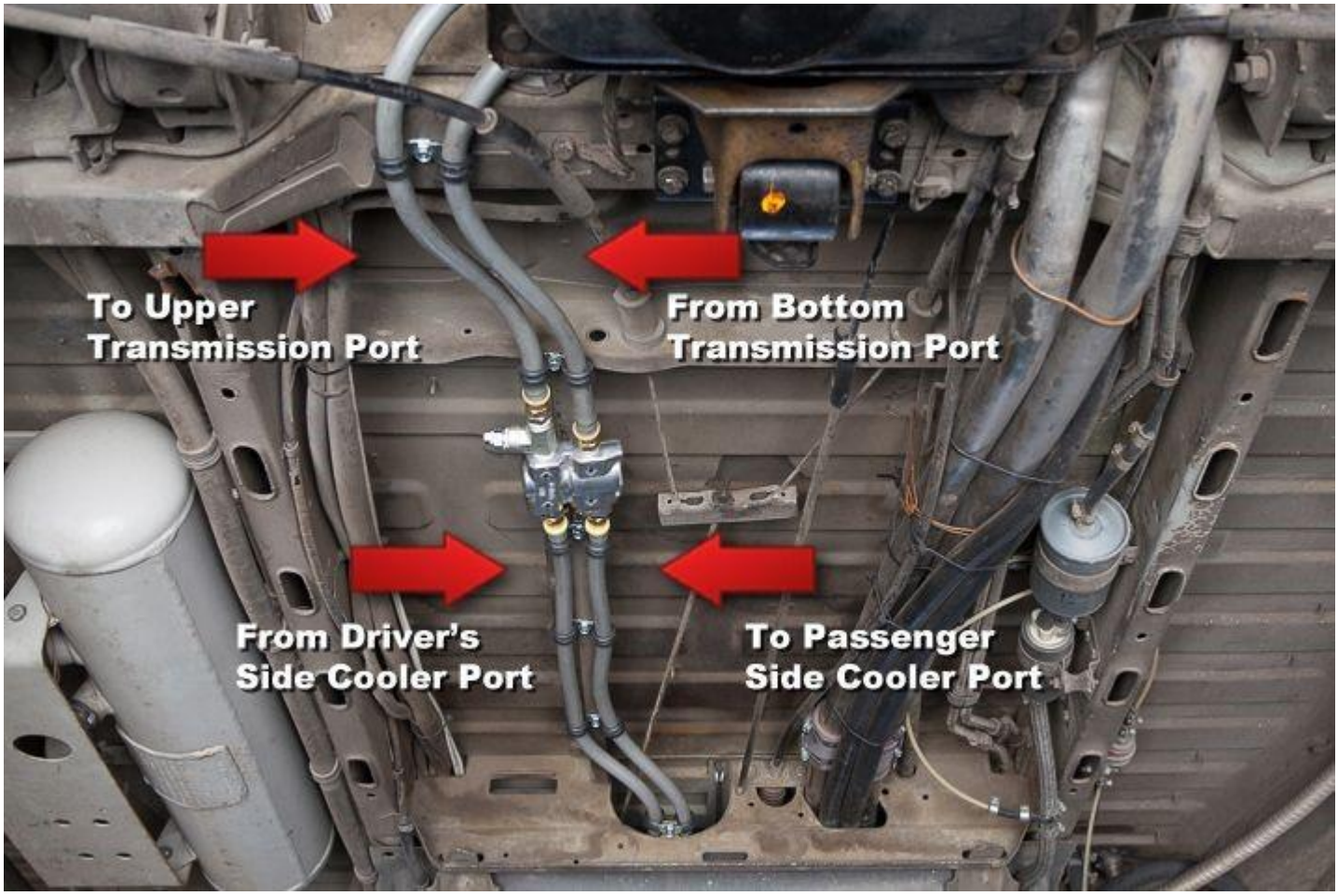
Place both pieces of **3” Long Trim Lok** onto the Passenger Side radiator mount. The foam padding of the **Trim Lok** will help protect the hoses from being worn and/or cut but the metal bracket.

Clip the **Zip-Tie** to the radiator mounting bracket.

Tighten the **Zip-Tie** around the two hoses coming from the **Aluminum Plate Cooler**, trim the excess off. This will hold the hoses securely to the radiator mounting bracket

Route the two hoses from the **Aluminum Plate Cooler** along the inside of the **Passenger Side** frame rail.
Locate a pair of **Rubber Lined Hose Clamps** onto the hoses in two locations as shown. Use a **3/8“ Socket** and a **Drill** in order to drive a **Self Tapping Screw** into the frame rail securing the hoses to the frame.

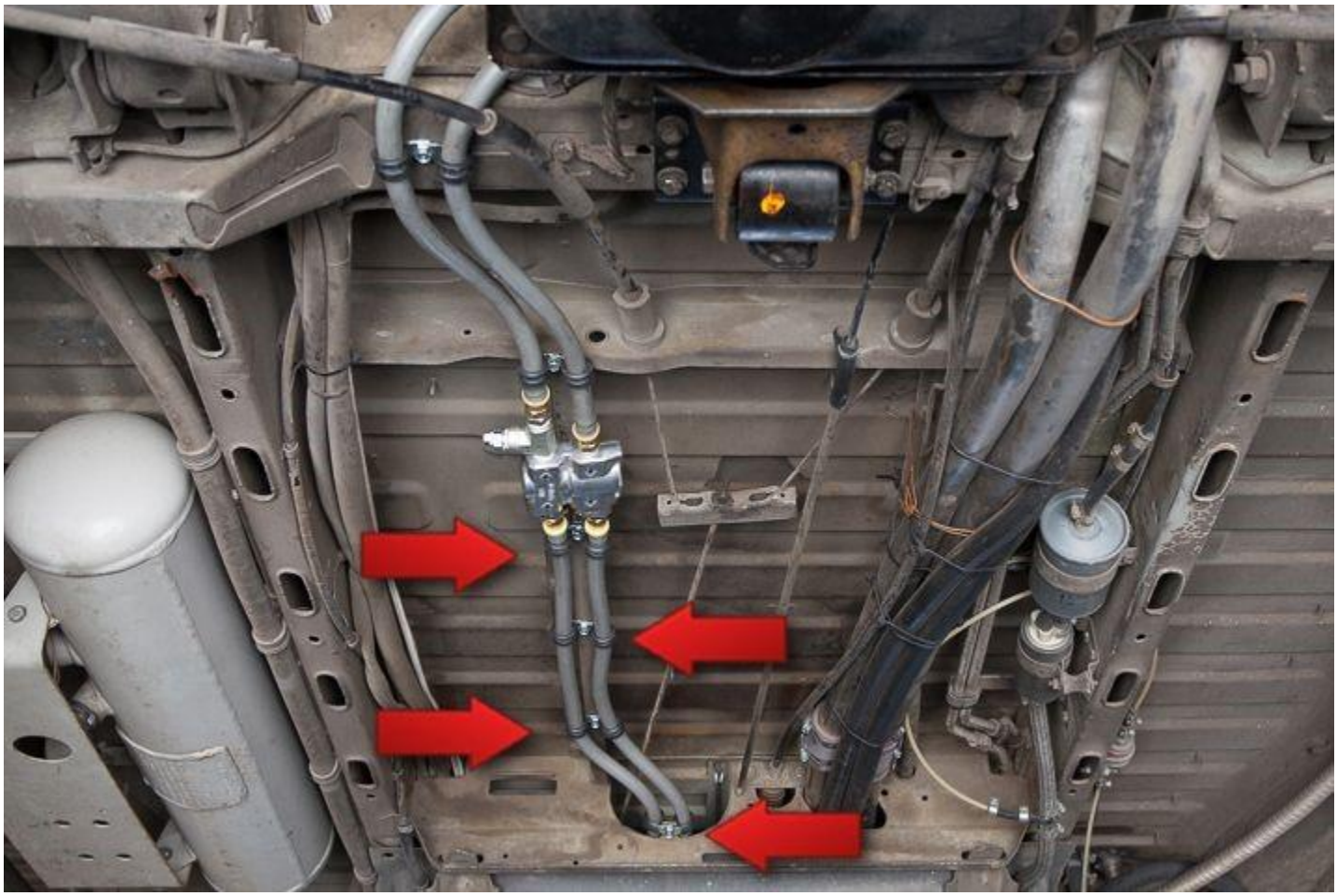
Continue to route the two hoses through the center tunnel above the fuel tank. Feed the hoses past the fuel tank and out the other end.



NOTE: The "T" at the Upper Transmission Port Inlet is no longer necessary in this kit.

Feed the two hoses from the front of the van through the center tunnel above the fuel tank. Attach the hose ends to the **Fluid Controlled Thermostat** making sure you have the correct hose connected to the correct port on the **Fluid Controlled Thermostat**.

Once you've correctly plumbed up the hoses to the **Fluid Controlled Thermostat** use a **18mm & 19mm Wrench** in order to tighten the fittings.



NOTE: The "T" at the Upper Transmission Port Inlet is no longer necessary in this kit.

Locate a pair of **Rubber Lined Hose Clamps** onto the hoses in four locations as shown. Use a **3/8"** **Socket** and a **Drill** in order to drive a **Self Tapping Screw** into the frame securing the hoses to the frame.

Fluid Level and Leak Check

Now that we've added an additional length of hoses and an **Aluminum Plate Cooler (**which also increases the overall fluid capacity) we need to replenish the automatic transmission fluid level.

Remove the deck lid of your engine compartment exposing the yellow automatic transmission dipstick.

Remove the dipstick and place your **Funnel** into the dipstick tube. Add a half quart of **Automatic Transmission Fluid** into the transmission. Remove the **Funnel** and reinsert the dipstick into the dipstick tube.

Put the decklid back on. Start the van, give it a minute in order to fill all of the hoses and **Aluminum Plate Cooler** with fluid. Inspect every hose connection you've made to make sure none are leaking. If none are leaking then take the van for a test drive for about 5 minutes or so. In order to properly check the transmission fluid level, it needs to be done while it's warm.

Remove the deck lid of your engine compartment and pull the dipstick tube. Wipe the fluid off with a rag, reinsert the tube into the dipstick tube and remove it again in order to check the fluid level. Continue to add fluid until your fluid level is between the two round marks on the dipstick.

In the instance of this install we added an additional half quart of **Automatic Transmission Fluid** making our total right at 1 full quart of **Automatic Transmission Fluid**. The amount you need to add may vary.

Front Lower Grill Re-Installation

Once you're confident all of your fitting connections aren't leaking and your transmission fluid level is correct you can now reinstall your front lower grill. One thing that is **VERY** important is to **DO NOT** use the original long screw that mounted your front lower grill. This screw is too long and if you use it, it will puncture the **Aluminum Plate Cooler** causing your entire installation to fail.

We've included a new, shorter **1/2" Long Screw** that you will need to use instead. This shorter screw will allow your grill to be fastened to the van body without damaging the **Aluminum Plate Cooler**.
The lower grill is now installed. You can now reinstall your spare tire mount or front skid plate. This concludes the installation of the Rocky Mountain Westy **Automatic Transmission Cooler Kit**.

Installation Complete

Now your Rocky Mountain Westy **Automatic Transmission Cooler Kit** installation is complete. You can rest easy that you'll never have worry about your stock ATF Oil Cooler leaking and cross contaminating both your cooling system and your transmission.

Your transmission fluid temps will be considerably lower now that it's cooled with ambient air passing through the front mounted **Aluminum Plate Cooler** as opposed to being cooled with coolant that's already upwards of 200° F.