

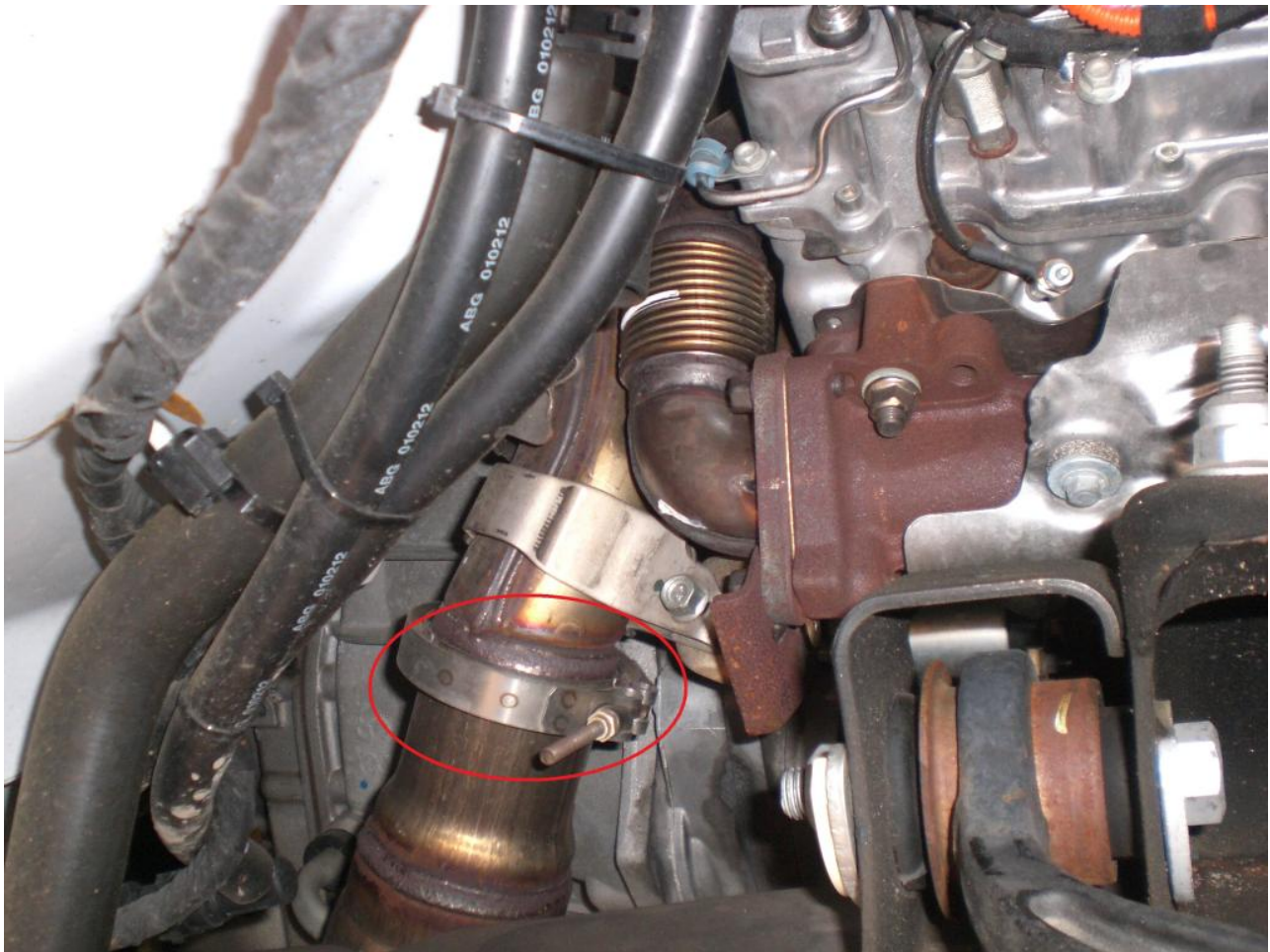
LML twin turbo install kit for 2011-2015 Duramax's

Step 1: Remove the inner fender wells. Turning the wheels to the left will allow more room for the install.



Step 2: Disconnect exhaust somewhere near the middle. This will allow you to slide the front pipe back enough for the down pipe to come out. If you are installing a new exhaust system, remove it completely.

Step 3: To remove the front pipe, disconnect the V band clamp connecting it to the down pipe. In 2015.5 they changed to a 3 bolt flange, this will need to be disconnected.



Step 4: working from the engine bay. Remove the plastic "6.6" intake resonator. 3 bolts hold this in place.



Step 5: Remove the air intake elbow with flat head screw driver.



Step 6: Remove turbo heat shield. 3 bolts hold this piece on. Reinstallation is optional.



Step 7: Remove the silver "S pipe". 9 bolts hold this in place. Disconnect all sensors/plugs. Twist lock ring and pull out the "s pipe".





Step 8: Remove the EGR hot pipe. 4 bolts hold this on.



Step 9: Remove turbo inlet pipe and PCV connection on back, then discard. The Y-bridge will also need to be removed and discarded.





Step 10: Remove the down pipe. First, loosen the v-band clamp on the turbo side. The down pipe may still feel tight. Take a flat head and pry around the clamp. Remove the 3 sensors on the down pipe.

Step 11: Working from the wheel well, remove the down pipe bolt from the tab on the up pipe. Remove down pipe.





Step 12: Remove up pipe riser heat shield. 2 bolts hold this on.

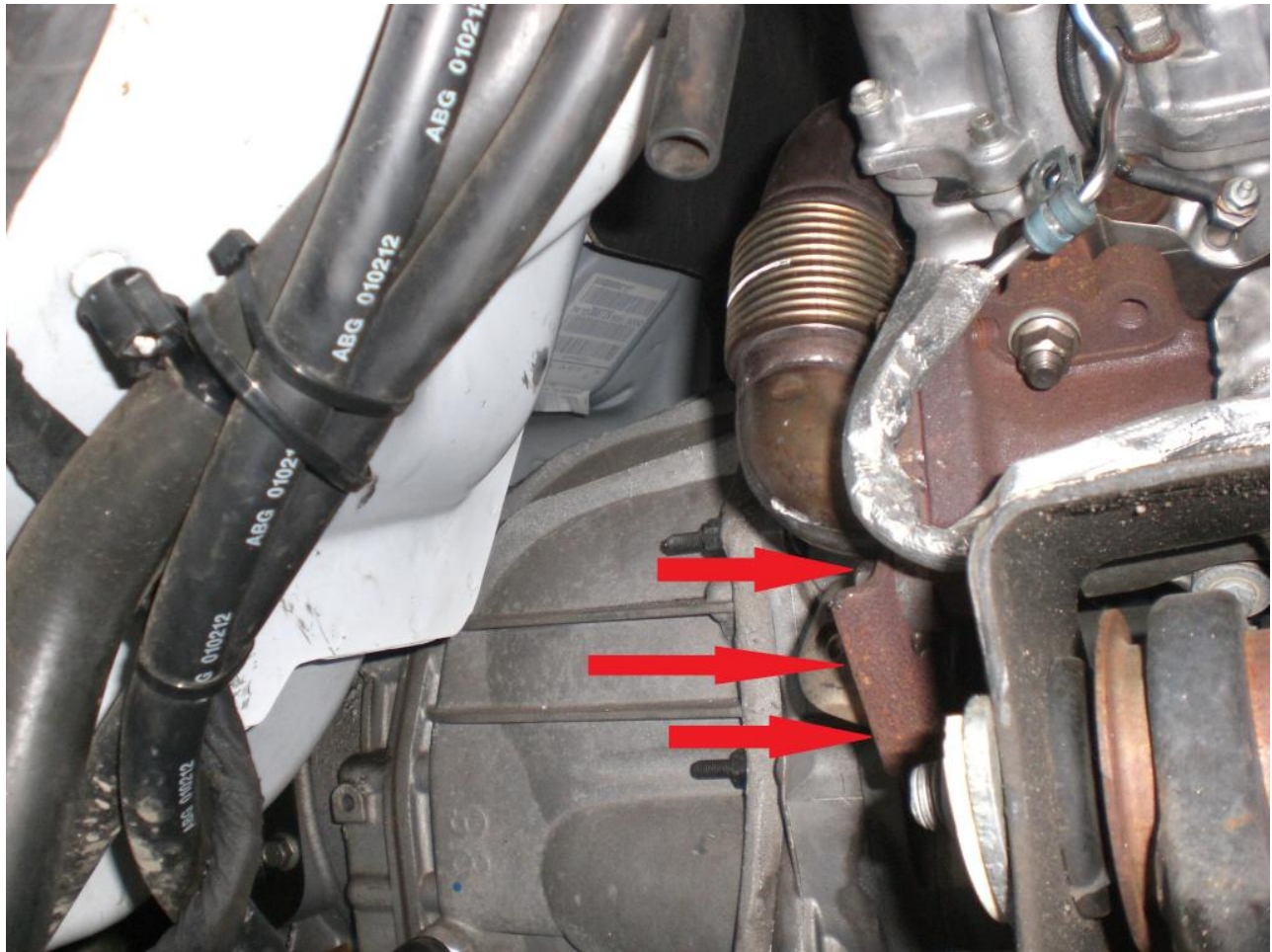


Step 13: Removing the Up Pipe. This is the hardest part of the delete, so make sure you have a good breaker bar and impact sockets. You will need a 12mm 12 point socket to remove the 9 bolts that hold the factory up pipe in place.

I've highlighted the 3 areas where the bolts are. Each section has 3 bolts holding the up pipe in place. Imagine the down pipe and riser heat shield removed. The bolts are behind those...



Step 14: Start by removing the 3 bolts on the intake manifold. Section 1. Keep gasket.



Step 15: Next, remove the 3 bolts that connect the riser to the EGR. These can be accessed from underneath. Section 2. The gasket and bolts will not be re used.

Step 16: The last 3 are the hardest to remove (section 3). You won't be able to see much so most of it will be by feel. You'll notice a metal coolant line in front of one of the bolts...the hose will have to be loosened and pushed aside to access the bolt. Loosen the one bolt and push to the side.



Step 17: Remove all 3 bolts from section 3. Unplug the sensor from the riser section. Remove the up pipe.



Step 18: If you bought a new up pipe or are using a lb7 pipe then skip this step. Cut the riser section off the up pipe. Using a piece of metal weld the hole shut.



Step 19: Disconnect coolant hoses from firewall



Step 20: With all of the hoses and sensors unplugged you can now take out the egr cooler. It may be easier to remove in 2 sections. (7 bolts hold the cooler in place). keep bolts and gaskets.



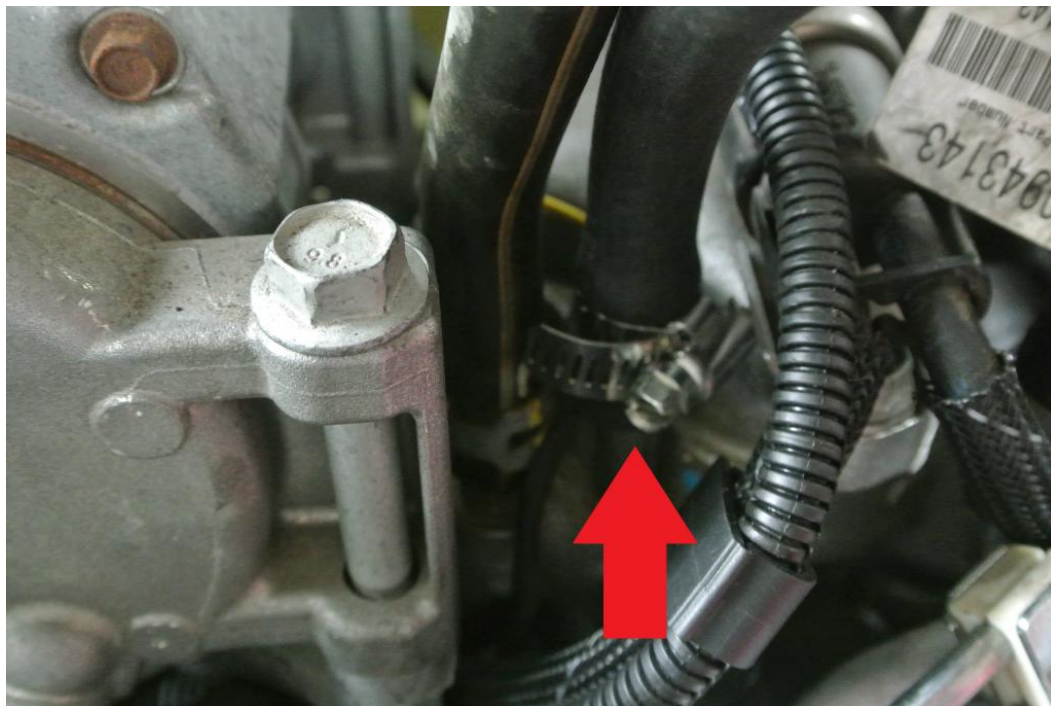
Step 21: Now you are finally ready to start making some modifications before installing the twin kit!

Step 22: Use the factory "L" shaped hose to connect the firewall fitting to the metal pipe behind the turbo. As you'll notice, there is one end that is lightly larger. This end will go on the metal tube connection. Tighten with hose clamps over the metal tube and reuse a factory constant tension clamp to go over the plastic fitting. There is a tab welded on the hot pipe to secure the coolant pipe tab to.

The 5/8" hose coming out of the passenger side location will need to be cut at the steel hard line crimp and extended to desired length AFTER the twin kit has been installed. Use the supplied 5/8" coolant hose and the 2 supplied 5/8" pushloc couplers.

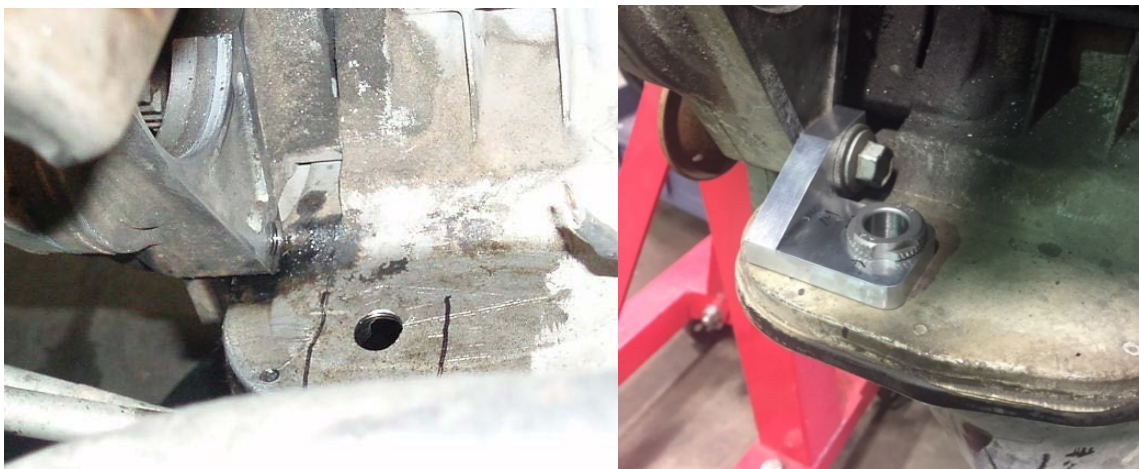


This nipple that comes off of the lower thermostat housing will need to be capped with the supplied coolant hose which has a billet plug in it.



You'll need to cut the 90° piece off your existing 4" front pipe, you can do this now if there is adjustment or wait till the new downpipe is in for mock up. Do make sure that your front pipe can slide in and out of the rest of your exhaust if you decide to cut now, it's nice for adjustment and this way you won't have to mock up the new downpipe before you cut.

Next comes the most intimidating part, drilling and tapping for the oil return in the upper oil pan. You'll want to mock up and mark where you'll want to drill, the 45° fitting will go in there after its drilled and tapped but make sure to have it out to get an idea of where it should be placed. Ideally you'll want it as close to the starter as possible without touching it of course, remember that the -10 adapter to the hose will also go over the threads. Also make sure to leave enough room to be able to get a wrench on the lower starter bolt as the fitting has to be installed before the starter. Make sure to stay within the indent on the aluminum to prevent drilling into the oil pan's sealing area. If unsure where to drill the hole, use our oil drain JIG tool which can be found on our website.



Next you'll remove the starter, be very careful when you take the nut off the plastic solenoid, it is fairly fragile and can break.

It may be a good idea to add a couple quarts of oil to the case before you begin drilling, the oil will push all of the shavings out so with the added oil it'll give you more time for peace of mind. A right angle drill is needed to get in the tight space. You'll need a 9/16 drill bit and 3/8NPT tap. Now its time to drill, make sure you keep everything square, as soon as the hole is drilled you'll want to begin tapping the hole as the oil is running out so have the tap ready. Once you're done you can drain the rest of the oil.

Next we'll install the 45* fitting/adaptor in the new hole, you'll want to use some black permatex on the threads to ensure a good seal.



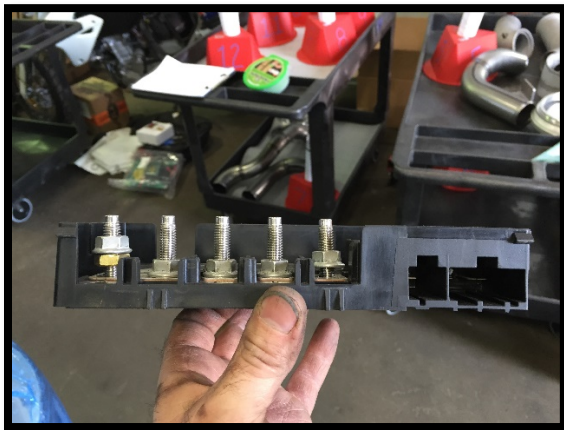
Reinstall starter

The battery cable modifications listed below are primarily for 2015 and new Duramax's. If you have a 2011-2014 then the only cable modification needed will be extending the cable going across the firewall cowl with the no longer used intake heater wire. It can be bolted together and use heat shrink wrap to insulate the connection. The wire will tuck nicely out of the way behind the new coolant expansion tank.



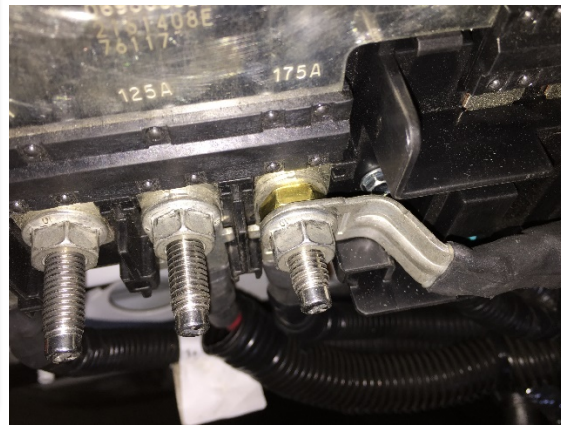
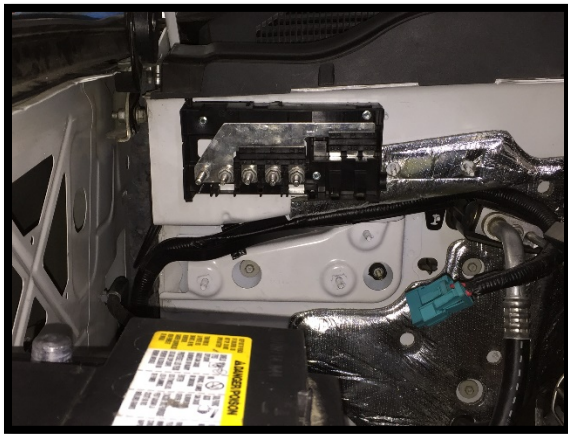
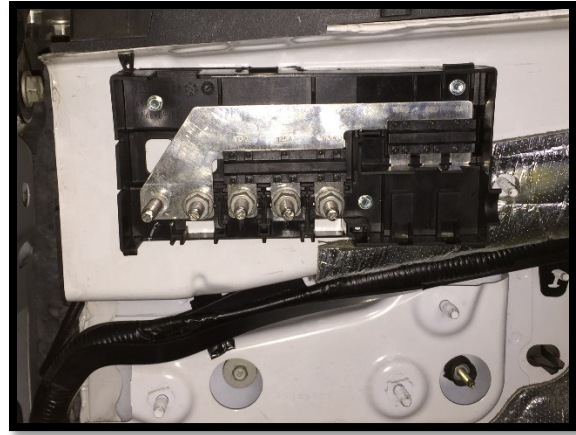
The box where all the battery connections are made will need to be cut down. Above is what it looks like before you cut.

Trim the battery cable terminal box as pictured in the next couple pages so that it will fit flush on the firewall. Snips will help you cut the plastic but a sharp box knife that has been heated with a torch will work as well. Smooth up with a disc sander or grinding disc as desired.

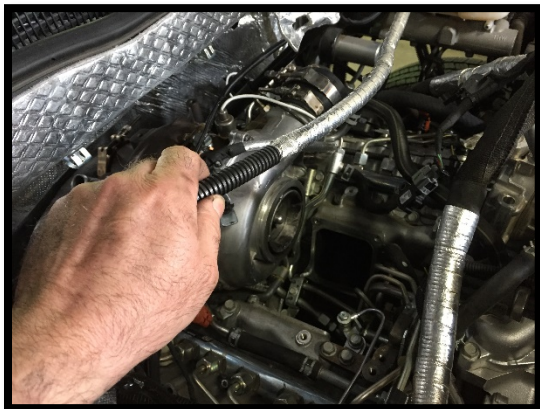


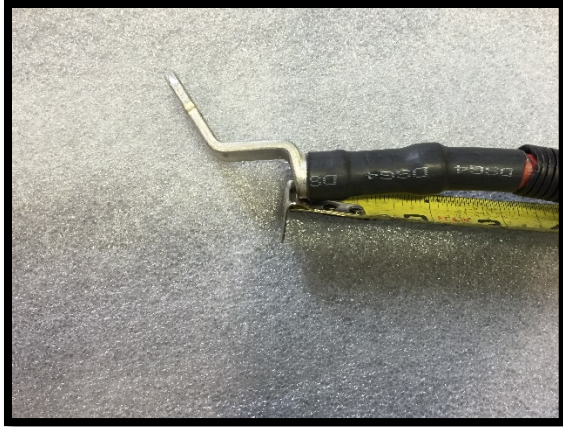


Cut the corner of the firewall heat shield off as shown above to allow for the new placement of the battery cable junction.



Approximate location of relocated junction box. Use included double sided adhesive and the 3 self-tapping screw with placement as shown above to mount the plastic case. Straighten both lugs on the starter cable and use it in place to get exact location. The starter cable will be the only cable that will end up too short if the box isn't in the correct location. All cables going into the junction box need to have the lugs straightened. From the factory the lugs have roughly a 45* bend in them that needs to be straightened out so that they don't contact the firewall.





Pictured above are the last 2 feet of the cable coming from the drivers side battery to the passenger side battery. After the 2ft are cut off, you will connect the cable coming from the drivers side battery to the new include terminal port. Use the included 3ft of cable to go from the 2nd port on the new positive terminal, and that will extend to the junction that has now been placed on the firewall.





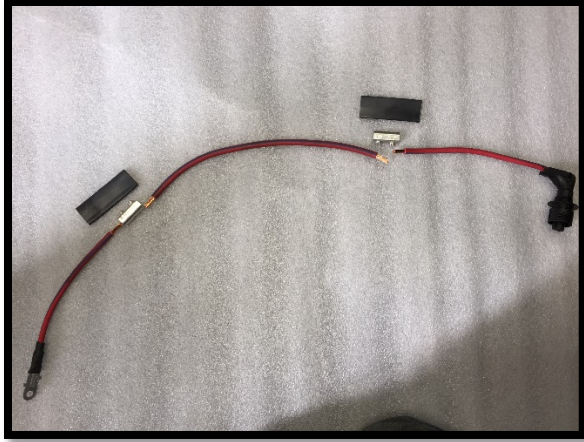
Final install pictures are above with the cables zip tied out of the way of the downpipe and the cover trimmed and clipped in place.

Trim the factory battery on both sides as pictured below to allow fitment in the new battery tray as pictured below.

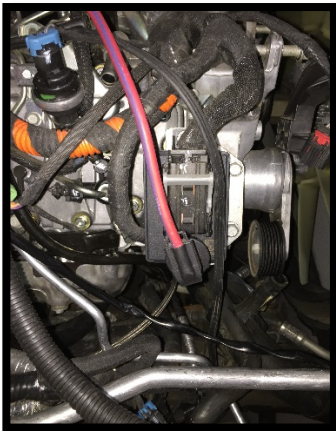
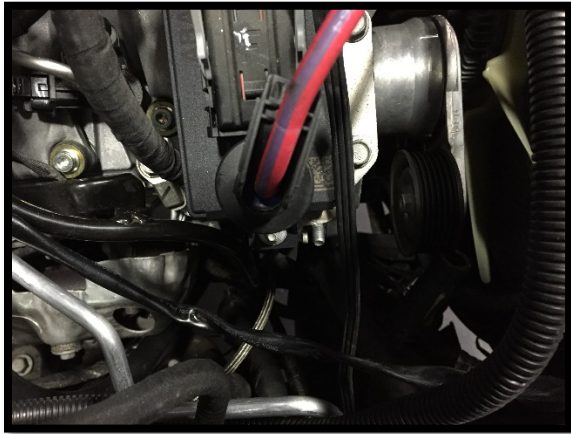


Below is the recommended location if you choose to keep the battery under the hood, the other option is to put it on the passenger side frame rail but you will need more battery cable to do so. The battery tray/battery does fit under the hood with the intake and air filter clocked in the correct location.





Extend the glow plug positive cable as picture using the old intake heater wire and the included wire splices as pictured above.



Unplug the plug in for the glow plug as pictured and disassemble the female plug from the wire as pictured. Reassemble with wire aimed more towards the rear of the truck.

Use the included $\frac{3}{4}$ " spacer and an unused factory bolt to mount the dipstick tube to the valvecover. You may need to drill out the threads on the dipstick tube bracket to do this.



The cable being repositioned as pictured will need to go on the INSIDE of the downpipe and secured to both the frame and the firewall.



You can now slide the Y-bridge into place but make sure to put the new compressor housing/mouthpiece V-band clamp into place at the same time. This must be done before bolting the Y-bridge down. Also, you must tighten the bottom bolts for the Y-bridge before tightening the top, this helps suck the Y-bridge down and into place.



After the new mouthpiece and Y-bridge are installed, you will need to reposition the alternator wire like pictured below.



Now that we have everything out of the way we can begin the install, first take the hot pipe that goes from the back side of the factory turbo to the T-6 mounting flange for the new S400 turbo. You'll need to snake it from the left side of the turbo to get it back there. Use the factory v-band clamp in this location, you'll want to put it on there somewhat snug for now but the pipe will need to have some movement for now until its time to tighten everything.

Now we can install the main turbo mount, it'll bolt up to the grounding bolt holes on the block just forward of the engine mounts. There are four in the area and you'll use the bottom two for the mounting holes. Use the supplied (2) Allen drive studs and (2) machine lock nuts to install the mount to the block and tighten finger tight. One hole will not have a bolt in it; make sure it is clean beforehand which may require running a tap through it. **DO NOT TIGHTEN THEM YET.**



Now you can secure the top end of the mount to the T-6 flange on the hot pipe using 2 of the 6 supplied **10mm** Allen head bolts with nuts. Snug them up by hand but do not tighten yet.

Now tighten the v-band clamp at the exhaust outlet of the factory turbo.

Then move on to tightening the T-6 flange to mount bolts, after that you can tighten the bolts from the mount to the block.

Now you can put the 4" downpipe on, just put it in place for now as it is hard to get into place with the turbine housing already on. You'll want to snake it in through the fender well and use the supplied 5" v-band clamp to secure it to the exhaust housing when you put it in place in the next step. Use the supplied 4" stainless band clamp to connect to the existing exhaust. You will most likely need to loosen the bracket for the AC drier and push it towards the drivers side to get the clearance for the downpipe.



Now we'll mount the exhaust housing to the T-6 flange, remove the exhaust housing from the turbo after completely loosening the v-band clamp, be careful removing it and make sure the turbo is secured so that it can't roll and damage the turbine wheel once the housing is off. Bolt the housing up with the supplied T-6 metal gasket in between the flange surfaces and using the rest of the supplied allen head bolts and nuts, it will be easier if you send the bolts in through the bottom and thread the nuts on top. The AC lines may need to be "massaged" a bit before the turbine housing will bolt up, moving them towards the passenger side with long bends seems to be the best option.

Here you can see the placement of the AC lines and cables. We now include studs to thread into the T-6 flange and locking nuts to secure the housing. You can either install the turbine housing by itself or with the center section and compressor housing installed onto it, it is much easier to hold into place if it is just the turbine housing as pictured.



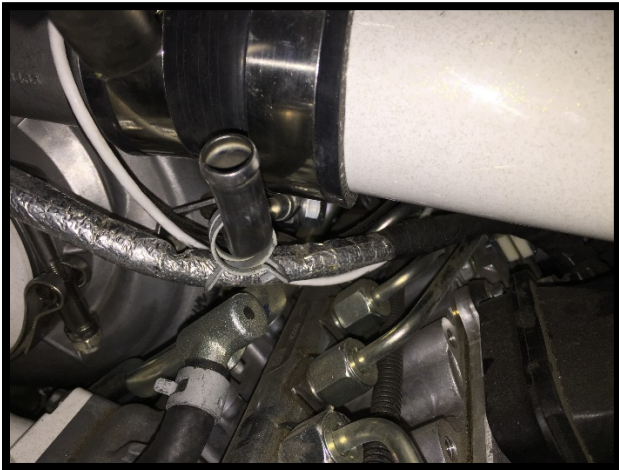
Now for the oil feed line, you'll need to remove the bolt to the right of the bracket mount on the block. It is the bolt with the green "+" in the upper right of the picture. If oil starts coming out that's a good thing, you've got the right bolt. Before you go any further you'll want to preload the turbo with oil, best way to do this is take a straw full of oil and drain it into the center cartridge from the top. You can tighten the O-ringed fitting into the block then tighten the line to it, run it up to the top of the turbo and install the fitting there as well.



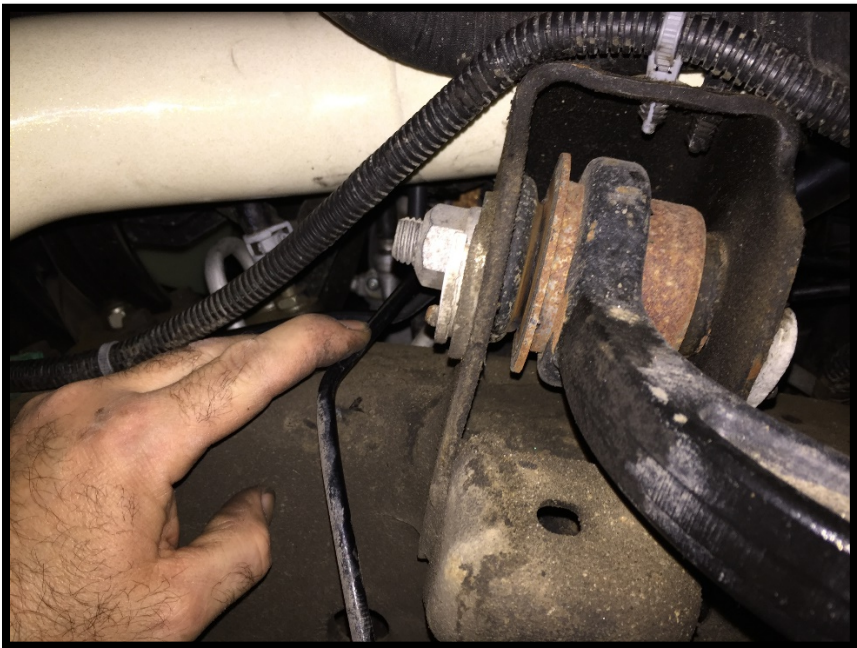
Although not mandatory if the turbo is prelubed with the straw technique, Borg Warner suggests to turn the truck over without starting till oil comes out the return. I'd also suggest this step as this way you'll know you have a supply of oil to the turbo before you start it.

The drain line is fairly self explanatory and can be installed using the included gasket and -10 line with the billet adapter for the bottom of the turbo.

Now we are going to install the drivers side IC pipe. You will need to slightly bend the coolant pipe to make room for the larger 3" boot/pipe/clamp as pictured. You will also need to cut the coolant hose where we have marked it with the blue paint marker.



The brake line on the frame on the drivers side may need to be bent slightly as shown to allow extra clearance for the drivers side intercooler pipe.



This is how we have clocked the new T-bolt clamps with best luck as far as fitment and ease to work on. It may be easier for you in different positions depending on the tools you are using.



Final product:

