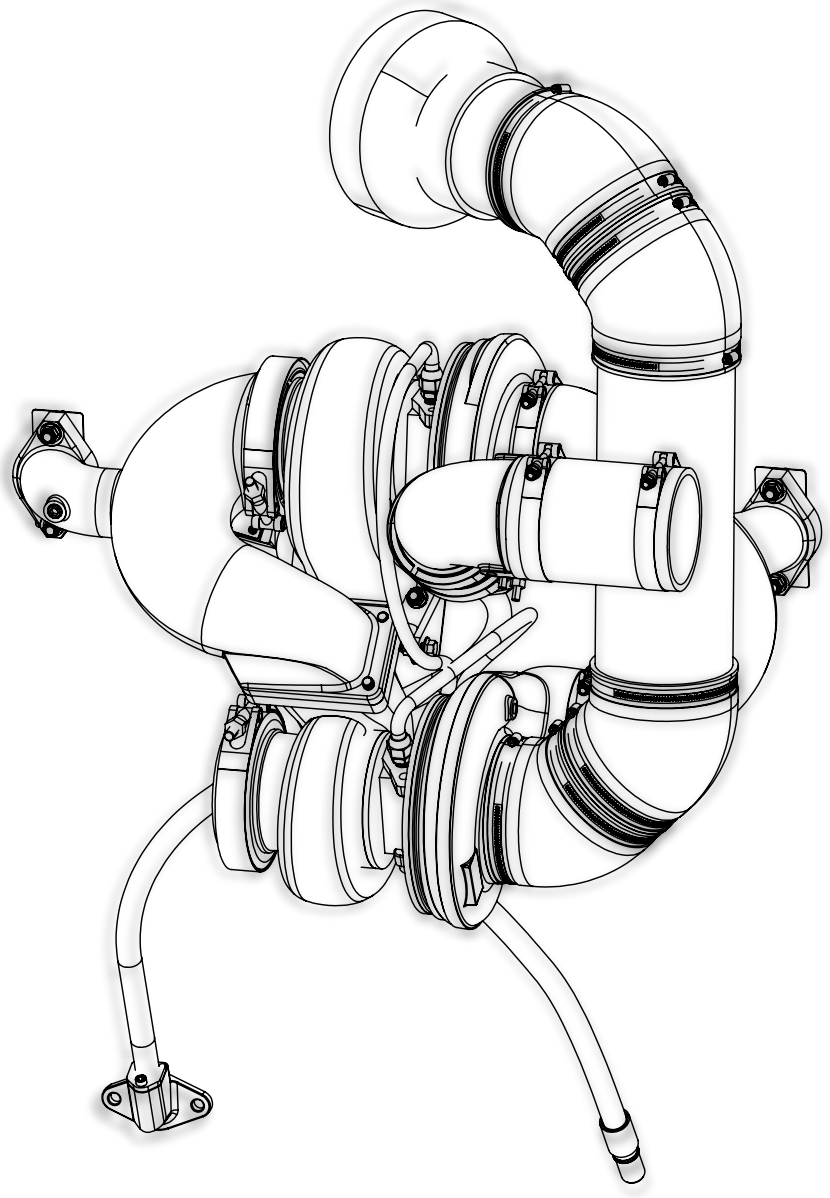
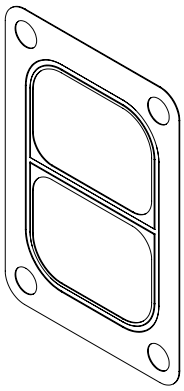
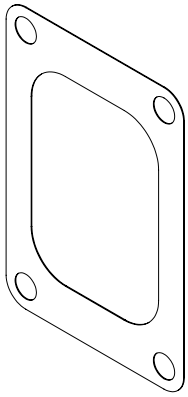
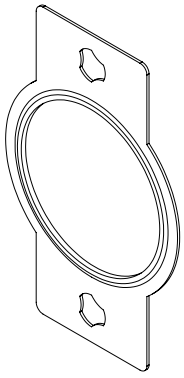
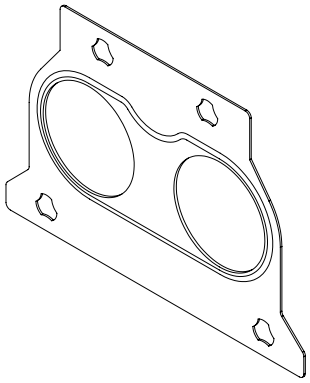
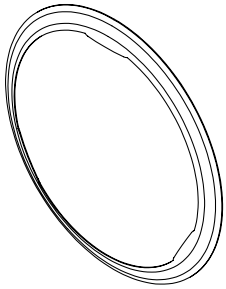
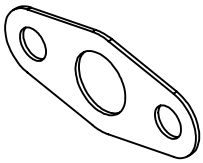
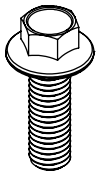
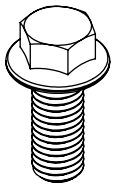
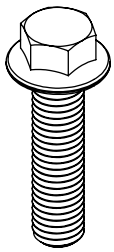
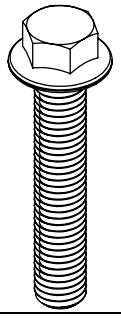
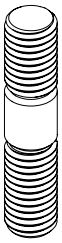
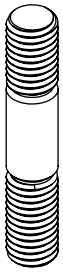
Cummins ISX / X15 Compound Turbo Installation Instructions



Included Gaskets and Hardware:

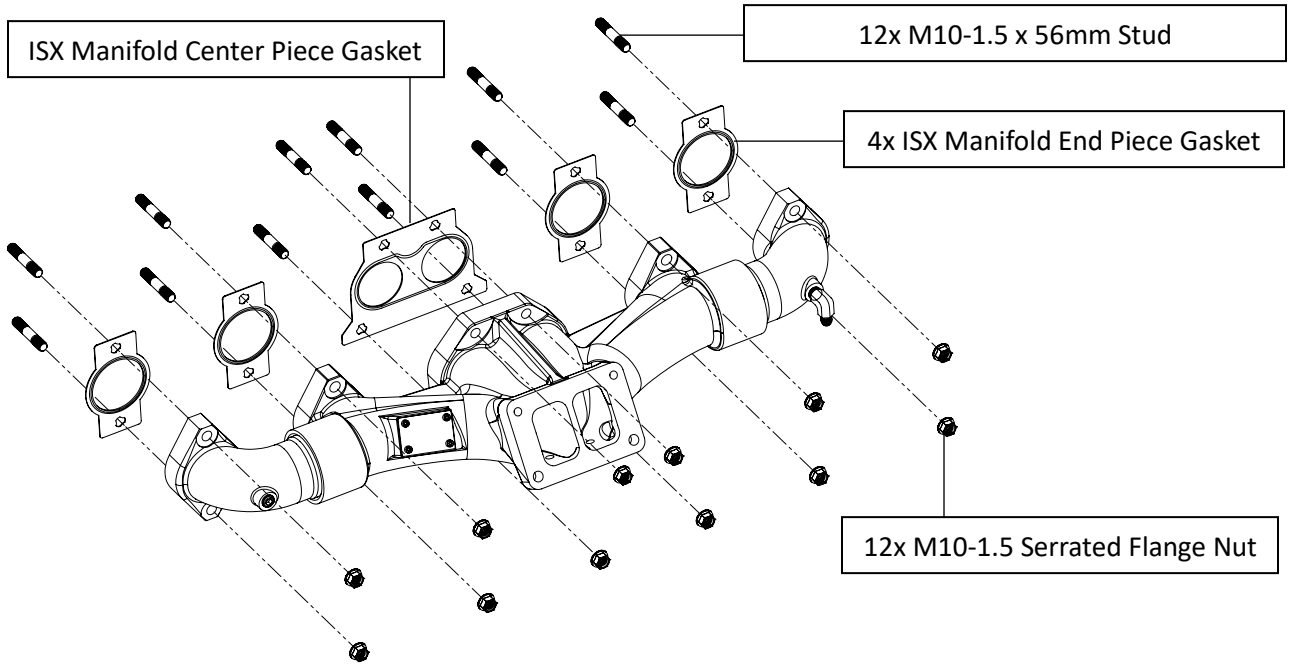
Name:	Part:	Quantity:
T6 Divided Gasket		1
T6 Non-Divided Gasket		1
ISX Manifold End Piece Gasket		4

ISX Manifold Center Piece Gasket		***1***
Hot Pipe Flange Gasket		***1***
Oil Drain Gasket		***2***
M8-1.25 x 25mm Flange Bolt		***4***
M10-1.5 x 25mm Serrated Flange Bolt		***2***
M10-1.5 x 40mm Serrated Flange Bolt		***4***

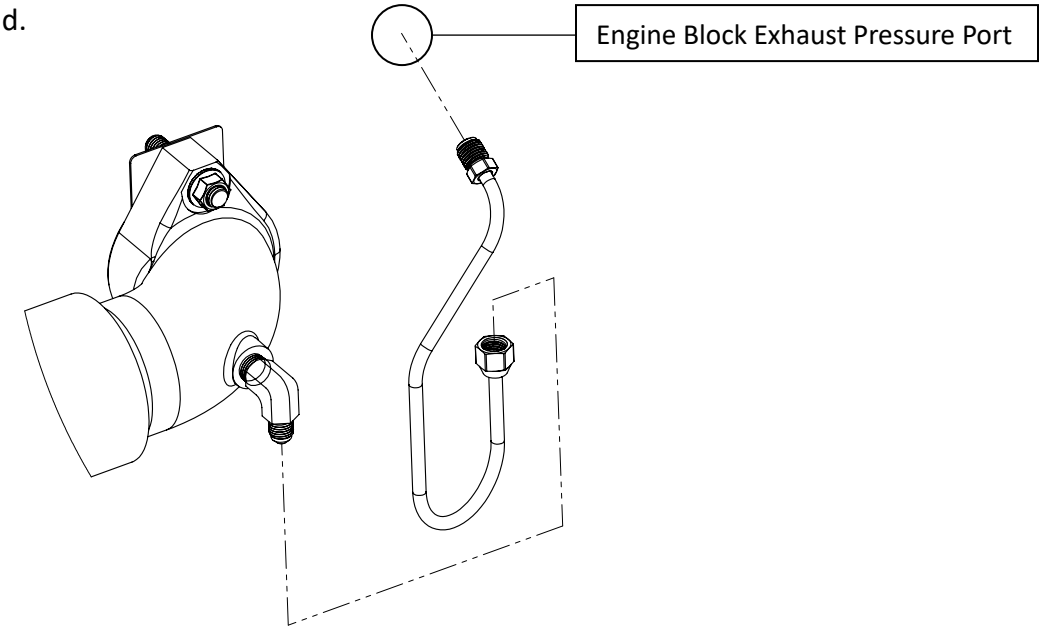
M10-1.5 x 55mm Serrated Flange Bolt		***2***
M10-1.5 x 48mm Stud		***2***
M10-1.5 x 56mm Stud		***12***
M10-1.5 Serrated Flange Nut		***18***

Installation Instructions:

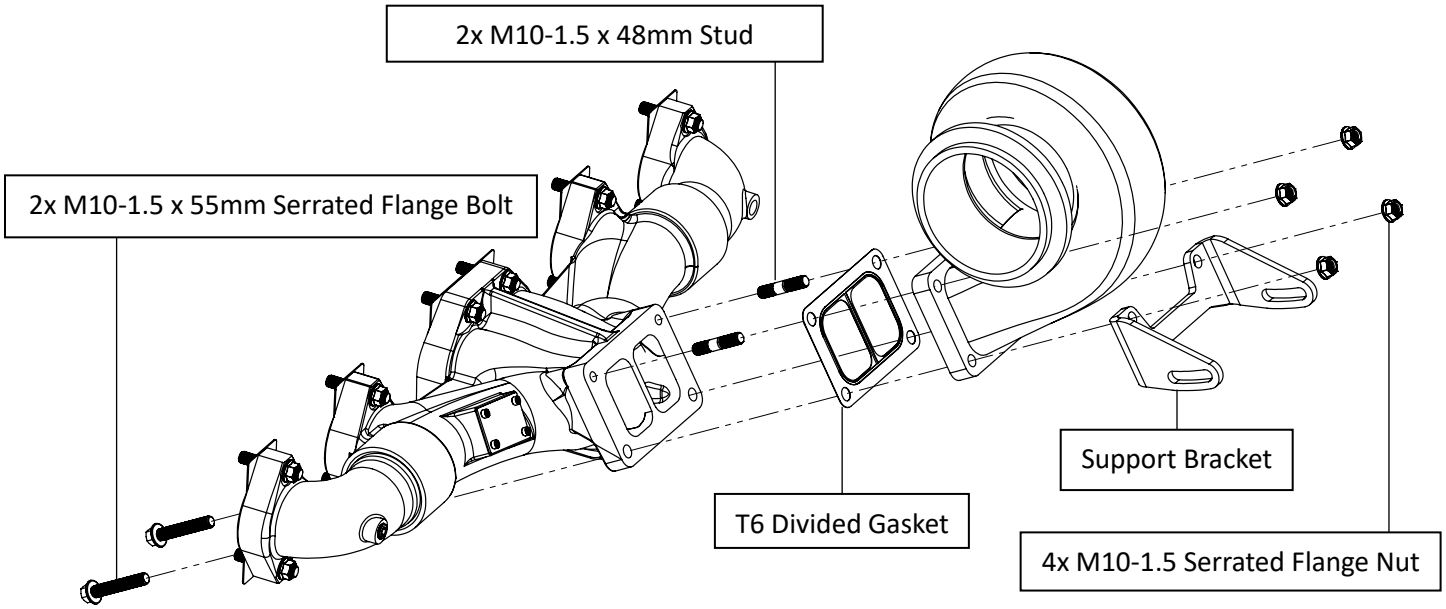
Step #1: Install the manifold onto the engine block. Pass the shorter threaded portion of the 12x M10-1.5 x 56mm studs through the gaskets and into the block, making sure the gaskets sit flat against the block before installing the manifold. Torque each nut to **50 ft-lbs.**



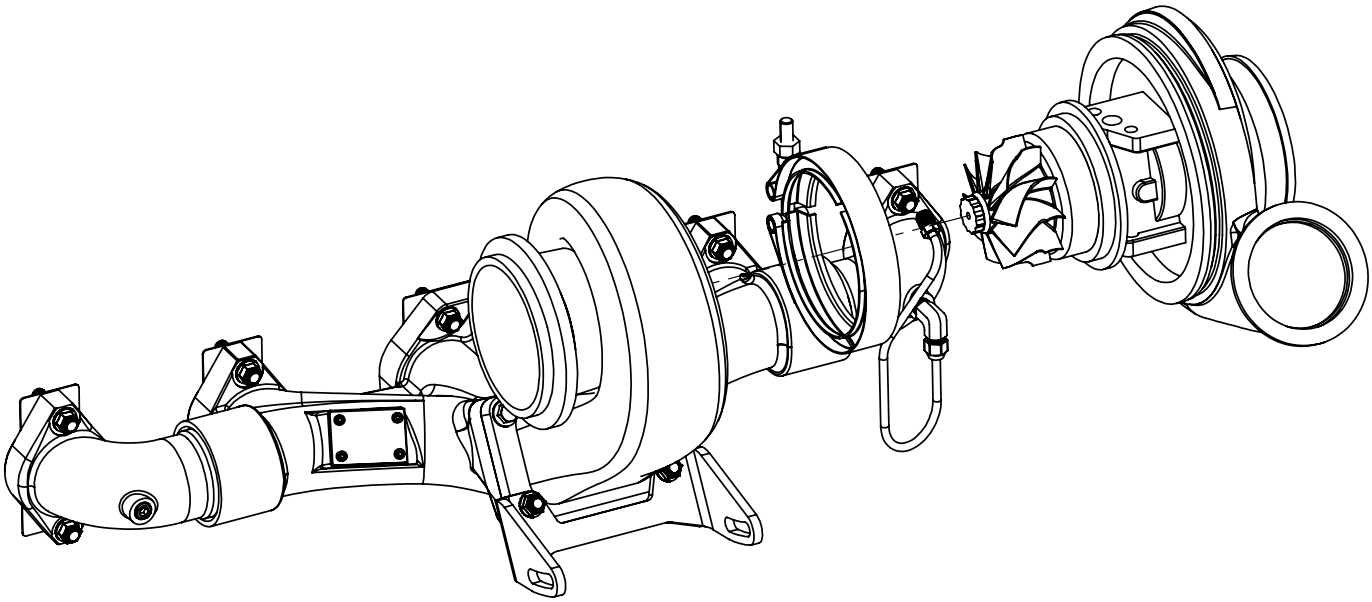
Step #2: Install the exhaust pressure reference tube between the exhaust manifold and exhaust pressure port located below the exhaust pressure sensor on the engine block. Install the tube to the block first and to the manifold second.



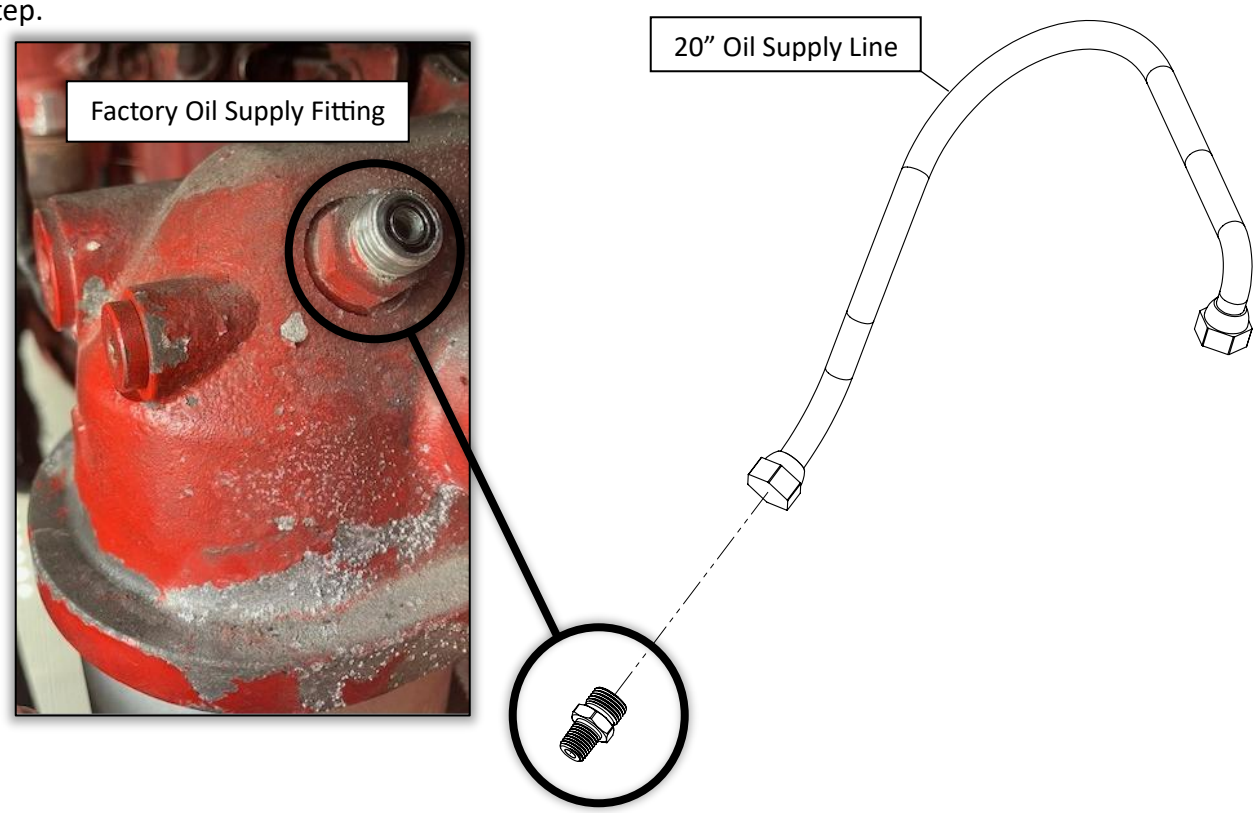
Step #3: Remove the turbine housing from the top turbo (the one with the straight V-band style compressor housing). Assemble the turbine housing and support bracket to the previously installed exhaust manifold. Fasten the shorter threaded portion of the M10-1.5 x 48mm stud into the manifold. Torque each fastener to **35 ft-lbs**.



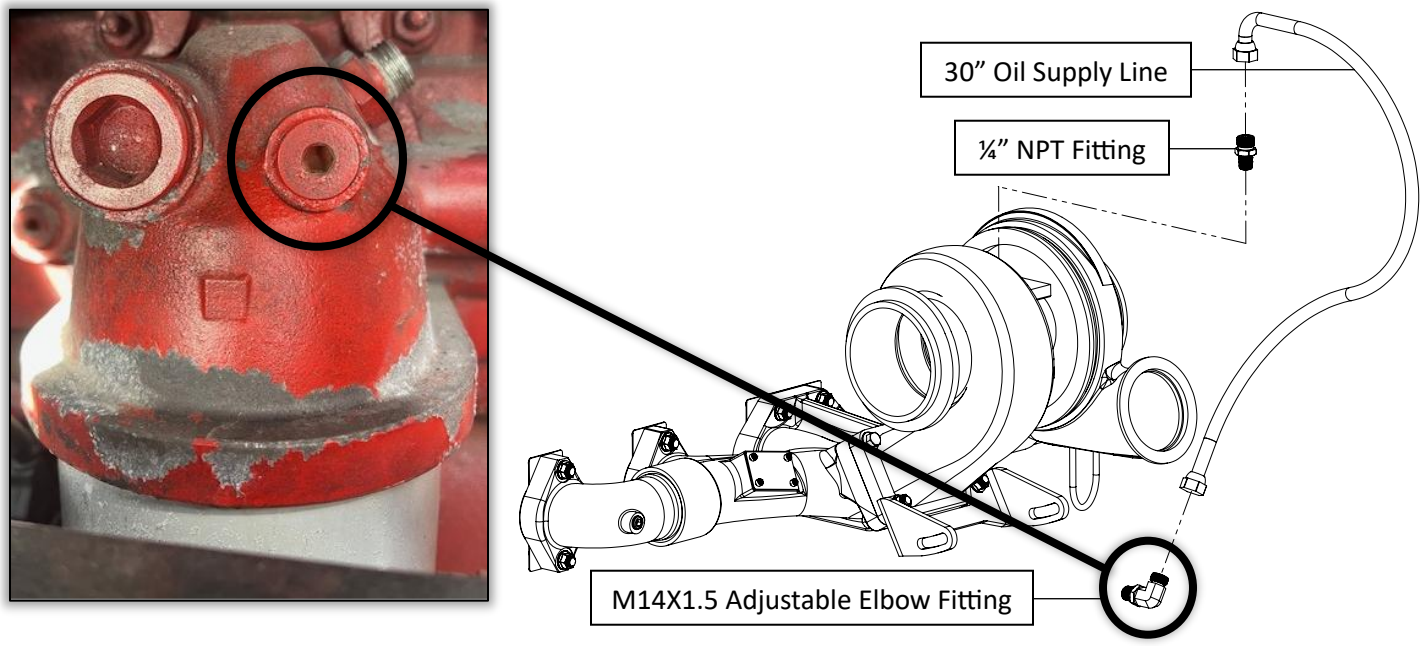
Step #4: Re-install the center section of the top turbo to the previously installed turbine housing. Clock the compressor housing towards the stock charge pipe. (**Note:** Orient the V-band clamp that holds the center section to the compressor housing such that you can easily access it once installed. The clocking of the compressor housing might need to be adjusted later.)



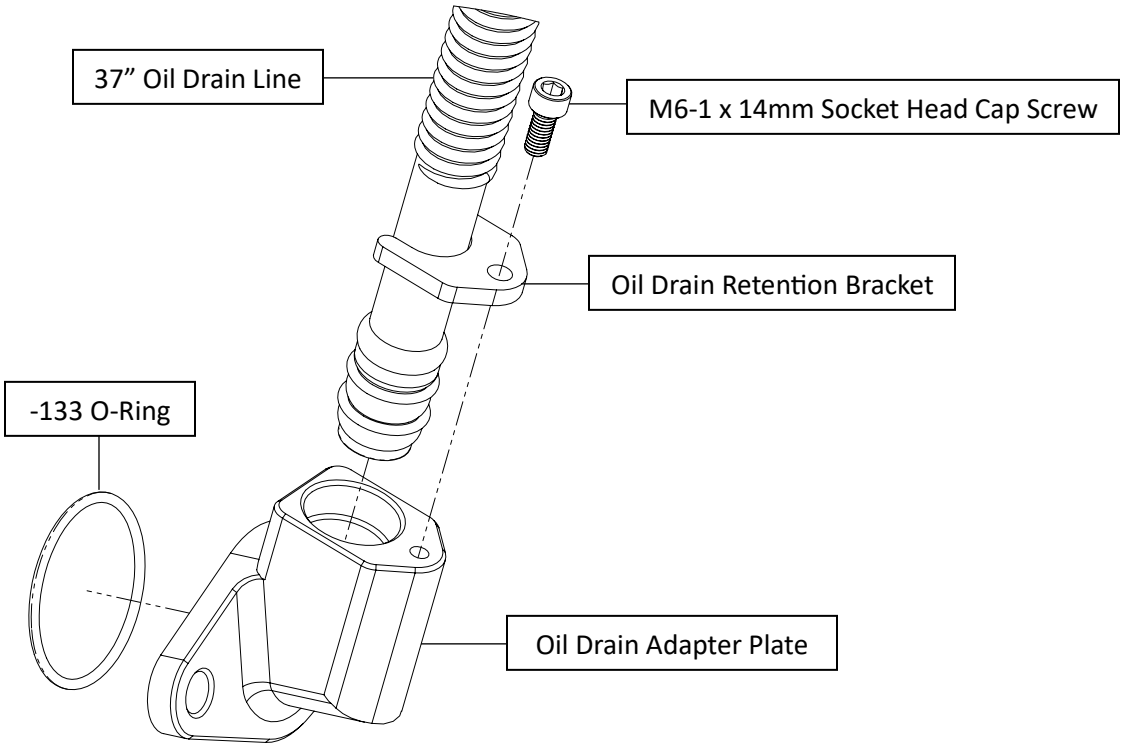
Step #5: Install the bottom turbo's 20" oil supply line to the oil filter housing. Use the stock oil supply fitting located on the right side of the oil filter housing. This supply line will get connected to the bottom turbo in a later step.



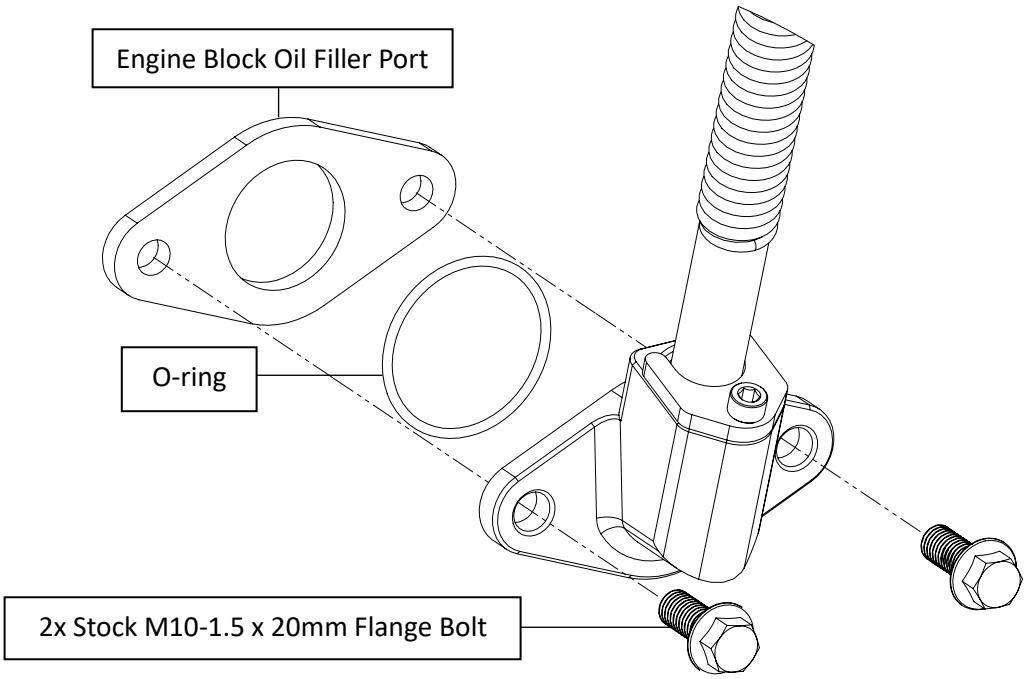
Step #6: Install the top turbo's 30" oil supply line to the oil filter housing and turbo. Remove the plug located on the front of the oil filter housing, and install the M14X1.5 adjustable elbow fitting. Install the ¼" NPT fitting into the turbo and connect the supply line.



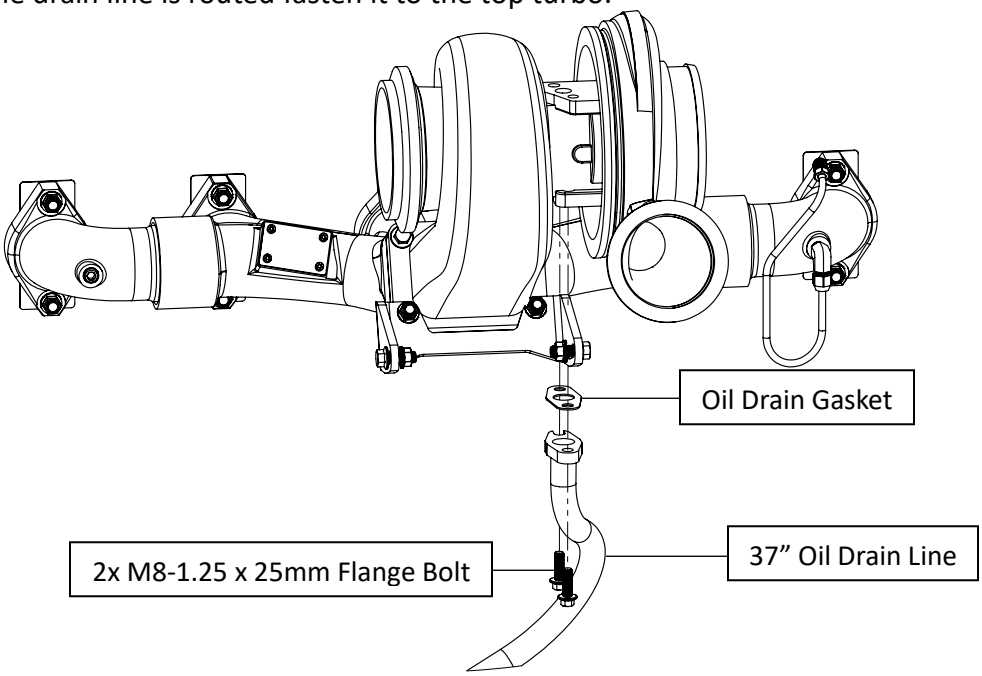
Step #7: Assemble the 37” oil drain line to the oil drain adapter plate.



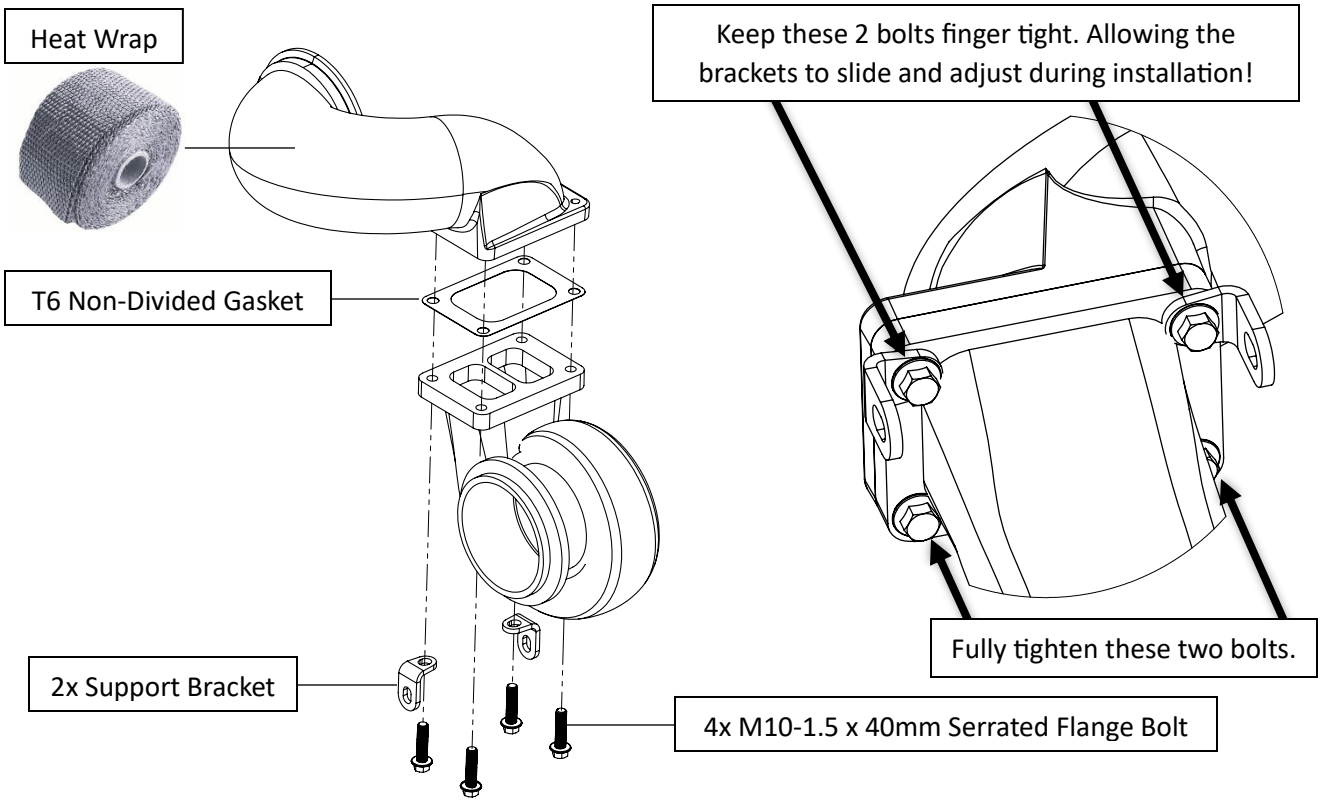
Step #8: Remove the oil filler cover plate and gasket from the engine block’s oil filler port. Install the oil drain adapter plate assembly to the oil filler port using the stock M10-1.5 x 20mm flange bolts. Make sure to place the included O-ring between the oil drain adapter plate and the face of the oil filler port.



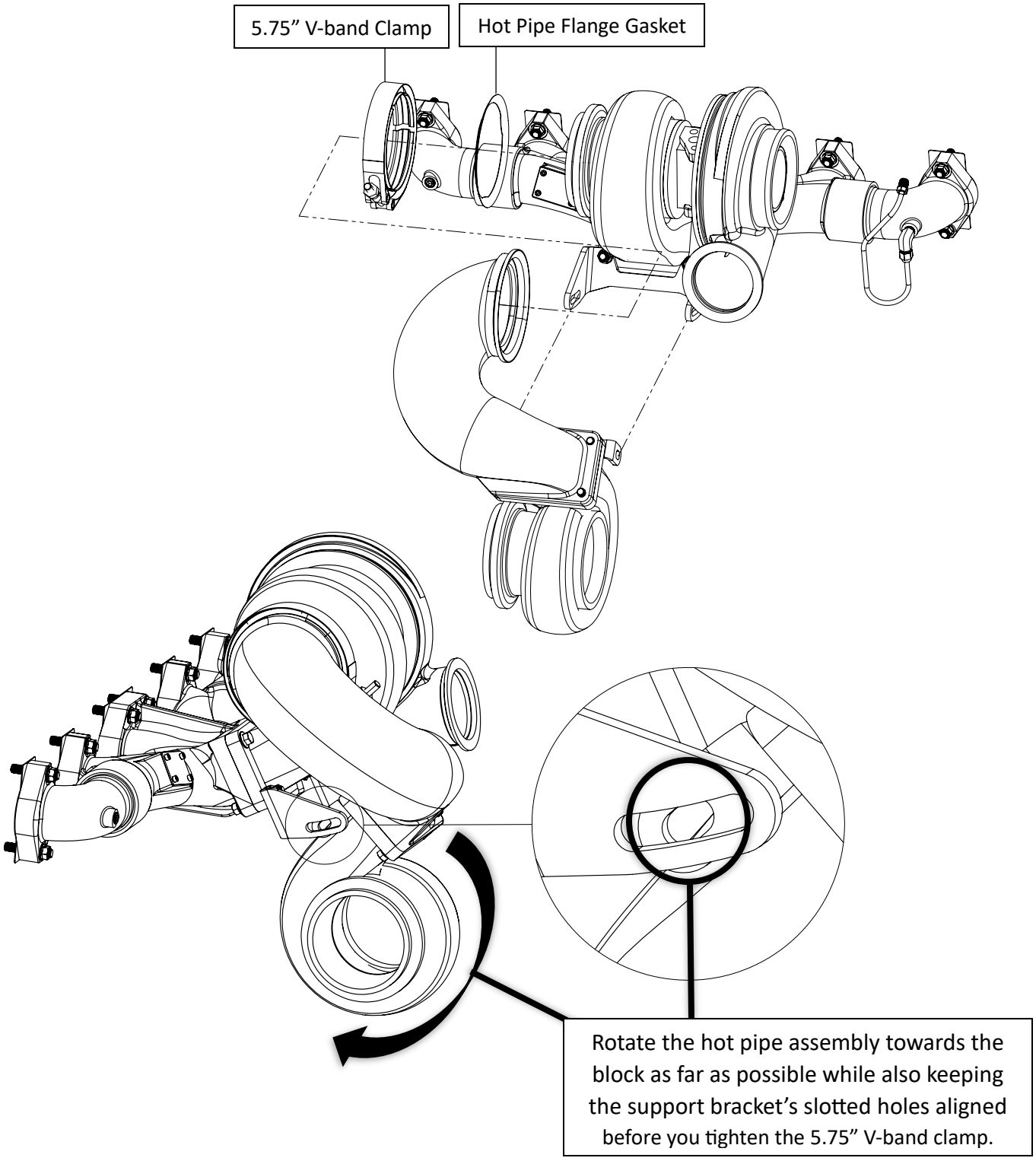
Step #9: Route the 37” oil drain over the oil filter housing behind the oil supply lines to the oil drain port of the top turbo. Once the drain line is routed fasten it to the top turbo.



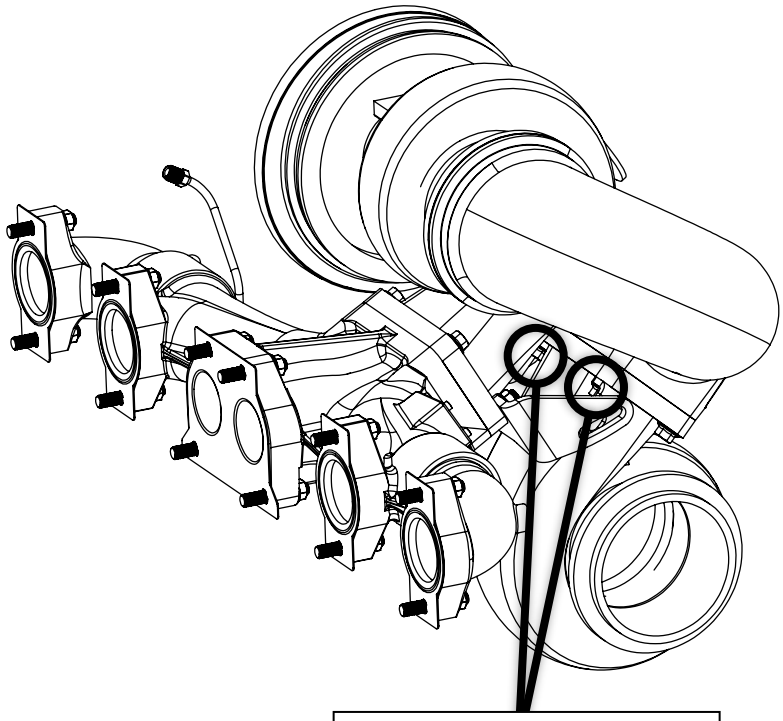
Step #10: Remove the turbine housing from the bottom turbo (the one with the barbed elbow style compressor housing). Assemble the support brackets, turbine housing, and hot pipe together. Keep the 2 bolts holding the support brackets finger tight, allowing the brackets to slide and adjust during the installation in the next step. Fully tighten the other 2 bolts. Wrap the hot pipe with heat wrap and secure it with the metal zip tie.



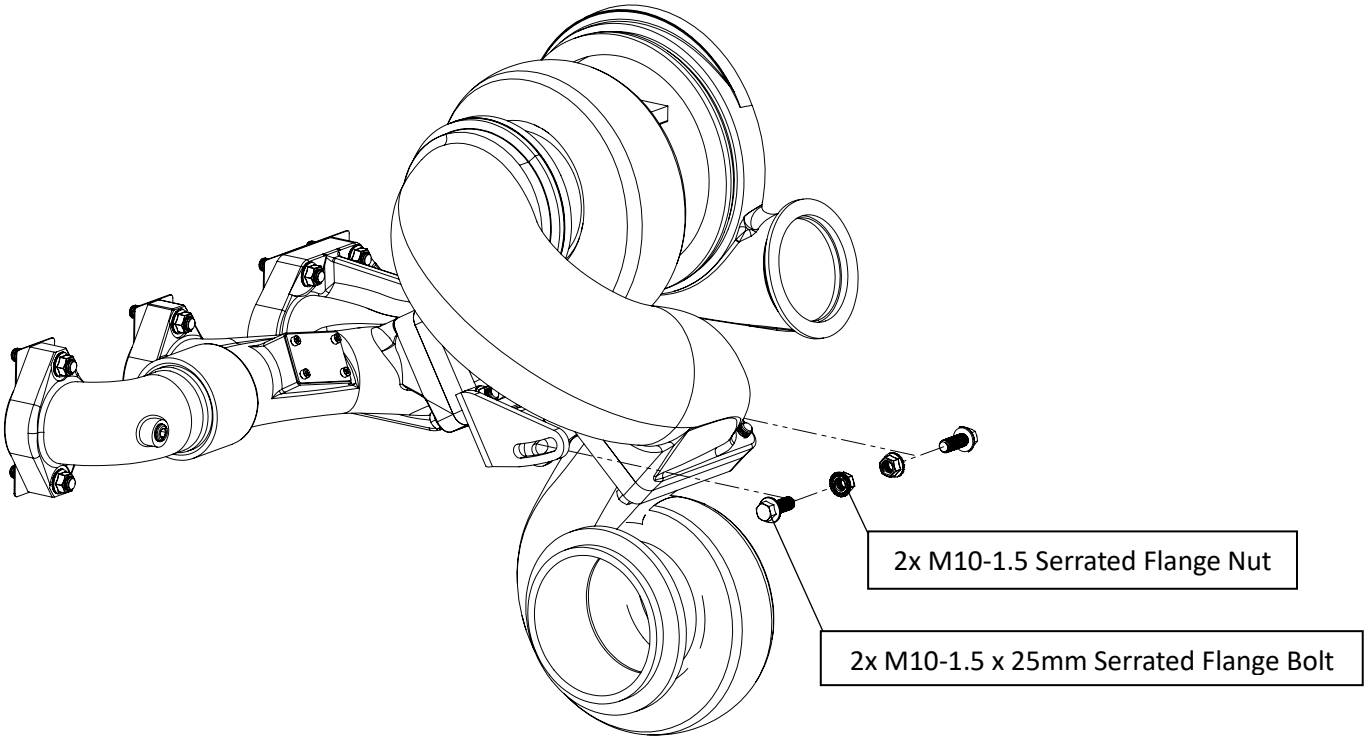
Step #11: Install the hot pipe assembly to the exhaust outlet of the top turbo with the hot pipe flange gasket in between. Slightly tighten the 5.75” V-band clamp enough to hold the hot pipe assembly while also allowing it to rotate. Rotate the hot pipe assembly towards the block as far as possible while also keeping the support bracket’s slotted holes aligned. Once rotated and aligned fully tighten the 5.75” V-band clamp into place.



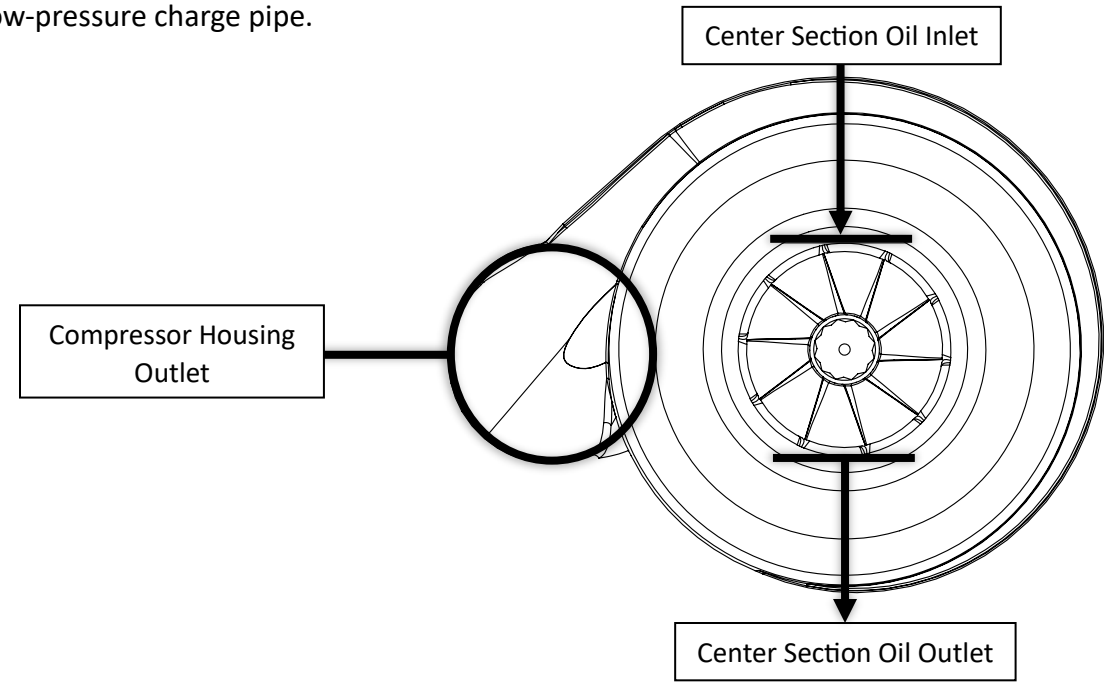
Step #12: Fully tighten the 2 support bracket bolts that were kept finger tight on the back side of the turbine housing in step #10.



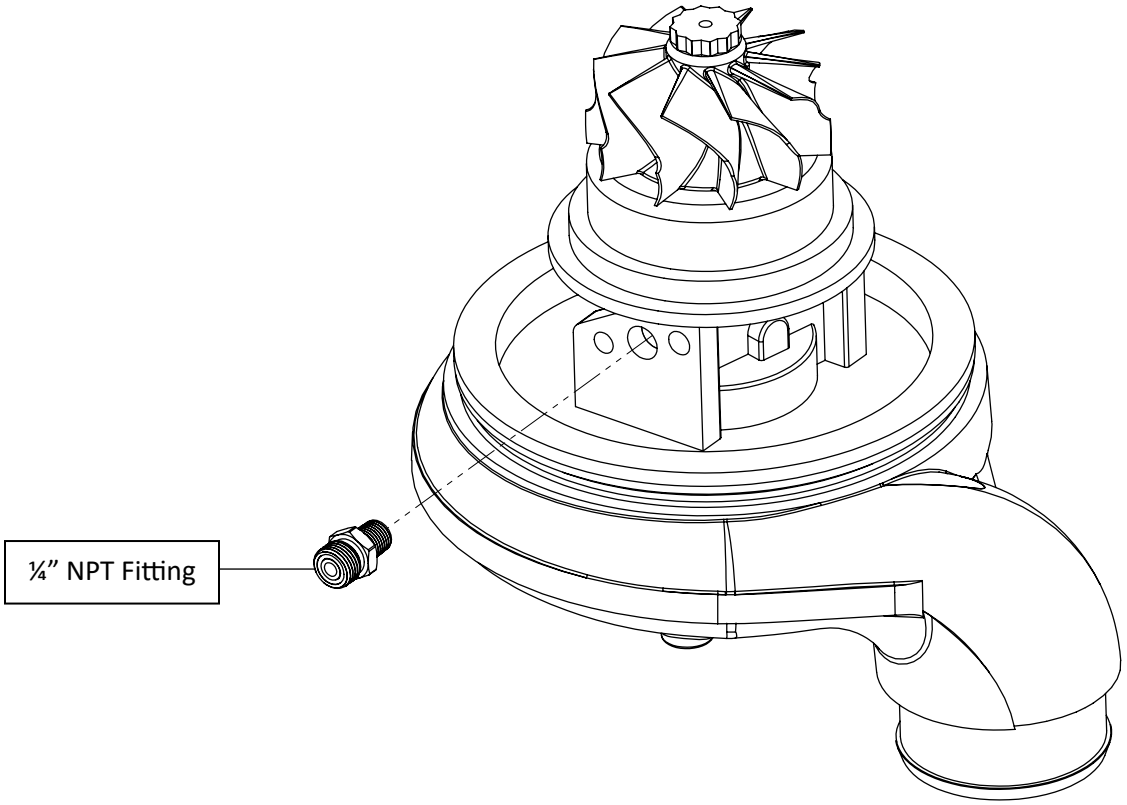
Step #13: Fasten the support brackets together. Pass the M10-1.5 x 25mm serrated flange bolts through the previously aligned slotted holes and fasten the M10-1.5 serrated flange nuts to the bolts.



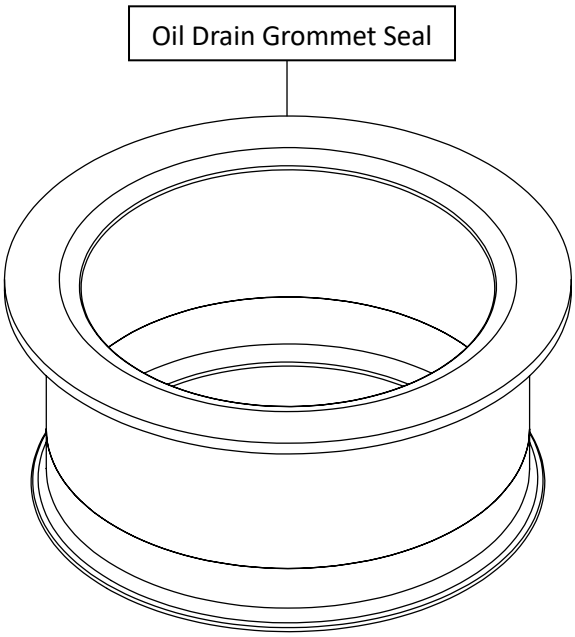
Step #14: Clock the bottom turbo's center section and compressor housing according to the diagram below. Orient the V-band clamp that holds the center section to the compressor housing such that you can easily access it once installed. You will loosen the clamp and make minor adjustments to the clocking when you install the low-pressure charge pipe.



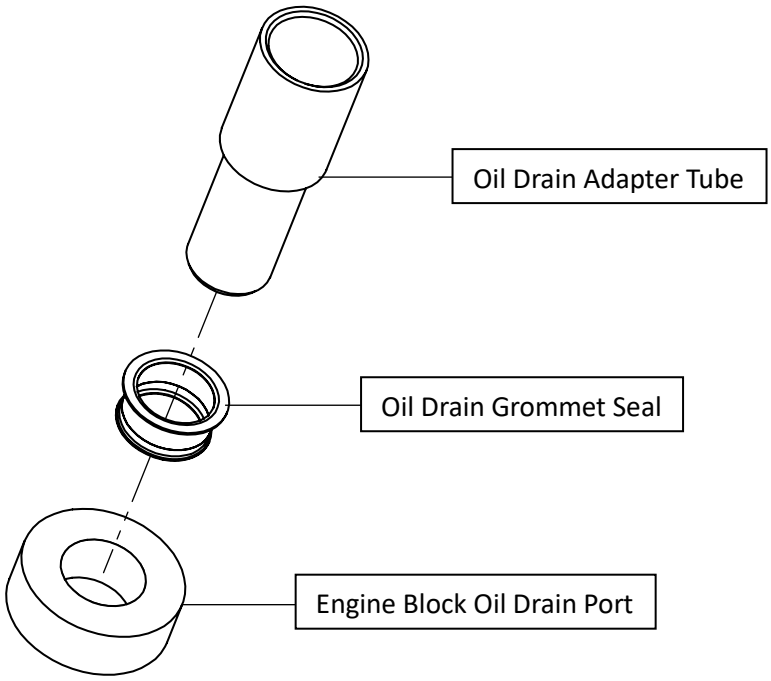
Step #15: Attach the 1/4" NPT oil supply fitting to the center section of the bottom turbo.



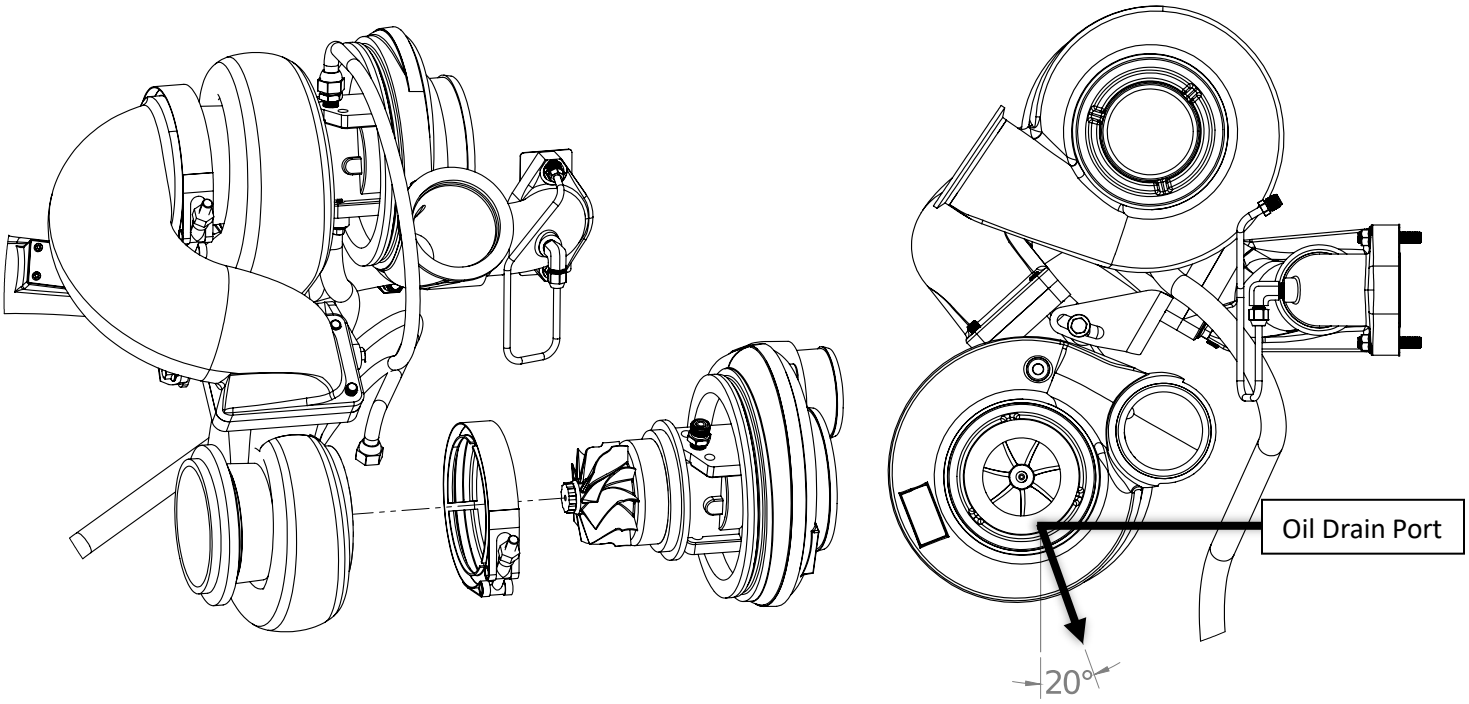
Step #16: Check that the stock oil drain grommet seal is not damaged and is installed in the oil drain port of the engine block. If the grommet seal is not in the port check for it on the stock oil drain line. If the oil drain grommet seal is missing or damaged replace it with Cummins Part #: 3678762.



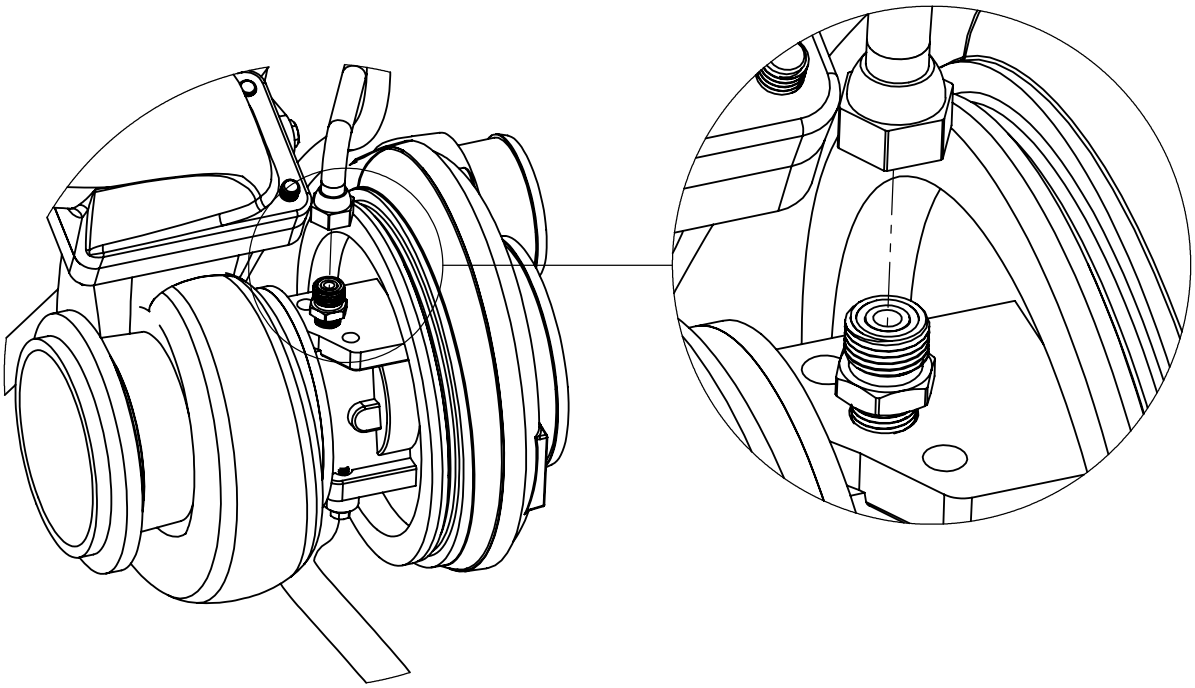
Step #17: Install the oil drain adapter tube into the engine block's oil drain port. Make sure the stock oil drain grommet seal is still installed in the engine block oil drain port before you install the oil drain adapter tube.



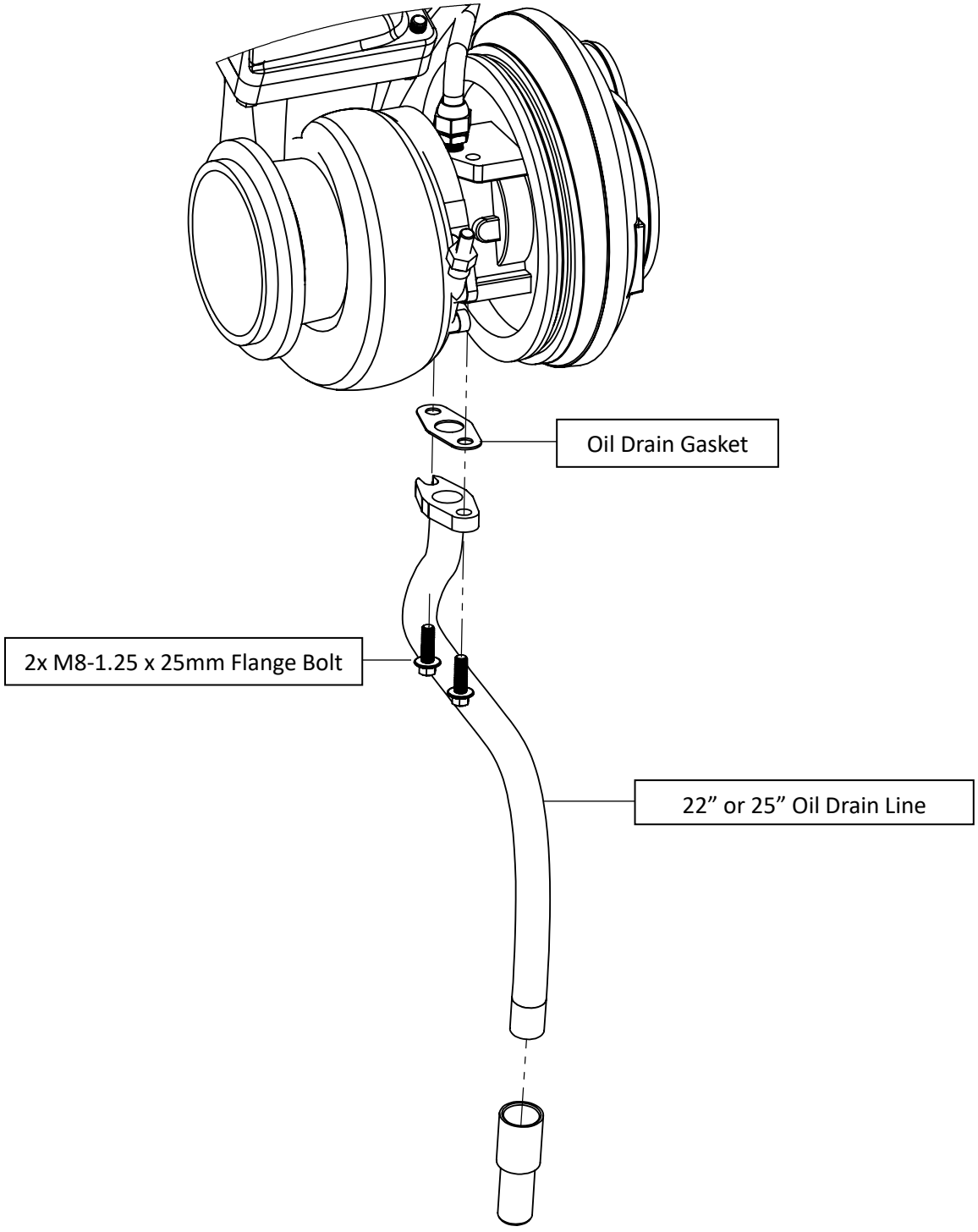
Step #18: Install the bottom turbo into the turbine housing. The oil outlet of the turbo needs to be rotated towards the engine block roughly 20° from vertical. This will allow the oil drain to clear the frame of the truck located directly below the turbo.



Step #19: Install the 20” oil supply line to the ¼” NPT fitting located on the bottom turbo.



Step #20: Install either the 22” or 25” oil drain to the bottom turbo. You will decide which length best fits your application. Install your chosen oil drain into the oil drain adapter tube and fasten it to the oil drain port of the bottom turbo. Only one of the oil drains will be used.



Step #21: The kit contains two air compressor filters of different sizes and a prefilter sock to fit different Cummins ISX application. You will only use one or none of the air filters depending on how your truck is plumbed. Follow the steps below and determine which option fits with your application.

- Locate the truck's air compressor under the intake manifold on the driver's side of the engine. Once the compressor is located find the compressor intake line.

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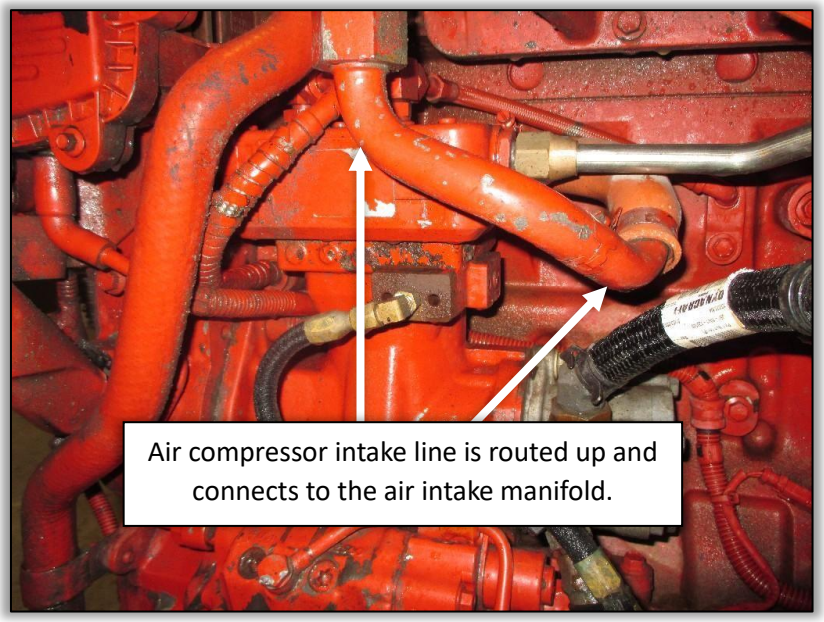
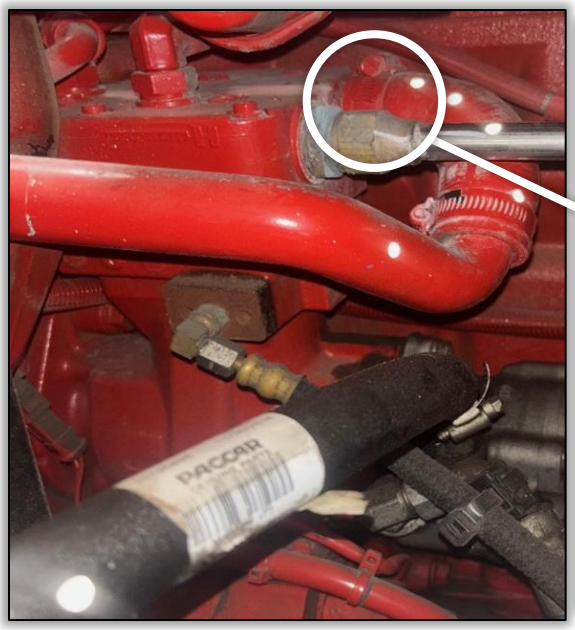
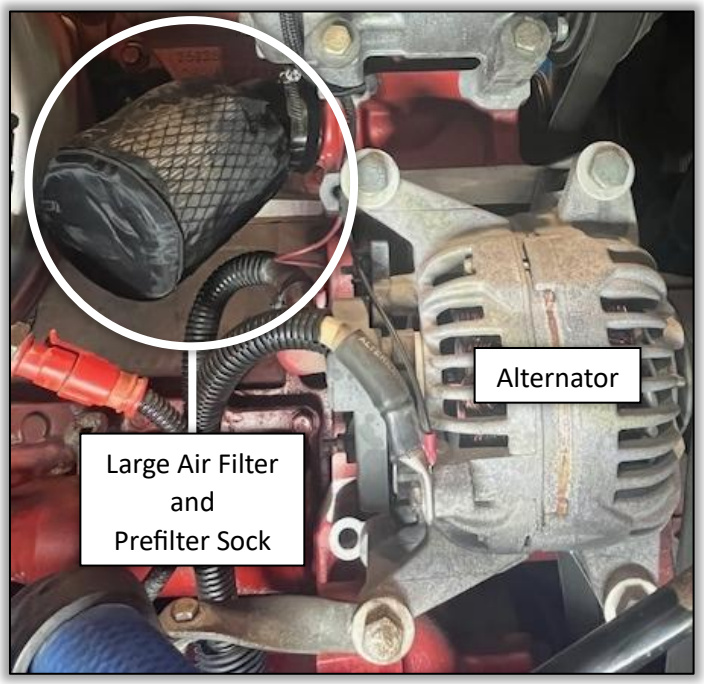
Option #1: Follow the path of the compressor intake line. If the line is routed up and attached to the intake manifold. Do not install either of the air filters. With this application, the compressor already pulls clean air from the engine's filtered intake system.



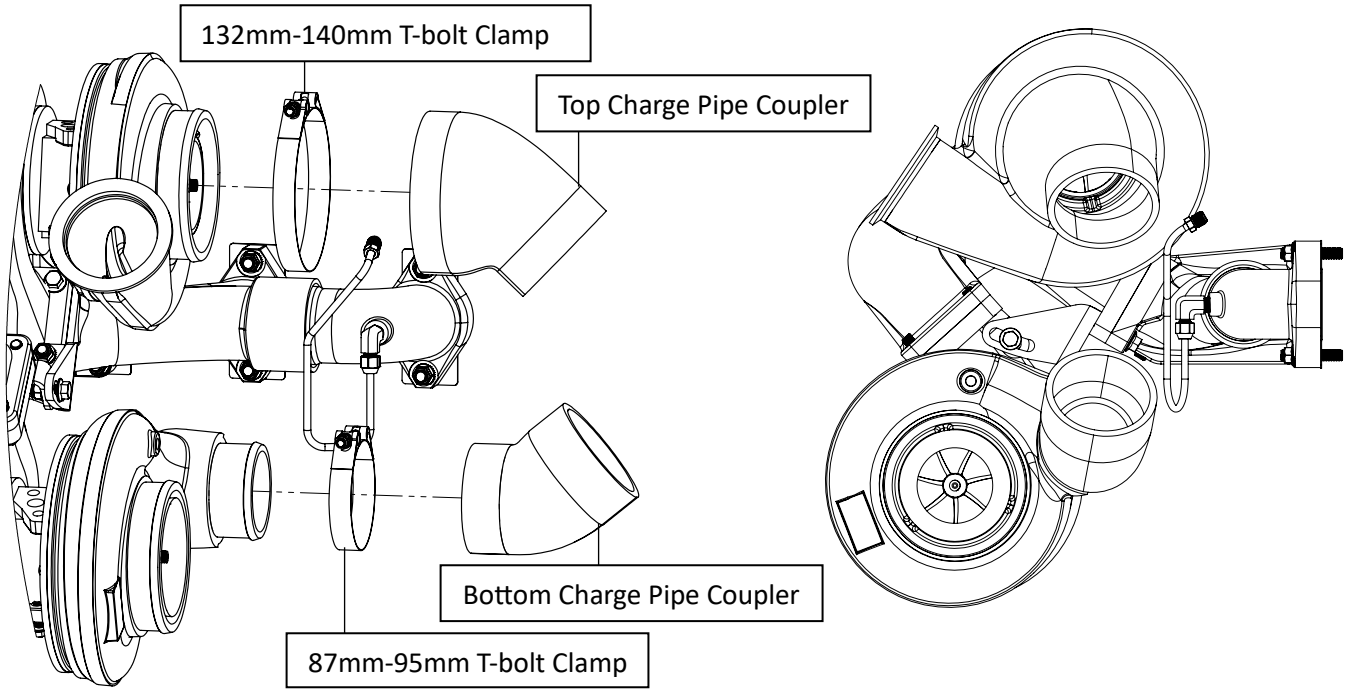
Option #2: Follow the path of the compressor intake line. If the line routes towards the front of the engine without splitting into two lines. Install the small air filter and prefilter sock directly to the inlet of the air compressor.



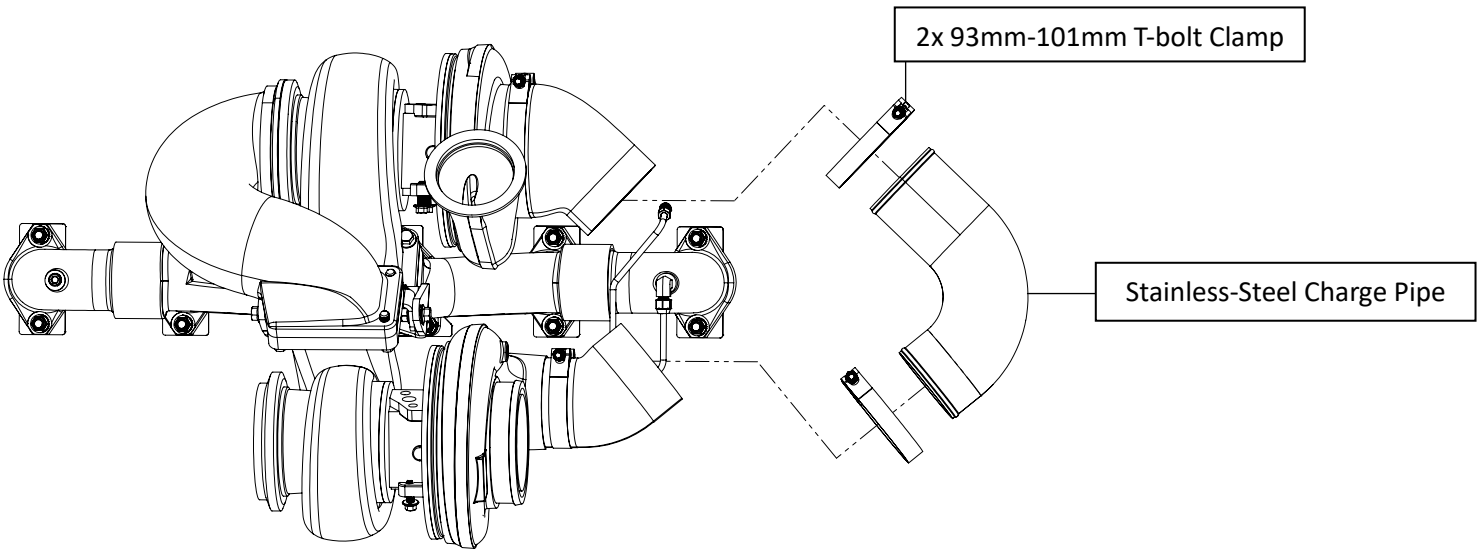
Option #3: Follow the path of the compressor intake line. If the line routes towards the front of the engine and splits into two lines. Where one of the lines routes to the air baffle on the front of the engine and the other routes to the passenger side of the engine. Install the large air filter and prefilter sock on the port located on the engine block behind the alternator.



Step #22: Install both charge pipe couplers and clamps to the compressor housing inlet of the top turbo and the outlet of the bottom turbo. Align the couplers according to the diagram below. Make sure each coupler is fully seated against each compressor housing to prevent the couplers from blowing off when pressurized. Wait to fully tighten the clamps until the charge pipe assembly is fully installed.

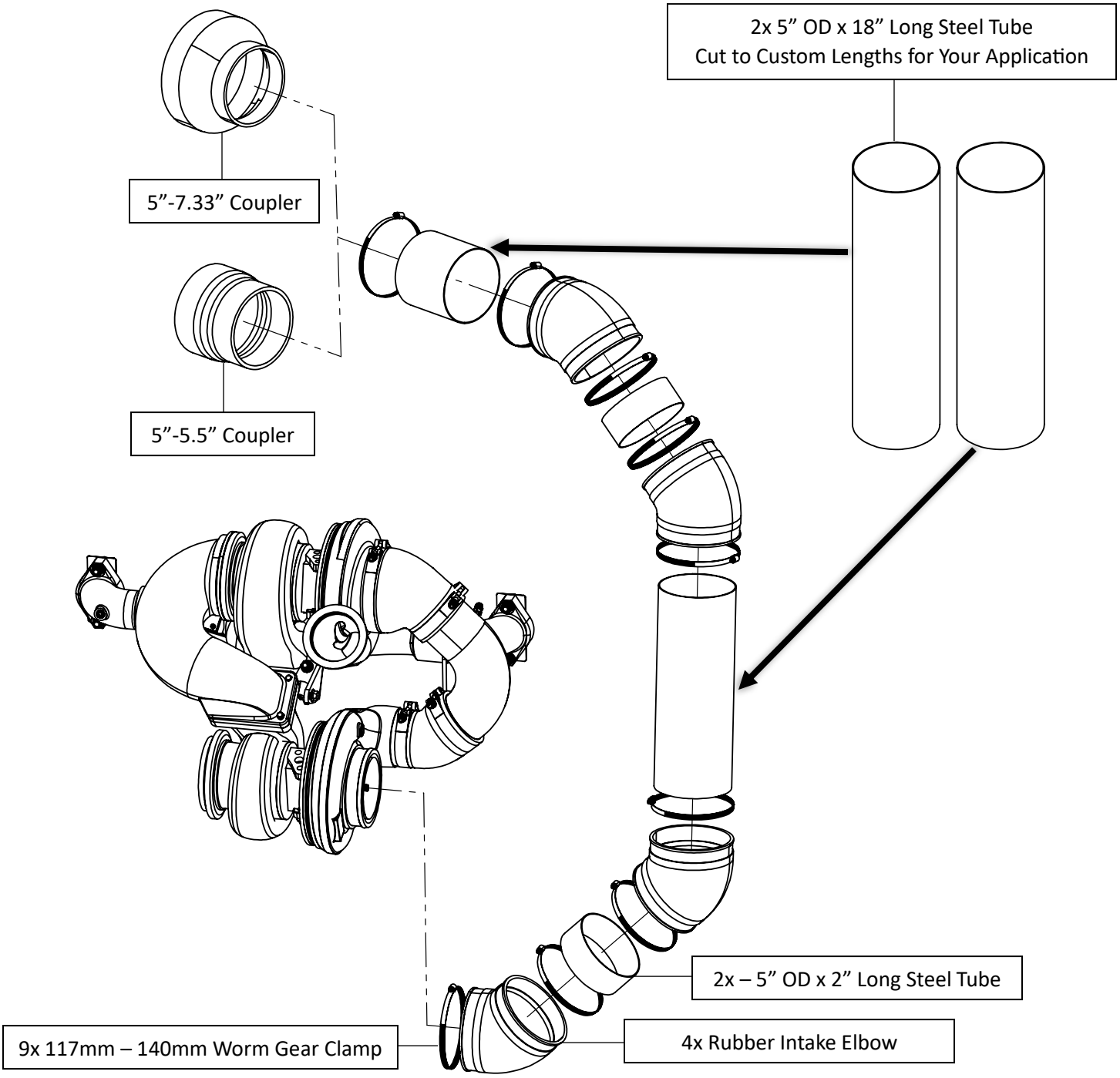


Step #23: Install the stainless-steel charge pipe and clamps. If the charge pipe is not lining up with the couplers. Rotate the couplers and the bottom turbo's compressor housing by loosening the V-band clamp. Once the stainless-steel charge pipe has been aligned check that both couplers are still fully seated against each compressor housing. Also, check that the stainless-steel charge pipe has been inserted far enough into both couplers to be clamped properly. Once verified, tighten all the V-band clamps.

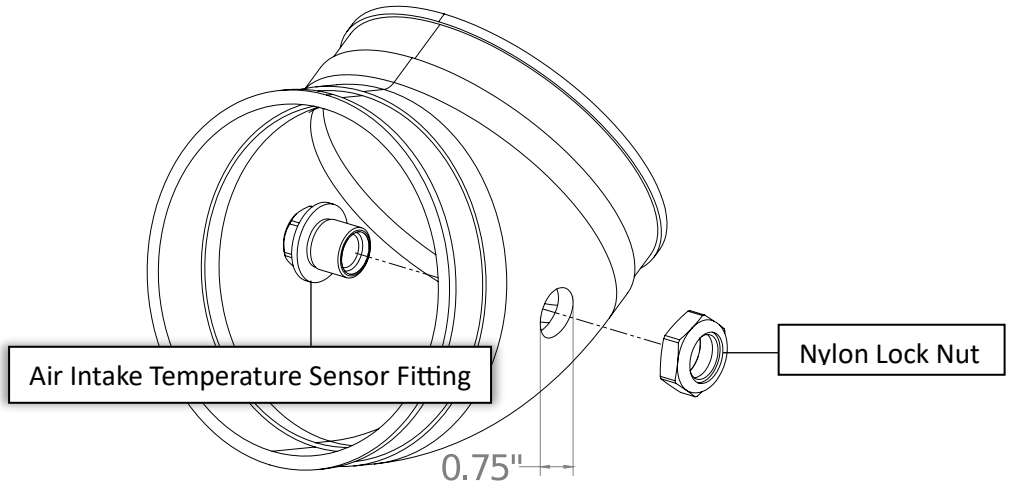


Step #24:

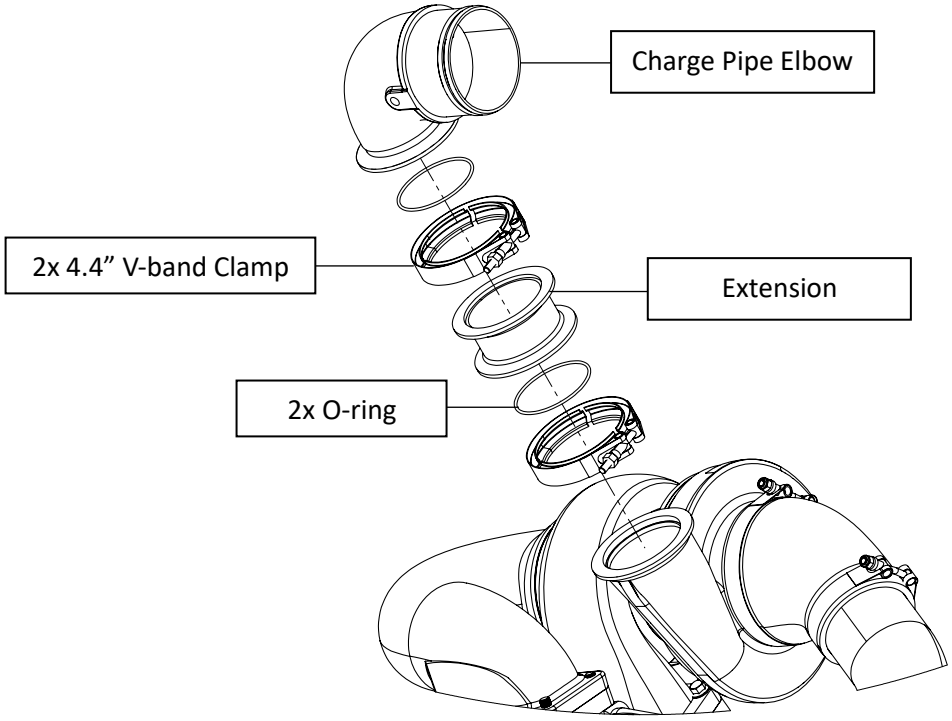
- Fabricate and install the air intake for the bottom turbo. The intake was designed to be customizable to fit a variety of applications. To customize the intake to your application you are required to cut the two 5” OD x 18” long intake tubes included with your kit and route them from the intake of the bottom turbo to the outlet of the air filter housing. The kit also includes a 5”-7.33” coupler and a 5”-5.5” coupler to fit the different air filter housing sizes.



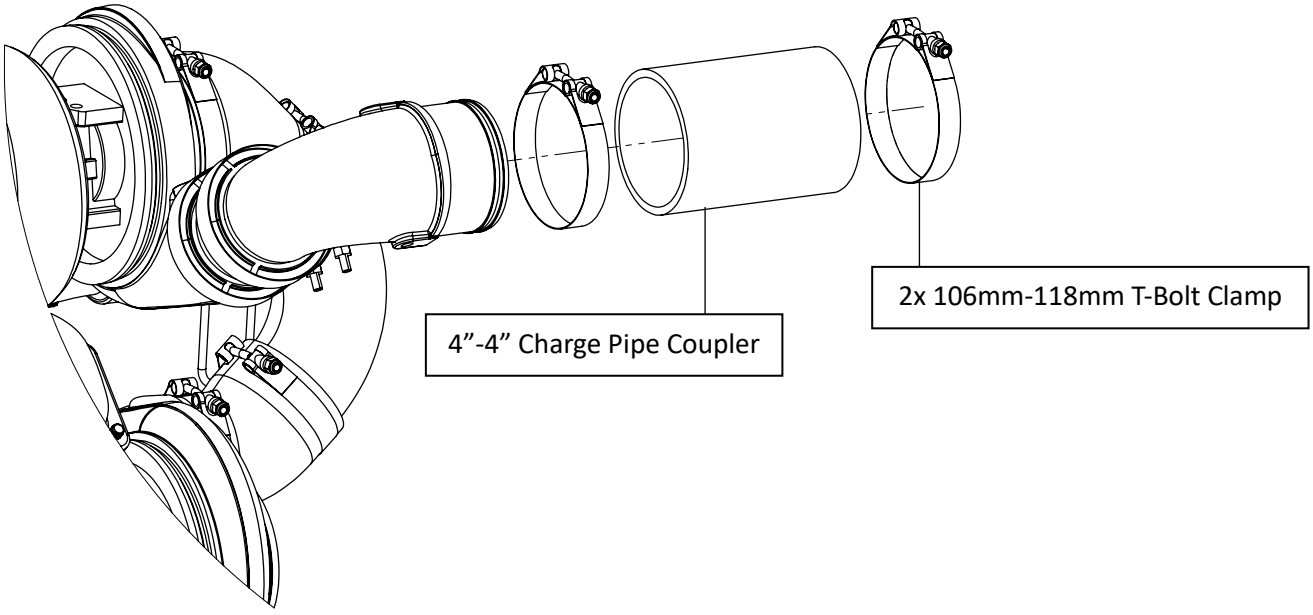
- During the fabrication process install the air intake temperature sensor fitting into one of the lower rubber intake elbows by drilling a ¾" hole in the rubber intake. The location of this hole is determined by the installer. Make sure the temperature sensor wire harness can reach the location before you drill the hole. Remove the air intake temperature sensor from the stock turbo, fasten it into the fitting and connect it to the wire harness.



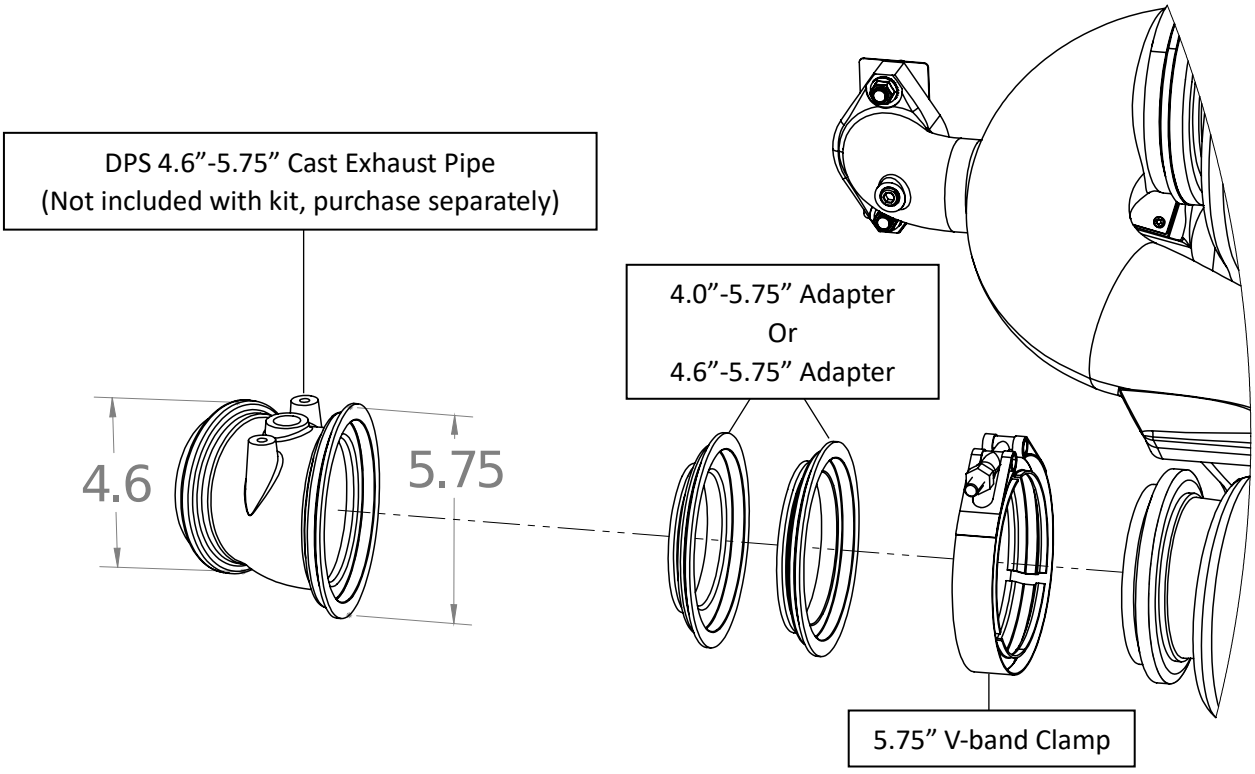
Step #25: Included with your kit is a charge pipe elbow and extension. The extension is only needed if the elbow interferes with your fabricated intake and some applications will not require the extension. Install and align the charge pipe elbow and extension if needed to your stock charge pipe. (**Note:** If the piping isn't aligning. Loosen the V-band clamp holding the compressor housing of the top turbo and rotate the compressor housing to align. Finish by tightening the compressor housing V-band clamps.)



Step #26: Install the 4”-4” charge pipe coupler between the charge pipe elbow and your stock charge pipe.



Step #27: Connect the exhaust outlet of the bottom turbo to your truck’s downpipe using the included adapters. The kit includes a 4.0”-5.75” and 4.6”-5.75” adapter. If you are using your stock exhaust, you can place an adapter between the outlet of the bottom turbo and the stock cast exhaust pipe. If you’re fabricating a custom 5” exhaust, you can weld the 5” pipe onto the 4.6”-5.75” adapter. For an additional cost you can also purchase our 4.6”-5.75” cast exhaust pipe. (**Note:** Loosen the downpipe support bracket to give the downpipe enough movement to fit the adapters.)



Step #28: After installation, drive the truck for approximately 100 miles then, while the truck is warm use gloves and re-torque all the manifold and turbo bolts, as the bolts sometimes loosen up after being heated and cooled a few times. Also, check all clamps, fittings, and lines for leaks while warm.