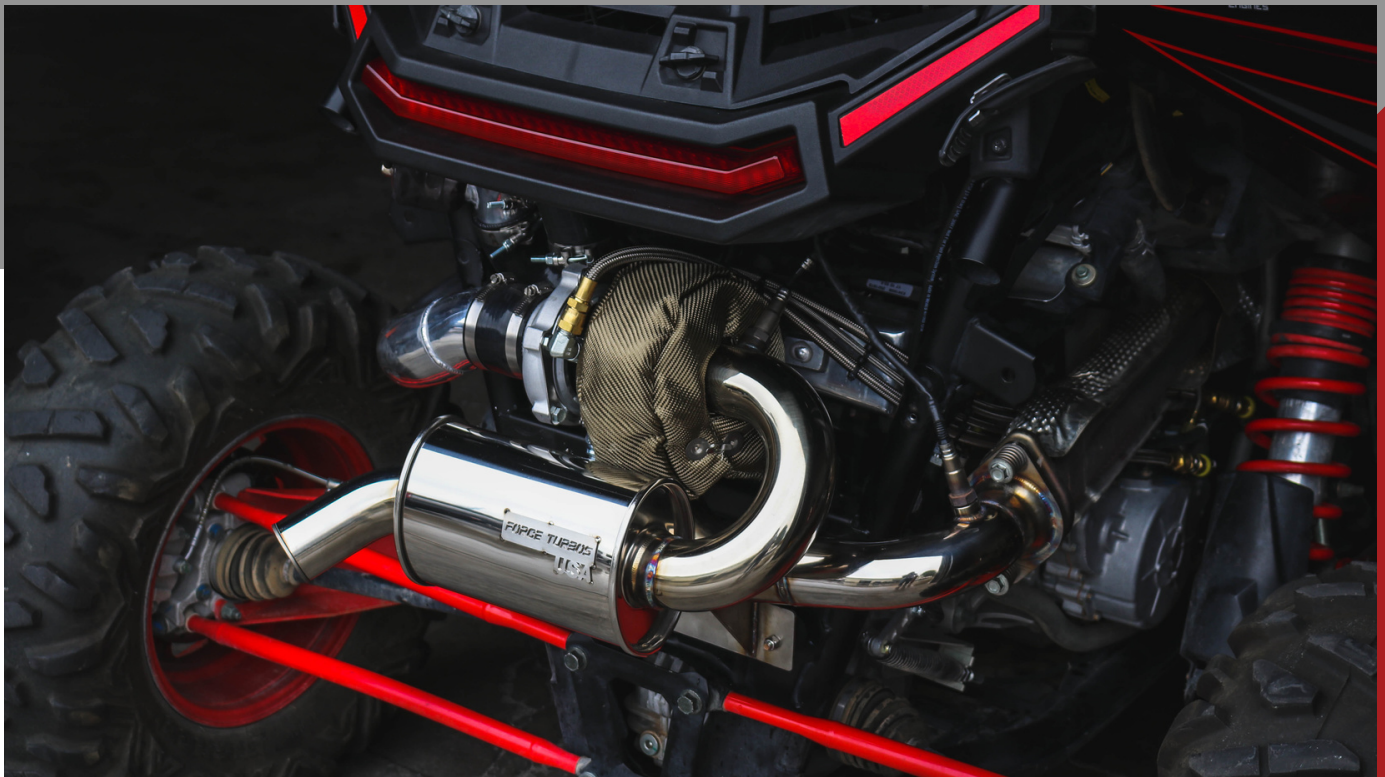




# INSTALLATION GUIDE

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## POLARIS RS1 TURBO SYSTEM



# INTRODUCTION

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## **WELCOME TO YOUR NEW POLARIS RS1 TURBO SYSTEM.**

With a boost level of 7 psi and high-volume design, you are sure to get the additional horsepower you are looking for with minimal stress on the motor. Your Polaris RS1 will see a dramatic horsepower increase to the wheels, from 85 RWHP to near and above 139 RWHP.

This system will fit all Polaris RS1 units (2018-2021).

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## **INSTALLATION TIME:**

A professional mechanic can install the system in about 8 hours, while a home garage mechanic usually needs 10-12 hours or more.

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## **DISCLAIMER:**

While there are no internal engine modifications required, we still recommend that the installation technician have adequate experience in power sports mechanics. Proper installation is imperative for safe operation.

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# INCLUDED PARTS

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# TOOLS NEEDED

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- Pliers
  - Needle nose
  - Straight cut
  - Slip joint
  - Wire cutters
- Wrenches
  - 11mm
  - 13mm
  - 14mm
  - 7/8"
- Sockets
  - 8mm
  - 10mm
  - 11mm
  - 1/4"
  - 1"
- Allen/Torx Bits
  - 8mm allen
  - T20
  - T25
  - T30
  - T40
- Drill Bits
  - 1" hole saw
  - Basic drill bit set
- Miscellaneous
  - Hammer/Mallet
  - Spring Puller
  - Flathead Screwdriver
  - Center punch
  - Razor blade
  - Spanner Wrench
  - 90 degree Pick

# STOCK VEHICLE

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# STEP 1: DISASSEMBLY

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## REMOVE THE FOLLOWING PARTS:

- Stock exhaust
- Rear radiator cover
- Rear taillights
- Cold air intake tube
- Airbox
- Throttle bodies

# STEP 2: ASSEMBLY

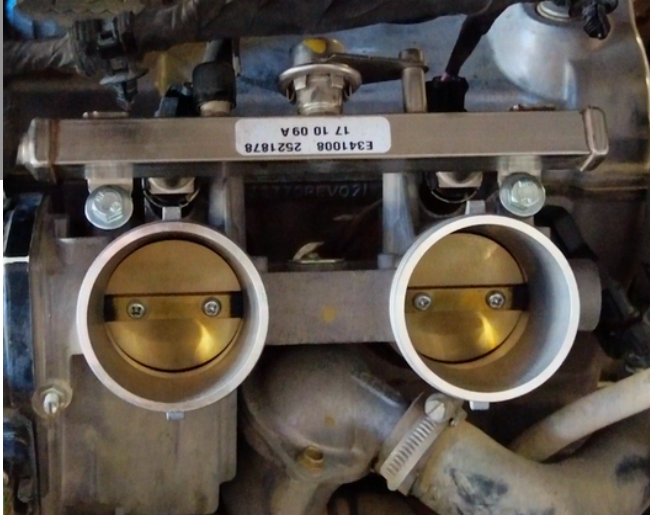
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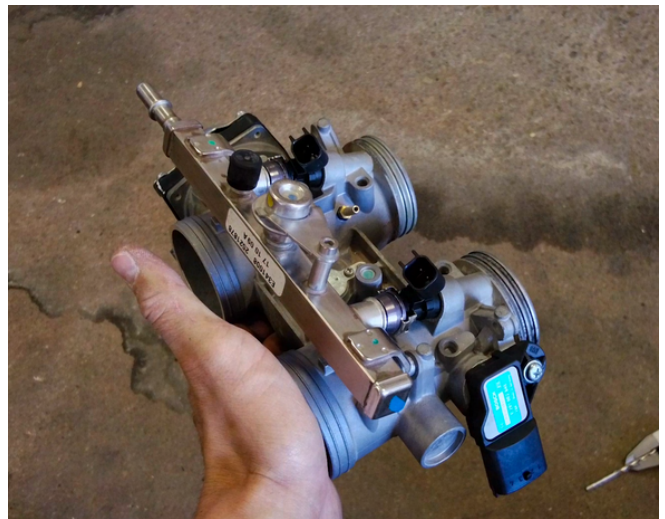
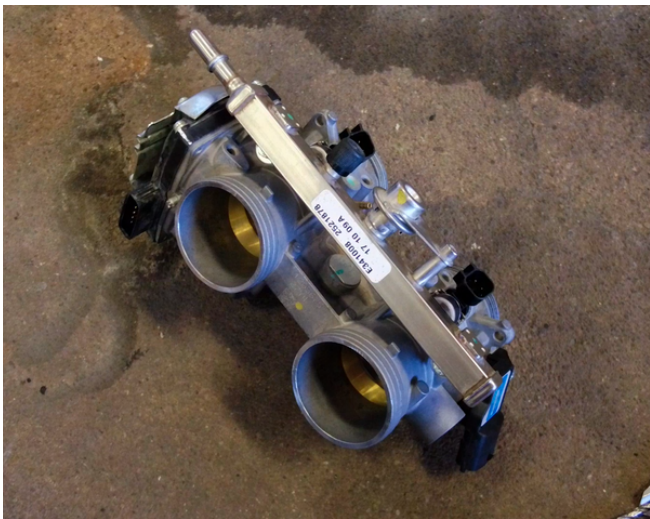
1. Remove screws pictured and take out the fuel injectors.



2. Install 1000 cc fuel injectors, fuel rail spacers, and screws included in kit to space fuel rail on injectors

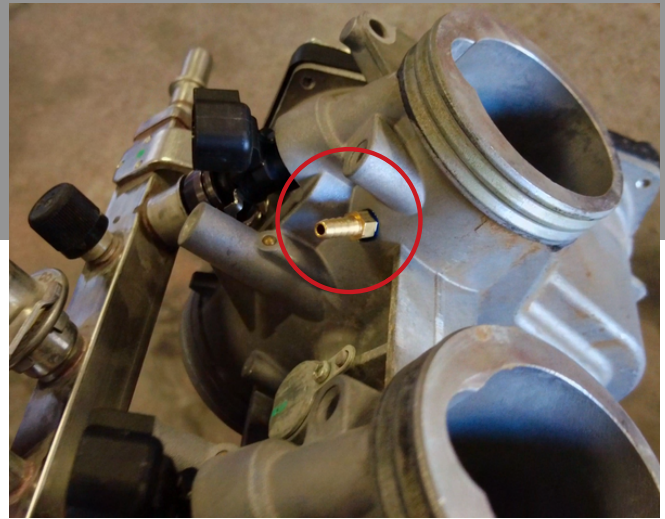
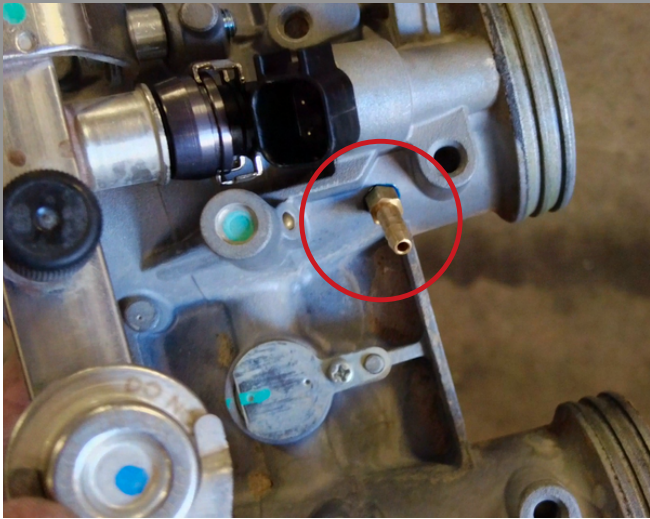


3. After the new fuel injectors have been installed, install the 3 bar map sensor on the right side of the throttle bodies with a phillips head screwdriver

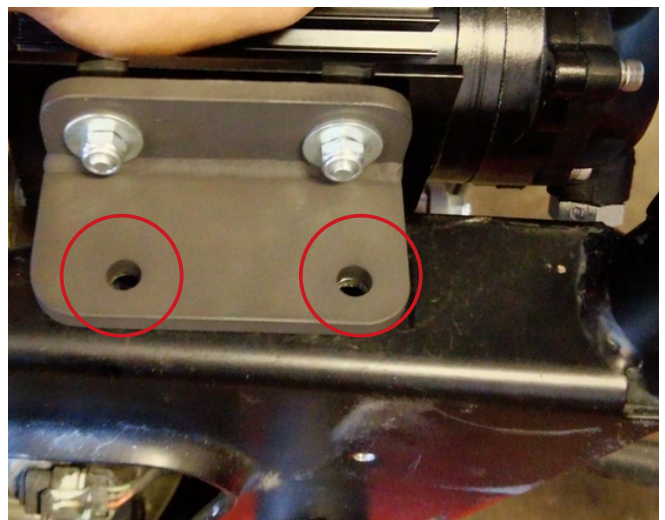
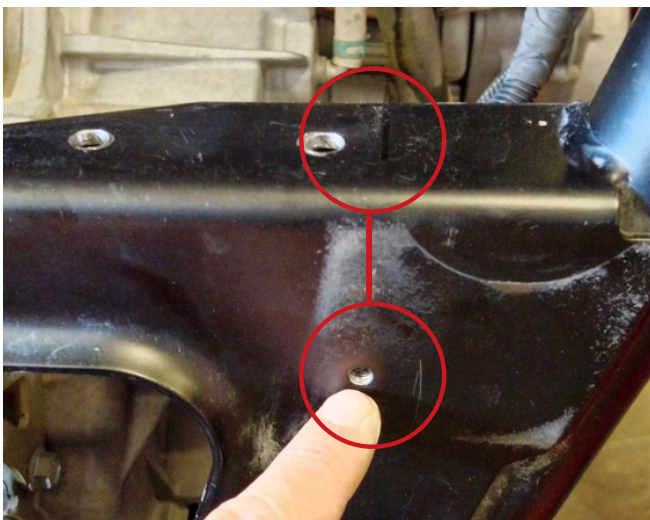


4. Remove the throttle bodies by unclamping the 1/4' worm gear clamps on motor side





5. Drill and tap the boost/vacuum reference for the BOV using a .156 drill bit and a 10-32 tap to match the threads of the brass fitting. Put red lock tight on threads when installing male barbed adapter. Run the reference line from BOV to the brass fitting. Reinstall the throttle bodies when completed



6. Draw a line directly up from the bolt hole on the right side of the frame and place the scavenge pump so that the right side is lined up with the line. Next, drill 3/8" holes where the holes are in the mounting bracket



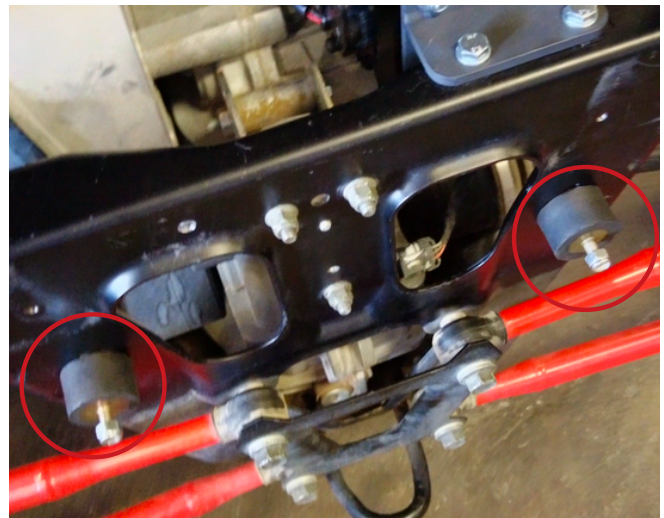
7. Bolt scavenge pump to frame using 13mm bolts



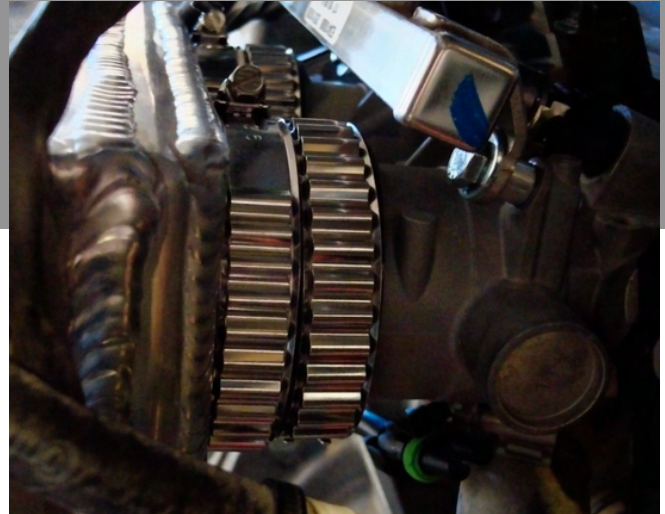
8. Ensure that the pump is not touching the frame after installation. The pump flow arrow should be pointing upwards



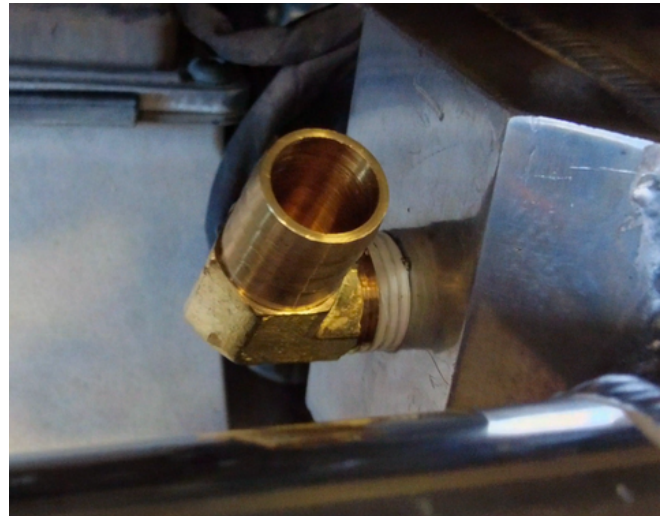
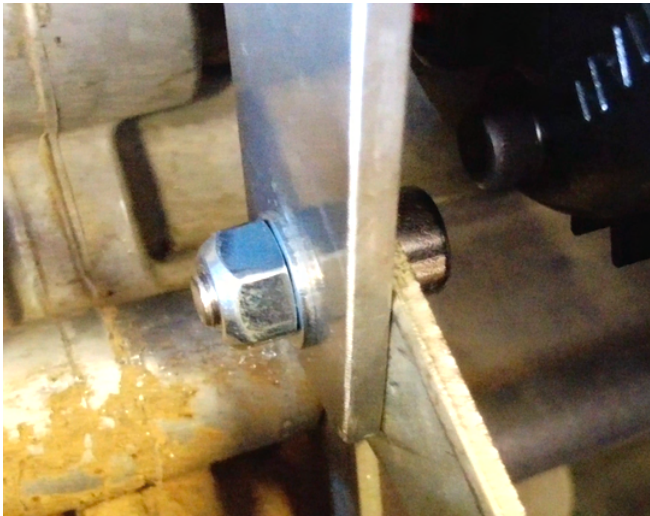
9. Drill out frame holes on the lower frame to 3/8", making them ready to accept rubber mounts



10. Install the rubber mounts that come attached to the turbo into the 3/8" holes that were just drilled in the frame. This is where the turbo will mount



11. Install the intercooler/airbox and silicon couplers onto the throttle bodies using the constant tension clamps



12. Secure lower intercooler/airbox bracket to the top of the transmission using the supplied bolt and nut

13. Ensure that 90° barbed fittings on either side of the intercooler/airbox are easily accessible



14. Install the turbo onto the lower rubber mounts. Install the spark arrestor



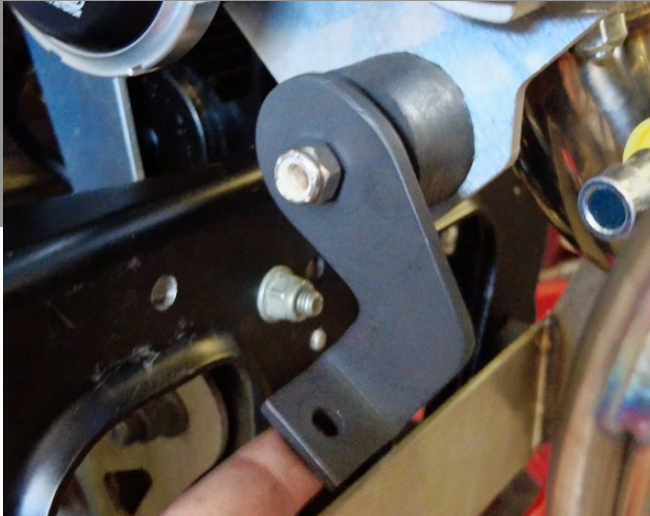
15. Attach the right side of turbo to the machine with stock bolts and springs



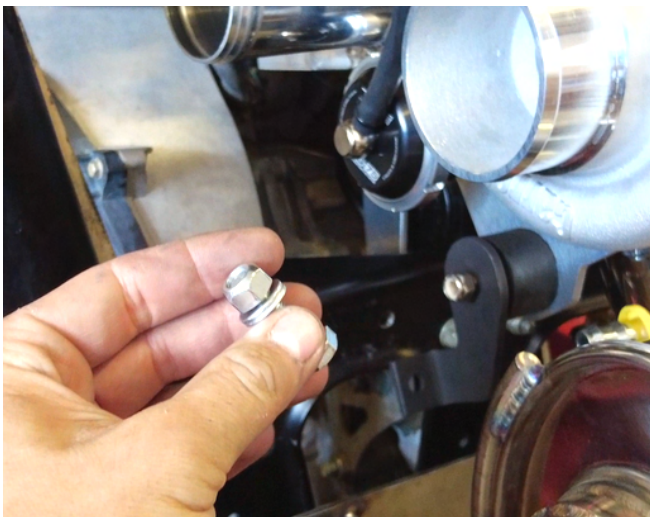
16. Install the stock O2 sensor onto the turbo inlet pipe just after the manifold connection



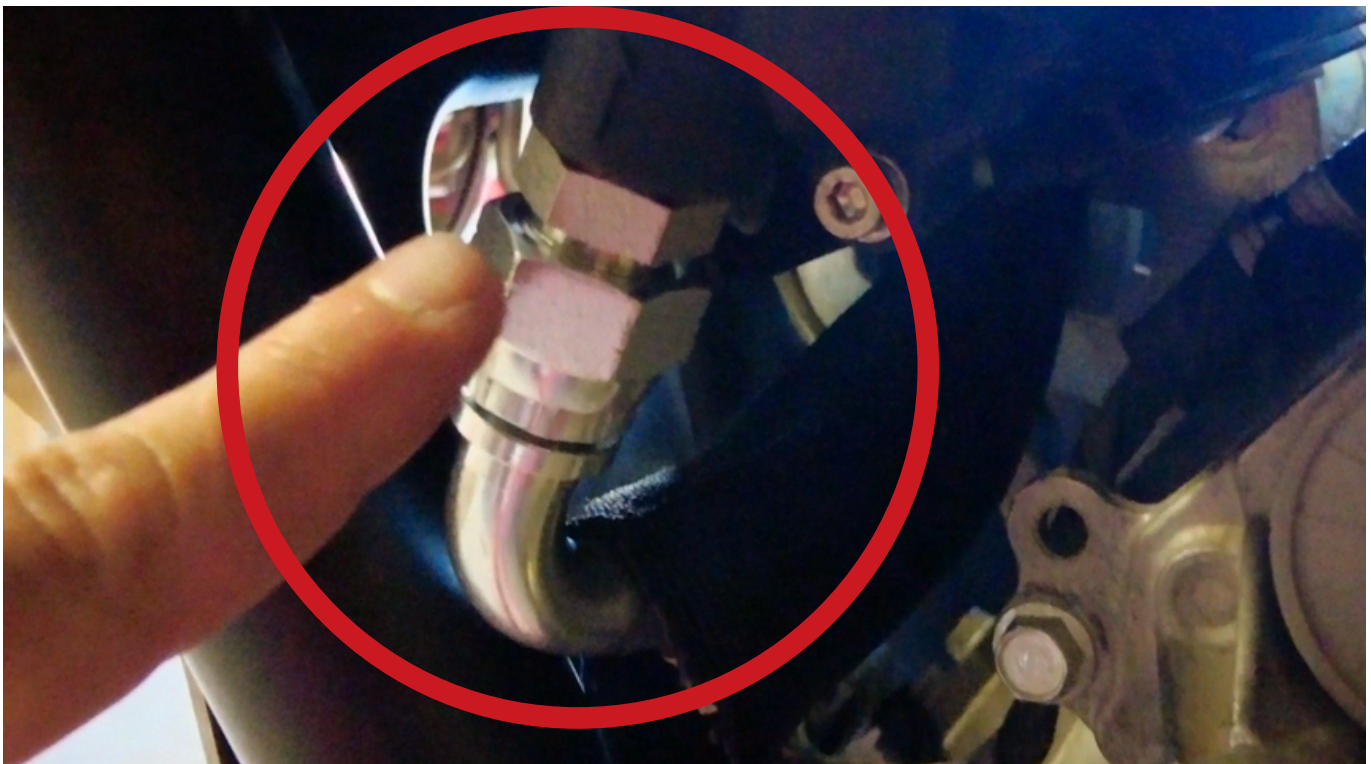
17. Install the AFR sensor for the Dynojet into the exhaust just after the turbo



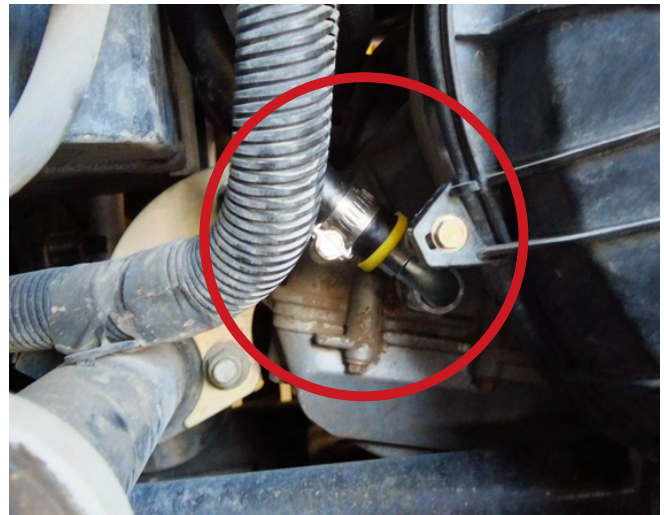
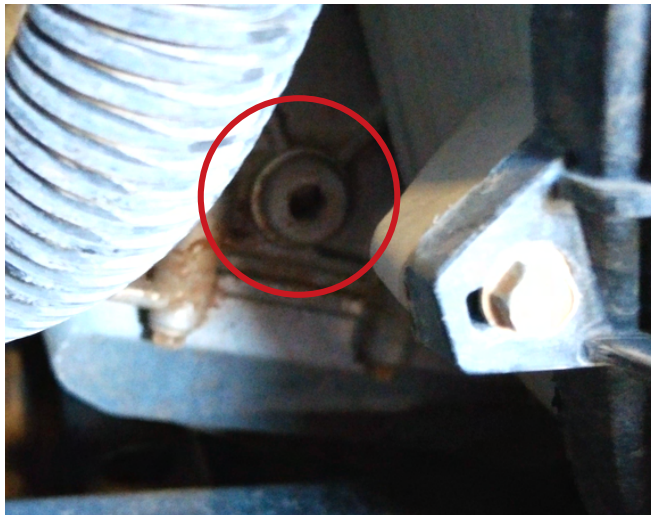
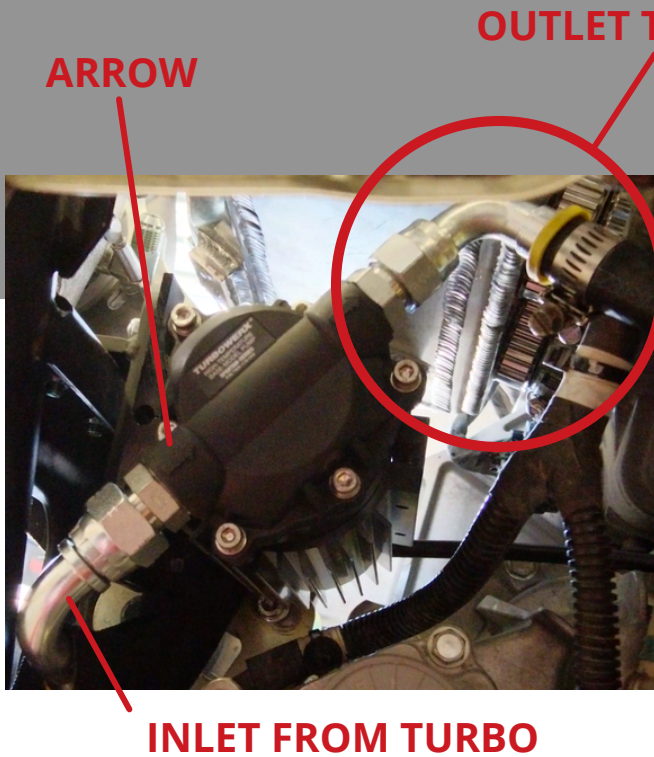
18. Once the turbo is resting on the rubber mounts and the 14mm bolts, lift the mounting piece on the left side of the turbo so that it is against the frame. Mark the location where the mounting piece meets the frame and drill a 3/8" hole through the frame where you marked



19. Install a 13mm bolt and nut through the mounting piece and the hole in the frame. This helps secure the turbo to the frame

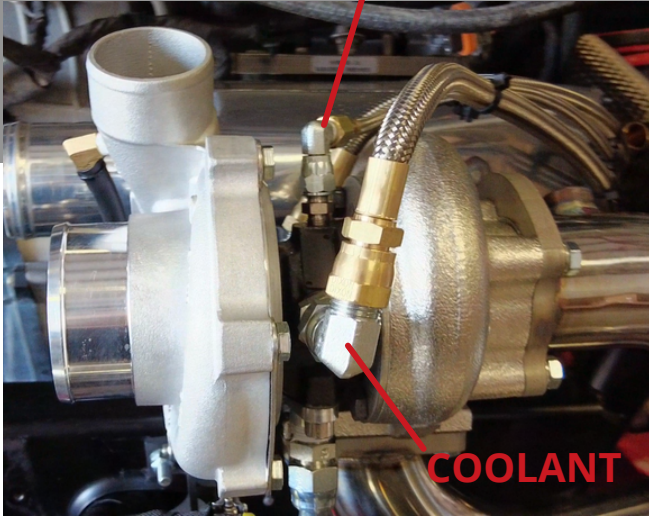


20. Install the oil drain line onto the bottom of the turbo, run the oil drain line through the left side next to the frame, and route it behind the turbo to the bottom right side of the oil scavenge pump. Ensure that the arrow on the oil scavenge pump is pointing upwards

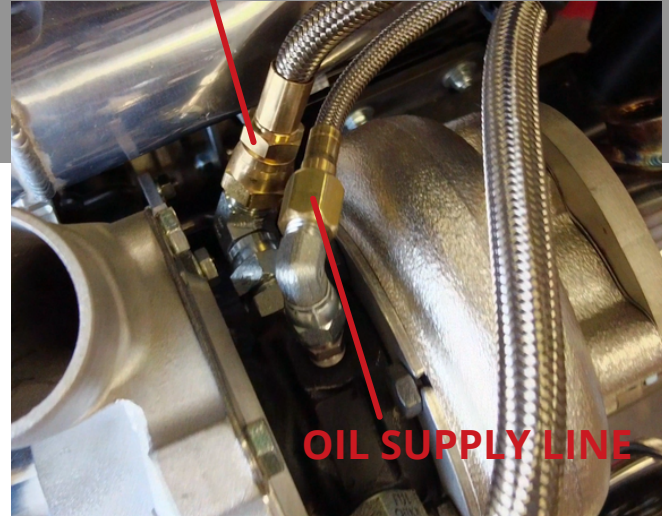


21. Route the other oil drain line from the top of the oil scavenge pump, across the front of the motor to the front of the clutch cover on the lefthand side of the vehicle in front of the primary clutch. From here, you will take the Allen bolt out of the motor, install the fitting using the gasket, and install the oil line. Ensure that there are no high or low spots in the drain line. That way gravity can help the oil flow as smoothly as possible

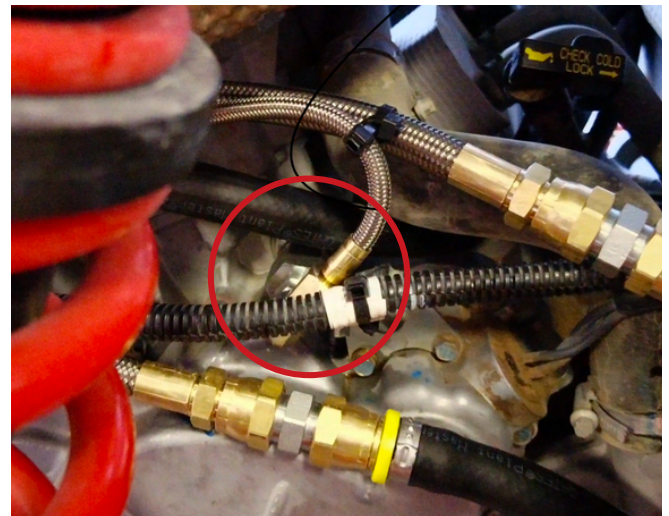
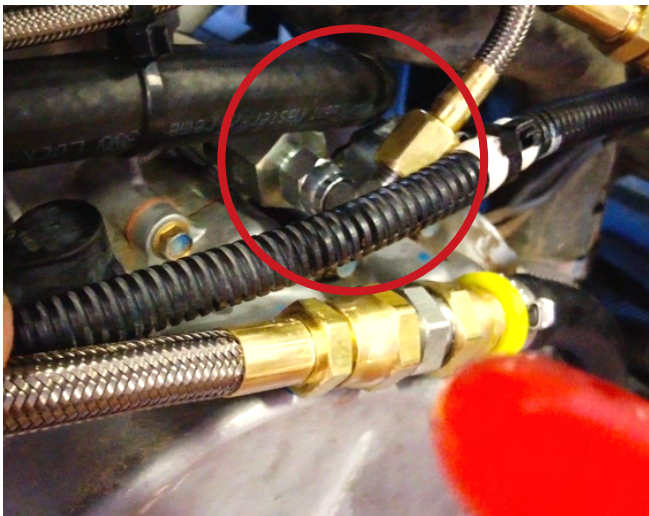
**OIL SUPPLY LINE**



**COOLANT**

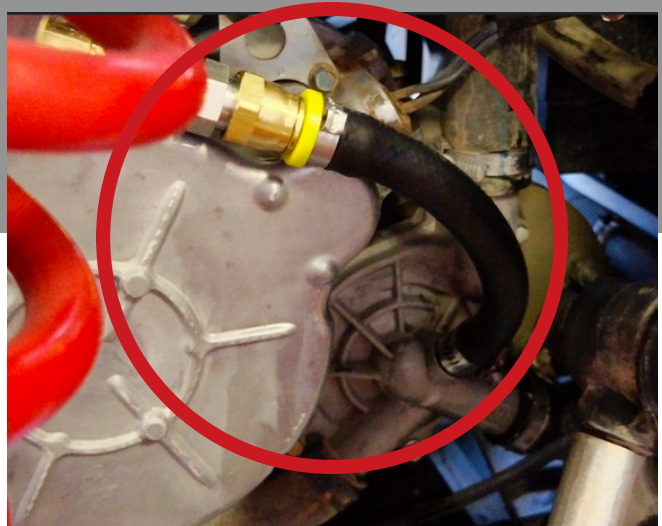
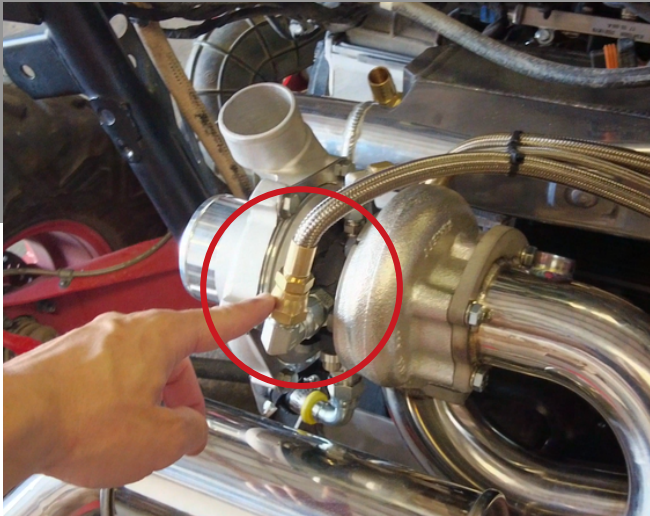


22. Install the oil supply line and two coolant lines to the turbo. The oil supply line will attach to the top of the turbo and the two coolant lines will attach to the sides

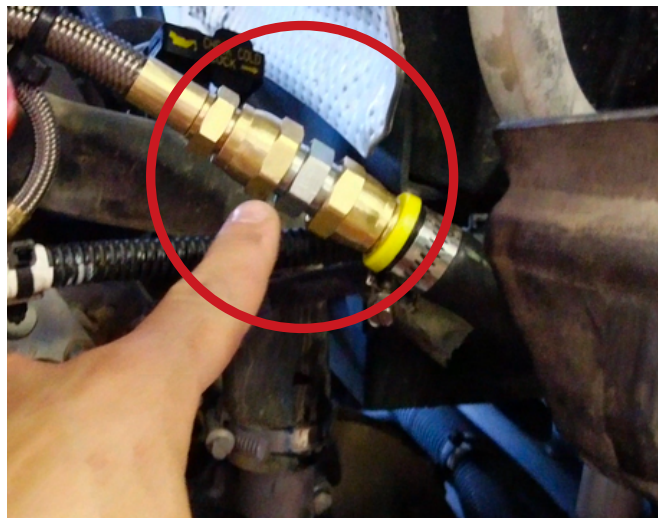
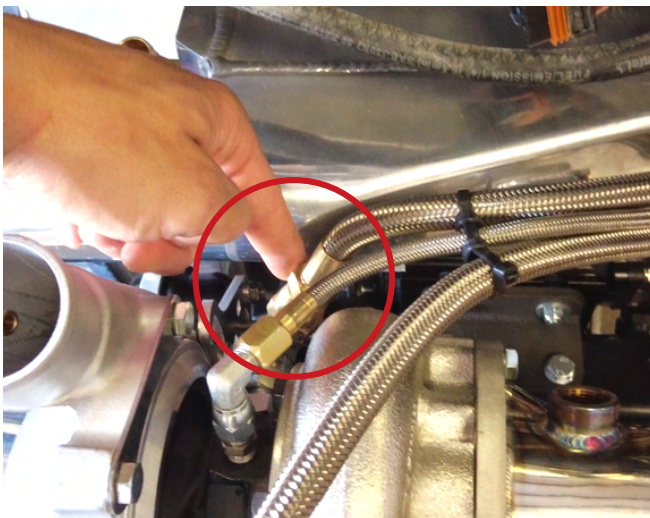


23. The other end of the oil supply line will attach to a big fitting on the right side of the vehicle where the 13mm Allen bolt was located

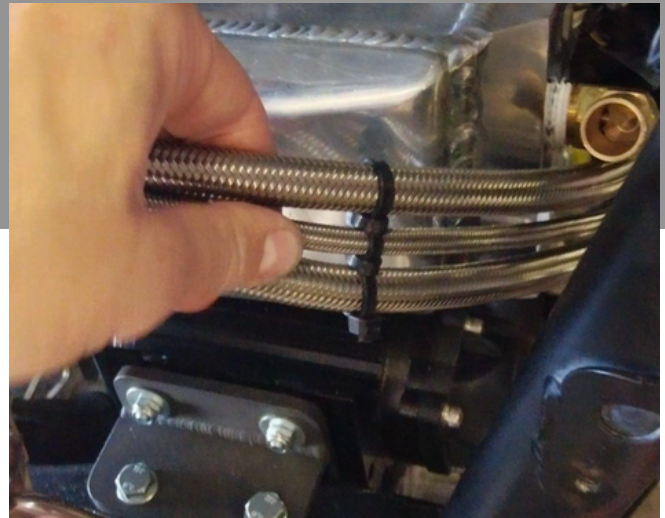




24. Disconnect the stock line that was connected to the thermostat housing. This stock line will attach to the new coolant line without the rubber hose. The first new coolant line with the rubberized hose will attach from the outside of the turbo to the outside of the thermostat housing on the right side of the vehicle



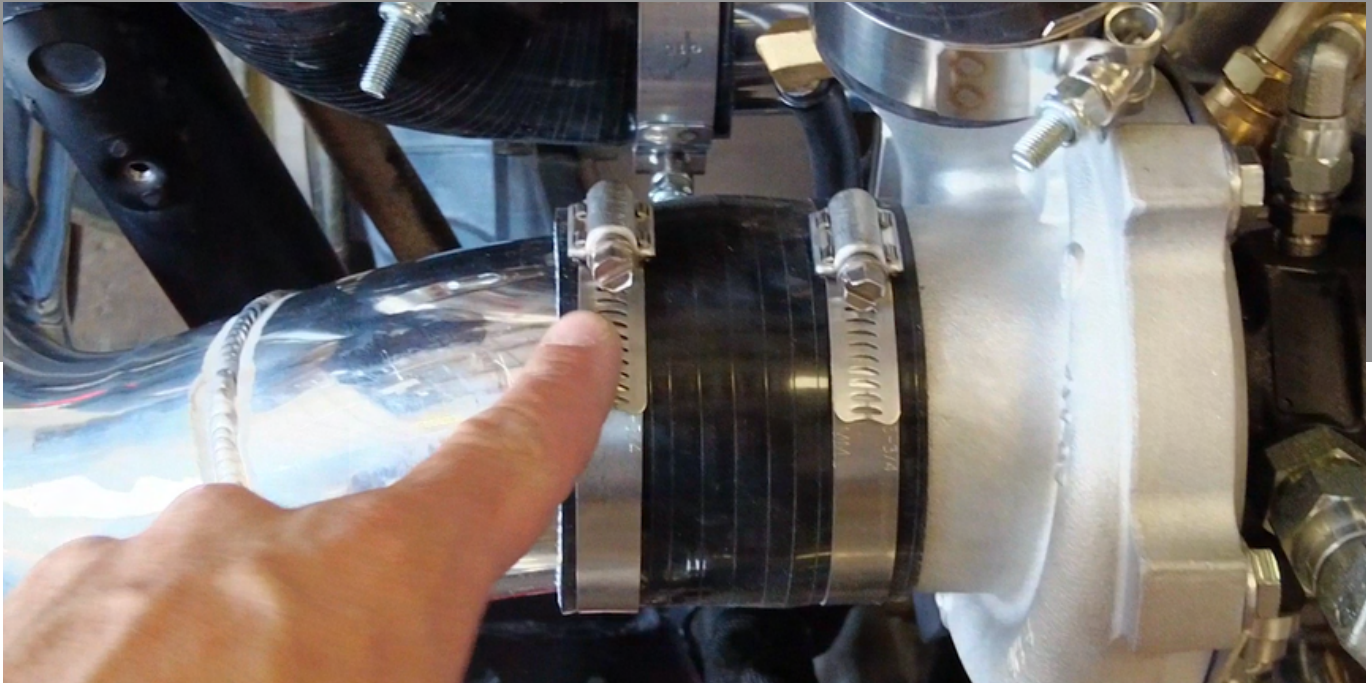
25. The second new coolant line without the rubberized hose will attach from the inside of the turbo to the stock coolant line that was disconnected from the thermostat housing



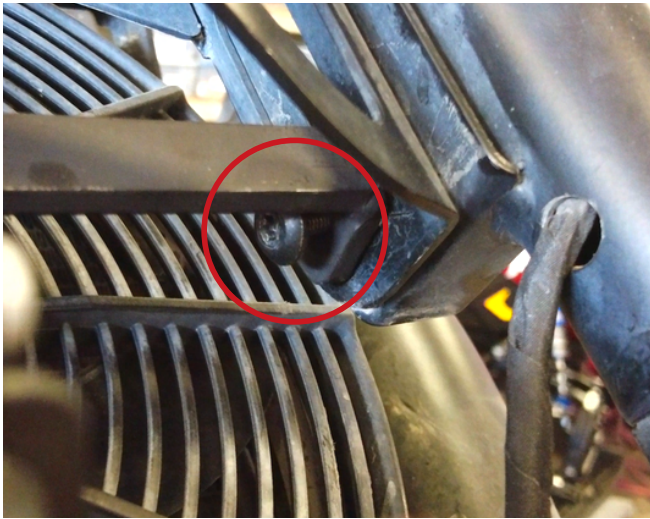
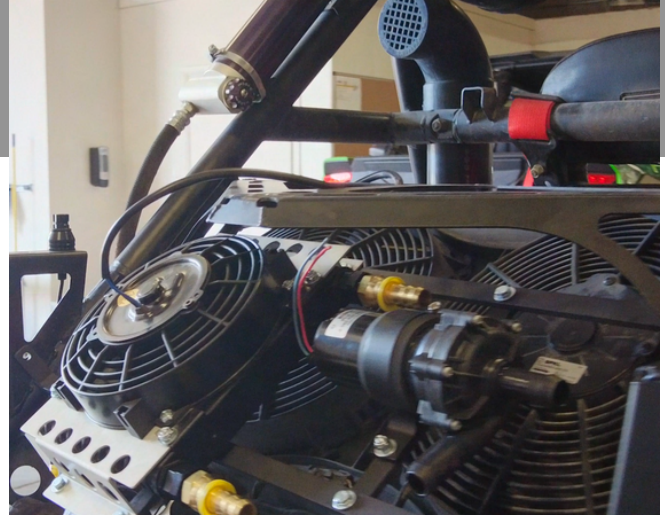
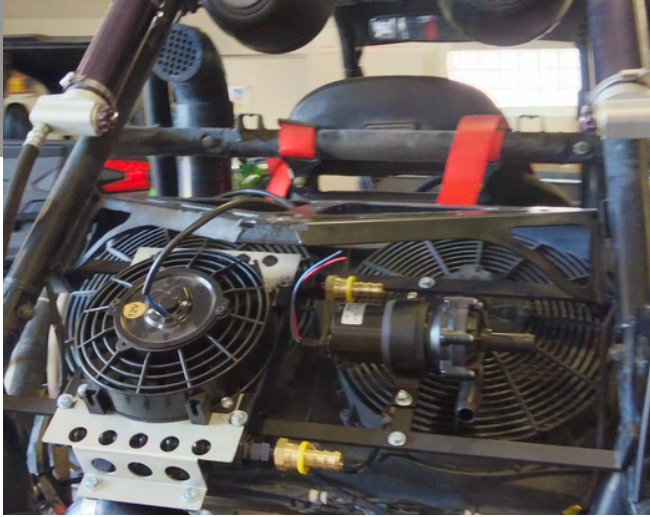
26. Zip-tie the oil supply line and the two coolant lines together and make sure they aren't touching or rubbing on motor



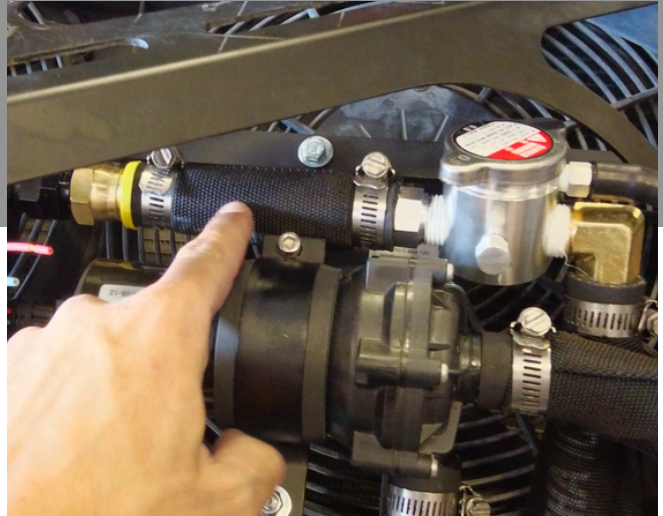
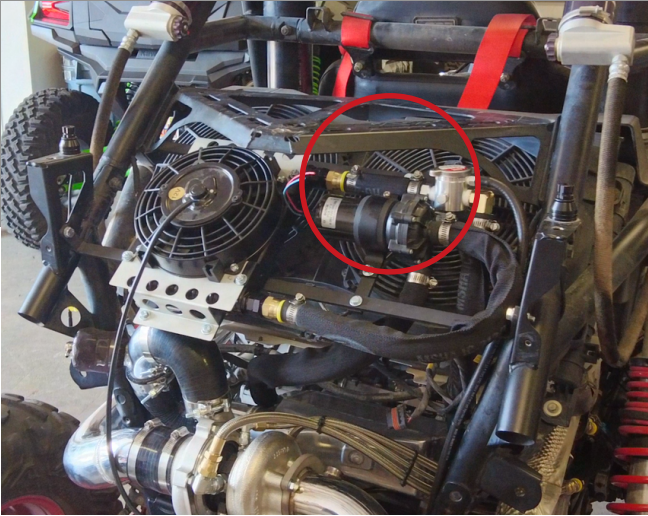
27. Install the charge tube and make sure it isn't touching the frame. Run the charge tube from the intercooler/airbox to the turbo



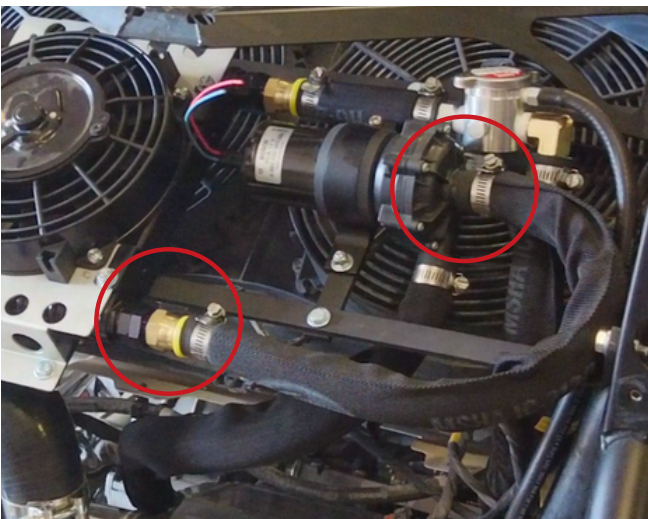
28. Install the cold air intake using the supplied worm gear clamps. Run it from the air filter box to the turbo inlet



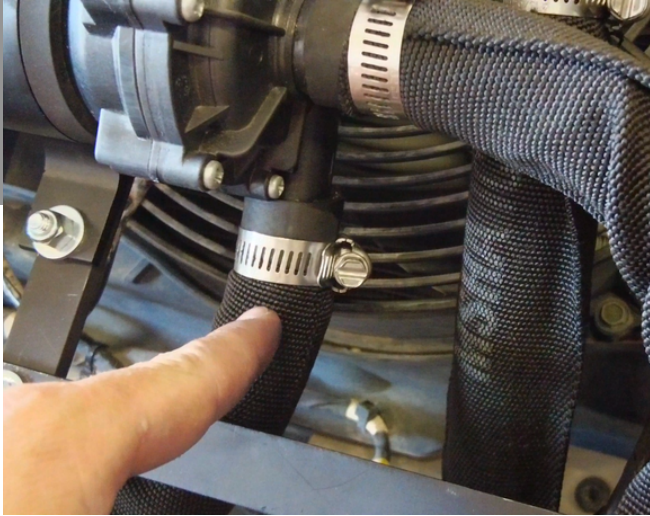
29. Install the water to air heat exchanger. You will reuse the T40 bolts for the upper bracket. For the lower bracket, you will drill 3/8" holes where the bracket meets the frame and install the provided hardware to secure it in place



30. Install the short line from the coolant filler to the top of the water to air heat exchanger



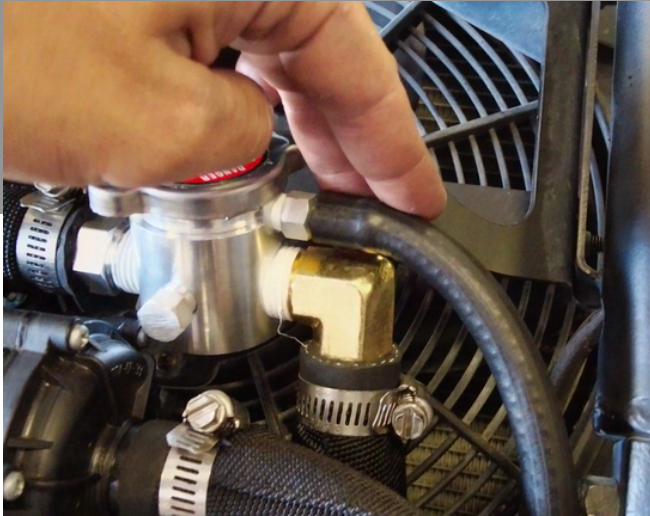
31. Install the longer line from the bottom of the water to air heat exchanger to the inlet of the pump



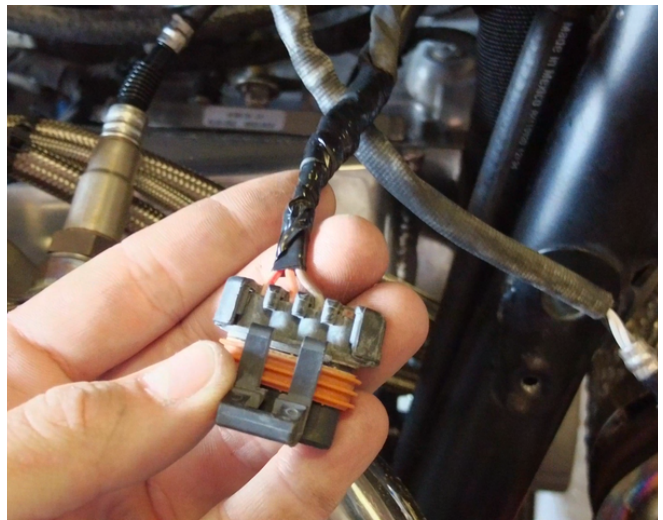
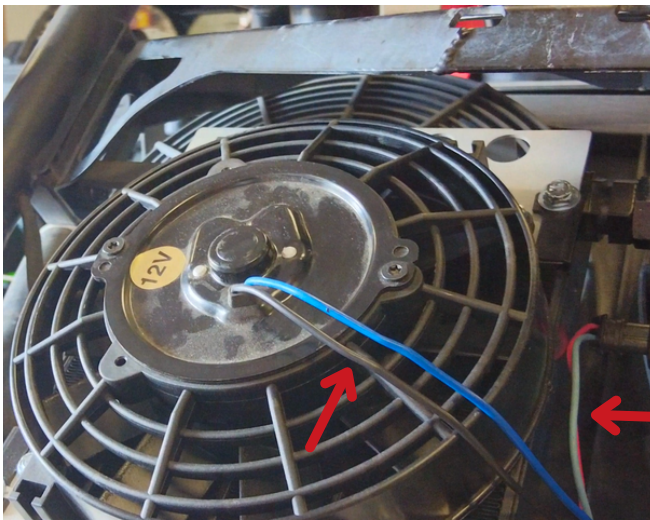
32. Install a line from the outlet of the pump to the lefthand side of the airbox



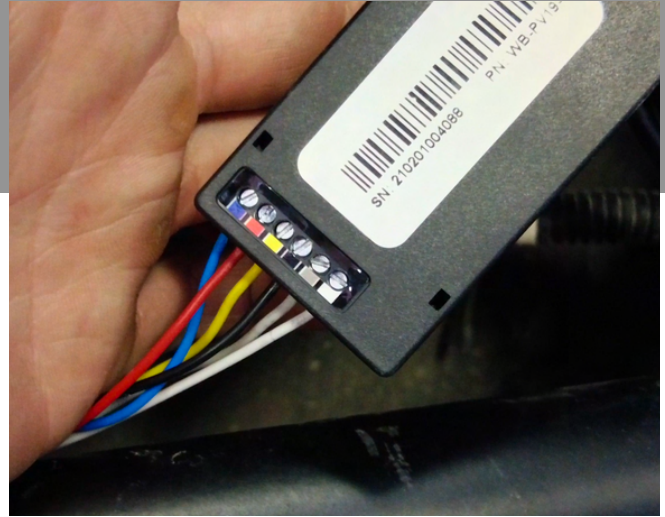
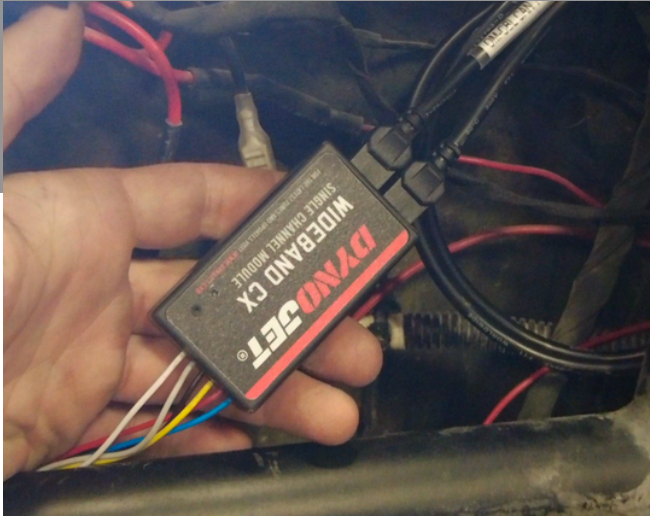
33. Install a line from the righthand side of the airbox to the righthand side of the coolant filler



34. Install a breather from the righthand side of the water filler to the bottom right side of the frame, keeping the line away from the axle/CV joint



35. Wire the fan and pump together, sync power and ground, and route them down to the taillights. Then route everything along the frame rail on the right side of the vehicle to the Dynojet Wideband at the front by the steering wheel

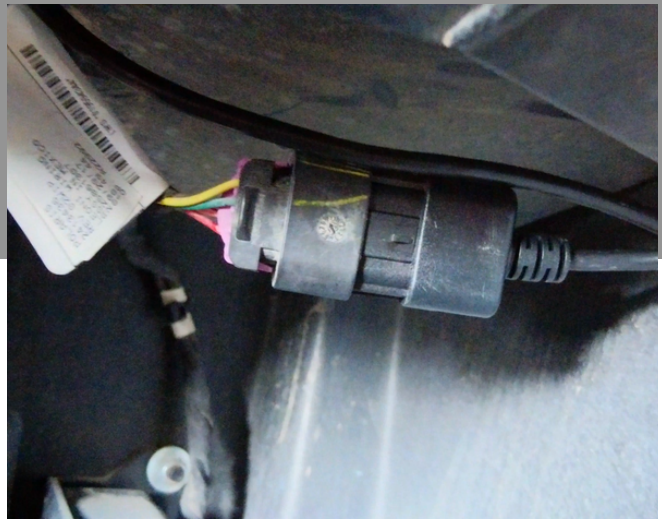


36. Connect the AFR sensor wires to their corresponding colors on the Dynojet Wideband



37. Route one wire from the Dynojet Wideband to the Power Vision 3 on the dash. Find a good spot to mount the PV3 with velcro

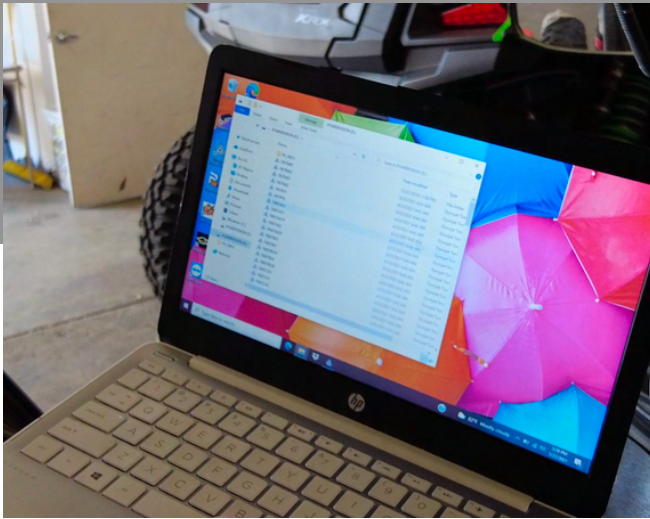




38. Route the other wire from the Dynojet Wideband to the diagnostic port on the left side of the ignition



39. To set up the Power Vision 3, turn on the vehicle and press the oval button. The PV3 will show that there are no compatible tune files. From here, press the back button, then press the oval button to get to the Main Menu. Next, go into Vehicle Tools, then Vehicle Information. Email a photo of this information to [info@forceturbos.com](mailto:info@forceturbos.com) so that we can make a tune and a stock tune to send back to you



40. After you have received your new tunes from Force Turbos, you will need to install them onto the PV3. Plug the PV3 into a computer with your tunes downloaded onto it. All of the tunes from Dynojet will appear. These are not compatible with the vehicle. Next, copy and paste your Force Turbos tunes onto the Power Vision. Disconnect the PV3 from the computer and turn on the vehicle. The PV3 will go through the setup process and eventually say "all required files found"



41. Next, press the oval button to see all compatible tunes. Select the Force Turbos RS1 tune and press the oval button to start the ECU flash



42. It will now ask if you want to delete incompatible STK and DJT files. Press the oval button to say yes and clean up the files so that only the compatible tunes are available



43. Next, it will ask if you want to flash ECU with selected tune file. Press the oval button to continue. This will take about 5 min to finish.

Make sure not to touch any electrical components on the vehicle until this step is complete



44. After the tune has been flashed in, turn off the vehicle and wait about 45 seconds. The tune should now be loaded into the vehicle and you may start it up





45. Next you will set up the gauges on the Power Vision. To do this, press the oval button to get to the Main Menu. go to Device Tools > Configure Gauges > Screen 1 > Channel 1. Set the Channel 1 to Air Fuel Ratio 1 (unit = AFR, precision = 0.0)

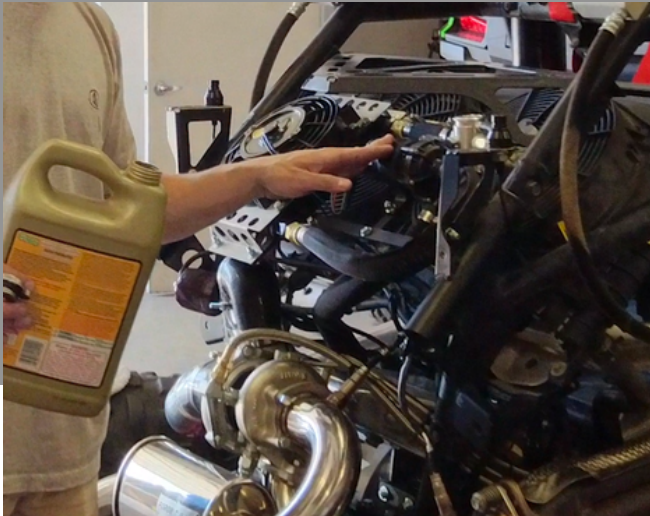


46. Using the same process, set the rest of the channels to show the desired gauges. We prefer Channel 2 to show Engine Speed, Channel 3 to show Barometric Pressure, and Channel 4 to show Manifold Absolute Pressure. Add more gauges to other screens if desired

47. IMPORTANT: BE SURE TO BLEED AIR POCKETS FROM THE COOLANT SYSTEM BEFORE USE! FAILURE TO DO SO COULD CAUSE IRREPARABLE ENGINE DAMAGE!

Bleeding the air pockets from coolant system may take some time. Have the patience to be thorough.

- Lift the front end of the machine off the ground by 12". Be sure to use correct lift points on the vehicle to avoid frame damage. Chock the wheels and use jack stands for safety.
- Fill radiator with coolant. Leave radiator cap off.
- Start machine. Let engine warm up to 160° F. Add coolant as air bubbles leave the system.
- Open bleed screw on back of engine head. (Be careful not to lose bolt or washer). Let air pockets bleed from the tube. Open and close multiple times.
- Once the air has been bled from the system (no more bubbles, just steady flow of coolant), tighten the bleed screw, install radiator cap, and fill overflow bottle with correct level of antifreeze.
- Return vehicle to level.
- Check oil level in motor once the engine has been up to working temperature (160° F).
- Fill engine oil if needed.
- Slowly run the machine and check for any oil leaks, or coolant leaks.



48. Fill the pump with coolant and run it so that coolant is circulated throughout the system

49. Take it easy on your first few rides and watch your AFR's when driving the machine. If they exceed the ranges below, shut it off to avoid engine damage:

- Idle = 14.7 - 14.9 or lower
- Midrange driving = 11.5 - 12 or lower
- Full throttle = 10.5 - 11.5 or lower

Always follow these good practices:

- For the best results, always use good 91 octane grade fuel or higher.
- Let your machine warm up to 120° F before driving for best operational performance.
- Check turbo system exhaust bolts and charge tube clamps after every ride to make sure that they have not become loose. Tighten if necessary.

**THANK YOU FOR PURCHASING A FORCE TURBOS PRODUCT.  
VISIT OUR WEBSITE AT [FORCETURBOS.COM](http://FORCETURBOS.COM) FOR OTHER  
GREAT PRODUCTS.**

# VEHICLE WITH TURBO SYSTEM

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