



## **2020 X3 Turbo RR Paragon-46 357 Turbo Upgrade System**

**SKU(s): 2020 P46-357 (604FC0044)**

**NOTE:** Expect 24–48-hour delay from the time you request a tune to when the file is enabled. Please create your Maptuner account before starting the project. Email us at [maptunerx@evopowersports.com](mailto:maptunerx@evopowersports.com)

**NOTE:** All X3 P46 dyno graphs were performed on a new stock Turbo R engine with higher compression. Turbo RR vehicles may have slightly less power.

This is a high-performance upgrade! Although we have gone through great lengths to build safety into the upgrade turbo system, the fact is installing any upgrade / turbo system requires care in both operation and installation. Poor fuel, improper setup or any number of things that are done incorrectly can damage your engine!

- You have likely voided the sound and exhaust emission standards of your country if applicable.
- This upgrade is intended for OFFROAD and RACING use only.
- This is a performance upgrade which will VOID your engine warranty especially if installed incorrectly or operated without regard to your instruments.
- The fuel requirements must be adhered to. Poor fuel can destroy an engine in seconds.
- Evolution Powersports bears no responsibility for damage caused to your vehicle by the installation of EVP products. The warranty on big turbo kits is 30 days from the date of purchase. Evolution Powersports, at its discretion will determine whether a part meets the warranty requirements. In no case is there any warranty from EVP for your vehicle or vehicles drivetrain. Although we have been careful to supply you with the highest quality parts possible, we assume no liability for damage to the vehicle or personal injury from installing or using any of our products.
- The installation of this kit is technical and mechanical in nature with many opportunities to make mistakes – mistakes that can be very costly. If you are not qualified to install this kit, bring your vehicle to one of our qualified installation centers to do the installation.
- This kit will make your vehicle faster, climb higher and accelerate more quickly and take a longer distance to brake than a stock tuned vehicle. If you are not capable of controlling the vehicle with the added performance, do not install the kit.
- High boost is hard on spark plugs – they must be changed frequently. If you experience misfire issues – Gap and replace the spark plugs.
- A full exhaust and clutching are required for this kit and can be purchased separately.
- Do not ever allow a child or an unqualified driver to operate this vehicle.



**Parts Included in Paragon 46-357 Turbo Upgrade System**

100FC0115	X3 Blow Off Valve 2.0 (BOV) Kit
100RC0083	2020+ X3 Desert Storm Charge Tube Kit
102FC0001	2020+ X3 Race Intercooler
203FC0060	2020+ X3 Desert Storm V-Flow Intake Kit
201FC0002	X3 "Torrent-F" Intake Plenum, Black
502RC0010	2020+ X3 1300cc Injectors, Set Of 3
604FU0056	X3 ME17 Paragon 46/42 Red Turbocharger Assembly
604FC0026	X3 Paragon Install Kit
800FC0010	X3 XR Series Custom Age 625 Head Stud Kit, 9mm-10mm
500RC0027	2017-2022 (non 2021+ RR) X3 340 LPH Fuel Pump Kit
702RC0013	X3 4 Bar MAP Sensor Kit
707FC0001	Maptuner X for BRP Vehicles
804FC0001	X3 Spark Plug Set of 3

**Parts Included X3 Paragon Install Kit**

953RU0073	Paragon and Desert Storm Turbo Oil Feed Line	1
953RC0067	5/8" Black Silicone Fire Sleeve	12
953RU0013	27mm Pinch Clamp	1
953RU0060	18mm Pinch Clamp	5
953RU0077	M8-1.25 Copper Flange Nut	1
953RU0078	HPS 3/8" Silicone Water Hose	13
953RU0078	HPS 3/8" Silicone Water Hose	13
953RU0079	3/4" Black Silicone Fire Sleeve	6
953RU0079	3/4" Black Silicone Fire Sleeve	11
953RU0038	3/16" 90-Degree Hose Barb	2
953RU0037	3mm ID Hose	7
953RU0037	3mm ID Hose	7
953RU0037	3mm ID Hose	30
953RU0080	3/8" Brass Hose Barb	1
953RU0034	11.3mm Pinch Clamp	8
603RU0000	X3 Turbo Heat Shield	1
001FU0133	Paragon Maptuner Power Flash	1
953RU0076	M8-1.25 x 40mm Stud	1
953RU0041	3/16" T Barb	1



Level	Tunes	Max Boost (psi)	Spark Plug Gap	Spring	Waste Gate (psi)	Engine HP
P46-357	91, 100, 110, E85	19, 25, 34, 34	.016 - .018	Brown/Pink	9.5	357 (E85)

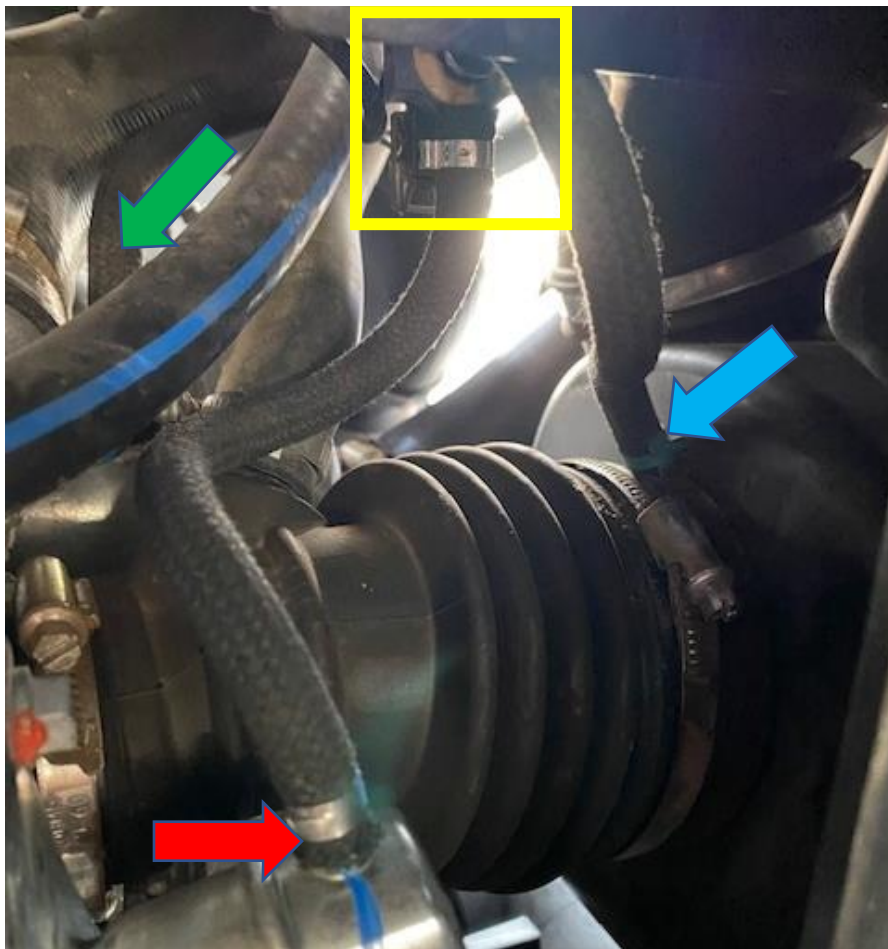
**Required Parts (Sold Separately)**

- EVP or other Full Turbo Back Exhaust System
- AFR Module
- Boost Module

## TURBO REMOVAL

**Step 1:** Remove panel between the seats that allows access to the turbocharger.

**Step 2:** Remove and label vacuum lines from the boost control solenoid going to the **wastegate actuator**, **boost reference**, and **air box** (corresponding colors). Boost solenoid located in the yellow box.



**Step 3:** Remove the worm drive clamp holding the intake tube onto the turbo. (Shown in photo above).

**Step 4:** Remove the worm drive clamp on the top of the air box.

**Step 5:** Using a 13mm socket remove the 2 bolts behind the driver seat holding the air box to the firewall.



**Step 6:** Remove the worm drive clamps or t-bolt clamps holding the charge tubes on. Intercooler to turbocharger and intercooler to throttle body. Remove from vehicle.

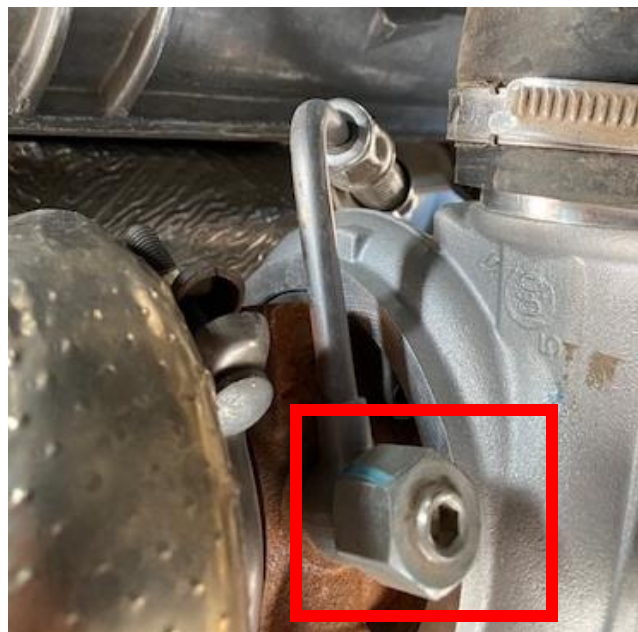
**Step 7:** Using a 10mm socket, remove the (4) fasteners holding the intercooler in place. Be sure to unplug the intercooler fan. Remove intercooler assembly from vehicle.

**Step 8:** Remove the nut on the V-band clamp holding the exhaust onto the turbo. You may need to use penetrating oil.

**Step 9:** Remove the worm drive clamps holding the heat shielding on to the mid-pipe. Remove heat shields from mid-pipe.

**Step 10:** Remove oil drain line from turbocharger by cutting the OEM clamp.

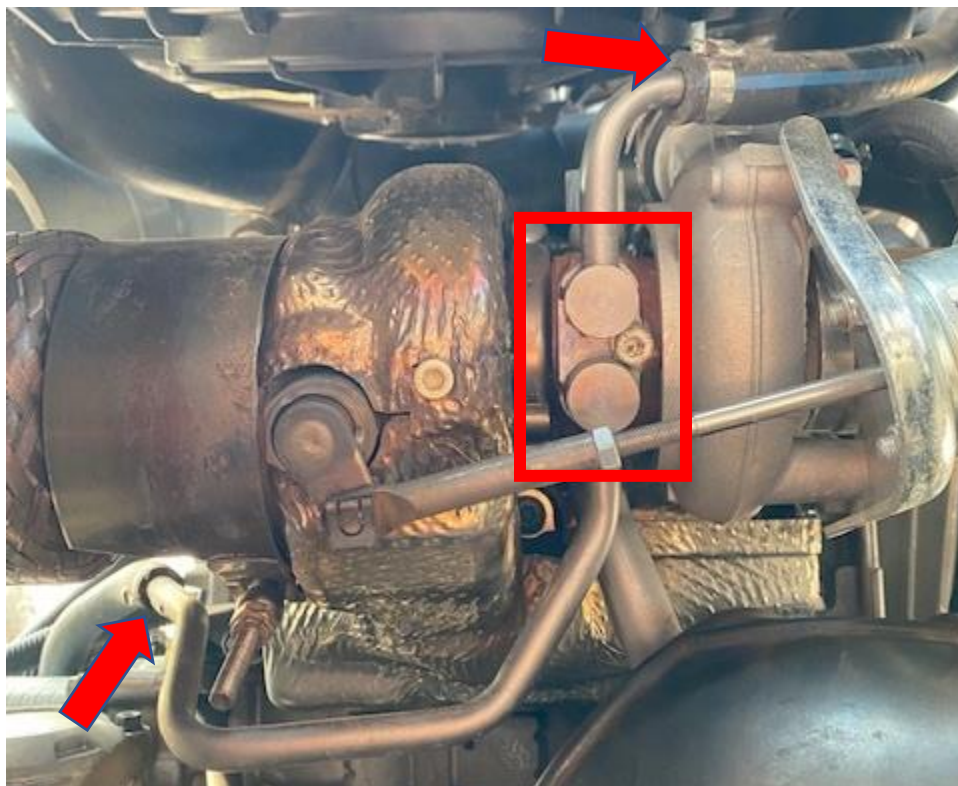
**Step 12:** Remove oil supply line from top of the turbocharger.





**Step 14:** Using a soft grip vise grip, pinch off the soft coolant lines that supply/return water to the turbo. About 2 inches from the hardlines.

**Step 15:** Cut the OEM clamps holding the soft coolant line to the hardline. Remove the soft coolant lines from the hard lines. The hardlines will come out with the turbocharger.



**Step 17:** Remove bolts securing exhaust manifold heat shields – lower heat shield can be removed. Upper heat shield must stay on until the turbo is loose.

**Step 18:** Using a 10mm socket or T40 Torx remove the fasteners holding the exhaust manifold to the engine and remove the turbo from the vehicle.

**Step 19:** Remove oil pressure sensor and OEM oil line (be sure to save the copper washers).



## Installation of the Paragon Turbocharger

**NOTE:** Your Paragon turbocharger will come pre-oiled and fitted with the correct coolant and oil fittings.

**Step 1:** Slide the supplied oil feed line through the 5/8" supplied fire sleeve. Reinstall the OEM oil pressure sensor through the banjo side of the EVP oil feed line. Install the OEM copper washers on each side of the banjo fitting. See figure 1.

**Step 2:** Install the M8 x 1.25 stud into the top hole of the center exhaust port. Thread the stud all the way in then back it out one full turn. Hang the OEM manifold exhaust gasket on the stud. See figure 2.

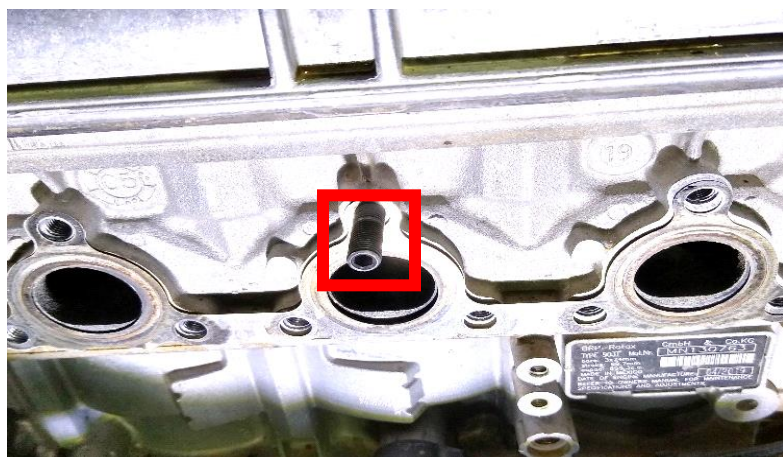


Fig 2



Fig 1

**Step 3:** Install the new turbocharger reusing the OEM fasteners. Sequence 1: Torque the (2) retaining screws to 44 in-lb (4 ft-lb). Sequence 2: Torque the all (9) retaining screws to 17 ft-lbs. (23 Nm). Install the M8 x 1.25 copper flange nut onto the stud. Use a 4mm Allen wrench to hold the stud while torquing to 17 ft-lb. See figures 3-4.

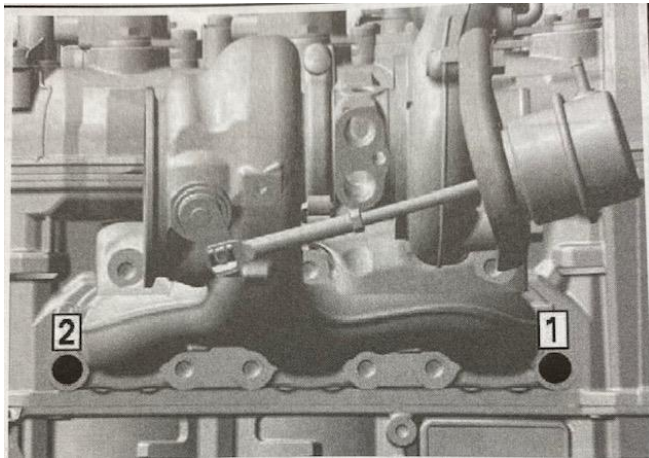


Fig 3

Sequence 1: 44 in-lb (4 ft-lb)

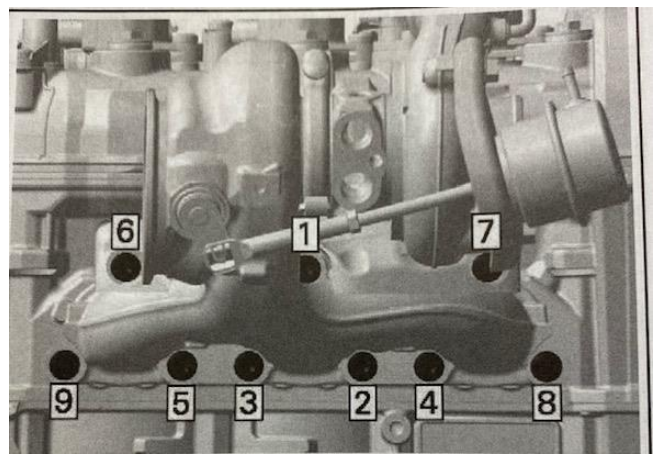


Fig 4

Sequence 2: 17 ft-lb

**Step 4:** Connect the EVP oil supply line to the top of the turbocharger. Remove the safety red cap before installing.

**Step 5:** Connect the OEM rubber drain hose to the Paragon oil drain. Use the supplied 27mm pinch clamp to secure it.

**Step 6:** Install both 3/4" fire sleeves onto each 3/8" silicone water hoses. The shorter fire sleeve will connect to the rear of the turbocharger coolant fitting and run to the "T" underneath the coolant reservoir. Use (2) 18mm pinch clamps. The longer fire sleeve with silicone hose will connect the the front barb coolant fitting and connect back to the OEM soft coolant line using the supplied 3/8" hose barb. Use (3) 18mm pinch clamps.

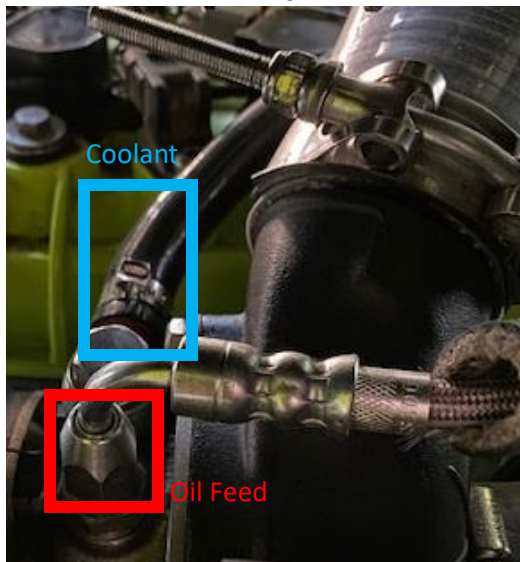


Fig 5

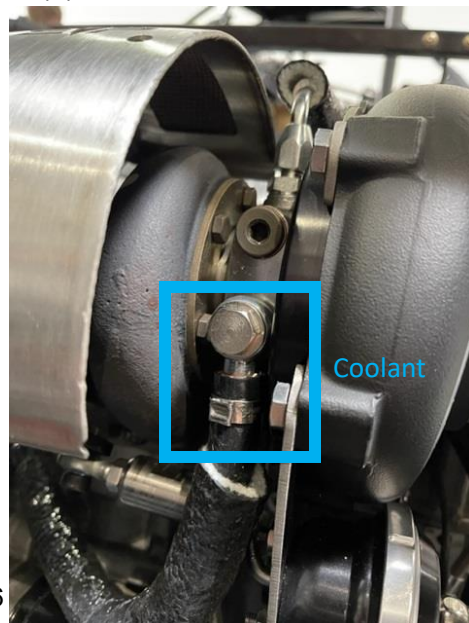


Fig 6



**Step 7:** Install the 3/4-3/4 barb into the V-Flow and secure with a pinch clamp. **NOTE:** If using a catch can, cap the hose barb with supplied cap. Install the V-Flow to the turbocharger and air box. Reinstall the (2) 13mm bolts securing the airbox to the firewall. Tighten the V-Flow down.

**Step 8:** Reinstall the (3) vacuum lines coming off the boost control solenoid. Use the (2) 3/16" 90-degree hose barbs and (2) 7inch vacuum hoses to connect the **wastegate** and **boost reference** port. Reuse the OEM **airbox** vacuum line and clamp and connect to the V-Flow.

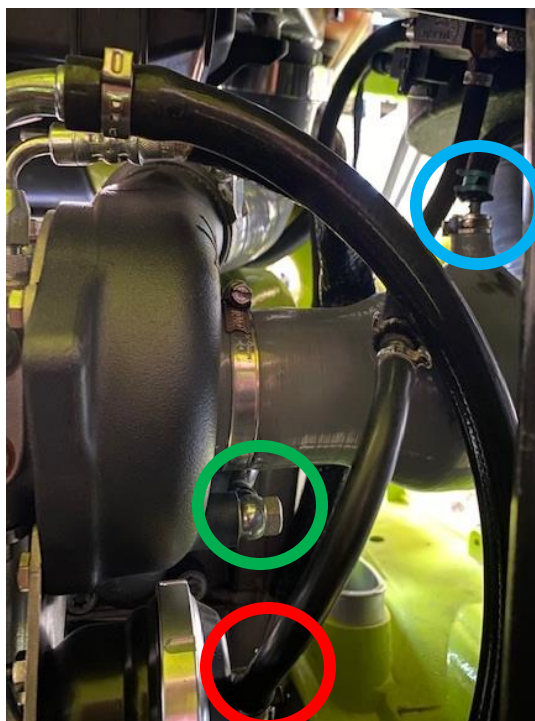


Fig 7

### MAP Sensor Kit Installation

**Step 9:** Install the (2) supplied MAP sensors. One is located on the throttle body; one is located on the intake plenum. (See Figure 8-9). The MAP sensor on the throttle body will use supplied MAP sensor harness. **NOTE:** Use dielectric grease on the green O-rings for installation. If you are getting MAP sensor codes, 180 the plug.

**NOTE:** Tighten both OEM throttle body clamps or it will pop off when boost is built.



Fig 8



Fig 9

### **Blow Off Valve Installation:**

**Step 10:** Install the lower charge tube onto the throttle body, don't tighten down yet.

**Step 11:** Install the Blow Off Valve into the charge tube. Run the vacuum line from the BOV to the plenum. Install the supplied plenum barb, reuse the OEM torx screw. (Fig 10)

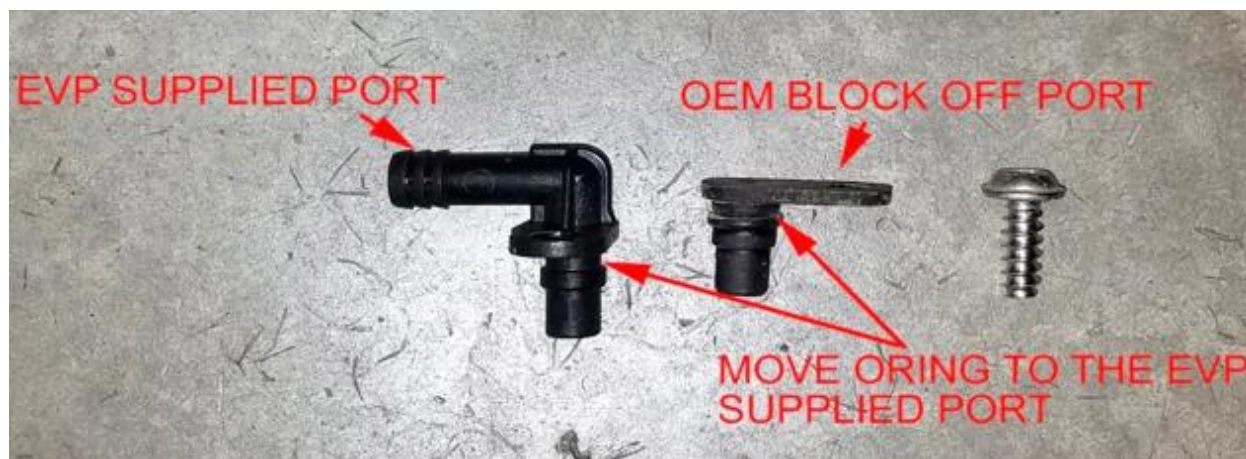


Fig 10

**Step 12:** Install the EVP plenum brace onto the OEM plenum. The brace will only fit on one-way. This is a girdle for the plenum. If you have any questions, please reference "the clamp" instructions on our website.

**NOTE:** you can upgrade to a EVP plenum if you don't want the brace.

### ***Injector Installation:***

**Step 13:** With brake cleaner, spray around all (3) injector ports and fuel rail. Wipe debris away with a rag. Turbo and Turbo R models press the metal clip down and remove the connector from the injector. Remove the fuel hose from the fuel rail. Push the connector in and spread left/right side away from the fuel rail. Remove the fuel rail, keep the O-rings with the fuel hose. Remove the (2) fuel rail screws.

**Step 14:** Remove the injector clip, once the clip is removed you can pull the injector out of the fuel rail. Install the EVP injectors, use dielectric grease on the o-rings allowing for easier installation. Place the injector clip back onto the fuel rail, make sure the clip is in both grooves. Reinstall the fuel rail in reverse order.



Fig 11



Fig 12

### ***Plenum Installation:***

**Step 15:** Remove the OEM plenum from the vehicle. The “Torrent F” plenum will reuse the OEM gasket and gasket sleeves. Clean the gasket before installation. Use Di-electric grease to push in all (8) gasket sleeves. (Figure 13).

**Step 16:** The “Torrent F” plenum comes with a hardware kit including: (4) throttle body mounting screws, (1) throttle body O-ring, (2) fuel rail mounting screws, (1) MAP Sensor mounting screw, (1) Intake manifold pressure barb. (Figure 14).





Fig 13



Fig 14

**Torque Specs for the Intake Manifold Screws are 80 in-lb**

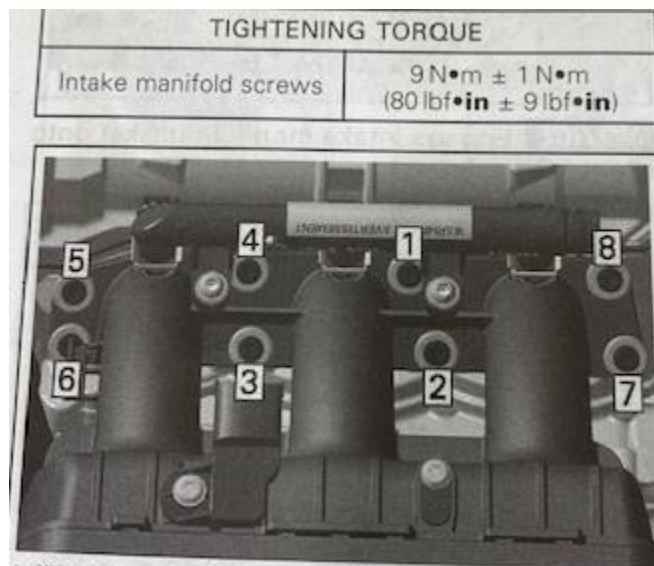


Fig 15





### ***Spark Plug Installation:***

**Step 17:** Remove all (3) spark plug coil connectors. Remove all (3) retaining screws and ground connectors. Pull the ignition coils out of the block. Now the spark plugs can be accessed and changed out with supplied EVP plugs. Torque the new spark plugs to 97 in-lb (11 Nm). Reinstall the coils, ground connectors and retaining screws.

### ***Head Stud Installation:***

**Step 18:** If you're installing 9mm ARP 2000 head studs please follow the instructions. If you're NOT installing head studs please skip to **step 19**.

Remove (1) factory head bolt and replace with **(1) ARP 2000 Head Stud 9mm**. Apply supplied assembly lube to the top of the stud threads and both sides of the washer and nut. Install washer first, then thread nut onto the top of the stud - torque nut to **45 ft lbs**. Be very careful not to drop anything into the engine! **NOTE:** Do this process one at a time for all remaining head bolts. **Never loosen more than (1) head bolt without replacing and torquing with a stud.** This will ensure the cylinder head gasket does not lose its seal. Once all factory bolts have been replaced with studs, torque the head according to the "REPLACEMENT" pattern and torque steps below. When all studs have been torqued to the final value, re-torque to the final value (3) more times.

























<p><b><u>REPLACEMENT Torque Procedure</u></b></p> <ol style="list-style-type: none"> <li>1. Initial 45 ft lb</li> <li>2. Final 52 ft lb confirm 3 TIMES</li> </ol> <p><b><u>NEW GASKET Torque procedure</u></b></p> <ol style="list-style-type: none"> <li>1. Initial 28 ft lb</li> <li>2. Intermediate 45 ft lb</li> <li>3. Final 52 ft lb confirm 3-TIMES</li> </ol>	<p style="text-align: center;"><b><u>Exhaust Side</u></b></p> <table style="width: 100%; text-align: center;"> <tr> <td>8</td> <td>1</td> <td>4</td> <td>5</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td>2</td> <td>3</td> <td>6</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	8	1	4	5					7	2	3	6				
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Fig 13

**XR Series Custom Age 625 9mm-10mm Torque Specs**

























<p><b><u>REPLACEMENT Torque Procedure</u></b></p> <ol style="list-style-type: none"> <li>1. Initial 45 ft lb</li> <li>2. Final 65 ft lb confirm 3 TIMES</li> </ol> <p><b><u>NEW GASKET Torque procedure</u></b></p> <ol style="list-style-type: none"> <li>1. Initial 28 ft lb</li> <li>2. Intermediate 45 ft lb</li> <li>3. Final 65 ft lb confirm 3-TIMES</li> </ol>	<p style="text-align: center;"><b><u>Exhaust Side</u></b></p> <table style="width: 100%; text-align: center;"> <tr> <td>8</td> <td>1</td> <td>4</td> <td>5</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td>2</td> <td>3</td> <td>6</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </table>	8	1	4	5					7	2	3	6				
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7	2	3	6														
																	

Fig 13

### ***Intercooler Installation:***

**Step 19:** Installing the EVP race intercooler and stock intercooler will be the same process. Place the intercooler into the tray and install the (4) intercooler bolts loosely. Connect the intercooler fan to the vehicles wiring harness. Connect both upper and lower charge tubes to the intercooler. Tighten all (4) intercooler bolts and all (4) charge tube clamps.

### ***Exhaust Installation:***

**Step 20:** Reinstall your free-flowing exhaust or if you have purchased one of our EVP handcrafted exhaust kits please find those installation instructions on our website. Install the EVP turbo heat shield: one v-band clamp and bracket.

## ***2018-2023 (non 2021+ RR) X3 340LPH Fuel Pump Installation***

**NOTE:** It is best to syphon all fuel out of the tank prior to starting this job.

**NOTE:** The fuel pump relay harness must be installed prior to powering up the dash or starting the vehicle- failure to do so will damage your ECU.

**Step 21:** Remove plastics covering fuel tank. See fig 14 below for location.

**Step 22:** Unplug electrical connector going into the top of the pump.

**Step 23:** Unhook fuel hose by removing the red/blue clip from the connection. Then push down on the black clip while pushing in on the back side of the fitting – then lift the fitting off the pump assembly.

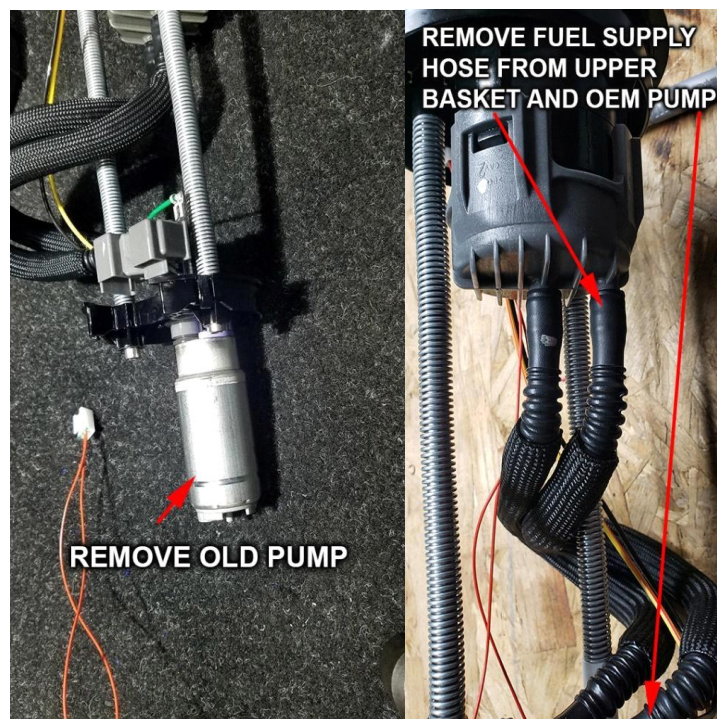
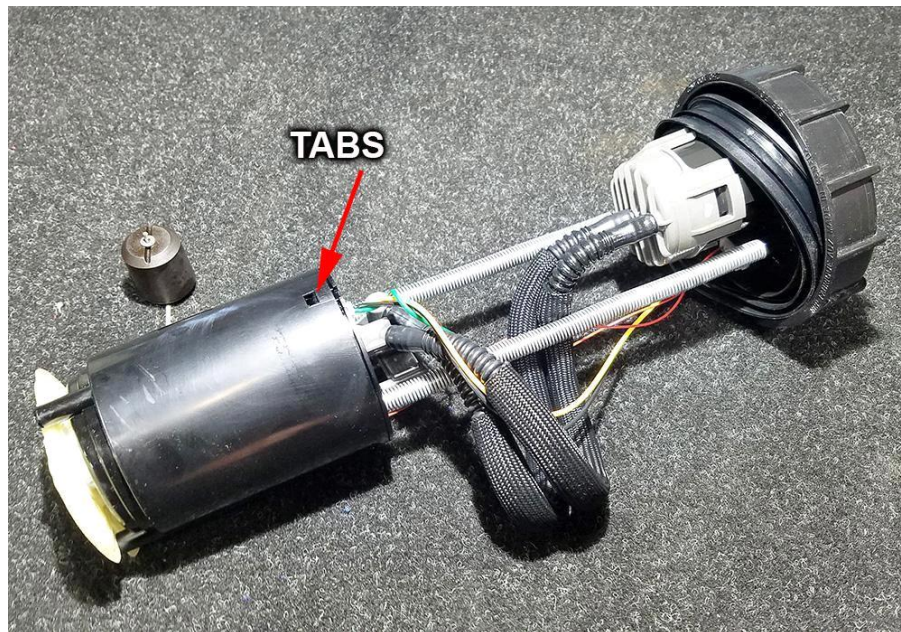
**Step 24:** Rotate pump assembly cap counterclockwise and remove from the tank

**NOTE:** Your fuel pump assembly **MUST** be the 172 HP Turbo R or 195 HP RR versions! If you have a **2017 X3** or a **120 Base Model** that has not been updated to the Turbo R or RR pump assembly, this must be purchased separately!

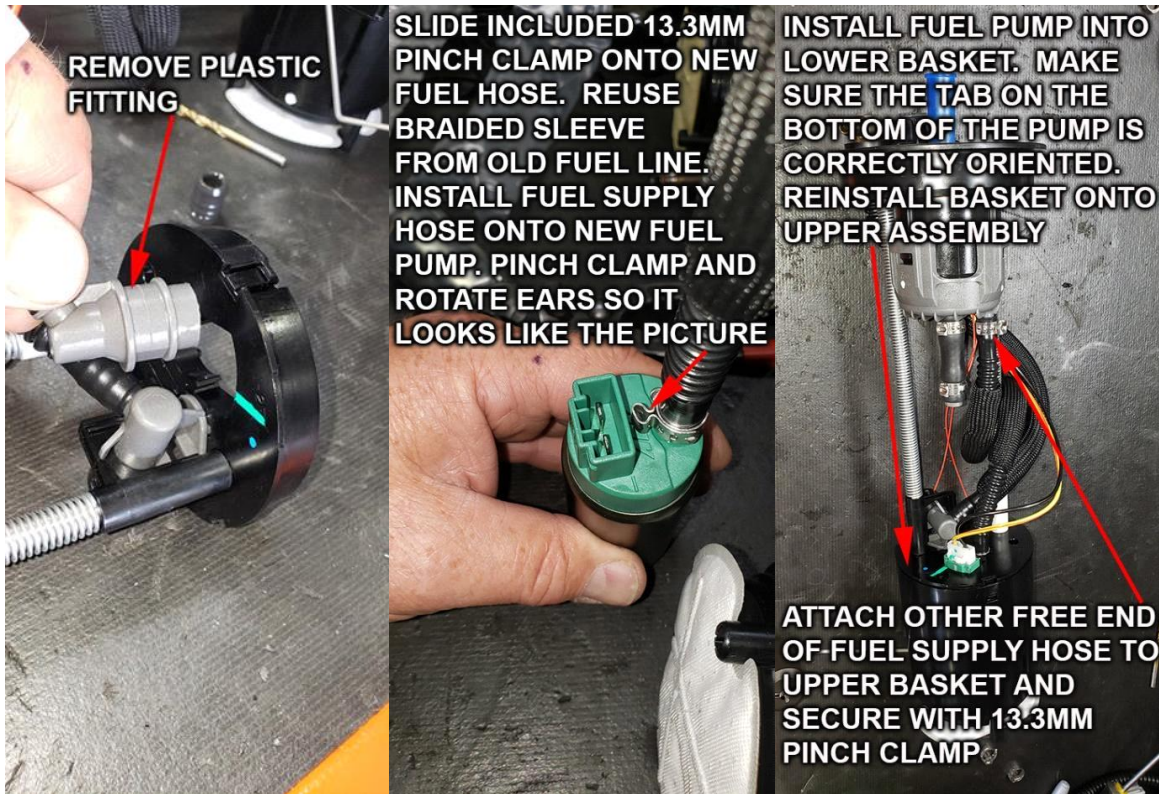


Fig 14

**Step 25:** With the fuel pump on a workbench and all the fuel drained out of the pump assembly, press in on the (3) tabs to release the housing covering the tank.







- Step 26:** Install fuel pump assembly back into tank in the reverse order from its removal.
- Step 27:** Install the EVP supplied fuel pump into the surge tank that was removed in . Make sure the pump is oriented and fitted correctly into the bottom of the housing When properly oriented, the pump will drop into place and it will not rotate.
- Step 28:** Plug the electric connection into the pump.
- Step 29:** Carefully align the tabs and reinsert the cap into the housing – do not force it – if it does not fit in with moderate pressure, something is not correct – recheck. See picture below of fuel line and electrical connection.
- Step 30:** Reinstall pump assembly.
- Step 31:** Install EVP Plug-N-Play fuel pump relay harness.
- Step 32:** Connect the yellow wire with the ring terminal and the relay to one of the bolts that secure the fuel pump protector strap to the frame. Make sure the ring terminal is grounded to the frame.
- Step 33:** Replace OEM fuel pump fuse with the supplied 20-amp fuse in location F5.



### ***Clutching (P46 357 Kits)***

- Clutching for 357 kits must be adjusted for an **8600-8800 RPM** shift out.
- Running a 91-octane tune clutching must be adjusted for **8100 RPM** shift out.

### ***MaptunerX / CodeShooter***

Now that your Paragon turbocharger kit is install, you need to flash your ECU before starting the vehicle. Make sure the proper fuel is in your vehicle before starting it. If you have already contacted your sales representative and have a big turbo file, please follow the step-by-step **MaptunerX or CodeShooter** instructions found on our website. If you have NOT contacted your sales representative, please call 715-247-3862 or email: [sales@evopowersports.com](mailto:sales@evopowersports.com)

### ***Launch Control (optional)***

If Launch Control has been purchased as part of this kit, your clutching engagement RPMs **MUST** be raised to at least your chosen engagement. This kit has launch files for 2600, 2800, 3000, 3300, 3600, 4000, 4500, 4800 RPMs. If you have any questions about clutching please contact our Tech Department [tech@evopowersports.com](mailto:tech@evopowersports.com)