



2014+ Sea Doo Spark Turbocharger Kit

SKU(s): 903FS0069, 903FS0070 (2014-2021), 903FS0071, 903FS0072 (2022+)





Parts Included in Spark Turbo Upgrade System	
903FS0048	2014-2021 Sea Doo Spark PTO Cover Assembly
903FS0049	2022+ Sea Doo Spark PTO Cover Assembly
903FS0050	Sea Doo Spark Turbocharger Install Kit
500FC0011	2020 X3 Fuel Injector Adaptors
903FS0051	Sea Doo Spark Charge Tube Kit
903FS0052	Sea Doo Spark Turbo Exhaust Kit
903FS0053	Sea Doo Spark Turbo Air Intake kit
903FS0031	Sea Doo Spark Ribbon Delete
903FS0054	Sea Doo Spark Turbo MAP Sensor Kit
903FS0055	Sea Doo Spark Turbocharger Assembly
903FS0056	Sea Doo Spark Turbo Blow Off Valve Kit
903FS0057	Sea Doo Spark Turbo Injector, set of 3
903FS0065	Sea Doo Spark Turbo Spark Plug, Set of 3
903FS0066	Can Am Diagnostic Port Cap
708FU0016	(OPTIONAL) CodeShooter ECU Flashing Device
705RU0015	(OPTIONAL) CodeShooter DESS Key, CS-BRP-1

Parts Included Spark Turbocharger Install Kit						
804FC0099	X3 OEM Exhaust Gasket					1
953RU0023	Zip Tie					10
953RU0606	16-27mm Worm Drive Clamp					4
903FS0058	Spark Raw Water to Intercooler Hose					1
903FS0059	Spark Intercooler to Turbocharger Hose					1
903FS0060	Spark Turbocharger to Hull Exit Hose					1
903FS0061	Spark Oil Feed Hose					1
903FS0062	Spark Oil Drain Hose					1
903FS0063	Spark Exhaust Manifold to Turbo Hot Hose					1
903FS0064	Spark Turbo Hot to Water Box Hose					1
Level	Tunes	Max Boost (psi)	Spark Plug Gap	Spring	Waste Gate (psi)	Engine HP
Stage 1	91	8.5psi	.016 - .018			165

Step 1: Remove engine access panel and knee panel on the left side of the hull.



Figure 1

Step 2: Through the engine access panel, disconnect the steering control (20 pin) plug and if equipped IBR (6 pin) plug. Do not use a screwdriver to pry off.



Figure 2

Step 3: Underneath the handlebars, through the knee panel you will locate the steering linkage. Remove the linkage with (2) 10mm sockets. Remove the steering linkage brace by removing (2) T30 head screws.



Figure 3



Figure 4

Step 4: Once the steering linkage is loose, push it into the engine bay.



Figure 5



Figure 6

Step 5: Remove the seat. Remove the (3) T30 screws around the fuel fill. Leave cap on.



Figure 7

Step 6: With a T30 socket, remove 23 screws holding the upper hull (black portion) on. (10) screws have a locknut underneath the lower hull. Use a 10mm socket.



Figure 8

Spark Removal of OEM Parts

Step 1: Make sure the battery terminals are disconnected.

Step 2: Remove the water box, (2) worm drive clamps and coupler from exhaust manifold to water box, (1) worm drive from water box to "J" pipe, (1) connector for exhaust temperature sensor, (1) zip tie holding the bilge pump connector.



Figure 9

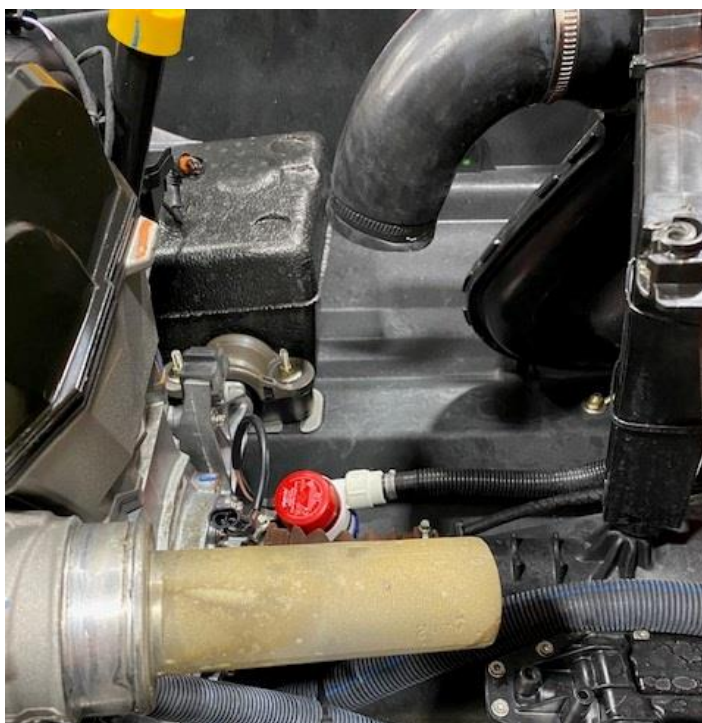


Figure 10

Step 3: Remove the exhaust manifold. Loosen (2) worm drives for water in/out and (9) manifold screws using an E10 socket.



Figure 11



Figure 12

Step 4: Place the exhaust manifold in a vice. Cut the 2.0" steel pipe off at the lip. See marking. Next file/sand the lip completely off. Test fitment in the turbocharger billet connector.



Figure 13

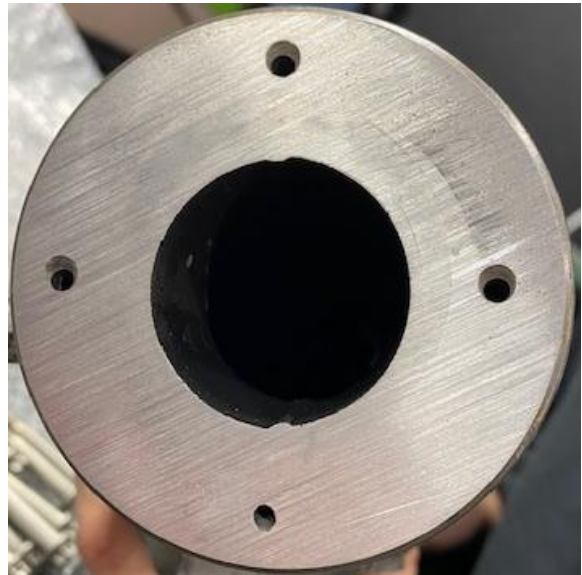


Figure 14

Step 5: Reinstall the exhaust manifold with supplied gasket. Torque bolts to 17 ft lbs.



Figure 15

****Leave water lines disconnected for now.**



Figure 16

Step 6: Remove the ECU, (3) 7mm screws and (2) ECU header connectors.

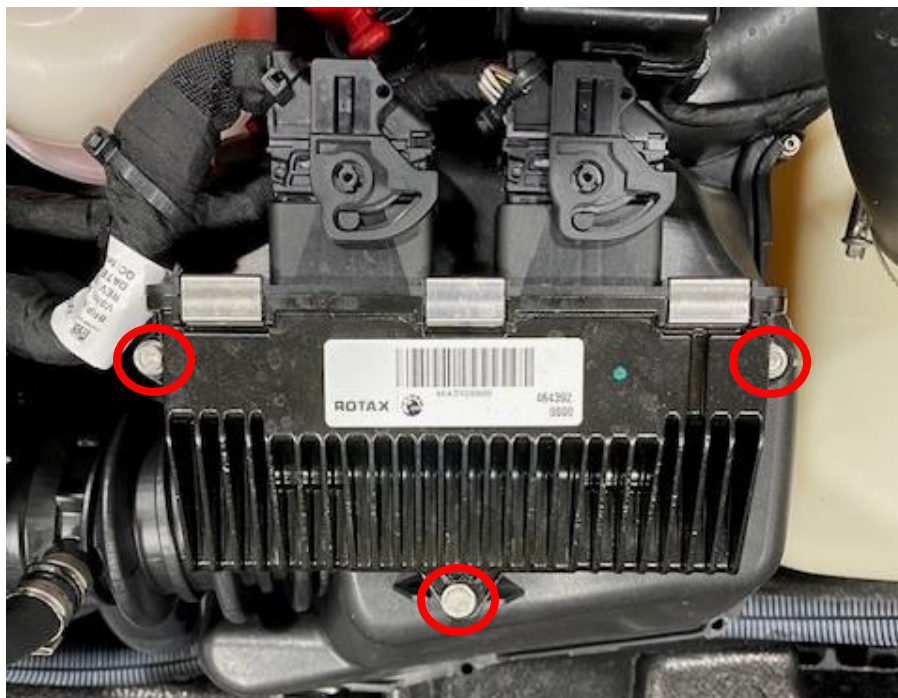


Figure 17

Step 7: Remove the starter solenoid by removing (2) 7mm screws. Remove the fuse block by squeezing (2) clips together.



Figure 18

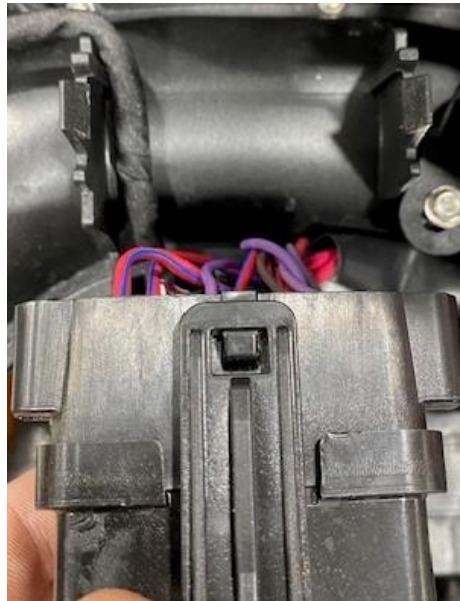


Figure 19

Step 8: Remove the coolant reservoir by removing (1) 7mm screw and (1) clip on backside.



Figure 20

Step 9: Remove the T-30 screw holding the valve cover fitting on. Reinstall the T30 screw loosely.



Figure 21

Step 10: Remove the worm drive holding the intake boot onto the throttle body.



Figure 22

Step 11: Remove (2) airbox straps, one of each side.



Figure 23



Figure 24

Step 12: Remove the voltage regulator by pressing down on the clip. Unplug both black and grey connectors from the voltage regulator. Place to the side for now.



Figure 25

Step 13: Remove the diagnostic port and let dangle for now.

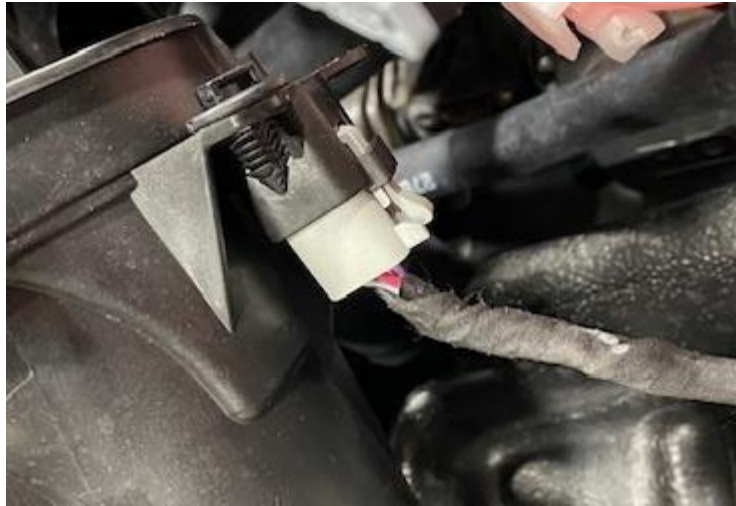


Figure 26

Step 14: Remove the pinch clamp from the throttle body boot to plenum. Discard.



Figure 27

Step 15: Pull the throttle body boot off the plenum. Located in the plenum is the flame arrestor.



Figure 28



Figure 29

Step 16: Remove the flame arrestor and seal.



Figure 30

Step 17: Install the ribbon delete into the plenum until it bottoms out. Reinstall the throttle body boot and supplied clamp. No seal, use supplied 60-80 worm drive clamp. Install (2) zip ties holding the fuel hose to plenum.



Figure 31

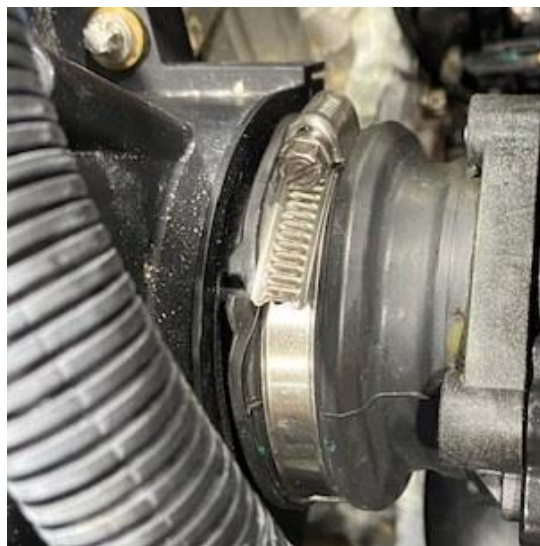


Figure 32

Step 18: Install the intercooler where the airbox was located, make a mark around the inlet pipe because this foam will need to be tripped. Make it large enough for silicone and a clamp.



Figure 33

****NOTE:** it is best to cut foam with a hot knife.



Figure 34



Figure 35

Step 19: Install the 2.25" x 3.0" coupler between the intercooler exit and throttle body. Use (2) 32 constant tension clamps.



Figure 36

Step 20: Install the ECU onto the front of the intercooler, use supplied M6 screws. Cut the zip tie holding the two ECU connectors together. Connect to ECU.



Figure 37



Figure 38

Step 21: Loosely mount the turbocharger to the exhaust manifold. You can see the compressor housing will touch the foam.



Figure 39

Step 22: Install the charge tube from the intercooler to turbocharger. They won't align perfectly. With a sharpie outline the turbocharger and charge tube. Cut the foam at a 45-degree angle. Test fit as you go.



Figure 40



Figure 41

Step 23: Locate the water pickup to intercooler hose, (1) 10AN 90 degree fitting and (1) "T".



Figure 42

Step 24: Install the 10AN 90 degree fitting onto the intercooler, route the "T" around the oil filter housing towards the exhaust manifold. Locate the water pickup hose that was connected to the exhaust manifold (left side). Cut 5-3/4" off the hose. Cut 7.0" of sleeving off.



Figure 43



Figure 44

Step 25: The hose you just cut, cut it down to 3-1/2" in length.



Figure 45

Step 26: Install the water pick up hose to the right side of the “T” fitting. Install the 3-1/2” hose to the top of the “T” fitting. Install the 7.0” of sleeving onto the hose going to the intercooler. Clamp all hoses to the “T” with supplied 16-25mm worm drive. Clamp the top hose to the exhaust manifold reusing the OEM worm drive.



Figure 46

Step 27: Locate the intercooler exit to turbocharger hose, 41” in length, (2) 6AN 90 Degree fittings. Install one fitting onto the intercooler exit and run underneath the engine back towards the turbocharger.



Figure 47

Step 28: Locate the exhaust manifold exit hose, cut 11.00" of hose off and 9.0" of sleeving off.



Figure 48

Step 29: Locate the 7.0" long 6AN hose with 6AN 90 Degree fitting and 3/8-1/2" coupler.



Figure 49

Step 30: Install this hose to the exit hose, reuse OEM 16-27mm worm drive clamp.



Figure 50

Step 31: You can remove the turbocharger and place it on a work bench. You are left with both inlet and exit water feed lines for the turbocharger.



Figure 51

Step 32: If your spark is equipped with IBR system, remove the (3) 13mm head screws. The top left screw has a nyloc nut on the back. Do not lose the stainless-steel bushings.



Figure 52

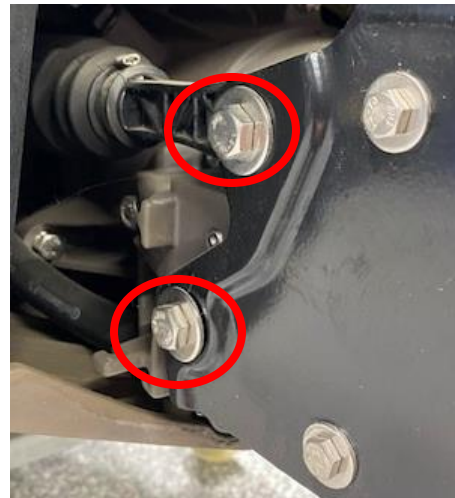


Figure 53

Step 33: Turn the nozzle and remove the steering linkage. Use 2 10mm sockets.

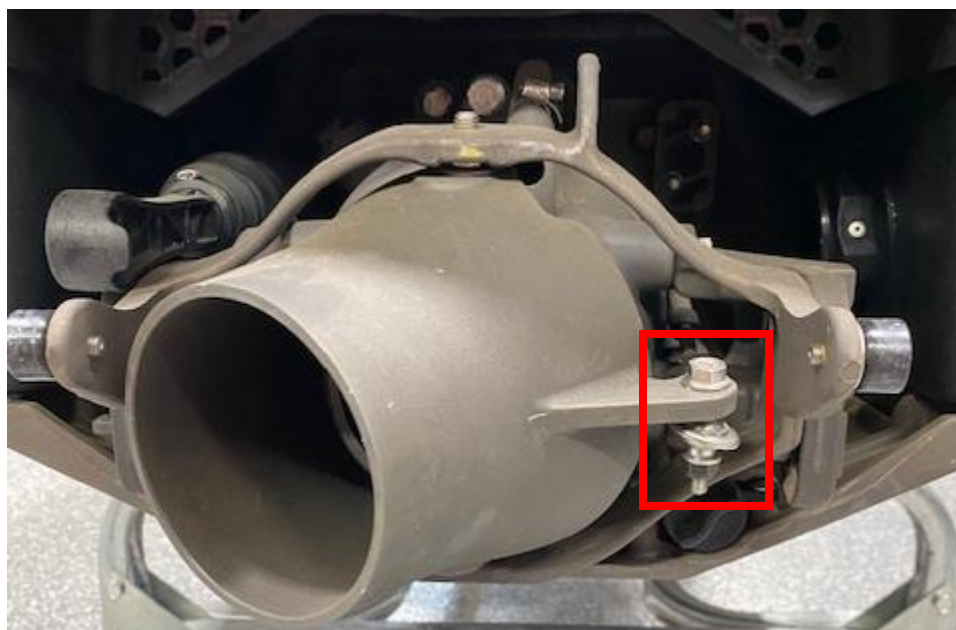


Figure 54

Step 34: With a 1/4" socket loosen the worm drive holding the siphon tube onto the jet pump. Remove the siphon tube.



Figure 55

Step 35: With a 12" extension and swivel you can access the (3) jet pump screws.



Figure 56



Figure 57

Step 36: Once hardware is removed, wiggle the jet pump out of the hull and driveshaft.



Figure 58

Step 37: With the jet pump on a work area, remove and inspect the wear ring.



Figure 59



Figure 60

Step 38: Loosen and remove the (3) venturi screws. Remove venturi from pump.

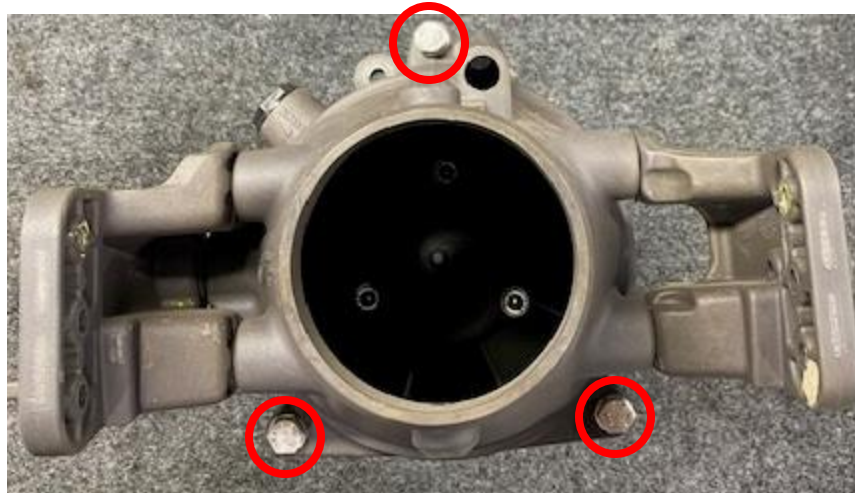


Figure 61

Step 39: Remove the (3) Allen screws holding the impeller cone on. 5mm Allen.

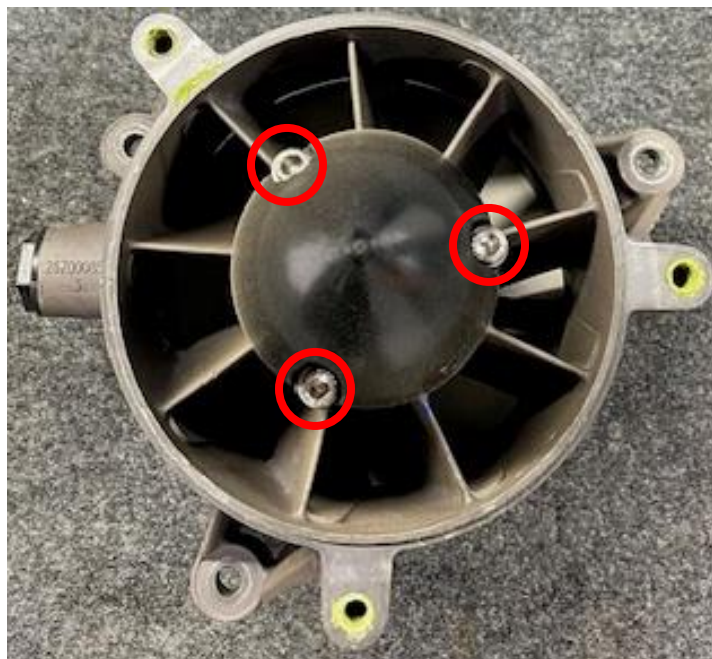


Figure 62

Step 40: Remove the impeller cone, you may need to pry with a screwdriver.



Figure 63

Step 41: Install the two flat spots into a vice. Clamp tight. Install the impeller spline tool **WR001** into the impeller. Loosen the impeller with a breaker bar. Spin the impeller off.



Figure 64



Figure 65

Step 42: With the impeller removed, grease up the jet pump shaft, threads and new impeller O-ring and threads.



Figure 66



Figure 67

Step 43: Install the new impeller and spine onto the jet pump threads. Install the spline tool and torque down to 92 ft-lbs.



Figure 68

Step 44: Remove the spline tool, grease the impeller splines and rubber boot. Install the rubber boot.



Figure 69

Step 45: Grease the bottom of the jet pump, o rings and cone. Reinstall the cone. Torque screws to 80 in-lbs and apply blue Loctite.

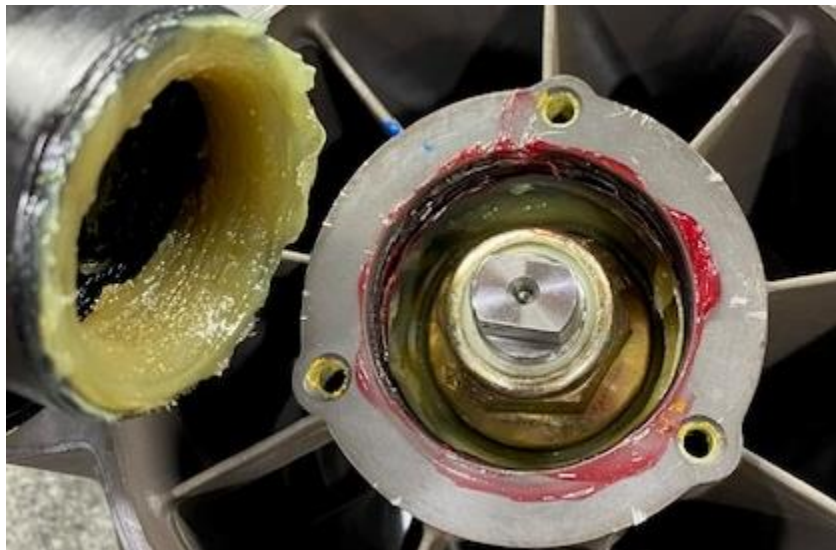


Figure 70

Step 46: Reinstall the venturi onto the jet pump. Torque to 18 ft-lbs and apply blue Loctite to the threads.



Figure 71

Step 47: Remove the OEM wear ring seal. Apply grease on the o ring and install onto the new stainless steel wear ring.



Figure 72

Step 48: Apply a light amount of grease onto the inside of the wear ring and slide onto the jet pump. This helps for initial start up.



Figure 73

Step 49: Drill out the rivet on the OEM exhaust piece. Use a 1/8" drill bit.



Figure 74

Step 50: Use supplied exhaust nut wrench and loosen the nut.

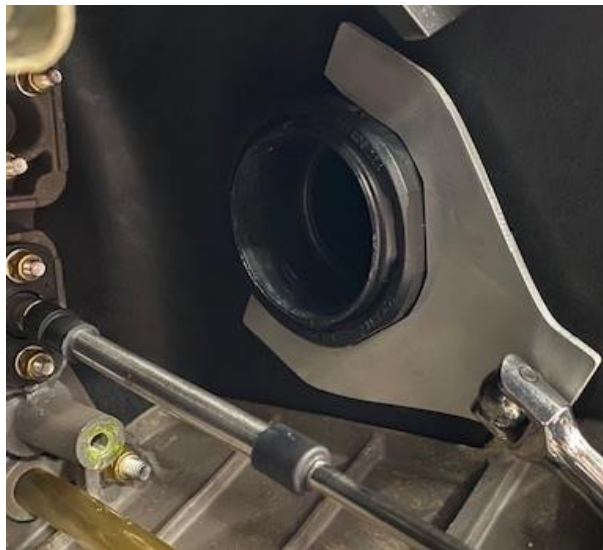


Figure 75

Step 51: Remove the OEM “J” pipe and muffler.



Figure 76

Step 52: Extract out as much oil as possible through the dipstick tube.

Step 53: Loosen both worm drive clamps on the outer drive shaft boot.



Figure 77

Step 54: Pull back on the outer brown boot, underneath is a pinch clamp around the inner boot. Cut this clamp.



Figure 78

Step 55: It is best to lift the rear of the jet ski about 6.0". Pull the driveshaft out of the hull. Place rags underneath the PTO cover and remove (6) PTO cover screws using a E10.

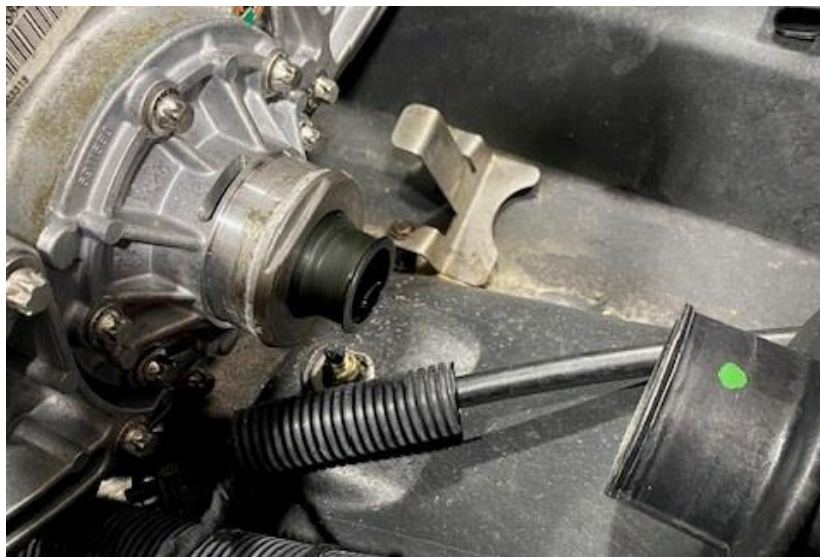


Figure 79

Step 56: Remove the OEM PTO cover. Some oil will spill out.

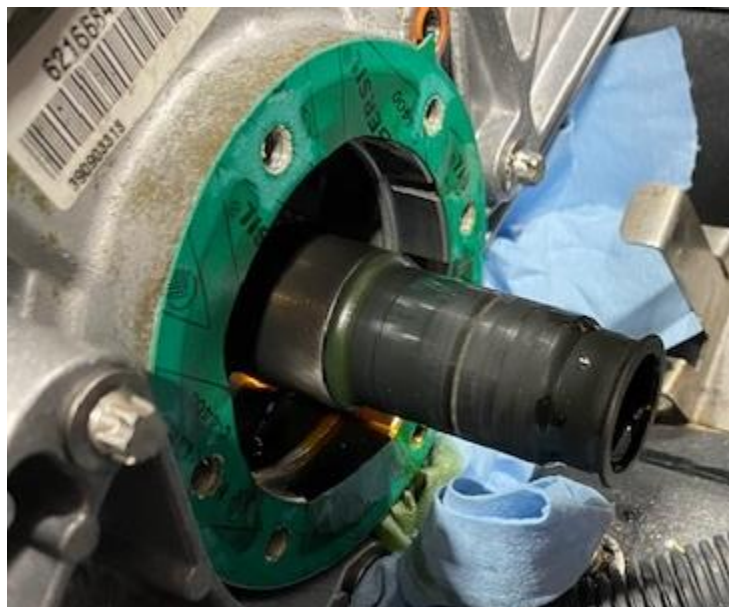


Figure 80

Step 57: Remove the old PTO gasket.



Figure 81

Step 58: Locate your new PTO cover with 10AN fitting. 2014-2021 have a longer style PTO cover so these instructions might show a different PTO cover than a 2022+.



Figure 82

Step 59: Install new supplied PTO gasket (words facing out) and PTO cover. Torque bolts in a criss-cross pattern to 17 ft-lbs.



Figure 83

Step 60: Grease up the splines on the drive shaft and inner drive shaft boot. Slide a 36.1mm pinch clamp over the inner boot and reinstall the drive shaft. Grease should squeeze out. Pinch the clamp, reinstall the outer brown boot and worm drive clamps.



Figure 84

Step 61: Install the turbocharger turbine housing inlet hose. 21" long with (1) 10AN 90 degree fitting to 1/2" adaptor. The opened end will get attached later.



Figure 85

Step 62: Install the turbocharger turbine housing exit to exhaust hose. 18" long with (2) 120-degree 10AN fittings. Install the oil drain line (2) 90-degree fittings 5-3/4" long.



Figure 86

Step 62a: Apply a large amount of Permatex RTV, ultra red high temperature gasket maker to the (4) exhaust manifold water ports. Also run a thick bead on the outer lip of the billet connector.

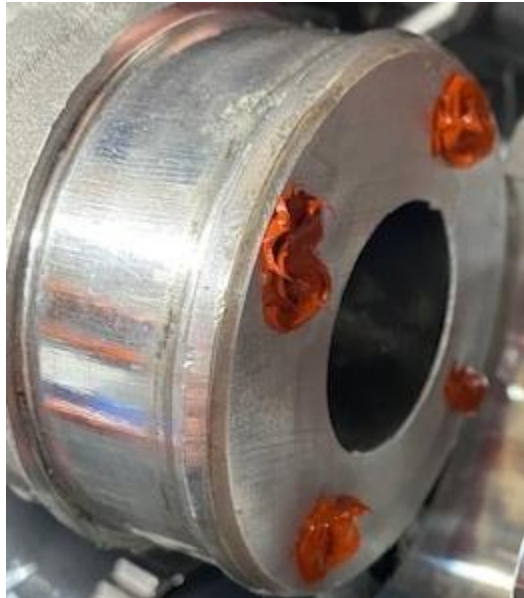


Figure 86a



Figure 86b



Figure 86c



Figure 86d

Step 63: Install the turbocharger to the exhaust manifold loosely again, install the turbo oil drain line to the PTO cover. Clock the turbo if needed. Once this line is correct install all (7) M6 screws into the billet connector.



Figure 87

Step 64. Install the turbocharger water inlet/exit hoses. Inlet coming from the intercooler line ran underneath the engine (right side), and the water exit leaving the hull (left side).



Figure 88

Step 65: Install the turbine water line to the last port on the exhaust manifold. This hose reduces to 1/2" hose. Use 16-25mm worm drive clamp.



Figure 89



Figure 90



Figure 91

Step 66: By the dipstick you will find an oil passage, remove the M6x1.0 plug.



Figure 92

Step 67: Install supplied 1/8MPT to 4AN male fitting, make sure fitting is snug but not overtighten.



Figure 93

Step 68: Install fire sleeve over the oil feed line. Blow out the line before install. Install one end to the fitting on the engine wrapped around to the turbocharger.



Figure 94



Figure 95

Step 69: Now is a good time to go back through every hose and tighten all AN fitting's. It is best to use aluminum AN wrenches so they don't mar up the fittings. Double check routing and rubbing. Some fittings may need to be clocked a certain way so rubbing doesn't accrue.

Step 70: Install the charge tube from compressor housing to intercooler. Adjust the tube around the battery and the blow off valve port is facing upwards. Use a 60-80mm worm drive on the intercooler and 32 constant tension clamp on the turbo.



Figure 96



Figure 97

Step 71: Remove the lower bracket on the electronics bracket. (2) 3mm Allen screws.



Figure 98

Step 72: Install the voltage regulator onto the bottom electronics bracket, use supplied hardware. Place the battery strap underneath the voltage regulator. Reinstall the bottom bracket to the upper bracket using (2) 3mm screws.



Figure 99

Step 73: install the starter solenoid to the upper bracket using supplied hardware.



Figure 100

Step 74: install the fuse box onto the upper bracket using (4) screws.



Figure 101

Step 75: Strap the battery in place, this will hold the electronics bracket as well. Reconnect the voltage regulator. Install the coolant jug onto the intercooler bracket.



Figure 102



Figure 103



Figure 104

Step 76: Remove map sensor connector. Don't use a screwdriver. With a T30 remove the screw holding the MAP sensor in place.

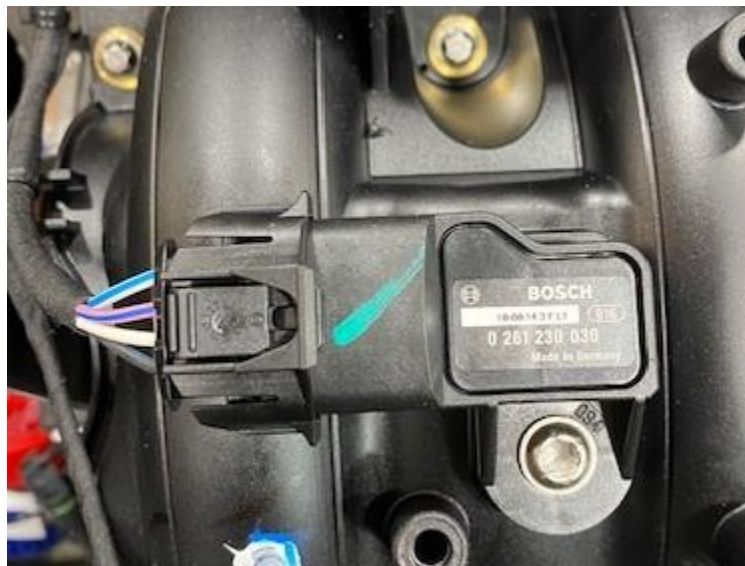


Figure 105

Step 77: Install MAP sensor shim with 90 Degree barb facing the fuel rail. Use dielectric grease on the O-Ring. Install supplied MAP sensor and fasten down with supplied screw. Reconnect the electrical plug, you may need to cut a zip tie.



Figure 106



Figure 107

Step 78: Install prefilter onto blow off valve. Install the BOV into the charge tube, fasten down with a 25-40mm worm drive. Install vacuum hose to BOV and fasten with 11.3mm pinch clamp.



Figure 108

Step 79: Route the vacuum line as seen in the photo up to the MAP sensor shim. Loosely zip tie the vacuum line to hold it in place.

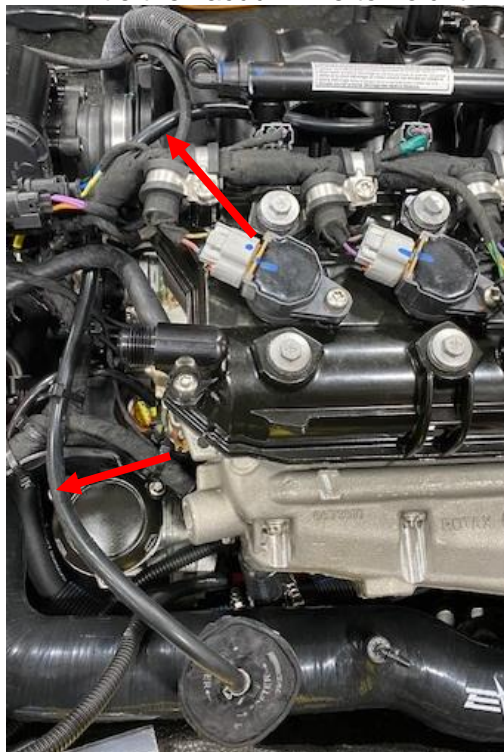


Figure 109



Figure 110

Step 80: Unclip (3) injector connectors and remove the fuel rail screws using a T30.



Figure 111

Step 81: Flip the fuel rail up, remove the injector clips and remove the injectors. Install dielectric grease on the supplied injector O-ring and install. Reinstall the injector clips. Reinstall the fuel rail and hardware. Install (3) injector adaptors before reinstalling the injector electrical connectors.



Figure 112



Figure 113



Figure 114

Step 82: Install supplied O-ring onto exhaust outlet. Install the exhaust outlet from the outside of the hull into the inside. The threads should be on the inside of the hull. Install the OEM exhaust nut from the inside of the hull. Use supplied nut tool to snug up. **DO NOT** overtighten this plastic nut.



Figure 115



Figure 116

Step 83: Install the rear exit silicone from the water box to exhaust outlet. Use (2) 312 T-bolt clamps to fasten silicone.



Figure 117



Figure 118

Step 84: Install the 3.0" x 3.0" silicone coupler from the turbocharger to water box. Use (2) 359 T-bolt clamps to fasten down. Install the temperature sensor from the OEM water box, install anti seize on the threads and install into new water box. Use a 19mm wrench.



Figure 119



Figure 120

Step 85: On the hull rear support, cut the zip tie holding the clear hose in place. Move this hose over to the other pillar and re zip tie. Install the air intake bracket to the rear support, fasten with M6 screw and locknut.



Figure 121

Step 86: Install the air filter adaptor into the intake tube, half way. Use 32 constant tension worm drive on turbo side and (2) 110-120 worm drives holding the intake to the bracket and the air filter.



Figure 122

**REMOVE RED CAP FROM COMPRESSOR INLET BEFORE INSTALLING.



Figure 123

Step 87: install the 90-degree barb into the intake tube and fasten down with a pinch clamp.



Figure 124

Step 88: Install the supplied valve cover fitting with O-ring. Use dielectric grease and fasten down with OEM T30 screw.



Figure 125

Step 89: Install the straight 6AN push lock fitting onto the valve cover fitting. Install 1/2" silicone hose from the valve cover to air intake barb.



Figure 126



Figure 127

Step 90: Remove the camshaft sensor connector and (3) coil connectors. It may help to loosen the P-clamps using a T30 socket. Remove the coil boots.

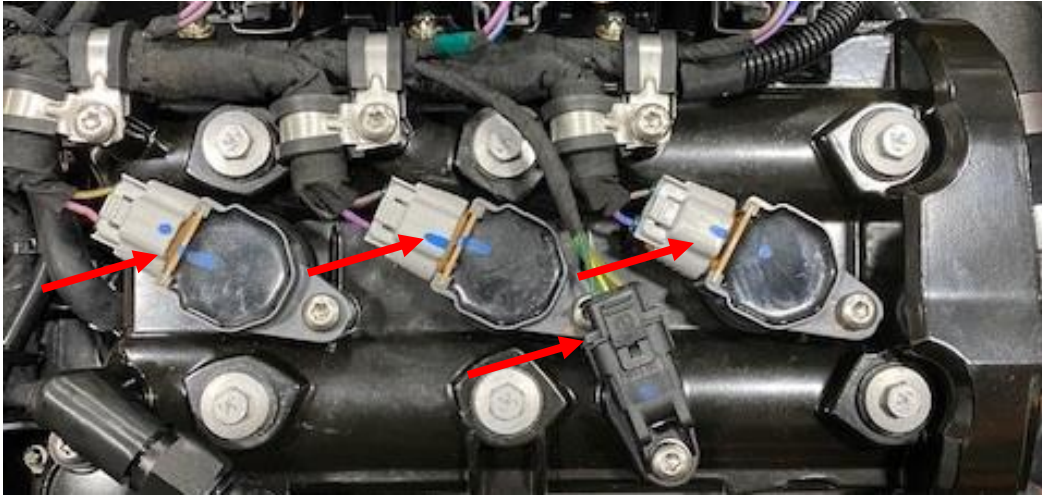


Figure 128

Step 91: With a 5/8" spark plug socket loosen and remove the spark plugs. It is best to use a magnet to remove the plugs.



Figure 129

Step 92: Install new plugs gapped at .018-.016", using a magnet so you don't drop the plugs. Reinstall the coil boots, screws, and connectors.



Figure 130

Pre-Starting Checklist

- Check all fittings, hose clamps, connectors etc
- Add oil back into the engine. Roughly 1-1.5 liters. Check engine oil after you start the engine for a few seconds.
- Check jet pump and make sure all hardware is tight, no debris in the impeller or wear ring.
- Make sure the proper fuel has been added to the fuel tank.
- Make sure no hoses or charge tubes are rubbing.
- ECU is properly tuned.

Winterizing Procedure

Step 1: Get a gallon of antifreeze, pump, and a flush kit (if not already installed).

Step 2: For these photos we installed a 3/4" threaded fitting to 1/2" barb attached to a drill pump.



Step 3: Start the machine, let idle.

Step 4: Start the drill pump, pushing antifreeze through the flush kit.

Step 5: Once antifreeze starts coming out the jet pump, make sure its dark pink, stop pumping.

Step 6: Let the machine run a few seconds longer, then shut off.

Step 7: Remove the water box, dump out the fluids, pour a splash of antifreeze into the bottom and reinstall the water box.