

HS-MOTORSPORTS.COM



SX-E TURBO KIT

2013-2016 6.7L CUMMINS

INSTALLATION INSTRUCTIONS

TROUBLESHOOTING:

Please read and understand all installation instructions before proceeding with the installation. If you have questions during the installation of this product, please email H&S Motorsports support at tech@hs-motorsports.com or call (855) 623-4450.

Included parts:

- 1 - BorgWarner SX-E Turbocharger
- 1 - SX-E 90-Degree Compressor Outlet Elbow
- 1 - HSM Cast Exhaust Manifold
- 1 - HSM Downpipe
- 1 - HSM Charge Pipe
- 1 - HSM Intake Pipe and Air Filter
- 1 - Hardware, Clamps, Fittings, Gaskets, etc.

Note: This kit will not work with the factory EGR system installed. Aftermarket engine tuning may be required to run this kit properly. Consult your tuning provider with any questions regarding engine tuning for this product.

STEP 1

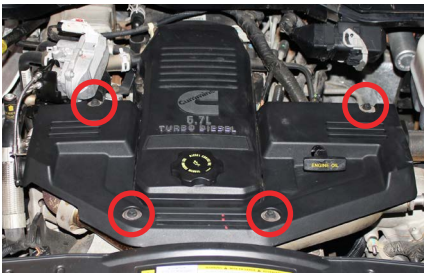


Disconnect the negative terminal from both batteries. Locate the coolant drain valve on the side of the radiator and drain the coolant system. It may be necessary to remove one bolt to temporarily move the power steering reservoir out of the way in order to access the drain valve. Use a clean bucket so that the coolant may be re-used if it is in good condition.

STEP 2



Remove the four bolts holding the plastic engine cover and remove the plastic cover (can be re-installed later if desired). Spray all of the exhaust manifold hardware with penetrating oil as this will aide in removal later.



STEP 3



Disconnect the active air system connector along with all other sensors (IAT, MAF) on the factory air intake and disconnect the factory breather hose from the valve cover. Remove the single bolt holding the factory air box to the radiator support and remove the entire air intake assembly from the vehicle with the breather hose still attached to the intake.



STEP 4



Disconnect and remove the factory exhaust crossover tube and remove the exhaust valve from the intake horn. Take care not to drop anything inside the intake horn and if desired, stuff a rag inside the openings as an extra precaution.



STEP 5



Remove the clamps from the passenger side factory intercooler pipe and remove the pipe from the vehicle. It may be easier to remove the intercooler pipe out from underneath the vehicle rather than from above.



Note: The following steps may differ slightly depending on vehicle year. Please use your best judgement when performing these steps and consult a professional if necessary.

STEP 6 

Unbolt and set aside the CCV sensor to allow access to the upper coolant pipe and remove all of the exhaust cooler components from the top of the factory exhaust manifold. It is easiest to remove the system in several separate pieces. During removal, keep in mind that some of the components may still contain coolant, so expect some spillage to occur.



STEP 7 

Disconnect the exhaust back-pressure tube from the exhaust manifold. Remove the bolts holding the sensor/tube to the cooler bracket and remove the sensor/tube assembly. Remove the nuts holding the heat shield on the front of the exhaust manifold and remove the heat shield. Remove the bolt holding the transmission dipstick to the cooler bracket.



STEP 8



Disconnect the turbo coolant line, heater hose, and upper vent hose from the vertical coolant pipe. Remove the lower bolt holding the vertical coolant pipe to the thermostat housing and carefully wiggle the pipe while pulling it out of the t-stat housing to remove it.



STEP 9



Disconnect the factory VGT electrical connectors. Disconnect and remove the upper coolant line from the factory VGT. Disconnect the oil feed line from the factory VGT. Disconnect the lower coolant line from the engine block. Using a pry bar or screwdriver, remove the locks from the exhaust manifold bolts and discard.



STEP 10



Remove the factory exhaust band clamp from the back side of the of the factory VGT. Spray penetrating oil down around the bottom of the factory VGT oil drain to aid in removal. Remove all of the factory exhaust manifold bolts and ensure that no wiring or coolant lines are still connected to the turbocharger or exhaust manifold. With the help of another person, remove the factory exhaust manifold/turbocharger assembly from the vehicle.

STEP 11



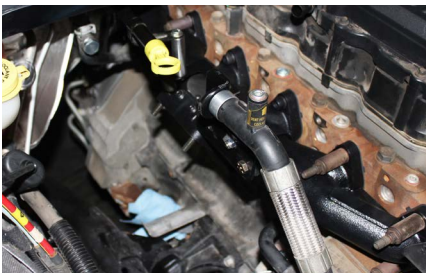
Install the supplied o-ring gaskets and 12mm plugs into the previous VGT coolant line locations on the vertical heater pipe and engine block. Tighten the plugs to 20 ft-lbs. Remove the coolant fitting from the top of the cylinder head and install the supplied 1/2" pipe plug.



STEP 12



Locate the supplied HSM exhaust manifold, gaskets, and two allen-head bolts. The allen-head bolts will be installed in the two top center bolt locations where the factory bolts will not fit. Clean the previously removed factory exhaust manifold bolts and install the HSM exhaust manifold onto the engine. Torque all exhaust manifold bolts to 35 ft-lbs.



STEP 13



Remove the factory oil feed fitting from the oil filter housing. Locate the supplied ORB to -4AN fitting. Place a dab of grease on the supplied fitting o-ring and install into the oil filter housing where the factory fitting was removed. Torque the fitting to 20 ft-lbs. Loosen the battery cable on the solenoid located near the passenger side battery and re-clock the solenoid assembly as shown for intake clearance. Resecure the battery cable after the proper adjustment has been made.



STEP 14



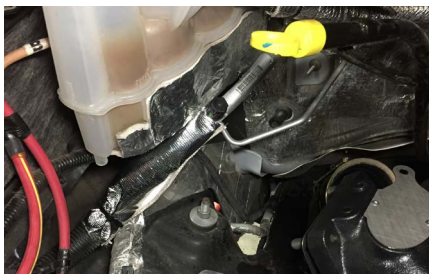
Using the factory hardware, reinstall the factory coolant pipes that were removed in Steps 8 and 10. HSM has provided a plate for the factory intake horn along with a plug and bracket for the 2009+ vehicles. If you need to use these parts, see pictures below for installation examples.



STEP 15



In some applications, one of the factory AC lines may have clearance issues with the new turbocharger. The AC line can be carefully bent to provide clearance for the turbocharger by holding the AC line near the service port and gently bending it downward and back underneath the coolant reservoir. You can temporarily install the turbocharger on the manifold to determine how much AC line clearance is required for your application. Before permanently installing the turbocharger, install one of the supplied 8" sections of heat shielding (foil side out) on the AC line where it is closest to the turbocharger (see picture).



STEP 16



Located the supplied 3/8" double-sided studs and install them into the threaded holes on the T4 mounting flange on the HSM exhaust manifold. Slide the supplied T4 gasket onto the previously installed studs and using the supplied 3/8" nuts, install the supplied SX-E turbocharger onto the exhaust manifold. Install the supplied transmission dipstick bracket on the upper-rear turbo mounting stud as shown and attach the transmission dipstick to the bracket with the supplied 1/4" hardware. Torque the turbo mounting nuts to 35 ft-lbs and the 1/4" dipstick bracket hardware to 20 ft-lbs.

Note: *The exhaust housing and center section of the supplied turbocharger should arrive pre-clocked in the correct position but the compressor housing may require some additional adjustment to achieve optimal positioning. To do this, carefully loosen the center section-to-compressor housing bolts and clock the housing in the correct position.*

After the correct orientation is achieved, retorque the bolts to 25 ft-lbs. DO NOT OVER-TIGHTEN!



STEP 17



Locate the supplied HSM oil feed line. Ensure that the line is clean and clear of any debris before installing the line from the top of the turbocharger to the fitting previously installed on the oil filter housing as shown. Locate the supplied oil drain tube, gasket, and (2) 3/8" x 3/4" bolts. Place a small amount of grease on the oil drain tube o-rings before pressing the oil drain into the factory oil drain location on the engine block. Take extra care to not pinch or damage the o-rings in the process and ensure that the oil drain is fully seated in the engine block. The oil drain tube is flexible and must be bent into the correct position to the bottom side of the turbocharger. Using the supplied gasket and bolts, install the oil drain tube to the bottom of the turbocharger center section and torque the bolts to 20 ft-lbs.



STEP 18



Apply glass cleaner to the inside of the supplied 45-degree boot and loosely install the 45-degree boot on the intercooler with the bend facing upwards. Apply glass cleaner to the inside of the supplied straight boot and loosely assemble the intercooler pipe as shown using the supplied cast 90-degree elbow, straight boot, and stainless pipe prior to installing it in the vehicle. Adjust the intercooler pipe assembly as necessary to ensure proper fitment of the 90-degree elbow on the turbocharger and install the v-band clamp. After proper fitment is achieved, install the remaining intercooler clamps (the factory lower intercooler clamp will be re-used) on the intercooler pipe assembly and tighten all clamps.



STEP 19



Using the supplied large v-band clamp, loosely install the supplied HSM downpipe onto the exhaust housing of the turbocharger. Using the supplied exhaust adapter and band clamps, adapt the downpipe to the rest of the vehicle exhaust system before tightening all clamps. Ensure that the exhaust system has proper clearance to avoid touching other components.



STEP 20



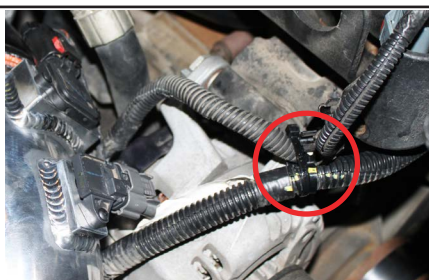
Remove the sensors from the factory air intake system and using the provided 6-32 button-head bolts, reinstall the sensors into the supplied HSM intake pipe. Tighten the bolts to 12 in-lbs.



STEP 21



Using the supplied 4" worm-gear clamps, install the supplied 20-degree 4" intake boot on the turbocharger compressor housing inlet and clock away from the engine as shown. Install the supplied HSM intake pipe and position the pipe so that it has proper clearance for surrounding components. Tighten the clamps after the proper orientation has been achieved. Reconnect the electrical connections to the sensors on the intake pipe and zip-tie the wiring as shown. Install the provided air filter onto the HSM intake pipe as shown while making sure that the filter will not rub on any other components.



STEP 22



Reconnect the heater hose and upper vent to the vertical coolant pipe and install the supplied 8" section of heat shielding to the heater hose coolant line as shown. Install the supplied 3/4" 90-degree elbow and small breather on the valve cover as shown.



STEP 23



Refill the cooling system and reconnect the vehicle batteries. Start the vehicle and verify that there are no leaks or other issues present. Bleed and top-off the cooling system as necessary before driving for any extended amount of time.

Enjoy your H&S Motorsports 6.7L Cummins SX-E Turbo Kit!



H & S Motorsports, LLC

4160 South River Road
St. George, UT 84790

WWW.HS-MOTORSPORTS.COM