

INSTALLATION GUIDELINES

SUBJECT: TURBOCHARGERS

FPE-2018-23
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GUIDELINES AND CHECKLIST:

1. Inspect the intake and exhaust system leading to and from the turbocharger to ensure they are free of debris. If the vehicle has experienced a turbocharger failure that resulted in mechanical damage to the compressor wheel prior to installation of a new turbocharger, a new intake air filter **MUST** be installed. Debris from a failed turbocharger can become lodged in the original filter and be easily drawn into the new turbocharger. Small particles will cause severe damage at high speeds.
2. Always use new gaskets at all air, oil, and exhaust connections. Never use silicone sealants on intake components. Silicone can become loose and become ingested into the turbocharger causing damage. Always use gaskets provided with the turbocharger in the installation.
3. Use high temperature anti-seize compound on all threaded fasteners connected to the turbocharger.
4. Fill the oil inlet port with clean engine oil before connecting the oil feed hose to the turbocharger.
5. Operate the engine at low idle for at least three minutes after completing the installation of any turbocharger. This will prevent oil starvation damage to the bearing system and purge any assembly lubrication from the bearing housing.
6. Following an engine heat cycle, retorque all fasteners to the specified torque.

BOOST PRESSURE LEAK DOWN:

A boost pressure leak down test should be performed any time a turbocharger is replaced. Small boost leaks are not audible and will result in a loss of boost pressure, requiring the turbocharger to work harder to overcome the losses. Boost pressure leaks are the most common cause for a turbocharger overspeed and premature wear of the thrust bearings in a turbocharger.

Using a turbocharger boost leak tester, pressurize the entire charge air system with air pressure and spray the entire charge air system from turbocharger outlet to intake manifold including the intercooler and couplers with a soapy water mixture, observing for bubbles that form at connection points or on charge-air components indicating a crack or leak.

1. Inspect or all charge air connections including boots and piping for cracks or loose connections.
2. Inspect the intercooler for cracks and leaks. A tell-tale sign is prior evidence of an oil leak.
3. Inspect all gaskets and connections of the charge air system where they meet the intake manifold and cylinder head.
4. Ensure all clamps are sufficiently tight.

INSTALLATION INSTRUCTIONS

EXCESSIVE CRANKCASE PRESSURE:

Excessive crankcase pressure caused by a restricted crankcase ventilation system is the number one cause of turbochargers pushing oil past its bearings and seals. If your original turbo was replaced due to pushing oil, the crankcase ventilation system **MUST** be checked prior to installing the new turbocharger.

5.9/6.7L Cummins: Prior to installing the new turbocharger, replace or thoroughly clean your crankcase filter. Model years 2003-2007 contain a replaceable and/or cleanable filter assembly. Model years 2007.5 to current may be replaced with part numbers: CV52001 or CV54003

6.6L Duramax: If you are running an aftermarket catch can, make sure it is clean and the lines to/from it are clear. Blow compressed air through the lines to make sure they're clear. Ensure the lines are routed in a manner that does not catch oil and therefore create a blockage (i.e. no dips in the line that can retain oil).

6.7L Power Stroke: Ford has updated the crankcase ventilation system filter design for MY2023. They are backwards compatible to MY2011 and are an upgrade for MY2011-2022. Prior to installing the new turbo, replace the crankcase ventilation system filter with the updated design, part number: PC3Z-6A785-A.

FACTORS AFFECTING TURBOCHARGER SERVICE LIFE:

An analysis of turbochargers indicated that approximately 40% of the failures are due to foreign material going through either the turbine or the compressor. An additional 40% are due to lubrication issues and boost leaks in the charge air system. The remaining 20% are of a miscellaneous nature. Some of the foreign material damage is the result of pieces of burned or broken valves, improperly installed gaskets, casting fins that may break out of the manifold, pieces of the air cleaner, and in small cases nuts or bolts that were dropped into the intake system. Undersized or plugged oil lines are the most common lubrication issue. It is essential to have an adequate supply of oil at full engine oil pressure.