

TURBOCHARGER

INSTALLATION INSTRUCTIONS

BEFORE INSTALLING THE TURBOCHARGER

It is important to read, understand and implement the instructions in this manual to ensure the trouble-free operation of your new Cateran Turbocharger.

Follow STEPS 1 -3 below:

STEP 1

The following engine parameters must be checked in order to verify that the “fault” the engine is demonstrating is actually the result of a damaged or worn Turbocharger:

- 1.1** Lack of engine power
- 1.2** Noisy Turbocharger operation
- 1.3** Excessive exhaust smoke
- 1.4** Excessive engine oil consumption
- 1.5** Excessive crankcase pressure

Any and/or all of the above can be caused by any and/or all of the following:

- 1.6** Faulty fuel injection system
- 1.7** Non-OEM calibration of the fuel injection system, such as would result from the utilization of a “tuning chip”
- 1.8** Restricted or blocked air cleaner system, including a restrictive snorkel design
- 1.9** Restricted or blocked exhaust system
- 1.10** Damaged or worn pistons/piston rings

STEP 2

Before Installing the Turbocharger

2.1 If all the preceding engine parameters in STEP 1 are within OEM specifications, it is then **absolutely necessary** to determine the cause of the original Turbocharger failure, in order to ensure that it does not reoccur following the installation of the replacement Turbocharger. The most common causes of Turbocharger failure are:

- 2.1** Engine oil contamination
- 2.2** Dust/Dirt in the air cleaner system
- 2.3** Excessive Turbocharger boost levels
- 2.4** Excessive turbine inlet temperature
- 2.5** Lack of oil supply to the Turbocharger

Any and/or all over the above can be caused by any and/or all of the following:

2.6 Oil/Oil filter change intervals, in a given 4x4 application. Before installing the replacement Turbocharger, the old oil should be drained hot and new oil meeting the OEM specifications filled to the OEM specified level, along with the fitment of a new engine oil filter meeting OEM specifications.

2.7 Air filter element replacement intervals, in a given 4x4 application and/or cracks in the air ducting connecting the air cleaner housing to the compressor inlet of the Turbocharger. Before installing the replacement Turbocharger, a new OEM specification air filter element must be installed in a perfectly clean air cleaner housing and the air ducting inspected for any cracks and cleaned/replaced as necessary.

2.8 Higher than OEM specification boost levels can result from a failed pneumatic actuator diaphragm, incorrectly functioning electro servo motor and/or "tuning" component. The latter by either aftermarket recalibration of the OEM computer, or the installation of a "tuning chip".

2.9 Higher than OEM specification turbine inlet temperatures can result from the same causes as outlined in 2.8.

2.10 Damage or internal blockage to the oil supply tube running from the engine to the Turbocharger will result in restricted oil flow to the Turbocharger. It is recommended that a new oil supply and drain tube is installed at the same time as the replacement

Turbocharger. However, if this is not done, it is at least **essential** that both pieces are removed from the engine and are thoroughly cleaned, **internally**.

Failure to correct the original cause of Turbocharger damage and/or wear, as set out above, may void the warranty of the replacement Turbocharger.

STEP 3

Before Installing the Turbocharger

3.1 Ensure that you have to hand the OEM workshop manual for the specific vehicle in question. Ensure the engine has been filled with new, correct OEM specification oil and that a new OEM specification oil filter has been installed. Ensure that when carrying out the installation of the replacement Turbocharger, OEM specification torque figures are applied to all fasteners.

3.2 Ensure that the part number on the name plate of the new replacement Turbocharger aligns with that of both the old Turbocharger being removed from the engine and the data sheet for the application in question.

OEM turbochargers normally have some combination of the following data on their nameplates:

3.2.1 A serial number

3.2.2 An OEM part number

3.2.3 A Turbocharger manufacturer part number

The replacement Turbocharger will have the following data on its name plate:

3.2.4 A serial number

3.2.5 A **REF** part number

3.2.6 A **replacement** Turbocharger part number

The appropriate data sheet will have the following information:

3.2.7 Vehicle and engine models which utilise the specific Turbocharger

3.2.8 All possible OEM part numbers including superseded models, which are for reference purposes only.

3.2.9 All Turbocharger manufacturer part numbers, including superseded models

3.2.10 The replacement Turbocharger part number

If in any doubt, call 0401 244 278, BEFORE installing the replacement Turbocharger.

PREPARATION FOR INSTALLATION

5 Important Steps to prepare for installation

1. Ensure that during the entire installation process of the replacement Turbocharger, no dirt or debris enters any part of the Turbocharger, or engine manifold.
2. Ensure all air ducting between the turbocharger and engine inlet ports, which includes the intercooler assembly (if fitted) and inlet manifold itself are perfectly clean and free from residual oil and /or carbon build up.

NOTE! Be aware that on diesel engines equipped with EGR (most since 2007), build-up of oil impregnated carbon inside the inlet manifold is almost a certainty. The inlet manifold of an EGR equipped diesel engine should be professionally cleaned before installing a replacement turbocharger, for the best results.

3. Ensure all packaging/ shipping material is removed from the replacement Turbocharger, prior to installation.
4. Ensure that the correct gaskets are used. Use only OEM gaskets or those available from the replacement Turbocharger supplier. Where “banjo fittings” are used with “banjo bolts”, for oil and/or water connection to the Turbocharger centre section, ensure new sealing washers are used.

Never use any form of liquid gasket or silicone sealer around any part of a Turbocharger.

5. Ensure that all mounting studs and fasteners, wherever used, on the specific Turbocharger, are in good condition and able to be torqued to OEM specification without failure. If replacement is required, (quite common, particularly of the Turbocharger mounting studs in the exhaust manifold), use only OEM components or those available from the replacement Turbocharger supplier.

INSTALLING the REPLACEMENT TURBOCHARGER

9 Steps

- 1.** The original engine oil should have already been replaced, while the engine was hot, prior to the removal of the old Turbocharger. Ensure this was done. If the oil filter has not been changed as yet, replace it now with an OEM specification component. Clean the air cleaner housing and install a new OEM specification air filter element. If it has not yet been done, now is also a good time to clean and inspect the air ducting which connects the air cleaner housing to the compressor inlet. At the very least, ensure they are completely clean. If damaged in any way, replace with new OEM specification components.
- 2.** Clean the PCV (positive crankcase ventilation) system and ensure it is working correctly. Any blockage or incorrect operation can create higher than specification crankcase pressure resulting in oil leakage within the Turbocharger assembly.
- 3.** Remove any old gasket material from the Turbocharger mounting flange on the exhaust manifold and mating flange of the turbine outlet casting/exhaust pipe. Clean both faces.
- 4.** Install the replacement Turbocharger on the exhaust manifold and reconnect the turbine outlet casting/ exhaust pipe, keeping mind note 3 above. Tighten all studs and fasteners to OEM specifications.
- 5.** If the Turbocharger is water cooled, re-install the water lines, ensuring new gaskets and/or sealing washers are used.
- 6.** Having previously ensured it is undamaged and internally perfectly clean, re-install the Turbocharger oil drain tube, using OEM specification new gaskets.

7. This is the single most important step of the replacement Turbocharger installation process.

The Turbocharger's pre-oiling and installation of oil supply line. It cannot be over emphasised how much care must be taken with this step.

Before connecting the oil supply line to the Turbocharger, pour at least 100 ml of new clean engine oil into the oil inlet port of the Turbocharger. If the port is at an awkward angle, use a hand pump or veterinary syringe. Then, provided it is in **perfect** condition, **inside** and out, the oil supply line can be installed. If there is any doubt whatsoever about the condition of this piece, it must be replaced with a new OEM component. Any issue with this part will almost certainly result in the destruction of the new replacement Turbocharger. In addition, remember to only install it with new OEM gaskets / sealing washers or those sourced from the replacement Turbocharger supplier.

8. Having previously ensured that they are completely undamaged and perfectly clean, re install the inlet/outlet air ducting to the compressor housing of the Turbocharger. Ensure all clamps are tightened to OEM specifications.

9. Carefully crank the engine, preferably without allowing it to fire, if that can be avoided. This primes the oil feed line to the turbocharger. Under no circumstances allow the engine to run above idle speed for the first 30 seconds. Lack of lubrication in these first few seconds will almost certainly destroy a new Turbocharger. Stop the engine, if it has fired.

COMPLETION of the TURBOCHARGER INSTALLATION

2 Key Steps

1. Restart the engine and allow it to idle for five minutes. Check the entire Turbocharger assembly for leaks of any kind. Rectify as necessary.

2. Stop the engine, allow a few minutes for oil to drain back to the sump and check the engine oil level. Under no circumstances should it be outside the OEM's min / max limits. If it is, rectify as necessary.

Congratulations you're done 🎉