Fault Finding - Turbochargers

Engine Fault

TURBOCHARGER DIAGNOSIS

Loss of Power	Black Smoke	Blue Smoke	Excessive Oil Consumption	Oil in Exhaust Manifold	Turbocharger Noisy		Symptom > Cause >		Check >	Centre Housing Sludged/Coked	Rating Assembly Drag/Binding	Turbine Wheel Damaged	Compressor Wheel Damaged	Excessive Oil Compressor End	Excessive Oil Turbine End	< Symptom
●	●	●	●		●	1	Air Starvation	1	Air filter cleanliness. Collapsed/restricted air pipes, leaking/loose connections	●	●					
●	●				●	2	Boost Pressure Loss	2	Restricted/damaged/leaking/loose turbo-engine ducting. Turbine housing connections, inlet manifold and gaskets.		●					
●	●				●	3	Exhaust Pressure Loss	3	Exhaust manifold/gaskets loose, damaged, leaking. Turbo mounting loose							
●	●			●	●	4	Excessive Exhaust Back Pressure	4	Exhaust system restrictions/damaged							
		●	●			5	Engine Crankcase Pressure	5	Crankcase breather cleanliness	●	●			●	●	
			●		●	6	Lack of Lubrication	6	Filter, grade, quantity and cleanliness of oil. Feed pipe restrictions/leaks			●	●	●	●	
		●	●	●		7	Excessive Lubrication	7	Oil drain from turbo restriction	●	●					
●	●					8	Poor Compression	8	Valve condition/timing, piston and ring wear/burning							
		●	●	●		9	Oil in Combustion Chamber	9	Valve and guide condition, pistoning ring wear	●						
		●	●	●		10	Prolonged Idling	10	Operating conditions	●	●					
●	●					11	Faulty F.I.E.	11	See Chart - Pumps and Chart - injectors							
●	●				●	12	Foreign Parts Included	12	Air cleaner fitted/complete, missing parts			●		●		
●	●				●	13	Foreign Parts in Exhaust	13	Missing parts, damaged turbine housing							
					●	14	Vibration	14	Turbo mounting			●	●	●		
						15	Oil Lag	15	Initial start acceleration is not excessive					●		
						16	Cold Operation	16	Ensure turbo is run at light load before use			●				
●	●	●	●	●	●	17	Faulty Turbocharger	17	Remove turbocharger and send for specialist check/overhaul	●	●	●	●	●	●	

SCM TURBO

PREPERATION
&
PRIMING GUIDE

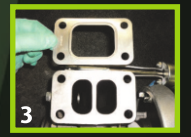
IMPORTANT: Please follow this fitting guide carefully. Failure to correctly prepare, fit and prime the turbo will cause the turbo to fail shortly after fitting, and could void a subsequent warranty claim.

PREPERATION

1) Identify the issue that caused the previous turbocharger to fail, and rectify any issues before installing the replacement unit (see Fault diagnosis chart overleaf for assistance).

2) Ensure the faces/flange of the oil drain pipe are clean. We strongly recommend replacing the oil feed- and drain-pipe when replacing the turbo.

3) Check the manifold faces and flanges are clean and free from damage.



4) Ensure the intercooler and air intake system are clean and free of debris.

5) Always check the engine breather pipes for blockages and restrictions.

6) Keep your work area free from dirt and other particles. Even the tiniest bit of contamination can cause the turbo to fail shortly after fitting.

FITTING/PRIMING

1) Before fitting the turbocharger, fill the turbocharger's oil feed hole with oil and rotate the rotor by hand.

2) Replace the oil filter and prime it with the manufacturers recommended oil, then fill the engine with oil.

3) Fit the turbocharger to the vehicle, leaving the air intake and oil pipes disconnected. Disconnect the ignition system or fuel supply, so the engine will crank over without starting.

4) Connect the oil feed pipe to the engine only, and then crank the engine over until oil can be seen flowing strongly out of the oil feed pipe.

5) Connect the oil feed pipe to the turbocharger.

6) Attach the oil return pipe to the turbocharger using the correct gasket. Do not use liquid sealant; use of this will void the warranty.

7) Crank the engine over again (still without firing) so a good flow of oil can be seen flowing freely out of the oil return-pipe. This ensures all air pockets are removed from the oil system.

8) Connect the oil return-pipe to the engine, and re-connect all remaining hoses (air intake, intercooler etc). Crank the engine over again until the oil pressure warning light goes out.

9) Reconnect the ignition system or fuel supply, the engine is now ready to start.

10) Once started, leave the engine to idle for 5 minutes, checking the turbocharger for any oil, air or exhaust leaks. Soapy water can be sprayed over the air connections to look for leakages.

11) Do not leave the engine to idle for longer than 5 minutes, as this could cause oil to access the exhaust system, resulting in smoke from the exhaust.