

# Turbocharger Failure Diagnosis Matrix

Loss of power, excess smoke, high fuel consumption, overheating, high exhaust temperatures and oil leakages from the turbocharger are all symptoms that could indicate turbocharger malfunction. However, these faults are often wrongly attributed to the turbocharger because defects in other components can produce the same symptoms. The turbocharger performance can only be impaired by mechanical damage or blockage caused by dirt.

This checklist provides a comprehensive list of the most common symptoms related to turbocharger failure. **BEFORE** replacing a turbocharger, verify the problem by consulting the chart below. If, after taking the appropriate action problems still persist, please contact your nearest authorised Holset distributor for advice.

	Engine running hot	Poor transient response	Smoke	Engine lacks power	Black exhaust smoke	Blue exhaust smoke	High oil consumption	Turbocharger noisy	Cyclic sound from the turbocharger	Oil leak from compressor seal	Oil leak from turbine seal
<b>Dirty air cleaner</b> Clean or replace element according to manufacturer's recommendations	●	●	●	●	●	●	●			●	
<b>Restricted compressor intake duct</b> Remove restriction or replace damaged parts as required	●	●	●		●	●	●	●	●	●	
<b>Restricted air duct from compressor to intake manifold</b> Replace seals, gaskets or tighten fasteners as required	●	●		●	●			●			
<b>Restricted intake manifold</b> Refer to engine manufacturer's manual and remove restriction	●	●		●	●			●			
<b>Air leak in feed from air cleaner to compressor</b> Replace seals, gaskets or tighten fasteners as required								●			
<b>Air leak in feed from compressor to intake manifold</b> Replace seals, gaskets or tighten fasteners as required	●	●	●	●	●	●	●	●			
<b>Air leak between intake manifold and engine</b> Refer to engine manufacturer's manual and replace gaskets or tighten fasteners as required	●		●	●	●	●	●	●			
<b>Foreign object in exhaust manifold (from engine)</b> Refer to engine manufacturer's manual and remove obstruction				●	●	●	●	●		●	
<b>Restricted exhaust system</b> Remove restriction or replace damaged parts as required	●			●	●					●	
<b>Exhaust manifold cracked, gaskets blown or missing</b> Refer to engine manufacturer's manual and replace gaskets or damaged parts as required		●	●	●	●			●			
<b>Gas leak at turbine inlet/exhaust manifold joint</b> Replace gasket or tighten fasteners as required		●	●	●	●			●			
<b>Gas leak in ducting after turbine outlet</b> Refer to engine manufacturer's manual and repair leak		●						●			
<b>Restricted turbocharger oil drain line</b> Remove restriction or replace damaged parts as required						●	●			●	●
<b>Restricted engine crankcase breather</b> Refer to engine manufacturer's manual and clear restriction						●	●			●	●
<b>Turbocharger bearing housing sludged or coked</b> Change engine oil and oil filter, overhaul or replace turbocharger as required						●	●			●	●
<b>Fuel injection pump or fuel injectors incorrectly set</b> Refer to engine manufacturer's manual and replace or adjust faulty components as required		●	●	●	●						
<b>Engine valve timing incorrect</b> Refer to engine manufacturer's manual for correct settings and adjust as required				●	●						
<b>Worn engine piston rings or liners</b> Refer to engine manufacturer's manual and repair as required				●	●	●	●			●	●
<b>Burnt valves and/or pistons</b> Refer to engine manufacturer's manual and repair as required				●	●	●	●			●	●
<b>Excessive dirt build-up on impeller and/or diffuser vanes</b> Clean in accordance with the appropriate Holset repair manual				●	●	●	●	●	●	●	●
<b>Turbocharger damaged</b> Find and correct cause of failure, repair or replace turbocharger as necessary				●	●	●	●	●		●	●
<b>Failed diaphragm</b> Replace using correct Actuator Service Kit	●							●			
<b>Siezed valve</b> Free valve/replace complete turbine housing sub-assembly	●	●									
<b>Leaking hose</b> Replace hose and clips	●							●			
<b>Wastegate mechanism set incorrectly</b> Contact nearest authorised Holset distributor for correct setting details	●	●	●	●				●			

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