

Turbo Diagnostic Matrix



Often a defective turbocharger is the consequence of some other primary engine defect which cannot be cured just by replacing the turbo. However, with this diagnostic matrix you can possibly determine the nature and extent of the real problem.

Possible Causes

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	Compressor/Turbine Wheel Damaged	Insufficient power/boost pressure too low	Boost pressure too high	Black smoke	Blue smoke	Turbocharger generates acoustic noise	High oil consumption	Oil leakage of compressor side of turbo	Oil leakage of turbine side of turbo
Dirty air filter system		✱			✱		✱	✱	
Intake or pressure hose distorted and/or leaking		✱	✱	✱		✱			
Excessive flow resistance in exhaust system / leakage upstream of turbine		✱		✱	✱	✱	✱	✱	
Oil feed and/or drain lines clogged, leaking or distorted					✱		✱	✱	✱
Crankcase ventilation clogged and/or distorted					✱		✱	✱	✱
Oil coked or sludge in turbocharger center housing					✱		✱	✱	✱
Fuel system/injection feed system defective or incorrectly adjusted		✱	✱	✱					
Valve guide, piston rings, engine or cylinder liners worn/increased blow by		✱		✱	✱		✱	✱	✱
Dirty compressor or clogged intercooler		✱		✱	✱	✱	✱	✱	
Boost pressure control swing valve/poppet valve does not close		✱		✱					
Boost pressure control swing valve/poppet valve does not open			✱						
Pipe or hose assy. To actuator valve defective or ruptured		✱	✱						
Compressor or turbine end sealing rings damaged					✱		✱	✱	✱
Turbocharger bearing damage	✱	✱		✱	✱	✱	✱	✱	✱
Foreign object damage to compressor or turbine wheels	✱	✱		✱		✱			
Exhaust gas leak between turbine outlet and exhaust pipe						✱			
Engine air collector/cleaner missing or loose gaskets		✱		✱		✱			
Turbine housing/flap damaged	✱	✱		✱		✱			
Insufficient oil supply to turbocharger	✱	✱		✱		✱			

Chart courtesy of BorgWarner Turbo Systems