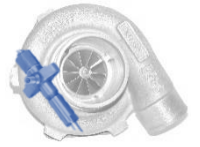


TURBO & FUEL INJECTION AUSTRALIA



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Trouble Shooting Guide for Turbochargers

Symptom	Possible Cause										
	Engine Lacks Power	Black Smoke	Excessive Oil Consumption	Blue Smoke	Noise	Excessive Oil – Compressor End	Excessive Noise – Turbine End	Drag or Bind in Rotating Assembly	Excessive Rotating Assembly Play	Damaged Compressor Wheel	Damaged Turbine Wheel
Dirty Air Cleaner											
Plugged crankcase breathers											
Air cleaner element missing, leaking or loose connections to turbo											
Collapsed or restricted air pipe before turbocharger											
Restricted or damaged crossover pipe –turbo to inlet manifold											
Foreign object between cleaner and turbocharger											
Foreign object in exhaust system (from engine, check engine)											
Turbocharger flanges, clamp or bolts loose											
Inlet manifold cracked gaskets loose or missing, connections loose											
Exhaust manifold cracked, burned, gasket loose, blown or missing											
Restricted exhaust system											
Oil lag at start-up											
Insufficient lubricant											
Lubricating oil containment with dirt or other material											
Improper lubricating oil type used											
Restricted oil feel-line											
Restricted oil drain line											
Turbine housing damaged or restricted											
Turbocharger seal leakage											
Worn journal bearing											
Excessive dirt build-up behind turbine wheel											
Excessive carbon build-up behind turbine wheel											
Too fast acceleration at initial start											
Too little warm-up time											
Fuel pump malfunction											
Worn or damaged injectors											
Valve timing											
Burned valves											
Worn piston rings											
Burned pistons											
Leaking oil feed line											
Excessive engine-idle											
Coked or slugged centre housing											
Oil pump malfunction											
Oil filter plugged											
Oil bath air cleaner; air inlet screen restricted/dirty air cleaner											
Oil bath air cleaner; oil pull-over/oil viscosity too low or high											
Boost control malfunction: wastegate											
Boost control malfunction: VNT											
Boost control malfunction: engine management system											

