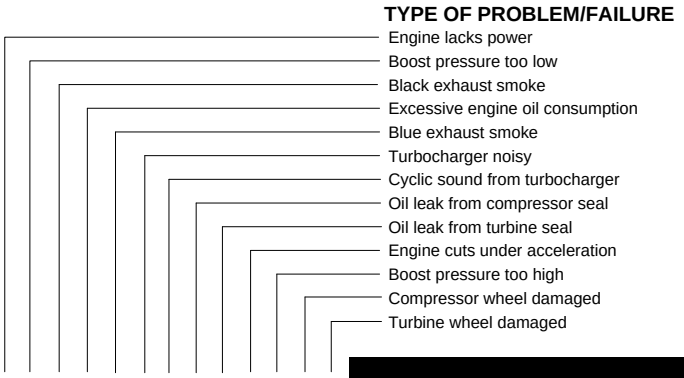
ENGINE & TURBOCHARGER
FAULT DIAGNOSTIC MATRIX



POSSIBLE CAUSES														REMEDY/ACTION
Foreign body damage on compressor or turbine side of turbo	●	●	●	●	●	●	●	●	●			●	●	Find and correct cause of failure, repair or replace turbocharger as required
Insufficient oil supply to turbocharger	●	●				●	●					●	●	Replace oil feed pipe, check oil pump and repair or replace turbo as required
Dirty/Clogged air filter element	●	●	●	●	●	●	●	●						Replace air filter element
Obstruction in the oil return pipe				●	●			●	●					Remove obstruction or replace pipe as required
Turbocharger centre/bearing housing sludged or coked				●	●			●	●					Change oil and oil filter, overhaul or replace turbocharger as required (check oil feed pipe for blockages)
Worn engine bores, liners or piston rings (blowby)	●	●	●	●				●	●					(Cylinder leakage test) Refer to engine manufacturers manual and repair engine as required
Internal engine problems (valves, pistons etc.)	●	●	●	●	●	●	●	●	●				●	(Cylinder leakage test) Refer to engine manufacturers manual and repair engine as required
Dirt or oil deposits caked on compressor wheel and/or diffuser vanes	●	●	●	●	●	●	●	●	●					Find and correct source of unfiltered air, check breather system for source of oil deposits. Turbocharger may need overhauling
Damaged turbocharger bearings	●	●	●	●	●	●	●	●	●			●	●	Find and correct cause of failure, repair or replace turbocharger as required
Turbine housing/wastegate seat cracked or valve damaged	●	●				●	●							Replace or repair defective/damaged parts as required
Obstruction in hose from air filter to compressor inlet	●	●	●	●	●	●	●	●						Remove obstruction and/or replace damaged parts as required
Obstruction in hose from compressor outlet to inlet manifold	●	●				●	●							Remove obstruction and/or replace damaged parts as required
Obstructed inlet manifold	●	●				●	●							Refer to engine manufacturers manual and remove obstruction
Air leak in hose from air filter to compressor inlet	●	●	●			●	●					●		Correct leak by replacing seals, tighten fasteners or replace hose as required
Air leak in hose from compressor outlet to intercooler/inlet manifold	●	●	●	●	●	●	●					●	●	Correct leak by replacing seals, tighten fasteners or replace hose as required
Air leak between inlet manifold and cylinder head flange	●	●	●	●	●	●	●							Refer to engine manufacturers manual and replace gaskets and/or tighten fasteners as required
Obstruction in exhaust manifold	●	●	●	●	●	●	●	●						Refer to engine manufacturers manual and remove obstruction
Restricted exhaust system or blocked catalytic converter	●	●	●					●		●	●			Remove obstruction or replace faulty components as required
Exhaust gas leak between exhaust manifold and cylinder head	●	●				●	●	●						Refer to engine manufacturers manual and replace gaskets and/or tighten fasteners as required
Exhaust gas leak from turbine inlet to exhaust manifold joint	●	●	●			●	●	●						Replace gaskets and/or tighten fasteners as required
Exhaust gas leak from downpipe after the turbine outlet						●	●	●						Replace gasket, downpipe or repair as required
Obstruction in engine crankcase vent and/or breather system				●	●			●	●					Refer to engine manufacturers manual, clear obstruction and/or replace filter
Fuel system defective or incorrectly adjusted	●	●	●	●						●	●		●	Refer to engine manufacturers manual, replace or adjust faulty components as required
Engine camshaft timing incorrect	●	●	●											Refer to engine manufacturers manual, replace worn parts and/or check timing as required
Turbocharger wastegate seized or not opening freely	●	●	●			●	●			●	●	●	●	Check wastegate valve and actuator operation
Excessive boost pressure, triggering ignition cut out switch	●	●				●	●			●	●	●	●	Check wastegate valve and actuator operation, also check for leaks in pressure hose to actuator, replace faulty parts as required
Piston ring sealing defective			●	●				●	●					Repair or replace turbocharger as required