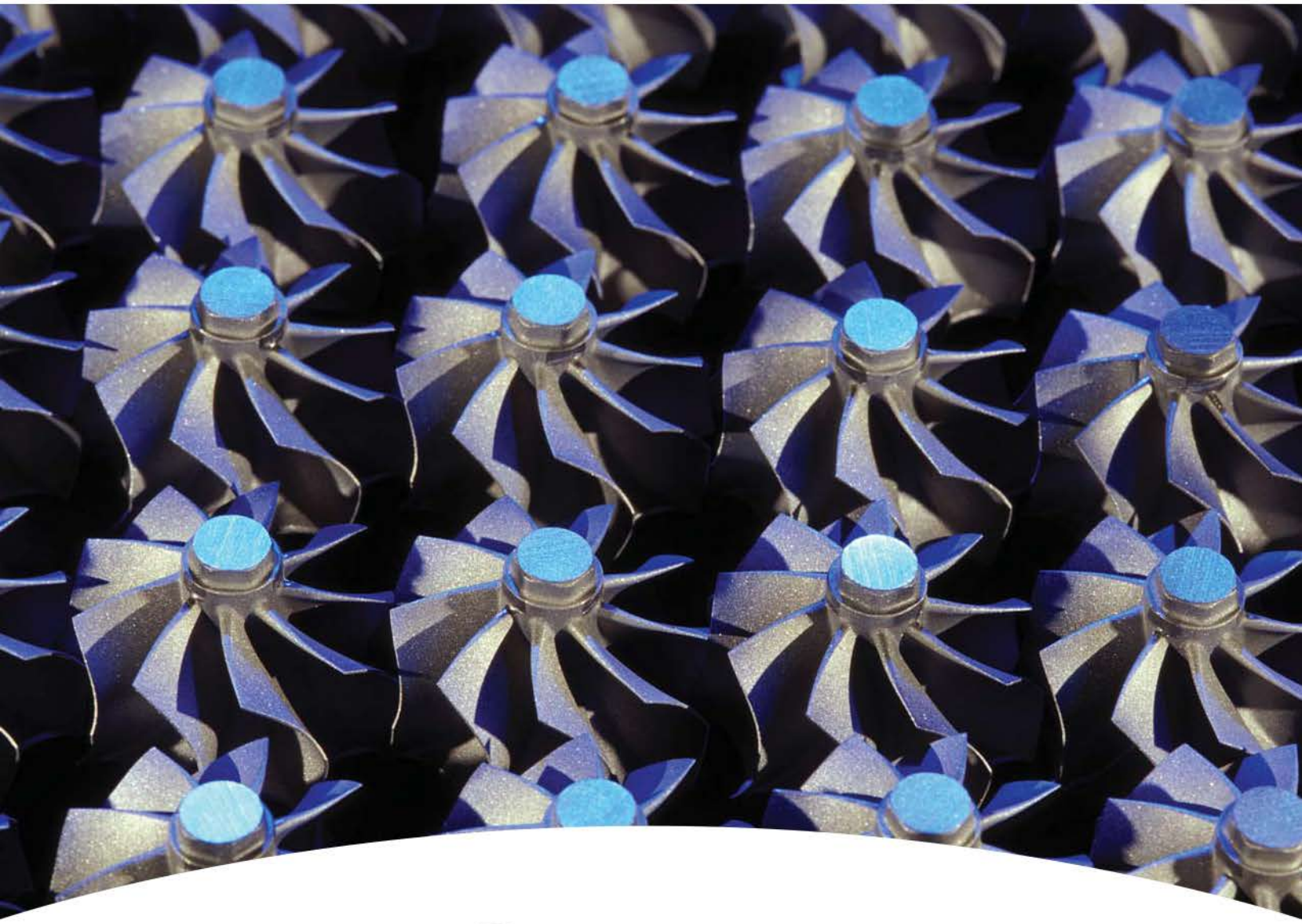
Troubleshooting Honeywell Garrett® Turbochargers



Providing Answers

Possible problem wth your turbo? Find the symptom and determine probable causes with the Garrett® Turbochargers Troubleshooting Guide.

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TROUBLESHOOTING

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POSSIBLE CAUSES	SYMPTOMS: Engine lacks power	Black smoke	Excessive oil consumption	Blue smoke	Noise	Excessive oil - compressor end	Excessive oil - turbine end	Drag or bind in rotating assembly	Excessive rotating assembly play	Damaged compressor wheel	Damaged turbine wheel	SOLUTION
Dirty air cleaner element	●	●		●	●	●						Clean or replace filter element
Plugged crankcase breathers			●			●	●					Clear obstruction per manufacturer's manual
Air cleaner element missing, leaking, or loose connections to turbo					●			●		●		Replace, repair or reconnect air cleaner element per manufacturer's manual
Collapsed or restricted air pipe before turbocharger	●	●		●	●	●						Inspect pipe for damaged or obstruction, replace or repair
Restricted or damaged crossover pipe - turbo to inlet manifold	●	●			●	●						Inspect pipe for damaged or obstruction, replace or repair
Foreign object between cleaner and turbocharger	●	●			●	●		●	●	●		Inspect air intake piping, remove foreign object
Foreign object in exhaust system (check engine)	●	●			●		●	●	●		●	Inspect exhaust piping only when engine is not running and cold, remove foreign object
Turbocharger flanges, clamp or bolts loose	●	●	●	●	●	●	●	●	●	●	●	Inspect all connecting hardware for damage, ensure tight fits per installation instructions
Inlet manifold cracked, gaskets, loose or missing, connections loose	●	●		●	●	●						Remove and inspect inlet manifold for damage to castings and gaskets, replace if needed
Exhaust manifold cracked, burned, gasket loose, blown or missing	●	●			●							Remove exhaust manifold only when engine is cold and not running and inspect for damage to castings and gaskets, replace if needed
Restricted exhaust system					●							Inspect exhaust system only when engine is cold, not running, remove obstruction
Oil lag at start-up								●	●			Inspect lubrication system lines, filters and oil for obstruction, remove obstruction
Insufficient lubrication								●	●			Inspect lubrication system lines, filters and oil for obstruction, remove obstruction
Lubricating oil contaminated with dirt or other material								●	●			Replace all filters and lubricating oil with new per manufacturer's manual
Improper lubricating oil type used								●	●			Replace lubricating oil with correct grade
Restricted oil feed line						●	●	●	●			Remove and inspect oil line, remove obstruction
Restricted oil drain line			●				●					Remove and inspect oil line, remove obstruction
Turbine housing damaged Or restricted	●	●			●						●	Remove turbine housing, inspect for cracks or wear, replace if needed
Turbocharger seal leakage			●	●		●	●					Inspect for proper oil feed / drain line installation. Contact Garrett distributor for rebuild
Worn journal bearings	●	●	●		●	●	●	●	●	●	●	Contact a Garrett performance distributor or Garrett master distributor
Excessive dirt build-up behind turbine wheel	●	●		●	●	●		●		●	●	Inspect air cleaner element and intake piping for damage or leaks, replace if needed. Clean compressor wheel and housing
Excessive carbon build-up behind compressor housing	●	●		●	●		●	●			●	Inspect crankcase ventilation
Too fast acceleration at initial start									●	●		Decrease acceleration at initial start
Too little warm-up time									●	●		Extend warm-up period
Fuel pump malfunction	●	●										Refer to engine manufacturer's manual and replace if needed
Worn or damaged injectors	●	●										Inspect injectors for damage and replace if needed
Valve timing	●	●										Refer to engine manufacturer's manual and replace if needed
Burned valves	●	●										Refer to engine manufacturer's manual and replace if needed
Worn piston rings	●	●										Refer to engine manufacturer's manual and replace if needed
Burned pistons								●	●			Refer to engine manufacturer's manual and replace if needed
Leaking oil feed line				●			●					Remove and inspect oil line, remove obstruction
Excessive engine pre-oil			●	●		●	●					Refer to engine manufacturer's manual and replace if needed
Excessive engine idle			●	●			●	●			●	Refer to engine manufacturer's manual and replace if needed
Coked or sludged center housing									●			Contact a Garrett performance distributor or Garrett master distributor
Oil pump malfunction			●	●		●	●	●	●	●	●	Refer to engine manufacturer's manual and replace if needed
Oil filter plugged	●	●	●	●	●							Refer to engine manufacturer's manual and replace if needed
Oil bath cleaner: air inlet screen restricted / dirty air cleaner	●	●	●	●	●							Replace air inlet screen
Oil bath air cleaner: oil pull-over / oil viscosity too low or high	●	●	●	●	●							Replace lubricating oil with correct grade
Boost control malfunction: wastegate	●	●	●	●	●	●	●		●	●	●	Inspect for damage, leaks or obstructions; replace or repair if needed
Boost control malfunction: vnt	●	●	●	●	●	●	●		●	●	●	Contact a Garrett performance distributor or Garrett master distributor
Boost control malfunction: engine management system	●	●	●	●	●	●	●		●	●	●	Refer to manufacturer's manual and adjust as needed

● Probable cause
Not a probable cause

Nearly all turbocharger-related problems are the result of a handful of causes. Knowing how to recognize the symptoms of these issues early and link them with causes will help you save downtime and money. The chart above outlines the probable causes and noticeable conditions of the most common turbocharger maladies as well as what you can do to solve them. If a problem falls outside of your mechanical comfort level, contact a Performance Distributor or a Master Distributor for assistance. www.TurboByGarrett.com/TurboByGarrett/Distributor

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