

III. Turbocharger Failure Diagnosis

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.

The checklist below provides a comprehensive list of the most common symptoms related to turbocharger failure. Before replacing a turbocharger, verify the problem by referring the chart below.

Failures:	(a) Engine power low	(b) Exhaust black smoke	(c) Oil consumption high; exhaust blue smoke	(d) Oil-leakage at the compressor end
	(e) Oil-leakage at the turbine end	(f) Impeller damaged	(g) Turbine damaged	(h) Abnormal noise

	a	b	c	d	e	f	g	h	Cause	Resolution
1	•	•	•	•				•	Air filter is dirty	Clean or replace
2	•	•	•	•				•	The air-in tube of the compressor is blocked	Clean blocks, change damaged tube if necessary
3	•							•	Tube between outlet of compressor and the inlet of the engine is blocked	Clean blocks
4	•							•	Inlet tube of the engine is blocked	Clean blocks
5						•	•	•	Junction of inlet tube and the cylinder cap is leaking	Replace seal ring, gasket, lock bolt
6	•	•	•	•				•	The tube between outlet of compressor and air-in tube of the engine leak air	Replace seal ring and lock bolt
7	•	•	•	•				•	Leakage between air-in tube and cylinder cap	Replace gasket, fasten bolt
8	•								Exhaust pipe of engine is blocked	Remove blocks
9	•								Exhaust pipe of turbine is blocked	Get rid of blocks
10	•							•	Leakage between exhaust tube of engine and cylinder cap	Replace gasket, fasten bolt
11	•							•	Leakage between exhaust tube of engine and turbine inlet port	Replace gasket, fasten bolt
12		•	•	•	•				Oil-out tube of turbocharger is blocked	Remove blocks or replace oil-out tube
13		•	•	•	•				Throat of crank case is blocked	Clean blocks
14		•	•	•	•	•	•		There are oil coking or fat lute in the bearing housing	Disassemble, clean, replace lubrication, change turbocharger if necessary
15	•	•	•	•		•	•	•	Impeller or diffuser is dirty	Disassemble, clean
16		•	•	•	•	•	•		Oil filter is blocked	Clean or replace filter element
17						•	•	•	Foreign bodies entered into inlet tube of compressor	Check air-in tube, find the source of foreign bodies
18						•	•	•	Foreign bodies entered air-in tube of engine	Check exhaust system, judge source of Foreign bodies
19	•								Failure of oil supply system	Check oil pump, throttle, proof supply advance angle
20	•								Failure of oil supply system	Refer to engine manual
21	•	•	•	•	•				Engine piston, cylinder sleeve is worn	Refer to engine manual
22	•	•	•	•	•				Piston is burn-out	Replace piston and lubrication
23		•	•	•	•				Engine run under idle condition for a long time	Avoid long idling
24			•	•	•	•	•		Chose the wrong lubrication or the lubrication goes bad.	Replace lubrication
25		•	•	•	•				The oil-level in the crank case is high	The oil-level should correspond with the engine manual