

DIESEL SMOKE DIAGNOSTIC INFORMATION

I. White Smoke

White Exhaust Smoke consists of a large number of particles of fuel oil larger than 1.0 microns in diameter. This indicates that the "Fuel is not Burning."

POSSIBLE CAUSE

- 1) faulty ignition pump
- 2) too high injection pressure or faulty injection
- 3) improper grade/delivery of fuel
- 4) incorrect engine valve timing
- 5) engine overheating or too cold, coolant entering combustion chamber and/or water in fuel
- 6) high exhaust back pressure

POSSIBLE REMEDY

- 1) set injection timing
- 2) check emission system operation
- 3) check fuel injection pump calibration
- 4) check injection nozzles
- 5) check fuel being used
- 6) check engine valve timing
- 7) check cooling system for overheating, head gasket leakage, and/or fuel tank and filters
- 8) check exhaust back pressure

II. Blue Smoke

Blue smoke consists of a large number of fuel oil particles about 0.5 microns in diameter or less. These particles are recondensed droplets of unburned fuel or incompletely burned fuel. This indicates that the engine burns excessive oil; and/or indication of "Lubricating Oil" being burned.

POSSIBLE CAUSE

- 1) engine crankcase oil level too high
- 2) wrong grade/type of fuel
- 3) oil level in air cleaner too high
- 4) air cleaner oil too light in viscosity
- 5) worn piston rings, valve guides or cylinders
- 6) turbocharger/blower defective

POSSIBLE REMEDY

- 1) check oil in crankcase and air cleaner
- 2) try another grade of fuel
- 3) perform compression test
- 4) check rings and/or valve seals
- 5) check turbocharger/blower

III. Black or Gray Smoke

Black or Gray Smoke consists of particles of carbon formed when fuel is heated in oxygen lean regions in the combustion chamber. Part of the fuel in the chamber is not being ignited or burned.

POSSIBLE CAUSE

- 1) faulty injection pump timing
- 2) too high injection pressure or faulty injection nozzles
- 3) clogged or damaged air intake filter
- 4) improper grade/delivery of fuel
- 5) incorrect engine valve timing
- 6) engine overheating
- 7) high exhaust back pressure
- 8) poor cylinder compression

POSSIBLE REMEDY

- 1) set injection pump timing
- 2) check emission system operation
- 3) check fuel injection pump
- 4) check injection nozzles
- 5) check fuel being used
- 6) check engine valve timing
- 7) check cooling system for overheating
- 8) check air intake filter
- 9) check exhaust back pressure
- 10) check compression

Source: DMC Inc., Placentia, California