

SMOKE

BLACK SMOKE

PROBABLE CAUSES

Air intake or exhaust restriction, exhaust back pressure device closing, turbocharger failure, loose injector, altitude (very slight black smoke on hard acceleration is normal).

PROCEDURE:

- If engine has a fuel knock or there is evidence of fuel in the exhaust manifolds, remove exhaust manifolds and inspect for fuel in the exhaust ports. (Suspect loose injectors, missing or damaged "O" ring and copper gasket on bottom.)
- Inspect air inlet system and exhaust system for possible sources of restriction.
- Inspect exhaust back pressure (EBP) device at WOT to determine if closing.
- Monitor EBP signal (PID) with the EST tool while operating the engine to determine if exhaust back pressure is high.

WHITE SMOKE

PROBABLE CAUSES

No glow plug operation, loose injectors, cold engine, bent connecting rods, low compression, worn rings, coolant leaking into combustion chamber past injector sleeves.

PROCEDURE:

- In cold ambient temperatures some white smoke is normal until the engine is up to operating temperature. Insure engine is up to operating temperature (190°F) prior to verifying a smoke complaint. If the engine is unable to obtain operating temperature during a road test verify thermostat opening temperature (190°F).

- On a cold engine the glow plug system may remain on for up to 2 minutes after the engine starts to assist in cold smoke cleanup. Perform glow plug diagnostic procedures (test #11) on Hard Start / No Start diagnostic form to verify glow plug operation.

- If engine has a fuel knock or evidence of fuel in the exhaust, remove exhaust manifolds and inspect for fuel in the exhaust ports. (Suspect loose injectors, missing or damaged "O" ring and copper gasket on bottom.)
- If air induction system show evidence of water injection, that can cause hydraulic static lock and bend connecting rods or if the air induction system shows evidence of dusting perform a compression test.

BLUE SMOKE/FUEL ODOR

PROBABLE CAUSES:

- Oil consumption
- Loose injectors.

PROCEDURE:

- If engine has a fuel knock or evidence of fuel in the exhaust, remove exhaust manifolds and inspect for fuel in the exhaust ports. (Suspect loose injectors, missing or damaged "O" ring and copper gasket on bottom.)