

NO START – DRY RESERVOIR

PROBABLE CAUSES

To understand the cause of the no-start and identify the most probable cause to this problem it is critical to identify the failure mode.

If the engine:

"STARTED RAN APPROXIMATELY 15 SECONDS AND STALLED"

The most likely cause is the lack of oil supply by the lube system.

Or if the engine;

"DID NOT START AND RESERVOIR WAS FOUND DRY"

Possibilities include reservoir leak down: Caused by a leaking check valve in the high pressure oil pump, porous oil reservoir, or reservoir pump down which occurs during cranking and no start conditions caused by CMP circuit or other electronic control circuit failures.

PROCEDURES

"STARTED RAN APPROXIMATELY 15 SECONDS AND STALLED"

This condition assumes that the reservoir was full when the engine start was attempted, the engine started normally and would die after 15 seconds of running.

- Refill the reservoir and verify the start and stall condition.
- Remove, inspect and measure clearances in the engine lube oil pump. (**Figure 4.16.**) Upon removal of the lube oil pump inspect the mating front cover surface for gouging or deep scratching, inspect the oil pump for damage or wear. Measure the "G" rotor to oil pump housing clearance. Specification is 0.028" – 0.032" (0.72 – 0.81 mm). Measure from surface of housing to "G" rotor dimension. Specification is 0.001" – 0.003" (0.2 – 0.08 mm.)

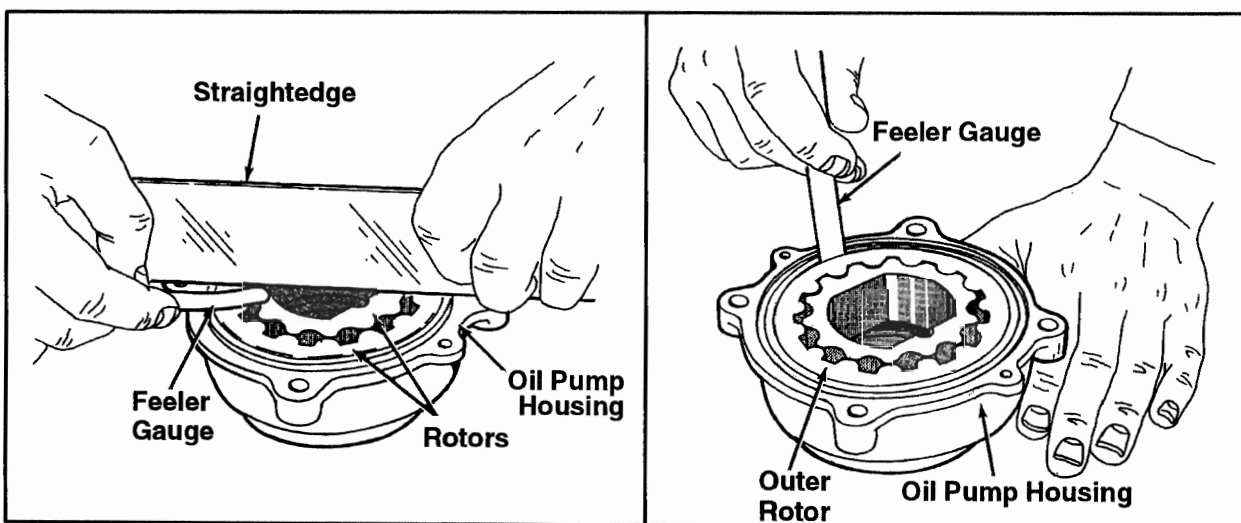


Figure 4.16. – Lube Oil Pump Inspection and Measurement

SUPPLEMENTAL DIAGNOSTIC ANALYSIS

NO START – DRY RESERVOIR (Continued)

"DID NOT START AND RESERVOIR WAS FOUND DRY"

- Refill the reservoir and attempt to start the engine.
- If the engine does not start, perform the procedures on the Hard Start/No Start Diagnostic form. The tests on this form will discern if the essential elements required to start are present. (e.g. CMP camshaft position signal, battery voltage, fuel & fuel pressure, ICP injection control pressure, etc.)
- If the engine starts, the low reservoir problem may be caused by reservoir leak down after a prolonged period of not running.
- Road test the vehicle for a minimum of 10 miles to assure that all air is purged from the injection control pressure system. Check oil level in reservoir to assure that it is full and let sit over night.
- Inspect oil level (**Figure 4.17.**) the next morning (prior to starting engine) to determine if leak down has occurred.
- The only paths for leakage is past a check ball internal to the high pressure oil pump or through a porous reservoir or front cover.
- Leakage past the check valve in the high pressure pump may be intermittent, the check valve internal to the pump is not serviceable. If the high pressure pump is suspect, replace it. (**Figure 4.18.**) (**Note: The IPR injection pressure regulator valve which is mounted in the pump will not cause a leak down problem and does not require replacement when a high pressure pump is replaced.**)
- Porosity through a reservoir or front cover casting is highly unlikely and if it does occur will probably be detected at very low miles. Leakage through a porous casting will also be diagnosed as a consistent problem and should not be a case of intermittent leak down. If porosity is suspected it is recommended to replace the reservoir first since it is far easier to replace than a front cover.

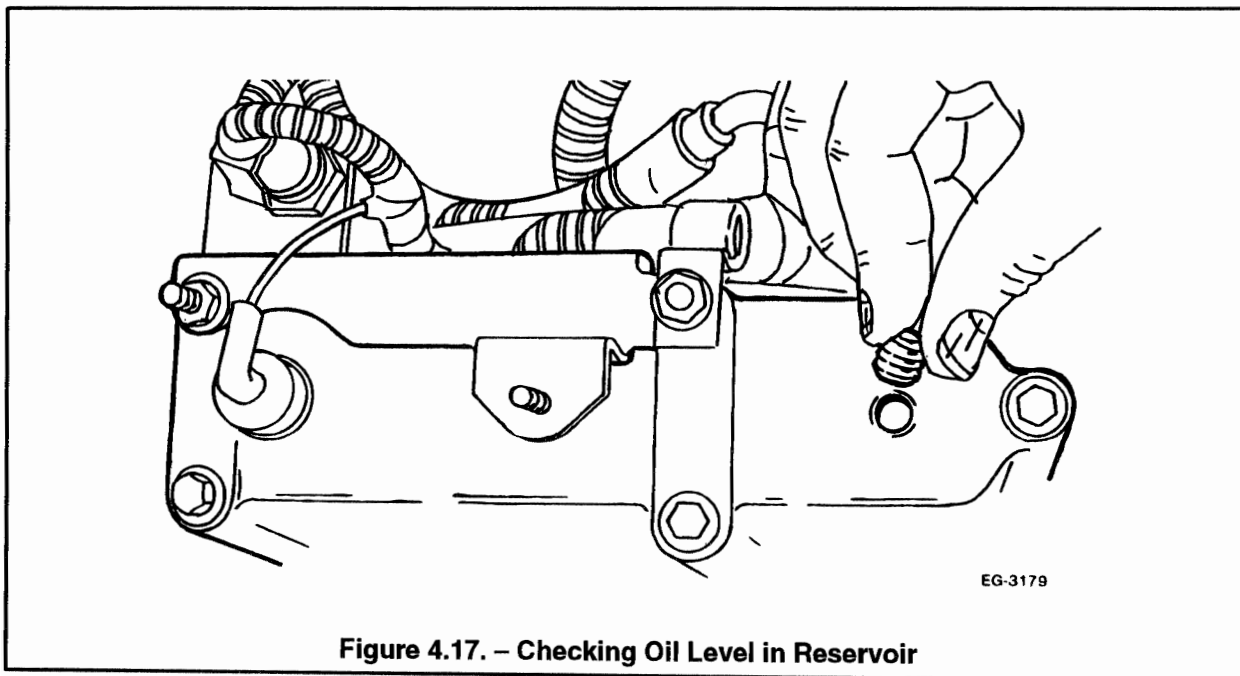


Figure 4.17. – Checking Oil Level in Reservoir

NO START - DRY RESERVOIR (Continued)

