

## DIAGNOSIS AND TESTING

**Closed-Type Positive Crankcase Ventilation (PCV) System**

**CAUTION:** The removal of the crankcase ventilation system from the engine will adversely affect the fuel economy and engine ventilation resulting in a shortened engine life.

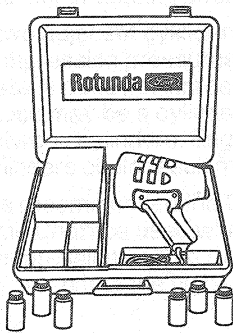
A malfunctioning closed crankcase ventilation system may be indicated by loping or rough engine idle. Do not attempt to compensate for this idle condition by disconnecting the positive crankcase ventilation system and making idle speed adjustments. To determine whether the loping or rough idle condition is caused by a malfunctioning crankcase ventilation system, refer to the Powertrain Control/Emissions Diagnosis Manual.<sup>2</sup>

**Engine Oil Leaks****Tools Required:**

- Rotunda Oil Leak Detector 112-00030

When diagnosing engine oil leaks, it is important that the source and location of the leak be positively identified before service. The following procedure has been found to be very effective and requires minimum equipment. Prior to using this procedure, it is important to clean the cylinder block, cylinder head(s), rocker cover(s), oil pan and flywheel housing areas with a suitable solvent to remove all traces of oil.

To perform oil leak diagnosis use Rotunda Oil Leak Detector 112-00030 or equivalent, perform the following procedure.



ROTUNDA OIL LEAK  
DETECTOR  
112-00030

A15068-A

**Fluorescent Oil Additive Method**

1. Clean engine with a suitable solvent to remove all traces of oil.

2. Drain engine oil crankcase and refill with recommended oil, premixed with Fluorescent Oil Additive ESE-M99C 103-A or equivalent. Use a minimum 14.8ml (1/2 oz) to a maximum 29.6ml (1 oz) of fluorescent additive to all engines. If oil is not premixed, fluorescent additive must be added to crankcase first.
3. Run engine for 15 minutes. Stop engine and inspect all seal and gasket areas for leaks using Rotunda Oil Leak Detector 112-00030 or equivalent. A clear bright yellow or orange area will identify leak. For extremely small leaks, several hours may be required for the leak to appear.
4. If necessary, pressurize main oil gallery system to locate leaks due to improperly sealed, loose or cocked plugs. If flywheel bolts leak oil, look for sealer on threads.
5. Service all leaks as required.

**Pressure Method****Alternative Testing Procedure**

The crankcase can be pressurized to locate oil leaks. The following materials are required to fabricate the tool to be used.

1. Air supply and air hose.
2. Air pressure gauge that registers pressure in one psi increments.
3. Air line shutoff valve.
4. Appropriate fittings to attach the above parts to oil fill, and PCV grommet holes and rocker arm cover tube.
5. Appropriate plugs to seal any openings leading to the crankcase.
6. A solution of liquid detergent and water to be applied with a suitable applicator such as a squirt bottle or brush

Fabricate the air supply hose to include the air line shutoff valve and the appropriate adapter to permit the air to enter the engine through the PCV valve opening. Fabricate the air pressure gauge to a suitable adapter for installation on the engine at the oil fill opening.

**Testing Procedure**

1. Open air supply valve until pressure gauge maintains 34.5 kPa (5 psi).
2. Inspect the sealed and/or gasketed areas for leaks by applying "Snoop Pressure Check" or a solution of liquid detergent and water over the areas for the formation of bubbles, which indicates leakage.

**Possible Leakage Points**

Examine the following areas for oil leakage

<sup>2</sup>— Can be purchased as a separate item.