

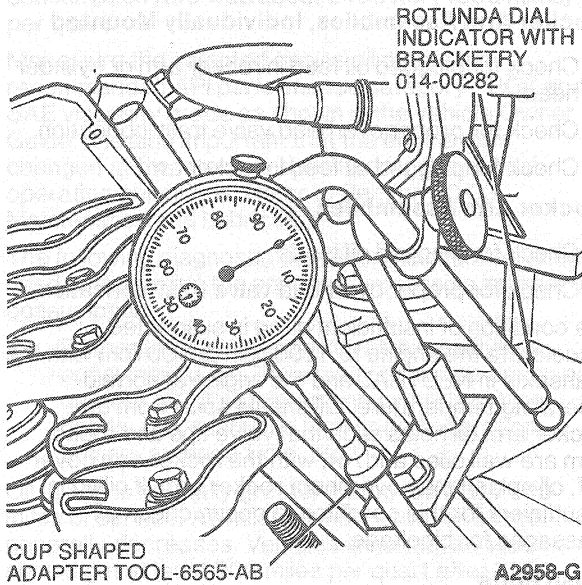
## DIAGNOSIS AND TESTING (Continued)

**Camshaft Lobe Lift****Tools Required:**

- Cup Shaped Adapter TOOL-6565-AB
- Rotunda Dial Indicator with Bracketry 014-00282

Check the lift of each lobe in consecutive order and make a note of the readings.

1. Remove valve rocker arm cover(s).
2. Remove rocker arm fulcrum bolts, fulcrum and rocker arm.
3. Ensure tappet is seated against cam. Install Rotunda Dial Indicator with Bracketry 014-00282 or equivalent in such a manner as to have ball socket adapter of indicator on top of tappet, or Cup Shaped Adapter TOOL-6565-AB or equivalent on top of push rod and in same plane as tappet or push rod movement.



4. Remove spark plugs.
5. Connect an auxiliary starter switch in starting circuit. Crank engine with ignition switch in OFF position. Bump crankshaft over until tappet is on base circle of camshaft lobe. At this point, tappet will be in its lowest position. If checking during engine assembly, turn crankshaft using a socket or ratchet.
6. Zero dial indicator. Continue to rotate crankshaft slowly until tappet is in fully raised position (highest indicator reading).
7. Compare total lift recorded on indicator with specifications.

8. To check accuracy of original indicator reading, continue to rotate crankshaft until indicator reads zero.

**NOTE:** If lift on any lobe is below specified service limits, camshaft and tappet operating on worn lobe(s) must be replaced, as well as any tappet showing pitting or having contact face worn flat or concave. Refer to Camshaft and Hydraulic Lash Adjuster as outlined.

9. Remove dial indicator, adapter and auxiliary starter switch.

**CAUTION:** After installing rocker arms, do not rotate crankshaft until tappets have had sufficient time to bleed down. To do otherwise may cause serious valve damage. Manually bleeding down will reduce waiting time.

10. Install valve rocker arm cover.
11. Install spark plugs.

**Hydraulic Tappet/Lash Adjuster****Tools Required:**

- Hydraulic Tappet Leakdown Tester TOOL-6500-E

Hydraulic tappet noise may be caused by any of the following:

1. Excessive collapsed tappet gap.
2. Sticking tappet plunger.
3. Tappet check valve not functioning properly.
4. Air in lubrication system.
5. Leakdown rate too rapid.
6. Excessive valve guide wear.

Excessive collapsed tappet gap may be caused by loose rocker arm fulcrum bolts, incorrect initial adjustment, or wear of tappet face, push rod, rocker arm, rocker arm fulcrum, or valve tip. With tappet collapsed, check gap between valve tip and rocker arm to determine if any other valve train parts are damaged, worn, or out of adjustment.

A sticking tappet plunger may be caused by dirt, chips, or varnish inside the tappet. The sticking can be corrected by disassembling the tappet and removing the dirt, chips or varnish causing the condition.

A tappet check valve that is not functional may be caused by an obstruction such as dirt or chips preventing it from closing when the cam lobe is lifting the tappet, or it may be caused by a broken check valve spring.

Air bubbles in the lubrication system will prevent the tappet from supporting the valve spring load and may be caused by too high or too low an oil level in the oil pan, or by air being drawn into the system through a hole, crack or leaking gasket on the oil pump pickup tube.

If the leakdown time is below the specified time for used tappets, noisy operation may result. If no other cause for noisy tappets can be found, the leakdown rate should be checked and any outside the specification should be replaced.