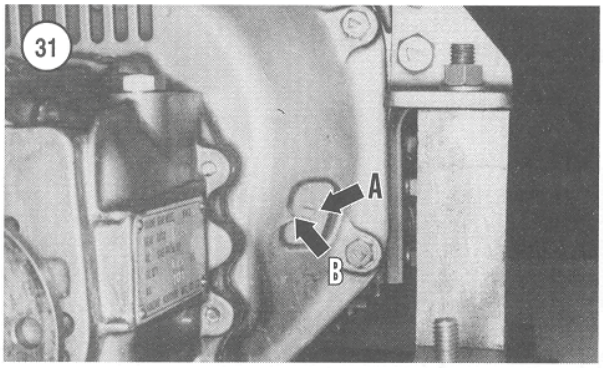
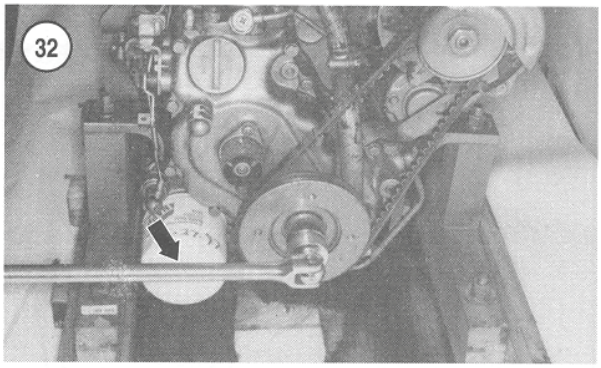
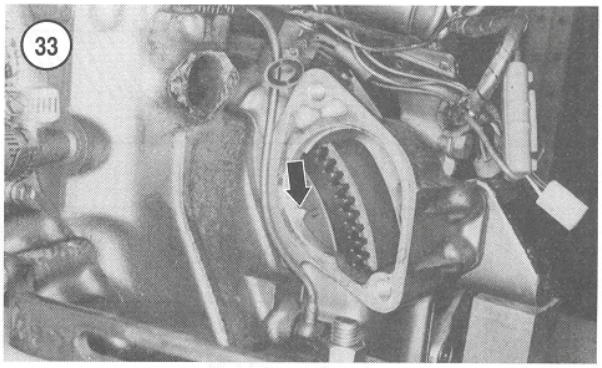






condition. In addition, it can warn of developing problems inside the engine. If more than a 43 psi. (300 kPa) difference exists between the highest and lowest reading cylinders on multicylinderengines, the engine cannot be tuned to develop its maximum power. Specified cylinder pressure is 390-470 psi (2700-3300 kPa).

A compression reading that is below the desired compression pressure indicates that engine repair is required because of worn or broken rings, leaky or sticking valves or a combination of all.

If the compression test readings are lower than desired, isolate the cause by performing a wet compression test. Remove the precombustion chamber (refer to Chapter Seven). Perform the wet compression test in the same way as the dry test, except pour approximately one tablespoon of heavy engine oil (at least SAE 30) into the injector hole before performing Steps 7-9. If the wet compression readings are significantly higher than the dry compression readings, the cause for the low dry compression reading is probably worn or broken rings. If there is little difference between the readings, the problem may be due to leaky or sticking valves or a faulty cylinder head gasket. If two adjacent cylinders on a multicylinderengine read low on both tests, the head gasket may be leaking between the cylinders.

Excessively high compression readings indicate carbon buildup in the cylinder.

NOTE

A special type compression gauge and adapter is required to measure the compression pressure in the cylinder. If the necessary compression test gauge is not available, have a diesel technician perform the test.

1. Be sure cooling water is connected to the engine.
2. Run the engine until it reaches normal operating temperature, then shut it off.

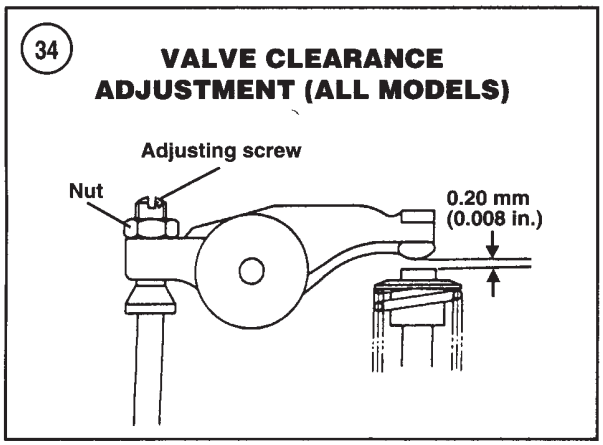
CAUTION

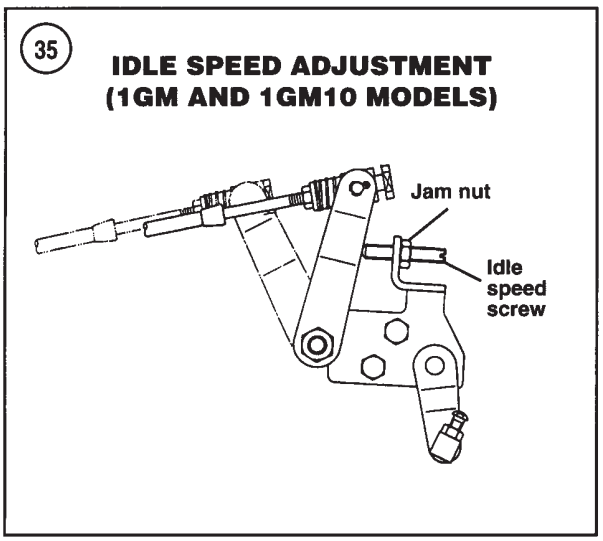
Be sure to remove all the injectors on a multicylinderengine to prevent inadvertent starting.

3. Remove the fuel injector(s) as described in Chapter Seven.
4. Clean the injector hole.
5. Rotate the engine to blow out any carbon.
6. Install the compression gauge and, if necessary, the adapter.
7. Crank the engine at least five turns or until there is no further increase in compression shown on the tester gauge.
8. Record the reading. Relieve the tester pressure valve and remove the compression tester.
9. Repeat Steps 4-8 for each remaining cylinder on multicylinderengines.

Valve Clearance Adjustment

Valve clearance is the gap between the end of the valve stem and the underside of the rocker arm. A specified valve clearance must be maintained for the valves to operate as designed. Insufficient valve clearance will cause





rough engine operation and possible engine damage, such as burnt valves. Excessive valve clearance will reduce engine performance. The recommended interval for valve adjustment is after every 300 hours of operation. However, it is a good practice to check the valve clearances during each tune-up.

The engine must be cold when adjusting valve clearance. On multicylinderengines, the cylinder nearest the flywheel is the number one cylinder.

1. Remove the rocker arm cover as described in Chapter Five or Six.
2. Observe the flywheel (A, **Figure 31**) through the opening in the clutch cover. A cylinder is at top dead center if the mark on the flywheel is aligned with the reference pointer (B) on the clutch cover.
3. Rotate the crankshaft with a wrench on the crankshaft pulley retaining nut (**Figure 32**).

CAUTION

Always rotate the crankshaft in the normal running direction (clockwise at crankshaft pulley); otherwise the water pump impeller will be damaged.

4. Rotate the crankshaft nut clockwise so the 1T mark on the flywheel aligns with the reference pointer (B, **Figure 31**) on the clutch cover. The piston must be on its compression stroke.

NOTE

*Some transmissions do not have an opening in the clutch cover. Remove the starter to view the timing marks on the flywheel (**Figure 33**).*

NOTE

When the piston is on its compression stroke and at top dead center, both valves will be closed. This can be determined by the position of the intake and exhaust rocker arms. Both should have free play, which indicates that the valves are closed.

5. Measure the clearance between the rocker arm and valve stem (**Figure 34**). Correct valve clearance is 0.2 mm (0.008 in.).
6. If the clearance is incorrect, loosen the locknut, then rotate the adjusting screw on the rocker arm (**Figure 34**). Hold the adjusting screw, then tighten the locknut. Recheck the valve clearance.

7A. 2GM and 2GM20 engines—Rotate the crankshaft 360° so the 2T mark on the flywheel aligns with the reference pointer (B, **Figure 31**) on the clutch cover. The piston for number 2 cylinder must be on its compression stroke (see preceding NOTE). Perform Steps 5 and 6.

7B. 3GM, 3GM30, 3HM and 3HM35 engines—Rotate the crankshaft 240° so the 3T mark on the flywheel aligns with the reference pointer (B, **Figure 31**) on the clutch cover. The piston for number 3 cylinder must be on its compression stroke (see preceding NOTE). Perform Steps 5 and 6.

8. Reinstall the rocker arm cover.

Idle Speed Adjustment

The correct idle speed is 825-875 rpm. Refer to the following procedure to adjust the idle speed.

1. Run the engine until it reaches normal operating temperature.
2. Place the transmission in neutral.
3. Loosen the jam nut on the idle speed screw (**Figure 35** or **Figure 36**).