

TOYOTA VALVE ADJUSTMENT

I wish I had a dime for every car that limped into the shop with a supposedly "fresh" tune up. A look under the hood usually uncovered an air filter so dirty it was bullet-proof, a fuel filter so full of crud that it had the heft of a softball, and plug wires taped more often than Namath's knees.

In addition, the smaller engines with adjustable valve clearances usually put up a clatter like a berserk pinball machine. Valve adjustments, like clean filters, are ignored with a passion. And while some newer four cylinder engines are starting to use hydraulic adjusters, there are still a lot of other engines which require periodic valve adjustments as a part of any good tune up or maintenance.

Some of you know from years of experience that valve adjustments are not only good procedure, but also good profit. Other technicians, accustomed to domestic models with hydraulics, may be missing out.

Easy Money

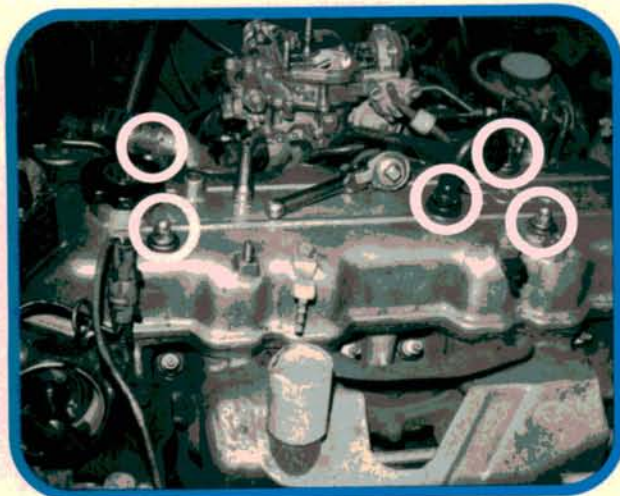
Most valve clearance adjustments don't require a huge investment of time, materials, or special tooling.

The Toyota 20R or 22R engines are a good example. The factory recommends that the valve lash be checked and the clearances adjusted at 15,000 mile intervals. The job is considered to be a maintenance procedure. The customer has to pay. He might as well pay you.

Valve clearance is very important to the health of this engine. Too loose? The tappets, or cam followers, "bang" against the valve stems. This sharp contact speeds wear at the valve stem and adjusting screw. Also, the valve opens late and closes too soon, affecting valve timing.

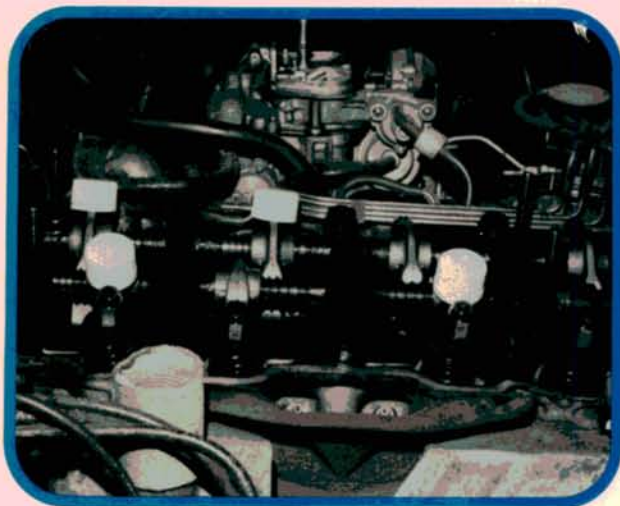
Too tight? The valve stays open too long. In extreme cases, the valve doesn't close at all. To prevent burning the valve face and valve seat, the valve must close completely and at the proper time. It must also stay closed long enough to allow the cylinder head to absorb some of its excess heat.

If you're not selling this adjustment as part of a good maintenance, you may be losing profit and causing poor engine performance as a result. If you are doing valve adjustments, it may still pay to review your skills.



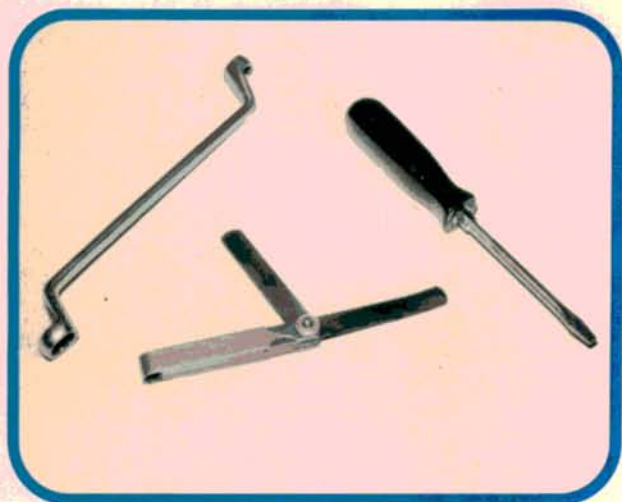
1

First, warm up the engine to warm—not blistering hot. Remove the air cleaner, cover the carb throat, and wash away as much grime as possible. Remove the valve cover and see if the cam followers are too hot to touch. If so, let them cool slightly.



2

Turn the engine over until number 1 cylinder is at TDC. The timing mark should be at TDC and the distributor rotor pointing to number 1. Adjust the valves we've marked with white caps, namely number 1 and 2 intakes and number 1 and 3 exhausts.



3

You'll need a box wrench—an offset helps save the knuckles—a set of feeler gauges, and a screwdriver. Find a screwdriver that fits tightly in the screw slot to prevent gouging or distorting the slot.



4

Always check the underhood decal of the shop manual for the proper settings. To adjust a setting, loosen the keeper nut and turn the screw. Feel for a slight drag on the feeler gauge. Tighten the keeper nut and always recheck the adjustment.



5

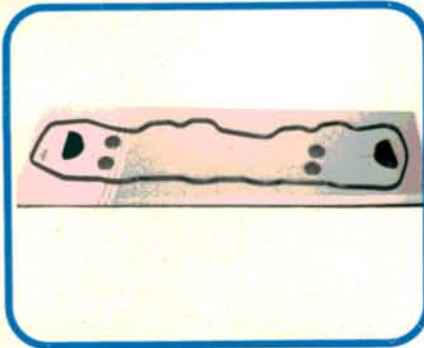
If you're not sure how the feeler gauge should feel when the valve is properly adjusted, check yourself with a micrometer. Set the micrometer to the desired setting and pull the feeler gauge through it. See how that feels?

**6**

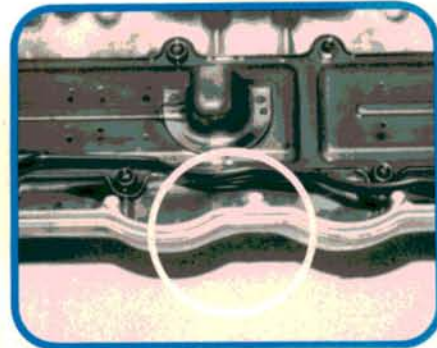
Rotate the engine until the timing mark comes around again—that's one full turn. Now number 4 cylinder's at TDC. Adjust the valves marked by white caps, namely number 3 and 4 intakes, and number 2 and 4 exhausts.

**7**

Don't overtighten those lock nuts or you'll pull threads. This will make the next adjustment very difficult when the adjusting screws want to turn with the nut. Just snug them down, and then double check the clearances to be sure they didn't change.

**8**

A good replacement valve cover gasket set includes the two "half-moon" seals for the cylinder head and new sealing washers for the cap screws. The half-moon at the rear of the head is hard to see. Don't forget it or you'll have a real mess on your hands.

**9**

Clean this groove in the valve cover thoroughly so that the new gasket will fit flat inside the groove. A little petroleum jelly or adhesive will help hold it in place. If everything's clean here, you shouldn't need any other kind of sealer.

**10**

However, when I fit the half-moon seals into the cylinder head, I usually put a fingerful of silicone sealer at the spot we've marked. Don't get carried away—a small dab on a clean, dry surface is enough.

**11**

Draw the valve cover nuts down slowly and evenly in steps. Remember to remove your wrench from the crank nut before you start the engine again.