

BMW M3 - DIY Valve Adjustment Information

Well, I performed the S54 valve adjustment yesterday. In my case I had some excessive ticking and the dealer said I probably just needed this adjustment. Otherwise its an inspection I/II thing. It was fairly easy compared to how it is portrayed. Quite entertaining to see that beautiful inline six's valvetrain in your own car in all its glory!

Anyway, I found that it was easier then the TIS leads you through. Of particular note is that it is easier not using the crankshaft to move the motor around. Once you get the plugs out, you can *easily* turn the motor over with a 32mm wrench on the *fan clutch*. The belt does have enough tension to do this. This avoids a bunch of the work messing with removing the fan, undertray, and the fan shroud so you can get to the crank pulley. It also avoids the tool for this.

The only special tool I think you must have is the shim installation tool. It is a special little plastic bar with a magnet in it. Well worth the money. You could technically do it without it, but it just wouldn't be worth the trouble. The tiny little shims would be quite easy to drop without this tool.

The feelers from the dealer you can get, but make sure you get the .15 and the .20 if you do. They are a separate tool number and specific for the S54 engines. I ordered the main part number on the TIS, and didn't get these. I ended up not using the BMW feelers at all, and using a generic and more complete set that had the exact tolerances I wanted. .05 differences between the feelers when you are testing in a .04 range seemed to be kind of silly. I also wanted my valve train down near the lower end of the tolerance range. Quite a few of mine were right at, or a teeny bit over the upper tolerance range. Since the shims are .04 apart, most of these I was then able to get down to right at the .18 (intake) or the .28 (exhaust) the valve required as a minimum value.

Here's what I used for this job:

Special Tools

- Shim installer, \$25.20, 90-88-6-114-400
- Shim Kit, \$319.50, 11-34-0-031-525

Seals, rings, gaskets, etc

- Sealing rings, \$8.43*6, 11-12-7-831-271
- Cover gasket, \$34.00*1, 11-12-7-832-034
- Rubber grommets, \$2.34*2, 11-12-1-437-395
- Rubber grommets, \$2.55*13, 11-12-7-830-972
- Copper sealing rings, \$0.38*2, 07-11-9-963-129

Misc supplies from parts store

- Measure device - mic or whatever
- High temp gasket sealant/maker
- Big ass 1 1/4 wrench (or 32mm) for fan
- Feelers, as diverse as you can get
- Parts cleaner

Major things not to forget:

- Don't do this on a hot engine, needs to be a cold motor. Period.
- Be crazy cautious about dropping shims, tools, dirt, whatever in the motor.
- Be anal - not kidding. Measure everything like five times.
- Document your work with each valve
- When finished, I recommend putting a little lube on each surface in the valvetrain

Shim Kit



All the parts...



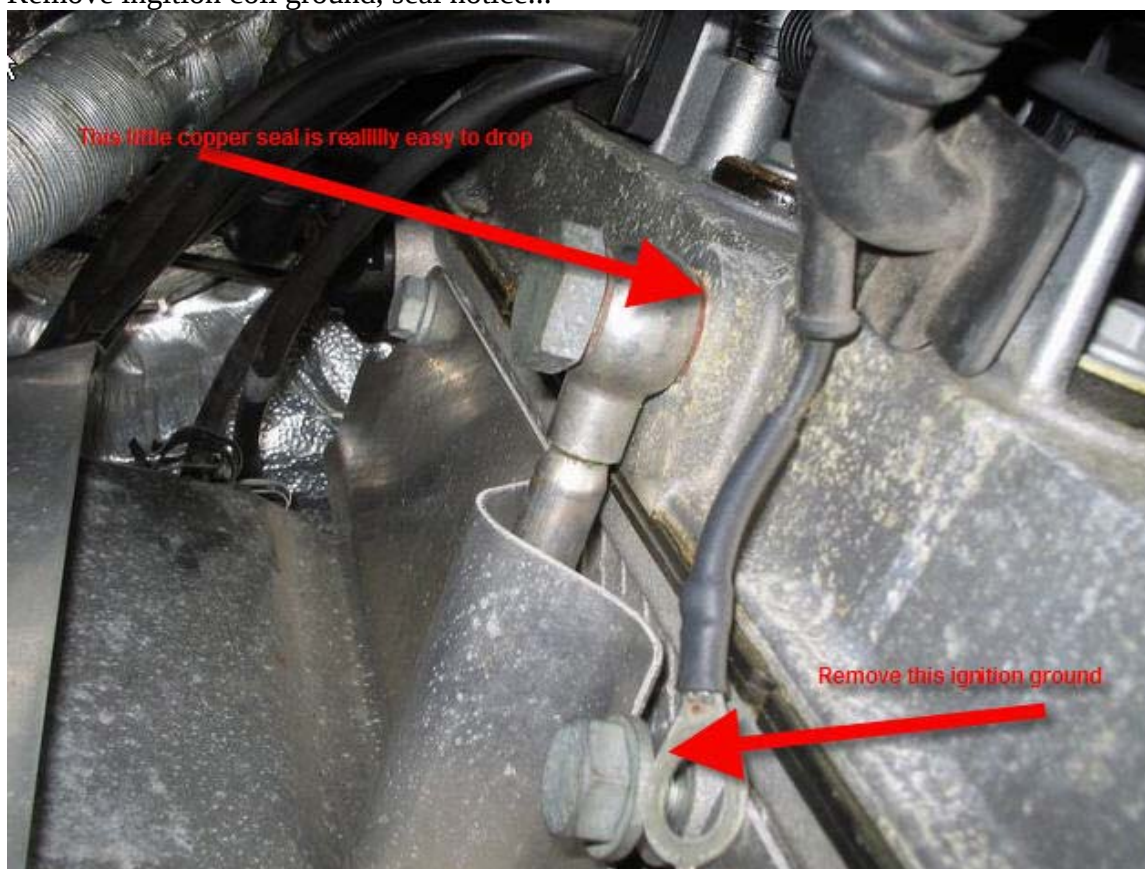
Removal of cabin air filter, etc...



Be careful with the exhaust cam sensor cable...



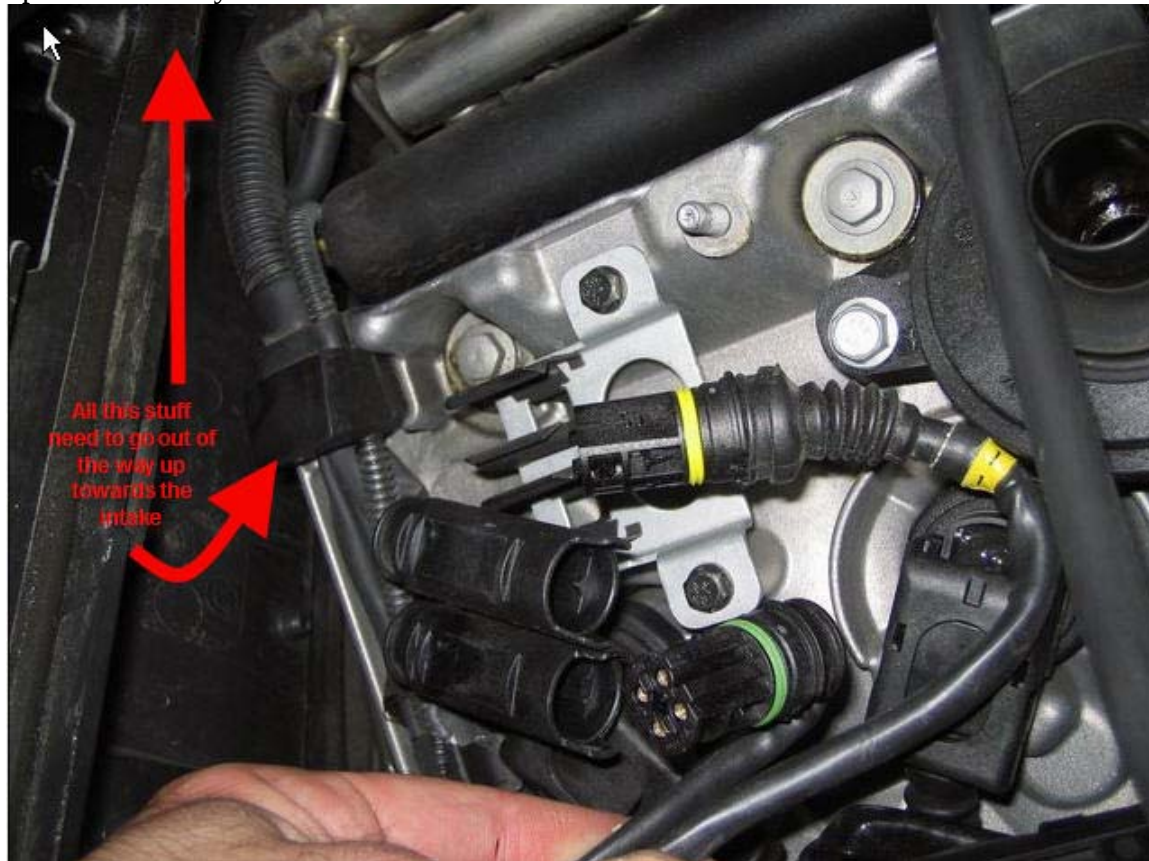
Remove ignition coil ground, seal notice...



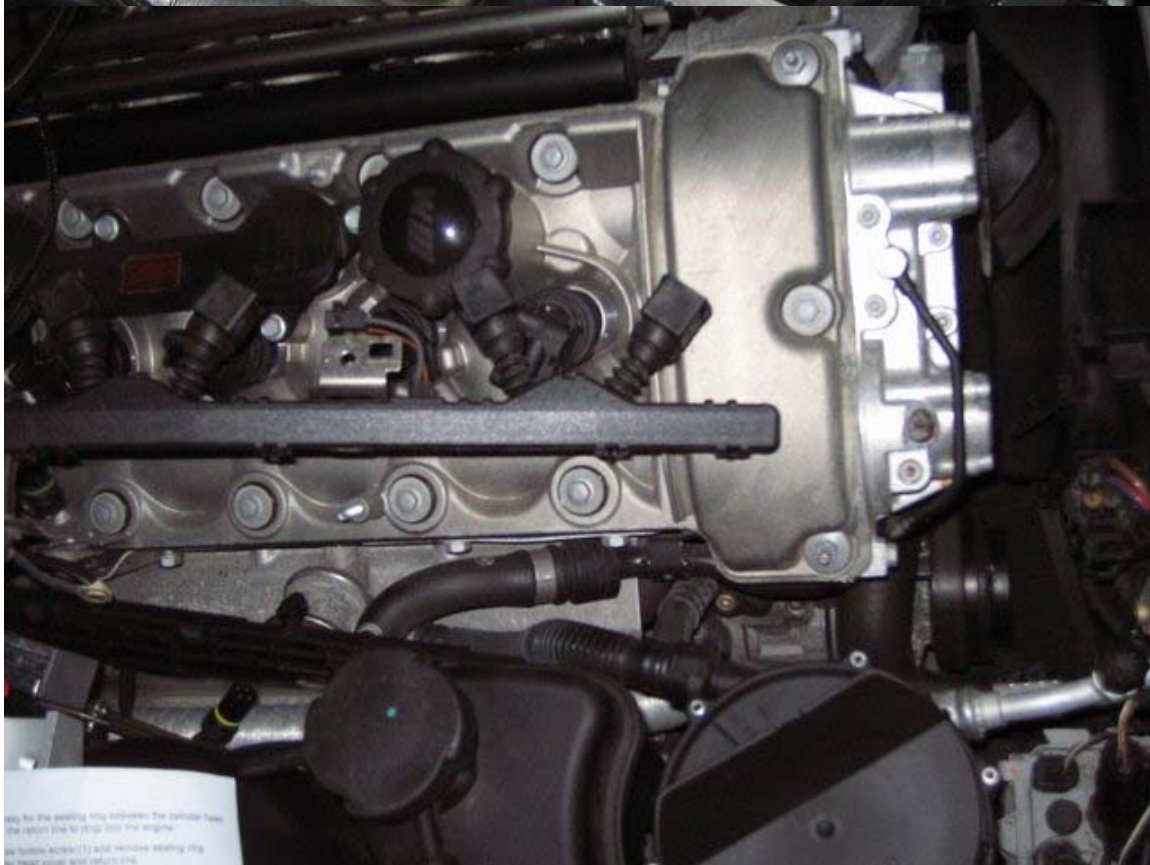
A dentist like pick thing made it wayyy easier...



Unplug the two O2 plugs... Unplug/remove anything you need to so you can move all that mess up out of the way across the intake.



Remove the all the plugs from the ignition coils.



step for the sealing ring between the cylinder head
the return line to strip into the engine
the return pipe (1) and remove sealing ring
at head cover and return line

Ignition Coils R&R



Move the whole coil harness up and out of the way



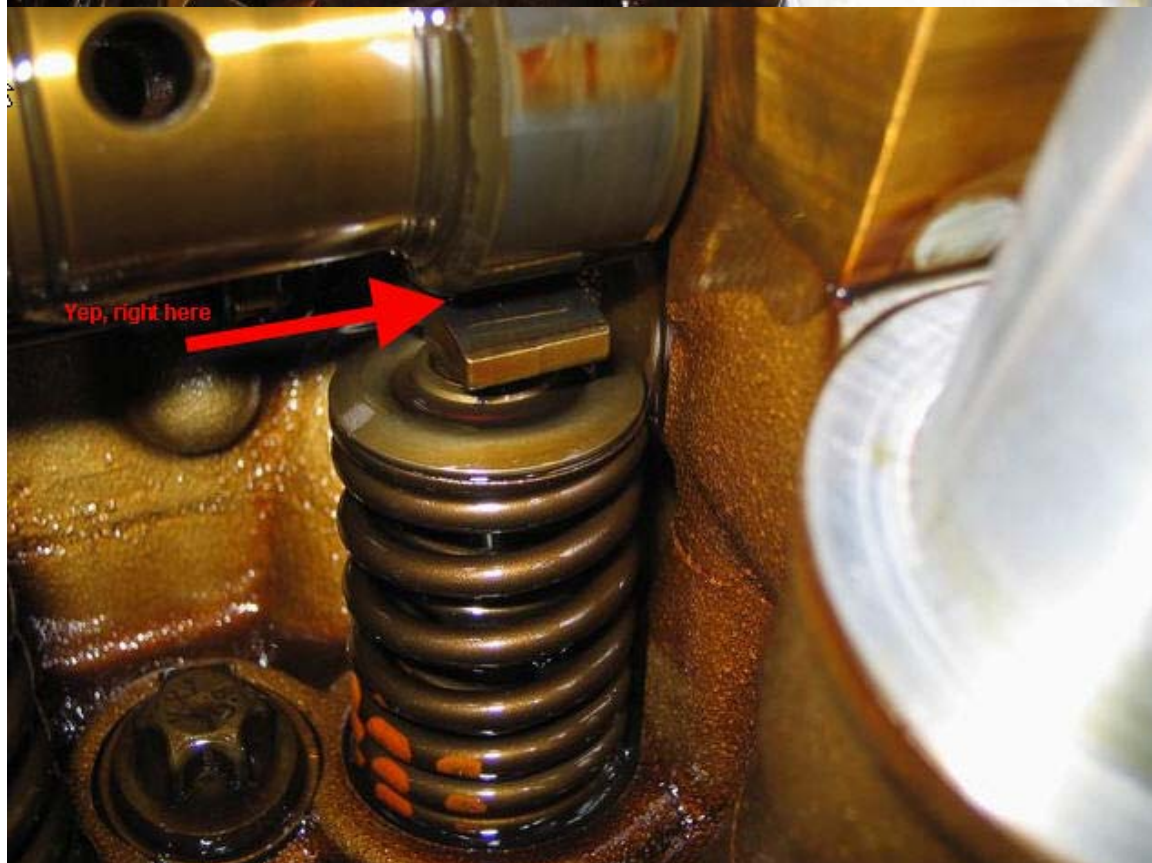
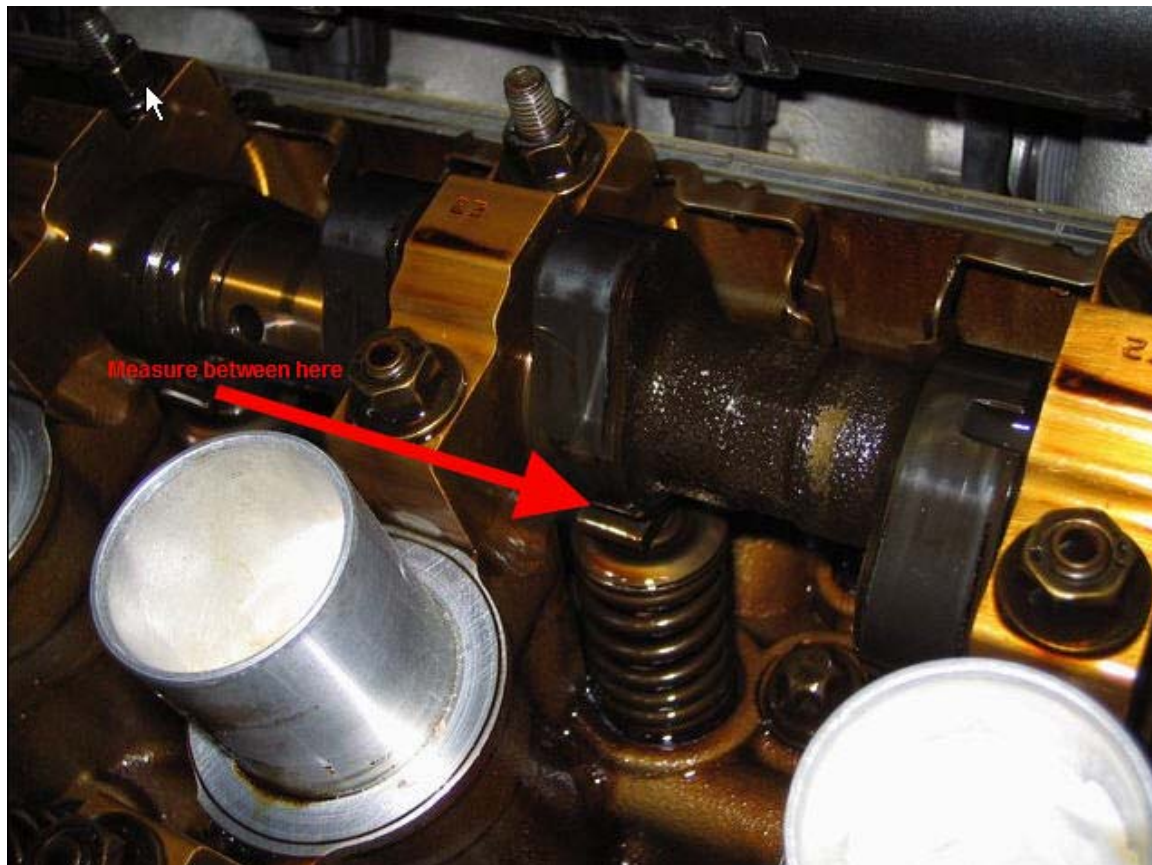
Push the O2 cabling down near the exhaust as much as you can, get it out of the way...



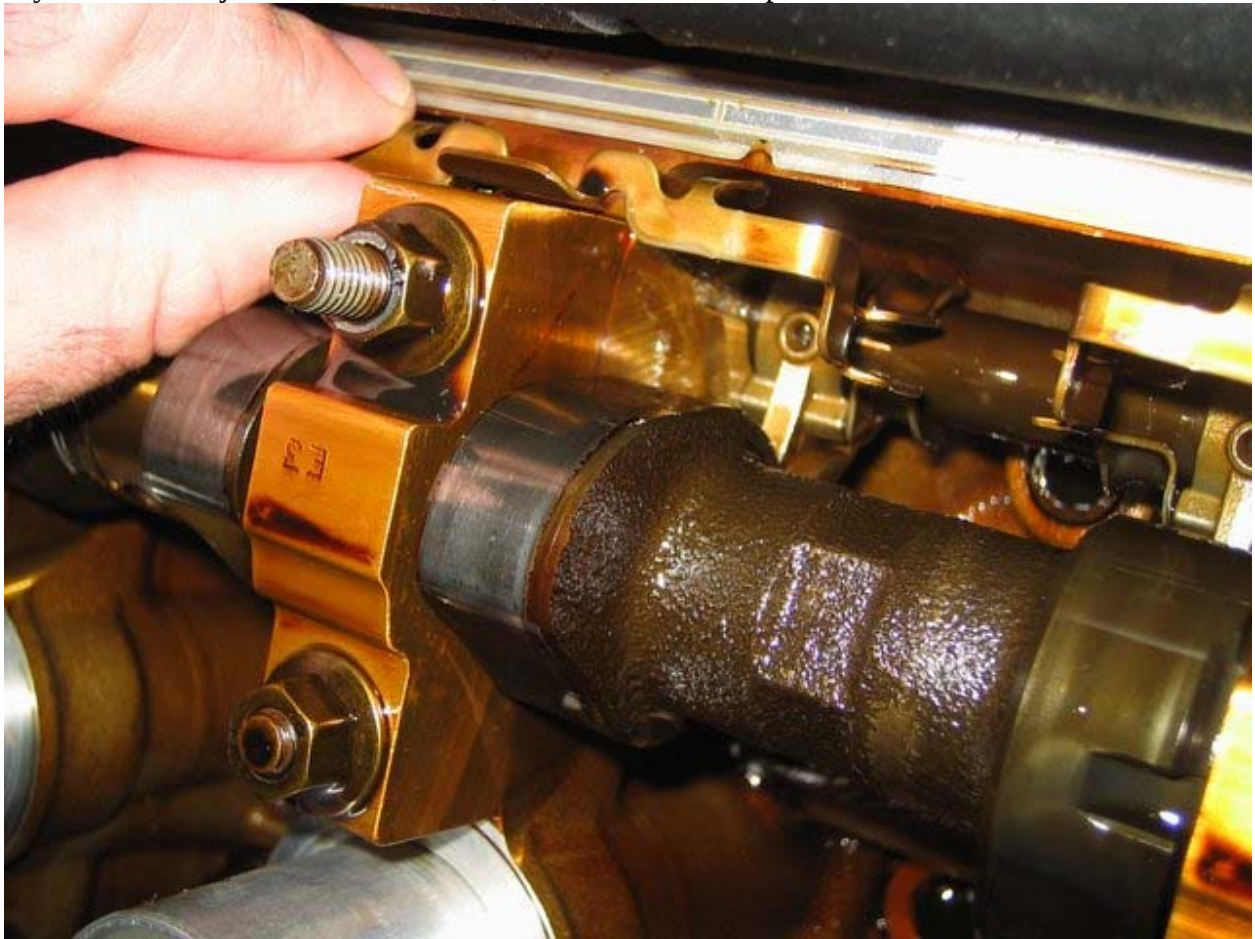
Off with your head. Head cover, at least...



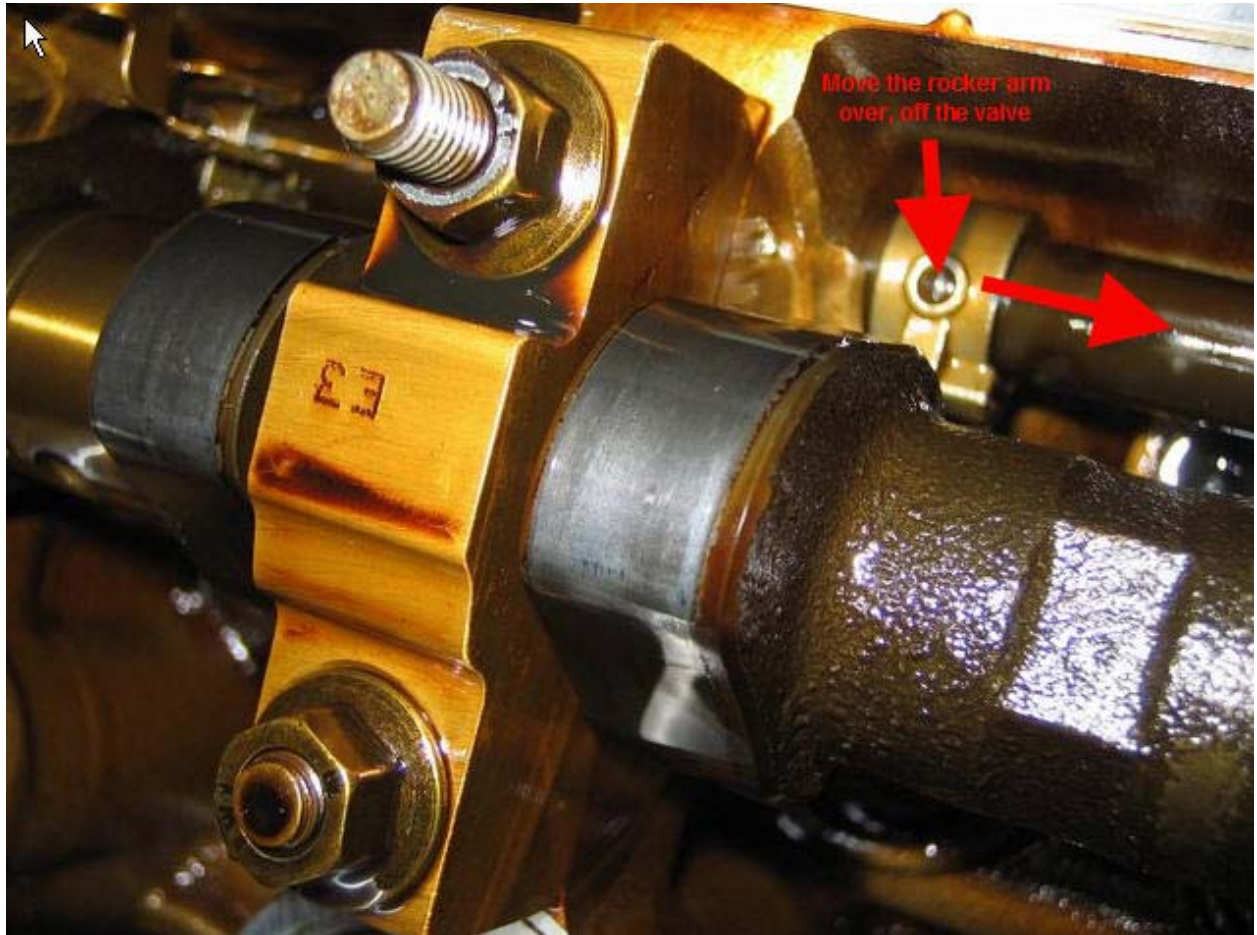
Where to measure



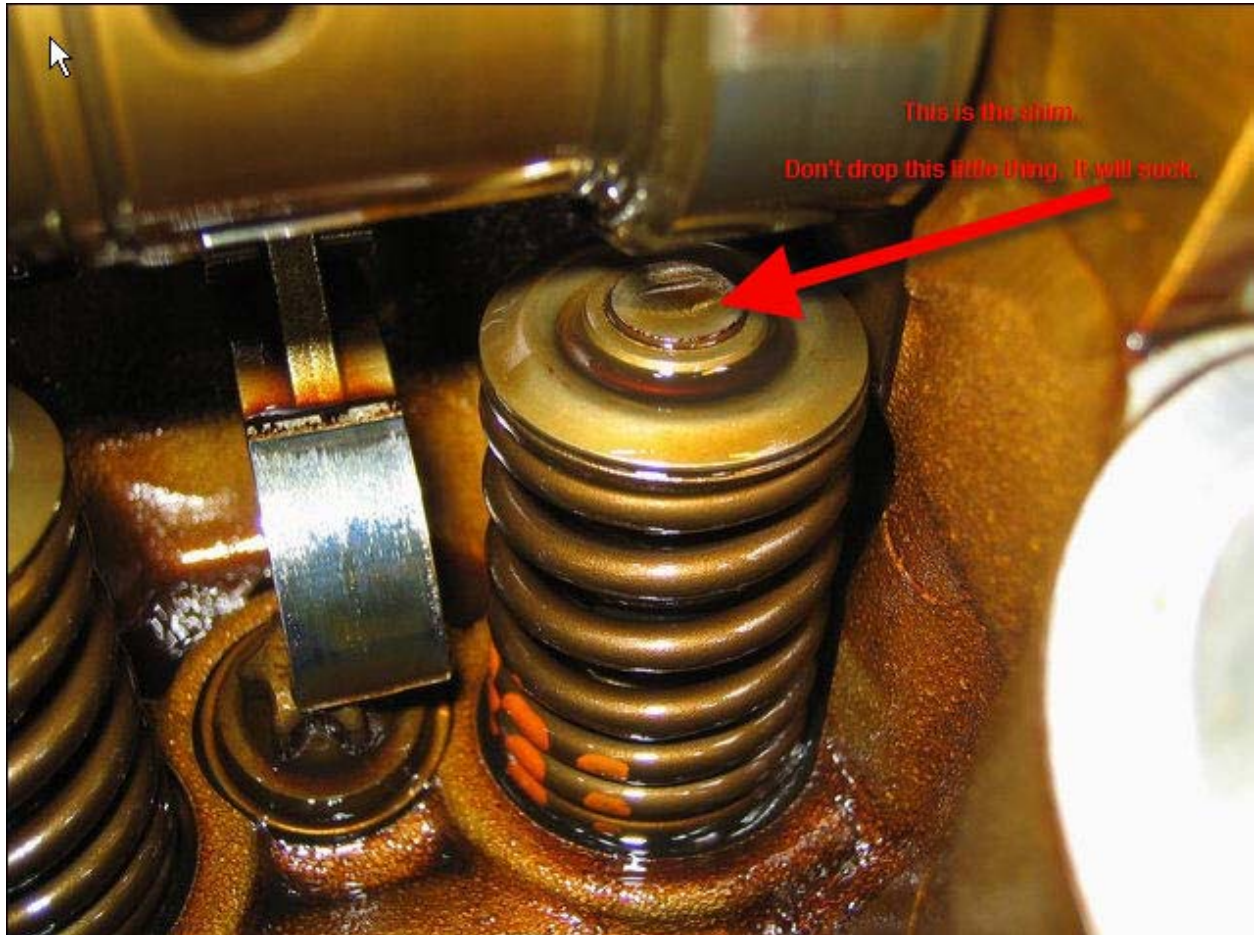
If you have to adjust one of the valves, remove this little clip



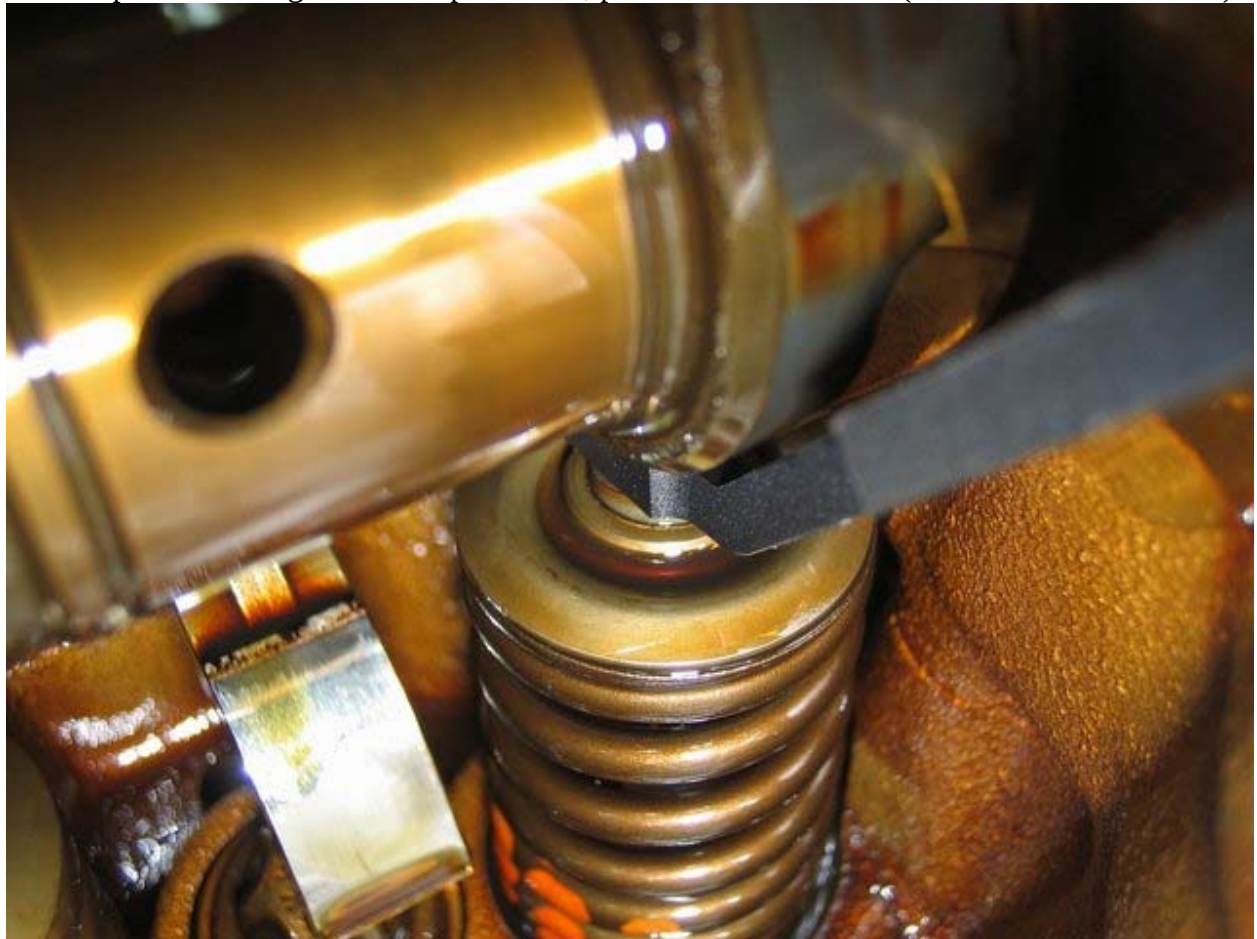
Move the rocker over



The Shim



Pick it up with the magnet on the special tool, part #90-88-6-114-400 (New # 83-30-0-493-743)



It sticks quite well.



Repeat for each valve that needs adjusting...