

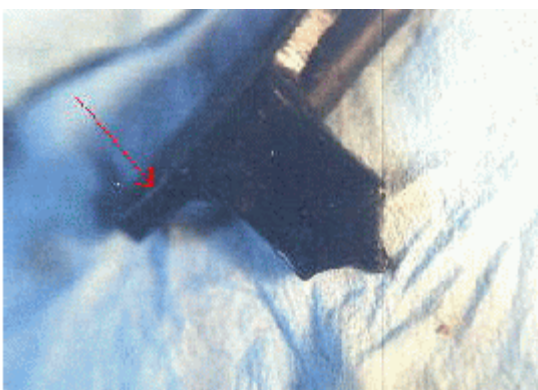
Adjusting Yamaha XJ Valve Shims - All but Maxim X



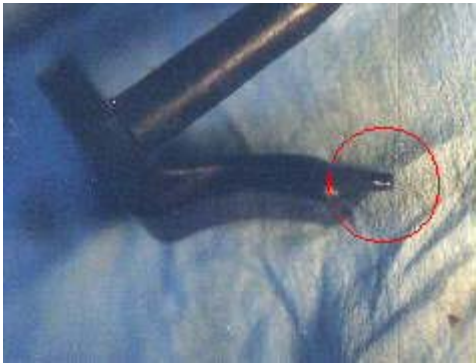
With the engine cold, remove the valve cover. Using feeler gauges, measure and record the clearance of each valve with the lobe opposite the shim and bucket. The feeler gauge should slide in and out easily, with a slight resistance.



Rotate the engine as required by using a wrench on the ignition rotor. Check the clearance against the specifications for your machine. If any are out of range, they must be changed. Remember that most machines have a different specification for exhaust and intake valves. This is because the exhaust valves run hotter and expand more.



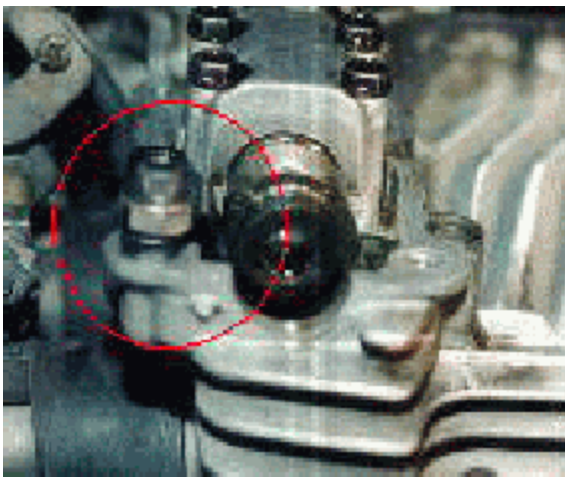
This is the valve shim tool. It comes with a 6mm allen head bolt to secure it to a rocker cover bolt hole in the head through one of the two slotted holes.



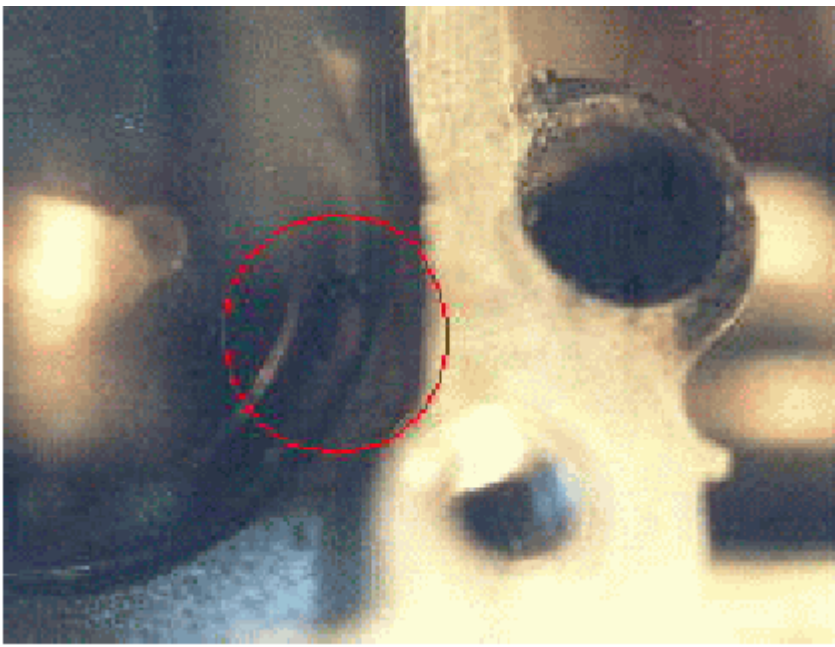
The little tang on the end is the part that holds down the bucket while the shim is removed. On some engines, this is a source of trouble. The little tang is at the wrong angle. I have seen the same tool work fine on some engines and not engage properly on others. A bit of heat and some gentle persuasion with a hammer and anvil was required to straighten the angle ever so slightly, and now it works just fine in all engines.



Before installing the valve shim tool, rotate the engine so the cam lobe pushes the shim and bucket down fully.



The valve shim tool in place (the bolt provided was a little long, and shimmed with a nut and washer to prevent damage).



The small notch in the bucket is used to pry the shim out. It is NOT for locating the adjustment tool. Rotate the bucket so the notch will be accessible when the bucket is depressed.



Once the tool is in place, rotate the engine so the camshaft lobe rotates away from the tool. This is important! **Rotating the camshaft lobe toward the tool will cause damage!** The bucket and shim should be held down by the tool as the lobe is rotated away, allowing the shim to be popped out of the bucket with a thin screwdriver.



A magnet, tweezers or small needlenose pliers will be required to extract the shim from between the camshaft and the bucket.

Re-installation is the reverse: slide the shim back into place (numbers down!) and press. Make sure it's straight in the bucket; it will snap down fully when the camshaft lobe is rotated over it.



The thickness of the shim is encoded on the back. For example, this once read "Y270", meaning it was 2.70mm thick. The "Y" is also important -- it means the diameter is correct for a Yamaha XJ model. I was once given shims without the "Y" and told (by the service manager) that they were just aftermarket shims. Actually, they were Suzuki shims, and didn't fit properly!

If the number is not legible, a direct measurement will be required.



Pad selection chart									
MEASURED CLEARANCE	INSTALLED PAD NUMBER*								
	200	205	210	215	220	225	230	235	240
0.00 - 0.05									
0.06 - 0.10									
0.11 - 0.15									
0.16 - 0.20	205	210	215	220	225	230	235	240	245
0.21 - 0.25	210	215	220	225	230	235	240	245	250
0.26 - 0.30	215	220	225	230	235	240	245	250	255
0.31 - 0.35	220	225	230	235	240	245	250	255	260
0.36 - 0.40	225	230	235	240	245	250	255	260	265
0.41 - 0.45	230	235	240	245	250	255	260	265	270
0.46 - 0.50	235	240	245	250	255	260	265	270	275
0.51 - 0.55	240	245	250	255	260	265	270	275	280
0.56 - 0.60	245	250	255	260	265	270	275	280	285

Look up the shim and valve clearance on the chart in your manual to determine the required shim.

For example. Let's say on this particular machine, the required clearance is 0.11 to 0.15mm, but the measured clearance only 0.08mm (blue circle). When checked, the installed shim was a 'Y205' (red circle). Looking these up shows the replacement shim should be a 'Y200' (green circle).

This is only an example. There are 2 different charts for each bike. One for intake valves (carburettor side) and one for exhaust valves (exhaust pipe side). Make sure you are using the correct chart for your valve and model.

Shims are re-usable! Let's say #1 intake valve has a Y275, but needs a Y270. #3 exhaust has a Y270, but needs a Y265. All you need to buy is a Y265, because you can move the existing Y270 from #3 exhaust to #1 intake.

I keep a record of all my installed shims, so I don't have to remove them to check the size every year. It makes life so much easier -- or at least it would if I could remember where I put it ;-)

tafn

dv