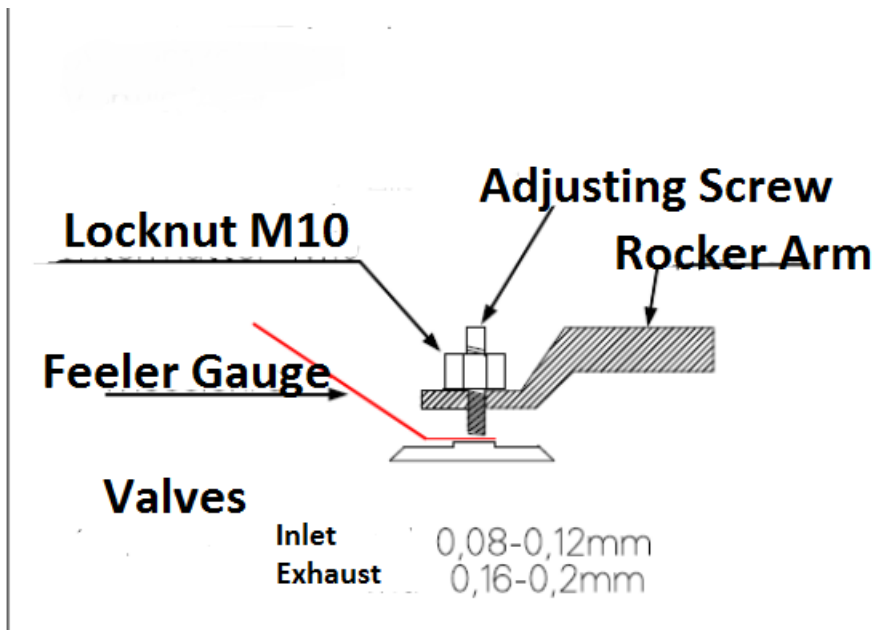


Adjust valves shortly for XS250 / 360/400 and SE.

This is a quick English translation from a German guide by Alex and Uszuschnigge.  
Good jobs guys. Also very last page has the official manual directions for adjustment.

See "Setting the valves" means adjusting the distance between the adjusting screw on the rocker arm and the valve (see System diagram).



The valves closest to the carburetor are your intake valves which would mean the valves closest to the exhaust manifold are your exhaust valves.

The valve clearance is set only when the engine is cold.

The following tools are required (Figure 1):

- 17mm box wrench (offset) or 17 nut
- cranked 10-key
- screwdriver
- Allen wrench set
- feeler gauges from 0.05 to 0.3 mm



- 1 Place the motorcycle on the center stand (otherwise when you open the cover a lot of oil will come out)
- 2 Remove the gas tank. Only 1 12mm bolt should be holding it on along with 1 vacuum tubing to disconnect to the carburetor and the main fuel line to the carburetor.
- 3 Unscrew the four valve cover (17mm socket/wrench).
- 4 Unscrew both spark plugs.
- 5 The round side cover with the 4 Allen screws (in the "lid") bottom left of the engine (with the Yamaha logo) A small amount of oil will drip out initially so be prepared this is normal.

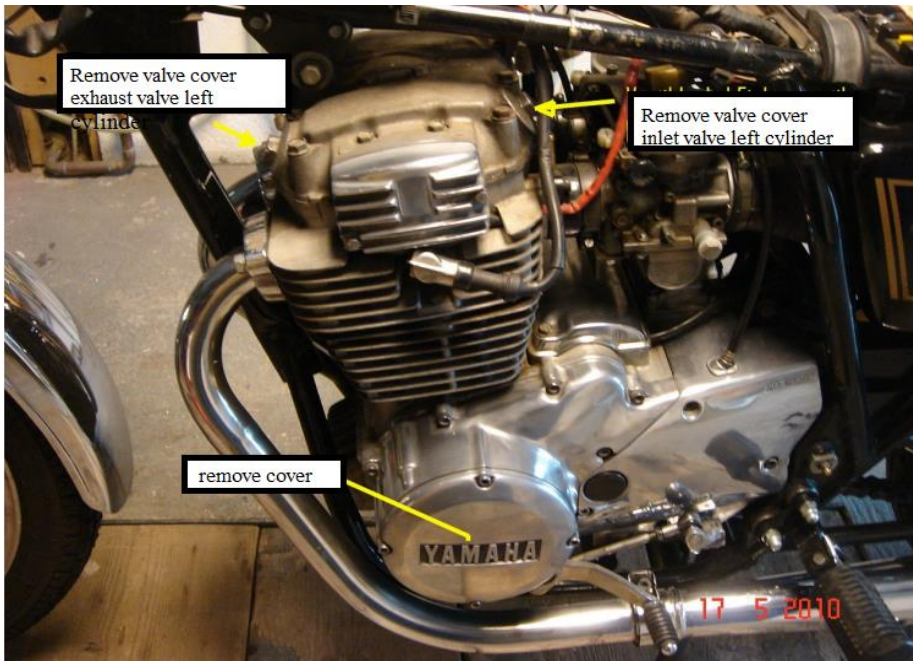


Figure 2: Under the removed side cover sits in the middle a 17mm nut which by turning it will rotate the motor. When rotating to set the valves turn the nut in the direction of the arrow (counter clockwise).

The valve clearance is best set when the engine is at the top Dead center (TDC) position. Turn that 17 mm nut until you get to the mark LT (which stands for left cylinder top) and line it up with the TDC mark on the flywheel. Now be careful since there are 2 LT positions. One position is LT on the compression stroke and the other is LT on the exhaust stroke. We are trying to set it to LT on the compression stroke. One way of making sure you are compression is take your finger and put it over the spark plug hole and turn the nut until you feel air trying to push out of the hole this is the compression stroke and quickly look for LT. It's a pain to try to get it to stay on LT since it won't want to stay there on its own. Another way to tell if you're on the compression stroke is if you set it to LT and you try to move **both** the rocker arms up and down with your finger. You should be able to slightly move them up and down. If they won't move at all then you know you're on the exhaust side.

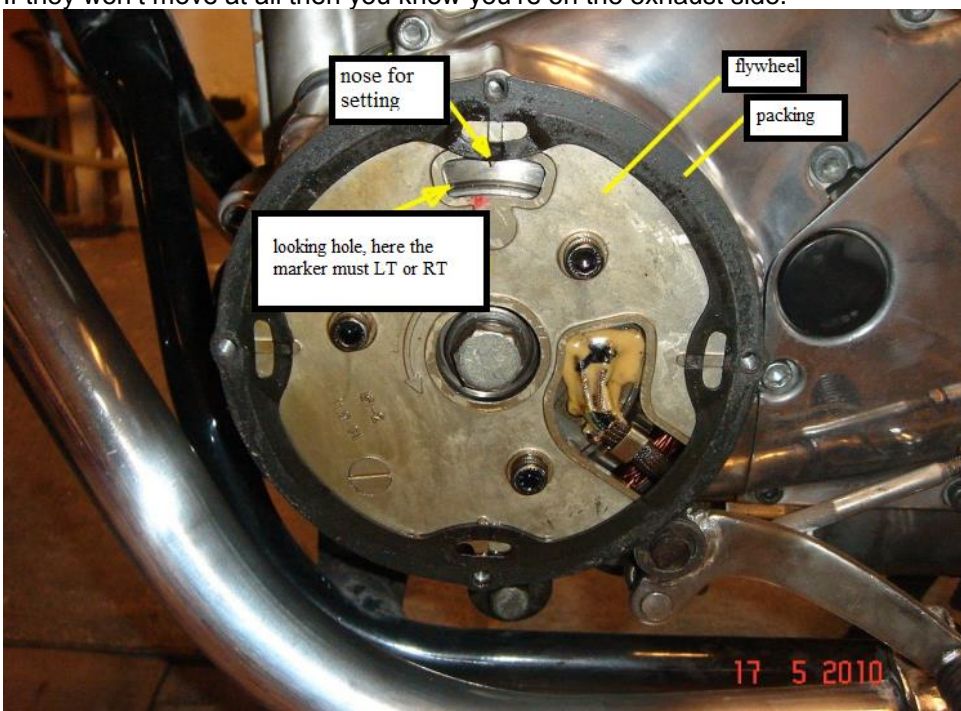


Figure 3: behind the alternator cover



With the left cylinder to start (if you were sitting on the motorcycle looking forward. left side)  
The corresponding mark on the flywheel is the bar at LT.

Option 1: both rocker arms cannot move. On the exhaust stroke don't try to adjust.

Option 2 (one round further rotated): both rocker arms can be moved. Now you can check and adjust:

Intake valve (carburetor side)	: 0.08 - 0.12 mm	( .003 - .005 inch)
Exhaust outlet (exhaust manifold side)	: 0.16 to 0.20 mm	( .006 - .008 inch)

Valve clearance measure:

Angled feeler gauge (or bend a flat one) between the adjusting screw and valve cover slide (Figure 5 and 6).

The right size gauge you should feel slight resistance when you push it all the way thru and if you try to shove one that's bigger than the acceptable range it should not be able to slide all the way thru.

If you need to adjust the distance then loosen the lock nut with a 10mm wrench (Figure 7) then either tighten or loosen the adjustment screw until the proper feeler gauges fit nicely. Then while holding the adjusting screw steady in position with your screw driver tighten the 10mm nut snug (don't over tighten). Manually turn the engine around a few times with the 17mm nut and check again. It might take more than one adjustment but eventually you will get it perfect  
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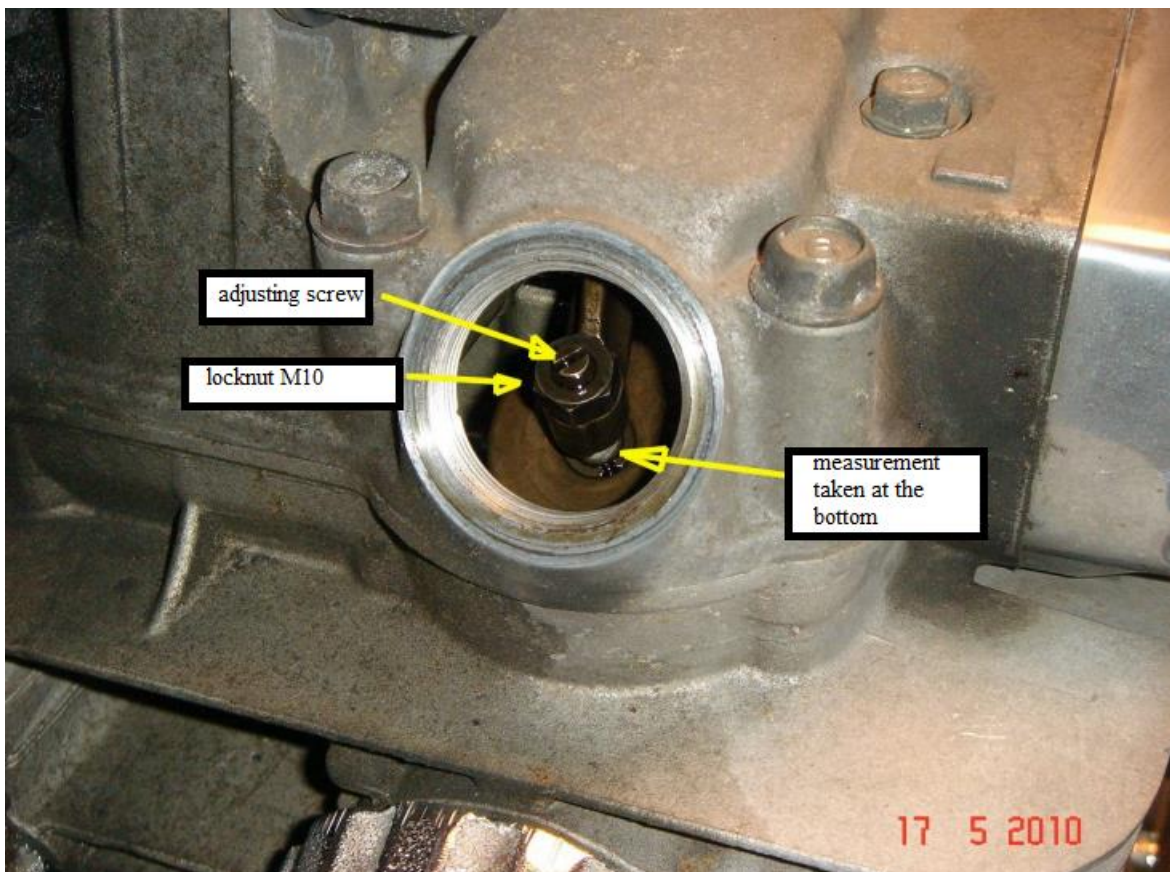


Figure 4: the adjusting screw on the rocker arm

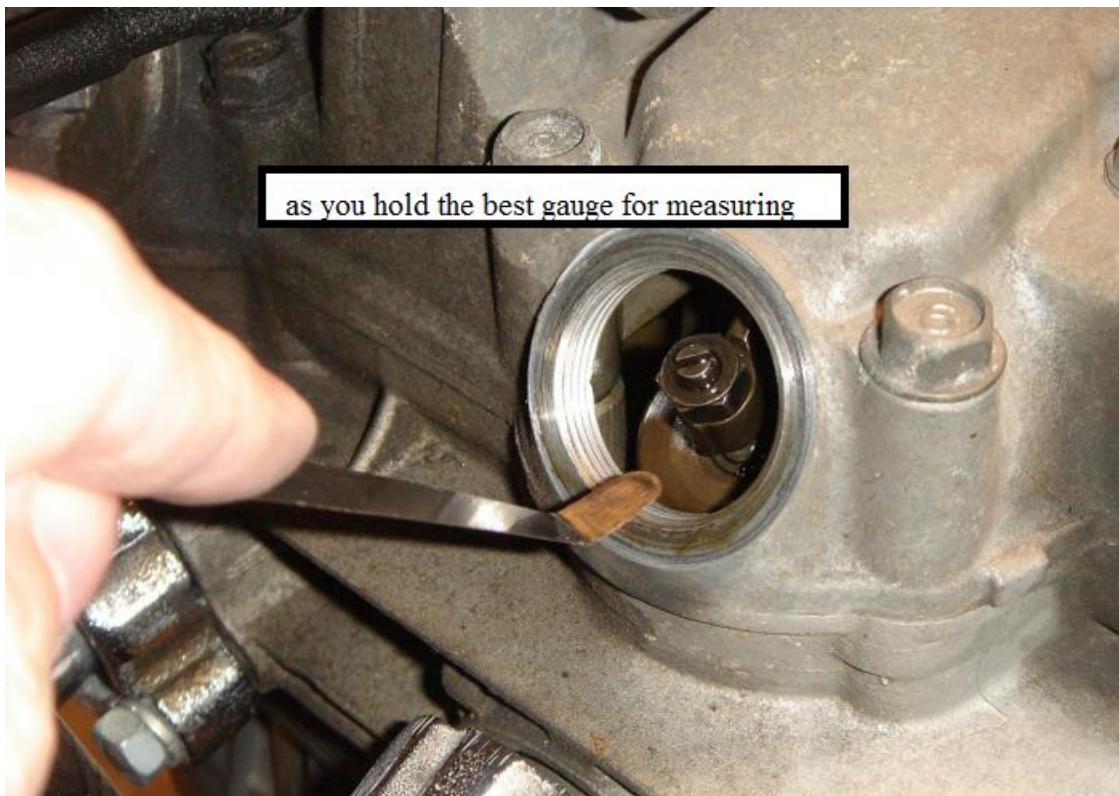


Figure 5: the gauge is set



Figure 6: one feels the valve clearance



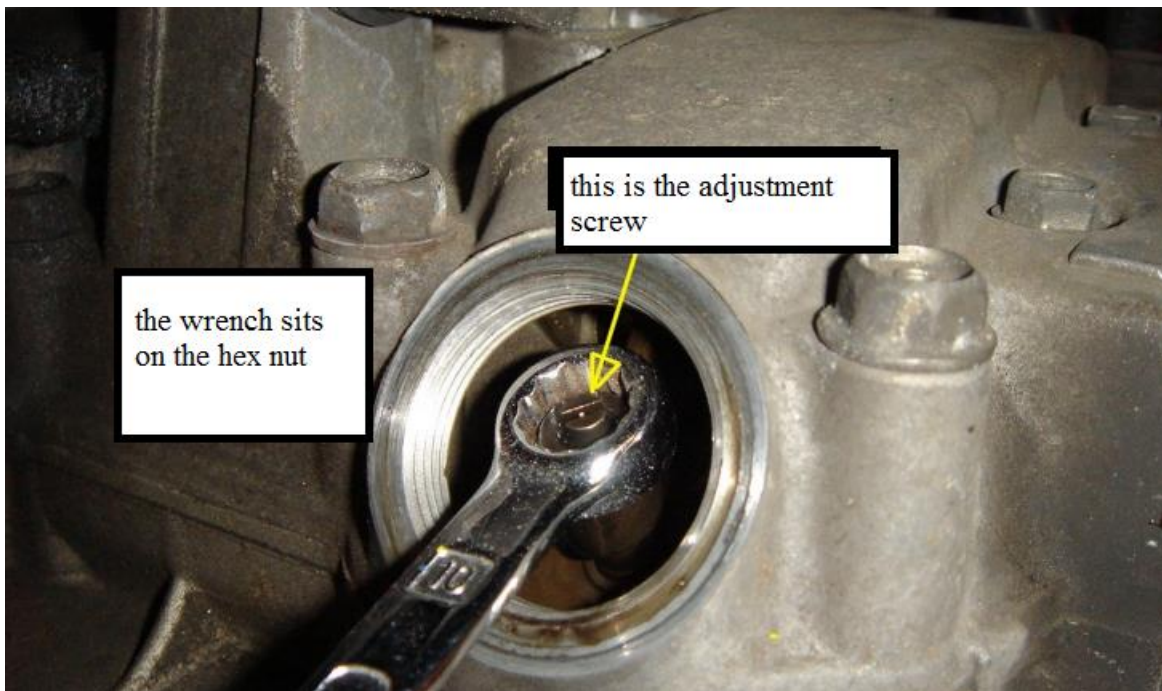


Figure 7: to loosen the lock nut on the rocker arm with a 10 wrench, then the set screw can be rotated

Now the right cylinder, the mark is the line next to the RT Flywheel. For this, the engine must be turned a half turn further are. Then rotate the engine several times, check values again. The mistake I made when doing this was that I kept trying to adjust it on the exhaust stroke and not the compression stroke so just make sure before you adjust you have it set on LT/RT on the right stroke (rocker arms should move up/down slightly by touch or by putting finger over spark plug and feel the air pushing out).

Ok you are done and you're ready to take on the world. When hooking the gas tank back up make sure to hook that vacuum hose from the petcock to the carburetor or else you will think you broke your bike.

May, 2010 by Alex and Uszuschnigge

Scroll down for the manuel version of adjusting the valves.

## VALVE ADJUSTMENT

**NOTE:** Valves must be adjusted when the engine is cold.

1. Turn the fuel petcock to the "RES" position. Disconnect the fuel feed line and the vacuum line from the petcock.

2. Remove the gas tank.

3. Remove the intake and exhaust tappet covers.

4. Remove the alternator rotor cover.

5. The valves for each cylinder are adjusted when the piston for the cylinder is at top dead center on the compression stroke. Use a wrench on the rotor nut so that the "LT" mark on the rotor is aligned with the stationary timing mark on the crankcase cover. Check that there is clearance at both valves for the left cylinder. There should be a



Alternator rotor aligned with timing mark to position right-side piston at top dead center

little movement in both rocker arms. If there is not, it indicates that the piston is at TDC on the *exhaust* stroke. If this is the case, rotate the engine through one full turn of the rotor and align the "LT" mark again. This should be TDC on the compression stroke.

6. Check the clearance between the rocker arm and the top of the valve for both intake and exhaust valves using the appropriate feeler gauges.

Clearances should be 0.08-0.12 mm (0.003-0.005 in.) for the intake, and 0.16-0.20 mm (0.006-0.008 in.) for the exhaust.

If the clearance is correct, a feeler gauge of the proper thickness will be a light slip fit between the rocker arm and valve.

7. If adjustment is necessary, loosen the adjuster locknut and turn the adjuster screw so that clearance is correct. Again, the feeler gauge should be a slip fit between the rocker arm and valve. Hold the adjuster in place and tighten the locknut securely. Recheck the clearance.

8. Turn the rotor one full turn so that the "RT" mark (for the right cylinder) is aligned with the stationary timing mark. Check that the piston is at TDC on the compression stroke by noting clearance at both valves as before. Check the right cylinder valves in the same manner.