



Assembly manual 90 cc & 105 cc cylinder kits

With the GY6 cylinder kit you have chosen a high quality sport cylinder kit for your scooter. For fitting this kit you neither have to be a mechanic nor you need special tools for it. The thing you should bear in mind that the complexity of a 4-stroke engine is considerably much more elaborated than the 2-stroke engine. Therefore you will need a little bit more time on your hands than for the change of a 2-stroke cylinder kit. Cleanliness is essential for the job.

The focal point is the adjustment of the camshaft in relation to the crankshaft. Please follow the steps of this fitting instructions to avoid engine faults which are very expensive.

Important note: Installation of this kit will increase your machines cubic capacity. It is the owner/riders responsibility to advise their insurance company or any controlling authority of this change to the original machines specification.

Basics:

- You should have at least 2 h for fitting of the kit.
 - Read the fitting instructions before you start your work.
 - Your working place should be clean, dry and good lighted.
 - Moreover lots of things are easier if you have a helping hand
- . We recommend to dismantle the engine from the frame. This took only 15 minutes but things are so much easier with the engine replaced.

Dismantling of the engine:

- Put the scooter on its main stand
- Dismantle the box for the helmet as well as the right hand side covering
- Remove the exhaust system
- Remove the air box
- Hang the rear brake cable out at the engine
- Undo the plug
- Replace the air hose at the variator cover
- Remove the ventilation hose
- Undo the carb and inlet manifold
- Under the right hand side cover is a connection for the starter engine. Undo this.
- Check if all connections between engine and frame are loose (except for engine bolt and rear shock absorber bolt)
- Undo the shock absorber bolt and remove the bolt. (It is very useful at this stage if you have a helping hand here.)
- Put the engine off the frame.



Ventilation hose



Inlet manifold and vacuum sensing hose



Rear brake cable



Air hose variator cover



Front engine bolt



Rear shock bolt

Dismantling of the old cylinder:

The engine stands on the main stand. That is perfect for an easy dismantling of the cylinder.

- Undo the flywheel cover and fan of the ignition
- Replace the cylinder cowl
- Undo the spark plug
- Dismantle the valve cover

Now you should have a closer look to the position of the camshaft in relation to the crankshaft. Rotate the flywheel until the mark is on the 'T' position. (All other marks are not important.)

At the 'T' position the camshaft should look like this:

- The two lines of the camshaft wheel have to be in line with the upper part of the cylinder head.
- The third hole (the big one) has to be at the top. (Otherwise the camshaft is twisted by 180°.)



Short summary:

Put the ignition to the 'T' mark and then the camshaft wheel has to be in line with the cylinder head.

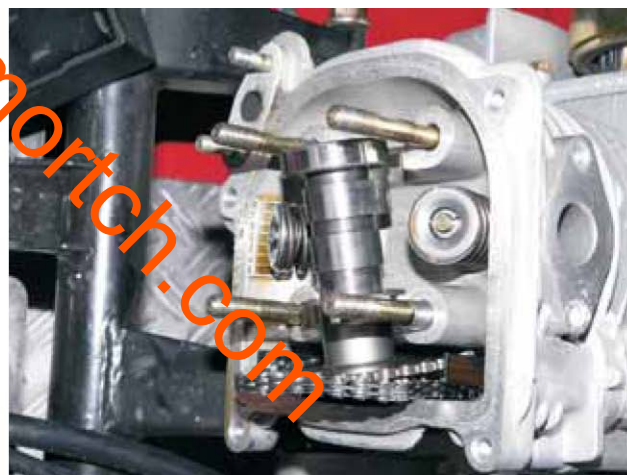
Camshaft drive chain tensioner:

- Undo the central screw but do not remove it.
- Remove both fastening screws
- Remove the chain tensioner
- Now you can remove the central screw. But be careful because of the spring that is attached. This can easily jump off otherwise.
- Prepare the chain tensioner for assembly. The toothed piston is secured by a small key sideways. If you push this key, the bolting device is unfixed and now you can put the tensioner fully back.



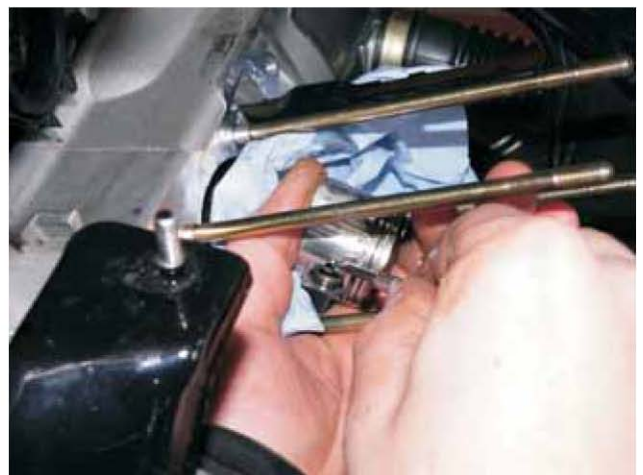
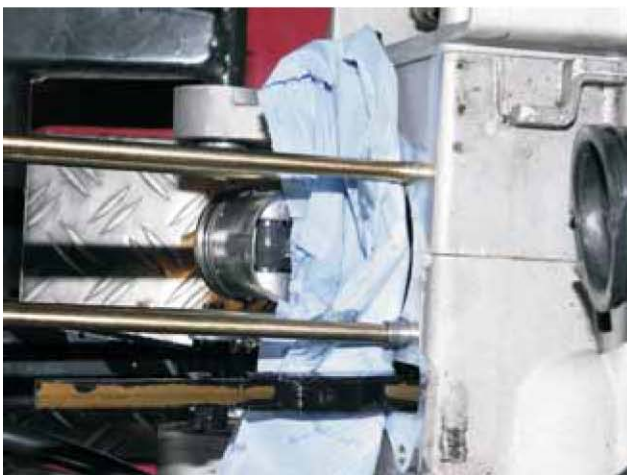
Camshaft dismantling:

- Unscrew the four nuts of the rocker
- Jiggle the rocker softly and remove it. There are two bushes between the rocker and cylinder head, be careful not to lose them
- Replace the drive chain from the camshaft when (but be careful that the chain does not fall into crankshaft housing)
- Replace the camshaft



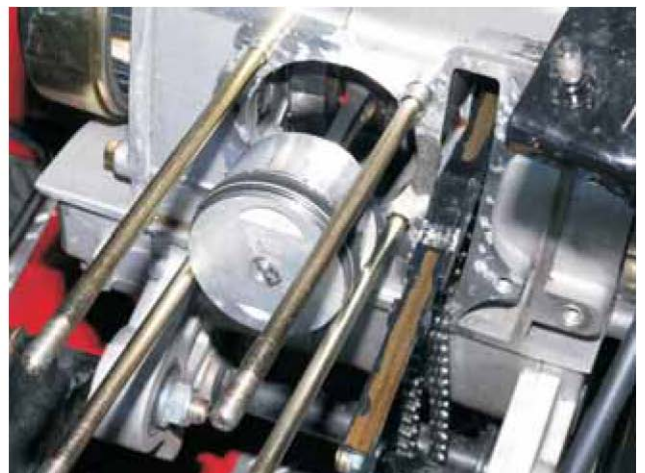
Dismantling of cylinder head and barrel:

- Undo the both screw at the side (8 mm spanner size)
- Take the cylinder head off. Helpful could it be softly jiggling the head. (But again: be careful there are two bushes as well)
- The lower chain tensioner can now be replaced
- Take the cylinder off, here are two bushes as well
- Put a clean cloth over the crank and chain casings
- Take the gudgeon pin circlips off
- Push the gudgeon pin out of the piston and take the piston off
- Clean the sealing surface with care



Fitting of the new piston:

- First fit the corrugated metal spacer in the lowest piston ring groove
- Put the thinn oil scraper ring under and over the metal spacer
- Now put the darkest black piston ring over it, the 'R' or 'RN' sign should face to the top
- Next put the upper piston ring (silver coloured) into the piston. The 'R' or 'RN' sign should face to the top
- Fit one of the gudgeon pin circlips
- Rotate the piston that the sign 'IN' faces to the top
- Smear some drips of oil over the surface of the piston and fit it to the crank
- Fit the second gudgeon pin circlip
- Check that the gudgeon pin circlips are a proper seat



Fitting of barrel:

- Fit the two bushes to the cylinder base.
- Put a new cylinder base gasket to the engine casings.
- Smear the inside of the barrel with some oil.
- Put the barrel over the cylinder studs and push it over the piston, push the piston rings with the fingers to get it fitted properly. Be careful that the chain is running in its seat and that it is fitted properly to the sprocket.
- After fitting of the barrel you can reassemble the chain guide. At the top the guide must be located to the two notches. The lower part of the guide has to be fitted to the notch near the sprocket.



Fitting cylinder head:

- Fit the cylinder head gasket to the barrel.
 - Next step is to fit the all-in-all four bushes. Fit two to the lower and two to the upper part.
 - The studs of the old cylinder head, inlet manifold and exhaust are being reused with the new head.
 - Gently put the cylinder head to the cylinder studs and guide the chain to the duct. Use something like a screwdriver to protect the chain from falling down into the engine casings.
 - Now you can reassemble the camshaft. The marks should be in line with the cylinder head when the mark of the ignition is rotated to the 'T' mark.
 - Now you are going to fit the rocker with its mark facing down. Make sure the 'EX' reading facing down. The rocker should be a very good fit to the valves. Sometimes they get caught. Best is to double check it.
 - Tighten the rocker with its four nuts up to 10-15 NM. Tighten the nuts crosswise.
 - Meanwhile check the correct position of crankshaft and sprocket:
 - Ignition is on 'T' mark
 - Marks of the camshaft wheel are in line with the cylinder head
 - The big hole of the camshaft wheel is on top
- If this is not the case, you have to adjust the alignment of the chain. The rocker has to be unbolted to change the position of the chain.
- If everything is reassembled in the right way the crankshaft rotation should be a smooth operation by hand.
 - Now you can fit the chain tensioner





Adjustment of valves:

- The valve play has to be adjusted with the 'T' marking inline
- The valve play for the inlet should be 0.05 mm and for the outlet valve 0.07 to 0.10mm. For a proper adjustment a feeler gauge is essential. For adjustment the counternut has to be unscrewed. Then you use the adjustment screw to get the right play. The adjustment screw is secured by tighten the counternut.
- Now the play has to be checked again. If it is right everything is okay and you can do the next step. If not it has to be adjusted again.
- Now the valve cover can be mounted.



Final steps:

- The carb should be fitted with a 5-10 % larger main jet.
- You should use a fresh refill of engine oil for running in of the new cylinder kit.
- All the parts can be mounted.
- The engine can be fitted to the frame and all the body parts can be mounted.



Running-In procedure:

For the first 100 km (65 miles) you should avoid full throttle opening. The total Running-In distance should be 500 km (315 miles). You should still avoid full throttle opening during this period. After the Running-In period you should renew your engine oil!

Have a good and safe trip with your new cylinder kit!

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