

VMC 5-speed gearbox assembly instructions:

To have maximum reliability and correct operation of the VMC 5-speed gearbox, it is necessary to perform false assemblies to be sure to have gear alignment as precise as possible. In order to check correct alignment, the gearbox must be mounted in the crankcase on "false bearings".

The false bearings can be made from old ground bearings both internally and externally so as not to have interference on the casings or on the mechanical parts that must be inserted, this in order to be able to mount everything on the casing without friction and impediments.

The false bearings you need are:

- the multiple gear bearing on the flywheel housing
- the wheel axle bearing
- the clutch basket bearing.

When installing the clutch it may happen that the plate pushing the springs rubs on the clutch basket, in this case with the 4-speed gearbox you can easily thickness even 1mm between the quadruple and the bearing on the flywheel side crankcase, on our 5-speed gear it is not possible due to the reduced space alignment.

At the most it can be thickened by a few tenths of a millimeter.

Proceed by mounting the multiple gear bearing on the flywheel side half-casing, mount the bearing and clutch basket with its seeger on the other half-casing, check for any slack between the clutch basket and bearing, if necessary remove it with a shim between the seeger and the bearing. Do the same between multi-gear and bearing in flywheel-side half crankcase if the multi-gear touches the crankcase once mounted.

Thicknesses not exceeding 3 tenths of a millimeter are allowed.

On some bearings, the axis of the multiple could enter without interference, in which case it is sufficient to apply some thread locker just before final assembly.

On some after market crankcases it may be necessary to file the flywheel side half crankcase near the crank chamber to create space for the multiple gear to enter the bearing.

With the clutch basket mounted on the clutch side half-crankcase and the multiple gear mounted in the other half-crankcase, close the crankcase with some screws and check that the multiple gear is pushed against the flywheel side bearing.

We assemble the clutch hub by tightening the clutch nut and check with the spring or springs mounted and compressed that the plate pushing springs does not touch the clutch basket.

Otherwise, act to eliminate the impediment by shimming between the bearing and multiple gear or by removing material, where possible, from the clutch bell or spring pusher plate.



Make sure that the clutch key does not create interference with the fixing of the cones, if necessary file it or remove it and mount the clutch basket with a drop of locking compound and tightening the nut to the right torque.

Once you have found the position in which the spring pusher plate does not touch anywhere, remove the clutch and measure how much the multiple pin protrudes from the center of the clutch basket and write the measurement.

Open the crankcase and set the flywheel side half crankcase aside.

On the clutch side half-crankcase we mount the false bearing of the wheel shaft and insert the VMC 5-speed gearbox complete with everything with the gearbox crowns mounted in the right direction (the crowns are marked and the brand must be visible when they are inserted on the axle gearbox), then mount the brake plate, drum, drum washer, and tighten the wheel nut until the gear shaft is in place.

With the entire gearbox in its final position inside the crankcases, proceed with the phase of checking the alignment of multiple gear and gearbox gears.

We take the multiple gear and insert it into the clutch basket up to the size written before, now check that the multiple gear and gearbox gears are perfectly aligned.

If the multiple gear positioned in the clutch basket with the measurement measured earlier is aligned with the gearbox crowns, we can proceed with the assembly.

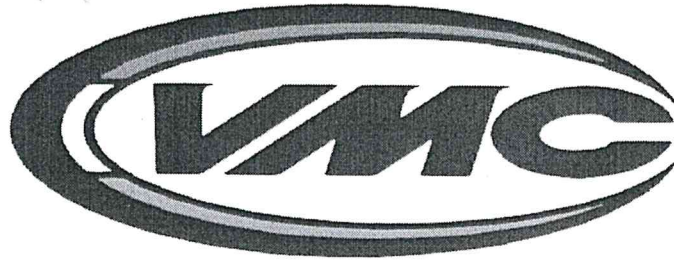
If, on the other hand, the gearbox is not aligned, it is possible to act by shimming by a few tenths with shims between the wheel bearing and its seat on the crankcase or between the multiple gear and its bearing.

Once everything is aligned, proceed with the assembly of the wheel-gearbox axle unit on the crankcase with the relative modified gearbox selector, as described below in the instructions, the starting components group, including the rubber pads.

Now close the two half-casings by coupling the gearbox crowns to the gears of the multiple by acting on the start lever simultaneously moving the gearbox axis with a gear engaged.

On some after market crankcases this phase may be difficult to carry out due to some dimensions different from the original crankcases. In this case, the two half casings can be closed by inserting the wheel axle into the casings without the wheel bearing that can be inserted later.

Once the casings are closed, check that all gears enter freely, make sure that in the fifth (5) gear position the arms of the selector do not touch in any way against the gearbox axis.



Also check that the clutch basket does not touch the gearbox axis or the gear of the first gear. With some after market baskets this could happen, in which case remove the excess material from the clutch basket

Once the checks are finished and everything has been fixed, you can proceed with the other assembly phases of your engine.

Other interventions and precautions necessary for the assembly and good use of the VMC 5-speed gearbox are the following:

- The gear selector inside the crankcase must be in perfect condition, possibly new. We recommend replacing the link and blocks of the gear selector with a kit with oversized blocks to eliminate possible slack. These kits can be found on sale in the best spare parts shops for vintage scooters.
- The ends of the selector arms inside the crankcase must be filed so when the crosspiece is in the fifth gear position there is sufficient space between the selector arms and the gearbox shaft which must be free to rotate touch on the selector arms . Just remove a few millimeters of material with a file, making sure that the safety thickness remains.
- The selector pulley outside the crankcase and the one on the handlebar must both be of the same model chosen: if the Vespa Pk selector is used, the gearshift pulley on the handlebar must also be the one for the Vespa Pk. The same goes for the other models available.
- It is good to replace the gearshift cables with new ones and use Teflon gearshift sleeves to improve the smoothness of the cables. Also make sure that the sleeves have the correct length for the frame model and that they do not make any curves that will constrain the cables.
- Check that the gear tube on the handlebar is not too worn and that it is well lubricated and adequately thickened, otherwise replace the gear tube with a new one and lubricate it adequately or intervene on the shims to eliminate any excessive play.
- Place the gear cables at the right tension through the adjustment screws on the crankcase. The gear tube must have a minimum of play. It must not be too rigid and it must be possible to select all 5 gears without any stop.