

RGM MOTORS GEARBOX REBUILD KIT, SOME NOTES YOU MAY FIND INTERESTING.
PLEASE REFER TO THE WORKSHOP MANUAL FOR FURTHER INFORMATION.

There have been many different gears and ratios made and used over the years, by many suppliers, the original Norton gears half a century ago would have the parts number on them, N 8023 etc., later they lost the part number, but could be identified as factory by the letters AH, the modified second gears introduced by the factory for the MK3 Commando having a modified tooth profile are marked AHB and these must be used as pairs, Quaipe gears has a number sequence such as A3H-103, our gears use a number code to identify them such as CM117, this being Close Mainshaft 1st with 17 teeth.

The 4 speed gearboxes are all arranged with the gears in ascending order, i.e. with the inner cover removed the pair of gears presented are first then second and so forth. The upper shaft, the output shaft is the mainshaft, and the lower the layshaft.

Prior to fitting the bushes it is a good idea to de-bur the gears, and the bushes can then be fitted, mainshaft second and layshaft third are not interference fits and can be pressed in virtually by hand, it is normal for these two bushes to be a floating fit and for the gears to rotate around the bush whilst the bush also rotates on the shaft, the layshaft first bush is an interference fit in the gear, and being a thin walled bush should be pressed in using steady pressure and not with any impact. This bush may need reaming once fitted.

The sleeve gear bushes are also an interference fit and being sintered the comments re steady pressure apply even more so, a mandrel should be used, carefully pressed into place no reaming is required. There are two versions of this bush, two lengths, the later bush being 50% longer is normally preferred two of these are used in standard AMC gears to give the maximum possible bearing area, only one on the close ratio fourth it as it has a needle roller bearing.

When undertaking a gearbox rebuild the shell should be examined around the bearing area for damage, and possible slackness of either bearing. The shell should be heated and new bearings should be dropped into place without any pressure and the shell left to cool judicious use of loctite can help with slack bearings but very little should be applied otherwise bearings may not drop fully home.

The shafts should be checked to ensure they are straight, often the shafts can be bent, particularly on Commandoes, how much of a run out is acceptable depends on your budget and application, a slow revving engine such as a 16H would not have a problem with 4 or 5 thou but a twin cylinder full race application would need to be pretty much perfect. When fitting new gears they should be checked on the shafts for an appropriate fit before assembly begins, particularly the gears with internal splines, the layshaft fourth and mainshaft first gears do not move once fitted and as such can be a light interference fit, the layshaft second and mainshaft third gears need to be a sliding fit, these should be checked carefully on the shafts, sometimes rags (burs) can cause tightness, and as the gears are heat treated they do move a small amount, also shafts have been produced for a number of years by a variety of different companies, and small dimensional differences can be found, occasionally used shafts seem to exhibit a slight amount of deformation and this can also make a new gear tight, generally with this form of spline there is very little actual interference, normally it is enough to rotate the gear trying each spline until the slackest position is found, then the gear is worked in with grinding paste until a nice sliding fit is obtained. Used gears should be examined for serious damage, but it is normal to see a certain amount of case attrition, this does not necessarily indicate imminent failure, and depending on usage well marked gears may still have significant life left in them, again it depends on your budget and application, cush drives, belt drives, and decent brakes all help extend gear life. When rebuilt a gearbox should be used gently for the first few hundred miles and basically allowed to bed in, and the oil changed regularly.

Should your kickstart ever descend by itself under hard acceleration then that is a sure sign the layshaft is being displaced, both the layshaft bearing and the support bush in the kickstart shaft should be replaced as a matter of urgency.

Occasionally there can be a problem with these gearboxes jumping out of first gear, the dogs on layshaft second should be examined for excessive wear, and the four holes in layshaft first likewise examined, sometimes a lasting cure can be achieved by the careful elimination of end float on layshaft first, this gear is located by its boss against the layshaft support bush in the kickstart shaft, this can be reduced by replacing the bush, and or placing a shim on the shaft between the gear and bush, it can easily be set by shimming until the shafts begin to tighten when the inner cover is nipped up, set without a gasket and rely on the gasket to give a running clearance.