

RGM 920 KIT



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- 2 X LIGHTENED (WAISTED BORE) GUDGEON PINS.
- 2 X SPECIAL PISTONS. (NO MACHINING REQUIRED).
- 4 X GUDGEON PIN CIRCLIPS.
- 1 X FULL PISTON RING SET. (CHROME FACED FOR MAXIMUM PERFORMANCE).
- 1 X C. N. C. CUT FULLY ANNEALED SOLID COPPER HEAD GASKET.

BIG BORE CONVERSION DETAILS 820cc MOTOR TO 920/950 cc

Before converting your machine to 920/950cc it is a good idea to consider what exactly it is you wish to achieve, and how much work you can undertake yourself. Simply boring the motor to get the required capacity is a relatively easy operation, actually persuading the device to deliver the power when and where it is wanted and in the required amount is rather more complicated. Here I will express what are my personal opinions on the subject.

1. A well set up 920 motor will be the faster of all the Norton twin cylinder derivatives.
2. It is not a good idea to build a 920 onto a 750 bottom end, it is possible but not recommended.
3. It is not a good idea to build a 920 purely as a tourer unless some high speed works envisaged, although the torque produced is very satisfying a good 850 motor should do the same job without putting excess strain on the transmission, and in point of fact unless you do some of the additional work we recommended the 850 motor may have the edge in top speed terms as with standard carburation, the 920 is strangled at higher RPM. So after considering the above points and still deciding to go ahead here are the costs involved.

NOTES/INSTRUCTIONS IF WE FIT LINERS.

Firstly you must entirely dismantle the motor and deliver to us your cylinder barrel. We will bore out the cylinder barrel on a production boring machine that allows us to place each bore in the optimum position and locates off the barrel base to bore a truly accurate bore at 90 degrees to the barrel base, we then hone the barrel to maximise the flow of heat from the liner to the barrel. The cylinder liner is then pressed home, it is a centrifugally close grained cast iron liner that should give longer life than the original bore. This a flanged liner so once fitted it is securely held in place. The liner is then bored to size and finally honed.

The next op consists of mounting the barrel on a face plate and milling the gasket surface flat and true.

This concludes the work on the cylinder barrel. We do not require the conrods as our new 920 pistons use the standard pin size, but you must inspect the rods to ensure they are in good condition. We supply a pair of Special pistons, whose careful design ensures an easy fit without modification, and whose all up weight, (pin/rings etc.) without doing any internal weight reduction work is actually slightly lighter than the standard 850. The piston weight is actually very important as it has a very big influence on both maximum RPM. and conrod life. The last item we supply is an annealed C. N. C. cut solid copper head gasket.

The cost of the above work is £320.00 inclusive of all parts and VAT.

The cost of the kit on a self build basis (parts only) is £159.00.

In addition you will have to ensure the remainder of the machine is in good condition, and if you wish to realise its full potential you must raise the compression ratio, fit a 2s, 3s, 4s or similar camshaft, polish the ports, (particularly the inlets) make sure the inlet ports measure a minimum of 32mm and fit at least 32mm carbs (Preferably 34mm ports and 34mm Amal Mk2 carbs with velocity stacks). And fit a good free flowing exhaust system, such as our item number 476B.

When considering the cost bear in mind that the extra performance may give rise to clutch problems, (if so budget for a belt drive). If all goes to plan the extra speeds achievable will make the current braking performance even worse, therefore budget for one of our 12" disc and caliper conversions, and have us reline the master cylinder to 13mm. See item's 713

As mentioned above, 920 motors require larger carbs in order to breath properly at higher (above 6000) RPM. We would recommend a pair of 34mm Mk2 Amals for road use, 36mm for racing. Smoothbores are even better but there extra bulk can make fitting awkward, and they have no tick-over screw.

The characteristic power curve of the 920 motor, even after mild tuning, starts at almost zero RPM and runs up to about 6000. Without larger carbs and sports cam there is no benefit in exceeding 6000. It is recommended therefore that the overall gear ratio be increased. We recommend a 23 tooth gearbox sprocket or 22 with our belt drive.

EXTRAS

Shot blast cylinder barrel and paint gloss black.	£17.80
Machine wider squish band in cylinder head and Mill 1 mm off cylinder head to increase C. R. To approximately 9.8 to 1. (Please note we can mill as much off as you require).	£65.00
Bore inlet ports out to 34 mm, true and straighten reshape, blend in. Tidy exhaust ports, supply and fit new alloy bronze guides (Colsibro), inlet and exhaust.	£240.00
Cut valve pockets in piston (not needed unless the motor is fitted with a high lift cam, big valve head, or high C.R.	each £12.00
Helicoil exhaust ports. (We can Helicoil most British threads P. O. A).	per port £42.00
Glass bead blast cylinder head	£17.00
Lighten and polish big end caps.	each £15.00
Supply 3s camshaft (re-profiles exchange only)	£72.00

TECHNICAL NOTES

Compression ratio, as the weight of a piston is largely a function of its size we have deliberately kept a fairly low crown height, also the flat top gives better combustion, (compared with a domed piston). Allowing for the increase in swept volume this gives a C.R. Of about 9.3 to 1 which is ideal for road use (all engines are different, ultimately the C.R. must be measured). For racing I would recommend opening up the cylinder head combustion chamber width to 81 mm, and then skimming the head to produce a squish clearance of .050". This should produce a C.R. of approximately 11 to 1.

In any event all clearances including valve, and squish should be measured in the traditional manner.

PLEASE NOTE; Our pistons are not handed (unless you have machined valve pockets). However the gudgeon pin is offset slightly to the rear of the piston. This helps to reduce engine noise, minimise piston slap, reduces the thrust face loading and results in a more durable piston. An examination of the steel expansion strut position on the inside of the piston relative to the gudgeon pin boss clearly shows the offset. REMEMBER "long half to the front".

For those whose so require we can supply oversize pistons, (our standard size pistons are marked 0.5, oversize 1.0) These are exactly the same as the pistons previously discussed but are designed to run in a bore of 3.211. The old (and no longer made) 920 piston was adapted from a ford cross-flow engine, it had the disadvantages of a larger gudgeon pin, excessive weight, and too much length both above and below the pin. This piston required extensive alteration before it could be used, and in its non Powermax version had a taste for self destruction. The nominal bore size for this piston at STD size was 3.188". Thus our piston should be suitable as a replacement for a worn 920. Once arrangements have been made to accommodate the standard size pin and the bore has been honed to 3.190"/3.191"

FITTING CYLINDER LINERS

Bore and hone barrel to 3.343" a good finish is required in order to minimise the heat flow barrier, for similar reasons moving the bores apart .010" is a good idea. (.010" each).

Any thin skirt sections remaining after boring should be removed.

Also the cylinder should be counter bored 3.374" to a depth of 4 mm to accept the spigot. Liner should then be pressed in taking care to see that it is fully home. The spigot on the liner will protrude into some of the Allen bolt head holes, the heads of the bolts can be reduced slightly and the liner locally relieved so as to allow the head of the bolt to squeeze past. At this stage it is worth pointing out that the conrod slots do not need to be re-machined into the liner, the bigger bore alone gives sufficient clearance.

The barrel should now be bored and honed to finished size, which is 3.190"/ 3.191" or slightly more if racing, or you don't want to run it in or you are from a particularly hot part of the world.

The cylinder barrel will also need to be skimmed flat, additional material can also be removed from here to lift the C. R. If required.

Addendum. As mentioned above all relevant clearances must be checked. This must include the clearance between the liner skirts and the crankcase mouth. Over the cylinder barrel to the crankcase, carefully note and mark areas of interference, rough out with a rotary burr, offering barrel up regularly to maintain accuracy. Finish with a flap wheel and the wet and dry.