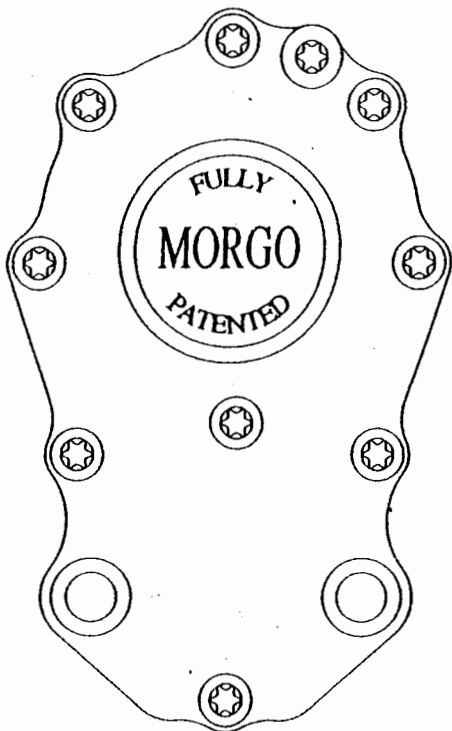


# MORGO®

## ARIEL 350/500 SINGLE SUPER ROTARY OIL PUMP



## FITTING INSTRUCTIONS

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**BRITISH CYCLE**  
SUPPLY COMPANY

1977-2002

*25th Anniversary*

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## Please read carefully before proceeding

With respect to the more enlightened, some aspects of these instructions may appear elementary, but it must be pointed out that some of our customers have never seen inside an Ariel engine.

We strongly recommend without exception everyone to read these instructions carefully.

1. Drain oil from oil tank.
2. Remove outer timing cover, old oil pump along with magneto and cam chain sprockets, disconnect oil pipes noting the feed and return, remove inner timing cover and cam.

## Camshaft Modification

1. Holding the cam in a vice with soft jaws, fit the cam chain sprocket onto the camshaft using the original nut. Torque up the nut as normal (Fig 3). Grind off the old pump drive peg so that the end of the shaft is flush with the old nut face (Fig 5). Remove the old nut, wash off grinding dust thoroughly. Fit new nut provided and ensure .100" (2.5mm) minimum from front face of nut to the end of the camshaft by measuring through the slot in the nut. (Fig. 7)
2. Re-fit camshaft to engine, replace inner cover making sure not to forget the additional small paper washer around the small transfer

tube. Fit magneto, cam sprocket and cam chain. Screw the (3)  
new slotted drive nut onto the end of the cam shaft and tighten.

## Fitting New Morgo Super Rotary Pump

Before fitting the new pump check that the feeler gauges you are using will pass through the slot in the back of the pump far enough to allow the end of the blade to pass over the drive shaft. See Fig. 6.

**We recommend the removal of the secondary timing case check valve ball and spring, if fitted**

1. Holding the pump horizontal with the feed holes uppermost, pump clean engine oil into the four transfer holes with a pump type oil can or similar fitted with a plastic outlet nozzle that is a good fit in the pump body holes, this pressure injection of oil is very important, it ensures the pump is fully primed and not air locked, it is also good practice to pump oil into the holes in the crankcase all the way back to the oil tank and down the scavenge pickup tube, you can not over fill the engine as the pump will remove any excess oil you pump in. After the first start up of the engine the pump will stay primed unless the oil feed pipes are removed for any reason, in which case the pump will have to be re-primed.

2. Put a small dab of grease in the drive slot in the pump shaft to hold the floating insert in place.

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3. Put the two new screws in the holes in pump body, and put gasket over screw threads. (Note: make sure holes in gasket line up with holes in pump) Place pump in position and ensure that the drive dog has engaged into the drive nut. Screw in the two screws each one a small amount at a time, until both screws centralise the pump, then nip up tightly.

Check the camshaft end float, this should be .005"/.010" (.15/.25mm) from the nut face to the end of the pump drive shaft. See Fig. 1

If the gap is too great use the shims provided to correct the clearance. These must be placed between the drive nut and the cam chain sprocket. If the gap is too small, an extra gasket must be fitted. At no time must the drive nut be modified.

4. Refill the oil tank with oil. Remove the priming screw. (Fig. 2) The screw is located between the two screws with the center drilled out. Allow air and oil to escape until all air bubbles stop and oil only escapes, it may take a few seconds for the oil to drain down from the oil tank, after a generous amount of oil has escaped replace the priming screw and Dowty washer. Lock the screw up tightly, the pump is now fully primed.

Note: Only Dowty washers should be used on the priming screw.

4a It is advisable to pour approximately 1/8 pint of oil into the crankcase via the rocker box valve clearance setting hole, this makes oil immediately available for the scavenge return.

5. Place the outer cover and gasket on the engine, if the cover sits flush up to the engine face no modification is needed. Go to step 7. If a gap can be seen we recommend the following procedure.
6. Place a piece of plasticine about 40\*20mm and 4mm thick over the uppermost part of the pump (over the priming screw area) put the cover back on, press fully on. Remove cover and the contact area will now be revealed. Carefully remove a small amount of material from the outer cover with a rotary burr and electric drill or similar, until a clearance is achieved.
7. From now on re-assembly is the reverse of the dismantling procedure.

### Important

Before starting the engine remove the spark plug and kick the engine over until oil appears from the oil tank return hole. Do not be fooled into thinking you have oil pressure just because oil is returning from the scavenge outlet tube this oil could be the residue from previous running with the old pump and not new oil delivered from the new rotary pump, make sure oil return is continuous.

It may also be noted in some engines when the oil is cold, the oil level in the oil tank can reduce but will return to its normal level on warming up after only a few minutes running. The reason for this is, the new pump having a larger delivery than the old plunger type pumps, resulting in more thick oil being present, because the oil is

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cold and thick the crankshaft picks up and carries a higher proportion of this extra oil and centrifugal force deposits the oil on the crankcase inner surfaces. As soon as the engine warms up only marginally, the oil drains to the bottom freely hence the oil level in the tank returning to normal. (The above can give the impression of wet sumping)

Whilst we are not suggesting for one minute that oil filter units should not be fitted in the scavenge return, it must be pointed out they do offer a partial restriction, particularly when the oil is cold, and more so when due for changing. Therefore it is recommended filter units with a by-pass safety relief valve facility should be fitted. (A magnetic oil tank drain plug is very effective for engines with cams and gears )

### Important

If for any reason the oil pipes have been disconnected from the engine and the oil has drained it is important to remove the priming screw to remove any air from the pipe between the oil tank and the pump. This is not necessary during a normal oil change, where the oil remains in the pipes and the pump.

Oil changing: When engines are totally drained of oil ie. Oil tank and crankcase etc. It is advisable to pour approximately 1/8 pint of oil into the crankcase via the rocker box valve clearance setting hole, this makes oil immediately available for the scavenge return.

It must be remembered that Ariels have not had the benefit of such a generous oil supply in the past and may have to be adjusted in some cases accordingly, especially after past experimenting by previous owners attempting to make the best of a poor oil supply to the rockers. Some owners in the past have restricted the scavenge outlet in the oil tank to gain more oil to the rockers, you will find the oil return with the super pump is more effective.

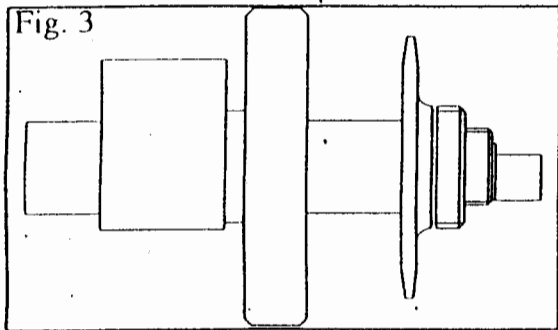
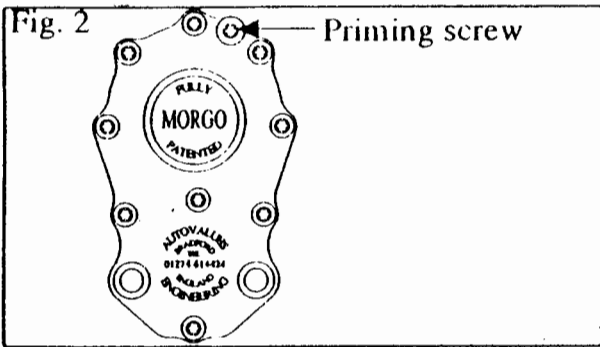
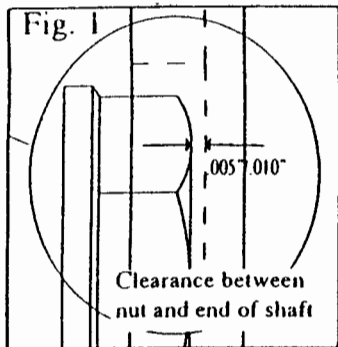
The golden rule with the Morgo super pump is, if the oil is there and the pump is primed the pump will pump it.

Remember advice is always at the end of the phone or fax.

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### Important

The priming screw on this pump MUST be fitted with a Dowty sealing washer, as supplied when new.



Ensure your feeler gauges will reach the shaft when passed through the slot in the back of the pump, as in Fig. 6

