

TECHNICAL (Continued)

Next, pop on the cam drive bevel after turning the shaft gear round to the spot where the two dots line up exactly. Tighten the drive bevel nut and bring the gears around so a grinding mark across the two gears can be seen -- there must be no sign of a step in the meshing height of the two gears. The shims behind the drive bevel can be altered to correct any differences. Use new locktabs on all the nuts.

The same procedure is used on the top bevel gears -- both sets of dots must line up of course. The meshing height is checked on the grind marks and altered by removing the drive shaft complete with bearing from the tube. Remove the circlip retaining the bearing and swap shims either side of the bearing to get the right height. When replacing the head with the two sets of dots lined up on the bevel gears, the shaft will slot straight into the tube over the semicircular dogs.

The valve gear in the head is all set up with shims once properly set, the motor runs for high mileages without readjustment. Make sure the rocker runs central to the valve-- swap the shims about on the rocker shafts to suit and check the top rocker without the shim pad for alignment.

With the cam installed, the top and bottom clearances on the valve can be set. Setting the valve return rocker is fairly simple, but unless you've got a micrometer to check packing shims, you'll have to do it on a trial and error basis. This means checking the fork clearance with the valve and spring fully assembled in the maximum upward lift position on the cam. The clearance must be zero with a good firm contact, but not binding.

The valve collar has a small ring in the top with shims underneath between the ring and the collar -- shims can be shuffled to bring the collar up or down in relation to the fork to get the right setting.

The normal top rocker has a shim pad which should be set at six thou on both valves -- the Ducati manual states four thou, but it has been found by experience that six is the better figure.

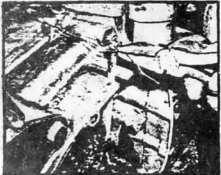
Before bolting down the rocker covers, make sure that the slip holding the valve springs at the bottom is seated properly on the two pins.

Strobe timing is the recommended method of setting the timing. A 14mm hex plug opposite the crank on the primary side to which a pointer can be bolted after removing a screw in the end of the shaft -- use a magnet on the screw-driver if you don't want to drop the screw in the works!

The pointer is a Ducati service item and costs around seven notes (?) ed., yes, it is a hell of a lot of money, so maybe it would be better to let a dealer do the job. Anyway, the 450 is timed to the line, and the 350 and 250 is timed to the dot on the cover at about the two-o'clock position. This should be done at about 4000 rpm and not at the figure recommended in the service manuals.

Our thanks to Mick Walker Motorcycles, Wibech, England for his generous help in supplying us with information and facilities for the Desmo rebuild.

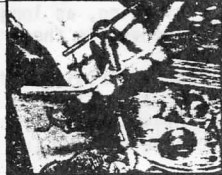
The DIOC wishes to thank Mr. D. Brian Williams of Ontario Canada for sending us this tech article.



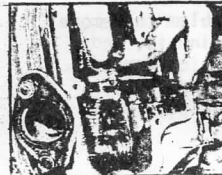
1 To get at the drive sprocket nut, you remove the cover, the clutch arm can drop down and needs to be wired up as shown.



2 This "O" ring was as flat and brittle as a potato crisp. There is also one below the barrel.



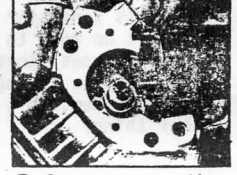
3 This is the weird device made by Ducati -- you can make a similar tool using a tube and bolt with a 4mm thread in the end.



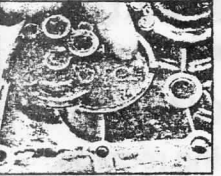
4 The shim pad can fall out once the rocker shaft is removed -- try to keep the washers on the rocker shaft in order.



5 With the lower return rocker removed, you can see the order of the retaining clips, shim pad, shims and collar to set clearance.



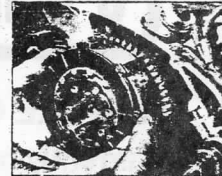
6 As you can see, making up a tool to hold the desmo cam could be a problem -- use a lever very carefully against the lobes.



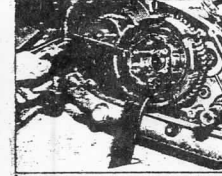
7 The oil pump hides in the timing cover. Remove the safety wires and screws -- hold the pump down to stop the ball valve escaping.



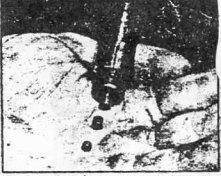
8 There's a special toothed locking tool shown here for undoing the LH thread timing pinion nut -- you can lock the crank against the ...



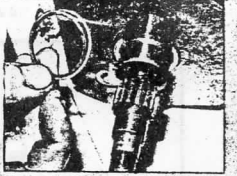
9 ... gudgeon pin using blocks of wood. Six ordinary screws retain the clutch springs to enable the cover and plates to be removed.



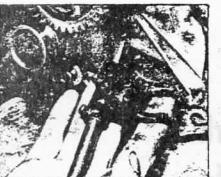
10 Complicated Ducati locking tools could be faked using a couple of clutch plates bolted to a lever -- one friction and one steel plate.



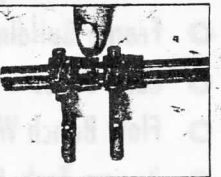
11 Instead of using a rod with a couple of ball-bearings, Ducati use rods, rollers and balls -- if you'll excuse the expression.



12 A loose pinion nut caused damage to the woodruff keyway, rotor taper and smashed up the shims causing even more end float.



13 All the shafts are a sliding fit including the selector shaft shown here -- if the forks show wear ridges, replace them.



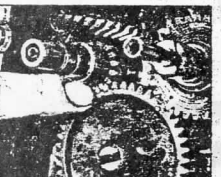
14 The outer selector fork on this shaft is identified by the slightly longer boss -- check all the rubbing surfaces for wear.



15 Check the selector drum for wear, don't lose any shims. Set the drum for zero end float as well as the gears.



16 The engagement dogs are slightly dovetailed on the sides to help retention, make sure they mesh properly by checking without crank.



17 Reassembling the timing pinions is a cinch -- line up the dots on the points and crank pinion with the raised pipe on the idler gear.



18 Pop the cam drive bevel on the crank so the dots line up -- move the shaft bevel round to line them up.



19 With the pinion nut tightened, move the gears round to a grinding mark which should show no step between gears -- shim pinion to bring level.



20 Both the dots and the grinding marks are the same at the cam end. Shim the shaft bearing to bring level, all dots must line up on assembly.

ENGINE DATA

	mm.
Bore sizes (all models)	+4
	+6
	+8
	+1.0
Piston wear limit (250)	.17
(350)	.19
(450)	.21
Top ring end gap (250/350)	.25 to .40
(450)	.30 to .45
Gudgeon pin oversize (all models)	-.01
	+.015
	+.02
Small end wear limit	.05

ADJUSTMENTS:

Clutch: Nip up central screw and release $\frac{1}{2}$ turn.

Points gap (all models)3 to .4

Valve clearance (all models -- cold)15

Return rocker (lower) zero

Timing: (250/350) Service tool pointer opposite dot on primary case at 4000 rpm with strobe light.

(450) Strobe timing as above but pointer lined up with cast line.

Static timing: (250/350) 5 to 8 deg. BTDC

(450) TDC

Head torque: 28 lb-ft

TOOLS

Spanners 7 to 23 mm
5 and 14 mm Hex keys
Special tools as described in text