

es to:- Major V.T. Mountford  
Mr. J.J. Booker  
Mr. P. Welsher  
Mr. R. Thomas  
Mr. R.A. Wilson-Jones

Notes on discussions held on 26th June, 1962 regarding recent piston troubles on 250 cc machines, and persistent trouble experienced with the big end oil feed seal on 250 cc engines.

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After some discussion it was decided:-

- 1.- That Mr. Welsher should produce a Super 5 piston with the original valve cutaway filled in and recut to the new size and angle. This is to be checked for compression ratio in an engine. At the same time a standard Super 5 piston is to be checked on the same engine to determine the alteration to the compression ratio brought about by the modified valve cutaway.
- 2.- Mr. Welsher is to produce a Constellation piston with the valve cutaway machined to the new size and angle. This is to be fitted to an engine and the compression ratio checked. A piston of the type used until recently with the valve cutaway at the wrong angle is to be checked for compression ratio in the same engine. This again is to determine the difference in compression ratio effected by the modified valve cutaway. From this information the thickness of the proposed compression plate will be determined.
- 3.- That Mr. Wilson-Jones would contact Messrs. Hepworth and Grandage to ensure that all piston rings fitted in future to 250 cc machines have a gap of .015" - .020". Also to ensure that the width of the scraper ring is reduced by .001". Mr. Wilson-Jones is also to take up with Messrs. Hepworth and Grandage the question of the advisability of thickening the casting slightly at the back of and below the scraper ring groove. Mr. Wilson-Jones suggests that the dual oil control scraper ring, which had been supplied with the Constellation piston, was possibly too drastic in its action for the 250 cc machine, and it was agreed that in future a slotted oil control ring should be fitted to all 250 cc pistons.
- 4.- That Mr. Thomas should amend the drawing for Piston Number 43723/A so that the two top ring grooves are raised by  $\frac{1}{32}$ " and the scraper ring groove width increased by .001".
- 5.- Mr. Welsher is to have machined as soon as possible 130 heavy type 350 cc Bullet pistons. These are for immediate production requirements. He will also have two of the Constellation type pistons recently supplied from Westwood machined with the new

valve cutaway. These are to be put into two experimental 250 cc machines, and subjected to testing at M.I.R.A. either on the No. 2. Circuit or the Outer Circuit whichever is considered to be the most effective in reproducing user conditions, which have caused failure in service. Or alternatively, one of the machines will be fitted with the type of piston, which has given trouble. If the modified machining shows an improvement, it should be decided to then use the remainder of the pistons received from Westwood, and also the stocks of 350 cc light pistons.

Oil seals fitted to 250 cc big end oil feed

Considerable trouble has been experienced during the running in of 250 cc engines in the engine assembly shop. The trouble consists of the cutting of a groove in the inner surface of the rubber, which bears on the oil supply shaft. This groove does not coincide with any groove or ridge on the shaft, and it must be assumed that it is caused by oil pressure acting on the back of the rubber oil seal forcing the rubber hard on the shaft at a point opposite the recess where the coil spring ring is fitted - this being the thinnest section of the moulded rubber.

In some cases, this groove has practically cut through the rubber moulding, and then the seal blows out into the primary chaincase. It was thought at first that this trouble had been brought about by the unaccountable increase in oil pressure, which has taken place over a period. (This pressure may have been caused by the reduction in big end clearance introduced some time ago.) In an effort to reduce the high pressure at the big end a lighter spring was fitted to the pump disc. This limited the pressure to round about 70 lbs. per sq. inch by allowing the pump disc to lift, but out of a recent batch of 25 engines, which had been run in and were being stripped to convert to five speed gears, six of the healthy oil supply seals were found to have failed.

Messrs. Burtonwood's Representative visited the Works yesterday, and he is having some seals produced, which will revert to the original thickness of rubber inside the steel housing. This will have a tendency to prevent the oil pressure entering the seal somewhat - thus possibly reducing the tendency to close on to the shaft. A number of seals have been supplied by Messrs. Burtonwood for tests in which the hole in the steel housing has been reduced so that any tendency for the moulded rubber to be forced through the hole will be considerably reduced - although this modification will not have very much effect on the cutting of a groove in the moulded rubber. A number of these modified seals are to be tested as soon as possible.

It was also suggested that the possibility of fitting a solid Nitril rubber block should be considered. Mr. Wilson-Jones undertook to contact Messrs. Roberts to obtain a suitable piece of this rubber.

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THE ENFIELD CYCLE COMPANY LIMITED

FROM MAJOR V.T. MOUNTFORD.

TO MR. G.H. BAKER, MR. R. THOMAS,  
MR. C.A. HOOKER, MR. R.A. WILSON-  
MR. J.J. BOOKER. JONES.


18th July, 1962

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250 c.c. PISTONS.

Further to my memo of the 6th July, I am informed that the light 350 piston has satisfactorily completed the tests over a period of more than 1,000 miles.

Therefore when the stock of heavy 350 Pistons has been exhausted, the Constellation and the light 350 Piston may be used, with, of course, the correct valve pockets and piston rings and with the compression plates referred to in my previous memo.

  
V. T. Mountford.