

Minutes of the Motorcycles Development Meeting

Held on 15th September, 1961.

Present:-  
Mr. J. A. Wilson-Jones  
Mr. J. Thomas  
Mr. J. H. Baker  
Mr. J. L. Bunker  
Mr. J. T. Mansfield

Business:-

1. Motion 1st Report

The report was read and a ballot was taken. The motion was carried by the following vote: 4 in favour, 0 against, 0 abstentions. The report was then discussed and a decision was reached that the work should be continued.

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Mr. Thomas reported that the work on the new engine design was well advanced. He mentioned that the new design was based on the old design but with a number of improvements. The new design was expected to be ready for testing in the near future.

2. Motion 2nd Report

Tests run over 15 hours on the bench, and the results on the road, indicated that the new engine was a considerable improvement on the old engine. The new engine was found to be more efficient and to have a longer life span. The results of the tests were very satisfactory and it was decided that the new engine should be put into production.

3. Motion 3rd Report

It had been fitted to an old type frame, which has a seat tube

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Present:-  
Mr. V.T. Mayall  
Mr. J. Baker  
Mr. J. Baker  
Mr. J. Thomas  
Mr. J. Wilson-Jones

Business:-

1. Motion for the Meeting

The meeting was held at a hotel and a set of steel  
lines were available by the kind of...  
assembly...  
delay.

The project was a first attempt to work with the wheel  
when on the leading fork is to be investigated, and a  
design produced by...

Mr. Thomas reported that the first 500 front forks were  
made, we had not as yet...  
for the fork, which is to be...  
possibility of fitting...  
that a set of...  
fitted to the fork, which is to be...

2. - Lubrication on 750 cc engine

Tests run over 15 hours on the bench, and the...  
road, indicating that lubrication on the engine...  
are open to the crankcase and proved satisfactory, and it was  
strongly recommended that this modification...  
associated alterations to the lubrication system...  
to the new 750 cc engine. It was reported that the...  
resulted in the cleanest engine, and the lowest oil...  
any twin engine, which had been tested. Since the...  
between the cam tunnels and the crankcase have been...  
also, the lubrication of the cam and cam followers was...  
satisfactory.

3. - 750 cc engine

It had been fitted to an old type frame, which has a seat tube

**THE ENFIELD CYCLE COMPANY LIMITED**

**FROM**..... Mr. J.J. Booker  
..... Motorcycle Manager

**TO**..... Mr. R. Thomas  
..... Drawing Office

..... 19th September..... 19 61.

Reference Paragraph 5 of the Minutes of the Motorcycle  
Development Meeting held on 13th September, 1961.

This paragraph should read:- "It was decided that the five  
speed gearbox at present on test should be fitted to the  
experimental 750 cc engine so that continued tests to prove the  
suitability or otherwise of this gearbox for use with the extra  
power of the 750 cc engine can be carried out."

*J.J. Booker*  
.....  
(J.J. Booker.)

using old type flat front engine plates. It was reported that the vibration on the dualseat and handlebars was better than was experienced when the engine was fitted in a present type frame. However, the vibration on the footrests was markedly worse. The possibility of using an alternative type of footrests and footrest mounting is to be investigated. Also tests are to be run with an altered balance factor for the engine. Mr. Lovekin is to be asked what is the balance factor of the present 750 cc engine in use, and also if he will produce a crankshaft with a reduced balance factor of 10%.

#### 4.- Silencing:-

It was agreed that without any delay, Mr. Baker would produce one of the new experimental silencers in a form suitable for production - absorption packing to consist of either coel-wrap or chopped strand mat fibre glass as is used for the Airflow component. It was furthermore agreed that arrangements should be made to fit the new experimental silencers to the Super Sports and Super 5 on a no loss - no scrap basis. Mr. Thomas and Mr. Baker were asked to report at the next meeting when this could be fitted.

It was reported that one of the new design silencers - i.e. oval type - had been produced, and this would be tested for noise and power during the coming week. The purchase of a small portable sound meter had been approved.

#### 5.- Five Speed Gearbox:-

It was decided that the five speed gearbox should be fitted on the 750 cc engine.

#### 6.- 350 cc Crusader:-

The intention was as soon as circumstances permit to introduce this model, and discontinue the present 350 cc models. It was therefore urgent that tests on this model should proceed without delay with particular attention to the clutch, gearbox and the wear etc. on chains. This machine should be fitted with the malleable iron clutch drum and the longer centre without delay.

In the meantime, Mr. Thomas, Mr. Baker and Mr. Booker will \* ascertain by sectioning a primary chain cover, whether it is necessary to provide any additional clearance by altering the dies for the cover. Mr. Thomas was asked to arrange for the schedule for the 350 cc Crusader to be completed as far as possible.

*Bullet or Chipper  
Type? Std Cam?*

\* During week ending 22nd September, a complete clutch utilizing the malleable iron drum and the lengthened centre should be available for assembly. The sectioned cover is then to be fitted to ascertain the actual working clearance of the clutch.



7.- 250 cc Frame with B quality side tubes:-

Tests on this were continuing, and would be completed during the present month when a decision whether or not to supersede the chrome molybdenum tubes at present in use, would be made.

8.- 175 cc Engine:-

Mr. Thomas produced his design. It was agreed that during the forthcoming period, he would produce a design for a complete machine incorporating this engine. It was also agreed that when Mr. Thomas came to detail the engine another draughtsman would be made available for him.

9.- Siba Self Starter:-

It was noted that the 24 v system was a marked improvement on anything tried previously. It was to be subjected to further tests. It was also reported that the Managing Director of Siba was coming to see us.

10.- Chromium Plated Cylinder Bores:-

Mr. Baker reported that the two metall sprayed barrels would be finished this week. One would then be assembled into an engine, and the other is to go away to be metal sprayed.

11.- The Scooter:-

It was reported that the hand gear change whilst very much better was not satisfactory, and would certainly not be acceptable to the general public. It was under consideration however, whether to design a unit with a cluster type gearbox or to use the existing gearbox mechanism with the foot change. In the meantime, the assembly of the second prototype scooter is to be urged.

Further comments were made that the performance of the engine after 100 miles running is hardly satisfactory, and needs to be improved.

12.- Batch Tests:-

The Batch Tests reported appeared to be satisfactory, and it now remained for a Batch Test to be carried out on a Super Meteor.

13.- Nylon Idler Gears:-

The return of the machine is awaited from the A.C.U. in order in order that the gears can be investigated. The Idler gear produced for the 250 cc is to be fitted to the 350 cc Crusader prototype.

14.- Sports Airflow Fairing:-

The Avon fairing on loan from Messrs. Green of Sheffield is to be fitted to a Sports Crusader with an idea of designing an Airflow fairing similar to that, so that it can be fitted to any of the existing models, and thus obviate the necessity to build Airflow models specially.

15.- Frame for 750 cc Model:-

\* Mr. Thomas is to design a new frame for the 750 cc model, and one of these is to be produced as soon as possible.

Frame Completed, Toolbox being  
designed

*J. J. Booker*  
.....  
(J. J. Booker.)

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Minutes of the Motorcycle Development Meeting  
held on 4th August, 1961.

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Present:- Major V.T. Mountford  
Mr. J.J. Booker  
Mr. G.H. Baker  
Mr. R. Thomas  
Mr. R.A. Wilson-Jones

Matters arising:-

1.- Bottom Link Front Forks:-

It was reported that twelve fork tubes had been received, but the following parts must be urged and progress reported to Major Mountford :-

Ball Head Clip  
Bottom Link steel stampings

It was agreed that as soon as the first pair of bottom link stampings are available these should be tested at M.I.R.A. as suggested by Mr. Wilson-Jones.

2.- Lubrication on 700 cc Engines:-

The engine modified with opened camshaft tunnels is noticeably clean and the oil consumption is satisfactory. It is being run on the road whenever possible to ascertain the extent of wear on the camshafts. It was agreed that this machine should be given a high speed test at M.I.R.A. Mr. J. Booker will keep Westwood informed of this development.

3.- 750 cc Engine:-

Mr. Baker reported that it would require new tools to produce heavier gauge engine plates, and it was agreed that he would produce some flat plates of heavier gauge in the tool room to see what effect this has on vibration. It was furthermore agreed that Mr. Booker would arrange for a 750 cc engine to be fitted into one of the old type frames with a seat tube to see what effect this layout had on vibration.

4.- Silencing:-

Mr. Wilson-Jones reported that the silencer with glass wool cartridge had been bench tested on a 250 cc, and it had been found to give slightly more power and to be 4 - 5 dB A quieter than the

present standard type. A drawing is to be made of this silencer with a view to Mr. Baker seeing how this can be produced in the simplest manner to anticipate legislation with regard to noise levels. A drawing of a large silencer has been made, and it was agreed that one of these should be made for test.

It was agreed that the silencer incorporating the depressed slot type of tube - Drawing W46532 - was unsatisfactory.

It was agreed that tests of silencers should be on 250 cc engines.

5.- Pistons for 250 cc Super Sports:-

The pistons for the Crusader Super Five will not be available until mid September.

6.- Five Speed Gearbox:-

A quotation from Messrs. Albion for the five speed gearbox for the Constellation has been received. It was decided to defer offering the five speed gearbox until the 750 cc is introduced. The 750 cc machines should be tested with a five speed gearbox.

7.- 350 cc Crusader:-

With regard to the five plate clutch being assembled with Armstrong inserts, the plates have been received, but the drum has not been received. Mr. Wilson-Jones is to urge delivery of this. In the meantime, tests are being run with the five plate clutch having J 17 linings with a steel drum. To date this is satisfactory except that as the result of crowding five plates on to the centre, the inner three plates do not disengage fully. It will therefore be necessary to lengthen the clutch centre by approximately  $1/16"$ , and another centre is being produced accordingly. This should be produced in time for a report to be made at the next meeting.

Pistons:- Mr. Wilson-Jones reported that sample pistons would be due from the Automotive Engineering Company in approximately six weeks. A quotation is still awaited.

Valves:- The burning of valves did not appear to be of epidemic proportions, and unless further failures occur no further action will be taken on this. Mr. Thomas is to investigate the possibility of increasing the radius on the end of the rocker arm.

Gear Box:- Mr. Booker said that he had omitted to say any



enquiries as to whether stronger material could be used for the gearbox and other critical parts. He will do so at the earliest opportunity. Also Mr. Booker is to enquire from Messrs. Albion what alterations dimensionally or otherwise were made to the stand in the set which has been supplied.

8.- 250 cc Frame with B quality side tubes:-

It was agreed that the test of the B quality Frame should be kept separate from the forthcoming Fave tests on the leading link fork, but tests of this frame with the B quality side tubes are to be carried out during the forthcoming period.

Heavy Weight Frames:- It was agreed that when any heavy weight frames were sanctioned, the question of fitting these with rear swinging arms having B quality tubes is to be considered.

9.- 175 cc Engine:-

Mr. Thomas produced a design for the 175 O.H.C. (Vertical) engine, and after discussion it was decided that this design had not come up to his original expectations. After further discussion it was agreed that he would produce another design incorporating the chain driven camshaft.

10.- Siba Self Starter:-

This is to be fitted with 24 v batteries during the next fourteen days.

11.- Chromium Plated Cylinder Bores:-

It was noted that the machine fitted with chromium plated cylinder bores had now run satisfactorily for 678 miles. The return of the other barrel from Messrs. Monochrome is still awaited. One barrel had been received from Messrs. Metco; this having been metal sprayed with insufficient thickness of steel deposit. This is to be returned to Messrs. Metco for respraying. With regard to the second barrel - this will be honed by Mr. Baker as soon as the works resume. It is for consideration what value there is in continuing these experiments with chromium plated or metal sprayed aluminium barrels.

12.- The Scooter:-

Several modifications have been made to the hand change gear, which is now reasonably satisfactory. It is to be fitted with heavier cables, and then will be subjected to extensive tests. The second prototype is now being assembled and the modifications

to the body work for this will have to be made by sub contractors.

13.- Batch Tests:-

Batch tests on the two models previously selected will be carried out immediately after the holiday.

14.- Nylon Idler Gears:-

Mr. Baker had produced idler gears for test, and so far they have been proved satisfactory. Nylon gears on the 350 cc Bullet were functioning satisfactorily having covered 923 miles.

It was proposed that nylon bushes should be tried on the linkage of the leading link front fork. Mr. Wilson-Jones will produce a set of bushes for test.

15.- Sports Airflow Fairing:-

Mr. Booker is to have prototype within twenty-one days.