COPY

Mr. R. Thomas.

VTM/MMcG

28th June, 1963

The Assistant Director,
Wheeled Vehicles,
Fighting Vehicles Research & Development Est.,
Chobham,
Chertsey, Surrey.

For the attention of Mr. W. Beavens.

Dear Mr. Beavens,

As promised I enclose, herewith, the following arrangement drawings - these are drawings of our current Civilian production Models and against each drawing number I give below the modifications which will apply to the prototype General Service Model.

1. General Arrangement Drawing No. W.41488.

(a) Instead of front fork Casquette the machine will have a facia panel and cover tubes suitable for mounting a separate headlamp.

(b) Instead of 17" wheels shown on the General Arrangement Drawing the General Service Model will be fitted with 18".

(c) The front mudguard will not be of the valanced type but the narrow section to provide adequate mud clearance.

(d) A different shape of petrol tank will be fitted.

(e) Legshields will not be fitted.

(f) Instead of a dual seat the machine would be fitted with saddle and separate pillion seat.

(g) The panniers would be of a different type and shape to accommodate the Service direction ~~post~~ signs

(h) The cylinder head steady has been modified since the drawing was made.

Contd.

The Assistant Director - Wheeled Vehicles. 28th June, 1963

2. Frame complete - Drawing No. W.46271.

The frame would be modified by the fitment of cradle tubes and a crankcase shield.

3. Engine Arrangement - Drawing No. W.45271.

(a) Sheet 1 - A casting incorporating a filter has been added to the oil pipe cluster.

4. Engine Arrangement - Drawing No. W.39630/A.

(a) Sheet 2 - The foot change stop plate has been altered.

(b) The sleeve shown on the gear indicator spindle is in fact a spring.

(c) The gear indexing plunger assembly has been modified.

(d) The clutch has been modified - as Drawing W.46996.

(e) The breather has been modified.

5. Front Fork - Drawing No. W.46793.

As stated above this would be fitted with a facia panel and cover tubes instead of Casquette.

6. Silencer - Drawing No. W.47921.

As drawing.

7. Chainstay - Drawing No. W.46268.

As drawing.

8. Front Hub - Drawing No. W.43526.

As drawing.

9. Rear Hub - Drawing No. 41005.

As drawing.

10. Clutch - Drawing No. W.46996.

As drawing.

Contd.

The Assistant Director - Wheeled Vehicles. 28th June, 1963

We should in due course produce entirely new drawings for the General Service Model.

With kind regards,

Yours very truly,

THE ENFIELD CYCLE CO.LTD.

V. T. Mountford.
Joint Managing Director.

RET/LB

Friday June 28th, 1963.

Major V.T. Mountford.

Herewith 1 set of prints of general arrangement drawings applicable to 248cc & 346cc O.H.V. Models. Below is listed differences, if any, between drawings and prototype machines to be submitted to F.V.H.D.E.:-

GENERAL ARRANGEMENT OF MACHINE W.41498.

Small Front Fork Casquette should be Facia Panel and Cover Tubes with separate headlamp.
17" dia. wheels should be 18" dia.
Front Mudguard should be of narrow section.
Wrong shaped Petrol Tank.
Legshields are not required.
Dual-seat should be saddle and separate pillion pad.
Wrong style panniers.
Cylinder-head steady out of date.

FRAME (COMPLETE) W.46271.

Cradle Tubes and Skid Plate not shown.

ENGINE ARRANGEMENT (SHEET 1) 248cc W.45271.

Filter Body not shown on oil pipe cluster.

ENGINE ARRANGEMENT (SHEET 2) 248cc W.39630/a.

Latest Stop Plate arrangement not shown on Foot Change.
Sleeve on Gear Indicator Spindle should be a spring.
Gear Indexing Plunger Assembly out of date.
Wrong Clutch shown.
Wrong Breather shown.

FRONT FORK (COMPLETE) W.46793.

Casquette shown instead of Facia Panel and Cover Tubes.

Cont'd.....

Cont'd.....

SILENCER (COMPLETE) W.47921.

Prototype drawing.

CHAINSTAY (COMPLETE)	W.46268 -	drawing correct.
FRONT HUB (COMPLETE)	W.43926 -	" "
REAR HUB (COMPLETE)	W.41005/a -	" "
CLUTCH (COMPLETE)	W.46996 -	" "

H.E. Thomas.
Chief Designer.

Mr. R. THOMAS.

MAJOR. V.T. MOUNTFORD.

Copy to:- Mr. J.J. BOOKER.

Wednesday March 13th 63

ENFIELD INDIA MODELS

I have investigated further your queries on differences between drawings and components and give below my findings:-

W.38890 (1479A) Headlamp Casing.

Bosses for Handlebar Clip Screws now added to drawing. I have inspected a sample casting which was taken to prove the dies before they were sent to India and these bosses were included.

W.41183/A (8926m) Brake Pedal.

The off-set of 2 15/16" as shown on our drawing is sufficient to ensure clearance between the Brake Pedal and Chaincase on all of our models using this pedal.

We have never fitted the Outer Chaincase which houses an alternator in the type of Frame that Enfield India is using. The boss which determines the position of the Brake Pedal is 13/16" nearer the fore and aft centre line of their machine than it is on our present machines, this must be the reason for the pedals fouling. We have never provided the off-set they require and if we must do so then we should give their pedal a new Work Number.

W.30333 (6/20m) Crankpin.

W.30333 does not appear on Drawing No. 10124m but on drawing 6/20m. Mr. E. Birch has checked a crankpin from the Service Dept. and all sizes are within the drawing limits.

Crankpin 45632 appearing on Drawing No. 10124m was an experimental pin.

I am enclosing new prints of W.38890 and W.30333.

R.E. Thomas.

THE ENFIELD CYCLE COMPANY LIMITED

FROM MAJOR V.T. MOUNTFORD.

TO MR. R. THOMAS,

Copy to : Mr. J.J. Booker.

8th March, 1963 19

I attach, hereto, copies of the correspondance which I have had with Enfield India regarding discrepancies in drawings and components.

Would you please let me have your further remarks so that I may reply to paragraphs 2, 3 and 4 of Mr. Raghavan's letter.

800 Brake Pedals now on order

3

V. T. Mountford.

breaking open of the tapped hole.

8925—

3. On W.No.41183/A - Brake Pedal - we find that the off-set 2.15/16" as shown in your drawing is not sufficient since without the off-set of 3.3/4", the Brake Pedal hits the chaincase. Perhaps you have a setting operation later on in the assembly.

38205
8327 m
8230—

4. W.No.10124M - Crankpin: The Work No. against this query is W.30553. 6720

5. We have noted the other information contained in your letter. As suggested by you, I have asked Sri Murali-krishna to prepare a list of the work numbers for which we have got manufacturing plans and as soon as it is ready, I shall arrange to forward the same to you.

I am indeed grateful for your assistance in the matter.

With kind regards,

Yours sincerely,

(S.V.RAGHAVAN)

Major V.T. Mountford

...DE"

Telephone
51171 (5 Lines)

THE ENFIELD INDIA LTD.

MANUFACTURERS OF ROYAL ENFIELD MOTOR CYCLES, SCOOTERS AND THREE WHEELERS

Regd. Office: "ROYAL ENFIELD BUILDINGS"

POST BAG No. 5284, TIRUVOTTIYUR, MADRAS-19

Ref:

Dear Major Mountford:

Sub: Component drawings for
350 cc Model.

Thank you very much for your letter Ref: VTM/MMcG dated 15/2/63 with the enclosures.

1479A

2. On W.No.38890 - Headlamp Casing - the point which you have missed refers to the additional material which was provided in the casting underneath the place to take the Handlebar Clip Screw, presumably to prevent the breaking open of the tapped hole.

8925—

3. On W.No.41183/A - Brake Pedal - we find that the off-set 2.15/16" as shown in your drawing is not sufficient since without the off-set of 3.3/4", the Brake Pedal hits the chaincase. Perhaps you have a setting operation later on in the assembly.

38205
8327M
8230—

4. W.No.10124M - Crankpin: The Work No. against this query is W.30553. 6720

5. We have noted the other information contained in your letter. As suggested by you, I have asked Sri Muralikrishna to prepare a list of the work numbers for which we have got manufacturing plans and as soon as it is ready, I shall arrange to forward the same to you.

I am indeed grateful for your assistance in the matter.

With kind regards,

Yours sincerely,

(S.V.RAGHAVAN)

Major V.T. Mountford

VTM/MMcG

15th February, 1963

Mr. S.V. Raghavan,
The Enfield India Ltd.,
Post Bag 5284,
Madras, 10,
India.

Dear Mr. Raghavan,

I have now had an opportunity of going through the list of drawings which you brought to my attention whilst I was over there, pointing out the difference between the drawings and the actual components and the ommissions therefrom, and I enclose, herewith, the following drawings against which I give comments :-

Work No. W.38895.		Bright chrome finish has now been added to this.
W.37824.		Bright chrome finish added.
W.39038.		Bright chrome finish added.
W.38387.		Dull chrome finish added.
141545A.		Heat treatment added.
W.21863.		Heat treatment added.
11099.		Heat treatment added.
W.38890.	(a)	Two holes added in bottom face and shape of face altered to miss steering lock hole on head lug of frame. We offer a steering lock as additional equipment and the alteration to the fact was only made in this connection.
	(b)	The different shape of the boss, to which you refer was a concession to the Foundry and it is immaterial which shape is used.
	(c)	Castings made from the new dies supplied to you will not need to be machined on the circumference where the headlamp rim fits.
	(d)	There was another enquiry on this drawing, but I

/am

Mr. S.V. Raghavan. 15th February, 1963

am sorry to say that my note had been damaged and it is indecipherable. Will you please be good enough to tell me what the other point in question was and I shall be glad to let you have our comments.

Work No. W.38098.
W.38097. (a) The spindle cap was case with a flat side to assist in casting and it is immaterial which shape is used.

(b) The larger diameter was added to the fork leg for the 250 c.c. Models to prevent the cover tubes rubbing the aluminium legs, but this is not required on '350 Bullet' fork legs as the oil seal housing W.38157 acts as a collar.

W.41183/1.(a) The relief is added to the enclosed drawing.

(b) You raised the question of the amount of off-set and according to our checking this is 2.15/16" as shown on the Drawing.

W.41280A. We obtain shoes from two sources and one of the Suppliers produce a slightly different section as this was more suitable to his methods, but the difference in shape is immaterial. We now only obtain shoes from the Supplier whose castings are in accordance with the Drawing.

W.40366A. Drawing amended - the material was changed from L8 to IM4W on the 29th March, 1961 and according to our records notification of this modification was sent to you.

W.39443. Drawing enclosed with the rib added in May 1956.

W.33368A.
W.33370A. Amended Drawings enclosed.

W.38239.
W.38240. The distance between the centres is $2\frac{7}{8}$" and this was redrawn from 7429M. The latest drawing enclosed.

W.38844. Amended Drawing showing cord relief enclosed.

W.31990. According to our records the gauges are made for $6\frac{1}{4}$" diameter - will you please confirm this modification.

W.29287. Amended Drawing enclosed.

10124M. There being four work numbers of this Drawing, would you please inform me to which part your enquiry referred. W.40264 is the chainstay bearing stud nut, and the Drawing according to us is correct.

Contd.

Mr. S.V. Raghavan. 15th February, 1963

W.45632 is a crankpin for a roller bearing, which was drawn specially for Enfield India, of which only a few samples were supplied and we are, therefore, unable to check this against the Drawing.

Work No. W.43701. Amended Drawing showing increased diameter of of holes enclosed, herewith.

W.42878. Amended Drawing showing increase in diameter on centre spot face enclosed, herewith.

W.17624.
W.39836. The position of the locating tangs are unimportant, but amended Drawings are enclosed.

W.37669. The alteration was intended to change the outside diameter from $\frac{5}{8}$" to 19/32" and this was never put into effect and has now been rescinded.

W.10097. The bore measures 3.9/16", but as you know this diameter varies slightly as the punch of the press tool wears and periodically a new punch has to be made. We have discontinued machining the outside diameter. Amended Drawing enclosed.

W.40793. Our Suppliers confirm that the material used is natural rubber.

W.31539 Our Drawing agrees with the measurement of springs which we have in stock and shows the spring in the un-loaded position.

W.34452.(a) The extent of the chilled surface is limited to $\frac{1}{2}$" from pivot centre.

(b) The milling operation has been added to the Drawing instead of spot facing.

I hope that all the above information will be of assistance to you and if you have further enquiries would you please be good enough to list them and send them to me when they will receive immediatel attention.

I would suggest that with regard to those parts which you have not yet manufactured you let me know the order in which you propose to manufacture and let me have details of the Drawings in your possession, or preferably the actual copies of the Drawings, when I will have these checked to ensure that they are strictly up to date.

With kind regards,

Yours sincerely,

V. T. Mountford.

Mr. R.E. Thomas.
Chief Designer.

Major. V.T. Mountford.

Friday March 1st. 63

THE FOLLOWING ARE ITEMS WHICH HAVE BEEN CHANGED FROM CHROMIUM PLATE TO CADMIUM PLATE

W18446 - Rear Mudguard Attachment Bolt - Sports Models.
W38767 - Front " " " - " "
W26168 - Handlebar Clamp Nut - Continental & U.S.A. Interceptor.
W36095 - Steering Stem Lock Nut Washer - 250cc Continental.
W41216 - Ft Fork Main Tube End Plug - " "
W39291 - Engine Attachment Nut - 250cc Models & New 350cc Bullet.
W45210 - " " " - " " " " " "
W44798 - Steering Stem Lock Nut (With Damper) 700cc Constellation (S'CAR)
W38968 - Ft Fork Main Tube End Plug - All Models Except Continental & Super 5.
W39038 - Fork Crown Clamp Bolt - All Models Except Continental & Super 5.
DE110 - Handlebar Clamp Nut - All Models Except Continental.

R.E. Thomas.
Chief Designer.

MR. R.E. THOMAS — MAJOR. V.T. MOUNTFORD.

CHIEF DESIGNER. — Copy to:- MR. J.J. BOOKER.

February 12th. 6

I was very perturbed by the list of complaints of drawing inaccuracies given to you by Enfield India. In defence of the Drawing Office I would like to make the following points:-

1) Only recently have we been asked to notify India of alterations to drawings.
2) No complete schedule of the machines as now made by India exists, only lists of parts still supplied by us.
3) Many of these drawings were made before it was the practise to give particulars of heat treatment and finish.

I give below information on the drawings you have listed:-

W.38895 (8387m) Handlebar Clip — Finish - Bright Chrome.
W.37824 (8147m) Kickstarter Spindle Nut. — " " "
W.39038 (8423m) Ft. Fork Main Tube Clip Bolt. — " " "
W.38387 (8234m) Ft. Brake Cable Adj. Carrier. — Dull Chrome.

W.141545A (934m) Timing & Driving Shaft Nuts.
Heat Treatment - Harden in Oil at 800°C for 20min.

W.21863 (5020m) Push Rod End (Bottom).
Heat Treatment - Cyanide Harden at 800°C for 20min.

W.11099 (8411m) Valve Stem Split Collar.
Heat Treatment - Cyanide Harden at 800°C for 1hr.

W.38890 (1479A) Headlamp Casing.

(a) Two holes added in bottom face. 18-10-57. Shape of face altered to miss steering lock hole on head lug of frame. 21-9-60.

(b) Different shape of boss was a concession to the foundry. Immaterial which shape is used.

(c) Castings made from new dies supplied to India will not need to be machined where headlamp rim fits.

(d) Cannot understand this query.

W.38096(8208m) Ft. Fork End (N.S.)
W.38097(8209m) " " " (O.S.)

(a) No alteration to drawing. The spindle cap was cast with a flat side without consulting the D.O. Immaterial which shape is used.

(b) No alteration to drawing. This larger diameter was added to Crusader Fork Legs to prevent the cover tubes rubbing the aluminium legs. Not required on G-2 legs, the oil seal housing W.38157 acts as a collar. A few G-2 legs were machined in error with the larger diameter, some must have been sent to India.

W.41183/A. (8925m) Brake Pedal.
(a)The relief was added without the authority of the D.O. Drawing now ammended.
(b)I have checked a brake pedal and the off-set is as stated on our drawing i.e. 2 15/16".

W.42180/A (8942m) Brake Shoe.
Shoes supplied by Surecast are to drawing. Shoes supplied by J.W. Murcott had a different section because he considered the dies to produce them were easier to make. We now only have shoes from Surecast.

W.40366/A (1521A) Crankcase (T/Side).
(a)The D.O. was not informed of this alteration. I cannot find the reason for it but the drawing has now been ammended.
(b)Material was changed from L8 to LM4W. 29-3-61.

W.39443 (8507m) Ft. Fork Crown. Rib added. 18-5-56.

W.23369/A (3788m) Operating Lever. (Inner Half).
W.23370/A (") " " (Outer ").
Position of Rivet appears to be neither 1¼" nor 1⅜" but 1⅜". Distance to centre of cranking radius should be 1 1/32" instead of ⅞".
Drawings ammended.

W.33239 (10088M) Rear Brake Operating Lever. (Inner).
W.33240 (") " " " " (Outer).
Redrawn from 7429m. 8-3-60. Distance between centres is 2⅜".

W.36844 (8388m) Ft. Fork Cover Tube Bush.
The cored relief was made without the authority of the D.O. Drawing now ammended.

W.31990 (7120M) 38T. Sprocket/Brake Drum.
I do not agree. The gauges are made for 6¼" dia.

W.29287/A (6452m) Rear Brake Cover Plate.
Water Deflector added. 18-6-57.

? (10124m) It is not clear which part is referred to as there are four Work Numbers on the drawing, two of these have been supplied to India. W.46264 is a Chainstay Bearing Stud Nut and the drawing appears to be correct. W.45632 is a Crankpin for Roller Bearing drawn especially for India. I believe only a few samples of these were supplied and I am unable to check this drawing.

W.43701 (9547m) Clutch Pressure Plate.
Three holes were increased to 9/16" dia without consulting the D.O. Drawing now ammended.

W.42878 (9346m) Clutch Driving Plate.
Centre spot face increased from 15/16" dia to 31/32" dia. 5-6-58.

W.17624 (4147m) Web for Brake Shoe.
W.39836 (8607m) Rim " " " .
Theses parts are B.O. assembled and the positions of the Locating tangs were unimportant. Drawings now ammended.

W.37669 (8114m) Spring End Pad.
An alteration is recorded 19-10-52 changing the outside diameter from ⅝" to 19/32". This has never been put into effect and I have rescinded the alteration.

W.10097 (2479m) Hub Lockring.
The bore measures 3 9/16". This diameter probably varies as the punch of the press tool wears and periodically a new punch is made. Machining of the outside diameter has been stopped. Drawing ammended.

W.40793 (8783m) Alternator wiring Grommet.
Our suppliers have been contacted and confirm that the material is natural rubber.

W.35139 (9549m) Rear Brake Return Spring.
Our drawing agrees with the springs we have in the stores and is shown in the un-loaded position.

W.34452 (7630m) Chain Tensioner Pad.
(a) Extent of Chilled Surface limited to ½" from pivot centre.
(b) Milling operation added to drawing in place of spot face.

I am appending new prints of all the above parts. We are unable to check drawings with components - we do not have the necessary instruments. I suggest the inspection department should check the components to the drawing.

THE ENFIELD CYCLE COMPANY LIMITED

From MAJOR V.T. MOUNTFORD,
JOINT MANAGING DIRECTOR.

To MR. J.J. BOOKER,
MR. R. THOMAS.

No Schedule of Parts headlamp issue
No instructions to notify India - rather the reverse
Finish not given on drawings until recently. Drawings without heat treatment very old

5th February, 1963 1962

During my visit to India serious complaints were made that Drawings of component parts, which we have supplied, were either incomplete or not accurate in that they do not agree with the actual components to which they refer.

I went through a quantity of drawings and I give below some examples in respect of which I require your comments.

Drawings Nos : 38895. 8387m Handlebar Clip. Bright Chrome
37824. 8447 No finish K's starter Spindle Nut " "
? 39038. 8423m specified. Ft Fork Main Tube Clip bolt. " "
? 38387. 8234m Ft Brake Cable adjuster carrier Dull Chrome.

Drawings Nos : 934 M. 111565A Timing Driving Shaft Nut. Harden in Oil at 800°C for 20 min
5020 M. 21863 Push Rod End (Bottom) Cyanide Harden at 800 for 20 mins
8411M/C. W110997 Valve Stem Split Collar. Cyanide 800°c for 1 hr.
} No heat treatment specified.

Drawing No. DG.1479.A (a) Two holes in bottom face not shown on Drawing. Added on Late Type Casing
Headlamp Casing 38890

(b) Handlebar clip boss - whereas a radius is shown on the Drawing, on the actual casting the boss is square.

New dies made for India
No machining necessary

(c) No mention is made of the machining required where the lamp rim fits.

(d) No mention is made of the metal which has been added to accomodate $1\frac{3}{8}$" handlebar clip pins.

Drawing No. 8208 M. (a) When was the spindle cap altered from a flat side to a raius and why were Enfield India not informed of this modification?

Should not have been altered discontinued

(b) The biggest diameter has been increased to 1.61/64" - when was this done and why was Enfield India not advised?

Drawing No. 41183 8925 M/B. (a) When was relief added to the brake pedal and why was Enfield India not advised?

3/16 removed from edge - stopped 1-10-52
Alternative sent?

(b) Similarly when was the off set of the crank increased from 2.15/16" to $3\frac{3}{4}$"

and why was Enfield India not advised?

Drawing No : 8942 M/A. We are supplying two different brake shoes neither of which is to the above Drawing - see section AA of Drawing and compare with brake shoes bearing cast Nos. 5202 SF1 and 5202 A.

Shoes supplied by Surecast are to drawing - J.V Muncott did not follow drawings accurately, supplies from this source has ceased

Drawing No : 1521A. (a) On the Drawing the tappet cover stud holes are shown drilled through, whereas in fact on the component they are blind. Drill ½ deep Tap 7/16 "

(b) When was the material changed from L8 to LM4 or DTD 424, and why was Enfield India not advised?

LM4W was L8 29-3-61

Drawing No : 8507 M. A rib has been added between points C and B, but this is not shown on the Drawing which Enfield India have.

Rib added 18-5-56

Drawing Nos : 3788.) 23369/A 3788M.) 23370/A A dimension of 1¼" is shown on the Drawing, whereas the actual dimension is 1⅞" - again alteration not advised to Enfield India.

Rear Brake Lever Pressings ~~Complete 23371/A~~

Drawing No : 7429 M. The dimension of 2⅝" shown on the Drawing is actually 2.13/16" on the component.

Redrawn 10088m 8-3-60 2⅞ crs. Rear Brake Lever - Prince

Drawing No : 8388 MD. The cored relief on the actual component is not shown on the Drawing. ?

7" Fork Cover Tube Bush

Drawing No : 7120 M. The recess for the cover plate shown as 6¼" has apparently been reduced to 6.3/16". ? NO

Sprocket/Brake Drum

Drawing No : 6452. Water deflector not shown. Added 18-6-57

Brake Cover Plate Pressing

Drawing No : 10124 M. Is not by any means up to-date compared with component. ? Part No. Samples/Backspin only

45632 or 4264?

Drawing No : 9547. W43701 A dimension H/C is shown as .501/.504, whereas it is actually 9/16" ? YES 3 Centre Holes

Clutch Pressure Plate - Ensign

Drawing No : 9346 M. 42878 Centre spot face is shown as 15/16", whereas it is in fact 1". 31/32 ?

Clutch Driving Plate - Ensign 31/32 was 15/16 5-6-58

Drawing No : 4147. 17624 The angle of the tangent is shown as 25, whereas it is in fact 35 and shown at 15, whereas it is in fact 20 and the width is shown as 9/32" whereas it is in fact ¼".

~~17617, 23 274~~ Brake Pressings Ensign - drawn 1931 Rim 39836 (8607m)

(39841 39838)

39866 Brake lever & Cam

Service Stores

Contd.

Drawing No :	8114 M.	Is shown as bar 19/32, whereas it is in fact $\frac{5}{8}$".
Drawing No :	2479 M.	Shown as $3\frac{5}{8}$", whereas it is in fact $3\frac{1}{2}$"
Drawing No :	8783.	This merely specified rubber, where they consider it should be neophrene or synthetic material of which they require details.
Drawing No :	9549.	The angle is shown loaded, whereas it is required unloaded and they think it should be 60 degrees.
Drawing No :	7630 M/B.(a)	When altered from hard chrome to chilling extent ought to have been shown.
	(b)	This component now appears to be milled off set, whereas it is shown with a spot fact operation.

You will appreciate from the above that Enfield India are finding tremendous difficulty when they come to manufacture parts according to our Drawings, as they then find that they do not agree with the actual components.

It is essential that we immediately check all drawings for components which we are still supplying to them to ensure that these are up to-date and agree in all respects with the actual components and give all the information required.

I have promised to write to the Works Manager at Enfield India regarding the above mentioned complaints and I, therefore, require your comments as quickly as possible.

V. T. Mountford.

THE ENFIELD CYCLE COMPANY LIMITED

FROM.....Mr. R.E. Thomas.....
.....DRAWING OFFICE.....

TO.....Major V.T. Mountford.....
.....

.....Monday 4th November.....19 62.

LUCAS DISTRIBUTORS.

Lucas Distributor Type 15DI was used on 1962 350 and 500 Bullets. A supply of these distributors will be needed for spares.

Lucas Distributors Type 18D2 is being used on 1963 700cc Sidecar Constellation Models. I presume we have enough distributors in stock at Westwood to cover the 50 sets required.

R.E. Thomas.

TRADE MARK
'MADE LIKE A GUN'

Manufacturers
of
Royal
Enfield
BICYCLES and
MOTOR CYCLES

Telegrams
CYCLES, PHONE, REDDITCH

Telephone
REDDITCH 121 (9 Lines)

THE ENFIELD CYCLE COMPANY LIMITED

HEAD OFFICE AND WORKS
REDDITCH
WORCS. ENGLAND

Your Ref. *Our Ref.*
VTM/MMcG

2nd November, 1962

Mr. V.L. Young,
Mr. R.E. Thomas.

Copies to : Mr. J.J. Booker,
Mr. R.A. Wilson-Jones.

I am informed by Messrs. Lucas that they will cease production of the present distributors in July 1963 - it will then be replaced by the built-in contact breaker of which I have sent you details.

I understand that this will not effect us as all our Models will be fitted with a contact breaker for a magneto - will you please confirm that this is so, as otherwise I must make arrangements with Lucas to provide for our future requirements of distributors. It will also be necessary to provide for the future requirements of distributors for Enfield India and I am in communication with Messrs. Lucas accordingly.

Sidecar Constellation - Coil

Spares

V. T. Mountford.

Manufacturers of Royal Enfield BICYCLES and MOTOR CYCLES

Telegrams CYCLES, PHONE, REDDITCH

Telephone REDDITCH 4222 (9 Lines)

THE ENFIELD CYCLE COMPANY LIMITED

HEAD OFFICE AND WORKS
REDDITCH
WORCS. ENGLAND

Your Ref.

Our Ref. VTM/MMcG

27th October, 1961

Mr. R. Thomas,
Drawing Office.

Copies to : Mr. J.J. Booker,
Mr. G.H. Baker,
Mrs. M. Ford.

Would you please issue a Schedule for the new '350 CRUSADER' to the specification agreed this morning, marking those parts which are not common to existing Models and then issue a Sanction for the production of 100 machines.

This is urgent as we ought to be producing some of these Models from early in the New Year.

1148m Issued 10/11/61

V. T. Mountford.

Manufacturers of **Royal Enfield** BICYCLES and MOTOR CYCLES

Telegrams CYCLES, PHONE, REDDITCH

Telephone REDDITCH 121 (9 Lines)

THE ENFIELD CYCLE COMPANY LIMITED

HEAD OFFICE AND WORKS
REDDITCH
WORCS. ENGLAND

Your Ref. *Our Ref.*
VTM/MMcG

27th October, 1961

Major F.W. Smith,
Mr. V.L. Young,
Mr. G.H. Baker,
Mr. J.J. Booker,
Mr. R. Thomas,
Mr. R.A. Wilson-Jones.

Reference Mr. Wilson-Jones' memo of the 24th October, regarding exhaust valves on '350 CRUSADER' engines.

The recommendation to use the longer studs in conjunction with wire inserts in the stud holes in the crankcase, is to be adopted for this Model.

V. T. Mountford.

THE ENFIELD CYCLE COMPANY LIMITED

FROM Mr. R.E. Thomas,
Chief Draughtsman

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

20th October, 1961 19

Enclosed please find notes on 'Differences Between 4 Plate Crusader Clutch with Steel Sprocket and 5 Plate 350 Crusader Clutch with M.l. Sprocket.'

R E Thomas

R.E. Thomas

If we have to accept Glacier standard diameters for P.T.F.E. Bushes, then a M.l. Drum with this bearing cannot be used as a spare part for existing clutches.

The drum would be machined from M.l. to the same dimensions as the present drum except for the bore size and increase in width at the bore to take the P.T.F.E.Bush. The main disc of the drum will be only .142/.137" wide, whereas the M.l. drum on test has a thickness of .180".

With a standard P.T.F.E.Bush, the bearing ring, at present called the ball track, will have an increased diameter. This is part of the clutch Centre Assembly which will make this a new part.

I suggest we should make a M.l. Drum for the present 250 cc Clutch ONLY if P.T.F.E. Bushes are available to suit our present centre assembly. If these are not available then we should use the 350 cc type clutch with 5-plates as soon as possible on the 250 cc models.

FILE COPY

DIFFERENCES BETWEEN 4 PLATE CRUSADER CLUTCH WITH STEEL SPROCKET AND 5 PLATE 350 CRUSADER CLUTCH WITH M.1. SPROCKET

Clutch Drum/Sprocket - M.1. and longer
D.V. P.T.F.E. Bush replaces balls and retainers.
Thinner friction linings bonded to Sprocket instead of rivetted.
Ball Track replaced by bearing ring.
No circlip necessary.
Centre lengthened and has reduced angle taper.
All plates have bonded linings on thinner plates.
One extra intermediate flat plate and one extra friction plate.
Shorter spring distance pieces.
Springs not yet decided upon.

A 4-plate clutch with bonded linings, i.e. as above but less one friction plate and one intermediate flat plate, would need a shorter centre to give clearance between the centre and the inside of the front plate. The clutch push rod would then need to be shortened.

If this were used on 250 cc models, the 350 Crusader gearbox mainshaft would be necessary.

If we have to accept Glacier standard diameters for P.T.F.E. Bushes, then a M.1. Drum with this bearing cannot be used as a spare part for existing clutches.

The drum would be machined from M.1. to the same dimensions as the present drum except for the bore size and increase in width at the bore to take the P.T.F.E.Bush. The main disc of the drum will be only .142/.137" wide, whereas the M.1. drum on test has a thickness of .180".

With a standard P.T.F.E.Bush, the bearing ring, at present called the ball track, will have an increased diameter. This is part of the clutch Centre Assembly which will make this a new part.

I suggest we should make a M.1. Drum for the present 250 cc Clutch ONLY if P.T.F.E. Bushes are available to suit our present centre assembly. If these are not available then we should use the 350 cc type clutch with 5-plates as soon as possible on the 250 cc models.

TRADE MARK
"MADE LIKE A GUN"

Manufacturers of
Royal Enfield
BICYCLES and MOTOR CYCLES

Telegrams
CYCLES, PHONE, REDDITCH

Telephone
REDDITCH 121 (9 Lines)

THE ENFIELD CYCLE COMPANY LIMITED

HEAD OFFICE AND WORKS
REDDITCH
WORCS. ENGLAND

Your Ref. *Our Ref.*
VTM/MMcG

4th October, 1960

The Drawing Office.

Copies to : Mr. R.A. Wilson-Jones.
Mr. J.J. Booker.
The Buying Office.

FRONT FORKS.

Will you please note that on all future Sanctions, front forks for four-stroke Models and/or as soon as present stocks will permit, we will use the 'B' quality main tube with springs modified to suit.

It is understood that on certain Models the adoption of the 'B' quality main tube requires some modification to the damping.

350 Clipper }
500 M/minor & Sports }

Meteor Sidecar (& Const)

250 Fork

V. T. Mountford.

TRADE MARK
'MADE LIKE A GUN'

Manufacturers
of
Royal
Enfield
BICYCLES and
MOTOR CYCLES

Telegrams
CYCLES, PHONE, REDDITCH

Telephone
REDDITCH 121 (9 Lines)

THE ENFIELD CYCLE COMPANY LIMITED

HEAD OFFICE AND WORKS
REDDITCH
WORCS. ENGLAND

Your Ref. *Our Ref.*

VTM/MMcG

20th June, 1961

Mr. R. Thomas,
Drawing Office.

I am considering authorizing orders for certain components ahead of Schedule.

Will you please inform me if any of the items shown on the attached list are likely to be altered for the 1962 Season.

V. T. Mountford.

REP/VY.

12th January, 1961.

Major V. T. Mountford.

Report on
The Design of a 346 c.c. O.H.V. Engine.
Based on the Crusader Sports Engine

****

Necessary Alterations.

70 mm. bore x 90 mm. stroke = 346 c.c.'s. This is the present 350 Bullet bore and stroke, the bore is also the same as the Crusader Sports.

New Flywheel castings in nodular iron for built-up crankshaft using all standard 350 Bullet big-end parts (1 pattern will make both flywheels). A One-piece cast crankshaft would mean a split big-end which is impossible to get into the existing crankcases and the flywheels would not be made wide enough to be able to balance a 350 c.c. engine. Flywheels cannot be made to overhang an integral crankpin as the pin cannot be ground.

New conn-rod with 6.062" centres. Standard 350 Bullet conn-rod has 6.875" centres which length would mean cutting away too much cylinder barrel and crankcase walls for clearance at extreme angular position of Rod and would also make engine too tall to get it into the existing Crusader frame. The new conn-rod gives a rod/stroke ratio of 1.71; this is slightly less than the 1.76 of the 700 c.c. models.

/Continued.....

The distance piece between D/Side ball bearing and sprocket could be used to give additional crankshaft support. A Compo bush would be fitted in the case end a left hand spiral oil groove machined on the outside diameter of the distance piece. } NOT NECESSARY

A flat top piston will give a compression ratio of between 7.8 : 1 and 8 : 1.

New cylinder barrel 1.002" longer than Crusader Sports. Crankcases as standard Crusader Sports but with clearance slots for conn-rod milled at bottom of cylinder barrel spigot recess, flywheel scraper turned away on centre-line of engine to miss big-end of conn-rod, D/Side bearing housing altered to take bearing bush, and large hole to be drilled in D/Side wall to allow oil to reach chaincase when clearance hole at main bearing is filled up.

Cylinder head as standard Crusader Sports except that 4 holding down nut recesses need machining $\frac{3}{8}$" deeper, i.e. 2" down from top machined face, to give enough room above ends of studs for head to be removed in frame.

4 new holding down nuts $\frac{5}{8}$" longer than Crusader.
4 " " " stude $\frac{1}{4}$" " " "
1 " " " stud 1" " " "

Rocker box cover - height of centre holding down boss and adjoining ribs to be reduced to 2" by machining off $\frac{1}{4}$" to enable nut to be removed in frame. } NOT NECESSARY

Holding down nut W.41451 to replace W.45801 used on Crusader Sports.

New Push rods 1" longer than Crusader Sports.

1" longer rocker oil feed pipe required.

Carburettor without adjusters on top must be used as top of mixing chamber is very close to frame top tube, mid-way adjusters will be required in control cables.

/Continued.....

Cylinder head steady eyebolt needs to be ¼" longer than Crusader Sports.

New Exhaust pipe required.

Hole in front wall of toolbox will have to be raised to connect with higher carburettor position.

Petrol tank will need re-shaping underneath to allow clearance for removing rocker box cover.

Gear ratios will have to be adjusted by alteration to countershaft and rear hub sprockets. There is room in the crankcase to increase the countershaft sprocket from 17 teeth to 19 teeth (18 teeth was the original Crusader size). The rear hub sprocket can be decreased from 49 teeth to 45 teeth minimum. The existing Crusader sprocket casting will have to be altered slightly to be able to do this.

The following top gear ratios will be attainable:-

18 Teeth Countershaft	and 49 Teeth Rear	= 5.33 : 1.
19 Teeth Countershaft	and 45 Teeth Rear.	= 5.04 : 1.
19 Teeth Countershaft	and 46 Teeth Rear	= 5.16 : 1.
19 Teeth Countershaft	and 47 Teeth Rear	= 5.27 : 1.

The present 350 Bullet has a top gear ratio of 5.15 :1.

It would be advisable to add a second key to help take the drive between clutch centre and gearbox mainshaft.

Further Alterations thought to be necessary to cope with anticipated extra power.

To change the primary drive from ⅜" pitch simple chain to ⅜" pitch duplex would necessitate the following alterations:-

New Engine Sprocket.
New Timing Sprocket.
New Camshaft Sprocket.
New Crankshaft Stud.

/Continued....

Redesigned clutch with outside diameter of plates reduced to slide under duplex sprocket. This would mean the following new parts:- Clutch Drum, Front Plate, Back Plate, Insert Plates, Friction Plates and Intermediate plates. Machining alterations to chaincase cover.

To add an extra plate to clutch would mean the following alterations:-

New Clutch Centre.
New Clutch Drum.
Extensive alterations to chaincase cover casting.

Gearbox - Messrs. Albion have intimated that it should be possible to increase the strength of gears.

TRADE MARK
'MADE LIKE A GUN'

Manufacturers
of
Royal
Enfield
BICYCLES and
MOTOR CYCLES

Telegrams
CYCLES, PHONE, REDDITCH

Telephone
REDDITCH 121 (9 Lines)

THE ENFIELD CYCLE COMPANY LIMITED

HEAD OFFICE AND WORKS
REDDITCH
WORCS. ENGLAND

Your Ref. Our Ref.
VTM/MMcG

21st March, 1961

Mr. R. Thomas,
Drawing Office.

Copies to : Mr. G. Baker,
Mr. J.J. Booker.

I confirm our conversation of yesterday, wherein it was decided that you would proceed with the preparation of a design for a 198 c.c. engine, based on the present 250 c.c. - having a 70 m.m. bore and shorter barrel with the new crankshaft.

V. T. Mountford.

R&T/LB

16.3.61.

Major. V.T. Mountford.

Copy to:- Mrs. Ford - Buying Office.

Smiths Speedometer Drive Gearboxes.

Further to my Memo dated 10.3.61, it has now been found possible to use the new speedometer gearbox on the 350c.c. Bullet Sports model - Sanction 1136m.

This Sanction was issued some time ago but Rear Hub parts have not yet been released.

Chief Draughtsman.

RET/LB

10.3.61.

Major. V.T. Mountford.

Copy to:- Mrs. Ford - Buying Office.

Smiths Speedometer Drive Gearboxes.

We have today issued instructions for the latest type of Speedometer Gearbox No. B.G. 5331/247 to be used on the following Sanctions:-

Crusader - Last 300 sets of 1100m.
Cruseder Sports - Last 1,200 sets of 1132m.
250c.c. Trials - All of 1138m.

All future sanctions will call for this box.

All outstanding sanctions, other than those mentioned above and the "Prince" Sanction 1118m, will use the present type Box W.31965.

The remaining "Prince models on Sanction will continue to use Box W.32445.

Chief Draughtsman.

TRADE MARK
'MADE LIKE A GUN'

Manufacturers
of
Royal
Enfield
BICYCLES and
MOTOR CYCLES

Telegrams
CYCLES, PHONE, REDDITCH

Telephone
REDDITCH 121 (9 Lines)

THE ENFIELD CYCLE COMPANY LIMITED

HEAD OFFICE AND WORKS
REDDITCH
WORCS. ENGLAND

Your Ref. Our Ref.
VTM/MMcG

10th March, 1961

Mr. R. Thomas,
Drawing Office.

Copies to : Mr. G. Baker,
Mrs. M. Ford.
Mr. J.J. Booker.

Further to my memo of the 23rd January, and your verbal reports, it is agreed that we will adopt the Smiths standard gearbox drive on all Models as soon as we can do this on a 'no scrap - no delay' basis.

Will you please arrange accordingly.

V. T. Mountford.

VTM/MMcG

1st March, 1961

Mr. J.J. Booker.

Copies to : Mr. G. Baker,
Buying Office,
Drawing Office.

I have been informed by Messrs. Lucas Ltd., that they propose to supersede the present type of electric horn by a new horn type 8H. which will become available for fitment to 1962 Models, the price of which will be 8/-d. each.

I understand that we have in stock a large quantity of horns type No. 069424, as fitted to 'CONSTELLATION', 'METEOR', 500 & 300 BULLET Models, and horns type No. 70142D, as fitted to all other Models.

I have in mind that we should fit the new type of horn 8H. to all Models in future when present stocks are completed. Will you please inform me if this proposal would be practical.

V. T. Mountford.

TRADE MARK
'MADE LIKE A GUN'

Manufacturers
of
Royal
Enfield
BICYCLES and
MOTOR CYCLES

Telegrams
CYCLES, PHONE, REDDITCH

Telephone
REDDITCH 121 (9 Lines)

THE ENFIELD CYCLE COMPANY LIMITED

HEAD OFFICE AND WORKS
REDDITCH
WORCS. ENGLAND

Your Ref. Our Ref.
VTM/MMcG

21st February, 1961

Mr. R.E. Thomas,
Drawing Office.

I give below an extract from a letter, which I have received from Mr. H.A. Maxted of Smiths, confirming matters discussed during his visit last week.

"Firstly I would confirm leaving with you a drawing 4112-006 showing the general outline of a 3" magnetic speedometer, and whilst the details such as case diameter, exit for the flex connection, position of trip shaft, and form of fixing will be the future trend, there is the possibility that shortly we will have a further type available, but with a case depth corresponding to the existing chronometric type.

"The other point raised by your Mr. Thomas concerning the bore size of the hub gear box for $\frac{5}{8}$" spindle, our general tolerance is .640"/.635, this being a standard size. With regard to the diameter of the hub, I am enclosing herewith a revised print, which as you will see recommends a tolerance of 1.9365"/1.9355". Will you please destroy or correct the other drawing which is already in your possession."

V. T. Mountford.

Gladstone 3333