

SERVICE



MEMORANDA

FOREWORD

This Service memorandum folder has been published to help the Trade acquire a better understanding of the Service technique of the Raleigh Moped.

It has been prepared in the confident belief that it will help all Service personnel to carry out better work in quicker time, and enable the trade to sell more Service and better quality to more customers.

From time to time, further pages will be issued covering alterations, deletions and additions for inclusion in this publication.

RALEIGH

MOPED

SERVICE

MEMORANDUM

CONFIDENTIAL

Experience has shown that most troubles occurring have been of the minor irritating type such as those listed hereunder:-

FUEL AND JET BLOCKAGES

Blockages occurred initially due to particles of dirt from the fuel tap blocking the carburettor feed hole. To obviate this, a small additional gauze is now being fitted in the fuel pipe of all new Mopeds leaving the factory. It is also available through our wholesale depots. (Part No. MF. 155; retail price 3d. each.)

If this trouble occurs, remove the fuel tap, pipe and carburettor. Thoroughly clean, using compressed air if available. Remove the fuel tap filter, thoroughly clean, blow out the feed hole in the fuel tap and pipe. Particular attention should be paid to the feed hole in the top of the float chamber cover.

STARTING THE ENGINE IN COLD WEATHER

During cold weather, the carburettor jet needle is being raised one notch on all new Mopeds leaving the factory between now and the end of March, 1959. We suggest that cases of difficulty in starting from cold should be similarly treated.

In spite of instructions contained in the Riding and Maintenance handbook, the cold start needle is often used as a "tickler", instead of lifting and holding the needle up for 5/6 seconds. If this operation is carried out correctly, no difficulty in starting from cold should be experienced. It would be helpful if customers are instructed on this point.

EXCESSIVE CONTACT BREAKER GAP

The symptoms are poor starting, erratic and rough running. Your pre-delivery check should include the contacts, which should be set at 0.015" when fully open. All are adjusted before leaving the factory, but a further check is recommended as an added precaution.

LUBRICATION OF FRONT AND REAR HUBS

Customers should not oil the front and rear hubs of the Moped soon after delivery. If the hubs are over-oiled, it tends to work through to the brake linings. Hubs fitted to present production Mopeds have the lubricators omitted, and are packed with Shell Alvania No. 2 grease.

CLEANING OF SILENCER OUTLET HOLES

During bad weather, especially in country districts, there is a greater tendency for the holes to become blocked. Please advise customers how important it is that the holes be cleaned regularly.

HEADLAMP SWITCH BREAKAGES

Breakages have been caused by the switch being forced further round after reaching its fullest extent of free movement, which can only be described as misuse. In an endeavour to eliminate this trouble, Lucas are now fitting a strengthened switch-plate to the headlamp. Strengthened switch-plates and spindles are being made available as separate items (Lucas Part No. 54331427). It is possible a few words of instruction to the customer on the correct use of the switch, before he takes over the Moped, might prevent much of this trouble.

ALLEGED LEAKING FUEL TANKS

A number of fuel tanks, alleged to be leaking, have been returned to us. The fault, in fact, is due to the fuel tap being insufficiently tightened into the tank boss. Please test the fuel tap for tightness before returning any tank.

GUARANTEE CLAIMS FOR PROPRIETARY PARTS

Any such parts should be returned direct to the manufacturer concerned. In this way, time will be saved and a more efficient service enjoyed by the customer.

LUCAS DEPOTS AND SERVICE AGENTS

Throughout the country Lucas Depots and Service Agents will shortly be in a position to service the electrical equipment fitted to the Raleigh Moped. The Stator plate (Lucas Part No. 42376) will be available through their B.90 exchange scheme at £1. 10. 0. retail. The Lucas Company are anxious to give as much assistance as possible, and you will be receiving visits from their technical representative, who will be pleased to help in any way he can.

LUBRICATION OF THE FREEWHEEL

We feel that mention should be made of the importance of regularly oiling the freewheel, especially during bad weather. A little attention to this will prolong its life enormously.

ALTERATIONS TO BASIC DESIGN

We would ask dealers always to bear in mind that any alterations to the basic design of the Raleigh Moped should not be made if by so doing the terms of the guarantee are liable to be rendered ineffective.

Raleigh Industries Limited, Nottingham.

23rd May, 1960.

Motor Division Service Department.

MOPED SERVICE MEMORANDUM FOLDER.

Confidential.

It has been decided that in future the Service Memorandum, containing specialised and up-to-the minute information for the use of the Trade, will be published in this Duplicated Sheet form.

This will make for the maximum of flexibility and speed in preparation and publication, as we feel it to be essential that the information should be made available with the minimum of delay to all concerned with Servicing.

We are re-issuing Memoranda Nos. 1 to 5 as the information contained therein is still applicable, and then carrying on from there with further sheets.

Raleigh Industries Limited, Nottingham.

23rd May, 1960.

Motor Division Service Department,

MOPED SERVICE MEMORANDUM.

NUMBER 1. (Re-issued)

Confidential.

Sheet 1 of 2.

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If this trouble occurs, remove the fuel tap, pipe and carburettor. Thoroughly clean, using compressed air if available. Remove the fuel tap filter, thoroughly clean, blow out the feed hole in the fuel tap and pipe. Particular attention should be paid to the feed hole in the top of the float chamber cover.

STARTING THE ENGINE IN COLD WEATHER.

During colder weather, the carburettor jet needle is being raised one notch on all new Mopeds leaving the factory until the end of March. We suggest that cases of difficulty in starting from cold should be similarly treated.

In spite of instructions contained in the Riding and Maintenance handbook, the cold start needle is often used as a "tickler", instead of lifting and holding the needle up for 5/6 seconds. If this operation is carried out correctly, no difficulty in starting from cold should be experienced. It would be helpful if customers are instructed on this point.

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ALLEGED LEAKING PETROL TANKS OR PETROL TAPS.

A number of fuel tanks or taps alleged to be leaking, have been returned to us. The fault has been due to the fuel tap being insufficiently tightened into the tank boss. Please first test the fuel tap for tightness when dealing with complaints of this nature.

GUARANTEE CLAIMS FOR PROPRIETARY PARTS.

Any such parts should be returned direct to the manufacturer concerned. In this way, time will be saved and a more efficient service enjoyed by the customer. (See Service Memo No. 6 for list of names and addresses.)

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Motor Division Service Department.

MOPED SERVICE MEMORANDUM.

NUMBER 2. (Re-issued)

Confidential.

Sheet 1 of 2.

USE OF FLYWHEEL EXTRACTOR MS.8.

Some Dealers have experienced difficulty in removing the flywheel from the crankshaft. The recommended method of using the MS. 8 Flywheel extractor tool is as follows:-

- (1). Remove Flywheel retaining nut and washer.
- (2). Screw thread adaptor MS.69 on to crankshaft ensuring that at least $3/32$ " of the crankshaft thread is exposed.
- (3). Apply a little grease to the end of the thread adaptor MS.69. This reduces friction between extractor bolt and the adaptor.
- (4). Screw the extractor tool body into the flywheel hub and apply pressure to the extractor bolt. Immediately the flywheel is released from its taper, pressure on the extractor bolt should cease. Remove the extractor and adaptor, then lift the flywheel off the crankshaft.

CLEANING OF "5-TUBE" TYPE SILENCER. (Note - This type of Silencer is now obsolete)

When cleaning the outlet pipes of the Silencer remember that they protrude into the Silencer body for approximately $2\frac{3}{4}$ ". The cleaning tool provided must be inserted right into the Silencer body as the ends of the pipes are not blanked off and must be kept clear, otherwise, back pressure will result. If the pipes are allowed to become badly blocked we recommend that a twist drill is used to clear them.

A build up of carbon can also occur at the end of the Exhaust Pipe where it protrudes into the Silencer body. A flexible drive shaft or curved rod approximately $\frac{1}{4}$ " dia. should be used to clear the pipe.

REMOVAL OF JOURNAL BALL BEARING FROM CRANKCASE.

It is essential before removing the journal ball bearing from the crankcase housing to completely remove the "turned-over" lip of aluminium which retains the bearing. (This operation is described in page 14, paragraph 21, of the Raleigh Moped Service Manual)

If the "lip" is not completely removed the housing will be damaged when the bearing is extracted.

ENGINE MOUNTING BRACKET.

When the engine mounting bracket is removed from the frame, it is important when refitting, to evenly tighten down the four clamp bolts otherwise fracture of the bracket may occur.

VILLIERS FREEWHEELS FITTED TO THE RALEIGH MOPED.

Although under test the Villiers freewheel gives satisfactory service if lubricated at regular intervals, it is not guaranteed by the Manufacturer for use of Motorised cycles.

All faulty Villiers Freewheels, if returned to your nearest Raleigh Depot within the 6 months guarantee period, will be replaced free of charge, providing the fault has not developed through lack of regular lubrication. The Bayliss Wiley Motorised freewheel is now being fitted to all current models.

LEGSIELDS.

A number of proprietary legshields are now on the market and are advertised as being suitable for the Raleigh Moped. Several of these rely on one of the crankcase bolts to support a mounting bracket and, even when the plain and spring washers are removed, the standard crankcase bolt is not long enough to adequately secure the bracket and results in the crankcase bolt thread being stripped. When legshields other than those approved and supplied by Raleigh are fitted, we regret we cannot accept responsibility for stripped crankcase bolt holes or other damage which may be brought about through this fitment.

REPLACEMENT OF PARTS UNDER GUARANTEE.

When returning parts for replacement under guarantee please ensure that full instructions accompany the parts together with the customers copy of the guarantee which will be returned in due course.

MODIFIED FRONT MUDGUARD. PART NO. MF.160.

New Mopeds leaving the factory are supplied with a modified front mudguard, the fitting of which is not the same as for the previous pattern. To fit replacement mudguards of the modified type the following instructions should be followed:-

- (1). Remove front wheel and existing mudguard.
- (2). Using a small chisel remove the brazing peg from the internal bore of the fork crown.
- (3). Fit the rubber grommet (4519503) into the large hole in the new mudguard.
- (4). Place mudguard in position and insert Mounting Tube (MF.162) through the rubber grommet into the Fork Crown.
- (5). Apply pressure from underneath to the Mounting Tube (MF.162) and screw Bolt (MF.181) to its fullest extent into the Fork Crown.
- (6). Replace mudguard stays and re-fit Front Wheel in normal manner.

MF.116 HANDLEBAR STEM.

It is most important that only the MF.116 Moped Handlebar Stem is fitted to the Raleigh Moped. This stem is specially strengthened and is not the same as that fitted to cycles. The Moped stem can easily be identified as it has three slots in the base of the stem instead of the usual two.

Raleigh Industries Limited, Nottingham.

23rd May, 1960.

Motor Division Service Department.

MOPEL SERVICE MEMORANDUM.

NUMBER 3 (Re-issued)

Confidential.

Sheet 1 of 4

SERVICING INSTRUCTIONS FOR THE RALEIGH MOPEL CLUTCH.

These instructions are issued together with the Raleigh Moped Clutch Spare Parts List, to which reference should be made.

DISMANTLING.

- (1) Remove both fairings, loosen engine fixing bolts and remove drive belt from clutch pulley. Swing the engine forward and tighten fixing bolts.
- (2) Remove both chains.
- (3) Remove one pedal crank. (CAUTION. No attempt must be made to hammer out cotter pins, unless the pedal crank and axle are adequately supported. Failure to observe this precaution will inevitably result in serious damage).
- (4) Remove and discard $\frac{5}{8}$ " circlip (28) and remove thrust washer (29) which is now exposed on bottom bracket axle (37). Withdraw axle complete with remaining pedal crank, circlip and washer.
- (5) NOTE: The Clutch plates can now be removed without disturbing the bottom bracket as follows:-
 - (a) Operate the Clutch lever and lock it in position with the handlebar locking plate (47)
 - (b) Remove the large internal circlip (19) from the Clutch housing with internal circlip pliers. The Clutch plates can now be removed. If the driving shaft (34) needs attention, it may be extracted from the Clutch housing side after carrying out the following operation.
- (6) Prise out and discard the right-hand spring ring (30). Remove sprocket (31) and thick spacer (32). Later models are fitted with a smaller sprocket. This necessitates a stepped spacer. The spacer should be fitted with the smaller diameter towards the sprocket face.

REMOVAL OF CLUTCH UNIT COMPLETE.

Follow above procedure with the exception of operation (5).

- (7) Take out the bottom bracket locating pin (40). The complete clutch assembly can now be withdrawn to the left-hand side. The Clutch plates are compressed after removal of the Clutch by means of the Clutch Plate removal tool (4030074).

Cont'd.....

This tool is inserted through the centre of the drive shaft so that the collar of the tool slides over the shaft and abuts up to the bottom bracket bearing sleeve. The angled bracket of the tool is then placed over the threaded shank of the tool, with the legs facing the Clutch plates. On threading down and tightening the nut, the Clutch springs are compressed by the plates. The internal circlip can be removed and upon removal of the tool, the plates can be lifted out, also the drive shaft. To remove the Clutch retaining washer, prise off the spring ring and pull off the washer.

- (8) Unscrew bottom bracket sleeve (27) and remove. (For removal and replacement of needle bearings, see pages 26 & 27 of Service Manual.)
- (9) Lay Clutch assembly down on the bench with pulley (13) uppermost and remove the three screws and shakeproof washers from the Clutch locking plate (5). Remove the release ring clip and lift off the locking plate.
- (10) Insert a suitable block into the Clutch housing (a circular block of wood about $4\frac{1}{2}$ " diam. x 1" thick would be ideal). This block should be deep enough to stand proud of the Clutch body and big enough to cover completely the heads of the six release pins. Lay the Clutch assembly down as previously. Depress rim of pulley in order to compress Clutch springs and rotate release plate (6) clockwise to remove. Release ring, ball and roller thrust races and washers may now be removed. On lifting the pulley and Clutch hub assembly clear, the Clutch pins and springs can be withdrawn.
- (11) The Clutch hub assembly can now be dismantled by removing the six Clutch housing nuts, bolts and spring washers and the bearing shroud (12). The Clutch pulley hub can now be withdrawn from the Clutch housing (16) if required.
- (12) If it is necessary to remove the needle roller bearing, drive out with a hammer and suitable drift.

REASSEMBLY.

- (1) Thoroughly clean all parts.
- (2) If the pulley hub needle bearing (4519440) has been removed, replace with a new bearing using special tool (4030024) to draw bearing into position. The bearing cage face, which carries the identification markings, must face outwards toward the clutch plates and the bearing should be drawn into the hub from the outer side i.e. clutch plate side of the pulley hub.
- (3) Loosely assemble together the bearing shroud (12) pulley (13) pulley hub (14) and clutch housing (16) using two bolts only, with nuts fitted loosely. The bolts are fitted through the small holes with the nuts and spring washers at the Clutch housing end.
NOTE:- The bearing shroud must be fitted into the recessed face of the pulley with the raised lip facing outwards. The pulley hub should be fitted to the pulley from the Clutch side, so that the smaller spigot passes through both pulley and bearing shroud (see diagram).

Cont'd.....

- (4) Insert Clutch release pins (26) without springs in order to line up the assembly. Fit the remaining bolts and tighten all nuts evenly.
- (5) Remove pins, apply a slight smear of grease to the sliding surfaces. Place the springs on the pins and assemble to the clutch hub.
- (6) Place the previously mentioned block across the heads of the clutch release pins and lay the assembly down with the clutch housing to the bottom. Note that the Clutch springs may now be compressed by pressing downwards on the pulley rim.
- (7) Apply a little grease to the recess in the pulley hub and place one needle bearing thrust washer (10) in it, followed by the well greased needle thrust bearing (11) and finally the other thrust washer also greased. Check that the bearing rotates freely.
- (8) Place the release ring (9) on the last thrust washer with larger diameter towards the pulley and assemble the bearing race (7) with twelve $\frac{1}{8}$ " balls on the release ring, ensuring adequate greasing.
- (9) Take the release plate (6) and place over the protruding release pins with the raised face downwards. Compress the clutch springs by pressing down on the pulley rim and rotate the release plate anticlockwise in order to fully engage its slots in the grooves machined in the Clutch release pins.
- (10) Fit the locking plate (5) with raised rim towards pulley and tighten the three securing screws.
NOTE - It is advisable to use new shakeproof washers.
- (11) Fit the Clutch retaining washer (35) and a new spring ring over the shorter flats of the driving shaft using special service tool (MS.20) (See fig 25 in Service Manual for use of tool), to fit the spring ring and enter driving shaft into pulley hub from Clutch housing side.
- (12) Lightly grease and with the fingers screw the bottom bottom bracket bearing sleeve into the release ring to its fullest extent.
- (13) Fit the steel clutch driven plate into the Clutch housing, then slide the driving plate onto the Driving shaft with the grease thrower to the inside. Now fit the outer Clutch driven plate.
- (14) Using special service tool (4030074) compress the Clutch plates so that the internal circlip may be fitted. (Care should be taken to ensure that the circlip is fully home in its groove). Remove Clutch plate tool.
- (15) Place the release ring clip loosely over the release ring so that the joint in the clip lines up with the scribed mark on the bottom bracket bearing sleeve and so that one row of knurling can be seen to protrude evenly above the face of the clip. Tighten the clip securing bolt and nut. Ensure that the bearing sleeve is screwed into the release ring to its fullest extent during the lining up operation. If no scribed line is discernible the release ring clip joint should be positioned at 120° anticlockwise from the tapped hole in the bearing sleeve (third of the way round) looking from the sprocket end.

Cont'd.....

A later pattern release ring and clip may be encountered. This release ring may be distinguished from the old type by a shoulder formed at the base of the knurling. The clip employed with this type release ring is slightly different in shape from the previous pattern and should be fitted firmly against the shoulder so that the top of the head of the clip securing bolt lines up with the scribed line on the bottom bracket bearing sleeve. Once this lining up operation has been carried out, it should be noted that owing to the four start thread employed, the release ring and bearing sleeve can be assembled four ways, only one of which is correct.

- (16) The assembly may now be fitted to the bottom bracket so that the locating pin passes through the hole in the bottom bracket and into the tapped hole in the bearing sleeve. Do not forget the cable clip, shakeproof washer and grease nipple. Alternatively the bearing sleeve can be removed, fitted into the bottom bracket and locked with the location pin, then the release ring screwed onto the bearing sleeve. If the release ring clip joint is positioned roughly in line with the chain stays and then the release ring screwed home, the ring and sleeve will then be in their correct relative positions.
- (17) Now fit the thick spacer (plain or stepped) over the driving shaft (step towards sprocket) followed by the sprocket and then a new spring ring (30) using service tool (MS.20) to fit spring ring.
- (18) Refit the bottom bracket axle (37) complete with pedal crank, taking care to fit one thrust washer (29) at either end of the axle. Fit a new $\frac{5}{8}$ " dia. circlip in place of the one previously removed.
- (19) Refit the Clutch cable and adjust to give $\frac{1}{8}$ " to $\frac{3}{16}$ " free movement at the handlebar lever. Finally lubricate the bottom bracket assembly through both grease nipples. (Caution-spring rings, $\frac{5}{8}$ " circlips and shakeproof washers should not be re-used, but always replaced by new parts)
- (20) Replace chains.
- (21) Refit drive belt and adjust. Replace fairings. Road test machine. Thorough cleanliness is essential during these operations and if grease is allowed to come into contact with the Clutch plates, inefficient operation of the Clutch will result.

RECOMMENDED GREASE.

Shell Alvania No. 2.

SPECIAL TOOLS AVAILABLE.

4030024	Clutch Bearing Assembly tool.
4030074	Clutch Plate Assembly tool.
MS.20	Spring Ring tool.

Motor Division Service Department.

MOPED SERVICE MEMORANDUM.

NUMBER 4 (Re-issued)

Confidential.

Sheet 1 of 3

This information has been issued previously as a special circular.

FITTING INSTRUCTIONS FOR THE RALEIGH MOPED CLUTCH CONVERSION SET.

The following items removed from the original fixed gear bottom bracket assembly will also be required to supplement the conversion kit.

402003	Spacer	1
402004	Final drive sprocket	1
402007	Axle - bottom bracket	1
4020019	Location pin	1
4020038	Cable clip	1
4020046	Left hand crank	1
4020047	Right hand crank and 32T chainwheel assembly	1
4020052	4 $\frac{1}{4}$ " R.I. Pedals	1 pr.
2930172	Cotters	2
2660070	$\frac{1}{4}$ " Plain washer	2
2920015	Cotter nut	2
4512194	Grease nipple	1
3490432	$\frac{1}{4}$ " Shakeproof washer	1

CLUTCH FITTING INSTRUCTIONS.

- (1) Remove both fairings and completely dismantle the fixed gear bottom bracket assembly as described on page 26 of the Raleigh Moped Service Manual. Retain the parts listed above for incorporation in the clutch assembly.
- (2) Slide the clutch assembly into the bottom bracket, locate with the location pin (4020019) and $\frac{1}{4}$ " Shakeproof washer (3490432) not forgetting the cable clip (4020038) and grease nipple (4512194) exactly as for a fixed gear bottom bracket assembly.
- (3) Fit the spacer (4020003) over the right hand end of the driving shaft, then the driving shaft sprocket (4020004) using the better of the two sprockets removed from the original bottom bracket assembly. Now fit the remaining spring ring with special tool MS.20.
NOTE - An alternative 11 tooth final drive sprocket (4020099) is available which provides lower gearing. A special stepped spacer (4020100) is supplied with this sprocket and should be fitted with the smaller diameter towards the sprocket face. This enables the chain to seat properly on the sprocket teeth.

Cont'd

(It is recommended that this smaller sprocket could be fitted in hilly localities, since the hill-climbing ability of the Moped is improved by the lower gearing.)

- (4) Screw the release ring out as far as it will go i.e. until it is about to pull the release plate and pins back. The cable anchor plate on the release ring clip should now be facing forward and in a horizontal position. If the release ring clip 3/16" bolt and lock nut are not already tight, they should be tightened at this stage. The release ring clip should be fitted squarely over the release ring so that one row of knurling can be seen to protrude evenly through the clip at the bottom bracket side.
- (5) Remove the two lower clamp bolts from the engine mounting bracket, supporting the engine while the bolts are out. Fit the clutch cable stop (4020063) with the offset towards the clutch and facing forward. Replace the mounting bracket bolts and spring washers, (the plain washers are not now required) and tighten evenly.
- (6) Remove the rear brake cable from the left-hand handlebar lever. Alter the position of the lever fulcrum bolt to the inner position, if not already there.
- (7) Fit the clutch cable assembly. The clutch return spring goes between the cable anchor plate of the release ring clip and the cable stop on the mounting bracket. The ferrule sits in the key-hole slots of the cable stop plate. The cable is run up the bottom diagonal tube and through the petrol tank mounting bracket. Fit the nipple into the left-hand handlebar lever (This now becomes the clutch lever). With the cable adjuster, adjust to give approximately $\frac{1}{8}$ " play on the lever before the clutch commences to release. Lock up the adjuster. The locking plate pin assembly on the clutch cable fits on the flats of the cable adjuster adaptor and when not in use, springs over the adaptor to prevent rattle etc.
- (8) Fit bottom bracket axle, cranks and pedals etc. as on the original bottom bracket assembly. The only difference being that the two smaller diameter thrust washers (4020081) replacing the originals, must be fitted adjacent to the driving shaft ends. Fill the bottom bracket assembly with a recommended grease until grease just appears at the thrust washer faces.
- (9) Fit both chains and adjust if necessary.
- (10) Remove the front brake cable from the right-hand lever and remove the lever from the handlebar. Refit just outboard of the clutch lever on the left-hand bar and facing downwards, then couple up the rear brake cable. Alter the position of the lever fulcrum bolt to the inner position, if not already there.

- (11) Fit the new dual cable brake lever assembly on the righthand handlebar. Pull the lever back to the bar, exposing the link plate. Having disconnected the brake cable at the front brake arm, feed the upper nipple into the link plate through the slot nearest the handlebar. Fit the new rear brake cable to run to the back wheel, clipping under the bottom bracket. Fit the nipple into the outer slot of the lever link plate. Now release the lever to it's normal position and fit the cable ferrules into the holes of the brake fulcrum. Front brake cable should be nearest the handlebar. Refit the front cable to the front brake arm and adjust normally.
- (12) Remove the brake arm from the rear brake and fit the new dual brake arm (3900008) if not already fitted, its position to be as the original.
- (13) Remove the left-hand side spindle nut and washer and also the lower torque arm clip bolt. Fit the new dual brake anchor plate (4010153) over the rear spindle and lock with the spindle nut (The plain washer is not now required). Replace the torque arm clip bolt.
- (14) Fit the two cable adjusters with the dual brake anchor plate, the top adjuster being from the dual right-hand brake lever, the bottom taking the left-hand levers independent cable. Fit the nipples to the rear brake arm.
- (15) Adjust the top adjuster (from the dual brake lever) normally. Now adjust the bottom independent cable until the free play has been eliminated from the left-hand handlebar brake lever.
- (16) Tension driving belt as detailed on page 9 of the Raleigh Moped Service Manual, refit fairings and tighten nuts.

Road test.

Raleigh Industries Limited, Nottingham.

23rd May, 1960.

Motor Division Service Department,

MOPED SERVICE MEMORANDUM.

NUMBER 5.

Confidential.

This was previously issued as a special circular dated 12th February 1960.

MOPED SILENCERS.

In any 2-stroke engine satisfactory performance is very closely linked with the correct functioning of the exhaust system.

Our first "5-tube" type of silencer is perfectly satisfactory from a design point of view and if the laid-down servicing procedure is strictly adhered to, but it is felt that the average Moped owner has little mechanical knowledge and a thorough job is not always made of decarbonising and cleaning.

In order to make this most essential servicing as easy as possible, we should like the latest "single tail-pipe" pattern of silencer which can be dismantled for cleaning to be fitted to Raleigh Mopeds on the widest possible scale.

With this end in view as from Monday, 15th February 1960, the latest silencer is being made available at a retail price of 9/8d (less usual trade discount). We feel that at this reduced price owners of Mopeds which are outside the guarantee period can and should be encouraged to purchase one in view of the servicing advantages already mentioned.

We cannot over-emphasize that it is in the interests of everyone connected with the Moped that every old-type silencer should be replaced by one of the new type, and we shall be grateful for the fullest co-operation in achieving this aim.

Raleigh Industries Limited, Nottingham.

23rd May, 1960.

Motor Division Service Department,

MOPED SERVICE MEMORANDUM.

NUMBER 6.

Confidential.

Sheet 1 of 2

Any proprietary part on which a guarantee claim is to be made should be returned direct to the Manufacturer concerned. In this way time will be saved and a more efficient service enjoyed by the customer.

Names and Addresses of Manufacturers of proprietary parts fitted to the Raleigh Moped MK.1. MK.1c. and MK.2c.

Carburettor & Carburettor parts.	Amal Ltd., Holdford Road, Witton, Birmingham 6.
Lighting & Ignition equipment.	J. Lucas (Sales & Service) Ltd., Great Hampton Street, Birmingham, 18.
Speedometer	Smith's Motor Accessories Ltd., 50 Oxgate Lane, Cricklewood, London, N.W.2.
Sparking Plug	1. Lodge Plugs Ltd., Rugby. 2. Champion Plugs Ltd., Fletham, Middx. 3. K.L.G. Sparking Plugs Ltd., Service Dept., Putney Vale, London S.W.15.
Tyres & Tubes	Dunlop Rubber Co. Ltd., Fort Dunlop, Erdington, Birmingham.
Petrol Tank Filler Cap	Benton & Stone Ltd., Aston Brook Street, Birmingham 6.
Petrol Tap	1. Push-pull type. Benton & Stone Ltd. Aston Brook Street, Birmingham 6. *2. Lever type. Rotherham & Sons Ltd., Engineering Department, Spon Street, Coventry.
Centre Stand	Shuresta (A. Mirecki) Ltd., Bayton Road, Exhall, Coventry.
Chains	Perry Chain Co. Ltd., Stockfield Road, Tyseley, Birmingham 11.

Cont'd.....

Freewheel	*1. Villiers Engineering Co.Ltd., Marston Road, Wolverhampton. 2. Bayliss Wiley & Co.Ltd., Stockfield Road, Tyseley, Birmingham 11.
Saddle	Lycett Saddles Ltd., Great Charles Street, Birmingham 3.
Saddle Bag & Panniers	J.B.Brooks & Co.Ltd., Great Charles Street, Birmingham 3.
Inflator	C.E. & J.P.Brittons Ltd., Brittania Works, Westwood Road, Witton, Birmingham 6.
Windscreen & Legshields	Stratford Auto Components Ltd., Manor Works, Shottery, Stratford on Avon.
Driving Belt (Sturmey Archer)	The Goodyear Tyre & Rubber Co.Ltd., Wolverhampton.

* By special arrangements with the Manufacturers concerned, these items if alleged to be faulty should be returned with full details to :-

Motor Division Service Department,
Raleigh Industries Limited,
Nottingham.

Raleigh Industries Limited, Nottingham.

23rd May, 1960.

Motor Division Service Department.

NUMBER 7.

MOPED SERVICE MEMORANDUM.

Confidential.

TORQUE LOADING RECOMMENDATIONS.

The following is a table giving recommended torque loadings for tightening some of the more important nuts and bolts on the Moped.

<u>Cycle Parts.</u>	<u>No. off.</u>	<u>Torque Setting</u>
Crank Cotter Nuts	2	10 lb.ft.*
Bottom Bracket Sleeve Bolt	1	8 lb.ft.
Bottom Backstay Bolts	2	10 lb.ft.
Handlebar Stem Bolt	1	15 lb.ft.
Shuresta Stand	1	20 lb.ft.
Front and Rear Wheel Nuts	4	20 lb.ft.
<u>Engine Parts.</u>		
Crankcase bolts	7	8 lb.ft.
Bearing Housing Attachment Bolts	4	10 lb.ft.
Exhaust System (flange to elbow)	2	8 lb.ft.
Silencer Body Bolts	4	8 lb.ft.
Cylinder Head Bolts	4	10 lb.ft.
Engine Mounting Clamp Bolts	4	10 lb.ft.
Exhaust Elbow Bolts (Elbow to barrel)	2	10 lb.ft.
Engine Mounting Bolts ($\frac{5}{8}$ " dia.)	2	20 lb.ft.
Flywheel Nut	1	20 lb.ft.

* Provided that the cotter pin is firmly and correctly positioned prior to tightening nut.

Raleigh Industries Limited, Nottingham.

23rd May, 1960.

Motor Division Service Department,

MOPED SERVICE MEMORANDUM.

NUMBER 8.

Confidential.

Sheet 1 of 2

STICKING CLUTCH MECHANISM.

If sticking of the clutch operating mechanism is encountered on the Raleigh Moped, the usual symptom of which is that the clutch fails to take up the drive when the handlebar lever is released, then the trouble should be dealt with in the following sequence.

- 1) Make sure that there are no sharp bends or kinks in the clutch cable in the course of its run.
- 2) Ensure that the inner cable is working freely in the outer and that it is well lubricated.
- 3) Lubricate the Release Ring (4020055) on the Bearing Sleeve (4020054) and work the mechanism several times by pushing on the Release Ring Clip (4020094) with a screwdriver or similar instrument.
- 4) If this fails it is necessary to dismantle the clutch and polish the threads on the Release Ring and Bearing Sleeve by lapping these two components together with fine grinding paste. When lapping the pressure should of course be applied in the same direction as it is when the mechanism is releasing the clutch. When the lapping operation is complete wash the components thoroughly in paraffin or a similar cleaning fluid to remove all traces of the grinding paste. The threads should then be lubricated with a medium grease (if it is available a graphited grease is preferable), and the clutch assembled.
- 5) As a further measure we are shortly making available an additional pull-off tension spring (Part No. 4020104 - External clutch return spring) to be fitted between the Release Ring and the lug on the crankcase which was used for the mounting of the original silencer and is now spare.

Cont'd

5 continued)

It is suggested that this spring could be used during the initial bedding-in period of the release thread and might possibly be dispensed with as soon as the clutch release is operating smoothly and freely.

It must be emphasized that if this additional spring is fitted it is still necessary to ensure that the cable and other parts of the release mechanism are working freely. If not the amount of effort required at the clutch handlebar lever to operate the clutch may become unduly heavy.

This spring is fitted by hooking the smaller right-angle looped end round the clutch inner cable through the last coil in the existing return spring, adjacent to the Release Ring Clip. The larger looped end is then hooked over the silencer mounting lug on the crankcase.

Motor Division Service Department,

MOPED SERVICE MEMORANDUM

NUMBER 9

Confidential.

Sheet 1 of 3

REFITTING ENGINE TO MOUNTING BRACKET.

There are now two types of engine crankcase in service. The difference lies in the slotted crankcase lug, the later type being thinner but stronger by virtue of a strengthening rib. In either case it is most important when refitting the engine to the mounting bracket on the frame that a steel spacing washer is correctly positioned between the crankcase lug and the Metalastik Bush fitted in the lower part of the mounting bracket.

In the case of the early type crankcase with the THICKER lug this washer is a THIN one part no. ME.33 (approx. 1/16" thick). In the case of the later type crankcase with the THINNER lug the washer is a THICK one part No. ME.99 (approx $\frac{1}{8}$ " thick).

Failure to fit the correct washer will cause fracture of the crankcase lug.

DRY BATTERY UNIT.

- 1) This unit is now being fitted on the left-hand instead of the right-hand side of the down tube.
This is to prevent the possibility of fretting between the Decompressor Cable and the Dry Battery Unit casing, and if this is occurring in service the Unit should be changed over.
- 2) Exhausted batteries should be removed from the Dry Battery Unit as failure to do so will cause corrosion of the casing.

DRIVING BELTS.

- 1) Prematurely worn belts are almost invariably caused by incorrect alignment of the belt pulleys.
To check the alignment, slacken the lower engine mounting bolt and swing the engine round through its adjustment to bring together the engine pulley and the clutch pulley. If the alignment is correct the rims of the two pulleys will approach each other evenly and squarely. If not it will be necessary to slacken the four engine bracket bolts and re-align the engine. Note that these bolts must be re-tightened evenly otherwise fracture of the bracket may occur.

Cont'd.....

DRIVING BELTS. (Cont'd)

- 2) If the belt is not correctly tensioned, the presence of water on the belt due to exceptionally wet weather or road conditions, or slush on the roads during the winter, may cause slippage of the belt.

Adjustment of the belt to the correct tension will eliminate this trouble, but first of all the belt must be examined to ensure that it is still in a servicable condition.

Belt slip has been known to be incorrectly diagnosed as "clutch slip", "engine not pulling", "lack of power" etc.

LIGHTING.

Some cases of headlamp failure have been found to be due to arcing between the lead contacts of the bulb and the copper contact strips, causing burning of the contacts and the build up of high resistance deposits. This arcing is caused by insufficient contact pressure and if the bulb is taken out of the holder and the two copper contacts bent downwards, greater pressure will be exerted on the bulb contacts and the trouble should disappear.

Later bulb-holders fitted to the Moped have been modified in the respect of having small cadmium plated strengthening plates fitted under the contact strip fixing rivets, these plates extending as far as the first bend in the strip.

CHAINS

Proper lubrication of the chains and correct adjustment is most important if they are to give good service. If the Driving chain is allowed to run too slack it may ride off the sprockets and this could have serious consequences.

SPARKING PLUGS

The sparking plugs recommended for use in the Raleigh Moped engine are:-

LODGE	HN. RH14.	For normal use. For hard riding or if "whiskering" is experienced.
CHAMPION	L5J.	For normal use.
K.L.G.	F75.	For normal use.

Cont'd.....

BOTTOM BRACKET.

- 1) When fitting pedal crank cotter pins care should be taken that the axle is adequately supported before hammering home the cotter pins otherwise the bottom bracket needle bearing may be damaged.
- 2) It is necessary to remember to check the adjustment of the pedal chain after the driving chain has been adjusted, as adjusting the driving chain also disturbs the adjustment of the pedal chain.
An over-tight pedal chain will cause failure of the bottom bracket needle bearings or failure of the free-wheel.

CARBURETTOR NEEDLE.

The Moped engine is more sensitive to correct carburettor needle setting than is generally imagined.

In cold weather inconvenience and irritation (and even oiling-up of the sparking plug) can be caused by having the needle set too weak, necessitating repeated flooding of the carburettor before the engine will run properly. Under these conditions the needle setting should be such that during the warming up periods after the initial recommended flooding, although the engine may hesitate it does not "die" completely.

As a general guide the needle should be in the central notch position in the Summer and raised one notch i.e. in the next notch to the bottom during the Winter. This however should only be taken as a guide and individual cases may call for different treatment. Note that excessive richening of the mixture will cause "four-stroking"

11-TOOTH FINAL DRIVE SPROCKET. MT.99.

If a 12-tooth final drive sprocket MT.4, is replaced by an 11-tooth Sprocket MT.99, the original spacer MT.3, must also be replaced by a new spacer MT.100. This new spacer has a cut-away on its outside diameter which must be positioned next to the sprocket, and this allows the chain to seat properly in the sprocket.

Raleigh Industries Limited, Nottingham
Motor Division Service Department
MOPED SERVICE MEMORANDUM

23rd May, 1960.

Confidential

NUMBER 10

CRANKSHAFT NEEDLE BEARINGS.

A crankshaft needle bearing of slightly different construction (Part No. NK.1516) is now being fitted to the Moped engine. This bearing is not interchangeable with the previous bearing and must be fitted into a housing of larger diameter, namely Part No. ME.108 - Bearing Retainer. The load carrying capacity of the new bearing is the same as the old and the reason for the change is that the different construction of the outer part of the bearing eases production tolerance problems. It will be noted that in this new bearing, the needle cage is retained in the outer portion by two end plates which are spun over into position. Great care should be taken in fitting this bearing to the crankshaft that these plates do not catch in the Circlip groove or on the shoulders at the ends of the pulley driving flats otherwise they may become loosened or dislodged.

DECOMPRESSOR CABLE.

A different type of Decompressor cable (Part number 451954. AMAL Decompressor Cable Assembly No. 244/1574) is now being fitted to the Moped. This has eliminated the screwed-on nipple at the one end and has a fixed nipple at each end. Adjustment is effected by the outer cable being in two portions with a screw-type adjuster in between.

FUEL TANK.

If an older type petrol tank is replaced by one of the later one-gallon capacity tanks as fitted to the MK.20 Moped, the original 18 S.W.G. (.048") tank clip must also be replaced by a heavier one - Part No. 4010011. This stronger clip is necessary due to the greater weight of a full tank.

CLUTCH CABLE.

For production reasons Clutch Cable Assembly - Part No. 4020072 is now fitted with a detachable slotted cable guide - Part No. 4020103 at the lower end instead of the plain non-detachable guide previously fitted.

REPLACEMENT BRAKE SHOES.

Attention is drawn to the existence of a scheme for the supply of Replacement Brake Shoes for the Moped. Service exchange brake shoes are available from the Spares Department at a cost of 5/2d per pair retail.

Raleigh Industries Limited, Nottingham.

23rd May, 1960.

Motor Division Service Department.

MOPED SERVICE MEMORANDUM.

NUMBER 11.

Confidential.

Sheet 1 of 2

CARBURETTOR.

The carburettor will not function correctly if the following two faults which are frequently found on machines returned from Dealers, are present.

- 1) Main jet not screwed home tight before the jet cap is screwed on.
- 2) Float replaced upside-down. The float needle point should always be UPPERMOST, sealing on the seat in the lid of the float chamber.

EXHAUST SYSTEM.

Machines are still being found with blocked silencers and in some cases blocked exhaust elbows. This can normally be detected by a "flat" note from the engine, and if any doubt exists as to this distinctive sound it can easily be reproduced by deliberately obstructing the tail-pipe.

SPEEDOMETER.

The speedometer manufactured by Smiths (Raleigh Part No. 4519455) is the only official recommendation for the Moped.

We cannot approve the fitment of any type of speedometer which has a drive unit on the wheel spindle between the offside fork blade and the hub.

This necessitates an undesirable springing apart of the fork blades and in addition leaves insufficient thread on the wheel spindle for the wheel nut.

STATOR PLATE.

When fitting a Stator Plate it is essential that the H.T. and lighting leads are routed well clear of the flywheel.

Many cases of ignition and lighting failure have been due to these leads fouling on the flywheel and shorting when the insulation has been rubbed away.

ENGINE TIMING

When any part of the Moped engine which involves the engine timing, such as the crankshaft, the magneto housing or the flywheel is replaced by another component, the timing marks no longer apply. It is necessary to re-time the engine by setting the piston at $5/32$ " before T.D.C. If the timing marks no longer coincide as is highly probable, they should be obliterated and fresh ones made.

WHEEL BEARINGS.

When adjusting the wheel bearings the adjustment can only be checked after both cone lock nuts have been fully tightened. In addition, unless they are fully tightened the adjustment will be disturbed when the wheel is replaced in the frame and the wheel spindle nuts are tightened.

BRAKES.

In the majority of cases where a complaint is made about the efficiency of the Moped brakes, we find that the trouble is due not to the brakes themselves but either to incorrect balancing of the front and rear brake due to maladjustment or to friction in the brake cables caused by lack of lubrication. These points should be attended to as a matter of routine.

INTERCHANGEABILITY OF MAIN CRANKSHAFT BEARINGS.

The journal ball bearing used on the Moped engine crankshaft is of the "4-spot" type which has a greater internal clearance than the "2-spot" bearing which is the type normally commercially available. The reason for this is that in this particular application where the bearing is carried in the light alloy crankcase, to prevent the bearing working loose in its housing due to differential expansion, it has to be held in place with an "interference" fit.

When a 4-spot bearing is shrunk in to the crankcase, it contracts slightly and the greater internal clearance is taken up. If a 2-spot bearing is used however, there is insufficient internal clearance to accommodate this contraction and the bearing will be damaged.

Raleigh Industries Limited, Nottingham.

30th May 1960

Motor Division Service Department.

MOPED SERVICE MEMORANDUM.

NUMBER 12.

Confidential.

LAMP BRACKET (MF.53)

If for any reason the lamp bracket is dismantled and it is found that only one spacing washer (MF.104) is fitted between the lamp bracket and the top head screwed race (P.832A), another spacing washer should be added on re-assembly.

Later production Mopeds are fitted with two spacing washers between the lamp bracket and the top head screwed race to ensure that the flange at the rear of the bracket is clear of the race head.

STEERING HEAD.

If the Moped is ridden with too much play or shake in the steering head bearings, the hammering that this imparts can cause breakage of the frame head tube.

The steering head should be adjusted so that, with the steering still completely free, every trace of play has been eliminated from the bearings.

FIRST 300 MILES SERVICE.

Purchasers of the Raleigh Moped are not always aware that they are entitled to a **FREE** service after the first 300 miles running-in period,

This should be pointed out when the sale is made, and the customer encouraged to bring his machine back for this most essential servicing.

This can also be greatly to the advantage of the Dealer as it forges the first and most important link in the after-Sales relationship.

SPARKING PLUG GAP.

We recommend that in future the sparking plug gap should be set at 0.017".

Raleigh Industries Limited, Nottingham.

30th May 1960.

Motor Division Service Department.

MOPED SERVICE MEMORANDUM.

NUMBER 13.

Confidential.

SERVICE SCHOOL

It is our firm intention to give our Distributors and Dealers the maximum assistance in providing speedy and efficient service for the benefit of owners of the Raleigh Moped. With this in view we hold regular courses of instruction in servicing the Moped at our specially equipped Service School in Nottingham. We need hardly add that increased efficiency will bring advantages to the Dealer by enabling him to carry out repairs more economically.

Every aspect of servicing that is likely to be encountered is covered, with emphasis on the use of the Special Tools. The school is equipped to enable those attending to do all the jobs for themselves under the supervision of an Instructor. The courses are designed to be of value whatever the level of knowledge of those attending.

Courses normally run from 1.45 p.m. on Mondays until mid-day on Fridays and no charge is made by Raleigh Industries Ltd.

We will also reserve accommodation at a local Hotel for anyone attending if requested to do so, but we do not bear the cost of this accommodation.

The Courses are open to all Distributors and Dealers and their Staffs, or by special arrangement to anyone else concerned with servicing the Raleigh Moped.

To make arrangements to attend please write, stating convenient dates, to :-

Service School Instructor,
Motor Division Service Dept.,
Raleigh Industries Ltd.,
NOTTINGHAM.

Raleigh Industries Limited, Nottingham.

30th May 1960.

Motor Division Service Department.

MOPED SERVICE MEMORANDUM.

NUMBER 14.

Confidential.

Sheet 1 of 2.

SERVICING THE RALEIGH MOPED.
SOME NOTES ON FAULT-FINDING.

We have now accumulated a good deal of experience in servicing the Raleigh Moped and we are frequently called upon to deal with problems which have been found insoluble by Owners or even Dealers.

It is by no means uncommon for us to find in these cases that decarbonising the exhaust system, cleaning and gapping the plug and cleaning and setting the contact breaker points is sufficient to restore the Moped to working order.

We have yet to find a problem which did not yield to normal fault finding procedure plus common sense. The most important points to bear in mind are :-

- (1) Do one thing at a time.
- (2) Take nothing for granted.

The following notes may be of assistance in supplementing the normal procedure.

GENERAL.

- (1) If the Moped does not run properly do not immediately assume that the reason is that the engine is excessively worn. Engines can run perfectly well with a considerable amount of "lift" at the flywheel.
- (2) Make sure that the whole exhaust system is free of carbon including the exhaust elbow. Replace any early "5-tube" type of silencer by one of the later pattern.
- (3) Do not trust the timing marks if the crankshaft, the flywheel or the magneto housing are not the original and have been replaced by other components.
- (4) Check for lack of compression caused by the decompressor valve not seating properly or the head gasket blown in the vicinity of the valve.

IGNITION.

- (1) A sparking plug even after cleaning and gapping may still be faulty. Keep a plug known to be O.K. for test purposes.

Cont'd.....

- (2) If the ignition is not 100%, setting the plug gap down to 0.015" will improve matters.
- (3) Decreasing the contact breaker gap to 0.012" and re-timing at this setting may also help.
- (4) Difficulty in starting when the engine is hot. This is more often than not an ignition fault. If attention to plug and points etc, proves unsuccessful, another possibility is the magnetism of the flywheel or what is much more unlikely an electrical fault with the stator plate (including condenser). N.B. Do not assume that a NEW stator plate or a NEW flywheel are necessarily perfect. There have been rare instances where this has not been so due to rough handling in transit or incorrect storage. If the stator plate or condenser are suspect, it is best to substitute items that are known to be good for test purposes. The same applies to the flywheel but this can also be tested by the following method. Place the flywheel on a vertical steel surface with a painted finish. If the flywheel sticks firmly with no tendency to slide downwards the magnetism is O.K. (This test is better used as a means of comparison than as an absolute test of one flywheel). We are sure that in dealing with problems of this kind your local Lucas Depot or Agents will be only too pleased to be of what assistance they can.

FUEL SUPPLY.

- (1) Keep on one side a carburettor which you know to work satisfactorily, and substitute this for test purposes in cases where a faulty carburettor is suspected.
- (2) Suspect the quality of the fuel or petrol-oil mixed in incorrect proportions. We have had Mopeds returned containing fuel which refused to fire. All kinds of contamination are possible including that by water or the wrong lubricating oil. If in doubt drain off the fuel and refill with a known supply.
- (3) When checking for an obstruction in the fuel supply do not forget the passages in the petrol tap. Dismantle the tap and thoroughly clean out.
- (4) Look out for a float chamber full of oil. This can be caused by re-fuelling with the petrol tap on "reserve" and pouring in a shot of oil without first turning the tap to "off". The oil tends to drop straight down into the carburettor.
- (5) If the petrol is getting down near to reserve erratic running can be caused by the fuel swilling about and producing an intermittent fuel supply. See that there is plenty of fuel in the tank for test purposes.
- (6) Rich mixture (characterised by 4-stroking) can be caused by the cold start needle not seating correctly. Check the needle and seating. The early type needle (all brass with a heavy knob) caused trouble in this respect.

Raleigh Industries Limited, Nottingham.

30th May 1960.

Motor Division Service Department,

MOPED SERVICE MEMORANDUM

NUMBER 15.

Confidential.

MOPED CRANKSHAFT BEARINGS.

In order to make a satisfactory job of fitting new bearings to the Moped crankshaft, one of the essentials is that a needle bearing assembly is fitted which provides the correct amount of clearance between the bearing and the shaft. This clearance is critical and requires working to a high degree of accuracy.

We do not consider that we can reasonably expect our Distributors and Dealers to carry the requisite measuring and gauging equipment to enable the necessary "grading" of crankshafts and bearings to be carried out.

We have decided therefore in future not to supply separately the individual components of the Crankshaft-Connecting Rod assembly (with the exception of the items marked thus X which will continue to be obtainable individually if required) but to make available on an exchange basis an assembly comprising the following parts :-

1 - Crankshaft.	ME. 65
1 - Connecting rod c/w small end bush	ME. 12
1 - Big end screw	ME. 25
1 - Big end retaining plate	ME. 16
16 - Big end bearing rollers.	-
1 - Journal ball bearing	-
X 1 - Circlip. External $\frac{5}{8}$ " diameter	-
X 1 - Flywheel key.	ME. 21
X 1 - Bearing housing joint	ME. 38
1 - Bearing retainer assembly	ME. 68
X 1 - Oil seal	-

The exchange price of this assembly will be 57/6d plus a surcharge of 27/6d if the crankshaft is found to be damaged owing to misuse.

It is appreciated that it will cost the customer a certain amount more to have new crankshaft bearings fitted. It is felt, however, that with the use of these factory-selected parts there should be no difficulty in turning out a first class job, and that the extra cost will be more than justified on the grounds of the improved quality and greater serviceability of the repaired engine.

With the compliments of -
Raleigh Industries Limited, Nottingham.
Motor Division Service Department.

SERVICE MEMORANDUM FOLDER.

When the Service Memorandum Folder was revised and brought up to date earlier this year it was intended to publish it on a limited scale only.

In response to many requests however, we have decided to give it a wider circulation, and we trust that you will find the information contained therein to be of value.

With the announcement of our new Models, we do not intend to lose sight of the interests of the many owners of our Mark 1 and Mark 2 Mopeds. You may be assured that every possible assistance and support will continue to be available in respect of Service and Spares.

