

### ERRATA

Lubrication of Sachs  
Engine should be  $\frac{1}{3}$  pint  
of oil to 1 gallon petrol.

*Miss L. Everett*

# NORMAN

## Lido

# HANDBOOK

**Price :** THREE SHILLINGS and SIXPENCE

slipped into place in the appropriate  
ed with straps.

5 3/16" B.S.F. RD. HD. Screws.  
5 " Nexagon nuts.  
5 " Spring washers.

# ORTANT MOPEDS, AUTOCYCLES AND SCOOTERS

**MOPEDS, AUTOS,  
EIGHT SCOOTERS**

nally inflating to riding pressure, it is essential  
eated correctly in the well of the rim.  
elf correctly on the rim and runs truly.  
eat itself on the rim it is advisable to lubricate  
water, soapy water, glycerine or French chalk.  
just above the bead, should be concentric with

**...e over!:-**



**NORMAN**  
*Lido*  
**HANDBOOK**

## **INTRODUCTION**

The purpose of this booklet is to give owners of Norman Mopeds a clear insight into their maintenance and operation. It serves to cover these fundamentals on any of the Mopeds which we manufacture, but as the engine unit in some of these models varies a separate booklet is enclosed with this one covering the particular engine type which is fitted. We do not, therefore, deal with engine maintenance but refer you to the appropriate booklet on this subject.

Norman Cycles Ltd.,  
Beaver Road,  
Ashford,  
Kent.



## **FOREWORD**

Driving and maintaining the Lido Moped is extremely simple.

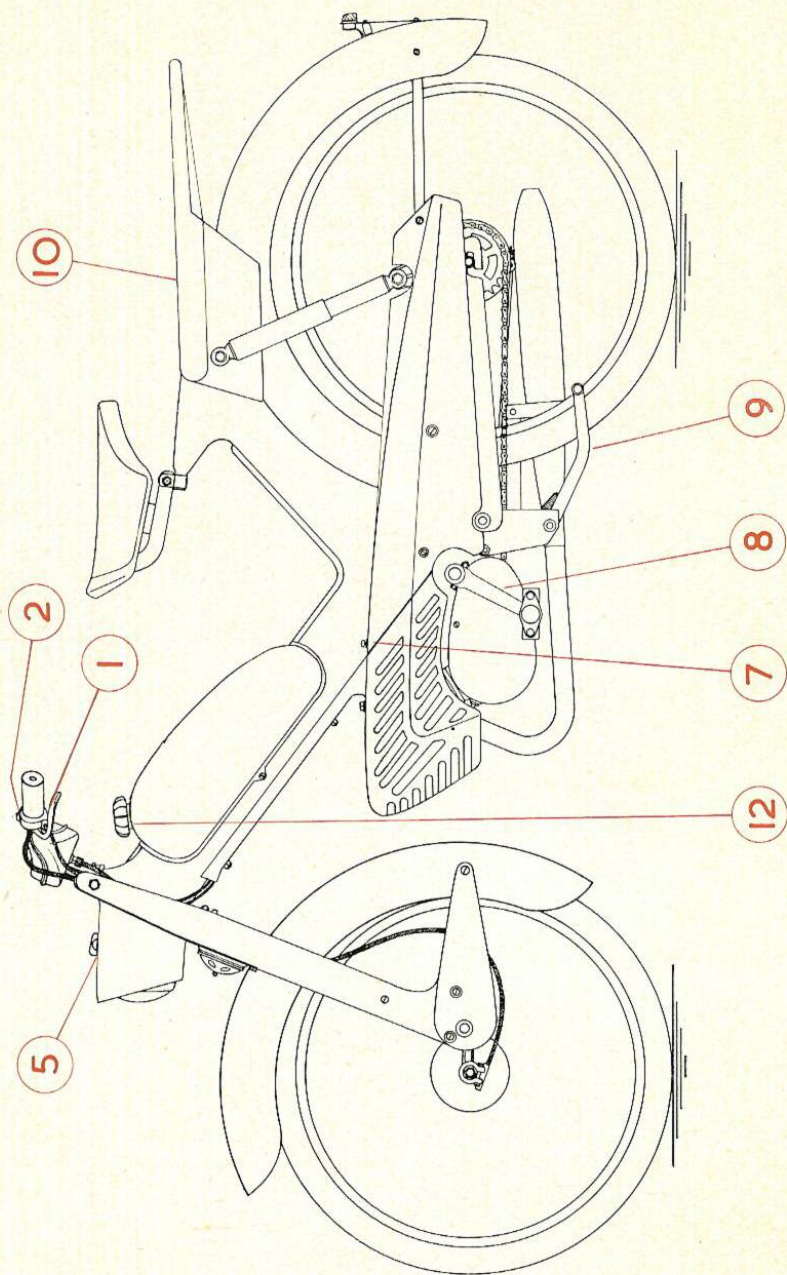
The information in this booklet, if carefully followed, will assist you to obtain the best performance from your machine. Before you can expect the peak of efficiency the machine must be carefully run in and this running in period will extend to between 3 — 500 miles.

Do not, during this period, drive the machine in excess of 25 m.p.h. and do not cause the engine to labour by "hanging on" in top gear when a change to a lower gear is definitely called for.

After the machine is fully run in it will have a maximum speed of around 30 m.p.h. but the actual maximum speed which can be obtained will depend on the conditions under which the machine is being driven.

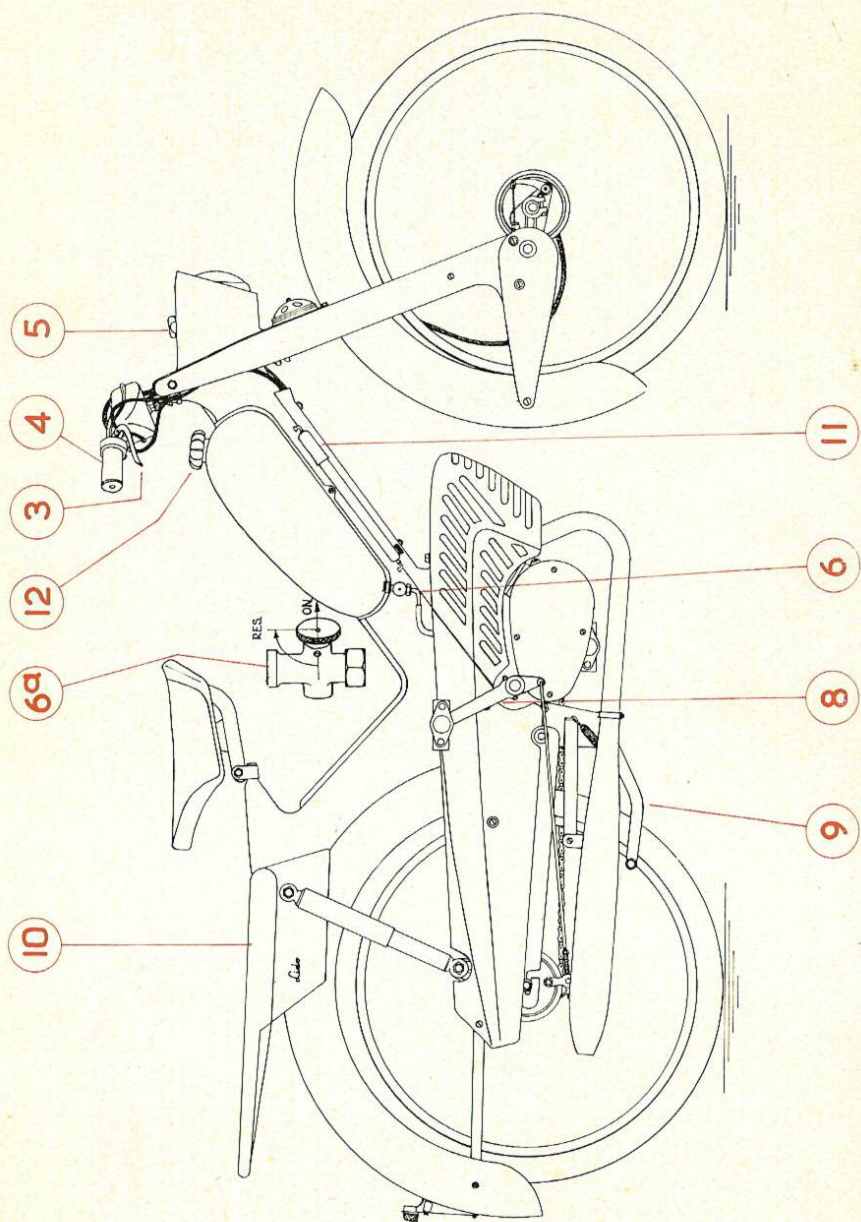
It is not a good practice to drive for long distances at the very maximum speed and when undertaking a long journey it is advisable to drive well within the capabilities of a machine of this class which will give you an average speed of around 20 m.p.h.

# CONTROLS.



Nearside Controls.



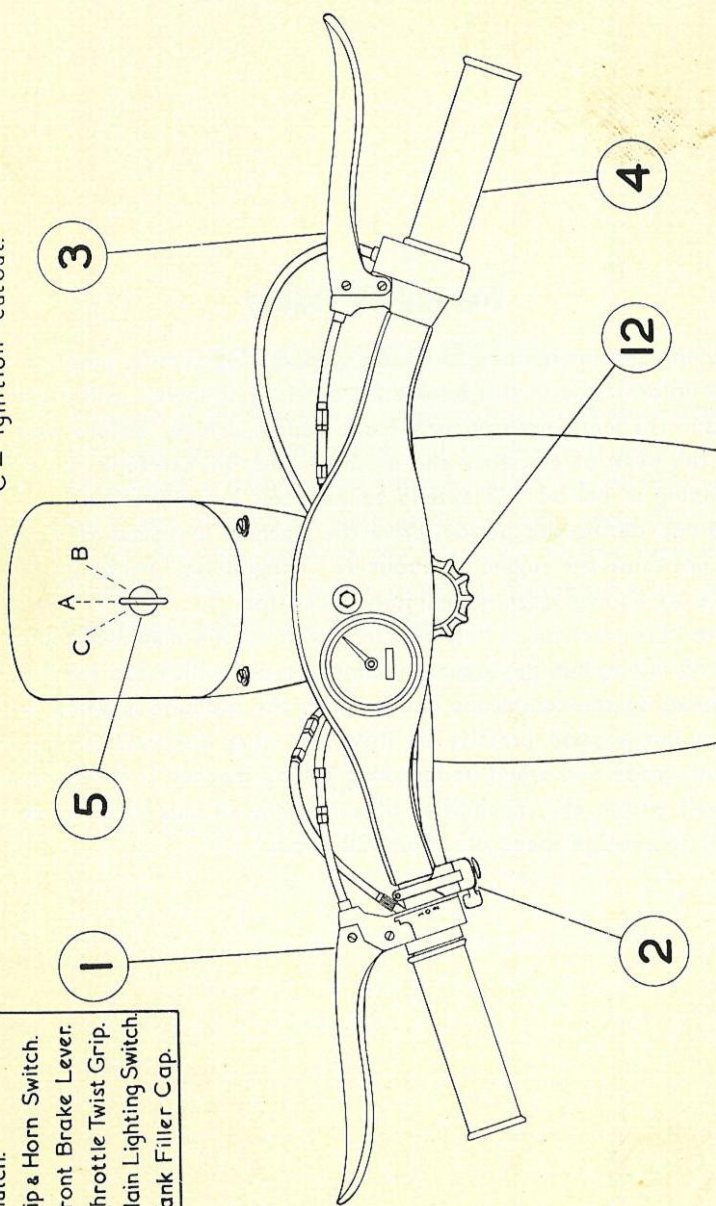


Offside Controls.

**Key to Controls.**

- 1 Gear Control and Clutch.
- 2 Dip & Horn Switch.
- 3 Front Brake Lever.
- 4 Throttle Twist Grip.
- 5 Main Lighting Switch.
- 12 Tank Filler Cap.

A = Off.  
B = Lights on.  
C = Ignition cutout.



# **HANDLEBAR CONTROLS.**

Fig. 2.



## CONTROLS

Before taking the machine on the road first become familiar with the operation and position of these controls. Make a study of the two views of the machine given on the opposite pages.

The list of controls is :

- No. 1. Clutch lever and gear control. This is on the left-hand side of the handlebar and is used for disengaging the clutch and operating the gears.
- No. 2. Is the lighting set dip-switch and horn-button unit. The operation of this unit will be self-evident.
- No. 3. Is the front brake lever and is situated on the right-hand side of the handlebar and is, of course, used for operating the front brake.
- No. 4. Is the throttle twist grip and as the name implies operates the throttle and controls the speed of the engine.
- No. 5. Is the main lighting switch. This has three positions and they are clearly shown on Figure 2.
- No. 6. Is the petrol tap, and this is the push-pull pattern. To operate the tap the button should be pulled outwards. It is also provided with a reserve position which is only used in an emergency, and to obtain the last pint, or so, of fuel from the tank the tap button must be turned in a right-hand direction.
- No. 6a. Shows an enlarged view of the tap for additional clarity.
- No. 7. This is the carburetter primer. On machines fitted with Sachs engines this must be depressed for a few seconds to flood the carburetter when starting from cold. On machines fitted with the Villiers engine, however, it is merely depressed and left in this position. The primer is on the nearside of machine when fitted with Sachs engine and on offside with Villiers engine.
- No. 8. Are the pedalling cranks and need no additional information.
- No. 9. Is the centre-stand.
- No. 10. Indicates the position of the toolbox.
- No. 11. Tyre inflator.
- No. 12. Petrol tank filler cap.

# **NORMAN LIDO**

## **GENERAL SPECIFICATION**

### **FITTED WITH SACHS ENGINE**

**ENGINE :** Sachs two stroke 47c.c., incorporating clutch and gearbox.

**BORE AND STROKE :** 38mm. x 42mm.

**COMPRESSION RATIO :** 6 : 1.

**BRAKE HORSE POWER :** 2.2 at 6,300 r.p.m.

**IGNITION :** Bosch Flywheel magneto incorporating lighting coils.

**IGNITION TIMING :** .078/.098" B.T.D.C.

**DYNAMO OUTPUT :** 6v. 17w. AC.

**LIGHT BULBS :** 6v. 15/15w. headlamp ; 6v. 3w. tail lamp.

**SPARKING PLUG :** KLG F70, 14mm. Gap : .018/.022".

**CARBURETTER :** Bing, model 1/12/71 with oil moistened air filter.

**SILENCER :** Villiers pattern, readily dismantled for cleaning.

**TRANSMISSION :** Engine to gearbox, helical gears — ratio 3.81.

**CLUTCH :** Two-plate Energit facings.

**GEARBOX :** Two speed in unit construction with engine.

**GEARBOX RATIOS :** 1st, 2.78 ; 2nd, 1.62.

**FINAL GEAR RATIOS :** 1st, 23.18 ; 2nd, 13.5.

**TRANSMISSION TO REAR WHEEL :** 1/2" x 3/16" chain. 98L.

**FINAL DRIVE SPROCKET :** 13T.

**REAR HUB SPROCKET :** 28T.

**LUBRICATION —** Engine : Petroil mixture, 1/2 pint of oil to 1 gallon petrol. Use S.A.E. 40 or 50 oil, or one of the recommended two-stroke oils.

Gearbox : S.A.E. 90 oil, 1/3rd pint.

**TYRE PRESSURES :** 23 lbs. front ; 34 lbs. rear.

**TYRES :** 23" x 2.25".

**WEIGHT OF MACHINE :** 116 lbs.

**WHEELBASE :** 46".

**OVERALL WIDTH :** 25".

**OVERALL LENGTH :** 72".

**GROUND CLEARANCE :** 7½".

**FUEL CONSUMPTION :** 120 — 180 m.p.g.

**FUEL TANK CAPACITY :** 1½ gallons.

**MAXIMUM SPEED :** 30 m.p.h.

**CRUISING SPEED :** 20 m.p.h.



# **NORMAN LIDO**

## **GENERAL SPECIFICATION**

### **FITTED WITH VILLIERS ENGINE**

**ENGINE :** Villiers Mark 3K 50 c.c. unit. Single cylinder two-stroke, incorporating clutch and gearbox.

**BORE AND STROKE :** 40mm. x 39.7m.m.

**COMPRESSION RATIO :** 7 : 1.

**BRAKE HORSE POWER :** 2.0 at 5,500 r.p.m.

**IGNITION :** Villiers flywheel magneto generator.

**IGNITION TIMING :** .093" B.T.D.C.

**DYNAMO OUTPUT :** 6v. 18w. AC.

**LIGHT BULBS :** 6v. 15/15w. headlamp ; 6v. 3w. tail lamp.

**SPARKING PLUG :** Lodge BH, 14mm. Gap : .018/.022".

**CARBURETTER :** Villiers, type SM10 with oil moistened air filter and shutter-type choke.

**SILENCER :** Villiers pattern, readily dismantled for cleaning.

**TRANSMISSION :** Engine to gearbox : roller chain. Ratio 3.17.

**CLUTCH :** 2 disc with plate clutch with 2 friction discs.

**GEARBOX :** 2-speed in unit construction with engine.

**GEARBOX RATIOS :** 1st, 3.06 ; 2nd, 1.71.

**FINAL GEAR RATIOS :** 1st, 25.83 ; 2nd 14.44.

**TRANSMISSION TO REAR WHEEL :** 1/2" x 3/16" chain. 99L.

**FINAL DRIVE SPROCKET :** 12T.

**REAR HUB SPROCKET :** 32T.

**LUBRICATION — Engine :** Petroil mixture, 1/3 pint oil to 1 gallon petrol ; S.A.E. 30 oil or one of the recommended two-stroke oils in the ratio of 1 part oil to 20 parts petrol.

**Gearbox :** S.A.E. 30 oil, 5/8 pint.

**TYRE PRESSURES :** 23 lbs. front ; 34 lbs. rear.

**TYRES :** 23" x 2.25".

**WEIGHT OF MACHINE :** 121 lbs.

**WHEELBASE :** 46".

**OVERALL WIDTH :** 25".

**OVERALL LENGTH :** 72".

**GROUND CLEARANCE :** 7½".

**FUEL CONSUMPTION :** 120 — 180 m.p.g.

**FUEL TANK CAPACITY :** 1½ gallons.

**MAXIMUM SPEED :** 30 m.p.h.

**CRUISING SPEED :** 20 m.p.h.

# **DRIVING THE MOPED**

## **(Machines fitted with Sachs engine)**

First of all pour into petrol tank a quantity of petrol mixture, using S.A.E. 40 or S.A.E. 50 oil in the proportion of 1 part oil to 25 parts petrol. Alternatively, petrol mixture using one of the special two-stroke lubricants as recommended inside back cover can be used.

## **STARTING THE ENGINE**

Turn the petrol tap on and depress tickler on carburettor for 5 or 6 seconds. Turn the gear operating twist grip to neutral position and close the throttle twist grip by turning as far as possible away from you. Now stand beside the machine and with the pedalling crank at the top press it forward sharply, when the engine will start. If it does not start first time withdraw the clutch lever and turn the pedal crank round to get the crank again at the top. Release clutch lever and try starting the engine once more. Once the engine is started allow it to warm up for a minute or so, but do not race it. The machine is then ready for driving away.

### **WHEN HOT :**

When the engine is hot after a previous run do not depress tickler. The engine should start straight off without doing this.

### **Machines fitted with Villiers engine**

Pour into petrol tank a quantity of petrol mixture in the proportion of 1 part oil to 24 parts petrol, using an oil of S.A.E. 30 rating. If lubrication is preferred by using one of the special two-stroke oils refer to the chart inside back cover for lubrication of Villiers Moped engine.

## **DRIVING**

Sit astride the machine and keep the engine running slowly. Now with the left hand withdraw the clutch lever fully and turn the gear-operating twist grip, complete with clutch lever, to 1st gear position (No. 1). Slowly release clutch lever ; hold the grip in this position and as the clutch is felt to "bite", and the machine starts to run forward, continue letting the clutch in slowly and at the same time speeding the engine up by turning the throttle twist grip towards you. Do not open throttle too far until the machine is actually under way.

### **Gear changing (Up)**

Now you have the machine under your control in first gear speed it up until approximately 10 m.p.h. is reached ; now close the throttle, almost, by turning twist grip away from you and simultaneously withdrawing clutch and turning gear twist grip, complete with clutch lever, to 2nd gear position (No. 2) ; now let clutch in quickly and again open the throttle by turning the twist grip towards you.



The machine is now in top gear and it is in this gear that you will drive it for most of your riding. The speed of the machine is, of course, controlled by the throttle and it will only be necessary to change down, i.e. from 2nd to 1st gear, if you wish to drive so slowly that the engine begins to labour or you are climbing a hill which is too steep for the machine to surmount in second gear.

### **Gear changing (Down)**

When it is required to change down from 2nd to 1st gear, operate the controls as described below.

Assuming that you wish to run the machine so slowly that the engine begins to run unsteadily, a change to lower gear is indicated. First of all close the throttle, or nearly so, and withdraw the clutch lever ; at the same time turn the gear twist grip to position 1. Now speed the engine up slightly, but not too fast, simultaneously letting the clutch lever in quickly. The same operation is carried through when you encounter a hill which is too steep for the machine to surmount in top gear. Immediately you feel the engine beginning to labour and the speed of the machine is dropping off, change down to 1st gear. Do not be in a hurry to change up into 2nd gear again, but make sure that the machine has surmounted the hill fully and is running easily, or you will have to make another hurried change down to 1st gear and possibly stall your engine in the process.

### **Stopping the machine**

When coming to rest with the engine running, close the throttle and release the clutch lever and turn gear control to neutral position (O). The rear brake is applied by operating the pedals backwards and the front brake is applied by the right hand with the lever immediately adjacent to the throttle twist grip. Do not operate the rear brake too fiercely or you will easily lock the rear wheel as the pressure which can be obtained by the leg and foot on the pedal crank is considerable. Application of either brake should be smooth and progressive.

### **To stop engine**

Turn lighting switch to position "C" (see fig. 2) and hold in this position until engine stops.

## **MAINTENANCE**

### **TO OBTAIN ACCESS TO ENGINE UNIT**

To remove front engine cowl first remove the top set-screw (located under cable cover) ; next remove the front screws on the left and right side panels, this will enable the cowl to be joggled free of the engine. The removal of this cowl allows access to the major engine components.

To remove the left side panels take out the second screw and also the small screw which is secured to the rear mudguard stay, the panel can now be lifted free and provides access to the chain and left side of the

machine. To remove the right panel, proceed as for left panel, this will allow access to the right side of the machine.

To refit panels position and fit loosely to rear mudguard stay ; fit loosely the rear screw and washer. Now joggle the front engine cowl into position. **Ensure** that the two top brackets fit into their respective seats on the side panels. **Ensure** that the two forked side brackets slide inside the side panels. Now fit loosely the top set-screw and washer. Manœuvre the forked brackets so that the slots are in line with the fixing holes, slide the "N" motif brackets into position and fit screws and washers loosely. Push the front engine cowl right home into the left and right side panels and tighten all screws ; finally position the primer on the carburetter. With the Villiers engine machine it is advisable to depress the choke stud first.

Any mechanically propelled vehicle needs, during the course of its use, certain maintenance. This can be classified under the following headings :

### **LUBRICATION**

### **ADJUSTMENTS**

### **CLEANING**

These we will deal with in the order given above.

## **LUBRICATION**

### **ENGINE**

Lubrication of the engine generally, will be taken care of completely if the correct grade and proportion of oil is added with the petrol. The gearbox, however, needs separate treatment and this must be topped up, drained, and refilled, at intervals in accordance with instructions given in the engine maintenance booklet.

### **HUBS**

The hubs on these machines don not require lubrication in the ordinary way, as each bearing is packed with grease at the time of its assembly. The hubs, however, should be dismantled periodically at say 8,000 miles, the bearings dismantled and cleaned, and repacked with grease. (See inside back cover for recommended lubricant.)

### **STEERING HEAD**

The remarks dealing with hubs apply also to steering head bearings.

### **TRANSMISSION**

The primary drive on the engine, which is enclosed within an oil bath, does not need any attention as this is lubricated by oil which is put in the gearbox. The rear driving chain, however, should be lubricated with a little engine oil every 300 miles. The chain should be removed completely from the machine at intervals of 3 — 4,000 miles ; it should be



cleaned in paraffin and wiped dry. It should then be immersed in a bath of warm oil and left to soak for half-an-hour or more ; it can then be hung up to drain and any surplus oil wiped off. It can now be refitted to the machine for another term of service.

## **PEDALS**

Lubricate through small hole in cap. Use S.A.E. 30 oil.

## **CABLES**

It is essential to the smooth operation of the controls which operate the clutch, gears, and front brake, that all operating cables work freely. These will not work easily unless they are kept lubricated. They are, of course, lubricated thoroughly at the time of assembly but in the course of use this lubricant will dry out. It is essential, therefore, that all cables be removed completely from the machine at 3,000-mile intervals and thoroughly lubricated. The best way of doing this is to first of all clean the cables externally and then soak them in a bath of warm oil for half-an-hour. Allow them to drain and wipe off any surplus oil on the outside. These should then be properly adjusted as described under adjustments.

## **FRONT FORK LINKS**

The bottom links of the front fork will require lubricating every 1,000 miles. A lubricator is provided in each fulcrum pin for this purpose and it is recommended that a light grease be used and this applied by the normal type of grease gun. It is recommended, also, that these are flushed out, using a light oil, every 3,000 miles and this can be done by using an oil gun or alternatively remove the grease gun nipples by unscrewing them and using a force feed oil can.

Small points needing weekly lubricating with the oil can are the control lever pivots on the handlebar. The pivots on the rear brake operating rod and the ends of all exposed Bowden cables. Also the pivot bearings of the centre stand must be remembered and a spot of oil applied to these once a week is all that is required.

The rear suspension does not require any lubrication.

# **ADJUSTMENTS**

Quite distinct from general running adjustments, it is recommended that all nuts and bolts on the machine should be gone over every 500 miles. This precaution is just to ensure that if by some mischance anything should have worked loose, this can be attended to — thus avoiding annoying breakdowns on the road.

## **WHEELS**

The wheel bearings on both front and rear hubs are cup and cone bearings which are adjustable as on the ordinary bicycle. The correct adjustment of these bearings should be checked every 500 to 1,000 miles. If correct, there should be approximately 1/16" shake of the wheel,



measured at the rim. If the shake exceeds this the bearings call for adjustment. On each wheel spindle, on the opposite side to the brake drum, the cone is adjustable and to carry out any adjustment the wheel spindle nut should first be slackened, followed by the locknut between the cone and the fork end. The cone can now be turned with a suitable spanner and turning it in a right-hand or clockwise direction will tighten the cone, and in an anti-clockwise direction will slacken it. The cone should, therefore, be adjusted as required, its locknut tightened, followed by the wheel spindle nut.

The measurement of shake of the wheel should always be checked after all nuts are tightened. To carry out correct adjustment of a cone bearing needs some care, as a bearing which is adjusted too tightly will quickly ruin itself.

**NOTE :** To adjust front wheel cone the wheel must be removed from machine and speedometer gearbox taken off first.

## **BRAKES**

### **Front Brake**

The front brake, which is operated by a cable with the lever on the handlebar, is adjusted by a special adjuster which is incorporated in the cable casing itself. This adjuster is provided with a body which has a hexagon end and a screwed adjuster which is in turn screwed into this body. This adjuster is also locked by a hexagon nut. To carry out adjustment, the main part of the adjuster is held securely with a spanner or pliers and its locknut slackened by half a turn. The body is now gripped and the adjuster screwed in or out as may be required. Screwing it outwards will tighten the operation of the brake and screwing inwards will have the reverse effect.

The best possible adjustment is with the cable adjuster as tight as possible, yet the wheel can be freely rotated without any sign of the brake lining rubbing against the drum. When adjusted to its best position the locknut on the adjuster can be securely tightened.

### **Rear brake**

This brake does not require adjustment as the operating rod between the pedalling crank and the rear brake arm has been designed at a fixed length. All that is required to ensure that the brake is maintained correctly is to check that the hexagon nut at the end of the brake rod is securely tight up against the trunnion roller on the operating lever and also that the additional safeguard of a split pin securely in position to prevent loss of this nut should it work loose on any occasion.

If, after a considerable period of use, it is found the brake loses its efficiency by reason of excessive movement of either the pedals or the arm on the brake drum, this will indicate that the brakes are in need of relining when if this is carried out, the original adjustment of the brake will be restored.

## **STEERING HEAD**

The adjustment of the steering head must be checked on occasions. To do this apply the front brake hard and endeavour to rock the machine forwards and backwards. With the front wheel locked in this manner any



play in the steering head bearings will show up. If play develops, the bearings must be adjusted in the following manner. First slacken the head locknut and then turn in a right-hand direction the screwed bearing race which is immediately below the fork crown plate. Turn this a small amount and check the bearing adjustment. When the play has been taken up the head locknut must again be securely tightened.

## **FORK LINKS**

The bottom link bearings on the front fork are not adjustable. It is as well, however, to check that the fulcrum pins on which these links oscillate have not worked loose in the course of service and in order to check these first of all slacken the locknut on the outside of the front fork. Then with a suitable spanner tighten the link pivot bolt as a whole by operating the spanner on the hexagon head inside the fork blade. After ensuring that this pin is tight, lock it securely by tightening the outer nut.

It is as well to note that with a bottom-link action fork there is always evident a slight amount of sideways rock of the front wheel. Excessive movement of the front wheel is usually traceable to one of the sideways rock in the front wheel.

1. Wear of the pivot pins and/or bearings.
2. Looseness of the front wheel due to incorrect adjustment of the bearings or slackness of locking nuts.
3. Link pinch-bolts not tightened securely.
4. Weak springs or wear on spring pivot pins.

## **REMOVAL OF WHEELS**

### **FRONT WHEEL**

To remove front wheel from machine place machine on its stand and also a box, or similar, under the front part of the engine to lift front wheel clear of the ground. Disconnect front brake cable at the hub ; remove both pinch-bolts, one on each link ; take off the wheel spindle sleeve nuts when the wheel will drop out of front fork links. To replace is the same operation in reverse.

**Note.** When refitting wheel take great care to ensure that the sleeve nuts, one on each end of the spindle are **dead tight up** against their respective locking nuts. Also ensure that the pinch-bolts in each link are securely tightened, as slackness at either of these points will allow rock in the front wheel.

### **REAR WHEEL**

With the machine on its stand first of all disconnect the rear brake operating rod. To do this remove split pin on rod and unscrew long hexagon nut. Take off completely. Remove inner nut on right-hand side of lower spring box anchorage. Now take off both wheel spindle nuts, one on each side, and lift off chain adjusters. The wheel can now be



pushed forward and will drop out. The chain can be lifted off and the wheel removed completely from underneath the machine. To refit wheel is, of course, the same procedure in reverse.

Before finally tightening the wheel spindle nuts, check the chain adjustment, and this is correct when there is approximately 1/2" up-and-down movement of the chain in the centre of its run. Adjustment of the chain is, of course, carried out by chain adjusters provided one on each end of the spindle. After adjustment tighten up the wheel spindle nuts securely. Do not forget, also, to replace and tighten securely the inner nut on the lower spring box anchor bolt, making certain, of course, that the anchor arm of the brake is correctly located on this bolt in the first place.

When replacing the brake rod the long hexagon nut should be screwed tightly up against the trunnion roller and do not forget to replace the split pin as a safety measure.

## **SADDLE**

The saddle is permitted only of adjustment for angle. It can, however, be adjusted to a limited amount for height and to accomplish this the saddle can be placed in either of two positions, that is to say, either up or down. With the saddle in its highest position the clip which holds it to the seat pillar has its open ends upwards. To place the saddle in its lowest position the pinch-bolt must be slackened, the saddle pulled off the seat pillar, and the clip turned 180 degrees, and then the saddle refitted. Always make sure the pinch-bolt is securely tightened after any adjustment.

## **ELECTRICAL EQUIPMENT**

This comprises of headlamp, tail lamp, and electric horn.

The operation of these is by means of two switches. There is on the headlamp a combined lighting and magneto cut-out switch. When the switch is turned as far as possible to the left, and held in this position, the engine can be stopped by short-circuiting the ignition, and on releasing the switch it will automatically return to its normal off position. When turned to the right it will switch on the head and tail lamps. The head lamp is further controlled for dip and main positions by a small lever on the supplementary handlebar switch. This supplementary switch also incorporates a horn press-button.

The wiring diagram which is shown on page 16 shows clearly the lay-out of the lighting system and its circuit. It also indicates the types and size of bulbs required.

To replace the headlamp bulb at any time the light unit must first be removed from its nacelle. This is undertaken by first removing the screw which is visible on the underside of the headlamp rim. The light unit can then be lifted up from the bottom and unhooked from its hinge plate at the top.

Once the light unit is removed the bulb holder can be extracted by hinging this upwards at the point where its retaining spring is positioned. If this is hinged upwards as indicated it can then be lifted



bodily, thus disconnecting it completely. The bulb is then removed in the usual way. It should be particularly noted, however, that the bulb or even a new one, must be replaced correctly and to do this ensure that the longer of the two locating pins is uppermost. Take particular note, also, that under **no** circumstances must the reflector be **touched** or the plating will immediately lift.

## ADJUSTMENT OF BEAM

The headlamp beam can be raised or lowered as desired within certain limits. To adjust the beam first slacken the two screws on the underside of the rim. The whole light unit can then be tilted slightly up or down. Securely tighten both screws after adjustment.

The rear lamp bulb is replaced by first removing the lantern or glass. The removal of this is quite straight forward by first removing the two screws which hold same in place.

## HANDLEBARS

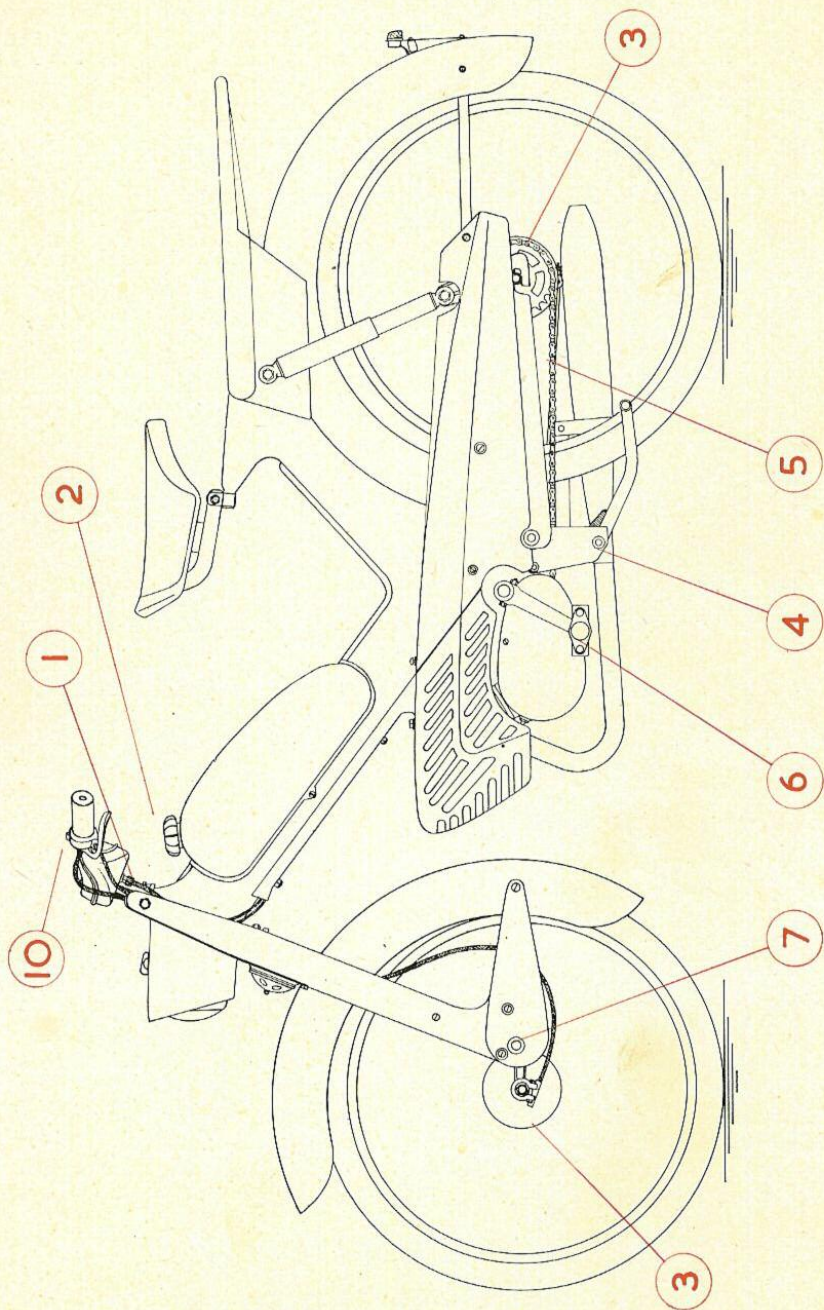
These are not arranged for any adjustment, either for height or radially. The position in which they are placed has been assessed as the best and any attempt at alteration should not be made.

## CLEANING

The preceding notes have dealt solely with the mechanical part of the maintenance. It is, of course, equally important that the machine be kept clean externally, and it is advisable to wipe over all enamel and plating work regularly every one or two weeks. The enamel work can, with advantage, be polished by using one of the recognised car polishes every four weeks or so. The plated parts need only rubbing over with a damp rag and then polishing with a soft duster. **Do not** use any metal polish on the plating or this will be quickly destroyed.

If you keep your machine clean in this way you will be proud of its appearance and quite apart from this it will give you an incentive to check the adjustments which have already been described. Always remember that a coating of dirt and grease can easily hide something which may be in need of attention and again there are few things more unpleasant than to attempt adjustments on a vehicle which is covered with a film of grease and dirt.

# LUBRICATION POINTS.



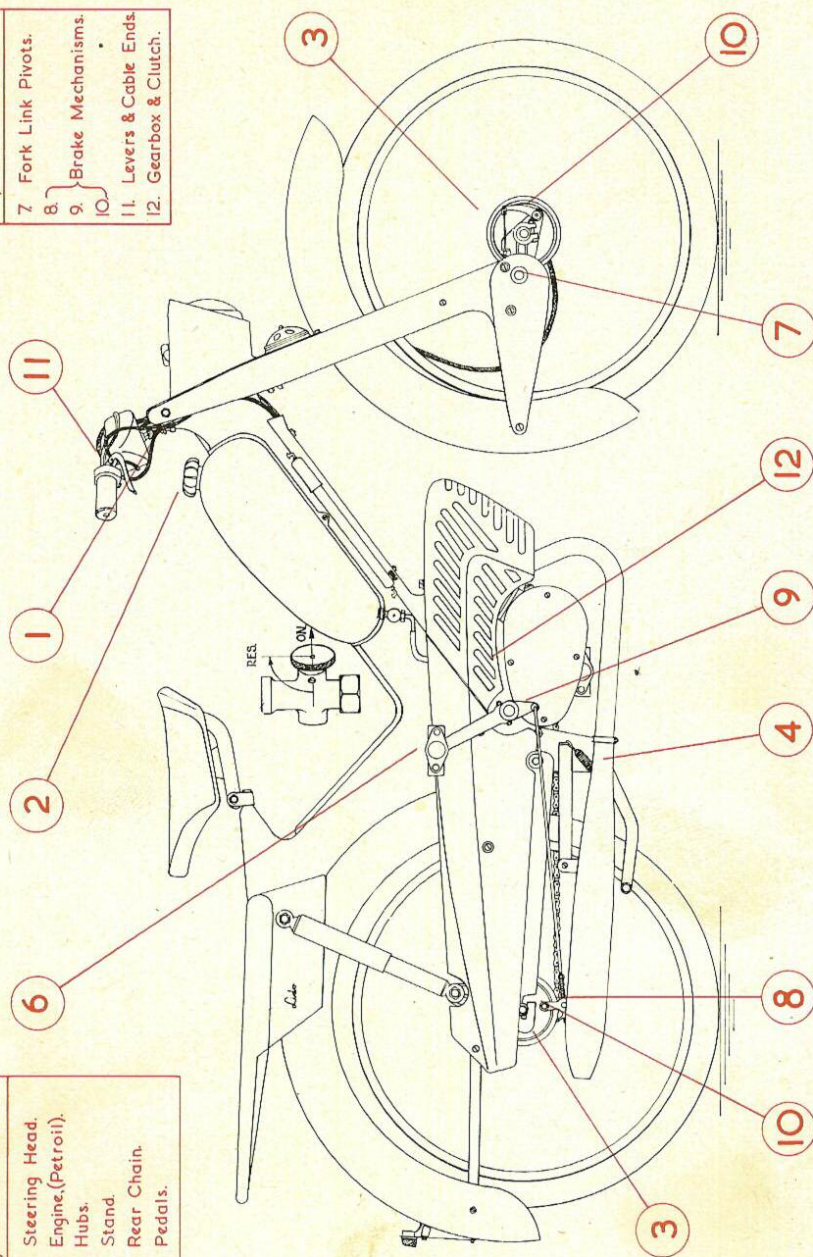
Nearside Lubrication.



Key to Lubrication.

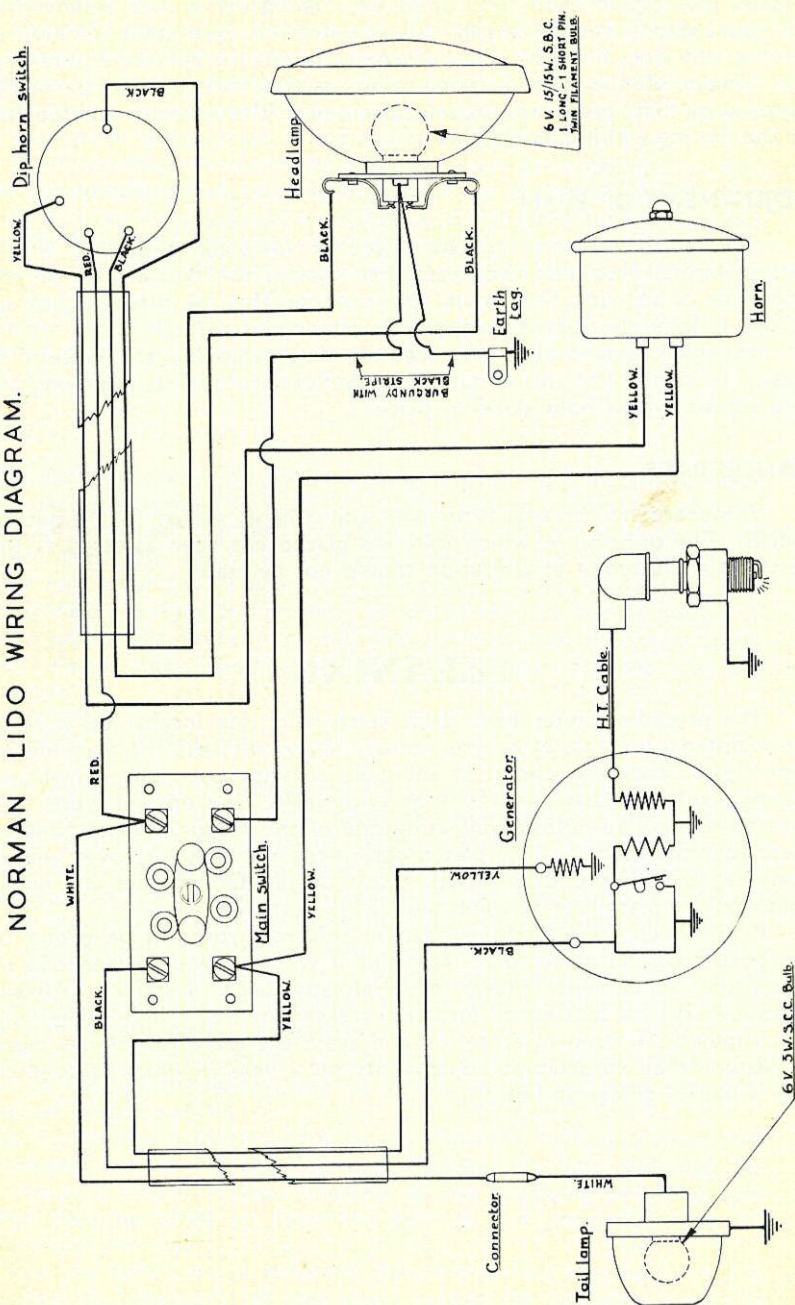
1. Steering Head.
2. Engine, (Petrol).
3. Hubs.
4. Stand.
5. Rear Chain.
6. Pedals.

7. Fork Link Pivots.
8. } Brake Mechanisms.
9. } .
10. } .
11. Levers & Cable Ends.
12. Gearbox & Clutch.



Offside Lubrication.

# NORMAN LIDO WIRING DIAGRAM.





# RECOMMENDED LUBRICANTS

SACHS UNIT	SHELL	ESSO	WAKEFIELD	B.P.	MOBIL
ENGINE: Petrol/oil ratio 25 : 1 unless otherwise stated.	Shell 2T Petroiler or Shell 2T Two-Stroke Stroke Oil.	Esso Two-Stroke Motor Oil (16 : 1) or Essolube 50.	Castrol Two-Stroke Oil (16 : 1) or Castrol XXL.	BP-ZOOM or Energol Two-Stroke Oil.	Mobilmix TT (16 : 1) or Mobiloil BB.
GEARBOX :	Dentax 90.	Esso Gear Oil 90.	Castrol ST.	Energol S.A.E. 90.	Mobilube C90.
VILLIERS UNIT					
ENGINE: Petrol/oil ratio 24 : 1 unless otherwise stated.	Shell 2T Petroiler Mix or Shell 2T Two-Stroke Oil.	Esso Two-Stroke Motor Oil (20 : 1) or Essolube 30.	Castrol Two-Stroke Oil (20 : 1) or Castrol XL.	BP-ZOOM or Energol Two-Stroke Oil.	Mobilmix TT (20 : 1) or Mobiloil A.
GEARBOX :	Shell X-100 30.	Essolube 30.	Castrol XL.	Energol S.A.E. 30.	Mobiloil A.

## GENERAL CYCLE PARTS

OIL CAN	Shell X-100 30.	Esso Handy Oil.	Castrol XL.	Energol S.A.E. 30.	Mobiloil A.
REAR CHAIN	Retinax A.	Esso Fluid Grease.	Castrolase CL.	Energol L2.	Mobilgrease MP.
WHEEL HUBS and other grease lubri- cated parts.	Retinax A.	Esso Multi-Purpose grease H.	Castrolase CL.	Energol L2.	Mobilgrease MP.



# Guarantee

## CONDITIONS OF SALE AND GUARANTEE

We give the following guarantee with our motor cycles and mopeds, including all accessories and component parts other than tyres, saddles, chains and lighting and electrical equipment and other than accessories and component parts supplied to the order of the Purchaser and differing from those comprised in the standard specifications. This guarantee is given in place of any implied conditions or warranties or any liabilities whatsoever, statutory or otherwise; no guarantee except that hereinafter contained and no condition or warranty whatsoever statutory or otherwise is given or is to be implied, nor are we to be under any liability whatsoever except under the guarantee hereinafter contained.

We guarantee, subject to the conditions mentioned below, that all precautions which are usual and reasonable have been taken by us to secure excellence of materials and workmanship, but this guarantee is to extend and be in force for six months only from date of purchase, or date of exchange in case of any accessory or part supplied by way of exchange as hereinafter provided, and damages for which we make ourselves responsible under this guarantee are limited to the free repair of or supply of a new part or accessory in exchange for the part of the motor cycle or accessory which may have proved defective. We undertake, subject to the conditions mentioned below, to make good in manner aforesaid any part or accessory covered by this guarantee which has proved defective within the said period of six months. We do not undertake to replace or refix, or bear the cost of replacing or refixing, any such new part or accessory in the motor cycle.

As motor cycles and mopeds are easily liable to derangement by neglect or misuse, this guarantee does not apply to defects caused by wear and tear, misuse or neglect. The term "misuse" shall include amongst others in the following act:—

The use of motor cycle, or of a motor cycle and sidecar combined, when carrying more persons or a greater weight than that for which the machine was designed by the manufacturers.

We do not guarantee tyres, saddles, chains or lighting and electrical equipment, or any accessories or component parts supplied to the order of the Purchaser, differing from those comprised in the standard specifications. As regards all such tyres, saddles, chains, lighting and electrical equipment, accessories and component parts, no guarantee, condition or warranty of any kind statutory or otherwise is given or is to be implied, and we are to be under no liability whatsoever in respect thereof.

## CONDITIONS OF GUARANTEE

If a defective part or accessory should be found in our motor cycles, or in any part or accessory supplied by way of exchange as before provided, it must be sent to us CARRIAGE PAID, and accompanied by an intimation from the owner that he desires to have it repaired or exchanged free of charge under our guarantee and he must also furnish us at the same time with the number of the machine, the date of the purchase or the date when the alleged defective part or accessory was exchanged as the case may be.

Failing compliance with the above, such articles will lie here at THE RISK OF THE OWNER, and this guarantee and any implied guarantee warranty or condition shall not be enforced.

We reserve the right to alter specifications and/or prices without notice.

**NORMAN CYCLE CO. LIMITED, ASHFORD, KENT, ENGLAND.**



## FITTING INSTRUCTIONS FOR PANNIERS TO LIDO AND

### NIPPY MARK IV

First, loosely assemble the two brackets, (A), on the rear carrier, (F), with the clamping strips (B & C), using 4 - 3/16" RD.HD. B.S.F. Screws and nuts. Place a washer under each nut, as shown in diagram; and note that the longest clamping strip, (B), is fitted at the front where the carrier, (F), is wider.

Now attach the two pannier frames, (D), to the ends of the brackets with another 4 - 3/16" RD. HD. Screws and nuts, and placing a washer under each nut. Note that the nut should be on the outside of the front bracket, to clear the carrier, (F).

Note that the frames should be attached so that they project forwards, giving ample clearance to the number plate, i.e. bracket (G), (which is closer to frame corner than the other), should be to the rear.

The assembly should now be slid rearwards, so that the rear clamping bracket is as far back as possible, (see diagram), and the lower bracket, (E), pivoted towards the rear, so that the hole in it is approximately  $\frac{3}{8}$ " back from the front edge of the rear mud-guard. Mark off the position of this hole on to the mudguard, and drill 3/16" clearance hole in mudguard.

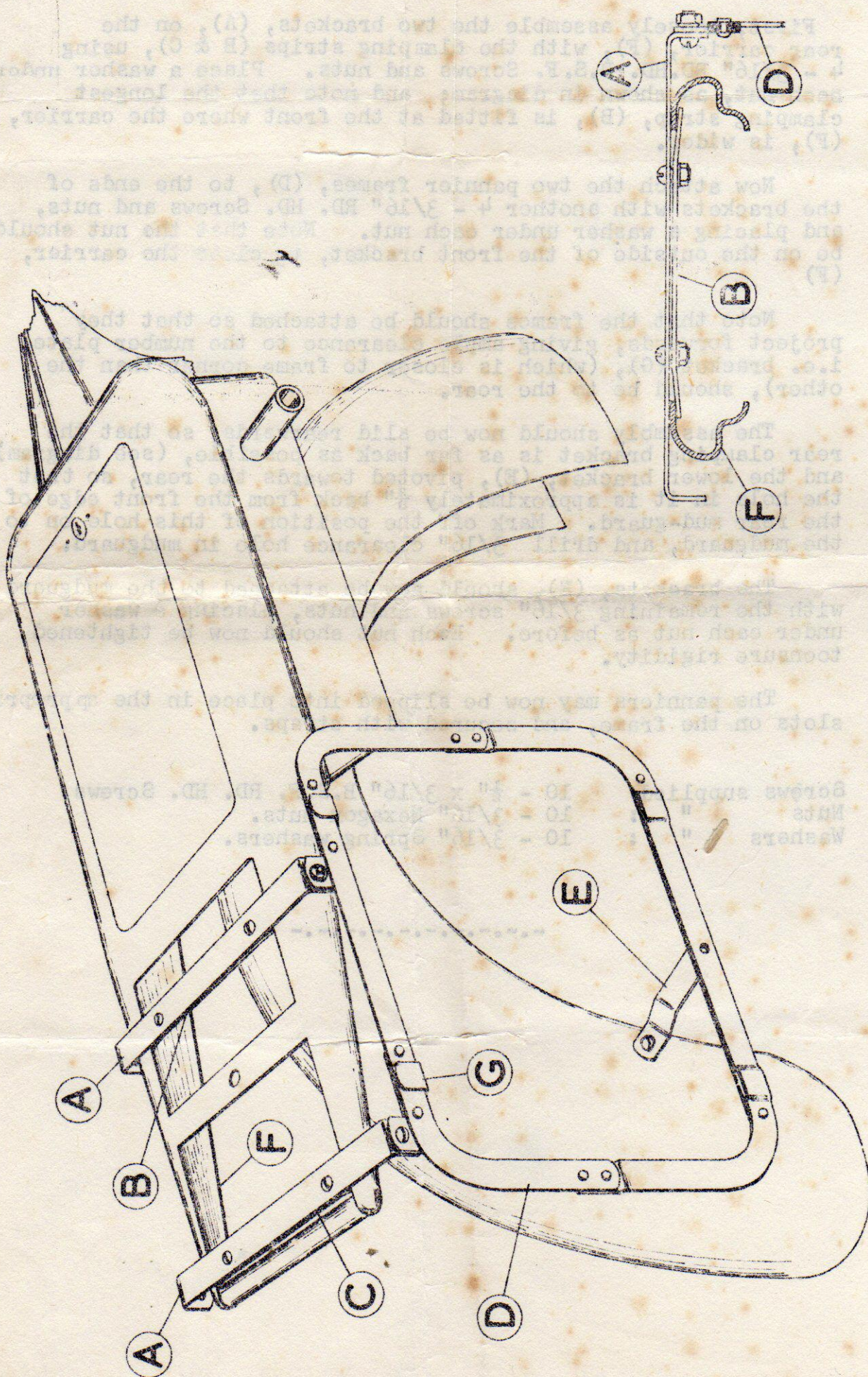
The brackets, (E), should now be attached to the mudguard with the remaining 3/16" screws and nuts, placing a washer under each nut as before. Each nut should now be tightened to ensure rigidity.

The panniers may now be slipped into place in the appropriate slots on the frame, and secured with straps.

Screws supplied:	10 - $\frac{1}{2}$ " x 3/16" B.S.F. RD. HD. Screws.
Nuts " :	10 - 3/16" Nexagon nuts.
Washers " :	10 - 3/16" Spring washers.

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PANNIER FITTING TO LIDO & NIPPY Mk. IV.



# **IMPORTANT**

## **DUNLOP TYRES FOR MOPEDS, AUTOCYCLES AND LIGHTWEIGHT SCOOTERS**

When refitting a tyre, before finally inflating to riding pressure, it is essential to ensure that:—

- (a) The rim tape is seated correctly in the well of the rim.
- (b) The tyre seats itself correctly on the rim and runs truly.

To assist the tyre to correctly seat itself on the rim it is advisable to lubricate the rim and tyre beads with water, soapy water, glycerine or French chalk. The fitting line of the cover, just above the bead, should be concentric with the top of the rim flange.

**For inflation pressure see over:—**

# INFLATION PRESSURE TABLE

## MOPEDS & AUTOCYCLES

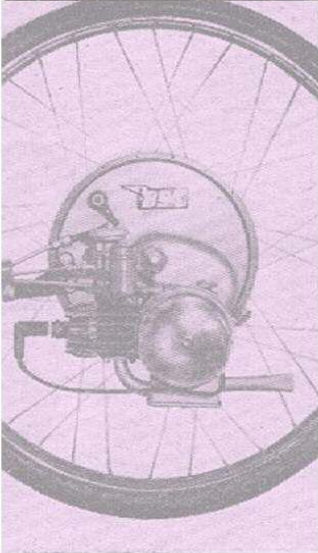
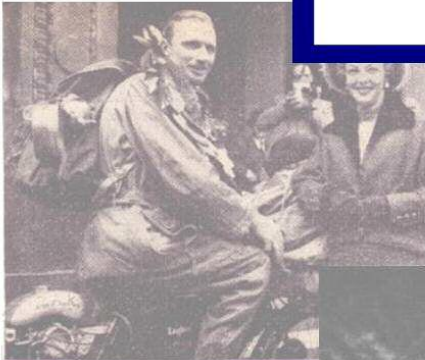
Tyre-Size	Rim Size		Max. Speed m.p.h.	Load per tyre — lb.						
				80	100	120	140	160	180	200
							lb. per sq. in.			
20 x 2½"	20 x 2½"	'G' Section	40	19	20	23	26	30	34	38
23 x 2.00	1522 mm.		30	23	25	30	35	40	45	50
25 x 2.00	24 x 1½"	'F' Section	30	21	23	28	33	37	43	48
26 x 2.00	1755 mm.		30	20	22	28	32	35	40	45
26 x 2 x 1¾"	26 x 1¾"	'F' Section	30	20	22	28	32	35	40	45
2.25—21	2.25—21	'G' Section	—	16	18	20	23	26	29	32

## LIGHTWEIGHT SCOOTERS

LIGHTWEIGHT SCOOTERS			Load per tyre — lb.					
2.50—15	WMO—15	}	100	120	150	180	200	230
20 x 2½" "R"			18	20	24	28	32	36



# IceniCAM Information Service



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