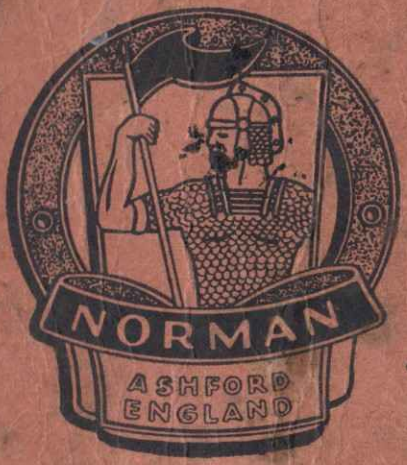


NORMAN Nippy

HANDBOOK

MARK III & IV

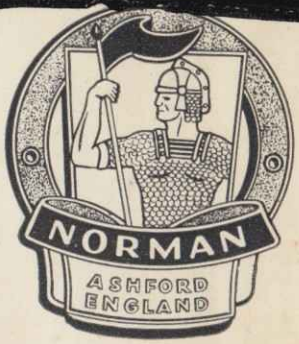
Price 3/6

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, where there are differences such as Engine type etc., these are clearly shown. Export Mark IV Norman Nippys are fitted with Sachs Engine Units and for these an additional book covering that Engine is enclosed.

May we take the opportunity of saying that when ordering spares from the manufadturer always quote Engine and Frame Number.

Norman Cycles Ltd.,
Ashford,
Kent.



NORMAN Nippy

MARK III AND IV

HANDBOOK

PRICE : Three Shillings and Sixpence

FOREWORD

Driving and maintaining a Norman Nippy is extremely simple. The information in this booklet, if carefully followed, will assist you to obtain the best performance from your machine.

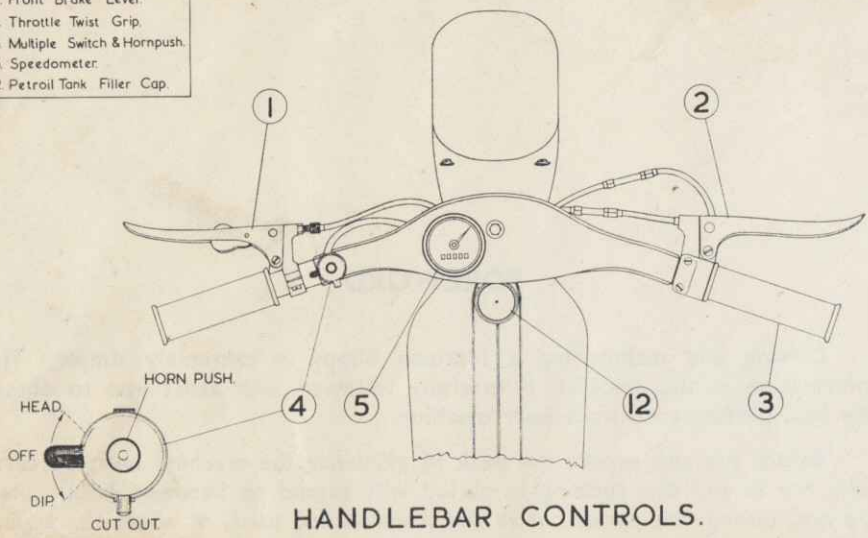
Before you can expect the peak of efficiency the machine must be carefully run in and this running in period will extend to between 3-500 miles. Do not, during this period, drive the machine too hard, or allow the engine to labour, always engage a lower gear or give light pedal assistance to help the engine.

After the machine is fully run in, it will have a maximum speed of around 26 m.p.h. for the Mark III Nippy, and around 30 m.p.h. for the Mark IV Nippy.

The actual maximum speed will, of course, depend on the conditions under which the machine is being driven. It is not a good practise to drive for long distances at the very maximum speed and when undertaking a long journey it is advisable to drive at a sensible cruising speed, 18–20 m.p.h. for the Mark III, and 20–22 m.p.h. for the Mark IV Nippy, this will pay handsome dividends in longer engine life and more miles to the Gallon of Fuel.

Key to Controls
1. Clutch Lever.
2. Front Brake Lever.
3. Throttle Twist Grip.
4. Multiple Switch & Hornpush.
5. Speedometer.
12. Petroil Tank Filler Cap.

NIPPY Mk. III.

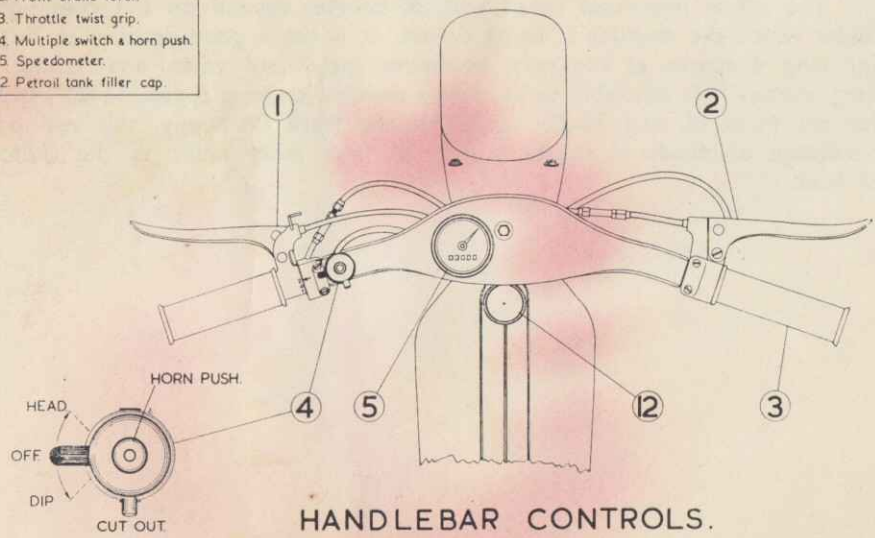


HANDLEBAR CONTROLS.

FIG. 1.

Key to Controls.
1. Clutch lever & gear change.
2. Front brake lever.
3. Throttle twist grip.
4. Multiple switch & horn push.
5. Speedometer.
12. Petroil tank filler cap.

NIPPY Mk. IV.



HANDLEBAR CONTROLS.

FIG. 2.

NIPPY Mk. III

HANDLEBAR CONTROLS, ETC.

1. Clutch lever.
2. Front brake lever.
3. Throttle twist grip.
4. Combined lighting, horn and cut-out switch.
5. Speedometer.
12. Fuel filler cap.

NIPPY Mk. IV

HANDLEBAR CONTROLS, ETC.

1. Clutch and Gear control.
2. Front brake lever.
3. Throttle twist grip.
4. Combined lighting, horn and cut-out switch.
5. Speedometer.
12. Fuel filler cap.

NIPPY Mk. III.
CONTROLS.

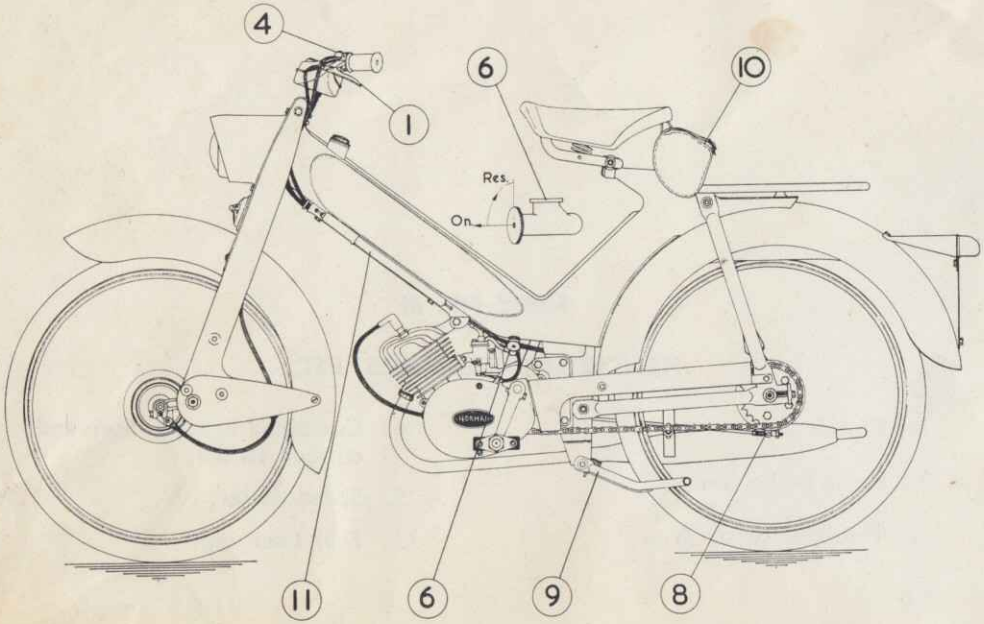


FIG. 3.

Nearside Controls

NIPPY Mk. III.
CONTROLS.

Key to Controls.
1. Clutch Lever.
2. Front Brake Lever.
3. Throttle Twist Grip.
4. Multiple Switch.
5. Speedometer.
6. Petrol Tap.

Key to Controls.
7. Carburetter Primer.
8. Rear Brake Lever.
9. Stand.
10. Toolbag.
11. Tyre Inflator
12. Fuel Tank Filler Cap.

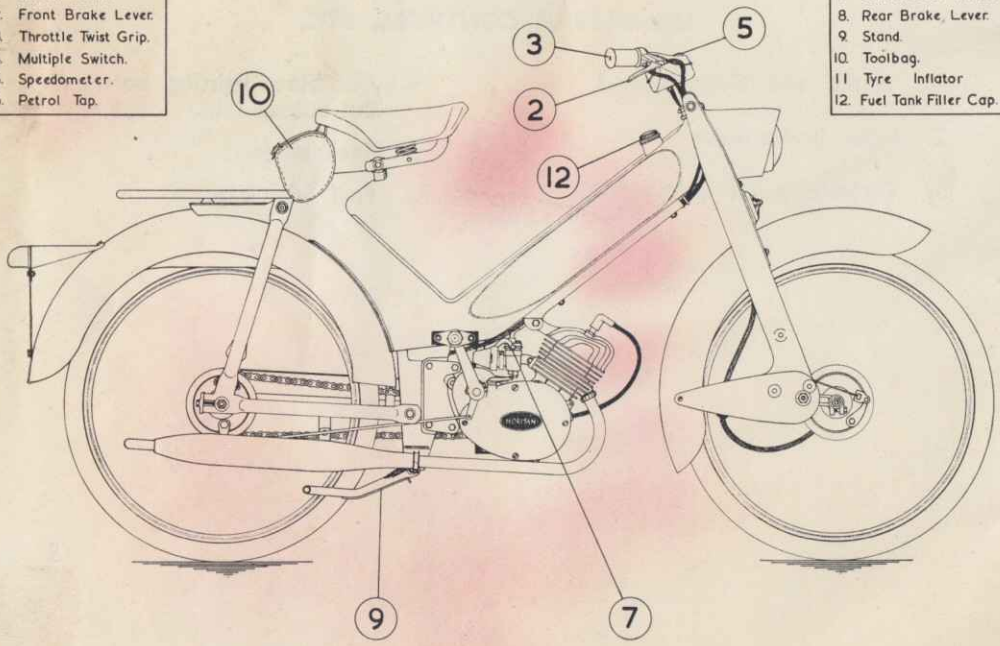


FIG. 4.

Offside Controls.

CONTROLS—MARK III

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 page.

The list of controls is :

No. 1 Clutch lever. This is on the left-hand side of the handlebar and is used for disengaging the clutch.

No. 2 Front brake lever which is situated on the right-hand side of the handlebar and is, of course, used for operating the front brake.

No. 3 Is the throttle twist grip and as the name implies operates and controls the speed of the engine.

No. 4 Is the lighting set switch, horn-button and magneto cut-out. It also selects the dipped headlight beam.

No. 5 Is speedometer, if fitted.

No. 6 Is the petrol tap, of 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 $\frac{1}{2}$ pint of fuel from the tank the tap button must be turned to the right.

No. 7 Is the carburetter primer (or tickler). The carburetter also embodies a choke lever. When starting from cold it is necessary to depress the tickler for a few seconds and move choke lever into the position marked 'C'. When the machine is under way and warmed up the choke lever must be moved to position 'A'. When the engine is hot, do not use the choke or tickler.

No. 8 Is the rear brake lever on hub.

No. 9 Is the centre-stand.

No. 10 Indicates the tool bag.

No. 11 Tyre Inflator.

No. 12 Petrol tank filler cap.

NIPPY Mk. IV. CONTROLS.

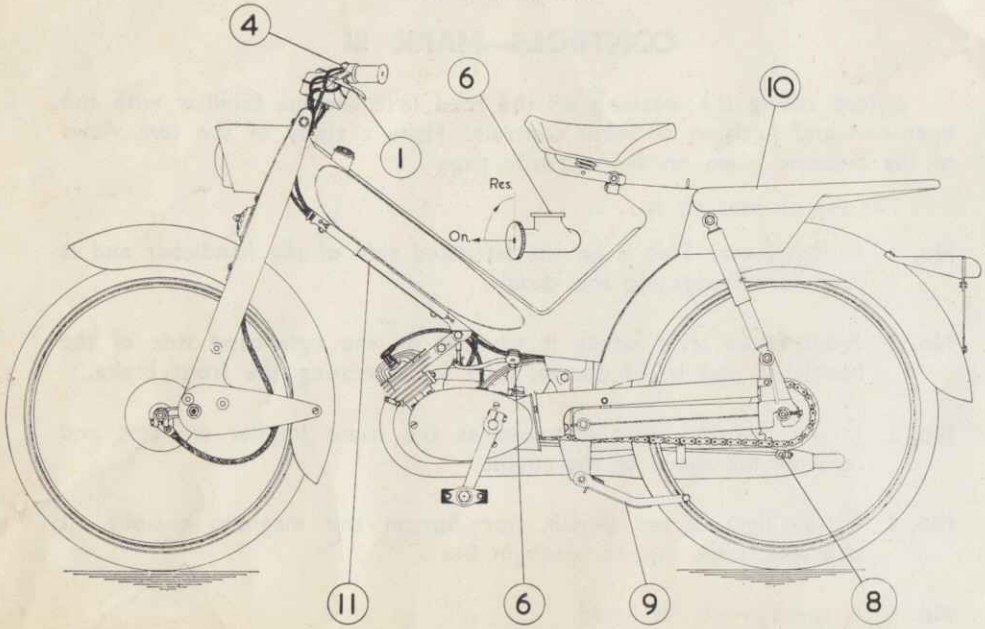


FIG. 5. Nearside Controls.

NIPPY Mk. IV. CONTROLS.

Key to Controls.
1. Clutch Lever & Gear Change.
2. Front Brake Lever.
3. Thottle Twist Grip.
4. Multiple Switch.
5. Speedometer.
6. Petrol Tap.

Key to Controls
7. Carburetter Choke
8. Rear Brake Lever.
9. Stand.
10. Toolbox.
11. Tyre Inflator
12. Petrol Tank Filler Cap.

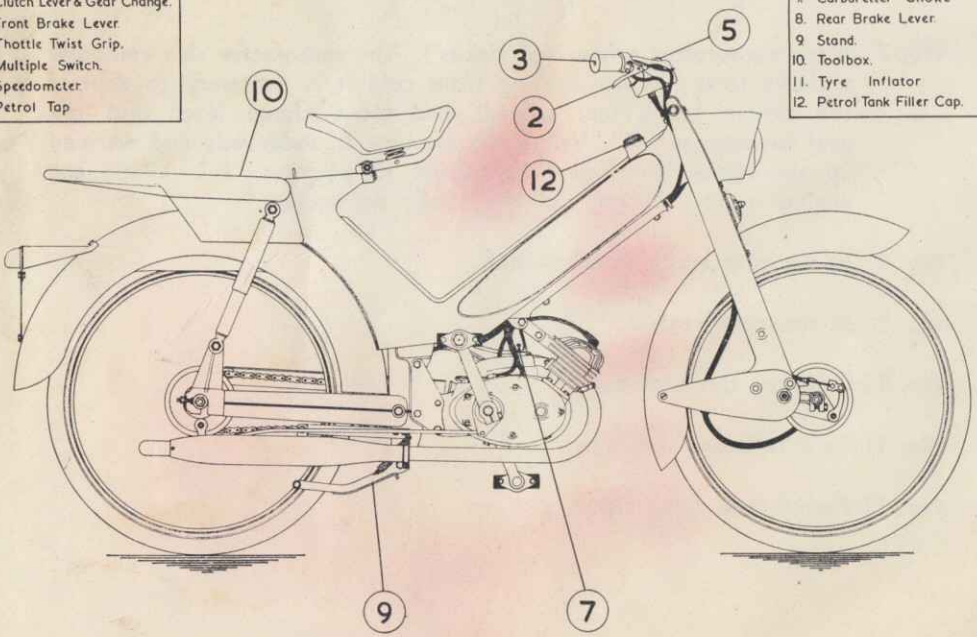


FIG. 6. Offside Controls.

CONTROLS—MARK IV

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 page.

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 Front brake lever which is situated on the right-hand side of the handlebar and is, of course, used for operating the front brake.

No. 3 Is the throttle twist grip and as the name implies operates the throttle and controls the speed of the engine.

No. 4 Is the lighting set switch, horn-button and magneto cut-out. It also selects the dipped headlight beam.

No. 5 Is the speedometer, if fitted.

No. 6 Is the petrol tap, of 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 $\frac{1}{2}$ pint of fuel from the tank the tap button must be turned to the right.

No. 7 Is the carburetter primer (or tickler). The carburetter also embodies a choke control. When starting from cold it is necessary to depress the tickler for a few seconds, and with the throttle twist grip almost shut, push the choke control right down. The choke opens automatically when the throttle is opened and then full power is obtained. When the engine is hot do not use choke or tickler.

No. 8 Is the rear brake lever on hub.

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 MARK III NIPPY

GENERAL SPECIFICATION

FITTED WITH MI-VAL ENGINE

ENGINE : MI-VAL 48 c.c. Unit. Single cylinder two-stroke incorporating clutch.
BORE AND STROKE : 38 mm. and 42 mm.
COMPRESSION RATIO : 6.5 : 1.
BRAKE HORSE POWER : 1.5 at 5,700 r.p.m.
IGNITION : Flywheel Magneto.
IGNITION TIMING : .093" B.T.D.C.
DYNAMO OUTPUT : 6v. 17 watt. A.C.
LIGHT BULBS : 6v. 15/15w. Headlamp, 6v. 3w. Tail Lamp.
SPARKING PLUG : KLG F70 14mm.
SPARKING PLUG GAP : .018"–.022"
CARBURETTER : 'Dell-Orto'
TRANSMISSION : Primary drive by helical gears 6 : 1.
CLUTCH : Multi-plate.
OVERALL GEAR RATIO : 16 : 1.
TRANSMISSION TO REAR WHEEL : $\frac{1}{2}$" x 3/16" chain, 105L.
FINAL DRIVE SPROCKET : 12T.
REAR HUB SPROCKET : 32T.
LUBRICATION : Engine : Petroil mixture. Ratio : 20 : 1 Petrol to oil, SAE 30.
Gearbox : Summer SAE 40 ; Winter SAE 30. 9 fluid ounces.
TYRE PRESSURES : Front 25lb., rear 45lb.
TYRES : 23" x 2.00".
WEIGHT OF MACHINE : 104lbs.
WHEEL BASE : 45$\frac{1}{2}$".
OVERALL WIDTH : 25".
OVERALL LENGTH : 77".
GROUND CLEARANCE : 6".
FUEL CONSUMPTION : 120–180 m.p.g.
FUEL TANK CAPACITY : 1$\frac{1}{4}$ gallons.
MAXIMUM SPEED : 25–26 m.p.h.
CRUISING SPEED : 18–20 m.p.h.

NORMAN MARK IV NIPPY

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 : 40 mm. x 39.7 mm.
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. A.C.
LIGHT BULBS : 6v. 15/15w. Headlamp, 6v. 3w. Tail Lamp.
SPARKING PLUG : Lodge BN 14 or CC 14. Gap : .018"–.022".
CARBURETTER : Villiers, type SM10 with oil moistened air filter and shutter-type choke.
TRANSMISSION : Engine to gearbox : roller chain. Ratio 3.17.
CLUTCH : Multi-plate.
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 : ½" x 3/16" chain. 99L.
FINAL DRIVE SPROCKET : 12T.
REAR HUB SPROCKET : 32T.
LUBRICATION : Engine : Petroil mixture, ⅓ pint oil to 1 gallon petrol ; SAE 30 oil or one of the recommended two-stroke oils in the ratio of 1 part oil to 20 parts petrol.
Gearbox : SAE 30 oil, ⅝ pint.
TYRE PRESSURES : 27lbs. front ; 45lbs. rear.
TYRES : 23" x 2.00".
WEIGHT OF MACHINE : 114lbs.
WHEELBASE : 46".
OVERALL WIDTH : 25".
OVERALL LENGTH : 72".
GROUND CLEARANCE : 7½".
FUEL CONSUMPTION : 120–180 m.p.g.
FUEL TANK CAPACITY : 1¼ gallons.
MAXIMUM SPEED : 30 m.p.h.
CRUISING SPEED : 20 m.p.h.

DRIVING THE MOPED

MARK III NIPPY

First of all pour into petrol tank a quantity of petroil mixture, using S.A.E. 30 oil in the proportion of 1 part oil to 20 parts petrol. Alternatively, petroil mixture using one of the special two-stroke lubricants as recommended inside back cover can be used.

STARTING THE ENGINE

Put the machine on its stand, close the choke on the carburetter (put lever in position 'C') and turn the petrol tap on, depress the carburetter tickler for 5–6 seconds, almost close the twist grip by turning it away from you. Set the pedal crank at the top of its movement, make sure the clutch lever is home (that is, in the driving position). Then give the pedal a firm push down. The engine should now start. If it does not, pull the clutch lever back onto its ratchet, reposition the pedals, release clutch lever and push the pedal down firmly again. When the engine fires, pull the clutch lever back onto its ratchet, give the engine a moment or two to warm up, the choke can now be opened (put lever in position 'A'). Make sure the clutch is fully withdrawn (back on its ratchet) then push the machine off its stand, it is now ready for driving away.

Sit astride the machine, slowly engage the clutch, at the same time progressively opening the throttle, a few turns of the pedals and the machine will move smoothly away.

Having got the machine under way, its speed must be controlled by the throttle twist grip, the clutch lever only being brought into use when stopping or slowing up in traffic.

An alternative method of starting is to disengage the clutch and pedal the machine away, cycle fashion, then when sufficient speed has been obtained release the clutch lever and the engine will start, enabling the machine to be ridden in the normal way, remember of course the choke must be opened when the engine is hot.

When the engine is hot, it is not necessary to use either the carburetter tickler or choke.

DRIVING THE MOPED

MARK IV NIPPY

Pour into petrol tank a quantity of petroil mixture in the proportion of 1 part oil to 24 parts petrol, using an oil of SAE 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.

STARTING THE ENGINE

Turn the petrol tap on and depress tickler on carburetter for 5 or 6 seconds. Turn the gear operating twist grip to neutral position and almost close the throttle twist grip by turning it away from you. Then push right down the choke control. (This opens automatically, see Note 7 of controls.) 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 the engine is hot after a previous run do not depress tickler or choke. The engine should start straight off without doing this.

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 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 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. 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, withdraw the clutch lever and turn gear control to neutral position (O). Do not keep clutch lever withdrawn, in either gear or neutral position, when stationary with the engine running. 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

Push magneto cut-out button. (See controls illustration.)

MAINTENANCE

THIS IS SET OUT FOR THE MARK III AND IV NORMAN NIPPY. ITEMS PARTICULAR FOR ONE MODEL ONLY ARE CLEARLY INDICATED.

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

HUBS

The hubs on these machines do 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 page 31 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 SAE 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, fitted to the Mark IV Nippy only, does not require any lubrication.

SPEEDOMETER

Some speedometer gearboxes are fitted with grease nipples, where this is so, they should be charged with heavy grease every 500 miles.

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 is fitted 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. To do this, hold the hexagon (inside fork blade) with a suitable spanner and tighten the outside 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 following items.

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 put 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.

MARK III NIPPY

REAR WHEEL

Place machine on stand, remove brake rod split pin and nut. Remove connecting link from chain and slacken the two spindle nuts. The wheel can now be pulled back out of the stay ends and free of the mudguard. To re-fit wheel is, of course, the same procedure in reverse.

Before finally tightening the wheel spindle nuts, check the chain adjustment, this is correct when there is approximately $\frac{1}{2}$" up and down movement of the chain in the centre of its run. Adjustment of the chain is 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 to replace and tighten securely the brake rod nut, finally fit the brake rod split pin.

MARK IV NIPPY

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. Disconnect chain. The wheel can now be pulled clear from the machine. To refit wheel is, of course, the same procedure in reverse.

Before finally tightening the wheel spindle nuts, check the chain adjustment, this is correct when there is approximately $\frac{1}{2}$" 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 the handlebar switch, this is clearly illustrated on the Handlebar Control Diagram and is marked No. 4. The illustration is self explanatory, the horn is operated by the top push button, the magneto cut-out by the rear facing push button and the headlamp by the three position lever on the left of the switch. In the middle position the lights are **OFF,** moving the switch forward puts the lights on in the **MAIN** beam position and bringing the switch back through the middle position into the rear position will give a **DIPPED** beam.

The wiring diagram which is shown on Figure 7 shows clearly the layout of the lighting system and its circuit. It also indicates the types and sizes 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.

ENGINE OPERATING INSTRUCTIONS

FOREWORD

Covering the Mi-Val Unit fitted to the Norman Nippy Mark III and the Villiers Unit fitted to the Norman Nippy Mark IV. Much of this information applies to both units, items particular to one unit are clearly shown.

RUNNING INSTRUCTIONS

LUBRICATION

Both engine units are designed to run on petroil mixture in the ratio of

Mark III Nippy 20 parts petrol to 1 of oil.

Mark IV Nippy 24 parts petrol to 1 of oil.

When using a straight oil it is advisable to make the mixture in a separate container and shake well before putting into the tank.

If one of the special self mixing 2-stroke oils is preferred, the petrol can be poured directly into the petrol tank ; it is advisable to turn the petrol tap off when carrying out this method.

GEARBOX LUBRICATION

The gearbox is filled with oil when the engine is tested at the factory. The oil level must be checked occasionally and topped up as required using an oil of the correct SAE rating (see " General Specification "). This check should be made at 500 mile intervals. With the Mark III Nippy this consists of removing the oil level dip stick on the right of the engine. (See Lubrication Illustration.) The level is correct when it comes between the two marks at the bottom of the stick.

To carry out the check with the Mark IV Nippy the gearcase level plug (see Lubrication Illustration) should be unscrewed and also the gearcase oil filler plug ; oil should be inserted at the filler plug until it begins to over run at the level plug when the machine is standing on level ground.

Every 1,000 miles the gearbox should be completely drained and this is best carried out when the engine is warm, and the removal of the drain plug under the engine and also the filler plug at the top to admit air is necessary. Allow to drain for 15 minutes. Replace drain plug. Refill to correct level.

NOTE : The vent hole in the filler plug should be kept clean and unobstructed.

With the Nippy Mark IV it is important that no attempt is made to engage the gears whilst stationary with the engine stopped. Excessive force will be needed to engage them under these conditions and serious damage may be caused to your gearbox by the use of such force. It is, of course, quite in order for the gear to be shifted into neutral as this will cause no damage.

MARK III CLUTCH CABLE

There must always be approximately 1/16" free movement of the clutch lever, this is obtained quite simply by use of the adjusters, one fitted to the clutch lever and the other to the engine, remember to tighten the lock nuts after adjustment.

MARK III CARBURETTER CABLE

This cable must be set by the adjuster fitted just below the twist grip to allow the engine to just tick over when the twist grip control is turned to the closed position.

MARK IV CLUTCH CABLE

There must always be approximately 1/16" to $\frac{1}{8}$" free movement of the clutch lever and this is obtained by means of the cable adjuster screws ; this setting will, however, only be effective if the clutch unit in the engine has been correctly set.

MARK IV CLUTCH UNIT ADJUSTMENT

With the engine in neutral, slacken off the clutch cable by means of the adjusters. Remove the rubber plug in the right-hand cover exposing the clutch adjuster screw. Turn the screw to the right, loosening the clutch plates, until the pedals can be made to slip without rotating the engine—very little movement only is necessary. Next take up cable slack completely by means of the cable adjusters, then rotate the clutch screw to the left, anti-clockwise, $\frac{1}{4}$ turn. Replace the rubber sealing plug and adjust the clutch cable to allow 1/16" to $\frac{1}{8}$" free movement of the lever.

MARK IV GEAR CHANGE CABLE

This cable should be just slightly slack when top gear is engaged. This will ensure that both gears and neutral are correctly engaged when the control lever is shifted into these positions. The adjustment is made at the handlebar end of the cable, just beneath the gear-change twist grip.

MARK IV CARBURETTER CABLE

This cable must be adjusted by the adjuster on the carburetter cap to allow the engine to just tick over when the twist grip control is turned to the closed position.

SILENCER AND EXHAUST PIPE

The silencer incorporated in the exhaust system is readily detachable for cleaning. The silencer as a whole can be removed from the exhaust pipe by slackening the clamping bolt on the silencer clip, unbolting the silencer from the frame of the machine and withdrawing from the pipe.

If the small screw at the extreme rear end of the silencer is removed the internal part of the silencer can be gripped with a pair of pliers and withdrawn for cleaning. This cleaning is then undertaken by washing all parts in petrol or paraffin, or one of the special detergents can be used. Scrubbing with a wire brush will also facilitate the removal of excess carbon deposit.

Blocking up of the exhaust system is one of the most usual causes of loss of power on two-stroke engines and quite apart from cleaning the silencer periodically, the exhaust pipe itself should be cleaned out and also the exhaust port of the cylinder barrel. Any build up of carbon at any of these points will impair the power output of the unit.

FLYWHEEL MAGNETO

The flywheel magnetos fitted to these machines supply both the low tension current for lighting and the high tension current for ignition.

In each case access is obtained to the magneto by removing the left crank and magneto cover, the only attention required is periodic cleaning and adjusting of the contact breaker points.

To clean points, turn the flywheel until the contact breaker is exposed by one of the apertures. The points should be cleaned with a petrol moistened cloth (not petroil) held over a pen-knife blade or similar implement. To check points gap make sure that they are fully open then check with a feeler gauge.

The Nippy Mark III should be set at 15–18 thous of an inch and the Nippy Mark IV should be 12–15 thous of an inch.

If adjustment should be required, each contact breaker is secured by a clamping screw which should be slackened and an adjusting screw which can be turned either way, to open or close the points, after adjustment make sure that the clamping screw is properly tight and re-check the points gap. Make no attempt to remove the flywheel from its shaft; special tools are required for this and it is a task which should be left to a skilled mechanic.

SPARKING PLUG

The sparking plug will require cleaning from time to time. It is advisable to remove it from the engine every 500 miles and clean off all carbon deposit and re-adjust the point gap to between .018"–.022". When adjusting the gap this must always be done by moving the fixed point which is attached to the body of the plug. Never bend the centre electrode. The outside insulation of the sparking plug must always be kept clean and free from moisture.

CARBURETTER

With the Mark III Nippy the air filter should be removed at intervals of 2,000 miles, washed thoroughly in neat petrol then dipped in a petroil mixture and allowed to drain before refitting, the main jet (recognised by its brass screw-driver slot end) on the left of the carburetter is easily removed for cleaning. For general cleaning of the carburetter and float chamber, etc., it will be found most straight forward to remove the whole carburetter from the cylinder barrel.

With the Mark IV Nippy this instrument should require no major attention under normal service conditions except periodical cleaning and re-oiling of the air filter. This filter is readily detachable from the carburetter by prising open two spring clips, one on each side. On removal of the unit it will be observed that there is a plastic plug covering two drain holes on the under side. This plug should be prised out.

To clean the filter dip it bodily in clean petrol, thoroughly rinse it, allow to dry out for a few minutes, and then dip the whole unit once more in a petroil mixture. Wipe off any of this from the external part of the filter, replace the plastic drain plug and refit to carburetter. The period between cleaning this filter depends a great deal on the conditions under which the machine is used, but for all practical purposes, 2,000-mile intervals should prove satisfactory.

NOTE : Ensure that the rubber ring sealing the joint between the filter and carburetter is in place when refitting filter.

Now despite two fuel filters (one on the petrol tap and one on the banjo connection at the carburetter) it may be found after some time that very fine impurities have managed to pass through them and have settled in a fine deposit at the bottom of the float chamber or in one of the fuel ducts. These impurities may find their way into the jets thus starving the engine completely of its fuel. The carburetter as a whole can be readily dismantled for rinsing out in clean petrol but it is as well to note that the main jet screws into the right-hand side of the carburetter body and can be easily removed for cleaning without recourse to further dismantling of the instrument. A choked jet can be cleared by blowing through it. The throttle slide has attached to it a taper needle. This is located in one of the five grooves provided by a small cranked plate. The position of this needle, which is set by the manufacturers, generally should not need altering.

DECARBONISING

Depending upon the conditions under which the machine is used the period between decarbonising will vary between 1,500 to 3,000 miles. When the machine is in need of decarbonising this will be indicated by loss of power and general sluggishness combined in some instances by overheating. When this time comes it is recommended that you arrange with your dealer to have the engine decarbonised. If, however, you feel competent to undertake the job yourself, the following notes will be found useful.

1. First obtain from your dealer a new exhaust gasket.
2. Get together the necessary tools, comprising : a tubular plug spanner, a special 'C' spanner, pliers, an old knife or scraper, and a screwdriver. Some clean rag will also be useful.

3. Disconnect the H.T. lead from the sparking plug.
4. With the 'C' spanner remove the exhaust pipe attachment nut and take off exhaust pipe.
5. Unscrew the lower bolt, washer and nut of the silencer rear support clip and remove exhaust pipe and silencer from the machine in one piece.
6. With the tubular plug spanner unscrew sparking plug from cylinder head.
7. With tubular spanner remove the four cylinder head nuts and washers and lift head from cylinder barrel.
8. By turning the rear wheel of the machine with the clutch engaged, bring the piston to its lowest position. This will be just below the exhaust port.
9. Carefully scrape away the carbon deposit from within the port, finishing off by drawing a narrow strip of cloth through it to remove any loose carbon.
10. Now turn the engine to bring the piston to the very top of its stroke.
11. Carefully scrape away carbon deposit from the top of the piston, finishing off by wiping it clean.
12. Now take the cylinder head and scrape the carbon deposit from inside of this and wipe clean.
13. The silencer and exhaust pipe should be cleaned as indicated earlier in this book.
14. Re-assemble the silencer and exhaust pipe.
15. Re-assemble cylinder head to barrel.
16. Replace exhaust pipe on the front of the cylinder barrel using the new exhaust gasket.
17. Screw the sparking plug firmly back into cylinder head after having cleaned off all carbon and reset points gap to .018"–.022".
18. Reconnect H.T. lead. The engine is now ready for starting up.

MAINTENANCE SUMMARY

Every 500 miles :

Check oil level in gearbox and clutch housing.

Every 1,000 miles :

Clean sparking plug and check gap. Drain gearbox and clutch housing, flush and refill. Clean air filter if necessary.

Every 3,000 miles :

Clean carburetter, fuel pipe, and filter. Clean air filter. Decarbonise engine and silencer.

After first 600 miles :

Drain gearbox and clutch housing and refill.

FAULTS AND THEIR CORRECTION

If the engine will not start

1. See that there is fuel in the tank.
2. See that the fuel tap is open.

If it still does not start it may be due to any of the following :

Carburetter blocked—unscrew jet and clean by blowing through it.

Fuel pipe blocked—clean fuel pipe, tap, screen filter and strainer.

Ignition cable disconnected or faulty—adjust or renew the cable.

Sparking plug defective—remove the plug and clean it and check the gap. If the plug is faulty renew it.

If the engine starts but quickly stops again.

Fuel pipe blocked—clean fuel pipe, tap and filter by blowing through it.

Sparking plug dirty—clean or replace plug.

Blocked air hole in tank filler cap—remove the filler cap and clean the vent hole.

If the engine runs at reduced power

Carburetter jet blocked—unscrew jet, and clean by blowing through it.

Sparking plug fouled—clean and reset or replace.

Air filter block—clean and oil air filter.

Exhaust blocked—clean exhaust port and silencer.

Contact breaker not adjusted—correct the gap and clean contacts.

If the engine runs unevenly

Sparking plug dirty—clean or replace plug.

Ignition system faulty—check ignition cable and connection. If this is all right, have the ignition system checked by your dealer.

If the engine 'four-strokes' and pulls badly

Exhaust blocked—decarbonise exhaust port and silencer.

Carburetter flooding—remove the float casing cover, clean, and check needle seating. If the float leaks fit a new one.

Carburetter jet loose—tighten jet.

Engine pulls poorly

Fuel supply inadequate—check and clean fuel pipe and tap.

Carburetter jet blocked—clean jet.

Engine 'back-fires'

Sparking plug fouled—clean and reset or replace.

Fuel supply insufficient—check and clean fuel pipe.

Engine cannot be started or clutch slips.

Clutch slipping—adjust clutch unit and cable.

Gearcase oil too thick—fill with oil of viscosity SAE 30.

Special Note

The Unified Thread System is adopted at various points on the Villiers engine, and Metric threads on the Mi-Val engine—it is most important therefore to ensure that any parts you obtain are genuine Manufacturers' spares.

WIRING DIAGRAM. NIPPY Mk. III. & Mk. IV.

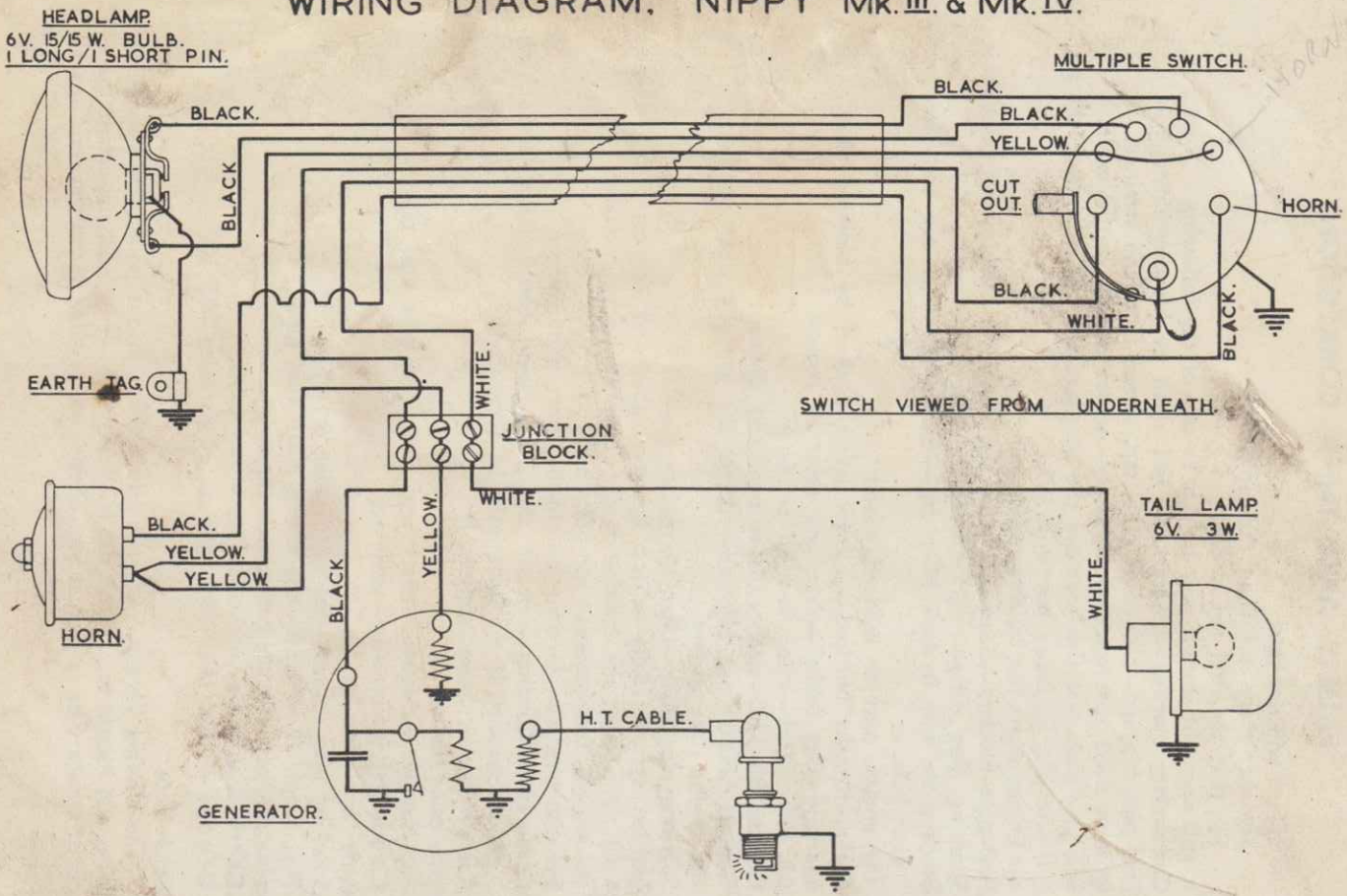


FIG. 7.

NIPPY Mk. III.
LUBRICATION.

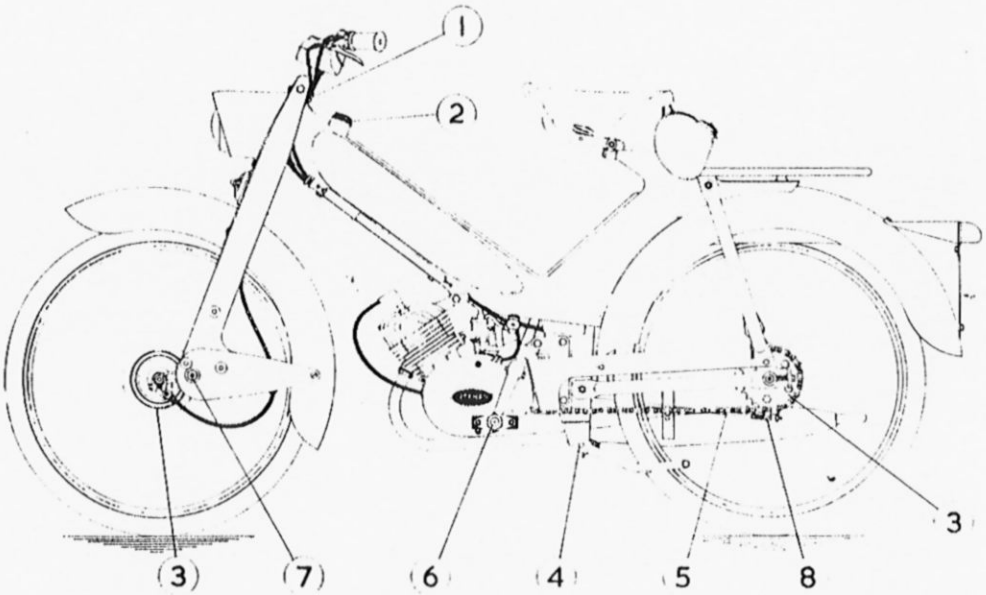


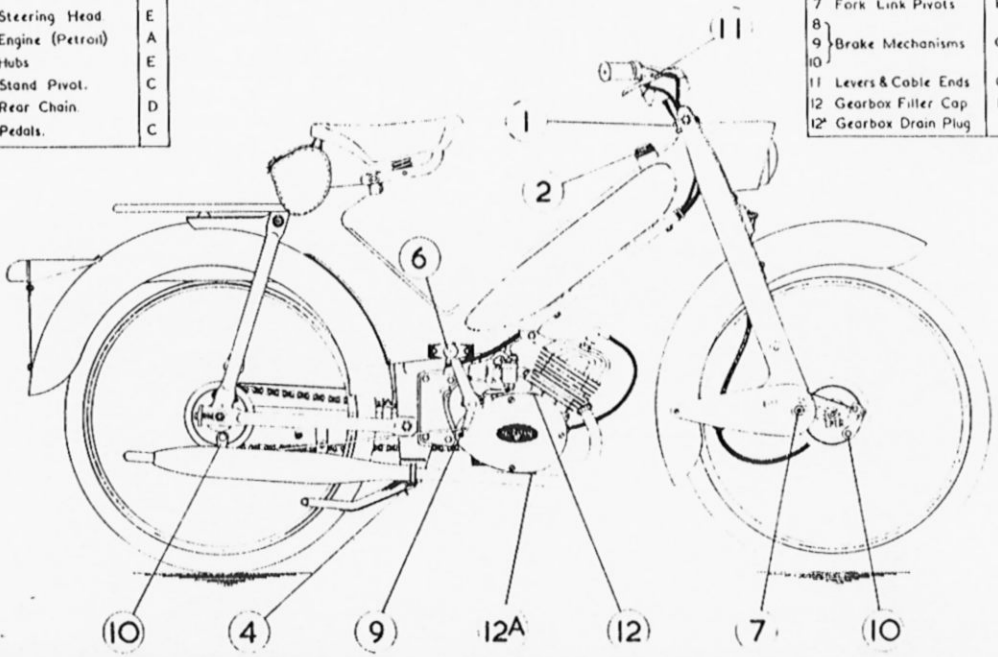
FIG. 8

Nearside Lubrication

NIPPY Mk. III.
LUBRICATION.

Key to Lubrication	
1. Steering Head	E
2. Engine (Petrol)	A
3. Hubs	E
4. Stand Pivot.	C
5. Rear Chain	D
6. Pedals.	C

Key to Lubrication	
7 Fork Link Pivots	E
8, 9, 10 Brake Mechanisms	C
11 Levers & Cable Ends	C
12 Gearbox Filler Cap	B
12A Gearbox Drain Plug	



NIPPY Mk. IV.
LUBRICATION.

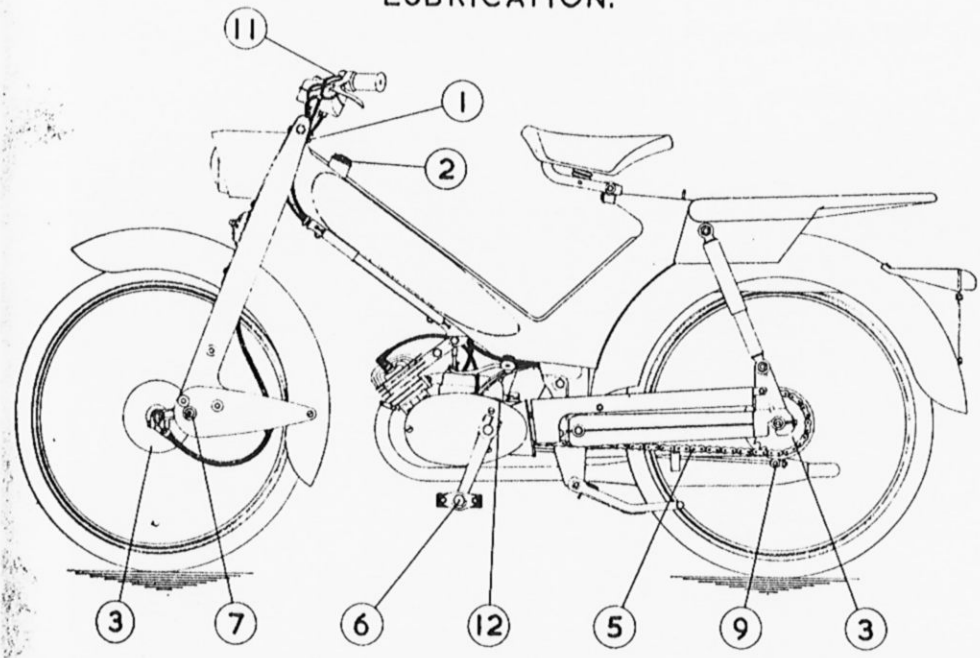
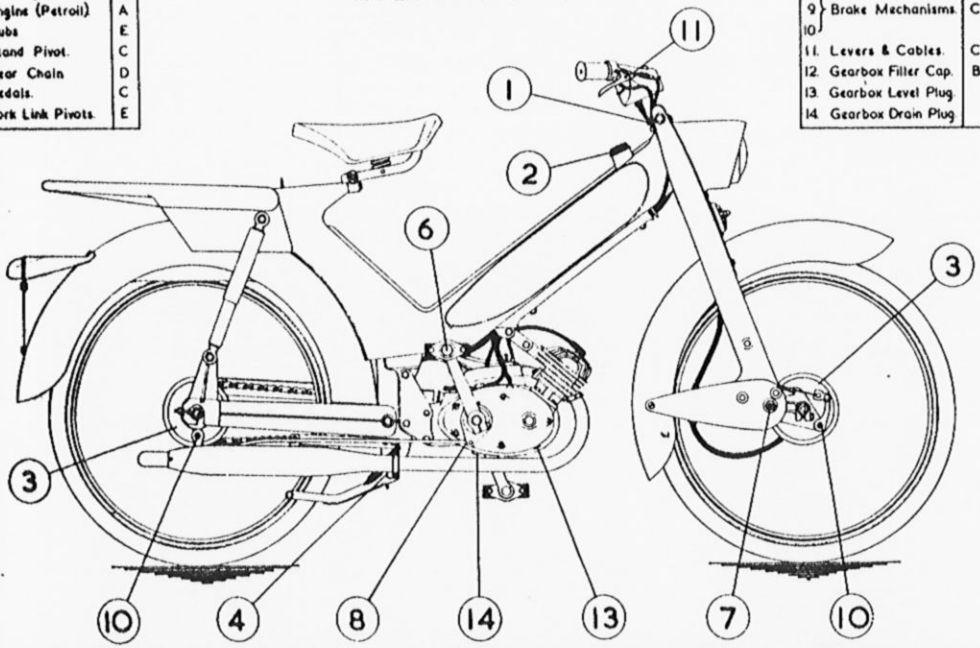


FIG. 10. Nearside Lubrication.

NIPPY Mk. IV.
LUBRICATION.

Key to Lubrication.	
1. Steering Head	E
2. Engine (Petroil)	A
3. Hubs	E
4. Stand Pivot.	C
5. Rear Chain	D
6. Pedals.	C
7. Fork Link Pivots.	E

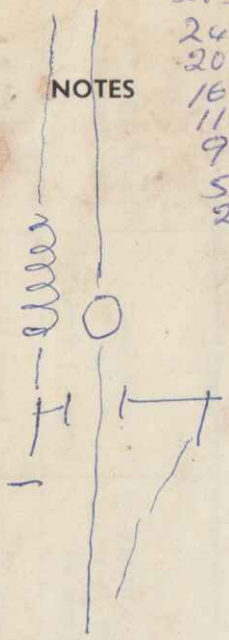
Key to Lubrication.	
8, 9, 10. Brake Mechanisms.	C
11. Levers & Cables.	C
12. Gearbox Filler Cap.	B
13. Gearbox Level Plug.	
14. Gearbox Drain Plug.	



RECOMMENDED LUBRICANTS

	MI-VAL UNIT	SHELL	ESSO	WAKEFIELD	B.P.	MOBIL	
A	**ENGINE :** Petrol/oil ratio 20 : 1 unless otherwise stated.	Shell 2T Petroiler or Shell 2T 2 stroke oil	Esso 2 stroke Motor oil (16 : 1) or Essolube 50	Castrol 2 stroke oil (16 : 1) or Castrol XXL	B.P.-Zoom or Energol 2 stroke oil	Mobilmix TT (16 : 1) or Mobiloil BB	A
B	**GEARBOX :**	Shell X-100 30	Essolube 30	Castrol XL	Energol SAE 30	Mobiloil A	B
	VILLIERS UNIT						
A	**ENGINE :** Petrol/oil ratio 24 : 1 unless otherwise stated.	Shell 2T Petroiler Mix or Shell 2T 2 stroke oil	Esso 2 stroke Motor oil (20 : 1) or Essolube 30	Castrol 2 stroke oil (20 : 1) or Castrol XL	B.P.-Zoom or Energol 2 stroke oil	Mobilmix TT (20 : 1) or Mobiloil A	A
B	**GEARBOX :**	Shell X-100 30	Essolube 30	Castrol XL	Energol SAE 30	Mobiloil A	B
	GENERAL CYCLE PARTS						
G	**OIL CAN :**	Shell X-100 30	Esso Handy Oil	Castrol XL	Energol SAE 30	Mobiloil A	C
D	**REAR CHAIN :**	Retinax A	Esso Fluid Grease	Castrolease CL	Energrease 12	Mobilgrease MP	D
E	**WHEEL HUBS :** and other grease lubricated parts.	Retinax A	Esso Multi-Purpose Grease H	Castrolease CL	Energrease L2	Mobilgrease MP	E

NOTES



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 cycles, 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 on 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, conditions 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.

NORMAN CYCLES LIMITED

ASHFORD, KENT, ENGLAND

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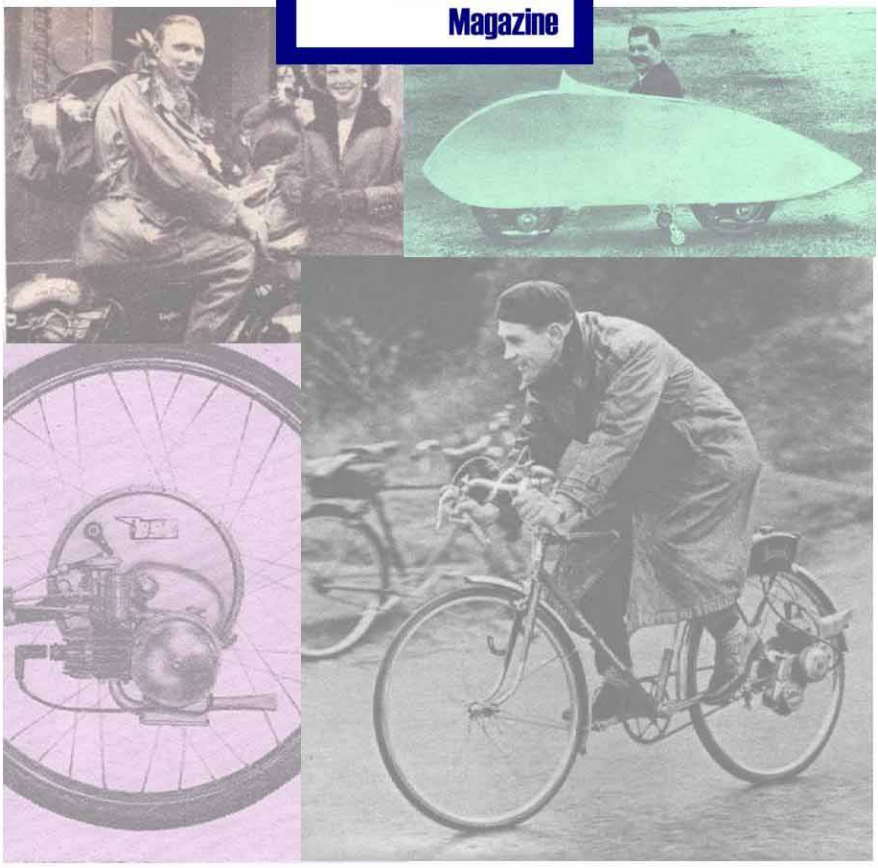

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