DOUGLAS
BRISTOL

By Appointment
To His Royal Highness The Duke of Edinburgh
Manufacturers of Vespa Scooters

Vespa 150 Sportique

OPERATION AND MAINTENANCE

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OPERATION AND MAINTENANCE

DOUGLAS (SALES & SERVICE) LTD., KINGSWOOD, BRISTOL
Telephone **67-1881**
DIVISION OF THE WESTINGHOUSE BRAKE AND SIGNAL COMPANY LIMITED

Fig. 1 - Vespa 150

NOTICE

To keep your VESPA in perfect running order and not to invalidate the guarantee offered by the contract, it is advisable to entrust repairs only to retailers or authorized service stations.

Demand original VESPA spare parts exclusively. All VESPA spares are made of the same material, have undergone the same machining steps and inspections as the components of your VESPA. This means guarantee for long life and normal performance of your machine and for your personal safety.

Special care should be taken with regard to fuel mixture which should consist of a good quality petrol and oil of make, grade and in the amount prescribed in this booklet, page 21.

SERVICE EXCHANGE

Ask your Dealer for full particulars relating to the Service Exchange Scheme. The use of the facilities we offer through this medium ensures an economical, speedy, and reliable means of carrying out repairs when such become necessary.

INDEX OF MAIN DIRECTIONS

We wish to thank you for your choice of this excellent model Vespa and hope that it will satisfy your every desire.

This booklet, in which the simple instructions for operation and maintenance can be found, will enable you to understand and use your machine in the most advantageous manner.

The descriptions and illustrations in this booklet are not to be taken as binding on the Manufacturer. The essential features of the model described and illustrated herein remaining unaltered, Douglas reserve therefore the right to carry out at any moment, without being obliged to bring this booklet up-to-date in due course, modification that may occur concerning machine units and parts, or delivery of accessories, that the Firm deems to be convenient on improvement purposes or for what may concern manufacturing or commercial requirements.

TECHNICAL DATA

Fuel consumption 128 miles per imp. gal. (approx.)
Max speed 85 Km/h (53 m.p.h. approx.)
Carrying capacity 2 persons and 10 Kg (22 lbs) of luggage.
Range ... ... 225 miles (360 Km)
Wheel base ... ... 46.5″ (1180 mm)

Handlebars width ... 27.9″ (710 mm)
Max length ... ... 68.7″ (1745 mm)
Max height ... ... 40.1″ (1020 mm)
Ground clearance ... 5.1″ (130 mm)
Min. turning circle ... 59″ (1500 mm)
Weight (without fuel) 194 lbs (87 Kg)

IDENTIFICATION DATA

Serial numbers prefixed with the figure '5' followed by two letters are positioned as follows:
Chassis—Stamped on a metal plate and affixed to the chassis immediately above the engine unit.

Engine—Stamped directly on to the crankcase half (clutch side) which forms the swinging arm of the engine which is pivoted to the chassis.

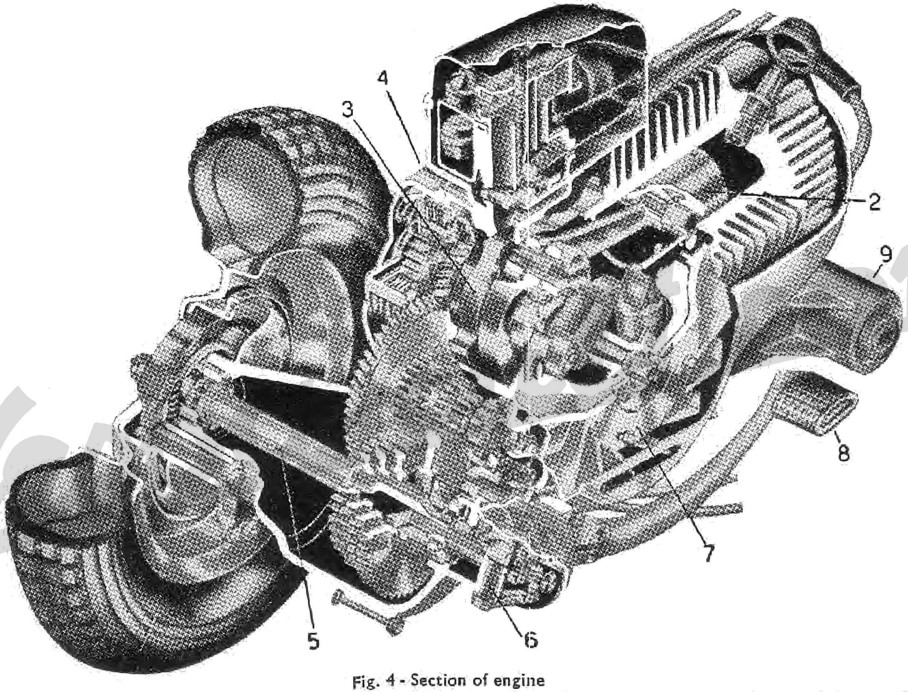


Fig. 4 - Section of engine

1. Air cleaner and carburettor - 2. Piston - 3. Crankshaft - 4. Clutch - 5. Mainshaft with gear pinions - 6. Gear shifter - 7. Flywheel magneto - 8. Kick-starter - 9. Crankcase arm (clutch side), pivoted to the frame.

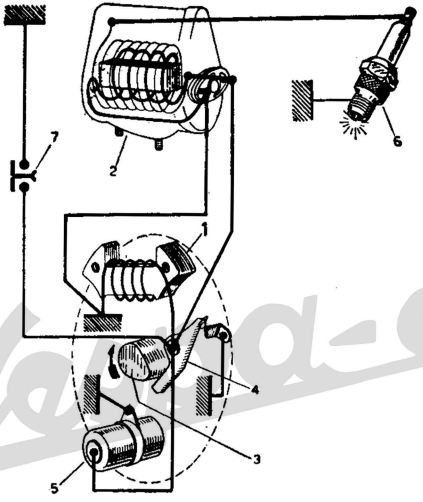


Fig. 5 - Ignition diagram

1. Ignition coil in flywheel magneto - 2. External H. T. coil - 3. Rotor cam - 4. Breaker - 5. Condenser - 6. Sparkplug - 7. Engine cut-out on switch.

Such numbers and prefixes identify the Vespa as prescribed by law and are repeated on the test card and other documents of the Vespa.
They must be quoted when ordering spares.

ENGINE

Single horizontal cylinder, two-stroke, with deflector piston and rotary valve, i.e.: fuel mixture flow to the cylinder is controlled by the rotation of a crankweb (see Fig. 6).

The engine works on a 2% petrol-oil mixture.

Bore	...	...	...	2.24″ (57 mm)
Stroke	...	...	...	2.24″ (57 mm)
Displacement	...	8.88 cu. in. (145.45 cc)		
Compression ratio	...	...		6.5 to 1

The engine is pivoted to the chassis of scooter through the cylindrical arm of the crankcase half, clutch side, provided with a spindle and two bushes (see Fig. 4).
Its vibrations are damped by the rear

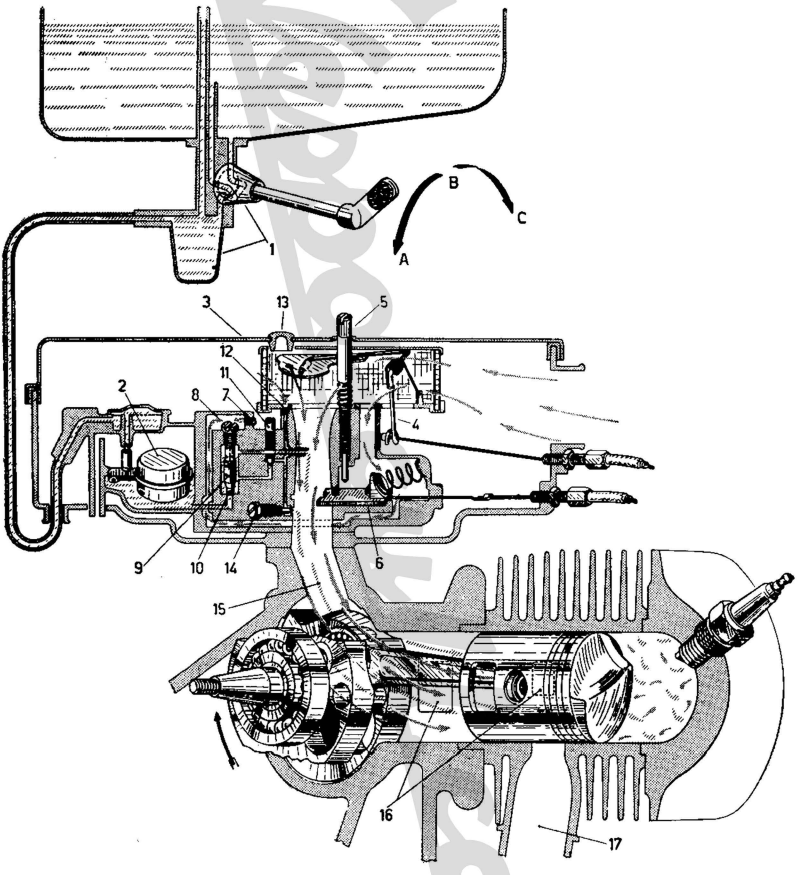


Fig. 6 - Feeding circuit

1. Fuel cock lever with sediment trap: (A) Reserve, (B) Open, (C) Closed - 2. Float - 3. Air cleaner with carburettor - 4. Choke - 5. Set screw for throttle slide - 6. Throttle slide - 7. Air vent for main jet - 8. Hole on mixer top - 9. Mixer - 10. Main jet - 11. Idling jet - 12. Air vent for idling jet - 13. Plug for inlet hole for oil; for laying up - 14. Idling adjuster - 15. Intake port - 16. Transfer ports - 17. Exhaust duct.

suspension with variable rate coil spring and hydraulic damper (see also page 13).
The rear wheel is secured to the end of the mainshaft.

Ignition by an external H.T. coil with primary winding fed by another coil inside the flywheel magneto (see Fig. 5).

Sparkplug: *K.L.G.* F.70, Gap .023/.026; *A.C.* 45F, Gap .022; *Lodge* H.N. Gap .022/.026; *Champion* L.86 Gap .020.
Ignition timing with spark advance of 28° ± 1°.

Lubrication of piston, cylinder, gudgeon pin, connecting rod, crankshaft, main bearings is attended to by the oil in the fuel mixture.
Both clutch and gear box operate in oil bath.

Fuel supply by gravity with petrol oil mixture.
The carburettor is embodied in the air cleaner case, has a plate-shaped slide valve and immersed jets.
Fuel tank with total capacity of 1.7 imp. gals), and emergency reserve of about .3 imp. gals.
Three way tap (" off " - " on " - " reserve ").

Transmission. The engine (see Fig. 4) directly drives the rear wheel through clutch, cush drive and gear box.
Engine to wheel transmission ratios:

First:	13.35 to 1
Second:	9.32 to 1
Third:	6.64 to 1
Fourth:	4.73 to 1

Clutch. Multiplate, with linings bonded to the driving discs (see Fig. 4).
Control by lever, on left hand side of handlebars (see Fig. 8), and adjustable cable.

Gear box. 4-speed drive with mesh gears in oil bath (see Fig. 15).
Its adjustable twistgrip control is coupled

with that of the clutch, on left hand side of handlebars (see Fig. 8).

Starting. By means of kickstarter, right hand side of scooter. The multiple gear and consequently the engine is set in motion through a ratchet and a gear by operating the kick-starter.

Cooling effected at all engine speeds by a centrifugal fan (see Fig. 7).

Silencer. Expansion and absorption combined type with very high silencing efficiency.

Air cleaner mounted inside the body. Air goes to the carburettor through a large flexible inlet tube, a silencing chamber and porous filter, which ensures a very quiet air intake.

Particular attention has been given to the design of the silencer and air filter in accordance with Ministerial requests to reduce the noise level to an absolute minimum. We recommend that these parts are maintained in good condition.

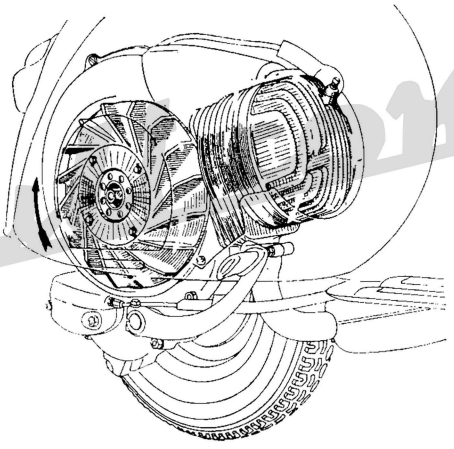


Fig. 7 - Engine cooling scheme

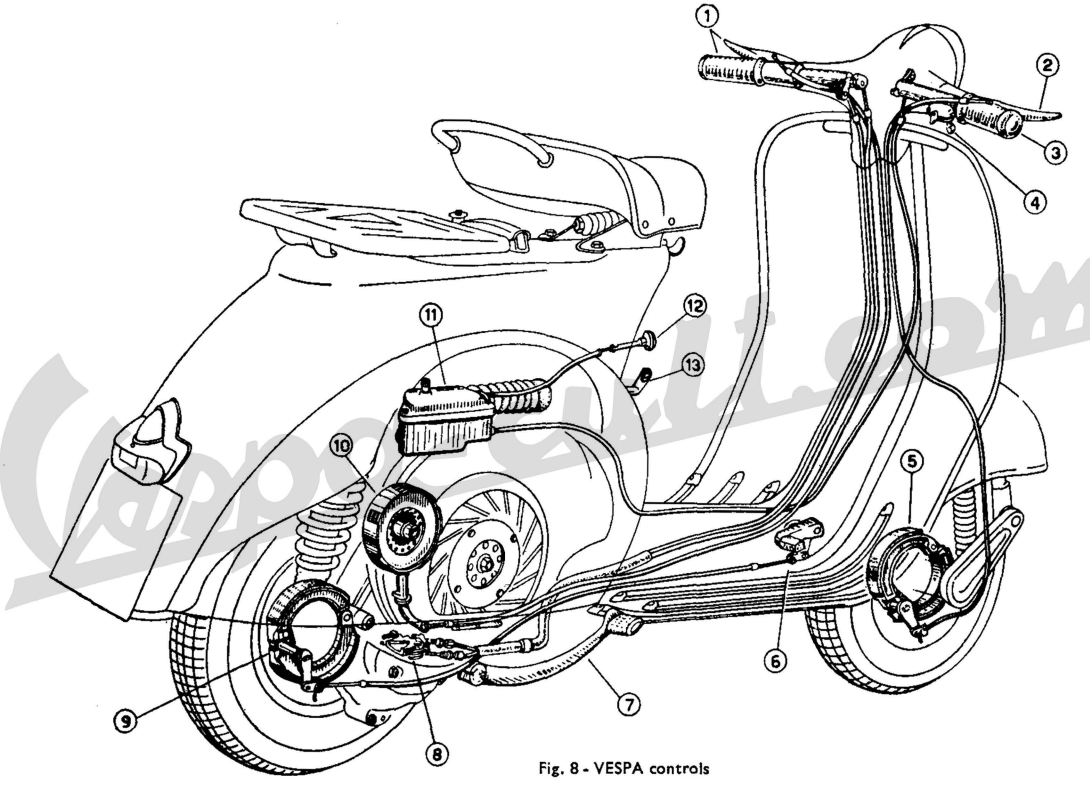


Fig. 8 - VESPA controls

1. Gear change twistgrip with clutch control lever - 2. Front brake lever - 3. Throttle control grip - 4. Light and dip switch - 5. Front brake shoes - 6. Rear brake pedal - 7. Kickstarter - 8. Gear shifter - 9. Rear brake shoes - 10. Clutch - 11. Carburettor, air cleaner 12. Choke control lever - 13. Fuel tap.

FRAME

Stressed skin body of pressed steel sheet, (see Fig. 1), with streamlined, monocoque type structure. It gives full protection to the driver, to the passenger and to the machine units; it is completed in this function by the mudguard and, on the two sides, by the steel sheet engine bonnet and tool box.

Handlebars in light alloy, with arrangement for head lamp and speedometer. All control cables and electric wires, connected to the handlebars, are concealed inside them (see Fig. 8).

Steering column, suspension and wheels. The steering column bears the handlebars, clamped on its top end, and the front wheel swinging hub, pivoted at its bottom end through a stub axle (see Fig. 9).
Front suspension with variable rate coil spring and double action hydraulic damper.
Rear suspension: swinging bracket for engine and rear wheel, variable rate coil spring and coaxial, double action hydraulic damper.
The wheels are interchangeable with rims of pressed steel sheet (⌀ 8").
Tyres of dia. 3.50 - 8".

Saddle of the nose-pivoted, sprung type with central spring adjustable to the driver's weight.

Brakes. Expanding type with cable control.
Front: lever on R.H. side of handlebars.
Rear: control pedal on floorboard, R.H.
Drums in light alloy with cooling fins.

Central stand. A two-legged stand, easy to operate, is arranged under the flooboard. A strong return spring in the middle holds it in contact with the flooboard and keeps it from vibrating while the scooter is being ridden.

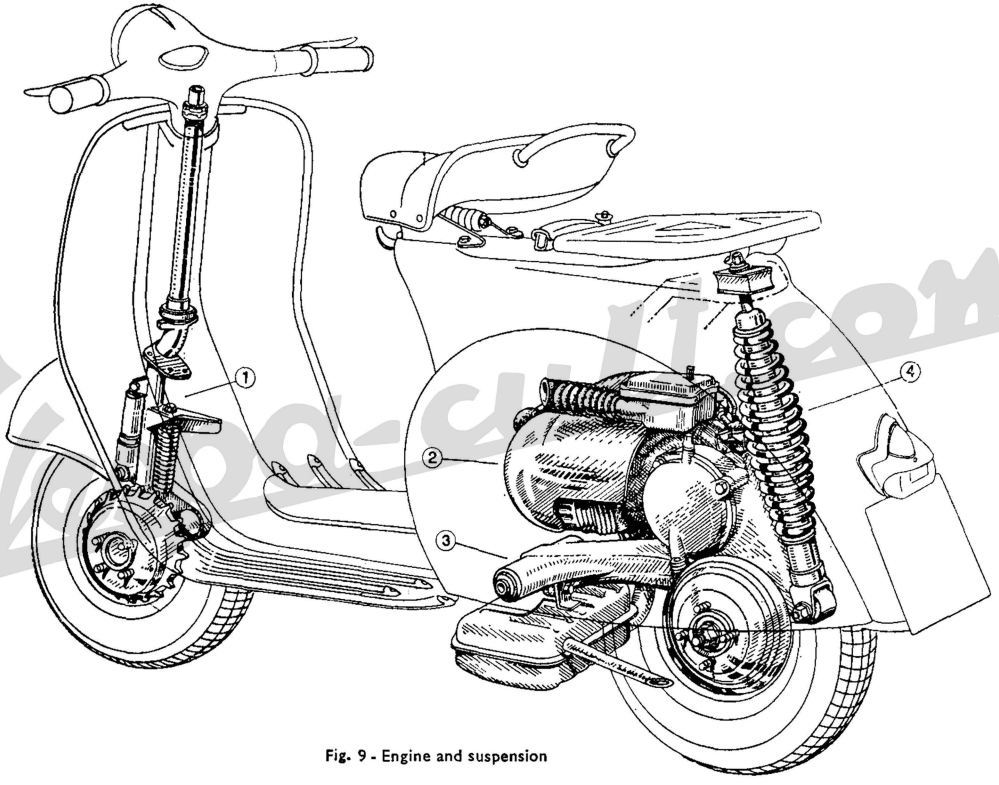


Fig. 9 - Engine and suspension

1. Steering column and front suspension - 2. Engine - 3. Pivoting arm of crankcase half, clutch side - 4. Rear suspension spring and hydraulic shock-absorber.

Steering lock. A suitable security lock is arranged on the frame, near the handlebars. Turning the key anticlockwise and the handlebars to the left, the lock engages the lugs welded on the steering column. Turn the key clockwise for releasing the steering system (see Fig. 10).

Do not attempt to ride the machine unless the key is in the lock and the handlebars move freely.

CAUTION.—The key cannot be removed when the lock is in the free steering position. Under no circumstances should the lock be lubricated.

Speedometer. The speedometer is housed in the central portion of the handlebars (see Fig. 10) and adds to the appearance of the scooter.

It is driven by the front wheel, the flex drive being completely enclosed in the steering column.

The speedometer dial is illuminated during night riding by a bulb suitably installed in the head lamp.

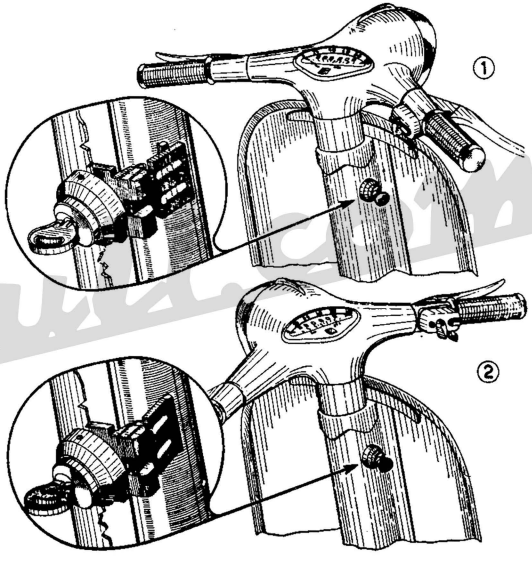
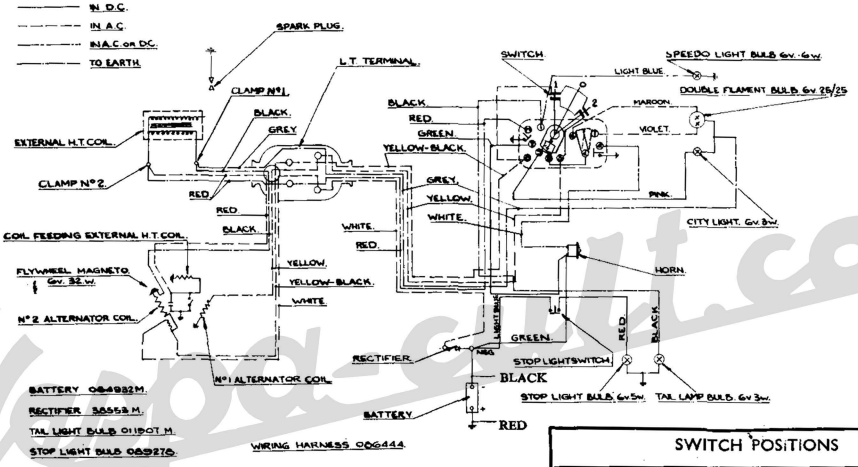
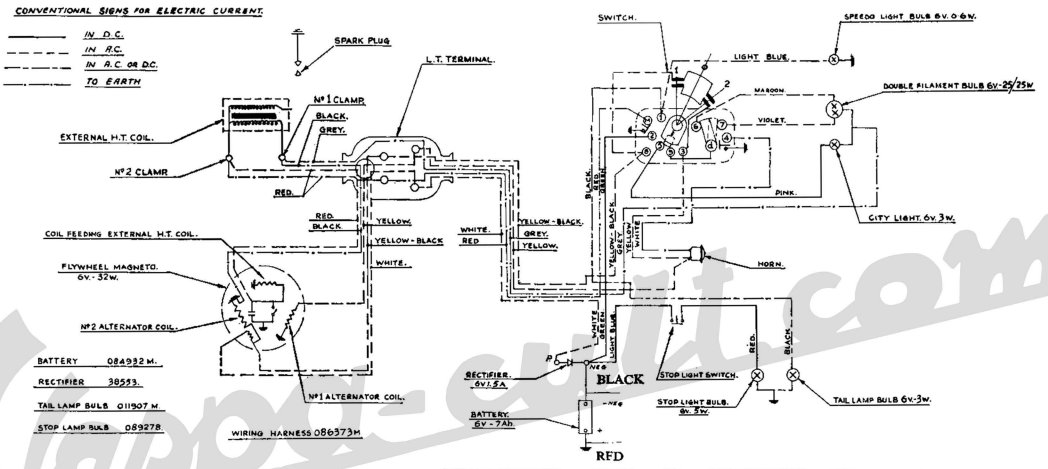


Fig. 10 - Security lock
1. Normal position - 2. Closed



SWITCH POSITIONS	
POSITION 0	No Lights L.T. Coil not in circuit
POSITION 1	A.C. current to headlamp, tail lamp and speedolight. L.T. coil in circuit contacts, 8, 3, 9, d, 6, or 7, 1, connected
POSITION 2	D.C. current, city light, tail lamp and speedolight. L.T. coil in circuit contacts 8, 3, 2, 5, 1, connected.

N.B. From and including Engine and Chassis No. 5 A.C./6450, the A.C. Horn is replaced by a D.C. Horn, and the revised *Wiring Diagram* is illustrated on this page.



SWITCH POSITIONS	
POSITION 0.	NO LIGHTS. L.T. COIL NOT IN CIRCUIT.
POSITION 1.	A.C. CURRENT TO HEAD LAMP, TAIL LAMP, & SPEEDO LIGHT. L.T. COIL IN CIRCUIT. CONTACTS 8, 3, 9, d, 6, OR 7, 1 CONNECTED.
POSITION 2.	D.C. CURRENT—CITY LIGHT, TAIL LAMP, & SPEEDO LIGHT. L.T. COIL IN CIRCUIT. CONTACTS 8, 3, & 2, 5, 1 CONNECTED.

Fig. 12 - Electric wiring diagram

WIRING

The electrical supply for illumination and horn is in a.c., fed directly from a 6 pole flywheel magneto (nominal voltage 6V), to the following groups:

Parking lights direct from battery.

The **head lamp**, ⌀ 115 mm (4.5"), installed in the handlebars, has a 25/25W double filament bulb (main and dipped beam), and with a 3W bulb (pilot light and parking light).

The **tail lamp,** with red reflector, has a 3 W bulb which also illuminates the number plate and a 5W bulb for the STOP light.

Horn. A/C.

Speedometer. A 0.6 W bulb is provided for illuminating the speedometer dial.

The light and dip **switch** unit, with two levers is installed on the right hand side of the handlebars (see Fig. 11); one of the control levers has three positions:

— pilot light, tail lamp and speedometer bulb on;

— lights off;

— head lamp, tail lamp and speedometer bulb on;

the other one gives the two lighting conditions of the head lamp (main and dipped beam).

The switch has also two push buttons for cut-out and horn respectively.

TOOL KIT

2 double-ended box spanners (11 - 14 and 21 - 22 mm); 1 double open-ended spanner (8, 14 mm); 1 single open-ended spanner (7 mm); 1 screwdriver.

These tools are contained in a canvas roll which is placed in the left wing together with this booklet.

Owing to the simple and rational design of the VESPA scooter, no particular experience is **required** for its operation, nor skilled personnel for its **maintenance.** The tasks can be carried out by any customer, even inexperienced, by following some general rules.

OPERATION

Fuel to be used during and after running-in should be a mixture of petrol and oil, with 2% pure mineral oil or $\frac{1}{4}$ pint per $1\frac{1}{2}$ gallons resp. See lubrication chart page 30.

We recommend you to use good quality, standard grade car petrol and to mix it with oil thoroughly. Keep the breather of filler cap clean.

Running-in. Important rules to be followed while running-in 2000 Km (1200 miles):

— Do not exceed following speeds:

1st gear:	13 mph (20 Km/h)
2nd gear:	19 mph (30 Km/h)
3rd gear:	25 mph (40 Km/h)
4th gear:	34 mph (55 Km/h)

— Do not hold these speeds for long periods neither use full throttle up-hill.

— Change oil in the gear box and check that nuts and bolts are not slack after the first 600 miles (1000 Km).

— Check that the carburettor is securely fitted on crankcase so that no air infiltrations may occur.

Starting the engine. See (Fig. 14) the three positions of the tap: on, off, reserve.

Open the fuel tap, put the gear box in neutral (Fig. 14-15) and the throttle in slow running position, then depress the starting lever.

Use the choke when the engine is cold; releasing as soon as the engine starts.

In case of starting troubles due to engine

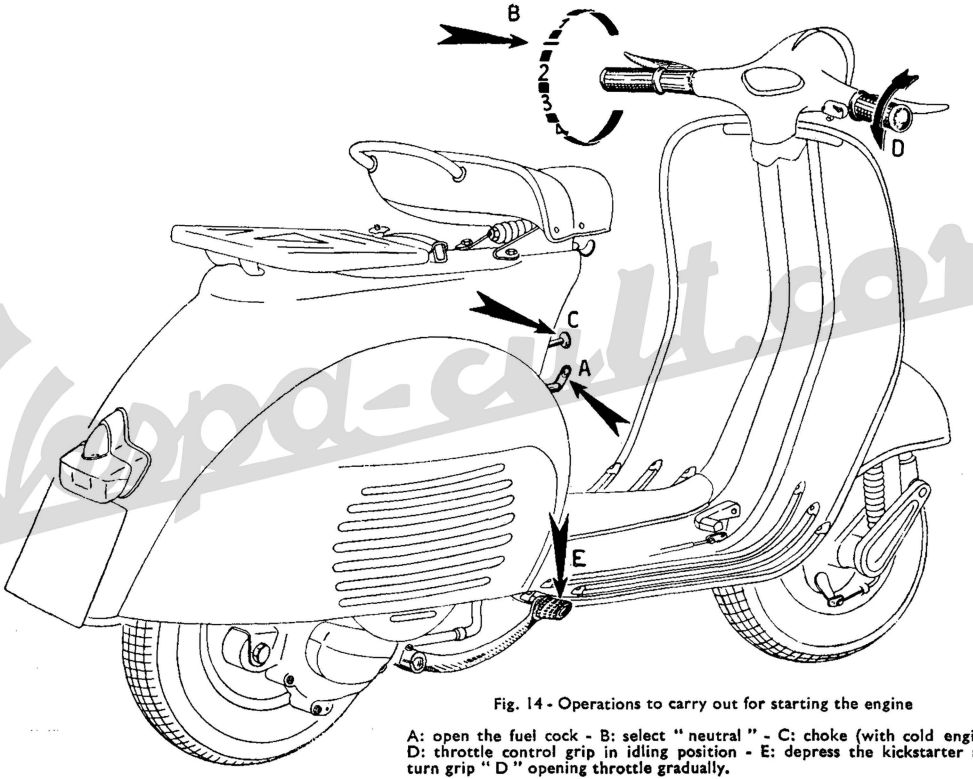


Fig. 14 - Operations to carry out for starting the engine

A: open the fuel cock - B: select " neutral " - C: choke (with cold engine) D: throttle control grip in idling position - E: depress the kickstarter and turn grip " D " opening throttle gradually.

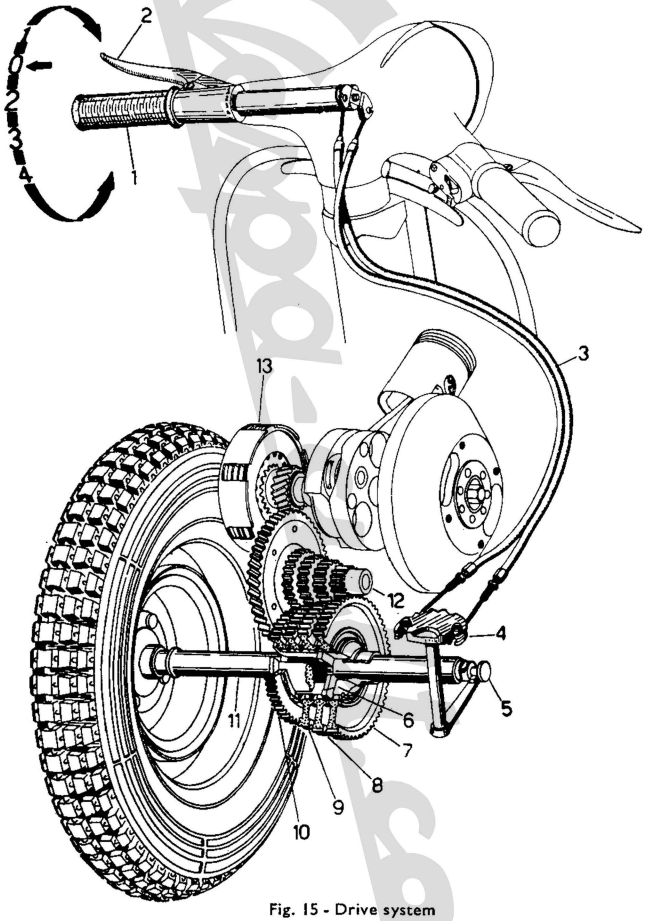


Fig. 15 - Drive system

1. Gear change twistgrip - 2. Clutch control lever - 3. Gear change control cables 4. Gear shifter - 5. Selector stem - 6. Selector - 7. 1st gear pinion - 8. 2nd gear pinion 9. 3rd gear pinion - 10. 4th gear pinion - 11. Mainshaft - 12. Cush gear - 13. Clutch.

N.B. - Positions 1-2-3-4 of the gear change twistgrip correspond to 1st, 2nd, 3rd and 4th gear respectively; " 0 " indicates the neutral position.

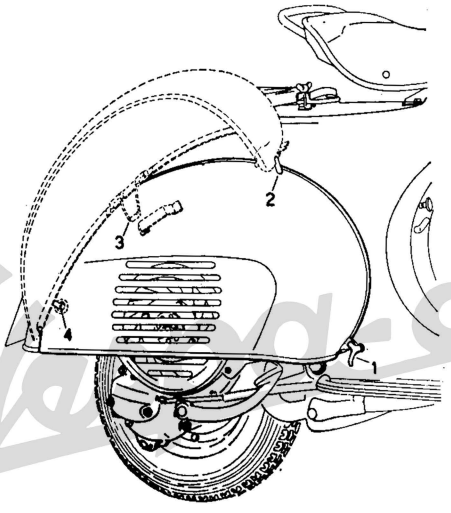


Fig. 16 - Engine bonnet removal

1. Engine bonnet blocking lever - 2. Front dowel - 3. Fixing hook - 4. Hooked pivot.

being flooded (unvaporized fuel mixture has reached the cylinder, and combustion becomes therefore very difficult), proceed according to the following method.

— Close the fuel tap, remove sparkplug and action the engine by means of the kick-starter; wipe the plug dry and screw it back. Open the fuel tap and depress the starting lever.

Exercise care on re-assembling the sparking plug; start screwing it by hand at the proper angle to avoid damaging the cylinder head; use the box wrench just for the last turns.

For access to the engine, take off the engine bonnet: proceed as follows.

— Pull the lever " 1 " (Fig. 16) and turn it so as to release it from the bonnet. Then move the bonnet slightly outwards, until front dowel " 2 " disengages from the hole on the frame.

— Push the bonnet from the front, upwards and turn (see position indicated by dotted line), thus releasing the fixing hook " 3 " from the frame.

— Move bonnet outwards round its hooked pivot " 4 " until the latter disengages from the hole on frame. The bonnet is thus removed.

For re-assembly, follow the reverse procedure.

Setting the machine in motion. Let the engine idle, lift the clutch and turn the gear change twistgrip (LH.) so that the line engraved on it coincides with the figures " 1 " (1st gear) engraved on handlebars (see Fig. 15). Now let in the clutch gently, while opening the throttle gradually to set the machine in motion.

Gear change. After reaching the required speed in 1st gear, quickly close the throttle, lift the clutch and turn the gear change twistgrip so that the engraved line is opposite figure " 2 " (2nd gear); let in the clutch and open the throttle.

Repeat this procedure for changing into 3rd and 4th gear and for changing down.

When you reduce the speed of your machine change down without delay.

See the drive system on Fig. 15.

Do not turn the gear change twistgrip while the engine is not running.
As soon as gear change troubles arise, customers should have their machines adjusted by a Retailer or authorized service station.

Slow running adjustment. Idling revs can be raised or reduced respectively by simply tightening or slackening, either with a screwdriver or by hand, the knurled slotted screw on air cleaner steel sheet cover (see Fig. 6, No. 5). The screw controls the throttle slide valve.

The adjuster screw for the throttle control cable is installed on the air cleaner case (see Fig. 6).
This screw is to be re-set only if necessary and while dismantling and re-assembling.

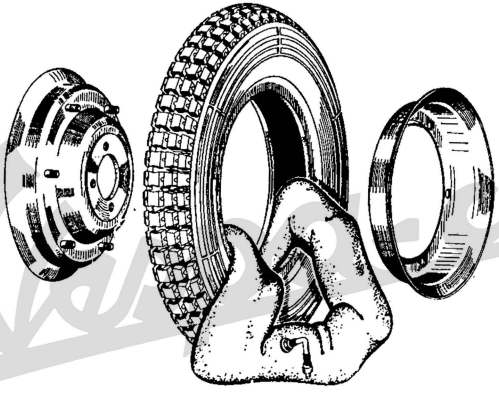


Fig. 17 - Removing the inner tube

Opposite to said adjuster screw there is on the air cleaner case a plugged hole for access to another screw (spring-loaded) with a tapering end (see Fig. 6, No. 14). This screw controls the flow of carburated air through the duct from the idling jet, and consequently the idling revs. We recommend the owner refrains from re-setting this screw, unless strictly necessary or during dismantling andre- assembing operations that should, anyway, be entrusted to a Service Station.

Stopping the engine. Push the earthing button; this will leave the cylinder full of fuel vapours, and the successive start will be easier.

Tyres. The wheels are interchangeable, i.e. they can be assembled either in front or rear, provided, of course, that they are inflated to the pressures subsequently prescribed.
For replacing a flat tyre, unscrew the four nuts which secure the wheel; pull the latter sideways off the studs, repair the tube or fit on the spare wheel.

Make sure that the spring washers are present when re-assembling the wheel: tighten the nuts diagonally and evenly.

For removing the inner tube, first deflate it then unscrew the six nuts on the wheel, so that the two halves of the rim fall apart (see Fig. 17).

Tyre Pressures

	Dunlop	*Pirelli*
Solo front	16 lb per sq. in	16 lb per sq. in
Solo rear	20 lb per sq. in	22 lb per sq. in
Pillion front	16 lb per sq. in	16 lb per sq. in
Pillion rear	32 lb per sq. in	32 lb per sq. in
Sidecar front	16 lb per sq. in	18 lb per sq. in
Sidecar rear	24 lb per sq. in	24 lb per sq. in
Sidecar	16 lb per sq. in	16 lb per sq. in

Brake adjustment. Brakes are properly adjusted if:

— the wheel rotates freely when respective control lever or pedal are in resting position.

— the braking action starts as soon as respective controls are operated. These conditions are obtained adjusting the cables by means of screws indicated with an arrow in Fig. 18.

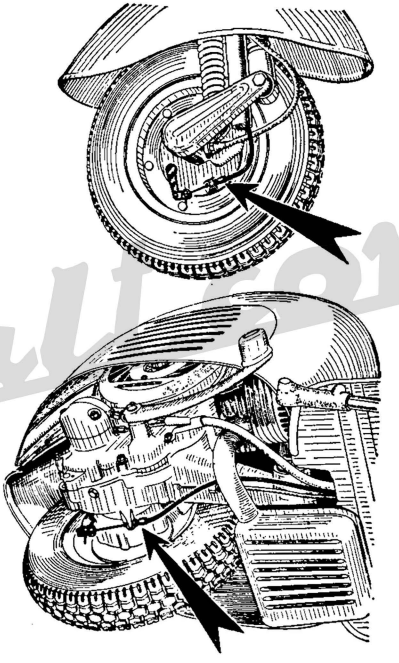


Fig. 18 - Brake adjustment

Setting the head lamp. The correct orientation of the main beam can be obtained both horizontally and vertically as follows.

Check that both front and rear tyres are inflated to correct pressures. See Chart, page 25.

Fig. 19 - Adjustment of head lamp

N.B. - Dimension " O " corresponds to adjustment carried out with driver and passenger on the machine.

Place the scooter on a level floor in front of a white wall as seen in Fig. 19. Start the engine, hold the throttle control twistgrip at about 1/3 and set the switch on " main beam ".

With two persons on the Vespa, slacken the two screws securing the head lamp, then move the latter as required in order that the beam axis coincides with point " O " on the wall.

Tighten the screws firmly.

This operation can be carried out also with the driver only sitting on the saddle.

In this case, of course, the beam alignment should be altered whenever the scooter is being ridden by both driver and passenger.

Cleaning the scooter. Brushing with paraffin and wiping dry with clean rags is advisable for external cleaning of engine.

All painted surfaces should be washed with water, cleaned using a sponge and wiped dry with chamois leather. Do not use paraffin on such surfaces as it damages paint and turns it dull.

If necessary, blow the head lamp reflector clean or wipe off dust with a very soft feather duster. Do not use a cloth and keep fingers off the reflector surface.

Before setting the machine in motion.

Check oil lever in gear box by unscrewing from the crankcase the level screw (see Fig. 21, No. 1). With the scooter standing upright, oil should just be about to flow out.

After the first 600 miles (1000 Km).

Warm up the engine and drain off all oil through the hole provided.

Pour some fresh oil in and run the engine or a few seconds. Drain again and refill. Please see lubrication chart, page 32.

Every 2500 miles (4000 Km)

(1) - Remove the air cleaner from the carburettor and agitate in a 30% oil-petrol bath.

(2) - Check oil level in the gear box.

(3) - Clean the lubricators of front wheel hub and refill them using a grease gun.

(4) - Grease joints on brake controls.

(5) - Grease the felt which lubricates the cam of the flywheel magneto.

(6) - Clean the sparkplug electrodes with a metal brush or very fine emery cloth, and adjust the gap. See chart, page 10. Inspect the insulation material of sparkplug, replace if the porcelain is cracked. Wash with neat petrol.

Use the type sparkplug recommended by Douglas. We remind owners to use an approved sparking plug, which will prevent many engine troubles. (Please see page 10).

(7) - Lubricate the speedometer drive pinion and flex drive.

All operations indicated hereunder should be carried out by authorized Service Stations.

(8) - Clean the silencer exhaust pipe and decarbonize the engine as explained in following notes.

Remove the silencer, the cooling hood, the cylinder head and cylinder.

Decarbonize the piston crown, the cylinder ports and the inner side of the cylinder head. Carefully clear the cylinder of carbon deposits.

Heat the exhaust pipe of the silencer, and clean it either by scraping it internally with a hooked wire or blowing air through from the opposite end; in both cases the silencer should be held so that the exhaust pipe is pointing downwards.

Every 5000 miles (8000 Km)

(1) - Clean the breaker points.
In order to avoid ignition troubles or abnormal running, have the breaker points adjusted at a service station: the gap (see Fig. 20, " A ") should be 0.3 - 0.5 mm (0.011" to 0.019"), and the points should begin to open when the current in the primary ignition circuit has reached its peak value.

(2) - Lubricate the control cables and the gear shifter.

(3) - Change the oil in the gear box (see page 29).

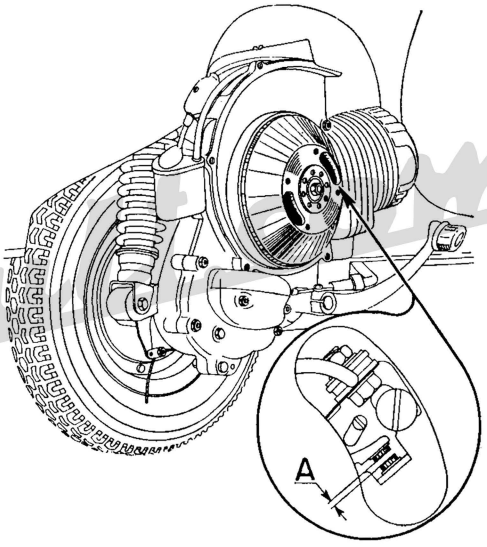


Fig. 20 - Breaker points.
A - Max gap: (0.011 - 0.019") 0.3 - 0.5 mm

LUBRICATION CHART

Part to be lubricated		*Lubrication*				
Every 2,500	*Every 5,000*	**Shell*	**B.P.*	*Esso*	*Wakefield*	*Mobil*
Gear-box topping-up	Gear-box change oil	Shell 2T Two-Stroke Oil or Shell X–100 30	Energol Two-Stroke Oil or Energol SAE 30	Esso Extra Motor Oil 20W/30	Castrol XL	Mobiloil A
Front suspension Felt pad on flywheel cam Joints on brake control Speedo flexible drive	Control cables Gear-change quadrant	Retinax A	Energrease L.2.	Esso Multi-purpose Grease H	Castrolease L.M.	Mobilgrease M.P.
Engine at each re-fuelling		Shell 2T Two-Stroke Oil in ratio of 2% or ¼ pint to 1½ galls. petrol	Energol Two-Stroke Oil in ratio of 2% or ¼ pint to 1½ galls. petrol	Essolube 30 in ratio of 2% or ¼ pint to 1½ galls petrol. Esso Two-Stroke Motor Oil in ratio of ¼ pint to 1 gall. petrol	Castrol XL in ratio of 2% or ¼ pint to 1½ galls petrol. Castrol Two-Stroke Oil in ratio of ¼ pint to 1 gall. petrol	Mobiloil A in ratio of 2% or ¼ pint to 1½ galls petrol or Mobil-Mix in ratio of ¼ pint to 1 gall. petrol

*Marketed also by National Benzole Co. Ltd., by arrangement with Shell-Mex & B.P. Ltd.

After first 600 miles change **Gearbox** Oil.

APPROVED PETROL/OIL MIXTURE

Make	*Description*
Shell	2T Two-Stroke Mixture
B.P.	B.P.-Zoom
National Benzole Co. Ltd.	Hi-Fli

} To be used with equal parts of neat petrol.

Hydraulic Dampers	When not working efficiently, consult your Dealer. If servicing is required, they should always be returned to the Works.

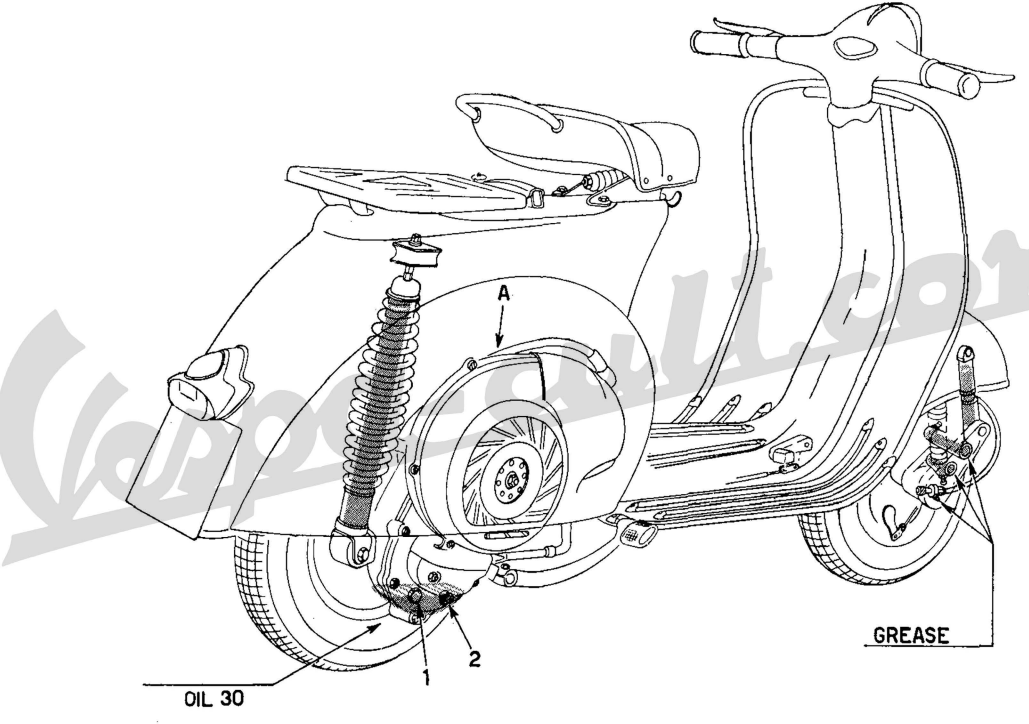


Fig. 21 - Lubrication scheme.

A: engine lubricated by fuel mixture - 1.: filling hole - 2.: draining hole.

(4) - In case of damper troubles contact your authorised service station.

Laying up. In this case, proceed as follows.

(1) - Clean the scooter thoroughly (see page 29).

(2) - With engine not running, rotate the throttle control twistgrip to its fullest extent, then pump 40 cc. (2.5 cu. in) of SAE 30 oil by means of an oil can into the carburettor intake through the hole (see fig. 6, No. 13) on the air cleaner cover.

Depress the kickstarter three our four times.

(3) - Support the chassis of the machine on two wooden blocks ensuring that the tyres are clear of the ground.

(4) - Empty the fuel tank.

(5) - Grease all unpainted metal parts.

FAULT FINDING

When the machine does not run properly, make all inspections and rectifications as explained below.

If the suggested remedies are not sufficient to eliminate the trouble, the Owner should consult an Authorised Vespa Dealer.

Locating the trouble	Remedies
HARD STARTING	
1. - Fuel system - Carburation	
Fuel tank empty	Turn to " reserve." Refill as soon as possible.
Filter on carburettor Fuel tap body Carburettor body Jets — Clogged, dirty	Remove and wash in petrol. Blow dry
Engine flooding	See page 23.
Air cleaner chocked or dirty	See page 30, No. 1
2. - Ignition	Disconnect the plug lead. Check if sparking occurs between lead and crankcase when the kickstarter is operated.
Sparking plug dirty	Clean (see page 30, No. 6). Correct gap to 0.023".
Porcelain of sparking plug cracked	Replace the plug (see " Notice," page 24, and page 30).
Breaker points dirty, worn or pitted; gap between breaker points incorrect	Ask the Retailer either to have them cleaned (with very fine emery paper or suitable files), or replaced, or to have gap adjusted.

Locating the trouble	Remedies
INCORRECT RUNNING	
1. - Lack of power	
Silencer outlet pipe carbonised	Clean (see page 31).
Sparkplug not well screwed into cylinder head	Tighten with 21 mm box wrench.
Cylinder head not fitting properly into the spigot on top of cylinder	Set the head properly and tighten the nuts uniformly.
2. - Back-firing at Silencer and carburettor	Replace or clean the plug and correct the gap (see page 30, No. 6).
3. - High fuel consumption	
(a) Air cleaner choked or dirty; flap of choke valve sticking in closed or partially closed position.	Clean with pure petrol and blow dry. Dip the filter into a 30% Petrol-oil bath. Release and lubricate the choke control lever.
(b) Other troubles (faulty carburettor, poor compression, etc.)	See your Retailer.
4. - Engine noisy - Clutch troubles - Gear pinions disengage of own accord - Starter assembly not engaging - Controls not operating properly - Steering column becomes stiff - Inefficiency of suspensions	See your Retailer.
5. - Poor braking	
Stroke of pedal or lever too long	Adjust (see Fig. 18, page 27).
Brake linings oily or worn down	Wash with petrol and dry in air, or replace. See your Retailer about oil leakage.
Brake drums and linings scratched	Replace.
6. - Faulty electric wiring	
Lead terminals loose or wrongly connected	Re-connect properly (see Figs. 11-12) or replace and tighten the screws.
Incorrect adjustment of the head lamp	Re-set properly (see page 28).

WHEN REFERRING TO THIS PUBLICATION IT IS ESSENTIAL TO QUOTE THE FOLLOWING REF.:
SPORTIQUE OP. & M. 2M./5./64L.B.4604