PIAGGIO

Vespa 150

OPERATION AND MAINTENANCE

UFFICIO TECNICO SERIE

STABILIMENTO DI PONTEDERA
Dis. No. 83041

1st EDITION / VDC 3000/710

NOTICE

In order to keep your VESPA in perfect running conditions and not to invalidate the guarantee offered by the contract, you should always have your machines repaired by sale agents or authorized service stations. Demand original **Piaggio** spare parts exclusively.

Special care should be taken in regard to fuel mixture which should be of a good quality gasoline and oil of make, grade and in the amount prescribed in this booklet, page 19. Avoid use of additives and vegetable oils.

INDEX OF MAIN DIRECTIONS

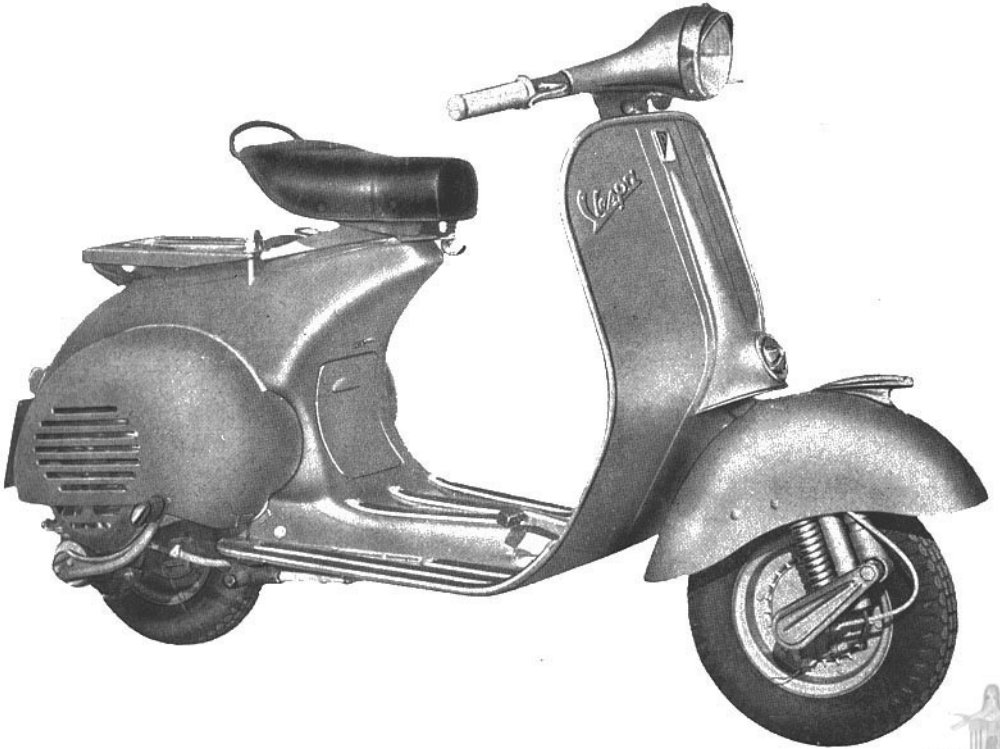

Fig. 1 - VESPA 150

INTRODUCTION

The « PIAGGIO Co. » welcoming you in the family of the Vespa owners, wishes to thank you for your preference, trusting that this scooter will be of your full satisfaction.

For its own characteristics (comfort, low fuel consumption, noiseless running, easy handling, neatness etc) the Vespa can have a large field of use; for work reasons as well as tourist trips, both along large highways and narrow farm roads.

Long and hard rides will not worry you and, driving the Vespa, you will soon realize its excellent performance.

This booklet, in which the simple instructions for operation and maintenance can be found, will enable you to know better your own Vespa and use it in the most suitable way.

IDENTIFICATION DATA

Serial numbers with prefixes are stamped on both engine and frame, in the positions indicated on Figs. 2 and 3 respectively.
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.

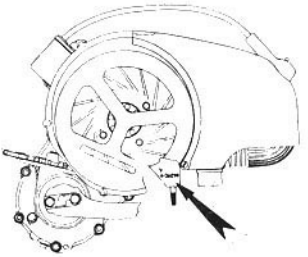

Fig. 2 - Stamping on engine

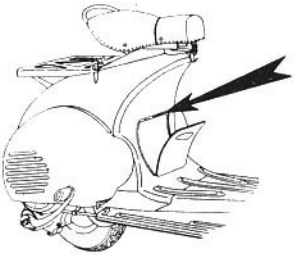

Fig. 3 - Stamping on frame

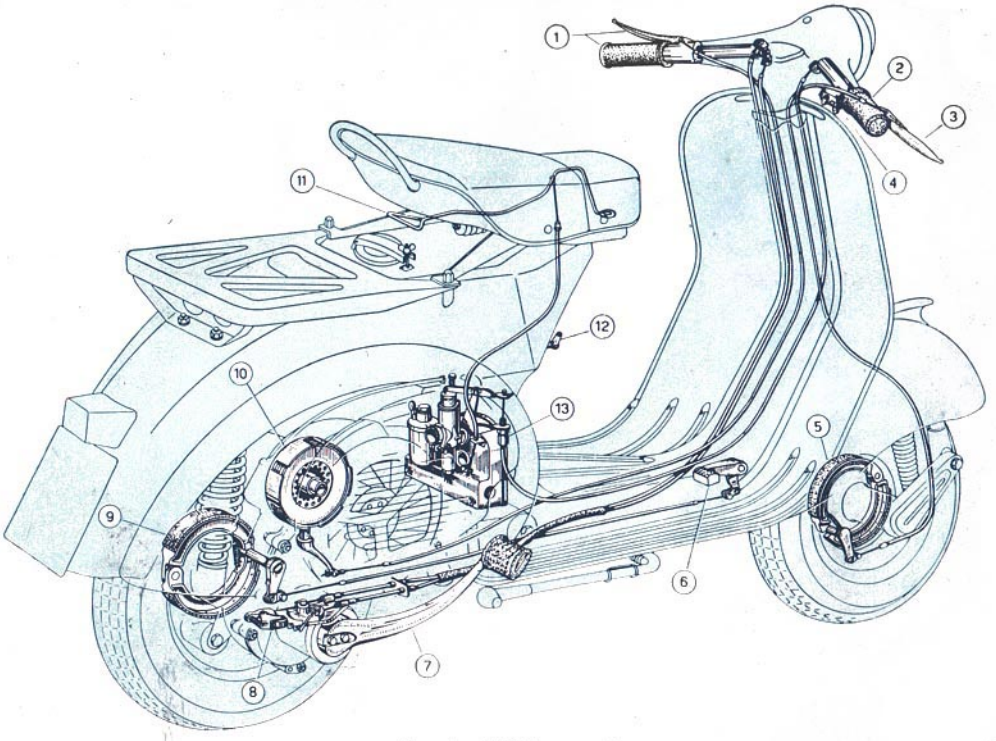

Fig. 4 - VESPA controls

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

TECHNICAL DATA

Fuel consumption at economic speed 2.2 liters to 100 Kms (107 mpg)

Max speed . . . 80 Km/h (49.5 mph)

Carrying capacity 2 persons and 10 Kg. (22 lbs) of luggage.

Range . . . . 370 Km (230 miles)

Wheel base . . . . 1165 mm (45.8")

Handlebars width . . 730 mm (28.7")

Scooter length . . . 1700 mm (66.9")

Max height . . . . 1040 mm (40.9")

Min. height of floorboard 220 mm (8.7")

Min. turning circle . . 1500 mm (59")

Weight (without fuel) . 93 Kg (204 lbs)

ENGINE

Single horizontal cylinder, two - stroke, with reverse flow scavenge and deflector piston.

Bore . . . . . 57 mm (2.24 in)

Stroke . . . . . 57 mm (2.24 in)

Displacement . . 145.45 cc. (8.88 cu. in)

Compression ratio . . . . . 6.3 to 1

Ignition by an external coil with primary winding fed by another coil inside the fly-wheel magneto.
Sparkplug: either AC 45 L or Marelli CW 225 A, CW 225 D.
Ignition timing with spark advance of 28 ± 1°.

Lubrication by mixture for piston, cylinder, wrist pin, con. rod, crankshaft, main bearings.
Both clutch and gear box operate in oil bath.

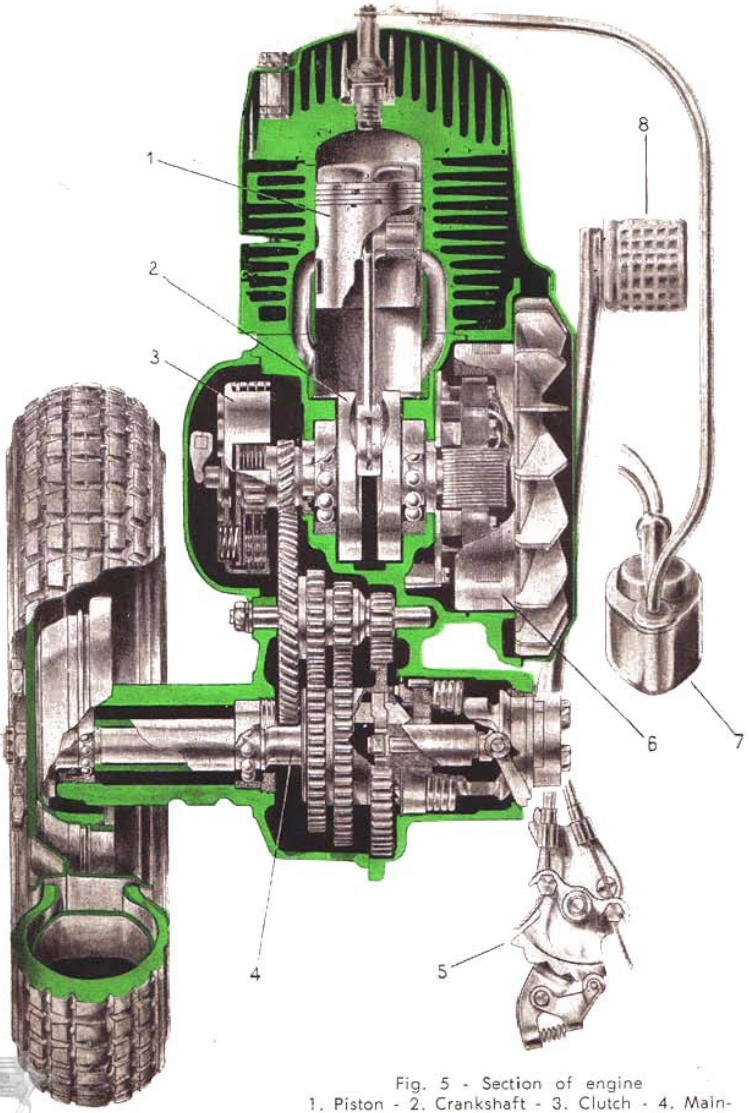

Fig. 5 - Section of engine
1. Piston - 2. Crankshaft - 3. Clutch - 4. Mainshaft with gear pinions - 5. Gear shifter - 6. Flywheel magneto - 7. External ignition coil - 8. Kickstarter.

Feeding. Fuel feed to the carburettor is provided for by gravity directly from the tank with gasoline-oil mixture (Fig. 6).
Carburettor with float-chamber. Fuel tank with total capacity of 8.2 liters (2.17 gals) and emergency reserve.
Three way cock (« open » - « closed » - « reserve ») with sediment bowl.

Transmission. The engine is installed on the swinging bracket of the rear suspension and drives directly the rear wheel through clutch, cush drive and gear box.

Clutch. Wet type; steel plates with cork inserts.
Control by lever, on left hand side of handlebars (see Fig. 4), and adjustable cable.

Gear box. 3-speed drive with mesh gears in oil bath.
Its adjustable twistgrip control is coupled with that of the clutch, on left hand side of handlebars (see Fig. 4).

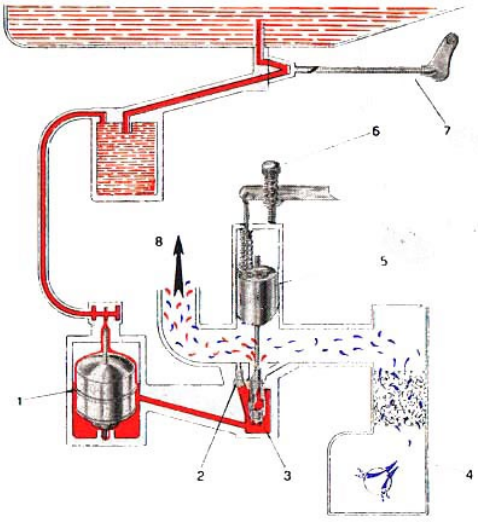

Fig. 6 - Feeding scheme

1. Float - 2. Idling jet - 3. Maximum jet - 4. Air cleaner 5. Throttle slide - 6. Idling adjuster - 7. Fuel cock lever - 8. To the cylinder

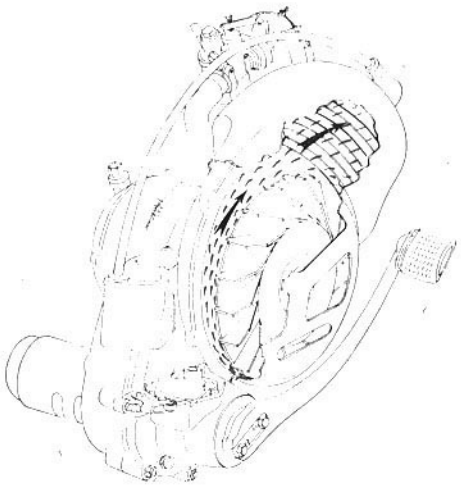

Fig. 7 - Engine cooling scheme

Engine to wheel transmission ratios:

First:	12.2 to 1
Second:	7.46 to 1
Third:	4.73 to 1

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

Starting. By means of kickstarter, right hand side of scooter. .

Silencer. Expansion and absorption combined type.

Air cleaner mounted inside the body. Silencing chamber with tangential intake tube, and with filter moistened by fuel mixture.

Notice. We recommend **not** to alter the silencer and air cleaner but to keep them in perfect efficiency, in order to avoid an unnecessary and disadvantageous noise and not to break the law regulations on the subject.

FRAME

Stressed skin body of pressed steel sheet, with streamlined, welded monocoque construction.

Handlebars in light alloy, with arrangement for head lamp and speedometer. All control cables and electric wires, to be connected to the handlebars, are concealed inside it.

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.
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 right hand side of handlebars. Rear: control pedal on right hand side of floorboard.
Drums in light alloy with cooling fins.

Central stand. A two-leg stand, easy to operate, is arranged under the floorboard. Two strong return springs hold it in contact with the floorboard and keep it from vibrating while the scooter is being ridden.

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, so that the machine can only turn around. Turn the key clockwise for releasing

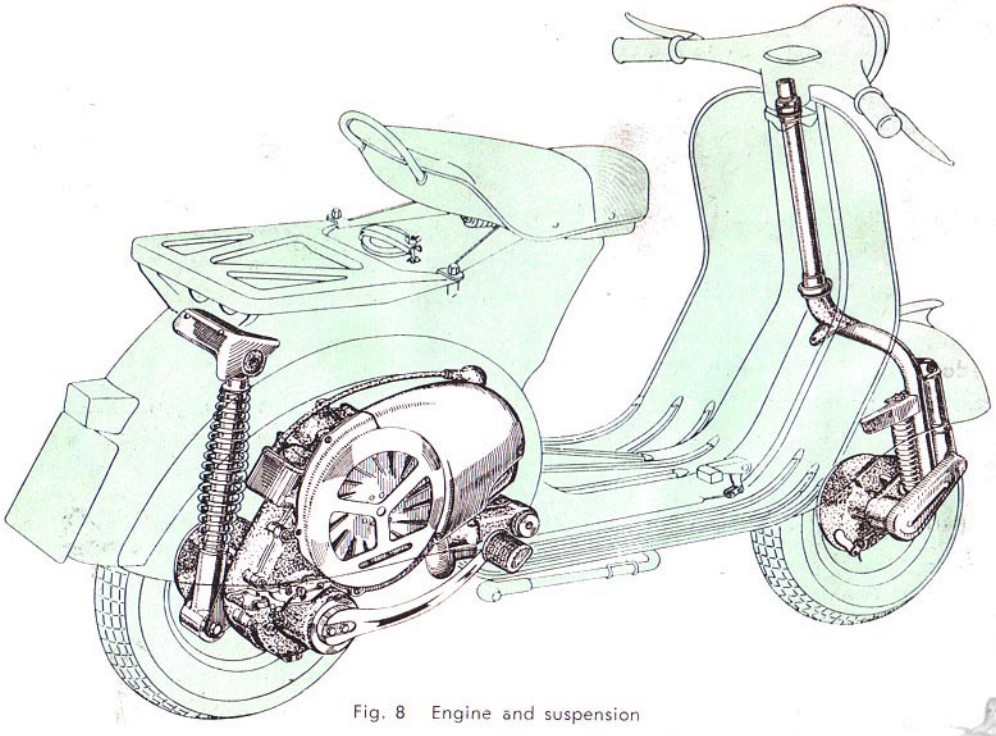

Fig. 8 Engine and suspension

the steering system (see Fig. 9).

We recommend **not** to lubricate the steering lock, even if it does not function properly.

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

Speedometer. The speedometer is housed in the handlebars-head lamp support, (see Fig. 9) and adds to the performance and appearance of the scooter.

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

The speedometer head is lit during rides at night by a bulb installed in suitable position in the head lamp.

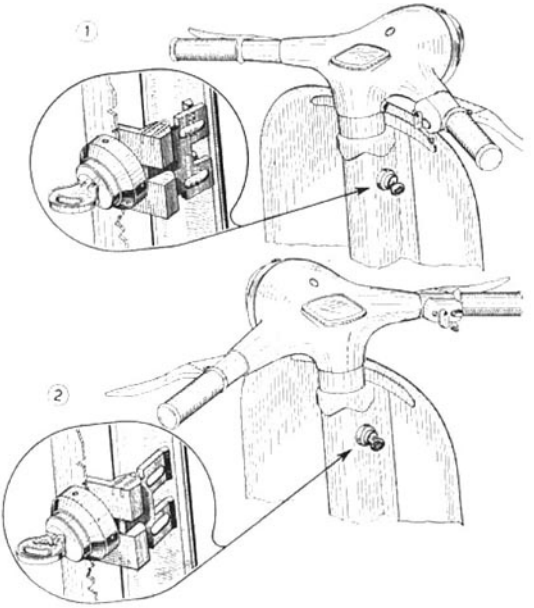

Fig. 9 - Security lock
1. Normal position - 2. Closed

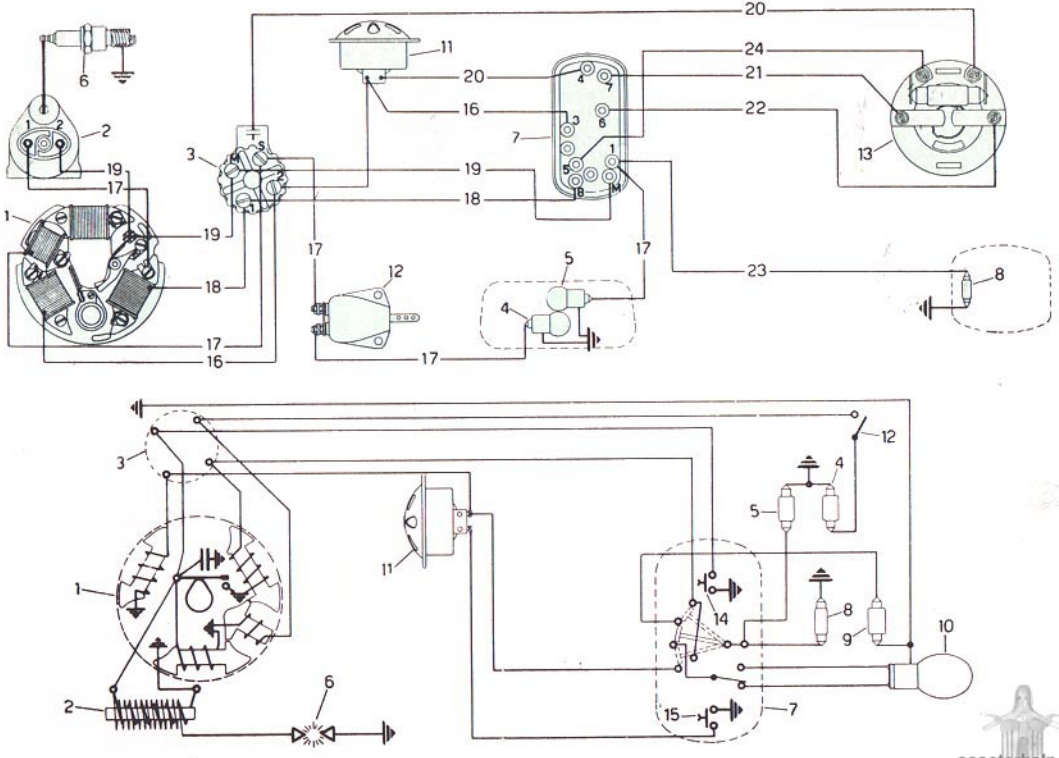

Fig. 11 - Connections and electric wiring diagram

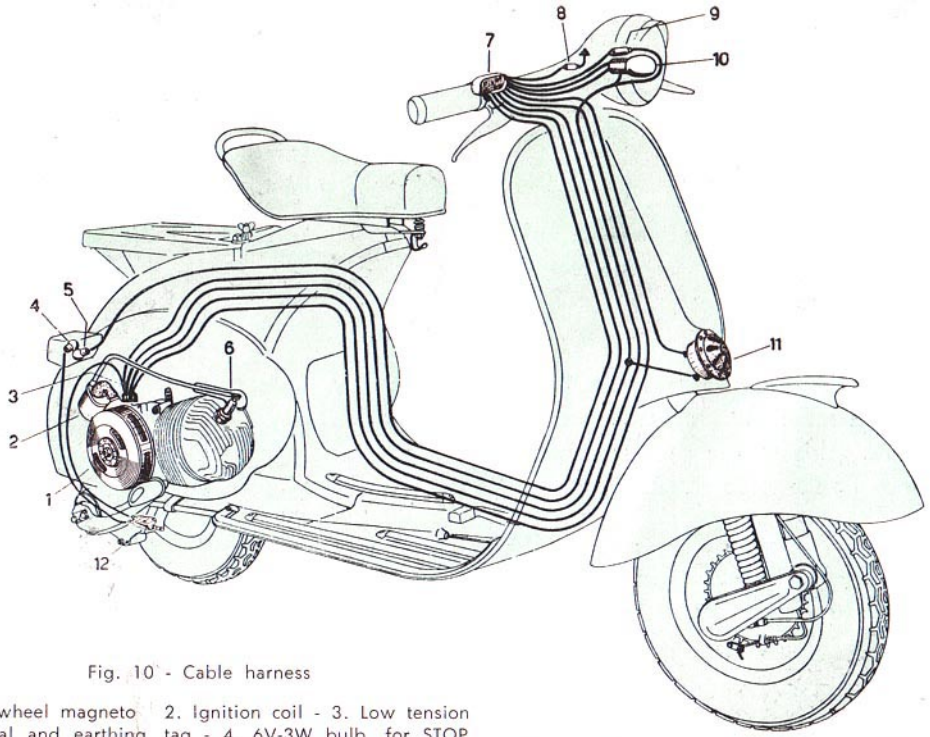

Fig. 10 - Cable harness

1. Flywheel magneto 2. Ignition coil - 3. Low tension terminal and earthing tag - 4. 6V-3W bulb for STOP light - 5. Tail lamp with 6V-3W bulb (for licence plate as well) - 6. Sparkplug - 7. Light and dimmer switch 8. 6V-1.5W speedometer bulb - 9. Pilot light (6V-15W bulb) 10. 6V-22/22W double filament bulb - 11. Horn 12. STOP light - 13. Inside view of head lamp - 14. Earth button 15. Horn button - 16. Yellow - 17. Black 18. Green 19. Red 20. White - 21. Violet - 22. Brown 23. Blue - 24. Pink.

The light and dimmer switch unit (see Fig. 12), provided with two levers, is installed on the right hand side of the handlebars: one of the control levers has three positions

— pilot light and tail lamp and speedometer bulb on;

— off;

— head and tail lamp and speedometer bulb on;

the other one gives the two light conditions of the head lamp («dim» - «bright»).

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

TOOL KIT

1 four-ended box wrench (11-14-21-22 mm)
1 double open-ended wrench (11-14 mm)
3 single open-ended wrenches (7-8 and 10 mm)
1 screwdriver.

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

A security lock is arranged on the lid of the tool box.

ACCESSORIES

On request the **Vespa 150** can be equipped with following accessories.

Pillion seat of the nose-pivoted, sprung type, secured to three holes on the rear luggage carrier of the scooter. It is small and actractive looking and gives remarkable comfort to the passenger, thus completing the efficiency of suspension (see Fig. 13).

WIRING

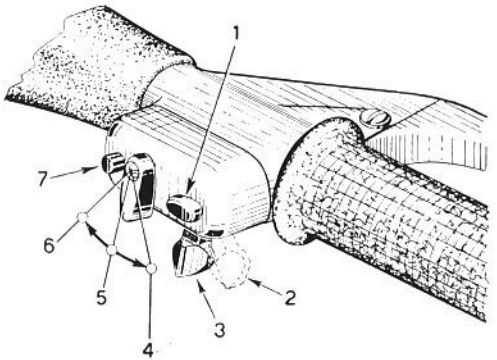

Fig. 12 - Light and dimmer switch

1. Horn button - 2. Country beam (bright) - 3. Traffic beam (dim) - 4. Head lamp, speedometer bulb and tail lamp on - 5. Lights off - 6. Pilot light, speedometer bulb and tail lamp on - 7. Earthing

Alternating current is supplied by the 6-pole **flywheel magneto** (nominal voltage: 6 V) to head lamp, 1.5 W bulb in the speedometer head, horn and tail lamp (see Fig. 11).

Head lamp, ∅ 115 mm (4.5"), installed in the handlebars, is provided with 22/22 W double filament bulb (« dim » and « bright ») and 15 W bulb (pilot light).

Tail lamp with ruby transparent reflector and a 3 W bulb, that lights the licence plate as well; there is also another 3 W bulb (STOP light) which is operated by a suitable switch when the rear brake pedal is depressed.

Owing to the simple and rational design of **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 unexperienced, by following some general rules.

OPERATION

Fuel mixture should be composed of gasoline and oil **Esso Motor Oil SAE 30** in following proportion: 55 cc. of oil to 1 liter of gasoline or 1/2 pint to 1 gal. respectively.

Customers may also ask for 5% ESSO MIX.

Notice. We recommend to use good quality, standard grade car gasoline, and to mix oil with gasoline thoroughly. Keep the breather on filling cap clean.

Running-in. Important rules to be followed while running-in (2000 Kms or 1250 miles):

— Do not exceed following speeds:

1st gear: 20 Km/h (13 mph)
2nd gear: 35 Km/h (22 mph)
3rd gear: 55 Km/h (34 mph)

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

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

Starting the engine. See on Fig. 14 the three positions of the fuel tap: open, closed, reserve.

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

In case of starting troubles, see that the engine be not flooded, i. e. mixture be not dripping from carburettor.

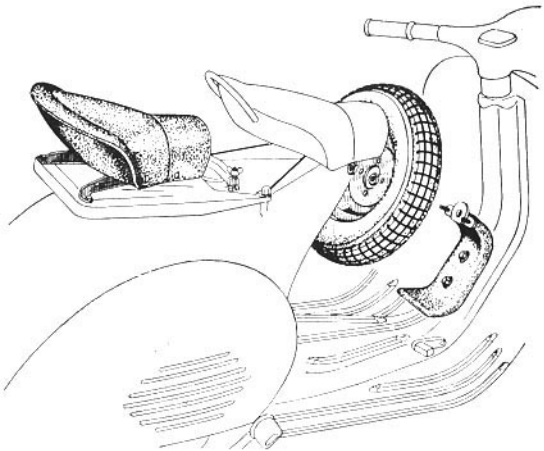

Fig. 13 - Pillion seat, spare wheel and bracket

Spare wheel and bracket. The wheel bracket can be secured to the scooter frame by two holes on its central !ongeron, with a suitable rubber packing in-between.
It is very robust and simple and holds the wheel in such a position where it is easily accessible and does not derange the driver at all.

ing the rod beneath the saddle) and kick the starting lever again.

Setting the machine in motion. Let the engine idle, depress the clutch and turn the gear change twistgrip so that the line engraved on it coincides with the figure « 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, close quickly the throttle, depress 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 gear.

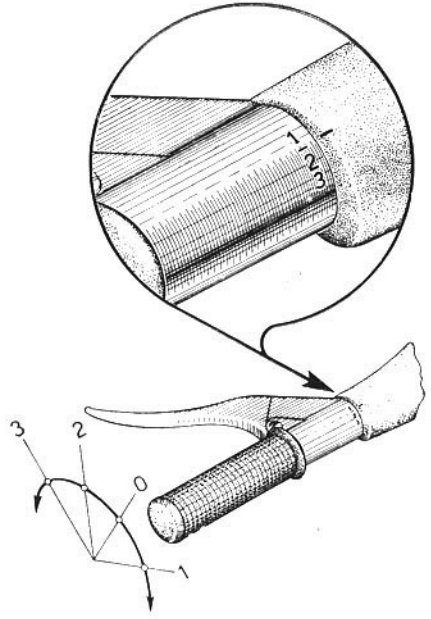

Fig. 15 - Gear change
1. 1st gear - 2. 2nd gear - 3. 3rd gear - 0. Neutral

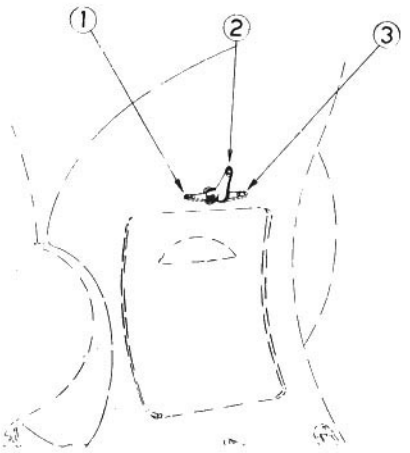

Fig. 14 - Fuel tap positions
1. Reserve - 2. Open - 3. Closed

Engine flooding can be overcome by either one of following methods:

— Push-start the scooter: engage second gear, depress the clutch and push the machine to a certain speed, suddenly release the clutch lever and pull it back as soon as the engine goes on.

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

Notice. Be careful while re-assembling the sparking plug: start screwing it by hand at the proper angle, und use the box wrench just for the last turns.

If, instead, the engine is not flooded, prime three or four times (tickler on float chamber cover), close the choke valve (by lift-

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 respectively prescribed below.

When a flat tyre is to be replaced, unscrew the four nuts which secure the wheel to the brake drum, pull the wheel sideways off the studs, repair it or fit the spare wheel on.

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

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

Tyre pressure should be 1.25-1.4 Kg/cmq (17.7-20 psi) on rear wheel, and 0.8-1 Kg/cmq (11.3-14.2 psi) on front wheel.

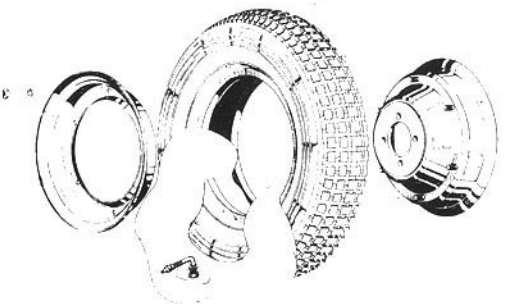

Fig. 17 - Removing the inner tube

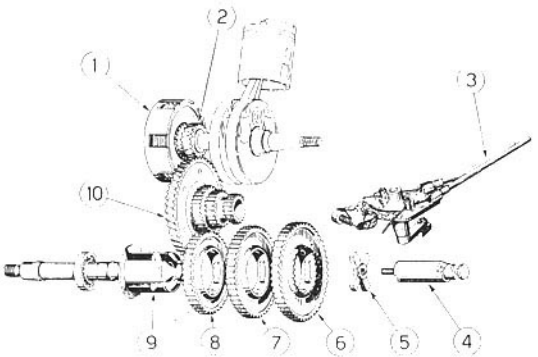

Fig. 16 - Drive system

1. Clutch - 2. Clutch pinion - 3. To gear change twist-grip - 4. Selector stem - 5. Selector - 6. 1st gear pinion - 7. 2nd gear pinion - 8. 3rd gear pinion - 9. Mainshaft 10. Cush gear

Follow a similar procedure for changing down(see the drive system on Fig. 16).

When you reduce the speed of your machine, change down with no delay.

Notice. Do not turn the gear change twist-grip while the engine is not running.

As soon as gear change troubles arise, particularly when the control becomes hard, customers should have their machines adjusted by a sale agent or authorized service station.

Slow running adjustment. No hand tool is required for this job. Idling revs can be raised or reduced resp. by simply tightening or slackening the screw on carburettor cover.

Stopping the engine. Push the earth button. This will leave the cylinder full of fuel vapours, and the next start will be much easier.

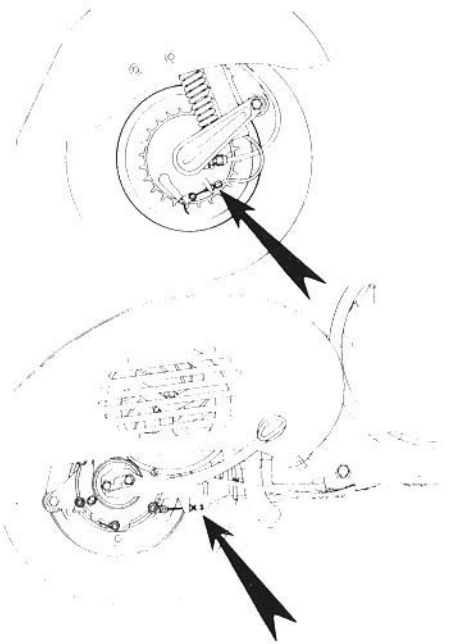

Fig. 18 - Brake adjustment

When the Vespa is ridden by both driver and passenger, the pressure of rear tyre should be increased to 2-2.2 Kg/cmq (28.5-31.3 psi).

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 achieved adjusting the cables by means of screws indicated with an arrow in Fig. 18.

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 1 and 2.2 atm (14.2 and 31.3 psi) respectively.

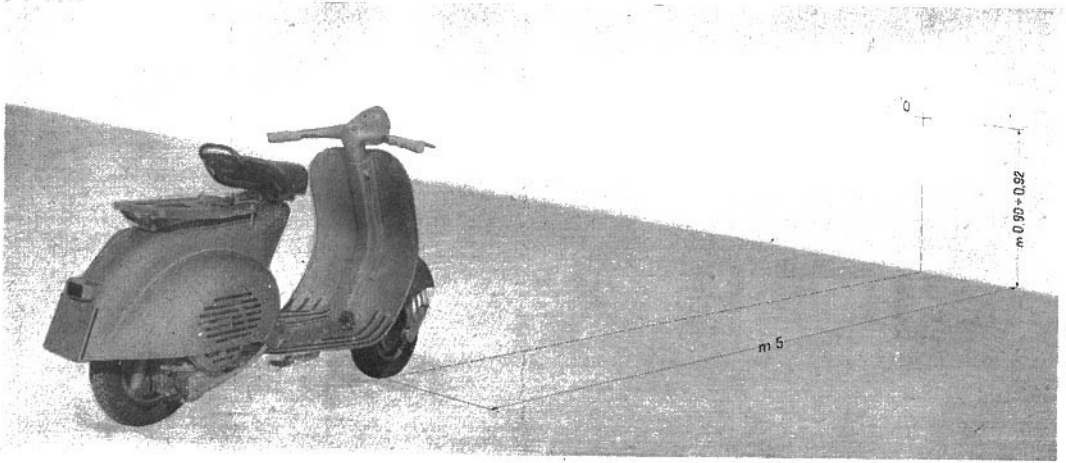

Fig. 19 - Adjustment of head lamp

Every 2000 Kms (1200 miles).

1) - Remove the air cleaner from the carburettor and shake it in a 30% oil-gasoline bath.

2) - Check oil level in the gear box.

3) - Clean the two lubricators of front wheel hub and refill them by means of a grease gun.

4) - Grease all joints on the brake controls and the ratchet quadrant of the gear shifter.

5) - Clean the sparkplug electrodes with very fine emery cloth or a metal brush, and adjust the gap to 0.6 mm (0.023 in).

Inspect the insulation material of sparkplug; replace if the porcelain is cracked. Wash with neat gasoline.

Use the sparkplug type prescribed by the Firm. We remind customers that constantly using the proper type of sparkplug will eliminate many engine troubles.

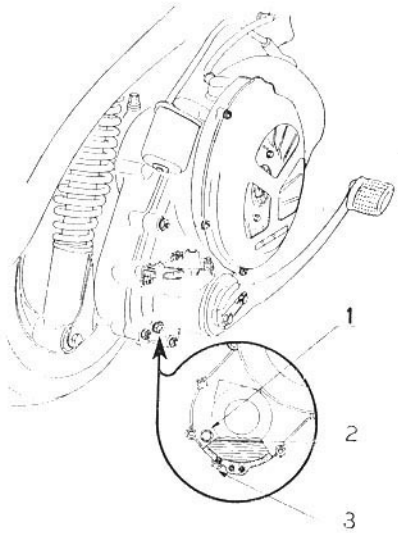

Fig. 20 - Oil level
1. Screw on filling hole - 2. Oil level
3. Screw on draining hole

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

With two persons on the Vespa slacken the screws securing the head lamp in its housing, then move the head lamp as required, in order that the beam axis coincide with point « O » on the wall.

Tighten the screws firmly.

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

In such a 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 outside cleaning of engine. All painted surfaces should be washed with water, deterged by means of a sponge and wiped dry with chamois leather. Do not use paraffin on such surfaces since it damages paint and turns it dull.

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

Before setting the machine in motion.

Check oil level in gear box by unscrewing from the crankcase the level screw marked « Olio » (see Fig. 20). The scooter standing upright oil should just be about to flow out.

After the first 1000 Kms (600 miles). Warm up the engine and drain off all oil through the hole provided (see Fig. 20). Pour some fresh oil in and run the engine for a few seconds. Drain again and refill with new ESSO MOTOR OIL SAE 30 (0.14 Kg. = 0.31 lbs).

See also page 19.

Every 3000 Kms (1800 miles). Grease the felt which lubricates the cam of flywheel magneto.

Every 6000 Kms (3600 miles). Lubricate the speedometer drive pinion and flex drive. Visit your Agent in case of damper troubles.

Disuse. In such a case, proceed as follows.

1. Clean the scooter thoroughly (see page 23).

2. Remove the air cleaner, start the engine and run it at low revs in neutral. Pump 60 cc. of ESSO MOTOR OIL SAE 30 into the carburettor intake through the hole on the air cleaner cover by means of an oil can.

3. Rest the floorboard on two wooden blocks in order to take weight off the tyres.

4. Drain all fuel from both tank and carburettor.

5. Grease all unpainted metal parts.

IMPORTANT. After long disuse, in order to prevent forming of air bubbles in the fuel system during the first fueling, and consequent carburation troubles, disconnect the rubber hose from the carburettor and let some fuel drip out to expel air. Then, with fuel tap open, reconnect the hose to the carburettor. Follow this procedure also when refueling after running out of gasoline.

In case of long storage or disuse, the carburation may result faulty, though said above precautions have been taken because of oil remainders in the idling jet due to the evaporation of the gasoline contained in the fuel mixture. You should then visit your Agent.

N. B. - Lubricate exclusively with oil and grease types as indicated on lubrication chart, page 26, and Fig. 22

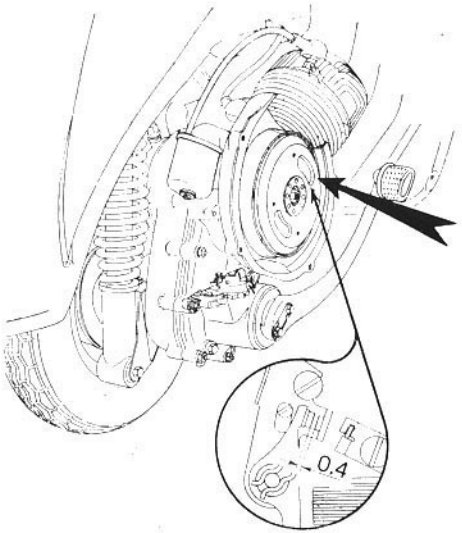

Fig. 21 - Breaker points

N. B. - All operations indicated hereunder should be carried out by authorized **Service Stations.**

6) - Clean and adjust the breaker points of the flywheel magneto (see Fig. 21), to 0.4 mm gap (0.015 in).

7) - Clean the silencer and decarbonize the engine as explained hereunder.
Remove the silencer, the cooling hood, the cylinder head and the cylinder.

Decarbonize the piston crown and the cylinder ports. Decarbonize the inner side of the cylinder head. Clear carefully the cylinder from carbon deposits.

Heat and clean the exhaust pipe of the silencer, either by scratching it inside with a hook wire or blowing air through from the other orifice; in both cases the silencer should be held so that the exhaust pipe is turned downwards.

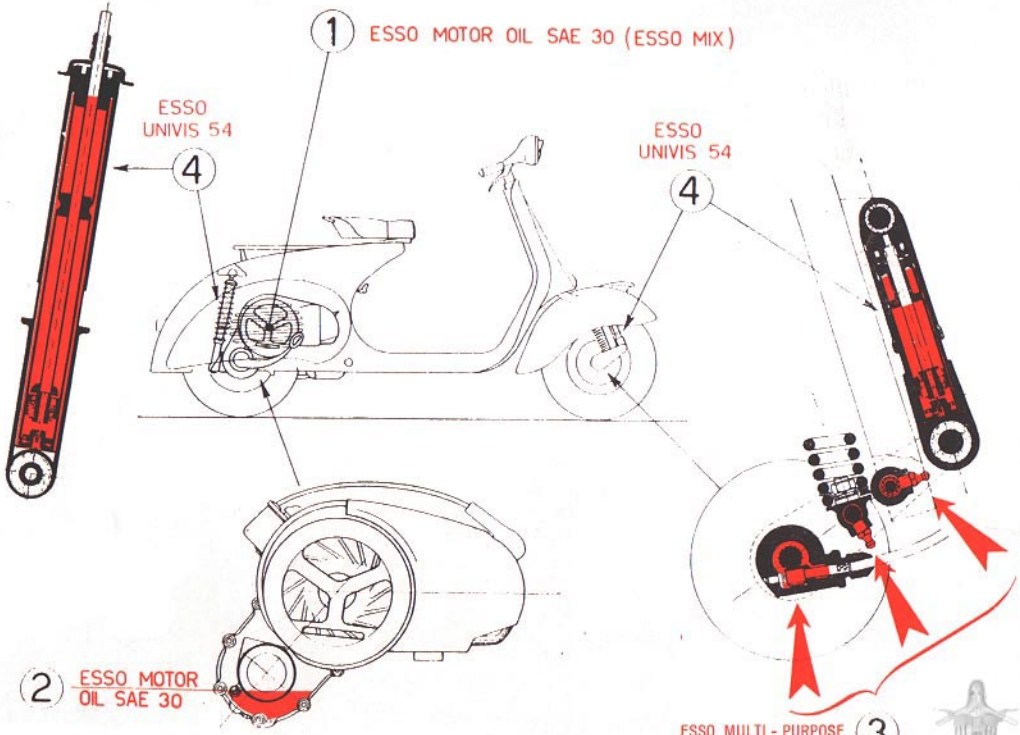

Fig. 22 - Lubrication scheme

LUBRICATION CHART

PARTS TO BE LUBRICATED			TYPE OF LUBRICANT
Every 2000 Kms (1200 miles)	Every 3000 Kms (1800 miles)	Every 6000 Kms (3600 miles)	
Gear box			Esso Motor Oil SAE 30
Gear shifter			Esso Multi-Purpose Grease «H»
Brake levers			Esso Multi-Purpose Grease «H»
Front suspension			Esso Multi-Purpose Grease «H»
	Control cables		Esso Multi-Purpose Grease «H»
	Felt of the flywheel cam		Esso Multi-Purpose Grease «H»
		Speedometer drive pinion and flex drive	Esso Multi-Purpose Grease «H»
Engine : at each refilling (lubricated by fuel mixture)			Esso Motor Oil SAE 30
Shock-absorbers : only when out of order			Esso Univis 54

Locating the trouble	Remedies	Remarks
2. - Carburation		
Engine flooding	See page 19	
Tickler sticking in depressed position	Release	
Float perforated	Replace *	
Air cleaner choked or dirty	See page 27, No 1	
Carburettor assembly mounted at an angle	Turn to vertical position	
3. - Ignition	Disconnect the plug lead. Check if sparking occurs between lead and crankcase when the kickstarter is operated	
Sparking plug dirty	Clean. Correct gap to 0.6 mm (0.023") (see page 27, No. 5).	
Porcelain of sparking plug cracked	Replace the plug (see «Notice», page 27).	* To be carried out by a sale agent.
Breaker points dirty, partially worn or pitted	Clean with suitable files or very fine emery paper *	
Gap between breaker points incorrect	Correct to 0.4 mm with feeler gauge (0.015") *	
Breaker points completely worn or pitted	Replace *	
INCORRECT RUNNING		
1. - Lack of power		
Silencer outlet pipe carbonised	Clean with tool provided *	
Induction pipe to cylinder loose	Replace the packing between pipe and cylinder. Tighten the nuts on cylinder studs.	
2. - Poor compression		
Sparkplug not well screwed into cylinder head	Tighten with 21 mm box wrench.	

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 customer should not try to carry out operations pertaining to the sale agents, who have necessary facilities to undertake this work.

Locating the trouble		Remedies	Remarks
HARD STARTING			
1. - Fuel system			
Fuel tank empty		Turn to « reserve ». Refill as soon as possible	
Fuel does not flow to the carburettor althoug the fuel tap is open or in position « reserve »		a) Depress the tickler until some fuel drips out, or b) Unscrew and remove the main jet. If the fuel system is efficient, fuel will come out. c) Blow through jet orifice to ensure that it is clear.	
Filter at top of sediment bowl Filter on carburettor Fuel tap body Carburettor body Main jet and atomizer Hose between sediment bowl and carburettor	Clogged, dirty	Remove and wash in gasoline. Blow dry	
Float needle valve sticking in its seating		Release by depressing the tickler	

Locating the trouble	Remedies	Remarks
8. - Controls not operating properly		
Inner cables rusted	Lubricate or, if necessary, replace *	
Excessive play	Adjust *	
9. - Steering column becomes stiff	Slacken top race of top ball bearing * Replace bottom race of each bearing *	
10. - Excessive play of steering column	Tighten top race of top bearing *	
11. - Poor braking		
Stroke of pedal or lever too long	Adjust (see Fig. 18 and page 24)	
Brake linings oily or worn down	Wash with gasoline and dry in air, or replace.	* To be carried out by a sale agent.
	Ask the sale agent about oil leakage	
Brake drums and linings scratched	Replace	
12. - Inefficiency of suspension		
Noisiness Inefficiency Difficult rotation of wheel spindle	Visit your agent	
13. - Engine noisy	Visit your agent	
14. - Faulty electric wiring		
Lead terminals loose or wrongly connected on L. T. socket, horn or switches	Re-connect properly (see Figs. 10-11, p. 14-15) or replace and tighten the screws. Ask the sale agent, if the trouble is not eliminated by this procedure.	
Incorrect adjustment of the head lamp	Re-set properly (see page 25)	

Locating the trouble	Remedies	Remarks
Cylinder head not fitting properly into the spigot on top of cylinder	Set the head properly and tighten the nuts	
3. - Explosions at silencer and carburettor		
Sparking plug carbon-coated or with excessive electrode gap.	Replace or clean the plug ** and correct the gap to 0.6 mm (0.023 in)	
Carbon pearls on sparkplug insulation	Clean	
Pre-ignition	Re-time the ignition *	
4. - Clutch troubles	Visit your Agent	
5. - Gear pinions disengage of own accord		* To be carried out by a sale agent.
Gear change control cables out of adjustment	Adjust *	
Gear shifter loose on crankcase	Tighten the screw	
Spring of stirrup broken, feeble or missing	Replace	
6. - Starter assembly not engaging	Visit your agent	
7. - High fuel consumption		** Use suitable wire brush or emery paper.
I - Fuel level too high in carburettor		
a) - Tickler sticking in depressed position	Release	
b) - Float perforated	Replace *	
c) - Float needle valve not properly fitting into its seating	Clean or replace both needle and float chamber cover *	
II - Air cleaner choked or dirty	Clean with pure gasoline and blow dry. Dip the metal wadding into a 30% gasoline-oil bath	
III - Flap of choke valve sticking closed or partially closed position	Release operating and lubricating the choke lever	
IV - Diametre of main jet orifice wrong or increased	Fit proper jet (0.83 mm)	
V - Poor compression	See No. 2 of this paragraph	