



MOTO GUZZI

GT

850

SHELL MOTOR OILS

RIDER'S HANDBOOK

SEIMM

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MOTO GUZZI

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GT
850

1st EDITION

RIDER'S HANDBOOK



INTRODUCTION

This booklet is intended to provide owners with the necessary information on operating and maintaining their machines for maximum efficiency.

The manual should be read very carefully as most troubles and failures arising from neglect or poor maintenance will be avoided if all the instructions herein contained are strictly followed.

Don't forget that all major overhaul jobs and repairs are best carried out by officially appointed Moto Guzzi dealers who have the necessary facilities to quickly and competently repair your Moto Guzzi.

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RUNNING IN

During the first 1600 kms. (1000 miles), a new or overhauled machine ought to be used with some intelligence as the efficiency, performance, and life of the engine are largely dependant on how it is run in.

The engine should never be allowed to reach a high number of revolutions before it has had a chance to warm up sufficiently. Never ride the machine at the highest permissible speeds for each gear before the machine has been well broken in.

Should the engine speed drop off considerably on an uphill grade, a lower gear should be immediately engaged. In case of overheating, it is best to stop and allow the engine to cool down.

Under no circumstances whatever should the following speeds be exceeded in the running in period.

Maximum permissible speeds:

Distance: up to 800 kms. (500 miles):

in low gear	45 kms. (28 miles)
in second gear	65 kms. (40 miles)
in third gear	85 kms. (53 miles)
in fourth gear	100 kms. (62 miles)
in top gear	115 kms. (72 miles)

from 800 to 1600 kms. (500 to 1000 miles):

in low gear	55 kms. (34.5 miles)
in second gear	80 kms. (50 miles)
in third gear	105 kms. (65 miles)
in fourth gear	120 kms (75 miles)
in top gear	140 kms. (87,5 miles)

From 1600 to 3000 kms. (1000 to 1800 miles) the speed can be gradually increased up to the maximum permissible limits.

**After the
first 500 kms.
(300 miles)**

Change the engine oil.
Tighten all nuts and bolts.
Check valve clearance.
Check distributor points.

**Every 500 kms.
(300 miles)**

Check oil level. Correct level is in between the minimum and maximum mark on the filler cap dipstick.

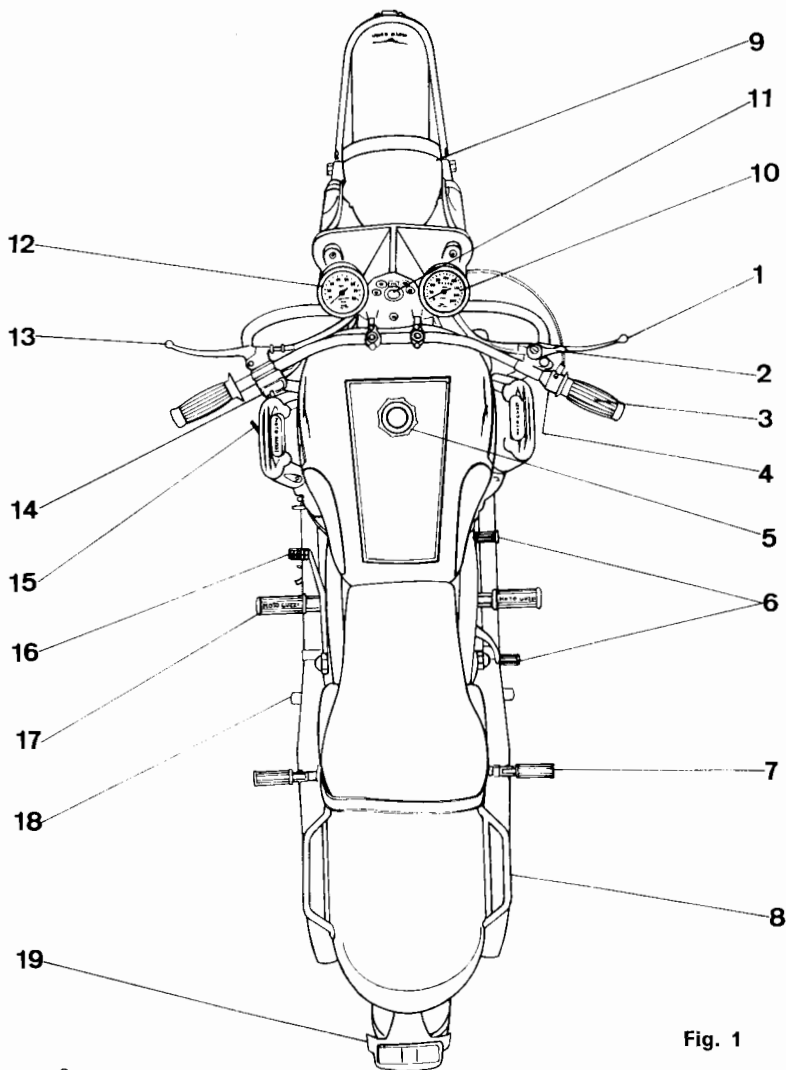


Fig. 1

CONTROLS AND ACCESSORIES

(See fig. 1)

1. Front brake lever
2. Air control lever
3. Throttle control grip
4. Starter button
5. Filler cap
6. Gearshift lever
7. Pillion footrest
8. Pillion handgrip
9. Headlight
10. Speedometer
11. Ignition key
12. Rev-counter
13. Clutch lever
14. Light switch and horn button
15. Side stand
16. Rear brake pedal
17. Footrests
18. Center stand
19. Tail light

The machine can also be supplied with gear-shift lever on the left and rear brake pedal on the right.

N.B. - The terms «right» and «left» in the text are used in the sense they would appear to one sitting in the saddle.


MOTO GUZZI

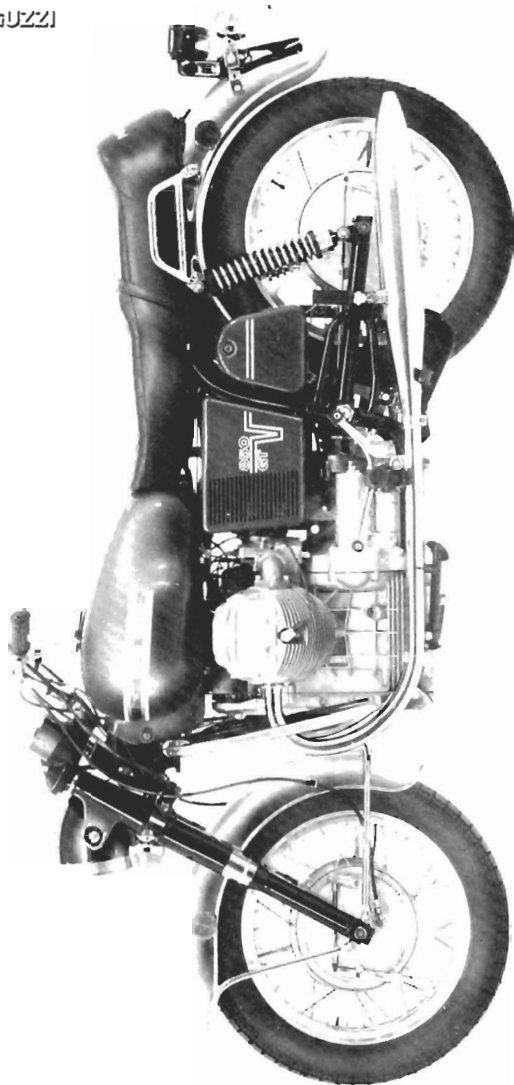


Fig. 2 - Left view

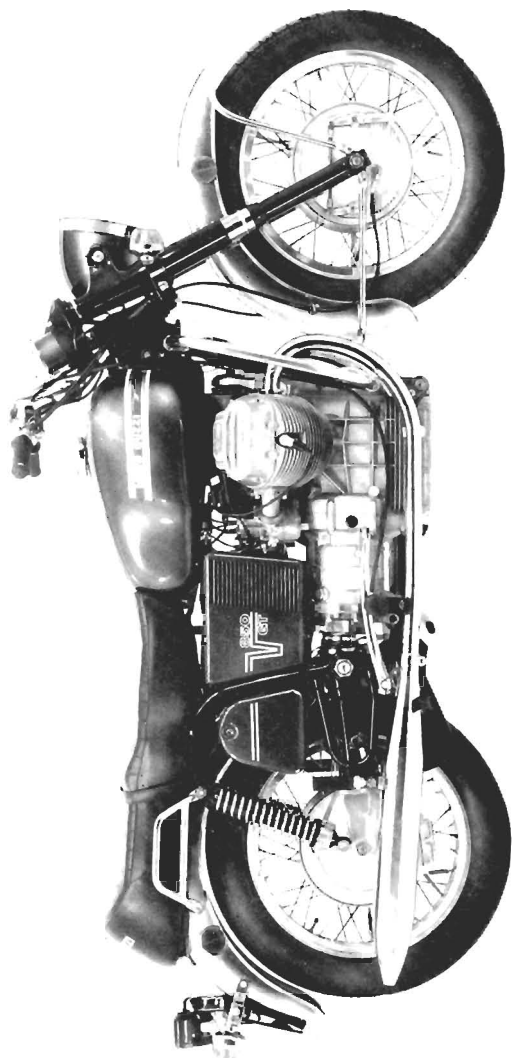


Fig. 3 - Right view



Identification data

(See fig. 4)

Every machine is identified with a serial number which is stamped on the frame down and on the left hand side of the crankcase cover.

This number appears in the conformity certificate and is the only one valid to all legal effects for the identification of the machine

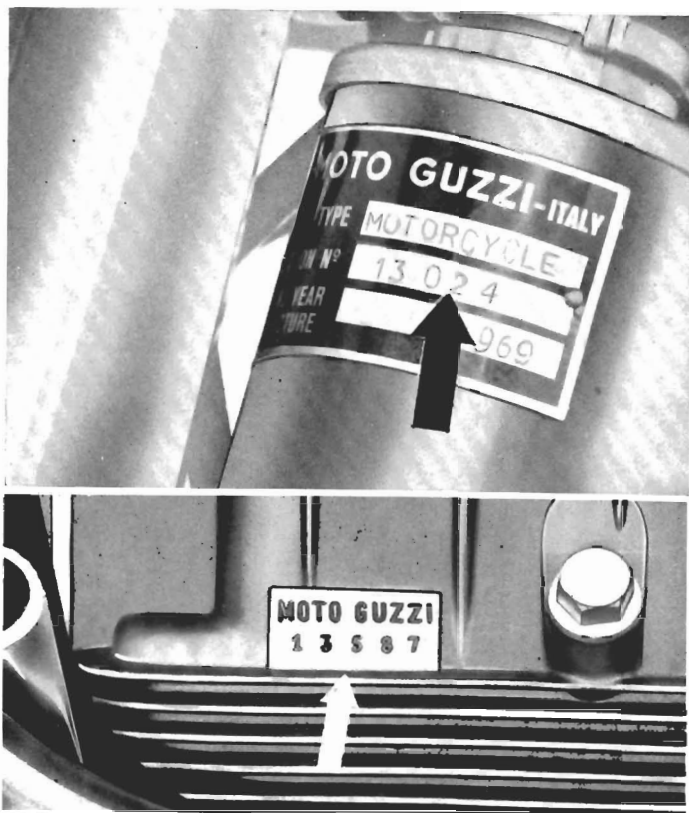


Fig. 4

Tool kit

(See fig. 5)

- 10 - Wrench, box 19/21/22 mm
- 11 - Wrench, open ended 17/19 mm
- 12 - Wrench, open ended 13/14 mm
- 13 - Wrench, open ended 10/11 mm
- 14 - Wrench, open ended 7/8 mm
- 15 - Wrench, open ended, tappet adjusting
- 16 - Allen key, 5 hex
- 17 - Pliers, universal
- 18 - Screwdriver
- 19 - Wrench, ring. double 22/27 mm
- 20 - Feeler gauge
- 21 - Screwdriver
- 22 - Wrench, damper adjusting
- 23 - Tool bag
- 24 - Instruction booklet

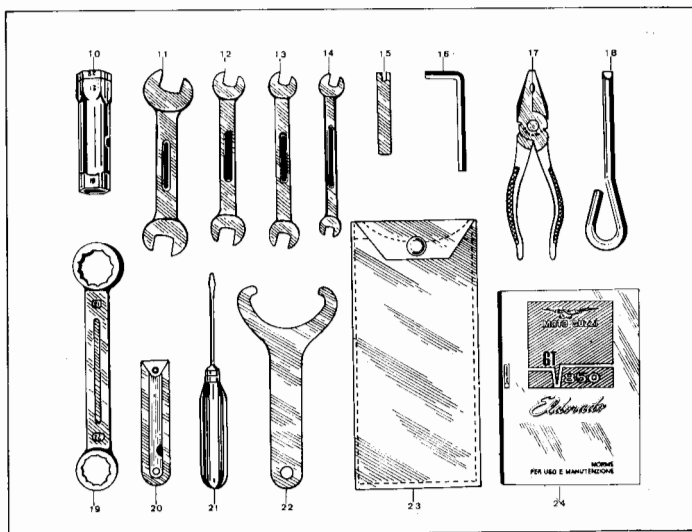


Fig. 5

**Spare parts**

In case of replacements make always sure that genuine MOTO GUZZI parts are used. Failure to do this will imply the loss of the right to claim warranty.

Warranty

The warranty period shall extend over a period of six months or 10.000 kms., whichever occurs first, from the date of purchase and shall be limited to the free replacement of a new part in exchange of the part which may have proved defective.

MAIN FEATURES

ENGINE	Cycle	: 4 strokes
(See fig. 5/1)	Number of cylinders	: 2
	Cylinder disposition	: « V » 90°
	Bore	: 83 mm (3.26")
	Stroke	: 78 mm (3.07")
	Displacement	: 844.05 cc. (51,5 cu.in.)

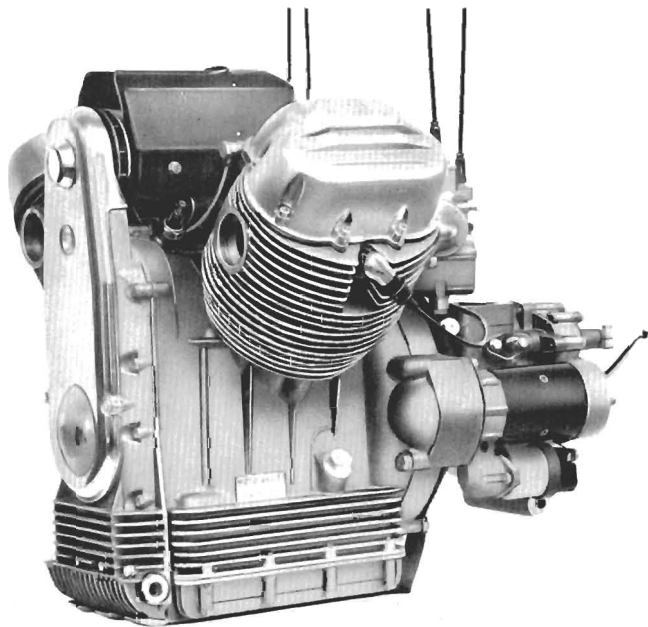


Fig. 5/1



Compression ratio	: 9.2 to 1
Revs at maximum engine speed	: 6500 r.p.m.
Output at maximum engine speed	: 64 HP SAE
Crankcase	: in light alloy
Cylinders	: in light alloy with hard chromed barrels
Cylinder heads	: in light alloy, hemispherical, with special cast iron inserted seats
Crankshaft	: steel construction
Crankshaft supports	: in anti-friction material pressed in 2 suitable housings
Connecting rods	: steel construction with AL-TIN alloy thin wall bearings
Pistons	: in light alloy

Valve gear

O.H.V., push rod operated via the camshaft in the crankcase and gear driven by the crankshaft.

Inlet:

- opens 24° before TDC
- closes 58° after BDC

Exhaust:

- opens 58° before BDC
- closes 22° after TDC

Rocker clearance for valve timing:

- 0,5 mm. (.0196")

Normal rocker clearance (cold engine):

- inlet 0,15 mm. (.0059")
- exhaust 0,25 mm. (.0098")



Carburation

2 Dell'Orto carburetors type VHB 29 CD (right) and VHB 29 CS (left), both gravity fed from the tank.

Standard carburetor setting

- Choke : 29 mm.
- Throttle slide : 60
- Atomizer : 265
- Main jet : 145
- Pilot jet : 45
- Starter atomizer: 80

With needle SV5 second notch from top: idling screw open $1\frac{1}{2}$ to 2 turns for the left carburetor and 2 - $2\frac{1}{2}$ turns for the right carburetor.

Air intake provided with dry filter.

Lubrication

Pressure, by gear pump driven by the crankshaft.

Oil strainer in crankcase.

Normal lubrication pressure 3.8 - 4.2 kgs/sq. cm. (54 to 60 lbs sq.in.) controlled by relief-valve.

Electrically controlled oil pressure gauge.

Cooling

By air. Cylinder and cylinder head deeply finned.

Ignition

By battery with automatic advance distributor.

Initial advance: 5°.

Automatic advance: 28°.

Ignition timing 33° full advance.

Contact breaker gap: 0.42-0.48 mm. (.016" - .018").

Spark plug: n. 225 in Bosch-Marelli scale or equivalent (long thread \varnothing 14 x 1,25)

Plugs point gap: 0.6 mm. (0.23").

Ignition coil.



Starting Electric starter with electromagnetic ratchet control.
Ring gear bolted on flywheel. Operated by starter button on the right handlebar.

Exhaust system Dual exhaust pipes and mufflers.

TRANSMISSION

Clutch Twin driven plates, dry type, flywheel driven. Controlled by lever on the left handlebar.

Gear box Five speeds, frontal engagement. Helical constant mesh gears. Cush drive incorporated.

Separate case bolted on crankcase, operated by rocker pedal from the R/H or L/H side of the machine.

Engine gear-box ratios: 1 to 1.235 (17-21)

Internal gear ratios:

- low gear 1 to 2 (14-28)
- second gear 1 to 1.388 (18-25)
- third gear 1 to 1.047 (21-22)
- fourth gear 1 to 0.869 (23-20)
- high gear 1 to 0.750 (24-18)

Secondary drive By constant speed double joint cardan shaft. Layshaft - bevel gear ratio: 1 to 4.625 (8-37)

Overall gear ratios:

- low gear 1 to 11.424
- second gear 1 to 7.929
- third gear 1 to 5.980
- fourth gear 1 to 4.964
- high gear 1 to 4.284

FRAME Duplex cradle, tubular structure.

Suspension Telescopic front fork incorporating hydraulic dampers.
Rear swinging fork with externally adjustable springs.



Wheels	WM 3/2,15 x 18".
Tires	4.00 x 18 front and rear, block type (Super-sport).
Tire pressure	Front tire: solo with passenger } 1.5 kgs/sq.cm. = 21 p.s.i. Rear tire: solo 1.8 kgs/sq.cm. = 25 p.s.i. with passenger 2.0 kgs/sq.cm. = 28 p.s.i. N.B. - The above recommendation is for normal riding (cruising speed). If using the machine at constant high speed or on motorways, the above pressure should be increased by 0.2 kgs/sq.cm. (2.8 p.s.i.).
Brakes	Expanding type. 220 mm. dia. (8.66"). Twin leading shoes front brake operated by hand lever on the right handlebar. Large rear brake operated on left hand side of machine.
Overall dimensions and weight	Wheelbase 1.470 mts. (about 57.8") Length 2.245 mts. (about 88.3") Width 0.795 mts. (about 31.3") Height (dry) 1.050 mts. (about 41.3") Minimum ground clearance 0.150 mts. (about 5.9") Curb weight 249 kgs. (about 548lbs.)
Performances	Maximum permissible speeds in each gear, solo riding: — bottom gear 68 kms/h (42 m.p.h.) climbability: 86% — second gear 98 kms/h (61 m.p.h.) climbability: 46% — third gear 131 kms/h (82 m.p.h.) climbability: 28%



- fourth gear 164 kms/h (102 m.p.h.)
climbability: 17%
- high gear 193 kms/h (120 m.p.h.)
climbability: 8,9%
- fuel consumption: 6.5 l. x 100 kms (CUNA)

Fuel and oil capacities

Group or part	Quantity	Recommendation
Fuel tank	22.5 liters	Petrol 98/100 NO R.M.
Reserve	4 liters	
Sump	3 liters	Shell Super 100 multi-grade or equivalent
Transmission	0.750 liters	Shell Spirax H.D. 90
Rear drive box (bevel set lubrication)	0,230 liters	Shell Spirax H.D. 90
Front fork dampers (each leg)	0.160 liters	Shell Tellus 33

INSTRUMENTS AND CONTROLS

Instrument panel
(See fig. 6)

1. Speedometer.
2. Green light indicating lights on.
3. Red warning light indicating insufficient flow of current from generator for battery charge. Should go out when the engine has reached a certain number of revolutions.
4. Orange neutral indicator. This will light up when the gearbox is either in neutral or in proximity of this position in between 1st and 2nd speed. Under the circumstances, before starting it is well to ensure that the gearbox is effectively in the neutral position but in any case it

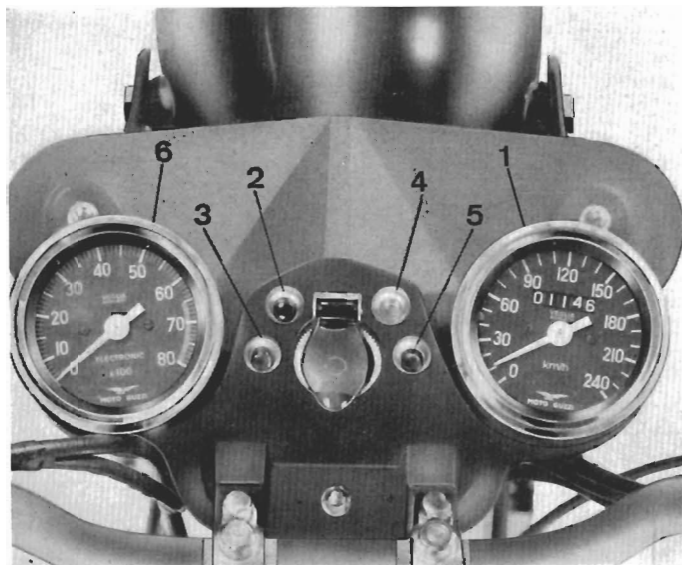


Fig. 6

is recommended to always start the engine with the clutch disengaged.

5. Red warning light. Oil pressure gauge. Will go out when oil pressure for normal engine operation is sufficient.
6. Revolution counter.

Ignition key
(Fig. 7)

This key has 3 positions:
« 0 » Machine at standstill, key removable, all electrics switched off.

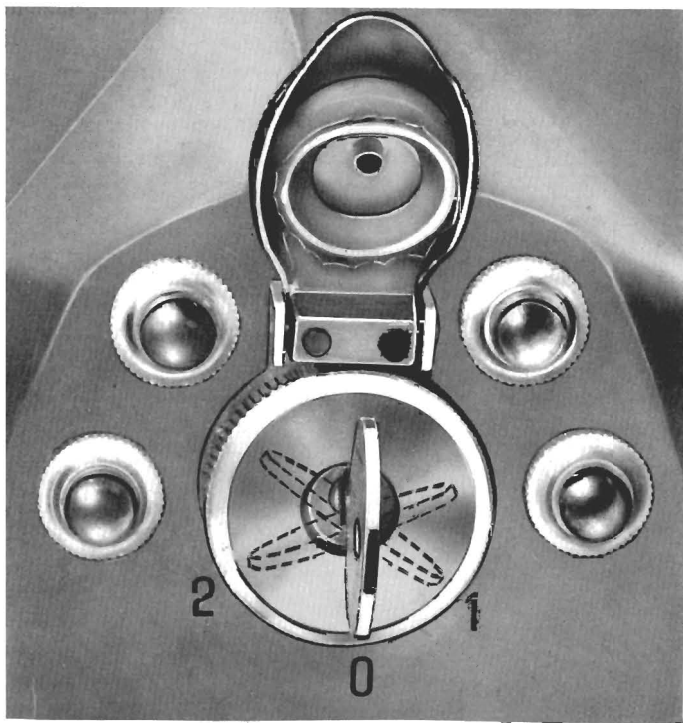


Fig. 7

- « 1 » Machine standing, key removable, parking lights on.
- « 2 » Running position or machine ready to set out. All controls on. For daylight driving no other position necessary. For night driving levers A and B on the left handlebar must be switched on (Fig. 9).

Starting button (Fig. 8)

On right handlebar. With the ignition key in position 2 the machine is ready to be started.

Ignition switch keys

Every machine is supplied with an ignition key and a duplicate. Key letter should be recorded and reported to your dealer in case of loss.

Steering lock (Fig. 31)

It is located on the left hand side of the steering column and it is key operated.

Steering lock keys

Every machine is supplied with a key and a duplicate.

Light switch and horn button
(See fig. 9)

It is located on the right handlebar.

- a) Light switch:
 - position « 1 » parking light
 - position « 2 » low beam

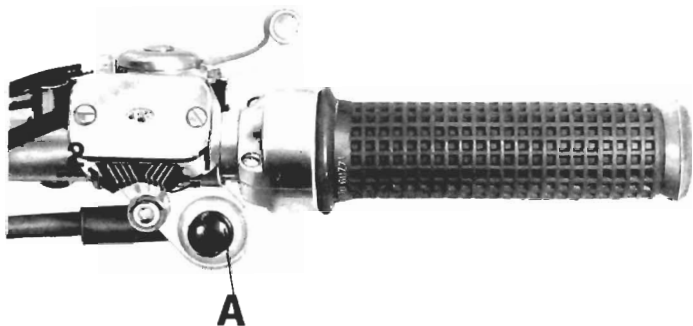


Fig. 8

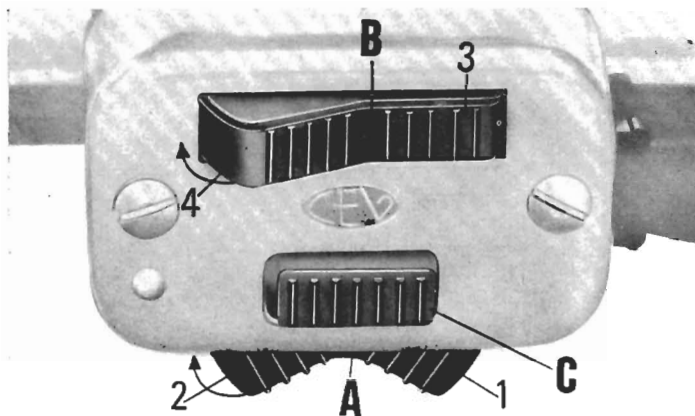


Fig. 9

- b) Dimmer switch:
 — position « 3 » low beam
 — position « 4 » high beam
 c) Horn button.

Clutch lever	Is on left handlebar and should be used for starting and gearshifting only.
Twist grip throttle control	It is located on the right handlebar. Throttle is opened by turning toward the rider.
Carburetor starter control (Fig. 16)	Is on the right hand side of the handlebar. It is opened by pulling toward the rider and viceversa.
Gearshift lever	On right hand side of machine.
Front brake lever	On right hand side of machine.
Rear brake pedal	On left hand side of machine.

Side stand

It is located on the right hand side of the machine and its only purpose is to make parking easier during brief stops.

When re-starting make always sure that this stand is returned to the rest position as if it is left inadvertently down, possible serious trouble may ensue.

**Turn lights
switch**

(See fig. 8)

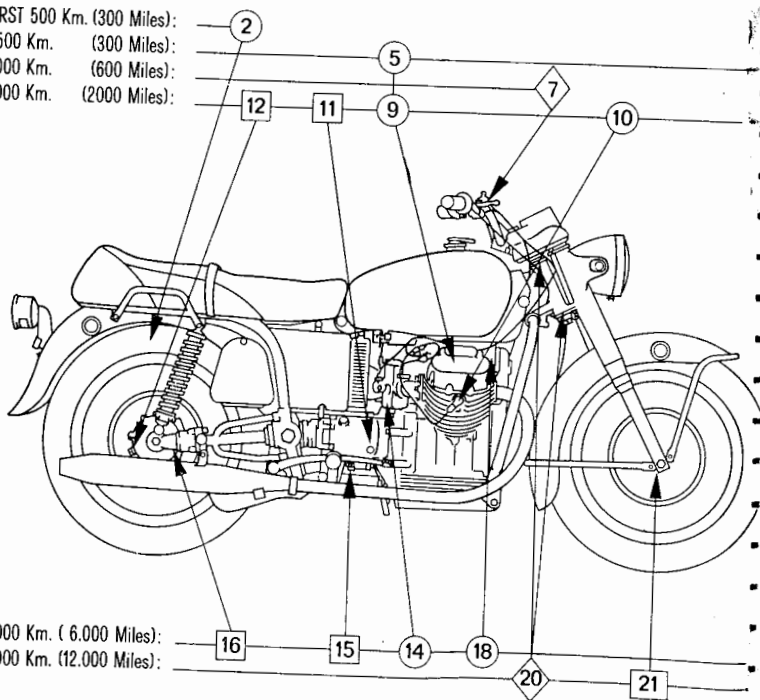
It is located on the right handlebar.
position 1. right turn lights on
position 2. left turn lights on.

AFTER FIRST 500 Km. (300 Miles):

EVERY 500 Km. (300 Miles):

EVERY 1000 Km. (600 Miles):

EVERY 3000 Km. (2000 Miles):



EVERY 10.000 Km. (6.000 Miles):

EVERY 20.000 Km. (12.000 Miles):

- Maintenance
- △ «SHELL Super 100 Multigrade»
- «SHELL Spirax HD 90»
- ◇ «SHELL Alvania Grease 2»
- ▭ «SHELL Tellus 33»

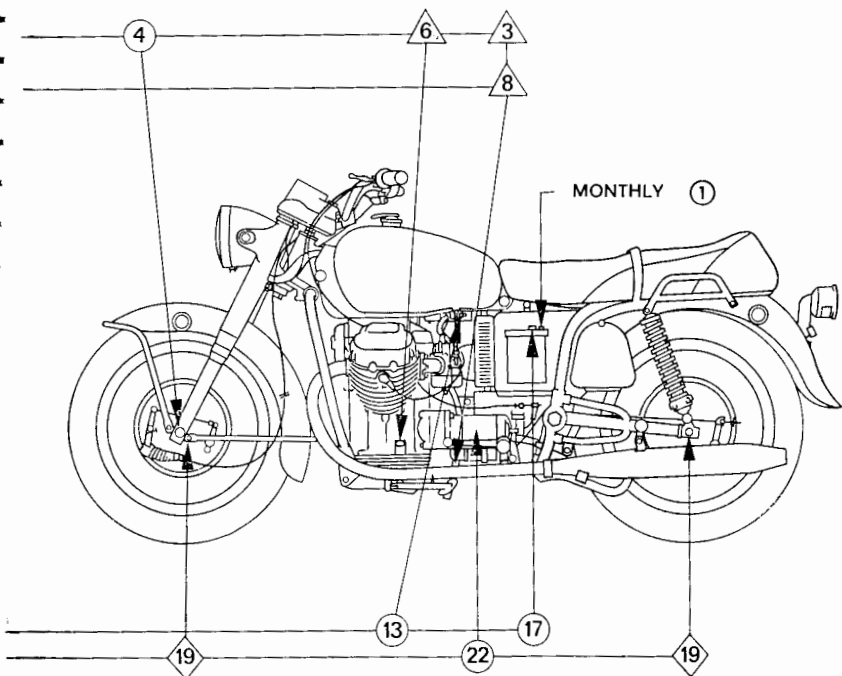


Fig. 11



RIDING INSTRUCTIONS

Engine starting

Before starting the engine ensure that:

- there is sufficient fuel in the tank
- the oil is at correct level
- the ignition key is on the « 2 » position
- the red warning lights (oil pressure and dynamo charge), the orange neutral indicator, and when night driving the green light are on
- the easy start lever (when starting from cold) is in the open position (See « A » in fig. 16).

When the above has been checked, twist the gas grip 1/4 turn and push the start button on the R/H side of the handlebar. After the engine has started and before returning the easy start lever to its normal riding position (« C » in fig. 16), let the engine idle for a short while in the hot and a few minutes in the cold season to allow the oil to reach all the lubricating points and the cylinders to get warm.

N.B. - Do not forget that the easy starting lever must be returned to the normal riding position. If left open when riding there will be irregular carburation and increased fuel consumption. In some cases there may also be the possibility of seizures due to too much petrol going in the cylinders.

Caution

Do not forget that starting the engine in gear (orange indicator light off) can be very dangerous unless the clutch is kept fully disengaged as with the firing of the engine the machine itself may start off.

Even at low temperatures the machine should always start easily provided everything is in good order and there is sufficient thrust from the starter motor.

If the engine does not start easily, do not

persist in many attempts but check carburation, ignition, battery charge and if the oil in the sump is of correct gradation.

Starting a hot engine

When starting a hot engine there is no need to open the starter lever as this would richen the mixture and make starting difficult. If starting a hot engine gives some difficulty it is well to open the throttle completely before pushing in the starter button.

Getting under way and stopping of machine

Pull the clutch lever completely, engage low gear, release the clutch slowly, and at the same time turn the gas on.

As soon as the engine has picked up some speed, close the gas, pull the clutch and by downward toe pressure engage second gear. Then release the clutch rapidly (but not with a jerk) and turn on the gas once more. Third and fourth and high gear are likewise engaged by toe pressure.

On the way

In normal riding conditions, all the tell-tale lights should be off, except naturally the green light when riding at night time.

If any one of them lights up, this means there is some fault in the system or oil pressure is insufficient.

The maximum speeds in each gear should never be exceeded, not even on steep downhill grades. Do not forget that either with right or left gear shift, by toe pressure you pass to a higher gear and by heel pressure to a lower gear (Fig. 10). Before any gear is engaged, make sure the clutch is completely disengaged. It is necessary to fully close the gas when you change up but it can only be closed partially when changing down. To obtain fast and effortless gear shifts, always, depress the pedal firmly but gently without stamping or jabbing vigorously on it.

The free position (neutral) is in between first and second gear. To locate this position it is necessary to shift to low gear and then by slight (toe) pressure (half stroke) to feel for neutral position.

With the machine standing still and the engine running, the transmission should always be kept in neutral. Do not keep the clutch lever depressed, even during the briefest stops. Always change to a higher gear rather than let the engine race.

Stopping the machine

As soon as the machine stops, close the throttle, shift to neutral, turn the key to the « 0 » position and take it off (Fig. 7).

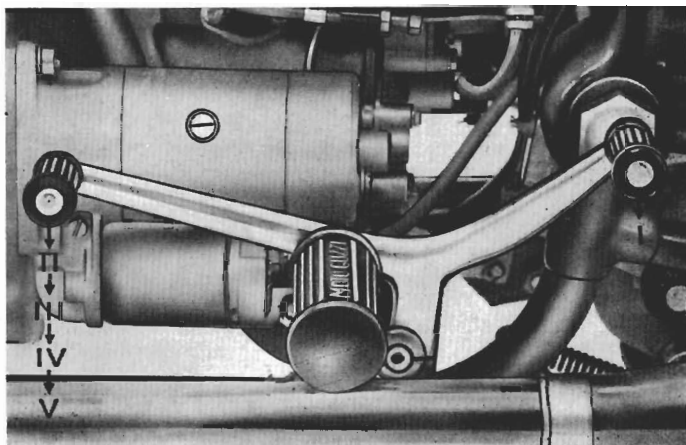


Fig. 10

The free position (neutral) is in between first and second gear. To locate this position it is necessary to shift to low gear and then by slight (toe) pressure (half stroke) to feel for neutral position.

With the machine standing still and the engine running, the transmission should always be kept in neutral. Do not keep the clutch lever depressed, even during the briefest stops. Always change to a higher gear rather than let the engine race.

Stopping the machine

As soon as the machine stops, close the throttle, shift to neutral, turn the key to the « 0 » position and take it off (Fig. 7).

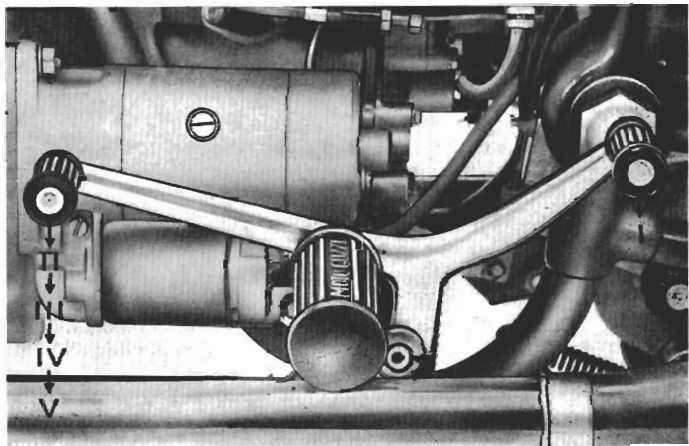


Fig. 10

LUBRICATION AND GENERAL MAINTENANCE CHART

(See fig. 11)

- | | |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monthly | 1) Check electrolyte level in battery (every 15 days in summer). See «Battery». |
| Periodically | 2) Check tire pressure with a gauge. See «Tyres», page 16. |
| After the first 500 kms. | 3) Replace the crankcase oil. See «Engine lubrication».
4) Tighten all nuts and bolts.
5) Check and adjust tappet play, if necessary. See «Tappet adjustment». |
| Every 1000 kms. | 6) Check and if necessary top up oil level in crankcase. Correct oil level is in between the minimum and maximum marks on the dipstick. See «Engine lubrication».
7) Lubricate cable ends. See «Lubrication of clutch, front brake and air cables». |
| Every 3000 kms. | 8) Replace oil in crankcase. See «Engine lubrication».
9) Check tappet clearance. See «Tappet clearance».
10) Check and clean spark plugs. See «Spark plugs».
11) Check oil level in gear box and if necessary top up. See «Lubrication of gear box».
12) Check oil level in transmission box for lubricating bevel gears. If necessary, top up. |
| Every 10.000 kms. | 13) Clean petrol taps and filters, carburetor filters, and fuel line to carburetors. See «Carburation».
14) Strip carburetor and check all parts. Use an air jet to clean out all ducts. See «Carburation».
15) Change gear box oil. See «Lubrication of transmission».
16) Change rear drive box oil. See «Lubrication of rear drive box». |



**After the first
20.000 kms.**

- 17) Check cleanliness and tightness of all battery connections and smear them with vaseline. See «Battery».
- 18) Clean commutator of generator using a clean cloth slightly moistened in petrol. See «Generator».
- 19) Check condition of wheel bearings and pack them with grease. See «Lubrication of wheel bearings».
- 20) Check condition of steering bearings and pack with grease.
- 21) Replace oil in inner tubes. See «Lubrication of fork».
- 22) Clean starter motor commutator using a clean rag slightly moistened with petrol.

SERVICING INSTRUCTIONS

Lubrication of engine (See fig. 12)

Using the oil filler dipstick (A), check the sump level every 500 kms. (300 miles).

Correct oil level is in between the minimum and maximum marks. Make this check on a warm engine with the filler cap screwed on one turn.

Every 3000 kms. (1800 miles) change the engine oil (on a new or overhauled machine this change should be made after the first 500 kms. (300 miles). The oil should be replaced when the engine is warm by un-

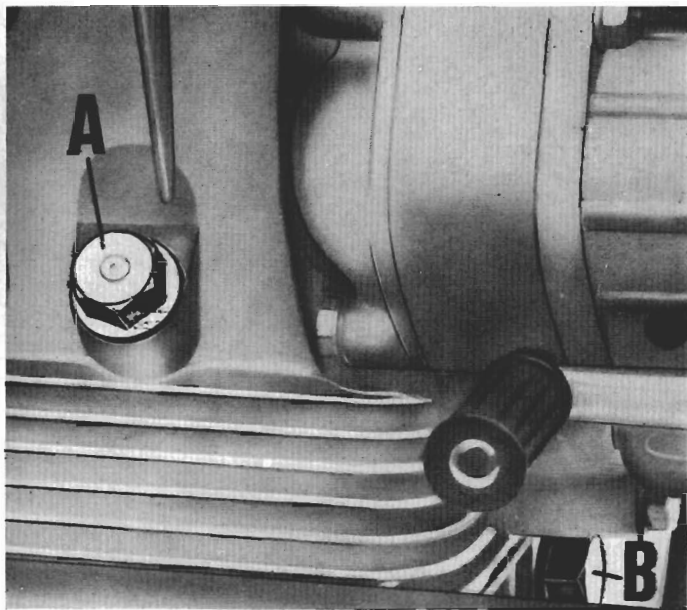


Fig. 12

screwing filler cap (A) and drain plug (B). Allow all the old oil to drain, re-fit plug B, and introduce fresh oil. Quantity required: about 3 liters (3¾ quarts). Oil recommendation: SHELL Super 100 Multigrade or an equivalent.

Oil pressure relief valve

Under no circumstances should this valve be tampered with as it has already been calibrated at the factory for a pressure operation of 3.8 - 4.2 kgs./sq.cm. (54 - 60 lbs. sq.in.).

Oil pressure gauge

The indicator light goes out when the pressure is sufficient to open the contact of the pressure operated solenoid.

If this light stays lit, then the oil pressure indicator does not work properly or the oil pressure is incorrect. In such cases, stop

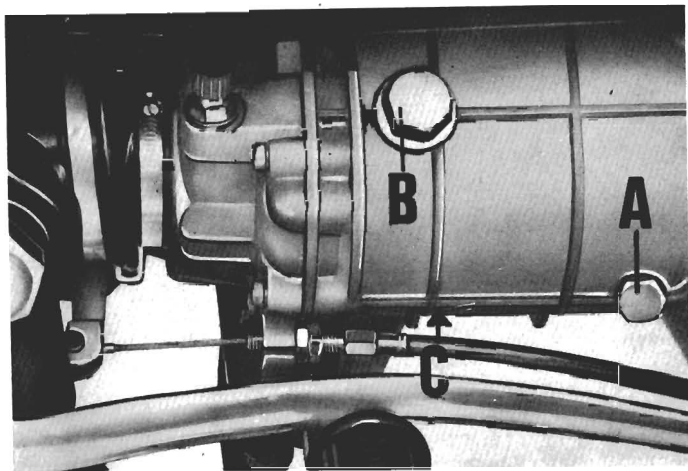


Fig. 13

the engine and inspect all passages and oil lines to determine the cause and correct it before restarting.

**Lubrication of
gear box**
(See fig. 13)

The oil in this box must be checked every 3000 kms. (1800 miles). The level is correct when the oil is flush with plug hole (A). Change this oil every 10.000 kms. (6000

miles). This operation should be carried out a short time after a ride when the oil is warm and easily drained.

To change the oil proceed as follows: unscrew filler cap B, level plug A and drain plug C under the box. When the old oil has drained and plug C re-fitted, introduce fresh oil through B until it starts to leak out from level hole A, when both plugs can be put back.

Oil quantity required: abt. 0.750 liter (1 $\frac{3}{4}$ pints).

Oil recommendation: Shell Spirax 90 HD or an equivalent.

**Lubrication of
rear wheel
drive**
(See fig. 14)

The oil level of this box should be checked every 300 kms. (1800 miles).

The oil should just skim hole A. Change the oil every 10.000 kms. (6000 miles) and do this operation on a hot engine. Unscrew filler plug B, level plug A, and bottom drain cover screws C.

When the old oil has drained, refit the cover and introduce new oil until it starts seeping through hole A, finally screwing on plug A. Quantity required: about 0.230 liters (1/2 pint).

Oil recommendation: Shell Spiral 90 HD or equivalent.

**Lubrication
of front fork
and hydraulic
dampers**

(See fig. 15)

Every 20.000 kms. (12.000 miles) or earlier, if necessary, change the oil in the fork tubes. Proceed as follows: remove the drain plugs and washer (A) and plugs (B). When the oil has drained, and drain plug A screwed on, introduce fresh oil through B.

Quantity of oil required for each fork tube: about 0.160 liters (5,4 oz.). Oil recommendation: Shell Tellus 33 or equivalent.

**Lubrication of
bevels in the
steering**

Every 20.000 kms. (12.000 miles) check condition of these bearings and pack them with Shell Alvania grease 2 or an equivalent.

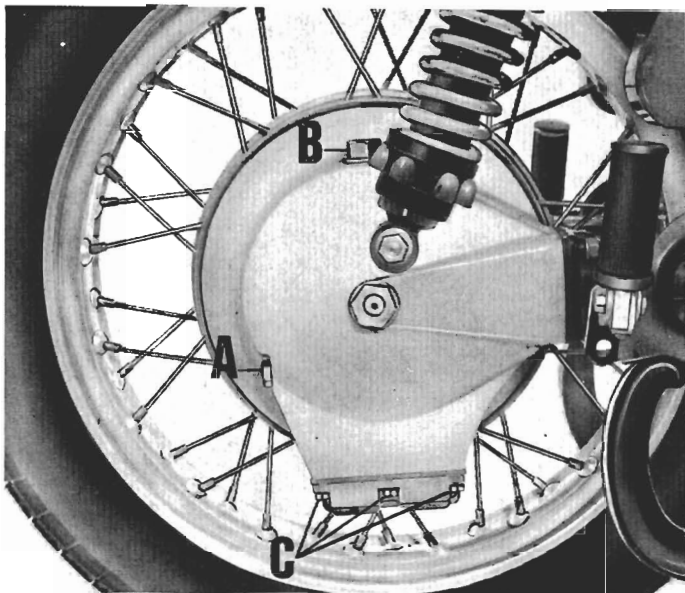


Fig. 14

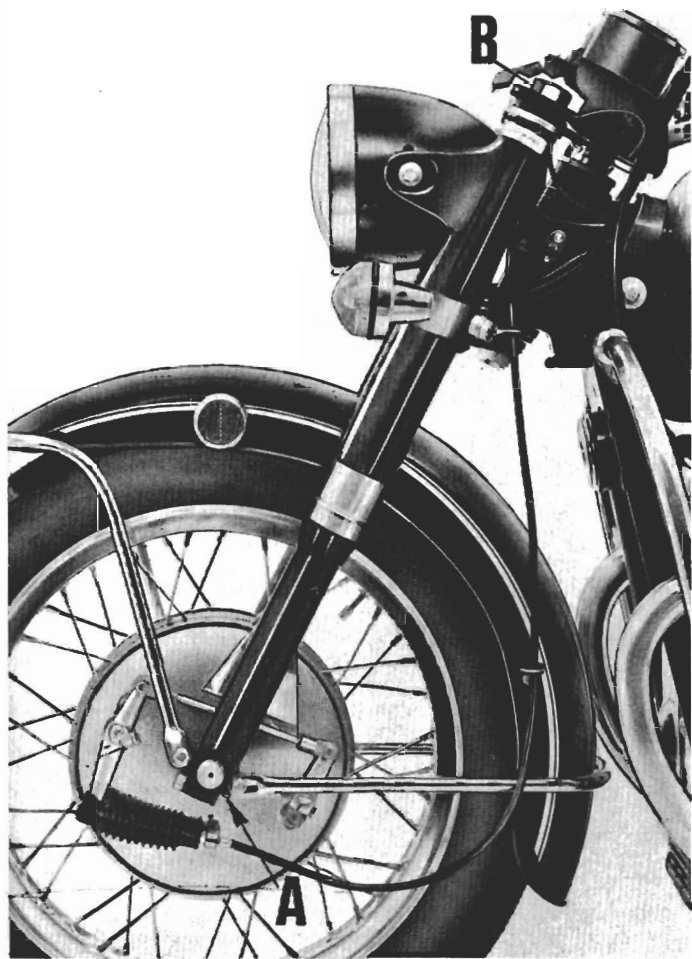


Fig. 15



**Lubrication of
wheel bearings**

Every 20.000 kms. (12.000 miles) check the condition of these bearings and pack with Shell Alvania Grease 2 or an equivalent.

**Lubrication of
control cables**

Every 100 kms. (600 miles) clean the cable ends and lubricate with Shell Alvania grease F 2 or an equivalent. Actuate the levers several times to allow some of the grease to enter into the casings.

**Lubrication of
rear fork
bearings**

At the time of a general overhaul it is well to inspect these bearings to ensure that they are still efficient and, if necessary, pack them with grease. Recommended lubricant: Shell Alvania grease 2 or an equivalent.

**Oil breather
unit**

If the motorcycle is left unused for any considerable length of time there is the possibility that foreign matter eventually present in the oil may deposit on the diaphragm inside the breather causing this to get stuck with consequent oil leakages.

Under the circumstances, we recommend to inspect this unit before using the machine again and this can be done by removing the unit from the machine with the fuel tank assembled.

Proceed as follows:

- Unscrew the breather unit securing bolt.
- Back out the breather from the left.
- Check that the pressure relief valve inside the breather can move freely. This can easily be done by means of a suitable rod introduced in the central tube of the breather. If the valve is stuck, free it with



the rod and wash the tube out first with pure petrol and then with an oil-petrol mixture. Finally dry off with an air jet to prevent the valve from oxidizing and getting stuck again to the tube end from the engine.

The unit can now be re-assembled on the machine.

CARBURATION

Carburetor

This model is fitted with 2 dual control Dell'Orto carburetors type VHB 29 CD on the right and VHB 29 CS on the left.

Both controls are on the right handlebar: one is the easy starting lever for cold starts, the other is the throttle twist grip control. When starting a cold engine, the easy start lever is turned on the open position « A » (See fig. 16).

After the engine has warmed up — a few seconds in the summer and a few minutes in winter, — this lever must be returned to the normal riding position « C » in fig. 16.

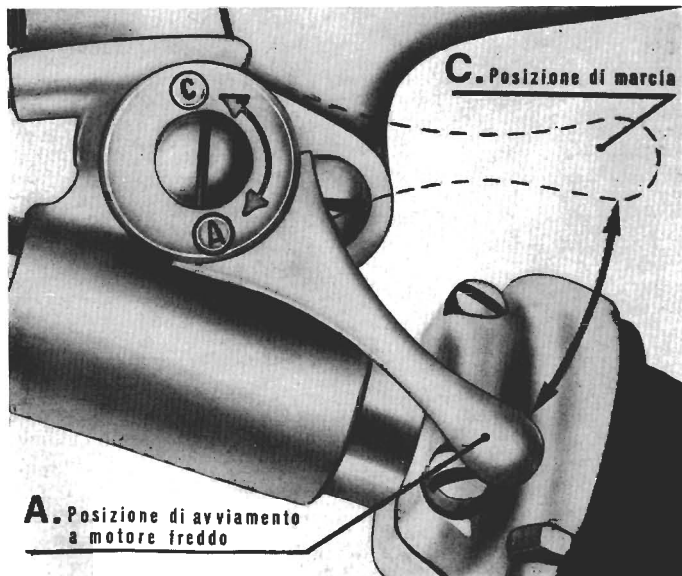


Fig. 16

