



V35C V50C

OWNER'S MANUAL

The illustrations and descriptions in this booklet are indicative only and the manufacturer reserves itself the right to introduce any modification it may deem necessary for better performance or for constructive or commercial reasons without prior notice.

This machine is not designed for the attachment of either a sidecar or for the towing of trailers. If the owners should decide to fit a sidecar or tow a trailer, then they do so at their risk and in no way would the manufacturers be responsible for defects or other incidents which may be attributed to the above.

Dear rider

First of all we wish to thank you for choosing this motorcycle of our production.

By following the instructions outlined in this manual you will ensure your bike a long and troublefree life.

Before riding, please read thoroughly this manual in order to know your motorcycle's features and how to operate it safely.

All major checking and overhaul jobs are best carried out by our dealers who have the necessary facilities to quickly and competently repair your Moto Guzzi.

Repairs or adjustments by any other than a Guzzi dealer during the warranty period could invalidate the warranty right.



The picture shows the V35C model - The model V50C is in page 56

INDEX

- 4** Main features
- 10** Controls and accessories
- 12** Identification data
- 14** Instruments and controls
- 20** Riding instructions
- 22** Running in
- 24** Maintenance and adjustments
- 31** Removal of wheels
- 34** Service schedule
- 36** Lubrications
- 40** Carburation
- 44** Valve gearing
- 45** Ignition
- 49** Electrical equipment

4 MAIN FEATURES

(data within brackets [] are referring to model V50 C)

Engine

Twin cylinder	4 stroke
Cylinder disposition	«V» 90°
Bore	66 mm [74 mm]
Stroke	50.6 mm [57 mm]
Displacement	346.22 cc [490.29 cc]
Compression ratio	10.5 : 1 [10.4 : 1]
Revs at maximum engine speed	8100 rpm [7500 rpm]
Horse power	35 HP [47 HP]

Valve gearing

O.H.V. push rod operated

Timing data:

Inlet:

- opens 18° before TDC
- closes 50° after BDC

Outlet:

- opens 53° before TDC
- closes 15° after BDC

Valve clearance for timing: 1 mm (.039")

Valve rocker clearance:

- inlet: 0.10 mm (.0039")
- outlet: 0.15 mm (.0059")

Lubrication

Forced by lobe type pump

Oil pressure warning light on instrument panel

Oil filters: wire gauze in oil sump and replaceable cartridge type

Ignition

Coil battery ignition with double contact breaker and automatic advance with centrifugal masses

Ignition data:

- ignition advance (fixed) 10°
- automatic advance 25° + 2°
- full advance (fixed + aut.) 35° ± 2°
- contact breaker gap 0.35 to 0.45 mm

Spark plugs:

Marelli CW 8 LP

Lodge 2 HL

Plugs points gap: 0.6 mm (.023")

Carburation

No. 2 carburettors «Dell'Orto» type VHB 26 FD/FS [PHBH 28 BD/BS].

Exhaust system

No. 2 exhaust pipes and No. 2 connected silencers.

Generator-alternator

Situated at the front end of crankshaft (14V-20A)

Starting

Electric starter (12V-0.7 KW) with electromagnetic ratchet control.

Transmission

Clutch

Dry type, single plate with diaphragm spring; hand controlled, lever on the L/H side of handlebar.

Primary drive

By gears: ratio 1 : 1.846 ($Z = 13/24$),
[1 : 1.642 ($Z = 14/23$)]

Gearbox

5 speeds, constant mesh gears, frontal engagement.

Foot controlled with lever on the L/H side of the machine.

Gear ratios:

low gear = 1 to 2.727 ($Z = 11/30$)

2nd gear = 1 to 1.733 ($Z = 15/26$)

3rd gear = 1 to 1.277 ($Z = 18/23$)

4th gear = 1 to 0.45 ($Z = 22/23$)

high gear = 1 to 0.909 ($Z = 22/20$)

Secondary drive

By cardan shaft and bevel gear set. Ratio 1 to 3.875 ($Z = 8/31$). Overall gear ratios (engine-wheel):

low gear = 1 to 19.506 [1 : 17.362]

2nd gear = 1 to 12.396 [1 : 11.034]

3rd gear = 1 to 9.134 [1 : 8.134]

4th gear = 1 to 7.475 [1 : 6.655]

high gear = 1 to 6.503 [1 : 5.787]

Frame

Duplex cradle, tubular structure.

Suspensions

Front: telescopic fork incorporating oil pneumatic dampers.

Rear: swinging fork and rear oil pneumatic dampers with adjustable external springs.

Wheels

Light alloy casting with rims:

- front: 2.15 x 18"8
- rear: 2.50 x 16"

Tires

Front: 100/90 – 18"

Rear: 130/90 – 16"

Brakes

Front: disc type with two cylinders operated by caliper. Hand controlled with lever on the R/H side of handlebar

- disc dia. 260 mm
- cylinder dia. 32 mm
- master cylinder dia. 12.7 mm

Rear: disc type with double cylinder caliper. Foot controlled with pedal on the center R/H side of the machine

- disc dia. 235 mm
- cylinder dia. 32 mm
- master cylinder dia. 15.875 mm

The rear brake is connected by an hydraulic transmission to a second brake on the front wheel having the same features and sizes of the hand controlled front brake (right).

Dimensions and weights

Wheel base (loaded)	1.460 m
maximum length	2.200 m
maximum width	0.960 m
maximum height	1.230 m
dry weight	165 kg

Performances

Top speed solo riding 150 km/h [165 km/h]
Fuel consumption 4,3 l x 100 km [5 l x 100 km]

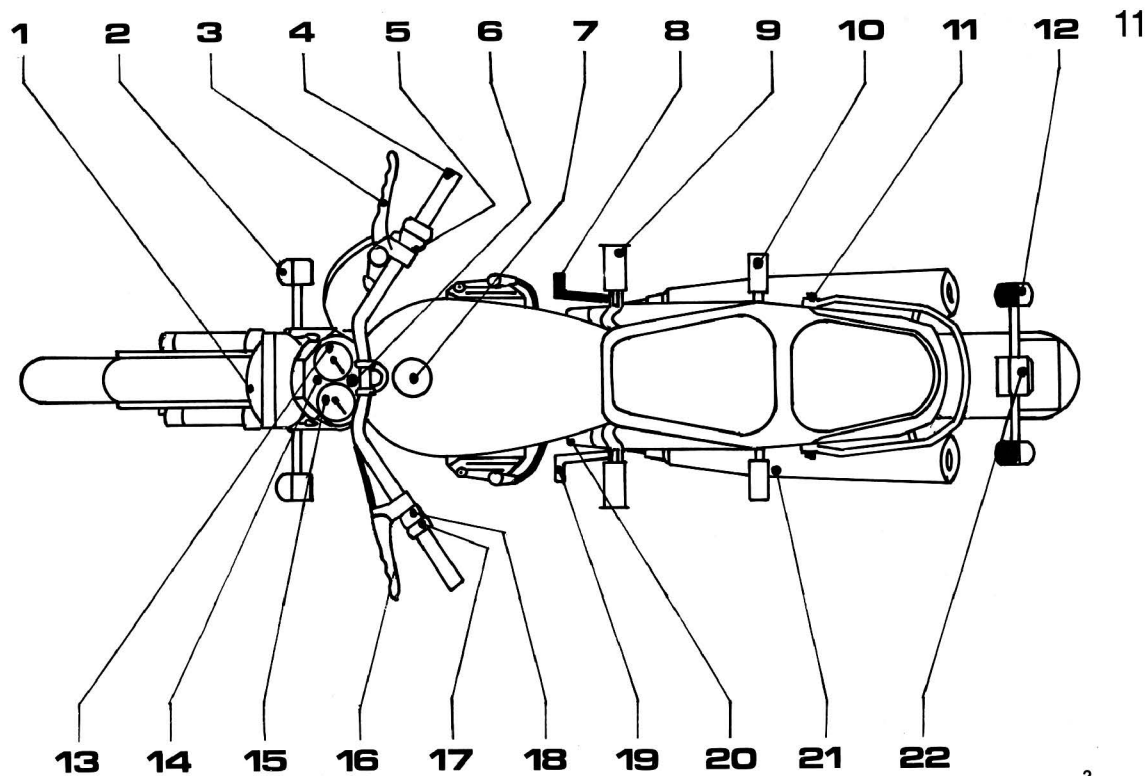
Fuel and oil capacities

Group of part	Quantities	Recommendations
Fuel tank (reserve 2 l about)	15 l (3.42 Imp. gal.) (4.15 US gal.)	Supergrade gasoline (98/100 NO-RM)
Oil sump	2 l (0.44 Imp. gal.) (0.53 US gal.)	Oil «Agip Sint 2000 SAE 10 W/50»
Gear box	1 l (.22 Imp. gal.) (.26 US gal.)	Oil «Agip F.1 Rotra MP SAE 90»
Rear drive box	0.170 l (.037 Imp. gal. 0.044 US gal.) of which: 0.160 l (0.141 qt) (.170 US qt) 0.010 l (.008 qt) (.010 US qt)	Oil «Agip F.1 Rotra MP SAE 140» Oil «Agip Rocol ASO/R» or «Molykote» type «A»
Front fork (each leg)	0.060 l (.052 qt) (0.063 US qt)	Fluid «Agip F.1 ATF Dexron»
Braking circuit (front and rear)		Fluid «Agip F.1 Brake Fluid SAE J 1703 B»

10 CONTROLS AND ACCESSORIES

(fig. 2)

- | | | | |
|----|--|----|--|
| 1 | Headlight | 16 | Clutch lever |
| 2 | Front turn signals | 17 | Buttons controlling: horn-flashers (Flash) -
Turn signals |
| 3 | Control lever, right front brake | 18 | Light switch |
| 4 | Throttle control grip | 19 | Gear shift pedal |
| 5 | Engine starting and stopping button | 20 | Side stand |
| 6 | Ignition key | 21 | Center stand |
| 7 | Lock set, fuel filler cap opening | 22 | Tail light |
| 8 | Pedal, left front brake and rear brake | | |
| 9 | Footrest | | |
| 10 | Pillion footrest | | |
| 11 | Rear suspensions with oil pneumatic
dampers | | |
| 12 | Rear turn signals | | |
| 13 | Speedometer-Tachometer | | |
| 14 | Instrument panel | | |
| 15 | Rev-counter | | |
- «Right» or «left» in the text are intended as seen by the rider astride the motorcycle.

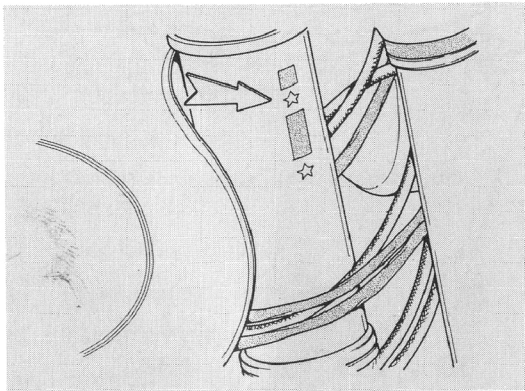


12 IDENTIFICATION DATA

(fig. 3)

Each motorcycle is identified by an identification number on the frame down-tube and a number stamped on the engine crankcase.

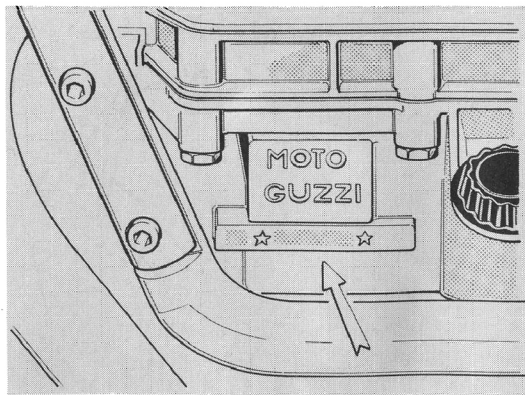
The identification number on the frame is mentioned in the motorcycle log-book and identifies the vehicle to all legal effects.



Spare parts

In case of part replacements, ensure that «**original Moto Guzzi spare parts**» only are used.

The use of non-genuine parts invalidates every warranty right.



Warranty

The warranty is valid for a period of 6 months with a limitation to 10,000 km (6000 miles) from the selling date and expires in case of modifications to the motorcycle or participation to racing competitions.

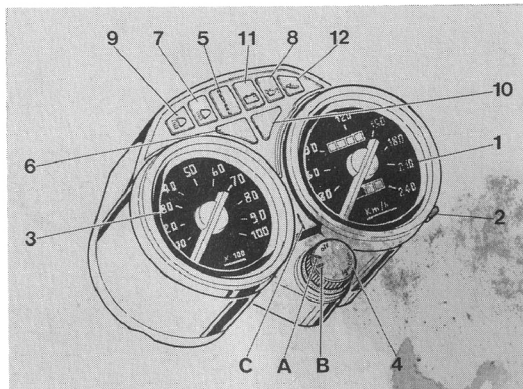
Tires, accessories, or parts not manufactured in the «SEIMM - MOTO GUZZI» factories are excluded from this guarantee.

Each new motorcycle is supplied with a «coupon book» which has to be carefully kept with all other circulation papers as it is the only document entitling the owner to request warranty services from SEIMM - Moto Guzzi dealers, according to the general conditions of sale.

14 INSTRUMENT AND CONTROLS

Instrument panel (fig. 4)

- 1 Speedometer tachometer
- 2 Speedometer zero setter.
- 3 Rev counter.
- 4 Ignition key:
 - «OFF» In line with the panel mark «C»: machine at standstill, key removable (no contacts);
 - «A» In line with the panel mark «C» (turned clockwise): machine ready to be started. All circuits on. Key not removable;



«B» In line with the panel mark «C» (turned clockwise): machine at standstill. With switch «A» (fig. 5) in position «E» parking light on. Key removable.

5 Warning light (green «Neutral»). Lights up when transmission is in neutral.

6 Warning light (green), left turn signals.

7 Warning light (green), indicating parking lights on.

8 Warning light (red), oil pressure gauge. It goes out when oil pressure is sufficient for normal engine lubrication. If it does not, it means that the oil pressure is not correct and in such an event the engine should be immediately stopped and all circuits checked over.

9 Warning light (blue), indicating high beam on.

10 Warning light (green), right turn signals.

11 Warning light (red), indicating current delivery from generator. It should go out when the engine reaches a certain number of revs.

12 Warning light available.

Light Switches (fig. 5)

They are located on the L/H side of the handlebar.

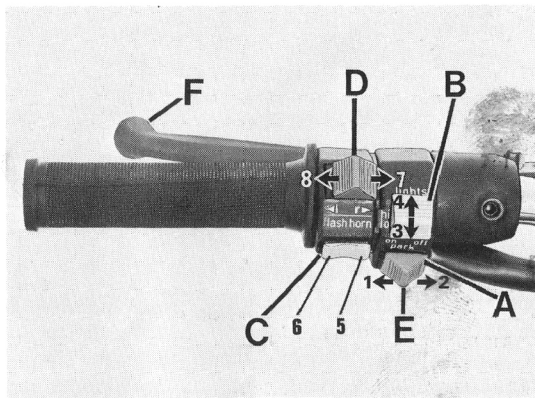
Switch «A»

- Position «E» parking light.
- Position «1» lights on.
- Position «2» lights off.

Switch «B»

With switch «A» in position «1»:

- Position «3» low beam.
- Position «4» high beam.



Buttons controlling: horns, flashers and turn signal (fig. 5)

They are located on the L/H side of the handlebar:

Button «C»

«5» (Horn) Horn control.

«6» (Flash) Flashing light control.

Switch «D»

- Position «7» Right turn signal control.
- Position «8» Left turn signal control.

Engine starting and stopping buttons (fig. 6)

They are located on the R/H side of the handlebar. With ignition key «4» (fig. 4) in position «A» in line with the panel mark «C», the motorcycle is ready to be started. To start the engine operate as follows:

- ensure that switch «B» is in position «1» (run-);
- fully draw the clutch control lever;
- with a cold engine set the starter lever in position «A» (see fig. 28);
- press starting button «A» (start).

To stop the engine in case of emergency:

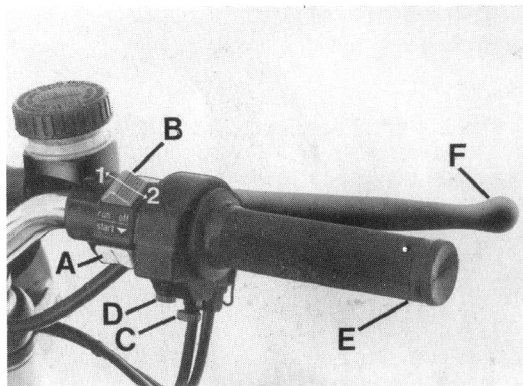
- set switch «B» in position «2» (off).

After stopping the engine turn the key of switch in fig. 4 counterclockwise until mark «OFF» is in line with the panel mark «C» and remove the key from the switch.

Starter control lever (fig. 28)

The control lever to start a cold engine is located on the L/H side of the motorcycle.

- «A» starting position.
- «B» riding position.



Throttle control grip («E» of fig. 6)

It is located on the R/H side of the handlebar: the throttle is opened by turning the grip towards the rider and closed viceversa.

To adjust the stroke of the throttle grip act on screw «D». To harden the return of the throttle grip act on screw «C».

Clutch control lever («F» of fig. 5)

It is located on the L/H side of the handlebar: should be pulled only for starting and gearshifting.

Right front brake control lever

(«F» of fig. 6)

On the R/H side of the handlebar: it controls the master cylinder for right front hydraulic brake.

Left front and rear brake control pedal («B» of fig. 18/1)

It is centrally located on the R/H side of the vehicle and it is link connected to the master cylinder. It controls the left front brake and rear brake simultaneously.

Gearshift pedal (fig. 7)

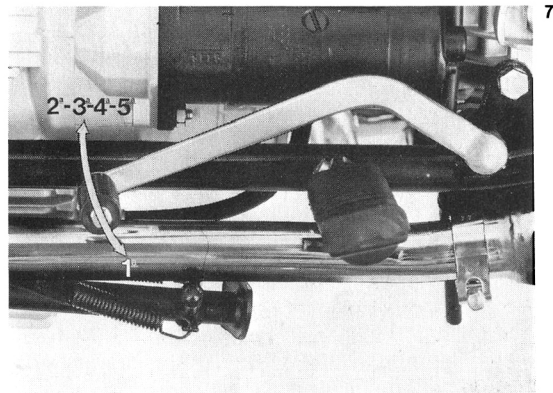
This pedal is located at the left center of the motorcycle. Positions:

- Low gear, front lever end towards the ground;
- 2nd, 3rd, 4th, high gear, lever end up;
- neutral, between low and 2nd gear.

Before actuating the pedal, draw the clutch lever completely.

Fuel filler cap (fig. 8)

Access to tap «B» is made possible by rotating key «A» and lifting the cover «C».



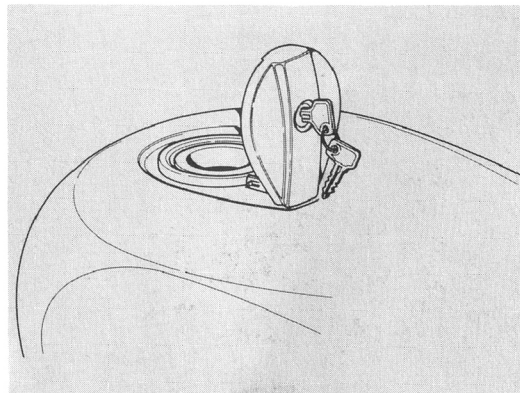
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Brake fluid reservoir for master cylinders controlling front and rear braking circuits (fig. 9)

Lift the seat to access to this reservoir. The minimum and maximum fluid levels are indicated on the transparent section «A». To top up remove cap «B» and rubber diaphragm.

Fuel taps (fig. 10)

They are located under the fuel tank, rear side. The tap levers (FUEL) have three positions:



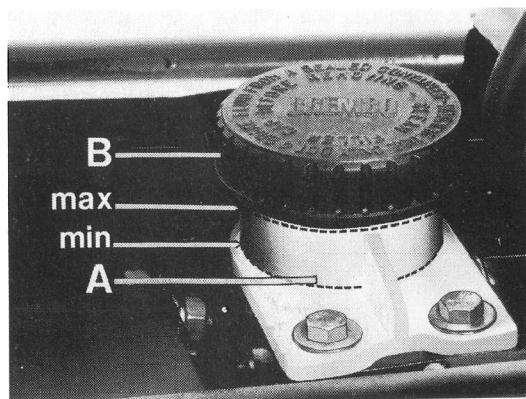
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- «ON» Open, arrow upwards.
- «RES» Reserve, arrow downwards.
- «OFF» Closed, arrow horizontal.

Terminal block with fuses (fig. 11)

It is located at the center of the motorcycle; access to it by lifting the saddle and removing the R/H side cover. The box fits 4 fuses of «16A».

Before replacing a fuse or fuses, it is necessary to eliminate the defect causing its burning.



Steering locking («A» of fig. 12)

To lock or unlock the steering, proceed as follows:

Locking:

- Turn the handlebar fully to the right;
- Insert the key in the lock set, turn it anticlockwise, push it right in, turn it clockwise release and withdraw it.

Unlocking:

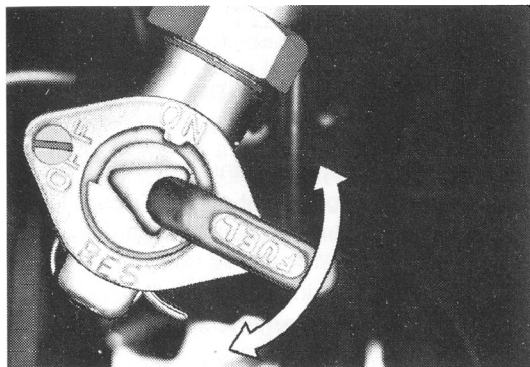
- Insert the key in the lock set, turn it anticlockwise, release and withdraw it.

Saddle locking device (fig. 13)

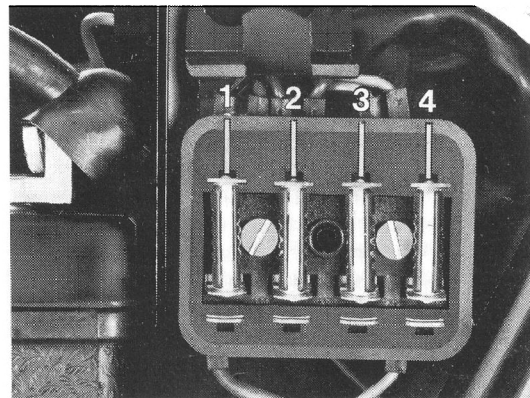
This device is located on the rear L/H side. To unlock, insert the key in the lock set and turn it clockwise.

Side stand («A» of fig. 14)

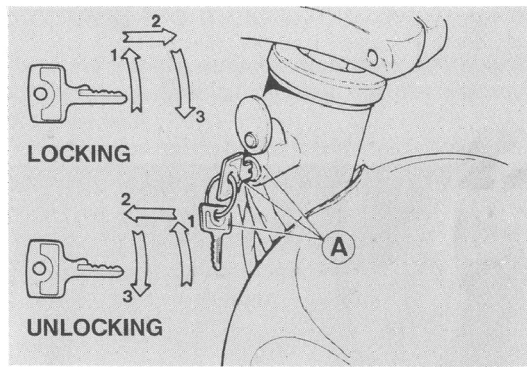
Lifting the bike, the side stand automatically retracts. It is therefore advisable not to use it for long stops, or in precary conditions of stability.



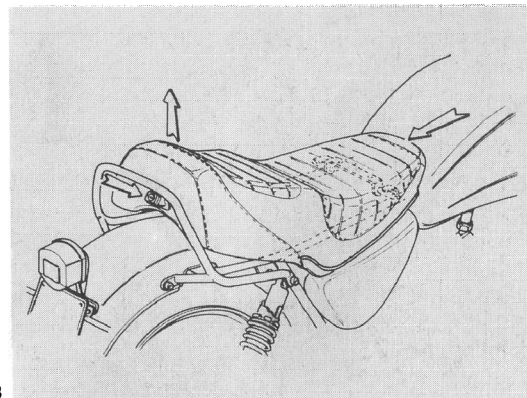
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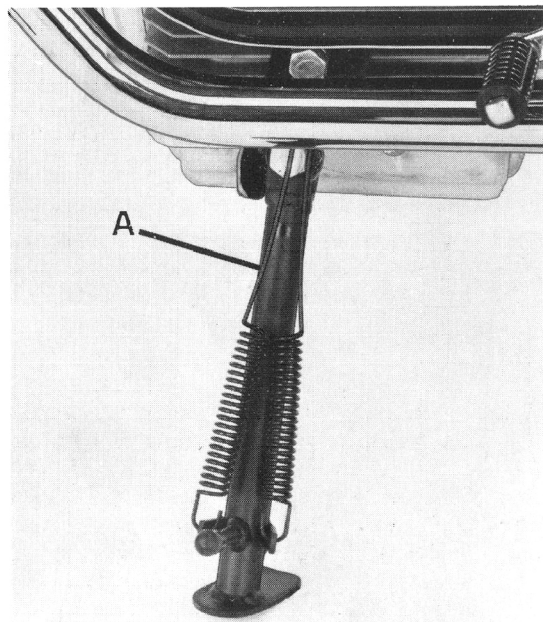
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12



13



RIDING INSTRUCTIONS

Controls before starting

Ensure that:

- there is sufficient fuel in the tank;
- the oil in the engine is at correct level;
- ignition key is in the start position «A» (see fig. 4);
- the following warning lights are lit:
 - red: oil pressure, generator;
 - green : neutral indicator;
- the starter lever for a cold engine is in starting position («A» in fig. 28).

Starting a cold engine

After checking all the above, open the throttle grip 1/4 turn, fully draw the clutch lever, check that switch «B» of fig. 6 is in position «1» (run) and press start button «A» (start) in fig. 6.

As soon as the engine has started and before returning starter lever to riding position («B» in fig. 28) *allow the engine to idle a few seconds in the hot season and a few minutes in the cold season.*

If starter lever is left in starting position («A» in fig. 28) whilst riding, there would be irregular carbu-

ration and increased fuel consumption and in the worst cases the cylinder may seize because of too much petrol going into it.

Caution - If the «green» indicator on panel does not light up with the ignition key in starting position (see «A» in fig. 4) this means that a gear is engaged. An engine starting under that circumstance could be very dangerous; it is therefore recommended to always ensure that the gearbox is in «neutral» position before starting.

Starting a hot engine

Proceed as for a cold engine, except that in this case «starter» lever has not to be adjusted to the start position («A» in fig. 28) as this would richen the carburation too much.

On the way

To change to another gear, close the throttle, pull the clutch control lever fully in and engage the new gear; release gently the clutch lever and open the throttle at the same time. The gear shifting pedal has to be firmly actuated and foot accompanied. When shifting down to a lower gear, operate brakes and throttle control grip gradually so as not to cause the engine to over rev when the clutch lever is released.

Stopping the motorcycle

Close the throttle, actuate the brakes gently, and pull the clutch lever in only when the bike is almost to a standstill.

This operation has to be done with much coordination in order to keep the vehicle under control.

To reduce speed gradually using the gearbox properly, utilise the engine braking power paying attention not to cause the engine to over rev.

On wet or slipper roads, the brakes, especially the front one on the right, should be used with great caution.

To stop the engine turn the ignition key till mark «OFF» is in line with the panel mark «C» (see fig. 4). When the engine is stopped, remember to close the fuel taps.

Parking

When parking at night on insufficiently lighted roads it is necessary to leave the parking lights on. Turn ignition key till mark «B» is in line with the panel mark «C» (see fig. 4) and light switch of fig. 5 in position «E»; remove the key and lock the steering (see chapter «Steering locking» and fig. 12).

22 RUNNING IN

During the running in period, follow strictly these recommendations:

- 1 Before starting allow the engine to warm up at idling speed for a more or less period of time, according to the external temperature.
- 2 Avoid exceeding the running in speeds indicated in the table. Bear in mind that besides keeping to the indicated speeds it is advisable to avoid running at the same number of revolutions for long period but change gear frequently.

- 3 Before stopping, reduce the speed gradually to prevent the various engine groups from undergoing abrupt changes of temperatures.

- 4 Ensure that all operations specified in the service voucher are carried out at the stated mileages.

- 5 Don't forget that proper bedding down of all components will only occur after several thousands of miles have been covered. This will allow you to obtain excellent performance from your motorcycle for a long period of time.

MAXIMUM RUNNING IN SPEEDS

Distance covered	Maximum permissible speeds				
	Low gear	2nd gear	3rd gear	4th gear	high gear
Up to 1000 (600 miles)	35 km (22 mph)	55 km (34 mph)	75 km (47 mph)	95 km (60 mph)	115 km (72 mph)
From 1000 km (600 miles) to 2000 km (1200 miles)	50 km (31 mph)	75 km (47 mph)	100 km (62 mph)	115 km (72 mph)	130 km (80 mph)
From 2000 km (1200 miles) to 4000 km (2400 miles)	Gradually increase the above limits up to the maximum admissible speed.				

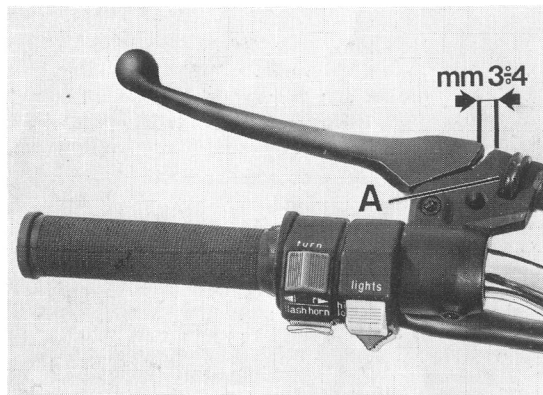
**After the first 500 km (300 miles)
1500 km (900 miles)**

- Change the engine lubricating oil. Should the level fall under the minimum mark before the engine has reached 500-1000 km (300-1000 miles) it will be necessary to change the oil instead of topping up. Recommended oil: «Agip Sint 2000 SAE 10W/50».
- Check tightness of all nuts and bolts.
- Adjust valve rocker clearance.
- Check ignition timing.
- Check tyre pressure.

24 MAINTENANCE AND ADJUSTMENTS

Adjusting the clutch control lever (fig. 15)

If the free play at the handlebar is more than 3-4 mm (.12 to .16") act on adjuster «A» to restore the correct play.



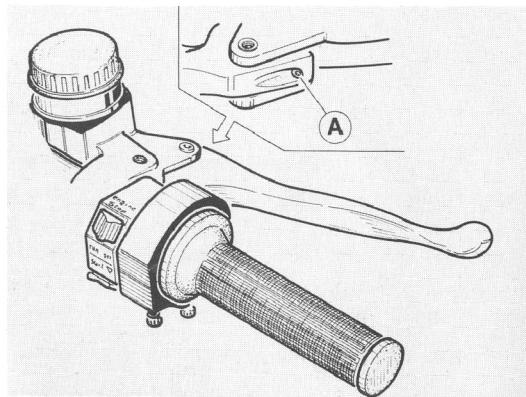
Adjusting the right front brake control lever (fig. 16)

For the above adjustment act as follows:

- Insert feeler gauge «A» between the floater in master cylinder and the control lever end and turn thumb screw «B».

The correct play is 0.05 to 0.15 mm (.0019 to .0059").

15



16

Checking wear of the brake pads

Every 3000 km (1800 miles) check the thickness of the brake pads.

- New pad 7 mm (0.275").
- Wear limit 3.5 mm (0.14").

If the thickness is below the wear limit, it will be necessary to replace the pads. After a pad replacement it is not necessary to bleed the air from braking circuits but only operate the control levers several times until the pistons in calipers reach their normal position.

Check also the conditions of the fluid pipes; should they be damaged, replace them immediately.

NB - For about 100 km (60 miles) after a pad replacement it will be necessary to carefully actuate the brakes in order to allow the pad to properly bed down.

Checking the brake disc

The brake discs must be accurately clean and without oil, grease, or other dirt and must not show any deep scoring.

In case of replacement or overhauling of the brake disc, it is necessary to check its wobbling. This checking is carried out by means of a proper

gauge that must never read more than 0.2 mm (0.0078").

Should the wobbling be higher, carefully check the mounting of the disc on the hub and the play of the hub bearings. Torque wrench setting for the disc-hub securing screws is 2.2 to 2.4 kgm (15 to 17 lbs/ft).

Checking the brake fluid level of the right front brake (fig. 17)

For a good working of the right front brake these directions are to be strictly followed:

- Periodically check the fluid level in reservoir «A». The minimum and maximum level must be within the transparent section of the reservoir.
- Periodically or whenever necessary top up fluid reservoir after loosening cap «B» and removing the gaiter.

Checking the brake fluid of the left front brake and rear brake (fig. 18)

For a good working of the left front and rear brake these directions are to be strictly followed:

- Periodically check the fluid level in reservoir «A»; this level must be within the minimum and ma-

imum level marks on the transparent section of the reservoir.

■ Periodically or whenever necessary top up fluid reservoir after loosening cap «B» and removing the gaiter.

NB - For topping up use only fresh fluid taken from sealed containers to be opened just before use.

When cleaning the braking circuits use only fresh fluid. Never use alcohol to clean or compressed air to dry; use Trichloroethylene for metal parts.

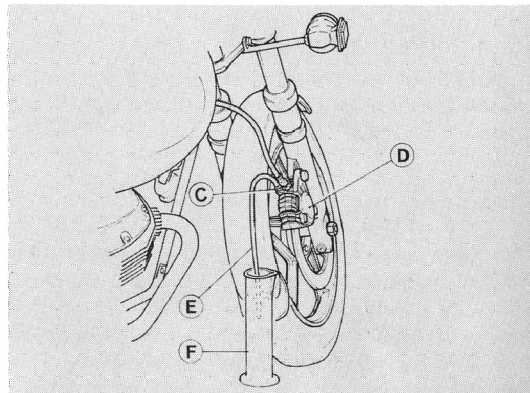
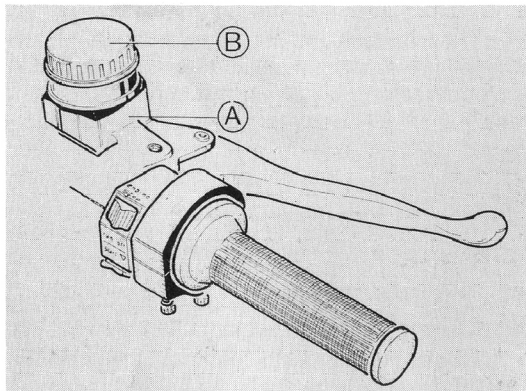
For lubrications do not use mineral oils or greases. If no proper lubricants are available, it is recom-

mended to moisten rubber and metal parts with brake fluid.

Fluid to be used: «Agip F.1 Brake Fluid-SAE J 1703 B ».

Bleeding the air from the braking circuits (fig. 17 and 18)

This operation is required when the movement of the control lever on the handlebar or control pedal is long and elastic because of the presence of air inside the braking circuits.



To bleed proceed as follows:

Right front braking circuit (fig. 17)

- Set the motorcycle up on the center stand.
- If necessary top up the fluid reservoir «A» (ensuring that during the air bleeding operation the fluid level does not fall under the maximum level).
- To bleed operate on caliper «D».

1 Take out the rubber cover then fit a transparent flexible pipe «E» into drain plug «C»; the other end of this pipe will be plunged into a transparent container «F» partially filled up with fluid of the same type.

2 Loosen drain plug «C».

3 Fully draw control lever on handlebar, release it slowly and wait for a few seconds before drawing it again. Repeat this operation until (looking through the transparent container «F») no more bubbles come out from the pipe end «E».

4 Keep control lever fully drawn and lock drain plug «C»; then remove pipe «E» and refit rubber cover onto drain plug. If the air bleeding has been correctly carried out, a direct and efficient working of the fluid will be felt immediately after the lever is pulled. If not, repeat the operation till the above is achieved.

Front left and rear braking circuit (fig. 18)

See previous chapter, except points «3» and «4».

3 Fully operate control pedal etc.

4 Keep the control pedal fully drawn etc.

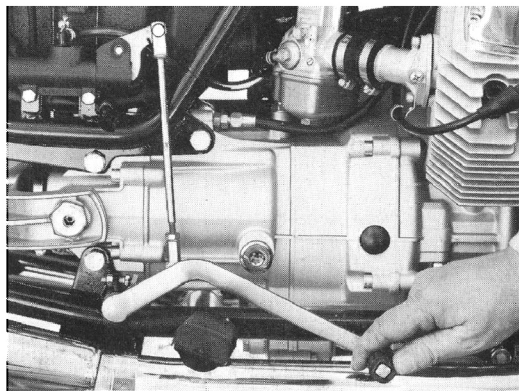
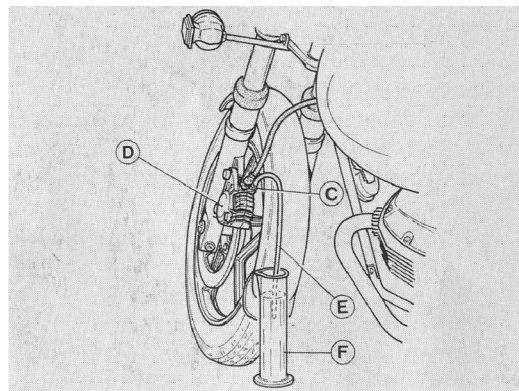
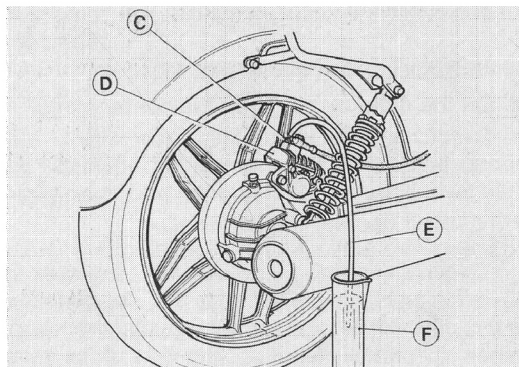
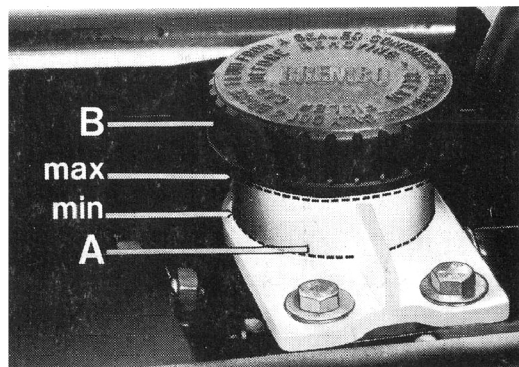
Adjusting the control pedal for front left and rear brake (fig. 18/1)

Check the clearance between floater in master cylinder and control lever «I» operating as follows:

- Fit a feeler gauge «A» between floater in master cylinder and control lever end.
- Correct play: 0.05 to 0.15 mm (.0019 to .0059").
- In case of incorrect play it is necessary:
 - To loose counter-nut «G», screw in or out screw «H» to obtain the above play.

Should you wish to modify the position of the control pedal «B» operate as follows:

- Take off the circlip «C», slip out pin «D», slacken counternut «E» and screw in or out fork «F» until the control pedal comes to the desired position.
- Refit pin «D» with circlip «C».
- Act on screw «H» to obtain the correct play between lever «I» and floater in master cylinder.



Adjusting the rear suspensions (fig. 19)

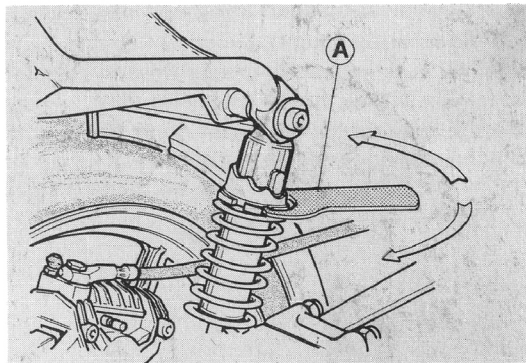
The suspensions springs can be adjusted to five different positions by means of wrench «A».

Do not forget that the two springs have to be adjusted to the same position to ensure a good stability of the motorcycle.

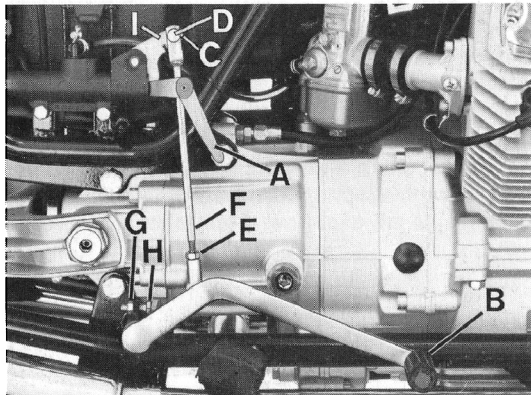
Adjusting the steering (fig. 20)

For safe riding the steering has to be adjusted so that the handlebar can move freely without any play:

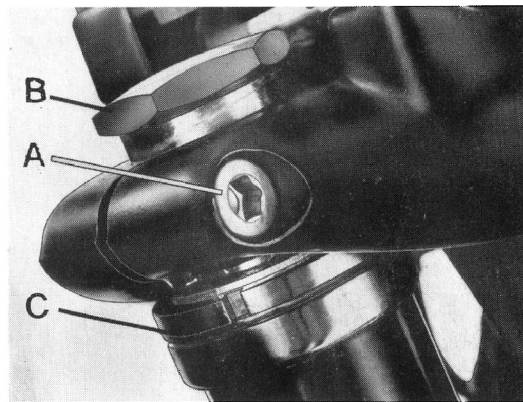
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20

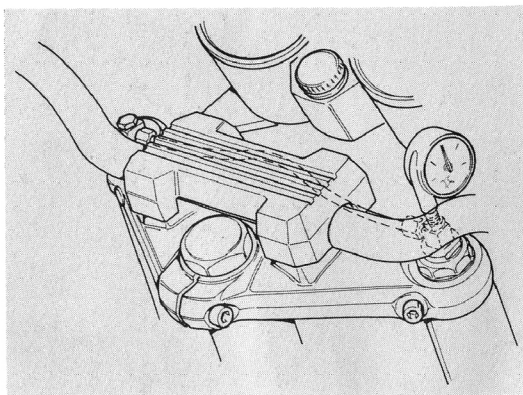


30

- Slacken steering head fixing bolt «A».
- Undo steering head nut «B».
- Screw in or out with a proper wrench adjuster screw «C» to take up the excessive play.

After the adjustment has been done, tighten nut «B» and steering head fixing bolt «A».

It is recommended to have this operation carried out by our dealers.



20/A

Oil pneumatic shock absorbers

(fig. 20 A)

The operating load pressures of these shock absorbers are the following:

- Front: 3 kg/sqcm \pm 1
- Rear: 4 kg/sqcm \pm 1

To check the pressure it is advisable to use a pressure gauge having a very short pipe (better if any), as the capacity of the pipe may affect the pressure existing inside the shock absorbers.

To ascertain to which extent your pressure gauge reduces, when taking the measurement, the pressure inside the shock absorber it is sufficient to carry out two consecutive measurements: the difference between the two readings gives approximately the pressure reduction occurring whenever a measurement is taken.

The measurement must be taken with the bike on the central stand and with cold shock absorbers; to charge the shock absorbers only use moistureless air.

REMOVAL OF WHEELS

31

Front wheel (fig. 21)

To remove the front wheel, operate as follows:

- Set the vehicle on the center stand and place a stand under the engine crankcase to keep the wheel up from the ground.
- Undo the screws securing the caliper to the fork and remove caliper «A» with its line.
- Undo wheel spindle lock nut «B».
- Undo the screws securing fork covers to wheel spindle «C».
- Slip off spindle «D» paying attention to the position of washers «E» and «F».
- Remove the wheel.

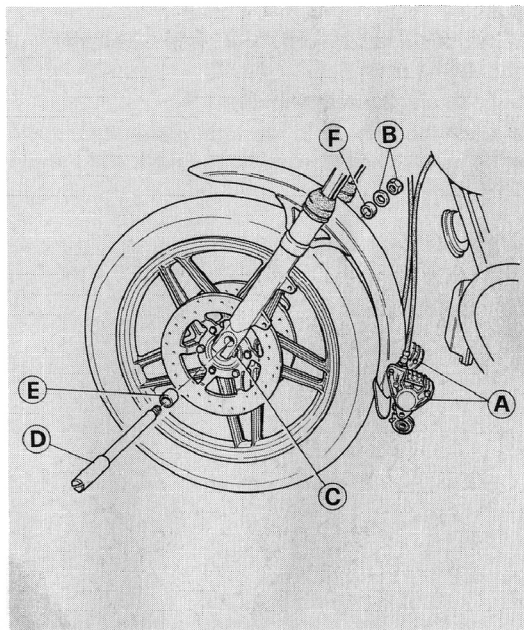
To re-fit the wheel reverse the dismantling operations.

NB - According to the type of tyre fitted it may be necessary to deflate the tyre to take the wheel off.

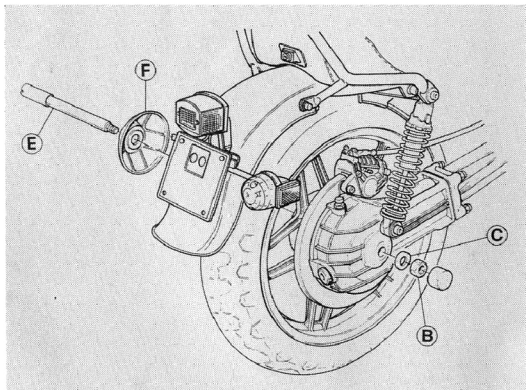
Rear wheel (fig. 22)

To remove the rear wheel from the swing arm and rear drive box, proceed as follows:

- Set the vehicle on the center stand.



- Fix tool «A» (in the tool set) to the L/H rear suspension.
- Undo nut «B» with washer «C» on the spindle rear drive box side.
- Loose screw «D» locking spindle «E» on swing arm.
- Withdraw spindle «E» from rear drive box, hub and swing arm.
- Take out the spacing disc «F».
- Lean the vehicle to the right just sufficiently to withdraw the wheel from the rear fork and the rear drive box.



To reassemble, reverse the dismantling sequence. Remove tool «A».

Wheel balancing

To improve the vehicle stability and reduce vibrations at high speed, the wheels have to be kept in a perfectly balanced condition.

- Remove the wheel and set it up on a fork.
- Spin the wheel slowly several times and watch if it always stops in different positions, thus indicating a correct balance.
- If one point of the wheel stops always at the bottom, put a balance weight on the opposite point.
- Repeat the operation till the wheel is correctly balanced.

Tires

These are included in the components which must be very carefully checked as the vehicle stability, riding comfort, and sometimes even the rider's safety are dependent on them.

Therefore it is inadvisable to use tires having less than 2 mm (1/16") thickness tread.

An incorrect tire pressure may also affect the vehicle stability and cause rapid wear of the tire.

The recommended pressures are:

Front wheel

With one or two persons: 2 kg/sqcm (28 p.s.i.).

Rear wheel

Solo riding: 2.2 kg/sqcm (31 p.s.i.)

With pillion: 2.4 kg/sqcm (34 p.s.i.).

The above values are for normal riding (cruising speed). If using the motorcycle at constant high speed or on highways, it is recommended to increase the pressure by 0.2 kg/sqcm (3 p.s.i.).

It is also very important for the tire beads to be properly entered into the center rim groove.

Tires that have an arrow on their sides have to be fitted in the following way:

- Front wheel, with arrow turned against the riding direction.
- Rear wheel, with arrow turned in the riding direction.

Removing and re-fitting tires on the rims

These models fit light alloy rims which offer very high mechanical resistance but might suffer damage from a functional and aesthetic aspect if improper tooling is used for the removing and assembly operations.

Under this circumstance, never use tools that have ribbings or sharp edges on the side contacting the rims.

The contacting surface of such tooling has to be very wide, smooth and with rounded edges. The use of the lubricants available on the market for these purposes will greatly facilitate tire sliding and settling on the rim, preventing also overloads on the tools.

34 SERVICE SCHEDULE

ITEMS ▼	MILEAGE COVERED ▶	900 mi. (1500 km)	1800 mi. (3000 km)	3700 mi. (6000 km)	5600 mi. (9000 km)
• Engine oil		R	R	R	R
• Oil filter cartridge		R		R	
• Wire gauze oil filter		C			
• Air filter				C	R
• Ignition timing		A	A	A	A
• Spark plugs		A	A	A	R
• Rocker clearance		A	A	A	A
• Carburetion		A	A	A	A
• Nuts and bolts		A			
• Fuel tank, filters and pipes					C
Gear box oil		A	A	A	R
Rear drive box oil		A	A	A	R
Wheel and steering bearings					
Fork legs oil					
Starter motor and generator					
Brake systems fluid		A	A	A	A
Brake pads		A	A	A	A

A = Inspections - Adjustments - Possible replacements - Servicing • C = Cleanings • R = Replacements.

- Operation required for maintaining the vehicle according to emission regulations (USA).

Occasionally, check the electrolyte level in battery; every 500 km (300 miles) check the engine oil level. In any case, renew this oil at least once a year.

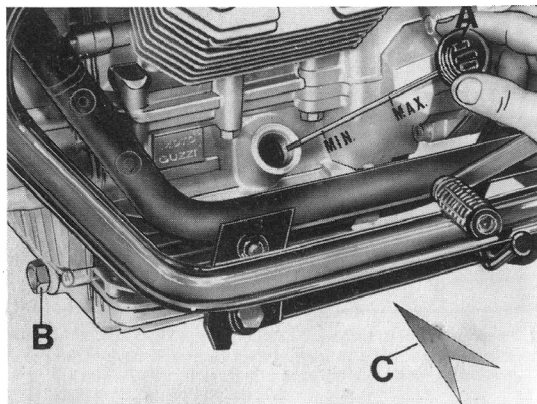
36 LUBRICATIONS

Engine (fig. 23)

Checking the oil level

Every 500 km (300 mi.) check the oil level in the sump (the correct level is nearly at the max on the filler dipstick). Should the level be lower, top up with oil of same type and density.

Before checking, let the engine idle for a few minutes; the oil filler dipstick «A» must be screwed down fully.



Changing the oil

After the first 500-1500 km (300-900 mi.) and later on every 3000 km (1800 mi.) change the crankcase oil.

The oil has to be changed when the engine is warm.

Remember to allow all the old oil to drain before introducing fresh oil.

«A» Oil filler cap with dipstick.

«B» Oil drain plug, front.

«C» Oil drain plug, rear.

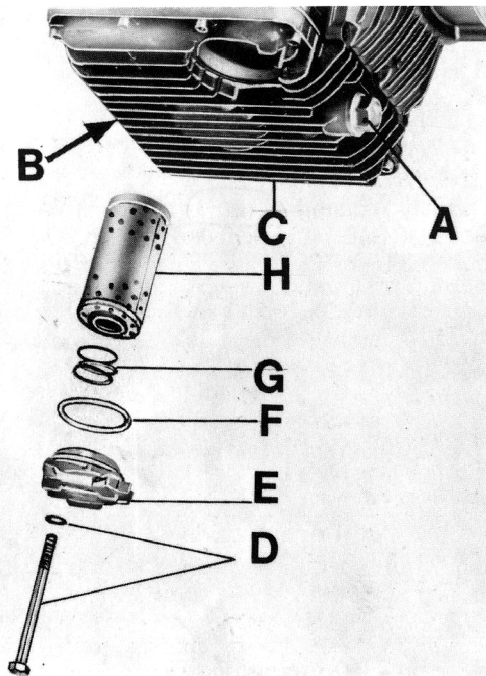
Quality required: 2 l (4.8 US pints - 4 Imp. pints)

«Agip Sint 2000 SAE 10W/50».

Replacing oil filter cartridge (fig. 24)

After the first 500-1500 km (300-900 mi.), (first oil change) and later on every 6000 km (3700 mi.), replace the filter cartridge proceeding as follows:

- Undo drain plugs «A» and «B» of sump «C» and oil filler cap «A» of fig. 23.
- Let the oil fully drain from sump «C».
- Undo cartridge securing screw «D» and remove from sump «C» the group consisting of cover «E», gasket «F», spring «G» and cartridge «H».



■ Replace the cartridge «H» and if necessary gasket «F». Re-fit the whole group by reversing the removal sequence and fill with the required oil quantity before screwing in the oil filler cap.

It is advisable to have this operation carried out by our dealers.

Washing the wire gauze filter and oil sump

After the first 500-1500 km (300-900 mi.), (first oil and filter cartridge change) and later on every 15.000 km (9400 mi.), it is advisable to remove the oil sump from the crankcase, to take out the wire gauze filter and to wash both in a petrol bath, then dry off with compressed air. Remember to replace also the gasket between sump and crankcase before mounting the sump.

This maintenance is best done by our dealers.

Gearbox (fig. 25)

Checking the oil level

Every 3000 km (1800 mi.) check that the oil level is nearly at plug input hole and level «A»; in case of incorrect level, top with oil of same type and density.

Changing the oil

Every 9000 km (5600 miles), replace the oil the gearbox. This operation has to be done on a warm

engine when the oil is more fluid and easier to drain. Do not forget to allow all the oil to drain completely, before adding fresh oil.

«A» Filler cap.

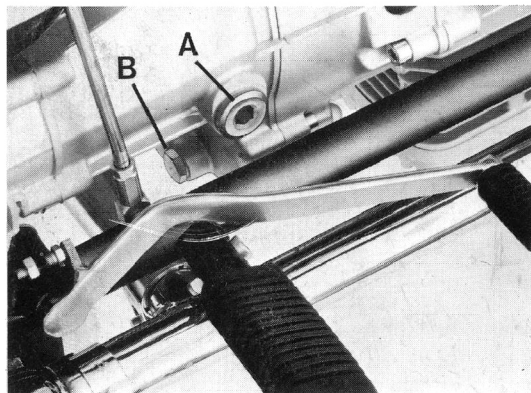
«B» Oil drain plug.

Quantity required: 1 l (0.22 Imp. gal.) of «Agip F.1 Rotra MP SAE 90».

Rear drive box (fig. 26)

Checking the oil level

Every 3000 km (1800 miles), check that the oil level is nearly skimming top level cap «A»; if lower, top



25

up with oil of same quality and density.

Changing the oil

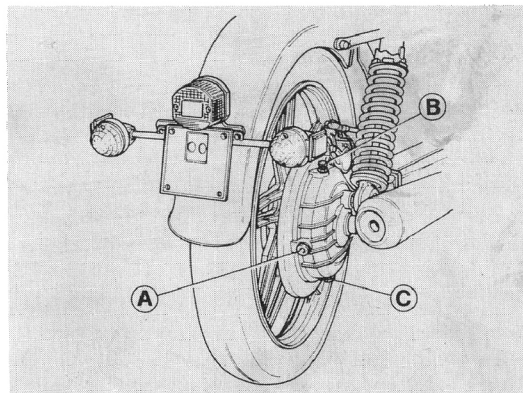
Every 9000 km (5600 miles), about, change the oil in the rear drive box. This operation has to be done on a warm engine as the oil is more easily drained. Remember to let the old oil drain completely before introducing fresh one.

«A» Oil filler cap.

«B» Oil vent plug.

«C» Oil drain plug.

Quantity required: 0.160 l (10 cu.in.) «Agip F.1 Rotra MP SAE 140» and 0.010 (.6 cu.in.) «Agip Rocol ASO/R» or «Molykote type A».



26

Front fork lubrication (fig. 27)

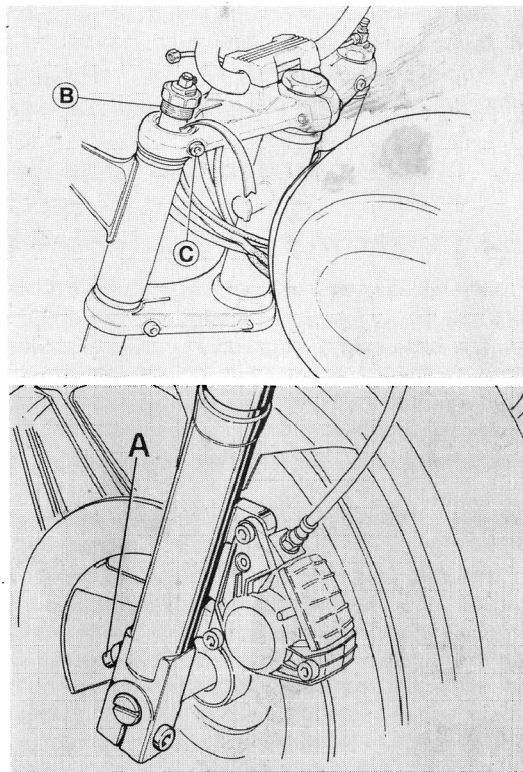
To replace the oil in the front fork legs, proceed as follows:

- With the bike on the central stand loose the side screw «C» locking the steering head to the fork arm, detach the compensating pipe and at the same time completely unscrew the hexagonal screw plug «B»; then remove drain plug «A».
- Slightly press the front part of the bike to force out the plug «B» which is solidal to the shock absorber.
- Refit plug «A» and introduce the quantity of fluid necessary (60 cc Agip F.1 ATF Dexron) through the space existing between the inner diameter of the fork arm and the shock absorber body.
- Refit plug «B» release the front part of the bike, and lock the side screw. Repeat the same operation for the other fork leg.
- Reconnect compensating pipe and restore the pressure to the indicated values.

Other lubrications

To lubricate:

- Steering caps and balls.
- Rear swing arm bearings.



- Cable ends.
 - Tacho transmission gear.
 - Prop stand articulations.
- Use «Agip F.1 Grease 30».

CARBURATION

Carburettors (fig. 28)

No. 2 carburettors Dell'Orto type «VHB 26 FD/FS» [«PHBH 28 BD/BS»].

Controls

- Throttle control grip on the R/H side of the handlebar.
- Easy starter lever for cold engine starts on the L/H side of the motorcycle.

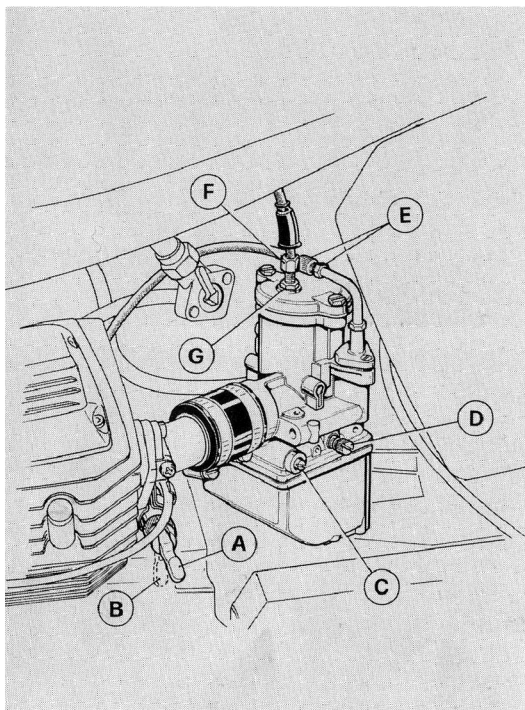
Position of starter lever:

- «A» Starting position for a cold engine.
- «B» Riding position.

NB - When the starter lever is in riding position «B» ensure that there is a clearance of about 3 mm between starter control cable and adjuster screw «E».

Standard carburettor settings

Choke	26 mm dia. [28 mm]
Throttle valve	40 [50]
Atomizer	260 AH [268 T]
Main jet	108 [118]
Idling jet	40 [50]
Starter jet	60
Needle	E 27 (2nd notch) [X 6 (3rd notch)]



Floater

14 gr [11 gr]

Idling screw adjustment:

open 1 1/2 turns.

Adjusting carburation and idling speed (fig. 28)

(If a suitable vacuumeter is unavailable)

For the above adjustment proceed as follows:

- 1 With the twist grip fully closed, check that the clearance between the cable terminal and adjusting screws is 1-1.5 mm (0.039-0.059") for both carburetors. If not loosen nuts «G» and screw in or out cable adjuster «F», finally retighten nuts «G».
- 2 Run the engine up to its normal riding temperature.
- 3 Screw idling screws «C» fully in and then screw them out one and a half turn.
- 4 Place your hands at each exhaust pipe end to make sure that the pressure is even. If not, act on screw «D» of one carburettor until both exhaust pressures are the same (since the idling speed has to be kept at about 1200-1300 rpm, it may be necessary to screw in the carburettor screw of the cylinder giving a lower pressure or to screw out the screw of the cylinder giving a higher pressure).

5 Operating on screw «C» adjust each cylinder to the point where carburation is best (that is the point where the revs tend to increase slightly), then re-set idling speed as described at point «4».

6 Disconnect one plug lead at the time and check that in each instance the engine stops after firing the same number of strokes. If not, undo carburettor screw «D» of the cylinder firing too much or screw in the carburettor screw of the cylinder firing less.

7 Adjust idling speed to 1200 to 1300 rpm by screwing in or out both screws «D» by the same amount.

8 Check the synchronization of the throttle slides opening proceeding as follows: with the assistance of a second person to slowly turn the twist grip control, check with your hands if the pressure increase at each exhaust pipe end is synchronous. If not, adjust carburation of the cylinder in advance by screwing in cable adjuster «F» and loosening counternut «G» until the pressure is the same for both exhaust pipes.

Adjusting carburation by means of a vacuumeter

For a correct carburation adjustment, we recommend to have this operation done in any of our dealer's shops by means of a vacuumeter.

Replacing the air filter (fig. 29)

Every 9000 km (5600 miles) or more frequently in case of riding on dusty roads, it is advisable to replace the air filter.

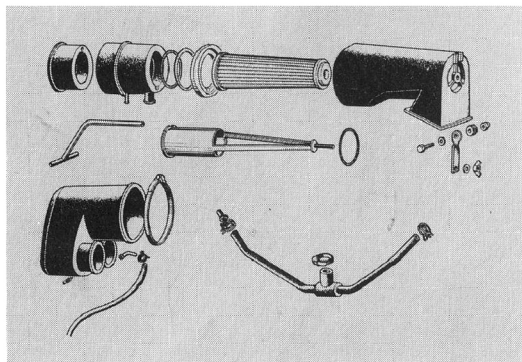
This filter is accommodated in a suitable housing «A» over the power unit together with the oil breather assembly.

The replacement of the filter cartridge is best done in one of our dealer shops.

Cleaning the fuel tank, taps, filters and fuel pipes

Every 9000 km (5600 miles) or in case of irregular fuel flow to the carburettors, it is necessary to clean the fuel tank, fuel taps, filter on carburettors and fuel pipes.

All these parts are best cleaned with petrol and dried off with compressed air.



44 VALVE GEARING

Tappet clearance (fig. 30)

After the first 500-1500 km (300-900 miles) and later on every 3000 km (1800 miles) or any time valve operation is too noisy, check the tappet clearance.

Do this control on a cold engine with piston at TDC in the compression stroke (valves closed).

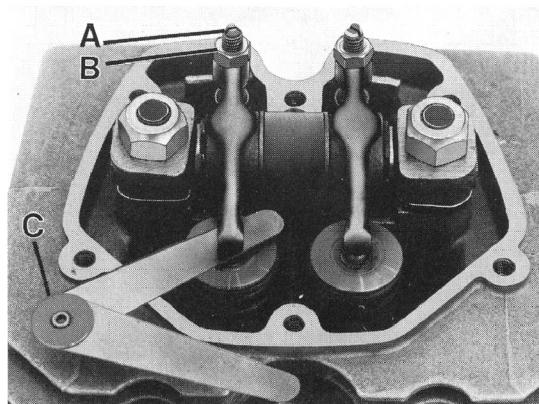
After removing the rocker cover, proceed as follows:

- 1 Slacken nut «B»
- 2 Screw in or out adjuster «A» to obtain the following clearances:
 - Inlet valve 0.10 mm (.0039")
 - Exhaust valve 0.15 mm (.0059")

This check is made using feeler gauge «C».

In case of higher clearance, there will be noisy valve operation while if the valves do not close fully there will be inconveniences such as:

- Compression loss.
- Overheating of the engine.
- Burning of valves, etc.



Ignition features

Coil-battery ignition with double contact breaker and automatic advance with centrifugal masses.

Ignition advance (fixed)	10°
Automatic advance	25° ± 2°
Full advance (fixed + autom.)	35° ± 2°
Contact breaker gap:	0.35 — 0.45 mm.

Maintenance, checking and adjusting the double contact breaker

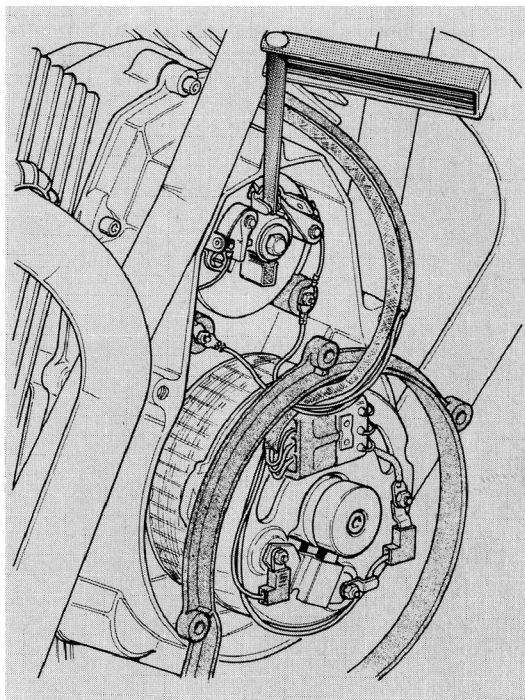
Maintenance

Every 3000 km (1800 miles):

- Check contact breaker gap.
- Lightly moisten cam felt pad «A» with a few drops of engine oil.

Inspection

- Remove the double contact breaker cover, after undoing its securing screws.



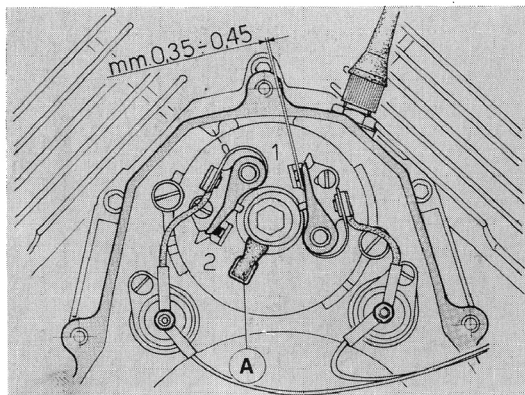
- If contacts are dirty or greasy, clean them with a petrol soaked rag. If damaged or worn, replace them.
- Check contact breakers gap which should be between 0.35-0.45 mm (.013"-.017")

Adjusting the contact points

Contact «1»: Left cylinder

Contact «2»: Right cylinder

- Bring cam «B» to its maximum lift, loosen screw «C» and shift plate «D» acting on the proper notch. Repeat the same operation for the other contact.



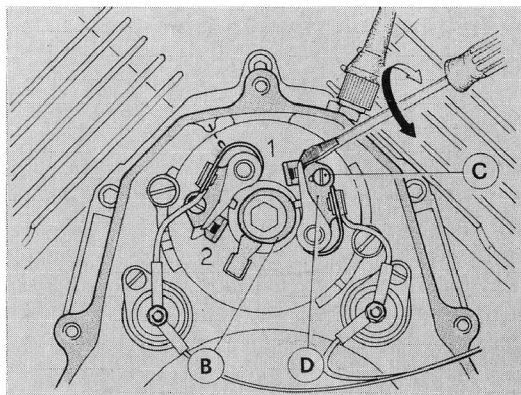
32

When adjusting the contact points it is necessary to check the ignition timing as well.

Checking and adjusting the ignition timing (fixed advance)

With the contact breaker gap adjusted at 0.40 mm (0.015") and with the notch «O» on the contact points plate aligned with the mark on the crank-case, the engine is timed: it is advisable to check the timing acting as follows:

- To find the exact moment when the points start



33

separating, it is advisable to use an appropriate timing light to be set up between the breaker feeding clamp being checked and the ground.

- Remove the rubber cap which seals the inspection hole on the R/H side of the gear-box opposite the flywheel.

- Turn the flywheel anticlockwise (engine rotation) until the piston is at the end of its compression stroke TDC (both valves closed).

At this stage mark «S» on the flywheel should coincide with the mark on the inspection hole.

- Slightly turn the flywheel clockwise and then anticlockwise till mark «3» is perfectly aligned with the mark on inspection hole: at this point (Fixed advance) contact points of the breaker «1» should start to open.

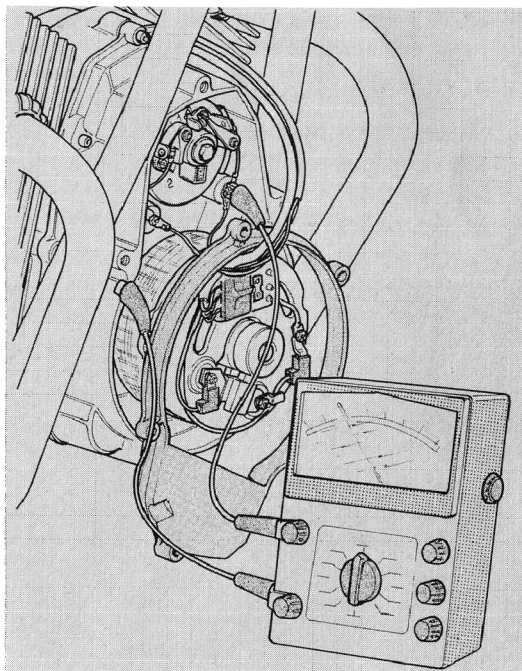
- If this does not occur, it is necessary to slacken the two screws «E» fixing the contact plate and shifting the plate same, bearing in mind that shifting in the arrow «F» direction ignition is advanced while shifting in the arrow «G» direction ignition is delayed.

- Lock screws «E» and check the opening of R/H cylinder contact (breaker No. 2) following the procedure of the L/H cylinder.

Bear in mind that marks «D» and «2», on the flywheel indicate respectively TDC position and fixed advance of R/H cylinder.

If contact breaker No. 2 does not open in the fixed advance position stamped on the flywheel, it will be necessary to change the contact gap of this

47



48

breaker, or of both breakers, within the indicated gap of 0.35-0.45 mm (.013"-.017").

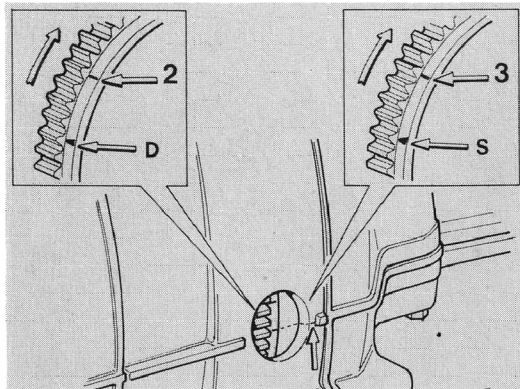
Bear in mind that changing the contact gap of breaker No. 1 (L/H cylinder) it will be necessary to repeat its timing.

Spark plugs

Spark plugs to be used are:

- Marelli CW 8 LP
- Lodge 2 HL

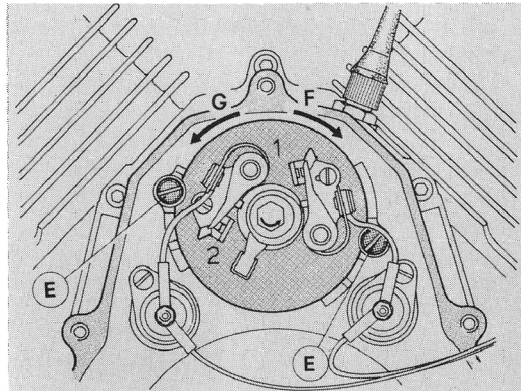
Points gap. 0.6 mm (.023").



35

When re-fitting the spark plugs ensure to properly start them by hand for a few turns to prevent stripings and then to complete the operation with a plug wrench, possibly on a cold engine. In any case, the plugs should be replaced every 9000 km (5600 miles) even if they appear to be still in good condition.

NB - It is advisable to have the ignition timing checkings and adjustments carried out by our dealers who have all the necessary equipment to ensure a correct execution of the job.



36

The electrical equipment consists of:

- Battery.
- Starter motor.
- Generator-alternator.
- Double contact breaker with automatic advance.
- Ignition coils.
- Rectifier.
- Regulator.
- Terminal block with fuses (No. 4-16A).
- Flashing relay.
- Starting realy.
- Headlight.
- Tail light.
- Turn signals.
- Key switch.
- Lighting switches.
- Switches for: turn signals, horn, flashing.
- Engine starting device.
- Horn.
- Warning lights on panel for: neutral position (green) - parking light «town driving» (green) - oil pressure (red) - high beam (blue) - generator warning (red).

Battery

The battery is a 12 V type with 20 A capacity (on demand 12 V - 32 A) and is charged directly by the generator.

To access to the battery:

- Lift the saddle and remove the side covers;
- Unhook the rubber band «A» and detach the electric wires «B» and «C» (fig. 37) from the battery. The battery can then be removed.

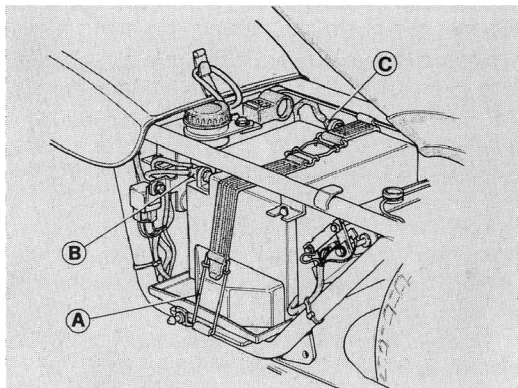
Instructions on how to put a new dry battery in service

Dry types batteries stay charged for quite a long time, provided they are stored in a cool place (20-30° = 60-86° F) and with their plugs well tightened down.

When putting these batteries in service, activate them as follows:

- 1 Introduce sulphuric acid, battery type, with a specific gravity of 1.27 at 25° C (77° F) till the level tops the plate separators by 5 mm or up to the level mark.
- 2 Let the battery at rest for about 1 hour and renew the level with the same type of acid. At this stage the battery is ready to be used. For

longer life, it is advisable to check the acid intensity in each cell. In case of readings lower than 1.26, it is necessary to give the battery a refreshing charge to an intensity equal to 1/10th of its capacity. 5 hours charge is normally sufficient, The temperature should never exceed 45° C (113 °F) but if it should go up higher, reduce the current intensity and lengthen the charging time. Stop charging when the specific gravity has gone up again to 1.27-1.28 at 25 °C and such a rate has remained constant for at least 3 readings at half hour intervals.



Instructions for maintaining acid full batteries

Activated dry type batteries or batteries that have been received already full with acid, should be serviced as follows:

- 1** Add distilled water (never add sulphuric acid) whenever necessary ensuring that the acid level always tops the plate separators by 5 mm (.19").
- 2** Always keep the battery terminals in a spotlessly clean condition and smeared with jelly.
- 3** Always keep the top battery cover completely dry, avoiding overflows of electrolyte which will reduce insulation and corrode the battery bracket.
- 4** Make sure the charging equipment does not give excessive or insufficient charging intensity, bearing in mind that the acid gravity should always be in between 1.24 and 1.27 kg/l. If not it will be necessary to check over the insulation and the efficiency of the charging and engine starting equipment.
- 5** All acid full batteries that have been stored should be periodically charged at an intensity equal to 1/10th of the capacity at correct acid level and at the correct gravity of 1.27 at 25 °C (77 °F).
- 6** All batteries should be installed on the machine with all retaining devices well tight and with all anti-vibratory devices properly adjusted.

NB - If the battery is due to be used in tropical cli-

mates (average temperature over 33 °C, 92 °F) it is recommended to reduce the acid gravity to 1.23 kg/l.

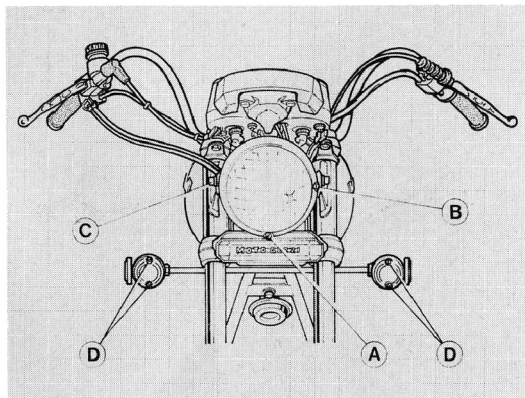
Light bulbs replacement

Headlight (fig. 38)

Undo bottom screw «A» withdraw the beam unit, take off the lamp holder and replace the bulb.

Tail light (fig. 39)

Undo screw «C» securing reflector to tail light; push bulbs inwards turn and slip them off from bulb holder.



38

Turn signals (fig. 38 and 39)

Undo screws «D» securing the reflector to the bulb and push the bulb inwards turning it at the same time to free it from the bulb holder.

In re-fitting the reflectors, screw in uniformly and do not lock too much to prevent breakings.

Instrument panel, tachometer, rev-counter

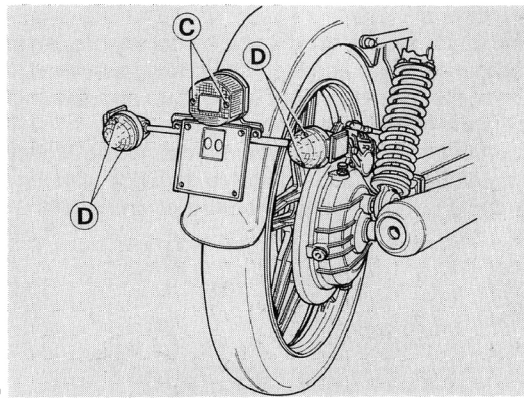
Slip off bulb sockets and replace bulbs.

Bulbs

Headlight:

– High and low beam

45/50 W



39

– Parking light 4 W

Tail light:

– Number plate lighting parking
and stop light 5/21 W

Turn signals 21 W

Panel warning lights 1.2 W

Tachometer and rev-counter 3 W

Headlight beam adjustment

(fig. 38)

For a safe riding and not to trouble crossing riders, the headlight beam has always to be set at correct height.

Horizontal setting is adjusted by screw «B», while vertical setting is adjusted by undoing screws «C» and shifting the headlight by hand up or down until the correct height is reached.

The center of the high beam must not be higher than 0.865 m measured at 3 m distance with motorcycle not on the stand and rider on saddle.

KEY TO WIRING DIAGRAM

54 Legend electrical wiring diagram

- | | | | |
|----|--|----|---|
| 1 | Tachometer (3 W bulb) | 33 | Rear brake switch |
| 2 | Rev-counter (3 W bulb) | 34 | Rectifier |
| 3 | Warning light, front and rear R/H indicator (1.2 W bulb-green) | 35 | Alternator |
| 4 | Warning light, front and rear L/H indicator (1.2 W bulb-green) | 36 | Regulator |
| 5 | Neutral position warning light 1.2 W bulb-green) | 37 | Battery |
| 6 | Oil pressure warning light 1.2 W bulb-red) | 38 | Terminal block with fuses (16A fuses) |
| 7 | Generator warning light (1.2 W bulb-red) | 39 | Starting relay |
| 8 | High beam warning light (1.2 W bulb-blue) | 40 | Starter motor |
| 9 | Parking warning light (1.2 W bulb-green) | 41 | Turn indicator light, rear, left (21 W bulb) |
| 10 | Parking position light, front (4 W bulb) | 42 | Turn indicator light, rear, right (21 W bulb) |
| 11 | Low beam W | 43 | Tail light |
| 12 | High beam 45 W } (40/45 W bulb) | 44 | Rear stop light (21 + 21 W bulb) |
| 13 | Turn indicator light, front right (21 W bulb) | 45 | Number plate lighting and rear parking light (5 + 5 W bulb) |
| 14 | Turn indicator light, front (21 W bulb) | 46 | 6-way Molex connector |
| 15 | Engine start and stop button | | |
| 16 | 4-way connector | | |
| 17 | 15-way connector | | |
| 18 | 12-way connector | | |
| 19 | Control device for: turn signals, horn and flashing lights, lighting | | |
| 20 | Light and engine starting switch (3 positions) | | |
| 21 | Oil pressure switch | | |
| 22 | Neutral position switch | | |
| 23 | Horn | | |
| 24 | Flashing light relay | | |
| 28 | Flasher box | | |
| 29 | Contact breaker | | |
| 31 | Coils | | |
| 32 | Front brake switch | | |

FUSES

- | | |
|-------|---|
| No. 1 | Turn signals - Horn |
| No. 2 | Flashing light relay - Starting relay - Rear stop light |
| No. 3 | Warning lights (Generator - Oil pressure - Neutral - High beam) |
| No. 4 | Parking light - Instrument lighting - Lighting |

