

1000 SP
III



MOTO GUZZI

OWNER'S MANUAL

The illustrations and description 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.

GBM S.p.A. MOTO GUZZI - Technical Publications - Code 30 90 00 11
Printed in Italy - D.E.Ca. - Ravenna - K 500 - 05/89

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.



Revente Interdite - Revendita Vietata - Resaling Forbiden - Wiederverkauf Verboten

CONTENTS

- 4** Specifications
- 10** Frame and engine numbers
- 11** Instruments and controls
- 19** Cleaning and storing
- 20** Riding your motorcycle
- 22** Running-in
- 23** Maintenance and adjustments
- 29** Removing the wheels
- 32** Maintenance schedule
- 34** Lubrication
- 38** Fuel system
- 42** Electronic ignition
- 45** Electrical equipment
- 49** Cleaning the windscreen

4 SPECIFICATIONS

Engine	4-stroke, twin cylinder Cylinder configuration: 90° V-twin Bore: 88 mm Stroke: 78 mm Capacity: 948.9 cc Compression ratio: 9.5:1 Max. torque: 7.9 kgm at 5800 rpm Max. power: CV 71 (kw 52) at 6800 rev/min
Valve gear	O.H.V. push rod operated rocker arms
Carburettors	2 Dell'Orto carburettors PHF 36 DD (right) and PHF 36 DS (left)
Lubrication	Pressure fed by gear pump Wire mesh and cartridge filters on oil sump Normal lubrication pressure 3.8-4.2 kg/cm ² (pressure valve on oil sump) Low oil pressure sensor (electrical) on oil sump
Generator / Alternator	On front of crankshaft (14V-20A)

Ignition	<p>Electronic ignition operating by magnetic pick-up; electronic ignition advance</p> <p>Ignition timing</p> <ul style="list-style-type: none"> ■ Ignition advance (fixed) $2^{\circ} \div 3^{\circ}$ ■ Full advance (static and automatic) $34^{\circ} \div 35^{\circ}$ <p>Rotor-pick up gap: $0.2 \div 0.4$ mm</p> <p>Spark plugs: Marelli CW 7 LP; Bosch W 7 D; Bosch W 7 DC; Champion N 9 YC; Lodge L 6 Y.</p> <p>Spark plug gap: 0.6 mm</p> <p>2 ignition coils mounted on frame.</p>
Starter	<p>Electric starter motor 12V-1,2 Kw with electromagnetic ratchet control. Ring gear on the flywheel. START push-button on right handlebar.</p>
Transmission	
Clutch	<p>Dry, twin driven plates. Located on engine flywheel. Clutch lever on left handlebar.</p>
Primary drive	<p>By gears, 1:1.235 ($Z = 17/21$)</p>
Gearbox	<p>5-speed, front engaging, constant mesh. Incorporated Cush drive.</p>

Control pedal on left side of machine.

Gear ratios

1st 1 : 2 (Z = 14/28)

2nd 1 : 1.388 (Z = 18/25)

3rd 1 : 1.047 (Z = 21/22)

4th 1 : 0.869 (Z = 23/20)

5th 1 : 0.750 (Z = 28/21)

Final drive

Cardan shaft with gears

Ratio: 1 : 4,714 (Z = 7/33)

Overall gear ratios (engine-wheel)

1st gear = 1 : 11,643

2nd gear = 1 : 8,080

3rd gear = 1 : 6,095

4th gear = 1 : 5,059

5th gear = 1 : 4,366

Frame

Modular duplex tubular cradle

Suspension

Front: «MOTO-GUZZI patented» telescopic forks;
springs load and dumping effect adjustable

Rear: swinging arm with adjustable helical springs
around adjustable hydraulic damper.

Wheels

Light alloy castings

Rim sizes:

- Front: 18 MT 2.50 H2
- Rear: 18 MT 3.00 H2

Tyres

Front: 110/90 V18

Rear: 120/90 V18

Type: Tubeless

Brakes

Front: floating disc with fixed caliper, twin brake cylinder. Brake lever on right handlebar. Independent hydraulic circuit for rear brake.

- \varnothing disc 300 mm;
- \varnothing brake cylinder 38 mm;
- \varnothing master cylinder 13 mm.

Rear: floating disc with fixed caliper, twin brake cylinder. Brake pedal on centre-right of motorbike;

- \varnothing disc 270 mm;
- \varnothing brake cylinder 38 mm;
- \varnothing master cylinder 15.875 mm.

The rear brake is connected by a hydraulic circuit to the left front brake; the left front brake has the same dimensions as the right front brake controlled by the brake lever.

Dimensions and weight

Wheelbase	1.495 m
Overall length	2.200 m
Overall width	0.900 m
Height (with screen)	1.400 m
Weight (dry)	240 kg

Performance

Max. speed with one rider: approx. 195 kph
Fuel consumption: 5.6 lt/100 km

ATTENTION: The starter motor should not be operated for more than 5 seconds; if the engine doesn't start, wait for 10 seconds before the following starting operation. Anyway act on the starter button only with the engine completely stopped.

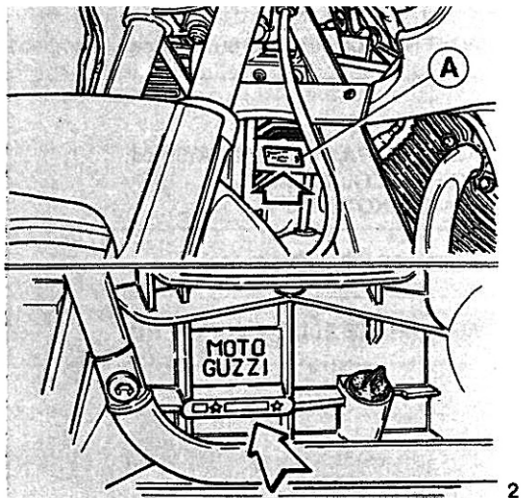
Recommended fuel and lubricants.

Part	Litres	Recommended product
Fuel tank (reserve approx 3 lt.)	approx. 22,5	Super petrol (97 NO-RM/min.)
Oil sump	3	AGIP NUOVO SINT 2000 SAE 10W/40 oil
Gearbox	0.750	AGIP ROTRA MP SAE 80W/90 oil
Rear drive (bevel set lub.)	0.250 of which 0.230 0.020	AGIP ROTRA MP SAE 80W/90 oil AGIP ROCOL ASO/R or MOLYKOTE TYPE A
Front forks (per leg)	0.070	AGIP ATF DEXRON fluid
Front and rear brake circuits	—	AGIP BRAKE FLUID - SUPER HD

10 FRAME AND ENGINE NUMBERS

(fig. 2)

The frame number is stamped on the downtube on tag «A»; this number is entered in the motorcycle's log-book and is thus used to identify the vehicle for legal purposes. The engine number is stamped on the crankcase.



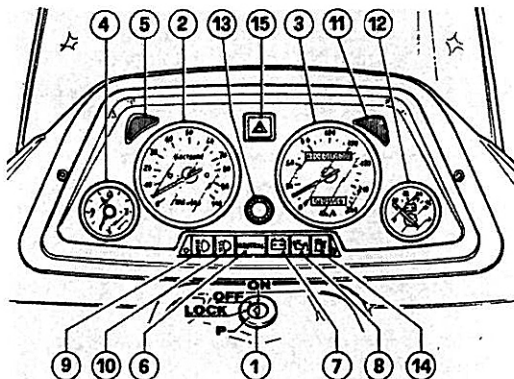
2

Spare Parts

Always use approved «Moto Guzzi Original Spares» only when replacing or repairing parts. Use of spares which are not approved will invalidate warranty rights.

Control panel (fig. 3)

- 1 Key switch for devices and antitheft steering lock.
- 2 Revolution indicator.
- 3 Odometer, tachometer.
- 4 Clock.
- 5 Pilot light (green light) for L.H. direction indicator lamps.
- 6 Pilot light («Neutral» green light) for gear in neutral. It lights with gear in neutral
- 7 Pilot light (red light) for generator current output



3

It must be off as the motor reaches a certain revolution number.

- 8 Oil pressure pilot light (red light). It goes out when there is enough pressure to grant the motor lubrication. If the pilot light doesn't turn off, the pressure is not the required one; in this case immediately stop the motor and check the fault.
- 9 Pilot light (blue light) for high beams.
- 10 Pilot light (green light) for parking lights.
- 11 Pilot light (green light) for R.H. direction indicator lamps.
- 12 Voltmeter.
- 13 Reset for trip odometer.
- 14 Fuel reserve pilot light (red light).
- 15 Switch for emergency direction indicator insertion.

Main switch and steering lock (fig. 3)

The main switch is operated by the key and it has four positions.

Position «OFF» steady vehicle. Removable key (no contact).

Position «ON» vehicle ready to be started. All circuits are on. Not removable key.

Position «LOCK» locked steering. Engine off, no contact. Removable key.

Position «P» locked steering. Engine off; with the

- 12 switch «A» on fig. 4 in «P» position the parking light is on. Removable key.

To operate the steering lock, act as follows:

- Turn the handlebar to the left or right side.
- Push the key and turn it anticlockwise to «LOCK» or «P» position.

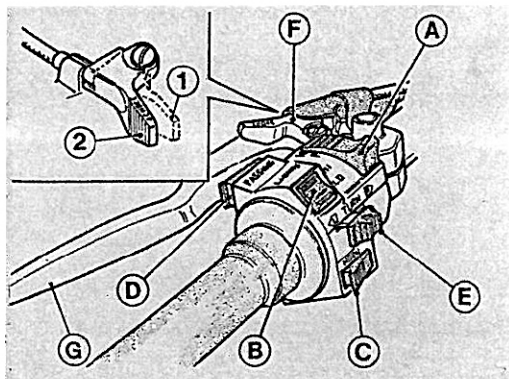
ATTENTION: do not turn the key to «LOCK» or «P» position during the riding.

Light switches (fig. 4)

These switches are on the left handlebar.

Switch «A»

- Position «O» lights off



4

- Position «P» parking lights on.
- Position «H» twin-filament headlamp on.

Switch «B» (lights)

With switch A in position «H»

- Position «LO» dipped beam.
- Position «HI» main beam.

Horn Button, Headlamp Flasher and direction indicators (fig. 4)

These are mounted on the left handlebar:

Push-button «C» (Horn) sounds the electric horn when pressed.

Push-button «D» (passing) flashing light control.

Push-button «E» (turn):

- position «R» for right turn signals control.
- position «L» for left turn signals control.
- press the switch to disconnect flashers.

Starter Button and Engine Stop Switch (fig. 5)

These are mounted on the right handlebar.

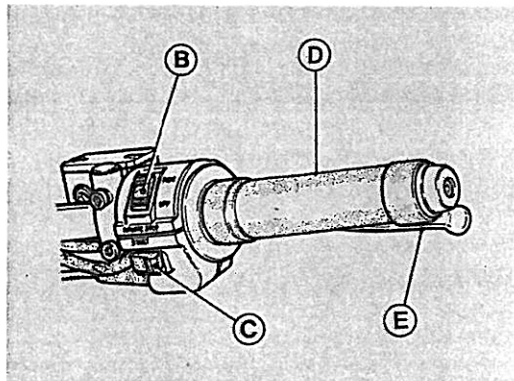
With the key «1» in fig. 3 (position «ON»), the vehicle is ready for starting. To start the engine:

- check that switch «B» is in position (run);
- pull the clutch lever in to disengage the clutch fully;
- if the engine is cold, put the «CHOKE» control «F» in the starting position «1» (see fig. 4);

- press the starter button «C» (start).
- To stop the engine in case of emergency:
- turn the switch «B» to position (off).
- Once the engine has stopped, turn the key switch (fig. 3) anti-clockwise until «OFF»; remove the key from the switch.
- NB: before start, put switch «B» in (RUN) position.**

Throttle twist grip («D» in fig. 5)

The throttle control is on the right handlebar; turning the twist-grip towards the rider opens the throttle, turning it away from the rider closes it.



5

Clutch lever («G» in fig. 4)

This is on the left handlebar and is only to be used when starting or changing gear.

Brake lever, r/h front brake («E» in fig. 5)

This is on the right handlebar and controls the master cylinder of the right front brake.

«CHOKE» control («F» in fig. 4)

The «CHOKE» is on the left handlebar and is used for cold starts.

- Position «1» CHOKE on; starting position.
- Position «2» CHOKE off; engine running.

Brake pedal for left front brake and rear brake («F» in fig. 16)

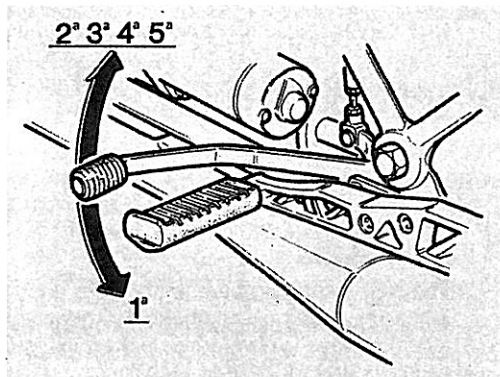
This is centrally located on the right side of the vehicle and is linked to the master cylinder by a tierod; this pedal operates the front left and rear brakes together.

14 Gearbox control pedal (fig. 6)

This is situated on the left of the motorcycle.

- 1st gear: push pedal down;
- 2nd, 3rd, 4th, 5th gears: pull pedal up
- neutral: between 1st and 2nd gears.

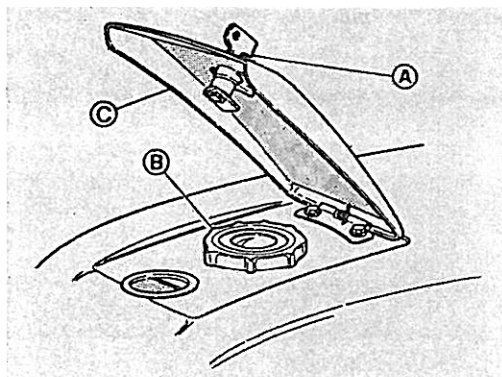
Before changing gear disengage the clutch fully.



Fuel filler cap (fig. 7)

To open the filler cap «B», turn the key «A» clockwise and lift the cover «C».

N.B. - Fuel spillage caused during refuelling should be cleaned immediately to prevent damage to the fuel tank paintwork.



Fuel taps (fig. 8)

They are situated under the rear part of the fuel tank.

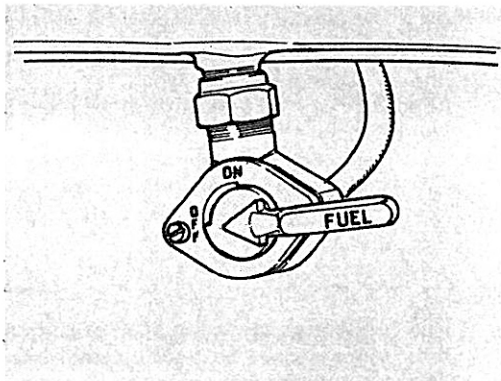
The lever has two positions:

«ON» fuel tap open

«OFF» fuel tap closed.

The reserve indicator sender unit is in the left fuel tap.

NOTE: With engine stopped (OFF) never leave cocks in opened position since fuel could flow down into engine crankcase.



8

Fuse box (fig. 9)

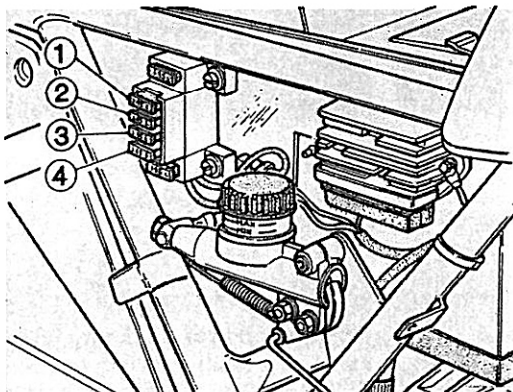
15

This is located on the right side. To gain access to the fuse box remove the right side panel.

The fuse box has 6, 15 Amp fuses, two of these are spares.

Before changing a burnt fuse, trace and repair the cause of the trouble.

Fuse «1»: horn - starter relay - stop light.



9

- 16 **Fuse «2»:** warning lights (generator, oil pressure, neutral), main beam, dipped beam, headlamp flasher, stop light;
Fuse «3»: side lights, direction indicators;
Fuse «4»: hazard warning lights.

Panniers (fig. 10)

To remove the panniers from their supports, turn the key «A» clockwise to position «2» and push the knob «B» (Push).

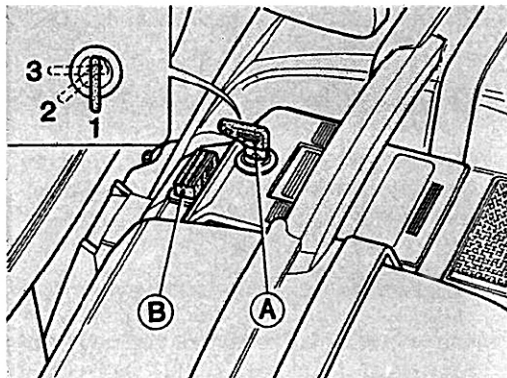
To open the side cover, turn the key to position «3» (the key cannot be removed).

In position «1» the pannier is locked and the key can be removed.

N.B. - The maximum load for each bag is 10 kg.; loads should be equally distributed between the two bags.

Documents pockets

At each fairing side are placed two pockets which can contain motorcycle documents or everything else.



10

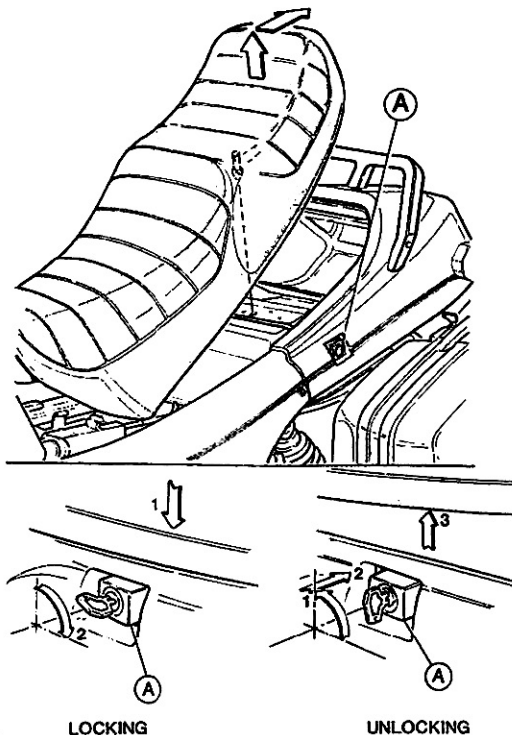
Seat lock (fig. 11)

The seat has a lock «A» to the rear on the left side of the bike.

To unlock, insert the key, turn anti-clockwise and push.

Lift the seat and remove.

To lock, press the seat down.



Side stand

The side stand can be used only for short stops. Since the stand is automatically retractable, it is recommended to always set up the machine on the central stand for greater stability.

11

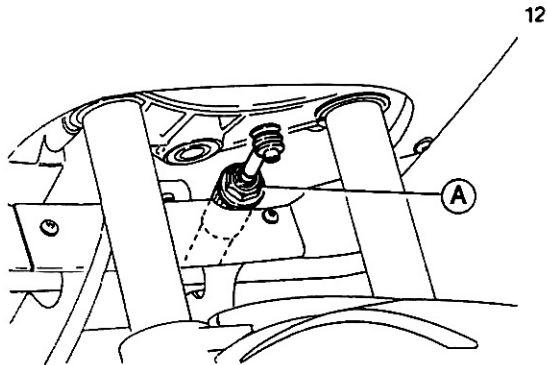
LOCKING

UNLOCKING

18 Steering damper (fig. 12)

It is fitted between the frame and steering yoke on the right hand side.

To harden or loosen the steering, turn in or out the knob «A».

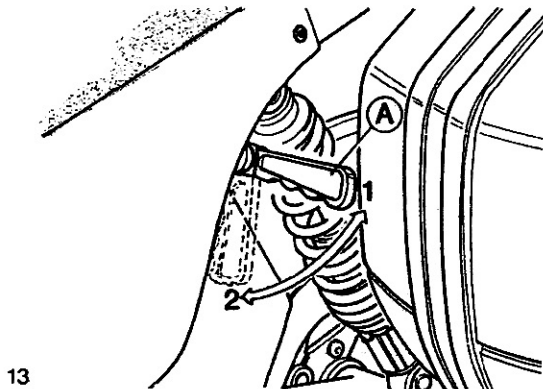


Lifting handle («A» in fig. 13)

The motorcycle is equipped with a movable handle on the left side; purpose of the handle is to facilitate the parking of the motorcycle on the central stand.

Position «1» open.

Position «2» closed.



Cleaning

Preparations for washing

Before washing the vehicle the following parts should be covered with an impermeable material: the rear part of the silencers; the clutch and brake levers and pedals, the throttle twist-grip and the ignition key switch.

Washing

Avoid spraying water too much pressure on the instruments and the front and rear hubs.

Drying

Remove the protective coverings.

Thoroughly dry the vehicle.

Test the brakes before using the vehicle.

Storage

If the vehicle is to remain idle for a considerable period of time (e.g. for the winter period) it should be stored in the following way:

- clean the vehicle thoroughly;
- empty the fuel tank and the carburettors; if left for-a-long time, the fuel would evaporate;
- remove the spark plugs and put a few drops of SAE 30 oil into the cylinder. Turn the crankshaft for a few revolutions and then replace the spark plugs;
- reduce the tyre pressures by 20%;
- position the vehicle so that its wheels are not touching the ground;
- smear a layer of oil on unpainted parts to prevent rust;
- remove the battery and store in a dry place away from the direct sunlight and where there is not danger of frost; check the battery charge once a month;
- cover the vehicle but in such a way that the air can circulate.

20 RIDING YOUR MOTORCYCLE

Preliminary checks

Check:

- that there is sufficient fuel in the tank;
- that the engine oil level is correct;
- the ignition key is in position «ON» (see fig. 3);
- that the following warning lights are on:
 - **red warning lights:** oil pressure and generator;
 - **green warning light:** «NEUTRAL» indicator;
- that the «CHOKE» control lever is in the start position (if the **engine is cold**) («1», fig. 4).

Cold Start

After the preliminary checks, turn the throttle twist-grip until it is 1/4 open, disengage the clutch fully, check that the switch «B» (fig. 5) is in the run position; press the starter button «C» (fig. 5).

When the engine has started, *allow the engine to idle at low revs for a few minutes (in cold weather) or for a few seconds (in warm weather) before switching the «CHOKE» control lever to the run (off) position («2» in fig. 4).*

If the «CHOKE» lever is left in the start position («1», fig. 4) when the vehicle is being used, carburation will be faulty, fuel consumption will be greatly increased and there will be a risk of seizing the engine caused by the washing of the cylinders by the excess fuel.

Caution!

If the green «Neutral» warning light does not come on when the ignition switch is on («ON» position in fig. 3) this means that a gear is engaged; starting the vehicle in this condition could be dangerous. Before starting, always check that the engine is in neutral.

Warm start

Follow the same procedure as that for the cold start but without the «CHOKE» control lever in the start position («1», fig. 4) otherwise the mixture will be too rich.

On the road

To change gear, shut the throttle, disengage the clutch fully and engage the next gear; then engage the clutch gradually while opening the throttle.

The gear change pedal should be operated firmly and surely.

When changing down use the brakes gradually and close the throttle gradually **to avoid over-revving the engine.**

Stopping

Close the throttle and use the brakes; just as the vehicle is about to stop disengage the clutch. These three operations should be carefully coordinated to maintain full control of the vehicle.

When slowing down in normal conditions, use the gearbox to provide engine braking to slow the vehicle; take care not to over-rev the engine. Use the brakes (especially the right front brake) with particular care when roads are slippery or wet.

To stop the engine, turn the ignition switch until «OFF» (see fig. 3).

Do not forget to turn off the fuel taps.

Parking

On badly lit roads, leave the parking lights on. (See paragraph «Main switch and steering lock» on page 11).

22 RUNNING-IN

The recommendations below should be followed when running-in:

- Before riding, run the engine at low revs until it has warmed up.
- Do not exceed the rpm shown in the table; it is also advisable to run the engine at varying speeds rather than at a constant speed.
- Before stopping reduce the speed gradually to avoid subjecting components to sudden changes in temperature.
- Remember that components need several thousand kilometers before they are properly bedded in; care taken in this period will ensure prolonged vehicle life.

RUNNING-IN

Kilometers	Max. RPM
From 0 to 1000	5000
From 1000 to 2000	6000
From 2000 to 4000	Gradually increase rpm until maximum permissible is reached.

After the first 500 ÷ 1500 km

- Change the engine oil.

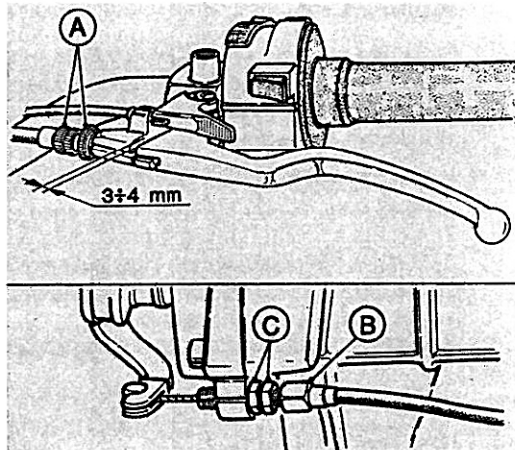
Should the oil level drop to the minimum level before the first 500 ÷ 1500 kilometers have been completed then carry out a complete oil change rather than just topping up. Recommended oil: «Agip Nuovo Sint 2000 SAE 10 W/40».

- Check that all nuts and bolts are tight.
- Check rocker clearance.
- Check the ignition timing.
- Check tyre pressures.

Adjusting the clutch lever (fig. 14)

There should be 3 ÷ 4 mm of free play at the lever; turn the adjuster screw «A» to obtain the desired play.

Play can also be adjusted on the cable adjuster «B» located on the right side of the gearbox. First loosen the lock nuts «C» and then adjust.



14

Checking brake pads wear

Check brake pads thickness every 5000 km:

- new pads mm 9;
- wear limit approx. mm 6.

If the pads are below the wear limit they should be changed. It is not necessary to bleed the brakes when new pads have just been fitted; pumping the brake lever a few times will return the caliper pistons to their normal position.

When changing the pads also check the flexible hoses; if damaged they should be replaced immediately.

N.B. - Treat new brake pads with moderation for the first 100 km until they are properly bedded in.

24 Checking and changing the brake fluid in the master cylinder reservoir (figs. 15 & 16)

To ensure efficient operation of the brakes:

1 Make frequent checks of the fluid level in the front («A» in fig. 15) and rear («H» in fig. 16) reservoirs. The level should always be above the «Minimum» mark on the reservoirs.

2 Top up the brake fluid when necessary or at regular intervals.

Only use recommended brake fluid in sealed containers for topping up. Fluid containers should only be unsealed a moment before they are about to be used.

3 The fluid in the brake should be changed completely every 15,000 km or at least once a year. To ensure efficient braking there should be no air bubbles in the brake circuit; long lever travel, or a spongy brake lever response indicates that there are air bubbles in the brake circuit.

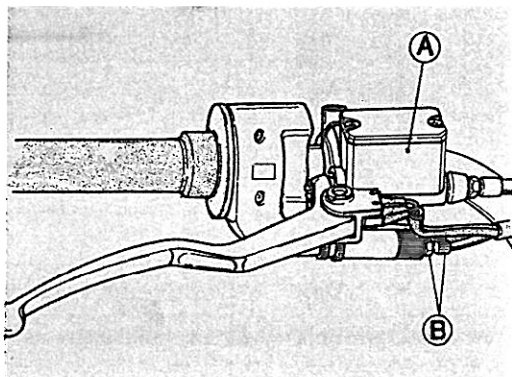
When flushing the circuit only use fresh brake fluid.

Never use alcohol for flushing or compressed air for drying; we recommend trichloroethylene for metal parts.

Never use mineral oils or greases for lubricating parts; if no suitable lubricant is available then rubber and metal parts can be lightly greased with brake fluid.

Recommended brake fluid: «Agip brake Fluid SUPER HD».

These operations are best carried out by a Moto-Guzzi dealer.



Adjusting the brake pedal of rear and left-hand front brakes (fig. 16)

Check the play between the master cylinder actuator and the brake rod as follows:

- place a feeler gauge «G» between the cylinder actuator and the brake rod, the gap between the two parts should be $0.05 \div 0.15$ mm. Turn the eccentric screw «A» to obtain the desired gap;

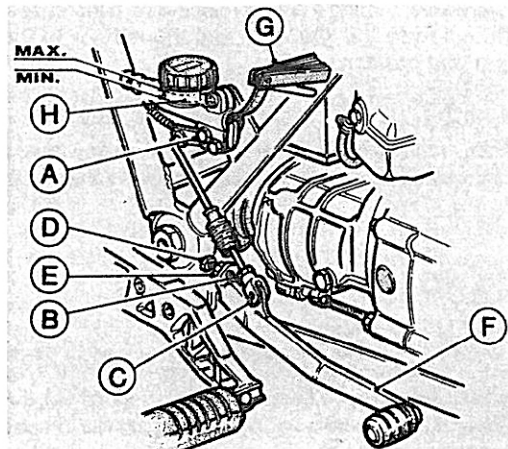
- if the gap is not correct, remove the split pin, remove the pin, unscrew the lock nut «B» and then screw or unscrew the fork «C» to obtain the desired position for the brake pedal «F»; replace the brake rod retaining pin and the split pin.

Now undo the lock nut «E» and adjust the lever return stop screw «D».

Bleeding the brake system

The brake system requires bleeding when there are air bubbles in the system and when the travel of the brake pedal and lever becomes long and spongy.

This operation is best carried out by a Moto-Guzzi dealer.



16

26 Adjustable telescopic fork (fig. 17)

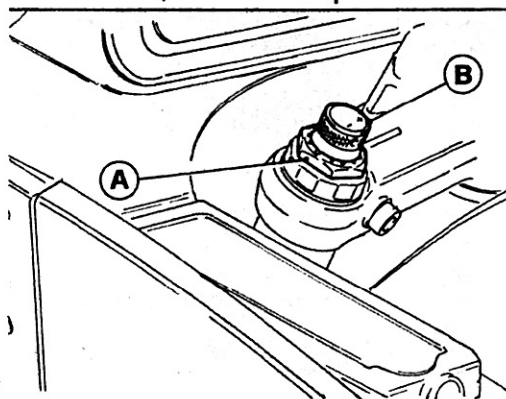
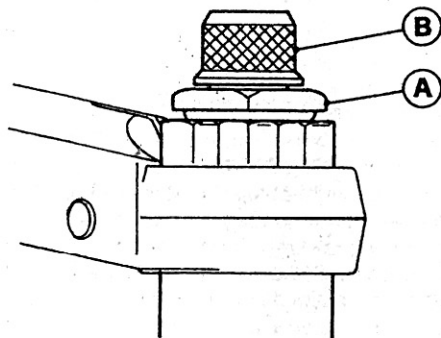
This motorcycle is equipped with a new telescopic fork MOTO GUZZI with separate adjustment of springs pre-loading and of dampers operation. To adjust springs pre-loading, turn nut «A» through a 32 mm wrench. Turning it clockwise the spring pre-loading is reduced; turning it counterclockwise, the pre-loading increases.

To adjust the damper hydraulic operation, turn knob «B».

Turn it clockwise, the hydraulic operation decreases; turning it counterclockwise, it increases. Do not force the knob «B» and the nut «A» to the extreme positions.

N.B. - It's important that spring pre-loading and damper operation are equally adjusted on both forks prongs, (equally turn both pre-loading adjustment nuts, beginning from end of stroke position, as well as the two hydraulic operation adjustment knobs).

To avoid the damaging of the shock-absorbers when riding on uneven roads, do not adjust them (knob «B») in position of maximum braking.



Adjusting the rear shock absorbers

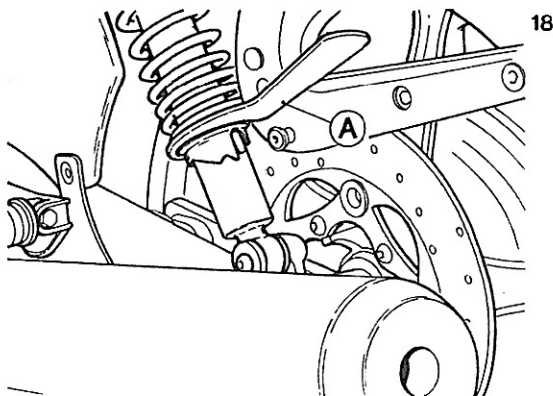
(figs. 18 & 19)

The loading of the rear suspension springs can be adjusted to one of the three settings by using the special spanner «A» (fig. 18).

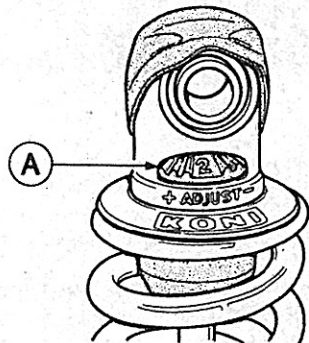
It is also possible to adjust the damping effect of the shock absorbers by turning the disc «A» (fig. 19). There are four settings corresponding to different loads and riding conditions:

- position 1 - very soft, for light loads;
- position 2 - one or two riders on good roads (e.g. motorways);
- position 3 - one or two rider with luggage, sport/touring use;
- position 4 - very hard, two riders, heavily loaded bike.

27



19



28 With the passing of time, when the vehicle has covered a considerable mileage it will be necessary to select a setting which is higher than that indicated above.

If the damping effect of the shock absorbers becomes noticeably irregular they should be checked by a Moto-Guzzi dealer.

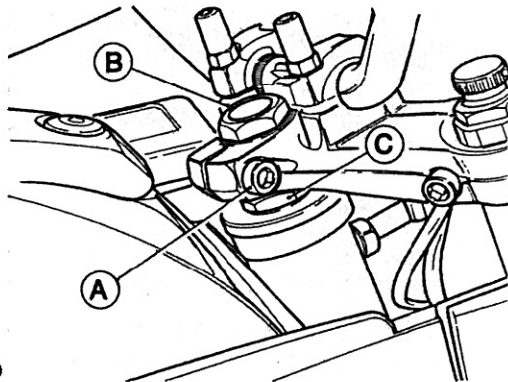
N.B. - Each shock absorber should have the same spring loading and damper setting as the other shock absorber to ensure maximum stability of the vehicle.

Adjusting the steering (fig. 20)

To ensure safe riding, the steering should be adjusted to allow free movement of the handlebars without any play.

- remove handlebars cover;
 - loosen the steering head fixing bolt «A»;
 - undo the steering head nut «B»;
 - turn the adjuster nut «C» to take up any play.
- When play has been adjusted tighten the nut «B» and the steering head fixing bolt «A».

This operation is best carried out by a Moto-Guzzi dealer.

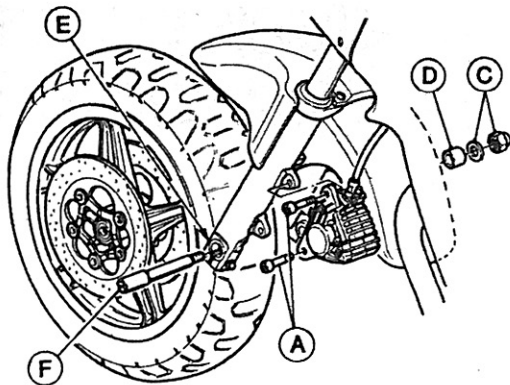


REMOVING THE WHEELS

Front wheel (fig. 21)

Remove the wheel as follows:

- place the machine securely on its centre stand;
- undo the bolts «A» holding the brake calipers to the fork legs and remove the calipers complete with hoses;
- unscrew the spindle retaining nut «C» on the left side;
- loosen the pinch bolts «E»;
- remove the wheel spindle «F» paying attention to the position of the spacers and «D» then remove the wheel;
- refitting the wheel is the reverse of the above procedure; care should be taken to fit the spacers in the correct position; pump the brake lever and pedal a few times to return the caliper pistons to their normal position.

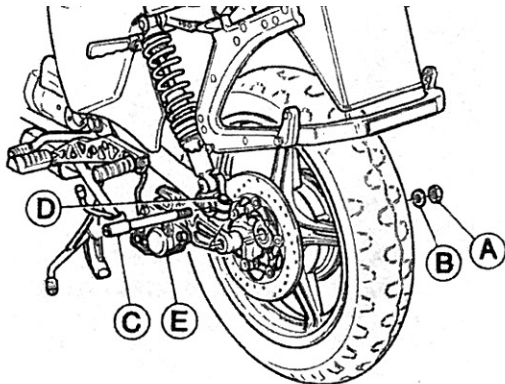


21

30 Rear wheel (fig. 22)

To remove the rear wheel from the swinging arm and from the final drive box proceed as follows:

- place the machine securely on its centre stand;
- remove the left side silencer;
- undo the spindle nut «A» and washer «B» on the final drive box side;
- loosen the pinch bolt «D» on the swinging arm;
- slide the spindle «C» out from the final drive box, the hub, and the swinging arm;



- remove the plate assembly complete with caliper «E» from the torque arm and fix this assembly to the frame;

- lean the machine to the right just enough to be able to disengage the wheel from the swinging arm and the final drive box and remove.

Refitting the wheel is the reverse of the above procedure; remember to insert the plate assembly complete with caliper onto the torque arm of the left swinging arm.

Tyres

Tyres are among those machine components which require regular checking.

Machine stability, rider comfort and safety all depend on good tyre condition.

Do not use tyres with less than 2 mm of tread.

Incorrect tyre pressures can cause instability and excessive tyre wear.

Tyre pressures:

- front wheel: with one or two riders 2.2 BAR.
- rear wheel: with one rider 2.4 BAR; with two riders 2.6 BAR.

These pressures are for normal touring use. For continuous high speed cruising (e.g. on motorways) the above pressures should be increased by 0.2 BAR.

Tyre fitting

This machine is fitted with cast, light-alloy rims; even though these are very strong they can be damaged both aesthetically and mechanically by the use of incorrect tools when removing and fitting tyres. Tyre levers should not have sharp edges or ribbing in those places where they come into contact with the rim; lever contact surfaces should be smooth and edges should be rounded. Use of a suitable commercially available lubricant facilitates tyre removal and fitting therefore making strenuous use of the levers unnecessary. It is important to ensure that the tyre beads settle properly into the centre rim groove.

Some tyres have an arrow moulded on the sidewall, in these cases the tyres should be fitted as follows:

- rear wheel: arrow pointing in the direction of rotation;
- front wheel: arrow pointing against the direction of rotation.

N.B. - These instructions should be followed unless otherwise directed by the tyre manufacturer.

32 MAINTENANCE SCHEDULE

ITEMS ↕	MILEAGE COVERED ↕	900 mi (1500 Km)	3000 mi (5000 Km)	6000 mi (10000 Km)	9000 mi (15000 Km)
• Engine oil		R	R	R	R
• Oil filter cartridge		R			R
• Wire gauze oil filter		C			C
• Air filter			C	R	C
• Ignition timing		A			A
• Spark plugs		A	A	R	A
• Rocker clearance		A	A	A	A
• Carburetion		A	A	A	A
• Nuts and bolts		A			A
• Fuel tank, filters and pipes				A	
Gear box oil		A	A	R	A
Rear drive box oil		A	A	R	A
Wheel and steering bearings					
Fork legs oil					
Starter motor and generator					
Brake systems fluid		A	A	A	R
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, lubricate joints and cables; every 500 km (300 miles) check the engine oil level. In any case, renew this oil at least once a year.

12000 mi (20000 Km)	15000 mi (25000 Km)	18000 mi (30000 Km)	21000 mi (35000 Km)	24000 mi (40000 Km)	27000 mi (45000 Km)	30000 mi (50000 Km)
R	R	R	R	R	R	R
		R			R	
		C			C	
R	C	R	C	R	C	R
		A			A	
R	A	R	A	R	A	R
A	A	A	A	A	A	A
A	A	A	A	A	A	A
		A			A	
A		A		A		A
R	A	R	A	R	A	R
R	A	R	A	R	A	R
A				A		
R				R		
A				A		
A	A	R	A	A	R	A
A	A	A	A	A	A	A

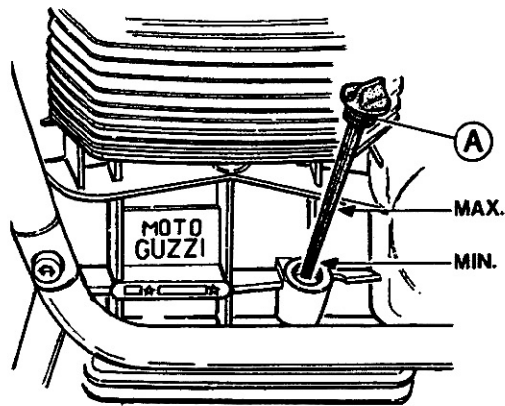
34 LUBRICATION

Engine lubrication

Checking the oil level (fig. 23)

Check the crankcase oil level every 500 km; the oil should reach the «Max» mark on the dipstick «A». If the oil is below this level, top up with the recommended type and grade of oil.

The oil level check should be carried out after the engine has run for a few minutes: the dipstick plug «A» should be screwed fully home.



Oil change (figs. 23 & 24)

The oil should be changed after the first 500 ÷ 1000 km and every 5000 km thereafter. Change the oil when the engine is warm.

Allow the sump to drain fully before filling with new oil.

«A» Oil filler plug with dipstick (fig. 23);

«B» Oil drain plug (fig. 24).

Oil required: 3 litres of Agip Nuovo SINT 2000 SAE 10W/40.

Changing the filter cartridge and cleaning the mesh filter (fig. 24)

The filter cartridge «A» should be changed every 15,000 km (every 3 oil changes) as follows:

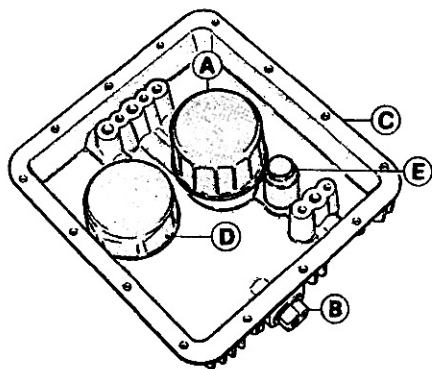
- unscrew the drain plug «B» and allow the sump oil to drain off fully;
- undo the screws and remove the sump cover «C» from the crankcase: this assembly includes the filter cartridge «A», the mesh filter «D» and the oil

pressure valve «E»;

■ Unscrew the filter cartridge «A» and fit a new approved filter cartridge.

When changing the filter cartridge «A» it is also a good idea to remove the mesh filter «D» and wash it in petrol; dry by blowing with compressed air. Blow the oil ducts in the sump out with compressed air and refit the mesh filter.

Do not forget to fit a new sump gasket when refitting the sump.



24

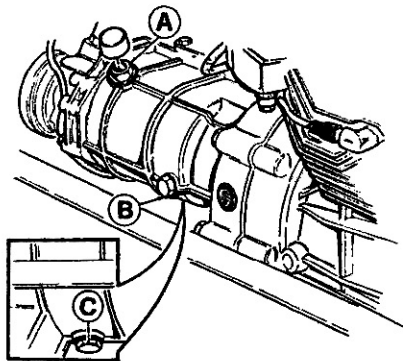
This operation is best carried out by a Moto-Guzzi dealer. 35

Gearbox lubrication

Checking the oil level (fig. 25)

Check the oil level every 5000 km; the oil should just reach the level plug hole «B».

If the oil is below this level top up with the recommended grade and type of oil.



25

36 Oil change (fig. 25)

The gearbox oil should be changed every 10,000 km. Drain the oil when the gearbox is warm as the oil is more fluid and drains more easily.

Allow the gearbox to drain fully before filling with new oil.

«A» Filler plug.

«B» Level plug.

«C» Drain plug.

Oil required: 0.750 litres of Agip Rotra MP SAE 80W/90.

«A» Level plug.

«B» Filler plug.

«C» Drain plug.

Oil required: 0.250 litres of which: 0.230 lt. is «Agip Rotra MP SAE 80W/90», and 0.020 lt. is «Agip Rocol ASO/R» or «Molykote type A».

Rear transmission box lubrication

(fig. 26)

Checking the oil level

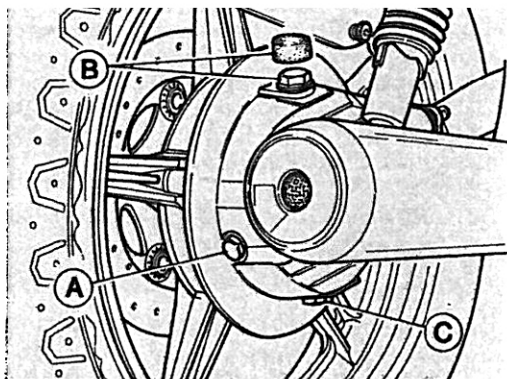
Check the oil level every 5000 km; the oil should just reach the level plug hole «A».

If the oil is below this level top up with the recommended grade and type of oil.

Oil change

The transmission box oil should be changed every 10,000 km. Drain the oil when the box is warm as the oil is more fluid and drains more easily.

Allow the box to drain fully before filling with new oil.

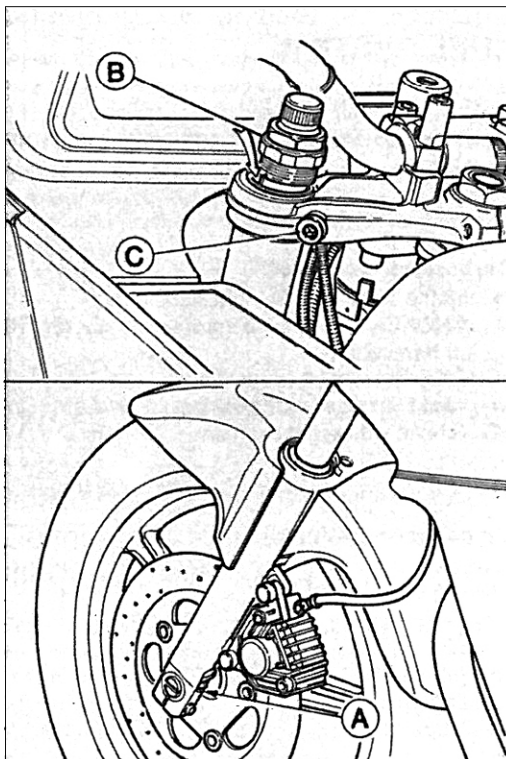


26

Front fork lubrication (fig. 27)

To change the fluid in the front forks proceed as follows:

- place the machine on the centre stand, remove the handlebar cover;
- loosen the side clamp bolts «C» holding the steering head and the fork together;
- undo the top nut «B»; remove the drain plug «A»;
- push the front of the machine downwards, this will force the top nut «B» out of the tube;
- refit the drain plug «A» and fill the fork with 70 cc of Agip ATF Dexron; pour the fluid into the space between the fork and the damper assembly;
- release the front of the machine, refit the top nut «B» and then tighten the side clamp bolts. Repeat the whole operation for the other fork leg.



27

Greasing

To grease:

- steering bearings;
- swinging arm bearings;
- control rod joints;
- centre/side stand fittings.

Use: Agip Grease 30.

38 FUEL SYSTEM

Carburetors (fig. 28)

2 Dell'Orto carburetors, PHF 36 DD (right) and PHF 36 DS (left)

Carburettor controls

- throttle twist grip on right handlebar;
- «CHOKE», cold start control lever, «E» (fig. 4) on left handlebar.

«CHOKE» control lever positions:

- «1» cold engine start position
- «2» choke off, engine running.

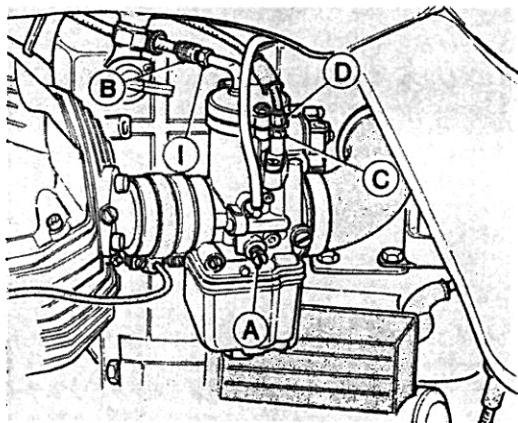
Carburettor settings

Diffuser	Ø 36 mm
Throttle valve	60/3
Spray nozzle	268 AR
Main jet	130
Idle jet	50
Starting jet	70
Tapered needle	K 18 (3rd notch)
Float	10 gr.

Idling screw: open by $1\frac{1}{2}$ turns.

Adjusting the «CHOKE» cable play (fig. 28)

With the «CHOKE» control lever in position «2» check that there is approx. 3 mm play between the cable ends and the cable adjuster screws «D». To adjust, loosen the lock nuts «C» and turn the cable adjuster screws «D» in the direction required. With the adjustment complete, tighten the lock nuts «C».



Balancing the carburettors and adjusting the idle setting (fig. 28)

Balance carburettors using a vacuum gauge

Precise adjustment of carburation can be carried out by a Moto-Guzzi dealer using a vacuum gauge.

Adjusting the idle setting

- To set the idling speed to $900 \div 1000$ rpm, turn the both idle screws «A» by the same amount.
- Open and close the throttle a few times to check that idling remains constant.

N.B. - The idle setting should be adjusted when the engine is at working temperature.

Adjusting throttle cable play (figs. 15 and 28)

With the throttle twist grip in the rest position, there should be $1 \div 1.5$ mm play between the cable ends and the cable tensioners «B» (fig. 28) of both carburettors; if necessary adjust by loosening the nut «I» and turning the cable tensioner «B» to obtain the desired play; lighten the nuts «I».

A further adjustment can be obtained acting on the cable tensioners «B» of fig. 15 pag. 24.

Changing the air filter («A» of fig. 29) 39

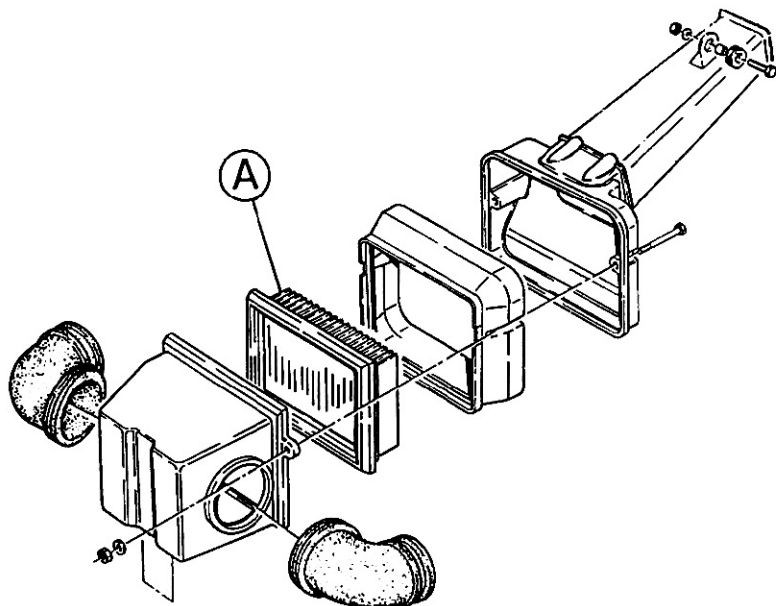
Check the air filter every 5000 km and clean by blowing with compressed air; change every 10.000 km. The air filter is mounted in a housing together with the oil breather above the engine.

For the above operations it is advisable to apply to a Moto-Guzzi dealer.

Cleaning the fuel tank, the fuel tap, filter and pipes

The fuel tank and other parts of the fuel feed system should be cleaned approx. every 10.000 km or whenever the carburettors show signs of fuel starvation.

Wash the filters, the pipes and the tap channels in petrol and blow with compressed air.



Valve clearances (fig. 30)

The clearance between rocker arms and valves should be checked and adjusted after the first 500 ÷ 1000 km and every 5000 thereafter or if the valve gear becomes excessively noisy.

Adjustment should be carried out with the **engine cold** and the piston at TDC in the compressions phase (valves closed).

Remove the rocker box cover and proceed as follows:

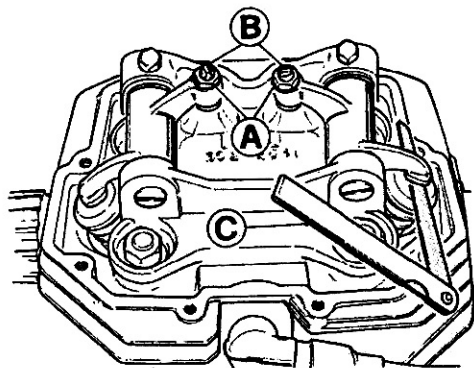
- 1 loosen nut «A»;
- 2 turn the adjuster screw «B» to obtain the clearances:

- inlet and exhaust valves: 0.22 mm;

Use a suitable feeler gauge «C» to measure the clearances.

Remember that if the clearances are greater than those specified, valve gear will be noisy; if the valves do not close fully this can cause problems such as:

- loss of compression
- engine overheating
- valve burn-out, etc.



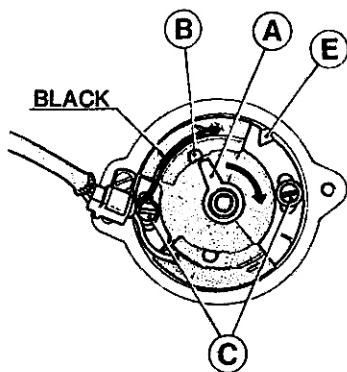
30

42 ELECTRONIC IGNITION

Ignition data

Electronic ignition; the advance is electronically controlled.

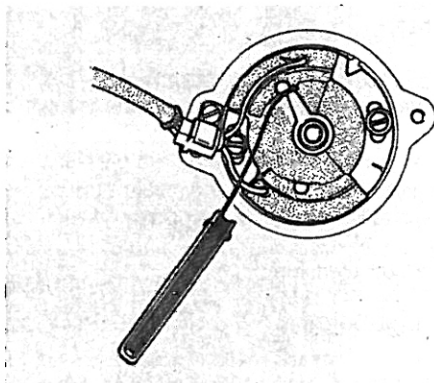
- Initial advance (fixed) $2^{\circ} \div 3^{\circ}$
 - Maximum advance (fixed + automatic) $34^{\circ} \div 35^{\circ}$
- Pick-Up to rotor gap $\text{mm } 0,2 \div 0,4$
- Ignition of electronic type doesn't require any maintenance.



Ignition timing (fig. 31-33)

Engine has been timed when (with the right cylinder to the T.D.C. in combustion phase) the left side of the rotor «A» is approximately on the middle of the sensor «B» on pick-up (right cylinder identifiable by the black cable). If necessary, undo the screws «C» and act on groove «E» using a screwdriver in order to rotate the pick-up plate.

31

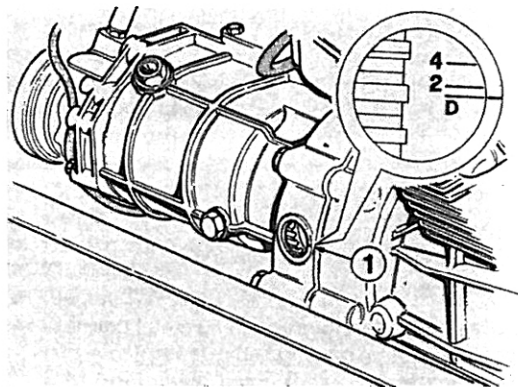


Alternately the adjustment can be made by rotating the external body of the ignition device after unscrewing the two lower retaining screws.

For a more precise checking of advance, use a stroboscopic light.

With the engine at 4.500 rev./min. the mark «4» (max. advance) on the flywheel (see on fig. 33) should be in line with mark «1» on the checking hole edge. The mark «D» on the flywheel indicates the T.D.C. The mark «2» on the flywheel indicates the fixed advance.

For these operations it is advisable to apply to a Moto Guzzi dealer.



33

ATTENTION

In order not to cause damages to the electronic ignition system, follow the precautions hereunder:

- **In case of battery removal or refitting, be sure that the ignition switch is in position «OFF».**
- **Do not disconnect the battery with engine on.**
- **Be sure of the perfect efficiency of earth cables of electronic boxes.**

44 Spark plugs (fig. 34)

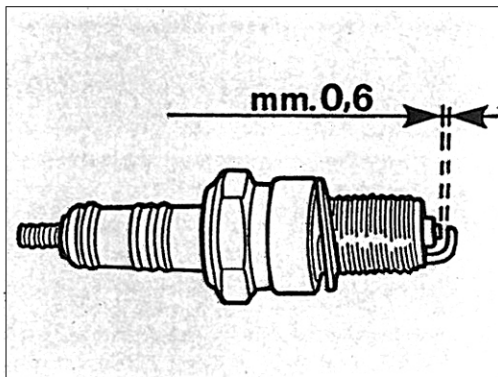
Use the following types of spark plug:

- Marelli CW 7 LP
- Bosch W 7 D
- Bosch W 7 DC
- Champion N 9 YC
- Lodge L 6 Y

Spark plug gap: 0.6 mm.

Remove the spark plugs for cleaning and checking at the intervals indicated in the **Maintenance Schedule**.

Refit the plugs by hand taking care not to cross threaded them, they should screw home easily; tighten when the **engine is cold**. Even if used plugs appear to be in good condition, they should be replaced every 10.000 km.



34

The electrical equipment consists of the following:

- Battery
- Starter motor with electro-magnetic ratchet
- Generator-alternator fitted to the front of the crankshaft
- Pick-up
- Electronic box
- Ignition coil
- Electronic box condenser
- Voltage regulator
- Fuse box (No. 4, 15 A fuses)
- Horn switch
- Starter switch
- Headlight
- Tail light
- Direction indicators
- Selector switch
- Light switch
- Direction indicator, horn and headlamp flasher switch
- Hazard warning lights, switch
- Starter device
- Electric horns
- Warning lights on instrument panel for: neutral indicator (green), side lights on (green), oil pressure (red), main beam (blue), generator (red),

- fuel reserve (red), direction indicators (green). 45
- Buzzer indicators

Battery

The 12 V/24 Ah battery is charged by the generator. To gain access to the battery:

- remove the seat;
- unhook the rubber strap and disconnect the battery cables.

Battery maintenance

Batteries which are already in service (i.e. dry batteries which have been filled, activated and charged) should be maintained as follows:

- top up with **distilled water** (never use acid) so that the liquid level is 5 mm over the top of the plates;
- battery terminals should be kept tight, clean and greased with Vaseline;
- keep the top of the battery clean, avoid spillage of acid as this will reduce insulation and will corrode the battery holder and cover;

- 46
- check that the charging equipment is not under or overcharging the battery; battery liquid specific gravity should be $1.24 \div 1.27$. If this is not the case it will be necessary to check the insulation and efficiency of charging and starting equipment;
 - batteries which are stored should be charged at regular intervals at 1/10th of capacity, should be kept topped up and with a specific gravity of 1.27 at 25°C;
 - the battery should be clamped firmly in place complete with anti-vibrations devices.

N.B. In tropical climates (average temperature above 33°C) electrolyte specific gravity should be reduced to 1.23.

Replacing bulbs

Headlight (fig. 35-36)

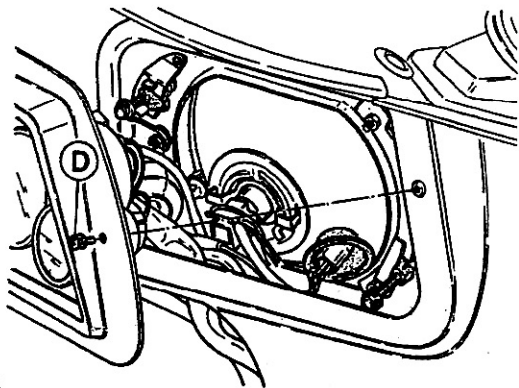
To change the bulbs, remove the instrument panel, disconnect the electric connections from the rear side, remove the rubber cover «G» and remove the lamp «D» by turning the spring «E».

After the reassembling, be sure not to have disconnected involuntarily any other electric connection (in particular the connection of the front side light). The lamp holder of the front light «F» is pressure connected.

N.B. - When changing the head light bulb (main/dipped beams) take care not to touch the glass part of the bulb with your fingers.

Instrument panel (fig. 35)

Undo the screws «D» and remove the instrument panel. Remove the lamp holders from their seats and replace the bulbs.



35

36

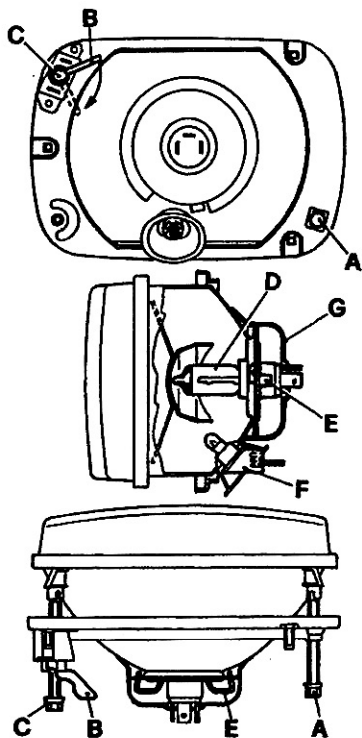
Tail light (fig. 37)

Undo the screws «A» holding the reflector to the unit.
To remove the bulb from the bulb holder, press in and turn.

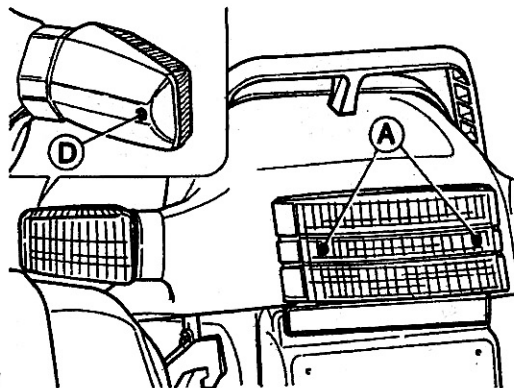
Front and rear direction indicators (fig. 37)

Undo the screws «D» holding the reflector to the direction indicator unit.
To remove the bulb from the bulb holder, press in and turn.

N.B. - Do not overtighten the reflector retaining screws as this will break the reflector.



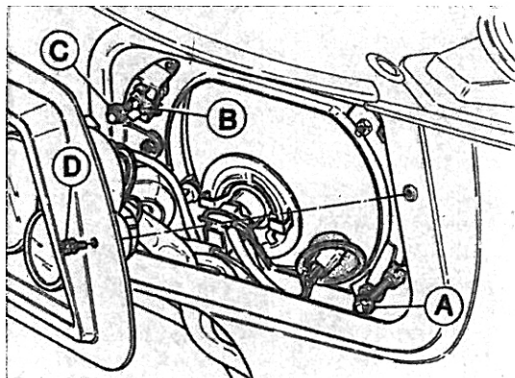
37



48 Adjusting the headlight beam (fig. 38)

The headlight beam should always be kept adjusted at the correct height to ensure good visibility and to avoid dazzling on coming traffic. Act on the screw «A» for the «horizontal» orientation whereas act on the screw «C» for the «vertical» one, to the prescribed height.

Acting on the lever «B» it is possible to change quickly the vertical orientation in order to adapt it to the load conditions (with one or two riders and luggage).



Bulbs

Headlight:

- Dipped and main beam 60/55 W
- Side/parking lights 4 W

Tail light:

- Number plate, stop light 5/21 W

Direction indicators

10 W

Speedo, rev. counter warning lights

3 W

Instrument panel warning lights

1.2 W

The windscreen can be cleaned using most of the soaps, cleaners, waxes and polishes commercially available for glass and plastic.

The following precautions should be taken:

- **do not wash or polish the windscreen in direct or strong sunlight or when temperatures are high;**

- under no circumstances use solvents, lyes or similar products;

- do not use abrasive substances, pumice, sand/emery paper, files etc.;

- wash all dust and dirt away before polishing. Small superficial scratches can be removed using a mild polish;

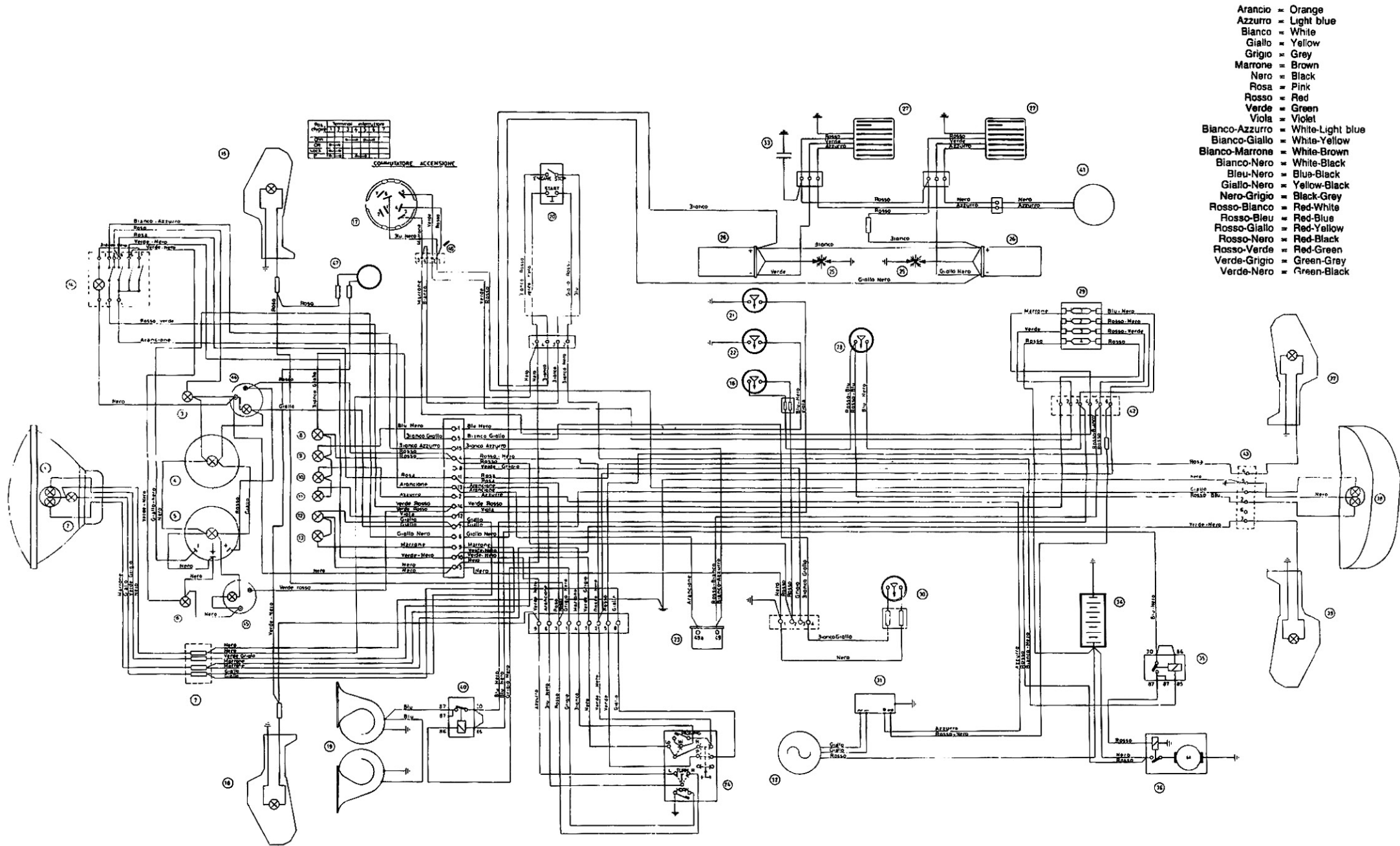
- paint or sealing compound can be removed before harden by using diesel, isopropyl alcohol or butyl cellosolvent (do not use methyl alcohol);

- use soft cloths, sponges, chamois leathers or cotton wool; do not rub too hard. Do not use paper towels or man-made fibre cloths as they tend to scratch the windscreen.

Deep scratches cannot be removed by hard rubbing or the use of solvents.

50 Key to wiring diagram

- | | | | |
|-----------|--|-----------|-----------------------------------|
| 1 | Bulb, main/dipped beam 60/55 W | 28 | Rear brake stop switch |
| 2 | Bulb, front sidelights 4 W | 29 | Fuse terminal board |
| 3 | Bulb, r/h direction indicator warning light. | 30 | Low fuel level warning sensor |
| 4 | Bulb, speedometer light | 31 | Voltage regulator |
| 5 | Bulb, rev. counter light | 32 | Alternator (14 V · 20 A) |
| 6 | Bulb, l/h direction indicator warning light. | 33 | Condenser |
| 7 | Connector, 4-way Molex | 34 | Battery (12 V - 24 Ah) |
| 8 | Bulb, fuel level warning light | 35 | Starter solenoid |
| 9 | Bulb, oil pressure warning light | 36 | Starter motor |
| 10 | Bulb, generator warning light | 37 | R/H rear direction indicator |
| 11 | Bulb, neutral warning light | 38 | Bulb, number plate and stop light |
| 12 | Bulb, sidelight warning light | 39 | L/H rear direction indicator |
| 13 | Bulb, main beam warning light | 40 | Two-note horn switch |
| 14 | Emergency flasher switch | 41 | Pick up |
| 15 | R/H front direction indicator | 42 | Connector, 6-way AMP |
| 16 | Front brake stop switch | 43 | Connector, 6-way Molex |
| 17 | Starter switch | 44 | Voltmeter |
| 18 | L/H front direction indicator | 45 | Clock |
| 19 | Two-note horn | 46 | Connector, 4-way AMP |
| 20 | Control switch: start/stop engine, lights | 47 | Direction indicator buzzer |
| 21 | Neutral position switch | | |
| 22 | Oil pressure switch | | |
| 23 | Blinker unit (12 V - 46 W) | | |
| 24 | Control switch: lights-horn-direction indicators | | |
| 25 | Spark plugs | | |
| 26 | H.T. coil | | |
| 27 | Electronic box | | |



GBM S.p.A. **MOTO GUZZI**



Mandello del Lario

