



MOTO GUZZI

Motociclo AIRONE

250 c.c.

COMME **PIRELLI**
Lubrificanti **SHELL**

Translated December 12, 2012

J. Carey

Not For Commercial Sale

ISTRUZIONI

per l'uso e la manutenzione



MOTO GUZZI

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IIª EDIZIONE

Motociclo **AIRONE**

250 c.c.

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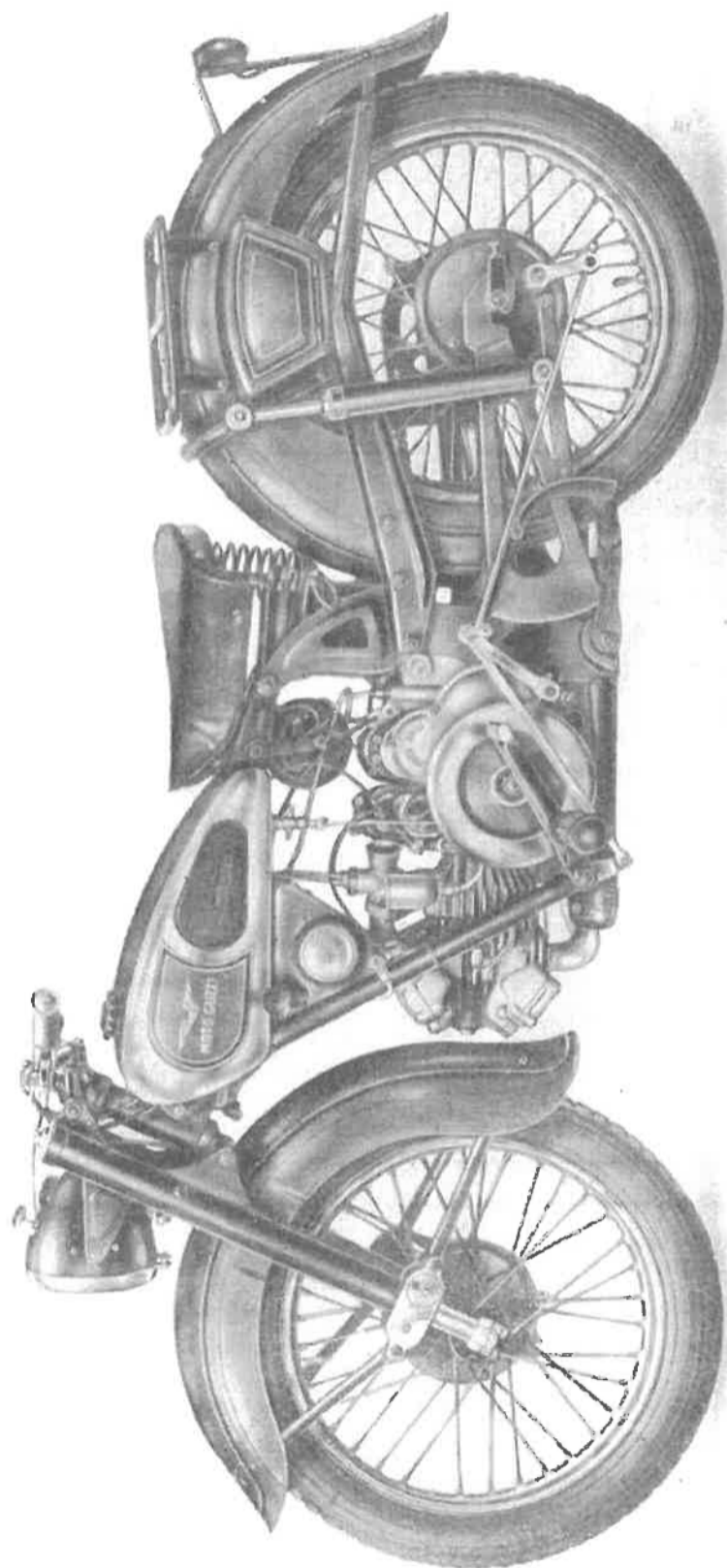


Fig. 1 - Motociclo Airone (lato volano)

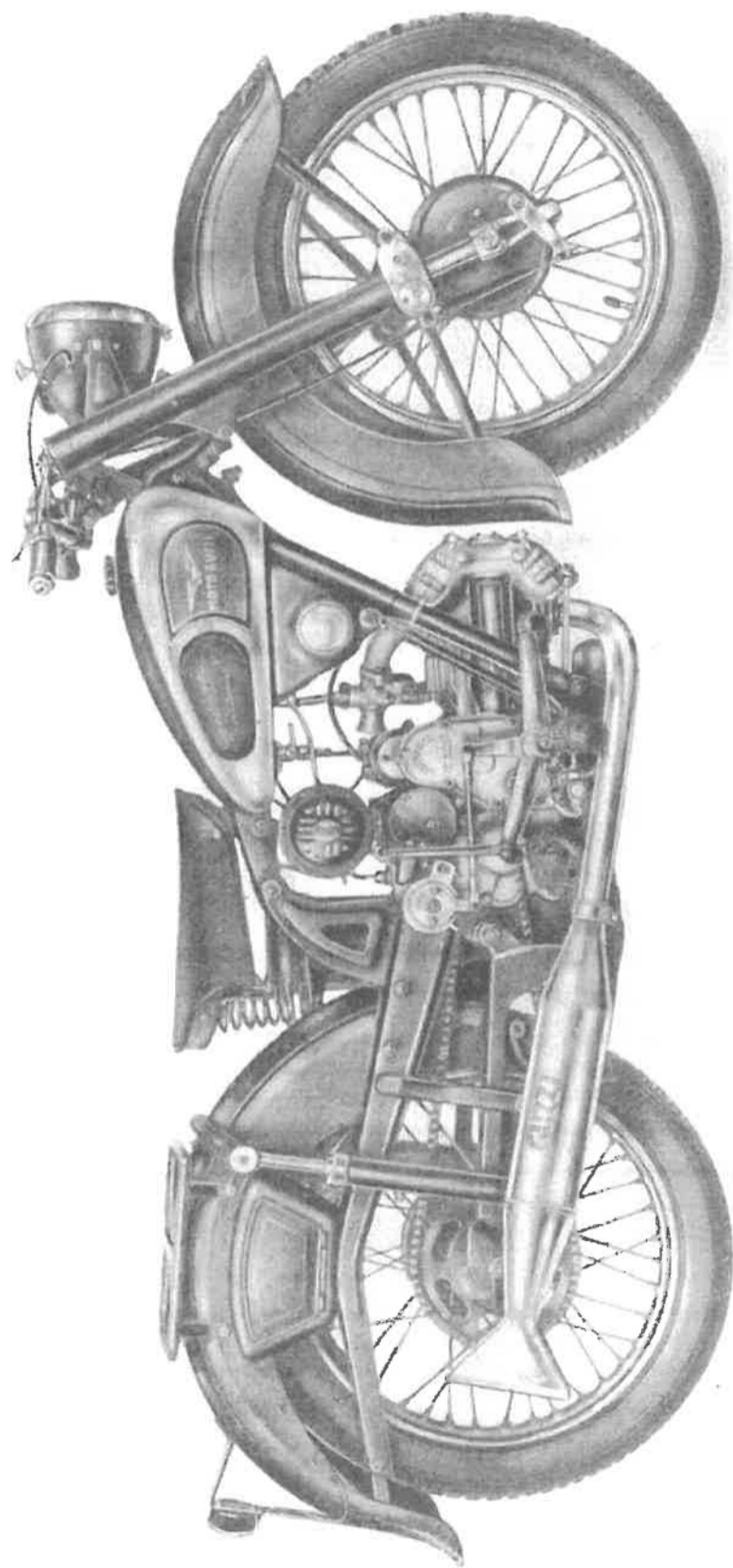


Fig. 2 - Motociclo Airone (lato distribuzione)

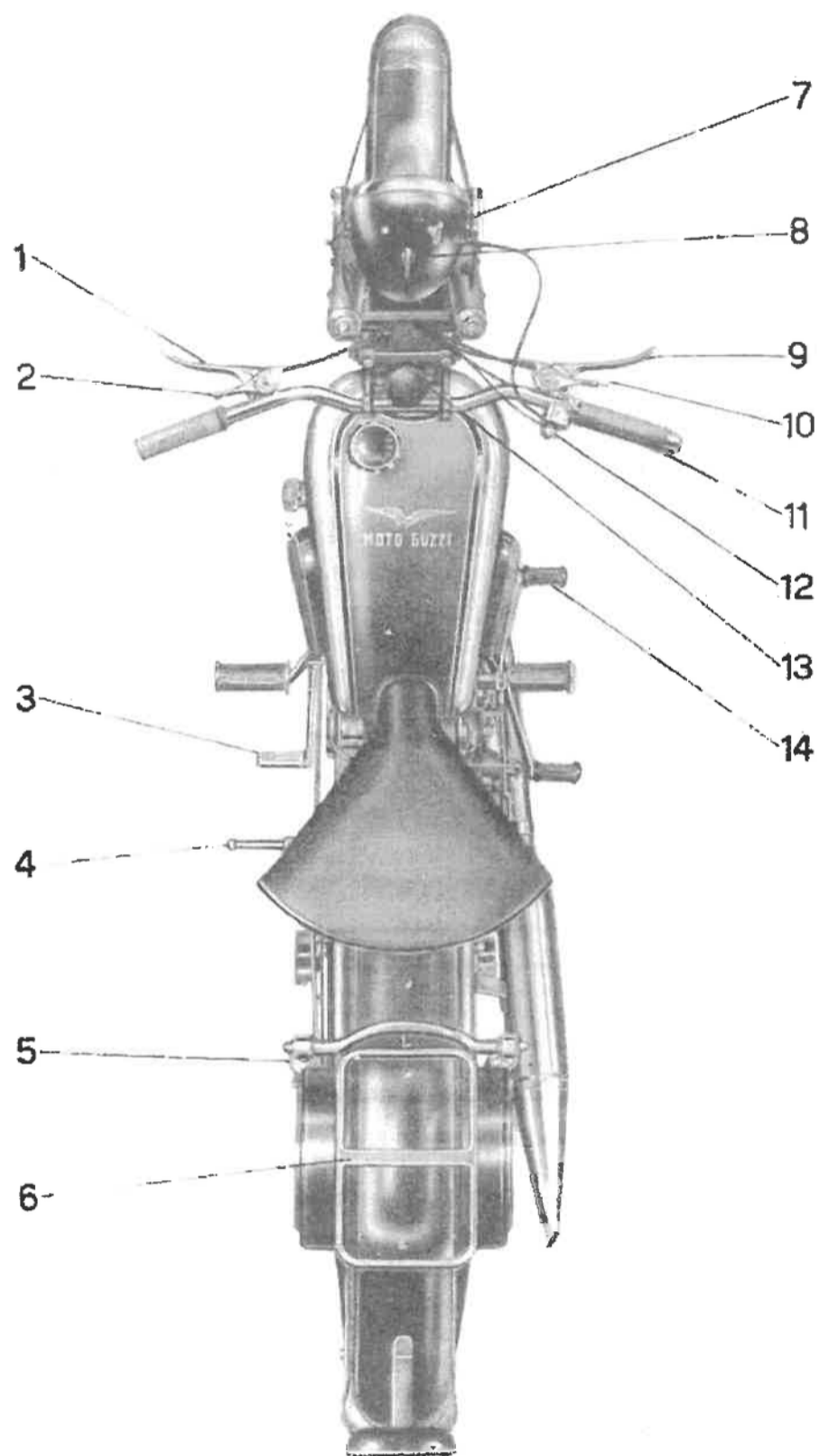


Fig. 3 - Motociclo Airone (comandi e accessori)

CONTROLS and ACCESSORIES

(see figure 3)

- 1 - Clutch control lever.
- 2 - Advance command lever (pulling delays).
- 3 - Rear brake pedal.
- 4 - kick start pedal.
- 5 - Hydraulic shock absorber.
- 6 - Luggage carrier.
- 7 - Key for electrical system.
- 8 - Minimum and maximum light switch.
- 9 - Front brake control lever.
- 10 - Choke lever.
- 11 - Throttle control knob.
- 12 - Electric horn button and anti-glare light control
- 13 - Steering brake control handwheel.
- 14 - Gear lever.

GENERAL CHARACTERISTICS

MOTOR

Engine: 4-stroke cycle with overhead valves.

Cylinder head: in light alloy with valve control parts completely covered and in an oil bath.

Number of cylinders: 1 - horizontal, in light alloy with barrel in special cast iron

Stroke 64 mm

Bore 70 mm

Displacement 250 cc

Power at 4800 rpm 9.5 Hp

Compression ratio 1: 6

For the distribution, opening and closing of valves, see chapter "Distribution" on page. 32

For the adjustment between rocker arms and valves see the chapter on page 33

IGNITION

Magnete Marelli B.L. I high voltage, counter clockwise rotation, gear operated.

Type M.B.L. 22.

Adjustable advance with lever. Measured on the motor axis: maximum 41 degrees.

Spark plug: Marelli CW 175A.

FUEL SYSTEM

Gravity fed, fuel tank capacity approx. 11 liters.

Carburetor with knob adjustment for the gas and throttle adjustment for the air.

Manufacturer: Dell'Orto, Type SBF 22.

Adjustment screw for idle.

Normal Carburetor Adjustment:

Diffuser 22 mm

Main jet Summer 100/110 ~ Winter 105/100

Pilot jet 45/100

Needle N.2 0 Summer second notch ~ Winter third notch

LUBRICATION

Forced, with delivery gear pump, with return vane.

Delivery of approximately 60 liters per hour at full capacity

Oil tank capacity approximately 2 liters.

COOLING

Air cooled. Head and cylinder are equipped with fins arranged radially with respect to the cylinder axis.

CLUTCH COUPLING

Dry. Multiple metal discs.

Number of discs 10 (4 in steel - 4 in bronze - 1 in fibrous lining - 1 in rear in bronze)

TRANSMISSION TYPE

Constant mesh type:

1st gear ratio - 1: 2.64

2nd gear ratio - 1: 1.788

3rd gear ratio - 1: 1.34

4th gear ratio - 1: 1

DRIVE

With gears with helical teeth between engine and gearbox.

With roller chain between transmission sprocket and rear wheel sprocket.

Transmission gearing:

Between engine and gearbox 1.805: 1 36 - 65

Between rent and rear crown 3.33: 1 15 – 50

Final drive ratios (motor / rear wheel)

in 1st gear 15.8: 1

in 2nd gear 10.70: 1

in 3rd gear 8.05: 1

in 4th gear 6.00: 1

GENERAL FEATURES

CHASSIS

Wheelbase 1370mm

Measurement of the motorcycle:

Length 2100 mm

Width 720 mm

Height 975 mm

Minimum height from the ground about 130 mm in correspondence to the lowest part of the frame (empty)

Weight of the motorcycle without fuel, oil, and accessories approximately 142 Kg.

SUSPENSION

Front Telescopic fork with hydraulic shock absorbers.

Rear: Swingarm with springs, located in special case under frame and hydraulic shock absorbers.

WHEELS

Spoked front and rear - 19 x 2-1/4 rims

TIRES

Front and rear - 3.00 - 19

INFLATION PRESSURES

Front tire Kg / cm² - 1.4 (20 psi)

Rear tire Kg / cm² - 1.8 (25 psi)

BRAKES

Expansion type.

Two units:

- one on the front wheel controlled by a hand lever placed on the right of the handlebar:
- one on the rear wheel controlled by a pedal placed on the left of the machine.

ELECTRICAL SYSTEM

For lighting: it consists of Dynamo Marelli type DN 19 G 30/6 2000 D with voltage regulator, 6V - 30 W.

Right rotation, operated as gears.

Ratio of dynamo to engine 1: 1.

Marelli electric horn type F.M. N 150 with three-light switch, control for anti-glare on the handlebar L M.A, 800. (L S.I.E.M. - E.C.I. headlights can also be mounted)

Reflective and reflective rear light: Type T. 16166.

Marelli battery type 3 M.E. 7/5

PERFORMANCE

Maximum gradients that can be overcome with the various gearboxes on roads in good maintenance conditions:

In 1st gear maximum gradient 25.5%

In 2nd gear maximum gradient 16.5%

In 3rd gear maximum gradient 11.0%

In 4th gear maximum gradient 4.0%

Range on roads in good maintenance conditions in a hilly area: about 330 km.

Maximum speed in the gears corresponding to the engine speed of 4800 rpm.

In 1st gear 35.5 Km/hr

In 2nd gear 52.5 km/hr

In 3rd gear 70 km/hr

In 4th gear 94 km/hr

NB. In the description, where it is written right
It means right as sitting on the saddle

ESSENTIAL RULES FOR USING THE "AIRONE" MOTORCYCLE

Acceleration of the no-load engine

With the gearbox in neutral, especially when the engine is cold, it is recommended not to overdo the acceleration of the engine.

Normal use

The engine can reach the speed of 4800 rpm. It is recommended not to exceed this engine speed, especially when lower gears are required. To check this, it is necessary to observe the maximum speed in the individual gears (see chapter: Performance).

Before starting a journey: make sure that there is sufficient fuel to complete the set route; that there is new oil tank in sufficient quantity and of suitable quality. As soon as the engine is started, make sure that the oil circulates regularly: once the oil tank cap has been removed, the lubricant must be seen coming out of the appropriate recovery tube.

It is advisable not to travel downhill with the gearbox in neutral or with the clutch disengaged: and it is advisable to use the engine braking action by keeping the throttle control knob at minimum opening. If the descent is strong, it is better to use the lower gears; to avoid the abnormal heating of the brake drums.

On a wet or frozen road, you must travel with the utmost caution, trying to avoid sudden braking and rapid acceleration. It is advisable to decrease the normal tire pressure.

Uphill it is convenient to use the gear that allows the engine to run at a normal speed, so as not to force the engine.

It is inadvisable to let the clutch slip to restart: by doing so the discs would wear out very quickly and would quickly reach a temperature such as to undergo deformations.

Use of the key on the light system headlight

In order not to lose it, push it all the way in, make it turn half a turn and release it: the key will come out of it so much that it needs to be put back in the normal safety position.

To operate the system, push it all the way, then make it complete a quarter turn.

To remove it from the headlight, you have to push it all the way back and make it go half a turn.

Both the half turn and the turn can be done indifferently from the right or from the left.

NB. If you try to spin it before it is pushed all the way it will break.

Attention, operate the system before starting the engine, the warning light must be on. With the engine running, the warning light should go out, which means that the dynamo has regular current. When the engine is stopped, the key must be disengaged from the working position (contact), otherwise the warning light would come back on, discharging the battery.

Starting the Engine

Open the tap on the right of the petrol tank and make sure that the fuel reaches the carburetor by pressing the button that acts on the float. Check that the gearbox is in the neutral position. Bring the advance lever of the magnate to the retard position (by pulling it retards), turn the throttle knob slightly, keeping the air lever closed and press the starter pedal firmly.

Especially in the cold season, it is advisable to let the engine run at low speed for a few minutes. In the meantime, you can open the air lever about halfway and slightly advance the magneto.

NB. The left fuel tap must be kept closed: it is used to for the fuel reserve and will therefore be opened only in this case.

Warm Engine Start

It is advisable to open the air lever about halfway; you must not press the carburettor primer button.

Starting the Motorcycle

After starting the engine, the motorcycle is pushed forward so that the support stand is in the raised position. You get on the saddle and pull the clutch lever to the end, then you engage first gear and gently let go of the clutch.

Use of the Gearbox

To change from lower to higher gears, you need to pull the clutch lever and at the same time close the throttle, move the gearshift pedal lever to engage the higher gear, gently release the clutch and accelerate at the same time.

To change from higher to lower gears the same maneuver without closing the throttle completely.

It is convenient to shift to higher gears when the engine tends to assume a high rotation speed. It is convenient to shift to lower gears when the engine is running low on effort.

Using the Air Control

Since the fuel is semi-automatic, it is necessary to maneuver the lever of the air closing it more or less according to the ambient temperature and the load conditions of the engine itself. It is obvious that closing the air increases the richness of the mixture and vice versa.

Practically it is advisable to reduce the air temperature to about half when the engine is under heavy load and at low speed.

Using the Magneto Advance Command

The control must normally be in a fully advanced position; the advance must be reduced only when the engine is under strong load and at low speed.

Stopping of the Motorcycle

The throttle is released, the rear brake pedal is pressed and the lever that controls the front brake is pulled, a few moments before the motorcycle stops, disengage the clutch, and shift the gearbox to the neutral position.

It is always advisable to use both the front and rear brakes at the same time.

In the event of sudden braking on a straight line, it is recommended to act more on the front brake and to avoid locking the rear wheel, thus having the certainty of obtaining good braking without the risk of skidding.

Stopping the Engine

To stop the engine, close the gas control, place the machine on the support stand and close the petrol cock.

Return to the garage

It is advisable to immediately carry out cleaning and a brief external inspection of the motorcycle as soon as it is in storage, especially after a trip made in bad weather or on a difficult road.

Preservation of the Motorcycle in case of long inactivity

Having to keep the motorcycle inactive for a long period of time, it is recommended:

- 1) Clean the motorcycle (see General Maintenance chapter).
- 2) Introduce a little oil into the cylinder through the spark plug hole and turn the flywheel a few turns in order to distribute a protective film against rust.
- 3) Bring the piston to the top dead center position with the valves closed.

To obtain this, the flywheel is required until the arrow drawn on it coincides with the one printed on the crankcase cover; then unscrew the cap for adjusting the rocker arm rod clearance and observe (to make sure that the valves are closed) if, by turning the flywheel a few centimeters, the rocker arms remain stationary.

If this does not happen, it is necessary to make a new turn of the flywheel and repeat the operations described above.

4) With the machine on the stand, keep the front wheel off the ground to isolate the rubber, especially if the floor is damp or greasy.

Carburation Faults and Remedies

If the engine does not start, or stops while driving, the cause may be:
Lack of fuel; check if there is a new fuel in the petrol tank and if the tap is open.

Obstruction of the fuel pipe or filter: clean them, blowing strongly to remove impurities.

Dirty carburetor: take it apart and wash it with clean petrol. Water in the carburetor; close the tap, remove the carburetor, and clean it thoroughly.

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Ignition Faults and Remedies

If the engine does not start, and the cause does not depend on the carburetion, look for the problem in the ignition.

The spark plug does not spark, remove the spark plug, place it on the cylinder, run the engine for a few turns, if it does not spark it may depend on a damp spark plug, if the motorcycle has been exposed to rain it may be missing or insufficient ignition, in this case remove the spark plug and let it dry.

Dirty spark plug: clean with pure petrol and a wire brush.

Cracked insulation: change the spark plug.

Spark plug electrodes not sized: check that the gap is 0.5 mm.

Spark plug wire: check that it is not broken, check the connection of the wire.

If, even with a new spark plug, there is no spark, check the points of the magneto they must be 0.3 mm ~ 0.4 mm, if dirty they must be cleaned.

Ignition too early or delayed: check the phase of the magnet.

Compression Faults

Loose head and cylinder locking nuts.

Spark plug not well screwed or without gasket.

Poor sealing of valves to valve seat.

Wrong valve gap.

Engine overheating

If the engine overheats the causes may be:

Oil pump not working, bad or old quality oil, blocked filter or piping.

- 1- Ignition too delayed.
- 2- Too poor mixture.
- 3 - Cooling fins packed with oil and dirt.

Proper Use of the Motorcycle

For the good use of the motorcycle avoid jerking with strong braking and rapid acceleration; run at a constant speed if possible.

Careful driving allows a saving of fuel and lubricant, a reduced consumption of tires and a normal wear of all the parts that make up the machine and the engine.

INSTRUCTIONS

For Maintenance of the Motorcycle "Airone"

The Airone type motorcycle does not require any special maintenance practice. The rules that we give here are those that every good motorcyclist, taking care of his vehicle must not forget.

Lubrication of the Motor Group Gearbox

In this type of engine, the oil not only has the function of lubricating, but also has the very important function of cooling the engine, as the function of water in water circulation engines.

Approximately 60 liters of oil flow from the tank to the engine and from the engine to the tank during each hour of operation. A gear pump sucks the oil from the tank and injects it into the crankshaft from the distribution side.

The oil then penetrates the internal ducts of the crankshaft and exits from the holes made therein under the big end.

After having lubricated the latter, the oil, passing through the rollers of the bearing of the big end, is on the sides of this, and by centrifugal force, is projected on the pin, on and on the cylinder walls, as well as on the gearbox gears, lubricating and cooling these parts.

The overabundant oil, by means of oil scraping rings fitted to the piston, is fed into the crankcase, and collects in the bottom of the case. From here, by means of a vane pump, coaxial with the first pump, the oil is sucked and pushed into the oil tank.

We also point out that the direction of rotation of the motor, horizontal arrangement of the cylinder, favors the perfect lubrication of the cylinder itself, since the oil droplets are, by centrifugal force, projected onto the upper part of the cylinder, whence by gravity, the oil descends to lubricate the lower part, while if the engine rotated in the same direction as the other engines, only the lower or front part of the cylinder would be perfectly lubricated, since, by centrifugal force, the oil droplets would be projected only on this.

Important Notice

For engine lubrication use Shell oils in the following grades:
below 10 C use Double Extra Shell
above 10 C use Triple Shell.

The oil must be changed every 2000 km.

This must be done when the engine is hot. Remove the filter from the tank by removing the perforated pipe fixing bolt (see fig, 4) and the nut that holds the filter, then clean it thoroughly.

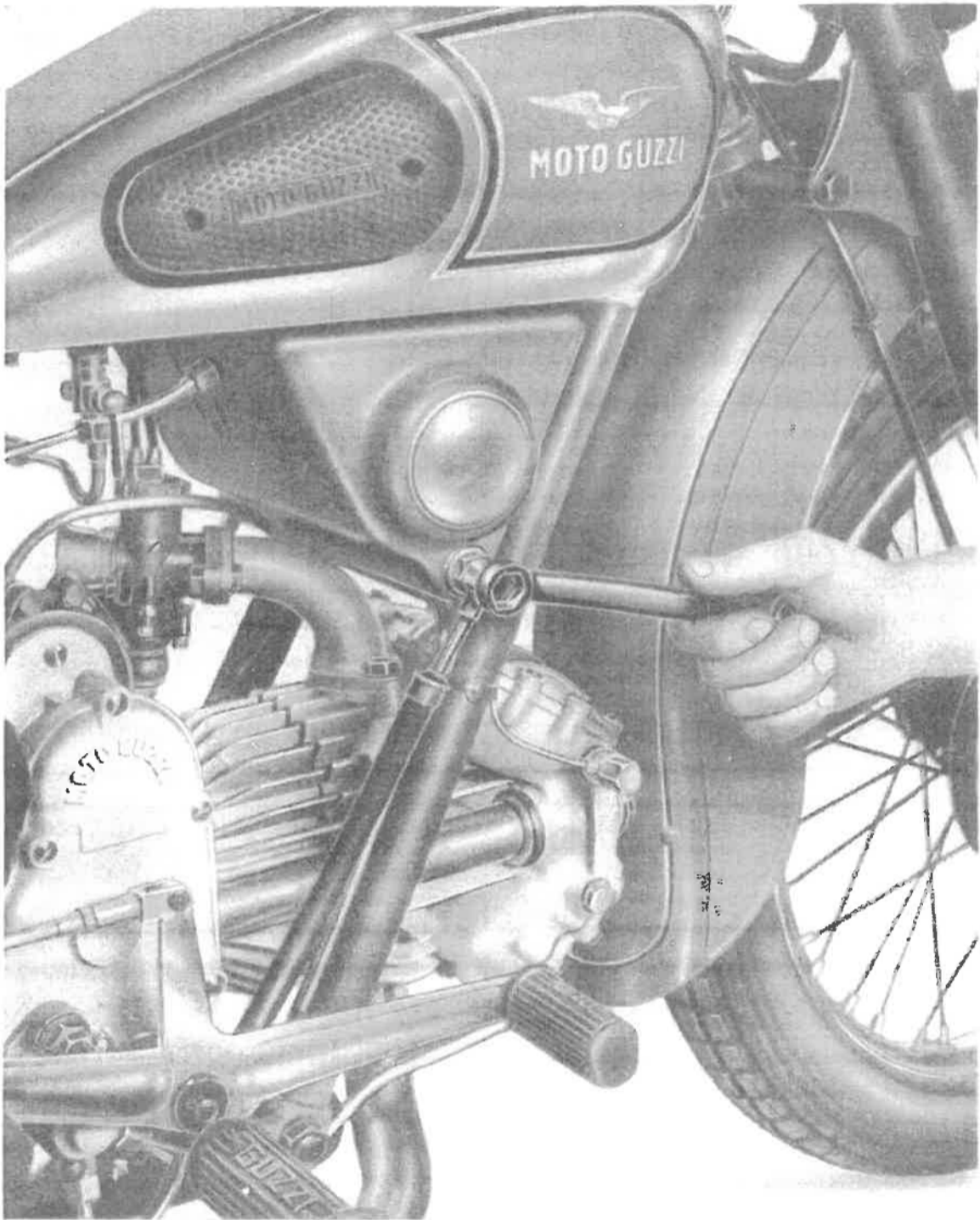


Fig. 4

Clean the filter in the motor box and all the pipes; the utmost care must be taken when reassembling, in order to avoid oil leaks or air aspirations which would cause the pump to malfunction with serious damage to the engine.

An automatic check valve is mounted on the pump. It is not recommended to tamper with this device which has been adjusted in the factory.

N.B. = To make sure that the oil circulates regularly, you must open the tank cap and observe, when the engine is running, if the lubricant comes out of the special tube.

The safest practical way to make sure that the engine oil is not defective is to touch the oil drain pipe near the tank while running. It must be lukewarm after a few minutes of running.

Lubrication of the other components

It is recommended to lubricate, by means of the special pressure pump for ball grease nipples, the pivot pin of the rear swingarm, and on the telescopic fork, for the pins of the adjusting rollers, and the internal guide bushings, by means of the special grease nipples. We recommend the Shell Retinax CD for this.

It is good to carry out this lubrication every 1000 km of travel.

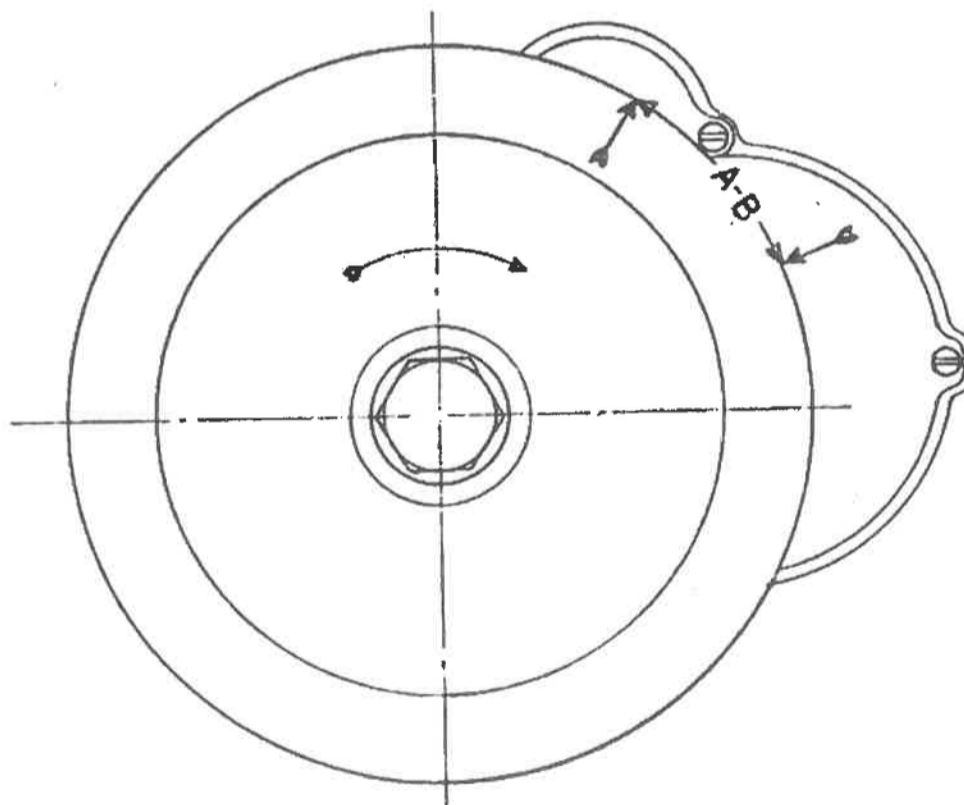
With Shell Retinax CD every 1000 km you have to keep the clutch thrust bearing capsule and the hardened screw for clutch control lubricated.

The bearings of the wheel hubs, of the magneto, of the dynamo only need to be revamped at very long intervals. These operations will be carried out during the general overhaul of the motorcycle.

Lubricate with Shell Retinax CD, once a year, the springs contained in the special box and the joint of the rear swingarm tie rods.

Drive Chain Lubrication

Although the chain is automatically lubricated by the breather that opens at the hinge of the chain, it is advisable, approximately every 1000 km, to wash it with petroleum or naphtha and spread it with Shell Retinax CD.



$$A = \text{mm. } 35 \div 40$$
$$B = \text{mm. } 80 \div$$

Fig. 4 bis

Valve Adjustment

Adjust the rocker arms so that the clearance is 0.20 mm for both valves.

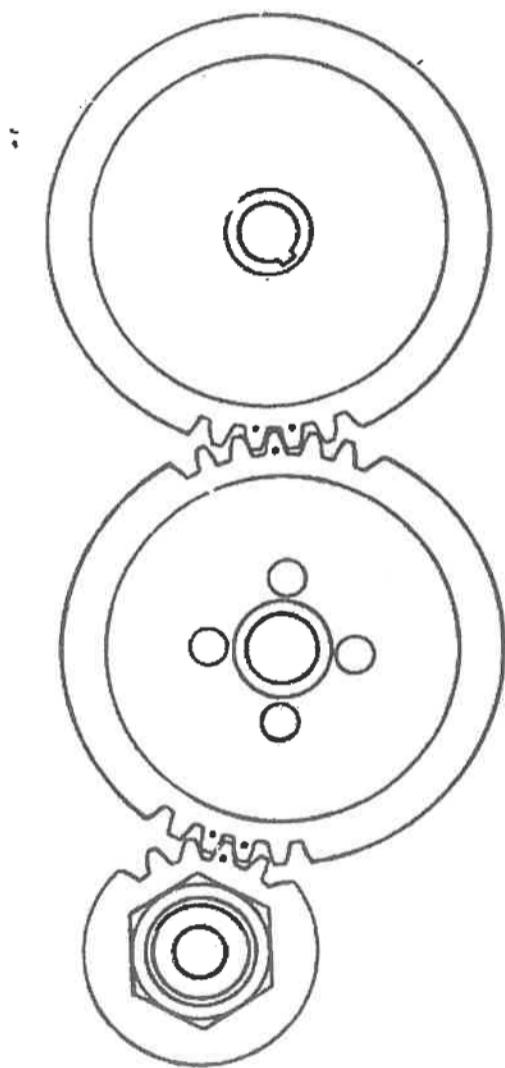


Fig. 5

When the arrow on the flywheel is 35 ~ 40mm measured on the periphery of the flywheel from the one marked on the cover (see fig. 4 bis A), the intake valve, also the exhaust is in phase.

The marked tooth of the drive axle pinion must enter between the marked teeth of the camshaft gear and the marked tooth of the camshaft must enter between the marked teeth on the magneto drive gear (see fig. 5).

Phasing the Magneto

When the engine is at the end of the compression phase, with the piston at top dead center, with the valves closed and with the advance control in the "All Anticipated" position, the platinum-plated points of the magneto breaker must begin to open, when the arrow marked on the flywheel is about 80 mm (measured on the periphery of the flywheel) from that marked on the cover (see fig. 4 bis B).

Adjustment between rocker arms and push rods

Adjustment must be carried out when the engine is cold. Unscrew the special cap nut with gasket from the cylinder head, using a special socket wrench. Used a screwdriver to release the rocker arm nut and screw or loosen the screw with a wrench that acts on the lock nut.

When adjusting valve lash it is necessary not to leave any play and take care that, if not letting go, the screw does not push on the push rod.

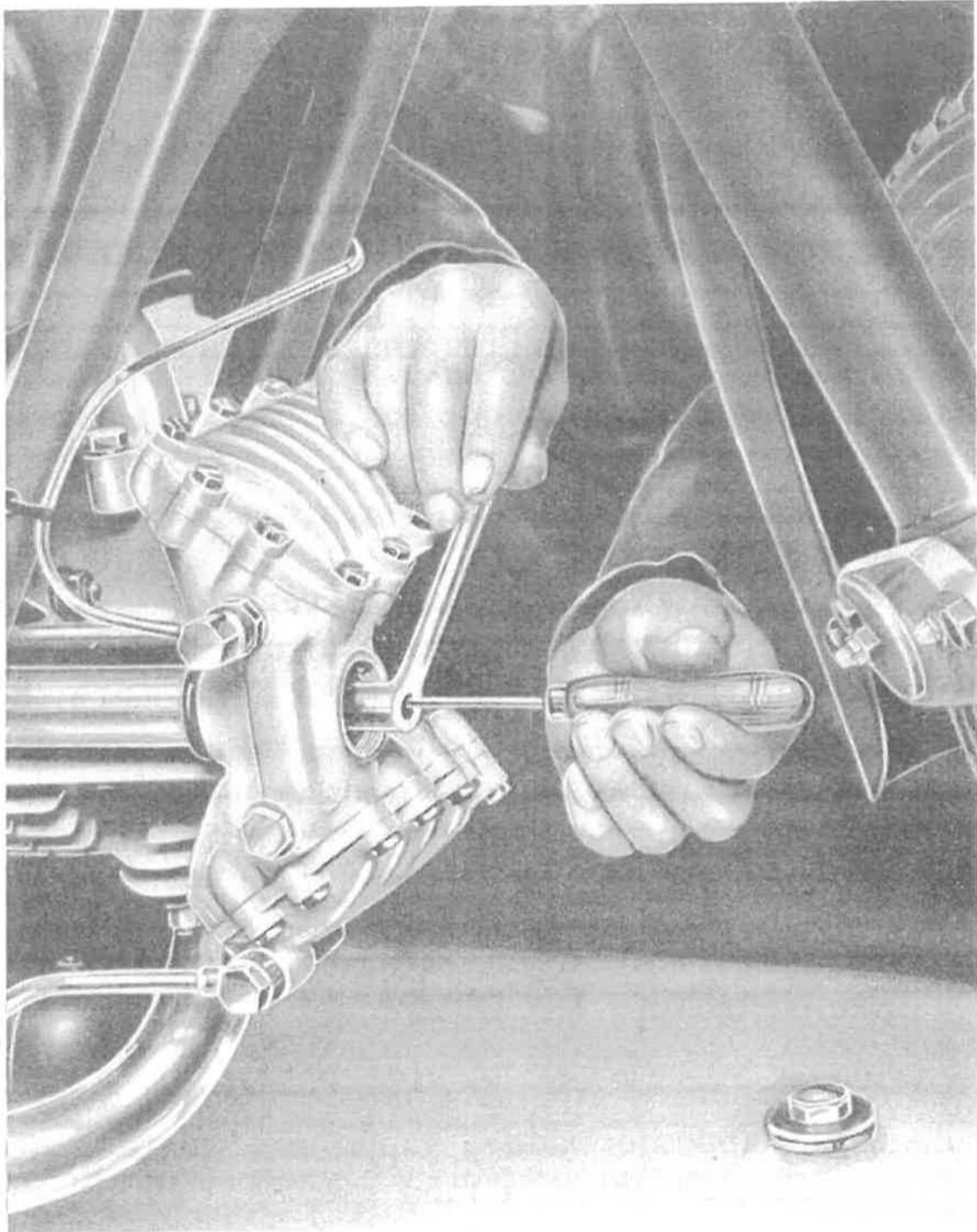


Fig. 6

Once the adjustment has been made, holding the screw firmly, locks the nut (see fig. 6).

N.B. - Check again at the end of the work that the adjustment screws do not make hard contact with the push rods, it may happen that when locking the nut the latter drags the screw, varying its adjustment. The adjustment must be made with the piston at top dead center, with closed valves, and precisely at the end of the compression phase.

Ignition

In this engine, ignition is provided by the high voltage Marelli BL 1 - MBL 22 magneto.

Check the platinum-plated pins of the points by cleaning them with a fine-cut file. If you consume them, always replace them using original material. Every 2000 km remove the points hammer and lubricate the pin with mineral grease. Coat the cam surface and the ring guide in the body with mineral oil.

When fitting the breaker make sure that the key fits exactly in its seat.

Check the opening of the points; it must be three to four tenths of a thousand meters.

Spark plug: Marelli CW 175 A is no longer available, most forums recommend **NGK B7ES** (may require a shim washer as the new style of spark plugs are either short or long reach, the original was in between).

Check the condition of the insulation; if you find cracks or breaks, replace the spark plug. The distance between the electrodes is 0.5 mm.

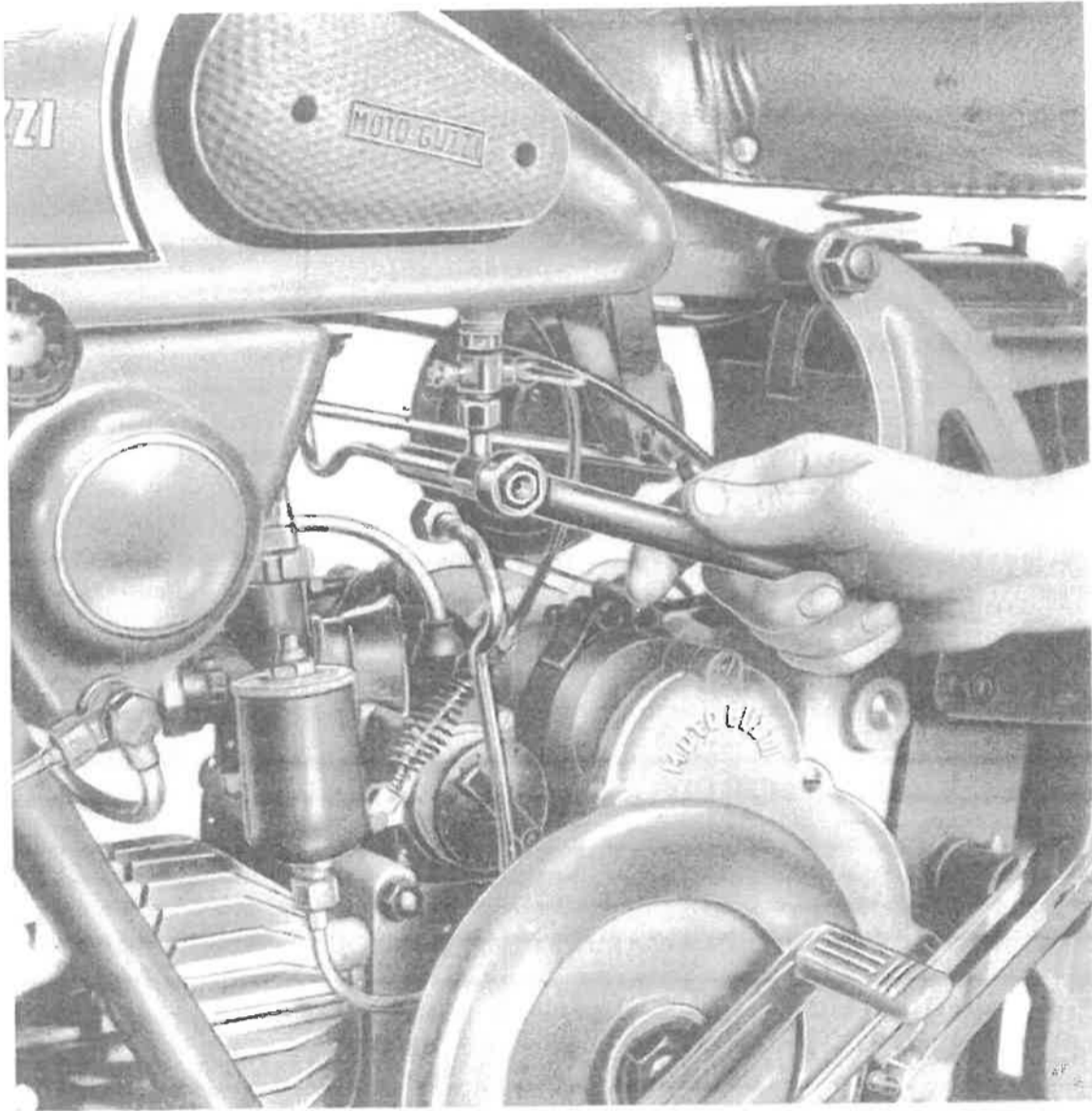


Fig. 7

It is not advisable to use pure petrol.

It is good not to change the type of the mounted spark plug. It is recognized that many engine problems can be avoided by the constant use of a suitable type of spark plug.

Fuel supply and Carburation

Approximately every 2000 km it is advisable to clean the fuel filter and the carburetor.

Remove the filter and make sure it is intact (see fig. 7). If the fuel taps are leaking, lightly grind the conical surface, if necessary, change the return spring. Clean the fuel pipes using a jet of compressed air. Check that the small hole in the gas tank cap is clear.

Adjustment of the Carburetor

Carburetor: Dell'Orto brand, type S.B.F. 22.

Clean the fuel bowl thoroughly and make sure that the pipe that carries the fuel from the fuel bowl to the jet is clean (blow with compressed air). To clean all the holes, it is recommended to use an air jet and it is not recommended to use metal wires, needles, etc. which could alter the diameter of the holes and make the carburetion adjustment problematic.

Normal adjustment:

Main jet	- Summer 100/100
	- Winter 105/100
Minimum jet	45/100
Valve	70

Adjustment of Fuel Mixture

Adjustment is carried out by changing the diameter of the jet (replacing the latter with one having a higher or lower number) and on the position of the needle.

By increasing the number of the jet and raising the needle, the air/fuel mixture is enriched, the opposite occurs by decreasing the jet and lowering the needle. Indications of a rich mixture are: black exhaust smoke, rough running with low blows, sooty dark-colored spark plug insulation.

Poor mixture indications are: backfire to the carburetor; light colored sparkplug with porous tips.

Remember that with cooler temperatures, it is necessary to enrich the mixture; vice versa it will need to be depleted if the temperature increases. With heavy petrol it is necessary to increase the jet number and raise the needle.

Minimum Idle Adjustment

It must be carried out with the engine warm. It is carried out by acting on two screws, a horizontal one placed immediately after the diffuser adjusts the idle to the minimum.

By screwing this screw into its seat, the mixture is enriched and vice versa. The other screw inclined with respect to the carburetor body axis, adjusts the "All Closed" position of the gas valves.

First adjust the inclined screw so that with the throttle fully closed, the engine can still run at low speed. Then screw or unscrew, depending on the case, the horizontal screw until the desired minimum idle is obtained.

N.B. - Carefully inspect that there is no air infiltration between the carburetor and intake manifold, or between intake manifold and cylinder head. If an air leak is present, the adjustment of the minimum idle is impossible.

Cleaning Exhaust Pipe and Silencer

Approximately every 10,000 km remove carbon deposits with wire brushes and clean carefully. Disassemble the interior and check that the perforated sheet is not rusted or damaged.

Carefully clean the drainage holes.

During reassembly take care that the various pieces match perfectly to avoid exhaust leaks.

Head and Valves

Approximately every 5000 km it is necessary to clean the combustion chamber, and possibly grind the valves.

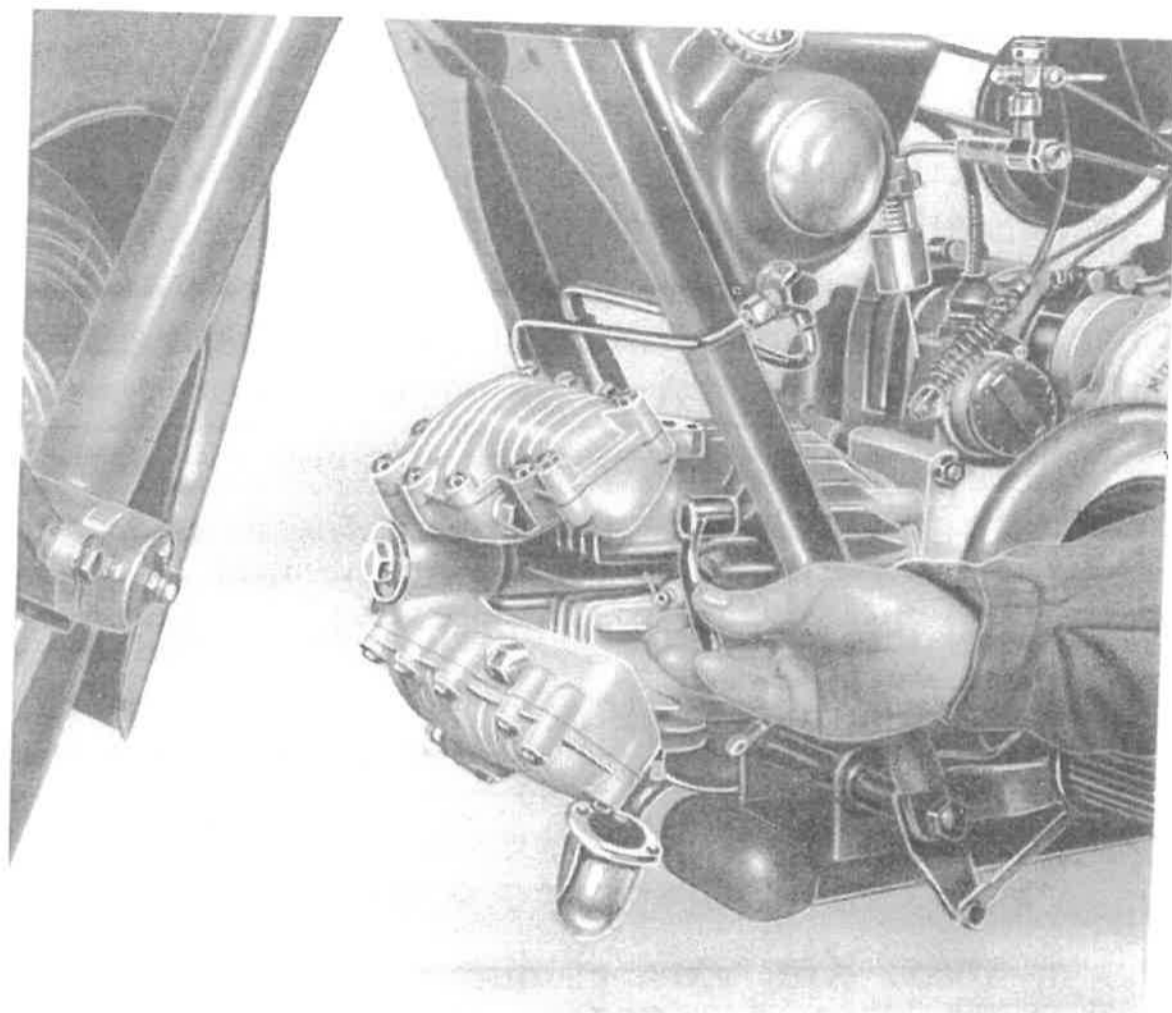


Fig. 8

To disassemble the cylinder head, it is necessary to remove the exhaust pipe, remove the nut and bolt for connecting the oil pipes and the pipe with the carburetor. Using a special socket wrench (supplied) remove the four nuts on the cylinder head studs (see fig. 8) then tap lightly with a mallet around the periphery of the head, removing it and sliding it forward.

After removing the head, make sure that the valves close perfectly in their respective seats; to check intake and exhaust, observe that liquid does not pass between the valves and valve seats.

If a faulty seal is found it is necessary to disassemble the valves and grind them on their seats. To disassemble the valves, it is necessary to proceed with the complete disassembly of the head by removing the two rockers, the springs by means of the special extractor and the valves.

For cleaning it is good to use blunt scrapers and wire brushes. For grinding it is advisable to use a mixture of oil and very fine grind. After grinding, it is advisable to carefully wash the head in order to make sure that all traces of abrasive have disappeared. The cleaning of the upper part of the piston is carried out with a scraper and wire brush.

If the cylinder and piston are removed, take care not to rotate the piston rings.

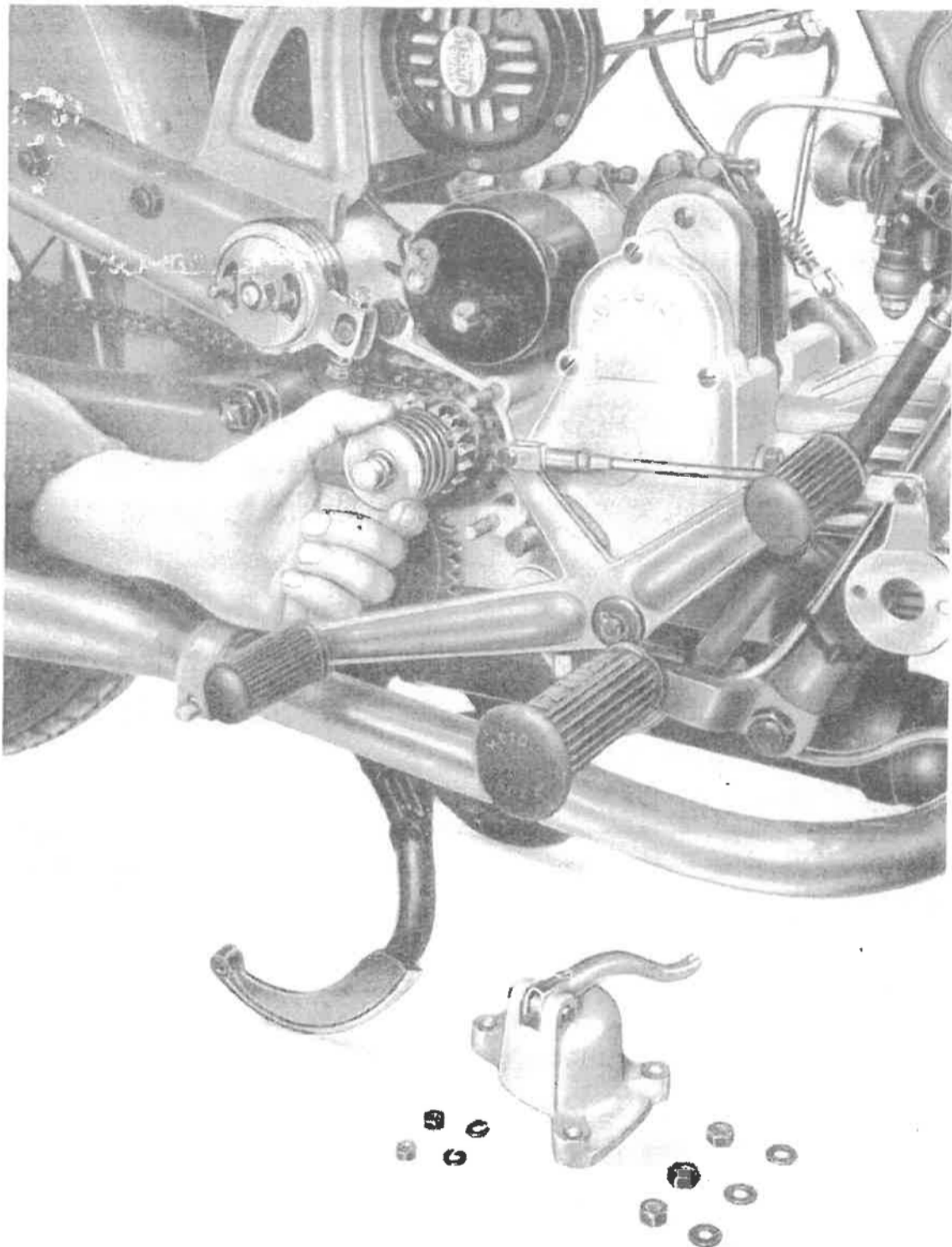


Fig. 9

N.B. - When reassembling, be careful (if the oil tank pipes have also been detached) not to invert the chrome bolt with 3 diameter hole for connecting the oil recovery pipe from the head, with the two bolts for connecting the pipes to the tank having a 6 diameter hole and with chromates.

Clutch Adjustment

In practical use, there are three drawbacks that may arise:

- 1) The clutch tears, that is, the engagement is abrupt and violent; this may be due to excessively loaded clutch discs. Remedy: Loosen the knurling disc.

Discs worn or warped: replace them. Impurity between discs. Wash with petroleum, introducing it through the hole in the top plug made in the left half crankcase and unloading it, after having rotated the control by hand and repeatedly moved it, from the hole in the lower plug.

- 2) The clutch slips, ie. sliding between the discs occurs even when the control is in the "fully engaged" position. This is due to springs that are too tight. Remedy: (after removing the clutch spring cover), screw in the knurled disc or replace the springs (see fig. 9).

Lack of play between external control lever and internal control rod. Adjust this clearance to measure (about 0.2mm) by acting on the special tensioner located on the sheath of the flexible coupling.

Excessive oil infiltration in the clutch. Remedy: wash with petroleum. If the problem is repeated, it is necessary to check the condition of the oil seal and clean the duct made in the crankcase which drains oil onto the chain.

3) -The clutch does not fully disengage. In other words, there is dragging between the fixed clutch body and the movable one even when the control is in the "fully disengaged" position. This causes difficult starting and noisy maneuvers of the gearbox.

The problem may depend on excessive play between the lever and the internal control rod (adjust the play: see above).

Excessive sagging of the control sheath: replace it.

Kneaded discs: wash (see above).

Adjusting The Chain Tension

To adjust the chain tension, loosen the nuts of the rear wheel axle, the lock nuts on the two tensioner bolts and the upper nut anchoring pin of the brake plate holder.

Then act in equal proportions, so as not to run the wheel off-centre, on the two chain tensioners when the swingarm is at mid-travel.

By operating in this way, you will notice that when the machine is on the stand the chain is not excessively tight. This is necessary because, otherwise, there would be excessive tension when the swingarm is halfway.

Adjustment of the Telescope Fork

In normal conditions of use, after traveling about 1000m km, it is good to check the play between the sliding arms, runners and rollers.

To carry out this check, it is necessary to raise the front part of the machine just enough to remove the wheel from the ground.

Then, grasp the two arms A with your hands, taking care to place the thumb of each hand on the lower edge of the box B and at the same time on the sliding arm A, to feel any play.

Adjust the arms as follows: loosen the bolt C on the disc of the guide roller D, then with the appropriate wrench turn the frame of the pin E, clockwise for the left arm just enough to bring the adjustment roller on the arm you are adjusting to eliminate the play.

In these conditions the arm A cannot slide the shoe roller. Then rotate in the opposite direction to; preceding the framework of the pin E, just enough to move the physical D by three or four millimeters measured on the edge of the stressed disc. To obtain this measurement, it is necessary to go to F before making this movement.

Once the adjustment is complete, lock the bolt C on the disc D, check as already mentioned above and as shown in figure 10 that there is minimum play between the arms, pads, and rollers, so as not to block the movement.

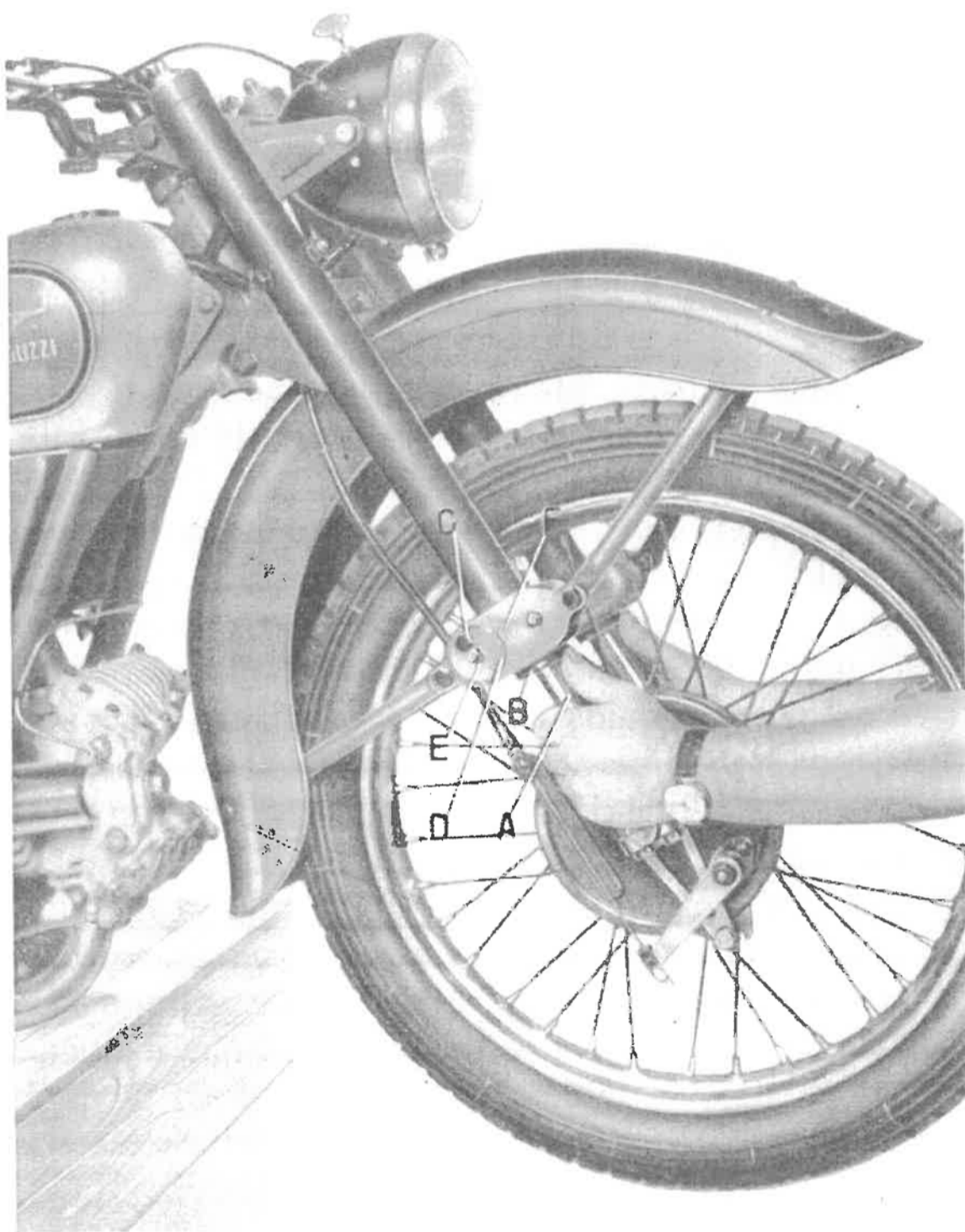


Fig. 10

It is absolutely necessary to keep the arms well adjusted, so that, if sensitive play is formed, the arms, skids and rollers would become difficult to make any further adjustment with consequent unsatisfactory operation.

Steering Adjustment

If the steering has play, the ball movements are subject to damaging shaking. To adjust it, it is necessary to loosen the nut for the steering head tightening bolt, then screw the nut for steering tightening located under the steering brake control handwheel just enough to remove the play while keeping the movement of the fork free.

At the last adjustment, make sure to lock the nut for the steering head tightening bolt again.

Swingarm Adjustment

To adjust the swingarm, unscrew the bolt holding the joint of the rear brake rod on the left side, loosen the nut on the left side as well and the lock nut on the right side, holding the control panel still with the special wrench (see fig. 11) . Then turn the pin the required amount (right to loosen, left to tighten) using the square end of the pin (right).

After adjustment, tighten the nut on the left side and the counter nut on the right side.

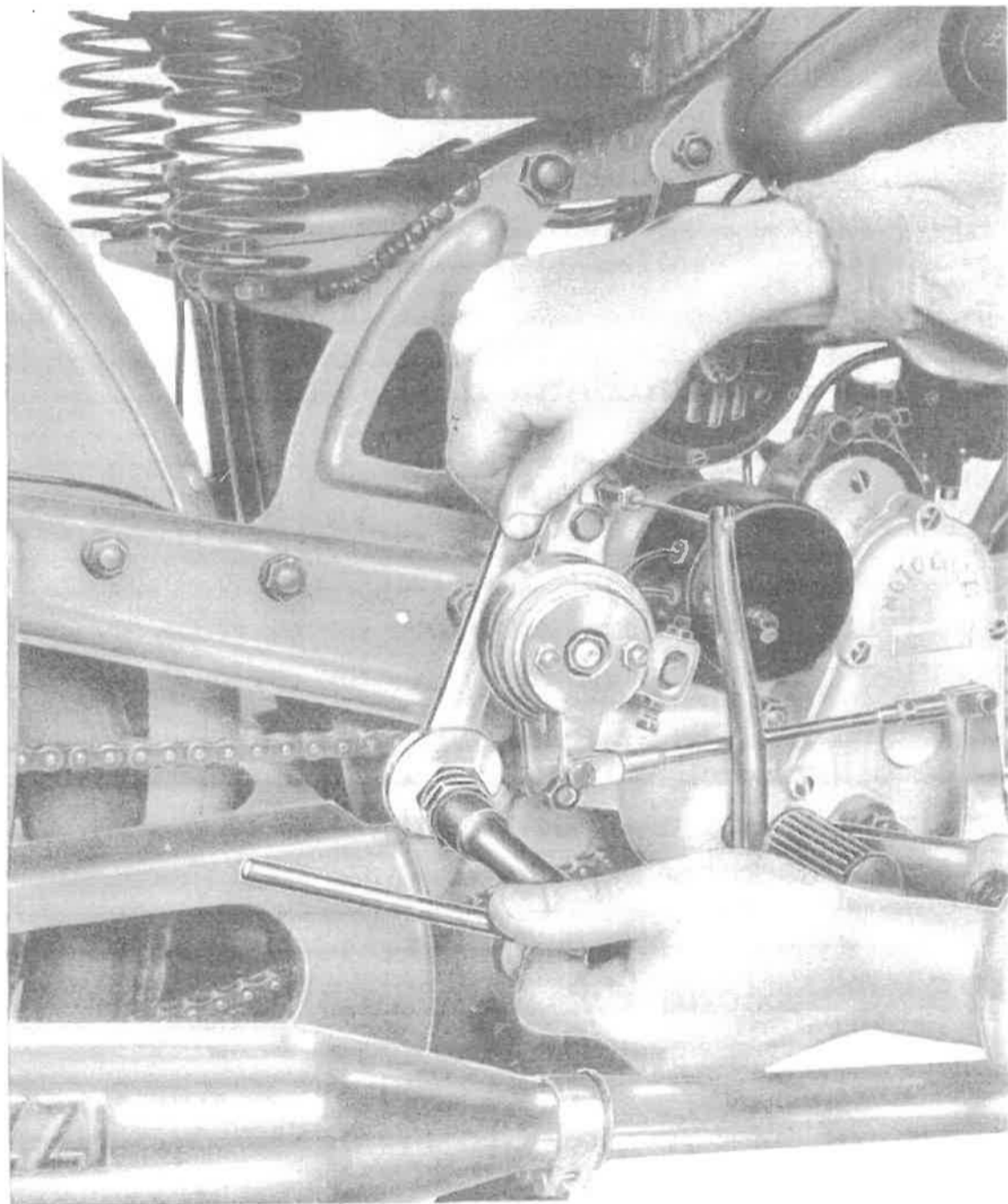


Fig. 11

The springs are carefully fitted to size in the factory. It is therefore inadvisable to vary the load. When you want to disassemble the pack of springs for cleaning, greasing or other, it is necessary to carefully observe the arrangement of the different parts (see fig. 12) in order to be able to reassemble them in the same order.

Reassemble the springs, these must be compressed exactly on both sides by means of the two sleeve nuts (keeping the machine resting on the stand, and therefore with the wheel raised) by about 26 mm in relation to their position of unloaded springs.

N.B. - After loading the springs, check that the measurement from the start of the spring tube to the starting plane of the loaded springs is approximately 14 mm.

Brakes Adjustment

For a good adjustment it is necessary that there is play (measured at the end of the pedal if it is the rear brake and at the end of the hand lever if it is the front brake) of about 10 ~ 15 mm before the friction material comes into contact with drums.

This play is adjusted by acting on the tensioner located on the right side of the fork for the front brake (see Fig. 13 (and on the nut screwed on the tie rod for the rear brake)).

Front Hub Adjustment

The front hub is equipped with tapered roller bearings and are adjustable. Remove the dust cover on the left of the machine, check the lateral play by loosening the lock nut and tightening the nut just enough for adjustment.

Then tighten the lock nut (see fig. 14). It is necessary (after tightening the lock nut) to have a small lateral play (0.1 mm); it is thus certain that the tapered bearing rollers are not over tightened causing rolling resistance and rapid wear of the parts.

Front Wheel Removal

Detach the brake cable wire from the front brake lever by removing the pin, clevis and cotter pin. Remove the four bolts that tighten the central axle of the wheel (see fig. 15).

Removal of the rear wheel

Remove the rear brake linkage, unscrew the rear brake torque arm anchor bolt from the swingarm (left side), loosen the two-wheel axle nuts just enough to be able to detach the two chain tensioning straps and remove the wheel by pushing it forward.

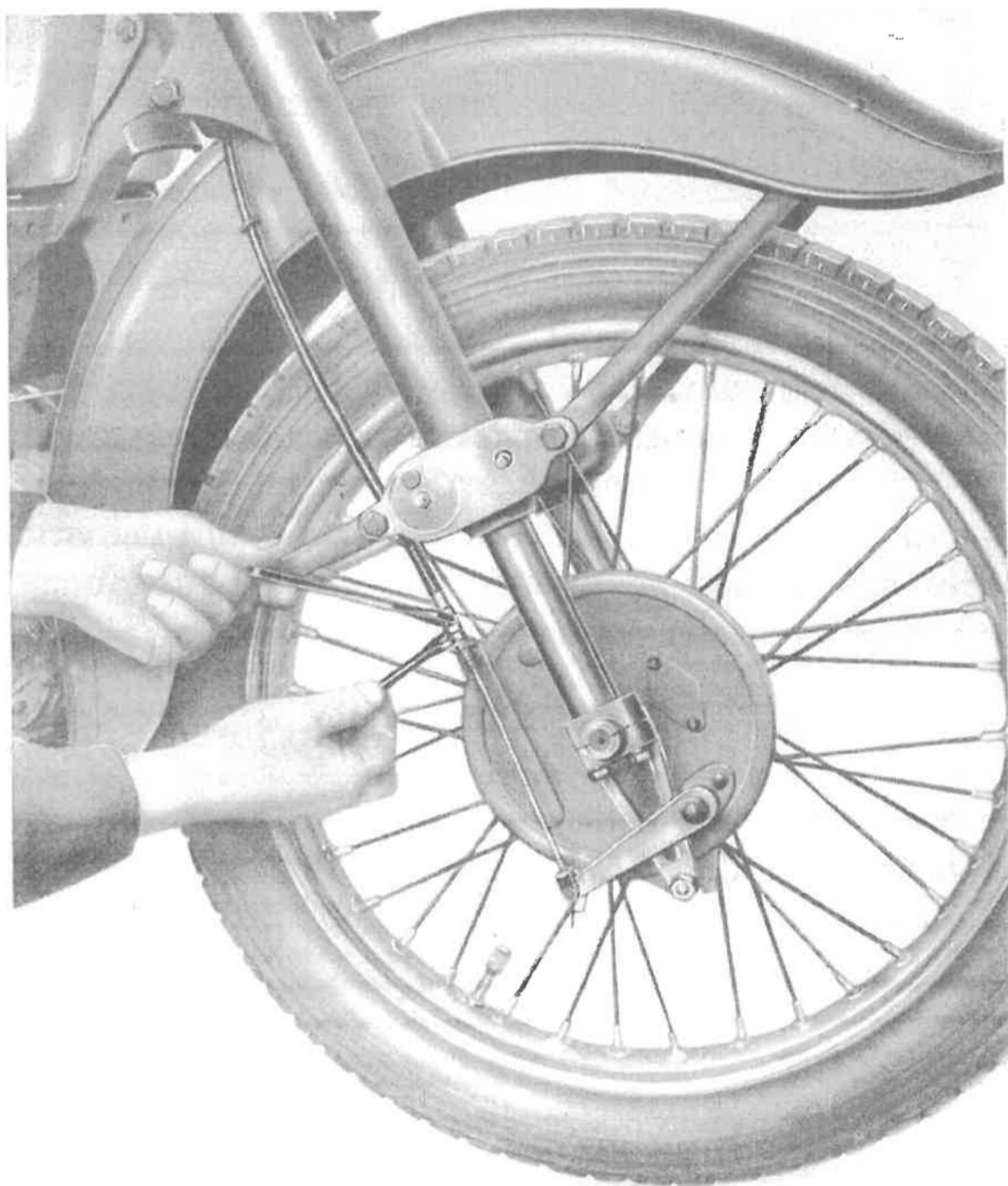


Fig. 13



Fig. 14

Checking the Shock Absorber Fluid in the Telescopic Fork

(Refer to figure 16)

If you feel an abnormal fork function (check that the cause is not due to bad adjustment) or after having traveled about 10,000 km, check the fluid level by carrying out these operations:

Unscrew the nut A and the upper cap B of the fork arm C and loosen the internal cap D using a special tube spanner.

Then remove the shock absorber body E, slowly, taking care to let the liquid drip into the inside of the arm F where it is contained before completely removing the body E.

Check the liquid level, the height of which must be 26 ~ 28 cm measured from the inner bottom of the sliding arms F.

If you need to add liquid, introduce it into the sliding arms it is good to use a piece of tube that poured between the sliding arm and the inside of the tube G.

It is recommended to use special liquid for shock absorbers.

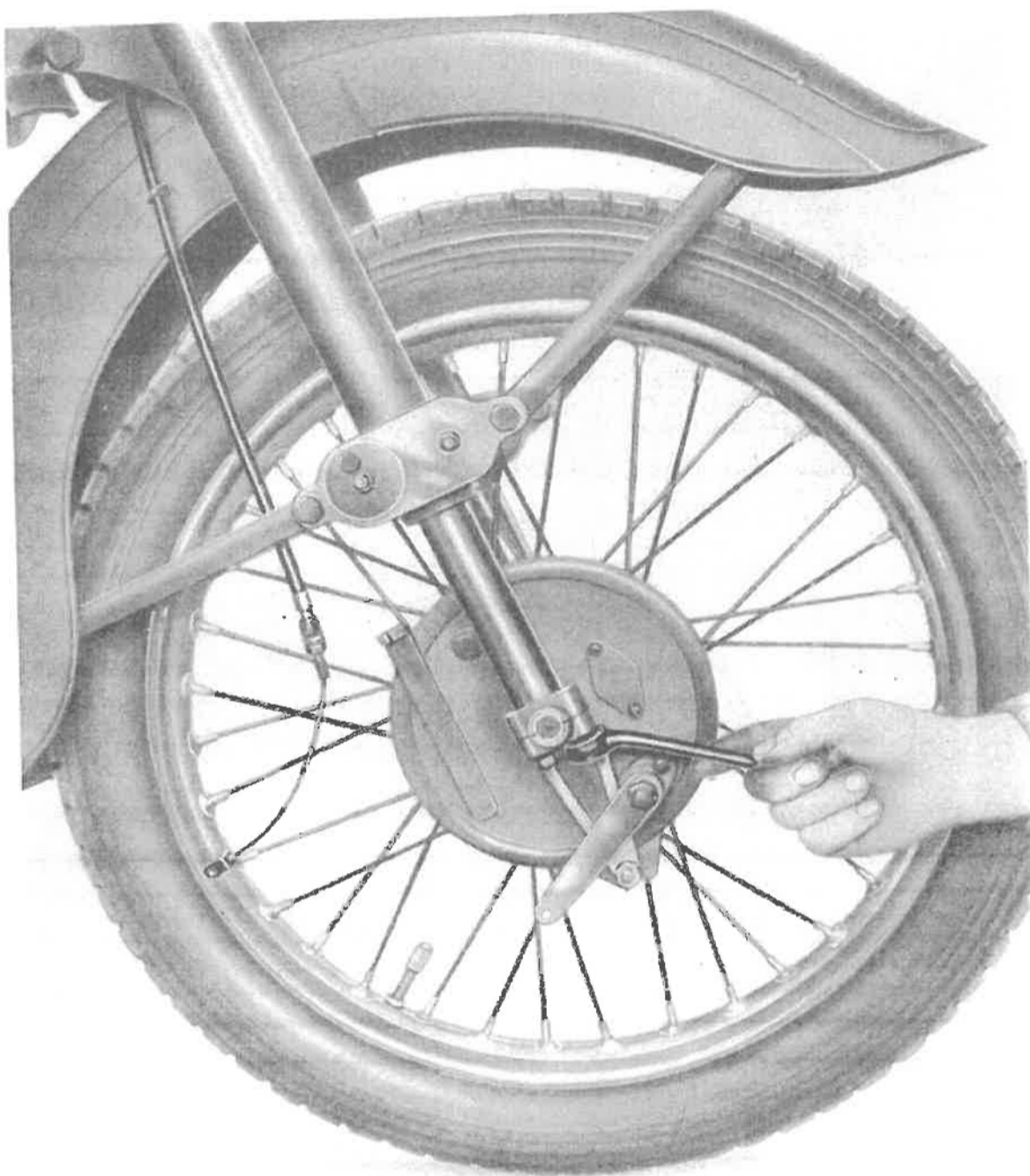


Fig. 15

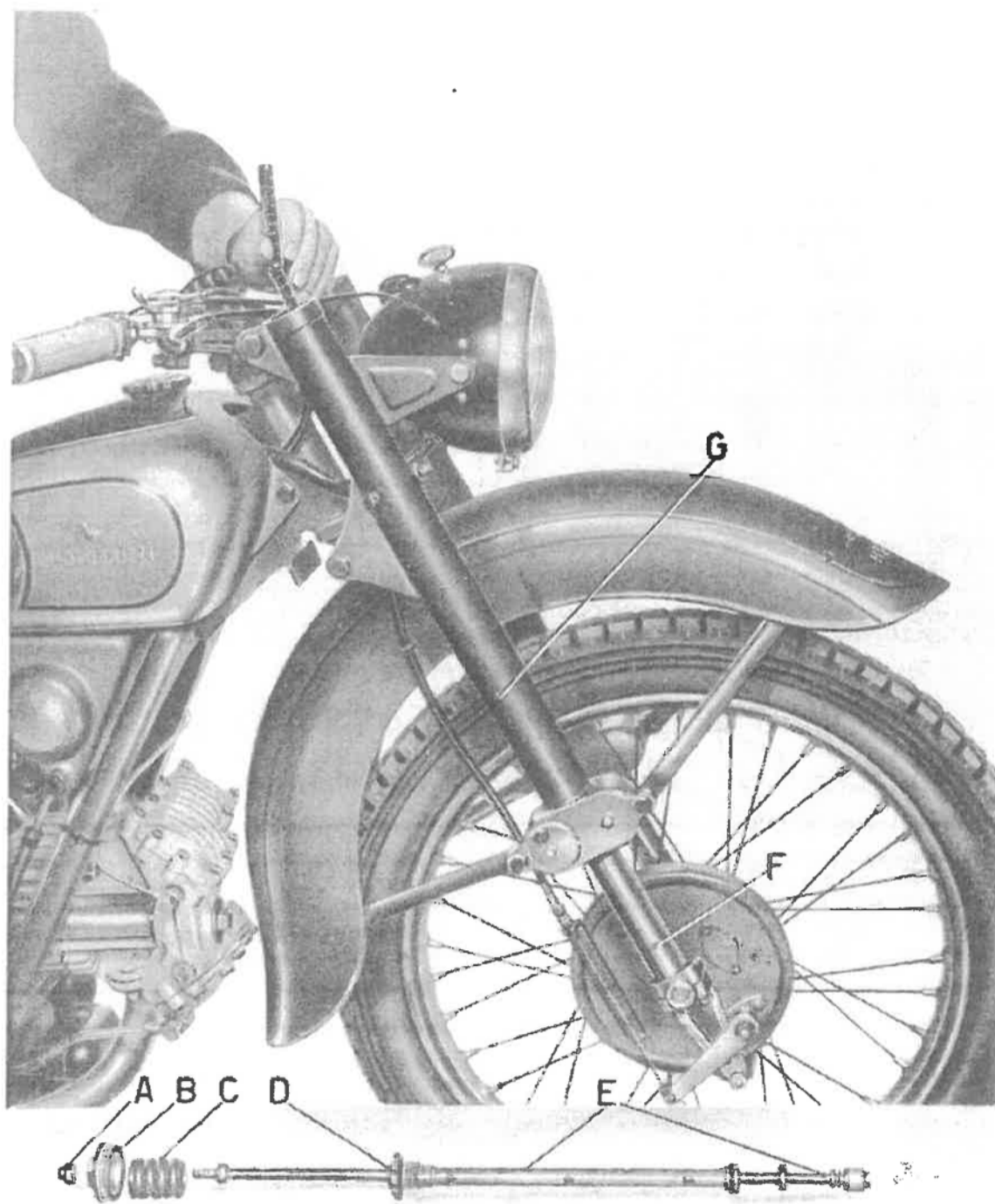


Fig. 16

Checking the fluid in the rear shock absorbers

If you notice an abnormal functioning of the shock absorbers, or after traveling about 5000 km, it is advisable to check the fluid level by removing the shock absorbers from the machine.

To carry out this operation it is necessary to unscrew the two sealing nuts A with relative washer and remove the shock absorber.

Unscrew the upper cap B and slowly bleed (so as not to spill the liquid) the assembly formed by the aluminum body C and the rod E with the piston mounted, taking care not to remove the internal cylinder.

Check the level by unscrewing the appropriate screw D located on the external tube of the shock absorber; if no liquid comes out of the hole, add it until it comes out of the hole itself.

If you need to add liquid, it is recommended to use special liquid for shock absorber.

After mounting the shock absorber, make sure that the rod E carrying the piston slides all the way.

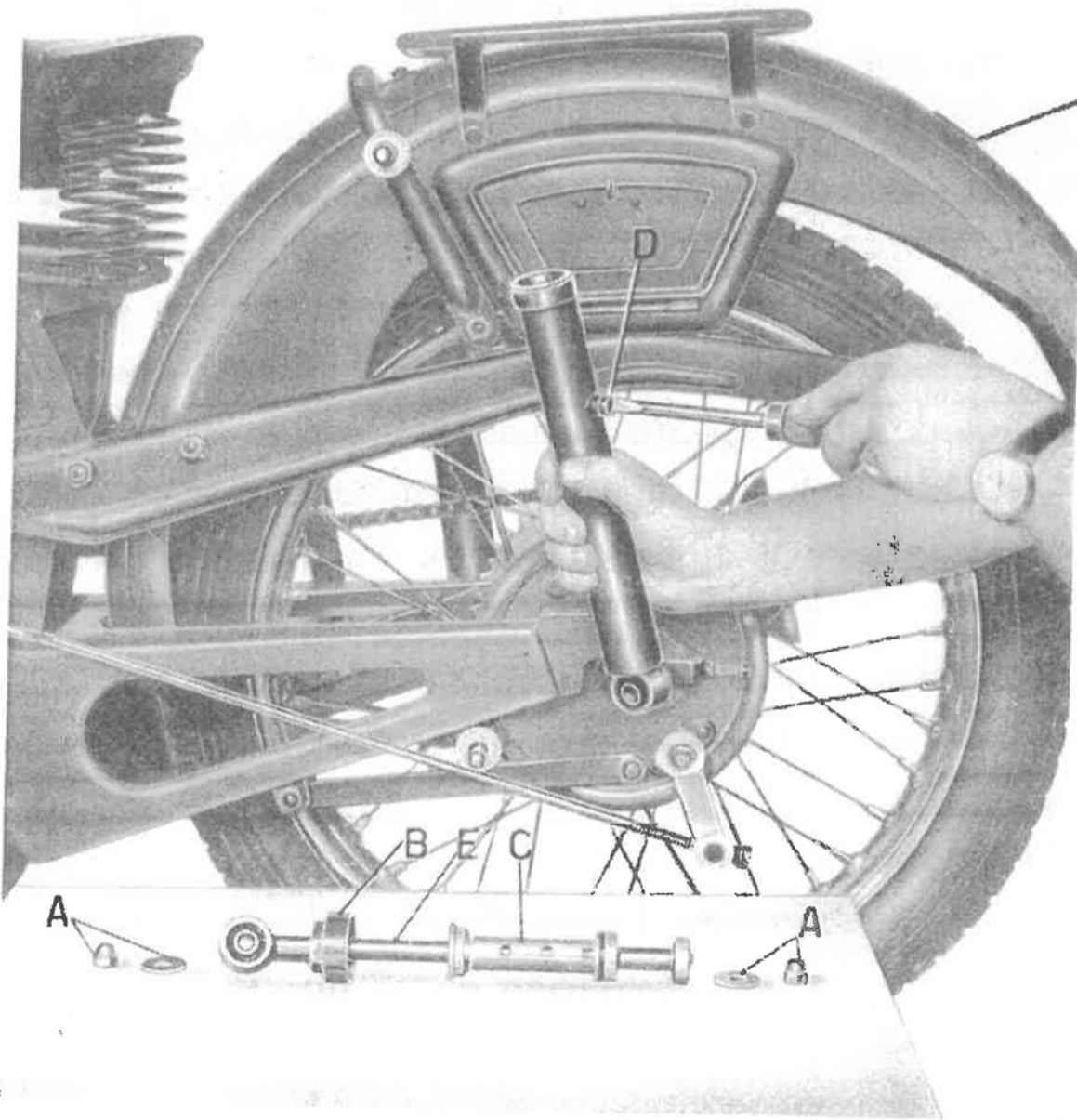


Fig. 17

Electrical System

Dynamo

Every 3000 Km approximately check the condition of the brushes. These must slide freely within their guides. If they are dirty, they must be cleaned and if worn, replace them.

Check the condition of the collector; if it is blackened, clean it with petrol (never use petroleum for this operation). It is not advisable to use emery paper even if it has a very fine grain.

Supported ball bearings only require lubrication at very long intervals. The rotor is removed, and the bearings are re-greased with special mineral grease.

The calibration of the automatic voltage regulator is performed on a test bench, and it is not advisable to change it.

Battery

To access the battery, carry out the following operations:

Remove the 2 saddle spring retaining bolts and turn it over, unscrew the bolt that holds the battery clamp, and remove the cover.

For the maintenance and storage of the battery, the recommended standards are:

Periodically check the electrolyte level, add distilled water so that the upper edge of the plates is completely submerged.

This check must be performed more frequently in the summer months (approximately every 20 ~ 30 days), while in the winter months it must be performed approximately every 40 ~ 50 days.

It is advisable to keep the terminals and the top of the battery elements clean and dry.

It is convenient to grease the part of the terminals themselves with petroleum jelly.

Electrical Cables

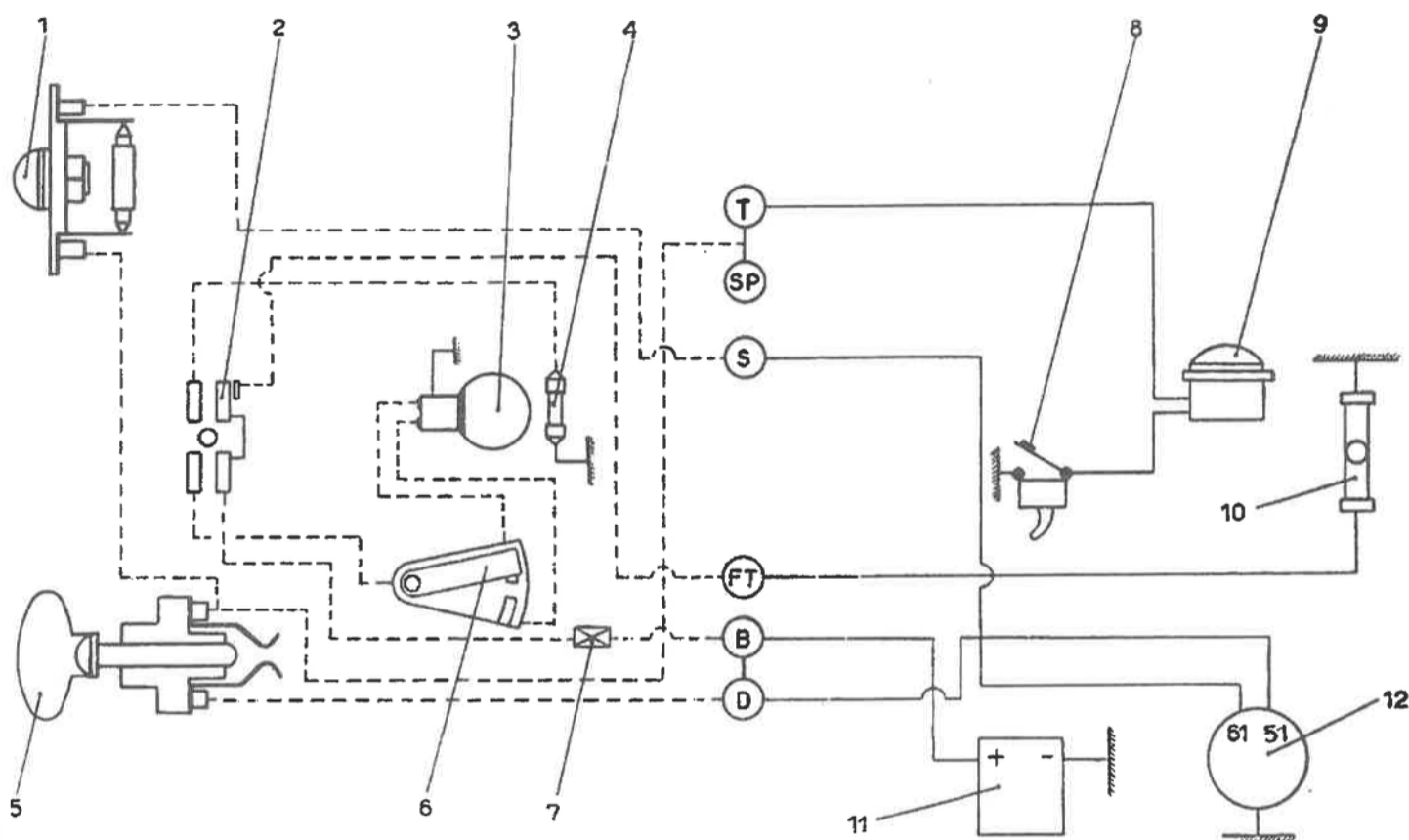
Check the external condition especially in the areas where sliding between frame and electrical wire insulation can occur. If any defects are found, replace the cables.

Headlamp

The headlight lens to shell is nearly watertight; this makes internal inspection virtually superfluous. Remember that the mirror surface of the dish does not need to be cleaned because it scratches easily and loses its luster.

The focus is fixed, the illumination by the filament of the lamp.

Use fuses of the same size and power as the 25/25 Watt mounted ones.



1 - Battery charge warning light

2 - City light and light switch

3 - Travel light bulb

4 - City light bulb

5 - Switch

6 - High beam and low beam
switch

7 - Fuse

8 - Horn button and high beam

9 - Electric horn

10 - License plate light

11 - Battery

12 - Dynamo

A – Dynamo / **B** – Battery / **FT** – License Plate Lamp / **S** – Charge Indicator / **SP** – Distributor / **T** - Horn

Electrical System Connections Diagram

The conductors marked with solid lines are external, the dotted ones are contained inside the headlamp shell.

The six terminals marked with the letters D, B, FT, S, SP, T (located on the inside of the headlight shell) must be connected respectively; terminal D to the dynamo (51), terminal B to the battery, the FT terminal to the license plate light, terminal S to the dynamo warning light (61), terminal T to the horn (see fig. 18).

Anti-glare Button and Switch

Lubricate the switch located on the handlebar and lubricate the switch located inside the headlight.

For the good functioning of the headlight, it is necessary to check whether the electrical contacts inside the headlight correspond to the two extreme positions of the switch lever. Otherwise, adjust the sheath using the tensioner located outside the headlight shell. The above is for the Mareilli FMN 150 light. On SIEM and ECI lights, the switch does not require any adjustment as it is electrically operated.

Electric Horn

With the function of the horn, it may happen that, either due to the adjustment of some parts or due to the consumption of others, the sound is no longer what it was when it was first installed. Adjustment is therefore essential. After checking that the battery is charged, use a screwdriver to go to the back of the appliance and adjust the sound by manipulating the round head screw located to the left of the support.

This screw has a knurled neck under the head, so that, by turning them to the right or to the left, the desired position is undirected, which is the one in which the sound emitted is the best.

General Maintenance

For the good maintenance of the motorcycle, it is necessary to follow the general rules listed below.

Motorcycle Cleaning:

To clean the engine, it is advisable to use petroleum jelly with a brush: then dry with clean rags.

To clean the painted parts soiled with dried mud, it is necessary, in order not to damage the paint, to moisten them well with a sponge soaked in water. Then wash with a water jet and make sure that all traces of mud have disappeared before drying with suede.

To keep the paint with a nice gloss, rub it lightly with a cotton swab impregnated with the special paste polish.

It is harmful for the paint to use petroleum which makes it dull and deteriorates quickly.

Paint Touch Up

They are painted with nitro cellulose: mudguards, petrol and oil tanks, tool boxes and luggage racks.

They following parts are stove enamelled: telescopic fork, frame, swingarm, pedal assembly, shock absorbers, brakes, and flywheel. As these are small pieces, in general, it is advisable to refinish the entire piece.

After having completely cleaned the surface to be treated, the anti-rust product is sprayed and dried in the oven at a temperature of 90 ~ 100 C for a duration of about 3 hours.

After this first general procedure, common to the two systems mentioned above, the piece is primed and sanded. If the piece is stove enameled, apply a first coat (opaque color) and let it dry in the oven for 2 hours at a temperature of 90 ~ 100 C.

Then it is applied by spray to the first coat of enamel, and it is dried to about 3 hours at 60 ~ 70 C. Then apply the second and last coat drying for about 3 hours at 60 ~ 70 C.

If the piece is painted with nitro-cellulose, after the application of the anti-rust, we proceed with the priming and the sanding, then the finish is applied by spray, and it is left to dry in the air for about 2 hours.

We then proceed with the spraying with nitro cellulose paint, leaving it to dry in the air for about 2 hours after each coat.

It is advisable to apply three coats of paint to have results: then polishing is carried out by rubbing with cotton balls impregnated with the special paste prepared for this use.

Decals

The decals bearing the eagle and the words "Moto Guzzi" must be applied to the tank and fenders with the appropriate flattening solvent.

About an hour after application, remove the paper with a damp sponge and remove any traces of flattening solvent with white spirit, then wash everything with pure water.

Periodic Maintenance Operations

Every 1000 Km:

Lubricate the joints of the swingarm and the telescopic fork with the special grease pump.

Lubricate the throw-out bearing and the tempered clutch screw with grease.

Lubricate the chain.

Adjust the telescopic fork.

Every 2000 Km:

Change the oil in the tank, clean the filters.

Remove the hammer of the magnet and lubricate the pin.

Clean the carburetor and filter.

Every 3000 Km:

Clean the dynamo brushes.

Every 5000 Km:

Clean the head and valves. Check the fluid level in the rear shock absorbers.

Every 10,000 Km:

Clean the exhaust pipe and silencer.

Check the fluid level in the telescopic fork.

Important Notice

It is advisable to check that all nuts and screws are tightened after the new motorcycle has covered the first 500 km.

This check is always appropriate and must be carried out periodically at least every 1000 km.

Remember that loosening a single nut can cause serious mechanical breakdowns or road accidents.

Important Notice

For engine lubrication use Shell oil in the following grades:

Below 10 C - Double Shell or Shell X 100 SAE 30.

Above 10 C - Triple Shell or Shell X 100 SAE 50.

