GILERA

ENGLISH USER MANUAL

SATURNO

'SATURNO'

USER MANUAL

MOTO GILERA • Societa per Azioni • ARCORE (Milano)

English Translation by James Wiseman - 04/20

PREFACE - ENGLISH EDITION

Welcome to this, a 'first stab' at an English translation of The Saturno Use & Maintenance Manual. This is very much a work in progress, and I've deliberately left off the parts lists, which can be found separately, on sites such as the excellent www.rpw.it. Please let me know of any discrepancies, errors or ommissions, by email at: laverdista76@gmail.com.

Oh, and for the purposes of this translation, I'm English, so the technical terms, spellings and other phraseology may be British English - They're not mistakes!

Enjoy!

James Wiseman, May 2020

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PREFACE

In this brochure is the main information about the motorcycle, and the rules that must be followed for good use and normal maintenance. The 'Saturno' motorcycle has been specially designed for tourists and sportsmen.

Careful study of all the parts allows the machine to offer maximum safety, peace of mind whilst riding, and minimum consumption.

The attention of customers is drawn to the instructions relating to lubrication, (page 21) and it is particularly recommended that they are followed. Also, for the first 1000 km of use, note the rules indicated on page 22.

For any occurrence - Operating issues, even partial repair of the machine, it is advisable to contact the factory or factory-authorised workshops . It is indispensable in any case, to use only original Gilera spare parts.

IDENTIFICATION DATA

Every motorcycle is marked with an identification number, (the same number for both the engine and the frame), which is stamped:

- On the engine block, on the upper left, where the cylinder head meets the block
- On the upper central tube of the frame, in the left position, under the saddle. (See Fig.1).

This number, in addition to being used to identify the motorcycle, is also used for legal purposes for sale and is shown on the certificate of origin and on the registration document. It must always be indicated in requests for spare parts.

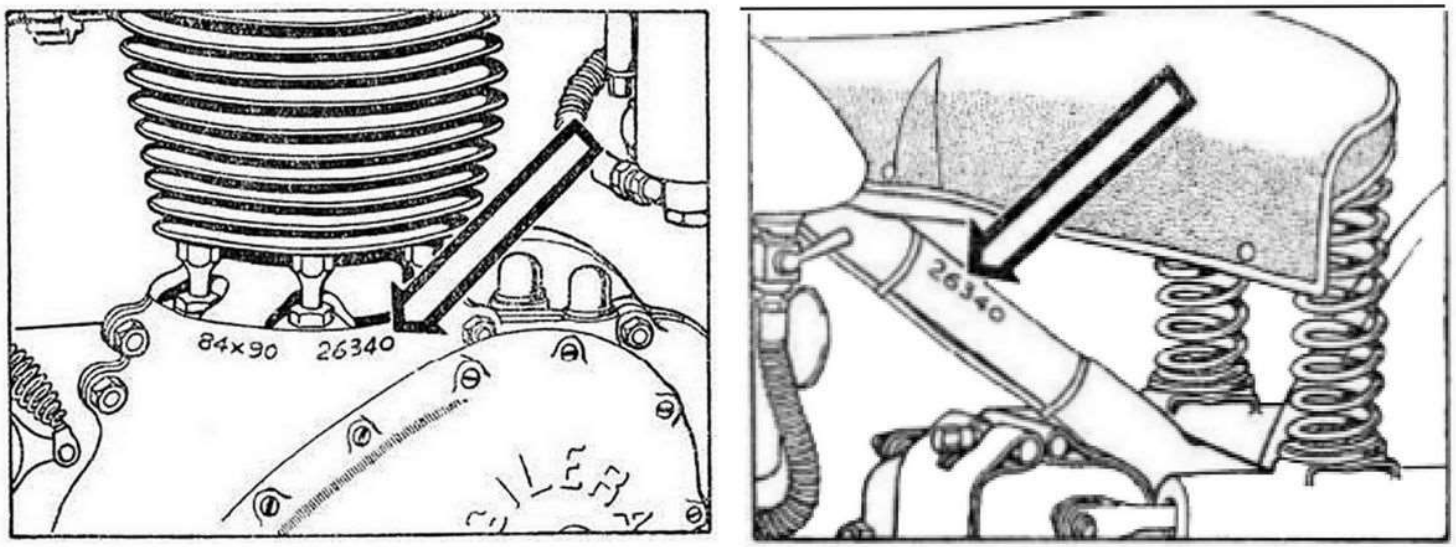


Fig. 1: Identification data

SPECIFICATION

	Saturno 'Sport'	Saturno 'Turismo'
Engine cylinders	1	1
Bore	84mm	84mm
Stroke	90mm	90mm
Displacement	498cc	498cc
Compression ratio	6:1	5.5:1
Maximum torque at	3500rpm	3500rpm
Maximum power at	5000rpm	5000rpm
Power (taxable in Italy)	5HP	5HP
Maximum engine power	22BHP	18BHP
Inlet and exhaust valves diameter	42	42

Carburettor: Dell'Orto RDF28

Diffuser: 28mm dia.
Main jet: 120
Idle jet: 50
Needle : Groove 3

Gear Ratios:

1st Gear	-	**10.25:1**
2nd Gear	-	**6.69:1**
3rd Gear	-	**5.28:1**
4th Gear	-	**4.51:1**

Drum brakes

Front	-	185mm diameter x 38mm
Rear	-	185mm diameter x 38mm

Wheels (interchangeable)

Spoked with grooved rim: 19" x 3"
Tyres: 3.25 x 19"=

PRINCIPAL CHARACTERISTICS

ENGINE - 4-stroke, vertical cast iron cylinder in the 'Turismo' model, light alloy in the 'Sport' model, with inclined overhead valves and aluminum alloy construction.

TIMING - Inclined overhead valves controlled by vertical and rocker arms. The intake and exhaust cams act on the vertical control arms of the rocker arms by means of oscillating levers. The central timing sprocket mounted on the crankshaft.

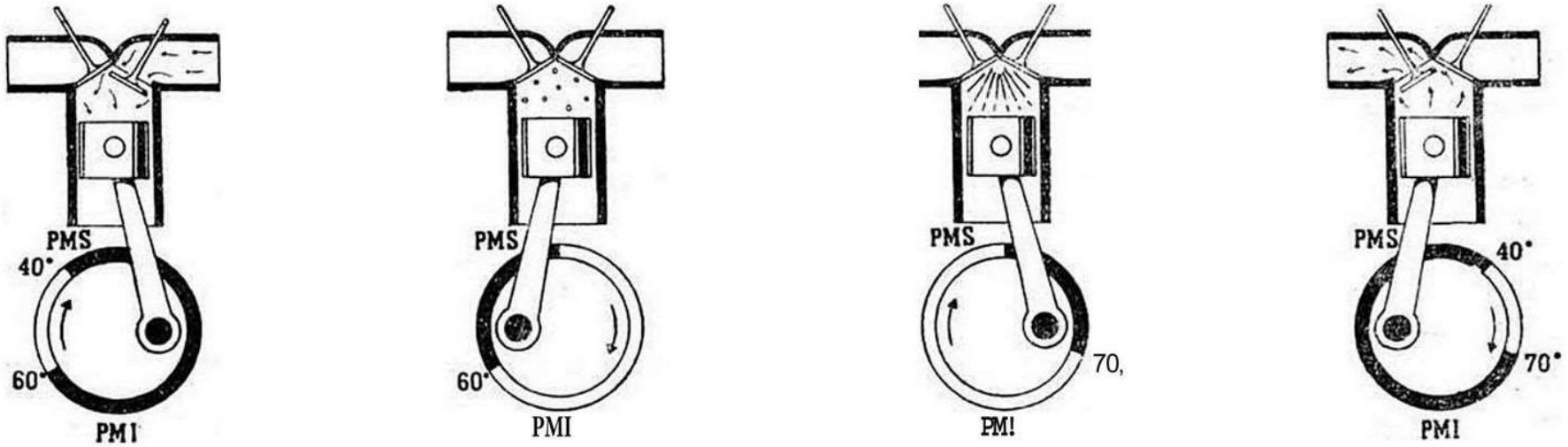


Fig 2 - Timing Diagram

ENGINE LUBRICATION

Forced circulation by means of gear pump - Complete and continuous oil filtration by means of a removable filter.

1 - Rocker arms
2 - Head oil pipe
3 - Oil regulating valve
4 - Oil drain plug
5 - Oil pump
6 - Three-way connection
7 - Coupling hole
8 - Breather tube
9 - Oil filler cap
10 - Oil filter

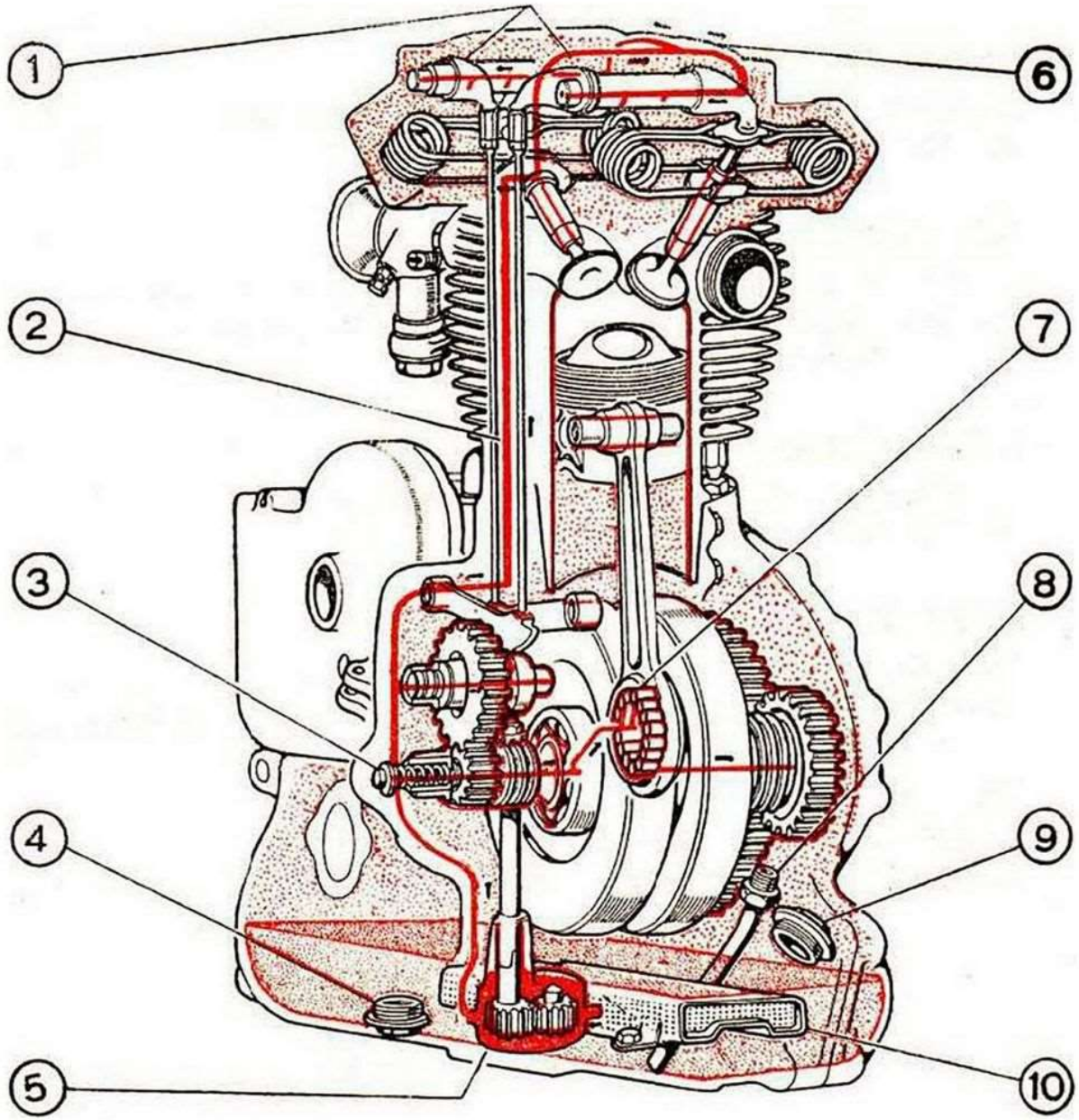


Fig.3 Engine Lubrication

FUELLING

Supply by means of a **Dell'Orto RDF 28** type carburrettor.Fuel tank fixed to the central tube of the frame. Petrol supply pipe with taps equipped with filter.

POWER

Supplied by a high voltage magneto and a spark plug. Magneto is **Marelli MLA 24** type, clockwise rotation - Advance adjustable with lever. The spark plug is of the Marelli **MDM 225** type or similar.

STARTING

With crank - Located on the right side of the motorcycle -
The mechanism contained in the gearbox and is in an oil bath.

CLUTCH

Dry - Made up of alternate discs
coated with antifriction fabric.

GEAR CHANGE

Four speed - Gear type always engaged - pedal control.

Fig. 4 - Positions of the gear change lever

TRANSMISSION
Chain located on the right side of the machine and protected by a special chain cover.

FRAME
and built in cold drawn steel tubes, electrically or oxygen welded according to thicknesses and their stresses.

STEERING
Consisting of the stem, fork head, steering tube, working on ball bearings - Handlebar fixed to the fork by means of clamps and adjustable by means of the steering brake.

FRONT FORK
Deformable parallelogram type with central compression spring integrated by shock absorber with hand-adjustable clutch.

REAR SUSPENSION
Gilera patented type - Swing-arm with swinging brackets, supported by springs and counter-springs, equipped with hand-adjustable friction shock absorbers.

WHEELS
of unified measurement. Interchangeable.

BRAKES
185m diameter of the type with internal expansion jaws, mounted on an aluminum brake holder plate. Shoes coated with friction material

ELECTRICAL SYSTEM

Battery:	6 V - 12 amp. (UNI 509)
Dynamo:	Marelli MRD 30/6 - 2000 AR 1
Headlamp:	CEV150
Rear light:	FPMC / 1
Horn:	Marelli T 38 - AO - 6

PRINCIPAL DIMENSIONS & WEIGHTS

Max. length: 2150mm
Max. width: 670mm
Max. height:1050mm
Wheelbase: 1420mm
Ground clearance: 170mm

Weight of the motorcycle (with oils, without rider):
Sport:175kg Turismo: 180kg

TANK CAPACITIES

Petrol tank: 14 litres
Oil (motor): 2.5 litres Medium viscosity motor oil

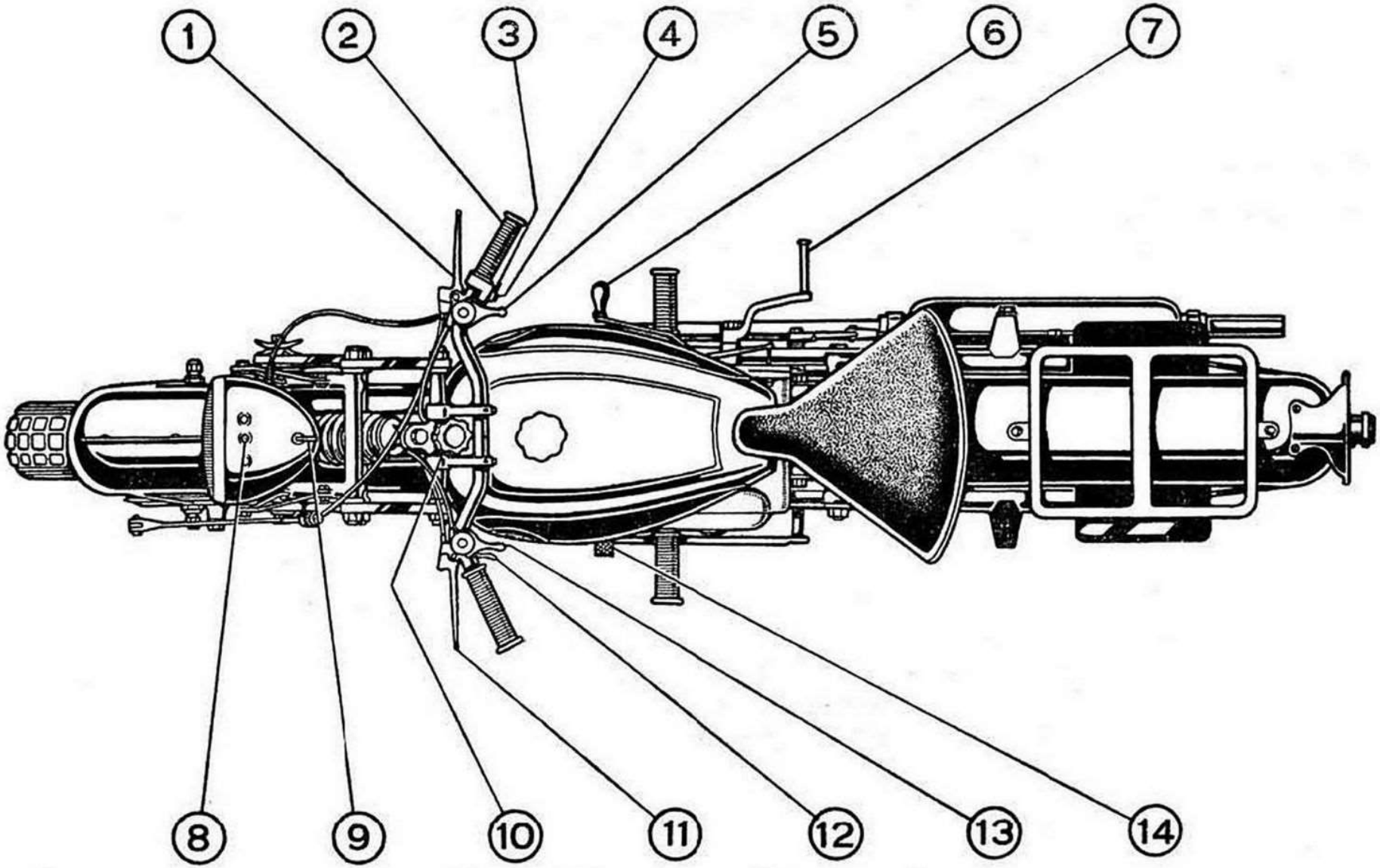


Fig. 5 - Arrangement of Controls

CONTROLS

ARRANGEMENT OF THE CONTROLS

The motorcycle control devices are arranged according to the labels in Fig. 5 and are the following (from left to right):

1) **Front brake lever**
2) **Fuel knob control**
3) **Dipping Light control lever**
4) **Electric warning button**
5) **Air control lever**
6) **Gearlever**
7) **Kickstart**
8) **Ignition Switch**
9) **Light switch**
10) **Steering damper control knob**
11) **Clutch lever**
12) **Valve lift lever**
13) **Advance control lever**
14) **Rear brake pedal**

GENERAL INSTRUCTIONS

HOW TO START THE ENGINE

Before anything else, make sure that the tank contains enough petrol, and that the crankcase oil level is correct (that is, that the oil reaches the bottom of the filler neck). Check if petrol is reaching the carburettor by pressing the tickler placed on the float chamber, after opening the taps located below the tank.

- **Open the throttle knob approximately 1/8 of its total stroke and completely close the choke control**
- **Pull the lever of the valve lifter to the limit of its travel**
- **Depress the kickstarter crank two or three times , always keeping the valve raised.**
- **Press firmly on the pedal crank with your foot**
- **At about halfway you need to release the valve lifter lever abruptly.**

The engine should start - If it does not start, repeat the attempt by trying to open the throttle lever more or less and advance the ignition to a greater or lesser extent (to advance, move the lever forward). .**Avoid letting the cold engine run too fast immediately - Wait until the oil has had enough time to complete its' entire circulation.**

MOVING OFF

To start moving, provided that the engine is running, pull the clutch lever fully and lift the gear-lever pedal upwards from the neutral position (0) to first gear; gradually release the clutch lever while at the same time accelerating the engine gradually.

When the car has reached an hourly speed of about 20 kilometers, pull in the clutch again, pushing down on the gear pedal to bring it into second gear; then the clutch lever is slowly released, suitably accelerating the engine.

A speed of about 30 km/h can be reached in third gear by repeating the above operations, then fourth gear.

When passing through the gears, always change gears gently to avoid causing shocks. When moving from low gears to high gears, always allow the engine rpm to decrease, closing the throttle before disengaging the clutch. On the other hand, the passage from high gears downwards must be done quickly, leaving the throttle a little open, so that when the clutch is released, the engine increases in rpm and can thus synchronize with the lowest gear that must be engaged.

Until about 500km is covered, with a new motorcycle, it is best not to exceed a speed of 50-60 km/h, that is, to allow all moving parts to bed in properly.

MAINTENANCE

LUBRICATION SCHEDULE (Fig. 6)

Lubrication, both of the engine and of the gearbox, is fully automatic. The oil level of the crankcase is inside the filling nozzle located at the bottom of the crankcase, transmission side.

Refill when the oil level reaches the lower part of the line of aforesaid filling. If motorcycle is new it is necessary, after having travelled the first 500 km, to completely empty the oil tank and replace with fresh oil; After that, completely renew the oil every 2000 kilometers.

It is necessary that the chain is kept well lubricated so that it lasts for a long time, in the best condition. It is good practice to disassemble it every 3000 km., Wash it thoroughly with oil and immerse it in a paraffin bath, agitating it in such a way that the lubricant has the possibility to penetrate all the joints. Periodic lubrication must be carried out every 1000/1500 km of:

- The swinging pins of the front fork
- The swing-arm pivots of the rear swing-arms
- The tie rod shafts of the rear suspension
- The pedal axles
- The wheel hubs

ADJUSTMENT OF CARBURETTOR

This is the Dell'Orto type RDF 28 model. The manufacturer provides the most suitable adjustment of the carburettor, but it can happen that adjustment is made necessary for many reasons, such as temperature changes, changes in altitude, humidity, the octane of the fuel used,

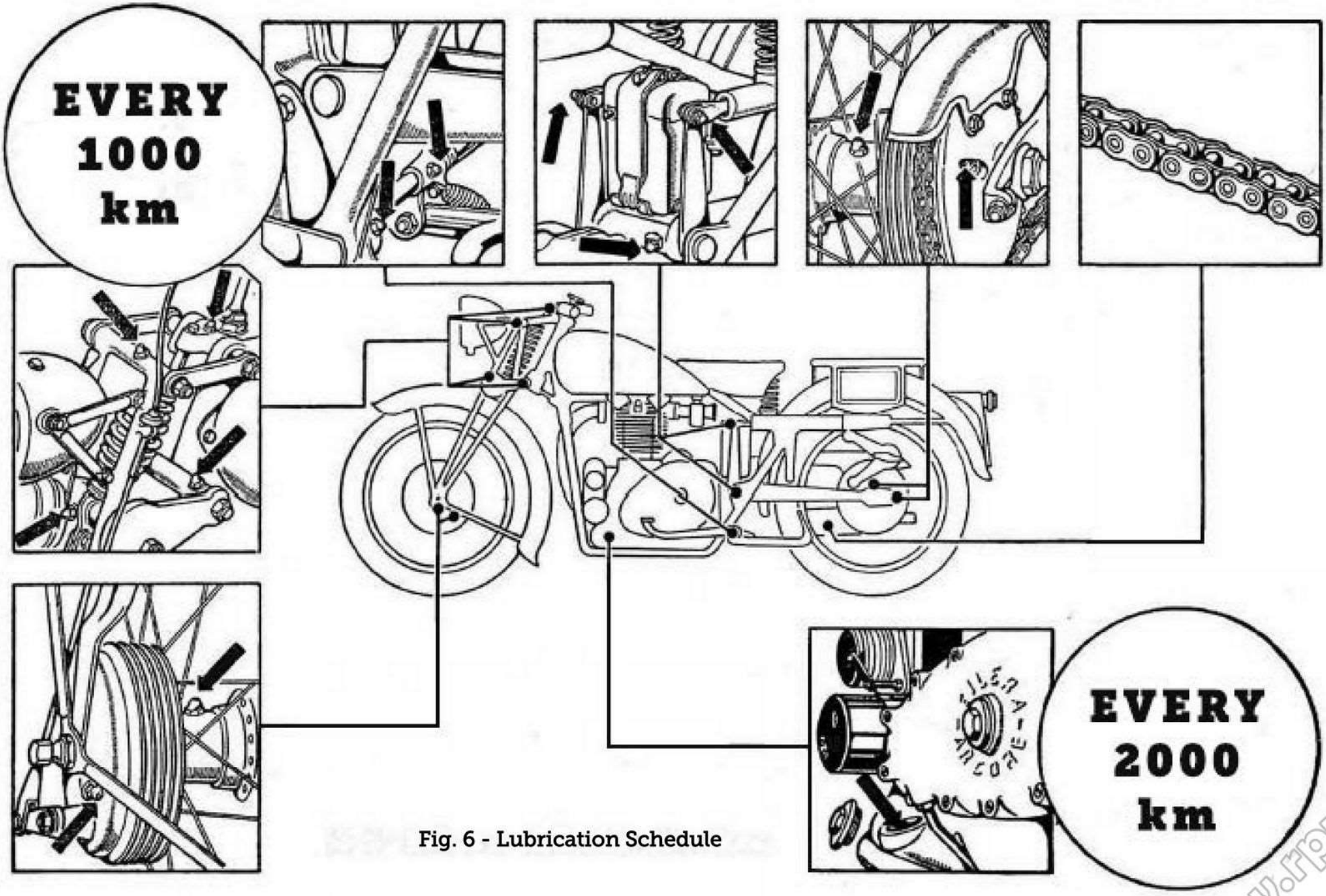


Fig. 6 - Lubrication Schedule

This need occurs when the engine is exhibiting the symptoms of too lean or too rich carburation. These symptoms are:

Too Lean:

- Spitting at the carburettor
- Poor performance
- Engine that stalls very easily when slowing down
- Excessive engine heat
- Spark plug light grey colour
-

Too Rich:

- Black exhaust smoke
- Excessive fuel consumption
- Too fast an idle
- Spark plug a very dark and greasy brown color

These drawbacks can be remedied by providing an accurate recording of the fuel according to the following procedure:

Removal: Remove the carburettor from the cylinder head by loosening the collar nuts which fix it to the intake pipe. Loosen the screw that secures the tray lid - unscrew the cover itself (7) - remove the conical rod (11) by pushing down - remove the float (10). To check the jet, loosen the main jet plug (18) and remove the fibre gasket (19) - loosen the atomiser (21) and remove the jet (17) - make sure that it is not blocked.

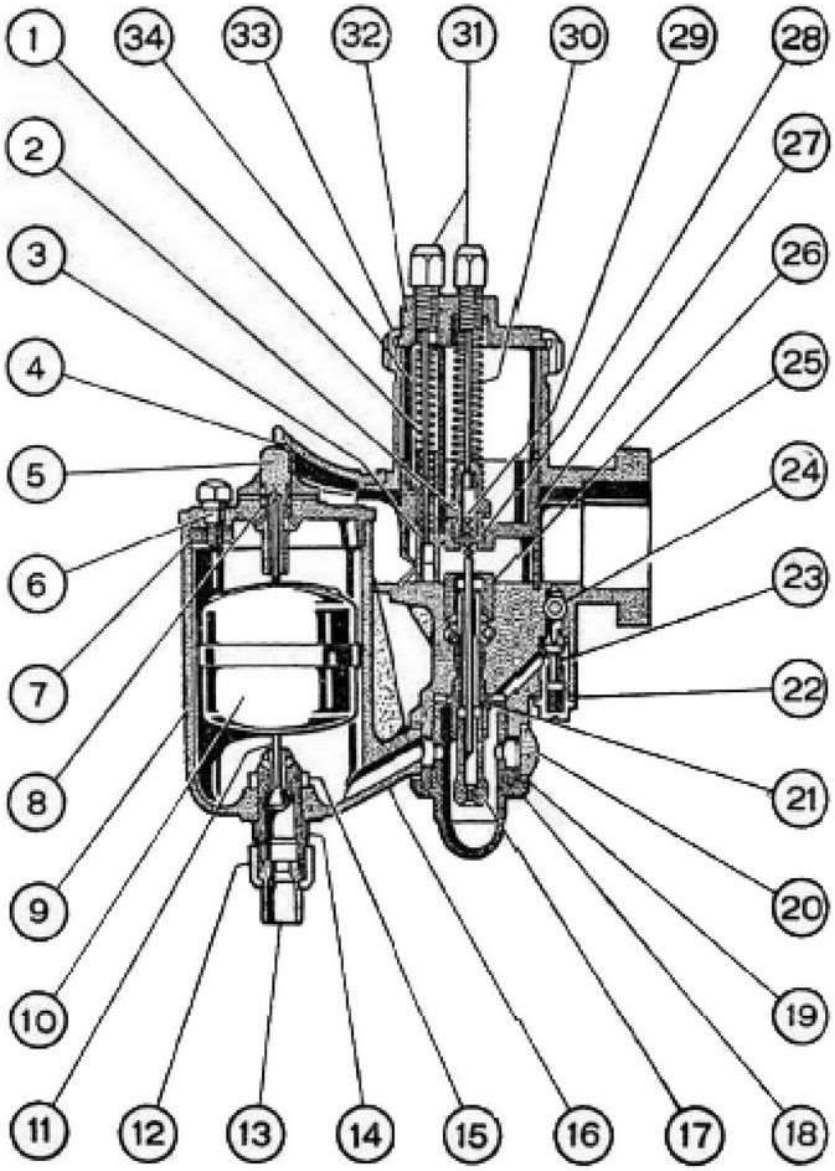
To reassemble it, carry out the disassembly operations in reverse order.

Idle adjustment - Use the screw (24) to regulate the passage of air in the idle jet (23). Normally the screw must be fully tightened, then opened by half a turn.

Main jet adjustment - Unscrew the lock nut of the fuel valve closing registerafter which the opening of the said valve is adjusted when the engine is hot and running. Once the adjustment has been made, fully tighten the locknut.

Fig 7 - Carburettor Schematic

1 Throttle plate spring
2 Nipples for throttle cable connection
3 Throttle plate
4 Air intake
5 Tickler
6 Bowl anchor screw
7 Bowl cover
8 Tickler spring
9 Bowl
10 Float
11 Float nozzle
12 Closure fitting
13 Nipple for fuel hose
14 Float seat
15 Locknut for seat
16 Fuel tube
17 Main jet
18 Caps for connecting the tray body
19 Bowl seal gasket
20 Body
21 Spray nozzle for main jet
22 Idle jet seal
23 Idle jet
24 Idle jet metering screw
25 Mounting body
26 Diffuser nozzle
27 Diffuser
28 Conical pin anchor key
29 Fuel valve
30 Fuel valve spring
31 Fuel register wire tensioners
32 Mixture chamber cover
33 Mixture chamber cover ring nut
34 Top cover



TAPPET ADJUSTMENT (Fig. 8)

Tappet adjustment is performed by removing the engine head cover, fixed with ten screws. With a 6mm wrench, hold the rod still, loosen the lock nut, and screw or unscrew the adjustable tip until a play of 0.2mm between the tappet and the valve rocker (intake) and 0.3 mm between the tappet and the rocker of the exhaust valve; after which the locknut will move against the adjustable tappet while holding the tappet itself.

CLUTCH ADJUSTMENT (Fig. 9)

To adjust the clutch control lever, use the nut and lock nut as shown in the figure. Clutch adjustment should be done as follows:

- Remove the cap located in the center of the transmission cover and thus uncover the clutch adjusting screw (2),
- Hold the nut still with a 19 mm T-wrench and first tighten or loosen ·the aforesaid screw using a screwdriver (3) to adjust the distance between the plate (which acts as a pusher) placed at the end of the screw itself, and the central rod of the clutch.

In all cases, in order for the adjustment to be well done, make sure that the clutch lever on the handlebar has a play of about 5-10 mm at its end.

BRAKE ADJUSTMENT (Fig. 10)

The adjustment of the **front brake control** is carried out by means of a hexagonal head bolt, with lock nut, screwed on the brake plate. It must be adjusted so as to leave approximately 5-10mm of play at the end of the handlebar brake lever.

The brake of the rear wheel of the motorcycle is adjusted by means of the puller located near the chain tightener. The play must allow the pedal to move 15-20mm before brake 'bite'.

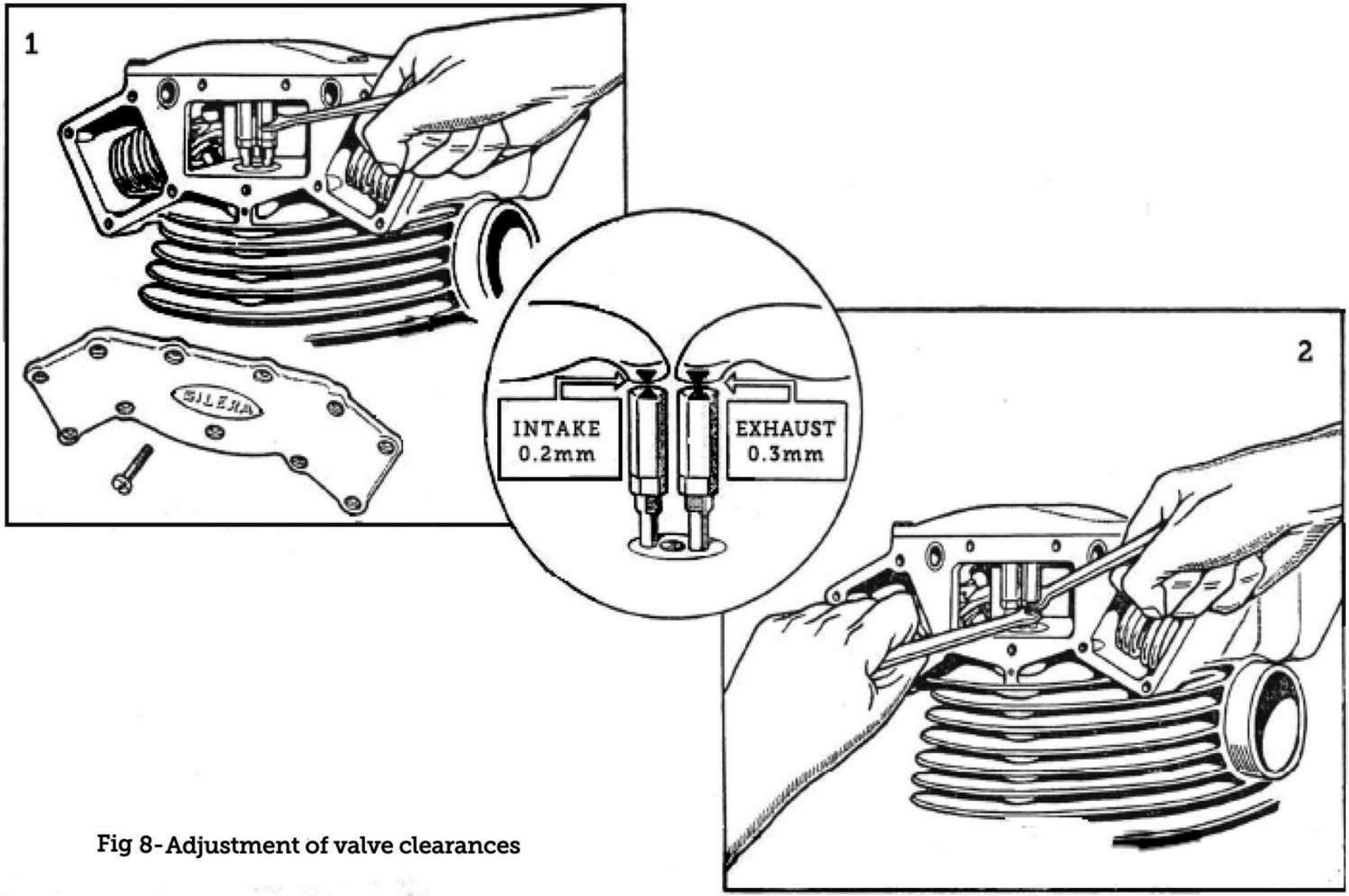


Fig 8- Adjustment of valve clearances

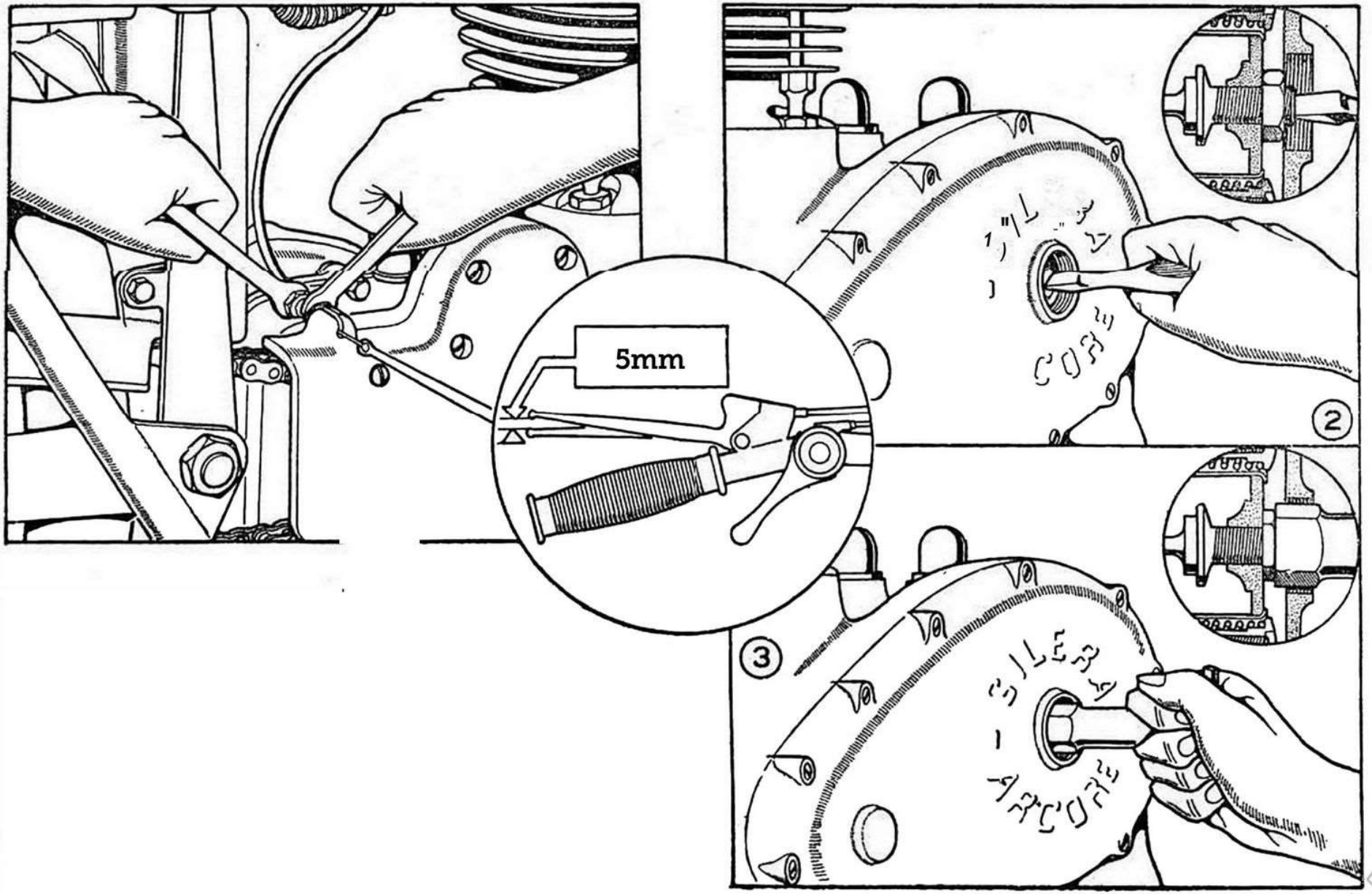


Fig. 9 - Adjustment of Clutch

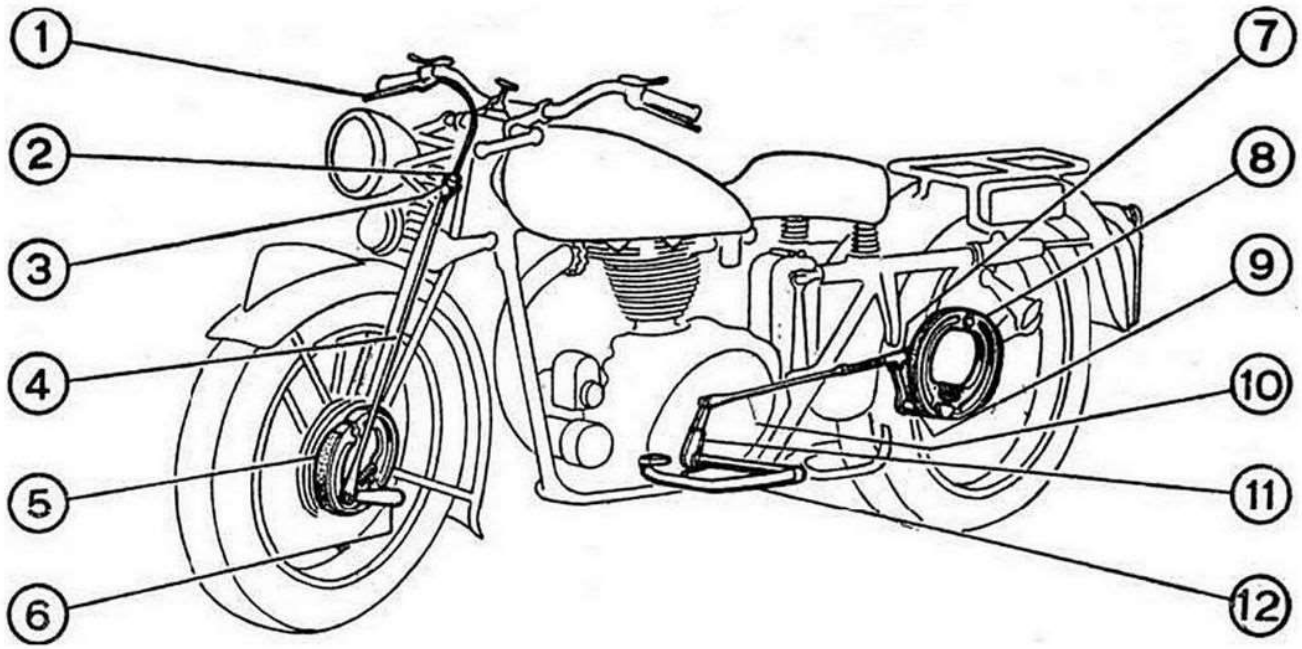


Fig 10 - Layout & Adjustment of Brakes

1 Front Brake Lever
2 Turn-screw
3 Locknut
4 Brake rod
5 Front Shoes
6 Actuating Lever
7 Knurled adjustment screw
8 Rear shoes
9 Rear brake actuator
10 Brake tie rod
11 Rear brake linkage
12 Rear brake pedal

FRONT FORK ADJUSTMENT

The nuts and end locknuts of the pins are loosened, then turn the axles using a 10mm wrench,working with the flat surfaces made at one end of the axle; Screwing them, the movement tightens, unscrewing them, it loosens. Once the axle has been adjusted, close the nut fully and then lock the locknut.

CHAIN ADJUSTMENT

The rear chain must be adjusted using the appropriate chain tensioner. To do this, loosen the two nuts that secure the wheel, and manoeuvre the chain tensioner nuts until you get the right tension, with a deflection between 10 and 20mm. During this operation, perfect alignment of the wheel must be observed, and this can be obtained by checking the distance of the rim from the fork, which must be the same from all points.

DISASSEMBLY OF THE WHEELS

Both wheels of the 'Saturno' motorcycle are interchangeable. Dismantle them by unscrewing the central nuts. Then remove the pin, remove the spacer tube and pull the wheel to disengage it from the brake, and remove it from the fork. To reassemble, insert the wheel into the fork, insert the pin and put the spacer in place, screw the nuts on the stud and block properly.

MAINTENANCE OF THE ELECTRICAL SYSTEM (Fig. 11)

Both the magneto and the dynamo need no special care. Both of these appliances require only minimal lubrication intervals. After a long time, however, it may be that it is necessary to proceed with their cleaning and consequent drying following the infiltration of dust, water or oil deposits in various parts.

You should then proceed as follows:

MAGNETO - In general it is only on the points that cleaning operations must be carried out since it is not possible to extend maintenance to other parts, which are hermetically sealed:

Remove the side cover, removing the metal clip. Then by unscrewing the central bolt it will be possible to remove the entire points assembly and proceed with prompt cleaning. When reassembling, ensure that between the points there is a gap of 0.4mm with open points (this will be obtained by appropriately rotating the engine using the kick-start pedal). The play is controlled with the calibration plate fixed on the key of the: magnet; if the play is greater or lesser than this, it is necessary to act on the adjustable needle until the correct gap is obtained.

DYNAMO - Any cleaning must be limited to the collector and brushes. Therefore remove the cover from which the two cables that go to the switch located in the headlight start. With maximum care we will proceed to cleaning using a small rag soaked in petrol, making sure to remove all the graphite dust dropped by the brushes on the copper body of the collector. When reassembling the pieces, make sure that the brushes have a good support surface on the collector. Otherwise it will be necessary to force the contact pins a little. The sealed voltage regulator requires the care of specialized people.

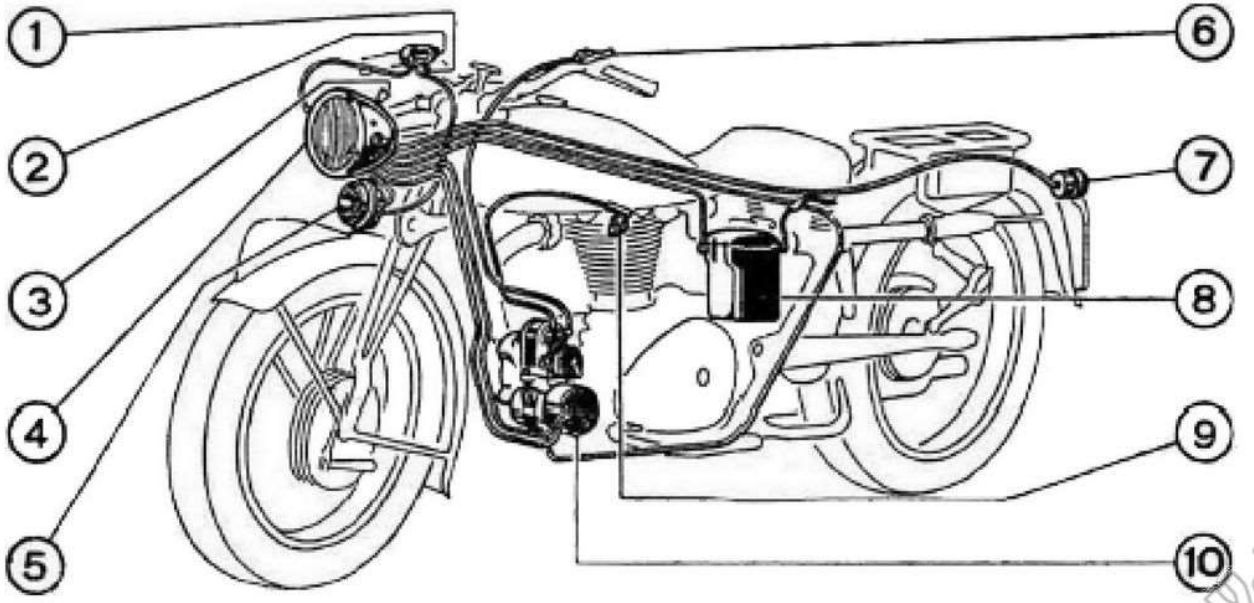


Fig. 11 - Electrical system layout

1 Dip switch
2 Horn button
3 Switch lever
4 Headlight
5 Horn
6 Advance control lever
7 Tail light
8 Battery
9 Spark plug
10 Dynamo/magneto assembly

BATTERY

It takes a lot of care to keep in tip-top condition. First of all, avoid it remaining unused for a long time. If the bike is immobilized for more than two weeks, charge it. This operation must be repeated periodically at least once a month to avoid battery sulphation. Once a month it is necessary to check the electrolyte level and when required, add distilled water through the holes, closed by the caps placed under the lid. Make sure that the quantity of liquid immediately does not cause an increase in the level electrolyte higher than necessary; Therefore, make sure that the liquid covers the plates of eight or ten dies: Keep the terminals clean - Smear them with grease after removing the green scale produced by oxidation.

HEADLAMP

To change it, and the lamps, the frame that forms a whole with the lens and reflector should be removed, by unscrewing the screw located at the bottom that holds the headlight frame together. You can then remove the lamp together with its support (lamp holder) which closes the opening at the back of the reflector.

THROTTLE MAINTENANCE

Does not require particular maintenance other than lubrication and periodic overhaul for the removal of any play.

REAR SUSPENSION MAINTENANCE

The lubrication of the rear suspension must be carried out regularly, both on the central oscillation pin and in the axles of the tie rods.For the springs which are completely enclosed in tubes, greasing can be done at longer intervals, however it is advisable for this operation to contact a specialized workshop, as it requires special tools.

TYRE INFLATION PRESSURE

The tires must be kept inflated to the correct pressure.

- Front: 18psi
- Rear: 22psi

This can be checked by means of special pressure gauges specific to the tyre valve type.

CARBURETTOR DEFECTS & REMEDIES

If the engine does not start or stop while driving, the cause may be:

- **Lack of fuel -** Check the petrol in the tank and whether the taps are open.
- **Obstruction of the petrol pipes** - Clean them by blowing and remove any impurities.
- **Dirty carburettor** - Remove it and wash it with clean petrol.
- **Throttle control wire** - Repair or replace it.
- **Water in the carburettor** - Close taps, remove the pipes and the carburettor and clean it well.
- **Flooded carburettor -** Close the taps and let the excess of petrol suck in from the engine.

IGNITION DEFECTS AND REMEDIES

If the engine does not start, and you have established that the cause is not any carburetion defect, you will have to look for a problem in the ignition.

1. The spark plug does not spark:
Remove the spark plug, rest it on the cylinder, rotate the engine, if there is no spark, this may depend on:

a) Dirty spark plug - clean it with a metal brush;
b) Cracked insulation - change the spark plug;
c) Spark plug points too far apart or too close. Check that the distance is 0.5mm.

2. Broken or badly insulated spark plug wire - Check and replace if necessary.

3. Spark too weak - It may depend either on insufficient speed impressed on starting or weakening of the magneto magnet.

4. - Absence of spark not due to the magneto - If there is no spark even with a new spark plug:

a) Check the points. They must be clean and have an 0.4mm gap;
b) The brushes must not be broken and the clip too weak.
c) The collector must be clean.

5. - Ignition too advanced or retarded:
Check the timing of the magneto; To do this place the piston to the P.M.S. position with valves closed, completely retard the magneto by moving the breaker ring in the direction of the rotor. Rotate the armature until the platinum pins are about to begin detachment. At this point lock the bakelite gear on the magneto shaft.

COMPRESSION ISSUES

Too high Compression:

- Fouling on the piston crown - disassemble and clean.

Low Compression:

- Head and cylinder closing bolts not tightened fully;
- Spark plug not screwed in properly or missing gasket;
- Elastic bands worn or broken;
- Valve seats worn or damaged or dirty;
- Valves sliding with difficulty in their guides;
- Bad adjustment of tappets;
- Oval cylinder bore

ENGINE OVERHEATING

The engine can heat up excessively for any of the following causes:

- Insufficient lubrication (bad oil, clogged filter, pump not working properly);
- Ignition too retarded;
- Poor mixture;
- Insufficient or excessive play between the tappets and the rocker arm of the exhaust valve.

WASHING

The cleaning of the motorcycle parts complies with the principles of sound economy, as it allows the vehicle to stay in better condition and to have a longer life. Ordinary and complete periodic cleaning carried out on the machine parts often allows one to find deficiencies in maintenance and to remedy them in time to prevent damage and avoid unpleasant consequences.

The best way is to use petrol, a brush and clean rags to dry, removing mud, dust, oil deposits and sludge. Avoid using solvents in the washing of painted parts. Take care to wash with water using a sponge and dry with a chamois leather.

ECONOMY

This expression indicates the driving system that allows the saving of petrol and oil, normal wear of parts and reduced tyre wear.

On long routes, avoid jerky acceleration and braking, while maintaining a constant speed regardless of prejudices deriving from being held up or in the process of being overtaken by other vehicles. Good running averages are obtained by minimising stops, allowing one to maintain a constant engine speed engine with the benefit of all the parts.