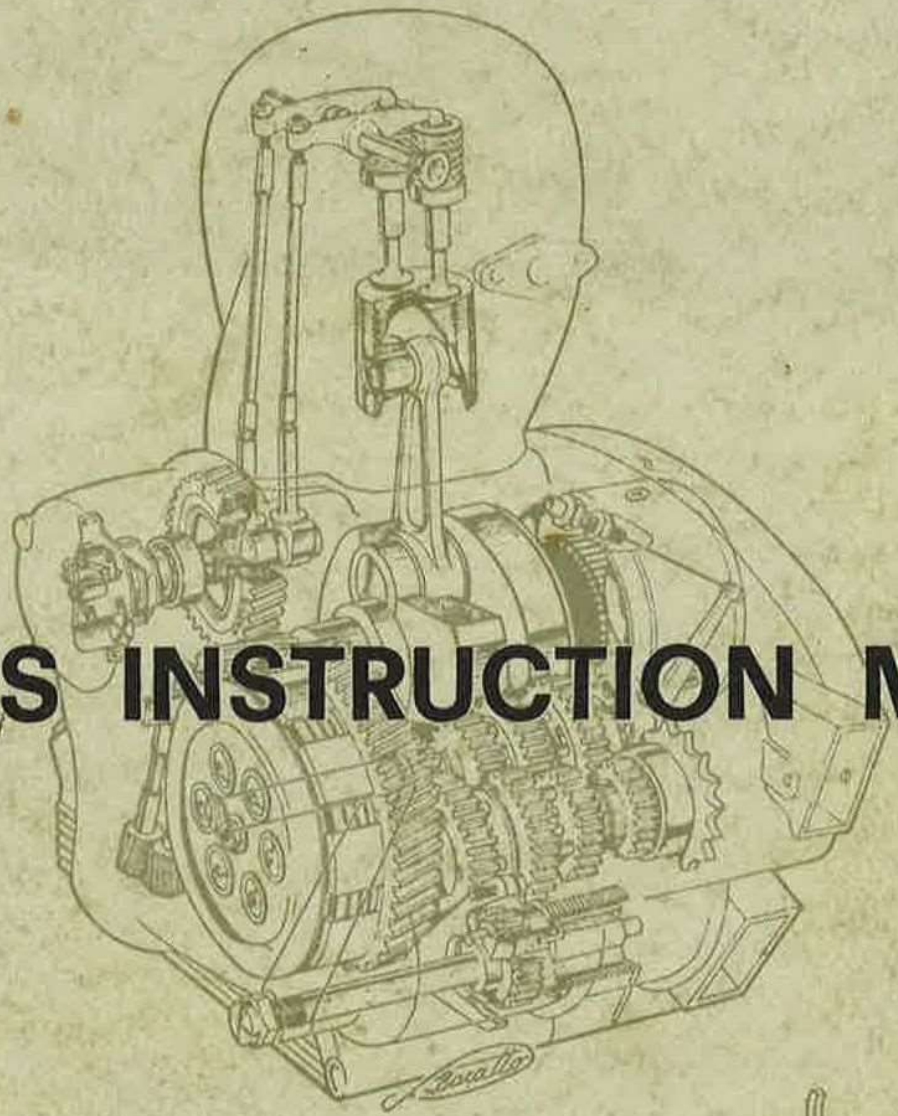
GILERA



REPAIRS INSTRUCTION MANUAL

98-124

standard
extra
six days

98 - 124 standard and extra model motor - cycles

14.12000

REPAIRS INSTRUCTIONS

MOTO GILERA - JOINT STOK COMPANY - ARCORE (MILAN)

PARTS INDEX

98-124 and «6 Days»

motor - cycles

WORKS AND OFFICES: ARCORE (Milano) - Telef.: Vimercate: 64.020 - 64.044 - 64.096 - 64.098

MILAN OFFICE: PIAZZA LEGA LOMBARDA) - MILANO - Telef.: 335.284 - 339.978

FOREWORD

It is essential in order to guarantee the best results that the repairer be properly acquainted with the motor-cycle needing repairs, in addition to having that technical knowledge that qualifies a mechanic.

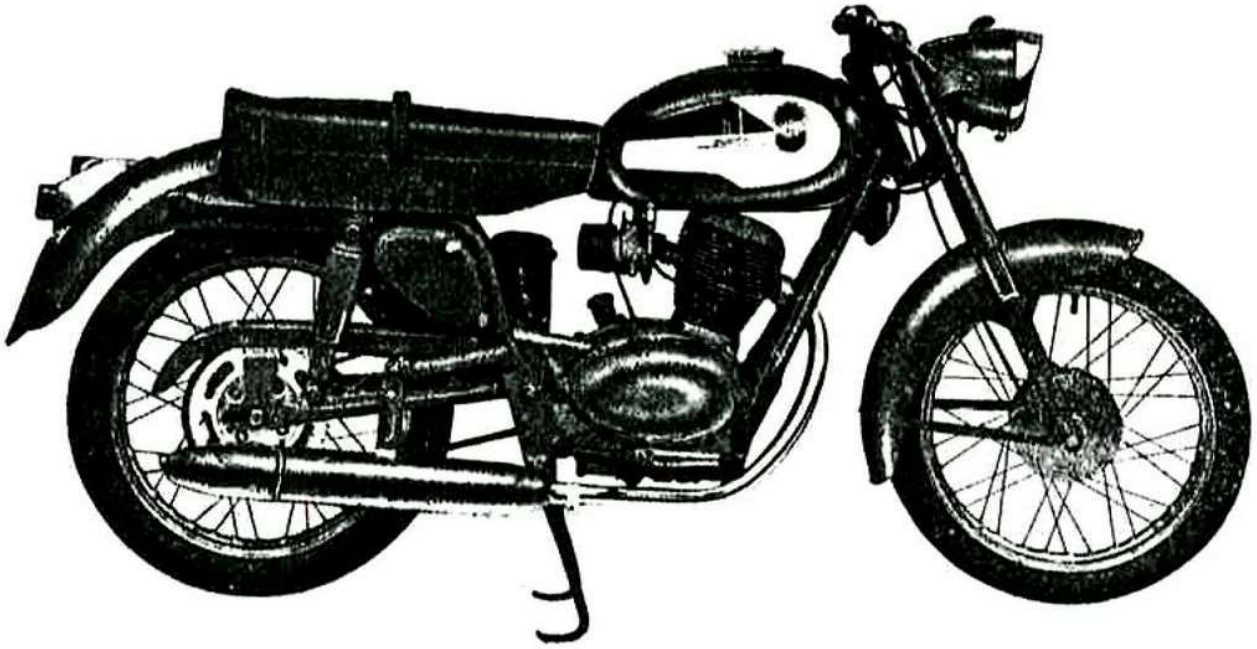
This manual, in fact, is for the purpose of directing the personnel detailed to effect repairs of the « 98 Jubilee and 124 » model motor-cycles, describing the characteristics and details, indicating the most logical methods for the various operations and wear limits, which, when exceeded necessitate the replacement of the parts to ensure that the machine gives its best possible performance.

The subject matter has been divided into several parts for easy reference purposes.

INDEX

« 98 » Extra MOTOR-CYCLE

(Fig. 1)



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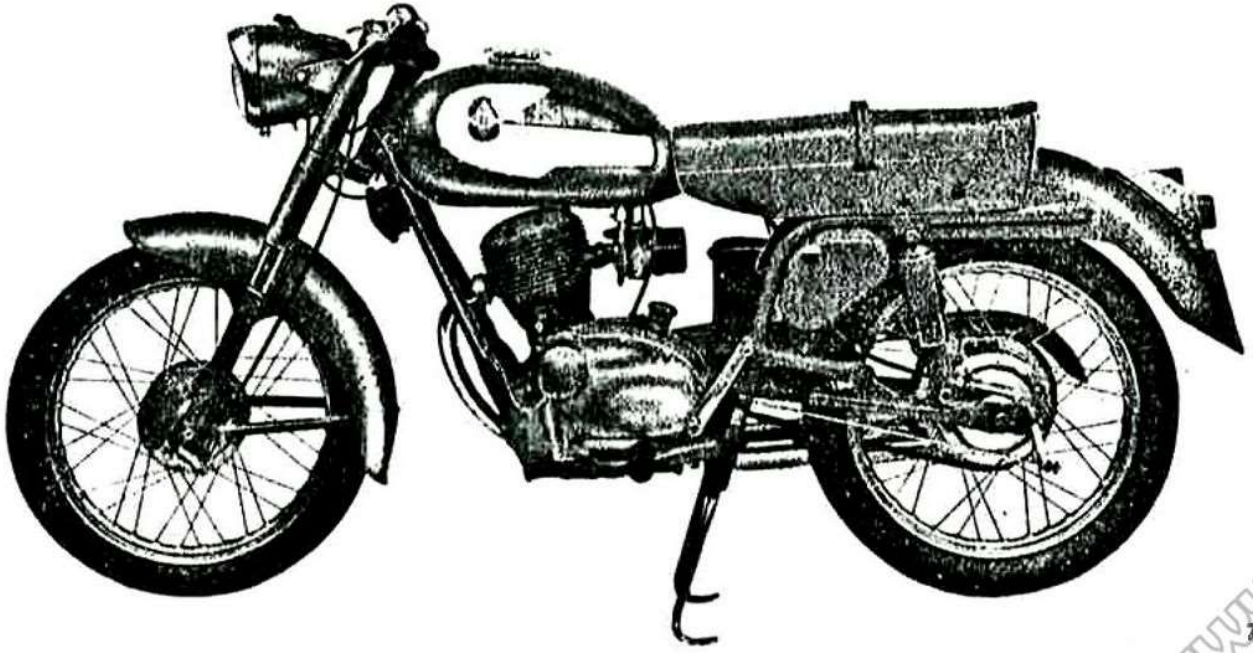
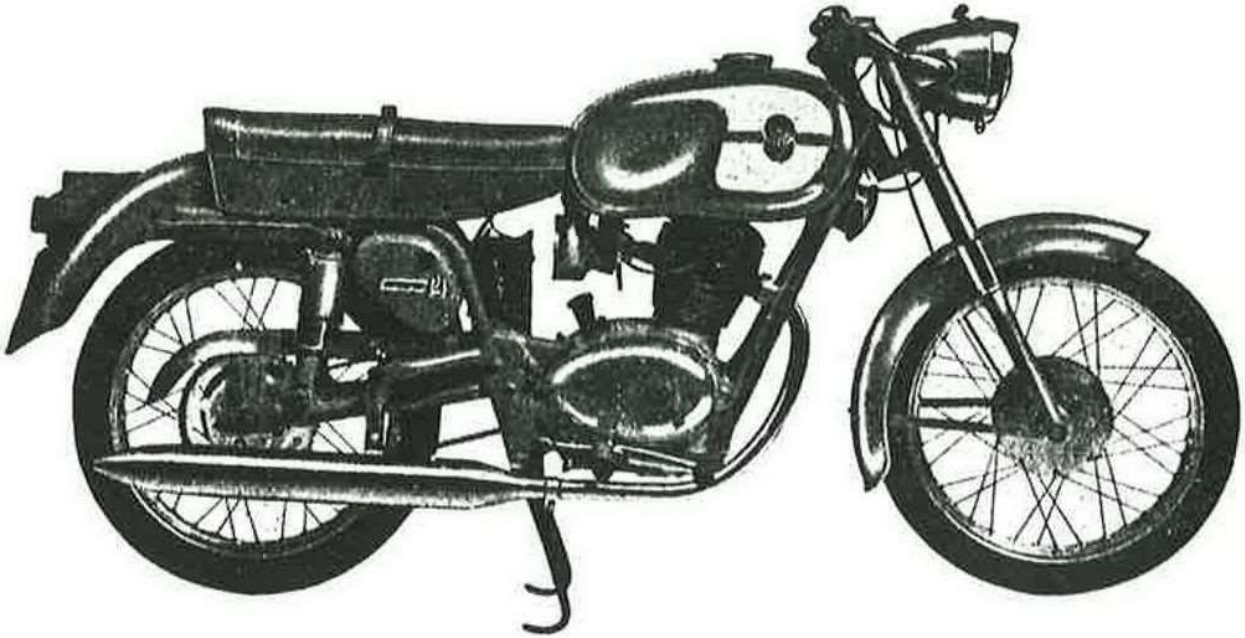


« 124 » Extra MOTOR-CYCLE
(Fig. 2)



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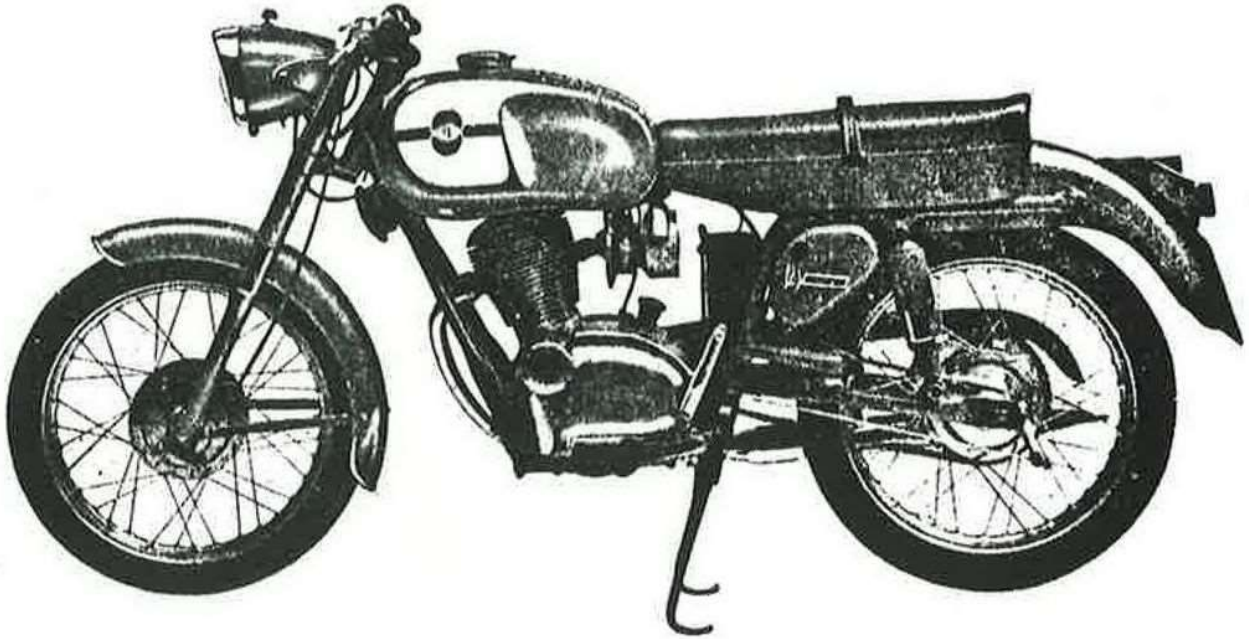
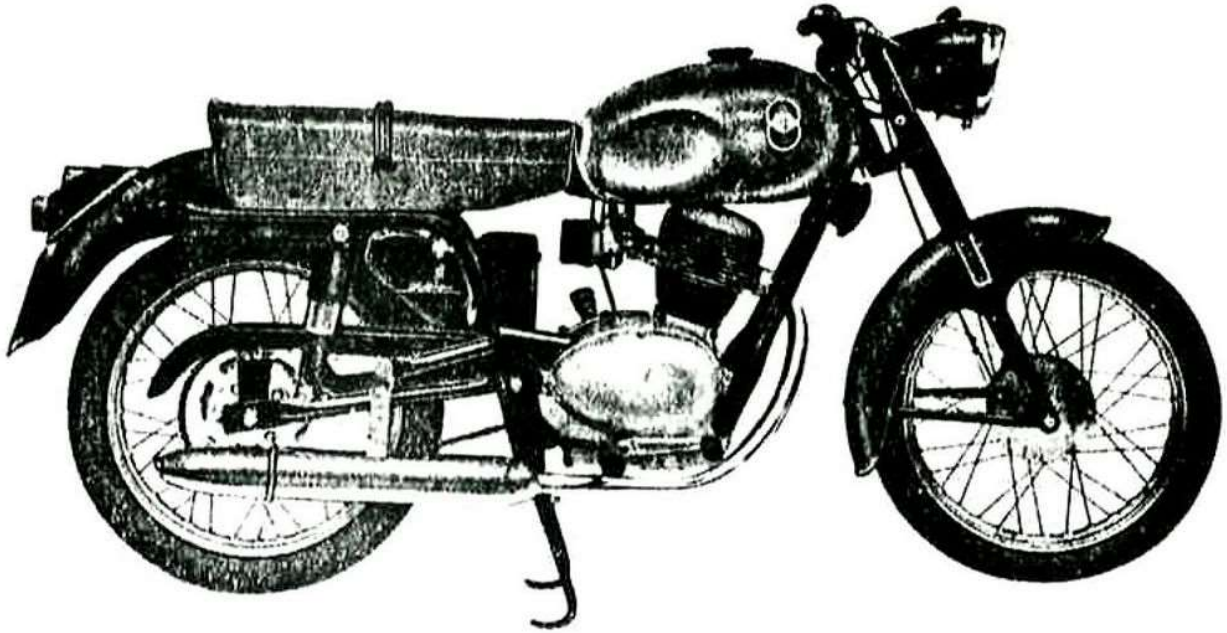


« 98 » Standard MOTOR-CYCLE

(Fig. 3)



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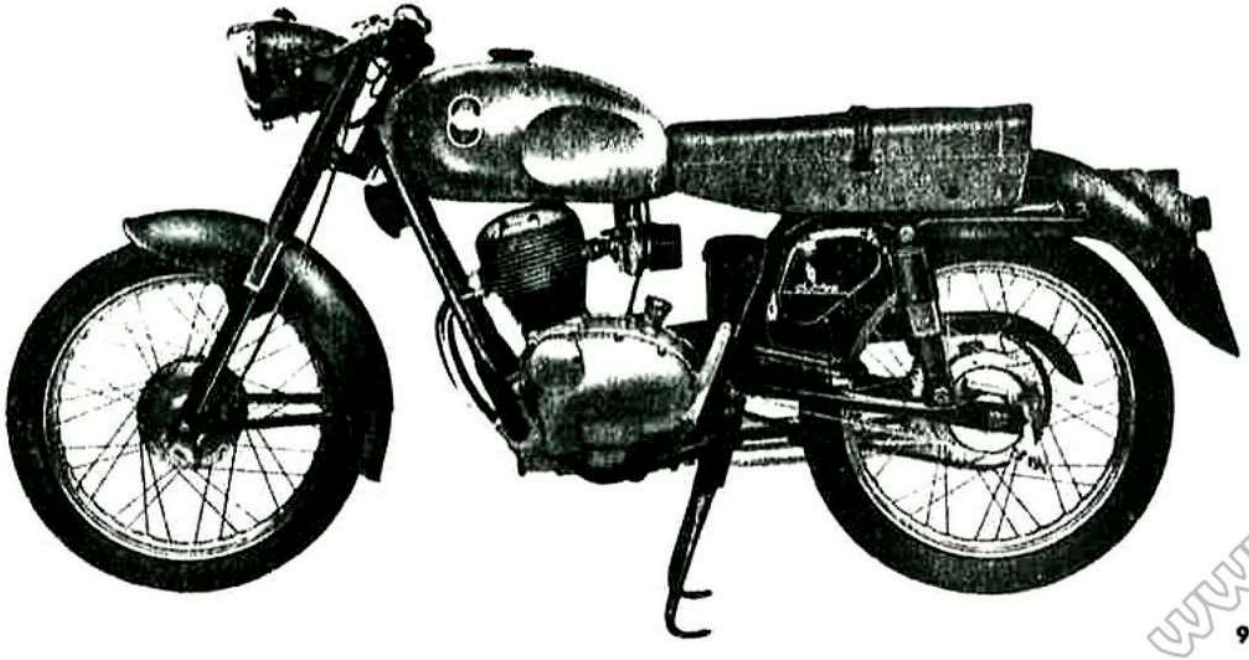
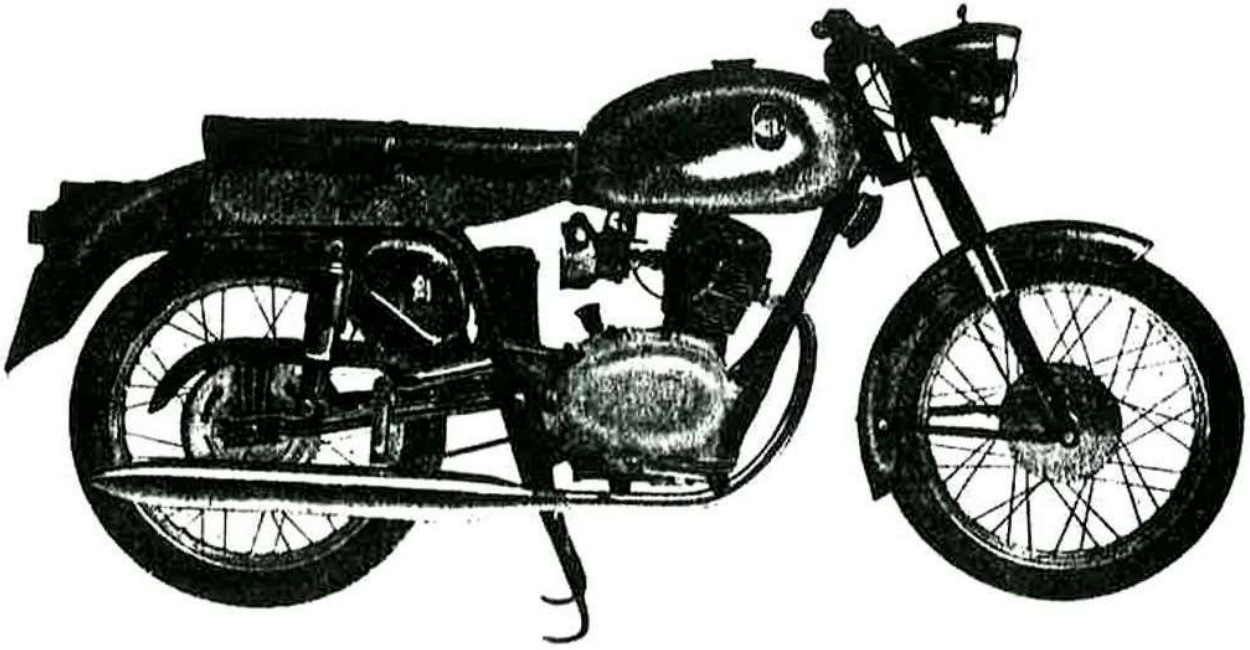


« 124 » Standard MOTOR-CYCLE

(Fig. 4)



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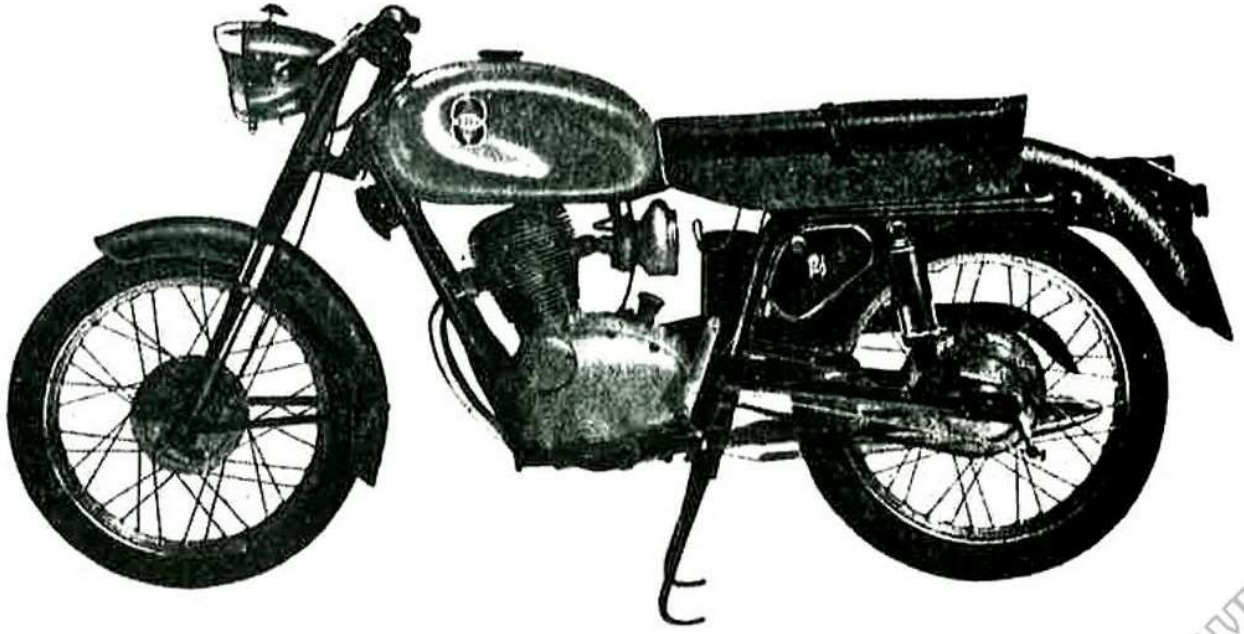
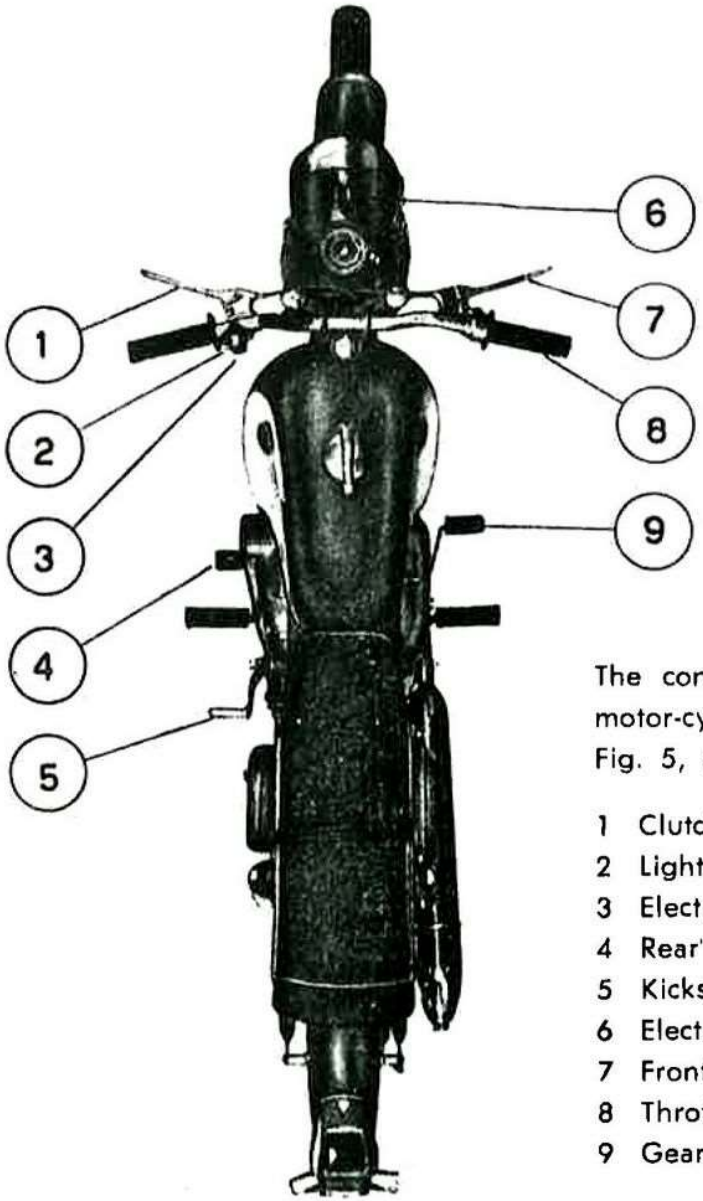


GENERAL CHARACTERISTICS
of the motor-cycles

CONTROL POSITIONS

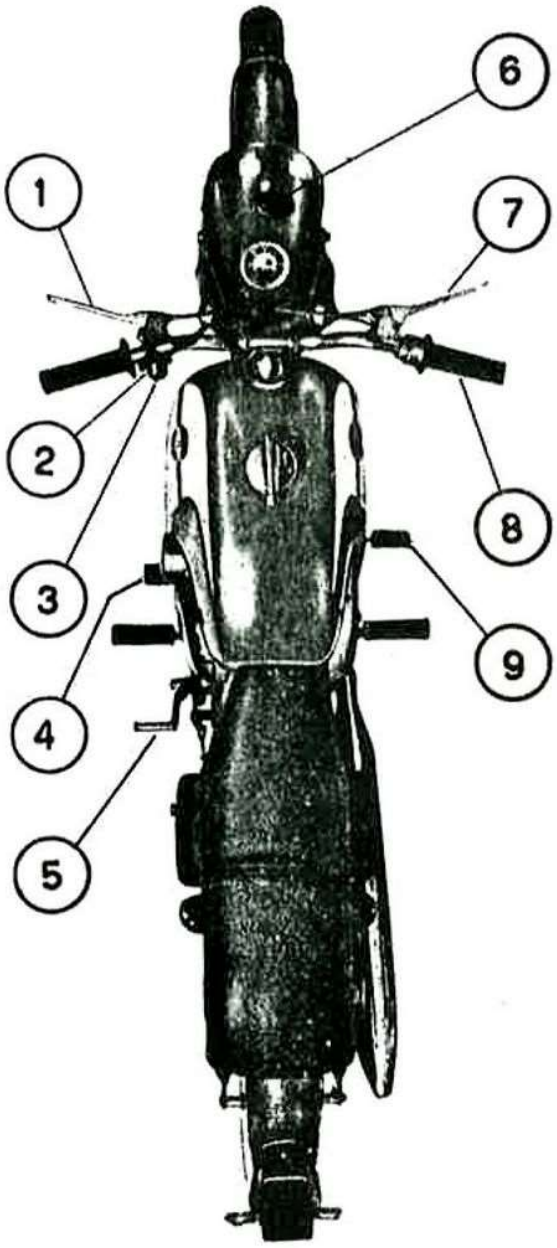
(Fig. 5)



« 98 »

The controls of the « 98 » and « 124 » motor-cycles, positioned as shown in Fig. 5, are as follows:

1 Clutch control lever
2 Light-dimming control lever
3 Electric horn button
4 Rear brake pedal
5 Kickstarter crank pedal
6 Electric circuit switch-key
7 Front brake lever
8 Throttle control handle
9 Gear change lever



« 124 »

IDENTIFYING DATA

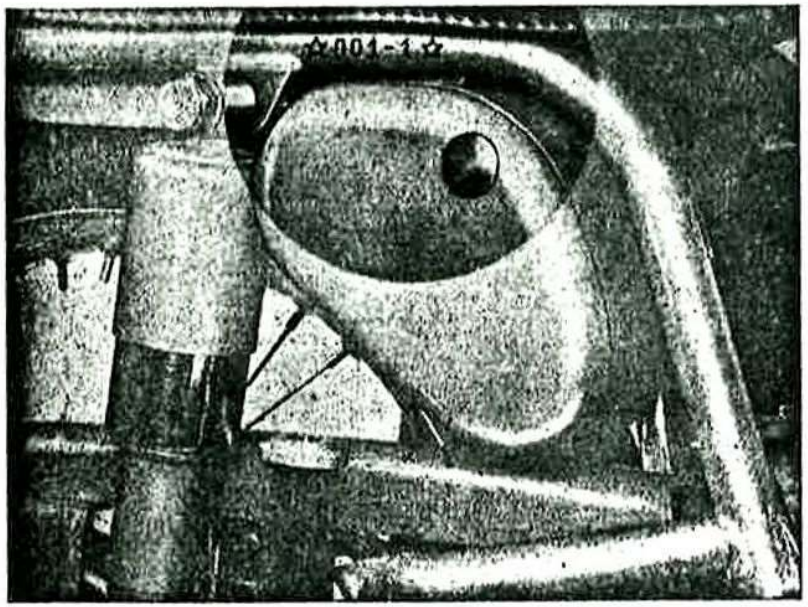
Every motor-cycle has an identification number stamped both on its frame and engine, in the undermentioned positions:

For the engine, on the right-hand side of the crankcase, on the small space provided, near the cylinder support base.

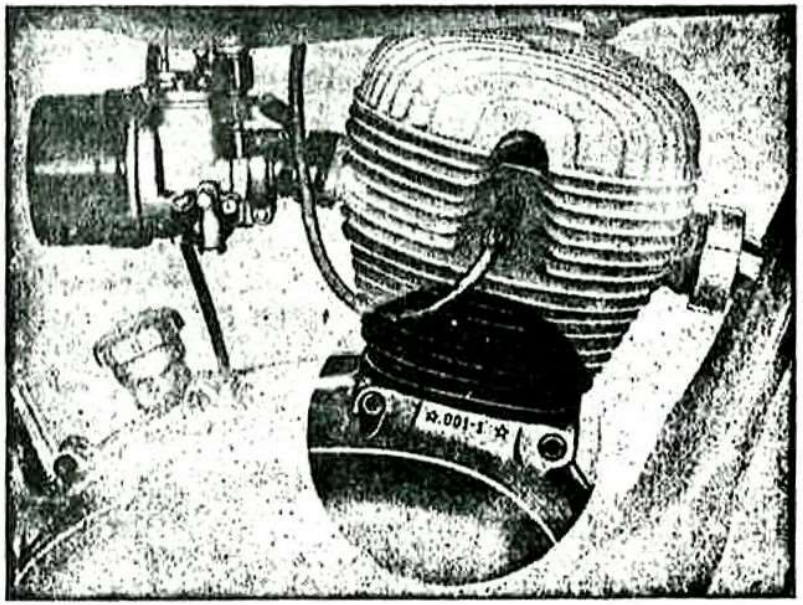
For the frame, on the rear right frame-tube, below the saddle.

This number is for the official identification of the motor-cycle and is quoted on the license of the motor-cycle concerned.

The number should always be quoted when requiring spare parts.



Location of identification number on frame



Location of identification number on engine

Fig. 6

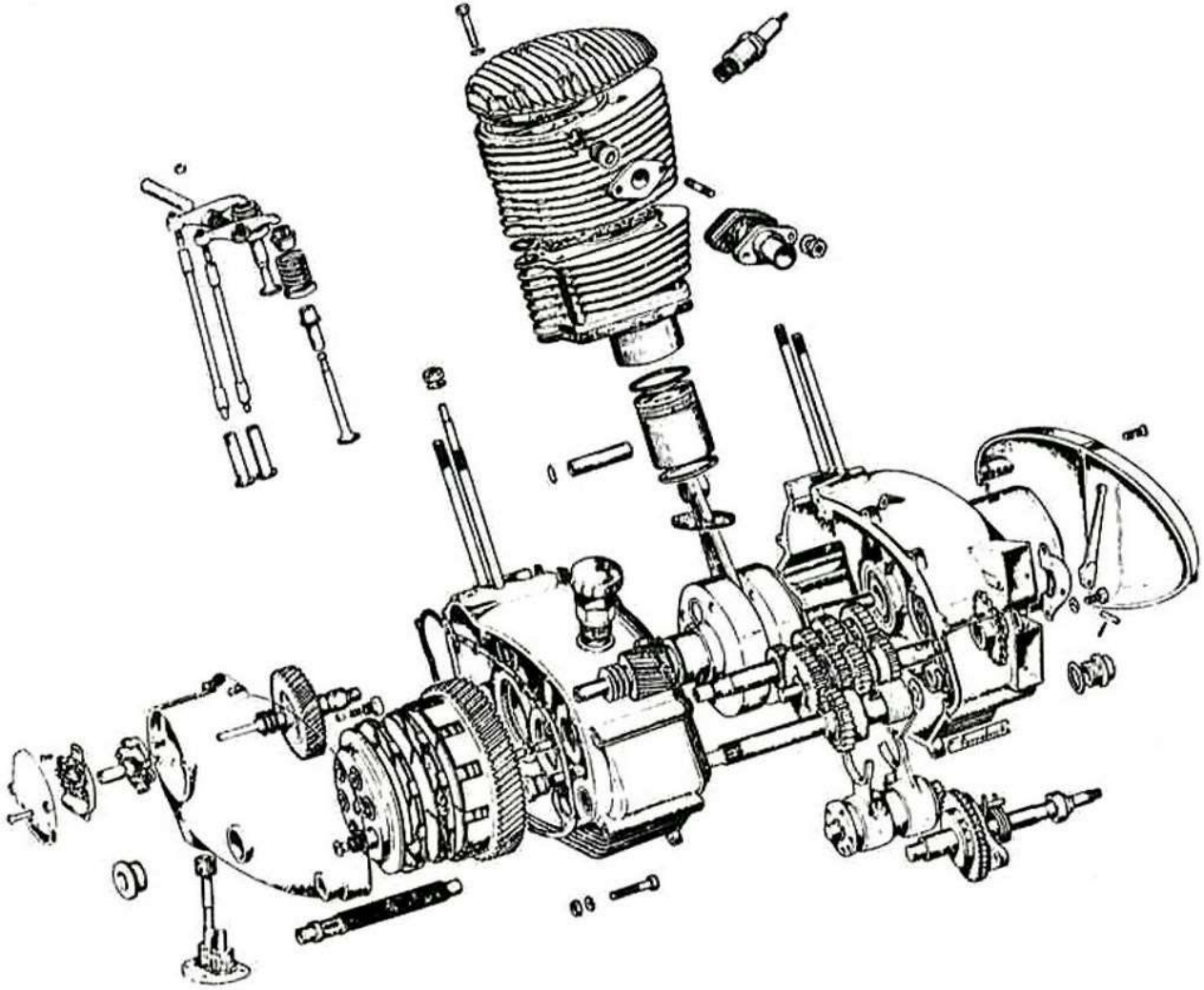


Fig. 7 - Sectional view of dismantled engine.

PERFORMANCES

	« 98 »	« 124 »
Maximum speed: approx . . .	M.P.H. 50	65
Fuel consumption: (according to CUNA) standards, approx per 65 miles .	Gallons 2⅘	½
Maximum surmountable gradient .	35 %	36 %
Fuel-tank range: approx . . .	miles 400	300

The above performances are based on the motor-cycle, with the rider only, travelling on good roads.

MEASUREMENTS AND WEIGHTS

Wheelbase	1.250 metres (abt. 4'1")
Overall length . . .	1.900 » (» 6'3")
Overall width	0.620 » (» 24'½")
Overall height . . .	0.910 » (» 3'0")
Ground clearance	0.175 » (» 7")
Weight of motor-cycle in running order	kg. 103 (abt. 227 lbs.)
Minimum steering radius, with cycle in a vertical position .	2.000 metres (abt. 6'6")

PETROL AND OIL TANK CAPACITIES

	« 98 »	« 124 »
Petrol-tank capacity (in gallons) . .	2½	2⅝
Engine oil sump capacity . . .	kg. 1.5	1.5

ENGINE

4-Stroke single cylinder gas engine, with rod and rocker driven overhead valves.
Battery coil ignition.
Petrol feed.
Air-cooling.
4-Speed pedal operated gearbox
Multi-plate cultch in oil bath.
Engine-wheel chain transmission.

		« 98 »	« 124 »
Number of cylinders . . .		1	1
Bore	mm.	50	56
Stroke	mm.	50	50
Cubic capacity	cc.	98.175.	123.08
Compression ratio		8	7.8
Maximum power, about . .	HP.	6	7
Maximum power rate . . .	r.p.m.	7000	7500
Maximum torque rate . . .	r.p.m.	4700	5000
Useful valve diameters — Inlet . .	mm.	19	21
Useful valve diameters — Exhaust . .	mm.	17	19

Aluminium alloy cylinder head, with cast iron valve seats.
Only for « 124 » the cylinder is of aluminium with cast iron tube.
The lower part of the crankcase is vaned.

CYCLE OF OPERATION (See Fig. 8).

Rod and rocker driven overhead valves.
The cycle of operations drives the connecting rods by means of disc tappets.

Suction	Start: 20° before top dead centre (PMS) End: 60° after bottom dead centre (PMI)
Exhaust	Start: 60° before bottom dead centre (PMI) End: 20° after top dead centre (PMS)

The above data should be checked with a clearance of mm. 0.3 (about 1/16"), between the valves and the rockers.
With cold engine, the normal clearance is of: Inlet: mm. 0.1 (abt. 1/32") - Exhaust: mm. 0.15 (abt. 1/128").

Feed

The carburettor is gravity fed from the tank by means of two taps and double piping; the reserve supply is obtained by keeping one closed.

Make and adjusting of carburettor:

« 98 »	« 124 »
Dell'ORTO ME 16 BS, with 4078 air-cleaner and silencer	Dell'ORTO ME 18 BS, with SF 1 air- cleaner and silencer
Diffuser: mm. 16 (abt. 5/8")	mm. 18 (abt. 1 1/16" diameter
Maximum jet { summer 72 / winter 74	{ summer 78 / winter 80
Gas valve No. 50	No. 50
Minimum jet 35	35
G4 cone-shaped pin on 2nd notch	G 3 on 2nd notch
Atomizer 258/A	258/A

The fuel screw open with a 3/4 turn.

Air control: This closes by pressing the « A » rod (Fig. 13), and opens automatically as the throttle valve opens.

Ignition

Battery ignition, with:

1. Automatic timing contact breaker, connected to the distributing shaft.

   Set advance: 7° ÷ 10°

   Automatic advance: 38° ÷40°

   Full advance: 45° ÷ 50°

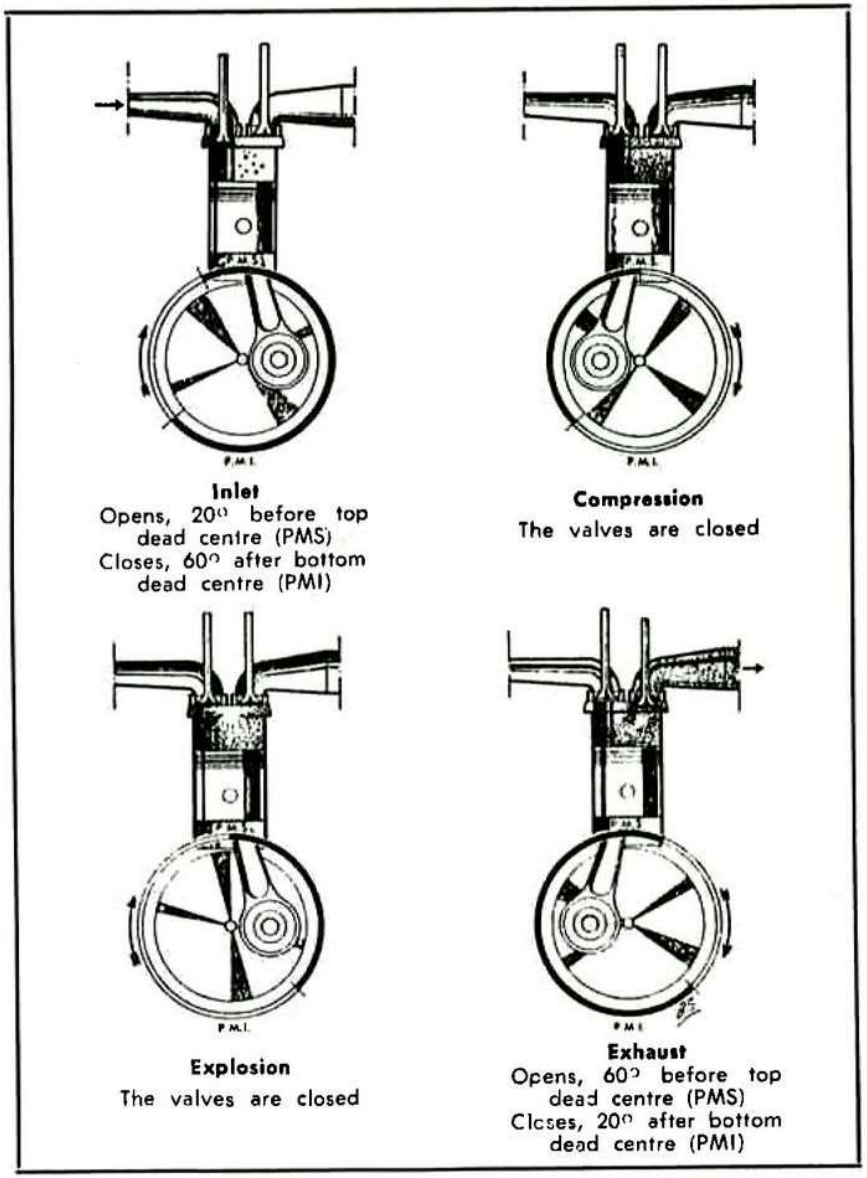


Fig. 8 - Distribution diagram

2. Ignition coil, fitted under the upper frame tube, in the tank opening.
3. Condensor, screwed to the contact-breaker plate.
4. Emergency coil feeder, incorporated in the head-lamp. This device enables the engine to be started even with a flat battery, or without a battery.
5. W 240 T2 Bosch, or similar, spark-plug for the « 98 » and Marelli CW 275 B, or similar, spark-plug for the « 124 ». Diameter and thread pitch: 15 x 1.25 (long thread).

Lubrication (See Fig. 9).

By forced circulation to the driving axle and rockers, by means of a mechanical geared pump and detachable filter.

Clutch

Multi-plate clutch in oil bath. There are four steel driven plates and four lined driving plates.

Transmission

Primary: By helical gears.

Gear ratio: 3.894 (74/19).

Secondary: By chain (½" x 7.8), with flexible coupling between the brake drum and the wheel hub.

	« 98 »	« 124 »
Ratio:	3.857 (54/14) or	3.533 (53/15) or
	3.928 (55/14) or	3.785 (53/14) or
	3.600 (54/15)	3.312 (53/16)

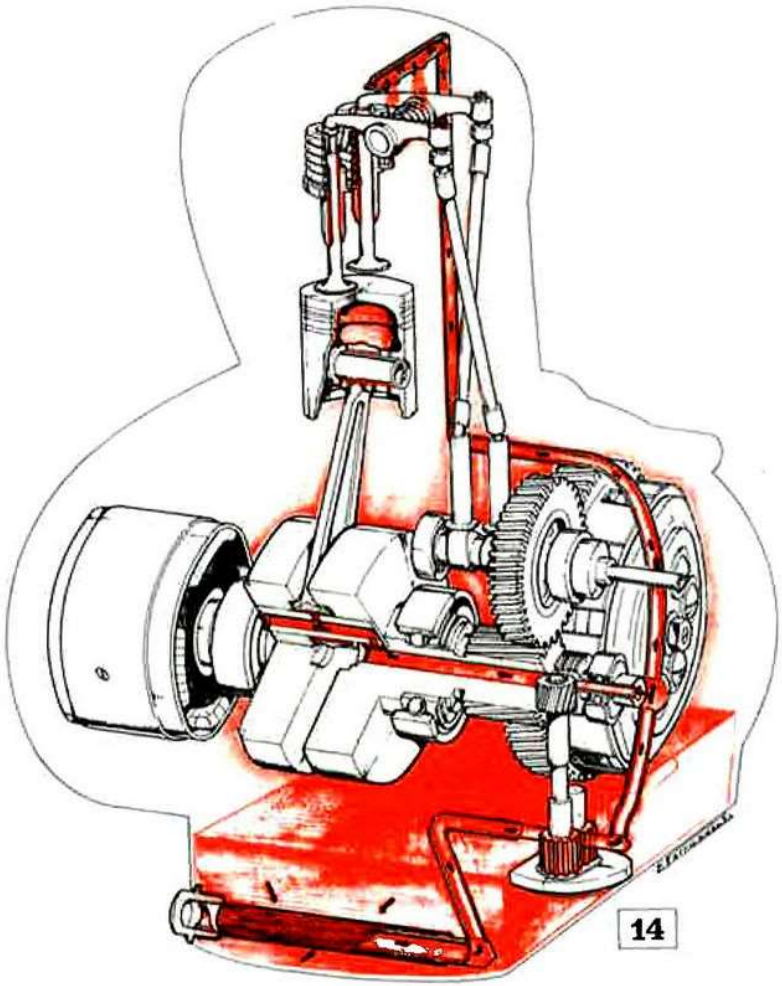


Fig. 9 - Engine lubrication

Gear box

Four speed gear box, with auxiliary shaft and sliding gears controlled by a pedal-lever shifter.

« 98 » gear ratios:

1st speed	1.941 (33/17)
2nd »	1.273 (28/22)
3rd »	0.852 (23/27)
4th »	0.613 (19/31)

« 124 » gear ratios:

1st speed	1.941 (33/17)
2nd »	1.174 (27/23)
3rd »	0.785 (22/28)
4th »	0.613 (19/31)

Frame

The frame is of cold-drawn steel tubes to which are connected the front and rear suspensions, the mudguards, tank, handle bar and saddle.

Front suspension

Telescopic fork, with hydraulic stopping at the end of the run.

Rear suspension

Oscillating fork type rear suspension, with compression acting helical cylindrical springs, incorporated with the hydraulic shock-absorbers enclosed in telescopic covers.

Brakes

Expanding jaw-type brakes on both wheels, acting on the following diameters:

« 98 »: 123 mm. diameter, front and back wheels.

« 124 »: 136 mm. front and 123 mm. rear wheel.

Front, controlled by hand, the back, by pedal.

Wheels

Tangent spoke wheels, with 17" x 2¼" steel rims.

front tyre: ribbed 17" x 2½" for « 98 »;
ribbed 17" x 2½" for « 124 »;

rear tyre: universal 17" x 2.75" R.

Pumping pressures:

with rider and passenger { front tyre 26 lbs. pressure; rear tyre 26 lbs. pressure }

with rider only { front tyre 26 lbs. pressure; rear tyre 23 lbs. pressure }

LIGHTING SET (See Fig. 10).

Dynamo

45 W - 6 V dynamo of the so-called « flywheel » type, the rotor being keyed direct to the driving axle, while the stator, centered by an express housing on the crankcase, is fixed by two studs to same.

Regulator

The regulator is fitted to a small express base, welded to the frame between the front guard-pieces.

Battery

This is of a 7 A/h - 6 V capacity.

Electric horn

6 V.

Lighting equipment

130 mm. diameter headlamp, with incorporated parking light, complete of:

1 25/25 W - 6 V dazzle and anti-dazzle light lamp

1 3 W - 6 V parking light lamp

1 3 W - 6 V pilot lamp.

2 Fuses

1 Removable electric circuit ignition and lighting coil-feeder switch-key

1 Emergency coil-feeder

1 light dimmer, with horn button, fitted to the handle bar

1 Rear light, with reflector, complete with 2 15 W - 6 V lamps for stop light and 5 W - 6 V for number plate and parking light.

The switch-key has three positions:

APRILIA headlamp	middle:	engine ignition	removable key
	left:	parking light	
	right:	dazze and anti-dazzle light	
SIEM headlamp	middle:	open circuit	removable key
	left:	parking light	
	three right positions:	1st-ignition	non-removable key
		2nd-park. light	
		3rd dazzle and anti-dazzle light	

KEY TO CABLE CONNECTIONS

1 SPIA stand for ignition light
2 FAN large stand for tail lamp
3 SPRINT stand for ignition coil
TROM stand for electric horn
4 BAT stand for battery
5 DIN stand for dynamo
6 PUL stand for dip switch

Fig. 10 - Electric wiring layout (SIEM headlight)

1. Ignition key - **2.** Fuse - **3.** Pilot lamp - **4.** Dazzle and anti-dazzle lamp - **5.** Parking light - **6.** Light dimmer with horn button - **7.** Deflector - **8.** Ignition coil - **9.** Regulator - **10.** Electric horn - **11.** Spark-plug - **12.** Dynamo - **13.** Contact-breaker - **14.** Condensor - **15.** Battery - **16.** Stopping switch - **17.** Stop light - **18.** Number plate and parking light, with reflector.

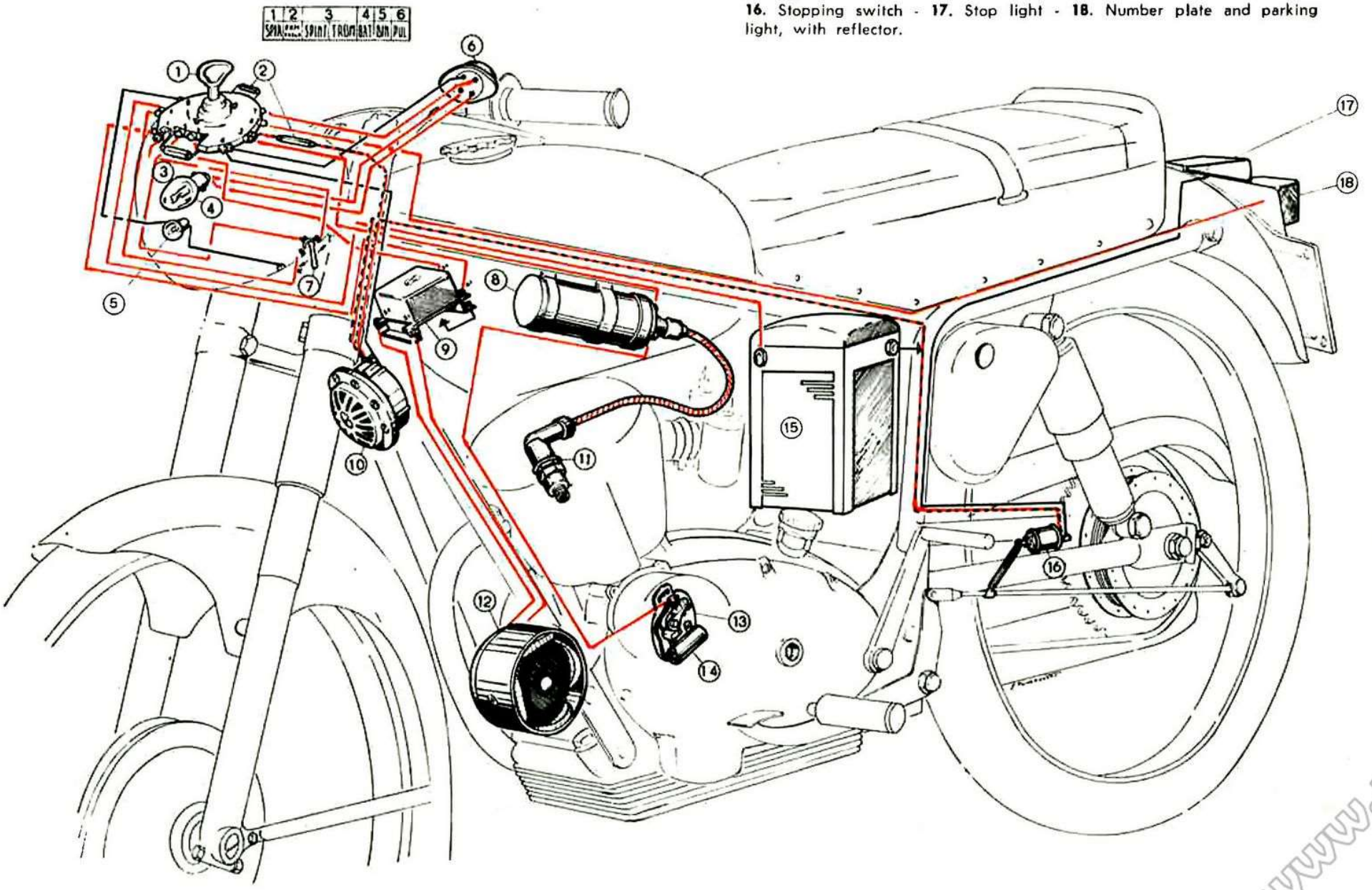
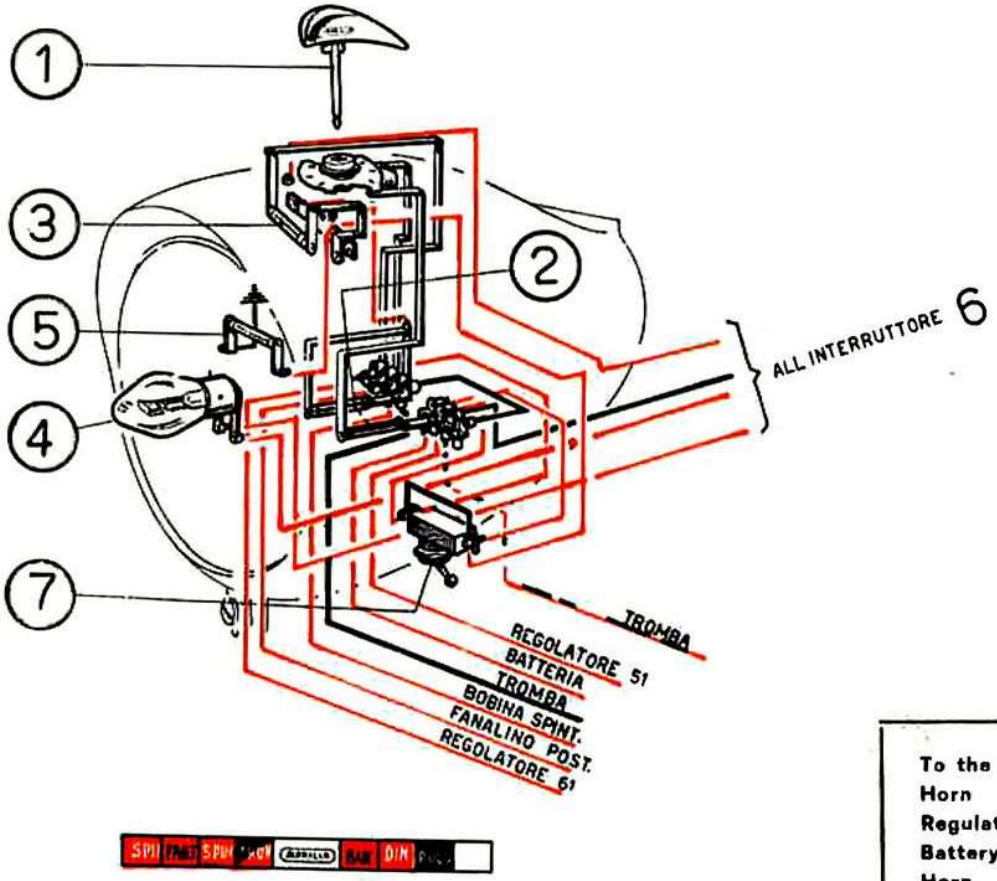
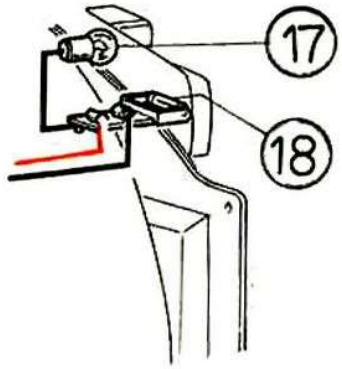


Fig. 11 - Electric wiring layout (APRILIA headlight)

1. Ignition key - **2.** Fuse - **3.** Pilot lamp - **4.** Dazzle and anti-dazzle lamp - **5.** Parking light - **7.** Emergency deflector - **17.** Stop light - **18.** Number plate and parking light, with reflector.





To the switch 6	**All' Interruttore 6**
Horn	**Tromba**
Regulator 51	**Regolatore 51**
Battery	**Batteria**
Horn	**Tromba**
Ignition coil	**Bobina spint.**
Rear lamp	**Fanalino post.**
Regulator 61	**Regolatore 61**

FAULT DIAGNOSIS AND REMEDIES
ADJUSTMENTS

FAULT DIAGNOSIS AND REMEDIES

RESEARCH AND LOCALIZATION AF THE FAULT	CAUSE OF THE FAULT	REMEDIES	NOTES
STARTING DIFFICULTIES			
1 - Feed			
Petrol that does not reach the engine.	Choking of the pipes due to accumulation of dirt.		
a) Hole on the tank cap. Tank tap.	Choked.	Dismantle and clean.	
b) Flexible tube between tap and carburettor.	Broken or choked.	Replace or clean with compressed air.	
c) Carburettor filter.	Choked.	Dismantle and clean.	
d) Jets.	Choked.	Dismantle and clean with compressed air.	
e) Carburettor body.	Choked pipes.	Dismantle the carburettor and clean with petrol.	
Leakage of petrol from the carburettor.	Choking of carburettor.		
f) Float.	Holed.	Replace.	
g) Float.	Defective pin tightness.	Clean or replace together with the float chamber cover.	
h) Carburettor.	Incorrectly positioned.	Adjust (axis of float chamber, vertical).	
2 - Ignition			
a) Spark-plug.	Dirty.	Clean. Restore the distance between the electrodes (0.5 ÷ 0.7 mm.).	

RESEARCH AND LOCALIZATION OF THE FAULT	CAUSE OF THE FAULT	REMEDIES	NOTES
a) Spark-plug.	Formation of pearly grains on the insulating.	Sand paper.	
	Broken insulating.	Replace the spark-plug.	
	Worn electrodes.	Replace the spark-plug.	
b) Battery.	Flat (the warning-light on the headlamp is out, the horn does not work).	Move the emergency deflector, located under the headlamp, to the position marked « DIN » and start the engine by pushing the motor-cycle along.	(See page 112)
c) Contact-breaker.	Dirty points.	Clean with fine grain emery paper or with the express file.	
	Incorrectly adjusted point.	Restore the maximum opening to that of 0.35 ÷ 0.40 mm.	(See page 34)
	Worn or corroded points.	Replace the points.	
d) Condensor.	Inefficient (excessive sparking on the contact-breaker points).	Replace.	
e) Coil.	Loose connections or not properly clean.	Clean thoroughly.	
	Inefficient.	Replace.	
	To check the coil. proceed as follows: Disconnect the spark-plug from the H.T. wire and put it near a cylinder head fin at a distance of about 8 mm., remove the clutch cover and lift and lower the mobile contact-breaker point. Of the coil is efficient a spark should crack between the H.T. wire and the head.		

RESEARCH AND LOCALIZATION OF THE FAULT	CAUSE OF THE FAULT	REMEDIES	NOTES
f) Spark-plug cable.	Protective covering broken.	Replace cable.	
	Loose spark-plug and coil contact.	Restore contacts.	
g) Wiring harness.	Broken protective coverings, with consequent earth discharge.	Replace the defective cable.	
h) Ignition phase.	Incorrect.	Adjust ignition phase.	(See page 129)
	INSUFFICIENT ENGINE EFFICIENCY		
1 - Loss of compression			
a) Cylinder-head coupling.	The head is not properly fixed on the cylinder.	Carefully tighten the nuts.	
b) Gasket between cylinder and head.	Not properly gas-tight.	Replace.	
c) Spark-plug.	Not properly locked on the head.	Tighten.	
d) Valves.	No play.	Adjust.	(See page 32)
e) Val.e seats.	Not perfectly gas-tight.	Regrind valve seat.	(See page 102)
f) Piston-cylinder coupling.	Excessive play.	Ream the cylinder and replace piston.	(See page 81)
g) Piston rings.	Sticking to the piston.	Replace and carefully scrape the grooves on the piston.	
2 - Irregular ignition			
a) Spark-plug.	Incrusted.	Clean.	

RESEARCH AND LOCALIZATION OF THE FAULT	CAUSE OF THE FAULT	REMEDIES	NOTES
a) Spark plug.	Electrodes, too near or too far apart.	Restore the distance between the electrodes (0.5 ÷ 0.7 mm.).	
	Worn electrodes.	Replace the spark-plug (approximate life of a spark-plug, kilometer 10.000).	
	(Spontaneus ignition).		
b) Contact breaker.	Incorrectly adjusted points.	Restore the maximum opening to that of 0.35 ÷ 0.40 mm.	(See page 34)
	Too advanced or retarded ignition.	Adjust the contact-breaker plate to obtain the prescribed fixed advance of 6° from the top dead centre.	
c) Condensor.	Defective (irregular explosions).	Replace.	(See page 129)
d) Dynamo.	Does not charge (battery almost flat):		
	a) worm brushes;	Replace brushes.	Verify the condition of the battery
	b) dirty commutator;	Clean.	
	c) scratched commutator;	Remove scratches.	
	d) obsolete regulator.	Replace.	
3 - Irregular feeding			
See « Starting difficulties », para. 1, a), b), c), d), e), f), g), h).			
a) Gas valve.	Excessive play between gas valve and carburettor body.	Ream the carburettor body and substitute the valve with one of a larger size.	(See page 106)

RESEARCH AND LOCALIZATION OF THE FAULT	CAUSE OF THE FAULT	REMEDIES	NOTES
EXCESSIVE FUEL CONSUMPTION			
1) Make sure that the carburettor is in perfect order, as previously described. It is to be borne in mind that bad carburetion may cause an excess fuel consumption.			(See page 25 and 106)
2) Maximum jet.	Oversize.	Replace with one of equal number.	
	Too big.	Try with one of 5 units lower.	
3) Tapered pin.	Too high.	Try lowering it by a notch.	
EXCESSIVE OIL CONSUMPTION			
1) Piston-cylinder coupling.	Excessive play.	Ream the cylinder and replace the piston with a larger one.	(See page 81)
2) Piston rings.	Worn or stuck.	Replace.	(See page 85)
3) . Valve-guide coupling.	Excessive play.	Restore the correct coupling by replacing the guide, the valve, or both (This latter solution is always advisable).	(See page 89)

RESEARCH AND LOCALIZATION OF THE FAULT	CAUSE OF THE FAULT	REMEDIES	NOTES
4) Cylinder - crankcase gasket and crankcase coupling gasket.	Imperfet tightness.	Replace, making sure that the coupling surfaces are perfectly flat.	To perform this, it will be sufficient to remove the cover and the mechanism underneath
5) Gaskets on exit of the lay shaft, driving shaft, clutch shaft and gear selector shaft.	Imperfet tightness.	Replace.	
DEFECTIVE CLUTCH OPERATION			
1 - Slipping of the clutch			
a) Control wire.	Too stretched.	Adjust with one of the express regulating devices.	(See page 33)
b) Clutch plates.	Dirty with oil. Excessively worn.	Dismantle and clean with petrol. Replace the plates.	
c) Springs.	Detensioned.	Replace.	
2 - Clutch that does not disengage			
a) Control cable.	Too loose.	Adjust with one of the express regulators.	(See page 33)*
	Uneven of the springs.	Adjust by acting on the express spring stop-nut.	
b) Clutch plates.	Swollen gasket. Deformed.	Replace the lined plates. Replace the steel plates.	

RESEARCH AND LOCALIZATION OF THE FAULT	CAUSE OF THE FAULT	REMEDIES	NOTES
NOISY ENGINE			
1 - Rockers - Valves.	Excessive play (noisy head).	Adjust. when cold { 0.1 mm. suction 0.15 mm. exhaust	(See page 32)
2 - Lay shaft gear	Excessive mesh play.	Replace the gear.	(See page 105)
INSUFFICIENT BRAKING			
a) Front brake lever.	Too loose (excessive play).	Adjust.	(See page 35)
b) Rear brake pedal.	Too loose (excessive play).	Adjust.	(See page 35)
c) Brake shoes.	Shiny. Worn out.	Rub with emery cloth. Replace.	

ADJUSTMENTS

Allowance between rockers and valves (Fig. 12).

The operation is performed, while the engine is cold, as follows:

Remove the cylinder head, check the tightening of the stud-bolt nuts and loosen the lock nuts of the regulators with a 10 mm. spanner.

Using a screwdriver, tighten or loosen the regulators to obtain the prescribed allowance of a 0.1 mm. for the inlet valve and 0.15 mm. for the exhaust valve. After having checked with a shim, lock the lock nut, holding the regulator still with a screwdriver.

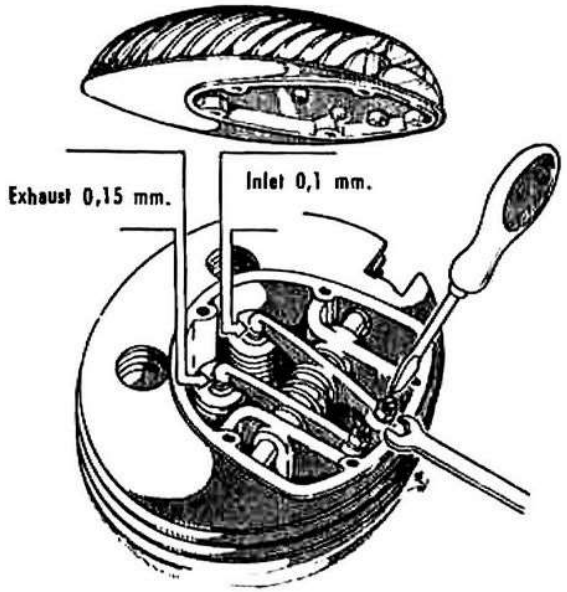


Fig. 12

Carburettor adjusting

The carburettor has been adjusted by us before leaving our works, but if accidental causes should alter this adjustment, to re-adjust same, proceed as follows:

a) Minimum adjustment.

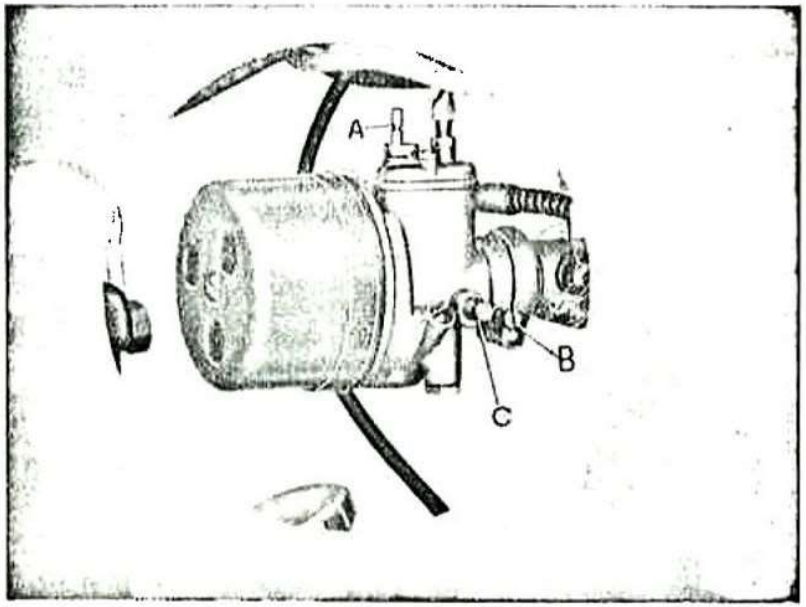
This is performed by operating on the screws C and B (See Fig. 13) which respectively adjust the position of the valve and the minimum passage of air, until the correct mixture combination is found, so as to obtain the required minimum. At this stage, on slowly opening the gas control, the engine should not misfire or stop. Otherwise, sligthly tighten the minimum air screw, until this weak point disappears.

Usually, the minimum air screw should be opened by a turn, or a turn and a half, with respect to its full closing.

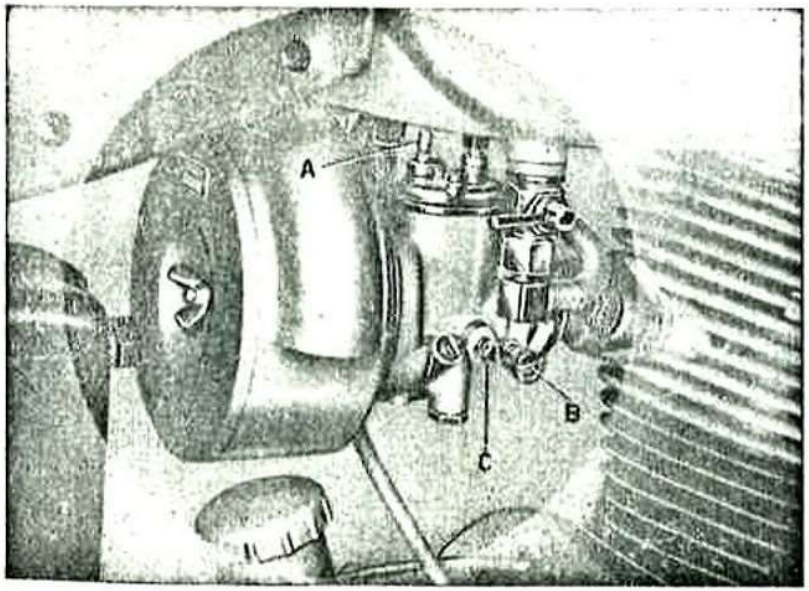
b) Maximum adjustment.

If the jets, valves and tapered pin are of the prescribed gauge and are not unduly worn, the adjustment should be in order; otherwise, and consequent especially to variations in petrol density or considerable changes in temperature and pressure (mountain) it is necessary to change the maximum jet, or the position of the tapered pin.

It is, however, to be borne in mind that by increasing the density of the petrol, or diminishing the temperature, it is necessary to enrich the mixture by moving the tapered pin upwards, or increasing the number of the jet, and vice-versa, if the petrol density if the petrol density diminishes or the temperature increases.



« 98 » motor-cycle carburettor



« 124 » motor-cycle carburettor

Fig. 13

Adjusting the clutch (See Fig. 14).

Operate on the wire-pulling nut A. In the event this should be at the end of its thread, screw it back again and, then, operate on the wire-puller B, setting by means of the wire-puller nut A, a play of mm. 4 (about 1/8") at the tip of the lever on the handle bar.

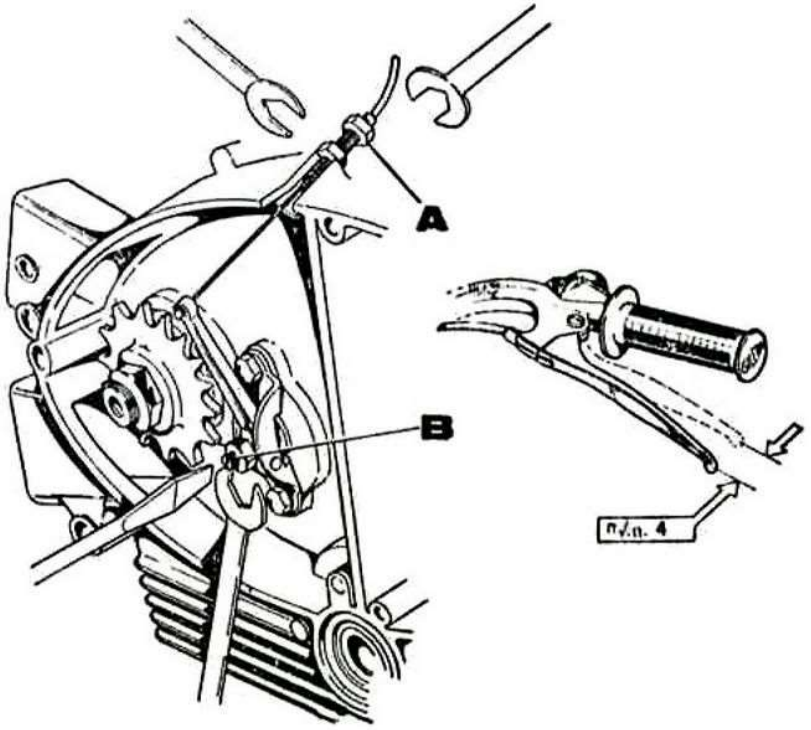


Fig. 14

Adjusting the contact-breaker (Fig. 15).

Check the conditions of the contacts; if they are dirty, clean them with a rag dipped in petrol, porperly drying them. If the contact surfaces should be uneven in any way, file them flat with the special file, properly cleaning them. Should the cam lubricating felt be dry, damp it by using not more than two drops of mineral oil.

To adjust the contacts, operate in the opening A with a screwdriver, after having loosened the screw B, so that the clearance between the contact points be of mm. 0.35 ÷ 0.40. After having completed the above operation, it is advisable to re-adjust the phasing of the ignition advance. After washing with petrol and drying with blasts of compressed air, lubricate the pins of the main body, the cam fork and the cam guide pin of the automatic timing unit with a few drops of mineral oil.

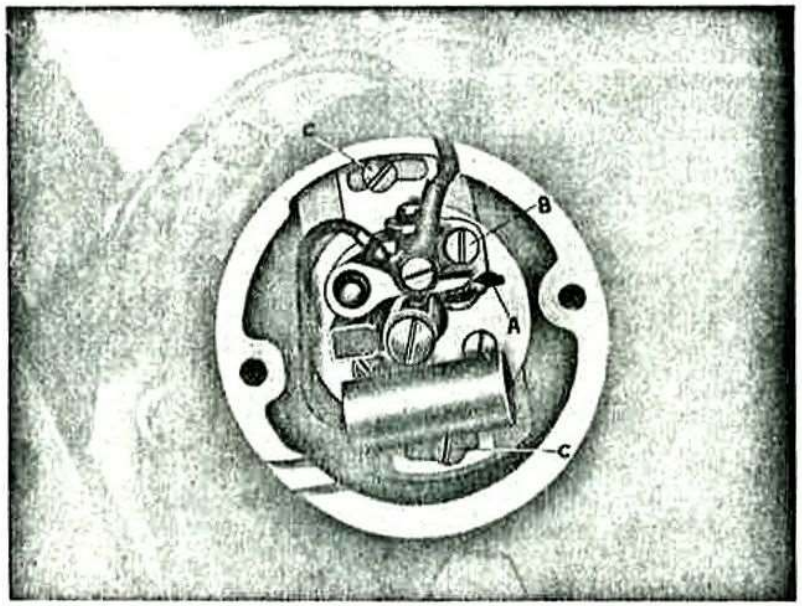


Fig. 15

Adjusting the chain (Fig. 16).

The adjustment of the chain is effected by operating uniformly on the tensioners, after having loosened the wheel stud fixing nuts, and the nut fixing the chaincover to the fork. To check the correct chain tension, place the cycle on its

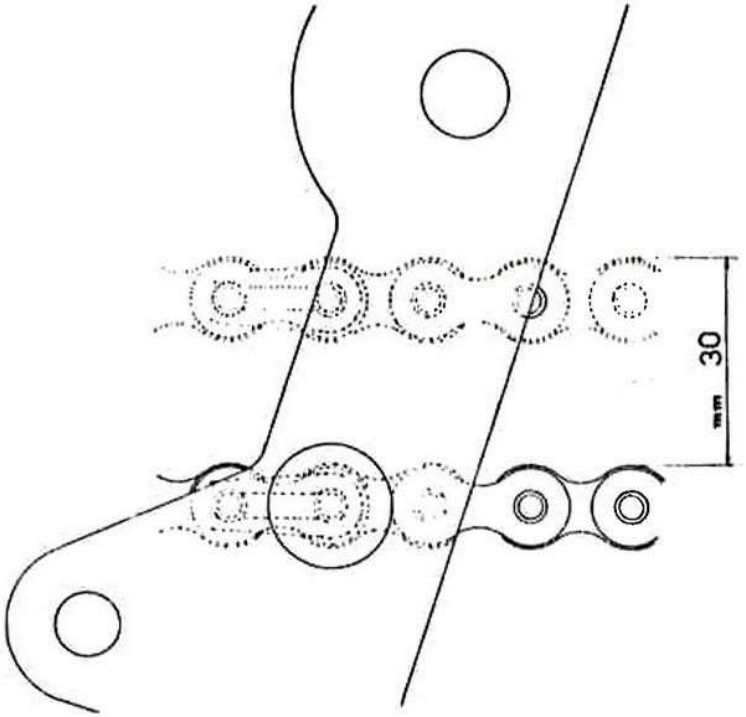


Fig. 16

prop-stand, and measure the slack along the edge of the rear engine support plate, wich results by lifting the lower edge of the chain along this edge. This slack should be of 30 mm. (about 1.1811").

Adjusting the brakes (Fig. 17).

The adjustment of the front brake control is performed by operating on the cable adjuster, positioned on the brake drum. it is necessary to allow 4 mm. (1/8") play at the tip of the brake lever on the handle bar.

The rear brake is adjusted by operating on the knurled knob, screwed on the control rod. Adjust up to leaving a play of 10-15 mm. (about 3/8"-9/16") at the tip of the pedal.

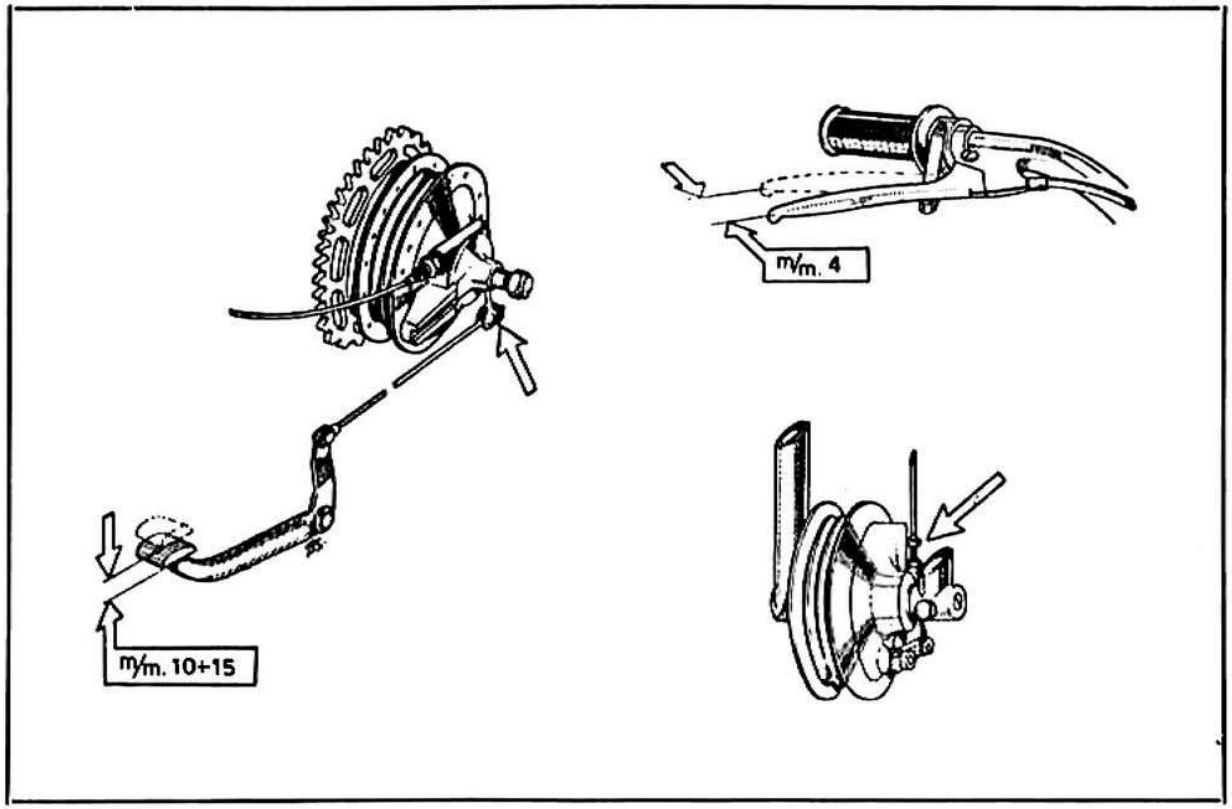


Fig. 17

TOOLS AND EQUIPMENT

STANDARD TOOLS

The following list includes the tools normally available on the market for « 98 » and « 124 » motor-cycle requirel

1 Set of moulded double spanners.
1 Complete set of hexagonal T-shaped spanners.
1 mm. 25 x 26 straight socket-wrench.
1 Socket-wrench pin.
1 mm. 5 Spoke-pulling spanner.
1 mm. 5.5 Spoke-pulling spanner.
1 Sector-wrench for diameters from mm. 45 to 50.
1 American-type screwdriver of mm. 150 length.
1 Fork-screwdriver of mm. 75 length.
1 Electrician-type screwdriver of mm. 150 length.
1 Pair of knurled-handle universal pliers of 160 mm. length.
1 Pair of external « Seeger » ring pliers 130 mm. long with straight noses.
1 Pair of bent-nose pliers.
1 Brugola No. 6 spanner
1 Pair of American-type pliers for mm. 50 to 100 diametre piston-rings.
1 Lead or copper mallet.
1 Buffalo-skin mallet of 260 grammes weight.
1 Dial comparator with support.
1 Ignition-phase detecting unit.
1 Saw for removing mica from collectors, of mm. 130 long.
1 Battery electrolite densimeter.
1 Set calipers.

SPECIAL TOOLS AND EQUIPMENT

The following list includes the special tools and equipment expressly made for dismantling overhauling and reassembling purposes.

The page number where the tool concerned is described or illustrated, is shown in addition to the part number.

DISMANTLING

FOREWORD ON DISMANTLING

In this part, a sequence of necessary operations is illustrated to completely take motor-cycle to pieces, according to a logical progressive procedure.

It is advisable to keep faithfully to the text and, above all, to use the tools indicated, which guarantee the successful outcome of the operations, apart from saving time.
It is advisable not to dismantle those prats that do not need to be repaired or checked, especially the forced couplings such as ring packings, bearings, pins, dowels, bushings, locked stud bolts, etc.

Each tool is indicated by its design number, while the flat and box spanners, the screwdrivers and pliers are indicated respectively with the symbols:

and with the size of the hexagon of the spanners in question. where no tools is indicated, the operation can be performed by hand.

We advise to make a note of the number and of the position of the adjusting thicknesses, and arrange the dismantled pieces in such a way as to avoid confusing them with parts belonging to another vehicle. Furthermore, take the necessary steps to keep the pieces free from dust and oxidation, in the event they have not to be re-assembled at once.

DISMANTLING THE ENGINE FROM MOTOR-CYCLE

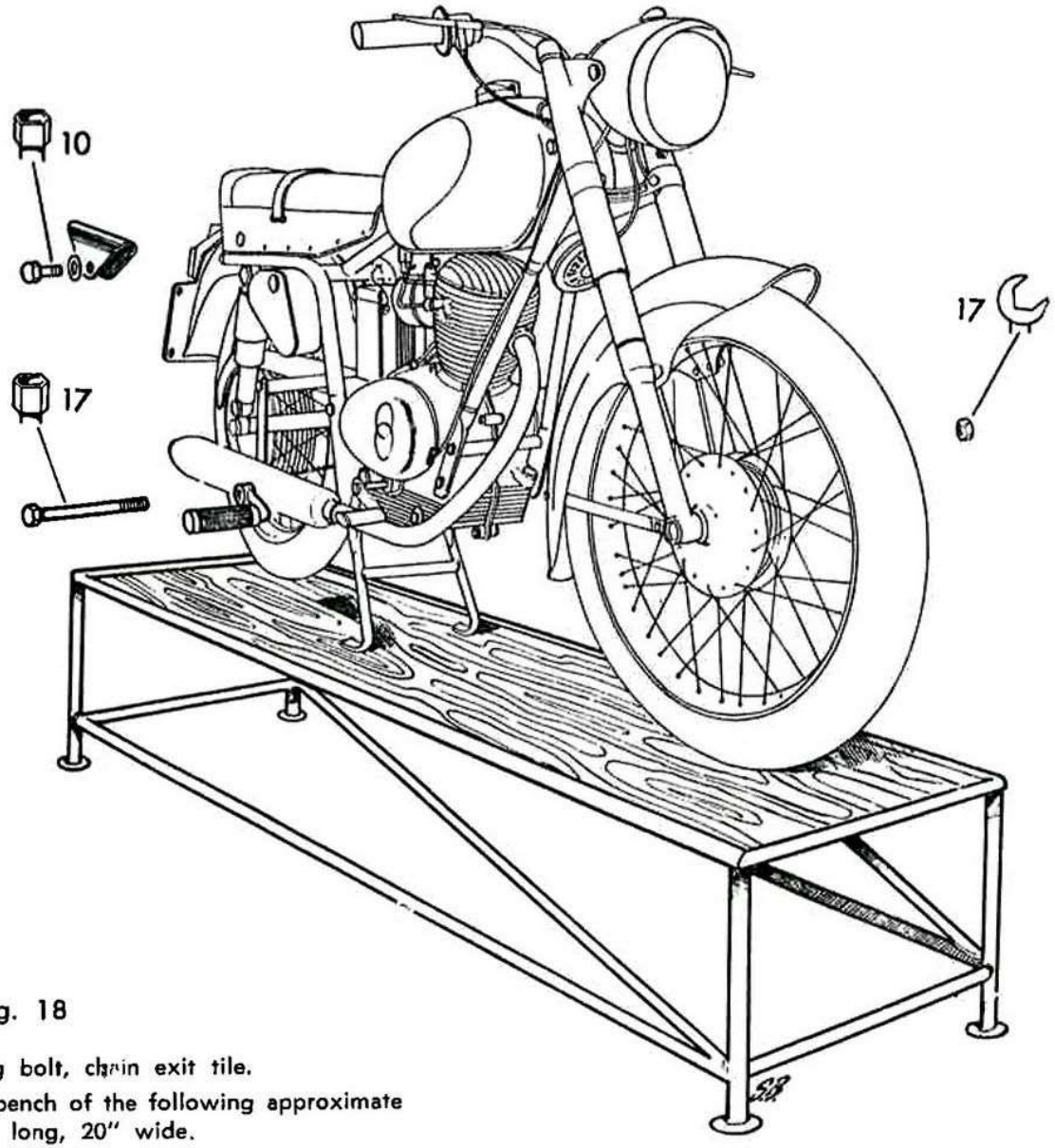


Fig. 18

1 - Footrest, lover engine-fixing bolt, chain exit tile.

Place the motor-cycle on a bench of the following approximate dimensions: 24" high, 6'6" long, 20" wide.

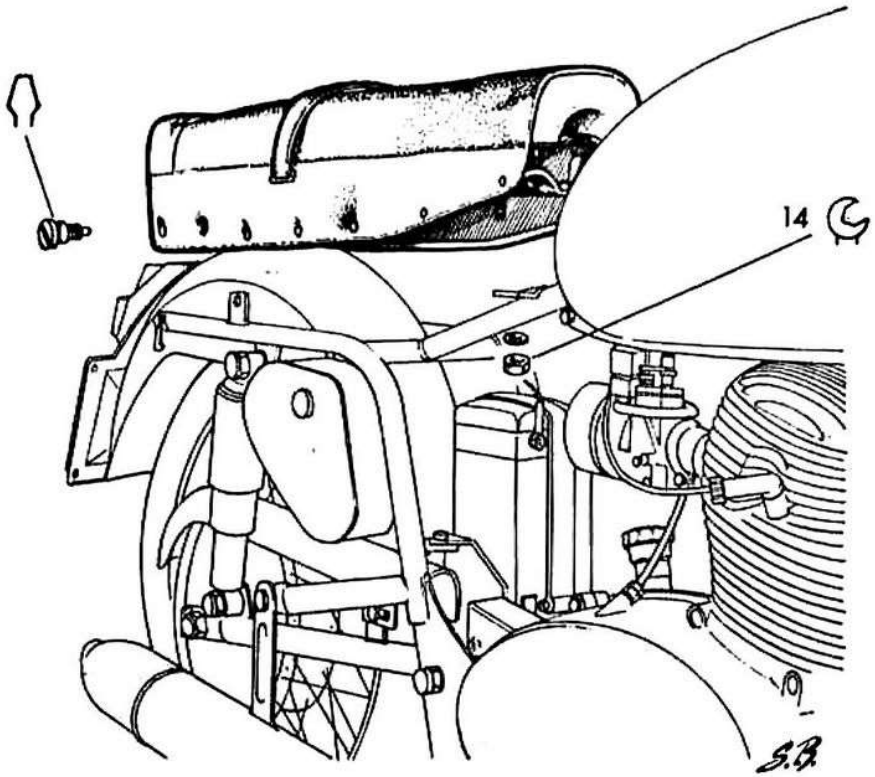


Fig. 19

2 - Saddle.

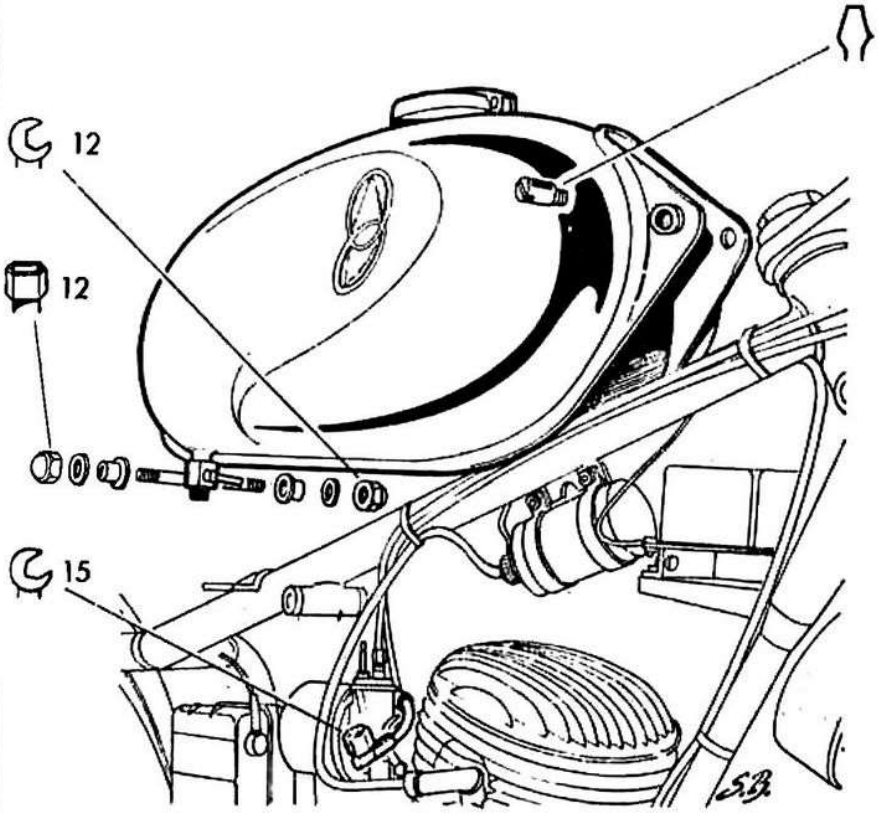


Fig. 20

3 - Petrol tank.

DISMANTLING THE ENGINE FROM MOTOR-CYCLE

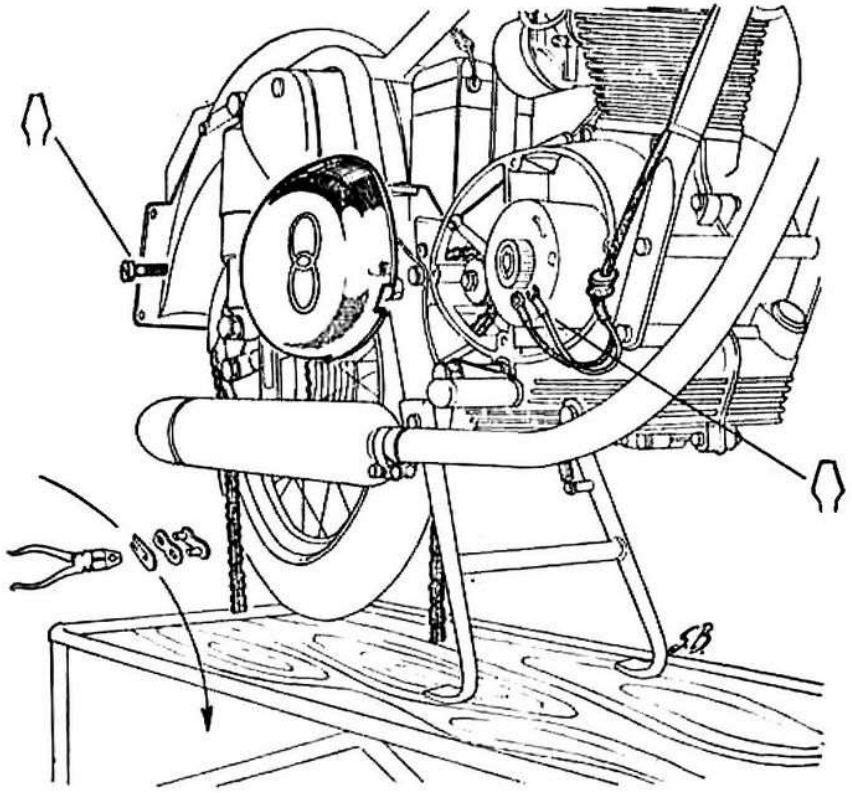


Fig. 21

4 - Remove the right hand side crankcase cover, and disconnect the dynamo wires.

5 - Open and slide the chain out.

N.B. - In replacing the chain, fit the connecting link spring with its closed end turned in the moving direction of the chain, as shown in Fig. 21.

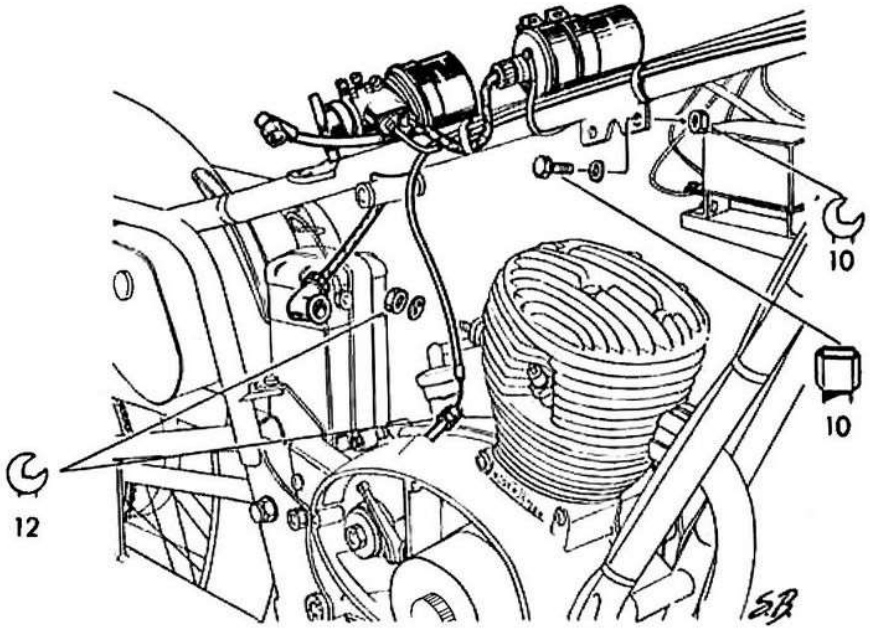


Fig. 22

6 - Disconnect the spark-plug cap.

7 - Disconnect the clutch control cable.

8 - Disconnect the ignition coil and shift it on to the frame tube.

9 - Remove the carburettor and place it on the frame tube.

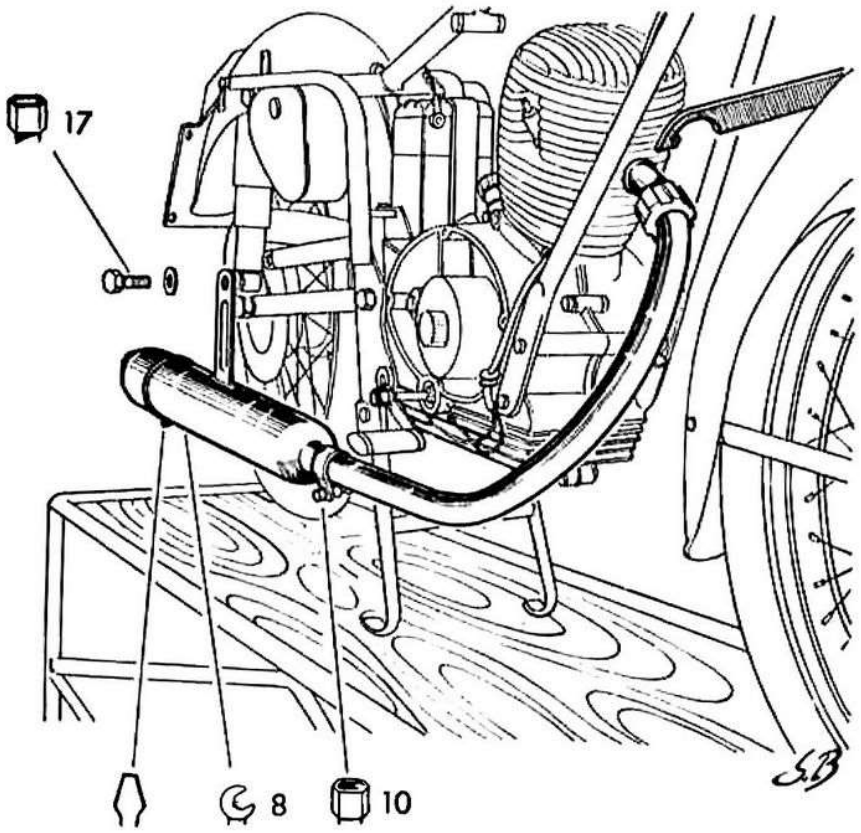


Fig. 23

10 - First, loosen the bolt connecting the silencer to the frame, then the ring holding the exhaust pipe, with the box-spanner and remove the whole unit.

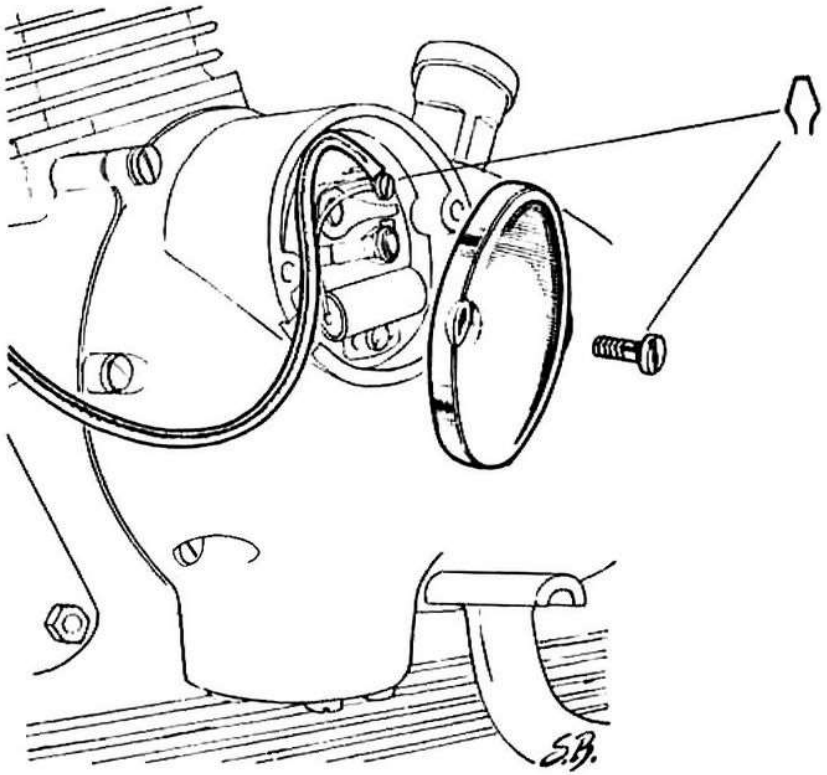


Fig. 24

11 - Remove the contact-breaker cover and disconnect the wires.

DISMANTLING THE ENGINE FROM MOTOR-CYCLE

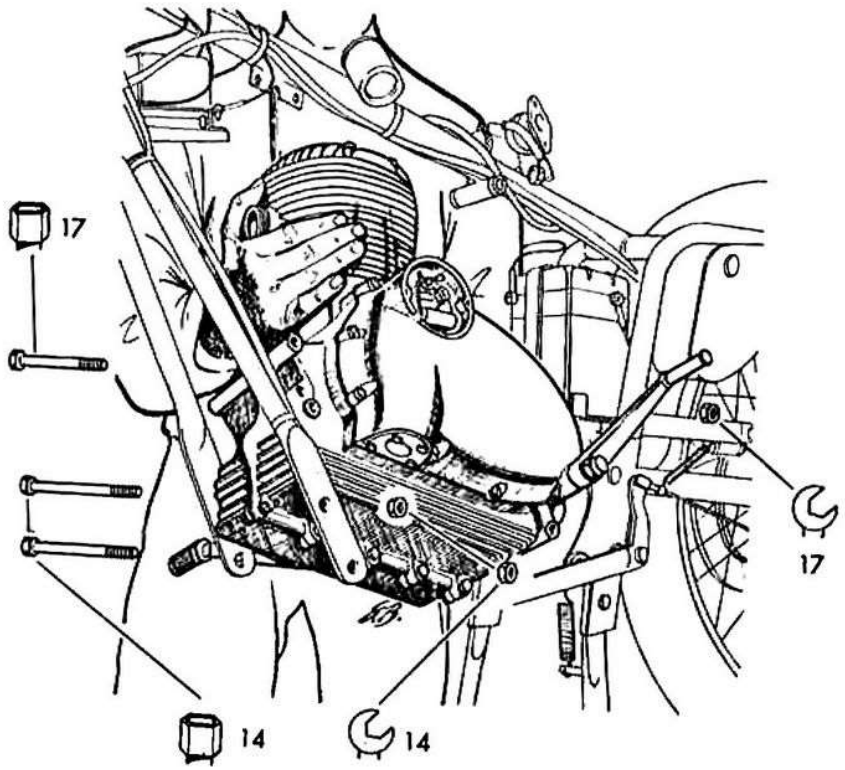


Fig. 25

12 - Slide the front stud bolts out that fix the engine to the frame and loosen the rear screw.

13 - Supporting the engine, completely remove the rear screw, lift, and, turning horizontally, lay the engine on the bench.

DISMANTLING BACK WHEEL AND BRAKE

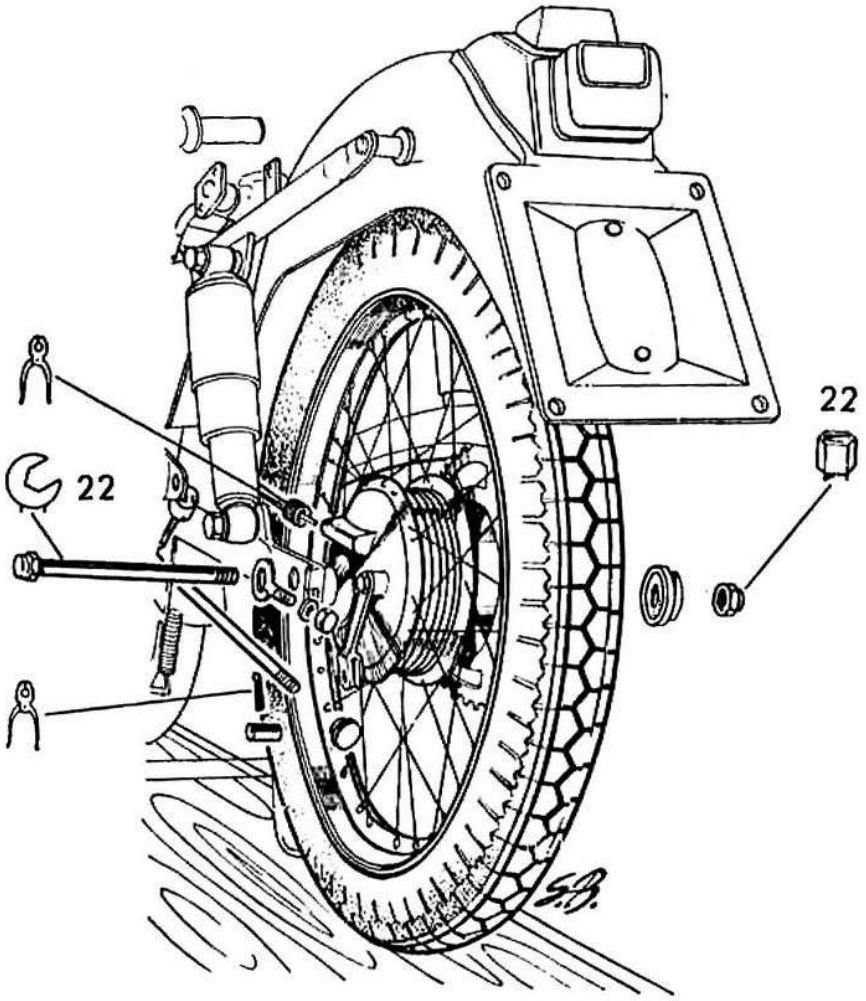


Fig. 26

14 - Back wheel.

DISMANTLING BACK WHEEL AND BRAKE

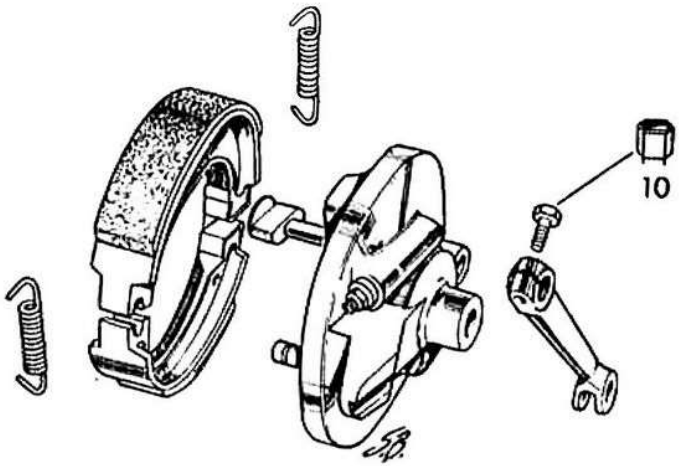


Fig. 27

15 - Brake shoe holder disc.
N.B. - It is advisable to apply to the makers for the eventual replacement of the brake shoes.

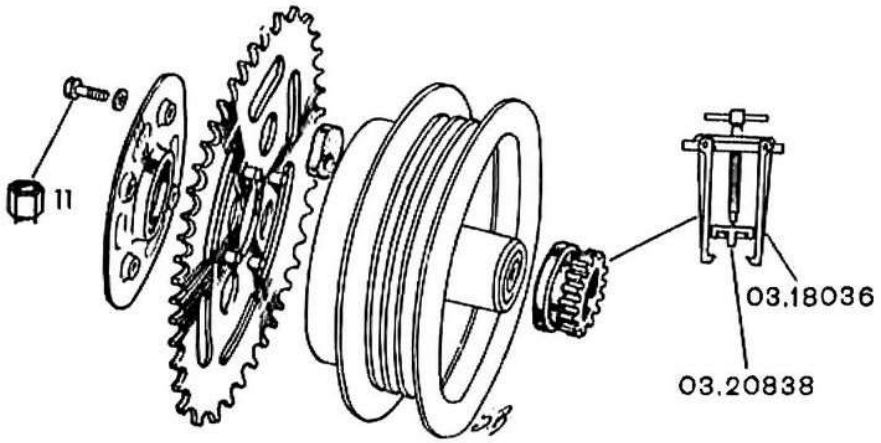


Fig. 28

16 - Rear wheel sprocket.

17 - Speedometer control gear.
To extract, use a special puller.

DISMANTLING BACK WHEEL AND BRAKE

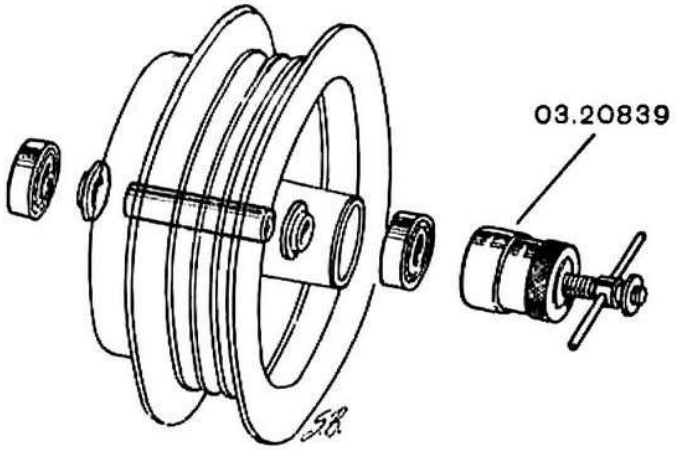


Fig. 29

18 - Back wheel hub bearings (only for replacing).

DISMANTLING REAR SUSPENSION

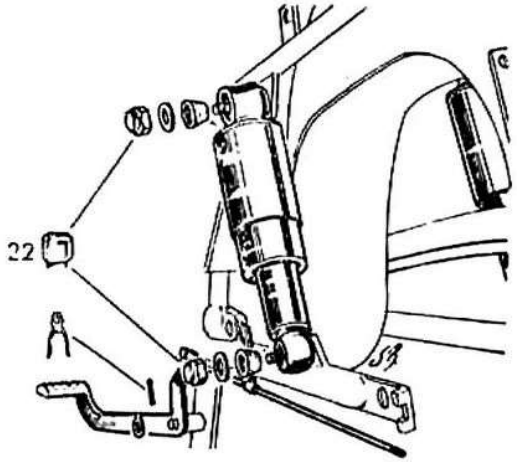


Fig. 30

19 - Shockabsorbers.

20 - After having disconnected the stop light switch spring from the clamp, remove the brake pedal.

DISMANTLING REAR SUSPENSION

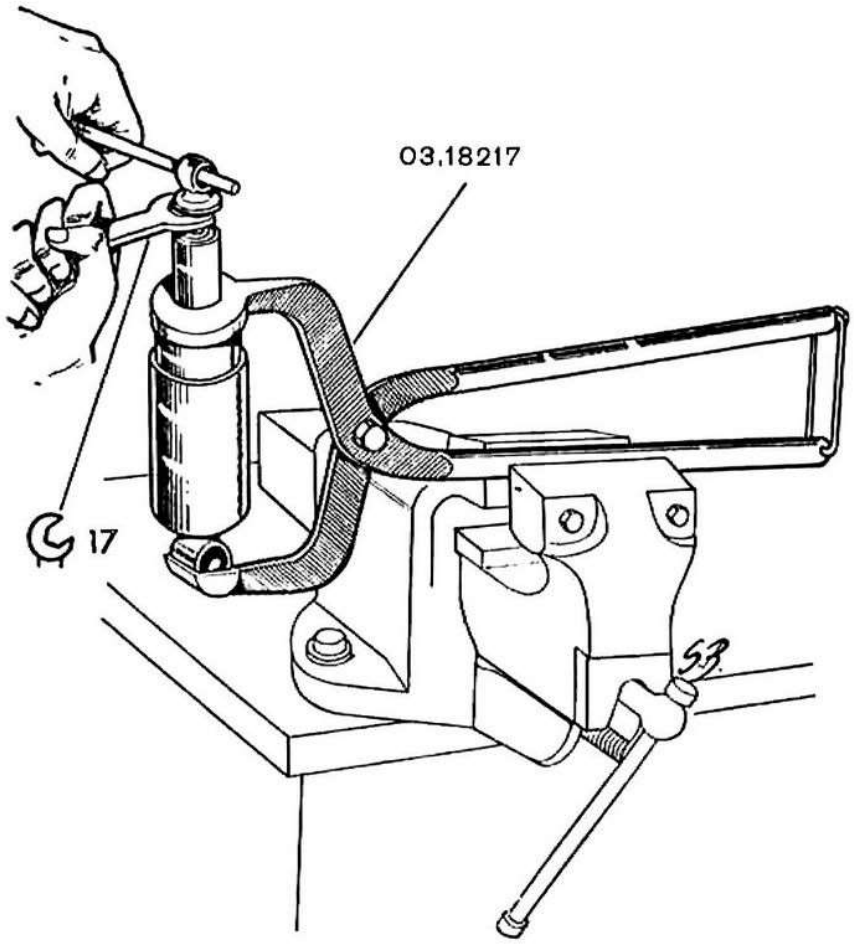


Fig. 31

21 - Shockabsorber casings.

N.B. - The dismantling of the body of the shockabsorber valve should be solely carried out by the makers.

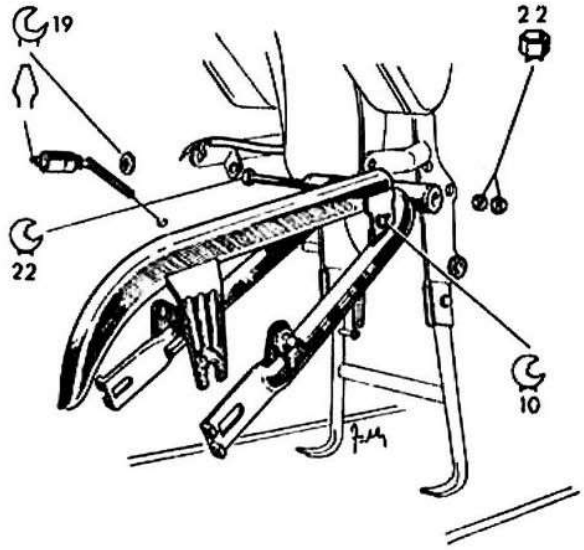


Fig. 32

22 - Chain-cover.
23 - Back fork.
24 - Stop-light switch.

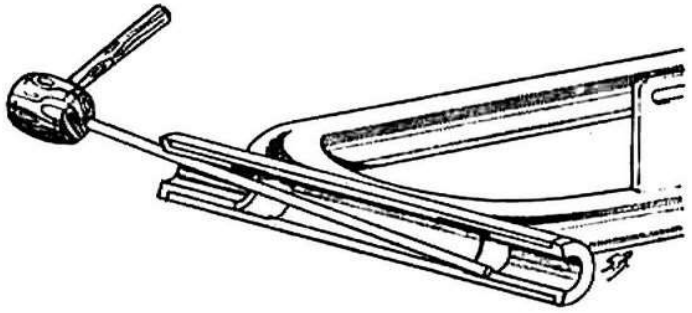


Fig. 33

25 - Back fork bushing.
(Only for replacing).

DISMANTLING BOXES, BATTERY AND REAR MUDGUARD

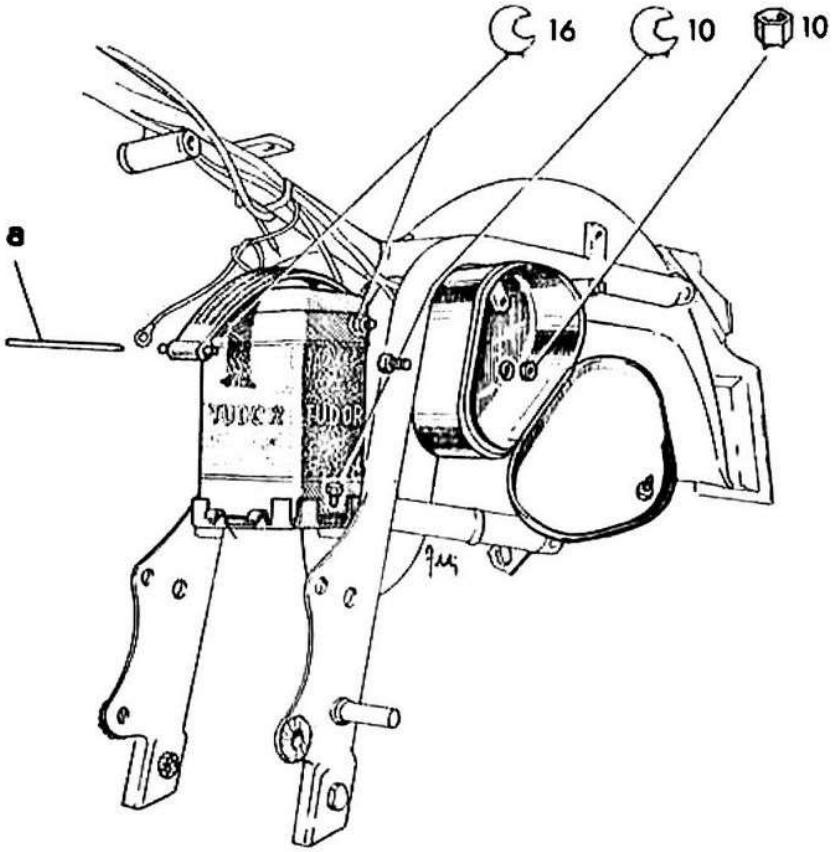


Fig. 34

26 - Tool-box.

27 - Battery and support.
To loosen the rubber band, insert a steel bar (a) in the front small tube of the band itself.

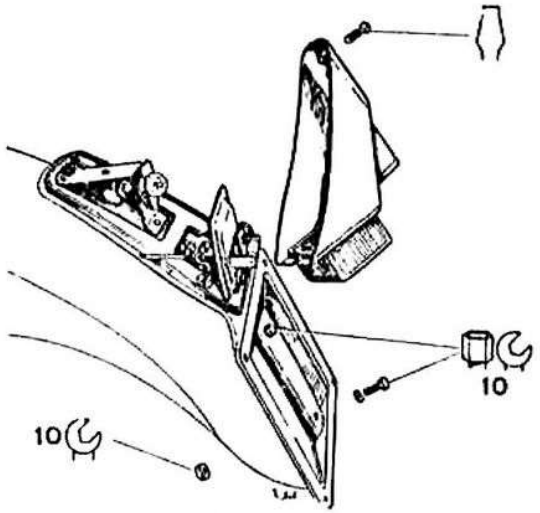


Fig. 35

28 - Rear light with number-plate holder.
Disconnect the rear light wires and slide them out of the mudguard.

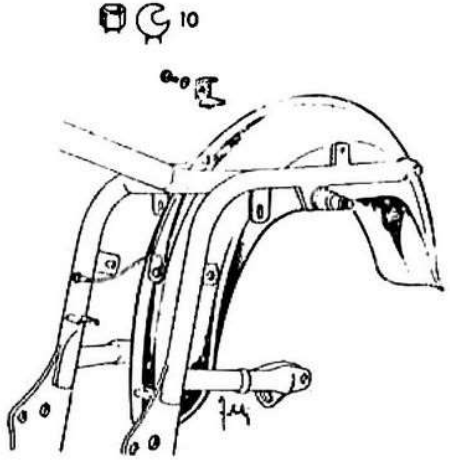


Fig. 36

29 - Rear mudguard.

DISMANTLING HEADLAMP AND HANDLEBAR

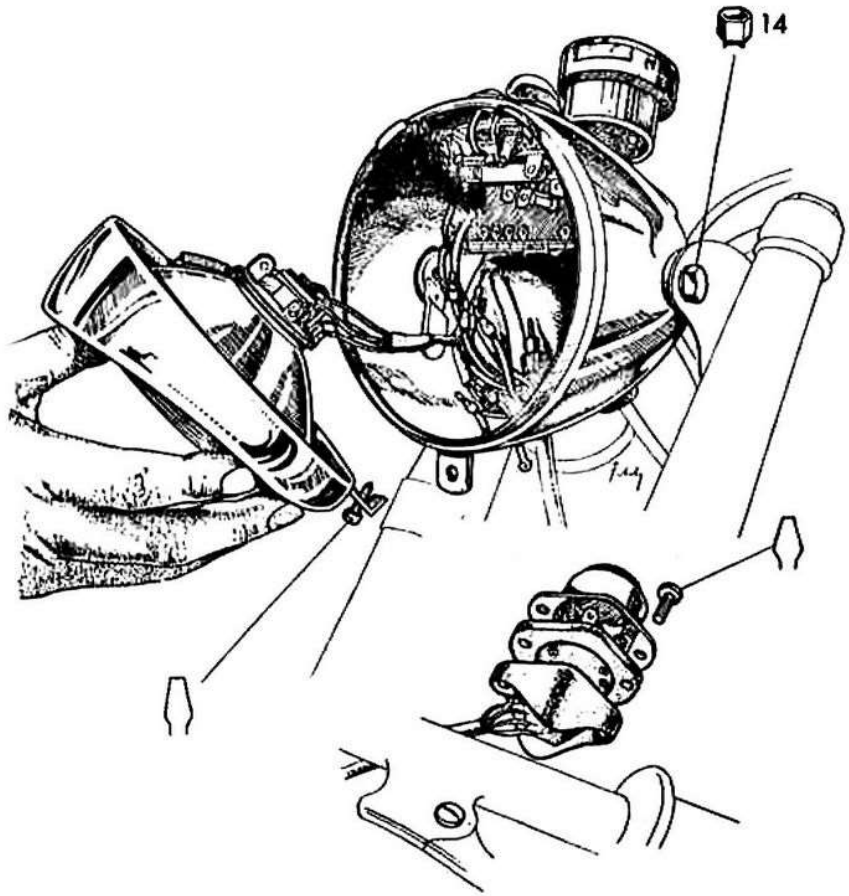


Fig. 37

30 - Dismantle headlamp.

Disconnect the electric connections on the handlebar and the headlamp. Disconnect the flexible wire of the speedometer.

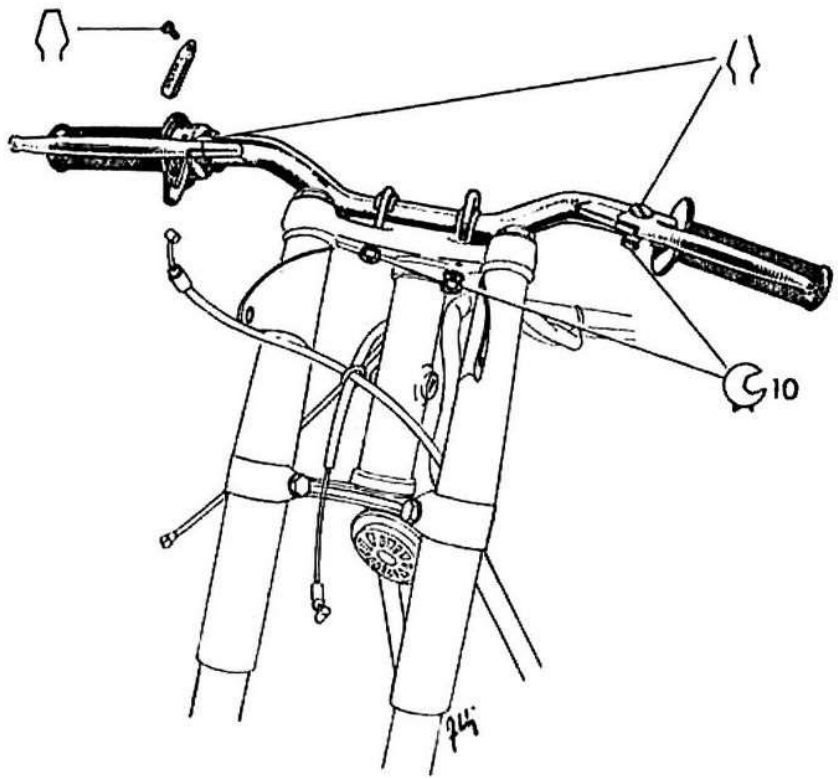


Fig. 38

31 - Handlebar.

Disconnect the front brake, clutch and gas control cables.

DISMANTLING FRONT WHEEL AND MUDGUARD

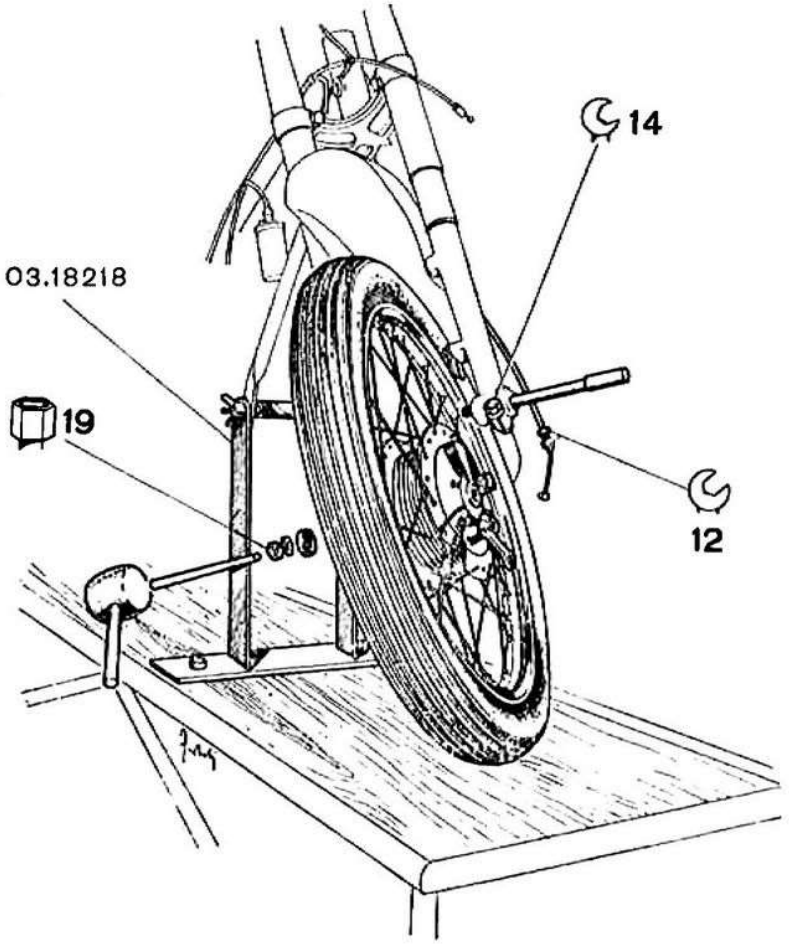


Fig. 39

32 - Front wheel.
Fix the frame support No. 03.18218 to the bench and lock the frame to it.
Disconnect the brake cable.
Remove the wheel bolt nut.
Loosen the fork leg screw.
Extract the spindle with the aid of a dowel pin and mallet.

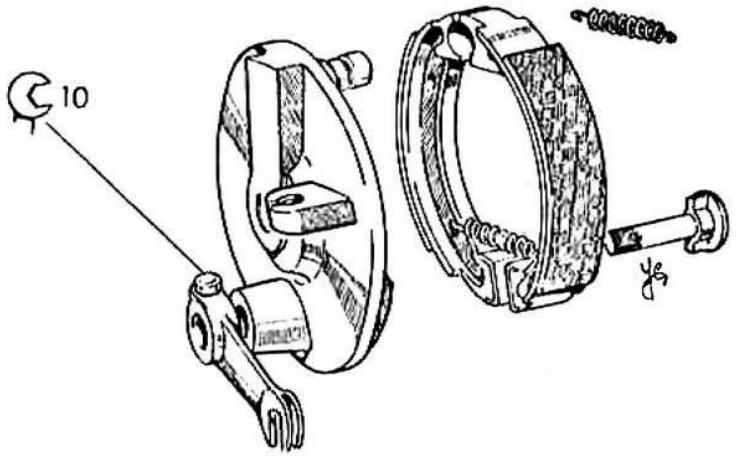


Fig. 40

33 - Brake shoe disc.
N.B. - Replacement of the brake shoes should be carried out only your Gilera agent.

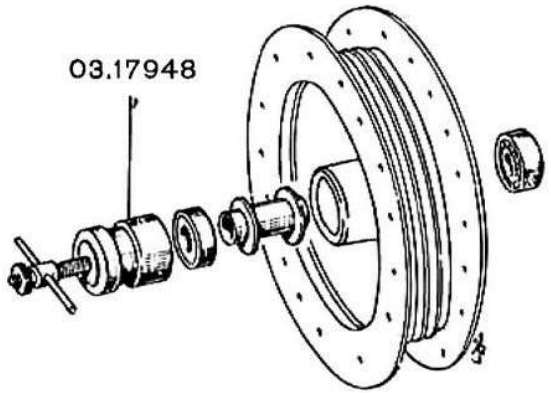


Fig. 41

34 - Brake drum bearings.
(Only for replacing).

DISMANTLING FRONT WHEEL AND MUDGUARD

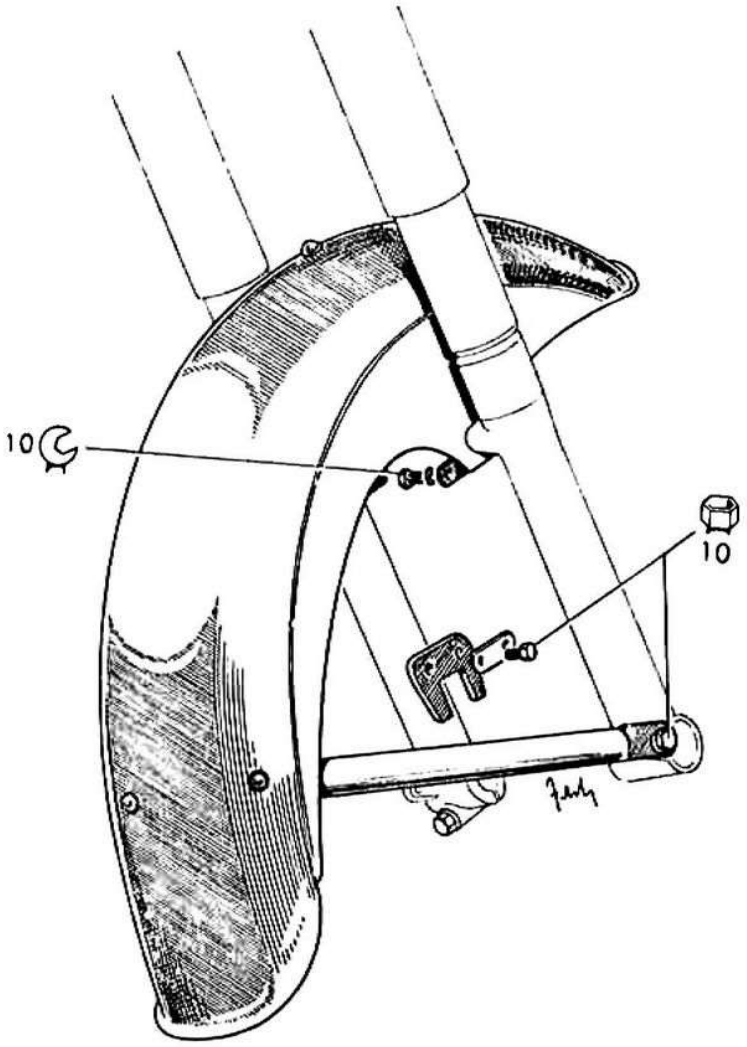


Fig. 42

35 - Front mudguard.
Straighten the small safety plate flanges.

DISMANTLING FRONT SUSPENSION

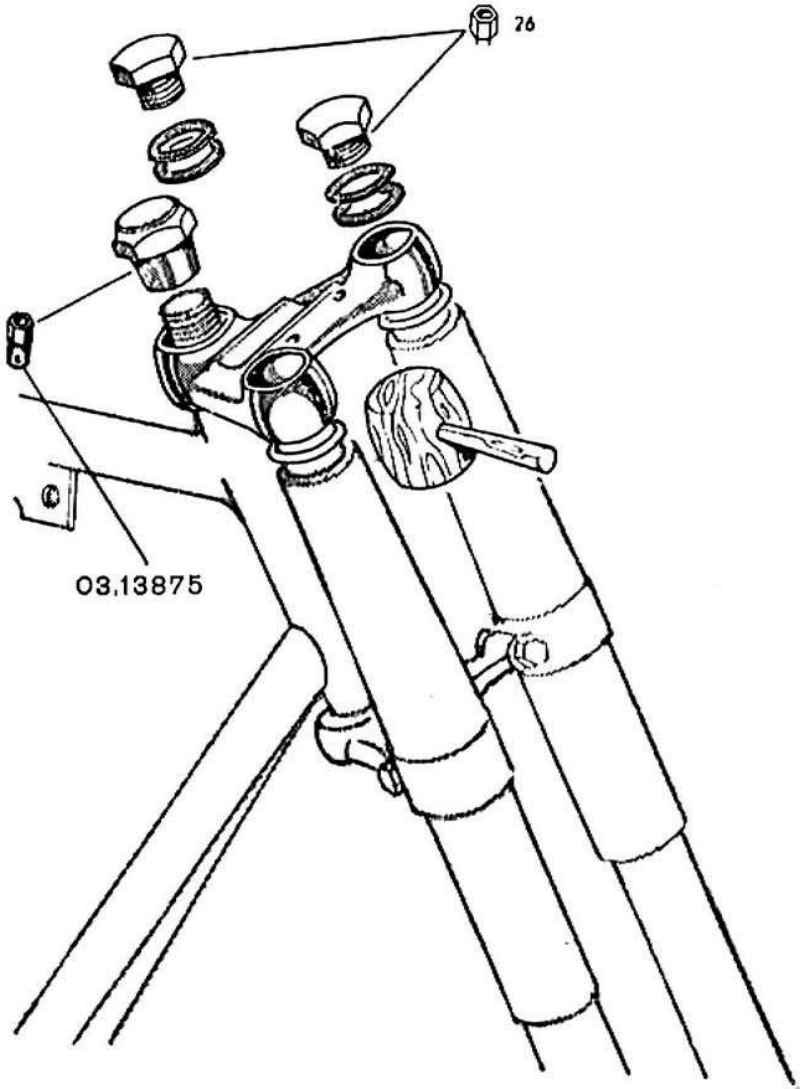


Fig. 43

36 - Handlebar connection.

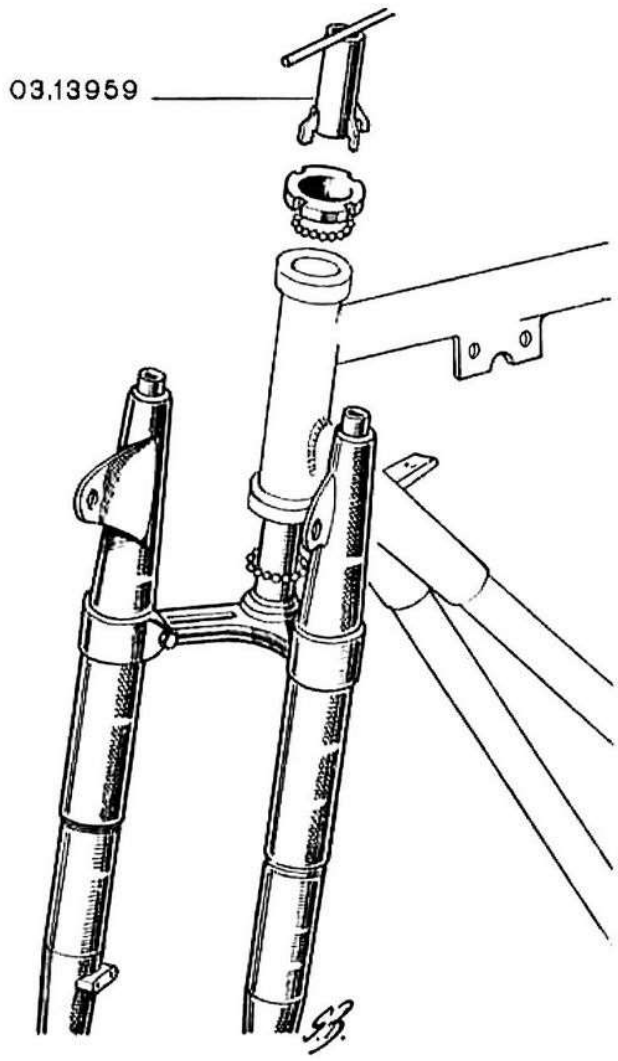


Fig. 44

37 - Disconnect the telescopic fork from the frame.

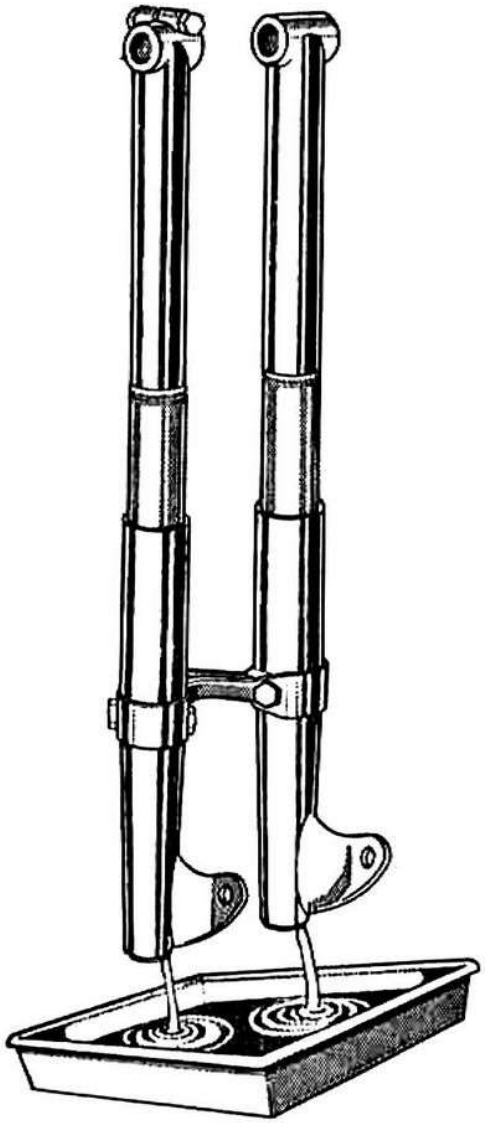


Fig. 45

38 - Drain the oil off.

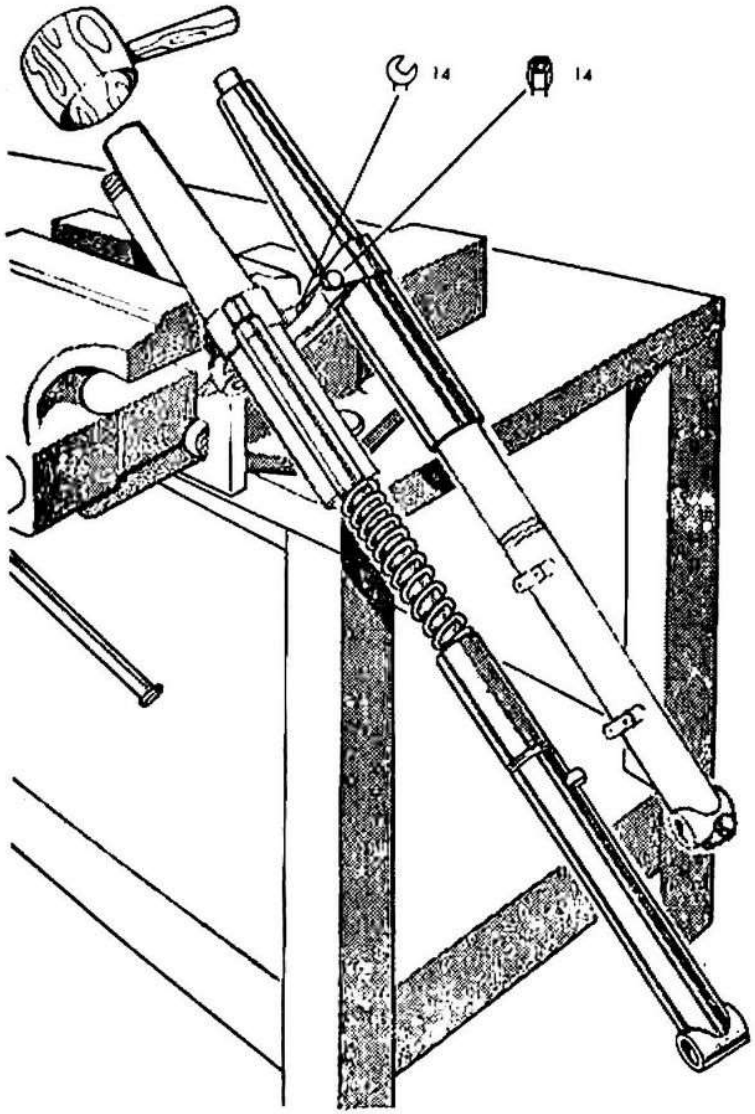


Fig. 46

39 - Remove the fork head locking screws.
40 - Slide the fork arms and casings out.

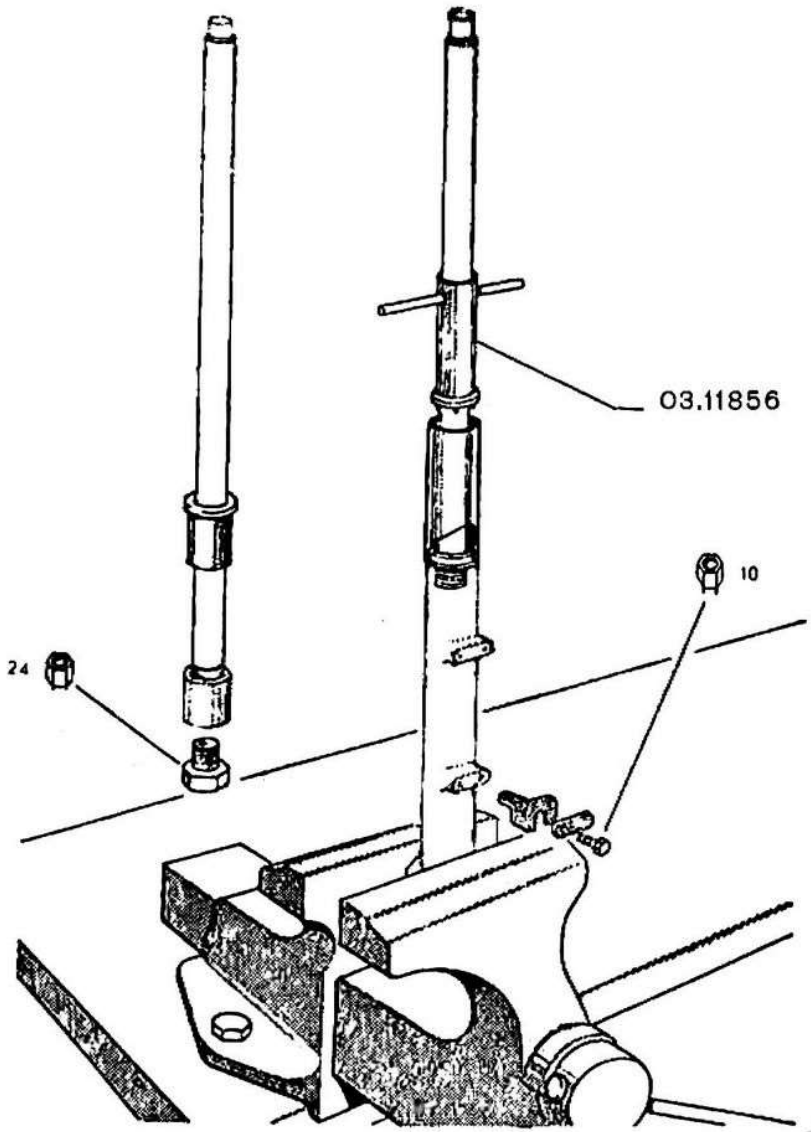


Fig. 47

41 - Spring cover.
42 - Main tube.

DISMANTLING FRONT SUSPENSION

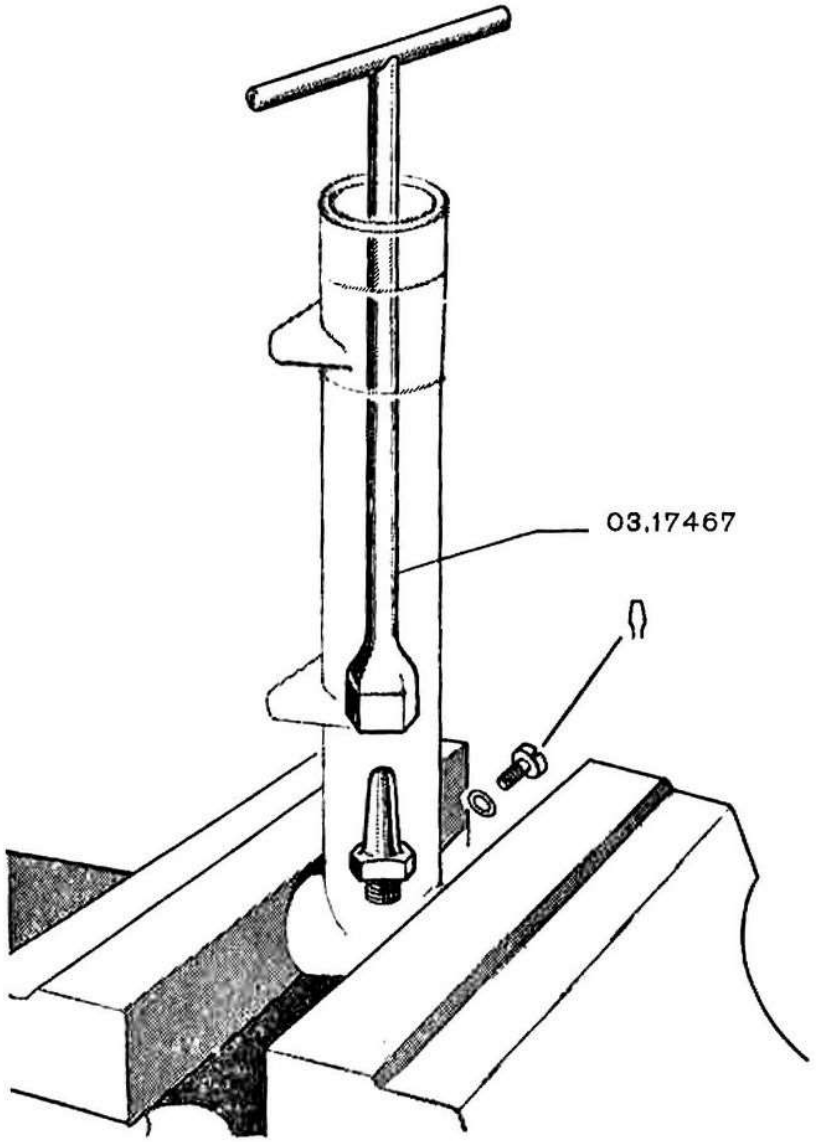


Fig. 48

43 - Oil hole plug.

DISMANTLING REGULATOR AND HORN

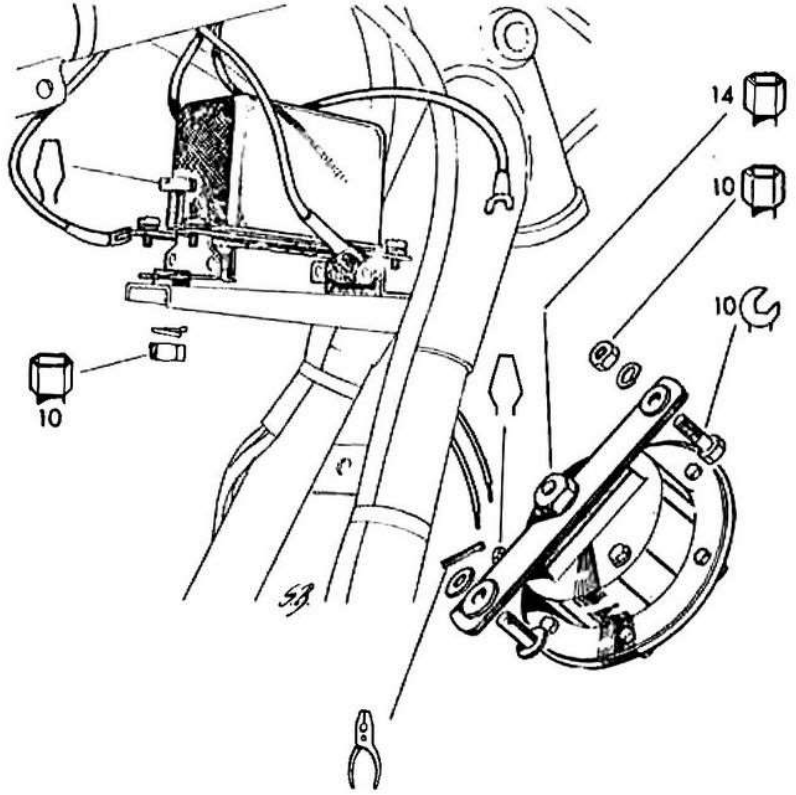


Fig. 49

44 - Regulator.

45 - Horn.

DISMANTLING CARBURETTOR

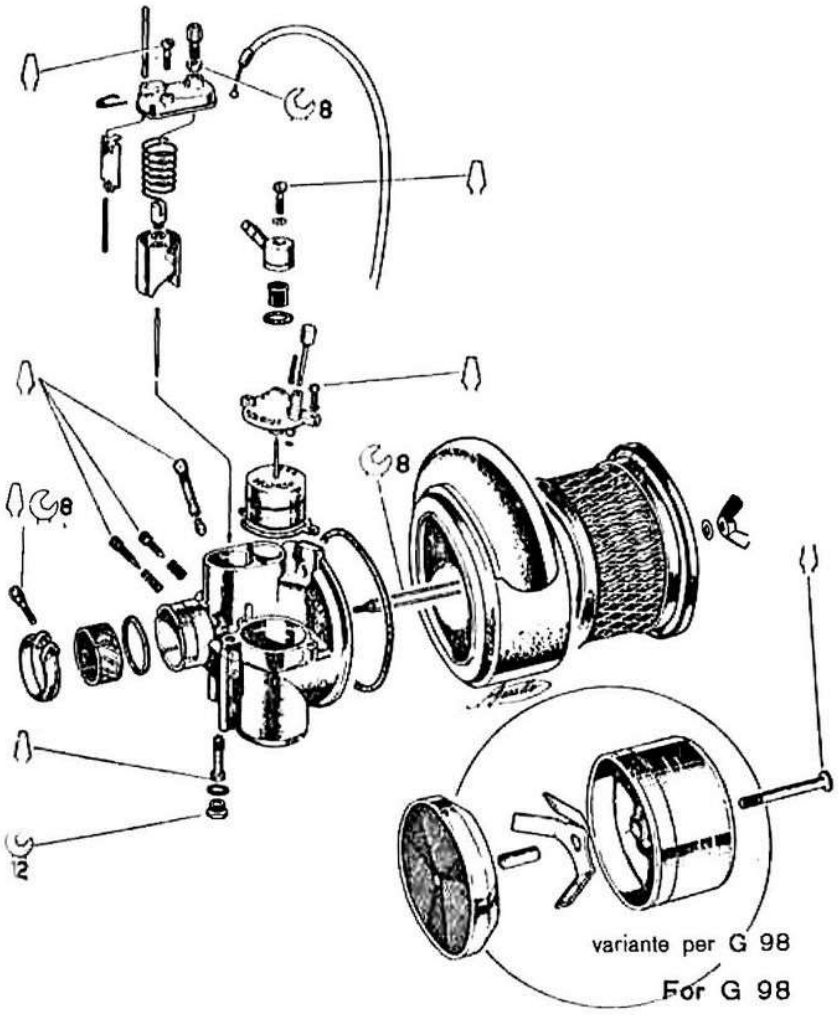


Fig. 50

46 - Carburettor.

DISMANTLING CONNECTING WIRES

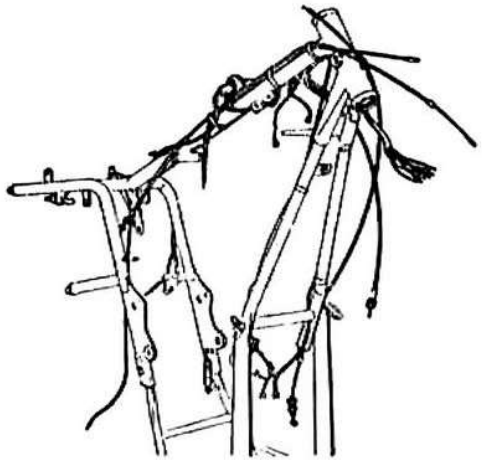


Fig. 51

47 - Electric plant connections - ignition coil. Speedometer flexible cable. Clutch control wire. Throttle control cable.

DISMANTLING VEHICLE PROP STAND

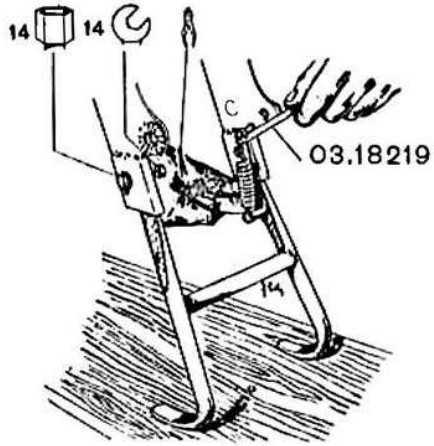


Fig. 52

48 - Vehicle prop stand.

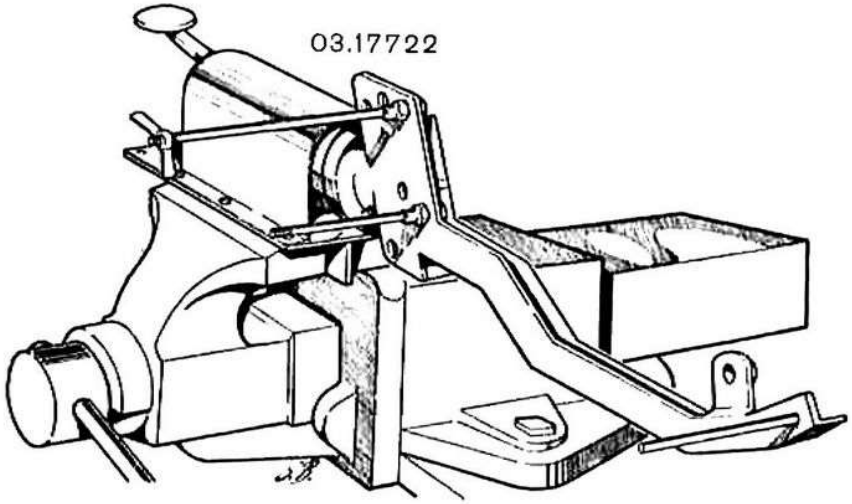


Fig. 53

49 - Engine support.
N.B. - Move the support into the different positions, according to necessities.

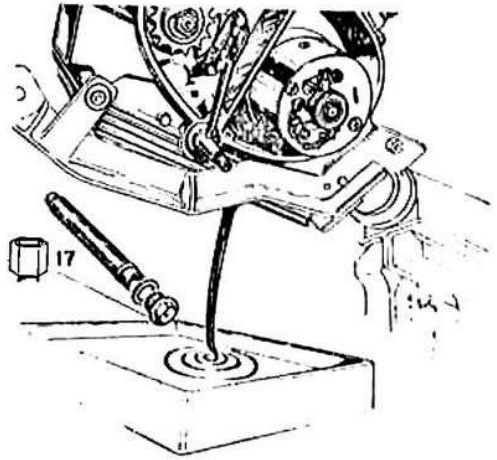


Fig. 54

50 - Pouring the oil out.

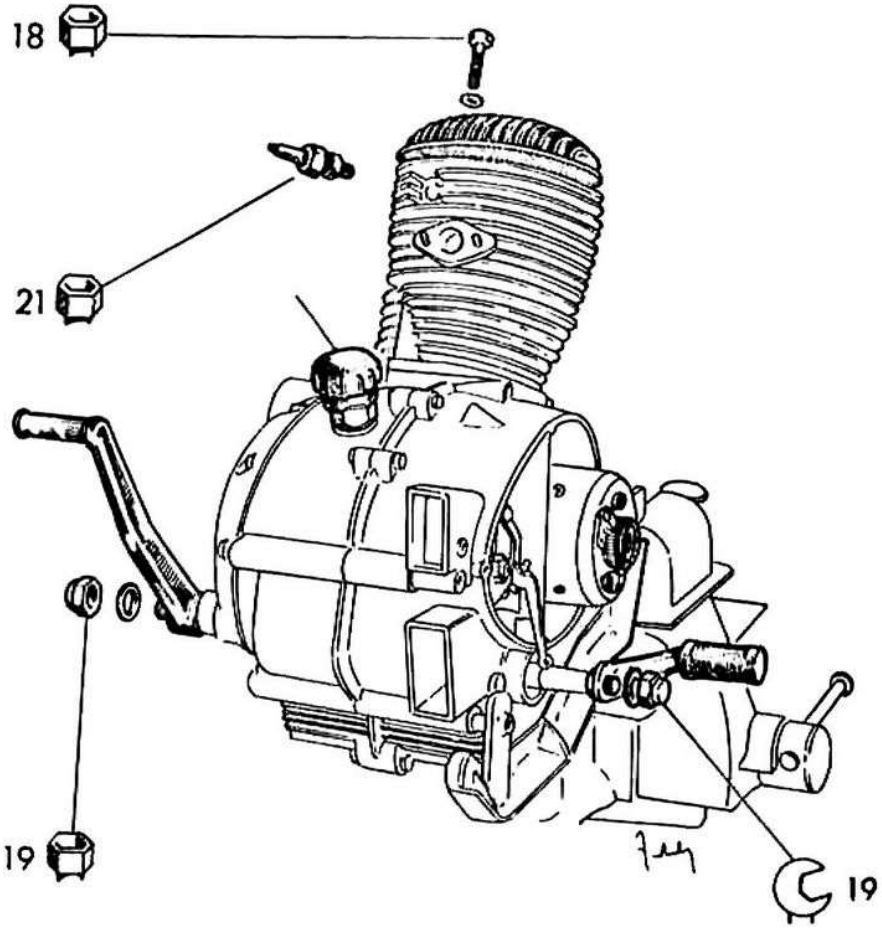


Fig. 55

51 - Remove the spark-plug, the rocker cover with gasket, starter, gear lever and breather.

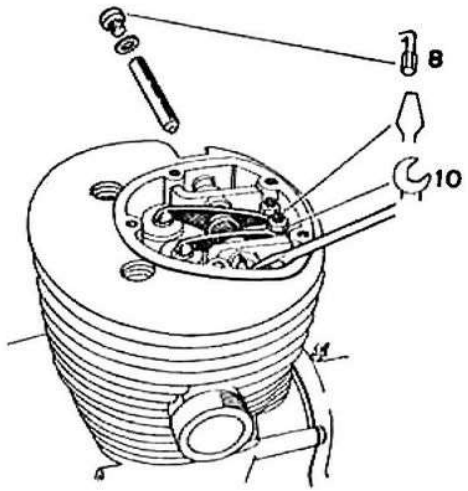


Fig. 56

52 - Rocker support.
To extract, use a screwdriver.

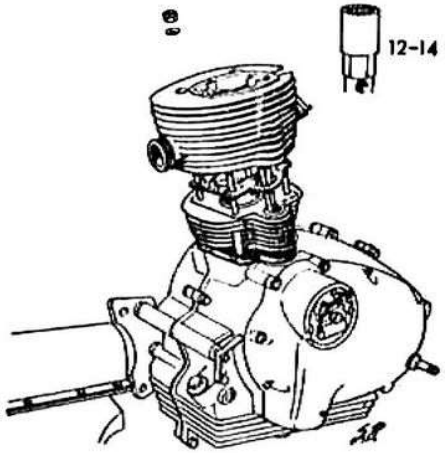


Fig. 57

53 - Head and cylinder.

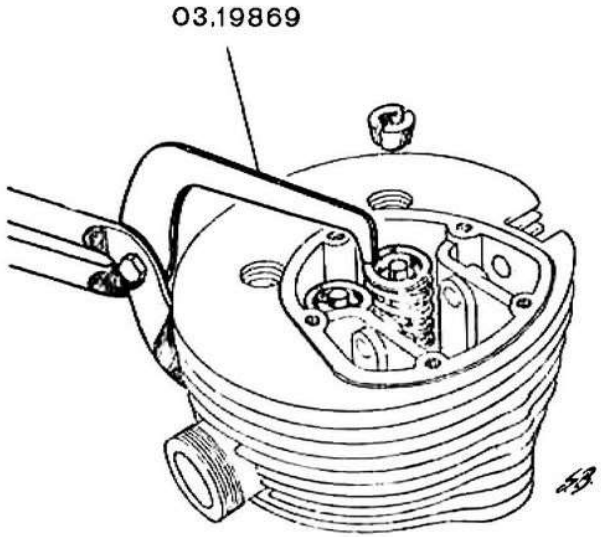


Fig. 58

54 - Valves.

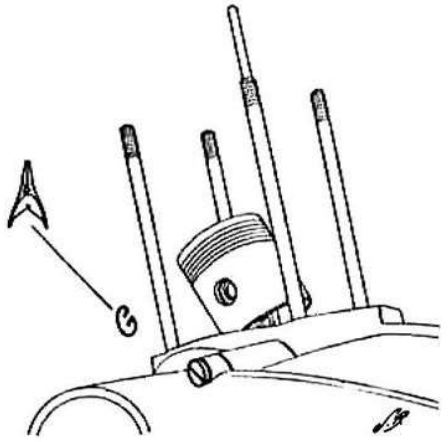


Fig. 59

55 Gudgeon pin circlips.

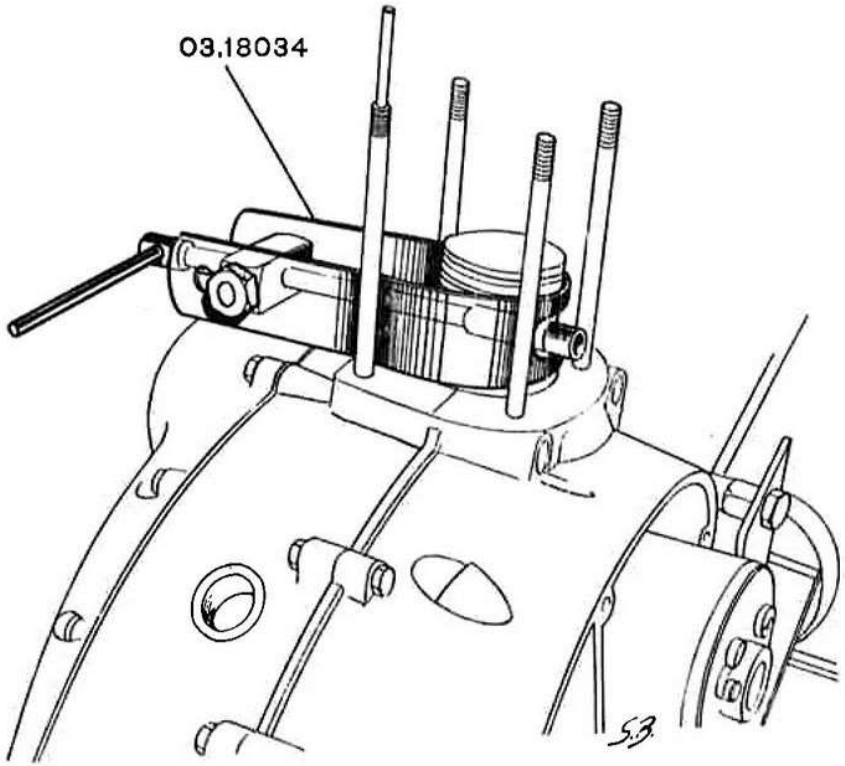


Fig. 60

56 - Extracting gudgeon pin.

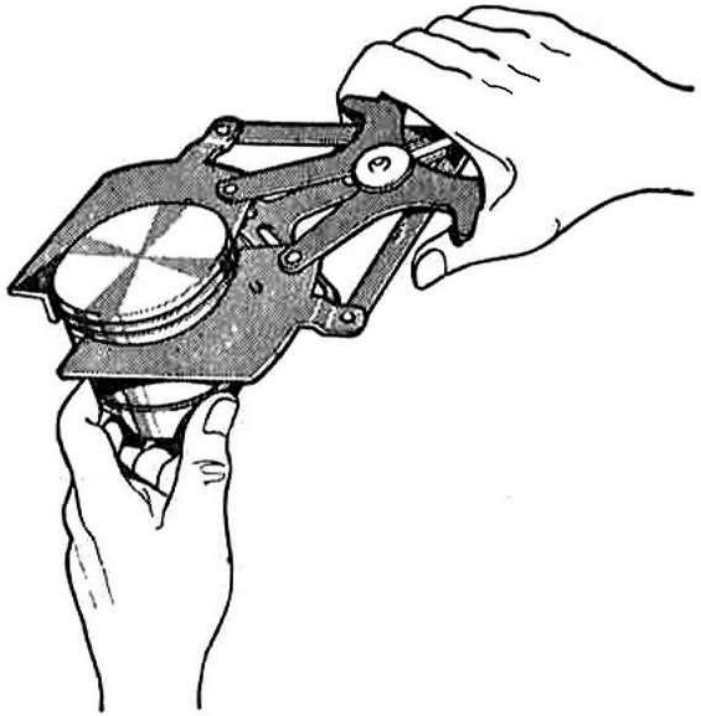


Fig. 61

57 - Piston rings.
Use the pliers for the rings.

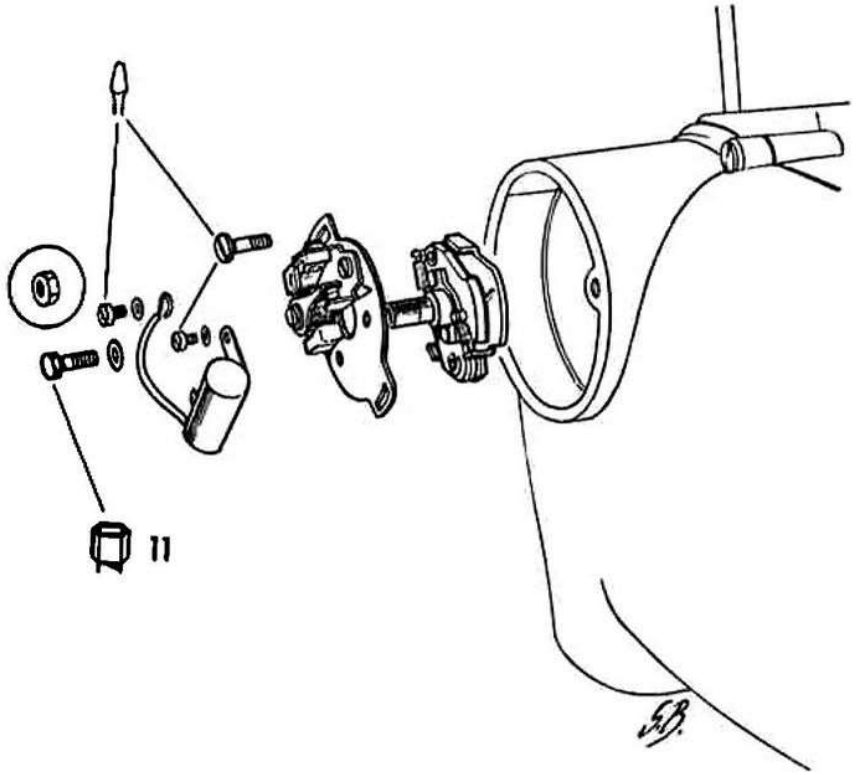


Fig. 62

58 - Condenser, contact-breaker, automatic timing.

N.B. - From machine no. 001-24818, the automatic timing locking screw has been replaced by a self locking nut.

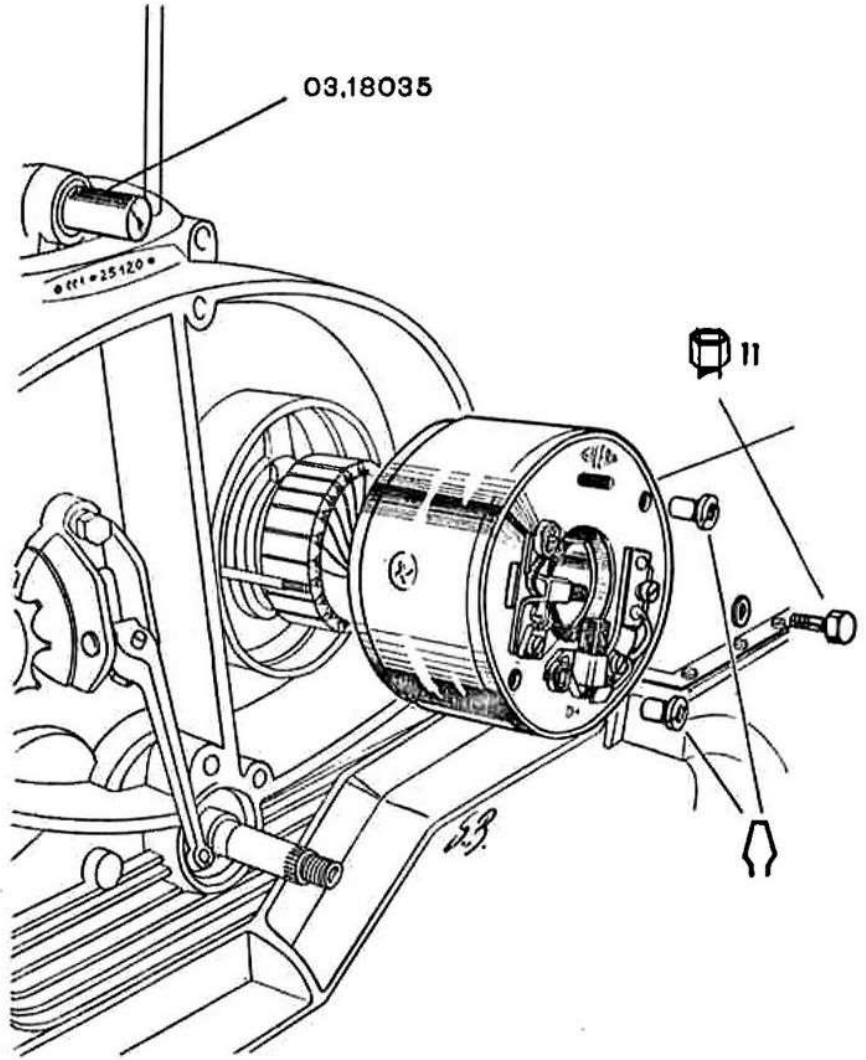


Fig. 63

59 - Dynamo casing.

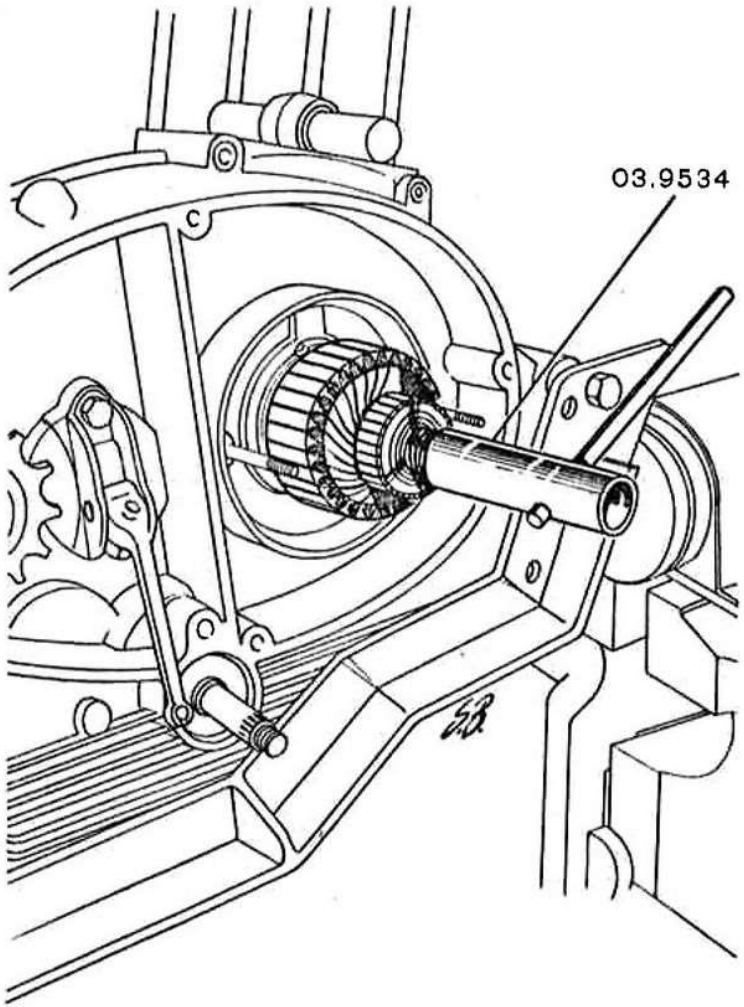


Fig. 64

60 - Extraction of dynamo armature.

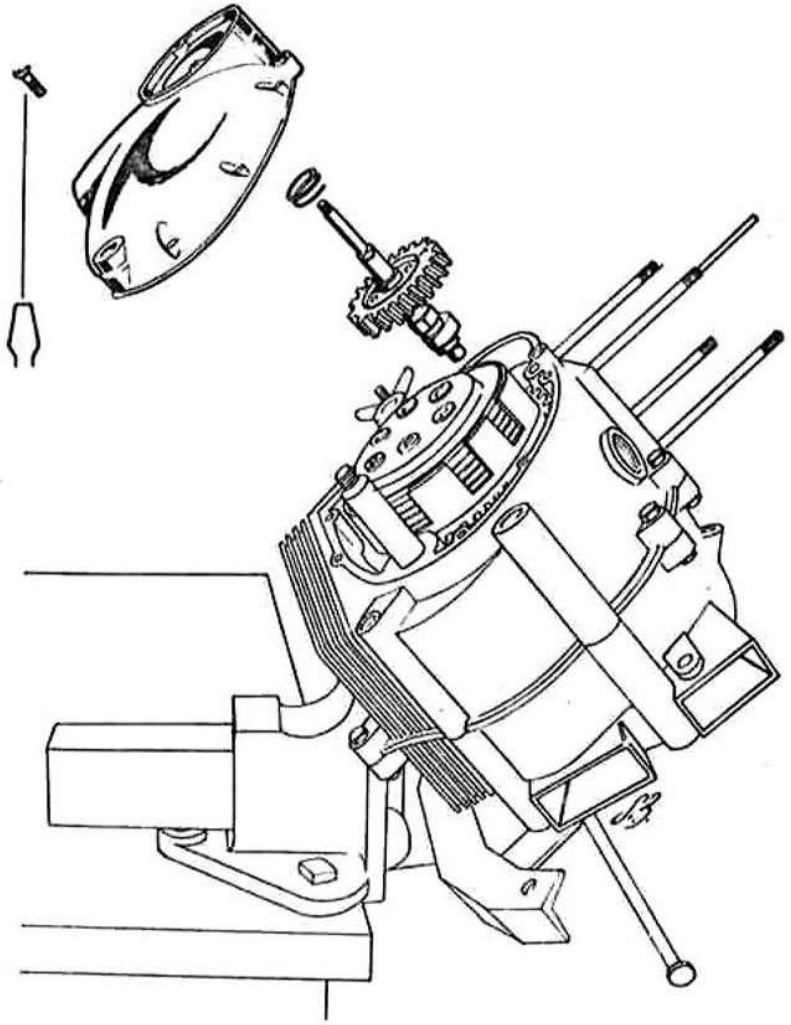


Fig. 65

61 - Clutch cover.

62 - Cam-shaft.
To extract the cam shaft, use an aluminium lever.

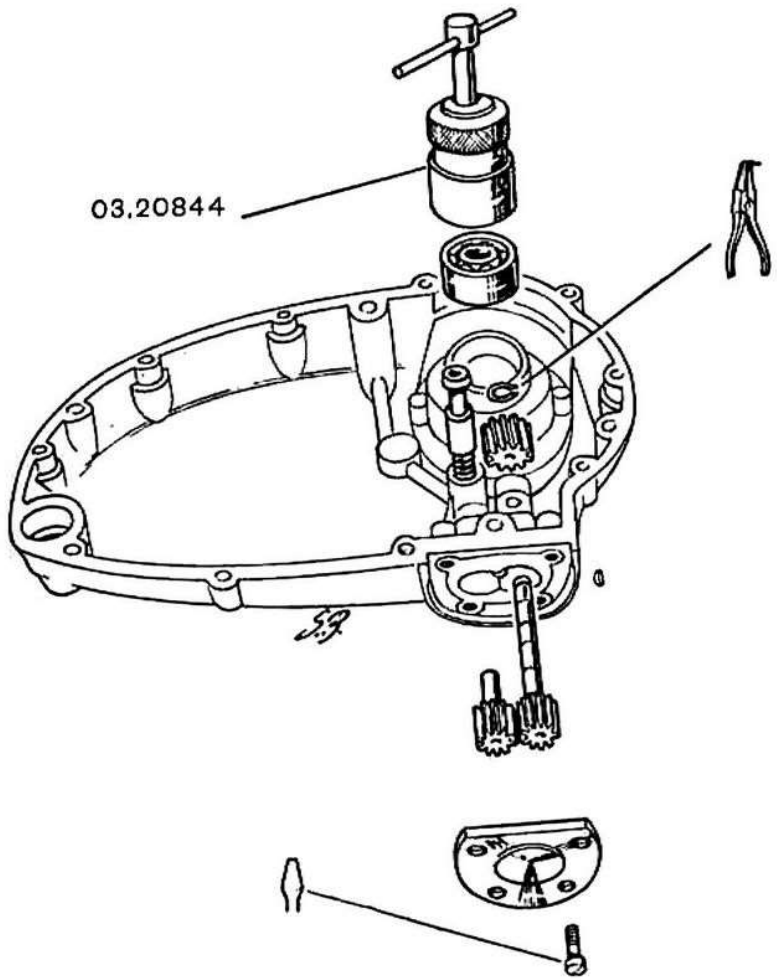


Fig. 66

63 - Lay shaft bearing.
(Only for replacing).

64 - Oil feed jet bush.

65 - Oil pump.

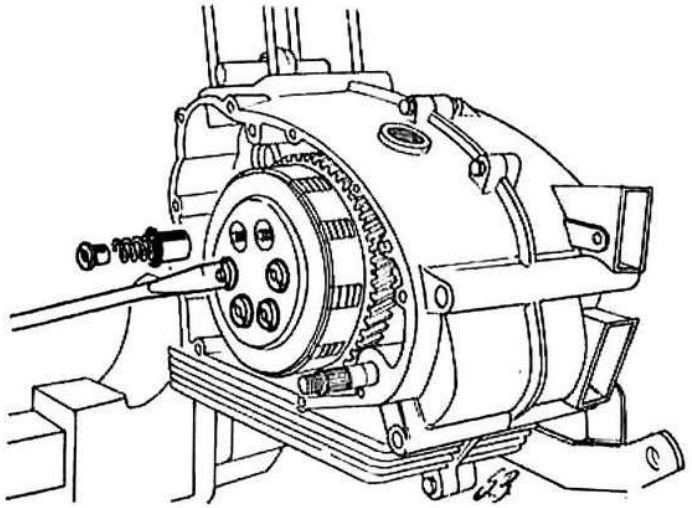


Fig. 67

66 - Clutch springs. Use the forked screwdriver.

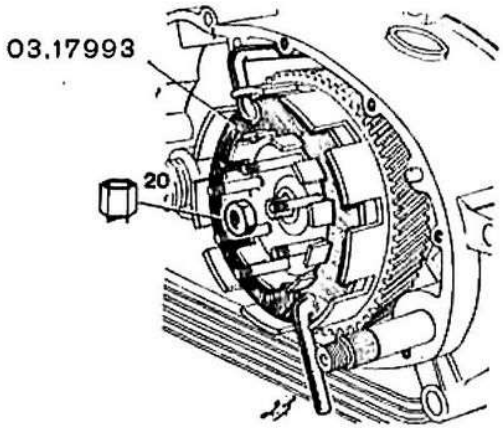


Fig. 68

67 - Clutch inner drum locking nut.

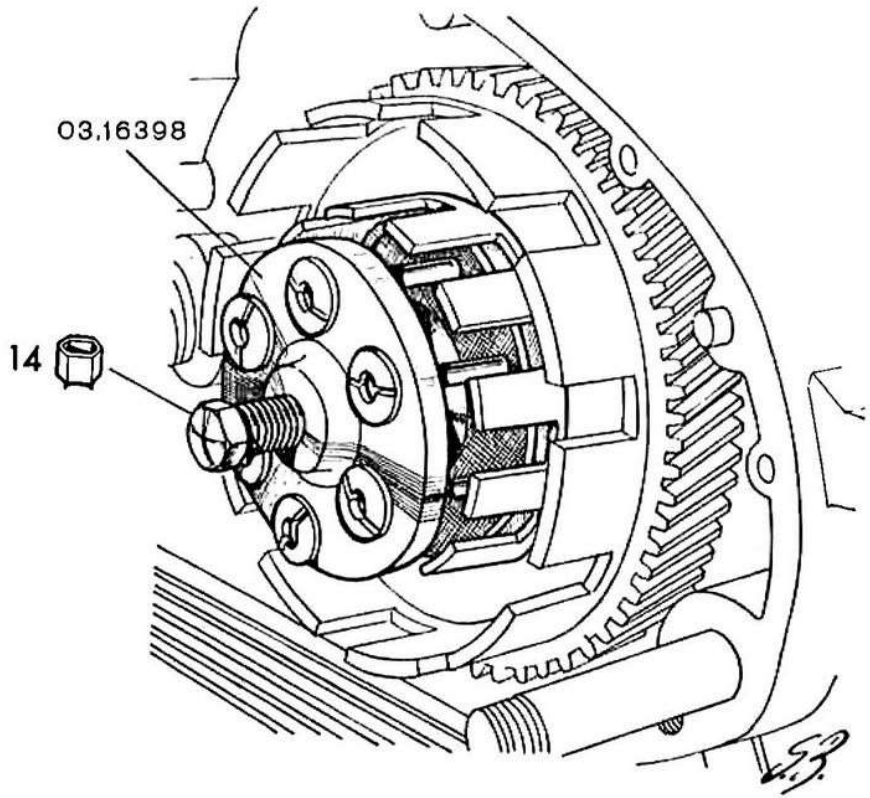


Fig. 69

68 - Extraction of the clutch inner drum.

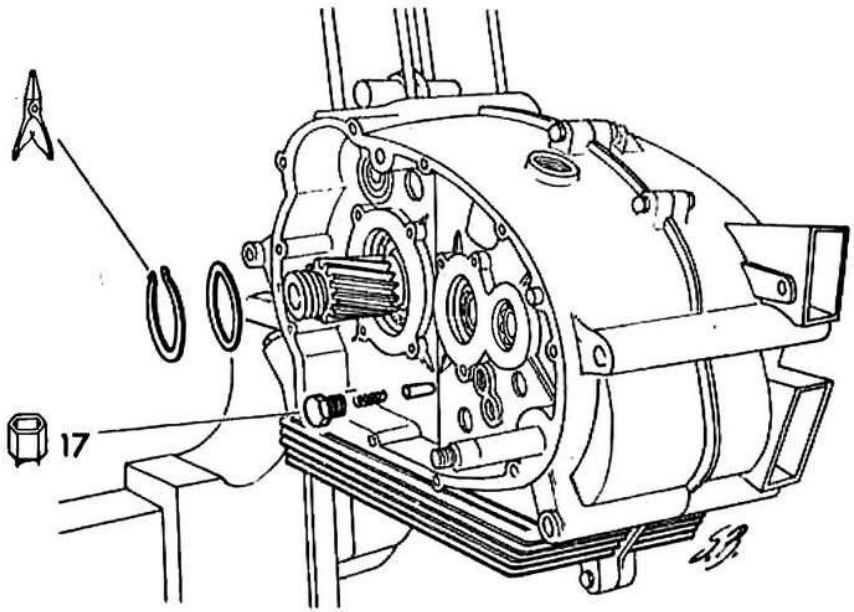


Fig. 70

69 - Plunger bush.
70 - Circlip for crankshaft bearing washer.

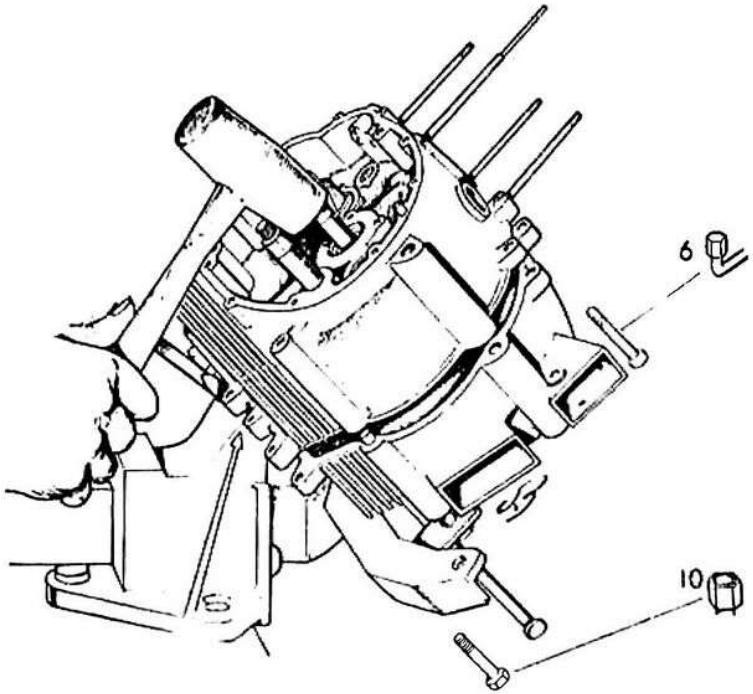


Fig. 71

71 - Opening the crankcase.
After having removed all the assembling screws of the crankcase, ligthly hit the primary (driving) shaft with a mallet so as to only remove the left crankcase, leaving all the internal parts on the right crankcase.

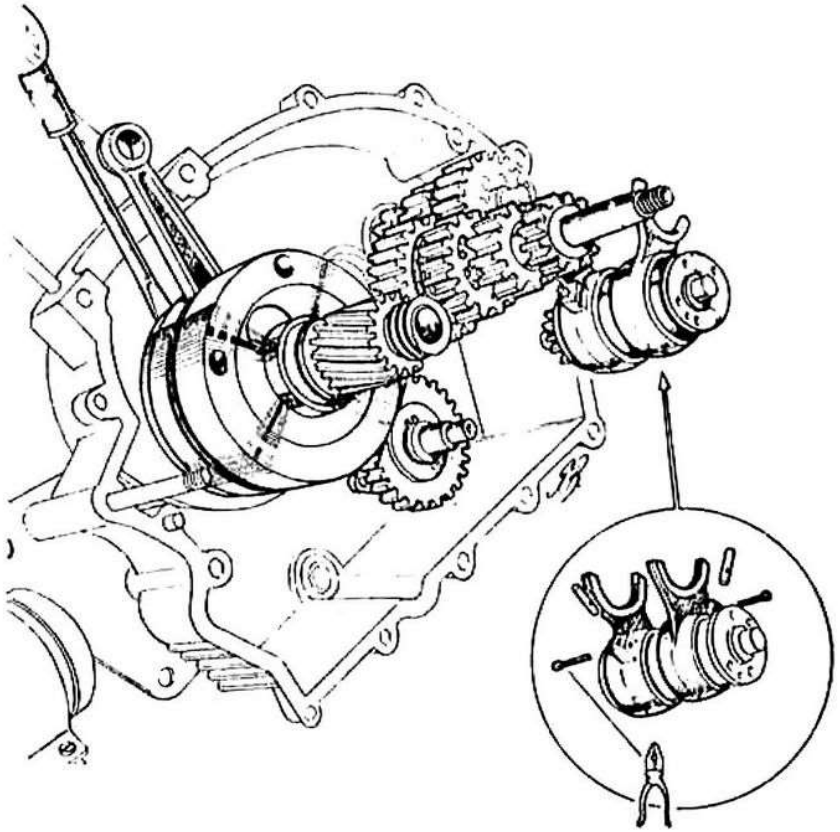


Fig. 72

72 - Remove the crank mechanism.
Helping oneself by levering with a screwdriver.
73 - Driving shaft.
74 - Gear selector and control.

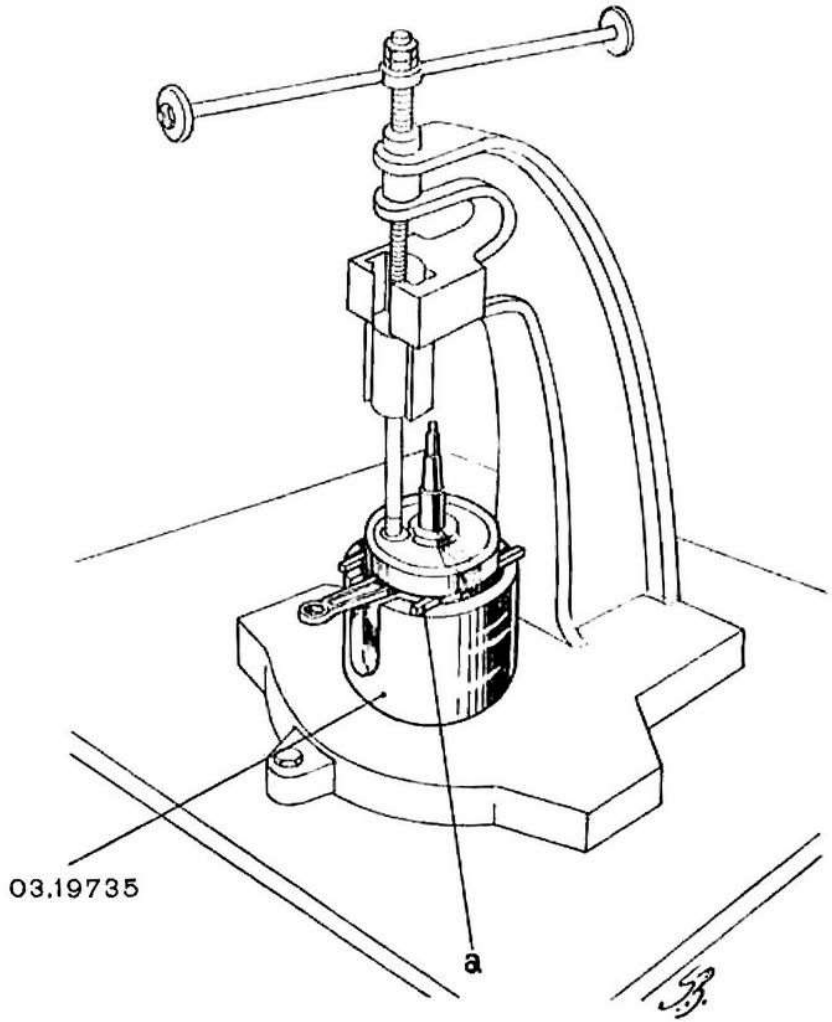


Fig. 73

75 - 1st operation dismantling crankshaft.
a) Steel ties.

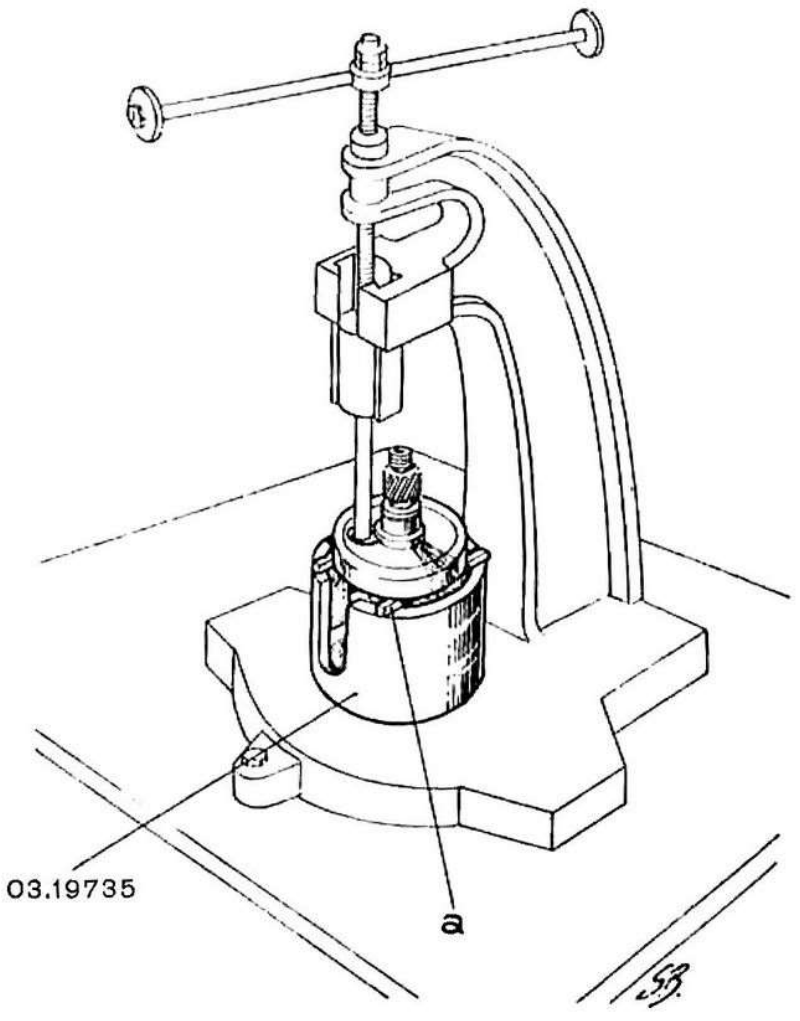


Fig. 74

76 - 2nd operation dismantling crankshaft.
a) Steel ties.

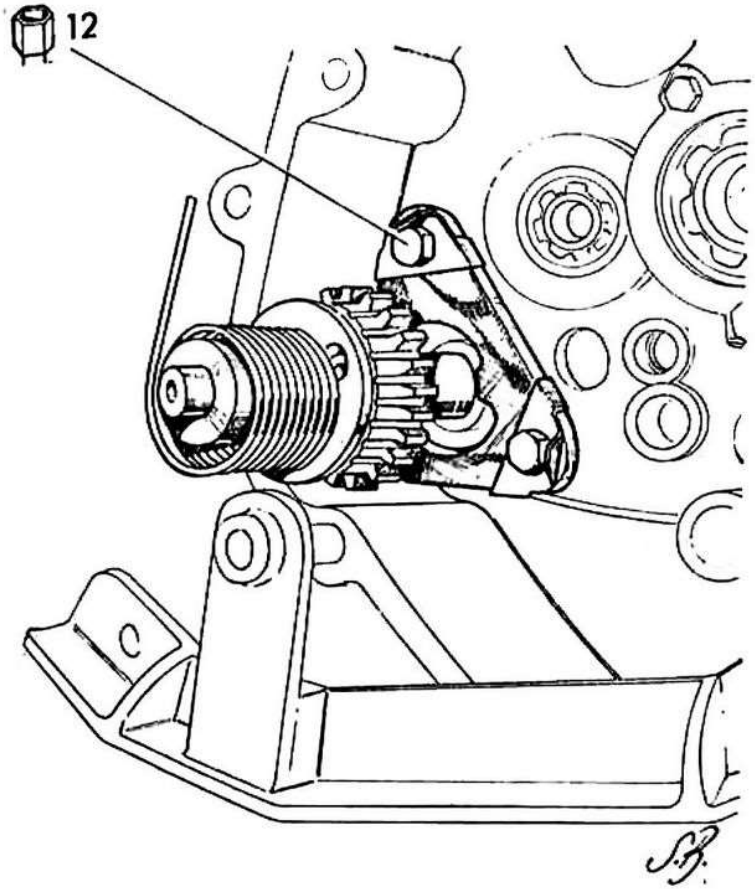


Fig. 75

77 - Starter.

78 - After having straightened the little safety plates, remove the stroke stopping plate.

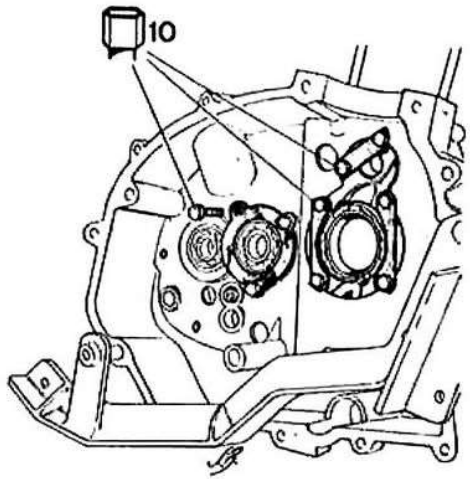


Fig. 76

79 - After having straightened the bent flanges, remove the bearing holding plates.

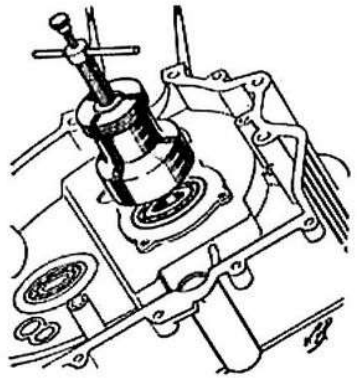


Fig. 77

80 - Extraction of crankcase bearings.
(Only for replacing purposes).

N.B. - Use the different necessary extracting tools for the various sizes of bearings (see pages 40-41 special tools).

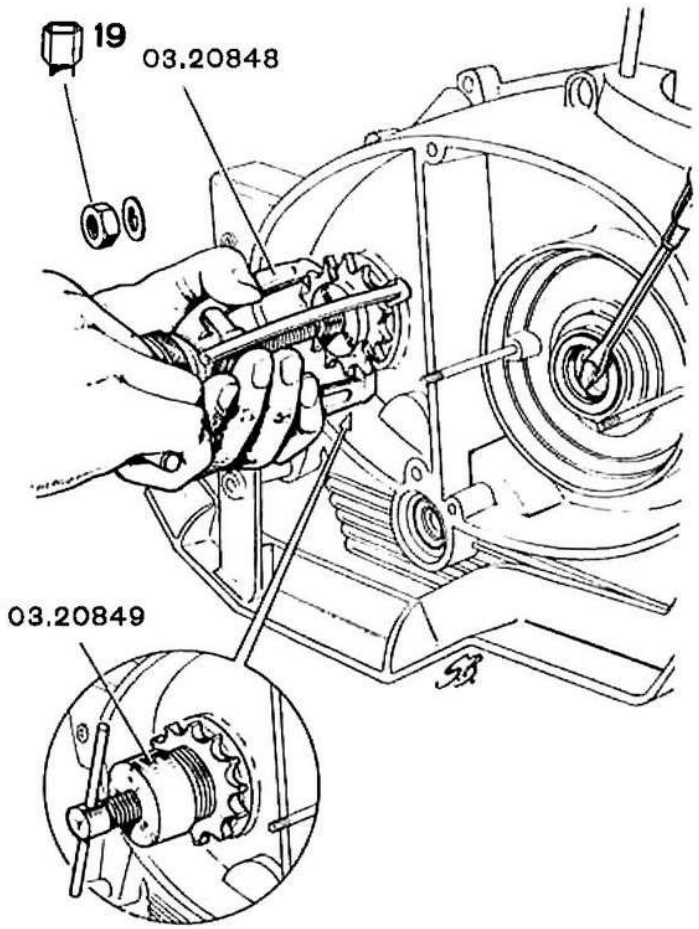


Fig. 78

81 - Extraction of chain sprocket.
With the aid of a mallet, consequently extract the gearbox secondary shaft.

82 - Extraction of oil seals.
(Only fór replacing purposes).

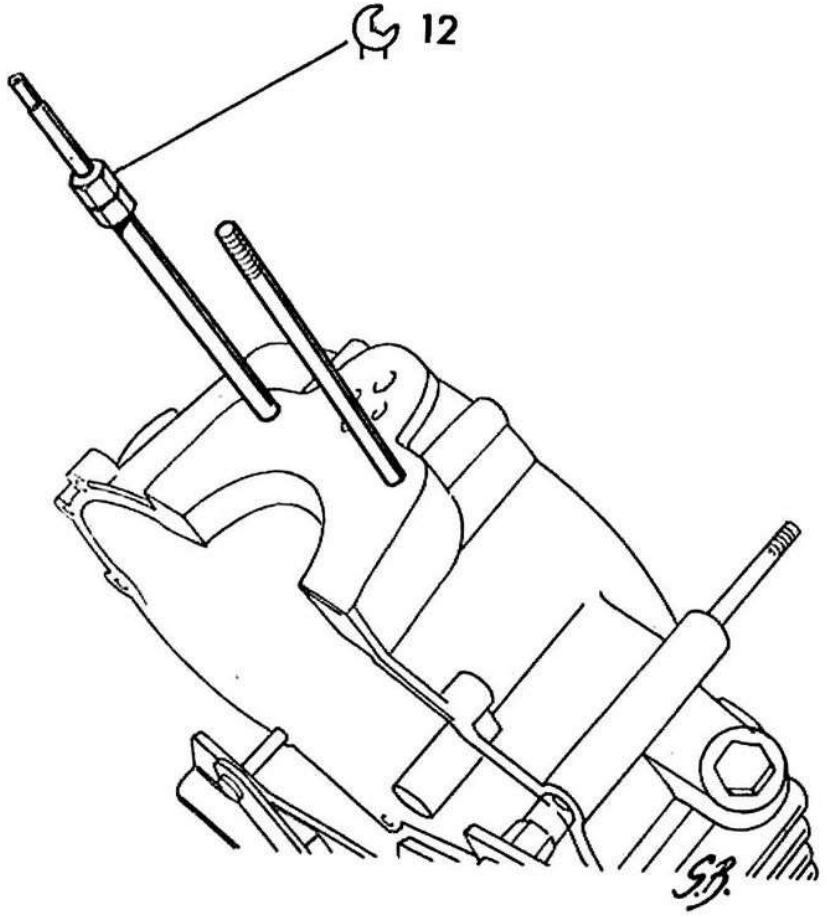


Fig. 79

83 - Cylinder-head fixing stud bolts.
(First lock the nuts together and, then, loosen the stud bolt).

OVERHAULING

FOREWORD ON OVERHAULING

In this part are listed the possible stresses and strains to which the various parts of the motor-cycle can be subjected and the relative remedies, in addition to the general instructions for a periodical and effective overhauling, the wearing limits of the various mechanism and the rules to replace same, when such limits have been exceeded.

NOTE:

ALL COUPLING, WEAR LIMIT, AND CLEARANCE TABLES ARE SHOWN IN MILLIMETERS.

Equivalents of millimeters and their fractions in inches approx.

mm.	100	=	4"
»	10	=	.4"
»	1	=	.04"
»	0,1	=	.004"
»	0,01	=	.0004"
»	0,001	=	.00004"

LUBRICATION DIAGRAM

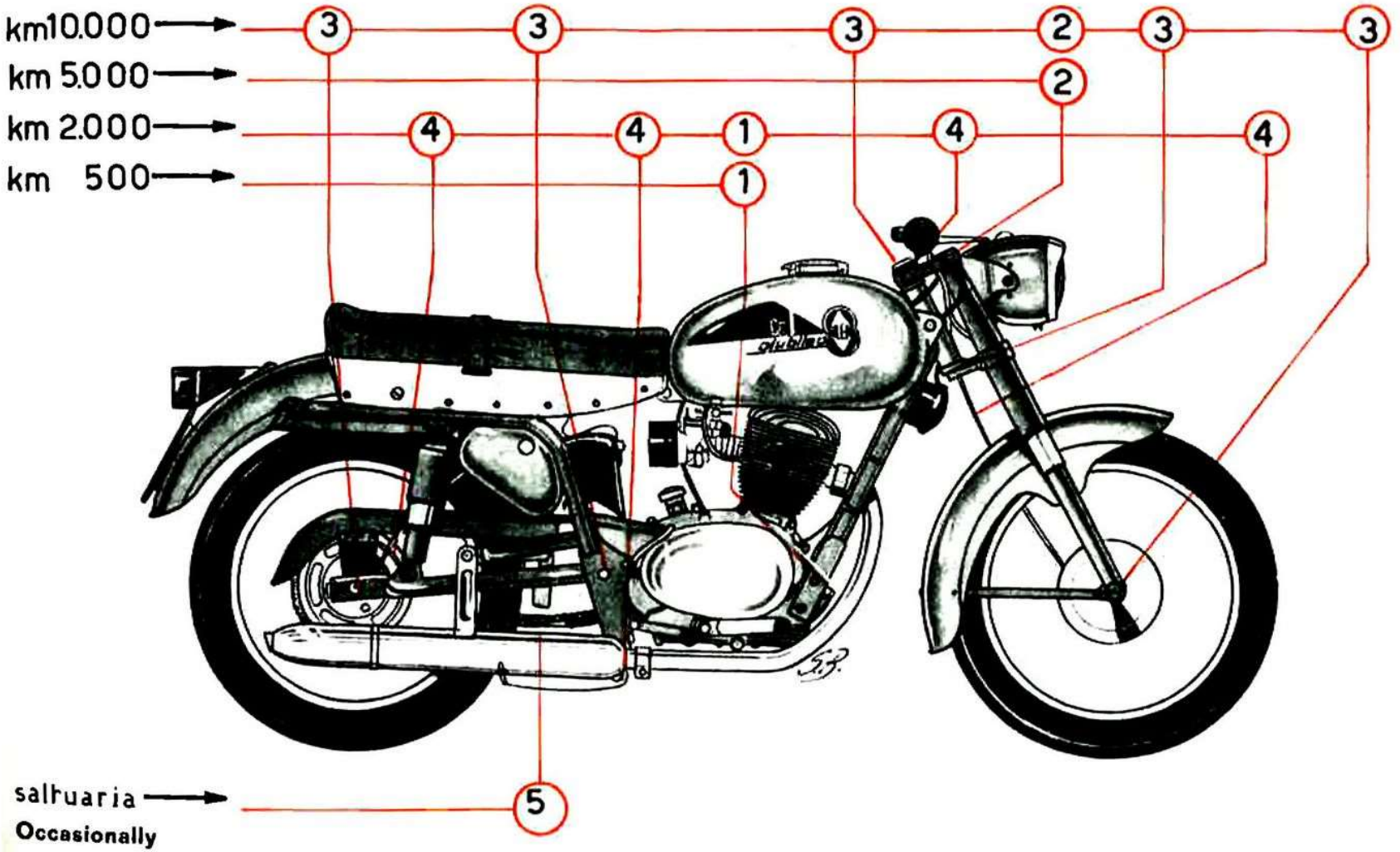


Fig. 80

LUBRICATION TABLE

It is to be borne in mind that the good working order of the motor-cycle depends largely on the care in its lubrication.

Ref. No.	Parts to lubricate	Period	Procedure	Type of lubricant
1	Engine.	After 300 miles approx (in the case of a new vehicle).	After having eliminated all residue, completely change the oil.	AGIP BP Energol HD SAE 50 (summer season) SAE 40 (winter season)
		Every 300 miles.	Check the oil level (it should touch the lower end of the screw-stopper thread). If necessary, add fresh oil to reach the above level.	
		Every 1250 miles.	Change the oil.	
2	Front fork.	Every 3125 miles.	Check the level. With the fork fully stretched, it should be at cm. 43 (abt. 17") from the handlebar connection level. If necessary, add more oil.	AGIP BP. Energol HD SAE 20 W
		Every 6250 miles.	Change the oil (Each arm 1/4 pint approx, check level as per 187 D).	
3	Front and back wheel bearings. Back fork oscillating axle. Steering balls.	Every 6250 miles.	Dismantle and grease.	Grease « Energrease L 3 »

No. Ref.	Parts to lubricate	Period	Procedure	Type of lubricant
4	Speedometer and cable, clutch, gas and front brake control cables, brake-shoe, brake pedal and prop-stand pins.	Every 3125 miles.	Coat with grease.	Grease «E nergrease L 3 »
5	Chain.		When the chain is very dirty with mud and grease, it is advisable to carefully clean it as follows: Take the chain off and, after washing it with paraffin, dry it perfectly. Dip the chain in a hot oil bath (50 ÷ 60° C.) for 30 minutes, so as to allow the lubricant to penetrate between the rollers and pins and let the excess oil drain off.	

PISTON AND CYLINDER COUPLINGS SELECTIVE TABLE
for « G 98 Standard and Extra » model motor-cycle

Standard		Oversize M 2		Oversize M 4	
Piston	Cylinder	Piston	Cylinder	Piston	Cylinder
49.940	50.000	50.140	50.200	50.340	50.400
49.945	50.005	50.145	50.205	50.345	50.405
49.950	50.010	50.150	50.210	50.350	50.410
49.955	50.015	50.155	50.215	50.355	50.415
49.960	50.020	50.160	50.220	50,360	50.420

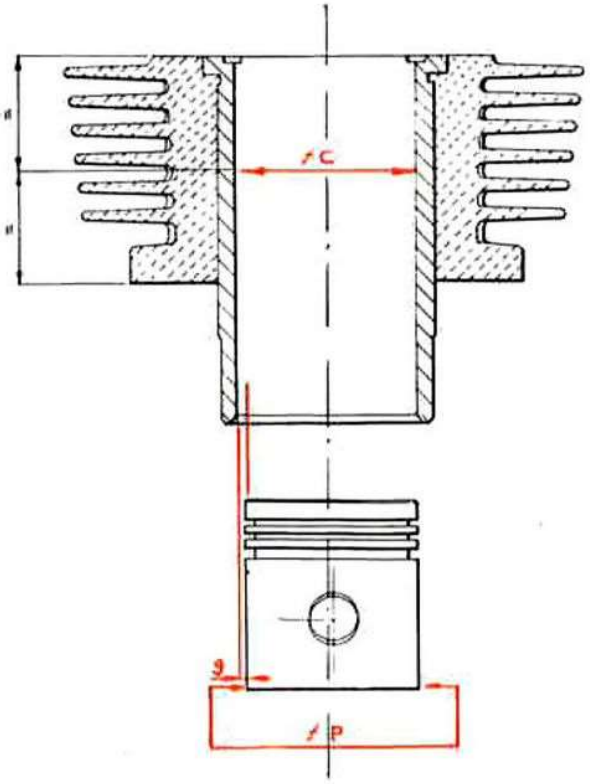


Fig. 81

The piston and cylinder diameters, observed as shown by the figures, are stamped respectively on the piston head and on the cylinder top. These figures correspond to one of the values quoted in the table, with rounding off of ± 0.002. The oversize pistons and cylinders have M 2 or M 4 stamped on them, respectively if the oversize is .008" (mm. 0.2) or .016" (mm. 0.4).

COUPLINGS

The pistons and cylinders are coupled with a play of .002" (mm. 0.05), i.e. according to one of the corresponding piston and cylinder values quoted in the table.

WEAR LIMITS

The maximum play — g — allowed to the wear limit is .005" (mm. 0.13).

PISTON AND CYLINDER COUPLINGS SELECTIVE TABLE
for « 124 Standard and Extra » model motor-cycles

Standard		Oversize M 2		Oversize M 4	
Piston	Cylinder	Piston	Cylinder	Piston	Cylinder
55.950	56.000	56.150	56.200	56.350	56.400
55.955	56.005	56.155	56.205	56.355	56.405
55.960	56.010	56.160	56.210	56.360	56.410
55.965	56.015	56.165	56.215	56.365	56.415
55.970	56.020	56.170	56.220	56.370	56.420

COUPLINGS

The pistons and cylinders are coupled with a play of .002" (mm. 0.06), i.e. according to one of the corresponding piston and cylinder values quoted in the table.

WEAR LIMITS

The maximum play — g — allowed to the wear limit is .005" (mm. 0.13).

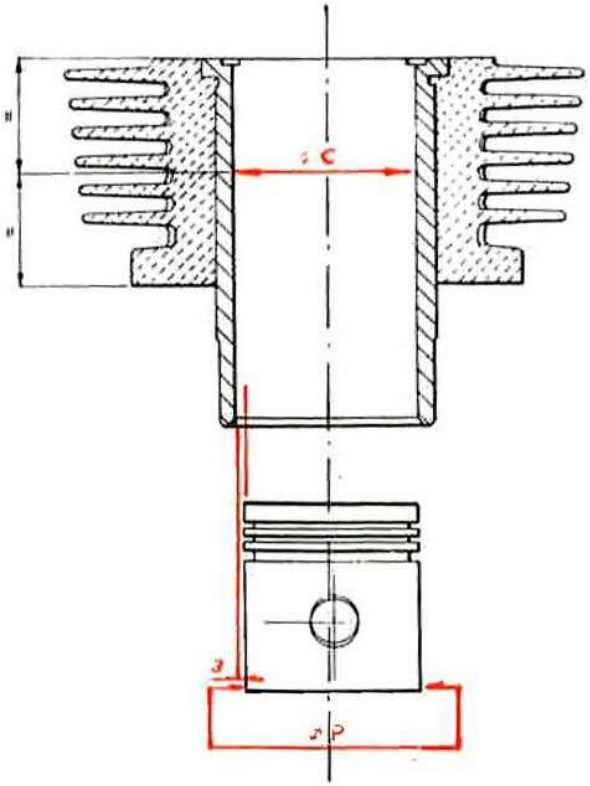


Fig. 83

The piston and cylinder diameters, observed as shown by the figures, are stamped respectively on the piston head and on the cylinder top. These figures correspond to one of the values quoted in the table, with rounding off of ± 0.002. The oversize pistons and cylinders have M 2 or M 4 stamped on them, respectively if the oversize is .008" (mm. 0.2) or .016" (mm. 0.4).

ASSEMBLING TOLERANCES AND WEAR LIMIT BETWEEN GUDGEON PIN AND PISTON

	« 98 »	« 124 »
Piston Ø **A**	13.495 ÷ 13.506	14.995 ÷ 15.006
Gudgeon pin Ø **B**	13.500 ÷ 13.492	15.000 ÷ 14.992
Interference and assembling clearance **C**	Interference 0.005 Clearance 0.014	Interference 0.005 Clearance 0.014
Maximum clearance allowed after wear **C** max.	0.03	0.03

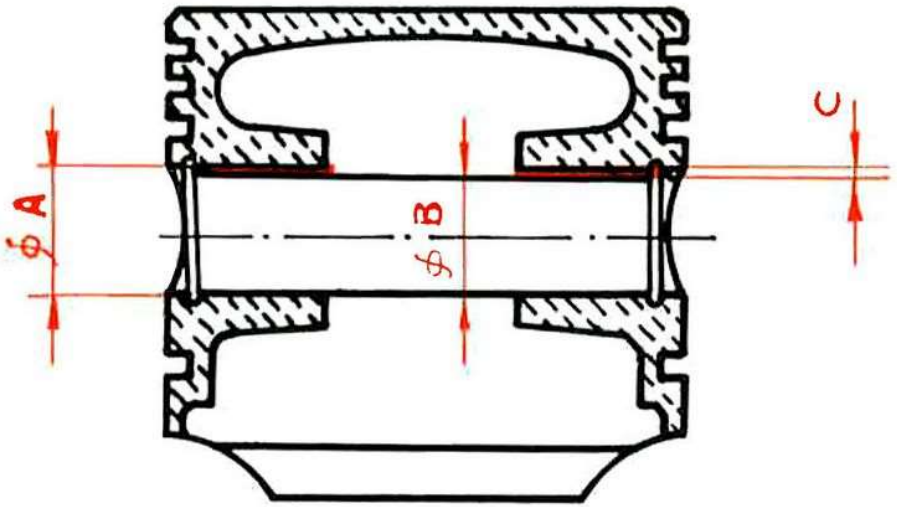


Fig. 84

AXIAL PLAY AND WEAR LIMIT OF THE COMPRESSION RINGS

Piston **D**	2.02 ÷ 2.04
Compression rings **E**	1.990 ÷ 1.978
Axial assembling play **F**	max. 0.062 min. 0.030
Maximum clearance allowed after wear **F** max	0.16

AXIAL PLAY AND WEAR LIMIT OF THE SCRAPER RINGS

Piston **D**	3.02 ÷ 3.04
Compression rings **E**	2.990 ÷ 2.978
Axial assembling play **F**	max. 0.062 min. 0.030
Maximum clearance allowed after wear **F** max	0.16

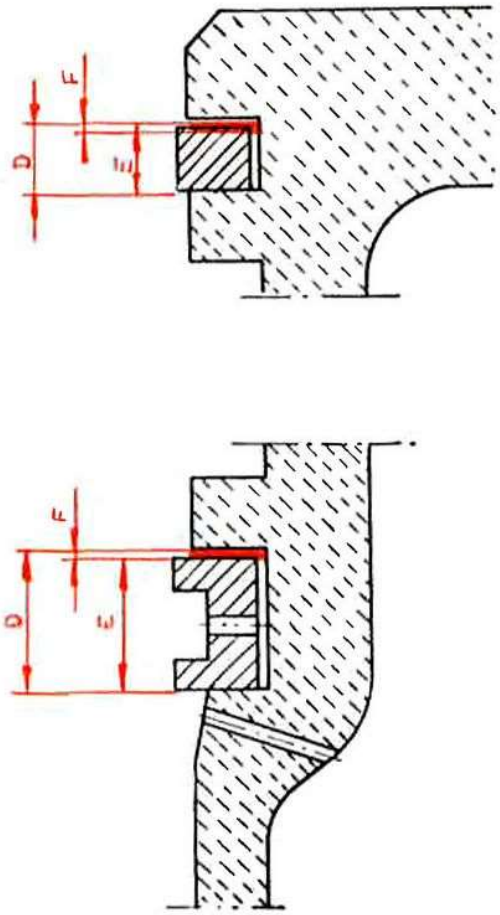


Fig. 85

PLAY BETWEEN THE PISTON RING ENDS

Operation	External diameter of the piston rings Ø L		Play between ends with the piston ring assembled G	Maximum play allowed after use G max.
	« 98 »	« 124 »		
Normal assembling	50	56	0.20 ÷ 0.35	2 mm.
First oversize	50.2	56.2		
Second oversize	50.4	56.4		
Tird oversize	50.6	56.6		

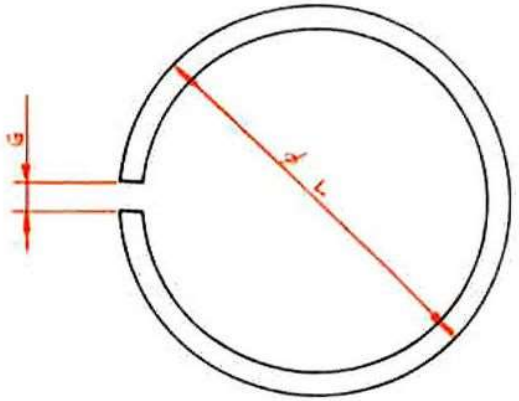


Fig. 86

ASSEMBLING TOLERANCES AND WEAR LIMITS BETWEEN SMALL END AND GUDGEON PIN

	« 98 »	« 124 »
Small end Ø **A**	13.516 ÷ 13.527	15,016 ÷ 15,027
Krankpin Ø **B**	13.500 ÷ 13.492	15,000 ÷ 14,992
Assembling play **C**	Max. 0.035 Min. 0.016	Max. 0.035 Min. 0.016
Maximum play allowed after use **C** max.	0.08	0.08

ASSEMBLING TOLERANCES AND WEAR LIMITS BETWEEN THE BIG END AND CRANK PIN

Big end Ø **A**	28.710 ÷ 28.719
Crankpin Ø **B**	28.660 ÷ 28.651
Assembling play **C**	max. 0,068 min. 0,050
Maximum play allowed after use **C** max.	0,15

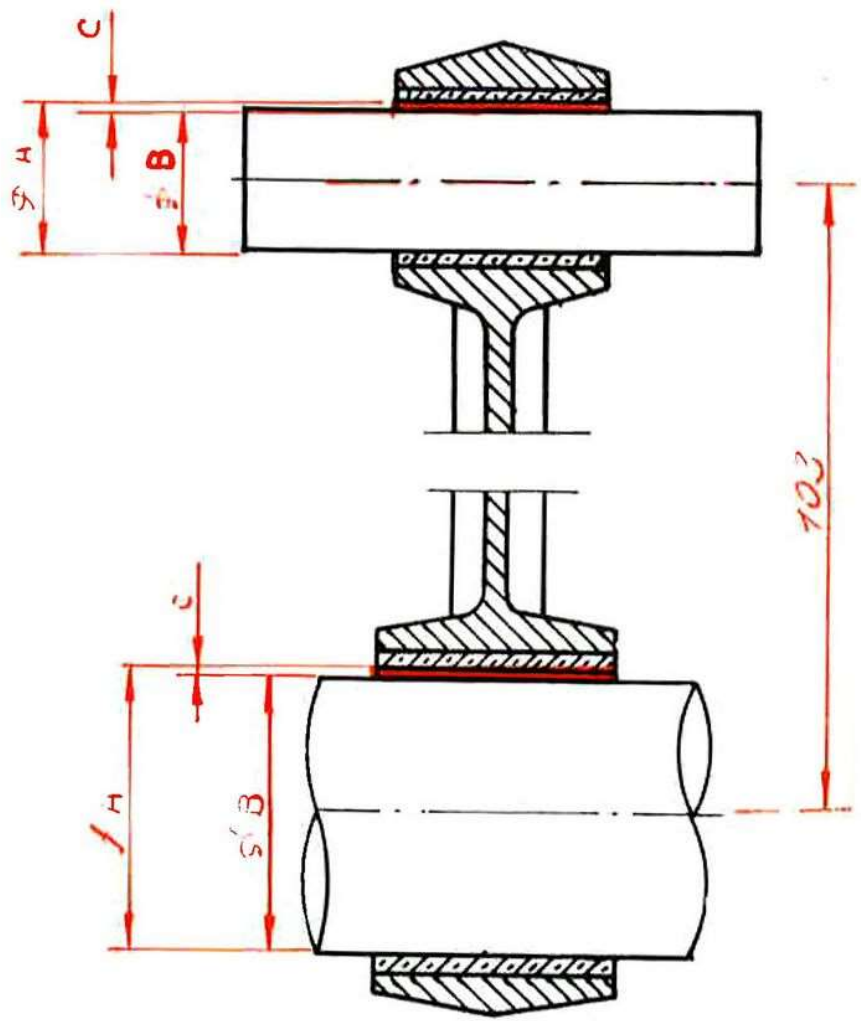


Fig. 87

ASSEMBLING TOLERANCES BETWEEN FLYWHEELS AND CONNECTING ROD

	« 98 »	« 124 »
Crankshaft Width **A**	18.0 ÷ 18.2	23.00 ÷ 23.2
Big end Thickness **B**	17.8 ÷ 17.7	22.60 ÷ 22.50
Assembling side play **C**	max. 0.5 min. 0.2	max. 0.7 min. 0.4

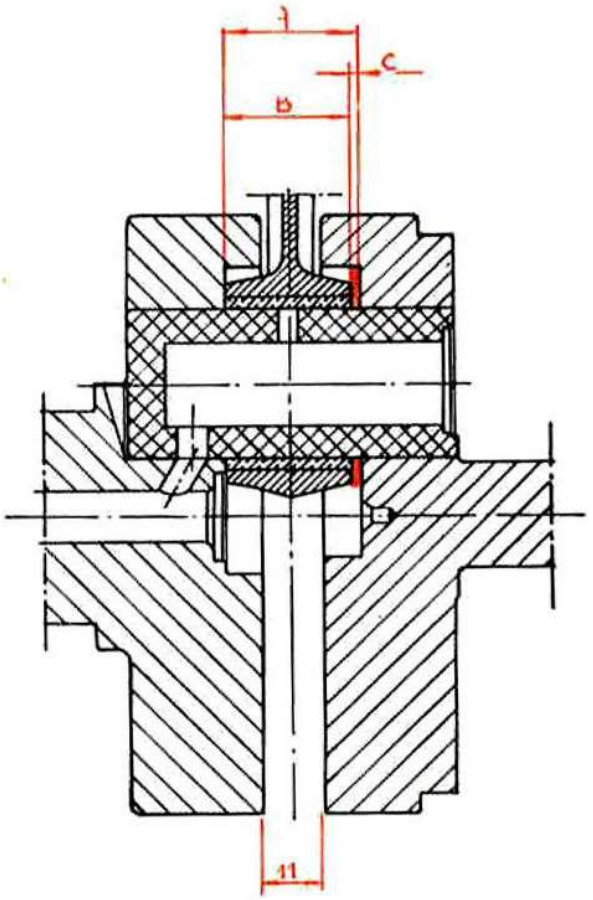


Fig. 88

ASSEMBLING TOLERANCES AND WEAR LIMIT BETWEEN VALVE AND VALVE GUIDE

Valve guide Ø **A**	Induction 6.020 6.032	Exhaust 6.030 6.042
Valve Ø **B**	6.000 ÷ 5.992	
Assembling play **C**	Induction	Exhaust
	max. 0.040	0.050
	min. 0.020	0.030
Maximum play allowed after wear **C** max.	Induction	Exhaust
	0.14	0.15

N.B. If the valve guide should become loose in its seat, it will be necessary to extract it and press one in its place of an increased diameter of 10.157 ÷ 10.142.

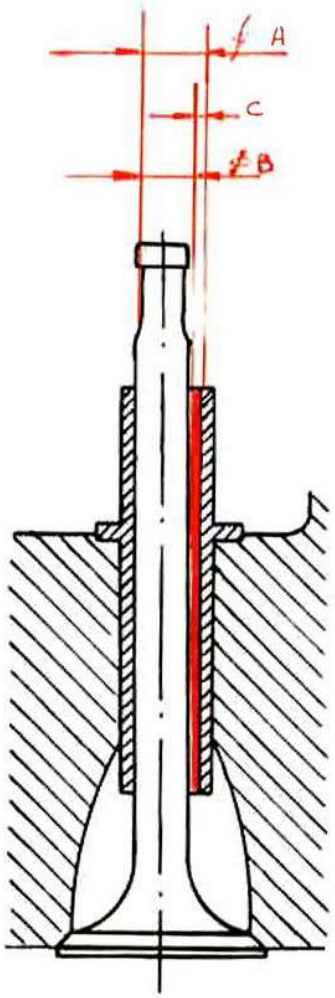


Fig. 89

LENGTHS, WEIGHTS AND RELATIVE LIMITS OF THE VALVE SPRINGS

New spring	L = 35 weight to the lenght of mm. 19.5 = kg. 27.6
Settled spring	L = 33,5 weight to the lenght of mm. 19.5 = kg. 25
Maximum limit allowed after use	L = 32 weight to the lenght of mm. 19.5 = kg. 22.4

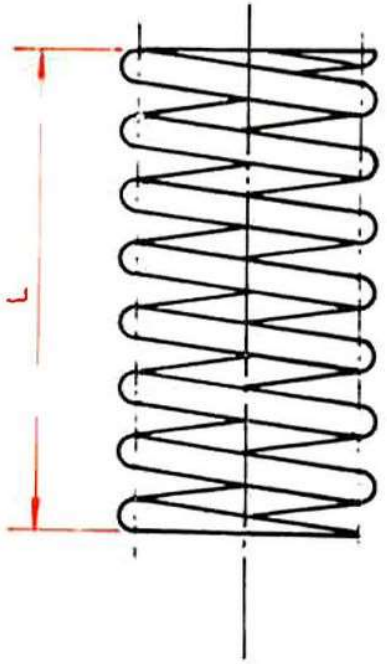


Fig. 90

ASSEMBLING TOLERANCES AND WEAR LIMITS BETWEEN SUPPORT PIN AND ROCKER

Rocker support Ø **A**	10.005 ÷ 9.990
Rocker Ø **B**	10.020 ÷ 10.005
Pin Ø **C**	10.000 ÷ 9.991

Assembling play	
D	**E**
Interference 0.010 Play 0.014	max. 0.029 min. 0.005

Max. play allowed after wear	
D max	**E** max
0.10	0.13

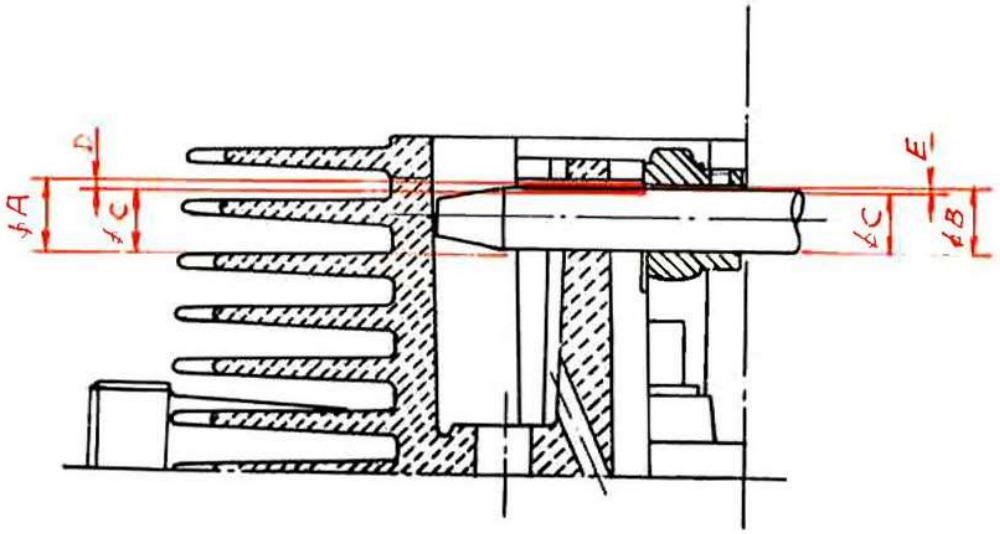


Fig. 91

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE BUSHING FOR THE 1ST SPEED SECONDARY SHAFT IDLE GEAR

Internal diameter of bushing Ø **A**	17.000 ÷ 17.027
Diameter of gearbox shaft Ø **B**	16.984 ÷ 16.966
Assembling play **C**	max. 0.061 min. 0.016
Maximum play allowed after use **C** max.	0.1
Internal diameter of the gear Ø **D**	20.000 ÷ 20.021
External diameter of bushing Ø **E**	19.993 ÷ 19.980
Assembling play **F**	max. 0.041 min. 0,007
Maximum play allowed after use **F** max.	0.1

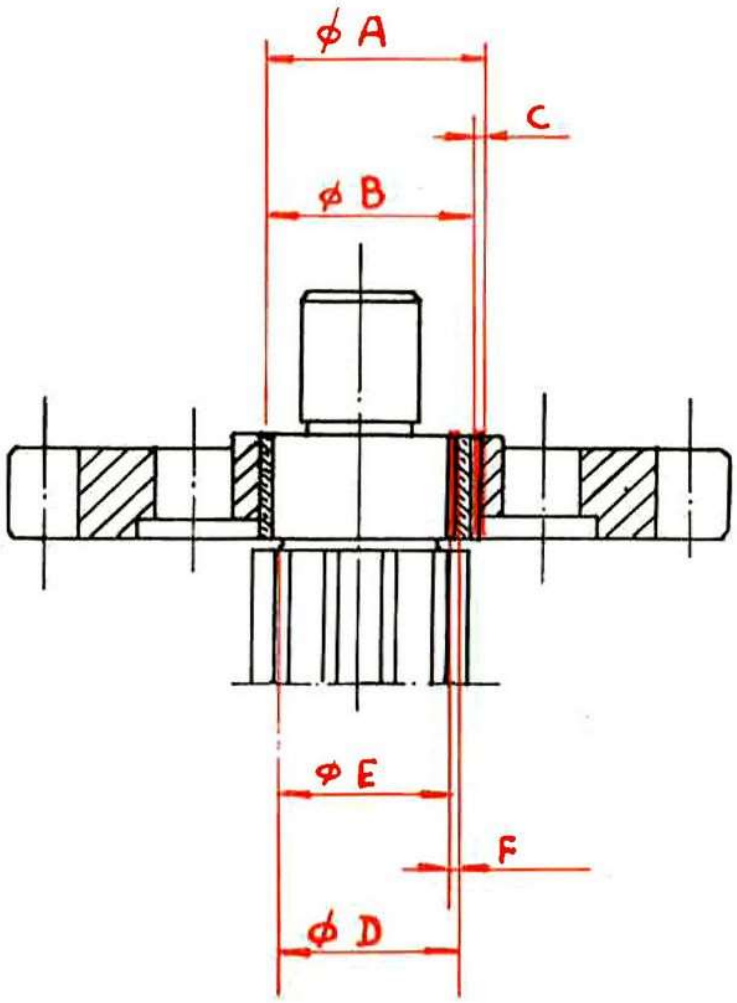


Fig. 92

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE 2ND SPEED PRIMARY SHAFT IDLE GEAR

« 98 » up to vehicle 001/17493 with bushing			
Internal diameter of bushing Ø **A**	17.526 ÷ 17.543	Internal diameter of gear Ø **D**	20.500 ÷ 20.521
Diameter of gearbox shaft Ø **B**	17.500 ÷ 17.482	External diameter of bushing Ø **E**	20.493 ÷ 20.430
Assembling play **C**	max. 0.061 min. 0.016	Assembling play **F**	max. 0.041 min. 0.007
Maximum play allowed after use **C** max	0.1	Maximum play allowed after use **F** max.	0.1

« 98 » from vehicle 001/17494 and « 124 » without bushing	
Internal diameter of gear Ø **A**	18.500 ÷ 18.521
Diameter of gearbox shaft Ø **B**	18.480 ÷ 18.459
Assembling play **C**	max. 0.060 min. 0.020
Maximum play allowed after use **C** max	0.15

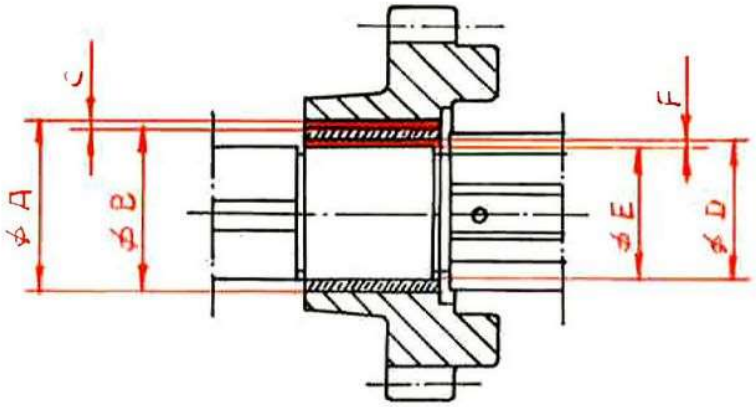


Fig. 93

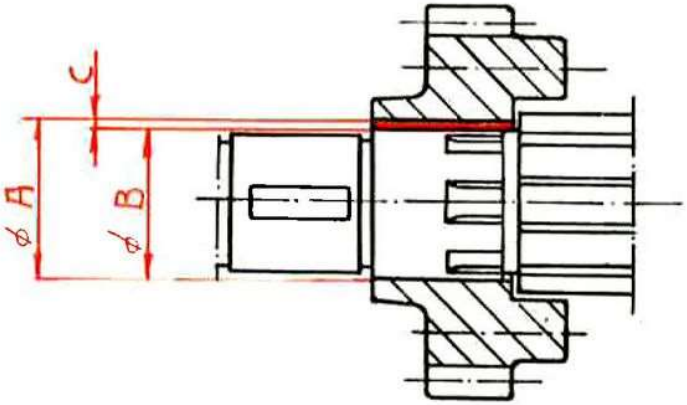


Fig. 94

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE 3RD SPEED SECONDARY SHAFT IDLE GEAR

« 98 » up to vehicle 001/17493 with bushing			
Internal diameter of bushing Ø **A**	17.516 ÷ 17.543	Internal diameter of the gear Ø **D**	20.500 ÷ 20.521
Diameter of gearbox shaft Ø **B**	17.500 ÷ 17.482	External diameter of bushing Ø **E**	20.493 ÷ 20.480
Assembling play **C**	max. 0.061 min. 0.016	Assembling play **F**	max. 0.041 min. 0.007
Maximum play allowed after use **C** max.	0,1	Maximum play allowed after use **F** max.	0.1

« 98 » from vehicle 001/17494 without bushing	
Internal diameter of bushing Ø **A**	18.500 ÷ 18.521
Diameter of gearbox shaft Ø **B**	18.480 ÷ 18.459
Assembling play **C**	max. 0.061 min. 0.020
Maximum play allowed after use **C** max.	0.15

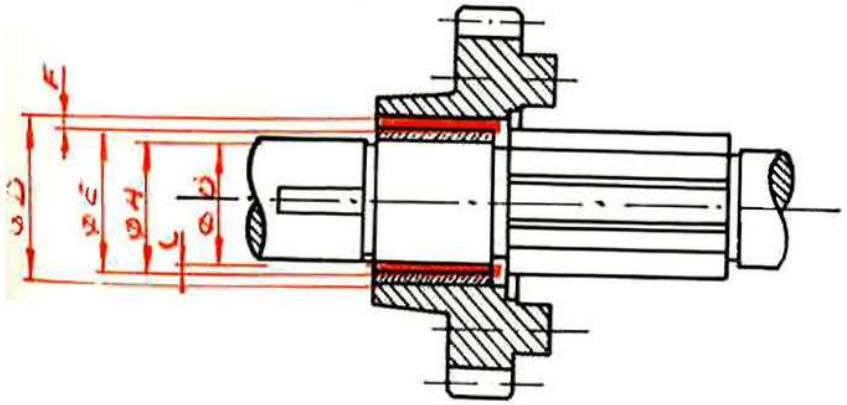


Fig. 95

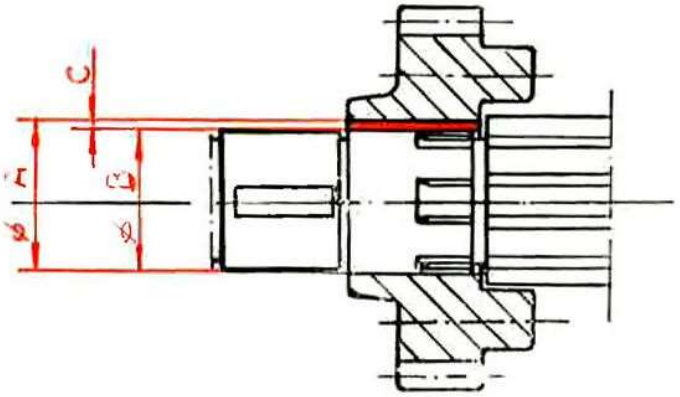


Fig. 96

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE 4TH SPEED PRIMARY SHAFT IDLE GEAR

« 98 » up to vehicle 001/17493		« 98 » from vehicle 001/17494 and «124»
Internal diameter of bushing Ø **A**	17.016 ÷ 17.034	13.516 ÷ 13.534
Diameter of gearbox shaft Ø **B**	17.000 ÷ 16.989	13.500 ÷ 13.482
Assembling play **C**	max. 0.045 min. 0.016	max. 0.052 min. 0.016
Maximum play allowed after use **C** max.	0.1	0.1
Internal diameter of the gear Ø **D**	20.000 ÷ 20.021	16.000 ÷ 16.021
External diameter of bushing Ø **E**	19.993 ÷ 19.980	15.994 ÷ 15.983
Assembling play **F**	max. 0.041 min. 0.007	max. 0.038 min. 0.006
Maximum play allowed after use **F** max.	0.1	0.1

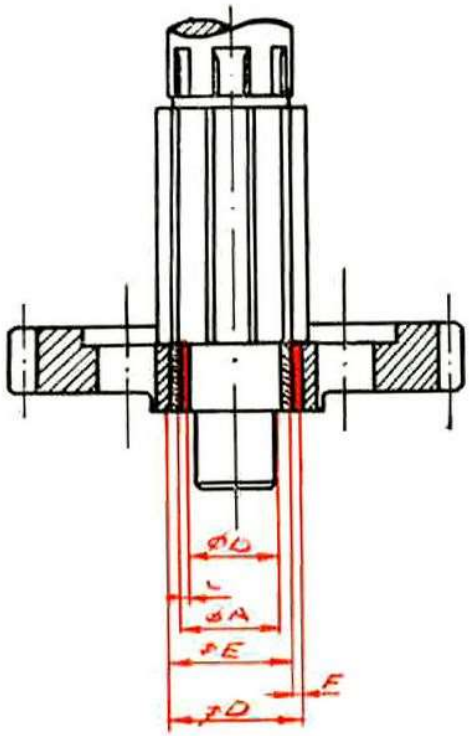


Fig. 97

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE BUSHING FOR THE KICK STARTER GEAR

Internal diameter of gear ∅ **A**	42.050 ÷ 42.066
External diameter of bush ∅ **B**	41.991 ÷ 41.975
Assembling play **C**	max. 0.091 min. 0.059
Maximum play allowed after use **C** max	0.2

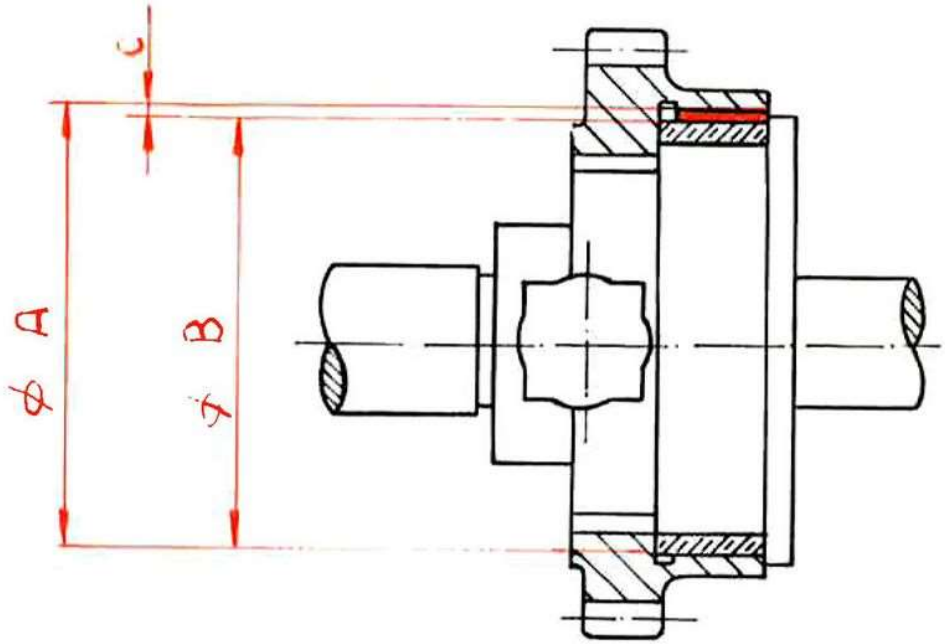


Fig. 98

ASSEMBLING TOLERANCES AND WEAR LIMITS BETWEEN FORK AND DRUM

Diameter of drum Ø **A**	37.966 ÷ 37.991
Internal diameter of fork Ø **B**	38.000 ÷ 38.025
Assembling play **C**	max. 0.059 min. 0.009
Maximum play allowed after use **C** max	0.15

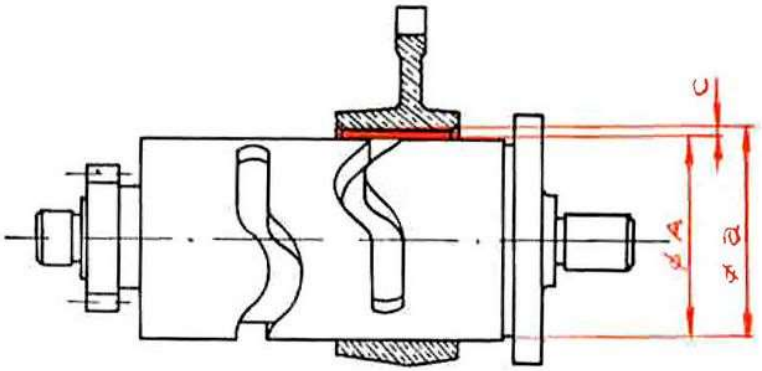


Fig. 99

ASSEMBLING TOLERANCES AND WEAR LIMITS BETWEEN FORK AND THE SLIDING GEAR

Thickness of the fork **A**	5.000 ÷ 5.200
Width of housing **B**	5.250 ÷ 5.400
Assembling play **C**	max. 0,4 min. 0.05
Maximum clearance allowed after use **C** max.	0.55

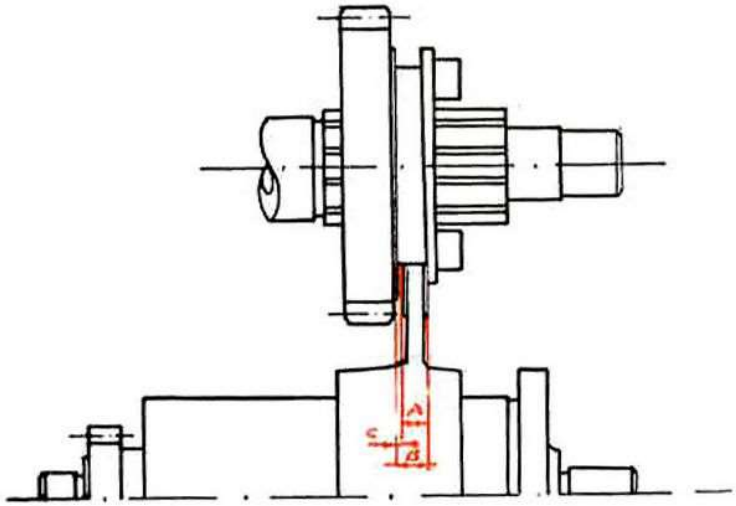


Fig. 100

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE OIL PUMP

	« 98 » up to vehicle 001-28099 and « 124 » up to vehicle 101-4489	« 98 » from vehicle 001-28100 and « 124 » from vehicle 101-4490
Depht of the gear housings **A**	15.05 ÷ 15.10	18.05 ÷ 18.10
Height of the gears **B**	14.99 ÷ 14.98	17.99 ÷ 17.98
Assembling play **C**	max. 0.12 min. 0.06	max. 0.12 min. 0.06
Maximum play allowed after use **C** max.	0.2	0.2

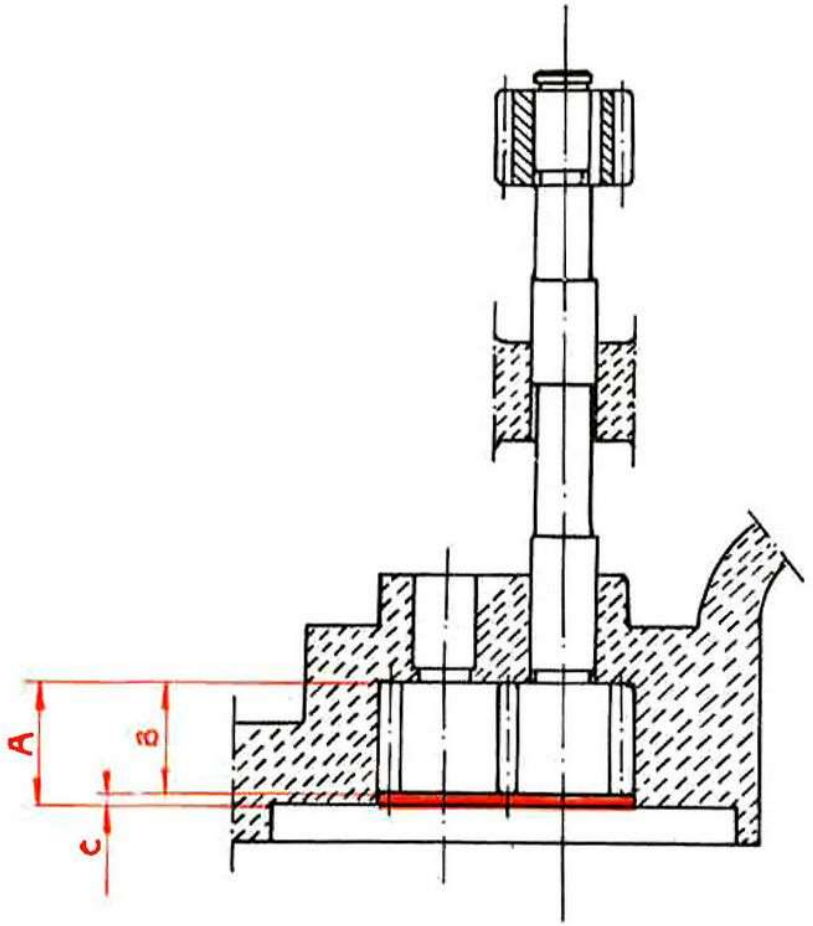


Fig. 101

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE FRONT FORK SLEEVES

Internal diameter of the sleeve Ø **A**	22.000 ÷ 22.022
Diameter of the main tube Ø **B**	21.992 ÷ 21.978
Assembling play **C**	max. 0.044 min. 0.008
Maximum play allowed after use **C** max	0.12

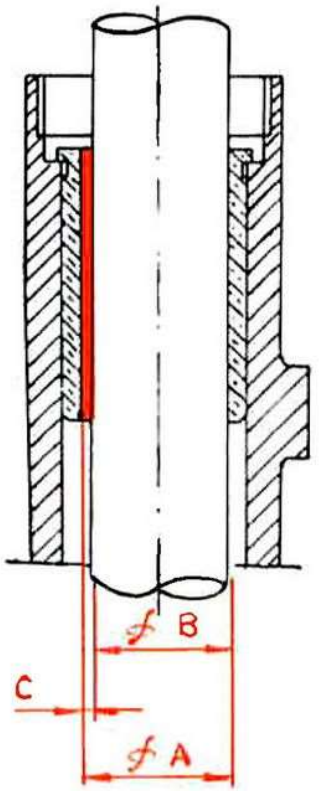


Fig. 102

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE FRONT FORK LOWER BUSHES

Internal diameter of the fork leg Ø **A**	27.000 ÷ 27.045
Diameter of lower bush Ø **B**	26.980 ÷ 26.959
Assembling play **C**	max. 0.086 min. 0.020
Maximum play allowed after use **C** max.	0.15

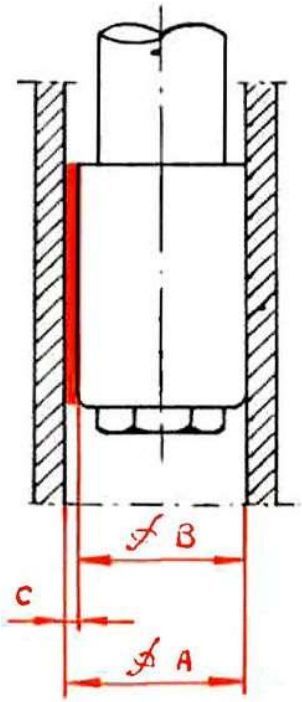


Fig. 103

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE REAR SWINGING ARM BUSHES

Internal diameter of bushing ∅ **A**	18.000 ÷ 18.018	Assembling play **C**	max. 0.035 min. 0.006	Transversal assembling play **D**	max. 0.7 min. 0.3
External diameter of spacer ∅ **B**	17.994 ÷ 17.983	Maximum play allowed after use **C** max.	0.15	Maximum play allowed after use **D** Max.	1.2

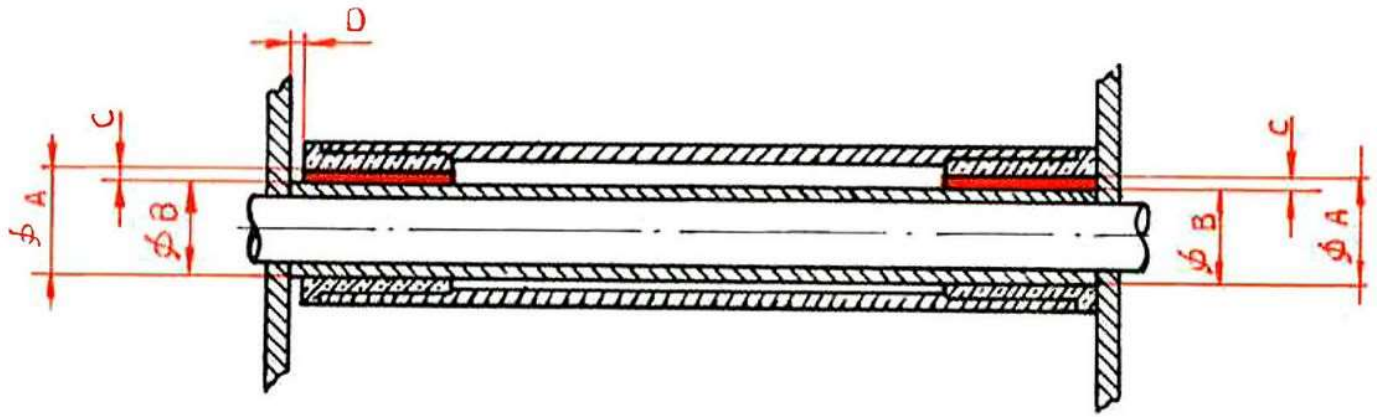


Fig. 104

ENGINE HEAD

Carefully remove the carbon deposits, without scratching the metal, and wash with paraffin.
Inspect the valve seats: they should not be notched or scratched, but must have a uniform surface so as to ensure the perfect tightness of the valves. In the event such tightness should be lacking, it is necessary to grind the valve seats. This latter operation must be performed with great care as follows (Fig. 106): fix the head in a vice, smear the seats and valves, providing they are not worn, lith fine grain emery, mixed with oil. Introduce the valve into its guide and fix the tool No. 03.7700 to the end of the valve stem. Alternately operate the tool in both directions, now and again changing position. Avoid the emery entering the valve guides. On completion of the grinding process, throughly wash the head and valves with petrol or paraffin. If the valve seats are worn or have deep marks, it is necessary, before effecting the grinding of same, to reface them with the express tool No. 03.18223 (Fig. 105). If with this operation the seat should deepen too much, it will be necessary to effect a rolling around the seat, using the flat part of tool No. 03.18223. To check the perfect tightness of the valves, pour a little petrol in the suction and exhaust conduits and make sure that this absolutely does not trickle through the valves.

VALVES

After having verified the seat, as described, check the coupling with its guide, referring to table at page 89. If the seat is ixcessively worn, or the coupling with its guide has

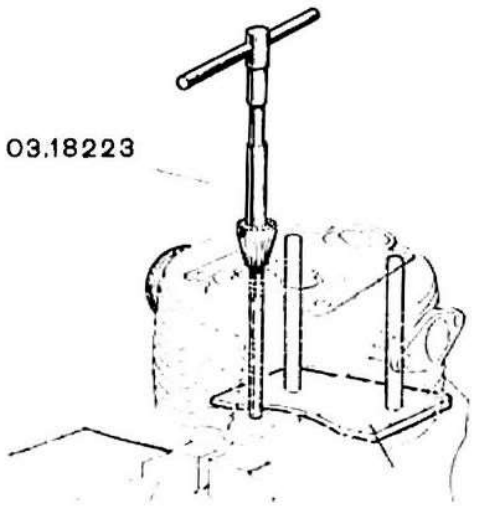


Fig. 105 - Refacing the valve seats.

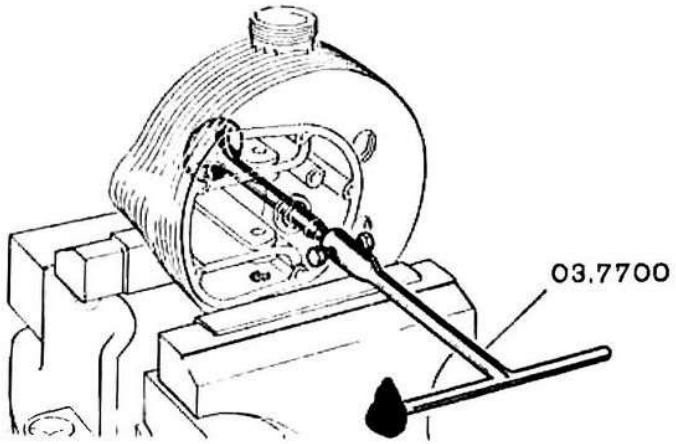


Fig. 106 - Grinding the valves.

exceed the prescribed limit, it is necessary to replace the valve. In this event, it is advisable to also replace the valve guide.

VALVE SPRINGS - ROCKERS - PINS

Check the loads and couplings as per the tables at pages 89 and 90.

CYLINDER - PISTON

Verify that the working surfaces do not show traces of seizing-up, deep scratches or cracks. Then, check the dimensions as per tables at pages 81-82 and 83. Either if it results from this verification that the wear limits have been exceeded, or if traces of seizing-up are noticed, it is necessary to have the cylinder rebored and a larger piston fitted. With the larger piston, it is necessary to also have larger piston rings.
The wear of the piston rings is to be checked as per the tables at pages 84 and 85.

CONNECTING ROD

Check with table at page 86. If the bushing have exceeded the prescribed wear limit, replace same, proceeding as follows:
Extract the worn bushes, by means of an hand press and with tools No. 03.20851 and 03.20852, and fit the new ones, with the aid of the press only (Fig. 107). Fix the connecting rod to be attended to, on tool No. 03.20853 and center it, with the express pin, in the position shown in Fig. 108. Clamp the tool on to the lathe plate and center it with the aid of a comparing device, with the point of which resting on the inner part of the bushing to be enlarged. Then, turn to the required diameter. It is emphasized that it is necessary to obtain a very smooth surface. Then, change the position of the connecting rod, substituting the pin and the bushes on the tool. Without moving the tool from its first position, also bore the small end bushing.
After completing the boring, drill the small end bush in correspondence with the holes on the small end.

N.B. - It is necessary to replace both bushing even if only the big one has exceeded the wear limit.

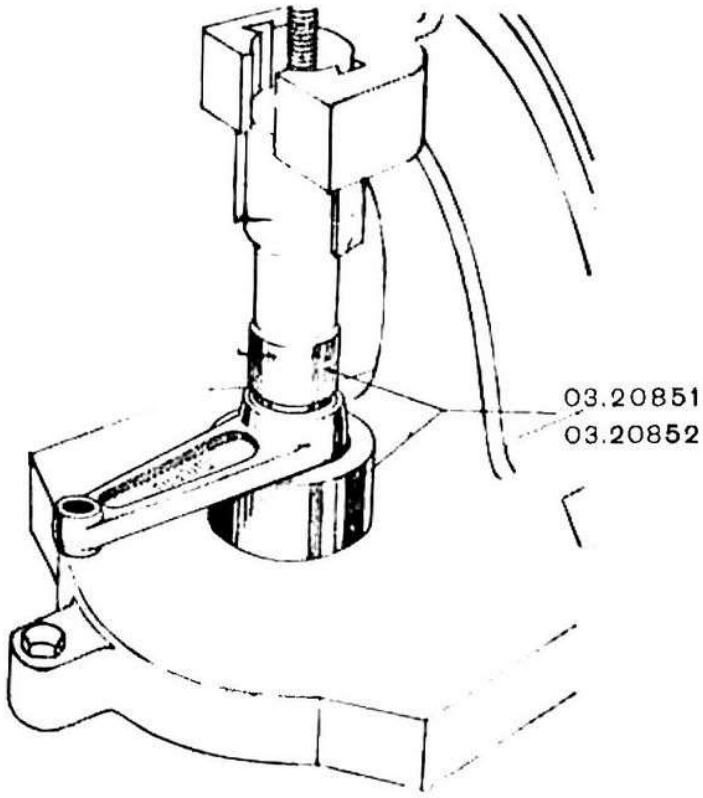


Fig. 107

GUDGEON PIN - CRANKPIN - FLYWHEELS

Check according to table at pages 86 and 87.
If the connecting rod should seize-up between the flywheels, with consequent tempering (bluish colour) of the crankpin housing it is necessary to replace the flywheels and the crankpin.

OIL PUMP

Check as per table at page 97. Replace the driving helical gear if excessively worn.

ENGINE

Verify the surfaces of the cams and tappets. If they show deep signs of wear, replace them.
Verify the cam shaft gear. If the teeth appear excessively worn, replace it proceeding as shown in Fig. 109, re-assembling as shown in Fig. 110, with the aid of tool No. 03.20896.

STARTER

Check the starter-gear bushing according to Table at page 95. Verify that the pawl runs freely in its seat and that its coupling edge does not show signs of excess wear.

SELECTOR AND SELECTOR FORKS

If the gear pedal is able to move a little, without any spring resistance, it is necessary to replace the spring, as it may be distorted. Verify that the inner section of the selector plate has no evident signs of wear, above all on its edges. If in the affirmative, replace the part.

Check the fork and drum couplings as per Tables at page 96. Verify that the pawls run freely in their seats and that the engaging edges are not excessively worn.

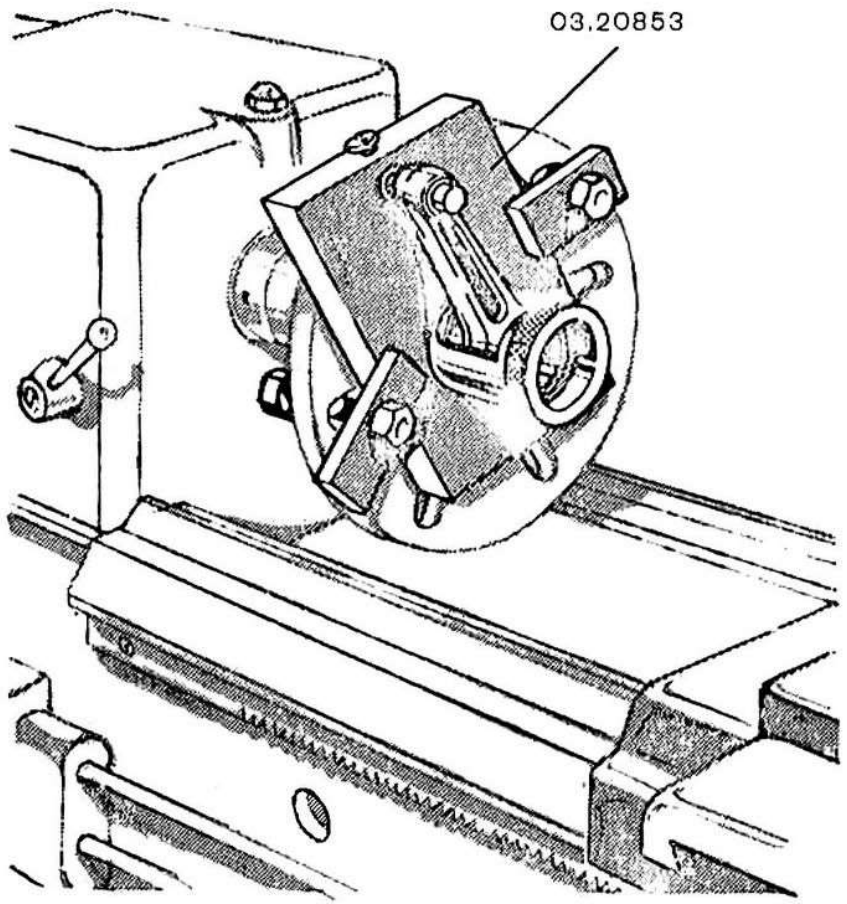


Fig. 108 - Boring of connecting rod bushing.

CLUTCH

Check the wear of the linings and of the plate couplings.

GEARS

Verify that there are no broken, chipped or excessively worn teeth. If in the affirmative, replace with new parts.

BALL BEARINGS

The wear of bearings is noticed by their noisiness (grooves and balls inclined) and by the excessive radial play between the inner and outer rings.

BREATHER

Verify that the ball can move freely, otherwise replace the ball.

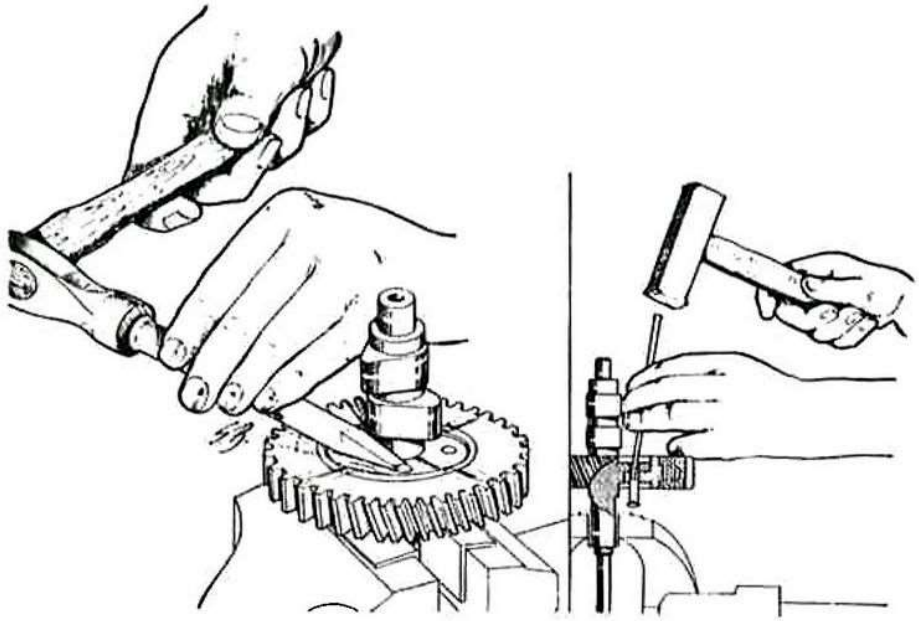


Fig. 109 - Dismantling the camshaft gear.

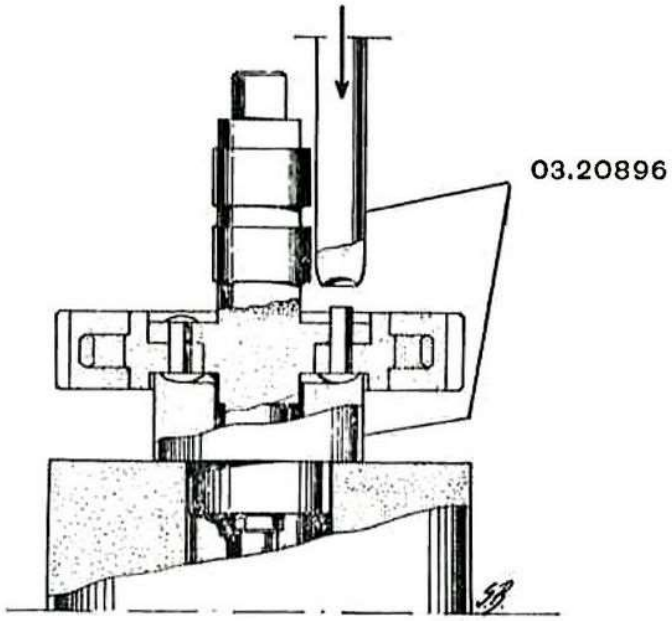


Fig. 110 - Assembling the camshaft gear.

REAR DRIVE

Verify the wear of the engine sprocket and wheel sprocket teeth. When excessively worn, it is necessary to replace the parts.
It is advisable to replace at the same time the engine sprocket, wheel sprocket and chain.
If the chain-adjuster should have reached its maximum tightening point, remove the false link with the special link-opener (Fig. 111).

CARBURETTOR

1) Take the carburettor completely to pieces, thoroughly washing all parts with petrol. Blow through the carburettor

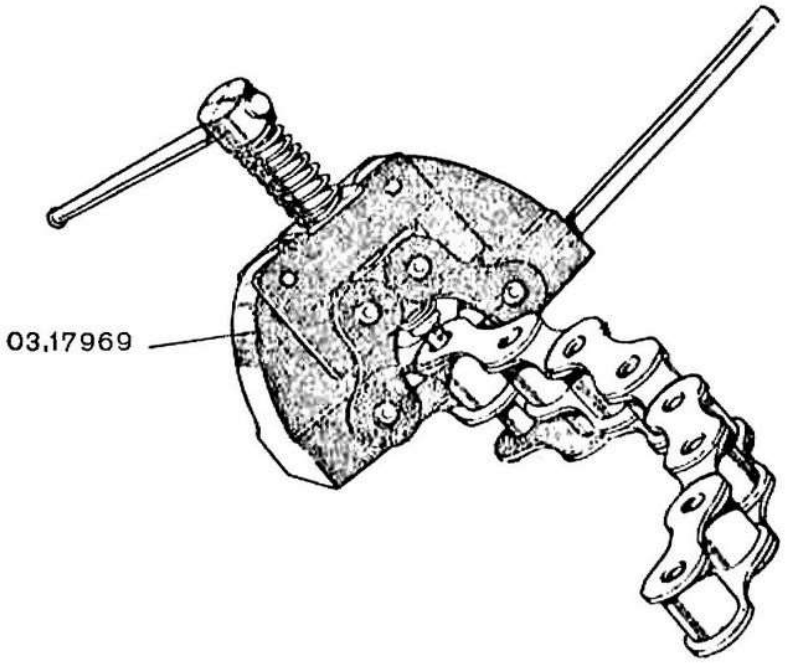


Fig. 111

body conduits and holes with compressed air, making sure that the conduits are perfectly clean by passing a copper wire through them.

2) **To keep the carburettor in good working order,** after having taken it to pieces, carefully check the condition of all its parts and, especially, the following.

3) **Throttle valve.** Verify if it slides properly in the mixing chamber and, in the event of excess play, due to heavy wear, replace it with a new one. If signs of wear should also be observed in the mixing chamber, such as to prevent a normal tightness or free sliding of the valve (even if new), ream the mixing chamber and fit a new valve of 0.2 mm. (.008") oversize.

4) **Tapered pin.** Check to see if this shows any signs of wear along its tapered part or in its fixing notches. In such an event, replace it at once with a new one of the same type.

5) **Atomizer.** Check same with the plug gauge. This plug should exactly enter the part marked « P » (passes) and should not enter the part marked « NP » (does not pass). If it should enter the part marked « NP » also, this means that the atomizer is of an increased size and it is, therefore, necessary to replace it with a new one of same gauge.

6) **Main jet.** This jet should never be touched for readjusting the size and, no attempt should be made to pass through any wire that is not much thinner and of softer material. In case of doubt as to its original size, or also through mishandling of its outer part, replace the jet with a new one of the recommended size, at once.

7) **Minimum jet.** The same rules for the main jet apply for the minimum.

8) **Constant level float chamber.** The proper working of this part of the carburettor is essential for correct carburation and to achieve this it is necessary to check the following parts:

9) **Tapered pin.** Verify that the tapered part of this pin is not unduly worn so as to compromise its tightness capacity and, in the event of its denting or evident signs of wear, replace it at once.

10) **Float.** Make sure that this is not burdened by eventual infiltrations of petrol (the correct weight is cut on the upper part of the float). Check that the fixing system on the tapered pin is perfectly efficient, and in the event of damage, replace it at once with a new one.

11) **Air cleaner and petrol filter.** We advise frequent checks and taking to pieces for cleaning purposes, bearing in mind that an air cleaner impregnated with dust is the cause of increase of consumption and loss of power.

12) **Micropaper element for SF 1 filter (« 124).** Every 1875 miles clean the filtering element by shaking it and blowing it from inside with low pressure air. DO NOT WASH IT! Every 6750 miles replace the filtering element with an original DELL'ORTO element bearing the same number of that out of use.

In the case of dusty roads, effect the cleaning and eventual replacements more frequently.

Reaming of the fuel chamber

1) Free the carburettor body of all other parts, including the valve reference pin.

2) Take the milling cutter with front guide No. 03.20885 for the first coupling operation and fit it on the self centering piece of the lathe, as shown in Fig. 112, making sure that it is centered.

3) Fit the reducer No. 03.18231 on the handle No. 03.18230.

4) Lubricate the mill with water emulsioned with chemical oil.

5) Make the chuck revolve at a speed of about 100 revs per minute.

6) Accompany the carburettor, to be reamed, by hand to the beginning of the mill mouth then, pressing on the lower end of the carburettor, with the flat shaped tailstock of the late (expressly prepared), advance slowly and progressively for about 25-30 mm. (abt. 1"-1¼") so as to have in the body to be reamed, a corresponding increased tract into which then fit the finishing mill.

7) After the first reaming step, pass to the second finishing operation, replacing the mill with that for finishing No. 03.18229/19.7 and, with same, ream as far as the bottom of the fuel chamber, being careful not to damage the bottom itself. During the above operations, the carburettor may be held still by resting the handle on the lathe bench, or olding the handle itself manually. If the work has been properly carried out, the reamed surface will be without scratches or undulations. When the increased mill have taken the cutting edge, the inconvenience will be revealed, because the diameter of the fuel chamber that has been reamed will appear diminished and the new valve will press in it; in such a case, sharpen the cutters of the mill itself by passing, counter-cutwise, a hard tempered tool such as o screwdriver, or a cold chisel.

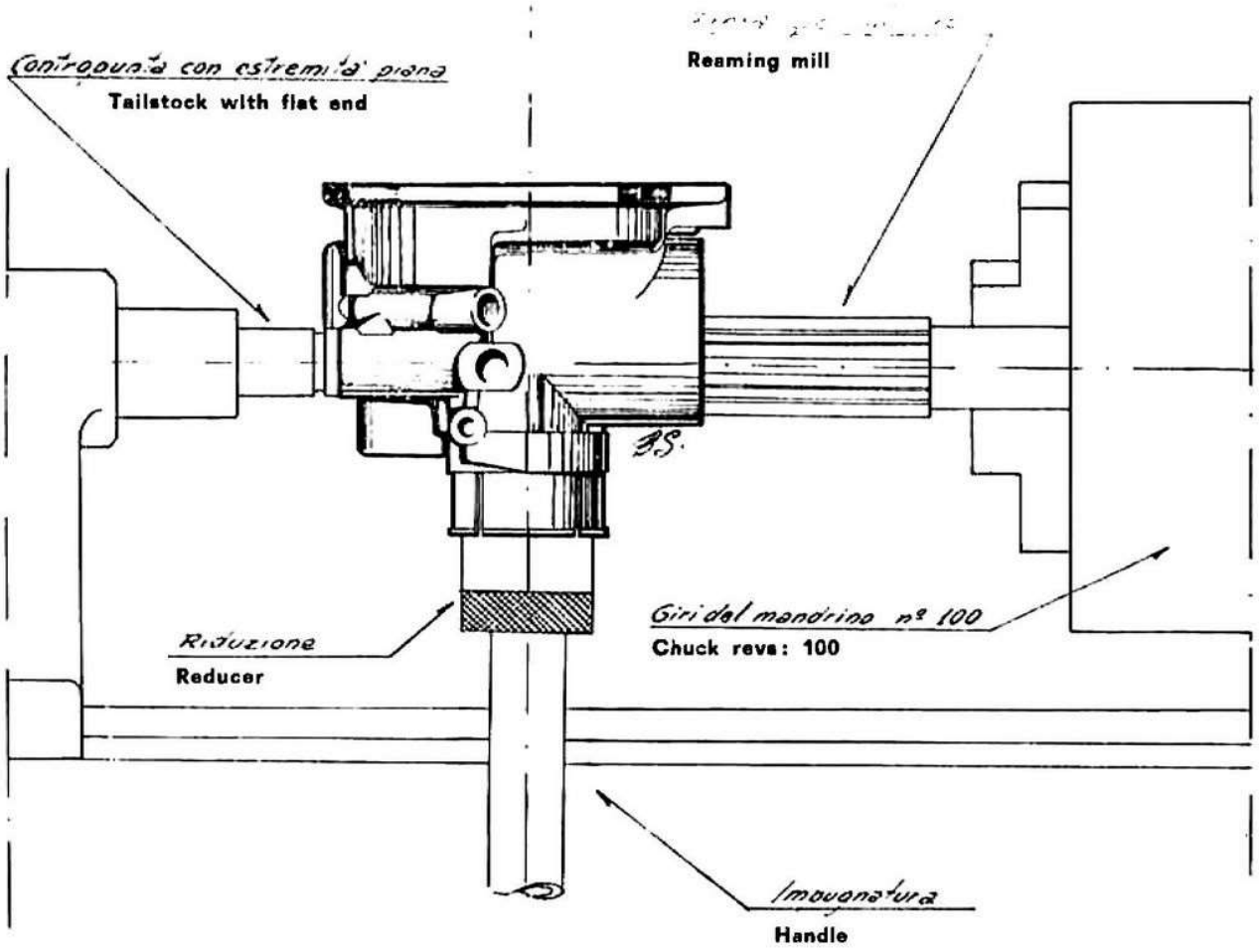


Fig. 112 - Reaming of the carburettor mixing chamber.

FRAME OVERHAULING

TELESCOPIC FRONT FORK

Check the bushes as per tables at pages No. 98 and 99 and, if necessary, replace them. Using the motor-cycle often on muddy roads, it is advisable to often check the condition of the oil. If the oil shoud be watery or dirty, replace it, after having washed the fork inner with a little petrol (with the fork assembled).

FRAME

If owing to an accident, the frame should be bent, straighten it by heating the parts concerned with a blowpipe.
To check, put the frame on the correct template (Fig. 113) and verify that all points coincide. To do this, specialized personnel is required, so as to avoid breakages or dangerous flaws in the tubes.

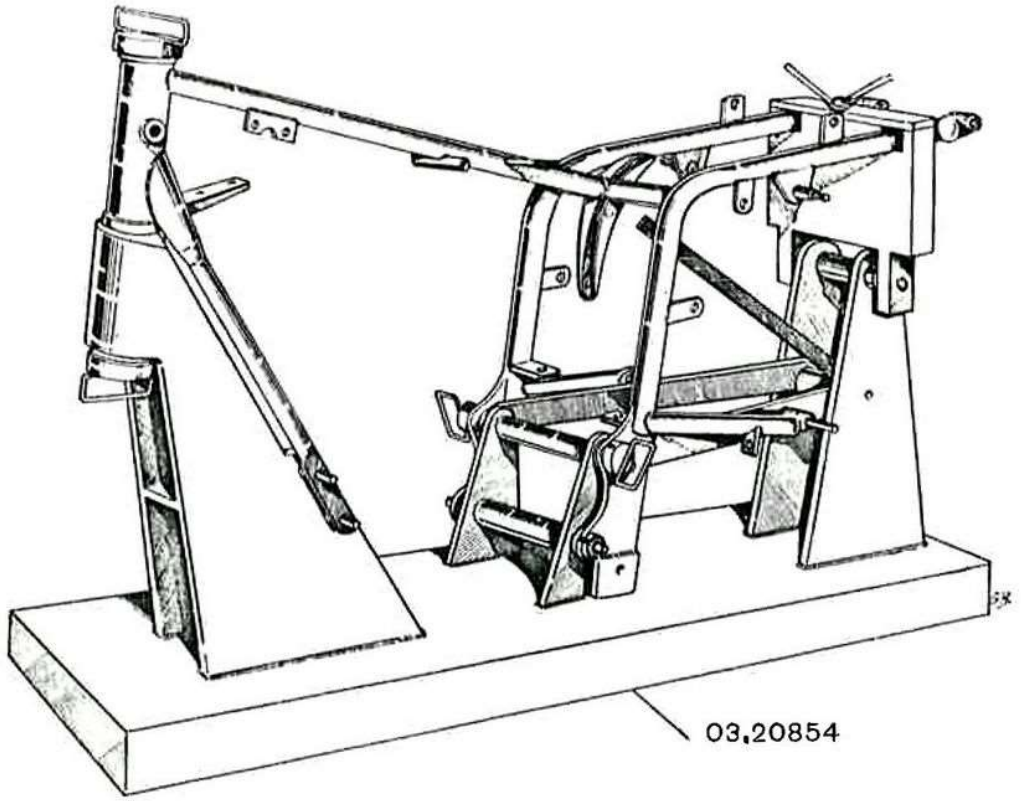


Fig. 113

REAR FORK

1) For the trueing of the rear fork, apply the same rules as used for the trueing of the frame (Fig. 114).

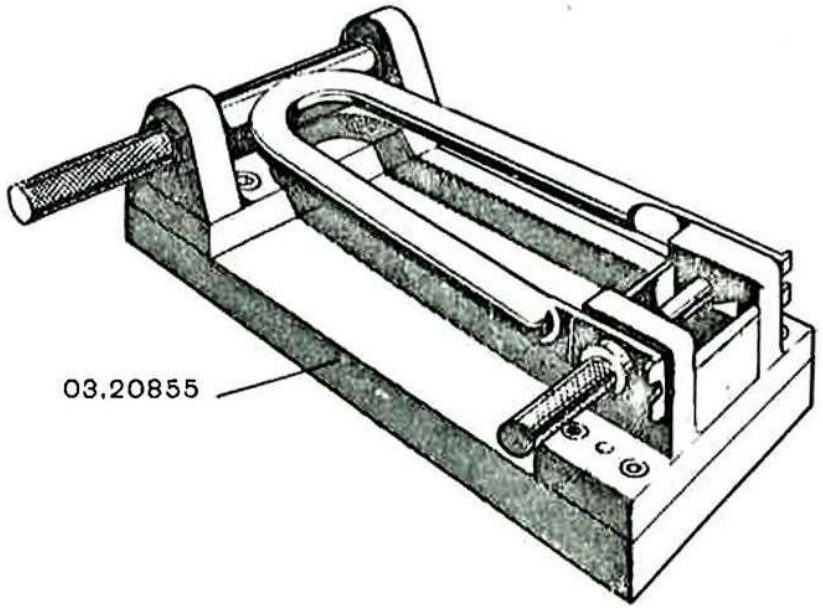


Fig. 114 - Template for checking the rear fork.

2) **Replacement of bushings**

2)After having removed the worn bushings as shown at page 53, fit the new ones with the aid of an hand press. Fix the fork on tool No. 03.18232 and, with a drill on the chuck of which the reamer No. 03.20856 has been fitted, ream the hole and slightly file the bushing surface.
After having loosened the rear handwheel pull the express ratchet and turn the fork. Then proceed to work the second bushing checking the total size with the gauge No. 08.32417.

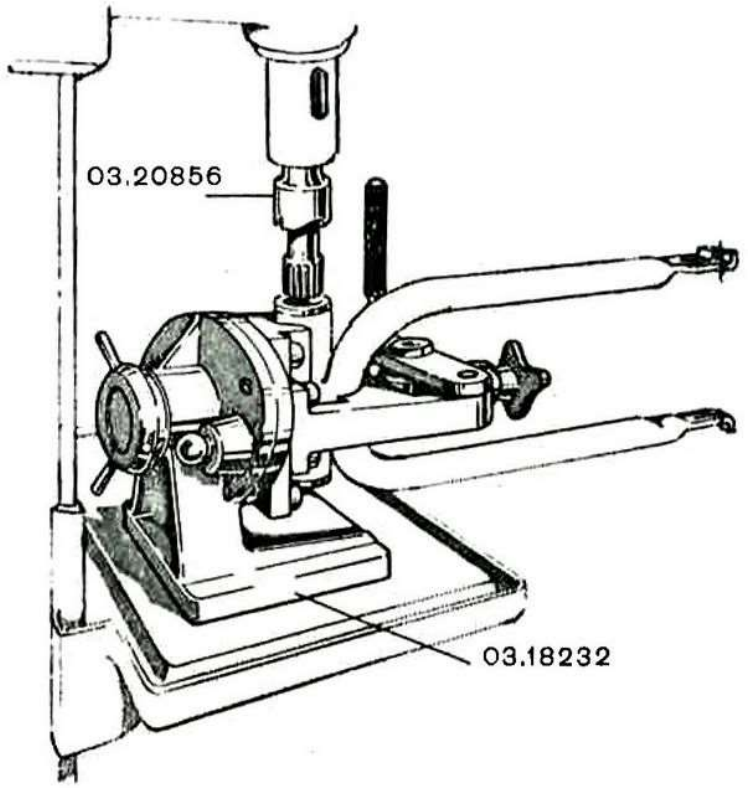


Fig. 115 - Reaming of the rear fork bushing.

WHEEL CENTERING

Check the position of the hub, with respect to the rim, with template No. 08.34195 for the front wheel, and template No. 08.34196 for the rear wheel (Fig. 116).

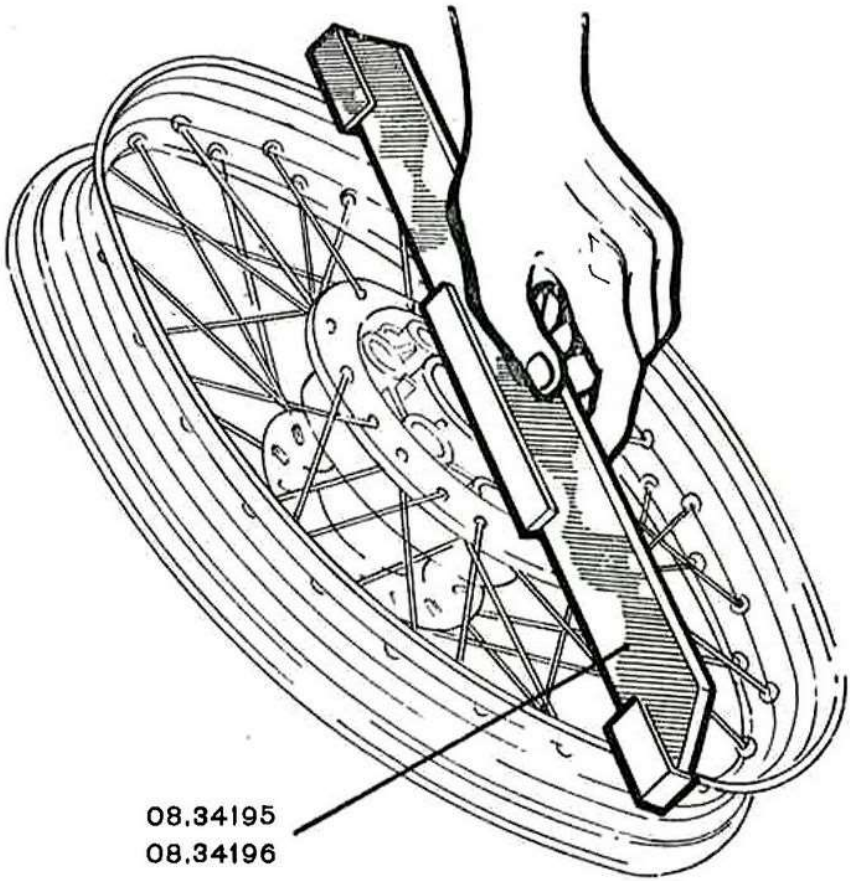


Fig. 116

Fix the wheel on the correct support and, with the spoke pulling spanner, screw the spoke nipples where required until the wheel is centered both horizontally and vertically, using the correct references (Fig. 117).

To do this easily and correctly, a certain experience is necessary.

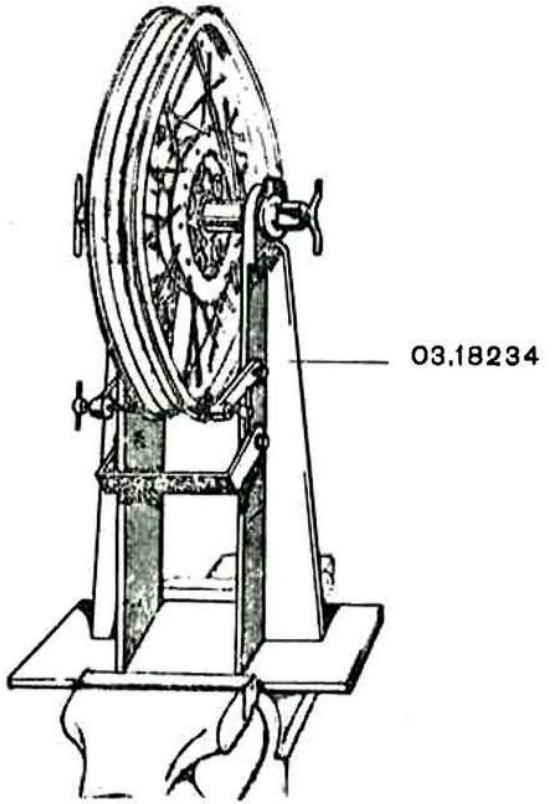


Fig. 117 - Wheel centering.

OVERHAULING LIGHTING AND IGNITION INSTALLATIONS

BATTERY

This is the electric unit that requires the most constant inspection and the most diligent maintenance. The mai upkeep rules are:

1) Verification of the electrolite level.

The electrolite level, that should be checked at least once a month, should cover the top edge of the plates by about 5 mm.
If it should be necessary, bring it to the above level again, using only **distilled water.**

2) Checking the charge condition.

After having brought the electrolite level up again, check its density with the express densimeter (Fig. 118).
With a charged battery, a density of 30° ÷ 32° Bè, corresponding to a specific weight of 1.26 ÷ 1.28, should be verified. If the density has fallen below 20° Bè, the battery is completely flat and it is, consequently, necessary to recharge same.
Furthermore, with a charged battery, the voltage of each cell should be of 2 ÷ 2.1 V. The discharge limit of each cell is of 1.8 V. The above voltage checks should be made by inserting a headlight bulb on the external circuit of the battery.

3) Battery re-charging.

The normal bench recharging should be effected with a 1.2 A. current for about 12 hours.
The power source connections should be made by connecting the corresponding poles (+ with + and — with —). During the charging the battery plugs must be removed. On com-

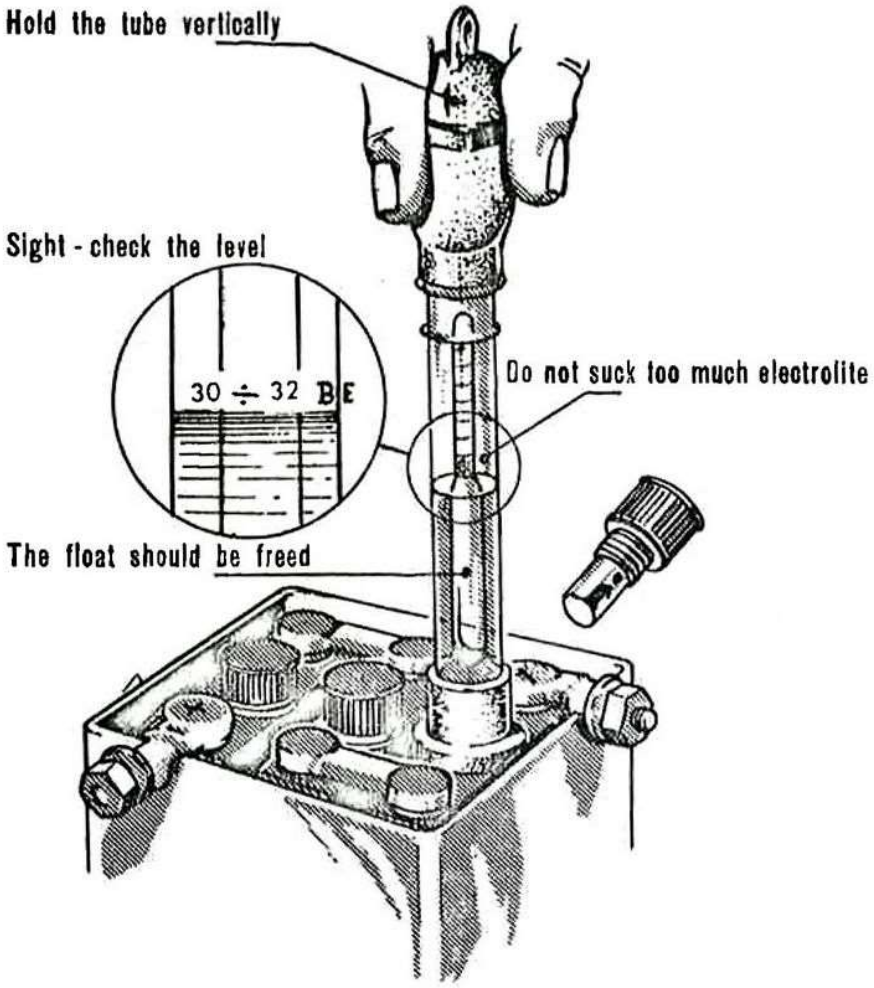


Fig. 118 - Checking the electrolite density.

pletion of the charging, check the electrolite level and density, as also te voltage of each cell.

4) Cleaning of the battery.

It is advisable to keep the battery constantly clean, and above all the upper part, and protect the clamps with vaseline.

DYNAMO AND REGULATOR

To maintain the dynamo in the best efficiency conditions, it is advisable to periodically clean it. Every 2500 or 3000 miles remove the layer of graphite, dust or grease that has accumulated on the commutator segments and the brush guide. This is done quite easily, since it is sufficient to free the brushes from the springs, slide them out and, then, with a rag soaked in petrol, clean the collector and the brush guides well. If the commutator segments should be slightly scratched, start the engine and pass lightly with fine grain glass-paper. (Never use emery paper). After completing this operation, it is always best to blow the commutator segments with compressed air.

If, instead, the scratches should be deep, it will be necessary to dismantle the armature and lathe the commutator.

After lathing, lower the mica insulation, between the segments, by about 0.5 mm. below the commutator diameter. For this operation, use the express saw blade or a mica removing machine. The brushes can be easily checked. A degree of wear of 2 or 3 mm. is normal, while above 4 mm., it is necessary to replace them.

The regulator does not require any maintenance. It will, howewer, be advisable during the periodical maintenance of

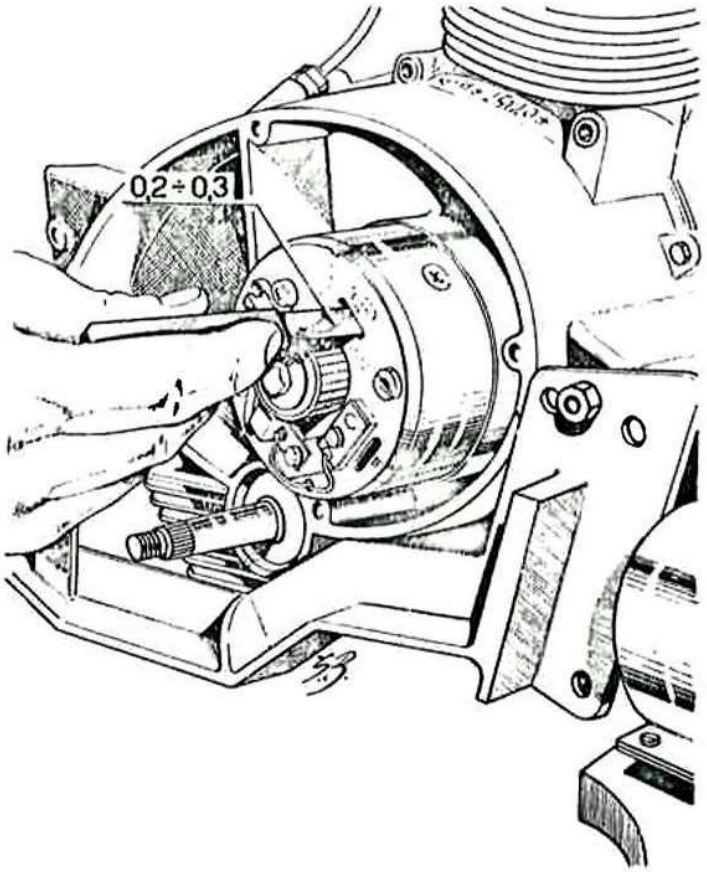


Fig. 119 - Checking the dynamo aircore.

the dynamo, to check the conditions of the conductors, wire terminals and the tightening of the clamps.
The operational faults that may arise in a dynamo are varied in character and origin.
We, therefore ,limit ourselves summarily to describe the most important.

1) The dynamo does not generate current while running.
This is one of the most common fault and it is immediately noticed by the continuous shining of the spy bulb located on the headlamp, the light of which does not go out as the engine speed increases. The cause of this trouble may lie in the dynamo, in the regulator or in the outer connections. Consequently, proceed to check the above units in accordance with the following order:

a) Connections: Check to see if there are any gaps, due to breakage, cables not perfectly insulated or loose clamps. Replace the deteriorated cables and lock the clamps.

b) Regulator: If the trouble continues, try by replacing the regulator, with temporary connections, with an efficient one. If the defect disappears with the fresh regulator, it is necessary to definitely replace the original regulator.

c) Dynamo: If, instead, the regulator is efficient, check the dynamo. Test the field circuit by means of a pilot bulb and battery. (Connect the + clamp of the battery to the D + clamp of the dynamo).
If the circuit is not broken, a spark should result. Otherwise, replace the field winding. After such replacement, with a feeler gauge ascertain that the aicore between the poles

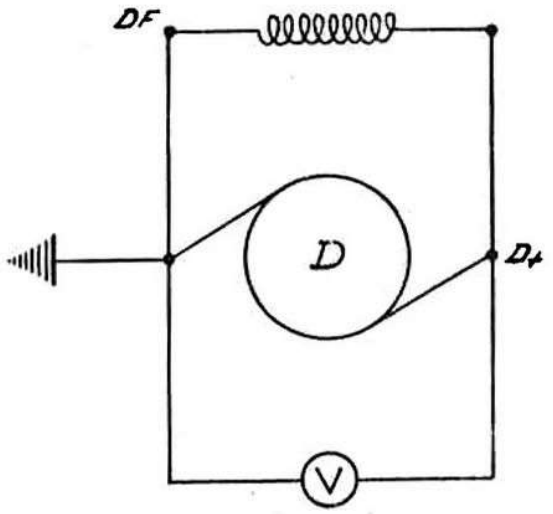


Fig. 120 - Diagram of the idle dynamo test.

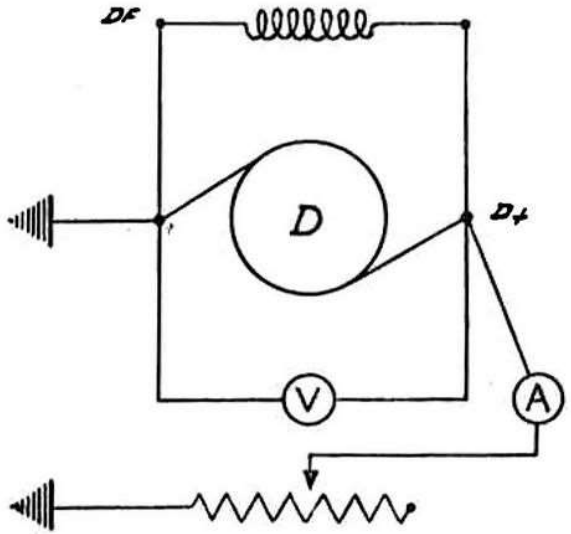


Fig. 121 - Diagram of the dynamo charging test. at a constant voltage of 6 V.

and armature is still of 0.2 ÷ 0.3 mm. (Fig. 119). Then test the armature circuit, short circuiting two consecutive segments at a time. If the current does not pass in a pair of segments, it is necessary to replace the armature.

2) The dynamo does not give its correct output.
Normally, this trouble is noticed by a frequent insufficiency of charging of the battery. After having verified the battery, as per relative instructions, effect the following dynamo tests:

a) Idle test: Fix the dynamo on the express test bench. Connect the DF clamp to the mass and insert the voltmeter between the D + and the mass (Fig. 120). Slowly increase the revolutions until a voltage of 6 V. is achieved. At this point the number of revolutions should be less or equal to 1450 revs per minute.

N.B. - The dynamo must rotate in the same direction that it does on the engine, i.e. anti-clockwise, looking at the brushes.

b) Charging test at a constant voltage of 6 V. Without changing the connections of the preceding test, connect a rheostat between the D + and the mass, with an ammeter in series (Fig. 121). Gradually increase the revs and regulate the rheostat until, with the tension of 6 V., a 7.5 A. current is obtained. Thus, the output will be of 6 V x 7.5 A = 45 W (nominal power). The corresponding number of revolutions should be less or equal to 2100 revs per minute. If the dynamo meets the above requirements, it is efficient and, therefore, it is necessary to find the cause in the regulator. Consequently, it is necessary to make the following tests:

c) Tension and connection revolutions: Connect the clamps D + and DF of the dynamo with the corrisponding regulator clamps. Connect the voltmeter between the « 61 » of the regulator and the mass, and a spy lamp between the « 51 »

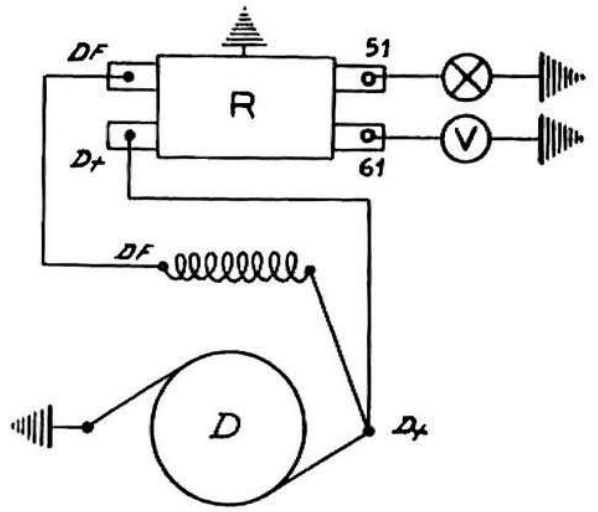


Fig. 122 - Diagram of the tension and connection revolutions test.
Diagram of the idle tension regulation test.

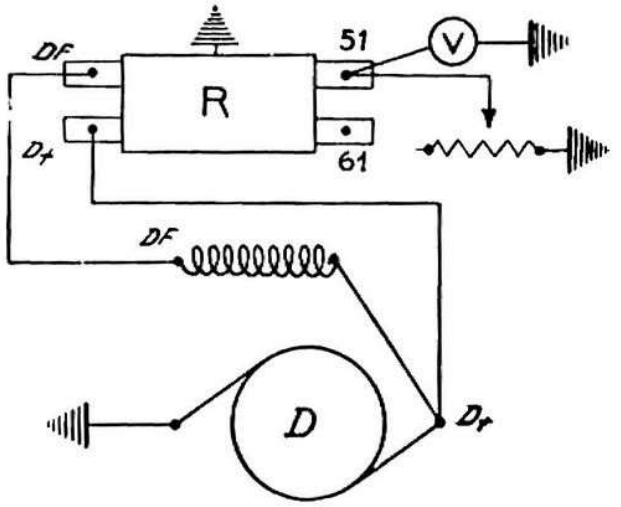


Fig. 123 - Diagram of the loading tension regulation test.

and the mass (Fig. 122). Rotate the dynamo, slowly increasing the revolutions until the spy lamp lights. In this moment, the connection of the automatic cut out points has taken place and the corresponding voltage, shown by the voltmeter, should be of 4 ÷ 5 V. In the same moment that the spy lamp lights, the number of revolutions should be less or equal to 1280 revs per minute.

d) Idle tension regulation: With the same connections of the previous test, also check the idle tension regulation. This tension should remain between 7.4 ÷ 8.2 V with the increase in the revolving speed of the dynamo.

e) Loading tension regulation: Connect the D + and DF clamps of the dynamo with the corresponding regulator clamps. Connect a voltmeter and a rheostat to the « 51 » clamps and the mass (Fig. 123). Regulate the rheostat until, with a normal tension (6 V), the nominal power of the dynamo (45 W) is reached.

At the beginning of the regulating, the tension should be comprised between 6.8 ÷ 7.2 V also with the number of revolutions increasing.

During this last test, the rheostat should not be touched If the conditions required under c), d) and e) should not be verified, it will be necessary to recalibrate the regulator. For subparagraph c) it will be necessary to act on the automatic cut out adjuster, as per Fig. 125.

HORN

Normally, this unit does not require any maintenance.

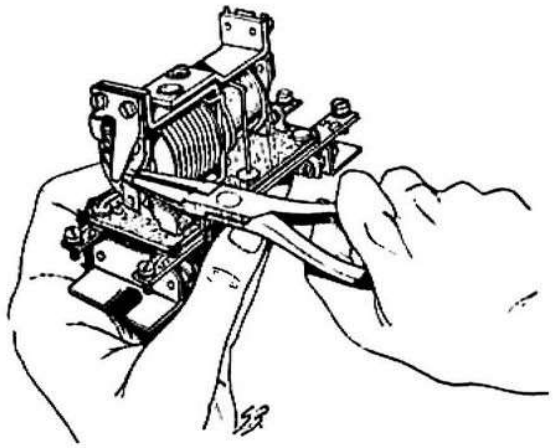


Fig. 124 - Calibration of the automatic cut out.

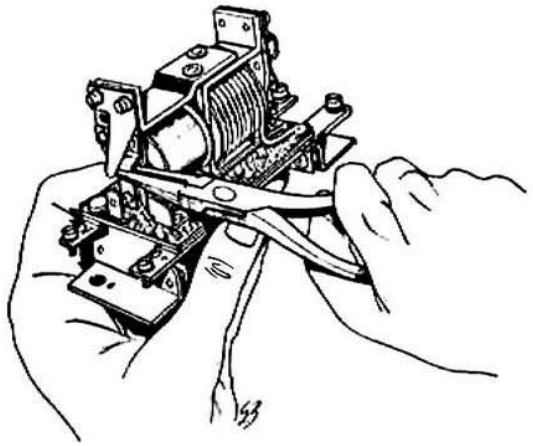


Fig. 125 - Calibration of the tension regulator.

FAULTS

1) The horn does not work.

If the horn does not work, the trouble may be due to:

a) Damaged horn.

b) Interruption between the battery, button and horn connections, or damaged button.

a) To see if the horn is damaged, connect it direct to a battery. In the affirmative, it is necessary to replace the horn itself.

b) If, instead, connected direct to a battery, the horn works, check the connections and the button.

2) The horn sounds oddly.

This defect may be found in the loosening of the horn support screws or in the adjustment of the horn contact breaker.

In the former event, it will be sufficient to tighten the support properly, while, in the latter, it will be necessary to effect a new adjustment, operating on the special screw located in the back part of the horn body (Fig. 126).

ADJUSTING THE HEADLIGHT

To correctly direct the headlight, it is necessary to place the motor-cycle at a distance of 10 metres (abt. 33 feet) from a screen on which an 0 has been marked, as per Fig. 127.

The centre of the ray of dazzling light should coincide with the 0, and the anti-dazzle light ray should be below the horizontal line passing through the 0. If necessary, loosen the screws B and direct the headlight to the required adjustment.

Prior to carry out the above adjustment, check that the tyres are inflated to the prescribed pressure.

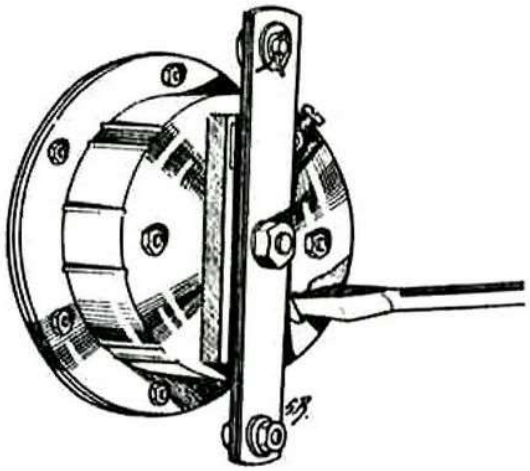


Fig. 126 - Adjusting the horn.

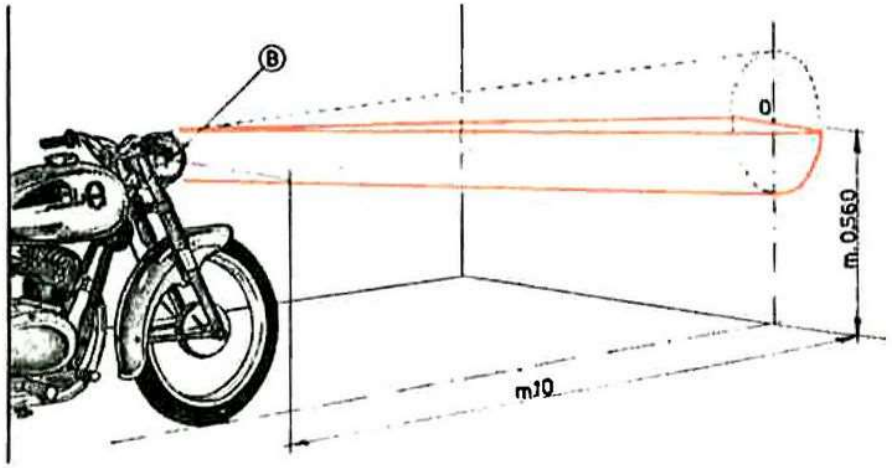


Fig. 127 - Adjusting the headlight.

REASSEMBLING

FOREWORD TO THE REASSEMBLING

In reassembling, follow the opposite procedure to that of dismantling, also using the same tools. Consequently, in this part we only deal with those operations that require different tools or procedures to those for dismantling. To obviate doing the work again, it is advisable to use the utmost care and the greatest cleanliness, especially during the reassembling of the engine. Remember to grease or oil all those parts that need it.

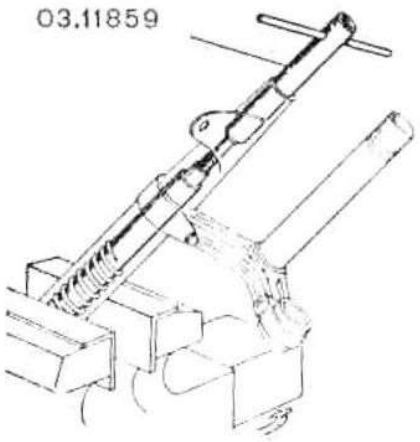


Fig. 128

1 - Assembling the front fork main tubes.

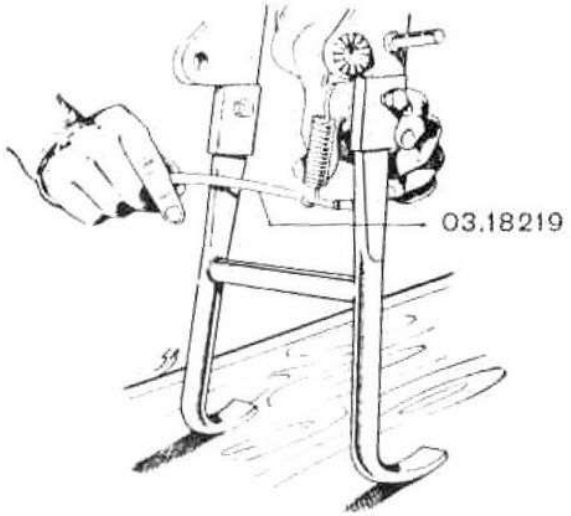


Fig. 129

2 - Assembling the prop-stand springs.

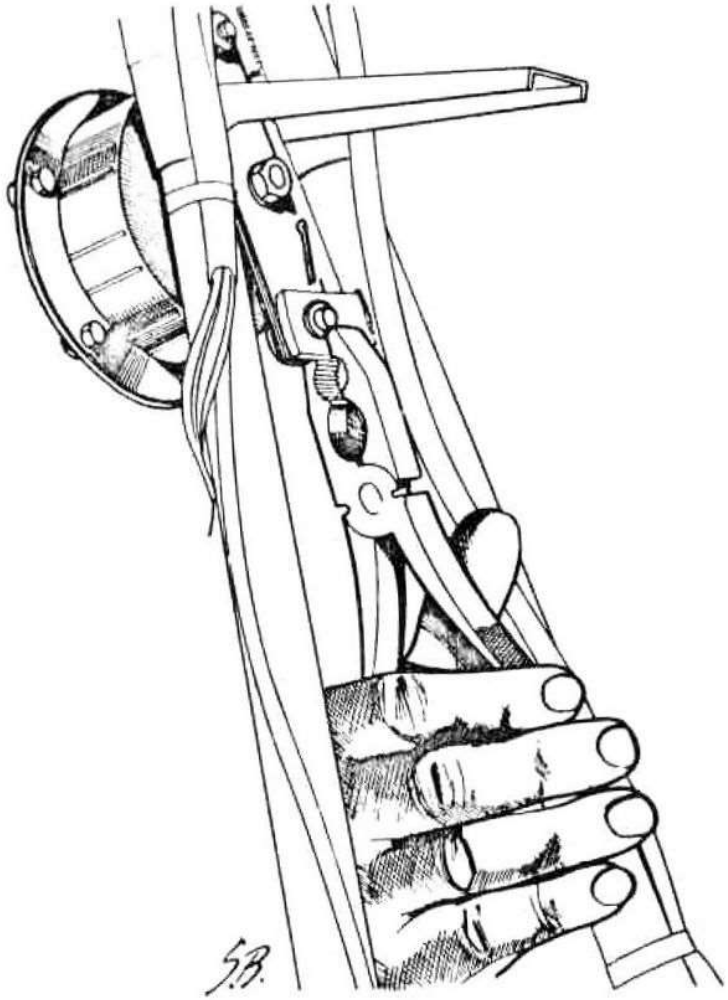


Fig. 130

3 - Assembling the electric horn.

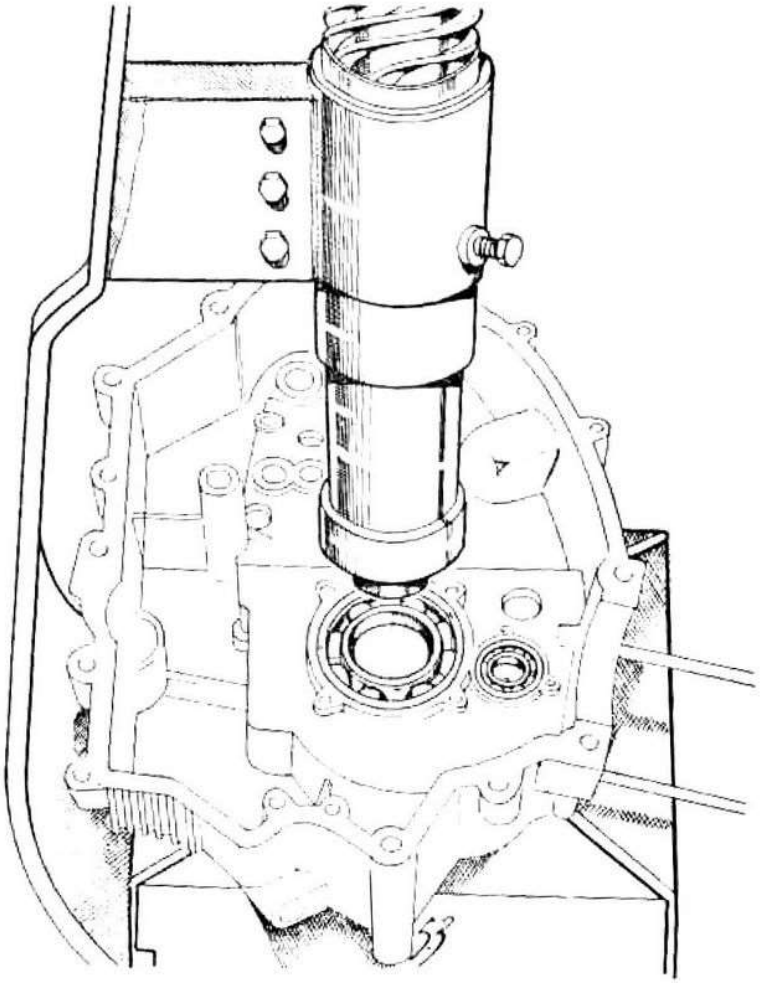


Fig. 134

7 - Assembling of the bearings in the crankcase.
Use the different necessary punches for the various bearing dimensions (See page 42, special tools).

N.B. - By using blows air, make sure that the little tubes for the passage of the oil in the left crankcase cover and the left semi-crankcase are free.

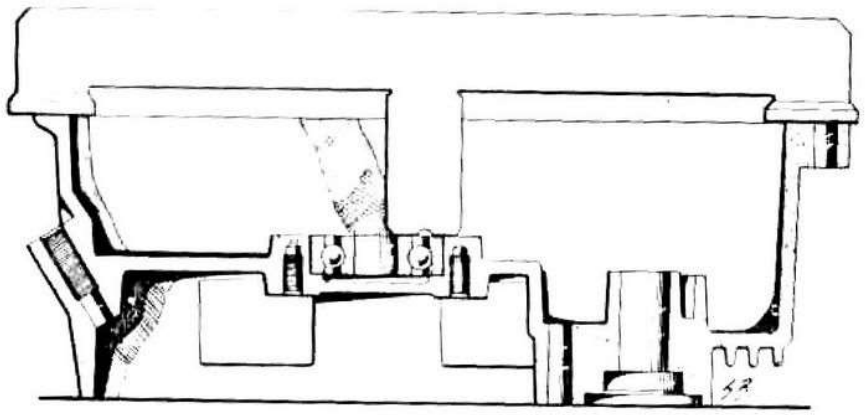


Fig. 135

8 - Checking the bearing abutting.
Check with the express depth gauges (See page 42, special tools).

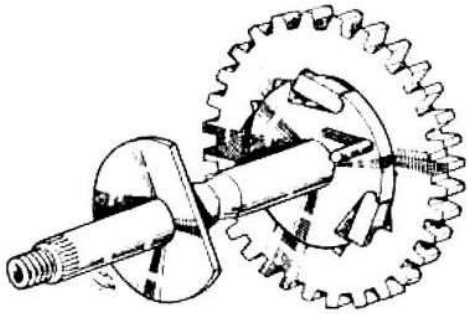


Fig. 136

9 - Position of the selector pawls.

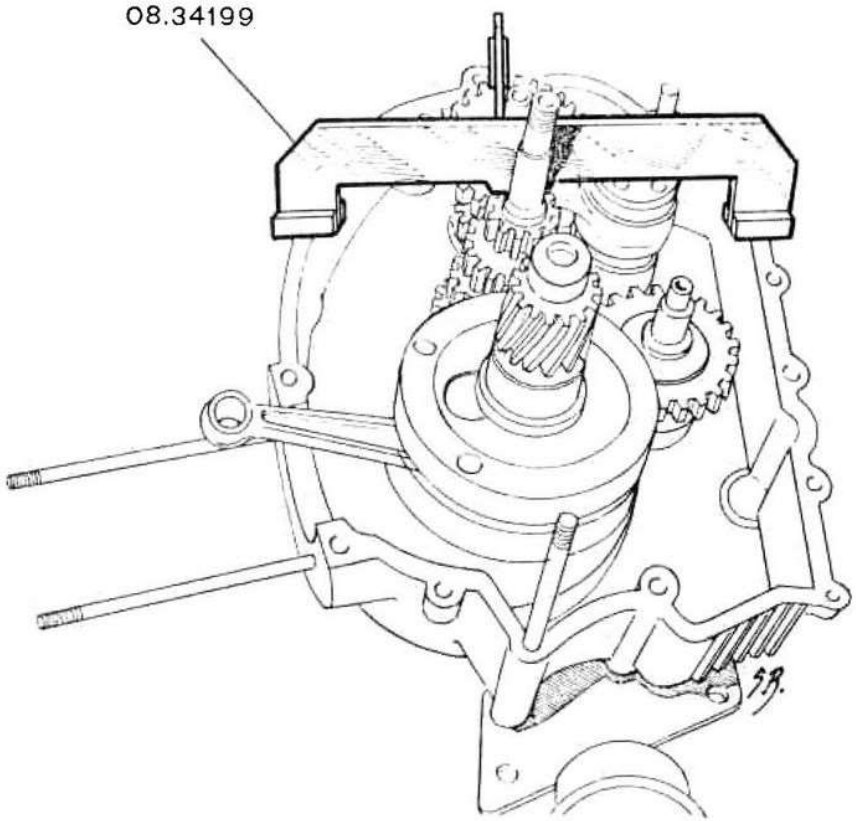


Fig. 139

12 - Checking the gearbox primary and secondary shafts and the selector shaft.

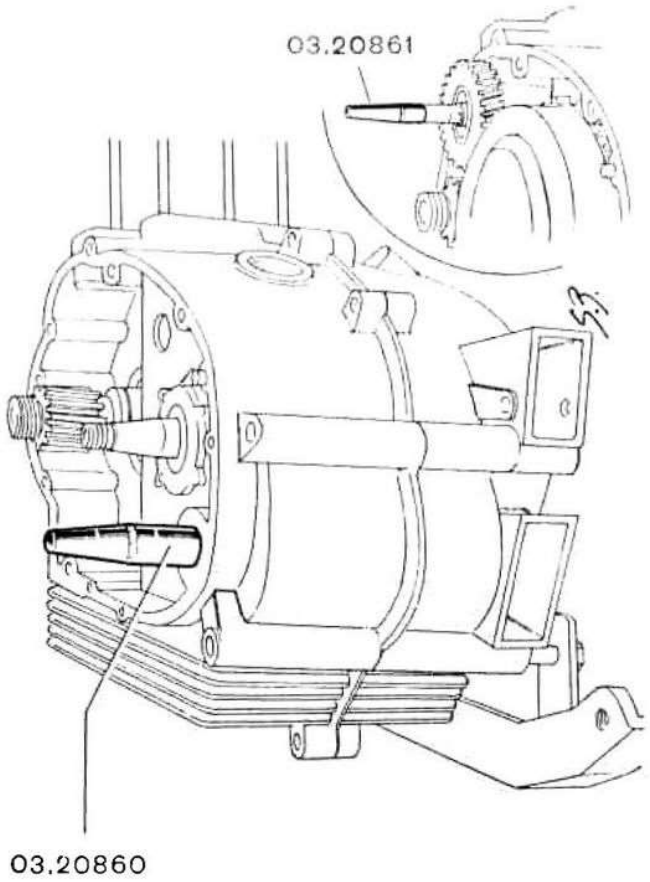
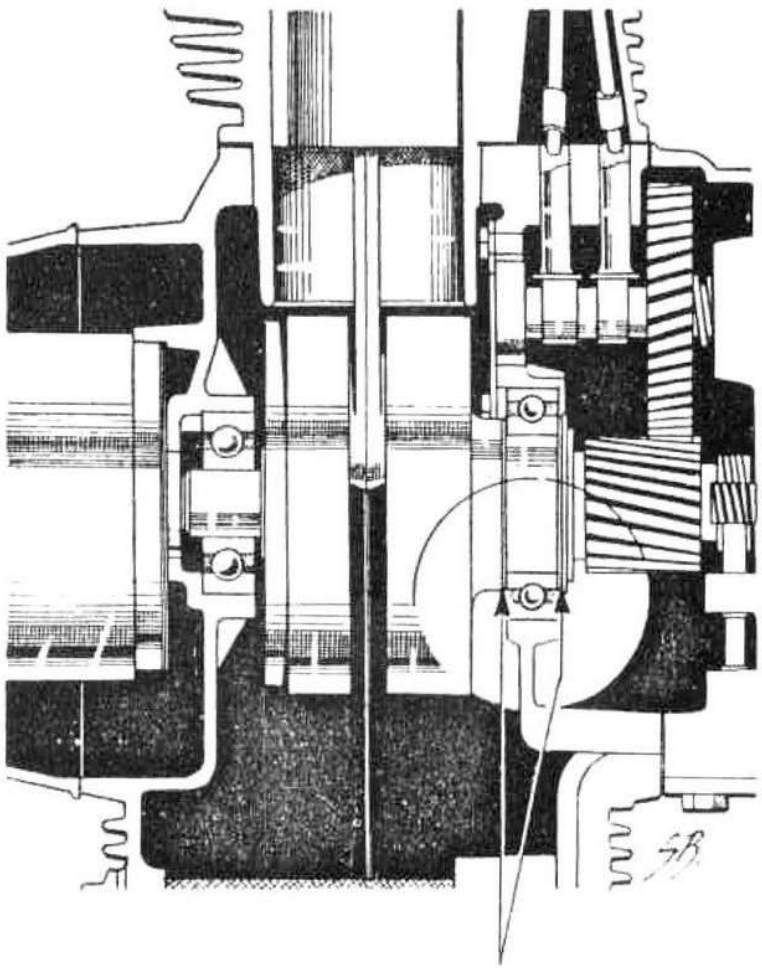


Fig. 140

13 - Crankcase closing.

In closing the two semi-crankcase, fit a sleeve on the kick-starter shaft to protect the oil seal. Act likewise for the distribution shaft in fitting the left side crankcase cover.



mettere le rondelle di correzione per annullare il gioco assiale

fit the shim washers to take off the axial play

Fig. 141

14 - Correcting the crank mechanism axial play.

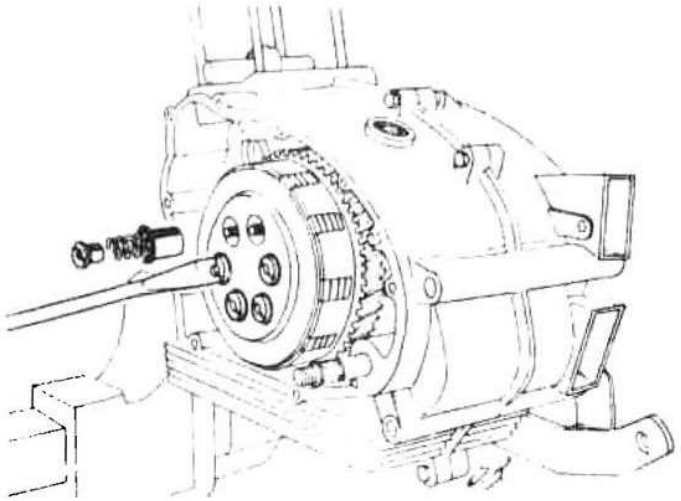


Fig. 142

15 - Regulate the spring load uniformally, so as to make the plates open perpendicularly to the clutch axle.

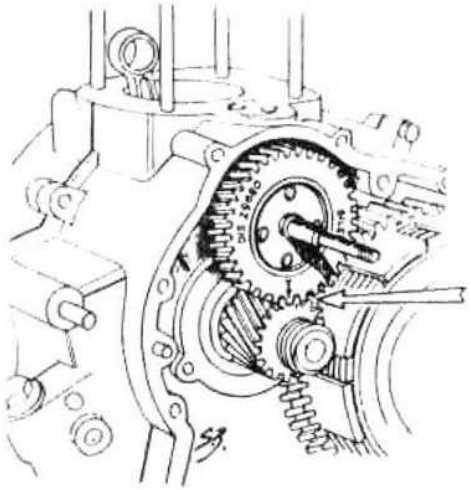


Fig. 143

16 - Assembling position of the camshaft. First introduce the tappets in their seats.

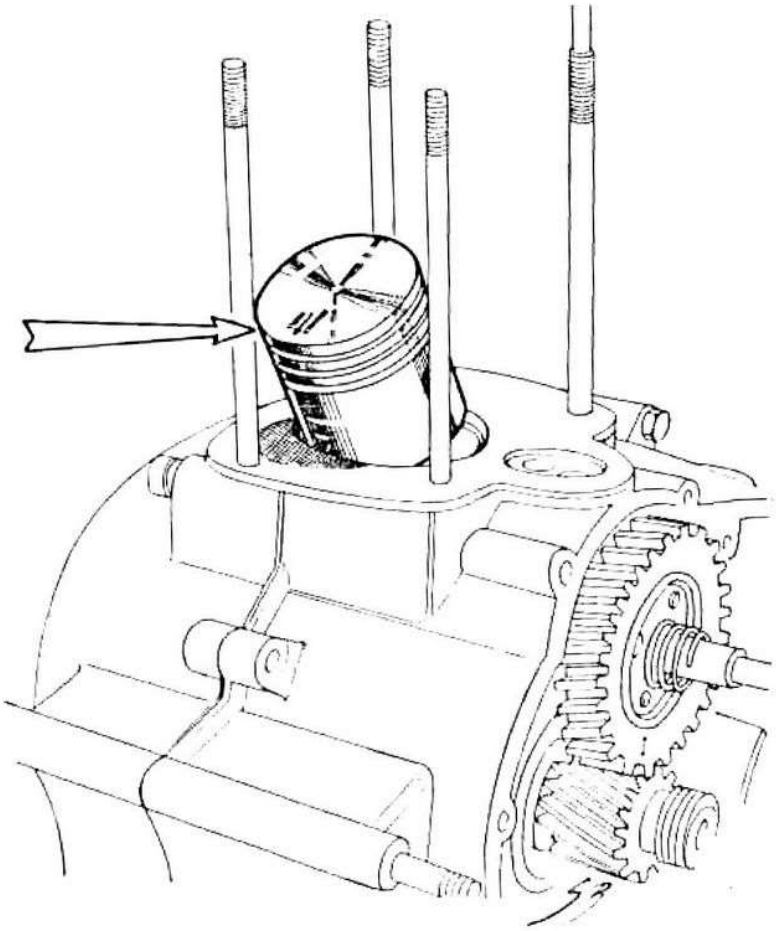


Fig. 144

17 - Piston assembling position.

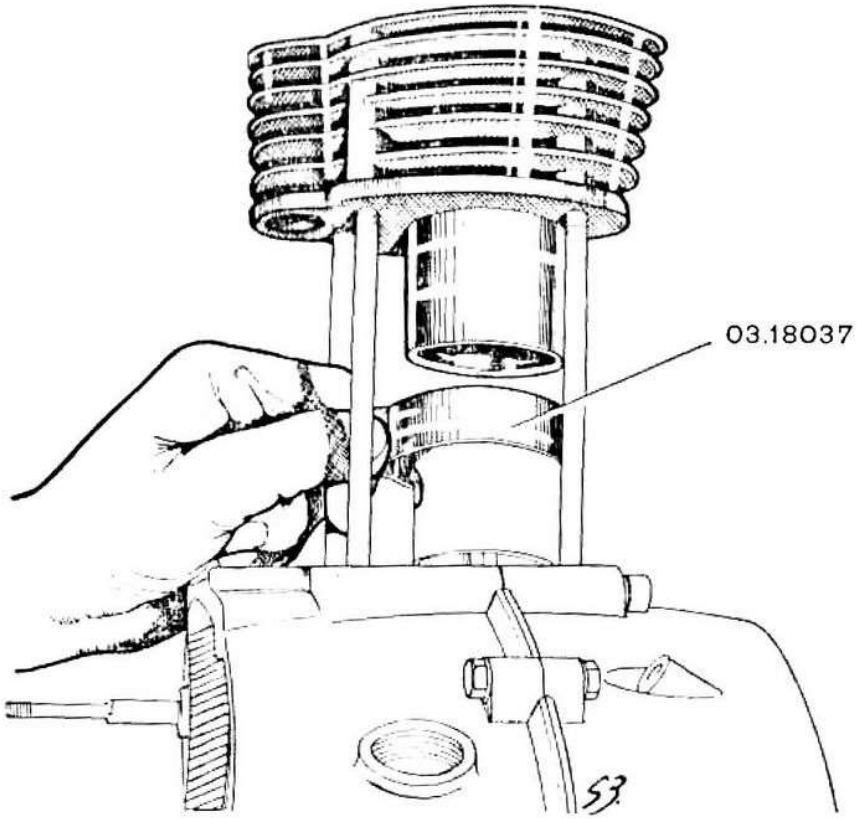


Fig. 145

18 - Fit the cylinder by making the piston rings enter with the aid of band No. 03.18037.

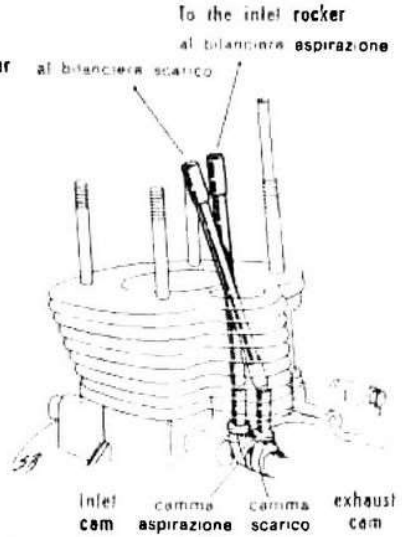


Fig. 146

19 - Position of the rocker control rods.

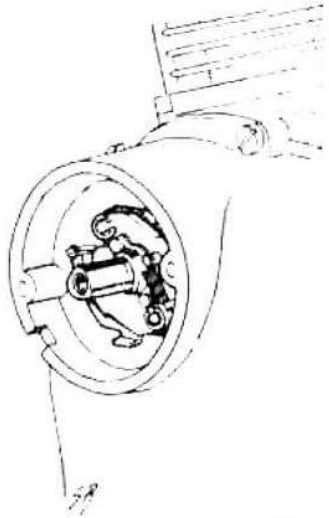


Fig. 147

20 - Assemble the automatic timing as illustrated in the figure after having set the connecting rod in the PMS (top dead centre) compression phase. (Though slightly moving the crank mechanism back and forward, in this position the tappets do not move).

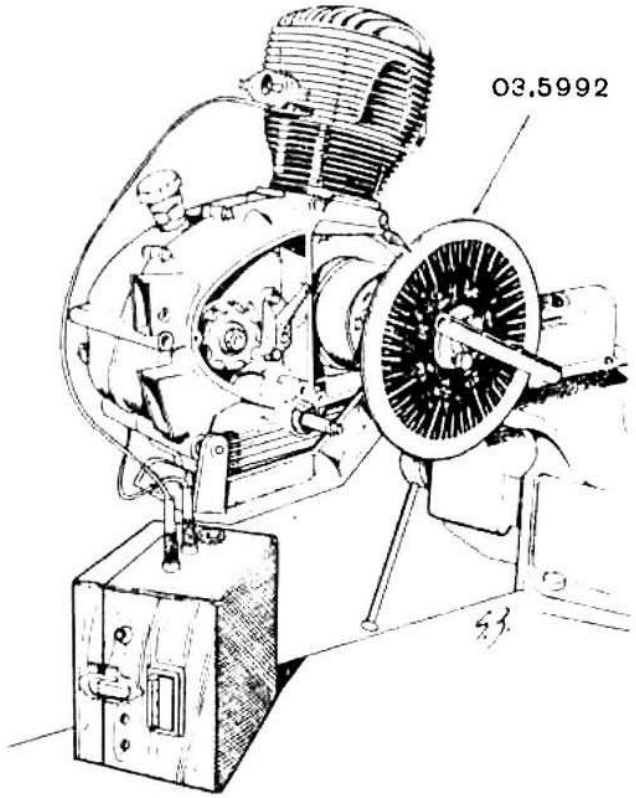


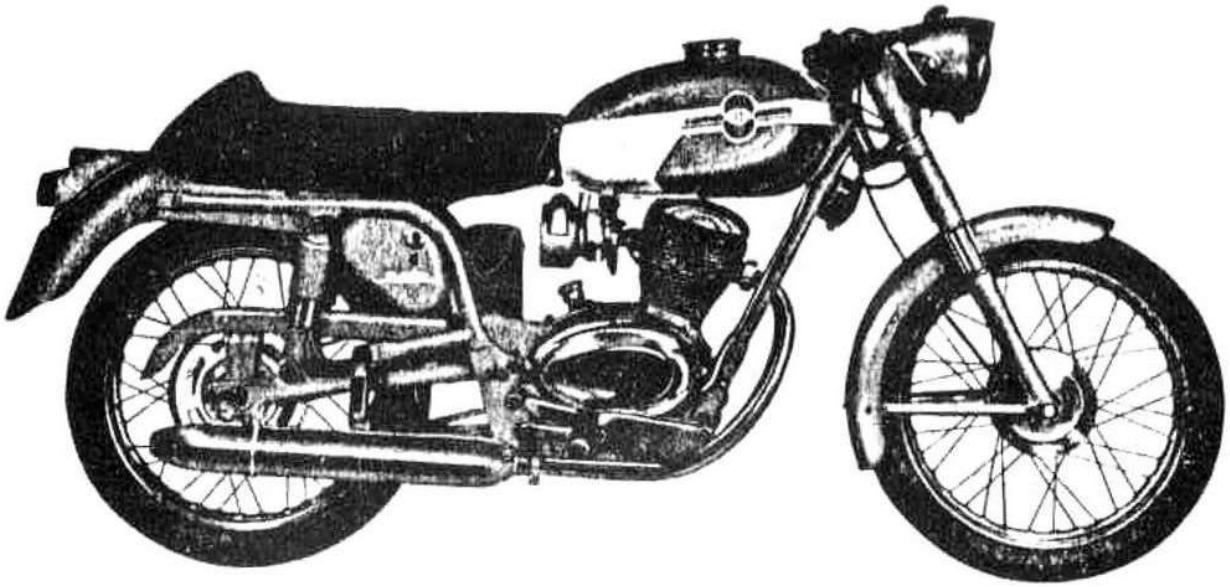
Fig. 148

21 - Adjusting the fixed ignition timing.
Assemble the contact-breaker and check the contact opening, as per page 34.
Fit the graduated disc and the relative index.
Connect a clamp of the ignition phasing detector unit to the body, and the other to the mobile contact of the contact-breaker.
Put the piston in the PMS (top dead centre) in compression phase and, from this position, turn the disc clockwise by 6°.
Loosen the screw C (Fig. 15) and move the plate until it comes to the exact point in which the spy bulb of the detector lights.

"98 - 6 G,, and "124 - 6 G,, MOTOR - CYCLES

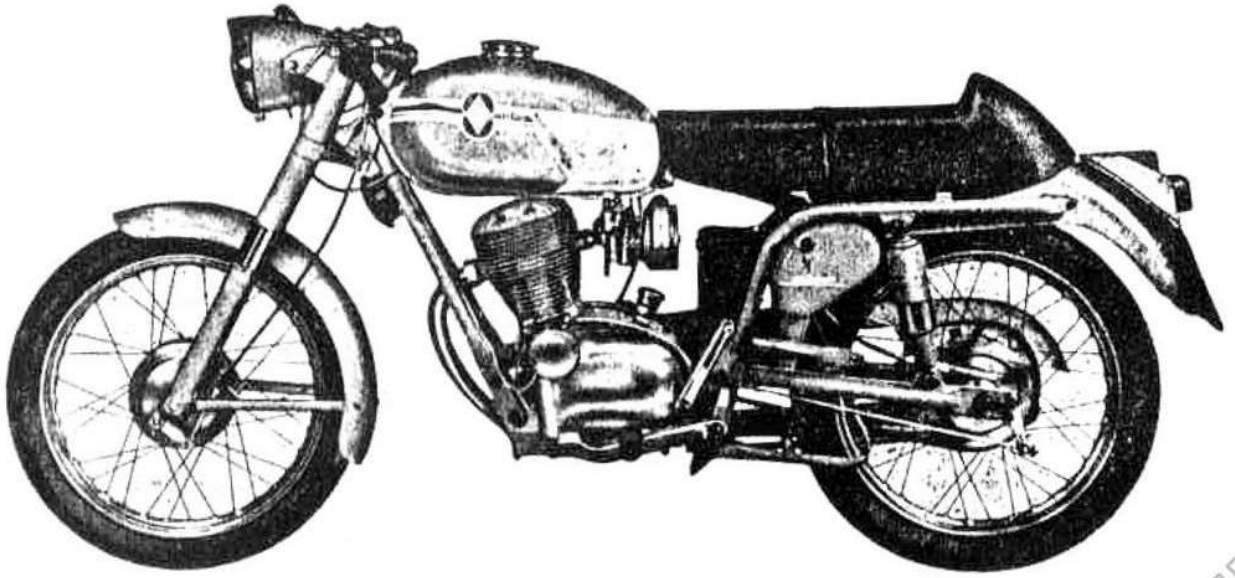
« 98 6 G » MOTOR-CYCLE

(Fig. 1)



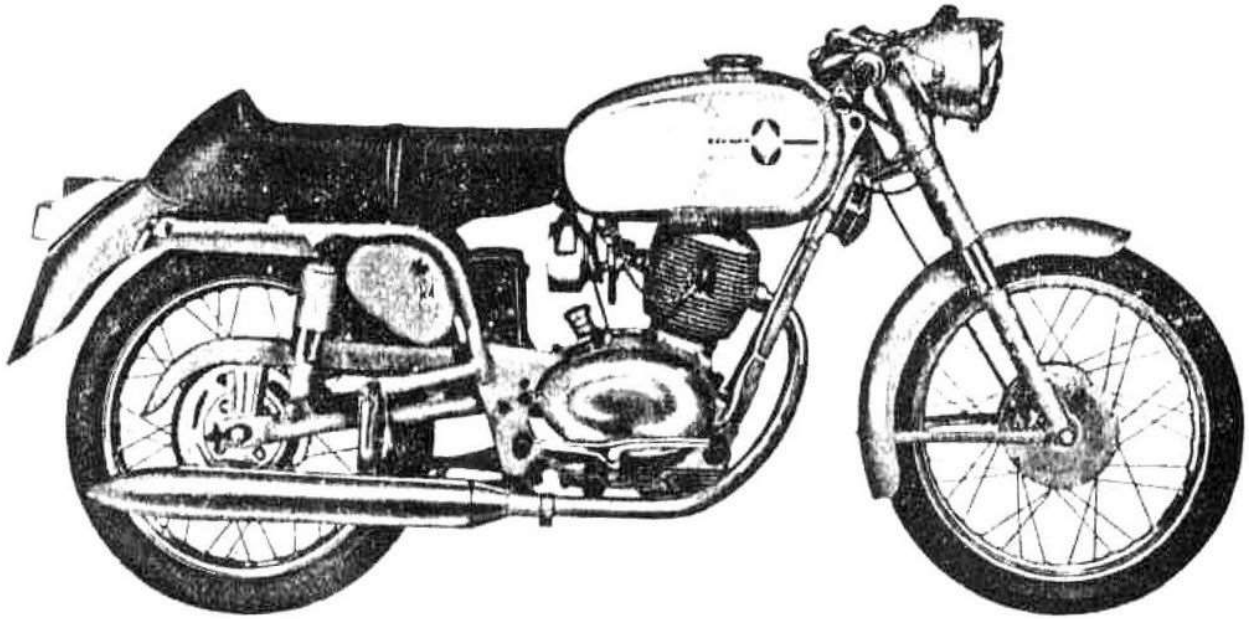
Right side

Left side



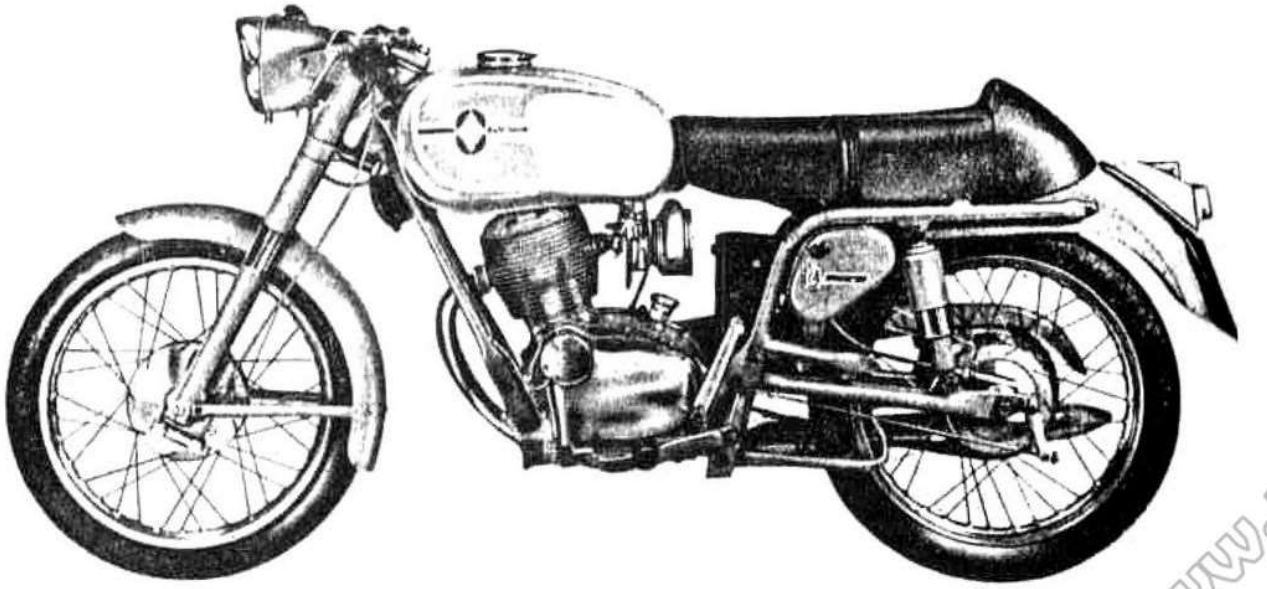
« 124 6 G » MOTOR-CYCLE

(Fig. 2)



Right side

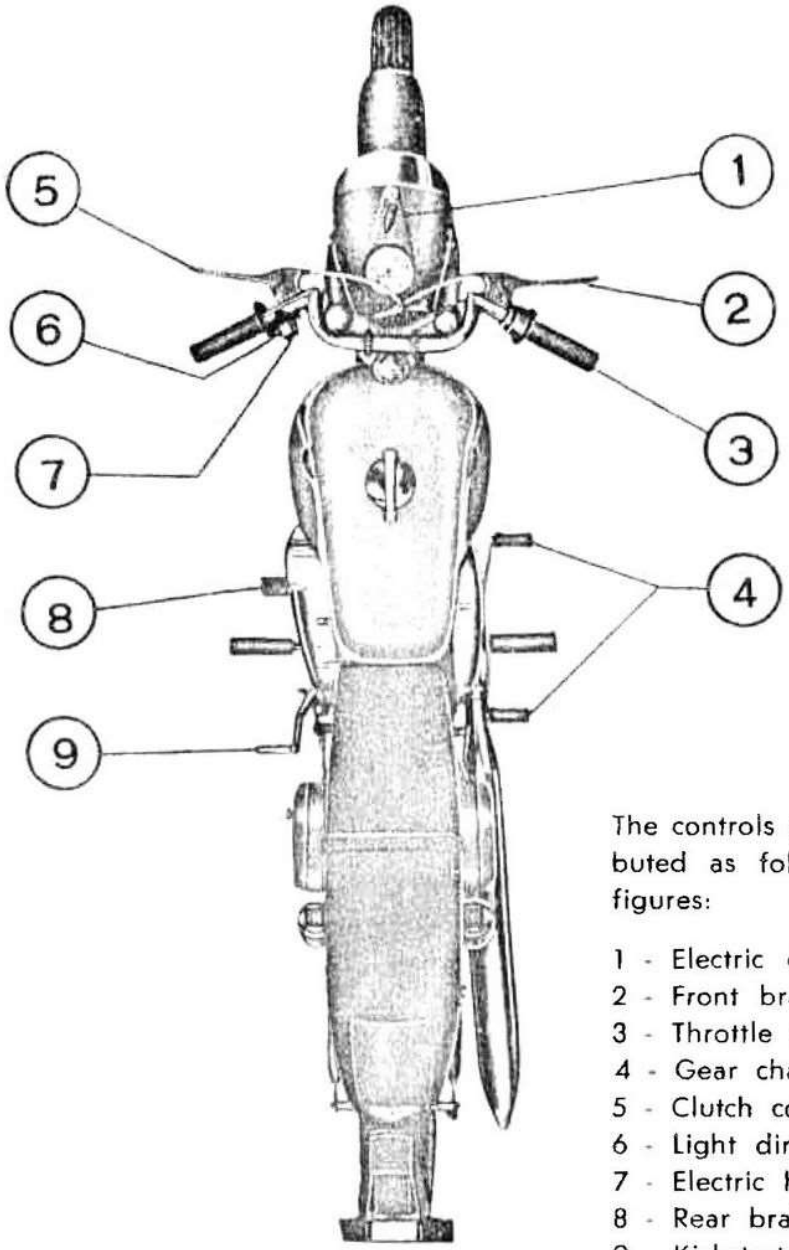
Left side



GENERAL CHARACTERISTICS
of the motor-cycles

DISTRIBUTION OF CONTROLS

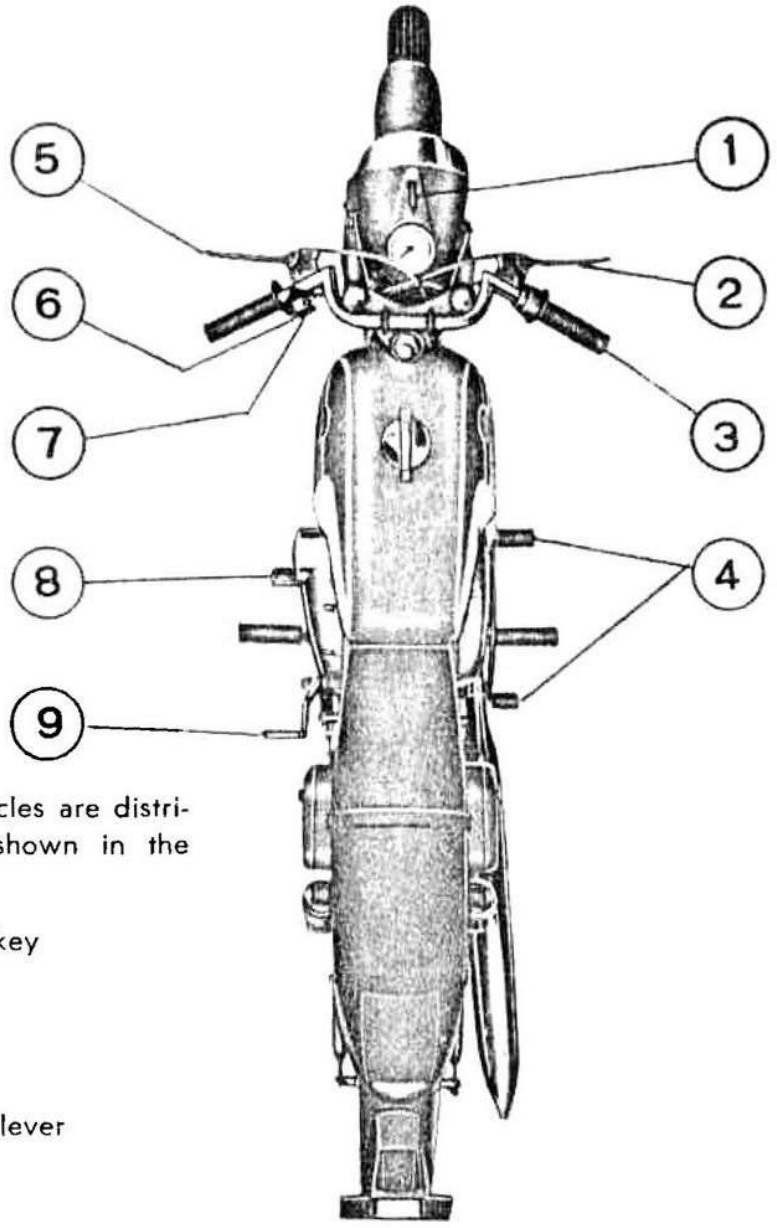
(Fig. 3)



« 98 - 6 G » motor-cycle

The controls of the motor-cycles are distributed as follows and as shown in the figures:

1 - Electric circuit switch key
2 - Front brake lever
3 - Throttle control handle
4 - Gear change lever
5 - Clutch control lever
6 - Light dimming control lever
7 - Electric horn button
8 - Rear brake pedal
9 - Kickstarter crank pedal



« 124 - 6 G » motor-cycle

IDENTIFYING DATA

See « 98 » - « 124 » (Page 14).

PERFORMANCES

	« 98 - 6 G »	« 124 - 6 G »
Maximum speed: miles per hour	abt. 55	abt. 65
Fuel consumption per 60 miles (according to CUNA standards)	approx. ½ gallon	⅝ gallon
Maximum surmountable gradient	35 %	36 %
Fuel tank ranges: approx. miles	350	300

The above performances are based on the motor-cycle, with rider only, travelling on good roads.

MEASUREMENTS AND WEIGHTS

Wheelbase	m. 1.25	1.25 (abt 4'1")
Overall lenght	» 1.90	1.90 (abt 6'3")
Overall width	» 0.60	0.60 (abt 23'½)
Overall height	0.91	0.91 (abt. 3'0")
Ground clearance	» 0.175	0.175 (abt. 7")
Weight without fuel	kg. 90	94 (abt. 198-205 lbs.)

PETROL AND OIL CAPACITIES

Petrol tank capacity: approx.	galls	3½	2½	
Oil sump capacity	pints	3	3	Approx.

ENGINE

Single cylinder four stroke gas engine, with rod and rocker driven overhead valves.
Battery coil ignition.
Petrol feed.
Air-cooling.
4-Speed pedal operated gearbox.
Multi-plate clutch in oil bath
Engine-wheel chain transmission

		« 98 - 6 G »	« 124 - 6 G »
Number of cylinders		1	1
Bore	mm.	50	56
Stroke		50	50
Cubic capacity	cc.	98.175	123.08
Compression ratio		8.85	8.7
Maximum power	abt. HP.	6.5	7
Maximum power rate	r.p.m	7500	7500
Maximum torque rate	r.p.m.	6000	5000
Useful valve diameters:			
Inlet	mm.	21	22.5
Exhaust	mm.	19	21

Aluminium alloy cylinder, with cast iron shirt.
Aluminium alloy cylinder head, with cast iron valve seats.

Distribution

See « 98 » - « 124 » (Page 16).

FUEL SUPPLY

The carburettor is feed by gravity by from petrol tank through two taps, one if which is to be opened only when it is required to use a certain reserve quantity of fuel.

Dell'Orto ME 18 BS carburettor, with air-cleaner and suction silencer.

Carburettor adjusting:

	« 98 - 6 G »	« 124 - 6 G »
Diffuser	Ø mm. 18	258/A
Main jet	78	80
Pilot jet	35	35
Minimum air screw opened by one turn		
Atomizer . .	258A/	258/A
Throttle valve	50	50

G 3 taper needle in 2nd notch.

The fuel screw to be open ¾ of a turn.

The air control device closes by pressing the rod (A), while it opens automatically on opening the gas (Fig. 13 of the « 98 - 124 » manual).

We suggest the use of super fuel.

Ignition

See « 98 » - « 124 » (Page 17).

Lubrication

See « 98 » - « 124 » (Page 18).

Drive

Primary: by helical gears.

Driving ratio: 3.894 (74/19).

Secondary: chain drive (½ x 7.8) with rubber shock absorbers incorporated between the brake drum and the wheel hub « 98 - G 6 » drive ratios: 3.785 (53/14) or 3.715 (52/14).

Clutch

See « 98 » - « 124 » (Page 18).

Gear box

Cascade four-speed gear box, with gears always engaged and sliding, controlled by pedal-lever shifter.
Gear box ratios: See « 98 » - « 124 » (Page 19).

MOTOR-CYCLE FRAME

See « 98 » - « 124 » (Page 19).

Seat

Special competition type.

Handlebar

Special competition type.

Tyres

For the « 98-6G » { Front tyre: 2.50 x 17 in ribbed
Rear tyre: 2.75 x 17 in universal

For the « 124 - 6 G »: See « 124 » (Page 20).

LIGHTING SET

See « 98 » - « 124 » (Pages 19-20-21-22).

FAULT DIAGNOSIS AND REMEDIES - ADJUSTMENTS

See « 98-124 »(Pages 25-35).

TOOLS AND EQUIPMENT

See « 98-124 » (Pages 39-42).

DISMANTLING

See « 98-124 » (Pages 45-72).

OVERHAULING

See « 98-124 » (Pages 75-80).

ASSEMBLING TOLERANCES AND WEAR LIMIT BETWEEN GUDGEON PIN AND PISTON

See « 98-124 » (Page 83).

AXIAL PLAY AND WEAR LIMIT OF THE COMPRESSION RINGS

See « 98-124 » (Table at page 84).

AXIAL PLAY AND WEAR LIMIT OF THE SCRAPER RINGS

See « 98-124 » (Table at page 84).

PLAY BETWEEN THE PISTON RING ENDS

See « 98-124 » (Table at page 85).

ASSEMBLING TOLERANCES BETWEEN FLYWHEELS AND CONNECTING ROD

See « 98-124 » (Table at page 87).

ASSEMBLING TOLERANCES AND WEAR LIMIT BETWEEN VALVE VALVE GUIDE

See « 98-124 » (Table at page 89).

ASSEMBLING TOLERANCES AND WEAR LIMIT BETWEEN SUPPORT PIN AND ROCKERS

See « 98-124 » (Table at page 90).

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE BUSHING FOR THE 1ST SPEED, SECONDARY SHAFT IDLE GEAR

See « 98-124 » (Table at page 91).

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE 2ND SPEED, PRIMARY SHAFT IDLE GEAR

See « 98-124 » (Table referred to assembling without bushing at page 92).

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE 3RD SPEED, SECONDARY SHAFT IDLE GEAR

See « 98-124 » (Table referred to assembling without bushing at page 93).

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE 4TH SPEED, PRIMARY SHAFT IDLE GEAR

See « 98-124 » (Table on the right of page 94).

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE BUSHING FOR THE KICK STARTER GEAR

See « 98-124 (Table at page 95).

ASSEMBLING TOLERANCES AND WEAR LIMITS BETWEEN SELECTOR FORK, DRUM AND SLIDING GEAR

See « 98-124 » (Table at page 96).

ASSEMBLING TOLERANCES AND WEAR LIMITS OF THE OIL PUMP

See « 98-124 » (Table referred to the gear seat depht of mm. 18.05 ÷ 18.10 at page 97).

ASSEMBLING TOLERANCES AND WEAR LIMITS REFERRED TO THE FRONT AND BACK FORKS

See « 98-124 » (Table at pages 98-99-100).

PISTON AND CYLINDER COUPLINGS SELECTIVE TABLE for « 98 - 6G » motor cycle

Standard		Oversize M 2		Oversize M 4	
Piston	Cylinder	Piston	Cylinder	Piston	Cylinder
49.950	50.000	50.150	50.200	50.350	50.400
49.955	50.005	50.155	50.205	50.355	50.405
49.960	50.010	50.160	50.210	50.360	50.410
49.965	50.015	50.165	50.215	50.365	50.415
49.970	50.020	50.170	50.220	50.370	50.420

COUPLINGS

The pistons and cylinders are coupled with a play of mm. 0.05 (.002"), i.e. according to one of the corresponding piston and cylinder values quoted in the table.

WEAR LIMITS

The maximum play — g — allowed to the wear limit is mm. 0.13 (.005").

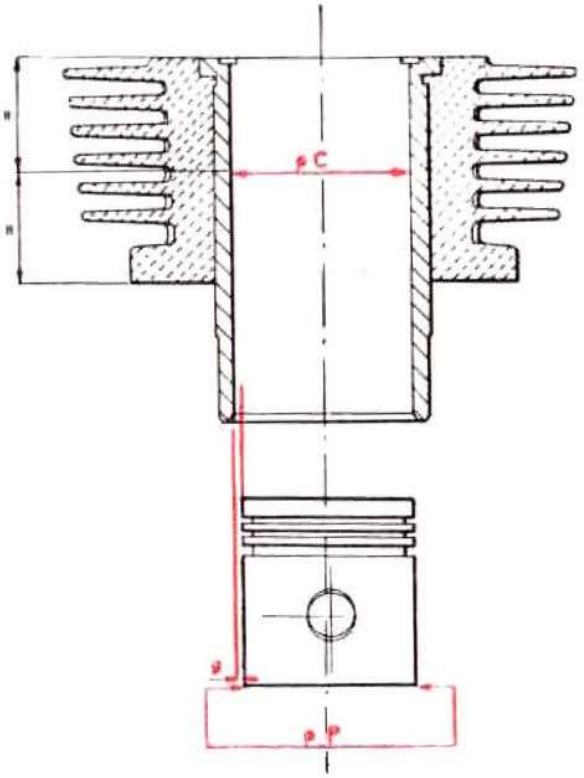


Fig. 4

The piston and cylinder diameters, observed as shown by the figures, are stamped respectively on the piston head and on the cylinder top. These figures correspond to one of the values quoted in the table, with rounding off of ± 0.002 mm. The oversize pistons and cylinders have M 2 or M 4 stamped on them, respectively if the oversize is .008" (mm. 0.2) or .016" (mm. 0.4).

PISTON AND CYLINDER COUPLING SELECTIVE TABLE for « 124 - 6G » motor cycle

Standard		Oversize M 2		Oversize M 4	
Piston	Cylinder	Piston	Cylinder	Piston	Cylinder
55.950	56.000	56.150	56.200	56.350	56.400
55.955	56.005	56.155	56.205	56.355	56.405
55.960	56.010	56.160	56.210	56.360	56.410
55.965	56.015	56.165	56.215	56.365	56.415
55.970	56.020	56.170	56.220	56.370	56.420

COUPLINGS

The pistons and cylinders are coupled with a play of mm. 0.05 (.002"), i.e. according to one of the corresponding piston and cylinder values quoted in the table.

WEAR LIMITS

The maximum play — g — allowed to the wear limit is mm. 0.13 (.005").

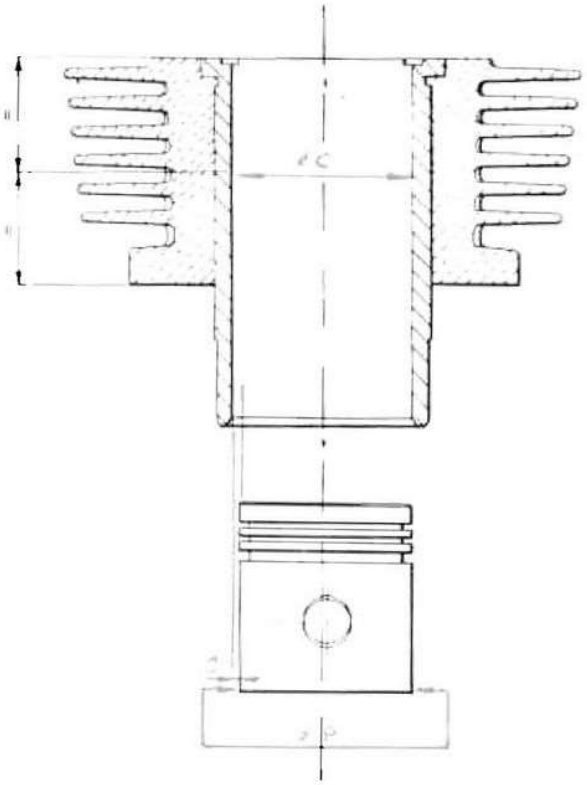


Fig. 5

The piston and cylinder diameters, observed as shown by the figures, are stamped respectively on the piston head and on the cylinder top. These figures correspond to one of the values quoted in the table, with rounding off of ± 0.002 mm. The oversize pistons and cylinders have M 2 or M 4 stamped on them, respectively if the oversize is .008" (mm. 0.2) or .016" (mm. 0.4).

ASSEMBLING TOLERANCES AND WEAR LIMITS BETWEEN SMALL END AND GUDGEON PIN

	« 98 - 6 G »	« 124 - 6 G »
Small end ∅ **A**	13.516 ÷ 13.527	15.016 ÷ 15.027
Gudgeon pin ∅ **B**	13.500 ÷ 13.492	15.000 ÷ 14.992
Assembling play **C**	max. 0.035 min. 0.016	max. 0.035 min. 0.016
Maximum play allowed after use **C** max	0.08	0.08

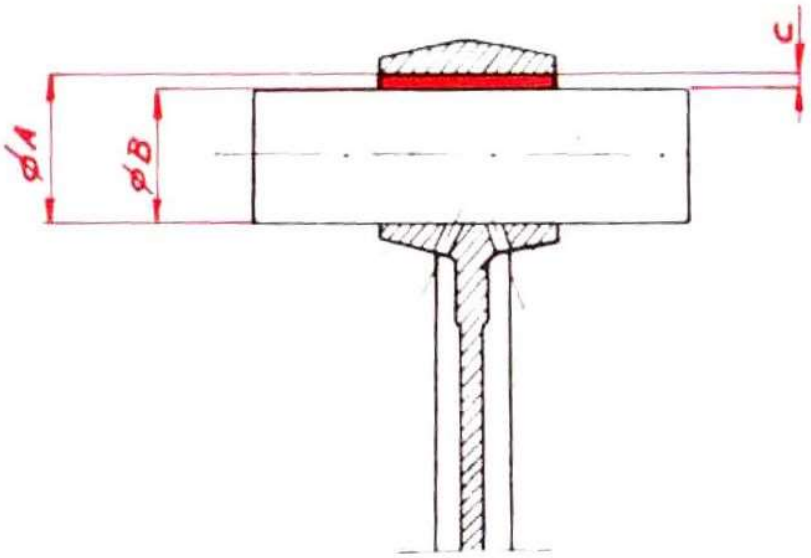


Fig. 6

ASSEMBLING TOLERANCES AND WEAR LIMITS BETWEEN THE BIG END AND CRANKPIN

Small end Ø **A**	Rollers Ø **B**	Krankpin Ø **C**	Assembling play **D**	Maximum play allowed after use **D** max.
36.663 ÷ 36.676	4.001 ÷ 3.998	28.660 ÷ 28.651	max. 0.029 min. 0.003	0.07

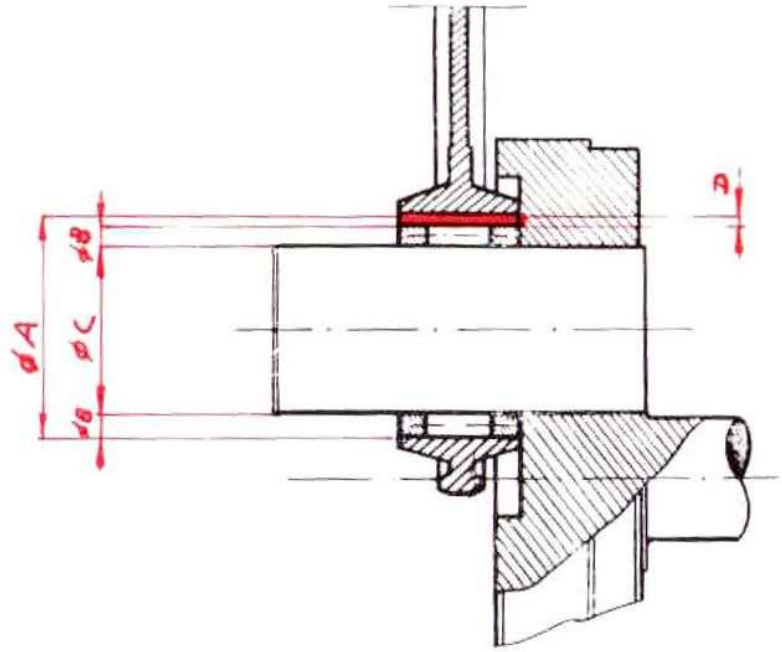


Fig. 7

LENGTHS, LOADS AND WEAR LIMITS OF THE VALVE SPRINGS

New spring	L = 36 Load at the lenght of mm. 19.5 = Kg. 36
Settled spring	L = 33.5 Load at the lenght of mm. 19.5 = Kg. 30.5
Maximum limit allowed after use	L = 32.5 Load at the lenght of mm. 19.5 = Kg. 28

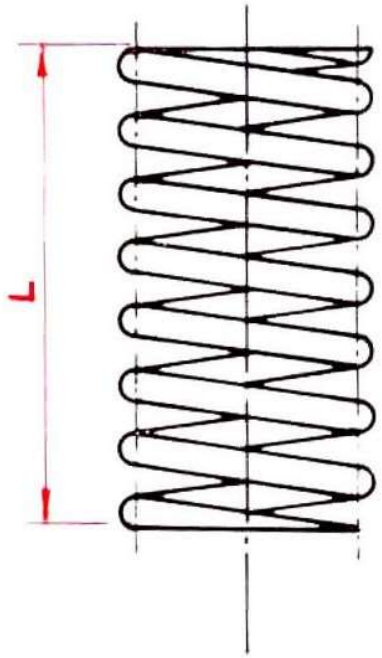


Fig. 8

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Carlo Bertoni

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