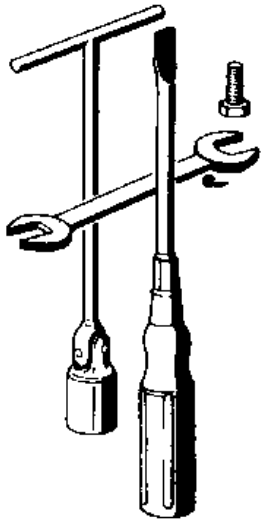
MOTO GUZZI

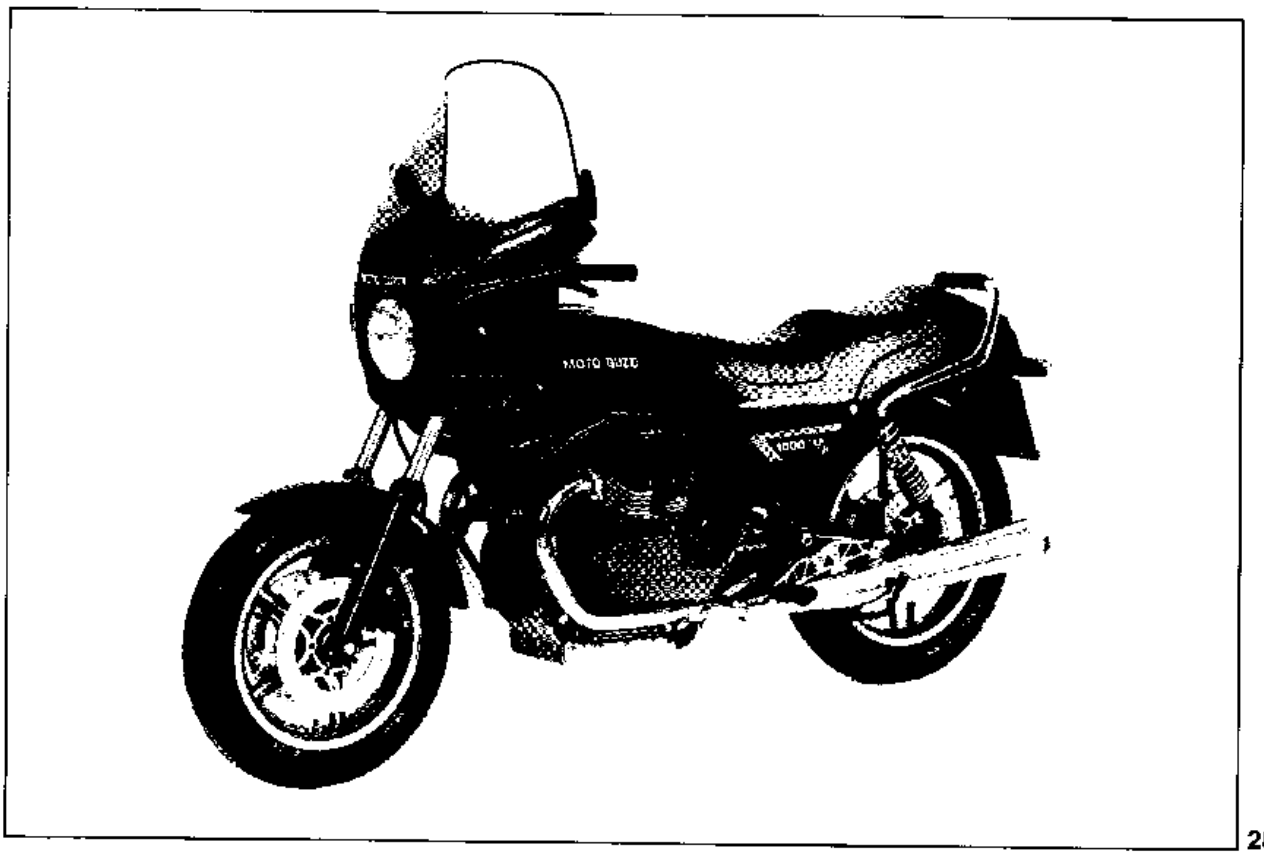
1000 SP II

WORKSHOP MANUAL



COD. 28920141

Additions to the Workshop manual for the models V 1000 G5 and 1000 SP - Code 17 92 01 61



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2 MAIN SPECIFICATIONS

ENGINE	4-stroke, twin cylinders
— cylinder configuration	90° "Vee" twin
— bore	88 mm
— stroke	78 mm
— total capacity	948.8 cc
— compression ratio	1 :9.2
— max. torque	7.7 kgm at 5200 r.p.m.
— max. power rating	67 HP at 6700 r.p.m.
— fiscal rating	12 HP
VALVE TIMING	O.H.C. with rods and rocker arms
FUEL FEEDING	no. 2 Dell'Orto carbs. VHBT 30 CD (R.H.) VHBT 30 CS (L.H.) type.
LUBRICATION	forced lubrication system with gear pump - wirenet and cartridge filters installed in the sump - standard lubricating pressure 3.8 ÷ 4.2 Kg/cmq (controlled by a special valve installed on the sump) electric transmitter for insufficient pressure indication on the crankcase
ALTERNATOR/GENERATOR	installed on the front side of crankshaft (14V-20A)
IGNITION	by ignition distributor with double breaker and automatic advance by centrifugal masses
— ignition data	first advance (fixed) 2°±1° total advance (fixed + automatic) 33°±1°
— breaker points gap	0.37 ÷ 0.43 mm
— ignition spark plugs	BOSCH W7 DC BOSCH W7 D LODGE HLNY CHAMPION N9 Y
— spark plug electrodes gap	0.6 mm
— ignition coils	no. 2 installed on the frame above the engine
STARTING	electric by start motor (12V - 0.7KW) equipped with electromagnetic control coupling crown gear fixed to the engine flywheel START push button placed right side on the handlebar

TRANSMISSION

CLUTCH	dry type with two driven discs positionned on the engine flywheel controlled by lever on the left side of handlebar
PRIMARY TRANSMISSION	by gears, ratio 1.235:1 (Ø = 17/21)
GEARBOX	five speed constant-mesh gearbox, front coupling. Built-in flexible coupling; control by pedal placed on the L.H. side of vehicle

— gearbox ratios:

1st	1 : 2	(Z = 14/28)
2nd	1 : 1.388	(Z = 18/25)
3rd	1 : 1.047	(Z = 21/22)
4th	1 : 0.869	(Z = 23/20)
5th	1 : 0.750	(Z = 28/21)

SECONDARY TRANSMISSION	by shaft with universal joint and gears
— ratio	1 : 4.714 (Z = 7/33)
— final drive ratio (engine-to-wheel)	
1st speed 1	1 : 11.643
2nd speed 1	1 : 8.080
3rd speed 1	1 : 6.95
4th speed 1	1 : 5.059
5th speed 1	1 : 4.366

FRAME	decomposable double cradle with tubular structure
SUSPENSIONS	
— front	telescopic fork "Moto Guzzi patent" with hydraulic shock-absorbers
— rear	swinging fork with adjustable springs concentric to the hydraulic shock-absorbers
WHEELS	in light alloy with rims
— front	16 x MT 2.15 H2
— rear	18 x MT 3.00 H2
TYRES	
— front	110/90 H 16" or V 16"
— rear	120/90 H 18" or V 18"
BRAKES	
— front	disc with fixed caliper and twin braking cylinder - manually controlled by handlever placed R.H. on the handlebar - hydraulic transmission independent from the rear brake: Ø disc 270 mm Ø braking cylinder 38 mm Ø pump 12.7 mm
— rear	disc with fixed caliper and twing braking cylinder - pedal control placed on the R.H. centre of the vehicle: Ø disc 270 mm Ø braking cylinder 38 mm Ø pump 15.875 mm The rear brake is connected by hydraulic transmission to the L.H. front brake having in its components the same dimensions as the R.H. front brake, hand controlled.

DIMENSIONS AND WEIGHTS	
— pitch (laden)	1.505 m
— max. length	2.170 m
— max. width	0.765 m
— max. height	1.440 m
— dry weight	220 Kg.
PERFORMANCES	
— max. speed	200 Km/h with driver only
— fuel consumption	5.8 l./100 Km
REFUELINGS	
— fuel tank (3l. reserve)	23 l. Super petrol (97 NO-RM/min)
— engine sump	3 l. of «Agip SINT 2000 SAE 10 W/50» oil
— gearbox	0.750 l. of «AGIP Rotra MP SAE 80 W/90» oil
— transmission (bevel gears lubrication)	0.250 l. of which: 0.230 l. of «Agip Rotra MP SAE 80 W/90» oil and 0.20 l. of «Agip Rocol ASO/R» or Molikote «A» type oil
— telescopic fork (each leg)	0.100 l. of «Agip F.1 ATF Dexron» fluid
— front and rear brakes	«Agip F.1 Brake Fluid - SAE J 1703» fluid

Light control switches - horn push-button and direction indicators (fig. 281)

Installed on the L.H. side of handlebar.

«A» switch

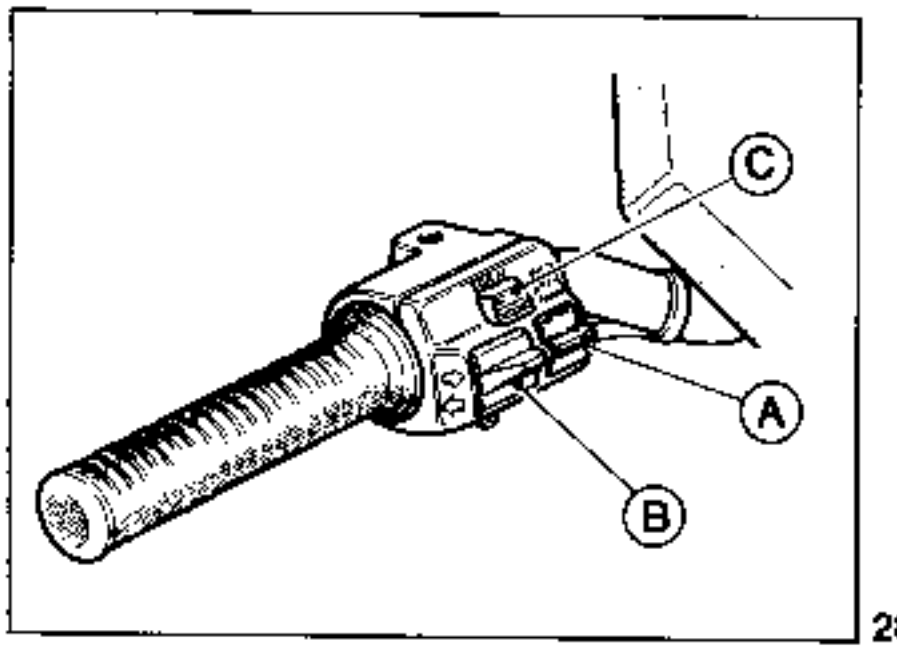
«PARK»	position	parking lights.
«ON»	position	bilux lamp on.
«OFF»	position	lights off.

«B» switch

Position ⟵ R.H. indicator control.
Position ⟶ L.H. indicator control.

«C» push-button

horn control.



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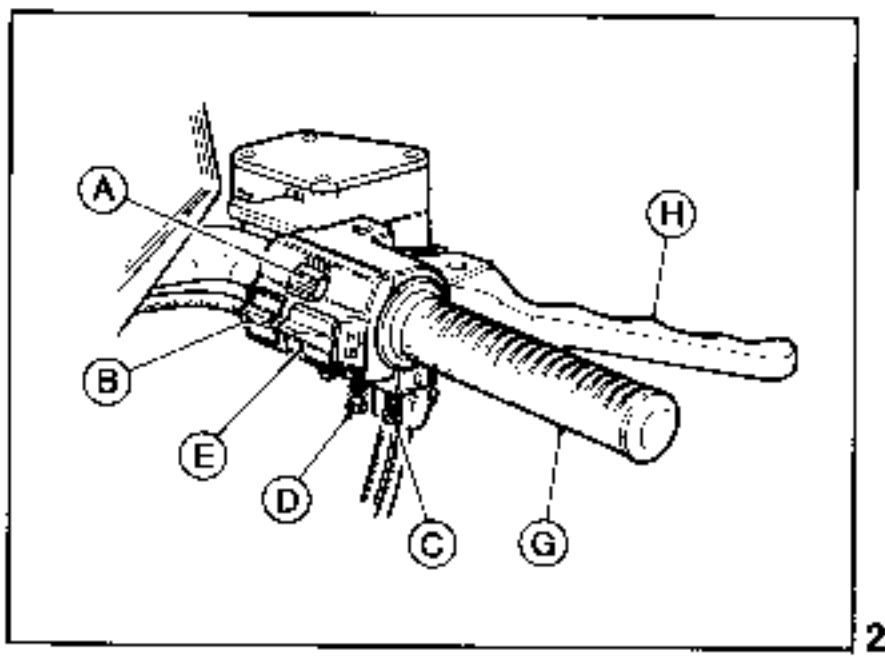
Starting push-button, engine stop switches and light controls (fig. 282)

Installed on the R.H. side of handlebar.
With «A» mark on the key in line with «C» mark (see fig. 12) the vehicle is ready for starting. To start the engine act as follows:
– ascertain that «B» switch is in the central position;
– strongly pull the clutch lever;
– when engine is cold, bring the «starter» lever on «A» starting position;
– push «A» starting push-button.
To stop engine act on the ignition switch situated on the dashboard.
To stop engine in emergency cases, you have to:
– move «B» switch upwards or downwards.
Once engine is stopped, rotate key of switch in fig. 12 anticlockwise until the «Off» mark is in line with «C» mark and extract key for the switch.

«E» switch

With «A» switch (fig. 281) on «ON» position:

«LO» position	low beam.
«HI» position	high beam.
«Flash» position	flashing light.



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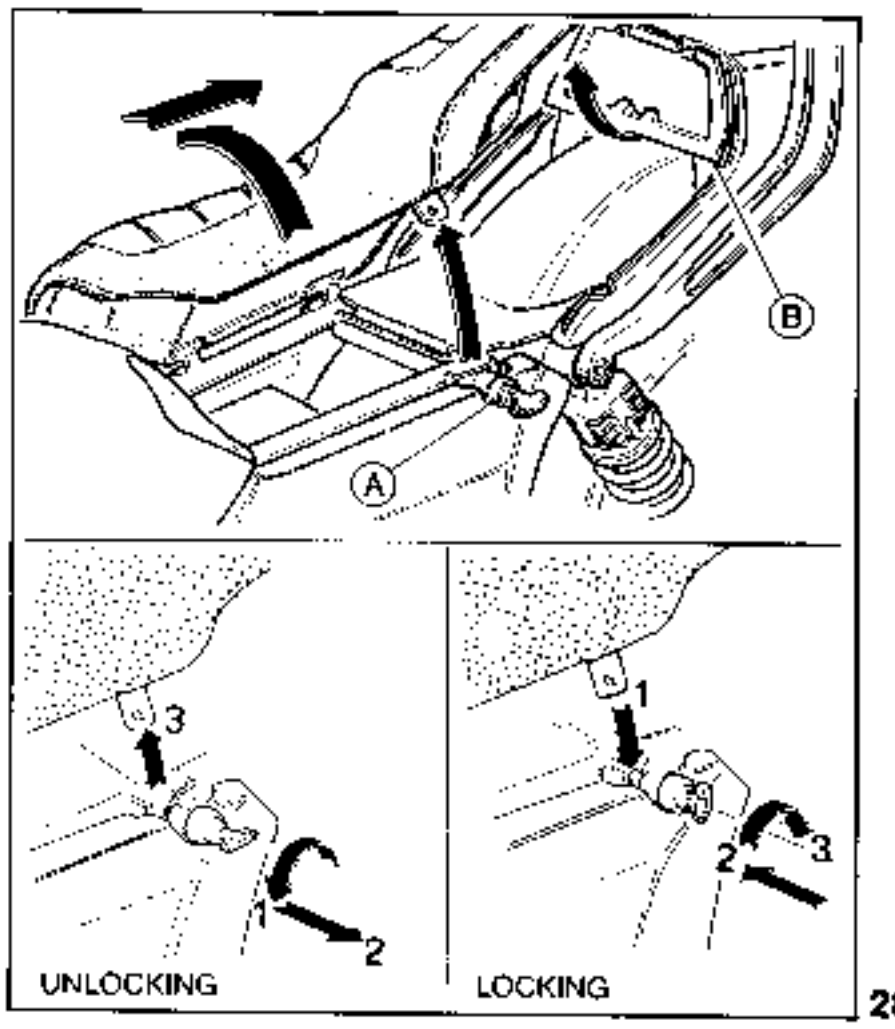
Saddle lifting device (fig. 283)

To lift the saddle, of movable type, insert the key in «A» lock; at the same push on the saddle and rotate key anticlockwise.
To lock, lower the saddle and pushing on it, strongly insert key and rotate it clockwise.
Then extract the key.
The tool kit is accessible, removing the «B» cover.



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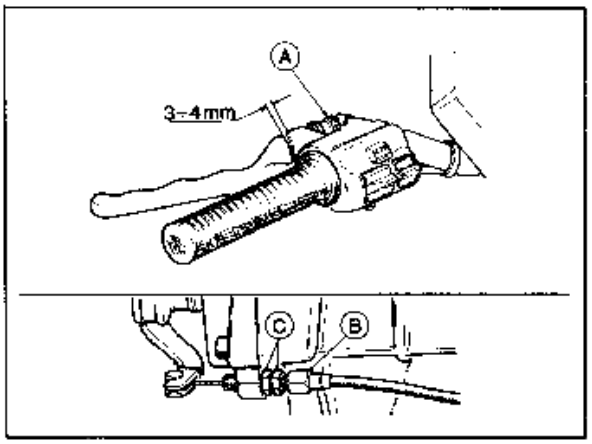

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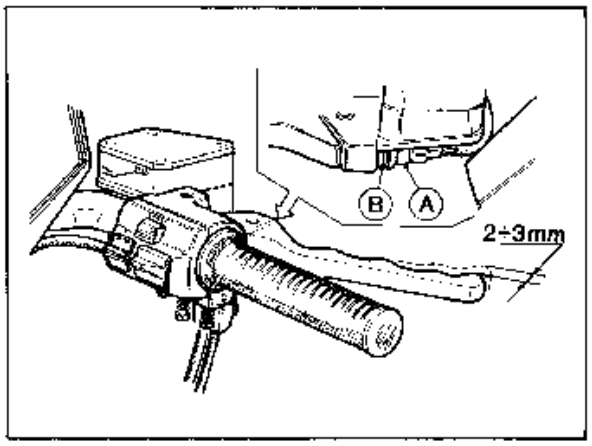
6 MAINTENANCES AND ADJUSTMENTS

Clutch lever adjustment (fig. 284)

To adjust play between lever and handlebar connection, if higher or lower than 3 ÷ 4 mm., act as follows: have the rubber diaphragm puller back and actuate «A» setscrew up to the prescribed figures.
Adjustment may be arranged also on «B» wire-stretcher, after having loosened «C» counternuts placed R.H. on the gearbox.



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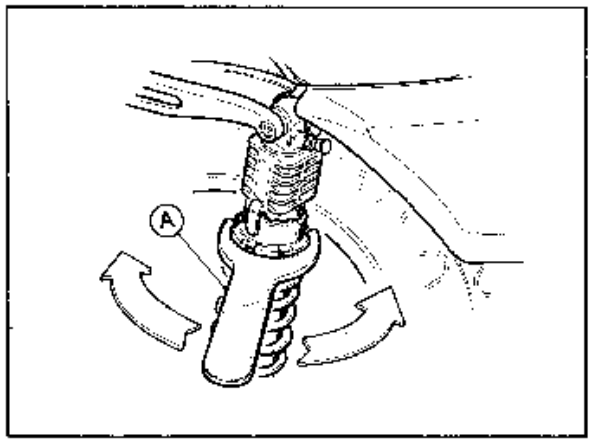
R.H. front brake lever adjustment (fig. 285)

A certain play is foreseen between master cylinder float and control lever end.
It is possible to adjust this play, changing the «B» washers quantity (placed on the STOP «A» switch positioned under the master cylinder transparent body).



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Rear dampers adjustment (PAIOLI type) (fig. 286)

Rear suspension springs can be adjusted in five different positions, using special wrench «A».
Charge and operating pressure of these rear suspensions is as follows:
3 ÷ 5 Kg/cm^2.
If you ascertain that the damping effect of these suspensions is not regular, you have to address yourself to an authorized workshop of our Dealers.

Remind that a good stability of the motorcycle is assured also by a correct adjustment of the two dampers, to be on the same position.

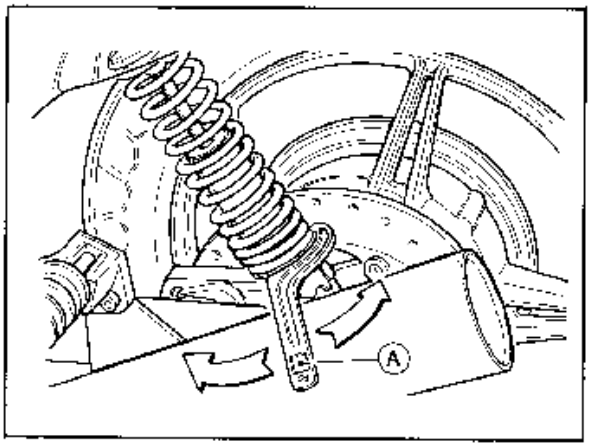
Rear dampers adjustment (KONI) (figg. 287-288)

Charge of the rear suspension springs can be adjusted in three different positions, using special wrench «A» as shown in fig. 287.
Moreover it is possible to adjust the damping effect of rear suspensions acting on «A» discs (fig. 288).
According to the specific needs and the bike load, there are four adjusting positions:

- 1 position - very soft for a light load;
- 2 position - for bike use as solo or pilot plus pillion on good roads (for instance: highways);
- 3 position - for sport use as solo or pilot plus pillion with luggage;
- 4 position - very stiff, for use as pilot plus pillion and heavy luggage.

After some time of use and long journeys, to compensate the natural loss of damping effect, an higher adjustment of rear suspension could be necessary.
If you ascertain that damping effect of shock-absorbers is not correct or regular, have them checked at an authorized workshop of our dealers.

N.B. - For a good stability of motorcycle it is always advisable to ascertain that both shock-absorbers are adjusted on the same position, for what concerns the setting disc and the spring charge as well.



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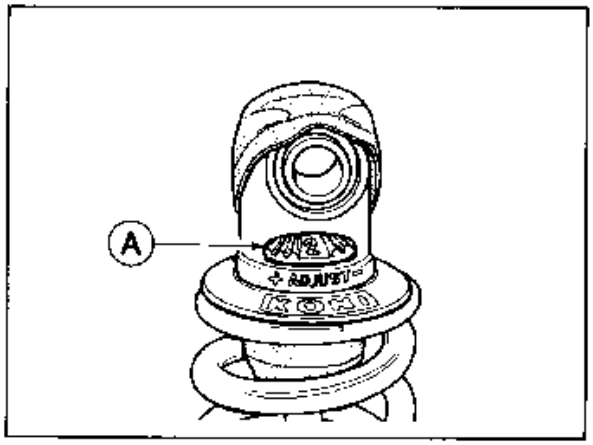

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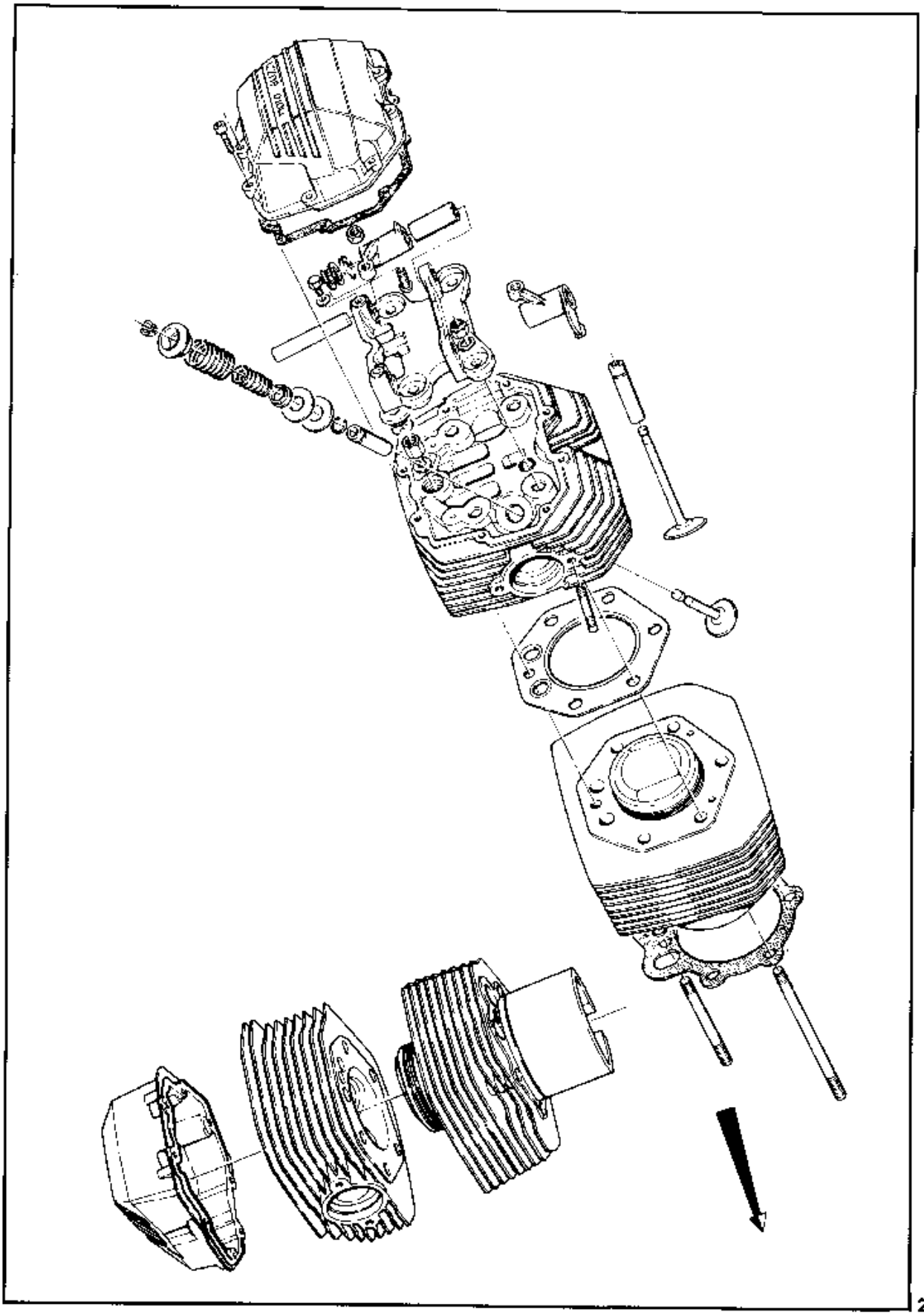
7 MAINTENANCE AND LUBRICATION OPERATIONS

OPERATIONS ▼ DISTANCES ►	1500 km	3000 km	6000 km	9000 km	12.000 km	15.000 km	18.000 km	21.000 km	24.000 km	27.000 km	30.000 km
Engine oil	R	R	R	R	R	R	R	R	R	R	R
Cartridge oil filter	R					R					R
Wirenet oil filter	C					C					C
Air cleaner			C	R		C	R			R	
Ignition timing	A	A	A	A	A	A	A	A	A	A	A
Spark plugs	A	A	A	R	A	A	R	A	A	R	A
Valve clearance	A	A	A	A	A	A	A	A	A	A	A
Carburettors	A	A	A	A	A	A	A	A	A	A	A
Nuts and bolts tightening	A					A					A
Fuel tank, filters, pipes				C			C			C	
Gearbox oil	A	A	A	R	A	A	R	A	A	R	A
Rear transmission oil	A	A	A	R	A	A	R	A	A	R	A
Steering column and wheels bearings								A			
Front fork oil								R			
Generator and start motor								A			
Braking system fluid	A	A	A	A	A	R	A	A	A	A	R
Brake pads	A	A	A	A	A	A	A	A	A	A	A

A – Maintenance - Check - Adjustment - Eventual replacement; C – Cleaning; R – Replacement.
Time by time inspect battery electrolyte level and lubricate the control joints and hoses, every 500 km. check the engine oil level.
In all cases renew oil at least once per year.

(fig. 289)



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CYLINDERS

Cylinders range (mm)

A size	B size	C size
88.000 ÷ 88.006	88.006 ÷ 88.012	88.012 ÷ 88.018

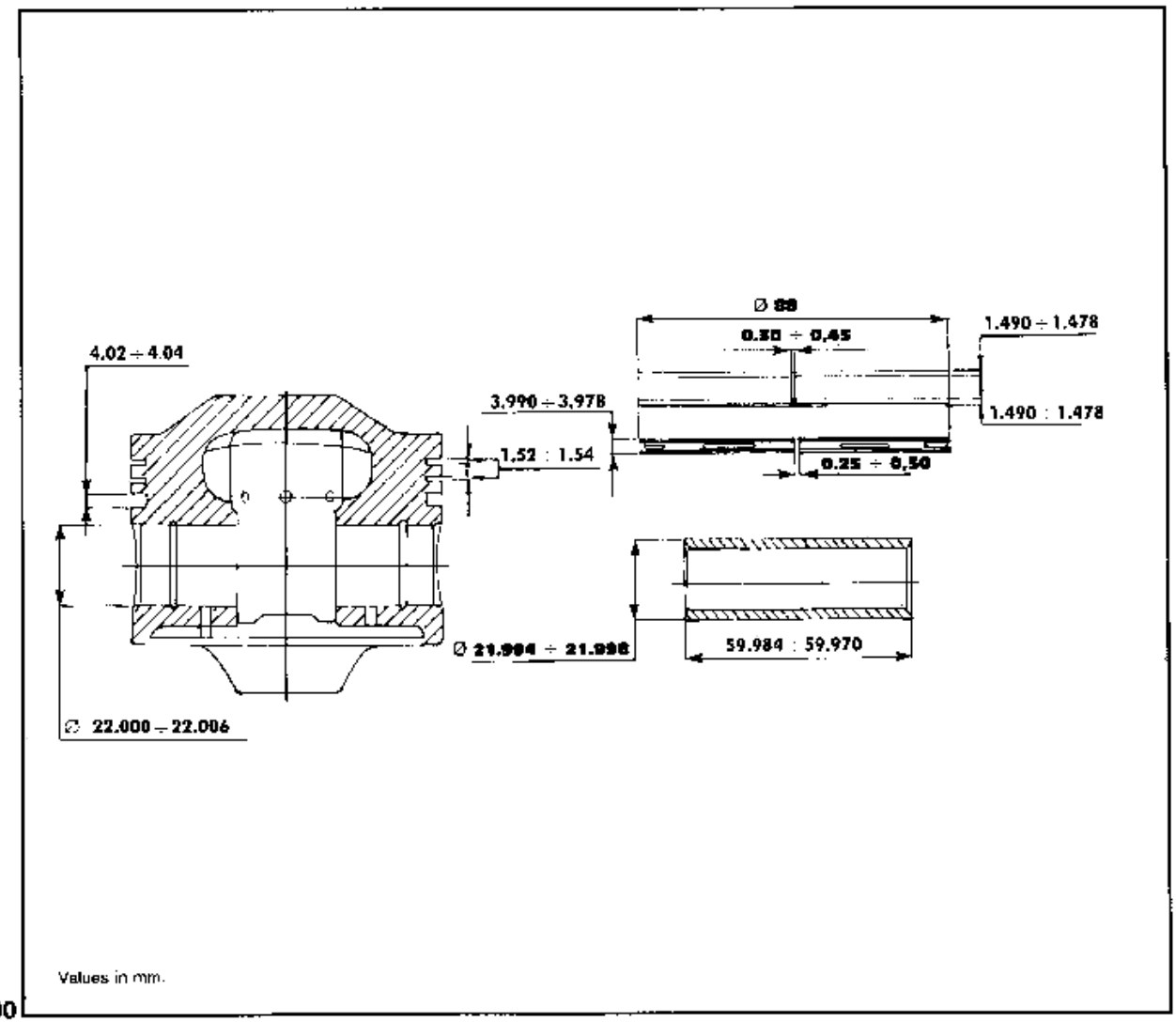
PISTONS

Pistons range (mm)

A size	B size	C size
87.968 ÷ 87.974	87.974 ÷ 87.980	87.980 ÷ 87.986

In an engine pistons have to be balanced; only a difference of 1.5 gr. in weight is admissible.

When installing a piston pay attention to the size mark engraved on piston and that «SCA» wording (exhaust) is directed towards the exhaust hole of cylinder.



Values in mm.

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CRANKSHAFT BALANCE CHECKING

To statically balance the crankshaft it is necessary to apply to the crankpin a load of 1.649 ÷ 1.651 Kg.

15 FUEL FEEDING

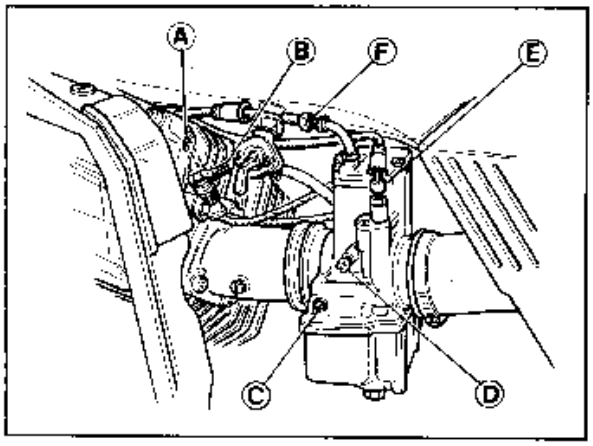
Carburettors (fig. 291)

No. 2 Dell'Ort «VHBT 30 CD» (R.H.) and «VHBT 30 CS» (L.H.) carbs.

Carburettors controls:

- throttle handgrip on right side of handlebar
- starting devices control lever for **cold engine** «starter» positionned on L.H. head cover:

«A» starting position with **cold engine.**
«B» running position.



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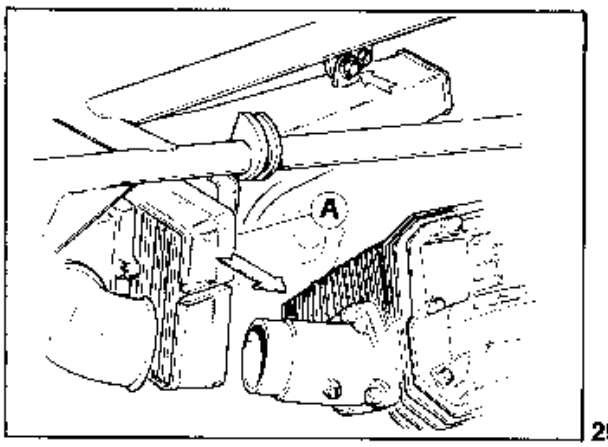
Setting data

Atomizer	Ø 30 mm
Throttle valve	40
Spray nozzle	265
Main jet	125
Idle jet	50
Starting jet	80
Needle jet	V9 (2nd notch)
Float	10 gr

Idle mixture setscrew: 1 1/2 turn.

AIR CLEANER REPLACEMENT (figg. 292-293)
Every 6000 Km. check the state of filtering unit and eventually clean it with compressed air; every 9000 Km. replacement is prescribed.
For replacement of air cleaner it is necessary to lift saddle, to remove fuel tank and side covers. Then remove R.H. carburettor and slacken the screw fastening the air intake to the frame; extract by the right side «A» box with the air cleaner after removal of the two side screws.



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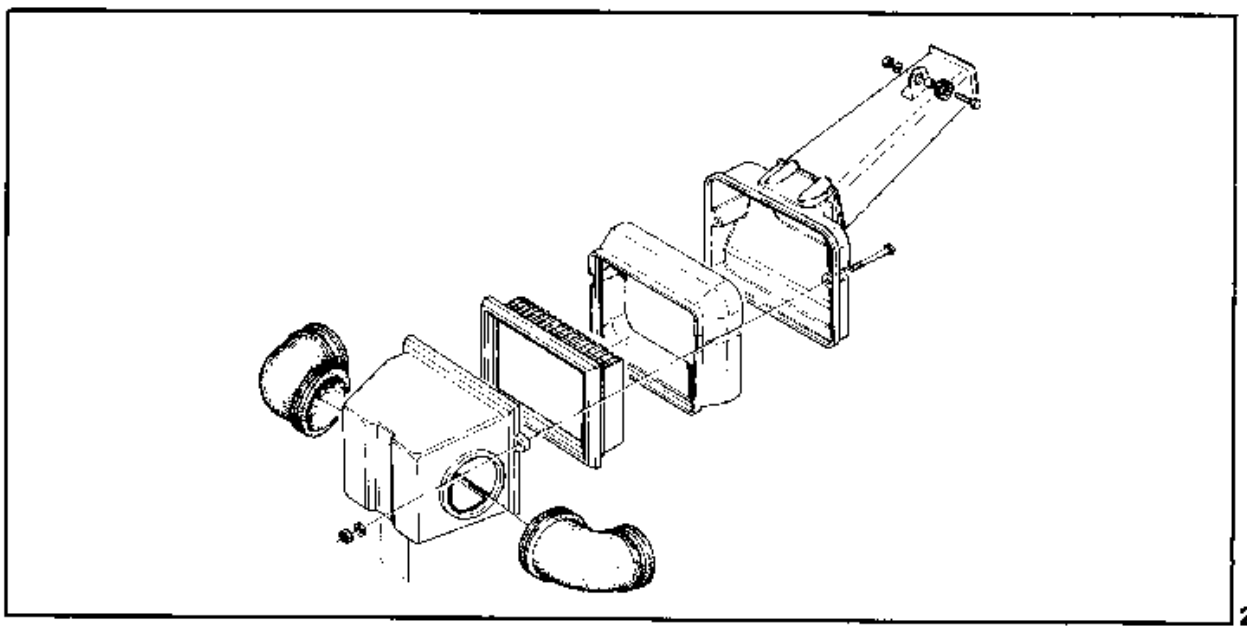
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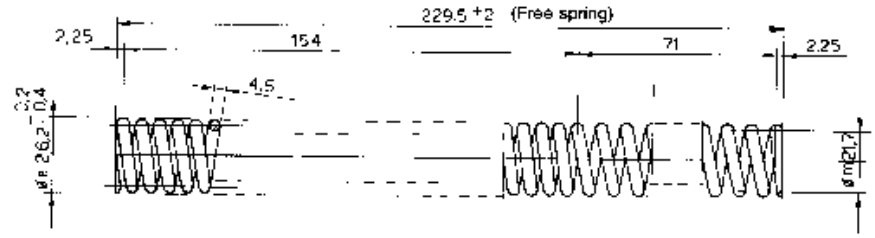
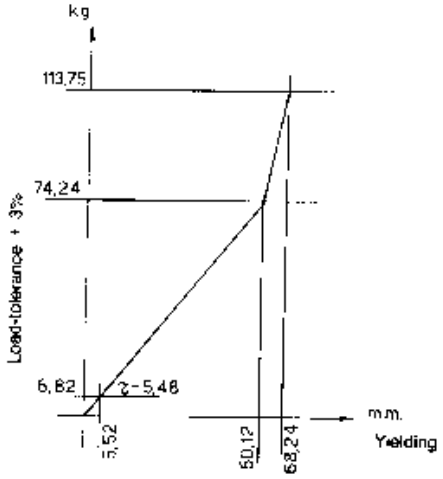
FORK LOWER SPRING



Check the spring after many compression to 160 mm.



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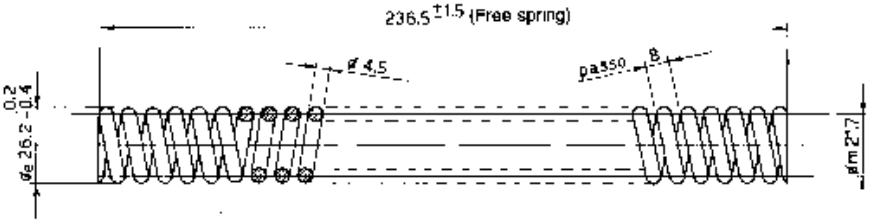
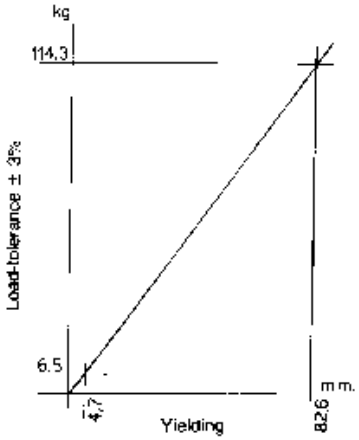
FORK UPPER SPRING



Check the spring after many compression to 150 mm.



Yielding load diagram (theoretic figures)

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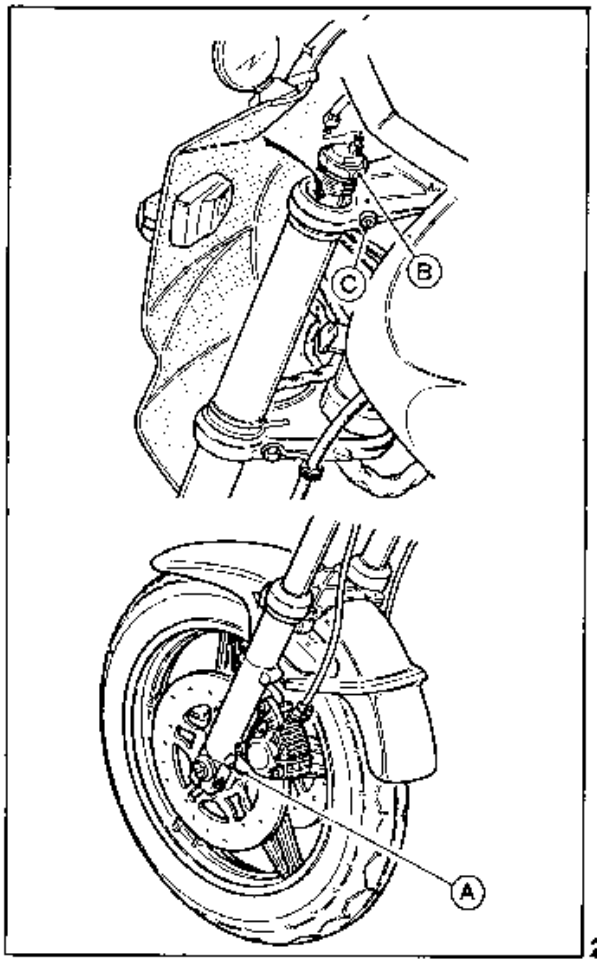
FRONT FORK LEGS LUBRICATION (fig. 296)

For fluid renewal inside the front fork legs, act as follows:

- with the vehicle on the central stand, loosen «C» side screw fastening the steering head to the fork leg; disconnect the balance pipe and at the same time unscrew the «B» upper hex. head cap; then remove «A» draining plug;
- slightly press dewnwards the front sie of motorcycle, you will obtain «B» cap coming out (this one being in one piece with the damper body).
- reinstall «A» plug and fill up with the prescribed quantity of fluid (100 cc. «Agip F.1 ATF Dexron» through the space between the inner diameter of fork leg and damper body;
- reinstall «B» cap after having lifted the front side of the bike, and lock the side screw again. Repeat the same operations for the other side too.
- connect the balance pipe again and reset the dampers pressure in compiance with the prescribed figures.



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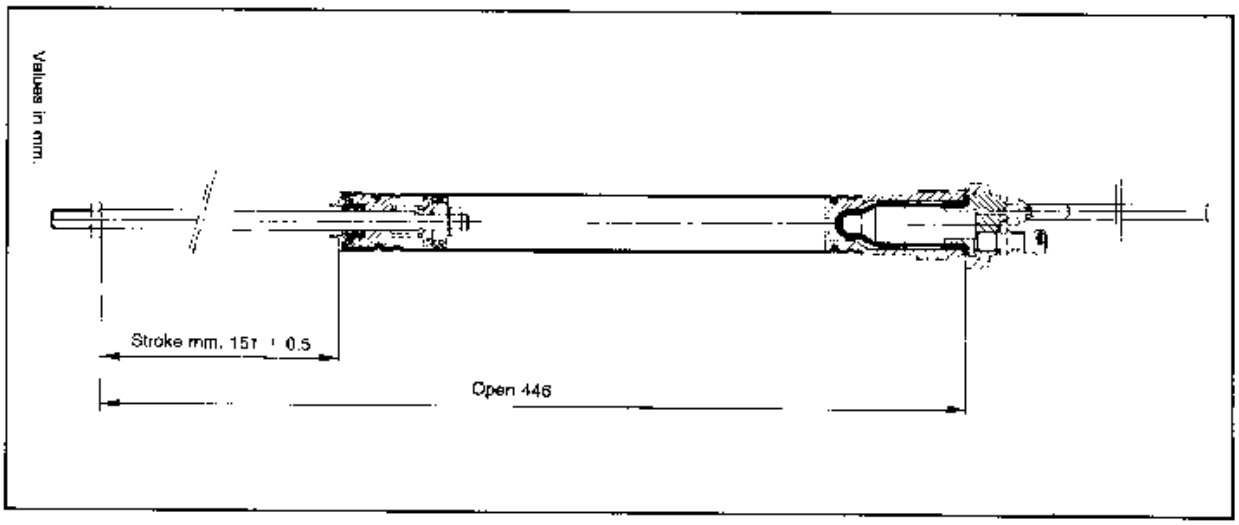
OIL-PNEUMATIC SUSPENSIONS

The operation and charge pressure of front suspensions is as follows: 1.5 ÷ 2.5 Kg/cm^2.
For pressure checking, the use of a special pressure-gauge is advisable.



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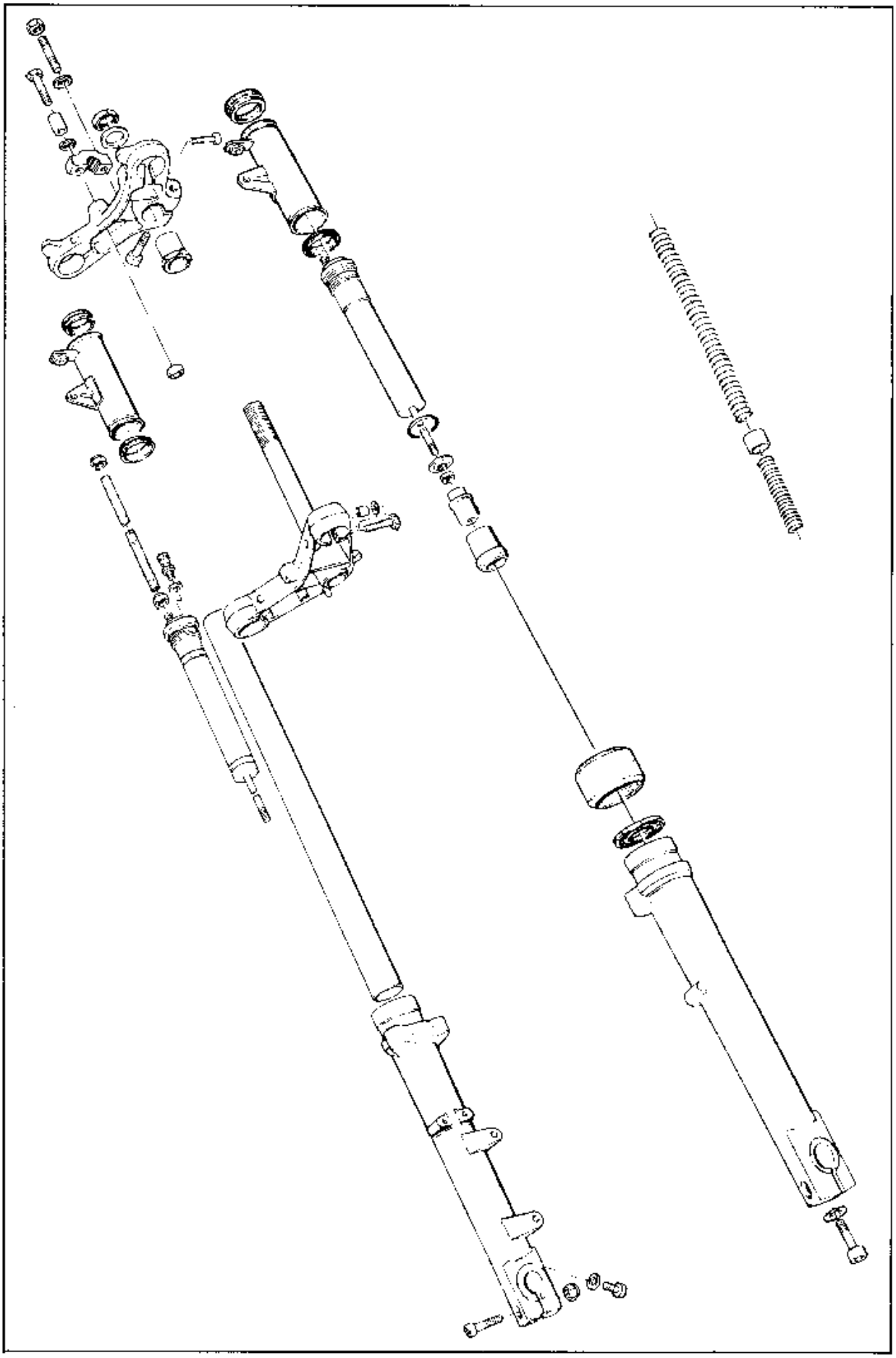

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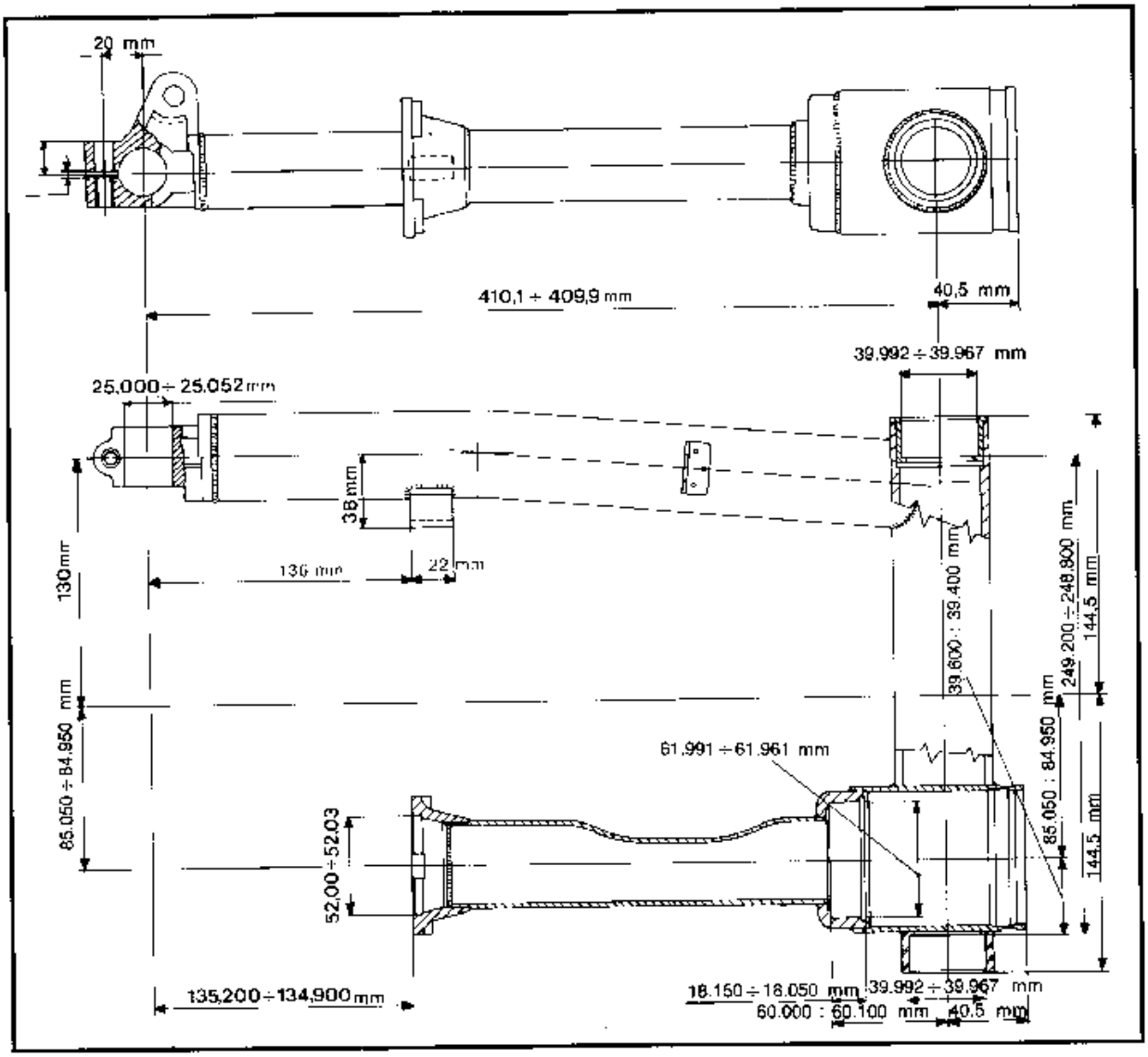
20 mm
410,1 ÷ 409,9 mm
40,5 mm
39,992 ÷ 39,967 mm
25,000 ÷ 25,052 mm
38 mm
130 mm
22 mm
39,600 : 39,400 mm
249,200 ÷ 249,800 mm
144,5 mm
85,050 ÷ 84,950 mm
61,991 ÷ 61,961 mm
52,00 ÷ 52,03
135,200 ÷ 134,900 mm
18,150 ÷ 18,050 mm
60,000 : 60,100 mm
39,992 ÷ 39,967 mm
40,5 mm

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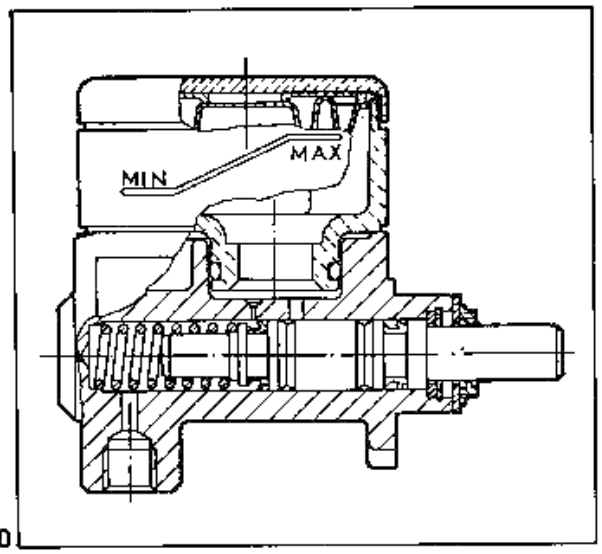
R.H. FRONT BRAKE CONTROL PUMP (figg. 300-301)



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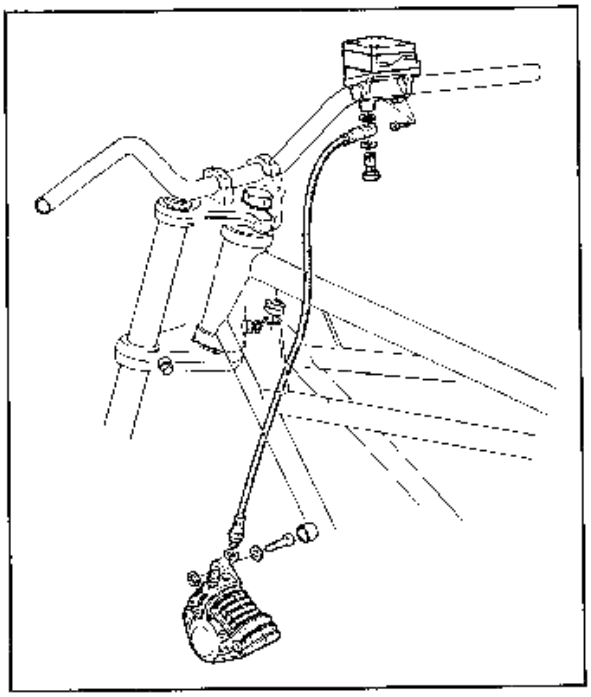

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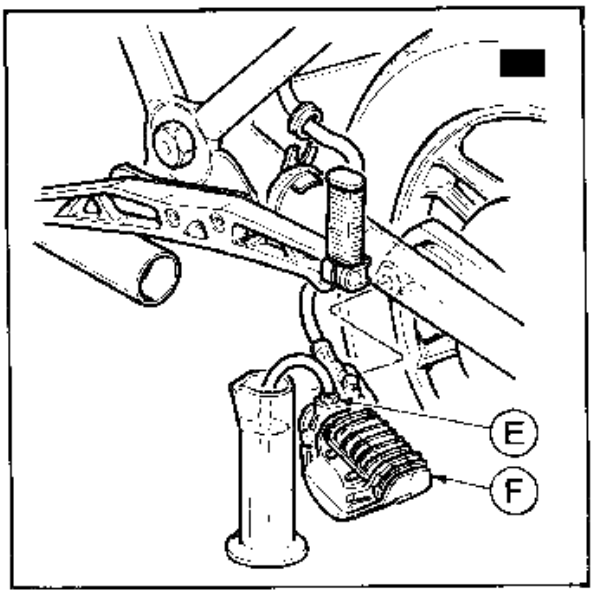
AIR-BUBBLE BLEEDING FROM BRAKE SYSTEMS

Rear brake and front L.H. brake system (fig. 302)

It is valid what prescribed on the workshop manual covering 1000 SP and 1000 G5 models, except for what follows:

1. If the case, fill up the pump feeding tank;
2. Arrange bleeding acting on «F» caliper, after having removed same from the supporting flange and placed in such a positions that «E» bleeding plug is directed upwards (fig. 302).



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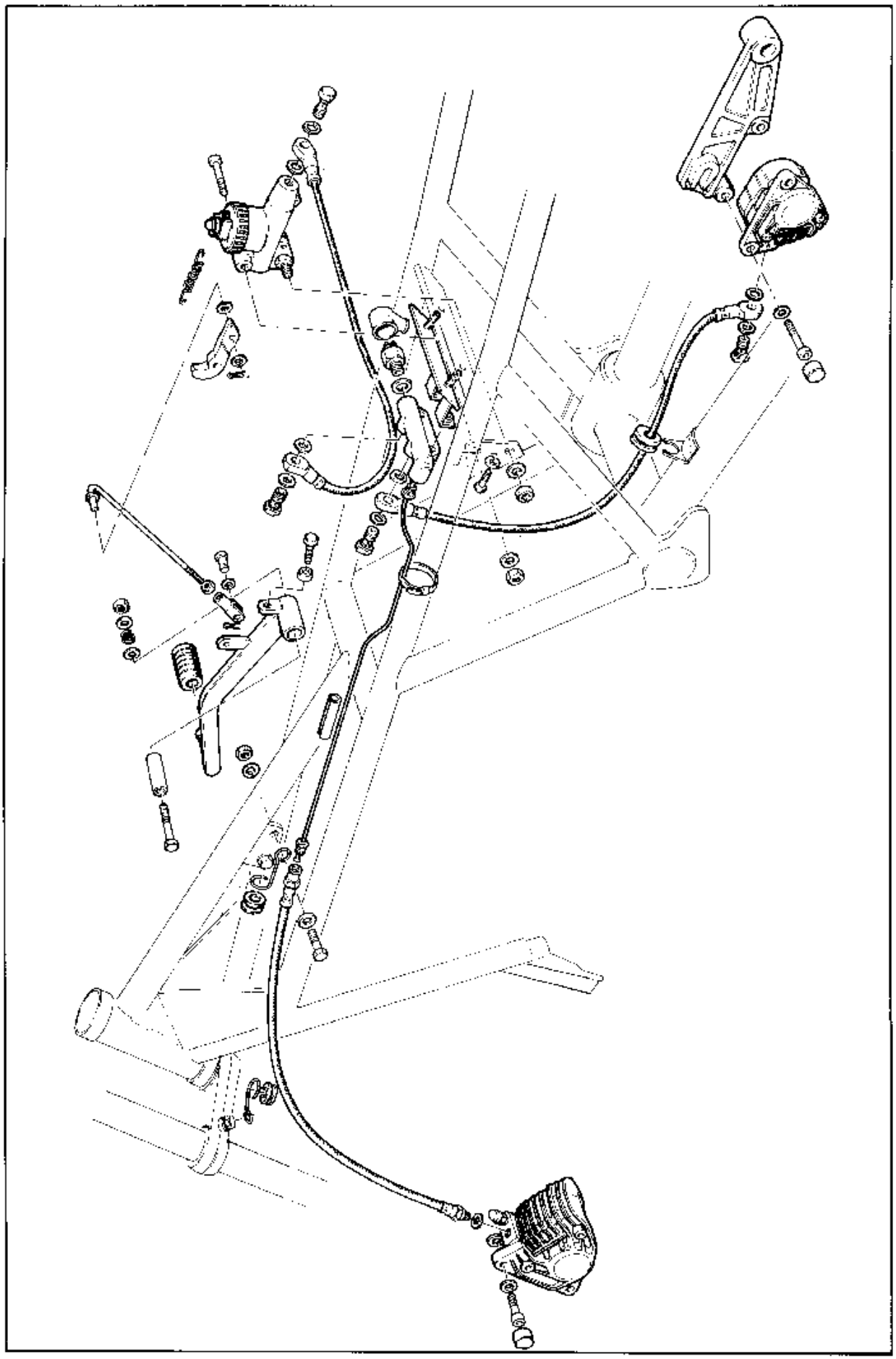

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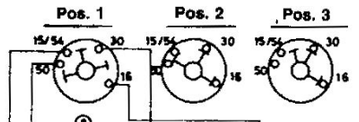
25 ELECTRIC SYSTEM SCHEME

Electric system scheme legend:

1 Head light
2 High and low beam bulb 45/40 W
3 Parking light bulb 4W
4 4-ways connector (Molex)
5 15-ways connector (Molex)
6 9-ways connector (Molex)
7 9-ways connector (Molex)
8 3-pos. ignition switch
9 Voltmeter (3 W bulb)
10 Speedometer (3 W bulb)
11 Rev. counter (3 W bulb)
12 Watch (3 W bulb)
13 R.H. flasher warn. light (1.2 W)
14 Parking light warn. light (1.2 W)
15 High beam warn. light (1.2 W)
16 Brake fluid level warn. light (1.2 W)
17 Oil pressure warn. light (1.2 W)
18 Generator warn. light (1.2 W)
19 Neutral pos. warn. light (1.2 W)
20 L.H. flasher warn. light (1.2 W)
21 Simultaneous flasher switching
22 R.H. front direction indicator (21 W)
23 L.H. front direction indicator (21 W)
24 R.H. rear direction indicator (21 W)
25 L.H. rear direction indicator (21 W)
26 Light control device - Engine stop and starting push-button
27 Horn control device - Lights and direction indicators switch
28 Bi-tonal trumpets
29 Front brake switch (STOP)
30 Rear brake switch (STOP)
31 Rectifier
32 Alternator BOSCH G1 14V 20A 21
33 Regulator
34 Battery
35 Starting solenoid
36 Start motor
37 16 A Fuse holder
38 STOP rear light 21W
39 Rear parking and number plate light
40 Tail light
41 3-way connector
42 Flashing device
43 Brake fluid level signal
44 Neutral pos. signal
45 Oil pressure signal
46 Coils
47 Spark plugs
48 Breaker
49 Trumpet solenoid
50 80 Ω - 2W resistance

IGNITION SWITCH



Bianco	=	White
Rosso	=	Red
Marrone	=	Brown
Verde	=	Green
Rosso-Blue	=	Red-Blue
Rosa	=	Pink
Nero	=	Black
Giallo	=	Yellow
Rosso-Verde	=	Red-Green
Verde-Grigio	=	Green-Grey
Verde-Nero	=	Green-Black
Arancione	=	Orange
Rosso-Nero	=	Red-Black
Bianco-Nero	=	White-Black
Rosso-Giallo	=	Red-Yellow
Blu-Nero	=	Blue-Black
Azzurro	=	Sky blu
Viola	=	Violet