

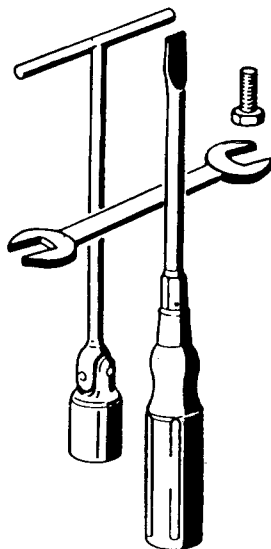


---

**1000 SP**  
**III**

---

# WORKSHOP MANUAL



COD. 30 92 01 11

Additions to the Workshop manual for the models V1000 G5 e 1000 SP - Cod. 17 92 01 61



**The illustrations and descriptions in this booklet are indicative only and the manufacturer reserves itself the right to introduce any modification it may deem necessary for better performance or for constructive or commercial reasons at any time and without prior notice.**

**GBM S.p.A. MOTO GUZZI - SERVIZIO PUBBLICAZIONI TECNICHE  
Cod. 30 92 01 11**

**Printed in Italy - D.E.Ca. - Ravenna**

## INDEX

|           |  |          |
|-----------|--|----------|
| <b>2</b>  | <b>MAIN SPECIFICATIONS</b>                                   | pag. 286 |
| <b>5</b>  | <b>CHECKING DEVICES AND CONTROLS</b>                         | pag. 288 |
|           | 1 Dashboard  |          |
|           | 2 Ignition and antitheft switch                              |          |
|           | 4 Light switches   |          |
|           | 5 Horn push-button, flash traffic beam, flashlights control  |          |
|           | 6 Start push-button and engine stop switch                   |          |
|           | 7 «CHOKE» control lever                                      |          |
|           | 8 Throttle grip  |          |
|           | 9 Clutch lever   |          |
|           | 10 Right front brake lever                                   |          |
| <b>7</b>  | <b>MAINTENANCE AND LUBRICATION OPERATIONS</b>                | pag. 290 |
| <b>12</b> | <b>ENGINE OVERHAULING AND CHECKING</b>                       | pag. 291 |
|           | 6 Valves and valve-guides                                    |          |
|           | 12 Cylinders   |          |
|           | 13 Pistons   |          |
|           | 18 Crankshaft balance checking                               |          |
| <b>13</b> | <b>TIMING</b>  | pag. 294 |
| <b>15</b> | <b>FUEL FEEDING</b>  | pag. 295 |
|           | 1 Carburetors  |          |
| <b>16</b> | <b>CLUTCH</b>  | pag. 296 |
| <b>21</b> | <b>FRONT SUSPENSION</b>                                      | pag. 297 |
| <b>22</b> | <b>SWINGING FORK</b>   | pag. 299 |
| <b>23</b> | <b>WHEELS</b>  | pag. 300 |
|           | 5 Tires  |          |
|           | 11 R.H. front brake system and R.H. front brake control pump |          |
|           | 12 Rear and L.H. front braking system                        |          |
| <b>24</b> | <b>ELECTRIC SYSTEM</b>                                       | pag. 302 |
|           | 2 Alternator-generator (SAPRISA)                             |          |
|           | 5 Starting motor (VALEO)                                     |          |
|           | 13 Electronic ignition                                       |          |
| <b>25</b> | <b>ELECTRIC SYSTEM SCHEME</b>                                | pag. 306 |
|           | 1 Electric system scheme legend                              |          |

**ENGINE**

|                          |   |
|--------------------------|---|
| - cylinder configuration | 4-stroke, twin cylinders                            |
| - bore                   | 90° «V» twin  |
| - stroke                 | 88 mm   |
| - total capacity         | 78 mm   |
| - compression ratio      | 948.8 cc  |
| - max. torque            | 9,5:1   |
| - max output             | 7,9 kgm at 5800 r.p.m.<br>71 CV (KW 52) at 6800 rpm |

**VALVE TIMING**

O.H.V. with rods and rocker arms

**FUEL FEEDING**

no. 2 Dell'Orto carbs. PHF 36 DD (R.H.)  
PHF 36 DS (L.H.) type.

**LUBRICATION**

forced lubrication system with gear pump - wirenet and cartridge filters installed in the sump of the crankcase - standard lubricating pressure 3.8÷4.2 kg/cm<sup>2</sup> (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**

Electronic, with magnetic sensor and variable advance.  
ignition data

■ First advance (fixed) 2° to 3°

■ Full advance (fixed + electronic) 34° to 35°

sensor and rotor gap 0,2 to 0,4 mm.

ignition spark plugs: MARELLI CW 7 LP; BOSCH W 7 D;  
BOSCH W 7 DC; CHAMPION N 9 YC; LODGE L6Y.

spark plugs electrodes gap 0,6 mm.

ignition coils: no. 2 installed on the frame

**STARTING**

electric by start motor equipped with electromagnetic control coupling.

crown gear fixed to the engine flywheel START push button placed right side on the handlebar

**TRANSMISSIONS****CLUTCH**

dry type with two driven discs  
positioned on the engine flywheel  
controlled by lever on the left side of handlebar

**PRIMARY TRANSMISSION**

by gears, ration 1:1235 (Z=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)

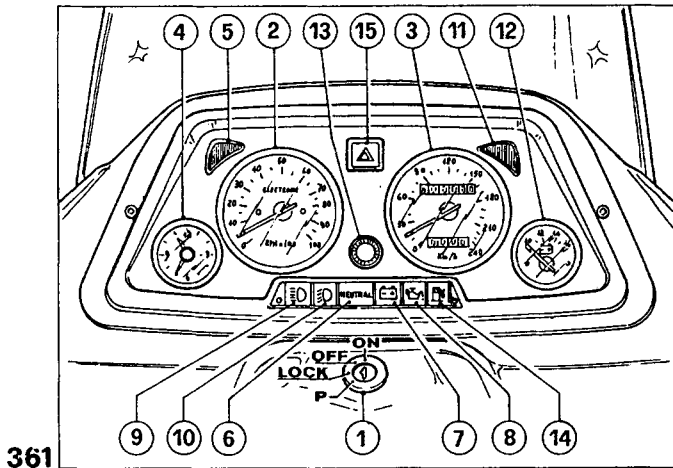
3rd 1:1.047 (Z=21/22)

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

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

|   |   |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
|---|---|--------------------------------|--------------------------------------|---------------|--|------------|--|---|--|--------------------------------|-------------------------------------|-------------------------|-------------------------------------|
| <b>SECONDARY TRANSMISSION</b>           | <p>by shaft with cardanic joint and gears.<br/> ratio 1 : 4.714 (Z=7/33)<br/> final drive ratio (engine-to-wheel)<br/> 1st speed 1 : 11.643<br/> 2nd speed 1 : 8.080<br/> 3rd speed 1 : 6.095<br/> 4th speed 1 : 5.059<br/> 5th speed 1 : 4.366</p>   |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| <b>FRAME</b>                            | decomposable double cradle with tubular structure   |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| <b>SUSPENSIONS</b>                      | <p>front: telescopic fork "MOTO GUZZI", with separated spring preload and shock-absorber damping adjustment<br/> rear swinging fork with adjustable springs concentric to the hydraulic adjustable shock-absorbers.</p>   |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| <b>WHEELS</b>                           | <p>in light alloy with rims<br/> ■ front 18 MT 2.50 H2<br/> ■ rear 18 MT 3.00 H2</p>  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| <b>TYRES</b>                            | <p>front 110/90 V18<br/> rear 120/90 V18<br/> Type: Tubeless</p>  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| <b>BRAKE</b>                            | <p>front: floating disc with fixed caliper and twin braking cylinder - manually controlled by handlebar placed R.H. on the handlebar - hydraulic transmission independent from the rear brake:<br/> Ø disc 300 mm;<br/> Ø braking cylinder 38 mm<br/> Ø pump 13 mm<br/> rear: floating disc with fixed caliper and twin braking cylinder - pedal control placed on the R.H. centre of the vehicle:<br/> Ø disc 270 mm<br/> Ø braking cylinder 38 mm<br/> Ø pump 15.875 mm<br/> 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.</p>   |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| <b>DIMENSIONS AND WEIGHTS</b>           | <table border="0"> <tr> <td>pitch (laden)</td> <td>1.495 m.</td> </tr> <tr> <td>max. length</td> <td>2.200 m.</td> </tr> <tr> <td>max. width</td> <td>0.900 m.</td> </tr> <tr> <td>max. height (windscreen)</td> <td>1.400 m.</td> </tr> <tr> <td>dry weight</td> <td>240 kg.</td> </tr> </table>   | pitch (laden)                  | 1.495 m.                             | max. length   | 2.200 m.                                       | max. width | 0.900 m.                                 | max. height (windscreen)                | 1.400 m.   | dry weight                     | 240 kg.                             |                         |                                     |
| pitch (laden)                           | 1.495 m.  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| max. length                             | 2.200 m.  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| max. width                              | 0.900 m.  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| max. height (windscreen)                | 1.400 m.  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| dry weight                              | 240 kg.   |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| <b>PERFORMANCES</b>                     | <p>max. speed 195 Km/h. with driver only.<br/> fuel consumption: 5,6 l. /100 Km (CUNA STANDARD).</p>  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| <b>REFUELINGS</b>                       | <table border="0"> <tr> <td>- fuel tank (ca. 3 l. reserve)</td> <td>22,5 l. Super Petrol (97 NO-RM/min.)</td> </tr> <tr> <td>- engine sump</td> <td>3 l. of "Agip NUOVO SINT 2000 SAE 10 W/40" oil</td> </tr> <tr> <td>- gearbox</td> <td>0,750 of "AGIP Rotra MP SAE 80 W/90" oil</td> </tr> <tr> <td>- transmission (bevel gear lubrication)</td> <td>0,250 l. of which: 0,230 l. of "Agip Rotra MP SAE 80 W/90" and 0,020 l. of "Agip Rocol ASO/R" oil or "Molikote A type oil"</td> </tr> <tr> <td>- telescopic fork (each prong)</td> <td>0,070 l. of "Agip ATF Dexron" fluid</td> </tr> <tr> <td>- front and rear brakes</td> <td>"Agip BRAKE FLUID - SUPER HD" fluid</td> </tr> </table> | - fuel tank (ca. 3 l. reserve) | 22,5 l. Super Petrol (97 NO-RM/min.) | - engine sump | 3 l. of "Agip NUOVO SINT 2000 SAE 10 W/40" oil | - gearbox  | 0,750 of "AGIP Rotra MP SAE 80 W/90" oil | - transmission (bevel gear lubrication) | 0,250 l. of which: 0,230 l. of "Agip Rotra MP SAE 80 W/90" and 0,020 l. of "Agip Rocol ASO/R" oil or "Molikote A type oil" | - telescopic fork (each prong) | 0,070 l. of "Agip ATF Dexron" fluid | - front and rear brakes | "Agip BRAKE FLUID - SUPER HD" fluid |
| - fuel tank (ca. 3 l. reserve)          | 22,5 l. Super Petrol (97 NO-RM/min.)  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| - engine sump                           | 3 l. of "Agip NUOVO SINT 2000 SAE 10 W/40" oil  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| - gearbox                               | 0,750 of "AGIP Rotra MP SAE 80 W/90" oil  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| - transmission (bevel gear lubrication) | 0,250 l. of which: 0,230 l. of "Agip Rotra MP SAE 80 W/90" and 0,020 l. of "Agip Rocol ASO/R" oil or "Molikote A type oil"  |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| - telescopic fork (each prong)          | 0,070 l. of "Agip ATF Dexron" fluid   |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |
| - front and rear brakes                 | "Agip BRAKE FLUID - SUPER HD" fluid   |                                |                                      |               |  |            |  |   |  |                                |                                     |                         |                                     |

## 5 CHECKING DEVICES AND CONTROLS



### 5.1. DASHBOARD (fig. 361)

- 1 Users insertion and antitheft key switch.
- 2 Revolution indicator.
- 3 Speedometer.
- 4 Clock.
- 5 Warning light (green light) for L.H. blinkers.
- 6 Warning light ("Neutral" green light) neutral position of gearbox. It is on only when the gearbox is in this position.
- 7 Warning light (red light) generator current delivery. It must go off when the engine has reached a certain r.p.m. range.
- 8 Warning light (red light) oil pressure. To be off when the pressure is sufficient to insure engine lubrication. If the warning light does not extinguish, the pressure is not the prescribed one; in this case it is necessary to stop the engine at once and investigate for the reason.
- 9 Warning light (blue light) high beam on.
- 10 Warning light (green light) parking lights on.
- 11 Warning light (green light) for R.H. blinkers.
- 12 Voltmeter.
- 13 Partial odometer zero reset.
- 14 Warning light (red light) fuel on reserve.
- 15 Emergency flashers switch.

### 5.2 IGNITION AND ANTITHEFT SWITCH (Fig. 361)

Switch "1" is controlled by the equipped key and can be regulated in 4 positions.

**"OFF" position**, stand vehicle. Extractable key (no contact).

**"ON" position**, vehicle ready for starting. All users are on. Key not extractable.

**"LOCK" position**, locked steering. Engine off, no contact, extractable key.

**"P" position**, locked steering. Engine off; through the switch "A" of fig. 362 in "P" position, parking lights. Extractable key.

To set the steering gear on:

■ Turn the handlebar completely on the left or on the right.

■ Press the key downwards and turn it counter clockwise till the position "LOCK" or "P".

**ATTENTION: do not turn the key in "LOCK" or "P" position during running.**

### 5.4 LIGHT SWITCHES (Fig. 362)

Placed L.H. on the handlebar.

**"A" switch**

■ "O" position lights off.

■ "P" position parking light.

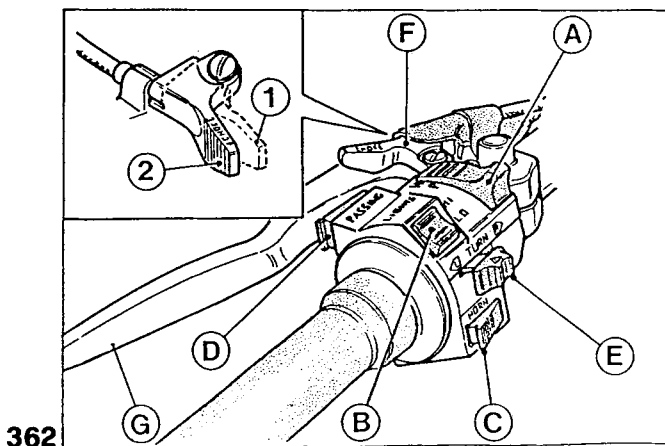
■ "H" position bilux lamp on.

**"B" switch (lights)**

With the switch "A" in position "H".

■ "LO" low beam.

■ "HI" high beam.



### 5.5 HORN PUSH-BUTTON, FLASH TRAFFIC BEAM, FLASHLIGHTS CONTROL SWITCH ( Fig. 362)

Placed L.H. on the handlebar:

- Push-button "C" (horn) horn control.
- Push-button "D" (passing) flash traffic beam control.
- Push-button "E" (turn):
  - "R" position, right direction indicators.
  - "L" position, left direction indicators.
  - Press the switch to disconnect the flashlights.

### 5.6 START PUSH-BUTTON AND ENGINE STOP SWITCH (Fig. 363)

Installed on the R.H. side of handlebar.

With key switch "1" of fig. 361 ("ON" position), the vehicle is ready to start. To start engine act as follows:

- make sure that "B" switch is in position (run);
- strongly pull the clutch lever;
- if the engine is cold, bring the "F" "CHOKE" lever on starting position "1" (see fig. 362);
- press on "C" start push-button.

To stop engine in an emergency case:

- "B" switch has to be turned on position (off).

Once engine is stopped, turn the key in the switch of fig. 361 in counter clockwise direction until the "OFF" position and extract the key from the switch.

**N.B. Always remember to replace the "B" switch on position (RUN) before starting.**

### 5.7 "CHOKE" CONTROL LEVER ("F" of Fig. 362)

The lever for cold engine starting gear (CHOKE) is placed on the L.H. of handlebar:

- "1" Starting position.
- "2" Running position.

### 5.8 THROTTLE GRIP ("D" of Fig. 363)

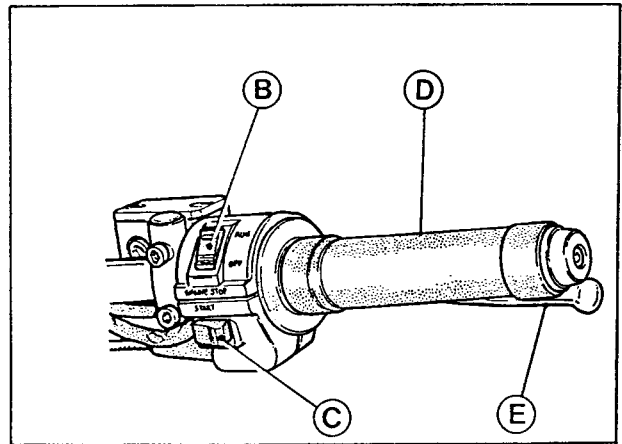
The throttle grip is placed on the R.H. side of handlebar; turning it towards the rider opens the throttle; turning it away from the rider closes it.

### 5.9 CLUTCH LEVER ("G" of Fig. 362)

Placed on the L.H. side of handlebar; it is only to be used when starting or changing gear.

### 5.10 RIGHT FRONT BRAKE LEVER ("E" of Fig. 363)

Placed on the R.H. side of handlebar; it controls the pump of the hydraulic front right brake.



363

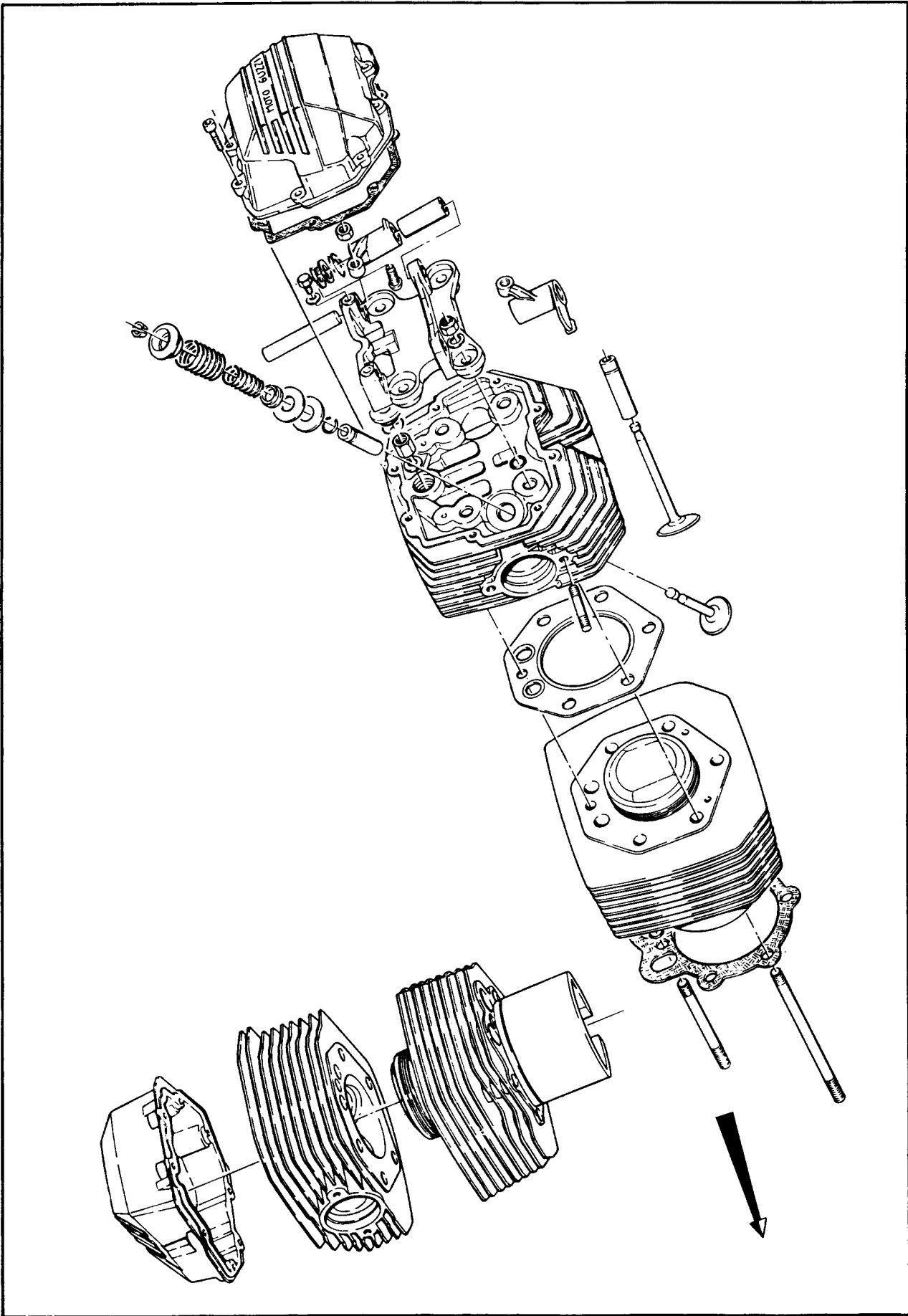
## 7 MAINTENANCE AND LUBRICATION OPERATIONS

| ITEMS<br>◇                             | COVERED MILEAGE ◇ | 1500 Km | 5000 Km | 10000 Km | 15000 Km | 20000 Km | 25000 Km | 30000 Km | 35000 Km | 40000 Km | 45000 Km | 50000 Km |
|--|-------------------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Engine oil                             |                   | R       | R       | R        | R        | R        | R        | R        | R        | R        | R        | R        |
| Oil filter cartridge                   |                   | R       |         |          | R        |          |          | R        |          |          | R        |          |
| Wire gauze oil filter                  |                   | C       |         |          | C        |          |          | C        |          |          | C        |          |
| Air filter                             |                   |         | C       | R        | C        | R        | C        | R        | C        | R        | C        | R        |
| Ignition timing                        |                   | A       |         |          | A        |          |          | A        |          |          | A        |          |
| Spark plugs                            |                   | A       | A       | R        | A        | R        | A        | R        | A        | R        | A        | R        |
| Rocker clearance                       |                   | A       | A       | A        | A        | A        | A        | A        | A        | A        | A        | A        |
| Carburation                            |                   | A       | A       | A        | A        | A        | A        | A        | A        | A        | A        | A        |
| Nuts and bolts                         |                   | A       |         |          | A        |          |          | A        |          |          | A        |          |
| Fuel tank, filters and pipes           |                   |         |         | A        |          | A        |          | A        |          | A        |          | A        |
| Gear box oil                           |                   | A       | A       | R        | A        | R        | A        | R        | A        | R        | A        | R        |
| Rear drive box oil                     |                   | A       | A       | R        | A        | R        | A        | R        | A        | R        | A        | R        |
| Wheel and steering bearings            |                   |         |         |          |          | A        |          |          |          | A        |          |          |
| Fork legs oil                          |                   |         |         |          |          | R        |          |          |          | R        |          |          |
| Starter motor and generator            |                   |         |         |          |          | A        |          |          |          | A        |          |          |
| Brake system fluid                     |                   | A       | A       | A        | R        | A        | A        | R        | A        | A        | R        | A        |
| Brake pads                             |                   | A       | A       | A        | A        | A        | A        | A        | A        | A        | A        | A        |
| ◇ Times (minutes divided into 60 sec.) |                   | Free    | 245     | 305      | 340      | 370      | 245      | 400      | 245      | 400      | 340      | 305      |

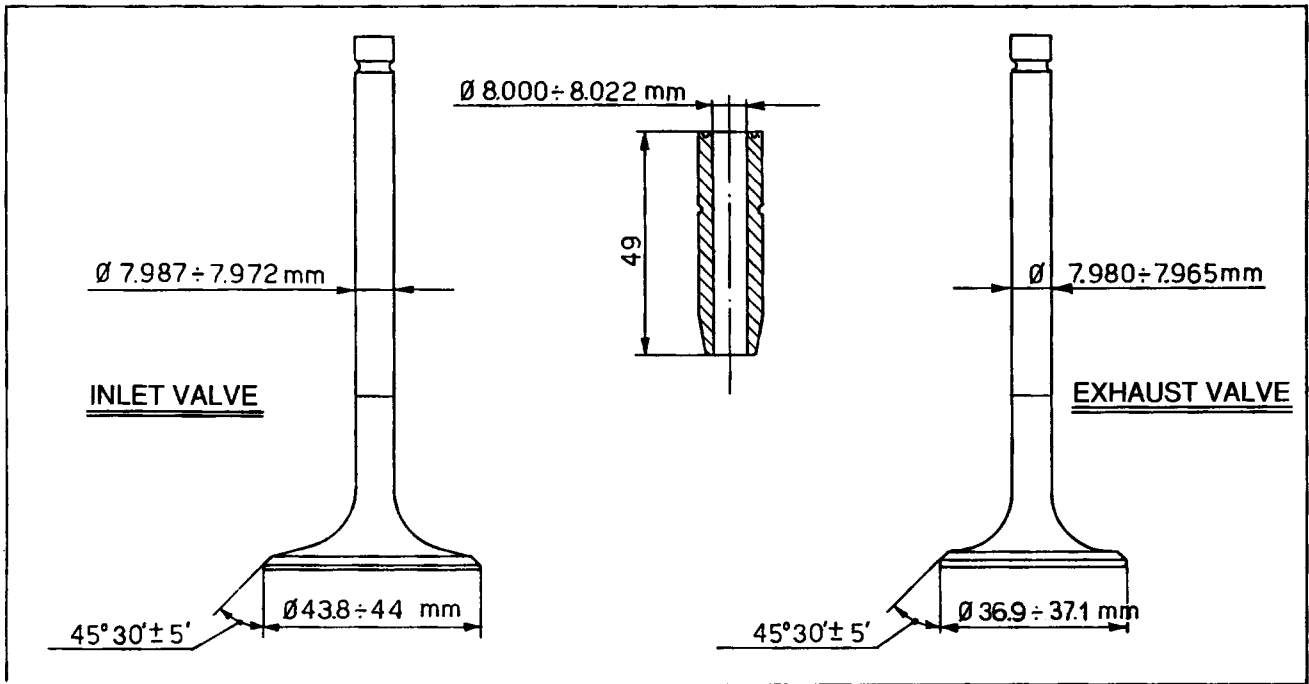
**A=**Maintenance-Check-Adjustment-Eventual replacement/**C=**Cleaning/**R=**Replacement  
**Time by time inspect battery electrolyte level and lubricate the control joints and hoses, every 500 Km. check the engine oil level.**  
**In all cases renew oil at least once per year.**



# 12 ENGINE OVERHAULING AND CHECKING



12.6 VALVES AND VALVE-GUIDES (fig. 365)



365

**12.12. CYLINDERS**  
Cylinders range (mm)

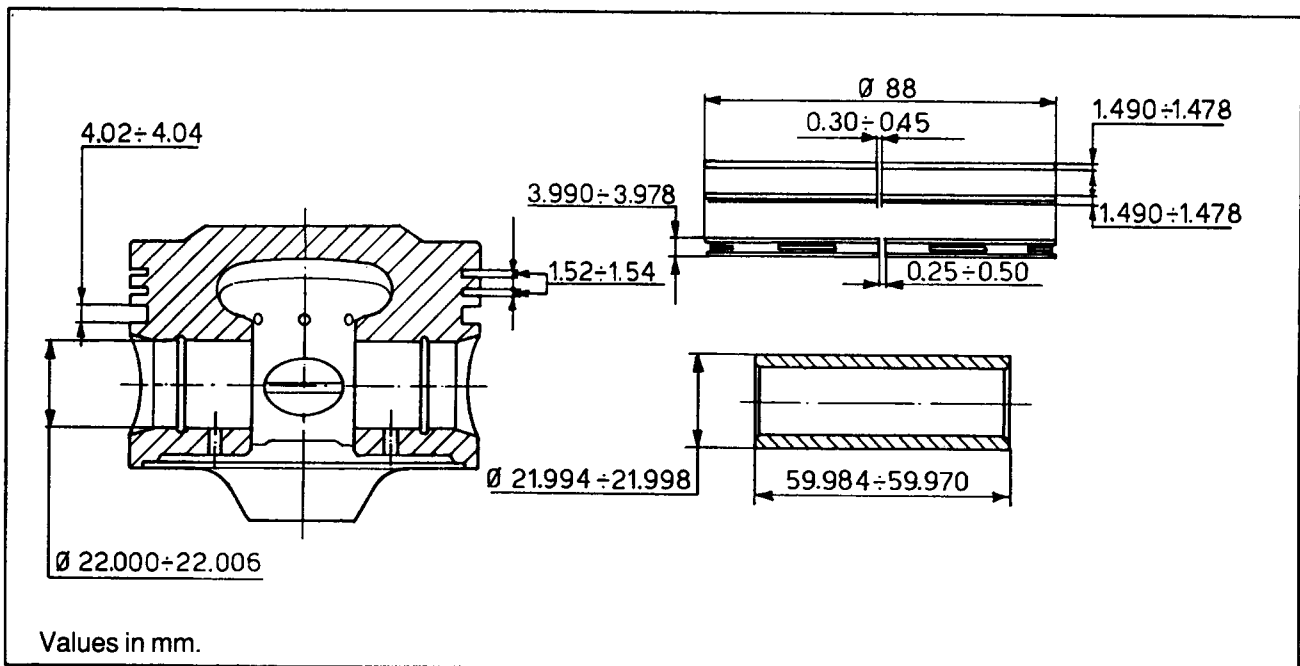
| A SIZE        | B SIZE        | C SIZE        |
|---------------|---------------|---------------|
| 88.000÷88.006 | 88.006÷88.012 | 88.012÷88.018 |

**12.13. PISTONS**  
Pistons range (mm)

| A SIZE        | B SIZE        | C SIZE        |
|---------------|---------------|---------------|
| 87.968÷87.974 | 87.974÷87.980 | 87.980÷87.986 |

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

When installing a piston, pay attention to the "SCA" (exhaust) wording to be directed towards the exhaust hole in the cylinder.



366

**12.18. CRANKSHAFT BALANCE CHECKING**

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

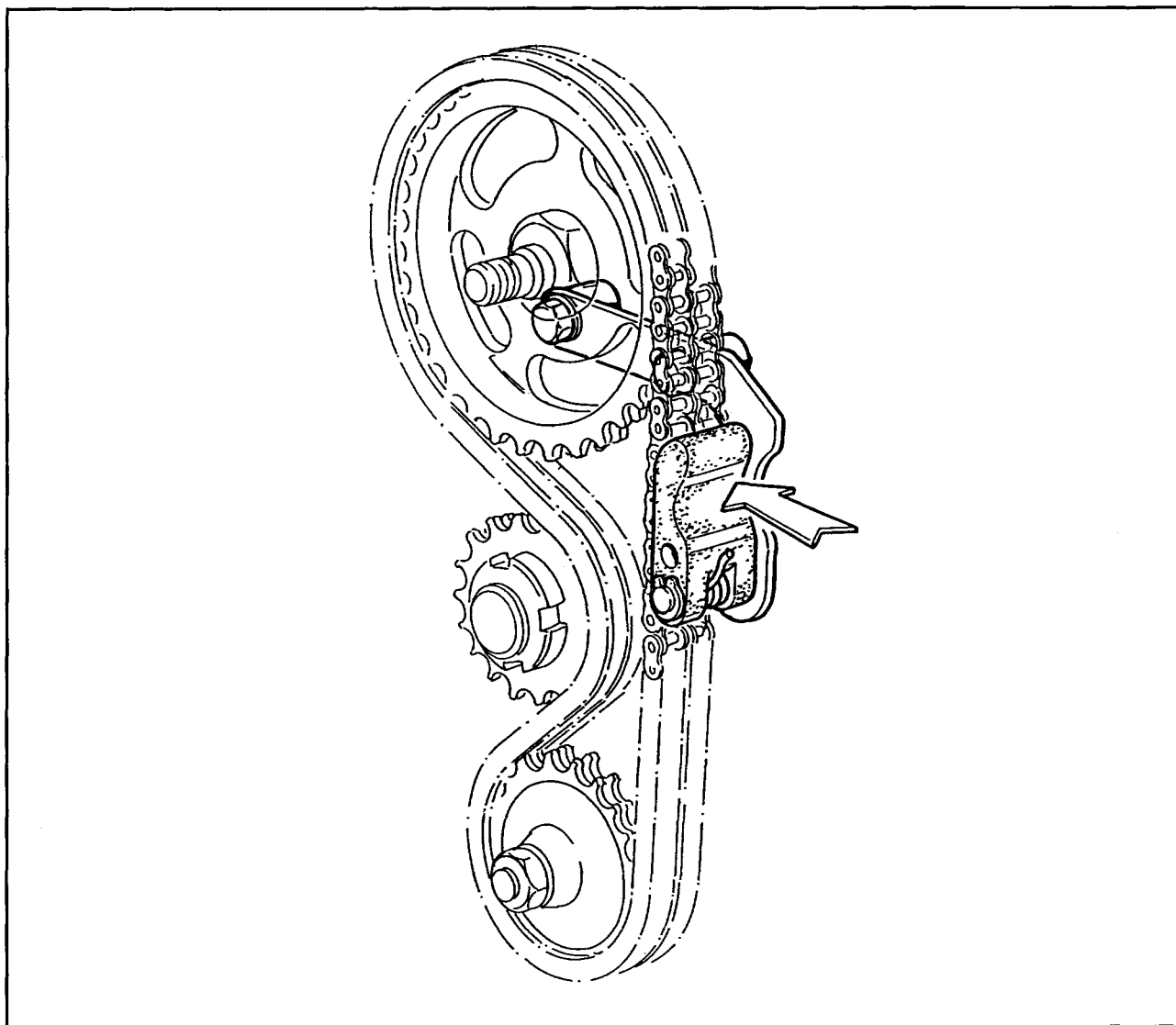
## 13 TIMING

The assembly of a new chain adjustment gear for automatic timing has been foreseen.

The new detail is interchangeable with the previous one and replaces it in every respect.

As above is valid also for the models of the V 850 - V 1000 series; in production from following engine numbers:

|                                |             |
|--------------------------------|-------------|
| CALIFORNIA III                 | : VT 032698 |
| 1000 GT                        | : VT 024724 |
| LE MANS 1000                   | : VV 016418 |
| 850 T5 POLIZIA/<br>CARABINIERI | : VR 016448 |



367

## 15 FUEL FEEDING

### 15.1. CARBURETORS

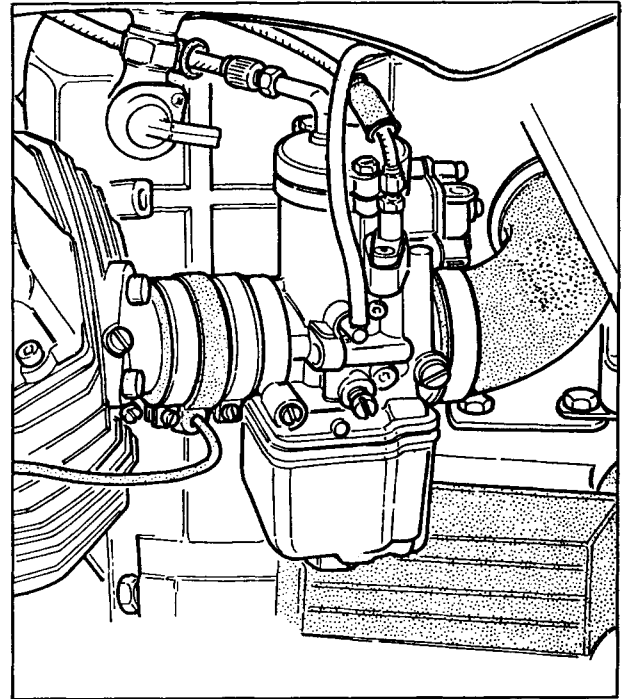
No. 2 Dell'Orto «PHF 36 DD» (R.H.) «PHF 36 DS» (L.H.).

#### Carburetors controls

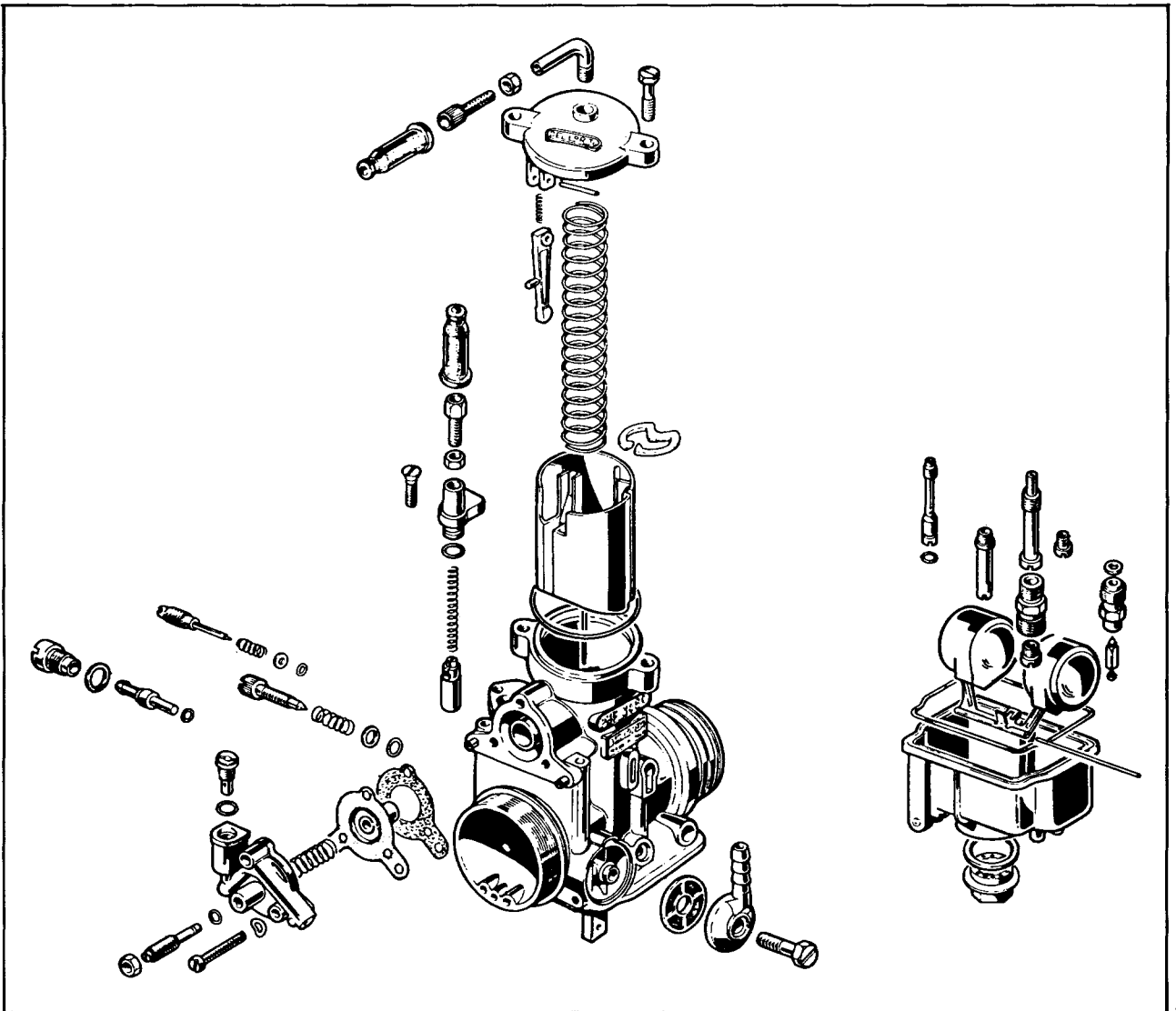
- Throttle handgrip R.H. on the handlebar;
  - "starter" control lever with **cold engine** «CHOKE» (F of Fig. 362) on the handgrip L.H. side.
- «CHOKE» control lever positions:  
«1» Start with **cold engine**  
«2» Run.

#### Setting data

|                       |                  |
|-----------------------|------------------|
| Atomizer              | Ø mm 36          |
| Throttle valve        | 60/3             |
| Spray nozzle          | 268 AR           |
| Main jet              | 130              |
| Idle jet              | 50               |
| Starting jet          | 70               |
| Cone-shaped needle    | K 18 (3rd notch) |
| Float                 | Gr 10            |
| Idle mixture setscrew | 1 1/2 turn.      |



368



369

## 16 CLUTCH

### DRIVEN DISCS AND CLUTCH INSIDE BODY

A new clutch inside body with corresponding clutch discs has been planned.

The new details are not individually interchangeable with the previous ones and can be identified thanks to the new profile of the matching teeth.

The new specific tools which have been foreseen for disassembling the a. m. details will be ordered with the following code numbers:

30 91 28 10 Tool for blocking the clutch inside body.

30 90 65 10 Tool for centering the clutch discs.

The modification has been introduced for all models of the series V 850 - V 1000 from following engine numbers:

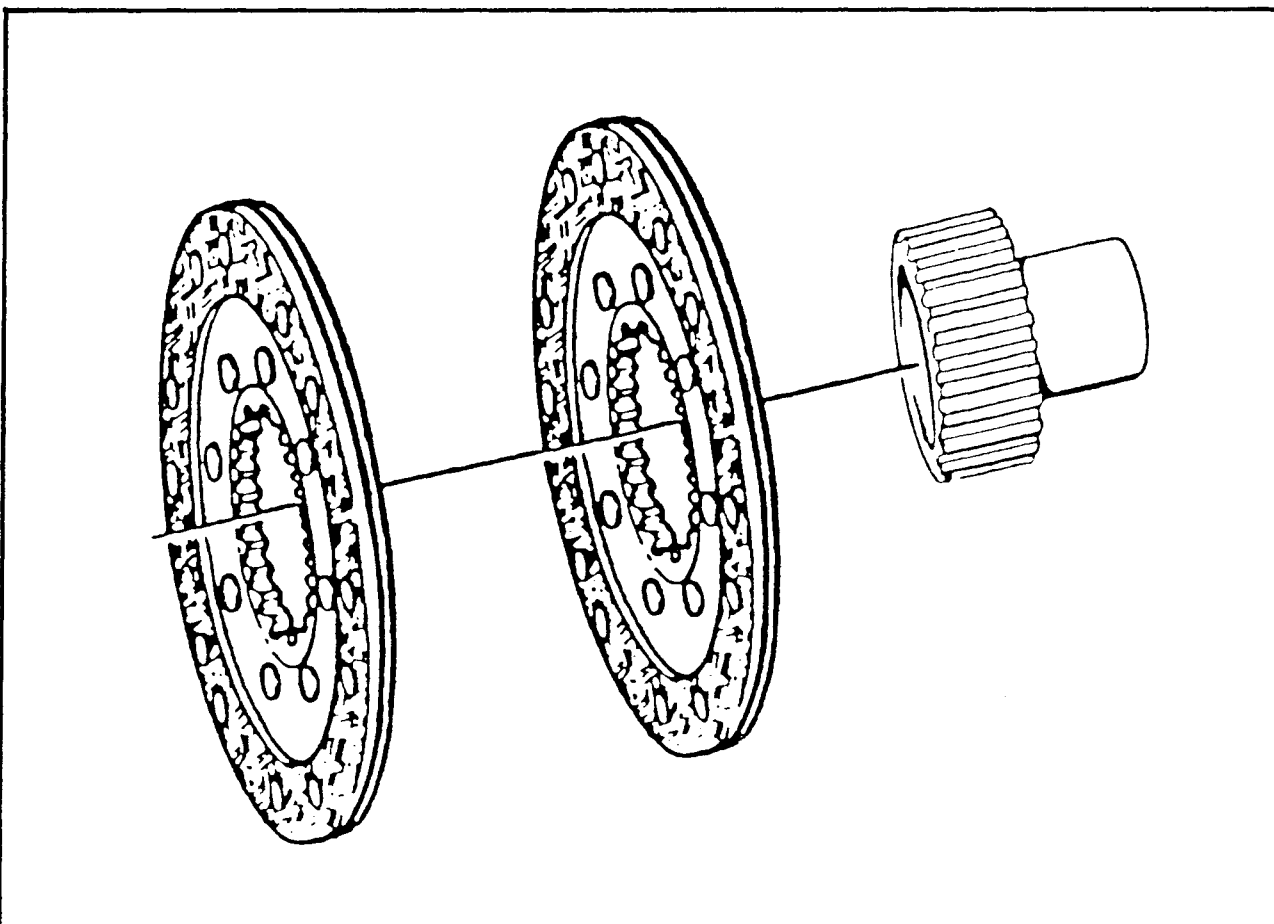
CALIFORNIA III : VT 032542

1000 GT : VT 024596

LE MANS 1000 : VV 016375

850 T5 POLIZIA/

CARABINIERI : VR 016448



370

## 21 FRONT SUSPENSION

### ADJUSTABLE TELESCOPIC FORK SETTING

(Fig. 371)

The motorcycle is provided with a new MOTO GUZZI telescopic fork with separate adjustment of the spring preload and shock absorber damping. To adjust the springs preload, turn the nut A through a 32mm wrench. By turning clockwise, the spring preload reduces; by turning counterclockwise, the preload increases. To adjust the shock absorber hydraulic damping, turn the knob B. By turning clockwise the hydraulic damping decreases, on the contrary, by turning counterclockwise, the damping increases. Do not force the knob B and the nut A in the end-of-stroke positions.

**N.B. - the springs preload and the shock absorbers damping must be uniformly adjusted on both fork rods (both preload adjustment nuts must be turned in the same way, by starting from the end-of-stroke positions, as well as the two hydraulic damping adjustment knobs).**

**To prevent from damaging the shock absorbers, in case of run on uneven roads, don't adjust them (knob B) in their maximum damping position.**

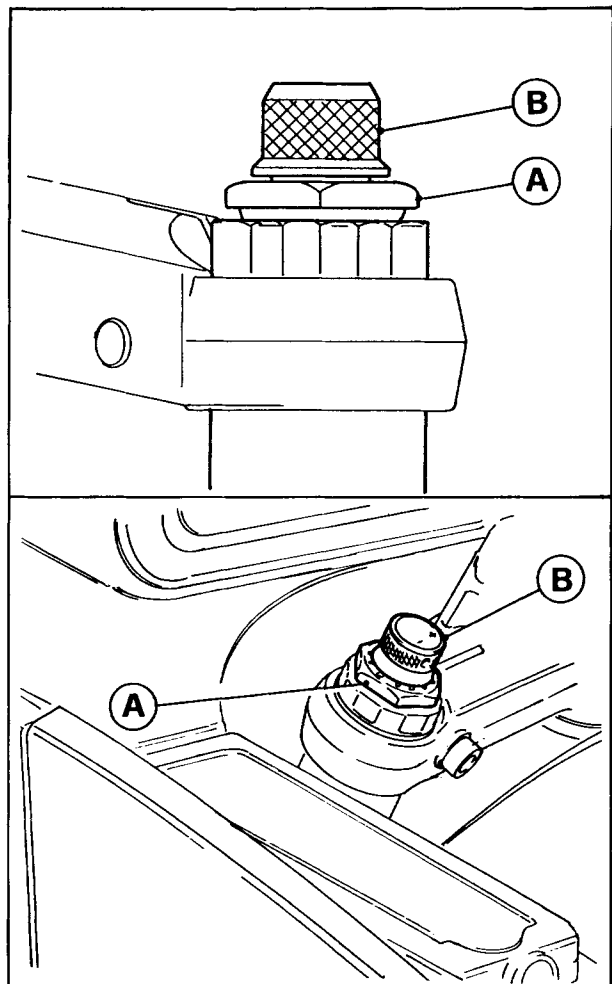
### FORK LEGS LUBRICATION (Fig. 372)

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

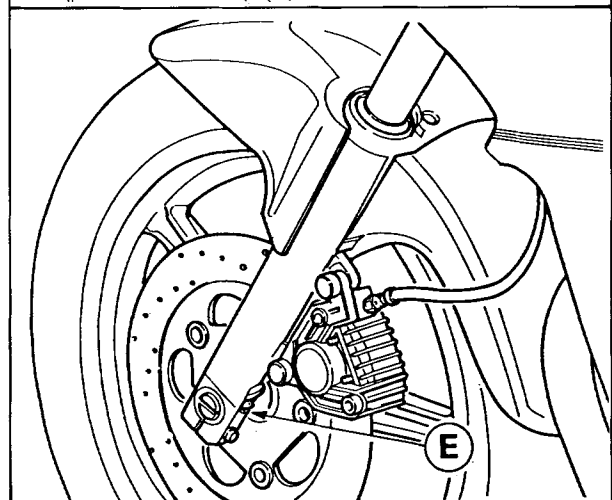
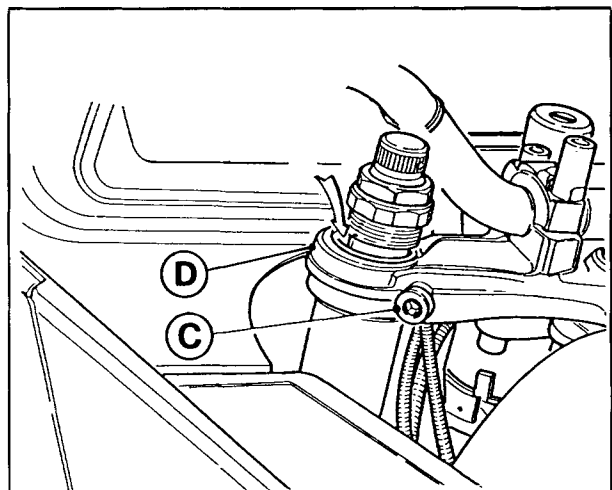
- with the vehicle on the central stand, disassemble the handgrip protection;
- loosen C side screw fastening the steering head to the fork leg;
- unscrew the D upper plug; then remove the E drain plug;
- by slightly pressing down the motorcycle front side, plug D, which is integral with to the shock absorber body, will come out;
- reassemble plug E and introduce the required fluid quantity (cc 70 «Agip ATF Dexron») through the space between fork leg inner diameter and shock absorber rod;
- reassemble plug D after having lifted the front side of the bike and lock the side screw again. Repeat the same operations for the other side too.

### FRONT FORK (fig. 373)

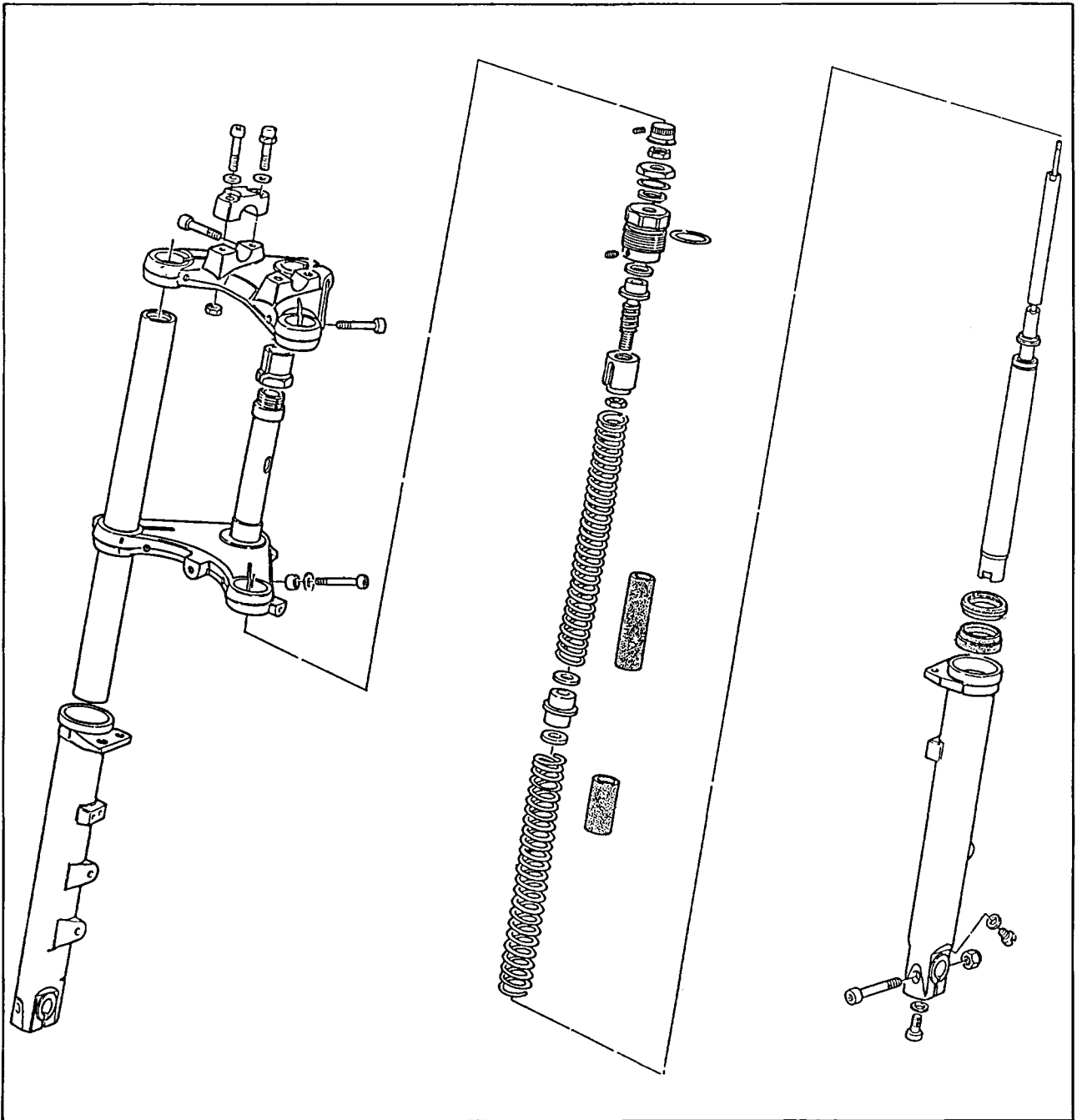
- Stroke 140 mm
- Sleeve inner diameter:  $40.010 \pm 0.050$  mm
- Fork legs outer diameter:  $39.975 \pm 0.050$  mm



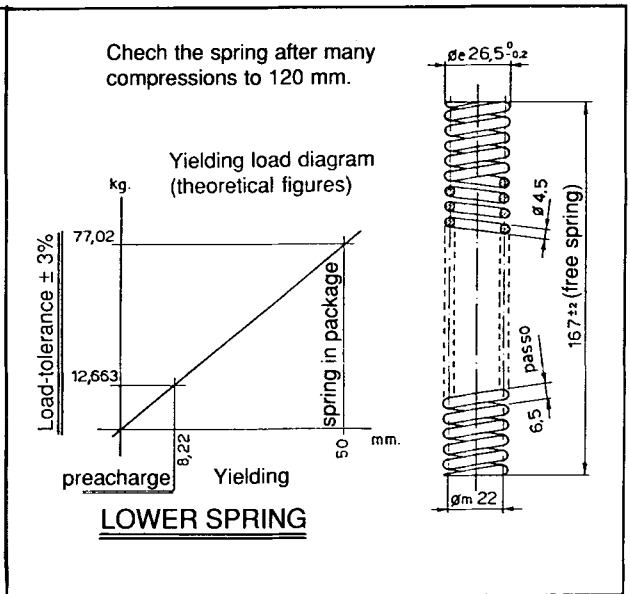
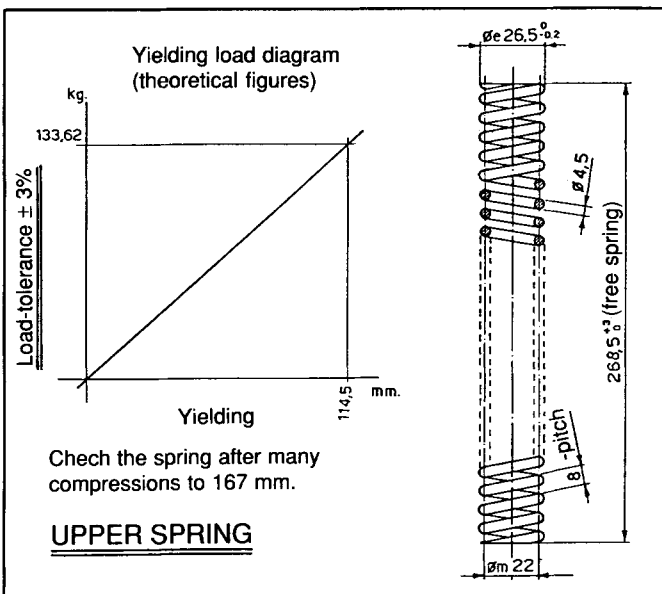
371



372



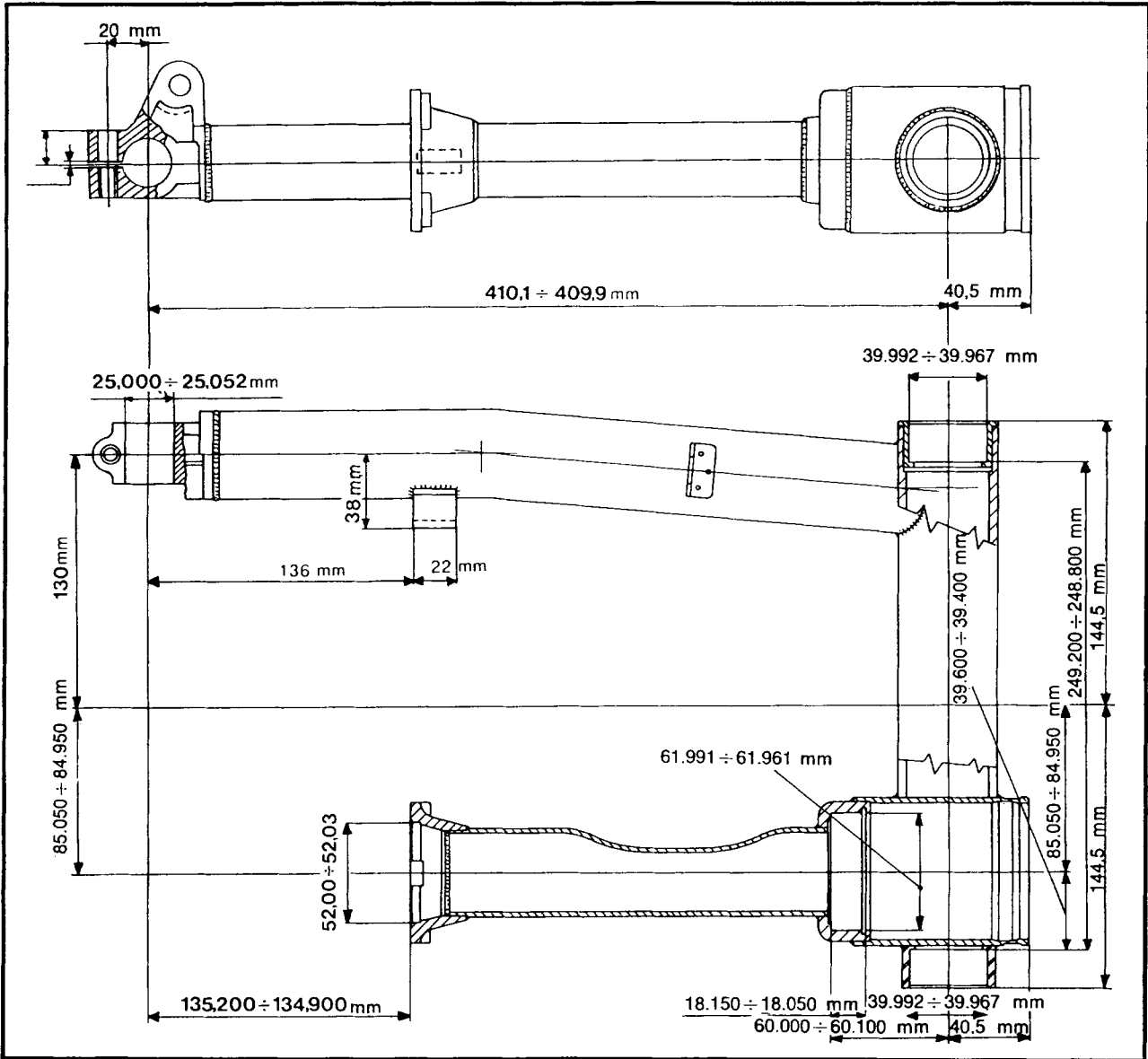
373



374



**22** SWINGING FORK



375

## 23 WHEELS

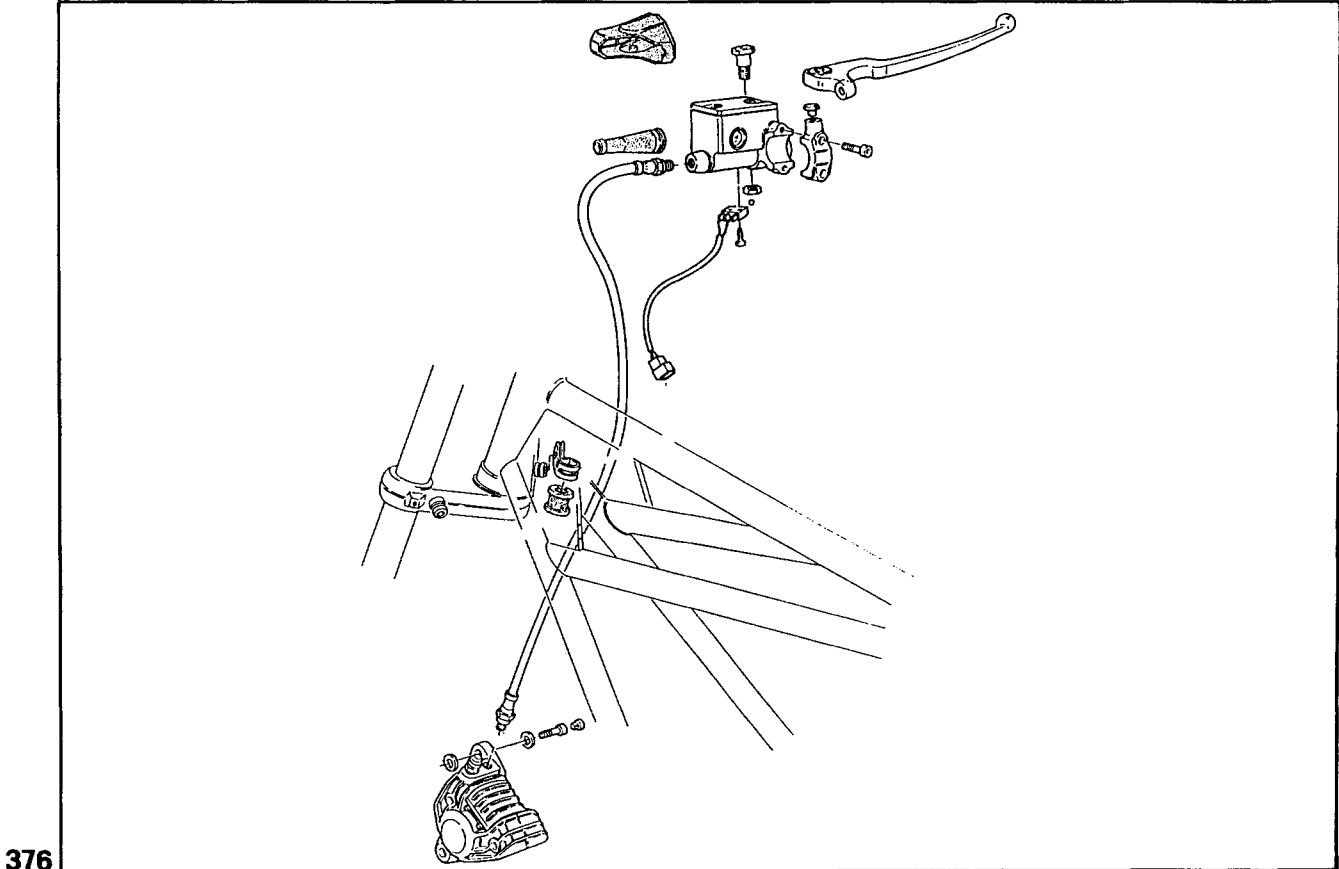
### 23.5 TYRES

Prescribed pressures are:

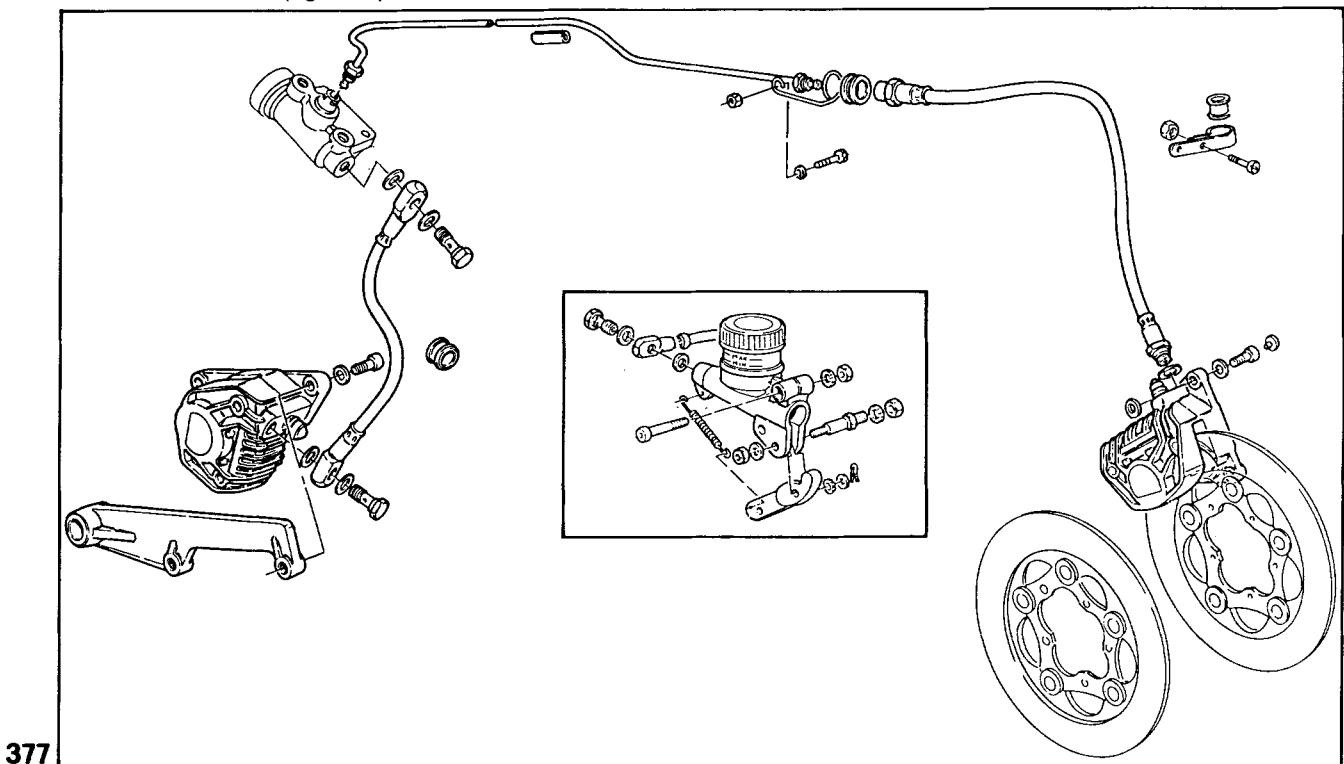
- front wheel: with one or two passengers 2.2 BAR
- rear wheel: with one passenger 2.4 BAR; with two passengers 2.6 BAR

Above stated figures are for touristic riding. For use at high continued speed, or highways use, an increase in pressure of 0.2 BAR to the above figures is recommended.

### 23.11. R.H. FRONT BRAKE SYSTEM AND R.H. FRONT BRAKE CONTROL PUMP (fig. 376)



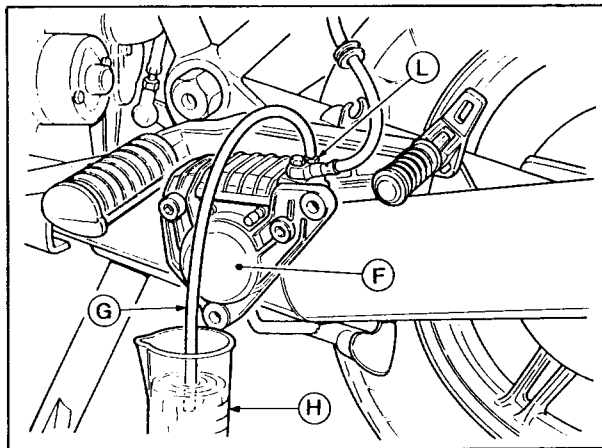
### 23.12. REAR AND L.H. FRONT BRAKING SYSTEM (fig. 377)



**Air bubble bleeding from brake systems: rear and L.H. front braking circuit.**

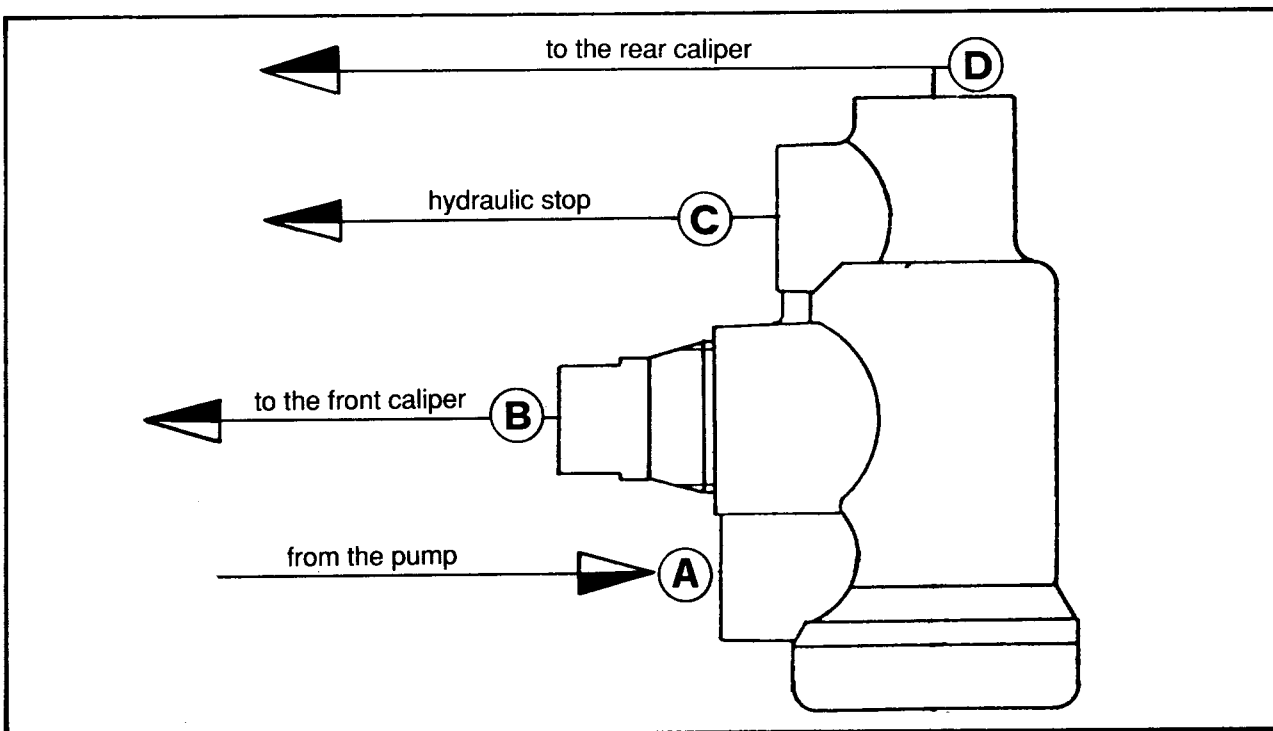
Instructions are as for 1000 SP and 1000 G5 models workshop manual, except the following points:

- 1 If the case, fill up the pump feeding tank;
- 2 Arrange bleeding acting on «F» caliper, after having removed it from the supporting flange and placed in such a position that «L» bleeding plug is directed upwards (fig. 378)

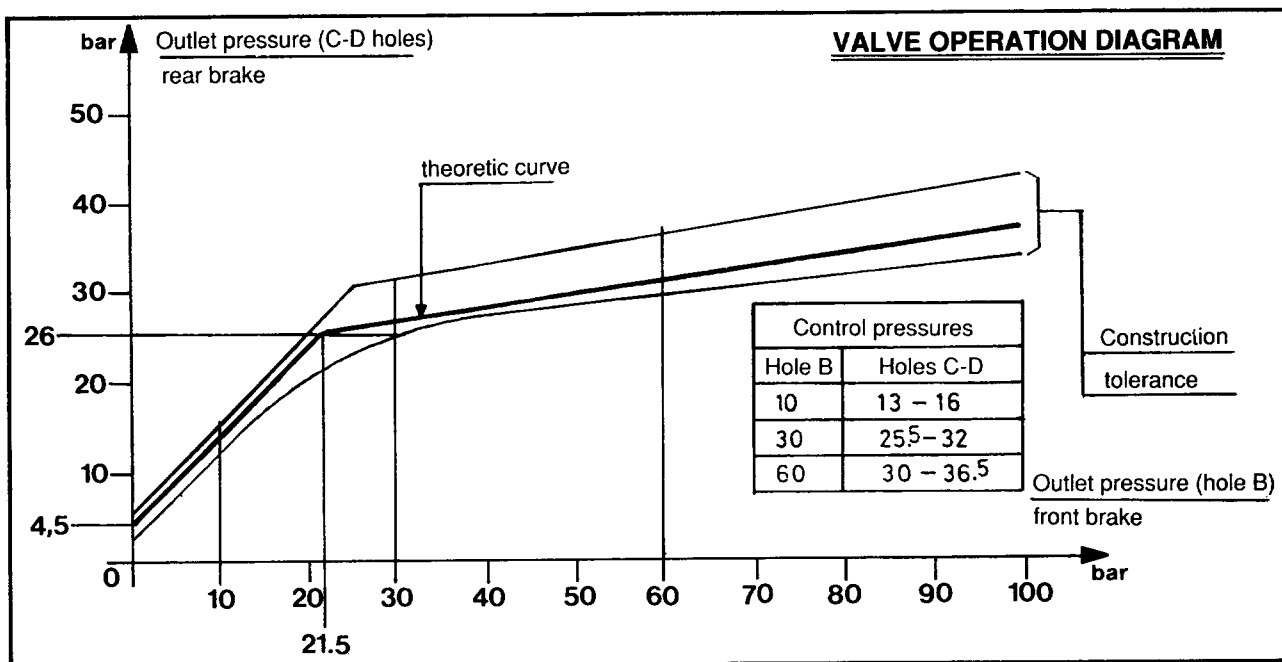


378

**PRESSURE DELAYING AND ADJUSTING VALVE (4,5/26)**



379



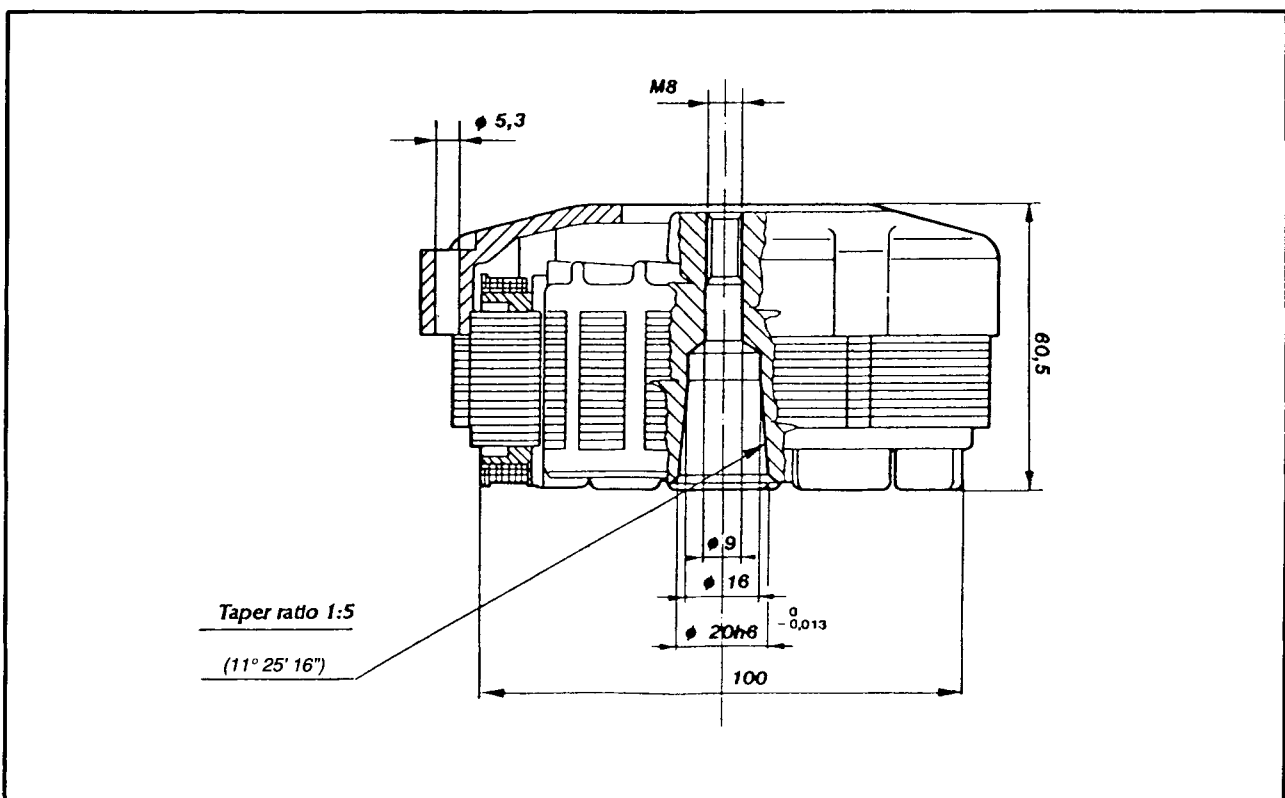
380

## 24 ELECTRIC SYSTEM

The electric system consists of the following components:

- Battery (12V - 24 Ah)
- Electromagnetic-controlled starter
- Generator-alternator, mounted on the crankshaft front part
- Pick-up assy
- Electronic device
- Ignition coils
- Capacitor for electronic device
- Voltage adjuster
- Fuse holder terminal board (no. 4 of 15A)
- Remote control switch for horns
- Remote control switch for start
- Front headlight
- Rear lamp
- Direction indicators
- User connection switch
- Lights control devices
- Direction indicators, warning horn and passing light control devices
- Emergency lights switch
- Engine start device
- Electric horns
- Signaling pilot lights on dashboard for : gear in neutral (green), tail lamp lighting (green), oil pressure control (red), driving beam (blue), not-enough-voltage generator (red), fuel reserve (red), direction indicators (green).
- Direction indicators beep.

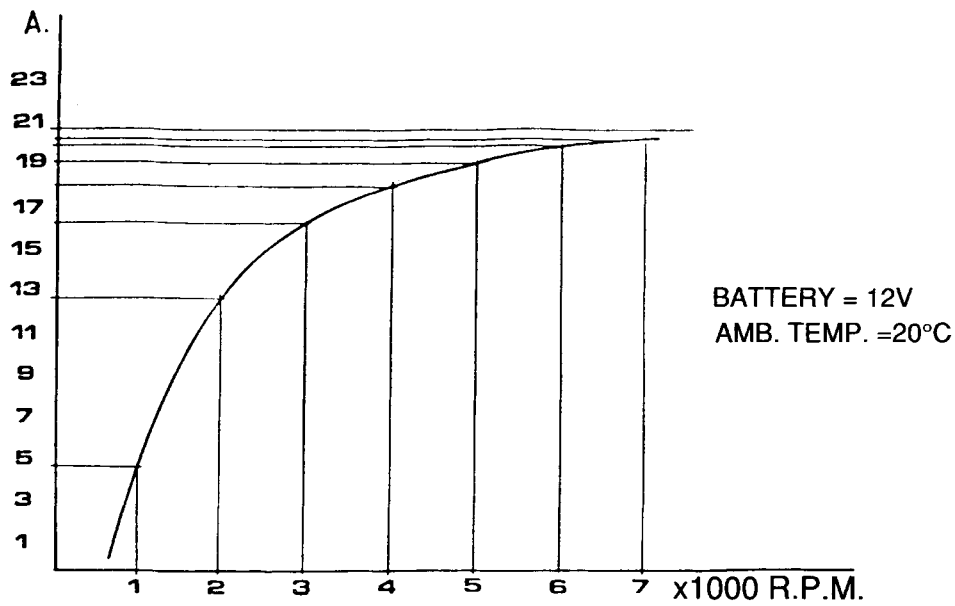
### 24.2. ALTERNATOR-GENERATOR (SAPRISA)



381

302

### LOAD CURRENT INTENSITY DIAGRAM



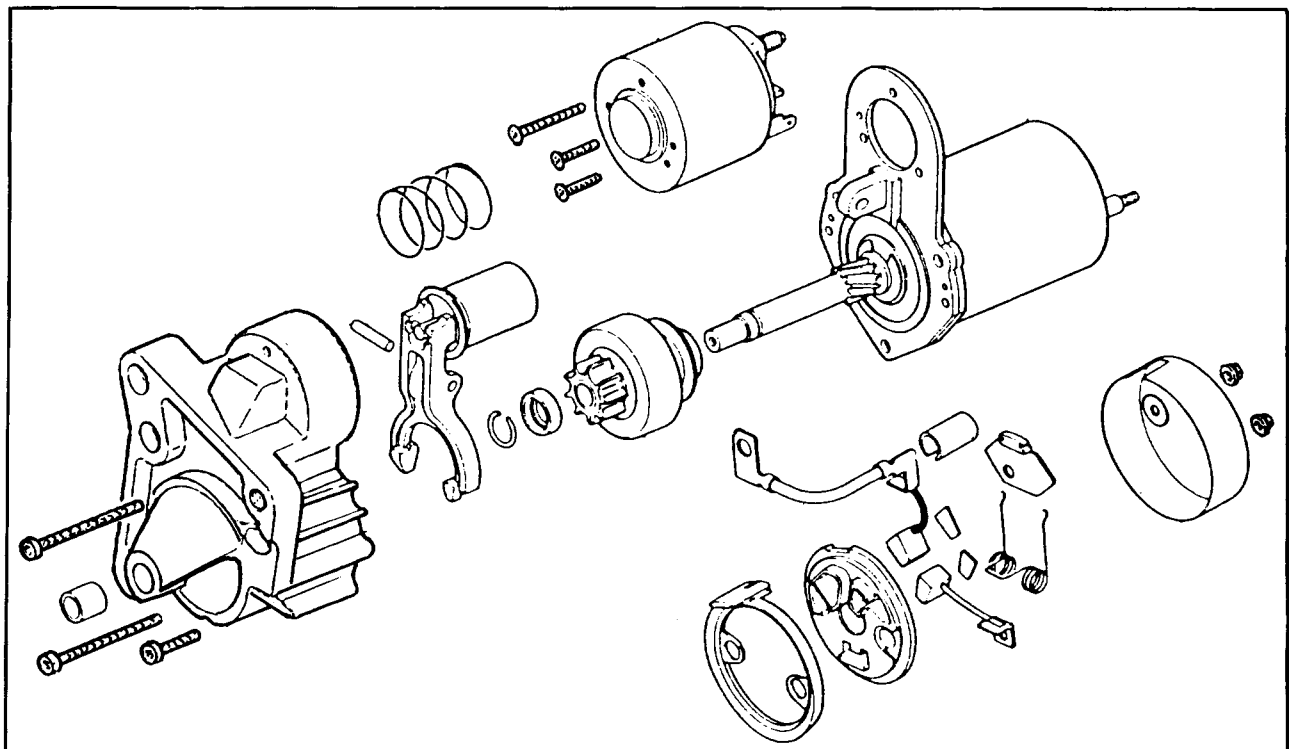
382

#### 24.5. STARTING MOTOR (VALEO)

| GENERAL CHARACTERISTICS |                  |
|-------------------------|------------------|
| Voltage                 | 12V              |
| Power                   | 1,2 Kw           |
| No-load torque          | 11 Nm            |
| Load torque             | 4,5 Nm           |
| Pinion                  | Z=9 mod. 2,5     |
| Pinion side rotation    | Counterclockwise |
| Speed                   | 1750 rpm         |
| No-load current         | 600 A            |
| Load current            | 230 A            |
| Weight                  | 2,8 Kg           |

#### **WARNING!**

**The starting motor must not be operated for more than 5 seconds; if the engine doesn't start immediately, wait for 10 seconds before starting again. In any case, press the operation push-button (START) with stopped motor only.**



383

## 24.13 ELECTRONIC IGNITION

### Ignition characteristics

Electronic advance change.

|                                     |         |
|-------------------------------------|---------|
| ■ Initial advance (fixed)           | 2°±3°   |
| ■ Max. advance (fixed + electronic) | 34°±35° |
| Air gap between detector and rotor: | 0,2±0,4 |

The electronic ignition requires almost no maintenance.

### TIMING (figg. 385-387)

The engine timing occurs when, in the explosion phase, with the R.H. cylinder in the T.D.C. (top dead center), the L.H. side of the ignition rotor flag A is positioned near the half of the sensor B (R.H. cylinder) on the pick up, identifiable through the black cable. If not, loosen the screws C, and, through a screwdriver, act on the groove E in order to rotate the pick-up holder plate.

Otherwise, it is possible to rotate the ignition device outer body by unscrewing the two lower screws.

For a more accurate advance control, use a stroboscopic gun.

With the engine at 4500 rpm, the mark 4 (max. advance) on the engine flywheel (see fig. 387) must be aligned with the reference 1 on the inspection hole side.

The reference D on the flywheel indicates the T.D.C. (R.H. cylinder).

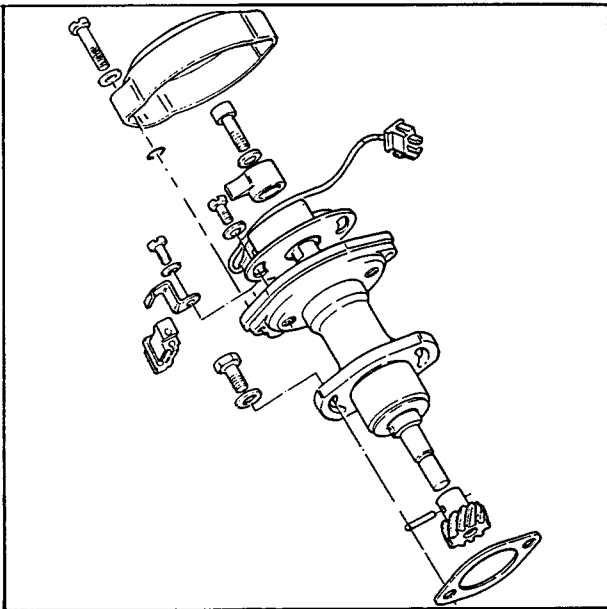
The reference 2 on the flywheel indicates the fixed advance.

### WARNING!

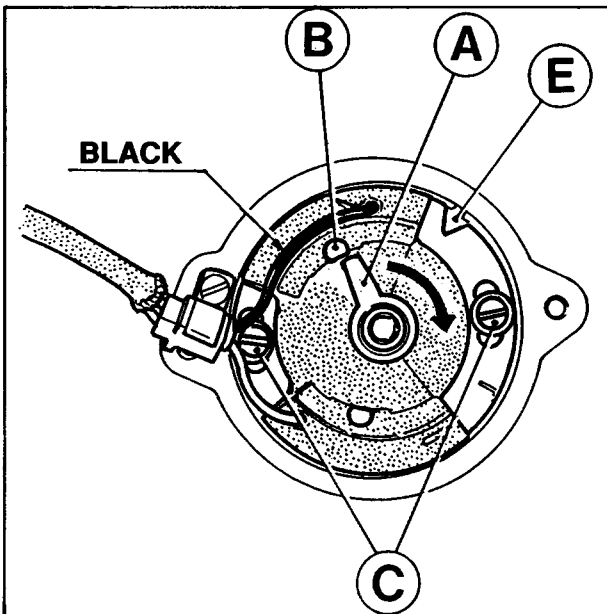
In order to prevent from damaging the electronic ignition system, note the following precautions:

- in case of battery disassembly or reassembly, make sure the ignition switch is in OFF position;
- don't disconnect the battery when the engine is on;
- control the perfect efficiency of electronic devices cables.

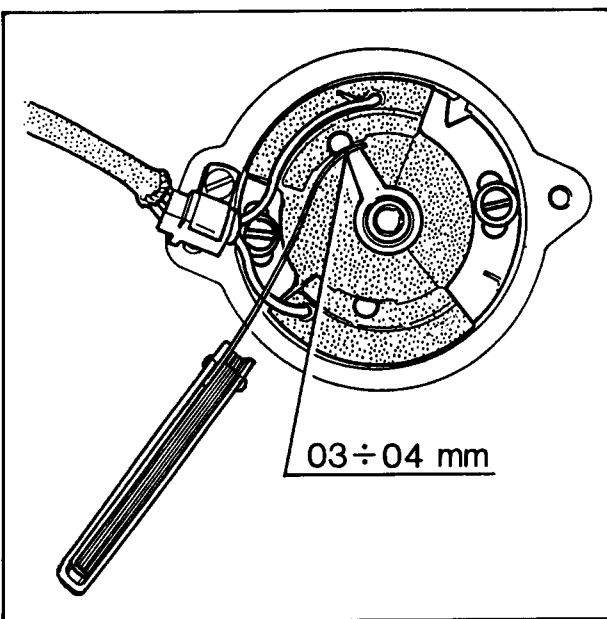
384



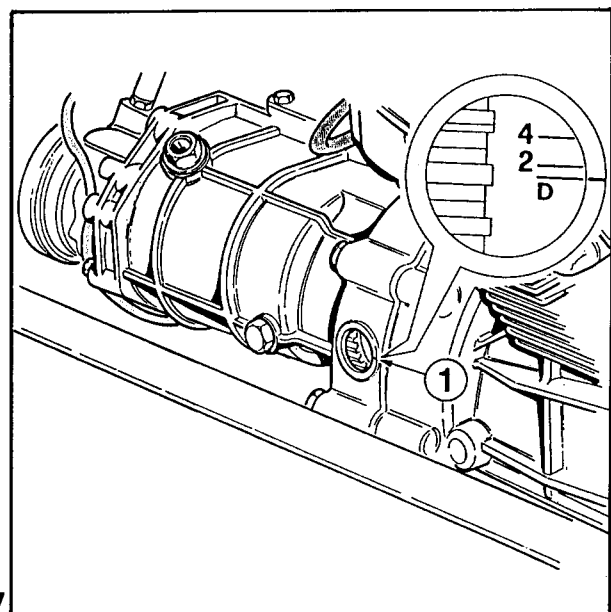
385



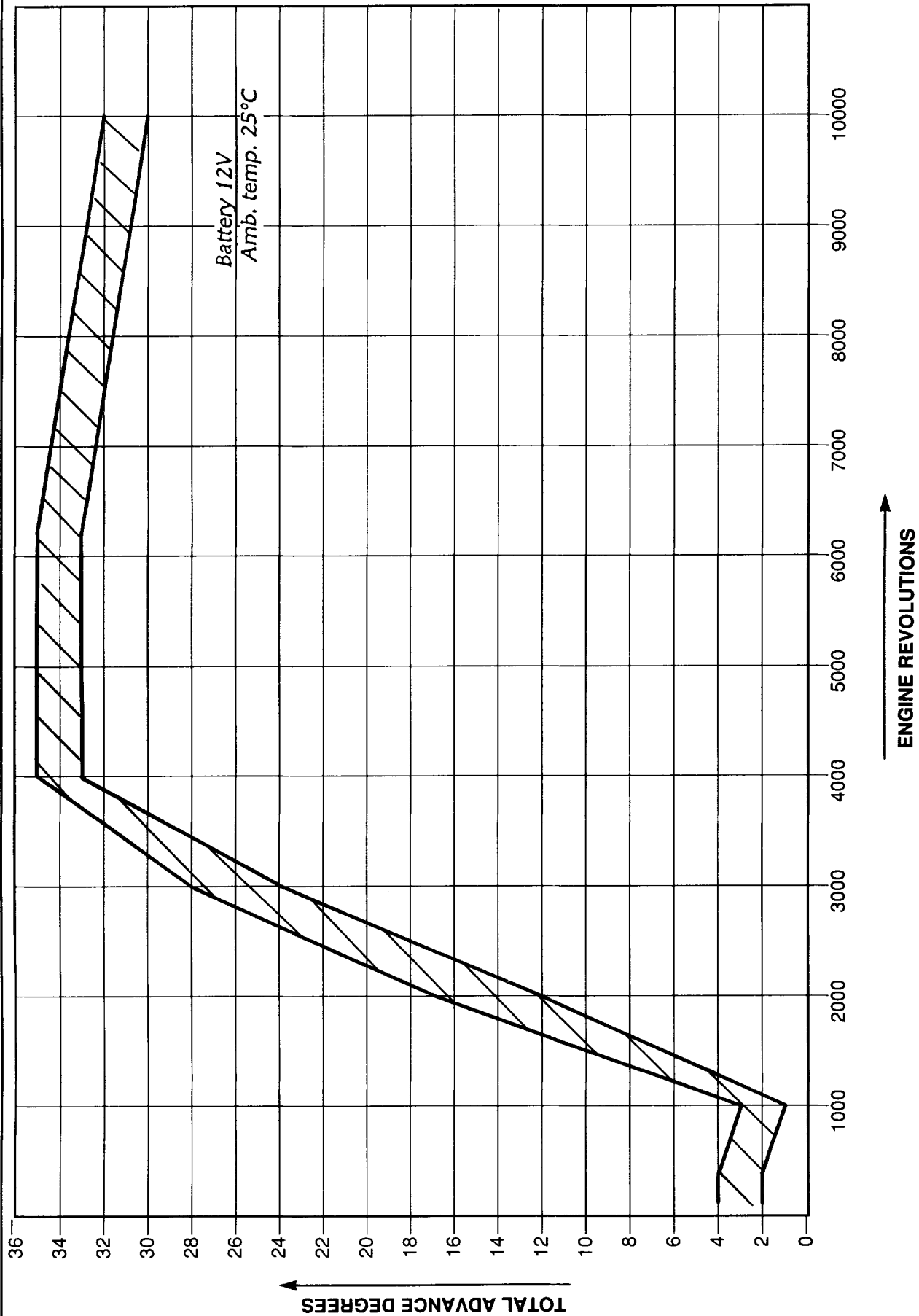
386



387



**ELECTRONIC IGNITION ADVANCE CURVE DIAGRAM**



## **25** ELECTRIC SYSTEM DIAGRAM

### **25.1. Electric system scheme legend**

- 1** Driving and traffic beam lamp (60/65 W)
- 2** Front parking light lamp (4 W)
- 3** R.H. direction indicator pilot light lamp
- 4** Speedometer lighting lamp
- 5** Revolution counter lighting lamp
- 6** L.H. direction indicator pilot light
- 7** 4-way Molex connector
- 8** Fuel level pilot light lamp
- 9** Oil pressure pilot light lamp
- 10** Generator pilot light lamp
- 11** "Neutral" pilot light lamp
- 12** Parking light pilot light lamp
- 13** Driving beam pilot light lamp
- 14** Simultaneous flasher switching
- 15** R.H. front direction indicator
- 16** Front brake stop switch
- 17** Ignition switch
- 18** L.H. front direction indicator
- 19** Bi-tonal horns
- 20** Engine start/stop device
- 21** "Neutral" position switch
- 22** Oil pressure switch
- 23** Flashing device (12V - 46W)
- 24** Direction indicators-horn-lights control device
- 25** Ignition sparking plugs
- 26** High voltage coils
- 27** Electronic devices for electronic ignition
- 28** Rear brake stop switch
- 29** Fuse-holder terminal switch
- 30** Fuel pilot light level transmitter
- 31** Voltage regulator
- 32** Alternator (14V - 20A)
- 33** Capacitor
- 34** Battery (12V - 24Ah)
- 35** Starting remote control switch
- 36** Starting motor
- 37** R.H. rear direction indicator
- 38** Stop and number plate light
- 39** L.H. rear direction indicator
- 40** Bi-tonal horns remote control switch
- 41** Pick up
- 42** 6-way AMP connector
- 43** 6-way Molex connector
- 44** Voltmeter
- 45** Clock
- 46** 4-way AMP connector
- 47** Direction indicators beep

**Fuse 1:** Acoustic warning - starting remote control switch; stop light.

**Fuse 2:** pilot lights (generator, oil pressure, neutral), driving beam, traffic beam, passing, stop light.

**Fuse 3:** parking light - direction indicators.

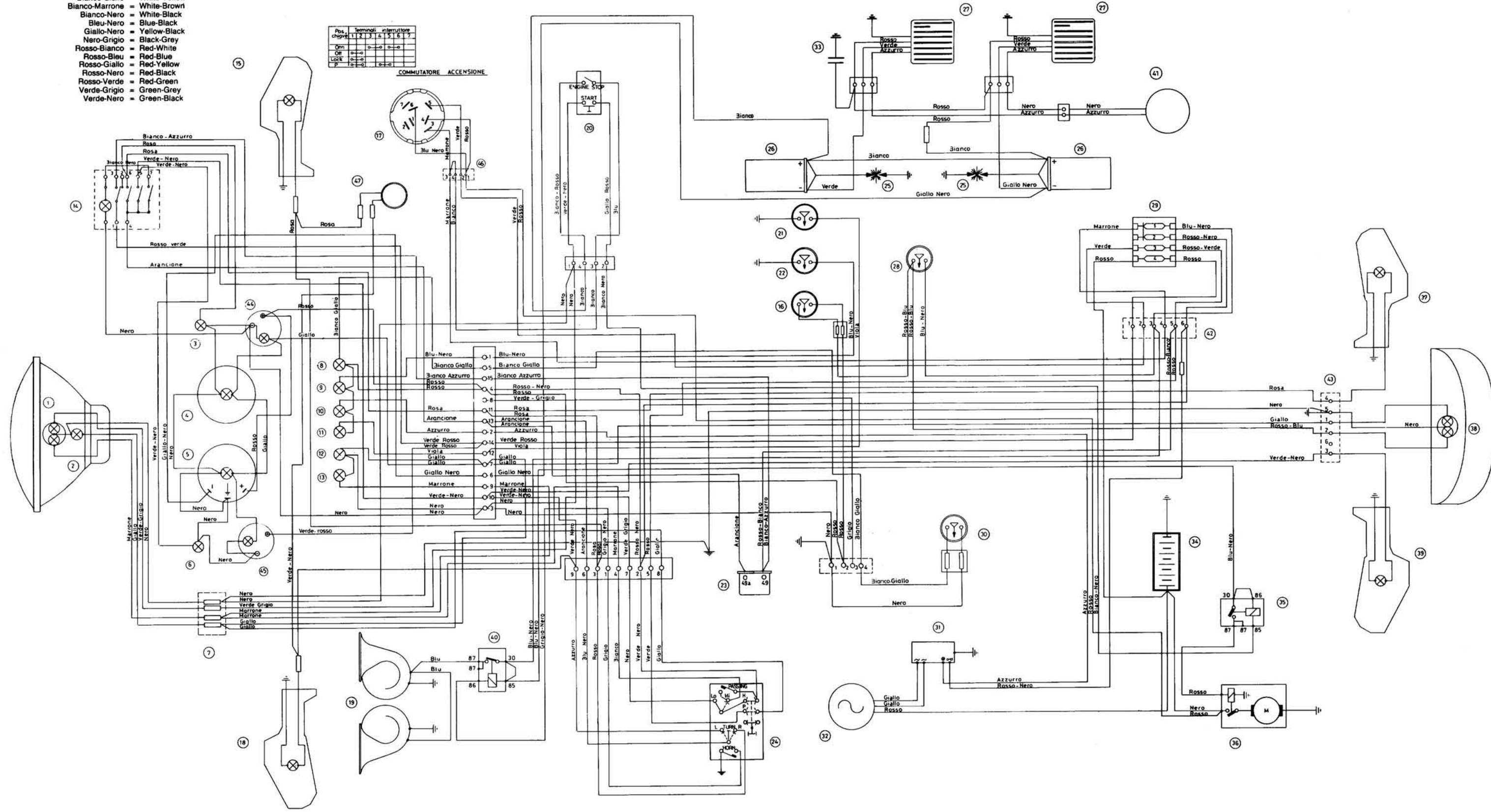
**Fuse 4:** emergency lights.



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

| Pos. chavi | Terminali | Interruttore |
|------------|-----------|--------------|
| 1          | 2         | 3            |
| 4          | 5         | 6            |
| 7          | 8         | 9            |
| 10         | 11        | 12           |
| 13         | 14        | 15           |
| 16         | 17        | 18           |
| 19         | 20        | 21           |
| 22         | 23        | 24           |
| 25         | 26        | 27           |
| 28         | 29        | 30           |
| 31         | 32        | 33           |
| 34         | 35        | 36           |
| 37         | 38        | 39           |
| 40         | 41        | 42           |
| 43         | 44        | 45           |
| 46         | 47        | 48           |
| 49         | 50        | 51           |
| 52         | 53        | 54           |
| 55         | 56        | 57           |
| 58         | 59        | 60           |
| 61         | 62        | 63           |
| 64         | 65        | 66           |
| 67         | 68        | 69           |
| 70         | 71        | 72           |
| 73         | 74        | 75           |
| 76         | 77        | 78           |
| 79         | 80        | 81           |
| 82         | 83        | 84           |
| 85         | 86        | 87           |
| 88         | 89        | 90           |
| 91         | 92        | 93           |
| 94         | 95        | 96           |
| 97         | 98        | 99           |
| 100        | 101       | 102          |

COMMUTATORE ACCENSIONE



- Arancio = Orange
- Azzurro = Light blue
- Bianco = White
- Giallo = Yellow
- Grigio = Grey
- Marrone = Brown
- Nero = Black
- Rosa = Pink
- Rosso = Red
- Verde = Green
- Viola = Violet
- Bianco-Azzurro = White-Light blue
- Bianco-Giallo = White-Yellow
- Bianco-Marrone = White-Brown
- Bianco-Nero = White-Black
- Bleu-Nero = Blue-Black
- Giallo-Nero = Yellow-Black
- Nero-Grigio = Black-Grey
- Rosso-Bianco = Red-White
- Rosso-Bleu = Red-Blue
- Rosso-Giallo = Red-Yellow
- Rosso-Nero = Red-Black
- Rosso-Verde = Red-Green
- Verde-Grigio = Green-Grey
- Verde-Nero = Green-Black

| Pos. chiave | Terminali interruttore |   |   |   |   |   |   |
|-------------|------------------------|---|---|---|---|---|---|
|             | 1                      | 2 | 3 | 4 | 5 | 6 | 7 |
| On          | a                      | a | a | a | a | a | a |
| Off         | a                      | a | a | a | a | a | a |
| Lock        | a                      | a | a | a | a | a | a |
| P           | a                      | a | a | a | a | a | a |

COMMUTATORE ACCENSIONE

