



# 850 **Le Mans** **II**

## WORKSHOP MANUAL



COD. 14 92 01 56

Additions and Changes to the Worksp Manual for V 1000 G 5 - 1000 SP - Cod. 17 92 01 61

The illustrations and descriptions in this manual are indicative only, the manufacturer reserving itself the right to introduce without notice any modification it may deem necessary for a better performance of the motorcycle or for constructive or commercial reasons.

SEIMM MOTO GUZZI - SERVIZIO PUBBLICAZIONI TECNICHE

COD. 14 92 01 56

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## HINTS ON THE PROPER USE OF THIS MOTORCYCLE

Due to its exceptionally high feature, this motorcycle can be considered as in the racing machine class and as such has to be ridden in a sportsmanlike way.

For this very reason, it has met the favour of many motorcycle fans but, same as for all racing bykes, it has to be used accordingly.

For instance, for fuel feed this model is fitted with carburettors with pumps and if the twist grip is not used correctly in accordance with the engine revolutions, there might be an excess of fuel which is ejected by the carburettors, similarly as occurs on sporting cars that fit same type carburettors.

It is obvious that if in such conditions the engine backfires, the risk of a fire is quite considerable. When travelling at low speed or in other words at low revs, it is necessary for the throttle grip to be used with care since the immission of a greater quantity of fuel might not be fully absorbed by the engine.

At high speed, also in case of abrupt accelerations, the fuel is entirely absorbed and used up by the engine, thus eliminating this risk and conferring to this model the brilliant «kicking up» qualities that make it one of its outstanding features.



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## 25 MAIN FEATURES

<b>ENGINE</b>	4-stroke
— cylinder disposition	«V» type 90°
— bore	83 mm
— stroke	78 mm
— displacement	844 cc
— compression ratio	10.2
— max torque	7.8 kgm at 6600 rpm
<b>VALVE GEAR</b>	OHV push rod operated
<b>CARBURATION</b>	2 «Dell'Orto» carburetors PHF 36 B(D) (right) PHF 36 B(S) (left)
<b>LUBRICATION</b>	oil pressure by gear pump wire gauze and cartridge filters in the oil sump oil pressure 3.8-4.2 kg/cm <sup>2</sup> (54-60 lbs. sq.in), controlled by relief valve in the sump oil pressure solenoid
<b>GENERATOR ALTERNATOR</b>	located at the front end of the crankshaft (14 V - 20 A)
<b>IGNITION</b>	battery-coil with twin contact breaker
— ignition data	initial advance (fixed) 8° automatic advance 26° total advance 34°
— contact breaker points gap	0.37 ÷ 0.43 mm (.014-.017")
— spark plug type	Bosch W 230 T 30 Champion N 9 Y Lodge 2 HLN Y
— spark plug points gap	0.5 mm (.019")
— ignition coils	2 fitted on the frame over the engine unit
<b>STARTING</b>	electric starter (12 V - 0.7 KW) with electromagnetic ratchet control ring gear secured to flywheel starter button (START) on the R/H side of the handlebar
<b>TRANSMISSION</b>	
<b>CLUTCH</b>	dry type - 2 driven plates on the flywheel lever controlled from the handlebar (left)
<b>PRIMARY DRIVE</b>	by gears, ratio 1 : 1.235 (Z = 17/21)
<b>GEARBOX</b>	5 speeds frontal engagement, constant mesh gears cush drive incorporated foot controlled on the L/H side of the vehicle
— ratios:	
low gear	1 to 2 (14/28)
2nd gear	1 to 1.388 (18/25)
3rd gear	1 to 1.047 (21/22)
4th gear	1 to 0.869 (23/20)
high gear	1 to 0.750 (28/21)

SECONDARY DRIVE	cardan shaft and level gear set
— ratio	1 to 4.714 (7/33)
— overall gear ratios:	
low gear	1 to 11.643
2nd gear	1 to 8.080
3rd gear	1 to 6.095
4th gear	1 to 5.059
high gear	1 to 4.366
<b>FRAME</b>	
SUSPENSION	cradle type - tubular structure
— front	telescopic front fork «MOTO GUZZI patent»
— rear	swinging arm with externally adjustable springs
WHEELS	rims cast in light alloy, rim size
— front	WM 3/2.15 × 18"
— rear	WM 3/2.15 × 18"
TIRES	
— front	Pirelli 100/90 H 18 (MT 18) Michelin 3.50 H 18 (M 45) Metzeler 3.50 H 18 (Rille)
— rear	Pirelli 110/90 H 18 (MT 18) Michelin 4.00 H 18 (M 45) Metzeler 4.10 V 18 (Block C7) <i>Tire brand fitted alternatively to comply with the different standards in each country.</i>
BRAKES	
— front	hydraulic disc - twin braking cylinders caliper - hand controlled from the R/H side handlebar hydraulic circuit independent from rear brake: disc dia. 300 mm (11.8") braking cylinder dia. 38 mm (1.49") master cylinder dia. 12.7 mm (.5")
— rear	hydraulic disc - twin cylinder caliper foot controlled on the R/H side of the vehicle: disc dia. 242 mm (9.5") braking cylinder dia. 38 mm (1.496") master cylinder dia. 15.875 mm (.6249") the rear brake is hydraulically interconnected to a second front brake featured and dimensioned same as the R/H lever controlled brake
OVERALL DIMENSIONS AND WEIGHTS	
— wheel base	1.485 m (58.4")
— length	2.190 m (86")
— width	0.610 m (24")
— height	1.210 m (47")
— ground clearance	0.175 m (6.9")
— dry weight	196 kg (431 lbs)
PERFORMANCES	
— max speed	solo riding: 230 km/h (144 mph)
— fuel consumption	6.5 lts km (abt 32 mpg)
FUEL AND OIL CAPACITIES	
— fuel tank	22.5 lts (5,84 us gls) Petrol Super (98/100 NO-RM)
— reserve oil sump	3 lts (3 <sup>1</sup> / <sub>4</sub> quarts) «Agip SINT 2000 SAE 10 W/50»
— gearbox	0.750 lts (1,3/4 pints) «Agip F.1 Rotra MP SAE 90»
— rear drive box (fevel gears)	0.250 lts (abt 9 oz) of which: 0.230 lts (8 <sup>1</sup> / <sub>4</sub> oz) «Agip F.1 Rotra MP SAE 90» 0.020 lts (3/4 oz) «Agip Rocol ASO/R» (Molikote type «A»)
— telescopic fork (each leg)	0.090 lts (3 oz) «Agip F.1 ATF Dexron»
— front and rear braking circuits	«Agip F.1 Brake Fluid - SAE J 1703 B»

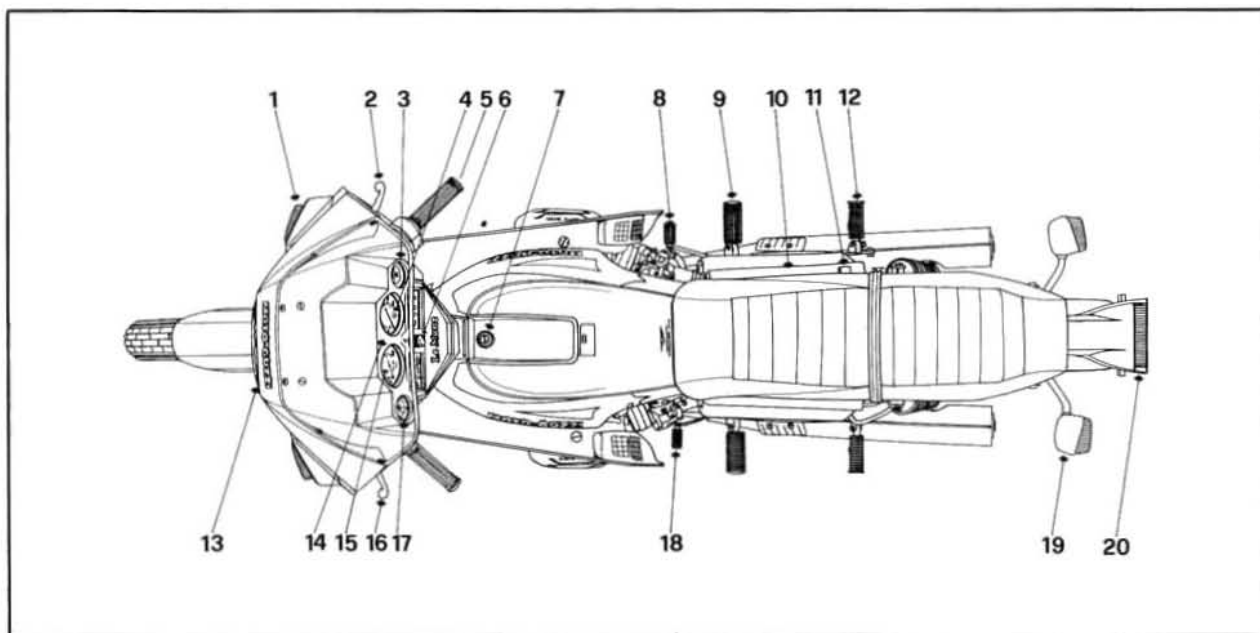


## 26 CONTROLS AND ACCESSORIES

(fig. 206)

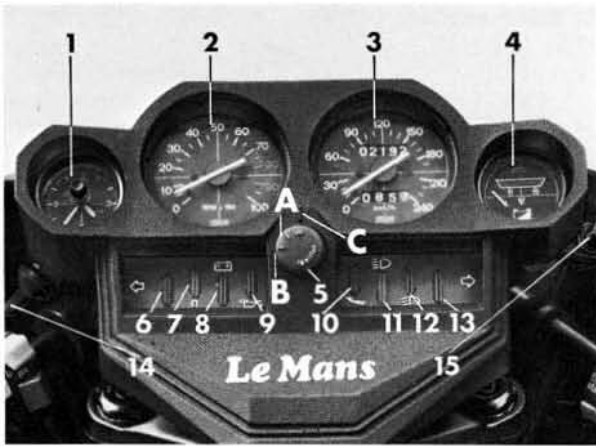
- 1 Front turn signal lights.
- 2 Control lever, R/H front brake.
- 3 Voltmeter.
- 4 Speedometer.
- 5 Throttle control grip.
- 6 Ignition key.
- 7 Fuel tank lock set.
- 8 Left front brake and rear brake pedal.
- 9 Front foot-rest.
- 10 Master cylinder for left front and rear brake.
- 11 Saddle lifting lever.
- 12 Rear foot-rest.
- 13 Headlight.
- 14 Panel board.
- 15 Rev-counter.
- 16 Clutch lever.
- 17 Clock.
- 18 Gear selector pedal.
- 19 Rear turn light.
- 20 Tail light.

*Right or left in the text is as seen by the rider astride the saddle.*



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### 27.1 PANEL BOARD (fig. 207)

- 1 Clock.
- 2 Rev-counter.
- 3 Speedometer.
- 4 Voltmeter.
- 5 Ignition key:
  - «OFF» In line with mark «C» on the panel: machine at standstill. Key removable.
  - «A» In line with mark «C» on the panel (turned clockwise): machine ready to be started. All contacts «on». Key not removable.
  - «B» In line with mark «C» on the panel (turned clockwise). With switch «A» (fig. 5) in position «O» parking light is «on». Key removable.
- 6 Warning light (green), L/H turn signal.
- 7 Warning light (orange or green), gearbox in neutral position when lit.
- 8 Warning light (red) indicating insufficient current from generator. Should go out when the engine has reached a certain number of revs.
- 9 Warning light (red). Oil pressure indicator. Goes out when pressure is sufficient for normal engine lubrication. If not, the pressure is incorrect and the engine has to be stopped immediately and oil level topped up. The lubrication system should also be checked over.
- 10 Warning light (red) indicating low level of oil in the reservoir-master cylinder for the front left and rear brakes. When this light comes on, top up the reservoir ensuring there are no leakages in the hydraulic circuit.
- 11 Warning light (blue) indicating high beam on.
- 12 Warning light (green) indicating parking lights on.
- 13 Warning light (green) right turn signal.
- 14 Switch for emergency flashers.
- 15 Zero reset for speedometer.

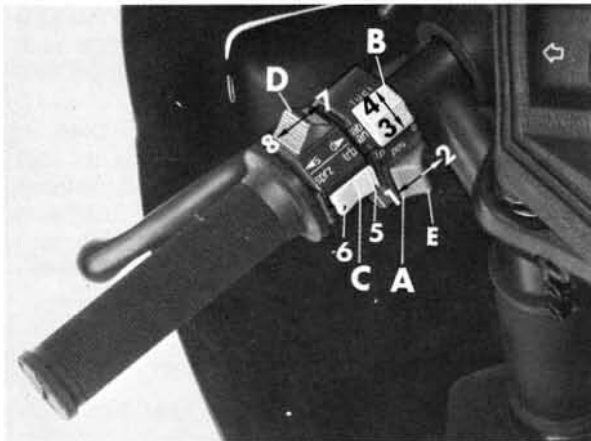
### 27.2 LIGHT SWITCHES (fig. 208)

Are fitted on the L/H side handlebar.

**Switch «A»:**

- «E» parking light;
- «1» dual filament bulb lighting;
- «2» lights off.

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**Switch «B»:**

With switch «A» in position «1»:

- «3» low beam;
- «4» high beam.

**27.3 HORN FLASHING LIGHT AND TURN SIGNAL CONTROLS (fig. 208)**

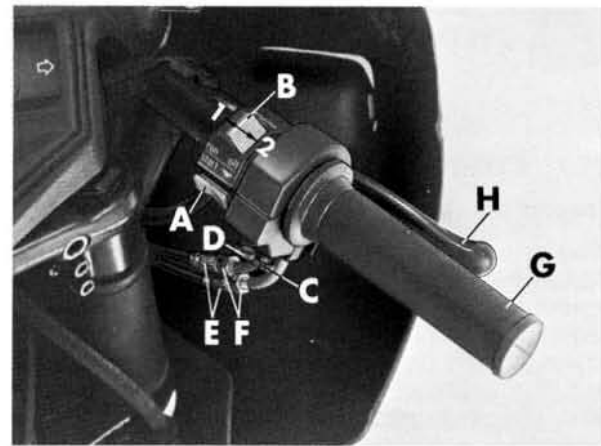
Are fitted on the left handlebar.

**Button «C»:**

- «5» (horn) Horn control.
- «6» (flash) Flashing light control.

**Switch «D»:**

- «7» right turn light;
- «8» left turn light.

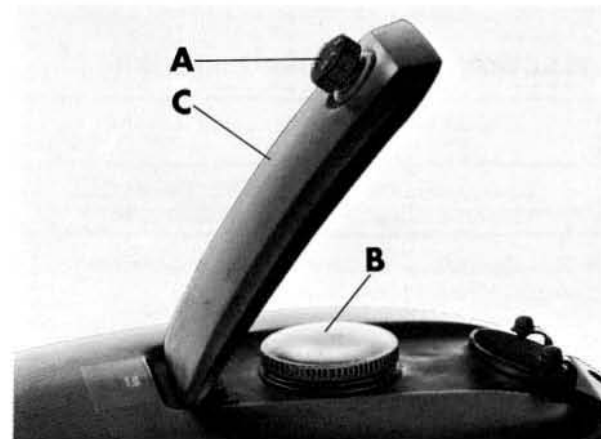


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**27.4 ENGINE STARTING AND STOPPING BUTTONS (fig. 209)**

Are on the R/H side of the handlebar. With mark «A» on the key in line with mark «C» on the panel (see fig. 207) the machine is ready to be started. To start the engine, proceed as follows:

- ensure switch «B» is in position «1»;
- pull the clutch lever completely;
- if the engine is cold, set the starter lever to position «A» (see fig. 217);
- press start button «A».



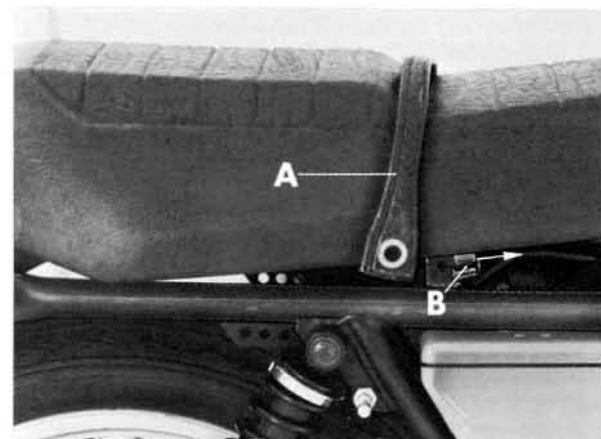
210

**27.5 FUEL FILLER CAP (fig. 210)**

To access to filler cap «B», turn key «A» and raise cover «C».

**27.6 SADDLE LIFTING DEVICE (fig. 211)**

Remove pin from the R/H side, remove grab strap «A» and press lever «B» forward.



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**28.1 CYLINDERS** (see fig. 212)

**Inspection**

The cylinder bore should be measured at 3 different heights in a transversal and longitudinal directions (on top, at center, and at the base). Should the sleeve be worn down to more than the specified limits, it will be necessary to regrind the cylinder, bearing in mind that pistons and piston rings are available in the following oversizes: 4/10 (.01574") and 6/10 (0.02362").

**CYLINDER**

ORIGINAL mm	4/10 mm (.01574")	6/10 mm (.02362")
83.000-83.018 (3.2677-3.2854")	83.400-83.418 (3.334-3.341")	83.600-83.618 (3.290-3.297")

**SELECTION OF CYLINDER DIAMETER**

CLASS «A» mm	CLASS «B» mm
83.000-83.009 (3.2677-3.2678")	83.009-83.018 (3.2678-3.2681")

N.B. *Cylinders must always be matched with pistons of same class.*

**28.2 PISTONS** (see fig. 212 and 213)

At the time an engine is overhauled the piston crown and the piston ring slots should be cleaned of all carbon deposits before checking piston-cylinder clearance.

If this exceed the limits indicated in the table, then it will be necessary to regrind the cylinder bearing in mind that the pistons are supplied in the following oversizes: 4/10 (.01574") 6/10 (.02362").

For engine balancing, both pistons should be the same weight. The maximum admissible difference should never exceed 1.5 grams (.05 oz). The selection measurement should be taken at 22 mm (.866") from the piston base (see drwg fig. 349 and selection table).

When fitting a piston, take note of the selection mark stamped on the piston, also that wording «SCA» (exhaust) is turned against the cylinder exhaust port.

**PISTON**

ORIGINAL mm	4/10 mm (.01574")	6/10 mm (.02362")
82.923-82.941 (3.2646-3.2653")	83.325-83.341 (3.2804-3.2811")	83.523-83.541 (3.2883-3.2889")

**SELECTION OF PISTON DIAMETER**

CLASS «A» mm	CLASS «B» mm
82.923-82.932 (3.2646-3.2650")	82.932-82.941 (3.2650-3.2654")

N.B. *Pistons must always be matched with cylinders of same class («A» with «A», «B» with «B»).*

**28.3 FITTING THE PISTON ON CON-ROD**

Before re-fitting the piston on the con-rod, heat it up in an oil bath at about 60 °C (140 °F) to lightly expand the hole and so make introduction of the piston easier.

**28.4 PISTON PIN - PISTON HOLE CLEARANCES** (see drwg n. 213)

Each piston fits 3 piston rings:

**1 Top compression ring**

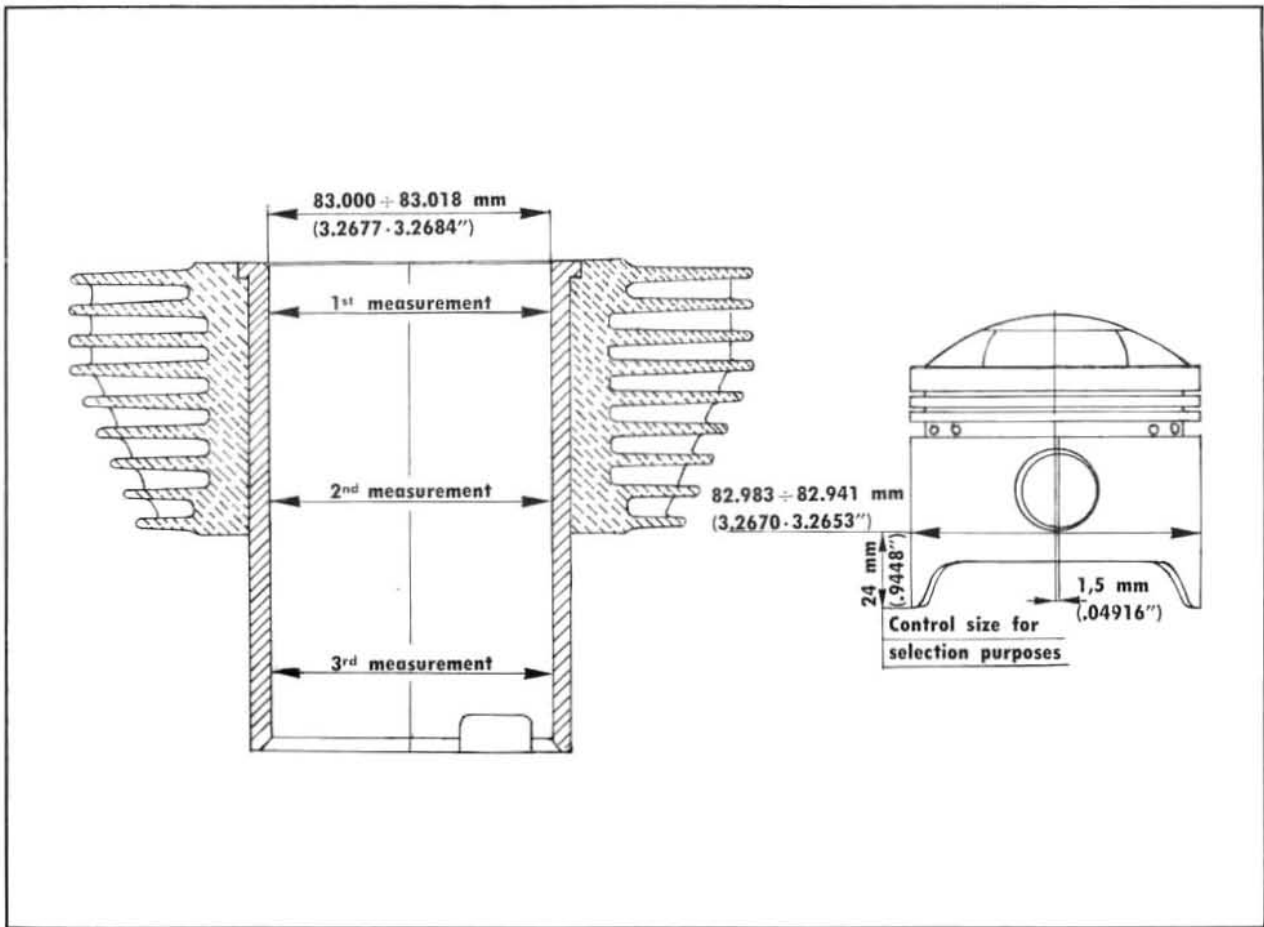
- Original production  $\varnothing$  83.000 mm (3.267")
- $\varnothing$  0/5 4/10 mm (.01574") 83.400 mm (3.282")
- $\varnothing$  0/5 6/10 mm (.02362") 83.600 mm (3.291")
- Piston ring thickness 1.490-1.478 mm (.05866-.05818")
- Piston ring gap 0.30-0.45 mm (.0118-.0177")
- Piston ring thickness - piston groove clearance 0.030-0.062 mm (.0011-.0024")

**2 Intermediate stepped oil scraper**

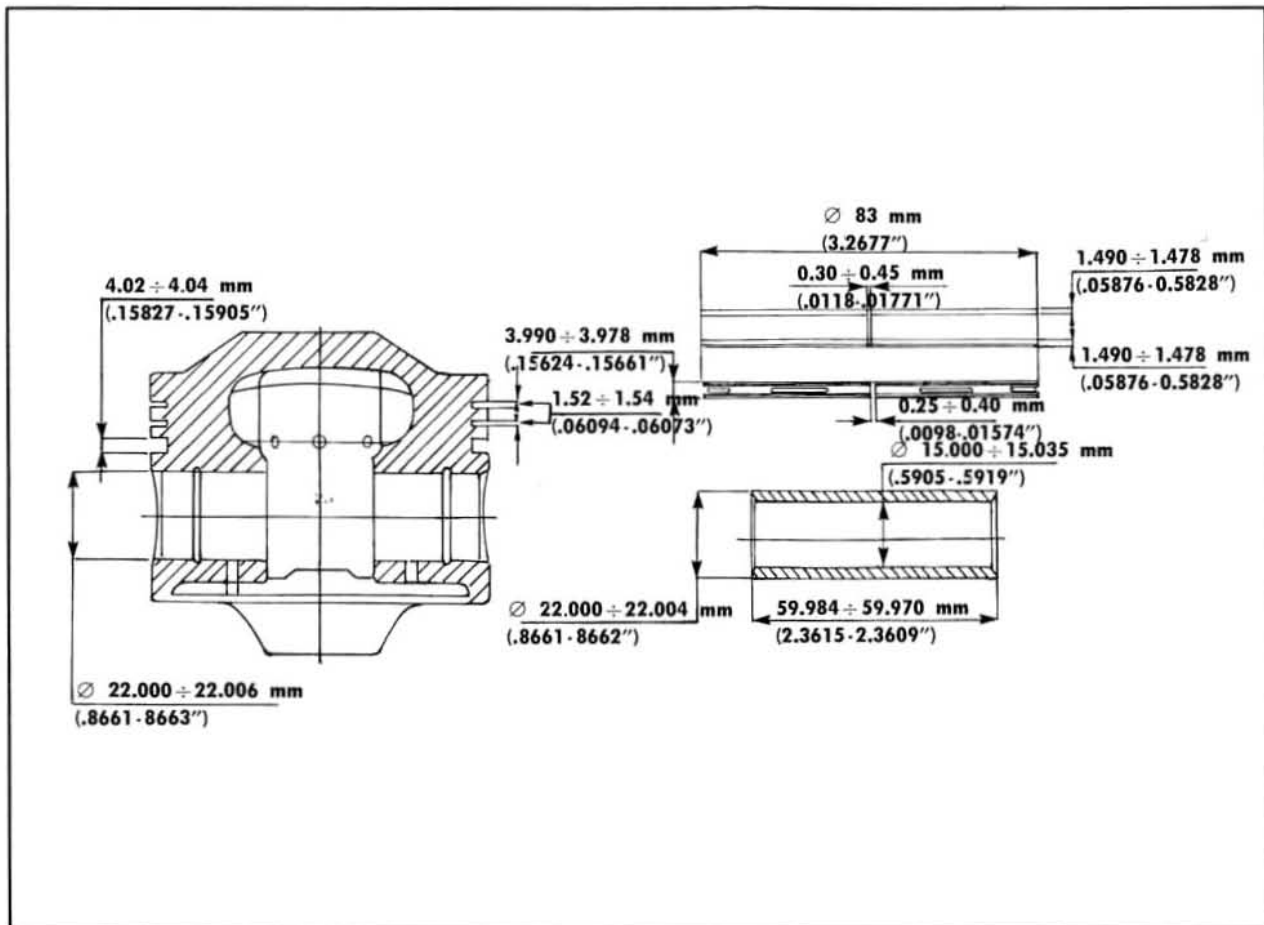
- Original production  $\varnothing$  83.000 mm (3.267")
- $\varnothing$  0/5 4/10 mm (.01574") 83.400 mm (3.282")
- $\varnothing$  0/5 6/10 mm (.02362") 83.600 mm (3.290")
- Piston ring thickness 1.490-1.478 mm (.05866-.05818")
- Piston ring gap 0.30-0.45 mm (.0118-.0177")
- Piston ring thickness - piston groove clearance 0.030-0.062 mm (.0011-.0024")

**3 Bottom oil scraper with spiral**

- Original production  $\varnothing$  83.000 mm (3.267")
- $\varnothing$  0/5 4/10 mm (.01574") 83.400 mm (3.282")
- $\varnothing$  0/5 6/10 mm (.02362") 83.600 mm (3.291")
- Piston ring thickness 3.900-3.878 mm (.153-.146")
- Piston ring gap 0.25-0.40 mm (.0098-.015")
- Piston ring thickness - piston groove clearance 0.042-0.060 mm (.0016-.0023")



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213

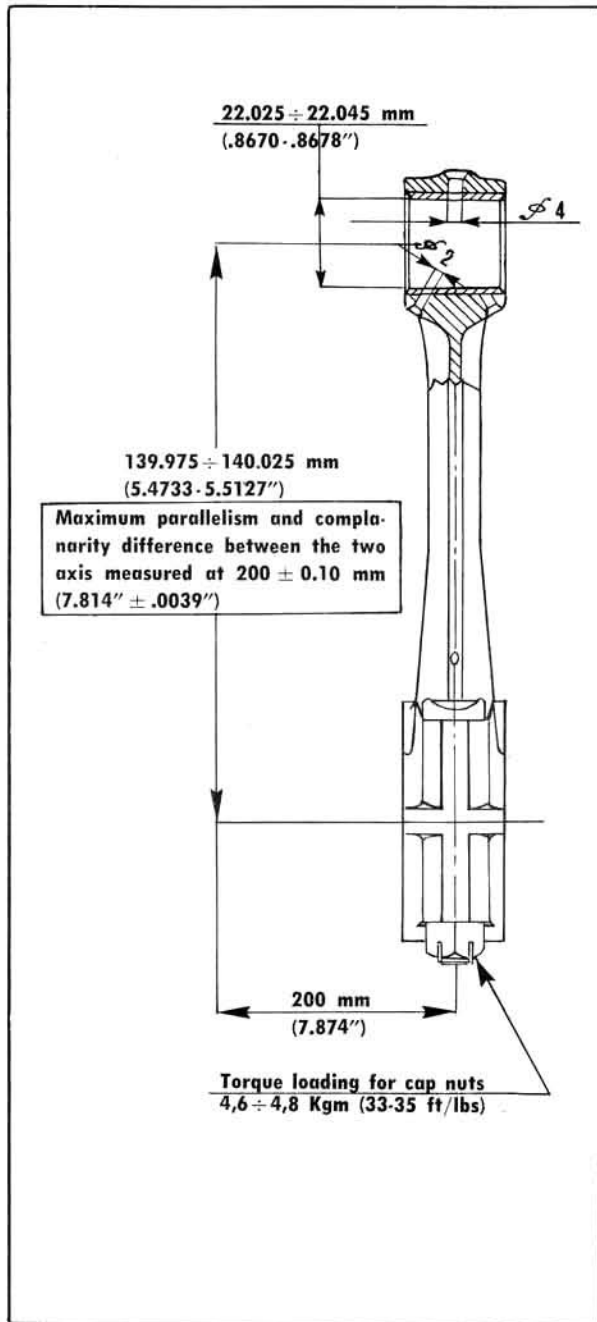
**29.1 CONNECTING RODS**

(see dwgs 214 and 215)

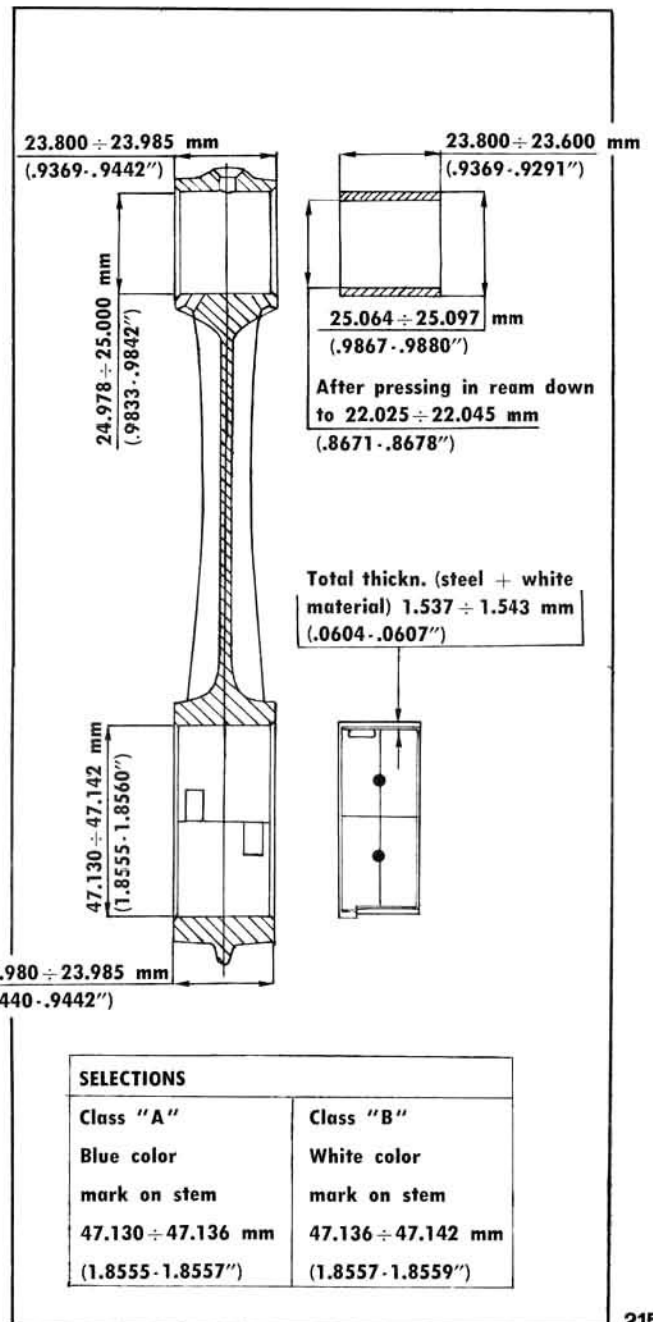
Cap nuts torque loading kgm 4.6-4.8  
(33-35 ft/lbs).

**SELECTION CON-RODS**

CLASS «A» (Blue colour on stem) mm	CLASS «B» (White colour on stem) mm
47.130-47.136 (1.8555-1.8557")	47.136-47.142 (1.8557-1.8559")



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SELECTIONS	
Class «A» Blue color mark on stem	Class «B» White color mark on stem
47.130 ÷ 47.136 mm (1.8555 - 1.8557")	47.136 ÷ 47.142 mm (1.8557 - 1.8559")

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## 29.2 CRANKSHAFT (dwg n. 216)

### Crankpin diameter:

ORIGINAL CRANKPIN SIZE mm	U/S BEARING		
	0.254 mm (.010")	0.508 mm (.020")	0.762 mm (.030")
44.008-44.020 (1.7325-1.7330")	43.754-43.766 (1.7225-1.7230")	43.500-43.512 (1.7125-1.7130")	43.246-43.258 (1.7026-1.7030")

### SELECTION OF CRANKSHAFT

CLASS «A» (Blue mark at flywheel end) mm	CLASS «B» (White mark at flywheel end) mm
44.008-44.014 (1.7325-1.7327")	44.014-44.020 (1.7327-1.7330")

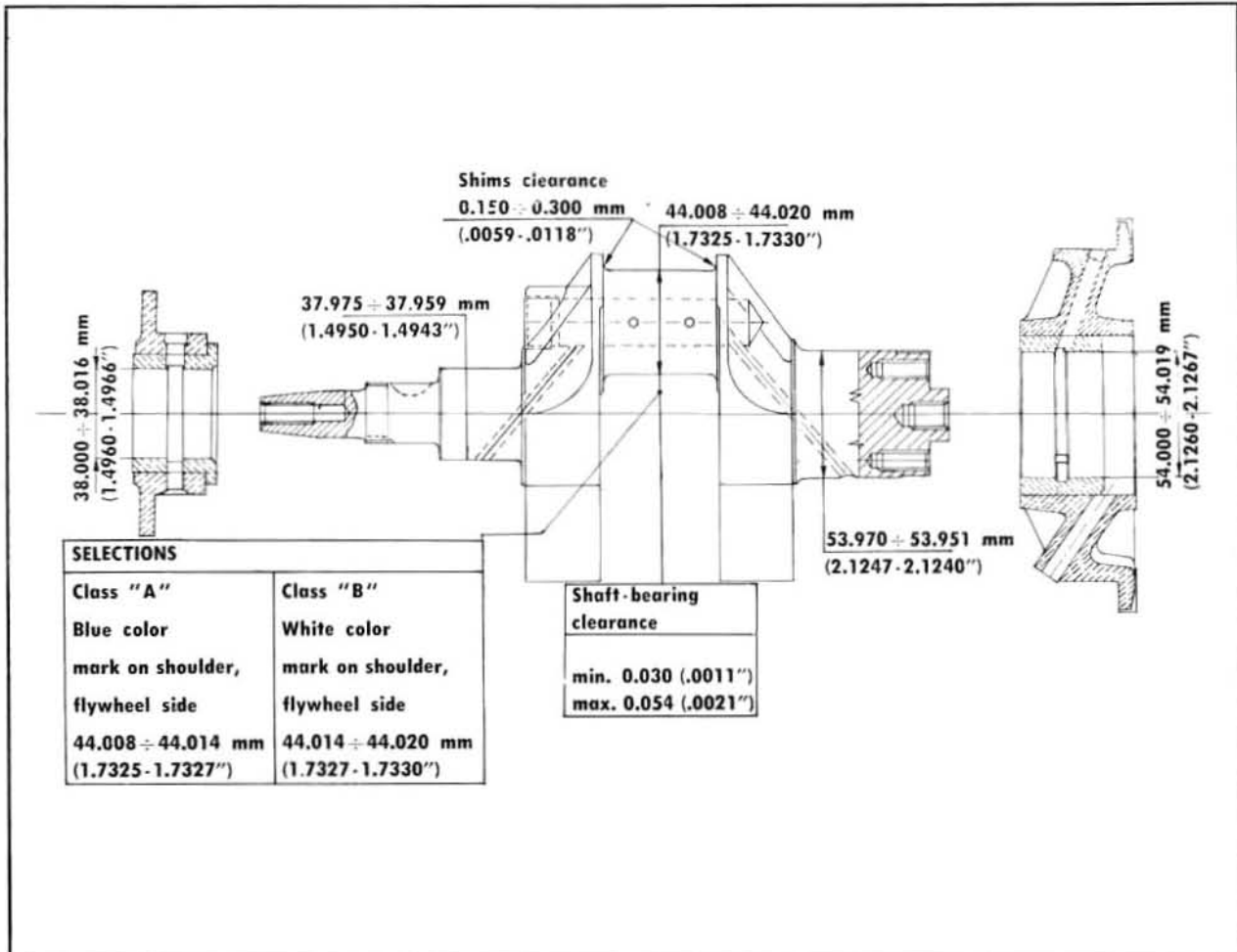
### Crankpin - bearing clearance:

- minimum 0.030 mm (.0011");
- maximum 0.054 mm (.0021").

### CHECKING WEIGHT FOR ENGINE BALANCING

The con-rod complete with nuts and bolts should be of same weight. Max permissible difference: 3 grams.

The crankshaft is statically balanced by adding a weight of 1.586 ÷ 1.616 kg (3.49-3.57 lbs).





**30.1 CARBURETTORS** (fig. 217)

2 Dell'Orto carburetors «PHF 36 B(D)» (right), «PHF 36 B(S)» (left).

**Controls**

- Throttle control grip on the right handlebar.
- Starter lever for cold engine starts on the left hand cylinder rocker cover.

«A» Start position.

«B» Riding position.

**Carburettor settings**

Choke	36 mm Ø
Throttle valve	60
Atomizer	265 A B
Main jet	140
Idling jet	60
Starter jet	70
Pump jet	38
Taper needle	K 5 (2nd notch)
Float	10 grams
Idling screw:	1 1/2 turn open.

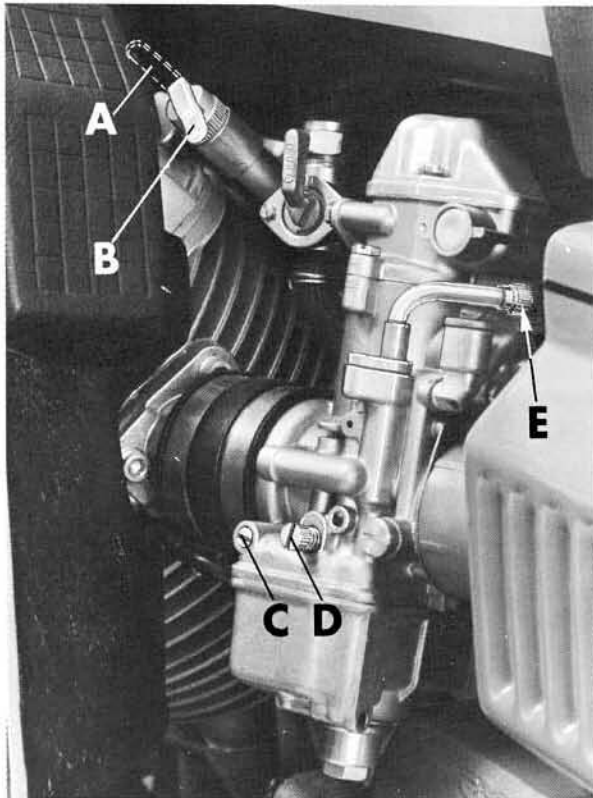
**30.2 FLOATS LEVELLING**

See para «15.2» in chapter «Carburation». The only difference is the checking template part N. 14 92 69 50. Being these 10 grams floats the size from the carburettor body to the float top should be 23.5 mm (.96") see fig. 84.

**30.3 ADJUSTING IDLING SPEED WITHOUT VACUOMETER** (fig. 217)

Proceed as follows:

- 1 Ensure that with starter lever in position «B» there is about 3 mm (.118") between the starter cable ends and adjusting screws «E» for both carburetors.
- 2 Ensure that with the throttle grip fully closed there is a play of about 1-1.5 mm (.039-.059"). If not, loosen nuts «F» and screw in or out cable tensioners «E». At the end of this operation tighten nuts «F» (fig. 209).
- 3 Run the engine up to its normal operating temperature. Screw idling screws «C» fully in and then screw them out one and a half turn.
- 4 Using both hands at the same time, check if the exhaust pipe pressures are equal. If there is any noticeable pressure difference, operate on screw «D» of one carburettor until the pressure will be the same as the other (idling speed will have to be kept at about 1000-1100 rpm and accordingly it may be necessary to screw in the screw of the carburettor for the cylinder giving a lower exhaust pressure, or screw out the screw of the carburettor for the cylinder giving a higher exhaust pressure.





5 Acting on screws «C» obtain the best carburation for each cylinder (this will be noticed by a slight increase of rpm) and adjust the tick-over speed according to point 4.

6 Disconnect one spark plug lead at a time and check that the engine in both cases stops after firing the same number of strokes. If this does not occur, screw out screw «D» of the carburettor for the cylinder that makes the engine fire more strokes or screw in the screw of the carburettor making the engine fire less strokes.

7 Adjust idling speed at 1000-1100 rpm by screwing in or out both screws «D» by the same amount.

8 Ensure that the slides open simultaneously by proceeding as follows: by the assistance of a second person, gradually turn the throttle control grip and check that the exhaust pipe pressure increases in synchronization, using both your hands. If the pressure increase of one cylinder is advanced, act on its carburettor by gradually screwing in adjuster «E» after loosening conternut «F» (fig. 209) until the synchronization of both exhaust pipe pressures is reached.

#### 30.4 CHECKING THE CARBURATION WITH A VACUOMETER

Proceed as follows:

1 Make sure that with starter lever in the «B» position there is a clearance of about 3 mm (.118") between the starter cable ends and the wire adjusting screws «E» of both carburettors (fig. 217).

2 Ensure that with the twist grip fully closed between the cable ends and cable adjusters «E» (at the handlebar end) there is a clearance of 1-1.5 mm (.039-.059") for both carburettors. If not, loosen conternuts «F» and screw in or out adjusting screws «E» not forgetting to re-tighten nuts «F» after adjustment (see fig. 209).

3 Adjust screw «C» (fig. 217) screwing it in fully and then unscrewing it 1 1/2 turns for both carburettors. (Undoing this screw increases the petrol flow and viceversa decreases it).

4 Remove inlet pipe «A» sealing plugs and in the holes fit up hoses «B» of vacuumeter «C» (see fig. 85).

5 To adjust the tick-over speed (to be done on a warm engine) operate as follows:

- start the engine with the throttle grip at minimum opening (1000-1100 rpm) operating on slide adjuster «D» in fig. 217. At this stage, check that both mercury columns «D» of vacuumeter «C» (fig. 85) are at same height and, if not act on screw «D» (fig. 217) to obtain this condition.

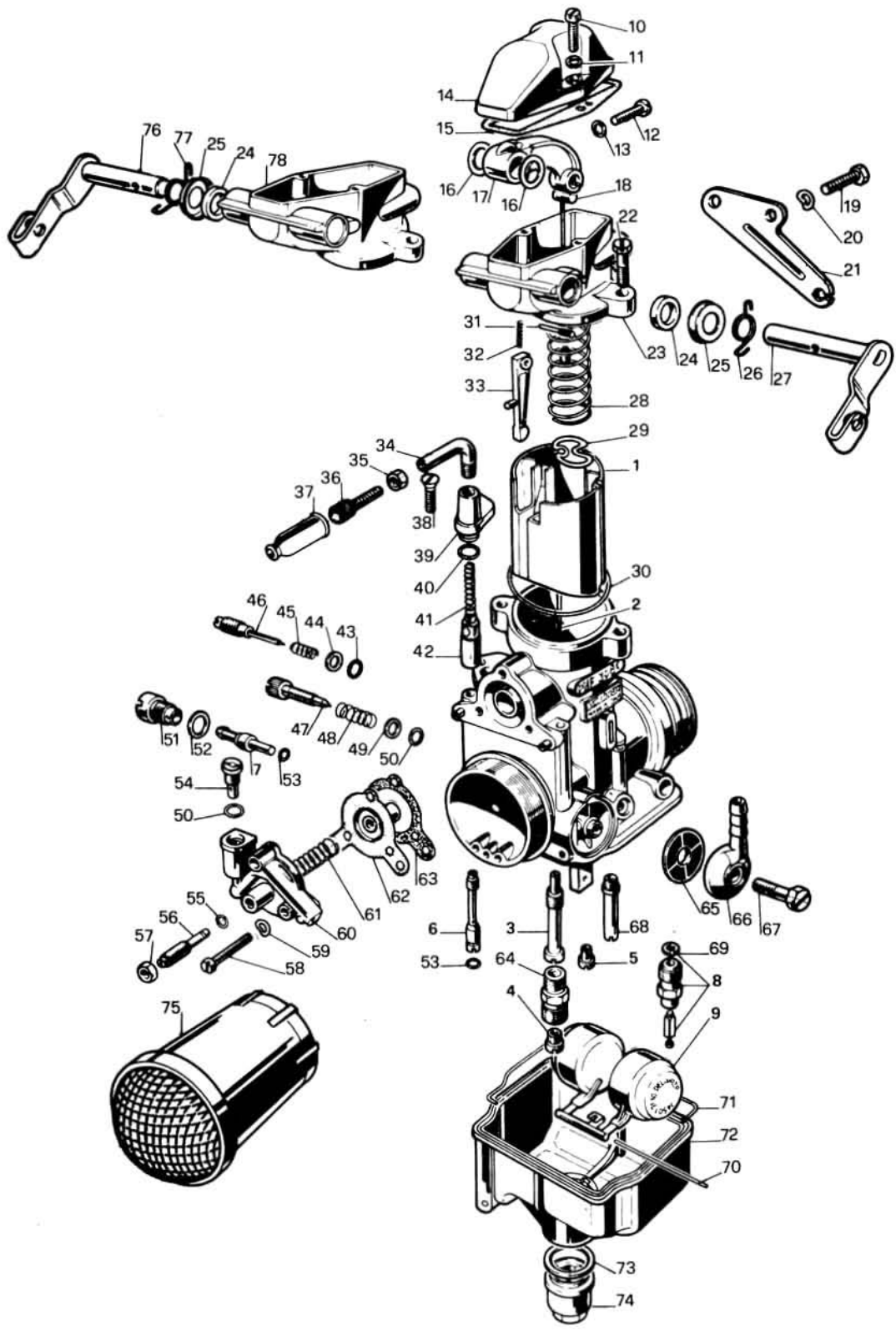
6 Re-adjust the positions of pilot screws «C» (fig. 217) to the point giving the lowest possible number of revolutions. Then re-check the position of both mercury columns «D» on vacuumeter dial «C» (fig. 85) and eventually repeat the operation at 5.

7 Synchronize the carburettors as follows (after adjusting idling speed):

- start the engine and gradually accelerate, checking that both mercury columns on vacuo-

meter dial «C» are equally lined up (fig. 85). If not, operate on cable adjusters «E» after having loosened conternuts «F» (see fig. 209) of the throttle control cables (handlebar end) until the said line up is obtained;

- after this check, undo the hoses from the inlet ports «B» (fig. 85) and retighten all retaining screws and washers.



### 30.5 CARBURETTOR COMPONENTS

- 1 Throttle valve (slide).
- 2 Needle K.
- 3 Main nozzle AB.
- 4 Main jet.
- 5 Pilot jet.
- 6 Starter jet.
- 7 Accelerator pump jet.
- 8 Float needle valve.
- 9 Float unit.
- 10 Top cover screw.
- 11 Gasket.
- 12 Throttle control lever screw.
- 13 Washer.
- 14 Top cover.
- 15 Cover gasket.
- 16 Washer.
- 17 Throttle slide crank.
- 18 Intermediate slide control cable.
- 19 Support screw.
- 20 Washer.
- 21 Support.
- 22 Mixture chamber cover screw.
- 23 Chamber cover.
- 24 Lever washer.
- 25 Lever cap cover.
- 26 Lever return spring.
- 27 Throttle gas lever.
- 28 Return spring.
- 29 Needle clip.
- 30 Gasket, mixture chamber cover.
- 31 Pin, accelerator pump lever.
- 32 Spring.
- 33 Throttle pump arm.
- 34 Tube.
- 35 Cable adjuster securing screw.
- 36 Cable adjuster.
- 37 Starter cable cap.
- 38 Starter cover screw.
- 39 Starter cover.
- 40 Cover gasket.
- 41 Starter valve return spring.
- 42 Starter valve.
- 43 Idle adjuster washer.
- 44 Washer, flat.
- 45 Idle adjusting screw spring.
- 46 Idle screw.
- 47 Throttle valve (slide) adjusting screw.
- 48 Throttle valve spring.
- 49 Flat washer.
- 50 Washer.
- 51 Accelerator pump jet holder.
- 52 Jetholder washer.
- 53 Washer.
- 54 Accelerator pump valve.
- 55 Pump diaphragm screw washer.
- 56 Pump diaphragm screw.
- 57 Diaphragm securing nut.
- 58 Accelerator pump cover screw.
- 59 Washer.
- 60 Pump cover.
- 61 Pump diaphragm spring.
- 62 Pump diaphragm.
- 63 Pump diaphragm gasket.
- 64 Main jetholder.
- 65 Filter screen.
- 66 Petrol feed union.
- 67 Union screw.
- 68 Accelerator pump feeder.
- 69 Needle gasket.
- 70 Float pivot pin.
- 71 Sealing gasket.
- 72 Float bowl.
- 73 Float bowl plug gasket.
- 74 Float bowl plug.
- 75 Air intake tube.
- 76 Pin, throttle control.
- 77 Pin return spring.
- 78 Cover, mixture chamber.

## 31 REAR SUSPENSION

(see chapter 20)

### Features of suspension spring

«A» and «B»

Spring «B» (see description and fig. 138/1).

## 32 FRONT SUSPENSION AND STEERING

(see chapter 21)

### Inspections

Short spring (see description and fig. 145).

Long spring «Modifications for model SP» (description and fig. 146).

## 33 WHEELS

(see chapter 23)

Front wheel (see para 23.2).

Rear wheel (see para 23.4).

Removal and fitting the tires on the rim (see para 23.9).

Air bleeding from braking circuits (see «2» in para 23.10).

Checking and replacing fluid level in reservoirs (see «3» para 23.10).

## 34 ELECTRICAL EQUIPMENT

(see chapter 24)

### 34.1 BATTERY (see para 24.1)

The battery is a 12 V type with a 20 Ah capacity (on request a 12 V - 32 Ah battery can be made available).

### 34.2 SPARK PLUG RECOMMENDATIONS

- Bosch W 230 T 30
- Champion N 9 Y
- Lodge 2 HLNY

### 34.3 IGNITION TIMING «FIXED ADVANCE»

(see para 24.12)

### 34.4 CHECKING IGNITION ADVANCE (FIXED + AUTOMATIC) USING A STROBE LIGHT

(see para 24.13)

N.B. *When carrying out the operations described in para 24.12 and 24.13 follow strictly the data in «Ignition advance data» and drawing fig. 218/1.*

### 34.5 IGNITION DATA (see dwg fig. 218/1)

Initial advance (fixed)	8°
Automatic advance	26°
Total advance (fixed + automatic)	34°
Contact points gap: 0.37 ÷ 0.43 mm (.014-.017")	
Spark plug points gap: 0.5 mm (.019")	

## 35 HORN AND LIGHTING EQUIPMENT

### 35.1 REPLACING THE LAMPS

#### Headlight (fig. 219)

To replace the bulb, disconnect the faston cables, remove rubber cap «G», and withdraw bulb «D» by turning springs «E».

After changing, make sure no other cables have been inadvertently disconnected, especially the parking light cable.

Parking light holder «F» is a pressure fit.

#### Tail light (fig. 221)

Undo screws «A» securing the reflector to tail light, push the bulb inwards turning to the left to slip it out.

#### Front and rear turn signal bulbs

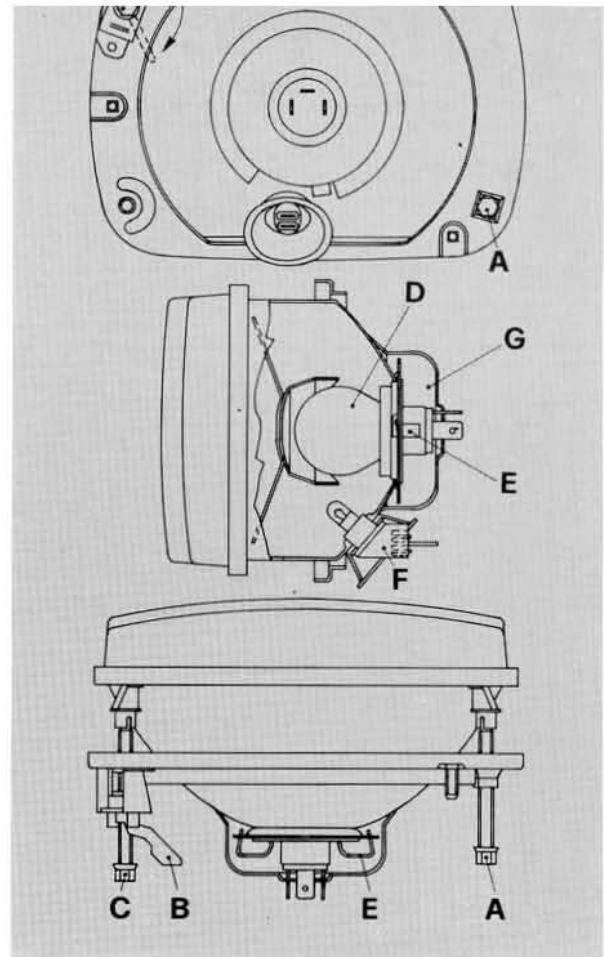
(fig. 220 and 221)

Undo screws «A» (fig. 220) and «B» (fig. 221) securing the reflectors to the lamp, push the bulb inwards turning it to the left to free it.

*In refitting the reflectors do not overtighten to prevent breakages.*

#### Panel, tachometer, rev-counter, voltmeter, and clock lights.

Remove the bulbholders and replace the bulbs.



219

### 35.2 LAMPS (12 V)

#### Headlight

- High and low beam 40/45 W
- Town driving or parking light 4 W

#### Tail light

- Number plate and stop 5/21 W

Turn signals 21 W

Speedo and rev-counter lights 3 W

Panel indicators 1.2 W

Voltmeter and clock 3 W



220

### 35.3 HEADLIGHT BEAM ADJUSTMENT

(fig. 219)

For safe riding and not to trouble crossing riders, the headlight has always to be kept at same height.

Horizontal setting is adjusted by screw «A».

Vertical setting is adjusted by screw «C» to the point where correct height is reached.

The center of the high beam has not to be higher than 0.833 meters (32-33") measured at 3 meters (10 ft) with the motorcycle off the stand and the rider in the saddle.

Operating on lever «B» it is possible to quickly change the vertical setting to suit load conditions (1 or 2 persons in the saddle).



221

**36.1 WITH UNPRINTED PANEL CIRCUIT**

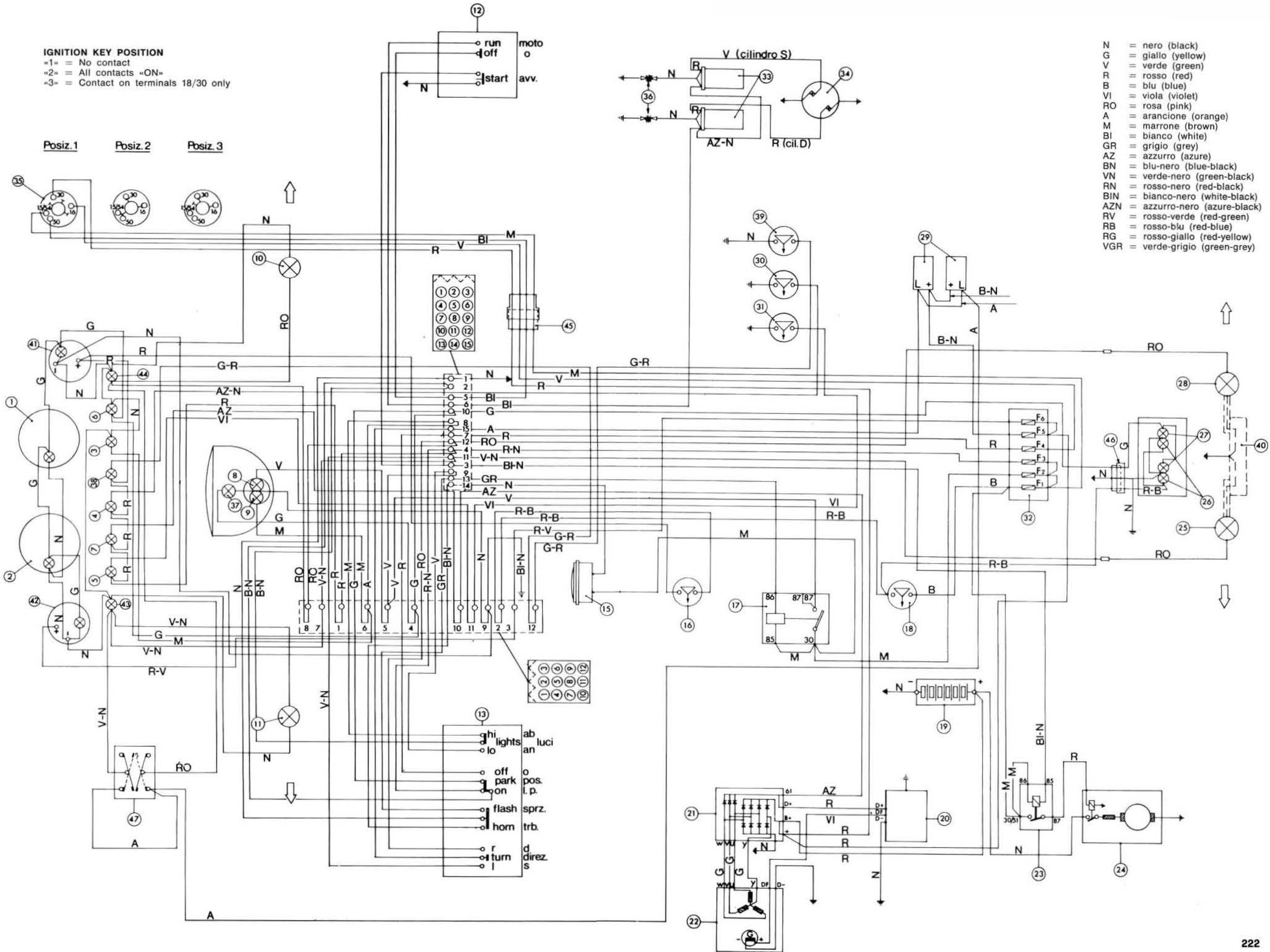
(fig. 222)

- 1 Tachometer speedometer (3 W bulb)
- 2 Rev-counter (3 W bulb)
- 3 High beam warning light (1.2 W bulb)
- 4 Oil pressure warning light (1.2 W bulb)
- 5 Neutral warning light (1.2 W bulb)
- 6 Parking light, warning light (1.2 W bulb)
- 7 Generator charge, warning light (1.2 W bulb)
- 8 Low beam (40 W) } (40/45 W bulb)
- 9 High beam (45 W) }
- 10 Front turn indicator, right (21 W bulb)
- 11 Front turn indicator, left (21 W bulb)
- 12 Engine starting and stopping button
- 13 Flashing light, turning lights, horn switch
- 15 Horn (consumption 3.5 A)
- 16 Front brake cutout switch
- 17 Flashing light relay
- 18 Rear brake switch
- 19 Battery
- 20 Regulator
- 21 Rectifier
- 22 Alternator
- 23 Starter motor relay
- 24 Starter motor
- 25 Turn signal, rear, left (21 W bulb)
- 26 Stop light (21 W + 21 W)
- 27 Number plate and parking light (5 + 5 W bulb)
- 28 Turn indicator, right, rear (21 W bulb)
- 29 Flasher unit, turn signals
- 30 Oil pressure switch
- 31 Neutral indicator switch
- 32 Terminal block with fuses (16 A)
- 33 Contact breaker
- 34 Coils
- 35 Ignition switch (3 positions)
- 36 Spark plugs
- 37 Parking lights, front (4 W bulb)
- 38 Warning light, brake fluid level (1.2 W)
- 39 Brake fluid level indicator
- 40 Flashing light bracket
- 41 Voltmeter (3 W bulb)
- 42 Clock (3 W bulb)
- 43 Warning light, left turn indicator (1.2 W bulb)
- 44 Warning light, right turn indicator (1.2 W bulb)
- 45 4-way connector
- 46 3-way connector
- 47 Switch for simultaneous turning on of all flashers

**IGNITION KEY POSITION**

- «1» = No contact
- «2» = All contacts «ON»
- «3» = Contact on terminals 18/30 only

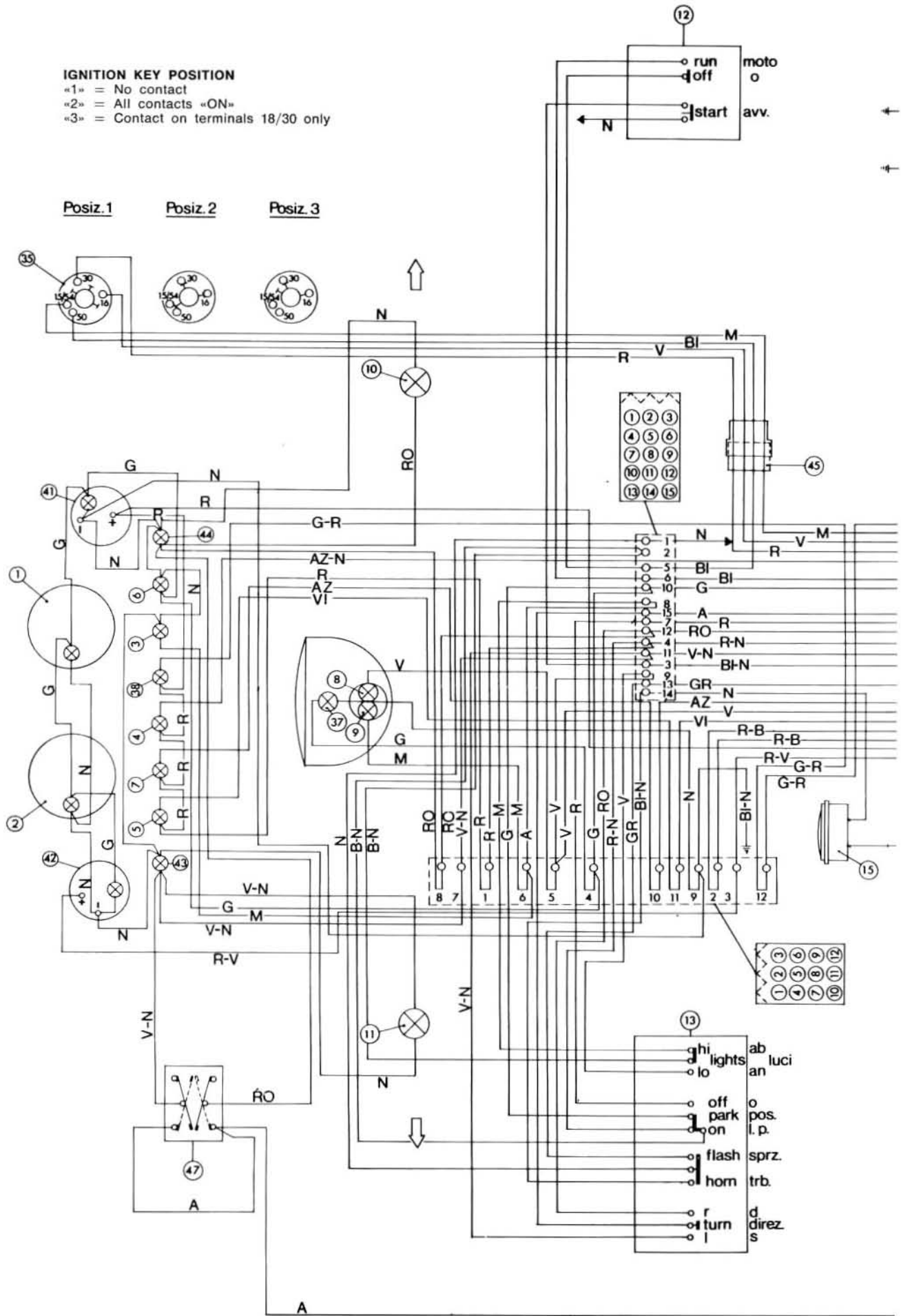
- N = nero (black)
- G = giallo (yellow)
- V = verde (green)
- R = rosso (red)
- B = blu (blue)
- VI = viola (violet)
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- A = arancione (orange)
- M = marrone (brown)
- BI = bianco (white)
- GR = grigio (grey)
- AZ = azzurro (azure)
- BN = blu-nero (blue-black)
- VN = verde-nero (green-black)
- RN = rosso-nero (red-black)
- BIN = bianco-nero (white-black)
- AZN = azzurro-nero (azure-black)
- RV = rosso-verde (red-green)
- RB = rosso-blu (red-blue)
- RG = rosso-giallo (red-yellow)
- VGR = verde-grigio (green-grey)





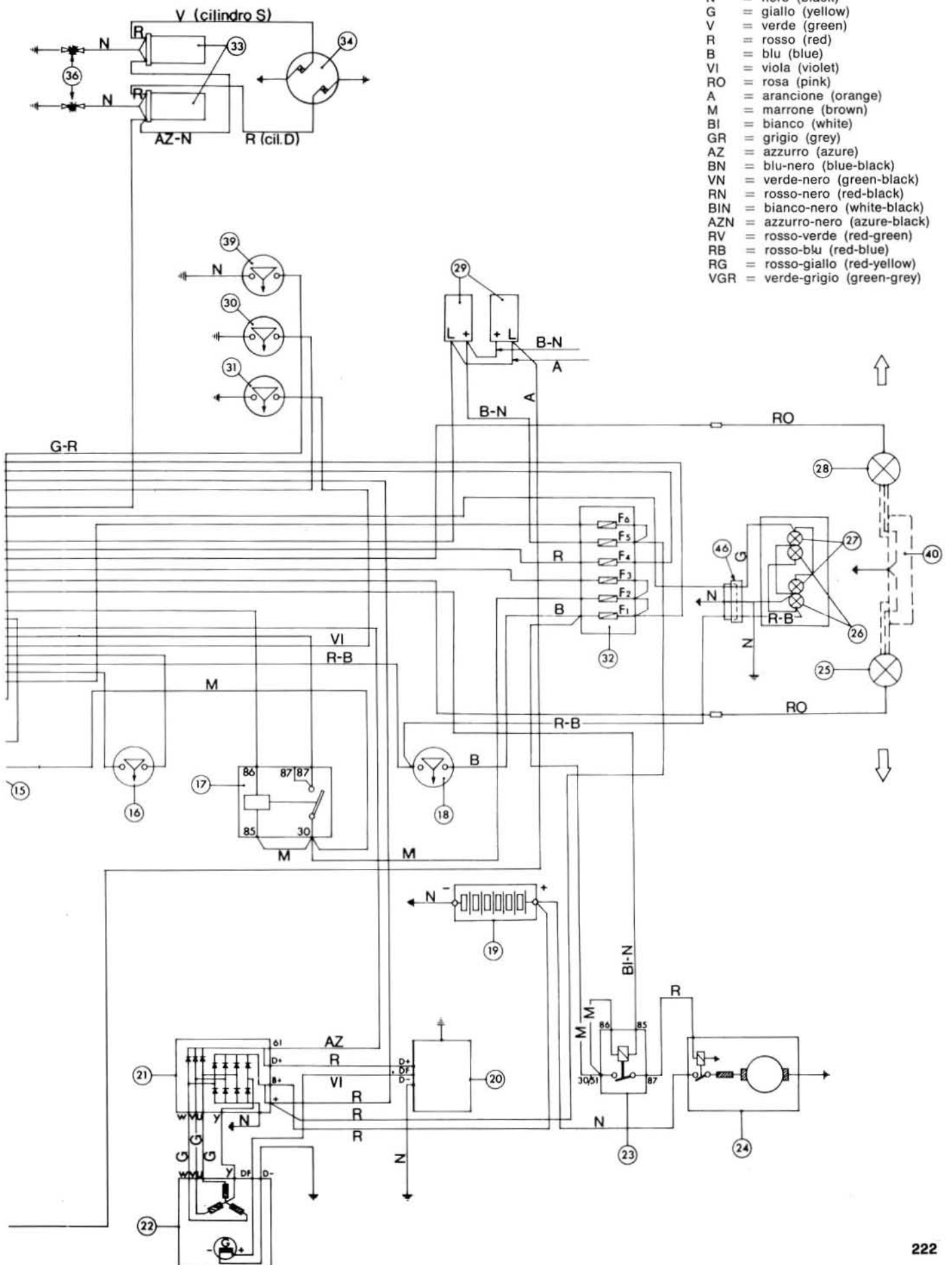
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- RG = rosso-giallo (red-yellow)
- VGR = verde-grigio (green-grey)



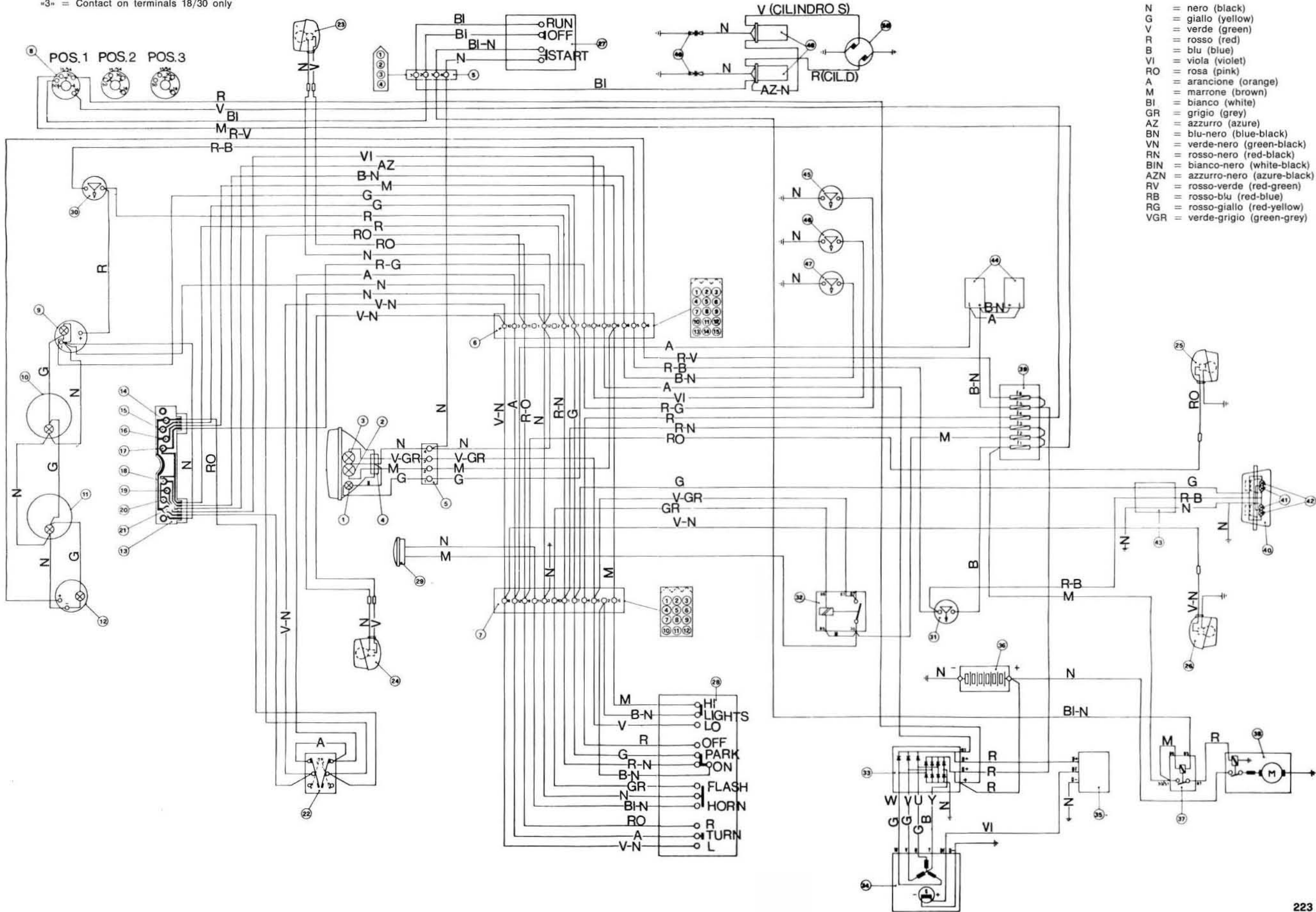
## 36.2 WITH PRINTED PANEL CIRCUIT

(fig. 223)

- 1 Front parking light (4 W)
- 2 High beam (45 W)
- 3 Low beam (40 W) } (40/45 W bulb)
- 4 3-way connector «AMP», headlight
- 5 4-way connector «Molex»
- 6 15-way connector
- 7 12-way connector
- 8 Light switch, 3 positions
- 9 Voltmeter (3 W bulb)
- 10 Speedometer (3 W bulb)
- 11 Rev-counter (3 W bulb)
- 12 Clock (3 W bulb)
- 13 Warning lights carrier with printed circuit
- 14 Warning light, right turn light (1.2 W bulb)
- 15 Warning light, parking light (1.2 W bulb)
- 16 Warning light, high beam (1.2 W bulb)
- 17 Warning light, oil fluid level (1.2 W bulb)
- 18 Warning light, oil pressure (1.2 W bulb)
- 19 Warning light, generator charge (1.2 W bulb)
- 20 Warning light, neutral position
- 21 Warning light, left turn signal (1.2 W bulb)
- 22 Switch for simultaneous switch on of all flashers
- 23 Front right turn light (21 W bulb)
- 24 Front left turn light (21 W bulb)
- 25 Rear right turn light (21 W bulb)
- 26 Rear left turn light (21 W bulb)
- 27 Engine starting and stopping button
- 28 Horn, flashers and turn lights switch
- 29 Horn
- 30 Front brake switch (STOP)
- 31 Rear brake switch (STOP)
- 32 Flashing lights relay (FLASH)
- 33 Rectifier
- 34 Alternator (14 V - 20 A)
- 35 Regulator
- 36 Battery
- 37 Starter relay
- 38 Starter motor
- 39 Terminal board with fuses (16 A)
- 40 Tail light
- 41 Rear stop light (21 W bulb)
- 42 Number plate and rear parking light (5 W bulb)
- 43 3-way connector
- 44 Flasher unit
- 45 Brake fluid level indicator
- 46 Neutral position indicator
- 47 Oil pressure indicator
- 48 Coils
- 49 Spark plugs
- 50 Contact breaker

**IGNITION KEY POSITION**

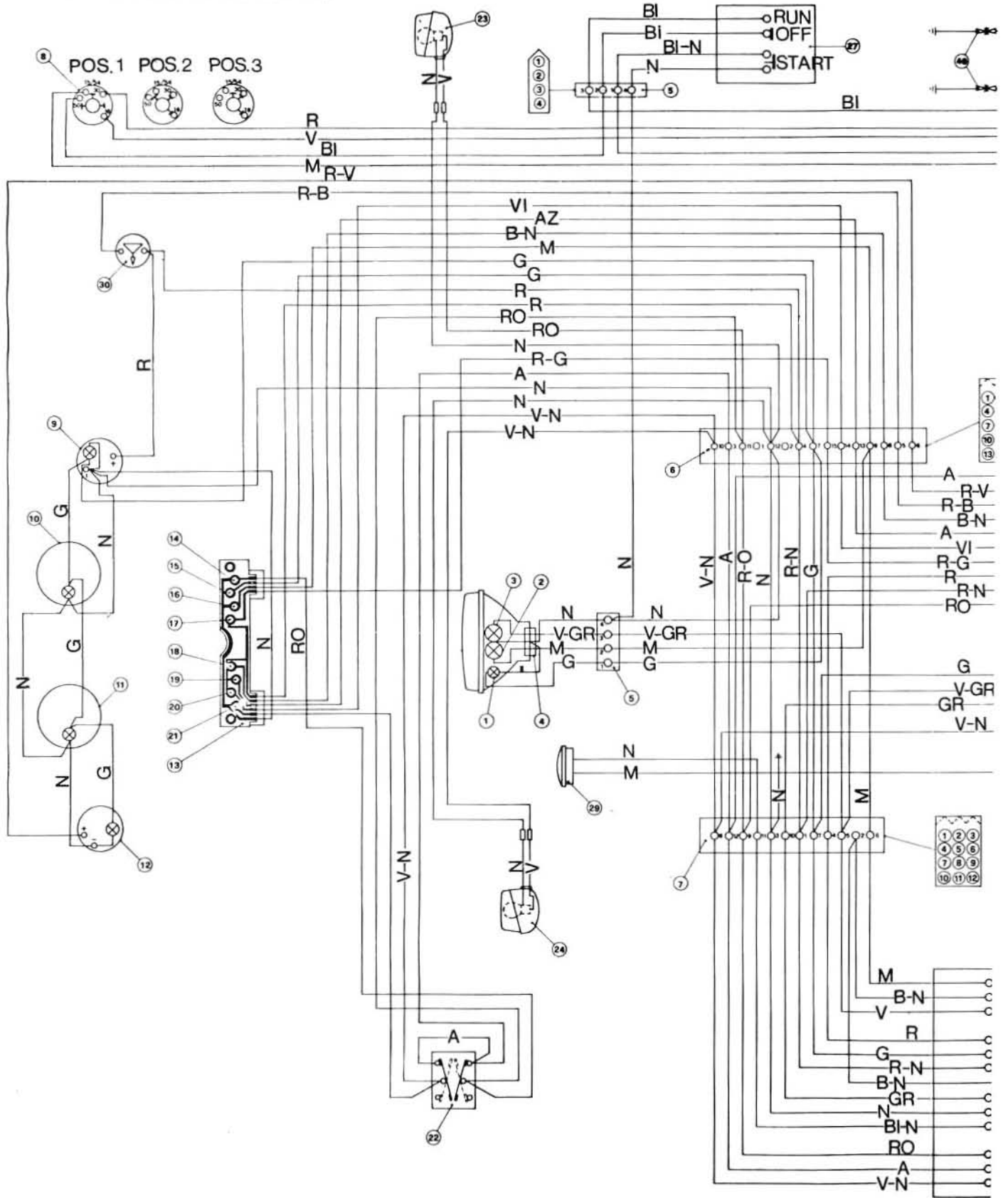
- «1» = No contact
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- «3» = Contact on terminals 18/30 only

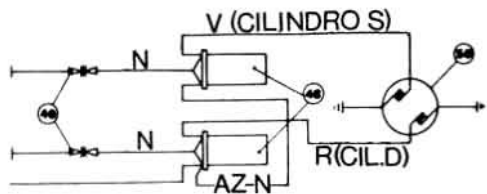


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- BIN = bianco-nero (white-black)
- AZN = azzurro-nero (azure-black)
- RV = rosso-verde (red-green)
- RG = rosso-giallo (red-yellow)
- VGR = verde-grigio (green-grey)

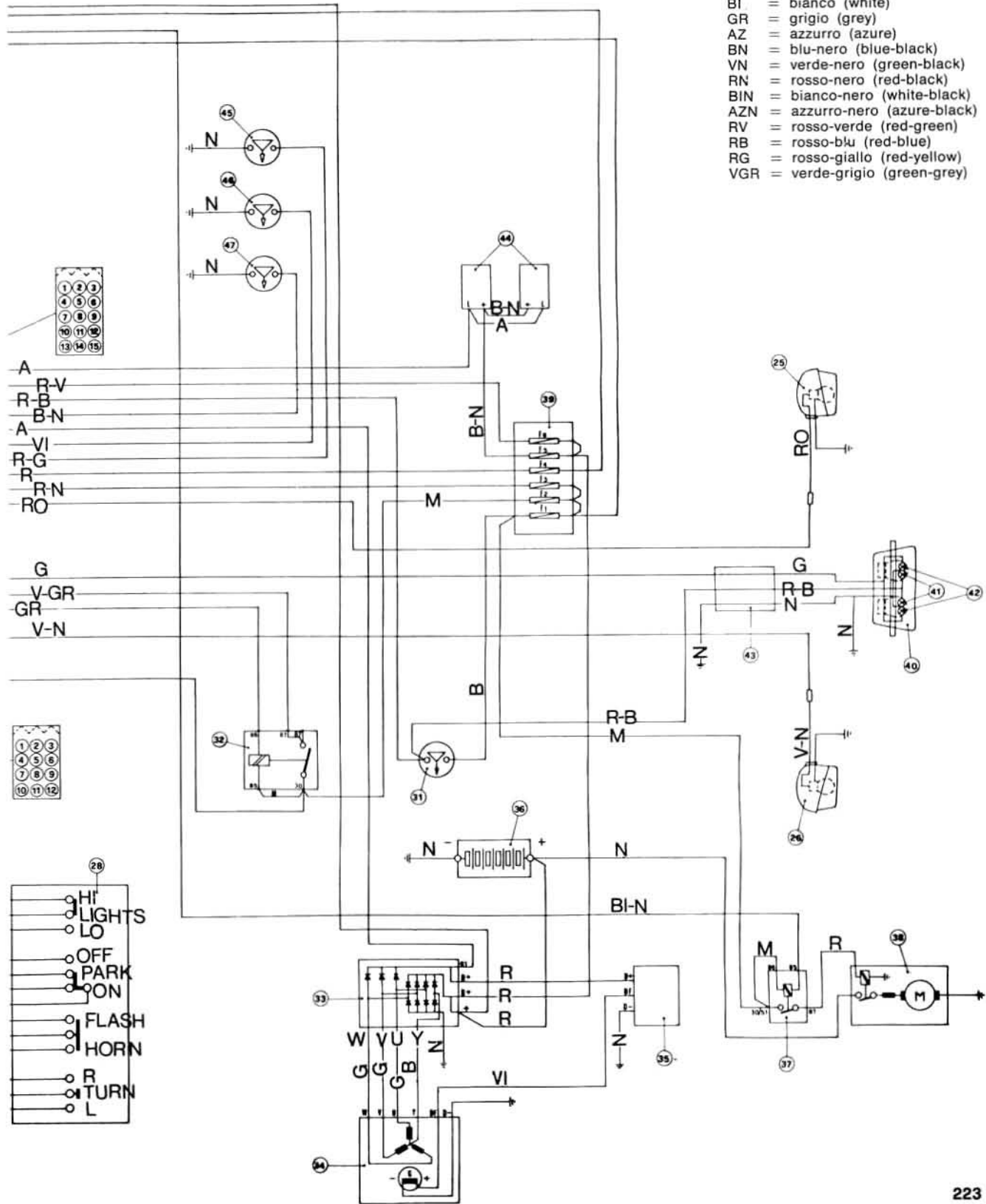
**IGNITION KEY POSITION**

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- «3» = Contact on terminals 18/30 only





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- VN = verde-nero (green-black)
- RN = rosso-nero (red-black)
- BIN = bianco-nero (white-black)
- AZN = azzurro-nero (azure-black)
- RV = rosso-verde (red-green)
- RB = rosso-blu (red-blue)
- RG = rosso-giallo (red-yellow)
- VGR = verde-grigio (green-grey)



## 37 CONVERSION KITS AVAILABLE ON REQUEST

The «850 Le Mans II» can be converted into a racing motorcycle by fitting a new gearbox set of straight toothed gears and new mainshafts to give different gearbox ratios.

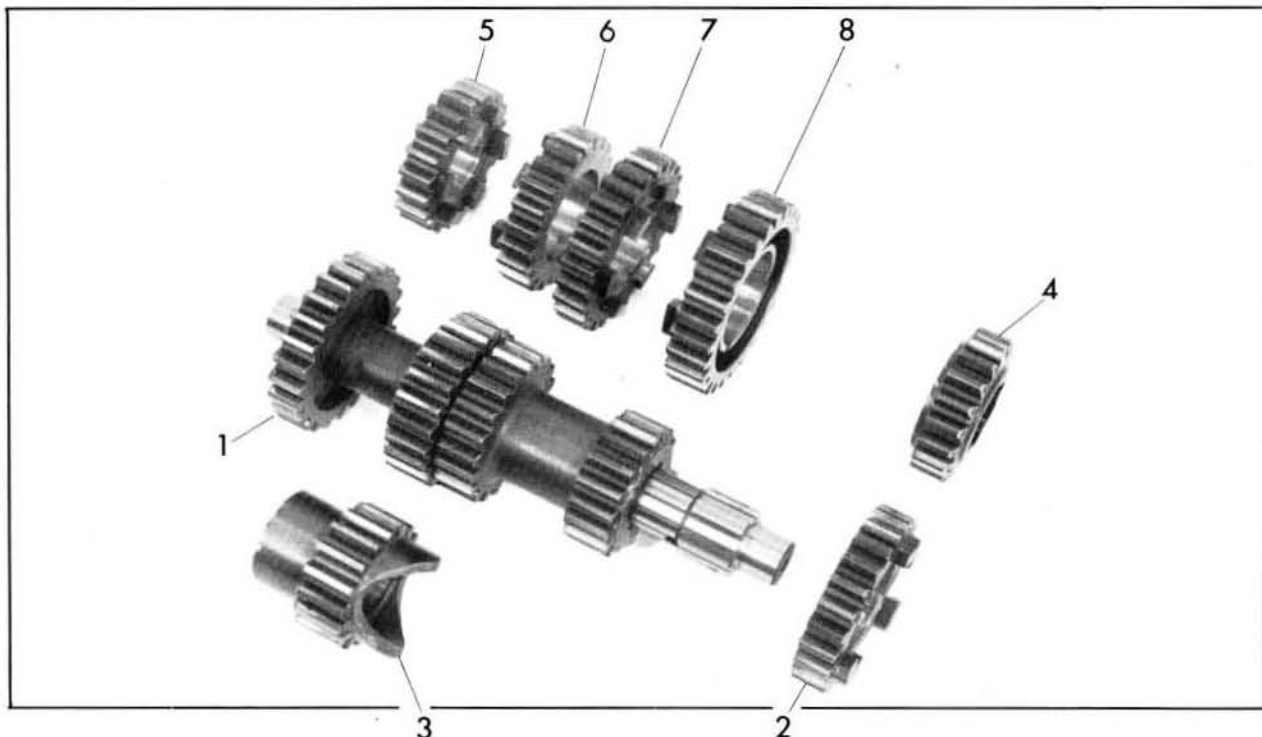
Important:

*When this kit is fitted, the «850 Le Mans II» is automatically excluded from all guarantee rights.*

Likewise, by fitting the boost up kit, the motorcycle will no longer comply with the **Highway code regulations** nor with the **type approval specifications** and accordingly cannot be circulated on open roads but only on closed tracks.

### 37.1 THIS KIT (PART N. 14 21 00 41) CAN BE SUPPLIED ON REQUEST AND CONSISTS OF (fig. 224):

FIG. N.	N. CODICE	DESCRIPTION	Q.TY
1	14 21 05 40	Main shaft (Z = 24 - 22 - 20 - 17)	1
1	14 21 05 41	Main shaft (Z = 24 - 22 - 19C - 16C)	1
2	14 21 20 40	5th speed gear on mainshaft (Z = 25)	1
3	14 21 11 40	Transmission gear (Z = 16)	1
3	14 21 11 41	Transmission gear (Z = 17)	1
4	14 21 52 40	5th speed gear on layshaft (Z = 19)	1
5	14 21 51 40	4th speed gear on layshaft (Z = 20)	1
6	14 21 48 40	3rd speed gear on layshaft (Z = 22)	1
7	14 21 45 40	2nd speed gear on layshaft (Z = 24)	1
7	14 21 45 41	2nd speed gear on layshaft (Z = 24C)	1
8	14 21 42 40	1st speed gear on layshaft (Z = 26)	1
8	14 21 42 41	1st speed gear on layshaft (Z = 26C)	1



224

Note:

1 Gears marked «C» next to the teeth number have to be fitted in a mated condition.

These parts are identified by:

- a round mark of turning at the center of the tothing for single 1st and 2nd speed gears on layshaft;
- two round turning marks on the central mating part of the double 1st and 2nd speed gears on main shaft.

The following bevel gear sets can also be made available:

1 6/32 - ratio 5,333 - part n. 17 35 46 90 - to be mounted with double cardan joint 14 32 80 40 and sleeve 18 32 77 00.

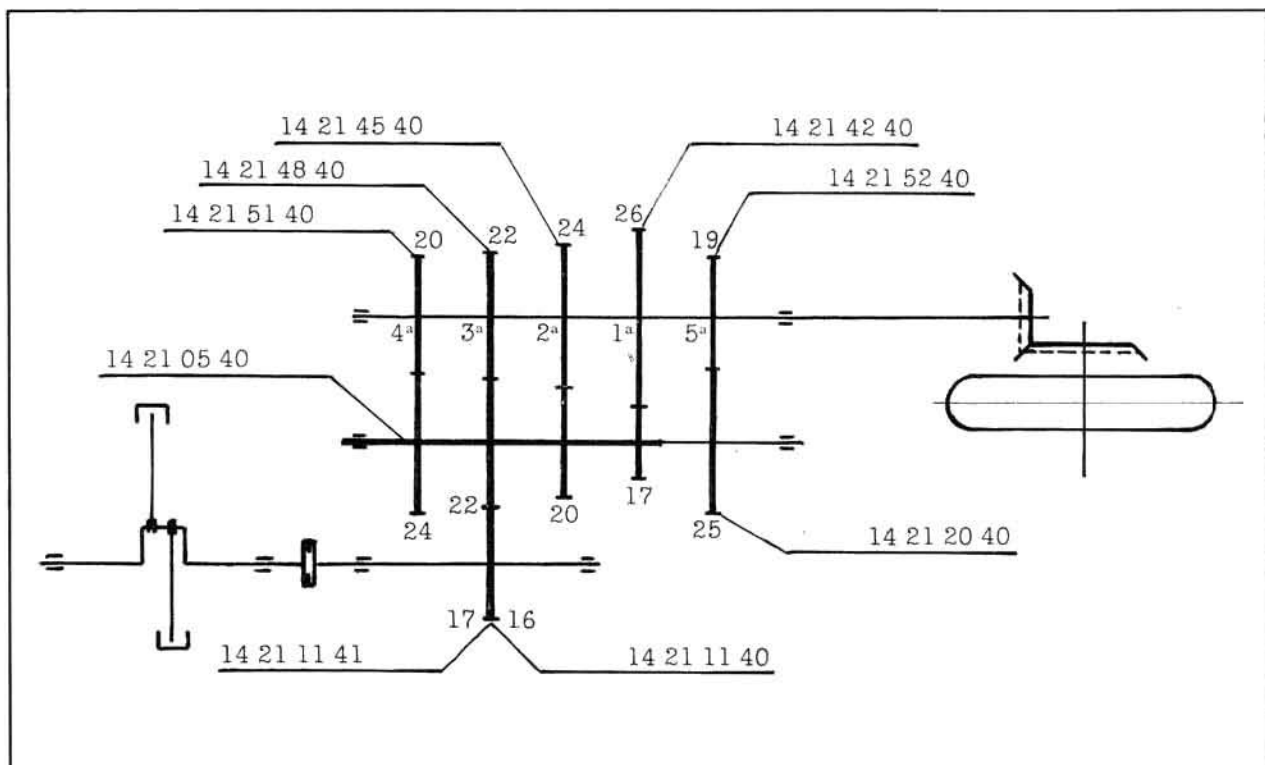
2 7/33 - ratio 4,714 - part n. 17 35 46 50 - to be mounted with double cardan joint 17 32 60 50 and sleeve 12 32 77 00.

3 8/33 - ratio 4,125 - part n. 14 35 46 40 - to be mounted with double cardan joint 14 32 80 40 and sleeve 18 32 77 00.

4 9/34 - ratio 3,778 - part n. 18 35 46 50 - to be mounted with double cardan joint 14 32 80 40 and sleeve 18 32 77 00.

### GEARBOX TYPE «A» (see fig. 225)

with modified transmission gear of clutch shaft: Z/17 or Z/16



**OVERALL GEAR RATIOS**

with transmission gear of clutch shaft Z/17 part n. 14 21 11 41

BEVEL GEAR SET	1st	2nd	3rd	4th	5th
6/32 = 5,333	10,554	8,282	6,901	5,749	5,242
7/33 = 4,714	9,329	7,321	6,10	5,03	4,634
8/33 = 4,125	8,163	6,406	5,338	4,447	4,055
9/34 = 3,778	7,477	5,867	4,889	4,073	3,714
<b>THEORETICAL SPEEDS AT 7.500 R.P.M. (rear tyre development mm 2.020)</b>					
BEVEL GEAR SET	1st	2nd	3rd	4th	5th
6/32	85,27	108,66	130,41	156,54	171,69
7/33	96,47	122,93	147,54	177,16	194,21
8/33	110,25	140,49	168,60	202,38	221,94
9/34	120,36	153,40	184,08	220,96	242,32

**OVERALL GEAR RATIOS**

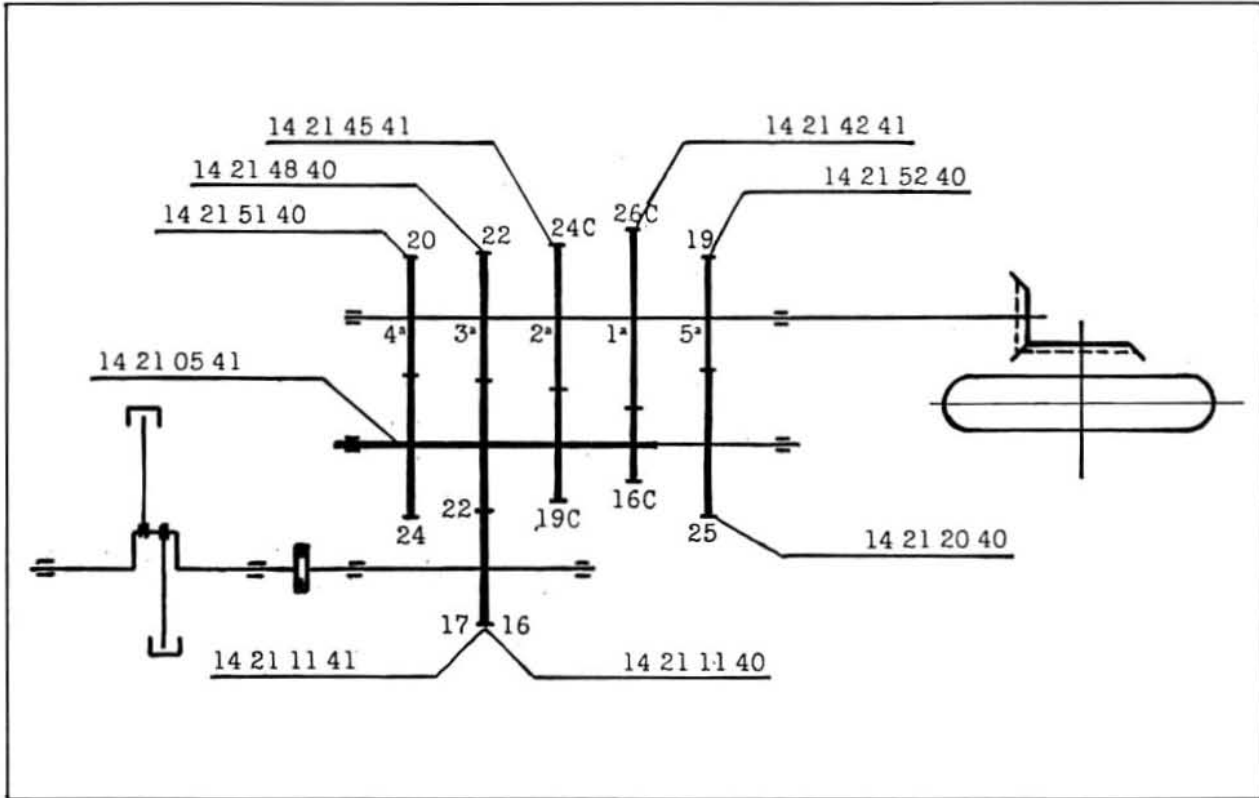
with transmission gear of clutch shaft Z/16 part n. 14 21 11 40

BEVEL GEAR SET	1st	2nd	3rd	4th	5th
6/32 = 5,333	11,210	8,799	7,333	6,106	5,573
7/33 = 4,714	9,909	7,778	6,482	5,398	4,926
8/33 = 4,125	8,671	6,806	5,672	4,725	4,311
9/34 = 3,778	7,941	6,234	5,195	4,326	3,948
<b>THEORETICAL SPEEDS AT 7.500 R.P.M. (rear tyre development mm 2.020)</b>					
BEVEL GEAR SET	1st	2nd	3rd	4th	5th
6/32	80,28	102,28	122,73	147,39	161,49
7/33	90,82	115,71	138,84	166,72	182,70
8/33	103,79	132,23	158,67	190,47	208,76
9/34	113,33	144,36	173,24	208,04	227,96



**GEARBOX TYPE «B» - 1st and 2nd low (see fig. 226)**

**with modified transmission gear of clutch shaft: Z/17 or Z/16**



226

**OVERALL GEAR RATIOS**

**with transmission gear of clutch shaft Z/17 part n. 14 21 11 41**

BEVEL GEAR SET	1st	2nd	3rd	4th	5th
6/32 = 5,333	11,215	8,714	6,901	5,749	5,242
7/33 = 4,714	9,914	7,703	6,10	5,08	4,634
8/33 = 4,125	8,675	6,740	5,338	4,447	4,055
9/34 = 3,778	7,945	6,177	4,889	4,073	3,714

**THEORETICAL SPEEDS AT 7.500 R.P.M. (rear tyre development mm 2.020)**

BEVEL GEAR SET	1st	2nd	3rd	4th	5th
6/32	80,24	103,28	130,41	156,54	171,69
7/33	90,78	116,83	147,54	177,16	194,21
8/33	103,74	133,53	168,60	202,38	221,94
9/34	113,27	145,70	184,08	220,96	242,32

**OVERALL GEAR RATIOS****with transmission gear of clutch shaft Z/16 part n. 14 21 11 40**

BEVEL GEAR SET	1st	2nd	3rd	4th	5th
6/32 = 5,333	11,914	9,263	7,333	6,106	5,573
7/33 = 4,714	10,531	8,188	6,482	5,398	4,926
8/33 = 4,125	9,215	7,165	5,672	4,725	4,311
9/34 = 3,778	8,440	6.562	5,195	4,326	3,948
<b>THEORETICAL SPEEDS AT 7.500 R.P.M. (rear tyre development mm 2.020)</b>					
BEVEL GEAR SET	1st	2nd	3rd	4th	5th
6/32	75,54	97,16	122,73	147,39	161,49
7/33	85,46	109,91	138,84	166,72	182,70
8/33	97,66	125,61	158,67	190,47	208,76
9/34	106,63	137,15	173,24	208,04	227,96

### 37.2 ENGINE BOOSTUP KIT PART N. 14 99 97 40 - «850 LE MANS II»

This includes:

PART N.	Q.TY	DESCRIPTION
14 00 32 40	1	Flange, crankase - Oil sump
14 00 36 00	1	Gasket, flange
14 15 33 40	1	Cam shaft
14 02 08 40	2	Gasket
14 11 26 40	1	Right carburettor
14 11 26 41	1	Left carburettor
14 11 50 40	1	Right manifold
14 11 50 41	1	Left manifold
14 12 07 41	1	Exhaust pipes
14 12 30 41	1	Right silencer
14 12 29 41	1	Left silencer
14 12 39 41	1	Silencer connecting tube
98 05 23 90	4	Screw, flange securing
98 62 03 55	14	Screw, flange securing

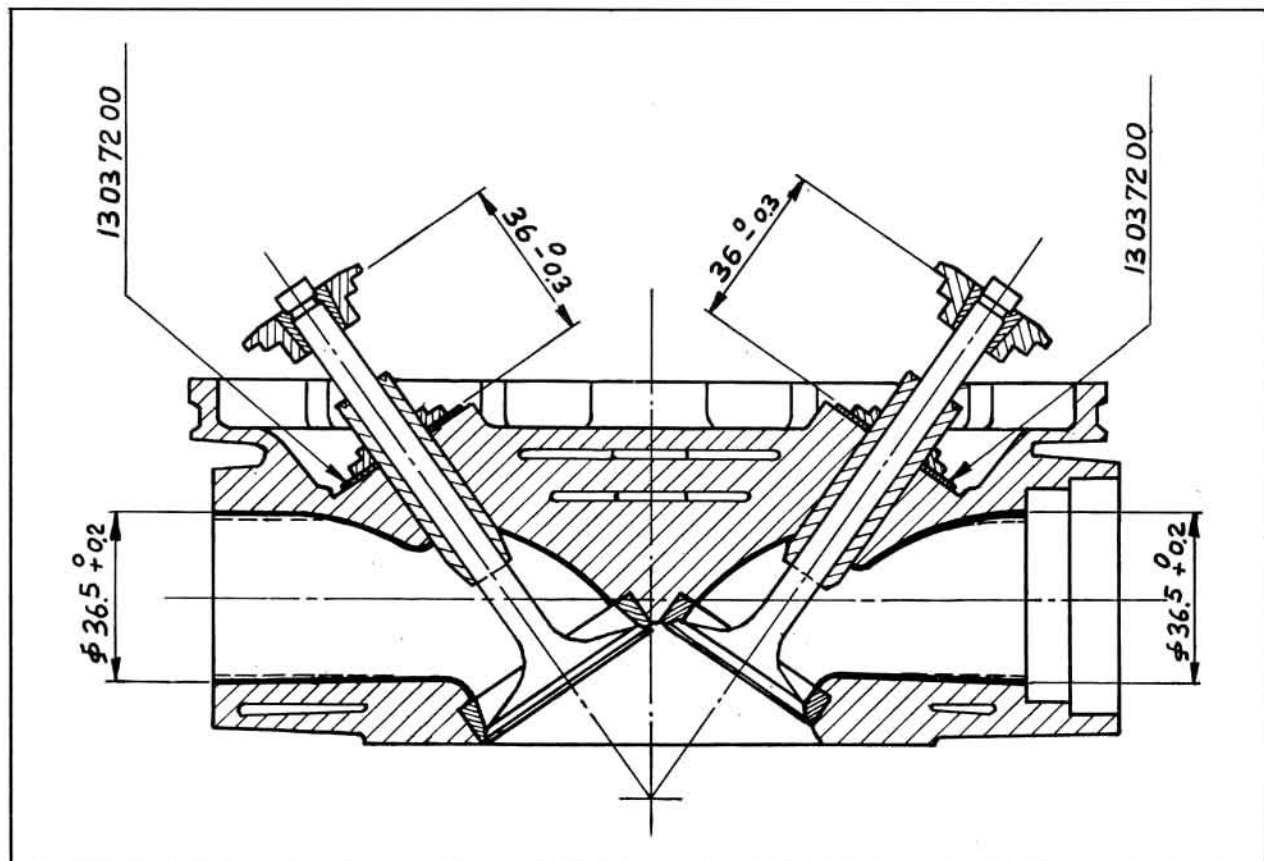
This conversion is completed by flaring and polishing the intake and outlet ducts, also by shimming the valve springs as shown in drawing n. 227.

#### INLET

Fit 1 to 7 washers part n. 14 03 73 00 between part n. 13 03 72 00 and the cylinder head.

#### OUTLET

Fit 0 to 6 washers part n. 14 03 73 00 between part n. 13 03 72 00 and the cylinder head.



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SEIMM MOTO GUZZI S. p. A. Mandello del Lario

Registro Società Lecco N. 2220

