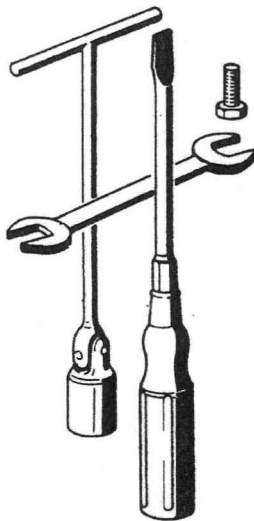




850 Le Mans

III

WORKSHOP MANUAL



COD. 28920151

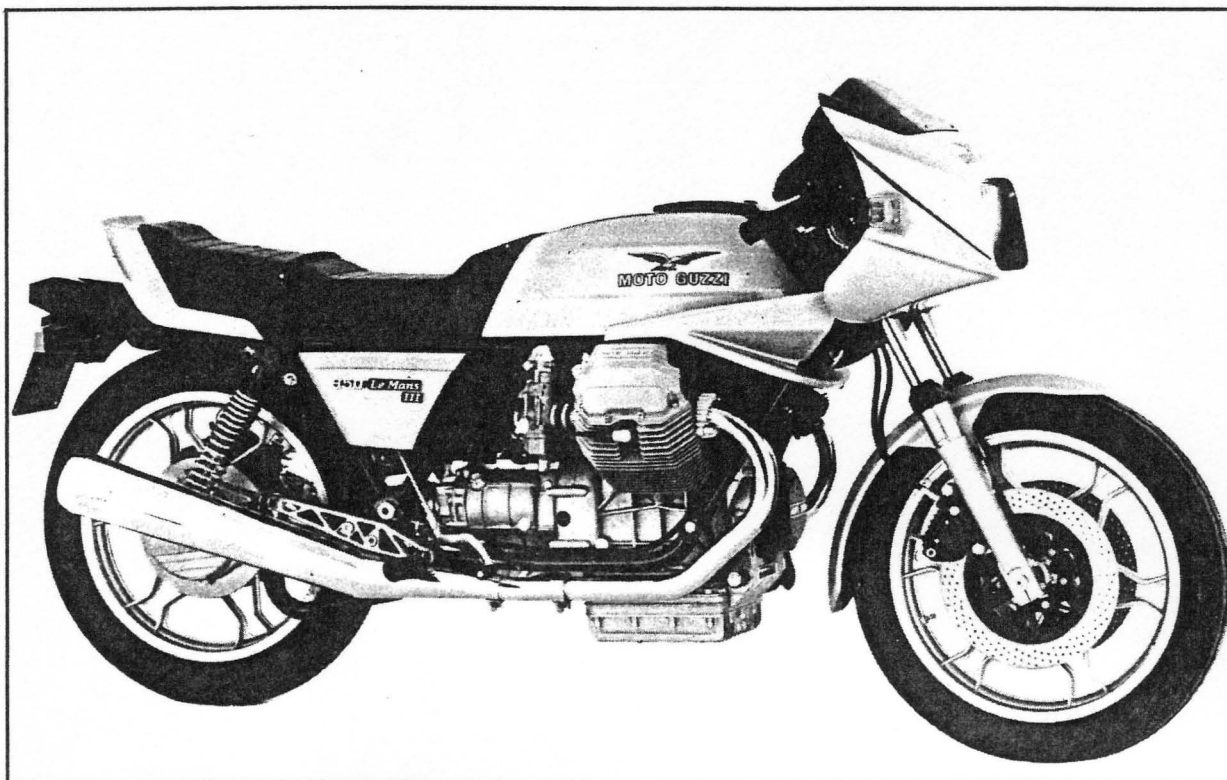
Additions to the Workshop manual for the models V1000 G 50 and 1000 SP - Code 17920161

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 without prior notice.

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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 bikes, 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, ending

in the air filter box of the carburettors same. 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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2**MAIN FEATURES**

ENGINE	twin cylinder - 4-stroke
– cylinder disposition	«V» 90°
– bore	83 mm
– stroke	78 mm
– displacement	844 cc
– compression ratio	9.8 to 1
– max torque	7.6 kgm at 6200 rpm
VALVE GEARING	O.H.V., push rod operated
CARBURATION	n. 2 carburetors «Dell'Orto» type PHF 36 B (D) (right) PHF 36 B (S) (left)
LUBRICATION	pressure, by gear pump wire gauze and cartridge filters in oil sump normal lubrication pressure 3.8 to 4.2 kg/sq cm (pressure relief control valve in the sump) oil pressure sender unit in the crankcase
GENERATOR ALTERNATOR	fitted in the front part of the crankshaft (14V - 20A)
IGNITION	coil-battery ignition with double contact breaker and automatic advance with centrifugal masses
– ignition data	ignition advance (fixed) 8° automatic advance 26° full advance (f. + a.) 34°
– contact breaker points gap	0.37 ÷ 0.43 mm
– spark plugs	Bosch W 5 D Lodge 2 HLN Y
– plug points gap	0.6 mm
– ignition coils	n. 2 fitted on the frame
STARTING	electric starter (12V - 0.7 KW) with electromagnetic ratchet control ring gear bolted on the flywheel starter button (START) fitted on the R/H side of handlebar
TRANSMISSIONS	
CLUTCH	twin driven plates, dry type fitted on the flywheel side hand controlled by lever on left handlebar
PRIMARY DRIVE	by gears, ratio 1 to 1.235 (Z = 17/21)
GEARBOX	5 speeds, frontal engagement, constant mesh gears. Cush drive incorporated pedal operated on the L/H side of the bike
– gear ratios:	
Low gear	1 to 2 (Z = 14/28)
2nd gear	1 to 1.388 (Z = 18/25)
3rd gear	1 to 1.047 (Z = 21/22)
4th gear	1 to 0.869 (Z = 23/20)
5th gear	1 to 0.750 (Z = 28/21)
SECONDARY DRIVE	by cardan shaft, bevel gear set
– ratio	1 to 4.714 (Z = 7/33)
– overall gear ratios (engine-wheel)	
Low gear	1 to 11.643
2nd gear	1 to 8.080
3rd gear	1 to 6.095
4th gear	1 to 5.059
5th gear	1 to 4.366

FRAME	duplex cradle, tubular structure
SUSPENSIONS	
– front	telescopic fork «MOTO GUZZI patent» with oil pneumatic shock absorbers
– rear	swinging fork and rear dampers with adjustable external springs concentric to the oil pneumatic shock absorbers
WHEELS	light alloy castings with rims:
– front	WM 3/2.15 x 18" CP2
– rear	WM 3/2.15 x 18" CP2
TIRES	
– front	100/90 V 18
– rear	110/90 V 18
BRAKES	
– front	disc type with caliper having 2 cylinders, controlled by hand lever on the R/H side of the handlebar hydraulic transmission independent from the rear brake: disc dia. 300 mm braking cylinder dia. 38 mm master cylinder dia 12.7 mm
– rear	disc type with fixed caliper with two cylinders foot controlled with pedal on the R/H side of the bike: disc dia. 242 mm braking cylinder dia. 38 mm master cylinder dia. 15.875 mm the rear brake is connected by an hydraulic transmission to a second brake on the front wheel having the same features and size as the hand controlled front brake
DIMENSIONS AND WEIGHTS	
– wheel base (loaded)	1.505 m
– max length	2.190 m
– max width	0.640 m
– max height	1.160 m
– min. ground clearance	0.175 m
– dry weight abt	206 kg
PERFORMANCES	
– top speed	230 km/h (144 mph); solo
– fuel consumption	5.7 l x 100 km
FUEL AND OIL CAPACITIES	
– fuel tank (reserve 3 l about) (3.1/4 quarts)	25 l (6.15 US gls) supergrade petrol (98/100 NO-RM)
– oil sump	3 l (3.1/4 quarts) oil «Agip SINT 2000 SAE 10 W/50»
– gear box	0.750 l (1.3/4 pints) oil «Agip F.1 Rotra MP SAE 90»
– rear drive box (bevel gear set lubrication)	0.250 l (9 oz abt) oil of which: 0.230 l (8.1/4 oz abt) «Agip F.1 Rotra MP SAE 90» and 0.020 l (3/4 oz) «Agip Rocol ASO/R» or Molikote «A» type
– front fork (each leg)	0.060 l (2 oz abt) fluid «Agip F.1 ATF Dexron»
– braking circuits (front and rear)	fluid «Agip F.1 Brake fluid - SAE J 1703 B»

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SERVICE SCHEDULE

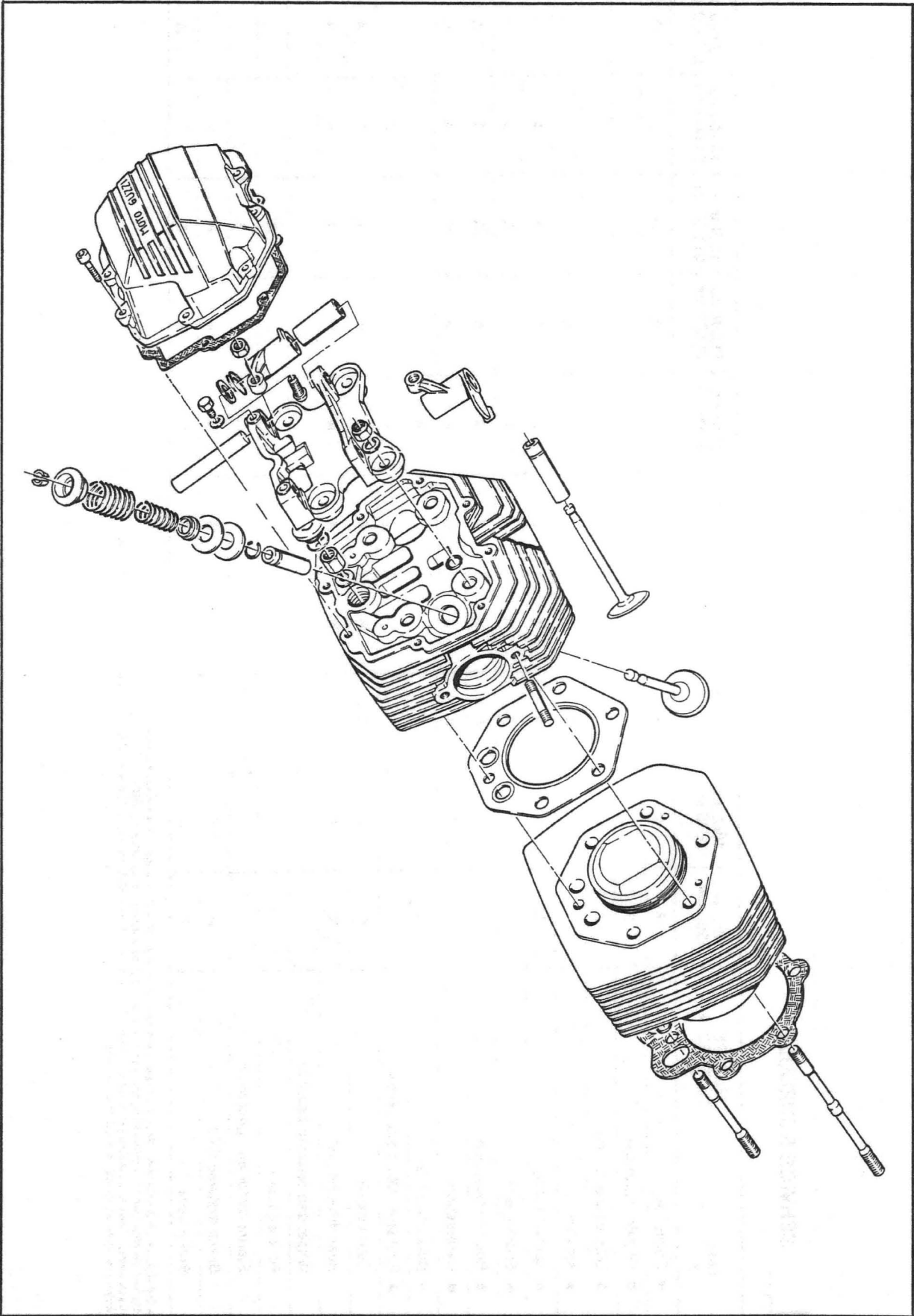
ITEMS ▼	MILEAGE COVERED ►	900 mi. 1500 km	1800 mi. 3000 km	3700 mi. 6000 km	5600 mi. 9000 km	7500 mi. 12,000 km	9400 mi. 15,000 km	11,300 mi. 18,000 km	13,200 mi. 21,000 km	15,100 mi. 24,000 km	17,000 mi. 27,000 km	18,900 mi. 30,000 km
● Engine oil		R	R	R	R	R	R	R	R	R	R	R
● Oil filter cartridge		R					R					R
● Wire gauze oil filter		C					C					C
● Air filter				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
● Rocker clearance		A	A	A	A	A	A	A	A	A	A	A
● Carburetion		A	A	A	A	A	A	A	A	A	A	A
● Nuts and bolts		A					A					A
● Fuel tank, filters and pipes					C		C			C		
Gear box oil		A	A	A	R	A	A	R	A	A	R	A
Rear drive box oil		A	A	A	R	A	A	R	A	A	R	A
Wheel and steering bearings									A			
Fork legs oil									R			
Starter motor and generator									A			
Brake systems 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 = Inspections - Adjustments - Possible replacements - Servicing / C = Cleanings / R = Replacements.

● Operation required for maintaining the vehicle according to emission regulations (USA).

Occasionally, check the electrolyte level in battery, lubricate joints and cables; every 500 km (300 miles) check the engine oil level.

In any case, renew this oil at least once a year.



CYLINDERS

SELECTION OF CYLINDER DIAMETER

GRADING A	GRADING B	GRADING C
83.000 ÷ 83.006 mm 3.2677 ÷ 3.2679"	83.006 ÷ 83.012 mm 3.2679 ÷ 3.2681"	83.012 ÷ 83.018 mm 3.2681 ÷ 3.2684"

PISTONS

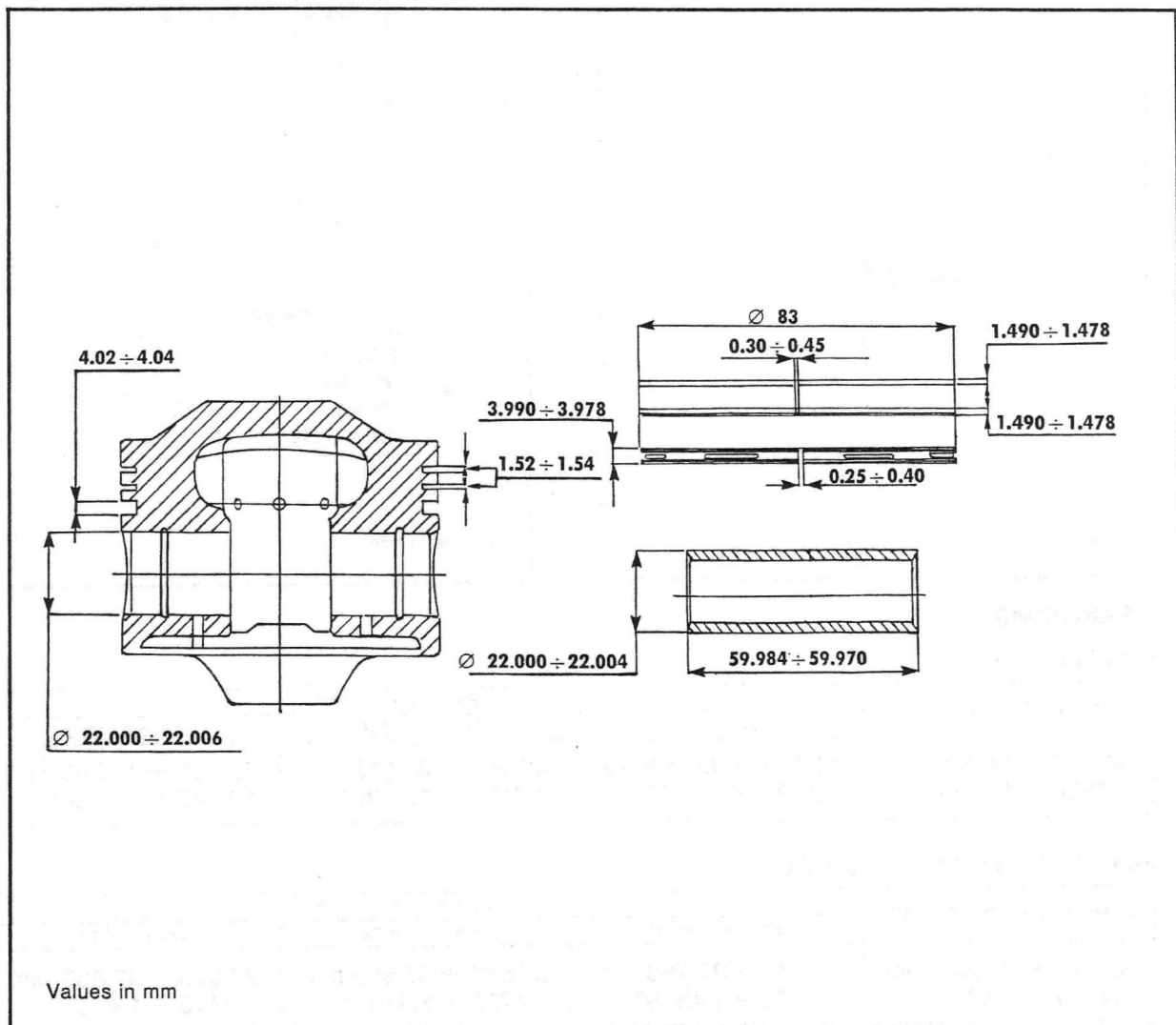
SELECTION OF PISTON DIAMETER

GRADING A	GRADING B	GRADING C
82.968 ÷ 82.974 mm 3.2664 ÷ 3.2666"	82.974 ÷ 82.980 mm 3.2666 ÷ 3.2669"	82.980 ÷ 82.986 mm 3.2669 ÷ 3.2671"

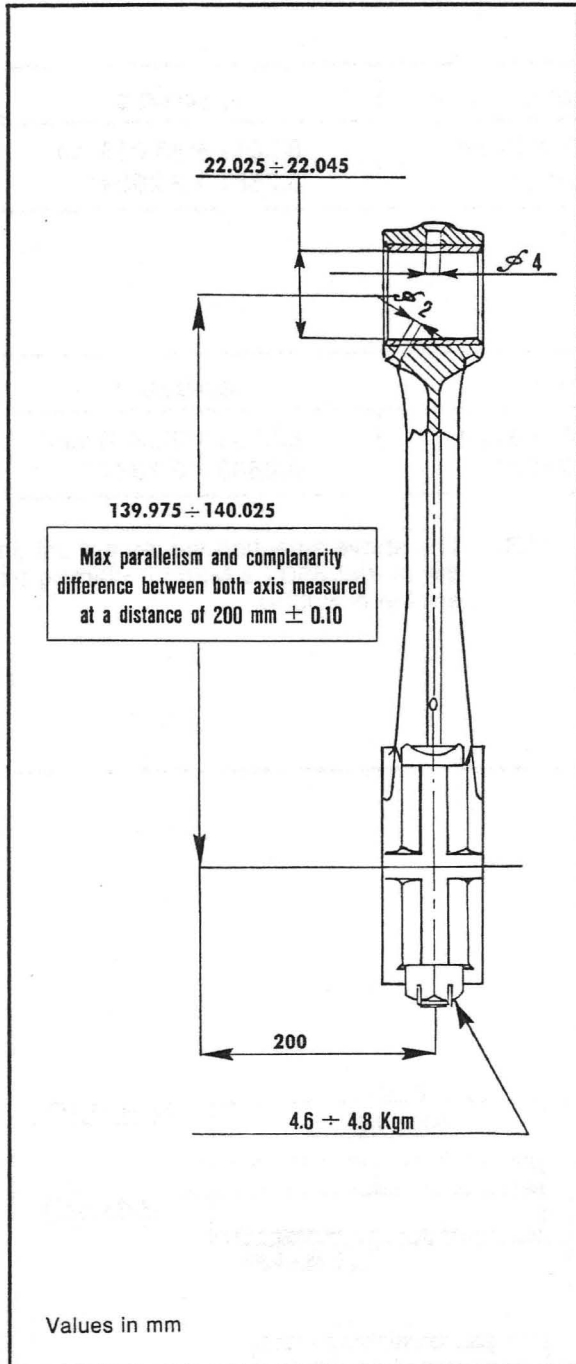
The pistons of an engine must be balanced; a weight difference between them of 1.5 gr is allowed.

When fitting a piston check that the class mark stamped on the piston and the word «SCA» (exhaust) are facing the exhaust hole in the cylinder.

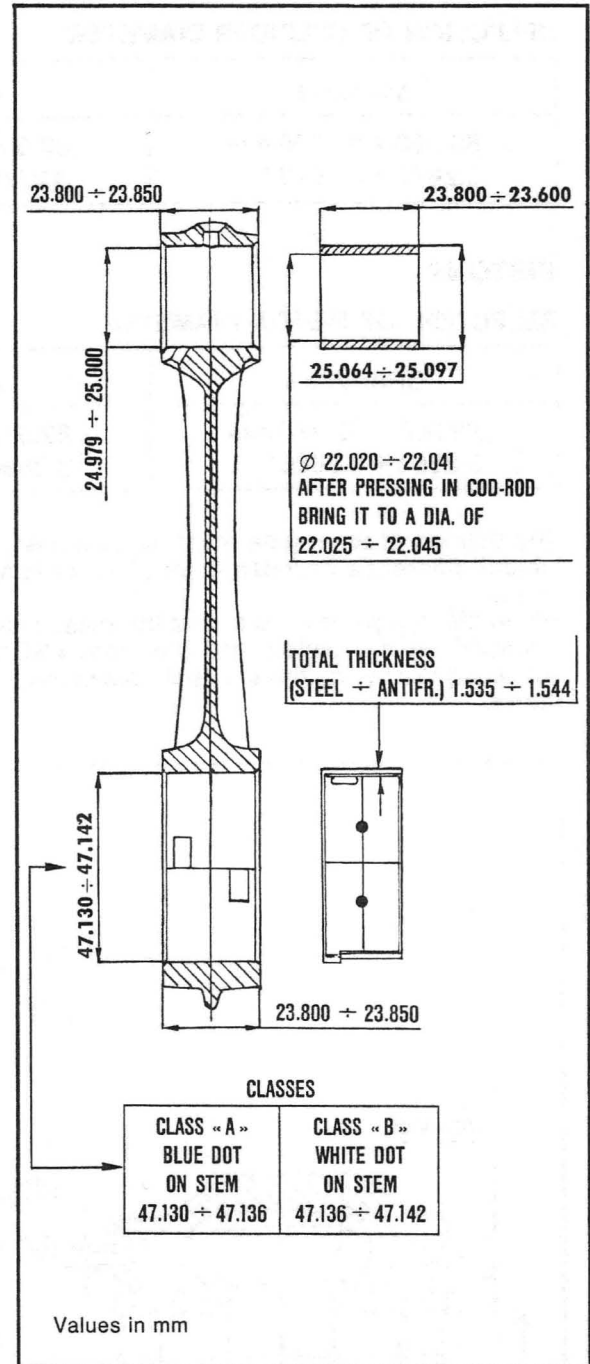
N.B. — The above selection values are valid for the model 850 Le Mans II starting from engine n. 80390.



CON-RODS



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CRANKSHAFT

Crankpin diameter:

STANDARD PRODUCTION PIN	UNDERSIZED OF		
	0.254 mm / .010"	0.508 mm / .020"	0.762 mm / .030"
$44.008 \pm 44.020 \text{ mm}$ 1.7326 ± 1.7331 "	$43.754 \pm 43.766 \text{ mm}$ 1.7225 ± 1.7230 "	$43.500 \pm 43.512 \text{ mm}$ 1.7120 ± 1.7130 "	$43.246 \pm 43.258 \text{ mm}$ 1.7025 ± 1.7030 "

Mainshaft diameter, timing side:

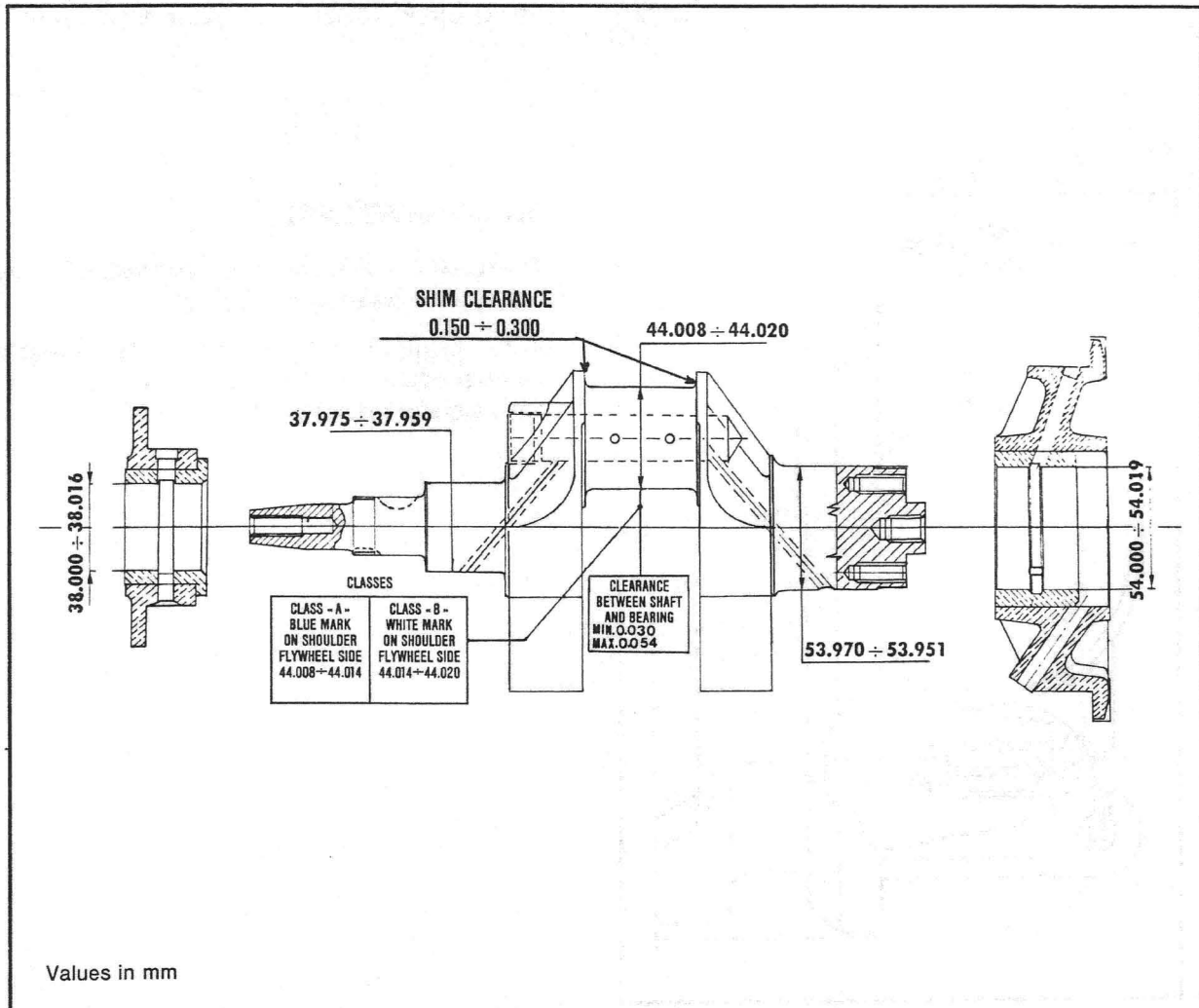
STANDARD PRODUCTION PIN	UNDERSIZED OF		
	0.2 mm / .0078"	0.4 mm / .01574"	0.6 mm / .02362"
$37.975 \pm 37.959 \text{ mm}$ 1.4951 ± 1.4944 "	$37.775 \pm 37.759 \text{ mm}$ 1.4872 ± 1.4866 "	$37.575 \pm 37.559 \text{ mm}$ 1.4793 ± 1.4787 "	$37.375 \pm 37.359 \text{ mm}$ 1.4715 ± 1.4707 "

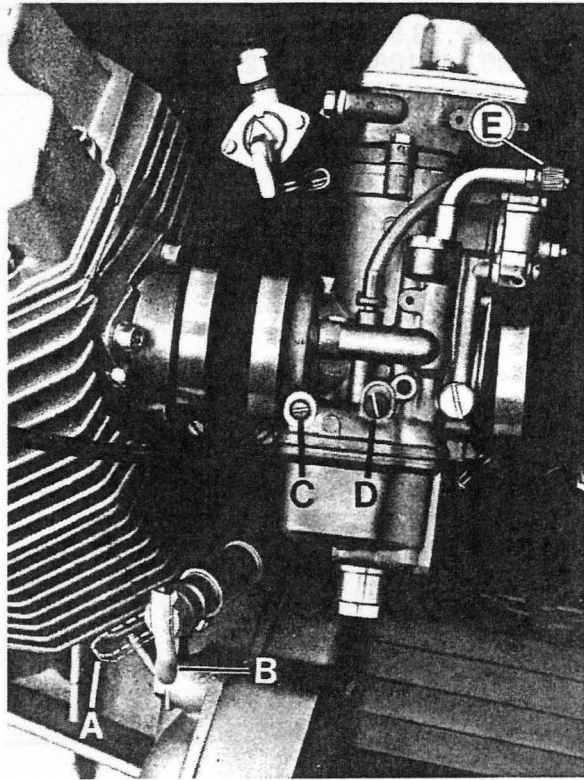
Mainshaft diameter, drive side:

STANDARD PRODUCTION PIN	UNDERSIZED OF		
	0.2 mm / .0078"	0.4 mm / .01574"	0.6 mm / .02362"
53.970 ÷ 53.951 mm 2.1248 ÷ 2.1240"	53.770 ÷ 53.751 mm 2.1169 ÷ 2.1162"	53.570 ÷ 53.551 mm 2.1090 ÷ 2.1083"	53.370 ÷ 53.351 mm 2.1011 ÷ 2.1004"

CHECKING CRANKSHAFT BALANCING

To balance statically the crankshaft it is necessary to add a weight of 1.650 ÷ 1.652 kg.





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CARBURETTORS

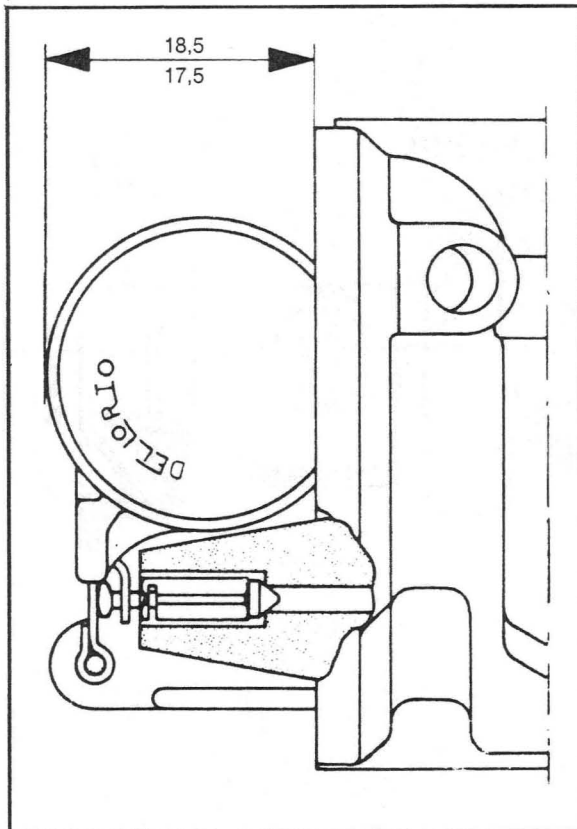
N. 2 Dell'Orto type carburettors «PHF 36 B (D)» (right) «PHF 36 B (S)» (left)

Controls

- throttle control grip on the R/H side of the handlebar;
 - easy starter lever for cold engine starts on the L/H side of crankcase.
- «A» starting position for cold engine.
«B» riding position.

Standard carburettor settings:

Choke	∅ 36 mm
Throttle valve	60/3
Atomizer	265 A B
Main jet	115
Idling jet	50
Starter jet	70
Pump jet	33
Needle	K 18 (3 rd notch)
Float	10 gr
Idling screw adjustment: opens 1 1/2 turns	

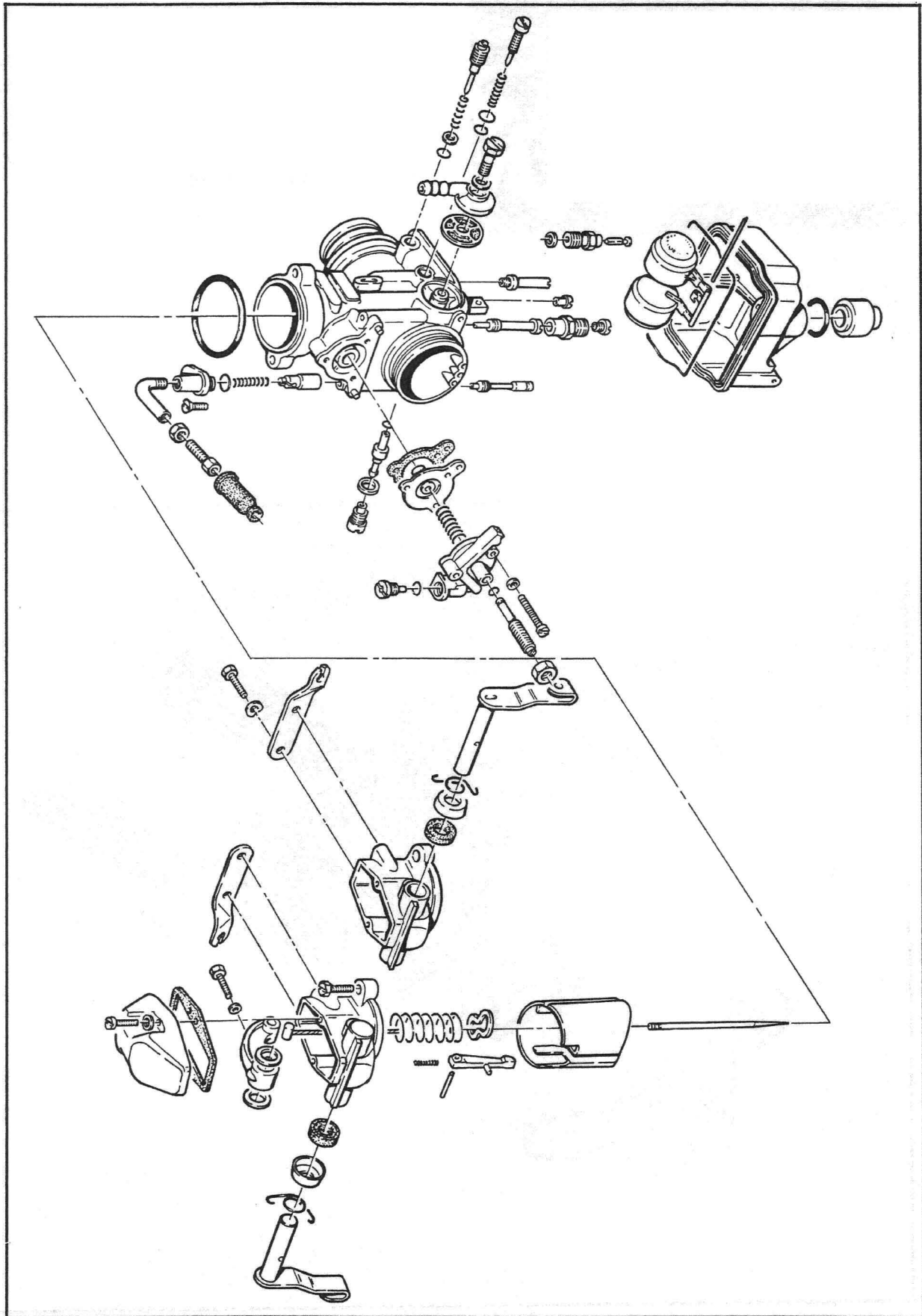


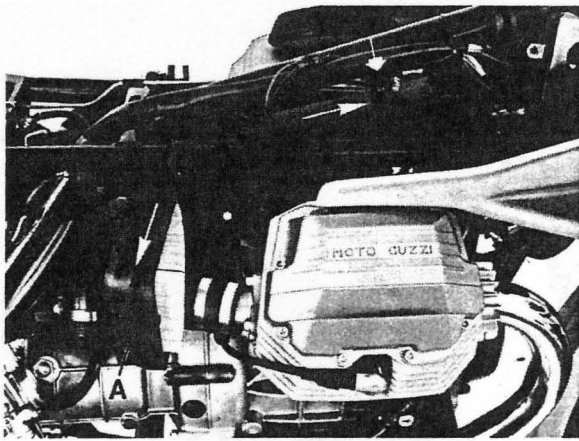
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FLOAT LEVELLING

To level the floats place the carburettor in vertical position as shown in fig. 235.

N.B. - Contrary to what said in the workshop manual code 14 92 01 56 the above values are valid also for model 850 Le Mans II.



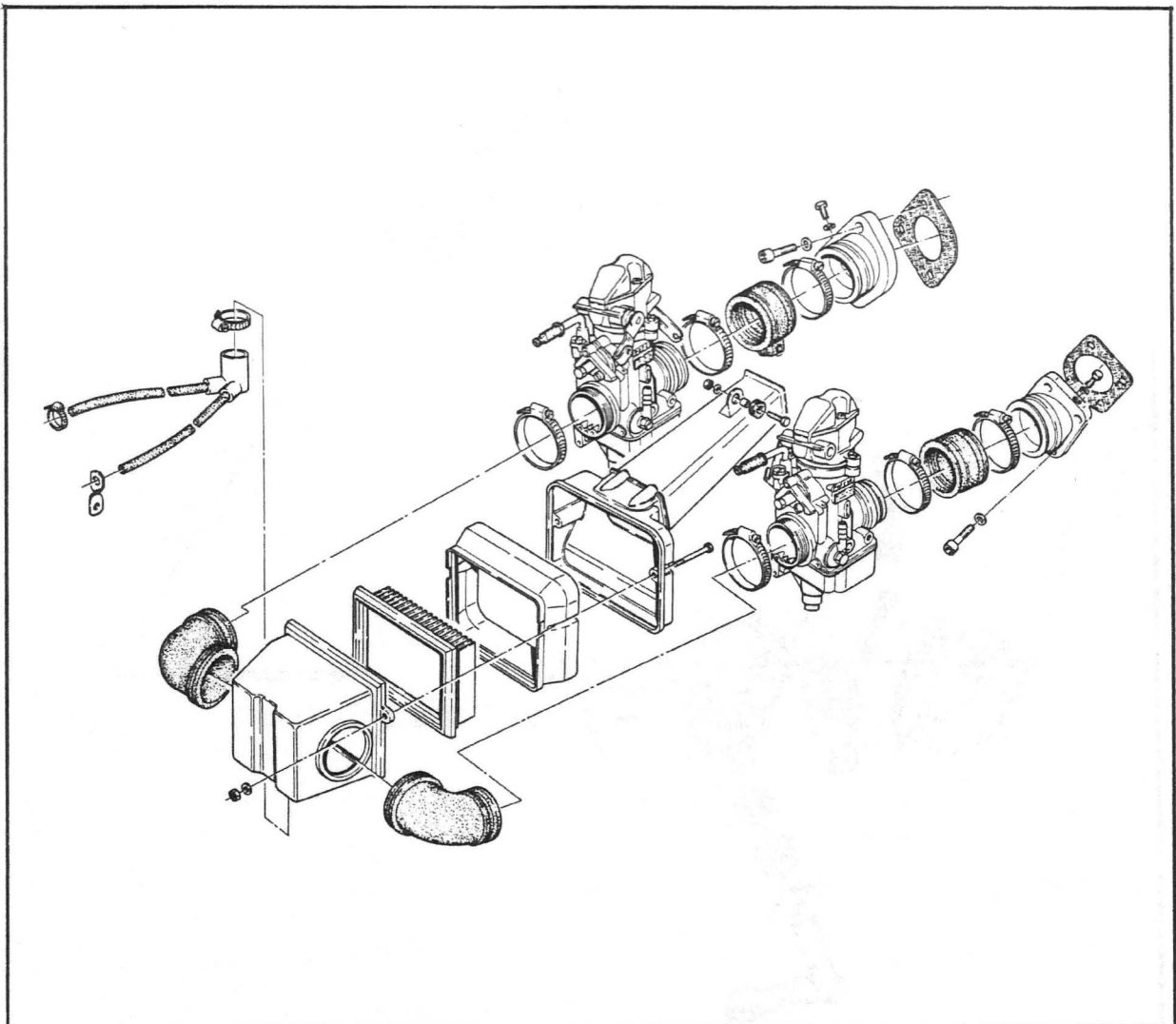


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REPLACING THE AIR FILTER

Every 6000 km (3700 miles) check conditions of air filter, if necessary clean it using compressed air; it is advisable to replace it every 9000 km (5600 miles).

To replace the air filter lift the saddle, remove fuel tank and side covers. Take out R/H carburettor and undo the screws fixing the air intake to the bike frame: remove the two side screws and take out from the R/H side the container «A» complete with the air filter.

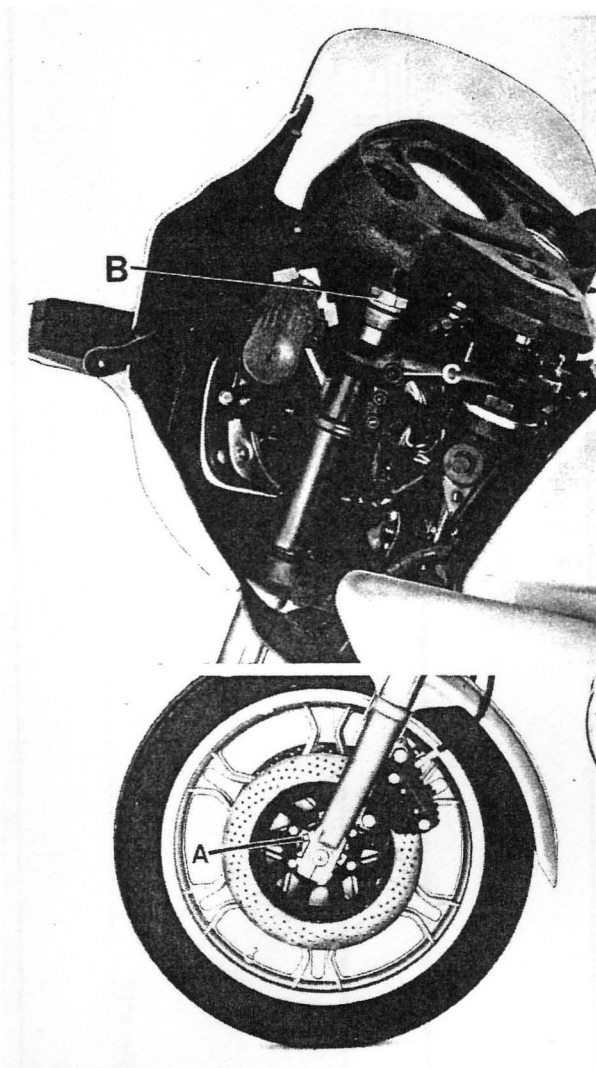


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FRONT FORK LUBRICATION

To replace the oil in the front fork legs, proceed as follows:

- with the bike on the central stand, loosen the side screw «C» locking the steering head to the fork arm; disconnect compensating pipe and completely unscrew the hexagonal screw plug «B»; then undo drain plug «A»;
- slightly press the front part of the bike to force out the plug «B» which is solidal to the shock absorber. Do this paying attention not to damage the instruments panel;
- refit plug «A» and introduce the quantity of fluid necessary (60 cc Agip F. 1 ATF Dexron) through the space existing between the inner diameter of the fork and the shock absorber body;
- release the front part of the bike refit plug «B» and lock the side screw. Repeat the same operation for the other fork leg;
- reconnect compensating pipe and check the pressures keeping to the given values.



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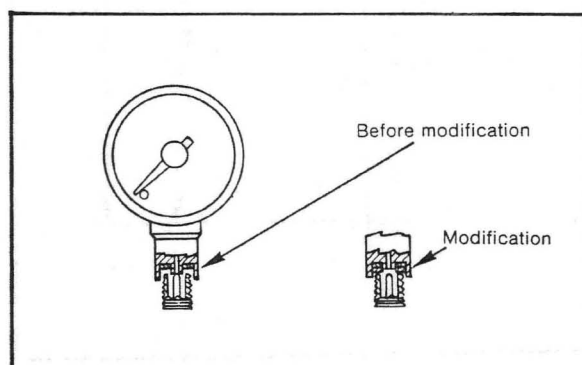
OIL PNEUMATIC SHOCK ABSORBERS

The operating load pressures of these shock absorbers are the following;

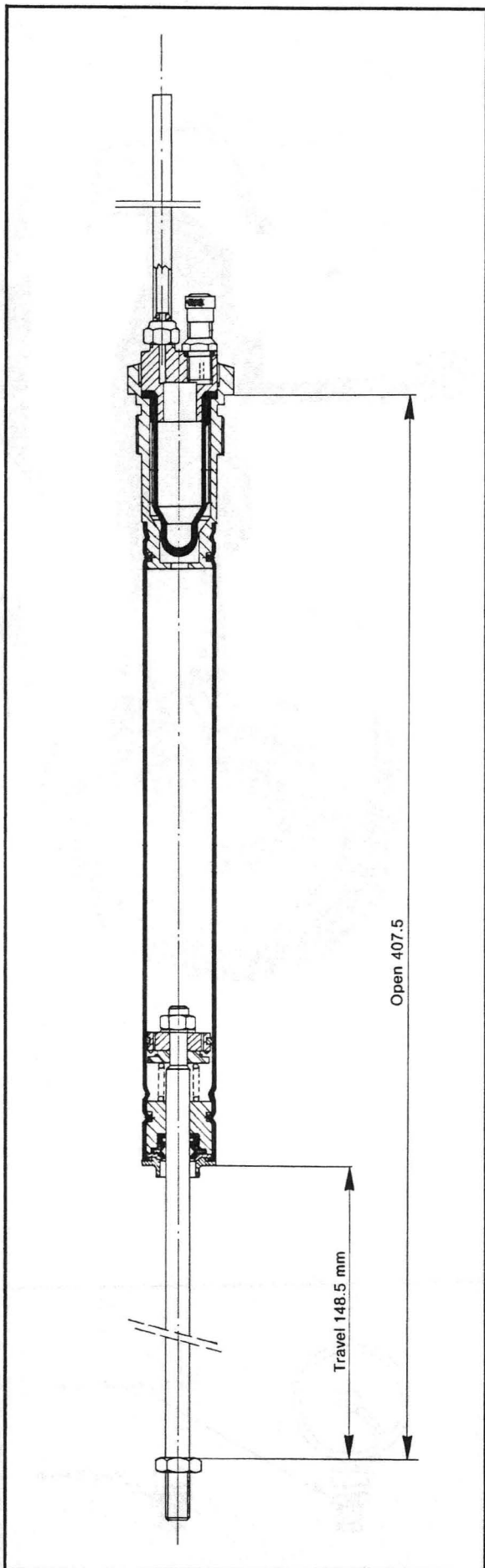
- front: 2 ÷ 3 kg/sqcm
- rear: 3 ÷ 5 kg/sqcm

To check the pressure it is advisable to use a pressure gauge having a very short pipe (better if any), as the capacity of the pipe may affect the pressure existing inside the shock absorbers. To ascertain to which extent your pressure gauge reduces, when taking the measurement, the pressure inside the shock absorber it is sufficient to carry out two consecutive measurements: the difference between the two readings gives approximately the pressure reduction occurring whenever a measurement is taken. The measurement must be taken with the bike on the central stand and with cold shock absorbers; to charge the shock absorbers only use moistureless air.

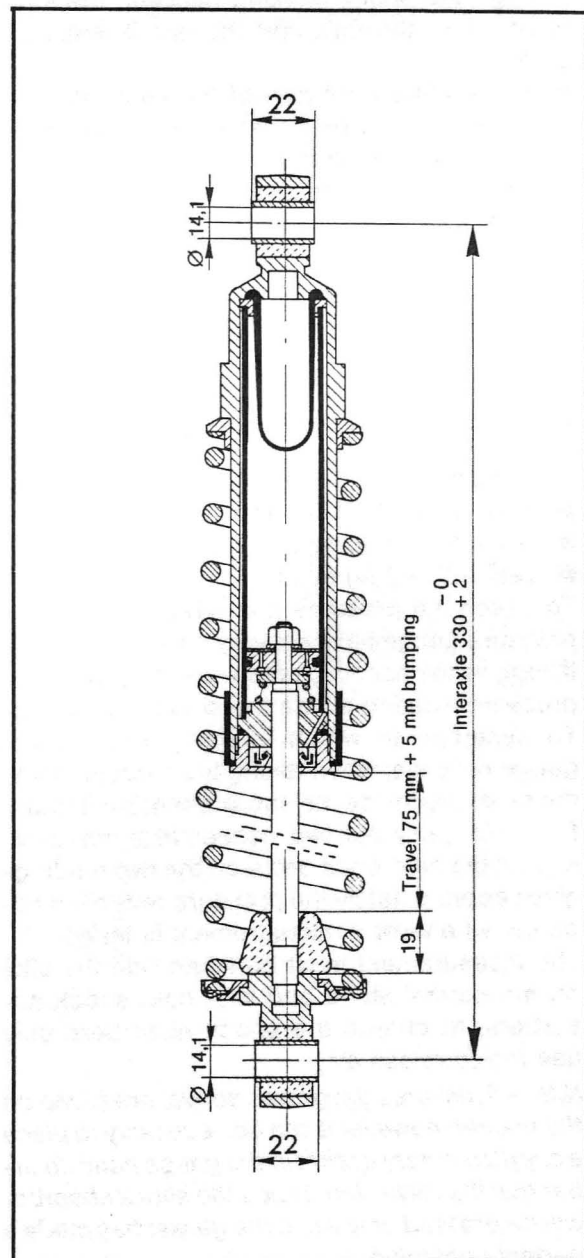
N.B. — Pressures gauges as above, are found on the market: however it can be necessary to place a supplementary gasket in the gauge head, in order that the valve stem inside the shock absorber will be pressed only when the gasket has made a perfect tightening.



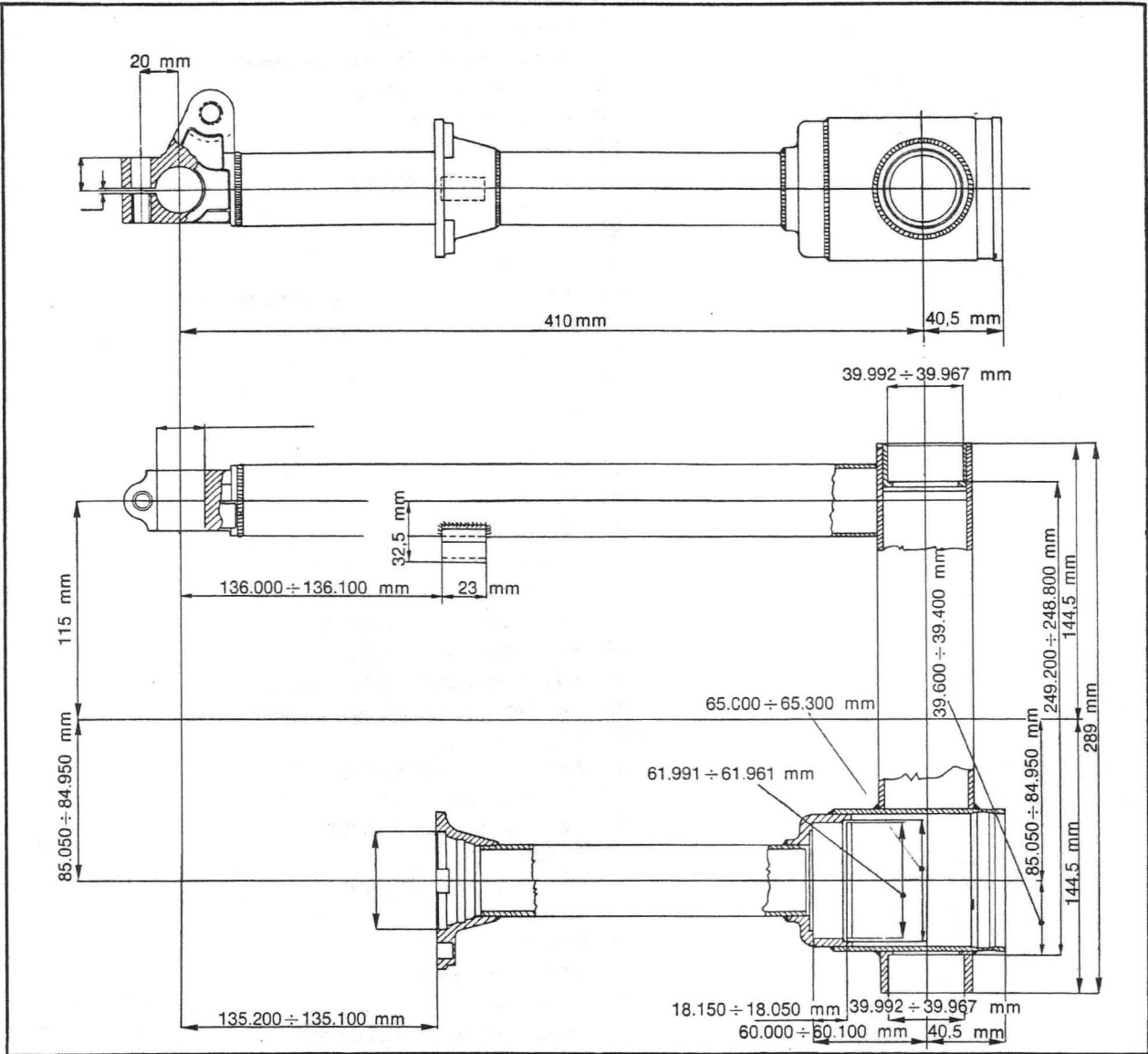
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KITS SUPPLIED ON REQUEST

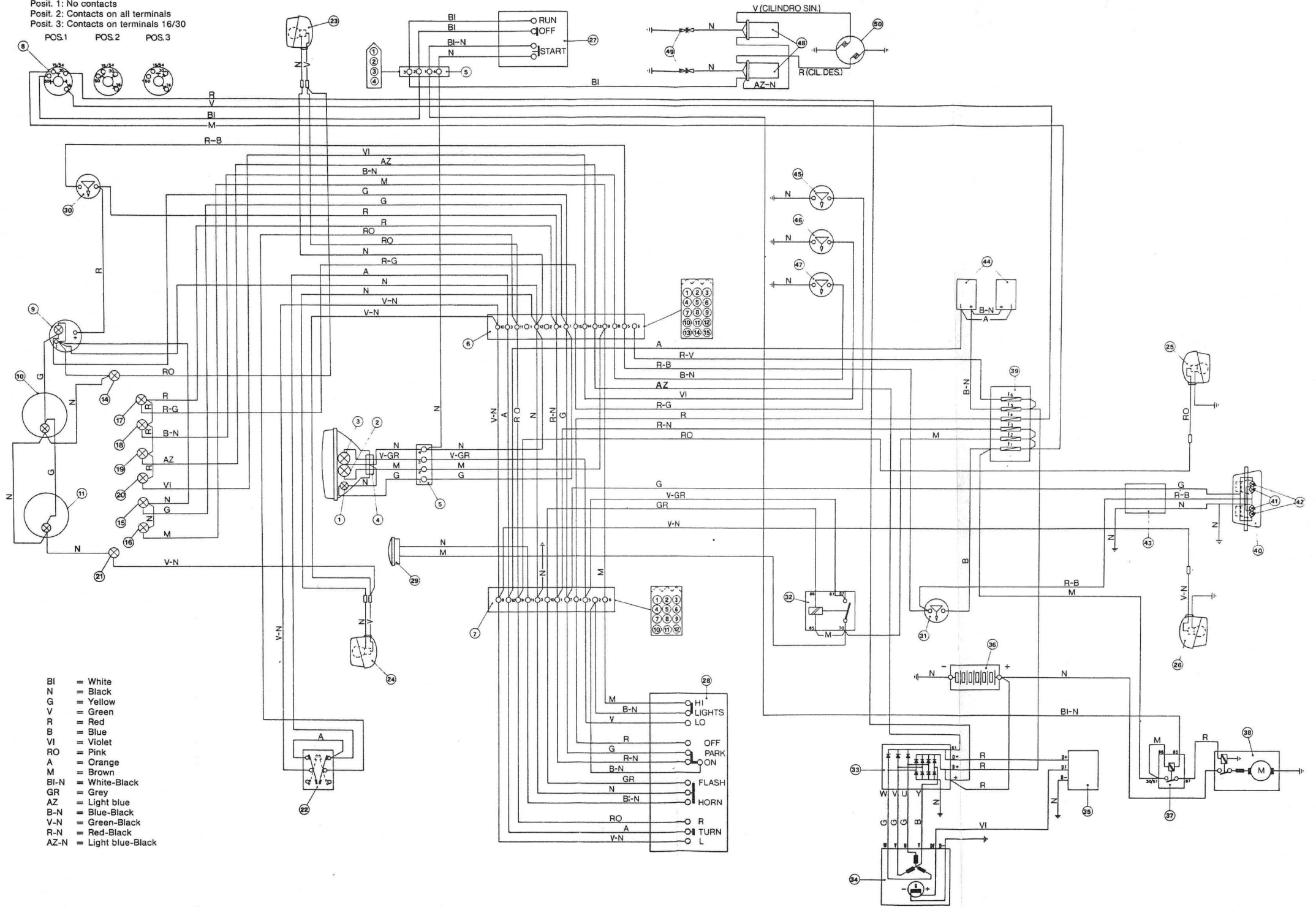
The following kits remain valid:

- GEARBOX SET OF STRAIGHT TOOTHED GEARS
foreseen in the workshop for the model 850 Le
Mans II - code 14920156.

- 1 Parking light, front (4 W)
- 2 High beam bulb (45 W)
- 3 Low beam bulb (40 W)
- 4 3-way connector for headlight (AMP)
- 5 4-way connector Molex
- 6 15-way connector
- 7 12-way connector
- 8 Ignition key (3 positions)
- 9 Voltmeter (3 W)
- 10 Tachometer (3 W)
- 11 Rev-counter (3 W)
- 12 Warning light, right turn signal (1.2 W)
- 15 Warning light, parking (1.2 W)
- 16 Warning light, high beam (1.2 W)
- 17 Warning light, brake fluid level (1.2 W)
- 18 Warning light, oil pressure (1.2 W)
- 19 Warning light, generator (1.2 W)
- 20 Warning light, neutral position (1.2 W)
- 21 Warning light, left turn signal (1.2 W)
- 22 Switch for simultaneous turning on of all flashers
- 23 Turn flasher, front, right (21 W)
- 24 Turn flasher, front, left (21 W)
- 25 Turn flasher, rear, right (21 W)
- 26 Turn flasher, rear, left (21 W)
- 27 Engine starting and stop button
- 28 Flashing light, turn signals, and horn switch
- 29 Horn
- 30 Front brake switch (STOP)
- 31 Rear brake switch (STOP)
- 32 Flashing light relay (FLASH)
- 33 Rectifier
- 35 Alternator (14 V - 20 A 21)
- 35 Regulator
- 36 Battery
- 37 Starter motor relay
- 38 Starter motor
- 39 Terminal block with fuses (16 A)
- 40 Tail light
- 41 Rear stop light (21 W)
- 42 Number plate and rear parking light (5 W)
- 43 3-way connector
- 44 Flasher box
- 45 Oil brake level solenoid
- 46 Neutral position solenoid
- 47 Oil pressure solenoid
- 48 Coils
- 49 Spark plugs
- 50 Contact breaker

IGNITION SWITCH POSITION

Posit. 1: No contacts
 Posit. 2: Contacts on all terminals
 Posit. 3: Contacts on terminals 16/30



- BI = White
- N = Black
- G = Yellow
- V = Green
- R = Red
- B = Blue
- VI = Violet
- RO = Pink
- A = Orange
- M = Brown
- BI-N = White-Black
- GR = Grey
- AZ = Light blue
- B-N = Blue-Black
- V-N = Green-Black
- R-N = Red-Black
- AZ-N = Light blue-Black