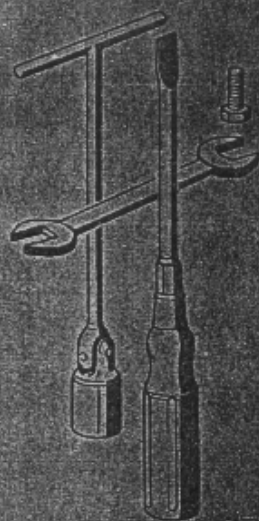


F.lli Benelli S.p.A.

500 *Quattro*

MANUALE DI OFFICINA
WORKSHOP MANUAL MANUEL DE REPARATION WERKSTATT HANDBUCH



750 *Sei*

INTRODUCTION

Purpose of this manual is to give the necessary instructions for overhauling and carrying out repairs in a rational way.

All data herein contained are meant to give a general knowledge on the main operations to be made when overhauling the different groups.

For this reason, the manual contains many illustrations, drawings, diagrams and tables to assist in the disassembling, checking and assembling operations.

This manual will also be a guidance to anybody who wishes to familiarize with the manufacturing characteristics of the various component, the knowledge of which will be an essential factor for performing a good job.

NOTE - The terms "right" and "left" used in the text are to be considered as seen by the rider on saddle.

For measures: $1'' = 25,4 \text{ mm} - 1 \text{ mm} = .03937''$.

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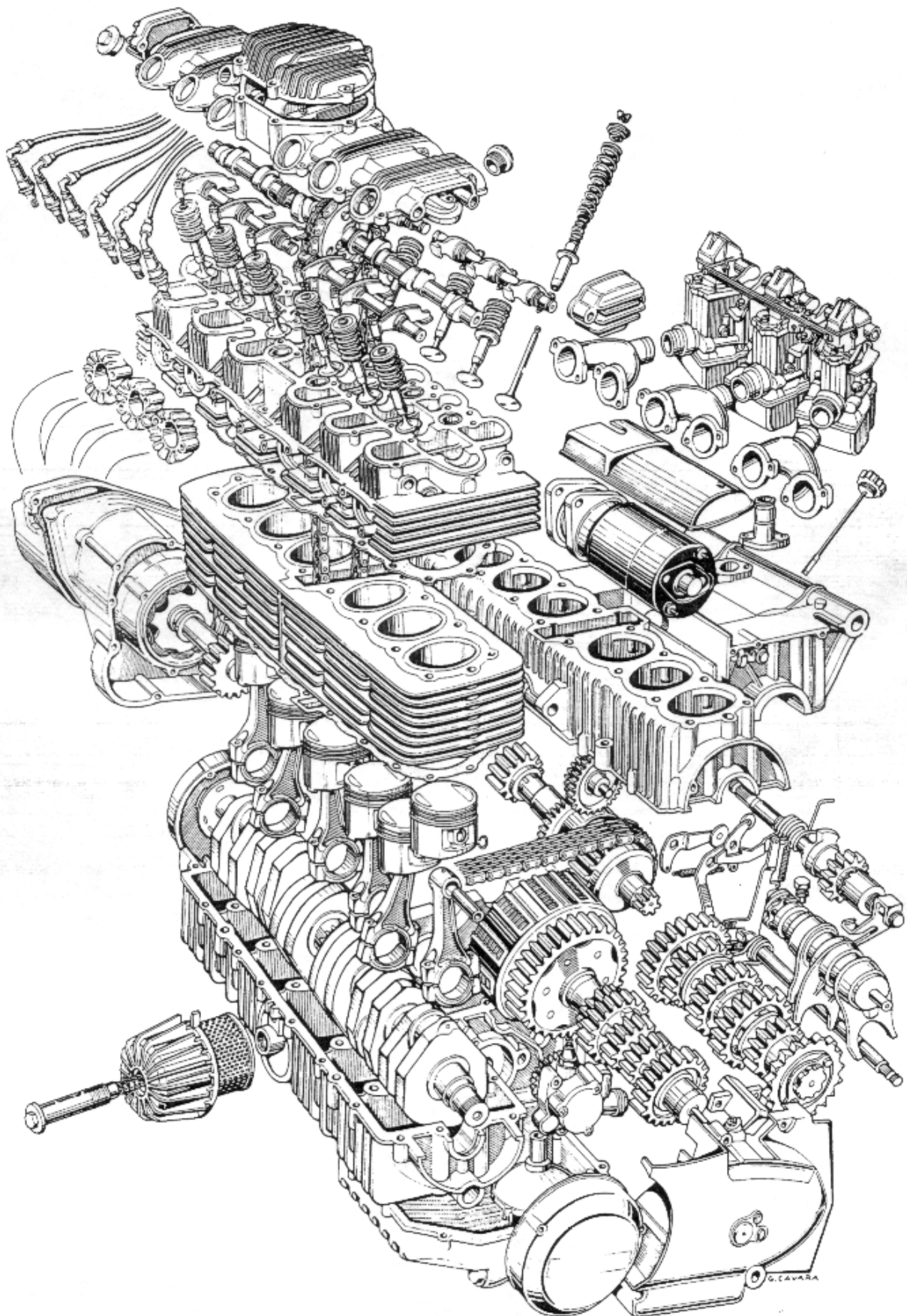
10**WIRING DIAGRAM**

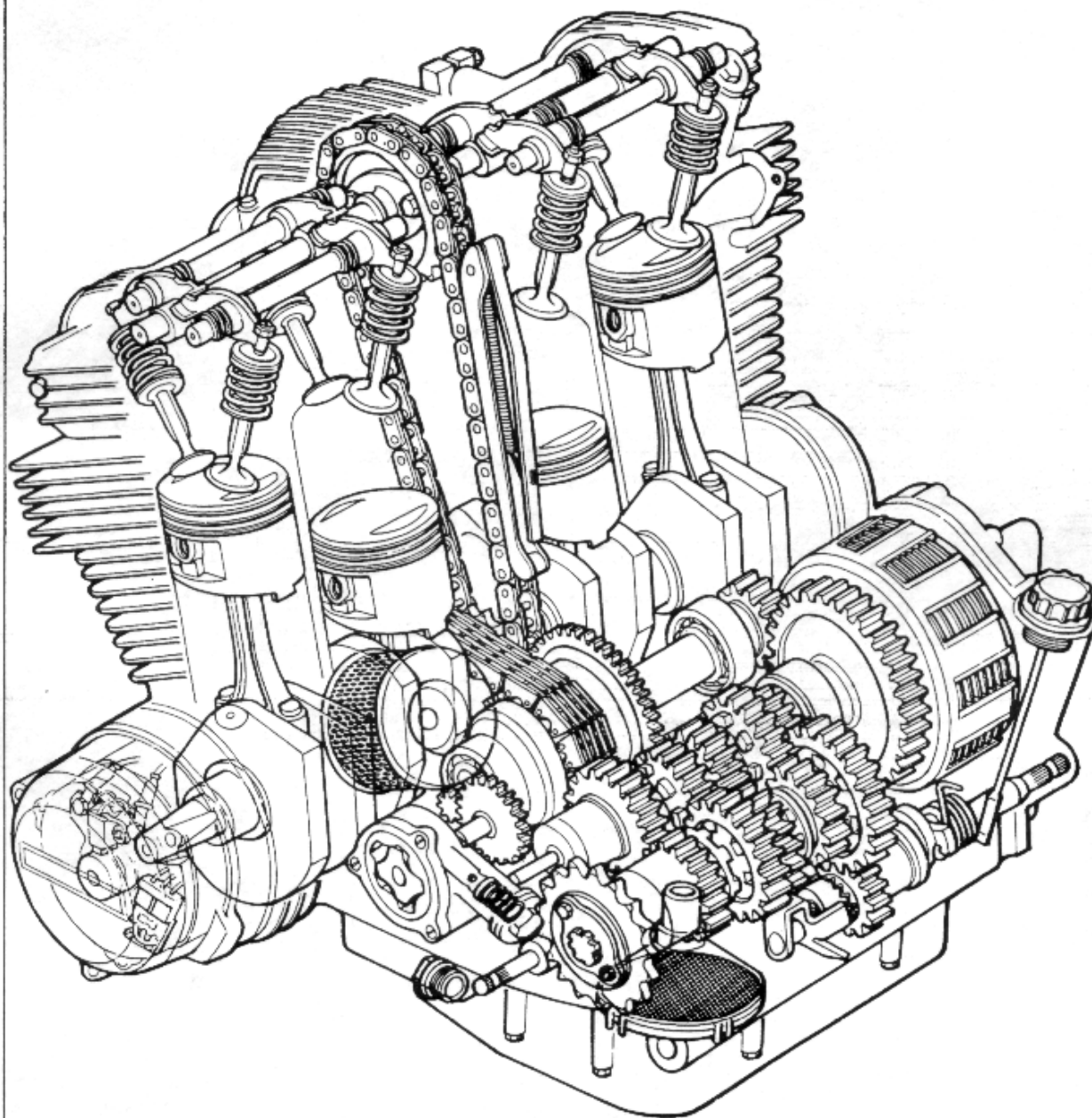
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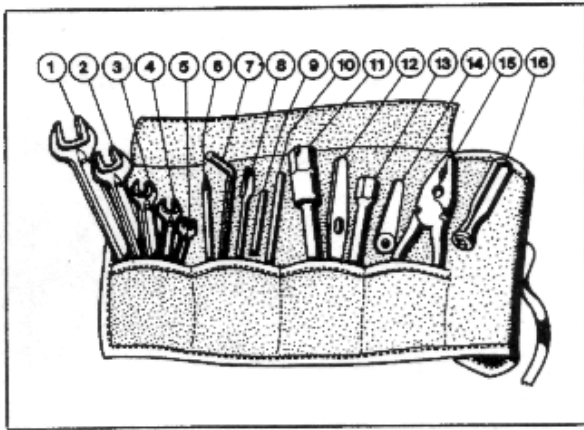
1 TECHNICAL DATA

	500 Quattro	750 Sei
ENGINE		
4 stroke		
— number of cylinders	4 in line	6 in line
— bore x stroke	mm 56 x 50,6	mm 56 x 50,6
— displacement	cc 498,51	cc 747,77
— compression ratio	10,2	9,8
— revs. at max. engine speed	9500 rpm	8900 rpm
— horse power	HP 47	HP 71
VALVE GEARING		
O.H. camshaft, chain driven		
— inlet	opens: 11° before TDC closes: 43° after BDC	opens: 11° before TDC closes: 43° after BDC
— exhaust	opens: 43° before TDC closes: 11° after BDC	opens: 43° before TDC closes: 11° after BDC
— rocker clearance for valve timing	mm 0,8 (.0315")	mm 0,8 (.0315")
— normal rocker clearance (cold engine)	mm 0,13 ÷ 0,15 (.00511" ÷ .00585")	mm 0,13 ÷ 0,15 (.00511" ÷ .00585")
CARBURETION		
— carburettors	n. 4 Dell'Orto VHB 22 D	n. 3 Dell'Orto VHB 24 D
LUBRICATION		
by gear pump, «EATON» type		
— normal lubricating pressure	kg/cm ² 3,5 ÷ 4,0 (50 ÷ 57 lbs-sq.in) electrically controlled oil pressure gauge	kg/cm ² 3,5 ÷ 4,0 (50 ÷ 57 lbs-sq.in) electrically controlled oil pressure gauge
— oil filter	cartridge type, replaceable	cartridge type, replaceable
GENERATOR		
— alternator	14 V - 13 A 14 V - 20 A	14 V - 13 A 14 V - 20 A
IGNITION		
by battery with contact breaker and automatic advance	double contact breaker	triple contact breaker
— initial advance (static)	10°	10°
— automatic advance (dynamic)	25°	25°
— full advance (I. + A.)	35°	35°
— contact breaker point gap	mm 0,38 ÷ 0,42 (.015" ÷ .016")	mm 0,30 ÷ 0,40 (.012" ÷ .016")
— spark plugs	Marelli CX8L Bosch X 260 T2	Marelli CX8L Bosch X 260 T2
— spark plug gap	mm 0,5 (.020")	mm 0,5 (.020")
— ignition coils	n. 2	n. 3
— cylinder firing sequence	1-2-4-3	1-4-2-6-3-5

	500 Quattro	750 Sei
STARTING		
— electric starter motor	12 V - 0,4 HP	12 V - 0,4 HP
TRANSMISSIONS		
— clutch	multiplates in oil bath hand controlled from the handlebar (left side)	multiplates in oil bath hand controlled from the handlebar (left side)
— gearbox	5-speed, frontal engagement, constant mesh gears foot controlled from the left side of the bike	5-speed, frontal engagement, constant mesh gears foot controlled from the left side of the bike
— gearbox/rear wheel, ratio	1 : 2,117 (Z = 17/36)	1 : 2,470 (Z = 17/42)
— gear ratio:		
1st gear	1 : 2,454	1 : 2,454
2nd gear	1 : 1,666	1 : 1,666
3rd gear	1 : 1,277	1 : 1,277
4th gear	1 : 1,050	1 : 1,050
5th gear	1 : 0,900	1 : 0,900
FRAME	duplex cradle, tubular structure	duplex cradle, tubular structure
SUSPENSION		
— front	telescopic fork with hydraulic shock absorbers	telescopic fork with hydraulic shock absorbers
— rear	swinging fork and hydraulic shock absorbers	swinging fork and hydraulic shock absorbers
WHEELS	spoke	spoke
— front rim	WM 3/2,15 x 18" in steel	WM 2/1,85 x 18" in aluminium
— rear rim	WM 3/2,15 x 18" in steel	WM 3/2,15 x 18" in aluminium
TYRES		
— front, ribbed	3,50 H 18" SS MT 76	3,50 H 18" SS MT 76
— rear, studded	4,10 H 18" MT 11	120/90 H 18" MT 18
— tyre pressure front	kg/cm ² 2,00 (28.5 lbs-sq.in)	kg/cm ² 2,30 (32 lbs-sq.in)
— tyre pressure rear (1 person)	kg/cm ² 2,30 (32 lbs-sq.in)	kg/cm ² 2,30 (32 lbs-sq.in)
(2 persons)	kg/cm ² 2,50 (35 lbs-sq.in)	kg/cm ² 2,50 (35 lbs-sq.in)

	500 Quattro	750 Sei
BRAKES		
— front	single disc Ø 300 mm	twin disc Ø 300 mm (1st series Ø 280 mm)
— rear	expanding type, twin leading shoe Ø 200 width mm 30	expanding type, twin leading shoe Ø 200 width mm 30
DIMENSIONS AND WEIGHT		
— wheel base	m 1,430 (56")	m 1,430 (56")
— max. length	m 2,120 (83.4")	m 2,120 (83.4")
— max. height	m 1,040 (40.94")	m 1,080 (42.5")
— max. width	m 0,760 (30")	m 0,760 (30")
— dry weight (without fuel and lubricants)	kg 190 (418 lbs)	kg 220 (485 lbs)
PERFORMANCES		
— max. speed with only the rider:		
1st gear	km/h 69,090	km/h 71,04
2nd gear	km/h 98,919	km/h 101,719
3rd gear	km/h 132,770	km/h 136,465
4th gear	km/h 161,479	km/h 166,071
5th gear	km/h 188,406	km/h 193,772
— fuel consumption (CUNA)	lt 7,7 x 100 km (38 mpg)	lt 7,9 x 100 km (35 mpg)
FUEL AND OIL CAPACITIES		
— fuel tank	lt 23 (Petrol super 98/100 NO-RM) lt 4 (res. incl.)	lt 23 (Petrol super 98/100 NO-RM) lt 4 (res. incl.)
— engine sump	lt 2,5	lt 3
— telescopic fork oil	70 cc each leg. (1st series: 270 cc)	70 cc each leg. (1st series: 270 cc)
— braking circuit	Agip F.1 Brake Fluid SAE J 1703 C	Agip F.1 Brake Fluid SAE J 1703 C
ELECTRICAL EQUIPMENT		
BATTERY	12 V - 15 Ah	12 V - 15 Ah
LAMPS:		
— headlight (high and low beam)	12 V - 40/45 W	12 V - 40/45 W
— headlight (town)	12 V - 3 W	12 V - 3 W
— rear light (stop and parking light)	12 V - 5/21 W	12 V - 5/21 W
— turn signals	12 V - 21 W	12 V - 21 W
— tach/speedometer - rev. counter	12 V - 3 W	12 V - 3 W
— instrument panel lights	12 V - 1,2 W	12 V - 1,2 W
FUSES	8 A: 1 - 15 A: 4	8 A: 1 - 15 A: 4
HORN	12 V	12 V

Indicative data, subject to change without prior notice.



2 MAINTENANCE

The life and efficiency of the engine and vehicle components depends on a regular and accurate maintenance service.

Periodic km and mileage intervals recommended for the various maintenance operations are intended only for normal use of the motorcycle.

For more severe use, such as country road riding or high speed riding, more frequent service may be required.

In case of accident or collision, have your dealer inspect the motorcycle.

Every motorcycle is equipped with a tool kit for any emergency operation.

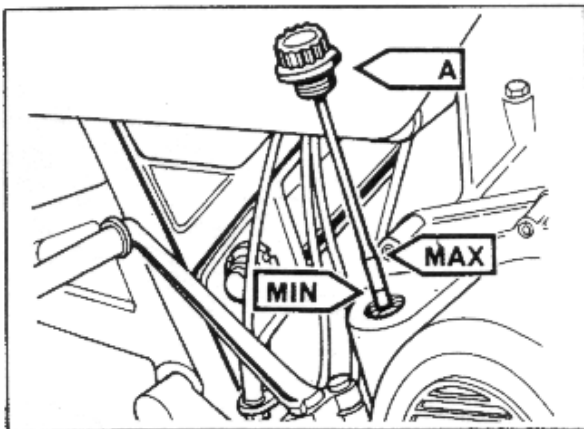
- 1 Wrench 22-24.
- 2 Wrench 17-19.
- 3 Wrench 12-13.
- 4 Wrench 8-10.
- 5 Wrench 5.5-7.
- 6 Phillips screw driver.
- 7 Allen wrench for T.C.E.I. Ø 8.
- 8 Screw driver.
- 9 Generator armature puller pin.
- 10 Pin for tube wrench.
- 11 Spark plug wrench.
- 12 Lever for screw driver.
- 13 Tube wrench 10-12.
- 14 Feeler gauge.
- 15 Pliers.
- 16 Screw driver grip.

ENGINE LUBRICATION

The engine oil is one of the chief factors affecting performance and life of the engine, therefore, it is necessary to follow these directions strictly.

2.1 CHECKING THE OIL LEVEL

Every 500 km (300 miles) check if the oil level is at the maximum mark on the filler cap dipstick «A», with the filler cap fully screwed in. Should the oil level be lower, add oil as recommended. It is advisable, however, that the oil level is never over the maximum mark, to avoid clutch malfunction, or oil overflow through the oil breather tube, due to too much crankcase pressure.



2.2 CHANGING THE ENGINE OIL

After the first 1000 ÷ 1500 km (600 ÷ 900 miles), and then every 3000 km (1800 miles) change the oil in the engine sump.

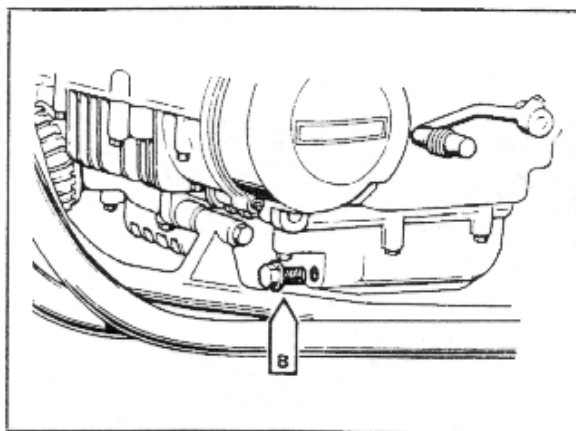
This change has to be made with the engine warm, proceeding as follows:

a Set an oil pan under the engine to catch the oil, and loosen the plug «B» on the sump, using a 17 mm wrench.

Note - To speed up the sump draining, it is advisable to also loosen the oil filler cap «A».

b After the sump is drained, turn the motor over several times to eliminate the residual oil in the lubrication circuit.

c Check if the gasket is in good condition, screw on plug «B», and fill up the sump through the filler cap hole «A», with the recommended oil type and quantity. In case the filter cartridge is replaced, add lt 0.250 (8.5 oz.) to the recommended oil quantity.



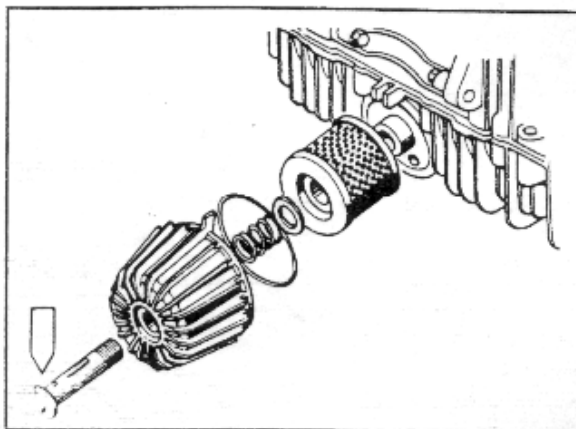
2.3 CHANGING THE OIL FILTER CARTRIDGE

The oil filter cartridge must be changed at the first oil change and then every 6000 km (3750 miles), proceeding as follows:

a Using a 13 mm wrench, loosen the cartridge cover securing bolt, remove cover, and slide the cartridge out.

b Drain the sump as previously indicated, then fit the new cartridge, and cover following the sequence of the picture. Make sure that the gasket is in good condition.

c Fill up the sump as previously indicated.

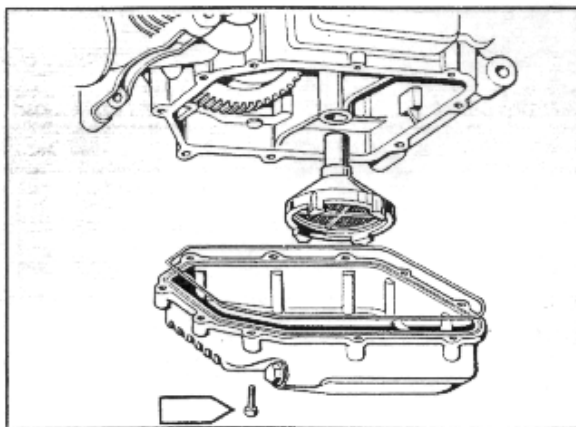


2.4 CLEANING THE OIL PUMP STRAINER

This is located under the pump inside the crankcase and has to be cleaned after the first 1000 ÷ 1500 km (600 ÷ 900 miles) and every 10000 km (6000 miles), or whenever necessary.

To dismantle it, simply remove the oil sump cover, by removing the fixing screws.

Clean the strainer carefully with petrol, dry it with compressed air, and re-fit following the sequence in the picture.

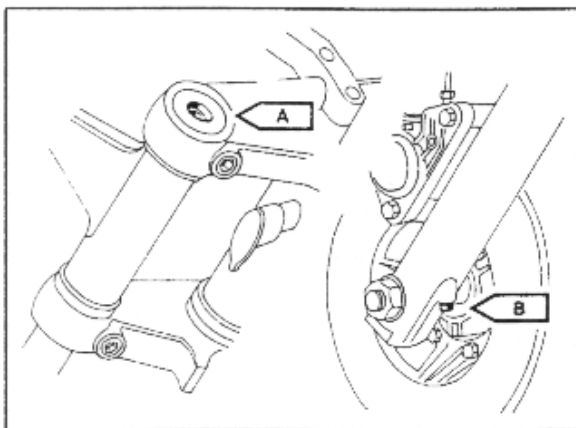


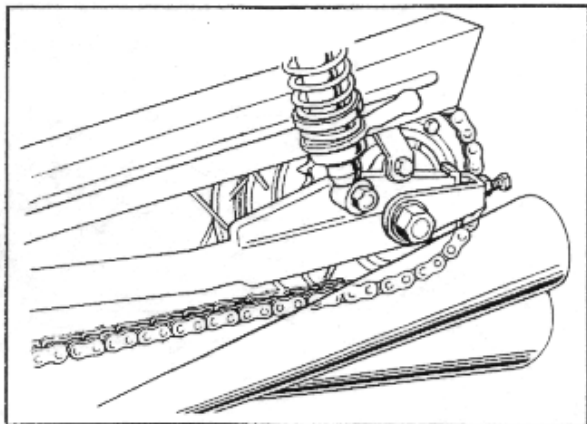
2.5 CHANGING THE OIL IN THE FRONT FORK

This change has to be made every 20000 km (12000 miles), or whenever necessary. Proceed as follows:

— loosen the oil filler and drain plugs «A» and «B»;
— drain the fork fully, then screw on the drain plugs again;

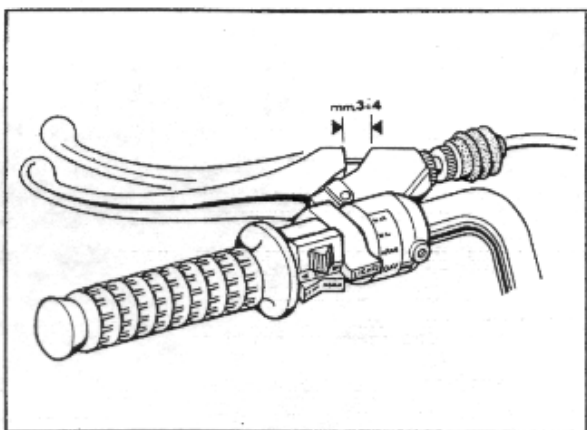
— fill each fork leg with 70 cc of oil «Agip F.1 ATF Dexron» (Transmission fluid ATF Dexron) and screw in the filler plugs.





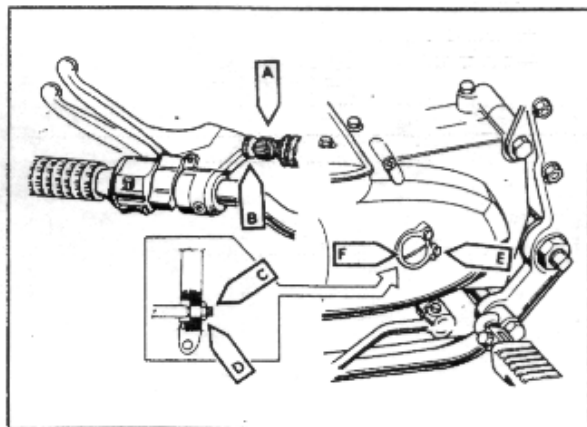
2.6 LUBRICATING THE DRIVE CHAIN

Normally, the drive chain can be lubricated without removal; however if the chain is very dirty, it is necessary to wash it in cleaning fluid, and after the chain is completely dry, lubricate with «Agip F.1 Grease 30» or «Agip Rocol Chain Lube» (Good quality chain lubricant).

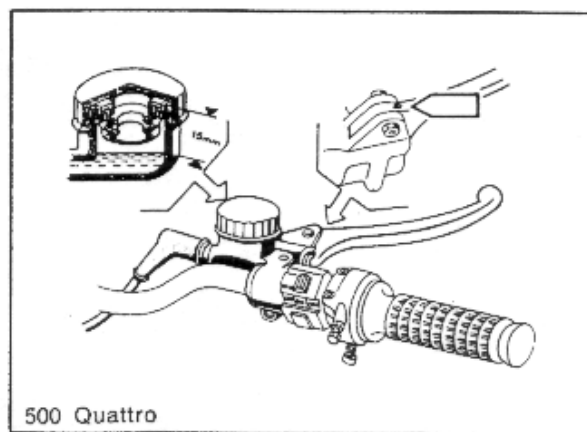


2.7 ADJUSTING THE CLUTCH CONTROL LEVER

Check if the free play at the handlebar lever is 3-4 mm (.120"-.160") otherwise loosen the nut «B», and adjust the screw «A» until the correct play is obtained.



If the clutch does not operate properly after the above adjustment (clutch slipping or improper disengagement) use the tool (M) to loosen the counter nut «D», and act on the adjuster «C» on the clutch lever in the crankcase. Adjuster «C» is accessible by removing the plug «F» and removing the bushing «E».



500 Quattro

2.8 INSPECTING AND ADJUSTING THE FRONT BRAKE

For good front brake efficiency, strictly follow these directions:

- periodically check the fluid level in master cylinder (fluid reservoir); the level should never be under the point shown in the picture;
- every 5000 km (3000 miles) replenish the oil level, using only Agip F.1 Brake Fluid - SAE J 1703.

Important - The fluid must be from the original container opened only when it is used.

- every 20000 km (12000 miles) or at least every two years, fully renew the brake fluid;
- ensure that between the floater in master cylinder

der and the end of the control lever on the handlebar there is the recommended play of $0.05 \div 0.15$ mm; otherwise act on the proper screw to get the correct play.

In order for the brake system to work properly, the oil lines, pump, and caliper must be free of any air. A long and spongy movement of the control lever is evidence of the presence of air in the system.

When washing the brake circuit, use only fresh oil. Do not use alcohol or compressed air to clean or dry the circuit. To clean metal parts, use trichloroethylene:

— every 5000 km (3000 miles) check the brake pad wearing. The thickness must be:

- 9 mm (.354") for new pad.
- 6.5-7 mm (.255"-.275") wear limit for 750 Sei.
- 6 mm (.236") wear limit for 500 Quattro.

If the thickness is under the above wear limit, the pads need to be replaced.

After the pad replacement, it is not necessary to bleed the air from the braking circuit. Simply operate the brake control lever until the caliper pistons reach normal position: pad/disc clearance about 0.2 mm (.0080").

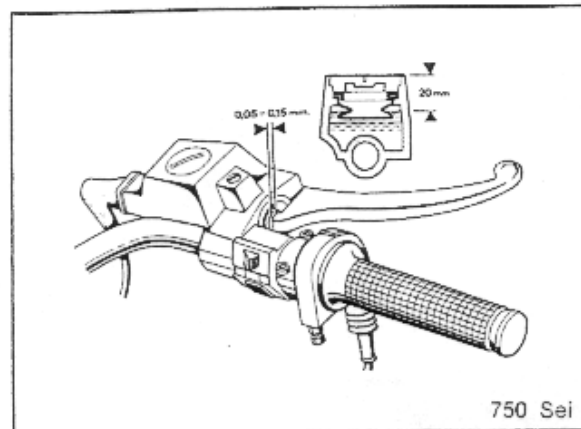
When replacing the pads, it is advisable to take out a small amount of fluid in order to avoid an overflow of oil from the master cylinder reservoir, as the piston will return further into the caliper.

Important - For the first 100 km (60 miles) apply the brakes very carefully, to allow the pads to set in properly.

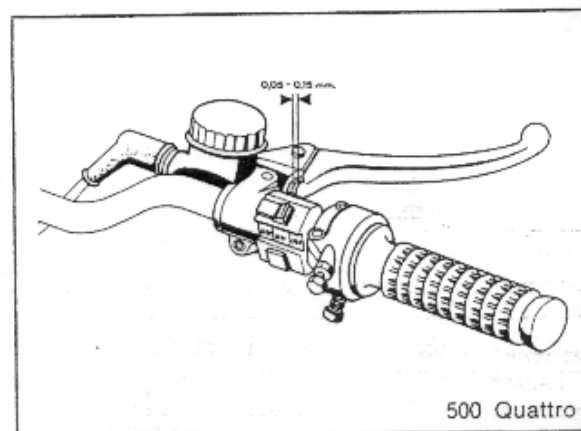
Check the condition of the oil lines, if damaged, replace them immediately.

Also check all oil line connections for leaks; if any, tighten the leaking connection, and if necessary, replace the copper gasket.

The brakes disc must be clean, without oil, grease, or dirt, and without any deep scores.



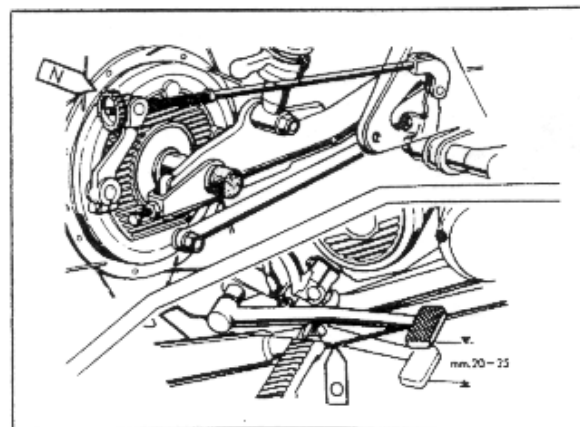
750 Sei

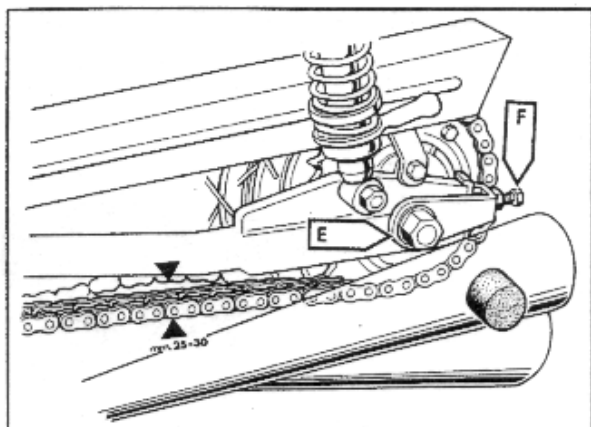


500 Quattro

2.9 ADJUSTING THE REAR BRAKE CONTROL

If the rear brake control lever makes a too long travel before the shoe linings contact the brake drum, it is necessary to screw in the adjuster «N» on the control rod, paying attention to leave free play of about 20-25 mm (.750"-1.000"), measured at the end of the control lever «O» before the shoe linings contact the brake drum.



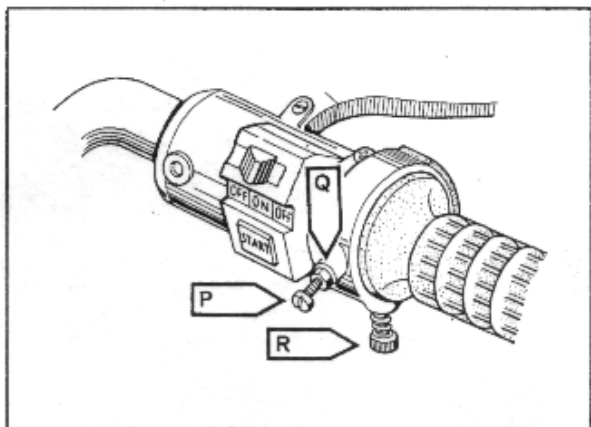


2.10 ADJUSTING THE DRIVE CHAIN

With the vehicle off the stand, check if the chain has a vertical movement of 25-30 mm (1-1 1/8"), in order to avoid excessive chain tension when the swing arm moves upward.

To adjust, proceed as follows:

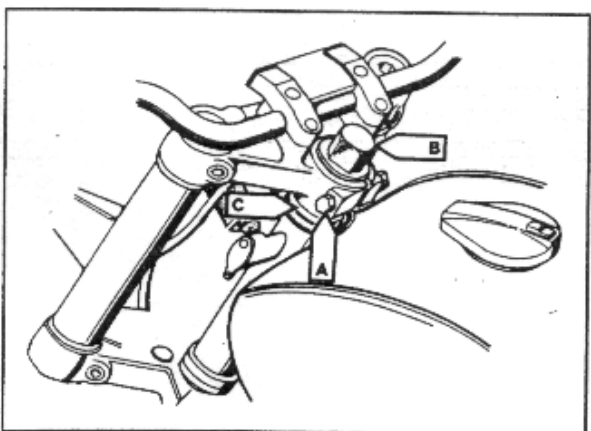
- loosen the adjuster «N» (para. 2.9);
- loosen the wheel spindle nut «E»;
- loosen the chain tensioner nut «F», and turn clockwise the adjuster bolt to tighten the chain. Reverse to loosen it. Adjust the chain tensioners evenly in order to true the rear wheel with the swing arm. After this adjustment, remember to adjust the free play of the rear brake control lever.



2.11 ADJUSTING THE THROTTLE CONTROL TWIST GRIP

To adjust the twist grip travel, act on screw «P» after loosening counternut «Q».

To tighten the twist grip movement, actuate the screw «R».



2.12 ADJUSTING THE STEERING

For safe riding, the steering has to be so adjusted as to allow a free movement of the handlebar, but without excessive play.

Operations are as follows:

- slacken the steering head fixing bolt «A», unscrew the nut «B» then screw in or out the adjuster «C», by means of a punch, to take up excessive play, or to loosen the steering. After this adjustment has been done, lock the nut «B» and the steering head fixing bolt «A».

Kg/cm ²	Lbs/sq.in.
1,5	21,3
1,7	24,1
1,9	27
2,1	29,8
2,3	32,7
2,5	35,5
2,7	38,4

2.13 TIRES

The tires are one of the most important components of the vehicle, upon which will depend the stability, riding comfort, and rider safety.

Therefore, it is not advisable to use tires having a tread depth lower than 1.5 mm and 2 mm rear.

Incorrect tire pressure may cause improper vehicle stability and affect tire life.

The recommended inflation pressures are:

- front wheel 2.00 kp/cm²;
- rear wheel (1 person) 2.30 kp/cm²;
- rear wheel (2 persons) 2.50 kp/cm².

Constant high speed riding requires a pressure increase of 0.15 kp/cm² (.021 lbs sq.in).

2.14 LUBRICATION AND GENERAL MAINTENANCE CHART

Monthly (or every 3000 km - 1800 miles)

- 1 Check the electrolyte level in the battery.

Periodically

- 2 Check the tyre pressure.

Every 500 km (300 miles)

- 3 Check the oil level in the crankcase engine sump.
- 4 Lubricate the drive chain.

Every 1500 km (900 miles)

- 5 Check spoke tightening and wheel truing.

Every 3000 (1800 miles)

- 6 Change the oil in the engine crankcase sump (each 2 oil changes replace the oil filter cartridge).
- 7 Check rocker-valve clearance.

Every 5000 km (3000 miles)

- 8 Check brake pad wear.
- 9 Check and eventually adjust the fluid level of hydraulic brake sistem.

Every 10.000 km (6000 miles)

- 10 Clean the fuel tank, filters, taps and lines.
- 11 Clean and grease the battery clamp ends.
- 12 Replace the air filter.

Every 20.000 km (12.000 miles)

- 13 Check if the rear wheel bearings are sufficiently greased.
- 14 Check if the steering bearings are sufficiently greased.
- 15 Change the oil in the front fork legs.
- 16 Clean the commutators of the alternator and starter motor using a clean rag slightly moistened with petrol.
- 17 Change the brake fluid.

2.15 CARBURETION

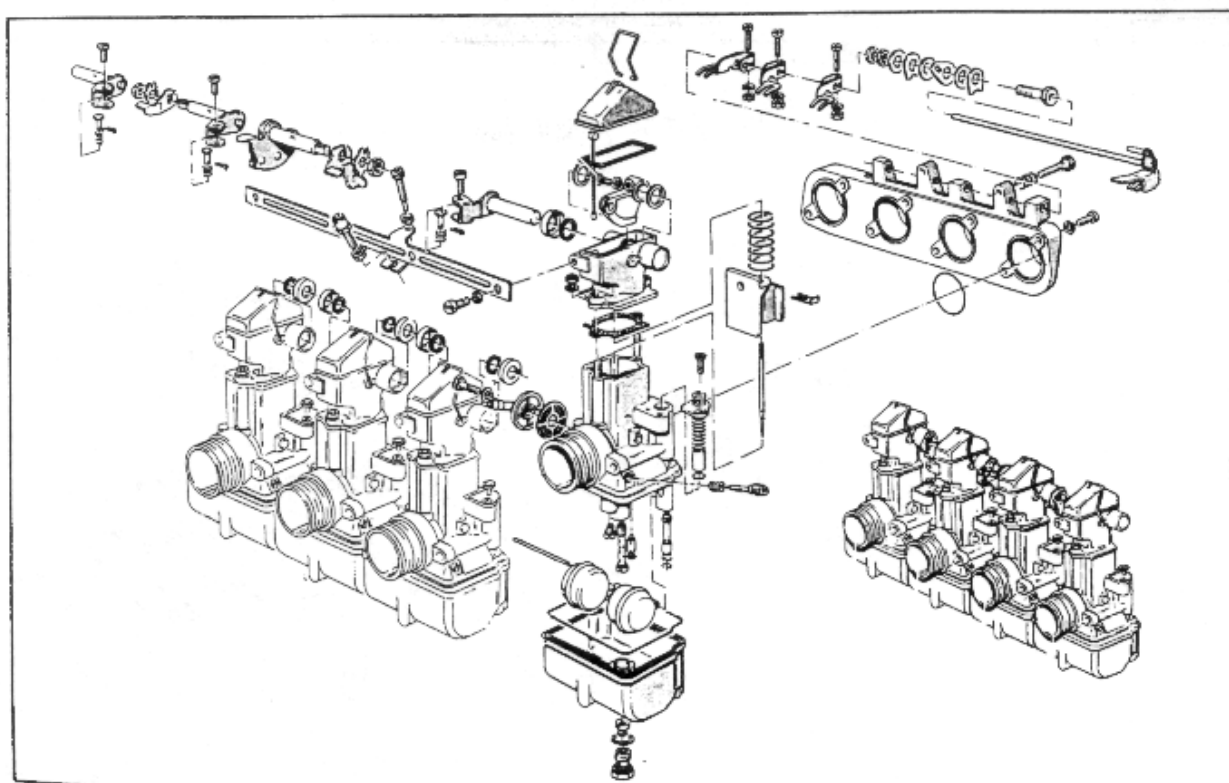
Carburetion tuning data 500 cc Quattro

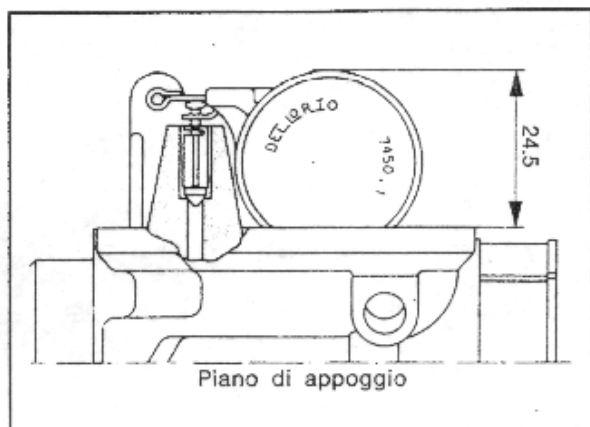
Dell'Orto, type VHB 22 D

Carburetor setting:

Choke $\varnothing$ 22 mm

Throttle (slide)	50
Atomizer (needle jet)	262 AB
Needle	E 35 (2nd notch)
Main jet	88
Idling jet	45
Starter jet	50
Float bowl	gr 14





Adjusting the float bowl

Ensure that the float bowl weight is as indicated; the weight is marked on the float bowl. Inspect the float bowl against any distortion and check if it turns freely on the pin.

Hold the carburetor body as indicated so that the float bowl arm comes to a light contact with the needle, and the needle with the float valve seat. In this position, check if the two float bowl halves are positioned at the proper height as indicated, in relation to the body plane.

Synchronizing the carburetors and adjusting the idling speed

a Remove the screw caps from the inlet tubes, and connect the mercury gauge (four columns) using the proper connectors.

b Starting from the closed position, unscrew the four idling screws «5» (for fuel) about one and one quarter turn.

c Start the engine and let it run until it reaches its normal running temperature; then idle the engine at 1200 rpm, and adjust screw «1».

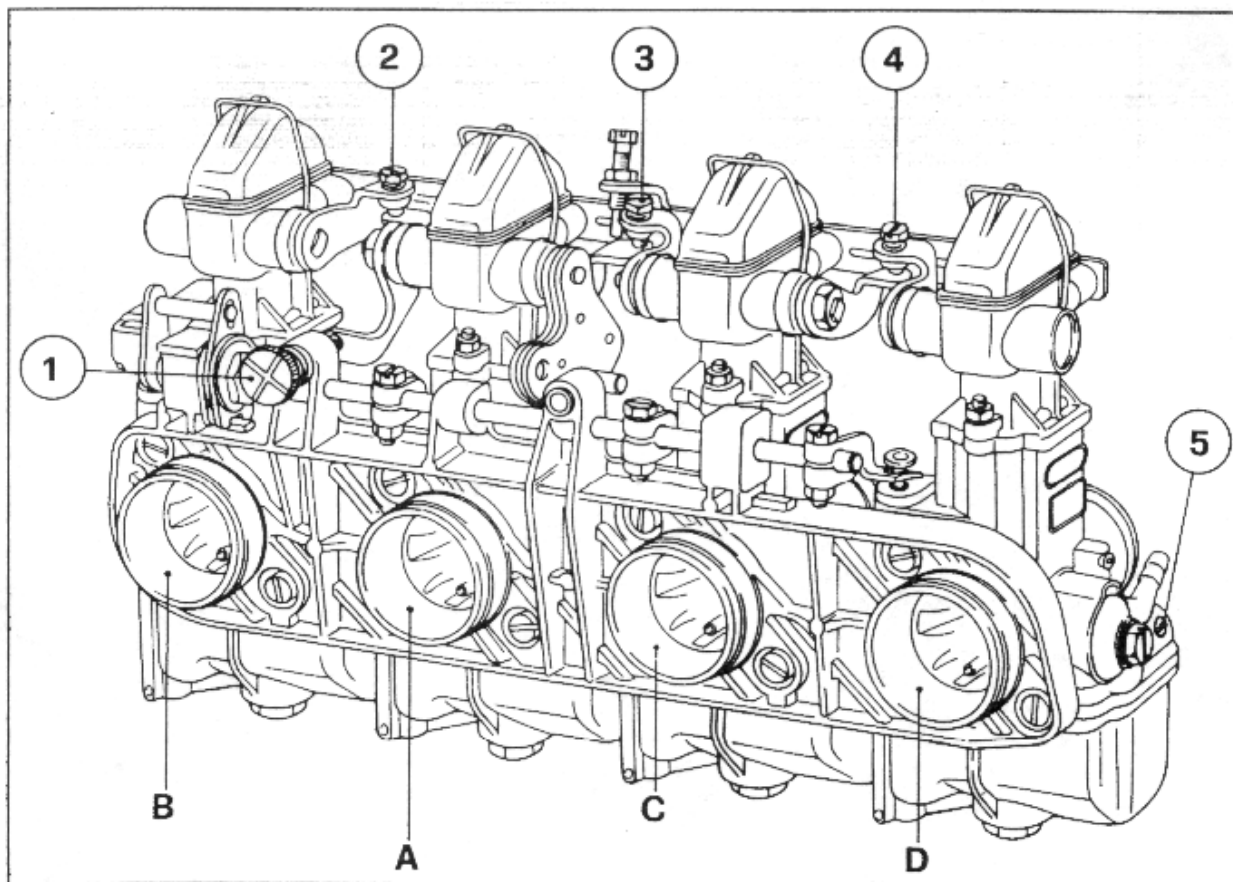
d Align the height of mercury columns for carburetors «B», «C» and «D» to the height reached by the column for carburetor «A». This is done by respectively turning in or out the screws «2», «3», «4». (When turning screw in, the mercury level will go down, turning it out, the mercury level will increase).

e Check the running of each cylinder, acting on the fuel adjusting screws «5», closing the screw, the fuel flow will be reduced, turning it out, the flow will increase.

f Repeat the alignment of the four mercury columns, then using screw «1» bring the idling speed at the desired RPM (about 1200).

If the carburetors have been disassembled for any reason, make a mechanical synchronization of the four carburetors, before refitting. Adjust the carburetor slides with screws «1», «2», «3», «4» until they are open about 1 mm (.040").

After re-fitting, synchronize and adjust idling speed as previously specified. (Items a - b - c - d - e - f).



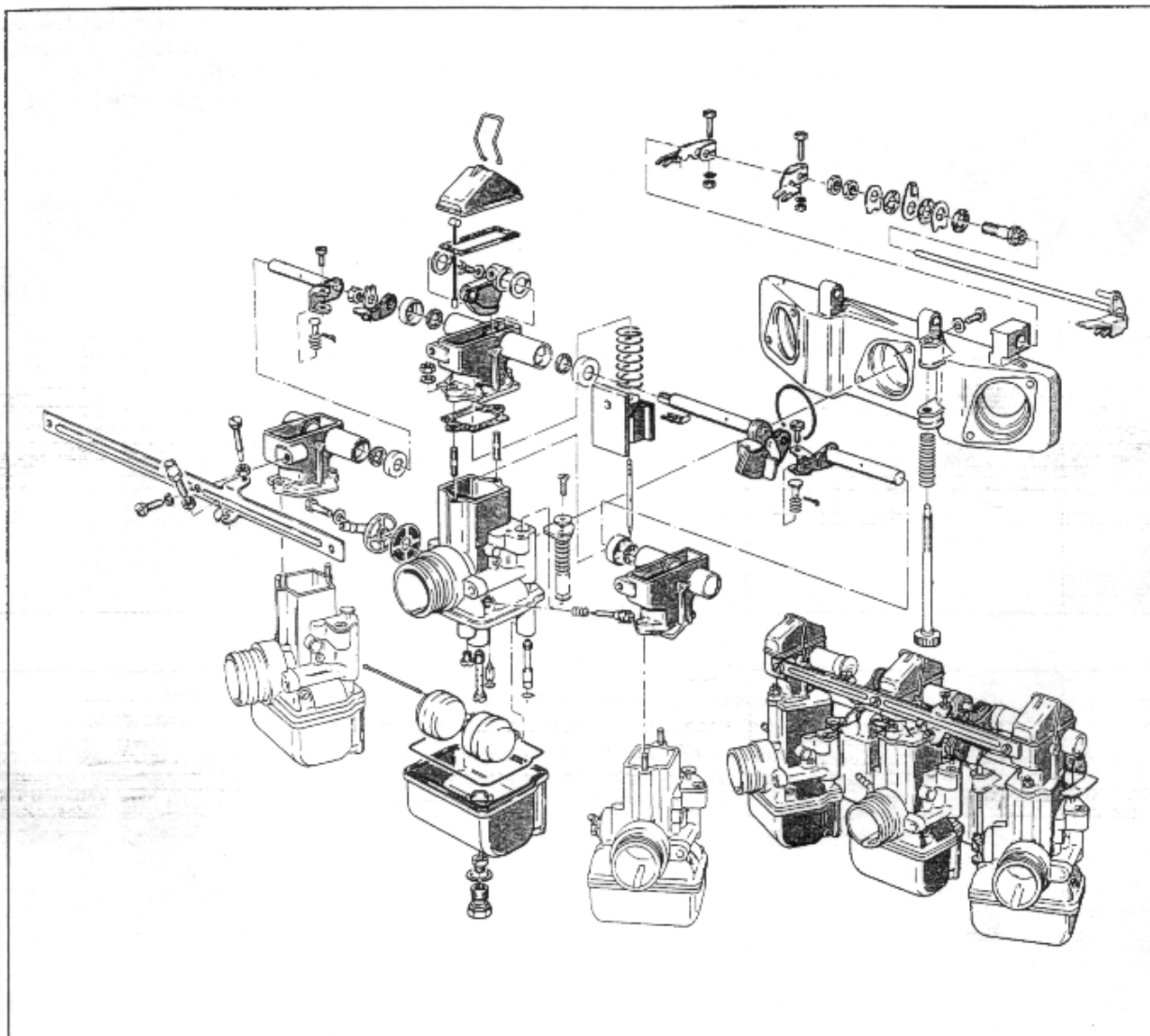
Carburetor tuning data 750 cc Sei

Dell'Orto, type VHB 24 D

Carburetor setting:

Choke $\varnothing$ 24 mm
Throttle (slide) 40

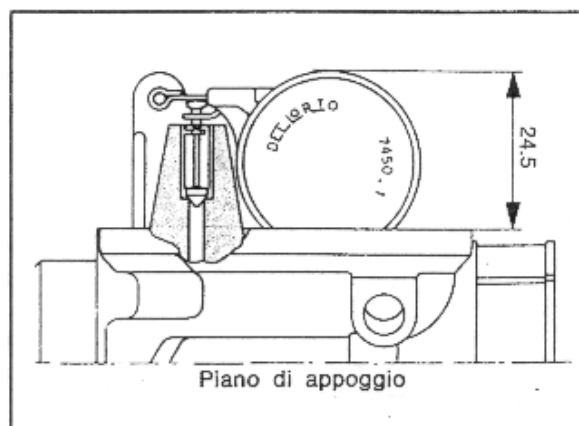
Atomizer (needle jet)	262 AE
Needle	E 4 (2nd notch)
Main jet	102
Idling jet	45
Starter jet	50
Float bowl	gr 14



Adjusting the float bowl

Ensure that the float bowl weight is as indicated; the weight is marked on the float bowl. Inspect the float bowl against any distortion and check if it turns freely on the pin.

Hold the carburetor body as indicated so that the float bowl arm comes to a light contact with the needle, and the needle with the float valve seat. In this position, check if the two float bowl halves are positioned at the proper height as indicated, in relation to the body plane.



Synchronizing the carburetors and adjusting the idling speed

- a Remove the screw caps from the inlet tubes, and connect the mercury gauge, using the proper connectors.
- b Starting from the closed position, unscrew the three idling screws «3» about one and one quarter turn.
- c Start the engine and let it run until it reaches its normal running temperature; then idle the engine at 1200 rpm, and adjust screw «4».
- d Align the height of mercury columns for carburetors «B» and «C» to the height reached by the column for carburetor «A», turning the screws «1» and «2» in or out.

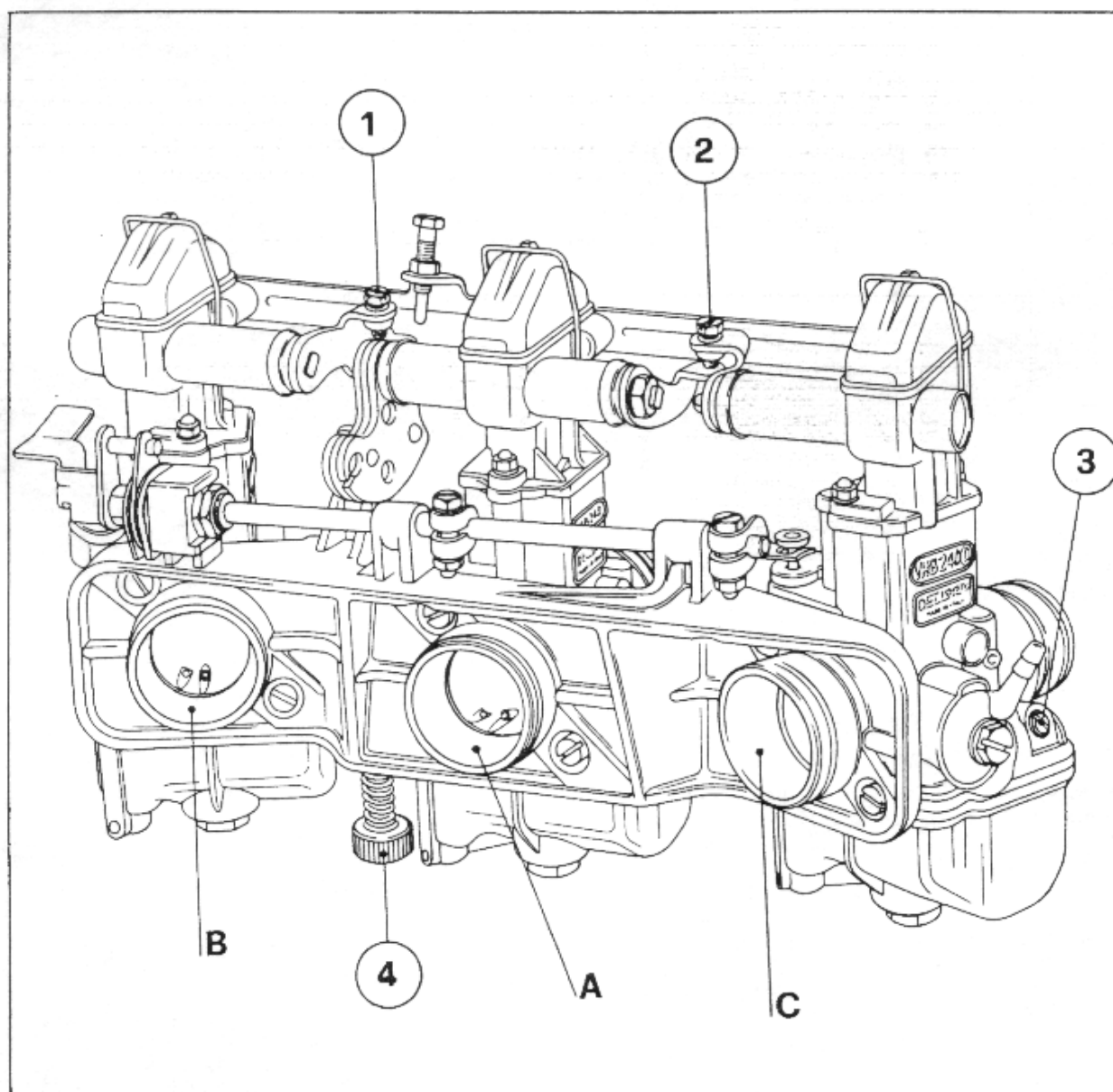
(When turning the screw in, the mercury level will go down, turning it out, the mercury level will increase).

e Check the running of each cylinder, acting on the fuel adjusting screw «3», closing the screw, the fuel flow will be reduced, turning it out, the flow will increase.

f Repeat the alignment of the three mercury columns, then using screw «4» bring the idling speed at the desired rpm (about 1200).

If the carburetors have been disassembled for any reason, make a mechanical synchronization of the three carburetors, before re-fitting. Adjust the carburetor slides with screws «1», «2», «4» until they are open about 1 mm (.040").

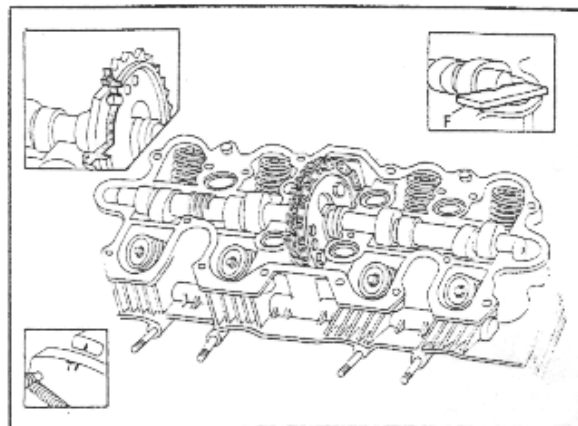
After re-fitting, synchronize and adjust idling speed as previously specified. (Items a - b - c - d - e - f).



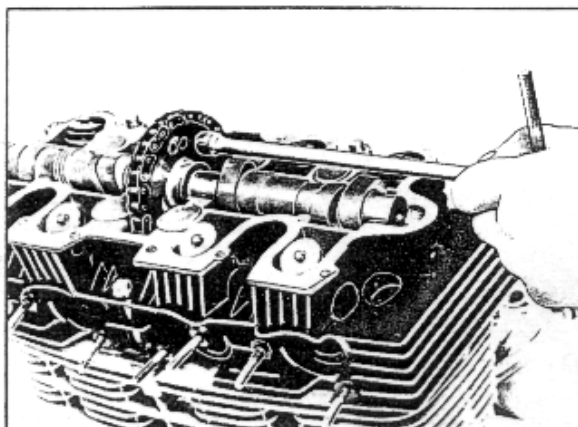
2.16 CHECKING THE VALVE TIMING

Proceed as follows:

- align the reference mark «T» (on the automatic advance plate) for cylinders 1-4 (1-6 for 750 Sei) with the notch on the crankcase; with the crankshaft in this position, the plate «F» must insert into the camshaft spline as indicated in the picture.
(The timing plate must be inserted on the rear side of the cylinder head);



- if readjustment is required, remove the two screws securing the cam chain gear to the camshaft, and adjust the timing, aligning the two threaded holes of the camshaft with the two holes of the cam chain gear.
Then lock the securing screws, after smearing the threads with «Loctite».

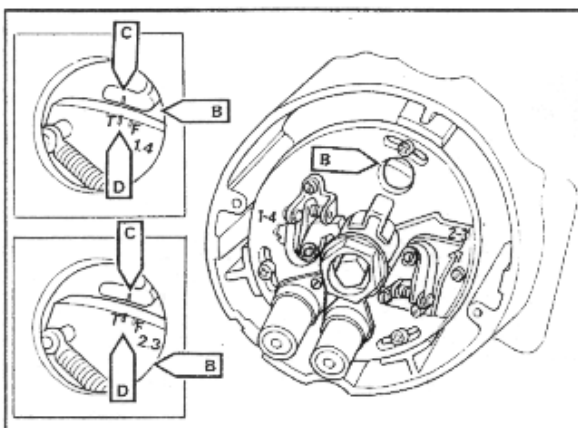
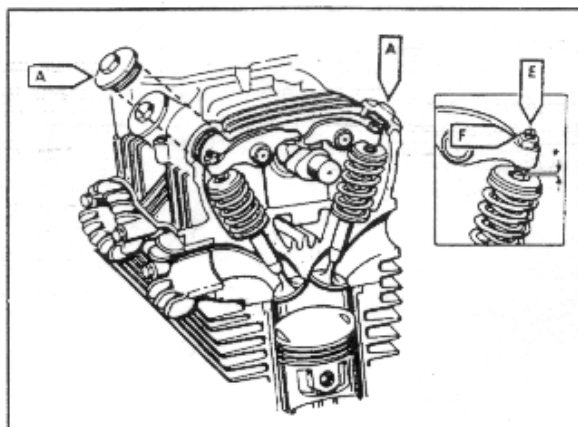


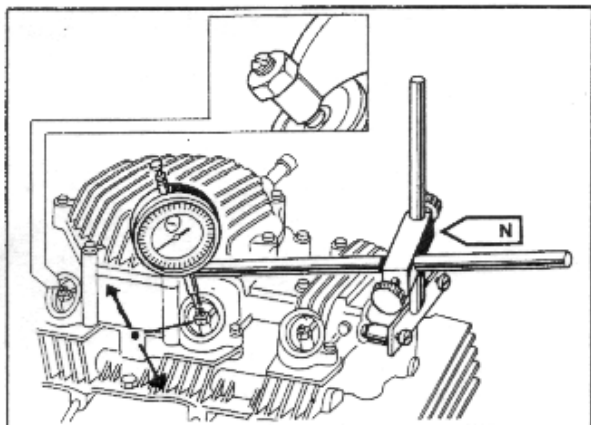
2.17 ADJUSTING THE VALVE CLEARANCE (500 Quattro)

Important - Cylinders are numbered from 1 to 4 starting from the left one as seen from the riding position.

Check, and if necessary, adjust the valve clearance by proceeding as follows:

- a Close the fuel taps, detach the fuel line, unhook the rubber strap securing the fuel tank, and remove the fuel tank.
 - b Remove the ignition breaker cover and the eight caps closing the valve adjusting holes «A».
 - c Rotate the crankshaft slowly until the piston of cylinder 1 reaches its top dead center combustion stroke (both valves closed), and see through the inspection hole «B» that the crankcase mark «C» is aligned with the mark «D» which is located on the automatic advance before the letter «T 1-4».
 - d Check the clearance of both valves, using a dial gauge together with tool «N».
- Normal clearance is 0.13-0.15 mm (.00511"-.00585").

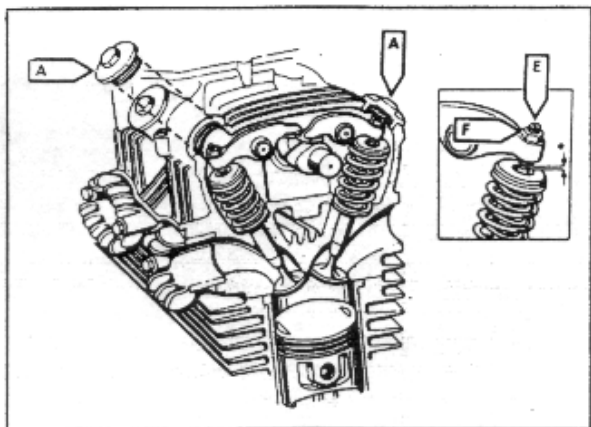




e If adjustment is needed, loosen counternut «F» and screw in or out the adjuster screw «E» until the proper clearance is obtained. Lock the counternut and recheck the clearance.

f To check and adjust rocker clearance for cylinder 4, rotate the crankshaft clockwise one full rev. (360°) and align the marks as specified under item c, then proceed as specified under items d and e.

g To check and adjust rocker clearance for cylinders 2-3, proceed as for cylinder 1-4, but aligning the mark on the automatic advance before the letter «T 2-3» with the mark on the crankcase.



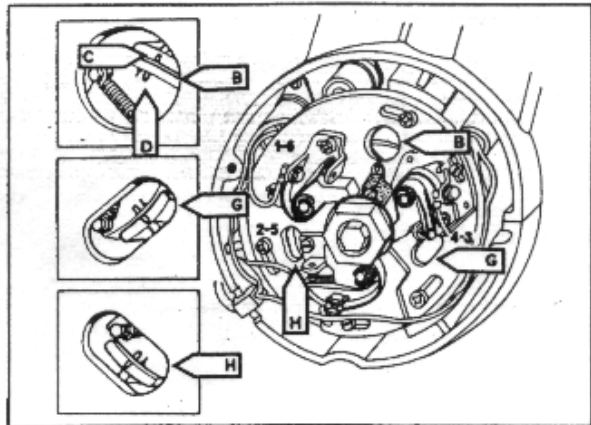
2.18 ADJUSTING THE VALVE CLEARANCE (750 Sei)

Important - Cylinders are numbered from 1 to 6 starting from the left one as seen from the riding position.

Check, and if necessary, adjust the valve clearance by proceeding as follows:

a Close the fuel taps, detach the fuel line, unhook the rubber strap securing the fuel tank, and remove the fuel tank.

b Remove the ignition breaker cover and the twelve caps closing the valve adjusting holes «A».



c Rotate the crankshaft slowly clockwise until the piston of cylinder 1 reaches its top dead center, combustion stroke, (both valves closed) and check through the inspection hole «B» if the crankcase mark «C» is aligned with the mark «D» which is located on the automatic advance before the letter «T».

Note - To facilitate this operation, first remove the spark plugs.

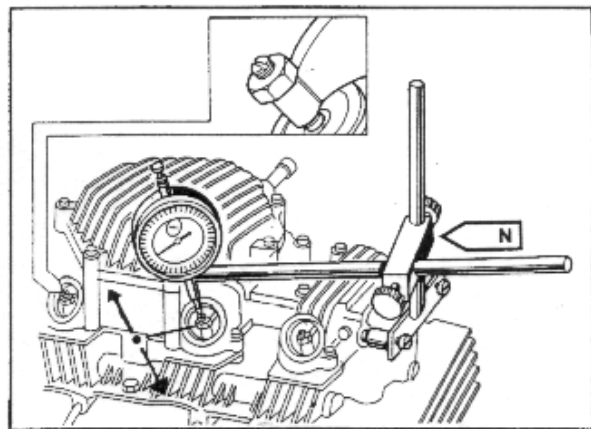
d Check the clearance of both valves, using a dial gauge together with tool «N».

Normal clearance is 0.13-0.15 mm (.00511"-.00585").

e Loosen counternut «F», and screw the adjuster screw «E» in or out until the proper clearance is obtained. Then lock the counternut and recheck the clearance.

f To check and adjust rocker clearance for cylinder 6, rotate the crankshaft clockwise one full rev. (360°) and align the marks as specified under item c, then proceed as specified under items d and e.

g To check and adjust valve clearance for cylinders 4-3, proceed as for cylinders 1-6 but aligning the mark on the automatic advance before the letter «T» with the crankcase mark which is visible through the inspection hole «G».



h To check and adjust valve clearance for cylinders 2-5, proceed as for cylinders 1-6 and 4-3 but aligning the mark on the automatic advance before the letter «T» with the crankcase mark which is visible through the inspection hole «H».

2.19 ADJUSTING THE IGNITION ADVANCE (500 Quattro)

To insure a precise ignition timing, it is necessary to adjust the ignition breaker contacts.

1 Adjusting breaker contact opening

a Remove the breaker cover.

b Open the contacts with the fingers, and check their condition; if they are burnt or worn, it is necessary to replace them.

A gray coloring of the contacts is normal, and can be eliminated by using first a contact breaker file, and then a very fine grain abrasive paper.

c Rotate the crankshaft clockwise until the maximum opening of breaker «A» referred to cylinders 1-4 is reached. Check the opening using a feeler gauge: 0.38-0.42 mm (.015"-.016").

In case of incorrect opening, loosen slightly the screw «B» and act on the notch «C», using a screw driver, to get the correct gap. Then lock the screw «B».

d Rotate the crankshaft clockwise again until the maximum opening of breaker «D» referred to cylinders 2-3 is reached.

e Proceed as specified in paragraph c; if necessary, adjust the contact breaker gap, loosening the screw «E» and acting on the notch «F». Then lock the screw.

2 Adjusting the ignition timing

Adjust first the contact breaker gap.

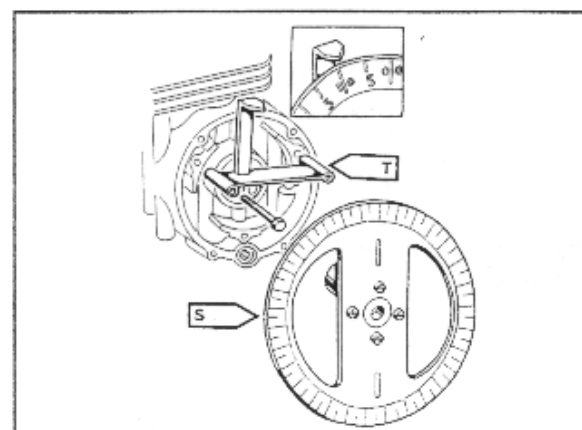
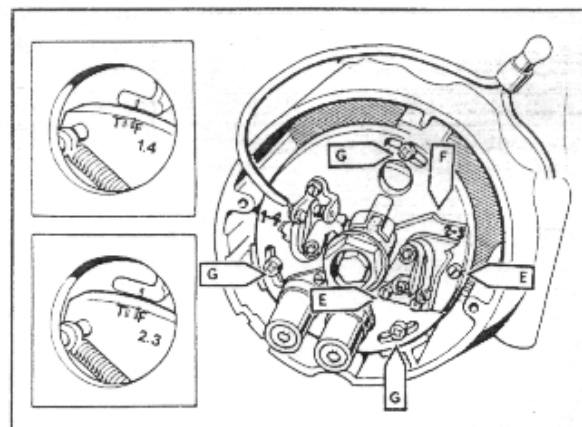
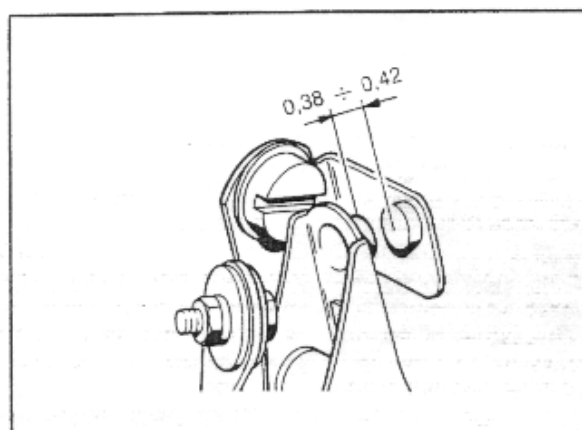
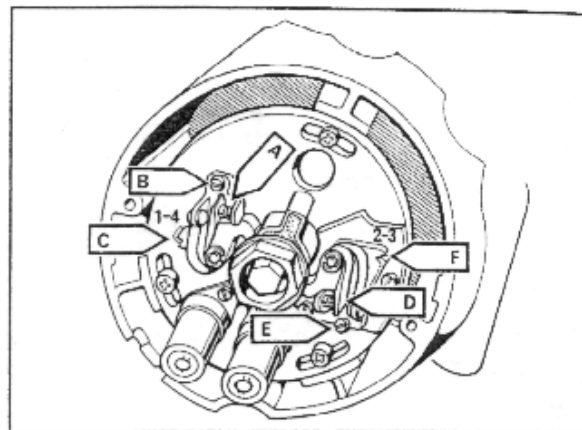
- to better detect the contact opening, use a timing light, connecting one wire to ground, and the other wire to the contact breaker wire being adjusted;

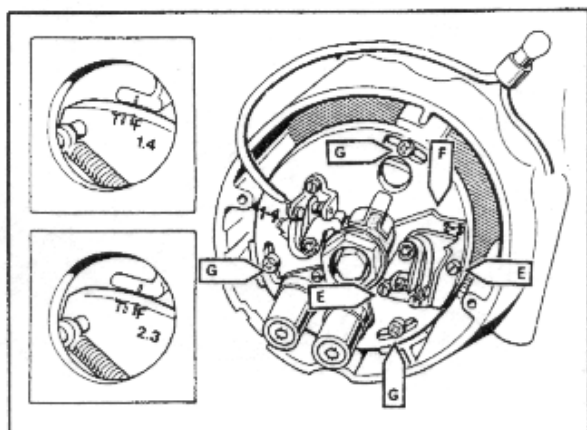
- to detect the exact ignition advance angle, use the disc «S» together with indicator «T».

a Rotate the crankshaft clockwise until the mark «F», which refers to cylinders 1-4, located on the automatic advance unit, is aligned with the crankcase mark. At this position, the contact breakers start opening.

b At this stage, the light must be on. Should the light be on after or before the timing marks are aligned, it is necessary to adjust the timing. Loosen the three screws securing the breaker plate «G», and carefully rotate the plate until the light is on. Then lock the screws.

Note - Rotating the plate clockwise, the timing is retarded; rotating it counterclockwise, the timing is advanced.





c Connect the timing light wire to the wires of the contact breaker which refers to cylinders 2-3, then rotate the crankshaft 180° clockwise (half a rev.) and align the mark «F» referred to cylinders 2-3 with the crankcase mark.

If timing adjustment is necessary, loosen the screws «E» securing the plate «F» and rotate the plate to the correct adjustment, then lock the screws.

d Recheck the contact breaker gap and the ignition timing.

Note - The above proceeding is relatively accurate if carefully followed; however, it is recommended to use a stroboscopic lamp. This will allow to check both the static and full advances.

Periodically check and smear with grease BOSCH 5.700.082.025 (contact breaker cam grease) the components of the automatic advance unit, and inspect the springs.

Every 10000 km (6000 miles), it is necessary to fill up the shaft spline, and to smear the cam felt using the above mentioned grease for both operations.

2.20 ADJUSTING THE IGNITION ADVANCE (750 Sel)

To insure a precise ignition timing, it is necessary to adjust the ignition breaker contacts.

1 Adjusting breaker contact opening

a Remove the breaker cover.

b Open the contacts with the fingers, and check their condition; if they are burnt or worn, it is necessary to replace them.

A gray coloring of the contacts is normal, and can be eliminated by using first a contact breaker file, and then a very fine grain abrasive paper.

c Rotate the crankshaft clockwise until the maximum opening of breaker «A» referred to cylinders 1-6 is reached. Check the opening using a feeler gauge: 0.38-0.43 mm (.015"-.016").

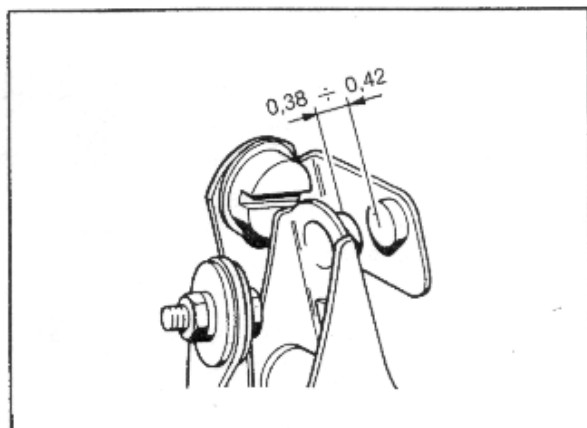
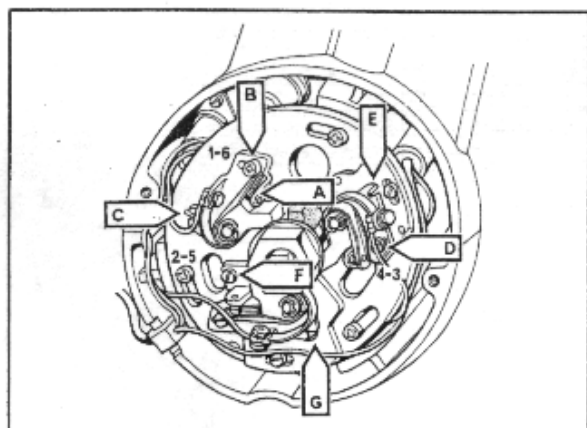
If contacts need adjustment, loosen screw «B» and act on the notch «C», using a screw driver, to obtain the proper opening; then lock screw «B».

d Rotate the crankshaft clockwise again until the maximum contact opening of breakers referred to cylinders 4-3 is reached.

e Proceed as specified in paragraph c; if necessary, adjust the contact opening, loosening the screw «D» and acting on the notch «E». Then lock the screw.

f Rotate the crankshaft until the maximum contact opening of breakers referred to cylinders 2-5 is reached.

g Check the contact opening; if necessary, adjust to the specified opening, loosening the screw «F» and acting on notch «G».



2 Adjusting the ignition timing

Adjust first the contact breaker gap.

To better detect the contact opening, use a timing light, connecting one wire to ground, and the other wire to the contact breaker wire being adjusted. To detect the exact ignition advance angle, use the disc «U» together with indicator «V».

Note - The light can only be used when this check is made with the engine in the frame, after setting the ignition key to position 1.

a Rotate the crankshaft clockwise until the mark «F», located on the automatic advance unit, which refers to cylinders 1-6, is aligned with the crankcase mark which is visible through the inspection hole «H». At this position, the breaker contacts begin to open.

b At this stage, the light must be on. Should it be on before or after the timing marks are aligned, it is necessary to adjust the timing. Loosen the three screws «I» securing the breaker plate, and carefully rotate the plate until the light is on. Then lock the screws.

Note - The timing is retarded by rotating the plate clockwise. The timing is advanced by rotating the plate counterclockwise.

c Connect the lamp wire to the wire of the contact for cylinders 4-3; rotate the crankshaft 120° clockwise and align the mark «F» to the crankcase mark which is visible through the inspection hole «N». If the light is on when the two marks are aligned, no adjustment is needed; otherwise, it is necessary to unscrew the screws «L», securing the plate «M», and rotate the plate to obtain the correct timing. Then lock the screws.

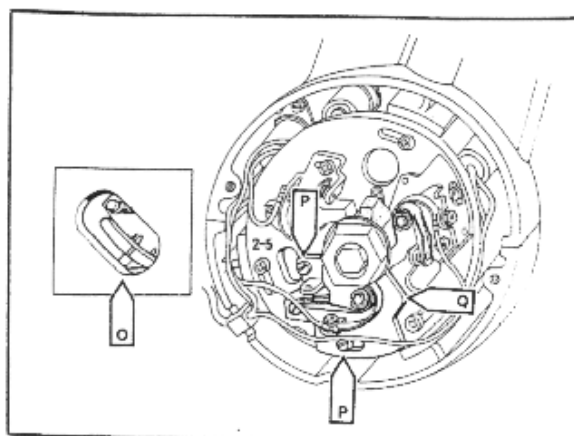
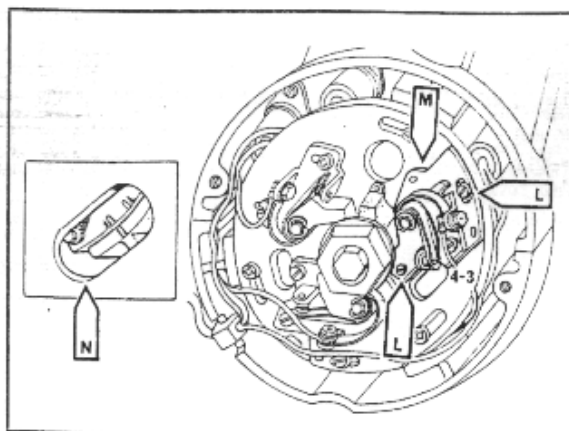
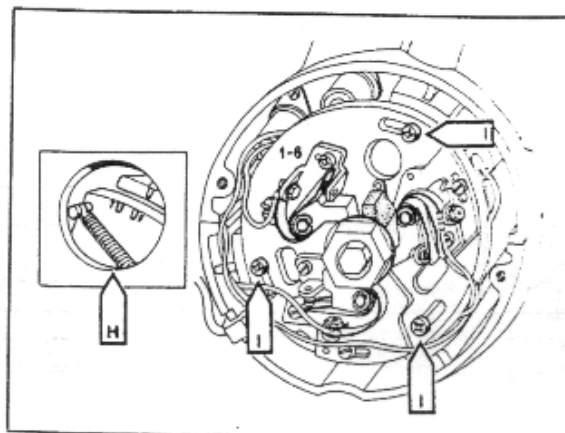
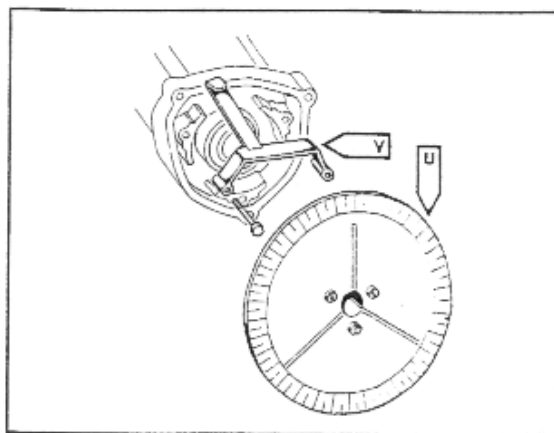
d Connect the lamp wire to the contact wire of the cylinders 2-5, rotate the crankshaft 120° clockwise and align the mark «F» to the crankcase mark which is visible through the inspection hole «O». If the timing needs adjustment, loosen the screws «F», securing the plate «Q», and rotate the plate for a correct timing.

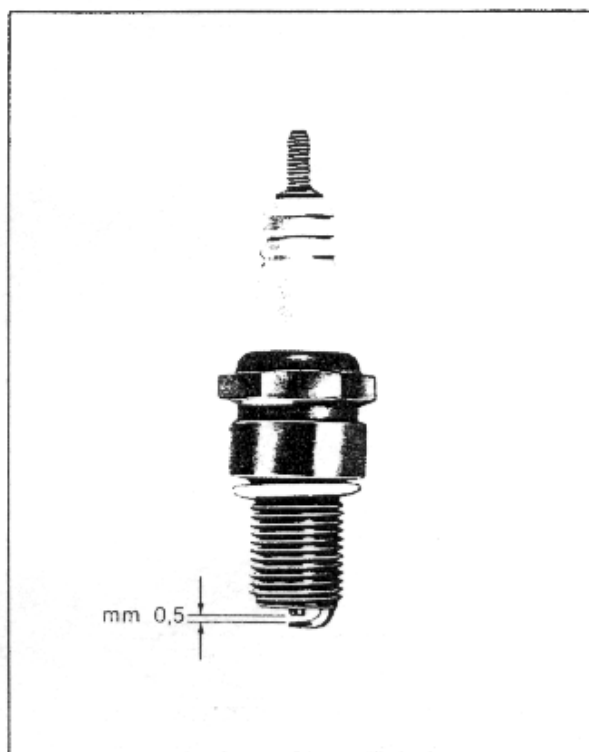
e Recheck the contact breaker gap and ignition timing.

Note - The above proceeding is relatively accurate, if carefully followed. However, to obtain the best results, it is recommended to use a stroboscope lamp. This will allow to check both the static and the full advance.

Periodically check and smear with grease BOSCH 5.700.082.025 (contact breaker cam grease) the components of the automatic advance unit, and inspect the springs.

Every 10000 km (6000 miles), it is necessary to fill up the shaft spline and to smear the cam felt using the above mentioned grease for both operations.





2.21 SPARK PLUGS

To use the spark plugs longer than the recommended km mileage will cause the electrodes to gradually burn, resulting in reduced performance. Therefore, after 3000 km (1800 miles), it is advisable to clean the electrodes, and to check, and eventually reset the gap. Correct gap must be 0.5 mm (.020"). Should the electrodes be worn, it is necessary to replace the spark plugs.

Caution - In case the spark plugs used are another type than factory recommended, be sure that the heat range, thread length, and pitch are the same as the original. If the thread is shorter, carbon deposits build up in the cylinder head threads causing overheating, and making it impossible to install the original spark plug.

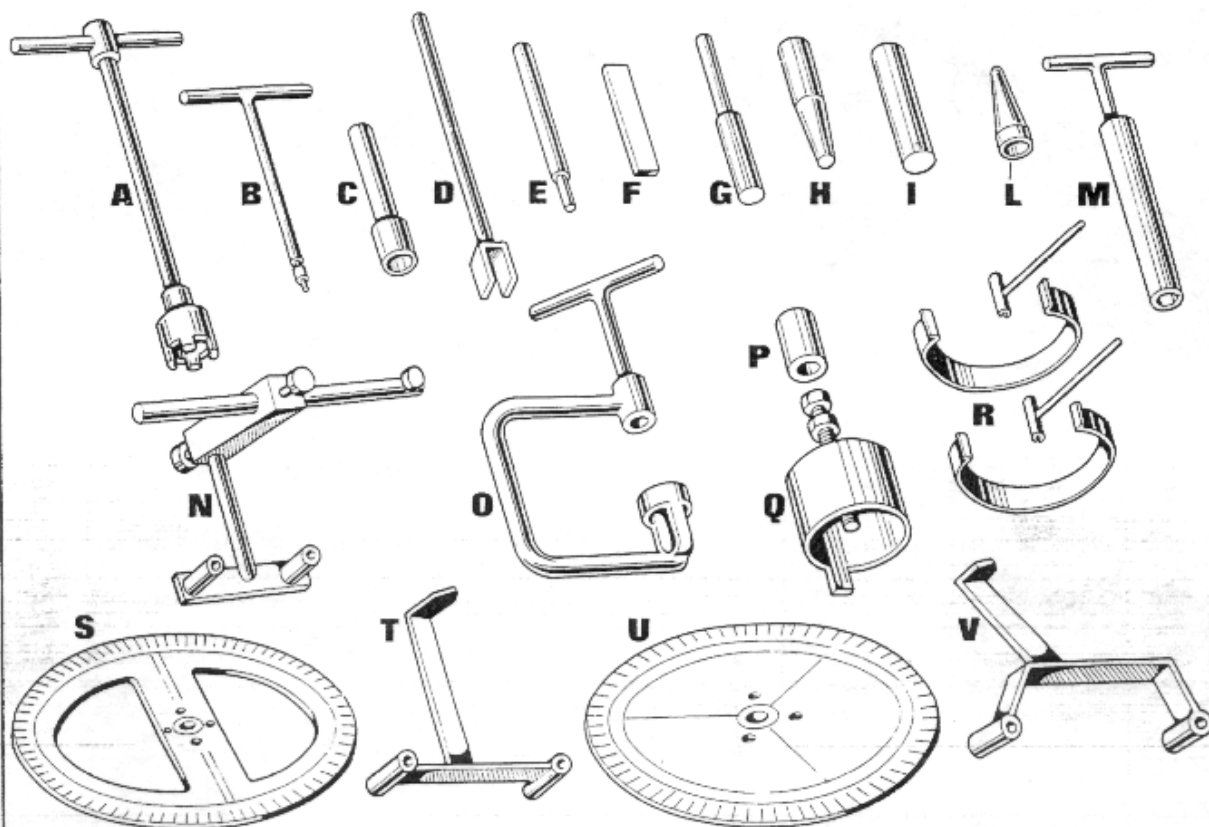
Should the thread be longer, carbon deposits build up along the threads of the spark plugs causing overheating, pre-ignition, and risk of piercing the piston top. In addition, when removing the spark plug, damage may occur to the cylinder head threads.

The recommended spark plugs are the following:
MARELLI CX 8L; BOSCH X 260 T2.

3 TORQUE SPECIFICATIONS

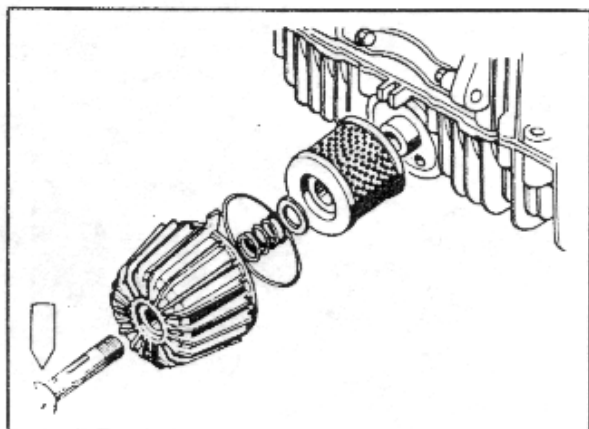
	kgm	ft.lbs
T.E. cam chain gear bolt	1.8 ÷ 2	11.5 ÷ 14.5
Cylinder head nuts	2.8 ÷ 3	20.2 ÷ 21.7
T.E. screw Ø 8 mm upper crankcase	2.3 ÷ 2.5	16.6 ÷ 18
T.E. screw Ø 6 mm upper crankcase	0.8 ÷ 1.2	5.7 ÷ 8.6
T.E. screw Ø 8 mm lower crankcase	2.3 ÷ 2.5	16.6 ÷ 18
T.E. screw Ø 6 mm lower crankcase	0.8 ÷ 1.2	5.7 ÷ 8.6
Connecting rod bolt nuts { normal nuts type	2 ÷ 2.2	14.5 ÷ 15.9
{ lock nuts type	2.2 ÷ 2.5	15.9 ÷ 18
Oil pressure switch	1.5 ÷ 2	10.8 ÷ 14.5
T.E. clutch spring bolt	0.8 ÷ 1.2	5.7 ÷ 8.6
Spark plug :	1.2 ÷ 1.6	8.6 ÷ 11.6
Oil drain plug	3.5 ÷ 4	25.3 ÷ 28.9
Oil filter cartridge cover bolt	2.5 ÷ 3	18 ÷ 21.7
Standard rates		
Screws Ø 6 mm	0.8 ÷ 1.2	5.7 ÷ 8.6
Screws Ø 8 mm	2 ÷ 2.4	14.5 ÷ 17.3

4 SPECIFIC TOOLS



Pos.	Part. N.	
A	704 075 0 799	Tool for rings
B	704 076 0 799	Puller, rocker pin
C	704 077 0 799	Tool, cylinder head nuts
D	704 078 0 799	Tool, chain tensioner
E	704 079 0 799	Puller, piston pin
F	704 080 0 799	Plate, valve gearing check
G	704 123 0 799	Puller, floater in master cylinder
H	704 128 0 799	Tool, fitting of master cylinder gasket (500 Quattro)
H	704 124 0 799	Tool, fitting of master cylinder gasket (750 Sei)
I	704 129 0 799	Tool, fitting of lock ring for floater in master cylinder (500 Quattro)
I	704 125 0 799	Tool, fitting of lock ring for floater in master cylinder (750 Sei)
L	704 130 0 799	Tool, fitting of master cylinder gasket (500 Quattro)
L	704 126 0 799	Tool, fitting of master cylinder gasket (750 Sei)
M	704 127 0 799	Tool, clutch point adjustment
N	704 083 0 799	Tool, dial gauge supporting (valve clearance adjustment)
O	704 084 0 799	Puller, valves
P	704 085 0 799	Bushing, starting gear
Q	704 086 0 799	Puller, starting shaft
R	704 082 0 799	Rings, pistons
S	704 058 0 799	Disc scale (500 Quattro)
T	704 081 0 799	Indicator, disc scale (500 Quattro)
U	704 087 0 799	Disc scale (750 Sei)
V	704 088 0 799	Indicator, disc scale (750 Sei)
Z *	704 122 0 799	Engine supporting block (for overhauling an engine off the frame)

* Not shown in the picture.

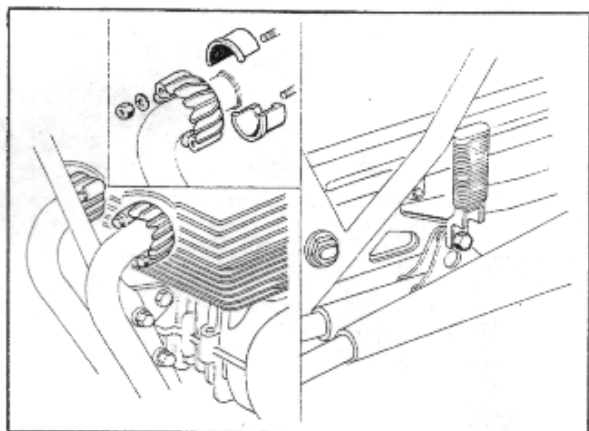


5 REMOVAL OF THE ENGINE UNIT FROM THE FRAME AND REASSEMBLING

a REMOVAL

The engine removal is necessary only when internal engine parts need replacement, or crankcase is to be disassembled. The removal of the cylinder heads, cylinder block, pistons, and other parts outside the engine unit do not require removal of the engine from the frame.

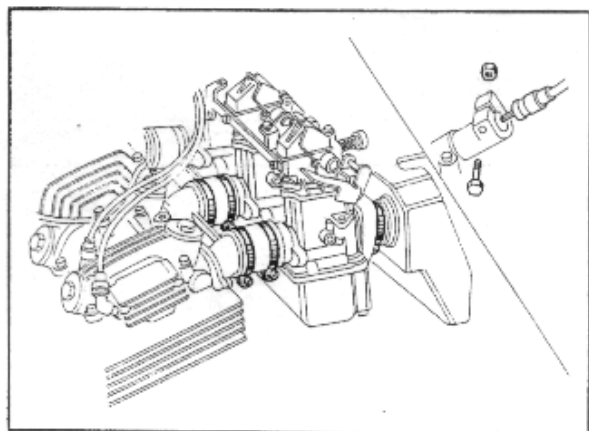
1 Unscrew the oil drain plug, using a 10 mm wrench, the oil filter securing bolt, using a 10 mm wrench, and drain the oil from the engine.



2 Close the fuel taps, detach the fuel line, and the strap securing the fuel tank, and remove the fuel tank.

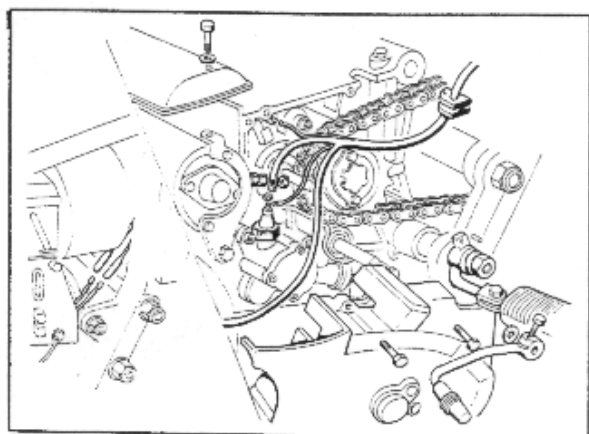
3 Using a 10 mm and 17 mm wrench, remove the front and rear exhaust pipe bolts, and exhaust hangers.

4 Detach the electric wires from the spark plug and the breather tube on the cylinder head. (For 750 Sei, take out the lower H.T. coil too.)



5 Using a 10 mm wrench, remove the bolt securing the tachometer cable and slip it off.

6 Using a screw driver, loosen the front and rear securing clamps, and take out the carburettor.



7 Using a 10 mm wrench, remove the gear pedal and the starter motor cover. Then, using a screw driver, remove the four securing screws of the left cover, and remove the cover. Also, remove the clutch cable.

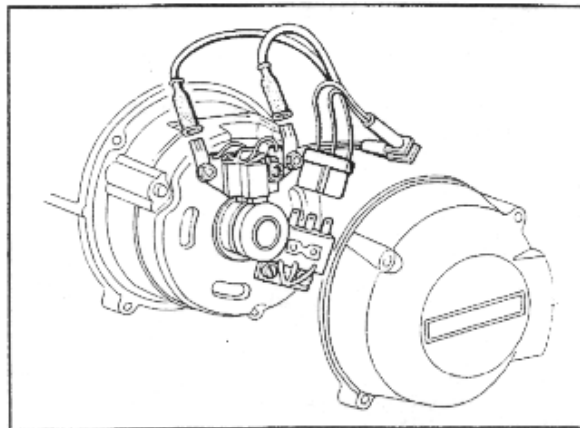
8 Detach the electric wires from: oil pump switch, starter motor, neutral position warning switch, contact breaker plate.

9 Using a screw driver, remove the generator cover securing screws, remove the cover and detach the electric wire from the generator.

10 Remove the secondary drive chain.

11 Loosen the brake pedal adjuster, and remove the kickstarter lever (for 750 Sei only) after unscrewing the securing bolt, using a 13 mm wrench.

12 Set a block under the engine and remove all nuts and bolts securing the engine to the frame, as well as the bolts securing the engine holding plates front and rear. Take the engine off from the left side, slightly lifting the rear side of the engine.



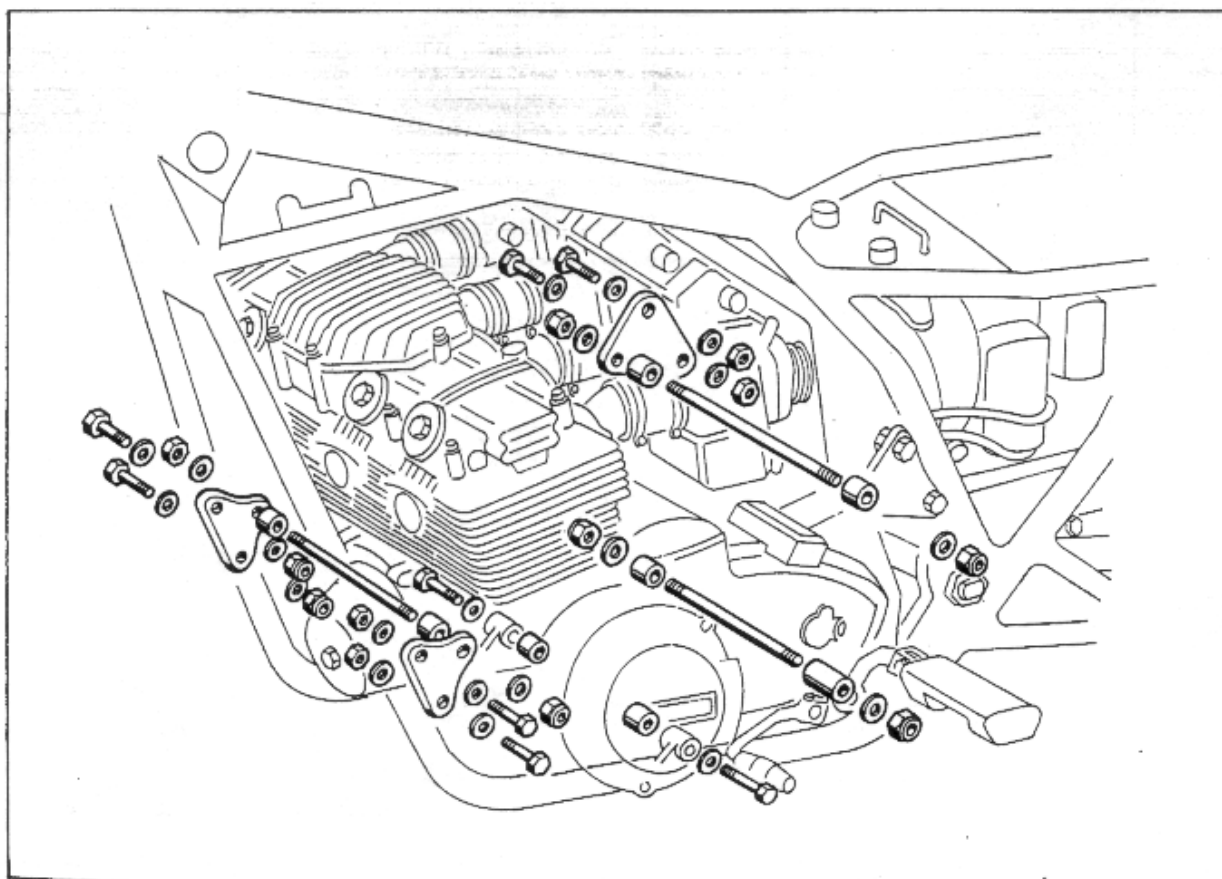
b ASSEMBLY

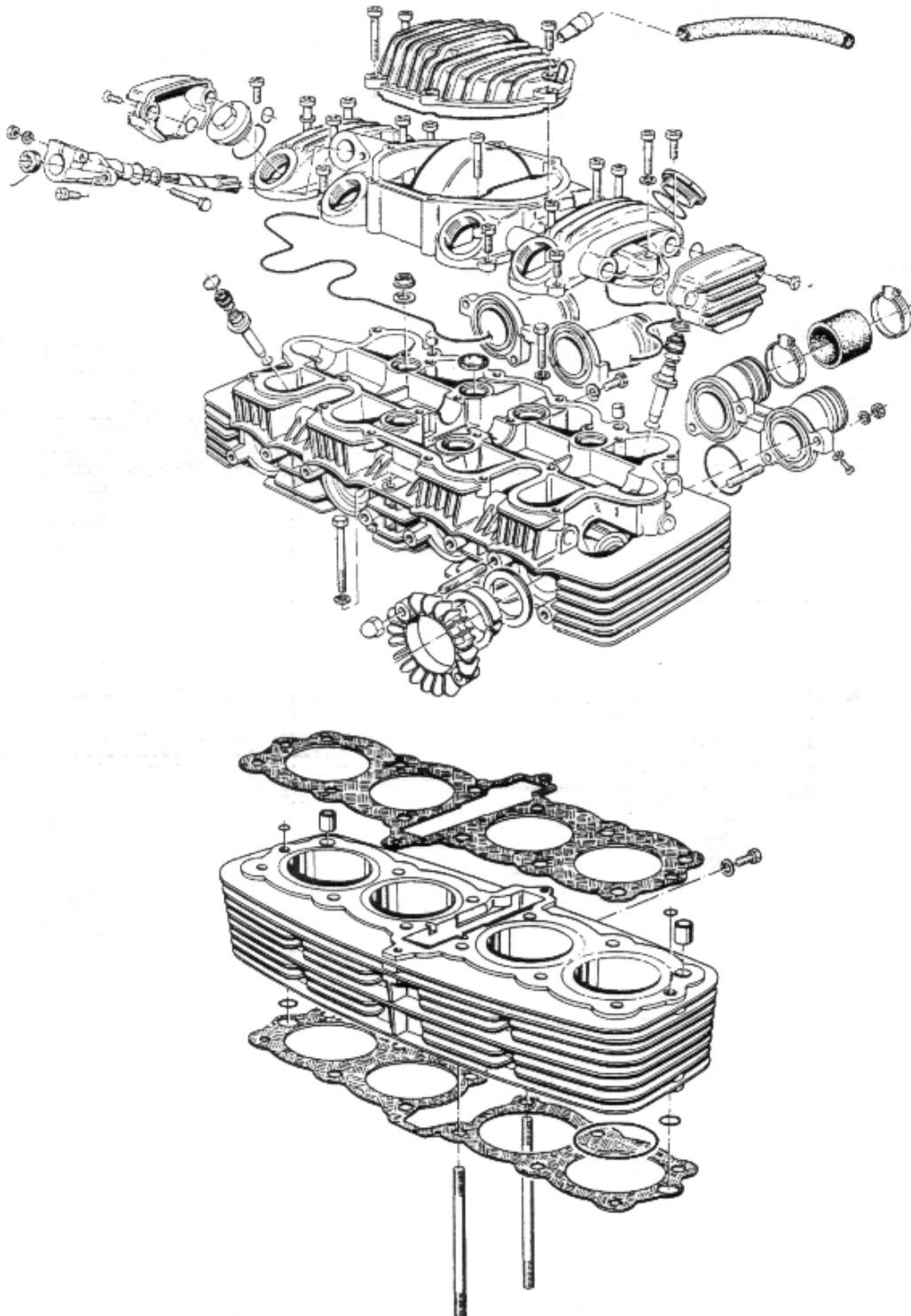
1 To reinstall the engine, reverse the disassembly operations, being careful to observe the following points:

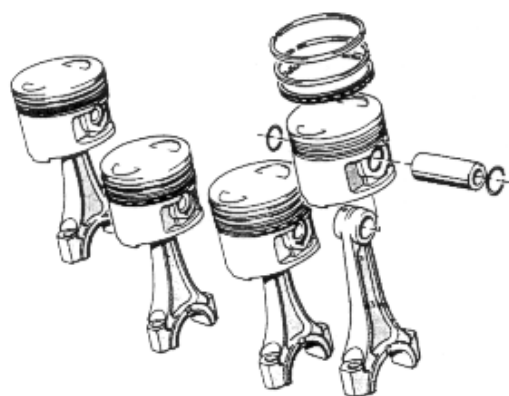
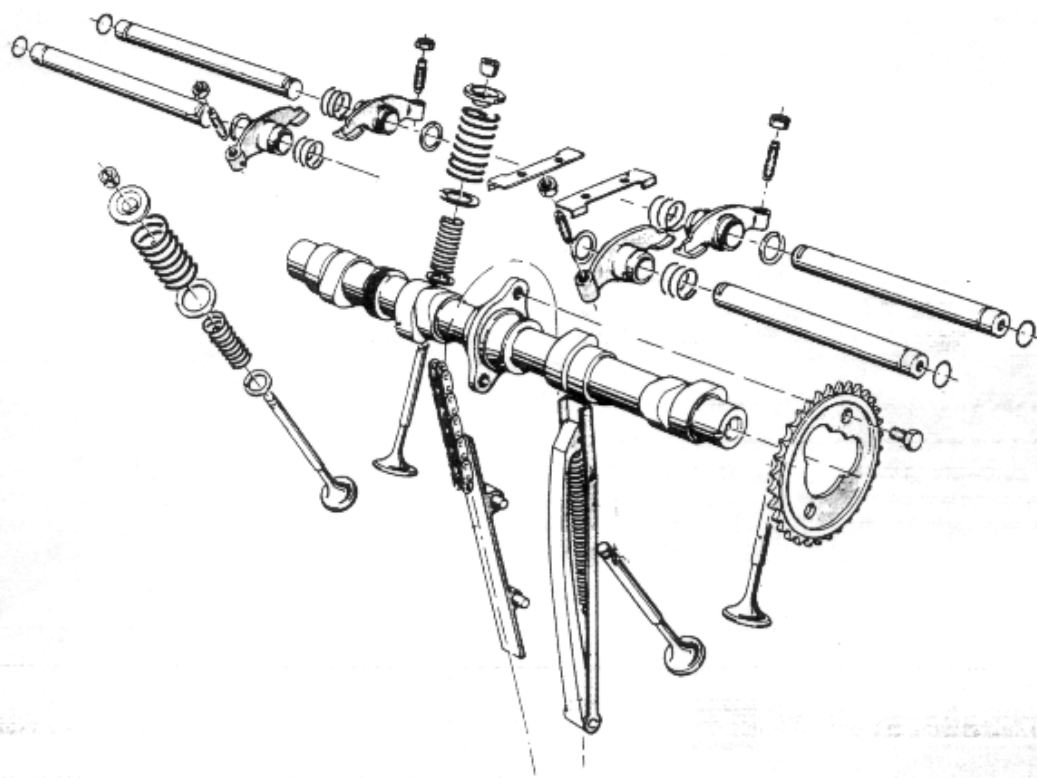
- connect the generator wires as indicated in the wiring diagram;

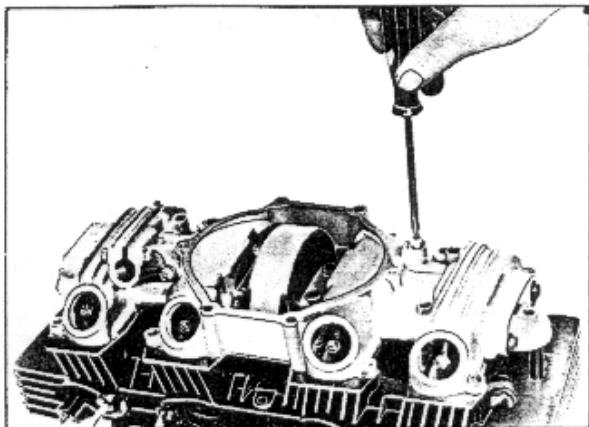
- make sure that the silencers are well connected through the proper rubber (only for 500 Quattro);

- with the engine installed, adjust the following plays: clutch cable, brake pedal, drive chain, and check the carburetion as specified in chapter 2.









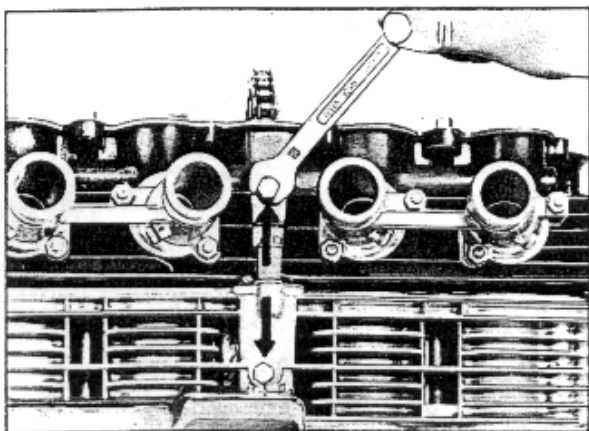
a Disassembly

1 Remove the fuel tank, exhaust silencers, tachometer cable, carburetor set, detach the spark plug wires and the breather tube on the cover, as specified in chapter 5.

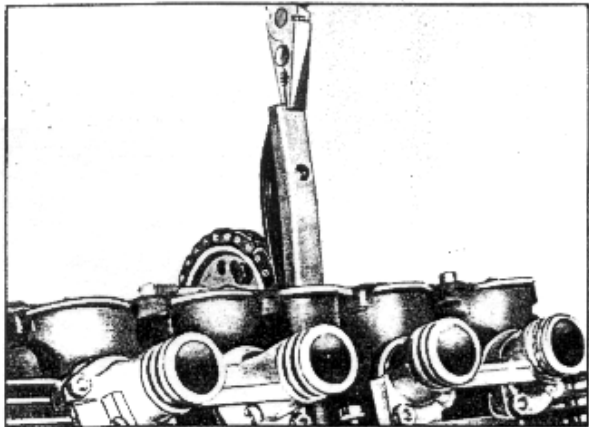
2 Remove the fixing screws and remove the breather cover.

3 Unscrew the tappet hole caps using a 17 mm wrench; remove the two rocker arm shaft side covers.

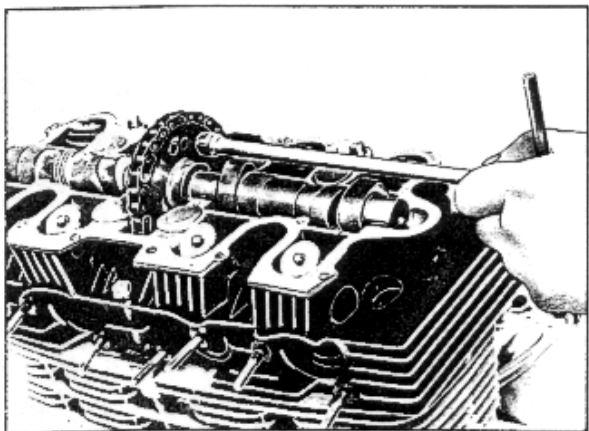
4 Remove the head cover, after loosening the screws (loosen the screws uniformly to avoid any possible cover distortion).



5 Using a 10 mm wrench, unscrew the two bolts securing the chain tensioner.



Take out the chain tensioner, using pliers. [With the engine in the frame, the chain tensioner can be held fast using tool (D)].



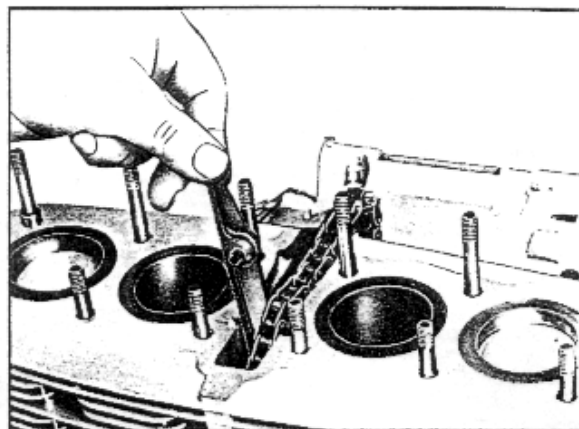
6 Using a 10 mm wrench, unscrew the two bolts securing the cam chain gear. Pull the gear out from the cam shaft hub and find the position where it is possible to take the chain off the cam chain gear. Then remove the cam shaft and cam wheel.

7 Take out the rubber gaskets disc and the spark plugs. Remove the two central bolts which are located on the outer front and rear side of the cylinder head. Now, using a 12 mm wrench, unscrew uniformly the cylinder head securing nuts. (12 for 500 Quattro, 16 for 750 Sei).

8 Take out the head, the gasket between head and cylinder and the two side oil seals. Slightly lift the chain guide, rotate 90° and take it off.

Note - Do not let the chain fall. It is advisable to secure it before removing the chain guide.

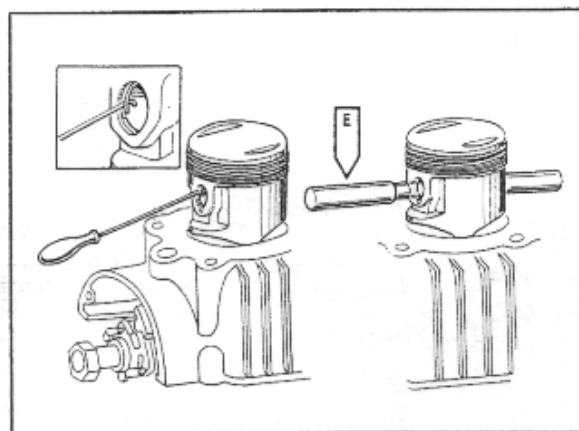
9 Remove the cylinder, take out the gasket between cylinder and crankcase, as well as the two side oil bushings and the rubber gaskets.



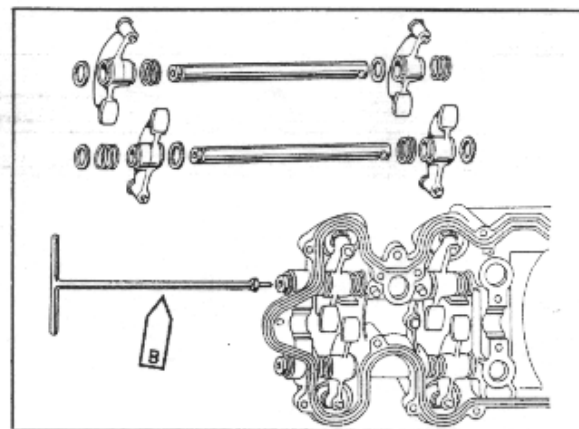
10 Take off the piston pin circlips, then using the proper tool «E», slide out the piston pins and take out the pistons.

Note - Before removing the pistons, stuff the crankcase holes with clean rags to avoid any dirt or parts falling inside the engine.

Caution - It is important to number the pistons before removing, in order to reassemble in the same position.



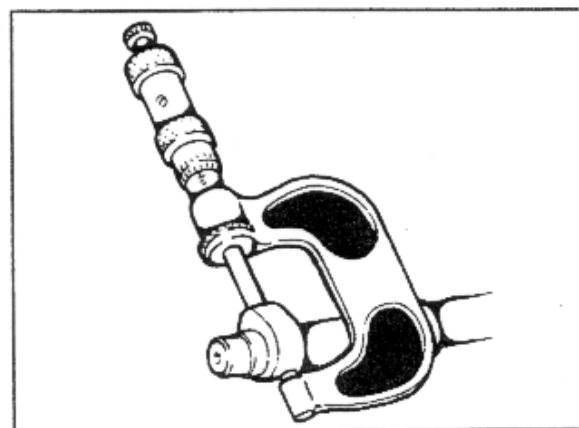
11 To take out the rocker arm shaft, screw the proper tool «B» into the end of the shaft and pull out.

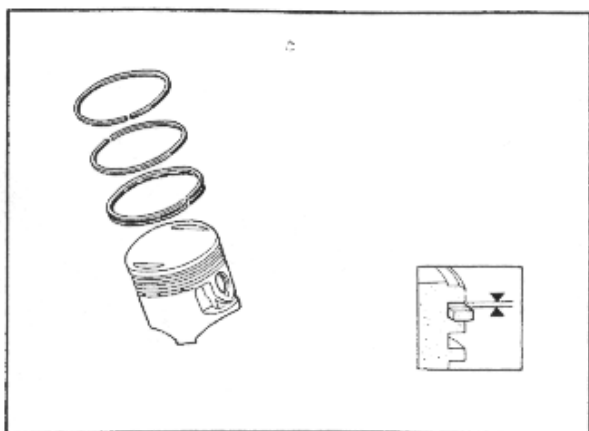
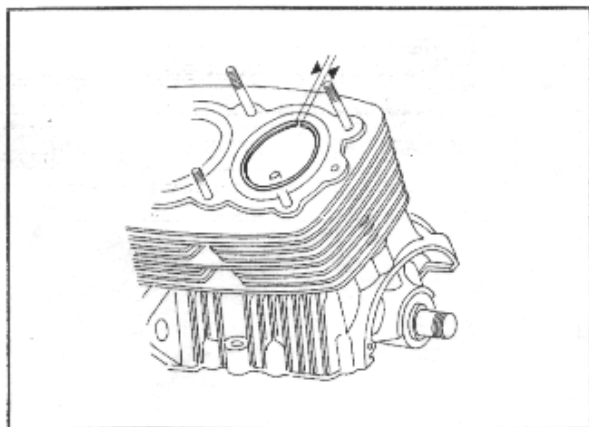
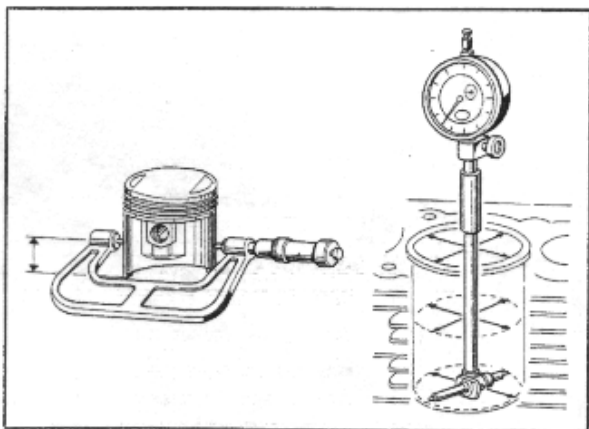
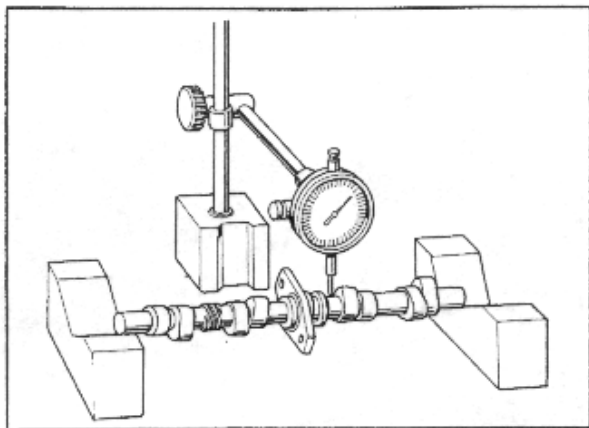


b Checking

1 Insure that the surfaces of the camshaft supporting bearings do not show any wear or scores. In case of scoring or heavy wearing, it will be necessary to replace the damaged part.

2 Check the cam height, using a micrometer gauge. Should the gauge reading be over the permissible wear limit, it will be necessary to replace the camshaft.





Cam normal height (mm)	exhaust = 34.635 (1.3635") inlet = 35.035 (1.3793")
Wear limit (mm)	exhaust = 34.585 (1.3596") inlet = 34.985 (1.3753")

3 Check the camshaft eccentricity, fitting the shaft on two «V» supports (max. 0.1 mm).

4 Ensure that all camshaft bearing surfaces do not show any scoring; otherwise replace the camshaft.

5 Measure the cylinder bore for width and depth (transversal and longitudinal) at cylinder top, middle and bottom. If the dimensions are over the permissible limits, it is necessary to re-bore the cylinder; 0.40 mm (.015748") oversized pistons are available.

Cylinder diameter:

Normal (mm)	Class A: $\varnothing = 56.010 \div 56.020$ (2.20511" $\div$ 2.20550") Class B: $\varnothing = 56.000 \div 56.010$ (2.20472" $\div$ 2.20511")
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Note - The reference for «A» and «B» class are stamped on the piston top and on the upper side of the cylinder block in correspondence of the cylinder barrel.

6 Using a micrometer gauge, measure the diameter at 11 mm (.433") distance from the piston bottom, 90° to the piston pin hole. Should the gauge reading be under the permissible limit, or should distortions or scoring be detected, replace the piston.

Piston diameter:

Normal (mm)	Oversized (mm)
Class A $\varnothing = 55.980 \div 55.990$ (2.20393" $\div$ 2.20432")	$\varnothing = 56.390 \div 56.370$ (2.22000" $\div$ 2.21928")
Class B $\varnothing = 55.970 \div 55.980$ (2.20353" $\div$ 2.20393")	

7 To measure the piston ring gap. Set the piston ring into the cylinder bore and check that this distance is not higher than 0.7 mm (.0275") using a feeler gauge.

8 Check the piston ring side clearance. After fitting the rings on the piston, check the clearance between ring and seat using a feeler gauge.

— Upper ring	
Normal clearance	$0.030 \div 0.052$ (.00118" $\div$.001968")
Wear limit	0.18 (.00708")
— Middle ring	
Normal clearance	$0.030 \div 0.052$ (.00118" $\div$.001968")
Wear limit	0.15 (.00595")
— Lower ring	
Normal clearance	$0.030 \div 0.052$ (.00118" $\div$.001968")
Wear limit	0.11 (.00433")

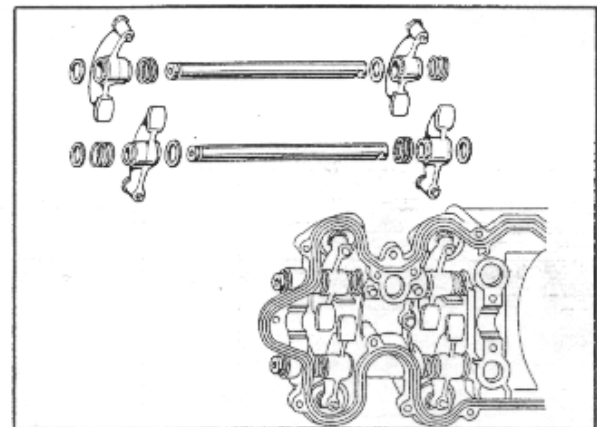
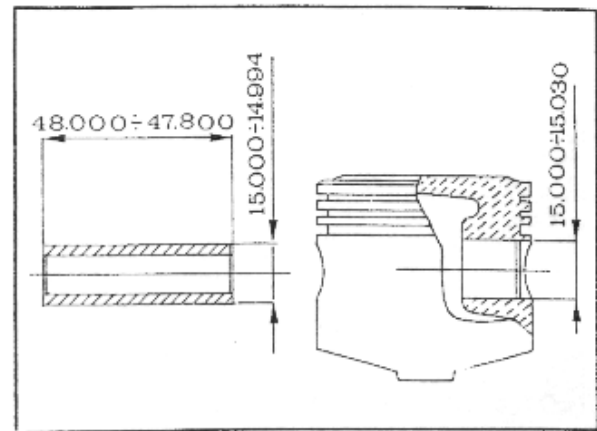
9 Using an inside micrometer gauge, measure the piston pin hole on the piston.

10 Check the condition of the rocker arm chromed surface.

c Assembly

1 Fit rockers arm and rocker shaft on the cylinder head cover, following the sequence shown in the picture.

Note - Clearance rocker-spindle is: $0.016 \div 0.034$ normal (.00062" $\div$.00118"); 0.11 max. (.00433").

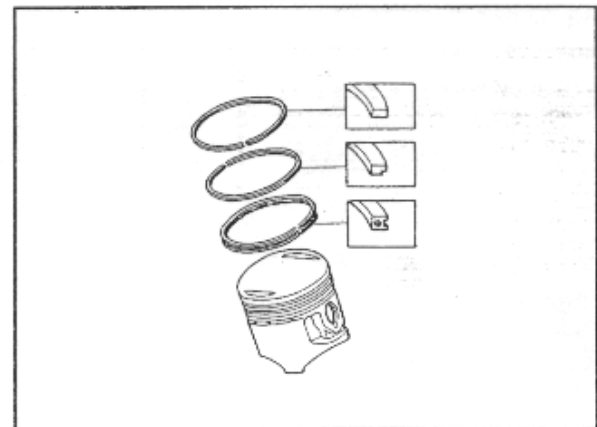


2 Fit the piston rings on the piston following the sequence shown in the picture.

Note - When assembling new piston rings, it is advisable to check that the ring-seat clearance is within the specified limits.

3 Fit the piston on the connecting rod, using the tool «E» to insert the piston pin. The piston must be fitted with the arrow (stamped on the piston top) facing forward (exhaust side). Then install new piston pin circlips.

4 Set the three piston ring gaps at 120° distance from each other, avoiding that the gaps come in correspondence with the piston pin axes.

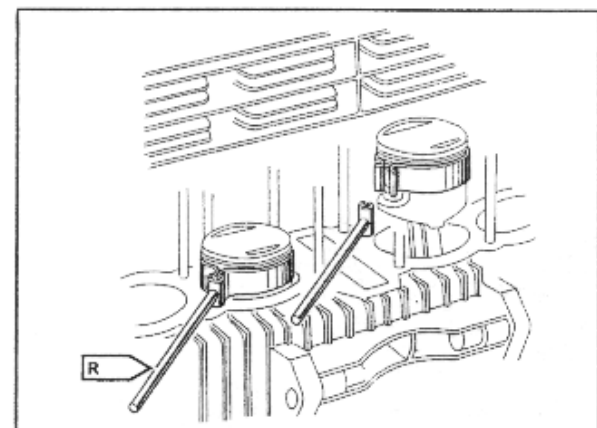


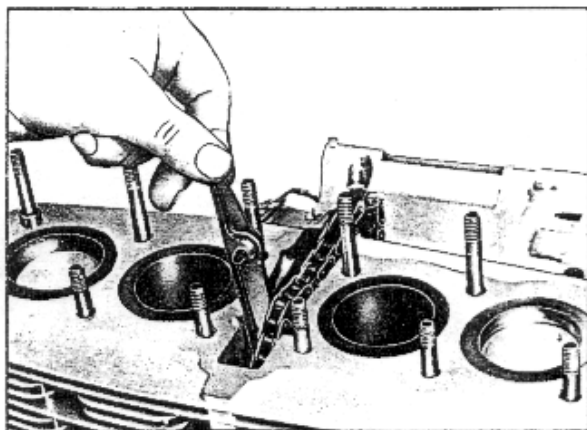
5 Fit the cylinder base gasket, the two oil bushings, and the two oil rings on the crankcase.

Note - Before installing the oil bushing, it is advisable to thoroughly clean the holes with compressed air.

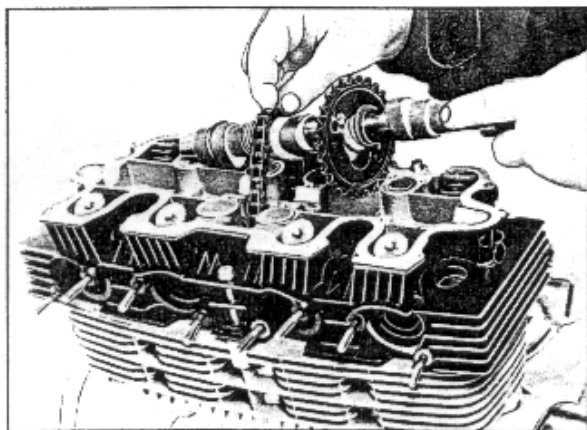
6 Install the bands (R) on the two inside pistons, rotate the crankshaft until the middle piston reach the top dead center, and install the pistons into cylinders.

Slowly rotate the crankshaft and insert the outside pistons in the cylinder. Lift the timing chain and push the cylinder down.

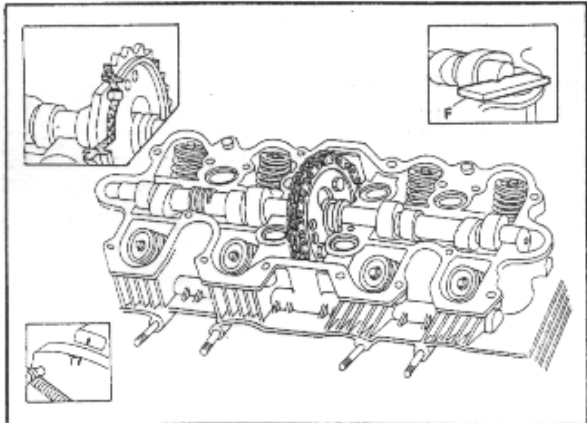




- 7 Fit the chain guide on the cylinder block.
- 8 Fit the gasket between head and cylinder, then fit the two oil rings on the cylinder.
- 9 Install the cylinder head and cylinder head washers and nuts uniformly. Using a 12 mm wrench, tighten evenly following the sequence in the picture, then torque the nuts to the recommended specifications ($2.8 \div 3$ kpm, $20.2 \div 21.7$ ft. lbs). Then fit and lock the two center bolts.



- 10 Lift the timing chain, and, from the left side, insert the camshaft and chain gear. Set the camshaft into the cylinder head bearing.



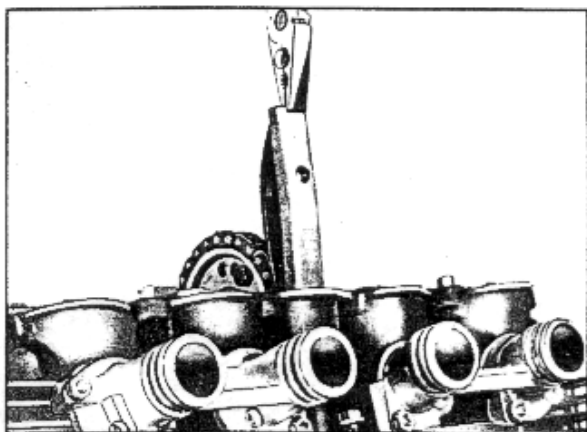
- 11 Remove the contact breaker cover and rotate the crankshaft clockwise so to align the mark «T» (1-4) - (1-6 for 750 Sei) with the timing mark on the crankcase.
(For 750 Sei, the mark «T» will have to be aligned with the crankcase mark which is visible through the inspection hole with the stamping 1-6). Now fit the plate «F» into the camshaft spline, and rotate the camshaft until the plate lays against the head plane rear side.

- 12 Fit the chain on the chain gear and install on the camshaft. If necessary, step the chain over the gear teeth until the two threaded holes on the cam are aligned with the holes of the gear. Lock the securing screws, after smearing the threads with «Locktite» and torque to specifications.

- 13 Install the chain tensioner and fasten using the two fixing bolts.
- 14 Fit the two centering rollers and the rubber discs which close the cylinder head nut holes.

- 15 Loosen the rocker arm adjusters, fit the head cover, and tighten the screws evenly to $0.8 \div 1.2$ kpm ($5.7 \div 8.6$ ft. lbs). Lock the screws uniformly, and in proper sequence, in order to avoid any cover distortion.

Note - The two side screws are mounted with aluminium washers.



16 Fit the two retaining plates of the rocker arm shaft as indicated in the picture, the long notch forward. Install the four screws without firmly tightening them.

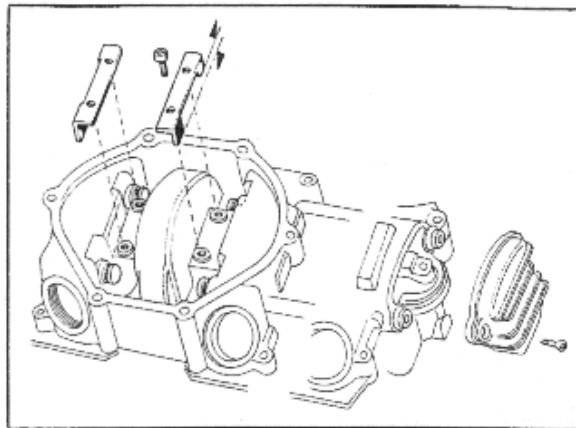
17 Install the two rocker arm shaft side covers and screws. Then fully lock the four retaining plate screws.

18 Fit the breather cover, fit the screws and two clamps retaining the spark plug leads under the two side screws.

19 Install the carburetor set, breather tube, exhaust silencers, and rev. counter cable.

20 Adjust valve clearance as specified in chapter 2, paragraph 17 or 18.

21 Check, and if necessary, adjust the ignition timing as specified in chapter 2, paragraph 19 or 20.



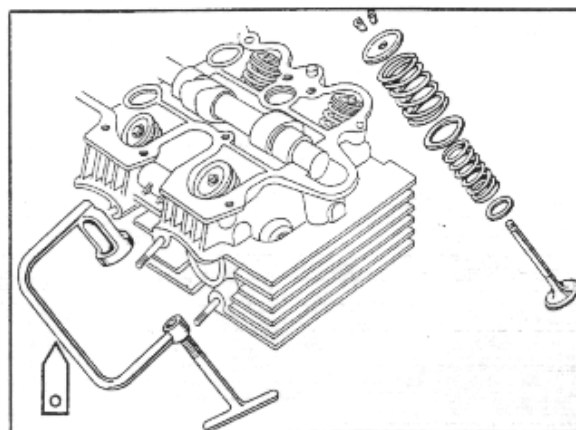
6.2 VALVES AND VALVE SPRINGS

a Disassembly

1 Remove the cylinder head as indicated in chapter 6.1.

2 Using the tool (O), compress the valve springs to free the two half cones, then take out the springs and valves.

3 Remove the valve guide rubber cap spring and rubber cap. If replacement is needed, use a soft punch and hammer to press out the valve guide.



b Inspection

1 Maximum clearance between valve stem and valve guide:

Inlet 0.08 (.003149")

Exhaust 0.10 (.003937")

If clearance is higher than the recommended specifications, it is necessary to replace both valve and valve guide.

Refit the valve guide on the head, using the proper pin, then bore out the guide inner hole at the following measure:

— valve guide, inlet and exhaust:

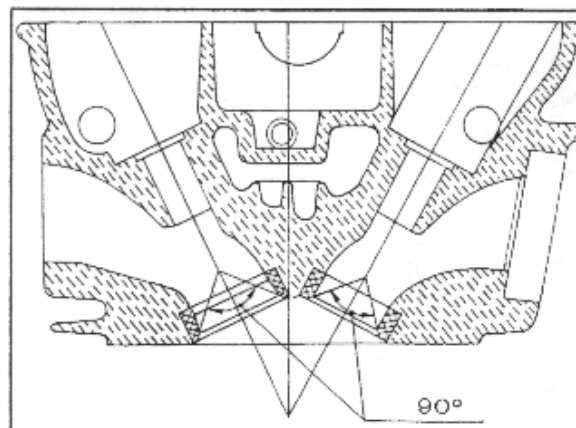
5.50 ÷ 5.52 (.21653 ÷ .21732).

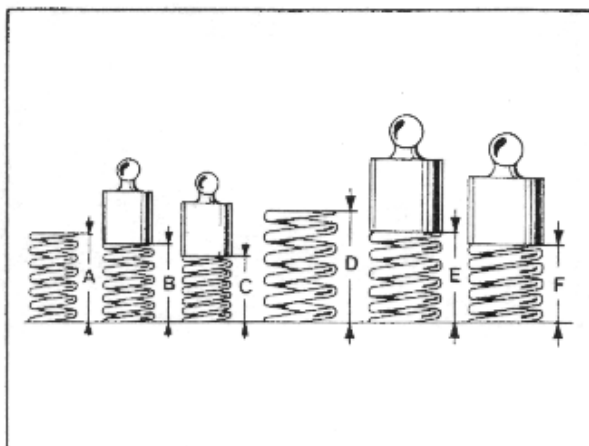
2 Check the seating of the valve and valve seat. If necessary, grind the valve seat with the special cutter. Seat the valve using valve grinding compound.

3 Checking valve eccentricity.

Set the valve on a «V» block and measure the valve eccentricity by using a dial gauge applied to the valve head and turning it. Should the gauge reading be off the permissible use limits, it will be necessary to replace the valve.

Maximum eccentricity: 0.06 mm (.00236").





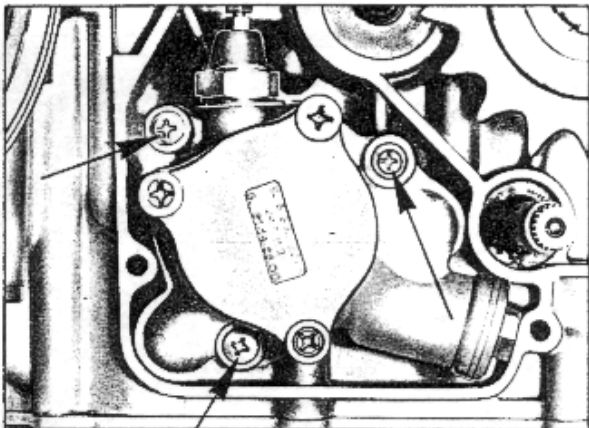
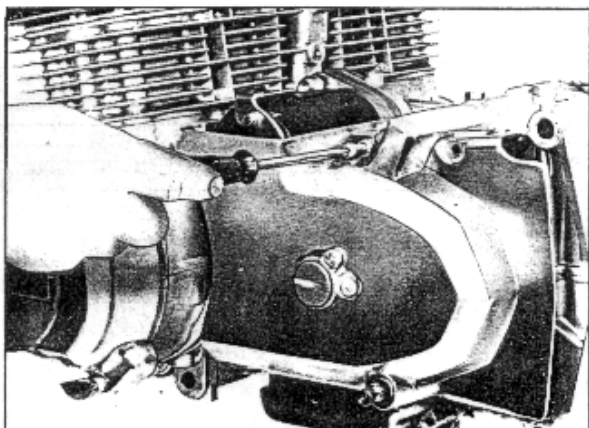
Inner spring:

Free length	A = 36	(1.417")
Under 8 kg Load (17.6 lbs)	B = 31.5	(1.240")
Under 20 kg Load (44 lbs)	C = 24.45	(.9625")

Outer spring:

Free length	D = 40.5	(1.594")
Under 18 kg Load (39.6 lbs)	E = 36	(1.417")
Under 43.5 kg Load (95.7 lbs)	F = 28.95	(1.139")

Load tolerance: $\pm 4\%$.



4 Inspection of valve springs.
Measure the spring free length, using a caliper.

5 Inspection of cylinder head plane.
Place a perfectly flat straight edge on the cylinder head plane, and using a feeler gauge, check if it is warped. If the cylinder head must be refaced, do not remove more than 0.2 mm (.00787"). After this operation, check the clearance between valves and pistons.

6 Check the oil sealing caps.

c Re-fitting

1 Wash all components with cleaning fluid, and reinstall by reversing the operation.

Note - When re-fitting the valves, oil the valve stem.
2 Install the cylinder head as specified in chapter 6.1.

6.3 CHAIN TENSIONER - VALVE GEARING

The chain tensioner is self-adjusting, and does not need any adjustment.

a Removal

1 Remove the chain tensioner as specified in chapter 6.1.

b Inspection

1 Inspect the spring condition and make sure that the chain tensioner plane, in contact with the chain, does not show and wear or scores.

c Re-fitting

1 Re-fit, proceeding as specified in chapter 6.1.

6.4 OIL PUMP AND FILTER - FILTER CARTRIDGE

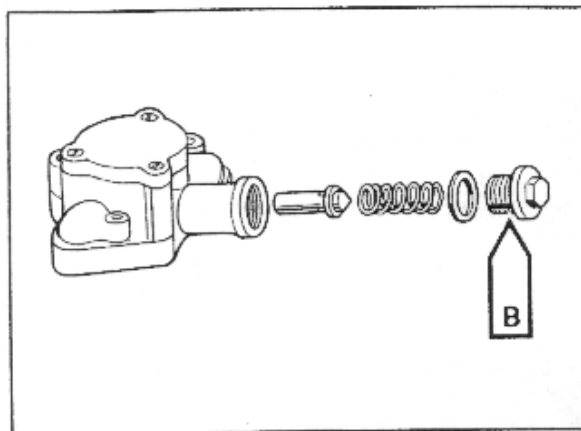
a Removal of the oil pump

1 Drain the oil as indicated in chapter 2.2.
2 Remove both the starter motor cover and the left side engine cover.

3 Remove the screw securing the electric wire to the oil pressure switch.

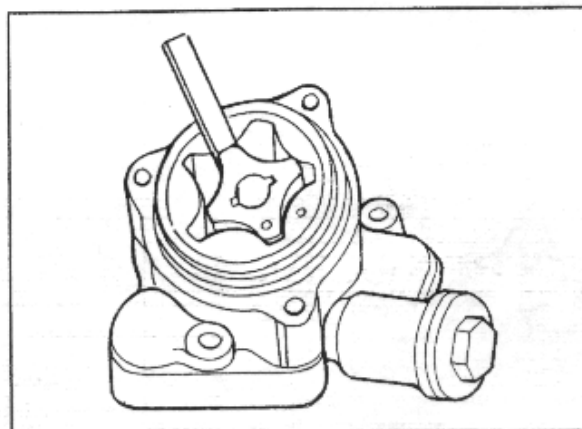
4 Remove the three screws securing the oil pump to the engine crankcase.

- 5 Remove the plug «B», and slide the spring and relief-valve out.



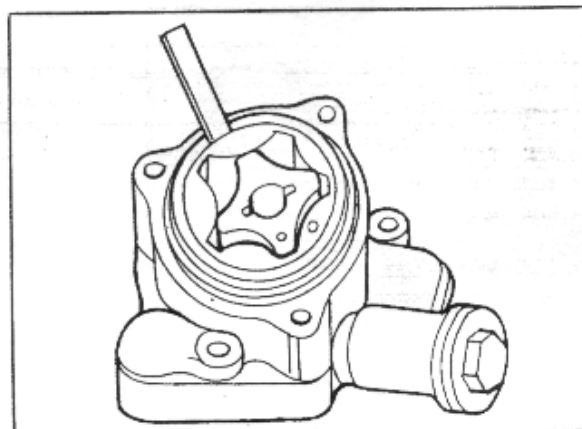
b Inspection

- 1 Measure the clearance between the inner and outer rotors, using a feeler gauge. If the clearance is higher than 0.35 mm (.01378") replace both rotors.



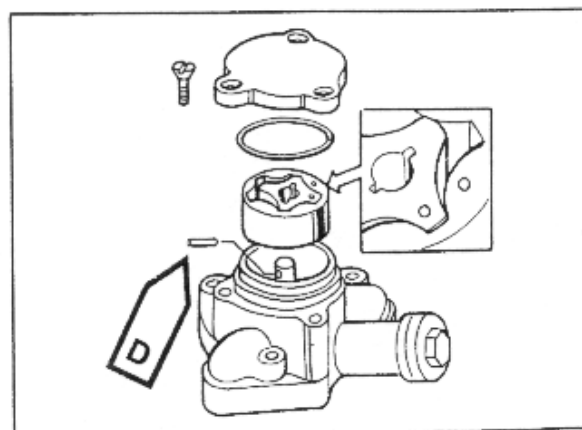
- 2 Using a feeler gauge, measure the clearance between outer rotor and pump body. In case the clearance is higher than 0.35 mm (.01378") replace the worn parts.

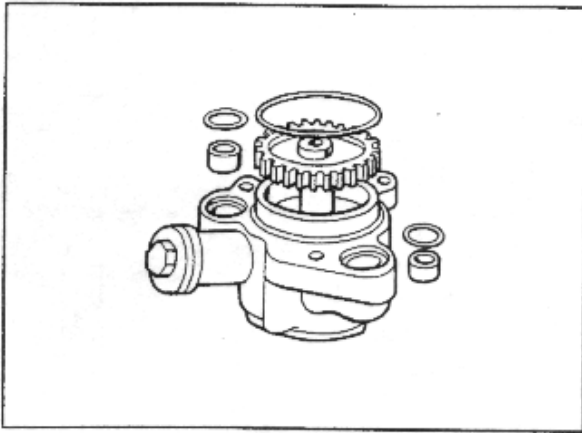
- 3 Inspect the relief-valve efficiency, making sure that it is not jammed in the pump body, and free of any dirt.



c Re-fitting

- 1 Insert the control shaft into the pump body, then re-fit the circlip «D» on the shaft.
- 2 Fit the inner and outer rotors in such a way that the two marks are facing out, toward the pump cover side.
- 3 Fit the seal ring into the pump body, then install the pump cover.
- 4 Fit the relief valve, the spring and the cap.

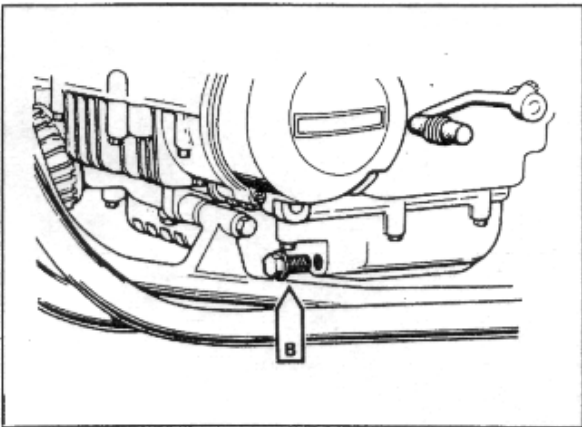




5 Fit the seal rings and the bushings, then reinstall the oil pump on the crankcase.

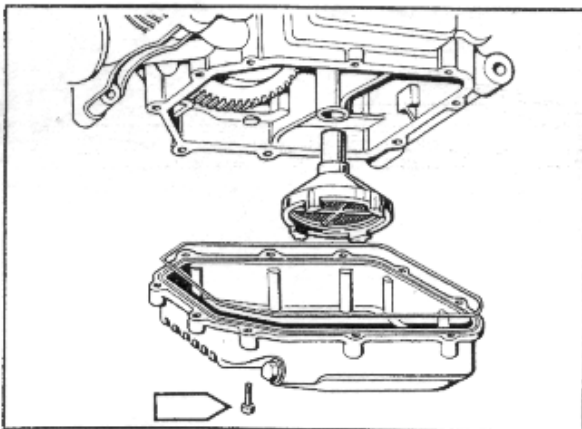
6 Re-connect the electric wire onto the oil pressure switch.

7 Install the left cover, then the shift pedal and the starter motor cover.



a Removal of the oil filter

1 Drain the oil as indicated in chapter 2.



2 Remove the ten screws securing the oil sump and remove the sump cover.

3 Slide the oil filter out.

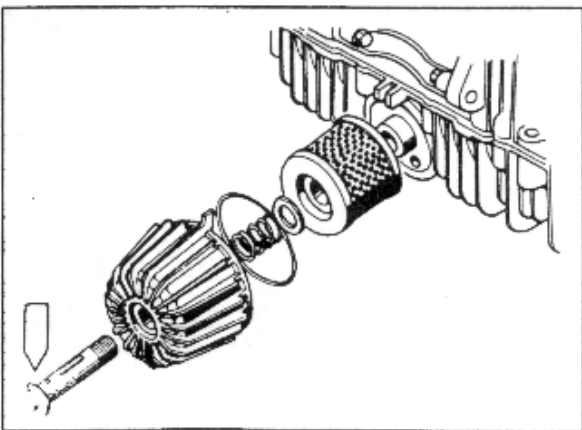
b Inspection

1 Wash the wire gauze and make sure it is not damaged, otherwise replace it.

c Re-fitting

1 Insert the oil filter into its seat on the crankcase, and the circlip.

2 Fit the oil sump.



a Removal of the filter cartridge

1 Drain the oil as indicated in chapter 2.

2 Remove the bolt and remove container and filter cartridge.

b Inspection

1 Check the condition of the filter cartridge, replace it, either if it is damaged or when it is recommended. Check the condition of rubber gaskets.

2 Wash all metal parts and check their condition.

c Re-fitting

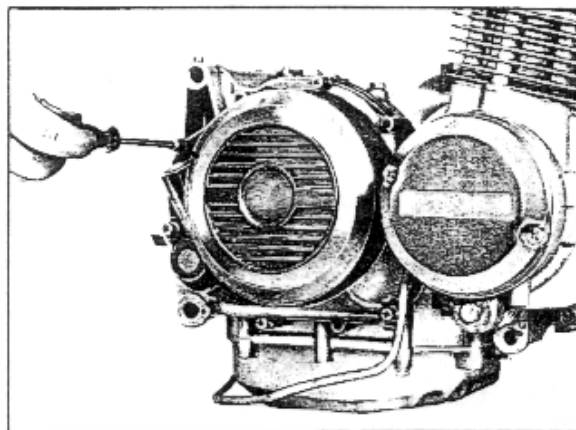
1 Insert the bolt into the cartridge cover, then fit the spring, the washer and the filter element. Now fit the group onto the engine.

6.5 CLUTCH

a Removal of clutch assembly

- 1 Drain the oil as indicated at chapter 2.2.
- 2 Slacken the ten securing screws and remove the right cover.

Note - For 750 Sei, it is necessary to remove the alternator as specified at chapter 6.7.



- 3 Remove the four screws securing the pressure plate and slide out the springs, the pressure plate, and the clutch plates.
- 4 Slide out the clutch throwout bearing.
- 5 Remove the retaining ring, then slide out the clutch crown assembly.
- 6 To remove the pressure plate long control rod, it is necessary to remove the left cover too.

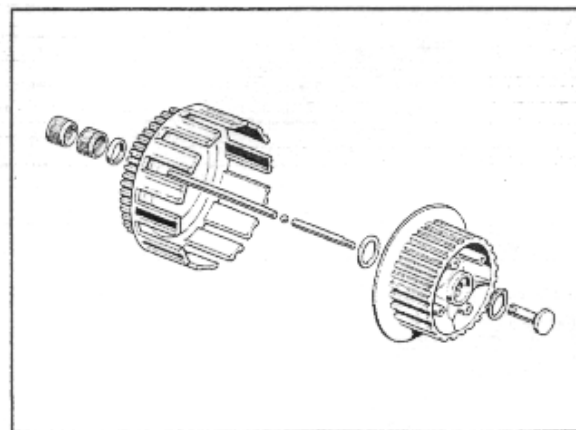
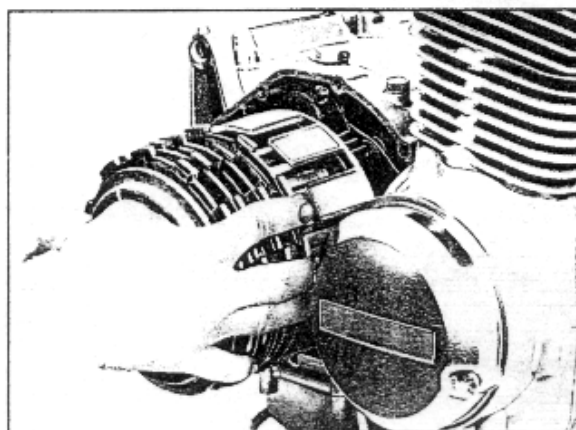
b Inspection

- 1 Using a caliper, measure the drive plate thickness and replace if worn under the permissible wear limit; new plate thick.: $3.2 \div 3.3$ mm (.1259" $\div$.1299") wear limit thick 2.9 mm (.1141").
- 2 Set the steel plates on a plane surface and check plate distortion using a dial gauge; should the distortion be superior than 0.1 mm (.003937") it is necessary to replace the plates.
- 3 Inspect the clutch springs. Replace the spring if not corresponding to the following specifications:

Free length	40.5 mm (1.5944")
Under 32.5 kg load (71.5 lbs)	29.5 mm (1.161")
Under 42.8 kg load (94.16 lbs)	26 mm (1.0236")

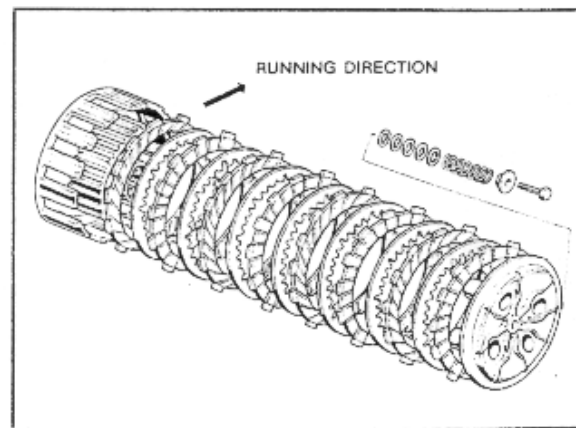
Load tolerance: $\pm 4\%$.

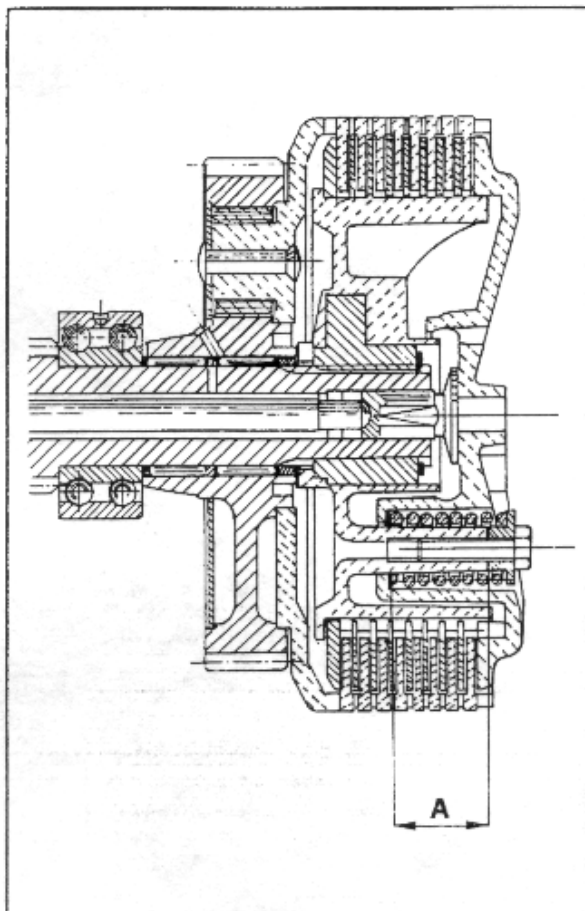
- 4 Check the condition of the rivets securing the gear to the clutch housing and the cushion block efficiency as well.
In case there is too much play, it will be necessary to open the clutch assembly and replace the cushion drive rubbers.



c Re-fitting

- 1 Insert the clutch control rod and the ball bearing.
- 2 Fit cage and spacer onto the shaft.
- 3 Fit the clutch housing.
- 4 Insert the shim.
- 5 Fit the clutch plates holder drum, and fasten it using the retaining ring. Make sure the ring properly enters the groove.
- 6 Insert the clutch throwout bearing.
- 7 Oil the clutch plates, and fit them following the sequence as indicated in the picture.





8 Fit the clutch pressure plate, the washers, the clutch springs and lock using the four T.E. screws. Check first and eventually adjust, using the proper shims, the measure «A» in the drawing: mm 23 (such measure can be checked after screwing and locking only 2 of the 4 T.E. screws).

9 Install the clutch cover and fill the engine with new oil.

10 Reinstall the left cover, if removed, and adjust the clutch control.

6.6 GEAR SELECTOR ASSEMBLY

a Removal

1 Remove the clutch ass. y as specified at chapter 6.5.

2 Take out the shifting lever, and spacer.

3 Remove the two T.E. securing screws, then take out the gear stop levers and the spacer as well.

4 Slide out the shaft and the control lever, disengaging their ratchet mechanism.

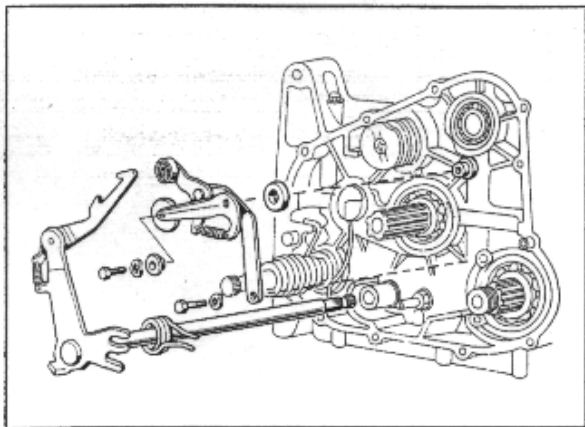
b Inspection

1 Check the efficiency of the gear stop components: bearing, small wheel, joints, spring. Ensure that the leverage do not show any distortion.

2 Check ratchet and control shaft ass.y efficiency; particularly that the engaging teeth do not show any wear and the levers do not show any distortion.

c Re-fitting

Reverse the sequence, do not forget to set the spacer under the gear stop ass.y.



6.7 CONTROL SHAFT FOR ALTERNATOR

(for 750 Sei, only)

a Removal

1 Remove the alternator cover, the alternator and the clutch as indicated at chapter 6.5.

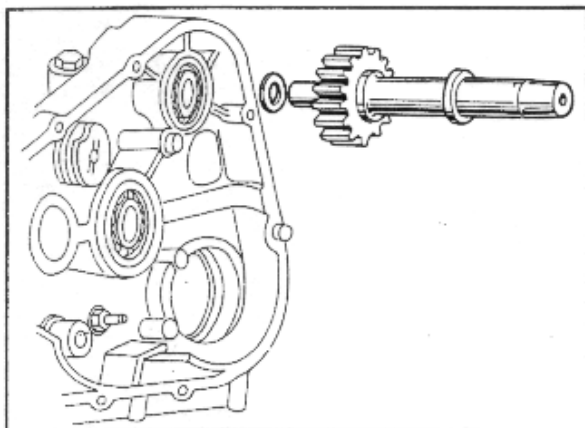
2 Slide out the alternator control shaft.

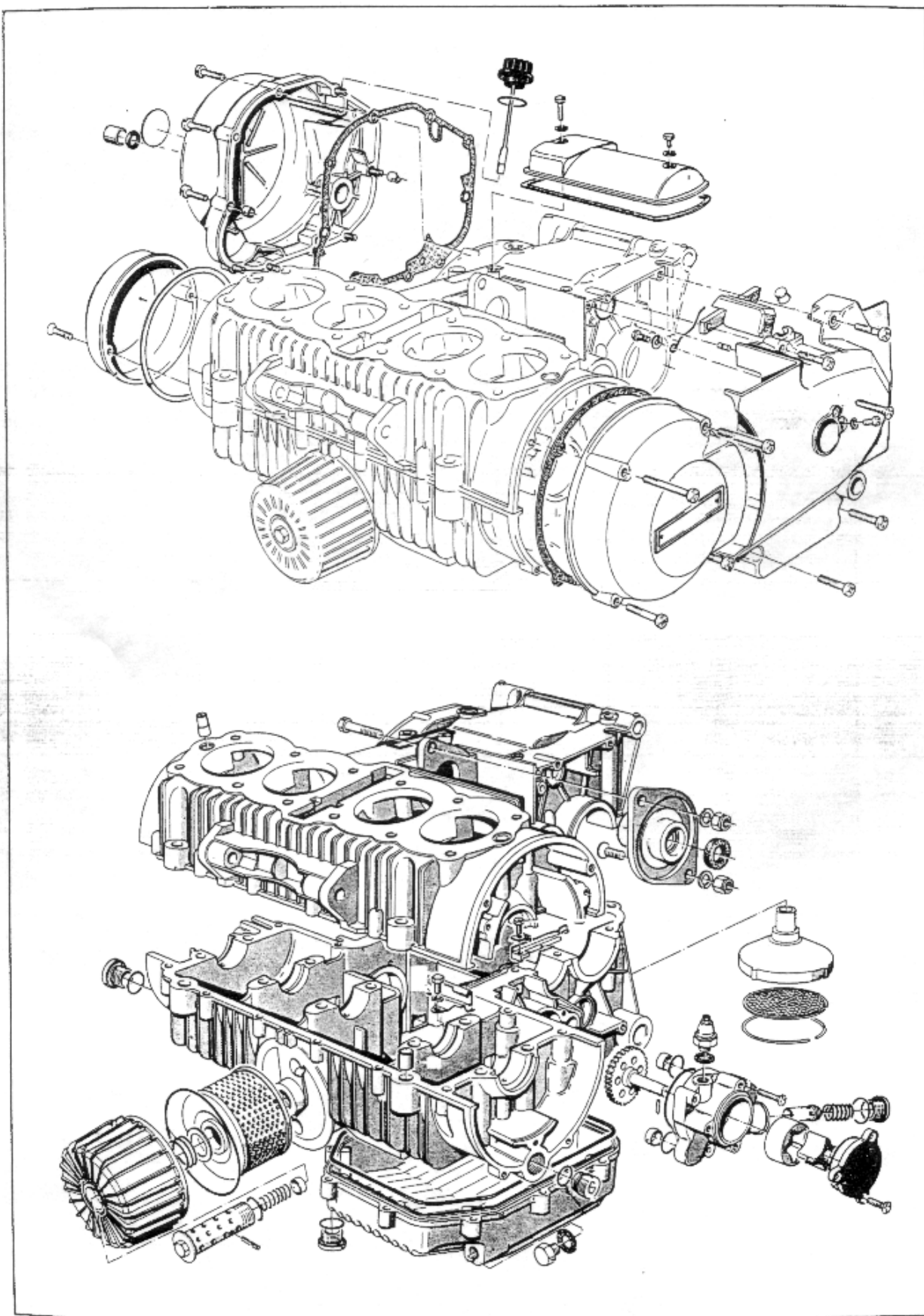
b Inspection

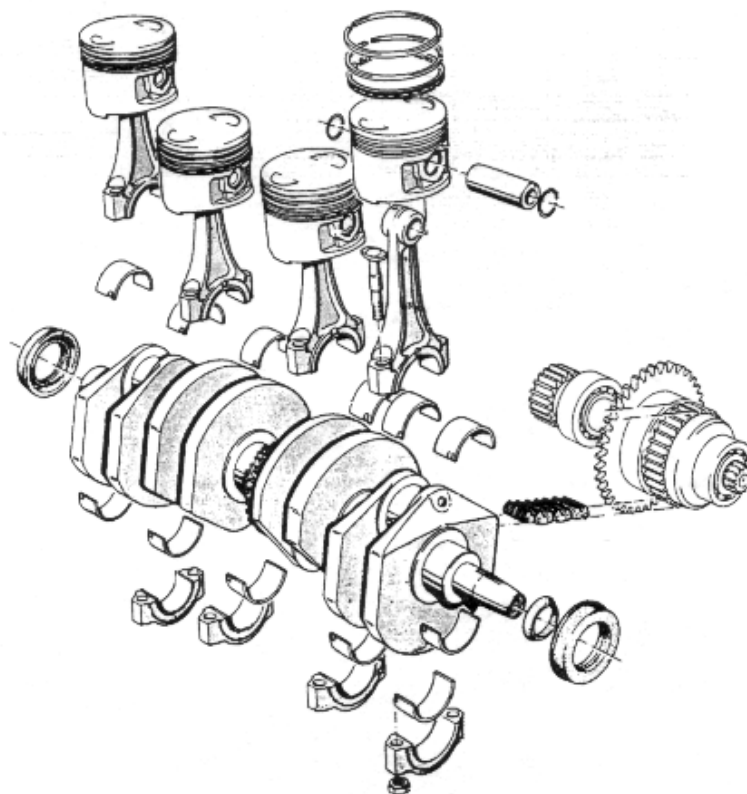
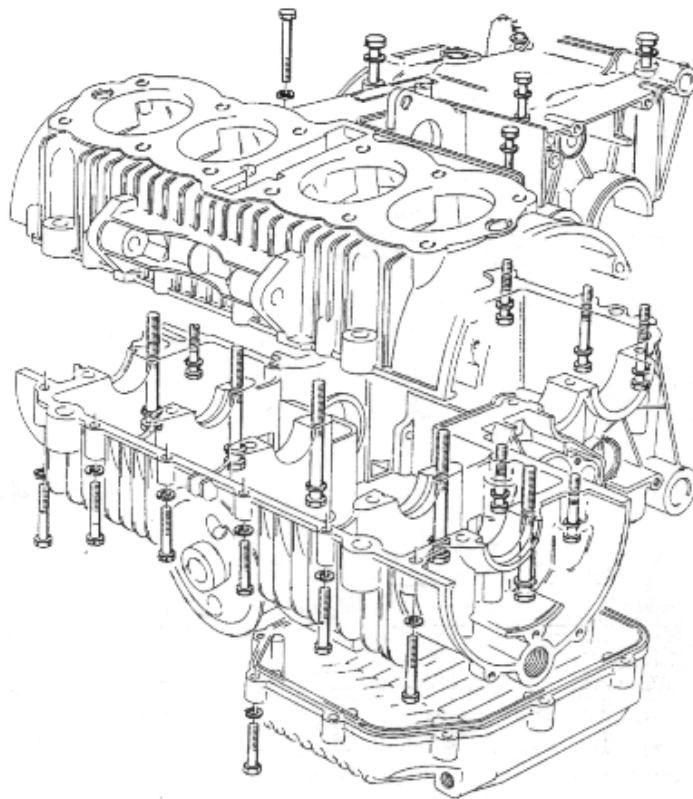
1 Check the efficiency of cushion drive rubbers.
2 Inspect the gear teeth and the shaft against wearing.
3 Check bearing condition.

c Re-fitting

1 Re-fit according to the specifications under chapter 6.5

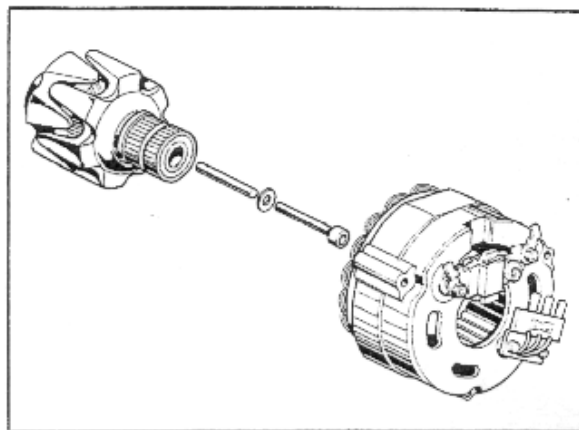




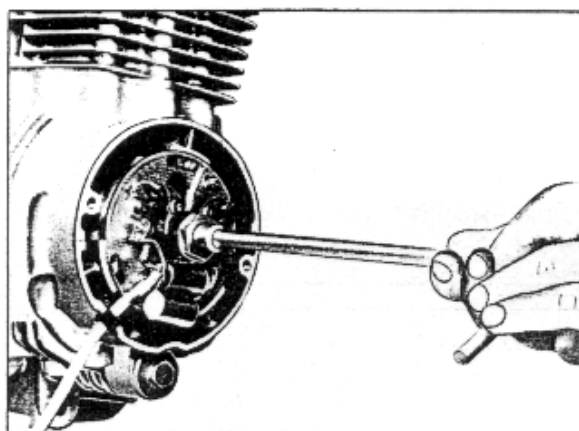


a Removal

- 1 Take out the engine from frame as indicated at chapter 5 and set it on the proper block «Z».
- 2 Remove cylinder head, cylinders and pistons as indicated at chapter 6.1.
- 3 Slacken the three screws securing the stator for alternator.
- 4 Slacken the screw securing the rotor for generator, fit the pin, in the bike tool kit, into the shaft hole, fasten the slackened screw until the rotor is disengaged, then slide out the rotor itself.



- 5 Remove the breaker cover, remove the center bolt and the three screws securing the plate; remove then the stator plate, with the electric wiring, and condensers.



- 6 Take out the clutch ass.y as indicated at chapter 6.5.

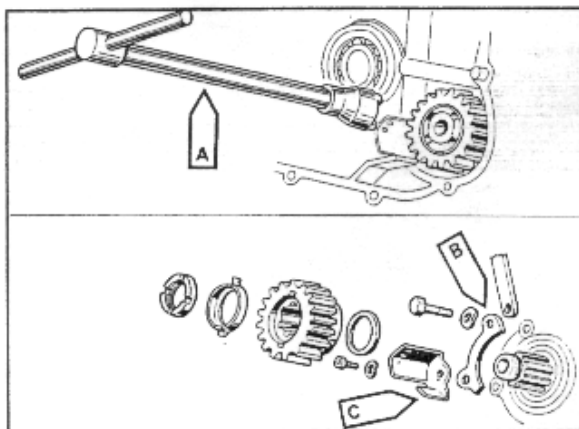
- 7 Remove the gear selector components as indicated at chapter 6.6.

- 8 Remove both the upper and lower bolt securing the starter motor holder and remove the starter motor.

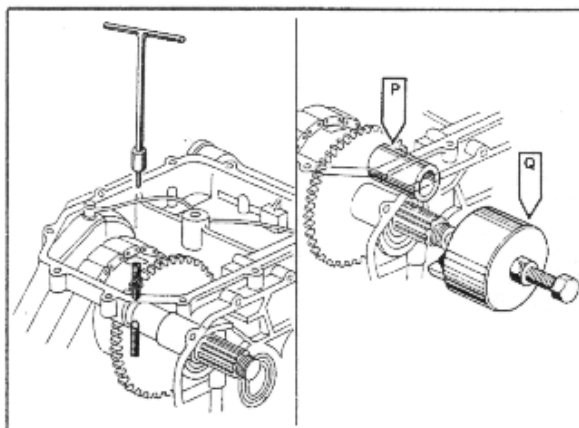
- 9 Remove the two securing bolts, then take out plate «B» and protection «C».

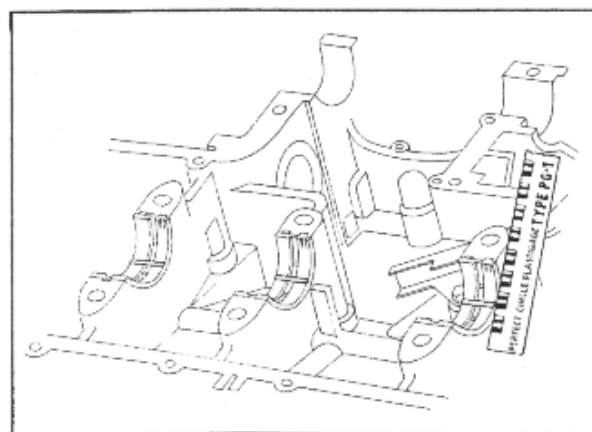
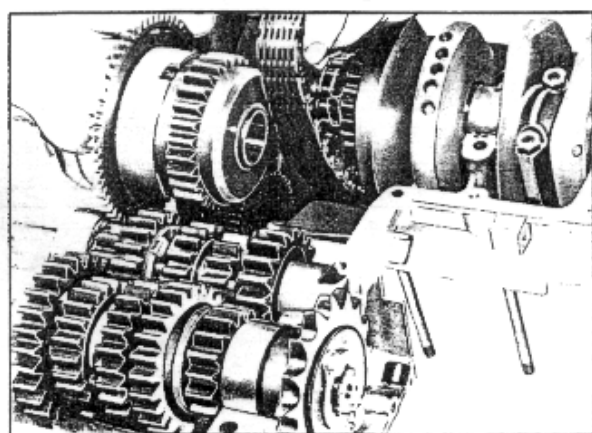
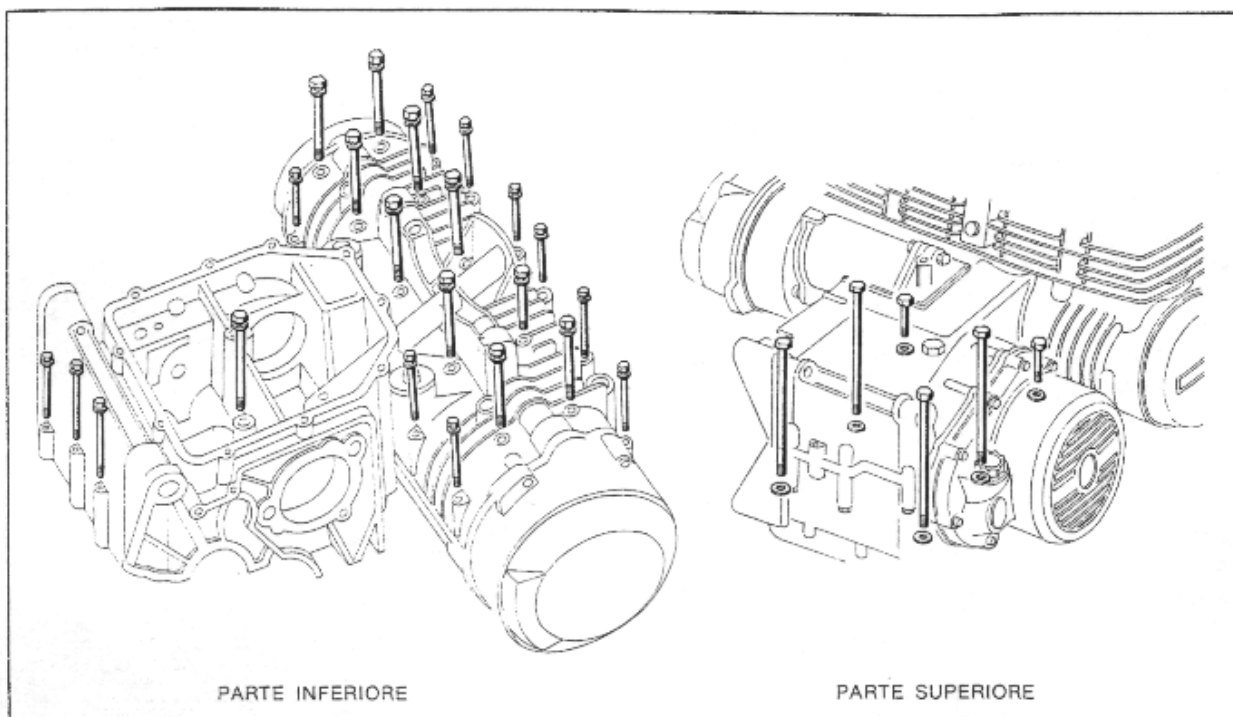
- 10 Using a screw driver flatten the wings of the ring securing the drive engine gear.

- 11 Using tool «A» slide the ring out, then in sequence dismantle ring, washer, gear, spacer.



- 12 Remove the sump, take out the oil filter and undo the two pressure screws. Set the spacer «P» between the gear and the crankshaft, set the tool «Q» as indicated in the picture and slide out the drive shaft.





13 Slacken in crossed sequence the bolts securing the engine crankcases (upper and lower side), remove the bolts and open the engine, using a plastic or rubber mallet, slightly hammering on the lower crankcase half to separate.

14 Take out the cushion drive and the drive gear.

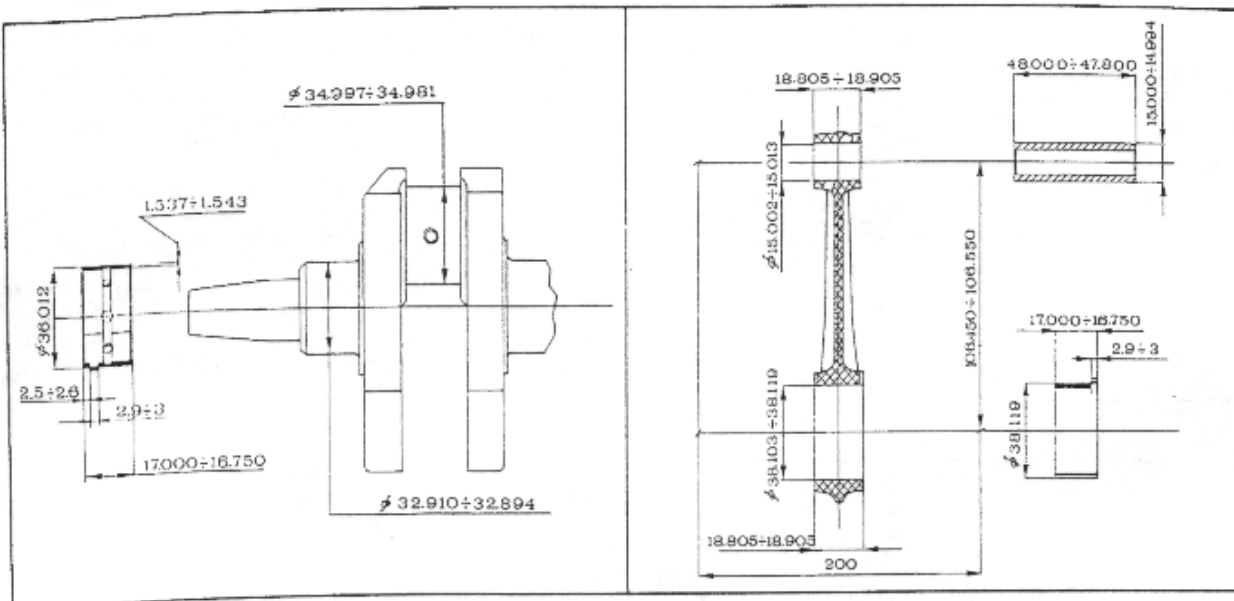
15 Pull out the crankshaft with the chains, then remove the connecting rod.

Note - Do not mix the support and connecting rod bearings.

b Inspection

1 Check clearance between main bearings and main shafts, using the specific product «PERFECT CIRCLE PLASTIGAGE». Set the above material on the main half-bearings, along the whole width, refit the crankshaft and close the crankcase halves with the specified torque loading. It is imperative to avoid any crankshaft rotation.

Open the crankcase halves and check clearance using the scale reported on the product container. Max. permissible clearance 0.08 mm (.00314").



2 Following the previous procedure, check clearance between con-rod big end bearings and crank pins.
Max. permissible clearance 0.08 mm (.00314").

3 Checking crankshaft eccentricity.
Lay the two crankshaft ends onto two «V» blocks and using a dial gauge check the eccentricity by turning the crank shaft itself. Should the gauge read higher than 0.05 mm (.00196") it will be necessary to replace the shaft.

4 Ensure that main shafts do not show any scoring or wearing within the max. permissible limit.
Should an ovalization higher than 0.05 mm (.00196") occur at any shaft, it will be necessary to replace the shaft.

5 Check coupling clearance between piston pin and con-rod small end.
Min. clearance 0.002 mm (.000787")
Max. clearance 0.04 mm (.00151")

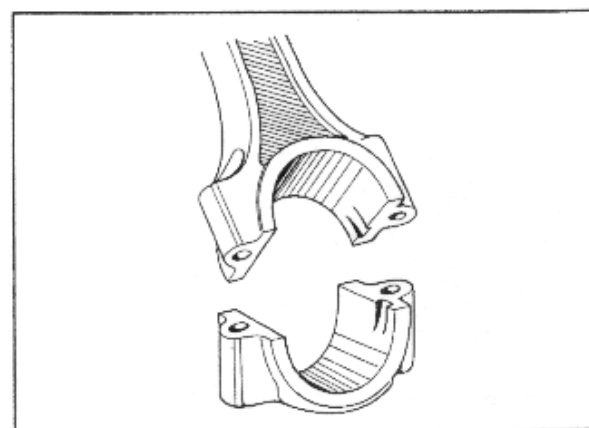
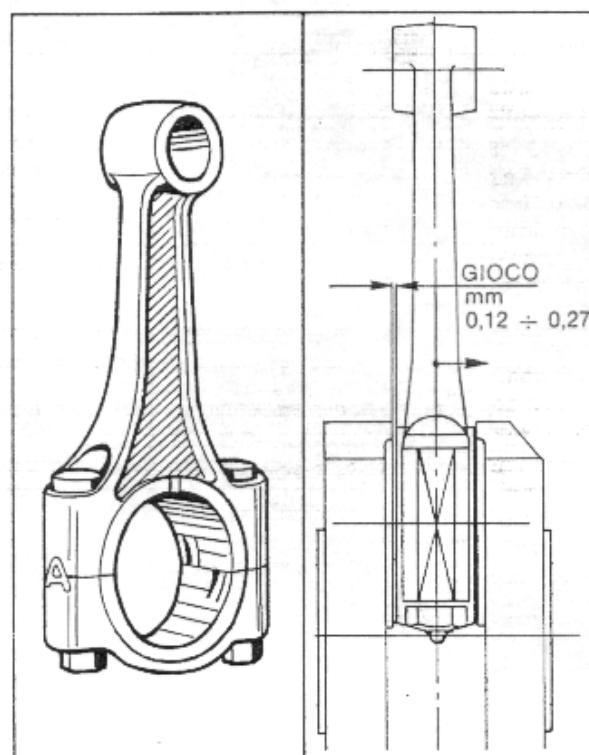
6 Check axis parallelism of con-rod small and big ends.
Max limit:
 ± 0.100 mm on 200 mm (.003937" on 7.874").

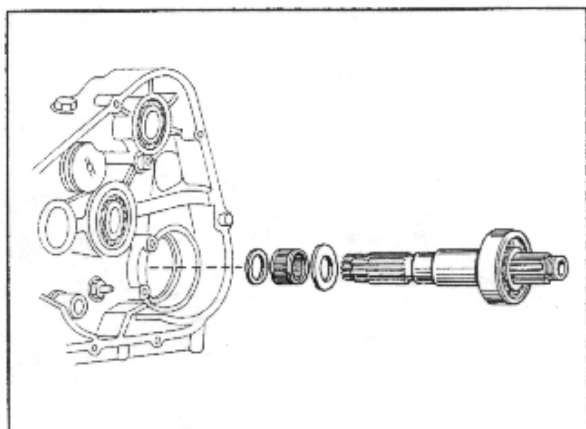
7 In case of replacement of a con-rod, ensure that the new con-rod is of the same class as the others. The weight selection is detected by the stamping A-B-C-D-E on the con-rod itself.

CLASS	WEIGHT (grams)
A	290 - 294
B	294 - 298
C	298 - 302
D	302 - 306
E	306 - 310

These rates are meant for a con-rod complete with nuts and bolts, without bearings.

8 Check the lateral clearance between con-rod and seat on the crankshaft.
Min. clearance 0.120 mm (.00472")
Max. clearance 0.270 mm (.01062")



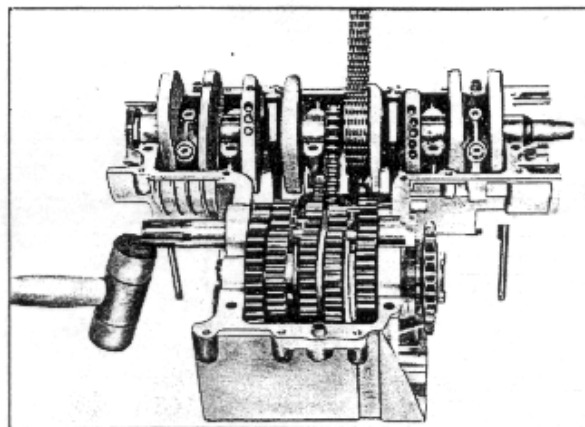


c Re-fitting

1 Re-fit pistons and con-rods into cylinders, fit the cylinder block onto the upper crankcase and lock the con-rods on the crankshaft, paying attention that the side, where the positioning teeth are located, faces the front of the engine.

Note - If the cylinder and cylinder head locking stud bolts have been removed, it is necessary to put some teflon on the threaded bottom of the same.

2 Complete the fitting of the armature driving shaft, reversing the dismantling sequence, and pay attention to fit the drive shaft after inserting shims and roller cage in the way as indicated in the picture.



6.9 GEARBOX - PRIMARY DRIVE ASSEMBLY - DESMODROMIC ASSEMBLY

a Removal

1 Remove the engine from the frame following the directions in chapter 5.

2 Open the engine according to chapter 6.8.

3 Lift the cushion drive and gearbox assemblies.

4 Remove the retaining ring and open the cushion drive assembly.

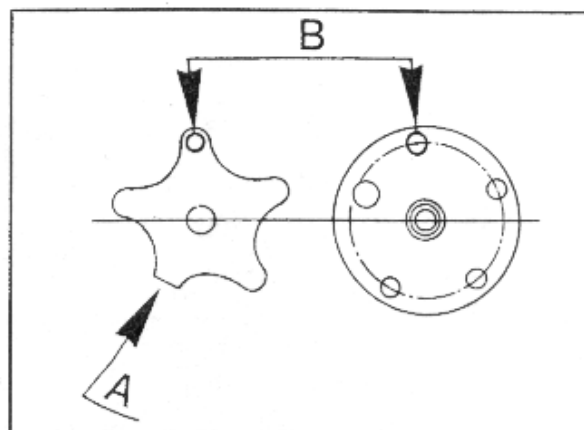
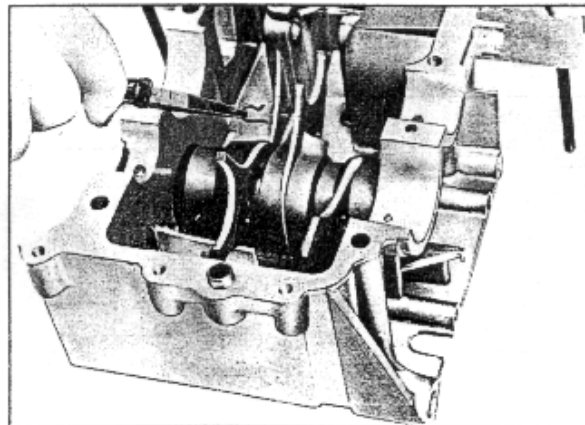
5 Disengage the cover on the drive gear and slide the gear out.

6 Unscrew the stop device on the upper crankcase and slide the guide roller out.

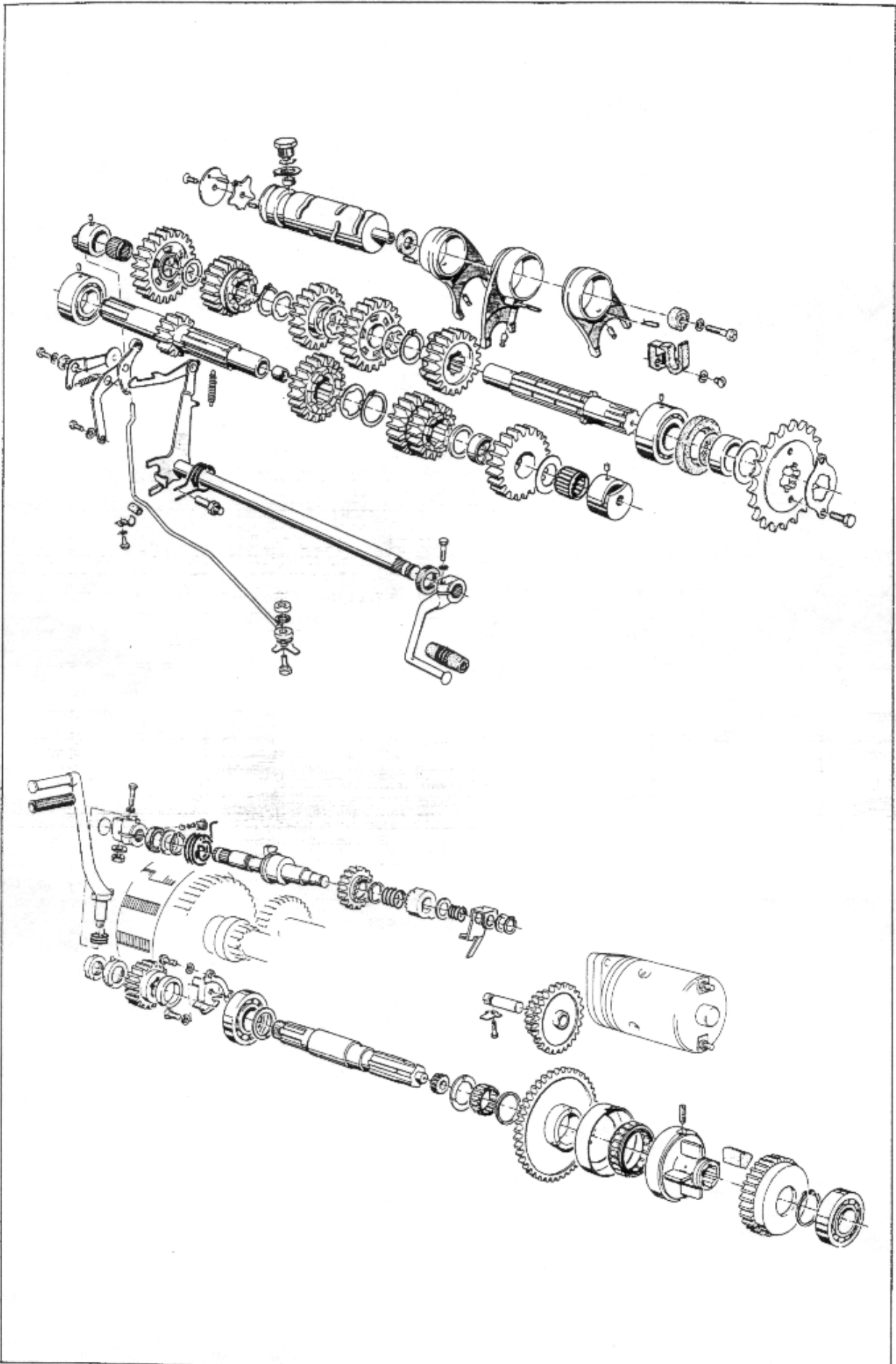
7 Take off the circlips and the fork guiding rollers.

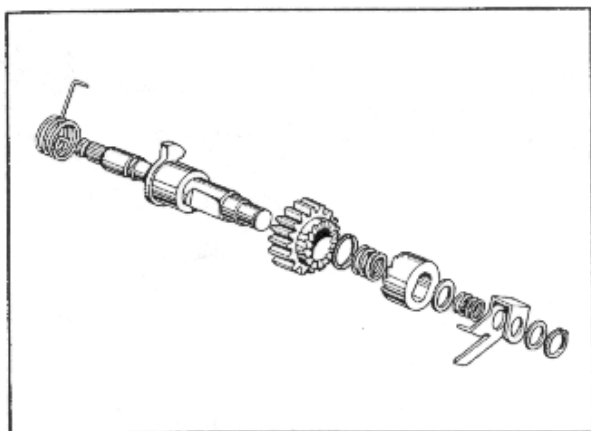
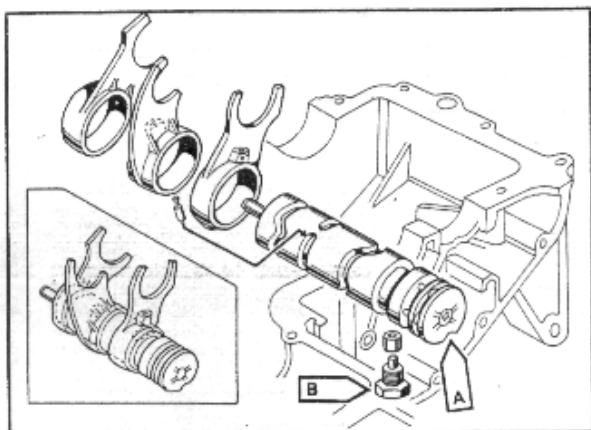
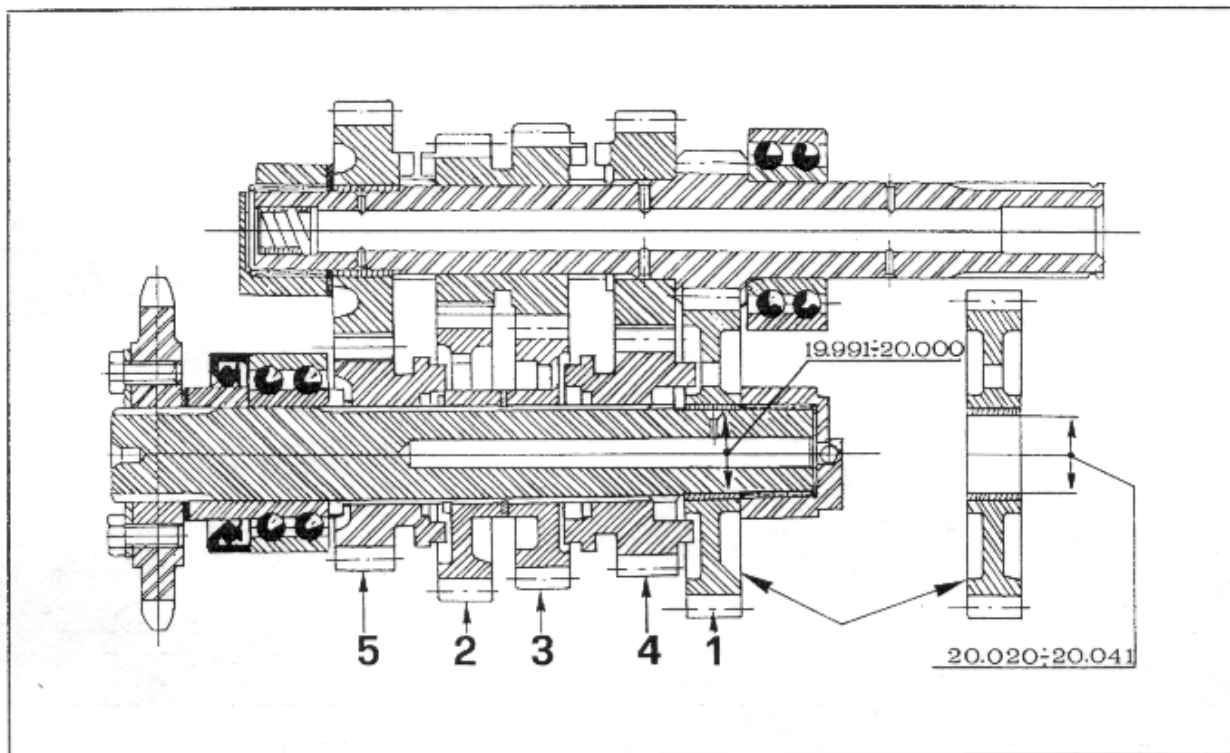
8 Remove the screw securing the neutral switch and take the switch out.

9 Slide out the desmodromic shaft.



In case of disassembling of desmodromic assembly, pay attention, when refitting, to the exact position of the inside toothed plate (see particulars «A» and «B»).





b Inspection

- 1 Make sure that the gears do not show any heavy wear or damage either on the teeth or engaging dogs.
- 2 Check the efficiency of the cushion drive rubbers and drive gear.
- 3 Make sure that the forks slide freely on the desmodromic shaft, and do not show any distortion or wear.
- 4 Check the bushings and bearings for wear or damage.

c Re-fitting

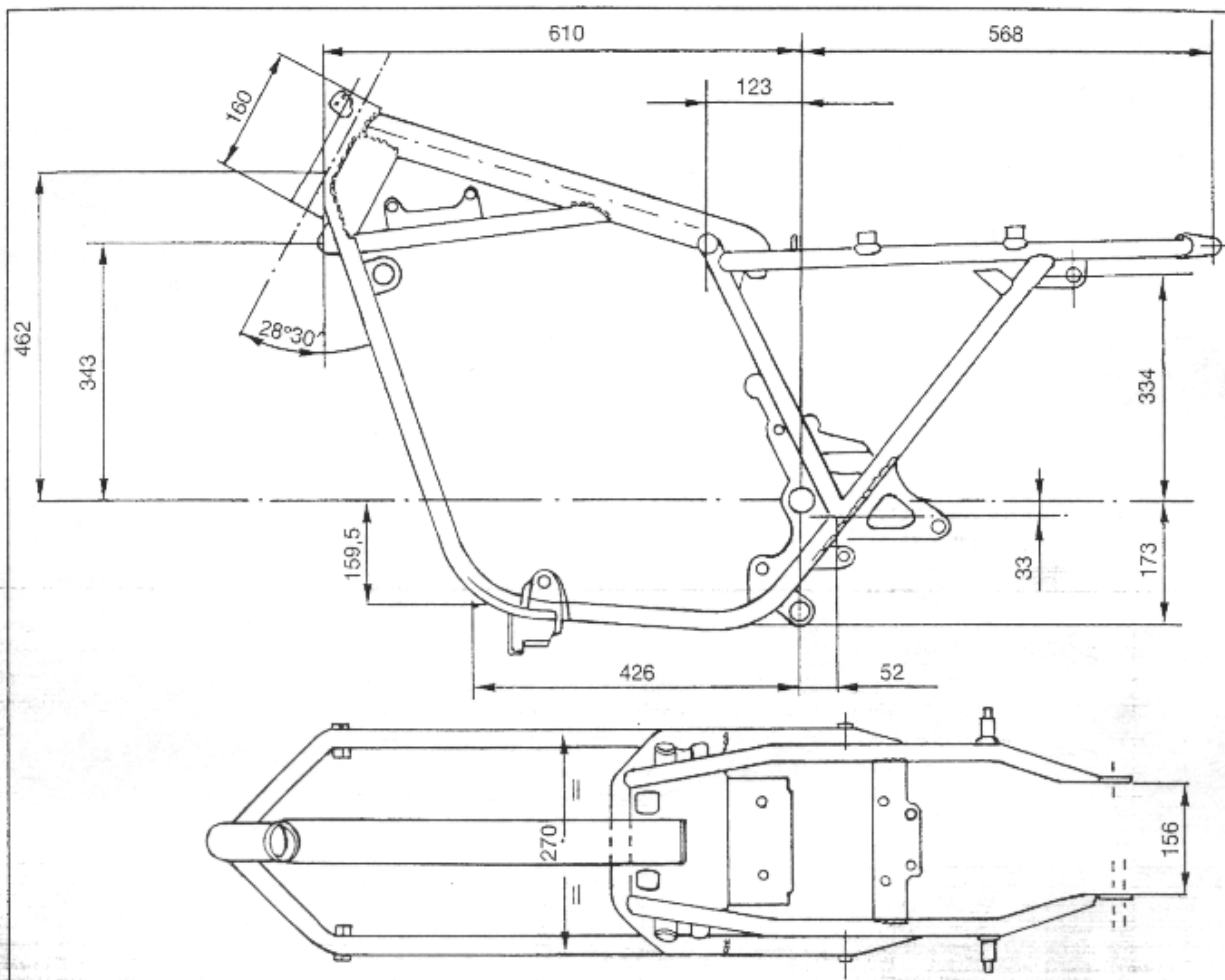
- 1 Re-fit the desmodromic shaft and the control forks according to the sequence indicated in the picture.
- 2 Fasten the desmodromic shaft with the proper stop bolt «B», which is located on the upper half crankcase.
- 3 Position the desmodromic shaft, aligning the notch «A» with the hole for stop nut «B», and insert the fork guiding rollers and their springs.
- 4 Position the gearbox shafts, being careful to insert the bushings and bearings on their respective pins.
- 5 Fit the cushion drive assembly into its chain and close the engine as indicated in chapter 6.9, after smearing the lower crankcase plane with some sealing paste.

6.10 KICKSTARTER SHAFT (for 750 Sei only)

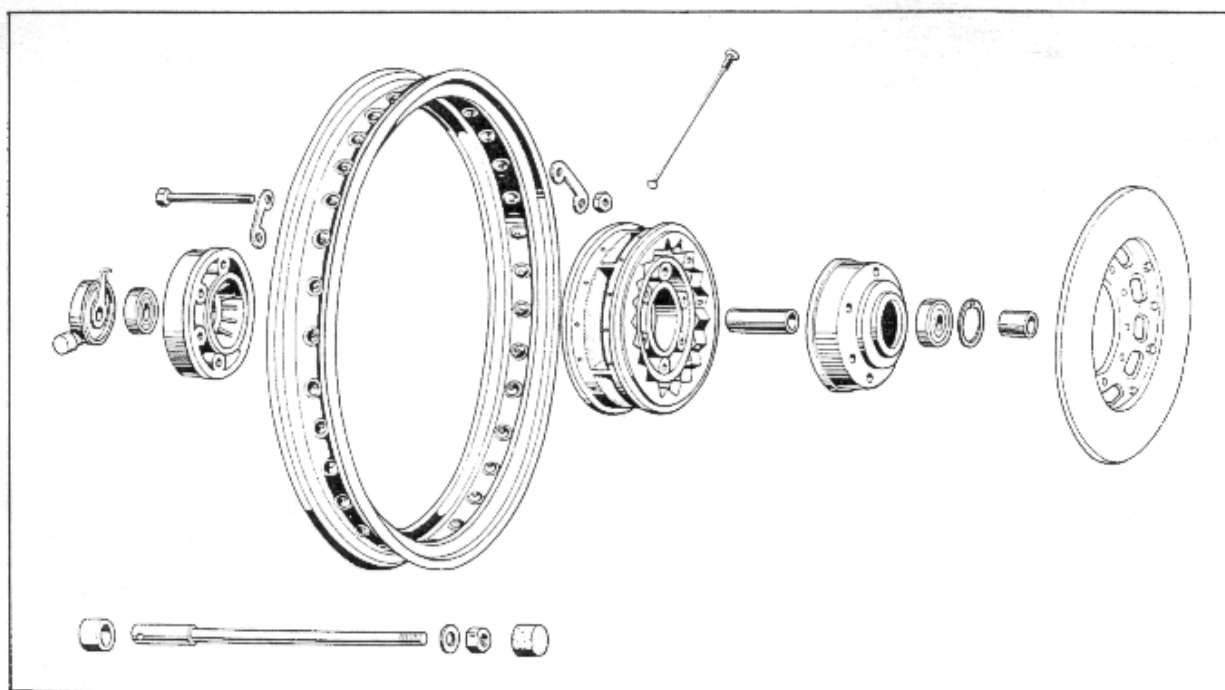
To remove and re-fit this shaft, it is not necessary to open the engine, but simply drain the oil, remove the clutch cover, and incline the motorcycle. Remove the oil sump and then remove and re-fit the shaft according to the sequence indicated in the picture.

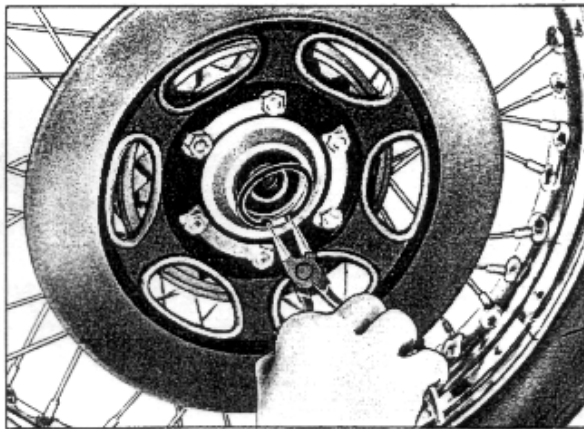
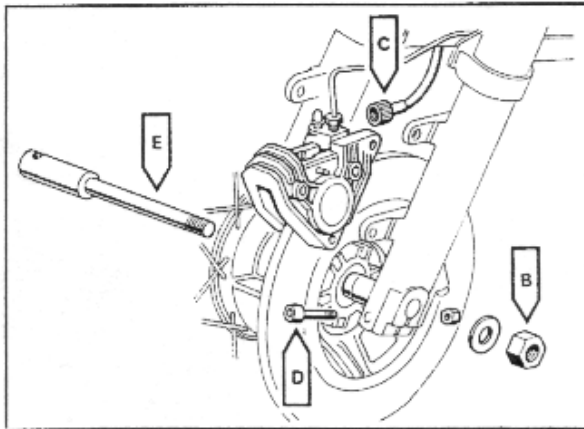
7 CYCLE

FRAME CHECKING DATA



7.1 BRAKE AND FRONT WHEEL





a Removal

- 1 Set a block under the engine to lift the front wheel off the ground.
 - 2 Detach the speedometer cable, unscrewing the securing ring «C».
 - 3 Remove the screws «D» at the fork legs bottom, securing the front hub spindle «E».
 - 4 Unscrew the nut securing the wheel spindle «B» and slide out the spindle itself, thus disengaging the wheel.
 - 5 Take off the bearing retaining ring, then using a pin take off the two side bearings and the middle spacer.
 - 6 To remove the brake disc it is sufficient to loosen the T.E. screws securing the disc itself to the wheel hub, after flattening the stop wing.
- Caution** - Do not operate the brake control lever when the wheel is removed; this could cause the brake pistons to come out of cylinders and consequently brake fluid to leak. Should this occur, insert the pistons into the cylinders again, refill the fluid brake reservoir (master cylinder) and bleed the brake circuit (air bleeding).

b Inspection

- 1 Check condition of spokes and tighten if necessary.
- 2 Check rim excentricity, max. permissible limit $0.9 \div 1.0$ mm (.032" $\div$.040").
- 3 Check bearing condition.

c Re-fitting

- 1 Re-fit the various components reversing the sequence indicated for removal.

7.2 DIRECTIONS FOR CHECKING AND OVERHAULING THE HYDRAULIC BRAKING CIRCUIT

1 Maintenance

For good brake efficiency, strictly follow these directions:

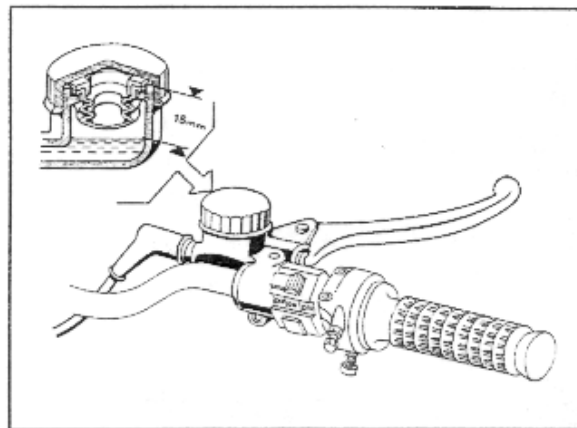
- periodically check the fluid level in the reservoir; it must never be lower than 8 mm (.320") under the maximum level (6 mm .240" for 750 Sei);
 - every 5000 km (3000 miles) fill the fluid reservoir; the fluid must be from the original container and opened only when it is used;
 - completely renew the brake fluid every 20000 km (12000 miles) or at least every two years;
- The fluid lines always have to be full of oil, without air. A long and spongy movement of the control lever indicates the presence of air bubbles inside the braking circuit.

When washing the brake circuit, use only fresh oil. Do not use alcohol or compressed air to clean or dry the circuit. Recommended fluid: «Agip F.1 Brake Fluid SAE J 1703 C».

2 Air bleeding

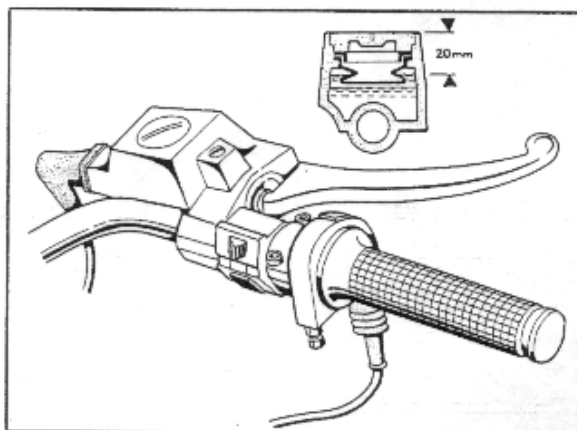
Proceed as follows:

— turn the handlebar until the master cylinder (fluid reservoir) «A» reaches the horizontal position;



— if necessary, fill up the fluid reservoir (make sure that during the whole operation, the fluid level is not lower than 8 mm .320" under maximum - 6 mm .240" for 750 Sei);

— bleed one caliper at a time;

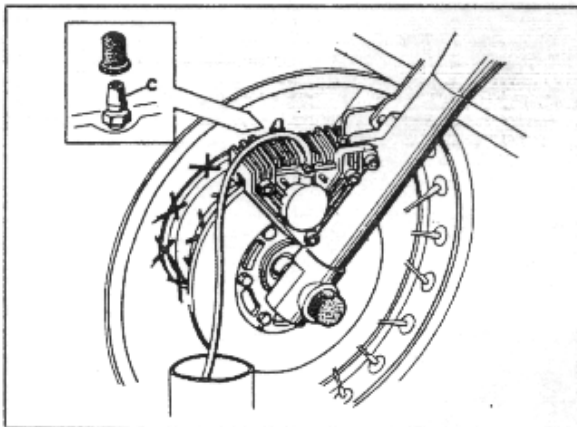


a take off the rubber cap, then fit a transparent flexible pipe on the drain plug «C»; the other end of the drain line will be fitted into a transparent container, partially filled with brake fluid of the same type;

b loosen drain plug «C»;

c fully operate the brake control lever on the handlebar several times, release it slowly and wait for a few seconds before operating it again. Repeat this operation until all the air bubbles are eliminated;

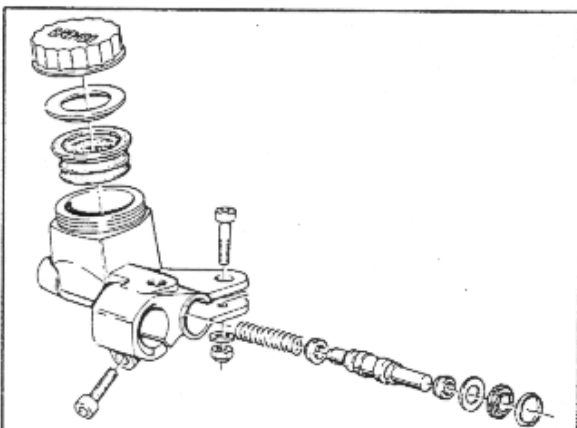
d keep the control lever completely drawn, and lock the drain plug «C». Then remove the flexible drain pipe and re-fit the rubber cap on the drain plug.

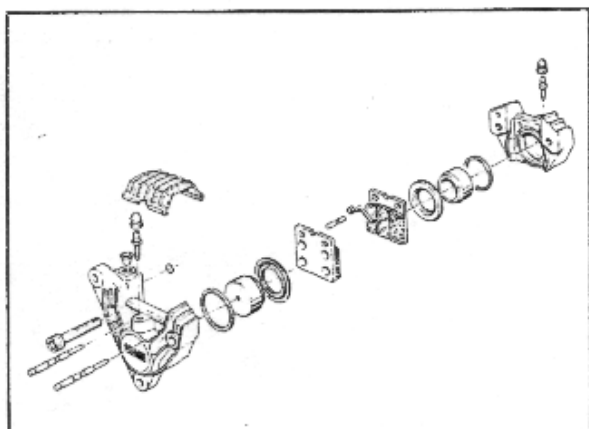


Note - The air in the brake circuit will not be fully bled by the above operation. The remaining air is automatically bled after a short time riding, thus causing a less elastic and shorter lever movement. If the air bleeding has been correctly carried out, a direct and efficient working of the fluid will be realized immediately after the initial idle movement of the control lever, otherwise repeat the operations.

3 General directions for removal of components from the braking circuit

Before removing any components, clean the outer parts and cover the oil line ends to prevent any foreign material from entering the lines.



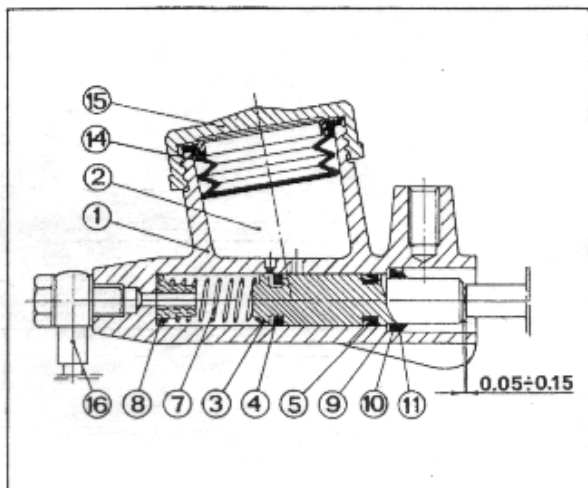


After removing the components, clean and remove grease from metal parts by using trichloroethylene. The trichloroethylene must not come in contact with the rubber gaskets.

Parts must be handled with care to prevent any damage. After cleaning, dry with unfrayed rags and moisten cylinder and piston walls with brake fluid to avoid any corrosion.

4 Master cylinder (fluid reservoir)

The master cylinder fits a special gaiter preventing the brake fluid from leaking out in case the vehicle falls down; such gaiter is secured by the cap.



- | | |
|------------------------|---------------|
| 1 Master cylinder body | 8 Bushing |
| 2 Fluid reservoir | 9 Washer |
| 3 Floater | 10 Scraper |
| 4 Gasket | 11 Stop ring |
| 5 Lip gasket | 14 Gaiter |
| 7 Return spring | 15 Gap |
| | 16 Connection |

a Inspection and checking

Periodically check the fluid level in the reservoir, it should not be lower than 8 mm (.320") under maximum (6 mm .240" for 750 Sei).

Every 5000 km (3000 miles) fill the fluid reservoir, take the fresh fluid from an original container, to be opened only when pouring. The brake fluid is a hygroscopic type and requires a full renewal every 15000 km (10000 miles), or at least every two years. Make sure that the clearance between brake control lever end and floater is $0.05 \div 0.15$ mm (.00196" $\div$.00590").

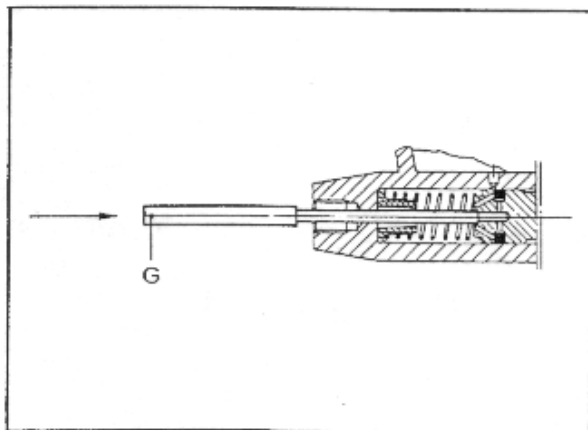
Periodically lubricate the scraper «10» moistening the floater stem «3»; **do not use mineral oil or grease, only brake fluid.**

b Overhauling and replacements of master cylinder components and tools to be used

In case the master cylinder is not working properly, and fluid leakages next to the brake lever is detected, this will decrease the brake efficiency and it will be necessary to replace the oil seal «4» and «5».

Operations are as follows:

- drain the fluid from the fluid reservoir «2»;
- remove and cover the oil line «16»;
- remove the control lever «G»;
- insert the tool into the fluid passage hole and push the floater «3» out by tapping slightly with a mallet. Be careful not to score the pump walls, and the outer surface of the floater;
- from floater «3», remove lock ring «11», scraper «10», and stop washer «9»;
- from master cylinder «1», remove spring «7» and spring guiding bushing «8»;
- carefully clean the floater «3», and the master cylinder body «1», and check that they are not damaged. Also check the I/D of the master cylinder and the O/D of the floater «3»;



	500 Quattro	750 Sei
Max. allowed hole $\varnothing$	12.843	15.918
Min. allowed floater $\varnothing$	12.657	15.832

— check gaskets «4» and «5». If replacement is necessary, remove them using the proper tool;

— re-fit the new gaskets «4» and «5» on the floater «3» using proper tools (pay attention to the mounting position of gasket «5»);

— on floater «3», fit the stop washer «9», the scraper «10» checking its condition, and the lock ring «11»;

— fit the return spring «7» on the floater «3» and guide bushing «8»;

— fit the whole assembly into the master cylinder hole;

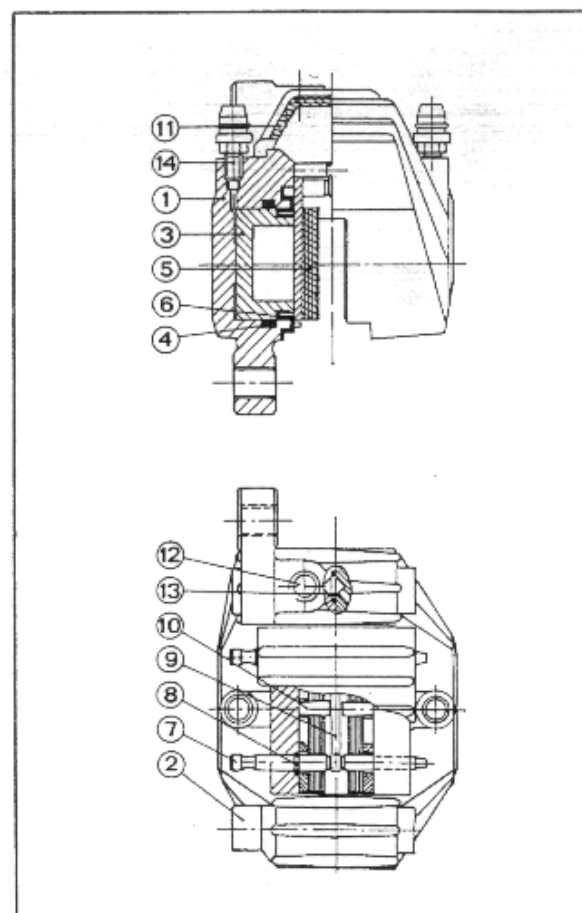
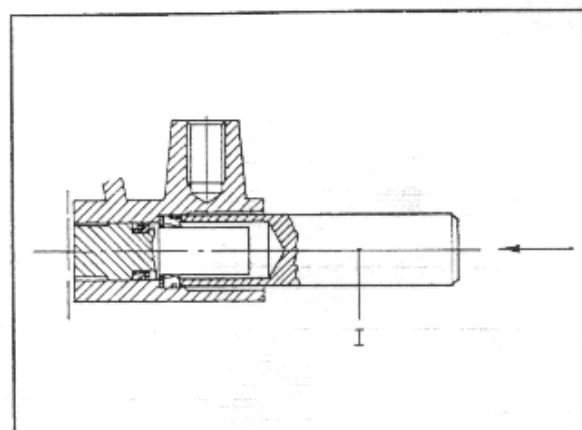
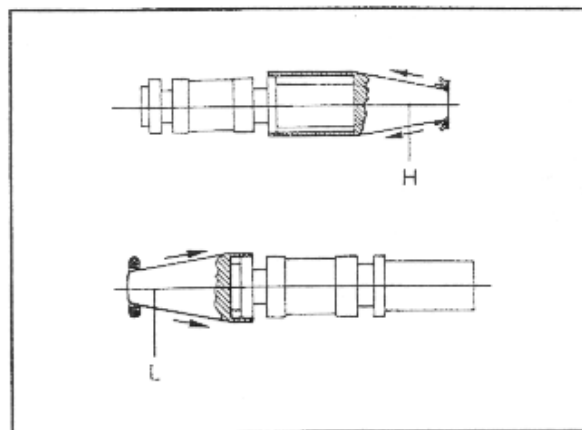
— fit lock ring «11» using a mallet on tool «1» until the stop washer «9» has reached its proper position;

— connect the oil line to the master cylinder body «1»;

— re-fit the control lever and check the clearance between lever end and floater «3»;

— fill up the fluid reservoir and bleed the air from the brake circuit.

Note - Before mounting, moisten the seals and metal parts using brake fluid. **Do not use mineral oil or grease.**



5 Caliper

Description

It consists of two light alloy bodies «1» joined by two screws «2».

Each body includes a cylindric housing acting as a guide for the brake piston «3».

Sealing between brake piston and cylinder is ensured by a gasket «4» lodged in a groove inside the cylindric housing.

A dust guard cap «6» prevents moisture or dirt particles from entering.

The two brake pistons are in direct contact with the two pads which are secured by two pins «7» each locked by a spring. A taper pin «10» pressed in the spring «9» prevents the pad from flapping, and helps the pad to return after braking. Cap «11» prevents the pads from getting wet.

The brake fluid is delivered to the caliper through the hole «12», while the two caliper bodies are connected by two inner holes. Sealing is insured by gasket «13». Each caliper body fits a drain plug «14» for air bleeding.

a Inspection and overhauling

Every 5000 km (3000 miles), check the condition of pads as follows:

- remove cap «11»;
- remove taper pin «10» and spring «9»;
- slip off pin, pad retainer «7»;
- slip off pads.

Thickness must be: New pad 9 mm (.3543").

Wear limit 6 mm (.2362").

For 750 Sei $6.5 \div 7$ mm (.2559" $\div$.2755").

If thickness is under this wear limit, it is necessary to replace the pads.

Pads are replaced as follows:

- push brake pistons «3» inside caliper bodies «1»; being careful not to damage the dust guard caps «6»;
- fit the new pads «5» into calipers;
- re-fit pins «7» pad retainer, taper pin «10» and spring «9».

After the pads are replaced, it is not necessary to bleed the air from the brake circuit; operate the brake control lever several times until the caliper pistons reach their normal position (clearance pad-disc: about 0.2 mm .008").

Note - When replacing the pads, it is recommended to take a little amount of fluid out of the reservoir, as the pistons being retracted into the housing might cause the fluid to overflow.

Caution - For about 100 km (60 miles), after the pads are replaced, use the brakes with caution until the pads are fully set in.

b Inspection and replacement of components

The replacement of caliper seal is necessary when fluid leakage occurs through the cylindric housings; fluid traces will be seen on the brake discs and caliper while the fluid level in the reservoir will be lower within shorter intervals.

Fluid leakage will effect braking efficiency and cause an elastic movement of the brake control lever as well.

To replace caliper seals, proceed as follows:

- remove and cover the fluid line;
- remove the caliper from the fork leg;
- remove taper pin, pad positioning spring, pad retainer pins, and brake pads;
- dismantle the caliper in two halves;
- remove the dust guard cap from the leaking caliper body;

— take off the brake piston from the body by using compressed air, being careful not to damage the piston surface;

— remove the defective seal, using a needle, being careful not to score the cylinder wall;

— clean accurately piston and cylinder and check the condition. It is recommended to check the I/D of cylinder housing and the O/D of piston against excessive wear:

Maximum cylinder $\varnothing$: 38.071 mm (1.49885")

Minimum piston $\varnothing$: 37.930 mm (1.4933");

- fit a new gasket into the cylinder groove;
- fit the piston into the cylinder (use only finger pressure for this operation);
- re-fit the dust guard cap after checking if the same is not damaged, being careful to secure it in its housing on the brake piston and on the caliper body;

— join the two caliper bodies, being careful that the gasket is properly lodged into the housing; lock the two screws with a wrench. Torque the screw at $4 \div 4.5$ kpm ($29 \div 33$ ft. lbs);

— re-fit the caliper on to the fork leg. Torque the screws at $4 \div 4.5$ kpm ($29 \div 33$ ft lbs);

— fit pads, pad retainer pins, and taper pin with positioning springs;

— connect the fluid line to the caliper;

— bleed the air from the brake system.

Note - Before fitting, moisten rubber and metal parts with brake fluid. **Do not use mineral oil or grease.**

6 Oil lines

Inspection

The condition of lines must be very carefully carried out. Damaged oil lines must be immediately replaced.

7 Braking disc

Description

The brake pads, when actuated, come in contact with the brake disc. Therefore, the condition of the pad will effect the braking efficiency.

On motorcycles, the surface of this disc is treated to prevent oxidation.

This treatment is also made on the brake pads. However, after the brakes are applied a few times, the protection will wear off, permitting a perfect set-in of the pads with the disc.

Inspection

The braking disc must be accurately clean; without rust, oil, grease, or other dirt, and without deep scores.

Damaged discs must be refaced.

Maximum permissible tolerances:

— parallelism: contact surface - braking part
0.050 mm (.001968");

— braking parts plane 0.050 mm (.001968");

— parallelism: braking parts (circular check)
0.015 mm (.00590");

— parallelism: braking parts (radial check)
0.060 mm (.001968")

Brake disc thickness	
Normal	Minimum
mm 6.35 ± 0.1 (.2499" ± .0039")	mm 5.80 (.2283")

Minimum disc thickness, must be absolutely respected. In case of replacement or overhauling, it is necessary to check, with a dial indicator, the side wobble, which must not exceed 0.2 mm (.007874"). If the wobble is more than recommended, check if the disc is properly mounted. Also check the wheel bearing play.

The torque specifications of the disc fastening bolts are 2.2 ÷ 2.4 kpm (16 ÷ 17.5 ft lbs).

FAULT CAUSES

FAULT CAUSES	REMEDIES
Brake screeching Caliper not fully locked Defective or missing taper in springs Pad wearing, off limit Pads impregnated with oil or grease Fitting of wrong pads	Lock the securing screws Insert new springs Fit new pad, after checking disc condition Replace pads Replace pads
Brakes vibrate Disc wobbling higher than 0.2 mm Brake piston locked	Reface or replace disc Free the piston
Brake disc excessive heating on normal riding Brake piston locked, pads glued to disc Brake lever without free play	Check pistons condition, clean pad housings in caliper Adjust lever play according to directions
Poor braking Brake disc dirty from oil or other material Excessively worn or glazed pads Pads dirty from oil or grease Piston locked	Clean the brake disc Replace pads, check condition of disc Replace pads Free the piston
Brake blocking Pads with high friction co-efficiency Disc with high oxidation	Fit proper pads Reface disc
High pad wearing Pads locked in housing, touching the brake disc Brake pistons locked Brake disc deeply scored	Clean pad housing in caliper, check coupling with guides Free the pistons Reface or replace disc
Irregular or sideways pad wearing Dirty pad housing Improper piston sliding Taper pin springs defective Sideways mounted caliper	Clean pad housing Get piston sliding properly Replace springs Check and mount properly
Long brake control lever travel Brake disc wobbling higher than 0.2 mm (.007874") Presence of air inside the brake circuit Brake disc deeply scored	Reface or replace the brake disc Bleed the air from the brake circuit Reface or replace

FAULT CAUSES	REMEDIES
Floater in master cylinder does not return Clamping bolt too tight Lever screw too tight (non-genuine part) Incorrect coupling between the lever and its housing on master cylinder (too thick) Deformed scraper by etching liquid Dirty brake fluid Defective floater return spring	Slightly loosen Slightly loosen Replace the lever Replace the scraper Strip master cylinder, clean and check components (seizing or scoring not allowed) Replace the spring
Fluid leaking from reservoir Gaiter incorrectly fitted Damaged gaiter Damaged reservoir rim (shoulder)	Fit the gaiter into the housing properly and close the cap carefully Replace Repair or replace master cylinder

Recommendations

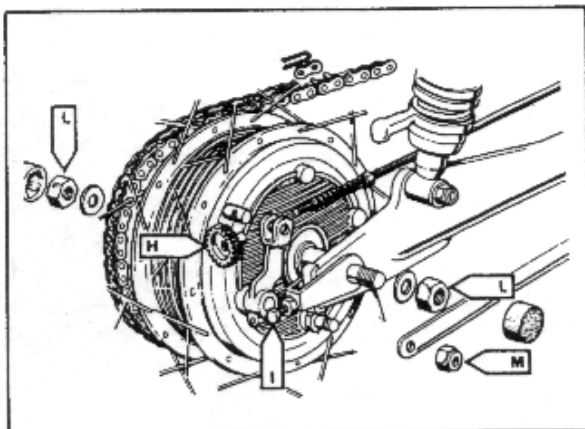
Brake circuit rubber components (for master cylinder: oil seals, scraper, ring, gaiter - for caliper; gasket joining caliper bodies, dust guard cap) are made of a special compound, brake fluid resistant; on the other hand, such compound cannot bear the etching action of mineral oils, solvents and diesel oils

which are sometimes used for washing the motorcycle.

It is strongly recommended to avoid any contact of these liquids with the brake circuit rubber parts.

On the master cylinder, it might occur that the scraper ring, because of contact with such liquids, melts and glues with the floater affecting the sliding of the floater.

Important - Use only the recommended oil.



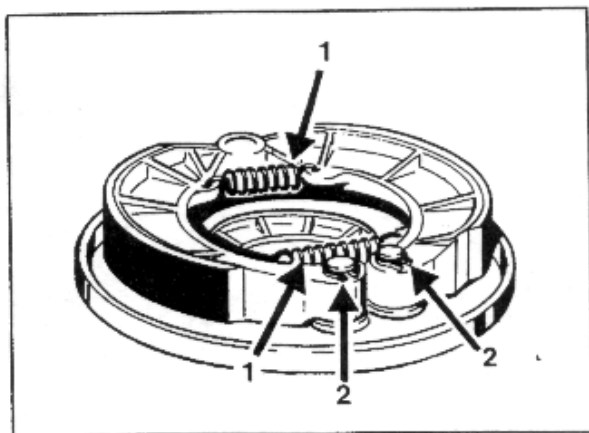
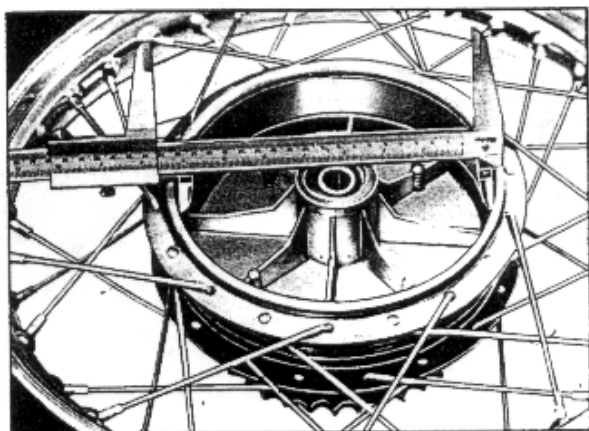
7.3 BRAKE AND REAR WHEEL

a Removal

- 1 Remove the adjuster «H» on the rear brake control rod.
- 2 Loosen the bolts «l» for chain tensioners.
- 3 Loosen the nuts «L» securing the wheel spindle.
- 4 Remove the nuts «M» and slide out the brake plate anchor rod from the pin.
- 5 Slide out the control rod from the brake control lever. Remove the connecting link and drive chain.
- 6 Lift the vehicle, rear side, and slide out the wheel from the rear swing arm.

b Inspection

- 1 Check the condition and tightening of all the spokes.
- 2 Check rim excentricity, maximum limit: $0.8 \div 1.0$ mm (.032" $\div$.040").
- 3 Check the condition of bearings.
- 4 Check condition and wear of the brake shoe linings; if the thickness of friction material is under 2 mm (.080") it will be necessary to replace the brake shoes.
- 5 Check the brake drum $\varnothing$: normal $\varnothing = 200$ mm (7.874") - max. permissible limit $\varnothing 201 \div 201.2$ mm (7.914").



- 6 Check the condition of springs «1» and retaining rings «2».

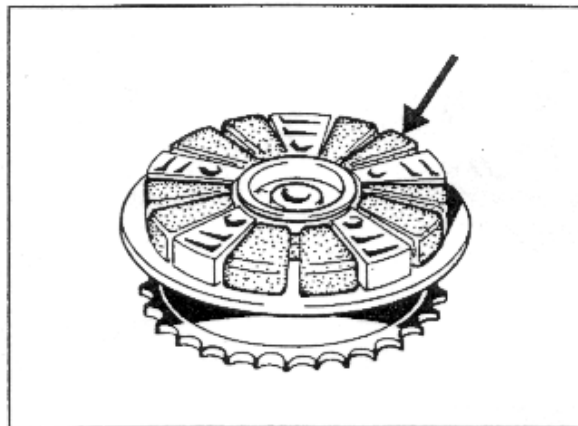
- 7 Check the integrity of the cushion drive.

c Re-fitting

- 1 Refit by reversing the removal sequence.
- 2 Adjust the drive chain, as indicated under chapter 2.
- 3 Adjust the brake control pedal, as indicated under chapter 2.

Note - Install the master link clip of chain toward rotation of the wheel as indicated in the picture under paragraph «Removal».

- 4 Make sure that the fork anchor plate rod is properly secured to the plate.



7.4 ADJUSTING THE WHEEL SPOKES

Make sure that all spokes are well tightened and the wheel is trued. Proceed as follows:

- spin the wheel and check if the spokes are tightened, otherwise act on left or right spokes until the wheel rim turns true within the recommended limits. This checking must be done after the first 500 km (300 miles) and afterwards every 1500 km (1000 miles).

7.5 WHEEL BALANCE

To improve the motorcycle stability and vibrations at high speeds, the wheels must be well balanced.

For the above adjustment, operate as follows:

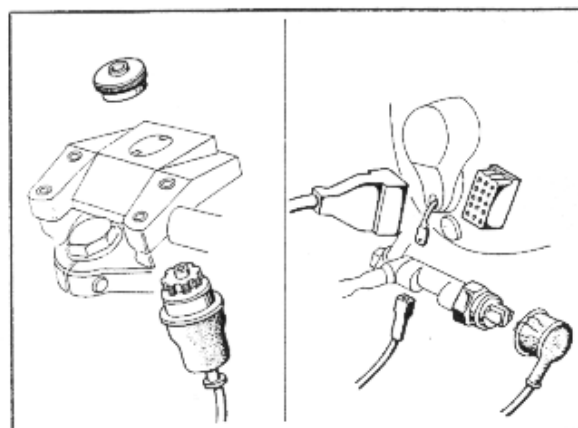
- make sure that all spokes are tightened, and the wheel rim is well trued, then remove the wheel and suspend it on a fork;
- spin the wheel slightly several times and see if it always stops in various positions, thus indicating a proper balance;
- if one point of the wheel always stops at the bottom, put a balance weight on a spoke opposite that point
- repeat this operation until the wheel is properly balanced, then fix the balance weights to the spokes using pliers.

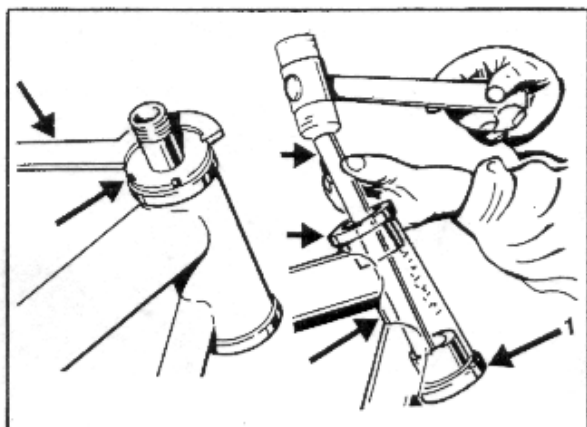
Balance weights are available from dealers in 15-20-30 grams. An imbalance under 15 grams does not affect the motorcycle stability.

7.6 STEERING ASSEMBLY

a Removal

- 1 Detach the control cables for throttle, clutch and rev. counter (tachometer).
- 2 Remove the ring securing the ignition block and slide out the block itself.
- 3 Detach the 15-way connector on the headlight, then the ground cable and the wires for the front stop light.
- 4 Remove the four bolts securing the handlebar clamp, setting in proper position both the handlebar and the instrument panel.





5 Remove the two bolts securing the steering head to fork members, then remove the bolt securing steering head to steering column and the steering adjusting nut, lift then the steering head.

6 Remove the steering upper cap, fit a block under the engine and slide out the front fork downwards.

7 Catch the steering ball bearing and take off the caps pressed on the frame, using a proper pin.

b Inspection

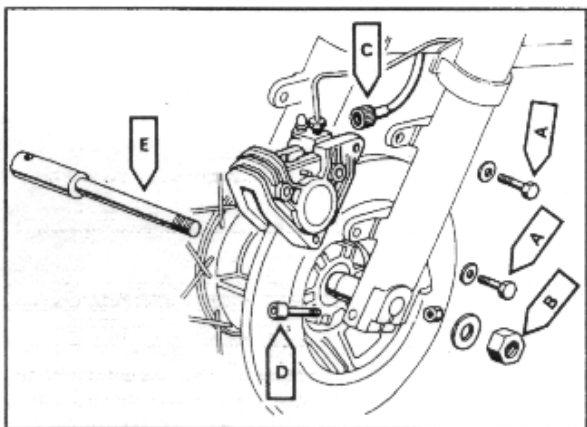
- 1 Inspect the ball race on the caps.
- 2 Inspect the balls.

c Re-fitting

- 1 Re-fit by reversing the removal sequence.

Note - It is advisable to wash the ball bearings and to use new grease.

- 2 Adjust the steering as indicated in chapter 2.12.



7.7 FRONT FORK

a Removal

- 1 Remove the front wheel as indicated in chapter 7.1.

- 2 Remove the nuts securing the mudguard and the bolt securing the front brake pipe to the mudguard itself.

- 3 Remove the front brake caliper from the fork leg and the pipe connection at the fork bottom.

- 4 Remove the headlight.

- 5 Remove the steering assembly as indicated in chapter 7.6.

- 6 Loosen the screw «1» securing the steering column at the lower fork bracket «2» and slide the two complete columns out; then drain the oil from the column.

- 7 Set the fork leg into a vice, remove the screw «3» securing the internal rod to the fork leg and slide out the steering column from the fork leg.

- 8 Remove the upper screw «4» securing the damper to the fork upper cap and slide the damper out.

b Inspection

- 1 Holding rod (fork tubes)

Check the condition of the chrome for any scoring. Make sure that it is straight and also check the condition of the threads.

- 2 Inspecting the holding rod $\varnothing$

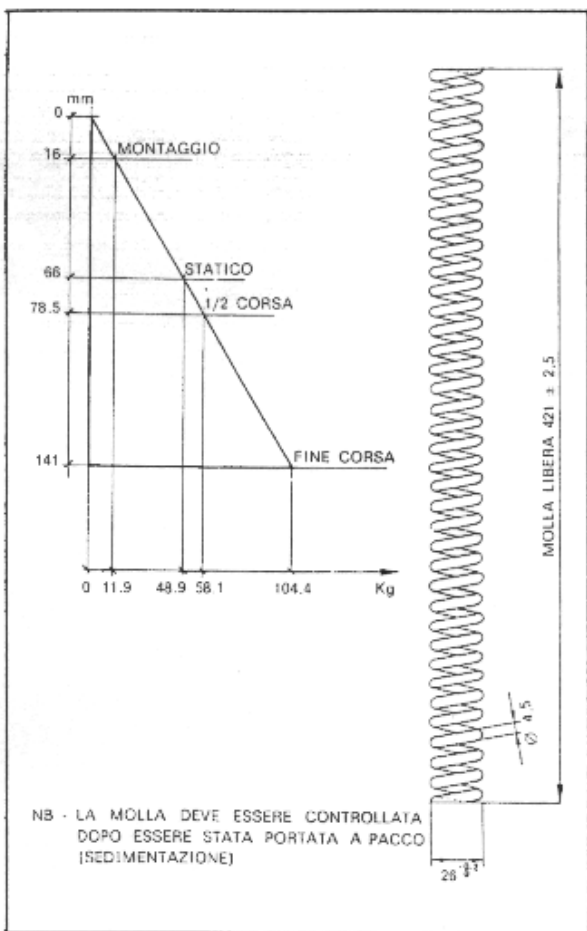
Holding rod diameter: $34.740 \div 34.715 \div 34.690$ mm ($1.3677'' \div 1.3667'' \div 1.3657''$). Clearance between rod and fork leg: $0.035 \div 0.100$ mm ($.000835'' \div .00397''$).

- 3 Fork leg

The fork leg is in light alloy; make sure that the inner side is smooth and without any scores or nicks.

- 4 Inspection of the I/D of the fork leg

I/D of the fork leg must be: $34.750 \div 34.790$ mm ($1.3681'' \div 1.3696''$).



5 Fork spring

Make sure that the spring is not damaged or broken. The free length of the spring is $418.500 \div 423.500$ mm ($16.476'' \div 16.673''$).

When the spring is compressed to 16 mm, it will have a load of 11.9 kg (26.19 lbs).

When the spring is compressed to 66 mm, it will have a load of 48.9 kg (107.58 lbs).

When the spring is compressed to 141 mm, full travel, it will have a load of 104.4 kg (229.68 lbs).

6 Oil seal on fork legs

Check proper sealing, if damaged, replace.

7 Damper return rubber ring

Make sure that it is not damaged.

8 Fork dampers

These dampers should never be tampered with. Inspect both dampers at the same time to ensure that they have the same dampening lead to prevent irregular operation of the fork.

Should they be not efficient, it will be necessary to replace them.

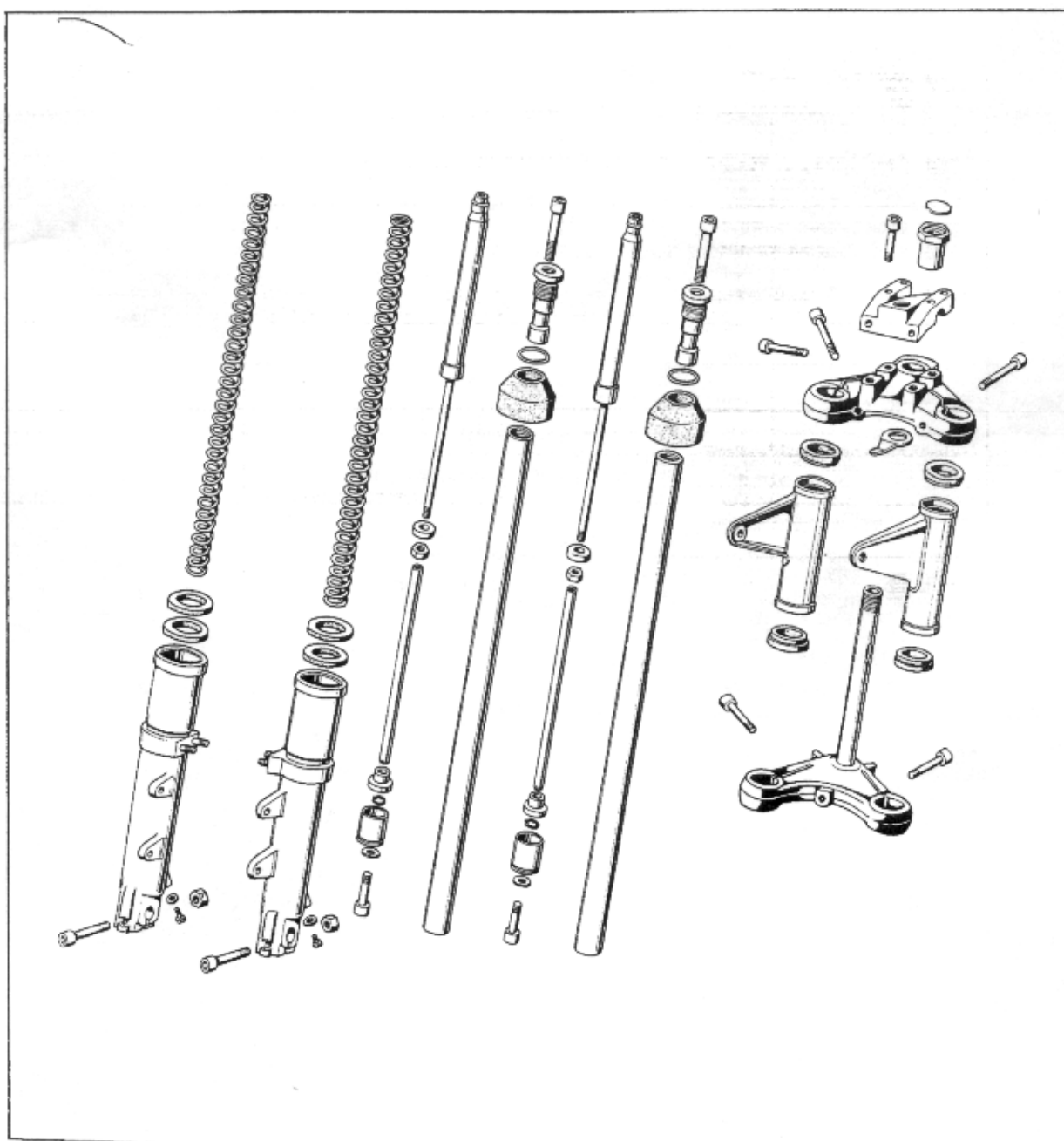
9 Steering bottom yoke (Lower fork bracket)

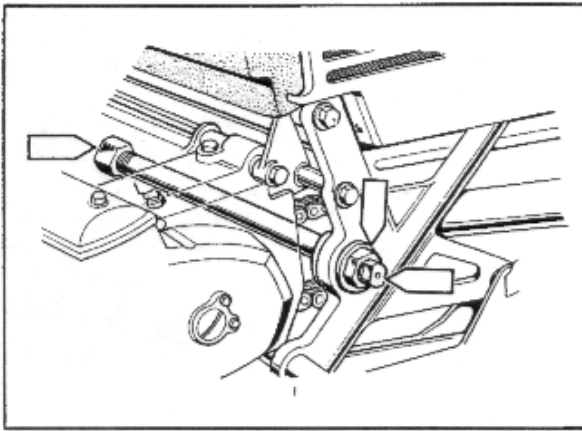
Make sure that the steering column is straight, and its threaded part is not damaged, otherwise, replace the yoke.

c Re-fitting

Re-fitting takes place by reversing the removal sequence, introducing 70 cc of oil «AGIP F.1 ATF DEXRON» (transmission fluid) in each leg.

Early Models 270 cc





7.8 REAR SUSPENSION (Fork swing arm)

a Removal

- 1 Remove the shock absorbers.
- 2 Remove the exhaust silencers.
- 3 Remove the rear wheel as indicated in chapter 7.3.
- 4 Remove the self-locking nut on the right side of the motorcycle as well as the ring on the left side.
- 5 Unscrew the rear swing fork pin and slide out; then remove the rear swing fork.

b Inspection

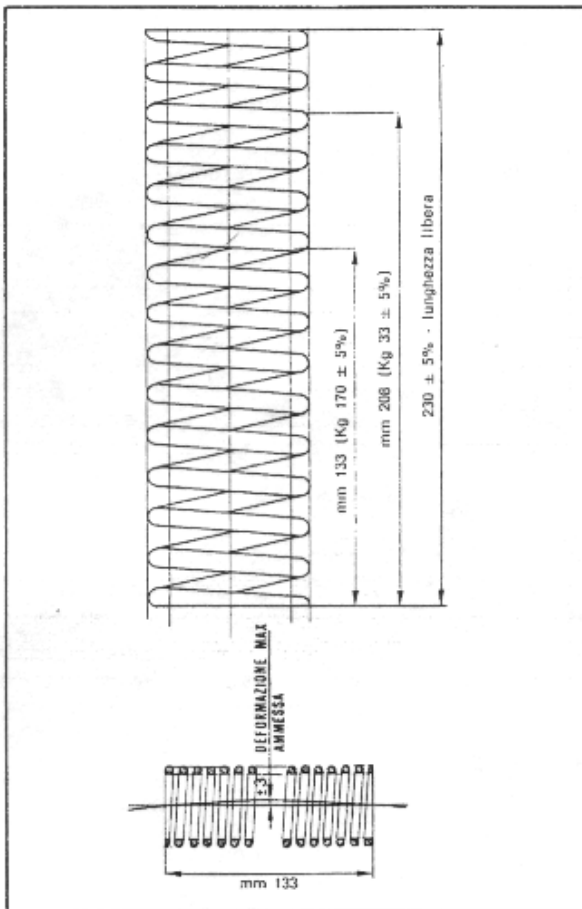
- 1 Check the condition of shock absorbers, with spring removed check spring pressure (see technical data).
- 2 Make sure that there is no excessive clearance between fork pin and bushing.
Maximum permissible clearance $0.30 \div 0.35$ mm ($.012'' \div .014''$).

c Re-fitting

- 1 Smear the fork shaft with grease, fit both the rear swing fork and the shaft onto the frame.
- 2 Lock both the lateral nut and ring.

To adjust the rear swinging fork free play, operate as follows:

- lock first the fork shaft, then lock but not excessively the self-locking nut at the right;
- screw or unscrew the fork shaft until a free swinging, without lateral play, of the rear fork is reached; then lock the self-locking nut and the counter nut at the left;
- re-fit the rear wheel as indicated at chapter 7.3;
- re-fit the shock absorbers and the exhaust silencers.



8 ELECTRICAL EQUIPMENT

The electrical equipment consists of: starter motor, alternator, contact breaker with centrifugal advance driven by the crankshaft, diode plate, ignition condenser, battery, spark plugs, warning lights, and lighting assembly.

The alternator starts to deliver the current at slightly higher rpm than idle speed. Therefore, the current is sufficient even when high consumption is required.

The current passing through the generator warning light provides the excitation of the alternator.

Note - Under normal condition of the charging system, the warning light will go out at about 1200 engine rpm and thereafter.

The voltage regulation is provided by the regulator which is located under the fuel tank.

The contact breakers break the primary circuit of ignition coils at a determined point, thus generating, in the secondary circuit of the high tension coil, the necessary voltage to provide the ignition of the air/fuel mixture.

The automatic advance regulates the ignition advance according to the engine rpm.

The 12 V - 15 Ah battery provides the current for starting the engine, in addition, it delivers current to the electrical equipment either when the engine is stopped or when the engine is running. Access to the battery is made possible by lifting the seat, removing the tool box, unhooking the rubber strap «A», and detaching the electric wires.

8.1 PUTTING A NEW BATTERY INTO SERVICE

1 Unscrew the plugs and introduce pure sulphuric acid for batteries with a specific gravity 1.28 kg/l (1.23 kg/l in tropical climates) and temperatures $+20^{\circ}\text{C}$ until the minimum level mark on the battery is reached. At introduction, acid temperature must not be lower than $+10^{\circ}\text{C}$. Do not use metal funnels.

2 Let the battery set for about one hour, then fill up to the recommended level by adding sulphuric acid then charge the battery. The charging amperage is computed in $1/10$ (1.5 Ah) of the battery capacity Ah rate which is stamped on the plate of the battery.

Note - Start charging only when temperature is lower than $+40^{\circ}\text{C}$ ($+50^{\circ}\text{C}$ in tropical climates).

To charge the battery, connect positive pole (+) of the battery to positive pole (+) of the charger; same connection for negative poles (-). During the charging operation, the temperature of sulphuric acid must not be higher than $+45^{\circ}\text{C}$ ($+55^{\circ}\text{C}$ in tropical climates); otherwise stop charging or reduce current.

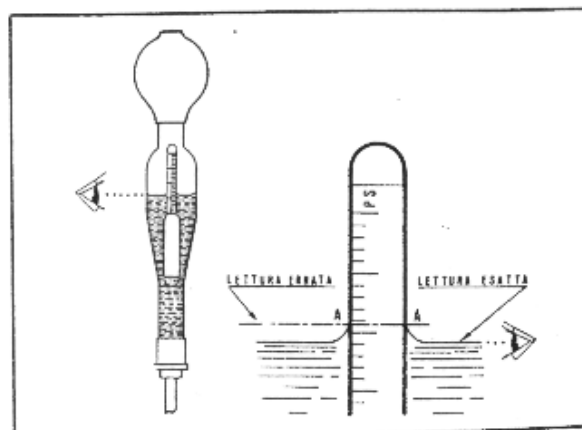
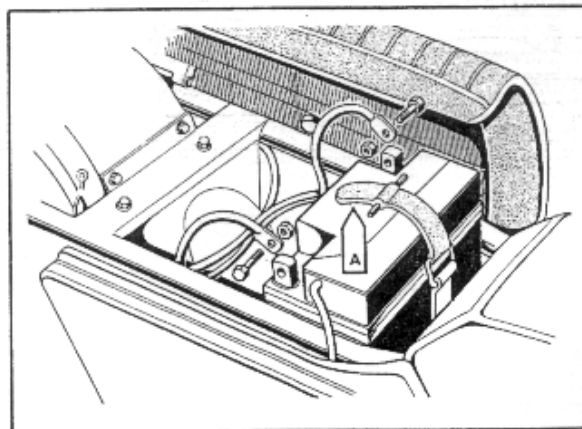
The initial charge will be accomplished when the acid density and current intensity rates will remain the same for at least two consecutive hours of charging.

At this point the specific gravity of the acid will have to be 1.28 ± 0.01 (1.23 ± 0.01 in tropical climates) at $+20^{\circ}\text{C}$.

It is to be considered that the specific gravity of acid varies 0.01 for each temperature change of 14°C ; this means that the specific gravity of an acid at $+34^{\circ}\text{C}$ will have to be increased of 0.01 to obtain the specific gravity at $+20^{\circ}\text{C}$.

Two hours after the charge end, check the level of the acid and if necessary top up with distilled water, then screw in the filling caps. The battery is now ready to be put in service.

Check periodically the electrolyte level, **adding distilled water only whenever necessary**. Ensure that all battery connections are well tight and clean, smear them with vaseline or battery terminal grease.



8.2 GENERATOR - ALTERNATOR

Brand	BOSCH G1 (R) 14 V 13 A 19 n. 0120340001		BOSCH G1 (R) 14 V 20 A 21 n. 0120340002	
Main features				
Max. output W/v	180/14		280/14	
Current intensity Amp.	13		20	
Charge starting, rpm	980		1000	
Peak revs (rpm)	10.000		10.000	
Max. permissible excentricity	0.06 mm (.00236")		0.06 mm (.00236")	
Field winding resistance	6.30 ohm + 10%		3.40 ohm + 10%	
3-phase winding resistance of stator (A.C.)	0.50 ohm + 10%		0.36 ohm + 10%	
Alternator test on the bench	Load	Top speed	Load	Top speed
	5 A	1350 rpm	5 A	1300 rpm
	10 A	2300 rpm	13 A	2100 rpm
	13 A	6000 rpm	20 A	7000 rpm
Output data (with regulator)				

8.3 REGULATOR

Brand	BOSCH AD 1/14 V 0190601009
Test speed	4500 rpm
Test load	13 Amp.
Regulation voltage	13.9 ÷ 14.8 V

8.4 RECTIFIER

Brand	BOSCH 0197002002 14 V/15 A	BOSCH 0197002003 14 V/22 A
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8.5 STARTER MOTOR

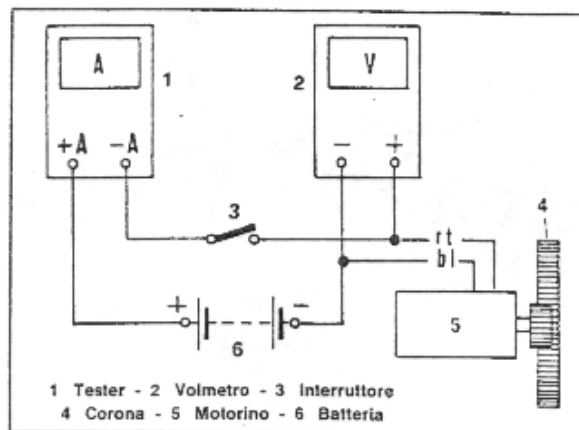
Brand	BOSCH, Bendix DG (R) 12 V 0.4 PS n. 0001160015
Voltage	12 V
Current intensity	24 Ah
Output	0.4 HP
Poles	4
Exciter winding	in series
Min. commutator ring Ø	31.2 mm (1.2283")
Min. brush length	11.5 mm (.4527")
Brush pressure	750 ÷ 1600 grams (1.65 ÷ 3.52 lbs)
Lengthwise armature tolerance	0.05 ÷ 0.20
Pinion	Z9 - mod. 1.25
Rotation, pinion side	clockwise

Bench test of starter motor

The main electrical wire from the test bench is to be connected to the motor connection. Be careful not to let the wire clamp come in contact with the motor casing.

Lubrication of motor spindle and bushing

Lubricate the spindle and bushings with special oil BUSCH 1 v 13 and silicon grease BOSCH FT 2 v 3.



8.6 AUTOMATIC ADVANCE DEVICE

It consists of two centrifugal weights pivoted on the spindles of the plates, which are solid with the driving shaft.

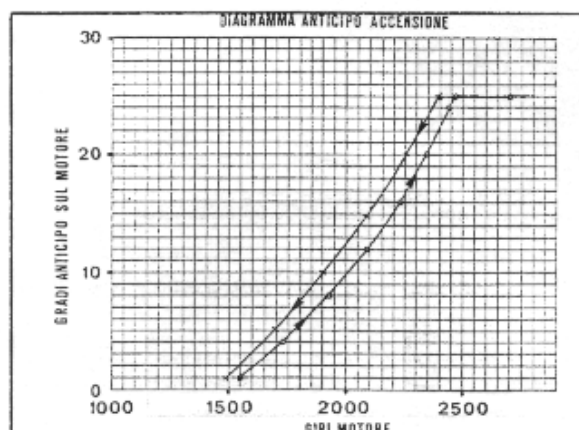
Every engine revolution requires an equivalent ignition angle (degree). See diagram.

At 1500-1550 rpm, the weights begin to open, causing an increased angle of the cam in respect to the breaker plate.

Maximum advance rate occurs at 2450-2500 rpm.

The return of the weights is obtained by springs. Each engine rpm rate covers a series of ignition points according to a curve (advance curve) which is established in respect of the rpm rate itself.

Such a curve in a diagram represents the automatic (dynamic) advance.



8.7 CONDENSER

The condensers are connected in parallel with the point breakers. Their function is to instantly break the current, and at the same time to damper the strong sparking of the points as a result of the current cut-off in primary circuits.

Condenser capacity: μF 0.22.

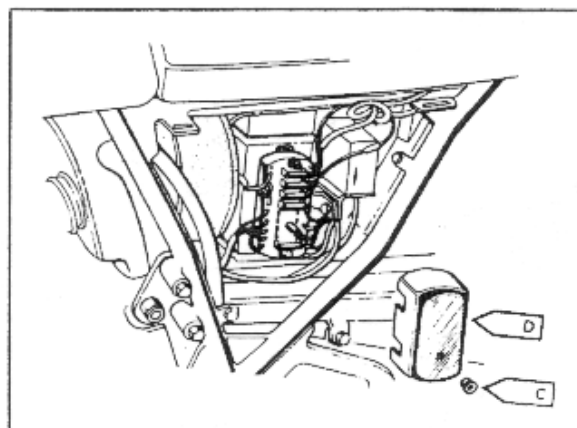
8.8 FUSE REPLACEMENT

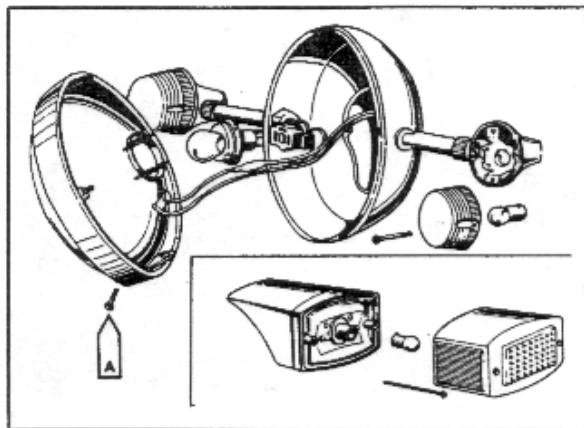
The terminal box with fuses is located under the left side cover. Access to the fuses is made possible by first unscrewing the cover securing bolt using a 10 mm wrench, remove the cover, then remove the nut «C» and the cover «D».

The motorcycle is equipped with n. 3 15 A fuses and n. 1 8 A fuse; in addition, there is a 15 A spare fuse. A frequent melting of the fuse is evidence of a short circuit or overloading of the electrical equipment. In this case, look promptly for the defect.

It is advisable to have the electrical equipment checked by a specialized workshop.

Note - The fuse protects the electrical equipment; in case of replacement, it is necessary to use fuses of the same type to prevent any damage to the equipment.





8.9 BULB REPLACEMENT PROCEDURE

1 Headlight

- a Remove the screw «A» located in the lower part of the headlight rim.
- b Unhook the headlight insert and take out the bulb holders with bulbs (remove clips and remove seal beam).
- c Remove the bulbs and replace them.

2 Tail light

- a Remove the two screws securing the reflector lens.
- b Push the bulb in and at the same time, turn it to the left, thus freeing the bulb.

3 Turn signals

- a Remove the screws securing the reflector lens.
- b Push the bulb in and at the same time, turn it to the left, thus freeing the bulb.

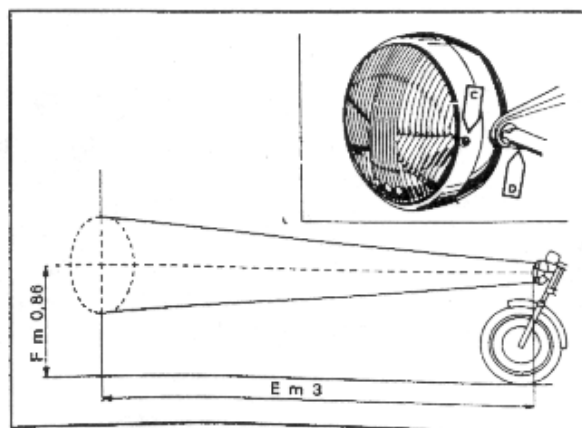
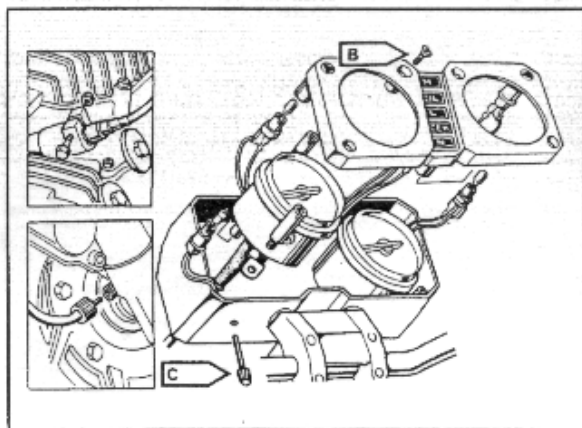
Note - When re-fitting the reflector lens for the tail light and turn signals, be careful to lock the screws uniformly without overtightening and breaking the reflector lens.

4 Warning lights

- a Remove the four screws «B» securing the instrument panel cover, and lift the cover.
- b Take off the bulb holder in question.
- c Replace the bulb and re-fit, being careful not to overtighten the cover securing screws.

5 Instrument lighting

- a Remove the instrument panel cover as previously indicated.
- b Unscrew the four bolts securing the instruments, then remove the km counter (speedometer) reset knob «C», detach the wires and lift the instruments.
- c Slide out the bulb holder and replace the bulb



8.10 HEADLIGHT BEAM ADJUSTMENT

The headlight must always be adjusted at the right height for safe riding and not to disturb the oncoming riders. For the horizontal adjustment, act on screw «C». For the vertical adjustment, loosen the two bolts «D» securing the headlight, and shift by hand.

The high beam center must not be higher than 0.86 m «F» measured at 3 m distance «E» with motorcycle not on stand and rider on saddle.

9 CLEANING AND STORAGE

9.1 Cleaning

1 Preparation for washing

Before washing, some precautions must be taken to keep water off. Therefore, cover the following parts with plastic:

- exhaust silencers, cover the silencer tail.
- clutch, throttle and brake levers.
- ignition key hole.
- air filter intake.

2 Where to be careful

Avoid spraying water with any great force near the following places:

- km and rev. counters (speedometer and tachometer);
- rear wheel hub. Should water get inside the rear wheel hub, the brakes will not function until they are dry;
- under the fuel tank and seat. The major electrical components are located here. Should water get inside, it will not be possible to start the engine until the wet components dry out.

3 After washing

- remove all plastic protections;
- immediately lubricate the drive chain to keep it from rusting.
- dry the whole vehicle carefully;
- test the brake efficiency before riding.

9.2 STORAGE

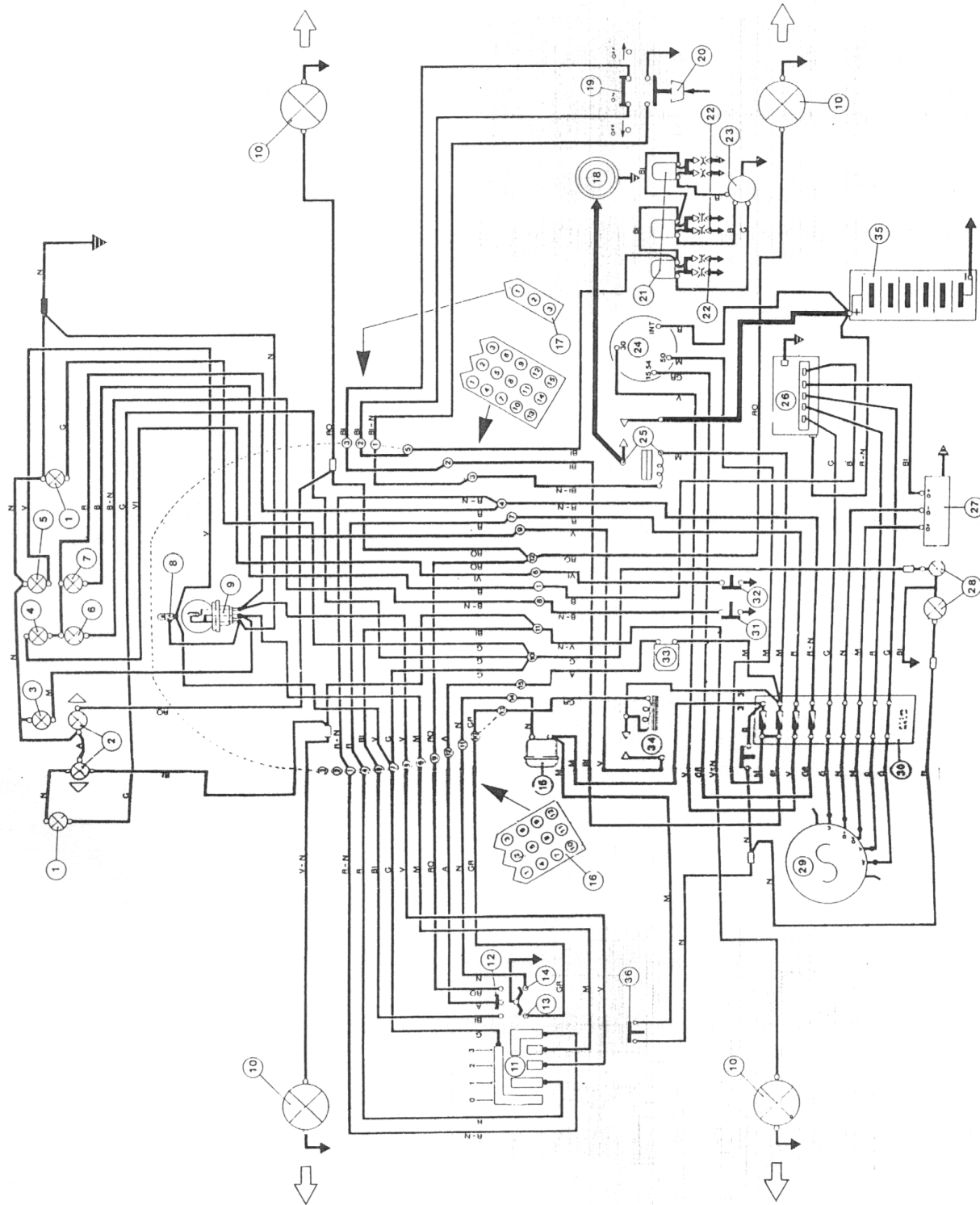
When the motorcycle is to be stored for any length of time, such as in the cold season, it should be prepared for storage as follows:

- clean the whole vehicle carefully;
- empty the fuel tank and the carburetors. If left in for a long time, petrol will deteriorate;
- remove the spark plugs and put several drops of SAE 30 oil into each cylinder. Kick the engine over slowly a few times to coat the cylinder walls with oil and re-fit the plugs;
- reduce tyre pressure by 20%;
- set the motorcycle in such a way that the wheels are raised from the ground;
- spray oil or rust preventing fluid on unpainted surfaces to prevent rusting, avoid oiling rubbers parts and brakes;
- remove the battery and store it without risk of freezing during such a period the battery will have a very low charge (about 1 Ah or less) check this condition every month;
- put a cover on the vehicle for dust protection but let the air circulate.

10.2 750 SEI

- 1 Instrument lighting 12V-3W
- 2 Turn signal warning light 12V-1.2W
- 3 High beam warning light 12V-1.2W
- 4 Neutral position warning light 12V-1.2W
- 5 Lights warning light 12V-1.2W
- 6 Oil warning light 12V-1.2W
- 7 Generator warning light 12V-1.2W
- 8 Parking light 12V-3W
- 9 Two lights bulb 12V-40/45W
- 10 Turn signal lights 12V-21W
- 11 Lights switch
- 12 Turn signal control switch
- 13 Headlight flashing control
- 14 Horn control
- 15 Horn
- 16 Wiring connector, left side devices
- 17 Wiring connector, right side devices
- 18 Starter motor
- 19 Engine stop button
- 20 Engine start button
- 21 H.T. coil
- 22 Spark plug
- 23 Contact breaker plate
- 24 Key block
- 25 Electric start relay
- 26 Diode rectifier
- 27 Regulator
- 28 Tail light 12V-5/21W
- 29 Generator
- 30 Terminal block with fuses
- 31 Oil warning light cutout
- 32 Neutral warning light cutout
- 33 Flasher unit
- 34 Flash relay
- 35 Battery
- 36 Front stop light cutout

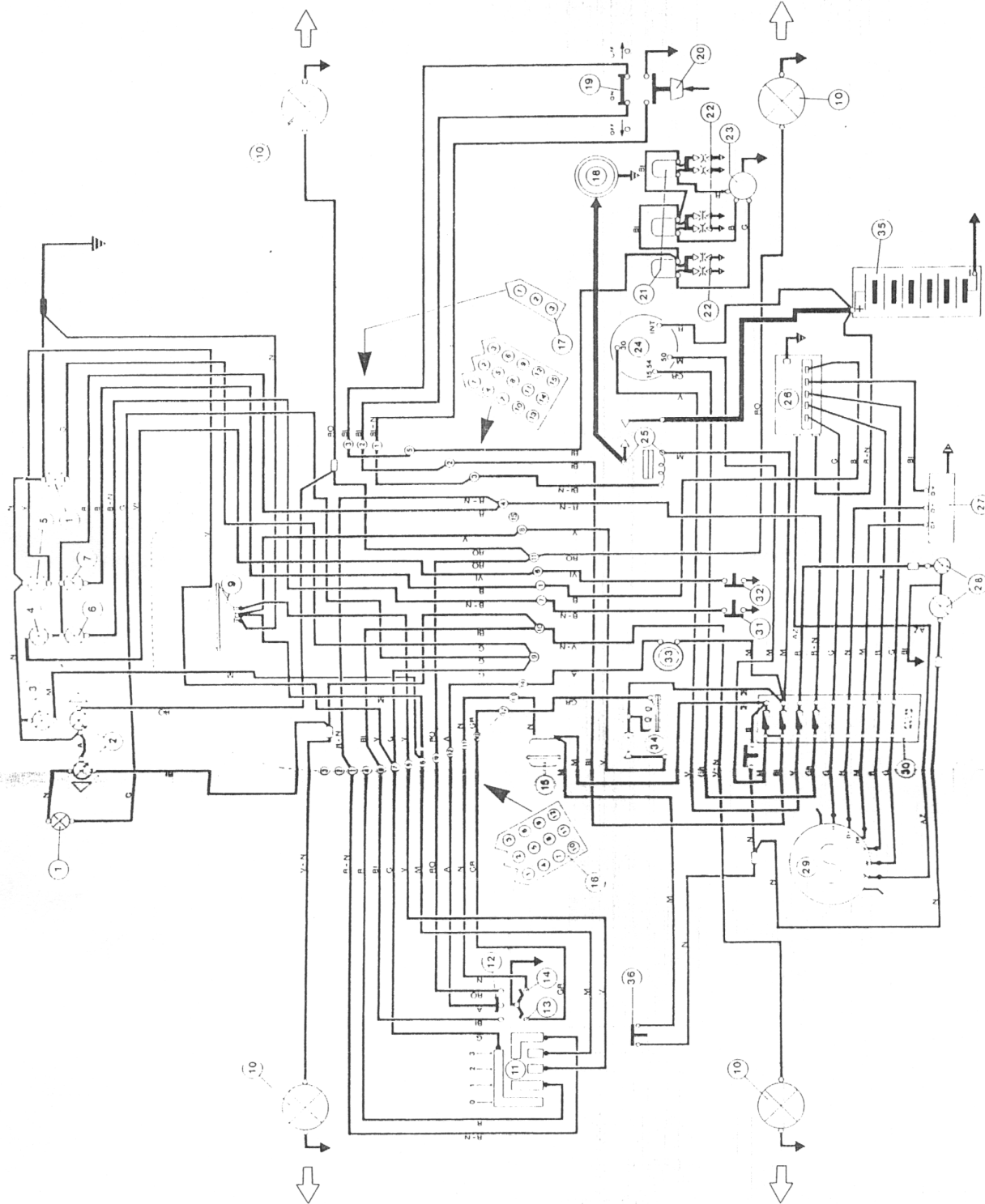
N = BLACK
 G = YELLOW
 V = GREEN
 R = RED
 B = BLUE
 VI = VIOLET
 RO = PINK
 A = ORANGE
 M = BROWN
 BI = WHITE
 GR = GRAY
 B - N = BLUE/BLACK
 V - N = GREEN/BLACK
 R - N = RED/BLACK
 BI - N = WHITE/BLACK



10.3 750 SEI - USA VERSION

- 1 Speedometer - tachometer lamp 12V-3W
- 2 Turn signal pilot lamp 12V-1.2W
- 3 High beam pilot lamp «H» 12V-1.2W
- 4 Neutral pilot lamp «N» 12V-1.2W
- 5 Headlight pilot lamp «L» 12V-1.2W
- 6 Oil pressure lamp «OIL» 12V-1.2W
- 7 A.C. generator pilot lamp 12V-1.2W
- 9 Sealed-Beam USA 12V
- 10 Turn signal lamp 12V-21W
- 11 Lights switch «LIGHTS»
- 12 Turn signal switch «TURN»
- 13 Flashing light button «FLASH»
- 14 Horn button «HORN»
- 15 Horn
- 16 L/H pin connector
- 17 R/H pin connector
- 18 Starter motor
- 19 Engine stop switch
- 20 Starter switch «START»
- 21 H.T. coil
- 22 Spark plug
- 23 Contact breaker
- 24 Ignition switch
- 25 Starter relay
- 26 Silicon rectifier
- 27 Regulator
- 28 Tail/stop light lamp 12V-5/21W
- 29 A.C. generator
- 30 Fuses box
- 31 Oil pressure switch
- 32 Neutral switch
- 33 Winker relay
- 34 Flashing relay
- 35 Battery
- 36 Front stop switch

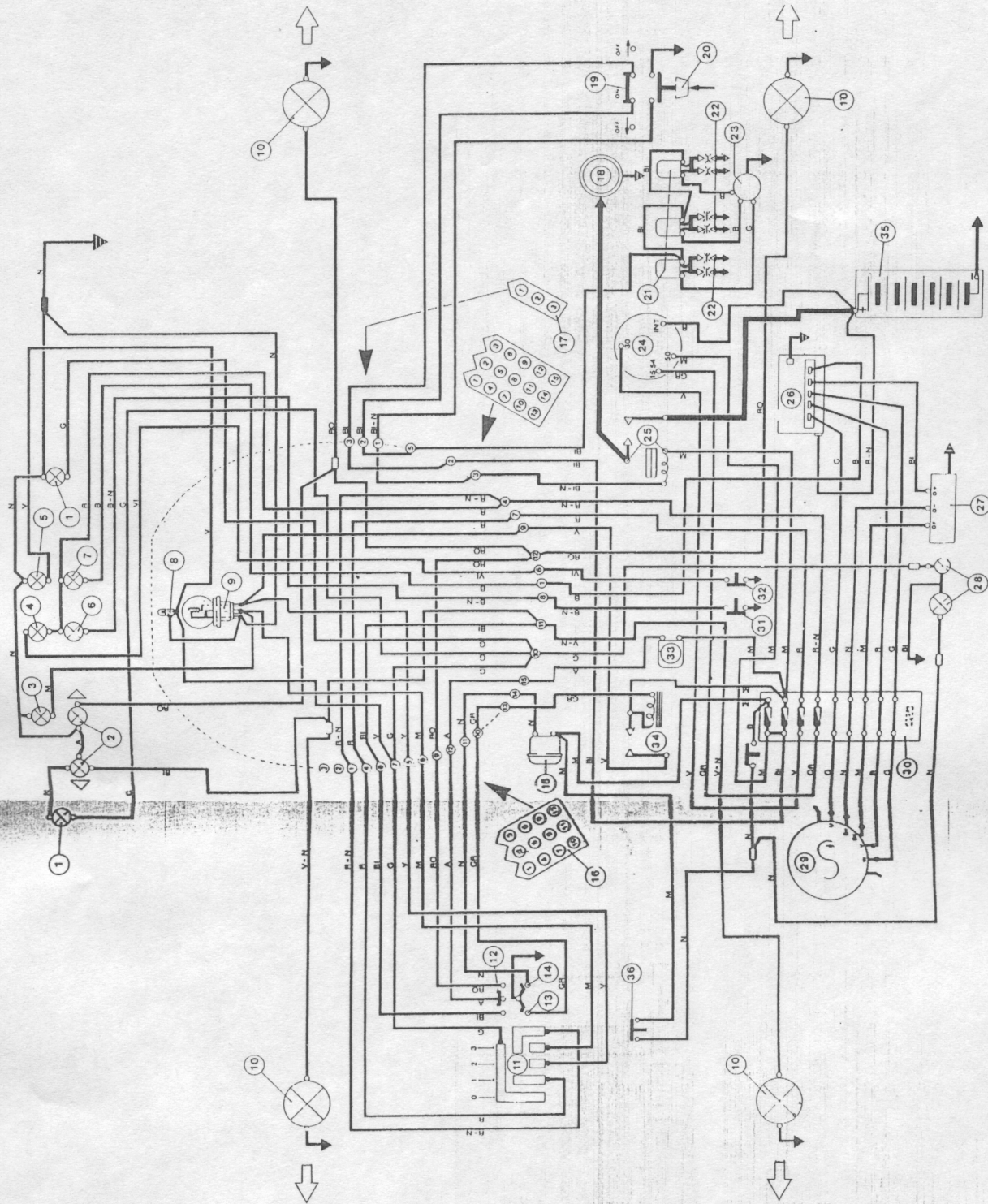
N = BLACK
 G = YELLOW
 V = GREEN
 R = RED
 B = BLUE
 VI = VIOLET
 RO = PINK
 A = ORANGE
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 BI = WHITE
 GR = GRAY
 B - N = BLUE/BLACK
 V - N = GREEN/BLACK
 R - N = RED/BLACK
 BI - N = WHITE/BLACK



10.2 SCHEMA ELETTRICO 750 SEI

- 1 Luci strumenti 12V-3W
- 2 Spia indicatori 12V-1,2W
- 3 Spia abbagliante « H » 12V-1,2W
- 4 Spia folle « N » 12V-1,2W
- 5 Spia luci « L » 12V-1,2W
- 6 Spia olio « OIL » 12V-1,2W
- 7 Spia generatore « GEN » 12V-1,2W
- 8 Luce città 12V-3W
- 9 Lampada biluce 12V-40/45W
- 10 Indicatori direzionali 12V-21W
- 11 Commutatore luci « LIGHTS »
- 12 Comando indicatori « TURN »
- 13 Lampeggio faro « FLASH »
- 14 Comando avisatore acustico « HORN »
- 15 Avisatore acustico
- 16 Connettore allacciamento dispositivi lato sinistro
- 17 Connettore allacciamento dispositivi lato destro
- 18 Motorino di avviamento
- 19 Bottone di massa
- 20 Pulsante avviamento « START »
- 21 Bobina A.T.
- 22 Candela di accensione
- 23 Piastra porta ruttori
- 24 Bloccetto a chiave
- 25 Relais avviamento elettrico
- 26 Raddrizzatore a diodi
- 27 Regolatore
- 28 Fanalino posteriore 12V-5/21W
- 29 Generatore
- 30 Morsetti portafusibili
- 31 Interruttore spia olio
- 32 Interruttore spia folle
- 33 Interrittenza
- 34 Relais lampeggio
- 35 Batteria
- 36 Interruttore stop anteriore

N = NERO
 G = GIALLO
 V = VERDE
 R = ROSSO
 B = BLEU
 VI = VIOLA
 RO = ROSA
 A = ARANCIO
 M = MARRONE
 BI = BIANCO
 GR = GRIGIO
 B - N = BLEU - NERO
 V - N = VERDE - NERO
 R - N = ROSSO - NERO
 BI - N = BIANCO - NERO

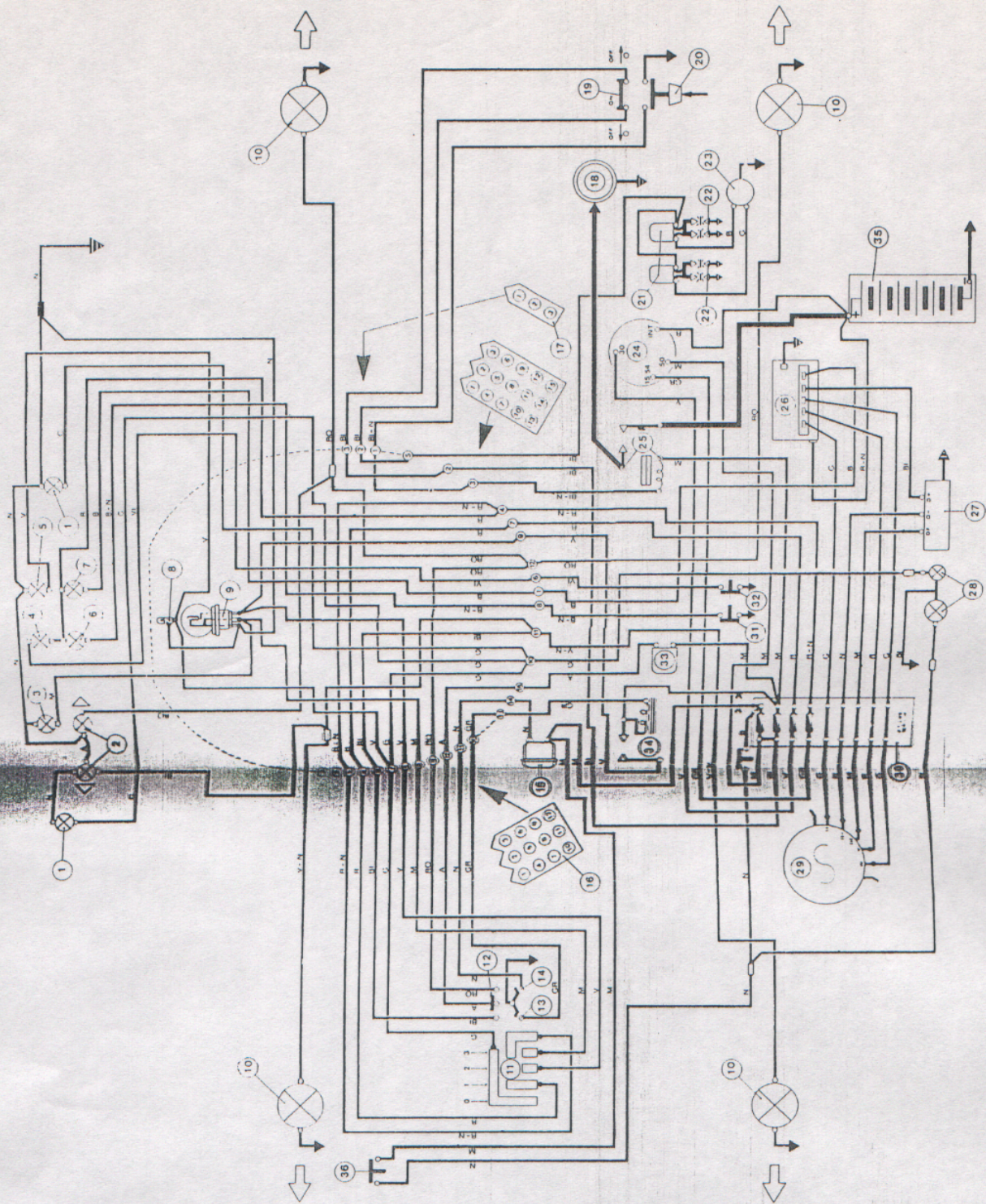


10 WIRING DIAGRAM

10.1 500 QUATTRO

- 1 Instrument lighting 12V-3W
- 2 Turn signal warning light 12V-1.2W
- 3 High beam warning light 12V-1.2W
- 4 Neutral position warning light 12V-1.2W
- 5 Lights warning light 12V-1.2W
- 6 Oil warning light 12V-1.2W
- 7 Generator warning light 12V-1.2W
- 8 Parking light 12V-3W
- 9 Two lights bulb 12V-40/45W
- 10 Turn signal lights 12V-21W
- 11 Lights switch
- 12 Turn signal control switch
- 13 Headlight flashing control
- 14 Horn control
- 15 Horn
- 16 Wiring connector, left side devices
- 17 Wiring connector, right side devices
- 18 Starter motor
- 19 Engine stop button
- 20 Engine start button
- 21 H.T. coil
- 22 Spark plug
- 23 Contact breaker plate
- 24 Key block
- 25 Electric start relay
- 26 Diode rectifier
- 27 Regulator
- 28 Tail light 12V-5/21W
- 29 Generator
- 30 Terminal block with fuses
- 31 Oil warning light cutout
- 32 Neutral warning light cutout
- 33 Flasher unit
- 34 Flash relay
- 35 Battery
- 36 Front stop light cutout

N = BLACK
 G = YELLOW
 V = GREEN
 R = RED
 B = BLUE
 VI = VIOLET
 RO = PINK
 A = ORANGE
 M = BROWN
 BI = WHITE
 GR = GRAY
 B - N = BLUE/BLACK
 V - N = GREEN/BLACK
 R - N = RED/BLACK
 BI - N = WHITE/BLACK



10 SCHEMA IMPIANTO ELETTRICO

- 1 Luci strumenti 12 V - 3W
- 2 Spia indicatori 12V - 1,2W
- 3 Spia abbagliante (H) 12V - 1,2W
- 4 Spia folle (N) 12V - 1,2W
- 5 Spia luci (L) 12V - 1,2W
- 6 Spia olio (OIL) 12V - 1,2W
- 7 Spia generatore (GEN) 12V - 1,2W
- 8 Luce città 12V - 3W
- 9 Lampada biluce 12V - 40/45W
- 10 Indicatori direzionali 12V - 21W
- 11 Commutatore luce (LIGHTS)
- 12 Comando indicatori (TURN)
- 13 Lampeggio foro (FLASH)
- 14 Comando avvisatore acustico (HORN)
- 15 Avvisatore acustico
- 16 Connettore allacciamento dispositivi lato sinistro
- 17 Connettore allacciamento dispositivi lato destro
- 18 Motorino di avviamento
- 19 Bottone di massa
- 20 Pulsante avviamento (START)
- 21 Bobina A. T.
- 22 Candele d' accensione
- 23 Capitori magnetici
- 24 Bloccetto chiave
- 25 Relais avviamento elettrico
- 26 Raddrizzatore a diodi
- 27 Regolatore
- 28 Fanalino posteriore 12V - 5/21W
- 29 Generatore
- 30 Morsetteria portautubili
- 31 Interruttore spia olio
- 32 Interruttore spia folle
- 33 Intermitenza
- 34 Relais lampeggio
- 35 Batteria
- 36 Interruttore stop anteriore
- 37 Centraline elettroniche
- 38 Connessioni su presa centralina

N = NERO
 G = GIALLO
 V = VIOLETTA
 R = ROSSO
 B = BLEU
 RO = ROSSO
 VIO = VIOLETTA
 A = ABBIGLIAMENTO
 M = MARRONE
 GR = GRIGIO
 BI = BIANCO
 AZ = AZZURRO
 B - N = BLEU - NERO
 R - N = ROSSO - NERO
 BI - N = BIANCO - NERO

