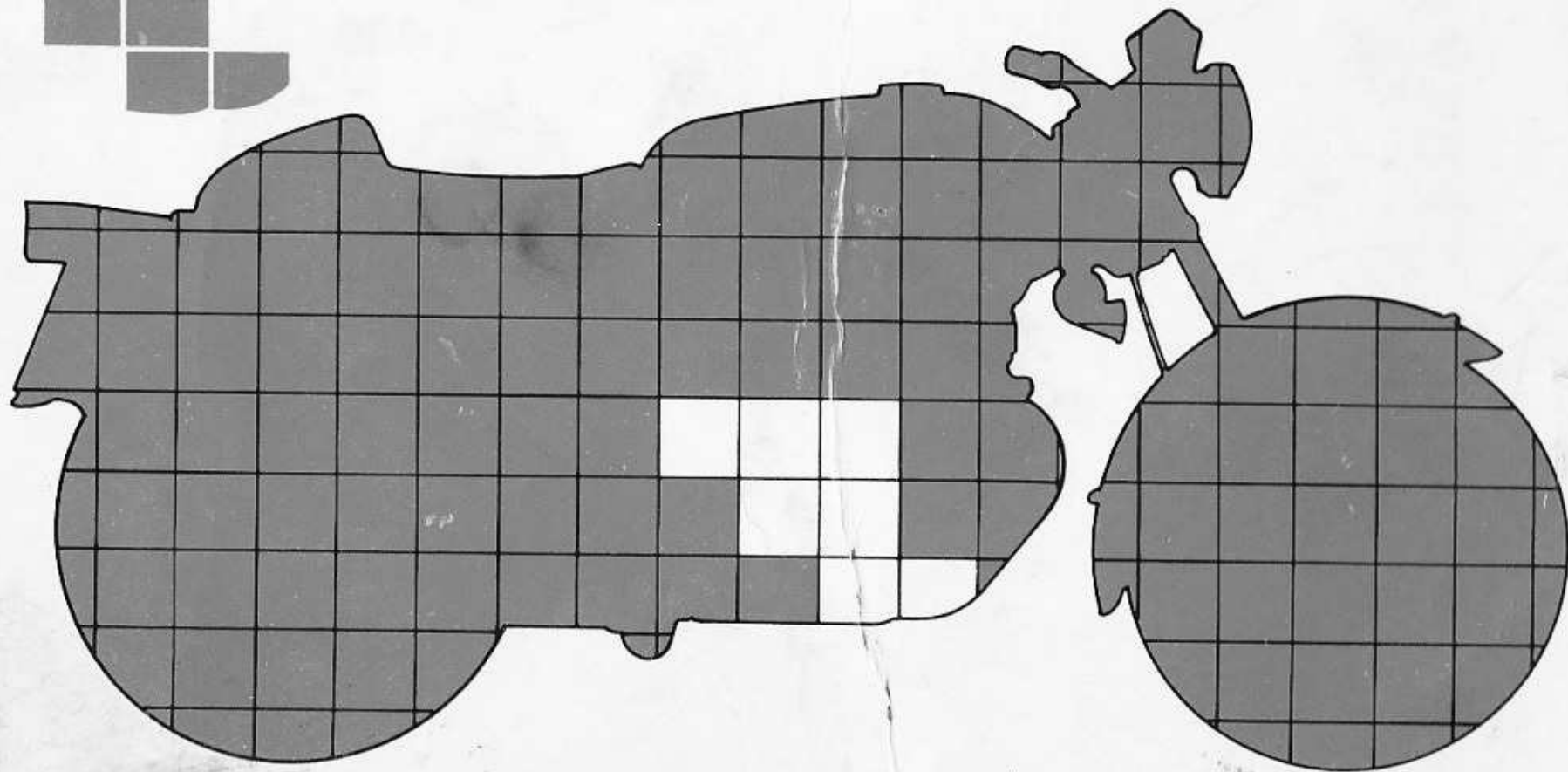
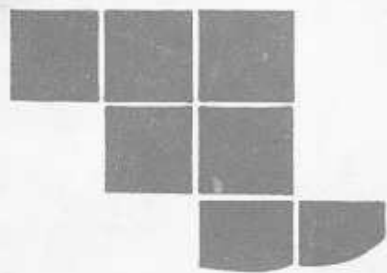


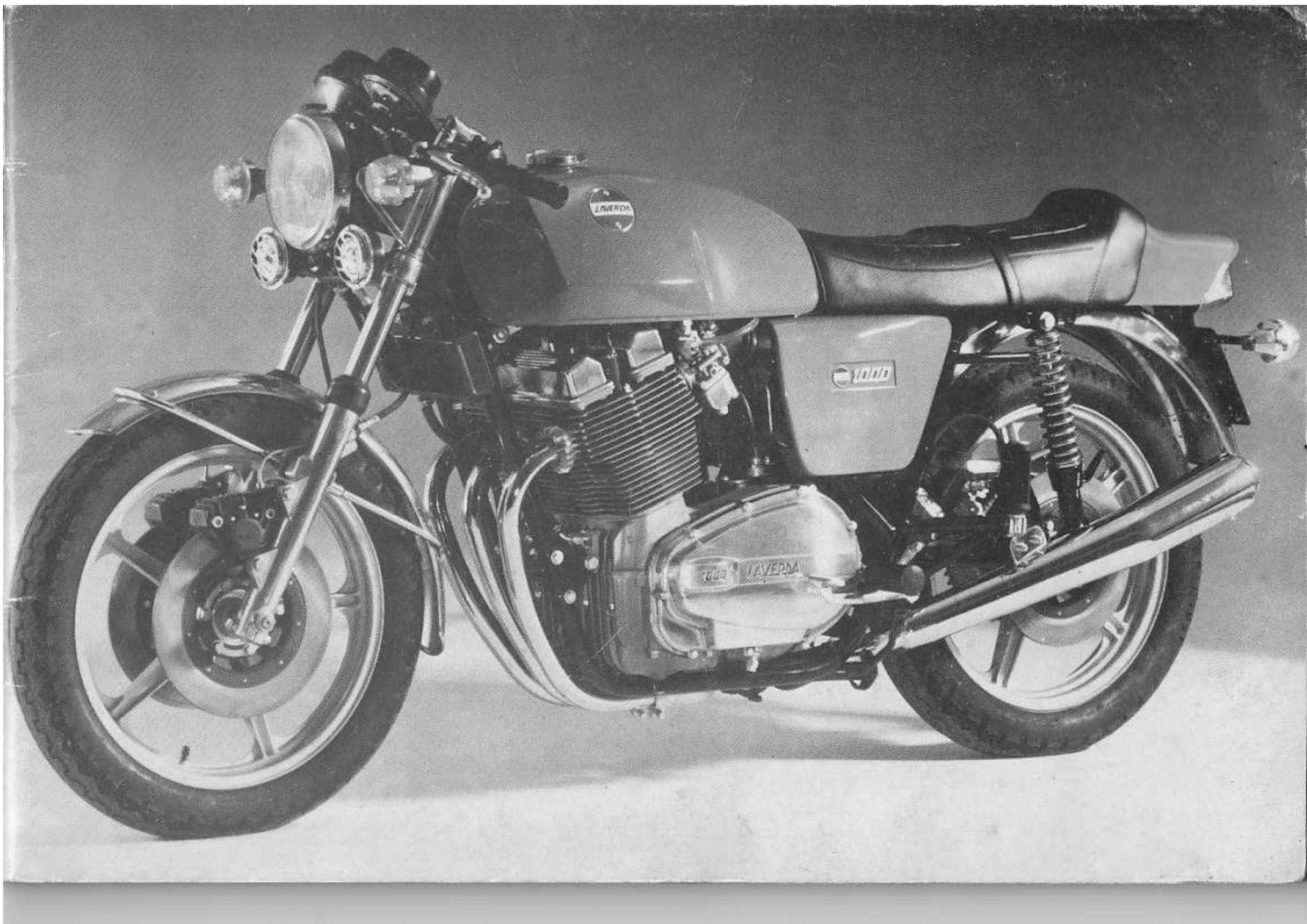
LAVERDA

1000

OPERATION AND MAINTENANCE



OPERATION AND MAINTENANCE



INTRODUCTION

Dear Laverda enthusiast :

This book is written to make it as easy as possible for the Laverda owner and for the mechanic to perform service jobs and repairs. Person not accustomed to repair motorcycles should turn to an authorized dealer if problems arise. Dealers have the tools and experience to perform more complicated jobs.

We cannot adequately stress the importance of changing oil at the proper intervals and making all periodic adjustments. This will virtually eliminate major repairs and will reduce over-all maintenance costs.

If you cannot find the information you need in this booklet, ask your nearest Laverda-dealer. He will do his utmost to help you. If by some reason he is unable to give you a satisfactory answer, please write directly to «MOTO LAVERDA, Service Department» and we will try to clear up your problems. We would appreciate very much if you specify the type and serial number of your motorcycle. That number is located on the left side of the machine at the swing arm fixing plate.

We wish you many pleasant hours on your LAVERDA and we are happy to count you among our satisfied customers.

With best regards

MOTO LAVERDA

1000 cc

TECHNICAL DATA

ENGINE

Three cylinder in line four-stroke with double overhead camshafts.

Light alloy cylinder head with cast iron valve seats.

Light alloy cylinders with cast iron liners. 20° forward inclination.

Stroke: 74 mm.

Bore: 75 mm.

Cylinder volume: 980,76 cc.

Compression ratio: 9 : 1.

IGNITION

AC generator and electronic ignition with automatic spark advance.

FUEL SYSTEM

Tank capacity: 20,5 litres (5,4 US gallon) (4,4 imp. gallon).

Carburettors: DELL'ORTO PHF-32-AD and PHF-32-AS (right and left hand).

Main jet: 118, idle jet: 55.

Needle: k1 in second notch.

Air cleaner filter.

We recommend the use of « Super » grade fuel.

LUBRICATION

Pressure by means of gear pump.

Oil capacity: 3 litres. (0,8 US gall., 5,3 pint)

Oil, cooler

CLUTCH

Multiplate in oil, lever on left part of handlebars.

PRIMARY TRANSMISSION

By triplex chain, ratio 1 : 2,04.

Gear box with 5 speeds :

First gear: 1 : 2,857

Second gear: 1 : 1,883

Third gear: 1 : 1,373

Fourth gear: 1 : 1,173

Fifth gear: 1 : 1

FINAL DRIVE

By chain 5/8 x 3/8", ratio 1 : 2,105, US version 2.333

Climbing ability 40%.

Fuel consumption (Cuna norm) 7,5 litres/100 km. 38 mil/imp. gall., 31 mil./US gall.

Normal range 260 km, 161 miles.

FRAME

Double cradle tubular frame.
Dual seat.

DIMENSIONS

Overall length:	2170 mm.	85,43"
Overall width:	740 mm.	29,13"
Wheelbase:	1460 mm.	57,48"

SUSPENSION

Front: hydraulically damped telescopic fork
Rear: swing arm with hydraulic shock absorbers.

WHEELS

Quick detachable front and rear
Cast aluminium wheels, sizes :
front: 2,15 x 18"
rear: 2,50 x 18"

TYRES

Front: 4,10H18" Dunlop TT 100
Rear: 4,25H18" Dunlop TT 100
Air pressure :
front 2,00 - 2,20 kg/cm² - 28 - 31 psi
rear 2,20 - 2,40 kg/cm² - 31 - 34 psi

DELIVERY OF THE MOTORCYCLE

Before starting the motorcycle, check that the oil level is correct, that the tyres have the right pressure (see above) and that the battery is prepared in accordance with the instructions on page 8. Fill the petrol tank with petrol (use Super grade).

INSTRUCTIONS FOR RUNNING-IN

The first period in the life of a motorcycle is most important for its future performance and reliability. We will therefore advise you to make a careful running-in before making use of the motorcycle's full potential. During the first 1000 kms you have better not exceed 3500-4000 rpm on any gear. Between 1000 and 3000 kms you can gradually increase the revs.

BRAKES

Front: double discs, 280 mm, lever and master cylinder on right part of the handlebar, connection to calipers by flexible hoses
Rear: single disc, 280 mm., lever alternatively on right or left side.

ELECTRICAL EQUIPMENT

AC generator: 12V 140 W.
Starter engine: 12V - 0,5 hp.
Battery: 12V - 32 Ah
Head light with parking light, tail - and numberplate light, stop light actuated by front and rear brakes, electric horns, instrument lights.

SPARE PARTS

When you need spare parts we advise you to get in touch with your local LAVERDA-dealer who can supply you with original parts.

We recommend only the use of LAVERDA original parts as we cannot guarantee parts not manufactured by us.

However, it is also important not to let the engine pull hard at too low revs. Have it go free and easy and make full use of the gearbox. After approximately 4000 ÷ 5000 kms you can expect the engine to be fully broken in.

STARTING THE ENGINE

- 1) Turn on both fuel taps.
- 2) Turn the ignition key between the tachometer and the speedometer.
- 3) If the engine is cold, pull the choke lever under the left part of the tank (see pic. 65).
- 4) Press the start button on the right part of the handlebar but do not twist the throttle grip.

5) After a few seconds release the choke lever. When engaging first gear the engine should be idling. If the first gear will not engage try slipping the clutch a little while pressing lightly on the gear change lever.

In the tachometer there are two signal lamps. The one to the left (GEN) is not used because at the moment there are no provisions for such a lamp. The one to the right (NEUTRAL) lights green when the gearbox is in neutral position between 1st and 2nd gears.

In the speedometer there are also two signal lamps. The one to the left, the blue one (BEAM), lights when the full beam headlight is on. The one to the right, the orange one (FLASH) lights when you use the turn signals.

OPERATIONS TO BE PERFORMED AFTER THE FIRST 500 KM, 300 MILES.

- 1) Change the oil while the engine is warm. It is possible to drain the oil by removing the plug under the gearbox (pic 22) but at least when the machine is new it is advisable to remove the entire oil-filter as shown in picture 21 and clean it.
- 2) When the engine is cold, tighten all bolts and nuts. Special care must be taken in tightening the cylinder head nuts.
- 3) Adjust the timing chain and the primary transmission chain. Regarding the timing chain see picture 16 and 17, regarding the primary chain see picture 18.

The oil in the engine should be changed at 500 - 1500 - 4000 km and after that each 2500 km. (300 - 900 - 2500 - 1500 miles).

We recommend you to change the primary transmission chain each 25.000 km. (15.000 miles).

FILLING THE BATTERY

- 1) Unscrew the cell caps.
- 2) Fill the cells with battery acid having a specific weight of 1,28 kg/liter at room temperature. Do not use a metal funnel.

The acid level should be just over the cell plates.

- 3) Let the battery rest one hour. Do not charge it if its temperature exceeds 40° centigrades. If during the charging the acid level comes under the upper part of the cell plates, add some acid.
- 4) When charging remove the cell caps and use a charging current not exceeding 1/10 of the battery capacity and do not charge more than 15 hours.

The temperature in the cells must not exceed 45° centigrades.

If it does, stop charging or reduce the charging current.

In any case the charging procedure is completed when each cell keeps a tension of 2,6 V. The acid specific weight should be 1,28 kg/liter at 20° centigrades and both that weight and the tension in the cells must remain constant for at least three hours after the charging. Note that the acid increases its specific weight 0,01 kg/liter for each 14 centigrades increase in temperature. If for instance the acid temperature is 34° centigrades the acid specific weight should be 1,29 kg/liter.

Two hours after the charging, acid shall be filled to a level just over the cell plates.

MAINTENANCE OF BATTERY

- 1) The acid level shall always be above the cell plates. If you have to add, use only distilled water. Never add acid.
- 2) If the battery needs filling too often there is probably a fault in the charging system causing an overcharge. This breaks down the water in the electrolyte and releases hydrogen. Have the charging system checked.

LUBRICATION

For the engine we recommend TOTAL GTS SAE 20 W/50. In case that brand is unobtainable use another high quality multi-grade oil of the same viscosity.

MAINTENANCE

MAINTENANCE WITH ENGINE IN THE FRAME

POSITIONS

1) Mount the ignition plate in such a position that its reference mark coincide with the corresponding mark on the inner flange of the cover. (See pic 1).

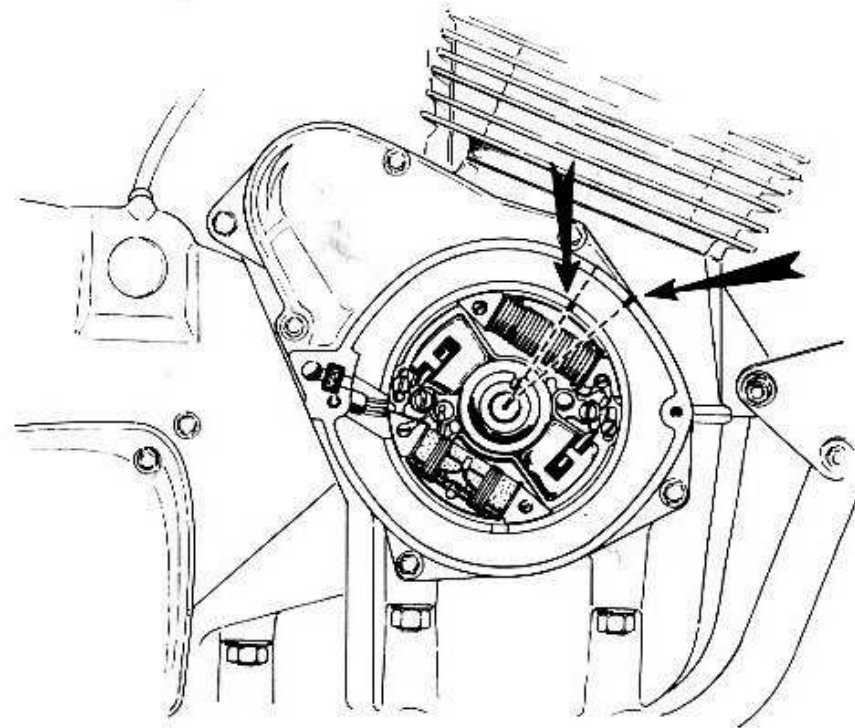


Fig. 1

2) The reference mark on the covers outer flange and the magneto flywheel are in line when the right hand piston is on its top dead centre (see pic 2).

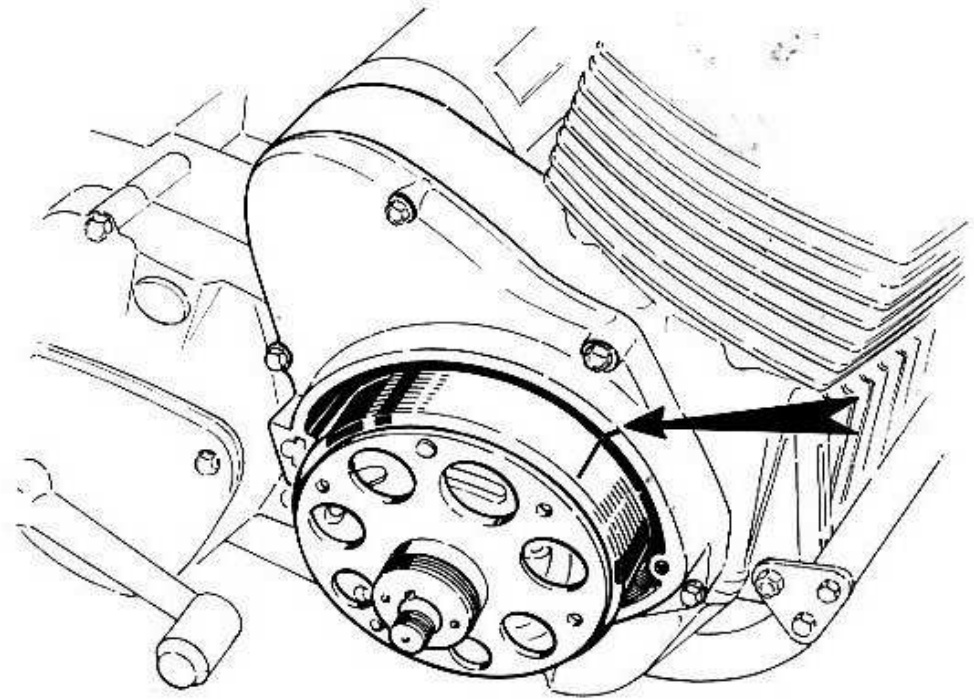


Fig. 2

- 3) When mounting the cam chain the reference marks on the camshaft sprockets shall be in line with the marks on the camshaft supports when the right piston is on its TDC as said in point two (see pic 3).

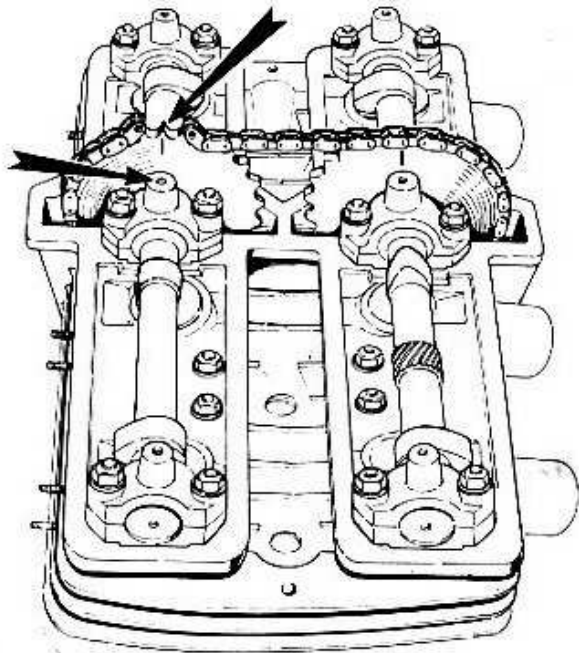


Fig. 3

- 4) Connect the ends of the cam chain with the link (see pic 4).
Now the timing positions are fixed.

OBSERVE - Do not unnecessarily remove the cam chain sprockets from the camshafts. In case you have to do so observe at the assembling that the Y-marks stamped on the sprockets must face the flange on the camshafts. (See pic 5).

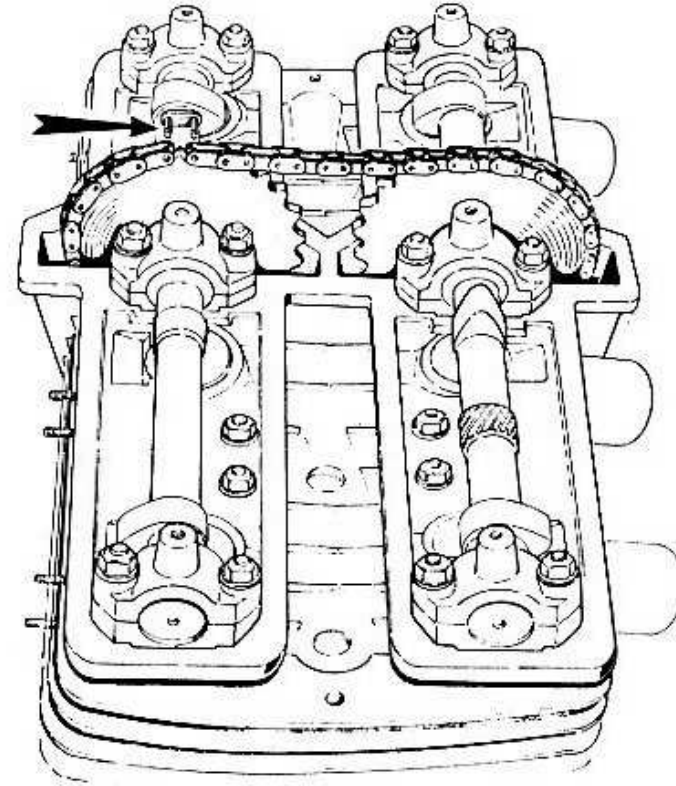


Fig. 4

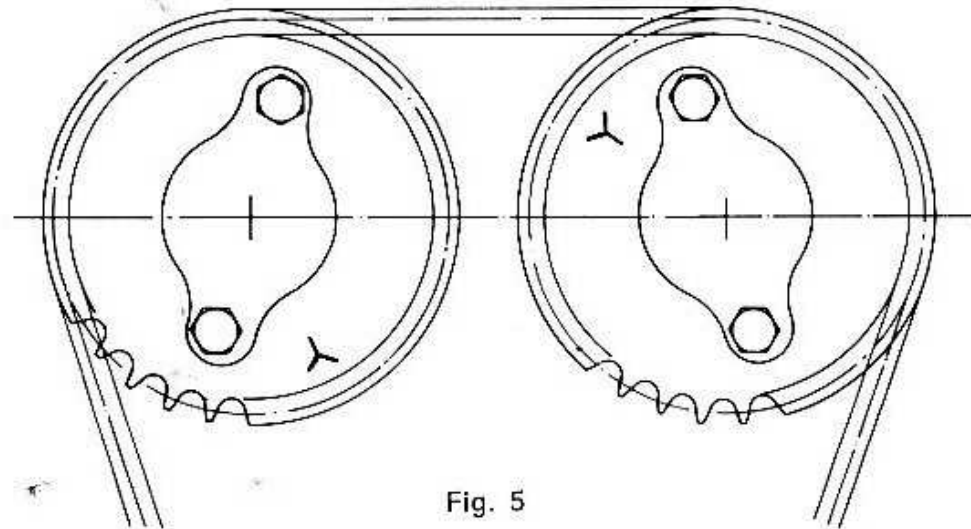


Fig. 5

CLUTCH CONTROL

To perform this operation it is necessary to remove the primary chaincase and undo the crankshaft nut by a 32 mm spanner. Remove the chain tensioner shaft as shown in picture 6 and pull simultaneously the engine sprocket and the clutch sprocket from their shafts (pic 7).

With a 10 mm spanner you can remove the six bolts keeping the spring-loaded disc in place (pic 8).

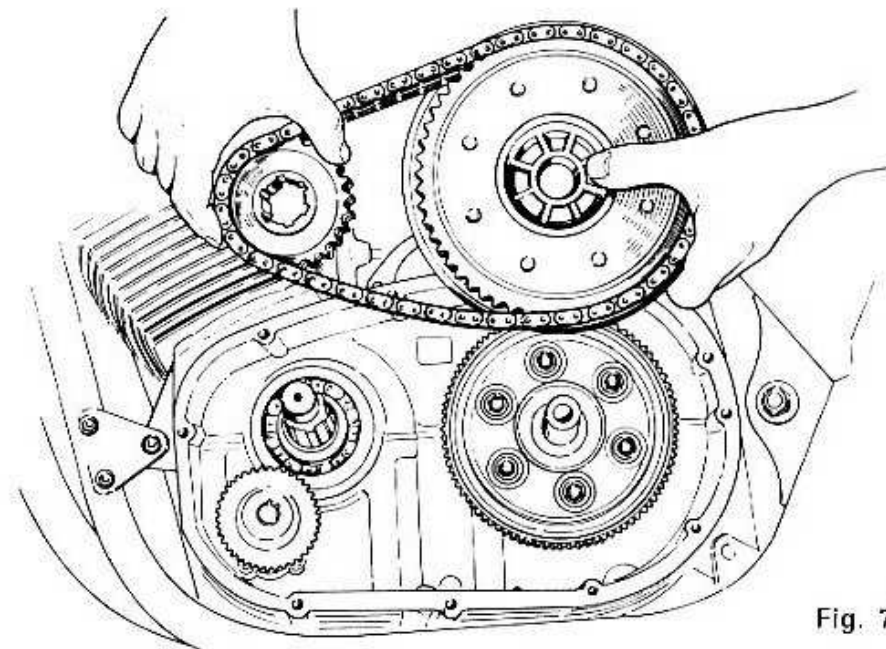


Fig. 7

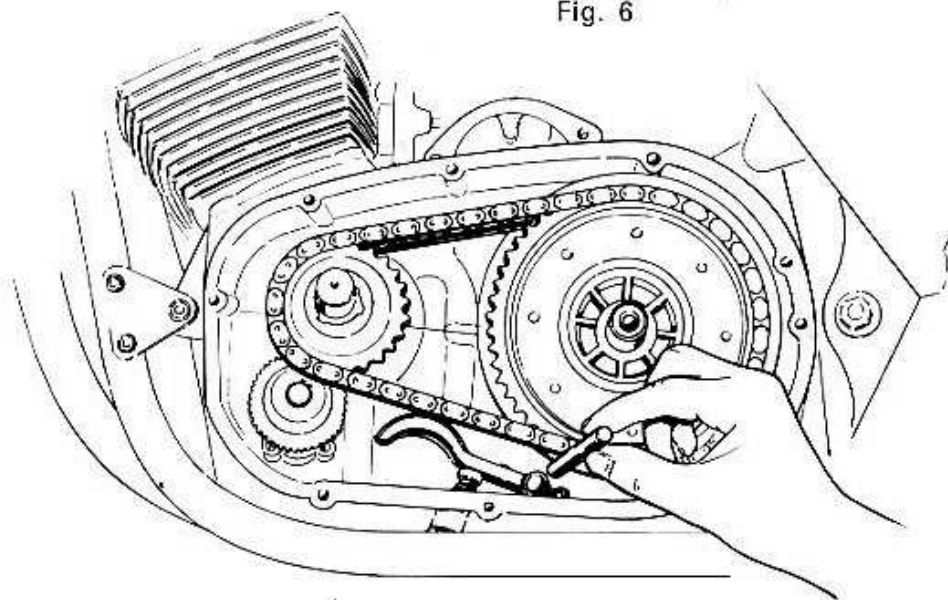


Fig. 6

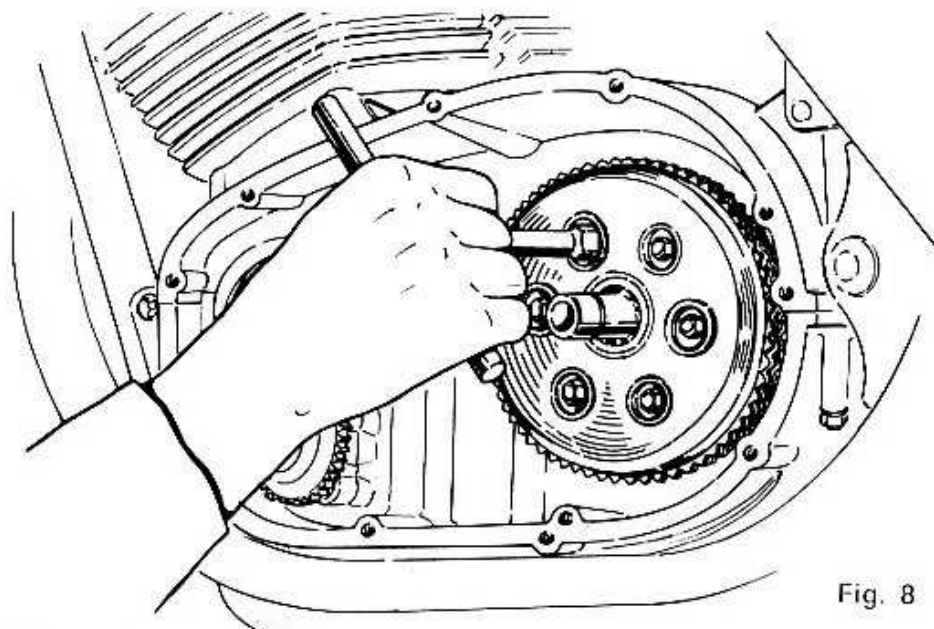


Fig. 8

Examine the friction pads and change the discs if they seem worn out. We recommend that you change the clutch springs at the same time.

If the clutch does not disengage properly, check that the key runs freely in its slot in the main shaft. Also make sure that the clutch rod moves freely in the mainshaft and that activation does not pull the mainshaft out of alignment with its bearings. To reassemble clutch, reverse the steps above and stack plates as shown in Fig. 9.

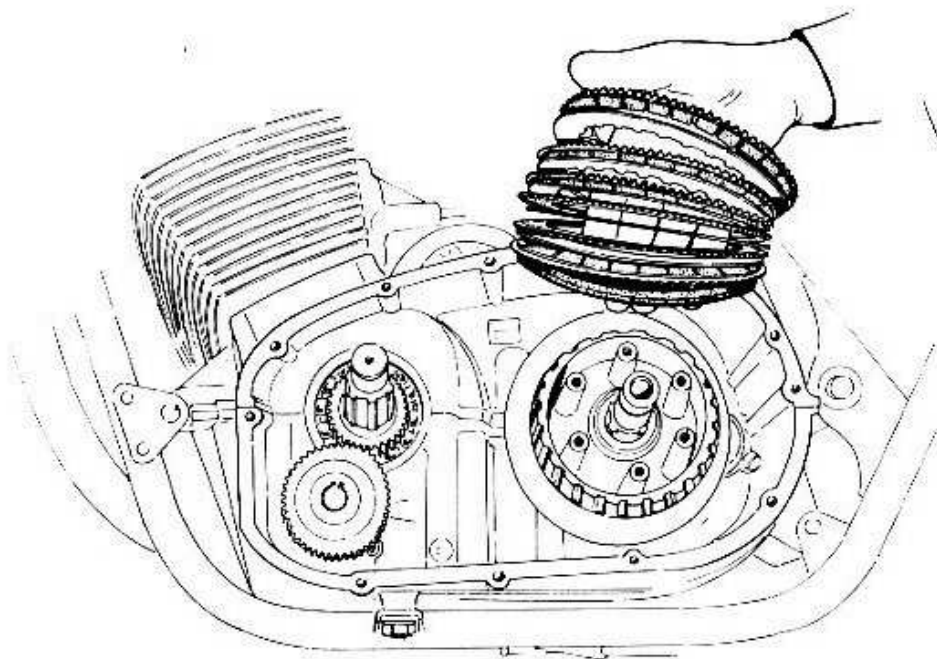


Fig. 9

In order to make the assembling easier turn the mainshaft so that the key is in a horizontal position as in picture 10. When mounting the clutch housing and its sprocket and the primary chain, problems can arise because the teeth on the

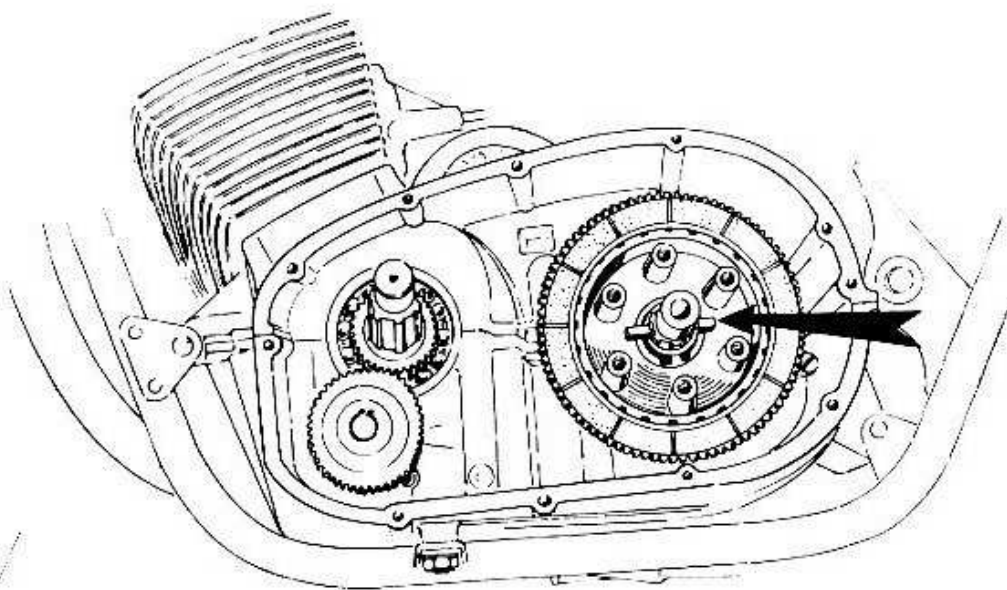


Fig. 10

clutch plates are not always exactly in line. In such a case the easiest way is to disengage the clutch by its lever and turn the clutch housing slowly while pressing it lightly against the engine to that the friction disc teeth line up with the grooves in the clutch housing.

ASSEMBLING THE OIL PUMP

Proceed as follows :

- 1) Put into its hole in the crankcase the smaller of the oilpump shafts together with the driven gear.
- 2) Mount in the oilpump body the longer shaft with its gear.
- 3) Mount on the same shaft, on the outside of the pump body, the big gear and the circlip securing the gear.
- 4) Spread a thin layer of gasket cement on the surface of the oilpump body.
- 5) Fit the pump body to the crankcase by the four screws.

REMOVING THE STARTER ENGINE

- 1) Remove the electric cable.
- 2) Remove the bolts securing the starter engine to the crankcase and pull it free (see pic 11).

ASSEMBLING THE STARTER ENGINE FREEWHEEL

Mount in their places, as shown in picture 12, one spring, one plunger and one roller. Make sure that the separate parts can move freely.

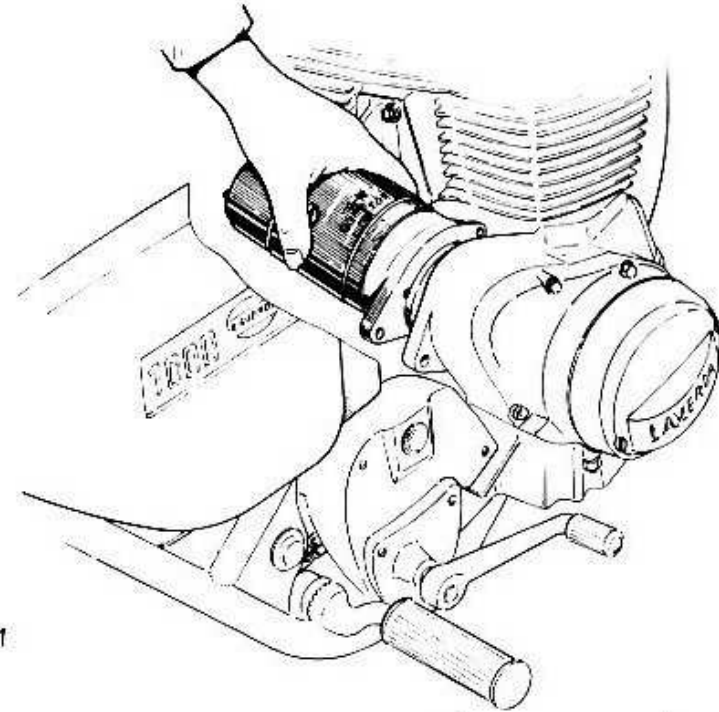


Fig. 11

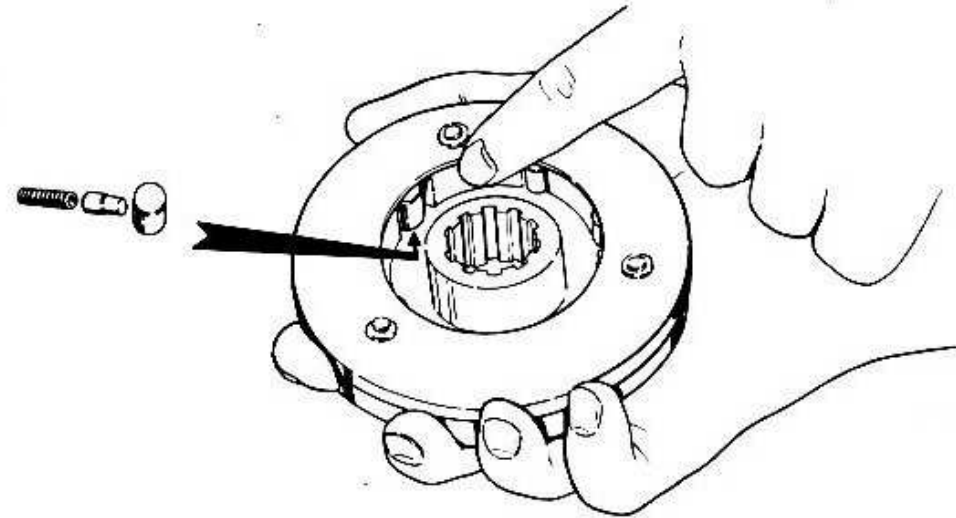


Fig. 12

FITTING THE FREEWHEEL ON THE CRANKSHAFT

- 1) Assemble the springs, pegs and rollers as already described and put into the freewheel the cylindrical part of the starter engine gear by turning it alternately to the left and to the right.
- 2) Put the whole assembly onto the crankshaft.
- 3) Bolt the cover into place and secure the nut with a 36 mm special spanner (see pic 13).

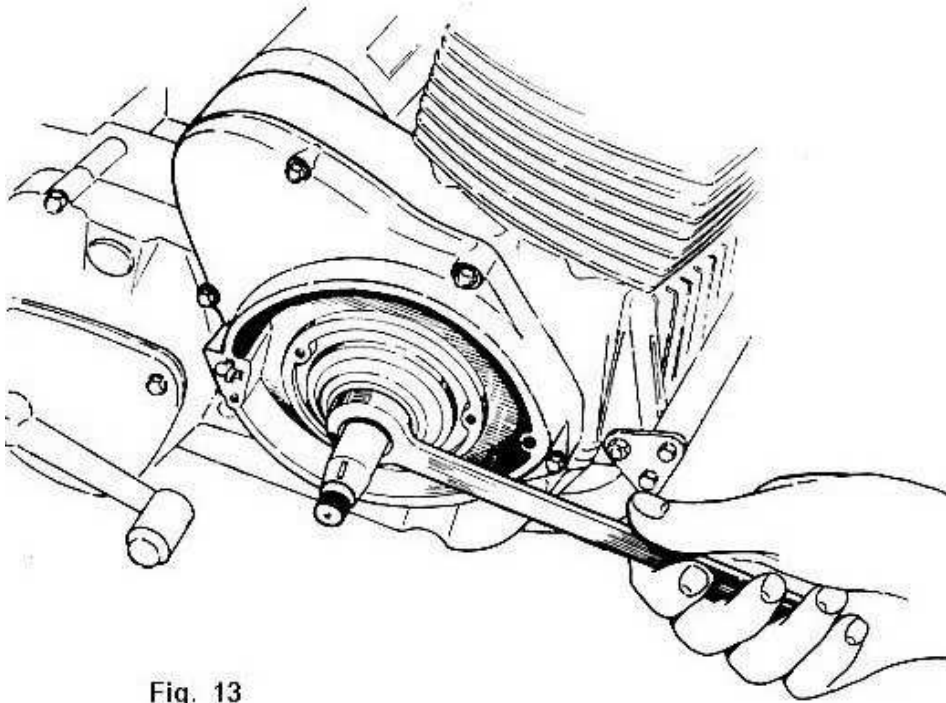


Fig. 13

FITTING THE CAM CHAIN ADJUSTER AND TENSIONING THE CAM CHAIN

- 1) Push the tensioner blade down behind the cam chain (pic 14) until the threaded bush at top of it is in line with the hole at the rear of the cylinder head. Fix the blade into its position by a screw.

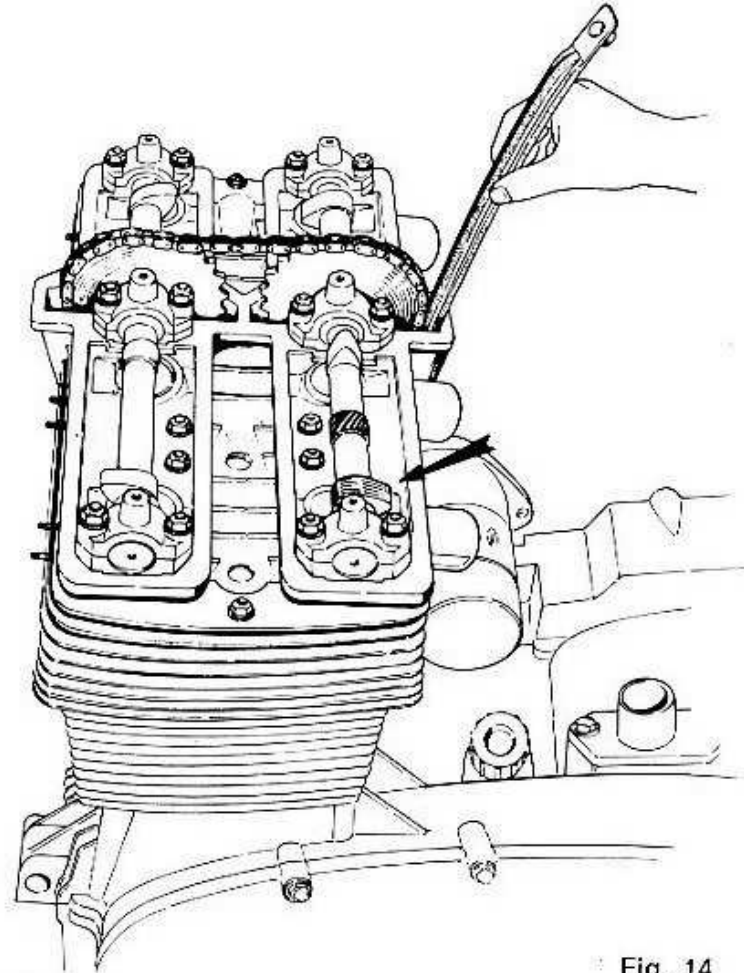
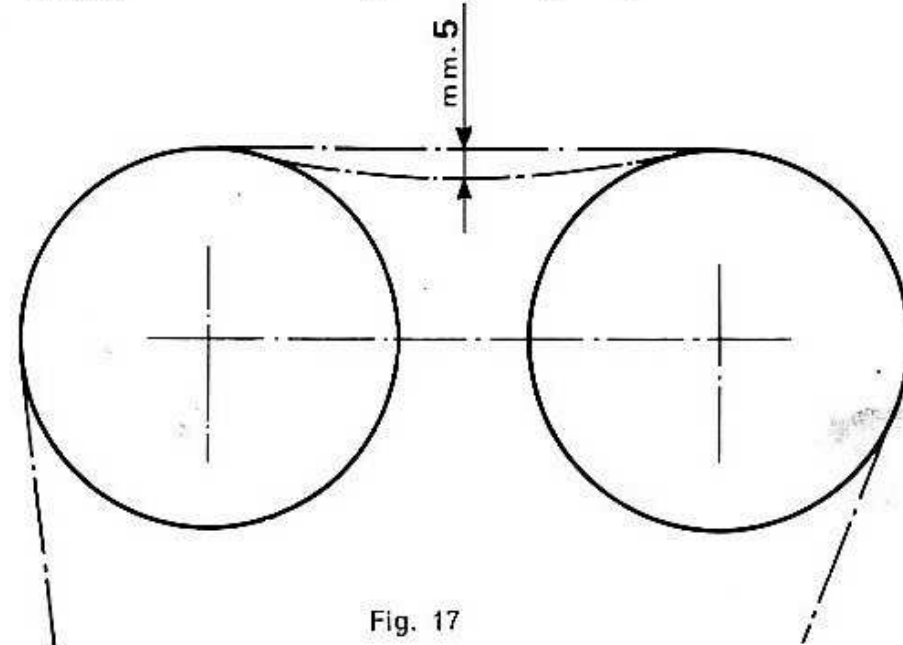
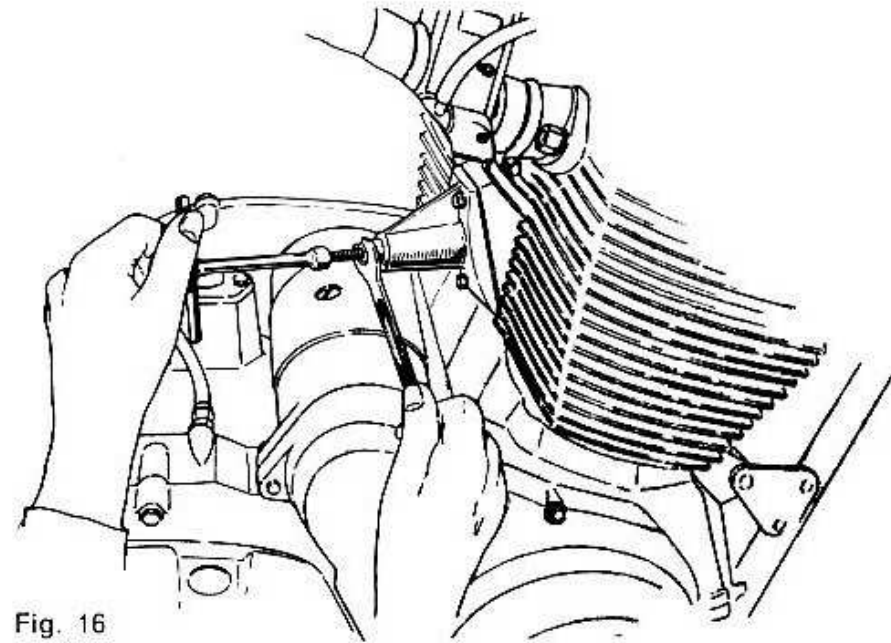
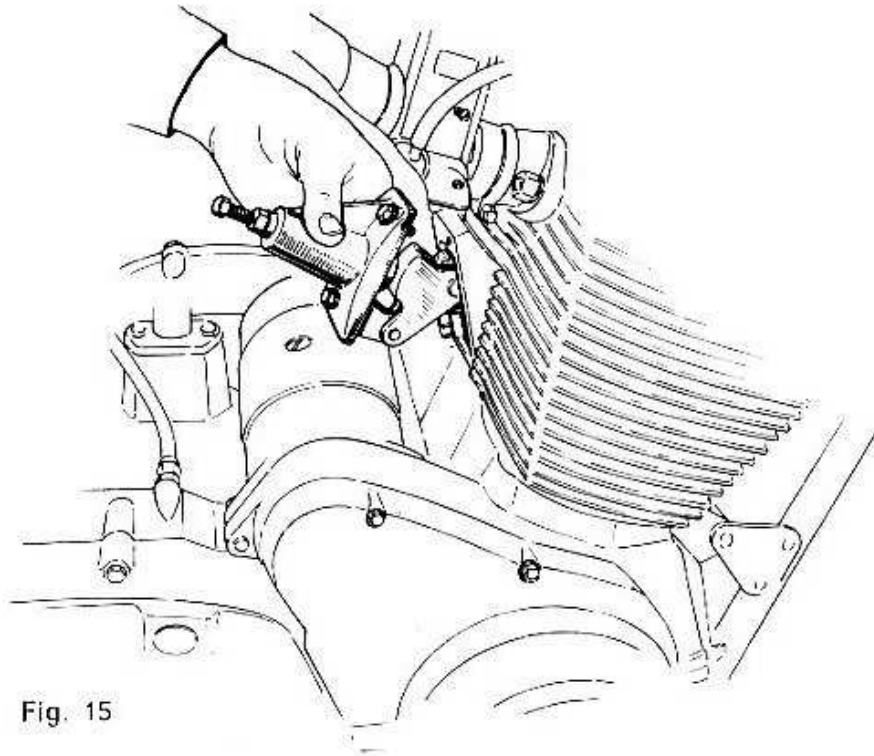


Fig. 14

2) Put the tensioning arm with its housing into place on the rear of the cylinder and lock it with two bolts (pic 15).



When adjusting the cam chain turn the engine so that the left cam lobe on the inlet camshaft is in the position shown on picture 14. Then slacken the lock nut on the adjuster screw (see pic 16). When the chain tension is correct, the play in the chain between the cam sprockets should be 5 mm in each direction up and down. If the play is more or less adjust with the screw behind the cylinder (pic 16 and 17).

ADJUSTING THE PRIMARY TRANSMISSION CHAIN

Remove the dome nut and slacken the lock nut on the adjuster screw under the transmission chaincase. Turn the screw in until you feel a very slight resistance. Back off one turn, tighten the lock nut and fit the dome nut again (Fig. 18).

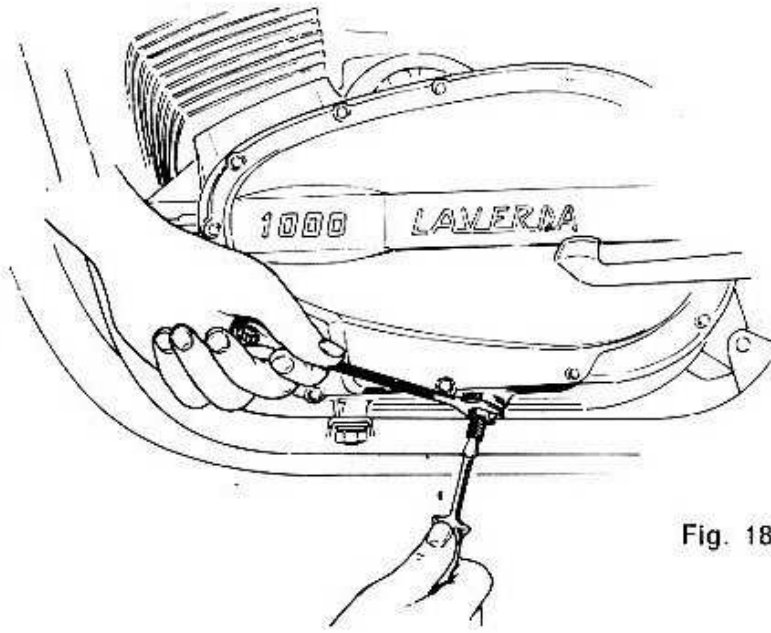


Fig. 18

ASSEMBLY AND ADJUSTMENT OF THE GEAR CHANGE MECHANISM

Put the selector wheel spindle into its hole in such a way that its reference marks coincide with the corresponding mark on the drum shaft as shown on picture 19. Mount the eccentric screw and the gear change lever shaft.

When adjusting, use a spanner and a screwdriver as you can see on picture 20. The purpose of the adjustment is to make the up and down movement of the selector arm equal or rather to make the play between one hook on the arm and the corresponding peg equal to the play between the other hook and the peg.

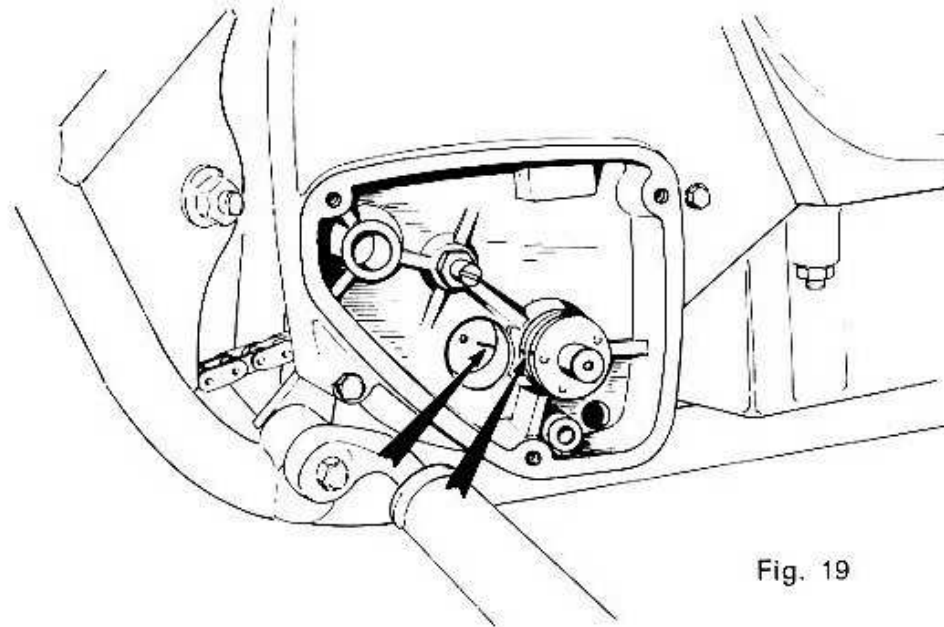


Fig. 19

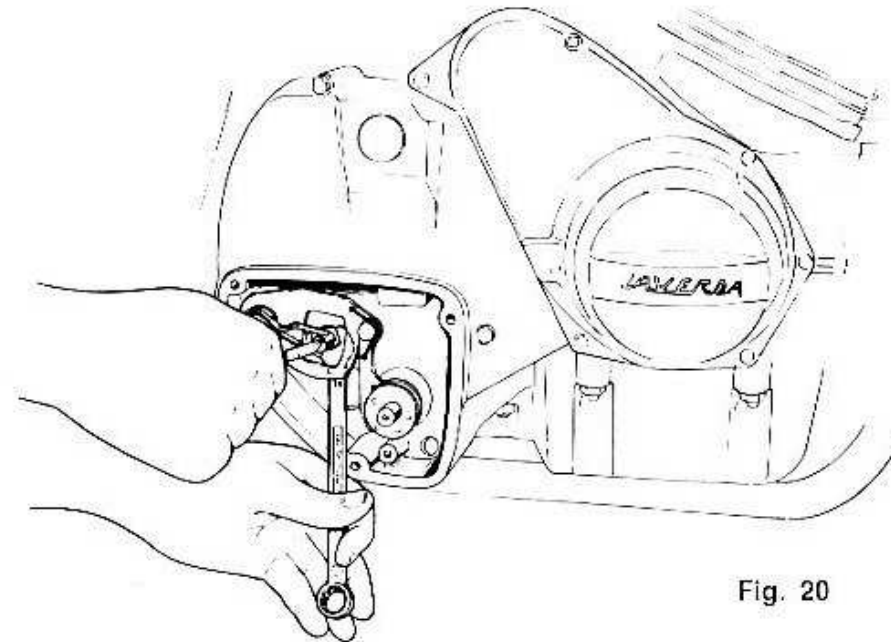


Fig. 20

REMOVING THE OIL FILTER

First loosen the three nuts keeping the oilfilter in place (see pic 21).

When cleaning the filter remove the nut above it and detach it from its base and wash it in petrol.

This operation ought to be done every 10.000 km, (6000 miles).

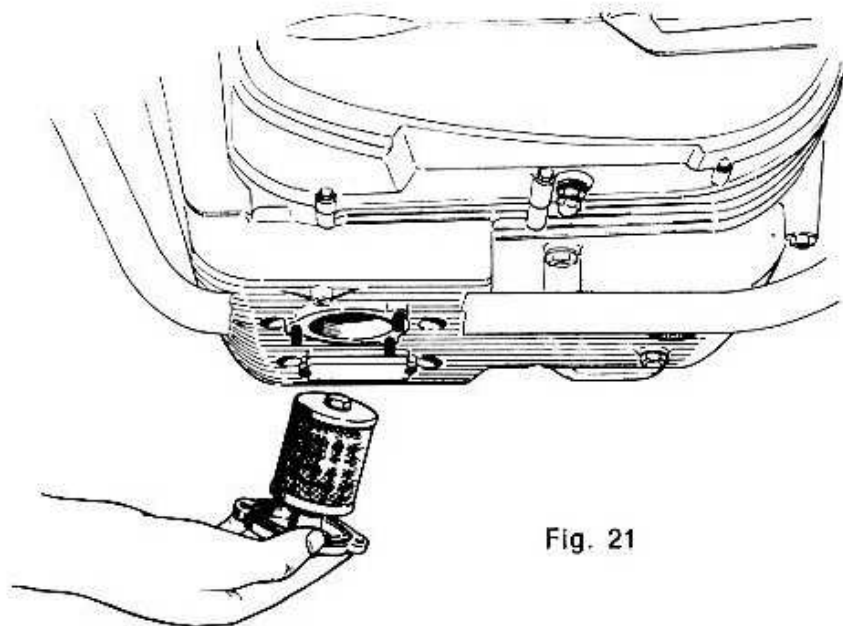


Fig. 21

DRAINING OIL

When the oil filter does not need cleaning drain the oil by removing the oil plug under the gearbox by a 20 mm spanner (pic 22).

REMOVING THE CLUTCH CABLE

Remove the rubber plug that covers the hole to the clutch cable connection (pic 23). Press with a screwdriver on the clutch arm in order to release the tension in the clutch cable. It is now possible to push the nipple of the clutch cable out through the slot in the side of the clip to which it is fitted.

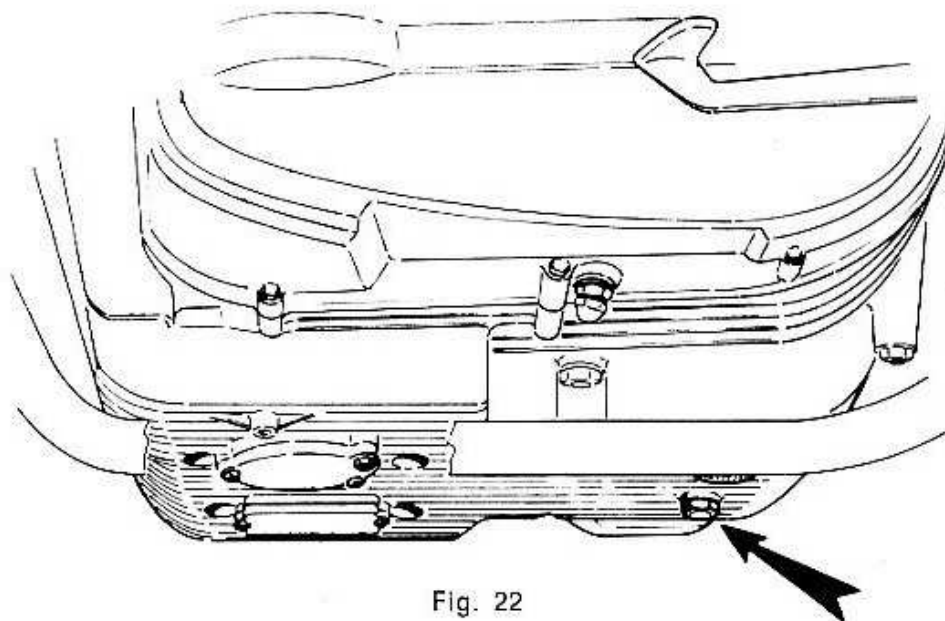


Fig. 22

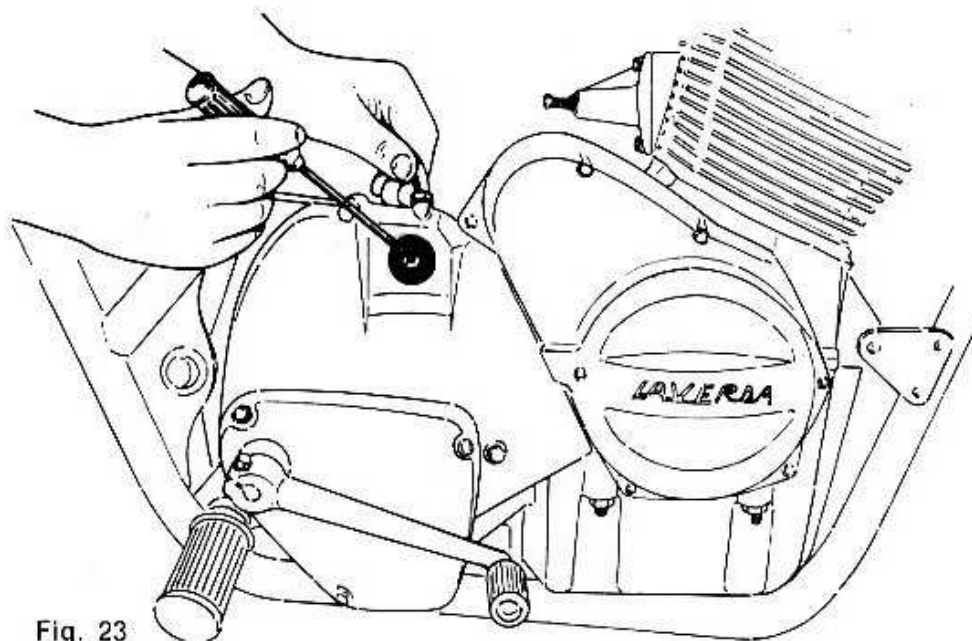


Fig. 23

TIGHTENING THE CYLINDER HEAD NUTS

Use for this work a torque wrench with a torque of 3,5 Kgm 25,3 FT. LB. (see pic 24).

Tighten the nuts in the order you can see on the picture, 1 - 2 - 3..... 12. Regarding the remaining 6 nuts you can tighten them with a normal spanner.

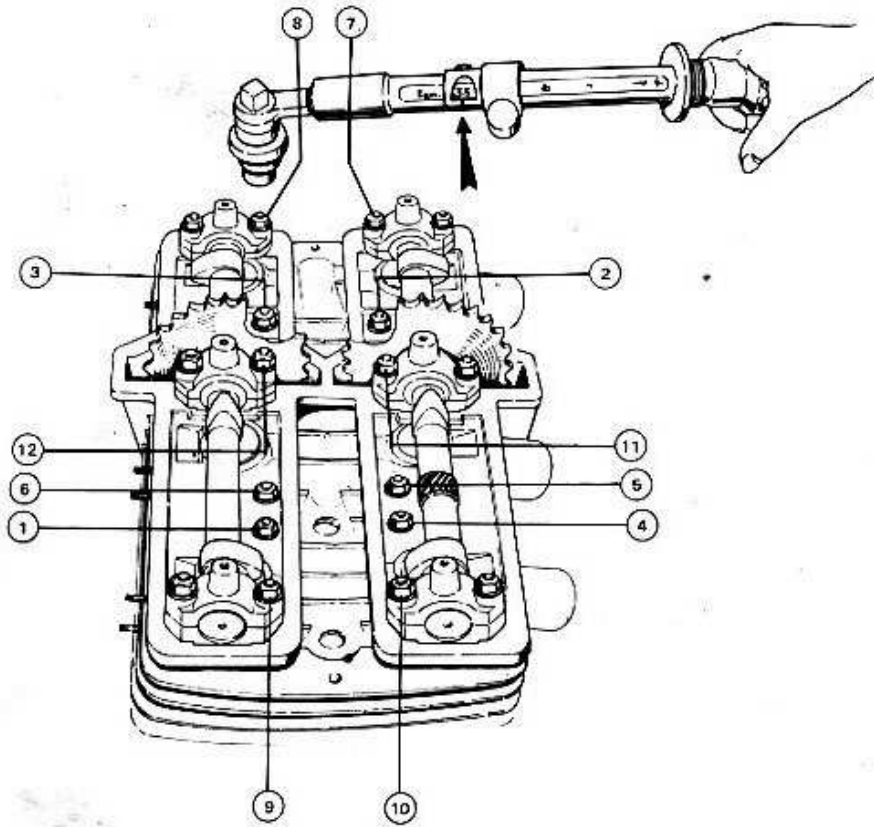


Fig. 24

ADJUSTING THE VALVE CLEARANCE

This work is to be performed with the engine cold.

- 1) Remove the seat, fuel tank, camshaft cover and the cover over the magneto flywheel.
- 2) Turn the engine so that the lobe on the cam, the play of which you want to check, points in a direction opposite to its valve (see pic 25). Check the valve clearance and write it down on a paper. Repeat the same with all valves.

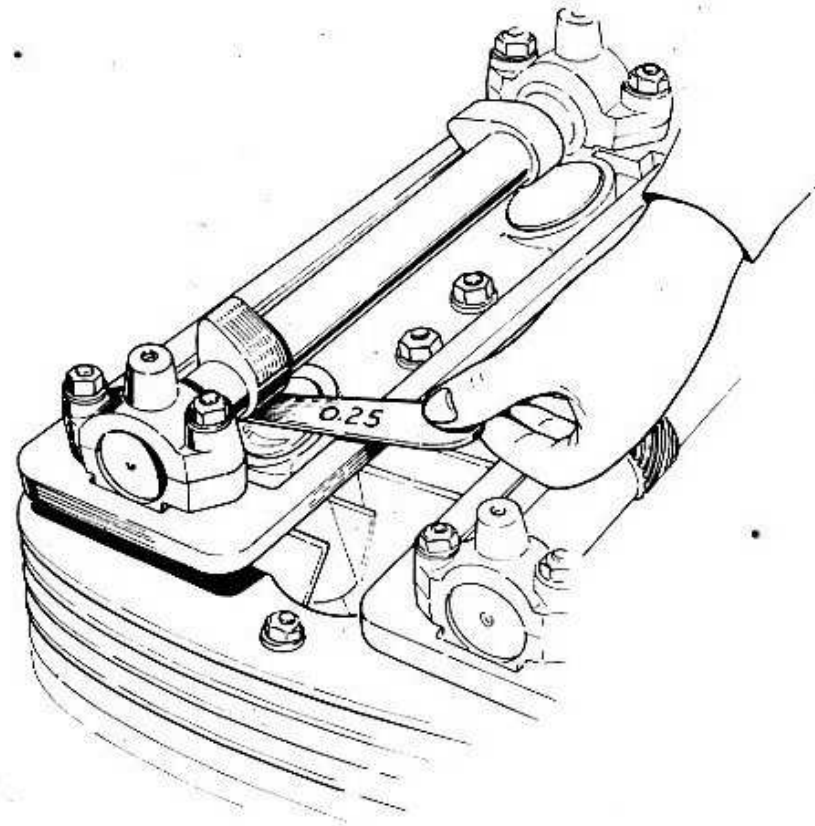


Fig. 25

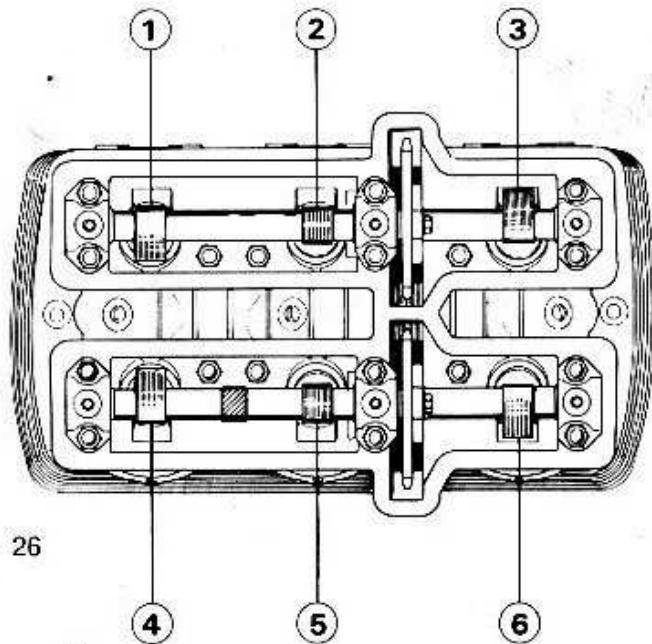


Fig. 26

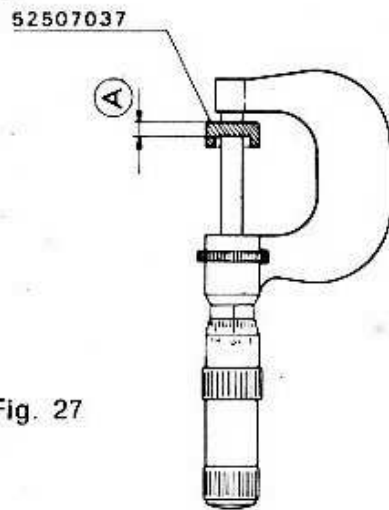


Fig. 27

- 3) Remove the camshafts. In order to prevent the ends of the camchain from falling into the crankcase, secure them with a piece of wire to something at the cylinder head.
 - 4) Remove the camfollowers and measure the thickness of the valve cap shim with a micrometer (fig. 27). By comparing the actual valve clearance with the correct one, 0,20 - 0,30 mm (0.008 - 0.012 in.), you can now calculate what thickness of shim you need to obtain correct clearance (see fig. 28).
- Put back the cam followers and the camshafts and check that the valve clearances are now correct.
- Connect the ends of the camchain and bolt to their places the cam cover and the magneto flywheel cover.

VALVE CAP SHIMS FOR ADJUSTMENT OF VALVE CLEARANCE

The following thicknesses of shims are available :

1,85 - 1,93 - 2,00 - 2,07 - 2,15 - 2,23 - 2,30 - 2,38 - 2,45 - 2,52 - 2,60 mm.

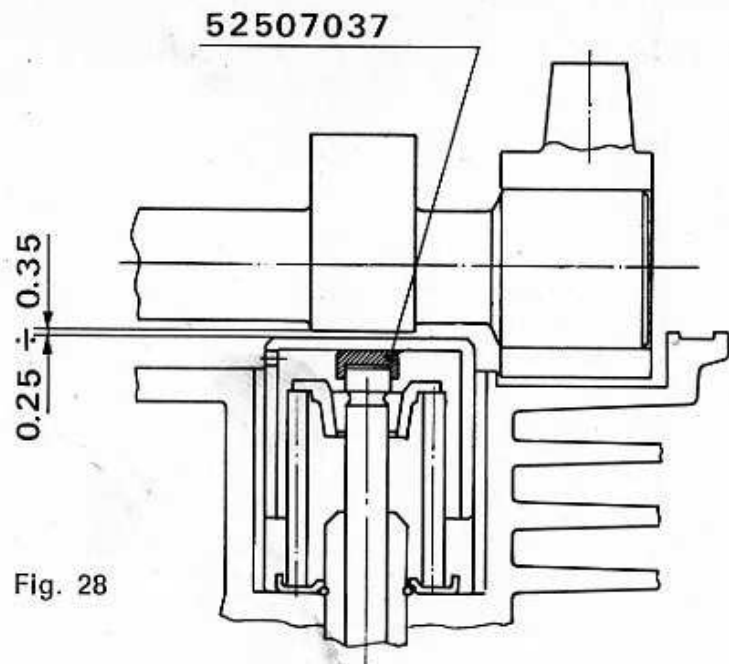


Fig. 28

REMOVING AND FITTING THE CAMSHAFTS

- 1) Remove the camshaft cover.
 - 2) Open the camchain and secure its ends with a wire to prevent it from falling into the crankcase.
 - 3) Undo the nuts that keep the camshaft supports in place
 - 4) Lift up the camshafts (see pic 29).
- When assembling, reverse the steps above.

Note that the inlet camshaft is the one with a worm drive for the revolution counter.

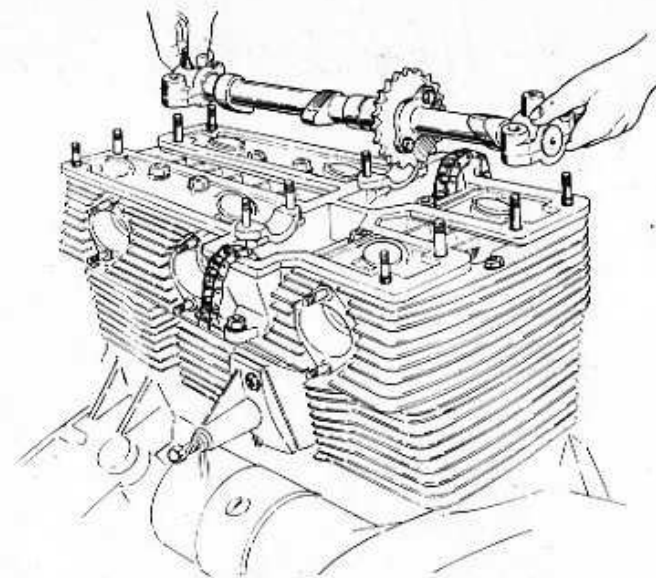


Fig. 29

REMOVING THE MAGNETO FLYWHEEL

Undo the left-hand threaded nut that keeps the flywheel in place and extract the flywheel by a special tool (see pic 30).

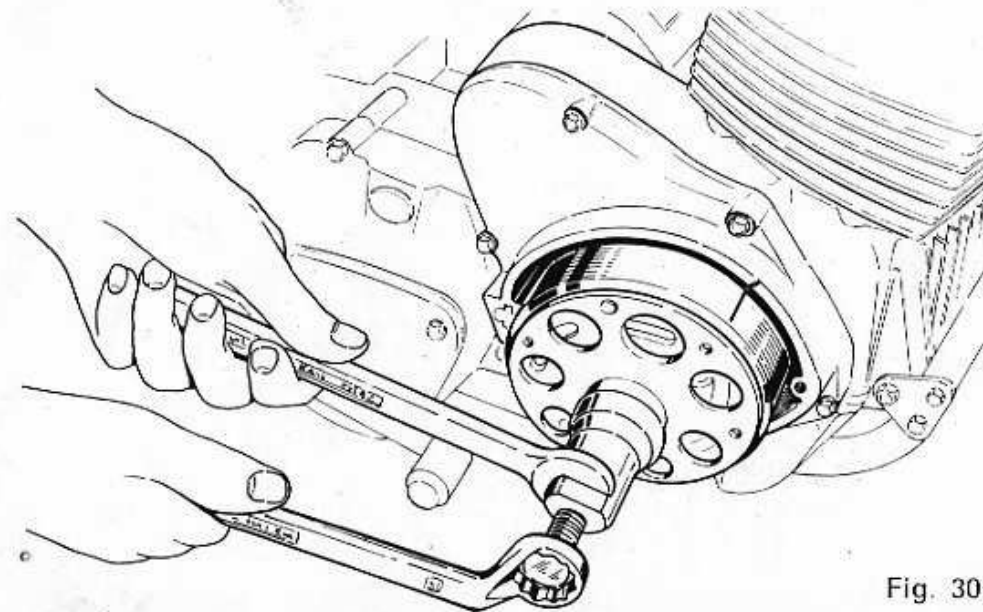


Fig. 30

WORK REQUIRING THE REMOVAL OF THE ENGINE FROM THE FRAME

REMOVING THE VALVE SPRINGS

Detach the camchain and all nuts keeping the cylinder head in place and lift it off. Remove the cam followers and the valve cap shims.

Compress the valve springs with a special tool (pic 31) which makes it possible to remove the small cones securing the valve spring collar.

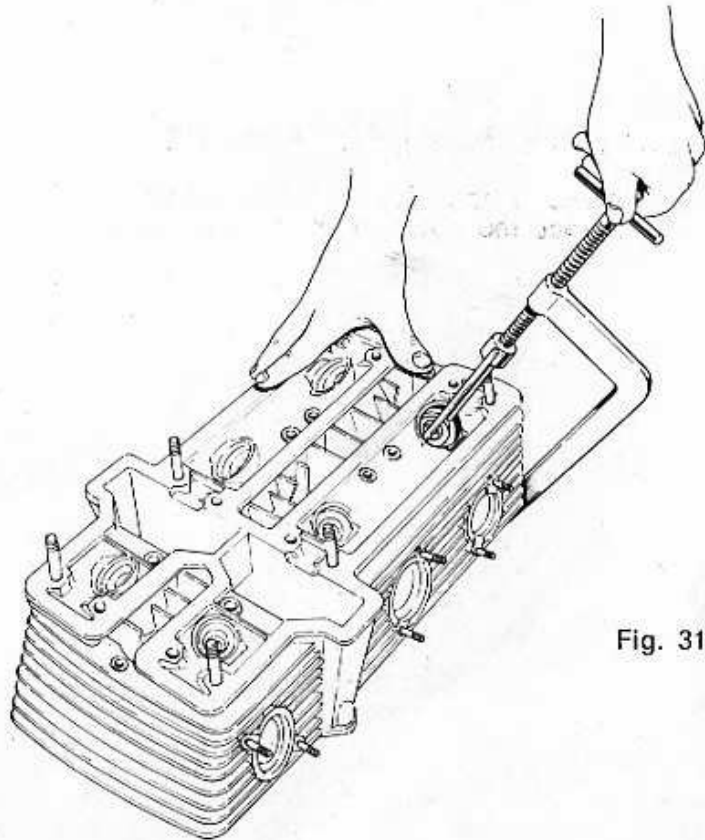


Fig. 31

REMOVAL OF THE SPINDLE FOR THE SHIFTING FORKS

Separate the crankcase and lift up the two gearbox shafts. Pull out the locking peg by a small pliers as shown on picture 32.

The spindle is threaded in its end and by means of a bolt you can pull it out.

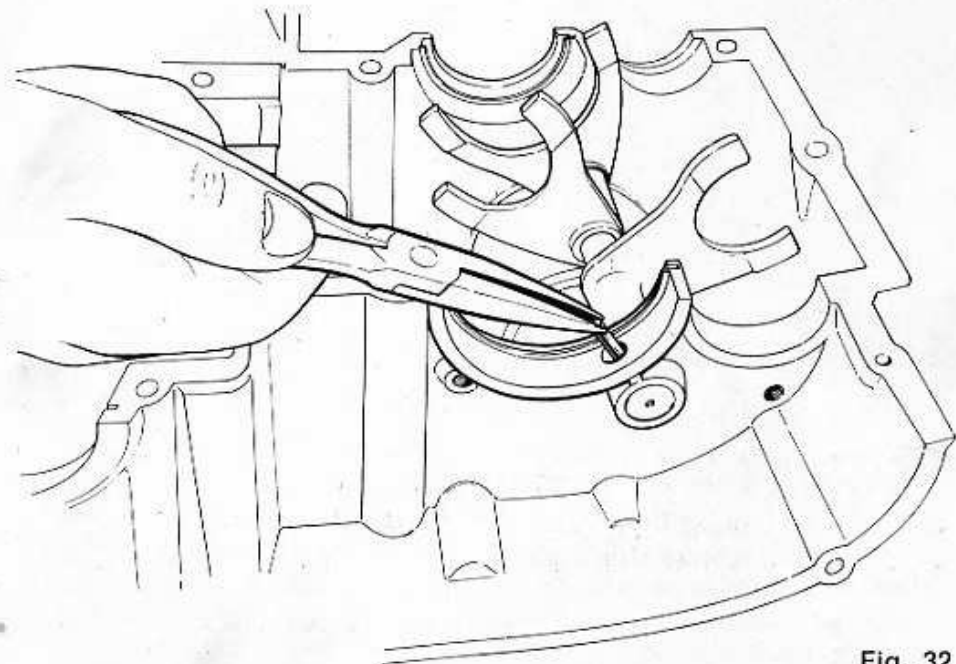


Fig. 32

FITTING THE SHIFTING FORK DRUM

Fit the plain washer on the selector drum spindle.

Put the key into its groove in the spindle and insert the spindle from the outside of the crankcase. From the inside, slip over the washer with a recess for the key. Hold the shifting drum in its position so that the spindle may enter its hole and the key fits in its slot in the drum (see pic 33).

Before putting the spindle end into the hole in the opposite wall slip over the other washer and the big nut that should be tightened in order to keep the shifting drum in its exact position.

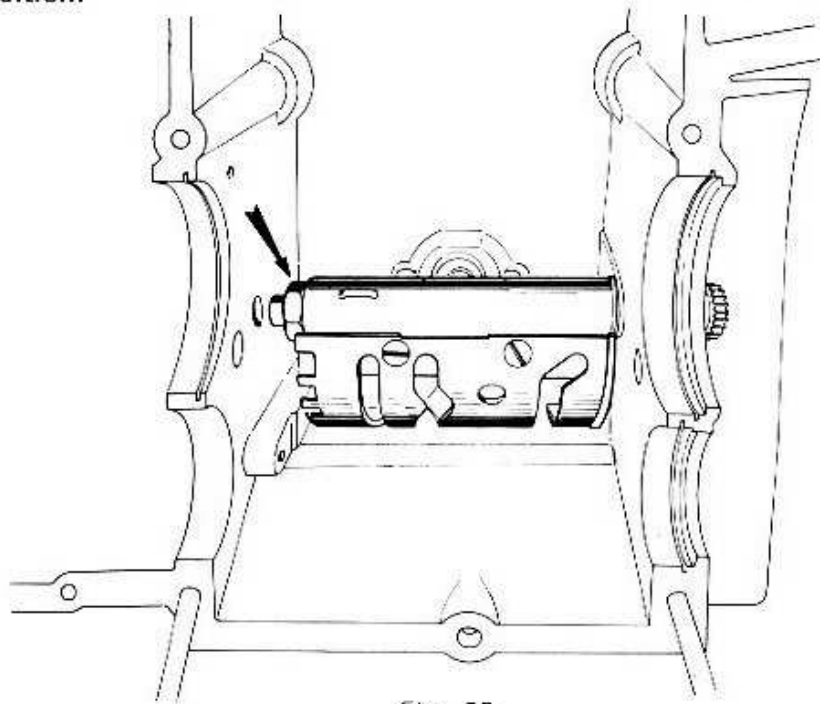


Fig 33

ASSEMBLING THE CRANKCASE

- 1) Mount the gear shifting drum, the arm with the roller that will lock the gears and the shifting forks with their spindles.
- 2) Put into their grooves the half rings that will secure the positions of the bearings (pic 34).
- 3) Put into their places the crankshaft and the gearbox shafts.

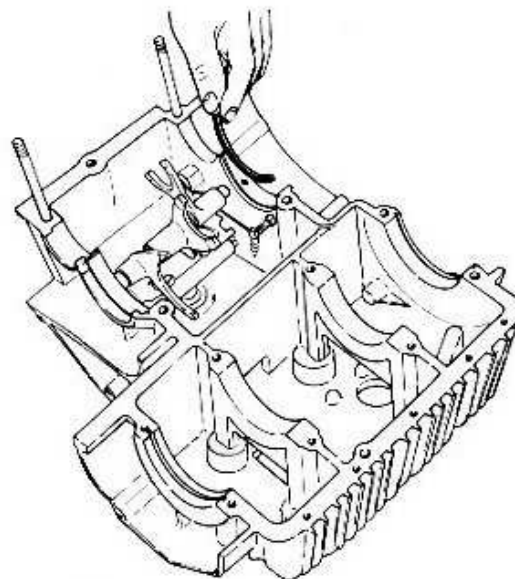


Fig. 34

- 4) Apply a thin even layer of gasket cement on sealing surfaces of the crankcase halves (pic 35).
- 5) Put the upper half of the crankcase in its place and apply all nuts. Do not forget the camchain before putting the two halves together.

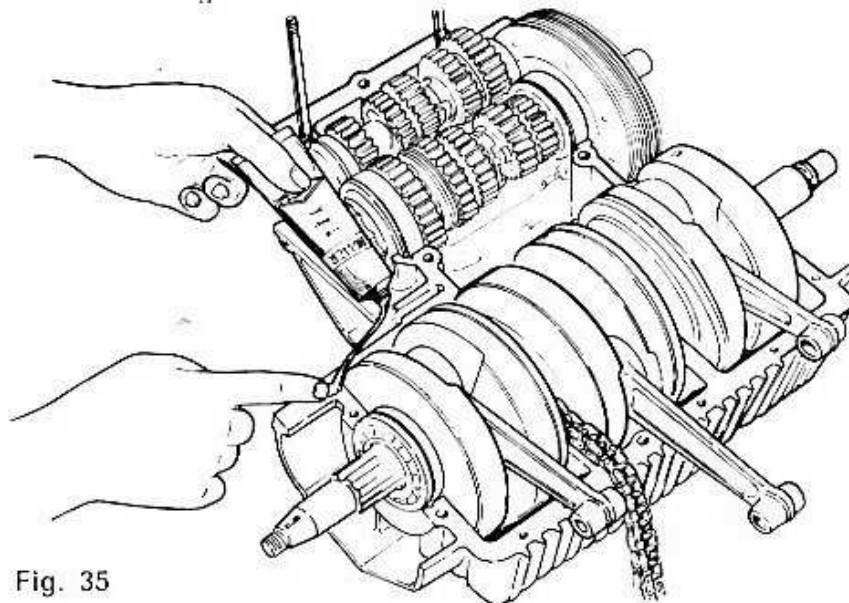


Fig. 35

CHECKING THAT THE GUDGEON PINS ARE PARALLEL TO THE SEALING SURFACE OF THE CRANKCASE

Place two absolutely straight rods of equal height on the crankcase as shown on picture 36. Put the piston pin in its hole and turn the crankshaft until the pin rests on the rods. If the connecting rod is absolutely straight the piston pin will rest with both its ends on the rods. If only one rod should be touched by the pin the connection rod needs straightening.

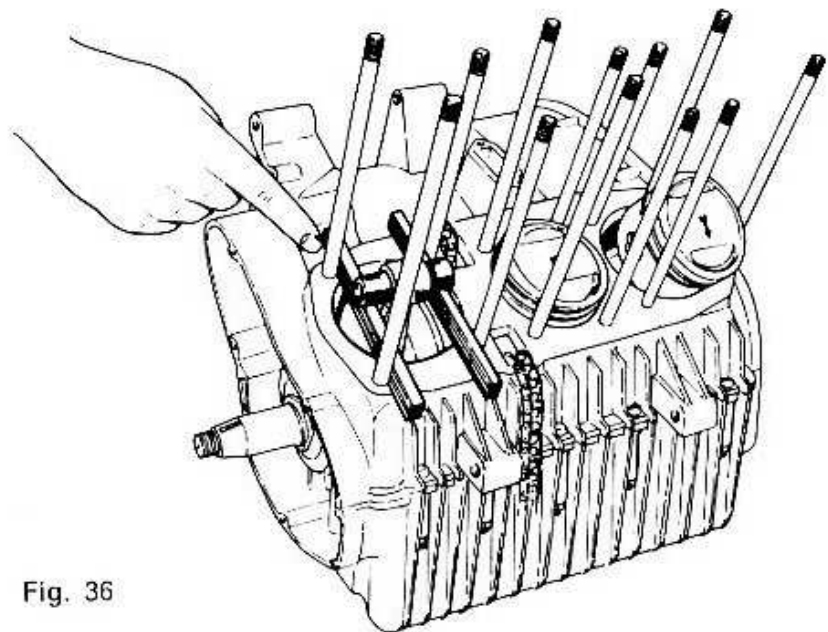


Fig. 36

REMOVING AND FITTING THE PISTONS

Remove the clips locating the piston pins and press with a special tool the pin through the piston making it free from the connecting rod.

When fitting the pistons observe that there are arrows stamped on the top (pic 38). Those arrows should be pointing forward. The piston pin special tool can also be used for reinstalling the pins as shown on picture 37. Finally fit the locking clips.

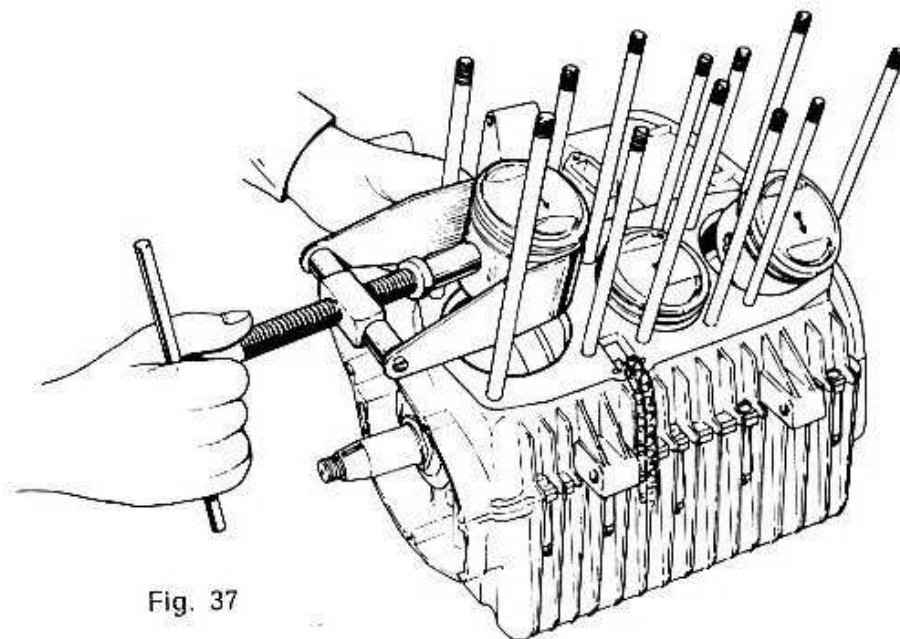


Fig. 37

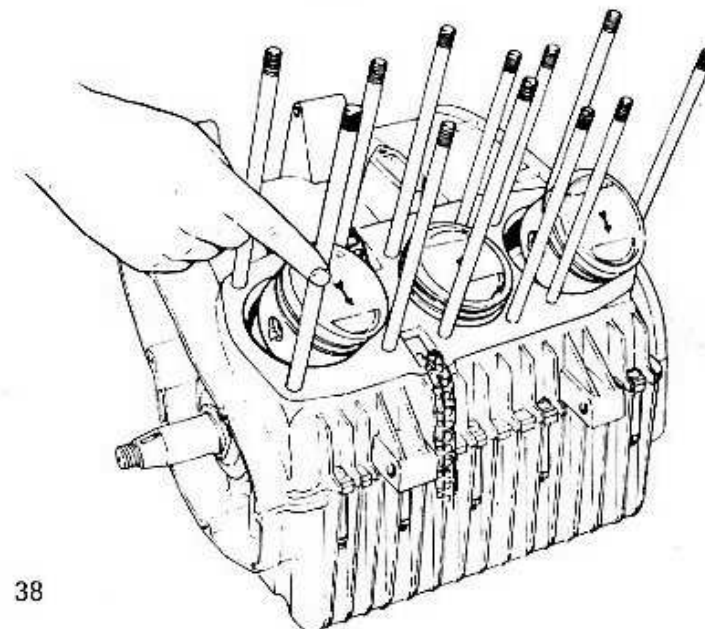


Fig. 38

FITTING THE PISTON RINGS

The piston rings should be fitted the way shown on picture 39 with the recess in the middle ring facing downwards. Before fitting the rings on the piston, put them into the cylinders and check that their ends do not touch. If they do, grind them off carefully at one end until they can be placed in the cylinder.

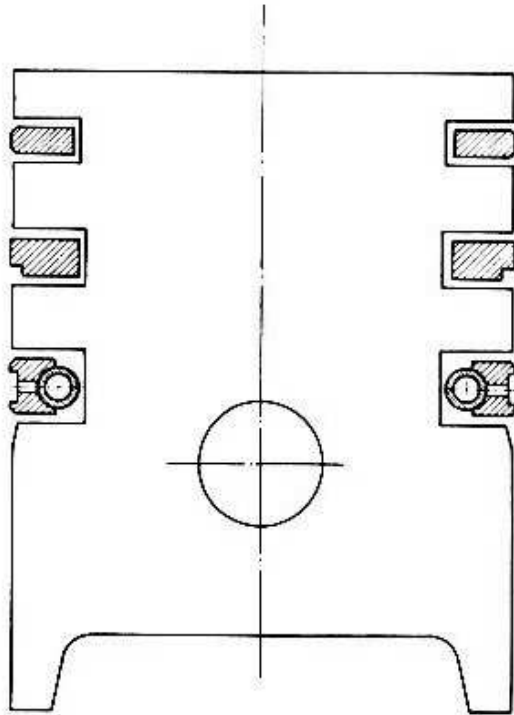


Fig. 39

CYLINDER BASE GASKET

Fit the gasket the way shown on picture 40 and make certain that the holes in the gasket coincide with the corresponding holes in the crankcase.

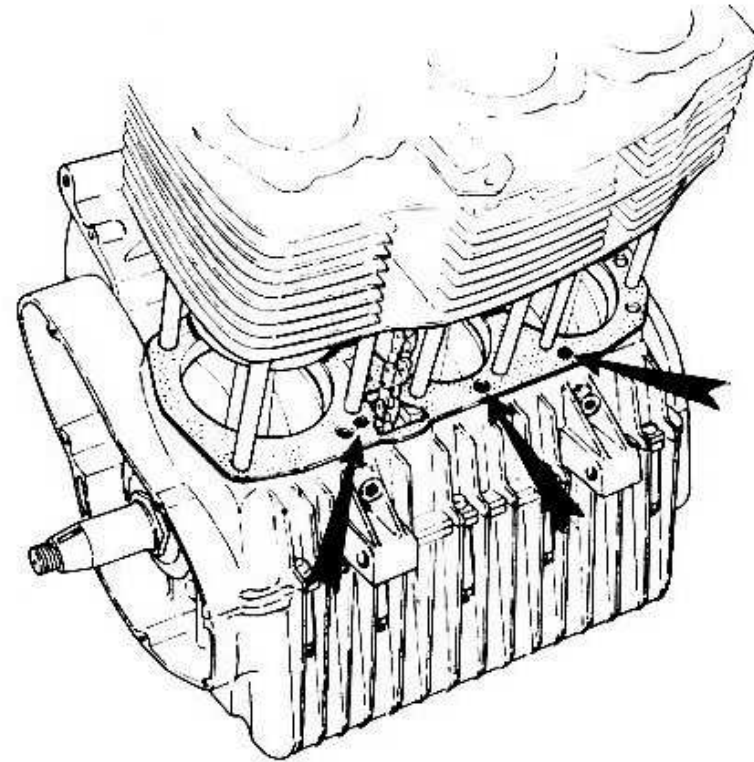


Fig. 40

FITTING THE CYLINDER

Put piston ring compressors around the pistons in order to keep the rings well down in their grooves. Fit the cylinder on the long studs and pull the camchain ends up to the upper side of the cylinder by two wires. Let the cylinder slide down slowly on the studs while the ring clamps slide down the pistons. Be careful so that no piston ring gets trapped under the cylinder skirts and brake. Remove the ring clamps (see pic 41).

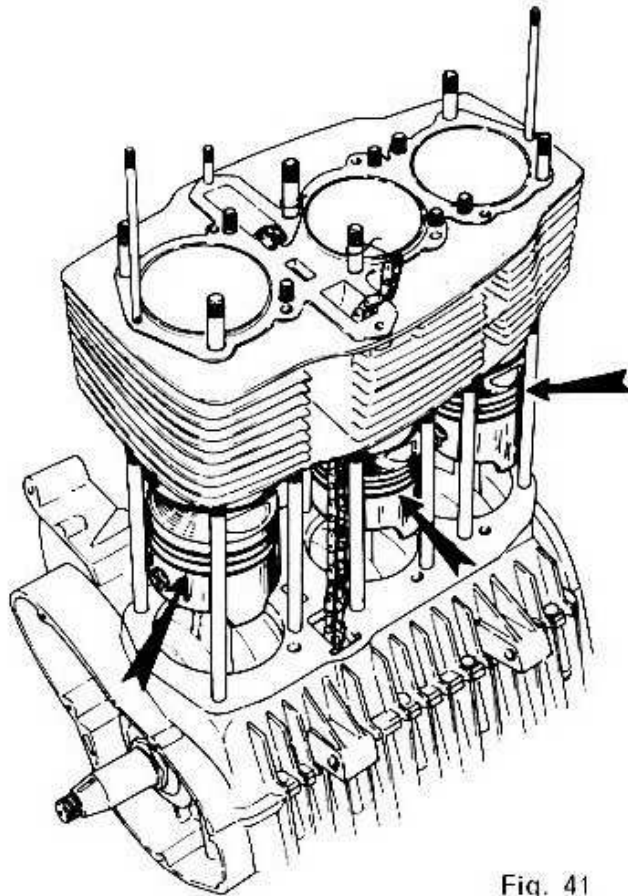


Fig. 41

FITTING THE CAM-CHAIN RESONANCE DAMPER

This part should be fitted in the front camchain hole with the thickest part of it upwards (pic 42). When you fit it you have to lift the cylinder a centimeter or so from the crankcase in order to get the peg, across the lower end of the damper, fit into its groove in the crankcase.

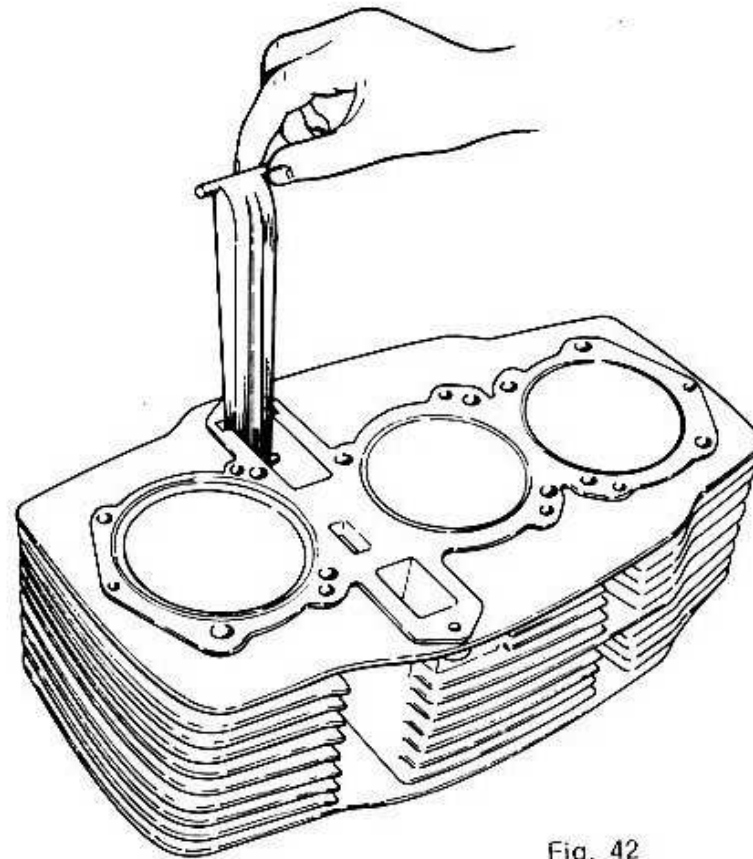


Fig. 42

FITTING THE CYLINDER HEAD ON THE CYLINDER

Put the cylinder head gasket in place. Slide the head down the studs and let it rest against a suitable spacer (see pic. 43). Pull the camchain up in its strings, remove the spacer and bring the cylinder head down to the cylinder.

FITTING THE CAMCHAIN CONNECTING LINK

Bring the crankshaft and the camshafts in the positions described in the beginning of the book and connect the ends of the camchain by its link as shown on picture 3 and 4. When fitting the spring clip make sure that its open end face rearward, against the direction of the chain (pic 45).

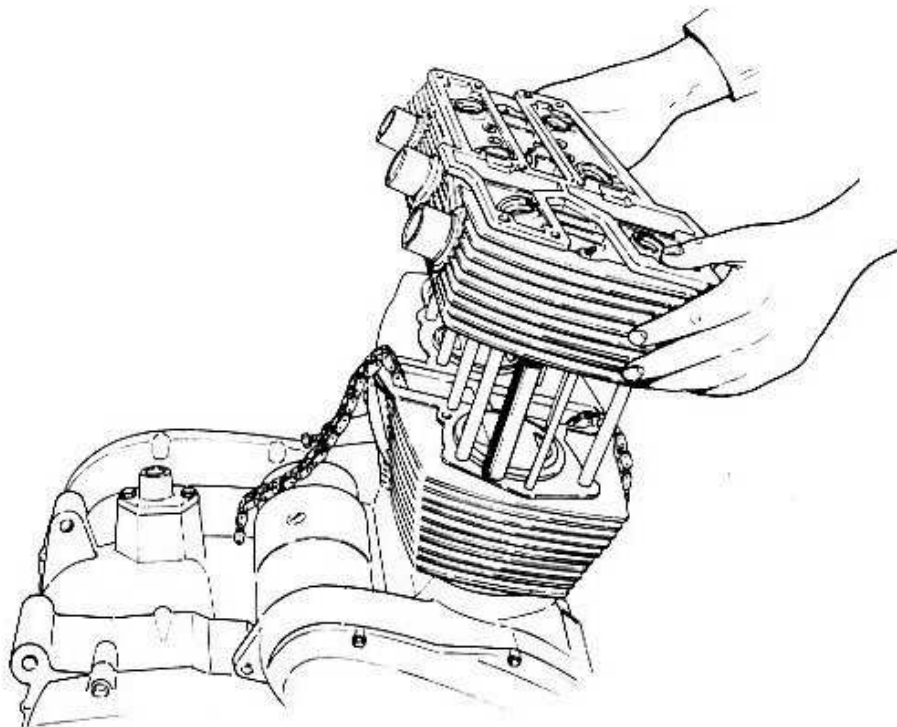


Fig. 43

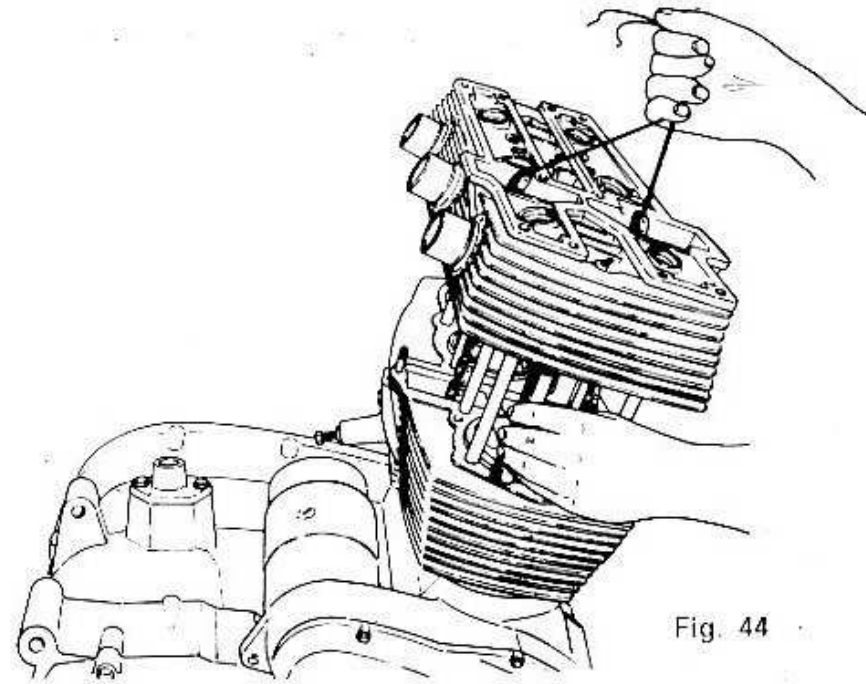


Fig. 44

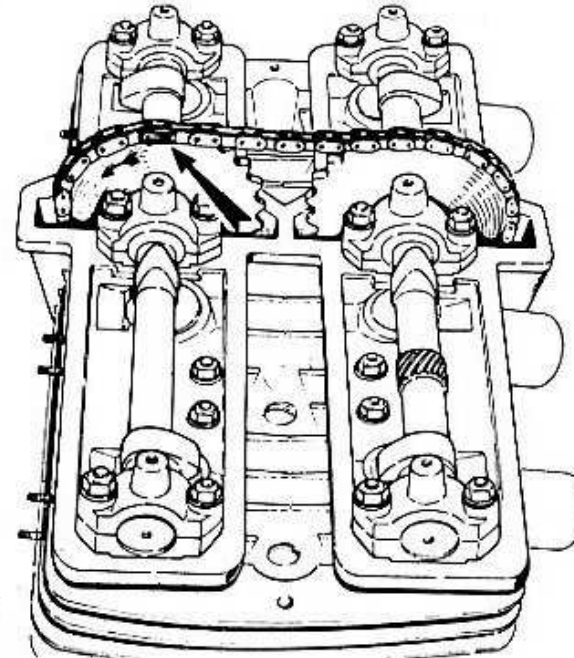


Fig. 45

REMOVING THE FRONT FORK FROM THE FRAME

Perform this job in the following order :

- 1) Remove the handlebar by undoing the nuts shown on picture 46 and remove the instrument support.
- 2) Remove the wheel spindle nut and the speedometer cable.
- 3) Remove the front brake calipers from the fork.
- 4) Remove the tachometer cable and the front wheel.
- 5) Remove the big plugs at the upper ends of the fork legs.
- 6) Remove the allen screw at the rear part of the upper fork yoke and the nut at the end of the steering stem. Remove the upper fork yoke.

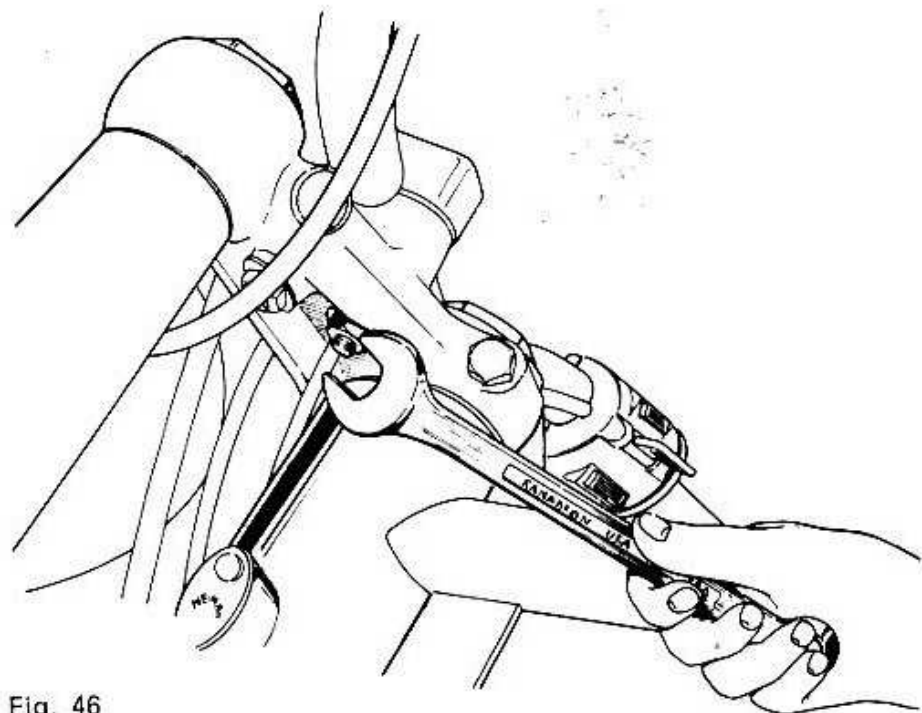


Fig. 46

7) Remove the headlight unit.

8) Remove the lower nut on the steering stem (pic 47).

Now it is possible to pull the fork free from the frame. If necessary give the steering stem a few light taps with a mallet.

ADJUSTMENT OF THE STEERING BEARINGS

If there is a noticeable play in the steering bearings they should be adjusted. Turn the big nut shown in picture 47 until you feel a slight resistance when turning the front fork, then release the nut enough for the fork to move lightly and freely.

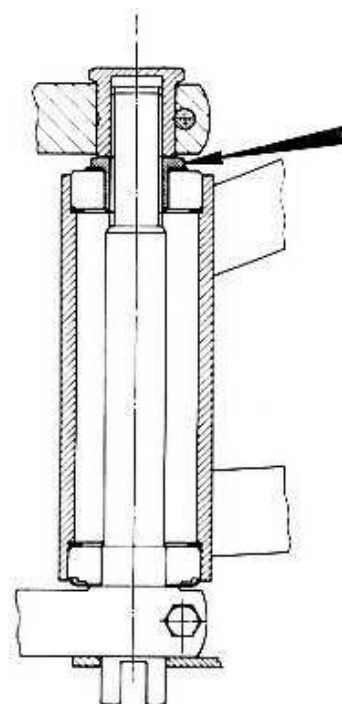


Fig. 47

FRONT FORK OIL

When changing front fork oil first remove the two fork leg top plugs and then the draining screws at the bottom of the fork legs. Fit the draining screws and fill into each leg 200 cc of TOTAL EQUIVIVIS 10 oil. Fit the top plugs again.

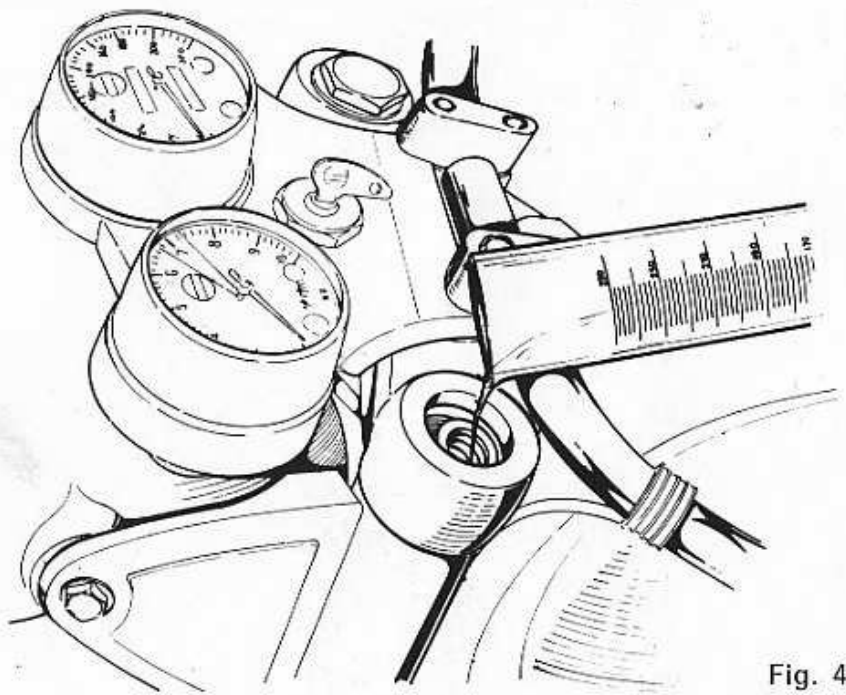


Fig. 48

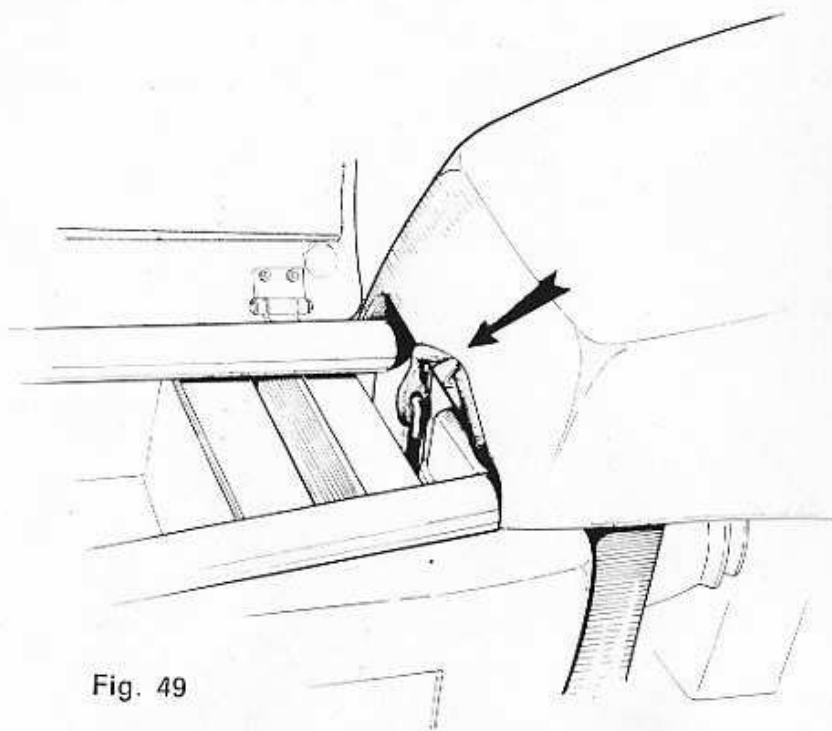


Fig. 49

REMOVAL OF THE FUEL TANK

Lift up the seat. Close the fuel taps and remove the fuel pipes.

Hook the rubber band at the end of the tank of the peg on the tank (pic. 49) and pull the tank rearwards.

CHECKING THE BATTERY ACID LEVEL

Lift up the seat and remove the cover over the battery. Unscrew the plugs in the battery and check the acid level. In case the plates in the cells are not covered by acid, fill with distilled water until the level is just over the plates (pic. 50).

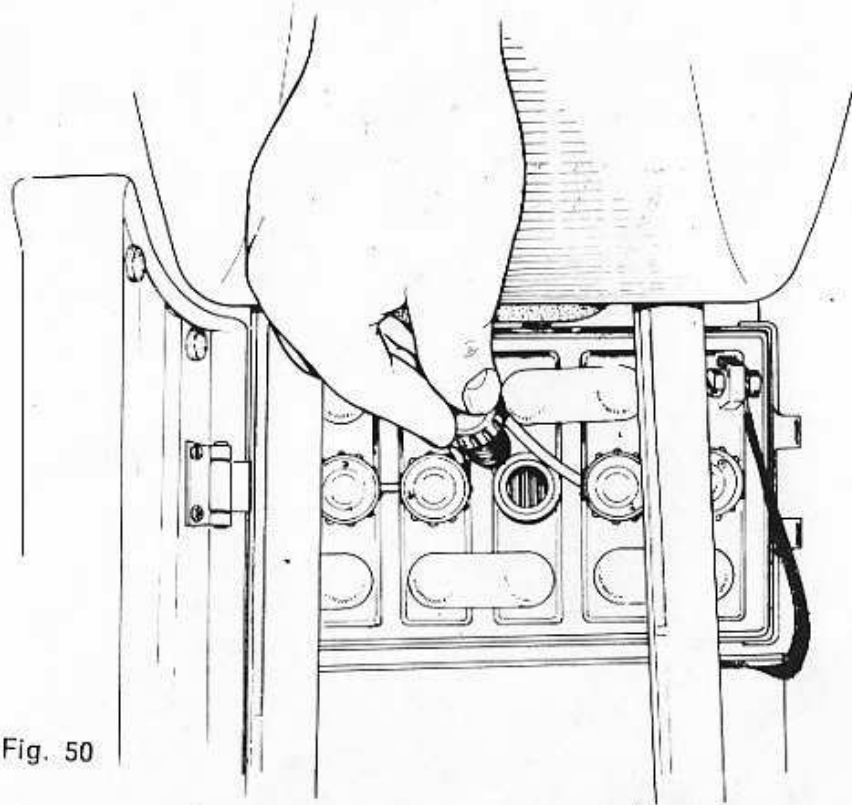


Fig. 50

FUSE BOX

The fuse box is accessible under the left hand side cover (pic. 51). If a fuse is faulty change it against another of the same type. In case also this fuse melts do not fit a stronger one as the fault is somewhere else in the electrical system.

RECTIFIER

The rectifier is situated under the toolbox on the right side of the motorcycle (see arrow on picture 51).

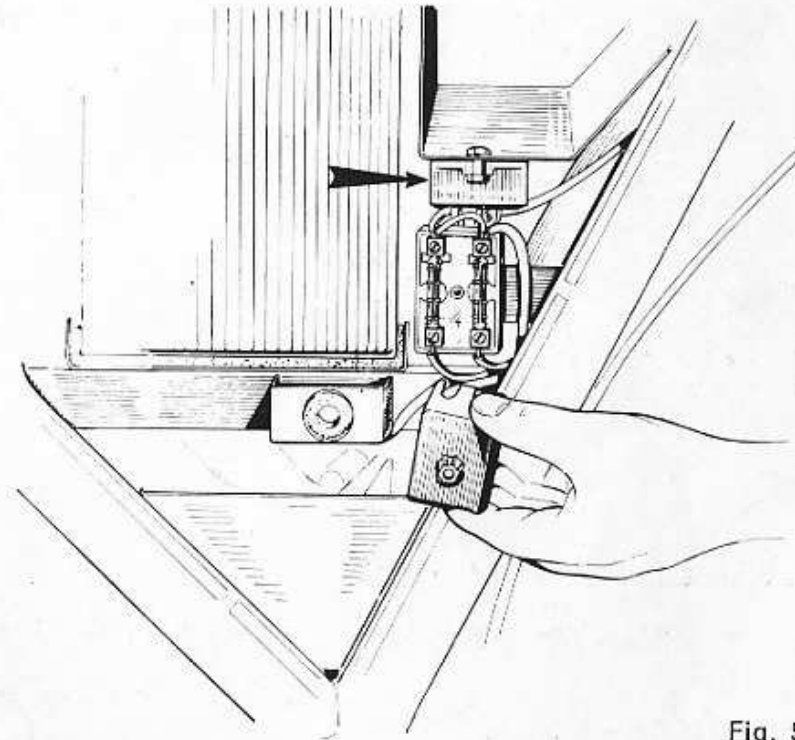


Fig. 51

STARTER RELAY

This is situated under the rear end of the tank and is accessible by removing seat and tank (pic. 52).

H. T. COILS

The high tension coils are situated under the front part of the fuel tank (pic. 54). The cable from the single coil goes to the middle cylinder spark plug, while the other two coils go to the outer cylinders.

EMERGENCY SWITCH RELAY

This relay is fixed to the frame as indicated by an arrow on figure 53.

Through this relay passes the current from the ignition plate to the coils and its function is to close and open the current circuit when the ignition switch is turned on or off.

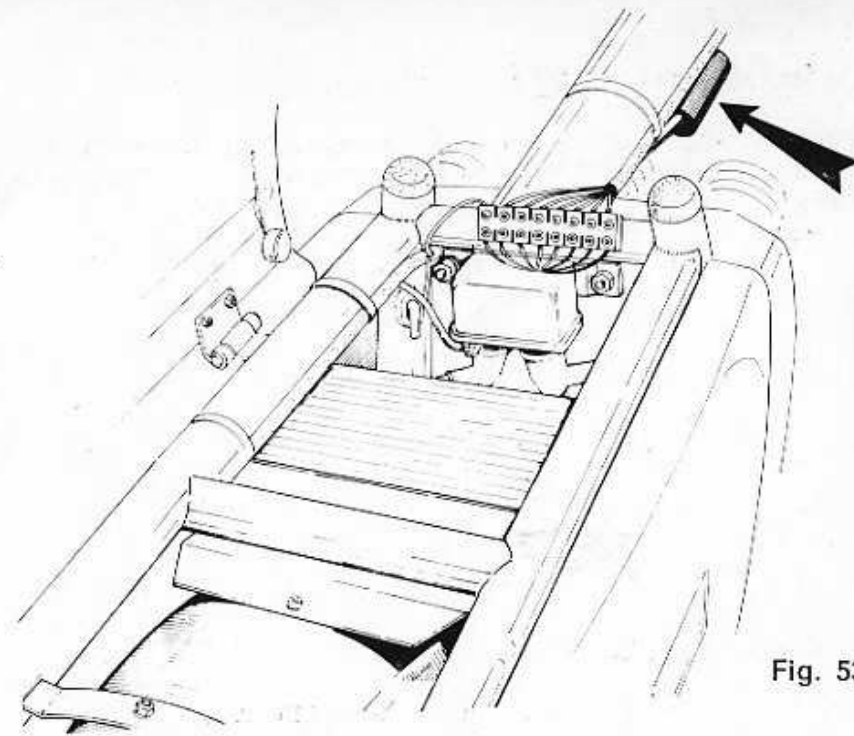


Fig. 53

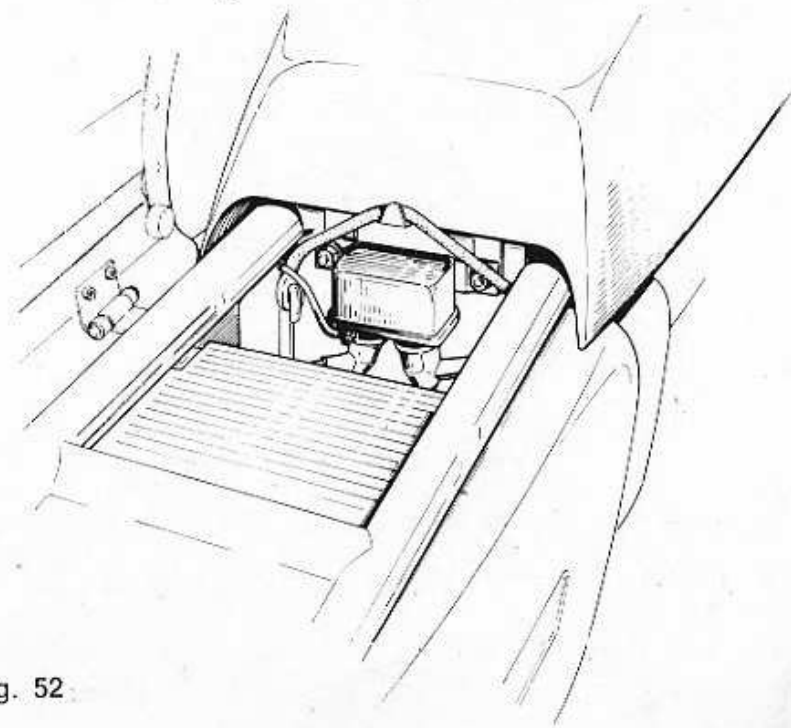


Fig. 52

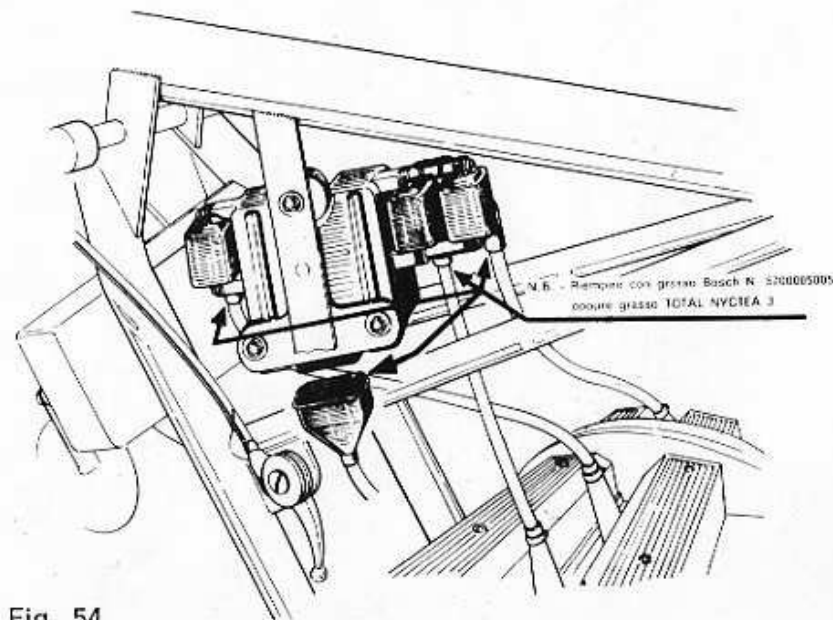


Fig. 54

AIR CLEANER FILTER

The filter is situated in the plastic box behind the carburettors. At 10.000 km (6000 miles) intervals the filter should be cleaned in petrol and blown through by high pressure air.

For removal of the filter make like this: detach the plastic side covers and the rubber connections between the filter and the carburettors. Remove the bolts that hold the air filter box (two above and two under). The box is now ready to be removed. Pull out the filter from its slots in the box (pic. 55).

HEADLAMP RUBBER SUPPORTS

The rubber supports are fitted to the front fork upper parts by three bolts. The remaining two bolts fit the lamp brackets to the rubber supports (pic. 56).

STEERING LOCK

The lock is on the left side of the steering head. To lock it, turn the key to the right (pic. 57).

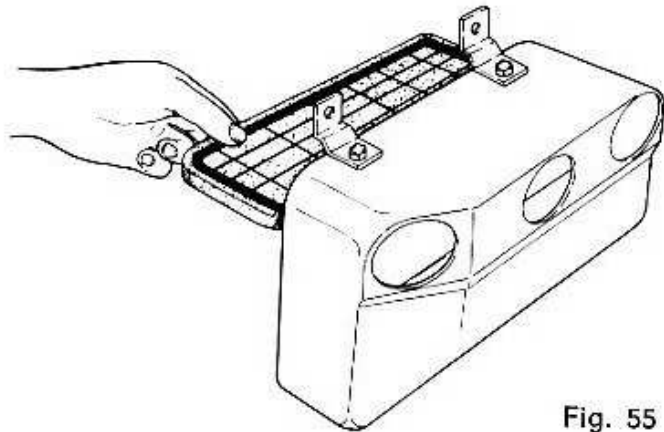


Fig. 55

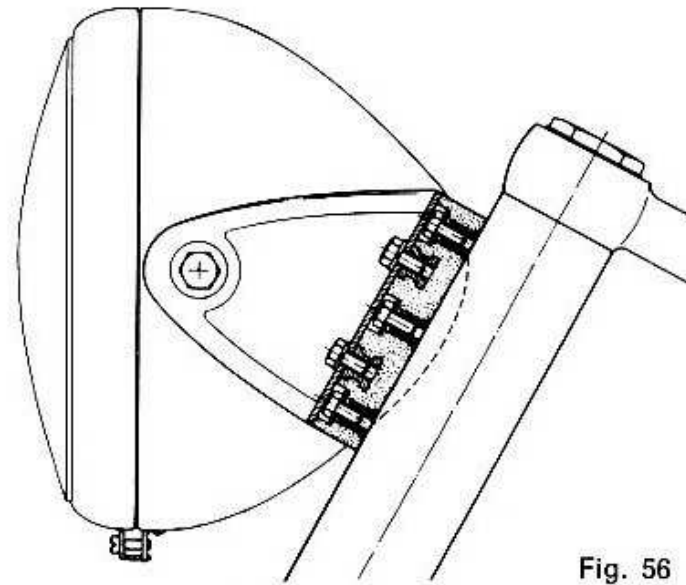


Fig. 56

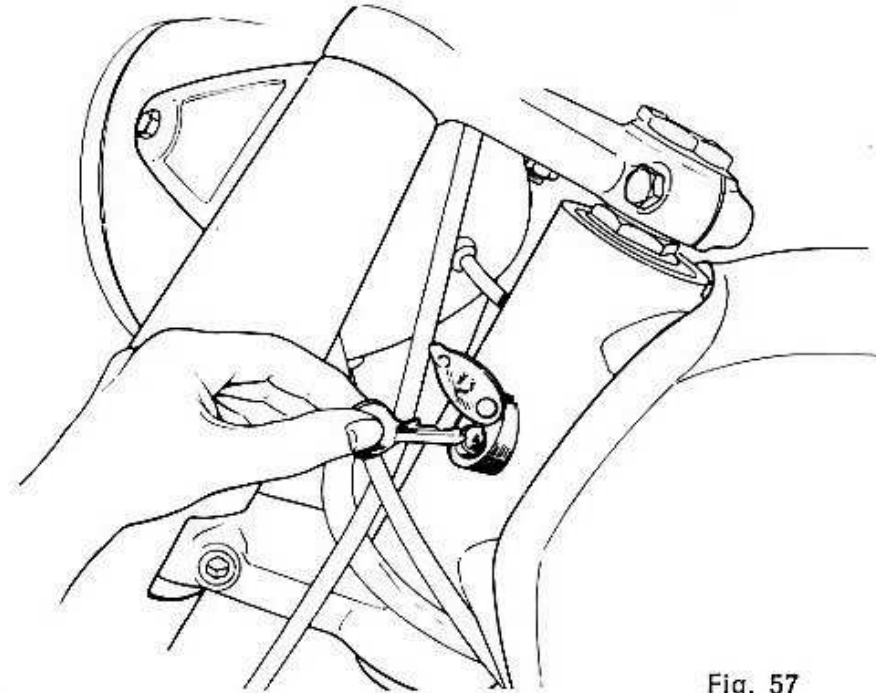


Fig. 57

ADJUSTMENT OF CLUTCH CABLE

If the clutch cable gets stretched to an extent where the adjustment on the handlebar is not enough, you will have to adjust at the gearbox instead. Turn the cable adjuster until you feel the clutch disengage properly. As the adjuster is made of brass it is important that you release the locknut first, otherwise the adjuster will break. Do not take up all slack, you shall always have a play in the lever of 2-3 mm (see pic. 58).

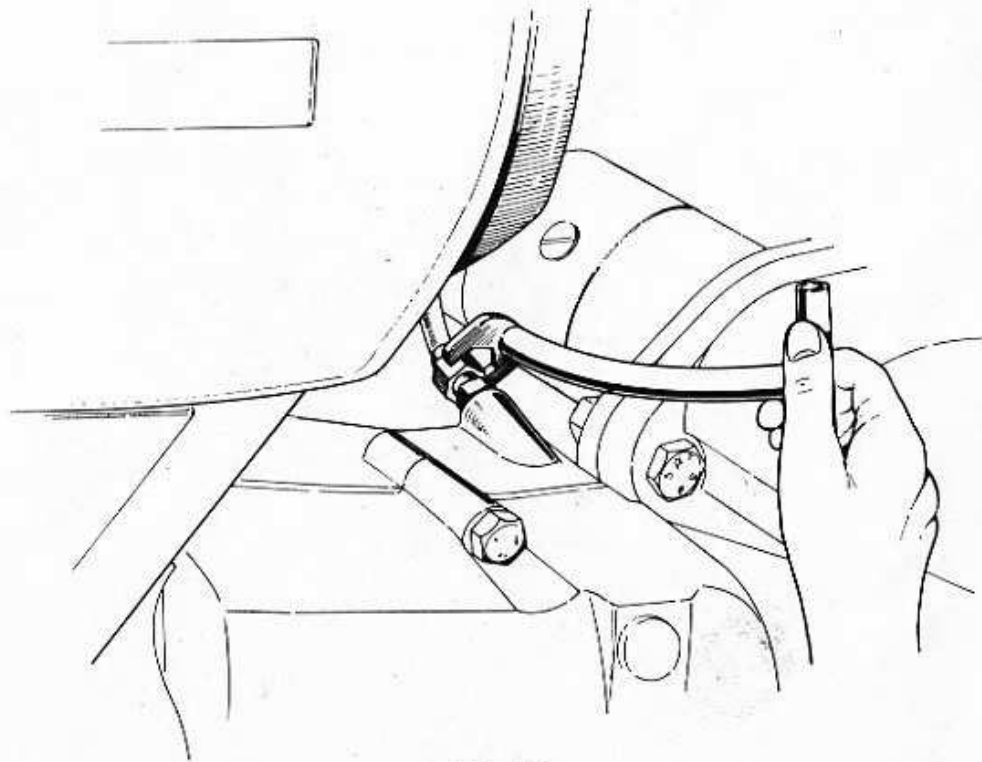


Fig. 58

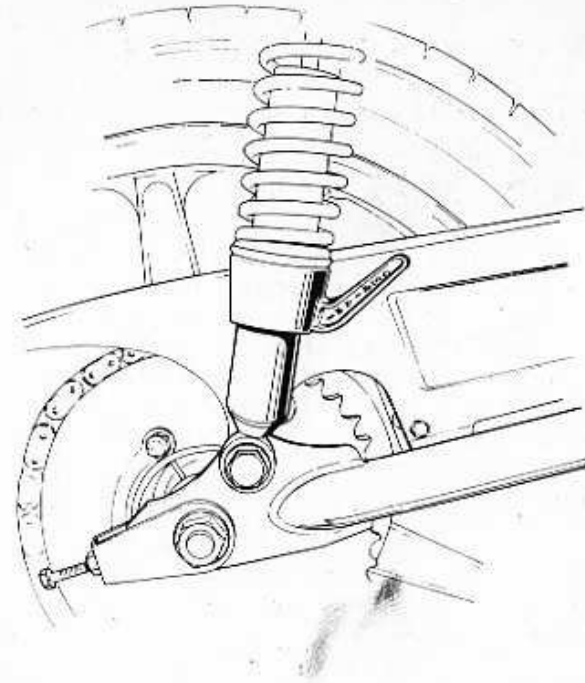


Fig. 59

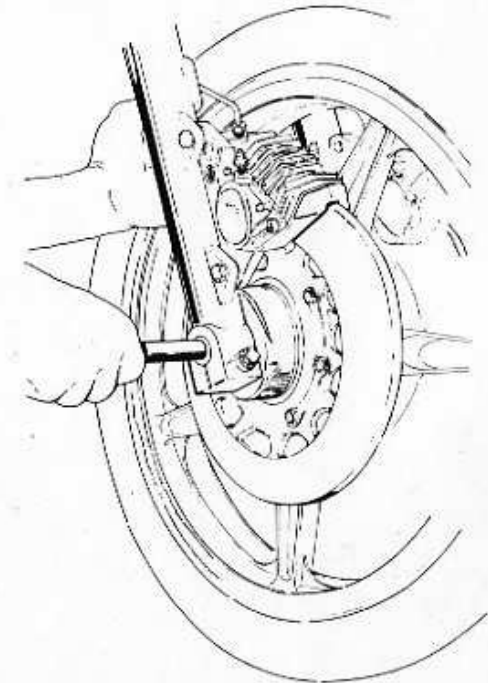


Fig. 60

ADJUSTMENT OF THE REAR SPRING RATE

The spring pressure is adjustable depending on the load. By turning the levers forward you get a higher spring rate, by turning them rearwards you get a lower rate. Picture 59 shows the adjuster set to the maximum load.

REMOVING THE FRONT WHEEL

Remove the speedometer cable. Loosen the two bolts at the bottom of the fork legs locking the wheel spindle. Remove the calipers from the fork legs. Undo the wheel spindle nut and pull the spindle out (pic. 60).

LUBRICATION OF THE SWING ARM SPINDLE

The grease nipple is fitted on the underside of the swing arm as shown by the arrow on pic. 61. Grease the bushings a few times a season to make sure no abnormal wear occurs.

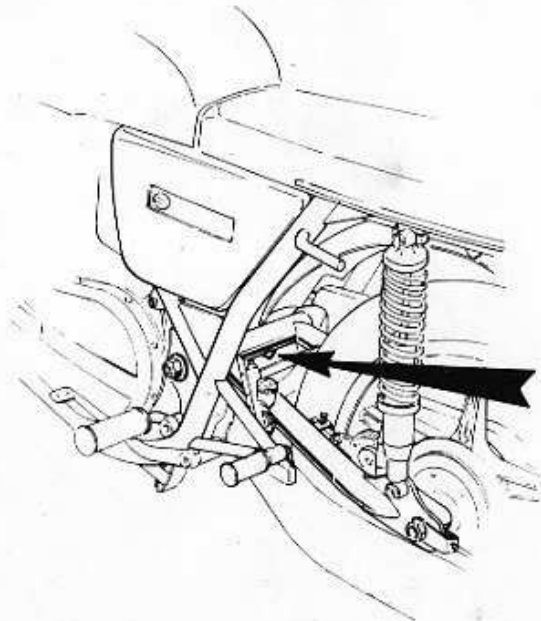


Fig. 61

REMOVING THE REAR WHEEL

Put the motorcycle on its center stand. Open the chain master link. Remove one of the wheel spindle nuts and pull the spindle out (pic. 62).

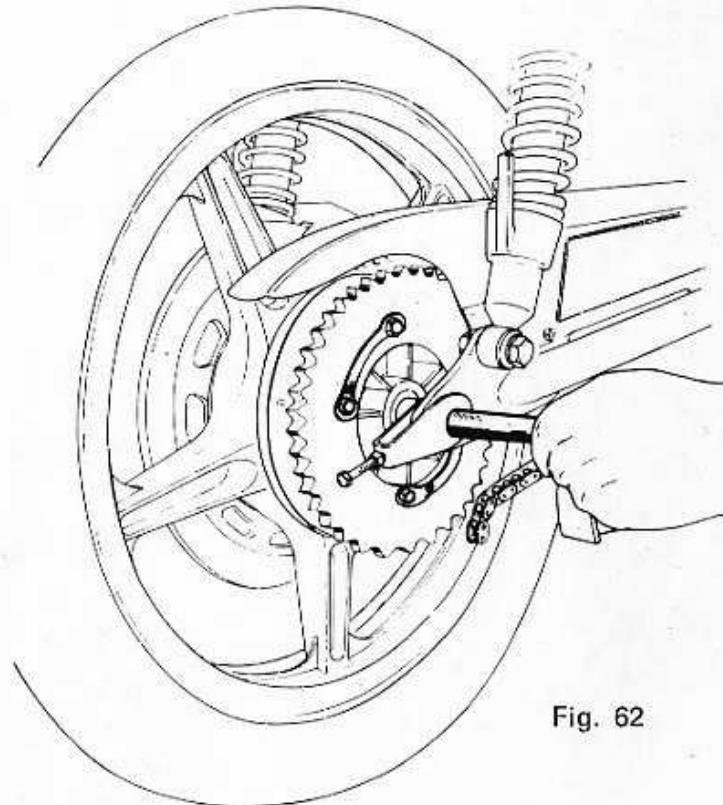


Fig. 62

FITTING THE REAR CHAIN CONNECTING LINK AND ADJUSTING THE CHAIN TENSION

Fit the chain link spring clip with its open end towards the direction of movement (pic. 63).

When adjusting the rear chain, load the bike a little so that the outgoing gearbox chain sprocket is in line with the swing-arm.

If you tighten the chain with the motorcycle unloaded the chain will be too tight when the bike is loaded. Release the wheel-nuts and the locknuts on the adjusting screws and adjust the chain until you can move it about 10 mm up and down from its centreline. Check carefully that the wheels are in line after the adjustment.

Each 2000 km you ought to wash the chain in petrol and lubricate it carefully.

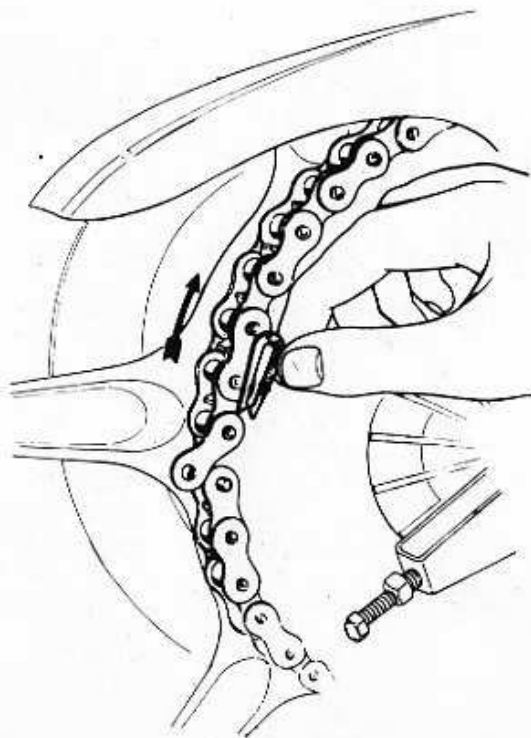


Fig. 63

CHECKING OIL LEVEL

Check the oil level by inserting the oil dipstick vertical through its hole without screwing it down (pic. 64). On the dipstick there are two marks indicating the maximum and minimum level. Keep the oil level between those marks.

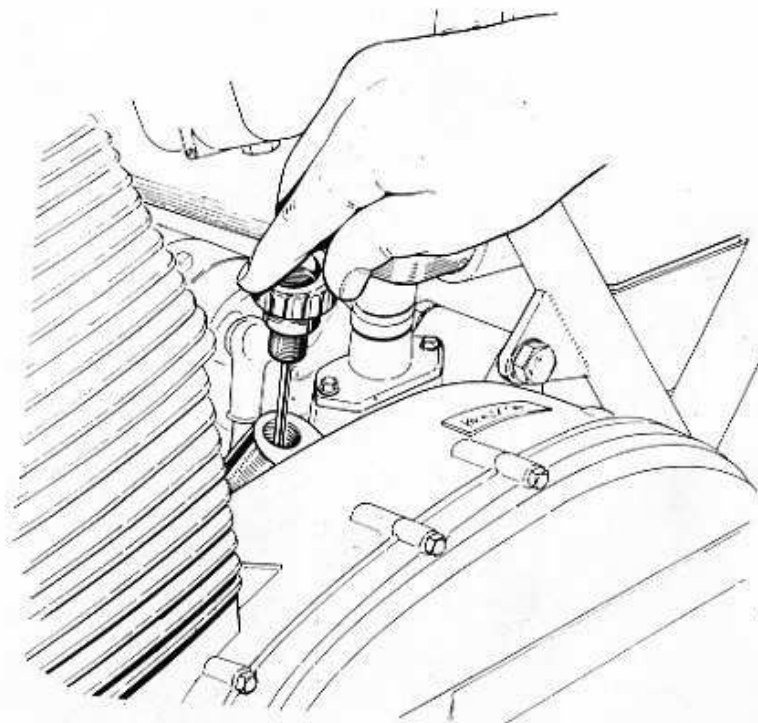


Fig. 64

CHOKE LEVER

The choke lever is situated on the left side of the machine under the tank as shown on picture 65. When starting the engine while it is cold, pull the lever rearwards. After a short while release it again.

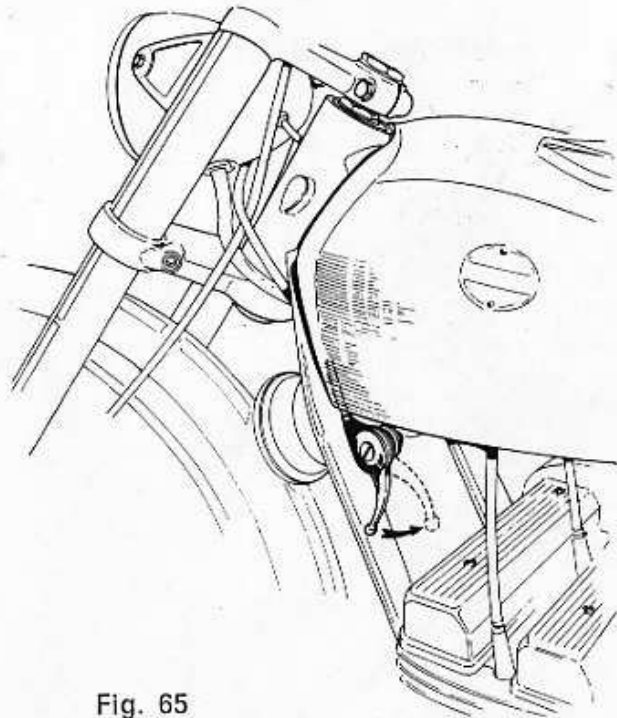


Fig. 65

LEVERS AT THE HANDLEBARS

In picture 66 you can see various controls on the handlebars :

- 1) Clutch lever
- 2) Beam flasher
- 3) Dimmer switch
- 4) Horn button
- 5) Tachometer
- 6) Ignition switch
- 7) Speedometer
- 8) Starter button
- 9) Front brake lever
- 10) Throttle grip
- 11) Turn signal switch
- 12) Emergency switch
- 13) Light switch

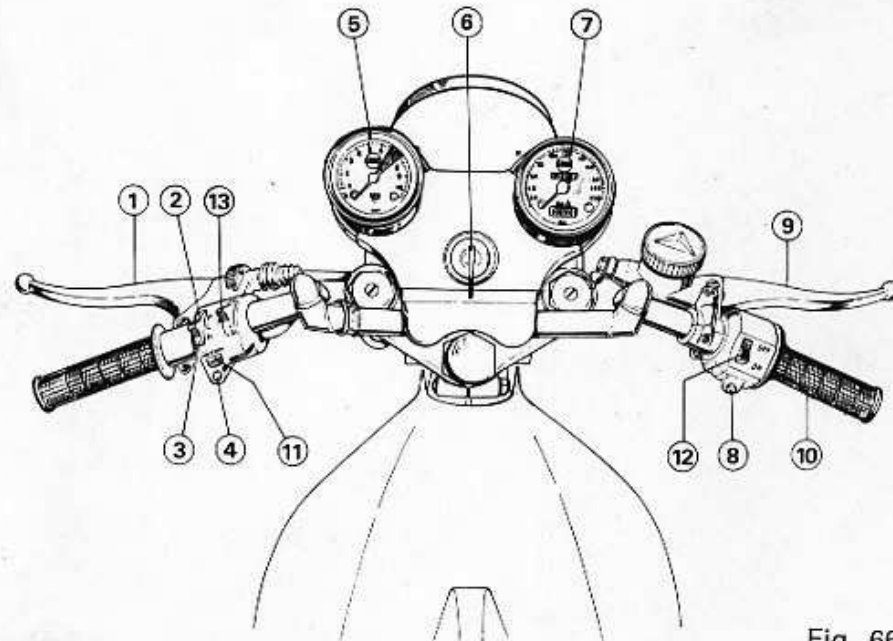


Fig. 66

INSTRUCTIONS REGARDING THE USE AND MAINTENANCE OF THE DISC BRAKES

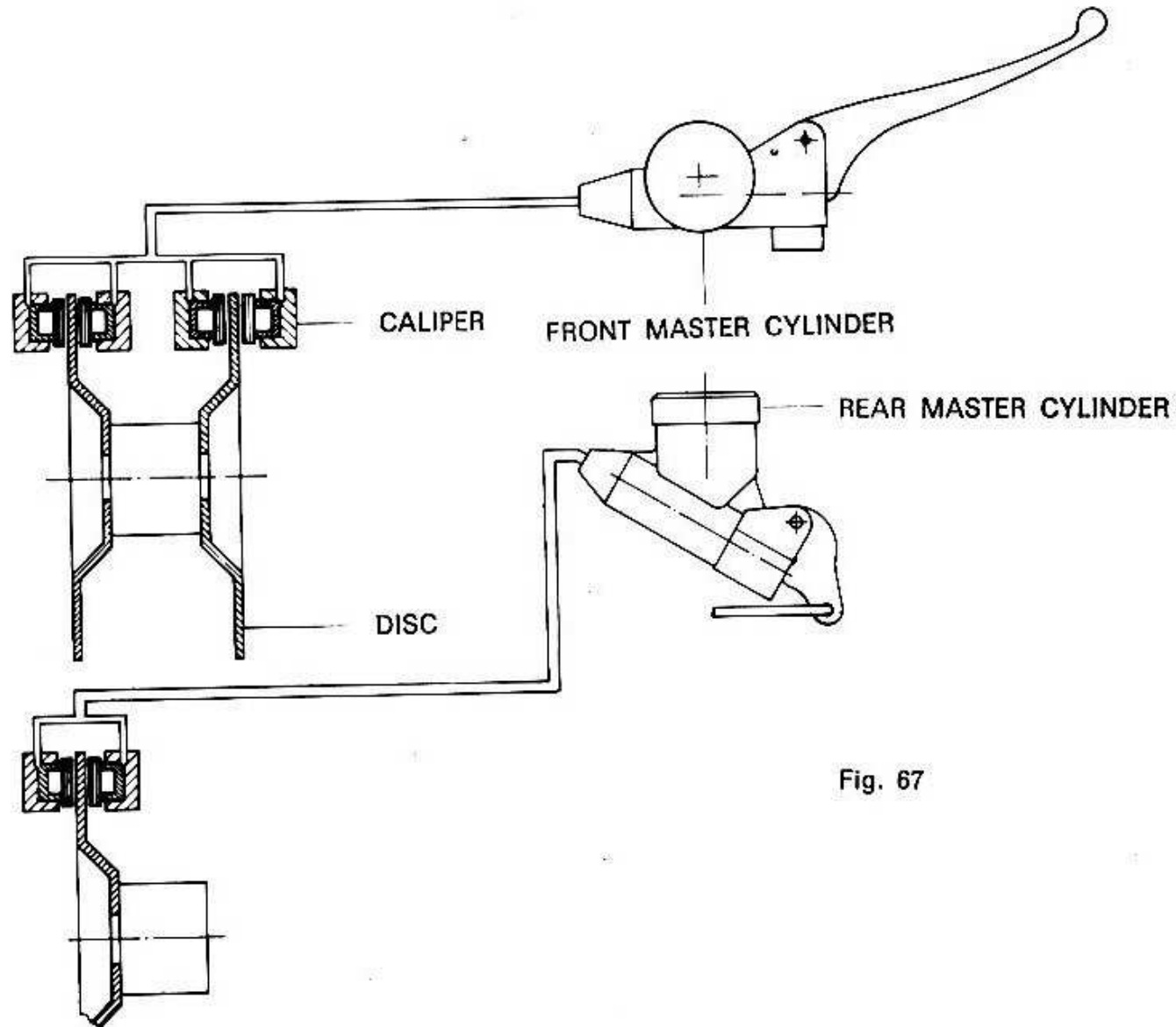


Fig. 67

MAINTENANCE OF DISC BRAKES

To obtain highest effect from brakes observe the following :

- 1) Check frequently the fluid level and never let it be lower than 8 mm under the maximum level.
- 2) Change brake fluid entirely each 20.000 km. (12.000 miles) (TOTAL HYDRAULIC BRAKE FLUID).

- 3) If the fluid level gets too low air may enter the fluid system. If there is air in the tubes you notice it by the elastic feeling and the long stroke of the lever. In order to bleed the system proceed as follows: fit tubes on the bleeding nipples on one of the calipers. Unscrew the nipple half a turn and apply the brake. Keep the brake lever in, while you tighten the nipple again. Release the brake and perform the same procedure once again. When no more air bubbles come through the tubes you proceed the same way with the other side caliper. When you have washed the motorcycle do not use compressed air to dry it, at least not the area around the master cylinder, as air in such a case may enter the fluid system.
- 4) Check that the play between the master cylinder piston and the brake lever is 0,1 - 0,3 mm. That play is adjustable by the eccentric screw indicated by the arrow on picture 68.

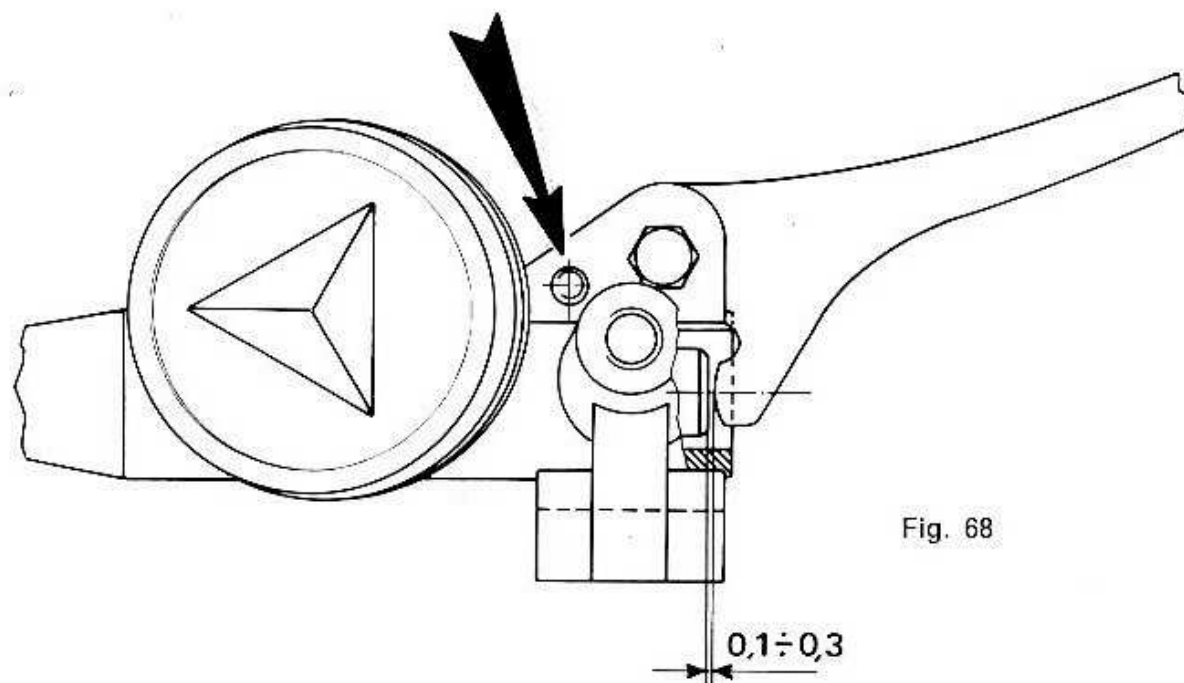


Fig. 68

- 5) After a long use the oil seal around the master cylinder piston may become worn. When you change it be careful not to scratch the piston or the walls of the master cylinder.
- 6) At about 5000 km interval you should check the brake pads. If they are thinner than 5,5 mm, replace them. Proceed this way: lift off the plastic cover on the caliper and pull out the two pegs keeping the pads in place. Change the pads and retain the pegs. If everything is correct mounted the distance between the disc surface and the brake pad should be 0,2 mm. (See pic. 69 and 70) When new pads are fitted it is quite possible that the oil level in the master cylinder is higher than before. Watch so that the oil do not drop from the oil container as it may do harm to the finish. When you have fitted new pads we recommend you to drive and to brake carefully the first 100 km as the new pads need « breaking-in » in order to obtain a good surface.

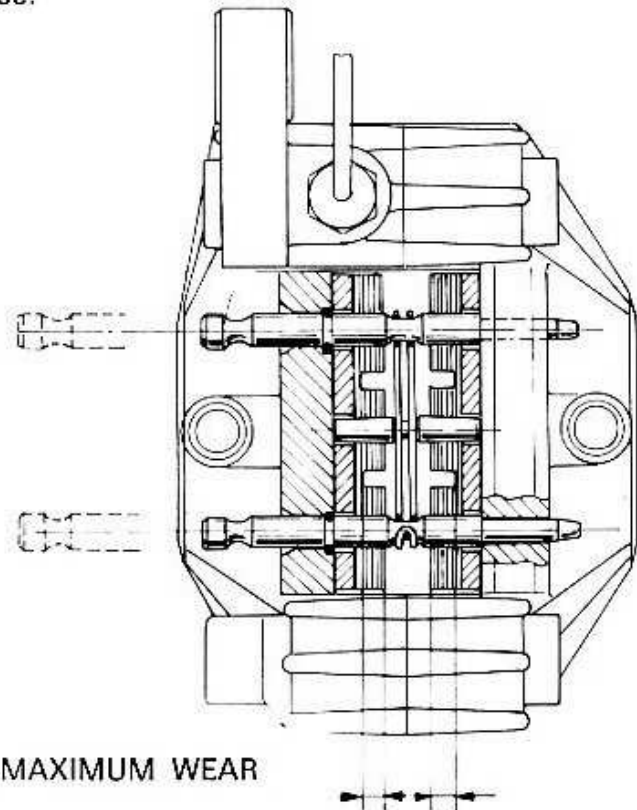


Fig. 69

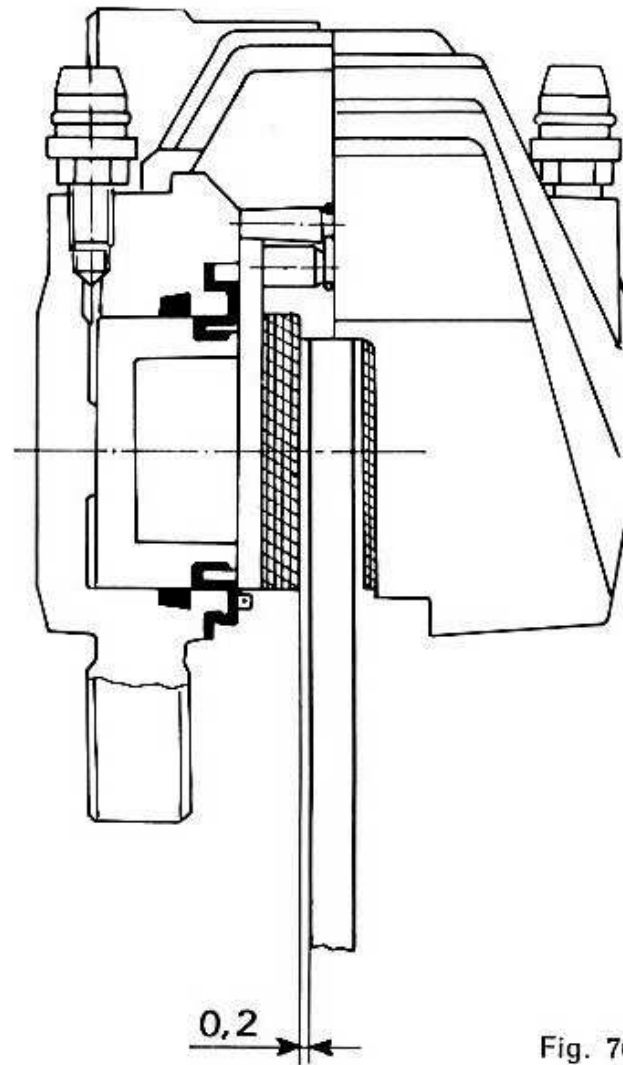


Fig. 70

- 7) In case the calipers leak oil turn to your dealer who can change oil seals.
- 8) Check frequently the condition of the brake fluid hoses. If they are worn or otherwise seem to be in a bad condition change them.
- 9) The effect of the disc brakes depend of course on the condition of the discs that have to be straight and smooth. Unevenness must not exceed the following measures :

- parallelism between the surface of the disc and the surface of the hub connection - not more than 0,050 mm
- smoothness of the disc surface - not more than 0,025 mm
- parallelism between the two brake surfaces 0,015 mm
- radial error not more than 0,038 mm.

The lateral runout of the disc may not exceed 0,2 mm. In case it does, at replacing e.g., check that the disc rests absolutely flat against the hub and that the wheel bearings are in good condition.

BRAKE FAULTS AND THEIR CAUSES

FAULT

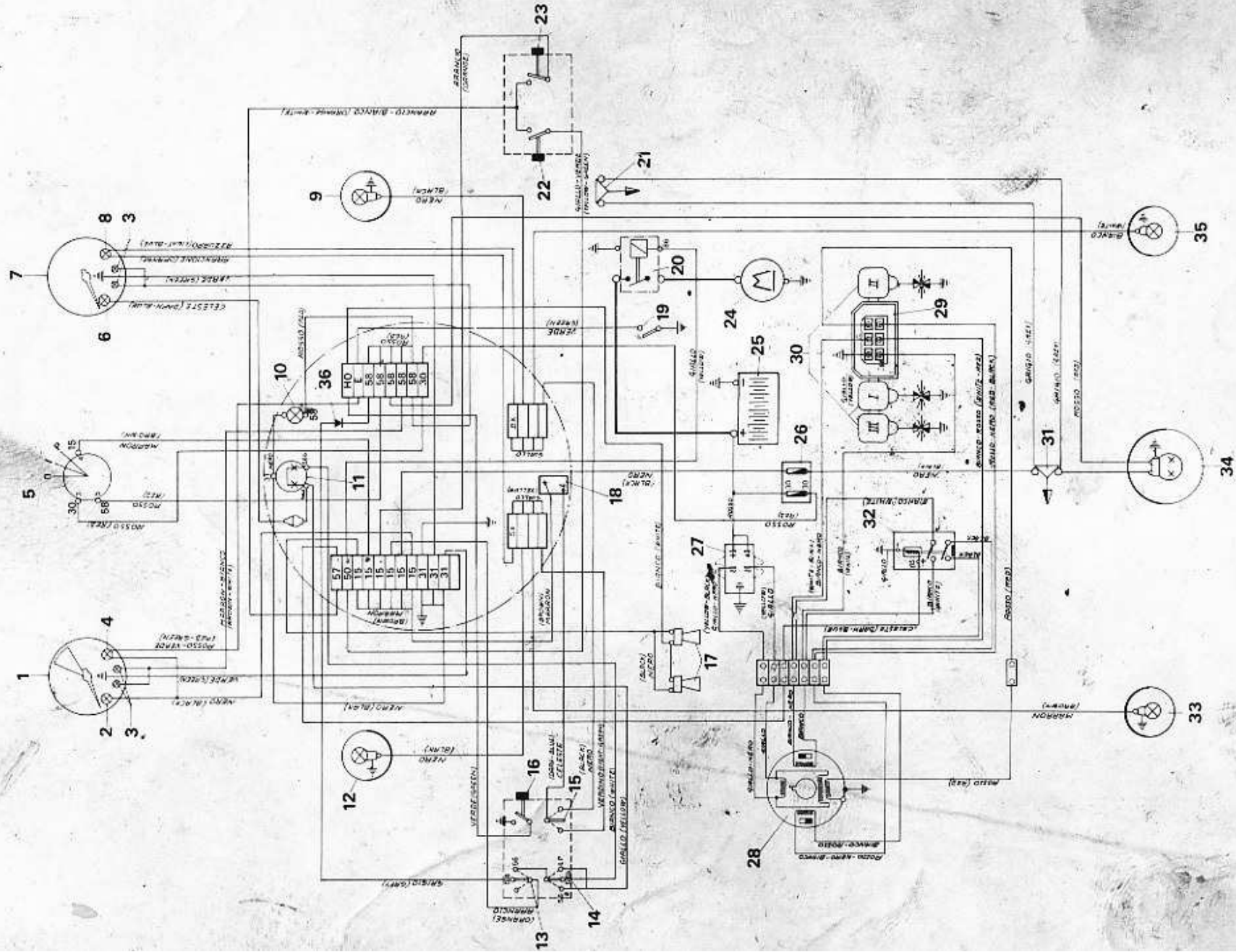
- 1) The brake squeaks.
- 2) The discs vibrate.
- 3) The discs become hot.
- 4) The brakes insufficient.
- 5) The wheel unmovable.
- 6) Excessive wear of the brake pads.
- 7) Long movement of the brake lever.

CAUSE

- 1) The caliper does not pinch properly, or the spring locking the pad pegs is faulty, pads too worn.
- 2) The lateral runout more than 0,2 mm, or one of the brake pads unmovable.
- 3) The pads do not return properly.
- 4) Oil or grease on discs or pads, - pads too worn, - pads stick in their holes.
- 5) The pads are in touch with the discs, - the discs are rusty.
- 6) The pads do not return properly but are in contact with the discs.
- 7) The lateral runout more than 0,2 mm - air trapped in the fluid system - discs very scratched.

ELECTRIC DIAGRAM

ELECTRIC WIRING DIAGRAM 1000 cc



O no current

I ignition on

P parking light

- | | | | |
|----|-------------------------------------|----|------------------------------|
| 1 | Tachometer | 19 | Neutral light switch |
| 2 | (not connected) | 20 | Starter relay |
| 3 | Instrument light | 21 | Stop lamp switch, front |
| 4 | Neutral lamp (green) | 22 | Starter button |
| 5 | Ignition lock | 23 | Emergency switch |
| 6 | Beam indicator lamp | 24 | Starter engine |
| 7 | Speedometer | 25 | Battery |
| 8 | Turn signal indicator lamp (orange) | 26 | Fuse box |
| 9 | Turn signal right hand, front | 27 | Rectifier |
| 10 | Parking light | 28 | Electronic ignition plate |
| 11 | Head lamp bulb | 29 | Electronic control box |
| 12 | Turn signal left hand, front | 30 | HT coils |
| 13 | Light switch | 31 | Rear stop lamp switch |
| 14 | Beam - dimmer switch | 32 | Emergency switch relay |
| 15 | Turn signal switch | 33 | Turn signal left hand, rear |
| 16 | Horn button | 34 | Tail light |
| 17 | Horns | 35 | Turn signal right hand, rear |
| 18 | Flasher unit | 36 | Diode |

CARBURETOR ADJUSTMENT

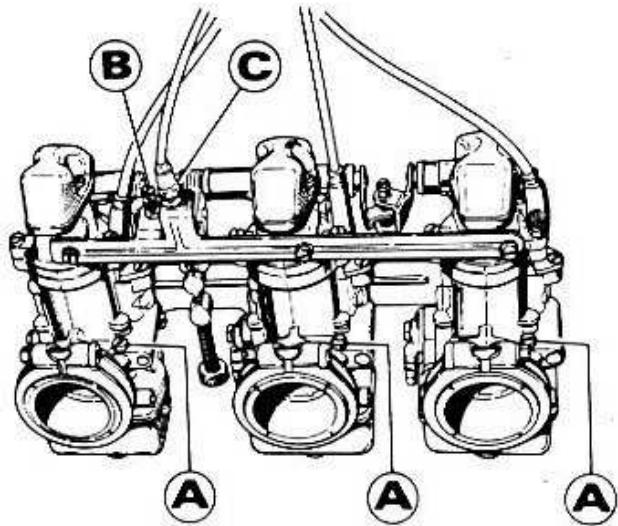


Fig. 71

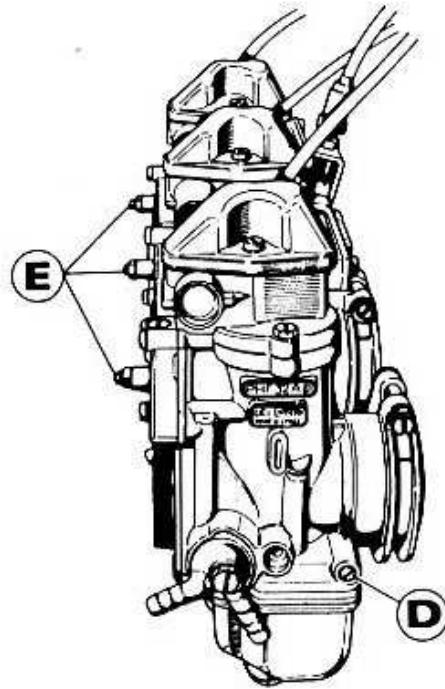


Fig. 72

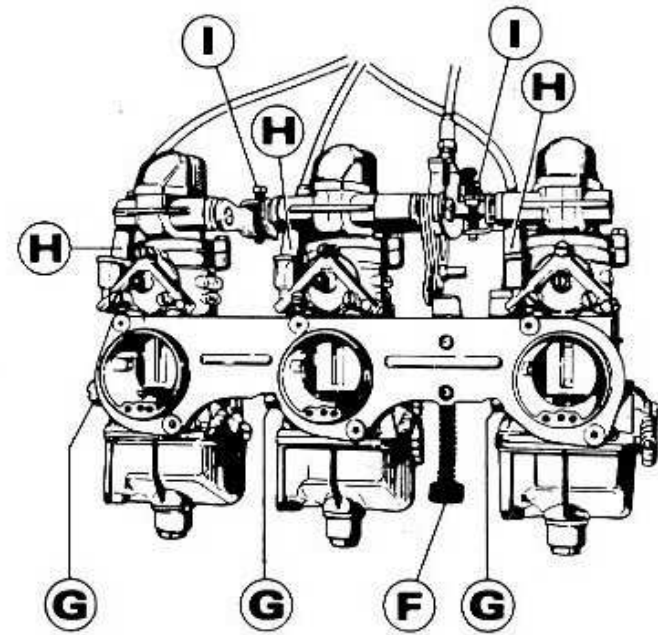


Fig. 73

CARBURETOR ADJUSTMENT

CARBURETOR 1000 3C

Diameter 32 mm

Main jet 118

Idle jet 55

Mixture adj screw position one or one and one half turn from bottom

Metering needle K1 in second notch

Throttle valve 60

Acceleration pump jet 35

Acceleration pump capacity 0.20 cc. (20 pumpstrokes give 4 cc. + 0.5)

Needle jet 265 AB

To make a correct carburetor adjustment, proceed as follows :
Start the engine and let it get warmed up. Stop it and connect vacuum gauges to the inlet manifolds at (A). Unscrew the mixture adjustment screws (D) to one-and-a-half turn from bottom. Start the engine and set the idling speed with the screw (F). Increase the engine speed to 2000-3000 rpm. With the screw (I) you adjust the outer carburetors to the central one in order to obtain synchronization between them.

Figure 71 :

- A) connections for vacuum gauge.
- B) upper throttle stop screw.
- C) cable adjuster.

Figure 72 :

- D) mixture adjustment screw.
- E) acceleration pump adjustment screw.

Figure 73 :

- F) lower throttle stop screw.
- G) plug over acceleration pump jet.
- H) choke cable adjuster.
- I) synchronization screws.

After synchronizing the carburetors, make the final idling speed adjustment (about 1000 rpm) by turning the screws (D), one at a time, outwards or inwards until the engine idles even and regular.

At last, check the synchronization once again running the engine at about 3000 rpm while watching the vacuum gauge.

TOLERANCES (in millimeters)

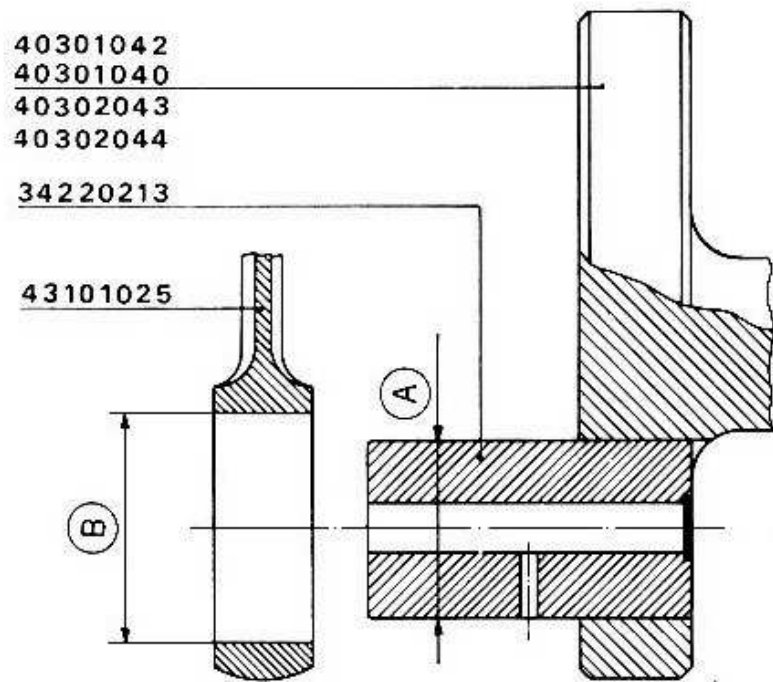


Fig. 74

A	36	$+0,020$ $+0,025$
B	46	$-0,025$ $+0,030$

Maximum play 0.060

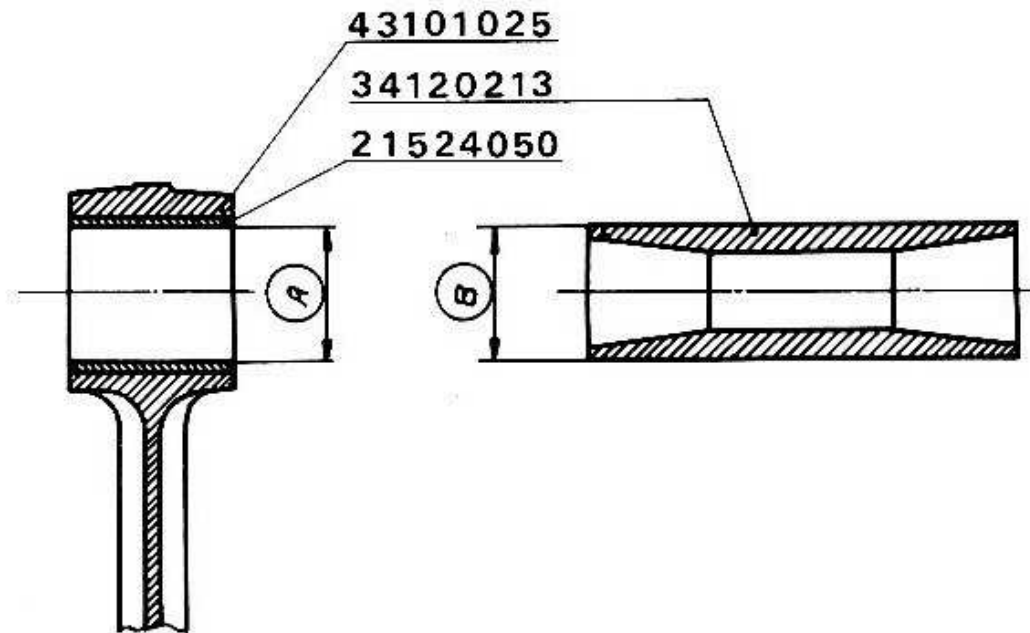


Fig. 75

A	20	$+0,015$ $+0,025$
B	20	0 $-0,006$

Maximum play 0.050

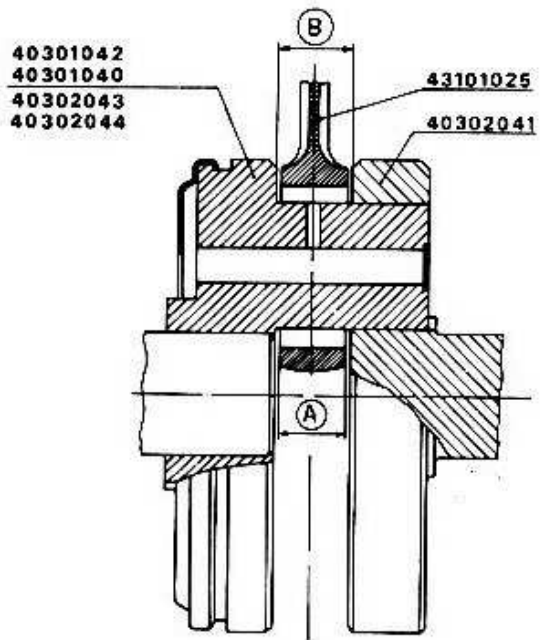


Fig. 76

A $22,7 \begin{matrix} 0 \\ -0,033 \end{matrix}$

B $23 \begin{matrix} -0,100 \\ -0,167 \end{matrix}$

Maximum play 0,350

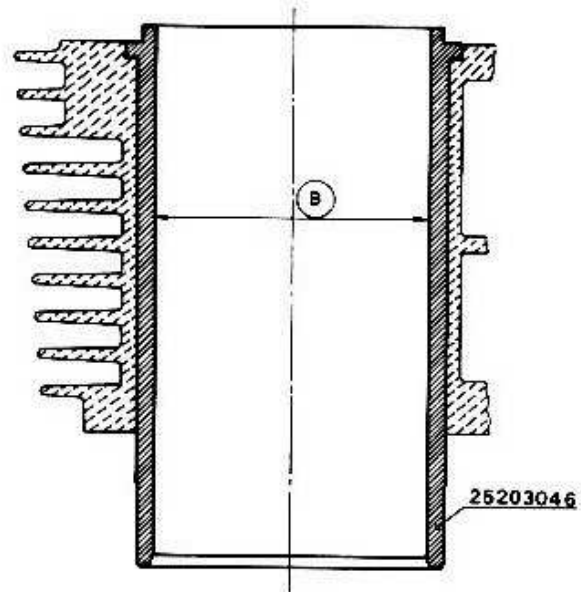
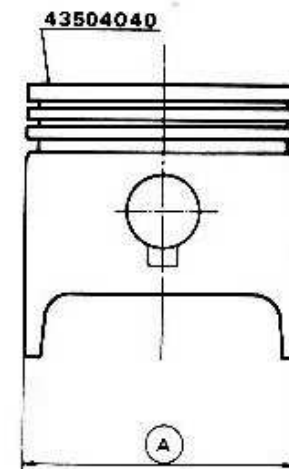


Fig. 77



A $75 \begin{matrix} -0,070 \\ -0,080 \end{matrix}$

B $75 \begin{matrix} 0 \\ +0,018 \end{matrix}$

Maximum play 0,180

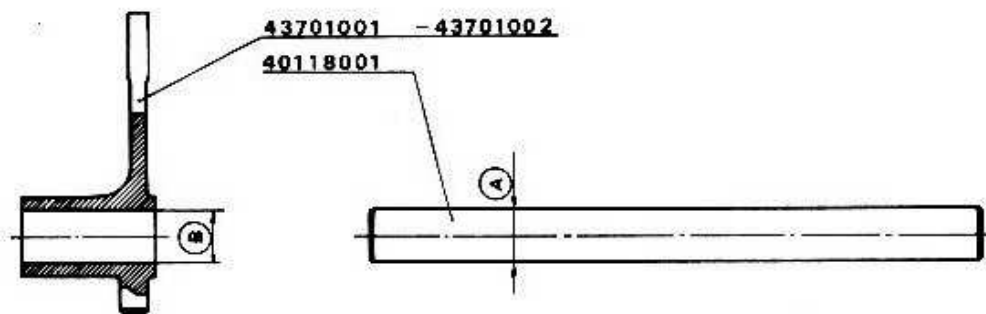


Fig. 78

A $14 \begin{matrix} -0,010 \\ -0,017 \end{matrix}$
 B $14 \begin{matrix} 0 \\ +0,018 \end{matrix}$

Maximum play 0,050

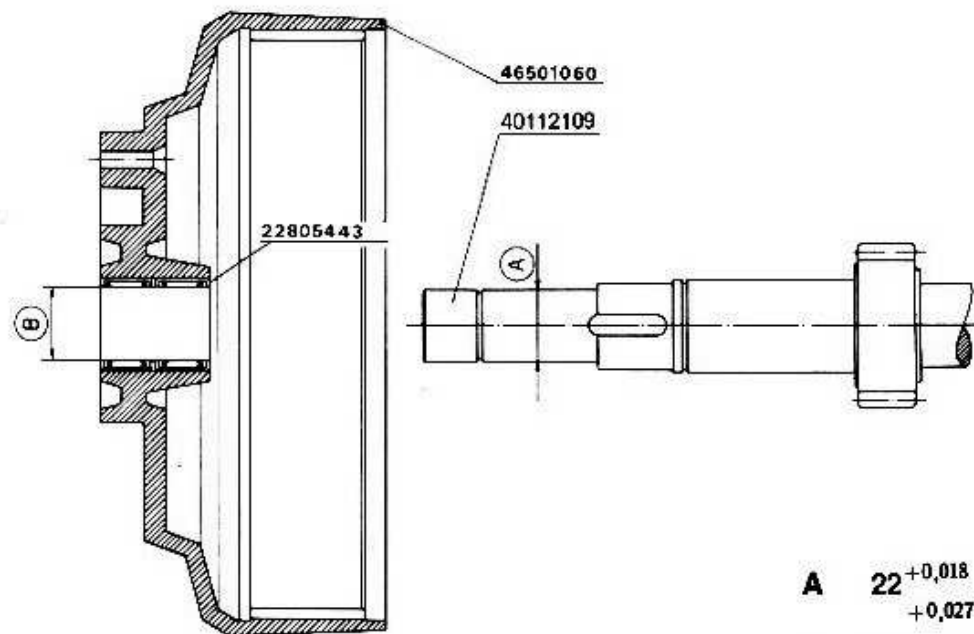


Fig. 79

A $22 \begin{matrix} +0,018 \\ +0,027 \end{matrix}$
 B $22 \begin{matrix} -0,040 \\ -0,055 \end{matrix}$

Maximum play 0,100

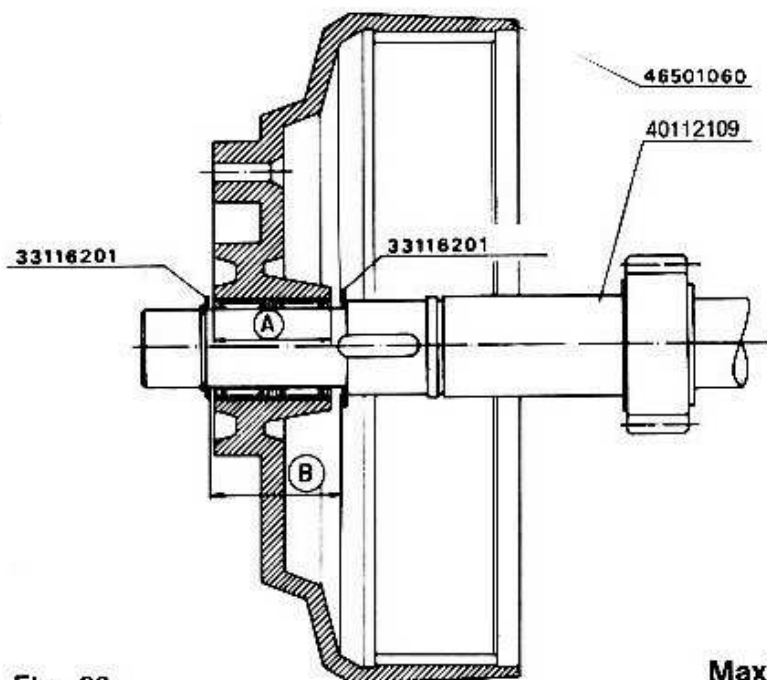
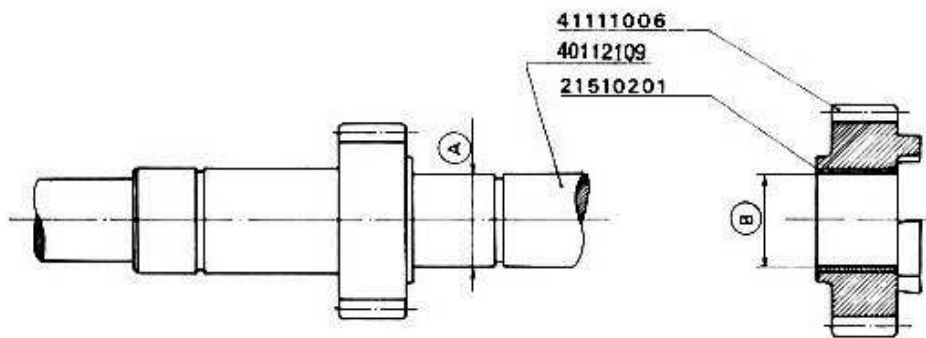


Fig. 80

A $31,7 \begin{matrix} 0 \\ +0,100 \end{matrix}$
 B $31,9 \begin{matrix} 0 \\ +0,050 \end{matrix}$

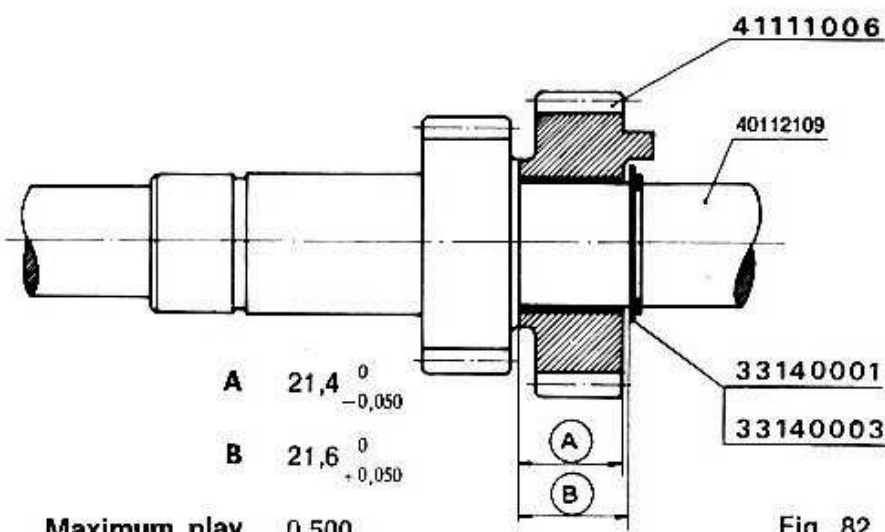
Maximum play 0,300



A 25^{-0,020}_{-0,041}
B 25^{+0,007}_{-0,010}

Maximum play 0,150

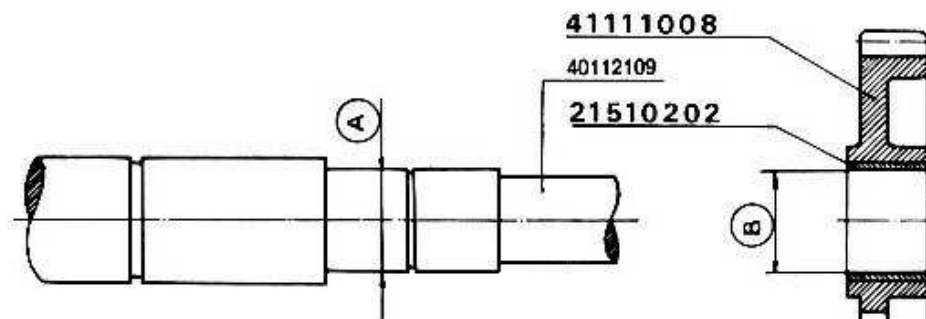
Fig. 81



A 21,4⁰_{-0,050}
B 21,6⁰_{+0,050}

Maximum play 0,500

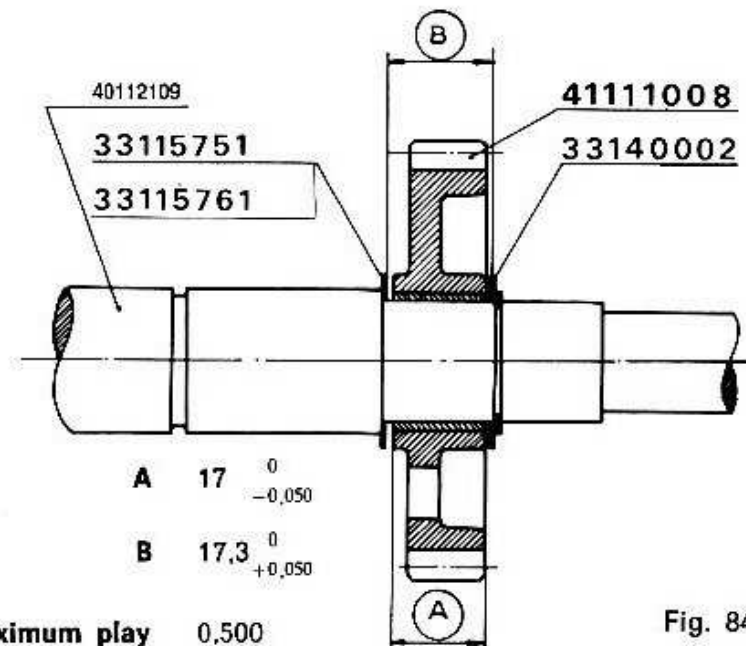
Fig. 82



A 20,5^{-0,020}_{-0,041}
B 20,5^{+0,007}_{-0,010}

Maximum play 0,150

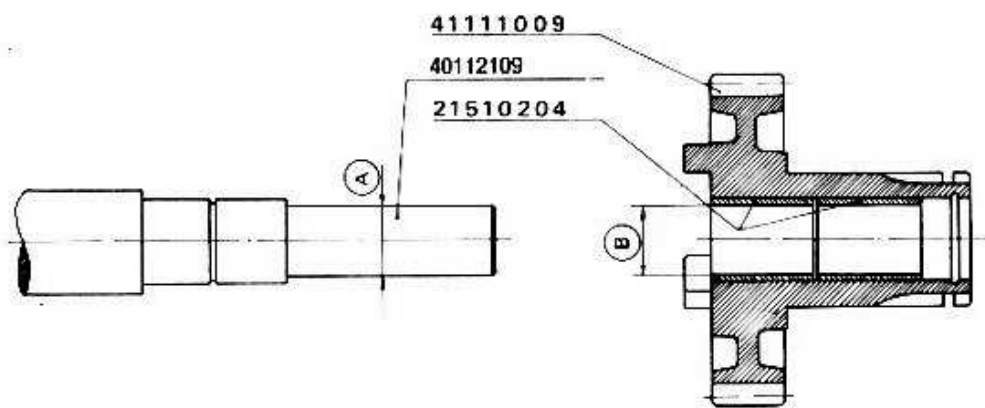
Fig. 83



A 17⁰_{-0,050}
B 17,3⁰_{+0,050}

Maximum play 0,500

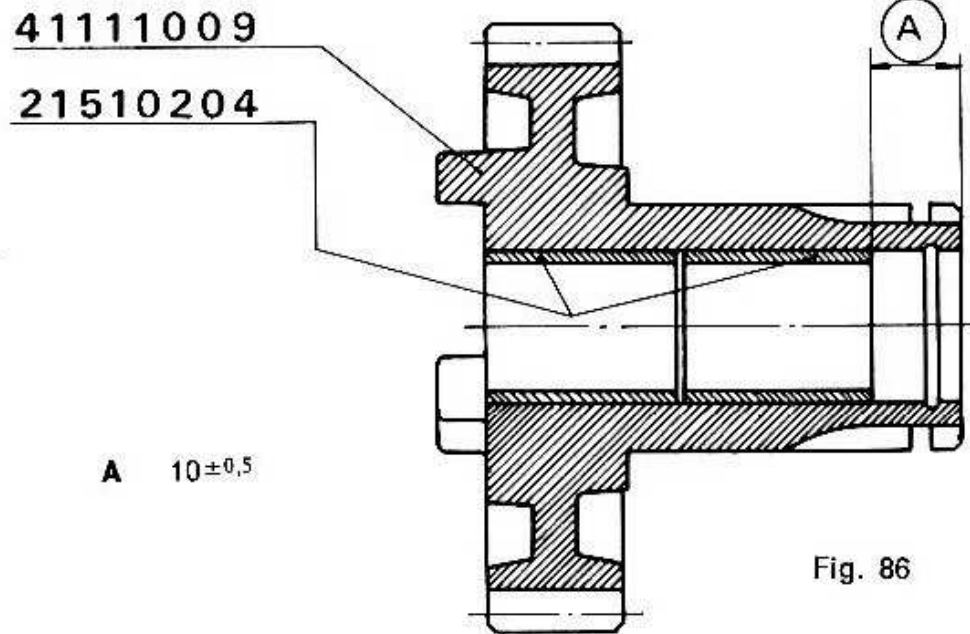
Fig. 84



A $17 \begin{matrix} -0,016 \\ -0,034 \end{matrix}$
B $17 \begin{matrix} +0,005 \\ +0,010 \end{matrix}$

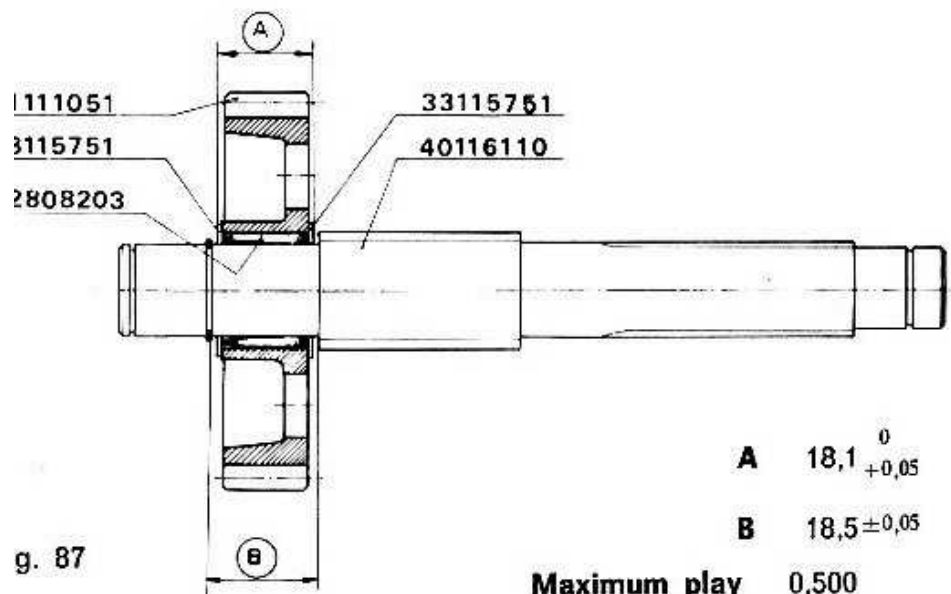
gioco max. ammesso 0,100

Fig. 85



A $10 \pm 0,5$

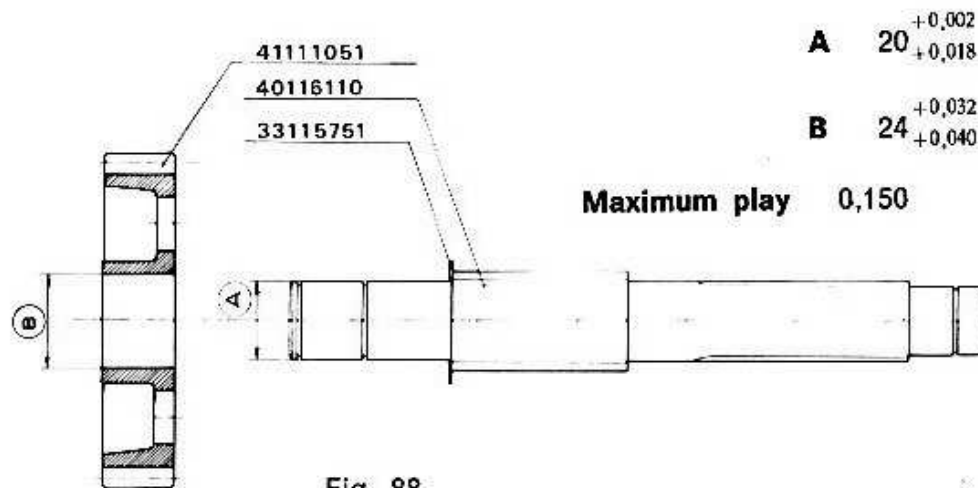
Fig. 86



g. 87

A $18,1 \begin{matrix} 0 \\ +0,05 \end{matrix}$
B $18,5 \pm 0,05$

Maximum play 0,500



A $20 \begin{matrix} +0,002 \\ +0,018 \end{matrix}$
B $24 \begin{matrix} +0,032 \\ +0,040 \end{matrix}$

Maximum play 0,150

Fig. 88

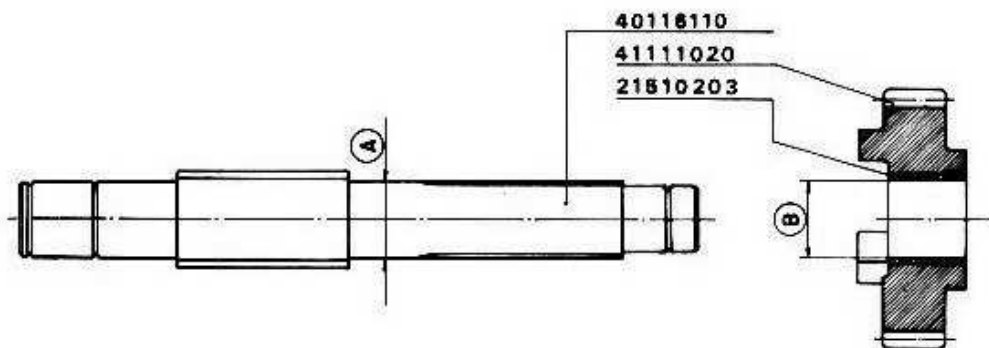


Fig. 89

A $20,5^{+0,020}_{-0,041}$

B $20,5^{+0,007}_{-0,010}$

Maximum play 0,150

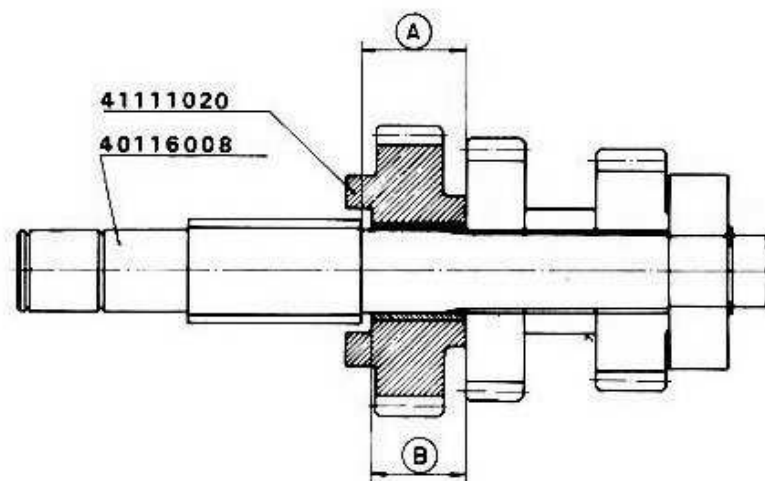


Fig. 90

A $20,5^0_{-0,050}$

B $21^{+0,050}_{-0,050}$

Maximum play 0,500

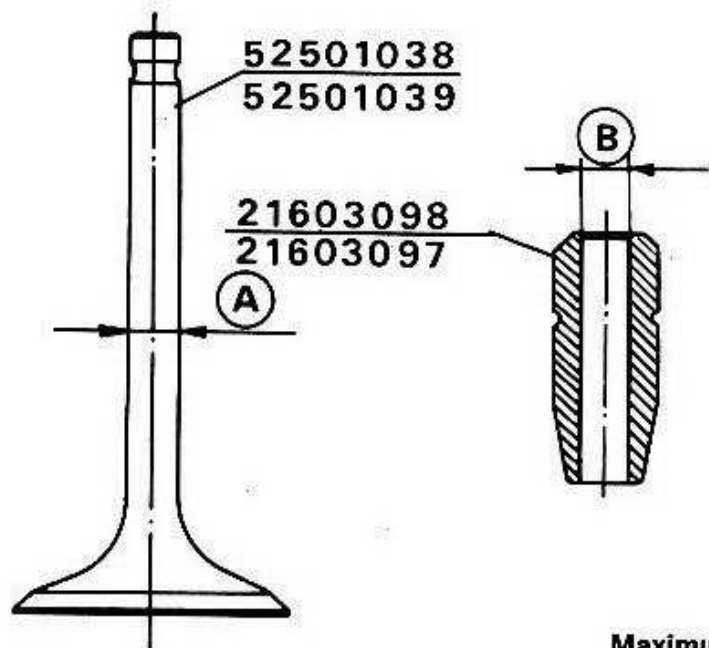


Fig. 91

ASPIRAZIONE

A $7^0_{-0,010}$

B $7^{+0,012}_{+0,030}$

Maximum play 0,200

SCARICO

A $7^0_{-0,010}$

B $7^{+0,035}_{+0,055}$

Maximum play 0,250

Fig. 92

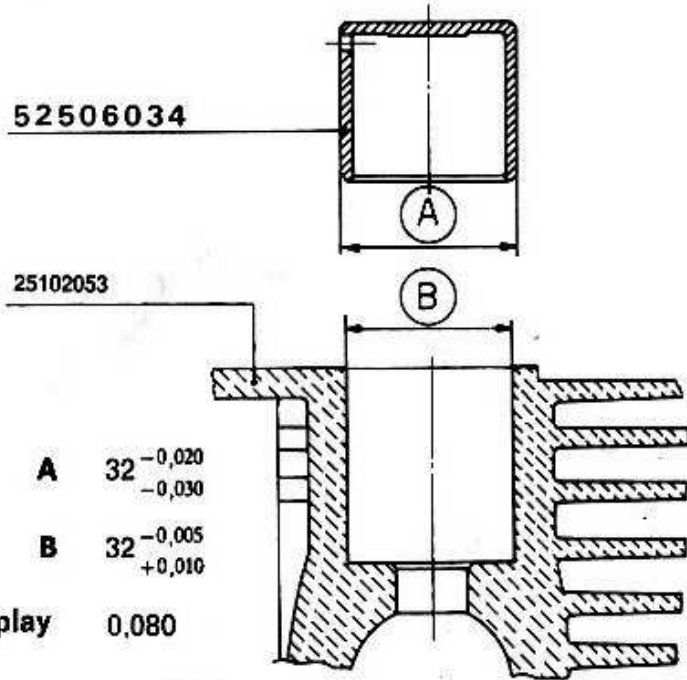
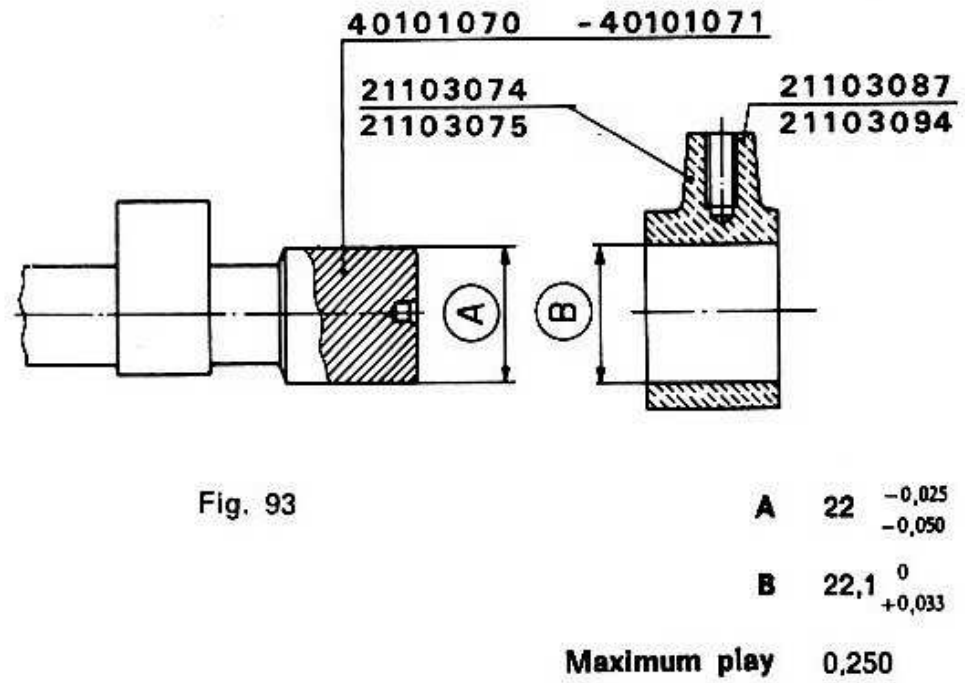


Fig. 93



25303054

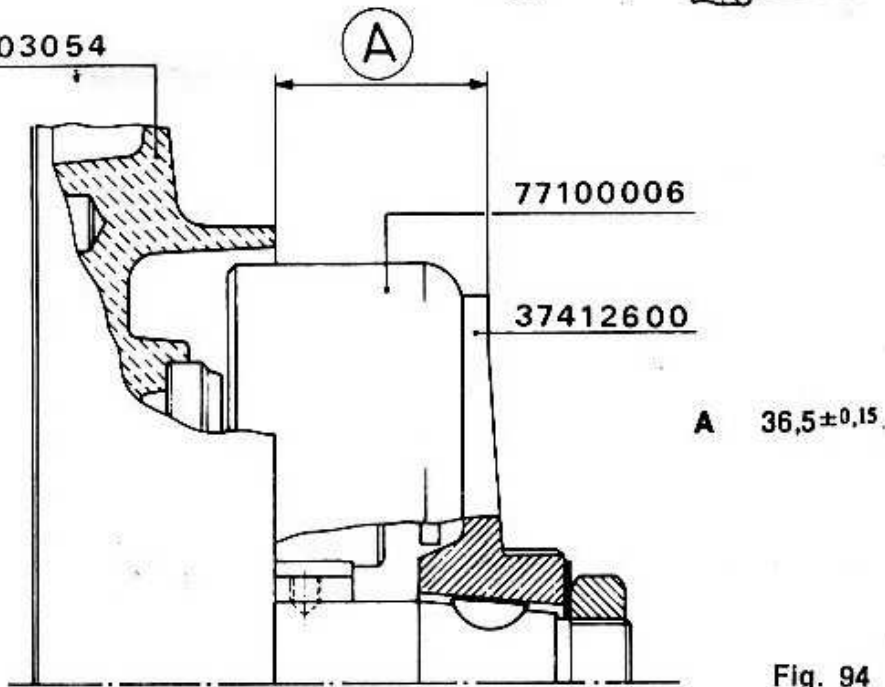


Fig. 94