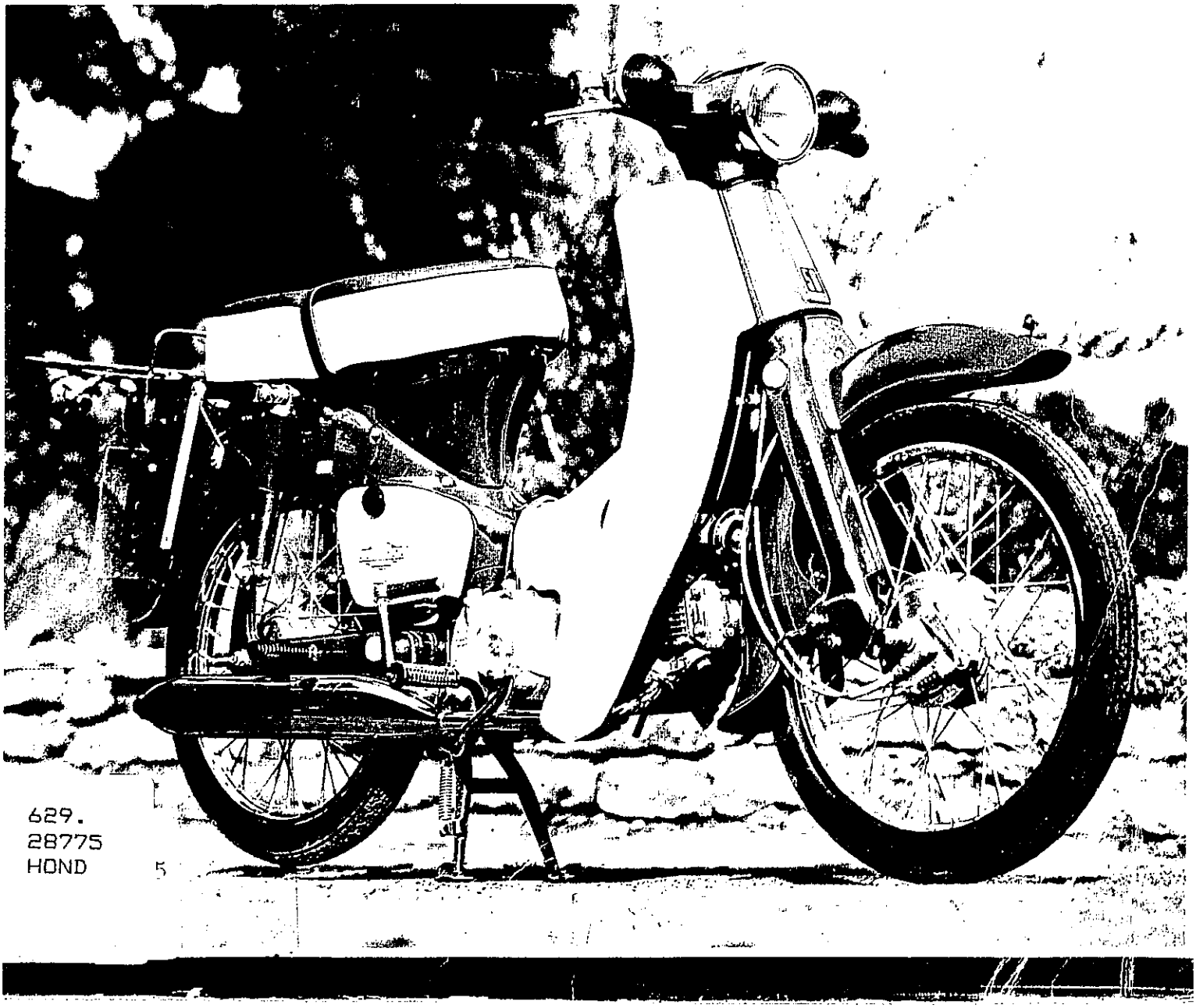
HONDA 50

ohv □ ohc □ scooters and bikes
All models 1962 on

HAYNES

Owners Workshop Manual



Contents

Honda C50 (1968 model)

Introduction to the Honda 50 models

During November 1962 Honda introduced into the UK their range of 50 cc motor cycles, with an impact that was dramatic in the extreme. Within a very short period of time, these models outsold all other machines of similar capacity and Honda became a household word.

Initially, four separate models were offered, the C100 and the C102 scooter-type machines with an open frame and automatic clutch, and the C110 and C110D (C114) virtually miniature motor cycles with a sporting specification. A fifth model, known as the 'Monkey Bike' was also produced, which used the same basic engine/gear unit. This machine, of small overall proportions, was designed to be carried in the boot of the average car.

Towards the end of 1964, an overhead camshaft engine was produced to supercede the original push rod design, a development that gave enhanced performance with little sacrifice in petrol economy. The new engine first appeared with a capacity of 90 cc, but a scaled-down 50 cc version was soon available, which was fitted to the redesignated C50 and S50 models. The option of a scooter-type model or a miniature motor cycle with sporting characteristics was thus retained.

A variant of the original C50 model is still in production, such is the continuing level of demand.

Model dimensions

Wheelbase	C100 and C102	46.5 in
	C110 and C110D (C114)	45.28 in
	C50	46.65 in
	S50	45.28 in
	SS50	46.3 in
Ground clearance	C100 and C102	5.5 in
	C110 and C110D (C114)	5.9 in
	C50	5.1 in
	S50	4.9 in
	SS50	5.1 in
Overall length	C110 and C102	71.25 in
	C110 and C110D (C114)	67.0 in
	C50	70.67 in
	S50	69.45 in
	SS50	70.5 in
Overall width	C100 and C102	22.25 in
	C110 and C110D (C114)	22.24 in
	C50	25.19 in
	S50	24.21 in
	SS50	24.0 in
Overall height	C100 and C102	37.25 in
	C110 and C110D (C114)	36.25 in
	C50	38.4 in
	S50	35.95 in
	SS50	36.2 in
Dry weight	C100	143 lb
	C102	154 lb
	C110 and C110D (C114)	145 lb
	C50	152 lb
	S50	168 lb
	SS50	163 lb

Chapter 1 Engine

Contents

Specifications

Part 2 of Chapter 1, the description and overhaul procedure of the overhead camshaft engine, commences on page 42.

Chapter 1/Engine and Gearbox Unit (ohv type)

The Honda 50 models included in this manual have been fitted with two types of engine, an overhead valve and an overhead camshaft design. Both are dealt with in this Chapter but in two separate parts. Part 1 concerns the ohv engine and Part 2, the ohc engine. The work necessary is described in full in the first part for the ohv engine, but is not repeated in the second part where it is the same, due to basic similarities in design. A fault finding table applicable to both types of engine is given at the conclusion of the Chapter.

Engine (ohv type)

Type	Single cylinder overhead valve, pushrod operated
Cylinder head	Cast iron (C100 and C102 models) Aluminium alloy (C110 and C110D (C114) models)

Cylinder barrel	Cast iron
Bore	40 mm
Stroke	39 mm
Capacity	49 cc
BHP	4.5 @ 9,500 rpm (C100 and C102 models) 5.0 @ 9,500 rpm (C110 and C110D (C114) models)
Compression ratio	8.5 : 1 (C100 and C102 models) 9.5 : 1 (C110 and C110D (C114) models)

Crankshaft

Diameter (right and left)	0.6692 inch - 0.6696 inch (16.997 mm - 17.008 mm)
Crankpin outside diameter	0.8306 inch - 0.8310 inch (21.098 mm - 21.107 mm)

Connecting rod

Big-end endfloat	0.003 inch - 0.013 inch (0.1 mm - 0.35 mm)
Small-end and gudgeon pin clearance	0.0006 inch - 0.0019 inch (0.016 mm - 0.049 mm)
Small-end bore diameter	0.5124 inch - 0.5135 inch (13.016 mm - 13.043 mm)

Piston

Diameter of crown	1.5602 inch - 1.5622 inch (39.63 mm - 39.68 mm) C110 and C102 models 1.5551 inch - 1.5571 inch (39.50 mm - 39.55 mm) C110 and C110D (C114) models
Maximum diameter at base of skirt	1.5740 inch - 1.5748 inch (39.98 mm - 40.0 mm) C110 and C102 models 1.5744 inch - 1.5752 inch (39.99 mm - 40.01 mm) C110 and C110D (C114) models
Piston to cylinder clearance (minimum)	0.0003 inch (0.01 mm)
Oversize pistons available	+0.25 mm, +0.50 mm, +0.75 mm and +1.00 mm Tolerances as standard pistons
Piston and gudgeon pin clearance	0.00024 inch (0.006 mm)

Piston rings

Compression (two top rings)	Top ring chrome, second ring tapered
Rdial depth	0.0709 inch - 0.0787 inch (1.8 mm - 2.0 mm)
Width	0.0976 inch - 0.0982 inch (2.480 mm - 2.495 mm)
End gap (both compression rings)	0.003 inch - 0.010 inch
Oil control ring	Third ring, at top of skirt
Radial depth	0.0709 inch - 0.0787 inch (1.8 mm - 2.0 mm)
Width	0.0976 inch - 0.0982 inch (2.480 mm - 2.495 mm)
End gap	0.003 inch - 0.010 inch

Gudgeon pin

Diameter	0.5118 inch - 0.5120 inch (13.0 mm - 13.006 mm)

Valves

Tappet clearance, inlet and exhaust	0.002 inch - 0.004 inch, set with engine cold 0.004 inch setting if engine is driven hard
Seat angle	45°
Inlet, overall length	2.4055 inch - 2.4134 inch (61.1 mm - 61.3 mm)
Outside diameter of stem	0.2152 inch - 0.2156 inch (5.465 mm - 5.475 mm)
Stem and guide clearance	0.0012 inch - 0.0020 inch (0.03 mm - 0.05 mm)
Exhaust, overall length	2.3858 inch - 2.3937 inch (60.6 mm - 60.8 mm)
Outside diameter of stem	0.2140 inch - 0.2144 inch (5.435 mm - 5.445 mm)
Stem and guide clearance	0.0024 inch - 0.0031 inch (0.06 mm - 0.08 mm)
Spring (outer) free length	1.063 inch (27.0 mm) C100 and C102 models 1.118 inch (28.4 mm) C110 and C110D (C114) models
Spring (inner) free length	1.0945 inch (27.8 mm) C100 and C102 models 1.0591 inch (26.9 mm) C110 and C110D (C114) models

Pushrods

Length, inlet	7.3779 inch (187.4 mm)
Length, exhaust	6.7216 inch (170.5 mm)

Capacities

Engine and gearbox	0.7 litres (1.2 Imperial pints)
(in unit)	(1.5 U.S. pints)

Torque wrench settings

Cylinder head nuts	70 in/lb
Rocker box holding down bolts	65 in/lb
Rocker oil feed pipe bolts	60 in/lb
Carburettor mounting nuts	60 in/lb

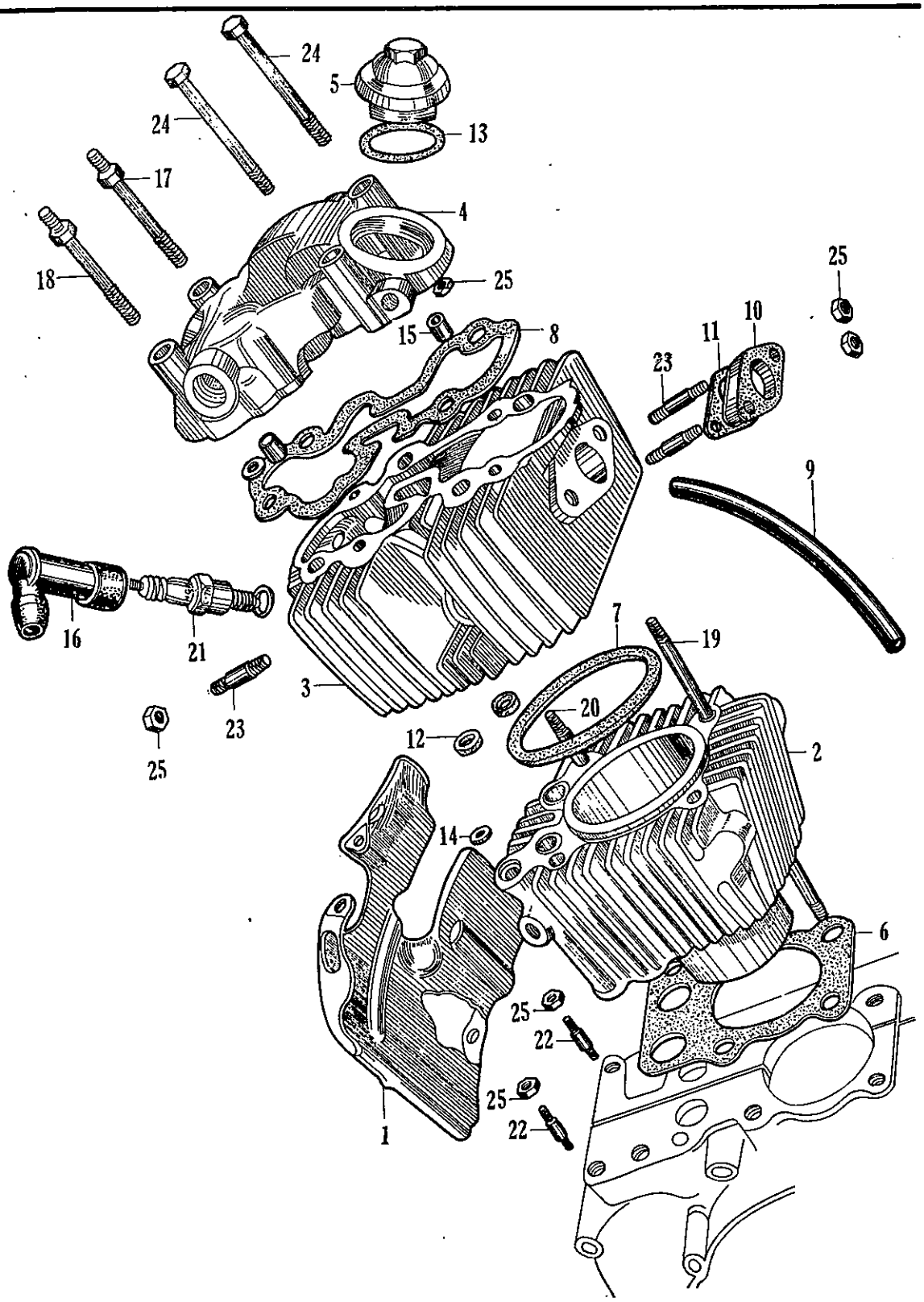


Fig.1.1 Cylinder head and barrel

1 *Dirt shield*
2 *Cylinder barrel*
3 *Cylinder head*
4 *Rocker box cover*
5 *Rocker box cap*
6 *Cylinder base gasket*
7 *Cylinder head gasket*
8 *Rocker box gasket*
9 *Breather tube*
10 *Carburettor heat insulator*
11 *Carburettor gasket*
12 *Push rod tunnel 'O'ring*
13 *Rocker box cap 'O' ring*
14 *Oil drainaway seal*
15 *Rocker box cover dowel*
16 *Sparking plug suppressor cap*
17 *Rocker box cover bolt - lower*
18 *Rocker box cover bolt - lower*
19 *Cylinder barrel stud*
20 *Cylinder barrel stud*
21 *Sparking plug*
22 *Dirt shield stud*
23 *Exhaust pipe retaining stud*
24 *Rocker box cover bolt - lower*
25 *6mm nut for exhaust pipe retaining stud, carburettor and dirt shield attachment*

1 General description

The engine fitted to the Honda C100, C102, C110 and C110D (C114) models is of the overhead valve type in which the valve gear is actuated by push rods. The alternative designation for the C110D model is given in brackets throughout this manual because the same model is known by either code according to the date of manufacture. The later C50, S50 and SS50 models have an overhead camshaft engine in which the valve mechanism is chain driven. The camshaft is located within the cylinder head casting.

All engine/gear units are of aluminium alloy construction, with a cast iron cylinder barrel. The C100 and C102 models have also a cast iron cylinder head, whilst the other models have this component cast in Light alloy. The flywheel magnetic generator is mounted on the left-hand side of the engine unit; the clutch assembly is located on the right-hand side of the engine, behind a domed aluminium alloy cover. Convention is defied by installing the engine/gear unit in a near horizontal position, so that the cylinder is almost parallel to the ground. The exhaust system is carried on the right-hand side of the machine and may be of either the upswept or downswept pattern, depending on the specification of the machine. All models are fitted with a kick-starter; the C102 has an additional electric starter to provide an alternative and convenient method of starting the engine.

The pushrod ohv engines are lubricated by the splash principle. A protrusion at the base of the connecting rod scoops oil from the crankcase sump and deflects it to the roller bearing big-end. The cam gear is lubricated by splash feed also; a spiral groove cut in the camshaft passes some of this oil to the valve rocker assembly, via an external pipe. The overhead camshaft engines have what is known as a trochoid pump, located behind the clutch assembly, that gives a positive oil feed to the overhead camshaft through internal oilways and to the crankshaft and associated parts, using two separate routes. Two filters are included in this latter system, a screen-type filter in the crank-case and a centrifugal filter within the right-hand crankcase cover. The system is therefore a combination of pressure and splash lubrication. Some early engines used a gear-type pump, operating on a similar principle.

Both types of engine are built in unit with the gearbox. This means that when the engine is dismantled, the gearbox has to be dismantled too, and vice-versa.

SPECIAL NOTE: When reading the text you will find it helpful to look at the photograph sequences accompanying and to cross refer the section/paragraph number of the text with the one captioning the photograph.

2 Operations with Engine/Gearbox in Frame

It is not necessary to remove the engine unit from the frame unless the crankshaft assembly and/or the gearbox bearings require attention. Most operations can be accomplished with the engine in place, such as:

1 Removal and replacement of cylinder head.
2 Removal and replacement of cylinder barrel and piston.
3 Removal and replacement of flywheel magnetic generator.
4 Removal and replacement of clutch assembly.
5 Removal and replacement of timing pinions and kickstarter assembly.

When several operations need to be undertaken simultaneously, it will probably be advantageous to remove the complete engine unit from the frame, an operation that should take approximately twenty minutes. This will give the advantage of better access and more working space.

3 Operations with Engine/Gearbox Removed

1 Removal and replacement of the main bearings.
2 Removal and replacement of the crankshaft assembly.
3 Removal and replacement of the gear cluster, selectors and gearbox main bearings.

4 Method of Engine/Gearbox Removal

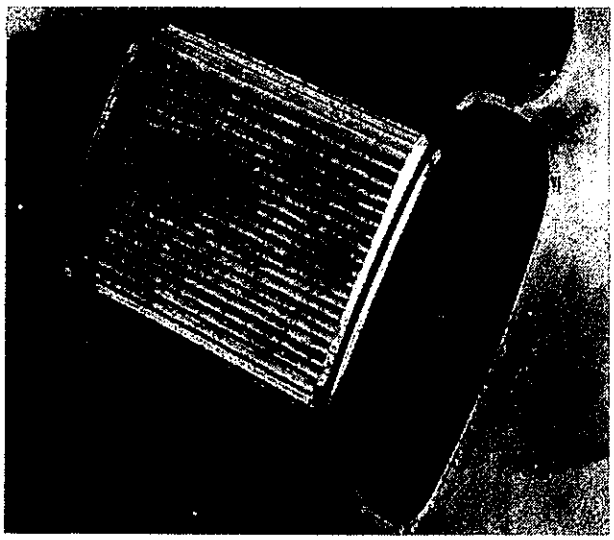
As described previously, the engine and gearbox are built in unit and it is necessary to remove the unit complete in order to gain access to either component. Separation is accomplished after the engine unit has been removed and refitting cannot take place until the crankcases have been reassembled.

5 Removing the Engine/Gearbox Unit

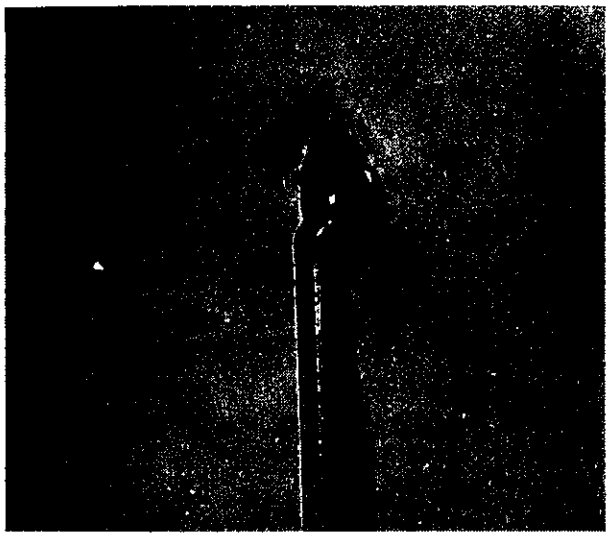
1 Place the machine on the centre stand and make sure it is standing firmly. Remove the crankcase drain plug and drain oil from the crankcase.
2 Remove air cleaner lid and withdraw element. (10mm dome nut).
3 Remove the front legshield assembly (held by four 10mm bolts). Slacken off the legshield rear clamp plates (14mm nuts) C100, C102, C50 models only.
4 Remove dirt shield attached to cylinder head and crankcase (Four 10mm nuts) C100, C102, C50 models only.
5 Remove exhaust system complete. (Two 10mm nuts at cylinder head and two 10mm bolts retaining silencer to frame bracket).
6 Remove copper asbestos joint ring from exhaust port.
7 Disconnect battery leads.

C100, C102, C50 models only.
8 Remove air filter hose from carburettor.
9 Unscrew top from main body of carburettor and withdraw the throttle slide and needle.
10 Pull off petrol pipe and remove carburettor from cylinder head (Two 10mm nuts). In the case of the C100, C102, C50 models it will be necessary to block the pipe immediately it is pulled away, unless the petrol tank is drained. In these models, the petrol tap is integral with the float chamber top.
11 Remove carburettor flange 'O' ring.
12 Disconnect main feed cable to starter motor (C102 model only).
13 Remove sparking plug lead by pulling off cap.
14 Disconnect the brown coloured wire from the rectifier and the four generator wires coloured white, yellow, blue and green with red stripe. These wires are fitted with snap connectors that pull apart. The cables are clipped to the frame, by a cable clip positioned immediately above the red-coloured rectifier on the main spine of the frame.
15 Remove the footrest assembly, which is attached to the crankcase by four 14mm bolts and spring washers. It is possible to remove the engine/gear unit with the footrests in place, if it is desired to use them as a convenient carrying handle.
16 Remove the lower section of the rear chaincase (if fitted) by removing the two 10mm bolts. Remove also the small forward mounted aluminium alloy sprocket cover (four crosshead screws).
17 Disconnect the rear chain at the connecting link and remove the chain.
18 Remove the small plastic section of the rear chainguard (if fitted).
19 Unhook the brake pedal and stop lamp switch springs.
20 Place a support under the engine unit and remove the upper and lower engine mounting bolts. The complete engine/gear unit can now be lifted clear of the frame.

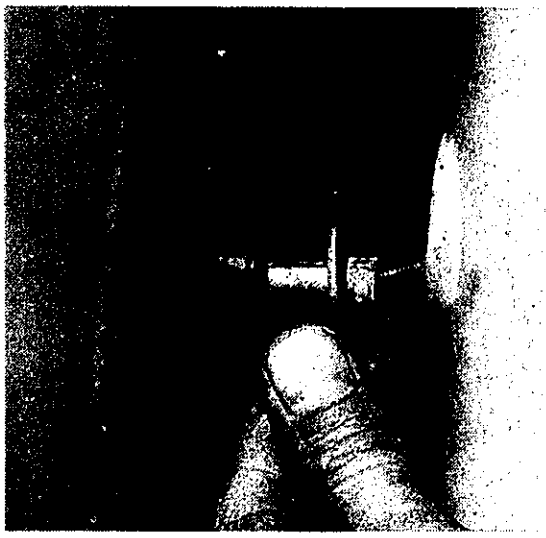
5.2 First remove air cleaner lid



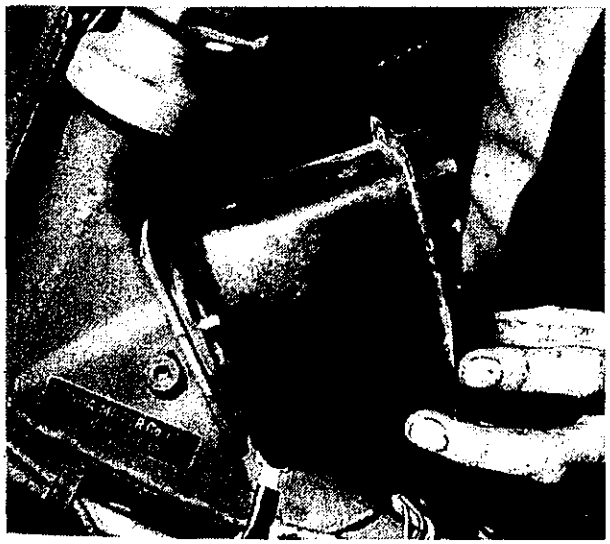
5.2A Then withdraw element



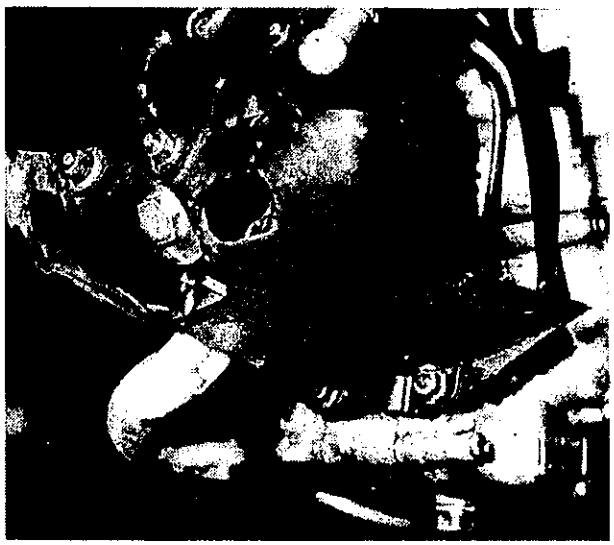
5.3 Detach legshield assembly by unscrewing bolts



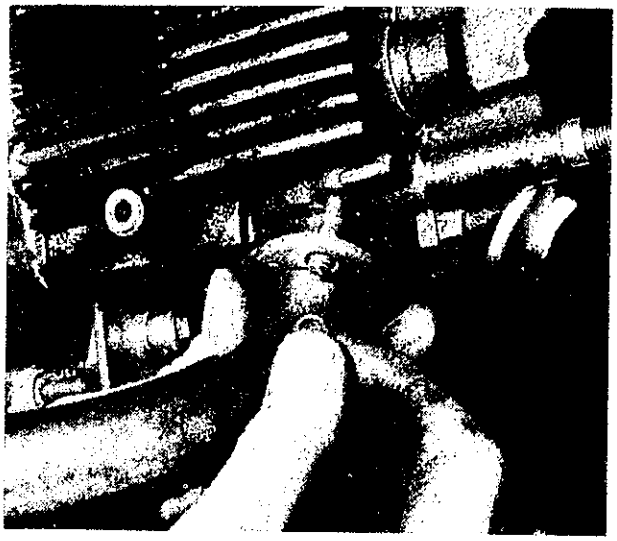
5.3A Don't lose spacers between legshields and frame



5.3B Air cleaner housing is free when legshields removed

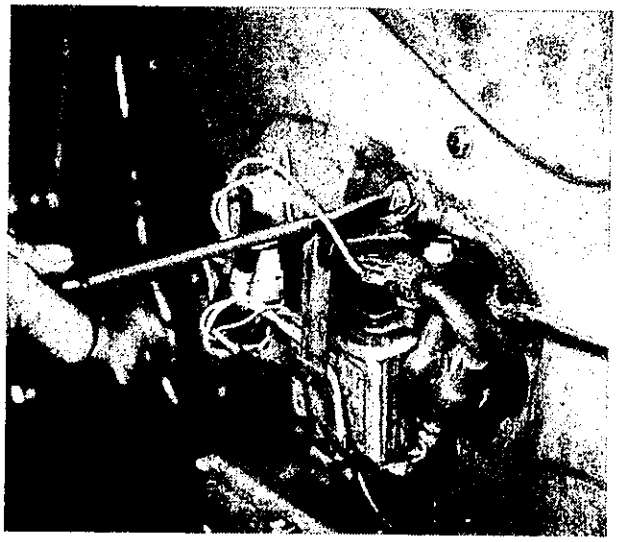


5.4 Remove also engine dirt shield

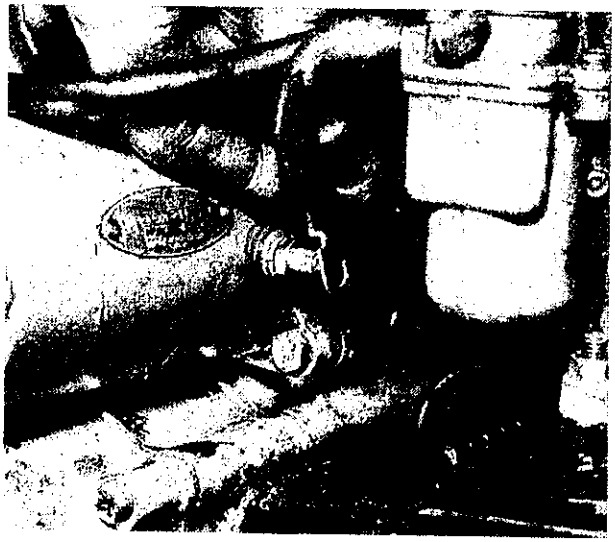


5.5 Detach exhaust pipe from cylinder head

5.5A Also remove two bolts below silencer

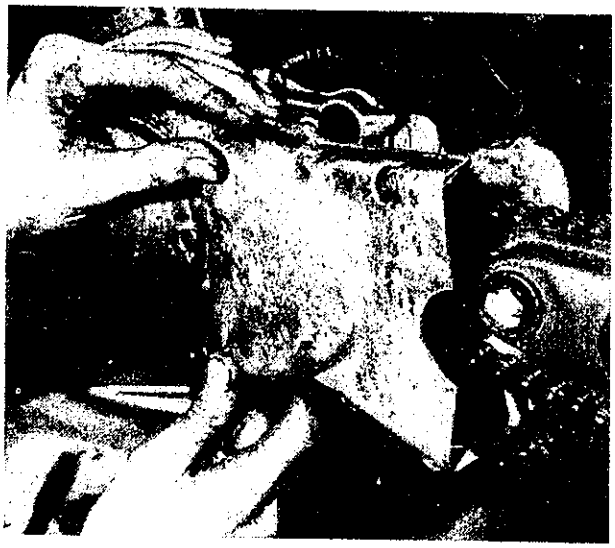


5.7 Unscrew battery clamp behind sidecover



5.12 Detach main starter lead

5.14 Separate generator cables at rectifier



5.16 Detach gearbox final drive sprocket cover

6 Dismantling the Engine and Gearbox - General

Before commencing work on the engine unit, the external surfaces should be cleaned thoroughly. A motor cycle engine has very little protection from road grit and other foreign matter, which will find its way into the dismantled engine if this simple precaution is not observed. One of the proprietary engine cleaning compounds such as 'Gunk' can be used to good effect, particularly if the compound is allowed to work into the film of grease and oil before it is washed away. When washing down, make sure that water cannot enter the carburettor or the electrical system, particularly if these parts have been exposed.

Never use undue force to remove any stubborn part, unless mention is made of this requirement. There is invariably good reason why a part is difficult to remove, often because the dismantling operation has been tackled in the wrong sequence.

Dismantling will be made easier if a simple engine stand is constructed that will correspond with the engine mounting points. This arrangement will permit the complete unit to be clamped rigidly to the work bench, leaving both hands free.

7 Dismantling the Engine and Gearbox - Removal of Generator

1 Remove the gear change and kickstarter pedals, which are retained on their splined shafts by a 14mm pinch bolt. Note the position of each pedal before drawing off the shaft (late models have centre punch marks to aid relocation).

2 Remove the two rocker box inspection caps (17mm spanner) and the external rocker oil feed pipe (10mm spanner). The inspection caps are damaged very easily if an incorrect size spanner is used.

3 Remove the gearbox sprocket, which is retained to the gearbox mainshaft by two 10mm screws and a retaining plate.

4 Remove flywheel magneto generator cover, which is retained by five cross head screws. All models except C102.

5 Remove the 14mm nut and washer retaining the flywheel magneto generator to the crankshaft and pull the flywheel from the crankshaft using either a flywheel extractor that screws into the internal threads of the flywheel centre or a chain pulled tight around the outside of the flywheel and a two-legged puller (see drawing).

6 Disconnect the green/red striped wire from the neutral indicator switch and remove the switch.

7 Remove the two countersunk cross head screws holding the stator plate to the crankcase and remove the stator plate complete with wires.

8 Remove the Woodruff key and bush from the crankshaft.

C102 model only

This machine has a different type of generator, which necessitates revised dismantling procedure:

9 Remove the stator plate inspection cover (circular cover on left-hand flywheel generator cover) and disconnect the blue wire from the condenser.

10 Remove the complete left-hand crankcase cover that houses the starter motor drive and the stator assembly. This cover is retained by four cross head screws.

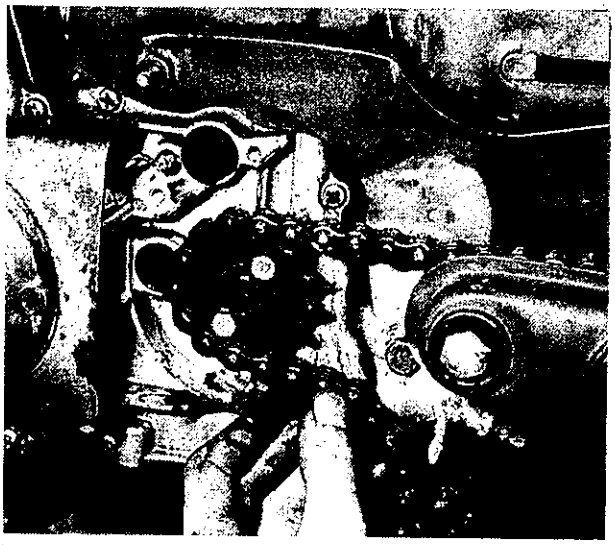
11 Disconnect the green/red striped wire from the neutral indicator contact and remove the complete stator coil assembly from the left-hand crankcase by unscrewing the three cross head screws. Remove the neutral indicator contact.

12 Hold the rotor stationary and remove the centre retaining bolt and washer. Lift off the automatic advance and retard mechanism.

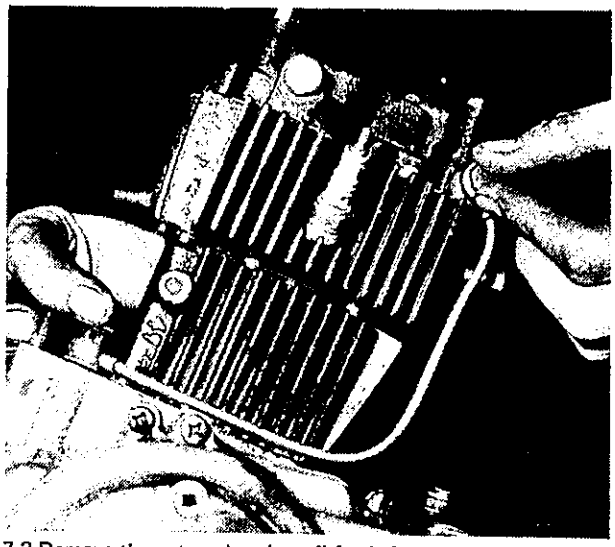
13 Remove the rotor and starter-driven sprocket. If the correct service tool extractor is not available, use a sprocket puller bearing on a footrest bolt screwed part way into the end of the crankshaft.

14 Remove the starter motor, twisting to free the sprocket from the endless chain. The starter motor is attached to the crankcase by three 10mm bolts.

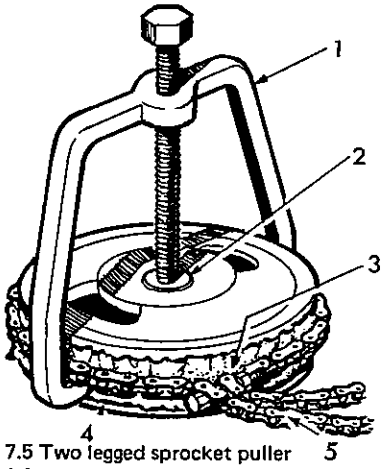
15 Remove the starter motor drive chain and sprocket. Note the sprocket contains a roller-type overrun clutch.



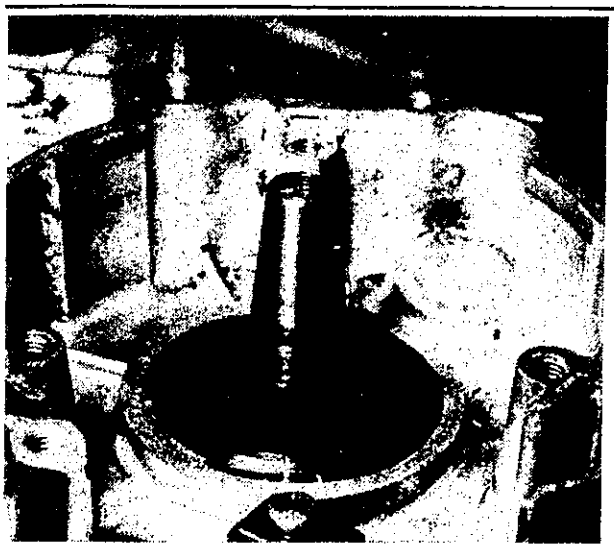
5.17 Remove chain after taking out spring link



7.2 Remove the external rocker oil feed pipe

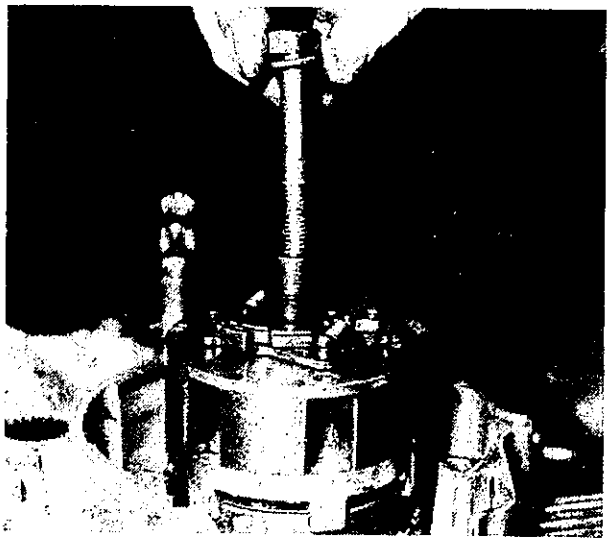


7.5 Two legged sprocket puller
1 Sprocket puller
2 Pad to protect end of crankshaft
3 Nut and bolt through chain
4 Pad under chain to protect flywheel
5 Motorcycle chain



7.8 Don't forget to remove woodruff key and bush from crankshaft

7.9 Remove stator plate cover and gasket



7.12 Removing the generator rotor retaining bolt

8 Rocker box, Cylinder head and Cylinder Removal

C100, C102, C110D (C114) models only

1 Remove the four 10mm bolts retaining the rocker box cover and lift it clear of the cylinder head.
2 Lift out the two push rods. There is no need to mark them because the exhaust pushrod is the shorter of the two.
3 Remove the four cylinder head nuts and lift the cylinder head away from the cylinder barrel.
4 The cylinder barrel can now be lifted from the crankcase, leaving the holding down studs that thread direct into the crankcase assembly. Note there is a gasket between the rocker box and the cylinder head, a copper ring-type gasket between the cylinder head and barrel and 'O' ring rubbers to seal the pushrod tunnels and the oil drainaway from the rocker gear. All should be renewed when the engine is reassembled.

9 Piston and Piston Rings - Removal

1 The gudgeon pin is of the fully floating type, retained by two wire circlips in the piston bosses. After the circlips have been removed, using pointed nose pliers, the pin can be tapped lightly from the piston.
2 Note the piston is marked with an arrow and must be positioned so that the arrow points downwards. If the piston is oversize, the amount will be tamped on the piston crown.
3 Remove the piston rings by expanding them gently, using extreme care because they are very brittle. If they prove difficult to remove, slide strips of tin behind them, to help ease them from their grooves. The top piston ring is of the chrome type and should have the mark 'top' on the uppermost face. The second ring is tapered and should have the 'top' mark in a similar position. A slotted oil scraper ring is fitted in the lower groove, which can be located with either face uppermost.

10 Valves and Rockers - Removal

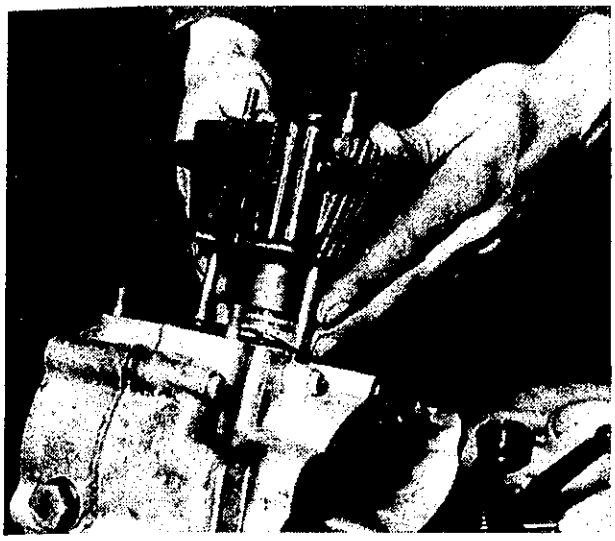
C100, C102, C110 and C110D (C114) models only

1 Use a small size valve spring compressor to compress the springs and release the split-type collets. The valves cannot be interchanged because the inlet valve has a larger head.
2 Remove the two 14mm plugs from the rocker box shell. The rocker spindles can be pulled out after these caps have been removed by applying pressure with a piece of stiff wire passed down the centre of each spindle. A small compression spring is located between the end of each rocker and the rocker box shell, to take up side play.

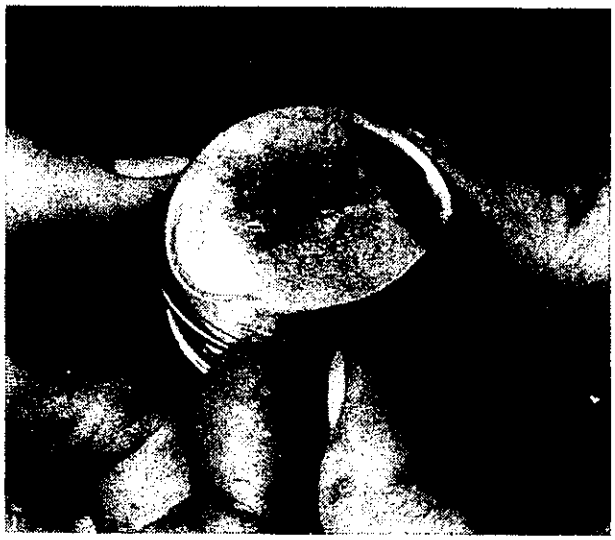
11 Crankcases - Separating

C100, C102 and C50 models only is only

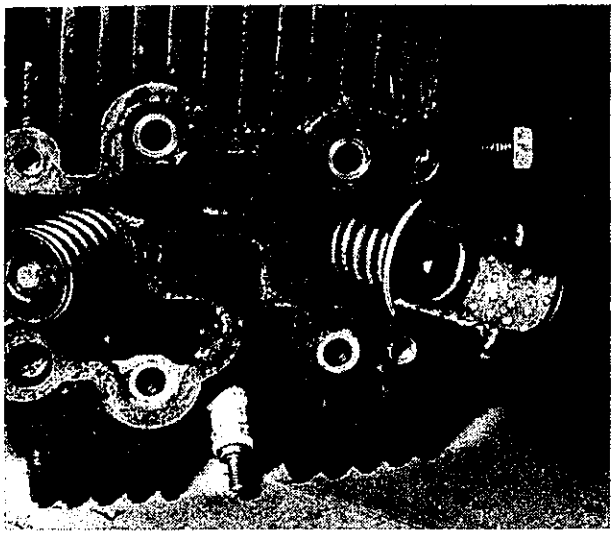
Before the crankcases can be separated, it is necessary to remove the clutch assembly, primary drive pinions, camshaft pinion (C100 and C102 models only) and part of the kickstarter and gear change mechanism. Proceed as follows:
1 Remove the clutch cover on the right-hand side of the engine unit. This is retained by nine cross head screws. There is slight pressure on the clutch cover, which may cause it to spring away from the crankcase when the screws are removed. Note the use of a sealing gasket.
2 When the cover has been removed, two springs will be found. These retain in position the oil plate situated in front of the camshaft drive pinion and apply pressure against the clutch cover (C100 and C102 models only). It is also probable that an anti-rattle spring will have dropped out of position. This is located between the clutch operating cam plate and the release mechanism, to eliminate chatter (C100, C102, and C50 models only). Remove the clutch operating lever and washer from its splined shaft, lift off the cam plate, and prise free the



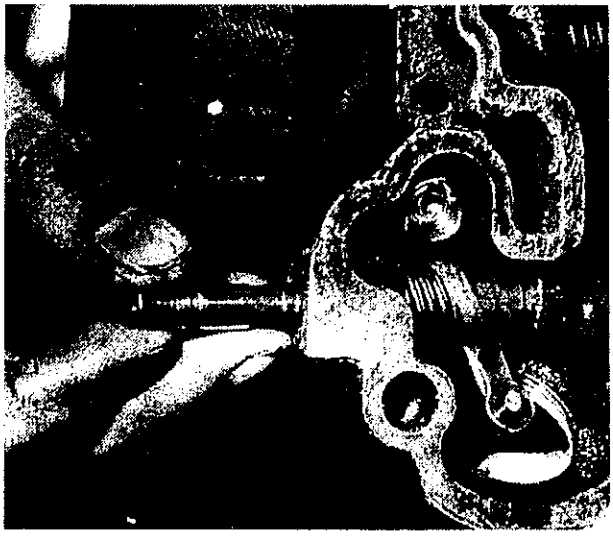
3.4 Lift barrel off crankcase whilst supporting the piston



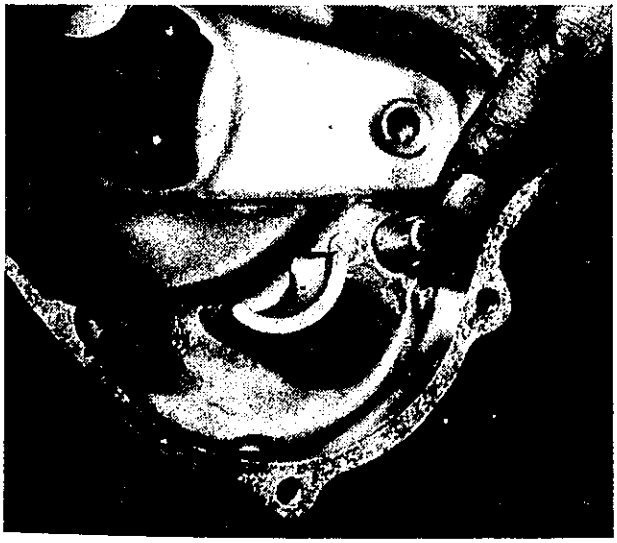
9.3 Ease the rings off the piston with great care. Note arrow on piston crown



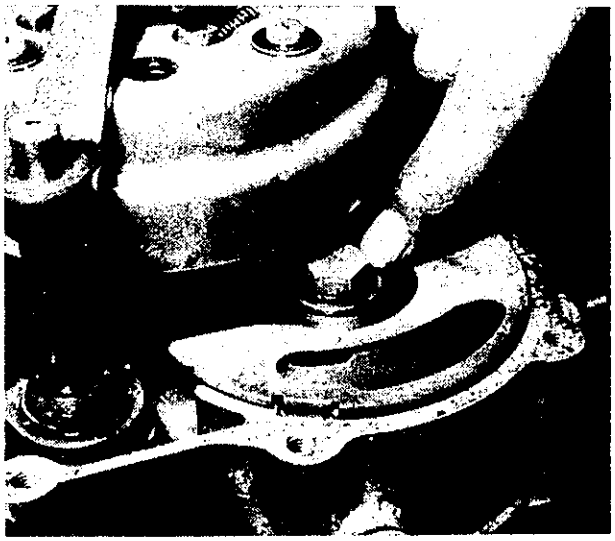
10.1 Compressing the valve springs. Note use of large washer and cutaway bush with compressor



10.2 Withdrawing the rocker spindles for inspection



11.2 These springs may drop out when clutch outer cover is removed



11.2A Oil plate in front of camshaft drive pinion

ball bearing and carrier from the clutch centre.
3 Remove clutch outer cover by unscrewing the four cross head screws (C50 model only).
4 The complete clutch assembly is splined to the crankshaft and is retained by a sleeve nut and tab washer. Bend back the tab washer and unscrew the sleeve nut, using a special tool made from a short length of conduit, if the appropriate service tool is not available. (See drawing). The complete clutch assembly can then be withdrawn from the shaft.
5 Remove the 17mm circlip from the gearbox mainshaft. Withdraw the driving pinion.
6 Remove the 23mm circlip and washer from the kickstarter shaft and disconnect and remove the kickstarter return spring, using pointed nose pliers.

7 Pull out the camshaft pinion, complete with camshaft and withdraw the cam followers, marking them to ensure their correct order of replacement (C100 and C102 models only).
8 Remove the crankshaft pinion. In the case of the C100 and C102 models, this is a tight fit on the crankshaft and is provided with two tapped holes through which two 10mm bolts can be threaded to act as extractors. Tighten each in turn a small amount, so that the pinion is drawn off the crankshaft gradually. Do not use excessive force or the bolts will shear. If the pinion is a particularly tight fit, the application of local heat will help. All other models use a different arrangement where the pinion and its internal bush are a sliding fit on the crankshaft.
9 Slacken off the 10mm bolt which locates the gear indexing pawl, to permit the pawl to be disengaged from the selector drum.
10 Depress the gear change lever by hand until it is clear of the selector drum with which it registers. Gently tap the gear change lever spindle out of the crankcase from the left-hand side, taking great care that the mechanism is not stressed.
11 Remove the nine crankcase cross head screws and hold the crankcase assembly over the workbench with the right-hand side uppermost. Gently tap the end of the gearbox mainshaft, the kickstarter shaft and the crankshaft alternately in order, using a rawhide mallet. This will separate the crankcases, leaving the complete gear cluster, kickstarter assembly and crankshaft in the left-hand case.

12 Remove the crankcase gasket and the two locating dowels.

C110, C110D (C114) S50, SS50 models

1 Remove the clutch cover as C100 and C102 models etc.
2 Remove the clutch operating pushrod to which is attached a lubrication reservoir. The trough is attached to an arm that locates in the hollow centre of the gearbox mainshaft. Prise out the ball bearing and bearing carrier from the clutch centre. Later models have a clutch thrust pad in place of the pushrod and lubricating trough.
3 Remove the clutch outer cover by unscrewing the four cross head screws (S50 and SS50 models only).
4 Remove the clutch assembly complete, following the instructions for the C100 and C102 models etc.
5 Remove the driving pinion, camshaft drive pinion and camshaft, crankshaft pinion and kickstarter spring. Disengage the gear index mechanism, following the instructions for the C100 and C102 models etc. The crankcases can now be separated.
6 Note that it will be more difficult to extract the crankshaft timing pinion fitted to the C110 and C110D (C114) models since the arrangement is identical to that employed for the C100 and C102 models.

12 Crankshaft Assembly - Removal

1 The crankcase bearings are a sliding fit in the steel-inserted housings in the crankcase. The crankshaft assembly complete with bearings should withdraw from the left-hand case without difficulty, using only light pressure.

13 Kickstarter Shaft and Ratchet Assembly - Removal

1 The complete kickstarter shaft and ratchet assembly can be withdrawn from the left-hand crankcase as a complete assembly. It can then be dismantled in the following order of component parts:
12mm thrust washer
Kickstarter pinion
14mm thrust washer
Pawl-lifting camplate
Circlip and pawl spring washer
Pawl spring
Pawl
Large distance washer
2 If it is necessary to remove the carrier for the camplate and pawl from the shaft, the position of the carrier in relation to the milled slot in the shaft should be noted. Both parts are punched marked to aid correct realignment.

14 Gear Selector Drum and Gear Cluster - Removal

1 Remove the rubber blanking plug located at the side of the neutral indicator switch.
2 Remove the 10mm bolt and washer retaining the gear selector drum in the crankcase (situated adjacent to the neutral indicator contact). The selector drum can now be withdrawn from the crankcase, together with the selectors and the gear cluster complete. The gear cluster can be dismantled in the following sequence:

C100, C102 and C50 models

Three-speed gearbox

Mainshaft assembly	Thrust washer, top gear pinion, splined thrust washer, second gear pinion (integral with mainshaft) and thrust washer.
Layshaft assembly	Thrust washer, top gear pinion, distance piece, second gear pinion, splined thrust washer, circlip, sliding dog, circlip, thrust washer and first gear pinion.

The gear selector forks are positioned on the selector drum by 10 mm screwed pins and tab washers. The neutral indicator contact is attached to the end of the selector drum.

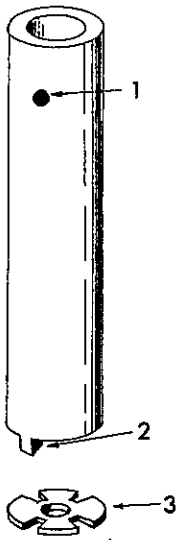
C110, C110D (C114) S50 and SS50 models

Four speed gearbox.

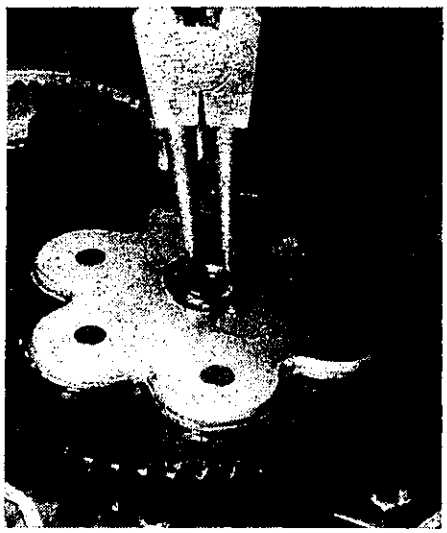
Mainshaft assembly	Thrust washer, top gear pinion, splined thrust washer, circlip, third gear pinion and dog combined, circlip, splined thrust washer, second gear pinion, first gear pinion (integral with mainshaft) and thrust washer.
Layshaft assembly	Thrust washer, top gear pinion, distance piece, third gear pinion, splined thrust washer, circlip, second gear pinion and dog combined, circlip, thrust washer and first gear pinion.

15 Oil Seals - Removal

1 Three oil seals are fitted in the left-hand crankcase, located at the crankshaft bearing, gearbox layshaft bearing and gear lever shaft. There is also an oil seal on the kickstarter shaft bearing in the clutch cover and, on the C102 model only, in the electric starter driven sprocket.
2 The oil seals are easily removed by prising them out of position with a screwdriver. Care should be taken to ensure the lip of the bearing housing is not damaged during this operation.

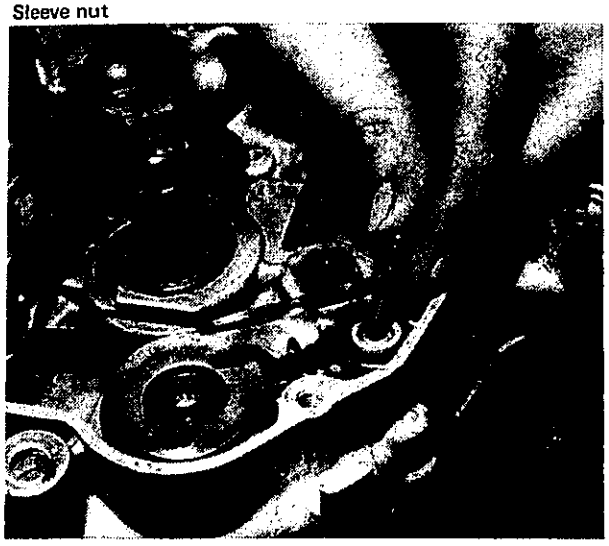


1.4 Clutch sleeve nut tool
Holes for tommy bar
Two pegs to engage with sleeve nut
Sleeve nut

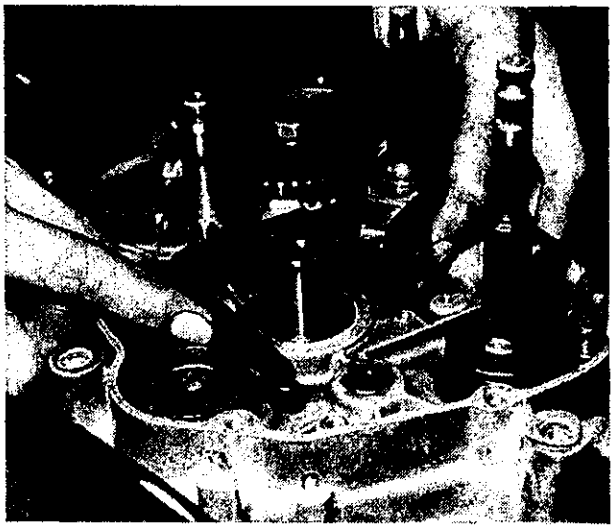


11.5 Removing circlip from driving pinion shaft

11.7 Withdrawing the camshaft and pinion

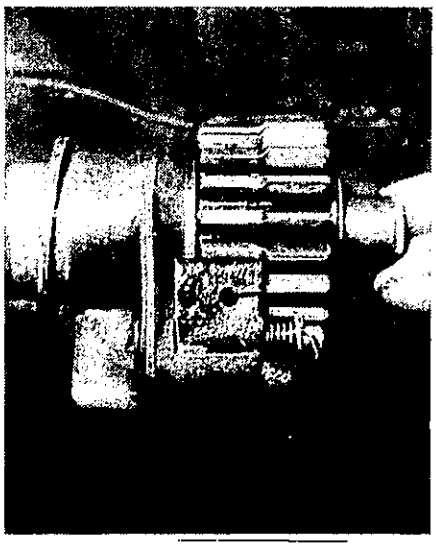


1.9 Releasing the gear indexing pawl

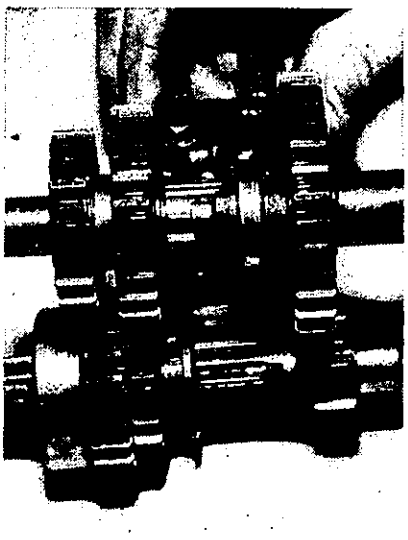


11.10 Disengaging gear change lever from selector drum

1.11 Separating the crankcases



13.1 The kickstarter shaft after removal



14.2 The complete three-speed gear train
Note loosened pin on selector drum.

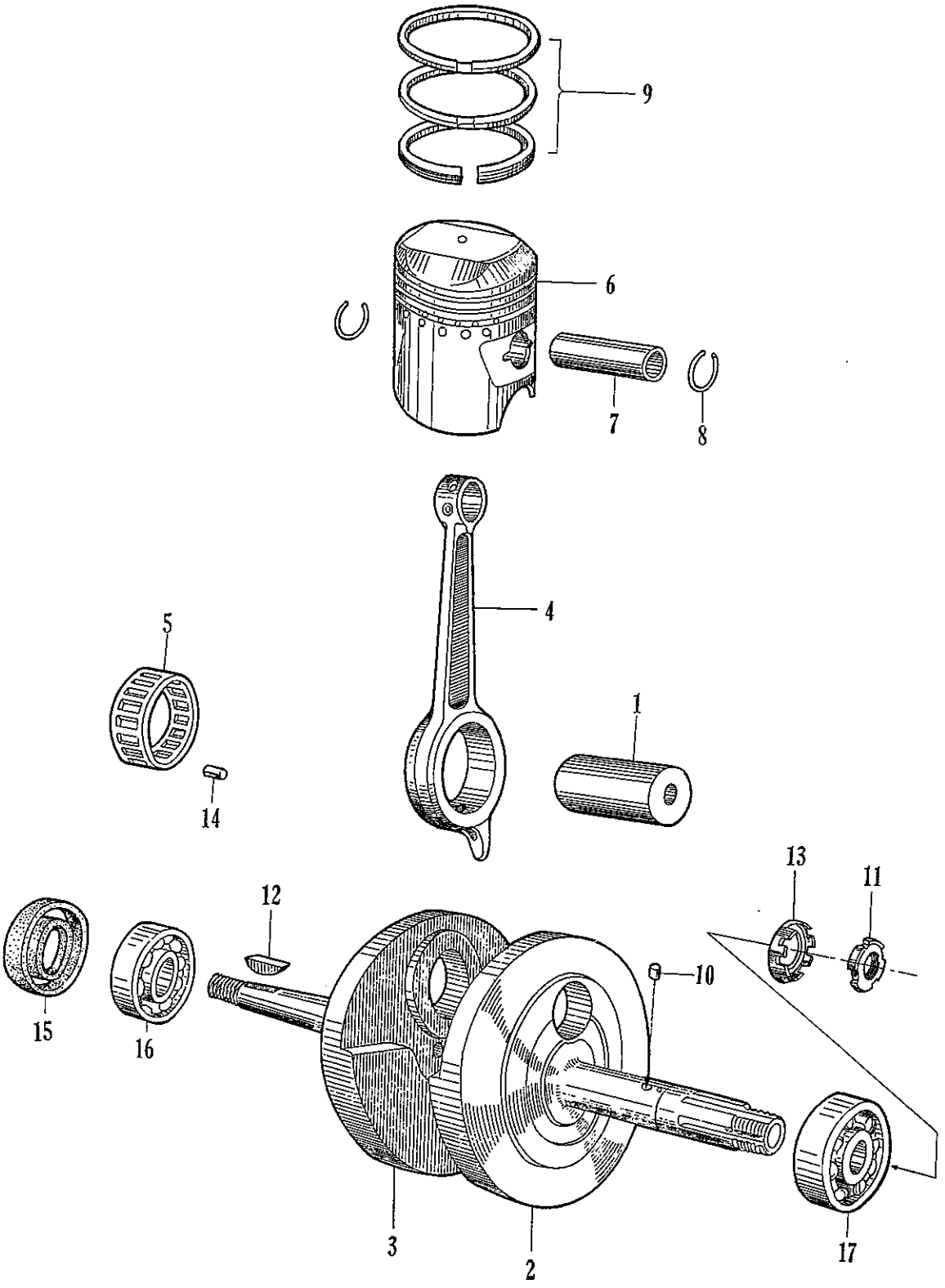


Fig.1.2 Piston, connecting rod and crankshaft

1 *Crankpin*
2 *Right-hand flywheel*
3 *Left-hand flywheel*
4 *Connecting rod*
5 *Big-end bearing cage*
6 *Piston*
7 *Gudgeon pin*
8 *Circlip*
9 *Piston rings*
10 *Timing pinion pin*
11 *14mm sleeve nut for clutch*
12 *Woodruff key*
13 *Tab washer for clutch sleeve nut*
14 *Big-end bearing roller*
15 *Crankshaft oil seal*
16 *Main bearing, left-hand*
17 *Main bearing, right-hand*

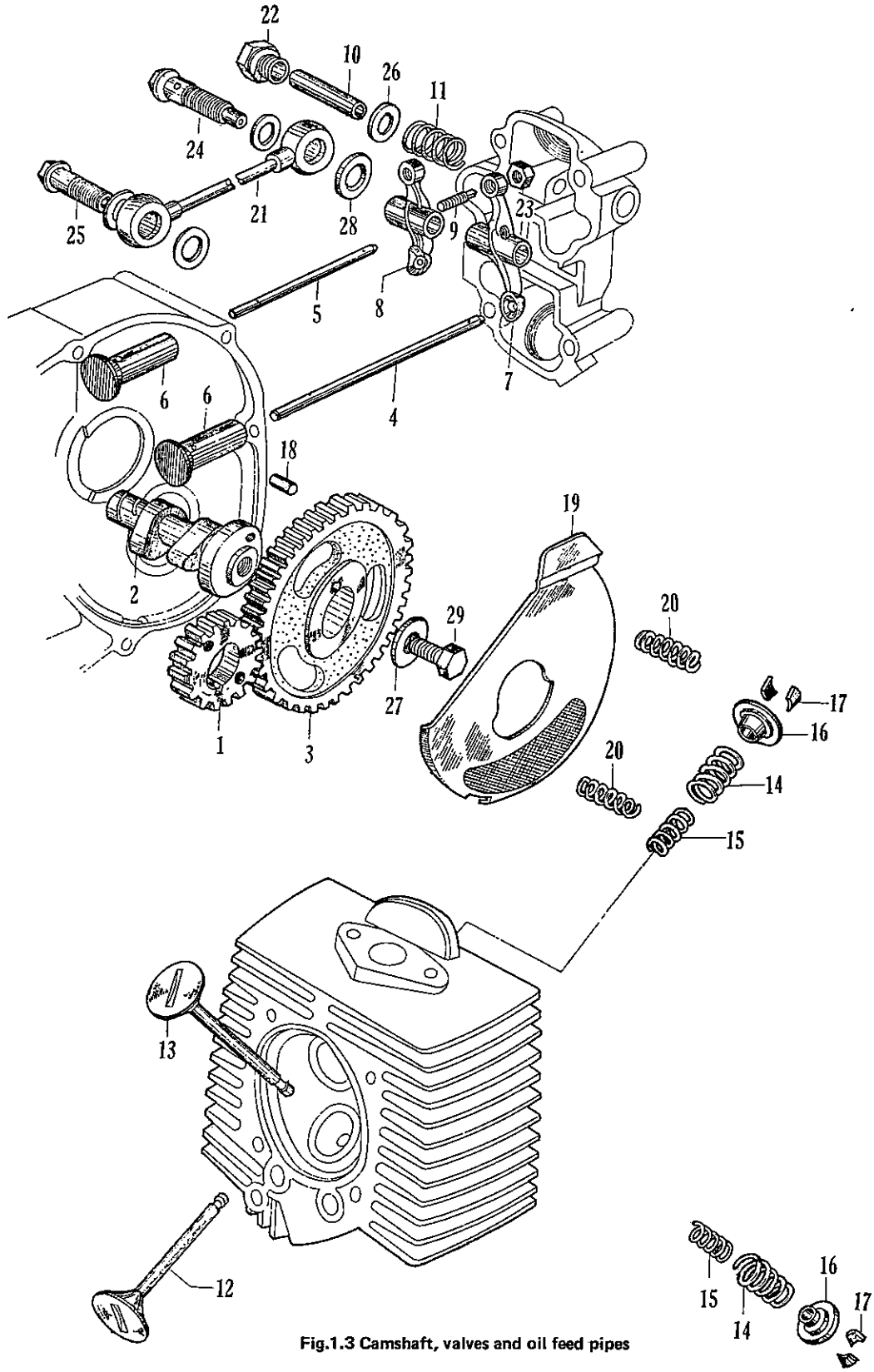


Fig.1.3 Camshaft, valves and oil feed pipes

1 *Timing pinion*
2 *Camshaft*
3 *Camshaft pinion*
4 *Push rod - inlet valve*
5 *Push rod - exhaust valve*
6 *Cam follwers*
7 *Rocker arm - inlet valve*
8 *Rocker arm - exhaust*
9 *Tappet adjusting screw*
10 *Rocker spindle*
11 *Rocker arm spring*
12 *Inlet valve*
13 *Exhaust valve*
14 *Valve spring - outer*
15 *Valve spring - inner*
16 *Valve spring cap*
17 *Collets*
18 *Dowel pin*
19 *Oil plate*
20 *Oil cover springs*
21 *External oil feed pipe to rockers*
22 *Rocker spindle cap*
23 *Tappet adjuster locknut*
24 *Banjo union bolt for oil feed pipe*
25 *Banjo union bolt for oil feed pipe*
26 *Washer, rocker spindle*
27 *Washer, camshaft pinion bolt*
28 *Washer, oil feed pipe union*
29 *Camshaft pinion retaining bolt*

16 Crankshaft and Gearbox Main Bearings - Removal

1 The crankshaft bearings will remain on their shafts when the crankshaft assembly is withdrawn from the crankcase. A puller or an extractor will be necessary for their removal as they are a tight fit on the shafts.
2 The gearbox bearings are a light press fit in the crankcase castings. They can be drifted out of position, using a mandrel of the correct size and a hammer.
3 If necessary, warm the crankcases slightly, to aid the release of the bearings.

17 Examination and Renovation - General

1 Before examining the parts of the dismantled engine unit for wear, it is essential that they should be cleaned thoroughly. Use a paraffin/petrol mix to remove all traces of old oil and sludge that may have accumulated within the engine.
2 Examine the crankcase castings for cracks or other signs of damage. If a crack is discovered, it will require professional repair.
3 Examine carefully each part to determine the extent of wear, if necessary checking with the tolerance figures listed in the Specifications section of this Chapter.
4 Use a clean, lint-free rag for cleaning and drying the various components, otherwise there is risk of small particles obstructing the internal oilways.

18 Big-end and Main Bearings - Examination and Renovation

1 Failure of the big-end bearing is invariably accompanied by a knock from within the crankcase that progressively becomes worse. Some vibration will also be experienced. There should be no vertical play in the big-end bearing after the old oil has been washed out. If even a small amount of play is evident, the bearing is due for replacement. Do not run the machine with a worn big-end bearing, otherwise there is risk of breaking the connecting rod or crankshaft.
2 It is not possible to separate the flywheel assembly in order to replace the bearing because the parallel sided crankpin is pressed into the flywheels. Big-end repair should be entrusted to a Honda agent, who will have the necessary repair or replacement facilities.
3 Failure of the main bearings is usually evident in the form of an audible rumble from the bottom end of the engine, accompanied by vibration. The vibration will be most noticeable through the footrests.
4 The crankshaft main bearings are of the journal ball type. If wear is evident in the form of play or if the bearings feel rough as they are rotated, replacement is necessary. To remove the main bearings if the appropriate service tool is not available, insert two thin steel wedges, one on each side of the bearing, and with these clamped in a vice hit the end of the crankshaft squarely with a rawhide mallet in an attempt to drive the crankshaft through the bearing. When the bearing has moved the initial amount, it should be possible to insert a conventional two or three legged sprocket puller, to complete the drawing-off action.
5 Note that in the case of the overhead camshaft engines, the bottom camshaft chain sprocket must be withdrawn from the left-hand crankshaft before access can be gained to the main bearing. The sprocket is recessed to accommodate a puller.

19 Cylinder Barrel - Examination and Renovation

1 The usual indications of a badly worn cylinder barrel and piston are excessive oil consumption and piston slap, a metallic rattle that occurs when there is little or no load on the engine. If the top of the bore of the cylinder barrel is examined carefully, it will be found that there is a ridge on the thrust side, the depth of which will vary according to the amount of wear that has taken place. This marks the limit of travel of the uppermost piston ring.
2 Measure the bore diameter just below the ridge, using an internal micrometer. Compare this reading with the diameter at the bottom of the cylinder bore, which has not been subject to wear. If the difference in readings exceeds 0.005 inch it is necessary to have the cylinder rebored and to fit an oversize piston and rings.
3 If an internal micrometer is not available, the amount of cylinder bore wear can be measured by inserting the piston without rings so that it is approximately ¾inch from the top of the bore. If it is possible to insert a 0.004 inch feeler gauge between the piston and the cylinder wall on the thrust side of the piston, remedial action must be taken.
4 Check the surface of the cylinder bore for score marks or any other damage that may have resulted from an earlier engine seizure or displacement of the gudgeon pin. A rebore will be necessary to remove any deep indentations, irrespective of the amount of bore wear, otherwise a compression leak will occur.
5 Check the external cooling fins are not clogged with oil or road dirt; otherwise the engine will overheat. When clean, a coating of matt cylinder black will help improve the heat radiation.

20 Piston and Piston Rings - Examination and Renovation

1 If a rebore is necessary, the existing piston and rings can be disregarded because they will be replaced with their oversize equivalents as a matter of course.
2 Remove all traces of carbon from the piston crown, using a soft scraper to ensure the surface is not marked. Finish off by polishing the crown, with metal polish, so that carbon does not adhere so easily in the future. Never use emery cloth.
3 Piston wear usually occurs at the skirt or lower end of the piston and takes the form of vertical streaks or score marks on the thrust side. There may also be some variation in the thickness of the skirt.
4 The piston ring grooves may also become enlarged in use, allowing the piston rings to have greater side float. If the clearance exceeds 0.004 inch for the two compression rings, or 0.005 inch for the oil control ring, the piston is due for replacement. It is unusual for this amount of wear to occur on its own.
5 Piston ring wear is measured by removing the rings from the piston and inserting them in the cylinder bore using the crown of the piston to locate them approximately 1½inches from the top of the bore. Make sure they rest square with the bore. Measure the end gap with a feeler gauge; if the gap exceeds 0.010 inch they require replacement, assuming the cylinder barrel is not in need of a rebore.

21 Valves, Valve Seats and Valve Guides - Examination and Renovation

1 After cleaning the valves to remove all traces of carbon, examine the heads for signs of pitting and burning. Examine also the valve seats in the cylinder head. The exhaust valve and its seat will probably require the most attention because these are the hotter running of the two. If the pitting is slight, the marks can be removed by grinding the seats and valves together, using fine valve grinding compound.
2 Valve grinding is a simple task, carried out as follows. Smear a trace of fine valve grinding compound (carborundum paste) on the seat face and apply a suction grinding tool to the head of the valve. With a semi-rotary motion, grind in the valve head to its seat, using a backward and forward action. It is advisable to lift the valve occasionally, to distribute the grinding compound evenly. Repeat this operation until an unbroken ring of light grey matt finish is obtained on both valve and seat. This denotes the grinding operation is complete. Before passing to the next operation, make quite sure that all traces of the grinding

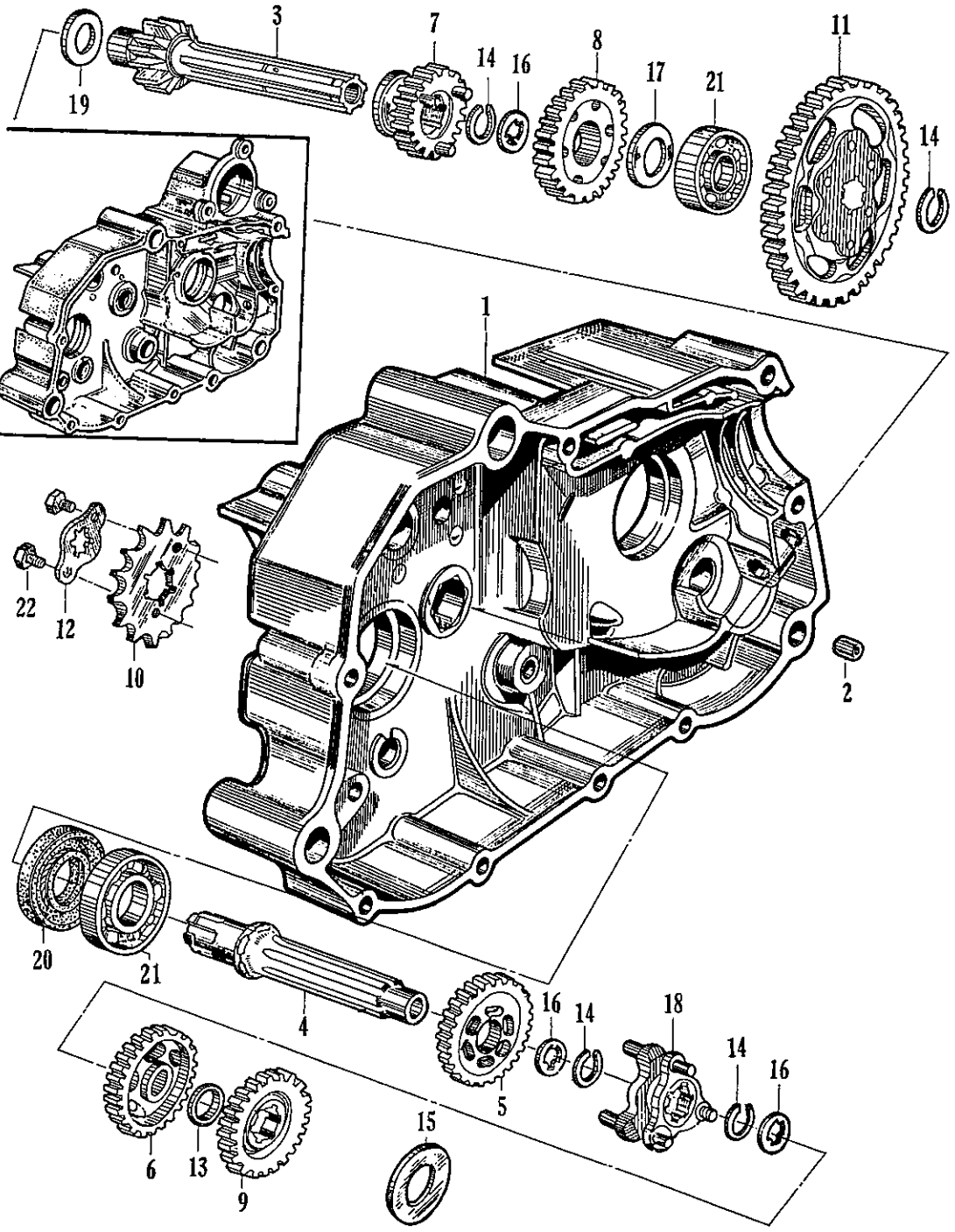


Fig.1.4 Gearbox and left crankcase half

1 *Left-hand crankcase*
2 *Crankcase dowel pin*
3 *Gearbox mainshaft*
4 *Gearbox layshaft*
5 *First gear pinion, layshaft*
6 *Second gear pinion, layshaft*
7 *Second gear pinion,mainshaft*
8 *Top gear pinion, mainshaft*
9 *Top gear pinion, layshaft*
10 *Final drive gearbox sprocket*
11 *Primary driven pinion*
12 *Gearbox sprocket locking plate*
13 *Collar for second gear, layshaft*
14 *17mm circlip*
15 *Thrust washer for layshaft top gear pinion*
16 *17mm splined thrust washer, mainshaft*
17 *Thrust washer for mainshaft top gear pinion*
18 *Sliding dog for layshaft*
19 *Thrust washer for end of mainshaft*
20 *Layshaft oil seal*
21 *Layshaft main bearing (left-hand) and mainshaft bearing (right-hand)*

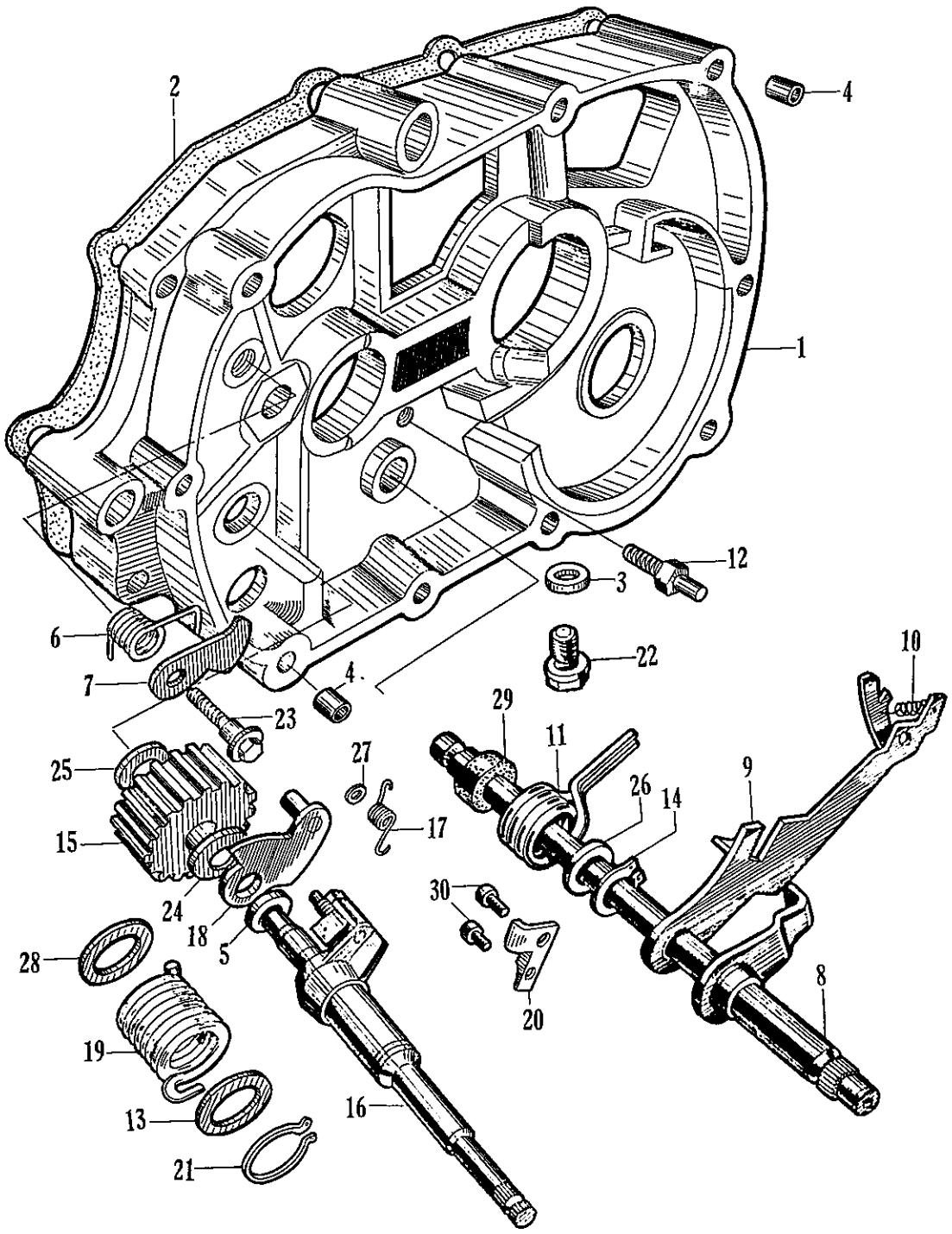


Fig.1.5 Gear changing mechanism and right crankcase half

1 *Right-hand crankcase*
2 *Right-hand crankcase cover gasket*
3 *Drain plug sealing washer*
4 *Crankcase dowel pin*
5 *17mm circlip*
6 *Gear selector drum stop spring*
7 *Gear selector drum stop*
8 *Gear change spindle*
9 *Gear change lever arm*
10 *Gear change arm spring*
11 *Gear change pedal return spring*
12 *Gear change pedal return spring*
13 *Kickstarter return spring thrust washer*
14 *12mm circlip*
15 *Kickstarter pinion*
16 *Kickstarter pinion*
17 *Kickstarter pawl spring*
18 *Kickstarter ratchet pawl lifting camplate*
19 *Kickstarter return spring*
20 *Kickstarter stop*
21 *23mm circlip*
22 *Crankcase drain plug*
23 *Pivot bolt for gear selector drum stop*
24 *14mm thrust washer*
25 *Kickstarter pinion thrust washer*
26 *12mm washer*
27 *6mm washer for pawl spring*
28 *23mm thrust washer for kick starter return spring*
29 *Oil seal for gear change pedal shaft*
30 *Cross head screws for kick-starter stop*

compound have been removed from both the valve and its seat and that none has entered the valve guide. If this precaution is not observed, rapid wear will take place, due to the abrasive nature of the carborundum base.

3 When deeper pit marks are encountered, it will be necessary to use a valve refacing machine and also a valve seat cutter, set to an angle of 45°. Never resort to excessive grinding because this will only pocket the valve and lead to reduced engine efficiency. If there is any doubt about the condition of a valve, fit a new replacement.

4 Examine the condition of the valve collets and the groove on the valve in which they seat. If there is any sign of damage, new replacements should be fitted. If the collets work loose whilst the engine is running, a valve will drop in and cause extensive damage.

5 Measure the valve stems for wear, making reference to the tolerance values given in the Specifications section of this Chapter. Check also the valve guides. If wear is evident, the cylinder head will need to be replaced if it is of the cast iron type. In these cylinder heads, the valve guides are an integral part and cannot be replaced. Alloy cylinder heads are fitted with detachable valve guides, which can be removed by heating the cylinder head in an oven then using a two diameter drift to drive them out of position. The initial diameter of the drift must be a good fit in the valve guide stem. Replace with the new valve guides whilst the cylinder head is still warm.

6 Check the free length of the valve springs against the list of tolerances in the Specifications. If the springs are reduced in length or if there is any doubt about their condition, they should be replaced.

22 Cylinder Head - Decarbonisation and Examination

1 Remove all traces of carbon from the cylinder head and valve ports, using a soft scraper. Extreme care should be taken to ensure the combustion chamber and valve seats are not marked in any way, otherwise hot spots and leakages may occur. Finish by polishing the combustion chamber so that carbon does not adhere so easily in the future. Use metal polish and NOT emery cloth.

2 Check to make sure the valve guides are free from carbon or any other foreign matter that may cause the valves to stick.

3 Make sure the cylinder head fins are not clogged with oil or road dirt, otherwise the engine will overheat. If necessary, use a wire brush. When the fins and outer surfaces are clean, a coating of matt cylinder black will help improve the heat radiation.

4 Reassemble the cylinder head by replacing the valves after oiling their stems: Compress each set of valve springs in turn, making sure the collets are located positively before releasing the compressor.

23 Rockers and Rocker Shafts - Examination

1 It is unlikely that excessive wear will occur in the rockers and rocker shafts unless the flow of oil has been impeded or the machine has covered a very large mileage. A clicking noise from the rocker box is the usual symptom of wear in the rocker components, which should not be confused with the noise that results from excessive tappet clearances.

2 If any shake is present and the rocker arm is loose on its shaft, a new rocker and/or shaft should be fitted.

3 Check the tip of the rocker arm at the point where it bears on the end of the pushrod (C100, C102, C110 and C110D (C114) models) or on the overhead camshaft (C50, S50 and SS50 models). If signs of cracking, scuffing or break through in the case-hardened surface, fit a new replacement. Check also the condition of the thread on both the tappet and the rocker arm, and the locknut.

4 Check the pushrods for straightness by rolling them on a flat surface. If they are bent, this is often a sign that the engine has been over-revved on some previous occasion. It is better to fit replacements than attempt to straighten the originals. (C100, C102, C110 and C110D (C114) models only).

24 Camshaft Pinion, Camshaft and Cam followers - Examination

C100, C102, C110 and C110D (C114) models only —

1 Examine the camshaft pinion for worn or broken teeth, an unusual occurrence that can be attributed to the presence of foreign bodies, or pieces from some other broken engine component.

2 The cams should have a smooth surface and be free from scuff marks or indentations. It is unlikely that severe wear will be encountered during the normal service life of the machine unless the lubrication system has failed or the case hardened surface has broken through.

3 Similar advice applies to the cam followers. They are designed to revolve whilst the engine is running, to even out any wear that may take place. Replace only if the base is indented or if there is evidence of wear such as scuffing.

4 Check the oil groove on the end of the camshaft to ensure it is clean and free from sludge. The external oil feed to the rocker box assembly is dependent on the flow of oil from the end of the camshaft. Check also that the external oil feed pipe and the hollow bolts that pass through the unions are clean and free from obstructions.

C50, S50 and SS50 models

1 The use of an overhead camshaft in the engine fitted to these models obviates the need for pushrods, cam followers and a camshaft pinion. The camshaft is driven by a chain and sprocket arrangement; the rocker arms bear direct on the camshaft without any intermediary.

2 Examine the cams and camshaft as in the preceding section relating to the C100, C102 models etc. A spiral groove in both ends of the camshaft forms part of the lubrication system.

25 Timing Pistons - Examination

C100, C102, C110 and C110D (C114) models only

1 It is unlikely that the timing pinions will need replacing unless the teeth have been damaged or broken.

2 Clean both pinions so that the timing marks are easily identified.

26 Gearbox Components - Examination

1 Give the gearbox components a close visual inspection for signs of wear or damage such as broken or chipped teeth, worn dogs, damaged or worn splines and bent selectors. Replace any parts found unserviceable since they cannot be reclaimed.

2 Examine the kickstarter return spring for weakness or damage. This component is often overlooked, even though it is tensioned every time the kickstarter is depressed.

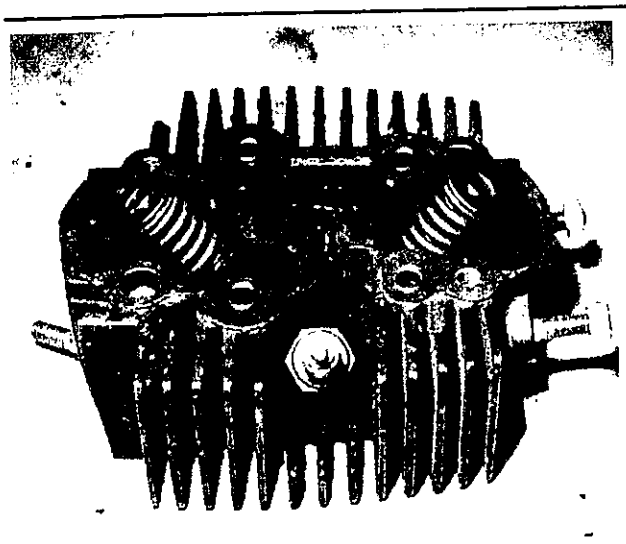
27 Engine Reassembly - General

1 Before reassembly is commenced, the various engine and gearbox components should be thoroughly clean and placed close to the working area.

2 Make sure all traces of the old gaskets have been removed and the mating surfaces are clean and undamaged. One of the best ways to remove old gasket cement is to apply a rag soaked in methylated spirit. This acts as a solvent and will ensure the cement is removed without resort to scraping and the consequent risk of damage.

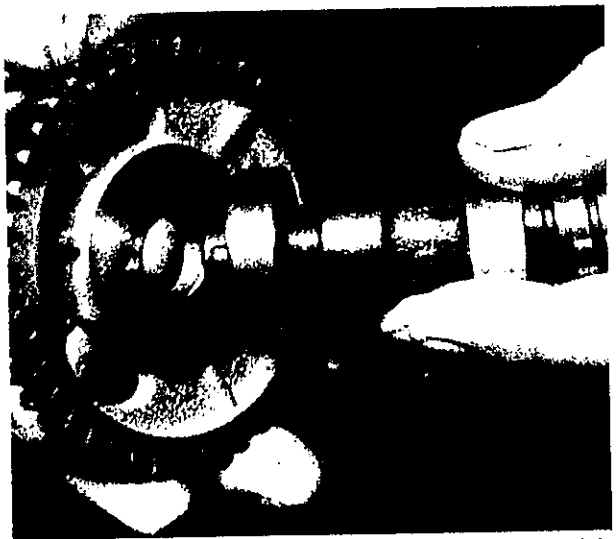
3 Gather together all the necessary tools and have available an oil can filled with clean engine oil. Make sure all the new gaskets and oil seals are to hand; nothing is more frustrating than having to stop in the middle of a reassembly sequence because a vital gasket or replacement has been overlooked.

4 Make sure the reassembly area is clean and that there is



22.4 The reassembled cylinder head, awaiting refitting

23.3 Wear will occur where the push rods bear on this cup



24.4 Camshaft showing oil grove and peg that engages with pinion to ensure correct timing.

adequate working space. Refer to the torque and clearance settings wherever they are given. Many of the smaller bolts are easily sheared if they are over-tightened. Always use the correct size screwdriver bit for the cross head screws and never an ordinary screwdriver or punch.

28 Engine Reassembly - Fitting Bearings to Crankcases

1 Before fitting any of the crankcase bearings make sure that the bearing housings are scrupulously clean and that there are no burrs or lips on the entry to the housings. Press or drive the bearings into the cases using a mandrel and hammer, after first making sure that they are lined up squarely. Warming the crankcases will help when a bearing is a particularly tight fit.
2 When the bearings have been driven home, lightly oil them and make sure they revolve smoothly. This is particularly important in the case of the main bearings.
3 Using a soft mandrel, drive the oil seals into their respective housings. Do not use more force than is necessary because the seals damage very easily. (Except SS50 model).
4 Lightly oil all the other moving parts as a prelude to reassembly. This will ensure all working parts are lubricated adequately during the initial start-up of the rebuilt engine.

29 Engine Reassembly - Left-hand Crankcase

1 Place the left-hand crankcase on two wooden blocks or in an engine stand so that the inner side faces upwards.
2 Assemble the gear clusters on their respective gear shafts, following the order detailed in Section 14 of this Chapter.
3 Locate the gear selector forks on the gear selector drum, making sure that the 10mm screwed pins engage with the tracks in the selector drum. Tab washers retain these pins in position. The two selector forks are arranged on the selector drum in the back-to back position.
4 Engage the selector forks in their respective positions, with the sliding dog on the layshaft and second gear on the mainshaft. Viewed endwise the lower of the two selector forks engages with the sliding dog on the layshaft and the upper fork with the sliding second gear pinion on the mainshaft.
5 Holding the complete gear assembly in the right hand, locate the layshaft in the journal ball bearing, the mainshaft in the plain bush and the tapered end of the selector drum in its housing. Hold all these parts firmly in position and invert the crankcase so that the 10mm bolt and washer can be replaced in the centre of the selector drum. Tighten this bolt and fit the rubber blanking plug.
6 Re-invert the crankcase, so that the inside is again facing uppermost.

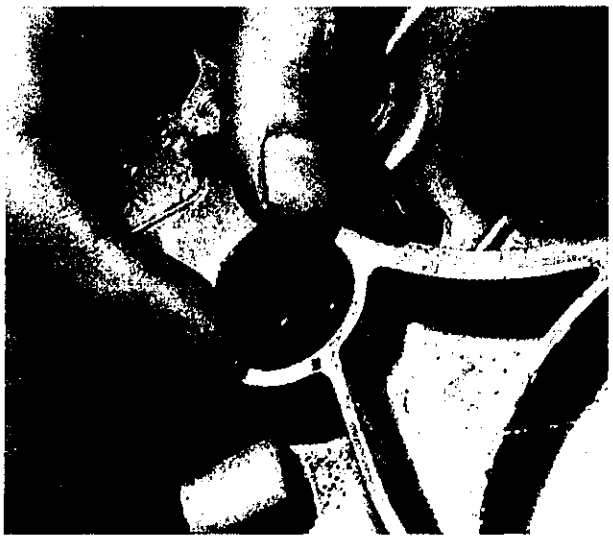
30 Engine Reassembly - Fitting the Kickstarter Shaft Assembly

1 If the ratchet assembly has been dismantled and the pawl carrier removed from the kickstarter shaft, it must be replaced so that the centre punch marks on the carrier and shaft coincide. Reassemble by reversing the sequel of events described in Section 13 of this chapter. Position the complete assembly in the crankcase, making sure the dowel pin of the pawl lifting cam-plate engages with its housing in the crankcase.

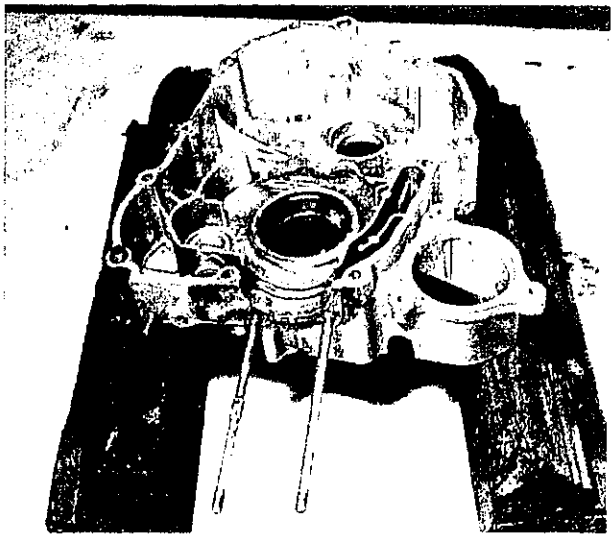
31 Engine Reassembly - Fitting the Crankshaft Assembly

1 Fit the crankshaft assembly in the left-hand crankcase with the splined mainshaft uppermost. Make sure the connecting rod clears the aperture for the cylinder barrel spigot. It may be necessary to tap the assembly into position, if the crankshaft journal ball bearing is a tight fit in the steel outer ring.
2 Replace the exhaust valve cam follower in its housing. Give the stem a liberal coating of oil before insertion; this will help

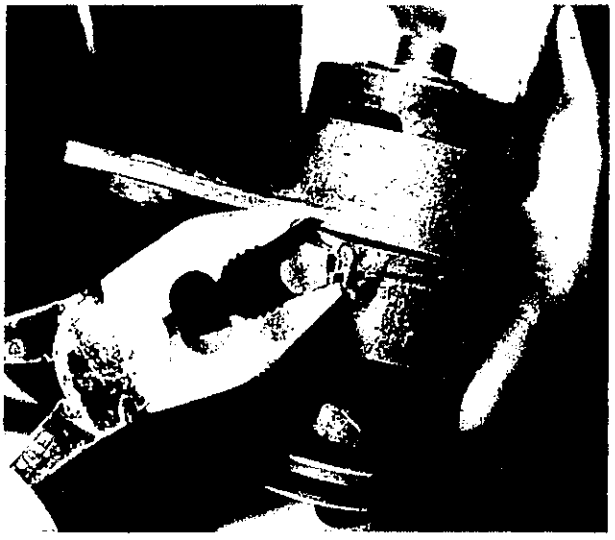
28.1 Socket makes ideal mandrel for bearings



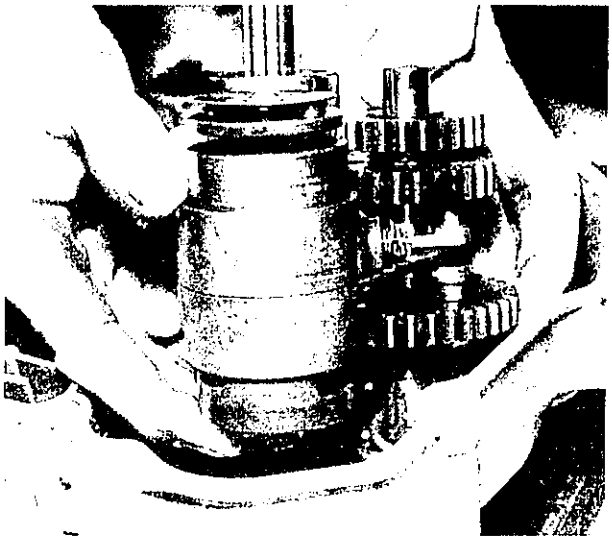
28.3 Oil seals damage very easily. Insert very carefully



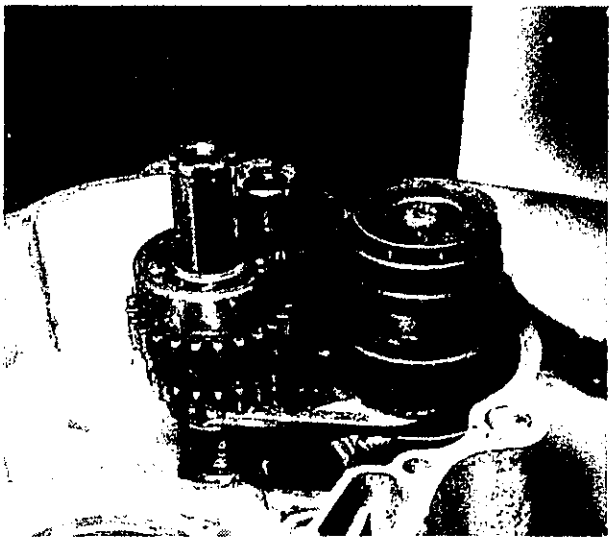
29.1 Wooden blocks raise crankcase clear of bench



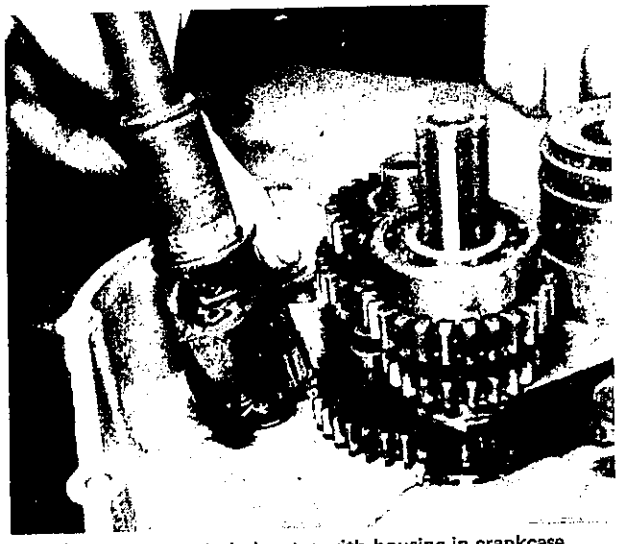
29.3 Make sure tab washers lock selector pins in position



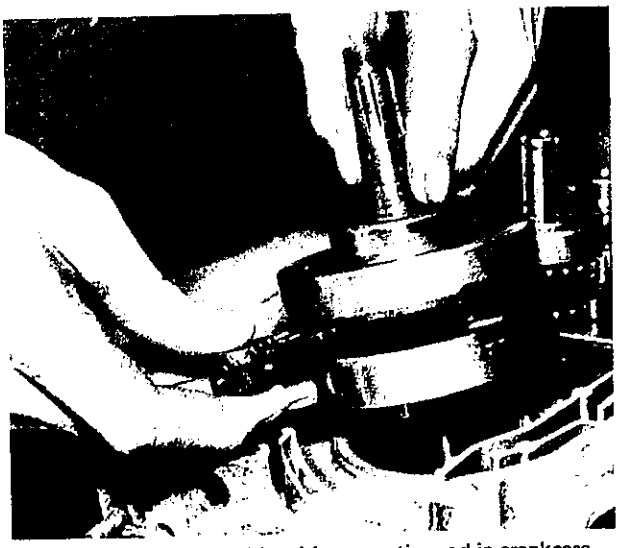
29.5 Insert gear assembly as a complete unit



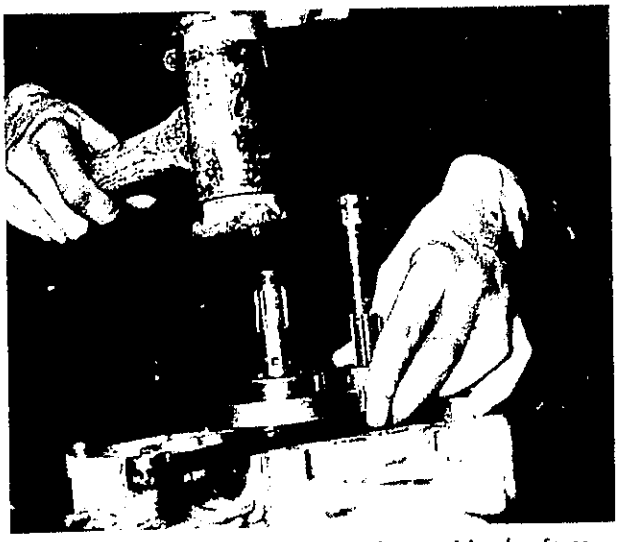
29.5A Assembly should locate as shown



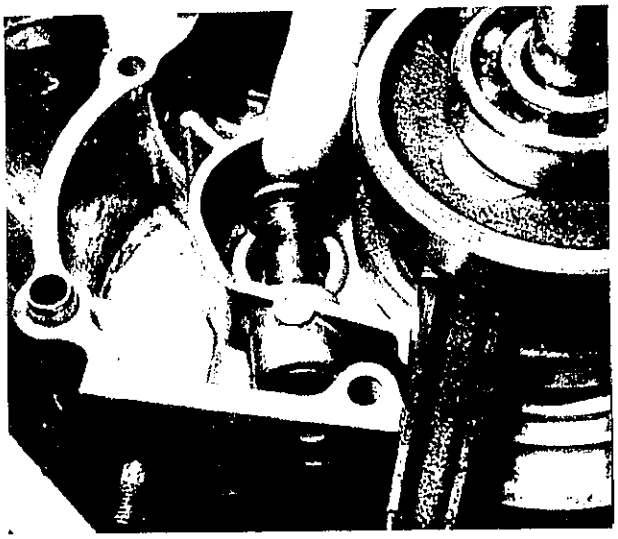
30.1 Make sure dowel pin locates with housing in crankcase



31.1 Fit crankshaft assembly with connecting rod in crankcase spigot aperture



31.1A Lightly tap crankshaft assembly into position (no force necessary)



31.2 Replace exhaust valve cam follower

retain the follower in position whilst reassembly continues.

3 Replace the crankcase dowels and fit a new gasket, after checking that both mating faces of the crankcases are clean. It should not be necessary to use gasket cement.

4 Replace the inlet valve cam follower in the right-hand crankcase, oiling the stem to aid its retention.

5 Lower the right-hand crankcase on to the left-hand crankcase, without using force. It should locate readily if the instructions given have been followed carefully.

6 Replace the nine cross head screws that hold the two crankcases together and tighten down evenly. Make sure that the crankshaft assembly is still free to revolve and that the kick-starter spindle does not bind. If the latter is tight, it is probable that a thrust washer has been misplaced. The crankcases must be parted again to investigate and eliminate the cause.

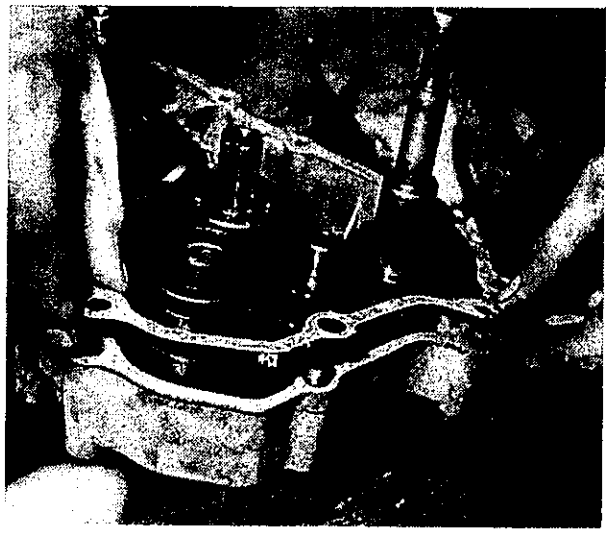
7 Replace the gearbox final drive sprocket on the splined end of the layshaft. Fit the locating plate and the two 10mm bolts.

32 Engine Reassembly - Fitting the Piston and Cylinder Barrel

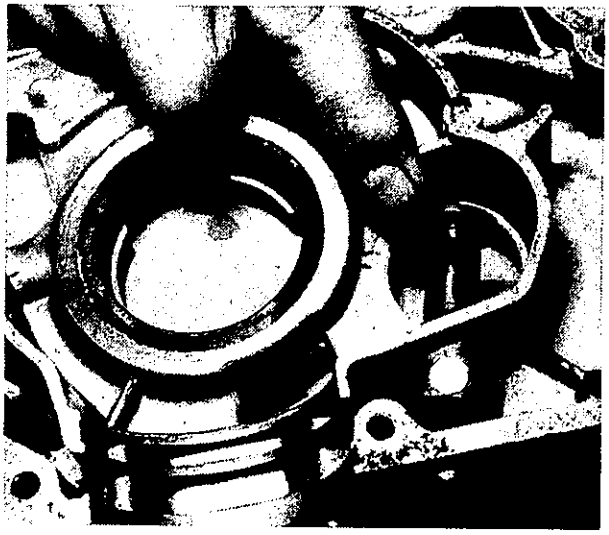
1 Assemble the piston on the connecting rod, with the arrow on the piston crown facing downwards. It may be necessary to heat the piston in warm water to enable the gudgeon pin to enter the piston bosses. Replace the gudgeon pin circlips, checking to ensure that both circlips are located positively in their grooves. Always fit new circlips - never re-use the originals. It is advisable to cover the mouth of the crankcase with rag during this operation. If a circlip falls in, it may be necessary to dismantle the engine again!

2 Check the piston ring gaps with the Specifications listed on page 12. Assemble the rings in their respective grooves, checking to make sure that the TOP marking on both compression rings faces upwards. The chrome ring is carried in the top groove of the piston and the tapered ring in the second groove. The slotted oil control ring occupies the bottom groove.

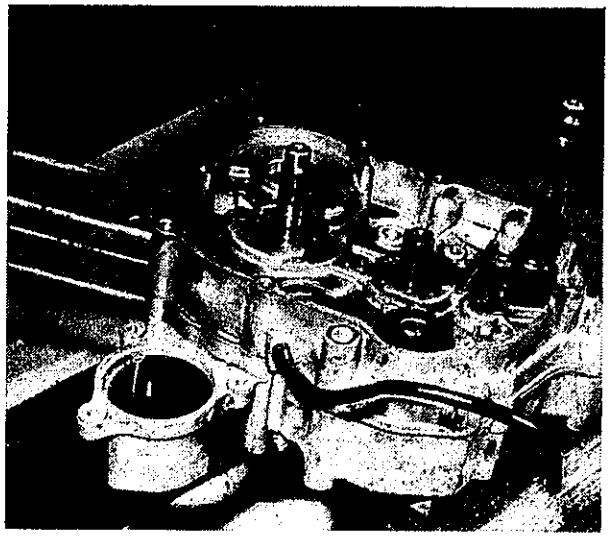
3 Fit a new cylinder base gasket and oil the piston and the cylinder bore. Slide the cylinder barrel down the long holding down studs and with the piston in a convenient position lower the barrel over the piston whilst compressing the piston rings with the fingers. Check that the ring gaps are staggered and not in line with each other, to cut down compression loss. Special care is needed whilst the rings are being compressed and inserted into the barrel because they are brittle and will break very easily.



1.3 Fit new crankcase gasket after replacing locating dowels

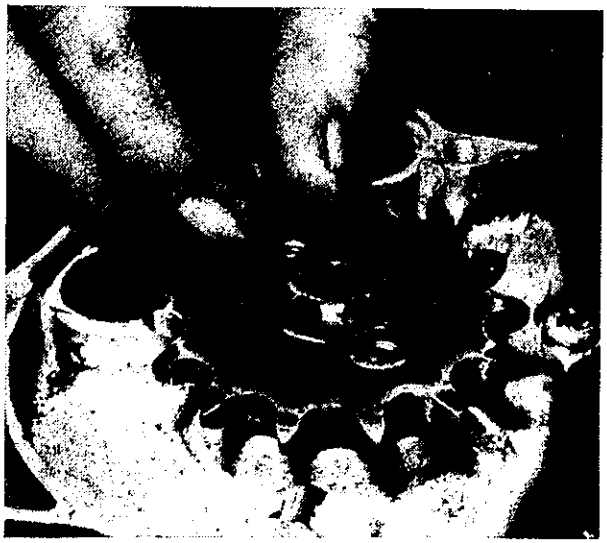


31.4 Don't forget to replace inlet cam follower in right-hand crankcase

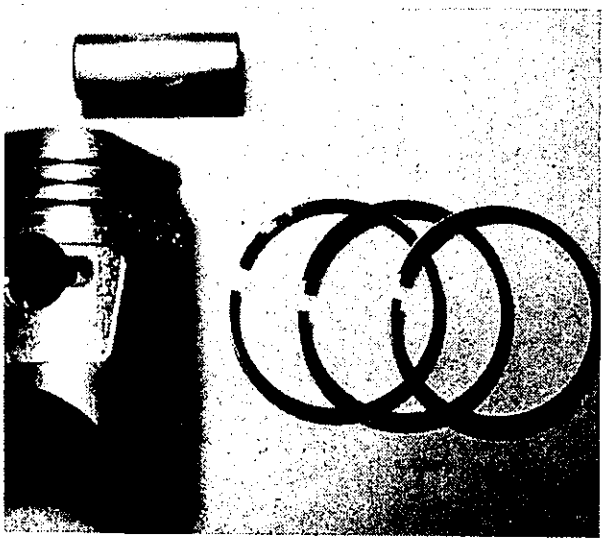


1.5 Crankcases should fit together as shown

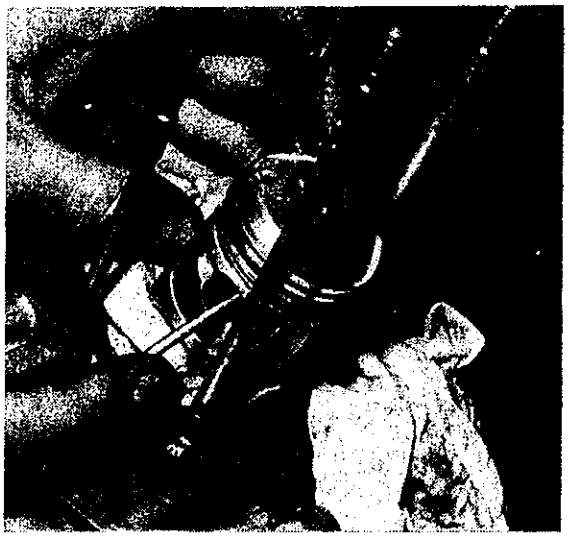
31.7 Fit gearbox final drive sprocket



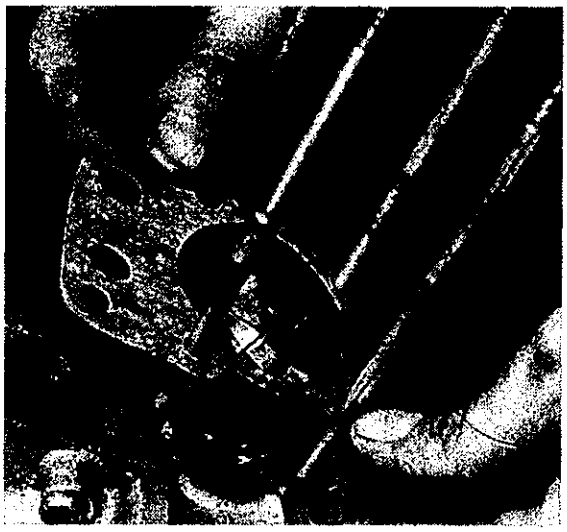
1.7A Then fit locking plate



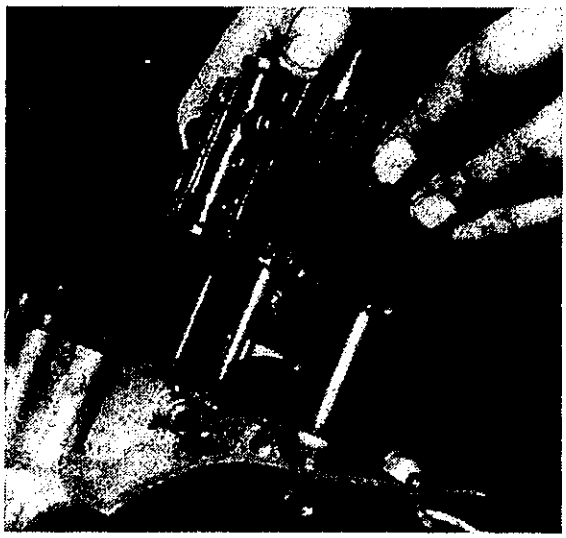
32.1 The piston and piston ring assembly



A Check that circlip is located positively in groove. Note rag ankcase to prevent accidents



Always fit new cylinder base gasket



Slide cylinder barrel down studs, over piston

33 Engine Reassembly - Replacing Camshaft and Camshaft Pinion

C100, C102, C110 and C110D (C114) models

1 Replace the camshaft pinion drive pin in the crankshaft and drive on the camshaft pinion so that it lines up with the pin. This task is made easier if the pinion is warmed before it is drifted into position.

2 Make sure the cam followers are home fully in their housings, then insert the camshaft so that the timing marks on the crankshaft pinion and the camwheel are exactly in line. This is important because the correct alignment of these marks determines the accuracy of the valve timing.

3 Early models have centre punch marks which register when the timing is correct. Later models employ an 'O' mark scribed on the camwheel which registers with either a similar 'O' mark on the crankshaft pinion or, in the absence of any marking, with the threaded extractor hole nearest to the keyway in the pinion.

34 Engine Reassembly - Refitting Gear Change Assembly

1 Check that the thrust washer is in position on the gear change shaft and tape the splined end of the shaft so that it will not damage the oil seal as it passes through. Whilst passing the shaft through the crankcase depress the gear change lever so that it will locate in the slot at the end of the selector drum.

2 Refit the selector drum pawl and spring, making sure the pawl engages with the gear indexing pin plate.

35 Engine Reassembly - Refitting and Tensioning Kickstarter Return spring

1 Lower the kickstarter return spring over the kickstarter shaft, locating the inner tang of the spring in the milled slot of the shaft before pressing the spring home.

2 Tension the spring by twisting the end of the spring in an anti-clockwise direction, until the end can be looped in the abutment at the base of the casting. Fit the retaining washer and circlip.

3 At this stage it is important to check whether the gear change and kickstarter mechanisms function correctly and that the gearbox shafts, crankshaft etc still revolve freely.

36 Engine Reassembly - Locating the Driver Gear and Clutch Assembly

1 Lower the large driving gear on to the splined gearbox mainshaft and refit the retaining circlip. Make sure the circlip is a good fit; if in any doubt, fit a replacement.

2 If the clutch has been dismantled, reassemble by reversing the dismantling instructions given in Chapter 2. After replacing the bronze bush in the centre of the drive gear and the drive gear itself, position the complete clutch assembly on the mainshaft and replace the locking washer and sleeve nut. Tighten the nut and bend over one of the tabs of the lock washer.

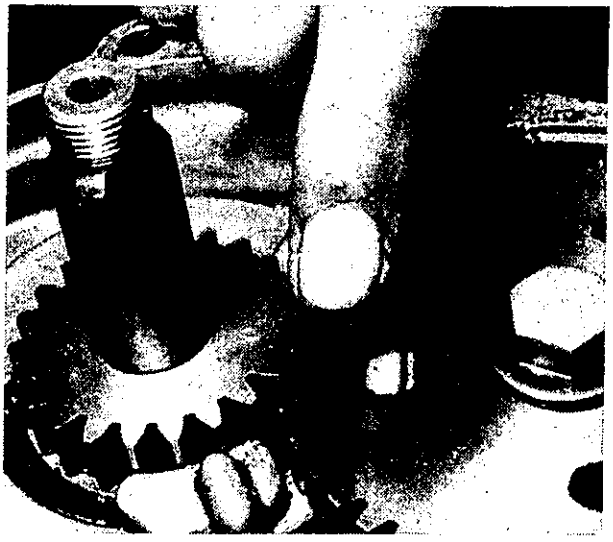
3 Press the journal ball bearing carrier into the centre of the clutch drum and the bearing itself. C100, C102, C110 and C110D (C114) models only, or:

Fit the clutch outer cover gasket and the outer cover itself. Press the journal ball bearing into the centre of the cover plate. (C50, S50 and SS50 models only).

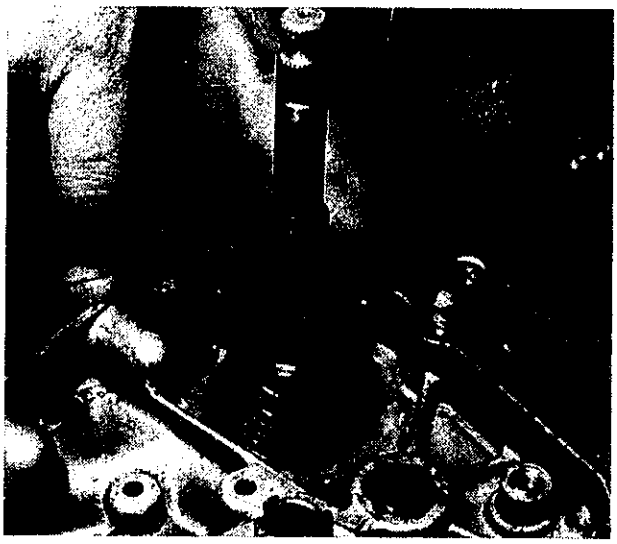
4 Position the clutch operating lever and washer on the splined gear lever pedal shaft and place the anti-rattle spring in the centre of the clutch operating cam plate. C100 and C102 models only, or:

Insert the oil through guide, oil guide spring, oil guide and thrust pad, in that order, through the centre of the journal ball bearing. (S50 and SS50 models).

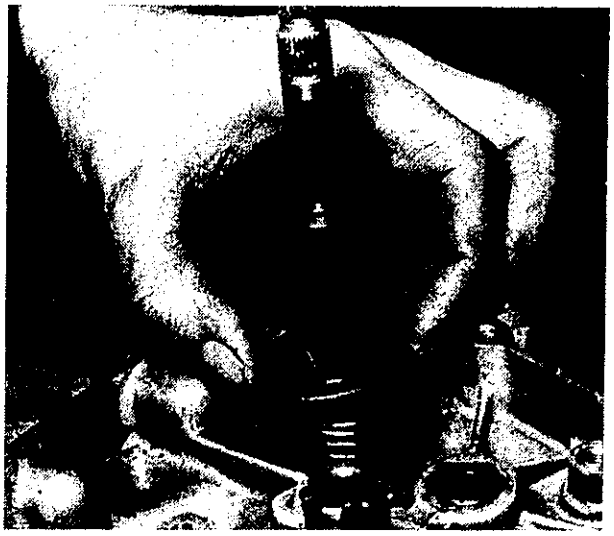
The C110, C110D (C114) and C50 models use variations of either of these two arrangements, although the operating principle in all cases is virtually identical.



3.3 Timing marks must register exactly. If pinion is replaced, heck position with old pinion

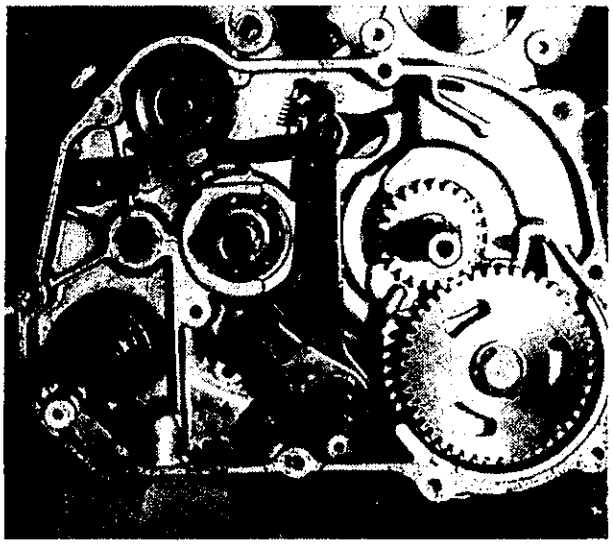


35.2 Tension kickstarter return spring clockwise and loop over crankcase abutment

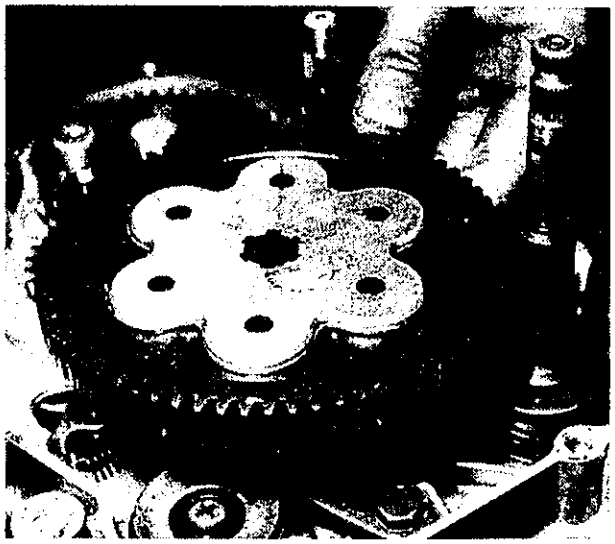


5.2A Don't forget to fit the retaining washer

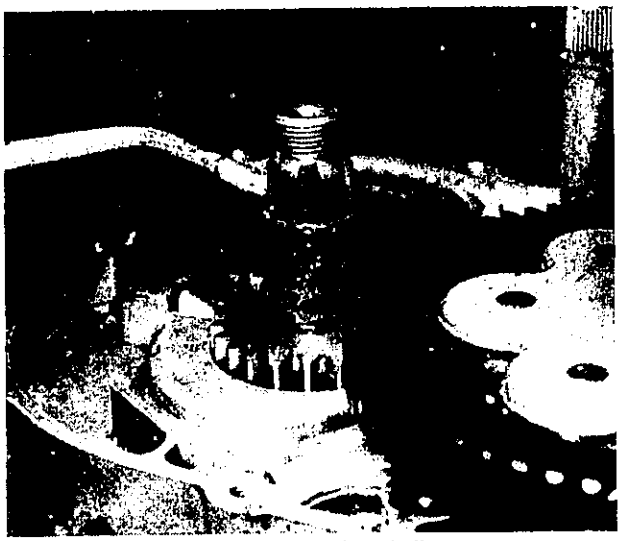
35.2B Before the circlip is fitted



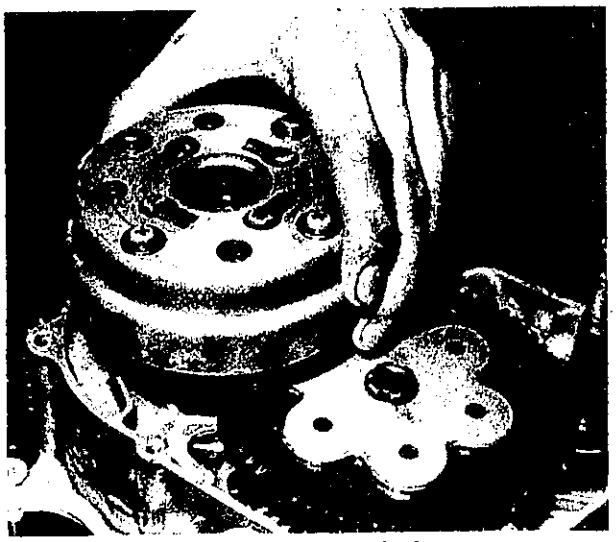
5.3 Check functioning of gearbox at this stage



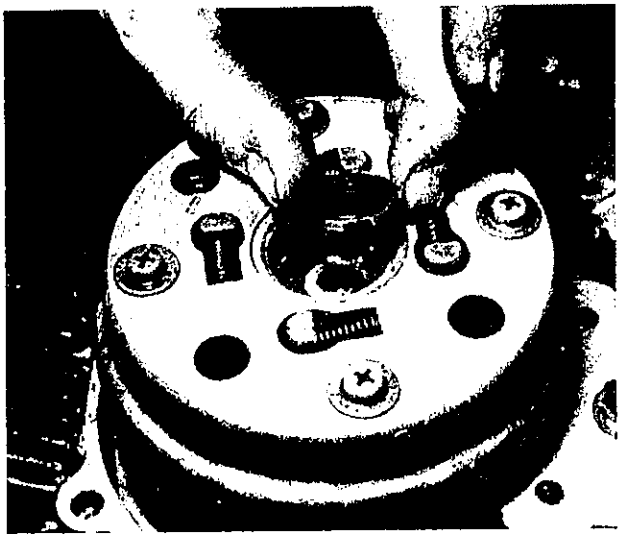
36.1 Lower driving gear on splined gearbox mainshaft



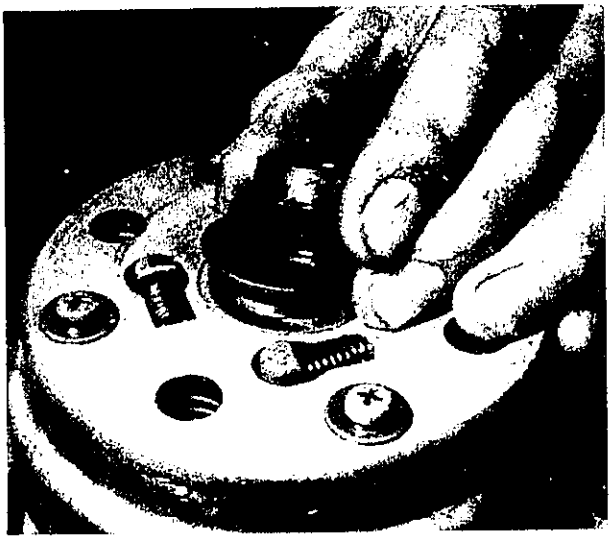
36.2 Place bronze bush on crankshaft and oil



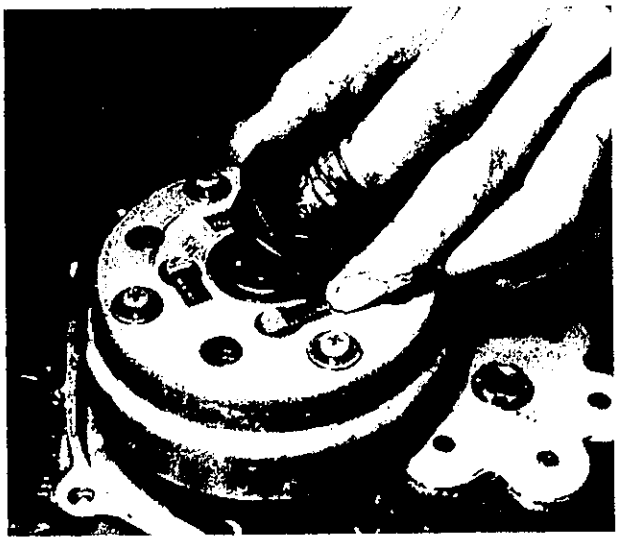
36.2A Lower clutch on crankshaft, over bush



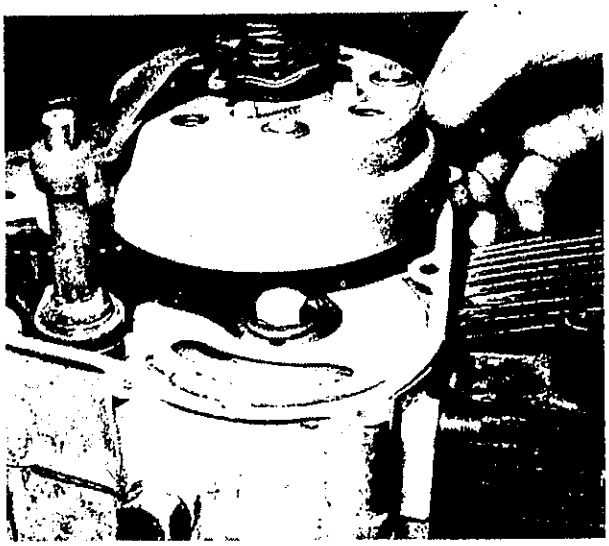
36.2B Use special tool to tighten sleeve nut, then lock with tab washer



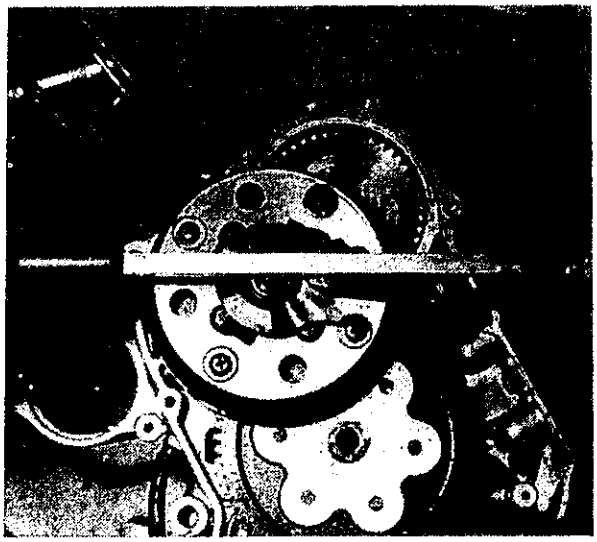
36.3 Bearing carrier and bearing fit next



36.4 Then clutch operating camplate and anti-rattle spring



36.4A Attach operating arm to gear lever pedal shaft and...



3.4B Check parts are in alignment, as shown

36.5 Lower left-hand clutch cover, after fitting new gasket

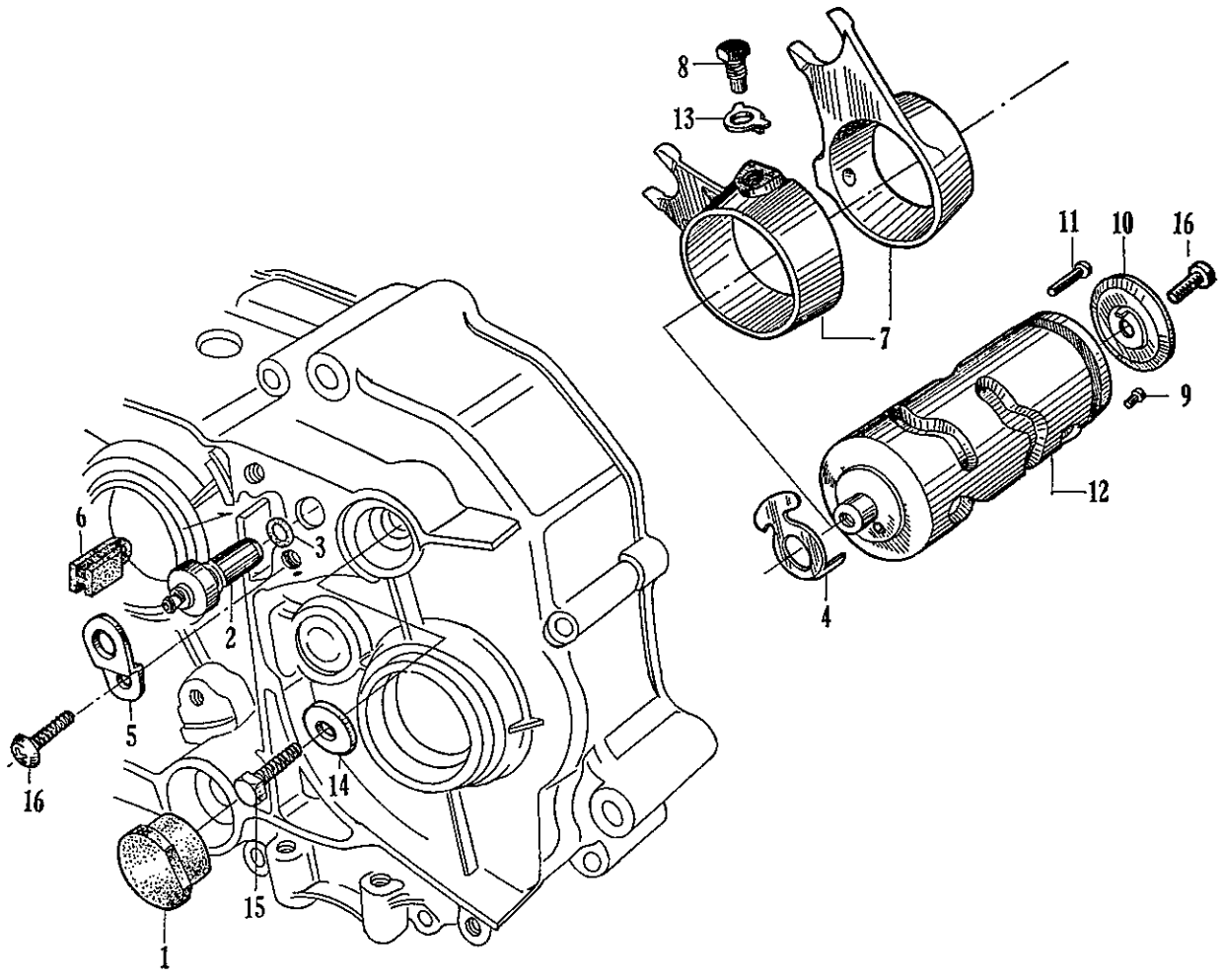


Fig.1.6 Gear selecting mechanism

1 Rubber blanking plug
2 Neutral indicator contact
3 'O' ring seal for contact
4 Rotary contact for neutral indicator
5 Retaining plate for contact
6 Grommet for neutral contact cable
7 Gear selector forks
8 Gear selector fork screwed pins
9 Pin for gear selector drum (short
10 Side plate for gear selector drum
11 Pin for gear selector drum (long)
12 Gear selector drum
13 Tab washer for gear selector fork screwed pin
14 Washer for gear selector drum retaining bolt
15 Gear selector drum retaining bolt
16 Cross head screw for contact retaining plate

5 Replace the two dowel pins in the outer side of the crankcase and position the new clutch cover gasket. Replace the two guide plate retaining springs in their housings within the clutch cover and fit the oil guide plate over the cam wheel so that the tang on the plate registers with the cutaway in the base of the crankcase (C100, C102, C110 and C110D (C114) models only). Lower the cover over the crankcase, taking care that the kickstarter oil seal in the cover is not damaged (lightly grease end of shaft). Tighten the nine cross head screws that retain the clutch cover in place.

37 Engine Reassembly - Fitting Starter Motor, Over-running Clutch and A.C. Generator

C102 models only

1 Slide the starter motor driven sprocket onto the crankshaft, after replacing key and bush and secure it with the small retaining plate and cross head screw. Fit the starter motor endless chain and position the starter motor in its housing so that the chain can be slipped over the small sprocket on the end of the starter motor shaft. Replace and tighten the three 10mm bolts that retain the starter motor in position, with the starter motor arranged so that the starter lead terminal faces towards the cylinder barrel.

2 Fit the woodruff key in the crankshaft and slide the generator rotor on to the crankshaft, taking care that the over-running clutch assembly at the rear of the rotor registers with the bearing surface of the driven sprocket.

3 Before proceding further, check whether the over-running clutch assembly is functioning correctly. If the rotor is turned clockwise, the driven sprocket at the rear should rotate in unison. When turning the rotor anti-clockwise, the sprocket should remain stationary. Instructions for dismantling and inspecting the over-running clutch are given in Chapter 7, Section 5.

38 Engine Reassembly - Fitting Advance and Retard Mechanism, Stator Coils and Starter Motor Drive Cover

C102 models only

1 Place the automatic advance and retard unit on the top face of the rotor, so that the pin in the base of the mechanism registers with the hole in the face of the rotor.

2 Replace the central 14mm retaining bolt and washer and tighten, whilst holding the rotor firmly with a chain wrench or some similar tool. Check that the advance and retard mechanism operates smoothly and freely.

3 Locate the stator coil assembly in the crankcase housing so that the timing pointer is to the rear of the engine. Replace and tighten the three cross head screws that hold the stator coil assembly in position. Locate the cable harness grommet in the crankcase slot made for this purpose and connect the green wire to the spring loaded end contact of the neutral indicator contact.

4 Fit the starter drive cover to the crankcase, using a new gasket. Make sure the blue wire to the condenser is threaded through the inspection aperture and connected. Tighten the four cross head screws that retain the cover to the crankcase.

5 Position the contact breaker plate in its housing, replace and tighten the two cross head retaining screws.

All other models

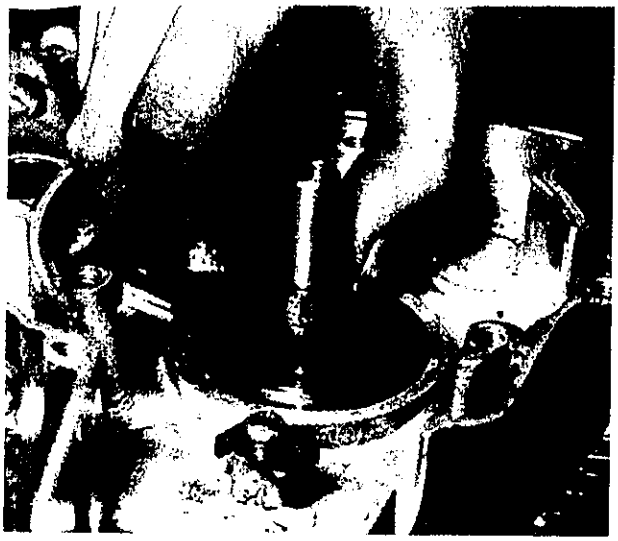
1 Position the stator plate and coil assembly in the outer crankcase, making sure that it is pressed home fully before the two countersunk retaining screws are tightened.

2 Fit the woodruff key in the crankshaft, locate the flywheel on the crankshaft, replace the retaining nut and washer and tighten fully whilst holding the flywheel firmly with a chain wrench or some similar tool.

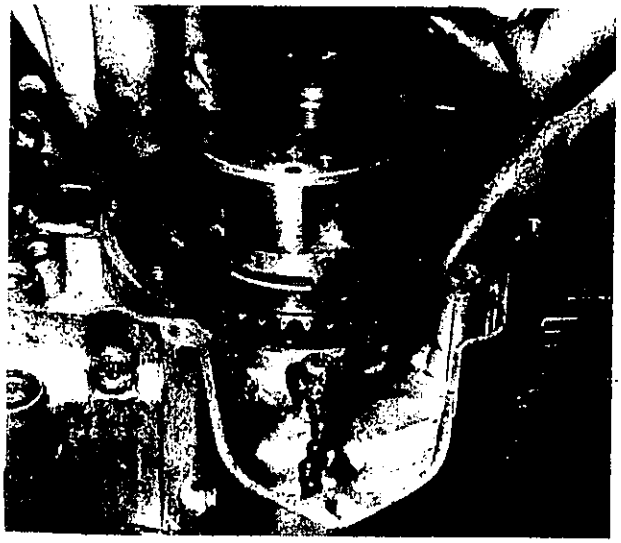
39 Engine Reassembly - Setting the Contact Breaker Points

1 Reference to Chapter 4, Section 3 will show how the contact breaker points can be adjusted to a gap of 0.014 inch when they are fully open. This check, and if necessary, adjustment must always be made before the ignition timing can be set.

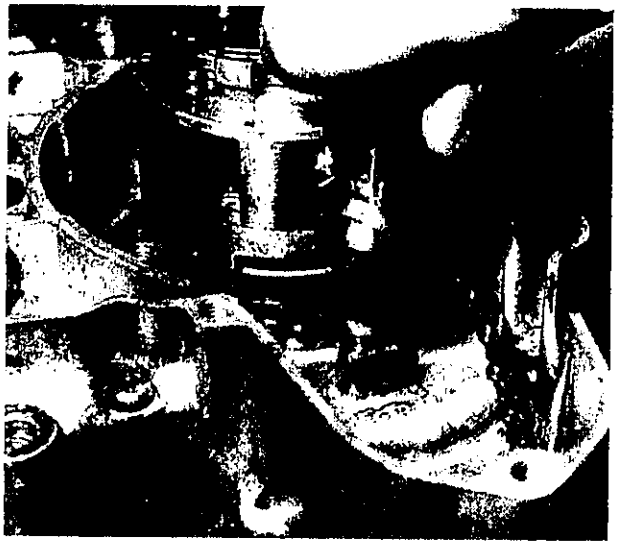
2 Replace end cover, fitting new gasket.



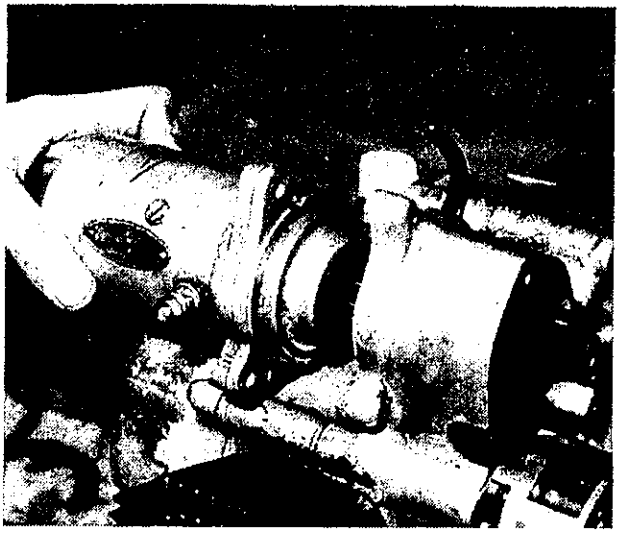
37.1 Start by replacing bush on crankshaft



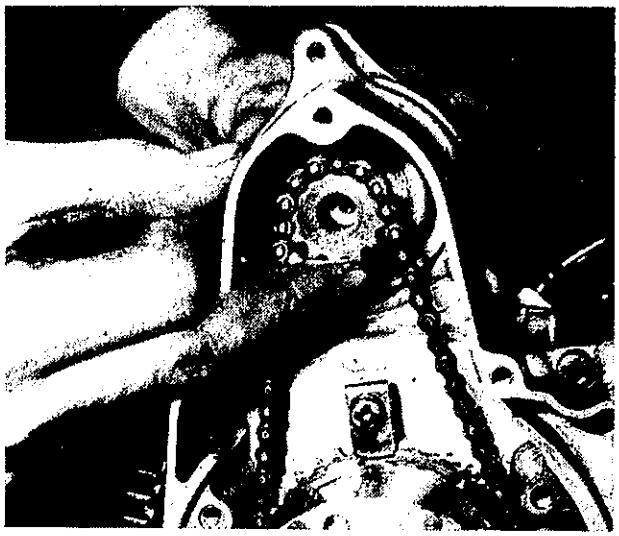
37.1A After adding woodruff key fit starter motor driven sprocket and chain (with rotor optional)



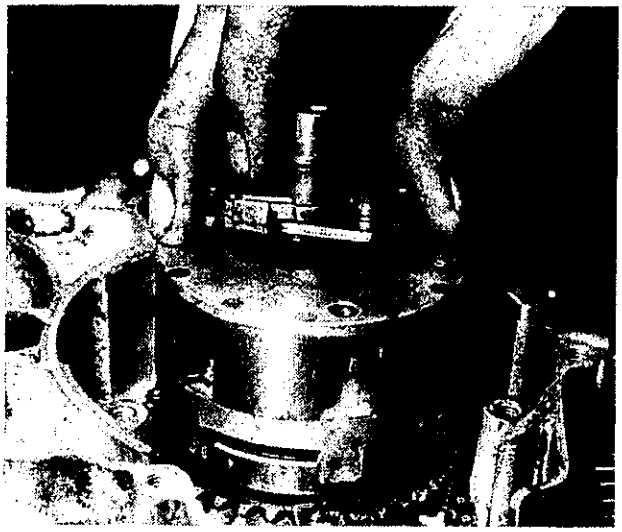
37.1B Position and tighten retaining plate



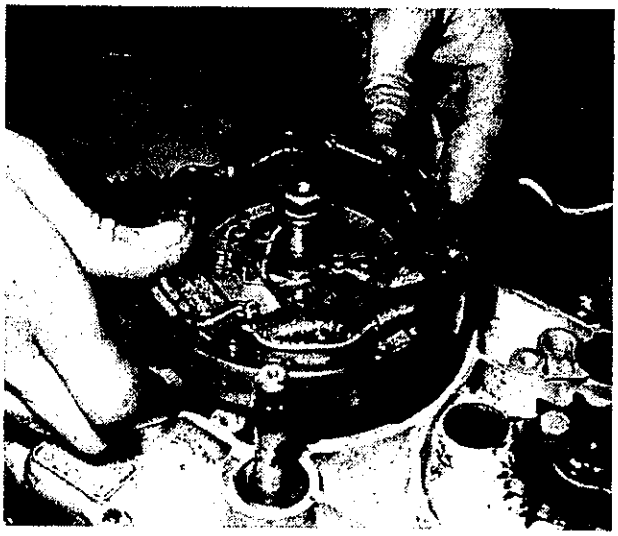
37.1C Fit starter motor with terminal towards cylinder barrel after...



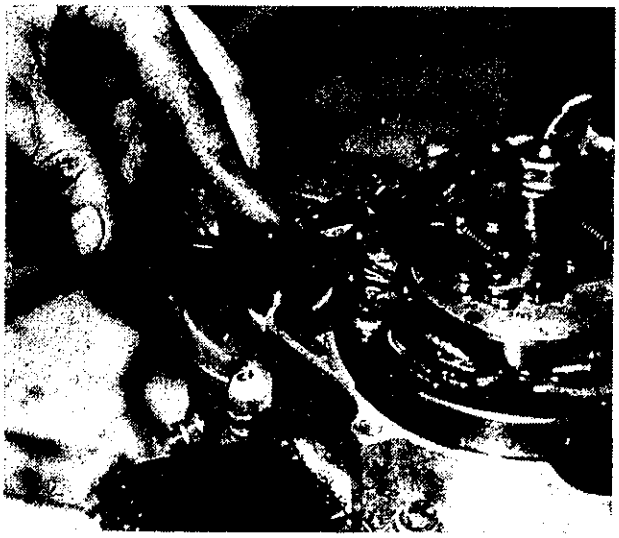
37.1D Twisting to ensure small sprocket and chain locate on end shaft



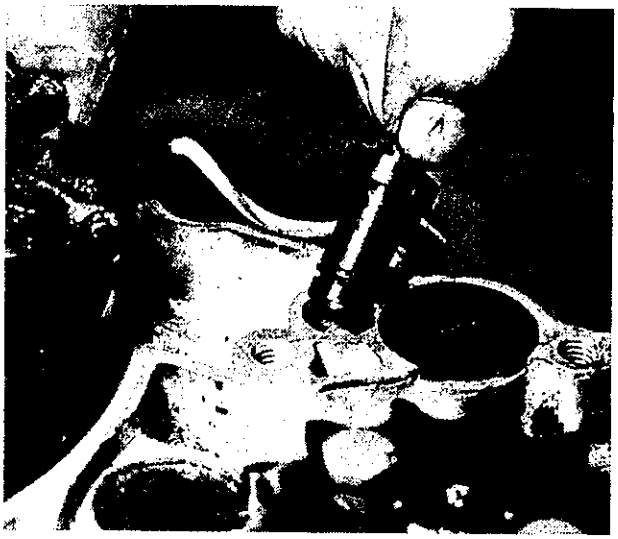
38.1 Fit auto-advance unit so that pin in base registers with rotor



38.3 Replace stator coil assembly and....

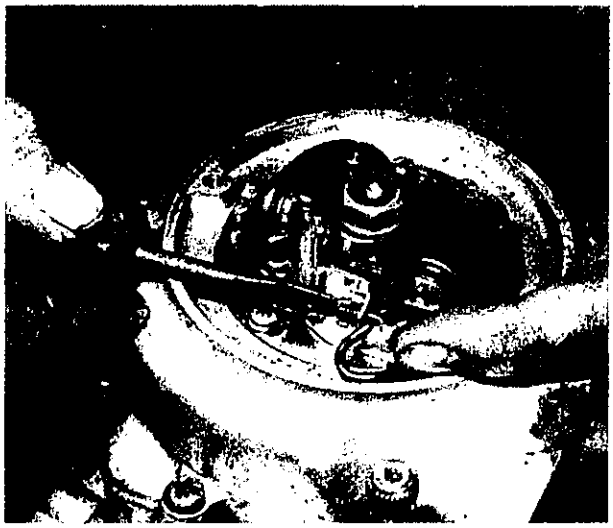


38.3A Locate harness grommet in crankcase

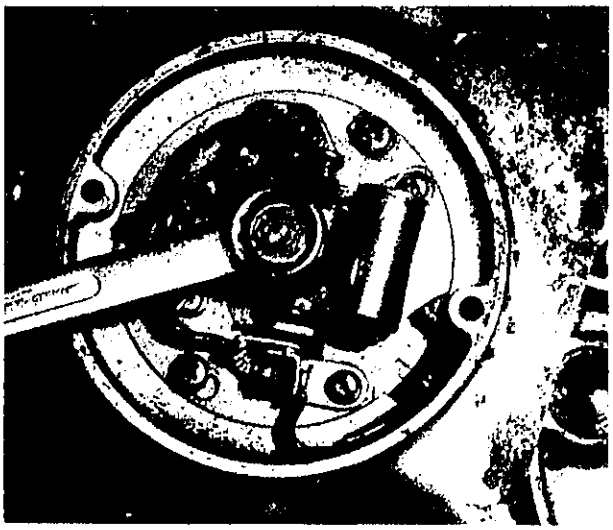


38.3B Locate neutral indicator switch and connect green wire

38.4 When fitting starter drive cover, make sure blue wire passes through aperture



38.4A Connect blue wire to spring-loaded connector



39. Turn contact breaker assembly to ensure points are fully open

40 Engine Reassembly - Checking and Resetting the Ignition Timing

This operation is described fully in Chapter 4, Section 6. The need for accuracy cannot be over-stressed because even a relatively small error in setting will have a marked effect on the performance of any small capacity engine.

41 Engine Reassembly - Fitting the Cylinder Head and Rocker Box

1 Assuming the cylinder head has received the attention described in Sections 21 to 23 of this Chapter, it can be replaced on the cylinder barrel.
2 Place a new copper cylinder head gasket in the spigot joint, using a coating of oil to hold it in place during reassembly. Replace also the two 'O' rings at the top of the push rod tunnels and a further seal ring over the oil drainaway.
3 Slide the cylinder head down the long holding down studs, making sure that none of the seals or gaskets are displaced. Replace the cylinder head nuts and tighten them gradually, in a diagonal sequence. Make sure they are tight, but do not over-tighten otherwise there is risk of shearing one of the studs.
4 Replace the pushrods, making sure they register with the tunnels inside the cam followers. The shorter exhaust pushrod fits in the left-hand side.
5 Fit a new rocker box gasket and lower the rocker box on to the cylinder head, so that the ends of the pushrods engage with the cups in the ends of the rocker arms.
6 Insert and tighten the four rocker box bolts, noting that the longer ones should be fitted in the dowel hole positions. On the C100 and C102 models, the bottom rocker box bolts have extensions, to which the cylinder head dirt shield is attached.

42 Engine Reassembly - Adjusting the Tappets

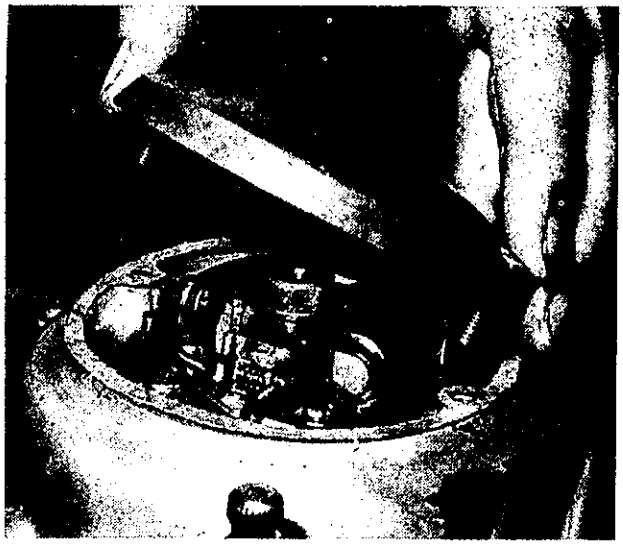
1 The tappets should be adjusted to 0.002 inch clearance when the engine is cold and the piston is at top dead centre (TDC) on the compression stroke.
2 To adjust the tappets, slacken the lock nut at the end of the rocker arm and turn the square-ended adjuster until the clearance is correct, as measured by a feeler gauge. Hold the square-ended adjuster firmly when the lock nut is tightened, otherwise it will move and the adjustment will be lost.
3 After completing the adjustment to both valves, refit and tighten the rocker box caps, using new 'O' ring seals. Use a spanner that is a good fit otherwise the caps will damage easily.

43 Engine Reassembly - Completion and Final Adjustments

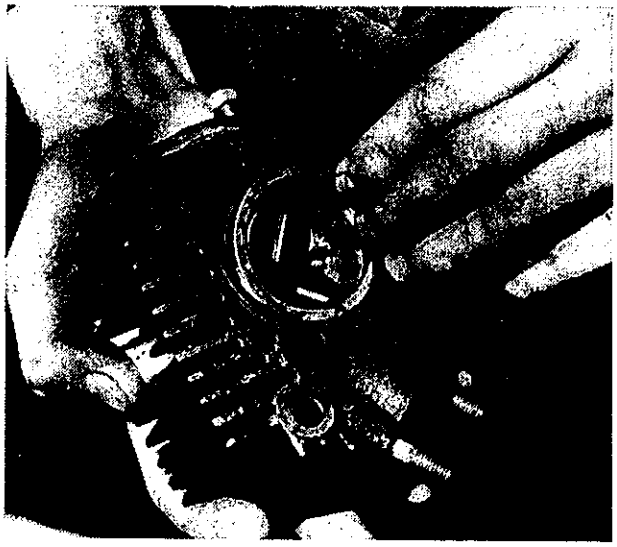
1 Refit the rocker oil feed pipe (ohv models only) and tighten the two union bolts.
2 Replace the sparking plug after checking that it is gapped at 0.024 inch.
3 Replace and tighten the crankcase drain plug. Refill the sump with clean engine oil of the recommended viscosity. The capacity is 0.7 litres, just over one Imperial pint. Check with the dipstick to make sure the oil is at the correct level.

44 Refitting the Engine/Gearbox Unit in the Frame

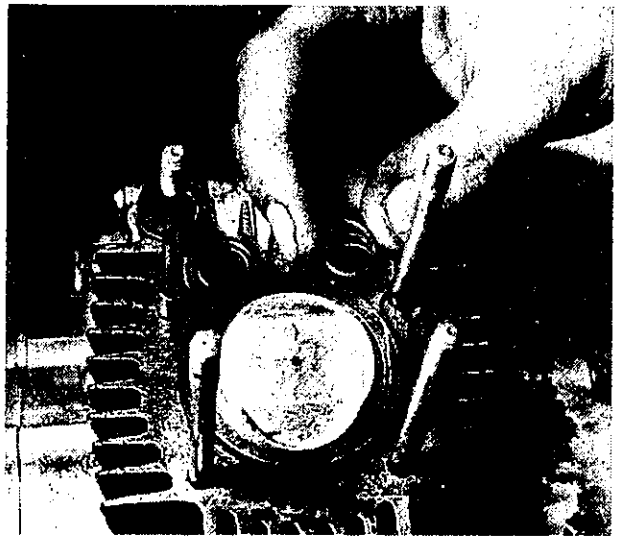
Follow in reverse the procedure given in Section 5 of this Chapter.



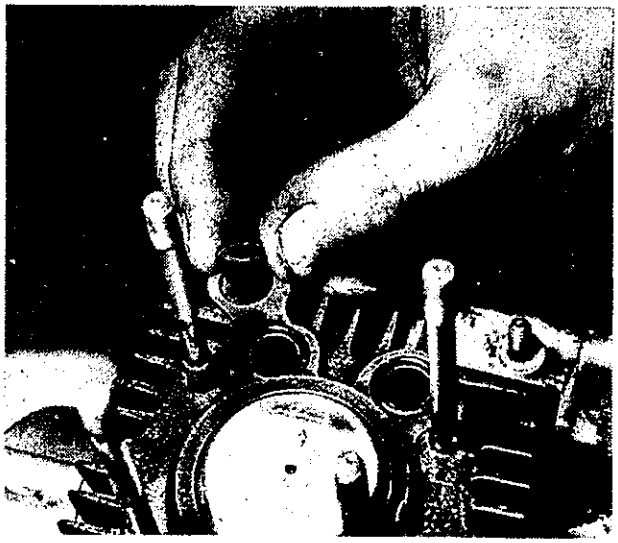
40.2 Fit new gasket before replacing end cover



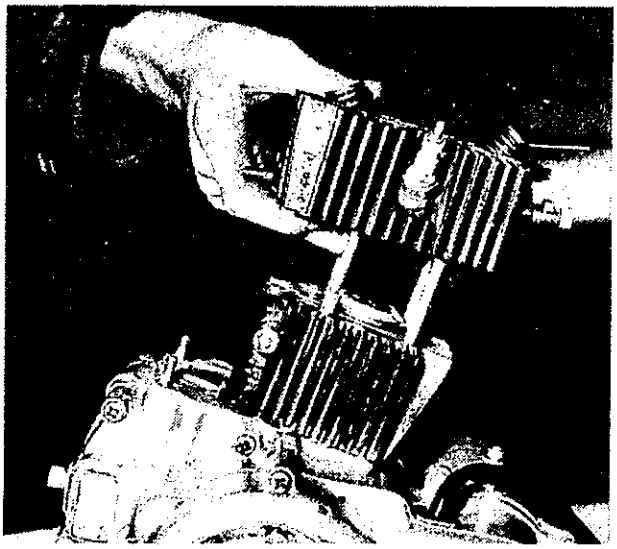
41.2 Hold new head gasket in place with oil



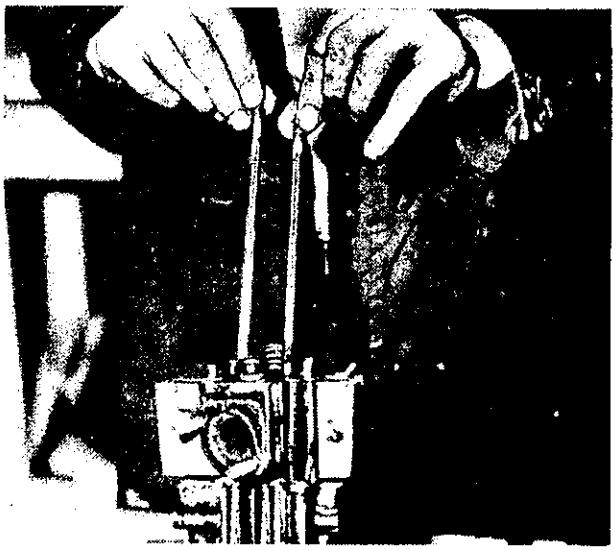
41.2A New 'O' ring seals for push rod tubes....



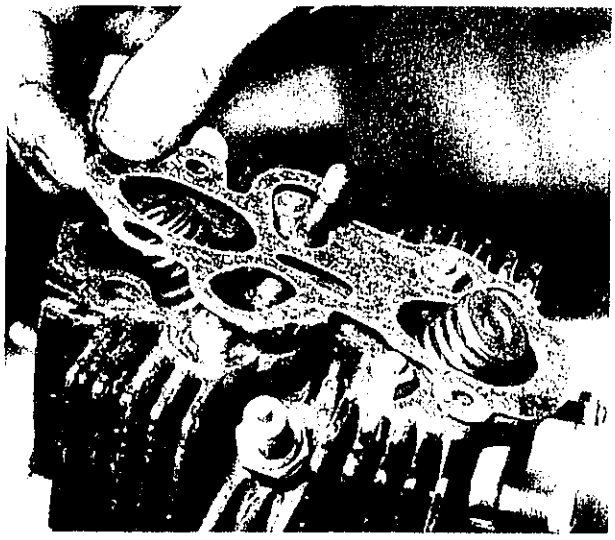
41.2B Also new seal for oil drainaway



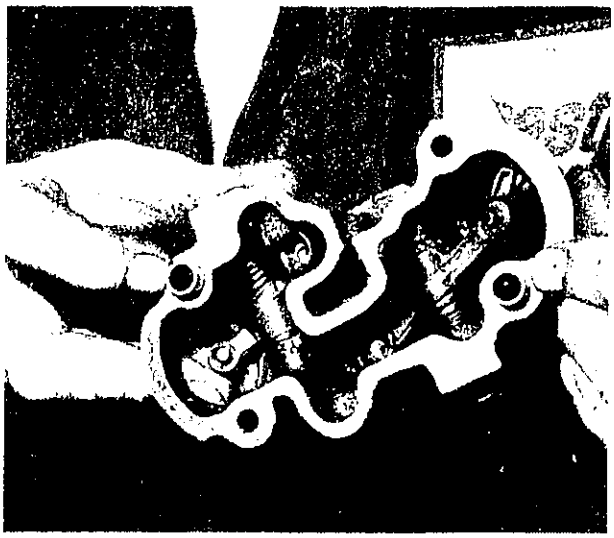
41.3 Slide cylinder head down retaining studs



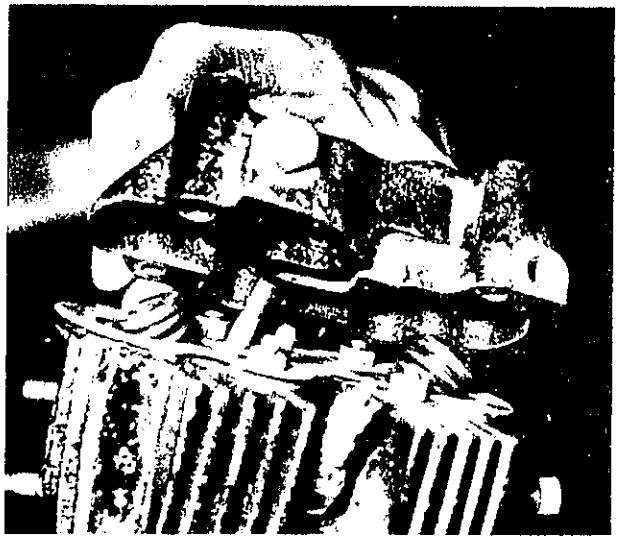
41.4 Replace both push rods, making sure they enter the hollow cam followers at their bottom ends



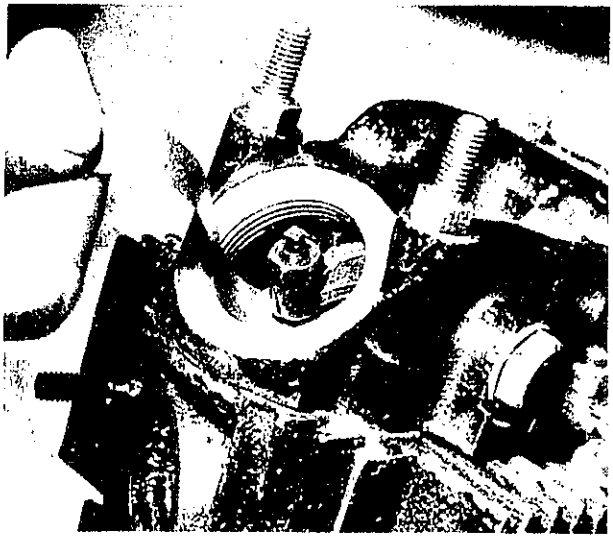
41.5 Fit new rocker box gasket



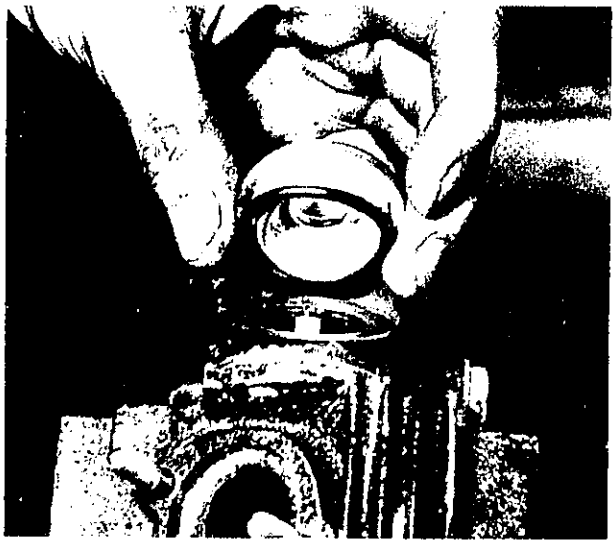
41.5A Make sure rocker box dowels are in position



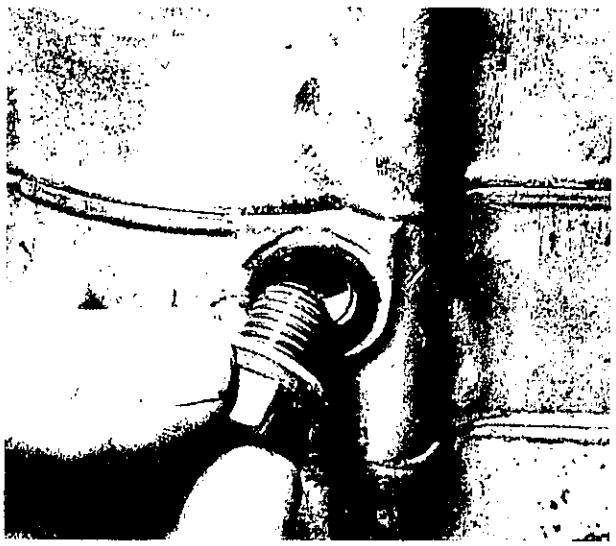
41.5B Lower rocker box into position, checking that push rods engage with rocker arm ends



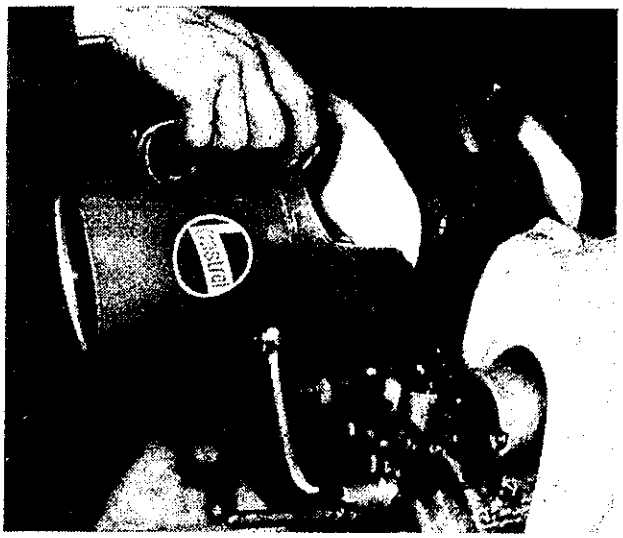
42.2 Check tappets after tightening down head



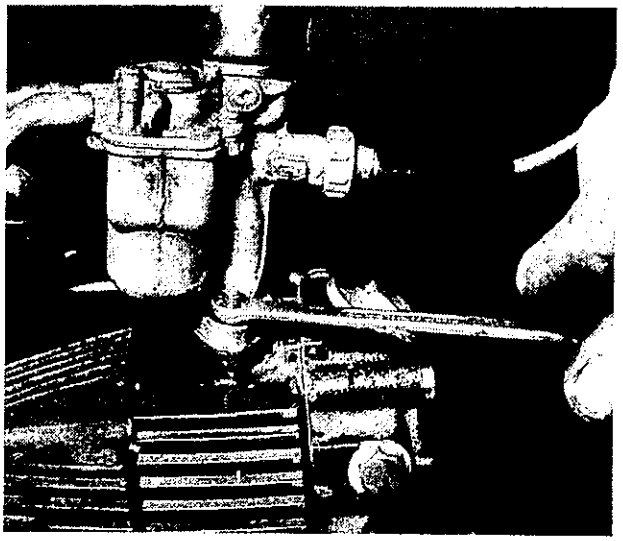
42.3 Always fit new 'O' ring seals to rocker caps



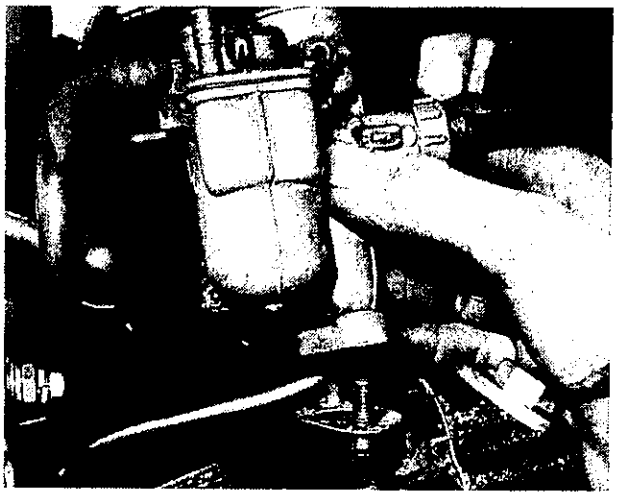
43.3 Don't forget to replace the drain plug before refilling sump!



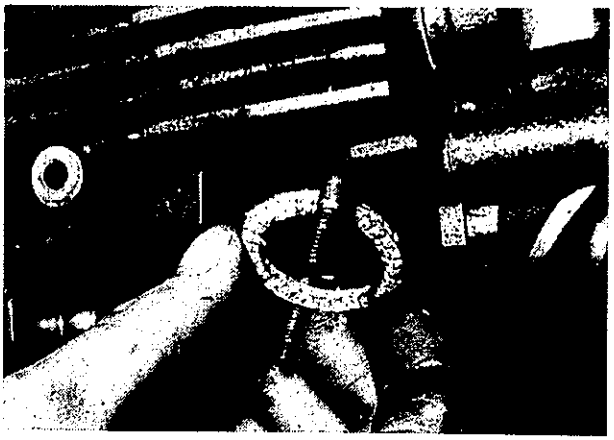
43.3A Refill sump to correct level with new oil



44A. Do not overtighten the bolts or flange will bow



44. Use new gasket for carburettor



44B. Fit new copper/asbestos washer before attaching exhaust pipe.

45 Starting and Running the Rebuilt Engine

When the initial start-up is made, run the engine gently for the first few minutes in order to allow the oil to circulate throughout all parts of the engine. Remember that if a number of new parts have been fitted or if the engine has been rebored, it will be necessary to follow the original running-in instructions so that the new parts have ample opportunity to bed-down in a satisfactory manner. Check for oil leaks and/or blowing gaskets before the machine is run on the road.

Part 2 starts overleaf

Symptom	Cause	Remedy
Engine will not turn over	Clutch slip	Check and adjust clutch.
	Flat battery	Recharge or replace battery.
	Bad battery connection or	Check all connections are clean and tight.
	Defective starter solenoid (C102 only)	Bridge solenoid contacts with heavy duty cable. If engine turns over, replace solenoid.
	Defective starter motor (C102 only)	Remove and overhaul.
Engine turns over but will not start	No spark at plug	Remove plug and check.
	No fuel reaching engine	Check fuel system.
	Too much fuel reaching engine	Check fuel system.
	Contact breaker gap incorrect, or points dirty.	Check contact breaker.
Engine runs but fires unevenly	Ignition and/or fuel system fault	Check systems as though engine would not start.
	Incorrect valve clearances	Check and reset.
	Burnt valves	Check compression. If none, remove cylinder head and examine.
	Blowing cylinder head gasket	Leak should be audible. Lift cylinder head and replace gasket.
	Incorrect ignition timing	Check timing marks for accuracy of setting.
Lack of power	Incorrect ignition timing	See above.
	Fault in fuel system	Check fuel system.
	Incorrect valve clearances	Check and reset tappets.
	Burnt valves	Check compression.
	Blowing cylinder head gasket	See above.
	Badly worn cylinder barrel and/or piston	Examine piston and cylinder barrel. Check with list of tolerances.
High oil consumption	Oil leaks from engine/gear unit.	Identify source of leak and rectify.
	Cylinder barrel in need of rebore and o/s piston	Fit new rings and piston after rebore.
	Worn valve guides	Recondition as appropriate.
Excessive mechanical noise	Failure of lubrication system	Stop engine and do not run until fault located.
	Wrong valve clearances	Re-adjust.
	Worn cylinder barrel (piston slap)	Rebore and fit o/s piston.
	Worn big-end bearing (rattle)	Fit new crankshaft assembly.
	Worn crankshaft bearings (rumble)	Fit new journal bearings.

Section 88, Gearbox fault diagnosis appears overleaf

Fault Finding Chart - Gearbox

Symptom	Cause	Remedy
Difficulty in engaging gears	Gear selectors not indexed correctly	Check that screwed pins engage fully with selector drum.
	Gear selector forks bent	Replace selector forks.
Machine jumps out of gear	Worn dogs on ends of pinions involved	Replace worn pinions.
	Selector pawl spring broken	Replace spring.
Kickstarter does not return when engine turned over or started	Broken or misplaced return spring	Replace spring or tension correctly.

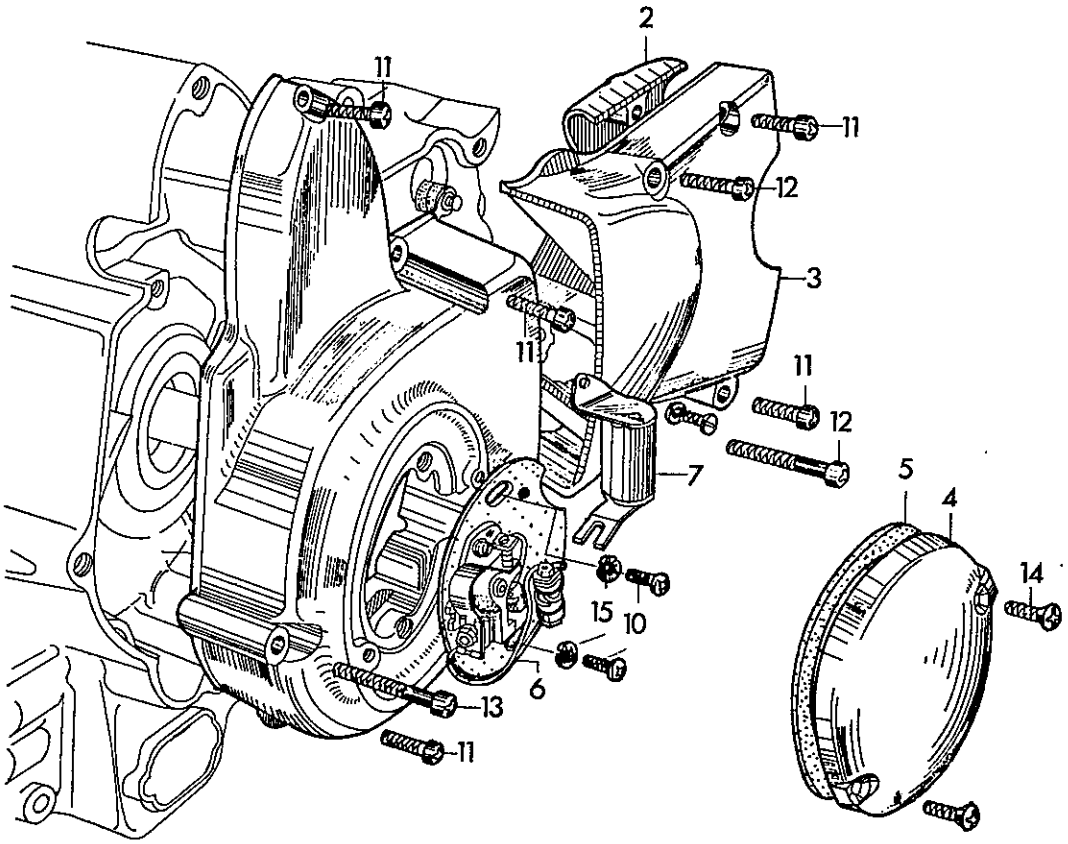


Fig.4.2 Contact breaker in left hand crankcase cover - C102

1 Left-hand crankcase cover
2 Final drive sprocket cover - rear
3 Final drive sprocket cover - front
4 Contact breaker cover
5 Contact breaker cover gasket
6 Contact breaker assembly
7 Condenser
8 Gear change pedal
9 Gear change pedal pinch bolt
10 Cross head screws for contact breaker plate
11 Cross head screws for left-hand crankcase cover and final drive sprocket cover (short)
12 Cross head screws for final drive sprocket cover (long)
13 Cross head screw for left-hand crankcase cover (long)
14 Cross head screws for contact breaker cover
15 Spring washers for contact breaker plate screws

Chapter 2 Clutch assembly

Contents

Specifications

	C100/C102	C110/C110D (C114)	C50 and S50	SS50
Clutch springs				
Number	4	8	4	4
Free Length	23.23mm	25.20mm	19.2mm	18.9mm
Minimum length	22.07mm	24.00mm	18.2mm	18.2mm
Inserted clutch plates				
Number	2	1	2	1
Thickness	2.7 - 2.8mm	3.5mm	3.5mm	3.5mm
Minimum thickness	2.3mm	2.9mm	3.1mm	3.1mm

1 General Description

The clutch is of the multi-plate type having two plain plates and two inserted plates (automatic clutch models) or one plain and one inserted plate (manually operated clutch models). In the former case the clutch is fully automatic in operation and is interconnected with the gear change pedal so that it disengages and re-engages in the correct sequence. In the latter case, the clutch is manually operated by the customary handlebar mounted clutch lever, via a flexible control cable.

2 Clutch Assembly - Dismantling

The clutch assembly complete is removed by following the procedure detailed in Chapter 1.11. When removed, the clutch can be broken down into its component parts as follows:

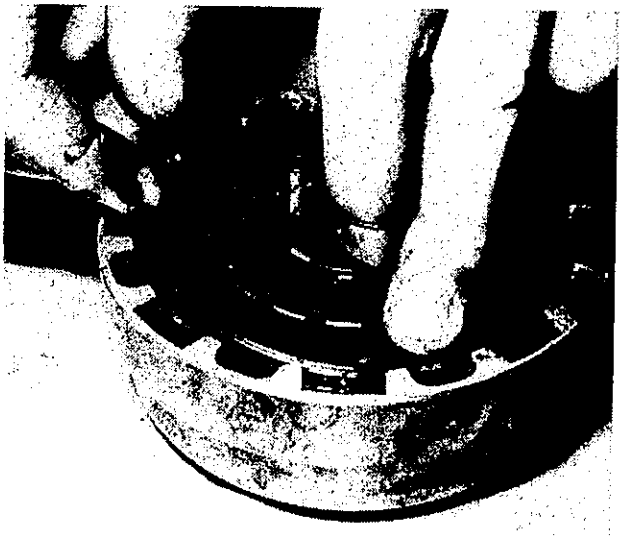
C100, C102 and C50 models

1 Remove the bronze bush from the centre of the drive gear and hold the clutch body in the left hand with the drive side (back) facing upwards. Prise out the 101mm circlip from the rear of the clutch body and lift out the drive gear assembly complete with the two plain and two inserted plates. Remove the four compression springs from their guide pins.

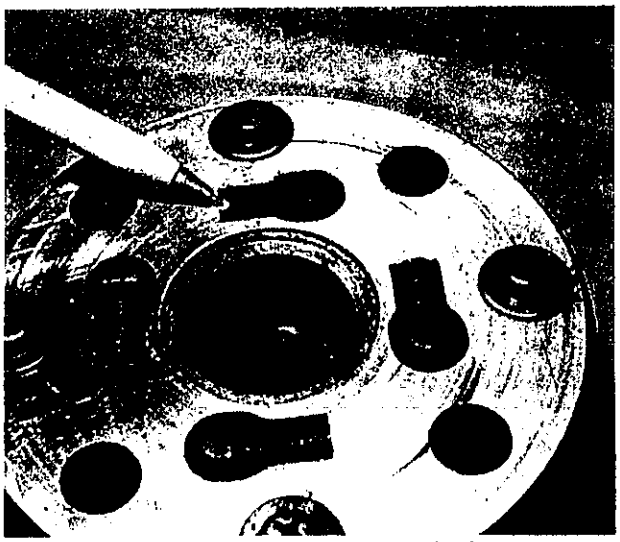
2 Lift out the lower plate complete with the guide pins and the eight hardened steel rollers. The C50 clutch employs four weights but operates on the same centrifugal principle.

3 Invert the clutch body and remove the four cross head screws from the front face, unscrewing each a little at a time. This will release the drive plate, the four small damper springs and the four main clutch springs.

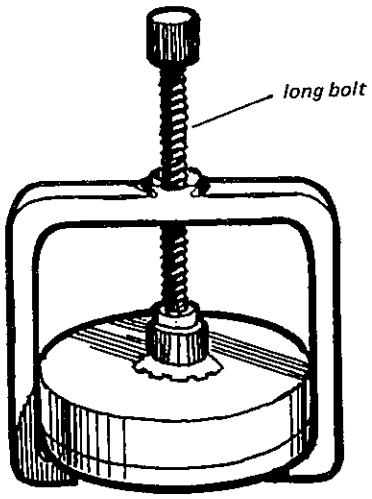
4 Removal of the retaining circlip from the clutch centre will permit the clutch drive gear to be separated. (C100 and C102 models only).



2.1 Prising out the 101mm circlip. Note fingers applying pressure to clutch plates



2.3 Clutch damper springs locate on these projections



2.1A Home-made tool for compressing clutch

C110, C110D (C114), S50 and SS50 models

1 To aid the dismantling of the clutch it is advisable to make up a compressing tool as shown in the accompanying diagram. It is possible to dispence with this tool if another pair of hands is available during the dismantling operation.

2 Remove the bronze bush from the centre of the drive gear and use a small screwdriver to prise out the four damper springs from the front of the clutch housing.

3 Use the compressing tool, or with the aid of another pair of hands, compress the clutch plate assembly sufficiently to allow the 101mm circlip to be removed from its location. Release the pressure and withdraw the bronze bush from the centre of the drive gear, the drive gear, plain clutch plate, inserted clutch plate, clutch pressure plate and the eight clutch springs.

3 Clutch - Examination and Renovation

1 Check the condition of the clutch drive to ensure none of the teeth are chipped, broken or badly worn.

2 Give the plain and the inserted clutch plates a wash with a paraffin/petrol mix and check that they are not buckled or distorted. Remove all traces of clutch insert debris, otherwise a gradual build-up will affect clutch action.

3 Visual inspection will show whether the tongues of the clutch plates have become burred and whether indentations have formed in the slots with which they engage. Burrs should be removed with a file, which can also be used to dress the slots, provided the depth of the indentations is not too great.

4 Check the thickness of the friction linings in the inserted plates. The following are the recommended serviceable limits:

C100 and C102 models	0.114 inch (2.9 mm)
C110 and C110D (C114) models	0.93 inch (2.3 mm)
C50 and S50 models	0.122 inch (3.1 mm)
SS50 model	0.122 inch (3.1 mm)

If the linings have worn to, or below these limits, the plates should be replaced. Worn linings promote clutch slip.

5 Check also the free length of the clutch springs. The recommended serviceable limits are as follows:

C100 and C102 models	0.9921 inch (24.2 mm)
C110 and C110D (C114) models	0.9146 inch (23.23mm)
C50, S50 and SS50 models	0.717 inch (18.2 mm)

Do not attempt to stretch the springs if they have compressed. They must be replaced when they reach the serviceable limit, as a complete set.

4 Clutch Operating Mechanism - Examination and Renovation

C100, C102 and C50 models odels

The automatic clutch fitted to these models is designed so that as the engine speed increases, eight hardened steel rollers increase their pressure on the clutch plates through being thrown outwards along their respective tapered tracks by centrifugal force. Four small diameter compression springs assist the clutch plates to free and four large diameter compression springs supply additional pressure when the rollers reach the end of their tracks.

A quick acting three-start thread mechanism is incorporated in an extension of the drive gear to apply pressure when the kickstarter is operated, or when the machine is on the over-run.

The clutch is completely disengaged each time the gear operating pedal is moved, through a direct linkage between the gear change lever spindle and the clutch withdrawal mechanism.

1 Check the condition of the roller ramps in the clutch druve plate and the roller contact area. Excessive wear in these areas is often the cause of engine stalling, fierce clutch engagement and difficulty in gear changing. Replace the worn parts.

2 It is rarely necessary to replace the eight rollers or the clutch housing, unless the rollers show evidence of wear and the clutch housing has roller indentations. This type of wear is caused by poor gear changing, usually by releasing the gear pedal too fast when moving away from a standstill or changing gear.

3 The C50 model uses a different mode of operation involving the use of four weights. The earlier problem of wear was therefore obviated even though the clutch operates on the centrifugal principle.

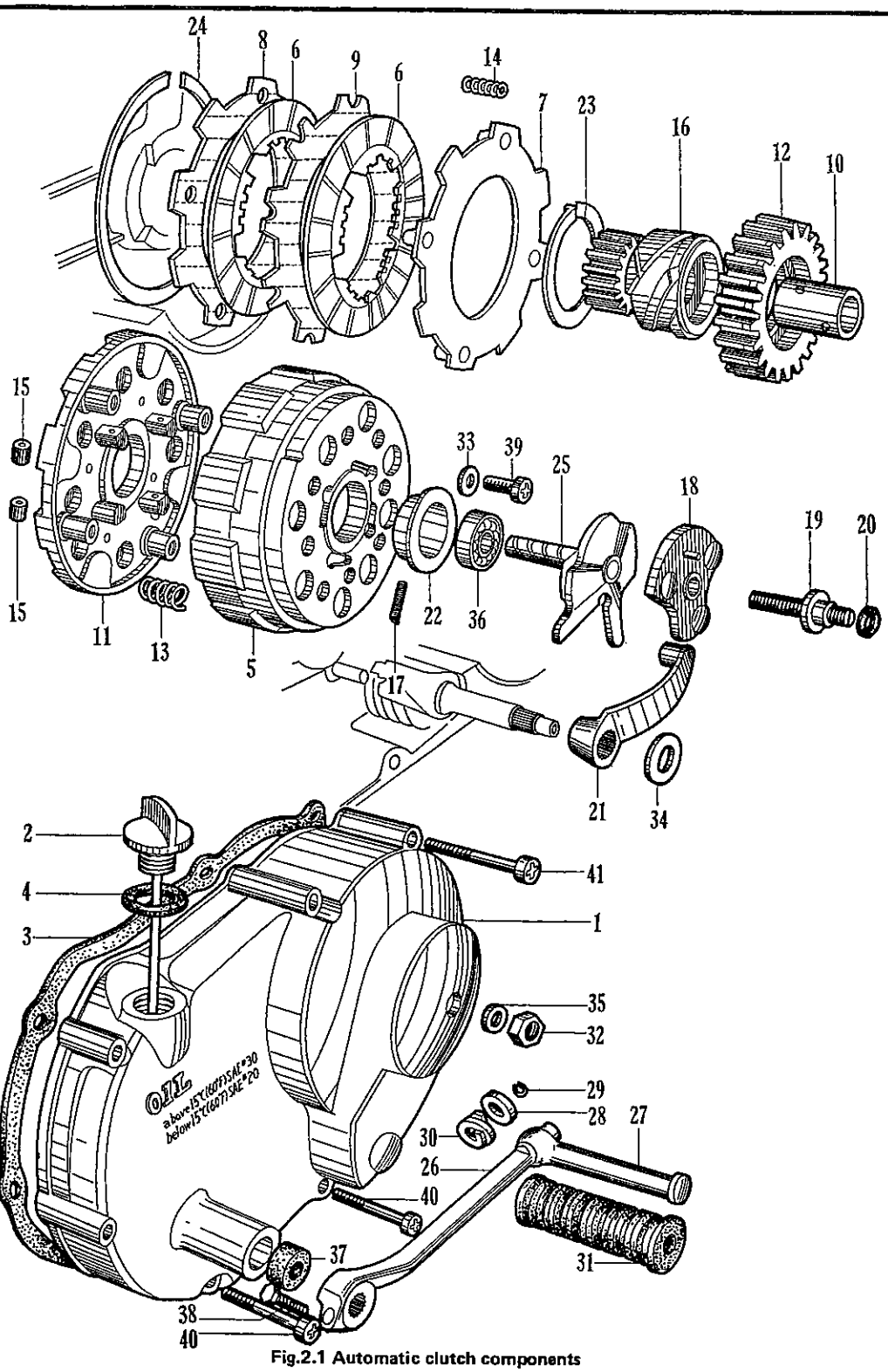


Fig.2.1 Automatic clutch components

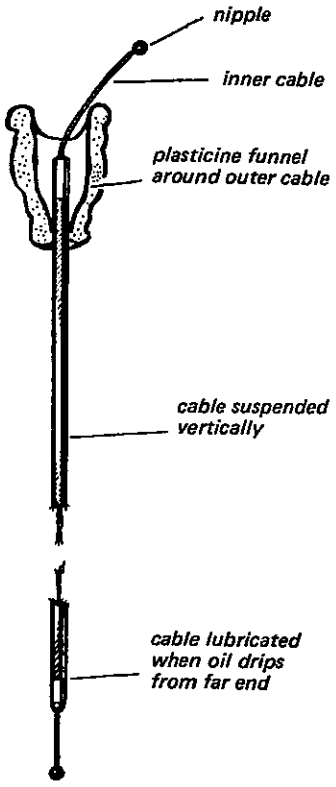
1 *Right-hand crankcase cover*
2 *Dipstick/oil cap*
3 *Right-hand crankcase cover gasket*
4 *Dipstick/oil cap sealing washer*
5 *Clutch drum*
6 *Inserted clutch plate*
7 *Plain clutch plate A*
8 *Plain clutch plate C*
9 *Plain clutch plate B*
10 *Clutch centre bush*
11 *Clutch drive plate*
12 *Clutch drive gear*
13 *Clutch spring*
14 *Clutch release spring*
15 *Clutch roller*
16 *Clutch centre guide bush*
17 *Clutch damper spring*
18 *Clutch lifter*
19 *Clutch adjuster bolt*
20 *'O' ring*
21 *Clutch operating arm*
22 *Clutch bearing retainer*
23 *37mm circlip*
24 *101mm circlip*
25 *Clutch cam plate*
26 *Kickstarter arm*
27 *Kickstarter pedal*
28 *Washer*
29 *Clip*
30 *Spring washer*
31 *Kickstarter rubber*
32 *8mm nut*
33 *Washer*
34 *10.5mm washer*
35 *8.5mm washer*
36 *Ball bearing*
37 *Oil seal, kickstarter shaft*
38 *Kickstarter pinch bolt*
39 *Cross head screw clutch drum*
40 *Cross head screw, right-hand crankcase cover*
41 *Cross head screw, right hand crankcase cover*

C110, C110D (C114), S50 and SS50 models

1 Provided the clutch adjustment is correct, as detailed in Section 6 of this Chapter, heavy clutch operation can often be traced to a dry, trapped or partially broken operating cable. Check whether the cable has any tight bends or whether it is trapped at any point, allowing the outer covering to become compressed.

2 It is best to remove the cable completely for oiling, so that it can be hung vertically. The accompanying diagram will show how to oil the cable, using a makeshift funnel of paper, plasticine or some similar material. Do not refit the cable to the machine until clean oil issues from the further most end.

3 If any of the inner cable strands are broken or if the outer covering is frayed, broken or compressed, the cable should be replaced. Clutch operation will become particularly heavy if water is able to enter the cable.

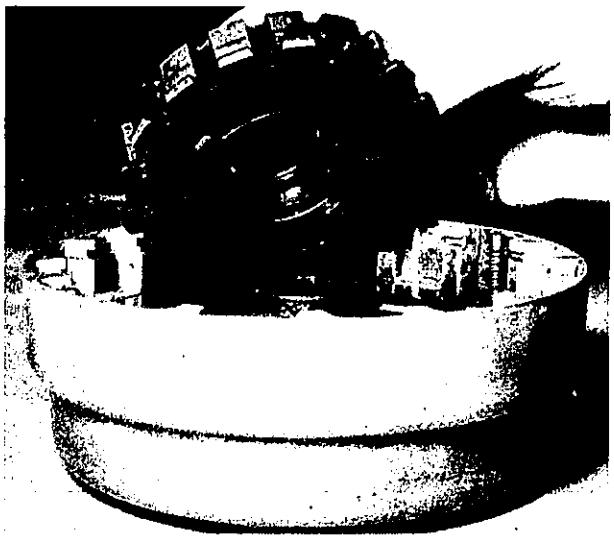


4.2 Oiling the control cables

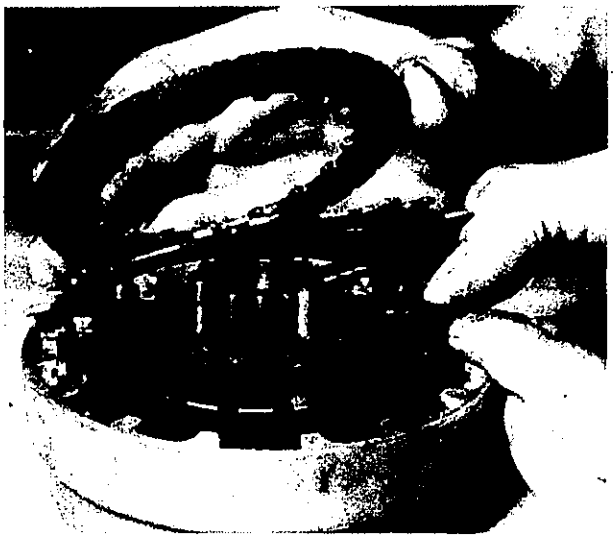
5 Clutch - Reassembly

1 Reassemble the clutch components by following the dismantling procedure in reverse. A second pair of hands, or the clutch compressing tool is necessary to depress the clutch plates against the spring pressure, whilst the retaining circlip is inserted and correctly located.

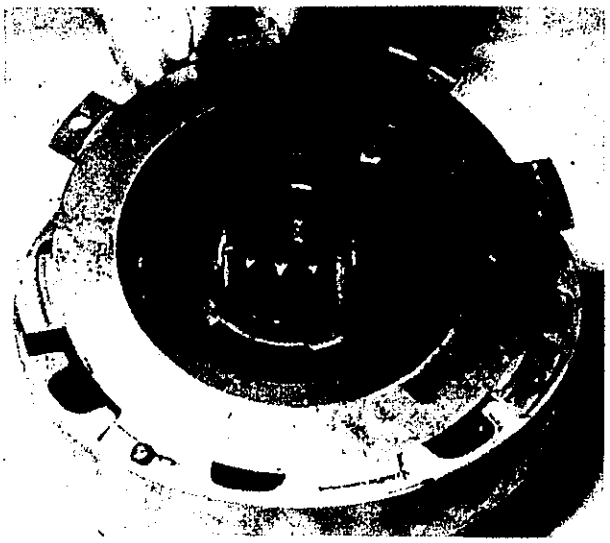
2 The built-up clutch is then replaced on the splined end of the right-hand crankshaft, following the engine reassembly procedure given in Chapter 1, Section 36. A torque setting of 33.4 ft/lbs is recommended for the sleeve nut that retains the clutch in position. Make sure the tab washer is bent over to lock the sleeve nut in position.



5.1 Clutch centre has drive gear attached



5.1A Reassembling the plain and inserted plates, spaced alternately



5.1B Adding the uppermost plain plate before the circlip is replaced

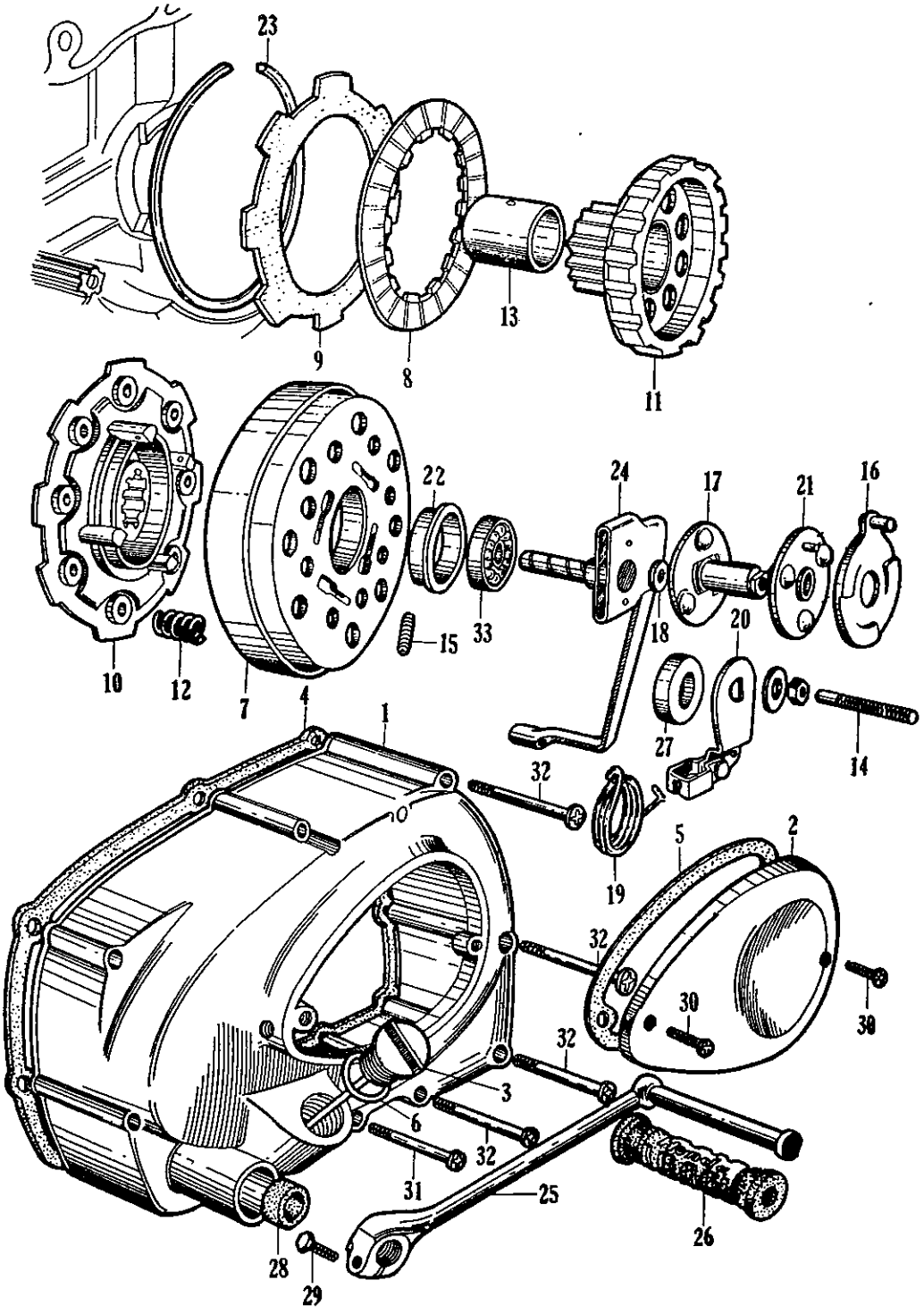


Fig.2.2 Manually operated clutch components

1 *Right-hand crankcase cover*
2 *Clutch cover*
3 *Dipstick/oil cap*
4 *Right-hand crankcase cover gasket*
5 *Clutch cover gasket*
6 *Dipstick/oil cap sealing washer*
7 *Clutch drum*
8 *Inserted clutch plate*
9 *Plain clutch plate*
10 *Clutch drive plate*
11 *Clutch drive gear*
12 *Clutch spring*
13 *Clutch centre bush*
14 *Clutch adjuster screw*
15 *Clutch damper spring*
16 *Clutch operating cam plate*
17 *Clutch lifter*
18 *'C' ring*
19 *Clutch lever return spring*
20 *Clutch operating lever*
21 *Ball retainer*
22 *Clutch bearing retainer*
23 *101mm circlip*
24 *Oil trough and guide*
25 *Kickstarter arm and pedal complete*
26 *Kickstarter rubber*
27 *Oil seal, clutch operating arm*
28 *Oil seal, kickstarter shaft*
29 *Kickstarter pinch bolt*
30 *Cross head screws, clutch cover*
31 *Cross head screw, right-hand crankcase cover (short)*
32 *Cross head screws, right-hand crankcase cover (long)*
33 *Ball bearing*

6 Clutch - Adjustment

C100, C102 and C50 models

1 Clutch adjustment is provided by means of an adjustable screw and locknut located in the centre of the clutch cover. Slacken off the 10mm locknut and turn the adjusting screw firstly in the clockwise direction, to ensure there is no end pressure on the clutch pushrod.

2 Turn the adjusting screw anti-clockwise until pressure can be felt on the end. Turn back (clockwise) for approximately 1/8th of a turn, and tighten the locknut, making sure the screw does not turn. Clutch adjustment should now be correct.

C110, C110D (C114), S50 and SS50 models

1 On these models it is first necessary to remove the clutch cover, which is retained by two cross head screws. Adjustment is carried by following the procedure detailed above.

2 The models fitted with a manually-operated clutch have also an adjuster on the clutch cable. Either method of adjustment can be used; the adjustment is correct if there is between 0.4" - 0.8" (1cm - 2cm) free play at the handlebar lever before the clutch commences to disengage.

7 Clutch - Correct Operation

1 Clutch operation on the models fitted with a manually-operated clutch can be checked by using the kick-starter. Clutch slip will make engine starting difficult.

2 With the engine running, disengage the clutch by grasping the clutch lever and see whether the machine starts to move forward or the engine stalls when bottom gear is engaged.

3 The machine should move forward smoothly as the clutch lever is released progressively, whilst increasing the engine speed.

4 Note that these checks cannot be applied to any of the models fitted with an automatic clutch because the special starting mechanism engages when the engine is turned over by the kickstarter.

8 Fault Diagnosis - Clutch

Symptom	Cause	Remedy
Engine speed increases but machine does not respond	Clutch slip	Check clutch adjustment for pressure on pushrod, or free play at handlebar lever. Check depth of linings, also free length of clutch springs. Replace if serviceable limits reached.
Difficulty in engaging gears. Gear changes jerky and machine moves forward, even when clutch fully withdrawn	Clutch drag	Check clutch adjustment for too much free play.
	Clutch plates worn and/or clutch housing	Check for burrs on clutch plate tongues or indentations in clutch housing slots. Dress with file.
	Wear in rollers and roller tracks (C100, C102 and C50 models only)	If signs of wear evident, replace worn parts.
	Clutch assembly loose on crankshaft splines	Check tightness of retaining sleeve nut. If loose, fit new tab washer and retighten.
Operating action stiff	Damaged, frayed or trapped control cable	Check cable and replace if necessary. Make sure cable is lubricated and has no sharp bends.

Chapter 3 Fuel system and carburation

Contents

Specifications

Fuel tank capacity			
C100, C102, C50 models	3.0 litres (5.3 Imp. pints) (6.3 US pints)		
S50 model	5.5 litres (9.7 Imp. pints) (11.6 US pints)		
C110, C110D (C114), SS50 models	7.0 litres (1.54 Imp. gal) (1.85 US gal)		
Carburettor			
Make	C100 & C102	C110 & C110D (C114)	C50
	Keihin	Keihin	Keihin
Type	DP 13 HOV	PW 16	1000 - 110
Main jet	88 - 92	85 - 88	70
Slow Running jet	35	35	35
Throttle valve	2	2	2
Jet needle	13302	16302	13239-3 stage
Slow running screw	1 - 1¼ turns	1 - 1¼ turns	1 - 1¼ turns
	S50	SS50	
Make	Keihin	Keihin	
Type	PW16FA6	1000 - 132 0001	
Main jet	78	80	
Slow running jet	35	35	
Throttle valve	1.5	2.5	
Jet needle	16232 - 3 stage	18231 - 3 stage	
Slow running screw	1 - 1¼ turns	1 - 1¼ turns	

1 General Description

The fuel system comprises a fuel tank from which petrol is fed by gravity to the float chamber of the carburettor. The open frame layout of the scooter-type models necessitates the use of a specially-shaped petrol tank that is located immediately below the nose of the dual seat. On these models, the petrol tap is incorporated in the top of the carburettor float chamber.

All machines are fitted with a carburettor of Keihin manufacture, the model depending on the type of machine to which the carburettor is fitted. All carburettors have a manually-operated choke and employ a throttle slide and needle arrangement for controlling the petrol/air mixture administered to the engine.

2 Petrol Tank - Removal and Replacement

1 It is unlikely that the petrol tank will need to be removed except on very infrequent occasions, because it does not restrict access to the engine unit of any of the models. Before the petrol tank can be removed, it is necessary to detach the dual seat.

C100, C102 and C50 models

1 Remove the two 10 mm nuts and washers that clamp the rear bracket of the dual seat to the frame. The front of the seat is fitted with a detachable spring-loaded fastener, to permit the seat to be raised for access to the filler cap. If this fastener is undone, the dual seat can be removed from the machine.

2 The petrol tank is attached to the frame by four 10 mm bolts. After the bolts have been removed, the tank can be lifted clear of the frame and the pull-off petrol pipe disconnected. Have available some means of blocking the petrol pipe to impede the flow of petrol, or else drain the tank before it is removed.

3 To replace the tank, reverse this procedure.

C110, C110D (C114) S50 and SS50 models

1 Loosen the two domed nuts at the upper end of the rear suspension units and pull the dual seat away from the petrol tank in a rearwards direction. A considerable amount of effort may be needed, especially if the domed nuts have been over-tightened.

2 The petrol tank is attached to the frame by the rear end only, using a 10 mm bolt. Two rubber buffers at the forward end of the frame locate in two slots in the centre channel of the petrol tank.

3 Drain the petrol from the tank and disconnect the pipe that joins the two separate halves.
4 Remove the 10 mm rear fixing bolt, nut and washers.
5 Raise the rear end of the tank slightly and pull rearwards, to detach the rubber buffers from the slots in the centre channel. The tank can now be withdrawn from the frame.
6 To replace the tank, reverse this procedure.

3 Petrol Tap - Removal and Replacement

C110, C110D (C114) and C50 models only

Before the petrol tap can be removed from the tank, it is necessary to remove the filter bowl, sealing washer and gauze.
1 The filter bowl is threaded to the petrol tap body and can be removed by using a 10 mm ring or socket spanner.
2 Lift out the synthetic rubber sealing washer and the filter gauze. This will reveal the crosshead screw that retains the tap. A synthetic rubber sealing washer is fitted between the body of the tap and the petrol tank.
3 Remove the two crosshead screws from the plate that retains the tap lever. If the plate and spring washer are removed, the tap lever will be released. The rubber gland washer fitted between the tap body and the tap lever should be renewed, irrespective of whether it appears damaged.
4 During reassembly, the top side of the gland washer should be lightly smeared with vaseline, to aid the smoothness of the tap operation. Do not overtighten any of the components during reassembly, otherwise there is risk of permanent damage to the synthetic rubber washers.

4 Carburettor - General Description

Various types of Keihin carburettor are fitted to the Honda 50 models, the exact specification depending on the designation of the model. The scooter-type machines have a downdraft carburettor, to which the float chamber is attached by two countersunk screws. The other models employ a carburettor with an integral float chamber, fitted with twin floats. Air is drawn into all the carburettors, via an air filter with a removable element. The conventional throttle slide and needle arrangement works in conjunction with the main jet, to control the amount of petrol/air mixture administered to the engine. There is also a slow running jet with an adjustable air screw, to control idling at low speeds, and a manually-operated choke, to aid cold starting.

5 Carburettor - Removal

1 Pull off the synthetic rubber tube connecting the air filter to the carburettor intake, following the procedure detailed in Chapter 1/5, Sections 8 - 11. Note that on some models it is necessary to detach also the oil feed pipes from the crankcase and valve rockers. These form part of the heating system to prevent the carburettor from icing during cold weather running.
2 Make sure the 'O' ring between the flange of the carburettor and the cylinder head is not lost.

6 Carburettor - Dismantling

C100, C102 and C50 models only

1 Remove the float chamber by unscrewing the two countersunk screws that retain it to the mixing chamber body. An 'O' ring is interposed between the mixing chamber body and the float chamber base, to effect a leak-tight seal.
2 To gain access to the petrol filter located in the float chamber top, remove the two crosshead screws that hold the top in position. Immediately below the float chamber top will be found the filter gauze, 'O' ring sealing washer, the filter cap and the seat for the float valve needle. There is also a gasket between the float chamber top and the float chamber, which should not be disturbed unless necessary.
3 The filter assembly can be dismantled for cleaning, by unscrewing the float valve needle seat.
4 To dismantle the petrol tap, remove the two crosshead screws that retain the small cap on the float chamber top. Removal of the cap will give access to the tap lever washer, tap lever and packing for the tap. It should not be necessary to dismantle the tap unless it is leaking.
5 The location of the main jet, needle jet and slow running jet is shown in the attached diagram. These components can be removed for cleaning, which is best accomplished with compressed air. Never use wire or any other thin object to clear a blocked jet because there is danger of enlarging the hole in the jet, to the detriment of petrol economy.
6 Further dismantling is not recommended nor should be necessary. It is unlikely that the butterfly choke assembly will give trouble, unless the screws retaining the butterfly work loose.
7 To reassemble the carburettor, reverse this procedure. If any of the 'O' rings or gaskets show signs of damage, they should be replaced as a matter of course, otherwise there is risk of petrol leakage.

C110, C110D (C114), S50 and SS50 models

1 Remove the float chamber assembly by prising off the spring clip at the base of the carburettor mixing chamber. A synthetic rubber gasket seals the joint between the float chamber and the carburettor mixing chamber.
2 Remove the hinge pin on which the float assembly pivots. The floats can then be withdrawn and the float needle lifted from its seating.
3 The accompanying diagram shows the location of the main jet, needle jet and slow running jet. The needle jet can be displaced after the jet holder has been removed, by pushing in a downwards direction.
4 Note that a secondary oil feed from the crankcase to the valve rockers is fed through the carburettor body, to prevent icing in cold weather running.
5 Do not use wire or any other thin object to clear a blocked jet because there is a danger of enlarging the hole in the jet, to the detriment of petrol economy. Use compressed air.
6 Further dismantling is not recommended, nor should be necessary.
7 Replace the component parts of the carburettor by reversing this procedure.

7 Carburettor - Adjustments

1 All adjustments should be made when the engine is at normal working temperature.
2 To adjust the slow running, set the throttle stop screw so that the engine runs at a fast tick-over speed.
3 Screw in or out the air screw until the engine runs evenly, without hunting or misfiring. Reduce the engine speed by unscrewing the throttle stop and re-adjust the air screw, if necessary. Do not arrive at a setting where the engine ticks over too slowly, otherwise there is risk that it may stall when the throttle is closed, during normal running.
4 As a rough guide, the air screw should be positioned from one to one and a quarter complete turns out from the fully closed position.
5 The amount of throttle slide cutaway, size of main jet, size of needle jet and size of slow running jet are pre-determined by the manufacturer and should be correct for the model in which they are used. Check with the Specifications, page 63. The throttle needle position can be varied, by removing and replacing the needle clip. Under normal circumstances, the needle should be positioned in the second or third notch, measured from the top.
6 The slow running jet controls engine speed up to approximately 1/8th throttle and the degree of throttle slide cutaway from 1/8th to ¼ throttle. Thereafter the needle jet takes over, up to ¾ throttle, and the main jet size controls the final ¾ to full throttle. These stages are only approximate; there is a certain amount of overlap.

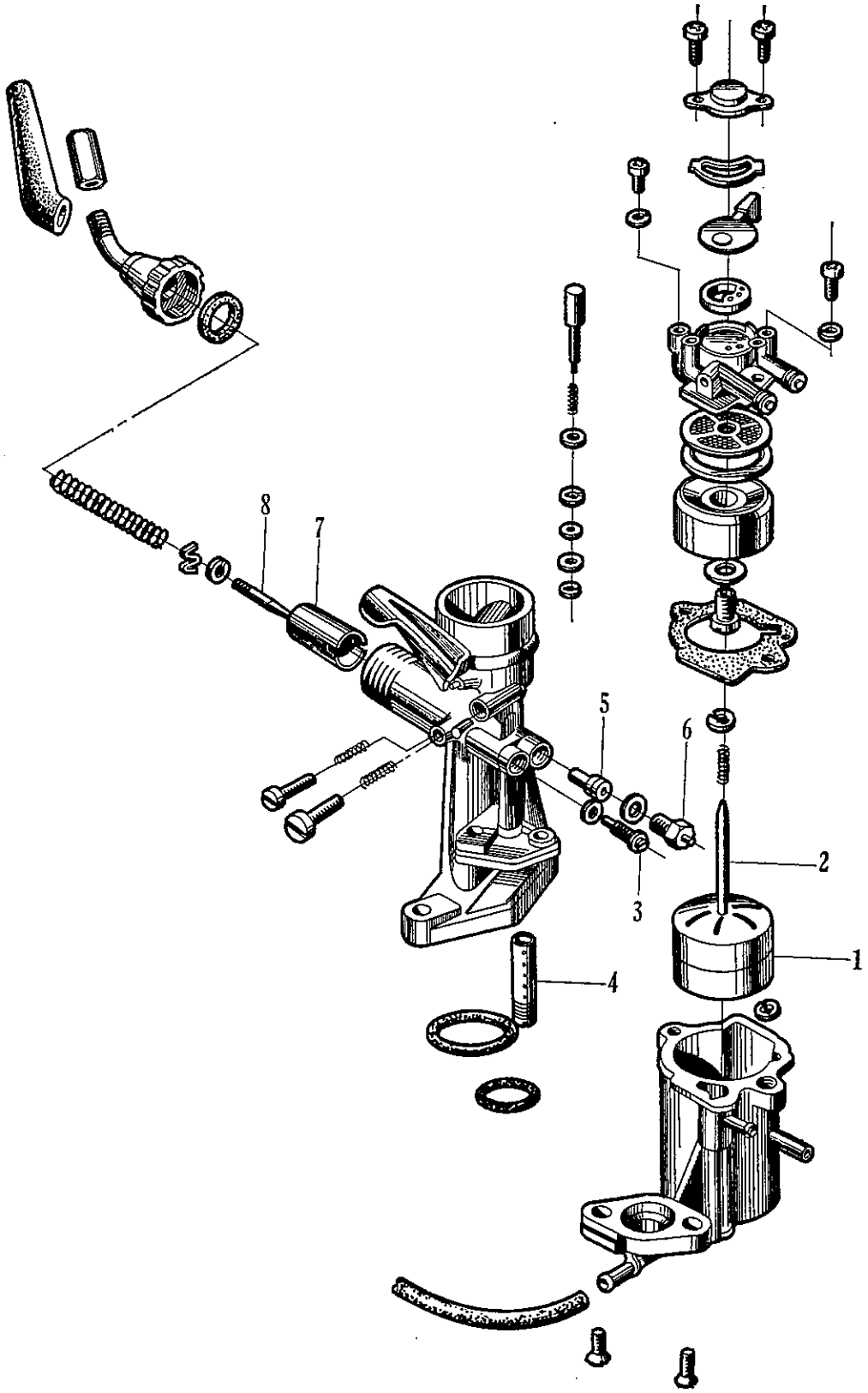


Fig.3.1 Carburettor component of 'scooter' type of fitment

1 *Float*
2 *Float needle*
3 *Pilot jet*
4 *Main jet*
5 *Needle jet*
6 *Needle jet holder*
7 *Throttle slide*
8 *Needle*

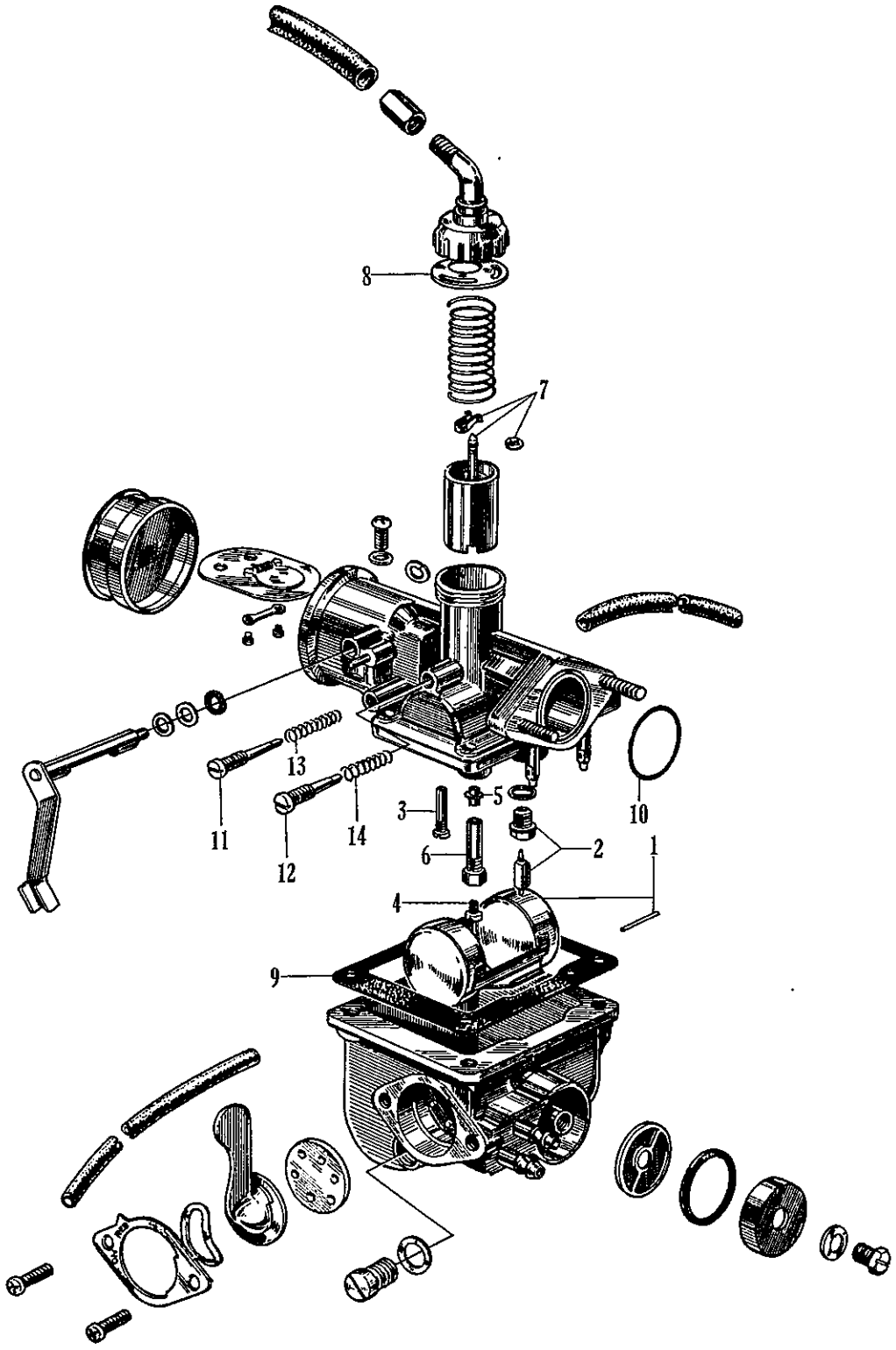


FIG.3.2 CARBURETTOR COMPONENTS OF 'MOTORCYCLE' TYPE OF FITMENT

1 Twin float assembly
2 Float needle
3 Pilot jet
4 Main jet
5 Needle jet
6 Needle jet holder
7 Needle, needle holder and spring clip
8 Carburettor top washer
9 Float chamber gasket
10 'O' ring induction seal
11 Pilot jet adjuster
12 Throttle stop screw
13 Pilot jet adjuster spring
14 Throttle stop spring

8 Air Filter - Cleaning

The air cleaner is found in one of three positions, the exact location depending on the specification of the machine. The scooter-type models house the air filter unit in the tube from the steering head to the bottom bracket, immediately behind the steering head. The S50 model has the air filter assembly in the right hand cover, below the dual seat, and the SS50 model utilises a well, below the dual seat.

1 To clean the air filter, remove the detachable element and tap it lightly to remove accumulated dust. Blow dry from the inside with compressed air, or brush the exterior with a light brush. Remember the element is made from paper. If it is torn or damaged, fit a replacement.

2 Oil or water will reduce the efficiency of the filter element and may upset the carburettor. Replace any suspect element.

3 It is advisable to replace the element at less than the recommended 6,000 miles if the machine is used in very dusty conditions. The usual signs of a filter element in need of replacement are reduced performance, misfiring and a tendency for the carburation to run rich.

4 On no account should the machine be run without the filter element in place because this will have an adverse effect on carburation.

9 Exhaust System - Cleaning

Although the exhaust system on a four-stroke does not require such frequent attention as that of a two-stroke, it is nevertheless advisable to inspect the complete system from time to time in order to ensure a build-up of carbon does not cause back pressure. If an engine is nearing the stage where a rebore is necessary, it is advisable to check the exhaust system more frequently. The oily nature of the exhaust gases will cause a more rapid build-up of sludge.

1 The exhaust system complete is removed easily by following the procedure in Chapter 1.5, Sections 4 - 5. On the early models, the silencer is a push fit on the end of the exhaust pipe.

2 The cylinder head flange joint relies upon a copper/asbestos washer to effect an airtight seal. If this washer is lost or damaged, air will be admitted and apart from a blowing exhaust, the engine will tend to backfire on the over-run.

3 A 10 mm bolt in the extreme end of the silencer retains the detachable baffle assembly in position. If this bolt is withdrawn, the baffle tube can be pulled clear of the silencer body, for cleaning.

4 Tap the baffle to remove loose carbon and work with a wire brush, if necessary. If there is a heavy build-up of carbon or oily sludge, it may be necessary to use a blow lamp to burn out these deposits.

5 Do not run the machine without the baffle tube in position. Although the changed engine note may give the illusion of greater speed, the net effect will be a marked drop in performance as a result of changes in carburation. There is also risk of prosecution as a result of the excessive noise.

6 When reassembling, make sure the bolt retaining the silencer baffle assembly is replaced and fully tightened.

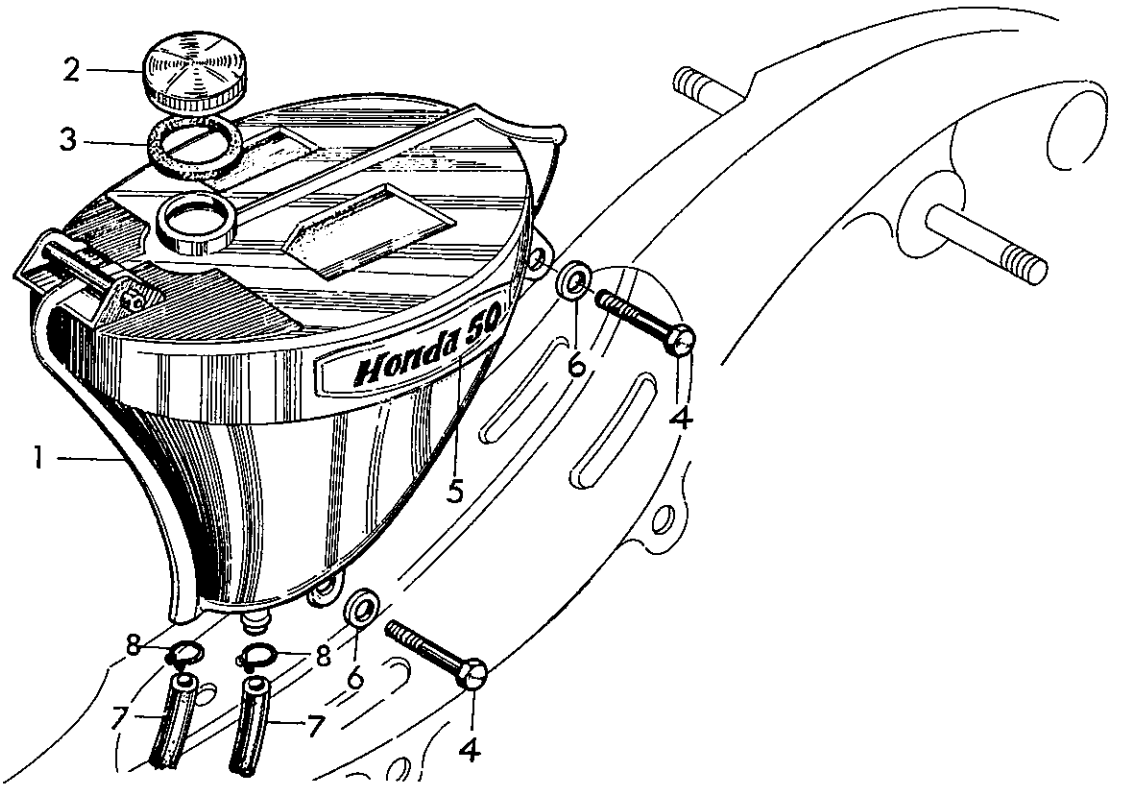


Fig.3.3 Scooter type fuel tank

1 Fuel tank
2 Filler cap
3 Filler cap sealing washer
4 Fuel tank securing bolts
5 Fuel tank motif
6 Plain washers for tank securing bolts
7 Fuel pipes
8 Clips for fuel pipes

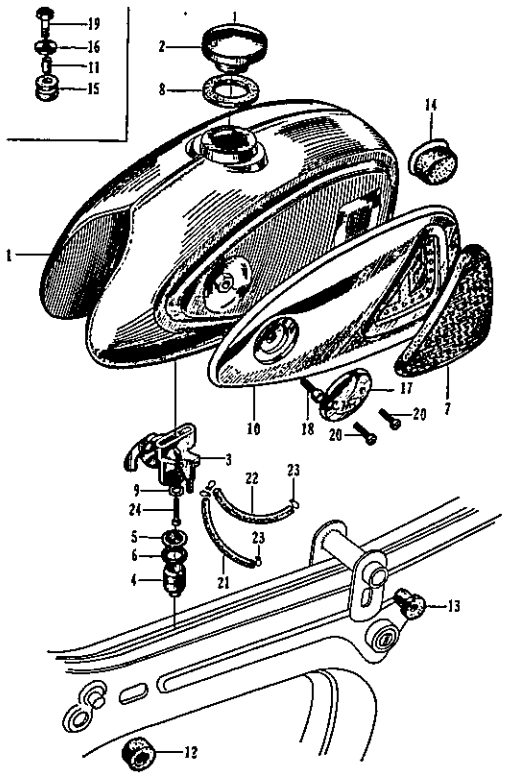


Fig.3.4 Motorcycle type fuel tank

1 Fuel tank	*7 Knee grip rubber*	*13 Rubber for rear attachment*	*18 Bolts for cover plates*
2 Filler cap	*8 Filler cap sealing washer*	*14 Fuel tank spacers*	*19 Attachment bolt*
3 Fuel tap body	*9 Fuel tap sealing washer*	*15 Rubber washer for attach-*	*20 Screws for tank badges*
4 Fuel tap filter cap	*10 Plated cover for fuel tank*	*ment bolt*	*21 Fuel pipe short*
5 Fuel tap filter gauze	*11 Collar for attachment bolt*	*16 Washer for attachment bolt*	*22 Fuel pipe long*
6 Washer for filter cap	*12 Rubber for front attachment*	*17 Fuel tank badge*	*23 Clips for fuel pipes*

10 Fault Diagnosis - Fuel System

Symptom	Cause	Remedy
Excessive fuel consumption	Airfilter element choked, damp or oily	Check, and if necessary replace.
	Fuel leaking from carburettor. Float sticking	Check all unions and gaskets. Float needle seat needs cleaning.
	Badly worn carburettor	Replace.
	Carburettor incorrectly adjusted	Tune and adjust as necessary.
Idling speed too high	Throttle stop screw in too far. Carburettor too loose	Adjust screw. Tighten top.
Engine does not respond to throttle	Back pressure in silencer. Float displaced or punctured	Check baffles in silencer. Check whether float correctly located or has petrol inside.
Engine dies after running for a short while	Blocked air hole in filler cap	Clean.
	Dirt or water in carburettor	Remove and clean petrol tap filter and float chamber.
General lack of performance	Weak mixture; float needle stuck in seat	Remove float chamber and clean.
	Leak between carburettor and cylinder head	Check 'O' ring and replace if necessary.

Chapter 4 Ignition system

Contents

Specifications

Generator	
Make and Type	Hitachi F120 (C50) Hitachi FAZ (S50) Mitsubishi FAZ - 1MIL (SS50)
Coil	
Make and Type	Hitachi CM61 - 08 (C50) Mitsubishi J39036 (S50) Mitsubishi HK1/1 2H (SS50)
Sparking plugs (standard fitment)	NGK C7HW (C100, C102, C110 and C110D (C114) NGK C7HS (C50, S50 and SS50)
Equivalents	Champion Z - 10 (C100 and C102) Champion Z - 8 (C110, C110D [C114], C50, S50 and SS50)
Thread	10 mm
Reach	12.7 mm
Gap	0.024 - 0.028 inch

* The champion 2 - 10 is a slightly 'hotter' sparking plug to the 2 - 8. There is no exact match, therefore there is the difference in the division of models between NGK and Champion.

1 General Description

The spark that is necessary to ignite the petrol/air mixture in the combustion chamber is derived from either a flywheel magneto generator attached to the crankshaft of the engine or a battery and coil, depending on the type of generator fitted. Both systems require a contact breaker assembly to determine the precise moment at which the spark will occur; as the points separate the circuit is broken and a high tension voltage is developed across the point of the sparking plug which jumps the air gap and ignites the mixture.

When the engine is running, the surplus voltage produced by the generator is converted into direct current by the rectifier and used to charge the battery. In systems where reliance on the battery is necessary for the initial start up, there is provision for an 'emergency start' procedure if the battery is fully discharged. The generator provides a small amount of current for the ignition circuit, if there is no additional electrical load. Immediately the engine starts, the battery commences to charge and within a very short time the normal ignition circuit is restored. This latter system applies to models fitted with an electric starter only.

Generator output does not correspond directly to engine rpm and is regulated automatically, obviating the need for a voltage regulator. All the coils in the system are brought into play only if there is a heavy electrical load, such as when all the lights are used during night time running.

2 Flywheel Generators - Checking Outputs,

The output from either of the two types of generator used can be checked only with specialised test equipment of the multi-meter type. It is unlikely that the average owner/rider will have access to this equipment or instruction in its use. In consequence, if the performance of a generator is suspect, it should be checked by a Honda agent or an auto-electrical expert.

3 Ignition Coil - Checking

The ignition coil is a sealed unit, designed to give long service. It is located within the main spine of the frame assembly. If a weak spark and difficult starting cause its performance to be suspect, it should be tested by a Honda agent or an auto-electrical expert. A faulty coil must be replaced; it is not practicable to effect a repair.

4 Contact Breaker - Adjustment

C102 models only

1 To gain access to the contact breaker assembly, remove the two crosshead screws that retain the circular cover plate on the left hand crankcase cover, and remove the cover plate and gasket.

2 Rotate the engine until the contact breaker points are in the fully-open position. Examine the faces of the contacts. If they are pitted or burnt it will be necessary to remove them for further attention, as described in Section 4.

3 Adjustment is carried out by slackening the two screws that hold the fixed contact breaker plate and moving the plate by turning the eccentric screw until there is sufficient clearance for a 0.014 inch feeler gauge to be inserted between the two contacts. Make sure the contacts are fully-open when this adjustment is made, otherwise a false reading will be obtained, which will affect the ignition timing. The feeler gauge should be a good sliding fit.

4 Tighten the fixed contact plate screws and recheck the gap.

5 Before replacing the cover plate, place a very light smear of grease on the contact breaker cam, making sure none reaches the contacts.

All Other Models

1 It is necessary to remove the left hand crankcase cover complete to gain access to the contact breaker points, which will be found within the flywheel magneto generator. A cutaway in the flywheel rotor permits access when the contact breaker points are in the fully-open position.

2 Adjustment is carried out by following the procedure detailed for the C102 model, as above.

3 Should it be necessary to remove the contact breaker points for further attention or replacement, it will be necessary to withdraw the flywheel magneto generator from the crankshaft, following the procedure given in Chapter 1/7.

5 Contact Breaker Points - Removal, Renovation and Replacement

1 If the contact breaker points are burned, pitted or badly worn, they should be removed for dressing. If it is necessary to remove a substantial amount of material before the faces can be restored, the points should be replaced.

2 To remove the contact breaker points, slacken and remove the nut at the end of the moving contact return spring. Remove the spring washer and plain washer and detach the spring. Note that an insulating washer is located beneath the spring, to prevent the electrical current from being earthed.

3 Remove the spring clip from the moving contact pivot and the insulating washer. Withdraw the moving contact, which is integral with the fibre rocker arm.

4 Remove the screws that retain the fixed contact plate and withdraw the plate complete with contact.

5 The points should be dressed with an oilstone or fine emery cloth. Keep them absolutely square during the dressing operation, otherwise they will make angular contact when they are replaced and will quickly burn away.

6 Replace the contacts by reversing the dismantling procedure. Take particular care to replace the insulating washers in the correct sequence, otherwise the points will be isolated electrically and the ignition system will not function.

6 Condenser - Removal and Replacement

1 A condenser is included in the contact breaker circuitry to prevent arcing across the contact breaker points as they separate. It is connected in parallel with the points and if a fault develops, ignition failure will occur.

2 If the engine is difficult to start of if misfiring occurs, it is possible that the condenser has failed. To check, separate the contact breaker points by hand whilst the ignition is switched on. If a spark occurs across the points and they have a blackened or burnt appearance, the condenser can be regarded as unserviceable.

3 It is not possible to check the condenser without the necessary test equipment. It is best to fit a replacement condenser and observe the effect on engine performance, especially in view of its low cost.

4 To remove the condenser, withdraw the uppermost fixing screw and slacken the nut that clamps the metal strip attached to the base of the condenser. This strip is slotted, to aid removal.

5 Reassemble by reversing the procedure, making sure the insulating washer remains between the strip and the base of the condenser and the plate to which it is clamped. If this precaution is overlooked, the condenser may is isolated electrically and arcing at the points will reoccur.

7 Ignition Timing - Checking and Re-setting

1 If the ignition timing is correct, the contact breaker points will be about to separate when the 'F' line scribed on the rotor of the flywheel coincides exactly with an arrow (C102 model) or an indentation or similar scribe mark on the left hand crankcase

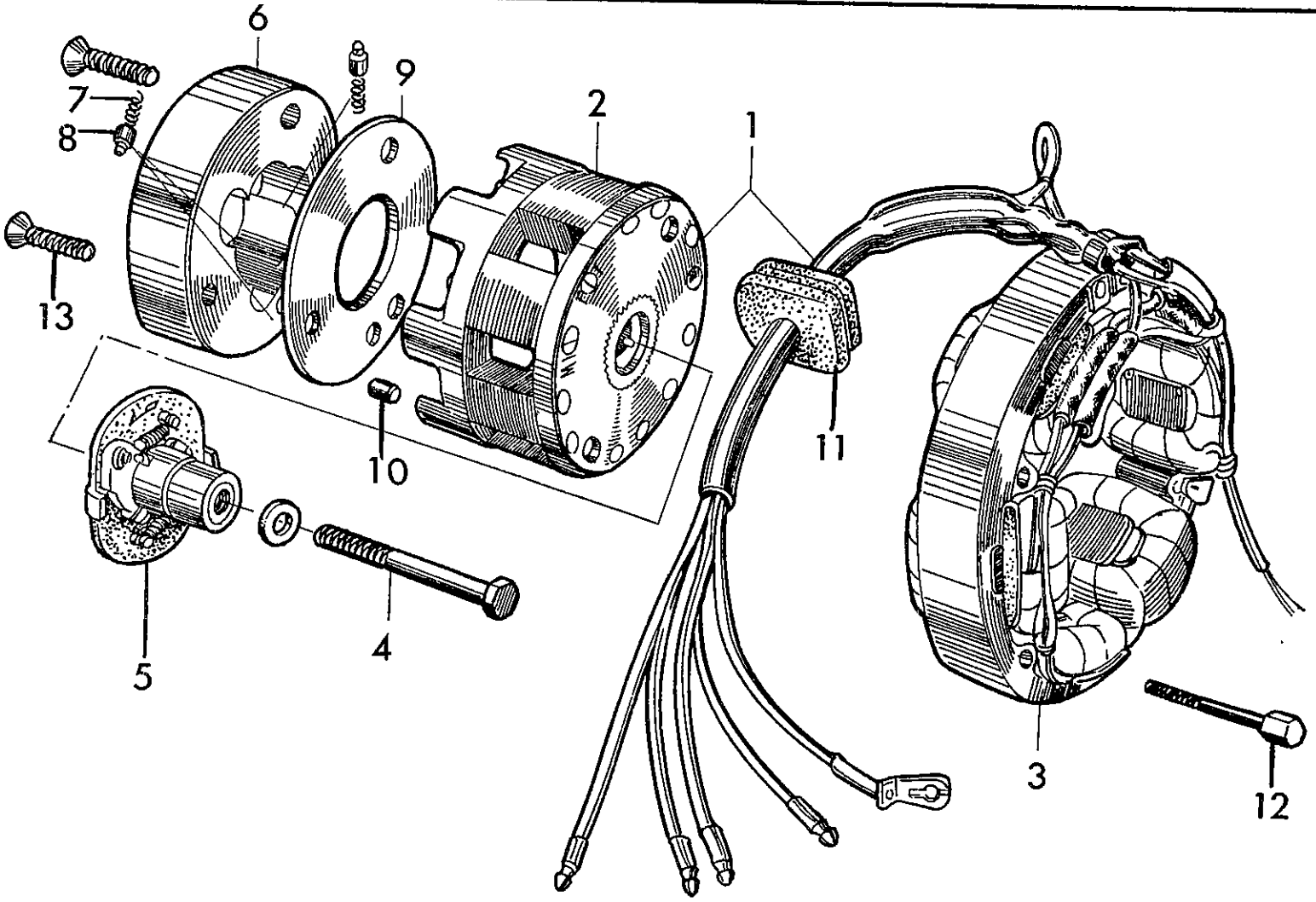


Fig.4.1 Flywheel magneto generator components

1 ac generator assembly
2 ac generator rotor
3 ac generator stator assembly
4 Retaining bolt for generator rotor
5 Automatic advance unit
6 Over-running clutch outer case
7 Spring for over-running clutch rollers
8 Cap for over running clutch roller springs
9 End plate, over-running clutch
10 Over-running clutch rollers
11 Grommet for generator harness
12 Retaining bolt for generator stator assembly
13 Retaining bolt for over-running clutch assembly

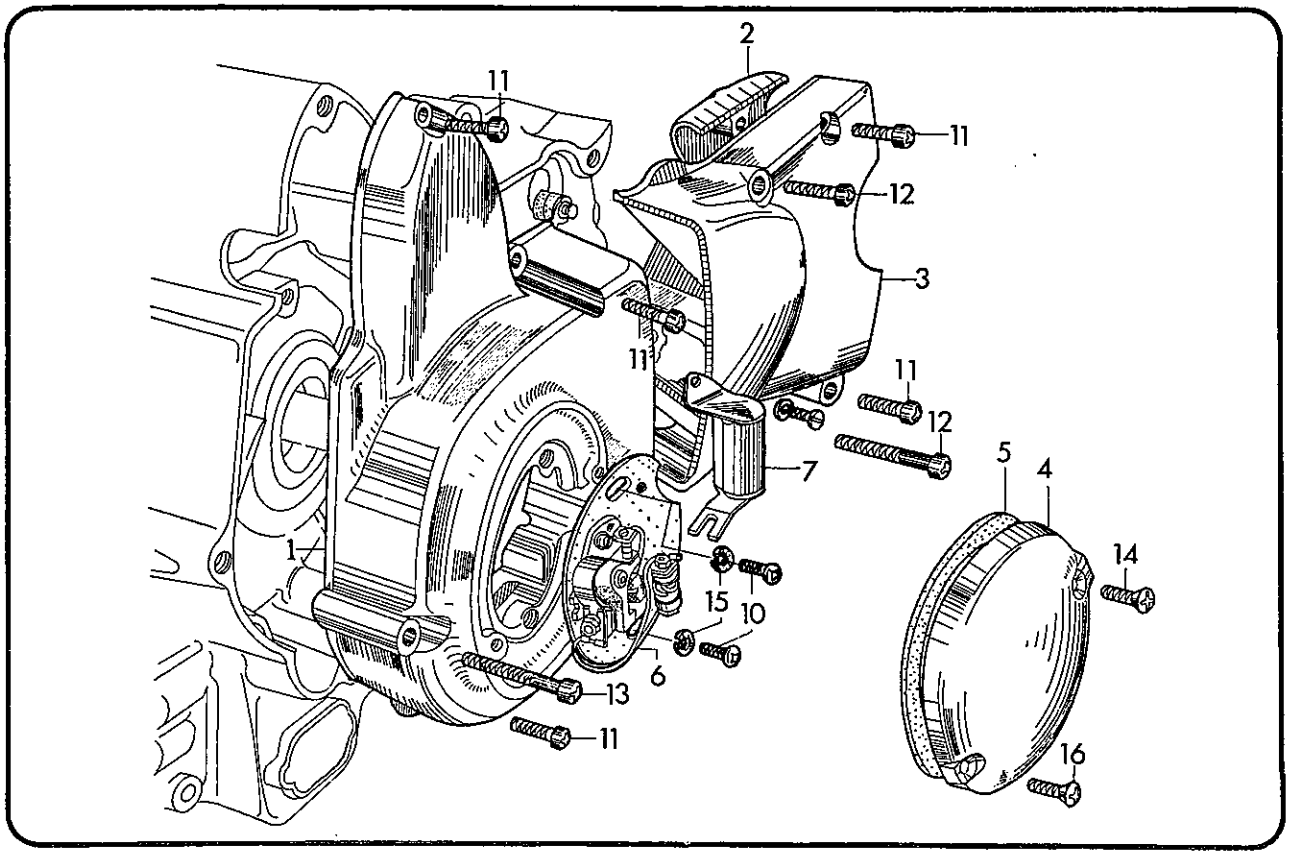
casting. As a check, it should be possible to slide a 0.001 inch feeler gauge between the points, when these timing marks coincide. The 'T' line indicates when the piston is at top dead centre (TDC).
2 Before checking the ignition timing, always make sure the contact breaker gap is correct. If the gap is altered after the timing has been checked, some variation of the accuracy of the ignition timing is inevitable.
3 If the timing is incorrect, the contact breaker gap should be either increased or decreased until the points commence to separate as the timing marks coincide. It is not possible to adjust the position of the stator plate.
4 In the case of the C102 model, the plate holding the complete contact breaker assembly is slotted, to permit a limited range of adjustment. If the two crosshead retaining screws are slackened a little, the plate can be turned until the points commence to separate, and then locked in this position by tightening the screws.
5 After checking the timing, rotate the engine and check again before replacing the covers. The accuracy of the ignition timing is critical in terms of both engine performance and petrol consumption. Even a small error in setting can have a noticeable effect.

8 Automatic Advance Unit - Location and Checking Action

1 Fixed ignition timing is of little advantage as the engine speed increases and provision is made to advance the timing by centrifugal means, using a balance weight assembly located behind the contact breaker assembly (C102 model) or within the rotor of the flywheel magneto generator. A check is not needed unless the action of the unit is in doubt.
2 To check the action of the unit it is first necessary to withdraw the contact breaker assembly complete (C102 model) or withdraw the rotor of the flywheel magneto generator. Refer to Chapter 1/7 for the dismantling procedure, commencing with Section 4.
3 The counterweights of the automatic advance unit should return to their normal position with smooth action when they are spread apart with the fingers and released. A visual inspection will show signs of damage or broken springs.
4 It is unlikely that the automatic advance unit will need to be dismantled, unless replacement parts have to be fitted.

9 Sparking Plug - Checking and Resetting Gap

1 A 10 mm NGK sparking plug is fitted to all 50 cc models as standard, the grade depending on the model designation. Refer to the Specifications Section heading this Chapter for the recommended grades.
2 All models use a sparking plug with a 12.7 mm reach, which should be gapped at 0.024 inch. Always use the grade of plug recommended or the exact equivalent in another manufacturer's range.
3 Check the gap at the plug points during every six monthly or 3,000 mile service. To reset the gap, bend the outer electrode to bring it closer to the central electrode and check that a 0.024 inch feeler gauge can be inserted. Never bend the central electrode, otherwise the insulator will crack, causing engine damage if particles fall in whilst the engine is running.
4 The condition of the sparking plug electrodes and insulator can be used as a reliable guide to engine operating conditions. See accompanying diagrams on page 74.
5 Always carry a spare sparking plug of the correct grade. In the rare event of a plug failure it will enable the engine to be restarted.
6 Never over-tighten a sparking plug, otherwise there is risk of stripping the threads from the cylinder head, particularly those cast in light alloy. The plug should be sufficiently tight to seat firmly on the copper sealing washer. Use a spanner that is a good fit, otherwise the spanner may slip and break the insulator.
7 Make sure the plug insulating cap is a good fit and free from cracks. This cap contains the suppressor that eliminates radio and TV interference.



10 Fault Diagnosis - Ignition System

Symptom	Cause	Remedy
Engine will not start	No spark at plug	Try replacement plug if gap correct. Check whether contact breaker points are opening and closing, also whether they are clean. Check whether points arc when separated. If so, replace condenser. Check ignition switch and ignition coil. Battery discharged. Switch off all lights and use emergency start. (C102 model only)
Engine starts but runs erratically	Intermittent or weak spark	Try replacement plug. Check whether points are arcing. If so, replace condenser. Check accuracy of ignition timing. Low output from flywheel magneto generator or imminent breakdown of ignition coil.
	Automatic advance unit stuck or damaged	Check unit for freedom of action and broken springs.

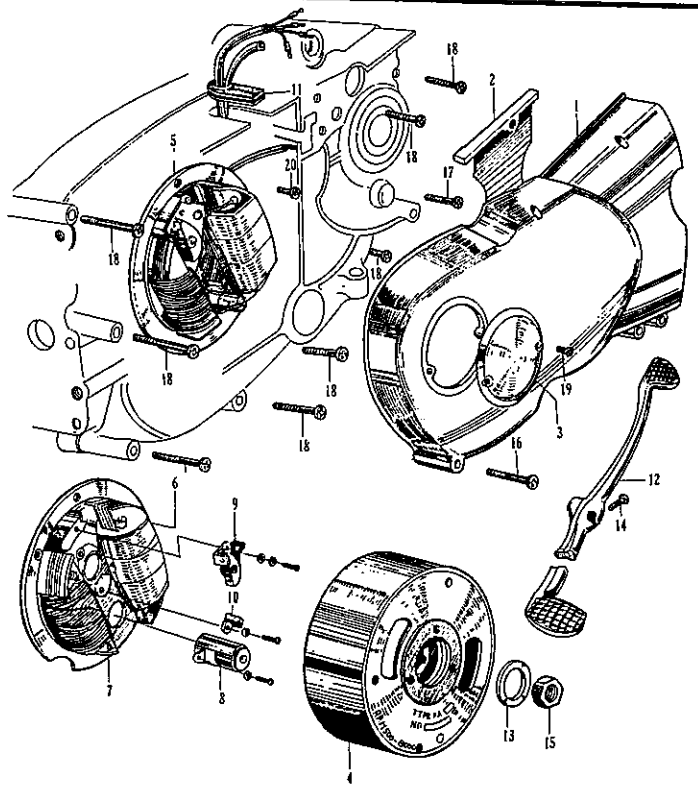


Fig.4.3 Contact breaker in left hand crankcase cover - all models except C102

1 *Left-hand crankcase cover*
2 *Final drive sprocket cover - rear*
3 *Contact breaker cover*
4 *Generator flywheel*
5 *Generator stator assembly*
6 *High tension ignition coil*
7 *Lighting coil*
8 *Condenser*
9 *Contact breaker points*
10 *Felt pad for contact breaker cam*
11 *Grommet for generator harness*
12 *Gear change pedal*
13 *Washer for generator retaining nut*
14 *Gear change pedal pinch bolt*
15 *Generator retaining nut*
16 *Cross head screw for left-hand crankcase cover (long)*
17 *Cross head screws for left-hand crankcase cover (short)*
18 *Cross head screws for left-hand crankcase*

Fig.4.2 Contact breaker in left hand crankcase cover - C102 and C50M models

Left hand crankcase cover
Final drive sprocket cover - rear
Final drive sprocket cover - front
Contact breaker cover
Contact breaker cover gasket
Contact breaker assembly
Condenser
Gear change pedal
9 Gear change pedal pinch bolt
10 Cross head screws for contact breaker plate
11 Cross head screws for left hand crankcase cover and final drive sprocket cover (short)
12 Cross head screws for final drive sprocket cover (long)
13 Cross head screws for left hand crankcase cover (long)
14 Cross head screws for contact breaker cover
15 Spring washers for contact breaker plate screws

WIRING DIAGRAM CODES

Wiring diagrams are given for each model in plan form, overleaf. The colour coding given here is relevant to each diagram

BL or Bu	—	Blue
BR or Bn	—	Brown
BK or Bk	—	Black
G or Gn	—	Green
GY or Gr	—	Grey
L/BL or LBu	—	Light blue
O	—	Orange
R	—	Red
D/Br	—	Dark brown
W	—	White
Y	—	Yellow
LG	—	Light green
LG/R	—	Red spiral on light green
G/Y	—	Yellow spiral on green
G (W tube)	—	Green in white tube
R (W tube)	—	Red in white tube
W (Y tube)	—	White in yellow tube
(Bu tube)	—	covered in blue tube
(O tube)	—	covered in orange tube
(V tube)	—	covered in clear tube
(R line)	—	with red line
(Gn line)	—	with green line

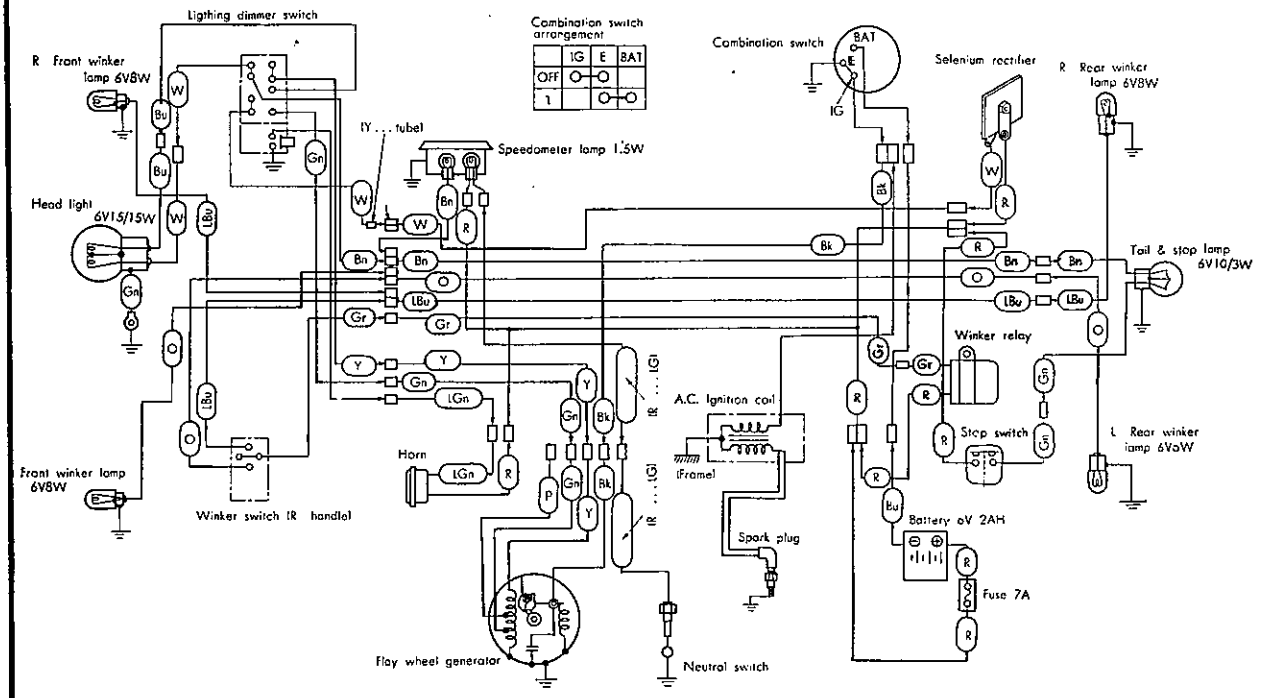


Fig WD1 Honda C50 Wiring diagram

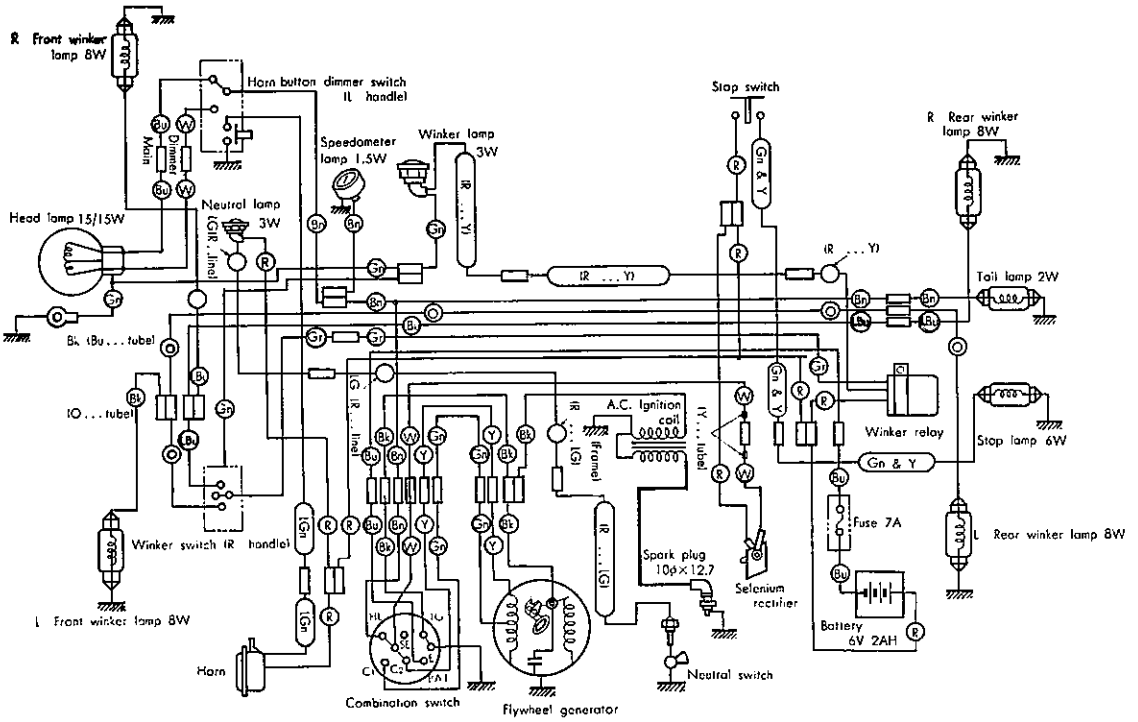


Fig WD2 Honda S50 Wiring diagram

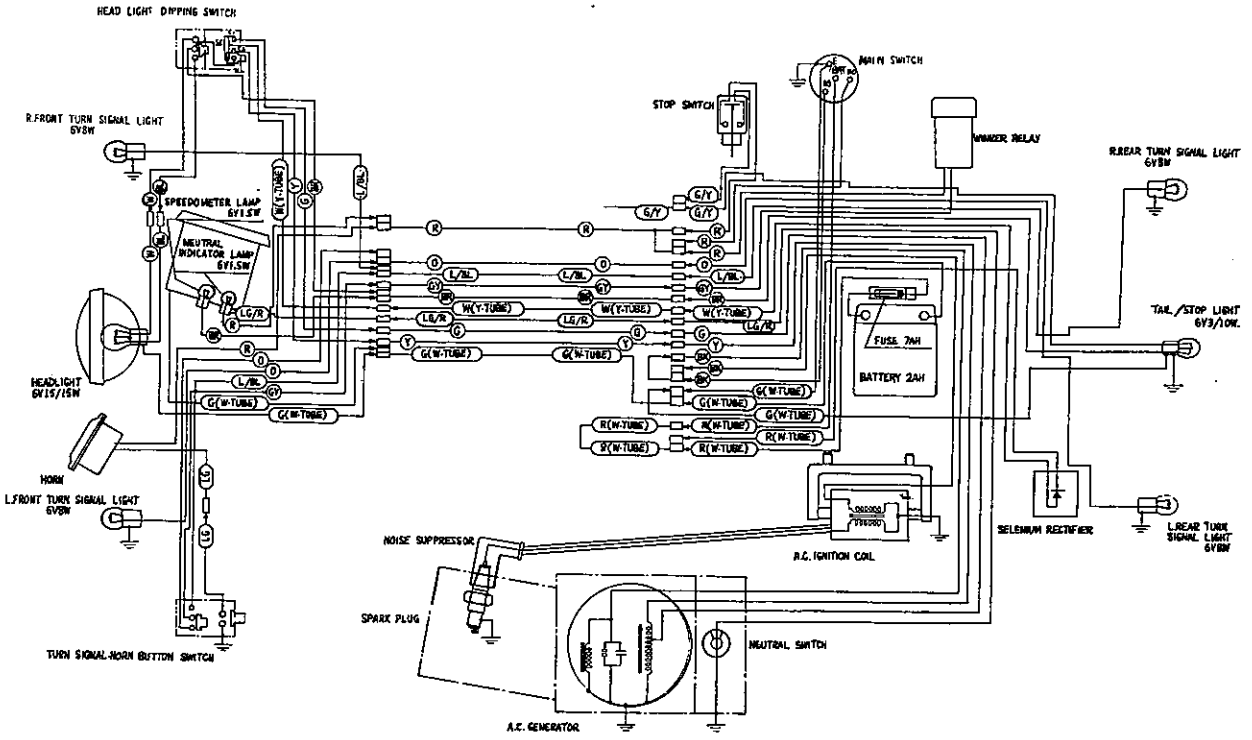


Fig WD3 Honda SS50 Wiring diagram

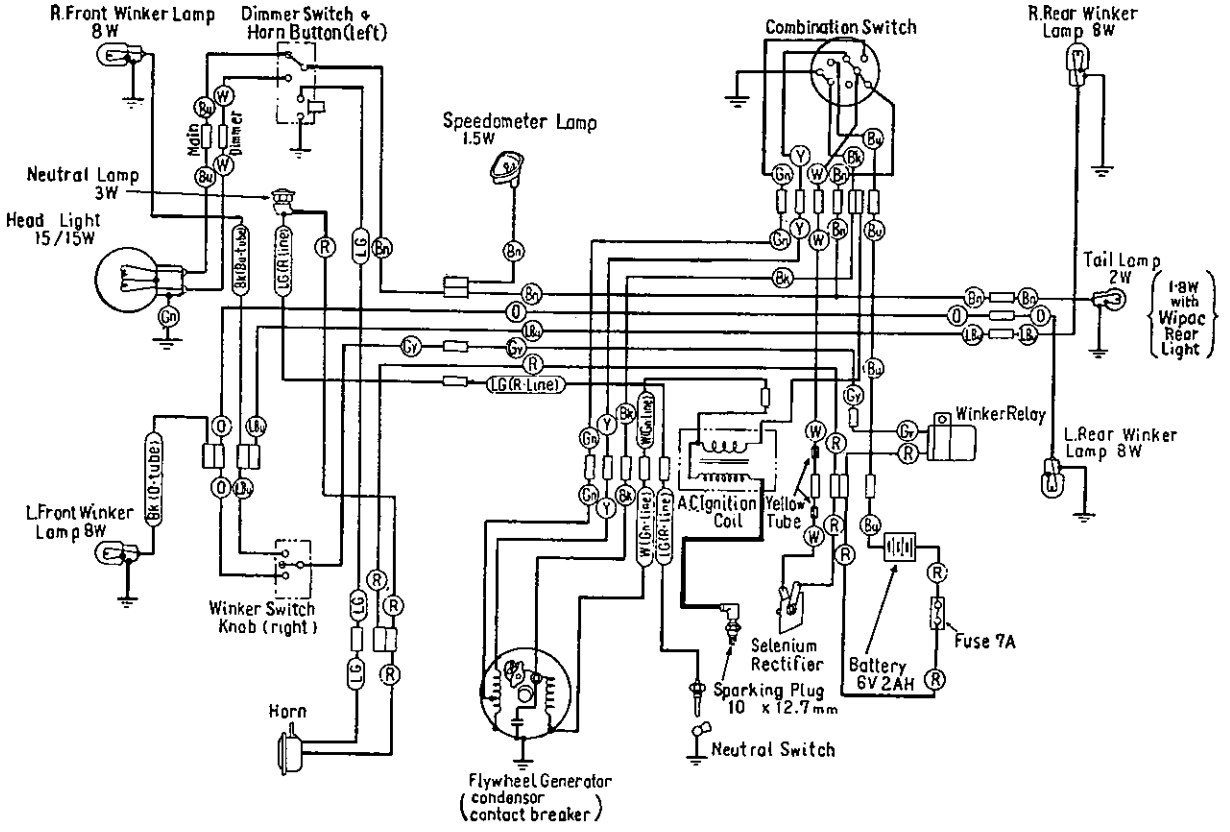


Fig WD4 Honda C100 Wiring diagram