HONDA

1959-66

Service Manual

PREFACE

This Maintenance Manual contains general data and information, and procedures relative to motorcycle maintenance, overhaul and repairs for Honda 125 and Honda 150 models C92, CS92, CB92, C95, CA95.

Therefore, information in this manual will be suitable instruction for servicemen and mechanics of Honda to assist them to efficiently service and repair these machines.

The contents of this book are divided into 9 chapters, including engine, chassis, electrical equipment and maintenance.

A service memo column is attached to the end of the respective paragraphs so that you may make notes of necessary items in our service bulletins. We hope this will be of some use to you.

Special tools referred to in this manual are shown on the Spare Parts List for the convenience of ordering them.

They are shown in the list attached to the end of this book.

This manual will be revised without notice.

January 31, 1963.

HONDA MOTOR CO., LTD.
EXPORT DEPARTMENT
#5-5, YAESU-CHO
CHUO-KU, TOKYO
JAPAN

622301

CONTENTS

ENGINE AND FRAME SERIAL NUMBERS

The location of the engine and frame serial numbers on Honda 125 and Honda 150 motorcycles is shown in Fig. 1 and Fig. 2.

The model, year and serial number can be told from both numbers, for example :

	(Model)		(Year)	(Serial No.)
Engine serial number	C92E	—	0	2357
Frame serial number	C92	—	60	3571

Mistakes and confusion can be avoided if the correct engine number and frame number is referred to in the Parts List or Service Bulletin when ordering needed replacements parts. Always include the engine and frame numbers in correspondence.

Warranty claims will not be approved unless the correct engine and frame serial numbers are included.

These numbers are also used for motorcycle registration and identification purposes.

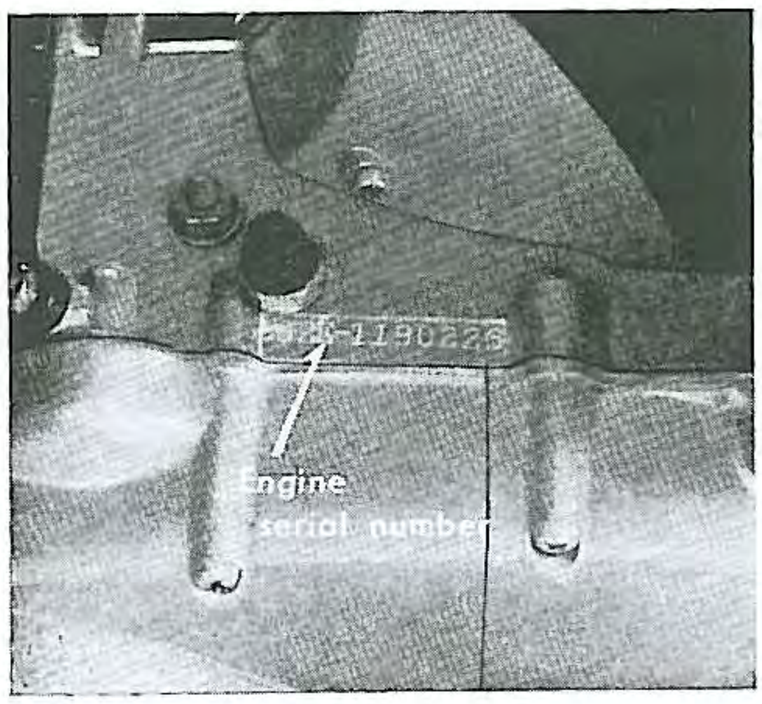


Fig. 1. Engine No.

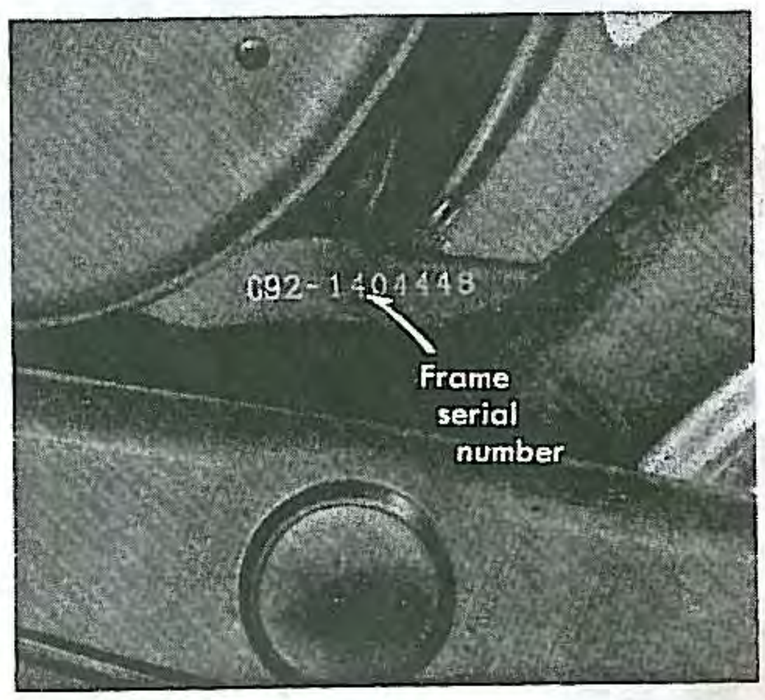


Fig. 2. Frame No.

I. ENGINE

The engine powering Honda 125 and Honda 150 motorcycles is a four-cycle twin-cylinder overhead cam type. The overhead cam shaft is driven by a chain from the crank shaft.

The crankshaft of C92 and C95 models is supported by two main ball bearings, and that of the CB92 and CA95 by two outer ball bearings and one intermediate roller bearing. The crank pin is press fitted perfectly into crankshafts and balancer weights. The piston and stroke of this engine give high rpm and the port and combustion chamber are shaped to produce efficient and economical engine performance. Lubricant which collects in the sump of the under crank case is force fed by a crankshaft-driven plunger pump on the right side of the crank case to crankshaft main bearings, connecting rods, cylinder, piston, cam shaft and valves.

A centrifugal oil filter on the right end of the crankshaft takes sediment out of the lubricant.

A specially-designed single carburettor is attached to the cylinder head with a heat insulator.

A gear case in unit construction with the crank case encloses compact transmission gears and the gear change device. A wet mulltipate clutch installed on the inside of the right side cover is attached to the gear box.

SERVICE

Partial servicing of the engine, depending on the location of the trouble, can be performed by carefully following the steps listed below.

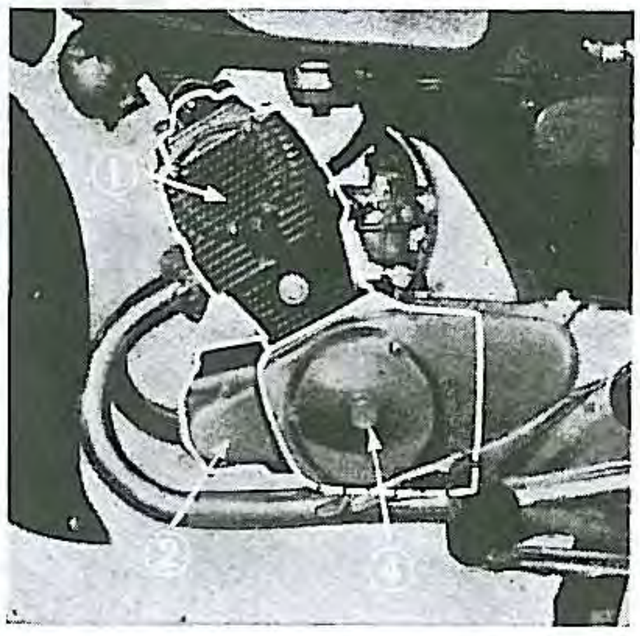


Fig. 3. Portions connected with servicing

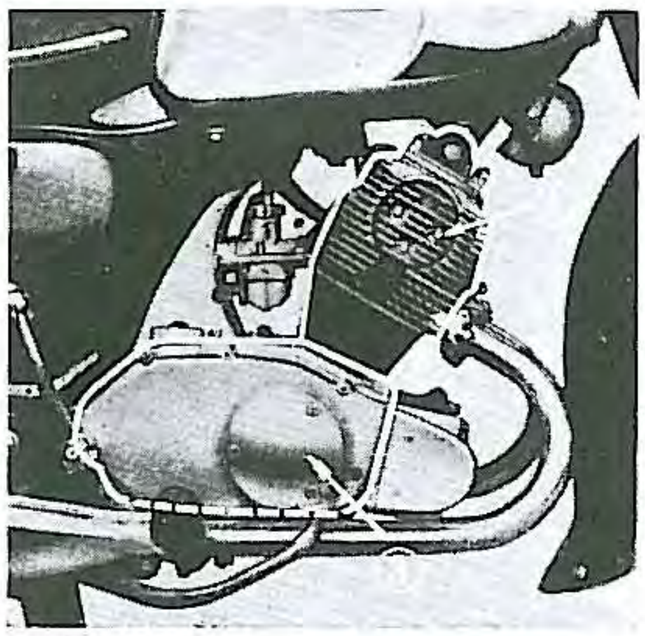


Fig. 4. Portions connected with servicing

(1) To service cylinder head, cylinder and piston, remove engine from frame, take off left crank case cover and disconnect the cam chain. (Fig. 3)

(2) To service starting motor, remove and disassemble it. (Fig. 3)

(3) To service clutch, remove right crank case cover and disassemble clutch. (Fig. 4)

(4) To service dynamo or starter motor, remove left side cover and disassemble. (Fig. 3)

(5) To service transmission, remove engine from frame and take off under crank case after first removing both side covers.

I-1. ENGINE REPLACEMENT

I. Engine Removal

Engine removal from the frame would follow the following procedures.

(1) Remove the step bar fixed on the under crank case, for standard engine. (Fig. 5)

(2) Remove the left side gear change pedal link from the engine and the left foot rest (Fig. 6) and remove the left foot rest carrier for CB92, CA95 engines. (Fig. 7)

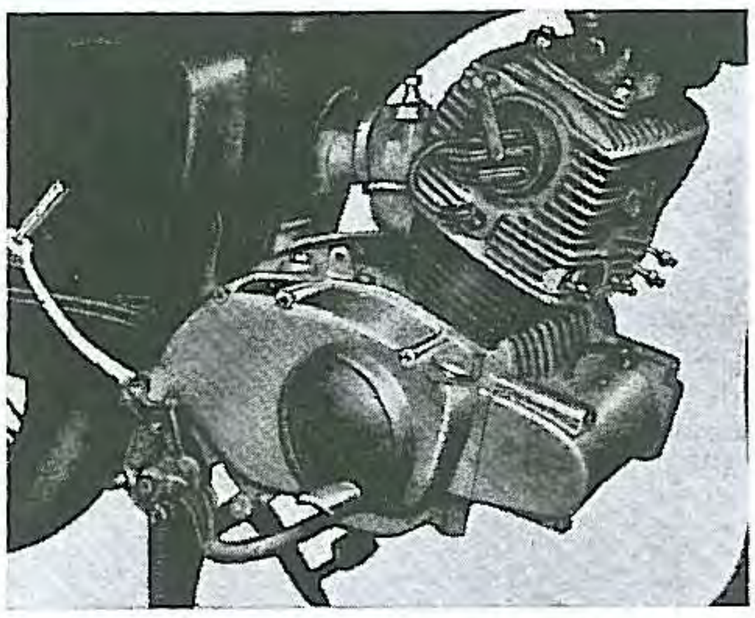


Fig. 5 Foot rest bar removal

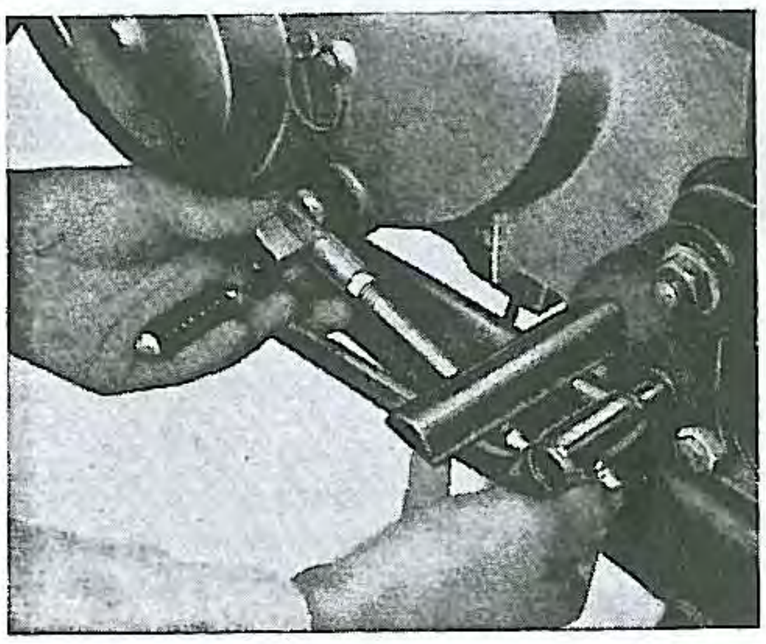


Fig. 6. Removing gear change pedal (CB92)

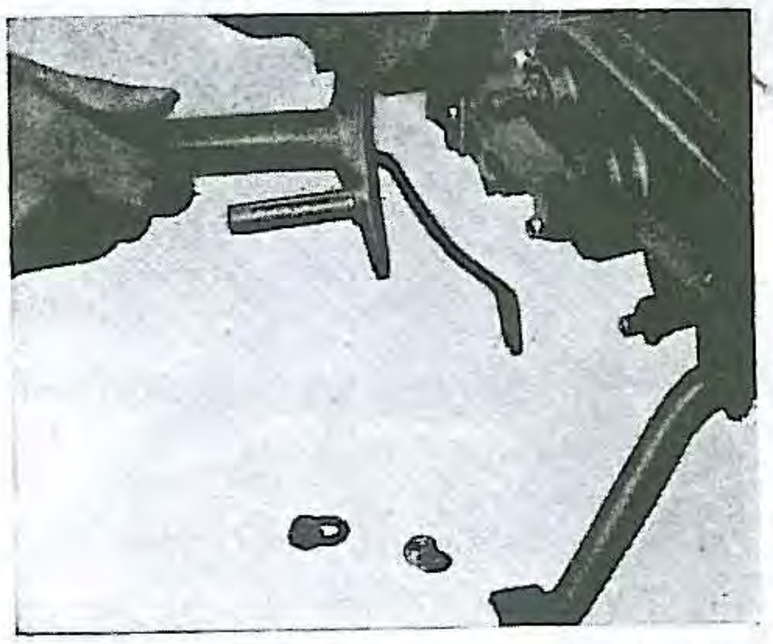


Fig. 7. Removing left foot rest carrier (CB92)

(2) Remove the exhaust pipes with muffler boxes on both side of the engine at the exhaust ports and muffler box brackets. (Fig. 8)

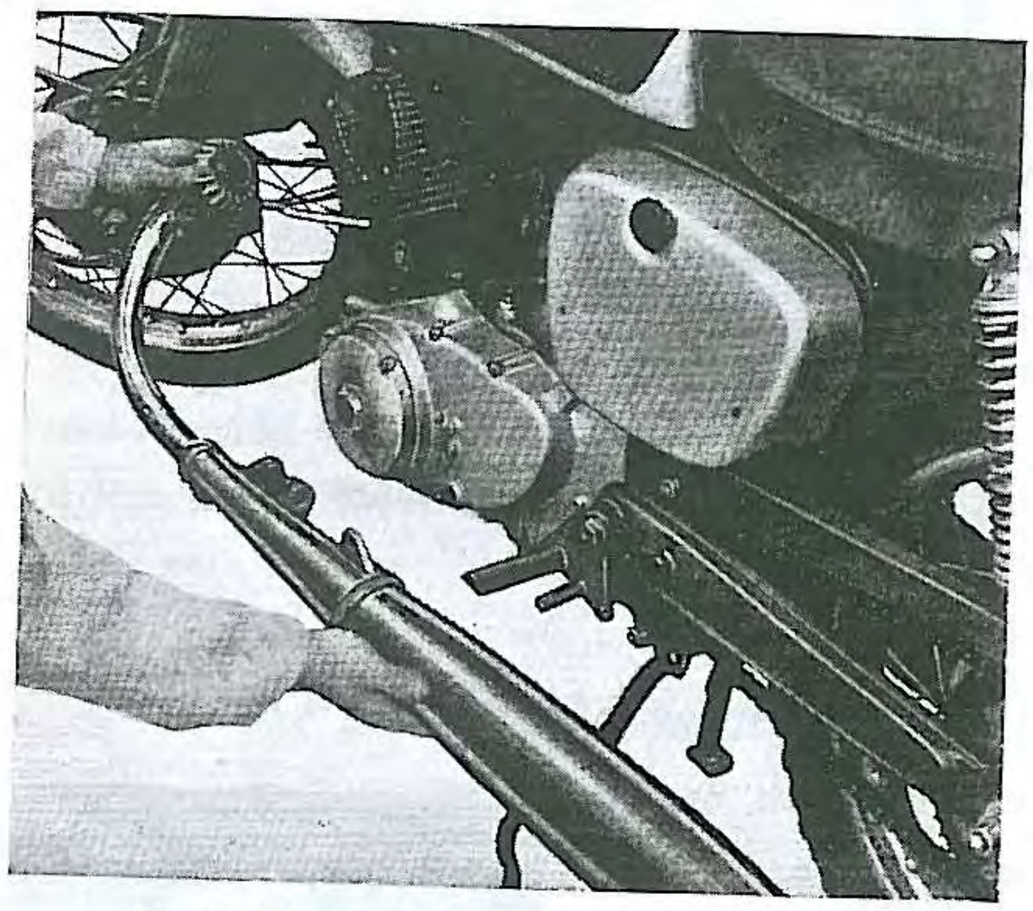


Fig. 8. Removing exhaust pipe and muffler box

(3) Remove the carburettor covers. (Fig. 5)

(4) Take off tool box in order to remove the air cleaner element with the tool tray board. (Fig. 9) The air cleaner can be disconnected from the carburettor rubber tube, by inserting left hand through frame under the carburettor and unhooking the clip on it.

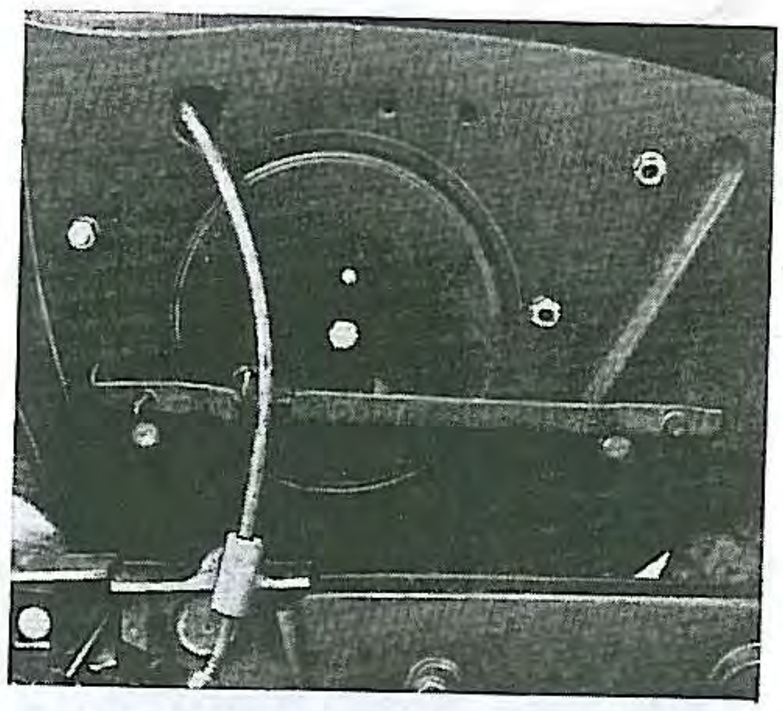


Fig. 9. Attachment of tool tray board

(5) Unscrew the wire harness holder nut and release the clamp (Fig. 10) and disconnect all the wiring. (Fig. 11)

(6) Remove the chain case cover (Fig. 12) and disconnect the drive chain at the joint link (Fig. 13). Then take out the chain case cover (B) (Fig. 14) and unhook the clutch cable end from the clutch arm.

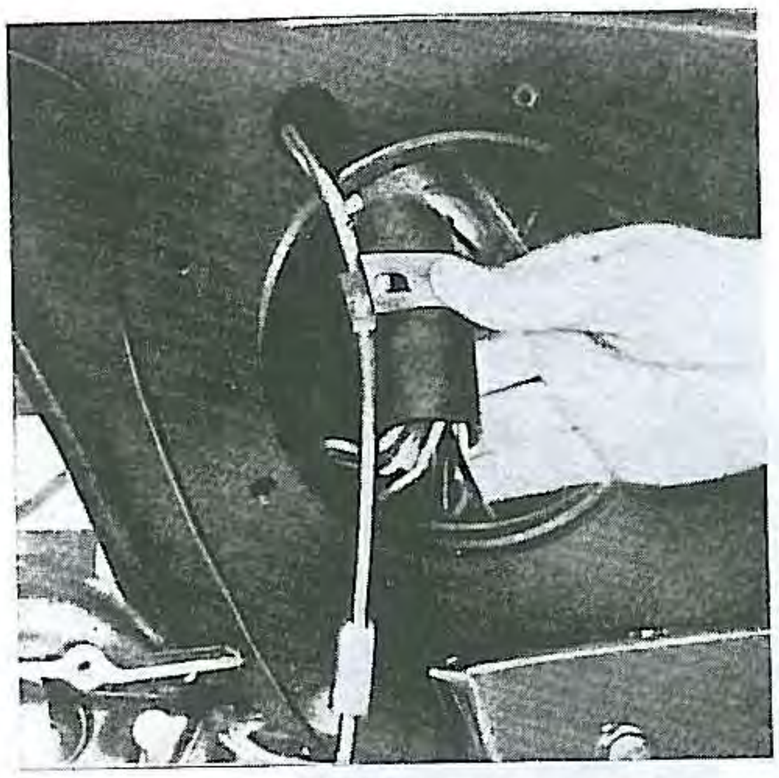


Fig. 10. Releasing wire harness holder clamp

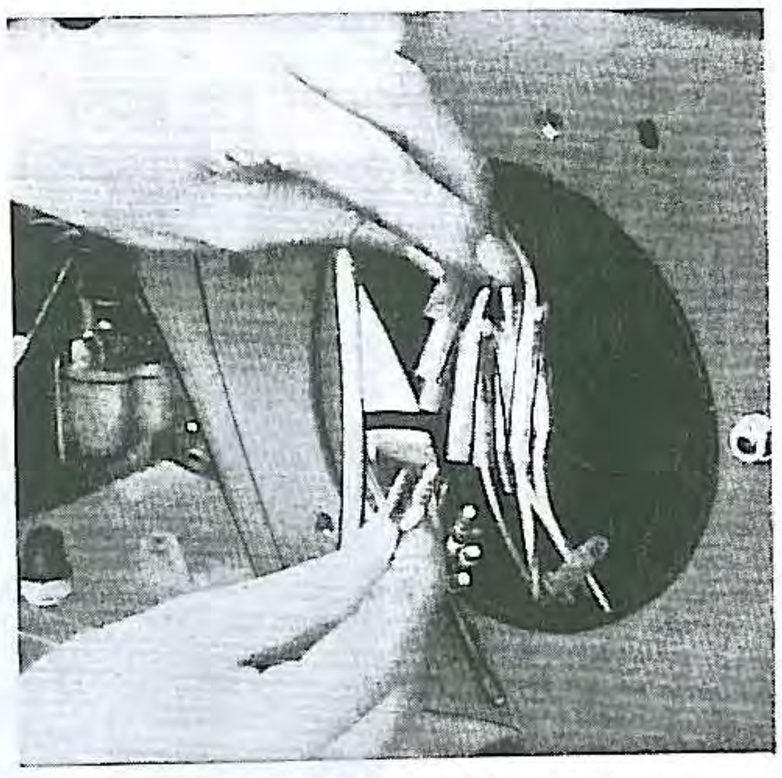


Fig. 11. Disconnecting wiring

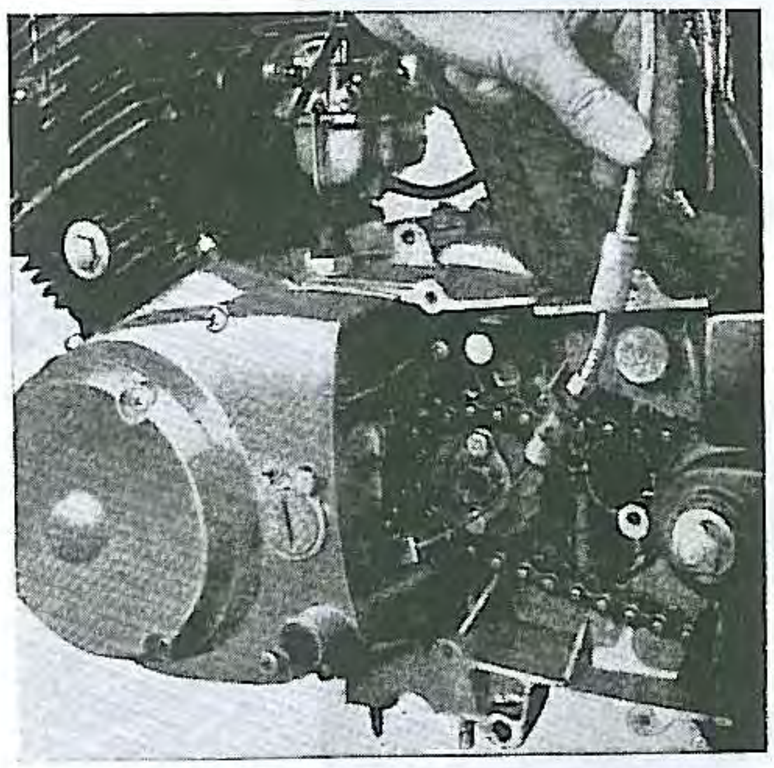


Fig. 12. Removal of chain case cover

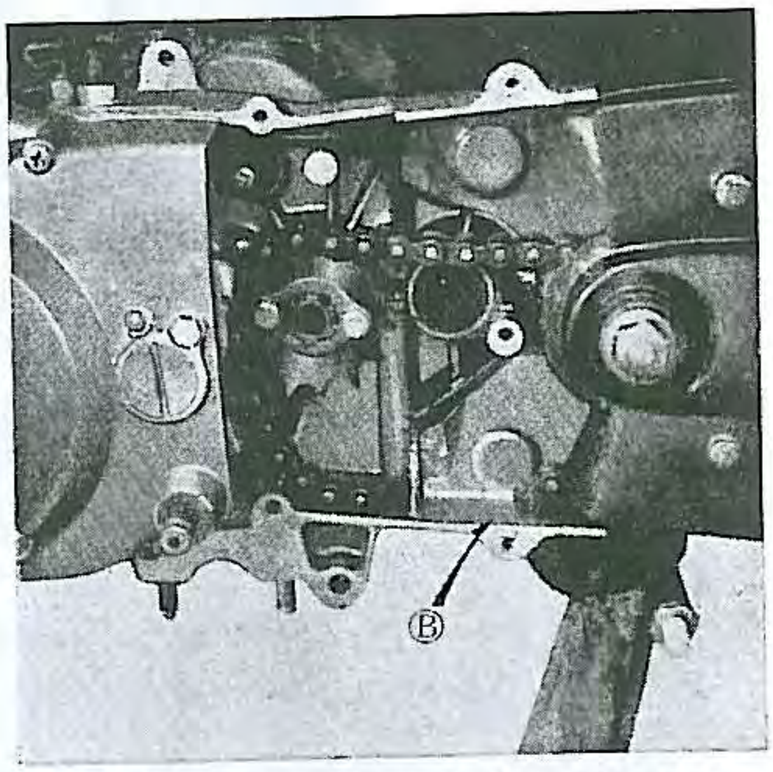


Fig. 13. Disconnection of drive chain joint

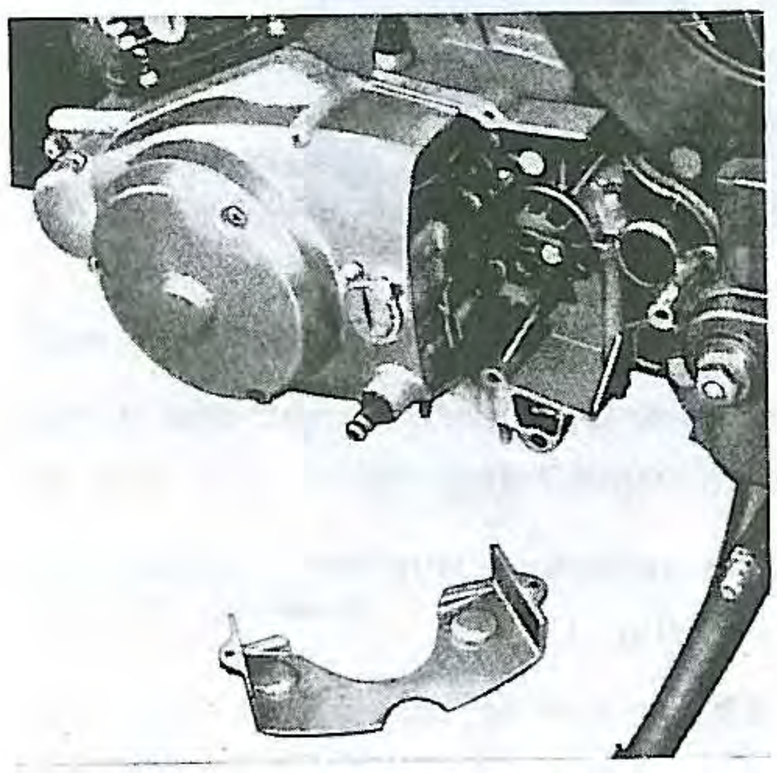


Fig. 14. Removal of chain case cover B

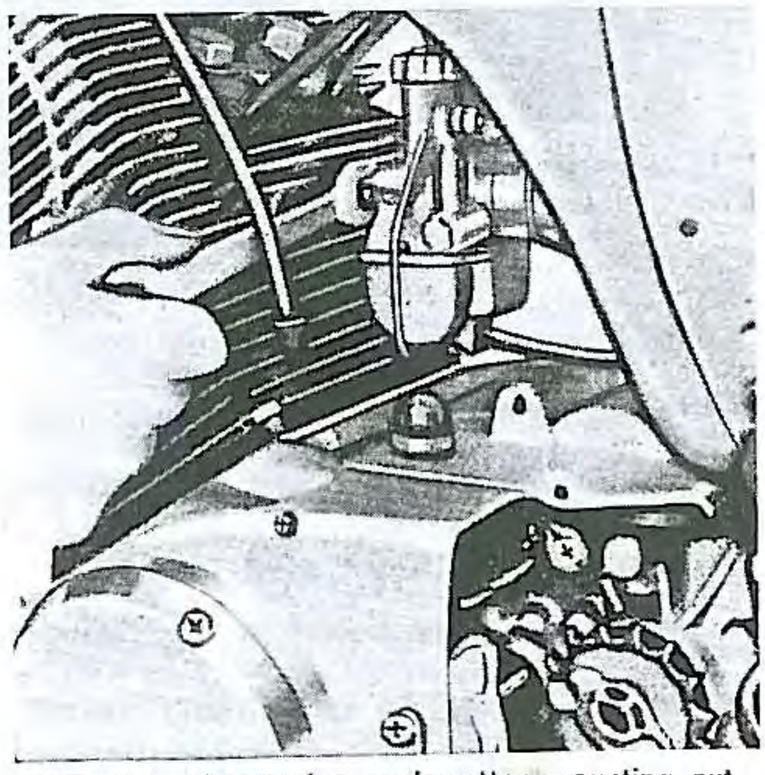


Fig. 15. Unscrewing carburettor mounting nut

(7) Separate the carburettor by unscrewing the mounting nut onthe cylinder head. (Fig. 15)

(8) On the right side of the engine remove the electric starter switch located on the right side of the frame, and disconnect the starter motor cable. (Fig. 16) Previous to this procedure, remove the battery by unscrewing the clamp bolt and terminals of battery. (Fig. 17).

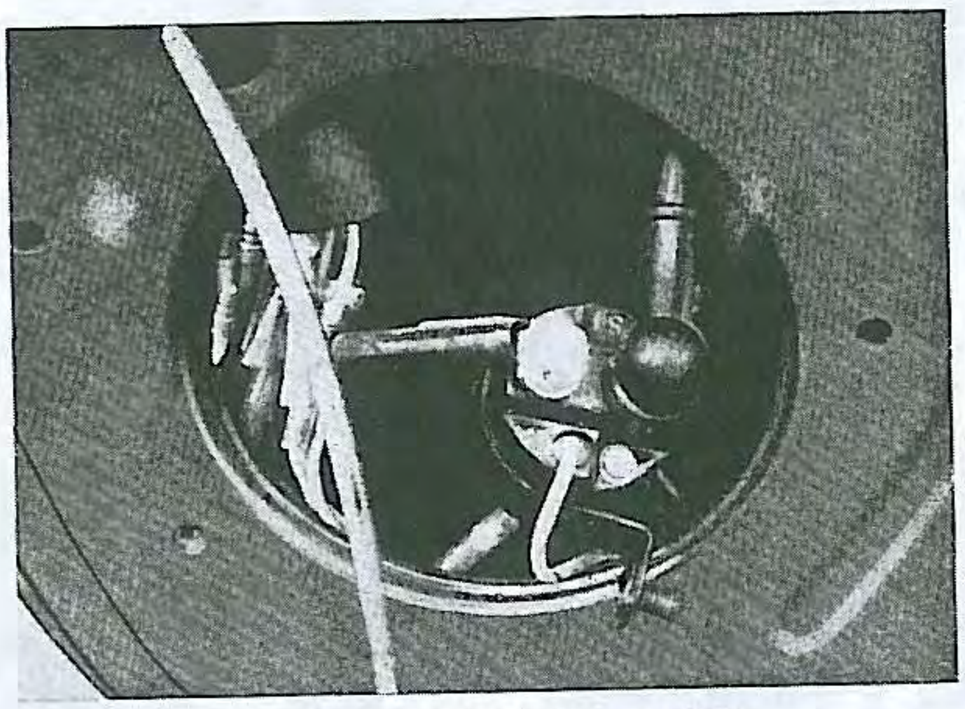


Fig. 16. Removal of starter switch

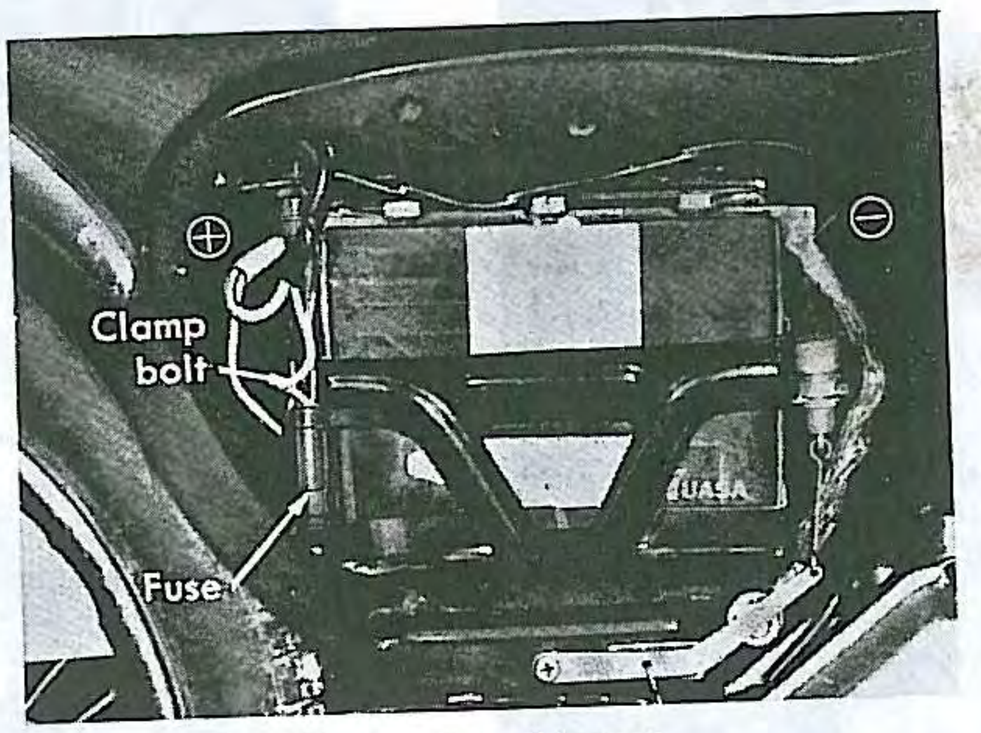


Fig. 17. Location of battery

Remove the kick starter pedal from the kick starter shaft on the right side of engine. Remove right foot rest and the brake pedal for CB92. (Fig. 18)

(9) Remove the spark plug cap at the end of the secondary wire and release the wire from the hole between the cylinder head fins. (Fig. 19)

(10) Place a support of suitable height under the crank case to support the engine before removing the engine mounting bolts.

Remove all the nuts from those bolts shown in (Fig. 20) with numbers ①, ②, ③ on both side of frame.

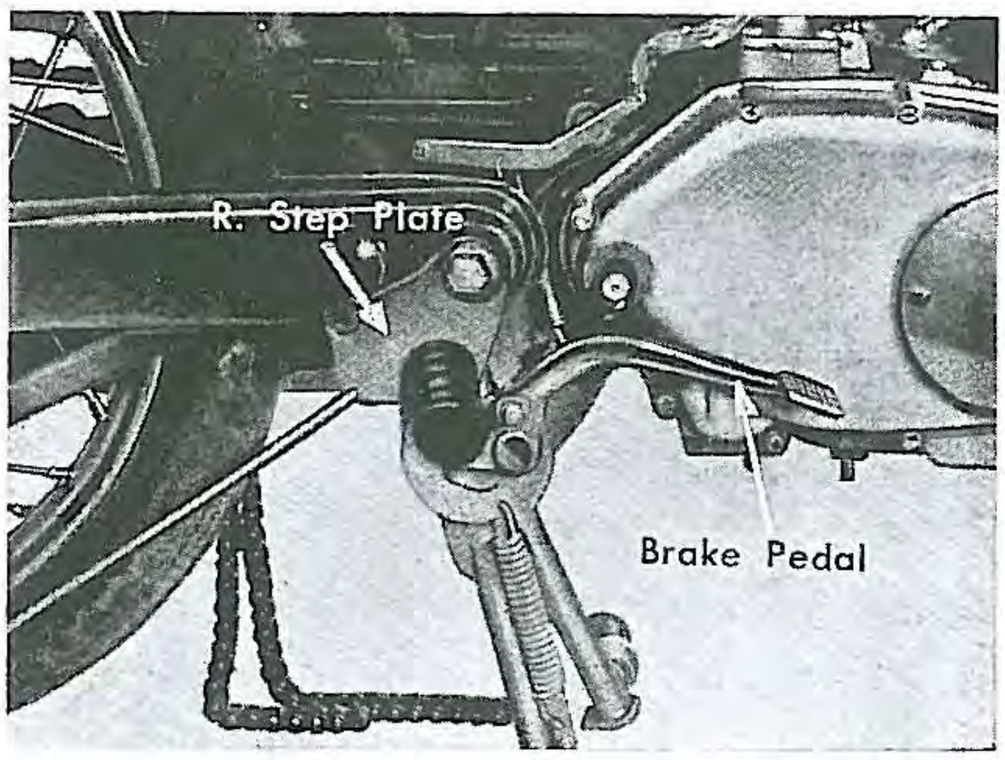


Fig. 18 Removing right foot rest

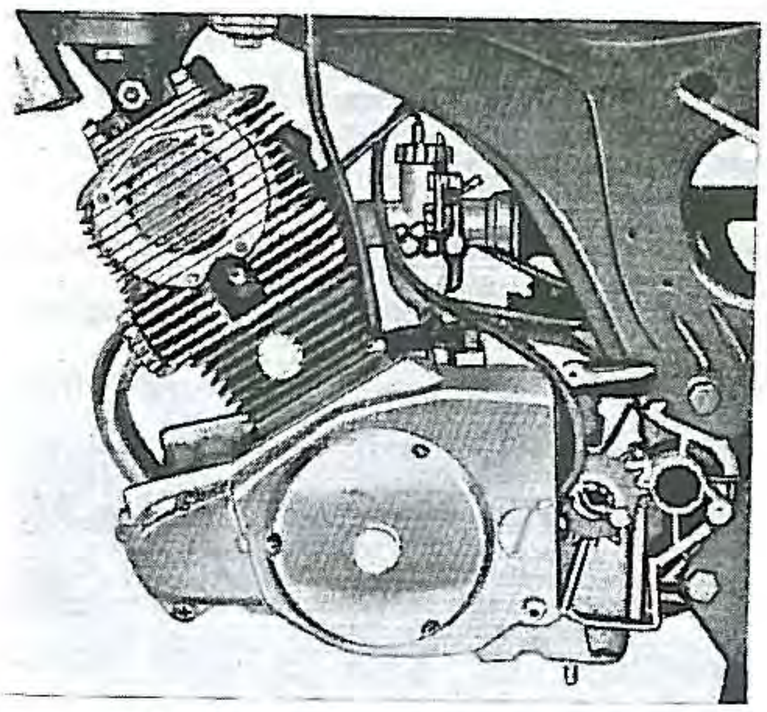


Fig. 19 Release secondary wire

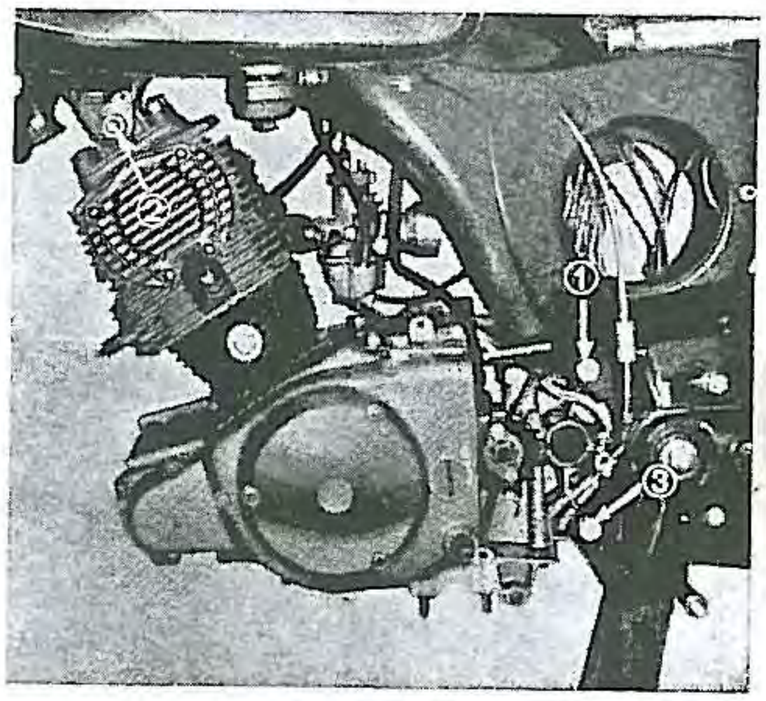


Fig. 20. Position of engine supporting bolts

Then draw out the bolt ① on both sides of the frame and the bolt ③ should follow, then the rear end of the engine will drop onto the stand. At last withdraw the bolt ② and place the whole engine on the stand by hand.

II. Engine Replacement

Engine replacement may be accomplished with the engine parts assembled, such as its condition at removal.

The procedure may be refered to the items in the paragraph of " Engine Removal " conversely if it is assumed that the word " remove " is replaced by " replace ".

Proceed as follows :

(1) Place the engine on a suitable stand and push the stand under the frame to the position where the replacement will be convenient.

(2) Insert the front engine hanger bolt supporting the front end of the engine to coincide with the mounting holes. Insert the rear end mounting bolts on both side of the engine from outside of the frame. In this case, care should be taken not to forget to place a battery ground bond strap on the right side upper bolt. Tighten the nuts most securely.

(3) Replace the carburettor on the cylinder head.

(4) Replace the battery with the battery clamp and connect the cable terminals to the battery.

(5) Conenct the electrical wiring at connectors and install the clamp on the frame. Connect the starter motor cable at the starter switch which should be fixed on the inside of the frame.

(6) Place the chain case cover behind the chain at rear end of the crank case and join the drive chain with joint link. The direction of the joint link should be inserted so that the slit end will point in the opposite direction to the rotation of the chain.

(7) Hook the clutch wire end to the clutch lever and set the clutch cable holder between the crank case rear-end, and the inner chain case cover. Install the outer chain case cover.

(8) Attach the air cleaner element to the connecting rubber hose and assure the fitting of the set rings and the insertion of the plastic tubes are brought from the carburettor and the vent hole on the cylinder head. Fix the air cleaner side-cover to the frame.

(9) Install the brake pedal and the right foot rest carrier on the frame. (CB92) Install both side mufflers and exhaust pipes. Install the foot rest (STD) or right carrier (CB92), change pedal, kick starter arm, carburettor covers, tool box and battery box cover.

(10) Fill the engine crankcase to the specified level with the proper oil indicated in **Section IV 16.**

III. Engine Dismantling

Engine dismantling is presented in the sequence to be followed when the engire is to be completely over-hauled after removal from the frame (Fig. 21). The operations of the proceduer pertinent to the clutch repairs, repairing of the starting motor and its devices.

and the governor or A.C. dynamo repairs are also applicable separately with the engine in the frame, provided that wherever necessary the part of the engine parts to be worked on is first made accessible by removal of engine parts.

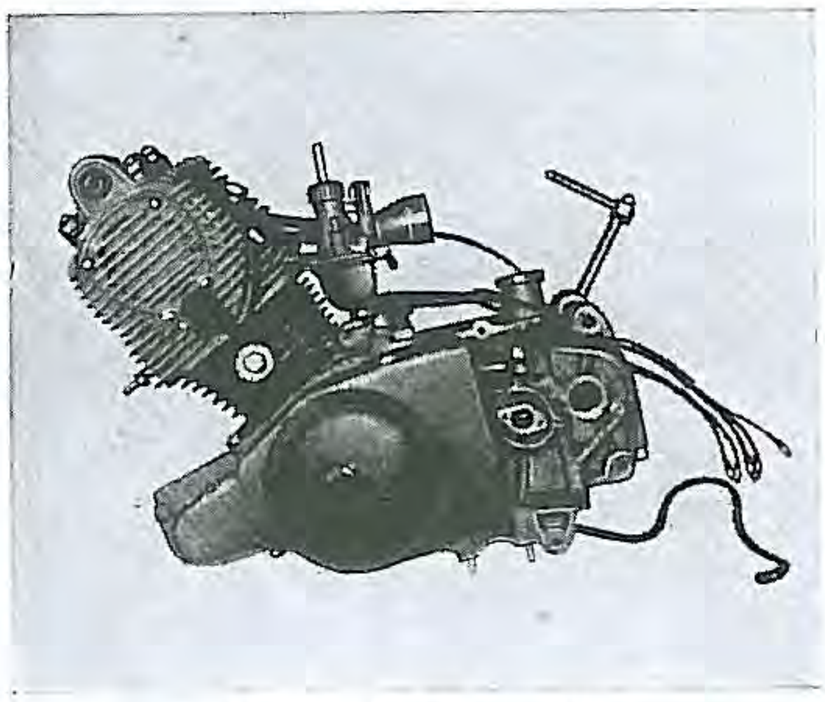


Fig. 21. Engine complete

When the dismantling operations are performed, it is assumed that the oil has been drained prior to starting.

I-2. CYLINDER HEAD AND CAM CHAIN

The cylinder head is made of aluminium alloy casting with the valve guides and valve seats cast into the head. For the method of fitting, the cylinder head is required to expand under the temperature of 200~250°C in a furnace for the insertion of inserts at room tempreature. The valves, rocker arms and cam shaft are located on the cylinder head and driven by the cam chain from the crankshaft.

Domed shape combustion chambers are provided for the improvement of efficiency.

Th cams for CB92 and CA95 are different from the standard model.

For engines after the serial number CB92E-010511 and CA95E-010139, a tachometer cable adapter is provided on the R. cylinder head side cover, and a tachometer drive gear is machined on the end of the cam shaft.

If it is decided to install the adapter on the earlier engines, the cylinder head should be replaced as they are not interchangeable. (Fig. 24)

1. Removal of Cylinder Head

(1) Remove the contact points cover and disconnect the green colored electric wire at the junction on the plate (Fig. 22). Then the left crank case cover with attached contact plate is removed by unscerwing the cross-recessed screws retaining the cover.

(2) Remove the 8mm bolt that attaches the spark advancer. In this operation apply a hammer on the end of wrench by an impact anticlockwise, otherwise the bolt will not release owing to its rotation in the same direction as the crankshaft.

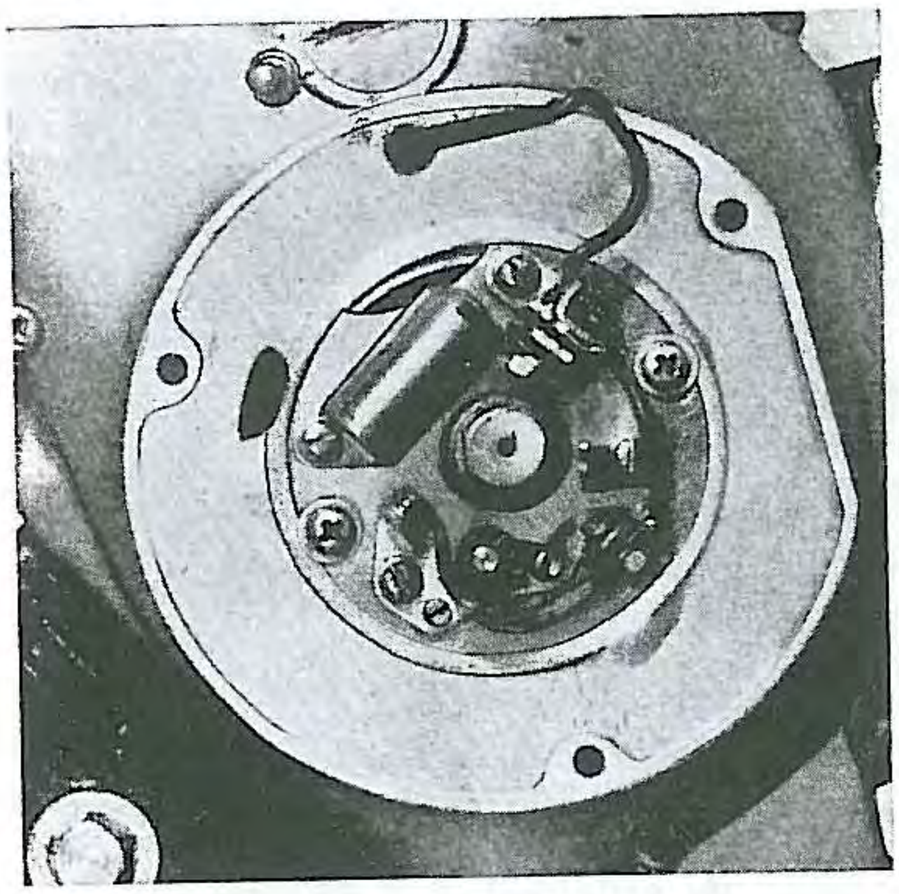


Fig. 22. Primary wire at contact breaker

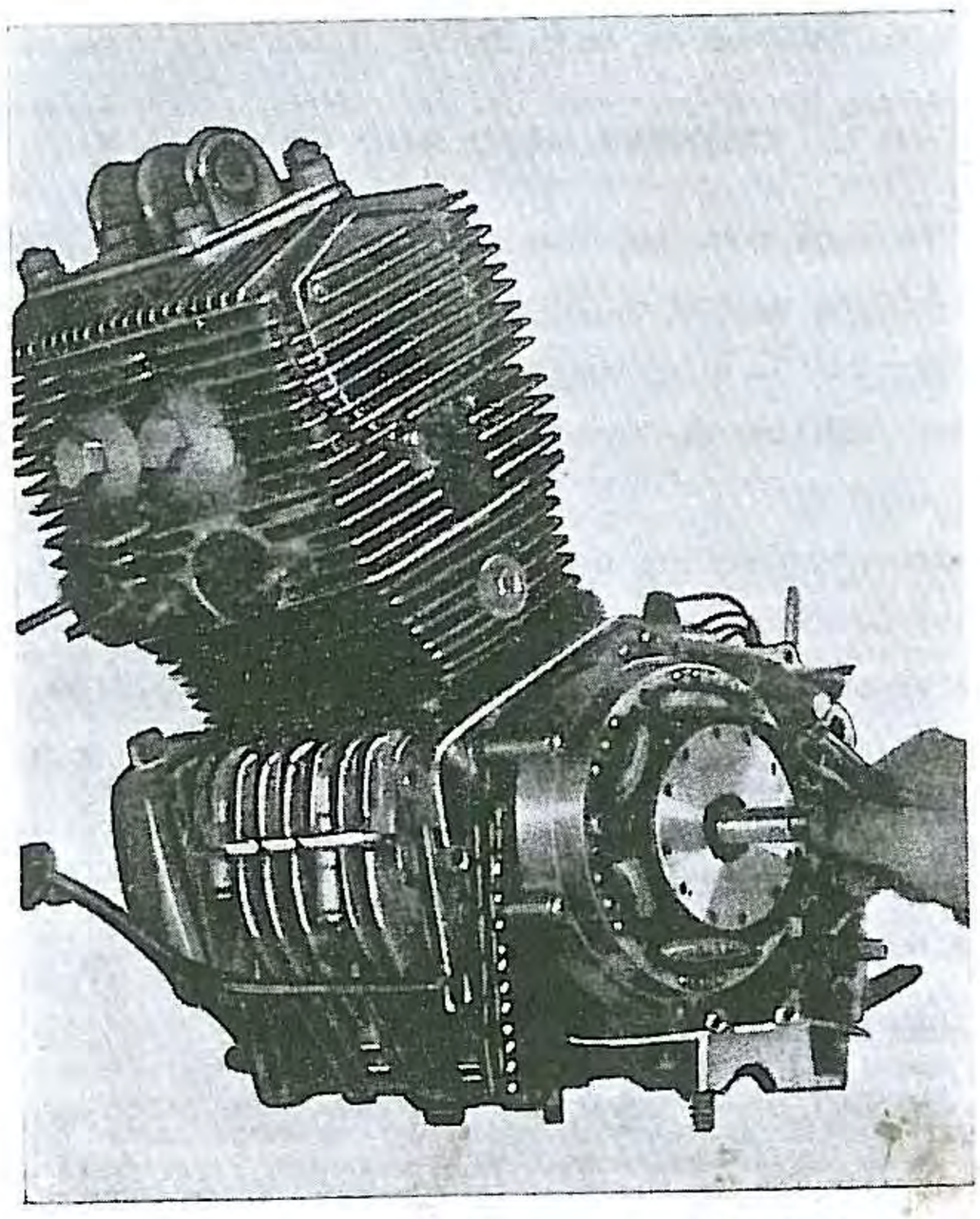


Fig. 23. Removing A.C. dynamo rotor with extractor

(3) Remove A. C. dynamo rotor with the extractor as shown in (Fig. 23.) After the rotor has been removed, remove the woodruff key wedged into the crankshaft.

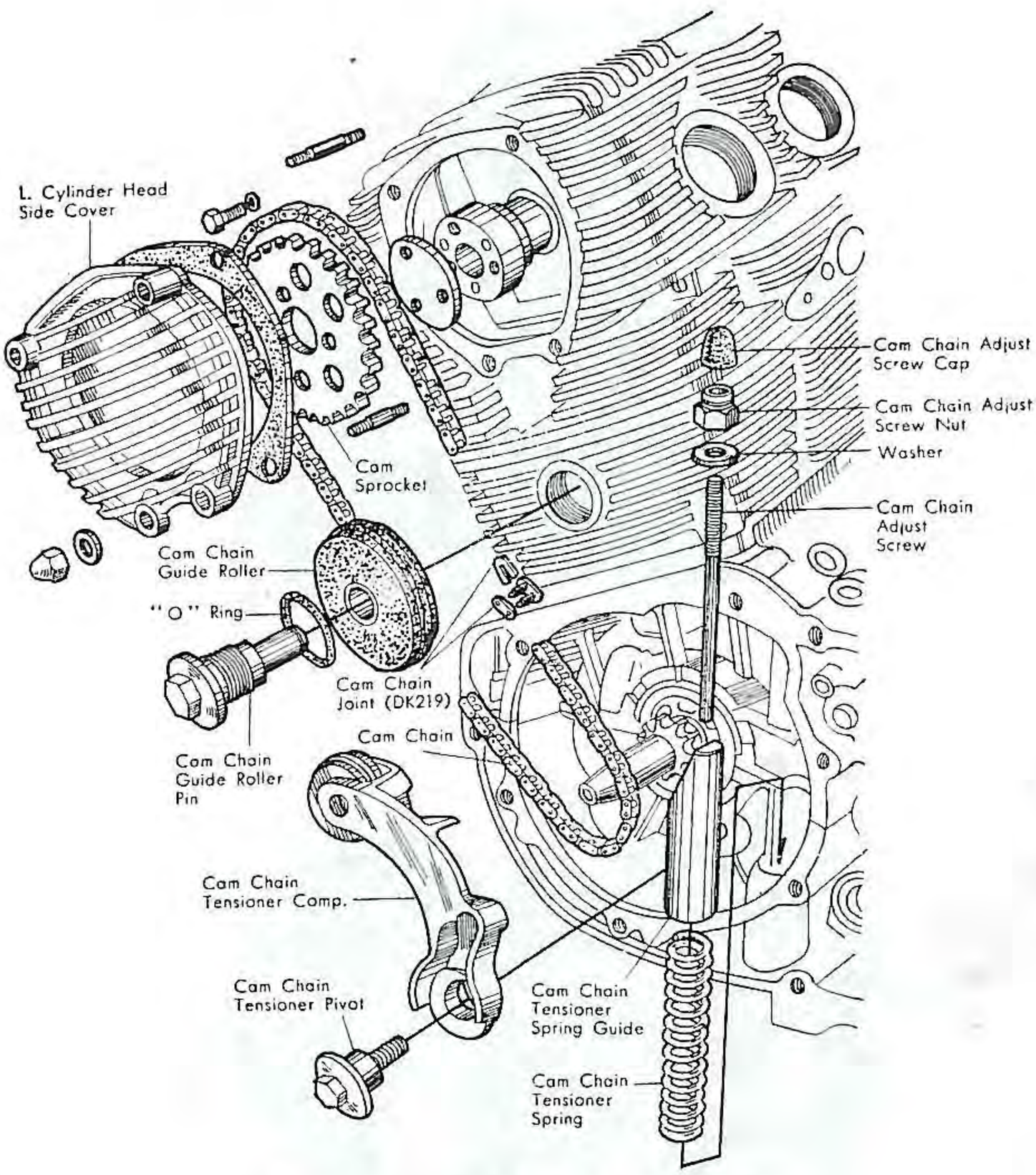


Fig. 24. Exploded view of cam chain system

(4) Remove the 4 starter motor mounting bolts (6 mm) at the front end of the crank case (Fig. 25) and take out the starter motor from the chain by twisting the sprocket end of the motor towards the A. C. dynamo.

Previously remove two clamps retaining starter motor cable under the crank case. (Fig. 26)

In this case of the starter motor sprocket set-ring being difficult to remove, pliers are available.

No more dismantling can be performed, before removing the set ring on the starter motor shaft.

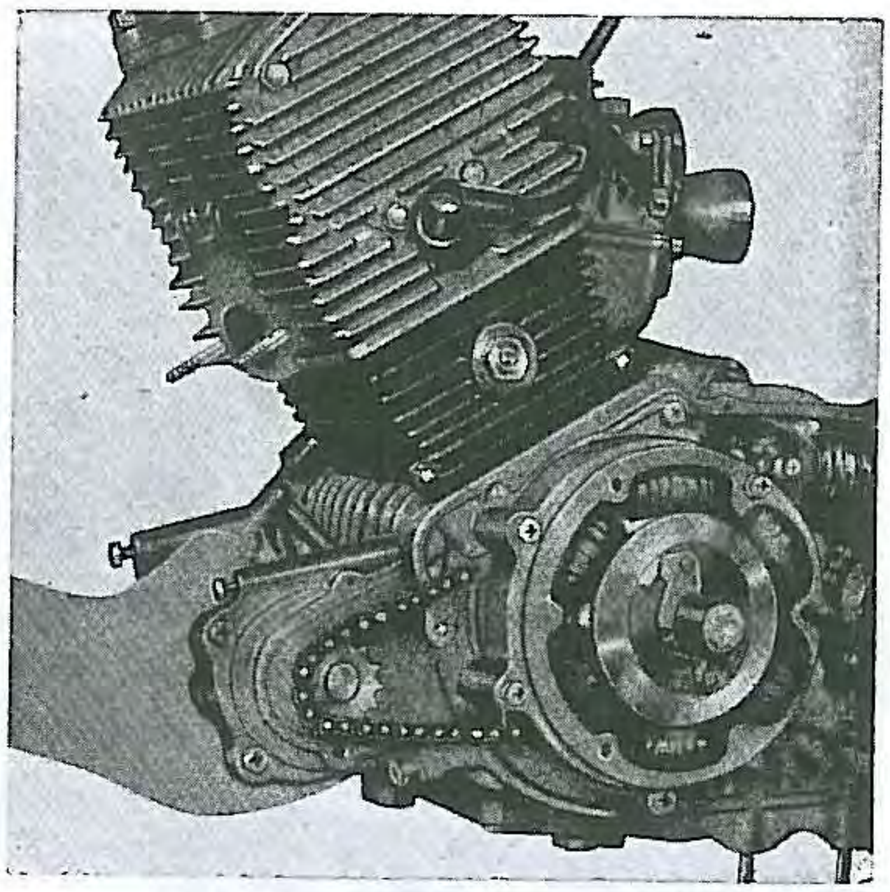


Fig. 25. Removing starter motor

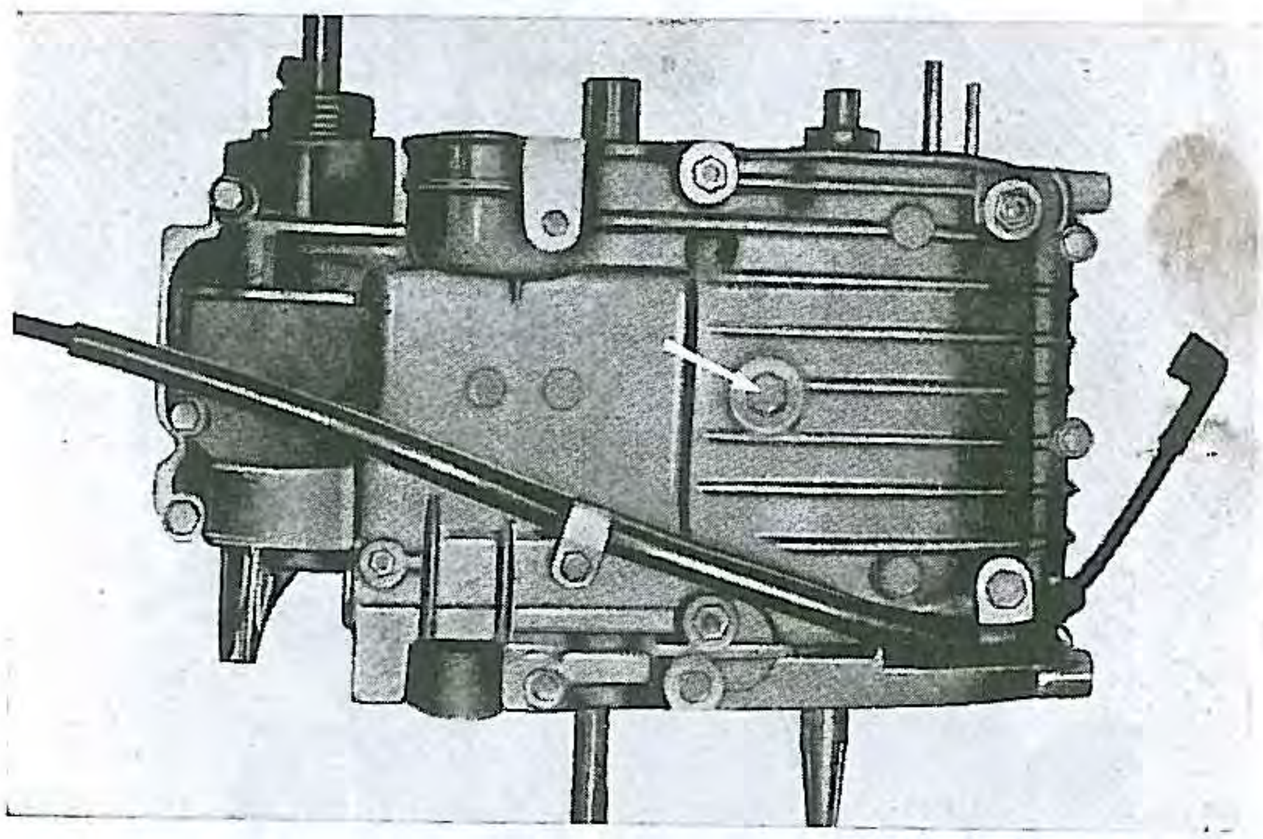


Fig. 26. Position of clamps under crank case

(5) Remove the ignition coil, (① in Fig. 27) attached on the left side of crank case for only engines up to the serial number C92E-937064.
Remove the cross head screws (5, 6×30 mm and 1, 6×24 mm) and pull out the A. C. ② dynamo starter base along with the starting chain and the sprockets as a

unit, then the starter motor sprocket will pull out concurrently with the other sprocket.

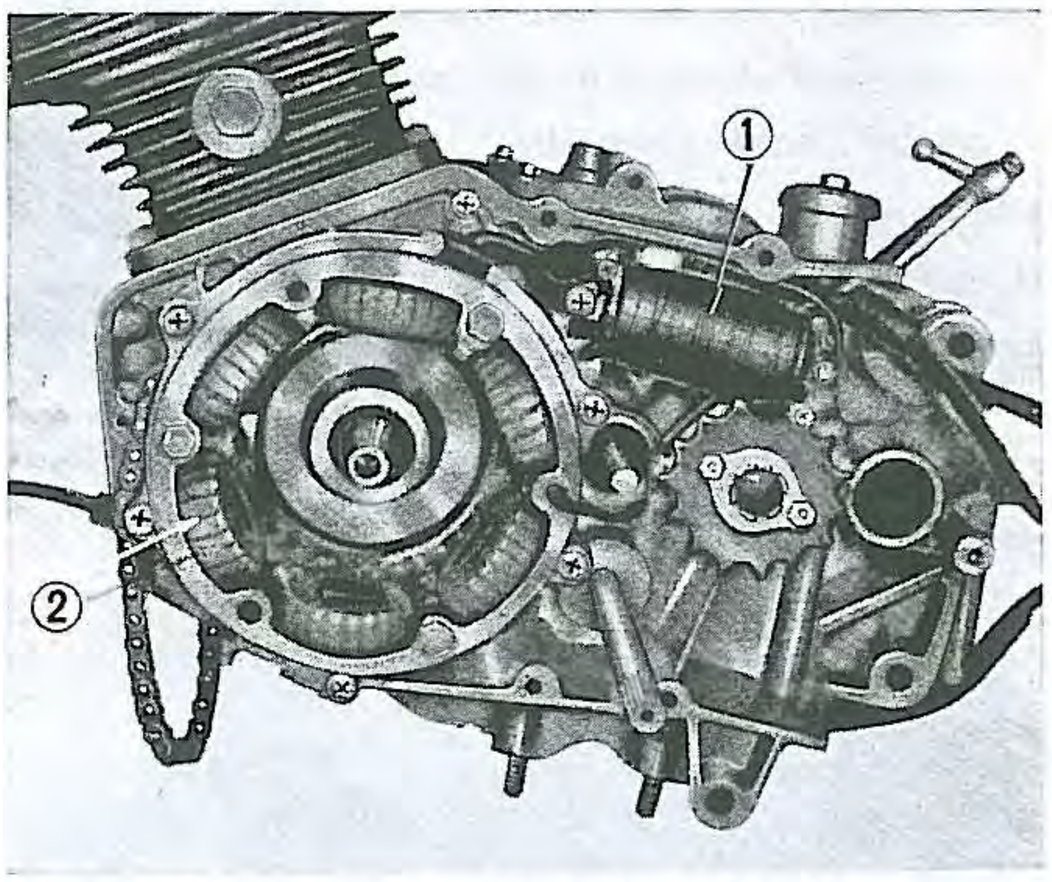


Fig. 27. Location of ignition coil and A. C. dynamo

(6) Remove the cam chain tensioner pivot bolt marked with an arrow in Fig. 28 and take out the cam chain tensioner. For accessibility in doing this, previously screw in the cam chain tension adjusting screw attached to the upper crankcase at the bottom.

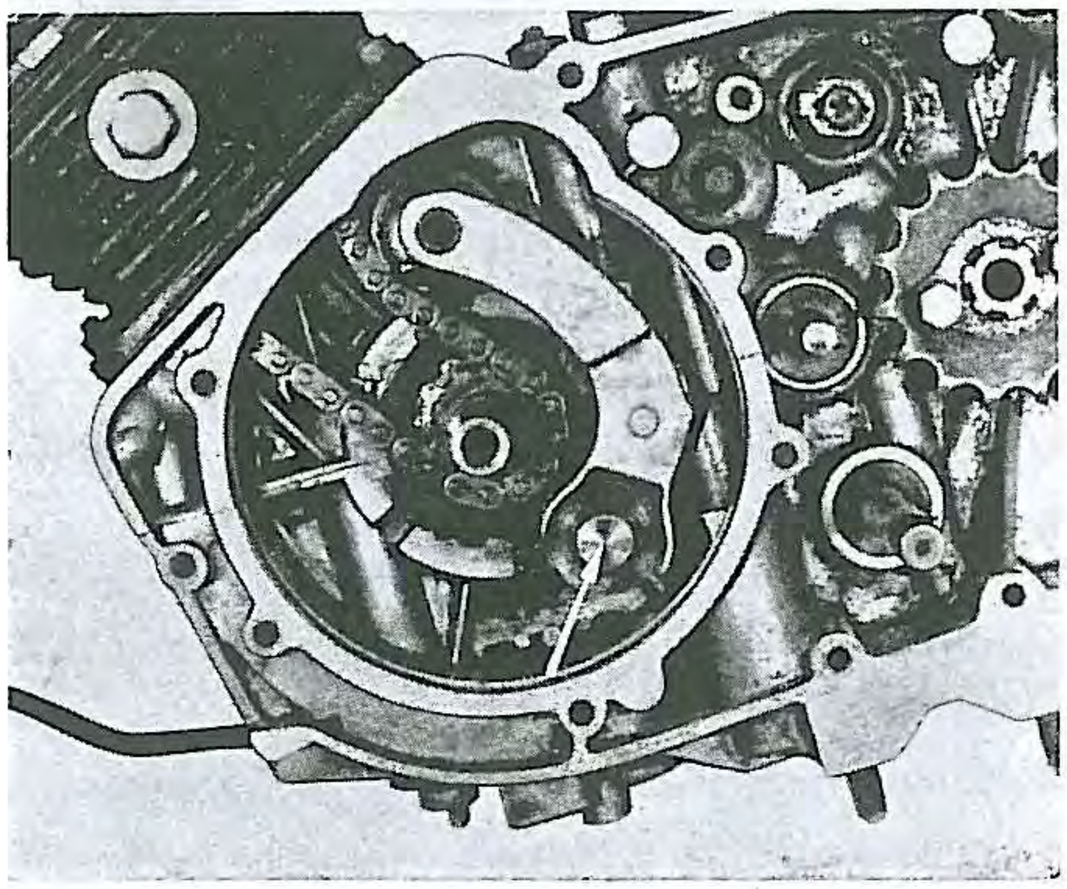


Fig. 28. Cam chain tensioner pivot bolt (arrow mark)

(7) Rotate the crank shaft until the cam chain joint appears on the side of the crank case where the cam chain tensioner rubber roller has been contacted. Then, remove the chain joint and separate the chain.

(8) Remove the cylinder head cover by releasing 6 nuts on it, (Fig. 29), and the cylinder head may be taken off from the crank case as refered in Fig. 30.

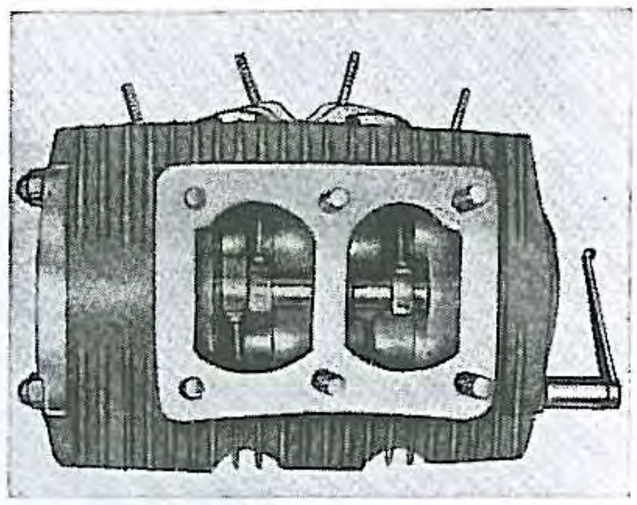


Fig. 29. Removal of cylinder head cover nuts

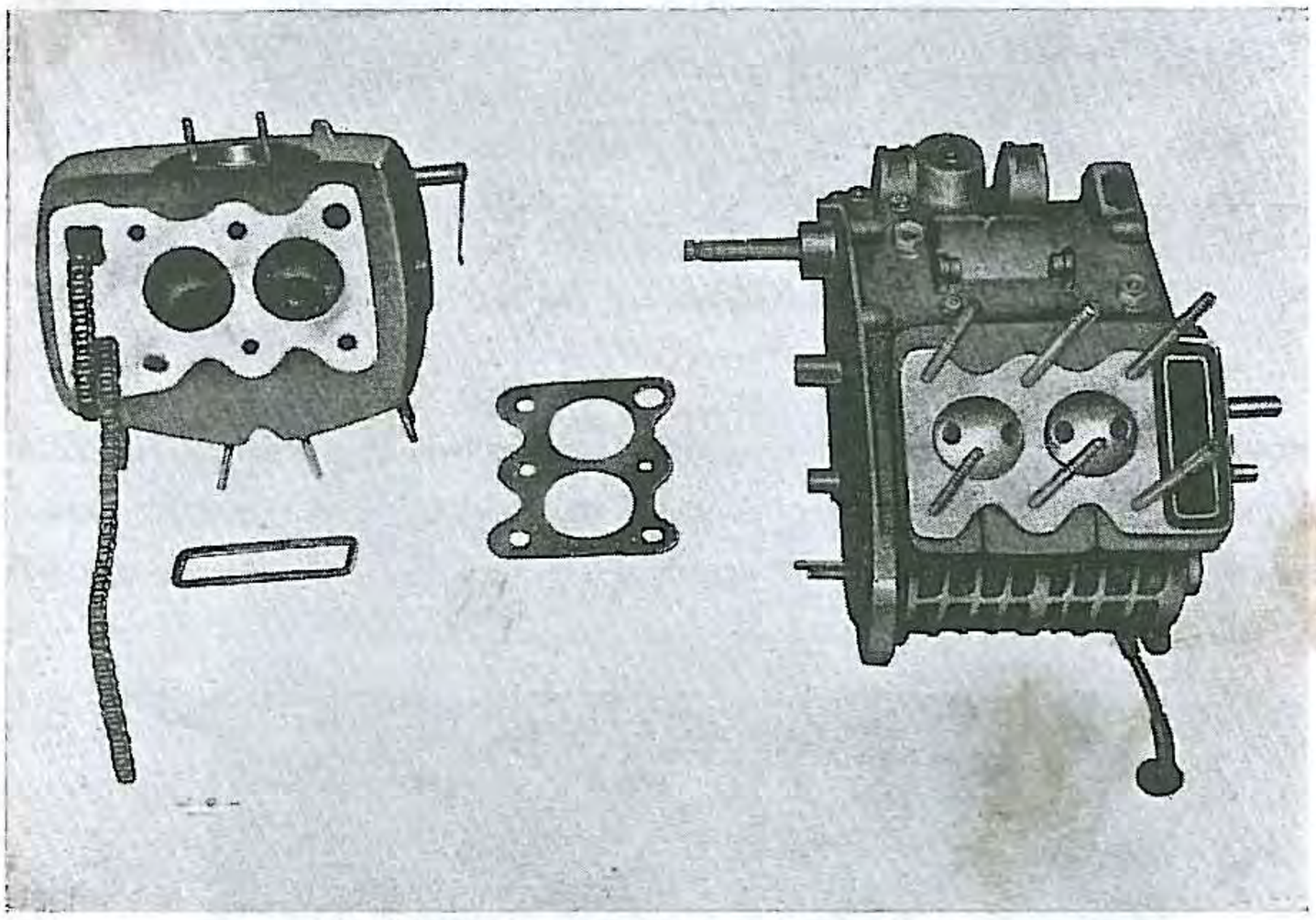


Fig. 30. Removal of cylinder head and gaskets

(9) The procedure for removing cylinder head should be accomplished as follows. (Fig. 31)

9-1 Remove L. cylinder head side cover and rotate the cam sprocket with rotating handle, provided in the service tool kit, until the chain will be released from the cam sprocket.

Remove the cam sprocket from the cam shaft by unscrewing 3 bolts.

9-2 Loosen all tappet adjusting screws so that every valve may be set free from rocker arms.

9–3 Remove distributor cap and rotor from the engines provided with distributor. Remove the R. cylinder head side cover.

For the CB92 and CA95 engines with tachometer drive gear: Remove the tachometer gear box cap and gear bushing retaining bolt. Pry out the oil seal located on the entrance, with a driver. Then withdraw the bushing and gear shaft. (Fig. 31, 32)

Remove 4 screws, one of which is located behind the gear bushing, and take off the R. cylinder head side cover by rotating. (Fig. 33, 34)

9–4 Remove both end set rings fixing the rocker arm clamp pins using thin nose pliers (Fig. 35) and drive out the rocker arm clamp pins by tapping from one side (Fig. 36). The rocker arms should be taken out from the tappet holes.

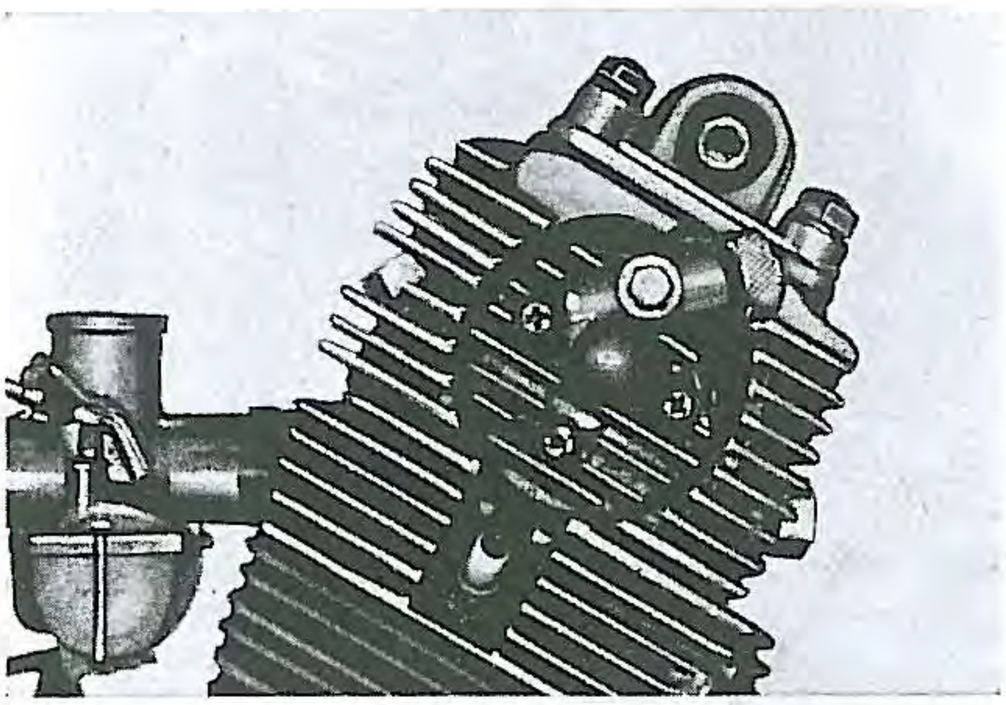


Fig. 31. Location of tachometer gear box

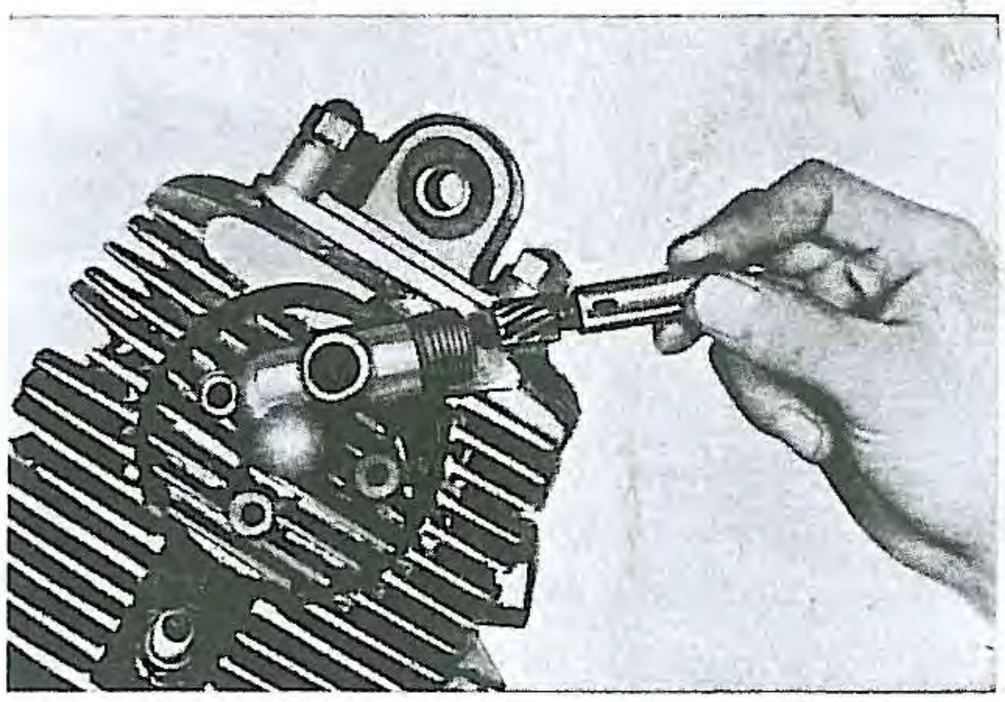


Fig. 32. Removing tachometer drive gear

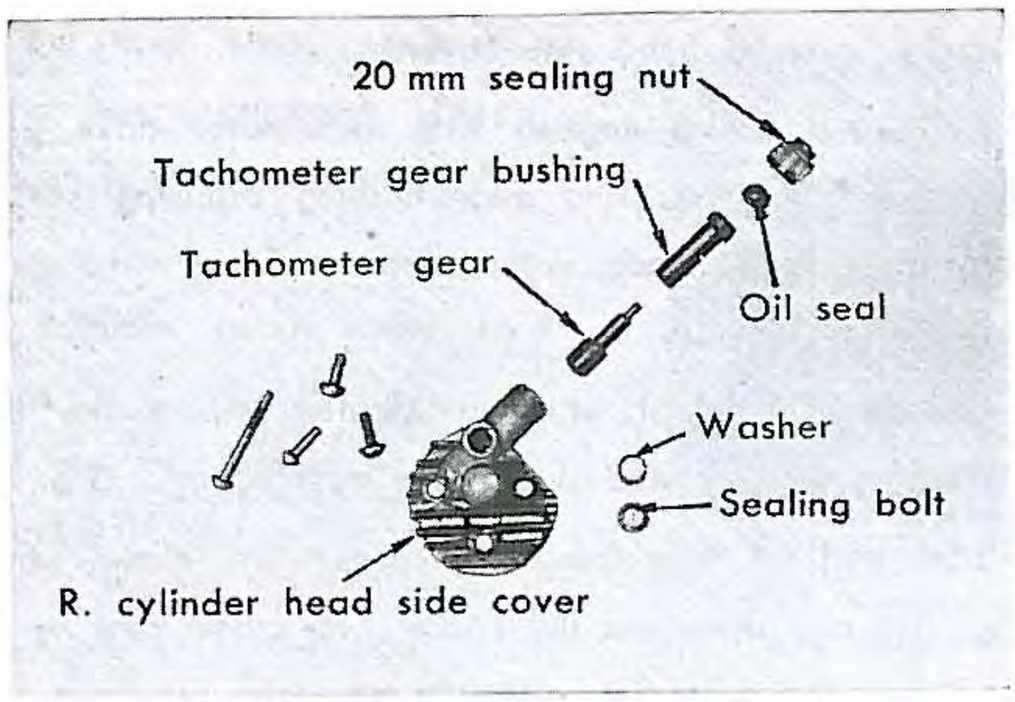


Fig. 33. Display of tachometer gear box

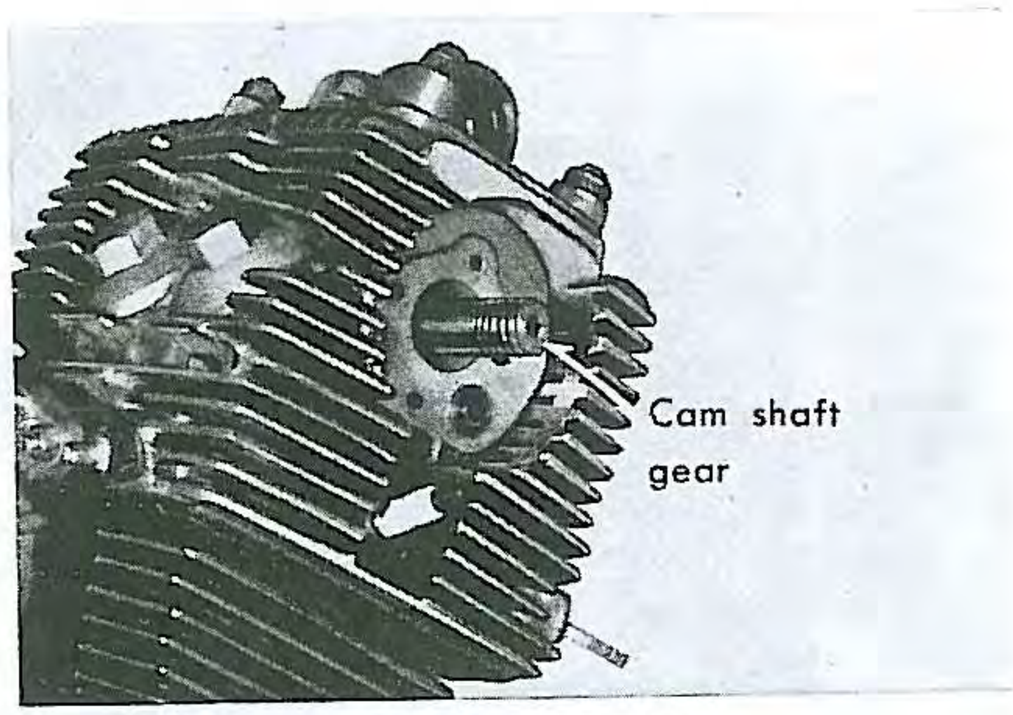


Fig. 34. Cam shaft gear

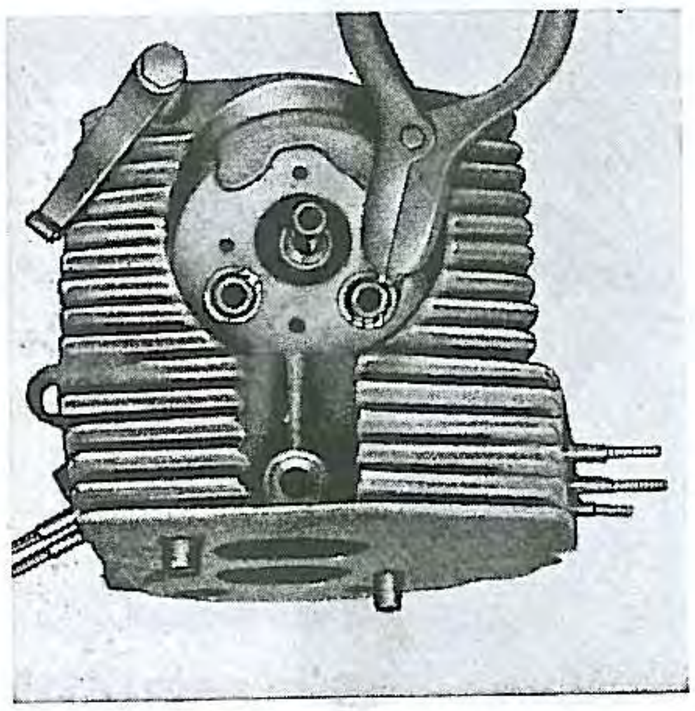


Fig. 35. Removing set rings of rocker arm clamp pins

Fig. 36. Withdrawing rocker arm clamp pin

9–5 Pull out the cam shaft assembly from the opening in the cam chain side of the cylinder head.

(10) Remove valves and springs

With the valve spring compressor which is used to hold the valve between its arms, compress the valve springs by means of turning the handle and remove the valve cotters from the top of the valve stems. (Fig. 37)

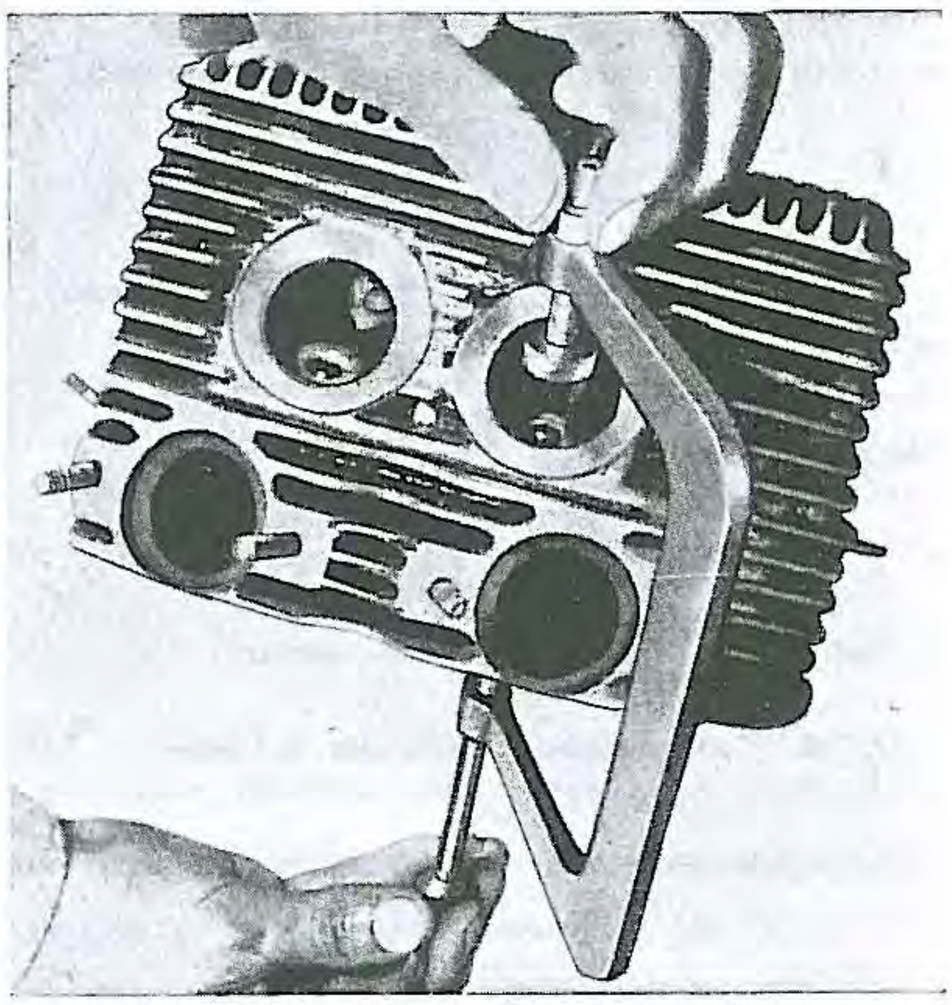


Fig. 37. Removing valve cotters using spring compressor

Remove all valves and tag to indicate the location of each in the cylinder head.

II. Inspection and Repair

(1) Cylinder head

Carefully remove all carbon deposits in the combustion chamber and on the valves with a suitable scraper. Be careful not to scratch the parts. Clean all parts with solvent.

1–1 Replace the cylinder head if it is cracked or warped more than 0.004″.

If it is warped less than this, the distortion may be removed by putting lapping compound on a flat iron surface and rubbing the head against it. Also, check the manifold surface and smooth it if needed.

1–2 Inspect valve seats for burns, pitting and wear before refacing them. If valve guides ear to be replaced, this must be done before the valve seats are refaced.

Refacing tools are cutters with angles of 30°, 90°, and 120°.
First, use the 90° cutter to correct seat angles on both inlet and exhaust valevs until all faults disappear. Measure the seat width, which should be within 0.04″–0.06″ (1.0–1.5 mm) after refacing. If it is more than this and the valve seats deeply, reface the top of the seat with a 120° cutter. Measure the width again. If it is still excessive, use a 30° cutter to correct the width.

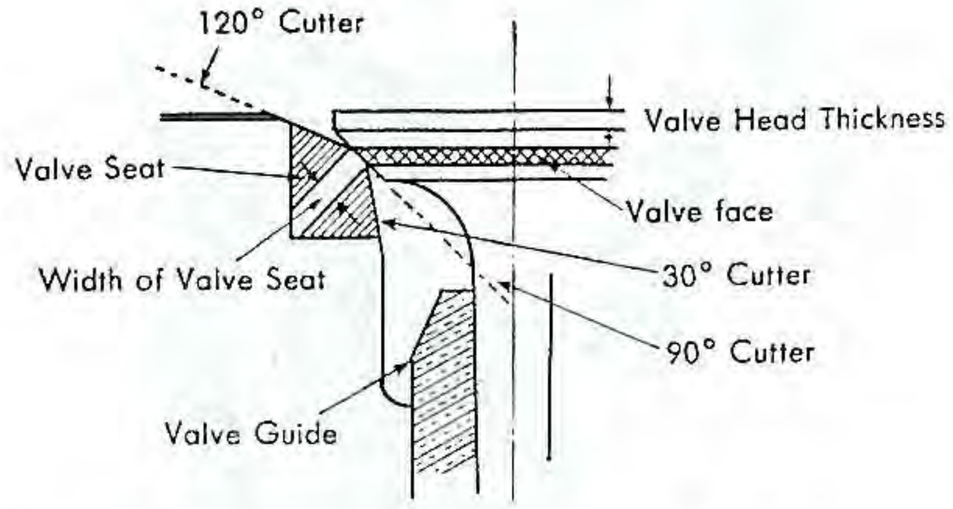


Fig. 38. Cutting angles of valve seat and valve

Do not cut the valve seats any more than necessary to bring them to specification.

The valve seats are "shrink fitted" in the cylinder head, so do not attempt to replace them.

1–3 Measure the inner diameter of the cam shaft bearing. Replace a head which is worn or excessively warped out of the round.

(2) Valve guides

Check valve guide bores with a "go" and "nogo" gauge (plug gauge) if available. Inside diameter is listed in specifications on page 156. Any valve guide which is broken or worn enough to give excessive clearance between valve stem and guide must be replaced.

The guide is shrink-fitted in the cylinder head at temperatures of 200°–250°C, and if it is necessary to replace the guides in a workshop where there is no suitable oven, it is advisable to replace the complete cylinder head instead.

The inlet valve guide has a hole which connects with an air vent drilled through the cylinder head, so be sure the holes correspond if an inlet valve is replaced.

This is designed to prevent oil entering the combustion chamber through the clearance between valve stem and guide.

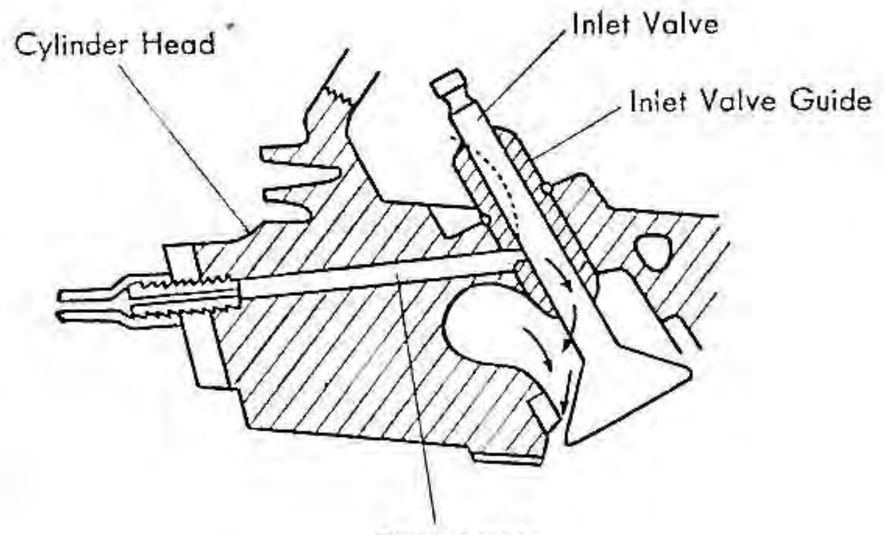


Fig. 39. Section view of air vent of valve guide

(3) Valves

Burned, warped or worn valves which are unserviceable must be replaced. Check by visual inspection.

Measure the valve stem diameter and valve head thickness to see that they match the specifications. (p. 158)

Replace unserviceable valves with worn stems or heads.

If a valve refacer is available, reface valves until traces of wear on head disappear. (Fig. 40)

After refacing, valves must be lapped into the valve seats. Service the valve seats first, if needed, and use a good lapping compound. Do not lap valves more than necessary. Stop lapping as soon as an even face seating is seen around the valve when lapping compound is wiped off.

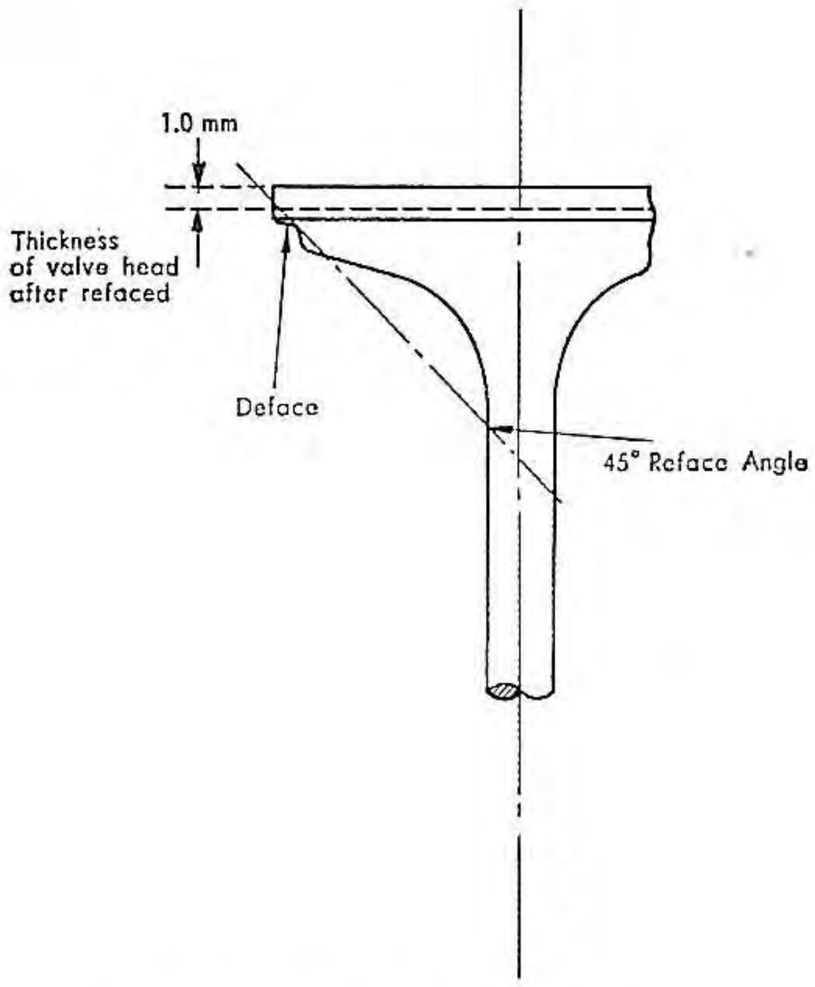


Fig. 40. Refacing of valve seat

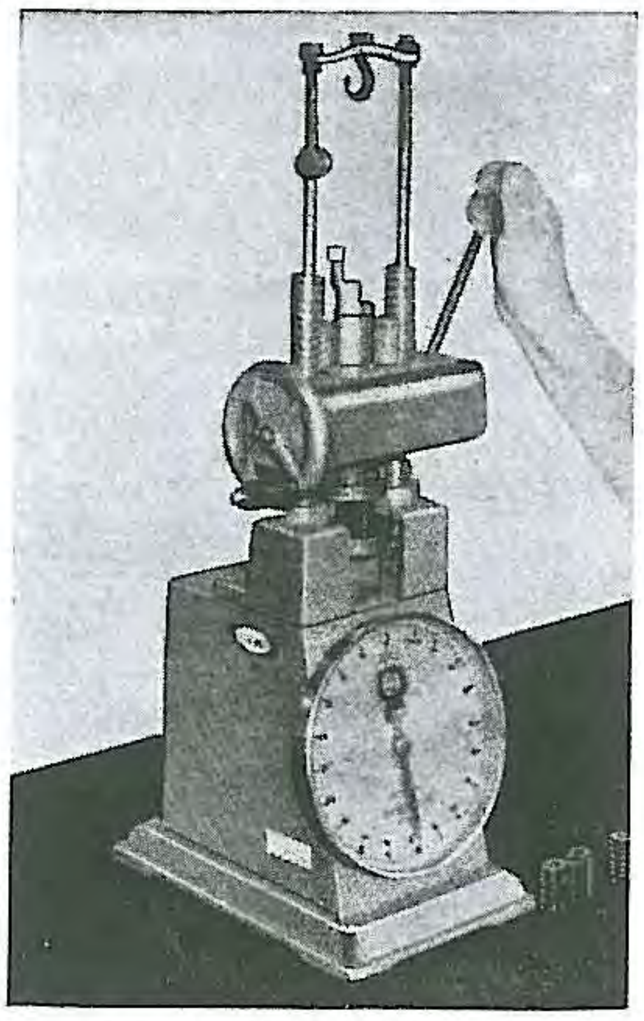


Fig. 41. Using valve spring tension gauge

(4) Valve springs

Measure the free length with a ruler and check the right angle of the valve springs. If springs exceed allowable tolerances listed in specifications (p. 159), replace them. Test for tension with a valve spring tension gauge. (Fig. 41) Replace springs that are not within specifications. (p. 159)

5) Oil seals

On engines with distributors (up to No. C92E737064) and CB92 and CA95 engines with tachometer gear boxes, check the oil seal on the right side cover for oil seepage. Replace any oil seal that leaks.

(6) Valve rocker arms, and clamp pins

Check rocker arms and replace any worn more than 0.002″ (0.05 mm) at the point which touches the cam.

Check the outer diameter of clamp pins and the clearance of the rocker arms and replace any not within the specifications. (p. 159)

(7) Cam shaft

A sectional drawing of a cam shaft is shown in Fig. 42. Cam shafts for various models are :

Model	C92, C95	CB92, CA95	Racing late CB92
Part Number	921416	B921916-IIA	YB921416A with tachometer drive gear

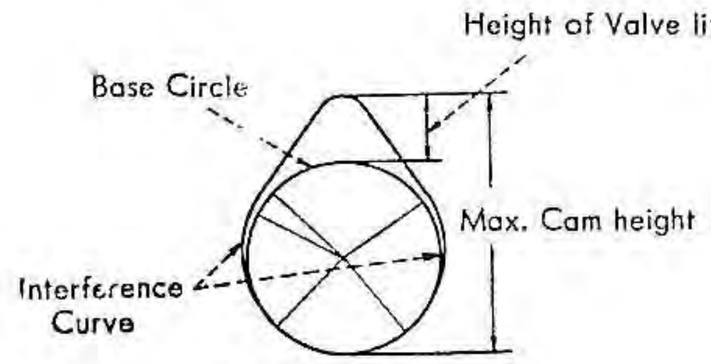


Fig. 42. Cam profile

Measure the maximum height of cam and outer diameter of journal and replace cam shaft worn beyond limits in specifications. (p. 159)

(8) Cam sprocket and cam chain

Check the cam sprocket cogs for cracks or excessive wear. If a special micrometer for measuring diametrical distance between valleys of cogs is available, refer to the specifications (p. 159) and measure. Replace a sprocket that is cracked or badly worn.

Measure the cam chain's total length after suspending a 3 kg. weight on one end. (Fig. 43)

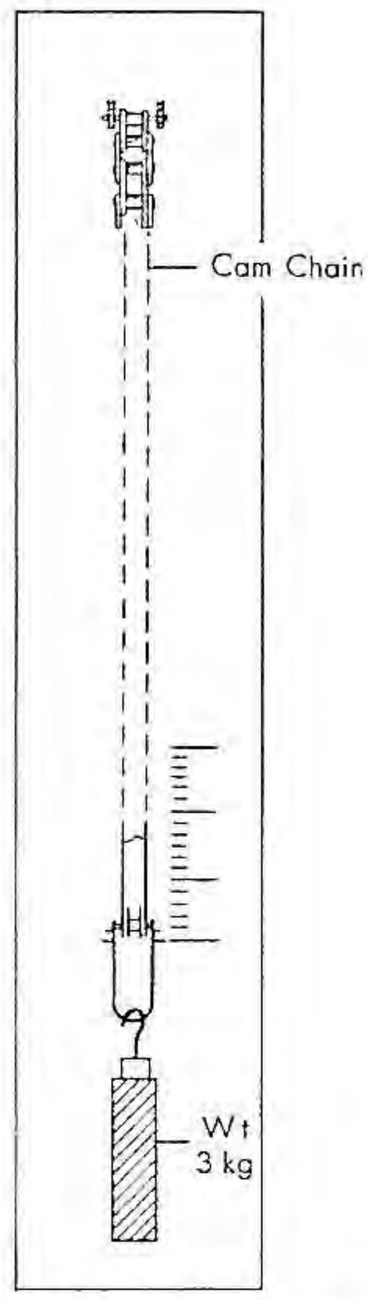


Fig. 43. Measuring overall length of chain

Replace chain if overall length exceeds specifications. (pp. 159)

III. Assembling and Installation of Cylinder Head

(1) Insert valves into valve guides to which they have been lapped. Do not mix up valves and guides.

Place the valve spring seat, inner valve spring, outer valve spring and valve spring retainer over the valve stem.

Compress the valve springs with a valve spring compressor until the valve stem slit emerges above the valve spring retainer. Set the valve cotters.

Use thin nose pliers to set the valve cotters in the slit. Remove the spring compressor and tap the valve spring seat lightly to check that the cotters are set accurately.

(2) Install the rocker arm side collar and the rocker arm with the rocker arm clamp pin inserted through the cylinder head. Place the circlips on both ends of the clamp pin and check the fit by tapping the clamp pin lightly.

(3) Install the cylinder head right side cover, inserting the packing between the cylinder head and side cover, and tighten the screws firmly. Use new packing and apply a thin coat of gasket sealant to make the fitting oil tight.

(4) Holding up the ends of the rocker arms, insert the cam shaft. Place the washer on the end of the cam shaft and attach the cam sprocket with 3 bolts (6 mm) and spring washers. The holes are not evenly spaced, so the washer and sprocket must be turned until the holes line up.

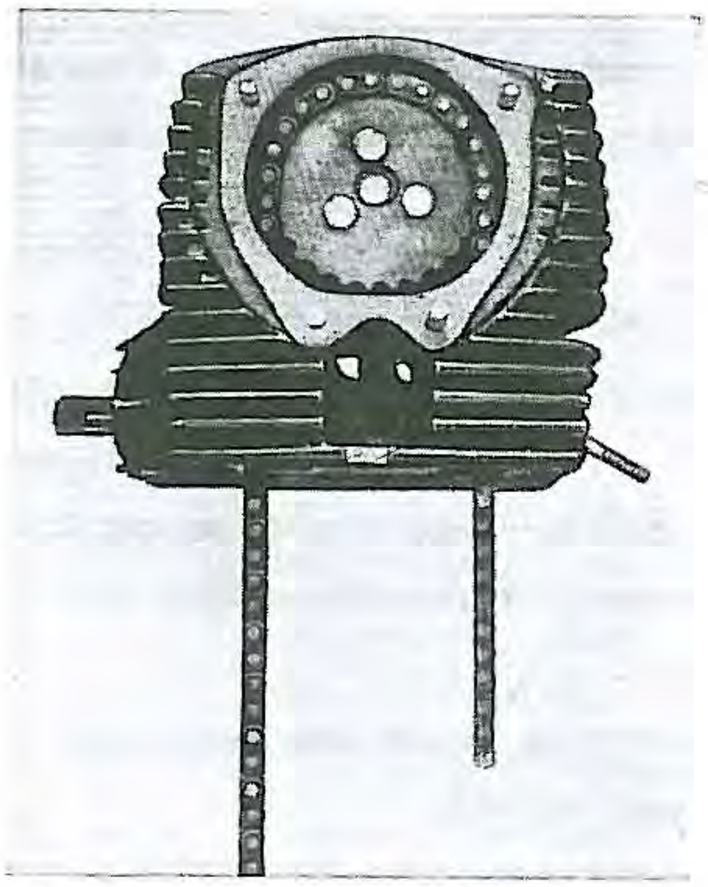


Fig. 44. Installation of cam chain to cylinder head

For engines with a distributor, first polish the electrical contact points in the rotor and distributor cap with fine emery paper, then install the cap and fix it with a clamp held by one of the side cap screws.
For Honda 125 Super Sport engines, install the speedometer cable gear shaft and bushing and fix it with the setting bolt.

(5) Fit one end of the cam chain onto the cam sprocket and rotate the sprocket until the inlet side of the chain hangs about 6″ (15 cm) shorter than the other end. (Fig. 44)

(6) After fitting the head gasket, cam chain case packing and 10 mm O-ring for the oil passage, place the cylinder head on the cylinder while threading the cam chain along both sides of the chain guide roller in the cam chain case of the cylinder. Fit the cylinder head cover packing in place, install the cylinder head cover and tighten down stud nuts with flat washers under each. Apply a thin coat of gasket sealant before fitting the right rear nut, which is dome-headed. It is important that the nuts be tightened gradually in the correct sequence. (Fig. 45, 46) Tightening torque is 10–15 ft-lbs.

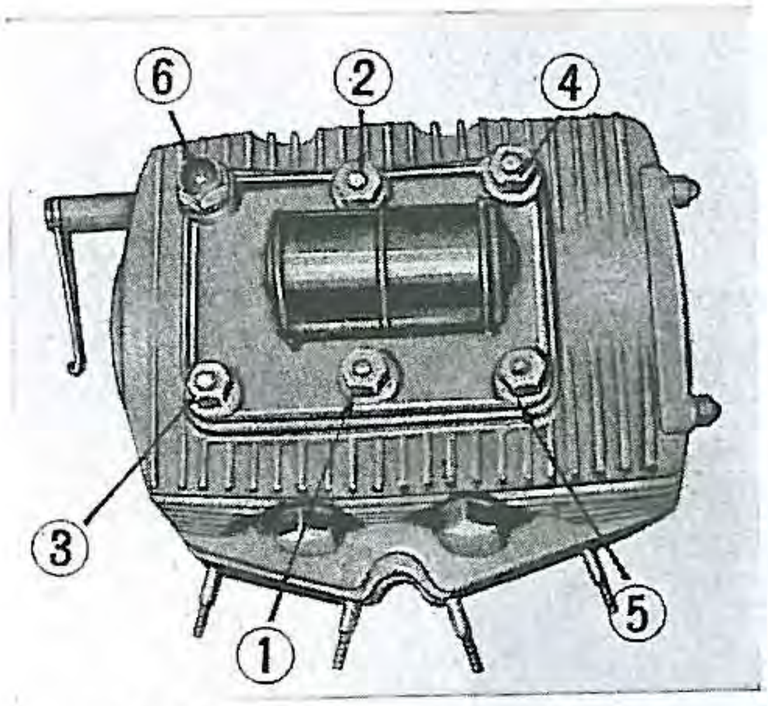


Fig. 45. Tightening order of cylinder stud nuts

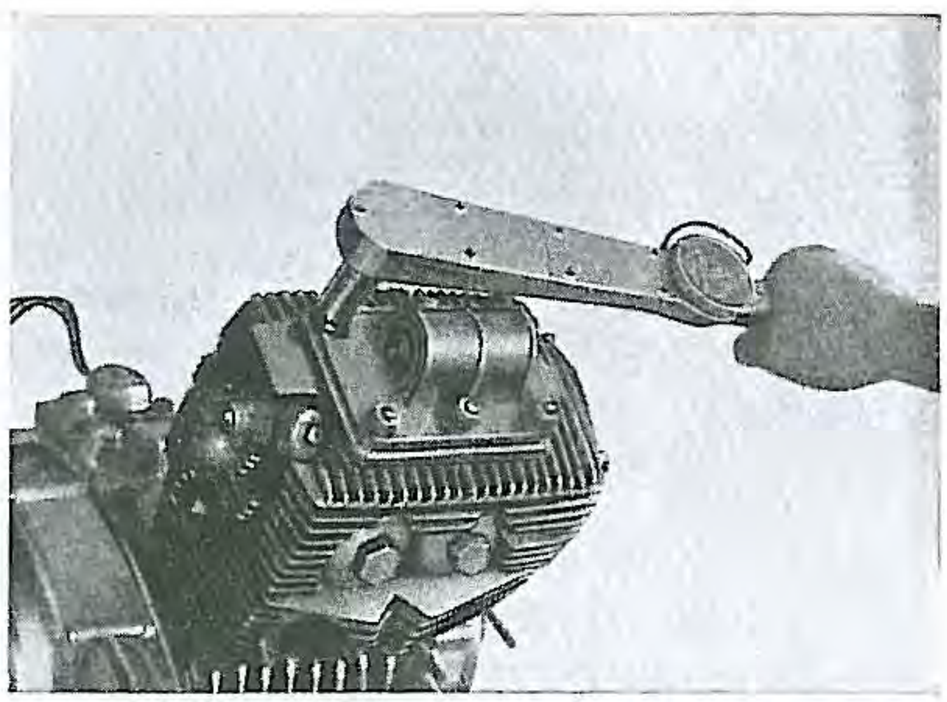


Fig. 46. Checking tightening torque for stud nuts

(7) When connecting the ends of the cam chain, first set the timing mark "O" on the cam sprocket so that it coincides with the notch marked on the cylinder head just above the left side cover packing. Place the mark on the timing sprocket of the crank shaft at the lowest point on the center line between the sprockets. (Fig. 47) The crank shaft spiel is opposite the timing mark.

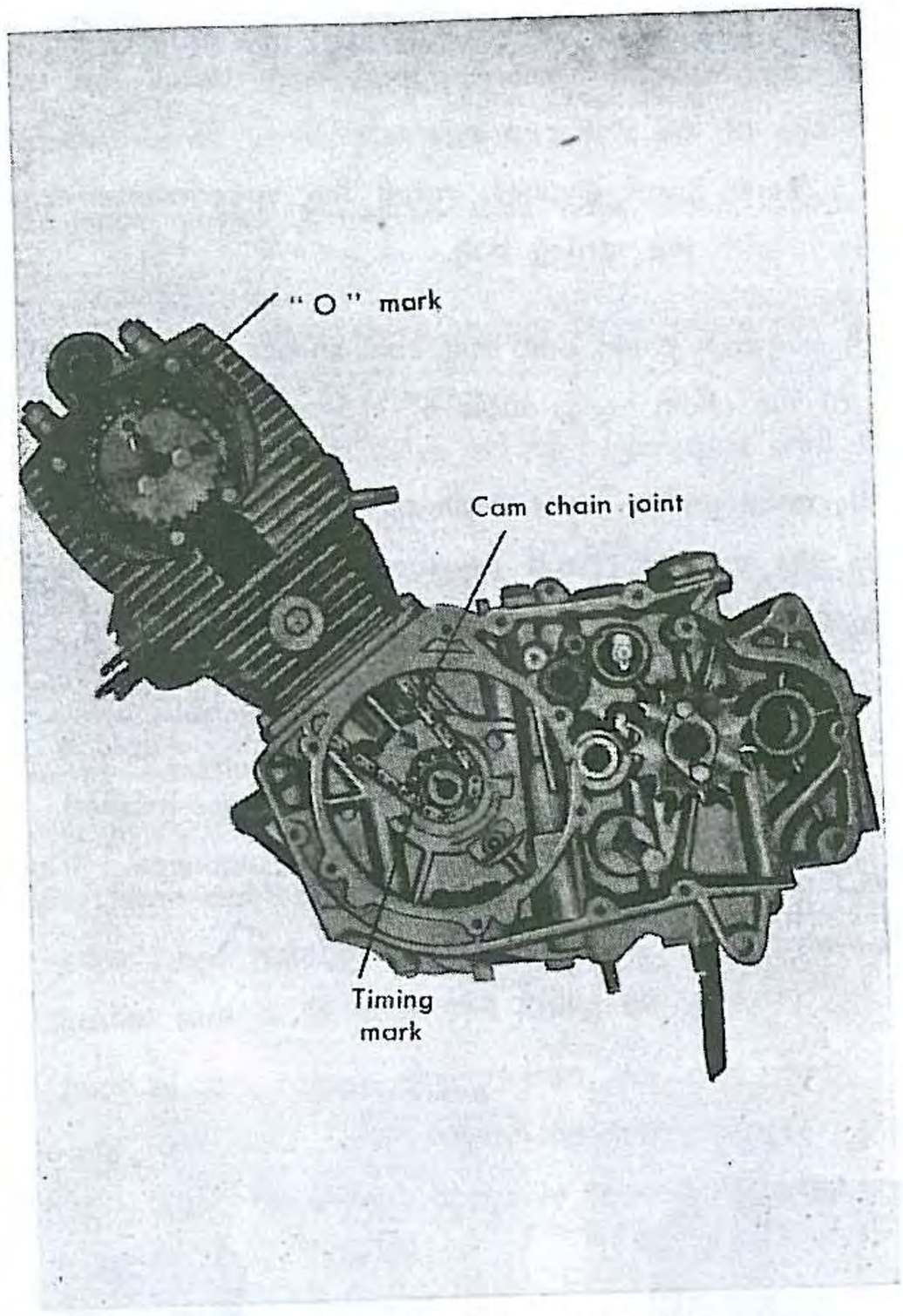


Fig. 47. Setting timing of sprockets

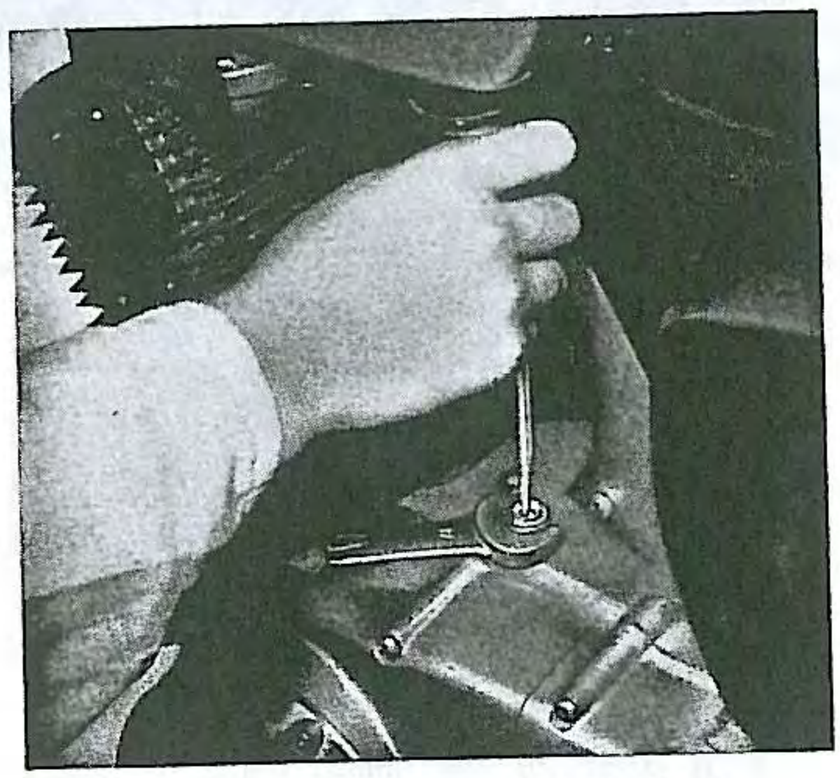


Fig. 48. Adjusting cam chain tensioner

Join the ends of the cam chain with a cam chain joint. Be sure that the cam chain joint is installed so that it trails in the direction that the chain movse; that is the open end of the clip pointing toward the timing sprocket.

(8) install the cam chain tensioner with the pivot bolt. Turn the crank shaft in the direction of engine rotation a little. If the tensioner was screwed down tight during disassembling, loosen the cam chain tensioner until the guide barely separates from the end of the adjusting bolt. (Fig. 48) Tighten the lock nut. (Specifications p. 161)

(9) Install the A. C. dynamo stator base and assemble the dynamo. (See p. 103)

I-3. CYLINDER, PISTON AND PISTON RING

The cylinder is contained in the cylinder block made of special cast iron and the bore is finished with a honing machine to an accurancy of 0.0004″ (0.01 mm) of taper and roundness. The right rear cylinder stud hole serves as an oil passage to the cylinder head.
The cam chain is enclosed in a chain case located on the left side of the cylinder block.

The dome-crown piston is made of high silicon aluminium alloy. It is oval shaped and taper ground with a relief area on both sides of the piston pin hole. There are two compression rings and one oil ring.

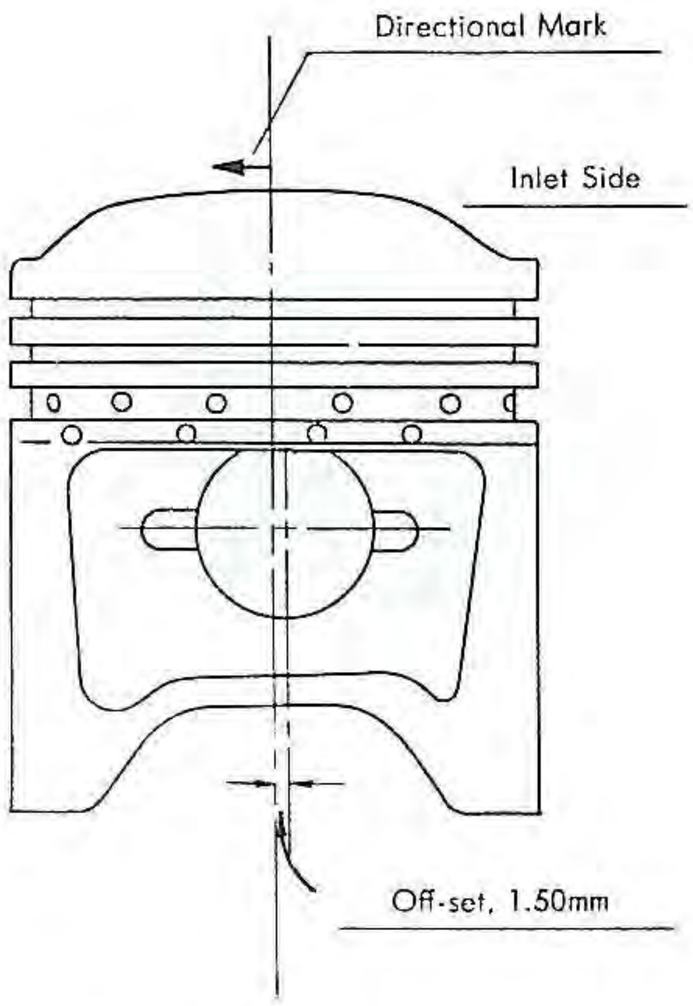


Fig. 49. Location of piston pin hole

The piston pin is finished very precisely and fitted in an off-set position 1.5 mm on the inlet side of the piston center line. (Fig. 49)

I. Removal of Cylinder & Pistons

(1) After removal of the cylinder head, and removal of the 2 stud nuts (6 mm) located on the left side base of the cylinder, the cylinder block can be lifted from the crank case over the stud bolts. (Fig. 50)

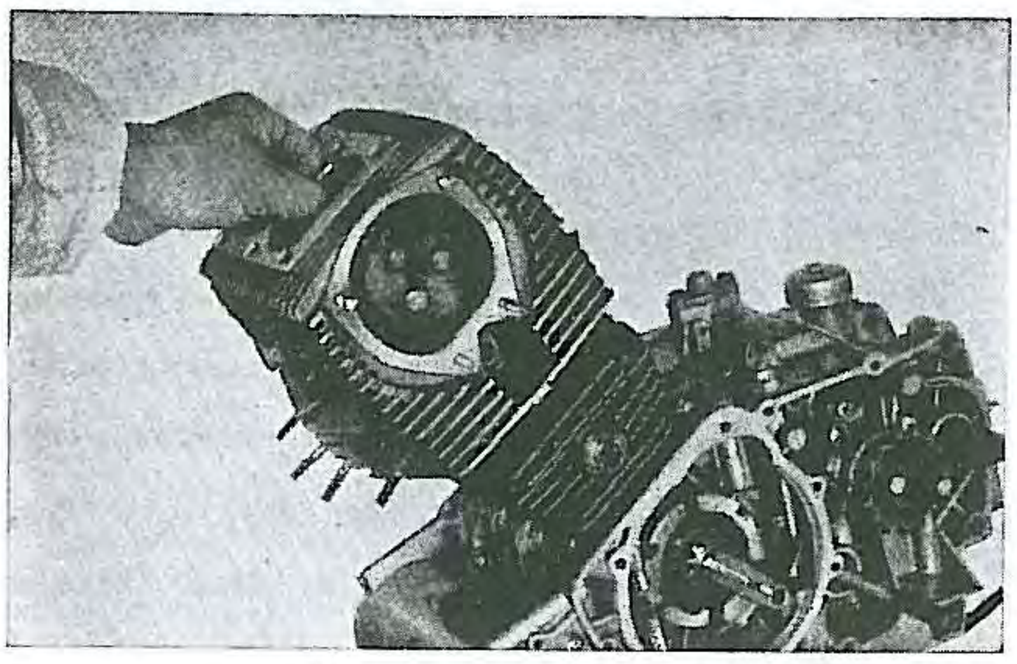


Fig. 50. Removing cylinder head

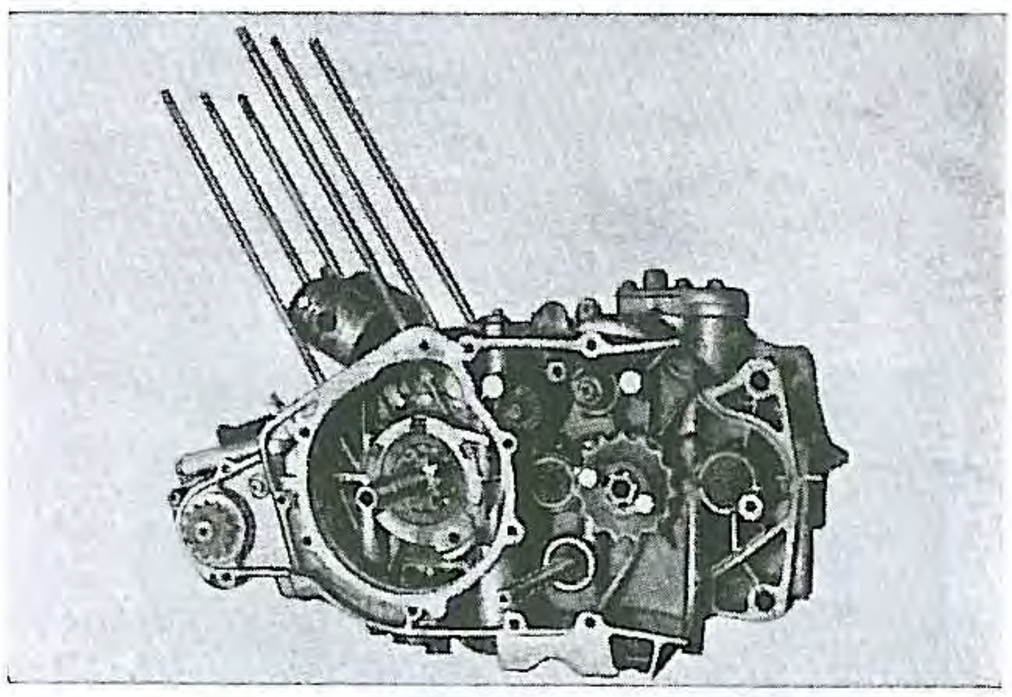


Fig. 51. Removal of cylinder head

(2) Remove both outside piston pin clips with sharp thin nose pliers and draw out both piston pins, (Fig. 52) which enable removal of the pistons from the rods.

(3) Remove the piston rings from piston-ring grooves : expanding with fingers or a special tool if available.

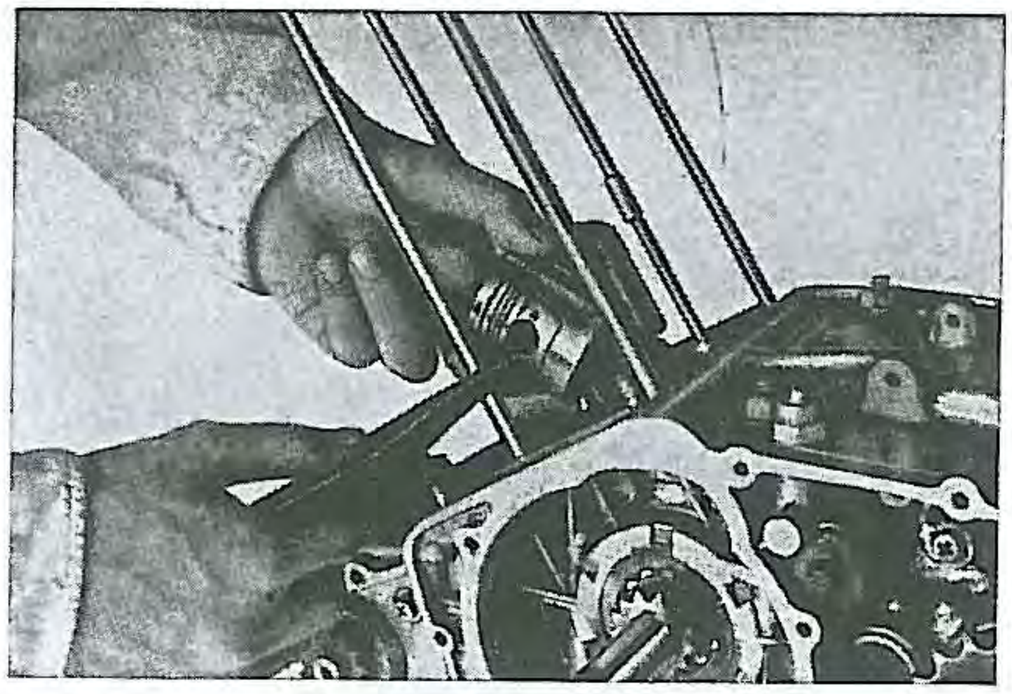


Fig. 52. Removing circlip

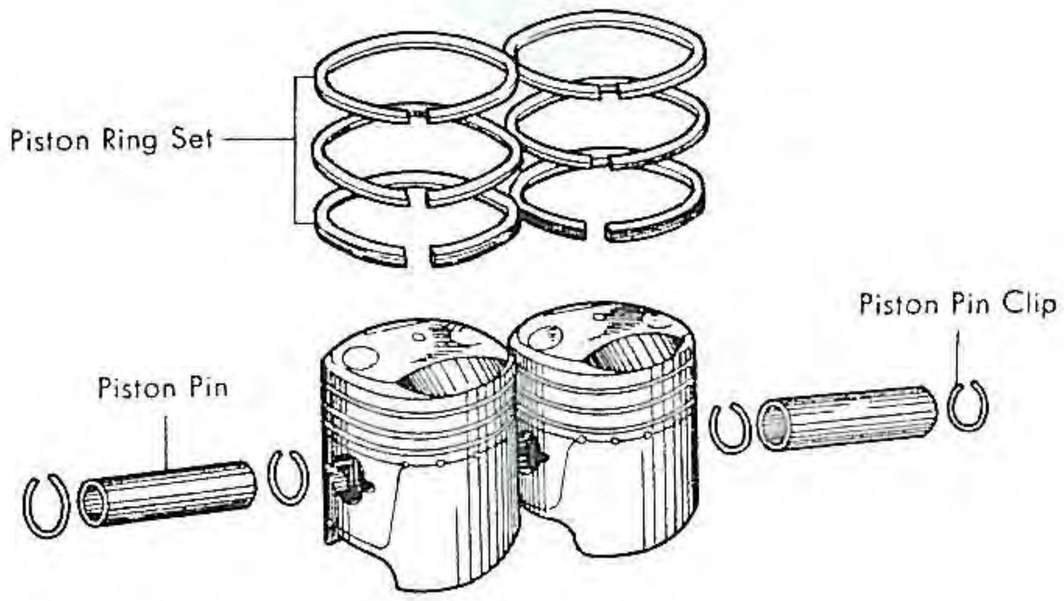


Fig. 53. Exploded view of pistons

II. Inspection & Repair of Cylinder, Pistons and Rings

(1) Remove all carbon deposits from the crown and grooves of the pistons.

(2) Check the flatness of the cylinder bore with a straight edge and the bore with a gauge. Rebore or recondition the cylinder if it is marred by 0.002″ (0.05 mm) or more.

(3) Check the cylinder bore for roundness and taper with a cylinder gauge and rebore or recondition if it does not conform to the specifications. (p. 155) (Fig. 54)

(4) If the cylinder bore is scored or tapered or out of round less than of 0.002″ (0.05 mm) it may be honed to enable new piston rings to seat properly. If the cylinder is damaged more than this, it must be rebored.

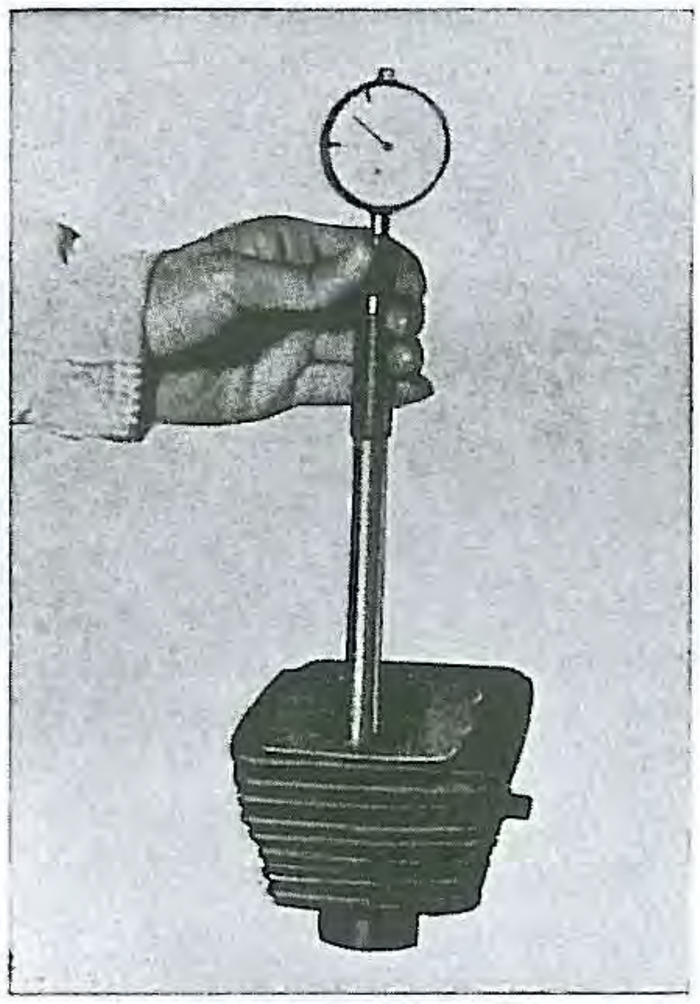


Fig. 54. Measuring cylinder bore

Pistons and rings are available in 0.15, 0.30 and 0.45 mm (0.006″, 0.0118″ and 0.0177″) oversizes. The amount of reboring and honing necessary can be determined by measuring the size and subtracting it from the next oversize which will clear up the flaws. Both cylinders must be refinished to the same oversize to keep the engine balanced.

When reboring, a minimum of 0.0008″ (0.02 mm) must be left for honing. Do not try to bore to the exact oversize, as honing is necessary for final finishing.

The rebored cylinder must be finished to within 0 to 0.004″ (0 to 0.01 mm) of the correct oversize.

(5) Examine pistons for cracks, burrs or scoring and replace if damaged. When a cylinder is rebored, an oversize piston must be fitted.

(6) When old pistons are being refitted, measure the diameter at the piston pin hole and 90° opposite with a micrometer and replace pistons which are deformed more than listed in the specifications. (p. 156) (Fig. 55)

The clearance between the piston and cylinder wall should be 0 to 0.0012″ (0–0.03 mm).

(7) Install new piston rings in the piston grooves and use a gauge to measure the piston ring side clearance. (Fig. 56)

Replace pistons if the clearance is more that listed in the specifications. (p. 156)

Fig. 55. Measuring piston diameter

Fig. 56. Measuring clearance between piston ring groove and ring

(8) Twist the piston back and forth by hand after connecting to the rod with the piston pin. If any movement can be felt, replace the piston.

(9) Replace piston rings whenever the engine is overhauled.

To fit new piston rings :

9-1 Fit each ring squarely in the cylinder bore about 1″ from the top. Measure the piston ring end gap with a feeler gauge. The gap must be 0.008″-0.02″ (0.2 mm-0.5 mm) for both compression and oil rings. (Fig. 57)

9-2 If the gap is less than 0.008″, file the ends of the piston ring squarely with a fine file to obtain the proper gap. If the gap is more than 0.02″, replace with a new ring. Oversize rings are available in sizes listed in II (4) above.

9-3 Before fitting new rings in the grooves of new pistons, roll the ring in the groove all the way around the piston to make sure it fits freely and there are no obstructions. (Fig. 58)

9-4 Be sure not to fit the rings upside-down. which would result in poor performance.

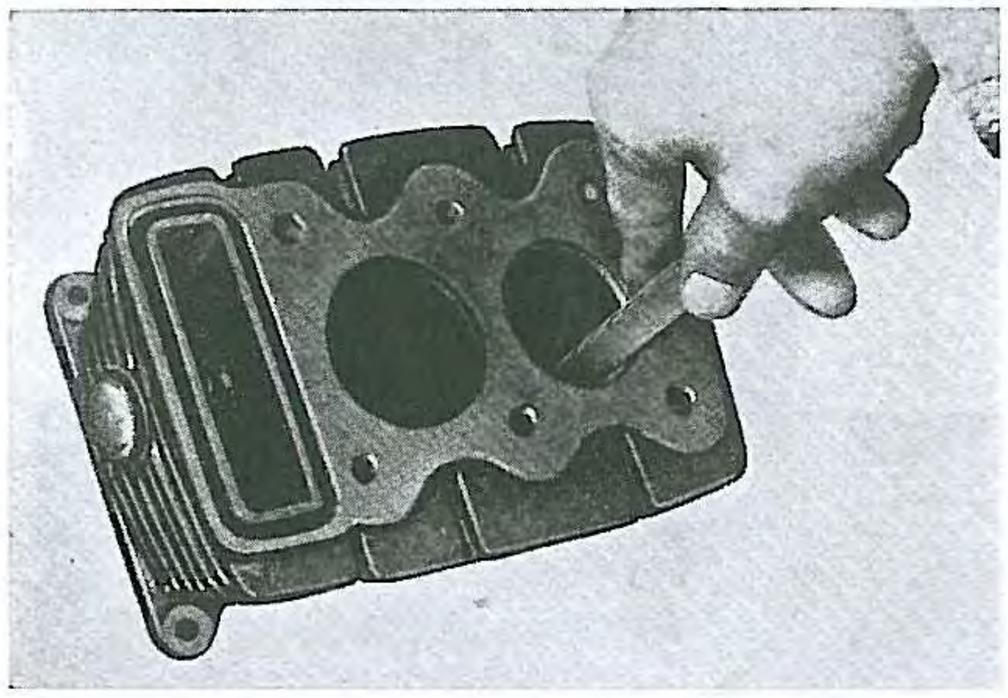


Fig. 57. Measuring piston ring end gap

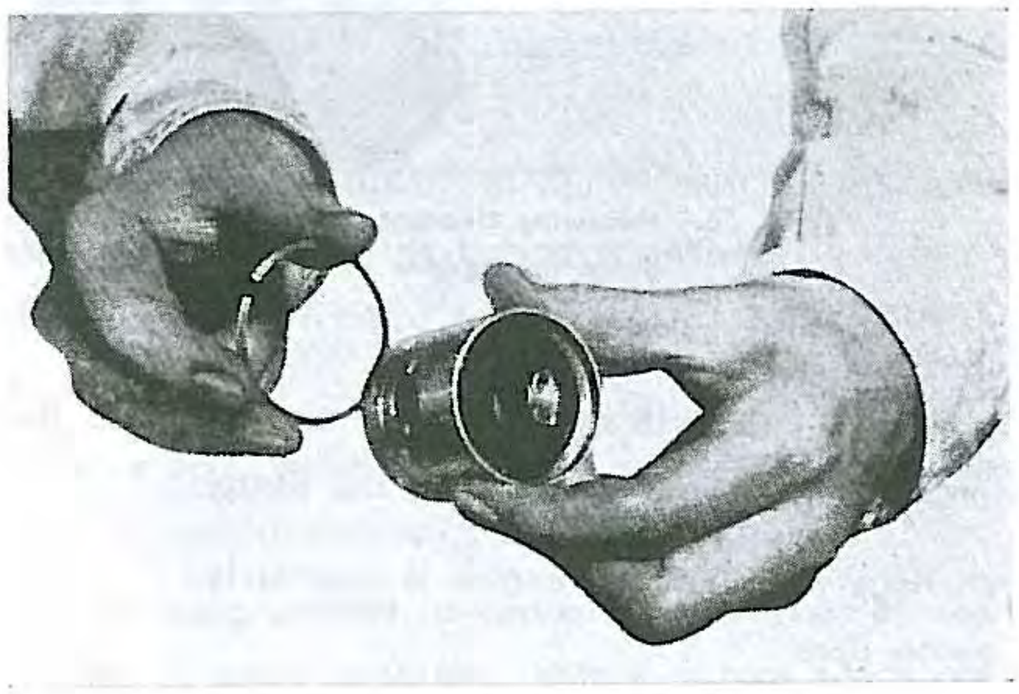
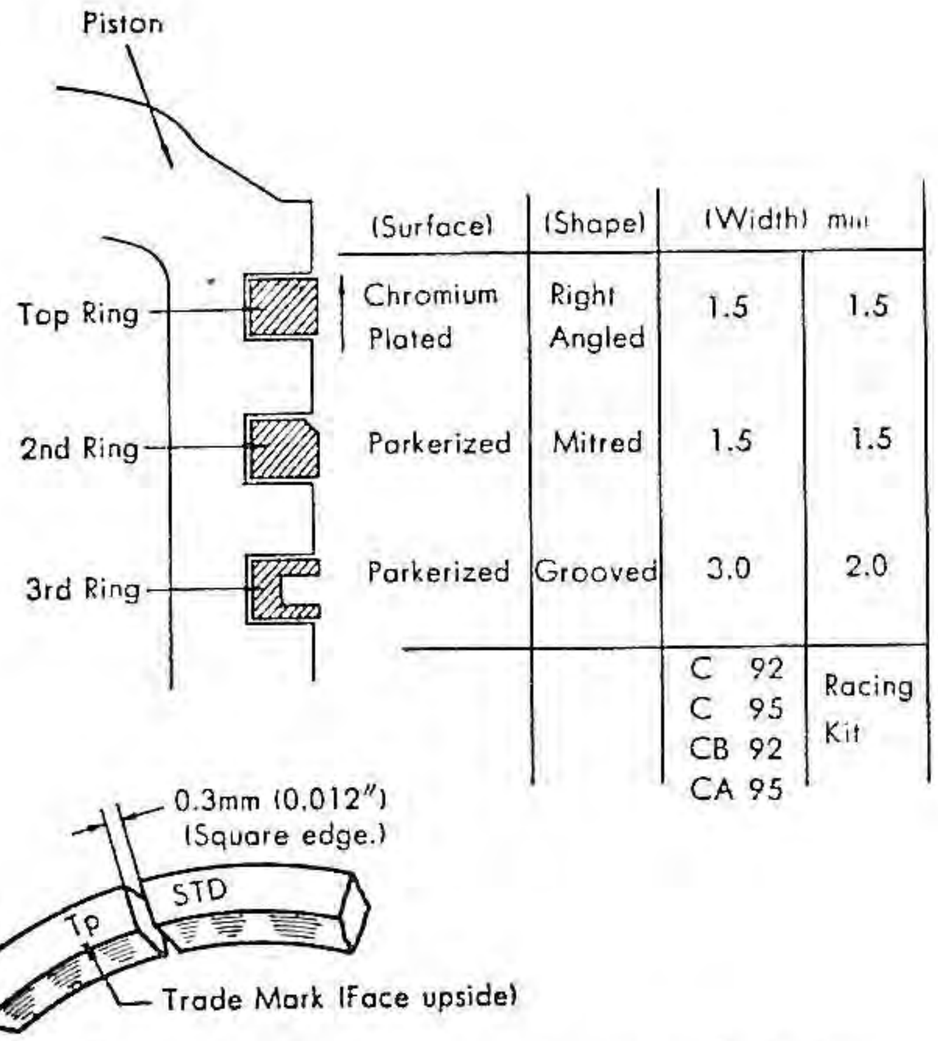


Fig. 58. Checking fit for ring in piston groove

The shapes of the rings are shown in Fig. 59. The side with the manufacturer's mark punched on it must be placed on top.



	(Surface)	(Shape)	(Width) mm	
Top Ring	Chromium Plated	Right Angled	1.5	1.5
2nd Ring	Parkerized	Mitred	1.5	1.5
3rd Ring	Parkerized	Grooved	3.0	2.0
			C 92 C 95 CB 92 CA 95	Racing Kit

Fig. 59. Section view of piston rings and marks on ring

(10) Measure the outside diameter of the piston pin and replace it if it is worn or out of the round more than listed in the specifications. (p. 157)

III. Installation of Piston and Cylinder

(1) Fit the piston rings into the correct grooves on the piston. It is best to use a ring expander. Do not fit the rings in the wrong groove or upside-down.

(2) Fix a circlip on one end of each piston pin. Insert the piston pin through the piston and connecting rod and fix with a circlip on the other end of the piston pin. The piston pins should be installed from the right side of the left piston and the left side of the right piston. Be sure the piston is fitted with the arrow mark on the crown pointing forward. (Fig. 60)

(3) Place the cylinder packing on the crank case. Be sure it is placed so that the holes correspond and that the oil passages are open and matched correctly. Lock the pistons at top dead center by placing a wooden block between the piston skirts and the crank case. Fit piston ring compressors around the rings on both pistons. Install the cylinder block onto the pistons, tapping it down gently with your hand. Remove ring compressors and wooden block after the rings are fitted into the cylinders. (Fig. 61)

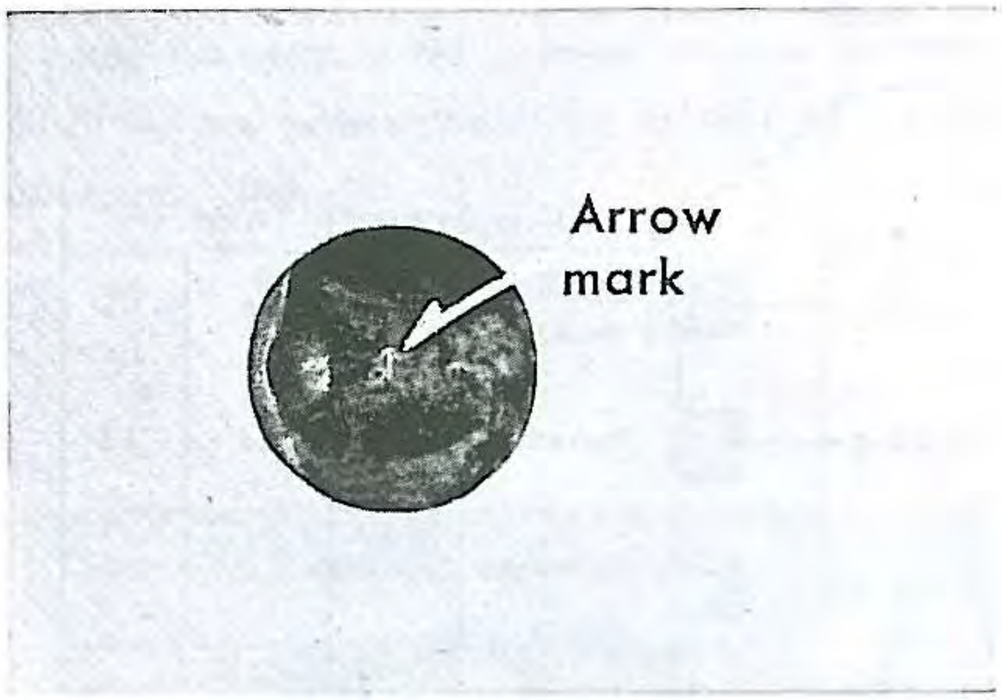


Fig. 60. Top view of piston

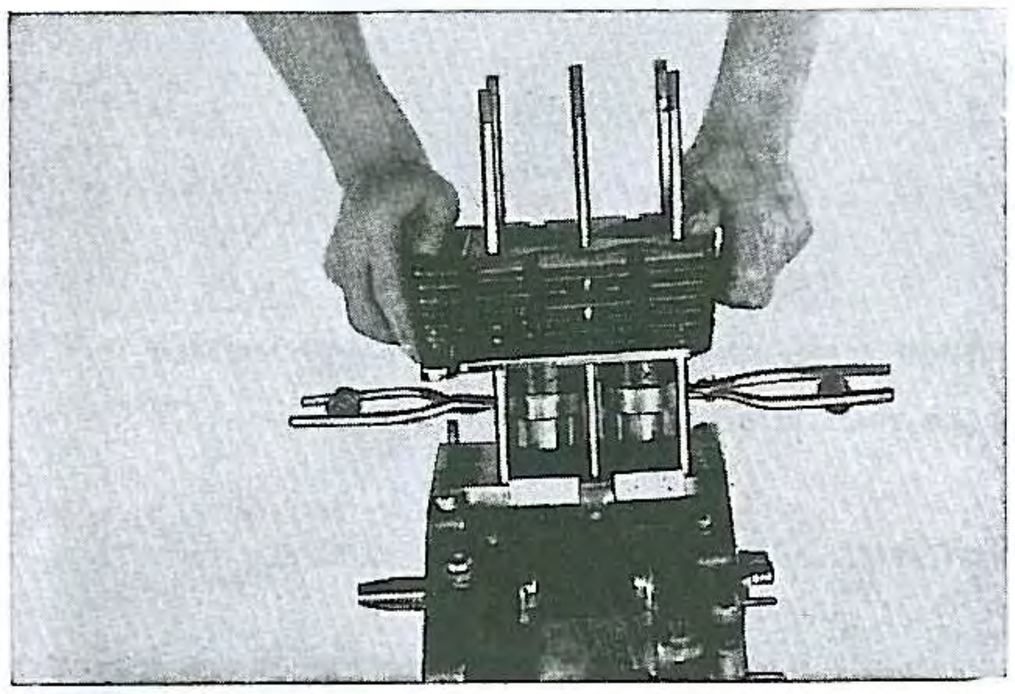


Fig. 61. Installing cylinder

(4) Tap the three dowel pins into the cylinder and fit the cylinder head gasket, cam chain rubber packing and rubber "O" ring around the oil passage dowel pin.

(5) Install the cylinder head and tighten the stud bolts on the head (refer to p. 162). Tighten the 6 mm stud nuts to attach the cylinder cam chain case to the crank case.

I-4. CRANK SHAFT AND CONNECTING ROD

Two types of crank shaft are available, one for standard engines and the other for the CB92 and CA95.

The standard crank shaft has two main ball bearings which support the crank shaft and a single crank pin press-fitted to the right and left crank shafts and two balancer weights in between. In machines with engine numbers above C92F-939667 the outer race of the ball bearings is thicker than in earlier models. The CB92 and CA95 engines have two ball bearings and one intermediate roller bearing supporting the crank shaft, and right and left crank pins incorporated with balancer weights to which the crank shafts are press-fitted. The complete crank shafts are press fitted to the center crank shaft. Connecting rods and big end roller bearings have been modified twice in standard and Super Sports engines, therefore there are 3 kinds of parts according to the engine number of the machine being repaired. (Fig 62, 63)

The main ball bearings have a groove around each race and are push fitted on the crank shaft. On the right end of the crank shaft, the drive gear is fitted onto a spline and locked with a nut. On the left end, the timing sprocket is fitted with a dowel pin.

In engines with serial numbers above C92E-931006 or C95E-912778, a helical drive gear is provided instead of the spur gear in earlier models. (Fig. 64)

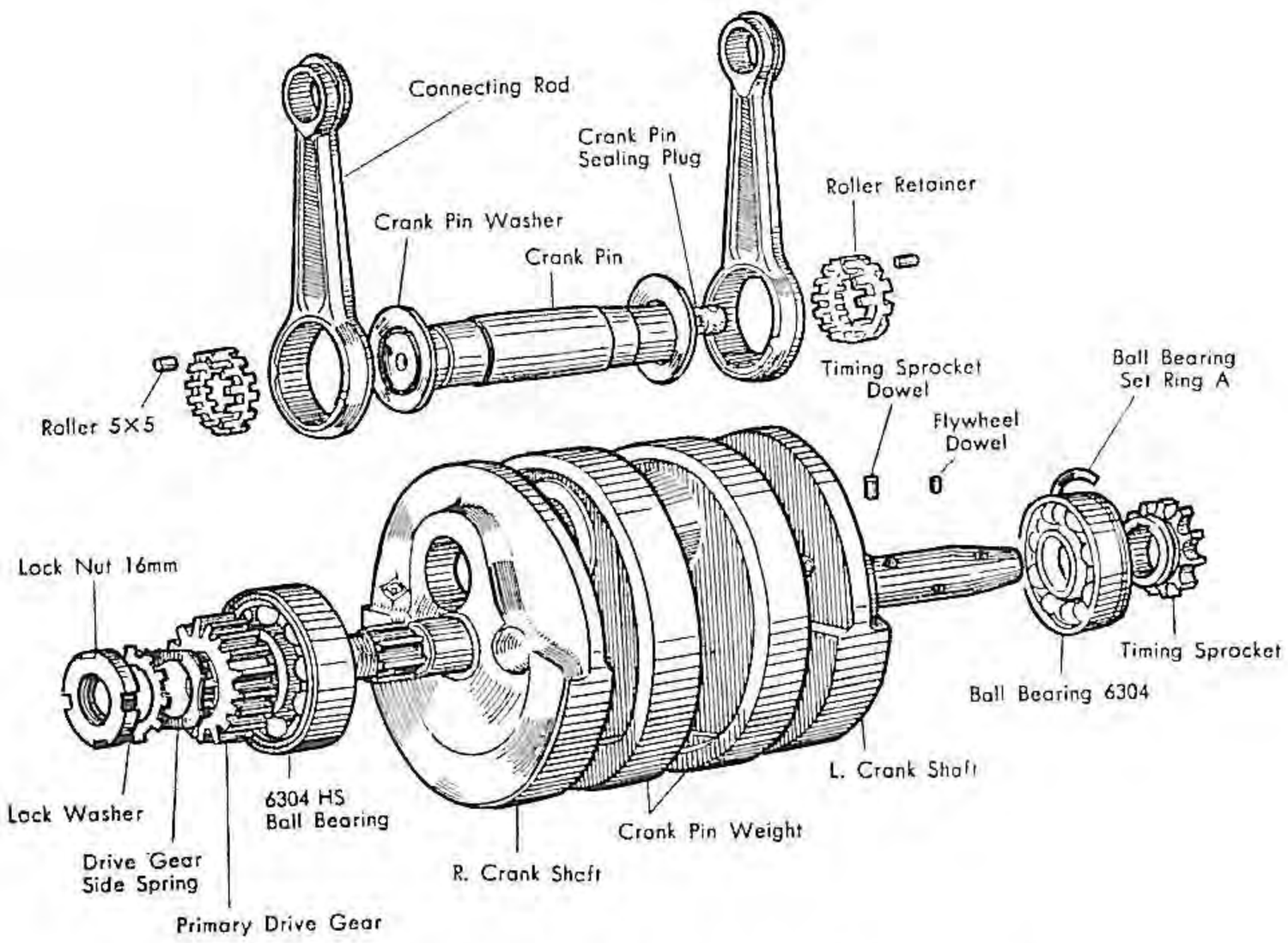


Fig. 62. Exploded view of crank shaft (standard model)

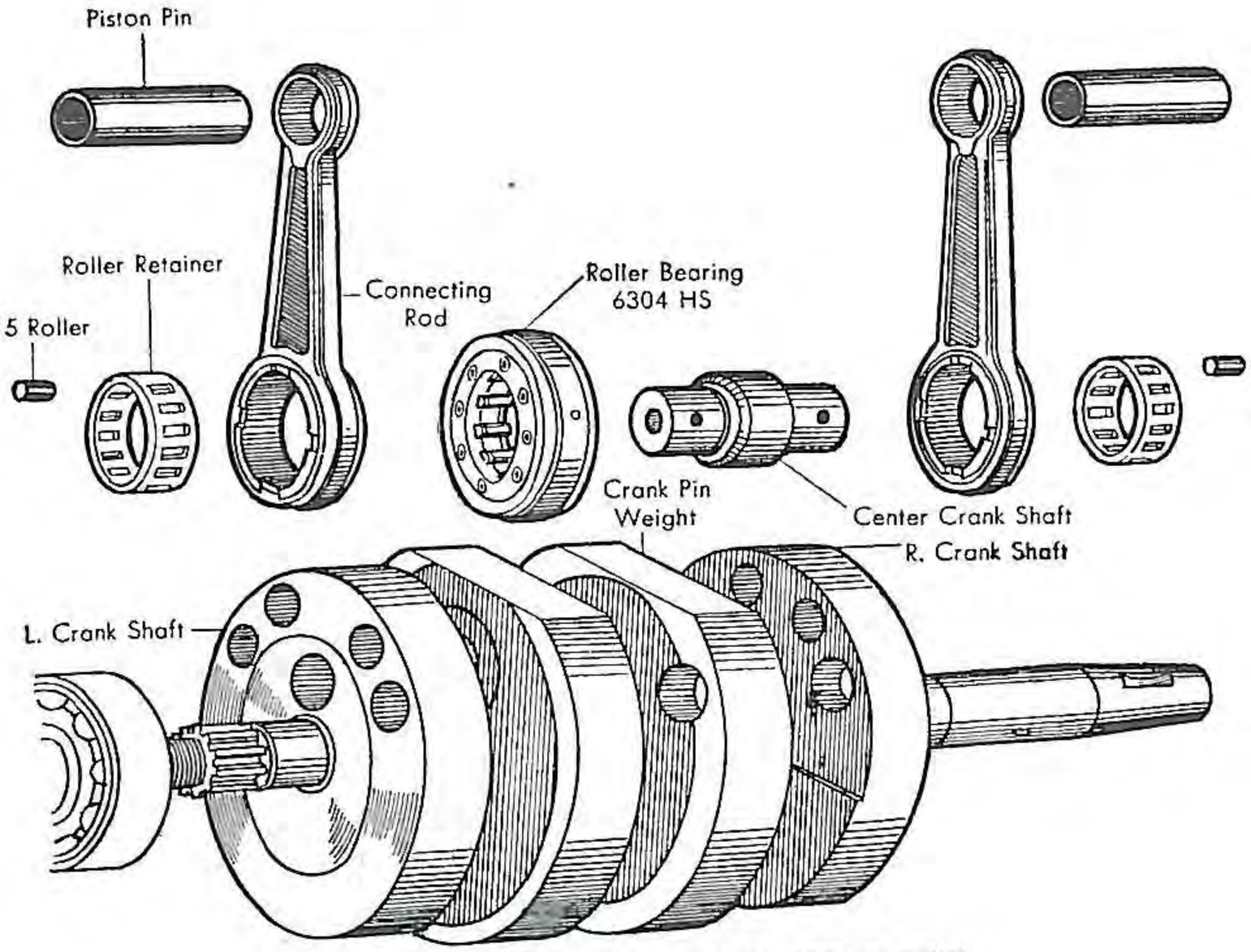


Fig. 63. Exploded view of crank shaft (CB92 & CA95)

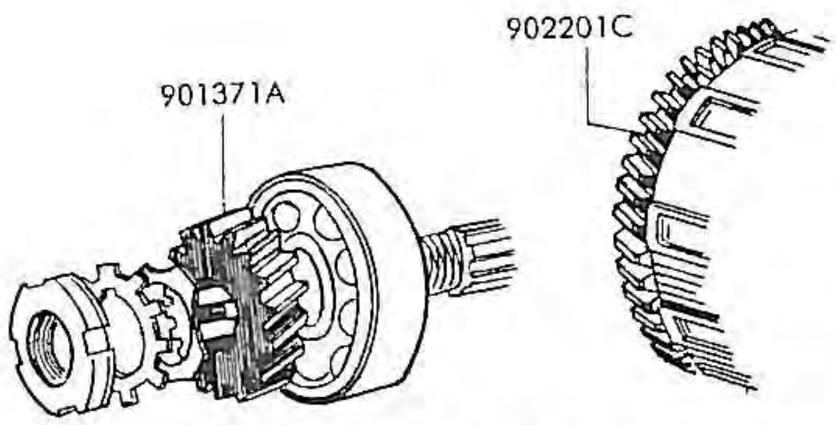


Fig. 64. Helical drive driven gear

Fig. 65. Instruction of anti-thrust rubber piece

Filtered oil is force fed into a passage in the right crank shaft which leads to the crank pin. (Refer to p. 57)

To prevent damage by the crankshaft during shipping, a rubber anti-thrust piece is placed between the head of the dynamo rotor clamp bolt and the contact breaker cover at the factory. A caution tag is attached to the starter button. Be sure to remove this rubber piece on new motorcycles before starting the engine. (Fig. 65)

I. Removal of Crank Shaft

(1) Start dismantling from the condition where the cylinder and pistons are striped as mentioned in the previous paragraph.

(2) Remove the right crank case cover, oil filter and the clutch assembly (P. 42).

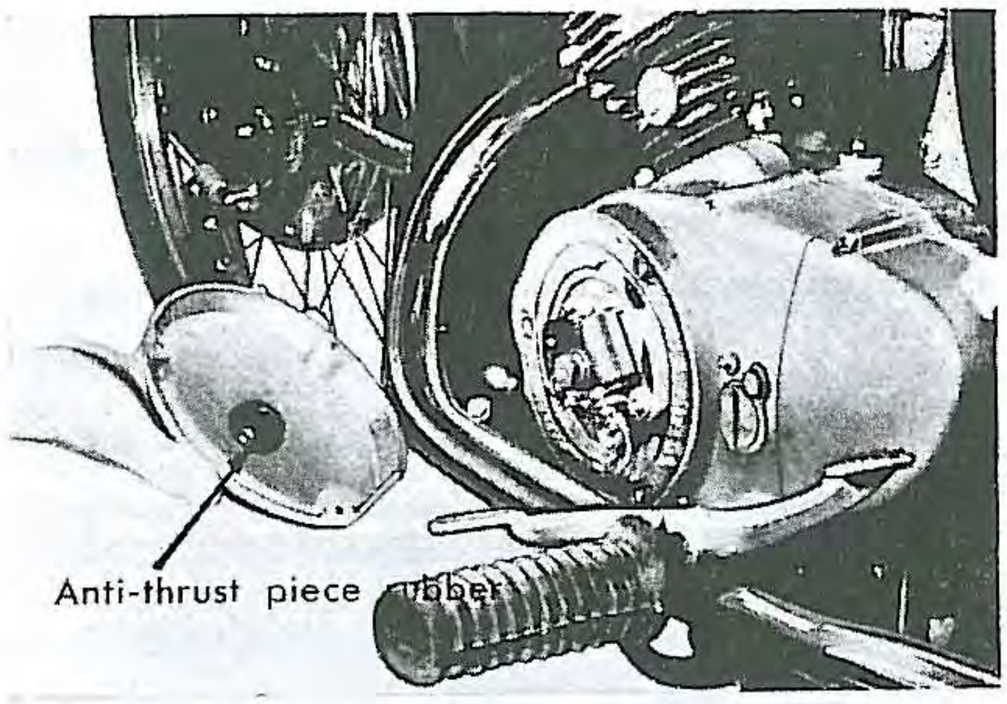


Fig. 65'. Anti-thrust piece

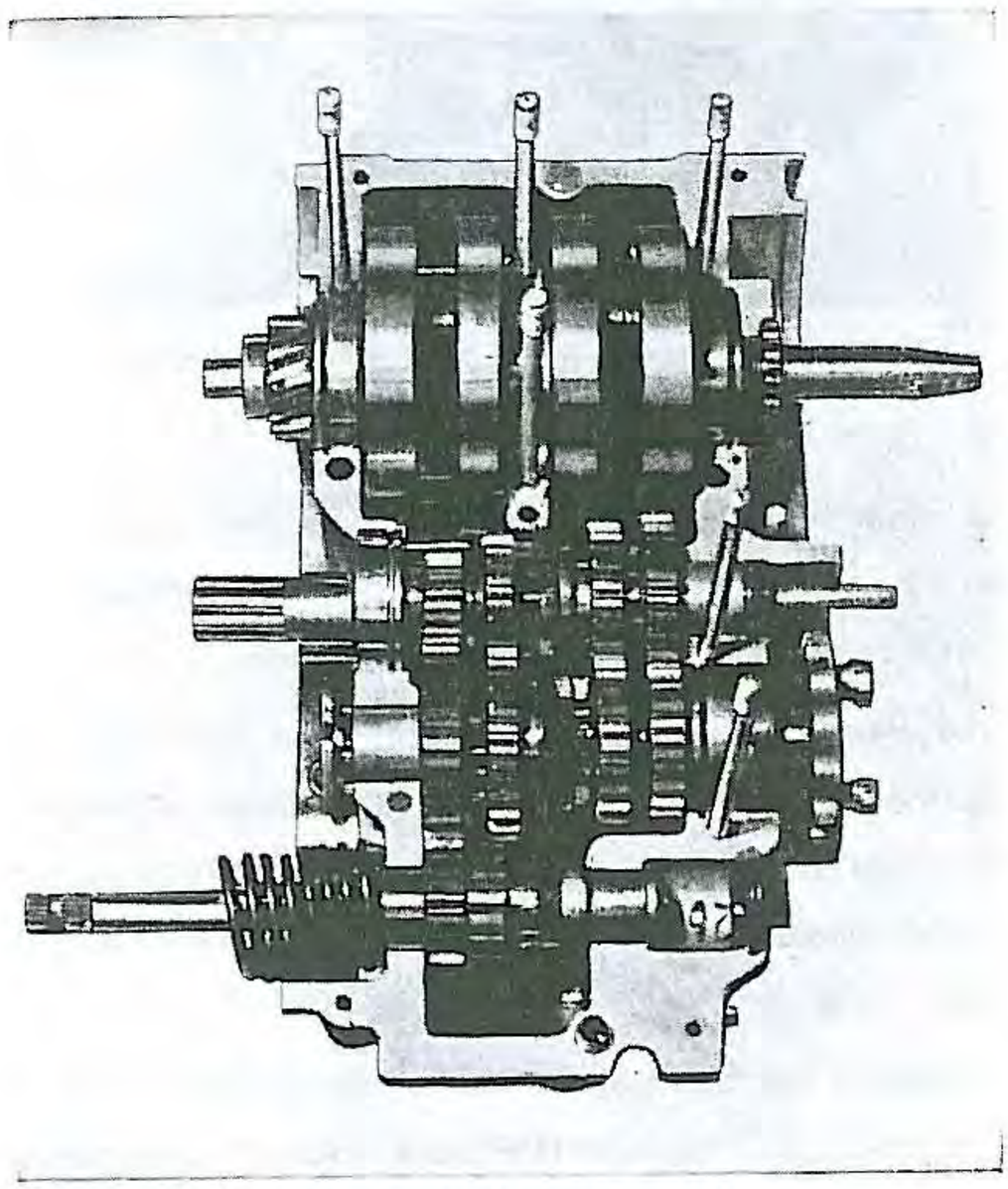


Fig. 66. Removal of under crank case

Remove the oil pump with clutch outer.

(3) Unscrew 3 (6 mm) and 2 (8 mm) nuts retaining the upper crank case.

(4) Place the crank case upside down and remove 6 stud nuts, (8 mm) 2 stud nuts (6 mm) and 6 bolts (6 mm).

(5) Remove the under crank case giving a gentle tap with wooden hammer. (Fig. 66)

(6) Remove the crank shaft assembly.

(7) Take out the timing gear with extractor. (Fig. 67)

(8) With a small chisel and hammer, straighten the lock plate on the drive gear retaining nut. Remove the nut, lock plate, washer and gear.

(9) Both side main bearings can be prised out by using a bearing extractor.

II. Inspection and Repair of Crank Shaft

(1) Cleanse all the parts with cleaning solvent and wipe dry.

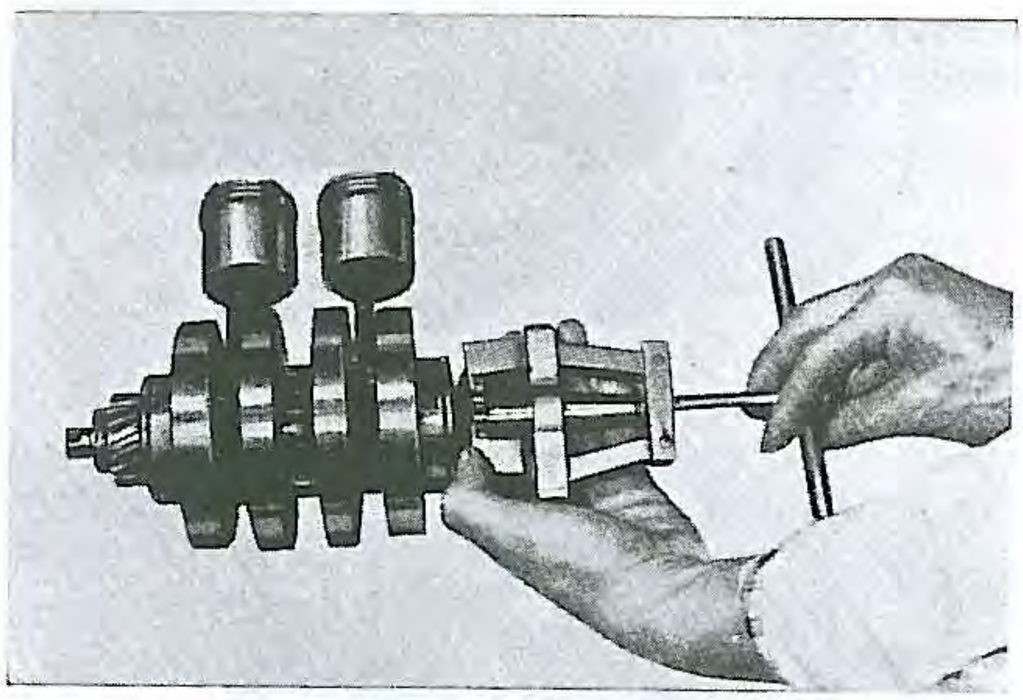


Fig. 67. Removing timing gear with extractor

(2) Main bearings

2–1 Hold the main bearing inner race with one hand and rotate the outer race with the other hand in order to check the smoothness of rotation or noise. Replace the bearings if there is excessive noise.

2–2 Mount the bearings on the crank shaft with the crank shaft supported by V blocks at the balancer weight. Set a dial gauge at zero on the surface of the outer race of bearing and force the outer race up and down radially to measure the amount of free play. Maximum allowable free play is 0.0002″ (0.005 mm). (Fig. 68)

2–3 Visually inspect the surface of the crank shaft journal, on which the ball bearing is mounted. Replace th e crank shaft if any defacement or distortion appears.

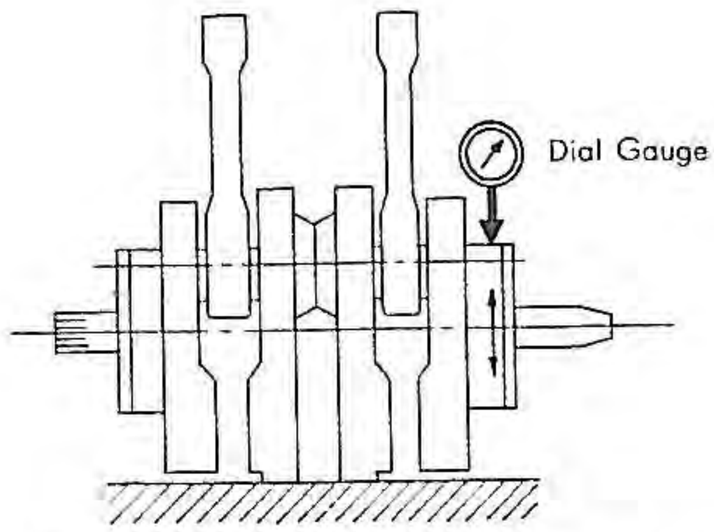


Fig. 68 Measuring run-out of main bearing

(3) Connecting rods, crank pins and big end bearings

3-1 Measure the inside diameter of the small end of connecting rods, replace the connecting rods when reassembling the crank shaft, if they exceed the specified limit.

3-2 Place part of the balancer weights of the crank shaft on V-blocks and measure the maximum amount of big end axis play by forcing the connecting rod vertically up and down. Use of a dial gauge is advisable for this purpose and the measurement should be done in the direction of small end and the right angles to same. Overhaul the crank shaft if the amount of play is more than 0.0002″ (0.05 mm). (Fig. 69)

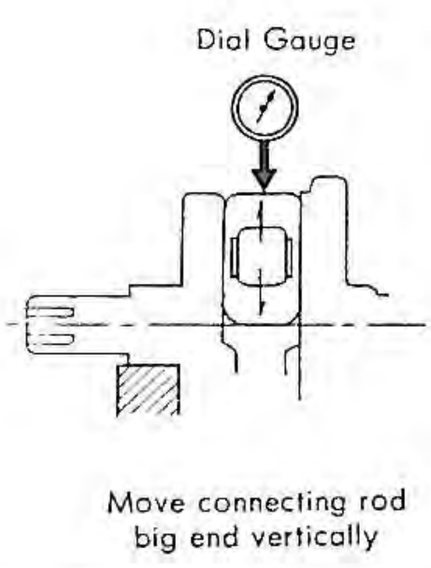


Fig. 69. Measuring radial play of connecting rod big end

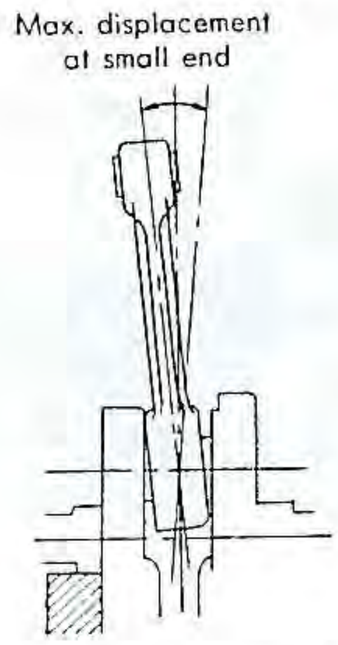


Fig. 70. Measuring swing of connecting rod

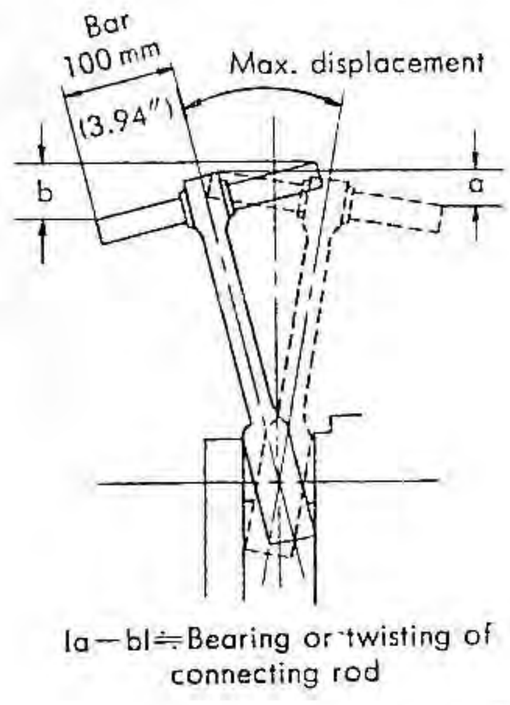


Fig. 71. Measuring distortion of connecting rod

3-3 Measure the axis play of connecting rod big end located between the crank shaft and balancer weight. Maximum allowable play is 0.04″ (1 mm). Therefore, overhaul the crank shaft if it exceeds this specification.

3-4 Hold the big end at the center of the circle and swing the small end to the axis of the crank shaft. Maximum allowable limit is 0.2″ (3 mm), therefore, overhaul the crank shaft if it exceeds this amount. (Fig. 70)

3-5 The total amount of distortion consisting of bending, twisting and uneven dfeacement in the connecting rod is measured by the amount of discrepancy between both ends of a 200 mm bar inserted in the small end of the connecting rod, when it is swung as in the paragraph (3-4). If it exceeds 0.08″ (2 mm), dismantle the crank shaft and inspect. (Fig. 71)

3-6 After the crank shaft has been dismantled, trace the cause of the faults by measuring the parts including connecting rod big end, connecting rod rollers and crank pin. The maximum allowable limits are listed on P. 158. Replace the parts worn and also those parts which have any surface flow.

(4) Measure crank shaft run-out

For checking run-out of the crank shaft, place main bearings on V-blocks. Locate a dial gauge at the ends of crank shaft where spline or taper are not machined, and gently rotate the crank shaft reading amount of run-out in the gauge. Maximum allowable amount is 0.0012″ (0.03 mm) for newly assembled. (Fig. 72)

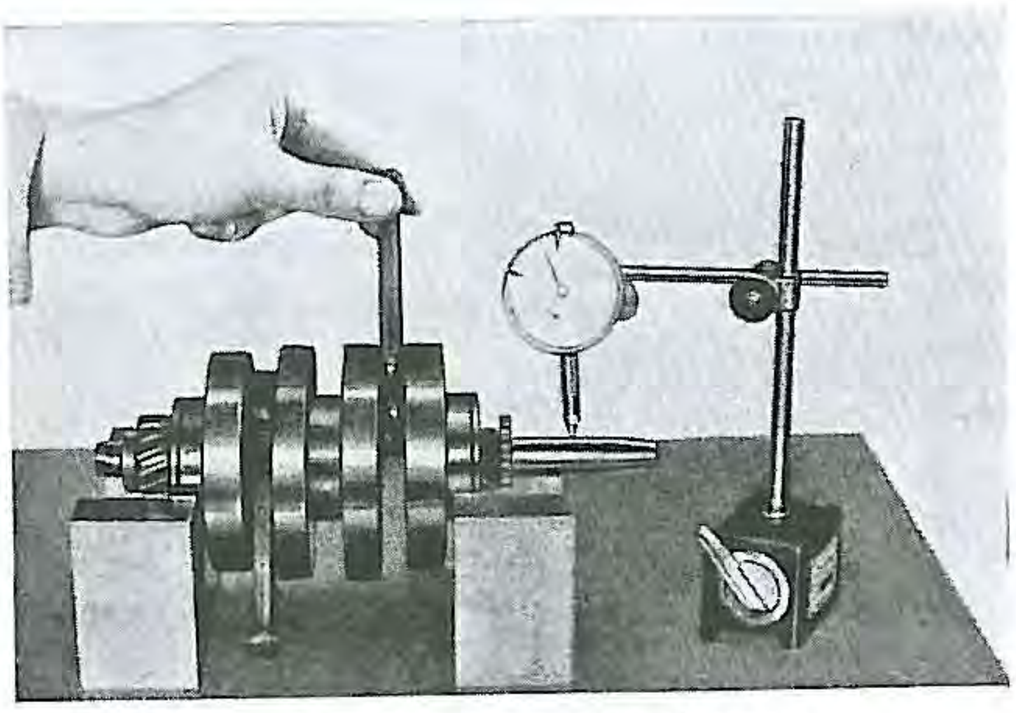


Fig. 72. Measuring crank shaft run-out

(4′) Center bearing

The center roller bearing on the crank shaft of CB92 & CA95 is able to be measured in accordance with the procedure of paragraph 3-2.

Dismantle the crank shaft if it has play in excess of the amount of more than 0.002″ (0.05 mm). Measure and check the fault after dismantling.

(5) Dismantling of crank shaft

Using special jig provided, and 10 to 15 ton press, the crank pin can be pushed out from the crank shaft and balancer weight.

Place the crank shaft on the hydraulic press and support one of the balancer weights firmly.

Drive out the crank pin with an aid of a suitable bar which is smaller than the crank pin in diameter, applying hydraulic pressure.

(6) Assembling crank shaft

Use the same hydraulic press and a specialized jig for assembling. First, press the crank pin in the R. crank shaft and install connecting rod with rollers and press the balancers in. Then assemble the L. crank shaft and connecting rod roller by holding the balancer weight firmly. Attention should be paid so that the oil hole in the crank shaft coincides with the one in the crank pin.

III. Installation of Crank Shaft

(1) Place the upper crank case on a block with the inside facing upwards.

(2) Position the complete crank shaft on which the main bearings are installed, with the connecting rod hanging down-wards. In this position, grooves on the main bearing

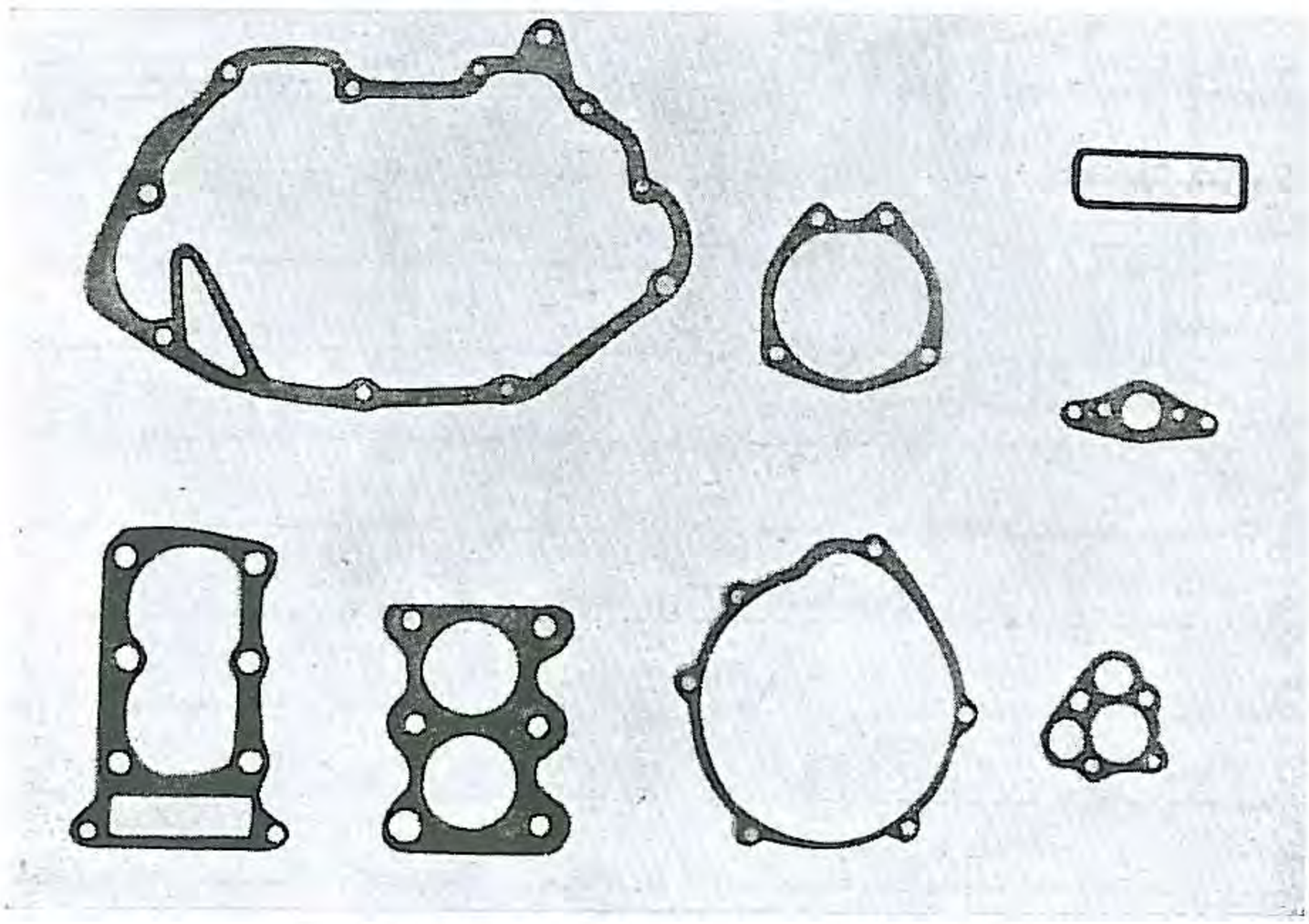


Fig. 73. Gaskets and packings for engine assembling

and bearing housing on the crank case should coincide by means of set rings inserted between them. Set a dowel pin between the crank case intermediate housing and center roller bearing for the models CB92 and CA95.

(3) Apply a coat of Gasket Paste (liquid gasket) on the mating surfaces.

(4) Place the under crank case on the upper crank case, when it is assured that the transmission gears and shifting devices have been completely assembled. (Refer to P. 55). Before covering the under crank case, ensure that the oil separating plates are fixed in. (Fig. 74)
Tighten all the nuts and bolts.

(5) Install the right crank case cover, left cover, cylinder and cylinder head with all their internal mechanisms.

(6) All the gaskets and packing, except liquid gasket, requierd to be replaced when assembling the engine are shown in Fig. 73.

MEMO

I-5. CLUTCH

The clutch has four friction discs and four plates. It is located on the right ena of the transmission main shaft inside the gear box and is fixed with a set ring. The primary drive gear is fitted to the clutch with 6 rivets through damping rubbers which prevent shocks from acceleration and deceleration from being transmitted to the gears.
Pulling in the clutch lever twists the clutch lifter, making it push the clutch rod and disengage the gears. The clutch plates dip into the right crank case cover oil sump, increasing clutch efficiency.

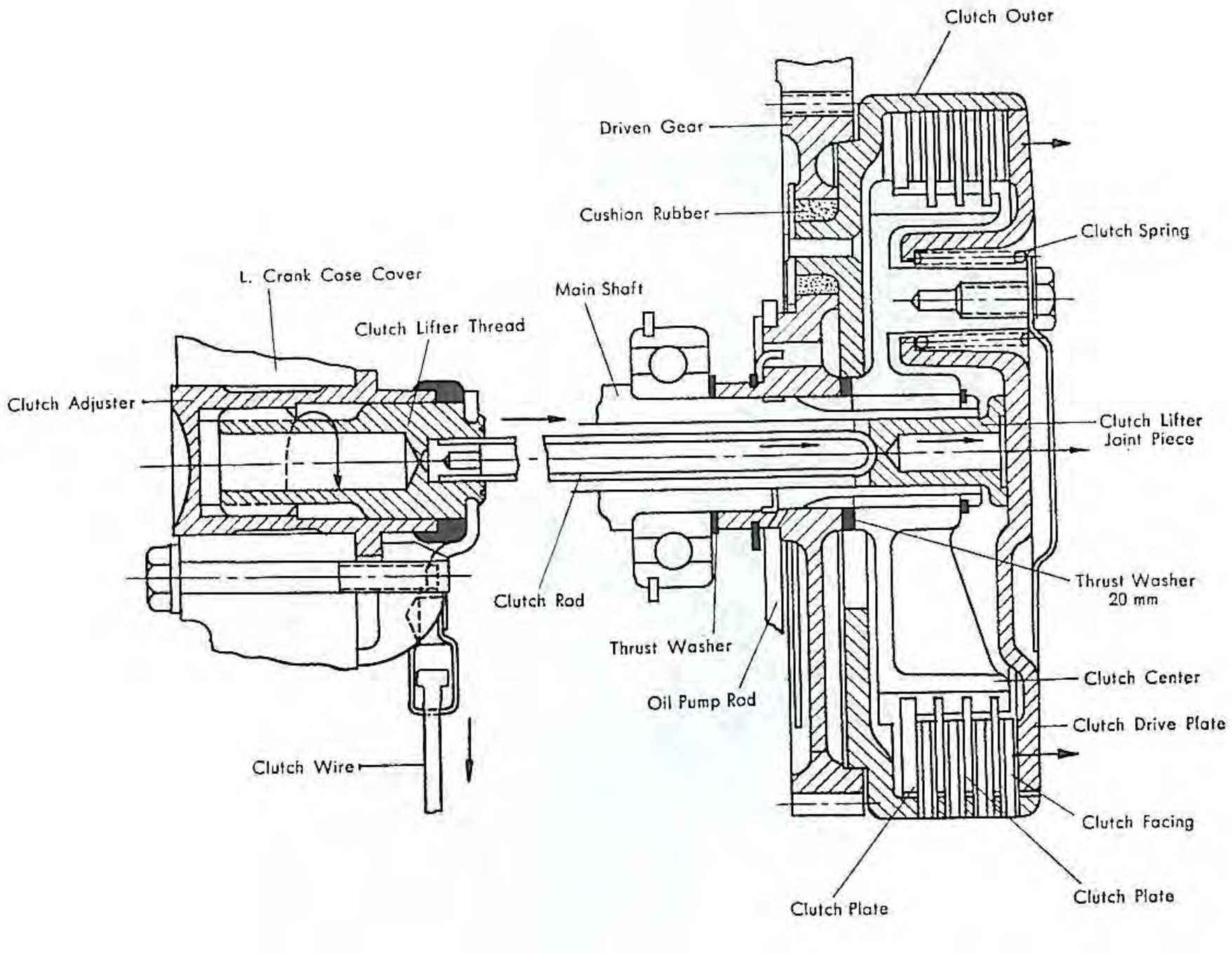


Fig. 74. Sectional view of clutch ass'y

I. Dismantling of Clutch

(1) Remove the R. crank case cover, unscrewing the 11 cross screws.

(2) Remove the oil filter cage which is inserted over the end of the crank shaft.

(3) Remove the 4 bolts (6 mm) retaining the clutch plate (Fig. 75). Then take apart the clutch plate and clutch springs.

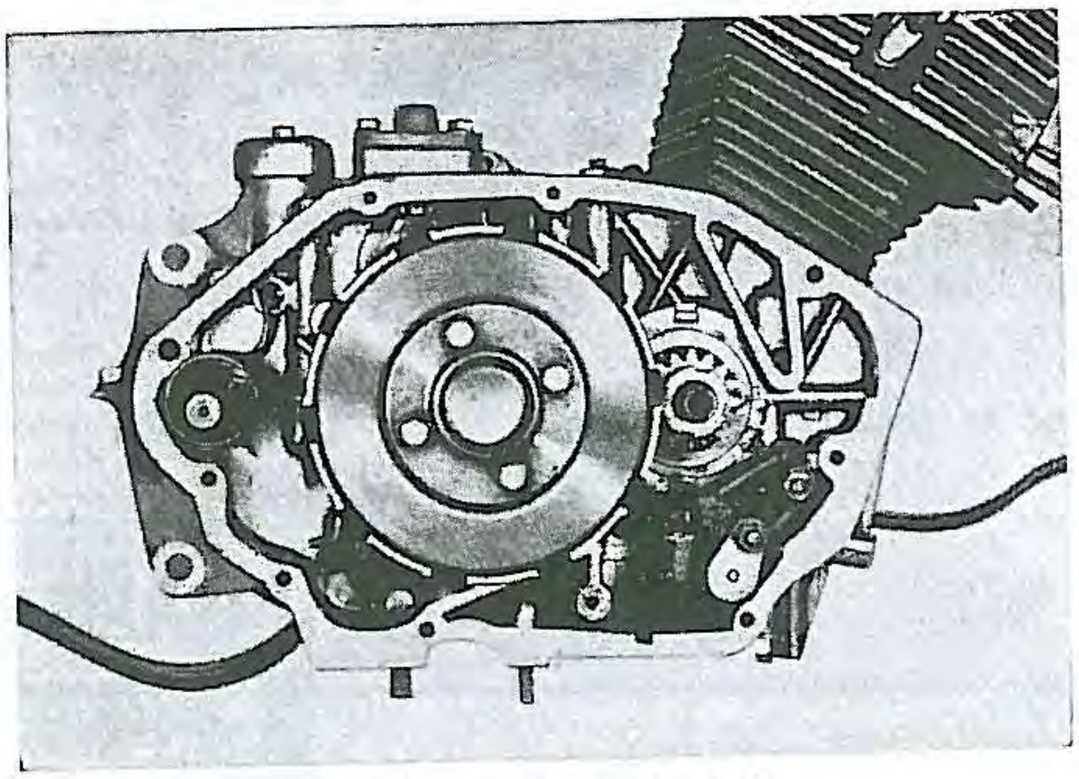


Fig. 75. Clutch retaining bolts

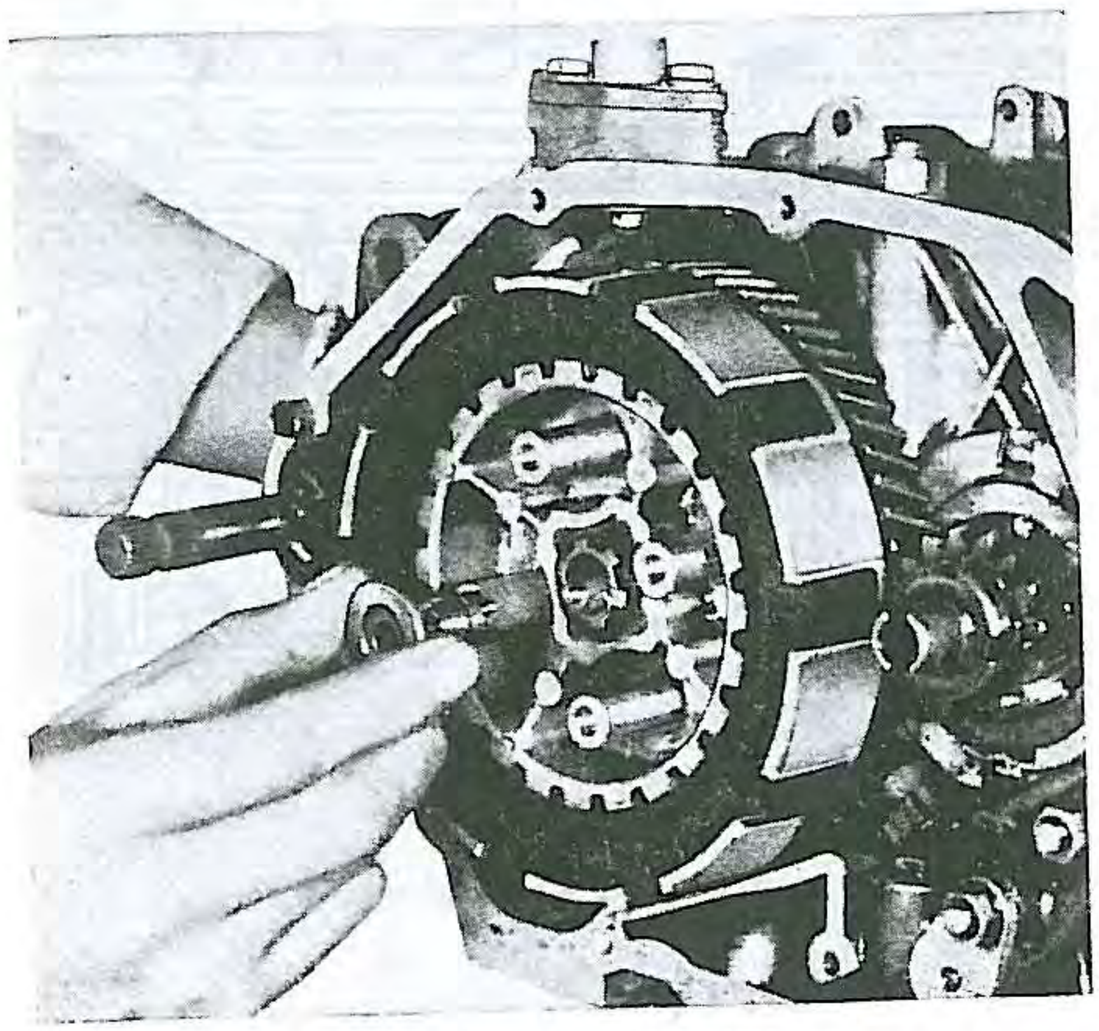


Fig. 76. Removing clutch lifter join

(4) Draw out the clutch lifter joint piece (Fig. 76) and the clutch lifter rod complete.

(5) Remove the set ring at the end of the transmission main shaft using set ring remover. Then the clutch center may be removed. (Fig. 77)

(6) Remove the plunger oil pump mounting stud nut and holding bolt.

(7) The clutch outer and the oil pump is removed as a unit, pulling them out together. Remove thrust washers.

(8) Separate the oil pump plunger arm and piston from the oil pump body.

(9) When required to remove the pump arm from the clutch outer, remove the set ring mounted behind it with a set ring remover. (Fig. 78)

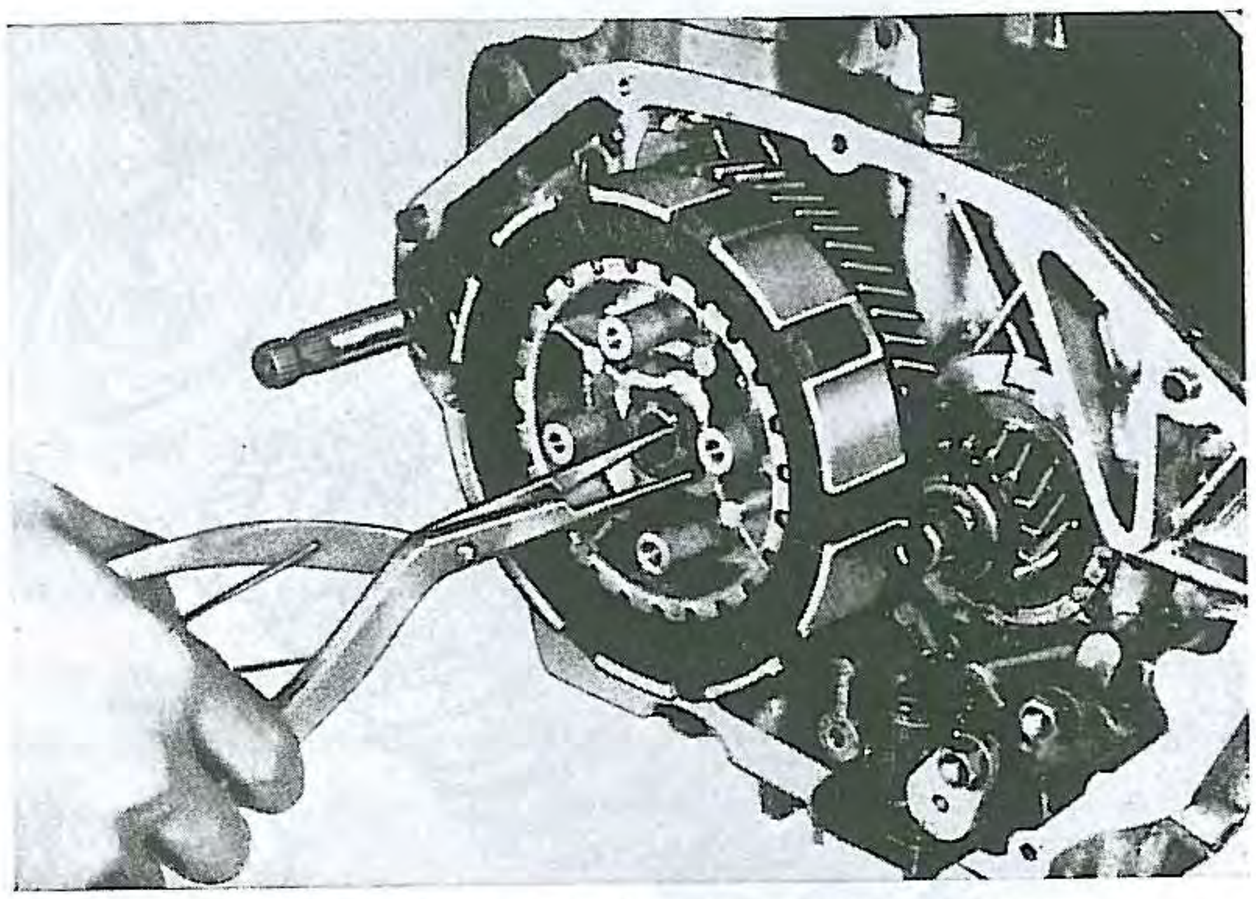


Fig. 77. Removing clutch center retaining set ring

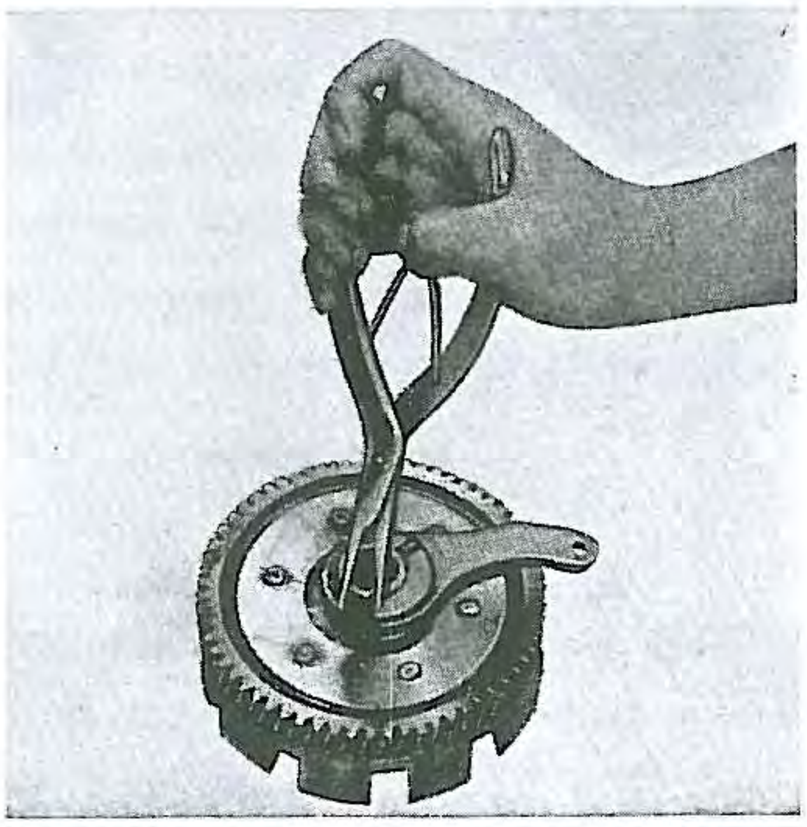


Fig. 78. Removing oil pump rod set ring

(10) At the left side of the engine, remove the L. crank case cover. Remove the 6 mm bolt retaining the clutch adjuster fixing piece, then the clutch adjuster complete may be removed from the cover. (Fig. 80). Unhook the clutch lever spring from the cover.

(11) Unscrew the clutch lifter thread complete from the adjuster. (Fig. 79)

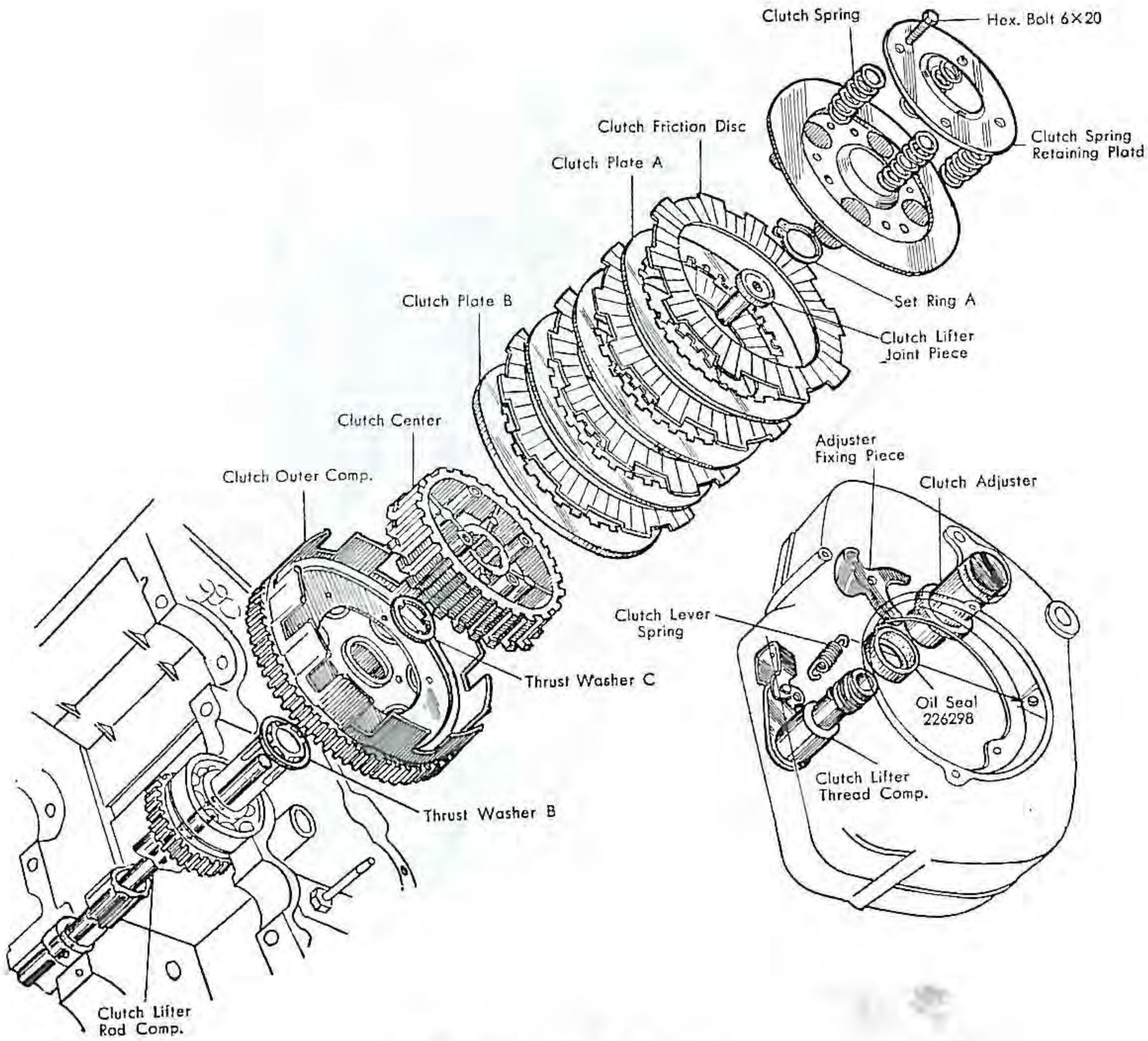


Fig. 79. Exploded view of clutch

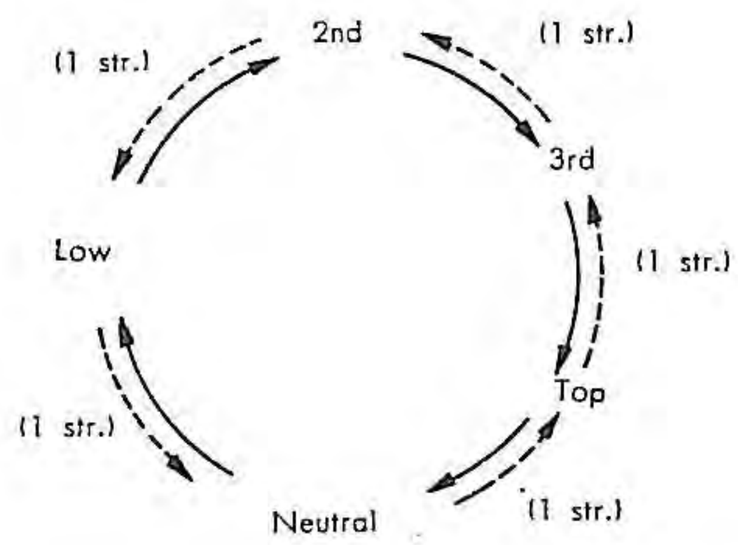
1-6. TRANSMISSION AND KICK STARTER

The transmission gear box is enclosed in the crank case and power produced by the crank shaft is transmitted to the transmission by helical gears.

The input shaft is called the transmission main shaft and the output shaft is called the transmission counter shaft, on which the drive sprocket is installed. There are 4 gears on each shaft which mesh with one another and are manually shifted in or out of mesh by the mechanical linkage of the shift arm, shift drum and shift fork. The gears have spur gears on the sides and are hardened to give long, trouble-free service.

Operation of gear change

There are two kinds of changing mechanisms for the Honda 125; one is a "rotary type" and the other a "return type" gear change. The rotary is installed on Honda 125 standard motorcycles with engine numbers up to C92E-12000 and the return on later standard machines and on CB92 and CA95 motorcycles. The difference in the two systems is shown below:



(Str.: Stroke)

Return system: (with Stopper)

(Stopper) Low⇇⇉Neutral⇇⇉2nd⇇⇉3rd⇇⇉Top (Stopper)

½ str. ½ str. 1 str. 1 str.

The rotary type has no final position, while the return type has stoppers below low gear and above top gear.

Manual force applied on the change pedal by the foot is transformed into rotary motion of the shift drum, which operates two shift forks fitting into grooves on the drum. (Fig. 82) The rotary motion of the drum is changed into a ial motion of the shift forks because of the cam action of the grooves on the drum, and the drum is interlocked by the stopper.

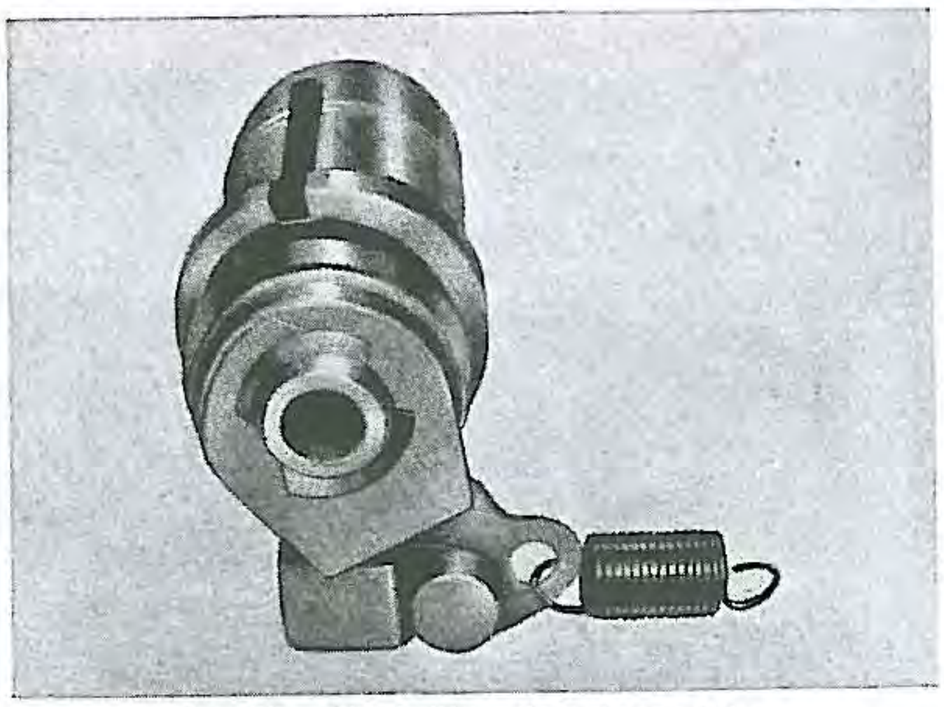


Fig. 80. Clutch lifter thread complete

II. Inspection and Repair of Clutch

(1) Visually examine the outer appearance of all composite parts for damage or flaws Replace faulty parts.

(2) Measure inside diameter of the clutch outer, and replace if it does not meet the specifications (P. 159).

(3) Measure the thickness of the clutch plate and facing for wear, corresponding to their specifications. Measurement of surface distortion of these parts is done by placing them on a surface plate and checking any clearance existing on or around the circumference of the clutch-plate, visible between the flat surfaces.
Amount of distortion, which may be allowed to the limit, is mentioned in the specifications (P. 160).

(4) Measure free height and squareness of all clutch springs and replace if any of them are beyond the limits of the specification (P. 160).

(5) Check the general condition of the drive and driven gears, back lash between them and inspect for evidence of excessive wear. Replace excessively worn, damaged gears.

(6) Replace the oil seal fitted in the lifter thread adjuster if any tendency of oil seepage appears.

III. Assembly of Clutch

(1) After the gear shift arm and kick starter spring and other relevant parts are completely installed on the crank case, the clutch assembly should be commenced. (Fig 81)

(2) Insert 20 mm thrust washer on the transmission shaft, position the oil pump gasket

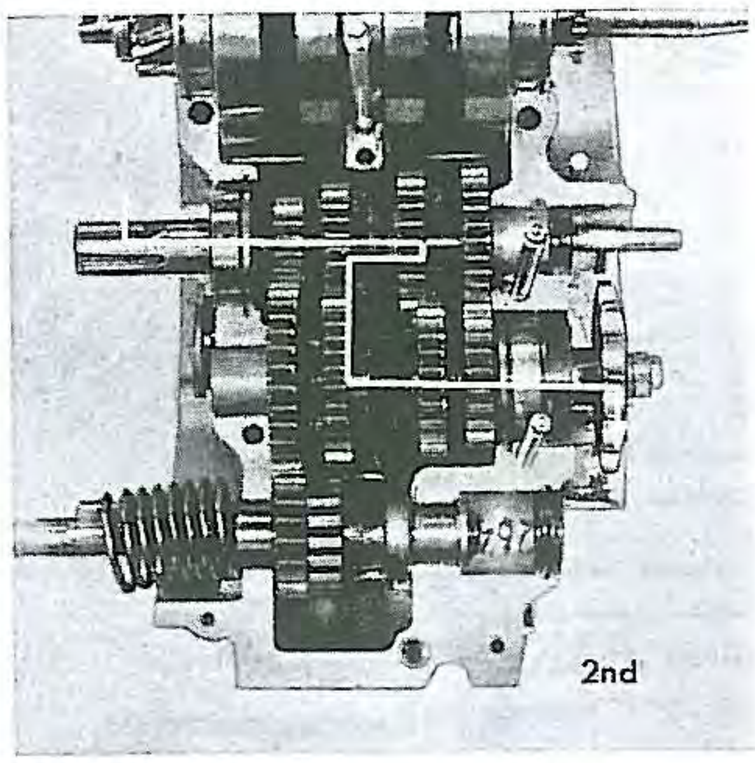


Fig. 85. Second gear

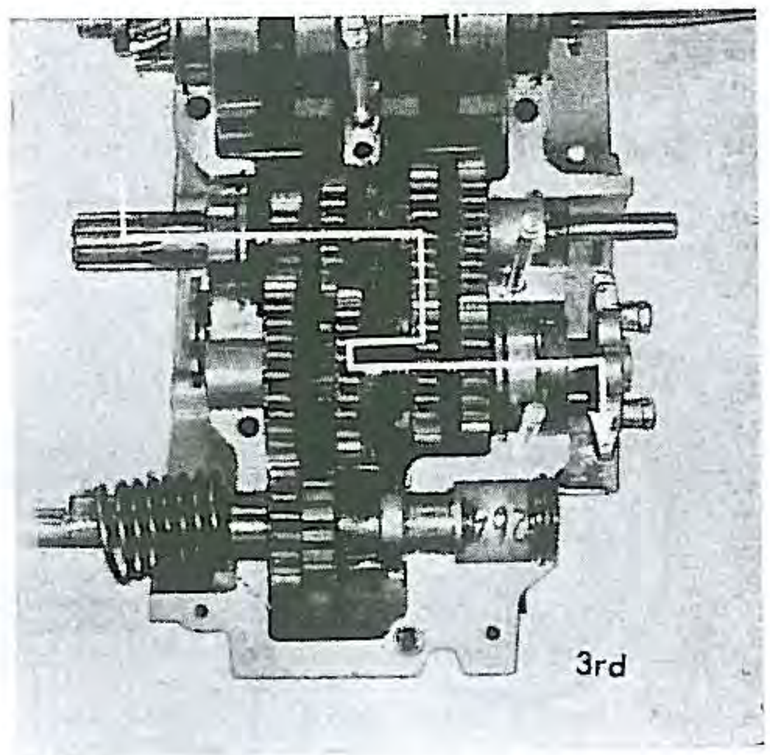


Fig. 86. Third gear

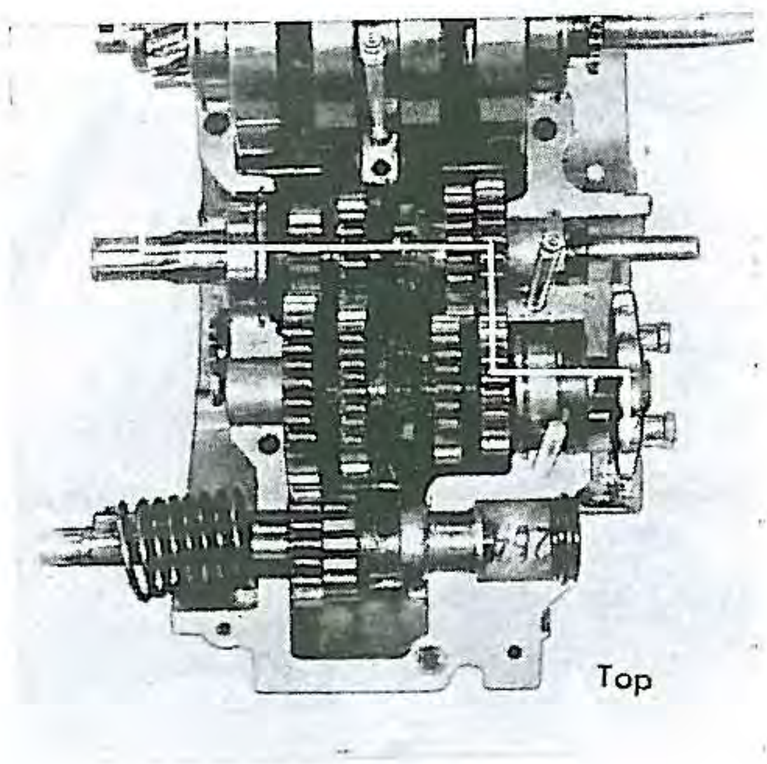


Fig. 87. Top gear

Operation of kick starter

A kick starter is positioned at the rear of the gear case. Its pinion gear is meshed with the counter shaft low gear, which connects with the crank shaft through the transmission main shaft. When the kick pedal is depressed, the pawl on the ratchet engages with the starter pinion and rotates the crank. When the pedal is not depressed, the pawl rests on the starter spindle bushing, preventing interference with the pinion. (Fig. 88)

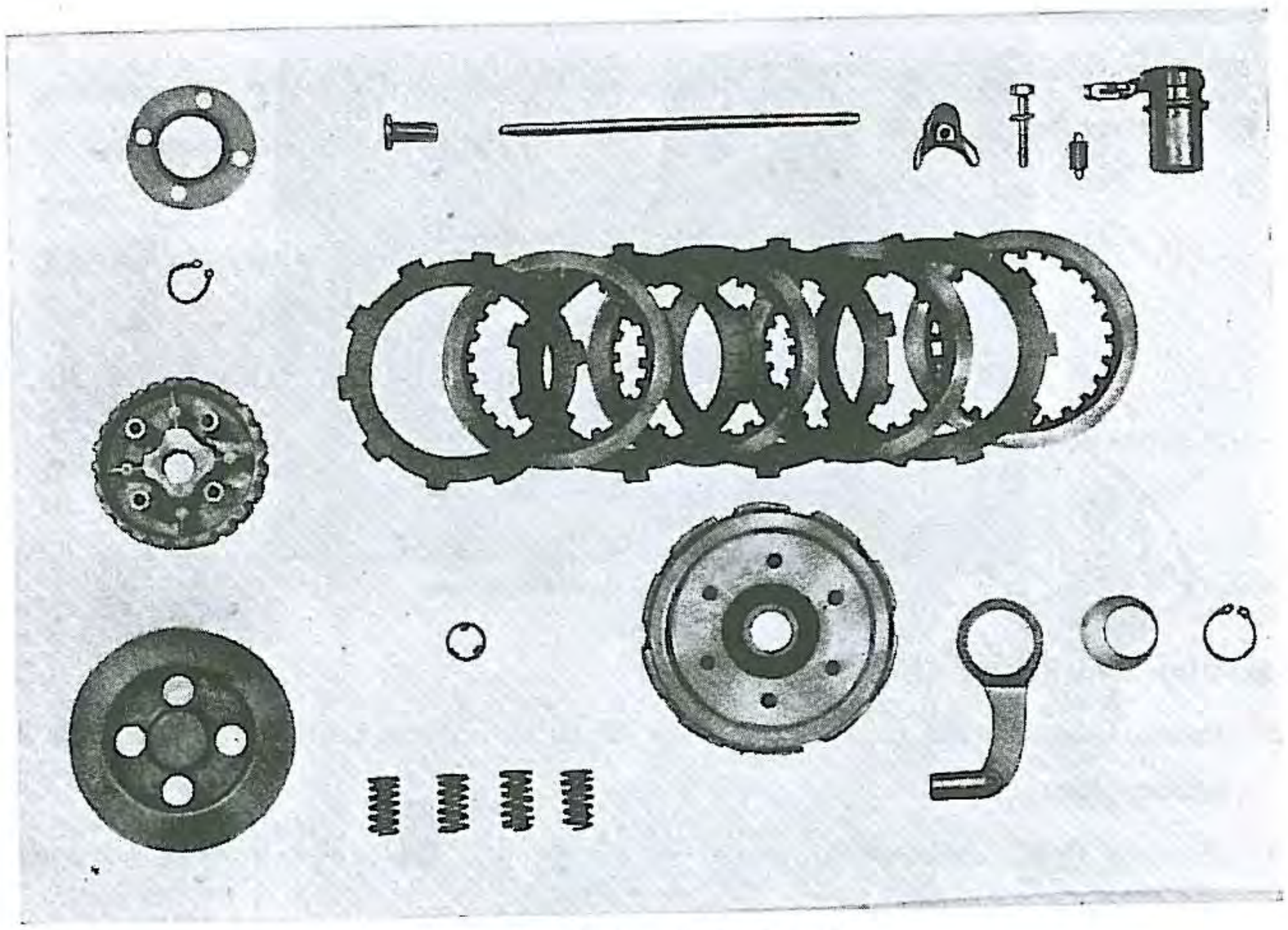


Fig. 81. Display of clutch parts

and install the clutch outer with oil pump body as a unit.

Install the clutch outer complete and fix with the set ring onto the transmission shaft. Tighten the oil pump stud nut and bolt.

(3) Set the clutch plate B to the bottom, and alternately install four clutch facings with the three clutch plates A.

(4) Insert clutch lifter rod complete and the joint piece in the transmission main shaft.

Install the clutch pressure plate and clutch springs on the extrusions of the clutch center. Tighten the springs and retaining plate firmly with 4 bolts (6 mm).

(5) Insert the oil filter complete over the crank shaft and install the right cover with its gasket.

(6) Fix the clutch adjuster assembly onto the L. crank case cover and hook on the return spring.

Apply grease into the adjuster through the nipple, using a grease gun.

(7) Adjust the clutch referring to (P. 160).

Gears are changed by the shifting of the main shaft 3rd gear and counter shaft 2nd gear, which are connected to the shift forks. The gear positions are shown in the following pictures : (Fig. 83, 84, 85, 86, 87)

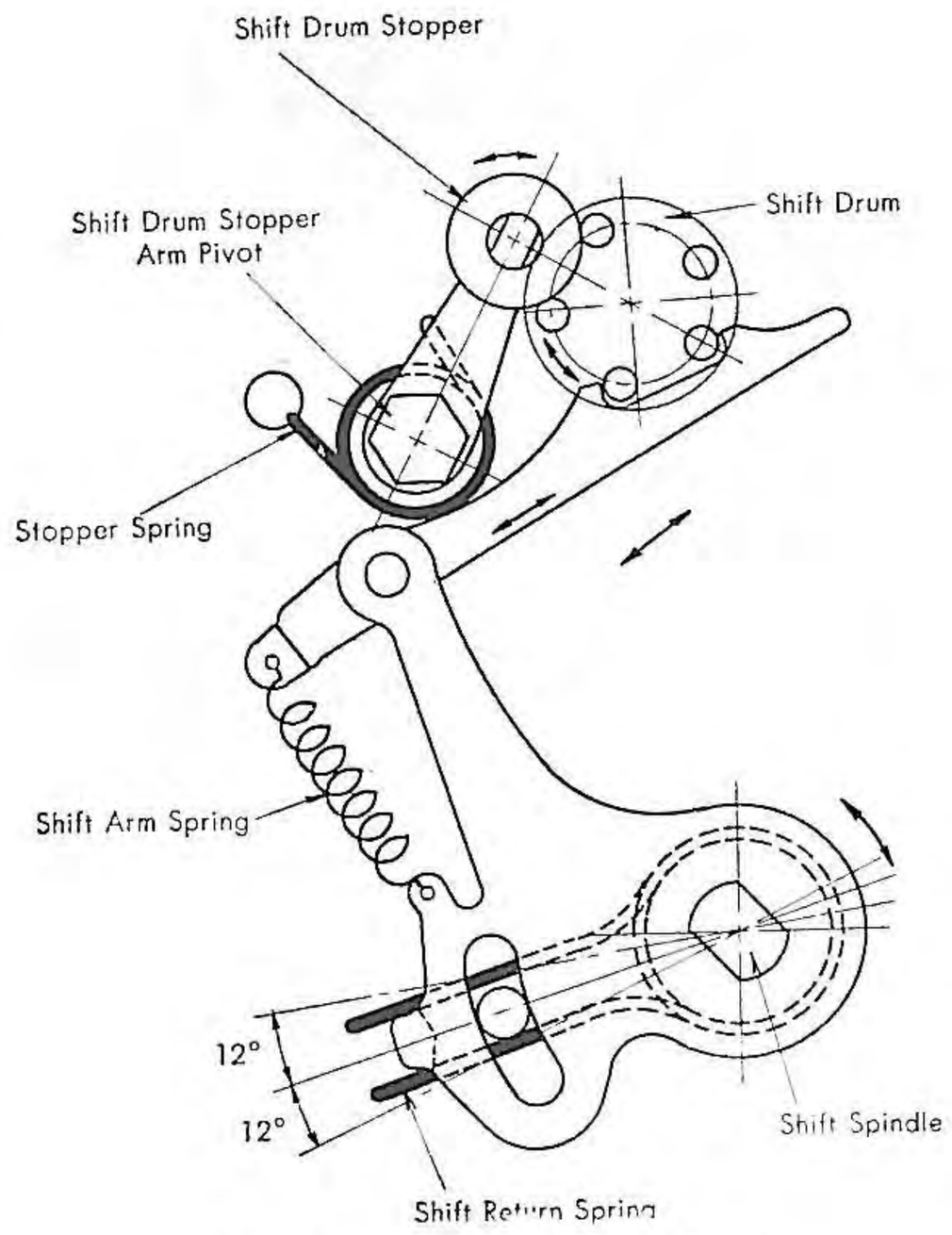


Fig. 82. Mechanism of change lever

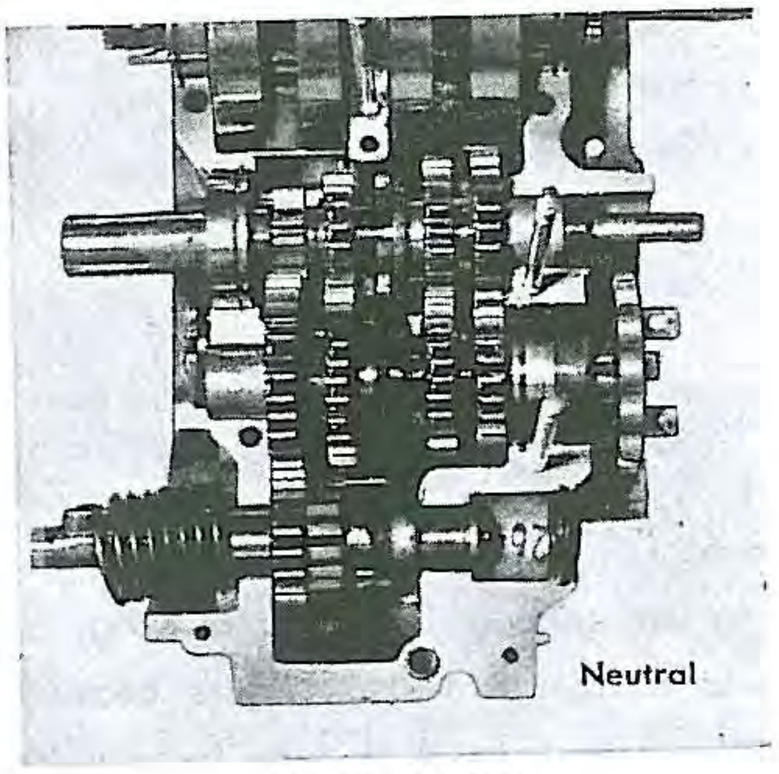


Fig. 83 Neutral

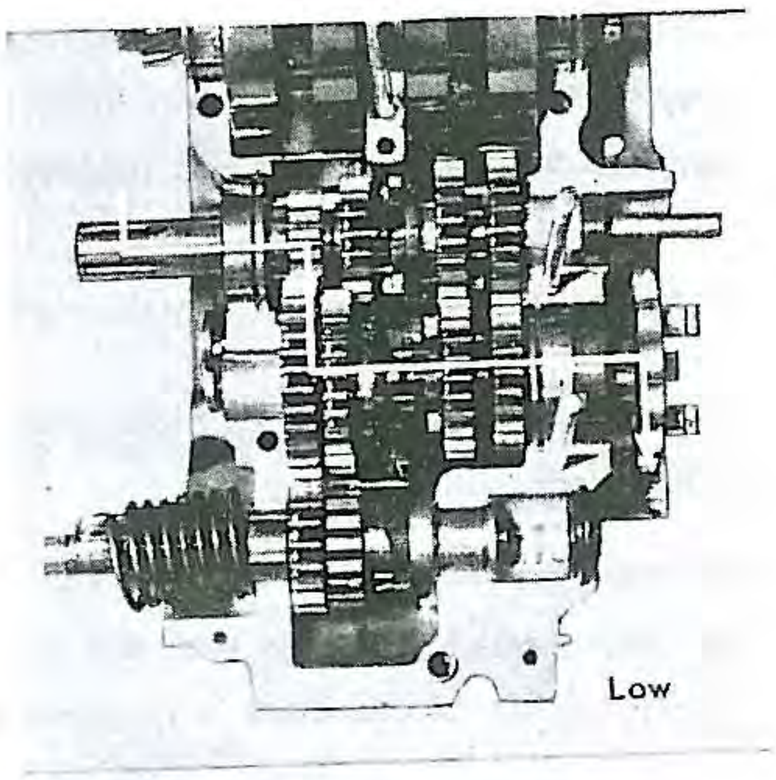


Fig. 84 Low gear

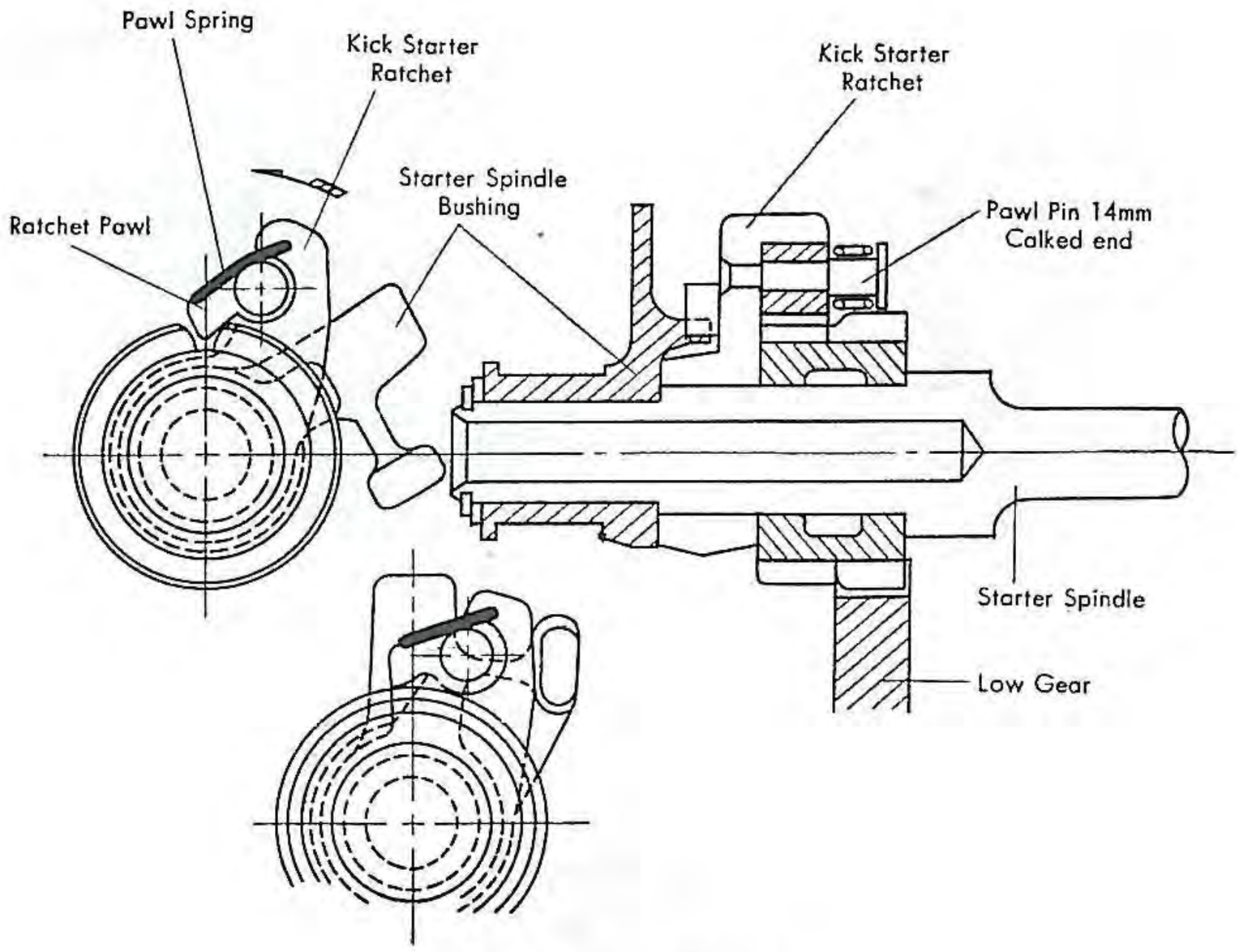


Fig. 88. Mechanism of kick pinion

Gear ratios

Gear teeth numbers for gear trains and their gear ratios are follows.

	Standard (C92–C95)	CB92 CA95
Drive Gear	16	16
Driven Gear	62	62
Gear ratio to transmission	3.875	3.875
Transmission main shaft gear	14 T	14 T
,, 2nd	18	19
,, 3rd	18	19
,, 4th	25	25
Counter shaft gear	22	22
,, low	34	33
,, 2nd	29	29
,, 3rd	25	24
Gear ratios ; at Low gear	2.61	2.36

2nd	1.61	1.474
3rd	1.19	1.043
Top	0.88	0.840
Final drive sprocket	15	15 (CB 92) 18 (CA 95)
Final driven sprocket	40 36	44 (CB 92) 36 (CA 95)
Secondary gear ratio (final drive)	2.67	2.93
Kick pinion	18	19

I. Dismantling of Transmission and Kick Starter

(1) Place the engine upside down on a suitable stand and remove the under crank case, after the parts enclosed in L. crank case cover and R. crank case cover have been removed. Unhook the coil spring attached on the upper crank case, for kick spindle.

(2) Then the transmission shaft, counter shaft and kick spindle with their respective gears, bearing and bushing can be detached from the upper crank case. (Fig. 88) (Fig. 90)

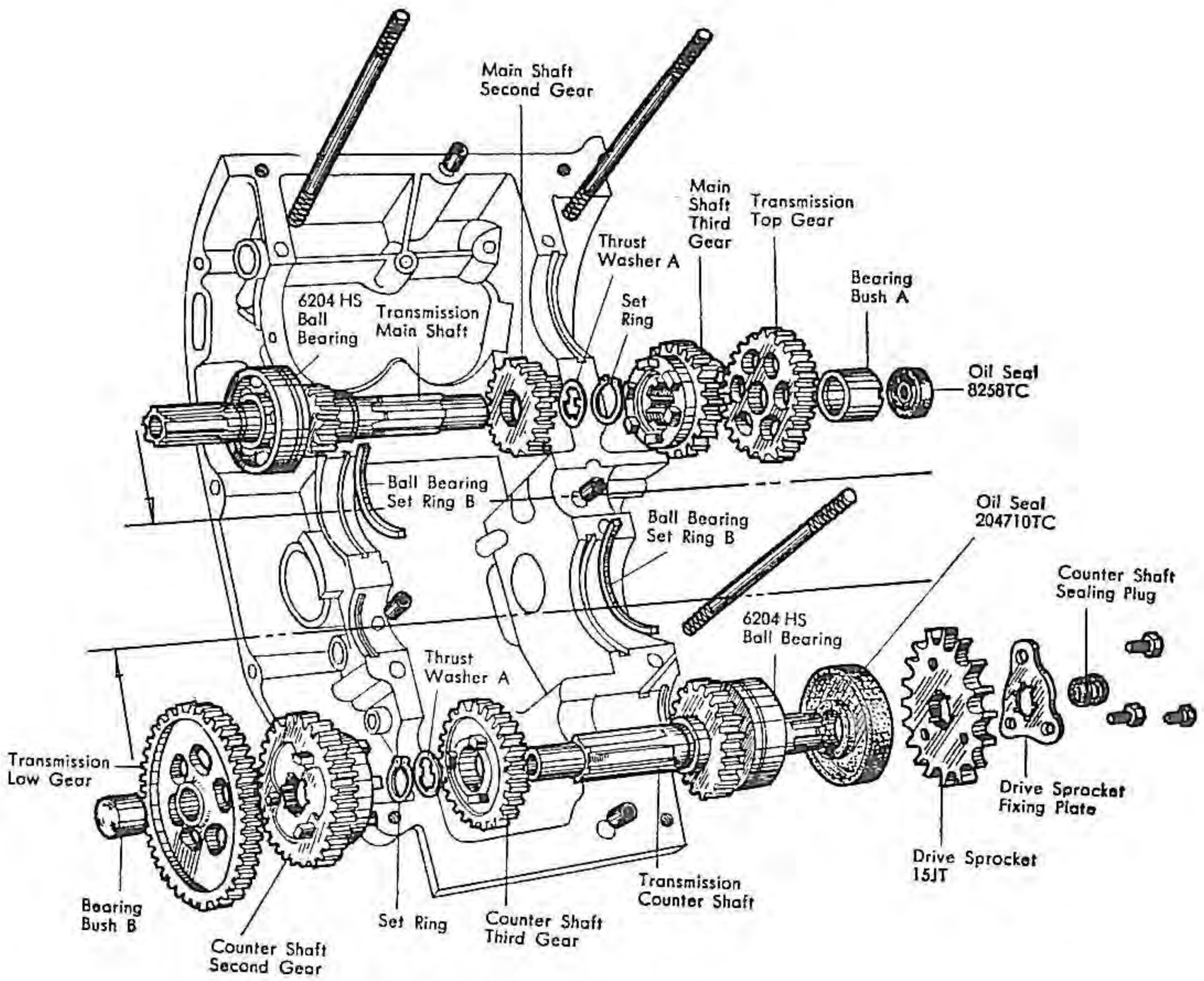


Fig. 89. Exploded view of transmission

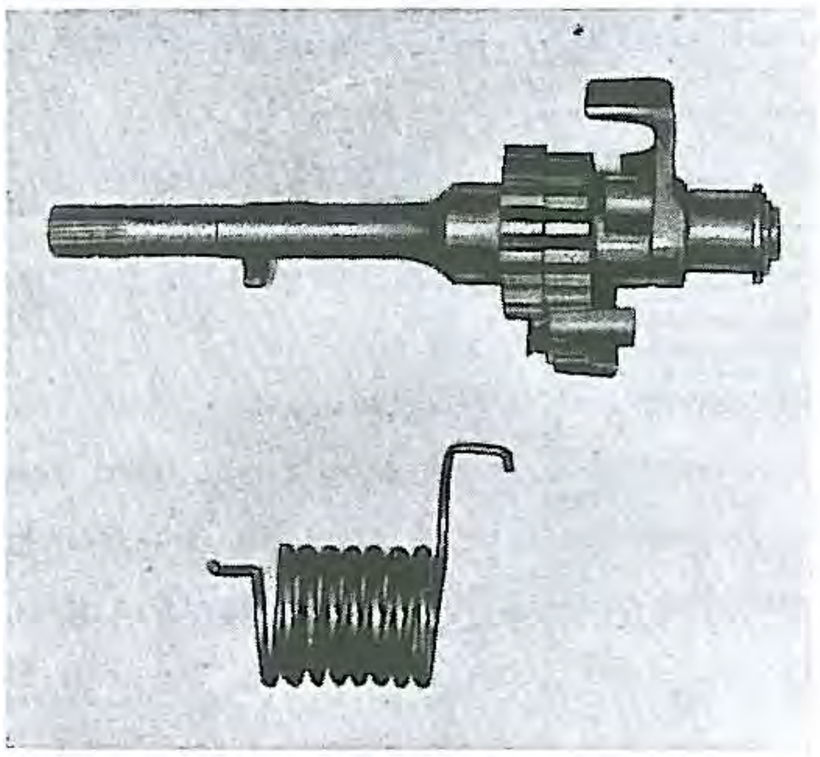


Fig. 90. Kick starter ass'y

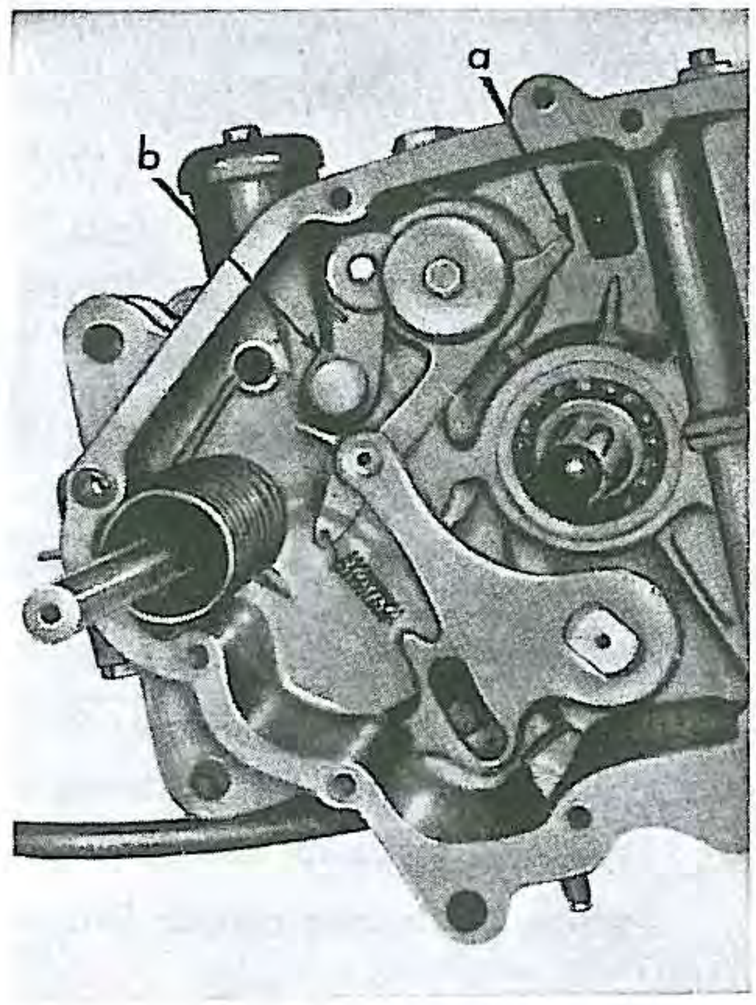


Fig. 91. Changing links

(3) With set ring remover, remove the set ring attached on the main shaft and counter shaft which retain the main shaft second gear and counter shaft third gear. Remove the sprocket by unscrewing the 3 fixing bolts (6 mm). (after Engine No. C92E-925610 they were altered into 2 bolts.)

Then the oil seals and main bearings can be extracted from their shafts.

(4) Remove the set ring on the left side of the change shaft. Then tap gently with wooden hammer on the serrated end of the gear shift spindle while depressing the gear shift arm link (a) until the projection of the link will not interfere with the gear shift arm guide. (Fig. 91)

(5) Remove the shift stopper arm pivot bolt (b) and detach the stopper arm.

(6) Remove shift drum guide, roller mounted, on the top of the crank case (Fig. 92) for standard model. Remove 2 bolts retaining shift drum guide screw and take out the guides. (CA95, CB92 and all export models for C92 after the engine number of C92E-120011 (Fig. 93)

Straighten the lock washers folded over on the selector fork guide pins with a chisel and a small hammer and remove the selector fork guide pins.

Remove the neutral switch rotor from the end of the shift drum.

Then the shift drum can be extracted from the upper crank case. (Fig. 94)

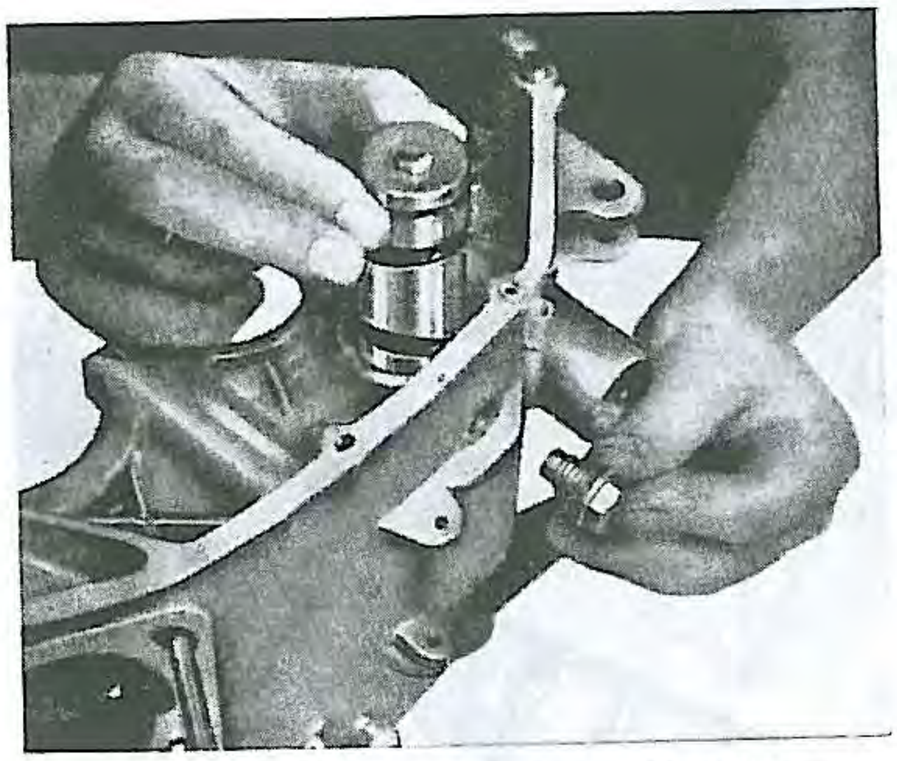


Fig. 92. Removing shift drum guide roller

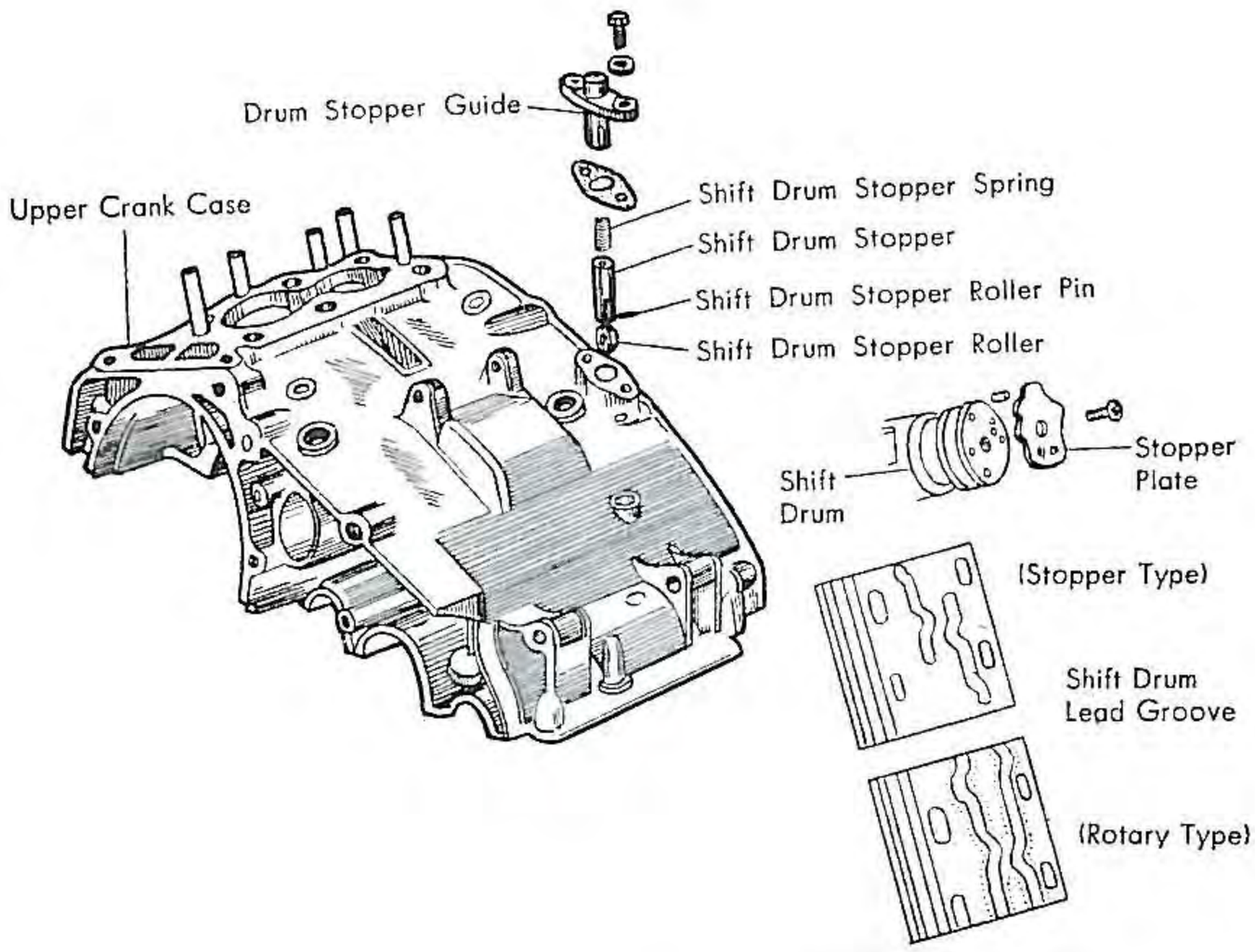


Fig. 93. Removal of shift drum stopper roller (CB92 & CA95)

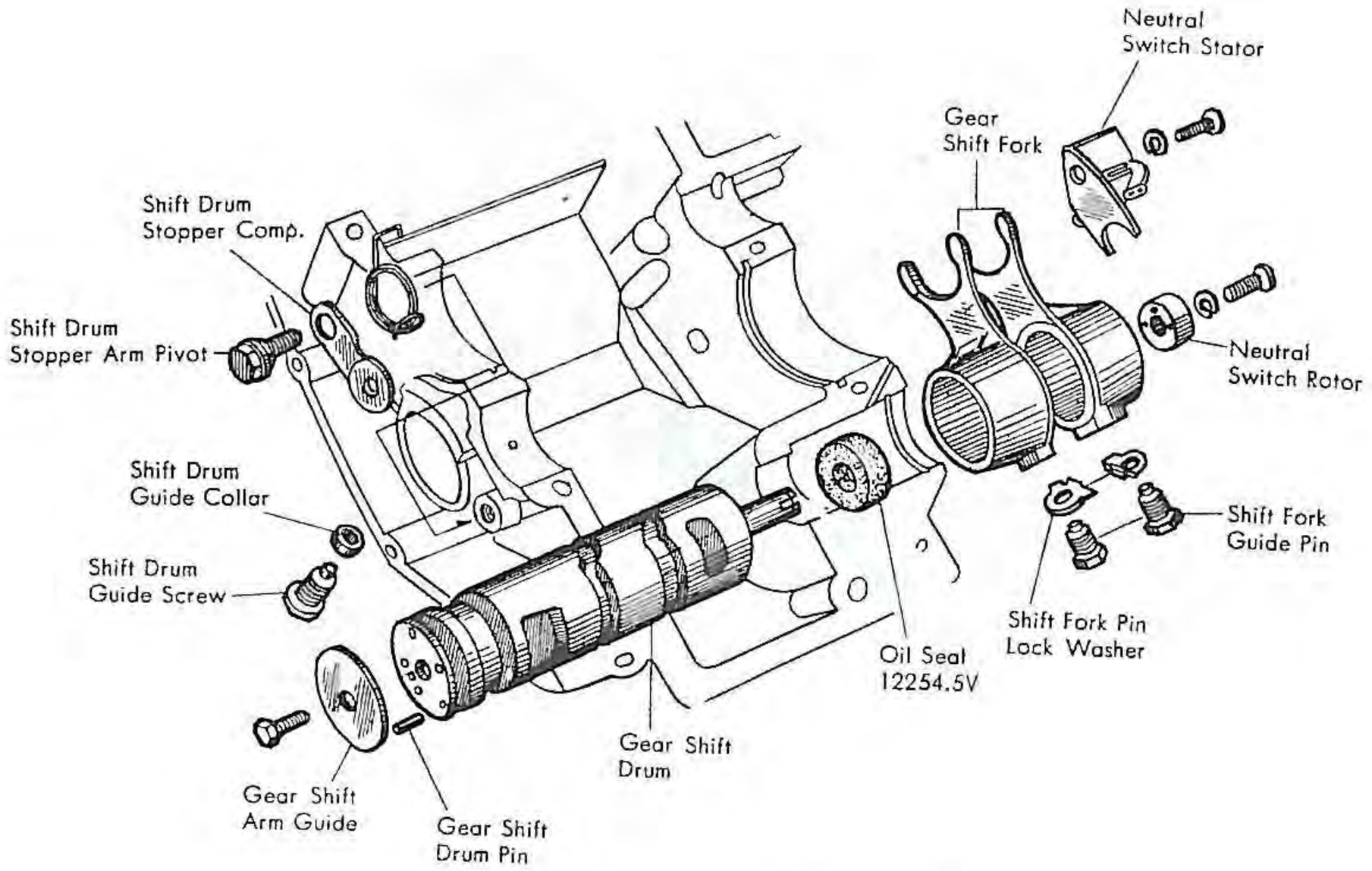


Fig. 94. Exploded view of shifting system

II. Inspection and Repair of Transmission

(1) Before dismantling the crank case check and examine for seepage or leak from the oil seals and blind plug. If any tendency of this appears, replace oil seals and plug.

(2) Inspect all components for excessive wear, cracks or damage, and replace any faulty parts.

(3) The ball bearings on the counter shaft and main shaft can be checked for excessive wear as follows:

In the case where they are attached on their shaft, move the outer race radially with finger pressure. If some play is felt by hand, replace the bearing. Rotate the outer race by hand, and if there is excessive noise, it must be replaced.

(4) Measure the inside diameter of the bushings according to the specifications and replace the unsatisfactory parts.

(5) Measure the diametrical distance between valleys of gears and replace if this dimension exceeds the specification.

Or measure distances of respective numbers of cogs in gears using micrometer for measuring teeth thickness. (Fig. 95)

I–7. LUBRICATINO AND BREATHER

Oil is pressure fed to the engine parts by an oil pump located on the right side of the crank case. (Fig. 96)

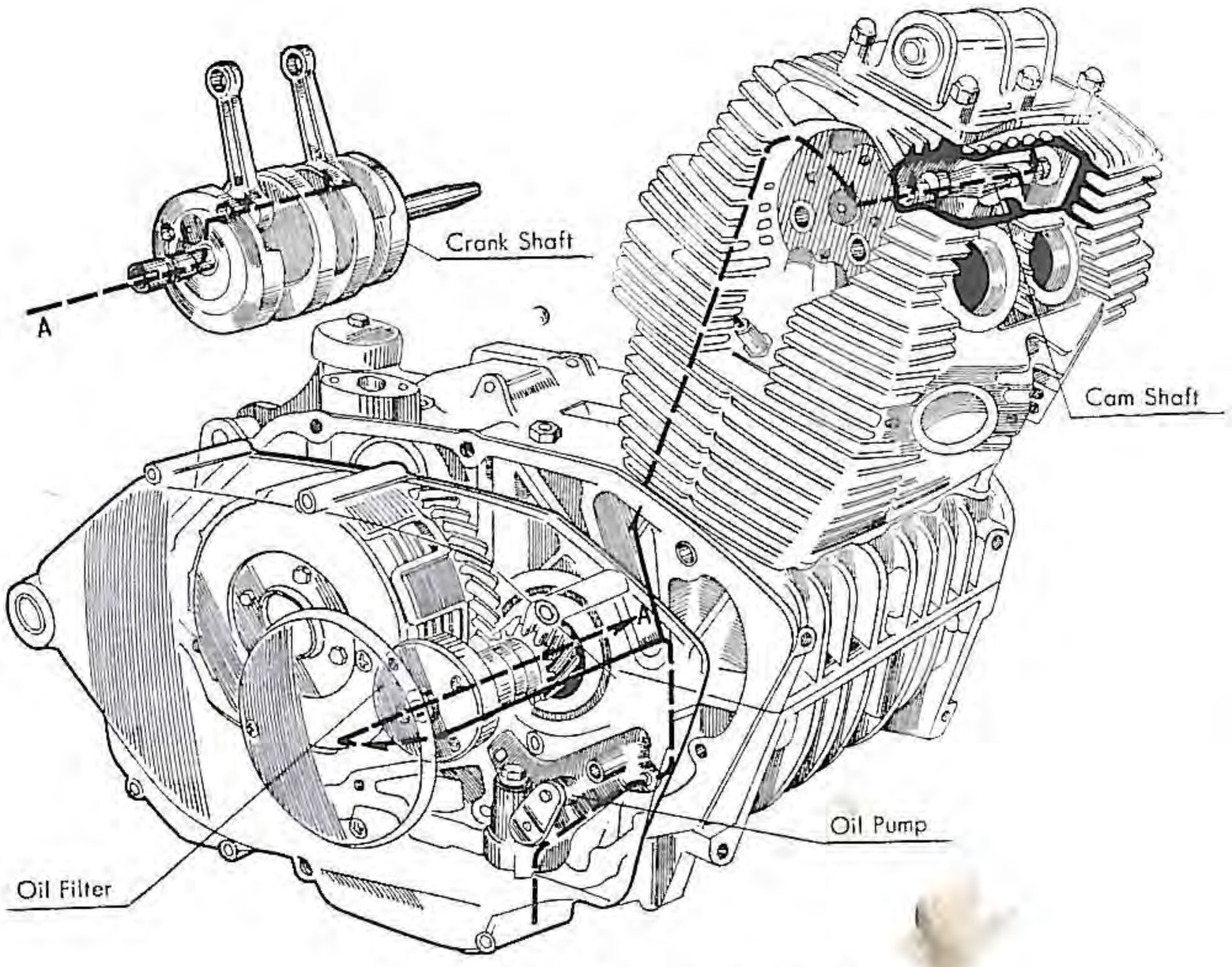


Fig. 96. Circulating diagram of lubricant

The plunger-type oil pump is cam operated by the crank shaft to draw oil through a submerged oil screen and force it under pressure into a chamber located on the crank case cover and from there to the oil gallery in the cylinder and head, cam shaft, rocker arms, oil filter, crank shaft, connecting rods and bearings.

The cylinder walls, connecting rod, small ends and pistons are lubricated by oil splash from spurt holes in the crank pins.

When the centrifugal type oil filter mounted on the end of the crank shaft rotates it separates particles of metal and dirt mixed in the oil by centrifugal force and deposits them around the wall and in partitions in the filter.

The clutch and transmission are lubricated by oil splash from clutch and gear rotation. The bushing on the counter shaft has a slit on the top which collects oil for lubrication.

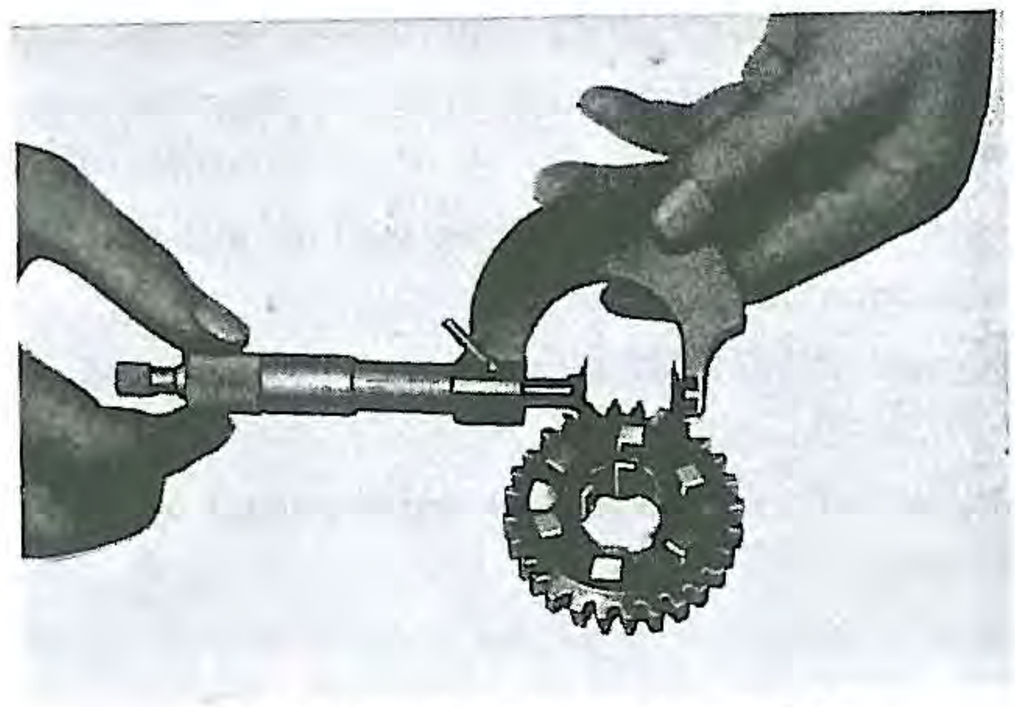


Fig. 95. Measuring thickness of gear teeth

III. Assembling Transmission and Kick Spindle

(1) Shift drum

Place the upper crank case, inside uppermost on an engine assembling stand, after all studs and an oil seal have been installed.

1-2 Insert the gear shift drum from the upper crank case large bore, introduce into the selector forks, and set the small end journal of the drum in the crank case. The position of the shift forks must be face to face with each other as illustrated in (Fig. 94).

Insert the shift fork guide pins with folding washers so that they can be set in their respective grooves on the shift drum. Tighten securely and fold up the washers at a face of the bolt head (not at a corner). To coincide the faces, do not rotate by unscrewing, but always turn in the direction of tightening.

1-3 Install the neutral switch stator on the crank case, and install the neutral switch rotor on the end of shift drum. (Fig. 94)

1-4 Insert gear shift drum pins into the large end of the shift drum and retain them with guide plate. Then attach the shift drum stopper with its spring in its position for standard C92 and C95.

1-5 Turn the crank-case upside-down and install the shift drum guide screw with collar.

For CA95 and CB92 model install the shift drum stopper complete with 2 bolts from the outside of the crank case.

(2) Kick starter

Set the pinion gear, the kick starter ratchet, the kick starter bushing and thrust washer on the kick spindle shaft, so that they are placed in the position as illustrated in Fig. 87 and retain the end with the set ring.

The later type discharges gas entering the gear case through holes between the clutch case and crank chamber through a breather funnel after passing through an oil separator. (Fig. 100)

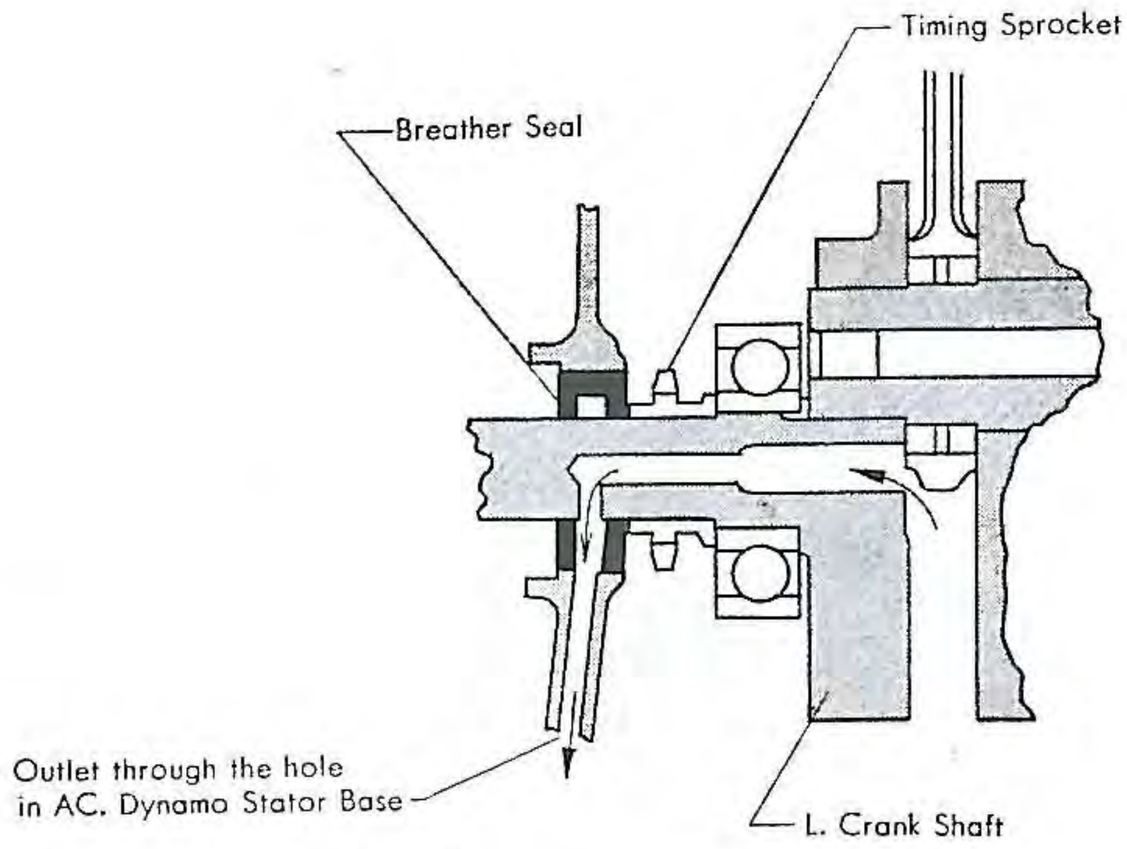


Fig. 99. Breather system for old model

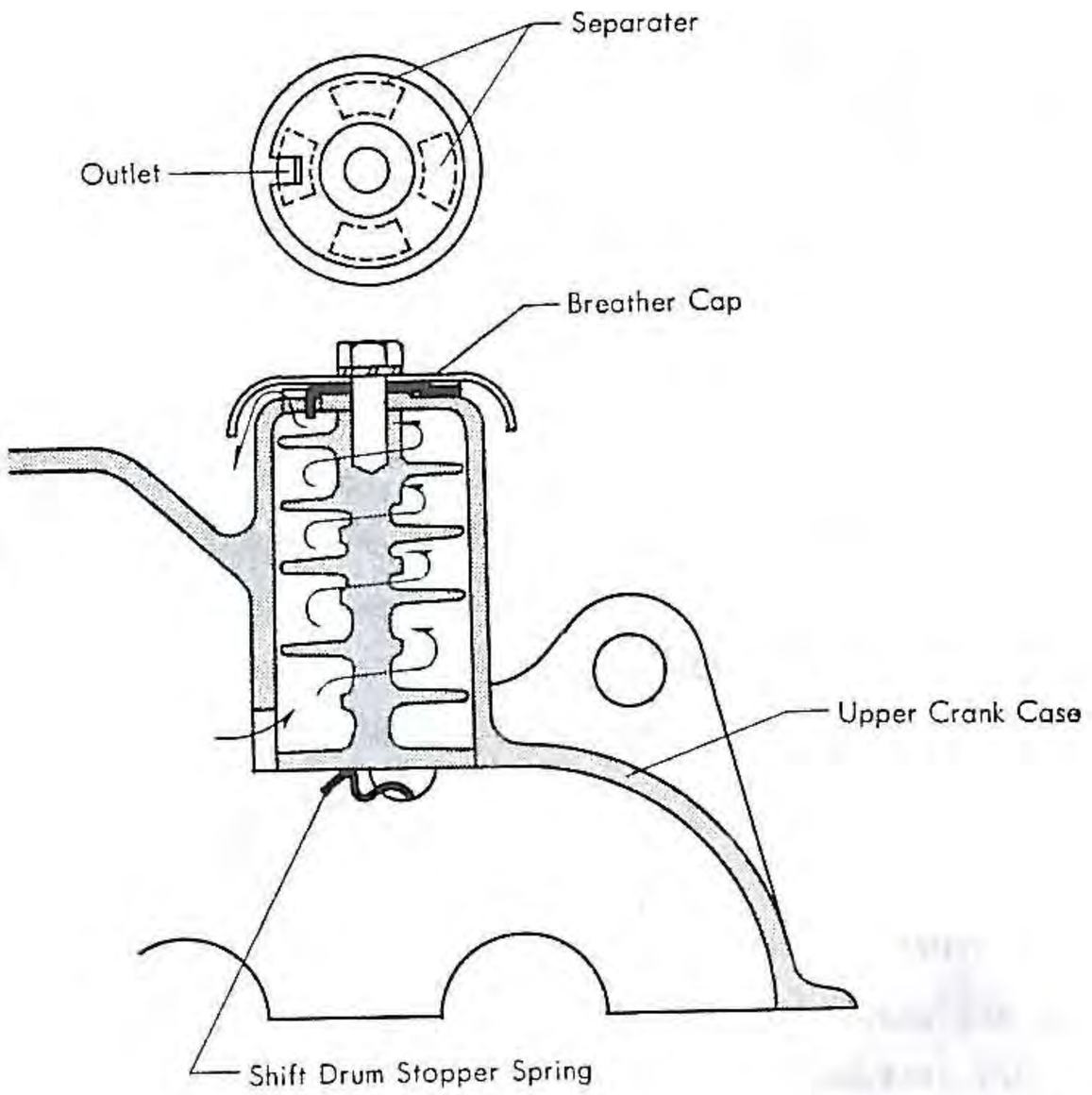


Fig. 100. Breather system for later models (from C92E-937667 C95E-914982)

Place the kick spindle complete on the crank case so that the stopper of the starter spindle bushing is seating within the protrusions on the crank case inner surface.

(3) Counter shaft

3-1 Tap the ball bearing onto the counter shaft so that the groove on the outer face comes closer to the gear.

3-2 Slip the oil seal 204/710TC onto the counter-shaft taking care not to damage the lip.

3-3 Slip on the counter shaft third gear and the thrust washer and hold them to the shaft with the set ring.

3-4 Slip the second gear first, then the transmission low gear on to the shaft. Install the 14 mm bushing B on the end of the counter shaft.

3-5 Insert a dowel pin and a ball bearing set ring on each side of the bores where the counter shaft and transmission shaft are resting.

3-6 Place the counter shaft gear cluster on the crank case and dent in the position so that bearing, and a hole on the bushing coincide with their inserts.
At the same time the counter shaft second gear (sliding gear) should be engaged in the respective shift fork selector.

(4) Transmission main shaft gear cluster.

4-1 Tap the main ball bearing 6204HB on to the main shaft so that the groove on the bearing outer race positions inwards. Slide the main shaft second gear toward the main shaft gear so that the face without the projection encounters the gear. Retain the gear with thrust washer and set ring.

4-2 Slide on the third gear, the top gear and the bushing on the shaft.

4-3 Install the transmission gear cluster on the dent of the crank case as on the counter shaft.

4-4 Place the oil seal 8258TC in the crank case dent at the end of bushing.

(5) Apply a coat of gasket sealant on the mating surface and insert dowel pins (front and rear intermediate) and install the under crank case. Tighten all bolts and nuts firmly.

(6) Install the change return spring stopper pin on the outer side of under crank case and insert the shift arm assembly through the bore of the crank case until correctly seated. It is assumed that the shift arm return spring and shift arm spring have already been attached.

Place the washer on the oil seal left side crankcase and install the set-ring onto the spindle shaft.

(7) Attach the shift drum stopper roller with the shift drum pivot bolt and spring in position. (standard engine previous to E. No. C92E-012001), insert the stopper roller with spring and guide in upper side of the crankcase, (for return type change)

(8) Complete assembly with the R. crank case cover, gear change arm and kick arm. Adjust the position of gear change pedal for CB92 as shown on (p. 137).

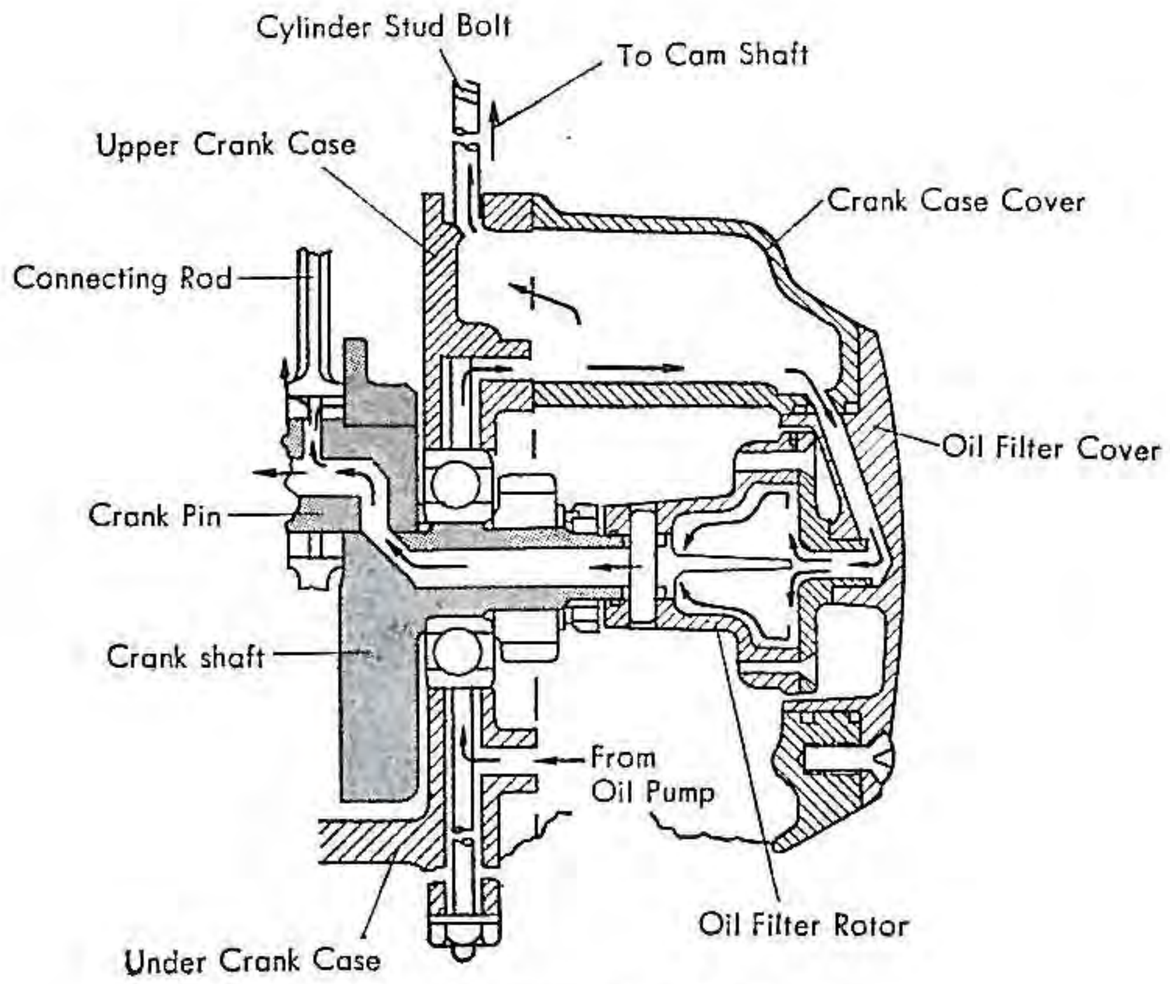


Fig. 97. Sectional view of oil filter

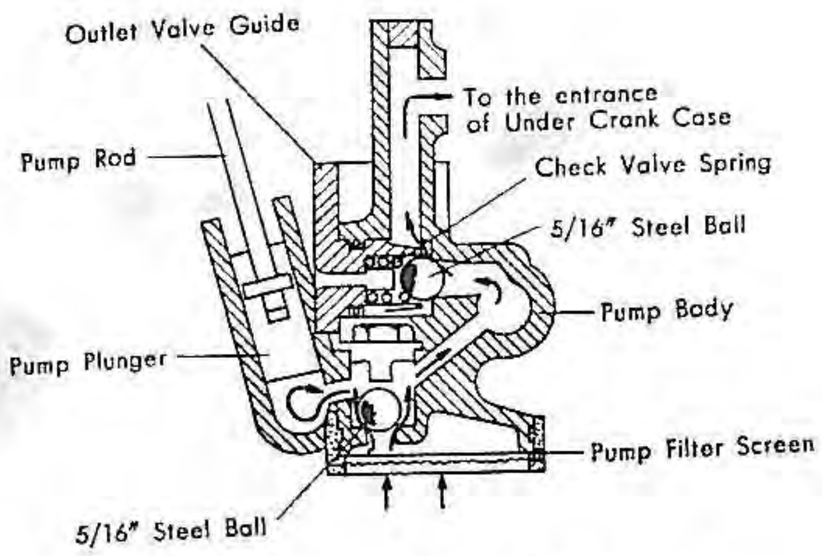


Fig. 98. Sectional view of oil pump

Oil collected in the sump, which is part of the under crank case, lubricates the engine as well as the transmission.

Crank case ventilation is by breather located on the crank shaft breather valve or (on engines with engine numbers above C92E-937667 or C95E-914982) the rear of the upper crank case. The breather valve discharges blow-by gas and water vapor which would otherwise contaminate the engine oil or cause seepage through the packing or gaskets.

The old type breather was located on the left crank shaft and discharged from a gallery passing through the shaft through the operation of a breather seal with barriers in the lip controling the time of discharge. (Fig. 99)

I. Dismantling of lubricating system

(1) Oil filter

Remove 3 screws on the oil filter cover and prise out the coevr using two cross head screw drivers inserted in the slits.

Then extract the oil filter chamber with fingers and open the cover secured by 4 screws. (Fig. 101)

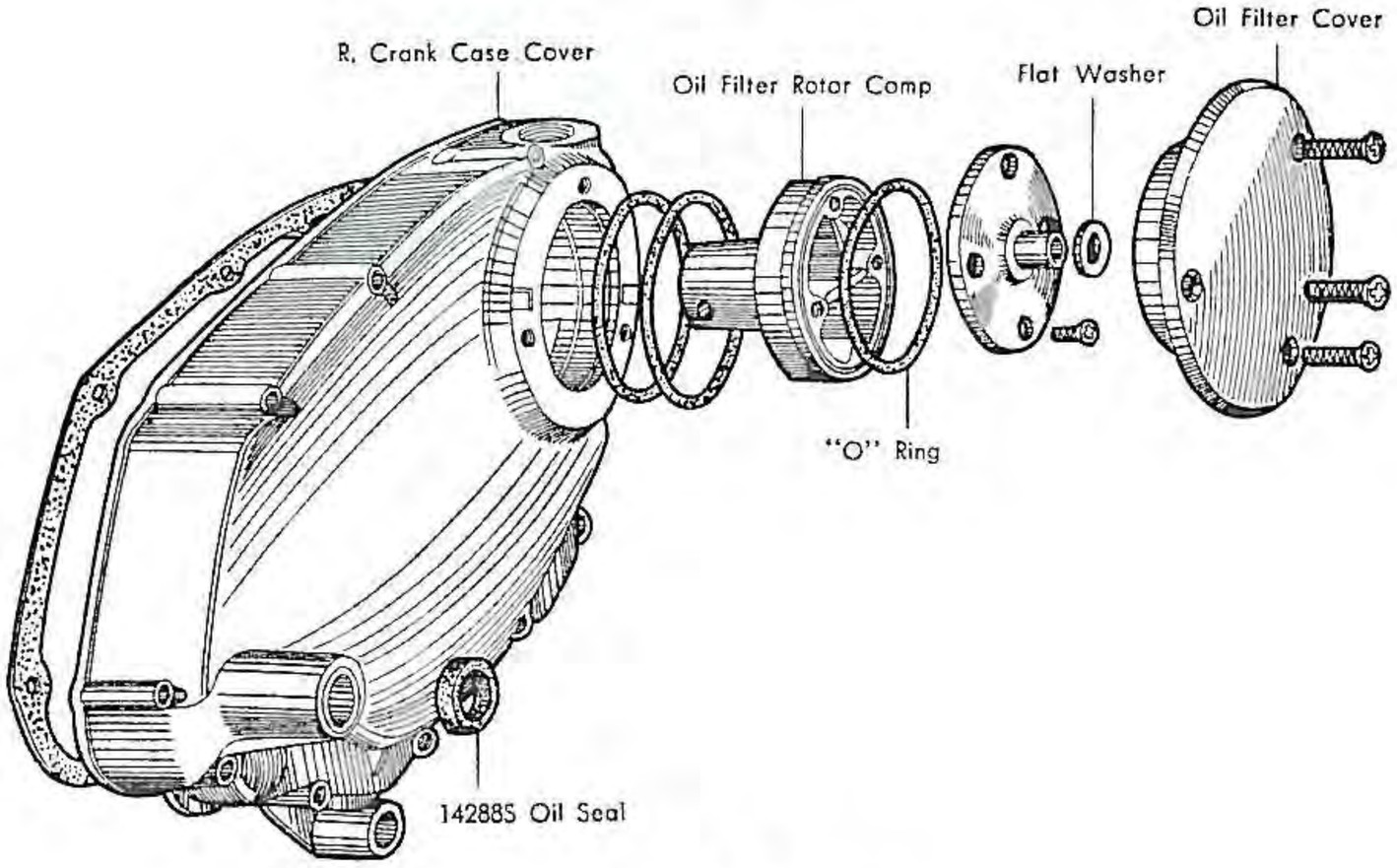


Fig. 101. Oil filter display

(2) Oil pump

2-1 Remove the R. crank case cover and remove the oil pump mounting nut and remove the oil pump as a unit with clutch assembly.

2-2 Separate the plunger piston from the pump body.

2-3 Dismantle the oil filter screen and valve guide complete with retaining spring and valve ball.

Remove suction valve bolt and take out the ball. (Fig. 102)

(3) Breather (Later type)

3-1 Remove the under crank case, all transmission gears and shift drum stopper roller spring. Remove the shift drum stopper spring which retains the barriers.

3-2 Remove the bolt (6 mm) on the top and dismantle.

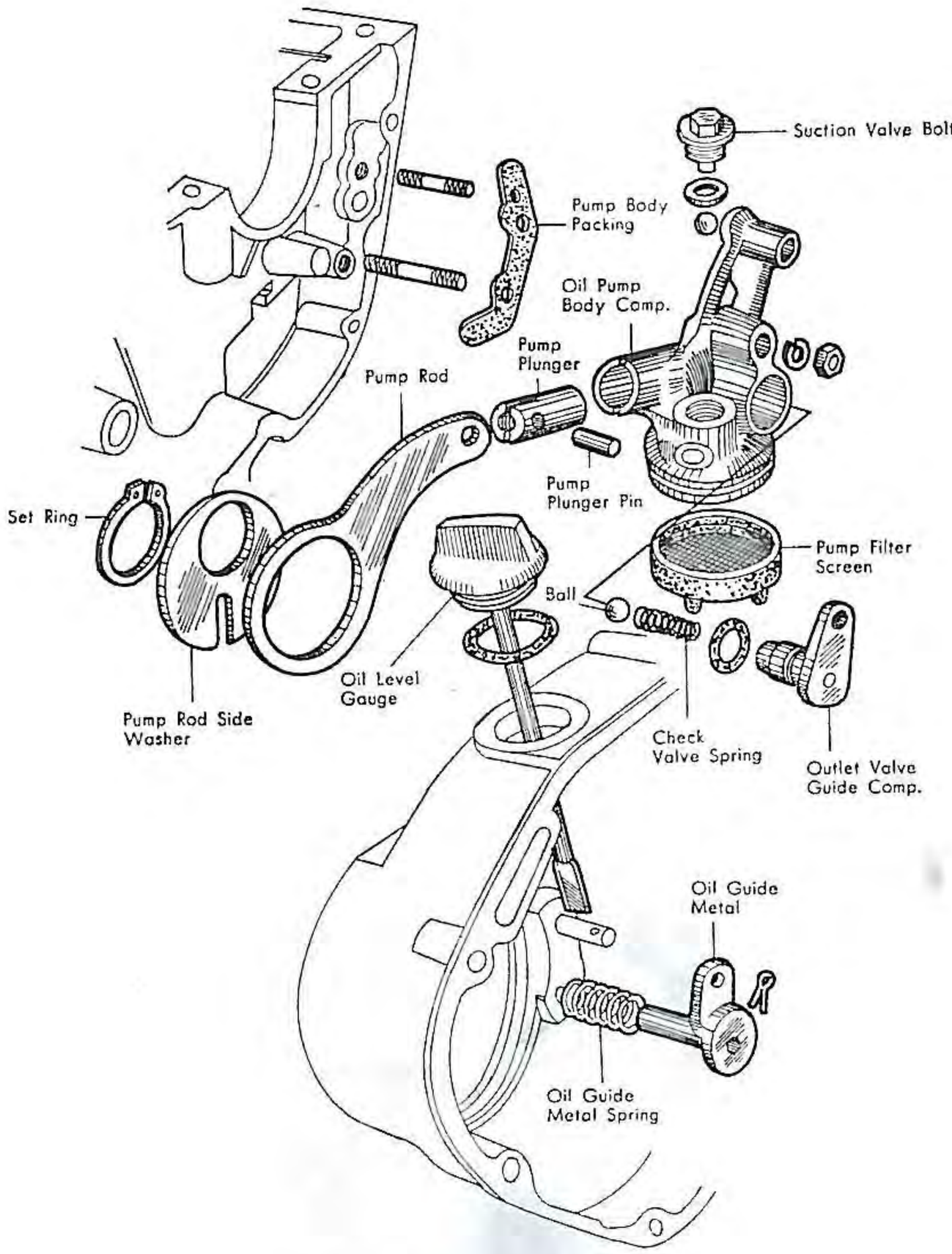


Fig. 102. Exploded view of oil pump

(4) Breather (Old type)

4-1 Remove the under crank case and crank shaft.

4-2 Draw out the breather seal from the crank shaft and examine the lips for wear or distortion.

II. Inspection and Repair of Oil Filter and Oil Pump

(1) Clean thoroughly the parts with solvent especially taking care of the inside of the filter.

(2) Measure the diameter of the plunger piston with micro-meter and if "go" and "nogo" gauge (plug gauge) is available, check the inside diameter of the plunger body. Replace a pump which does not comply with the specifications (P. 159)

(3) Visually examine the check valve balls and seats, to ensure that they are in proper condition.

(4) After the pump is assembled, dip the oil pump screen in oil and work the pump by hand, checking the oil spurt from the outlet hole on the valve guide.

(5) Replace O-rubber rings and gaskets used on the oil pump.

III. Assembly of the Oil Pump and Oil Filter

(1) Oil pump and oil filter

1-1 Place a new packing (gasket) on, in the correct position.

1-2 Assemble the oil pump body completely.

1-3 Attach the pump rod to the clutch outer with a set ring.

1-4 Mount the pump body together with clutch outer in position.

1-5 Secure it with respective bolts and nuts.

1-6 After the completion of the clutch assembly insert the oil filter body so that the pin across the bore of the filter meets the crank shaft slit. (Fig. 103)

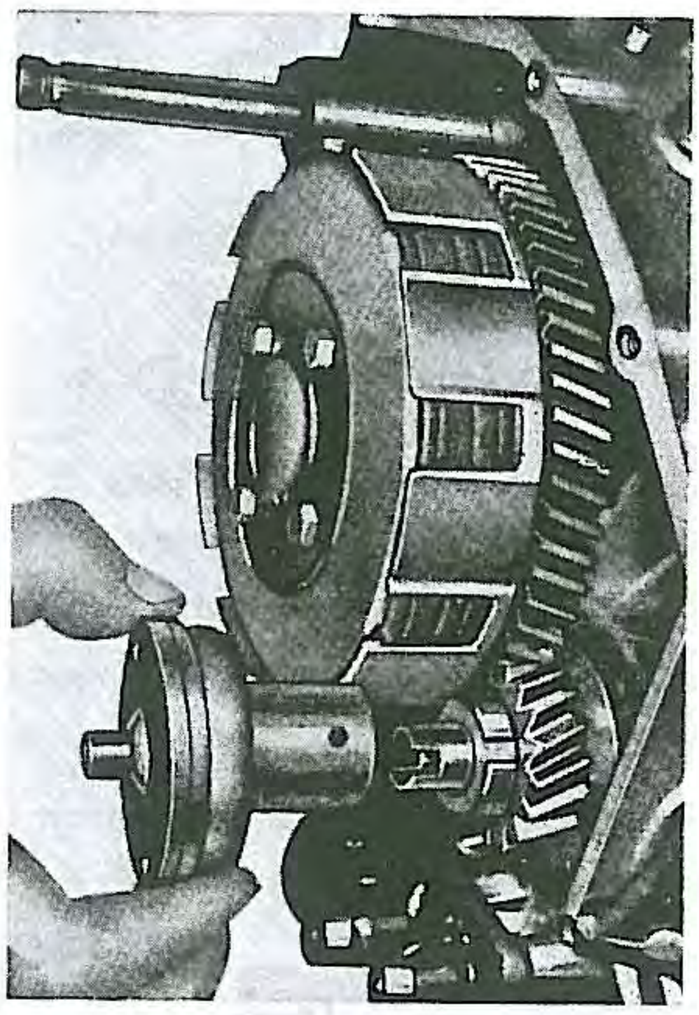


Fig 103. Installing oil filter

1-7 Finish the assembly by attaching the R. crank case cover.

(2) Breather body

2-1 Insert the oil separator into the chamber body, place the rubber valve and breather cap on the top, and tighten the separator with 6 mm bolt, with all the parts in position.

2-2 Before attaching the shift drum stopper roller, insert stretched end of the roller stopper spring, through the crank case, to hold the oil separator.
Fix the drum stopper roller with its bolt. (Fig. 104)

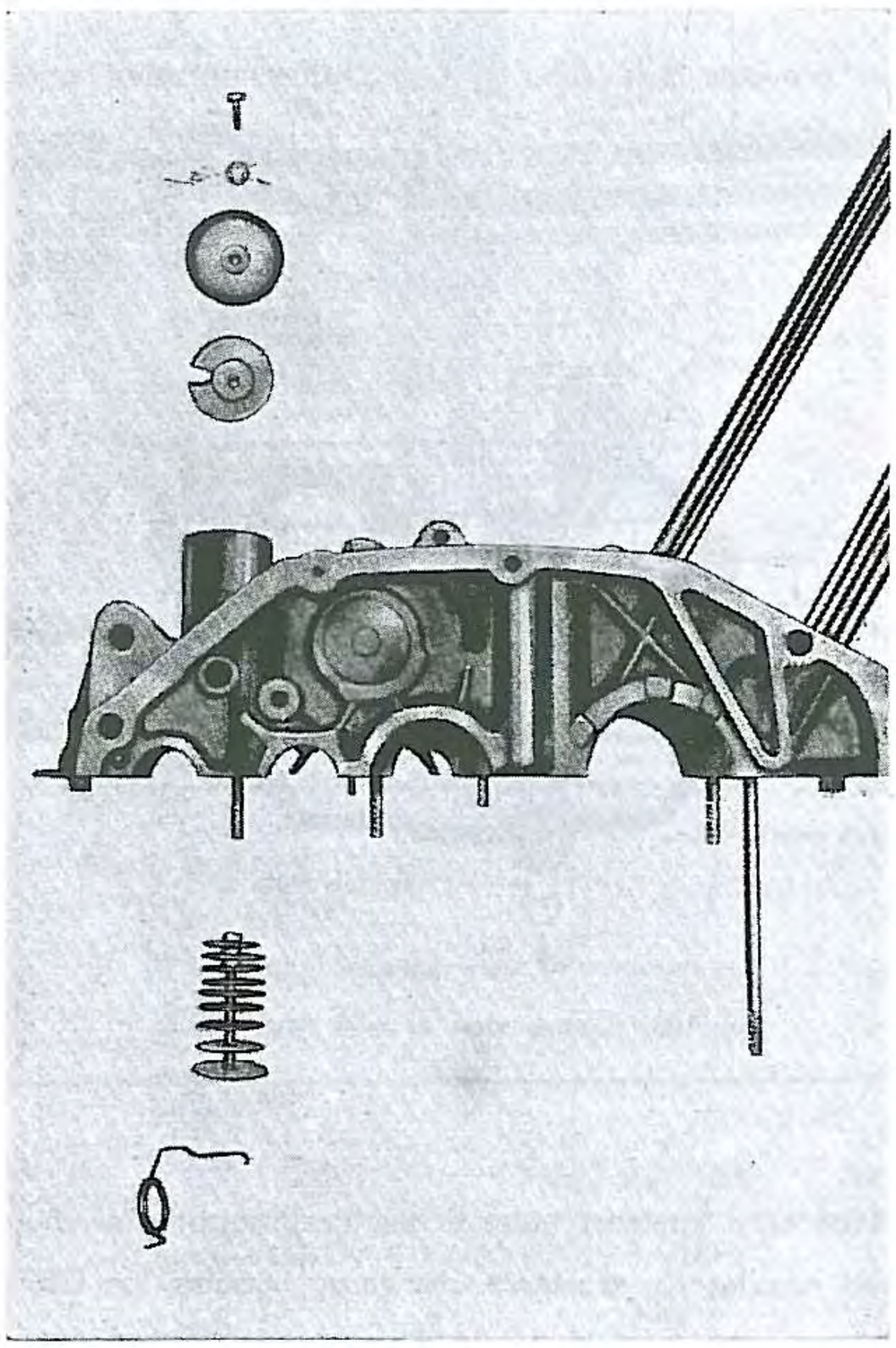


Fig. 104. Parts for funnel type breather

I–8. CARBURETTOR

Fuel travels from the tank into a sediment bowl, which is combined with a fuel cock, and to the carburettor through a rubber tube.

There are two different types of carburettors, one for standard motorcycles and the other for CB92 and CA95 models.

The CB92 and CA95 carburettor has a special power jet to provide increased fuel at high revolutions.

A filter type air cleaner prevents dust, sand, dirt and other abrasive particles from entering the engine through the carburettor.

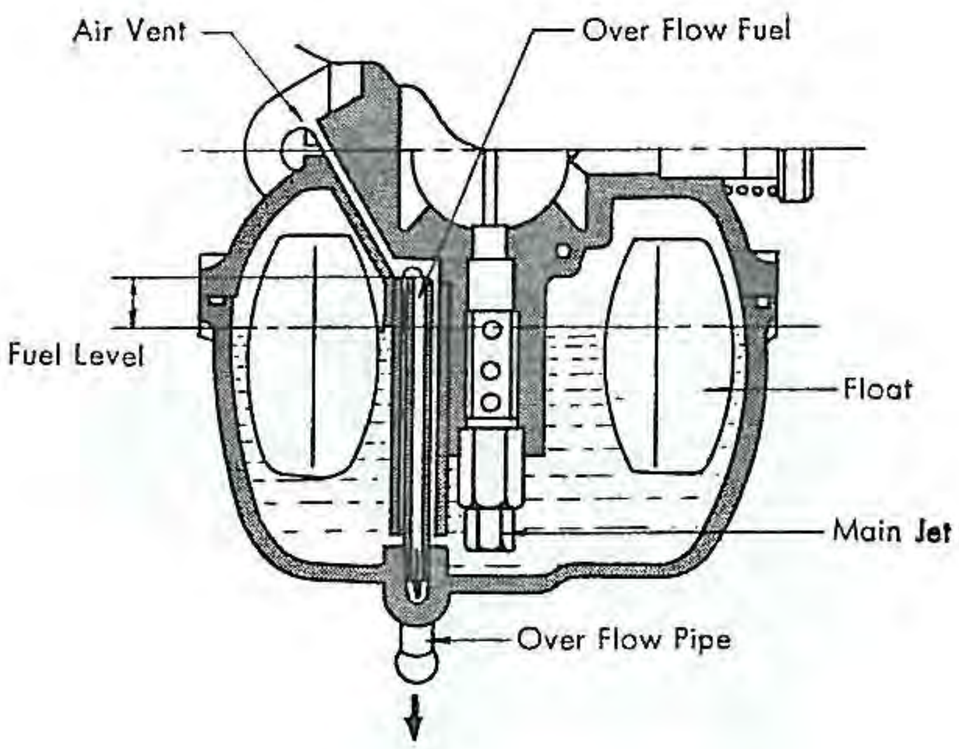


Fig. 105. Cutting view of over flow pipe

Fuel from the tank is kept at a constant level in the carburettor fuel chamber and sucked into the cylinder through two nozzles for standard and three nozzles for CB92 and CA95 models. These are the main jet and slow jet, plus an additional power air jet for CB92 and CA95.

The slow jet is used up to 1/8 throttle openings. The main jet, which is controlled by the jet needle, operates from there to full throttle. The power jet operates above 6,000 rpm, or a speed of 70 km/h in top gear. Therefore, two types of carburettor adjustments are required; low speed and high speed.

A sectional view of the standard carburetter is shown in Fig. 106. Sizes of jets and nozzles are shown below :

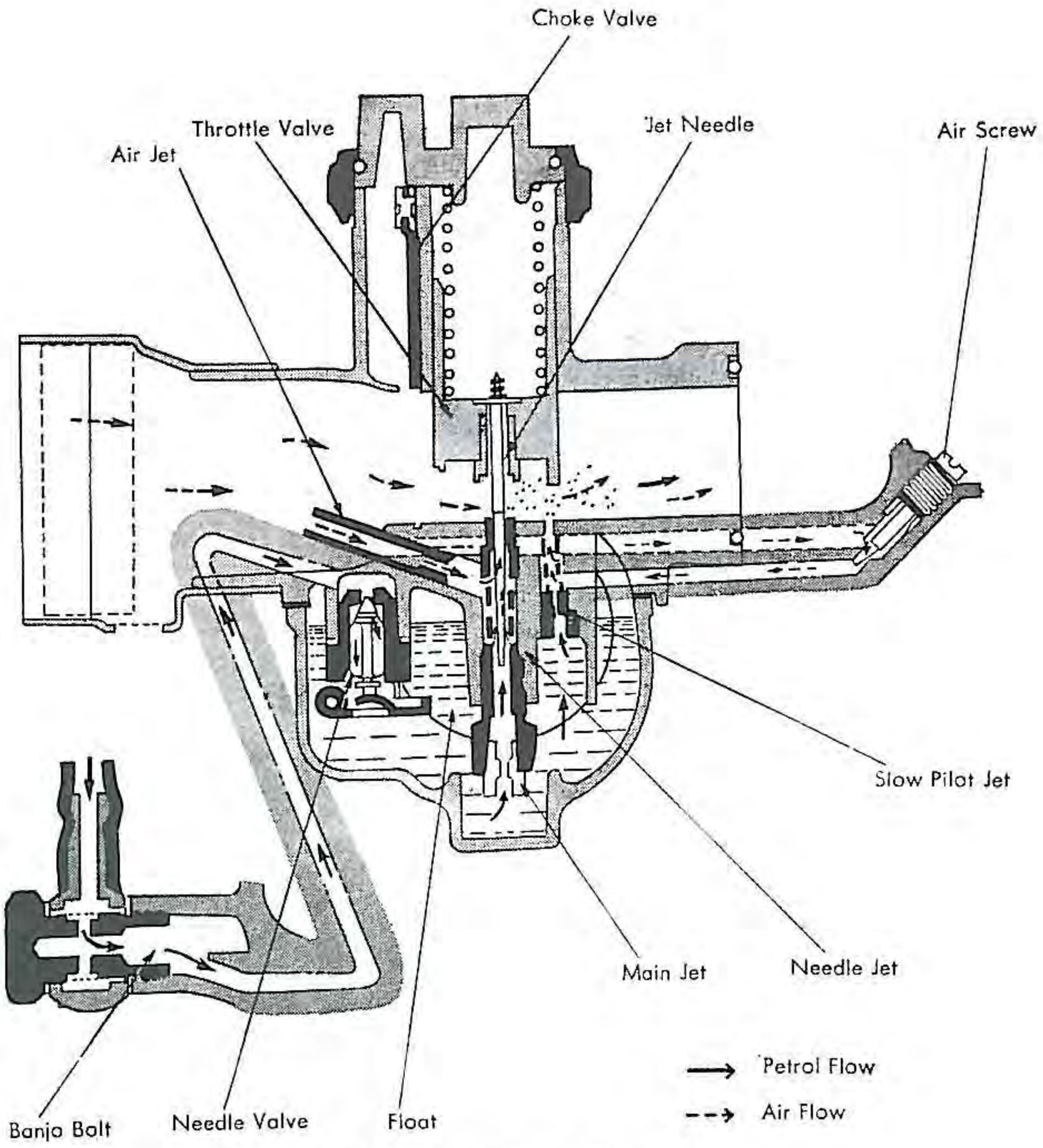


Fig. 106. Sectional view of carburettor

	C92	C95	CB 92 STD	CB 92 Racing	CA 95 STD
Model of carb.	PW18HOV18	PW20HOV20	PW18HA3	〃	PW20HA3
Main Jet	#90	#95	#85	〃	#95
Air Jet	#150	〃	#150	〃	#150
Jet Needle	1.8331-3	〃	18401-3	18401-4	18401-3
Throttle Valve	#2	〃	#2	〃	#2
Opening rate of Air Screw	1½ open	〃	1½ open	〃	1¼ open
Slow Jet	#60	〃	#35	〃	#35
Power Jet	—	—	#200	〃	#130
Power Air Jet	—	—	#160	#140	#130

Fig. 107. shows the section of the power air jet, for CB92 and CA95

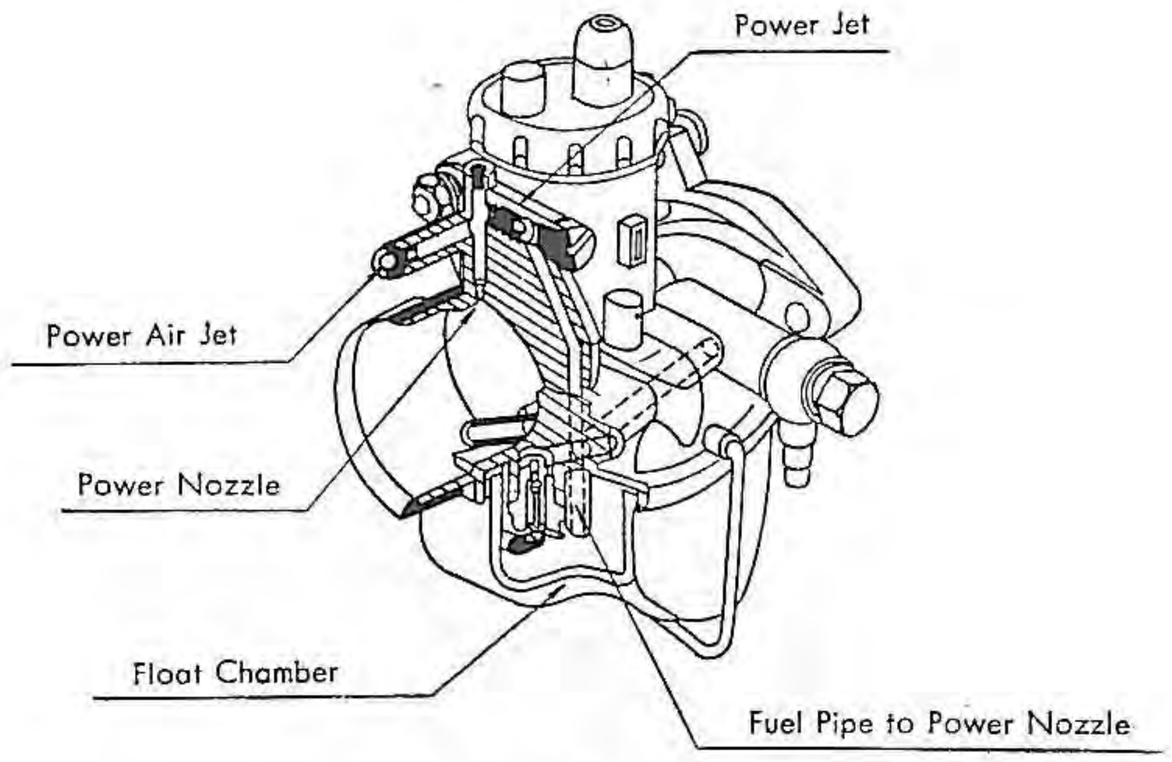


Fig. 107. Cutting view of power jet

I. Dismantling of Carburettor

(1) Shut off the fuel tap turning the tap to "stop" and take off the rubber tube from joint pipe at the carburettor.

(2) Unscrew the throttle top cap and draw out the throttle valve, remove the needle clip plate fitted on the bottom of the throttle valve dent, and unhook the throttle wire end notch from it.

(3) Remove the rubber connecting tube clip at the intake port.
Remove 2 stud nuts which are mounted on the cylinder, and remove the carburettor assembly.

(4) Unhook the float chamber set clip to remove the float chamber body.
Drive out the float arm pin and remove the floats and needle valve.
Using 8 mm socket wrench, remove the valve seat.
Main jet may be removed with (—) screw driver.
Remove jet needle holder and needle jet with 6 mm socket wrench.
Remove the slow jet and power jet (for CB92, CA95) with a suitable driver.
Remove the air screw and throttle stop screw.

II. Cleaning and Inspection of Carburettor

(1) Clean all the parts with petrol paying careful attention not to damage the nozzles.

(2) Blow out all drilled passages in the carburettor body and blow all jets with compressed air. Visually inspect all jets for dirt and remove any obstacle by compressed air. Do not use metal needle or other tool or stick.

(3) Inspect the tips of air screw, jet needle and float needle valve for defacement. Replace the parts having defacement.

III. Assembling of Carburettor

(1) Install all jets in their respective bores in the carburettor body and ensure that they are correctly fitted into interior.
In this case attention is directed that headed screws are not damaged.
Whenever the carburettor is opened up, replace the packing (or gasket) or rubber O-rings.

Before installing the float chamber body inspect the height of float according to the paragraph regarding adjustment.

(2) Mounting on engine
Pass the throttle wire end through carburettor top, top cap, throttle valve spring and throttle valve, to recess, and install the jet needle with clip attached to the third notch from the top and fit the clip plate into the throttle valve.
Insert the throttle valve in the bore of the carburettor body and screw down the top cap compressing the spring.

Then mount the carburettor to the cylinder head stud and tighten with nuts evenly.
Connect the fuel rubber tube back to the connecting pipe.
Install connecting rubber tube to air cleaner completely and secure with clip ring.

IV. Adjustment of Carburettor

(1) Adjustment for high speed
When the throttle valve is open from 1/2 to full, the fuel supply is controlled by the main jet. Check performance when running at full throttle by closing the choke lever a little.

1-1 If speed increases, the mixture is too lean and a larger size jet is required.

1-2 If speed decreases, the main jet may be correct or too large. Test again with a smaller jet sizes until the proper jet is found.

(2) Adjustment for intermediate speeds

When the throttle opening is from 1/8 to 1/2, the fuel supply is controlled by the height of the jet needle and the area of the throttle valve cutaway.

1-1 If the exhaust is black and the mixture might be too rich, lower the jet needle by one notch; that, is the clip should be raised one notch.

1-2 When misfiring occurs during accelerating or when riding steadily at about 1/2 throttle, the mixture is too lean. Raise the jet needle one notch.
The number marked on the throttle valve indicates the size of the cutaway area. A large number gives a lean mixture and small number a rich mixture. Be careful when adjusting the carburettor with the throttle valve not to affect the performance below 1/8 opening, as this adversely affects the fuel mixture.

(3) Adjustment for idling

When adjusting the throttle valve opening below 1/8, remember that the fuel supply is controlled by the pilot air adjusting screw and the throttle valve cutaway.

1-1 The mixture rate is adjusted by the pilot air screw. Tighten the screw to get a rich mixture and loosen for lean mixture.

1-2 Adjust the cutaway when adjustment by the pilot air screw is not sufficient to provide smooth operation.

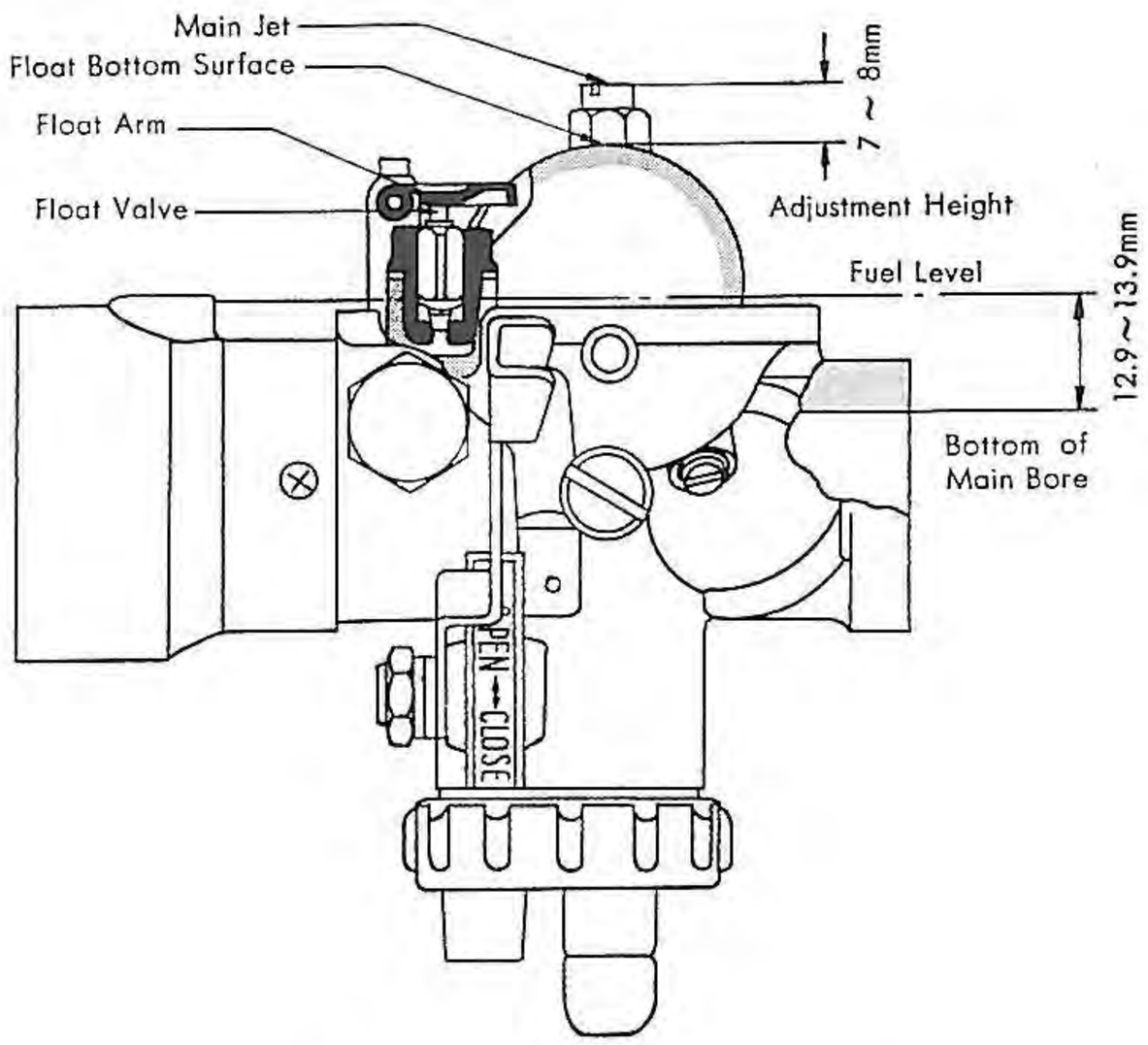


Fig. 108. Adjusting float level

(A) Adjustment of float level

Place the carburettor upside-down as in Fig. 108 and measure the distance from the bottom of the main jet to the float. When the float is supported by fingers until the float arm is about to touch the top of the float valve, the distance should be 7–8 mm (0.28–0.32 in.). If it is more or less than this, adjust the height, bending the float arm carefully so as not to damage or break it. When this distance is properly adjusted, the height of the fuel level is correct.

The height of the level is 12.9–13.9 mm (0.514–0.554 in.) measured from the bottom of the bore for model PW18HA3a.

MEMO

II. CHASSIS

The frame and fork of all models are made of pressed steel in two halves welded together into a single unit.

The steering handle is made of pressed steel in the standard motorcycles and of steel pipe for the CB92 and CA95. The standard motorcycles have turn indicator lights opreated by a switch on the steering handle, but the CB92 and CA95 do not.

Front suspension is a leading link type and rear suspension is a pivoted swinging arm type. both with internal coil springs and hydraulic shock absorbers.

All pivot bushings are rubber except for the front arm link pivot, which is a metal bushing.

Both front and rear tires are 3.00"×16". The rear wheel is driven by a chain through rubber dampers.

A chain case protects the rear chain from dust.

II-1. HANDLE AND CONTROLS

The pressed steel steering handle for the standard models is fixed by two studs through rubber cushions, while the CB92 and CA95 pipe handle bars are fixed to the front forks with handle bar pipe holders.

The clutch and front brake cables on CB92 and CA95 have grease nipples and free play adjustres.

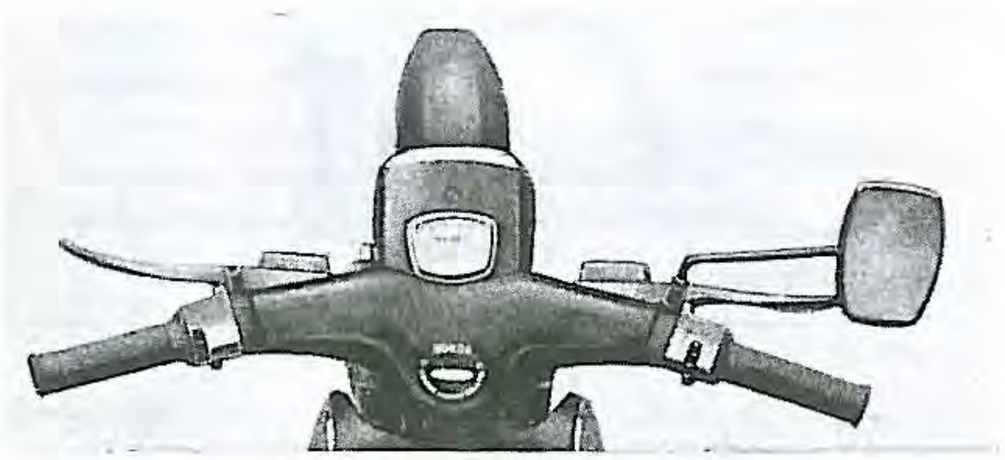


Fig. II-1. Handle (C92 STD)

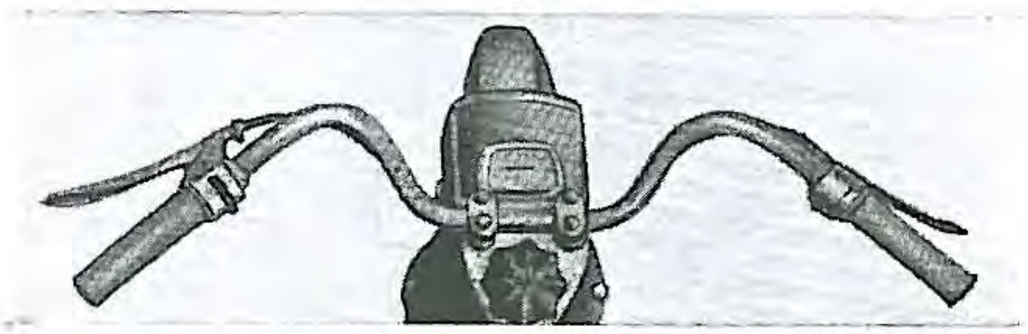


Fig. II-2. Handle bar for CA95

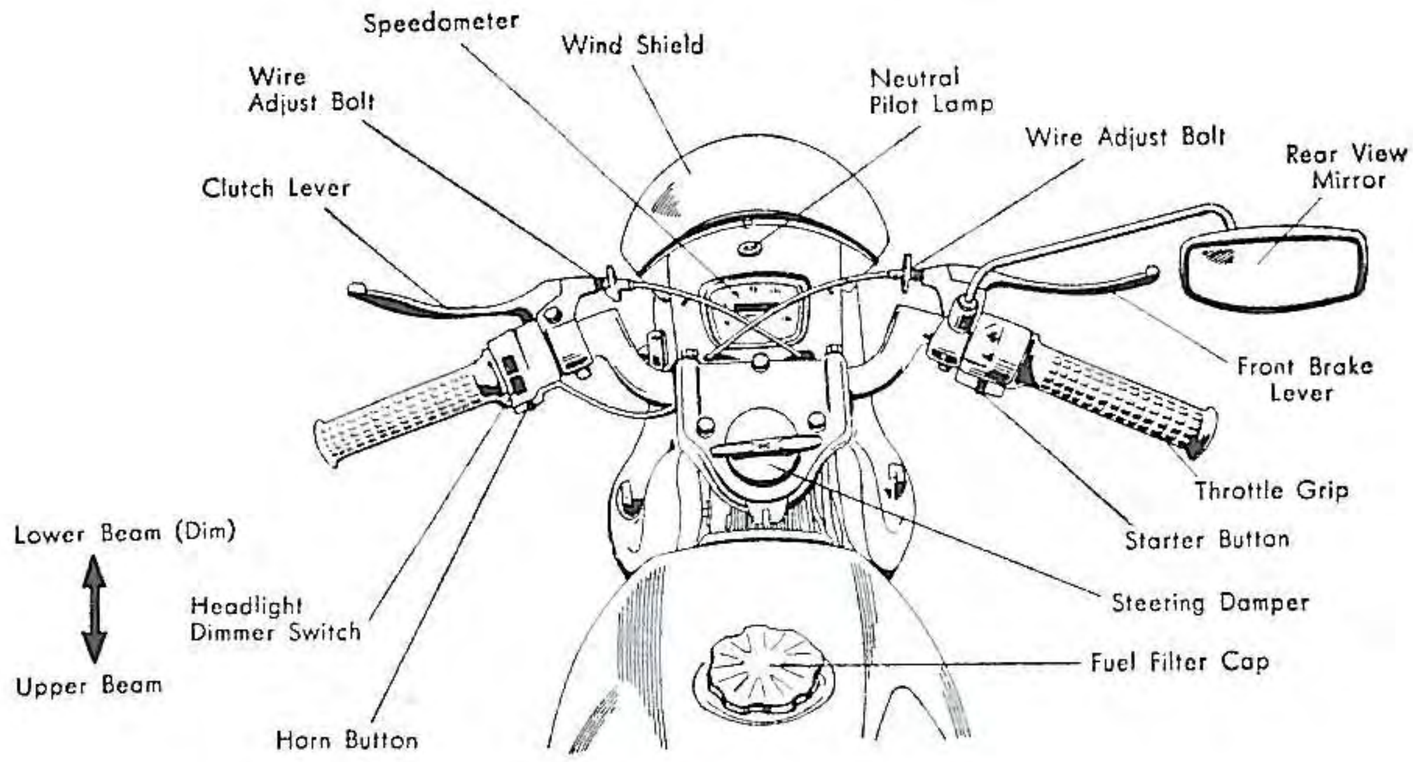


Fig. II-3. Handle bar (CB92)

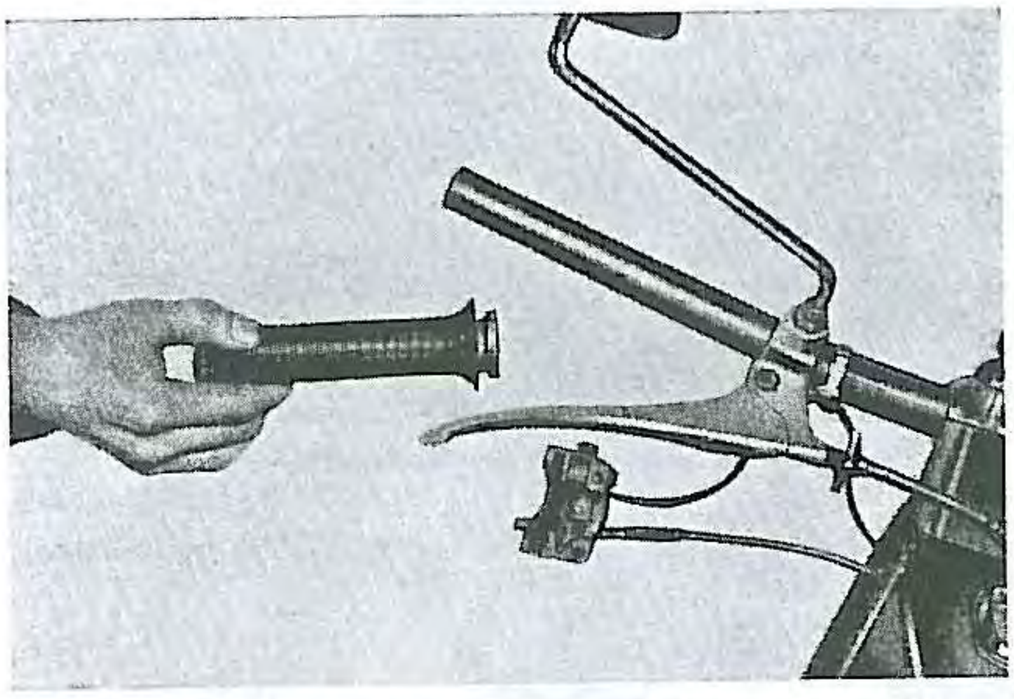


Fig. II-4. Removing throttle grip and stator button metal

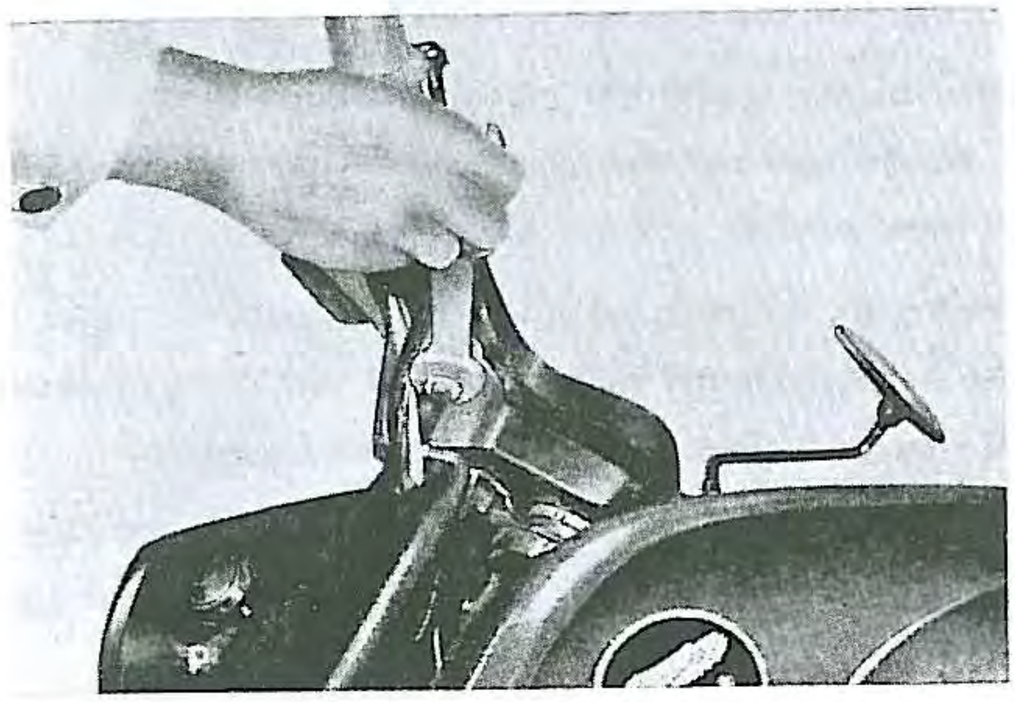


Fig. II-5. Removing handle bar mounting nuts

I. Dismantling of Handle Bars

(1) Remove the throttle, clutch, and front brake cables at the attachments to both handle levers and throttle control. The procedure for removing the throttle control is. – Begin with dismantling the starter button metal base and drawing out the throttle grip from the handle bar.

(2) Remove head light, behind the light, and disconnect the wiring which is relevant to the electrical operating switches located at each end of the handle bar.

(3) Remove two mounting stud nuts under the handle. (C92STD)

(4) Remove the handle damper assembly and the handle bar pipe holder by withdrawing the retaining 2 bolts (6 mm) and 2 bolts (8 mm). (CB92, CA95)

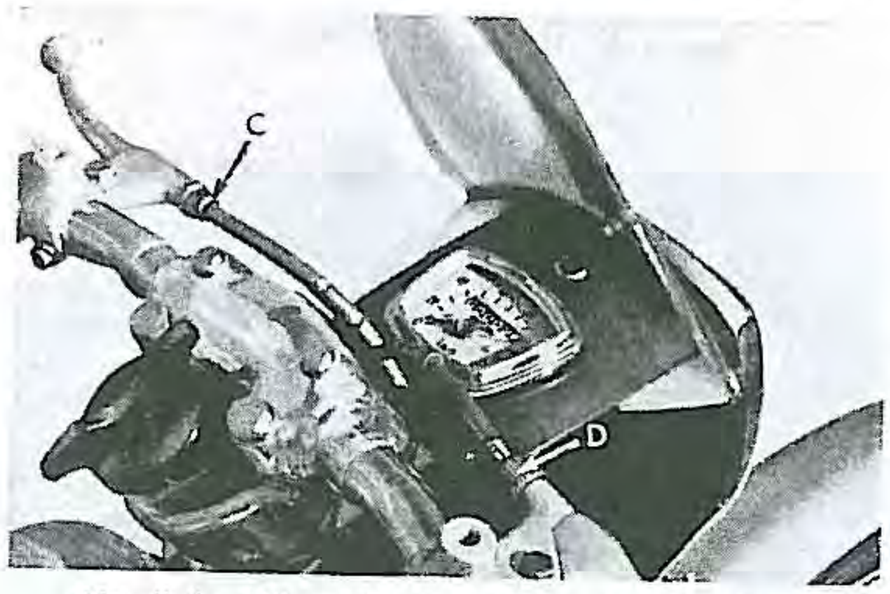


Fig. II–6. Wire adjusters on the control cables

Then the handle bar should be removed with the wiring of the electrical operating switechs still attached.

II. Assembly of Handle Bar

(1) Place vibration damping rubber onto the stud bolts welded under the handle and install handle to the fork top bracket (C92STD)

(2) Set one half-piece of the handle bar pipe holder and secure with, tightening screws. Then place the handle bar and the other half of the holder in position and tighten the bolts at the most suitable position of the handle bar. (CB92, CA95)

(3) Complete assembling by attaching throttle, clutch, and front brake cables and handle levers. Connect the wiring in the head light case with their respective colors. Check and adjust free play and operations for the control cables.

(4) Special attention is required when passing control cables and electric wiring through respective openings in the handle bar, so that the coverings of cables and wires are not injured.

(5) Lubricate the control cables periodically. with cable lubricator if available.

II-2. FRONT FORK

The bottom of the steering column (stem) is welded to the pressd steel front fork. The steering column rotates on the steering center line through the medium of ball races located at the top and bottom of the frame head. (head stem)

The maximum steering angle is fixed by the stops on the steering column base. The angle of caster is decided by the welded angle of the column to the front fork.

Front forks for the standard model and CB92 or CA95 are not interchangeable and accordingly top bridge plates are not the same.

On the CB92 and CA95, a steering damper is provided for optional adjustment of the tightness of steering according to the road surface condition.

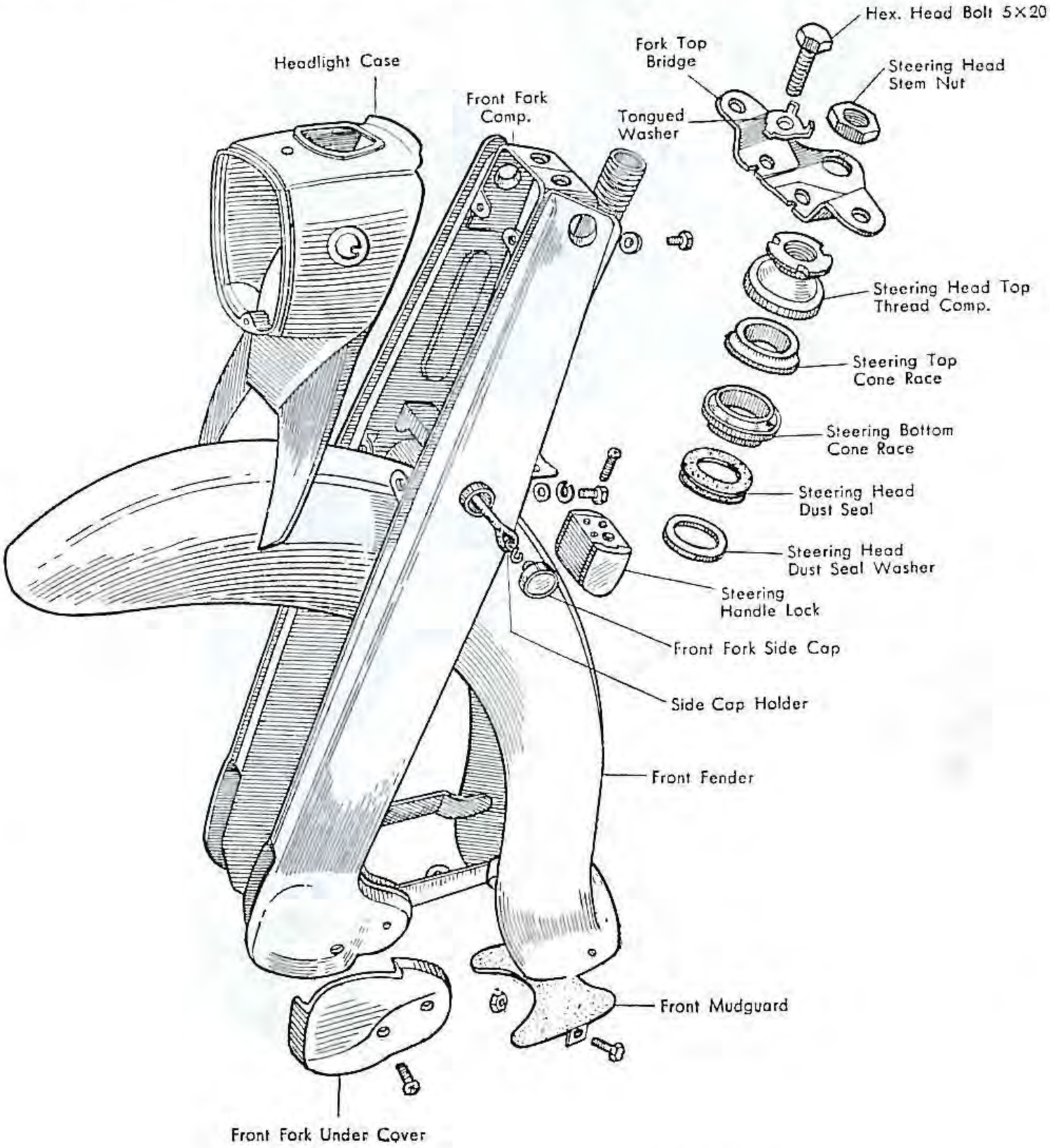


Fig. II-7. Exploded view of front fork (C92)

The head light case, front fender and handle bar lock are attached on the front fork. (Fig. II-7, II-8)

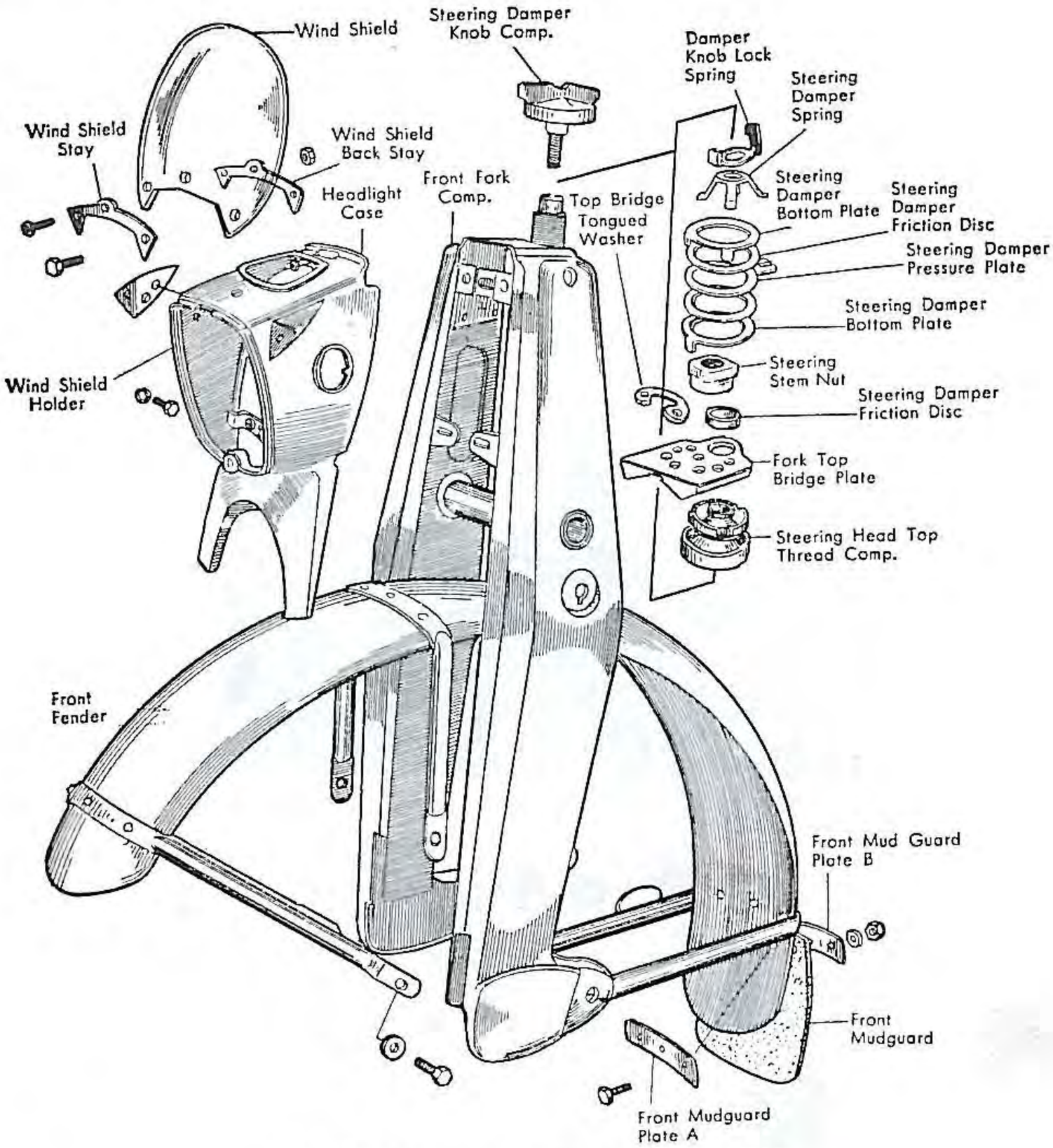


Fig. II-8. Exploded view of front fork (CB92)

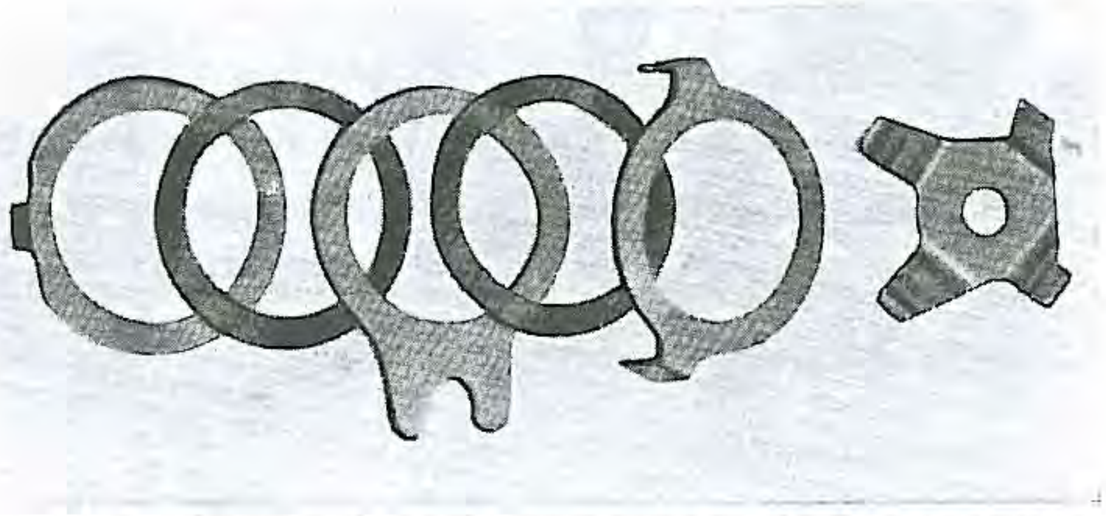


Fig. II-9. Display of steering damper friction plates. (CB92 CA95)

I. Dismantling of front fork

(1) Remove front wheel (P. 85) placing a suitable support under the crank case.

(2) Remove the steering handle damper for CB92 and CA95. (Fig. II-9)
Remove the steering handle, cushions and fender.

(3) Straighten the folding washers located on the fork top bridge plate, with a chisel and hammer, and remove the 2 bolts retaining the front fork and 1 big nut for the steering column. Then the fork top bridge plate should be taken off. (Fig. II-10 for standard model) (Fig. II-11. for CB92. CA95)

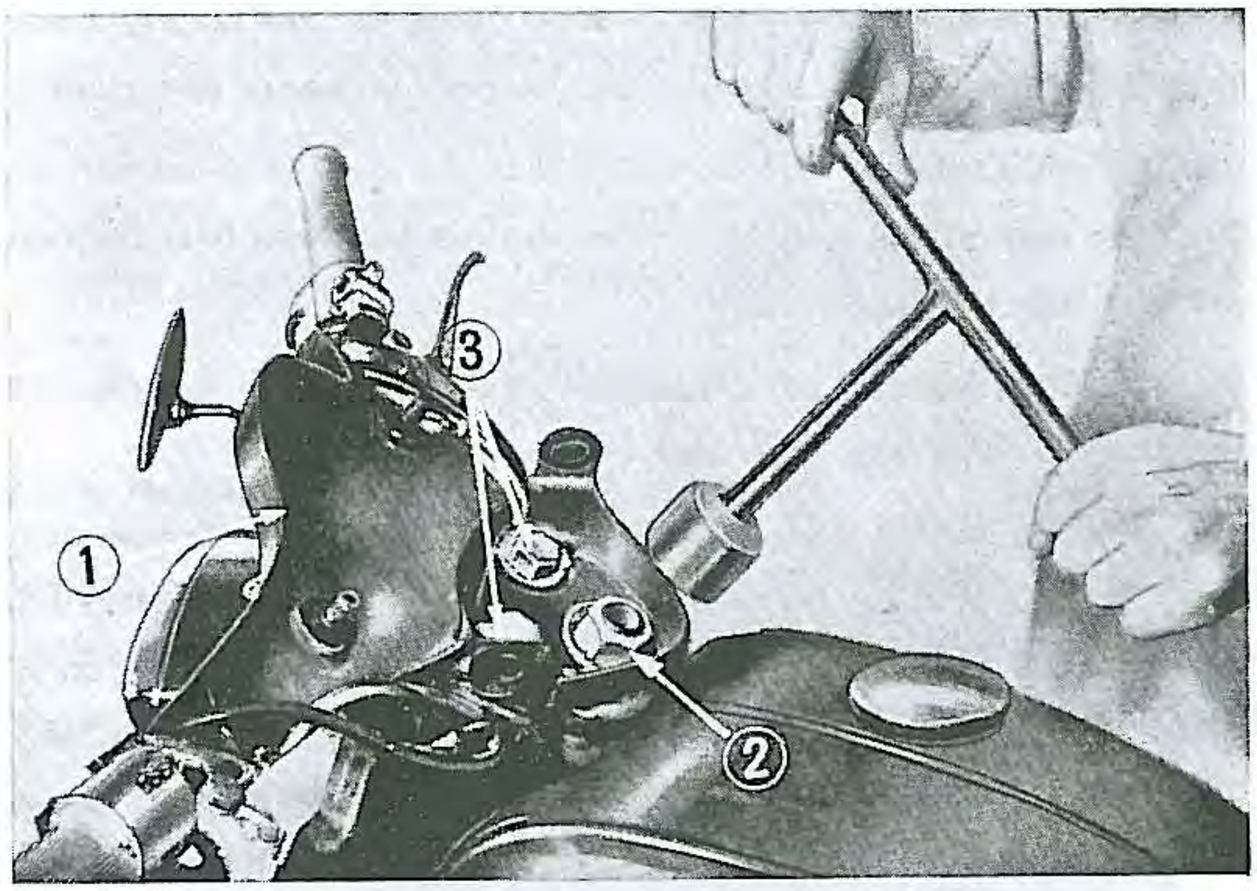


Fig. II 10. Removing steering stem nut (C92)

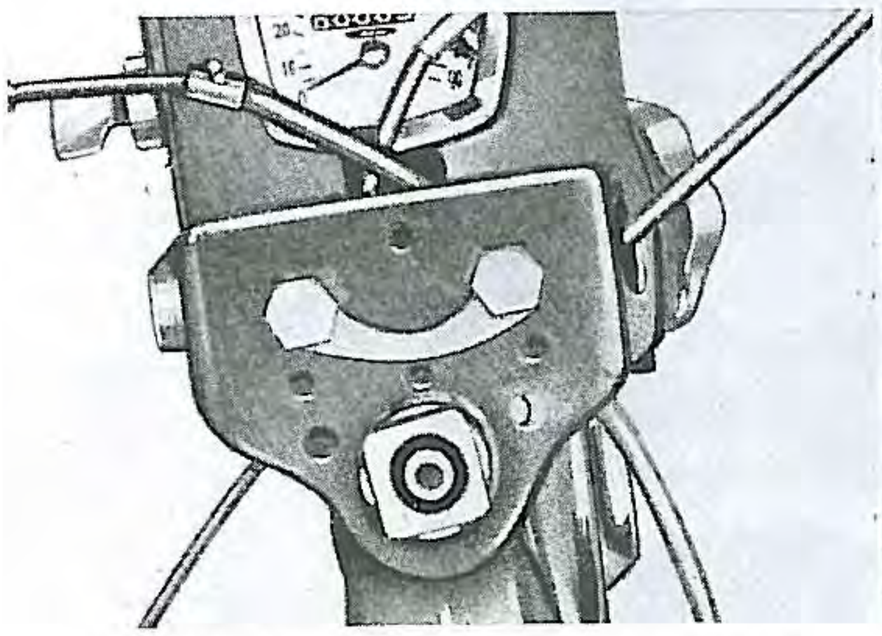


Fig. II-11 Steering stem nut and top bridge plate bolts (CB92)

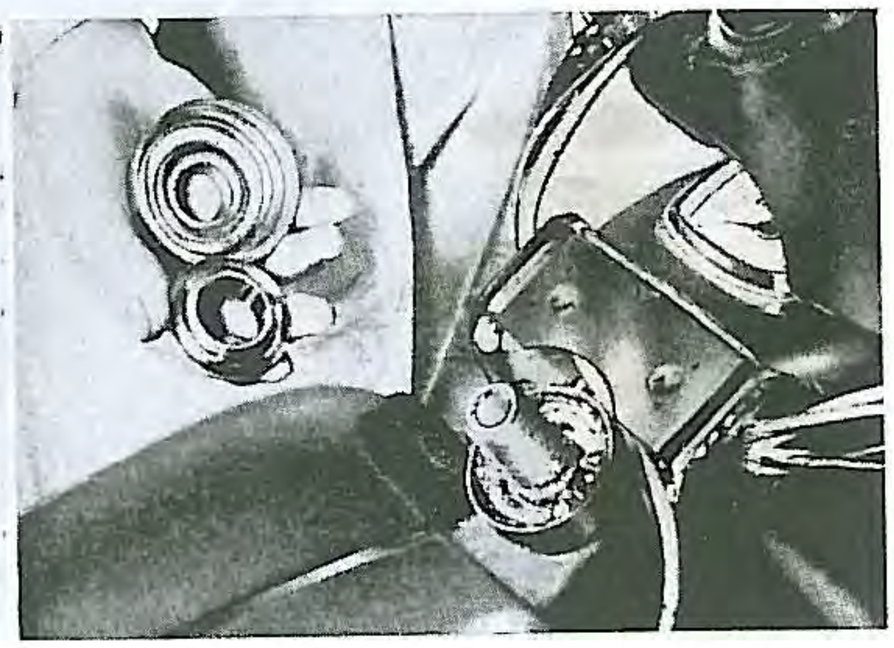


Fig. II-12. Removing steering top adjusting nut and top race

(4) Remove the combination switch from the head light case.

(5) Supporting the front fork assembly with one hand, unscrew the steering head top thread using a pin spanner and remove the top ball race. Then the front fork assembly may be taken out from under the head pipe. (Fig. II-12)

(6) Remove the head light case and the front fender from the fork.

I. Repair and assembly of the front fork

(1) Replace damaged or worn steel balls.

(2) Replace demaged or defaced steel ball races.

(3) Replace excessively twisted or bent front fork or steering column. If a special inspecting or trueing jig is available, the checking is a simple matter but a rough check may be made using height gauge and flat surface bed.

(4) Repack grease in the ball races fitted in both ends of the frame head pipe with medium toughness fibre grease and position all balls in grease to facilitate reassembly.

(5) Install the front fork complete after ensuring that the dust seal washer, dust seal and the bottom race are on the column. Place the top ball race over the upper balls and tighten with the top threaded cap.

(6) Tighten the top threaded cap until looseness of steering stem has disappeared, when shaking the fork to front and rear, and up and down.

(7) Position the fork top bridge plate, tighten firmly with the top bridge plate bolts and the column nut and fold up the washers. Check the steering ability by turning the fork to right and left sides. It should turn easily so that the fork continues to move when given a slight touch. Adjust the tightness if necessary. (Fig. II-13)

Fig. II-13. Adjusting tightness of steering bearings

(8) Attach all other parts such as the head light case and fender.

II-3. FRONT SHOCK ABSORBERS

The front spring provided with the oil damper, containing oil, is installed inside the front fork. (Fig. II-14) Construction of the springs and dampers are as shown in (Fig. II-15)

I. Dismantling of front shock absorbers

(1) Remove the upper bolts and the pivot bolts of the front arms. Then the springs (cushions) may be withdrawn with the front arms. Remove the under bolts.

(2) Lift up the caulking at the end of the damper rod. Unscrew the bottom metal by holding the damper rod with a driver. Then remove the lock nut from the damper rod, and take out the coil spring with spring case.

(3) Interior of the damper piston is not recomended for dismantling and if there is any oil leakage or other defects are found, replace with a complete set of shock absorbers.

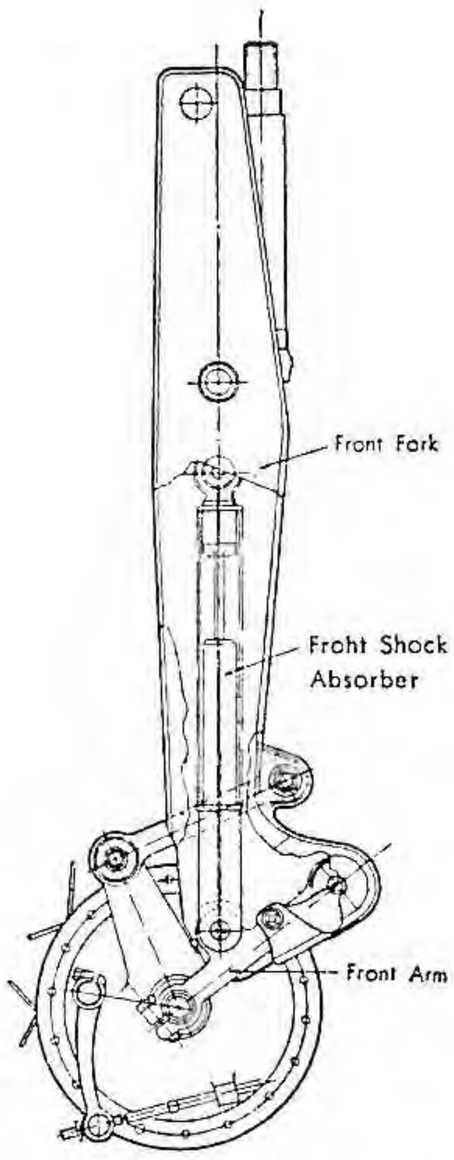


Fig II-14. Construction of front fork shock absorbers

II. Inspection & reassembly of front shock absorbers

(1) Measure the inside diameter of front arm pivot bore and the outsider diameter of pivot collar. Replace excessively worn parts.

(2) Measure the free length of the coil spring, tension and rightangleness. Replace the spring, if it does not agree with Specification (p. 161).

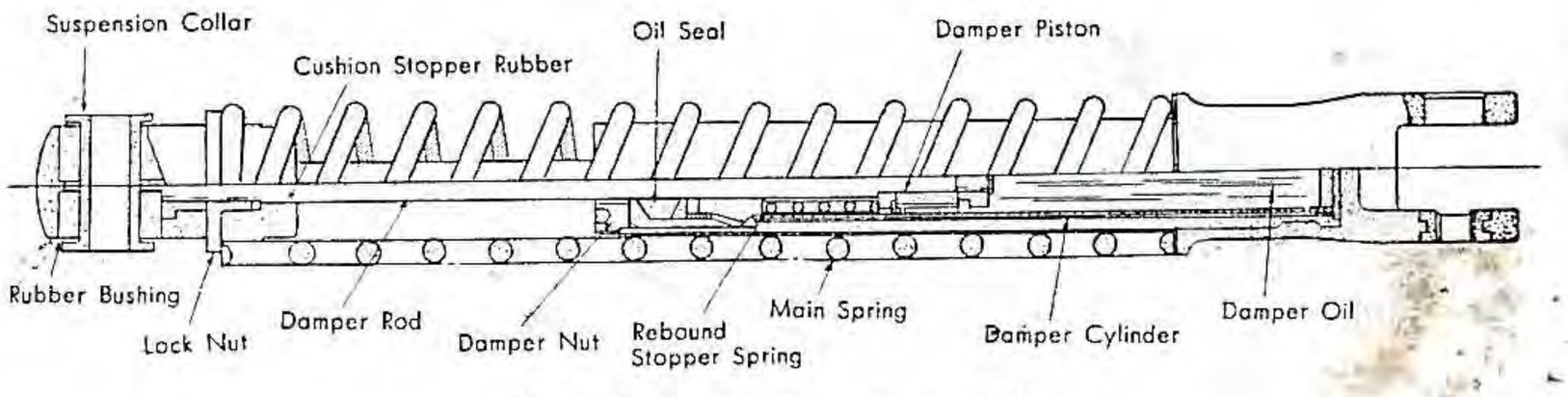


Fig. II-15. Front shock absorber ass'y

(3) Visually inspect the rubber bushings and stopper rubber for damage or distortion. Replace the faulty parts.

(4) For reassembling the shock absorber, pull out the damper rod as far as possible and install the spring and spring case over the rod. By compressing the spring, install the lock nut on the end of the damper rod and screw in the lock nut to the end, holding the shaft with a driver. Install the bottom metal securely and caulk the end of the rod to the bottom metal.

II-4. REAR SUSPENSION AND SHOCK ABSORBERS

The front ends of the rear fork are connected to the frame with a pivot bolt and the rear ends support the rear cushions. (Fig. II-16, II-17) The cushion for the CB92 differs from the standard cushion and the strength of the spring is adjustable in 3 stages.

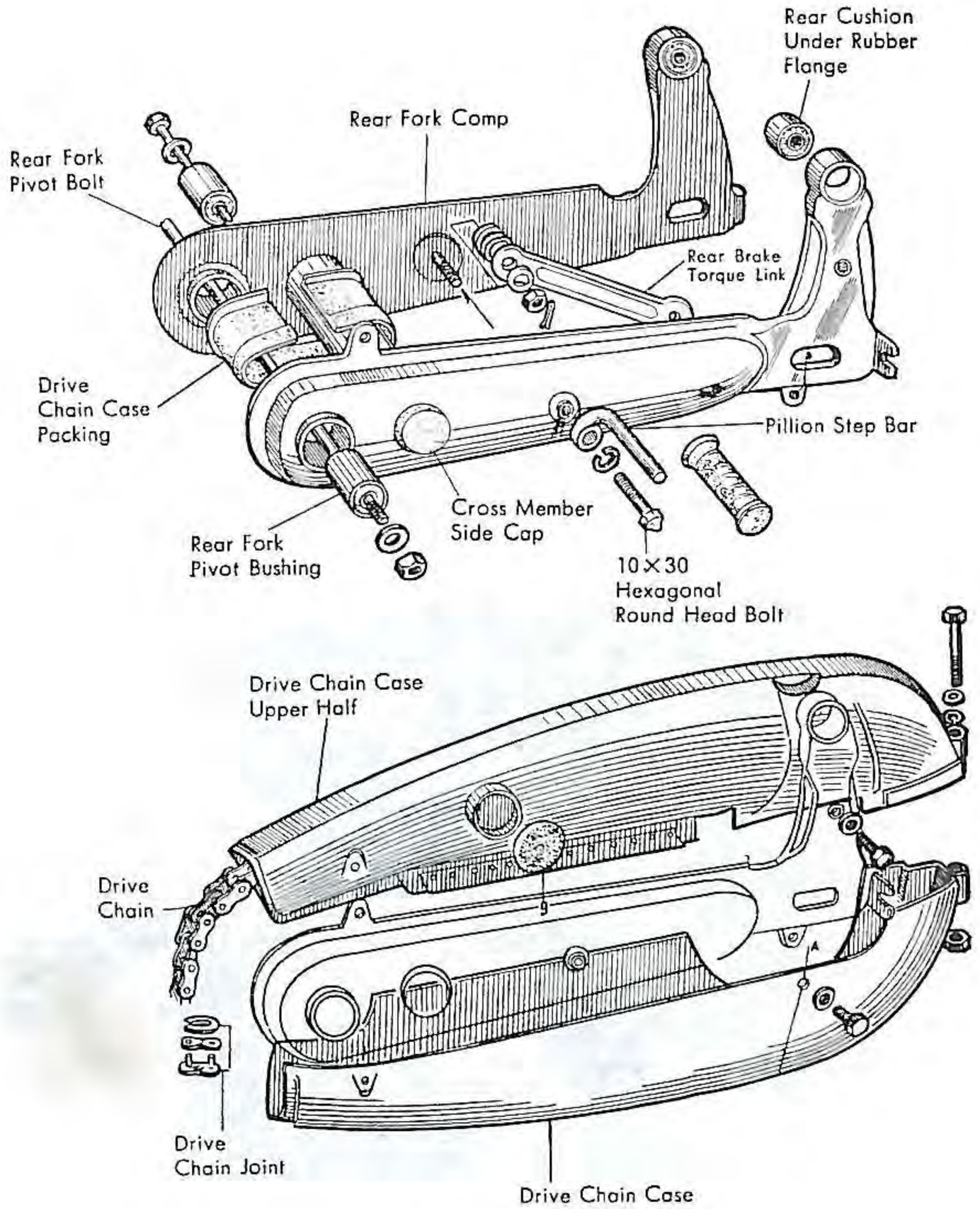


Fig II-16. Exploded view of rear fork and chain case (C92 & CA95)

Take out the brake panel with brake shoes attached. (Fig. II-21)

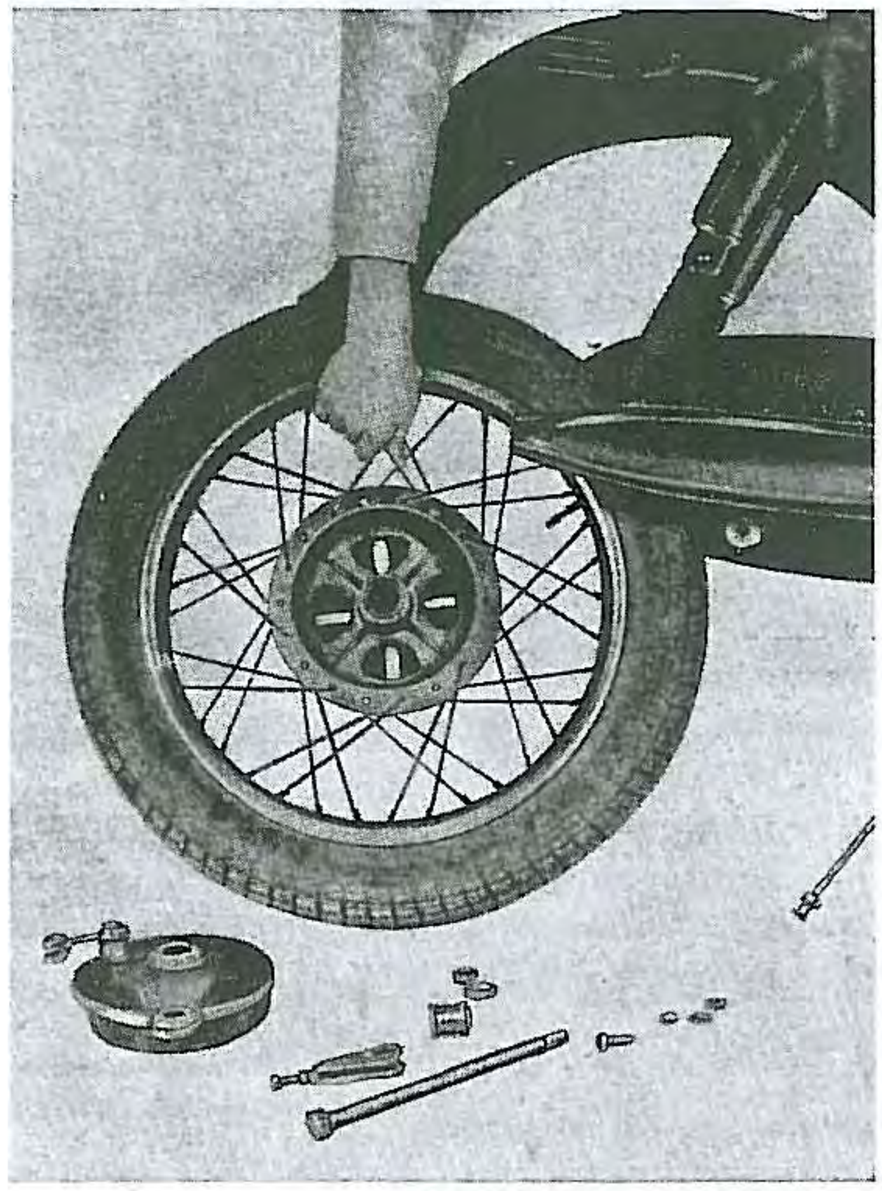


Fig. II-21. Removing rear wheel (C92 & CA95)

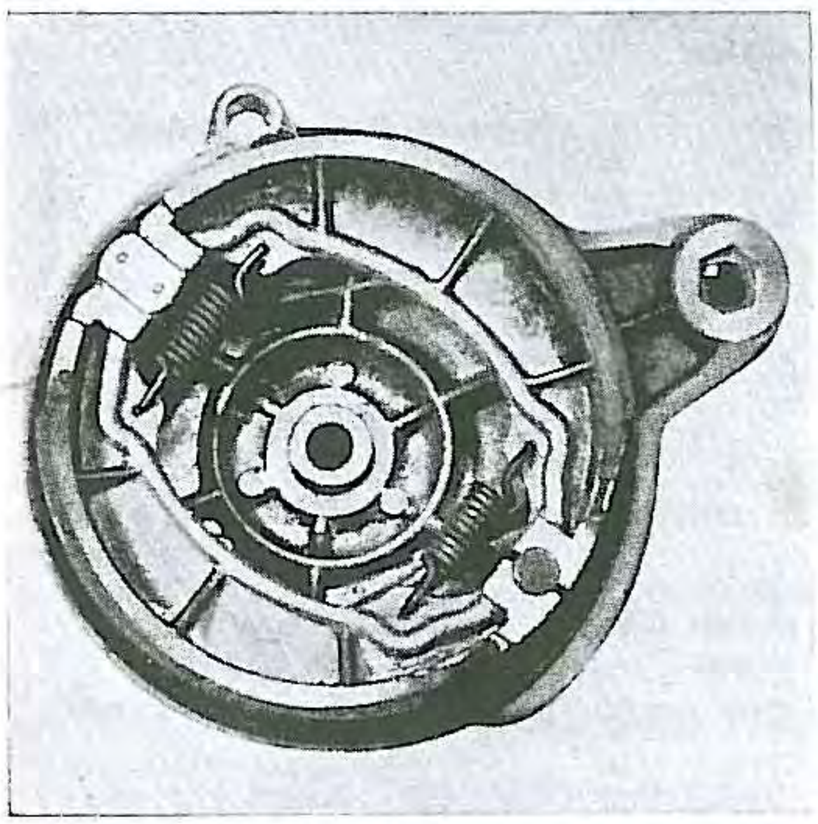


Fig. II-22. Rear brake shoes and panel (C92 & CA95)

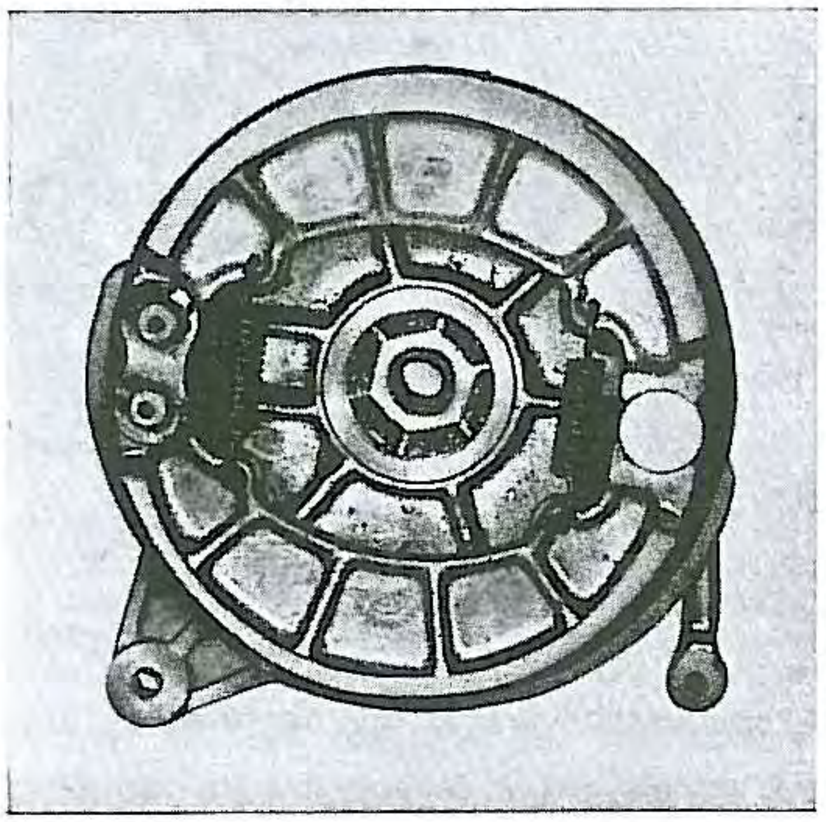


Fig. II-23. Rear brake shoes and panel (CB92)

Then withdraw the wheel from the flange and take it out from the rear fork, tilting the motorcycle. (Fig. II-21)

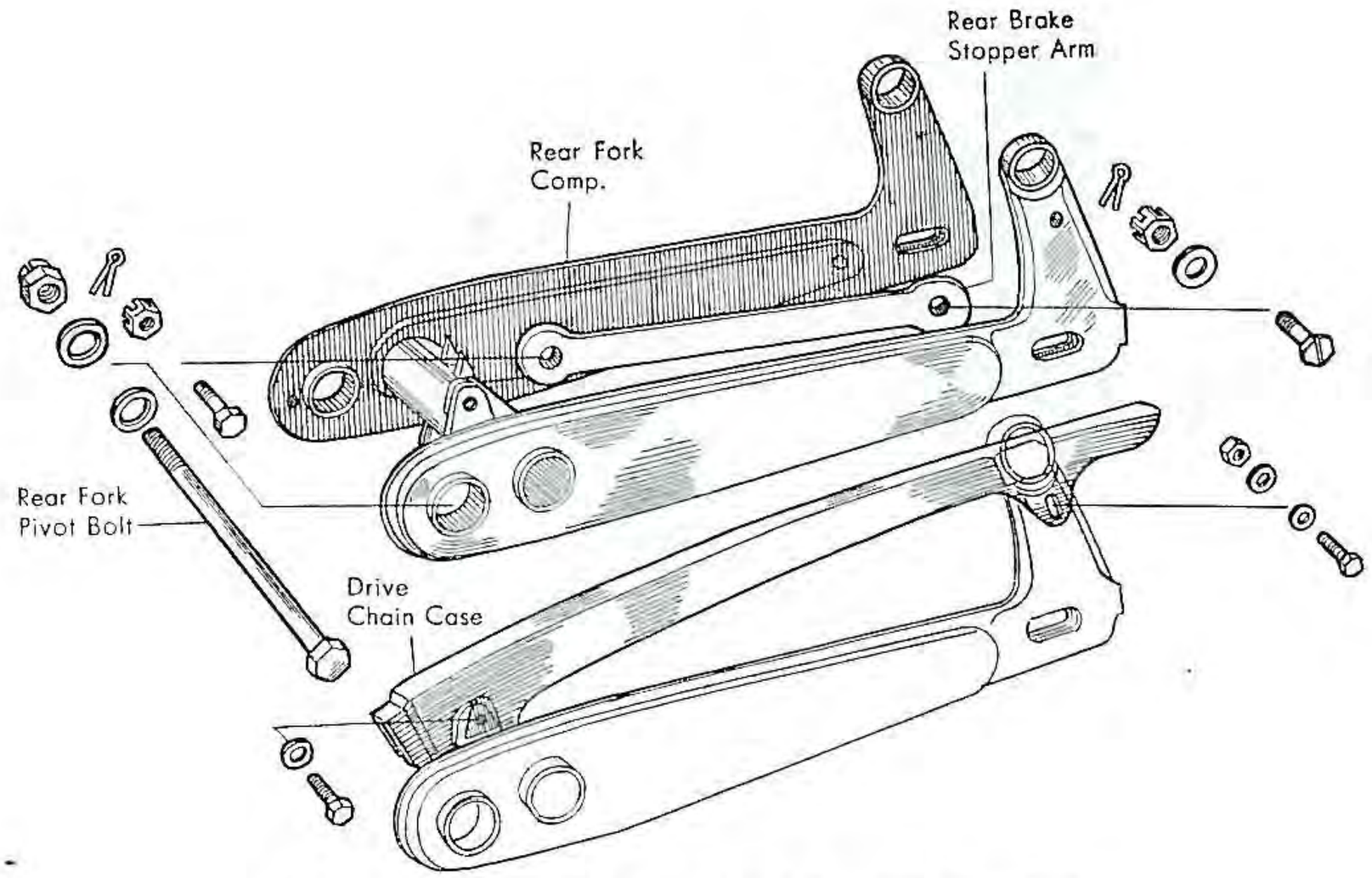


Fig. II-17. Exploded view of rear fork and chain cover (CB92)

A. REAR FORK

I. Dismantling

(1) Remove rear wheel and hub.

(2) Remove top and bottom chain cases and chain (C92 & CA95). Only top chain case and chain (CB92).

(3) Remove the lower shock absorber mounting bolts.
Remove rear fork pivot bolt nut, withdraw pivot bolt and take out the rear fork.

II. Inspection

(1) Visually inspect deformation or wear in rubber bushings and chain case packing. Drive out the defective bushing with driver and hammer and install the new bushing with press.

(2) For checking distortion or twist, insert a long bar which fits closely to the pivot bushing and support both ends with V-block on a flat surfaceted.
Insert another bar through the rear end opening where the rear axle is installd and support the center of the bar at a point. Measure the difference between both ends with height gauge.
Use square gauge for checking twisting.

B. REAR CUSHION

A sectional view of the rear cushion construction is shown in Fig. II-18.

The rear cushion cylinder contains spindle oil and shocks are absorbed by a piston and rod action. The CB92 cushion springs are not covered and spring tension is adjustable in 3 stages.

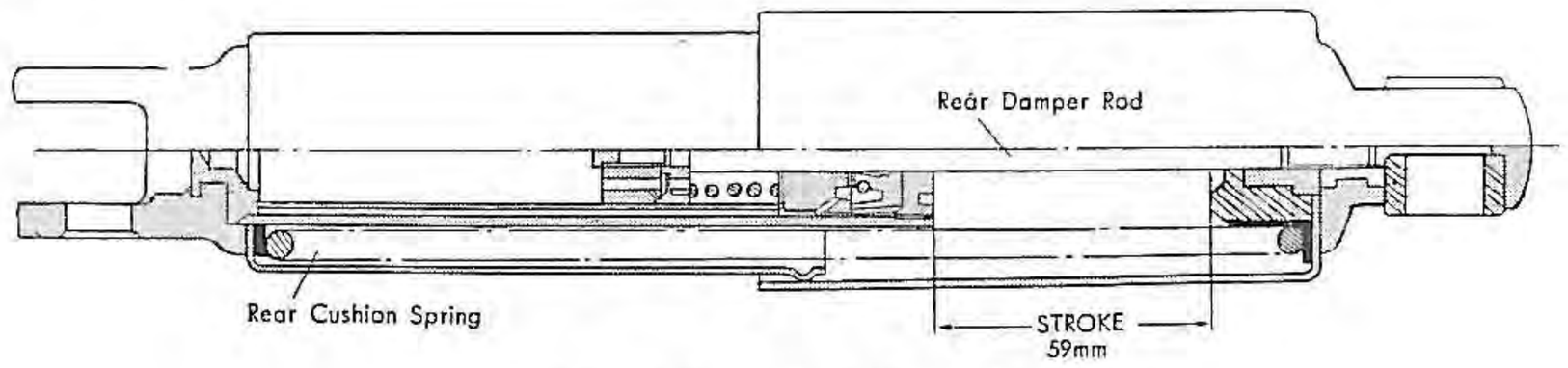


Fig. II-18. Rear cushion ass'y

I. Dismantling of rear cushion

(1) The rear cushion can be removed by loosening the upper and lower support stud nuts and bolts.

(2) Remove the 2 cross head screws on the bottom metal.

(3) Holding the end of the rod with a screw driver to prevent its turning, file away the caulked part of the damper rod lock nut and remove it. The case, spring and dampers can be removed. (C92, CA95)

(4) Unscrew the notch pin from the upper joint. Set the spring tension adjusting at the bottom notch. Compress the main spring with a spring compressor and remove the upper spring retainers. (CB92)

II. Inspection and assembly

(1) Measure the free length and right angle of the main spring and replace the spring if it exceeds the limits listed in the specifications. (P. 161)

(2) If the damper rod is damaged or if oil leaks, replace the complete damper assembly.

(3) Replace the stopper rubber if it is damaged.

(4) To reassemble, pull the damper rod all the way out and install the main spring on the damper rod. Compressing the spring, fit the damper rod nut. Tighten the nut, install the under case and tighten the lock nut. Attach the bottom metal. (C92 STD and CA92, CA95)

Compress the spring, attach the upper joint to the rod, insert the pin through the joint and rod and set the rear cushion spring retainers.

(5) Adjust spring tension according to usage, that is, for touring or racing, using pin spanner provided in the tool kit. (Fig. II-19)

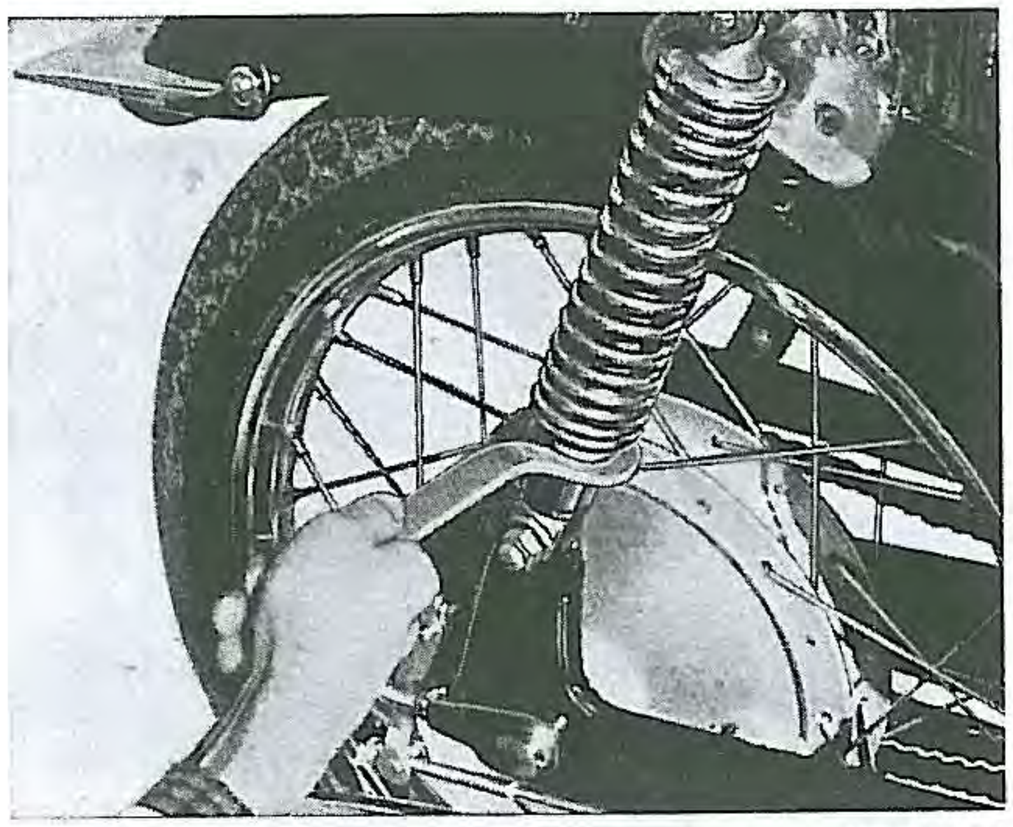


Fig. II-19. Adjusting tension of rear shock absorber spring (CB92)

II-5. REAR WHEEL AND REAR BRAKE

The rear wheel is driven through rubber dampers by a sprocket attached to the final drive flange. There are 4 semi-circular shaped dampers for the C92 standard and CA95 models, and 4 small round rubber bushings for the CB92. The rear wheels can be removed without disassembling the rear flanges on all models. (Fig. II-20)

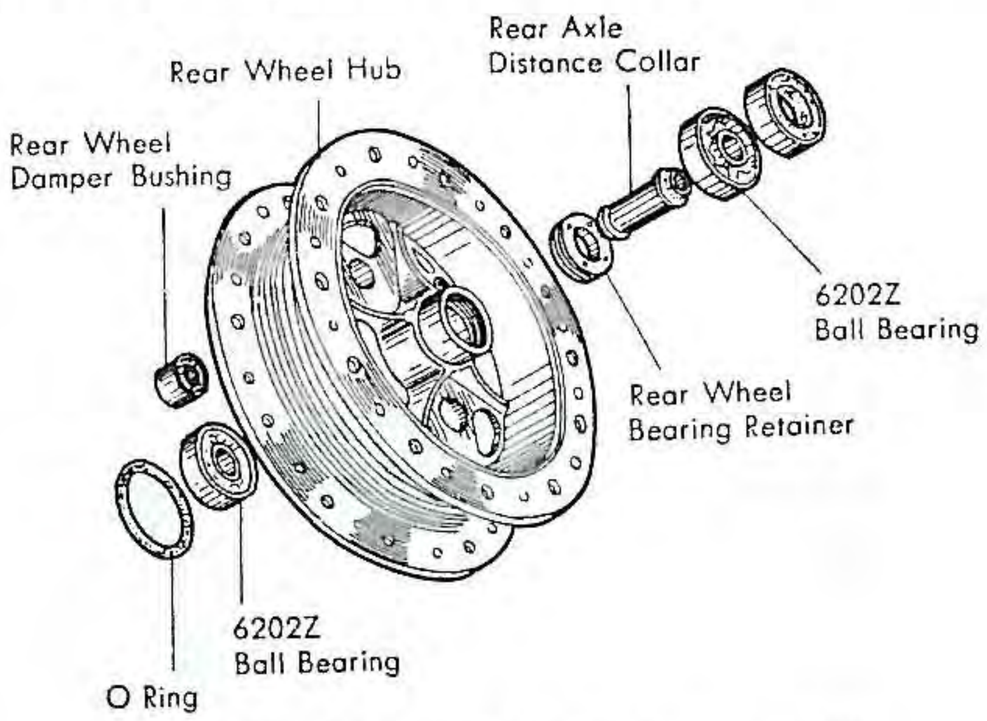


Fig. II-20. Rear wheel hub and damper (CB92)

Rear double-shoe brakes are operated by a cam and one anchor pin for C92 standard end CA95 models and 2 anchor pins for the CB92.

(1) Disassmebly of rear wheel

Place the machine on the center stand. Remove the rear brake torque link at the panel and brake adjusting nut at the brake rod. Remove the rear axle and collar and the wheel can be dismounted.

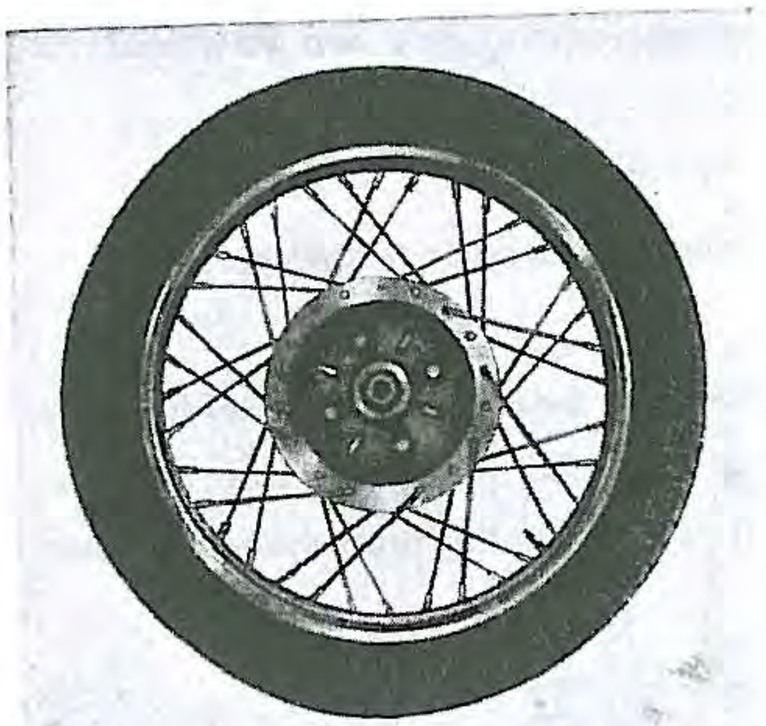


Fig. II-24. Rear wheel and damper (C92 & CA95)

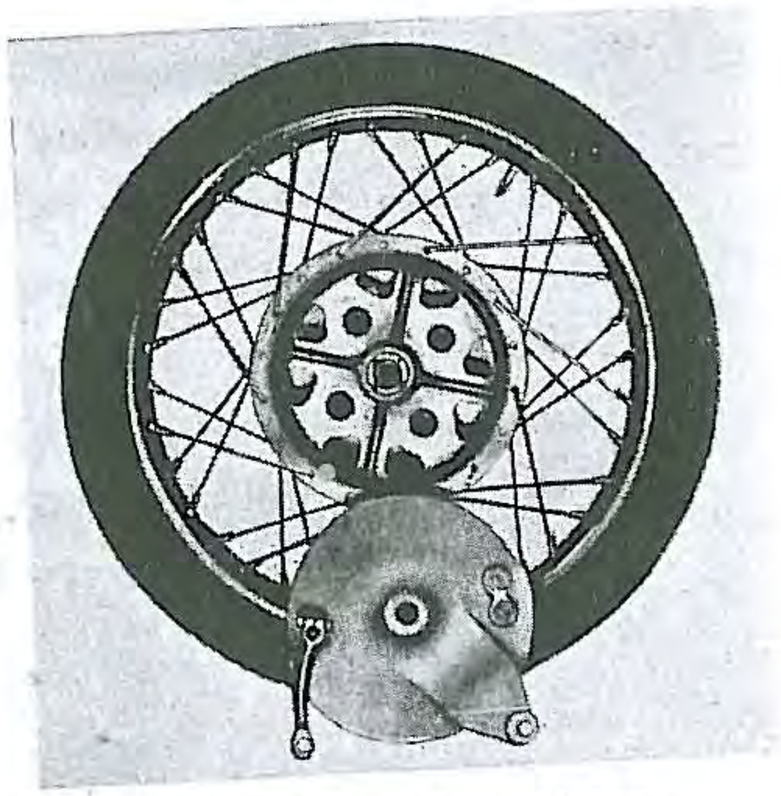


Fig. II-25. Rear wheel and damper (CB92)

(2) To dismantle the brake shoes, merely remove the brake springs (for C92 STD & CA95) and remove anchor pin set rings with a set ring remover, and the anchor pin washer. Then withdraw the brake shoes from the anchor pins. (for CB92) (Fig. II-24, II-25)

(3) The bearings can be taken off by hand but if tightly fit, take out by tapping lightly on the inside. The oil seal can be removed at the same time.

(4) Wheel bearings and oil seal : –

Remove 6 mm bolts retaining the damper rubbers and take out the 4 pieces of rubber. . (for C92 STD & CA95)

Drive out the rubber dampers with a driver and hammer or a press. (for CB92)

(5) Tyre and tube

Remove the tube valve cap and valve using the tip of valve cap to deflate tube of air. Lay the tyre on the ground and press the side of the tyre to force out the tyre bead from the side of the rim. Insert 2 tyre levers between rim and tyre bead, and pull tyre bead out away from the rim, using the lever all around.

Push the valve stem into the rim and remove the tube from the tyre. For repairing the tube a piece of rubber and rubber paste and scissors are provided in the tool kit.

II. Inspection and reassembly

(1) Repair tyre and tube if necessary, and push the tube back between the tyre and rim, aligning the tube valve with hole in rim and making sure that the tube is not twisted. Using the tyre levers to pry the bead in the rim all around. Gradually inflate the tyre ensuring the bead fits into the rim up to the pressure of 32 lbs/in^2.

(2) Wash all bearings thoroughly and check for excessive radial play and roughness. Replace if it is in bad condition.
Repack grease completely on the bearings and fit into hub.

(3) Check oil seal and "O" rubber ring on the hub for distortion and replace if it is deemed unserviceable.

(4) Install the rear axle through the bearings and hold the axle between blocks (refer to Fig. II-26), set a dial gauge on the face of the rim and hub drum and turn the wheel gently, reading the amount of run-out. If run-out of the drum exceeds 2.0 mm (0.08″), replace the drum.

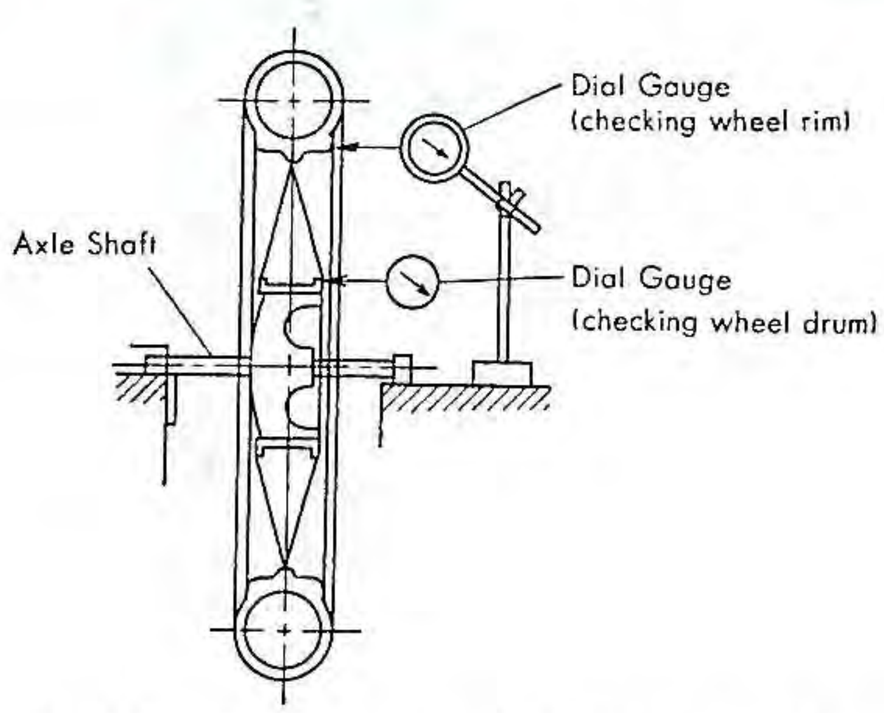


Fig. II-26. Checking run-out of wheel at rim and drum

(5) Tightening spokes
Retighten and adjust the spokes evenly so that run-out of the rim will be within 3.0 mm (0.12″), and if it is found that this cannot be remedied, the rim may be warped and should be replaced.

(6) Brakes
Measure outside diameter for wear and replace if they are out of specification. (P. 161)
Replace the brake shoe complete, if the lining exceeds the wear limit.
Insert the brake cam into the brake panel and fix end onto brake arm. Install the brake shoes on the panel and fix with brake shoe springs. (C92 STD)
Check tolerance between brake shoes bore and the anchor pin for excessive wear and if it is deemed unserviceable replace the brake panel or brake shoes. (CB92)
Install the brake shoes on the panel and set the clip rings on the end of anchor pins. (CB92)

(7) Install the rear wheel hub onto the rear flange, the panel and the collar. Insert the rear axle and tighten the nut after adjusting the graduation of the wheel adjuster

II-6. FRONT WHEEL AND FRONT BRAKE

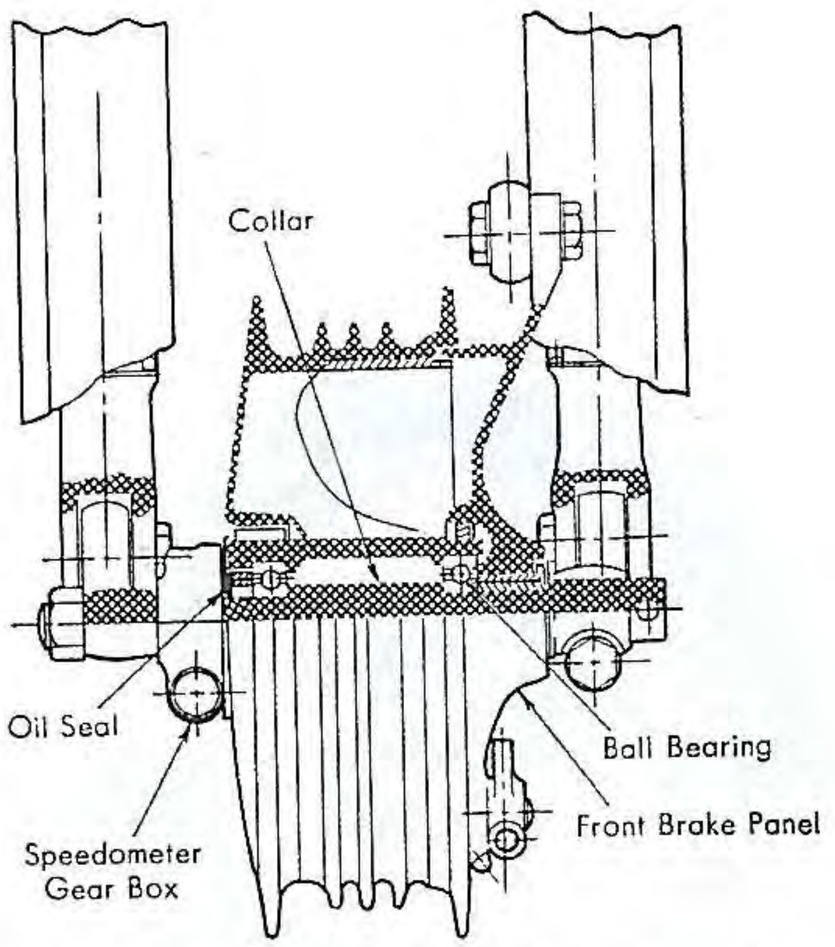


Fig. II-27. Construction of front wheel support

1. Dismantling of front wheel

Place a stand or block under the engine, lifting the front wheel off the ground. For the C92 standard and CA95, remove the brake adjusting nut, front arm lock bolt on the left side, front panel stopper bolt and axle nut. Pull out the axle, raise the front fender up enough that the wheel clears and slip the wheel out from between the forks. (Fig. II-28)

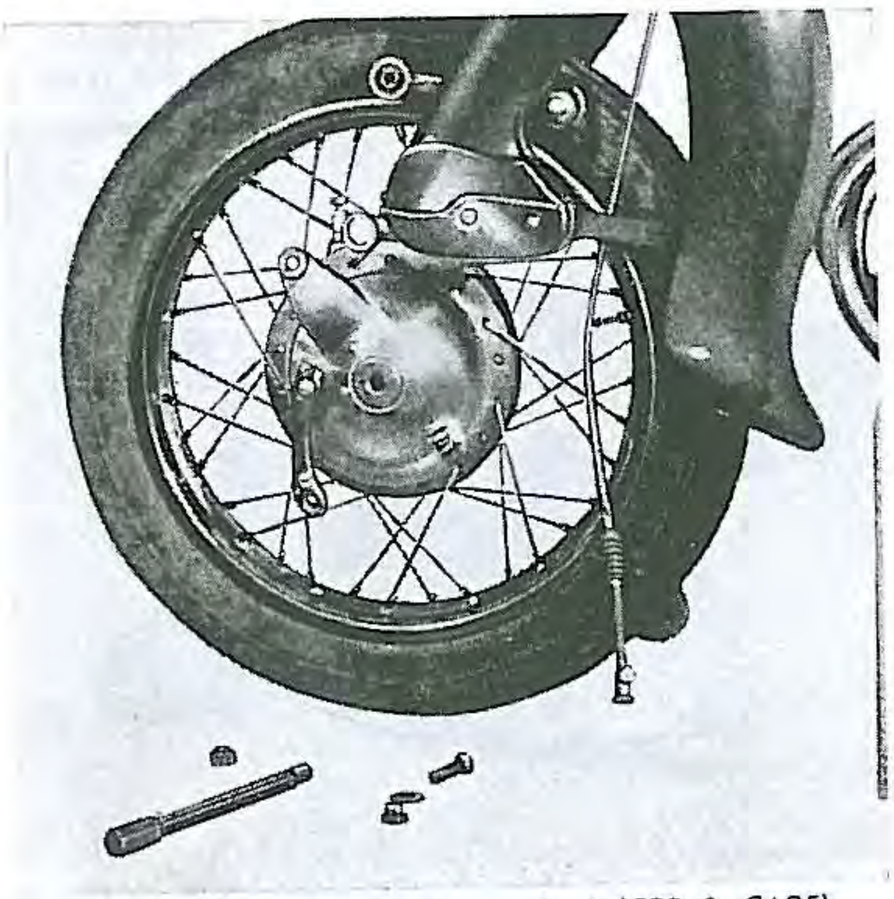


Fig. II-28. Removing front wheel (C92 & CA95)

On the CB92, the front fender is attached to the front brake panel and should be removed with the front wheel. To remove the fender and wheel, turn the fender until the dents in it match the side torque link supports on both sides and slip the wheel and fender out. (Fig. II–29)

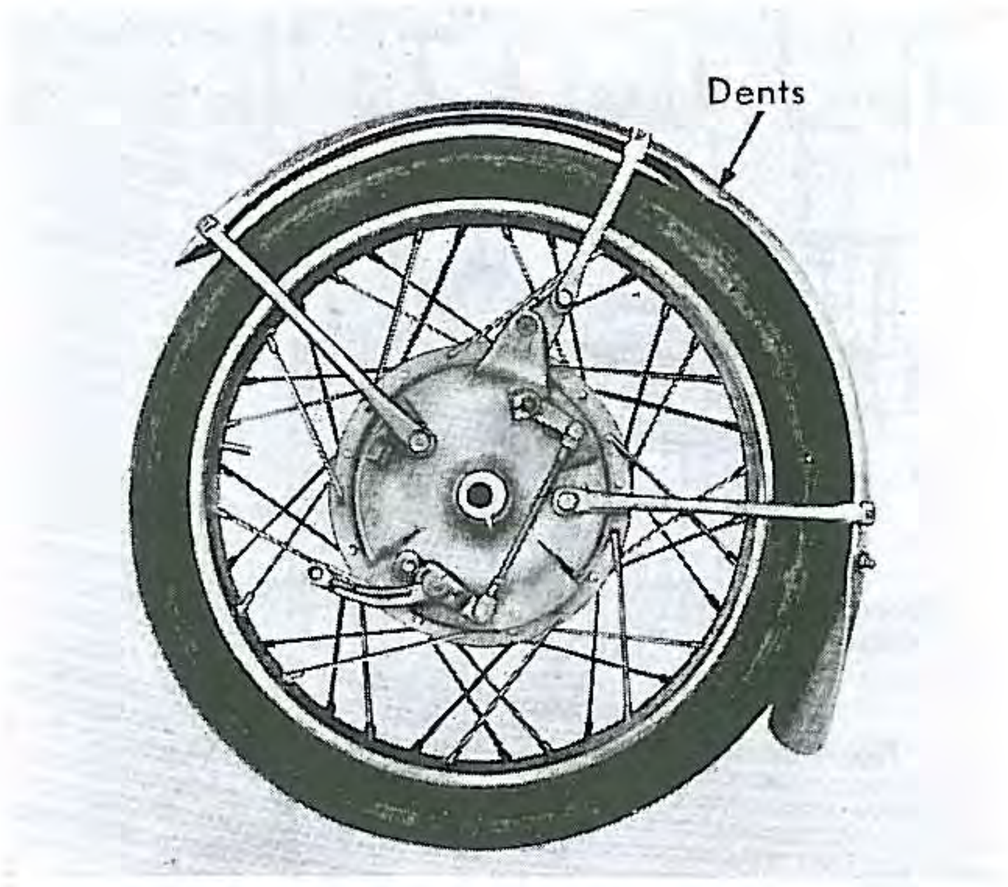


Fig. II–29. Removal of front wheel and fender

Brake shoes can be removed easily on the C92 and CA95, but on the CB92 it is necessary first to remove each anchor pin set ring and the springs.

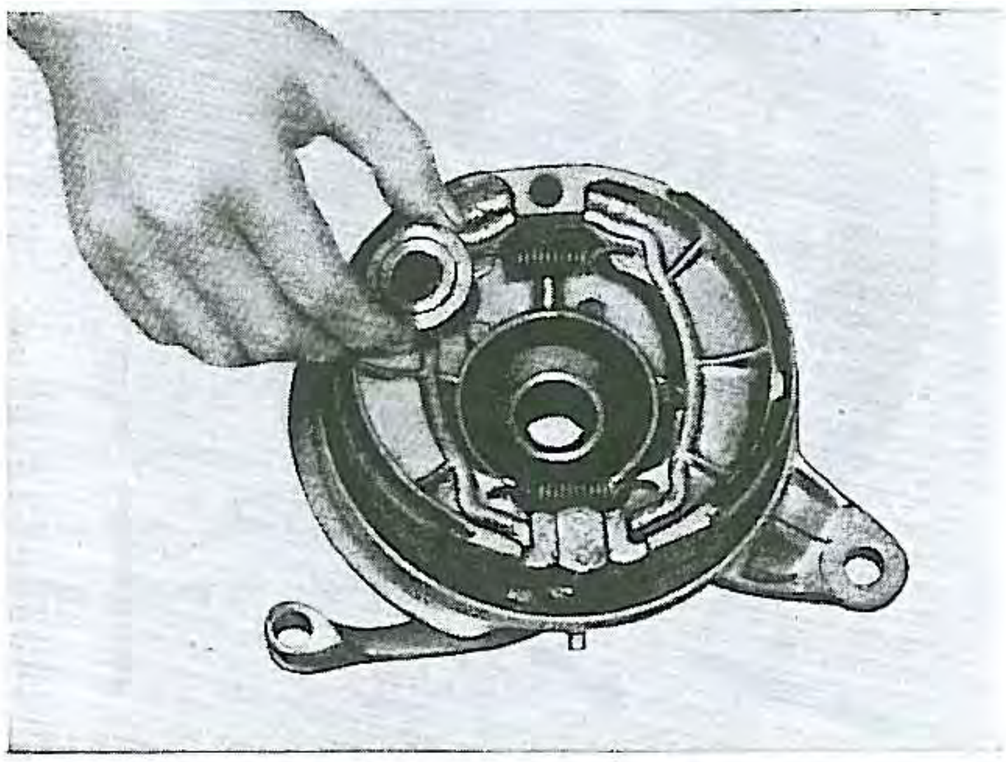


Fig. II–30. Front panel spacer

II. Inspection and reassembly

Use the procedure listed for the rear wheel and brake on page 83 and 84 for inspecting and reassembling the front wheel and brake. Check the front panel spacer to be sure there is no excessive tolerance, and replace if necessary. (Fig. II-30)

As the CB92 front brake has double cams, it is necessary to adjust the brake rod after reassembly as described on page 133.

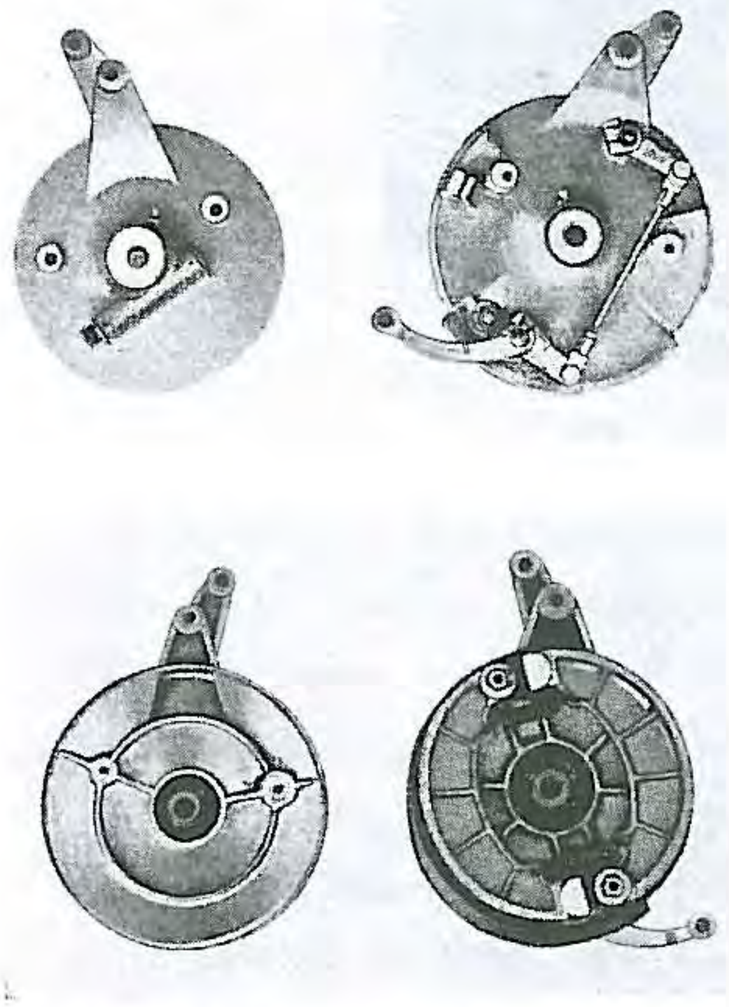


Fig. II-31. Front brake shoes and right and left side panels

Fig. II-32. Removing panel air guide cap (CB92)

All nuts should be tightened with the torque listed in the specifications. (P. 161, 162)

Proper pressure for the front tyre is 28 lbs/in.

(Note) On the CB92, front and rear brake panel air guide caps are provided, which can be removed when racing to cool the brakes. (Fig. II-32)

II-7. DRIVE CHAIN AND DRIVE FLANGE

A special size (No. 428) of drive chain is used on all models. Transmission of power to the rear wheel is through rubber dampers in a flange.

On the C92 and CA95, the chain is completely enclosed in the chain case, but it is not completely enclosed on the CB92.

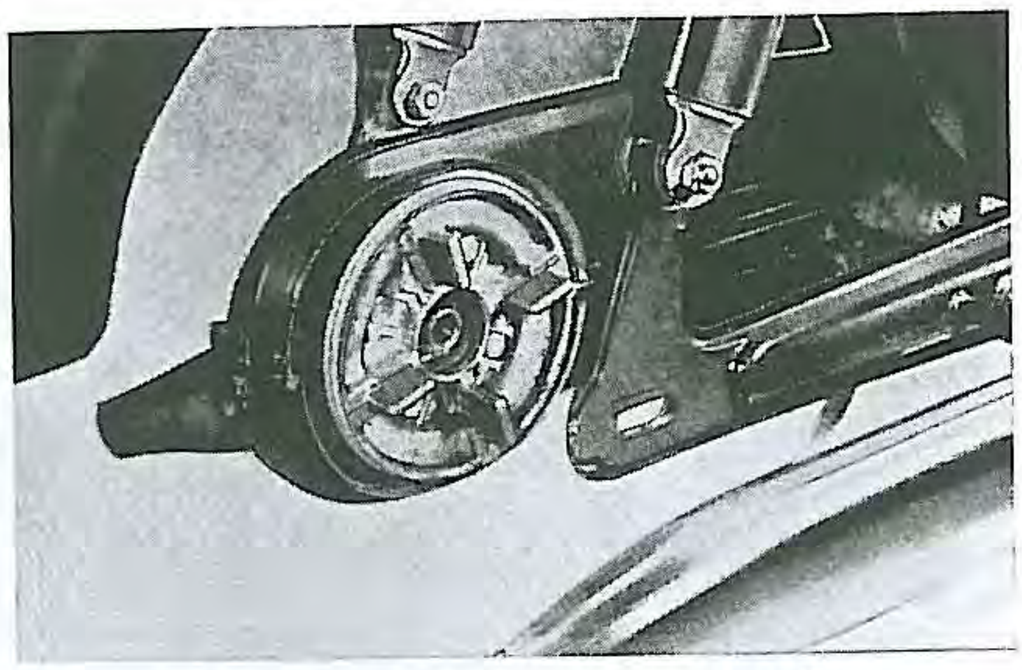


Fig. II-33. Rear wheel flange (C92, CA95)

I. Dismantling

Remove the chain case or chain cover and disconnect the drive chain. Remove the axle sleeve nut and remove the rear flange. (Fig. 34, 35)

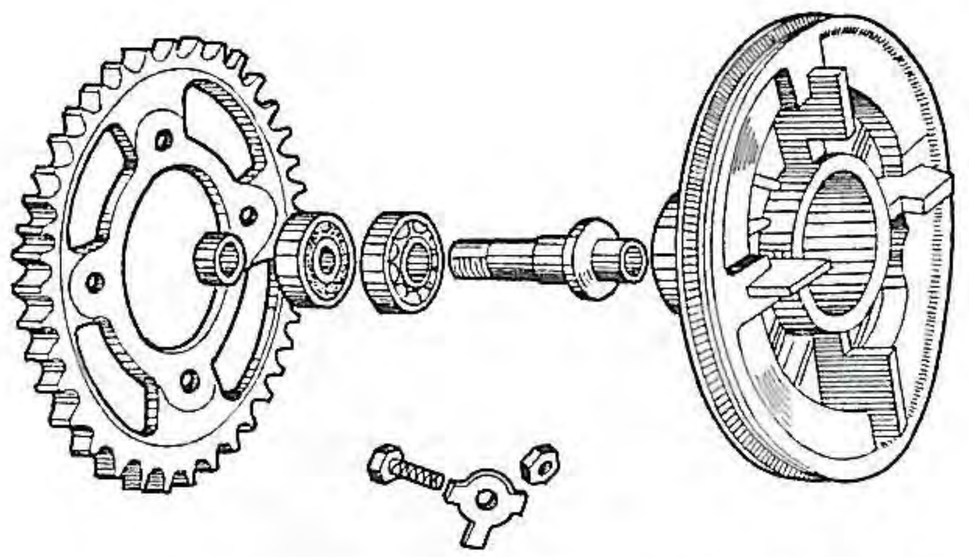


Fig. II-34. Rear drive flange and sprocket (C92 & CA95)

Straighten the folding washers using a chisel and hammer, and remove the nuts. (C92STD and CA95). Remove the cotter pins on the lock nuts and then remove the rear sprocket. Withdraw the sleeve shaft and take out the oil seal and bearing.

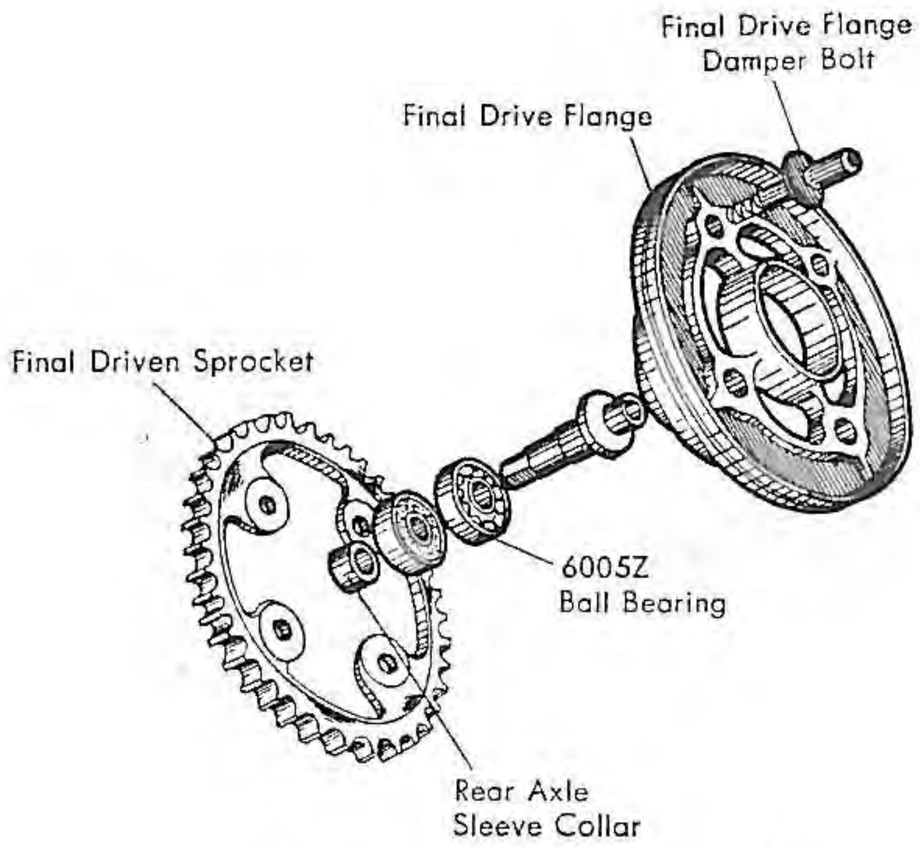


Fig. II-35. Rear drive flange and sprocket (CB92)

II. Inspection and reassembly

(1) Wash all parts with cleaning solvent and check the bearing, sprocket and oil seal for wear. Replace if necessary.
Repack grease, reassemble all parts and install in the wheel hub.

(2) Wash the drive chain thoroughly with gasoline and dry it.
Fit the chain about 2/3 around the drive sprocket and check wear by pulling on it. If there is more than 5 mm distortion, replace the chain.
To lubricate the chain, soak it in melted grease for several minutes, remove and wipe off excess grease.
When connecting the ends of the chain, be sure the master link clip trails; that is, the open end is toward the rear in the direction the chain moves.

(3) Sight check the bearings and oil seal for wear or damage, and replace if excessively worn.

(4) If the rubber in the dampers has deteriorated, replace them.

(5) When the sprocket is replaced, be sure to lock the nuts securely by bending the washers against them.

II-8. FUEL TANK AND FUEL TAP

The fuel tank is mounted on the frame with vibration insulating rubber cushions. A fuel tap with 3 positions—off, reserve and on—is mounted under the left side of the frame. The

tank holds about two liters of gasoline when drained to the level where it is necessary to move the fuel tap to "RES" position.

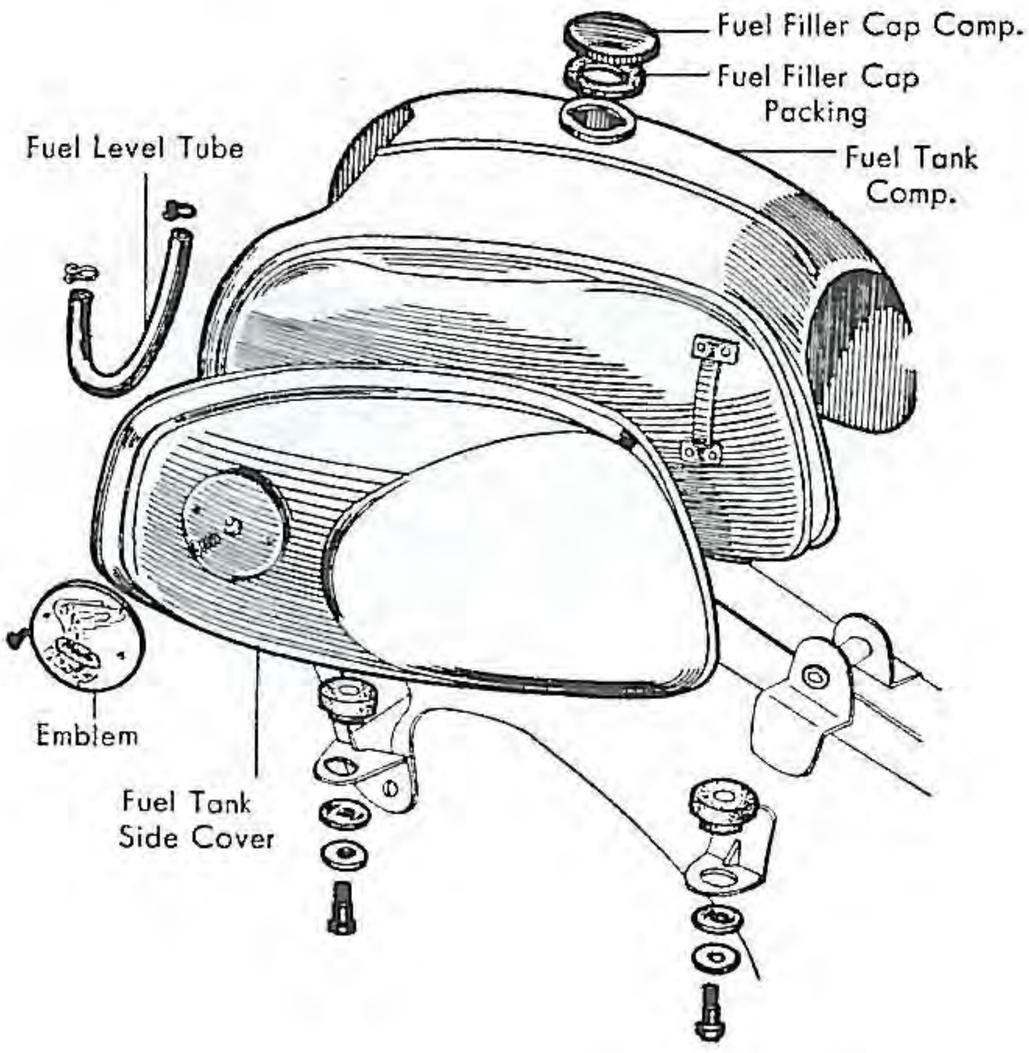


Fig. II-36. Fuel tank support (C92 & CA95)

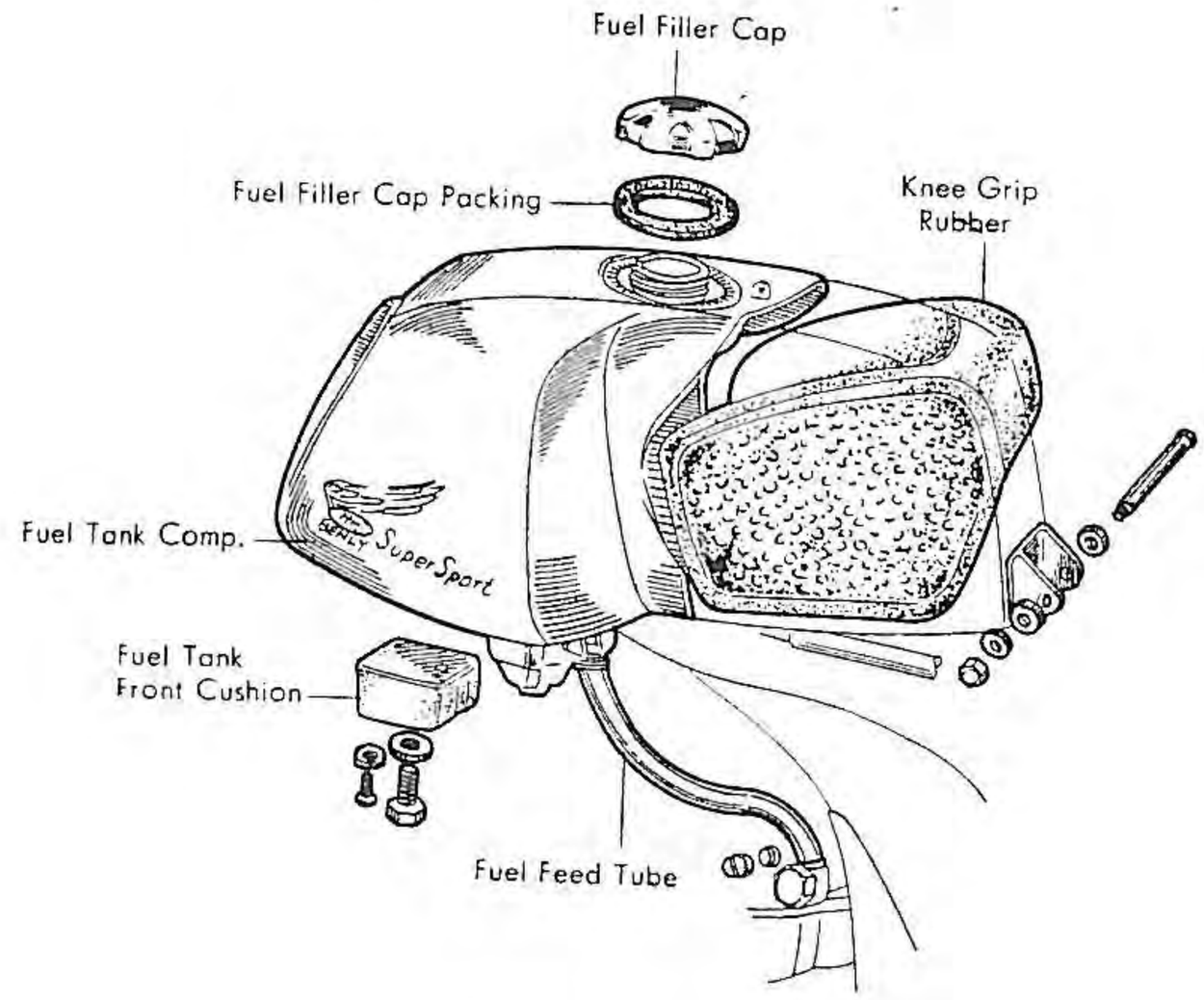


Fig. II-37. Fuel tank support (CB92)

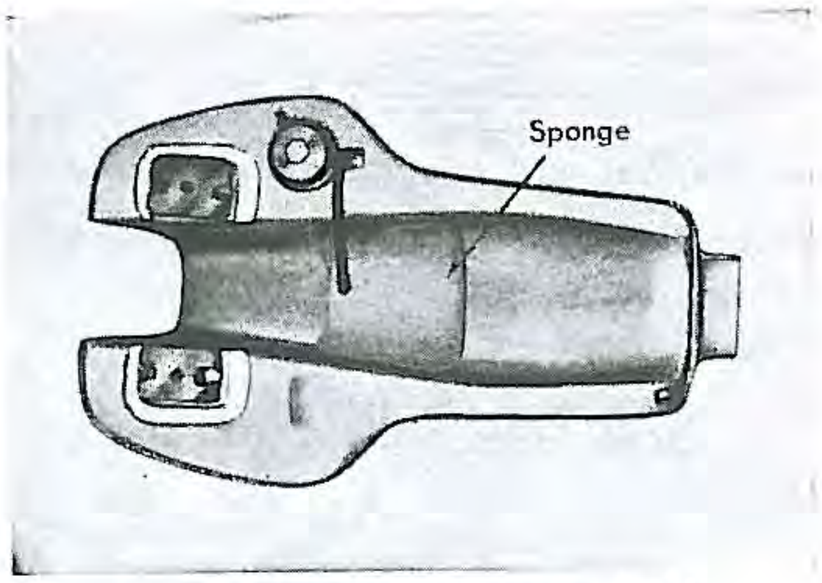


Fig. II-38. Support and sponge (CB92)

I. Dismantling

(1) Remove 4 mounting bolts.

(2) Set the fuel tap in "stop" position and disconnect the tube leading to the carburettor. Then disconnect the front level tube and plug the holes so that the petrol does not flow out. Remove the 4 fuel tank mounting bolts (92 STD), and 2 front mountings and 1 hinge bolt at rear end on the frame (CB92). Then the fuel tank can be removed from the frame. Remove the fuel tank. (Fig. 36, 37)

(3) Replacing the fuel tap

Remove the fuel bowl and take out the rubber gasket, then unscrew the 3 screws retaining the tap to the tank. Before removing, fuel should be drained. (Fig. 39)

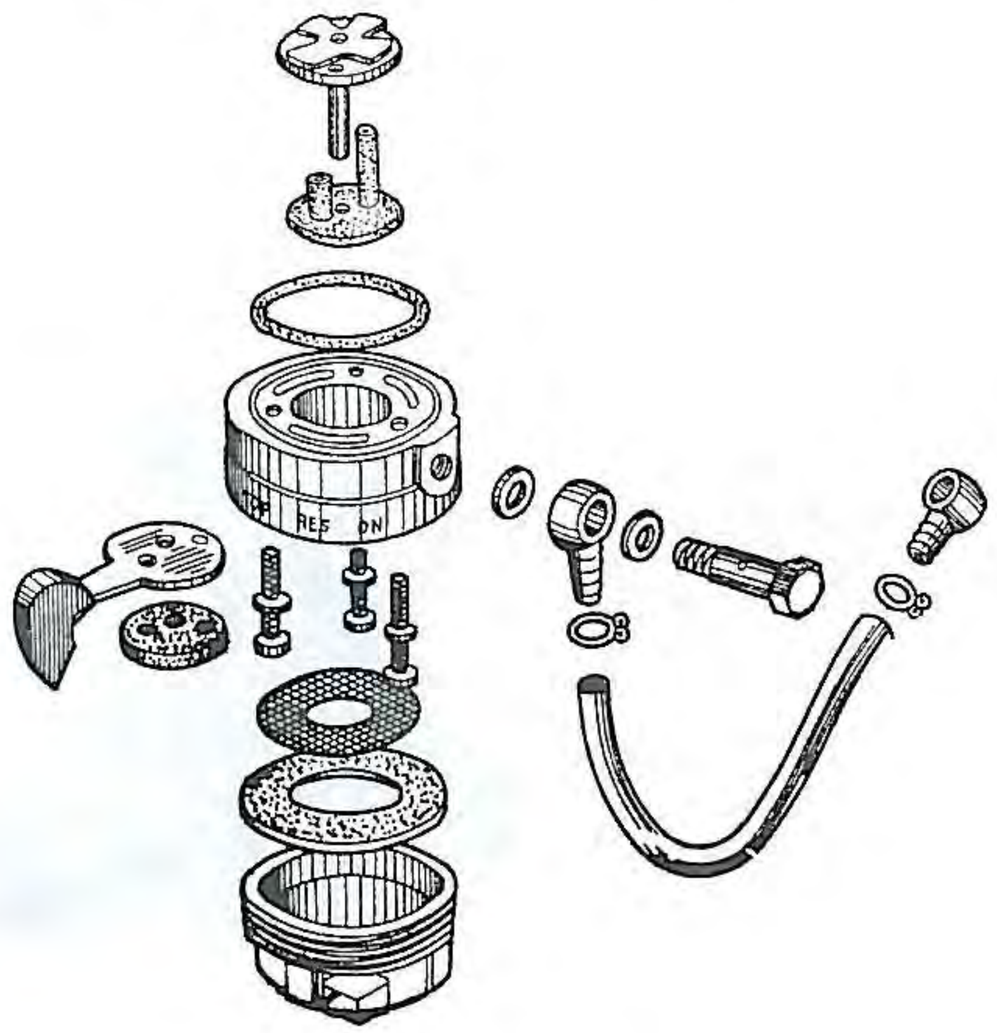


Fig. II-39. Fuel tap

II. Replacement of side cover

If it is required to replace the fuel tank side cover, remove the tank emblem and unscrew the screw behind and remove the chromium plated side cover by thrusting it backwards.

II-9. AIR INTAKE

The air cleaner element is made of filter paper which prevents dust from entering the engine. The air cleaner is located in the middle of the frame and connected to the carburettor by a rubber tube. (Fig. II-41)

I. Disassembly

Remove the carburettor cover. Insert a hand under the caburettor, remove the clamp and disengage the rubber tube. Remove the tool box cover on the left side. Take out the tool tray board, to which the air cleaner is attached. (Fig. II-40)

II. Installation

After servicing the air cleaner as described on page 135, be sure to insert the connecting, tube, air vent plastic tube and power air jet tube (on CB92, CA95) in their respective holes.

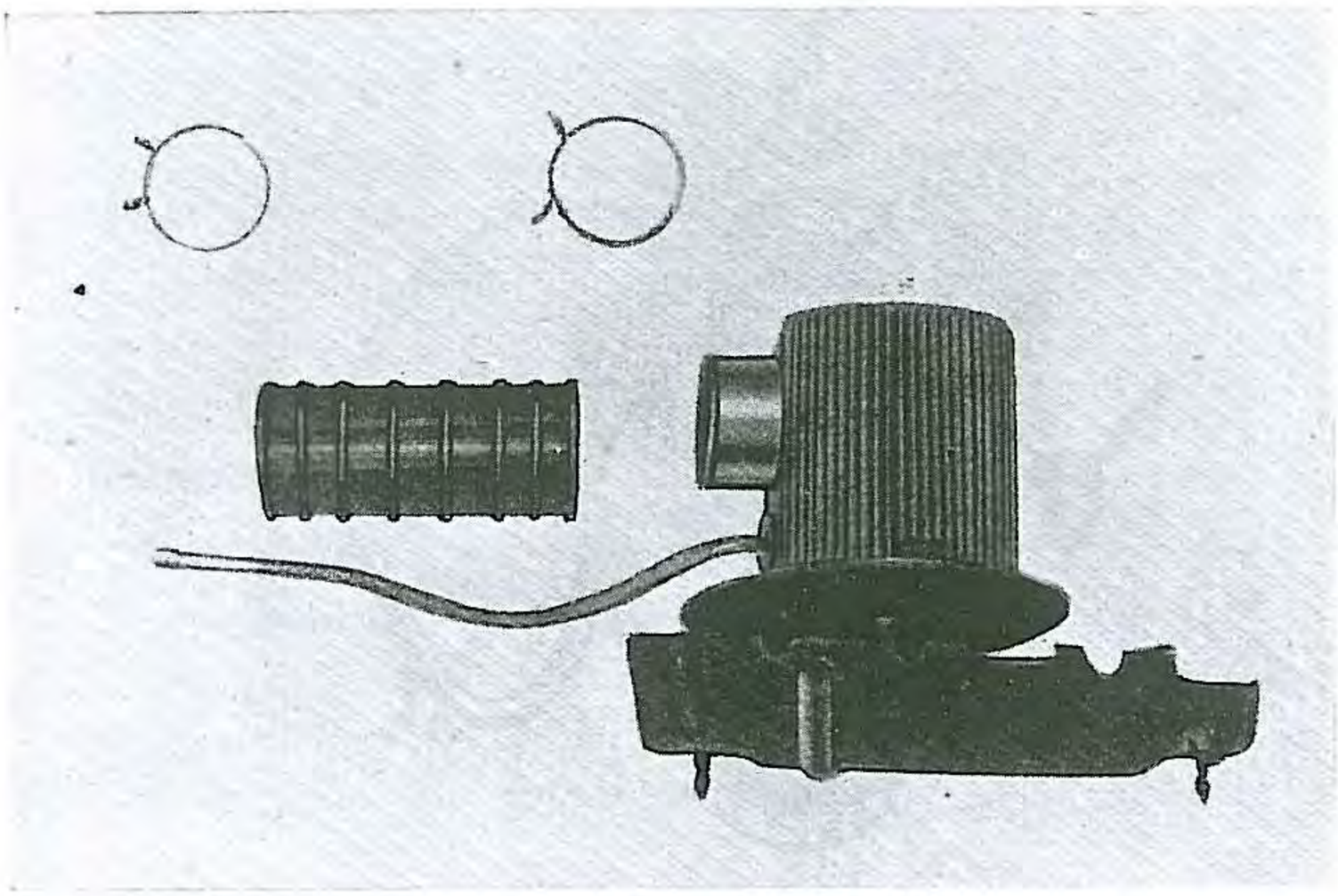


Fig. II-40. Air cleaner (C92 & CA95)

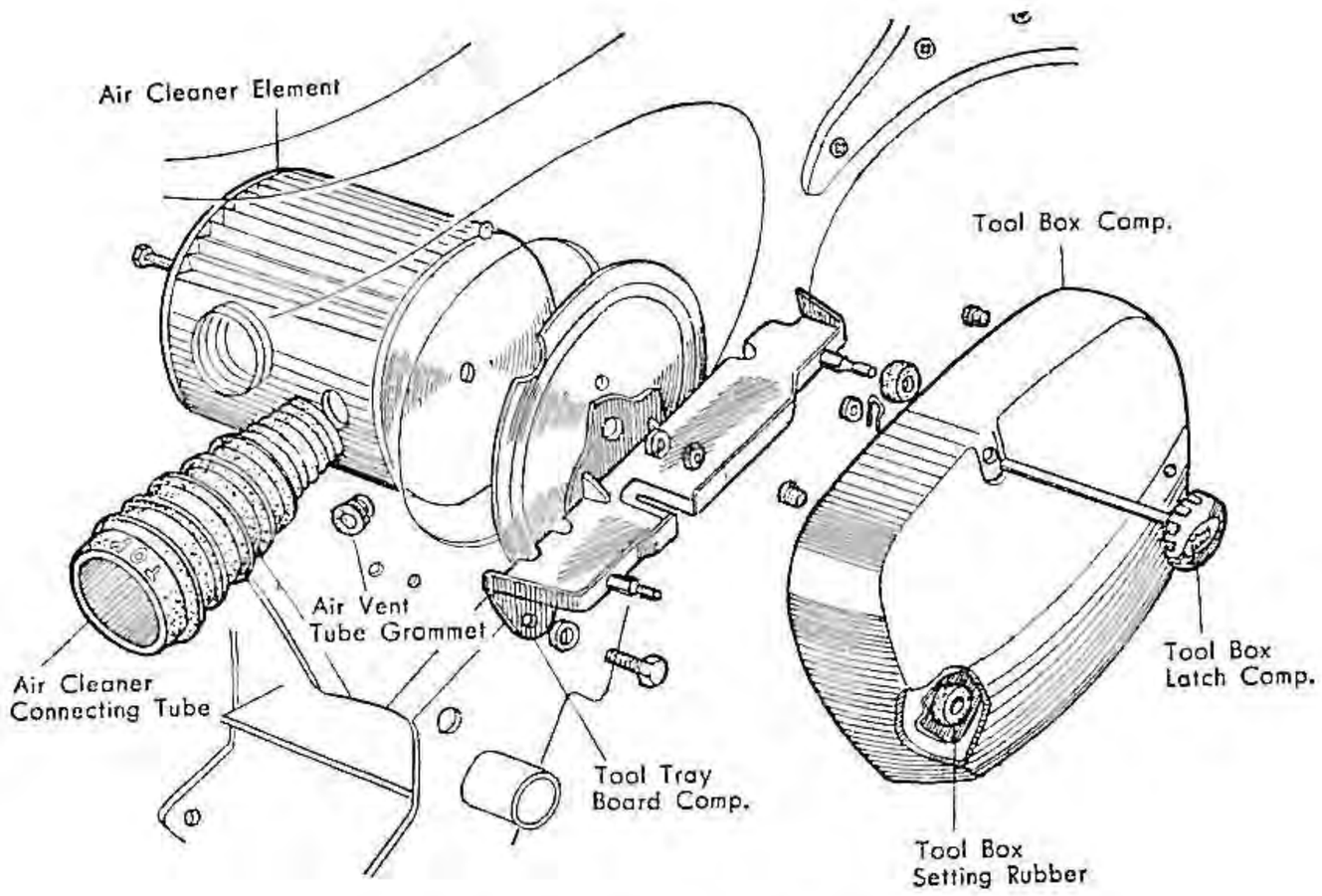


Fig. II-41. Location of tool tray board

II-10. EXHAUST

On the C95, upswept exhaust and mufflers attached to the tool and battery box are installed.

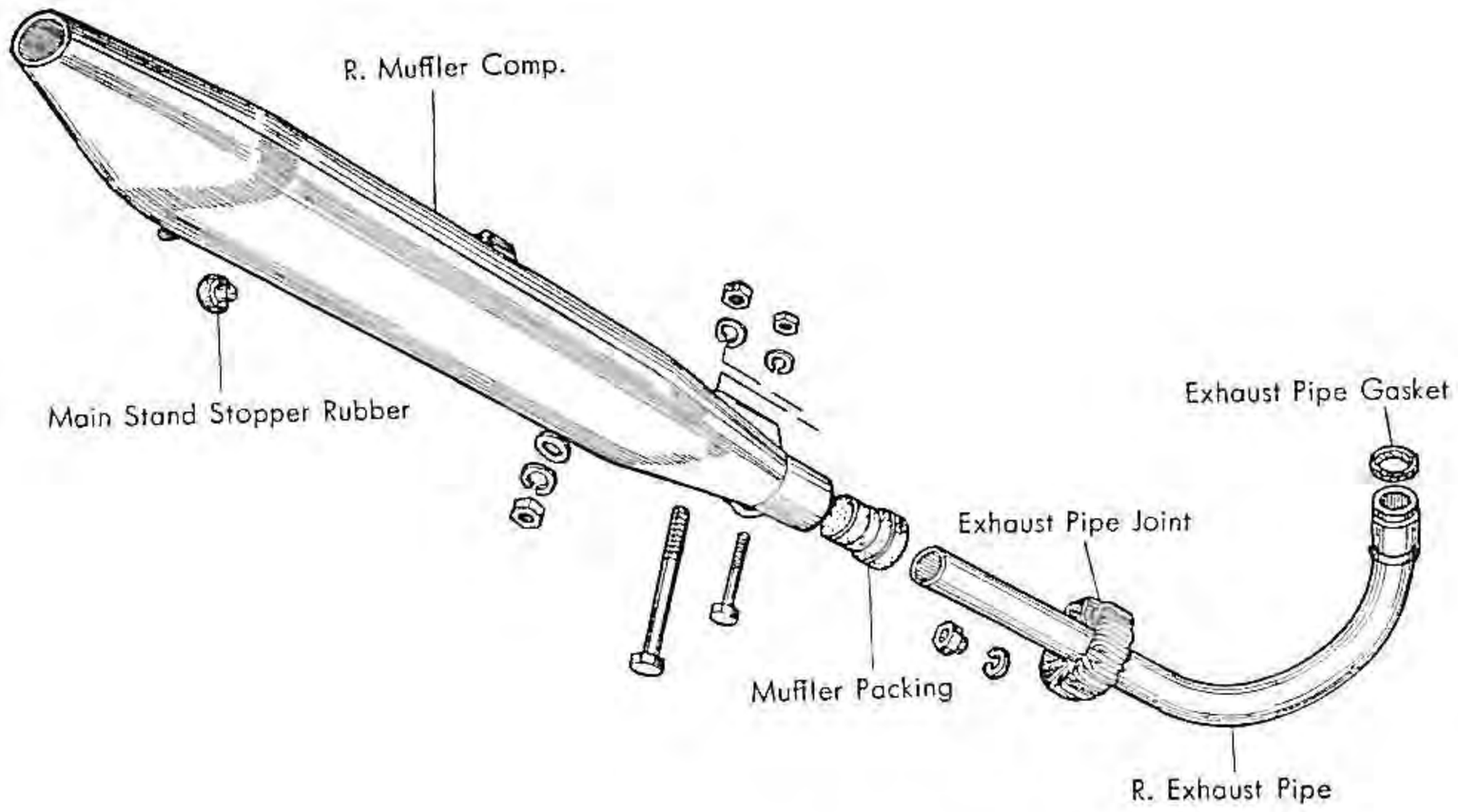


Fig. II-42. Exhaust pipe and muffler box (C92 & CA95)

II-13 SEAT

Two kinds of seats are available for the C92 and CA95; a single seat with luggage carrier and a dual seat For the CB92, there is a dual seat and a special racing seat with an upswept rear end Seats can be replaced by first removing the fuel tank.

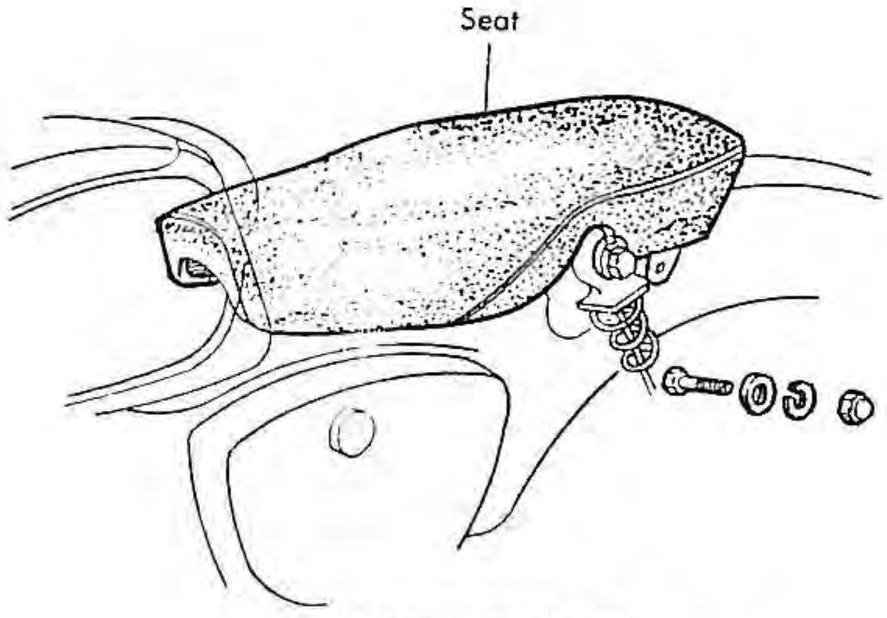


Fig I-52. Seat (CB92)

II-14 SPEEDOMETER, HANDLE LOCK AND TOOL KIT

A SEEDOMETER

A magnetic eddy current type speedometer is installed in the top of the head light case on the C92, C95, CB92 and CA95. The speedometer is driven by a cable from the gear box on the front brake panel

The speedometer glass is sealed so it cannot be replaced.

To remove the speedometer, first take out the head light.

The speedometer cable can be removed after first taking off the front fender and disconnecting it at the speedometer and the gear box.

B HANDLE LOCK

The handle lock is located on the right side of the frame head pipe. It is inserted into the casing and held by the cover. It can be replaced by unscrewing the retaining screw on the cover

C TOOL KIT AND ACCESSORIES

The tools shown in Fig II-53 are enclosed in a tool bag and placed in the tool box for the owner's use

For racing the CB92, a set of megaphone pipes without silencers is available.
The standard muffler has a detachable inner diffuser which can be removed for cleaning. It can be taken out by removing the bolt at the end of the muffler.

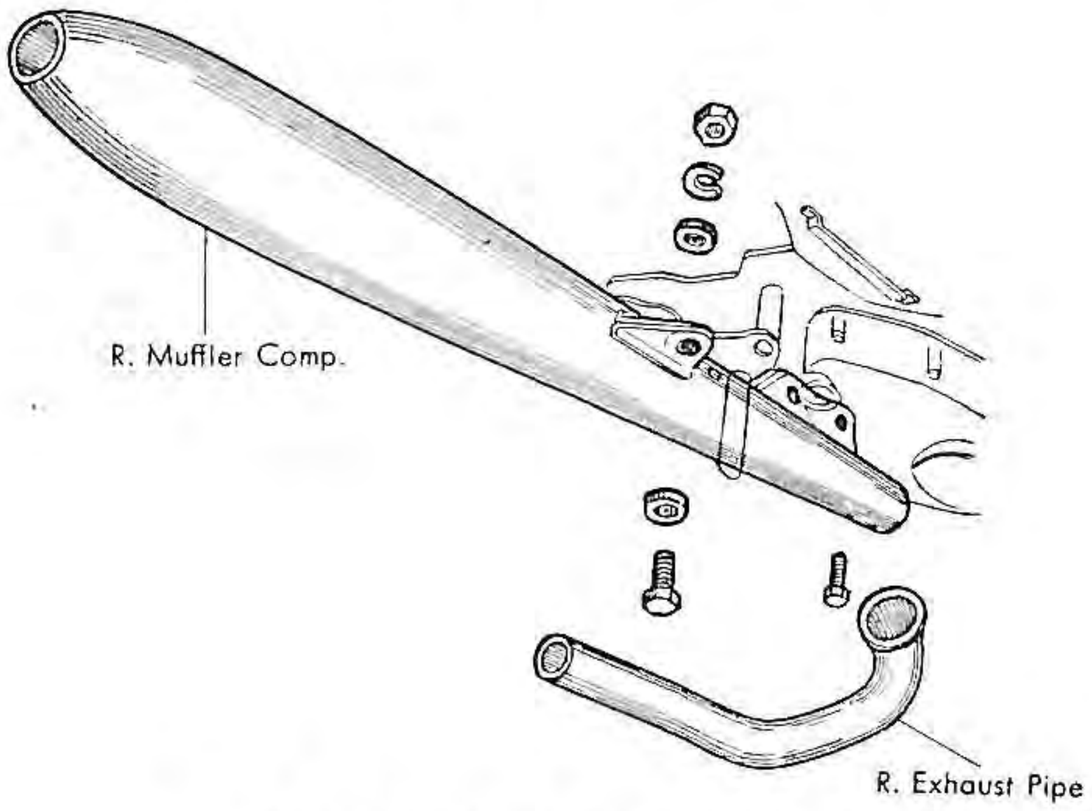


Fig. II-43. Exhaust pipe and muffler box (CB92)

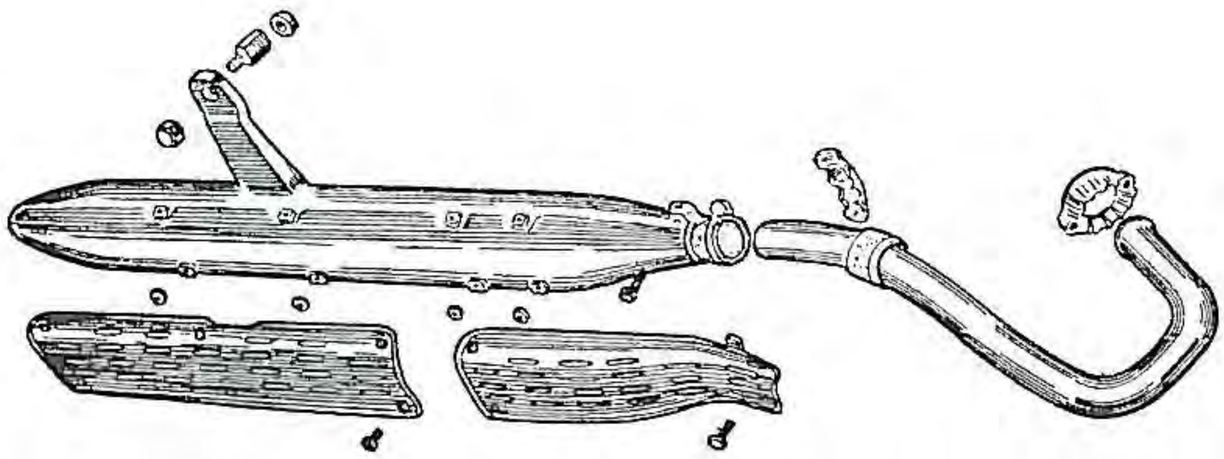


Fig. II-44. Exhaust pipe, muffler box and protector for CS92

II-11. FOOTREST, MAIN STAND AND BRAKE PEDAL

The step bar on which both right and left step rubbers are installed is attached to the under crank case on C92 standard and CA95 models, but the CB92 has step plates attached on both sides of the motorcycle.
A side stand is installed on the C92, C95 and CA95 but not on the CB92.

Dismantling

(1) The step bar and step plates can be removed by taking out the bolts after the mufflers are removed. (Fig. II-45, II-46)

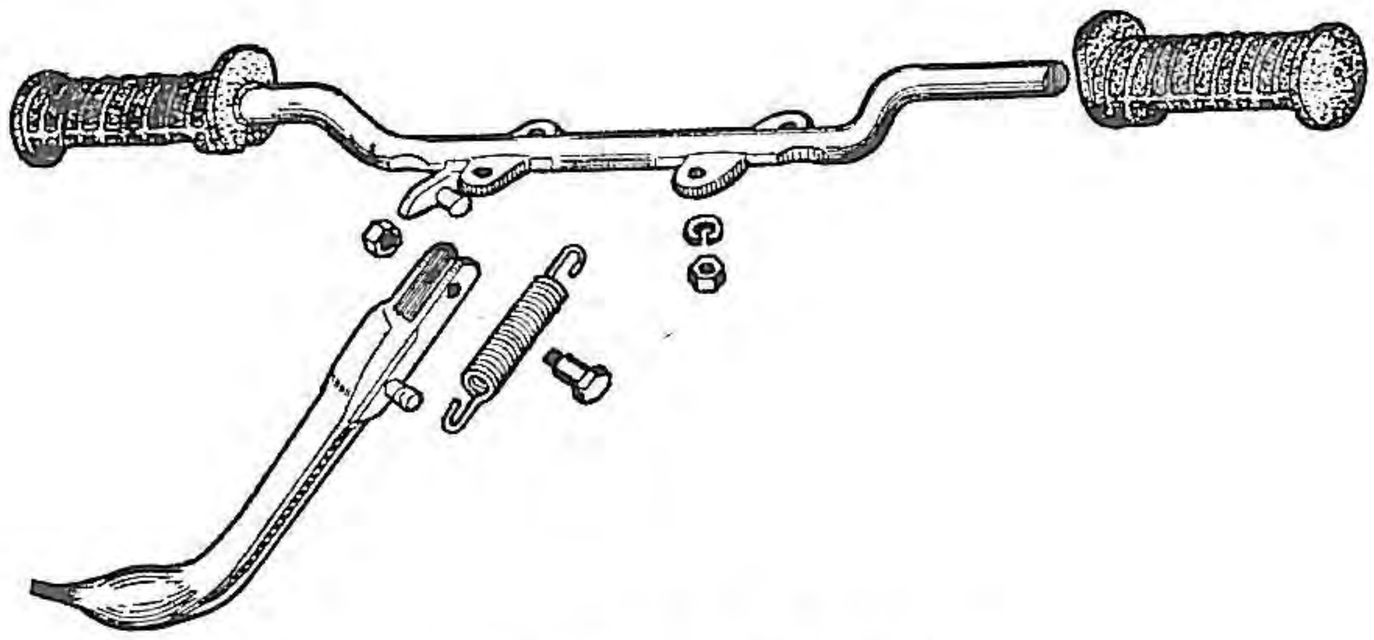


Fig. II-45. Footrests (C92 & CA95)

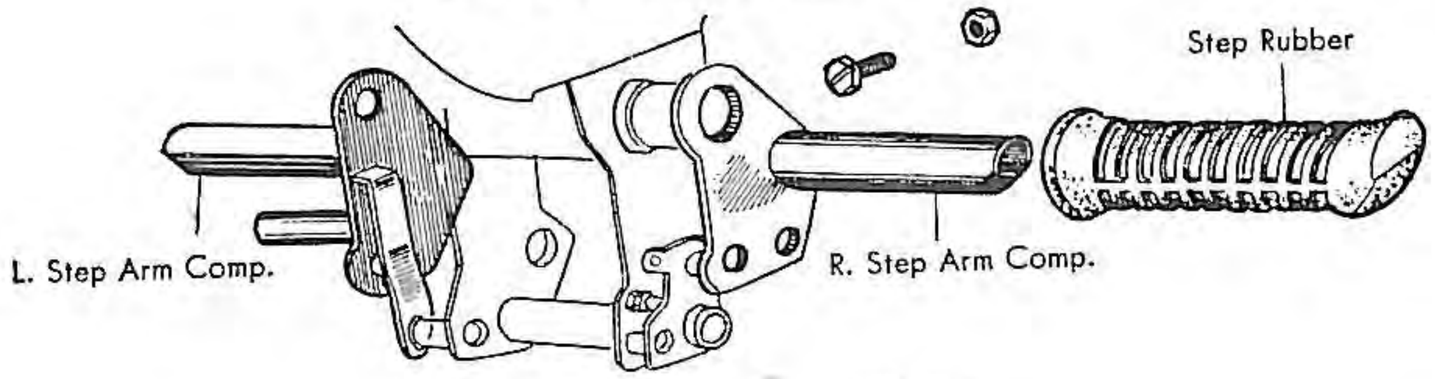


Fig. II-46. Step plates (CB92)

(2) The brake pedal can be removed when the cotter pins on the brake rod and brake pivot pipe are removed (C92, C95 STD).

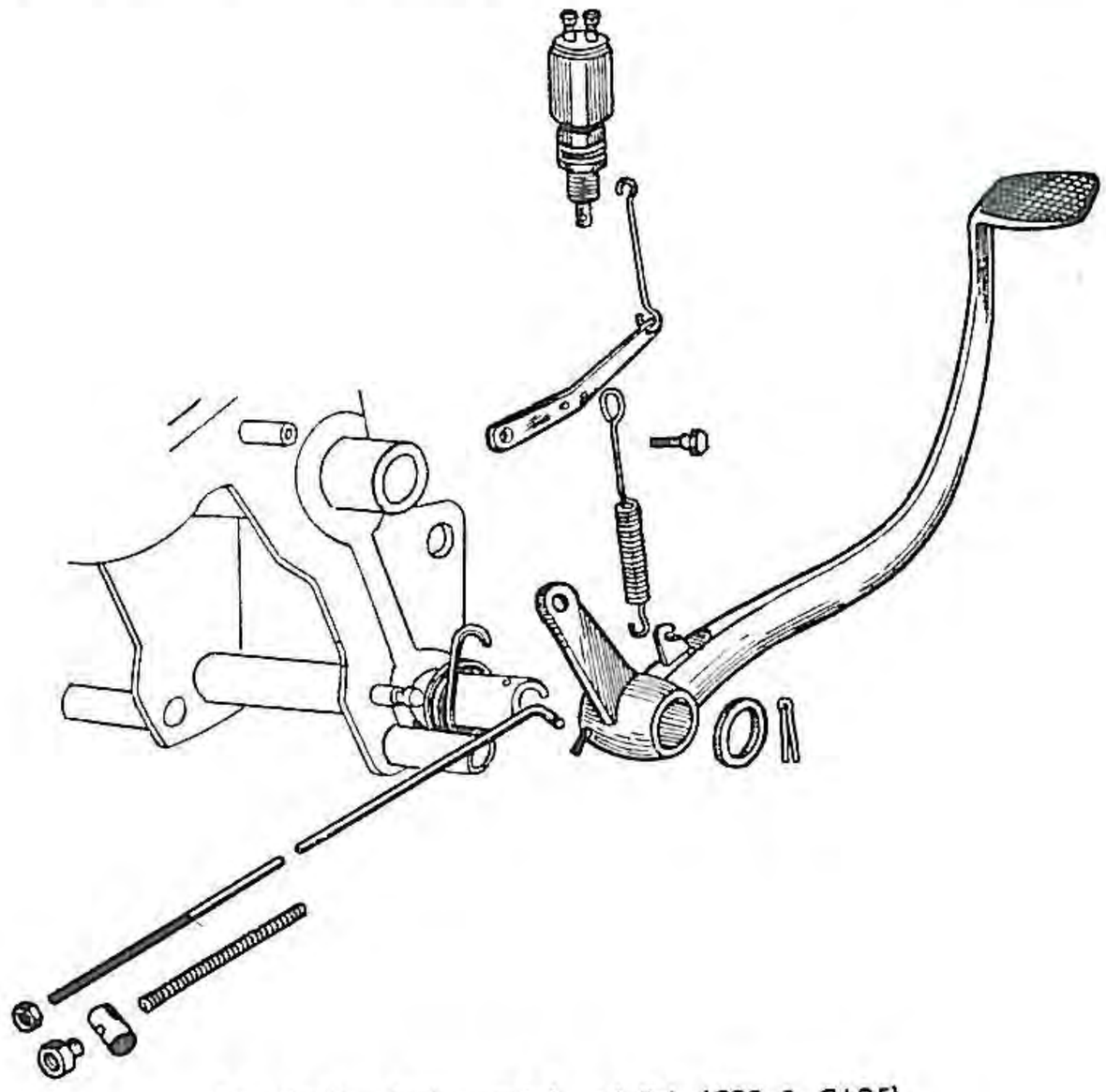


Fig. II-47. Brake pedal and link (C92 & CA95)

Remove the brake pedal pivot bolt of CB92. (Fig. II-48)

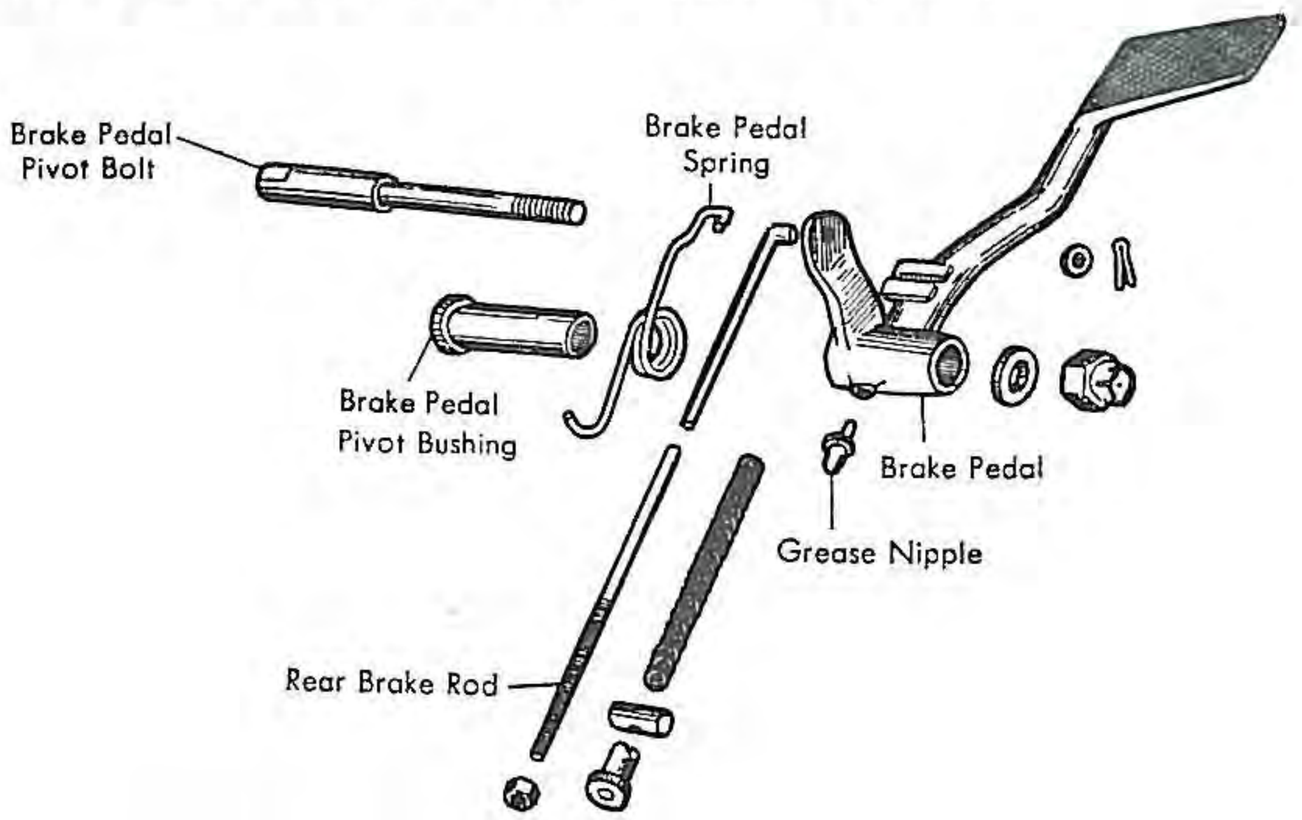


Fig. II-48. Brake pedal and link (CB92)

(3) Remove main stand anchor bolt and remove the main stand spring from hook.

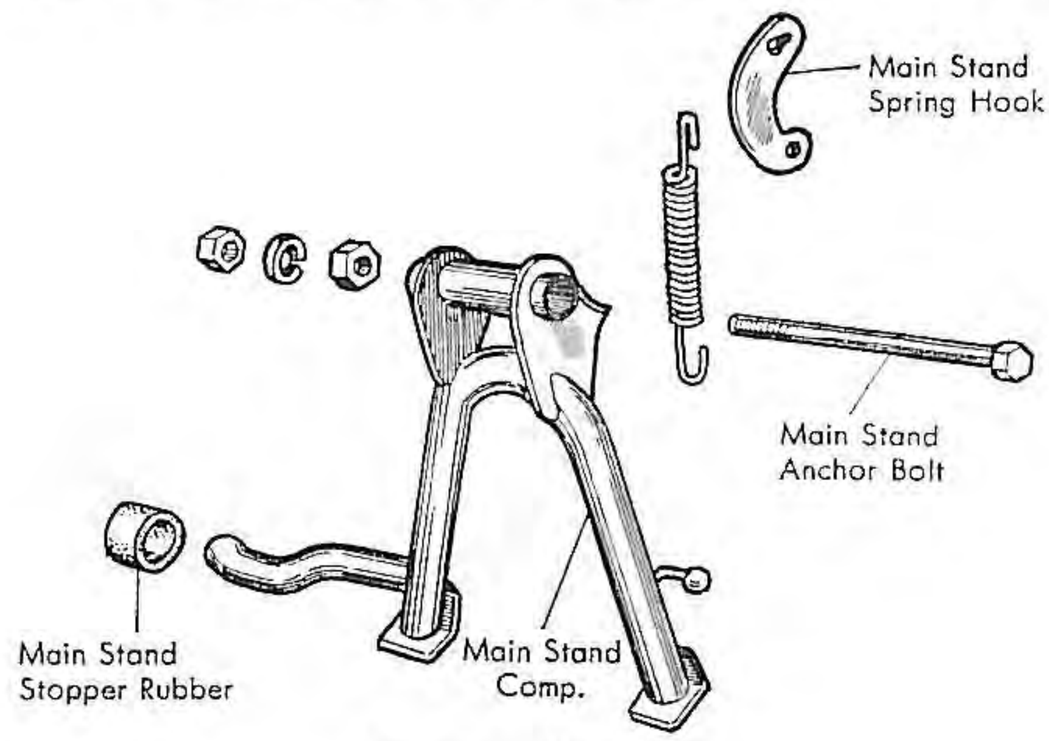


Fig. II-49. Main stand

II-12. FRAME

The frame and rear fender is a single unit with both halves welded together.

The CB92 frame is shorter than the C92 and CA95 frame and has a flat rubber mudguard at the end of the rear fender. (Fig. II-50)

A steering head pipe fitted with press-fitted steering ball races is welded to the front part of the frame.

Replace the ball races if they are damaged, worn or streaked. They can be driven out by tapping with a rod and hammer.

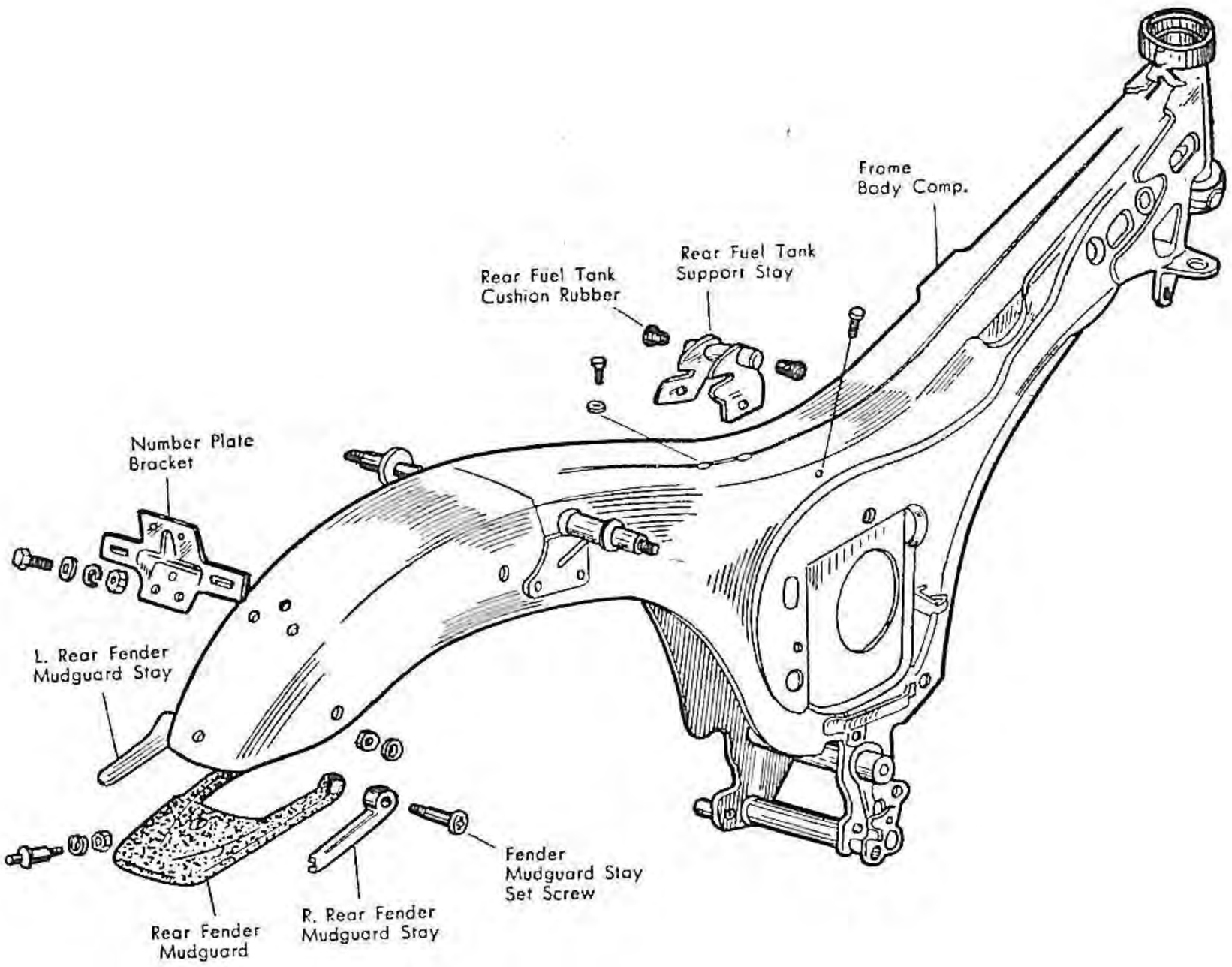


Fig. II-50. Frame (CB92)

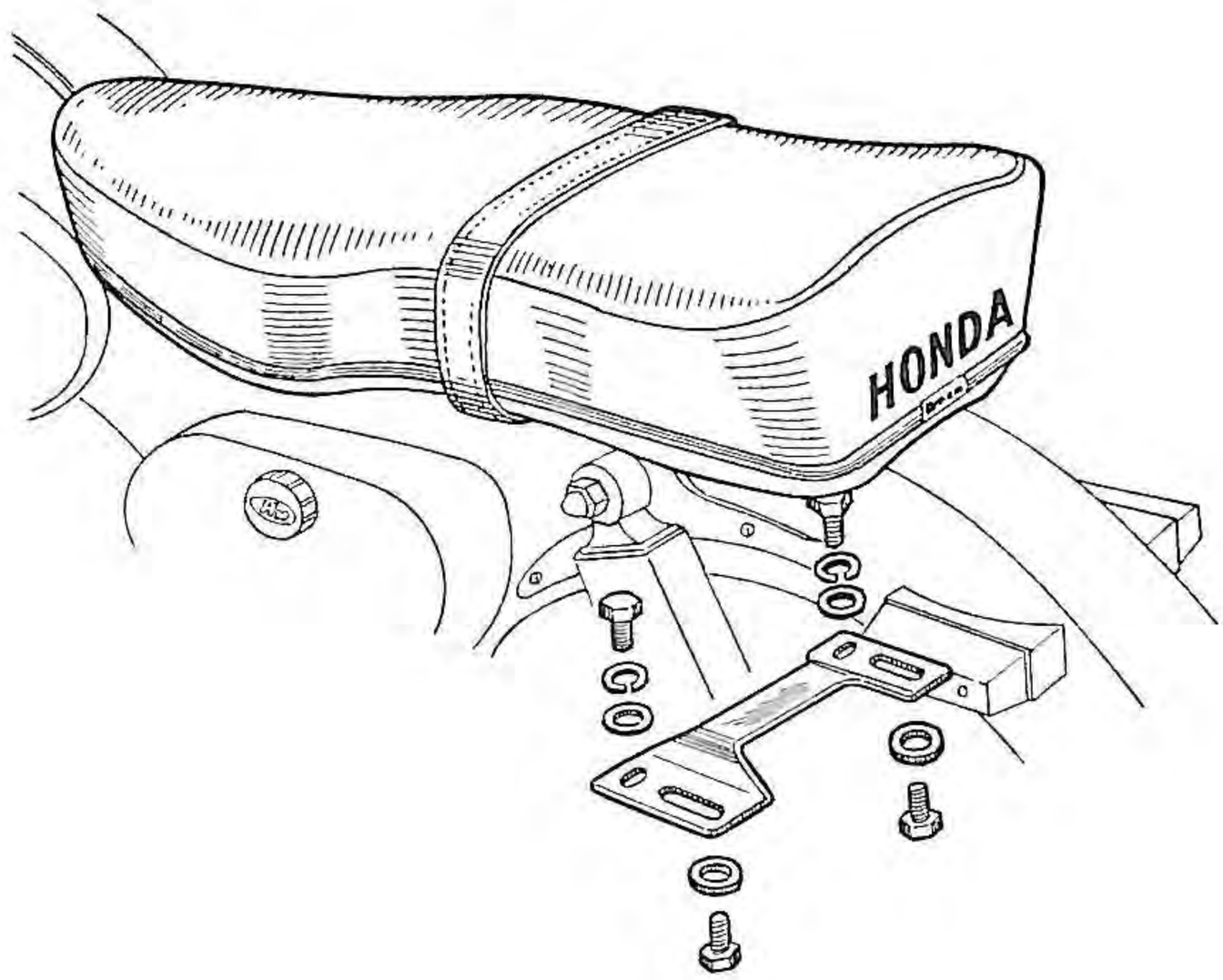


Fig. II-51. Dual seat and bracket (C92 & CA95)

A small can of touch-up paint, auxiliary fuse for electrical circuits, air pump for inflating tyres, a piece of rubber and glue are included.

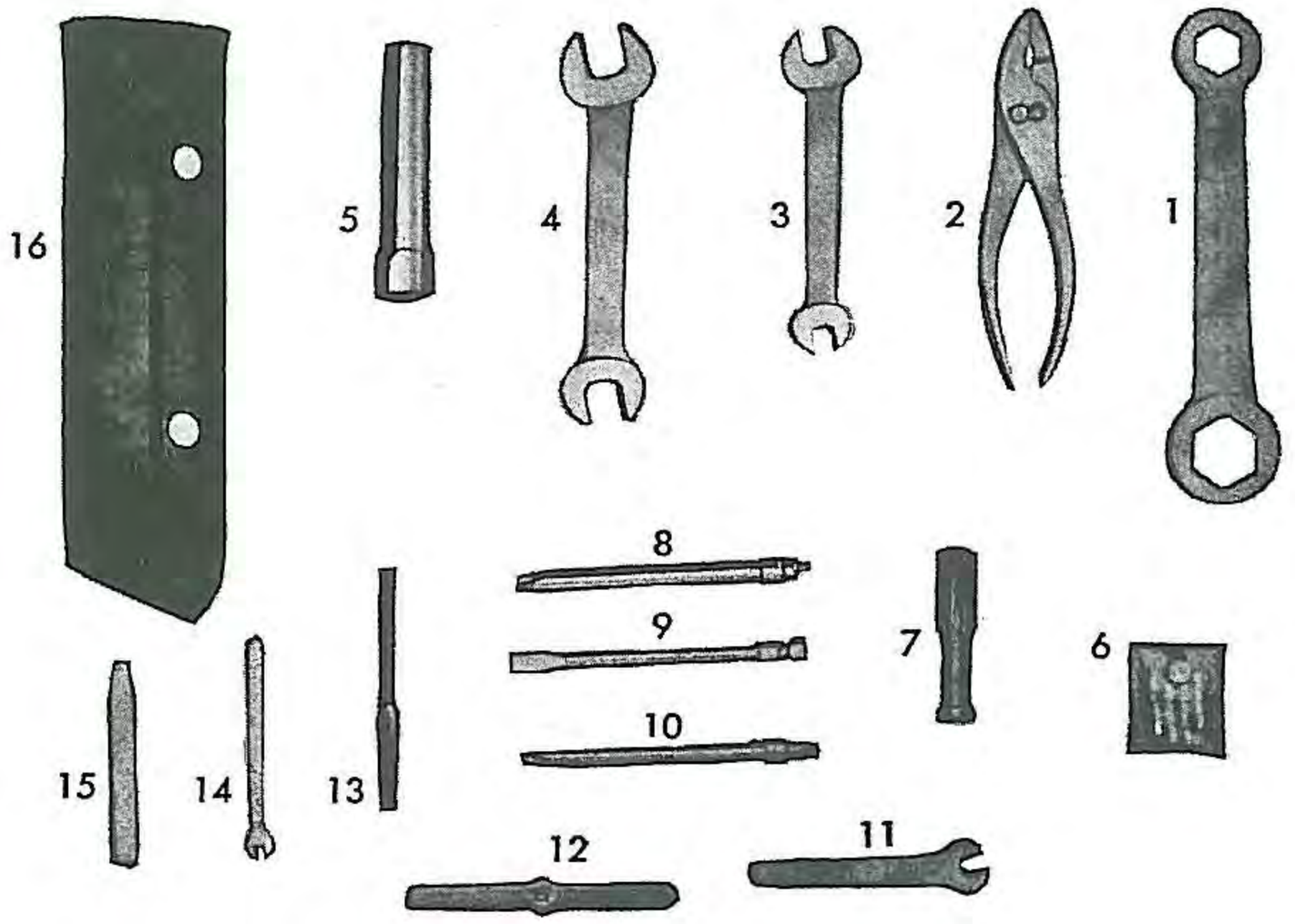


Fig. II-53. Tool kit

① Axle wrench

② Plier

③ Double head spanner 10 mm and 14 mm

④ Double head spanner 17 mm and 19 mm

⑤ Spark plug wrench

⑥ Auxiliary fuse

⑦ Grip

⑧ Screw driver ⊕ B 8 mm

⑨ Screw driver ⊖ C 6 mm

⑩ Screw driver ⊕ A 6 mm

⑪ Tappet adjusting spanner

⑫ Lever

⑬ Point file

⑭ Tappet adjusting spanner

⑮ Feeler gauge

⑯ Tool bag

III. ELECTRICAL EQUIPMENT

Electrical equipment is divided into 5 groups; storage battery, generating, starting, ignition and lighting equipment. In addition, winkers, horn, neutral indicator light and wiring harnesses and included in miscellaneous electrical equipment.

III-1. BATTERY

The battery is installed in the battery box on the left side of the frame. With the engine running at normal speeds, current generated by the A.C. dynamo and rectified by the selenium rectifier will easily supply the electrical requirements of the ignition system, lights and various electrical accessories.

When the engine is not running, when starting the engine with the starter motor or when the demand for current is greater than the dynamo output, the battery supplies the required current. The plastic case battery has 3 cells, each containing 7 positive plates and 8 negative plates.

Plates are insulated from each other by separators and are immersed in an electrolyte solution of sulphuric acid and water.

The capacity of the battery is 11 ampere hours at 6 volts.

The positive terminal is connected to the selenium rectifier thrugh a fuse and the negative terminal is grounded to the frame with a ground strap.

1. Removal and installation of battery

Remove the battery box cover. Remove the battery clamp by unscrewing the 6 mm bolts

6 cm deep
17 cm Long
15 cm High

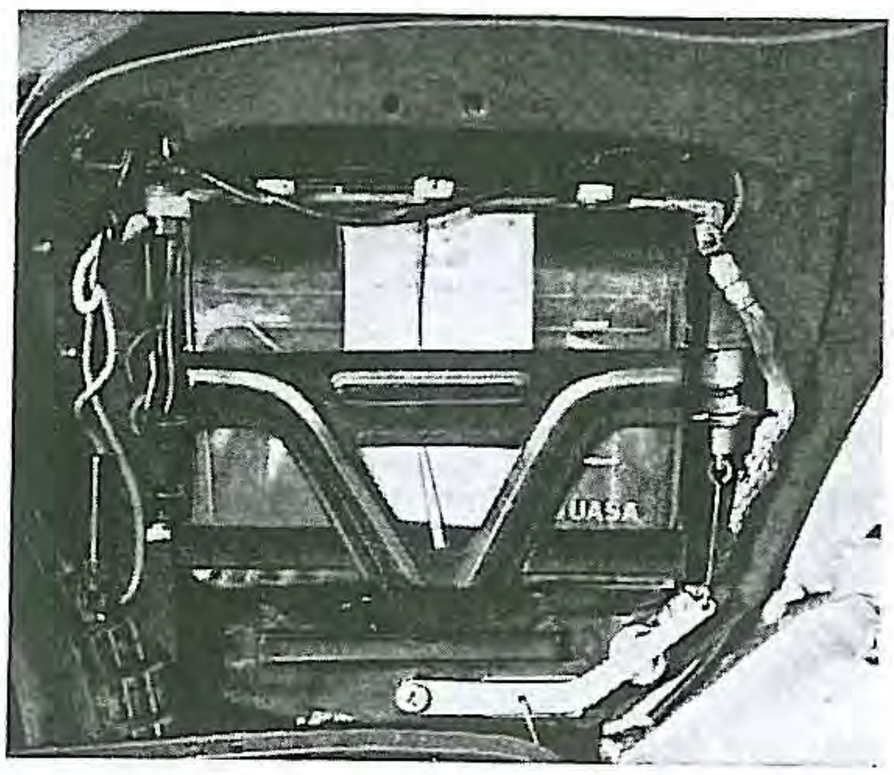


Fig. III-1.

Disconnect the wires from both battery terminals and the battery can be removed.
When installing the battery, wipe the battery clean and firmly tighten the wires on both terminals. (Fig. III-1)
Be sure the battery vent pipe is not pinched shut.

II. Maintenance

Batteries are shipped overseas uncharged and without electrolyte.
When charging the battery for the first time, follow the instructions attached to the battery, which read :
Battery maintenance requires only keeping the electrolyte at the specified level. If the level decreases exceptionally rapidly, check the dynamo to see if it is over-charging.
Relations between the specific gravity of the electrolyte and the amount of charge in the battery is as follows :

Specific gravity	Capacity of charge
1,130—1,500	0%
1,200—1,210	50%
1,260	100%

These are standard figures when the temperature is 20°C. Use the following formula for calculations at other temperatures :
Specific gravity at 20°C = (t°C Spec. Grav.) + 0.007 (t°-20°)
In the above formula, t° stands for electrolyte temperature in centigrade.
If the specific gravity falls below 1.210 when it is converted to 20°C, the battery requires charging.

Dry-Battery

Type	Capacity	Initial charging current (A)	Normal charging current (A)	Volume of electrolyte (liter)	Density of filling electrolyte (at 20°C)
MBK 76	6V. 11 Amph	1.1	1.1	0.4	1.260

(1) Precaution before use

The battery contains dry, charged plates but no electrolyte. When the battery must be used immediately, or a lack of time or charging equipment does not permit initial charging, the battery can be placed in service by adding sufficient electrolyte. However, an initial charge is recommended.

(2) Filling with electrolyte

Use a solution of diluted sulfuric acid of the proper specific gravity cooled to below 30°C. Fill the battery up to the electrolyte level line (upper line).

(3) Standing

Allow the battery to stand for two or three hours after being filled with electrolyte before charging it.

If the level falls during this period, add electrolyte to bring the solution up to the upper line.

(4) Charging

With the electrolyte temperature below 30°C, charge the battery at the rate given above for 15 to 20 hours. If cell temperature rises higher than 45°C during charging, stop charging for a while or reduce charging current to one-half.

If the electrolyte level falls during charging, add only distilled water to bring the level up to the upper line.

(5) Completion of charging

During the final period of charging, adjust the electrolyte specific gravity to between 1.250 and 1.270 at 20°C and continue charging for two or three hours. After charging is finished, wash the battery with clean water and dry.

(6) Handling

1. Before use, remove the sealing tape on the plug vents and open the overflow pipe.
2. Be sure to attach the vinyl overflow pipe to the battery when installing it on the motorcycle.

Sulphation

If the battery is excessively discharged, sulphation will occur and white powder form on the positive plates. After a long time the white powder will be deposited at the bottom of the cells.

Where sulphation has occurred, remove the cell caps, empty the battery of electrolyte and wash thoroughly and repeatedly with water until all the white powder is removed. Refill the battery with electrolyte and charge fully.

Hydrometer

Use a hydrometer to check specific gravity of the electrolyte.

The hydrometer indicates the specific gravity by means of floating balls, as follows

Red ball	float	float	sink
White ball	float	sink	sink
Specific gravity	over 1.240	1.240—1.180	under 1.180
Capacity of charge	100%	50%	0%

III-2. CHARGING SYSTEM

The charging system consists of the A.C. dynamo and the selenium rectifier. Alternating current induced by the A.C. dynamo is altered by the rectifier into direct current for charging the battery.

A. A.C. DYNAMO

A 6 pole permanent magneto is attached to the left end of the crank shaft and rotates in the center of a 6 coil stator. The dynamo is of a special design which regulates the maximum output automatically. Current output does not correspond directly with the engine rpm, so no special voltage regulator is needed. (Fig. III-3)

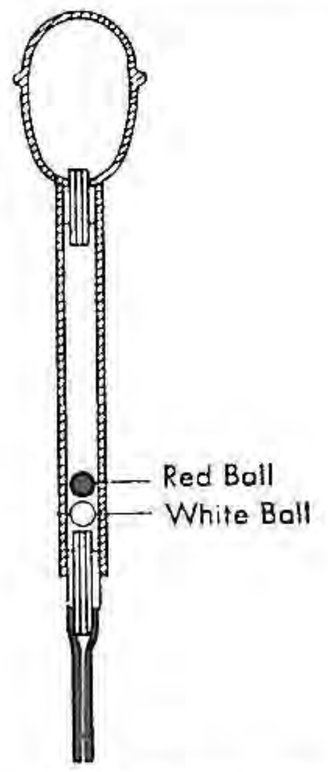


Fig. III-2.Specific Gravity Tester

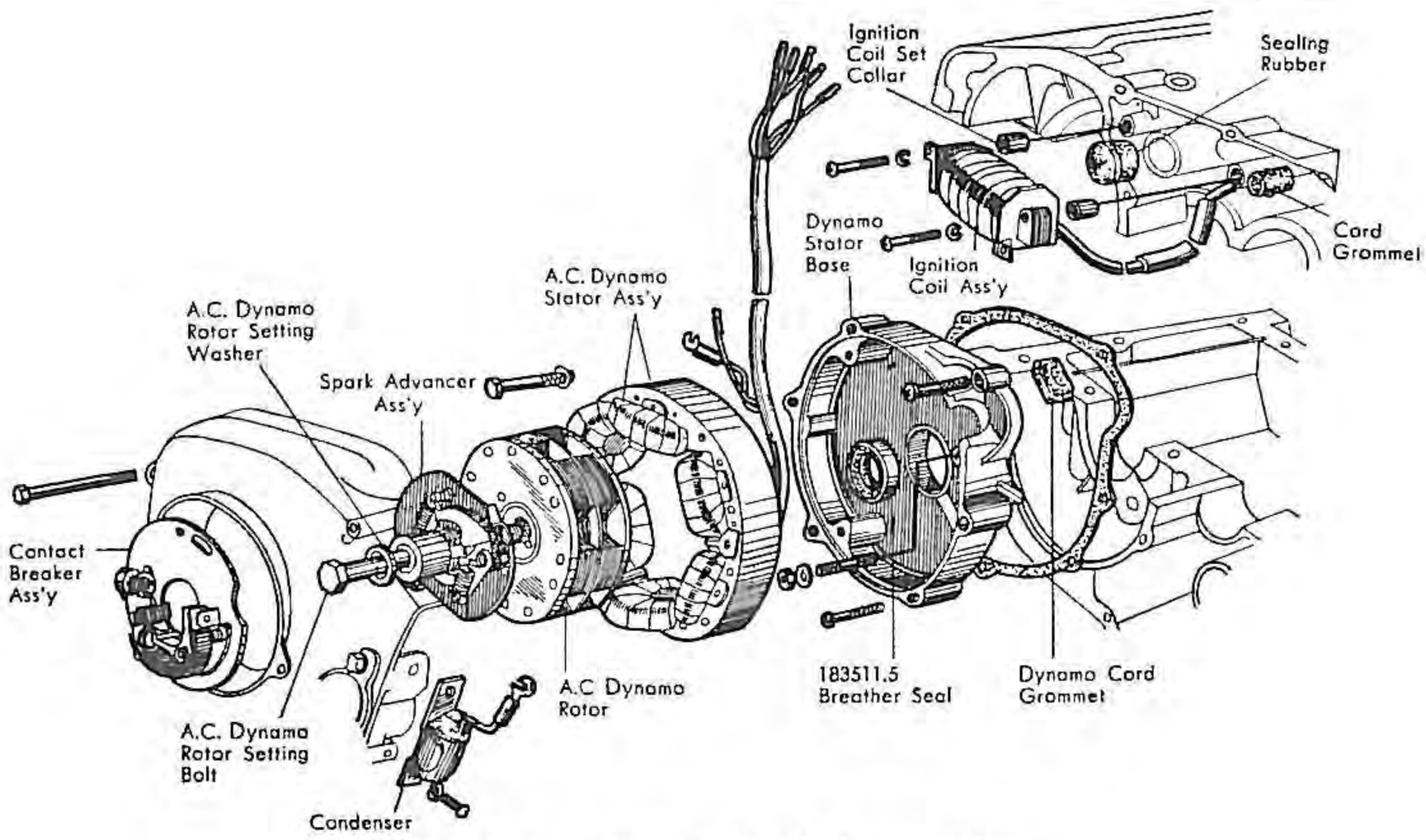


Fig. III-3. Exploded view of A.C. dynamo system

When lights are turned on, all coils are used, but for daytime running only a portion of the coils are utilized.

I. Disassembly and assembly

Disconnect the wiring and remove the right crank case cover and chain case cover. Remove the screws holding the dynamo. Remove the screws clamping the wiring to the crank case. Disconnect the neutral switch terminal. Remove the spark advancer and the dynamo rotor with an extractor.

The dynamo can be assembled by following the above steps in reverse.

Fig. III-4. A.C. Dynamo stator base

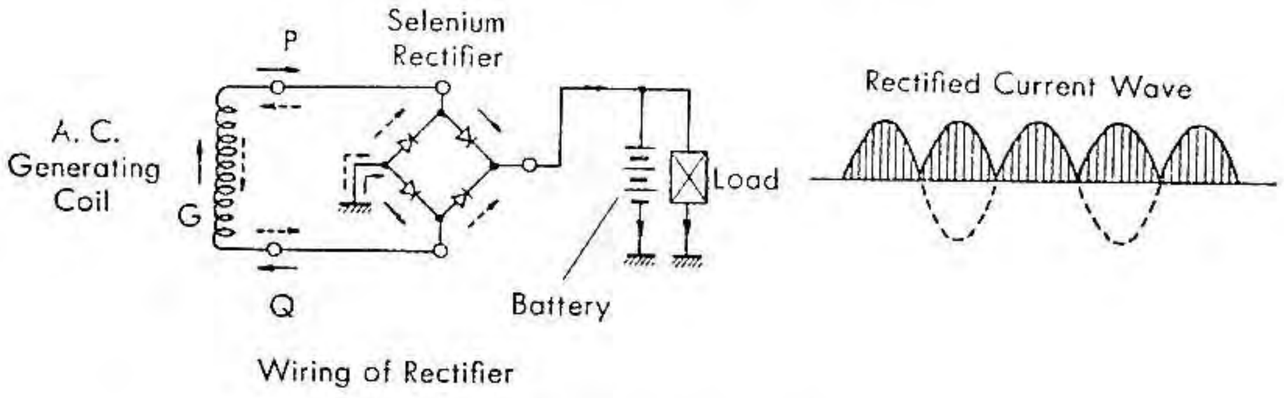


Fig. III-5. Charging Circuit

II. Inspection and maintenance

(1) Use a service tester or ammeter to check the dynamo output. (p. 122)

Check the generating current at 3 engine rpm readings.

The standard charging current under 6-8 volts is shown below and the dynamo should charge within +0.2 ampere at each rpm reading.

Speed at top gear		30 km/h	50 km/h
Crank shaft RPM	1000 rpm	2200 rpm	3700 rpm
Generating current, (day time)	+1.0	+4.5	+6.5
Generating current (night time)	−3.0	−1.0	+2.3

Remove the battery box cover and the battery. Take out the tool tray board attached to the air cleaner.

Unscrew the nuts retaining the coil from the outside of the frame. Remove the primary wire terminal and spark plug cap from the secondary wire (for simultaneous ignition type). As there is no difference in the efficiency of the distributor type coil and the coil used without a distributor, they can be interchanged. In this case the distributor cap should be attached to the cylinder head side cover to protect it from dust and the secondary wires led directly to the spark plugs.

II. Testing coil

(1) Power test

A three needle tester is recommended to check coil output. (Fig. III-10) The service tester (p. 122) can be used.

Connect the + wire of the tester to the secondary wire and the ground — terminal to the frame. Attach a spark plug to the other side of the secondary wire.

Rotate the crank shaft by using the starter motor. Check the maximum sparking distance between the two main pointers, which is found by moving one pointer until sparks cease to jump. The minimum gap should be 8 mm at crank revolutions of 300 to 3,000 rpm.

(2) Conduction test

A conduction test is needed to check whether there is a disconnected wire or short circuit in the ignition coil.

Use a tester by connecting one lead wire to the terminal and the other to the

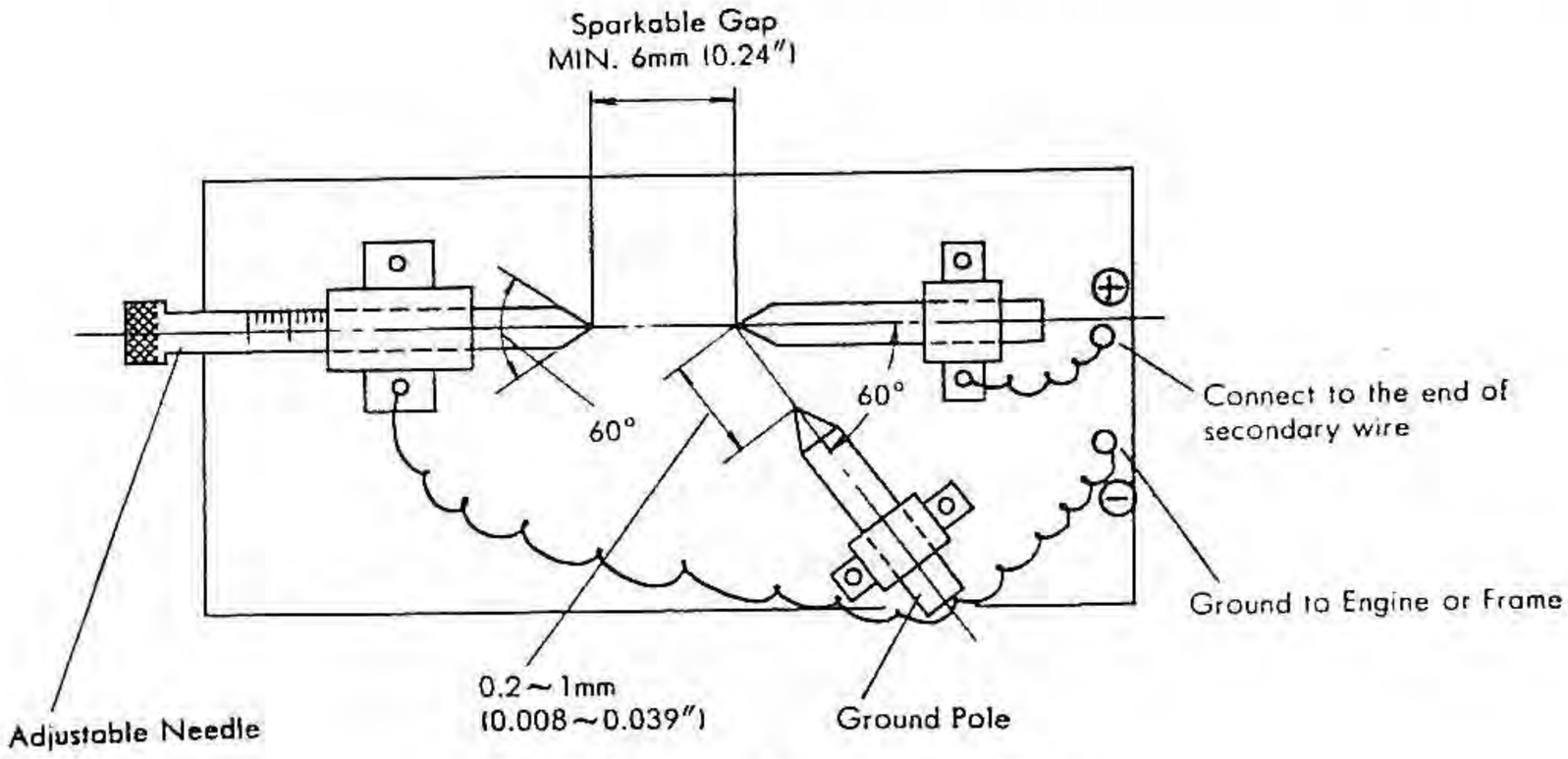


Fig. III-10. Three Needle Spark Tester

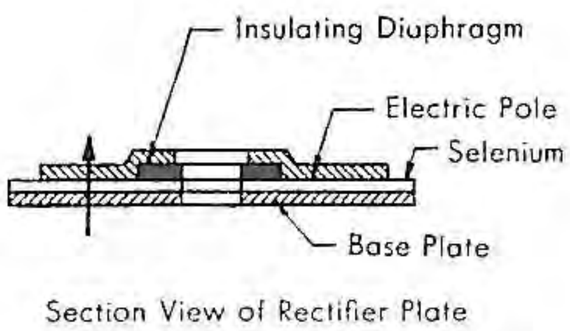
(2) When the magnetic power of the rotor has become weak, have it remagentized by a specialist.

B. SELENIUM RECTIFIER

The selenium rectifier changes alternating current induced by the dynamo into direct current for charging the battery. It consists of 850 mm-square sheets of selenium plate and operates by full wave rectification of A. C. current. To prevent contact with wires or cabels, all edges of the plates are covered with rubber.

I. Dismounting

The selenium rectifier is attached by 1 nut to the left side of the frame just below the center of the fuel tank. It can be dismounted by using a long wrench. Remove the caerburttor and the selenium rectifier can be dismounted from the opening behind it. Disconnect the wiring from the terminals with a screw driver.



Section View of Rectifier Plate

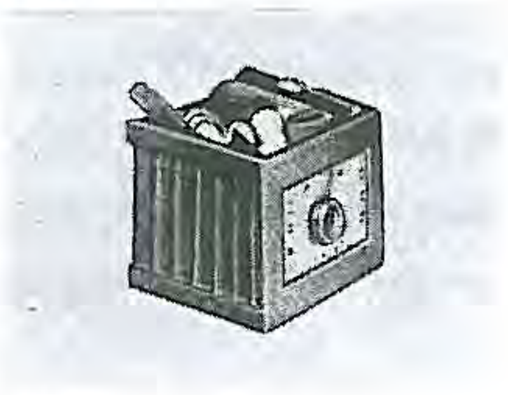


Fig. III-6. Selenium rectifier

II. Installation

Connect the wiring to the selenium rectifier terminals according to the wiring color code. Be careful not to interfere with other wiring or cables. As the rectifier is grounded to the frame at the point where it is mounted, do not use insulation in mounting it. The rectifier will not burn unless the plates are shorted.

III-3. IGNITION SYSTEM

The ignition system is designed to deliver a high voltage electrical charge of 15,000-20,000 volts to each spark plug at the correct time to fire the compressed charge of fuel and air in the cylinder. The 7 elements making up the system are ignition switch, ignition coil, distributor, breaker points, condenser, spark plug and battery.

There is no distributor on engines having serial numbers adove C92E-937065 or C95-915183. These engines have a simultaneous ignition system, so that both plugs fire at the same time; that is, each fires twice during one full cycle of the engine.

If it is not stable at any rpm or is less or more advanced than listed above, replace the spark advancer.

Replacement of spark advancer

Remove the breaker points cover and breaker points base plate.

Check to see that the springs are in good condition and that the points cam has sufficient grease on the shaft.

D. CONDENSER

The condenser is uesd along with the breaker points to absorb excess current and assist the breaker points to function properly.

The capacity is 0.2 μ Farrad.

A faulty condenser is sometimes indicated by badly burned breaker points, weak spark or difficulty in starting the engine.

Use the service tester (p. 122) to check the insulating resistance between the terminal and the outer tube, in conjunction with this data :

over 50MΩ	Good	
50～10MΩ	rather good	replace
below 10MΩ	faulty	replace

The condenser terminal must be tightened firmly to the breaker points primary circuit.

E. DISTRIBUTOR

The distributor delivers high voltage current to each spark plug. The rotor inside the cap switches this current to the cables leading to each spark plug.

Replacement of distributor cap or rotor

The inside of the cap and rotor must be kept clean.

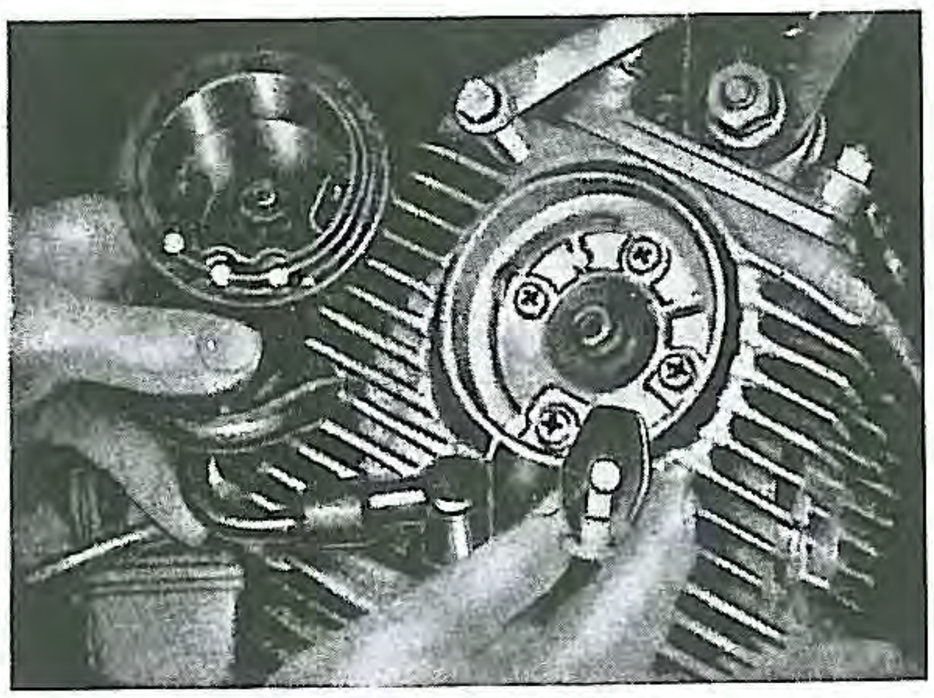


Fig. III-12. Removing distributor cap and rotor

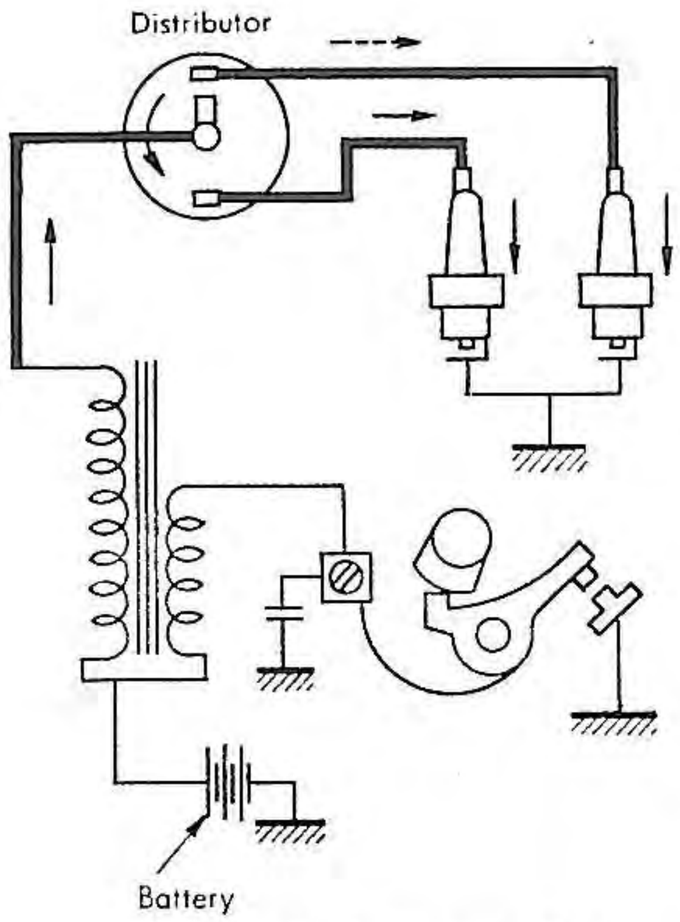


Fig. III-7. Ignition system Wiring (Distributor Method)

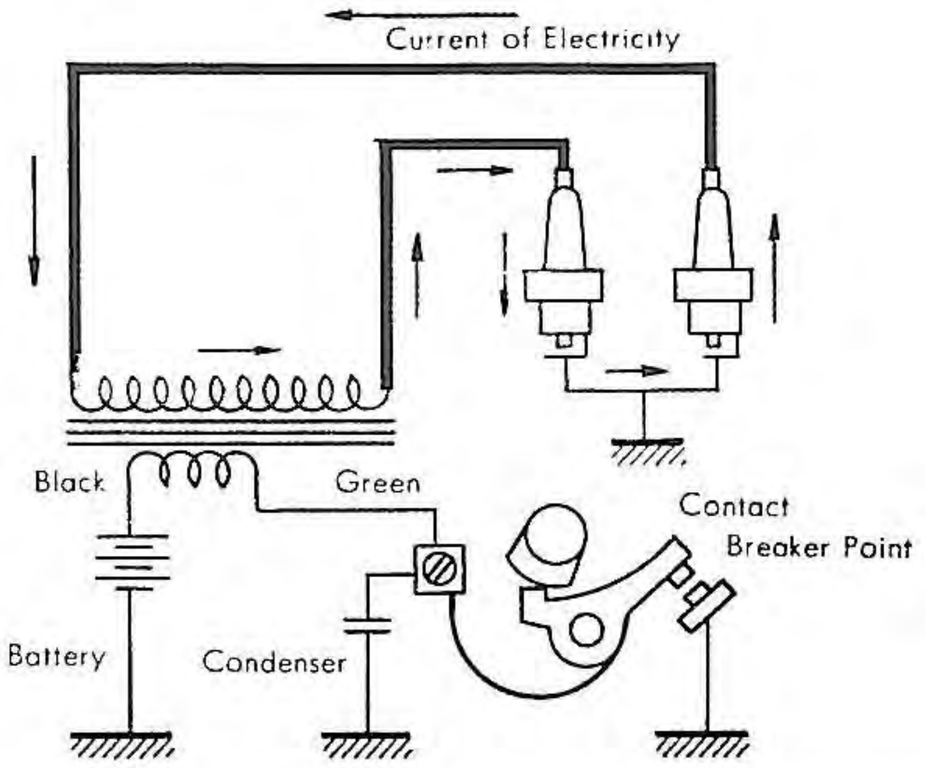


Fig. III-8. Ignition system Wiring (Simultaneous Method)

A. IGNITION COIL

From the same engine numbers, the ignition coil is located on the inside of the frame instead of on the left side of the crank case. The ignition coil is important to engine performance.

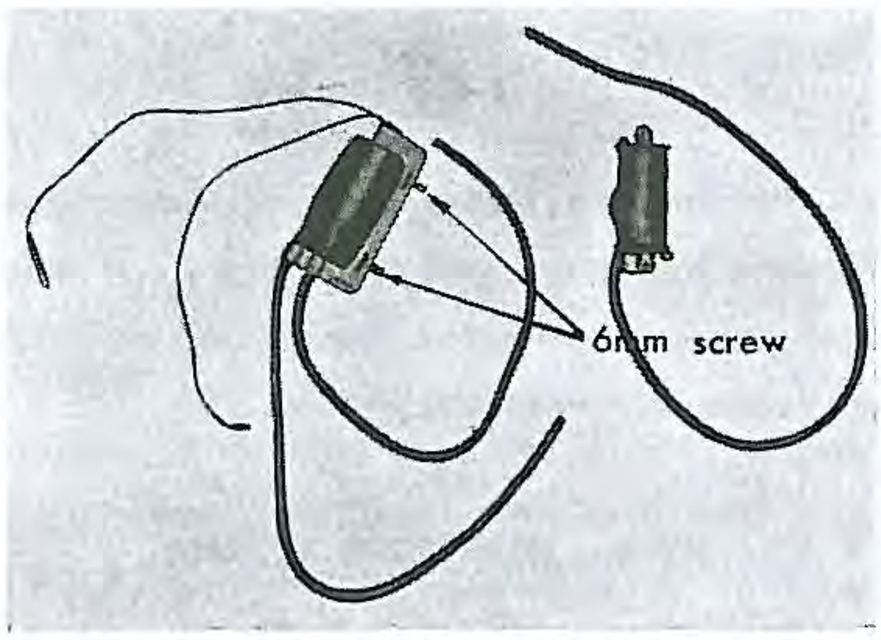


Fig. III-9. Two kinds of ignition coil
(Left is the one attached to frame)

I. Replacing ignition coil

Remove right crank case cover and chain case cover.

Remove screws retaining the coil.

Remove the primary wire terminal and secondary wire from the distributor cap. Take off the distributor cap.

earth or core of the coil. The service tester (p. 122) can be used.
The earth conduction test should show no resistance, but the connection to the coil core must be an open circuit.
If the coil fails either test, replace it.

B. BREAKER POINTS

The breaker points are located on the left end of the crank shaft where the contact breaker cover is attached. The condenser is located on the left side crank case.

I. Replacement of breaker points

Remove the breaker cover from the left crank case cover and remove the screws holding the breaker arm and points. After replacing the breaker points, set the ignition timing correctly, referring to p. 126.

II. Repair of breaker points

Check the points for discoloration, pitting and burring. Oil on the points will result in poor engine performance, so wipe the points clean with a dry cloth. If the points are pitted so badly they cannot be smoothed with a file, replace the points.

C. SPARK ADVANCER

The spark advancer is attached to the dynamo rotor behind the contact breaker base plate. The spark advancer regulates the ignition timing at high speeds. As mentioned in the

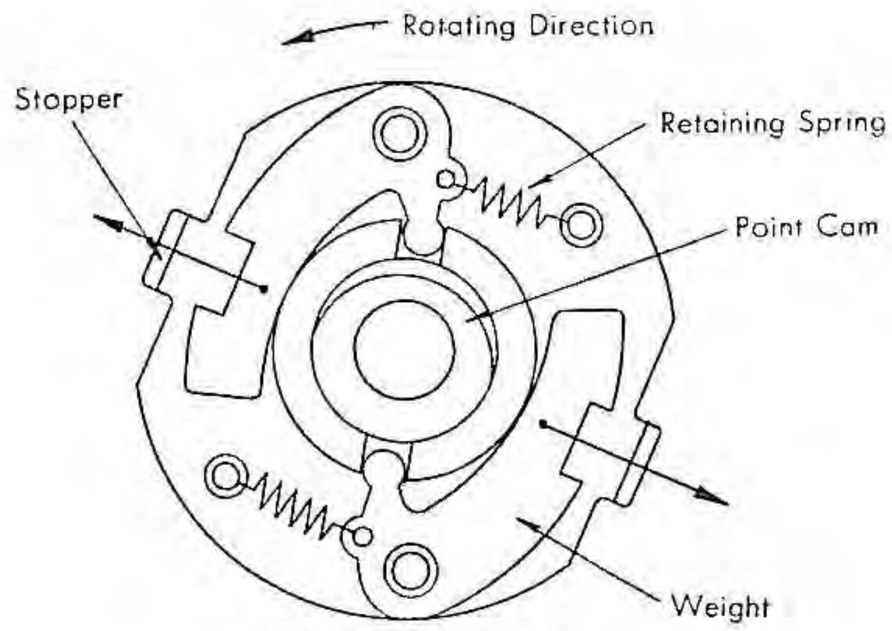


Fig. III-11. Spark advancer

specifications, the advancer stays at 5° BTDC at 900–1200 rpm and then advances up to 45° BTDC at 2300–2700 rpm.
The advancing angle and state of advancing in reference to rpm can be checked by the service tester. (p. 122)

If cracks or carbon deposits are found on the poles, replace them. Badly defaced rotor contact plates and cap center electrodes should be replaced. To replace the cap, unfasten the clamp and remove the screws holding the high tension wires.

F. SPARK PLUG

The spark plugs used in Honda 150 and Honda 125 motorcycles are :

	C92 & C95	CB92	CA95	Special parts
For normal use	C7H	C10H	C10H	C12H
For heavy stress operation	C8H	C12H	C12H	

Under normal usage, the spark plug should be completely dry and have a thin gray or brownish coating and the insulator should be scorched a golden brown color.

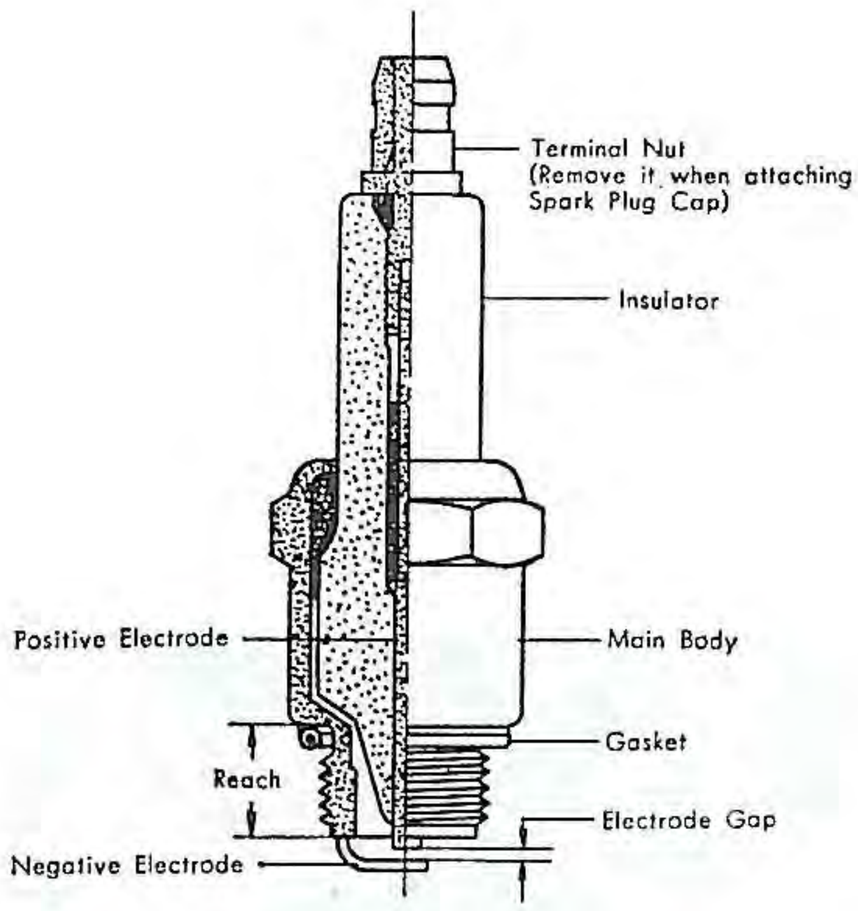


Fig. III-13. Cutting view of spark plug

1. Maintenance of spark plug

Use a spark plug cleaner or wire brush to clean the plug if it has carbon deposits or is wet. After cleaning, set the gap to 0.6–0.7 mm (0.024–0.028″). Replace any damaged or badly worn spark plug.

If a spark plug tester is available, check the plug under 7–10 lbs. atmospheric pressure. Replace any plugs not passing the test.

When installing plugs, first screw in by hand and " finger tighten " then tighten another 1/4 turn with a spark plug wrench. Do not forget to insert the spark plug washer.

II. Spark plug trouble shooting

Symptoms	Cause	Remedy
Insulator cracked or damaged	Over heating	Use a colder type spark plug
	Over heating due to loose tightening	Tighten it firmly
Insulator and electrodes are sooty or wet	Plug is too cold	Change to hot type plug
	Carburettor fuel air mixture is too rich or excessive use of choke shutter	Adjust carburettor mixture correctly.
	Burning oil due to worn piston rings or coming down into cylinder	Repair the trouble in the engine.
	Weak sparks at spark plugs	Check and repair high tension circuit.
		Check and clean the contact point surfaces and correct the gap.
		Recharge the battery if discharged.
Unusual wear of electrodes or granular substance growing at the insulator	Excessive heating	Replace with a colder spark plug.
	Over heating due to loose tightening of the spark plug	Tighten it firmly.
	Fuel/Air mixture is too lean	Adjust the carburettor.
	Too advanced or too retarded ignition timing	Adjust the timing.

III–4. ELECTRIC STARTER

When the starter button on the right handle is depressed, 100 amphere current flows into the starter motor, making it revolve. This force is conveyed to the engine by chain and the engine revolves and starts. After the engine starts, an automatic clutch, called the "over–running clutch", severs the connection.

Wiring is as below :

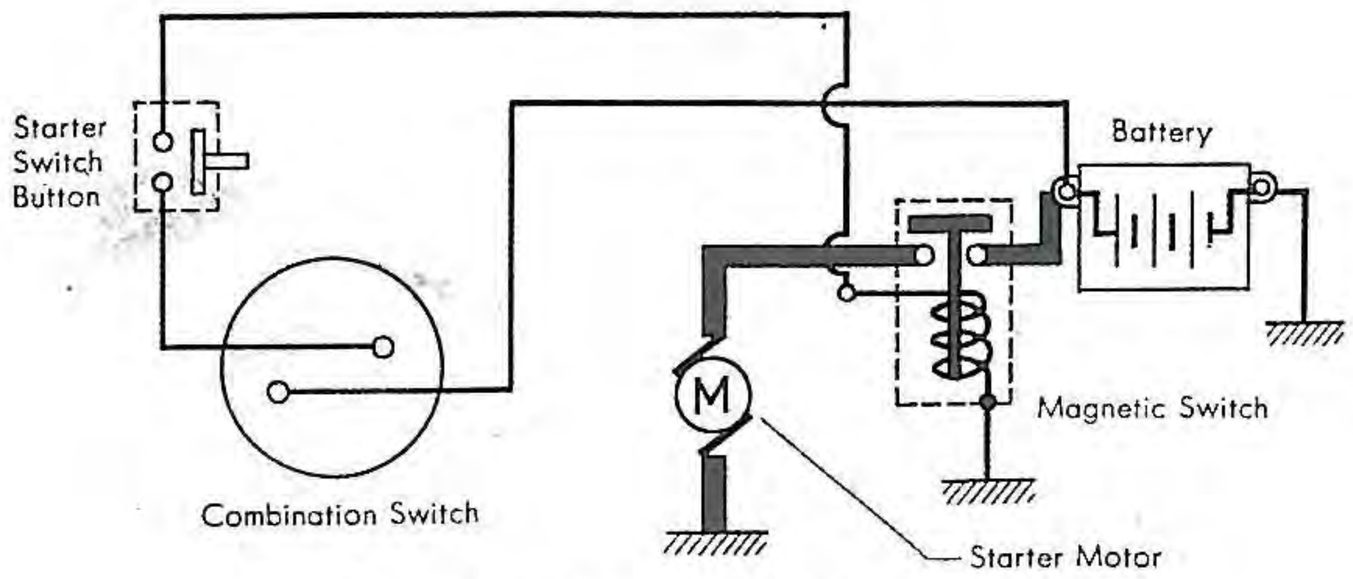


Fig. III-14. Wiring diagram for electric starter

A. STARTING MOTOR

Capacity of the motor at the time of cranking is:

2.3 V, 200 Amp. 1.8 Kg-m, Torque 0.3 HP.

There are two reductions between the motor and the crank :

Primary	**Shaft—Sprocket (Planetary gear)**	**7.33 : 1**
Secondary	**Sprocket—Crank Sprocket**	**2.77 : 1**
	Total	**20.3 : 1**

In cold weather the crank will rotate at 250-300 rpm.

1. Dismantling and Assembly

Refer to the exploded view (Fig. III-15) and remove the covers on both sides of the starting motor. Unscrew 1 long and 3 short 6 mm bolts fixed on the crank and disconnect the motor from the chain. Remove the sprocket set ring and the serration-fitted sprocket can be taken off the motor shaft. Unscrew the bolts on the gear case and disassemble the front part the motor. There are 3 planetary gears fixed on a plate by pins.

Remove the ring gear from the side of the main body. Remove the commutator cover and screws on the rear part of the motor. Next detach the bearing and the commutator and armature coils inside may be pulled out. Loosen brush screws and remove the brushes by pulling the springs.

Reverse the above steps to reassemble. It is better, however, to fit the sprocket on the shaft first and then attach the planetary gears.

II. Checking and Maintenance

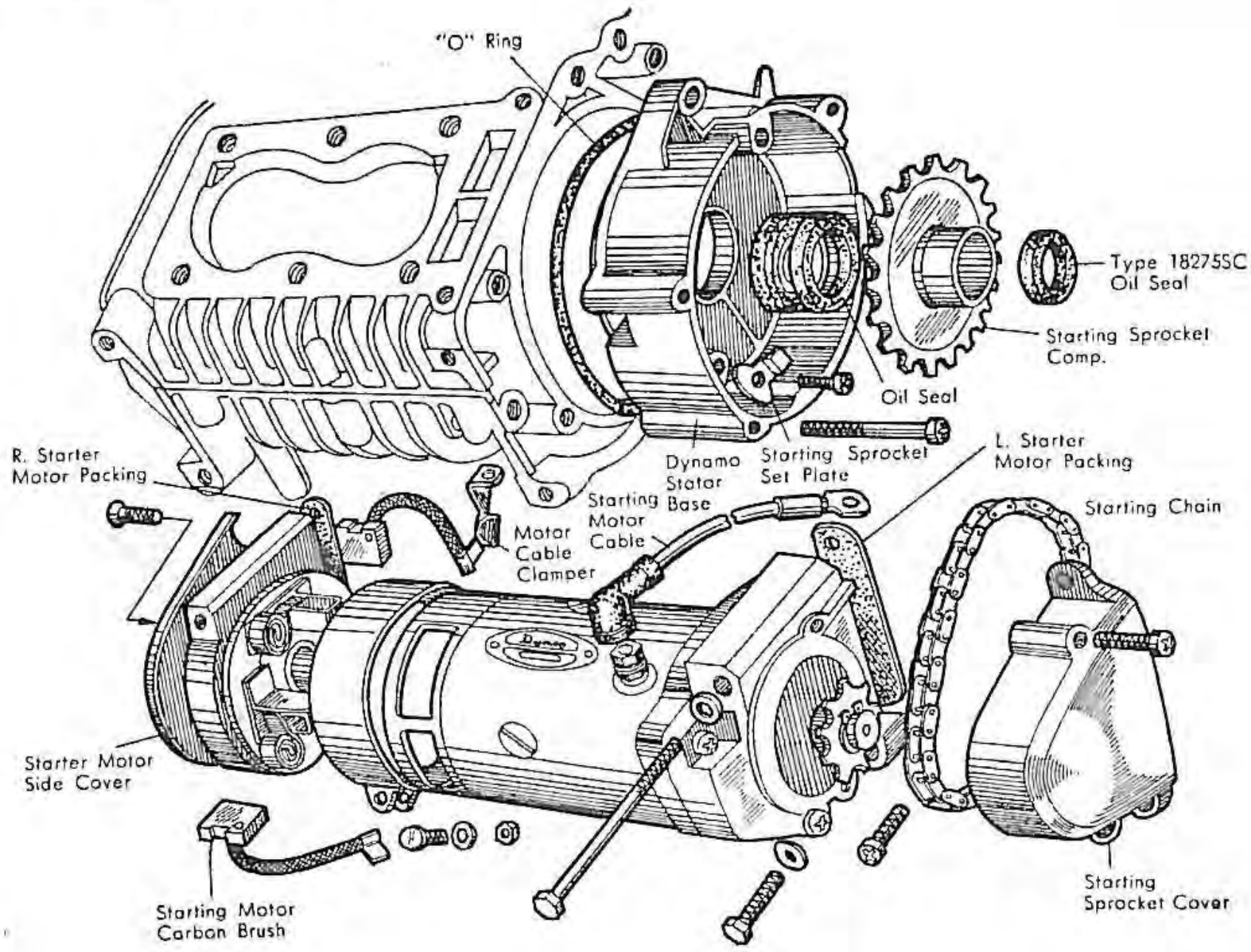


Fig. III-15. Exploded view of starting system

Gear defects are rare. Should a tooth be chipped, remove the gear holding pin and replace the chipped gear.

When the commutator copper parts are worn and its efficinecy decreases, it is advisable to have a spceialist undercut the insulating mica.

Worn brushes and faulty springs can be replaced easily by removing the bearing cover.

If the starting motor is immersed in water, disassemble the motor and dry the inner parts completely as soon as possible.

B. STARTER MAGNETIC SWITCH

As the starter motor current is 100 amp., a thick cable and special connector are required. The magnetic switch is provided for this reason. (Fig. III-14)

When a magnetic switch has been used for a long period, the contact plate is burned by the high current, resistance increases and finally the flow of current will be stopped. In such a case, a click will be heard when the starter button is pushed but the motor will not start. Remove the switch, take out the 2 screws and file the contact plate with a fine mesh file or sandpaper.

C. OVER-RUNNING CLUTCH

The over-running clutch is designed so that the rotation of the starter motor is transmitted to the engine crank shaft, but when the engine starts the engine rotation is not transmitted back to the starter motor. The construction is shown in Fig. III-16.

When the chain moves in the direction shown by the arrow in Fig. III-16 (b), the 3 rollers pushed out by their springs in the direction of the small arrow and the sprocket

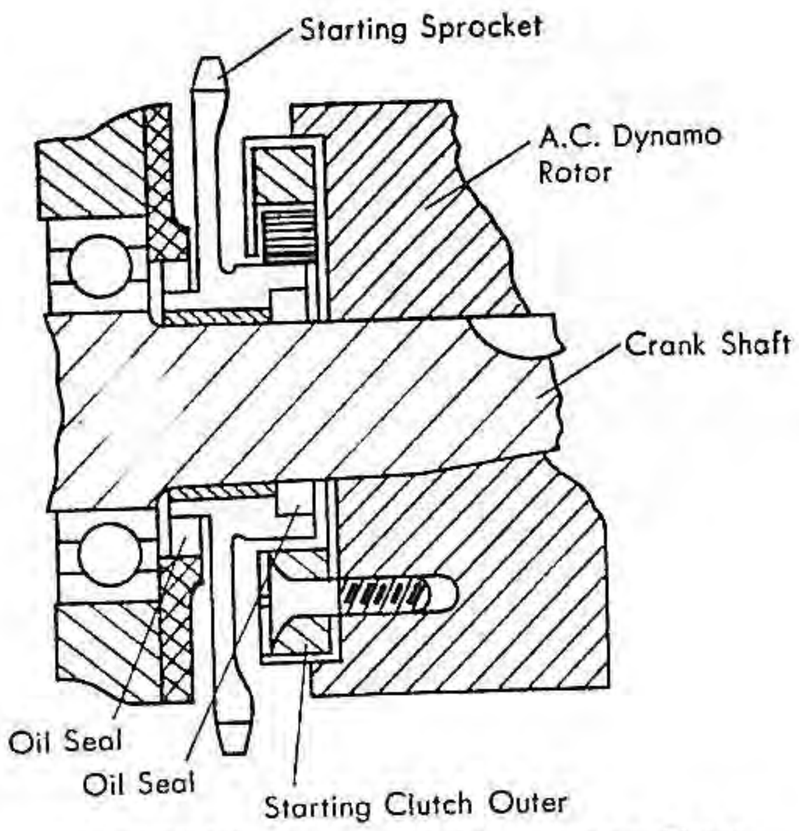


Fig. III-16 (a). Section of Over-running Clutch

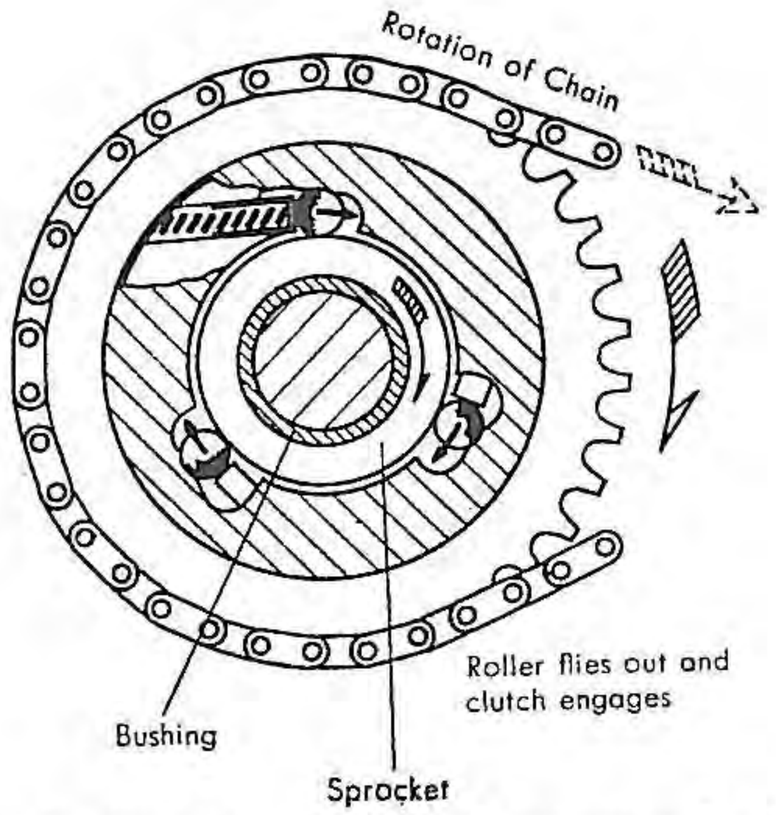


Fig. III-16 (b). Side view of Over-running Clutch

and outer wedge rotate together. As the outer wedge is connected to the dynamo rotor with 3 screws, the engine crank shaft is rotated.

When the engine starts and crank shaft rpm becomes faster than the rotation of the starter motor, the clutch outer wedge rotates and the 3 rollers are pushed back by centrifugal force and become separated from the sprocket, so the engine rotation is not transmitted to the starter motor sprocket.

1. Dismantling and inspection

Remove the right side cover and the dynamo stator base. Remove the starter motor chain sprocket and disconnect the starter motor. The dynamo rotor and starting sprocket are pulled off the crank shaft together.

(1) Check the crank case and starting sprocket oil seals.

(2) Replace the starting sprocket bushing if the inner diameter is worn excessively.

(3) Check the place where the starting sprocket roller hits, and pressure marks and wear on clutch outer wedge. Replace worn parts.

(4) Check the roller springs.

II. Assembly

Set the 3 springs, spring caps and rollers on the clutch. Fix the clutch to the dynamo rotor with 3 screws and tighten firmly. Place the key into the crank shaft slit to coincide with the dynamo rotor. Rotating it in the direction of crank shaft rotation, push the rotor against the sprocket while holding the chain stationary. Then the clutch will be set. Complete assembly by installing the spark advancer and dynamo base.

Apply a thin coat of non-sticky grease (such as silicon grease DC 44) to the rollers when assembling.

III-5. MISCELLANEOUS EQUIPMENT

A. HORN

An A.C. coil type horn is used and volume and sound are improved by a trumpet. A cross-section is shown in Fig. III-17. The horn sounds by vibrating the diaphragm magnetically. Sound is amplified by a coiled trumpet. The horn volume is 100~105 phons two meters in front of the horn. When a horn has been used for a long time, the contact point surfaces become unevne and current decreases, resulting in a weak and inferior sound. Remove the horn cover, loosen the lock nut and adjust with the adjusting nut. To increase volume and improve quality of the sound, turn the adjusting nut clockwise. Adjust for the best sound and tighten the lock nut.

The diaphragm is made of very thin hard metal. When this has been damaged and the sound becomes inferior, it must be replaced.

Before checking the horn itself when it does not sound, check the horn button and terminal connections first.

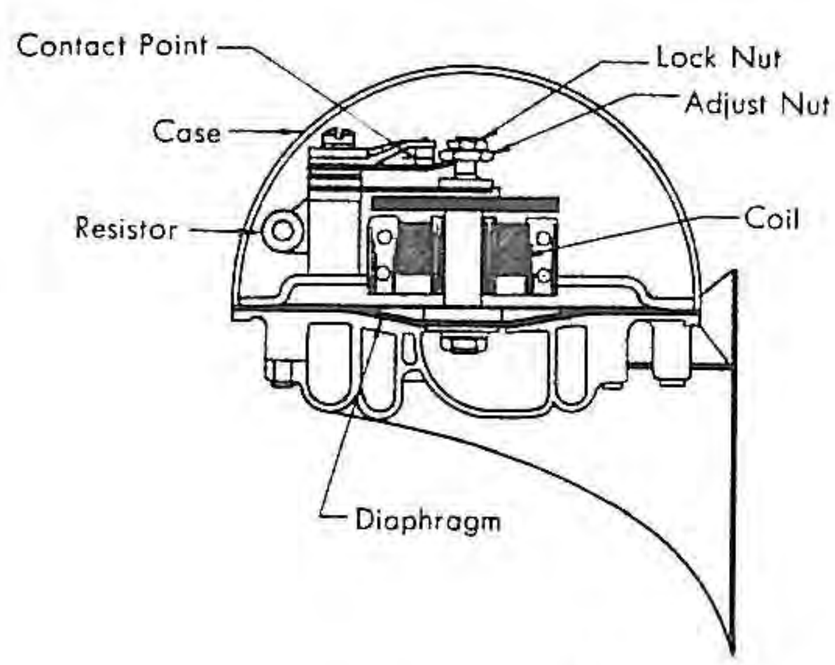


Fig. III-17. Cross-section of Horn

B. WINKERS

The winker relay is attached to the inside of the frame with a seat mounting bracket bolt. The construction of the relay is shown in Fig. III-18. It balances the magnetic force of the relay with the spring. Standard wink frequency is 60~120 times per minute.
If a winker does not blink but remains lighted when switched on, one of the 2 bulbs on that side is burned out. If both front or both rear bulbs blink at the same time when the switch is changed to either side, the wiring is faulty.

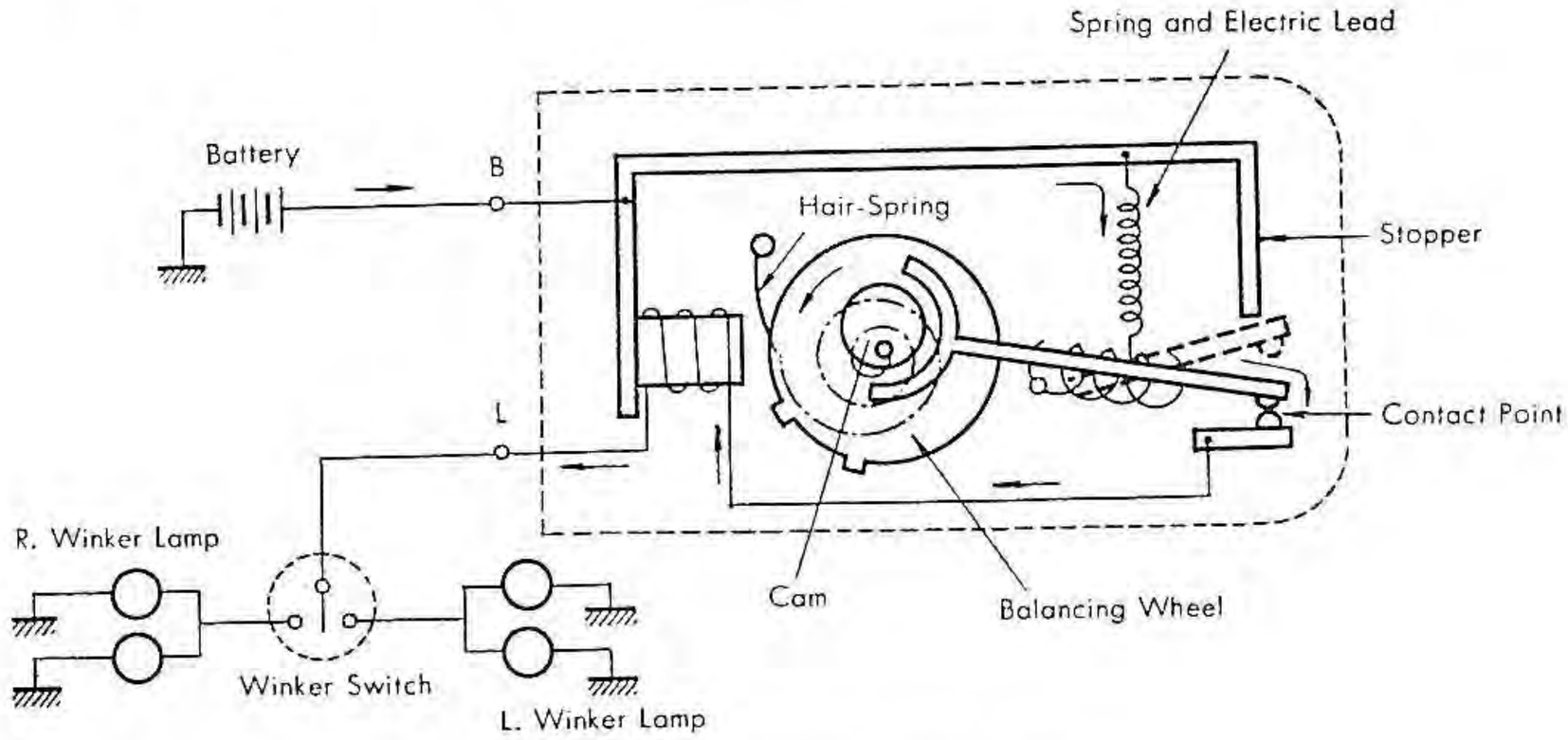
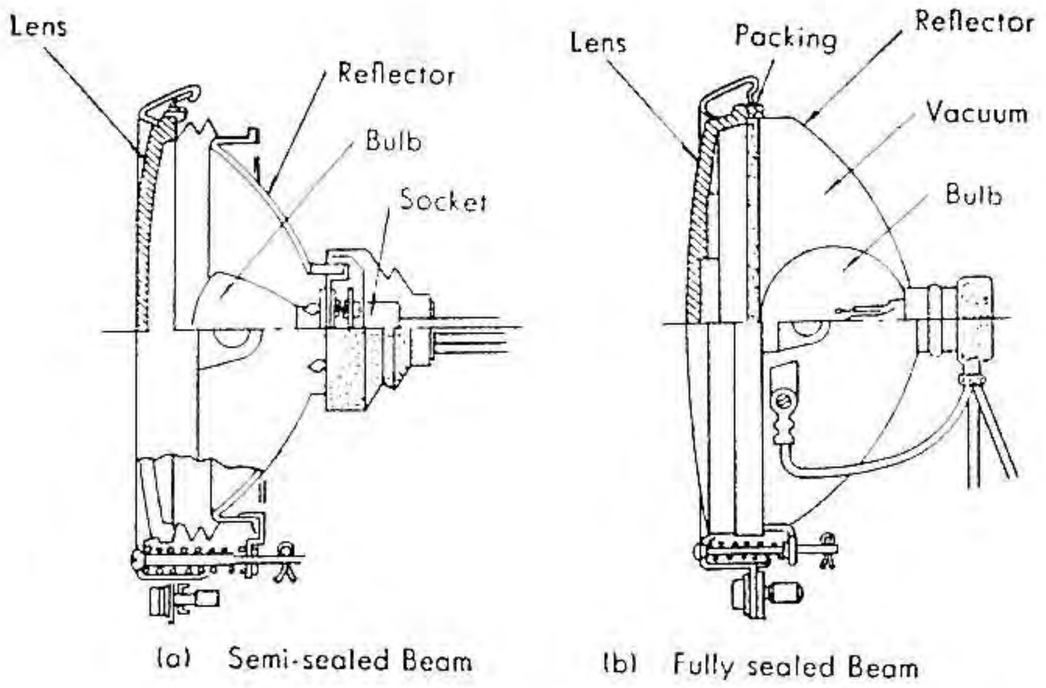


Fig. III-18. Structure of Winker Relay

If both lights on one side remain lit or blinking is unstable, or if one side will not light at all, the relay is defective. Replace the relay in this case.

C. HEAD LIGHT

Two different types of head light are used. They are interchangeable. One is a semi-sealed beam and the other a fully sealed beam type.
Details of both are shown in Fig. III-19. The semi-sealed beam light has a lens and reflector fixed on one body with a socket which holds a bulb inserted. The socket can be removed to change bulbs.
The fully sealed beam light is sealed and the bulb cannot be removed. When a bulb burns out, the complete sealed beam unit must be replaced. The advantage of a sealed beam is that a larger bulb can be used giving a brighter light and a longer filiament is used so that there is less heat at a given brightness, giving long bulb life.
The output of both lights is 6-8 V, 35 W, and 25 W when dimmed. Illuminating power is more than 20,000 candlepower at the central part of the high beam projected on a screen



(a) Semi-sealed Beam (b) Fully sealed Beam

Fig. III-19. Difference between head lights

10 meters from the head light and more than 5,000 candlepower at the central part of the low beam. (Fig. III-21)

The head light angle can be adjusted with the adjusting screw. To raise, screw in, and to lower, screw out. Adjustment should be made with the rider seated on the motorcycle and the machine pointed at a screen.

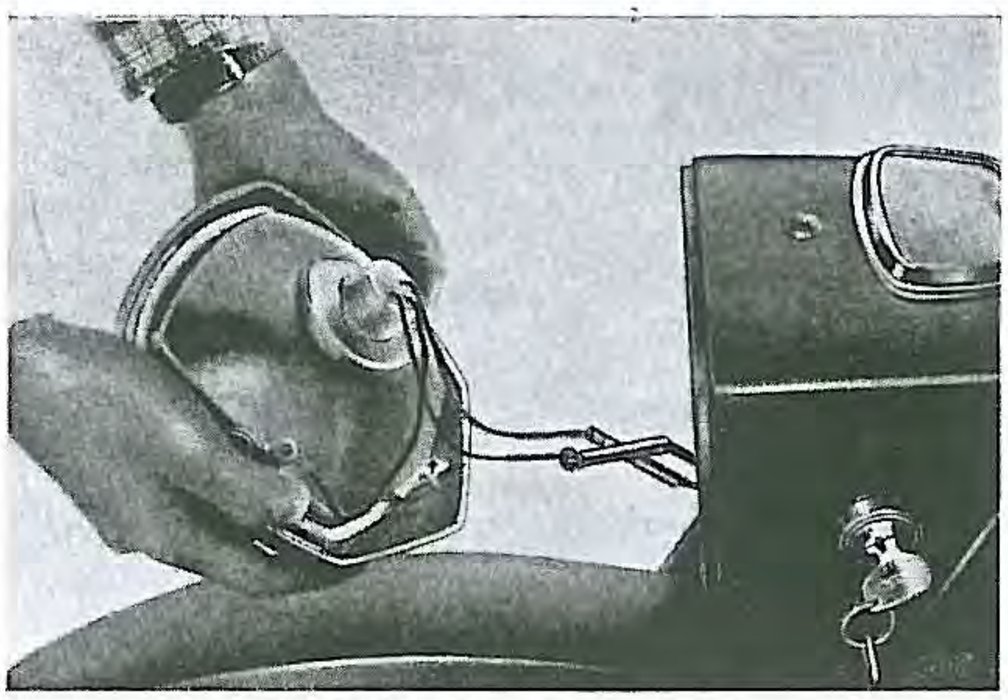


Fig. III-20. Removing head light

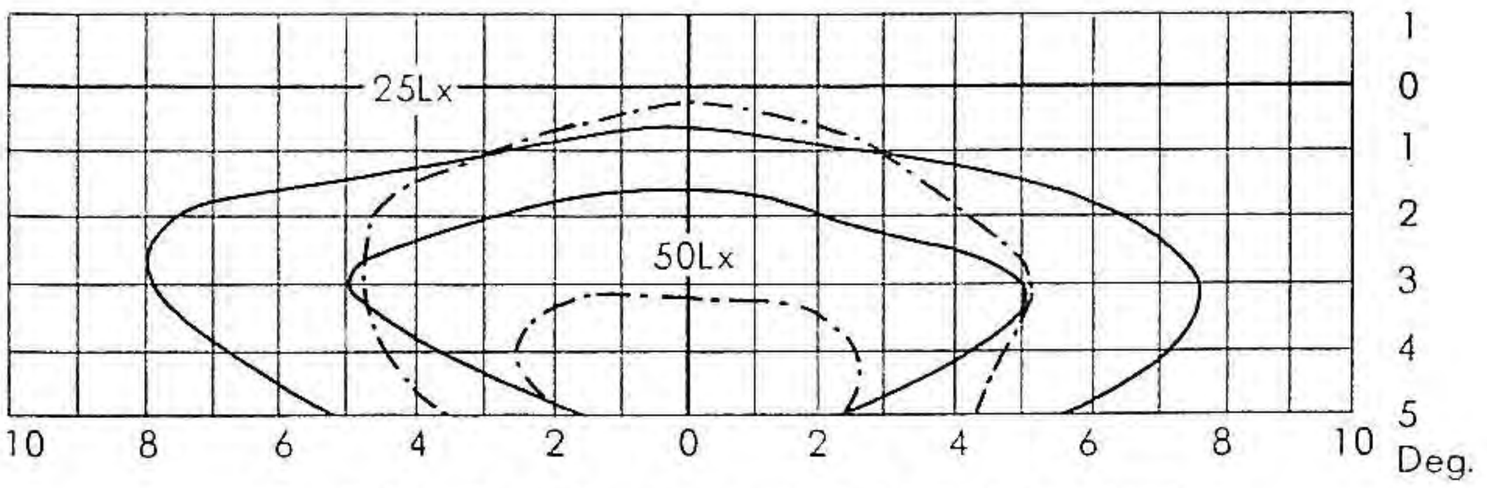


Fig. III-21. Illuminating power projected from 10 m a head
—— main beam, ——·—— dimmed beam

D. STOP SWITCH

The stop switch, in a small case attacehd under the left cover in front of the battery, is operated by the action of the brake arm. See the brake pedal section (Fig. III-25) for construction. It is similar to an ordinary contact switch except that the case has two edjusting nuts by which the unit can be adjusted to turn on the stop light when the brake pedal is depressed regardless of the angle of the brake pedal. The stop light should be adjustad so that it turns on when the brake pedal is depressed 1/3.

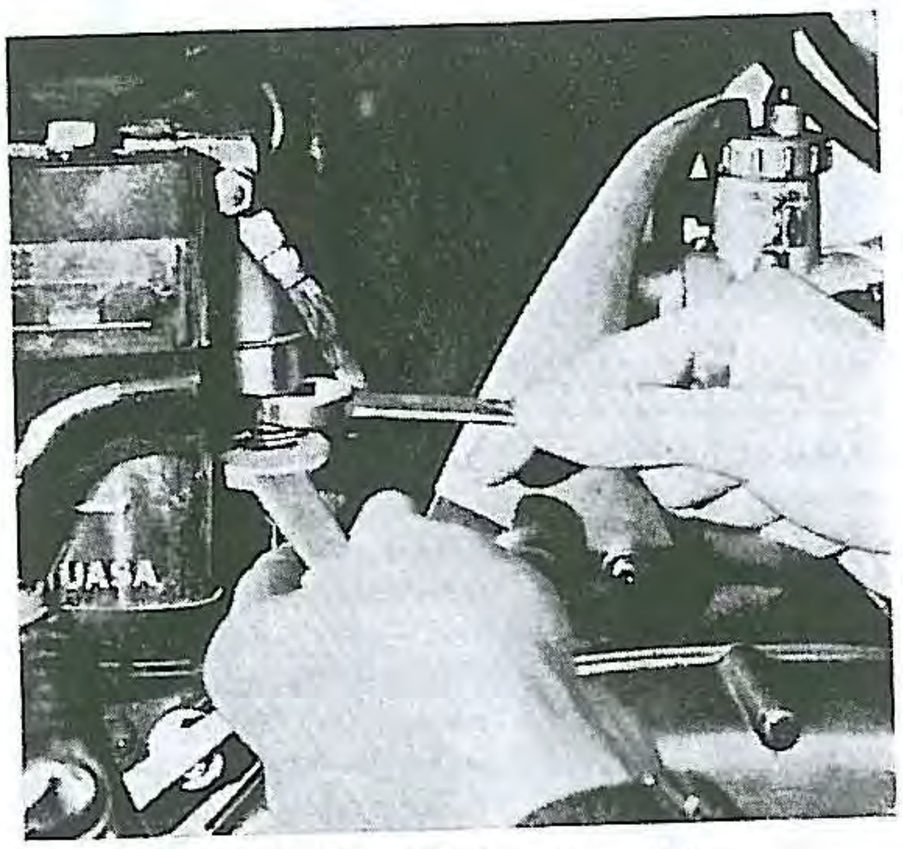


Fig. III-25. Adjusting stop switch

D. WINKER LIGHTS

Special cylinder-shaped bulbs are fitted in the amber-lensed winker light bodies on both sides, front and rear.

E. TAIL AND STOP LIGHT

The tail light is covered with a white plastic lens and the stop light with a red plastic lens. The double-filament bulb is 6–8 V, 3 W for tail light and 6–8 V, 6 W for stop light. The stop light is turned on by the stop switch connected to the rear brake. To remove the bulb, take out the two screws which fasten the lens.

F. METER LIGHT & NEUTRAL LIGHT

The meter light is in the speedometer case and the neutral indicator light is in the head light case. (Fig. III–22) Both bulbs are 6–8 V, 3 W. To remove either bulb, remove the headlight and unscrew the bulb. The neutral indicator light is held in place by a rubber mounting.

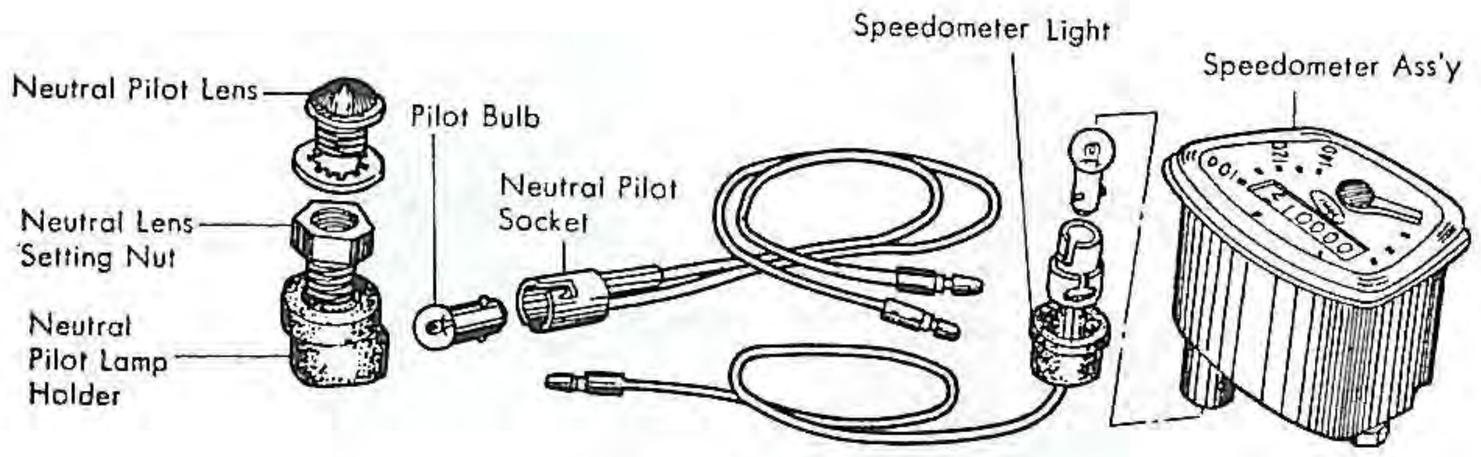


Fig. III-22

G. WIRING HARNESS

The wiring harness is a bundle ot wires running from the battery to the head light case. It is clamped on the left side of the frame, running along side the frame in the recess in the tank and entering the frame through an opening. Head light wiring connectors are stored in the head light case. Several other connectors are bundled together in a cube-shaped polyethylene coupler covered with a rubber tube and clamped above the peep hole in the right side of the frame. Wires from the battery run through a reinforced plate channel inside the frame on the right side to protect them from damage by dirt, moisture or flying stones.

When connecting wires, take care that they are of the same color and pattern, otherwise a fire or a short circuit might result. Always refer to the wiring diagram when connecting wires.

III–6. SWITCHES

A. COMBINATION SWITCH

Light and engine switches are combined on the left side of the head light. The switch has 4 positions. Three identical keys are supplied with each motorcycle. (Sometimes the dealer keeps one, which is handy when the owner loses his.)

To dismantle the switch, remove the head light, unscrew the nut on the outside of the switch with a special pin wrench and remove the switch body. When assembling, be sure to match the slot on the head light case with the notch on the switch. Check the wiring when the switch does not operate properly in any position. If the wiring is all right, the switch is faulty. Follow the circuit table when testing wiring.

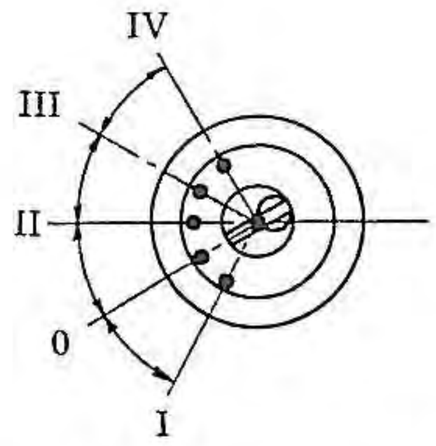


Fig. III–23 Key position of combination switch

SIGNS written on the back of Switch			BAT	ST	IG	HE	TL	SE	DY
COLOR of wire leads			Red	Black & Red	Black	Green	Black & White	Yellow	White
POSITION of KEY Insert	Whether the key is pulled out: Object for using	Circuit leading to	Battery	Starting Switch	Ignition Coil, Neutral Lamp, Horn, Winker, Stop Lamp	Head Lamp, Speedometer Lamp	Tail Lamp	Selenium Rectifier	A.C. Dynamo
0	Daytime Parking	Can							
I	Preparation for starting	No	○—○	○—○					
II	Daytime Riding	No	○—○	○—○	○				
III	Nighttime Riding	No	○—○	○—○	○	○	○	○	○
IV	Nighttime Parking	Can	○—				○		

Note: ○—○ shows an closed circuit

B. WINKER, HEAD LIGHT DIMMER SWITCH, HORN BUTTON AND STARTER BUTTON

There is a head light dimmer switch and horn button on the left steering handle and a winker light switch and starter button on the right steering handle, each contained in a switch case.

Repair or replacement is required in case of faulty operation of knobs, failure of switches defective contacts or wrong wiring.

For defective contacts and faulty operation of knobs, unscrew two bolts on the steering handle switch case, separate the case parts and correct the defect. If replacement of parts connected with the wiring harness is required, remove the nuts holding the steering handle, remove the head light, uncouple the terminal connector in the headlight case and remove the wiring harness from the handle. Care must be taken when threading the wiring harness through the steering handle when assembling.

C. NEUTRAL SWITCH

When the gears are in neutral with the switch turned on, the neutral indicator light will turn on. In case of failure of this lamp due to defective switch contacts, replace the switch or replace the contact points. A bakelite rotor contact point is attached with 6 mm screws on the shift drum shaft in the upper crank case under the kick cover and a wire is inserted in the stator on the case.

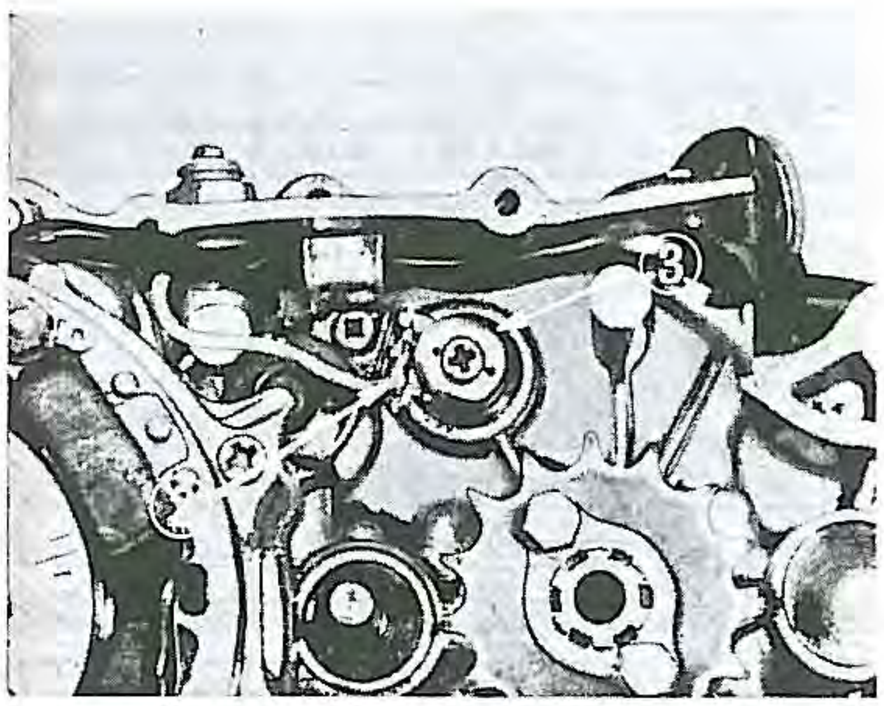


Fig. III-24. Neutral switch

III–7. SERVICE TESTER

For the convenience of chceking and adjusting the electrical parts and systems, here is the set of testers provided in one case. Testing capacities are as shown below:

Purposes of Test	Indication	Contents
Current check	Red lamp is lit (when current is available)	Check for presence of current
Conduction	Red lamp	Disconnection of the wiring and switches check
Resistance	Meter	Measuring the resistance of secondary coil and selenium rectifier
Insulation	Meter	Investigation of the insulation of the condenser, and also measurement
Condenser Capacity	Meter	Judging condenser capacity (0–0.6μF or under)
A.C. Voltage	Meter	Battery and load system investigation (0–15 V)
D.C. Current	Meter	Load current, charge current investigation (15 Amp both)
Speed of Rotation	Meter	Speed of revolution at the crank and other rotary parts. (0–6,000 rpm)
Dynamo Output	Meter	Testing the output of Dynamo 1 and 2 (0–15 V)
Coil Test	Spark distance measured by three point tester	Testing the spark faculty of the ignition coil
Timing Tests	Indicate by timing light (using 6 V Battery	Spark timing and advance angle of governor in-vsetigation

Detailed directions for the use of respective testers are supplied with the set. Testing is done by simply connecting respective leads to the required part of the electric equipment according to its purpose.

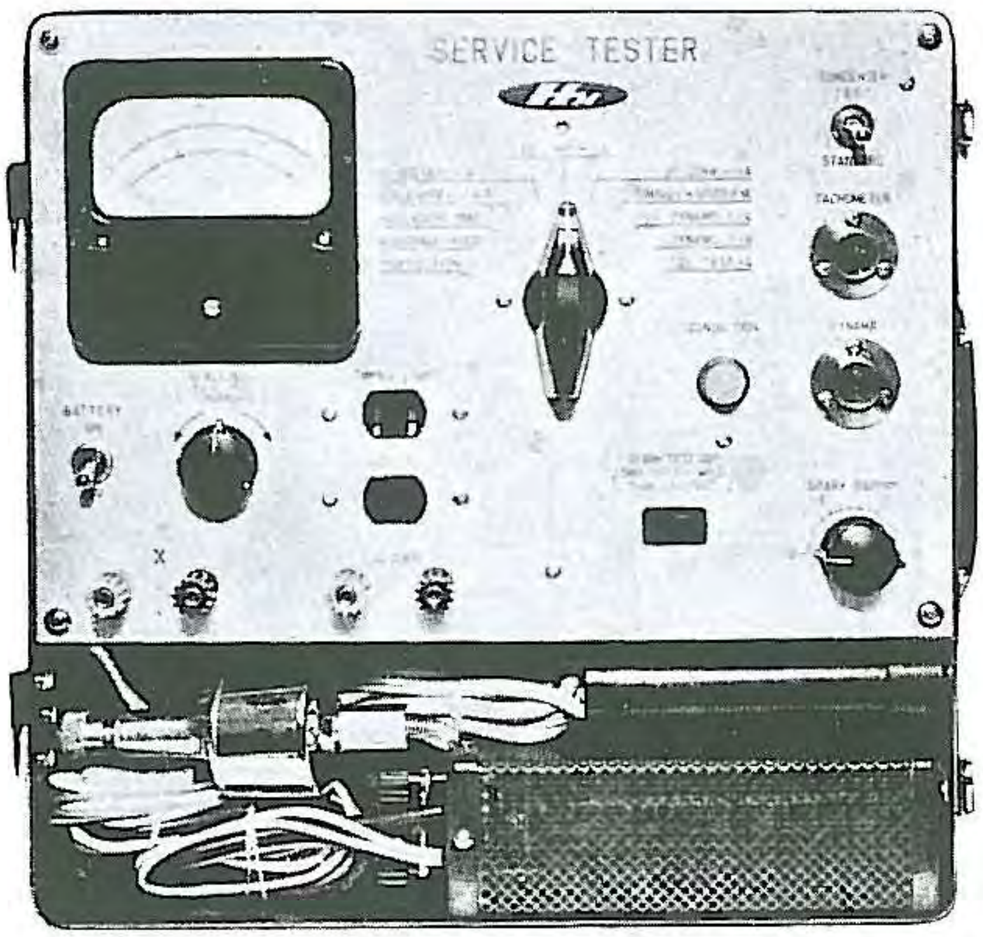


Fig. III-26 a. Service Tester

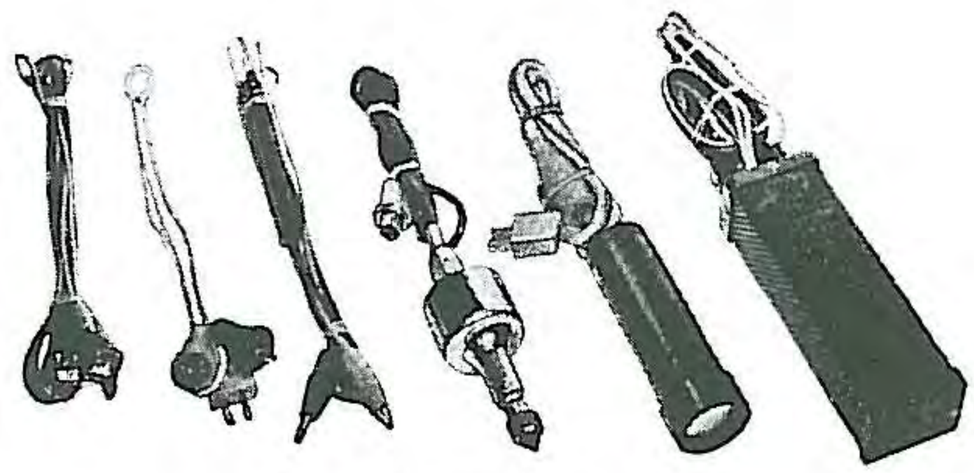
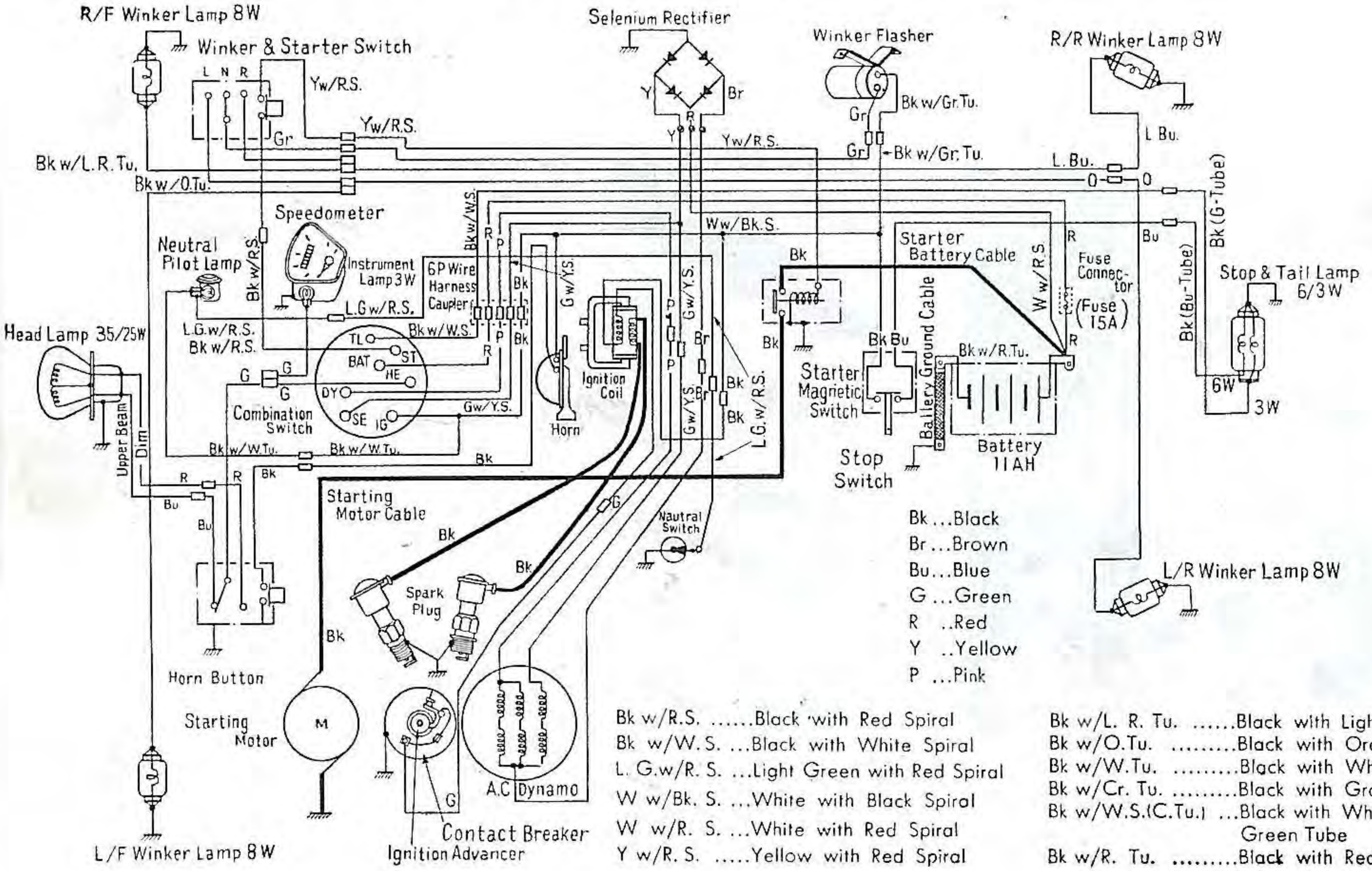


Fig. III-26 b.

MEMO

WIRING DIAGRAM OF C 92 & C 95

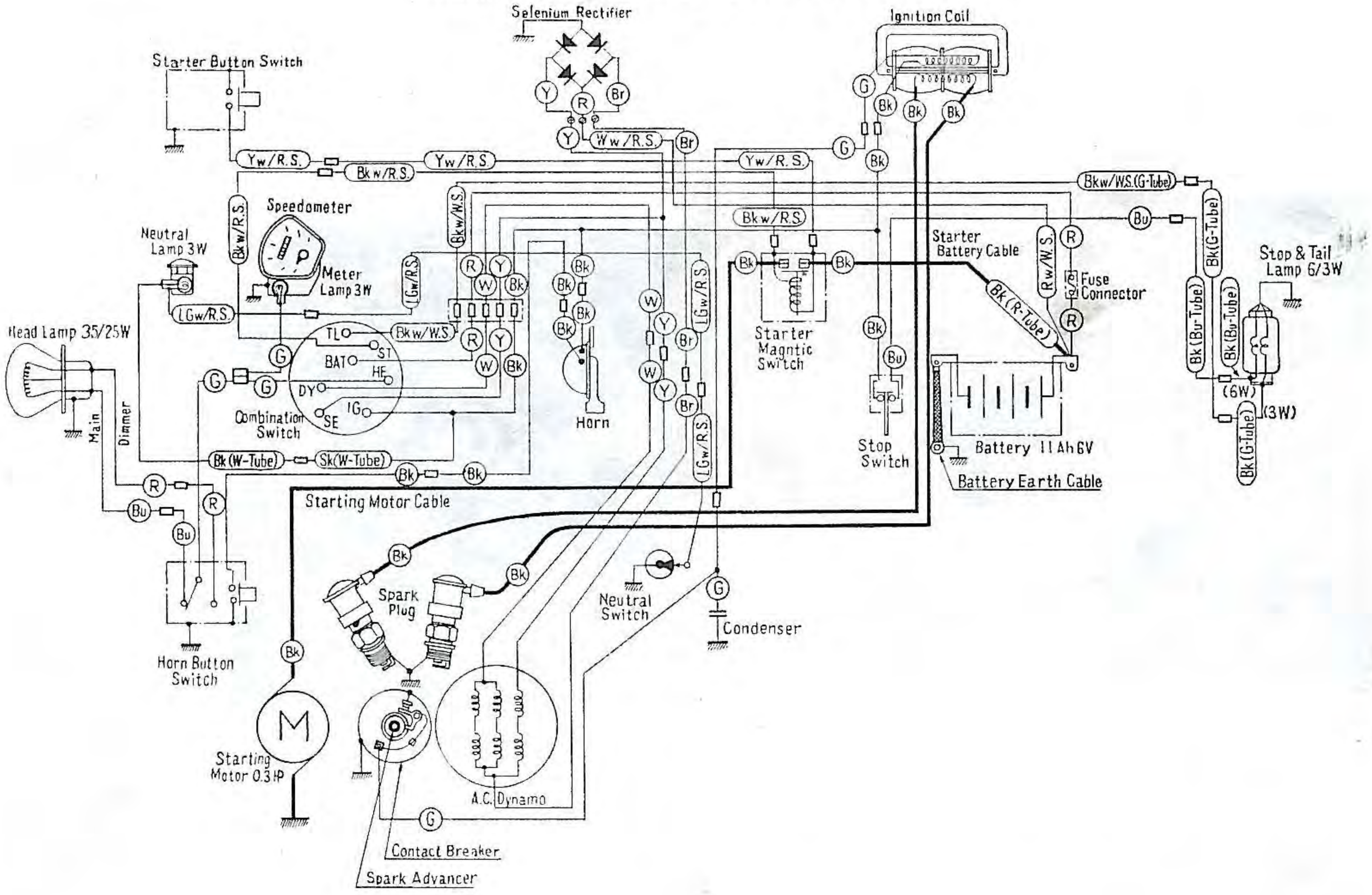


Bk ...Black
Br ...Brown
Bu...Blue
G ...Green
R ..Red
Y ..Yellow
P ...Pink

Bk w/R.S. .....Black with Red Spiral
Bk w/W.S. ...Black with White Spiral
L.G.w/R.S. ...Light Green with Red Spiral
W w/Bk.S. ...White with Black Spiral
W w/R.S. ...White with Red Spiral
Y w/R.S. .....Yellow with Red Spiral

Bk w/L.R.Tu. .....Black with Light Blue Tube
Bk w/O.Tu. .....Black with Orange Tube
Bk w/W.Tu. .....Black with White Tube
Bk w/Cr.Tu. .....Black with Gray Tube
Bk w/W.S.(C.Tu.) ...Black with White Spiral with Green Tube
Bk w/R.Tu. .....Black with Red Tube

WIRING DIAGRAM OF CB92 & CA95



IV. ADJUSTMENTS AND SERVICE

IV-1. IGNITION TIMING ADJUSTMENT

Check ignition timing and contact breaker point surfaces every two or three months. Faulty timing or bad point surfaces result in poor performance and erratic engine revolutions. The timing of idling speed at 800-900 rpm is 5 degrees before top dead center, the moment the "F" mark aligns with the indicator. Timing begins advancing at 1200 rpm and the full advance of 45 degrees BTDC is obtained at 2300 rpm. To adjust timing : (Fig. IV-1)

(1) Remove the contact breaker cover, rotate the crank shaft until B rests on the peak of cam C and adjust the point gap to 0.3-0.4 mm (0.012-0.016").

(2) To adjust the point gap, loosen screw D and move screw E to the left or right. The gap is decreased by turning the screw in and increased by turning it out.

(3) To adjust ignition timing, rotate the crank shaft until the red mark F on the rotor aligns with the mark J on the generator stator. Loosen the 2 G screws, one at

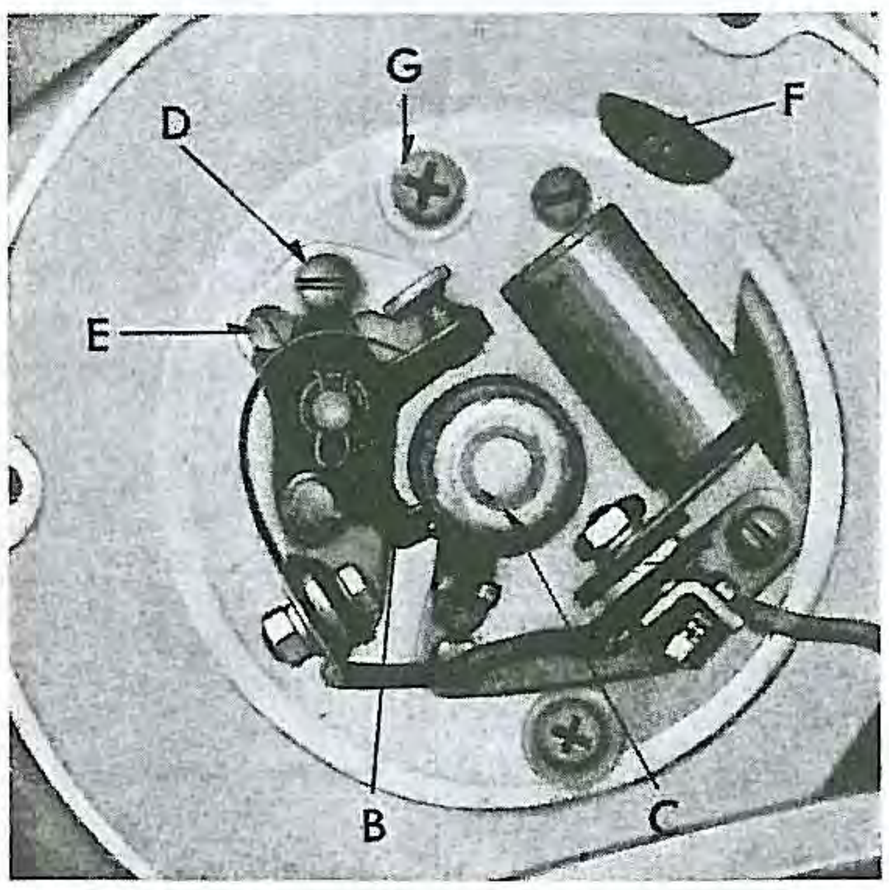


Fig. IV-1. Whole view of contact breaker point

the top of the plate and the other at the bottom, rotate the plate assembly to a position where the points just close and tighten the 2 G screws.

(4) Use a tester or small light to determine the exact instant the points close. (Fig. IV-2)

IV-3. CARBURETTOR ADJUSTMENT

Adjustment of carburettor is described on page 67.

The condition of the carburettor is apt to change during use of the engine, requiring minor adjustments from time to time, particularly of the idling speed. Cleaning at regular intervals is required. The idling speed of about 800-900 rpm can be adjusted by throttle stop screw B. (Fig. IV-4) When the adjustment is correct the engine will idle smoothly and will not stop or stall when the throttle is opened.

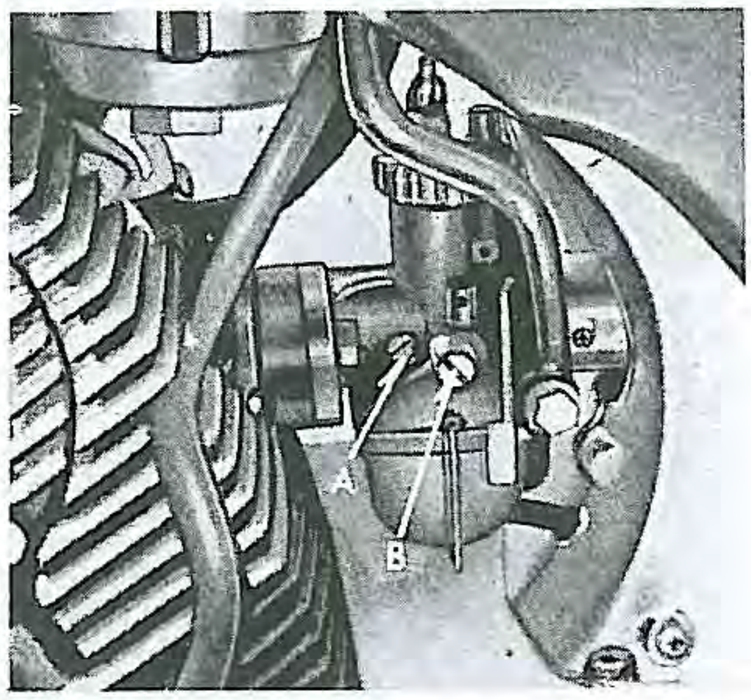


Fig. IV-4. Idling adjusting screws of carburettor

IV-4. CLUTCH ADJUSTMENT

If the clutch is not adjusted properly the motorcycle will not run at full efficiency even if the engine is in excellent condition.

If the motorcycle jumps or stalls when the gears are shifted from neutral into low, the clutch will not release satisfactorily. If the motorcycle will not gain speed properly when engine rpm is increased, the clutch is slipping. Adjust the clutch to give 10-15 mm of free play in the clutch lever.

(1) Loosen bolt A and adjust the clutch by turning the clutch adjuster. The clutch may slip when clutch adjuster B is tightened excessively and may not disengage easily when the clutch adjuster is too loose. (Fig. IV-5)

(2) Depress the kick starter and check the clutch for slip and engagement with the clutch lever in and out.

(3) There should be 10-15 mm of play in the clutch lever.

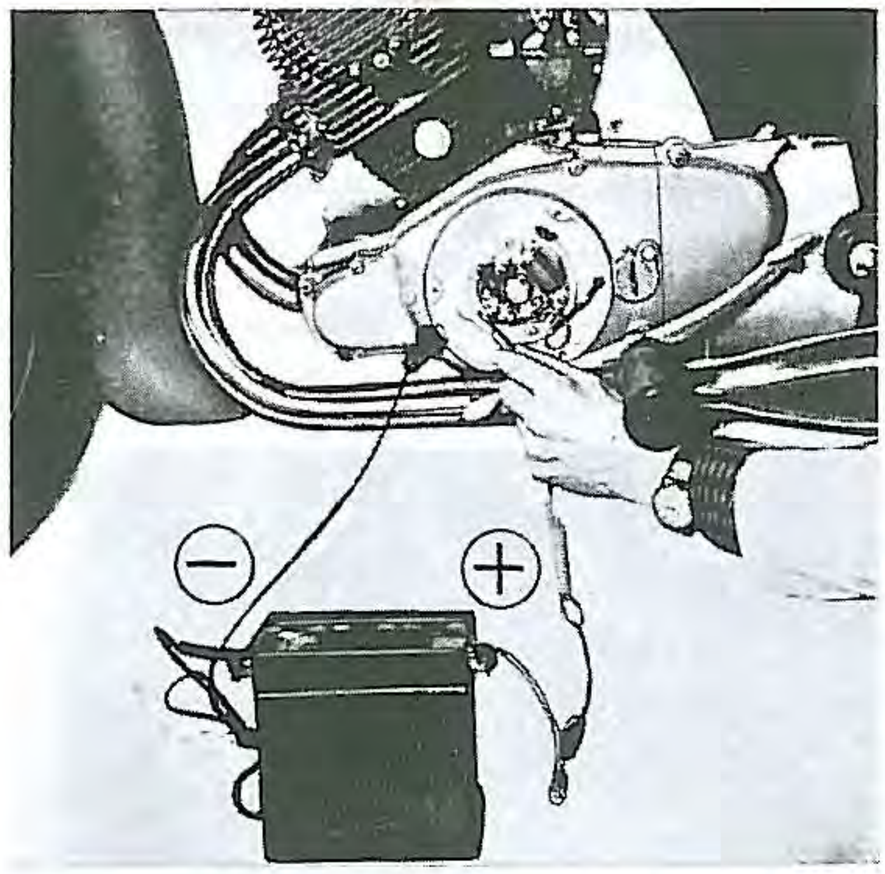


Fig. IV-2. Using miniature lamp 60 V checking timing

(5) For checking the timing dynamically while the engine is revolving, the timing light in the service tester (P. 122) is useful. This light can also be used to check the state of timing advance relative to engine rpm. (P. 108)

(6) After adjustment is completed, turn the crank shaft a few turns and recheck the ignition timing.

(7) Burned or pitted points should be smoothed with a file, and any oil wiped from the surfaces with a clean, dry cloth.

(8) Apply a small amout of good grease to the oil slipper during regular maintenance service.

(9) Where concern is only for power at high rpm using megaphone exhaust pipes and special racing kit carburetter jets on the CB92, it is advisable to set the timing at 10 degrees BTDC, by marking a point on the dynamo rotor 10 degrees from the "T" mark counter-clockwise or at the same distance from "T" to "F" on the circumference.

IV-2. VALVE TAPPET CLEARANCE ADJUSTMENT

Tappet clearance is important to correct operation of the valves. As it affects valve timing, if the clearance is too small the engine will not run smoothly. If the clearance is too large, tappet noise is heard.

(1) Remove the contact breaker cover and align the pointer on the generator with the black "T" mark on the rotor.

(2) Remove the four caps with an axel wrench or open end wrench, loosen the lock nuts and turn the adjusting screw with the special wrench provided to obtain the specified clearance. (Fig. IV-3)

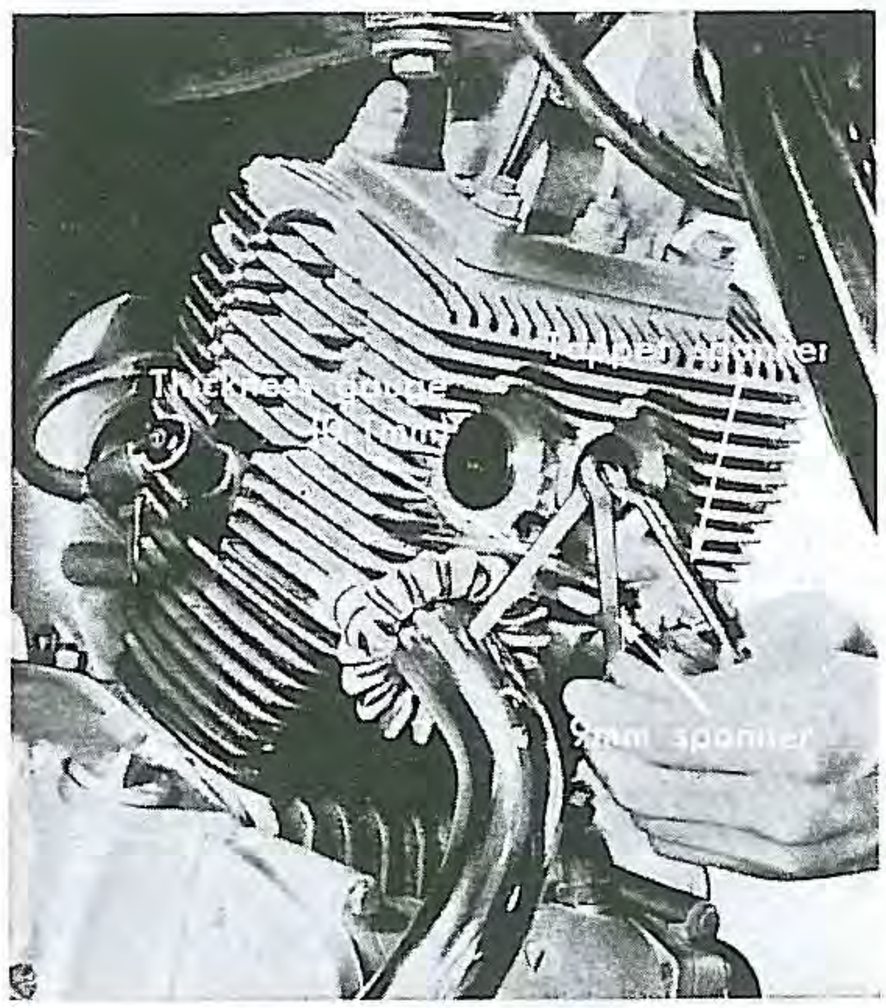


Fig. IV-3. Adjusting tappet clearance

Turn the adjusting screw in to decrease and out to increase clearance. The proper clearance for both intake and exhaust valve tappets when the engine is cold is 0.1 mm. Check clearance with the thickness guage in the tool kit.

(3) Holding the adjusting screw in position, tighten the lock nut. Rotate the crank shaft one revolution and make the same adjustment as on the opposite side.

(4) After the adjustment is completed, depress the kick starter several times and recheck the clearance.

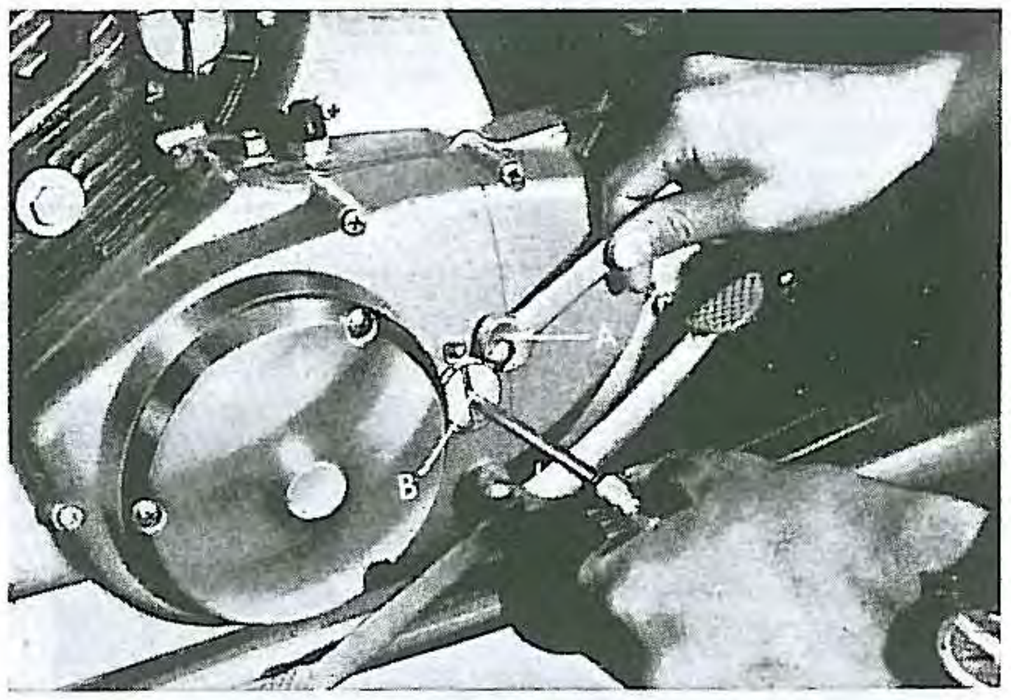


Fig. IV-5. Adjusting clutch

(4) The main adjustment can be made by steps 1 through 3, but to facilitate the adjustment of free play in the lever a cable adjuster in provided on the CB92 clutch cable. (Fig. IV-6)

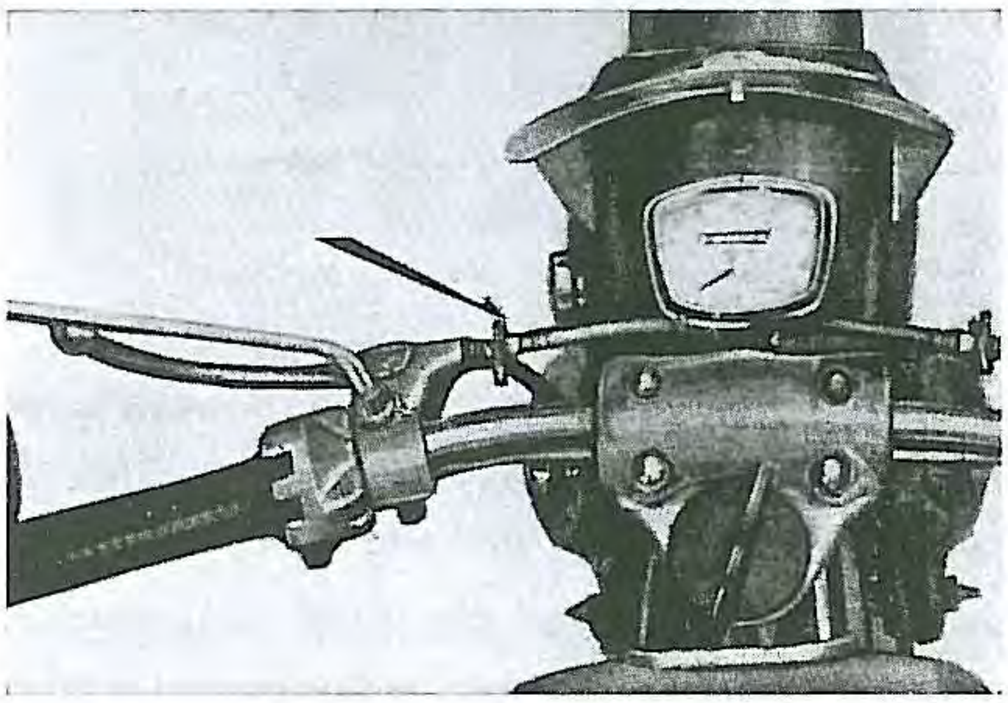


Fig. IV-6. Clutch cable (CB92)

IV-5. DRIVE CHAIN ADJUSTMENT

Correct adjustment of the drive chain affects the power output at the rear wheel greatly and also the durability of the chain.

When the chain is too tight it decreases power transmission, and when it is too loose it causes excessive wear.

(1) Remove the rubber cap on the chain case and adjust the drive chain so there is 10-20 mm (0.4-0.8") of play. (Fig. IV-7)

(2) To adjust the drive chain, loosen the medium sized axle nut and large axle sleeve nut and turn the adjuster nut in the direction needed. Turn the nut in to tigten the drive chain and out to loosen it. (Fig. IV-8)

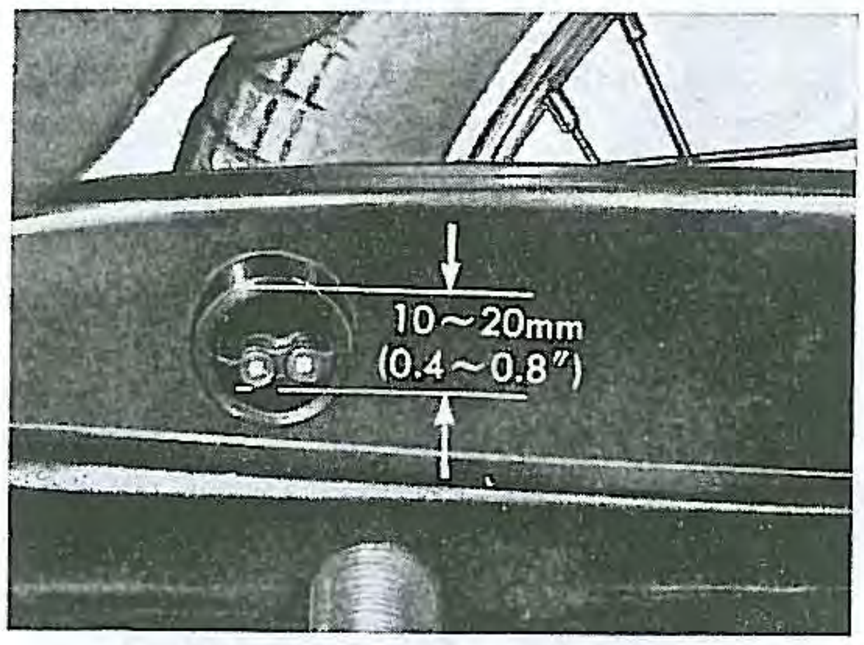


Fig. IV-7. Max. deflection of drive chain

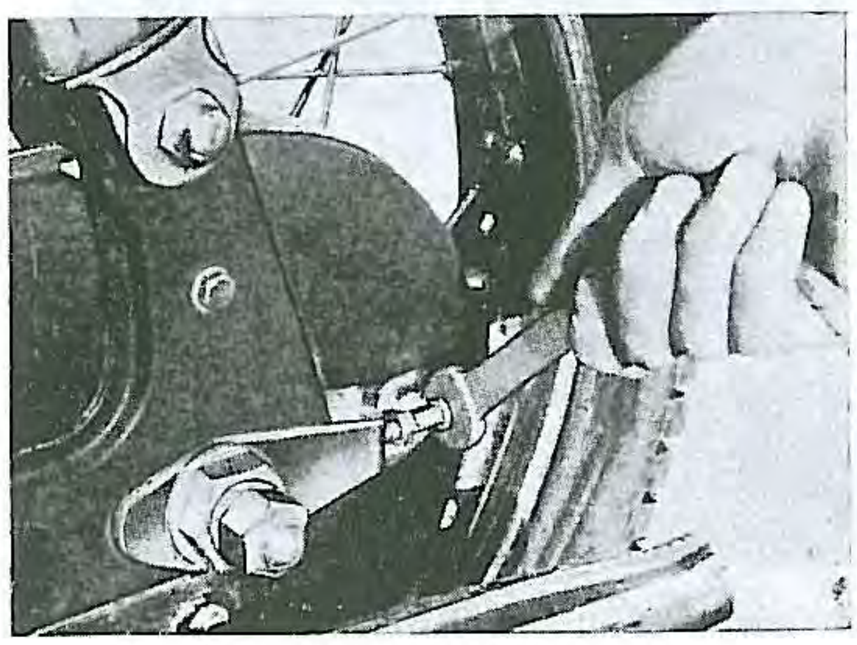


Fig. IV-8. Adjusting drive chain adjuster

(3) Turn the adjusters on both sides the same amount a little at a time, checking the play in the chain, and be sure the notch marks on both adjusters are even. If they are not, the rear wheel will not be straight in the frame, resulting in unstable riding.

IV-6. CAM CHAIN ADJUSTMENT

Faulty adjustment of the cam chain results in cam chain noise, and routine adjustment occasionally is recommended.

(1) Remove the rubber cap and loosen the cam chain adjusting lock nut and cam chain adjusting screw.

(2) Remove the exhaust tappet hole cap and while watching the rocker arm, rotate the crank shaft in the reverse direction and then in the normal direction until the exhaust valve rocker arm starts to operate.

(3) Turn the cam chain adjusting screw in until the tip just touches the cam chain tensioner spring guide. As this is not visable, determine when the screw touches the guide by feel.

(4) Hold the adjusting screw with a screw driver and tighten the cam chain adjusting lock nut. (Fig. IV-9)

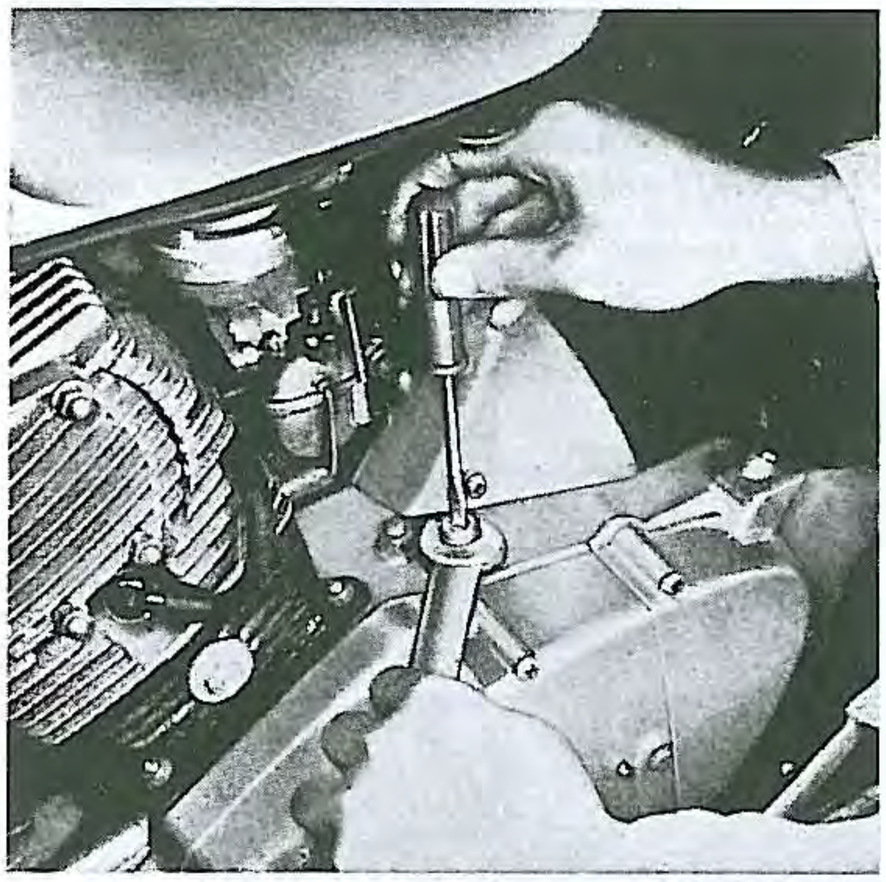


Fig. IV-9. Adjusting cam chain

IV-7. BRAKE ADJUSTMENT

Rear brake pedal adjustment corrects the amount of free play in the brake pedal. Be sure the brake does not drag and is not too loose.

A. REAR BRAKE

(1) Adjust the rear brake pedal until there is 30-40 mm (1.2-1.6″) free travel before the rear brake begins to operate. (Fig. IV-10)

(2) To adjust, turn the rear brake adjusting nut in the needed direction. Turn the nut in to reduce the pedal travel and out to increase the pedal travel.

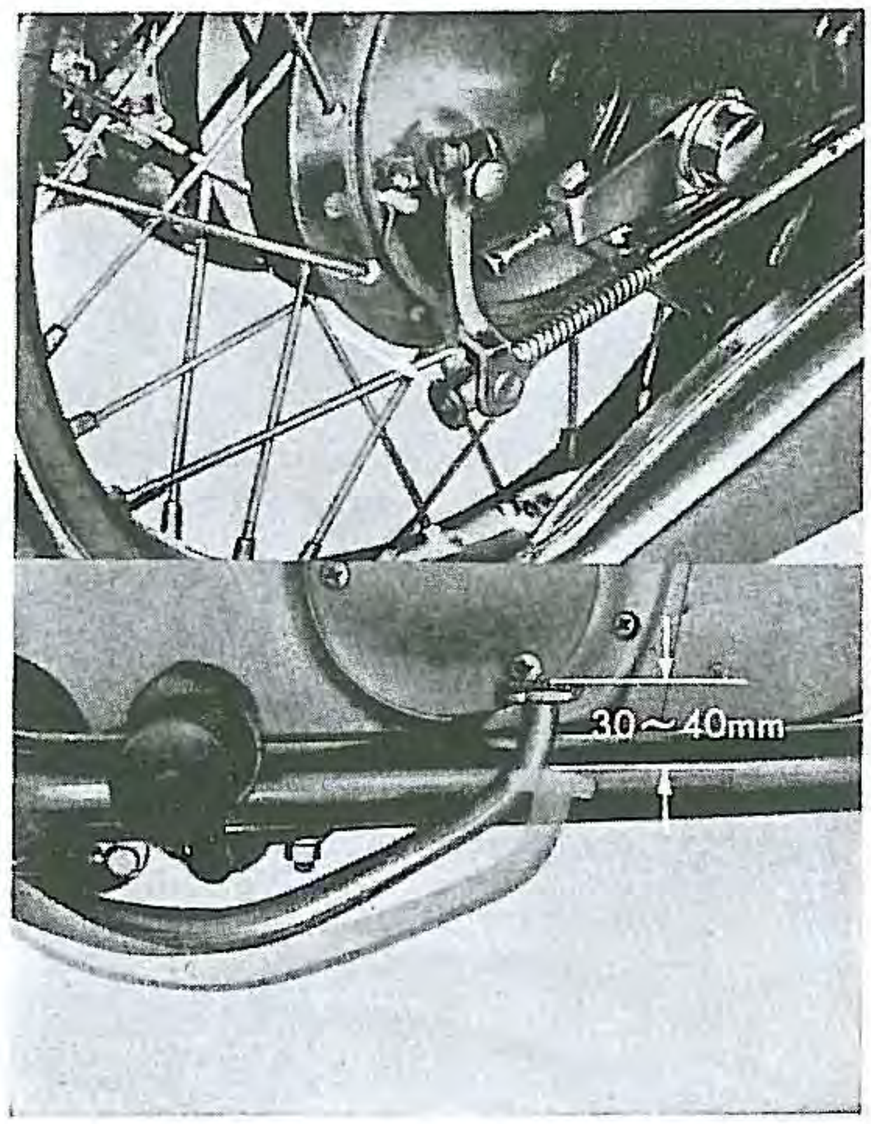


Fig. IV-10. Adjustment of rear brake

B. FRONT BRAKE

(1) Adjust so there is 3-4 mm (0.12-0.16″) of free travel in the front brake lever before the brake bagins to operate. (Fig. IV-11)

(2) To adjust, turn the front brake adjusting nut in the needed direction. Turn the nut in to decrease and out to increase the free travel of the lever. (Fig. IV-11)

(3) To adjust the CB92 front brake :

3-1 An adjuster is provided in the brake cable for minor brake lever play adjustments.

3-2 When the brake shoes are replaced, connect the brake rod so that the two cams are synchronized. Adjust the brake rod at the joint to the length required so that the distance between the upper brake arm and lower brake arm is correct. After fitting joint pins and cotter pins, check the brake rod side play. If the brake rod is too tight between the arms, adjust the rod.

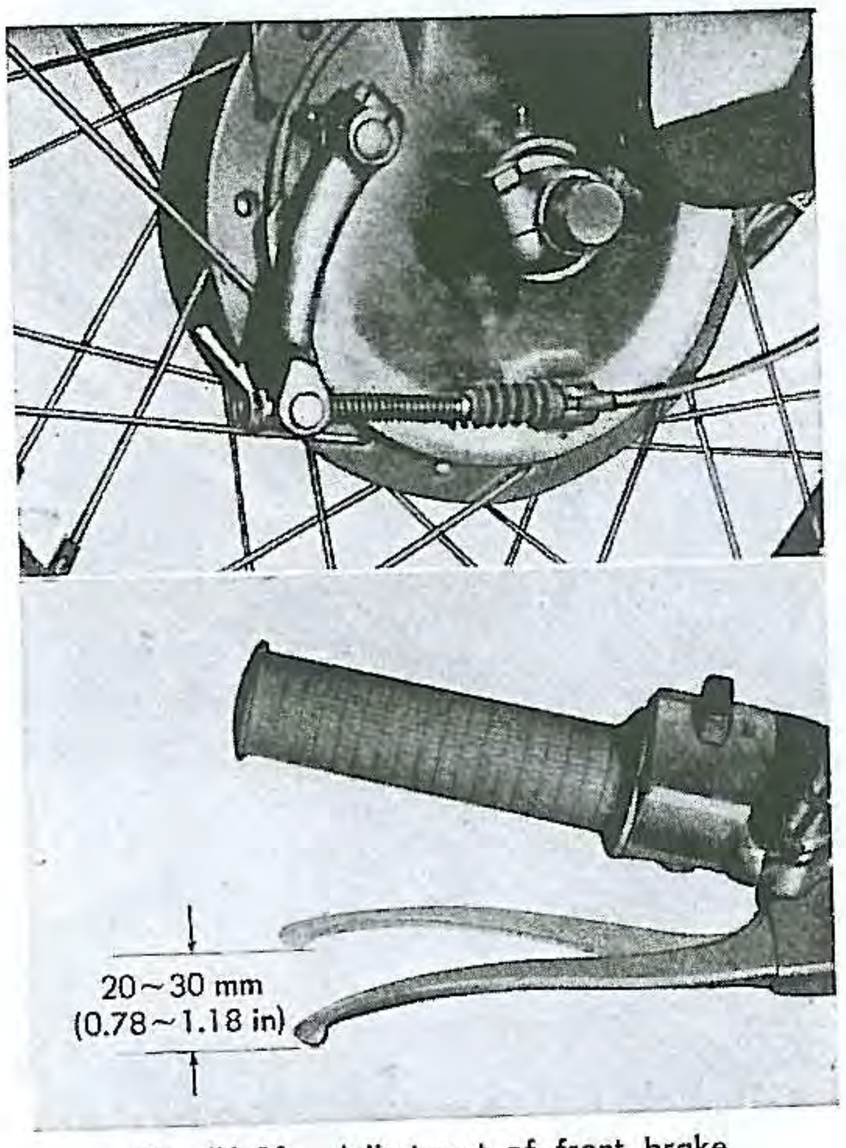


Fig. IV-11. Adjustment of front brake

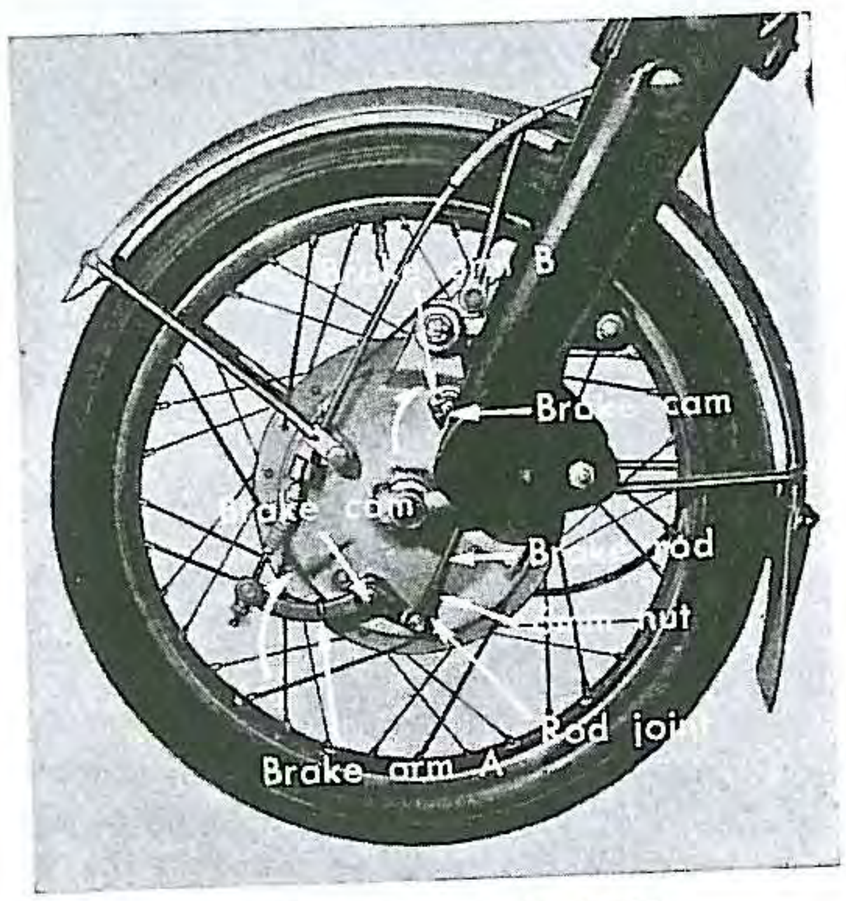


Fig. IV-12. Front brake (CB92)

3-3 Major adjustments are made at the cable adjuster at the end of the brake arm, as on standard models.

3–4 When brakes are given hard usage, such as in races, remove the front and rear air guide caps to cool the brake drums. For normal use, the caps should be attached to prevent dirt and sand from getting into the brakes.

IV–8. CLEANING AIR CLEANER

The air cleaner should be kept clean and dry. When it is dirty, there is danger that engine performance will be adversely affected or dirt get into the engine and cause rapid wear. Clean preiodically.

(1) Remove the air cleaner elment as described on page 92.

(2) Clean a dirty element by tapping it gently, blowing with compressed air or brushing the outside with a soft brush.

(3) A cleaner element fouled with oil or water will not clean the air properly. Be careful not to get oil or grease on the element. If the cleaner is fouled with oil or grease or broken, replace it.

IV–9. CLEANING OIL FILTER

(1) Remove the oil filter and pull out the oil cleaner.

(2) Remove the oil filter cap and wash the dirty oil cleaner inside thoroughly with gasoline.

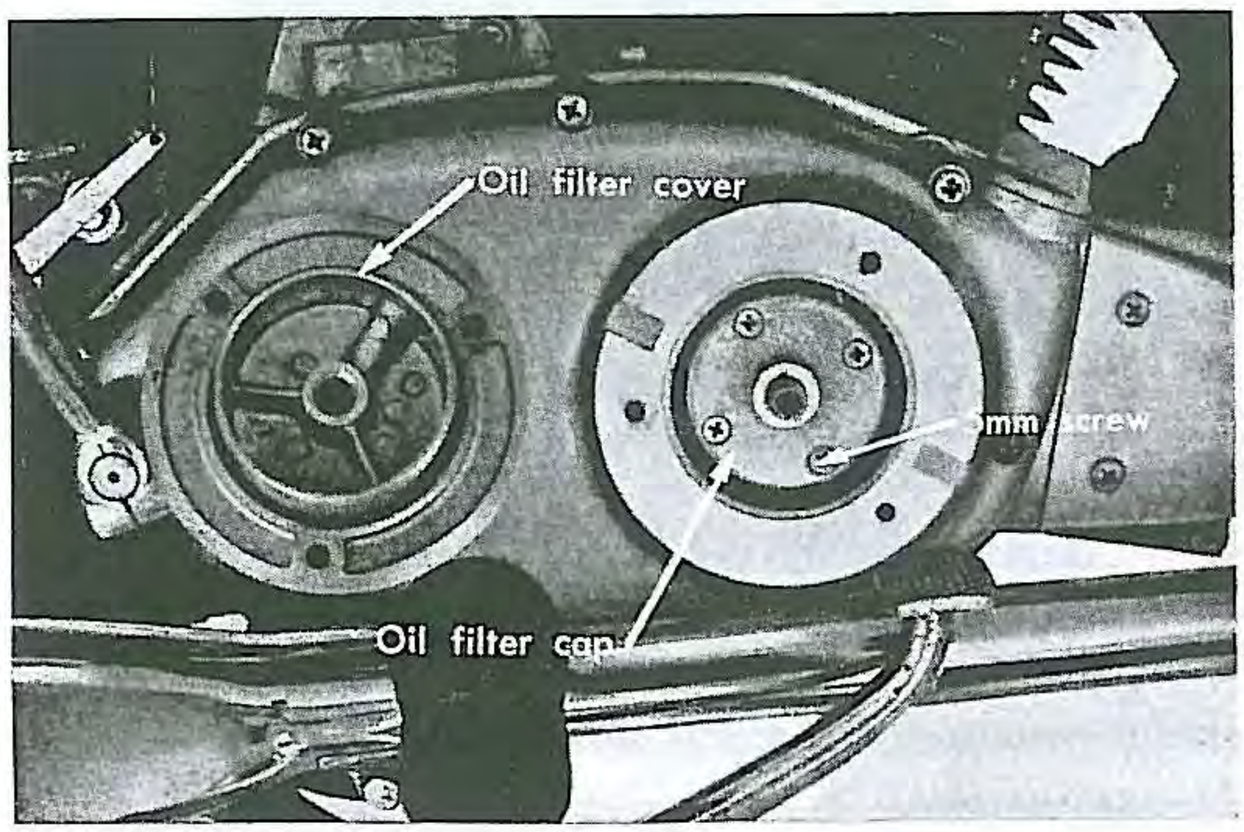


Fig. IV–13.

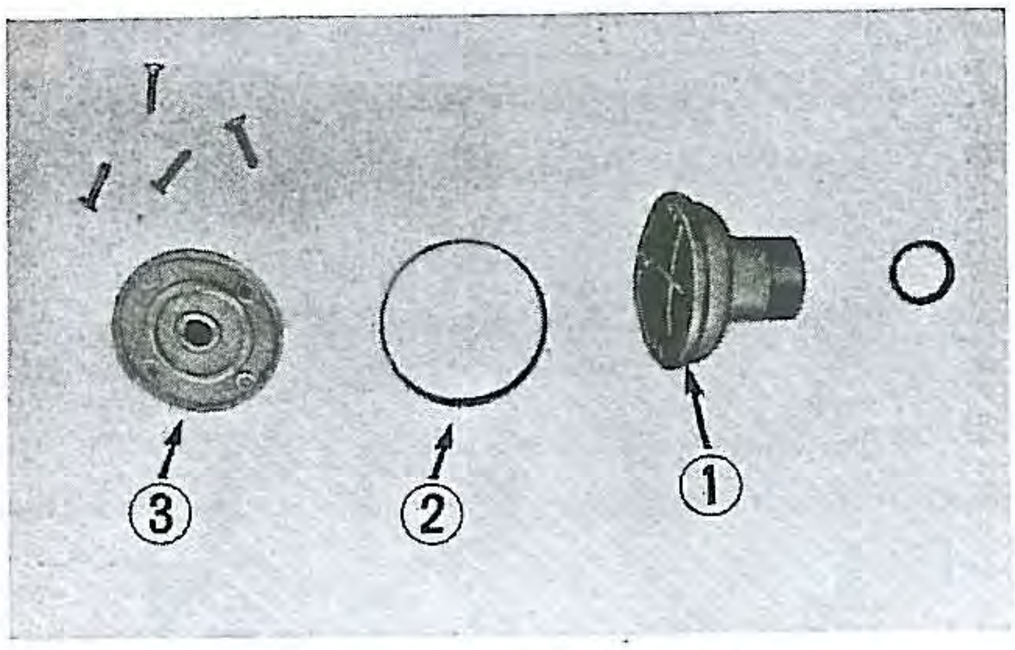


Fig. IV-14. Removal of oil filter

IV-10. CLEANING FUEL STRAINER

Dirt in the strainer can be seen from outside through the plastic strainer cup. Remove the strainer cup and clean the inside of the cup and the screen. (Fig. IV-14)

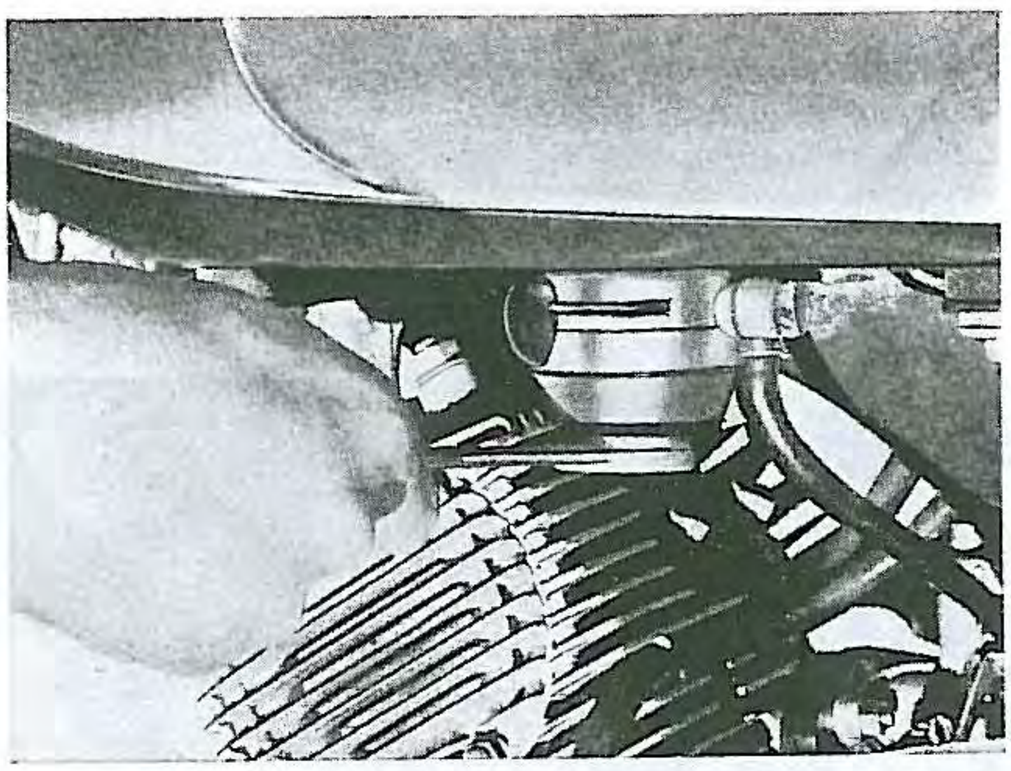


Fig. IV-15. Removing fuel cock strainer

IV-11. THROTTLE CABLE AND GRIP ADJUSTMENT

(1) To adjust the free travel in the throttle grip, loosen the nut ② and turn the adjuster ③ in the needed direction. A free play of about 5 mm (0.2″) is recommended. (Fig. IV-16)

(2) Twist grip stiffness can be adjusted with the adjusting screw after the nut is loosened. Aftr adjustment, tighten the nut firmly. (Fig. IV-17)

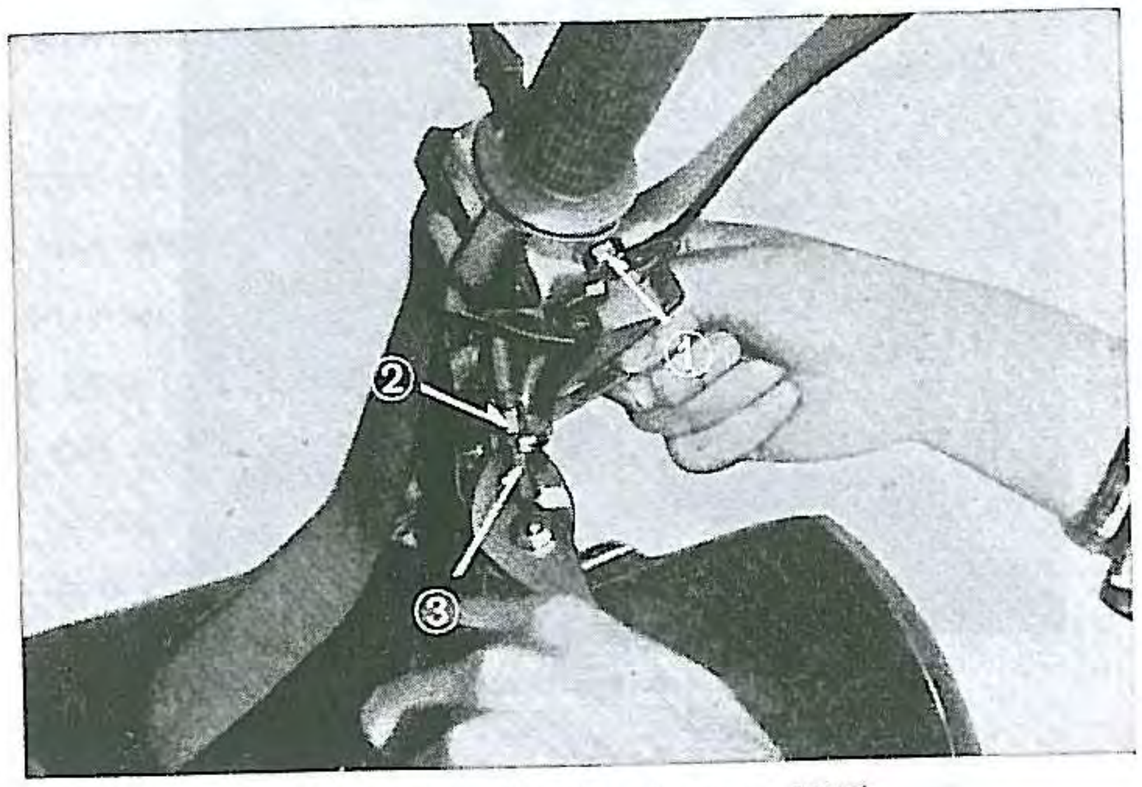


Fig. IV-16. Throttle adjustment (C92)

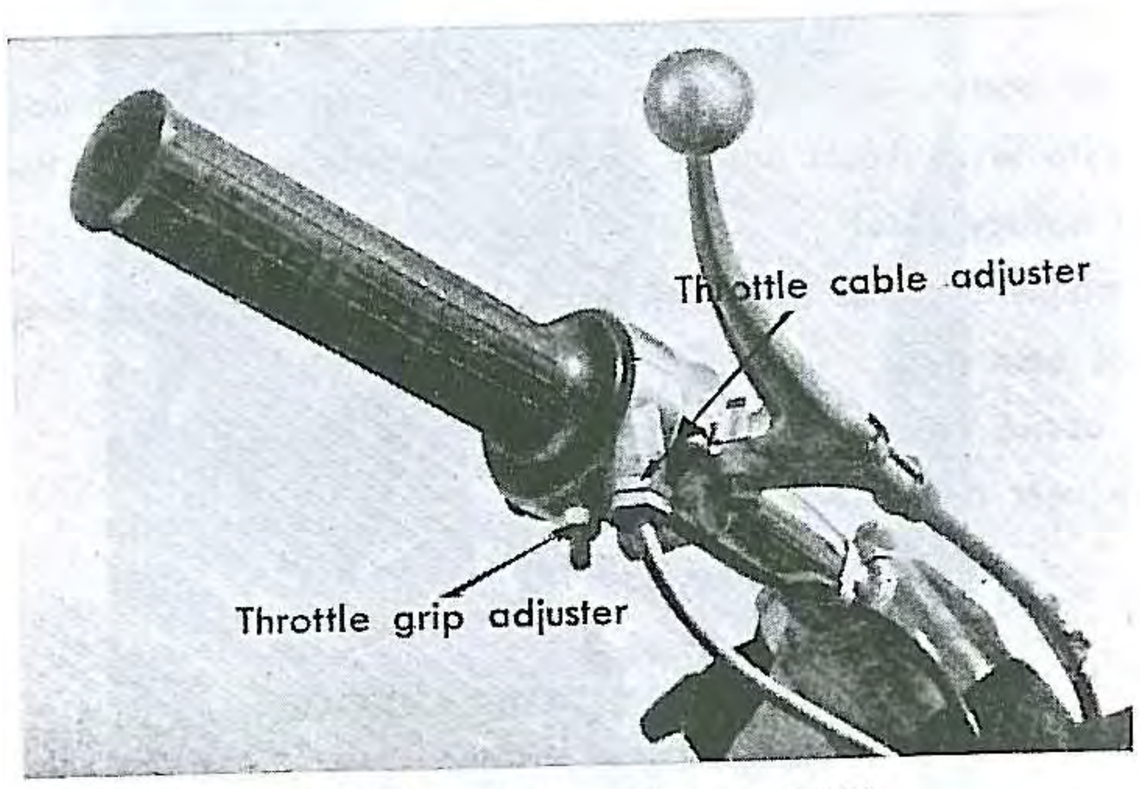


Fig. IV-17. Throttle adjustment (CB92)

IV-12. ADJUSTMENT OF CHANGE PEDAL

The change pedal position cannot be adjusted on standard models, but the angle of the pedal may be adjusted to fit the rider's foot on the CB92. Unscrew the lock nut with a 10 mm wrench and turn the change rod by hand or with a pair of pliers Tighten the lock nut after adjustment. (Fig. IV-18)

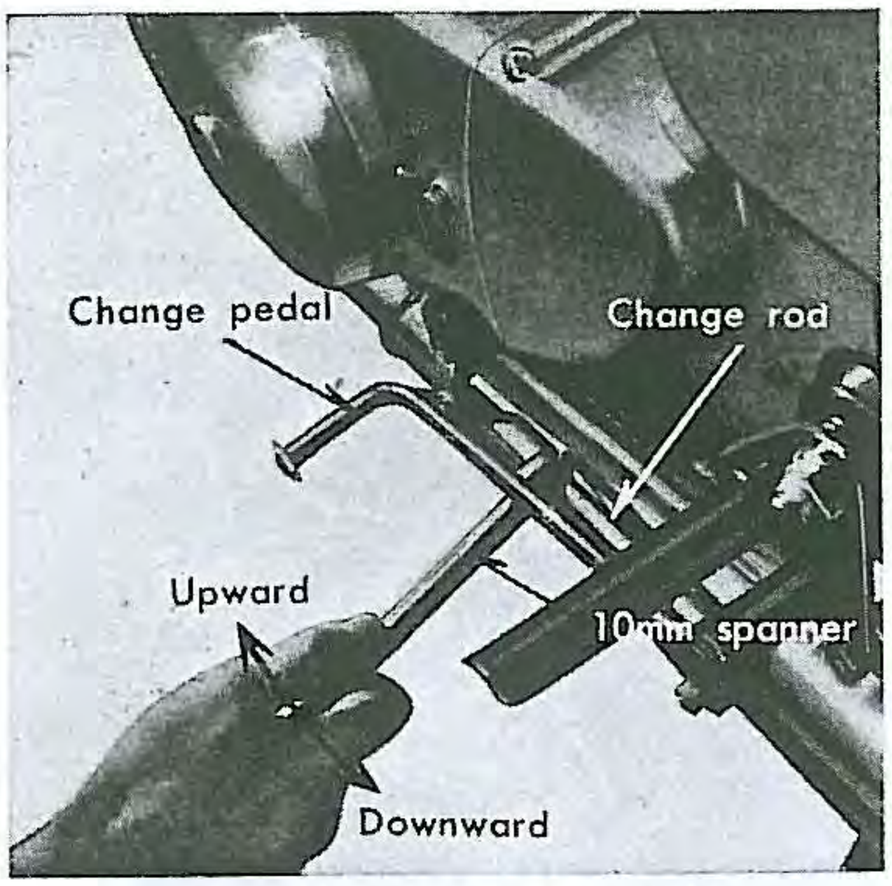


Fig. IV–18. Adjusting change pedal

IV–13. BATTERY SERVICE

As maintenance of the battery is described on page 101, only routine service is listed here.

(1) The electrolyte level should not be allowed to fall below the lower line marked on the side of the battery case.

(2) When electrolyte becomes low, add distilled water to the upper level line. Do not use sulphuric acid.

(3) Do not fill above the upper line.

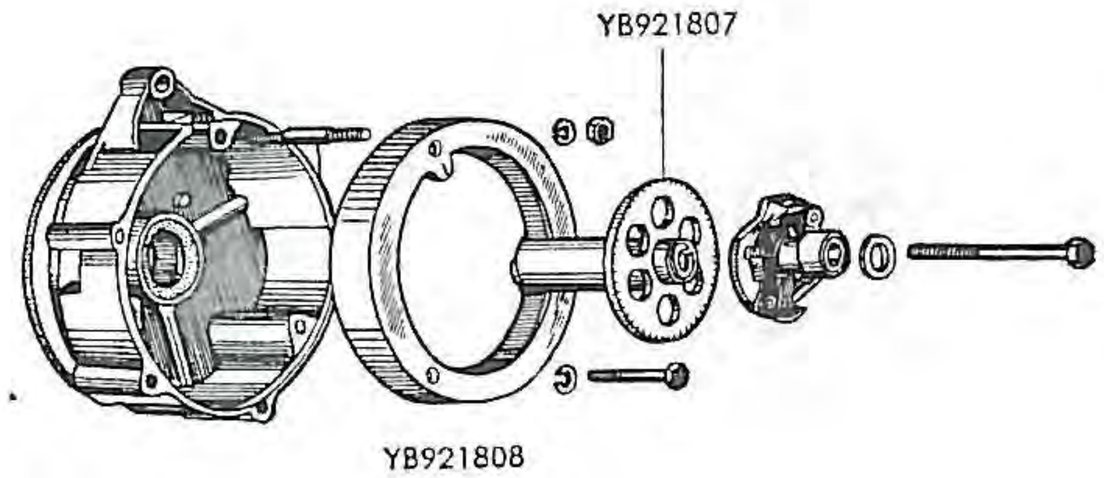
(4) Be sure the vent pipe is not obstructed.

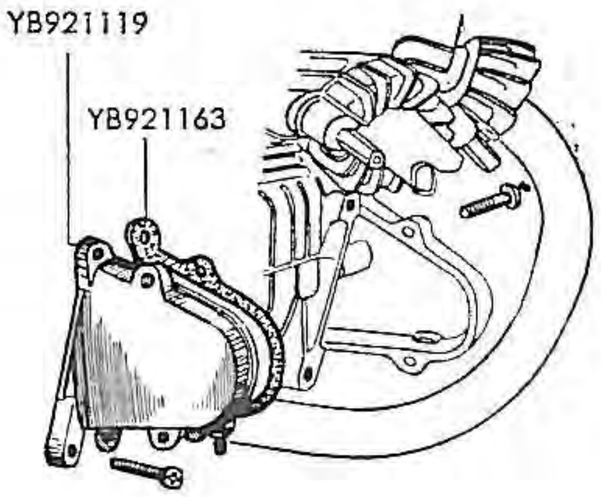
IV–14. SPARK PLUG SERVICE

The condition of the spark plug affects engine performance greatly, and plugs should be checked regularly. Clean the electrode and adjust the gap to 0.6–0.7 mm (0.024–0.028″) as described on page 110.

IV–15. ADJUSTMENT OF HEAD LIGHT AND STOP LIGHT TIMING

These adjustments are described on page 117 and page 121.





3. Spark plug

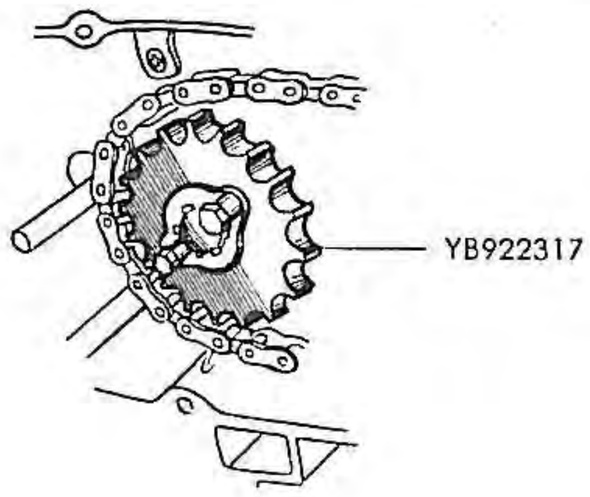
Colder type spark plugs are available. The gap on these plugs should be set at 0.014–0.016″ (0.35–0.40 mm)

YB921817A	Spark plug C10H, C12H	2 pcs

4. Drive sprocket

Selected according to racing conditions.

YB922317	Drive sprocket :	14 teeth	1 pc



5. Cam shaft and exhaust valve

The exhaust valve is reinforced with stereite welding to prevent wear. The cam shaft is for high revolution valve timing.

YB921416	Cam shaft	1 pcs
YB921416B		1
YB921547	Exhaust valve	2

YB921416 is superseded by YB921416B which is made integral with tachometer drive worm gear. The later is adopted for complete engines from CB92E-010511 and CA95E-010139.

IV-16. LUBRICATION

I. Engine Oil

As engine oil is absolutely essential to satisfactory engine operation and engine life, extreme care should be taken in checking and changing the oil regularly. More frequent oil changes are recommended under severe service conditions.

(1) Put the motorcycle on the main stand, remove threaded drain plug from the under crank case and drain all the oil from the engine.
Drain the oil when the engine is at normal operating temperature.
Replace the plug after all the oil has drained.

(2) Remove oil cap and pour new oil into the engine to the level of the mark on the dip stick. Normally an oil change takes about 0.8 liter, but when the oil is drained thoroughly from all oil passages and the filter, it takes 1.2 liters. Do not screw in the oil dip stick when checking oil level. Just insert it. (Fig. IV-19)
Crank the engine and check the oil level again after running it.

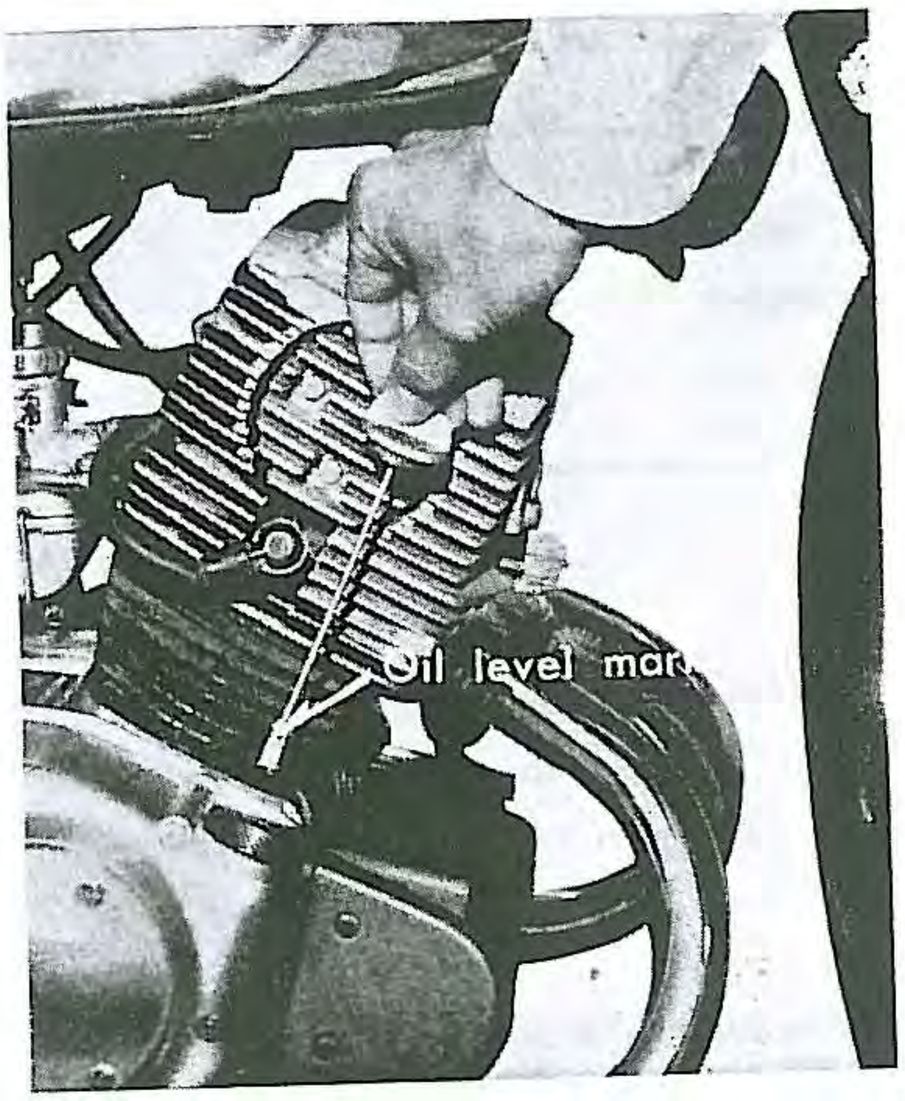


Fig. IV-19. Checking oil level

(3) Heavy duty oil of the following brands is recommended :

SHEEL	RETINAX
PENNSYLVANIA	
PENNZOIL	PENNDRAKE

CASTROL MOBIL OIL

and "HONDA ULTRA OIL" which is specially produced for Honda machines.

(4) Grades recommended are :

Over	15°C (59°F)	#30 SAE
Below	15°C (59°F)	#20 SAE

II. Grease service

(1) Grease nipples

Replenish grease periodically through all nipples with a grease gun, referring to the routine maintenance chart. Fiber grease is recommended. Grease nipples are located at these points :

Front brake arm
Front brake panel
Front arm pivot bushing (R & L)
Clutch adjuster
Rear brake arm
Speedometer gear box
(Nipples on CB92 only)
Front brake arm (upper)
Change pedal pivot
Brake pedal pivot
Brake cable
Clutch cable

(2) Front and rear axle bearings

Replace grease in front and rear axle bearings every 5,000 miles. Pack grease between balls and put a thin coat inside the wheel hubs.

(3) Drive chain

The chain should be thoroughly cleaned and greased as described on page 89.

V. PERIODICAL MAINTENANCE

Routine maintenance shown below is also listed in riders manual.

Items \ Duration	1st time after 200 miles	2nd 2nd month	3rd 5th month	4th 8th month	5th 11th month
Adjust and/or service drive chain	○	○	○	○	○
Check and/or service battery		○	○	○	○
Change oil	○	○	○	○	○
Clean oil cleaner		○	○	○	○
Adjust tappet clearance	○	○	○	○	○
Grease all nipples		○		○	
Check tightening of bolts and spokes		○		○	
Adjust ignition timing	○		○		○
Adjust cam chain		○		○	
Clean carburettor			○		
Clean fuel strainer			○		
Grease wheel bearings			○		

VI. RACING KIT FOR CB92

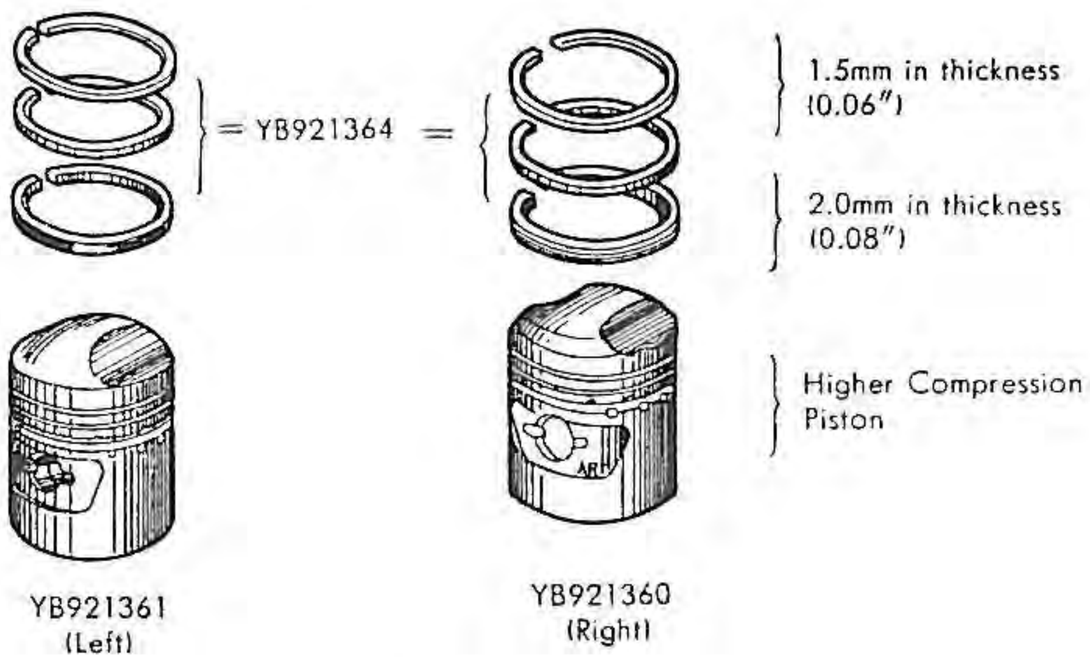
A special racing kit is available for the CB92 which increases performance and provides special equipment needed for racing.

VI-1. ENGINE PARTS

1. Piston and piston ring

High compression pistons and thin piston rings for raising compression pressure and decreasing friction between the piston rings and cylinder wall.

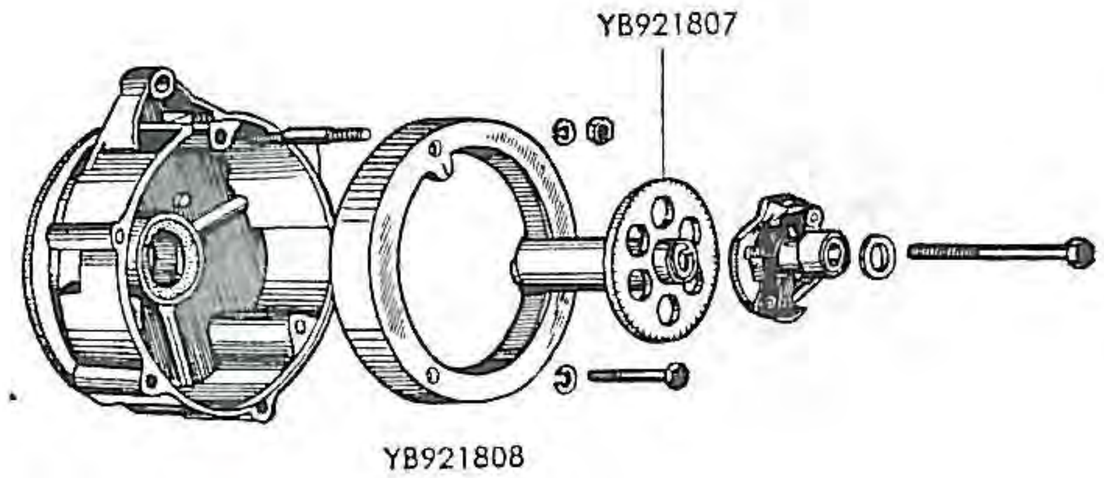
YB921360	Piston	1 pcs
YB921361	Piston	1
YB921364	Piston ring set	2

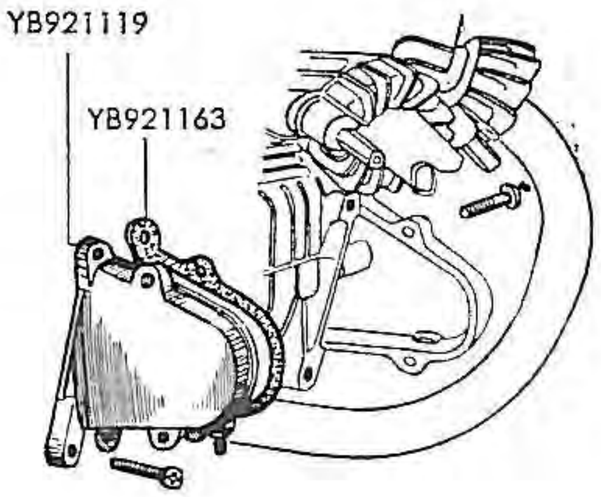


2. Removing starter motor and dynamo

To decrease weight, the starter motor, dynamo and rotor can be removed. When the dynamo is removed ignition coils of higher efficiency should be used in place of the standard coil. Before each race, fully charge the battery.

YB921119	Front crank case cover	Covering space of starter motor
YB921163	Front cover Packing	
YB921807	Governor shaft	Substitution for the rotor to keep the spark advancer in position
YB921808	Stator base cover	Substitution for A.C. dynamo starter
YB921806A	Ignition coil	Higher efficiency at high R.P.M





3. Spark plug

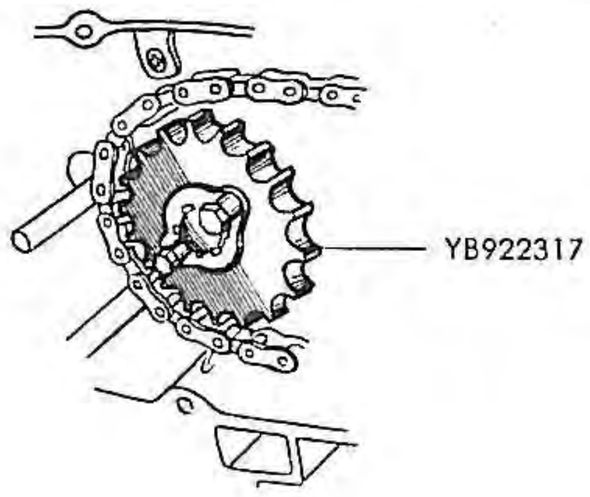
Colder type spark plugs are available. The gap on these plugs should be set at 0.014–0.016″ (0.35–0.40 mm)

YB921817A	Spark plug C10H, C12H	2 pcs

4. Drive sprocket

Selected according to racing conditions.

YB922317	Drive sprocket :	14 teeth	1 pc

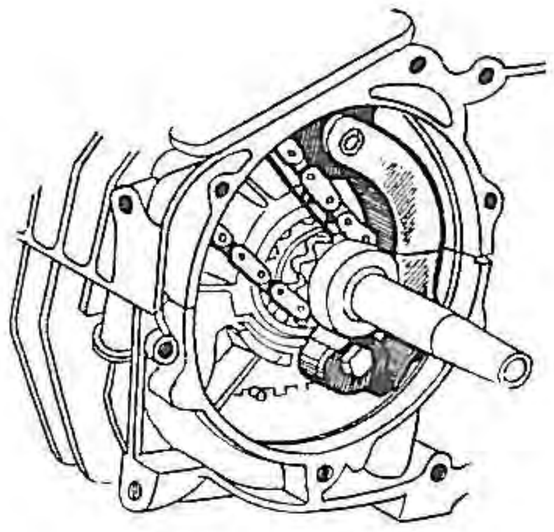


5. Cam shaft and exhaust valve

The exhaust valve is reinforced with stereite welding to prevent wear. The cam shaft is for high revolution valve timing.

YB921416	Cam shaft	1 pcs
YB921416B		1
YB921547	Exhaust valve	2

YB921416 is superseded by YB921416B which is made integral with tachometer drive worm gear. The later is adopted for complete engines from CB92E-010511 and CA95E-010139.



6. Carburettor jets

For improved performance using megaphone diffuser pipes.

YCZPW22/15	Main jet	1 pc
YCZPW20A/04	Power jet	1

7. Tachometer gear box

Far engines numbered below CB92E-010510 and CA95E-010138 without tachometer gear boxes, the following parts are required to install the tachometer.

B921206C	Cylinder head complete	1 pc
B921212B	R cylinder head side cover	1
B921216B	Cam shaft complete	1
B921465	Tachometer gear	1
B921467	12 mm sealing bolt	1
B921470	Tachometer gear bushing	1
B921472	20 mm sealing nut	1
B922883	12 mm sealing washer	1

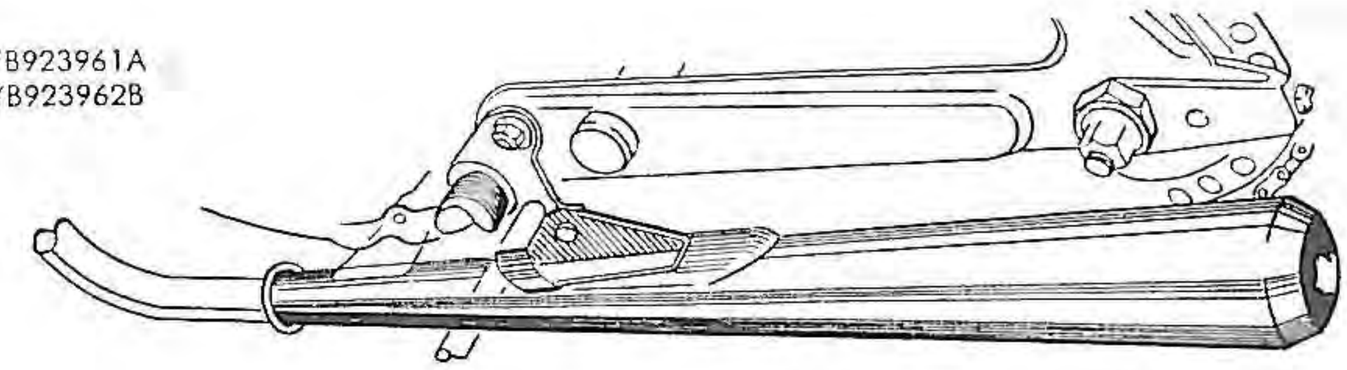
VI-2. FRAME PARTS

1. Megaphone type diffuser exhaust pipes

Diffuser pipes without mufflers to increase efficeincy.

YB 923961A	R. Exhaust diffuser	1 pc
YB 923962A	L. 〃 〃	1

YB923961A
YB923962B

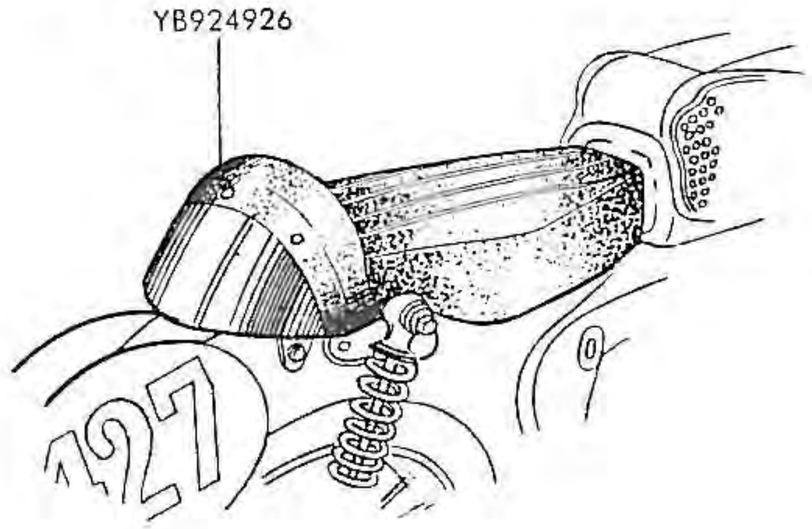


2. Racing seat

With a hump at the back to improve riding position.

YB 924926	Racing seat	1 pc

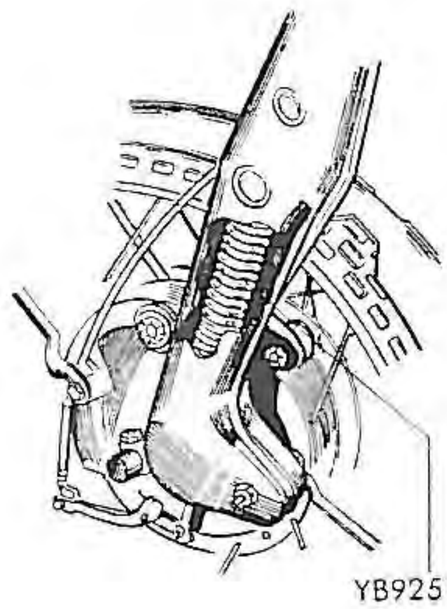
YB924926



3. Front and rear cushions

Heavy load springs with stiffer dampers to decrease amount of movement and improve steering at high speeds.

YB 925166	Front cushion ass'y	1 pc
YB 926116	Rear " "	1 Spring tension 177-1kg at displacement of 102.4mm



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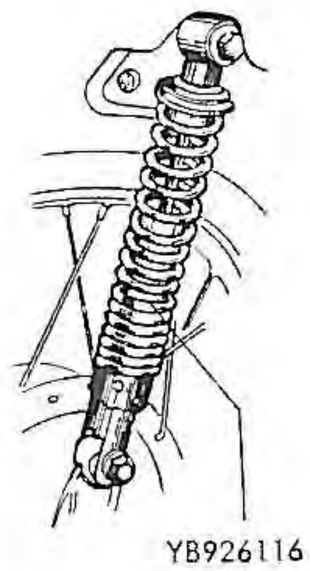
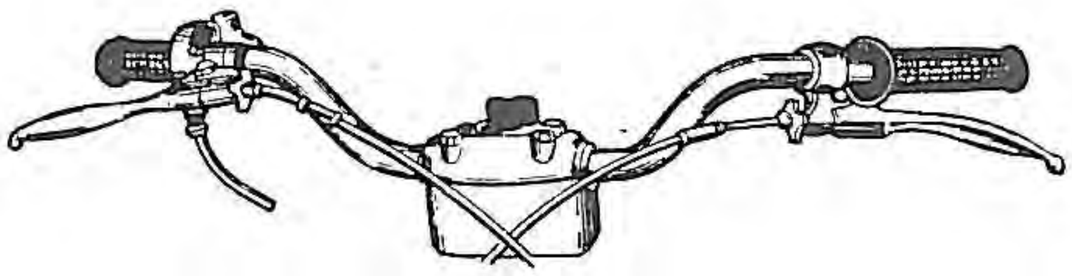


YB926116

4. Steering handle

Low handle bar with ball-tipped levers for road racing.

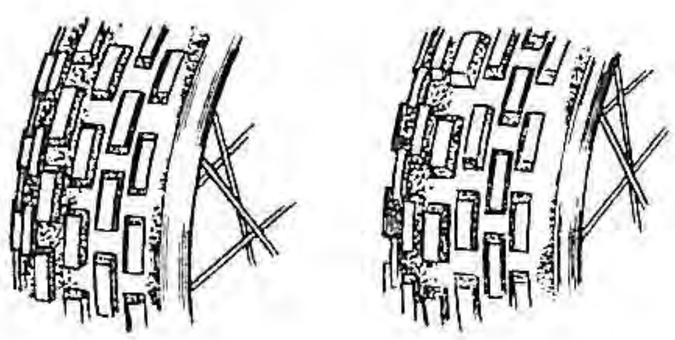
YB 925201A	Steering handle pipe	1
YB 925205	R. Steering handle lever	1
YB 925206	L. 〃 〃 〃	1
YB 925207	R. Steering handle bracket	1
YB 925208	L. 〃 〃 〃	1

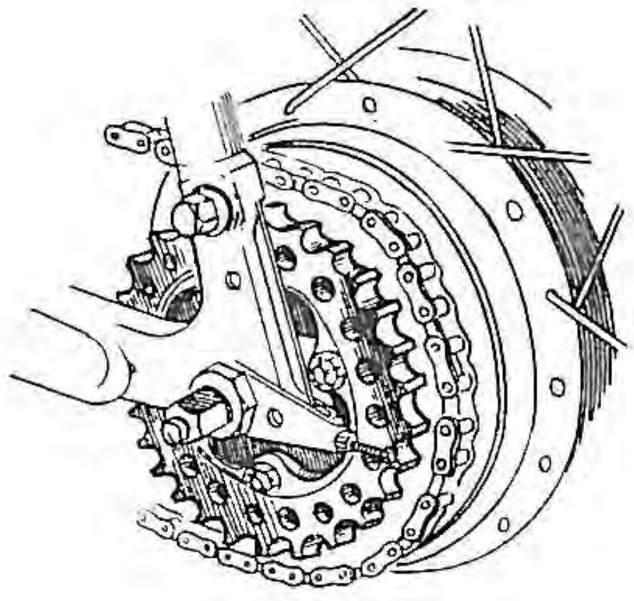


5. Tyres

Knobby type for cinder track, scrambles and trials.

YB 925401.6	Front tyre	2.50–18	1 pc
YB 926401.6	Rear 〃	2.75–18	1





6. Final drive sprockets

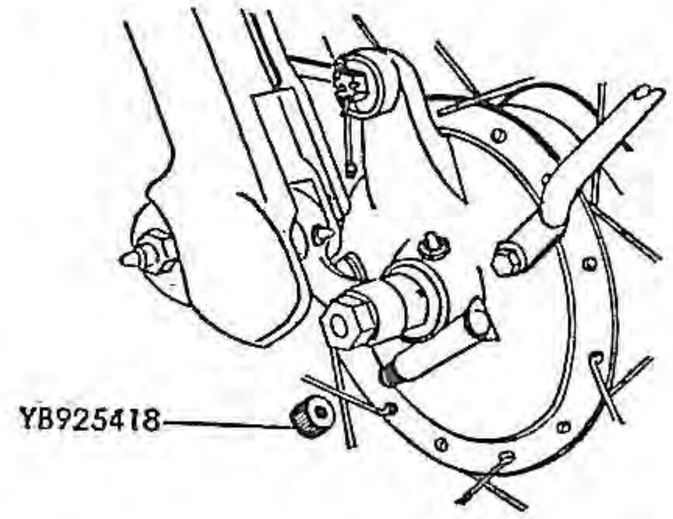
To change gear ratio according to race conditions.

YB 926226	Drive chain DK428 (120R)	1 pc
YB 926433	Final driven sprocket 38T	1
YB 〃 B	〃 〃 〃 42T	1
YB 926433C	〃 〃 〃 48T	1
YB 〃 D	〃 〃 〃 43T	1

7. Tachometer

Shows engine rpm.

YB 924828	Tachometer	1
YB 924829	// cable ass'y	1

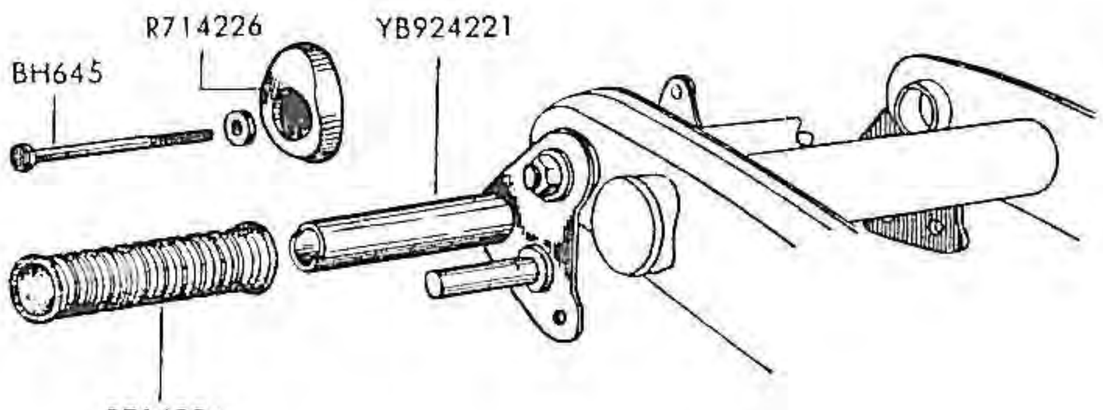


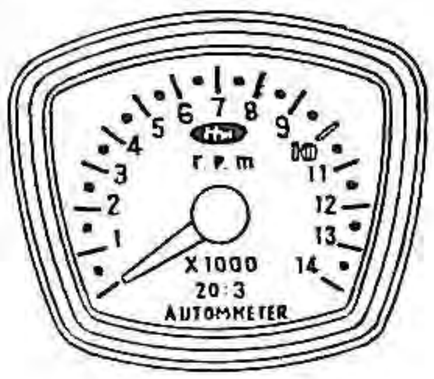
8. Others

Grilled guide to replace front brake panel ventilator cover.

Speedometer gear box cap to keep front hub clean. Side stoppers for steps to prevent feet slipping off.

YB 925418	Gear box cap	1 pc
YB 924221	R. Foot rest complete	1
YB 924222	L. // // //	1
R 714226	Foot rest piece	2
R 714224	// // rubber	2
BH 645	6×45 bolt	2





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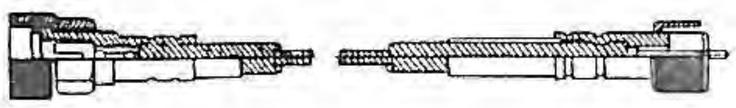

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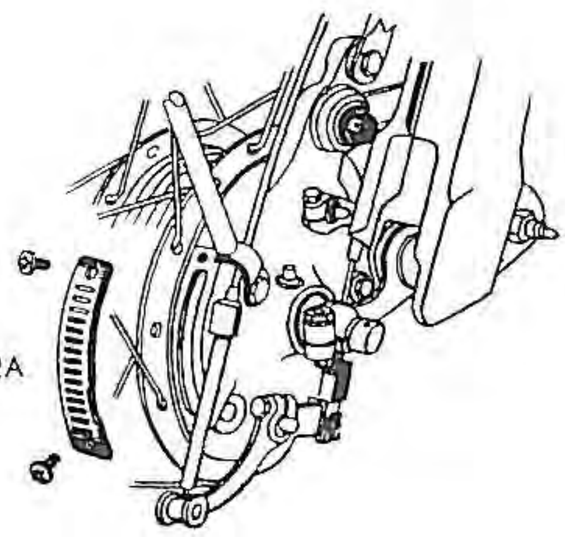


YB925512A

VII. SERVICE TOOLS

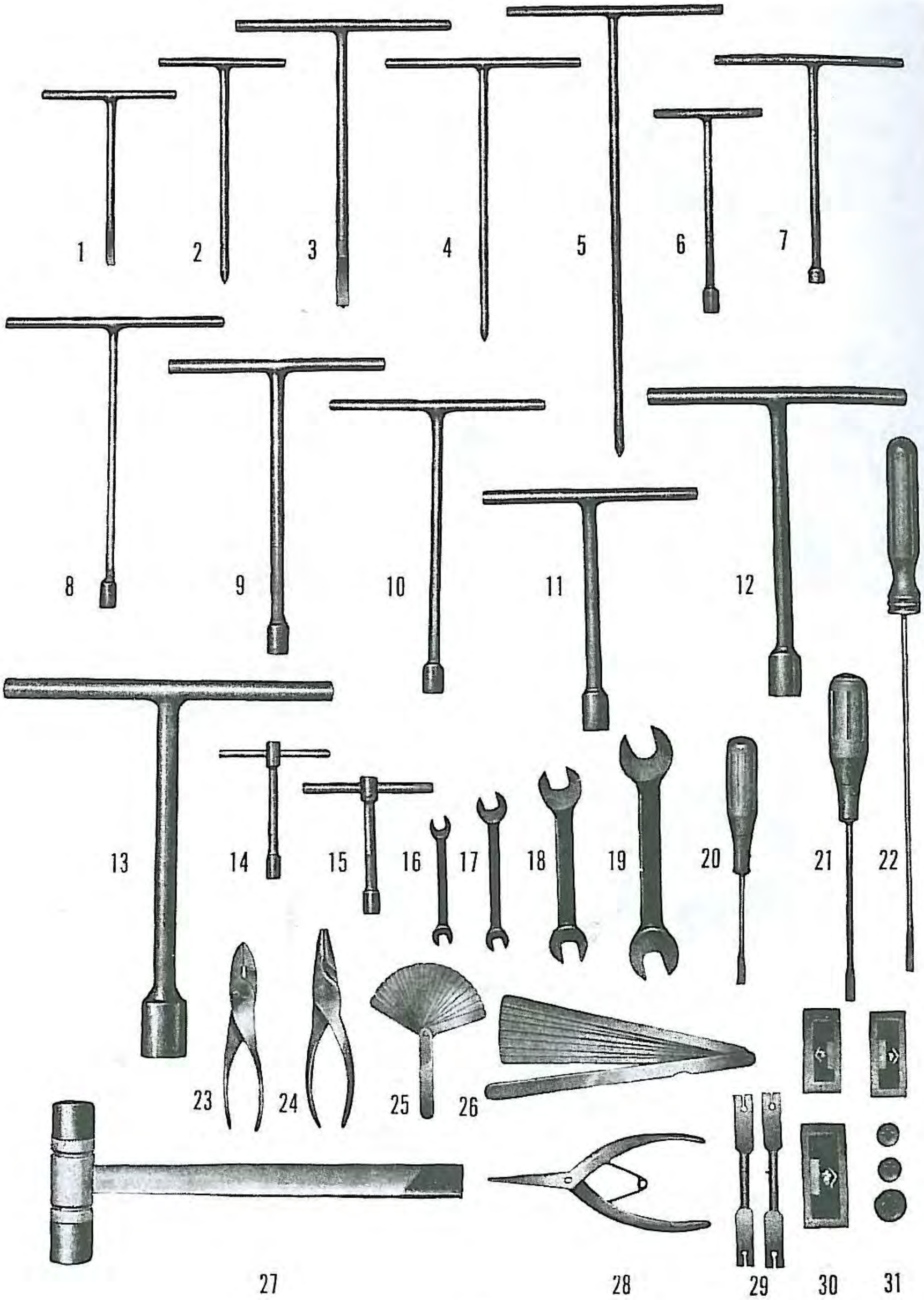
Necessary tools for dismantling, reconditioning and reassembling the Honda 125 and 150 are listed hereunder.

They are contained in two tool kit sets. One is called the common tool kit, (useful for all kinds of motorcycles) and the other is the special tool kit, for use on Honda 125 and 150 exclusively.

1. Common tools

(Ref No.)	(Tool No.)	(description)	(qty)
1	K-1	T-Handle fore head driver (# 2)	1
2	K-2	T-Handle cross head driver (# 2)	1
3	K-3	T-Handle fore head driver (# 3)	1
4	K-4	T-Handle cross head driver (# 3)	1
5	K-5	T-Handle cross head driver (# 4)	1
6	K-6	8 m/m T-Handle socket wrench (0.32)	1
7	K-7	9 m/m Handle socket wrench (0.35)	1
8	K-8	10 m/m T-Handle socket wrench (0.39)	1
9	K-11	14 m/m T-Handle socket wrench (0.55)	1
10	K-13	17 m/m T-Handle socket wrench (0.67)	1
11	K-14	19 m/m T-Handle socket wrench (0.75)	1
12	K-15	21 m/m T-Handle socket wrench (0.83)	1
13	K-17	26 m/m T-Handle socket wrench (1.02)	1
14	K-21	Socket wrench for inserting, 6 m/m stud bolt (0.24)	1
15	K-22	Socket wrench for inserting, 8 m/m stud bolt (0.32)	1
16	K-33	8×9 Double head spanner (0.32×0.35)	1
17	K-34	10×14 Double head spanner (0.39×0.55)	1
18	K-35	17×19 Double head spanner (0.67×0.75)	1
19	K-36	21×23 Double head spanner (0.83×0.90)	1
20	K-37	Fore head driver with wooden handle 100 m/m, 150 m/m	1
21	K-38	Fore head driver with wooden handle 100 m/m, 150 m/m	1
22	K-39	Fore head driver with plastic handle	1
23	K-48	Pliers	1
24	K-49	Thin nose pliers	1
25	K-50	Feeler gauge (0.04, 0.06, 0.10, 0.12)	1
26	K-51	Feeler gauge (0.35, 0.4, 0.65, 0.07, 0.75)	1
27	K-52	Rubber hammer	1
28	K-53	Snap ring remover	1
29	K-54	Nipple spanner for tightening spokes	2
30	K-55	Tap with handle, 5•6•8 m/m (0.2, 0.24, 0.32)	1 set
31	K-56	Dies with handle, 5•6•8 m/m (0.2, 0.24, 0.32)	1 set
32	K-57	Tool box	1

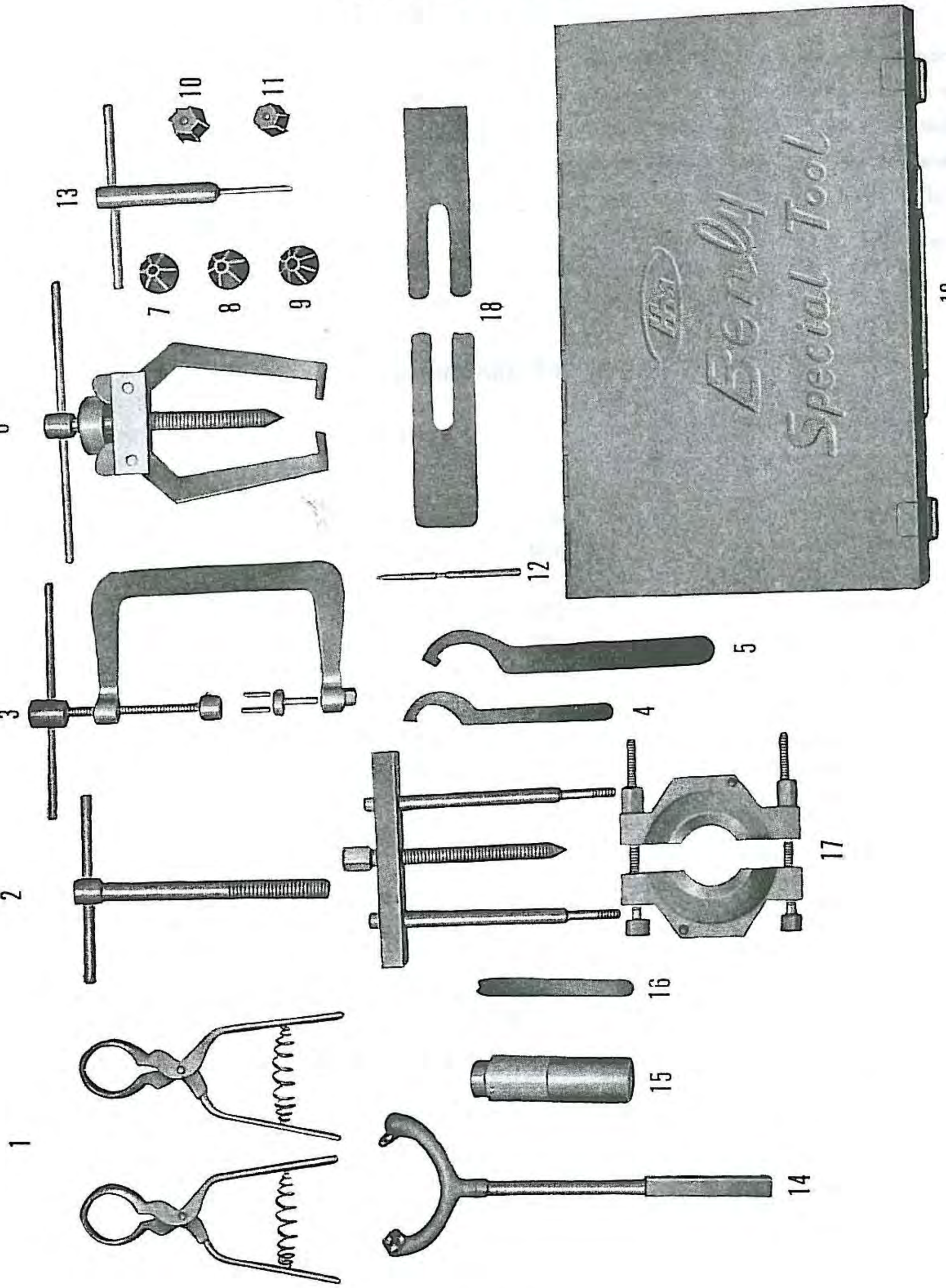
Common Tools



2. Special tools

(Ref. No.)	(Tool No.)	(Description)	(qty)	(Comments)
1	C-903	Piston ring compressor	2	installing cylinder onto piston
2	C-904	Dynamo rotor puller	1	for removing dynamo rotor
3	C-905	Valve lifter	1	for removing valve cotters
4	C-908	Main switch pin spanner	1	for removing main switch
5	C-909	4 m/m pin spanner.....	1	for adjusting steering top ball race
6	C-910	Timing gear puller	1	for removing timing gear
7	C-911	Valve seat cutter; 120° angle	1	for repairing valve seat (for exhaust valve seat)
8	C-922	Valve seat cutter; 120° angle	1	for repairing valve seat (for inlet valve seat)
9	C-912	Valve seat cutter ; 90° angle	1	for repairing valve seat
10	C-913	Valve seat cutter ; 20° angle	1	" (for inlet valve seat)
11	C-923	Valve seat cutter , 20° angle	1	for repairing valve seat (for exhaust valve seat)
12	C-915	Valve guide reamer	1	for reaming valve guide
13	C-914	Valve seat refacer bar	1	available with cutters
14	C-916	Drive sprocket holder.....	1	for holding drive sprocket
15	C-917	Driver ; for timing gear	1	for fitting timing gear
16	C-919	Tappet wrench	1	for adjusting tappets
17	C-921	Crank shaft bearing puller.....	1	for removing crank shaft main bearing
18	A-7034	Wood block	1	
19	K-51	Tool box.....	1	

Special Tools



VIII. TECHNICAL DATA

Important data for maintenance is listed in this chapter which is divided into three sections. The section of "General data" includes the general features of performance of the complete motorcycle, the " dimensions and limits " section includes dimensions of component parts with tolerances for standard and repairing limits, and in the torque spceification (last section) is listed the specific torque for tightening bolts and nuts.

Representation of signs is as follows.

* for C92, (*) for CB92 and (**) for CA95.

The numbers without the above signs are common for all models.

VIII-1. GENERAL DATA

1. Dimensions and Performance

Dimension: mm (in)	*	(*)	(**)
Overall length	1,900	1,875	1,900
Overall width	640	595	720
Overall height	955	930	1,007
Wheelbase	1,245	1,260	1,250
Min. ground clearance	130	140	135
Weight: Kg (lbs)			
Total dry weight	120	110	124
Weight distribution, front	55	52	58
Weight distribution, rear	65	58	56
Min. turning radius: mm (in)	1,700	2,000	1,700
Max. top speed: Km/h (mph)	*115	(*) 130	(**) 125
Climbing gradient: degrees	18° 26′		
Stopping distance: m (ft)	8; braking at speed of 35 Km/h on flat level road.		
Fuel consumption: Km/l (mpg)	*65; (*) 60; (**) 55; constant cruising speed of 35 Km/h on a flat and paved road.		

2. Engine

Stroke & Number of cylinders	4 st. twin cylinder	
Location of valve	Overhead cam & valves	
Bore × Stroke: mm (in)	* (*) 44 × 41 (1.73 × 1.62)	(**) 49 × 41 (1.93 × 1.62)

2. Engine (Cont'd)

Total displacement : cc	* (*) 124 ; (**) 154
Compression ratio	*8.3 : 1 ; (*) 10 : 1 ; (**) 9.7 : 1
Max. output : HP/rpm	*11.5/9,500 ; (*) 15/10,500 ; (**) 16.5/10,000
Max. torque : Kg. m/rpm	*0.9/8,200 ; (*) 1.06/9,000 ; (**) 1.24/9,000
Engine weight : Kg (lbs)	*36 (79.2) ; (*) (**) 37 (81.4)
Compression pressure : lb/in^2	*120 ; (*) (**) 130
Carburettor Bore size	* (*) PW18HA3a 18 mm (0.71 in) (**) PW20HA3a 20 mm (0.79 in)
Battery Type Capacity : V, Amp-h	 MBK 7-6 6-12 Ah
Spark plug Type Size : mm Spark gap : mm (in)	 *C7H ; (*) (**) C10H 10 × 12.7 0.6-0.7 (0.024-0.028)
Ignition timing Initial sttinge : degrees Advance angle : degrees Contact point gap : mm (in)	 5 BTDC 40 BTDC 0.3-0.5 (0.012-0.02)
Timing drive	Cam chain (78 links)
Tappet clearance : mm (in) (in. & ex. when cold)	0.1 (0.039)
Lubricant capacity : l. (pt)	1.2 (2.1)
Starting device	Electric starting motor (provided with kick starter)
Type of air cleaner	Filter paper
Lubricating system	Wet sump and plunger pump
Type of oil filter	Centrifugal oil filter
Type of clutch	Wet and multi-plate
Type of transmission	Constant mesh 4 forward speeds
Type of gear changing	Foot control

Gear ratio	
Gear ratio of gear box	
First	*2.61 ; (*) (**) 2.36
Second	1.61 ; 1.47
Third	1.19 ; 1.04
Top	0.88 ; 0.84
Primary transmission	
Type	Gear drive
Gear ratio	*3.88 ; (*) 3.88 ; (**) 3.88
Final transmission	
Type	Chain drive
Gear ratio	*2.67 ; (*) 2.93 ; (**) 2.40
Total gear ratio	
First	*27.04 ; (*) 26.83 ; (**) 21.98
Second	16.68 ; 15.76 ; 13.69
Third	12.33 ; 11.12 ; 9.68
Top	9.12 ; 8.98 ; 7.82

3. Chassis

Max. steering angle	45°
Handle bar size : mm (in)	*640 (25.2) ; (*) 595 (23.44) ; (**) 700 (28.00)
Caster : degrees	*61 ; (*) 60 ; (**) 61
Trail : mm (in)	* (**) 95 (3.74) ; (*) 100 (3.94)
Tyres	
Size front	* (**) 3.00–16–4 ply (*) 2.50–18–4 ply
Rear	* (**) 3.00–16–4 ply (*) 2.75–18–4 ply
Air pressure	
Front	25 lb/in^2
Rear	30 lb/in^2 (for solo)
〃	40 lb/in^2 (for pillion occupied or racing)
Frame	Single unit, made of pressed steel
Suspension	Pivot link with coil spring and oil damper (front & rear)
Brake	
Type	Internal expanding band brake

Item	Standard	Repairing Limit	Remarks
Oil ring groove width	3.01–3.03 (0.1868–0.1194)	3.1 (0.12)	
Piston min. clearance to cylinder	0.–0.03 (0–0.0012)	0.15 (0.006)	
Gudgeon pin hole diam.	14.0–14.01 (0.551–0.552)	14.03 (0.553)	
Available oversize	0.25, 0.50, 0.75 (0.01, 0.02, 0.03)		
Piston ring			
Compression ring thickness	1.497–1.499 (0.05898–0.0590)	1.43 (0.056)	
Width	* (*) 1.9–2.1 (0.075–0.083)	1.8 (0.07)	
	(**) 2.1–2.3 (0.827–0.906)	2.0 (0.788)	
Tension	* (*) 0.56–0.68	0.4	
	(**) 0.62–0.76	0.5	
End gap in cylinder bore	0.15–0.35 (0.0059–0.014)	0.8 (0.032)	
Clearance to piston ring groove	0.02–0.06 (0.00079–0.00204)	0.15 (0.0059)	
Piston ring available oversize	0.25, 0.50, 0.75 (0.01, 0.02, 0.03)		
Gudgeon pin			
Outside diam.	13.99–14.0 (0.551–0.552)	13.98 (0.549)	
Overall length	* (**) 36.0–36.4 (1.42–1.43)		
	(**) 40.8–41.0 (1.608–1.62)		
Clearance to gudgeon pin hole	0–0.12) (0–0.005	0.05 (0.0019)	
Connecting rod			
Small end diam.	14.02–14.04 (0.552–0.553)	14.07 (0.554)	
Clearance betw. gudgeon pin	0.016–0.049 (0.0063–0.0193)	0.07 (0.0296)	Push fit

3. **Chassis** (Cont'd)

Brake pedal free play : mm (in) Handle lever free play : mm (in)	30–40 (1.2–1.6) 20–30 (0.8–1.2)
Fuel tank capacity	* (**) 9.1 (2.4) (*) 10.5 (2.8)

4. **Electrical Apparatus**

Generator type Charging current : Amp	 daytime 51.6 nighttime 51.8 at 3,000 RPM.
Bulb : V–W Head lamp Tail and stop lamp	 6–35/25 6–3 (tail) ; 6–6 (stop)
Winker lamp : V–W	6–8×4
Meter lamp : V–W	6–3
Neutral lamp : V–W	6–3
Selenium rectifier Output voltage : V	 15
Horn Type Sound volume : phon	 Diaphragm 100–105
Winker relay blinking frequency : times/min Fuse : V–Amp Condneser capacity : μF	60–120 6–15 0.24–0.34

VIII–2. DIMENSIONS AND LIMITS

Standard value indicates the manufacturers standard size or standard size for reassembling or adjusting.

The repairing limit represents the limit of the parts which can be repaired.

In this list the number without units indicate mm and (in), and others according to the unit indicated.

Item	Standard	Repairing Limit	Remarks
Cylinder bore	* (*) 44.00～44.01 (1.7336～1.7339) (**) 49.00～49.01	44.1 (1.71～1.74) 49.1	
Wall thickness	4 (0.16)	3 (0.12)	

Item	Standard	Repairing Limit	Remarks
Clearance to valve guide	0.01–0.03 (0.00039–0.0012)	0.07 (0.0028)	
Outer valve spring			
Free height	28.86 (1.137)	27.8 (1.09)	
Compression	14.2–15.8 kg (31.31–35.84 lb)	13.8 kg (30.43 lb)	at 20 mm (0.79) height
Inner valve spring			
Free height	30.21 (1.189)		
Compression	4.7–5.3 kg (10.36–11.69)	4.0 kg (8.82 lbs)	at 19 mm (0.75) height
Camshaft			
Journal diam.	17.95–17.96 (0.706–0.708)	17.0 (0.67)	
Journal diam.	29.93–29.94 (1.179–1.180)	29 (1.178)	
Cam height	24.0	23.05	
Cam base circle	19.0 ϕ	18.05	
Oil pump plunger diam.	13.96–14.01	13.90	
Timing sprocket			
Inside diam.	18.0–18.01 (0.709–0.7095)	18.1 (0.718)	
Teeth Valley	27.56–27.66 (1.086–1.0898)	27.4 (1.08)	13 teeth
Cam chain total length	598.6–599.6	593.0	77 links
Rocker arm			
Inside diameter	10.0–10.015 (0.394–0.395)	10.08 (0.387)	
Clearance to clamp pin	0.013–0.043 (0.0051–0.017)	0.15 (0.006)	
Cam chain tensioner spring			
Compression	4.75–5.75 kg (10.48–12.68 lb)	4.0 (8.82 lb)	at length of 70 mm
Clutch outer			
Inside diam.	19.99–20.01 (0.7876–0.788)	20.1 (0.792)	

Item	Standard	Repairing Limit	Remarks
Out-of-round	0.01 (0.0004)	0.05 (0.002)	
Bore taper	0.01 (0.0004)	0.05 (0.002)	
Oversize available	0.20, 0.50, 0.75		
Height of cylinder barrel	63.55–63.65	63.0	
Cylinder head			
Valve seat angle	45°		
Valve seat width	1.0 (0.04)	2.0 (0.08)	
Tightening tolerance of valve guide	0.07–0.11		shrink fit at temp 250°C
Flatness of gasket surface	max. 0.03	0.05	
Cam shaft bearing			
Inside diameter	30.00–30.02 (1.182–1.183)	30.1 (1.186)	
Cylinder gasket thickness	1.1–1.2 (0.043–0.049)		
Valve guide inside diam.	5.5–5.51 (0.17–0.2171)	5.45	both in. ex.
Valve guide outside diam.	10 04–10.05 (3.956–3.960)		shrink fit at temp 250°C
Piston			
Top ring round diameter	* (*) 43.75–43.80 (1.72–1.726)		
	(**) 48.70–48.75 (1.919–1.921)		
Skirt max. diameter (thrust side)	* (*) 43.98–44.00 (1.733–1.734)	43.9 (1.730)	
	(**) 48.98–49.00 (1.970–1.9306)	48.9 (1.927)	
Oval rate (skirt)	0.11–0.13 (0.0043–0.0051)		
Piston ring groove depth	* (*) 2.10–2.13 (0.0821–0.0839)	2 08 (0.820)	
	(**) 2.35–2.43 (0.0926–0.0957)	2.1 (0.083)	
Compression ring groove width	1.5–1.53 (0.0594–0.0603)	0.16 (0.063)	Top & second

Item	Standard	Repairing Limit	Remarks
Max. tilt at small end		3.0 (0.118)	
Big end diam.	35.055–35.015 (1.8792–1.3796)	35.05 (1.38)	
Bend and twist		0.15 (0.006)	off-set
Crank shaft			
Crank pin diam.	26.006–26.109 (1.0246–1.0287)	25.05 (0.9870)	
Tightening tolerance to crank pin weight	0.05–0.07 (0.002–0.0027)		
Journal diam.	19.996–20.005 (0.7878–0.7881)	19.94 (0.7856)	
Ball bearing axial play	0.005 (0,00197)	0.1 (0.0039)	
Ball bearing radial play	0.014–0.016 (0.0055–0.0063)	0.05 (0.0197)	
Max. run out at both ends	0.04 (0.0012)	0.3 (0.012)	
Center crank weight	(*) (**) 20.07–20.08 (0.7980–0.7912)		
Center crank shaft radial play	(*) (**) 0.010–0.020 (0.0055–0.0063)	0.05 (0.0197)	
Exhaust valve			
Stem diam.	5.47–5.48 (0.2155–0.2159)	5.45 (0.2147)	
Length	57.1–57.3 (2.249–2.257)		
Valve head seat thickness	1.0–1.5 (0.039–0.059)	2.0 (0.0785)	same as inlet valve
Clearance to valve guide	0.02–0.04 (0.0008–0.0016)	0.08 (0.0032)	
Inlet valve			
Stem diam.	5.48–5.49 (0.2159–0.2163)		
Length	58.0–48.2 (2.285–2.293)		

Item	Standard	Repairing Limit	Remarks
Change shift groove width	7.1–7.2 (0.279–0.284)	7.4 (0.292)	
Selector fork inside diam.	34.00–34.03 (1.34–1.341)	34.07 (1.342)	
Clearance betwn. selector fork and shift drum	0·025–0.075 (0.00098–0.00295)	0.15 (0.0057)	
Tension of spring			
Front	102 kg	90	at 146.5 mm height
Rear	159 kg (*) 165 kg	145 (*) 150	at 75 mm displacement at 95 mm displacement
Brake drum diameter	151.8–152.2 (*) 200–200.15	149 (*) 198	
Run-out of wheel rim	2 (0.08)	3 (0.12)	

III–3. TORQUE SPECIFICATIONS

1. ENGINE

Part Name	Part No.	Quantity used	Tightening Torque
Clutch spring retaining plate, bolts	BH 620	4	4–5 ft–lb
Left crank case cover, cross screw	JP 660 & 640	3	3–4
Drive chain cover A, cross screw	JP 620, 630 & 650	5	3–4
Under crank case, steel nuts	NH 6	1	10–15
A.C. Dynamo stator, attaching bolts	BH 630	3	5–6
Dynamo stator base, attaching cross screw	JP 630		3–4
Ignition coil, attaching cross screw	JP 535	2	2–4
Right crank case cover, cross screw	Jp	10	3–4
Oil pump attaching stud nuts	NH 6	3	6–7
Carburettor, mounting stud nuts	NH 6	2	3–4
Left cylinder head side cover, stud nuts	NBC 6	4	5–6
Cam chain tensioner pivot	901457	1	10–13
Cam chain guide roller pin	901449	1	10–13
Cam sprocket, attaching bolts	BH 614	3	6–7
Right cylinder head side cover, cross screw	JP 617	4	4–4

Item	Standard	Repairing Limit	Remarks
Friction disc thickness	3.5 (0.138)	3.0 (0.12)	
Warpage	0.2 (0.08)		
Clutch plate A thickness	1.6 (0.068)	1.4 (0.055)	
Clutch plate B thickness	3.0 (0.12)	2.7 (0.106)	
Clutch spring			
Free height	28.2 (1.111)		
Compression	8.0–12.0 (kg) (17.64–26.5 lb)		at length of 21 mm (.827)
Transmission			
Main shaft diam.	19.97–19.98 (0.786–0.787)	19.9 (0.784)	
	14.97–14.98 (0.589–0.590)	14.79 (0.587)	
Main shaft axis play	0.1–0.75 (0.0039–0.029)		
Rotary play between spline shaft and gear	00.32–0.096 (0.0013–0.0038)	0.2 (0.008)	
Counter shaft diam.	19.97–19.98 (0.787–0.7872)	19.9 (0.784)	
	14.97–14.98 (0.5898–0.5902)	14.9 (0.587)	
Ball bearing (6204H) radial play	0.014–0.016 (0.0006–0.00063)	0.05 (0.0019)	
Counter shaft clearance to its bushing	0.016–0.045 (0.00063–0.0018)	0.1 (0.0039)	
Kick starter spindle clearance to its bushing	0.016–0.058 (0.0006–0.0020)	0.1 (0.0039)	
Contact breaker arm spring tension	500–650 gr (1.403–1.433 lbs)	400 gr (0.88 lb)	
Clearance betwn. A.C. dynamo rotor and stator	0.4 (0.016)		in radium
Change shift drum diameter big end	33.95–33.98 (0.338–1.339)	33.9 (13.36)	
small end	11.97–11.98 (0.4616–0.4720)	11.9 (0.468)	

IX. TROUBLE SHOOTING

Procedures of diagnosis for finding out causes of trouble and their probable causes are described as follows.

1. Engine does not start or hard to start

(1) Remove the carburettor float chamber and check for fuel flow, if not enough fuel is supplied :

1-1. Clogged fuel line

1-2. Clogged fuel tank cap vent hole

1-3. Clogged fuel tap

1-4. Clogged carburettor line or stuck needle valve

(2) Remove the spark plugs, attach them to the spark plug caps, turn on the ignition switch and rotate the crank shaft with starter motor while the (—) electrodes are grounded. If the spark plugs do not spark well or there is no spark :

2-1. Faulty spark plug, (to make sure, check the spark plug with spark plug tester.)

2-2. Sooty or wet spark plug

2-3. Contact breaker points dirty or pitted

2-4. Faulty condenser

2-5. Incorrect adjustment of contact breaker points

2-6. Short circuit or breakage in ignition coil or wiring

2-7. Damaged combination switch

(3) Check compression pressure at the cylinder with a compression gauge and if lack (or absenee) of compression is indicated in either cylinder ;

3-1. Incorrect tappet clearance

3-2. Incorrect seating of valves in valve seats

3-3. Excessive wear in valve

3-4. Excessive wear in piston ring, piston cylinder

3-5. Blown out cylinder head gasket

3-6. Seized valve in valve guide

3-7. Faulty valve timing

(4) Engine seems to start but won't continue running ;

4-1. Choke shutter (in cold weather) opened too wide

4-2. Air screw of carburettor adjusting air-screw wide open

4-3. Damaged carburettor insulator or gasket

Part Name	Part No.	Quantity used	Tightening Torque
Oil pump body, attaching stud nuts	NH 6	3	6–7 ft–lb
Carburettor, mounting stud nuts	NH 6	2	3–4
Left cylinder head side cover, stud nuts	NBC 6	4	5–6
Cam chain tensioner pivot	901457	1	10–13
Cam chain guide roller pin	901449	1	10–13
Cam sprocket, attaching bolts	BH 614	3	6–7
Right cylinder head side cover, cross screw	JP 617	4	3–4
Tappet adjusting hole cap	901214	4	5–7
Drain bolt	902713	1	10–13
Drive sprocket, attaching bolts	BH 610	3	6–7
Cylinder stud bolt, nuts	902756 902757	6	14–18
Spark plugs	1001818	2	3–5

2. FRAME

Front & rear wheel spoke, nipples	905401	36	2–3 ft–lb
Steering handle lock attaching cross screw	JO 510	2	2–3
Horn button & winker switch under case, cross screw	JP 518	4	2–3
Front & rear brake arm, bolts	BH 620	2	5–6
R. L. Luggage carrier support metal attaching cross screw	JO 620 cr.	6	5–6
Luggage carrier support bolts	BH 817 & 828	4	12–16
Steering handle mounting steel nuts	NH 8	2	12–16
Front shock absorber upper bolts	907743	2	22–26
Front shock absorber under bolt nuts	907745	2	22–26
Front arm pivot bolt	907723	2	25–30
Fuel tank fixing bolt	707709	4	6–7
Engine hanger bolt	907705	1	25–30
Engine support bolts	BH 1040	4	25–30
Saddle cushion attaching bolts	BH 620	2	5–6
Foot rest, attaching stud nuts	NC 6	4	10–13
Main stand anchor bolt, nuts	NC 10	2	12–16
Side stand pivot screw, nut	NC 10	1	22–26
Exhaust box mounting bolts	BH 856	2	15–20
Exhaust box mounting nuts	BH 10	2	25–30
Exhaust pipe joint, nuts	NC 6	4	5–6
Tool tray board, attaching bolts	BH 612	2	5–6

Part Name	Part No.	Quantity used	Tightening Torque
Rear fork pivot bolt, nuts	707770	2	32–37 ft–lb
Drive chain case, attaching bolts	BH 618 cr.	5	5–6
Rear shock absorber suspension bar, nuts	NC 10 cr.	2	22–26
Rear shock absorber under bolt	907707	2	22–26
Front brake drum cover, stopper bolt	907704	1	25–30
Front brake torque bolt	907724	1	24–23
Front axle nut	907767	1	35–40
Rear axle nut	907767	1	35–40
Rear axle sleeve nut	907769	1	45–50
Final driven sprocket bolt, nuts	BH 832	4	12–17
Horn assembly mounting bolts	BS 620	2	6–7

2. Engine does not develop full power

(1) Stand the vehicle on the main stand and rotate the rear wheel by hand when the gear is set in neutral, if wheel does not turn easily ;

1-1. Dragging rear brake-incorrect adjustment

1-2. Damaged wheel bearing

1-3. Too tight drive chain tension, incorrect adjustment

(2) Check the tyre air pressure and inflate to the correct amount.

(3) Check the clutch for slip and if it is found slipping ;

3-1. Improper adjustment of clutch

3-2. Worn clutch facing

3-3. Weakened clutch springs

(4) Measure the highest revolutions of crankshaft with a revolution counter and if the engine does not develop full revolutions ;

4-1. Choked carburettor

4-2. Clogged air cleaner

4-3. Insufficient supply of fuel

4-4. Clogged exhaust box

4-5. Faulty ignition coil or contact breaker points

4-6. Faulty seating of valve

4-7. Incorrect ignition timing

4-8. Excess weakness in valve springs

4-9. Faulty spark plug ; test the spark plug with spark plug tester

(5) Check oil level in the crankcase and adjust the level to the specification. Excess amount of oil results in trouble.

(6) Inspect for excess heating of engine and if found ;

6-1. Excess carbon deposit in combusion chamber

6-2. Inferior grade of fuel

6-3. Slipping clutch

6-4. Lean air-fuel mixture ; improper size main jet in carburettor

6-5. Dirty cylinder and cylinder head

(7) Check for the engine developing ping or knocking when it is submitted to quick acceleration or excessive running at high speed, and if it is so ; The probable causes are same as No. (6).

3. Engine runs erratic and/or with misfiring

(1) Adjust air screw of carburettor properly and if it still runs under same circumstances.

1-1. Faulty ignition timing

1-2. Damaged carburettor insulator or packing

1-3. Faulty spark plug

1-4. Faulty condenser

1-5. Faulty ignition coil

1-6. Faulty contact breaker point

1-7. Incorrect tappet clearance

(2) Check for missing at high speeds and if the engine is still the same

2-1. Insufficient supply of fuel

2-2. Incorrect valve timing

2-3. Damaged or weak valve springs

2-4. Other causes mentioned in No. (1)

4. Excessive oil consumption or blue or black exhaust smoke

(1) If the engine exhausts smoke while continuous running at high or low RPM.

1-1. Worn cylinder or piston rings

1-2. Reversely assembled rings in piston

1-3. Excess clearance between exhaust valve and guide

(2) If the engine exhausts smoke just after closing throttle valve suddenly from certain opening :

2-1. Excess clearance between inlet valve and guide

2-2. Clogged air vent hole or plastic tube

5. Clutch jerks or engages unsmoothly

(1) If the machine moves off with jerking or the engine stops at the moment when the clutch is engaged.

1-1. Uneven tensions of clutch springs

1-2. Distorted clutch plates or facings

1-3. Sticky movement of clutch plate in the clutch outer

6. Gear shifting does not operate correctly

(1) When in changing gear it does not engage.

1-1. Worn notch on the shift drum

1-2. Selector fork stuck to the shift drum

1-3. Worn selector fork

(2) If the gear jumps out while running :

2–1 Worn dogs on the gear shifter

2–2 Worn or distorted selector fork

2–3 Weakened shift drum stopper spring

7. Engine runs with unusual noise when the tappet clearances are correct :

(1) If knocking noise is heard from the cylinder when accelerating.

1–1 Excess clearanc between cylinder and piston

(2) If chattering noise is heard even if the cam chain has been adjusted :

2–1 Excessively worn cam chain

2–2 Excessively worn cam chain tensioner spring or roller

(3) When knocking noise is heard from crank case.

3–1 Worn crank shaft big end

3–2 Worn crank shaft bearing

(4) If the clutch makes noise when operating clutch lever.

4–1 Excess clearance between the clutch plate and clutch outer

4–2 Excess clearance between the clutch center and clutch plate

8. Troubles in steering

(1) If it is felt that the steering is hard when taking turns.

1–1 Over-tight steering ball races

1–2 Bent steering stem

(2) Steering wanders or pulls to one side while running.

2–1 Worn front and/or rear wheel bearing

2–2 Distorted front and/or rear wheel rim

2–3 Loose spokes

2–4 Worn rear fork pivot bushing or front arm pivot bushing

2–5 Bent front fork or frame or rear fork

3–6 Incorrect rear wheel alignment

2–7 Uneven strength of shock absorber springs on each side

9. Troubles in brakes

(1) The brake does not actuate properly even after the free play is adjusted correctly.

1–1 Worn brake shoes

1-2 Worn brake cam

1-3 Worn brake pedal shaft

1-4 Brake shoe contaminated with oil or water

1-5 Stuck brake cable or rear brake link

1-6 Lack of grease in brake cam

(2) Brake squeaks when applied.

2-1 Excessively worn brake shoe

2-2 Contaminated surface of brake shoe

2-3 Warped or pitted wall of brake drum

2-4 Excess wear of brake panel spacer

MEMO

DESIGN CHANGE

BREATHER

The change is applied to each model starting from engine numbers :

C92E —1193875

CS92E—2700001

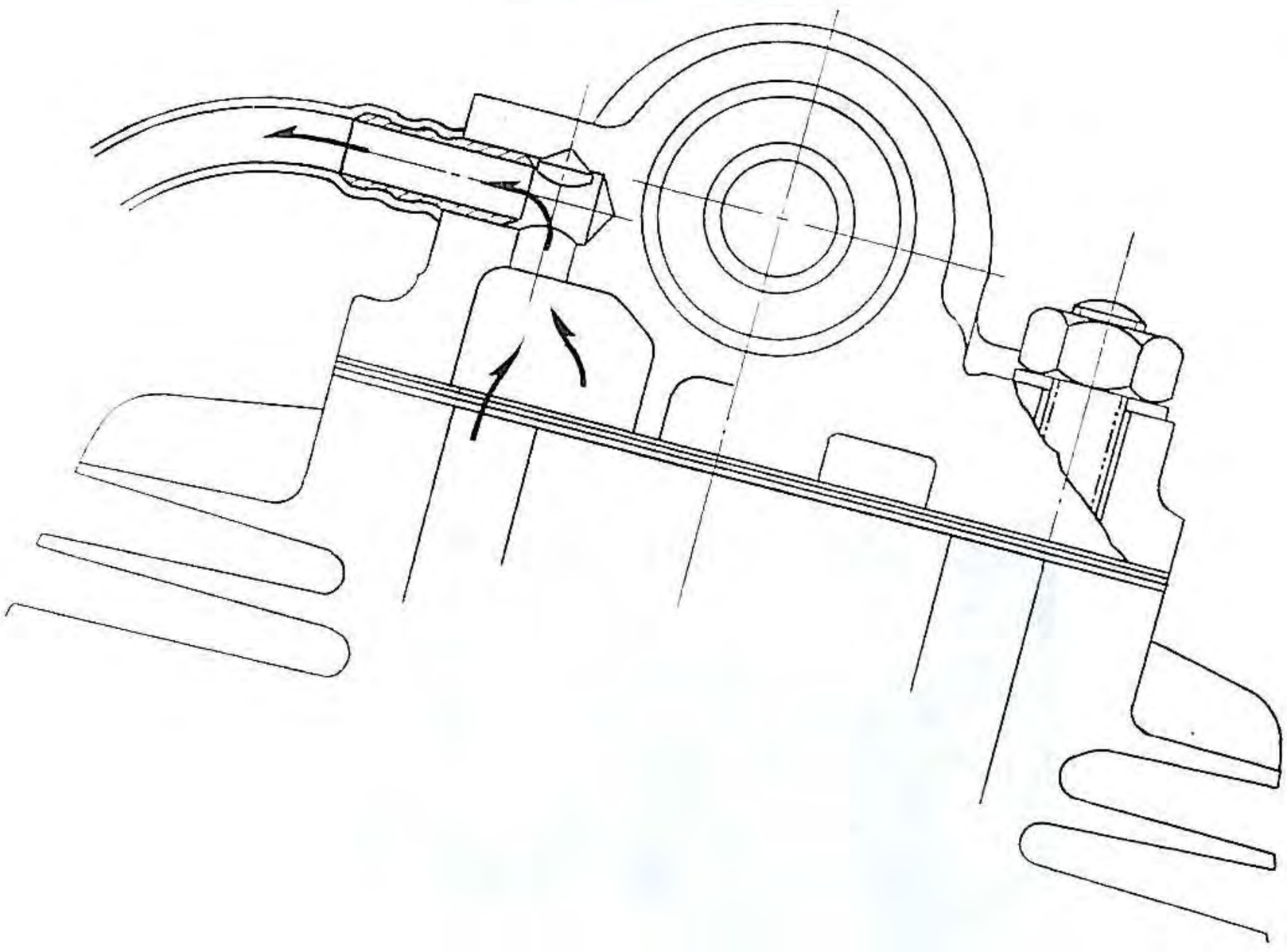
C95E —2100001

CB92E—2100001

Description of Change

The crankshaft is reinforced by using larger bearings and the housings for the bearing of the upper and lower crankcases are also given additional strength.

For this purpose, the " funnel type " breather pipe secured to the upper crankcase (see page 59) has been done away with in order that negative pressure accumulated within the case is discharged through the haed cover.



DESIGN CHANGE

HANDLE

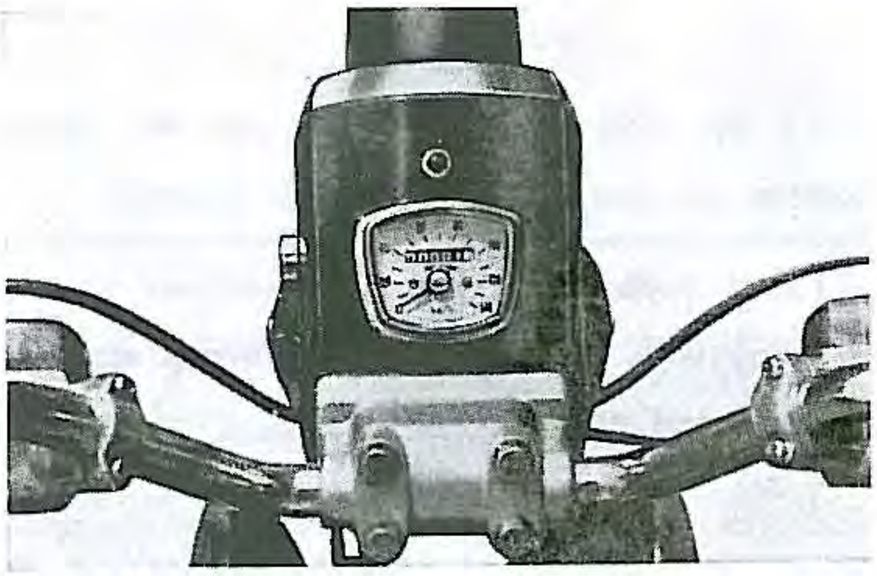
This design change will come into effect from the following vehich number.

CII 92f —3400001

CII 95f —3400001

CIIS92f —3770001

The Pressed handle will be changed to the pipe handle, and the direction indicator is attached to pipe section.



CLUTCH

This design change will come into effect from the following engine number.

C92 —3163706~

C95 —3101353~

CII92—3466846~

CII95—3102477~

The main point of this design change was to make if easy to replace the clutch wire by furnishing a window on the front part of the drive chain cover.