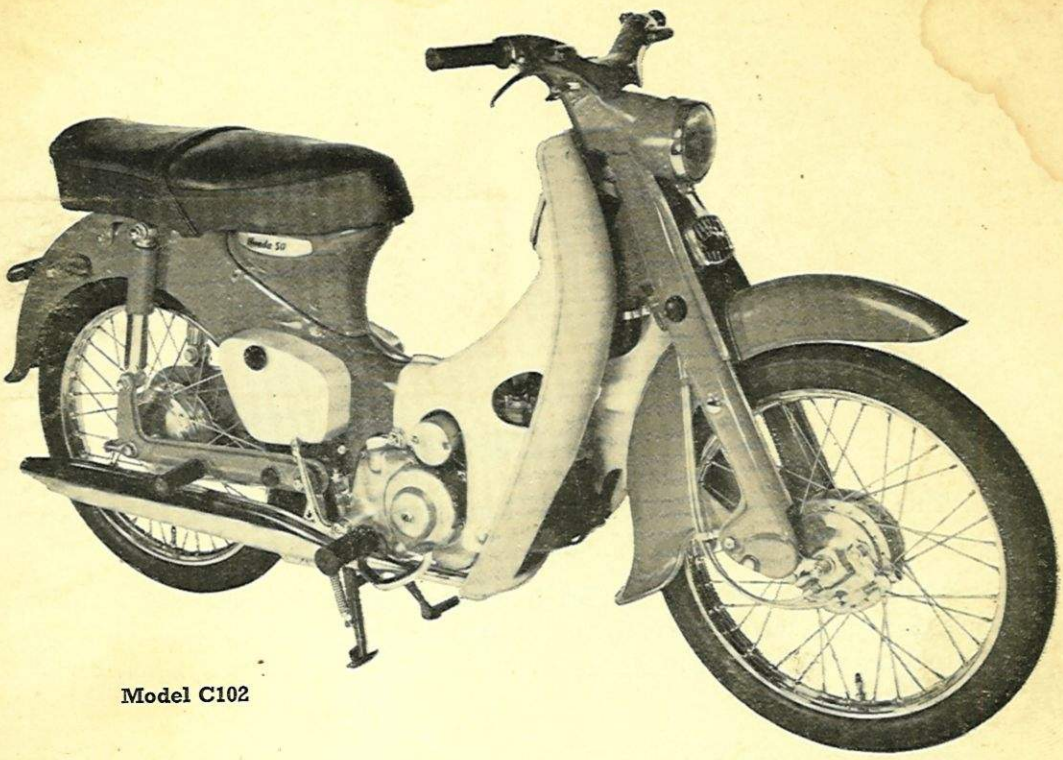
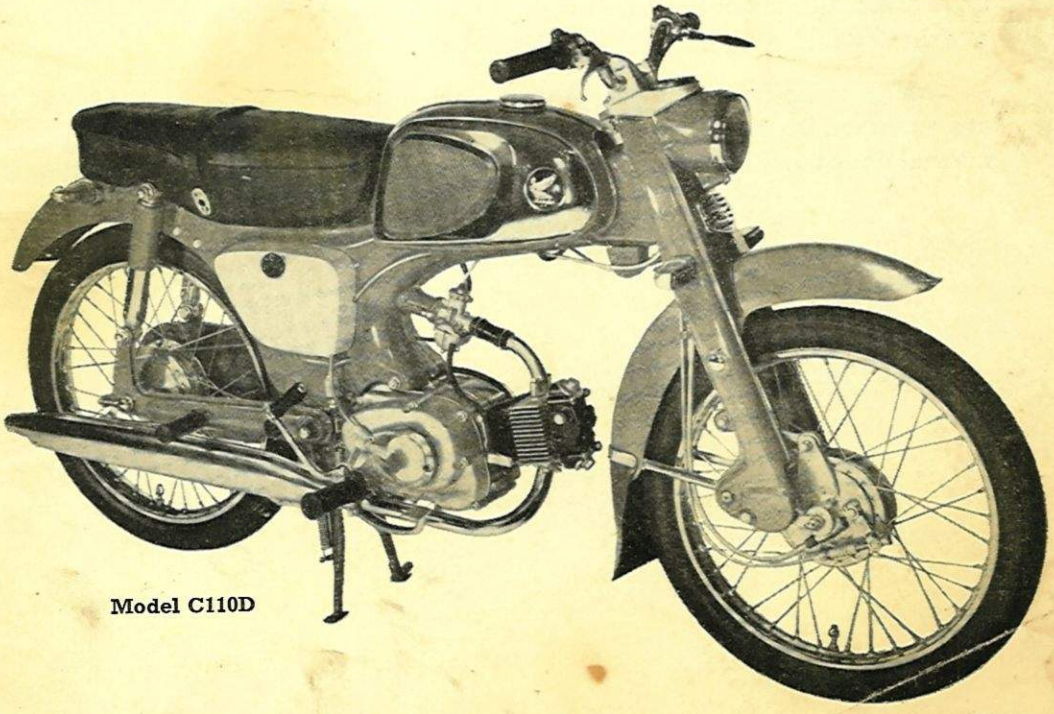
HONDA 50

SERVICE MANUAL



Model C102



Model C110D

ERRATA

From February 1st, 1963, Model No. C110D will revert to its original Model number and be known as Model C114.

FOREWORD

This manual covers the HONDA range of 50cc. machines, consisting of four models, viz. models C100, C102, C110 and C110D.

Models C100 and C102 differ from each other in respect of electrical equipment only, the C100 being fitted with an AC type flywheel mag-generator, whereas the model C102 is fitted with an electric starter and a rotating-magnet type AC generator.

Models C110 and C110D are identical to each other except for the exhaust system, which is upswept on the former and downswept on the latter model. Models C100 and C102 are fitted with three speed gearboxes and centrifugal type automatic clutches, whereas models C110 and C110D have four speed gearboxes and manually operated clutches.

Many of the frame and cycle parts, with the exception of the frame itself, are common to all models and much of the description contained in this manual does therefore apply to all models except where otherwise mentioned.

INDEX

ELECTRICAL

TECHNICAL DATA

Engine: O.h.v. single cylinder, air cooled, four stroke type.
Bore: 40mm. (1·57″)
Stroke: 39mm. (1·54″)
Compression ratio: 8·5 : 1 (C100 and C102); 9·5 : 1 (C110 and C110D)
Cylinder capacity: 49cc.
Max. horsepower and torque: (C100 and C102) 4·5 h.p. @ 9,500 r.p.m., 2·46ft./lb. @ 8,000 r.p.m.
(C110 and C110D) 5·0 h.p. @ 9,500 r.p.m., 2·82ft./lb. @ 8,000 r.p.m.
Ignition timing: (C100, C110 and C110D) 35 degrees b.t.d.c. (stable), (C102) 5 degrees b.t.d.c. (stable), 35 degrees (fully advanced).

Description	Dimension	Repair indication
Cylinder bore dia.	*1·5748″ — 1·5752″ 40·00mm. — 40·01mm.	1·580″ 40·1mm.
Cylinder bore dia.	**1·5756″ — 1·5760″ 40·02mm. — 40·03mm.	1·580″ 40·1mm.
Cylinder head valve seat (width)	0·039″ 1mm.	0·08″ 2mm.
Cylinder head gasket thickness	0·0197″ — 0·0236″ 0·5mm. — 0·6mm.	
Piston–top diameter	*1·5602″ — 1·5622″ 39·63mm. — 39·68mm.	
Piston–top diameter	**1·5551″ — 1·5571″ 39·50mm. — 39·55mm.	
Maximum dia. at base of skirt	*1·5740″ — 1·5748″ 39·98mm. — 40·0mm.	
Maximum dia. at base of skirt	**1·5744″ — 1·5752″	
Piston and cylinder minimum clearance	0·0003″ — 0·001″ 0·01mm. — 0·03mm.	
Oversize pistons, tolerances as for standard pistons	Sizes +·25mm. +·5mm. +·75mm. +1·0mm.	
Gudgeon pin diameter	0·5118″ — 0·5120″ 13·0mm. — 13·006mm.	
Piston ring chrome (top groove) radial depth	0·0709″ — 0·0787″ 1·8mm. — 2·0mm.	
Width	0·0583″ — 0·0589″ 1·480mm. — 1·495mm.	
Gap	0·003″ — 0·010″	0·039″ max.
Piston ring tapered (second groove)	Dimensions as per top ring	0·039″ max.
Oil control ring radial depth	0·0709″ — 0·07872″ 1·8mm. — 2·0mm.	
Width	0·0976″ — 0·0982″ 2·480mm. — 2·495mm.	
Gap	0·003″ — 0·010″	0·0392 max.
Piston and Piston pin clearance	0·00024″ 0·006mm.	0·002″ 0·05mm.
Connecting rod small end bore diameter	0·5124″ — 0·5135″ 13·016mm. — 13·043mm.	

* Model C100 and C102 ** Model C110 and C110D

Description	Dimension	Repair indication
Connecting rod small end and gudgeon pin clearance	0·0006″ — 0·0019″ 0·016mm. — 0·049mm.	0·003″ 0·08mm.
Connecting rod big end axial clearance	0·003″ — 0·013″ 0·1mm. — 0·35mm.	0·023″ 0·06mm.
Crank pin outside diameter	0·8306″ — 0·8310″ 21·098mm. — 21·107mm.	0·830″ 21·08mm.
Right and left crankshaft dia.	0·6692″ — 0·6696″ 16·997mm. — 17·008mm.	0·667″ 16·95mm.
Exhaust valve overall length	2·3858″ — 2·3937″ 60·6mm. — 60·8mm.	
Outer diameter of stem	0·2140″ — 0·2144″ 5·435mm. — 5·445mm.	0·2126″ 5·40mm.
Thickness of head	0·0276″ 0·7mm.	
Inlet valve overall length	2·4055″ — 2·4134″ 61·1mm. — 61·3mm.	
Thickness of head	0·0197″ 0·5mm.	
Outer diameter of stem	0·2152″ — 0·2156″ 5·465mm. — 5·475mm.	0·21382″ 5·43mm.
Exhaust valve stem and guide clearance	0·0024″ — 0·0031″ 0·06mm. — 0·08mm.	0·0039″ 0·10mm.
Inlet valve stem and guide clearance	0·0012″ — 0·0020″ 0·03mm. — 0·05mm.	0·0039″ 0·10mm.
Valve spring (outer) free length	*1·063″ 27·0mm.	1·008″ 25·6mm.
	**1·118″ 28·4mm.	1·095″ 27·8mm.
Valve spring (outer) load	*13·89 lb. — 15·21 lb. 6·3 — 6·9kgs.	11·82 lb. 5·36kgs.
		Height 0·925″or 23·5mm.
	**18·63 lb. — 20·40 lb. 8·45kgs. — 9·25kgs.	17·64 lb. 8·0kgs.
		Height 0·925″ or 23·5mm.
Valve spring (inner) free length	*1·0945″ 27·8mm.	1·043″ 26·5mm.
	**1·0591″ 26·9mm.	1·047″ 26·0mm.
Valve spring (inner) load	*5·62 lb. — 6·28 lb. 2·55kgs. — 2·85kgs.	4·78 lb. 2·17kgs.
		Height 0·886″ or 2·25mm.
	**9·19 lb. — 10·08 lb. 4·17kgs. — 4·75kgs.	8·38 lb. 3·8kgs.
		Height 0·8472 or 21·5mm.
Push rods: Length, inlet	7·3779″ 187·4mm.	
Length, exhaust	6·7126″ 170·5mm.	
Bend		0·024″ 0·6mm.
Valve lifter (cam follower) outer diameter	0·4714″ — 0·4718″ 11·973mm. — 11·984mm.	0·470″ 11·94mm.

Description	Dimension	Repair indication
CLUTCH		
Friction disc thickness	*0·1063″ — 0·1102″	0·091″
	2·7mm. — 2·8mm.	2·3mm.
	**0·1378″	0·114″
	3·5mm.	2·9mm.
Clutch spring free length	*0·9146″	0·869″
	23·23mm.	22·07mm.
	**0·9921″	0·945″
	25·2mm.	24·0mm.

* Models C100 and C102 **Models C110 and C110D

Contact breaker gap: 0·014″ (0·012″ — 0·016″).

Tappet clearance: Inlet and exhaust, 0·002″ — 0·004″ cold.

Sparking plug gap: 0·024″, type N.G.K. C7HW, 10mm. x 12.7mm. reach.

Carburettor:

C100 and C102 models—
Main jet, No. 88 — 95
Slow running jet, No. 35
Throttle valve, No. 2
Jet needle, 13302
Slow running adjusting air screw, 1 — 1¼ turns out.

C110 and C110D models —
Main jet, No. 85 — No. 88.
Slow running jet, No. 35.
Throttle valve, No. 2 (Pw16.)
Jet needle, 16302.
Slow running adjusting air screw, 1 — 1¼ turns out.

Overall gear ratios:

C100 and C102 models—		**C110 and C110D models —**	
Low	35·8–1	Low	33·9–1
Second	19·3–1	Second	19·64–1
Top	12·8–1	Third	14·53–1
		Top	11·73–1

Engine oil capacity: All models — (1⅛ pints approx).

Petrol tank capacity: C100 and C102, 0·8 gallons
C110 and C110D, 1·6 gallons.

Tyre size: All models— 2·25″ x 17″ front and rear.

Tyre pressures: All models— front 22 p.s.i., rear 28 p.s.i.
Increase rear tyre pressure to 32 p.s.i. for pillion.

Battery: Models C100, C110 and C110D—6 volt, 2 ampere/hour.
Model C102 — 6 volt, 11 ampere/hour.

Bulbs:

Models C100, C110 and C110D—		**Model C102—**	
Head	6v./15w./15w.	Head	6v./20w./20w.
Tail	6v./1·8w.	Tail	6v./1·8w.
Stop	6v./6w.	Stop	6v./6w.
Winker	6v./8w.	Winker	6v./8w.
Neutral ind.	6v./3w. small bayonet.	Neutral ind.	6v./3w., small bayonet.
*Winker ind.	6v./3w., small bayonet.		
Speedo.	6v./1·5w.	Speedo.	6v./1·5w.

Dry weights: Model C100 — 143 pounds (65 kgs.)
Model C102 — 154 pounds (70 kgs.)
Model C110 — 145 pounds (66 kgs.)
Model C110D — 145 pounds (66 kgs.)

Overall length:	C100 and C102, 71·25″	C110 and C110D, 67″
Overall width:	C100 and C102, 22·25″	C110 and C110D, 22·24″
Overall height:	C100 and C102, 37·25″	C110 and C110D, 36·25″
Wheelbase:	C100 and C102, 46·5″	C110 and C110D, 45·28″
Ground clearance:	C100 and C102, 5·5″	C110 and C110D, 5·9″

*C110 and C110D only

ENGINE UNIT

TO REMOVE ENGINE UNIT FROM FRAME, models C100 and C102

Remove crankcase drain plug and drain the oil from the crankcase.
Disconnect battery lead.
Remove air silencer/cleaner lid (10mm. domed nut).
Remove front legshield assembly (remove four 10mm. set-screws. Slacken off legshield rear clamp plates, 14mm. nuts).
Remove the dirt shield, which is attached to the cylinder head and crankcase by four 10mm. nuts.
Remove exhaust system complete (two 10mm. nuts at cylinder head and two 10mm. set-screws retaining the silencer to the frame bracket).
Remove the copper-asbestos ring washer from the exhaust port.
Remove air filter hose.
Unscrew carburettor mixing chamber top cap and withdraw throttle valve and needle assembly.
Disconnect petrol pipe (pull off) and remove carburettor from cylinder head (two 10mm. nuts).
Lift off carburettor flange joint 'O' ring.
Disconnect starter motor feed cable (not applicable to model C100).
Disconnect sparking plug lead by pulling waterproof cap off the plug.
Disconnect brown wire from the rectifier and the four generator wires, white, yellow, blue and green with red stripe. These wires are fitted with snap-on connectors and the cables are clipped to the frame by a cable clip situated immediately above the rectifier on the frame down-tube.
Remove the footrest assembly, which is attached to the crankcase by four 14mm. nuts and spring washers.
Remove the lower section of the rear chain case (two 10mm. set-screws) and the small forward mounted aluminium cover (four cross head screws).
Disconnect the rear chain at the connecting link and remove the chain.
Remove the small plastic section of the rear chain guard.
Unhook the brake pedal and stop lamp switch springs.
Place a supporting block under the engine, remove the upper and lower engine mounting bolts and the engine unit can be lifted clear of the frame.

ENGINE DISMANTLING

Remove the gear change and kickstarter pedals which are retained on their respective shafts by a 14mm. set-screw. Note the position of each pedal before drawing the pedal off the shaft (pedals and shafts are punch marked).
Remove the two rocker box inspection caps (17mm. spanner) and the rocker oil feed pipe (10mm. spanner).
Remove the gearbox sprocket, which is retained on the secondary gear shaft by two 10mm. screws and a retaining plate.
**Remove the stator plate inspection cover and disconnect the blue wire to the condenser.
**Remove the cover which houses the starter motor drive and stator assembly; this cover is attached to the crankcase by four cross head screws. If it is intended to remove the stator plate on which the contact breaker and condenser are mounted, it is advisable to scribe a mark on the stator plate continuing onto the case, in order to facilitate timing on re-assembly.
**Disconnect the green/red striped wire from the neutral indicator switch and remove the complete stator-coil assembly from the left-hand crankcase (three cross-head screws).
**Hold the rotor stationary with a holding tool and remove the central retaining bolt and washer. Lift or prise off the advance and retard mechanism.
**Remove the rotor and starter driven sprocket, using the special puller (available from the Service Dept.)
**Remove the woodruff key from the shaft.

**Remove the starter motor, which is attached to the crankcase housing by three 10mm. set-screws.

**Remove the starter motor drive chain and sprocket. A special, roller type free-wheel device is incorporated in the drive sprocket.

*Remove the flywheel magneto cover, which is retained by five cross head screws.

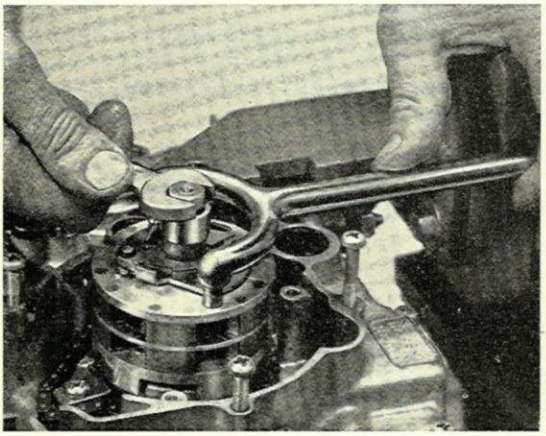
*Remove the 14mm. nut and washer retaining the flywheel to the crankshaft and using the special flywheel extractor, withdraw the flywheel from the crankshaft. The extractor body has a left-hand thread.

*Disconnent the green/red striped wire from the neutral indicator switch.

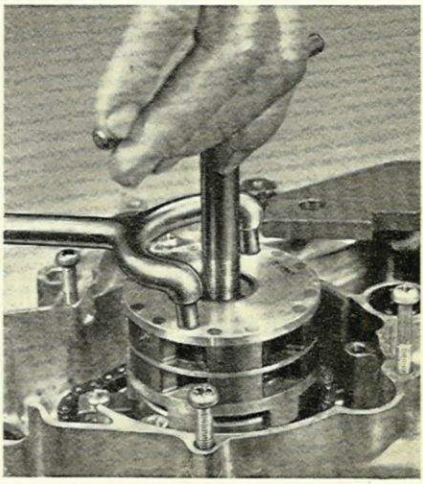
*Remove the two countersunk cross-head screws fixing the stator plate to the crankcase and remove the stator plate complete with wires.

*Remove the woodruff key from the crankshaft.

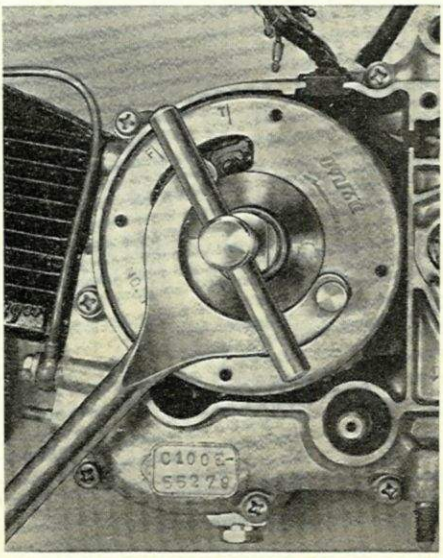
* Model C100 ** Model C102



Holding rotor with holding tool whilst removing retaining bolt (C102)



Extracting rotor, using special extractor tool (C102)



Removing flywheel, using holding tool and extractor (models C100, C110 and C110D)

ROCKER BOX, CYLINDER HEAD AND CYLINDER REMOVAL

Remove the four 10mm. bolts retaining the rocker box and lift it off the cylinder head. A gasket is fitted between the rocker box and the head. Lift out the push rods. The exhaust push rod is the shorter of the two. Remove the four cylinder head nuts and the cylinder head can be lifted clear of the cylinder. A copper ring type gasket is fitted between the cylinder head and the cylinder, two 'O' type rubber washers and a rubber ring seal washer are also fitted to seal the push rod tunnel and oil drain from the rocker gear. The cylinder can now be lifted clear of the crankcase assembly.

PISTON

The piston gudgeon pin is retained in the piston by two wire type circlips and after these have been removed, using pointed nose pliers, the pin can be lightly tapped out of the piston.

The piston crown is marked with an arrow and on re-assembly it is essential to make sure that the piston is positioned so that the arrow points downward when the engine is positioned normally.

Remove the piston rings (two compression and one scraper). The top piston ring is a chrome type and is marked 'top' on the face which should face upwards, the second ring is of the taper type and is also marked 'top', a slotted scraper type is fitted in the lower groove.

VALVE REMOVAL

Use a small valve spring compressor to depress the springs and remove the split type collets.

VALVE ROCKER REMOVAL

Remove the two 14mm. plug bolts from the rocker box; the rocker spindles can then be extracted using a piece of stiff wire pushed down the centre of the spindle. Side play is taken care of by a small compression spring placed between the end of the rocker and the rocker box.

WORK ON THE CYLINDER HEAD (all models)

Remove the valves from the cylinder head, using a valve spring compressing tool. Remove all carbon deposits from the head and valves and examine the valve faces and the valve seats in the head for wear. If the face of a valve is not too badly pitted it can be reground on a valve refacing machine to an angle of 45 degrees. A valve with pit marks of more than ·006 — ·007″ in depth should be replaced with a new valve.

Measure the valve stems for wear, making reference to the tolerances given on page 2.

Examine the valve seats in the cylinder head for wear and, if necessary, a small amount of metal can be removed with a valve seat cutter to clean up the seat.

The valves should be **lightly** ground into their seats using fine grinding compound, afterwards thoroughly wash all parts in petrol to remove all traces of grinding compound.

Check the free length of the valve springs against the dimensions given on page 2 and, if necessary, replace with new.

Re-assemble the valves in the head, using a spring compressor to depress the springs. Check that the valve collets are accurately positioned in the valve spring collars.

REMOVAL OF CLUTCH COVER, ETC.

The clutch cover is attached to the crankcase by nine cross head screws and, after the screws have been removed, the cover can be lifted away from the crankcase. A gasket is fitted between the two cases and this should be

removed. Two small compression springs are located inside the clutch cover and when all the retaining springs have been removed the cover will tend to spring away from the crankcase. The purpose of the two springs is to retain the oil plate, situated in front of the camshaft drive gear, in position. The plate can now be removed. An additional anti-rattle spring is also fitted between the clutch operating camplate and the release mechanism, and this can also be removed. Remove the clutch operating lever and washer from its splined shaft, lift off the clutch operating camplate and prise out the journal ball bearing and carrier from the centre of the clutch drum.

REMOVAL OF CLUTCH ASSEMBLY COMPLETE

The complete clutch assembly is splined to the crankshaft and is retained in position by a sleeve nut and lockwasher. Bend back the lockwasher tab and unscrew the sleeve nut with a suitable tool. The correct tool is available from the Service Dept. The complete clutch can now be withdrawn from the shaft.

DISMANTLING THE CLUTCH

Remove the bronze bush from the centre of the drive gear. Hold the clutch body in the left hand with the drive gear facing upwards. Prise out the 101mm. diameter spring ring from the back of the clutch body, and the drive gear assembly complete with two plain plates and two lined plates can be lifted from the clutch body. Remove the four small compression springs from their guide pins (the purpose of these four springs is to assist in freeing the clutch plates).

Lift out the lower plate complete with guide pins and the eight hardened steel rollers.

Remove the four cross head screws from the front face of the clutch body, unscrewing each screw a little at a time: this will enable the drive plate, the four small damper springs and the four main clutch springs to be released.

To separate the clutch drive gear from the clutch centre it is only necessary to remove the retaining circlip.

Place all the parts in order of dismantling for careful examination prior to re-assembly.

REMOVAL OF DRIVER GEAR, CAMSHAFT, CAMSHAFT DRIVE PINION, KICKSTARTER SPRING, ETC.

Remove the 17mm. circlip from the primary gearbox shaft and the driver gear can be drawn off the shaft.

Remove the 23mm. circlip and washer from the kickstarter shaft and disconnect and remove the kickstart return spring, using pointed nose pliers.

Remove the camshaft and the inlet and exhaust valve lifters (cam followers).

Remove the camshaft timing pinion from the crankshaft, using the special puller.

The timing pinion drive pin can be removed, using a pair of side cutters, by taking a firm grip on the pin and levering against the mainshaft as shown in the illustration.

Slacken off the 10mm. bolt, which locates the shift drum pawl, sufficiently to allow the pawl to be disconnected from the shift drum.

Depress the shift lever, which registers in the shift drum locations, by hand, until it is clear of the drum and gently tap the gear change lever spindle out of the crankcase from the left-hand side. Great care is necessary during this operation, otherwise the mechanism may be strained.

Note: A thrust washer is fitted on the gear change lever spindle next to the circlip which retains the gear shift arm.

SEPARATING THE CRANKCASES

Remove the nine crankcase holding screws and hold the crankcases over the bench with the right side facing upwards. Now using a rawhide or copper mallet gently tap the end of the primary gear shaft, the kick start shaft and the crankshaft alternatively in order to separate the cases, leaving the complete gear, kick start assembly and crankshaft in the left hand case.

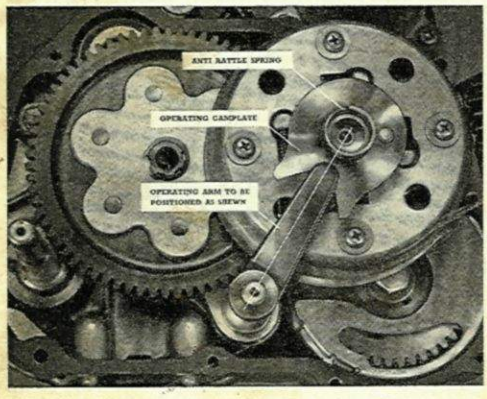
Remove the crankcase gasket and the two dowels.

REMOVAL OF KICKSTART SHAFT AND RATCHET ASSEMBLY

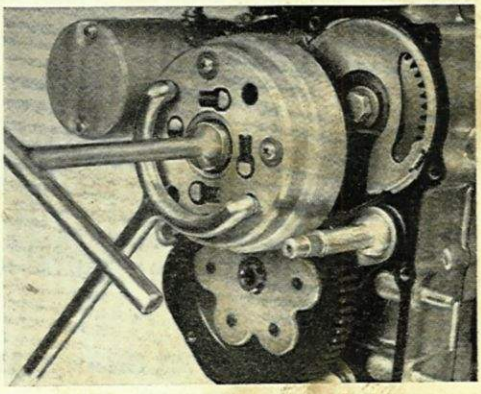
This can be withdrawn from the left-hand crankcase as a complete assembly and dismantled in the following order:

12mm. thrust washer
kickstart pinion
14mm. thrust washer
Pawl-lifting cam plate
Circlip and washer-retaining pawl spring
Pawl spring
Pawl
Large distance washer

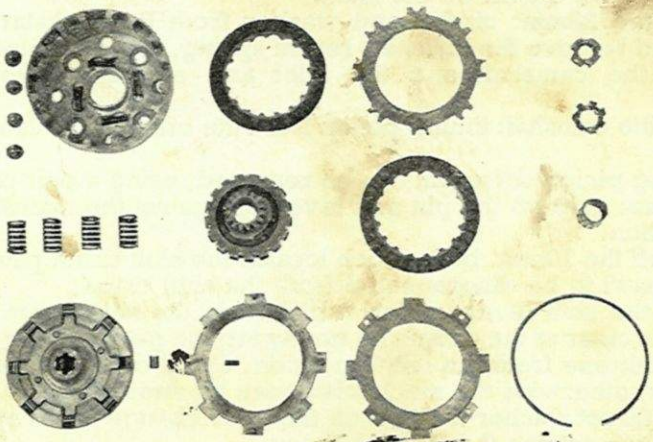
If it is found necessary to remove the carrier for the pawl-lifting cam plate and pawl from the shaft, the position of the carrier in relation to the milled slot in the shaft should first be noted (a centre punch mark will be found on the kickstart shaft and a corresponding mark on the carrier).



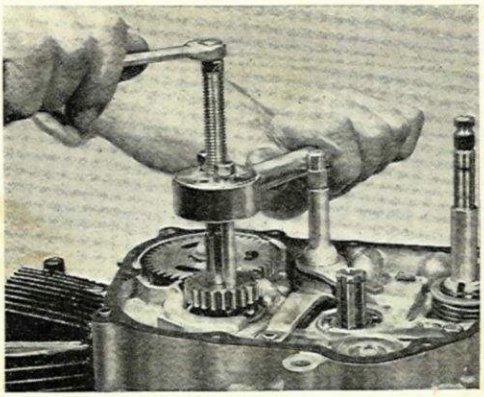
Clutch withdrawal mechanism, driver gear, oil plate and camshaft



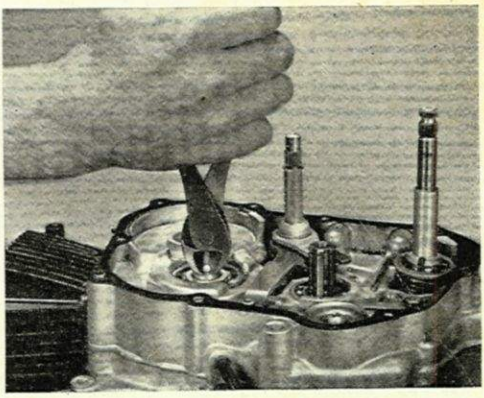
Removing clutch retaining sleeve nut, using holding tool and socket spanner



Clutch dismantled (models C100 and C102)



Removing timing pinion from the crankshaft, using the special puller



Removing timing pinion drive pin

REMOVAL OF THE GEAR SHIFT DRUM AND GEAR CLUSTER

Remove the rubber blanking plug which is located at the side of the neutral indicator switch.

Remove the 10mm. set-screw and washer retaining the gear shift drum in the crankcase, which is situated adjacent to the neutral indicator switch, and the shift drum and gear cluster complete can be withdrawn from the crankcase.

The gears, thrust washers, circlips, etc., are positioned on the shafts in the following order:

Primary Shaft — thrust washer, high gear, splined thrust washer, circlip, second gear, the first gear which is integral with the primary shaft and a thrust washer.

Secondary Shaft — thrust washer, high gear, distance piece, second gear, splined thrust washer, circlip, sliding dog, circlip, thrust washer and first gear.

The gear operating forks are located in position on the shift drum by 10mm. screwed pins and tab washers, and the neutral indicator contact is attached to the end of the shift drum.

REMOVAL OF OIL SEALS FROM THE LEFT-HAND CRANKCASE AND CLUTCH COVER

Three oil seals are fitted in the left-hand crankcase as follows: crankshaft journal bearing, gearbox secondary shaft journal bearing and gear change pedal shaft, and these can easily be removed from the cases by prising out with a screwdriver or similar tool. An oil seal for the kickstart pedal shaft is fitted in the clutch cover and this can be removed by a similar method.

On the C102 model only, an oil seal is fitted in the electric starter driven sprocket.

REMOVAL OF CRANKCASE JOURNAL BALL BEARINGS

All the journal ball bearings are a press fit in the cases, and it is advisable to use a hand operated press for removal and replacement of all bearings. However, if a press is not available the operation can be carried out using correct size mandrells and a hammer.

INSPECTION AND SERVICING (all models)

Before the parts of a dismantled unit can be examined for wear it is essential that they are thoroughly cleaned. After cleaning, carefully examine each part, making reference to the data regarding tolerances, etc., given on pages 1, 2 & 3.

ENGINE RE-ASSEMBLING (models C100 and C102)

FITTING JOURNAL BALL BEARINGS TO CRANKCASES

Ascertain that the bearing housings are perfectly clean and that no burrs exist at the entrance to the housings. Using a small press or, if a press is unavailable, a suitable mandrell and hammer, press or drive the bearings into the cases. Lightly oil the bearings and make sure that they revolve smoothly.

In all future re-assembling operations it is essential to lightly oil all moving parts on assembly.

OIL SEALS

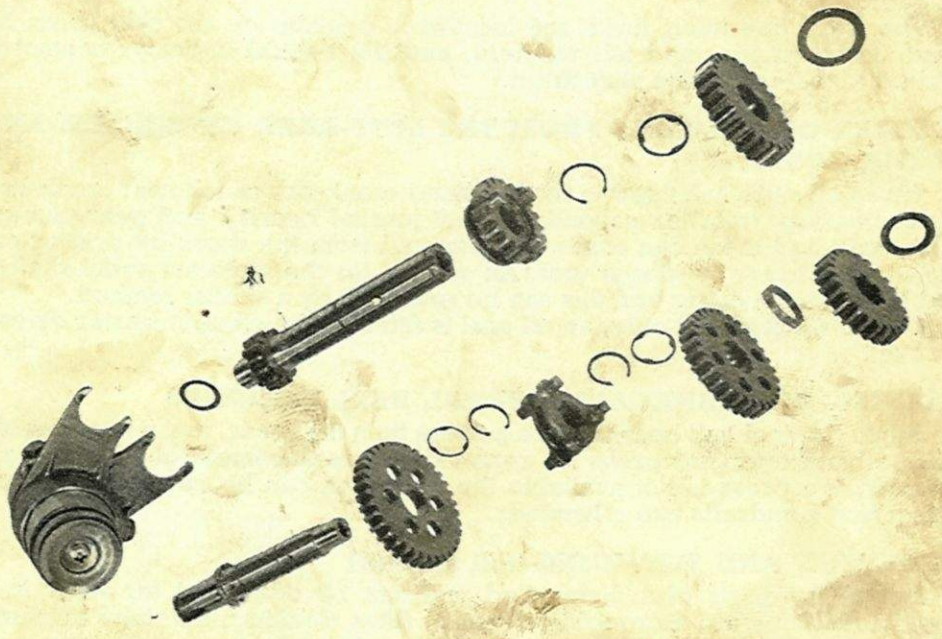
Using a suitable soft mandrell the seals can be driven into the housings.

GEAR CLUSTER, LEFT-HAND CRANKCASE

For ease of assembly it is recommended that the left-hand crankcase is placed on two wooden blocks on a bench, or mounted on a special engine stand. The inside of the crankcase should face upwards.

Assemble the gears, circlips, thrust washers, distance piece, sliding dog, etc., on the gear shafts in the reverse order to that described in the dismantling operation. Locate the selector fork and shift drum assembly in their respective positions in the sliding dog on the secondary shaft and the second gear on the primary shaft (holding the gear cluster in the hand with the secondary shaft positioned on the left-hand side and the primary shaft on the right-hand side, take the shift drum assembly and locate in position with the rear selector positioned in the secondary shaft sliding dog and the forward facing fork located in the second gear on the primary shaft).

Hold the complete gear cluster and shift drum assembly in the right hand and lower into the crankcase, locating the secondary shaft in the journal ball bearing, the primary shaft in the bush and the tapered end of the shift drum in its housing. Replace and tighten the 10mm. set-screw and washer which retains the shift drum in the crankcase. Refit the rubber blanking plug.



Gear cluster (exploded) (models C100 and C102)

KICKSTART SHAFT AND RATCHET ASSEMBLY

If the pawl carrier has been removed from the kickstart shaft it should be refitted to the shaft so that the centre punch marks on the carrier and shaft coincide. The remainder of the kickstart parts should be assembled in the reverse order to that described in the dismantling operations. Position the complete assembly in the left-hand crankcase, taking care to ensure that the dowel in the pawl-lifting cam plate locates in the crankcase dowel hole.

CRANKSHAFT ASSEMBLY

The crankshaft should now be fitted into the left-hand crankcase with the splined mainshaft uppermost and the connecting rod free to move in the crankcase cylinder spigot aperture.

Refit the exhaust valve lifter (cam follower) in the left-hand crankcase. It is advisable to smear the stem with a small amount of thin grease in order to prevent it from falling into the crankcase during later assembling operations.

Replace the crankcase dowels and fit a new crankcase gasket.

RIGHT-HAND CRANKCASE

Refit the inlet valve lifter (cam follower) in its guide and lower the right-hand case onto the left-hand case. No force is required providing the previous instructions have been carried out correctly.

Replace the nine cross head screws retaining the cases and tighten down evenly.

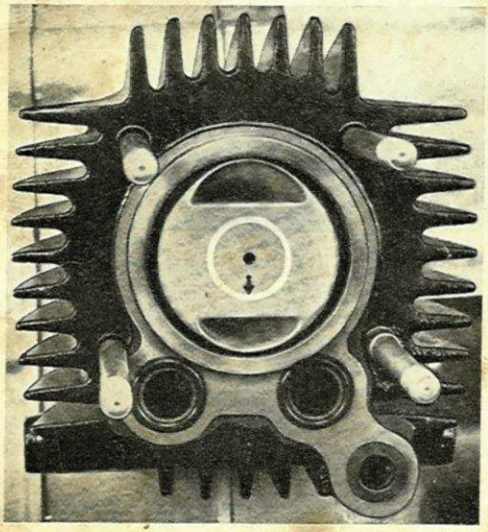
GEARBOX SPROCKET

Replace the gearbox sprocket on the splined secondary shaft, locate the retaining plate, replace and finally tighten the two 10mm. set-screws.

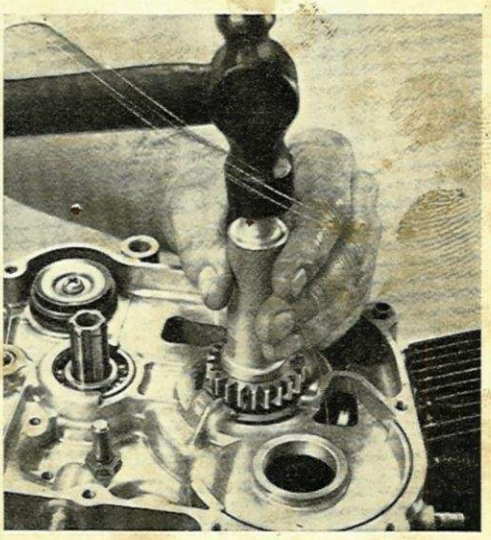
PISTON AND CYLINDER

Assemble the piston on the connecting rod, making sure that the **arrow mark** on the piston crown points downwards. Replace the gudgeon pin circlips. Having previously checked the piston ring gaps in the cylinder, as per the recommendations given on page 1, assemble the piston rings in their respective grooves with the gaps set equi-distant, i.e. top ring (chrome compression) — second ring (tapered compression) — bottom ring (slotted oil control).

Care must be taken to see that the 'TOP', marked on both compression rings, faces upwards.



Piston should be fitted with the arrow pointing downwards



Driving timing pinion on to the main-shaft, using the special tubular drift

Place a new cylinder base gasket in position, oil the piston and cylinder bore, move the piston to the b.d.c., position and lower the cylinder over the piston whilst compressing the rings with the fingers.

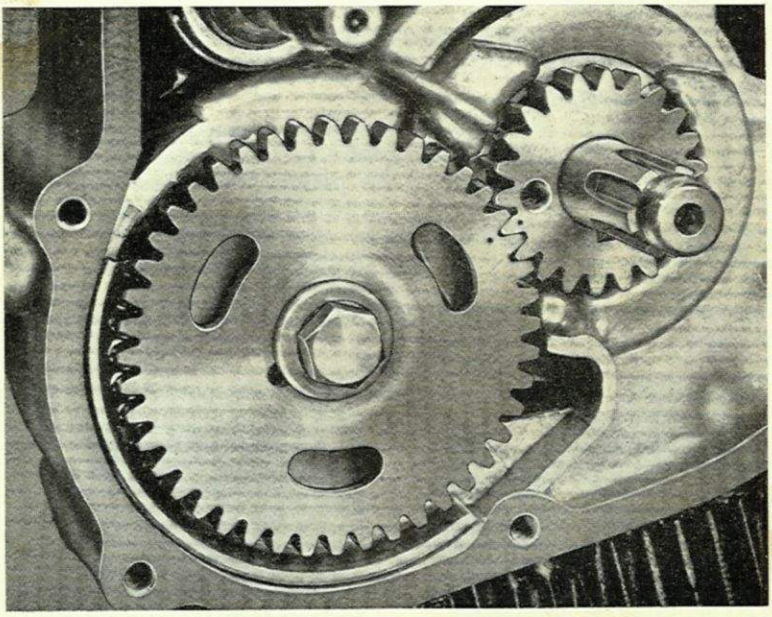
CAMSHAFT AND CAMSHAFT PINION

Replace the camshaft pinion drive pin in the crank mainshaft and drive on the pinion, using a tubular drift. The camshaft can now be positioned in its housing, making sure that the timing marks on the pinion and camwheel 'line up' with each other.

REFITTING THE GEARCHANGE SHIFT LEVER ASSEMBLY, AND SHIFT DRUM PAWL AND SPRING

Ascertain that the thrust washer is in position on the gearchange shaft and lightly grease the splined end of the shaft in order to minimise risk of damage to the oil seal. Pass the shaft through the crankcase, whilst at the same time slightly loading the shift lever return spring and depressing the shift lever to enable it to locate in the slot in the end of the shift drum.

Refit the shift drum pawl and spring, ensuring that the pawl is located in the gear position pin retaining plate.



Valve timing (all models)

KICKSTARTER RETURN SPRING

Lower the return spring over the kickstarter shaft, locating the inner tang of the spring in the milled slot in the shaft before pressing the spring home. Load the spring and locate the looped end in the abutment at the base of the casing. Fit retaining washer and circlip.

At this stage it is advisable to check that the gear change and kick-start mechanisms function correctly and that the gear shafts, crankshaft, etc., revolve freely.

DRIVER GEAR

Lower the driver gear on to the splined primary shaft and secure with circlip. Ascertain that the circlip is a good fit in its groove and that it has not stretched. If in doubt replace with a new circlip.

CLUTCH ASSEMBLING

Position the four springs in the clutch carrier, lower the clutch body in position over the springs and carrier and replace the four cross head screws. Tighten the screws fully.

Replace the four damper compression springs, which can be prised into position with a small screwdriver **(make sure that they are correctly seated).**

Place the clutch body on the bench with the four screw heads facing downwards, i.e. with the screw heads resting on the bench. Place the eight rollers in position in their tracks and follow on with the plain clutch plate to which is attached four pins, continuing in the following order:

The clutch centre and crankshaft drive pinion assembly, one bonded friction plate, the thin plain plate, one bonded friction plate, the four small clutch plate release springs, which locate over the pins attached to the first plain plate and, finally, the outer plain plate. The four holes on this plate should locate over the spring pins. Compress the whole assembly, by hand pressure or with a compressing tool and locate the large diameter retaining circlip in its groove.

Replace the bronze bush in the centre of the drive gear.

Important. All clutch parts should be oiled before assembly.

Position the complete clutch assembly on the crankshaft and replace the locking washer and sleeve nut, tighten the nut and bend over a locking washer tab.

Press the journal ball bearing and bearing carrier into the centre of the clutch drum and locate the clutch operating cam plate spigot in the bearing inner ring, position the clutch operating lever and washer on the splined gear change shaft as shown in the illustration on page 8 and place the anti-rattle spring in its location on the clutch operating cam plate.

CLUTCH COVER AND OIL GUIDE PLATE

Replace the clutch cover gasket and place in position on the crankcase over the two dowels, position the two guide plate retaining springs in their locations in the clutch cover and fit the oil guide plate in position in the crankcase over the cam wheel, making sure that the tong on the plate registers with the cutaway in the base of the crankcase. Lightly grease the end of the kickstarter shaft at the oil seal position and lower the cover over the crankcase, securing with the nine cross head screws.

STARTER MOTOR DRIVEN SPROCKET, STARTER MOTOR, ROTOR, STATOR COILS AND ADVANCE AND RETARD MECHANISM

(model C102 only)

Slide the driven sprocket on to the crankshaft and position and secure the sprocket retaining plate with the cross head screw. Place the starter motor chain on the sprocket and offer the starter motor into its housing in such a way that the drive chain can be slipped over the small driving sprocket. The starter lead terminal should face towards the cylinder. Replace and tighten the three 10mm. set-screws which retain the starter motor in position.

Fit the rotor woodruff key to the crankshaft and lower the rotor onto the shaft, great care is necessary, as the roller type freewheel in the base of the rotor must register with the bearing surface on the driven sprocket.

After assembly check that the freewheel device is working by turning the rotor in a clockwise direction, when the driven sprocket should

revolve with the rotor, turning the rotor in an anti-clockwise direction the sprocket should remain stationary.

Place the automatic advance and retard unit in position on the top face of the rotor with the pin in the base of the mechanism registering with the hole in the top face of the rotor, replace the 14mm. retaining bolt and washer and finally tighten whilst holding the rotor with the holding tool. Check that the advance and retard mechanism is free to operate.

Position the stator coil assembly in the crankcase housing with the timing pointer to the rear of the engine. Replace and finally tighten the three cross head retaining screws. Position the cable harness and grommet in the crankcase slot and connect the wire to the neutral indicator switch.

Fit the starter motor drive cover to the crankcase, threading the blue condenser wire through the inspection aperture in the case. Replace and finally tighten the four cross head fixing screws.

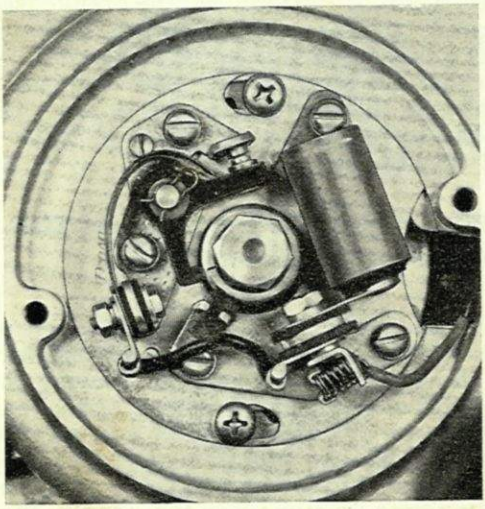
IGNITION TIMING — CONTACT BREAKER MOUNTING PLATE (model C102 only)

For model C100, refer to stator plate, flywheel and ignition timing for model C110 on page 21.

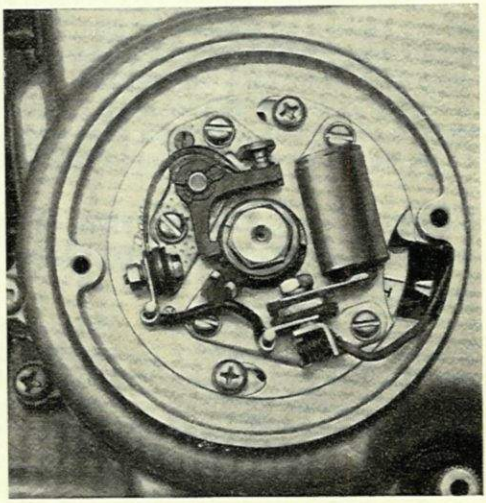
Position the contact breaker mounting plate in its housing, replace and provisionally tighten the two fixing screws.

SETTING CONTACT BREAKER POINTS

Before attempting to set the ignition timing it is essential that the contact breaker points are accurately set to a fully open gap of ·014″. The method of setting the gap is as follows: A short red line is stamped on the top face of the contact breaker cam for the purpose of indicating the correct setting position and it is essential that the fibre heel of the movable contact coincides with this line when the gap is set at ·014″. Adjustment can be made by slackening the two screws which retain the fixed contact plate and moving the plate by means of the eccentric screw. After the contacts have been set to the correct opening gap and the fixing screws tightened, an additional check of the opening gap should be made to make sure that the setting has not altered during the retaining screw tightening process.



Shewing correct position for setting contact breaker gap. Line mark on cam should be in centre of contact breaker fibre heel



Contacts should commence opening when the 'F' line coincides with the arrow (model C102)

TIMING (model C102 only)

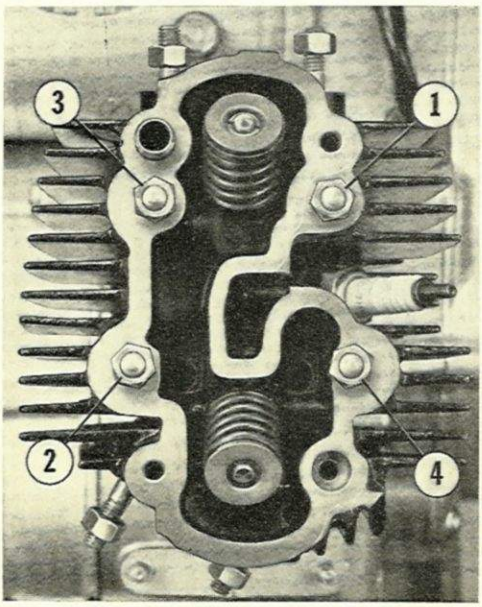
Providing a pencil or similar mark was made on the mounting plate and casing during the dismantling operations, it is recommended that the timing operation is commenced with these two marks in line. Should the plate not have been marked during dismantling, or a new plate or contacts have been fitted, it is advisable to commence the timing operation with the plate centralised in the adjustment slots.

Four lines are scribed on the outer edge of the rotor and are visible through the inspection hole. Two of the lines are marked 'T' and 'F', the 'T' indicating the top dead centre piston position and the 'F' indicating the firing point. The remaining two lines indicate the maximum advance given by the advance and retard unit.

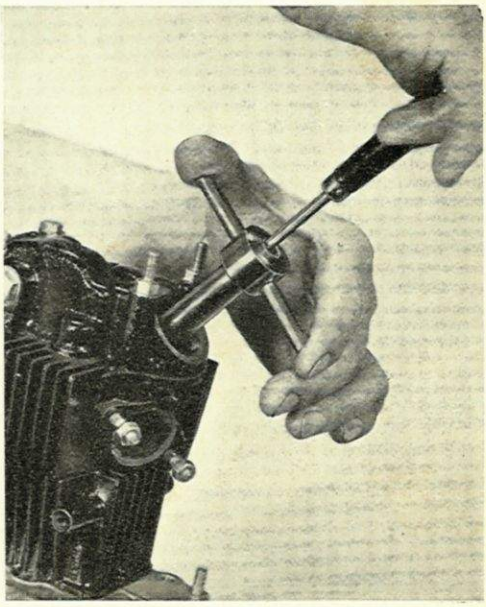
Turn the engine in an anti-clockwise direction (when viewed from the left-hand side with the engine positioned as it would be in the frame of the machine) until the 'F' mark on the rotor exactly coincides with the pointer which is visible through the inspection hole. At this position the contact breaker points should just commence to open (·0015″ feeler gauge should be just free between the contacts).

If, for instance, with the line and pointer coinciding the contact breaker points have not commenced to open, the ignition timing will be retarded and to correct this condition it will be necessary to loosen the two cross head screws fixing the contact breaker mounting plate and move the plate in a clockwise direction until the contact breaker gap commences to open (·0015″ gauge). If, on the other hand, the contact breaker points have commenced to open before the line marked 'F' has coincided with the arrow pointer, the timing will be advanced and it will be necessary to reverse the foregoing procedure by turning the contact breaker mounting plate in an anti-clockwise direction until the gap opening is ·0015″ when the two marks coincide. After the correct setting has been arrived at, tighten the two plate fixing screws and connect the blue condenser lead to the terminal.

Suitable electrical equipment combining a Stroboscope is available for accurately setting the ignition timing.



Cylinder head nut tightening order



Tappet adjustment

CYLINDER HEAD AND ROCKER BOX

Assuming that the usual attention has already been given to the cylinder head, i.e. valves reground or refaced, springs renewed, etc. (described on page 6), proceed to assemble the cylinder head on the cylinder as follows: position the copper head gasket in the head and the two push rod hole 'O' rings and oil drain seal ring in their respective recesses in the cylinder top face, lower the head over the four cylinder holding down studs and tighten the nuts (the nuts should be tightened in the order shown in the illustration). Locate the push rods in the valve lifters (cam followers): exhaust, short, left-hand side; inlet, long, right-hand side. Fit a new rocker box gasket and lower the rocker box onto the head, at the same time locating the end of the push rods in the rocker cup ends.

Replace and tighten down the four rocker box bolts. Two different lengths are used, the longer ones should be fitted in the dowel hole positions.

TAPPET ADJUSTMENT

The tappets should be adjusted to ·002 — ·004″ (cold) with the piston in the t.d.c. position (firing).

Replace the screwed rocker box caps, which should be fitted with new 'O' rings.

Refit the rocker oil feed pipe and contact breaker inspection cover.

Replace the sparking plug. Gap ·024″.

Replace and tighten the crankcase drain plug and refill with engine oil.

For temperatures below 60 degrees F use S.A.E.20 grade oil and for temperatures above 60 degrees F use S.A.E.30 grade. Capacity 0·6 litres (approx. $1\frac{1}{8}$ pints). The oil level dipstick reading should be taken with the cap unscrewed (Oil to cover the flat portion of the stick).

REFITTING THE ENGINE UNIT IN THE FRAME

Carry out the operations described in the 'To remove engine unit from frame' instructions on page 4, in the reverse order.

TO REMOVE ENGINE UNIT FROM FRAME (models C110 and C110D)

Disconnect battery lead.
Remove exhaust system complete (two 10mm. nuts at cylinder head and two 10mm. set-screws retaining silencer to frame).
Remove copper-asbestos ring washer from exhaust port.
Remove rocker oil feed pipe.
Remove oil feed pipe which runs from the crankcase to the carburettor body.
Unscrew carburettor mixing chamber top cap and withdraw the throttle valve and needle assembly.
Disconnect petrol pipe (pull off).
Remove the two 10mm. nuts fixing carburettor to frame.
Remove the two 10mm. bolts fixing inlet manifold to cylinder head and take off the carburettor and manifold as a unit. A gasket is fitted on the manifold flange and an 'O' ring on the carburettor fixing flange.
Remove the clutch operating mechanism inspection cover from the right-hand case, disconnect and withdraw the clutch cable.
Unhook the stop-light switch operating spring and the brake pedal return spring.
Remove the foot gear-change pedal.
Remove the flywheel-magneto cover which is retained by five cross head screws.
Remove the footrest assembly (four 14mm. nuts and washers).
Remove the rear chaincase lower section and remove the rear chain.
Remove the rear plastic section of the chainguard.
Disconnect the sparking plug lead and remove the crosshead screw retaining the H.T. lead fixing clip to the crankcase.
Disconnect the five flywheel mag-generator wires located inside the frame behind the battery mounting position. The wires are coloured black, green, yellow, white/green stripe and light green/red stripe.
Place a suitable block of wood underneath the crankcase in order to support the weight of the engine, remove the two 14mm. nuts from the engine mounting bolts, withdraw the bolts and lift the engine clear of the frame.

ENGINE DISMANTLING (models C110 and C110D)

Remove kickstarter pedal (10mm. bolt). The pedal and shaft splines are centre-punch marked to ensure refitting in the correct position.

Remove the two rocker box inspection caps with a 17mm. spanner.

Remove the gearbox sprocket which is retained on the secondary shaft by two 10mm. set-screws and a retaining plate.

Remove the 14mm. flywheel retaining nut and washer from the crankshaft and, using the special flywheel extractor, withdraw the flywheel from the crankshaft. The extractor body has a **left-hand** thread.

Disconnect the green/red stripe wire from the neutral indicator switch and remove the cross head screw and plate retaining the neutral indicator switch. Remove the switch.

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

Remove the woodruff key from the crankshaft.

ROCKER BOX, CYLINDER HEAD AND CYLINDER REMOVAL

Remove the four 10mm. rocker box retaining bolts (two long, two short) and lift the rocker box off the cylinder head. Two dowels are fitted to locate the box on the head.

Lift out the push rods.

Remove the four cylinder head nuts and washers and the cylinder head can be lifted clear of the cylinder. Great care is necessary as there may be a tendency for the cylinder base to stick tight to the crankcase. A gasket is fitted between the cylinder base and the crankcase, and two 'O' type rubber

washers and a rubber ring seal washer between the cylinder head and the cylinder top face. A copper ring type gasket is also fitted between the cylinder head and the cylinder.

PISTON

Instructions as for models C100 and C102.

VALVE REMOVAL

Instructions as for models C100 and C102.

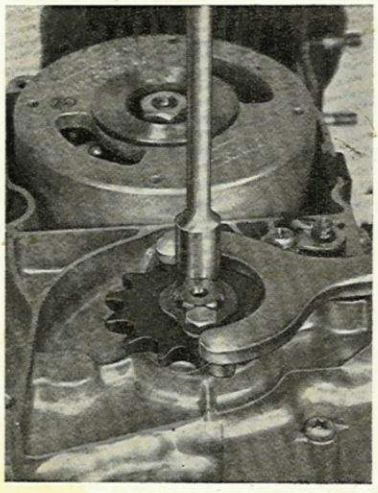
VALVE ROCKER REMOVAL

Instructions as for models C100 and C102.

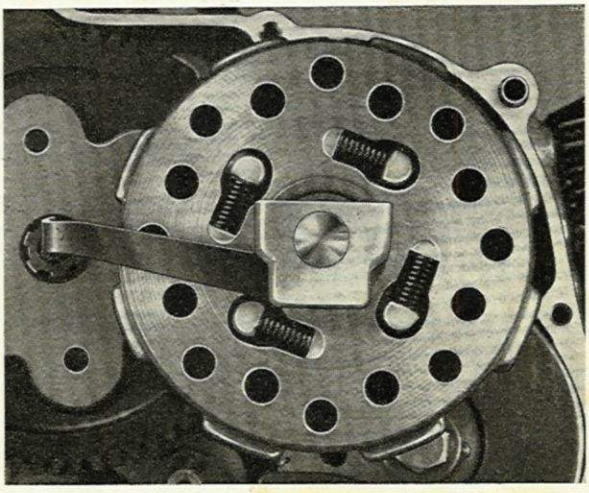
REMOVAL OF CLUTCH COVER

The clutch cover is attached to the crankcase by nine cross head screws and after the screws have been removed the cover can be lifted away from the crankcase. A gasket is fitted between the two cases and this should be removed. Two small compression springs are located inside the clutch cover and when all the retaining screws have been removed the cover will tend to spring away from the crankcase. The purpose of the two springs is to retain the oil guide plate situated in front of the camshaft drive gear in position. The plate can now be removed.

Remove the clutch operating push rod to which is attached a lubrication reservoir for the clutch withdrawal mechanism. An arm is attached to the trough and the arm locates in the centre of the primary gear shaft. Prise out the journal ball bearing and bearing carrier from the centre of the clutch drum. The clutch withdrawal operating mechanism is housed in the cover and consists of movable and fixed cam plates. Interposed between the plates is a flat plate, housing three hardened steel balls and, when the movable cam plate is turned — as when the clutch lever is withdrawn — the clutch is released. An adjusting screw is fitted in the centre of the movable cam plate spindle and an oil seal is fitted in the clutch cover.



Removing gearbox sprocket (all models)



Clutch, lubrication pocket (models C110 and C110D)

REMOVAL OF CLUTCH ASSEMBLY (models C110 and C110D)

Instructions as for models C100 and C102.

REMOVAL OF DRIVE GEAR, CAMSHAFT, CAMSHAFT DRIVE PINION, KICKSTART SPRING, ETC.

Instructions as for models C100 and C102.

SEPARATING THE CRANKCASES (models C110 and C110D)

Instructions as for models C100 and C102.

REMOVAL OF KICKSTART ASSEMBLY (models C110 and C110D)

Instructions as for models C100 and C102.

REMOVAL OF GEAR SHIFT DRUM AND GEAR CLUSTER (models C110 and C110D)

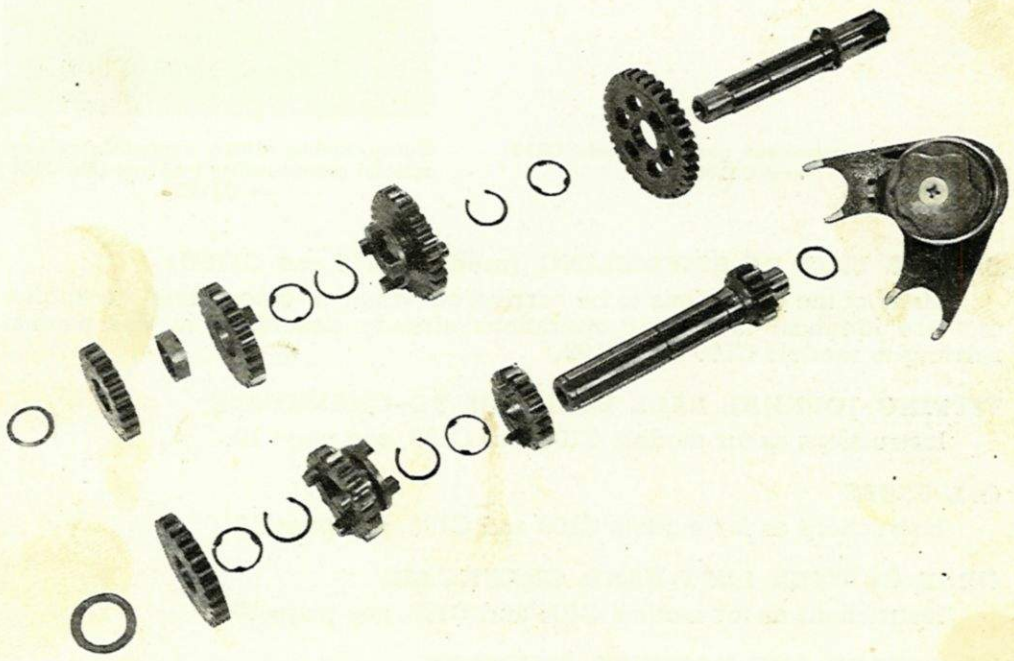
Remove the rubber plug adjacent to the neutral indicator switch.

Remove the 10mm. set-screw and washer retaining the shift drum in the crankcase; this will enable the shift drum and complete gear cluster to be withdrawn from the crankcase.

The gears, thrust washers, circlips, etc. are positioned on the shafts in the following order:

Primary shaft—thrust washer, high gear, splined thrust washer, circlip, third gear and dog combined, circlip, splined thrust washer, second gear, first gear which is integral with the primary shaft and thrust washer.

Secondary shaft—thrust washer, high gear, distance piece, third gear, splined thrust washer, circlip, second gear and dog combined, circlip, thrust washer and first gear.



Shewing order of gear assembly (models C110 and C110D)

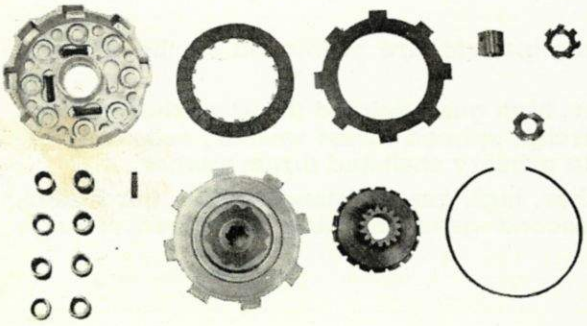
DISMANTLING THE CLUTCH (models C110 and C110D)

To dismantle the clutch it is advisable to make use of a clutch spring compressing tool (a small hand press or drill press). Proceed as follows:

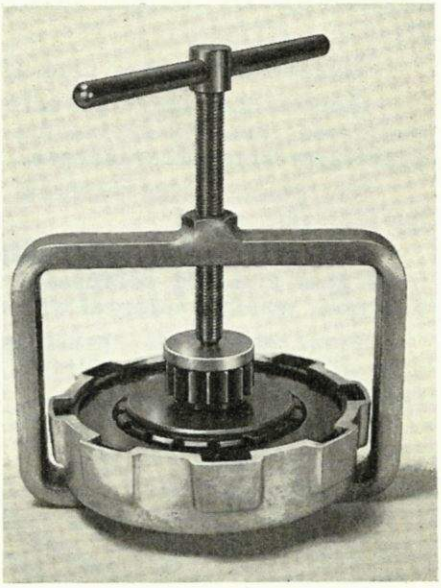
Remove the bronze bush from the centre of the drive gear. Using a small screwdriver, prise out the four damper springs from the front face of the clutch housing.

Using the compressing tool or press, compress the complete assembly sufficiently to allow the 101mm. circlip to be removed from its location. Release the pressure on the tool or press, and the clutch plates, etc., can be lifted out in the following order: clutch drive gear, clutch plate plain, clutch friction plate, clutch pressure plate, eight clutch springs and finally the clutch housing.

Place all the parts in order of dismantling for careful examination before re-assembly.



Clutch component parts (models C110 and C110D)



Compressing clutch assembly, using special compressing tool (models C100 — C110D)

ENGINE UNIT RE-ASSEMBLING (models C110 and C110D)

Many of the operations to be carried out when re-assembling the engine unit are identical to similar operations already described in this manual relating to models C100 and C102.

FITTING JOURNAL BALL BEARINGS TO CRANKCASE

Instructions as for models C100 and C102, see page 10.

OIL SEALS

Instructions as for models C100 and C102, see page 10.

GEAR CLUSTER LEFT-HAND CRANKCASE

Instructions as for models C100 and C102, see page 10.

KICKSTART AND RATCHET ASSEMBLY

Instructions as for models C100 and C102, see page 11.

CRANKSHAFT ASSEMBLY

Instructions as for models C100 and C102, see page 11.

RIGHT-HAND CRANKCASE

Instructions as for models C100 and C102, see page 11.

GEARBOX SPROCKET

Instructions as for models C100 and C102, see page 11.

PISTON AND CYLINDER

Instructions as for models C100 and C102, see page 11.

CAMSHAFT AND CAMSHAFT DRIVE PINION

Instructions as for models C100 and C102, see page 12.

REFITTING THE GEAR CHANGE SHIFT LEVER ASSEMBLY, AND SHIFT DRUM PAWL AND SPRING

Instructions as for models C100 and C102, see page 12.

KICKSTARTER RETURN SPRING

Instructions as for models C100 and C102, see page 12.

DRIVER GEAR

Instructions as for models C100 and C102, see page 13.

CLUTCH ASSEMBLING

To assemble the clutch the dismantling operations should be carried out in the reverse order, then position the bronze bush in the centre of the drive gear and locate the complete assembly on the splined end of the crankshaft, replace the lockwasher and sleeve nut, tighten the nut and bend back the tab washer.

Locate the journal ball bearing and carrier in the centre of the clutch drum and position the clutch operating push rod and lubrication reservoir in the journal ball bearing, with the locating arm positioned in the hollow centre of the primary shaft.

CLUTCH COVER AND OIL GUIDE PLATE

Instructions as for models C100 and C102, see page 13.

STATOR PLATE, FLYWHEEL AND IGNITION TIMING (models C100, C110 and C110D)

Position the stator plate and coil assembly in the crankcase and replace and tighten the two countersunk cross head retaining screws.

Ascertain that the stator plate is pressed fully home into its location in the crankcase, otherwise the plate will foul the flywheel.

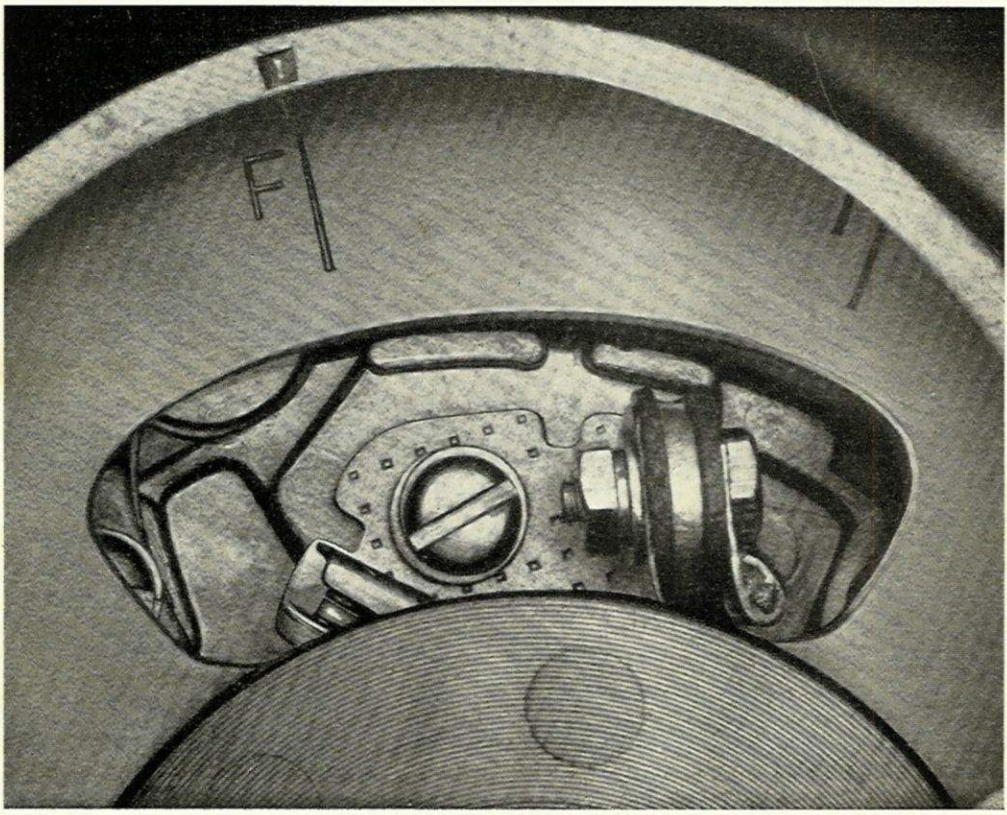
Fit the woodruff key in the crankshaft, locate the flywheel on the crankshaft, replace the flywheel fixing nut and washer and finally tighten.

Adjust the contact breaker gap to a maximum of ·014″ in the fully open position. Adjustment can be made by loosening the contact breaker base plate fixing screw and moving the base plate either way until the correct gap is obtained. A screwdriver slot is provided in the contact base plate for this purpose. After the correct gap has been obtained, tighten the retaining screw and make an additional check of the gap to make sure that it has not altered during the tightening process.

Revolve the flywheel in an **anti-clockwise** direction until the 'F' mark on the flywheel coincides with the indent on the flywheel case and in this position the contact points should be just commencing to open. The actual measurement of the gap for 'just opening' is ·0015″ (1½ thou.)

As the stator plate is non-adjustable the only alteration that can be made to the ignition timing is by increasing or decreasing the contact breaker gap, i.e. if, for instance, the contact breaker points have not commenced to open

when the 'F' mark on the flywheel is in line with the indent on the crankcase flywheel housing, the timing will be retarded and it will be necessary to increase the contact breaker gap sufficiently to enable the points to commence opening when the marks coincide. If, on the other hand, the contacts commence opening before the 'F' mark and the indent coincide, then the timing will be advanced and to correct this condition the contact breaker gap will have to be reduced slightly. **A careful check should be made after carrying out the timing operation, as the performance of the engine depends to a large extent on the accuracy of the timing.**



Timing marks and contact breaker adjustment (models C100, C110 and C110D)

CYLINDER HEAD AND ROCKER BOX

Instructions as for models C100 and C102, see page 16.

TAPPET ADJUSTMENT

Instructions as for models C100 and C102, see page 16.

Finally, replace the sparking plug. Gap 0·024″ (24 thou.)

Replace and tighten the crankcase drain plug and refill the crankcase with engine oil S.A.E. 20 for temperatures below 60 degrees F, S.A.E. 30 for temperatures above 60 degrees F. Oil capacity of crankcase 0·19 gal., 0·6 litres (1⅛ pints approx.)

The oil level dipstick reading should be taken with the dipstick/filler cap unscrewed (oil to cover the flat portion the the stick).

REFITTING THE ENGINE UNIT IN THE FRAME

Carry out the operations described in the 'To remove the engine unit from frame' instructions on page 4, in the reverse order.

EXPLANATION OF THE WORKING PRINCIPLE OF THE CENTRIFUGAL TYPE AUTOMATIC CLUTCH (models C100 and C102)

The important feature of this type of clutch is that as the engine speed is increased the mechanism, consisting of eight hardened steel rollers, increases the pressure on the clutch plates, due to the rollers being thrown outwards along their respective tapered tracks by centrifugal force.

A special mechanism consisting of a quick acting three-start thread is incorporated in an extension of the drive gear in order to apply pressure to the clutch when the kickstarter is operated, or when the machine tends to overrun the engine.

In addition the clutch can be completely disengaged each time the gear operating pedal is moved, due to the fact that a clutch withdrawal mechanism is directly connected to the gear change lever spindle.

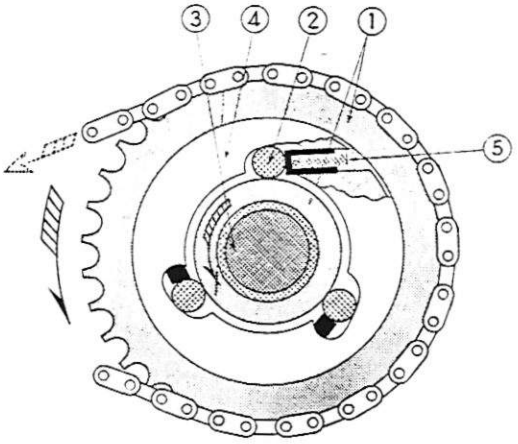
Four small diameter compression springs are used to assist the clutch plates to free and four large diameter springs supply additional pressure when the rollers have reached the end of their tracks.

STARTER MOTOR DRIVEN-SPROCKET FREEWHEEL (model C102)

The freewheel, or over-running clutch, incorporated in the sprocket is necessary in order to transmit the drive from the starter motor and to prevent the drive from the crankshaft being transmitted to the starter motor when the engine is running. See illustration.

When the driven sprocket (1) rotates in the direction of the arrow the rollers (2) are forced against the crankshaft and the crankshaft is driven. Immediately the crankshaft rotates faster than the sprocket, as when the engine is running, the rollers are thrown outwards by centrifugal force against the springs (5) in the body (4).

An oil seal is fitted in the body to prevent excess oil reaching the stator.



Electric starter driven sprocket freewheel device

CLUTCH ADJUSTMENT (models C100 and C102)

The only clutch adjustment that can be made is by a screw and locknut situated in the centre of the clutch case. By slackening the locknut and turning the screw in a clockwise direction, the clutch operating cam plate will be moved away from the release mechanism, which will allow full spring and roller pressure to operate on the clutch. For correct adjustment, turn the screw in an anti-clockwise direction until pressure can be felt on the screw, then turn the screw in a clockwise direction for approximately ¼ of a turn. Turning the screw in an anti-clockwise direction will bring the cam plate in contact with the release mechanism and, if screwing anti-clockwise is continued, the springs will gradually become depressed with a resultant tendency for the clutch to slip. After making an adjustment it is essential to tighten the locknut.

No indication of clutch slip or drive is possible by turning the engine over with the kickstarter, as under these circumstances the special starting mechanism becomes engaged.

CLUTCH ADJUSTMENT (models C110 and C110D)

Adjustment is carried out by means of an adjusting screw and locknut situated in the centre of the clutch operating arm. To gain access to the operating arm it is necessary to remove the pear shaped cover from the clutch case. A clutch cable adjuster is also fitted to the clutch case at the point of entry of the clutch cable.

The adjustment is very sensitive and should be carried out as follows:

Ascertain that approximately $\frac{1}{4}''$ of 'free play' exists in the clutch control cable.

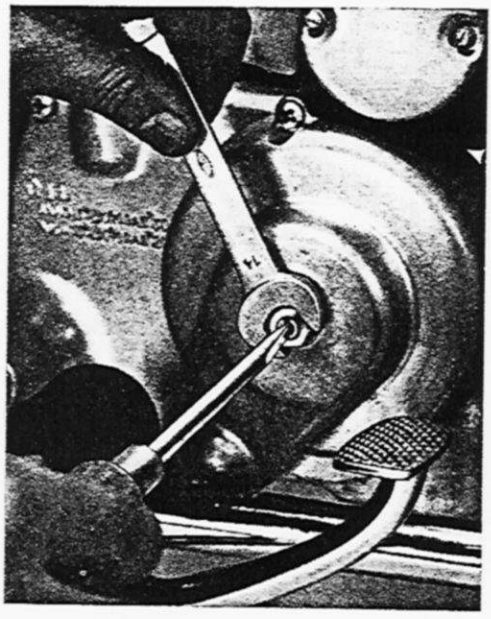
Slacken off the 10mm. adjusting screw locknut and turn the adjusting screw, firstly a little in an anti-clockwise direction to make sure that no contact exists between the adjusting screw and the push rod.

Then turn the screw in a clockwise direction until pressure can be felt on the screw, discontinue screwing inwards but turn the screw anti-clockwise for approximately $\frac{1}{8}$-turn and tighten the locknut.

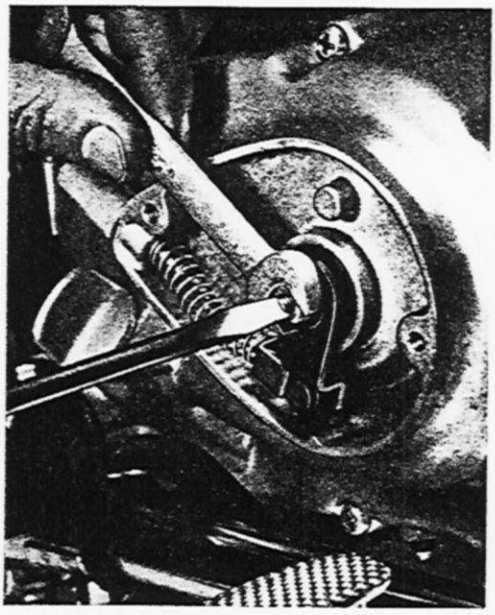
Adjust the clutch control cable until approximately $\frac{1}{8}''$ of 'free play' exists in the cable.

Check the clutch operation for 'drive and freeing' by operating the kickstart.

Warning. Under no circumstances should the adjusting screw continue to be screwed inwards against the pressure of the clutch springs, as this will allow the plate housing the three hardened steel balls to drop out of position and should this occur it will be necessary to remove the clutch cover in order to re-position it.



Clutch adjusting screw and locknut (models C100 and C102)



Clutch adjusting screw and locknut (models C110 and C110D)

RE-CUTTING VALVE SEATS (all models)

Valve seats should only be re-cut if they are burnt or pitted.

One 45-degree valve seat cutter suitable for both inlet and exhaust valve seats is supplied with the Special Tool Kit, together with one each 120-degree—30-degree cutter for blending the inlet valve seat into head hemisphere and port, and one each 120-degree—30-degree cutter for exhaust valve seat blending.

For identification purposes the two inlet valve seat blending cutters are the larger ones. A mandrel and tommy bar for use with the cutters is also supplied with the Kit.

Before using the cutters all carbon deposits should be removed from the head and ports and the condition of the valve guide holes examined.

If the valve guide holes are worn the guides can be renewed on models C110 and C110D, but on models C100 and C102 they are integral with the cylinder head and are therefore not renewable.

Use the 45-degree cutter first, which should be mounted on the taper mandrel supplied and remove a minimum amount of metal from the seats. After a satisfactory seat has been obtained the 120- and 30-degree cutters should be used to blend the seat into the head hemisphere and port.

Afterwards thoroughly clean the head to remove all traces of metal.

CRANKSHAFT ASSEMBLY (all models)

The crankshaft assembly comprises right and left half-crankshaft/flywheels, crankpin, connecting rod, roller cage and rollers.

The crankpin is parallel and is pressed into the flywheels, the pressure required being in the region of 4 tons.

Special fixtures are required for the dismantling and assembling operations.

After the assembly has been separated all the parts should be carefully inspected for wear, with special reference to the measurements given in the Technical Data section on page 2, and the connecting rod should be checked for alignment.

When a crankshaft assembly has been rebuilt, the mainshafts should be checked for truth on vee blocks or knife edges, using a clock gauge at a distance of 1·18 inches from the outer edge of the flywheels. Maximum permissible run out is ·001 inches.

ELECTRICAL

BATTERY

Dry charged batteries of YUASA manufacture are fitted, type MBC 1-6A, to models C100, C110 and C110D, and type MBQ 8-6 to model C102.

NOTE: The C100 battery is fitted with the fuse holder in the Red battery lead and the C110—C114 fuse holder is in the Blue lead. **The batteries are not interchangeable.**

Specifications

Type	Voltage	Capacity at 10 hr. rate (AH)	Initial charging current (A)	Normal charging current (A)	Volume of electrolyte in litres	Density of filling electrolyte at 20°C
MBC 1-6A	6	2	0·2	0·2	0·09	1·280
MBQ 8-6	6	11	1·1	1·1	0·36	1·260

PRECAUTIONS BEFORE USE

The battery contains dry and charged plates but no electrolyte.

When the battery is needed for use immediately or where lack of time or charging equipment does not permit an initial charge to be given, the battery can be placed in service. However, an initial charge is recommended before placing in service when time and equipment permit, so that its characteristic performance is assured.

FILLING WITH ELECTROLYTE

Remove the vent plug and attach the vent pipe. For filling, use diluted sulphuric acid of the correct specific gravity (see table above) cooled below 30°C beforehand. Fill the cells up to the electrolyte level line (upper line).

STANDING

The battery must stand for two or three hours after being filled with electrolyte before commencing to charge.

After the standing period, if the level has fallen, add electrolyte of the same specific gravity to restore the level.

CHARGING

After the temperature of the electrolyte has fallen below 30°C, charge the battery at the above rate (see table) for approximately 15-20 hours.

If the cell temperature during charge rises above 45°C, discontinue charging temporarily or reduce charging rate to half and continue charge.

If necessary to restore the electrolyte level during charge, use only distilled water.

The battery is located on the right-hand side of the frame on models C100 and C102, and on the left side on models C110 and C110D. Inspection can be carried out by removing the plastic cover. A fuse is fitted in a detachable fuse holder in one of the battery leads and this should be checked when installing the battery. Always keep the outside of the battery washed clean and make sure that the vent tube is not clogged.

Check the level of the electrolyte periodically and top up with distilled water only to the top line.

The electric horn, winker lights, neutral indicator light, etc., are operated direct from the battery and the head and tail lamps are direct from the generator with the exception of model C102 on which the lamps are battery operated.

Do not run the engine for any length of time with the battery disconnected or the rectifier will suffer serious damage.

SWITCHES

LIGHTING AND IGNITION

A combined lighting and ignition switch is fitted to all models and the key can only be removed when the key is turned to the first position, i.e. off. This position is marked with a black spot, the other two positions being marked with red spots.

Turning the key to the first position for daylight driving allows the ignition, horn, winking lights, stop-light and neutral indicator to operate and the switch key cannot be removed.

Turning the key to the next position will allow the lights to operate providing the engine is running and the key cannot be removed.

If any of the above positions fail to operate correctly, first make a thorough check of the wiring relating to the defective part and providing the wiring is satisfactory conclude that the switch is faulty and replace. The switch is retained in position by a screwed ring.

WINKING LIGHT SWITCH AND HEADLAMP DIPSWITCH

Both these switches, which are located in the brake and clutch lever fulcrum bodies, are of similar construction and in the event of trouble occurring, the most likely cause will be dirt or corrosion on the contacts. Both switches can be easily dismantled and the contacts cleaned with fine emery cloth.

NEUTRAL SWITCH

The neutral switch is located on the left side of the crankcase above the gearbox sprocket and operates in conjunction with the gear change mechanism. Likely causes of trouble are damage to switch or damaged wiring. If a switch is replaced, ascertain that the rubber sealing ring is sound before installing.

HORN BUTTON SWITCH

This is located on the left-hand handlebar in conjunction with the headlamp dipswitch and if the horn fails to operate it is likely that the button contact is at fault. Clean the contact with fine emery paper. If a button should have to be replaced, the wire harness is combined with the headlamp dipswitch harness and both will have to be replaced.

HORN

The electric horn is a direct-current microphonic type with a tone volume of 90–100 phons at a distance of 2 metres with a current consumption of 0·6 — 0·8 amps.

When the volume of tone is low or hoarse, the trouble is usually not the horn itself, but a partially discharged battery or poor horn button switch contact.

Tone volume can be adjusted by turning in or out the adjusting screw, which is located at the rear of the horn.

To remove the horn it is first necessary to take off the headlamp casing.

WINKING SIGNAL LIGHT RELAY SWITCH

On all models the relay is located at the side of the battery.

The standard operation is 70–100 blinks per minute.

For the signal lights to operate correctly the bulb must be of the correct voltage and wattage, i.e. 6v./8w. It is also essential for both bulb filaments (i.e. front and rear) to be intact, otherwise the system will not operate.

With the directional switch 'on', if either side does not 'blink' but the light is continuous, or the 'blinking' is erratic, or it does not light at all, the trouble is in the relay. In this case the relay should be replaced. Also check for a possible broken lead or bad connection from the battery to the relay.

HEADLAMP

The headlamp lens and reflector are sealed as one unit and the bulb is replaced from behind the reflector.

To replace the bulb remove the lamp rim fixing screw, this will release the rim, reflector and lens as an assembly; the bulb holder, which is retained in position by a spring, can then be removed and the bulb replaced.

In the event of headlamp bulb failure, it is essential to switch over to the other filament immediately, otherwise the tail lamp and speedometer lamp will become overloaded and burn out (models C100, C110 and C110D only).

The headlamp beam is adjustable for height by means of a small screw positioned immediately above the lamp rim retaining screw.

FUSE

A 7 amp. fuse is fitted in a fuse holder in the battery positive lead as a protection for the electrical equipment in the event of a short circuit (10 amp. on model C102).

Never replace a fuse with one of higher amperage and always make a check of the wiring, etc., for a short circuits before replacing the fuse.

SELENIUM RECTIFIER

A selenium type rectifier is fitted on all models. On models C110 and C110D it is located inside the frame immediately above the battery carrier. Running the engine without the battery being connected, or running without a fuse, will cause a reverse current flow towards the selenium rectifier, causing it to lose its efficiency and, if continued for a long period, the rectifier will get hot and fail.

CONDENSER

The condenser is fitted on the magneto stator plate and is connected between the primary ignition coil and the contact breaker.

Its purpose is to prevent arcing at the contact breaker points and to assist in breaking down the magnetic field. The capacity of the condenser is 0·2 — 0·26mfd.

To determine the condition of the condenser, it must first be removed from the stator plate and then checked on a service tester.

Under normal temperature, if insulation resistance measures over 5 meg. ohms — good;

1 — 5 meg. ohms — fair; under 1 meg. ohms — unfit for service.

The condenser itself rarely gives trouble.

When replacing a condenser, make certain that the condenser body is making a sound earth contact at its point of contact on the stator plate.

To test a condenser on the Honda service tester, see page 48.

CHARGING SYSTEM (models C100, C110 and C110D)

The charging system consists of a lighting coil mounted on the stator plate, a selenium rectifier and battery. Alternating current is rectified to half-wave current by the rectifier before passing to the battery.

The lighting coil is separated into two parts, one for the lights and one for the battery charging. For night driving this generates alternating current (6-8v.) direct to the lights and alternating current day and night via the rectifier to charge the battery.

TESTING THE CHARGING (models C100, C102, C110 and C110D)

To determine the condition of the charging coil, connect an ammeter (reading 2amps.) in series to the fuse connector attached to the positive battery lead, start the engine and check the current generated according to the crankshaft revolutions.

Make a check with the switch key in day and night position, making reference to the chart below.

Models C100, C110 and C110D

Crankshaft r.p.m.	1,500	3,000	6,000	8,000
Daytime charging current-amps	0	0·2	0·2	1·5
Night-time charging current-amps	0	0·2	0·4	0·5
Lamp voltage-volts	4·5	6·5	8·0	8·5

Model C102

Crankshaft r.p.m.	1,500	3,000	6,000	8,000
Daytime charging current-amps	0	1·0	1·25	1·25
Night-time charging current-amps	0	1·5	1·75	2·0

When replacing a coil, be sure to locate the coil accurately on the stator plate with the slots in the fibre insulating end plates facing the stator plate.

STARTING WITH 'FLAT' BATTERY (model C102)

It is possible to start the engine with a 'flat' battery providing the lighting switch is not turned to the 'on' position. At night-time it is necessary to run the engine for a minute or two before turning the lighting switch to the 'on' position, in order to enable the battery to build-up slightly.

ELECTRIC STARTER MOTOR (model C102)

It is possible to remove the starter motor from the engine unit whilst the unit is in the frame of the machine.

Proceed as follows:

Disconnect the starter cable from the starter terminal.

Remove the gear change pedal.

Remove the four cross-head screws retaining the starter drive casing to the crankcase and lift the casing away from the crankcase with the stator plate and condenser wire still attached.

Remove the three cross-head screws retaining the starter motor to the crankcase and the starter motor can then be positioned in such a way that the chain can be lifted off the small sprocket. Anchor the chain to the frame by means of a piece of wire to prevent it from becoming detached from the driven sprocket.

FITTING NEW BRUSHES TO THE STARTER MOTOR

Remove the two screws retaining the end cover and draw off the cover.

Remove the two screws retaining the brush leads.

Hook a piece of stiff wire under the brush springs and lift the springs upwards to enable the brushes to be withdrawn from their holders.

The overall length of a new brush is 11·5mm.

Before fitting new brushes ascertain that they are free to slide in their holders and that the commutator is clean.

DISMANTLING THE STARTER MOTOR

Remove the two screws which pass through the starter motor body.

The body can then be drawn off the mounting plate which also serves as a housing for the reduction gear.

Withdraw the armature from the reduction gear unit. Shim washers are fitted to both ends of the armature shaft.

Remove the drive sprocket which is retained on the reduction gear shaft by a circlip.

Remove the three countersunk screws which retain the two halves of the reduction case and lift off the top half of the case. A gasket is fitted between the two faces.

The reduction gear shaft runs on a journal ball bearing which is retained in its housing by a wire clip.

The fixed ring gear is a press fit in the housing and it is also prevented from turning by a locating pin. The two reduction gear pinions are retained on the shafts by split pins.

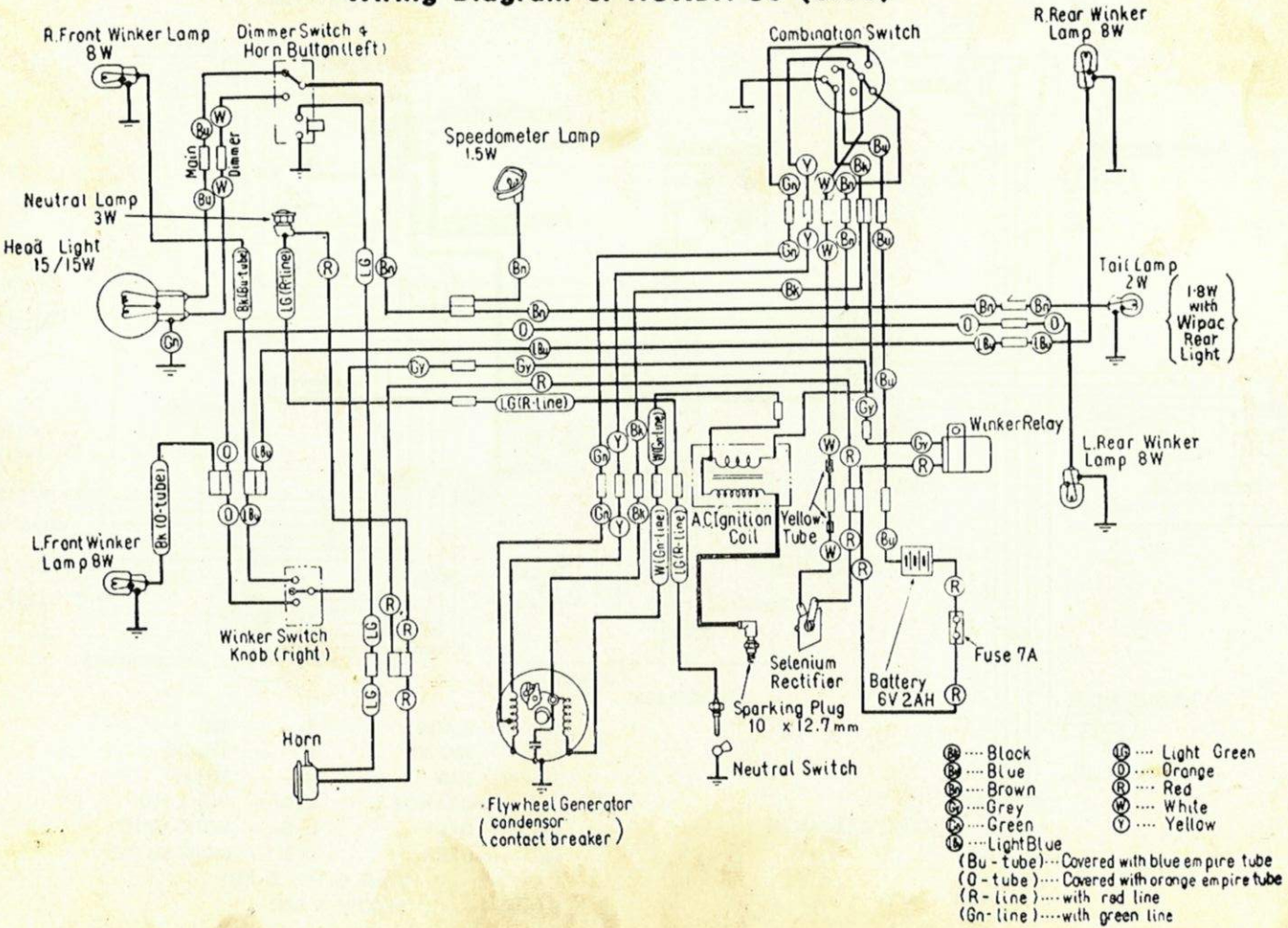
The reduction gear shaft can be driven out of the journal ball bearing using a soft drift.

Thoroughly clean all the component parts before re-assembly and grease the reduction gear with a good quality Molybdenum Disulphide Lithium base grease and the journal ball bearing and both ends of the armature shaft with h.m.p. grease. Only a small quantity of grease should be applied to the shafts.

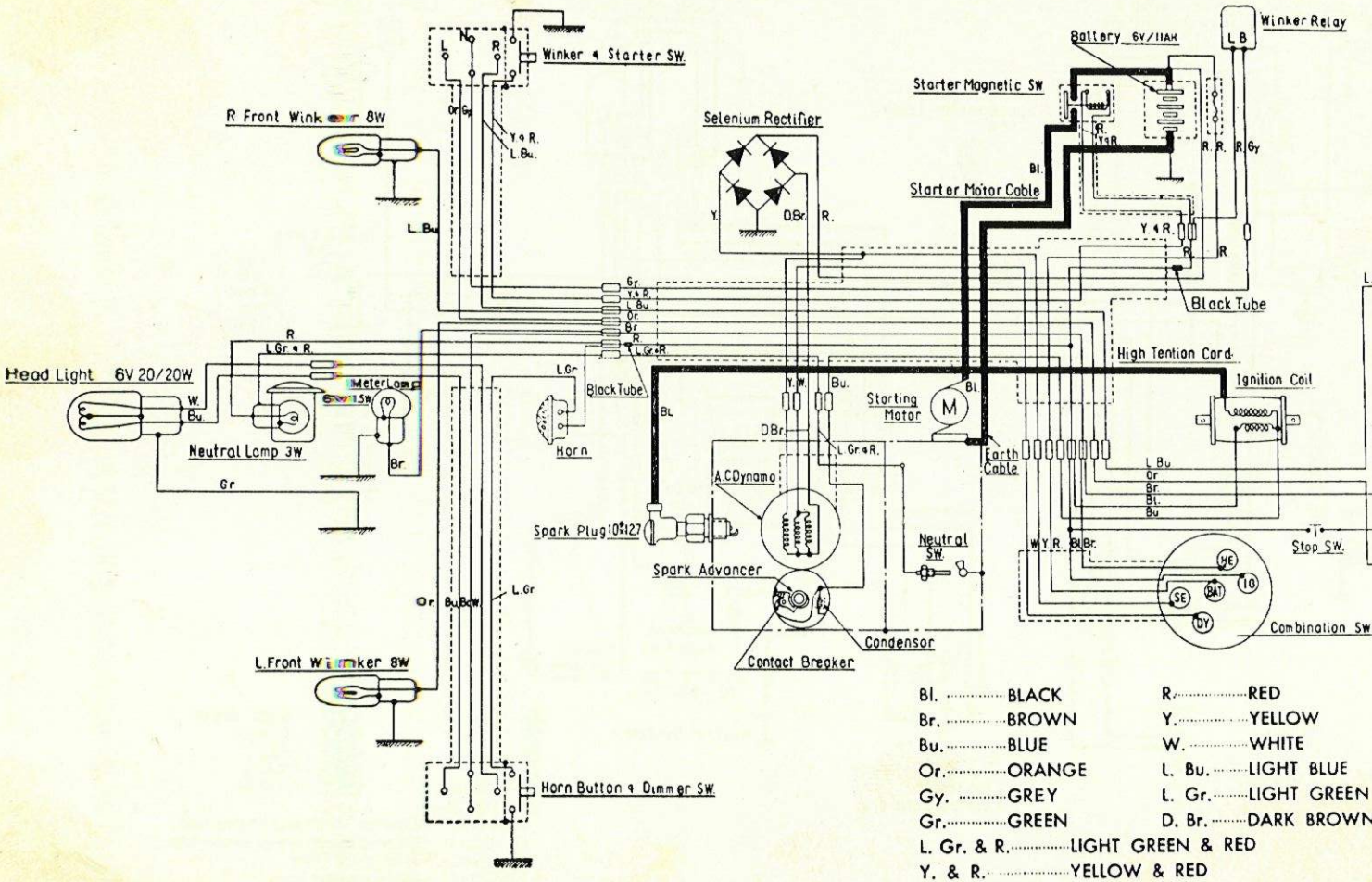
A rubber ring type seal washer is fitted between the starter motor body and the brush gear housing and the washer also serves to seal the end cover to the housing.

A rubber washer is also fitted to the two cover retaining screws to prevent the ingress of water.

Wiring Diagram of HONDA 50 (C100)

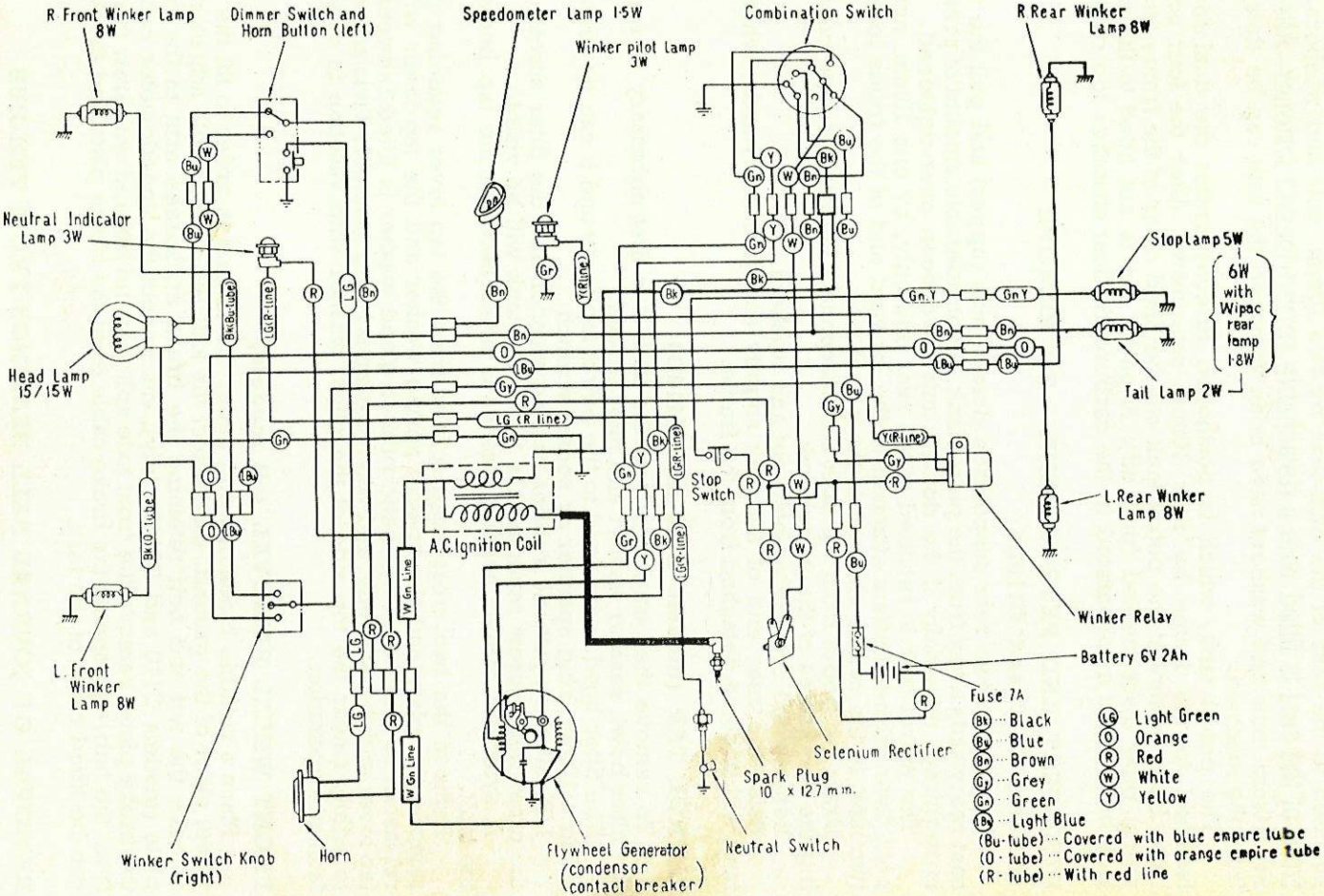


Wiring Diagram of HONDA 50 (C102)



Bl.	BLACK	R.	RED
Br.	BROWN	Y.	YELLOW
Bu.	BLUE	W.	WHITE
Or.	ORANGE	L. Bu.	LIGHT BLUE
Gy.	GREY	L. Gr.	LIGHT GREEN
Gr.	GREEN	D. Br.	DARK BROWN
L. Gr. & R.	LIGHT GREEN & RED		
Y. & R.	YELLOW & RED		

Wiring Diagram HONDA 50 C110, C110 D



DUAL-SEAT AND PETROL TANK — TO REMOVE (models C100 and C102)

The dual-seat is anchored to the frame by means of a bracket which is attached to the rear of the dual-seat by two 10mm. nuts and washers. The front of the seat is fitted with a detachable spring-loaded fastener. After the two 10mm. nuts and washers have been removed the seat can be detached from the machine.

The petrol tank, which is positioned directly under the dual-seat, is fastened to the frame by four 10mm. set-screws. After the four screws have been removed the petrol tank can be lifted clear of the frame and the petrol pipe disconnected (pull off). A petrol tap is not fitted to the petrol tank but a tap is incorporated in the carburettor float chamber top cover.

DUAL-SEAT AND PETROL TANK — TO REMOVE (models C110 and C110D)

Loosen the two rear suspension domed nuts (upper) and pull the dual-seat rearwards away from the petrol tank. A considerable amount of pressure is required, especially if the domed nuts have been over-tightened.

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

Drain the petrol from the tank and disconnect the rubber pipe connecting the two halves of the petrol tank.

Remove the rear fixing bolt, nut and washers.

Raise the rear end of the tank slightly and pull rearwards, when the tank will become detached from the frame.

PETROL TAP (models C110 and C110D)

To remove the petrol tap from the tank it is first necessary to remove the filter bowl, sealing washer and filter screen.

The filter bowl is screwed to the petrol tap body and it can be removed using a 10mm. ring spanner or socket wrench.

Lift out the synthetic rubber sealing washer and the filter screen, and the cross head screw retaining the tap to the tank will be visible.

A synthetic rubber sealing washer is fitted between the tap body and the tank.

Remove the two cross head screws from the tap lever retaining plate, remove the plate and the special spring washer and the tap lever will be released. A renewable synthetic rubber gland washer is fitted between the tap lever and the tap body, and when the tap is being assembled it is advisable to lightly smear the top side of the gland washer with vaseline in order to facilitate operation.

FRONT WHEEL REMOVAL (all models)

Place a suitable block of wood under the engine in order to lift the front wheel clear of the ground. Disconnect the knurled brake cable adjuster nut, remove the nut and bolt retaining the brake anchorage arm to the brake plate (models C110 and C110D only), disconnect the speedometer cable at the brake plate, remove the front axle split pin and nut and withdraw the axle from the hub, disconnect the brake cable from the brake plate and the wheel can be lifted clear of the fork.

REMOVAL OF JOURNAL BALL BEARINGS FROM THE HUB

A tubular distance piece is located between the bearings in the hub and the distance piece, with one bearing attached, can be driven out of the hub using a soft metal drift. The other bearing can then be driven out in a similar manner.

SPEEDOMETER DRIVE GEAR BOX

The speedometer drive worm and wheel are both detachable from the brake plate. The wheel can be lifted out of the brake plate and the worm can be removed after the two bush-retaining grub screws have been removed from the housing.

An oil seal is fitted on the inside of the brake plate speedometer housing to prevent lubrication seepage from the speedo drive gears onto the linings.

A felt washer is fitted on the outside of the brake plate and an oil seal is fitted on the opposite side of the hub to prevent the ingress of dirt and water to the bearings.

Refitting the wheel to the forks is a reversal of the dismantling procedure.

REAR WHEEL

To remove the rear wheel it is unnecessary to disconnect the rear chain.

Disconnect the rear brake rod adjusting nut, the brake anchor arm nut and spring clip, remove the rear axle nut (17mm.) and draw out the rear axle.

Remove the rear axle distance piece from between the frame and brake plate and the wheel can be drawn sideways off the sprocket carrier and lifted clear of the frame. Four separate cushdrive rubbers are housed in the left-hand side of the hub and the hub assembly consists of two journal ball bearings with a distance piece interposed between them.

An oil seal is fitted to protect the right-hand bearing and an 'O' ring seals the rear hub with the sprocket carrier.

The sprocket carrier assembly is retained in the frame by a 23mm. nut.

SILENCER (models C110 and C110D)

A detachable baffle tube is fitted in the end of the silencer and is retained in position by a 5mm. screw.

After the screw has been removed the tube can be withdrawn. Thoroughly clean out all the holes in the tube, preferably by burning. Considerable back pressure will be caused by blocked holes resulting in loss of performance.

The cleaning operation should be carried out every 2,500 miles.

AIR CLEANER (Carburettor) (all models)

On models C100 and C102 the air cleaner is attached to the frame front down-tube, and on models C110 and C110D on the right-hand rear section of the body immediately below the seat. After the plastic cover has been removed the paper type element can be detached from the frame.

Clean the element by dusting with a soft brush or with compressed air (low pressure).

If the element is damaged or oily it should be replaced.

When re-assembling the cleaner make sure that no air leak exists between the cleaner and carburettor.

FRONT FORK (models C100 and C102)—TO REMOVE

Remove the front wheel and front mudguard.

Disconnect the front brake cable at the handlebar lever end.

Remove the twist grip throttle control and disconnect the throttle cable.

Remove the lamp front and disconnect the wires leading from the winker light switch, dip switch, horn switch and on the C102 the electric starter switch.

Remove the neutral indicator and speedometer bulb holders from their sockets.

Disconnect the remaining wires inside the headlamp case, remove the case fixing screws and lift off the case.

Remove the two 14mm. nuts retaining the handlebars to the mounting bracket, lift the handlebars clear of the bracket for approximately 3 inches and disconnect the speedometer cable from the speedometer head, the handlebar assembly can then be lifted off completely.

Remove the sleeve nut retaining the handlebar mounting bracket to the fork stem (a special spanner is provided in the Special Tool Kit) and the two 10mm. set-screws, distance pieces and washers which also retain the bracket to the fork, and the mounting bracket can be lifted off the fork.

Disconnect the electric horn wires and remove the horn.

Unscrew the fork crown nut, using a 36mm. 'C' spanner, and the fork can be withdrawn from the steering head.

Twenty-one $\frac{3}{16}$" diameter steel balls are contained in the top and bottom cup and cone assemblies.

ASSEMBLING (see as for models C110 and C110D)

FRONT FORKS (models C110 and C110D)—TO REMOVE

Remove the front wheel and front mudguard.

Disconnect the clutch and front brake cables at the handlebar lever end.

Remove the twist grip throttle control and disconnect the throttle cable.

Remove the lamp front and disconnect (snap-on connectors) the three wires leading from the winking light handlebar switch (orange, grey and light blue) and the four wires from the headlamp dipswitch (brown, white, blue and green).

Remove the speedometer bulb, winking light indicator bulb and the neutral indicator bulb by removing the rubber bulb holders from their sockets.

Disconnect the speedometer cable at the speedometer head end, unhook the speedometer retaining spring and lift the speedometer clear of the handlebar mounting bracket.

Remove the four 10mm. handlebar clamp bolts and lift off the handlebars complete with the headlamp dipswitch and winking light cables attached.

Disconnect the remaining wires inside the headlamp case and lift off the headlamp rim and reflector assembly.

Remove the headlamp case (one cross head screw, two 10mm. set-screws).

Remove the handlebar mounting bracket cap nut and washer and lift off the bracket.

Disconnect the electric horn wires and remove the hooter.

Disconnect the right- and left-fork winker wires at the snap connectors (orange and light blue).

Remove the two 14mm. set-screws retaining the fork bridge plate and lift off the plate.

Unscrew the fork crown nut, using a 36mm. 'C' spanner, and the fork can be withdrawn from the steering head.

Twenty-one $\frac{3}{16}$" diameter steel balls are contained in the top and bottom cup and cone assemblies.

ASSEMBLING

Assembling the fork can be carried out by reversing the above dismantling procedure.

Particular care should be taken when adjusting the steering head to make sure that neither play or tightness exist.

A good quality grease should be used for setting the $\frac{3}{16}$" steel balls in the steering head cups and all cables and working parts lubricated on assembly.

STEERING LOCK (models C110 and C110D)

The steering lock is retained on the fork crown by two 6mm. cross head screws and it is advisable to remove the fork from the machine, should it be found necessary to remove the lock.

On models C100 and C102 it is possible to remove the steering lock from the fork with the front legshield only removed.

FRONT SUSPENSION UNITS AND PIVOTING ARMS (models C100, C102, C110 and C110D)

The two suspension units are mounted inside each blade of the pressed steel front fork and they can be detached from the fork after removing the front wheel and the upper and lower rear pivot bolts.

The top collar of the unit is mounted on two split rubber type bushes which are pressed into the collar and are easily renewable.

The lower end of the suspension unit is attached to the pivoting arm by an 8mm. cross head screw and locknut, and a ground steel bush working in a fibre bush takes care of the angular movement. The rear end of the pivoting arm is also similarly mounted and both pivot points are fitted with dust caps, felt washers and grease nipples. A rebound rubber buffer for the pivoting arm is attached to the bottom of the fork by means of an 8mm. bolt and nut.

TO DISMANTLE A FRONT SUSPENSION UNIT

Lightly hold the top collar of the unit in a vice and slacken off the screwed locking washer with an adjustable wrench. Unscrew the top collar and the lockwasher (a rubber buffer is attached to the washer) from the damper rod. The suspension spring can then be removed from the damper body. A fibre anti-rattle sleeve is fitted between the spring and the damper cylinder.

The unit is oil-damped and caulked after filling. Individual parts for damper units are not therefore available and in the event of a damper unit becoming unserviceable it should be replaced by a new unit.

The free length of the suspension spring is 4·82″.

REAR SUSPENSION UNITS (models C110 and C110D)

DISMANTLING

Hold the top collar in a vice and depress the unit by hand to enable a 21mm. open ended spanner to be positioned on the damper spindle locknut. Slacken the nut and unscrew the top collar; the top HEIZAX spring cover and the spring will then become detached from the body.

A rubber buffer stop is positioned on the piston rod immediately below the locknut and a large diameter fibre washer is fitted in the top cover in order to prevent the spring from chafing the cover.

It is not intended that the damper unit be dismantled for servicing and in the event of it becoming unserviceable it should be replaced with a new unit.

A fibre anti-rattle sleeve is fitted between the damper body and the spring.

The free length of the two-rate spring is 8·3″.

Two replaceable rubber bushes working on steel bushes are fitted in the unit mounting collars.

ASSEMBLING

Assembling the unit is a reverse procedure of the dismantling operation. Lightly grease the damper rod on assembly.

REAR SUSPENSION UNITS (models C100 and C102)

The dismantling and assembling procedure is similar to the instructions for models C110 and C110D except that the **bottom** collar is screwed to the damper rod

A small screwed filler plug is fitted to the top of the unit and this should occasionally be removed and approximately 1cc. of light grease injected into the unit.

Unserviceable damper units should be replaced with new units.

The free length of the suspension spring is 8·56″.

REAR PIVOTED FORK (all models) — TO REMOVE

Remove right and left rear suspension units.

Remove both sections of the rear chain case.

Disconnect the chain at the connecting link and remove the chain.

Remove the rear wheel.

Remove the sprocket carrier.

Remove the 17mm. domed nut from the pivot shaft and draw the shaft out from the opposite end.

A silentblock type bush is fitted in each side of the fork and these can be pressed out of their housings, should renewal be necessary.

Re-assembly should be carried out in the reverse order to dismantling.

CARBURETTOR, KEIHIN TYPE DP.13.HOV. (models C100 and C102)

The carburettor is of the downdraught type with the float chamber attached to the mixing chamber by two countersunk screws.

An 'O' ring is interposed between the float chamber base and the mixing chamber.

The petrol tap is located on the top of the float chamber top cover and a screen type filter is also incorporated in the top cover.

To remove the filter, unscrew the float valve seat from the float chamber top cover, this will allow the filter bowl to be removed exposing the filter screen.

A throttle stop screw is located on the side of the mixing chamber to regulate idling speed and an air adjusting screw is positioned slightly above and to the right of the throttle valve screw.

The correct adjustment of the air screw is approx. 1-1$\frac{1}{4}$ turns out.

A manually operated choke is incorporated in the bell mouth of the carburettor and the choke is fully closed with the lever in the upright position.

A synthetic rubber plug is attached to the choke valve and when the choke is in the closed position the plug completely cuts off the air supply to the slow running air adjusting screw

The carburettor should be periodically dismantled for cleaning.

Carburettor settings

Main jet size, No. 88 — 95.

Slow running jet size, No. 35.

Throttle valve size, No. 2.

Jet needle, No. 13302.

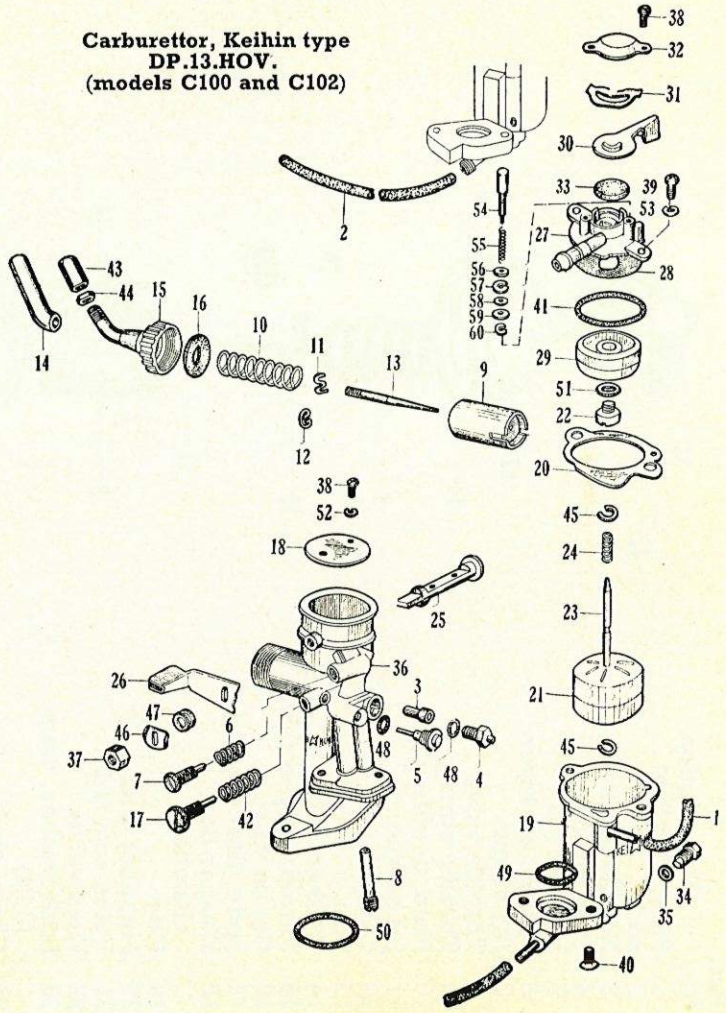
Needle position — clip in 3rd or 4th notch from top.

A special 'W' shaped flat wire clip retains the needle position clip in the throttle valve.

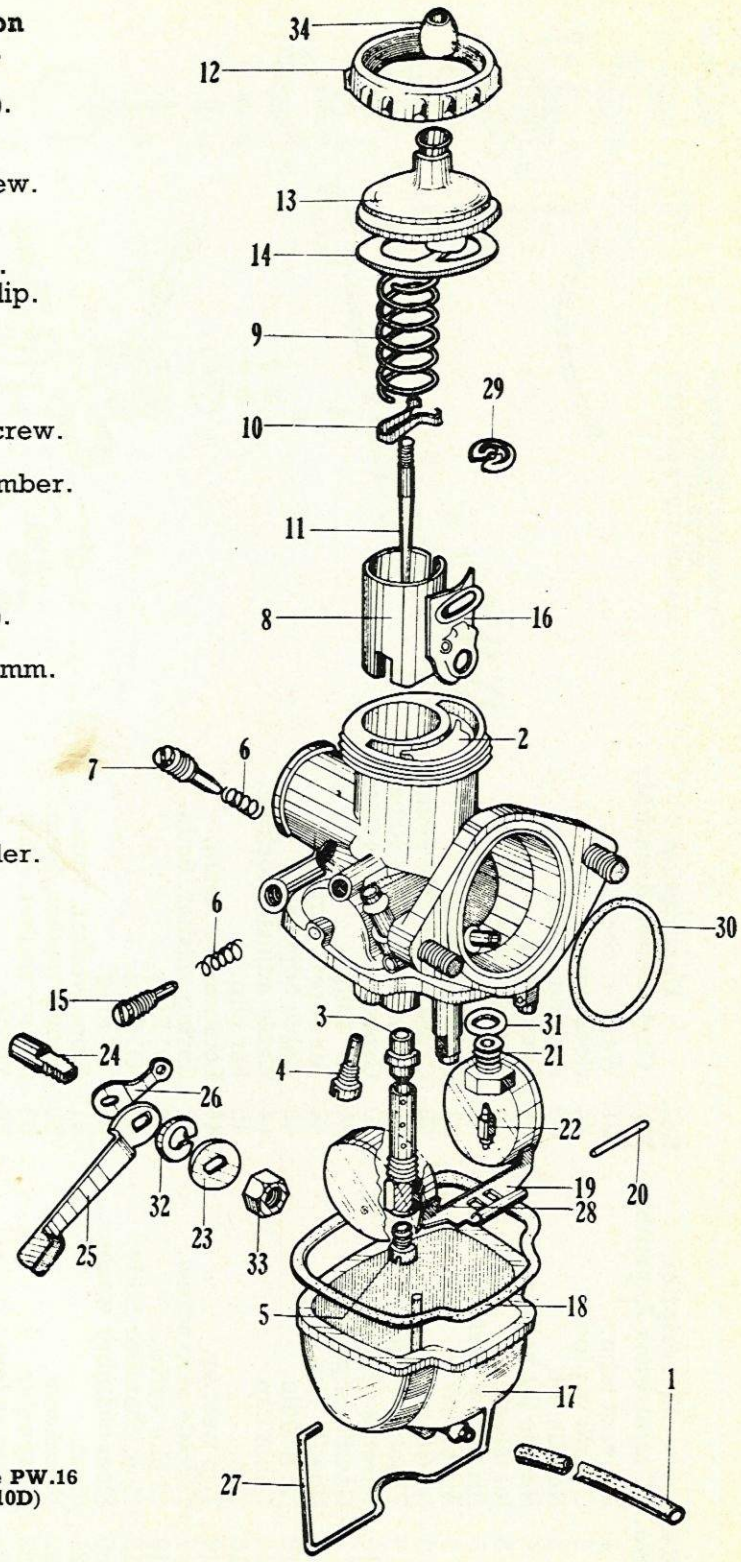
Ref. No.	Description Carburettor Assembly
1	Air vent tube.
2	Overflow pipe.
3	Needle jet.
4	Needle jet holder.
5	Jet (slow).
6	Air screw spring.
7	Air screw
8	Jet (main).
9	Throttle valve.
10	Throttle spring.
11	Needle clip plate.
12	Needle clip.
13	Jet needle.
14	Cable cap.
15	Top.
16	Top washer.
17	Throttle stop screw.
18	Choke valve.
19	Float chamber body.
20	Float chamber washer.
21	Float.
22	Valve seat.
23	Float valve.
24	Valve spring.
25	Choke shaft.
26	Choke lever.
27	Float chamber cover.
28	Filter net.
29	Filter cap.
30	Cock lever.

Ref. No.	Description Carburettor Assembly
31	Washer, cock lever
32	Cock cover.
33	Packing, cock.
34	Drain plug.
35	Washer, drain plug.
36	Body.
37	Lock nut 6mm.
38	Cross screw, 3 x 5mm.
39	Cross screw, 4 x 10mm.
40	Cross screw, 5 x 14mm.
41	'O' ring.
42	Air screw spring.
43	Cable adjuster.
44	Cable adjuster locknut.
45	Bar clip.
46	Lockwasher, 6mm.
47	Spring washer, 6mm.
48	'O' Ring.
49	'O' Ring.
50	'O' Ring.
51	Fibre washer, 7mm.
52	Spring washer, 3mm.
53	Spring washer, 4mm.
54	Tickler.
55	Spring, tickler.
56	Seal washer.
57	Stop ring.
58	Washer, 2mm.
59	Plate, tickler.
60	Stop ring, 1·5mm.

Carburettor, Keihin type DP.13.HOV. (models C100 and C102)



Ref. No.	Description
1	Pipe, overflow.
2	Body.
3	Needle jet (2·6).
4	Slow jet (35).
5	Main jet (85).
6	Spring, air screw.
7	Air screw.
8	Throttle valve.
9	Throttle spring.
10	Plate, needle clip.
11	Jet needle.
12	Cap.
13	Top.
14	Washer, top.
15	Throttle stop screw.
16	Choke valve
17	Body, float chamber.
18	Washer float chamber.
19	Float.
20	Pin, float arm.
21	Valve seat (1·2).
22	Float valve.
23	Lock washer, 6mm. (0·24).
24	Choke shaft.
25	Choke lever.
26	Choke link.
27	Float chamber set clip.
28	Needle jet holder.
29	Needle clip.
30	'O' ring.
31	Fibre washer, 6mm. (0·24).
32	Spring washer, 6mm. (0·24)
33	Lock nut, 6mm. (0·24).
34	Cable cap.



Carburettor, Keihin type PW.16 (models C110 and C110D)

CARBURETTOR, KEIHIN TYPE, PW. 16 (models C110 and C110D)

The carburettor is rigidly attached to the frame and connected to the inlet pipe by a rubber hose.

An 'O' ring is fitted between the carburettor flange and the frame.

The oil feed from the crankcase to the valve rockers is fed through the carburettor body in order to prevent 'icing up' of the carburettor during cold weather.

A throttle stop screw with a knurled head is fitted on the left-hand side of the body immediately above the pivot point for the float chamber retaining clip, and a pilot-jet air adjusting screw is located to the left of the throttle stop screw and is set at an angle.

The manually operated choke is fitted with a spring loaded 'door' which permits an increase in air flow as the throttle is opened enabling 'warming up' to be carried out with the choke lever in the closed position.

DISMANTLING

Remove knurled top cap and withdraw throttle valve and needle from the mixing chamber body. The needle is retained in the throttle valve by a 'W' shaped flat steel clip and the needle is provided with five grooves for mixture strength adjustment. This can be made by varying the position of the needle clip.

Prise off the spring clip retaining the float chamber to the carburettor body and the chamber can be lifted off. A synthetic rubber gasket seal is fitted between the chamber and the body.

Remove the hinge pin on which the twin floats pivot, and the floats can then be removed and the float needle lifted out of its seating.

The main jet is screwed into the hexagon needle jet holder and after the jet holder has been removed the needle jet can be pushed downwards.

The pilot jet is positioned to the side of the main jet, and it can be unscrewed from the body.

CARBURETTOR SETTINGS

Main jet, 85–88.
Slow running jet, 35.
Throttle valve, 2 (PW16).
Jet needle, 16302.
Air adjusting screw, 1–1¼ turns out.

PETROL LEVEL ADJUSTMENT

The float needle is fitted with a spring loaded plunger in order to minimize shock on the needle seat, and when replacing the needle it is important to observe that the needle is positioned correctly, i.e. with the taper-end bearing on to the seat.

When making a check or correction for petrol level, reference should be made to the diagram below.

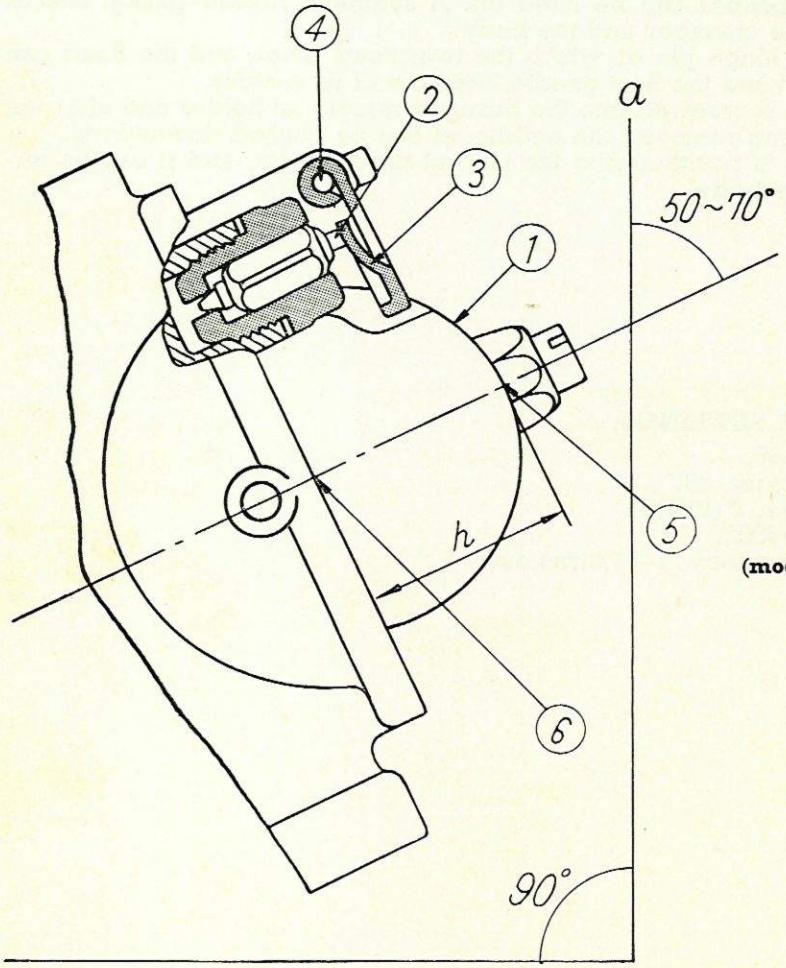
Place the carburettor in the upside down position, when the float needle spring will be depressed due to the weight of the floats against the spring.

Tilt the carburettor to an angle of 50–70 degrees from the vertical as shown in the illustration and check the measurement between the base of the carburettor body and the outer periphery of the float.

The correct measurement should read 19·5mm. plus or minus 0·5mm.

Any alteration to the level can be made by carefully bending the hinge or tongue, paying special attention not to alter the position of the individual floats.

a — Perpendicular line.
1 — Float.
2 — Needle
3 — Float tongue.
4 — Pivot pin.
5 — Outer periphery of float.
6 — Measuring position on carburettor body.

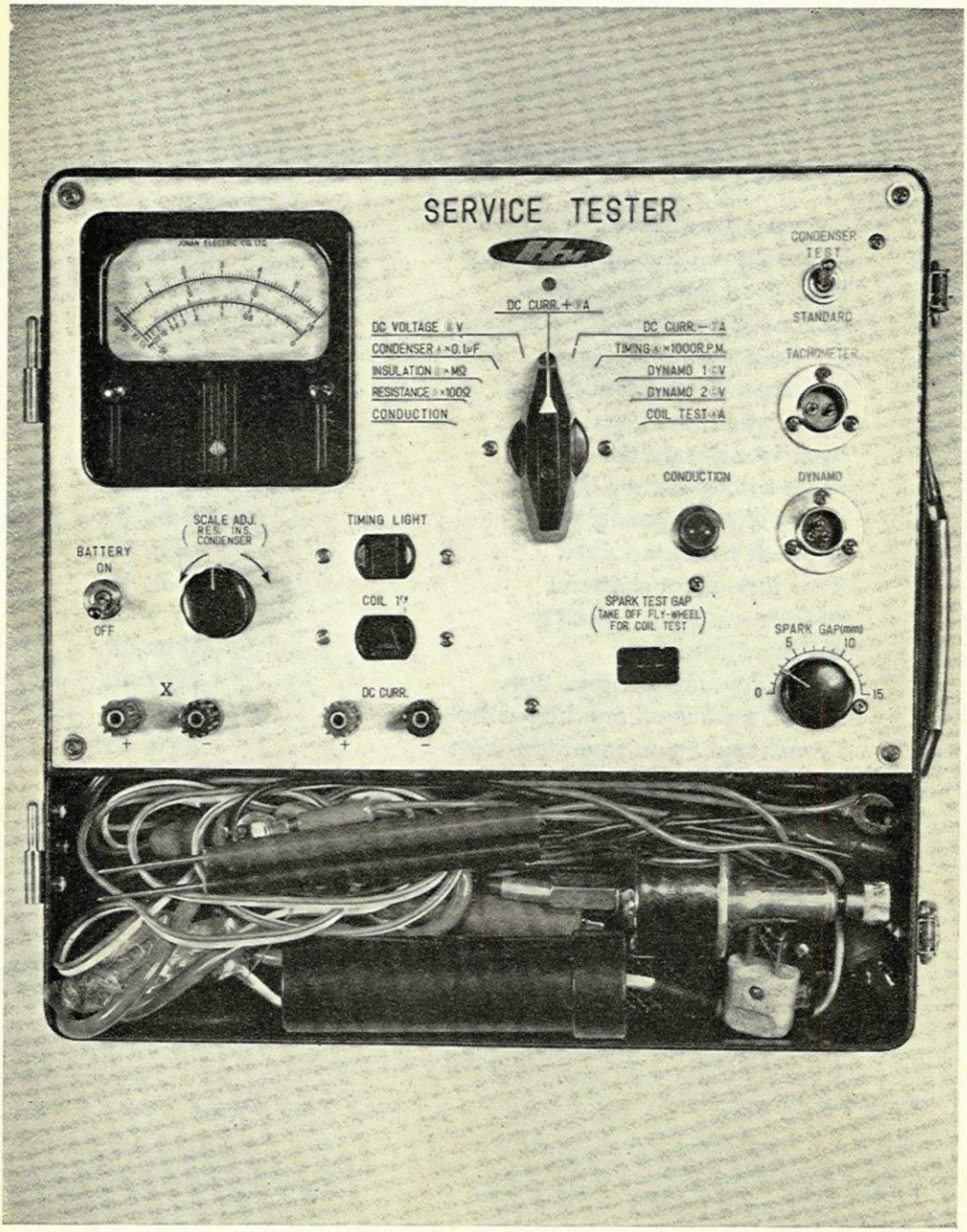


Petrol level (models C110 & C110D)

TIGHTENING TORQUES

Cylinder head nuts	70 in./lb.
Rocker box holding down bolts	65 in./lb.
Rocker oil feed pipe bolts	60 in./lb.
Carburettor mounting nuts	60 in./lb.
Flywheel retaining nut	22 ft./lb.
Camshaft gear retaining nut	13–15 ft./lb.
Front wheel axle nut	25–35 ft./lb.
Rear wheel axle nut	25–35 ft./lb.
Front brake anchor bolt	20 ft./lb.
Petrol tank mounting bolts	60 in./lb.
Footrest mounting nuts	18 ft./lb.
Rear fork pivot shaft nut	40 ft./lb.
Rear suspension unit nuts	30 ft./lb.
Chain adjuster nuts	60 in./lb.
Engine mounting bolts, nuts	20 ft./lb.
Front suspension unit upper bolt	20 ft./lb.
Front suspension pivot arm bolt	20 ft./lb.
Sprocket carrier hollow spindle nut	40–50 ft./lb.
Front mudguard fixing nut	20 ft./lb.
Handlebar fixing nut (C.100 and C102)	20 ft./lb.
Handlebar fixing bolt (C110 and C110D)	20 ft./lb.

INSTRUCTIONS FOR USING THE ELECTRICAL SERVICE TESTER ON THE HONDA 50



Three 10amp. fuses are incorporated in the Tester. In the event of either one 'blowing' due to wrongly connecting leads, etc., during testing, the fuses should only be replaced by one of the correct amperage.

A hinged door is located in the bottom of the Test Kit giving easy access to the fuses.

R.P.M. TEST (models C100, C102, C110 and C110D)

Remove the flywheel or rotor inspection cover.

Connect the Tachometer two-pin plug lead to the socket marked TACHOMETER.

Turn the change-over switch to the 'TIMING × 1,000' position.

Start the engine and hold the Tachometer in the hand in line with the centre of the flywheel or rotor and connect the rubber drive cone to the centre of the shaft.

The r.p.m. reading should be taken from the top scale A and multiplied by 1,000.

CONTINUITY TEST

A 6 volt battery is required for this test.

Connect the RED + and WHITE — battery leads which leave the storage compartment of the Test Kit at the top left-hand corner to a 6 volt battery.

Connect the RED and BLACK test leads to the X terminals.

Turn the change-over switch to 'CONDUCTION'.

Turn on the battery switch and connect the ends of the test leads to the object or wiring to be tested.

The RED 'CONDUCTION' lamp on the panel will light if the circuit is continuous and will fail to light if the circuit is broken.

DC VOLTAGE TEST

Connect the RED and BLACK test leads to the X terminals.

Turn the change-over switch to 'DC VOLTAGE V' position.

Connect the RED positive lead and the BLACK negative lead to the positive and negative terminals of the battery to be tested and read the meter on the B scale (volts).

H.T. COIL TEST (models C100, C110 and C110D)

A 6 volt battery is required for this test

Disconnect the two wires leading to the coil at the snap connectors, (black wire, and white with green stripe wire) the two wires are housed inside the frame behind the battery.

Plug into the socket marked 'COIL' the two-pin plug with the pins set at an angle and connect the RED and WHITE wires leading from the socket to the two wires leading from the H.T. coil.

Remove the waterproof cover from the sparking plug and connect the screwed hexagon adaptor supplied with the kit to the plug cover.

Connect the RED high tension lead which leaves the test box storage compartment at the right hand bottom corner to the hexagon adaptor.

Connect the two leads, WHITE and RED, leading out of the top left-hand corner of the box to a 6 volt battery and the black lead to the frame.

Turn the change-over switch to the 'COIL TEST A' position.

Turn on the battery switch and adjust the spark gap by means of the regulator knob.

The spark can be observed through the 'SPARK TEST GAP' window and if it is continuous at a gap of 6mm. or more the coil is satisfactory.

Always connect the BLACK lead to the frame when carrying out this test otherwise a severe electric shock may be felt by the operator.

MODEL C102

The procedure for testing the H.T. coil on model C102 is identical to the above except that the two wires leading to the coil are coloured BLUE and BLACK.

IGNITION TIMING, USING THE STROBOSCOPE (model C102)

A 6 volt battery is required for this operation

Connect the RED + and WHITE — battery leads, which leave the Test Kit at the top left-hand corner of the storage compartment, to a 6 volt battery and the black lead to an earthing point on the machine.

Remove the sparking plug waterproof cover and connect the hexagon adaptor supplied with the kit to the sparking plug. Replace the sparking plug cover and connect the RED H.T. lead from the Stroboscope to the hexagon adaptor on the sparking plug.

Plug in the RED and WHITE Stroboscope leads attached to the two-pin plug into the socket marked 'TIMING LIGHT'. The plug will only enter the socket one way, as the pins are of different sizes.

Remove the contact breaker inspection cover from the engine.

Set the change-over switch at 'TIMING × 1,000' position, start the engine and run at idling speed.

Switch on the battery switch on the Test Kit panel and shine the Stroboscope into the aperture on the cover plate when the rotor will have the appearance of being stationary.

For the timing to be correct the line on the rotor marked 'F' and the arrow pointer on the stator coils should be exactly in line.

Any discrepancy can be corrected by slackening the two screws retaining the stator plate and moving it in the required direction. When the correct setting has been obtained, tighten the stator plate retaining screws.

By increasing the engine revolutions and using the Stroboscope it will be possible to observe the movement of the automatic advance and retard mechanism. If the unit is functioning correctly it should point between the two black lines on the rotor when the revolutions are increased.

IGNITION TIMING USING THE STROBOSCOPE (models C100, C110 and C110D)

A 6 volt battery is required for this operation

Connect the RED + and WHITE — battery leads, which leave the Test Kit at the top left-hand corner of the storage compartment, to a 6 volt battery and the black lead to an earthing point on the machine.

Remove the sparking plug waterproof cover and connect the hexagon adaptor supplied with the kit to the sparking plug. Replace the sparking plug cover and connect the RED H.T. lead from the Stroboscope to the hexagon adaptor on the sparking plug.

Plug in the RED and WHITE Stroboscope leads attached into the two-pin plug to the socket marked 'TIMING LIGHT'. The plug will only enter the socket one way, as the two pins on the plug are of different sizes.

Remove the flywheel inspection cover.

Set the change-over switch on the Test Kit at the 'TIMING × 1,000' position, start the engine and run at idling speed (approx. 1,000 r.p.m.).

Switch on the battery switch on the Test Kit panel and shine the Stroboscope into the aperture on the revolving flywheel when the flywheel will will have the appearance of being stationary.

For the timing to be correct the line on the flywheel marked 'F' should be exactly in line with the indent on the flywheel cover.

Any discrepancy can be corrected by re-adjusting the contact breaker gap with the engine stationary.

EXAMPLE 1

If the 'F' mark on the flywheel has not reached the indent on the case, the timing will be retarded and in order to advance it the contact breaker maximum opening gap should be increased **slightly.** After this has been done a further test should be made with the Stroboscope.

EXAMPLE 2

If the 'F' mark on the flywheel has passed the indent mark on the case, the timing will be advanced and it will be necessary to decrease the contact breaker gap **slightly** in order to retard it.

Generally speaking, if the contact breaker gap is set accurately at 0·014" before the test is carried out, the timing will be correct, providing the fibre heel on the contact breaker is not excessively worn.

RECTIFIER TEST (model C102)

A 6 volt battery is required for this operation

Connect the RED + and WHITE — battery leads, which leave the Test Kit at the top left-hand corner of the storage compartment, to a 6 volt battery.

Connect the two test leads with 'prods' attached to the X terminals on the Service Tester.

The rectifier is a full-wave type comprising two sections, and each section should be tested individually.

Disconnect the RED and BROWN wires from the rectifier, located on the left-hand side of the frame.

Turn the change-over switch to the 'RESISTANCE × 100' ohms position and turn the battery switch to 'ON'.

Using the 'prods' attached to the RED and BLACK wires leaving the X terminals, to obtain a POSITIVE reading connect the RED 'prod' to the BROWN wire terminal on the rectifier and the BLACK 'prod' to the RED terminal and take a reading on the 'D' scale.

A reading between 10-40 ohms can be considered satisfactory.

By reversing the 'prod' connections, i.e. BLACK to BROWN and RED to RED, a NEGATIVE resistance reading can be obtained and this should be at least 1,000 ohms for the rectifier to be satisfactory.

A good NEGATIVE resistance reading will barely move the needle of the meter.

Similar tests should then be carried out on the opposite section of the rectifier substituting the YELLOW terminal for the BROWN.

RECTIFIER TEST (models C100, C110 and C110D)

A 6 volt battery is required for this operation

Connect the RED + and WHITE — battery leads, which leave the Test Kit at the top left-hand corner of the storage compartment, to a 6 volt battery.

Connect the RED and BLACK test leads with clips attached to the X terminals on the Service Tester.

Turn the change-over switch to the 'RESISTANCE × 100' ohms position.

Disconnect the RED and WHITE wires leading from the rectifier at the snap connectors.

Turn the battery switch on the Tester to the 'ON' position.

FOR POSITIVE TEST

Connect the RED test lead to the WHITE rectifier lead and the BLACK test lead to the RED rectifier lead and take a reading from the 'D' scale on the meter. A reading of between 10-40 ohms can be considered satisfactory.

FOR NEGATIVE TEST

Reverse the connections, i.e. RED test lead to RED rectifier wire and the BLACK test lead to WHITE rectifier wire.

The reading on the 'D' scale and this should be at least 1,000 ohms for the rectifier to be satisfactory.

A good negative resistance will barely move the needle of the meter.

CONDENSER TEST — CAPACITY (models C100, C102, C110 and C110D)

A 6 volt battery is required for this test and the condenser should be removed from the stator plate

Connect the test leads with the two 'prods' attached to the X terminals on the Service Tester.

Connect a 6 volt battery to the two leads, WHITE and RED, which leave the Test Kit at the top left-hand corner of the storage compartment.

Turn the change-over switch to the 'CONDENSER×0·1MF' position.

Turn the battery switch to the 'ON' position.

Turn the condenser switch on the test panel to the 'STANDARD' position.

By means of the scale adjusting control, adjust the meter to read 0·3mf on the 'A' scale (i.e. No. 3 calibration on the 'A' scale).

Connect the test 'prods' to the condenser, one to the case (earth) and one to the centre lead.

Turn the condenser switch on the panel to the 'TEST' position and take the reading from the 'A' scale.

The capacity of the condenser is 0·2–0·26mf.

INSULATION

Use the test leads and battery as in the previous test.

Turn the change-over switch to the 'INSULATION×M' ohms position.

Turn the battery switch to the 'ON' position.

Short circuit the test 'prods' together and adjust the meter by means of the scale adjusting knob to read 'ZERO' on the 'D' scale, i.e. the needle in the fully-deflected position.

Connect the test 'prods' to the condenser, one to the case (earth) and the other to the terminal connection and take the meter reading on scale 'D'.

Under 1meg./ohm — condenser unfit for service.

1–5meg./ohms — serviceable.

Over 5meg./ohms — very good.

After testing a condenser it should be short circuited immediately in order to discharge it.

AC GENERATOR VOLTAGE TEST (model C102)

Connect the three-pin plug leading from the load resistance box into the socket marked 'DYNAMO'. For identification, the box is screened and it is rectangular in shape.

Disconnect the 'SHORT BAR' from the load resistance terminals on the end of the box.

Disconnect the generator wires at the snap connectors which are situated immediately above the rectifier and are clipped to the frame.

Three test leads, coloured BROWN, WHITE and RED, leave the load resistance box and these should be connected as follows:

Test Leads		Generator Wires
BROWN	to	BROWN
WHITE	to	WHITE
RED	to	YELLOW

Start the engine and set it running at 2,000 r.p.m. by means of the carburettor throttle stop screw in conjunction with the tachometer.

Turn the change-over switch to 'DYNAMO 1 V' position.

Take a reading on scale 'C' on the meter, which should read a minimum of 3-6 volts or more.

Turn the change-over switch to 'DYNAMO 2 V' position and a reading of 7 volts or more should be obtained.

AC FLYWHEEL-GENERATOR VOLTAGE TEST (models C100, C110 and C110D)

Connect the three-pin plug leading from the load resistance box into the socket marked 'DYNAMO'. For identification, the box is screened and it is rectangular in shape.

Disconnect the 'SHORT BAR' from the load resistance terminals on the and of the box.

Disconnect the YELLOW and DARK GREEN generator wires at their snap connectors.

Turn the change-over switch to 'DYNAMO 1 V' position.

TEST 1

Connect the BROWN wire from the load resistance box to the DARK GREEN generator wire and the RED load resistance wire to EARTH.

Start the engine and run at 2,000 r.p.m. (check r.p.m. with tachometer).

Take a reading on scale 'C' on the meter, which should read 2·5 volts or more.

TEST 2

Connect the BROWN load resistance wire to the YELLOW generator and the RED load resistance wire to EARTH.

At 2,000 r.p.m. a reading of 3·5 volts or more should be shewn on the 'C' scale.

DC TEST POSITIVE + AND NEGATIVE — AMPS.

Connect the RED and BLACK test leads with clips attached to the RED and BLACK DC CURR. terminals on the Service Tester panel.

To make a test when the current flows through the RED + terminal, set the change over switch to the DC CURR. + A position and in the case of current flowing from the opposite direction — to + set the change over switch to the DC CURR. — A position.

To test charge or discharge disconnect the positive + battery lead from the battery terminal and connect it to the RED + test lead, then connect the BLACK — test lead to the battery + terminal.

Run the engine and take the reading from the A scale.

A fuse is incorporated in this circuit and in the event of a current in excess of 15 amps being passed the fuse will 'blow'.

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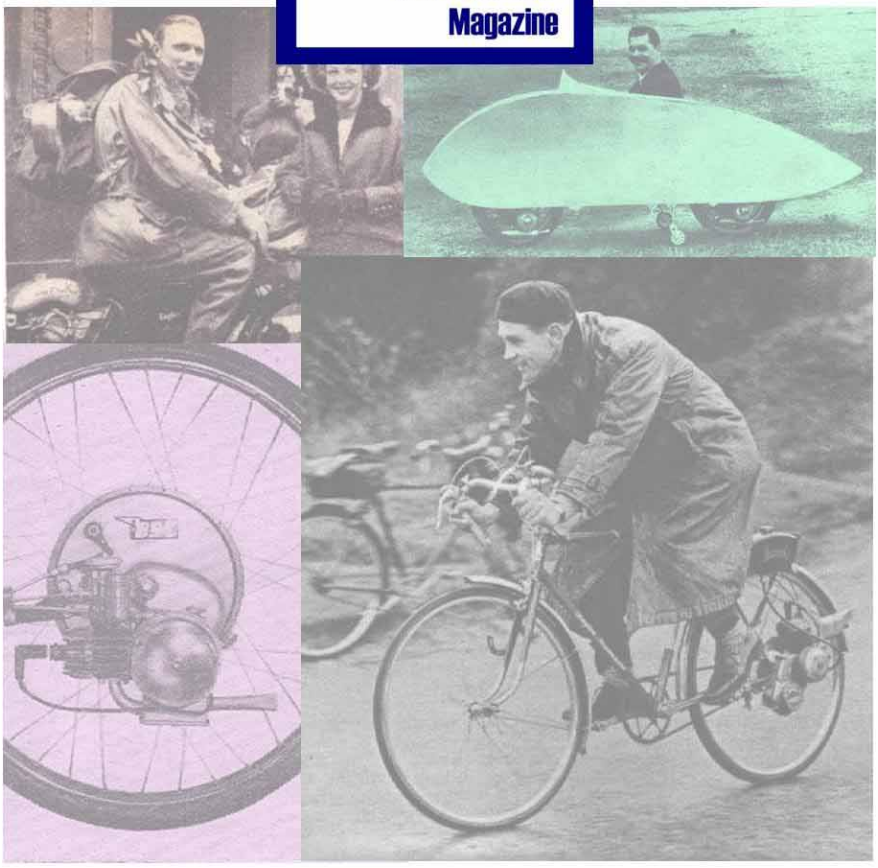

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