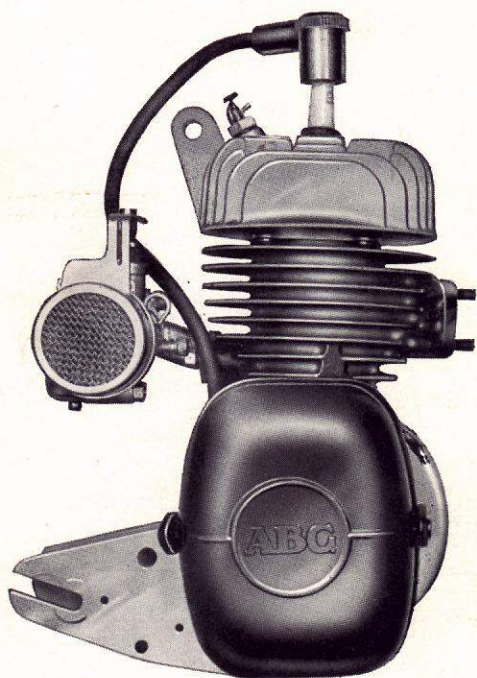


AUTO VAP



Service Manual for the

VAP 57 ENGINE UNIT

as fitted to the

**1960 RANGE OF AUTO-VAP MOPEDS,
STANDARD, DE LUXE, SUPER DE LUXE, CARAVELLE
AND CARAVELLE DE LUXE**

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VAP 57 ENGINE UNIT

TECHNICAL DATA

Single cylinder two-stroke, twin transfer ports. Flat topped piston.

Bore	40 mm.
Stroke	38 mm.
Cubic capacity	48.5 cc.
Compression ratio	6.5 — 1
Maximum B.H.P.	1.75 @ 5,000 R.P.M.
Ignition and Lighting	Magneclair
Contact Breaker Gap	.012 in. to .014 in.
Ignition Timing	$\frac{1}{8}$ in. B.T.D.C.
Piston Ring Gap	.008 in.—.014 in.
Crankshaft Journal Ball Bearings (2 off)	15 mm. x 35 mm. x 11 mm.
Small end rollers	2 mm. x 9.8 mm. 19 off
Big end rollers	2.5 mm. x 9.8 mm. 22 off (not sold separately)
Spark Plug	Lodge CNY or KLG F75
Spark plug gap	.020 in. — .025 in.
Bulbs — Headlamp	6V. 1 amp (Screw in cap)
— Tail	12V. 0.5 amp (Festoon)

VAP 57 ENGINE UNIT

DISMANTLING

Assuming the complete engine unit has been removed from the frame proceed as follows:

1. With a suitable distance piece placed between the engine plates, mount the complete unit in a vice. A wooden block is very suitable for this purpose.
2. Remove the sparking plug.
3. Remove the carburettor and inlet manifold from the cylinder.
4. Remove the plastic cover from the Magnecol, prise off the spring clips retaining the high tension and lighting coils, this will enable the two coils to be lifted clear and expose the two screws fixing the stator plate to the crankcase. Remove the two 8 mm. set screws and tab plates, connect a soft iron keeper across the stator plate laminations in place of the high tension and lighting coils and remove the complete stator plate assembly from the crankcase.

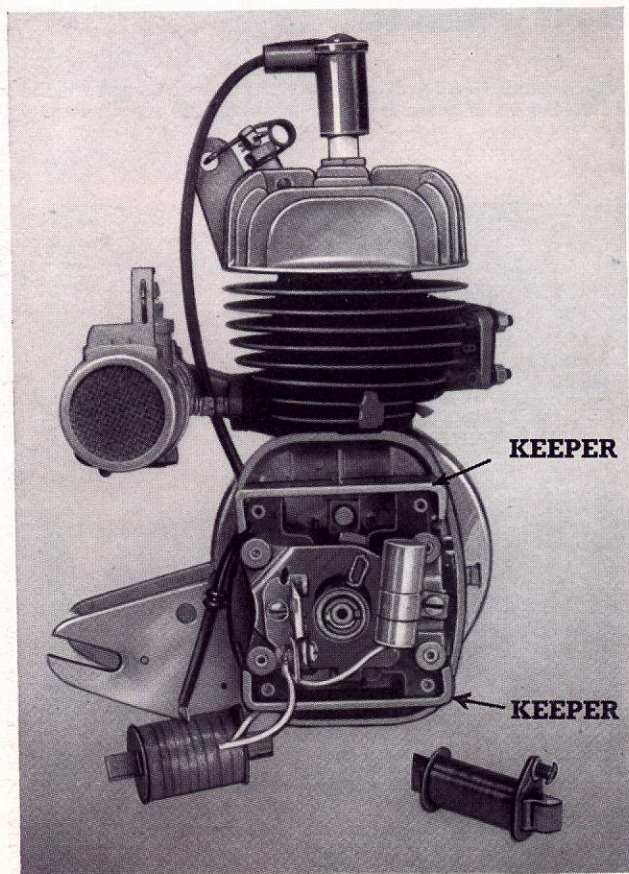
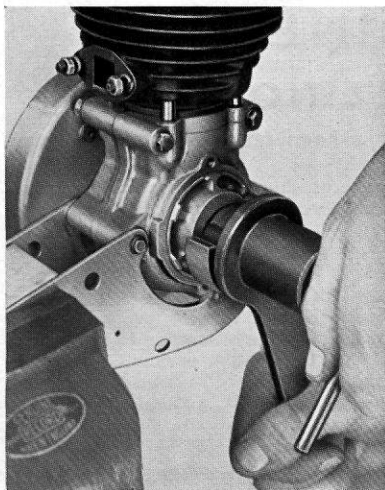


Illustration 1

5. Using spigot wrench tool No. 64 unscrew the rotor retaining slotted nut whilst holding the rotor in position with the locking wrench tool No. 65.



Holding rotor with tool No. 65 whilst undoing slotted nut

Illustration 2

6. Using extractor tool No. 57, remove the rotor and cam from the crankshaft and refit into the stator plate in order to retain the magnetism.

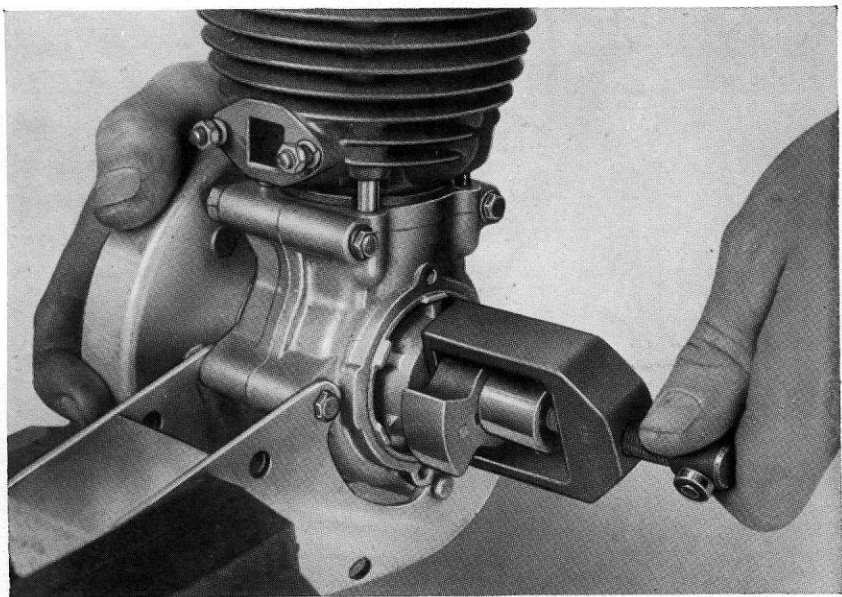
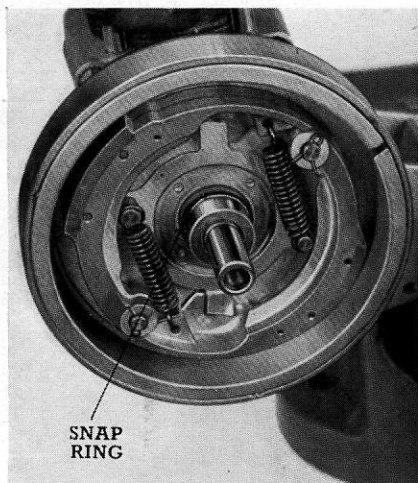


Illustration 3

Removing rotor using extractor tool No. 57

7. Remove plastic grease retainer from the end of the crankshaft primary pulley and remove the set screw and lock tab washer retaining the primary pulley. The pulley assembly complete can now be removed from the crankshaft.

8. Remove snap ring from the centre boss of the driving plate assembly by gently prising with a small screwdriver.



Clutch Assembly—note position of drive tang when re-assembling

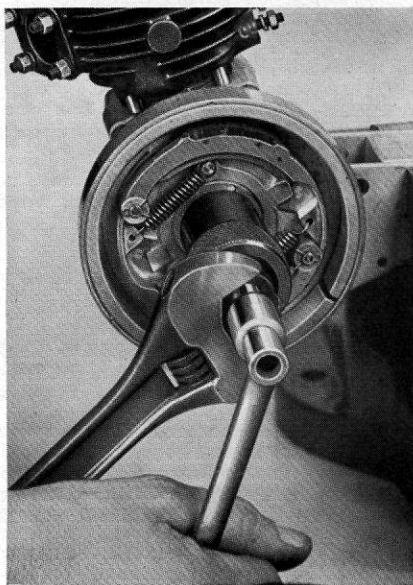
Illustration 4

9. Screw the thread protector into the end of the crankshaft and using tool No. 53 extract the driving plate assembly from the crankshaft.

Removing driving plate assembly using tool No. 53

Illustration 5

10. Remove the four cylinder head securing nuts and lift off the cylinder head, the cylinder can now be lifted clear of the holding down studs.
11. Remove the two gudgeon pin retaining circlips from the piston and push the gudgeon pin out of the piston.



Pistons with red paint mark on piston crown are fitted to cylinders marked F on cylinder upper machined spigot.

Pistons with blue mark on piston crown are fitted to cylinders without identification marks.

12. Remove the crankcase assembly from the vice, take out the five crankcase studs and nuts.
13. Heat crankcase assembly over a gas ring to approximately 80°C . and using crankcase extractor tool No. 26, pull off the Magneclair side crankcase half.

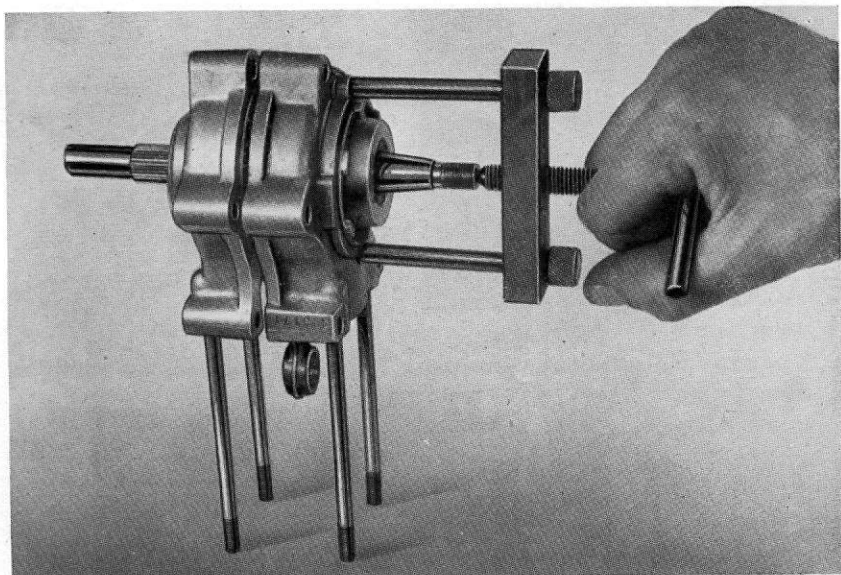


Illustration 6

Removing half crankcase using tool No. 26

14. Re-heat the remaining crankcase half over the gas ring to 80°C . and using a rawhide mallet or block of wood gently drive the crankshaft out of the crankcase half.
15. Using a piece of tube of suitable diameter, drive the oil seals out of the crankcase halves.
16. At this stage it is advisable to carefully examine the crankshaft assembly to decide whether or not it is fit for further service. If it is found necessary to remove the journal ball bearings proceed as follows:

Drive a finely tapered drift between the crankshaft web and the outer ring of the journal ball bearing until the bearing is drawn from the shaft sufficiently to enable the bearing extractor tool No. 73 to be accommodated on the bearing, apply pressure on the extractor centre bolt until the bearing is completely removed from the shaft.

Note: Once this journal ball bearing has been removed from the crankshaft, it is unfit for further service.

REMOVING JOURNAL BALL BEARING FROM CRANKSHAFT USING TOOL No. 73

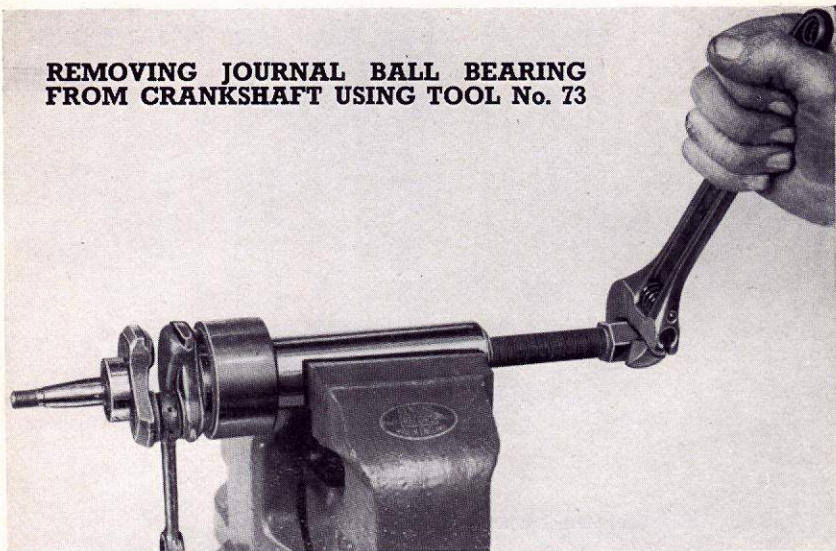


Illustration 7

VAP 57 ENGINE UNIT ASSEMBLING

Fitting Journal Ball bearings to Crankshaft

Place a suitable steel wedge between the webs of the crankshaft, position the bearing shim washer on the shaft and using a piece of tube of the same diameter as the inner ring of the bearing, press or drive the bearing on to the shaft to its fullest extent. This operation should be repeated with the opposite side bearing.

The wedge should now be removed from between the crankshaft webs.

The dimensions of the crankshaft journal ball bearings are 15 mm. x 35 mm. x 11 mm. (3 dot fitting).

Fitting the crankshaft into the crankcases

Heat the crankcase to approximately 80°C over a gas ring, position a new crankcase gasket coated both sides with jointing compound (such as Wellseal) on one half of the crankcase, insert the crankshaft between the two crankcase halves and gently press together. Assemble the mounting brackets and the five crankcase studs and nuts on the crankcases and tighten with light pressure only. (Final tightening should take place after the cylinder has been fitted). Ascertain that the crankshaft revolves freely in the cases before proceeding any further.

Fitting oil seals

Slide the oil seal fitting tool No. 62 over the crankshaft, oil the inner lip of the new seal to be fitted and slide the seal over the fitting tool. Using a suitable mandrel of the same outside diameter as the oil seal and bored out to enable it to slide over the crankshaft, drive the seal into the crankcase until the outer face is flush with the outer face of the bearing housing. **Note: Always use new oil seal when re-assembling an engine.**

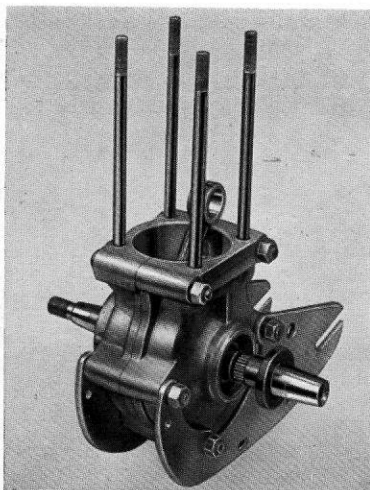


Illustration 8

Method of fitting oil seal using tool No. 62

Fitting piston to connecting rod

Position the 19 needle rollers inside the small end eye of the connecting rod using grease to hold them in position. Ascertain that they are accurately positioned by passing the gudgeon pin through the rollers. Accurately place the thrust washers in position using grease to hold them. Place the piston in position and carefully push the gudgeon pin through the piston and connecting rod small end eye. Ascertain that the needle rollers have not become displaced during the operation and fit the gudgeon pin retaining circlips into their grooves.

Note: The piston is marked "E" for exhaust and "A" for admission or inlet and when it is fitted the "E" should face forward.

Fitting the cylinder

Using a new cylinder-base gasket evenly coated on both sides with jointing cement, place in position on crankcase. Assemble the piston rings on the piston so that the stepped ends locate with the pegs in the piston ring grooves, lightly smear the cylinder bore with oil and while compressing the piston rings with the fingers or piston ring clamp, slide the cylinder over the piston. Make sure that the cylinder base gasket is not disturbed when the cylinder spigot enters the crankcase.

Decompressor valve

The decompressor valve assembly should be dismantled and examined before the cylinder head is replaced. To reseal the valve it should be lightly hammered on to its seat using a copper drift. Do not use grinding paste to grind in the valve.

Fitting cylinder head

Ascertain that the cylinder spigot and the inside face of the head are clean, lightly smear the spigot with jointing cement and lower the head into position over the cylinder holding down studs. Replace the four plain washers and 10 mm. nuts and evenly tighten down.

Fitting Driving plate assembly to crankshaft

Heat the driving plate assembly to a temperature of approximately 80°C and using driving plate assembly tool No. 52, draw the assembly on to the crankshaft. It will be necessary to exert considerable pressure with the tool in order to to this.

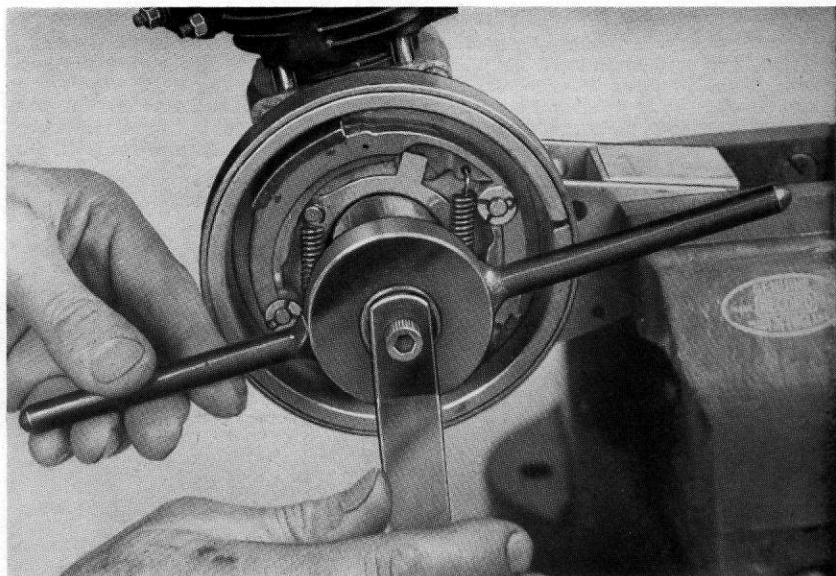


Illustration 9

Fitting Driving Plate to Crankshaft using Tool No. 52

Fitting primary pulley

Replace the snap ring on the driving plate hub with the projection on the ring positioned as shown in illustration Nos. 4-11-13. Lightly grease the two caged needle roller bearings inside the pulley hub with high melting point grease also the freewheel rollers and slide the pulley on to the crankshaft making sure that the slot in the freewheel roller cage engages with the projection on the snap ring. Finally, fit the shim washer, locking tab washer and retaining set screw, apply a small amount of high melting point grease to the plastic grease cap and replace.

Fitting the Magneclear and timing the Ignition

Ascertain that the crankcase mounting boss and the Stator base plate of the Magneclear are clean, position the Magneclear on the crankcase, smear the threads of the two retaining set screws with jointing cement and screw into the crankcase together with the two shakeproof washers and lock plates. Do not finally tighten the screws at this juncture. Refit the H.T. and lighting coils.

Set the contact breaker gap at .012 in. before commencing the timing operation. The correct ignition time is $\frac{1}{8}$ in. B.T.D.C.

Procedure for timing the ignition

Using a depth gauge or measuring stick, slowly rotate the engine in a clockwise direction (from the Magneclear side) until the piston is at the top dead centre position, now slowly rotate the engine in an anti-clockwise direction until the piston has travelled $\frac{1}{8}$ in. down the cylinder bore. This should be checked with a depth gauge or measuring stick. With the piston at this position the Magneclear contact points should be just commencing to open. Should they not have commenced to open the setting will be retarded and it can be corrected by moving the stator plate round in an anti-clockwise direction. If on the other hand the contacts have already opened the setting will be advanced and this can be corrected by moving the stator plate in a clockwise direction. After the correct setting has been arrived at finally tighten the two stator plate fixing screws.

The measurement allowed for the contacts commencing to open is .0015 in.

Set the sparking plug gap at .022 in. to .025 in. and refit in cylinder head.

Using a new induction pipe gasket, evenly coated with jointing cement assemble the induction pipe on the cylinder, replace the two nuts and shakeproof washers and evenly tighten down.

Replace the carburettor on the induction pipe.

Driving belt adjustment

The driving belt should be checked for tension using the driving belt gauge tool No. 36 (see illustration No. 10). If the belt is correctly adjusted the stepped portion of the plunger will be just visible above the top edge of the tool. The tolerance allowed is indicated by the red machined groove. To adjust the belt slacken the engine plate clamp bolt and the cylinder head to frame mounting bolt and pivot the engine forward, afterwards tighten the bolts and recheck the tension, making sure that the belt is correctly aligned.

A special tool No. 51 is available to simplify belt adjustment.

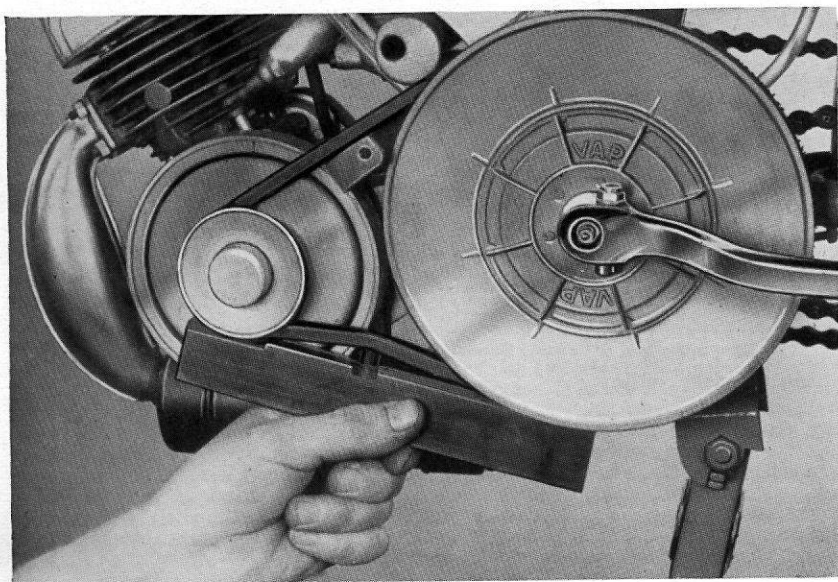


Illustration 10

Using Driving Belt Gauge Tool No. 36

CLUTCH DISMANTLING

In order to completely dismantle the clutch it is preferable for the engine to be removed from the frame.

Proceed as follows:

1. With a suitable block of wood placed between the engine plates, mount the complete unit in a vice.
2. Remove the plastic grease retainer from the end of the crankshaft primary pulley and remove the set screw, tab washer and shim washer retaining the pulley. The pulley assembly complete can now be removed from the crankshaft.
3. Using a tapered punch or tommy bar, prise the inertia ring out of the driving plate by gently levering against the clutch shoes. Three holes are provided in the inertia ring to assist this operation.
4. Disconnect the clutch shoe springs and remove the two spring clips retaining the shoes.
5. Pivot the shoes outwards until they are clear of the retaining plate, the shoes can then be lifted off the driving plate pivot pins.

Special Note:

Do not bend the retaining plate tabs back in order to remove the shoes. These are accurately adjusted and are not supplied separately.

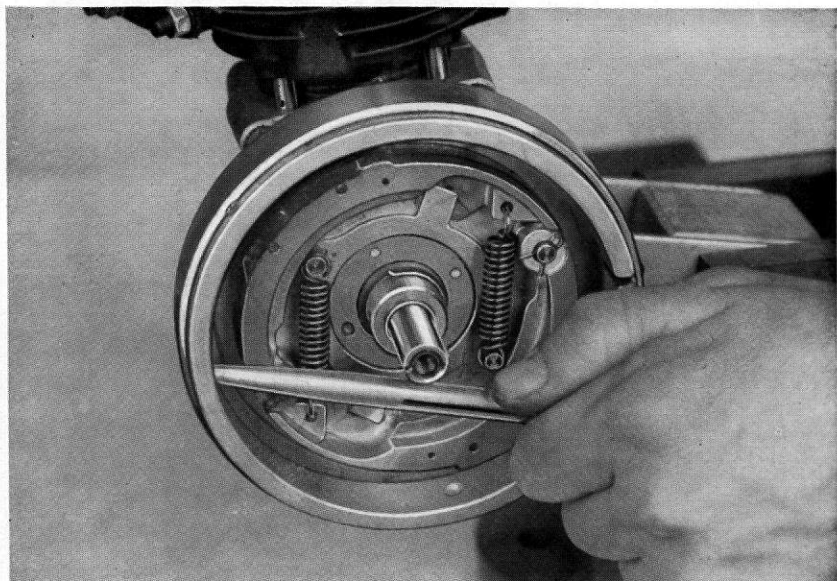


Illustration 11. Prising the Inertia Ring out of the Driving Plate using a tommy bar

CLUTCH RE-ASSEMBLING

This is to be carried out in the reverse order to the dismantling instructions with the exception of the replacing of the inertia ring.

Fitting the inertia ring to the drive plate

Position the special clamping tool No. 56 on the inertia ring with approximately $\frac{1}{4}$ in. of the ring protruding out of the clamping tool. Compress the tool by tightening the clamp screw until the ring is compressed sufficiently to enter into the drive plate. Having entered the ring into the drive plate, release the pressure on the clamp bolt and nut and remove the tool. Using a soft metal drift evenly drive the ring into the drive plate and finally make three equidistant centre punch dots between the drive plate and inertia ring as a safeguard against possible movement.

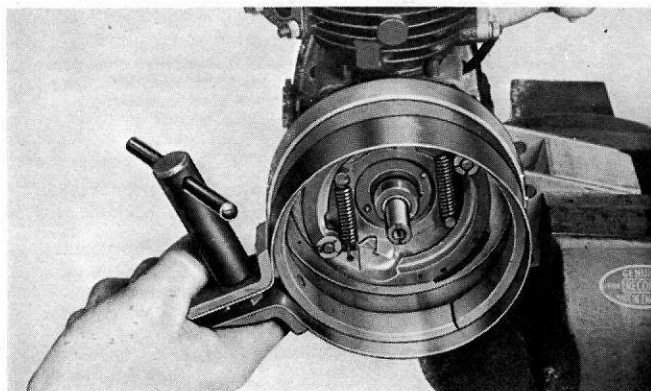


Illustration 12 Fitting the Inertia Ring into the Driving Plate using Tool No. 56

CLUTCH

From engine number 474,126 a modification has been made to the mounting of the clutch shoes, which enables the shoes to be removed without disturbing the inertia ring.

The clutch shoe retaining plate is now fitted with two elongated holes which allow it to be turned in a clockwise direction in its locations until its projections are clear of the shoes.

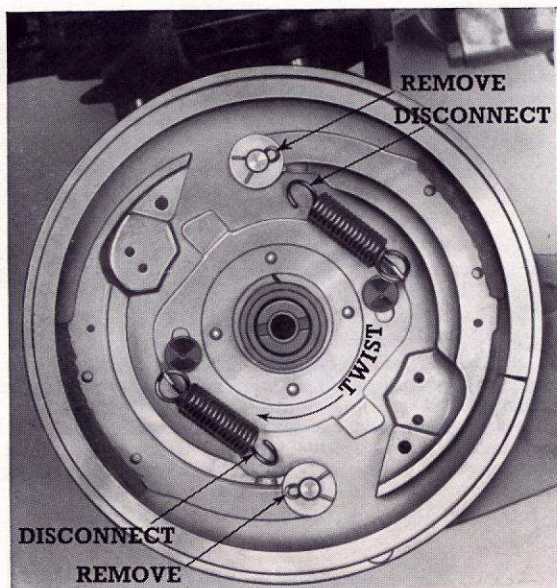


Illustration 13

Showing retaining plate already twisted in a clockwise direction allowing the shoes to be lifted off the drive plate after the spring clips and the shoe springs have been disconnected.

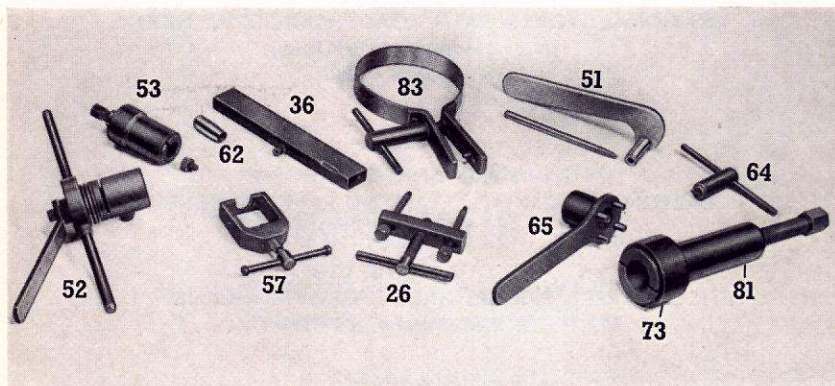
Disconnect the clutch shoe springs and the retaining spring clips and turn the clutch shoe retaining plate in a clockwise direction until its projections are clear of the shoes, the shoes can then be lifted off the drive plate.

To assemble reverse the above procedure.

No adjustment is provided on the clutch.

AUTO-VAP

LIST OF SPECIAL TOOLS



Tool No.	Description
26	Crankcase extractor.
36	Belt adjustment gauge.
51	Belt tensioner.
52	Driving plate replacing tool.
53	Driving plate extractor.
57	Rotor extractor.
62	Oil seal fitting tool.
64	Spigot wrench for Rotor fixing screw.
65	Locking wrench for Rotor.
73	Half bushing set
81	Journal ball bearing extractor
83	Inertia ring fitting tool.

} to be used in conjunction
with each other.

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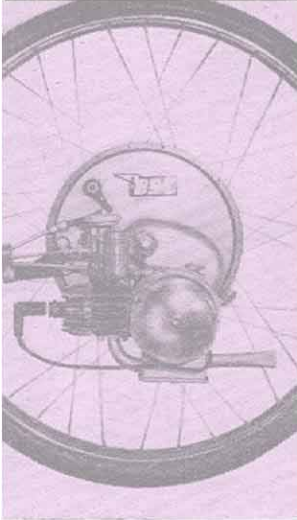
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