the clutch gear – it should be 22.5 mm (fig. 69).

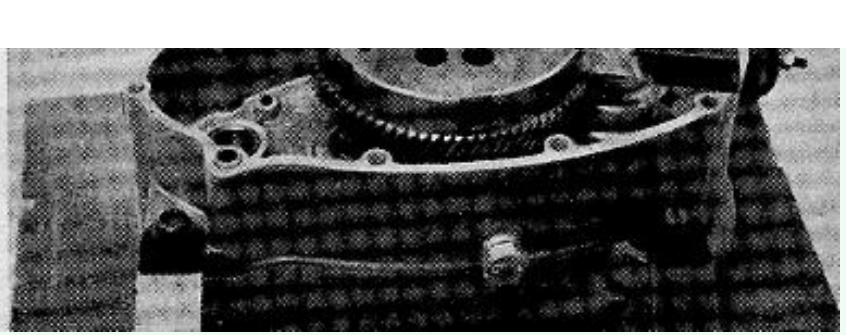


Fig. 69

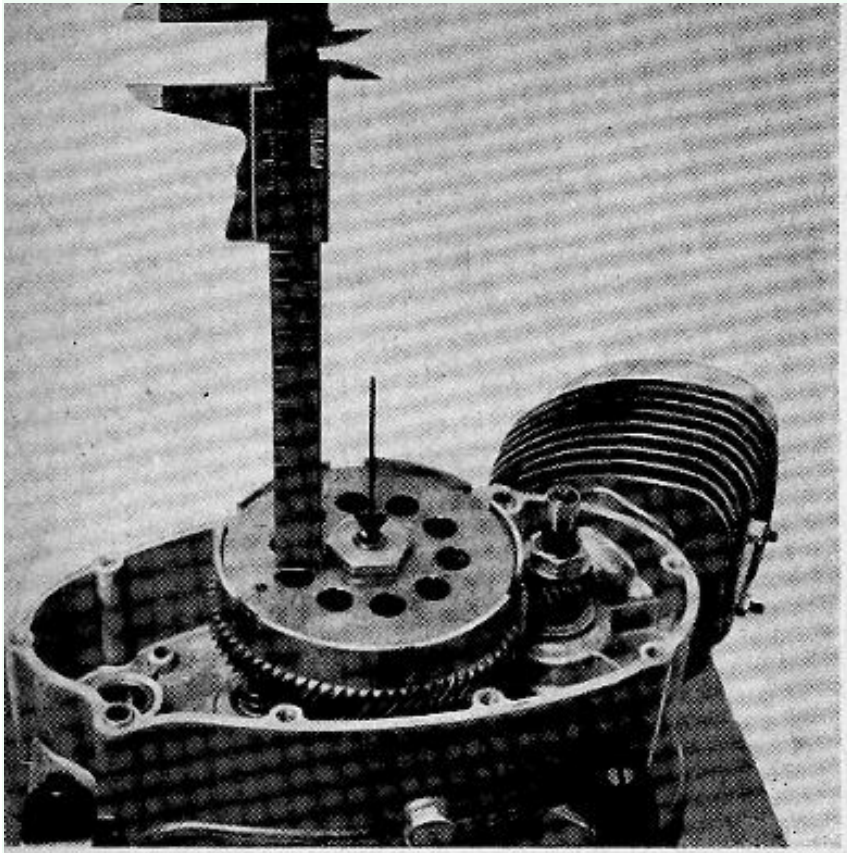


Fig. 70

Take the tool away from the cover plate and press main drive shaft down all the way to the stop, then measure distance again – it should be 21.8 mm.

Example:

22,5 mm
– 21,8 mm
0,7 mm

The values and final clearance listed are only given as examples (fig. 70).

To obtain the required axial play of 0.1 mm, fit 0.6 mm packing washers between ball bearing in clutch gear and clutch shifter hub (fig. 71).

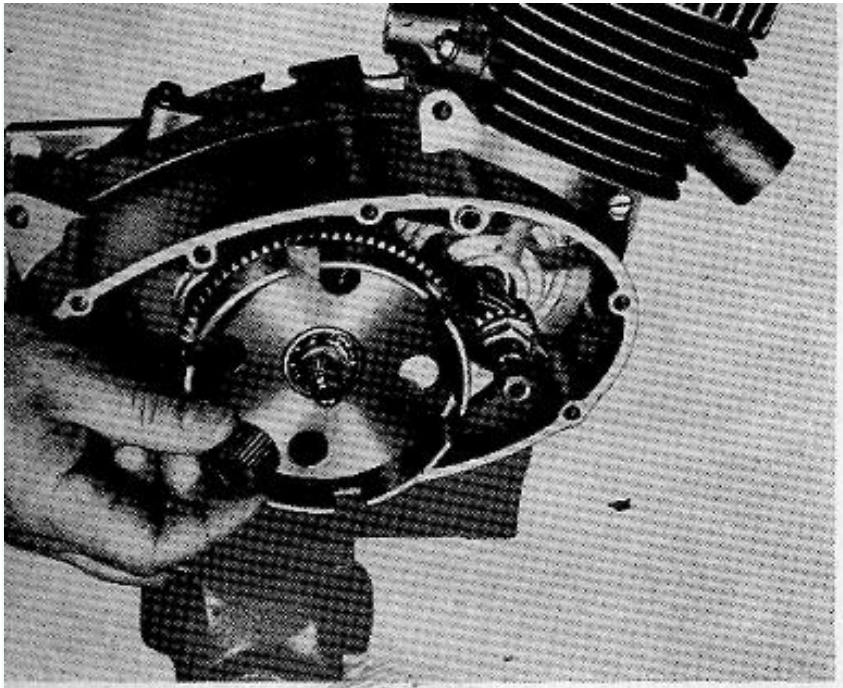


Fig. 71

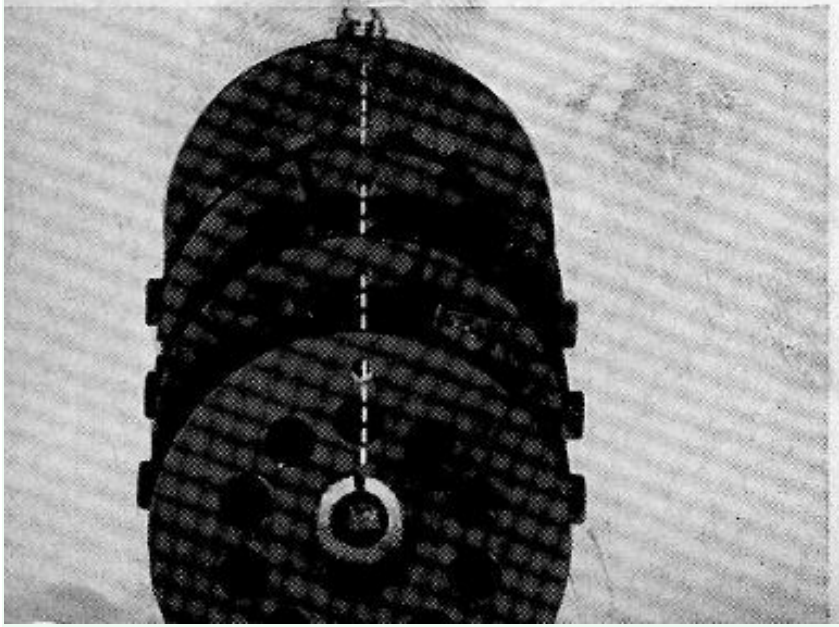


Fig. 72

o) Mounting Clutch

The clutch shown in fig. 72 is fitted to the following engines:

Type 267 up to No. 3484 123
Type 276 up to No. 4045 406
Type 281 up to No. 4600 606

Fit retaining, lining and outer steel plates, then fit cover plate. To align bores for the spring sleeves correctly, the clutch shifter hub is marked with a reference line and all plates with internal splines have a special aligning bore. Make sure that all these bores are accurately aligned on the line mark (fig. 72).

Having fitted the cover plate, run down the nut and tighten it firmly, holding the assembly steady with tool SK-A 279.

Clutches with 4 plates (fig. 73) are fitted to:

Type 267 as from No. 3484124
Type 276 as from No. 4045407
Type 281 as from No. 4600607

All scooter engines are fitted with 4-plate clutches. Assemble as follows:

Fit retaining plates, lining and outer steel plates, then fit cover plate. Here again, the clutch hub has a reference line and all plates an aligning bore.

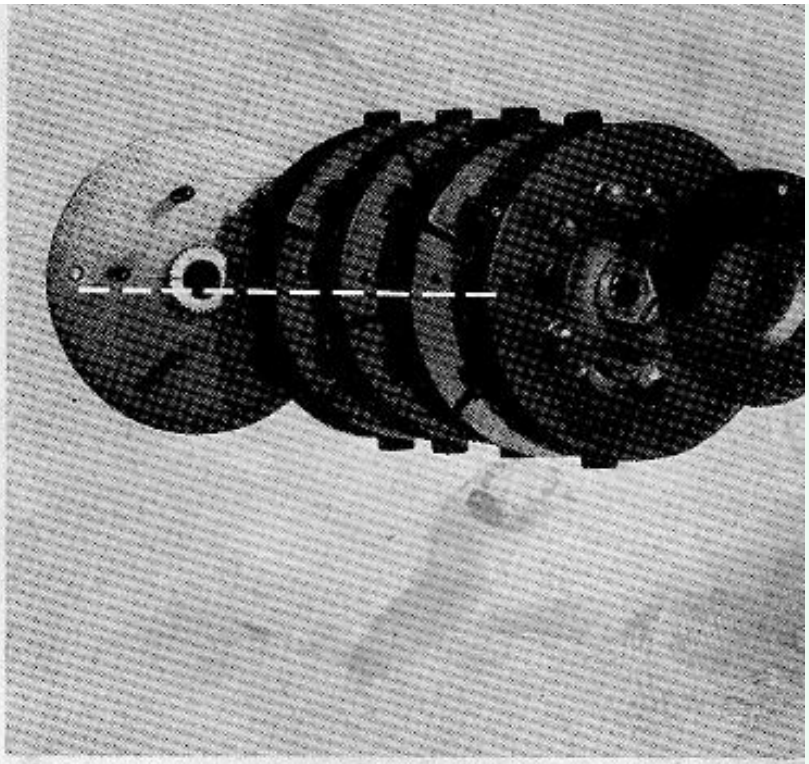


Fig. 73

Underneath the reference bore on the cover plate, an arrow is additionally marked which must be in line with the mark on the hub. Also note that the dished side of the upper steel plate must face the gearbox. Having placed the fourth plate in position, fit the cover plate so that the dished side faces the gearbox.

Having fitted the cover plate, run down the nut, hold the assembly tightly with tool SK-A 279 and tigh-

ten nut firmly (fig. 73).

Next, insert the spring sleeves, complete with springs, fit special service tool SK-A 234 (as shown on fig. 16) and insert thrust plate between clamping bolt of the tool and the clutch springs. Press clutch springs together, and you can then fit and tighten the 5 or 10 nuts, M 5. Take off the service tool, fit thrust pin with the required packing washers to the thrust plate (fig. 74).

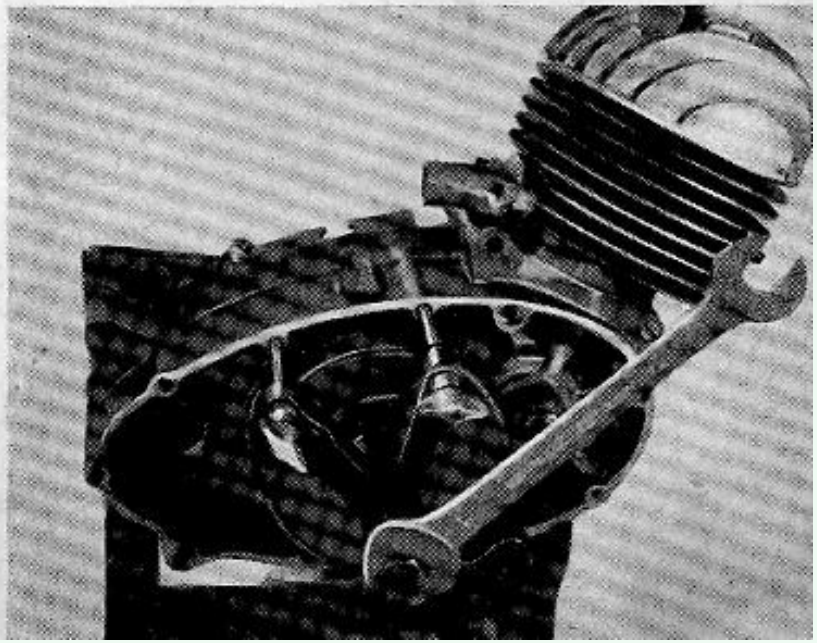
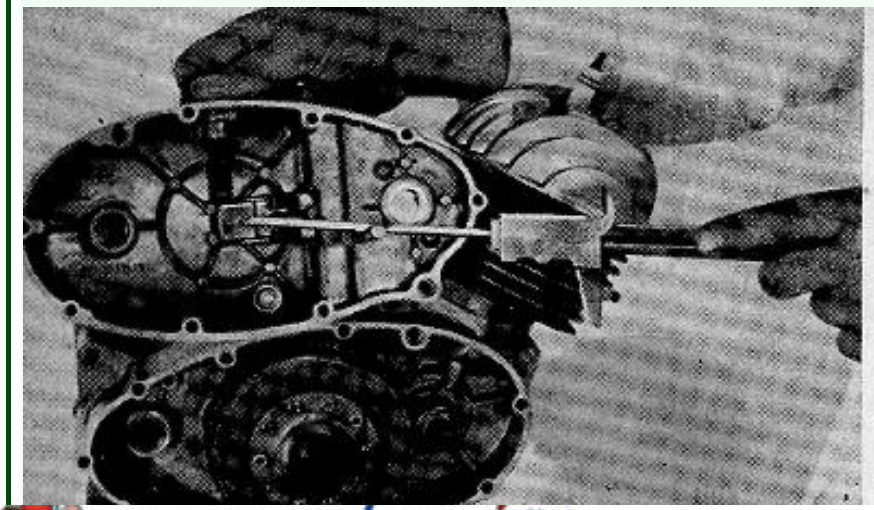


Fig. 74



p) Setting Clutch Tongue and Clutch

To obtain the largest possible resetting range, the clutch tongue must be set to the mushroom-shaped thrust pad. To do this, first coat the pad with chalk, then fit the clutch bell cover and operate the clutch lever on the housing.

Fig. 75

Take the bell cover off again, check whether the thrust pad contacts the tongue roughly at the centre. If it does not re-set with the setscrew for the thrust plate on the bell cover, then secure the new setting.

Next, check the clutch lever play at the housing. In its rest position, it should be possible to move the lever by hand about 2–3 mm in its bearing at the clutch tongue. If the play is too large or too small, correct by fitting or removing the appropriate number of washers under the thrust pad (fig. 75).

The following notes, up to fig. 85, apply only to engines with pedal gear change.

q) Taking off and Mounting Pedal Gear Change Spindle

The assembly is shown in fig. 76. Inside the pawl mount C are the two gear-change pawls D with spring. Selector drum B engages over the pawls; above the drum

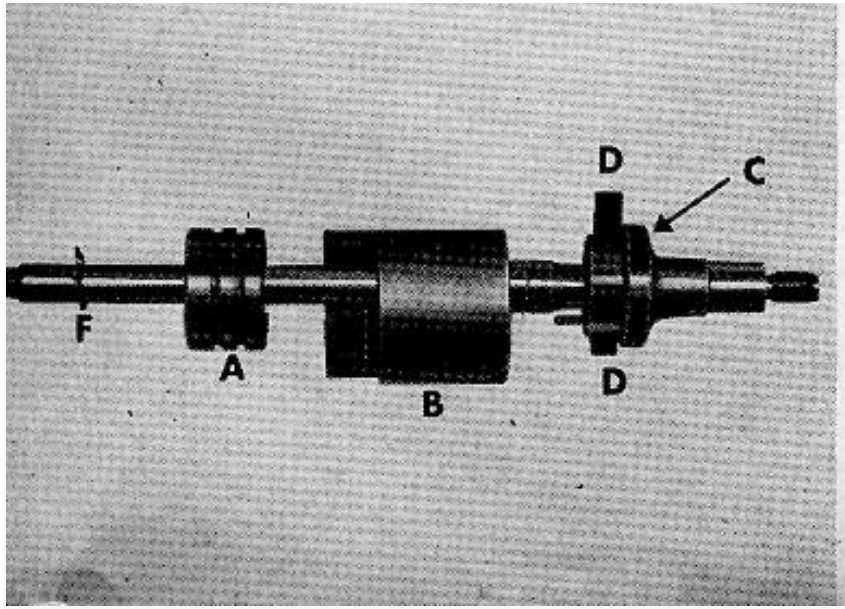


Fig. 76

sits pawl deflector A with return spring. The whole assembly is held by snap ring F. In case of damage to the selector spindle, we supply the complete assembly for replacement, but the return spring is available as a separate repair part (fig. 76).

The selector spindle comprises the following separate parts:

A) Pawl deflector
B) Selector drum
C) Pedal selector spindle
D) Selector pawl
E) Return spring
F) Snap ring
G) Spring
H) Oval-head rivet
I) Compression spring
J) Stop pin
(fig. 77)

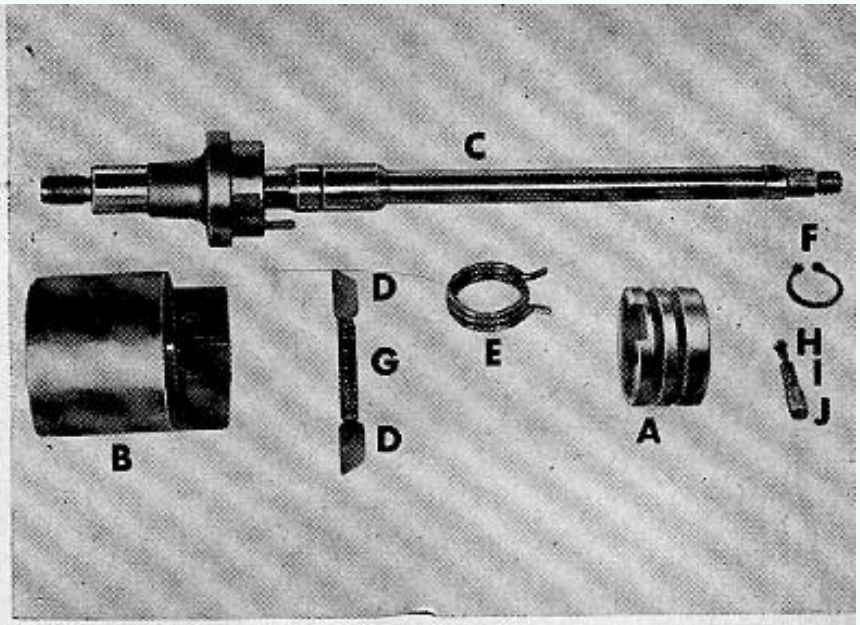


Fig. 77

Clamp pedal selector spindle by

the thread for the selector drum into a vice between a pair of soft-metal pads, then remove top snap ring (fig. 78).

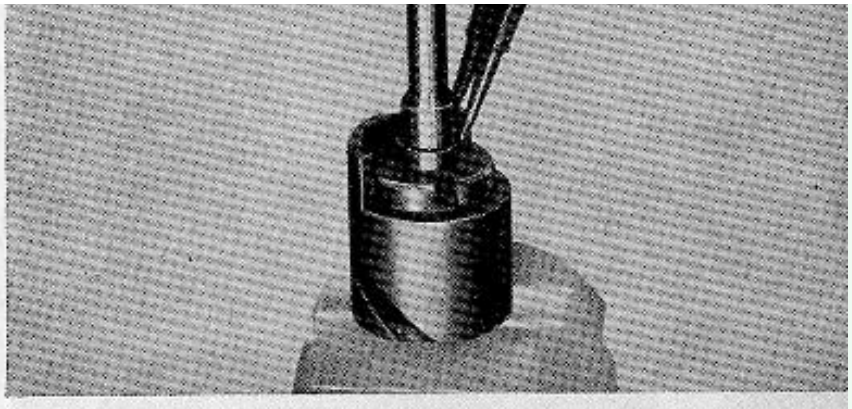


Fig. 78

Span the selector drum with your hands from underneath, so that as you lift it off together with the pawl deflector, you will prevent the pawls from dropping out under spring pressure (fig. 79).

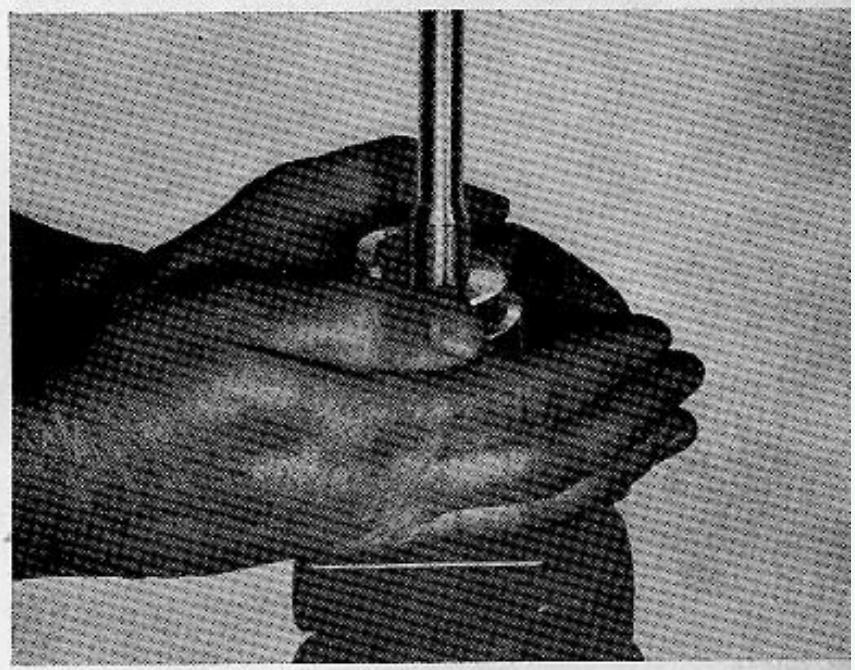


Fig. 79

Fit selector pawls and pawl springs into the groove on the selector spindle. Note that the large side faces on the tapered pawls should face the cylindrical pin in the pawl mount on the spindle (fig. 80).

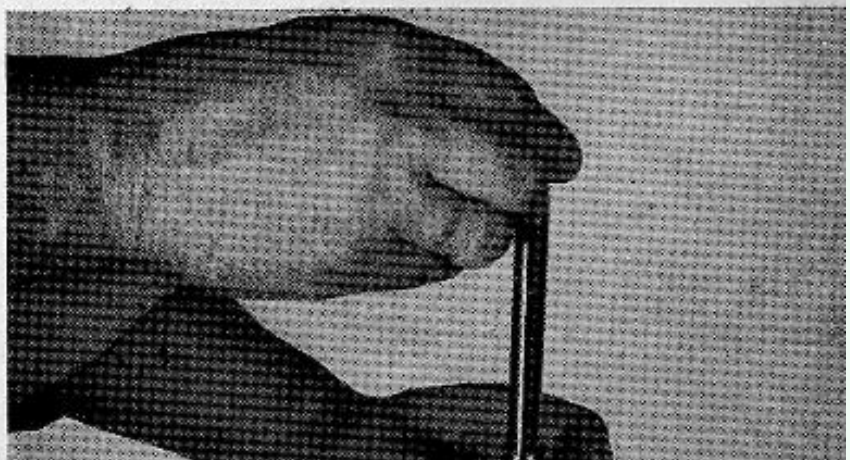


Fig. 80

Fig. 81

Fit the selector drum on to the pedal selector spindle, pressing the pawls inwards as you do so. The collar with the recesses acting as internal stops must face the cylindrical pin on the spindle. Tilt the drum at a slight angle to make it easier to fit (fig. 81).

To fit the return spring to the pawl deflector, insert it with its top stop into the lower recess and with the bottom stop into the top recess of the pawl deflector. The spring should be unloaded.

It is advisable to ease the spring into position with a pair of flat pliers to ensure that the stops enter the recesses far enough. To turn the spring, use only a screw driver, pliers or similar tool. To make the fitting easier, you can use a second screw driver to press the spring

against the recesses in the pawl deflector as you coil and ease it into position (fig. 82).

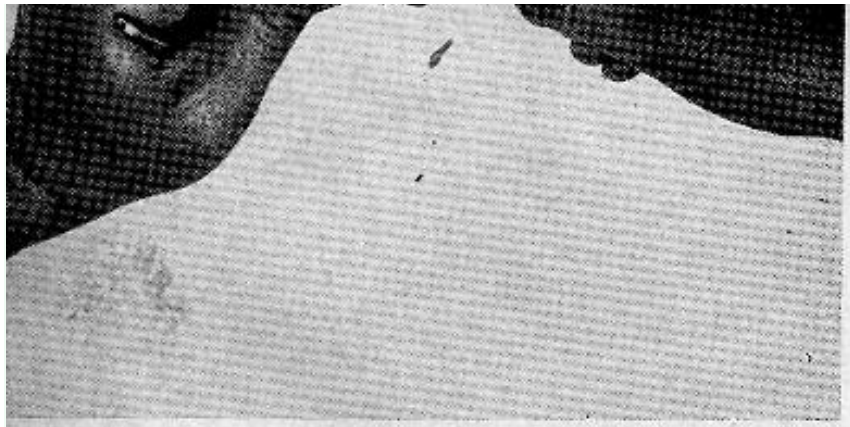


Fig. 82

Next, fit the pawl deflector, complete with return spring, to the pedal gear selector spindle. Note that the cylindrical pin in the pawl mount must be fitted through both arms of the return spring. To check correct assembly, fit assembly pin SK-A 213 into the recess of the pawl deflector, when you should be able to move the deflector to both sides under spring loading (fig. 83).

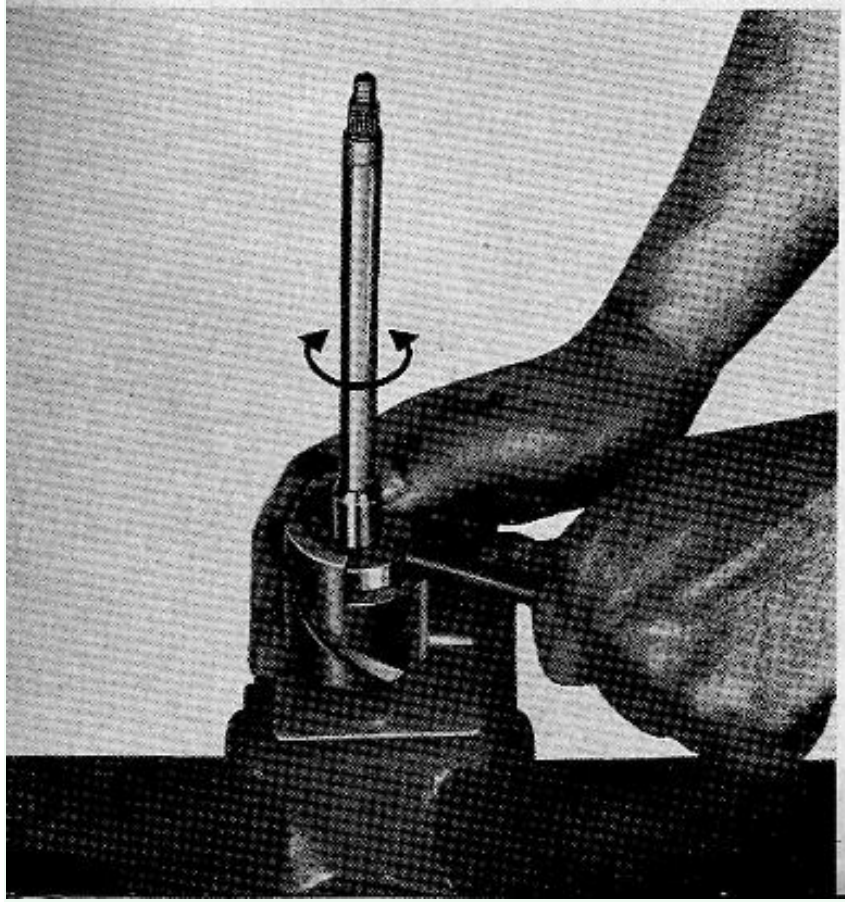


Fig. 83

Fit the snap ring into the groove on the spindle, then turn the pawl deflector to expose the bore into which oval-head rivet (H), compression spring (I) and stop (J) are fitted.

Having fitted these parts in the sequence listed, turn the deflector

again until the stop engages in the recesses providing the internal stops for the selector drum. To mount the pedal selector spindle, set the transmission to 2nd gear (fig. 84).

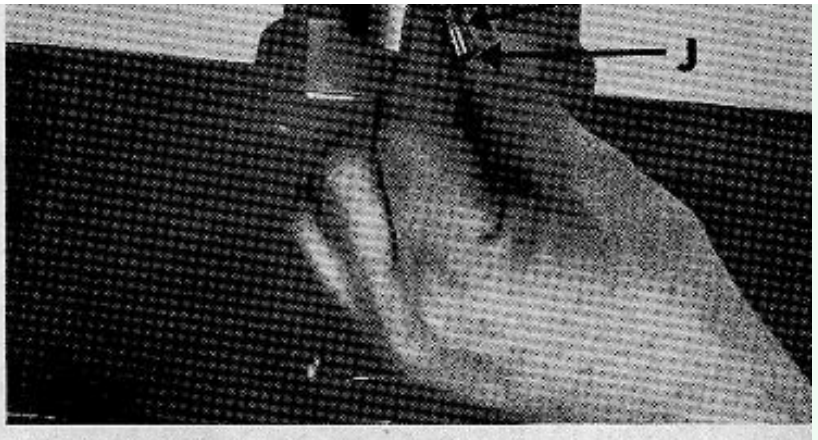


Fig. 84

Fit selector slide and pedal gear change spindle. Note that the taper groove on the selector drum engages with the mating piece on the selector slide, while the recess on the pawl deflector engages over the pin on the right-hand casing. Oil all moving parts (fig. 85).

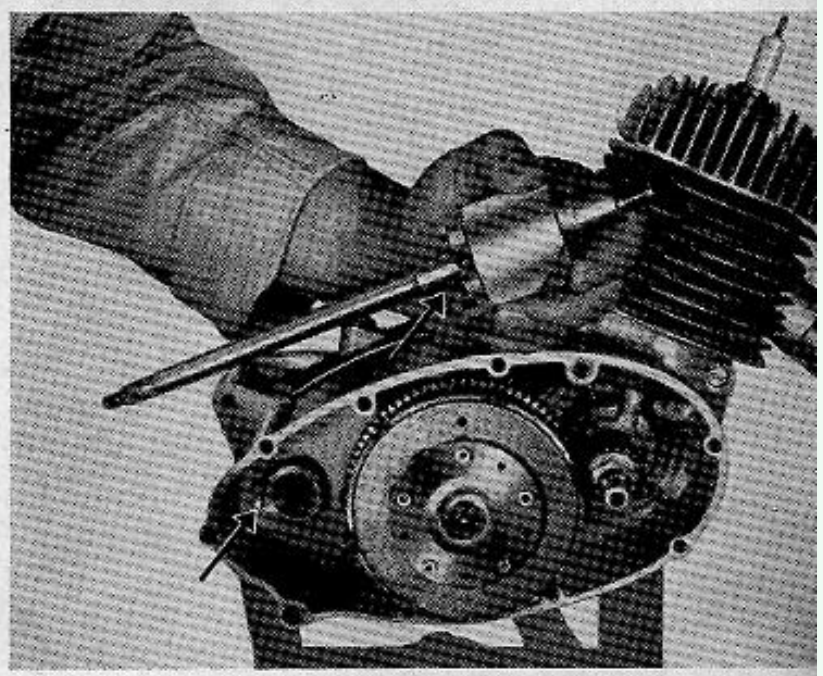


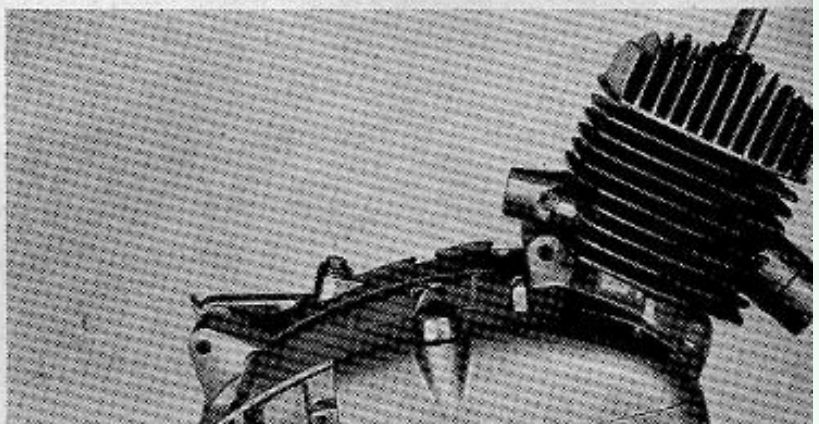
Fig. 85

r) Mounting Clutch Bell Cover

Insert two press-fit bushes into the right casing, coat the joint faces with sealing compound, then fit clutch bell housing cover.

Introduce one bolt, M 6 x 45, from the right under the pedal gear change spindle and run it down firmly (fig. 86).

On the left-hand side, fit the following screws:



A)	M 6 x 120	M 6 x 120	M 6 x 120
B)	M 6 x 120	M 6 x 120	M 6 x 120
C)	M 6 x 98	M 6 x 120	M 6 x 120
D)	M 6 x 120	M 6 x 120	M 6 x 120
E)	M 6 x 98	M 6 x 98	M 6 x 98
F)	M 6 x 98	M 6 x 98	M 6 x 98
G)*	M 6 x 92	*M 6 x 92	*M 6 x 92
H)	M 6 x 98	M 6 x 98	M 6 x 98
I)	M 6 x 98	M 6 x 98	M 6 x 98
			**M 6 x 98

*) Screw with cable clip to be fitted only after base plate has been mounted

**) Only fitted to engines of type 281, where it is located between I and G (fig. 87).

Fig. 86

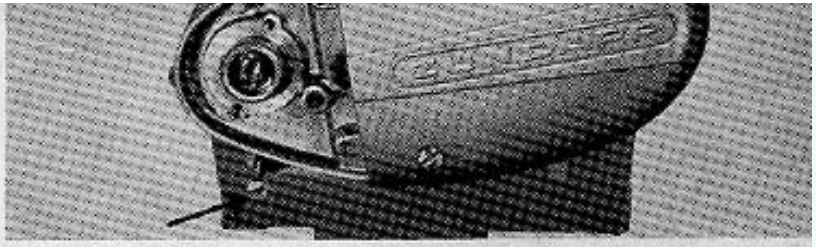
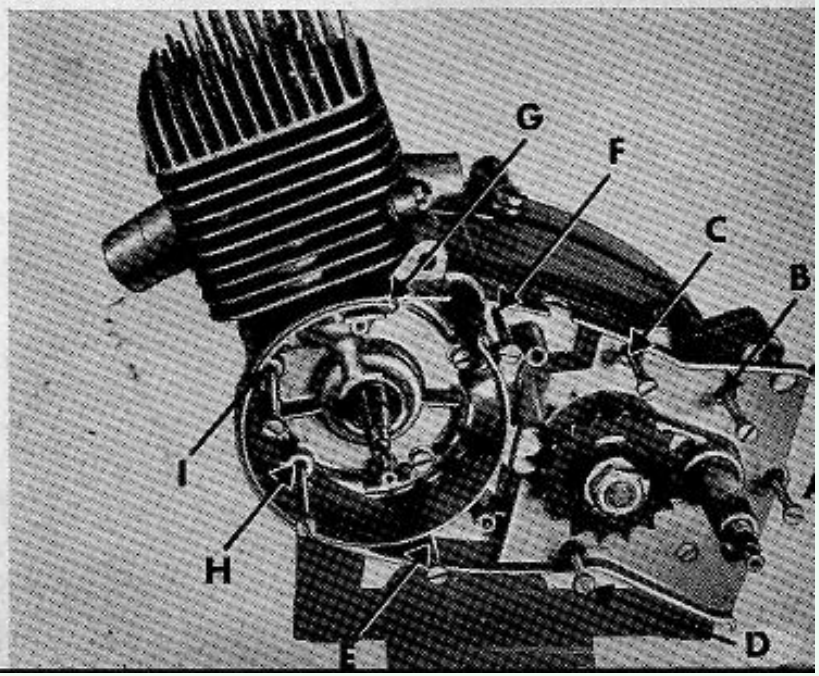


Fig. 87



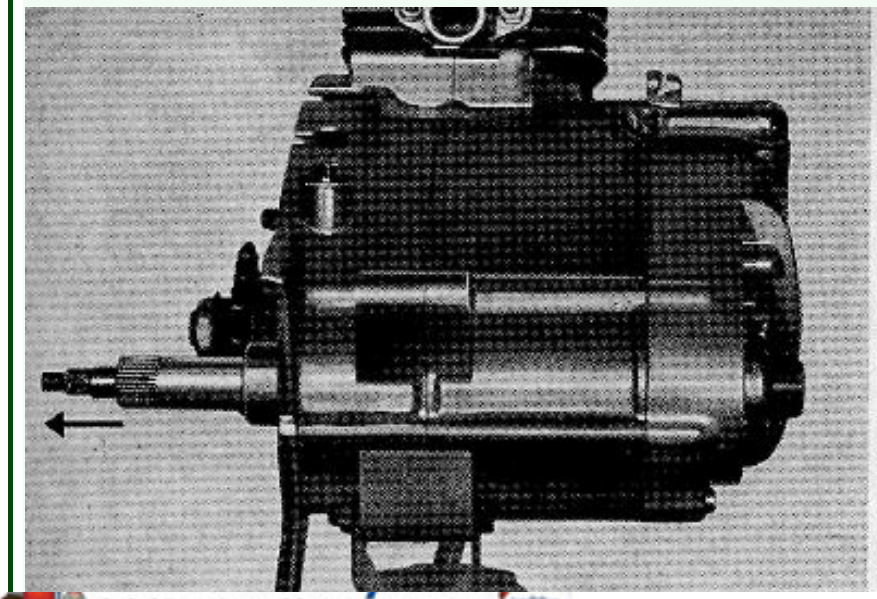


Fig. 88

s) Setting Pedal Gear Change Spindle

The spindle must be fitted with slight play. Press it lightly to the left (seen in direction of travel) all the way to the stop.

Screw on the setting dome, running it down until it lightly contacts the face of the casing, but without altering the axial location of the spindle (fig. 88).

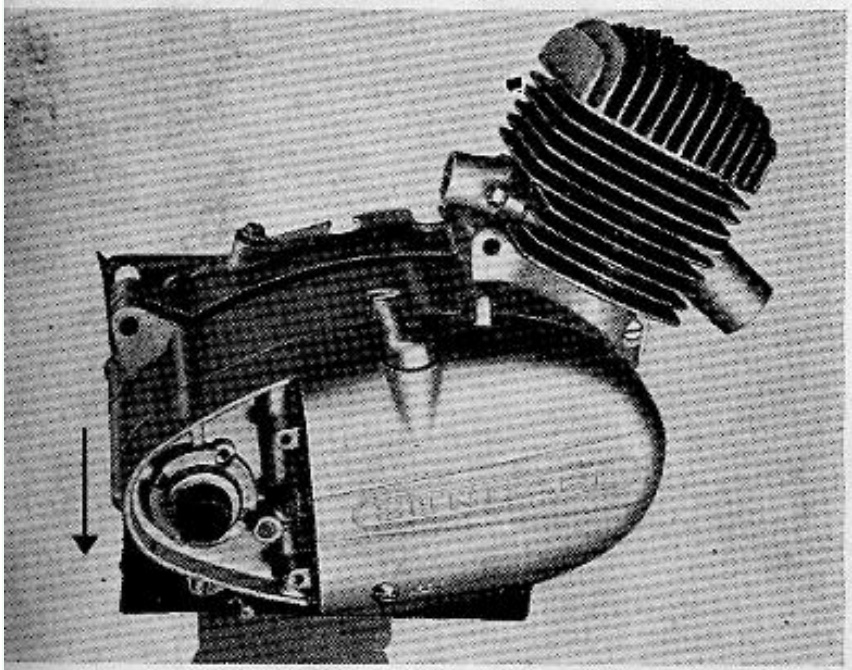


Fig. 89

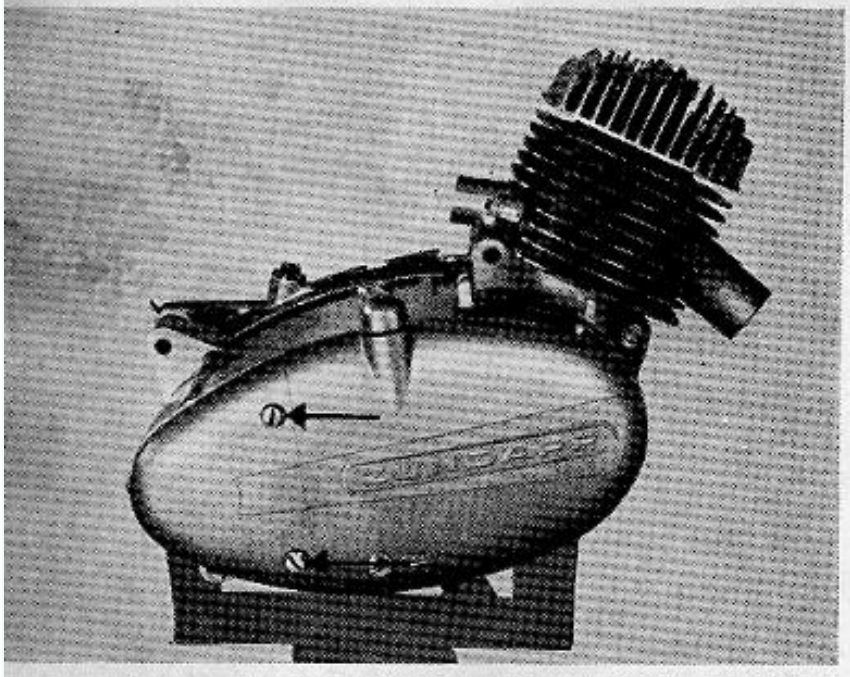


Fig. 90

Now, draw the spindle to the right and turn the setting dome further all the way against the casing, counting the quarter turns as you go. Then turn the dome back by half the number of quarter turns counted and fix it to the casing with the screws provided (fig. 89).

t) Mounting Cover over Clutch and Gear Selector Assembly (Connector Cap)

Fit the cover and secure with the two countersunk fillister-head screws, M 5 x 15 (fig. 90).

u) Mounting Ignition System

Fit baseplate and run down screws M 4 x 15, lightly only, since these have to be slackened again when setting the ignition.

Then slide cable with rubber grommet into the opening provided on the casing, remembering the ignition cable clip. Fit Woodruff key into its slot on the crankshaft, then slide on the flywheel magneto.

Note: Take care not to push the key out of its slot again.

Run down fixing nut and firmly

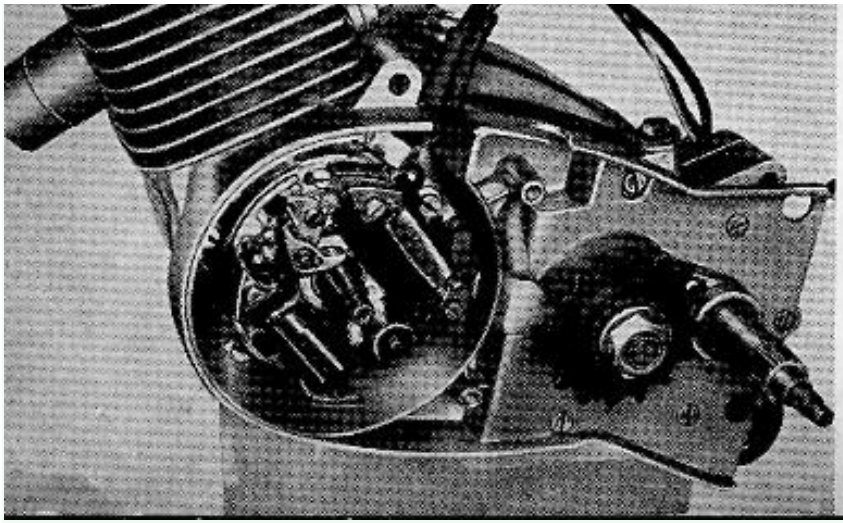


Fig. 91

tighten it with socket key, holding the flywheel in position with service tool SK-A 251.

On engines of type 281, the baseplate is fixed with 3 screws (fig. 91).

v) Setting Ignition Timing

Set contact breaker gap to 0.35—0.45 mm, then, with a dial gauge or similar instrument, determine top dead centre.

Next, turn flywheel magneto back in opposite direction to engine rotation until piston has reached the position matching the specified ignition point. Check the setting with a standard ignition tester or control lamp. It is advisable to carry out a second check of the timing after baseplate screws have been tightened (fig. 92).

For specified ignition timing, see technical data.

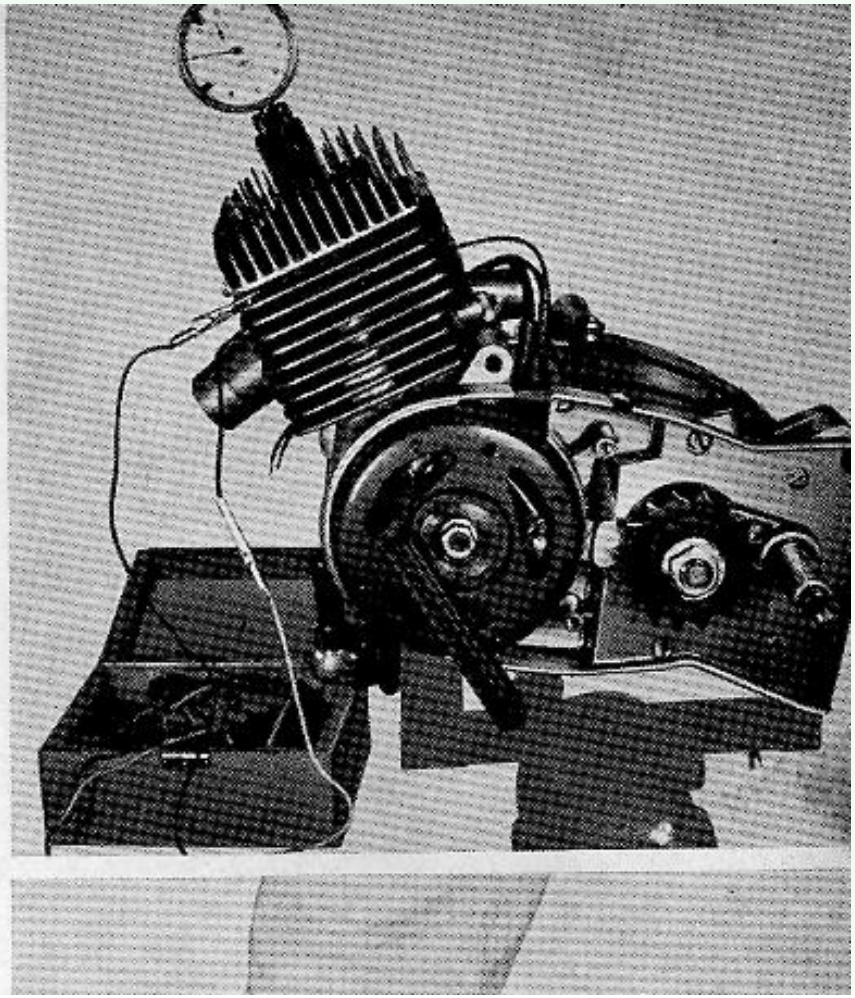


Fig. 92

w) Taking off and Mounting Kickstarter Spring and Sleeve

Take off snap ring, lift cover plate on one side at the stop nose. Gripping the kickstarter pedal lever firmly, you can now release the kickstarter spring from load (fig. 93).

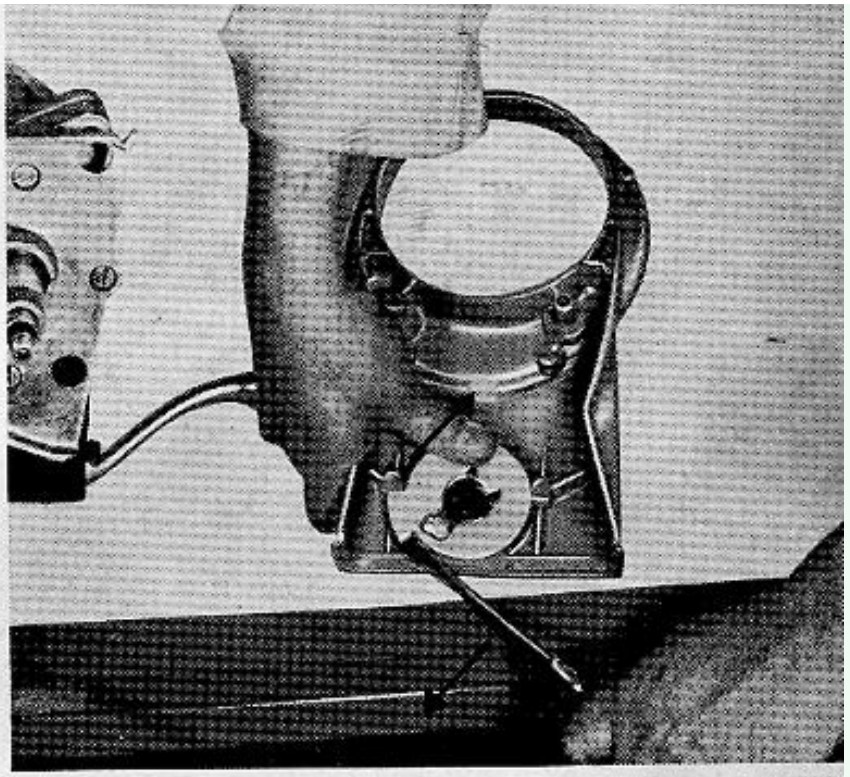


Fig. 93

Take off lever, complete with sleeve and sealing ring from below, lift cover plate with stop up and off. The kickstarter spring can now be replaced (fig. 94).

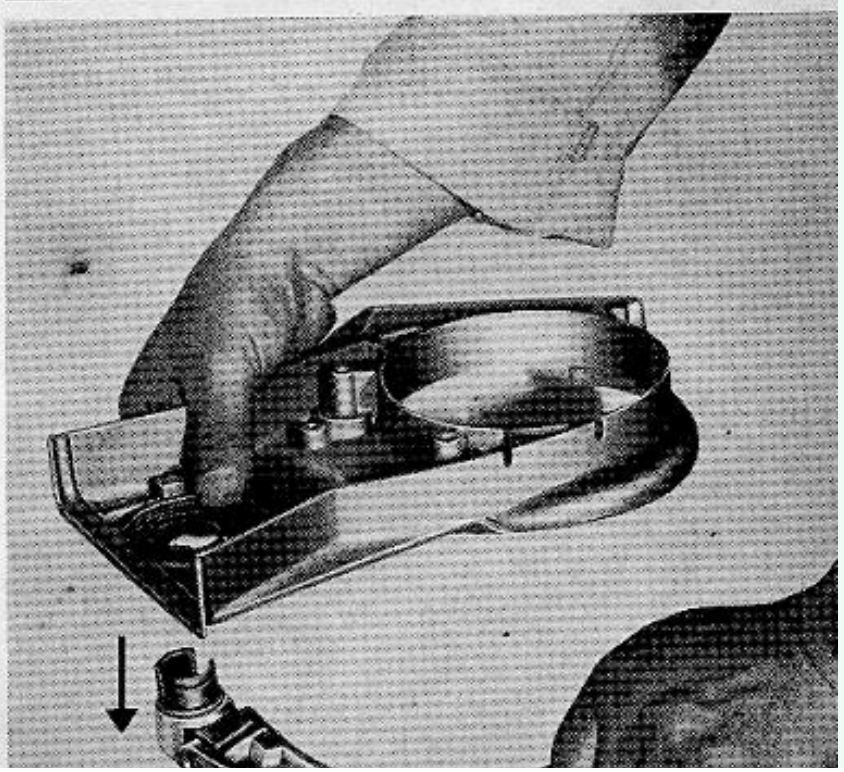


Fig. 94

Fig. 94

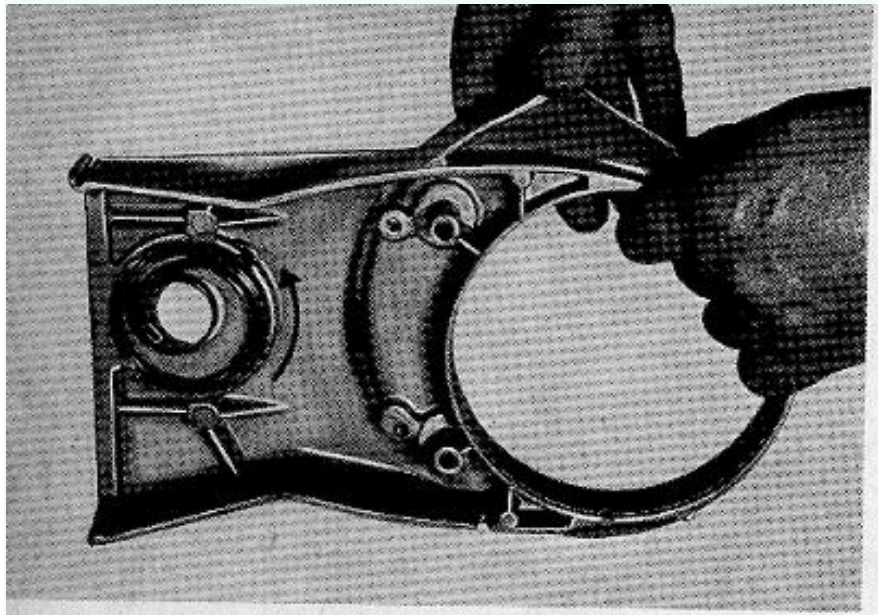


Fig. 95

Assembly of Kickstarter.
If the left-hand casing cover had been completely dismantled, first fit starter spring in such a way that, seen towards the inside of the cover, the spring can be tensioned anti-clockwise. Grease the spring well. Then introduce the small stop nose of the cover plate into the inner spring loop, and fit the sleeve, kick-starter pedal lever facing up, through the plate from the other side; remember checkplate between casing cover and sleeve. Hold the casing cover with one hand, then pre-tension kickstarter spring by turning kickstarter pedal lever through about 1 revolution, until the stop nose lies just in front of the top stop on the casing. Finally, fit the snap ring (fig. 95).

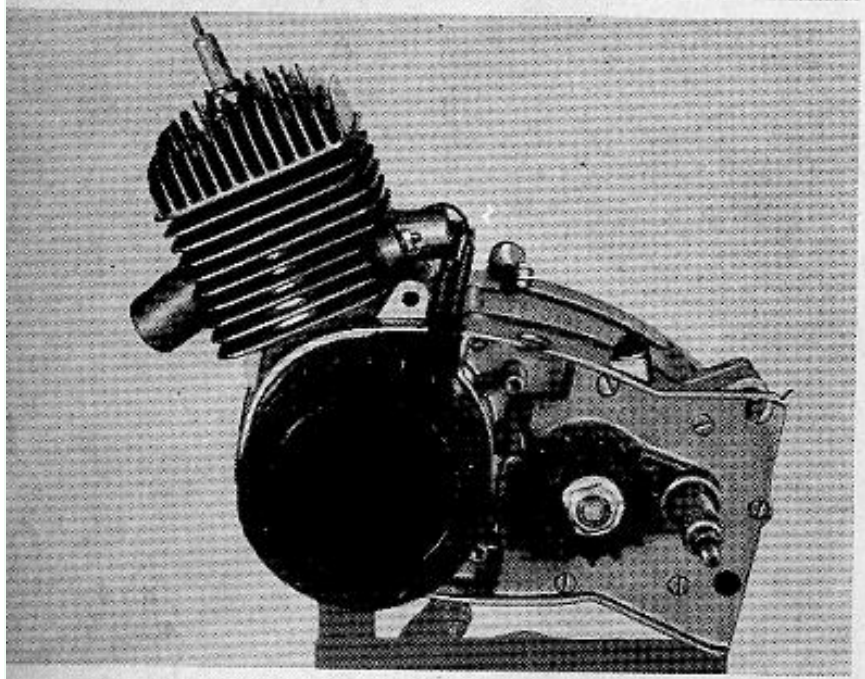


Fig. 96

x) Mounting Fan, Left Casing Cover with Kickstarter and Fan Casing

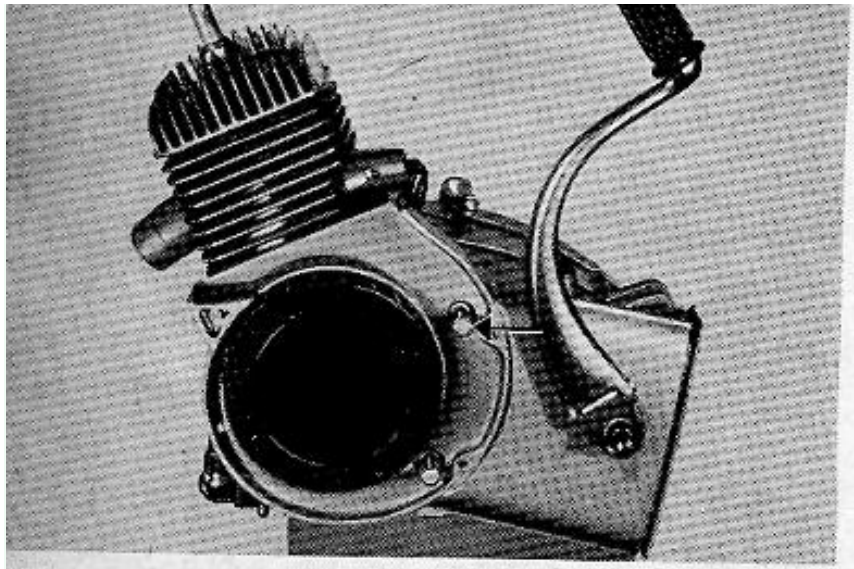


Fig. 97

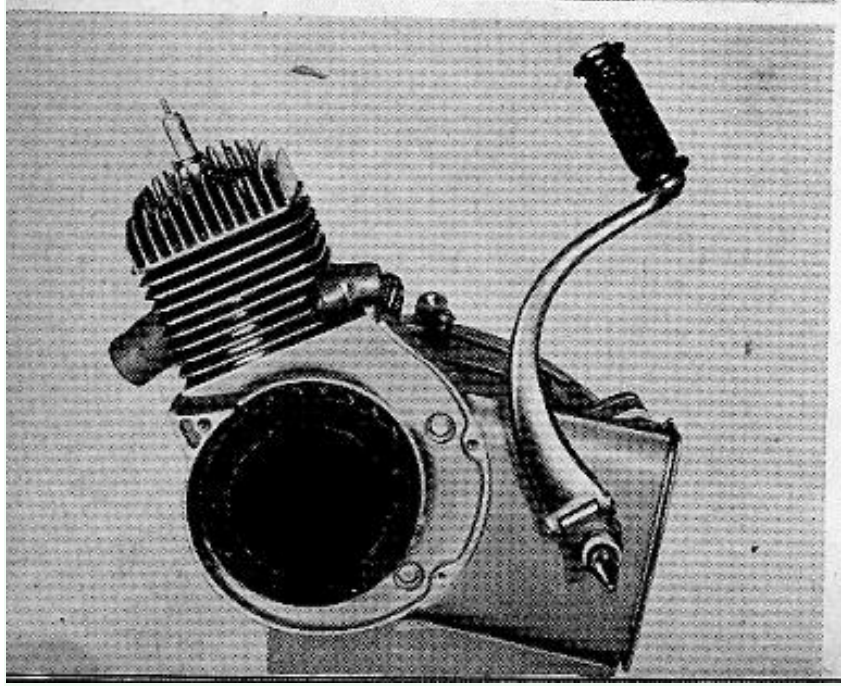


Fig. 98

Fit and bolt fan to flywheel magneto with 4 cylindrical screws, M 5 x 20 (fig. 96).

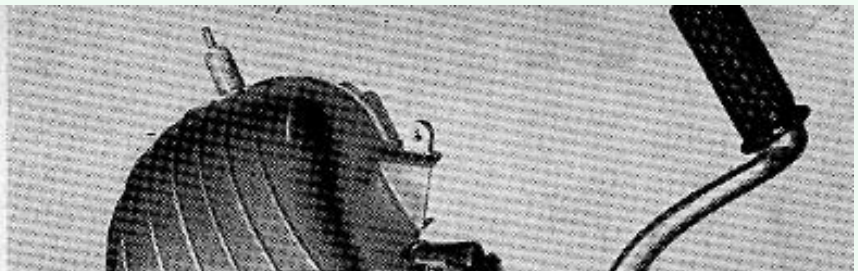
The following can only be carried out after engine has been fitted into frame:

Fit casing cover on left and bolt down with two hexagon bolts, M 6 x 35 (fig. 97).

On air-cooled engines, fit 2 cylindrical bolts, M 6 x 45.

Fit sealing ring of pedal gear change spindle into sleeve of kick-starter, using sleeve MV 6-1563 and hollow punch MV 6-347 (fig. 98).

Mount fan casing, bolting it to the left casing cover with 3 cylindrical screws, M 6 x 45 (fig. 99).



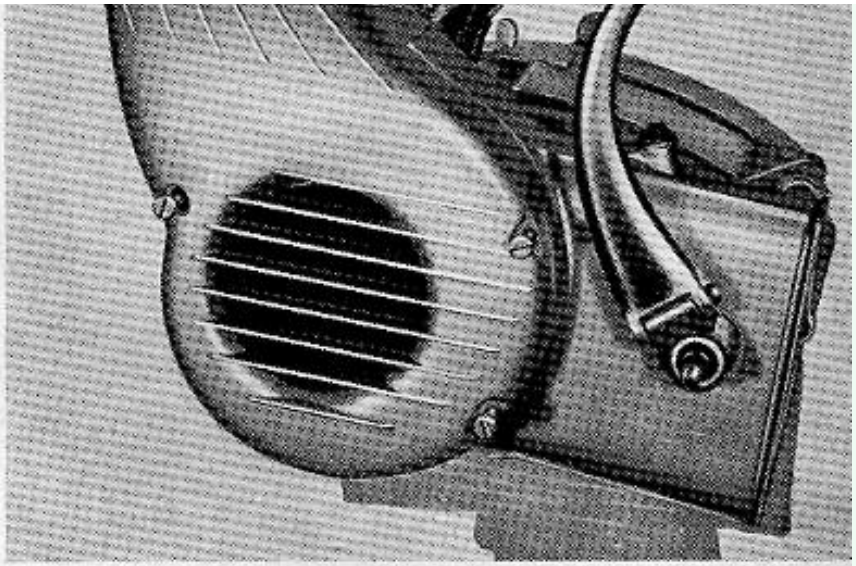


Fig. 99

Bolt on fan cap with 2 cylindrical screws, M 5 x 14.

Note: Check that the 2 rubber buffers are fitted inside the fan cap (fig. 100).

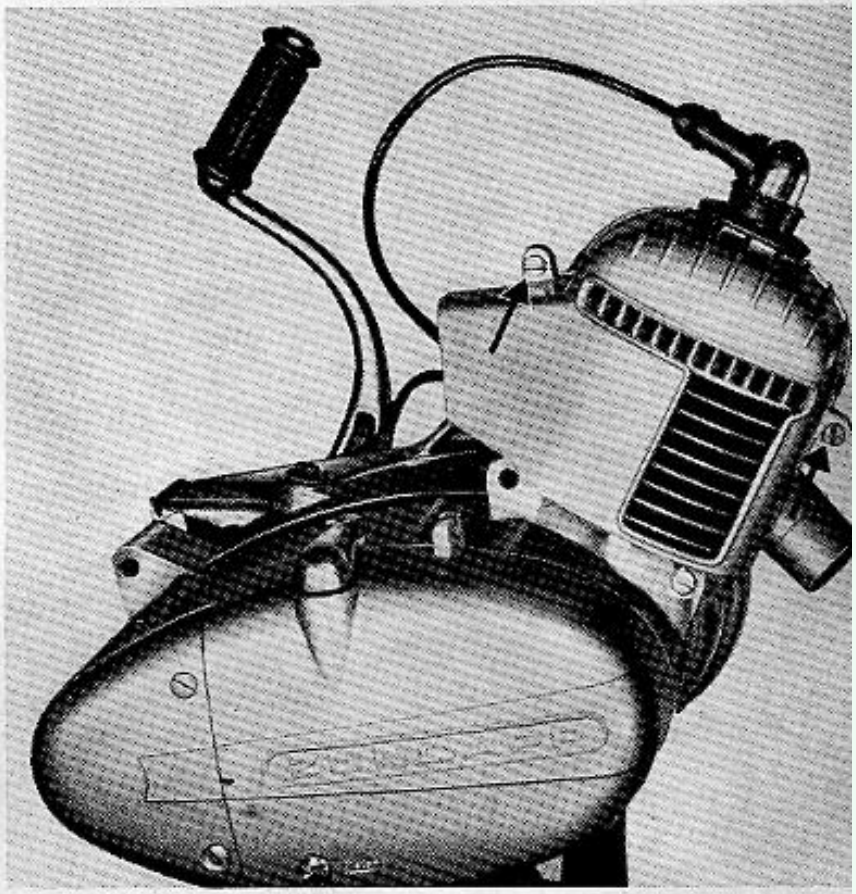


Fig. 100

Fit gear change pedal in this sequence:

Bush (spacer ring)
Lever with pedal
Serrated washer
Hexagon nut
Plastic pedal cover sleeve
(fig. 101).

Refill gearbox with oil, see technical data.

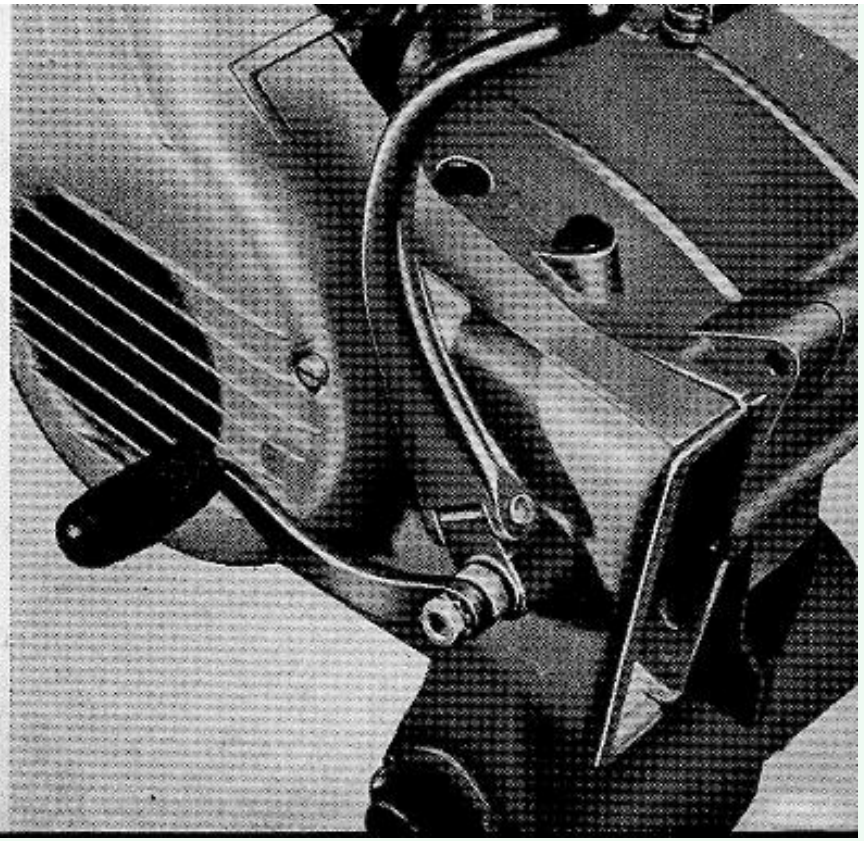
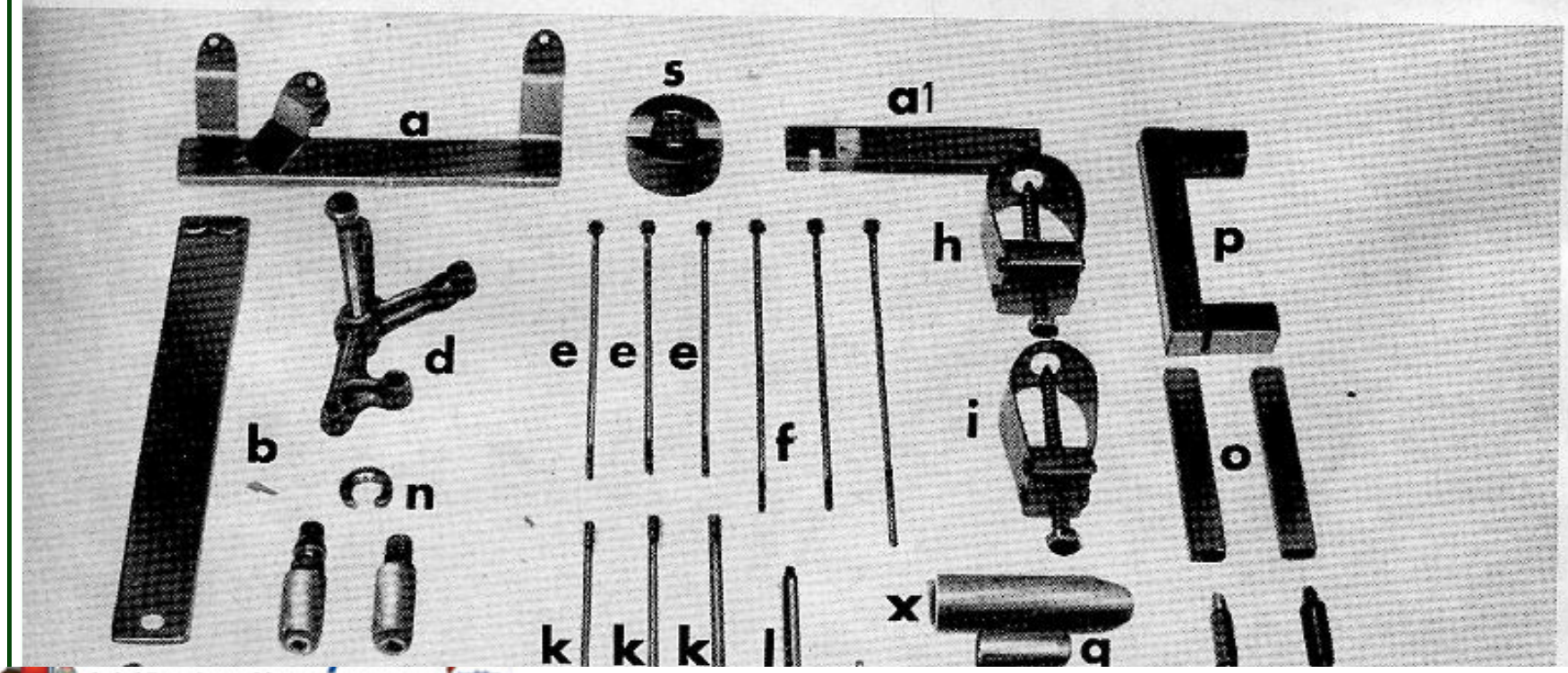


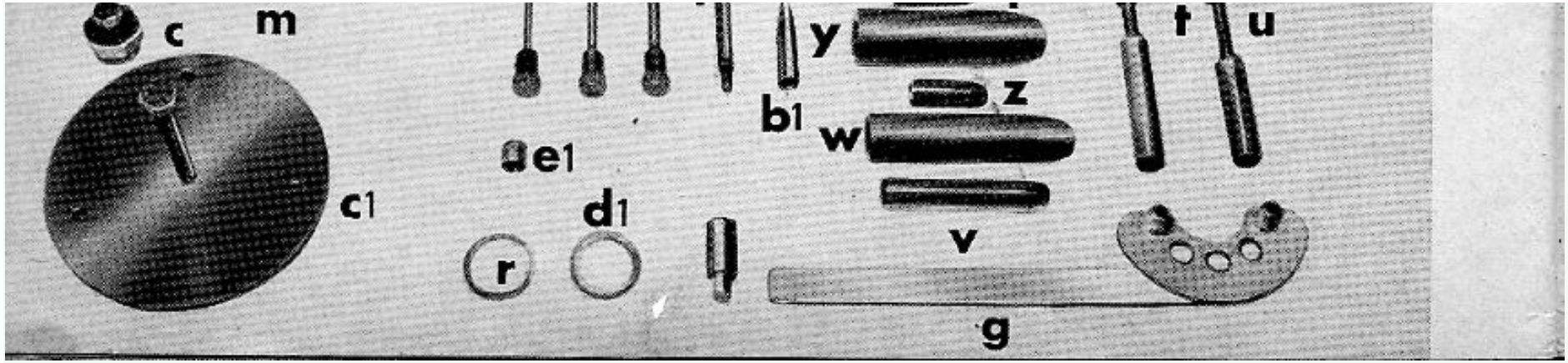
Fig. 101

3. Special Service Tools

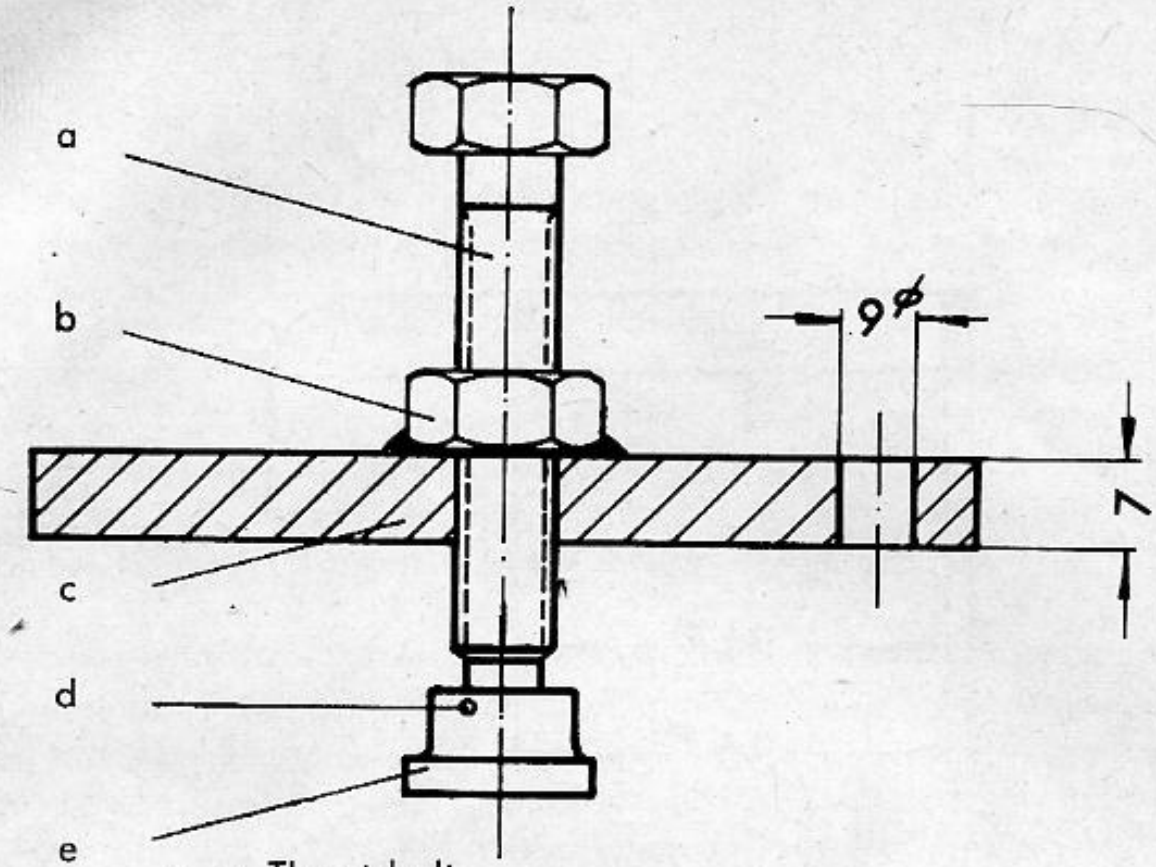
Illustr.	Order No.	Description	For use, see fig. No.
a	SK-A 126	Engine clamping fixture	1-28, 61-96
b	SK-A 251	Flywheel magneto key	7, 8, 91
c	SK-A 263	Press-off bolt	8
d	SK-A 234	Clamp	16, 27, 74
e	SK-A 237	Studs	16, 74
f	SK-A 265	Clamping stud, 8" long	16, 74
g	SK-A 279	Assembly key	17, 73
h	SK-A 64	Press-off tool for gudgeon pin	22
i	SK-A 268	Press-off tool for gudgeon pin, 75 and 100 cc	22
k	SK-A 246	Stud	27, 28, 29
l	SK-A 213	Supporting pin	27, 29, 83
m	SK-A 232	Setting sleeve, 3-speed engines	37, 38
n	SK-A 233	Clamping snap ring	

		Clamping snap ring	37, 38
o	SK-A 161	Gauging bar	39, 40, 63
p	SK-A 206	Gauging yoke, in place of SK-A 161	39, 40, 63
q	SK-A 217	Assembly socket sleeve for selector shaft	44, 61
r	SK-A 138	Spacer ring for driver	60
s	SK-A 125	Ring gauge	62
t	SK-A 163	Mandrel	65
u	SK-A 275	Mandrel, 100 cc	65
v	MV-6-339	Assembly sleeve	44
w	MV-6-347	Hollow punch	34, 98
x	MV-6-961	Hollow punch	61
y	MV-6-734	Hollow punch	61
z	MV-6-960	Mounting sleeve	61
a1	MV-6-115	Aligning bar	64
b1	MV-6-1563	Sleeve	98
c1	to be made in own workshop	Press-off plate	28, sketch on p. 39
d1	to be made in own workshop	Ring for selector shaft	60, sketch on p. 40
e1	to be made in own workshop	Spacer sleeve	37, 38, sketch on p. 40



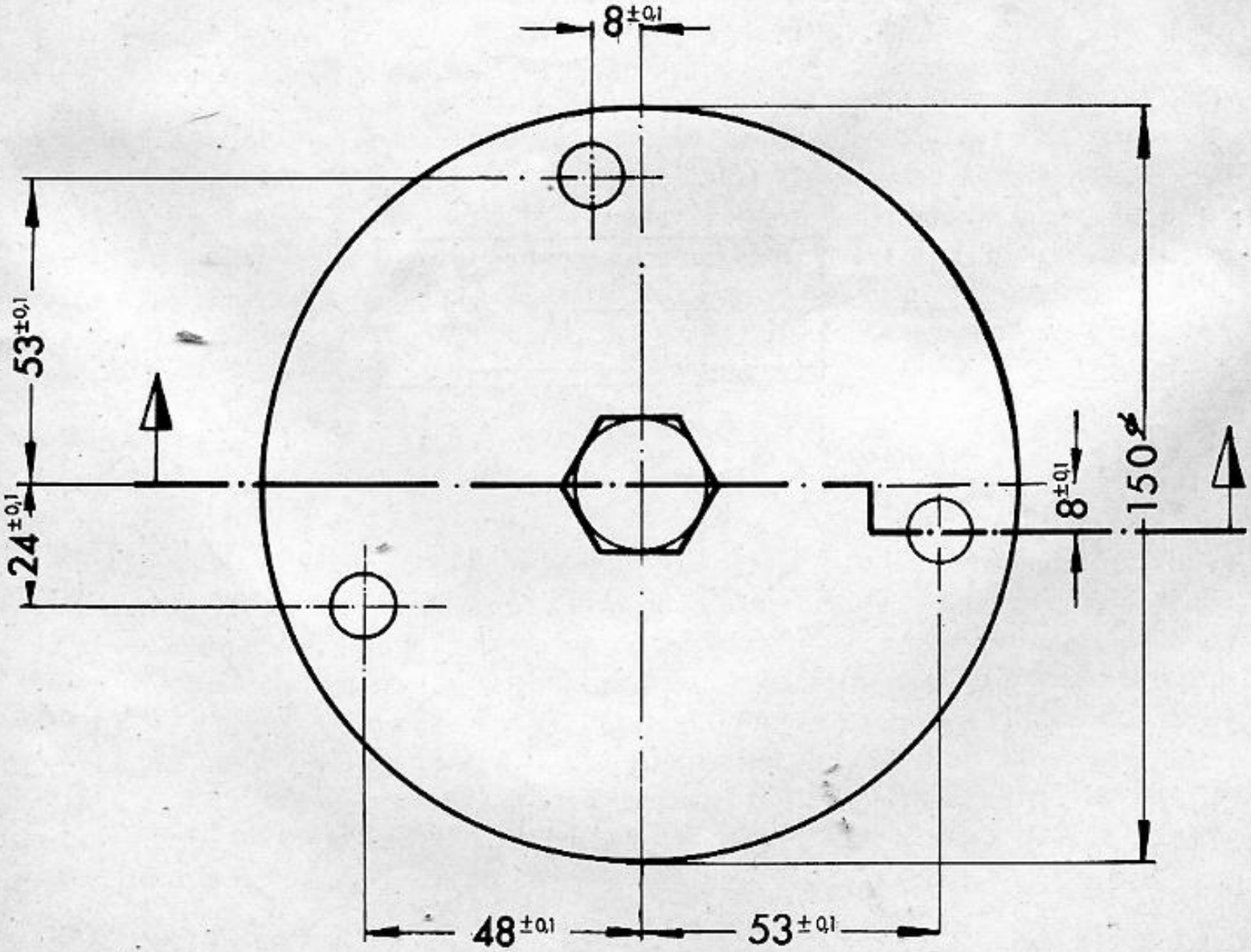


Press-off Plate

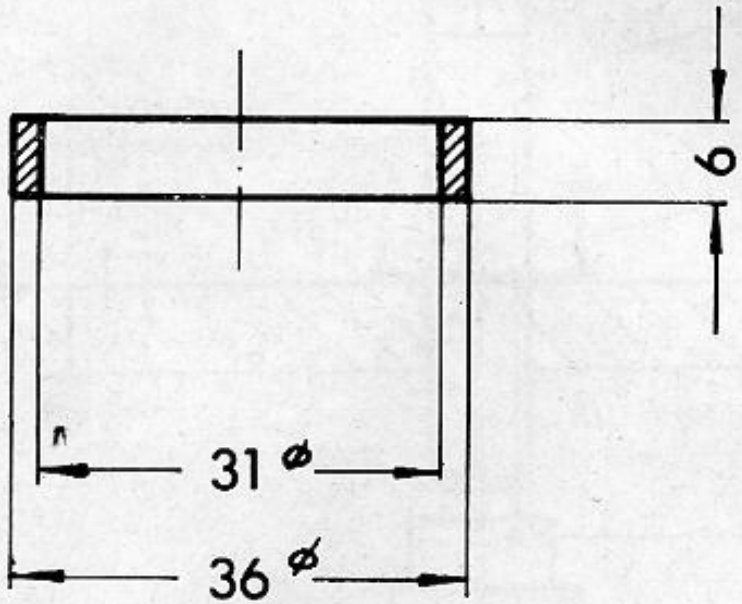


a = Thrust bolt

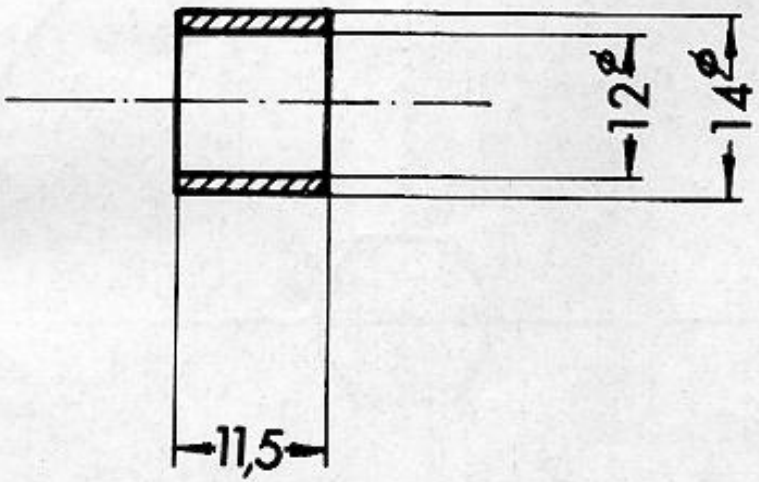
b = Hexagon nut (welded on)
c = Steel grade 37 K
d = Cylindrical pin
e = Pressure pad



Ring for Selector Shaft



Spacer Sleeve



4. BING Carburettors

Operation

The carburettor is designed to supply the engine with the correctly proportioned and thoroughly mixed fuel/air mixture to match any load.

The mixture is prepared in one idling and one main jet system. The idling jet system supplies the engine at the lower speed stages. It consists of the idling fuel jet, the idling air jet and the air adjuster screw. If the air inlet is partially throttled with the adjuster screw, the idling mixture becomes richer, if more air is admitted the mixture becomes leaner. Carburettors on small engines have no separate idling jet system; instead the needle jet system provides the mixtures at all stages.

As engine speed increases, the main jet system comes into action, consisting of main jet, mixing chamber insert or fixed atomiser and needle jet. The exchangeable main jet sits in the nozzle block, screwed from below — or from the side on inclined-jet carburettor designs — into the carburettor housing. On carburettors with fixed atomisers, the main jet is screwed to the lower end of the needle jet. As the main jet system comes into action, the fuel flows via the main jet to the needle jet. The outlet bore of the needle jet is located in the mixing chamber where the preliminary mixing of fuel and air takes place. Here, little fuel, air bubbles form which are then mixed with the main air flow stream and drawn into the engine combustion chamber. A tapered needle, fixed to the throttle slide, controls the available needle jet cross section. Operation of the throttle slide drives the needle further into the jet, thus narrowing the free cross section between needle jet bore and needle, or, vice versa, draws the needle further out and thus increases the cross section.

The needle shank has several grooves, so that the needle can be re-set in relation to the throttle slide. If the setting is altered so as to drive the needle deeper into the bore, the engine is supplied with a leaner mixture. If the needle is set higher on the throttle slide, the available flow cross section increases and, consequently, the mixture becomes richer. The needle setting will only influence fuel consumption under throttle control. With the throttle fully open, fuel consumption is exclusively governed by the main jet.

Fitting Carburettor.

Carburettors must be mounted with special care. They must be positioned accurately vertical and fitted flush and precisely on their connecting socket. The slots of the clamping connecting fitting must on no account admit secondary intake air, otherwise a steady, quiet idling speed cannot be set. Where connecting flanges are provided, use only gaskets in perfect condition and tighten nuts evenly. Fix Bowden cable sleeves without any sharp bend or kinks. Check that throttle slide opens and closes all the way as you operate either lever or twist grip. On carburettors with starter jets, the Bowden cable hooked to the starter piston should have a little play to ensure that the piston provides a reliable seal.

Carburettor Maintenance

From time to time, the carburettor should be rinsed out with petrol and thoroughly cleaned. While this is done, check that all parts are in perfect condition. Replace worn float needles, needle jets and jet needles, as well as throttle slides, since these govern engine performance and fuel consumption. On carburettors with separate starter jet assembly, test that starter piston has tight seal. The air filter should also be rinsed at regular intervals in either kerosene or petrol. After cleaning, coat the filter mesh with oil.

Where a screwed hose union is fitted, take this off, draw out the filter element and clean it, slacken the connector nut and take off float cap. On carburettors with side-mounted float housing, slaken the two screws on the cover, take off the cover, then take float from housing. The float should drop by its own weight from its suspension

take float from housing. The float should drop by its own weight from its suspension on to the bottom of the float cap, so that it can readily be lifted out. The float needle can then be removed after taking off the spring-loaded retaining clip. On some versions, the float lies loosely in the cap. The forked part which prevents the float needle from dropping out can be taken off after its fixing pin has been drawn off. Do not bend the fork piece and check that it lies horizontally in its top position. Never use a sharp, hard tool to clean the needle seat or the jet bores, but merely rinse them out carefully, then blow them out to remove all liquid. Do not tighten the locknut too hard, but run it down by hand only. Use only the original sealing rings for the float cap seal. Take care not to bend the float sealing edge, otherwise the float may become displaced up or down and no longer seal off the float needle. This would lead either to fuel leaks or to a partial or total fuel blockage.

Use only absolutely clean fuel and fill it through a filter into the tank to prevent trouble with the feed system. Before fitting the fuel hose, first allow a little fuel to run through it to drive out all the air and prevent the formation of bubbles and an airlock in the system.

Special Hints

1. The carburettor is one of the most delicate parts of the engine. Handle all parts with great care, run down all threaded connections lightly, never use force to fit any parts of the float into position.
2. Do not use hard, sharp tools to clean the jets. **On no account, enlarge nozzle bores with a reamer or by any other means.**
3. Fit only Original BING spare parts to ensure troublefree operation and a long service life.
4. In all your spare part orders, quote part No. accurately and in full. If the number is not known, quote the carburettor type code, stamped into the casing, or send old part as a sample.

5. BING carburettors will give excellent service at all times, provided standard good-quality branded fuels are used, carburettors are kept clean and only Original BING spare parts are fitted.

Carburettor Setting

Manufacturers of carburettors work out the most suitable design and select the jet sizes in close collaboration with the engine makers. They also specify the setting which tests have shown to give best performance and maximum economy. It is, therefore, inadvisable to depart from their specifications

Idling

Idling speed should always be set or regulated while the engine is warm. With the adjuster screw, close the throttle slide until the engine just ticks over slowly and steadily. On carburettors without separate idling speed system, the needle jet assembly supplies the amount of fuel required for idling speed. Carburettors with separate idling speed system work as follows:

The air adjuster screw controls the ratio of the fuel/air mixture supplied by the idling speed system. By turning the adjuster clockwise, the mixture becomes richer, by turning anti-clockwise, it becomes leaner. The setting is correct when the engine ticks over quietly and evenly. As soon as it does, do not alter the air adjuster setting again, since this also governs the lower and medium speed range, so that any further adjustment might increase fuel consumption.

When the throttle is slowly opened out, the engine should steadily rev up. It should

neither splutter nor should the speed drop back again at any throttle setting. If the engine splutters or speed rises in surges, or if black fumes escape from the exhaust silencer, the mixture has been made too rich. If the engine coughs or cuts out for brief moments, if a blue flame blows back from the carburettor, or if the engine is difficult to start, the mixture has been set too lean.

Driving Speed Range

In order to determine the most suitable main jet for a carburettor, first take the machine on a straight, level road and find out its maximum speed by the speedometer or with a stop watch. Generally, the main jet which will produce the highest speed on a level road will be the most suitable for any machine. But if on long continuous runs at full throttle the engine starts knocking due to overheating, select the next larger jet size.

In the medium speed range, carry out fine settings between two needle jet sizes by means of the needle. By setting the needle higher, the mixture will become richer and vice versa.

Note that needle position only affects the mixture ratio in the lower and medium speed ranges, not for driving at full throttle. If the carburettor is correctly set, the insulator of the spark plug will show an even brown combustion coating. A spark plug coated with black coking residues or wet to the touch is a sure sign that the mixture is too rich, a white insulator shows that it is too lean.

Always remember that only correct carburettor setting guarantees maximum running economy.

Starter Systems

To start a cold engine needs a specially enriched fuel mixture. To supply this, many carburettors have a separate starting system.

Starter Air Shutter (see carburettor for R 50 and RS 50)

On some carburettor types, the starting aid consists of a pivoted shutter in the filter chamber, operated by Bowden cable. When the starter knob is pulled, the shutter substantially narrows the carburettor cross section, so that the mixture will become rich enough to start a cold engine.

Starter Air Slide (see carburettors for KS 50 Super, Sport-Combinette and Super-Combinette 433)

With these designs, the engine is started from cold as follows: Close throttle slide all the way, and with the pressure pin and knob, press the starter slide down. As you start, pull out throttle about one-third to one-half of the way to a clearly perceptible stop. Once the engine has come to life, leave the throttle in this intermediate position, until the engine has run itself warm. Then open throttle all the way, and this will also raise the starter slide to its end position where it engages. If on starting you inadvertently pull out the throttle too far so that it overrides the stop and takes the starter slide with it, so that the knob jumps back again, press the starter knob once more.

Starter-Jet Carburettors (see carburettor for KS 100)

On these designs, a cylindrical starter-jet housing is arranged next to the main housing, whose piston is operated by Bowden cable. In its top position, the piston uncovers the port which admits starting air from the filter socket and the starting fuel mixture port leading to the carburettor intake socket. Fuel enters from below through the starter jet into this housing, which generally also has a storage chamber.

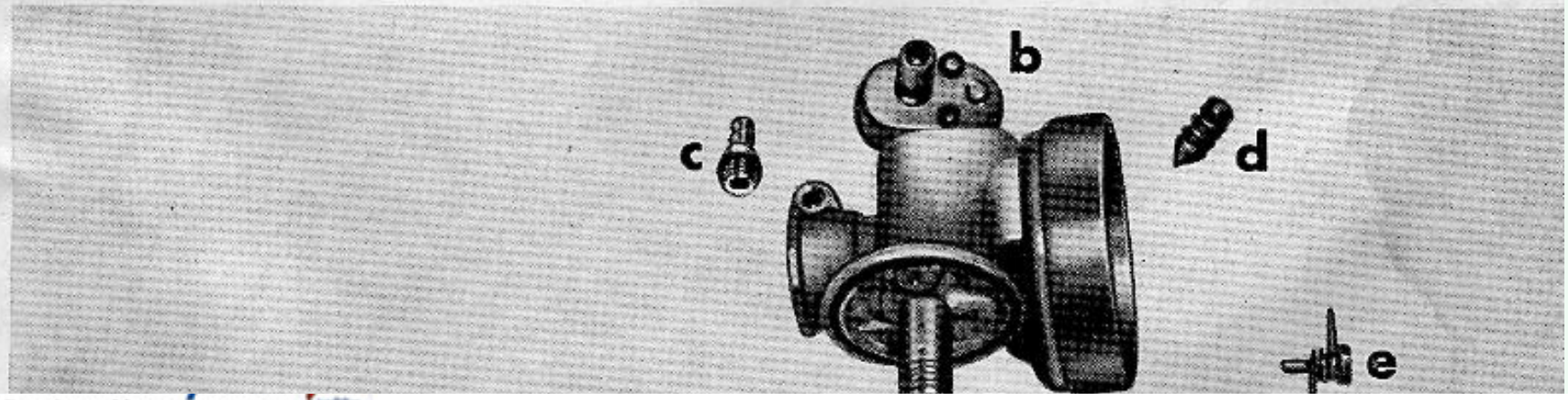
When the engine is started from cold, the piston is raised, while the throttle slide remains closed. The fuel is first drawn from the storage chamber and when this is empty, through the starter jet. It is then mixed with the starting intake air to produce at first a very rich mixture which becomes gradually leaner as it flows directly into the intake socket of the carburettor and from there to the engine. Once the engine has run itself warm, shut off the starter piston.

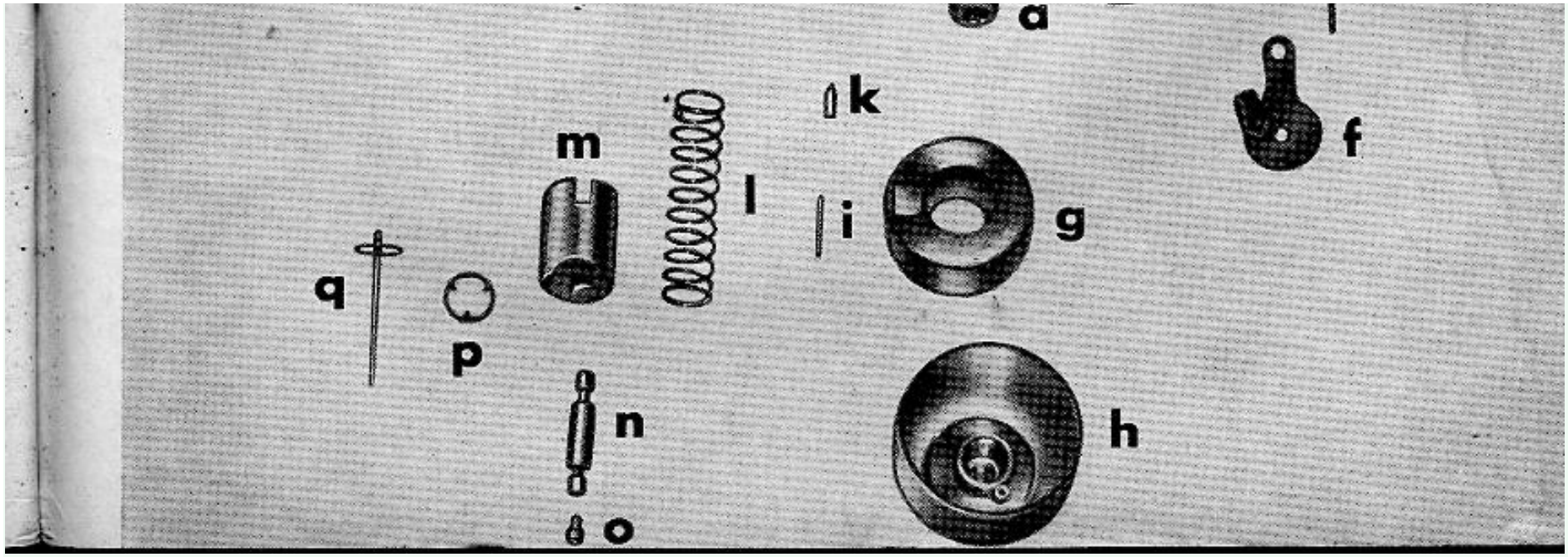
Carburettor for Engines 267, 276 (R 50, RS 50)

a) Carburettor housing

b) Cover plate

c) Hose union with sealing ring
d) Adjuster screw with spring
e) Collared screw with spring
f) Starter shutter
g) Float
h) Float cap
i) Pin
k) Float needle
l) Slide spring
m) Throttle slide
n) Needle jet
o) Main jet
p) Washer
q) Jet needle with locating plate

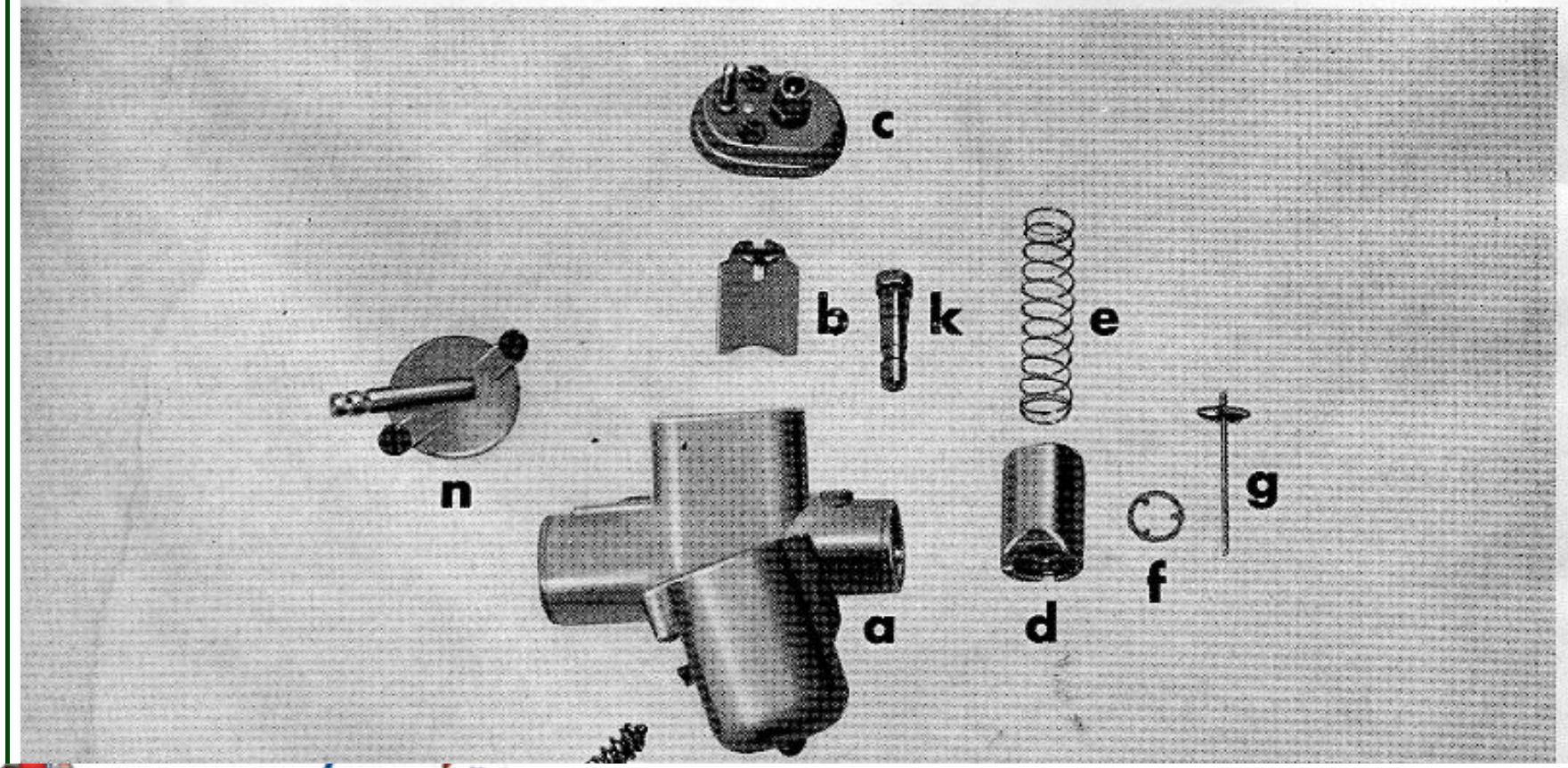




Carburettors for Engines 267, 276
(KS 50 Super, Sport-Combinette and Super-Combinette 433)

a) Carburettor housing
b) Starter slide
c) Cover plate
d) Throttle slide
e) Slide spring
f) Washer
g) Jetneedle with locating plate

h) End plug with sealing ring
i) Needle jet
k) Main jet
l) Adjuster screw with spring
m) Float with float needle
n) Float housing cover



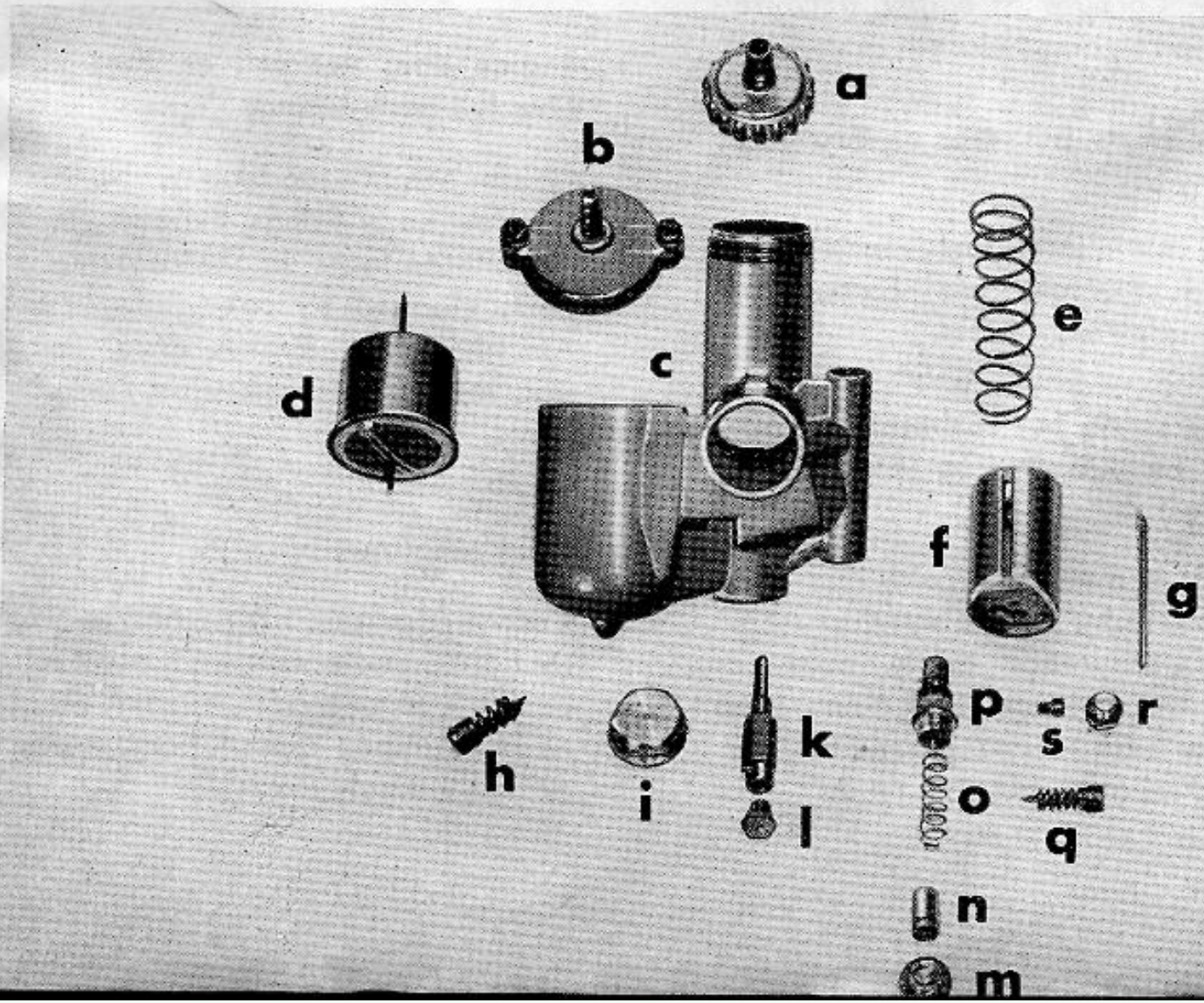
Carburettors for Engines 281 (KS 100)

a) Cover plug
b) Float housing cover
c) Carburettor housing
d) Float with float needle
e) Slide spring
f) Throttle slide
g) Jet needle
h) Adjuster screw with spring
i) End plug with sealing ring
k) Needle jet
l) Main jet
m) Screw with sealing ring
n) Starter piston
o) Spring
p) Adjuster screw with nut

q) Air control screw with spring

r) Screw with sealing ring

s) Idling jet



Troubles, and their Causes

1. **Engine will not start**

   Cause: Fuel tap not opened, starter aid not operated when starting from cold. Jets clogged. Carburettor flooded (engine drowned). Ignition not switched on. Spark plug defective, spark too weak. Spark (electrode) gap on plug too large, spark plug short-circuited, gap clogged by dirt water or oil.

2. **Engine chokes back on starting**

   Cause: Ignition timing set too early

3. **Engine starts badly**

   Cause: Mixture too lean (operate starting aid). Idling jet clogged. Spark plug dirty or oily; spark gap too large or too small (weak spark). Water in fuel.

4. **Engine starts, but stops again after short run**

   Cause: Carburettor empty, because fuel tap remained closed

5. **Engine starts, but stops on throttling**

7. **Engine starts, but runs irregularly and splutters on throttling up**

   Cause: Mixture too rich (fit smaller jets, alter needle setting of throttle slide). Air filter dirty. Float overflows. Ignition cuts out. Spark plug oily or coked up. Starter piston not completely closed (high fuel consumption).

8. **Engine runs properly, but exhaust backfires**

   Cause: Ignition cuts out. Mixture too lean.

9. **Engine knocks or pinks**

   Cause: Too many early firings, fuel is not of anti-knock grade. Excessive compression. Glowing coke deposits or parts of overheated spark plug produce faulty ignition. Main jet too small.

10. **Engine does not pull or does not give full performance**

up

Cause: Main jet or fuel line clogged, engine still too cold, carburettor badly adjusted.

6. **Engine starts, but carburettor "spits back" on throttling up (coughs and sneezes)**

Cause: engine very cold, fuel mixture too lean. Jet too small or clogged. Carburettor badly adjusted (poor transitions). Too many late firings. Suction intake line leaks or air enters at carburettor union.

Cause: Mixture too lean or too rich. Too few early firings. Exhaust clogged. Piston leaks. Intake or exhaust ports clogged by coking deposits. Air filter dirty. Brakes drag. Friction losses in transmission components.

11. **Float overflows**

Cause: Foreign body carried in fuel to float needle seat and obstructs needle operation. Float leaks. Float needle jumped out of float spring or was wrongly mounted.

5. Technical Data

Machine Model	Super-Co. 433-002	Super-Co. 433-004	Super-Co. 433-022	Sport-Co. 515-003	Sport-Co. 515-004	Sport-Co. 515-041
Engine Model	267-003	267-004	267-031	267-001	267-002	267-032

Cubic Capacity	50	50	49,9	50	50	49,9
Bore/Stroke	39/41,8	39/41,8	39/41,8	39/41,8	39/41,8	39/41,8
Compression	8,5:1	8,5:1	8,5:1	8,5:1	8,5:1	8,5:1
Capacity, h. p.	2,6	2,6	2,6	2,6	2,6	2,6
R. P. M.	4500	4600	4830	4550	4600	4850
Mode of Operation	2-stroke	2-stroke	2-stroke	2-stroke	2-stroke	2-stroke
Gearbox Oil	SAE 80	SAE 80	SAE 80	SAE 80	SAE 80	SAE 80
Gearbox capacity, cc	350	350	350	350	350	350
Petroil mixture	1:25	1:25	1:25	1:25	1:25	1:25
Oil grade for petroil mixture	SAE 40 2-stroke oil or engine oil	SAE 40 2-stroke oil or engine oil	2-stroke oil or SAE 40 engine oil	2-stroke oil or SAE 40 engine oil	2-stroke oil or SAE 40 engine oil	2-stroke oil or SAE 40 engine oil
Rated fuel consumption per 100 km	1,6 l	1,6 l	1,6 l	1,6 l	1,6 l	1,6 l
Carburettor Model Code	1/16/60	1/16/60	1/16/60	1/16/60	1/16/60	1/16/60
Cross section	16	16	16	16	16	16
Main Jet	70	70	70	68	68	70
Needle Jet	2,20	2,20	2,20	2,17	2,17	2,20
Needle setting, stop from top	3	3	3	3	3	3
Idling Jet	–	–	–	–	–	–

Air Adjuster Screw	–	–	–	–	–	–
Electrical System	Bosch 6 V/23 W	Bosch 6 V/23 W	Bosch 6 V/23 W	Bosch 6 V/23 W	Bosch 6 V/23 W	Bosch 6 V/23 W
Ignition timing, before TDC	1,8 mm	1,8 mm	1,8 mm	1,8 mm	1,8 mm	1,8 mm
Contact Breaker Gap	0,35-0,45	0,35–0,45	0,35–0,45	0,35–0,45	0,35–0,45	0,35–0,45

ort-Co.	KS 50 Super	KS 50 Super	KS 50 Super	KS 100	Scooter R 50	Scooter RS 50
-041	515-002	515-061	515-061	514-320	561-003	561-004/06
-032	276-002	276-026	276-026	281-320	267-020	276-010 276-44
9	50	49,9	49,9	98	49,9	49,9
41,8	39/41,8	39/41,8	39/41,8	50/50	39/41,8	39/41,8
:1	8,5:1	9:1	9:1	9:1	9:1	9:1
	4,2	4,6	4,8	8,2	2,6	4,6

0	7200	6900	7500	6340	4500	7000
troke	2-stroke	2-stroke	2-stroke	2-stroke	2-stroke	2-stroke
E 80	SAE 80	SAE 80	SAE 80	SAE 80	SAE 80	SAE 80
)	350	350	350	450	350	350
5	1:25	1:25	1:25	1:25	1:25	1:25
troke oil or E 40 gine oil	2-stroke oil or SAE 40 engine oil	2-stroke oil or SAE 40 engine oil	2-stroke oil or SAE 40 engine oil	2-stroke oil or SAE 40 engine oil	2-stroke oil or SAE 40 engine oil	2-stroke oil or SAE 40 engine oil
l	2,3 l	2,6 l	2,6 l	2,7 l	2,3 l	2,5 l
6/60	1/17/61	1/17/64	1/17/76	1/22/41	1/16/63	1/17/62
	17	17	17	22	16	17
	82	84	82	100	68	70
)	2,24	2,24	2,15 A	2,64	2,20	2,15 A
	2	3	2	3	3	2
	–	–	–	35	–	35
	–	–	–	1½-2½ U.	–	–
sch /23 W	Bosch 6 V/34 W	Bosch 6 V/34 W	Bosch 6 V/34 W	Bosch 6 V/34 W	Bosch 6 V/18+5 W	Bosch 6 V/29+5 W
mm	1,8 mm	1,1 mm	1,1 mm	1,8–2,0 mm .07-.08	1,8 mm	1,1 mm
5–0,45	0,35–0,45	0,35–0,45	0,35–0,45	0,35–0,45 .015	0,35–0,45	0,35–0,45

5. Technical Data

Machine Model	Super-Co. 433-002	Super-Co. 433-004	Super-Co. 433-022	Sport-Co. 515-003	Sport-Co. 515-004	Sport-Co. 515-041
Engine Model	267-003	267-004	267-031	267-001	267-002	267-032
Spark Plug	W 225 T 1 225/14 u 2	W 225 T 1 225/14 u 2	W 225 T 1 225/14 u 2	W 225 T 1 225/14 u 2	W 225 T 1 225/14 u 2	W 225 T 1 225/14 u 2
Spark Gap	0,5	0,5	0,4	0,5	0,5	0,4
Headlight Bulb	6 V/15 W	6 V/15 W	6 V/15 W	6 V/15 W	6 V/15 W	6 V/15 W
Rear Light Bulb	6 V/3 W	6 V/3 W	6 V/3 W	6 V/3 W	6 V/3 W	6 V/3 W
Brake Light Bulb	6 V/5 W	6 V/5 W	6 V/5 W	6 V/5 W	6 V/5 W	6 V/5 W
Flashing Direction Indicators	–	–	–	–	–	–
Signal	Bell	Bell	Bell	Bell	Bell	Bell
Gear Ratios:						
1st Gear	1:2,470	1:2,470	1:2,470	1:2,470	1:2,470	1:2,470

2nd Gear	1:1,476	1:1,476	1:1,476	1:1,476	1:1,476	1:1,476
3rd Gear	1:0,962	1:0,962	1:0,962	1:0,962	1:0,962	1:0,962
4th Gear	-	-	-	-	-	-
Overall Transmission Ratio						
1st Gear	1:36,9	1:36,9	1:36,9	1:36,9	1:36,9	1:36,9
2nd Gear	1:22,1	1:22,1	1:22,1	1:22,1	1:22,1	1:22,1
3rd Gear	1:14,45	1:14,45	1:14,45	1:14,45	1:14,45	1:14,45
4th Gear	-	-	-	-	-	-
Primary Reduction	1:4,33	1:4,33	1:4,33	1:4,33	1:4,33	1:4,33
Clutch	Multi-plate Oilbath Type	Multi-plate Oilbath Type	Multi-plate Oilbath Type	Multi-plate Oilbath Type	Multi-plate Oilbath Type	Multi-plate Oilbath Type

Co.	Sport-Co.	KS 50 Super	KS 50 Super	KS 50 Super	KS 100	Scooter R 50	Scooter RS 50
	515-041	515-002	515-061	515-061	514-320	561-003	561-004/06
	267-032	276-002	276-026	276-026	281-320	267-020	276-010 276-44
T 1 u 2	W 225 T 1 225/14 u 2	W 260 T 1 260/14 u 2	W 260 T 1 260/14 u 2	W 260 T 1 260/14 u 2	W 260 T 1 260/14 u 2	W 225 T 1 225/14 u 2	W 260 T 1 260/14 u 2
	0,4	0,5	0,4	0,4	0,4 .815	0,4	0,4
W	6 V/15 W	6 V 25/25 W	6 V 25/25 W	6 V 25/25 W	6 V 25/25 W	6 V/15 W	6 V 25/25 W
/	6 V/3 W	6 V/3 W	6 V/3 W	6 V/3 W	6 V/5 W	6 V/3 W	6 V/3 W
/	6 V/5 W	6 V/5 W	6 V/5 W	6 V/5 W	6 V/5 W	6 V/5 W	6 V/5 W
	-	-	-	-	6 V/18 W	-	-
	Bell	Buzzer	Buzzer	Buzzer	Horn 17 W	Bell	Buzzer
	1:2,470	1:3,636	1:3,636	1:3,636	1:3,636	1:2,466	1:3,636
	1:1,476	1:2,058	1:2,058	1:2,058	1:2,058	1:1,476	1:2,058
	1:0,962	1:1,363	1:1,363	1:1,363	1:1,363	1:0,961	1:1,363
	-	1:1,080	1:1,080	1:1,080	1:1,080	-	1:1,080
	1:36,9	1:35,4	1:35,4	1:35,4	1:26,00	1:26,69	1:26,84

	1:22,1	1:20,1	1:20,1	1:20,1	1:14,75	1:15,97	1:15,19
	1:14,45	1:13,2	1:13,2	1:13,2	1:9,77	1:10,41	1:10,06
	–	1:10,5	1:10,5	1:10,5	1:7,74	–	1:7,97
	1:4,33	1:4,33	1:4,33	1:4,33	1:2,785	1:4,33	1:4,33
late h Type	Multi-plate Oilbath Type	Multi-plate Oilbath Type	Multi-plate Oilbath Type	Multi-plate Oilbath Type	Multi-plate Oilbath Type	Multi-plate Oilbath Type	Multi-plate Oilbath Type