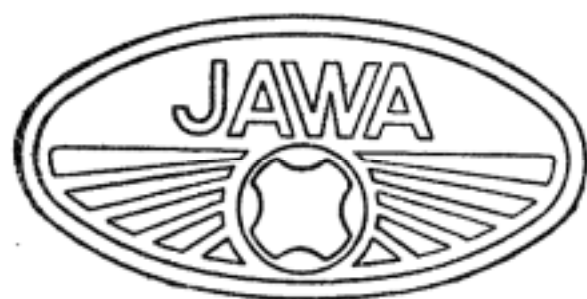


ULTRA LIGHTWEIGHT MOTOR CYCLE



50 c. c. — 550 model

SPECIFICATION AND OPERATOR'S MANUAL

| | |
|-------------------|--------------------------|
| Model | 550 |
| Cylinder capacity | 49,8 c. c. |
| Bore | 38 mm |
| Stroke | 44 mm |
| Engine output | 1,6 BHP at 5000 r. p. m. |

The Ultra-Lightweight motor cycle which you have bought, is the lightest motor cycle of our production. The most up-to-date design of this machine is a guarantee of its reliability, riding comfort and easy handling.

This manual will help you to become acquainted with your mount, to know its components and their operation. It will advise you on maintenance and how to remove possible minor defects. In your own interest rely on the manual for information, so as to prevent accidental damage to your machine!

Accept our best wishes for thousands of pleasant and joyful miles with your new model.

JAWA

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I. SPECIFICATION AND RIDING INSTRUCTIONS

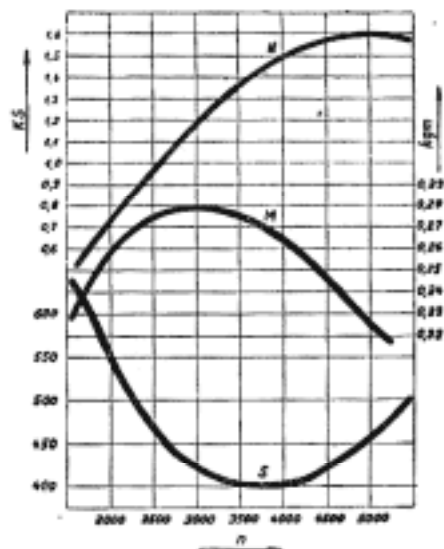


Fig. 1. — Diagram of engine output and fuel consumption with regard to r. p. m.

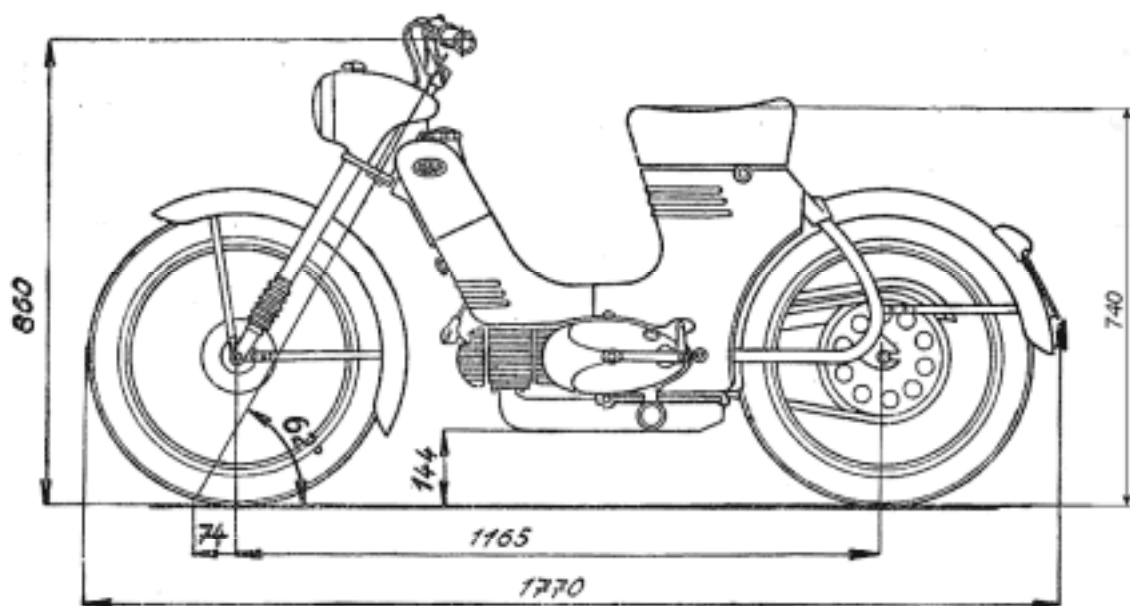


Fig. 2. — Dimensions of the motor cycle.

I. TECHNICAL DATA

| | |
|--|----------------------------|
| Engine | two-stroke air-cooled |
| Number of cylinders | one |
| Bore | 38 mm |
| Stroke | 44 mm |
| Cylinder capacity | 49,8 c. c. |
| Compression ratio | 6,1 to 1 |
| Engine output | 1,6 BHP at 5000 r. p. m. |
| Fuel tank capacity | 6¼ pts |
| Maximum speed | 28 m. p. h. (45 km p. h.) |
| Maximum climbing ability | 32% |
| Weight — dry | 104 lbs |
| inc. fuel | 111 lbs |
| Carrying capacity (payload) | 290 lbs |
| Weight of fully loaded machine | 390 lbs |
| Front wheel spindle maximum load | 150 lbs |
| Rear wheel spindle maximum load | 248 lbs |
| Primary drive by 9,5X5,8 in. chain | 44 links |
| Final drive by 12,7X5,2 in. chain | 111+1 links |
| Primary and final drive ratios: | |
| Primary | 2,43 to 1 (34/14 T) |
| Final | 3,93 to 1 (55/14 T) |
| Bottom gear | 2,94 to 1 (24/14X24/14 T) |
| Second gear | 1,716 to 1 (24/14X19/19 T) |
| Third gear | 1 to 1 (direct) |
| Overall gear ratios: | |
| Bottom gear | 28,1 to 1 |
| Second gear | 16,4 to 1 |
| Third gear | 9,54 to 1 |
| Overall kick starter ratio | 7,74 to 1 |
| Internal expanding brakes | dia 100/20 mm |
| Braking distances from 25 m. p. h. (40 km p. h.) handbrake | 100 ft (30,8 m) |
| both brakes applied | 50 ft (15,4 m) |
| Front wheel suspension | by telescopic fork |
| Full front wheel suspension stroke | 3½ in. (90 mm) |
| Rear wheel suspension | by pivoted rear fork |
| Full rear wheel suspension stroke | 1,9 in. (50 mm) |
| Carburettor | Jikov 2912 |
| Wheels — size of rim | 1,5X2 in. |
| size of tyres | 2,5X16 in. |

2. DESCRIPTION OF MOTOR CYCLE

The Ultra Lightweight 50 c. c. — model 550 is a solo motor cycle suitable for carrying one person. It is of modern simple design, light construction and graceful appearance.

The power unit is a two-stroke, air-cooled petrol engine with inverted scavenging. The engine is well balanced within its extent of revolutions (runs without vibrations), has a quiet run and is capable to perform at maximum output for long periods of time.

The exhaust silencer can be dismantled and ensures efficient damping of noise. The exhaust pipe is down swept.

The one-plate clutch runs in an oil bath. The cork lined clutch plate forms the chain wheel of the primary transmission. The clutch is controlled by hand lever on the L. H. side of the handlebars.

The gearbox forms a unit with engine block. The three gears are suitably selected both for flat and hilly ground.

The gear shifting is foot operated by means of a lever on the L. H. side of the engine.

The power transmission is by means of chains. The primary chain is fully enclosed by the L. H. crankcase cover and runs in an oil bath. The secondary chain is on the R. H. side of the motor cycle and is partially protected by a cover. The carburettor Jikov 2912 is enclosed by the main frame tube cover. Choke diameter 12 mm, main jet 55 with air cleaner 70. The throttle valve is controlled by a cable from the twist grip on the R. H. side of the handlebars. The carburettor is fitted with an air cleaner dia 70 forming an effective intake damper at the same time.

The wheels are easily detachable — both the front and rear wheel spindles are of the knock-off type.

The rear wheel brake is right foot operated, the front wheel brake is right hand operated. Both brakes are highly efficient and can be adjusted without tools.

The frame is open (without top frame tube), of simple sturdy construction, with pivoted rear fork. The open frame type makes mounting of the machine easy and enables women to ride in normal clothes.

The fuel tank is a steel sheet pressing. Capacity 6½ pts, a fuel reserve of approx. 1 pt is secured by a two position fuel tap with fuel filter.

The seat has a foam rubber insert. It is very comfortable, hinged and the space underneath serves for tools, tyre inflator, battery and odd necessities.

The footrests are fitted to the frame by means of a bracket. Their position will suit every rider.

The front suspension consists of telescopic fork of simple design. Its stroke is sufficient (90 mm).

The rear suspension consists of pivoted rear fork, sprung by a central spring enclosed in the cover under the seat. The rear wheel operates on a circular path — maximum stroke 50 mm.

The stand is fitted on the bottom of the engine block and ensures stability of the motor cycle on firm, level ground.

It is not, however dimensioned for the rider's weight. While the motor cycle is on the stand do not sit on it and do not start the engine.

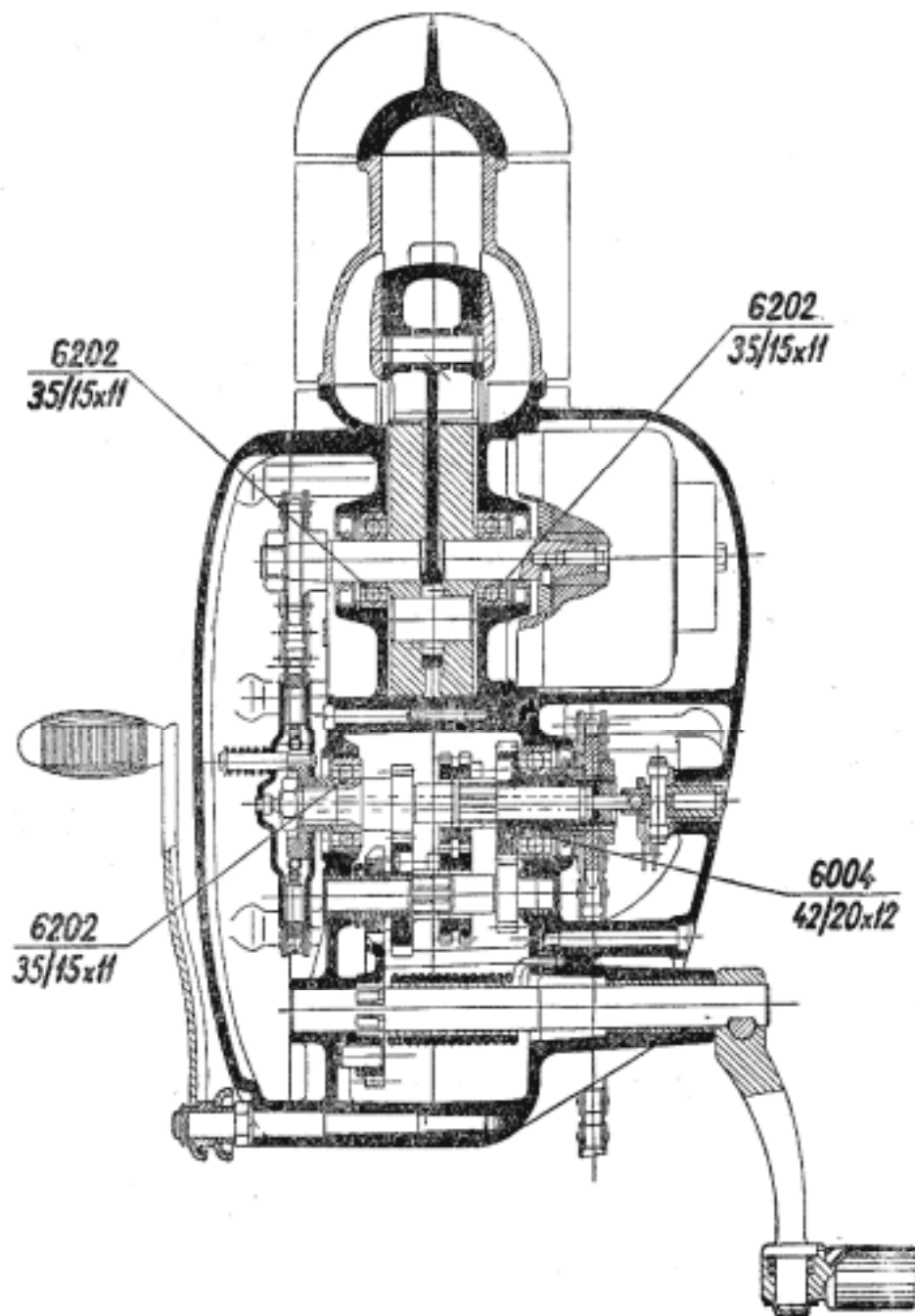


Fig. 3. — Engine 50 c. c. — model 550 — sectional view.

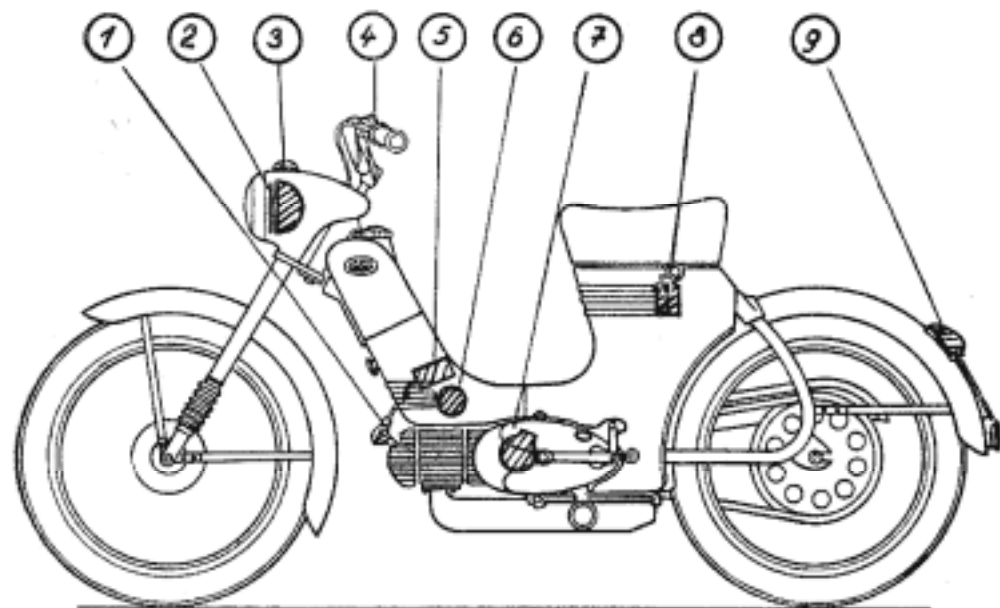


Fig. 4. — Electric current supply and electrical appliances.

- | | |
|---|-----------------------------|
| 1. Sparking plug. | 6. Electric horn. |
| 2. Headlamp. | 7. Magneto (on R. H. side). |
| 3. Light and ignition switch. | 8. Electric horn battery. |
| 4. Dip switch and electric horn button. | 9. Tail lamp. |
| 5. Ignition coil. | |

3. ELECTRICAL EQUIPMENT — DESCRIPTION

The magneto is in principle a small A/C generator, in which a permanent magnet fitted to the crankshaft rotates in the stator.

Output of the magneto is 20 W, Voltage 6 V.

The permanent magnet is of special steel. It has four pole extensions. The current for the ignition and light is supplied from the coils. Electrical winding is two phase with eight coils. The current induced in the four coils of one phase supplies through the rectifier the primary winding of the independent ignition coil. The four coils of the second phase supply the current for the lights. Both branches i. e. ignition and lighting are independent on each other and do not affect one another.

The stator with the coils is fitted to the crankcase by two brackets and studs M 5X35. The stator can be rotated by 20° to adjust ignition advance. The ignition advance should be 2,8 to 3,1 mm before TDC.

The stator cover forms a complete contact breaker (consisting of: base plate, condenser, fixed contact, contact breaker arm and lubricating felt pad). The contact breaker complete must not be rotated under any circumstances, to avoid

shifting of the magneto field and thereby reducing the quality of the spark. The correct position of the contact breaker complete is determined when setting the magneto at the works. The fastening screws of the contact breaker complete are secured by red varnish. Should the securing varnish be damaged the manufacturer will not guarantee any possible damage, burning or any incorrect operation of the electrical equipment.

The contact breaker point gap can be adjusted by shifting the plate with the fixed contact towards the contact breaker arm. The contact breaker point gap should be about 0,4 mm. (See detailed description with fig. 23 in Part II, para 28.)

The terminal base — fitted on the stator has terminals numbered as follows:

- „11” — for the ignition coil cable
- „55” — for the light switch cable

The rotor is mounted on the crankshaft taper (the position is indicated by a small pin) and fastened by means of a hexagonal head screw M 5X55 with cutting. The screw fastens at the same time the cam.

Warning: When removing the stator a steel sheet ring has to be slipped at once over the rotor to prevent demagnetisation of the magnet.

The ignition and light switch is located in the headlamp and has three positions given by the shifting of the lever:

Dip switch containing also electric horn button is fitted on the L. H. side of the handlebars. By means of the dip switch the main beam can be dipped. The dip switch contacts are made so as to insure that the tail lamp bulb is always under current at the same time with one filament of the main bulb. This prevents the burning of the tail lamp bulb.

The ignition coil — 6 V — is fitted to the frame of the machine under the fuel tank.

The sparking plug PAL 14/175. The sparking plug cable has a terminal with ignition suppressor.

The headlamp dia 110 mm with two filament bulb 6 V — 15/15 W, controlled by the dip switch gives main beam and dipped beam light.

The tail lamp is fitted with a 6 V — 5 W.

Warning: Should bulbs of other value be employed there is a danger of their burning or overheating.

Electric horn and battery: The electric horn is fitted to the frame under fuel tank. It is supplied by current from the battery located in the box under the seat. The battery consists of two flat dry cells — 4,5 V, Bateria 310 — connected in line. It will stand several thousands of hootings. One pole of the battery is earthed. The middle screw („58”) on the lid of the battery serves for connecting the tail lamp leads (to make the dismantling of the rear mudguard easier).

Leads: The majority of leads is of 4 sq. section. The colours of the leads indicate the following connection:

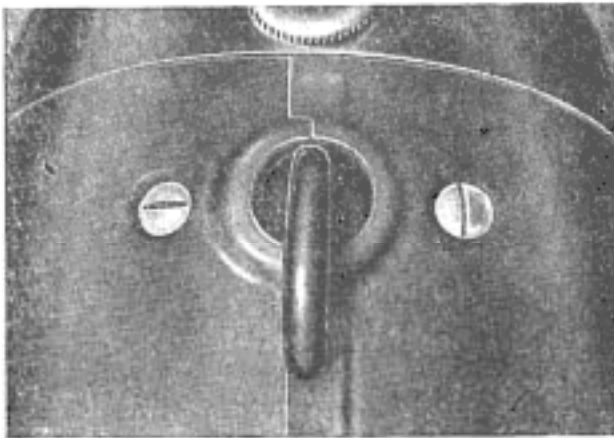
- | | |
|------------------------|--|
| Green lead | magneto terminal „11” to ignition coil |
| White lead | magneto terminal „55” to light switch in headlamp |
| Red lead | light switch terminal „56” to dip switch |
| Blue leads | dip switch to headlamp |
| Yellow leads | light switch terminal „58” in headlamp to tail lamp |
| Green lead | battery via horn to horn button |
| Black leads | battery, switch („31”) and dip switch earthing and ignition coil to contact breaker and switch „1” in headlamp |

Fig. 5. — Ignition and light switch lever position.

a) engine off



b) day riding



c) night riding

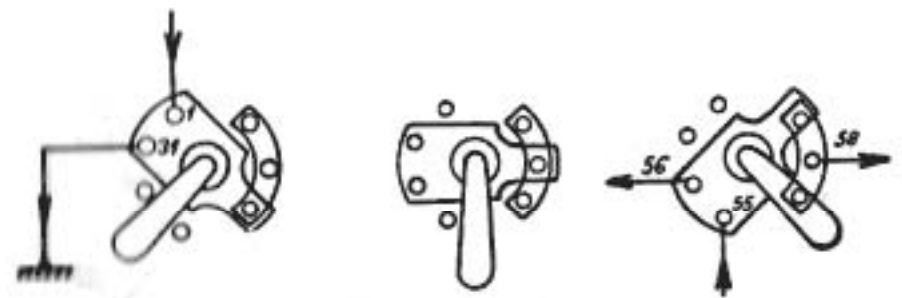
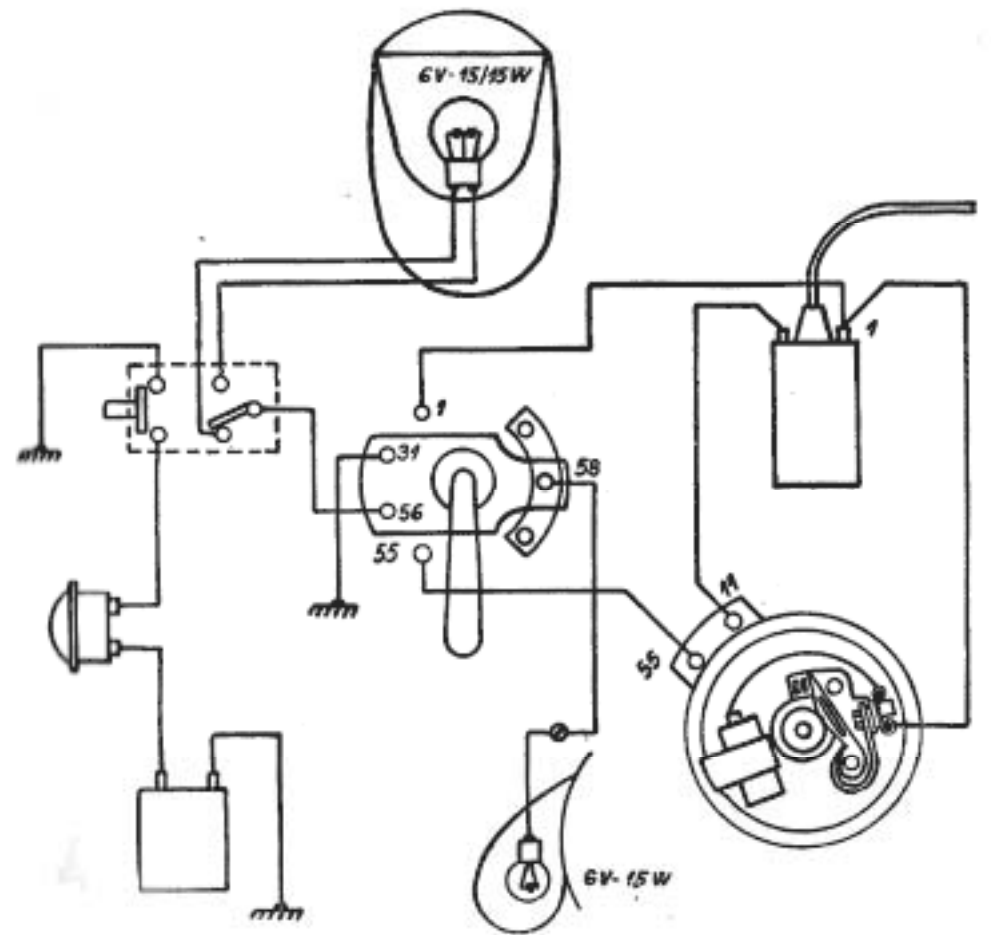
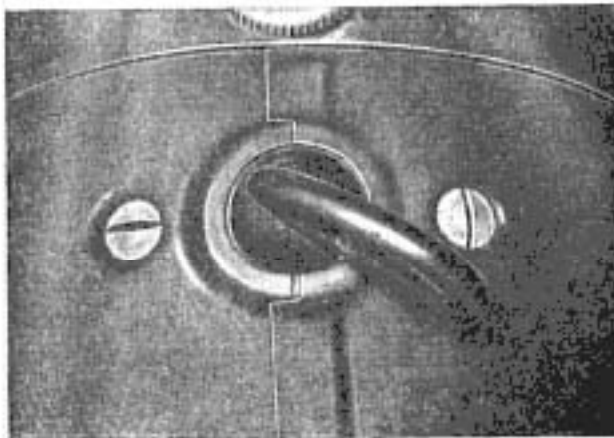


Fig. 6. — Electric wiring diagram.

4. RUNNING IN A NEW MOTOR CYCLE

When taking over a new machine the customer is advised to check the equipment of the motor cycle tools as well as the oil level in the gear box. The oil level can be checked by the oil level inspection hole, closed by the oil level screw M 6X8 (fig. 7). The dry cells to feed the electric horn are not delivered with the machine. To fit the battery see fig. 8. Check the fitting by sounding the electric horn.

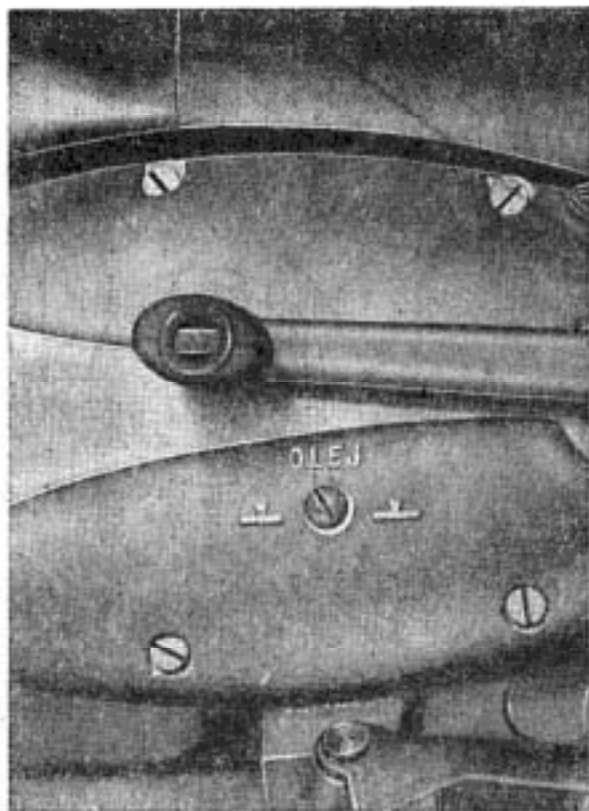


Fig. 7. — Oil filling and inspection hole.

The correct running in has a great influence on the output, fuel consumption and durability of the new motor cycle.

Therefore, observe the following instructions:

- a) Mix the petrol in the approved ratio:
- | | |
|---|------|
| Before covering the first 600 miles (1000 km) | 16:1 |
| After the first 600 miles (1000 km) | 24:1 |

- b) Before covering the first 300 miles (500 km) do not open more than half the throttle.
- c) On long uninterrupted rides cool the engine by opening and closing the throttle occasionally.
- d) When stopping keep the engine running at the lowest revolutions.
- e) Do not use the first and second gear for longer periods.
- f) Check periodically all screws and nuts for slackness.
- g) Drain the oil in the gear box after the first 300 miles (500 km). Rinse the gear box with rinsing oil and fill with new oil (see Part II, para 2).
- h) After the first 300 miles (500 km) the throttle may be opened more than half, but only for short periods.
- i) Change the oil for the second time after 900 miles (1500 km) when the machine is „run in“; careful maintenance is necessary also after the engine has been run in.



Fig. 8. — Fitting the battery.

5. RIDING INSTRUCTIONS

A. Before starting:

1. Make sure there is fuel in the fuel tank (the filler cap is opened anticlockwise; keep filler cap breathing hole clean; after having run in the machine mix the fuel with oil at the ratio 24:1 and use the strainer when filling the tank).
2. Check the brakes, lights and electric horn.
3. Check: the spares (spare tube, sparking plug, bulb)
tools (tyre inflator, spanner)
4. Check the tyre pressure (it should be 18 to 21 lbs sq. in.).

B. The controls are located as follows:

Throttle twist grip — R. H. side of the handlebars (right hand).

Clutch — lever on the L. H. side of the handlebars (left hand).

Starter lever — R. H. side of the engine (right foot).

Gear shifting lever — L. H. side of the engine (left foot).

Front wheel brake — lever on the R. H. side of the handlebars (right hand).

Rear wheel brake — pedal on R. H. side of the engine (right foot).

Electric horn — button on the L. H. side of the handlebars (left hand).

Dip switch — L. H. side of the handlebars (left hand).

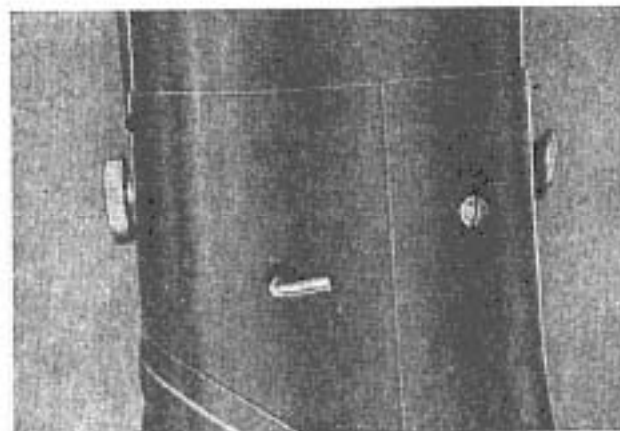
C. Starting the engine:

1. Make sure to shift to neutral.
2. Open the fuel tap.
3. Flood the carburetter in that you pull out the knob (fig. No. 9b). At cold weather the pulled-out knob is to be turned by one quarter of a revolution (90°) to the R. H. side. Thus the fuel will be allowed to flow to the orifice of the carburetter not only through the main jet, but also through this auxiliary way permanently (i-e. through the pump). The fuel mixture is greatly enriched, so that the engine will warm up quickly to the working temperature, and will thus be suited to give the necessary output for starting off.

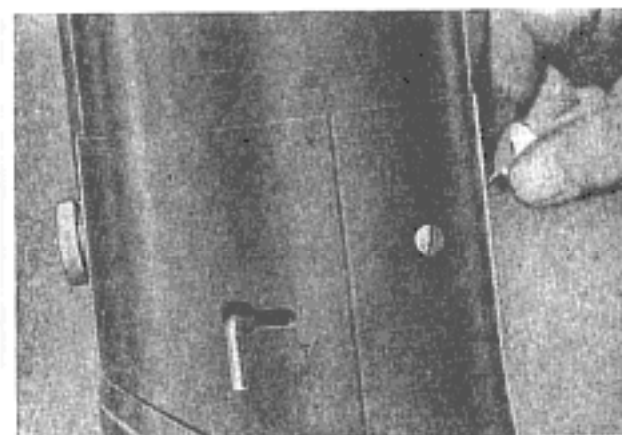
After several meters of riding turn the knob back into its original position. The spring will push the conical valve of the pump, which is rigidly joined to the knob by a rod, and will cut off the flow of the fuel through this auxiliary way via the pump.

4. Push the ignition switch lever (in the headlamp) into the middle position (fig. 5b).
5. Start the engine by pressing the starting lever (in the direction of the ride).

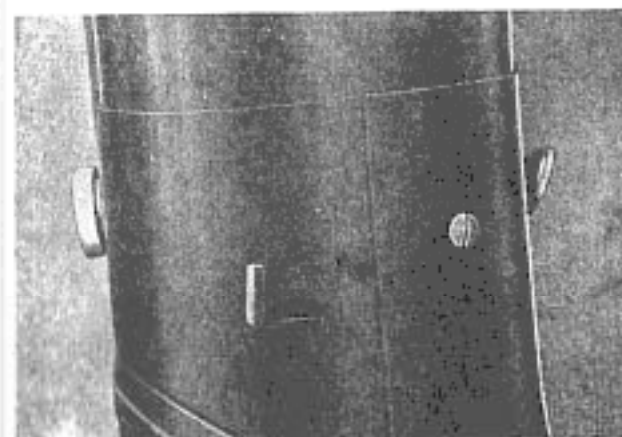
Fig. 9. — Fuel tap lever positions.



a) Fuel shut off



b) Fuel main supply open
— flooding the carburetter



c) Fuel emergency supply open

D. RIDING.

- a) **Starting:** Press the clutch lever. With the tip of your left foot depress fully the gear shifting lever and release. The lever will return immediately to its original position. At the same time open the throttle gradually, release slowly and gradually the clutch lever (especially in the second half of its stroke, when the engine starts pulling). As soon as a speed of 7 miles (10 km) is achieved engage the third gear in the following manner:

Press the clutch lever and close the throttle at the same time. With the tip of the left foot lift fully the gear change lever and release. Release the clutch, opening the throttle at the same time. Both operations have to be done more quickly than when starting. As soon as a speed of approx. 13 miles (20 km) is achieved engage the third gear in like manner.

- b) **Climbing:** If the engine, when climbing, starts losing revolutions, it is necessary to engage a lower gear. To change down declutch and close the throttle pressing the gear change lever down. The engaging of the lower gears has to be done more quickly than the engaging of the higher gears, because the motor cycle when climbing loses speed after declutching. Engage the first gear in the same way.

Keep in mind that after engaging a higher gear the engine runs at lower revolutions than before.

- c) **Braking:** When riding down-hill or when slowing down or stopping, use the brake. Close the throttle, press first the rear brake, than the front brake; if possible, this should be done slowly and gradually, too vehement braking makes the wheels skid. Special care is required when braking on slippery ground.
- d) **Stopping:** When slowing down to stop, close the throttle, declutch, brake and shift to neutral gear. The neutral position is half way between the first and the second gear. To achieve this press (lift) the lever half way. Stop the engine by turning the ignition switch to the L. H. side (fig. 5a).

After stopping do not forget to burn off the fuel tap (fig. 9a). Having finished riding for the day, let the engine run at low revolutions after the fuel has been shut off to consume the fuel in the carburetter, the oil in the fuel might choke the jet.

- e) **Night riding:** When riding in the dark switch on the headlamp and the tail lamp by turning the witch lever to the R. H. side (fig. 5c). Main beam and dipped beam is switched by a lever on L. H. side of the handlebars.

6. What should be avoided.

To let the engine race while it is standing is harmful as it is not being cooled. Do not keep declutched for any considerable time as the cork inserts of the clutch plate would be subject to unnecessary wear. Never help the engine uphill by letting the clutch "slip", but change down in time. But do not run for long with bottom gear engaged.

List of tools necessary for maintenance of the JAWA 50 c. c. model 550

- | | |
|-------------------------------------|---------------------------------------|
| 1. Canvas tool kit. | 6. Combined spanner. |
| 2. Double ended spanner $\#$ 14/17. | 7. Contact spanner with feeler gauge. |
| 3. Double ended spanner $\#$ 9/10. | 8. Screwdriver 3 mm. |
| 4. Box spanner $\#$ 10. | 9. Double screwdriver. |
| 5. Handle die 5. | 10. Tyre lever — 2 pieces. |
| | 11. Grease gun. |
| | 12. Tyre inflator. |
| | 13. Tyre inflator connection. |

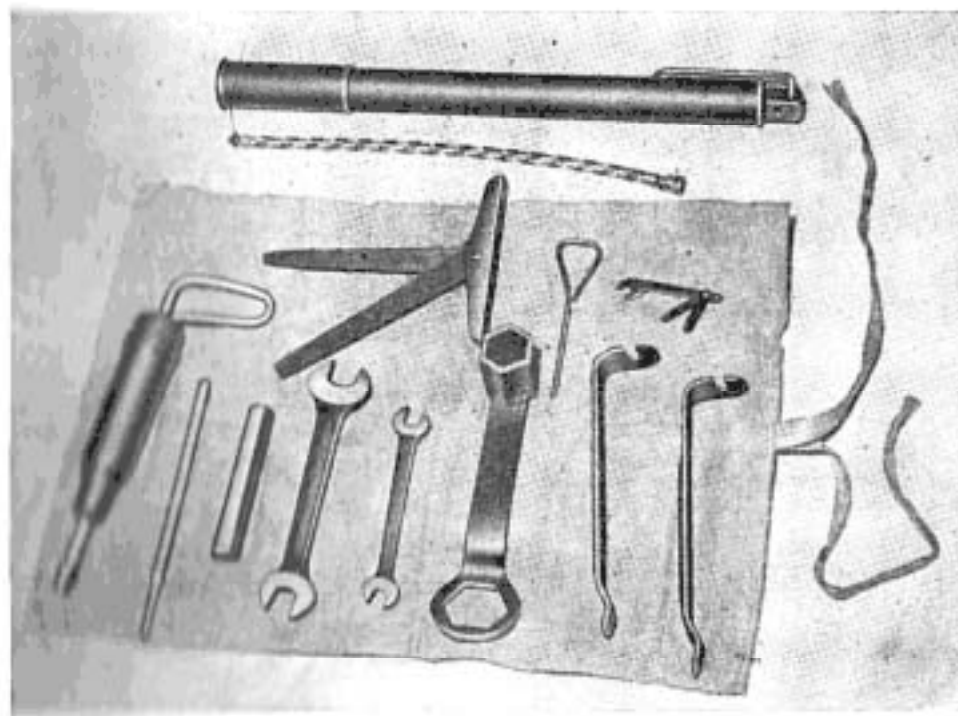


Fig. 10. — Tools.

II. MAINTENANCE

1. CLEANING THE MOTOR CYCLE

The simple smooth line of the motor cycle makes it easy to clean. Use plenty of water for washing the machine, preferably with a sponge. Wash with paraffin parts that have been soiled with oil and dust. When washing take care to keep the carburetter, headlamp and brakes clear of water. Wipe dry chromium plated and enamelled parts and polish them with flanel or charmois leather.

The enamelled parts should be polished with an enamel coating from time to time. To remove water from the cylinder cooling fins, start the engine, the warmth of which will cause the water to evaporate.

Note: Petrol, paraffin and oil dissolve rubber (tyres, handlebar grips, footrests). Consequently protect the rubber parts from contact with liquids mentioned.

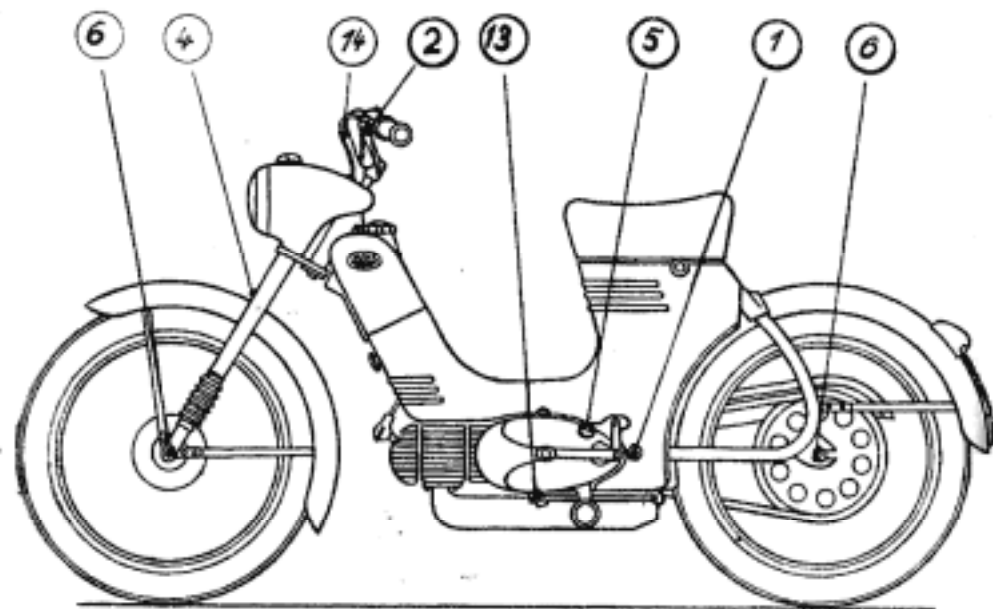


Fig. 11. — Lubrication chart — L. H. side.

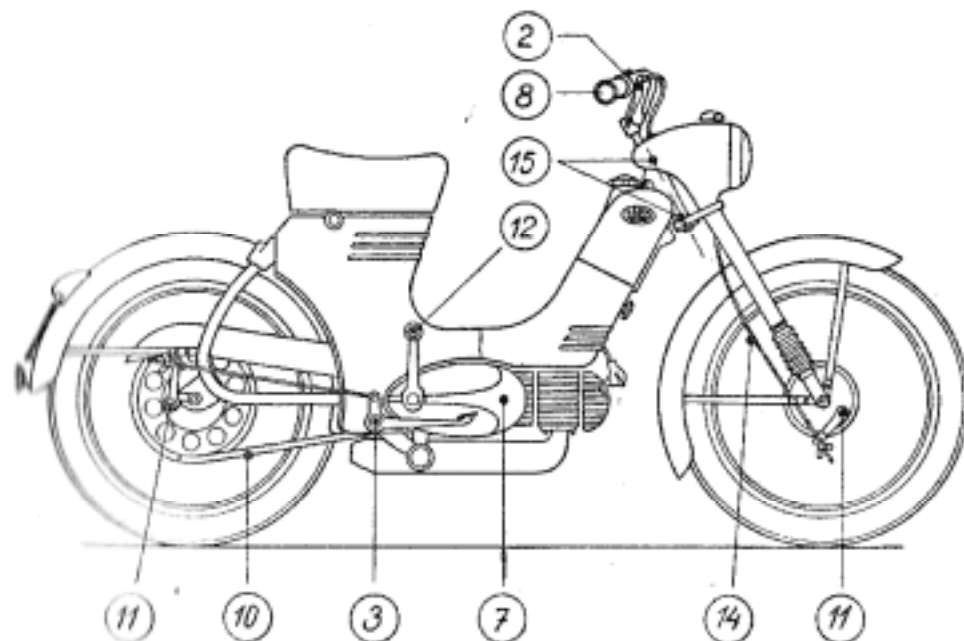


Fig. 12. — Lubrication chart — R. H. side.

2. LUBRICATING THE MOTOR CYCLE

The engine is lubricated automatically by adding engine oil to the fuel at a ratio 24 to 1.

Fill the gearbox in hot weather with Castrol SAE 50, in cold weather with Castrol SAE 20.

Change the oil in the gearbox after 3,000 miles (5,000 km), preferably after having finished a trip, while both engine and oil are warm. Drain the oil through the draining hole at the bottom of the engine. Pour approx. 25 cub. in. (400 c. c.) rinsing oil into the gearbox filler neck (Fig. 7) and let the engine run for two to five minutes at low revolutions (ride a short distance). Change to all gears. Drain the rinsing oil into a clean container, let the impurities settle down and pour off the clean oil for further use. After screwing in the draining plug pour in the new oil till the oil level reaches the inspection hole in the L. H. cover. When closing the filler neck do not forget the seal rings to the screws.

The clutch runs in an oil bath (oil from the gearbox).

The forks should be greased with Castrolase CL by means of a grease gun after every 300 miles (500 km).

Wheels (bearings) should be lubricated after every 3,000 miles (5,000 km). Disassemble the wheels (see Part III, para a, b) and lubricate the bearings with a grease gun (Castrolase heavy).

The pivoted rear fork should be lubricated after every 300 miles (500 km) by means of several strokes of the grease gun (Fig. 14) with Castrolase CL.

The primary chain is totally enclosed by the L. H. crankcase cover, runs in an oil bath and does not require any attention. When badly worn it should be replaced.

The secondary chain should be serviced after every 1,900 miles (3,000 km) in the following manner:

Rotate the chain until the connecting link reaches the rear chainwheel, loosen the spring clip with a screwdriver (Fig. 14), remove the connecting link and pull out the chain. Wash it in paraffin. Let it dry and place it for about three hours in a slightly warm solution of Castrolase graphited. The warm lubricant then penetrates the chain links better. Take out the chain, let the lubricant solidify and wipe off the excess grease. The chain is now ready for fitting. When fitted the connecting link spring clip should face with its full curve in the direction of rotation of the chain.

Magneto: After 1,900 miles (3,000 km) remove the R. H. side crankcase cover and with a few drops of oil lubricate the contact breaker arm pin (Fig. 15). Care should be taken that no oil gets on to the contact breaker points. The felt on the contact breaker base should be soaked in Castrolase heavy.

The control cables (clutch, front brake, throttle) should be lubricated after every 1,900 miles (3,000 km) with a few drops of oil.

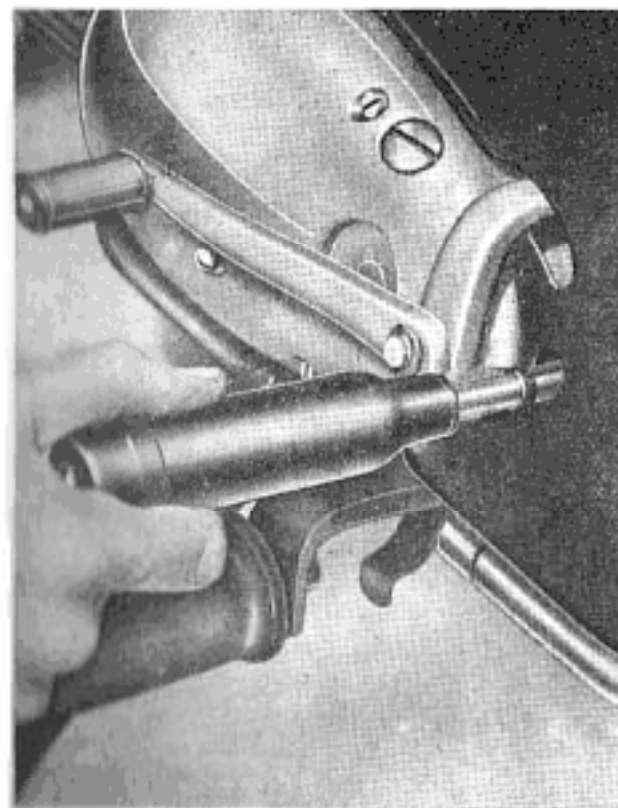


Fig. 13. — Lubricating the pivoted rear fork.

| LUBRICATION CHART (Figs. 12 and 13) | | | | | |
|-------------------------------------|-------------------------|-----------|-------|----------------------------------|--------------|
| Miles (km) covered | Lubrication point | Point No. | Total | Type of lubricant | |
| | | | | Hot weather | Cold weather |
| 300 (500) | Pivoted rear fork | 1 | 1 | Castrolase CL | |
| | Lever pin | 2 | 2 | Castrol SAE 50 | |
| | Foot brake lever pin | 3 | 1 | Castrolase CL | |
| | Telescopic front fork | 4 | 2 | Castrolase CL | |
| 600 (1000) | Gearbox (topping up) | 5 | 1 | Castrol SAE 20 Castrol SAE 50 | |
| 1900 (3000) | Wheels- bearings | 6 | 4 | Castrolase heavy | |
| | Contact breaker arm pin | 7 | 1 | Castrolase heavy | |
| | Contact breaker felt | 7 | 1 | Castrolase heavy | |
| | Twist grip | 8 | 1 | Castrolase CL | |
| | Speedometer drive | 9 | 1 | Castrol SAE 50 | |
| | Secondary chain | 10 | 1 | Castrolase graphited | |
| 3000 (5000) | Brake cams | 11 | 2 | Castrol SAE 50 | |
| | Start lever pin | 12 | 1 | Castrolase heavy | |
| | Centre stand pin | 13 | 1 | Castrolase CL | |
| | Control cables | 14 | 3 | Castrolase brake cable grease | |
| | Steering head | 15 | 2 | Castrolase heavy | |
| | Gearbox | 5 | 1 | Castrol SAE 50 Castrol SAE 20 | |

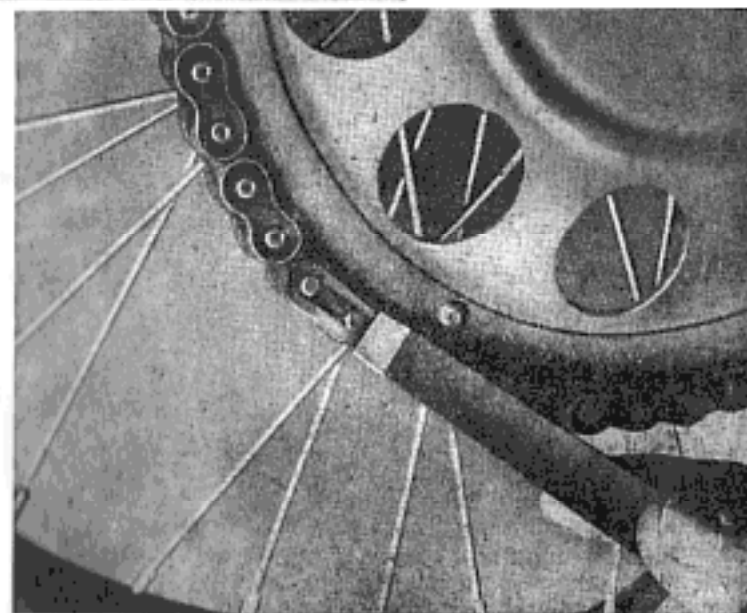


Fig. 14. — Removing the chain connecting link.

3. ADJUSTING THE BRAKES

The brakes are well dimensioned. They require only occasional adjusting, when the brake shoe lining is worn. The brakes are adjusted by turning the adjuster nuts (fig. 15 a 16). Having adjusted the brakes check the wheels for free rotation.

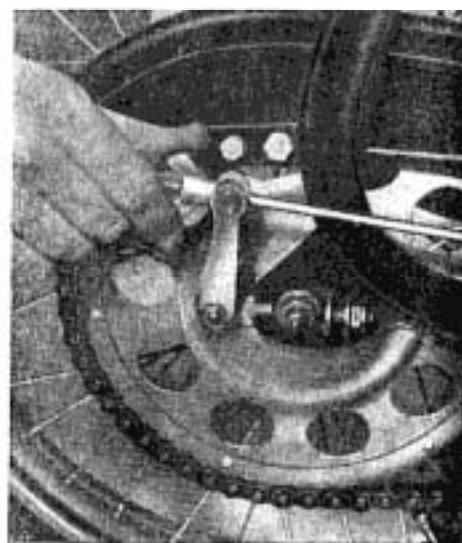
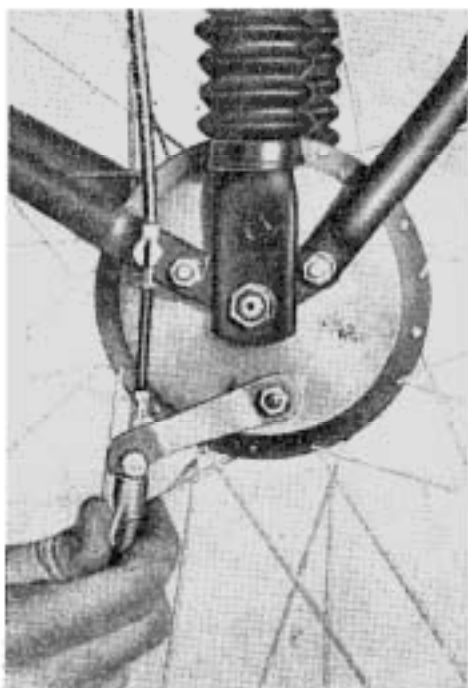


Fig 15. — Adjusting the front brake. Fig. 16. — Adjusting the rear brake.

The pressure in the front tyre should be 14 lbs. sq. in. and in the rear tyre 20 lbs. sq. in. It is advisable to check the pressure with the tyre pressure gauge. Attention is called to the fact that oil, petrol and strong sunshine are harmful to the tyres. Examine the tyres from time to time and remove any foreign matter stuck in the tyre pattern. Check the tyre valves for leakage by unscrewing the valve cap and moistening the valve. Should any bubbles appear, the valve is leaky. In such case tighten the valve core, the slotted valve cap will serve for the purpose. Should the valve still leak, screw out the valve core and replace it by a new one.

A punctured tube has to be patched. Remove the tyre cover from the rim in the following manner:

Unscrew the valve core to deflate the tyre completely. Unscrew the nut securing the valve to the rim. Lay the wheel in a horizontal position and press the tyre edge well into the rim base at a point diametrically opposed to the valve (fig. 17). Using the tyre levers slip the cover edge near the valve over the rim edge (fig. 18). Take care not to pinch the tube and thus damage it. Having slipped all the cover circumference over the rim edge press the valve completely out of the rim base and remove the tube. Having screwed in the valve core and inflated the tube partially the punctured spot will be best located by plunging the tube in water. Mark the punctured spot (e. g. with a copying pencil), dry the tube and repair as follows:



Fig 17. — Rim and tyre — sectional view — fitting the tyre cover.

4. TYRES

The life of the outer tyre cover depends on the inner tube air pressure in relation to the load carried. As a rule the tyre has to be inflated so as to keep it original shape, even under full load. Running on underinflated tyres will result in the cover wall cord threads breaking.

Slightly rub the punctured spot with a piece of sand-paper. Smear the rubbed spot with rubber solution. Allow the solution to dry and only then place the patch after first removing its protective coating. Press the patch well to the tube, especially at its edges. Powder the patched spot with French chalk (talcum powder) to prevent the tube sticking to the inner walls of the cover. Examine the outer cover carefully and remove the nail if it is still in.

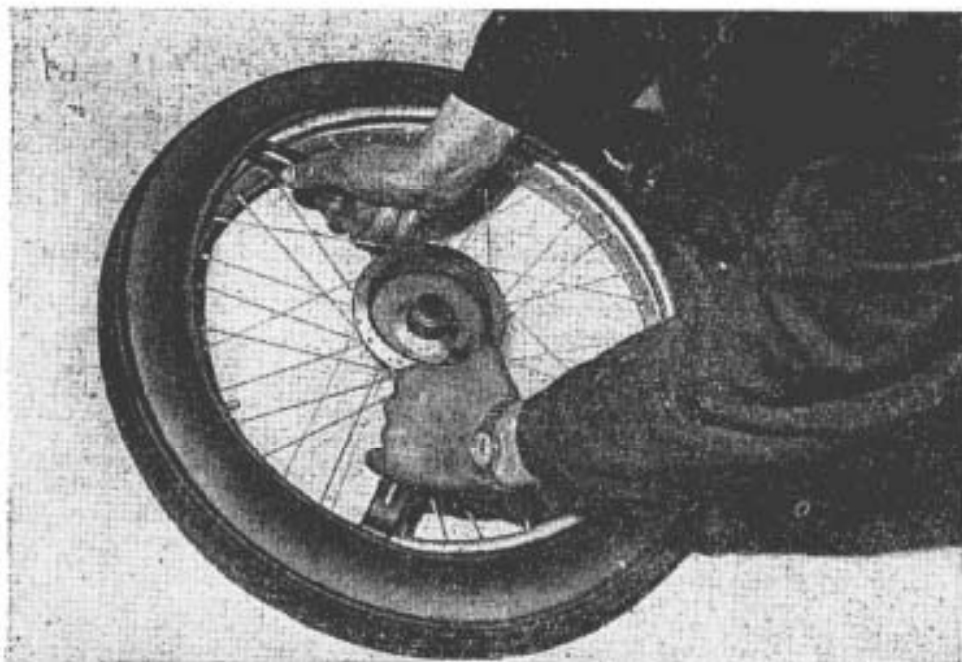


Fig. 18. — Correct tyre fitting.

Fitting the tyre: Inflate the tube partially, insert it into the cover, one edge of which has remained in the rim, push the valve through the rim hole and secure it by its nut (do not tighten). Then slip on the cover side over the rim edge beginning opposite the valve, work with hand or foot and tyre lever both sides towards the valve. Proceed carefully in order not to damage the tube. Tyre patching is an emergency remedy only during a trip. For permanent repairs of tubes rely on vulcanisation by a repair shop. Rely also on a repair shop for repairing damaged tyre covers.

5. ADJUSTING THE CHAIN

Slacken the rear wheel spindle i. e. the spindle securing nut $\# 17$. Then by even slackening of the nuts $\# 10$ shift the rear wheel spindle. Never use force when slackening these nuts, you might damage the threads. After adjusting the chain (maximum free movement $\frac{3}{8}$ to $\frac{3}{4}$ in.) tighten the nut $\# 17$. Make sure that the wheels are in line. Check and adjust the rear wheel brake. Check the chain tension every 600 miles (1000 km).

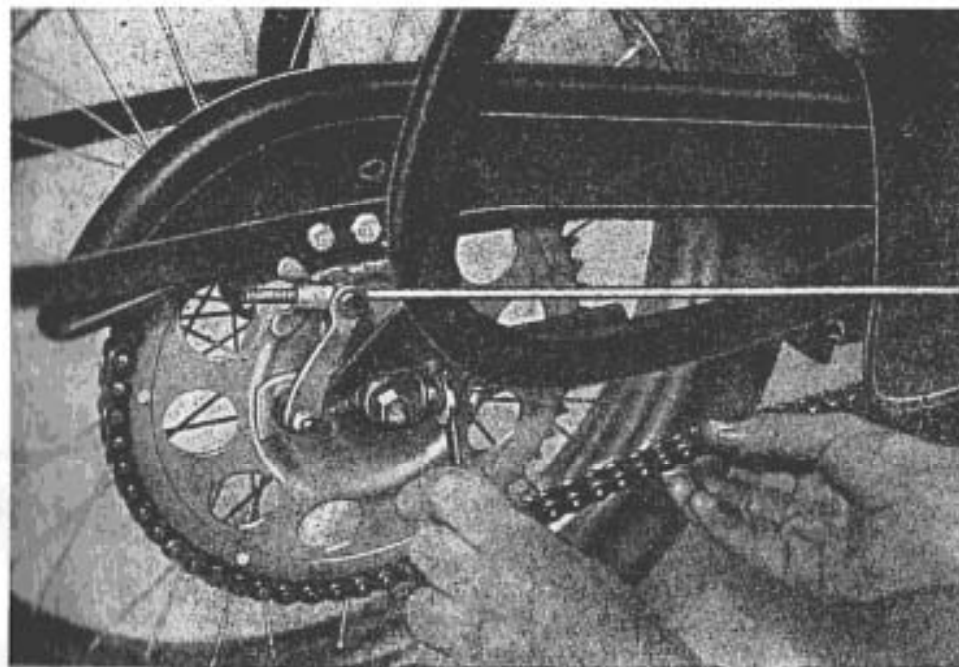


Fig. 19. — Adjusting the chain.

6. THE CLUTCH AND ITS ADJUSTING

With the operation of the clutch the connection of the engine and the gear box is interrupted. The clutch is operated when gear changing to protect the teeth of the pinions from shocks. The clutch runs in an oil bath and does not require any attention except the adjusting of the play in the clutch control cable. The clutch lever has to be always free. In time the clutch control cable will stretch and the play of the lever increase. To adjust the play slacken the grub screw "A" locknut and loosen the grub screw by one or two turns. After checking the clutch lever play retighten the locknut. When the lining of the clutch plate has been worn considerably and the adjusting of the play by means of the grub screw is not sufficient, adjustment by means of screw "B" on the R. H. side of the engine block becomes necessary (fig. 20).

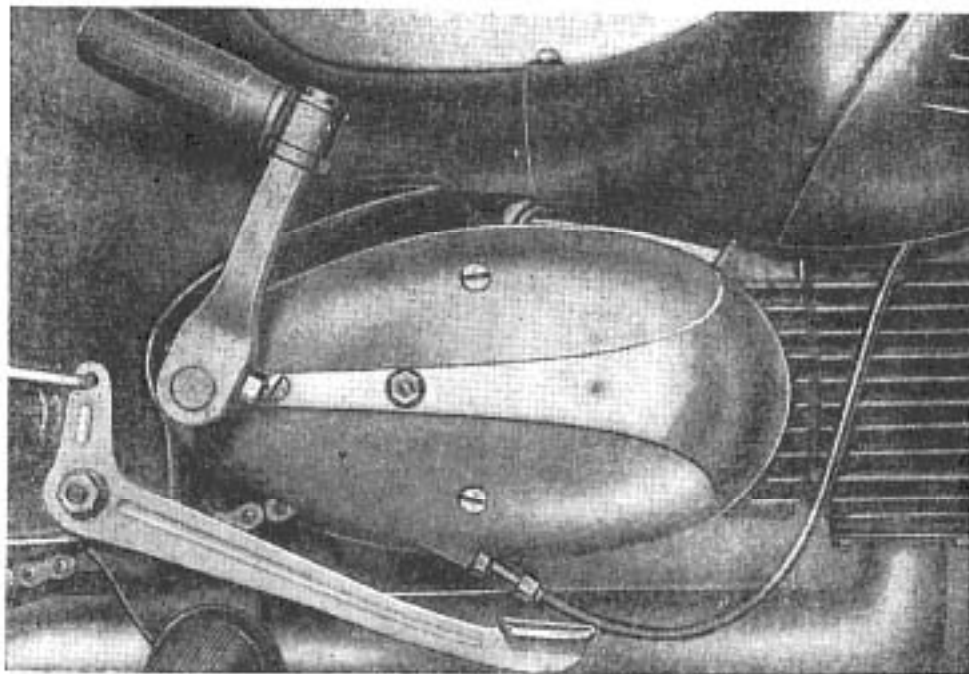


Fig. 20. — Adjusting the clutch.

7. JIKOV 2912 CARBURETTOR

The carburettor is correctly set at the works. Both the jet and the throttle valve are suitably selected. Therefore no setting is required, and they should be cleaned from time to time.

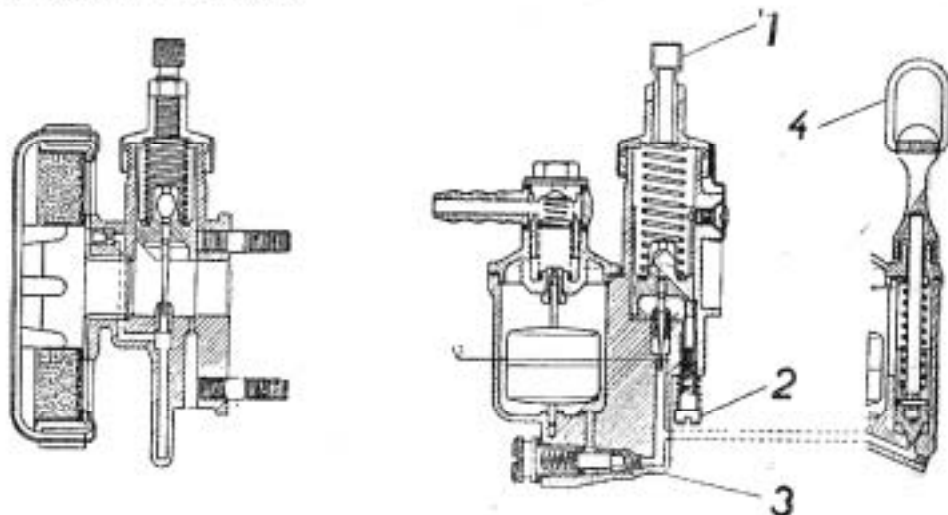


Fig. 21. — Carburettor.

For easy starting of the engine the idling speed first be set correctly. This is done by shortening or extending the throttle cable — screw „1“.

To prevent the throttle valve from coming right down, its lowest position is set by means of screw „2“ which must never be completely unscrewed. If the main jet „3“ becomes choked, in most cases it will be sufficient to wash it by means of two or three strokes of the starting pump „4“. Only if this should be of no avail the jet should be washed and blown through. Never clean it with a wire or a hard tool, as this might damage the delicate jet hole and thus upset the running of the engine and the fuel consumption.

The carburettor is equipped with an air cleaner and a bleeding cup (fig. No. 22), which prevents the overflow of fuel from the carburettor on the cylinder, when flooding the carburettor. The cup drains the overflowed fuel outside the touch of the eventually hot cylinder, thus preventing the possibility of inflammation of the vapours. When ascertaining the right function of spark plugs, the screw fastening the R. H. side front cover should be used as contact tester.

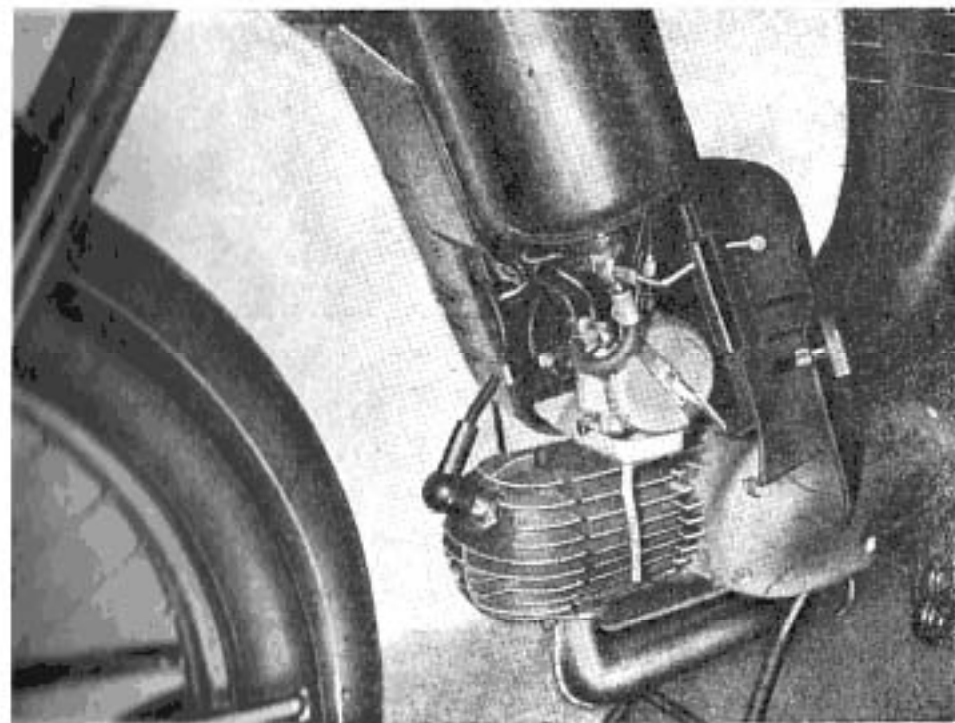


Fig. 22. — Air cleaner and drip cup.

8. ELECTRICAL EQUIPMENT MAINTENANCE

Check the leads from time to time and wind insulating tape round any spot with damaged insulation. The damaged spots might cause a short circuit.

The **sparking plug** has to be cleaned from time to time, the carbon carefully scraped off and if necessary the point gap adjusted to 0,5 mm, bending carefully the point on the plug body.

The **ignition coil** is fitted to the frame and does not require any maintenance. Care is only to be taken that the lead from the coil to the sparking plug is not damaged. Be careful with the water when washing the machine. Wherever required by regulations the lead terminal at the plug has to have an ignition suppressor.

The **electric horn** does not require any maintenance, only when cleaning care is to be taken that no water gets into it. To adjust tighten or slacken the regulating screw on the bottom part of the horn cover.

The **battery** — If the battery is weak or molten replace the two dry cells according to fig. 9.

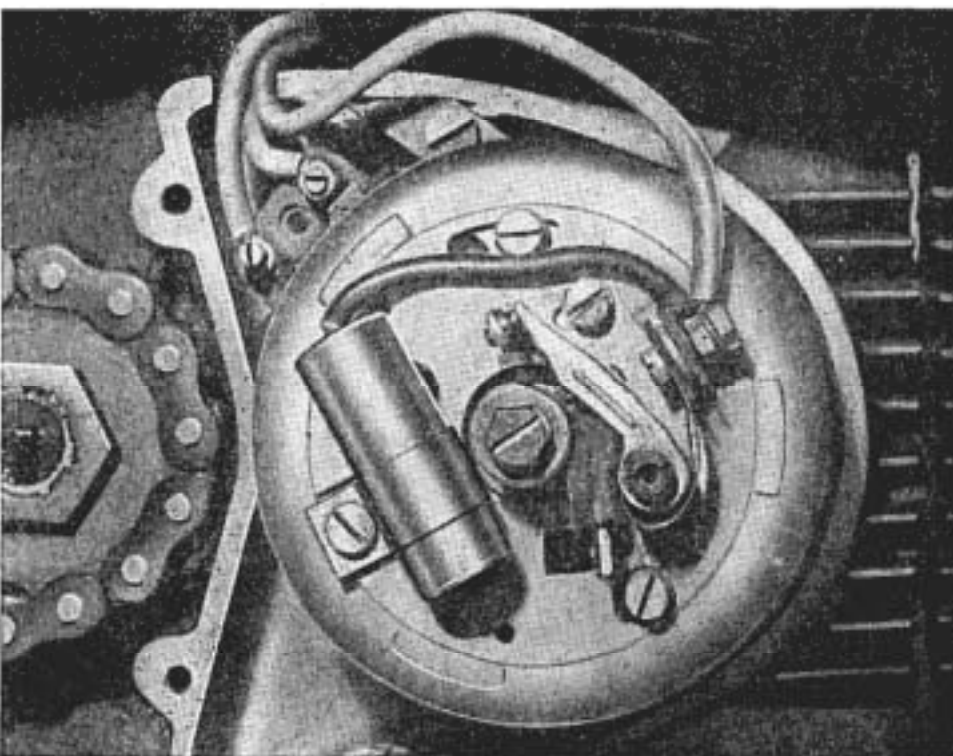


Fig. 23. — Magneto.

The **magneto maintenance** consists in checking of the lubricating felt of the contact breaker every 1 900 miles (3 000 km) and to see that it does not touch the cam and that it is properly lubricated. After 3 000 miles (5 000 km) check the point gap. Keep the magneto clean — beware of dust and oil.

Setting the ignition

Rotate the crankshaft until the piston reaches its T. D. C. (at its most forward position). In this position having slackened screw „A” set the gap of contact „B” to about 0,4 mm (check by means of feeler gauge). Having set the point gap retighten the fastening screw.

Place a piece of cigarette paper between the contact breaker points and rotate the crankshaft until the paper will pass between the points. As that moment the piston should be 2,8 to 3,1 mm before its T. D. C. This distance can be measured by means of a rod or depth gauge with the cylinder head removed. If the ignition advance is not correct, slacken the magneto clamps „C” and set the advance by rotating the magneto. After setting do not omit to retighten the clamps.

Note: The contact breaker complete „D” must never be rotated in order not to disturb the length and quality of the spark.

9. DECARBONIZATION

It is advisable to remove carbon deposits every 3 000 miles (5 000 km) (for instructions regarding dismantling see Part III, para 4). Burnt fuel residues (carbon deposits) cause a drop in the engine output as well as excessive heating of the engine. Remove the carbon from the piston, cylinder head and exhaust ports by careful scraping. At the same time remove carbon deposits from piston ring grooves (preferably with an old broken piston ring). When replacing the piston rings fit the rings into the same grooves in which they were before being removed. Having scraped off the carbon, wash the parts in question in clean petrol or paraffin.

Clean the exhaust silencer in the following way:

Unscrew the lock with perforated tube off the back end of the silencer. (The lock fastens also the spring bracket of the stand.) Clean the tube thoroughly with a wire brush. Scrape the carbon deposits on the inner side of the cover with a suitably bent wire. Replace the spring bracket of the stand before screwing in the lock with the tube.

III. DISMANTLING AND ASSEMBLING WITHOUT SPECIAL TOOLS

1. Removing the front wheel

- a) Slacken and disconnect the cable from the brake lever.
- b) On the R. H. side: unscrew the spindle nut $\# 17$ and remove the spring washer.
- c) On the L. H. side: slacken the pinch bolt $\# 10$ and push out the front wheel spindle.
- d) Remove the wheel.

Assembly:

- A. Place wheel in position.
- B. On the L. H. side: insert front wheel spindle.
- C. On the R. H. side: do not omit to replace the spring washer, screw on and tighten the nut $\# 17$.
- D. Bring the front fork to full depression several times.
- E. On the R. H. side: tighten nut $\# 17$, place brake cable in position and adjust the brake (see Part II, para 3).
- F. On the L. H. side: tighten pinch bolt $\# 10$.
- G. Check the front fork for correct operation by bringing it to full depression several times.

2. Removing the rear wheel

- a) On the R. H. side: rotate the rear wheel until the connecting link of the secondary chain reaches the rear chain wheel, then remove the spring clip with a screwdriver and disconnect the chain.
- b) Disconnect brake rod.
- c) Unscrew nut $\# 17$ and remove spring washer.
- d) On the L. H. side: push out the rear wheel spindle and remove the speedometer drive.
- e) Remove the wheel.

Assembly:

- A. Put the wheel in position and take care that the brake bracket rests with its cutting on the pin.
- B. On the L. H. side: replace the speedometer drive and the rear wheel spindle.
- C. On the R. H. side: replace the washer, screw on and tighten nut $\# 17$.

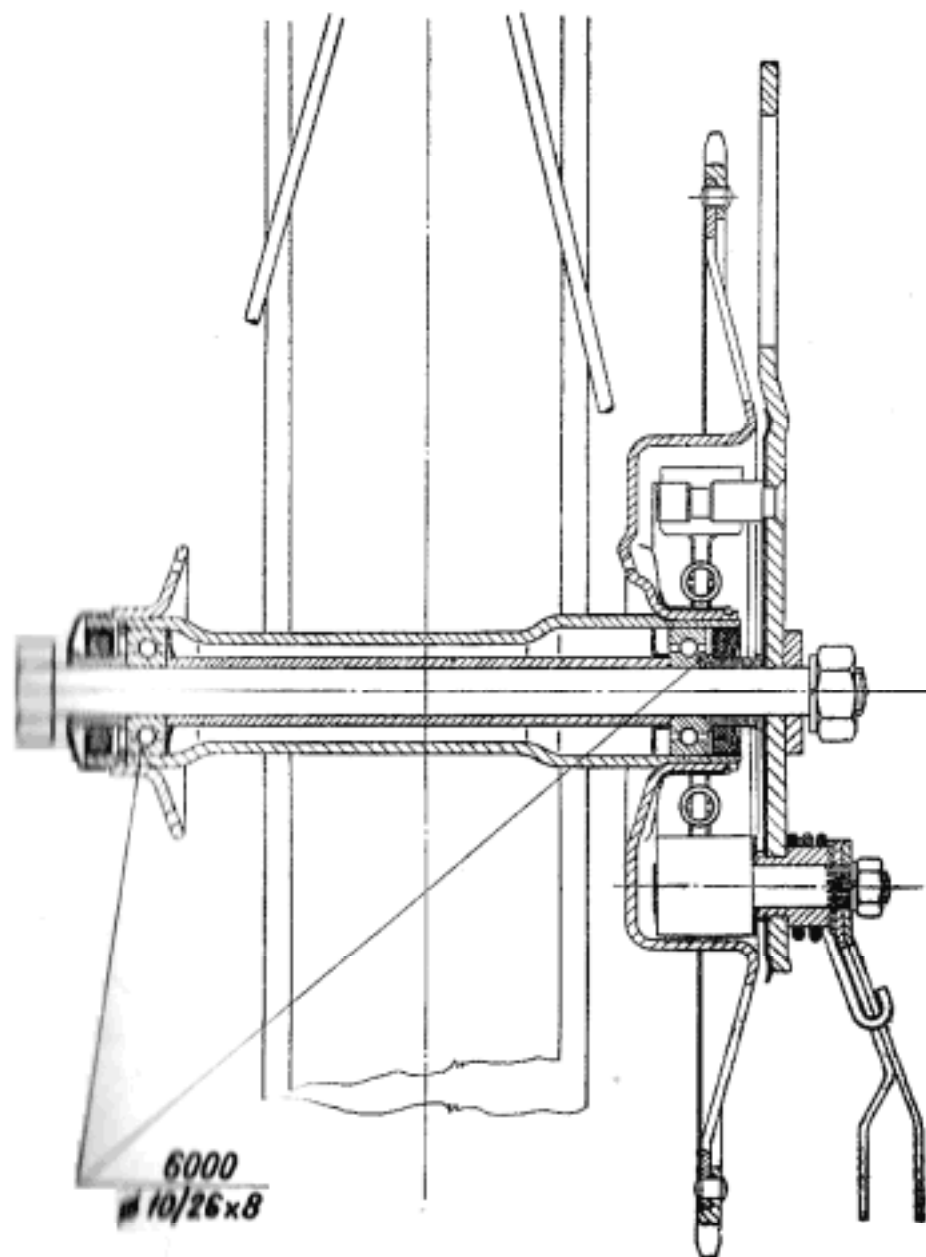


Fig. 24. — Rear wheel — sectional view.

- D. Replace and connect the chain. Warning: the connecting link spring clip has to face with its full curve the direction of the chain rotation (fig. 15 and 20).
- E. Connect the rear brake.
- F. Check the rear wheel and brake for correct operation.

3. Replacing the wheel ball bearings

- a) Remove the wheel and take off the brake back plate.
- b) Remove the seals on both sides of the wheel and the bearing lock on the L. H. side.
- c) From the R. H. side push with a suitable length of tubing the second bearing so far until the bearing that has been unlocked falls off (together with the metal ring). Push out the remaining bearing to the R. H. side and remove the distance sleeve.

Assembly:

- A. On the L. H. side: insert the metal ring and by applying pressure to the outer bearing race press the bearing in so far until the lock can be placed into position.
- B. On the R. H. side: Place the distance sleeve in position and press the second bearing in.
- C. Check whether the R. H. bearing rests on the lock, then push in the seals and replace the wheel (see Part III, para 1 or 2).

4. Removing the cylinder head and cylinder barrel

- a) Disconnect the sparking plug lead, the exhaust silencer and having removed the cowls unscrew the carburetter.
- b) Unscrew the four cylinder head nuts $\frac{1}{2}$ 10.
- c) Press the kickstarter lever down. The cylinder head stuck due to the carbon will be worked free and will be easily removed.
- d) Push the piston to its B. D. C. (rear position) and push out the cylinder barrel with the gasket.
- e) Cover the crankcase opening with a clean cloth to prevent dirt from entering the crankcase.

Assembly:

- A. Place a new gasket under the cylinder barrel.
- B. Push the cylinder barrel on.
- C. Put a new gasket under the cylinder head and push the cylinder head on.
- D. Tighten the four nuts $\frac{1}{2}$ 10.
- E. Connect the sparking plug lead.
- F. Screw in the carburetter, the exhaust silencer and covers.
- G. After a few miles ride (to warm the engine) tighten the cylinder head.

5. Replacing the piston rings.

The piston rings have to be replaced should the gap exceed 0,031 in. (0,8 mm), the correct gap being 0,008 in. (0,2 mm). To check the gap width insert the removed piston ring into the cylinder top part.

- a) Take off the cylinder head from the cylinder barrel (Part III, para 4).
- b) The best way to remove piston rings is to use three thin steel strips. Insert one strip under the piston ring in the middle and the two others under the piston ring ends (fig. 25) and remove the piston ring.

Replace the piston rings:

- A. To fit the rings see fig. 25.
- B. Check the play of the piston rings in the grooves by turning.
- C. The piston ring locks should face the pins in the piston grooves.
- D. Replace the cylinder head on the cylinder barrel (Part III, para 4).

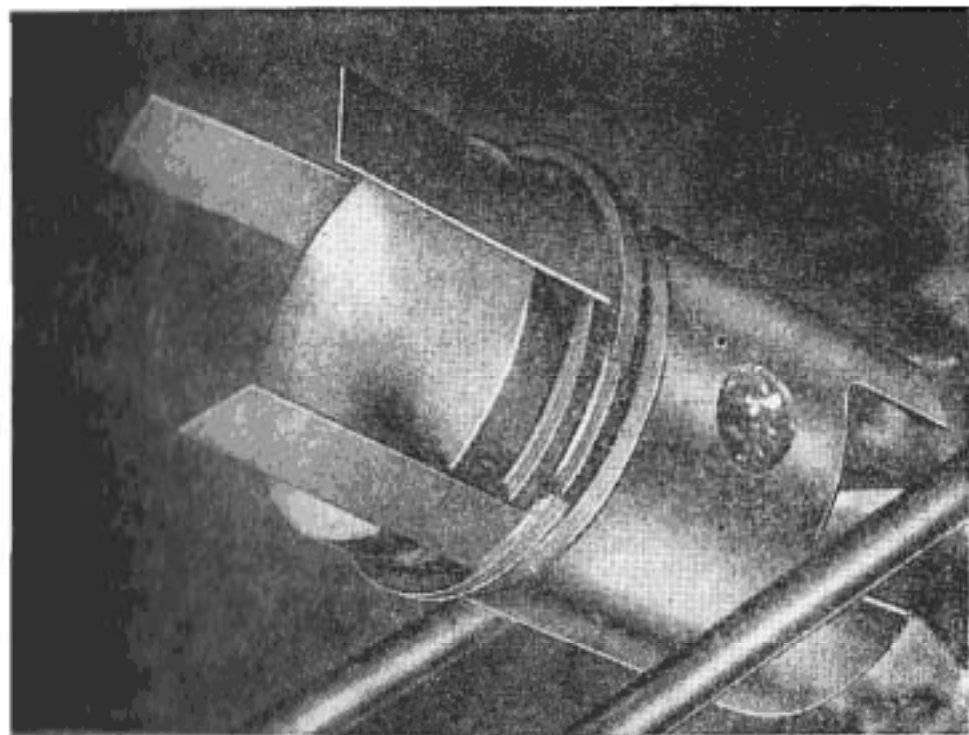


Fig. 25. — Fitting the piston rings.

6. Lifting the seat

Lift the seat by unscrewing the hand screw on the R. H. side underneath the seat. When putting it back tighten the screw so that the seat would not get loose. Under the seat is a box for tools, spare tube, spares and the dry cells to feed the electric horn.

7. Dismantling the twist grip

- Turn the twist grip till the countersunk head screw shows in the rubber opening.
- Unscrew the countersunk head screw and pull out the handlebars end plug.
- Pull off the twist grip.

Assembly:

- Push on the twist grip, push in the plug and fasten the countersunk head screw.
- Check the correct operation of the twist grip.
- The twist grip rotation can be adjusted by the screw in the metal retention cap.

8. Dismantling the headlamp

The headlamp consists of two main parts: Rim with reflector and nacelle.

Removing the rim with reflector:

- Unscrew the securing screw from the rim bottom.
- Swing the rim with reflector upwards and take off.
- Disconnect the leads from terminal if necessary.

To get at the bulb there is no need to disconnect the leads, it is sufficient to press in and turn the socket.

When assembling make sure before tightening the securing screw that the rim is correctly fitted into the top part of the nacelle.

To dismantle the telescopic front fork or the steering head it is necessary to remove the headlamp nacelle:

- Remove the rim with reflector and disconnect the leads.
- Disconnect the flexible speedometer shaft by unscrewing first the union nut, then the securing nut, take out the bracket and remove the speedometer.
- Unscrew the screws of the dip switch, the screw in the rear part of the reflector and both screws ($\frac{1}{4}$ " 10) above the steering crown and stem.
- Pull apart the headlamp nacelle halves.

When assembling take care not to pinch the leads:

- Fit the nacelle halves together.
- Screw in the screws ($\frac{1}{4}$ " 10).
- Fit in the speedometer.

- Fit the dip switch and screw in the screws in the rear part of the reflector.
- Connect the leads and replace the rim with reflector.

9. Dismantling the front fork:

- Remove the headlamp nacelle (Part III, para 8).
- Take off the top strap of the rubber sleeves.
- With a box spanner unscrew the nut $\frac{1}{4}$ " 10 in the fork cup and to make the working easier unscrew also the plug.
- Pull out the plungers with the coil spring downwards.

Assembly:

- Lubricate the plungers with „bearing grease 00“ and replace the plungers with the coil spring.
- Replace the plugs and the nut $\frac{1}{4}$ " 10 (do not forget the spring washer).
- Tighten the rubber sleeve metal straps.
- To replace headlamp see Part III, para 8.

10. Pivoted rear fork

Before removing the pivoted rear fork the following operations have to be carried out:

- Remove the rear wheel (Part III, para 2).
- Remove the cowls (Part III, para 11).

Dismantling:

- Lift the seat and unscrew the nut $\frac{1}{4}$ " 10 from the bolt fastening the spring. The fork sinks on the pin.
- Unscrew the lubricator of the pivoted rear fork.
- Screw the screw M 8 into the opening for the lubricator, using this screw pull out the pin cover. Push out the second cover on the other side. The inside of the fork bearing can now be thoroughly cleaned and properly lubricated. The next operation requires a puller with which the pivoted fork pin can be pushed out (pulled out).

Assembly:

- Having pressed in the fork pin move the fork several times up and down to make sure that it moves freely.
- Push on both plugs.

- C. Screw the lubricator into the left cover and lubricate the pin bearing by means of the grease gun.
- D. Screw the pressure spring to the hinge of the seat. Do not omit to place the spring washer under the nut $\neq 10$.

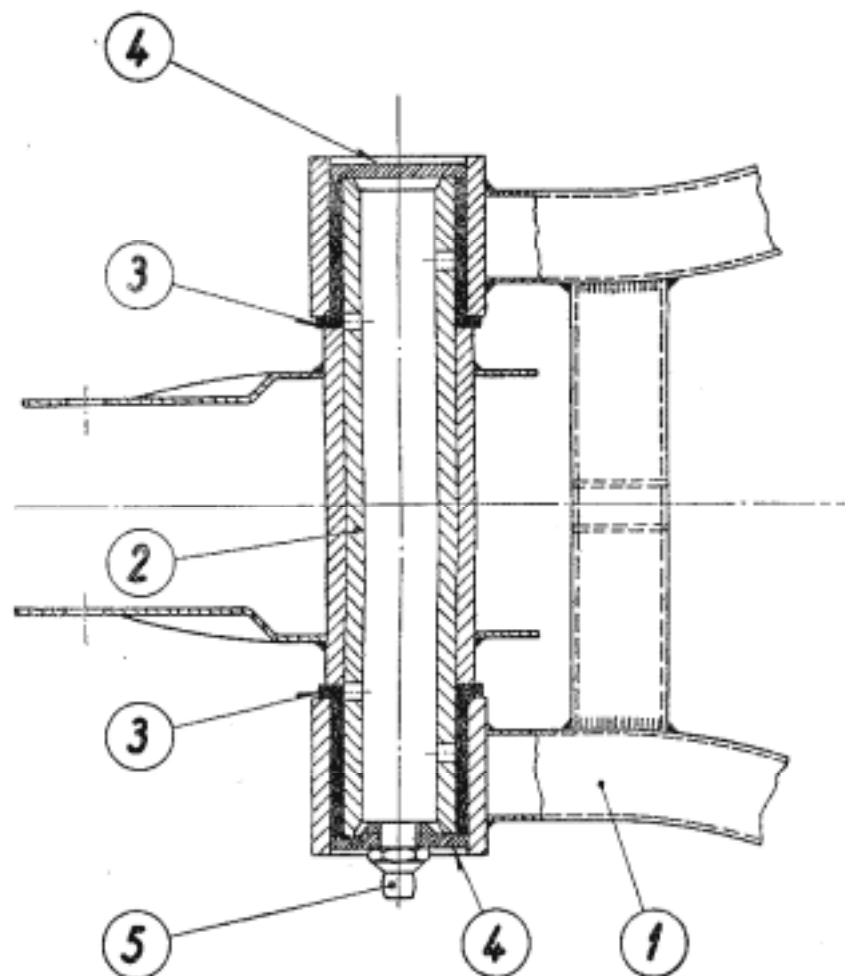


Fig. 26. — Pivoted rear fork bearing — sectional view.

11. Removing the cowls:

- a) From the R. H. side: unscrew the rear wheel brake nut and remove the pedal.
- b) Unscrew the four screws under the fuel tank, the hand screw of the lid, the screw in the middle of the cowl down above the engine, the screw behind the engine block cover from the L. H. side.
- c) Disconnect the rod of the carburettor starting pump.
- d) Unscrew the hand screw fastening the seat.
- e) Unscrew the five fastening screws under the seat.
- f) Remove the cowls.

Assembly:

- A. Match the cowls taking care that they fit in the entire circumference.
- B. Screw in the hand screw fastening the seat.
- C. Screw in all the screws, replace and tighten the brake pedal and check its operation.
- D. Having ridden a few miles tighten thoroughly all screws.

12. Removing the engine from the frame

- a) Remove the cowls (Part III, para 11).
- b) Disconnect the fuel pipe, throttle and clutch cables, sparking plug lead and the gear change lever rod.
- c) Disconnect the chain.
- d) Unscrew the three engine fastening bolts M 6 ($\neq 10$).
- e) Remove the engine.

Assembly:

- A. Replace the engine into the frame and tighten the three bolts M 6.
- B. Connect the chain, the fuel pipe, throttle and clutch cables, the sparking plug lead and the gear change lever rod.
- C. Replace the cowls.
- D. Check the running of the engine and after a few miles tighten all the screws.

IV. DISMANTLING WITH THE AID OF SPECIAL TOOLS

1. Dismantling the engine.
2. Dismantling the crankshaft and connecting rod assembly.
3. Dismantling the clutch and the primary chain.
4. Dismantling the gearbox.
5. Dismantling the gear change mechanism.
6. Dismantling the magneto.

These operations require expert skill and special workshop equipment. It is therefore preferable to have them carried out in a specialist repair shop.

DEFECTS, CAUSES AND REMEDIES

| Trouble | Location | Remedy |
|-----------------|--|---|
| Engine misfires | Engine overheated. Plug points glow, faulty sparking plug. Cylinder head clogged with carbon. Over-advanced ignition. Exhaust silencer clogged with carbon. | Wait until engine has cooled, do not run at high revolutions. Replace sparking plug. Remove head and decarbonize. Adjust ignition. Detach exhaust silencer, dismantle and decarbonize. |
| | Water or oil in carburetter. Insufficient fuel supply. Temporary short circuiting caused by faulty plug lead. Weak mixture. Improperly mixed petrol. | Clean the carburetter. Open emergency supply tap, refuel, inspect inlet manifolds, clean the filler cap breathing hole. Tape crack in insulation or replace lead. Clean jet - adjust carburetter. Stir mixture properly before refuelling. |
| | Unsuitable sparking plug. Oiled sparking plug. Excessive spark gap. Dirty breaker points. Burnt breaker points. Improperly adjusted breaker points. Faulty condenser, engine runs regularly on low revolutions only, strong sparking between breaker points. Temporary short circuiting caused by faulty plug lead. | Replace sparking plug. Remove and clean sparking plug. By bending outer point adjust the gap to 0.019 in. (0.05 mm). Clean the point using a cloth soaked in petrol. File points using a fine file. Adjust to 0.0019 in. (0.05 mm). Replace condenser. Tape crack in insulation or replace the lead. |
| | Engine overheated. Insufficient lubrication. Throttle cable broken or has slipped out. Air leak between carburetter and cylinder. | Allow engine to cool and keep it running at low revolutions. Take care that petrol is mixed properly at a ratio 24:1. Replace or adjust the cable. Renew packing, or tighten mounting flange. |

| Trouble | Location | Remedy | |
|------------------------------------|---|--|--|
| Engine lacks power (does not pull) | Carburettor out of order | Jet choked. Leaking float. Float stuck. Float needle does not seat properly. | Remove jet and clean it. Replace float. Loosen float. Repair or replace faulty needle. |
| | Permanent occurrence | Carbon accumulation in cylinder, head, exhaust and silencers. Insufficient fuel feed. Faulty ignition. | Remove head, barrel, exhaust piping, decarbonize. Dismantle and clean piping. Adjust contact breaker point gap and ignition advance. |
| | | Improper carburettor setting (improper mixture). Throttle valve stuck. | Adjust idling, needle position and clean air filter. Loosen and adjust valve to open fully. |
| | | Exhaust silencer clogged. Worn cylinder interior and piston. | Dismantle and decarbonize. Rebore cylinder, renew piston and rings, have piston condition of pin bearing checked (accredited workshop). |
| Temporary occurrence | Air leak in engine (crankcase halves or carburettor intake) | Take both crankcase halves apart, clean joint faces, apply jointing compound and reassemble properly. Replace packing under carburettor mounting flange. | |
| | Faulty head gasket. Brake drums rubbed by brake shoes. | Replace. Adjust brakes. | |
| Carburettor cannot be flooded | Fuel supply or cleaner partly clogged. Throttle cable sticks. Engine overheated. | Clear supply passages or cleaner. Lubricate or replace cable. Allow engine to cool and keep running at low revolutions. Replace plug. | |
| | Empty fuel tank. | Transfer fuel reserve (sufficient for 20 miles/30 km), refuel at the earliest convenience. Open fuel tap. | |
| | Fuel tap closed or partly closed. Cleaner above the tap clogged. Clogged pipe or carburettor screen. Clogged fuel cap breathing hole on the fuel tank. | Unscrew fuel tap and clean filter. Remove piping and blow it through, take out carburettor, dismantle jet and clean it. Clean filler cap breathing hole. | |

| Trouble | Location | Remedy | |
|--|---------------------------|---|---|
| Spark at cable end | No spark at sparking plug | Oiled sparking plug. Damaged plug insulation. Short circuiting between sparking plug points. Plug points gap too wide. | Remove plug and clean it. Replace plug. Adjust sparking plug gap to 0,019 in. (0,05 mm). Adjust gap to 0,019 in. (0,5 mm). |
| | | Ignition and light switch switched off. Faulty ignition coil. Dirty breaker points. | Switch on. Replace ignition coil. Clean using a cloth soaked in petrol. |
| | | Burnt breaker points. Faulty breaker points. | File points using a fine file. Have points repaired or replaced. |
| | | H. T. lead broken or loose. | Tape insulation crack, replace lead at the earliest convenience. |
| No spark at cable end | No spark at cable end | Burnt lead insulation. | Tape lead and replace as soon as possible. |
| | | Faulty condenser. Stator winding insulation damaged. Water in contact breaker. | Replace. Refer to an accredited workshop. Blow out water, wipe off carefully allow to dry. |
| Faulty bakelite lead terminal. | No spark at cable end | Faulty bakelite lead terminal. | Replace terminal. |
| | | Broken piston ring. Jammed piston ring. | Remove ring and fit a new one. Remove ring, clean it and replace. |
| Spark plug washer leaks. Faulty cylinder head gasket. Jammed piston. | No spark at cable end | Spark plug washer leaks. Faulty cylinder head gasket. Jammed piston. | Replace washer. Replace gasket. Dismantle and repair accredited workshop). |
| | | Poor compression | |

TWO-STROKE ENGINE OPERATION

Two-stroke petrol engine is particularly suitable for motor cycles. Having few moving parts it is therefore subject to less wear and consequently is more reliable in operation. Its working action is accomplished in a single crankshaft revolution (i.e. two piston strokes).

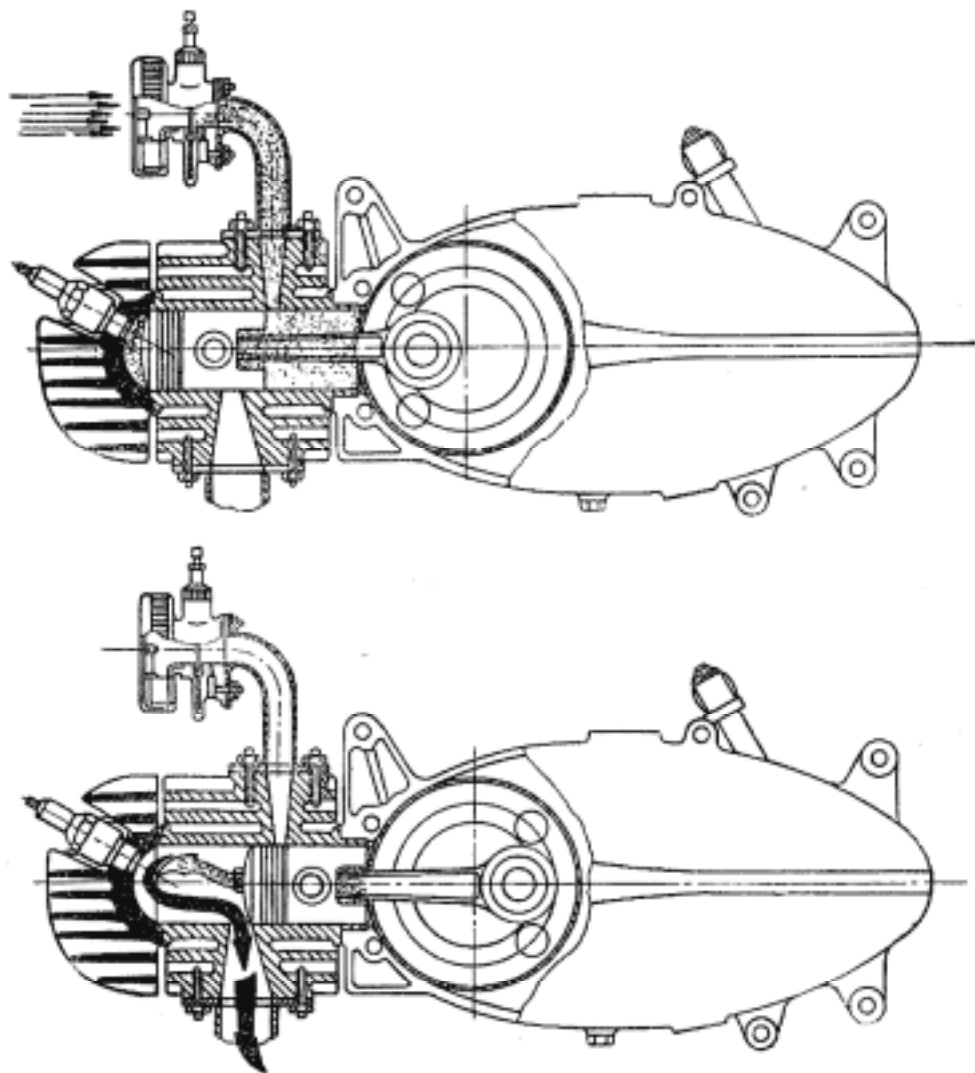


Fig. 27. — Two-stroke engine operation diagram.

1. Piston moves upwards:

The piston closes first the transfer ports, then the exhaust port and the mixture is compressed in the compression space of the cylinder head. Before the piston reaches its T. D. C. position the compressed mixture is ignited by means of an electric spark from the sparking plug.

In the meantime a certain amount of vacuum (underpressure) is created under the piston, which will cause the air and petrol mixture to be sucked from the carburettor into the interior of the crankcase.

2. Piston moves downwards:

After the mixture has been ignited the actual working stroke of the piston starts (the action of transmitting the force of expanding gasses by means of the crankshaft mechanism and transmission to the rear wheel of the motor cycle). The top edge of the piston opens first the exhaust port and the exhaust of the burnt gasses takes place. The top edge and the piston openings then open the two transfer ports. Under the piston and in the crank space there is fresh mixture compressed by the piston now moving down. Through the open transfer ports this fresh mixture directed by the shape of the port streams now into the cylinder: Both streams meet, hit the rear wall of the cylinder, proceed towards the cylinder head which turns them to the exhaust port side. The fresh mixture fills the cylinder and expulses at the same time the remaining burnt mixture (scavenging).