

61075

TOM COLLINS & SONS LTD.

Mosquito

For Super After Sales Service

TOM COLLINS & SONS LTD.

MOTOR CYCLES AND SCOOTER

BOUNDARY ROADS, ST. HELENS

Phone: ST. HELENS 634

INSTRUCTIONS FOR THE USE

Tom Collins

MOTOR CYCLE SPECIALIST



REGISTERED

TRADE MARK

974 Boundary Road, ST. HELENS,
IMPORTANT!!

The care of your tyres is even more essential now that your cycle is motorised. Please note that, when mending punctures, the patches used should be very thin and smoothed on all sides. Otherwise, the canvas of the outer cover in this area may be damaged, which would render the cover unserviceable in a very short time.

PT 2520 E

Mosquito

INSTRUCTIONS FOR THE USE

S. p. A. MECCANICA GARELLI
MILANO (ITALY)
Via Visconti di Modrone, 19

NEEDY SIDE'S POLITICAL EFFICIENCY & SPECIAL DISTRIBUTION

Bob Sangster

REPRESENTATIVE LIVERPOOL 2

CENTRAL 73969 - 1129

SALES
SALES
SERVICE

TECHNICAL DATA

Two stroke engine, type 307

Bore	35 mm	(1" 3/8)
Stroke	40 mm	(1" 9/16)
Piston displacement	38.5 cc	(2.3 cu. in.)
Maximum number of revolutions on load	4,200 rpm	
Corresponding speed	32 Km/h	(20 mph)
Transmission by friction roller	ratio 1 : 2	
Magneto ignition		
Ignition advance	25°	
As measured on flywheel circumference	30 mm	(1" 3/16)
Gap between points of contact breaker4 mm	(.016")
Gap between points of sparking plug5 mm	(.020")
Mixture lubrication		
Capacity of fuel tank	2.5 liters	(2.2 quarts)
Carburettor diffuser diameter	9 mm	(3/8")
Carburettor jet diameter . . .		

SUITABLE TYPES OF SPARKING PLUG

Marelli CW 175
Lodge H 14
AC 44
Bosch W 175 T1
Champion J8J - L10
KLG F50 - F70

Or plugs equivalent in thermal degree, length of the threaded connecting end, and shape of electrodes.

The auxiliary engine "Mosquito" is designed and built with a view to motorising the bicycle in a simple, economical and particularly a practical way, for the use of all cyclists. The engine does not cause the cyclist any inconvenience whatsoever. It can be of really great service inasmuch as the cyclist will realize that his vehicle will remain a bicycle.

With regard to the fixing of the engine on to the bicycle, the working of it and its maintenance, it will suffice to follow the few rules given in this booklet.

Cyclists should always keep in mind that in the event of the engine failing, whatever the reason for it, such as lack of fuel, they can disconnect the engine, the bicycle being thus again free and running without any extra resistance.

HOW TO FIX THE ENGINE

Move lever marked 1. into its DISENGAGED position (fig. 1).

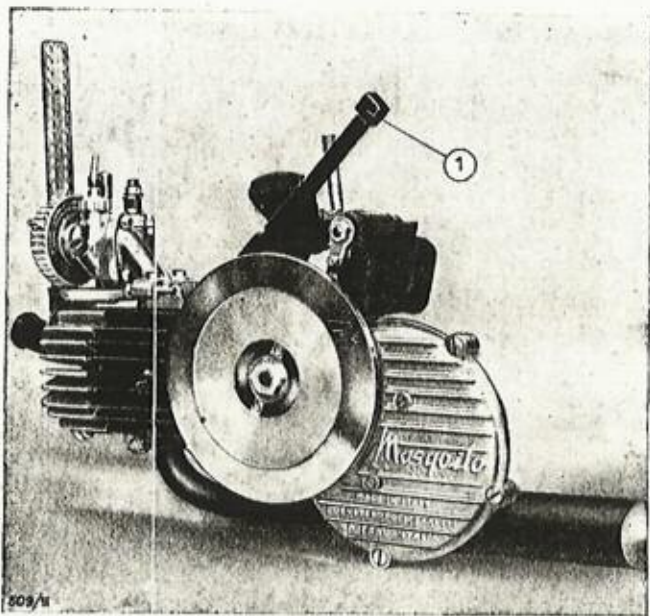


Fig. 1

Fix the motor on the bicycle frame (fig. 2) by means of top-plate marked 3 after checking that blocks marked 2 and blocks marked 4 are a good fit over the tubes of the fork. Blocks, which are not symmetrical, can turn so as to allow them to fit the above tubes, if necessary. Then put on springwasher 5. and nut 6. but do not tighten completely.

Slide the engine over the tubes of the fork (fig. 3) until the roller 7. is just touching the tyre of the back-wheel and the axis of the cylinder is approximately horizontal.

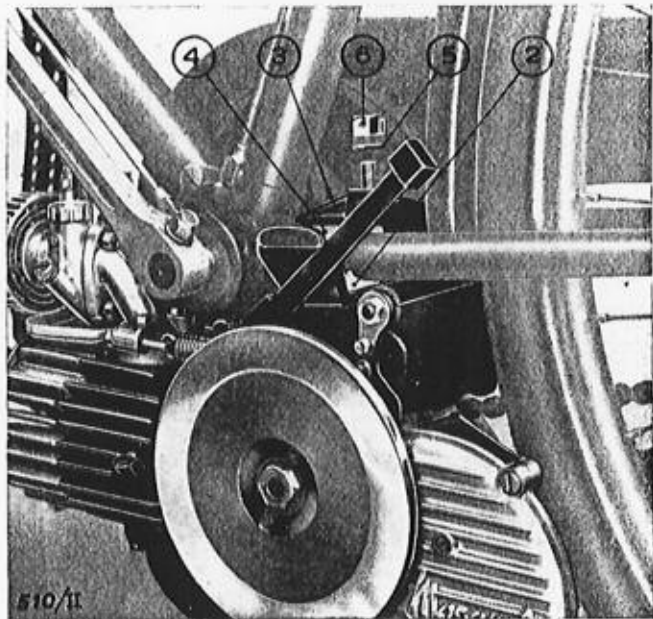


Fig. 2

Make sure that the crank lever of the pedals can turn freely, without fouling the engine and that the back-wheel is centrally placed on the driving roller (the wall of the tyre should be approximately 1/4" (6-7 mm) from the side of the casing). Then tighten nut 6.

Fix bracket marked 9. on the inclined front tube of the frame by means of bolt marked 10. but do not tighten, so as to allow bracket to be moved along the tube.

Thread the perforated strip marked 11 (fig. 4) on to the

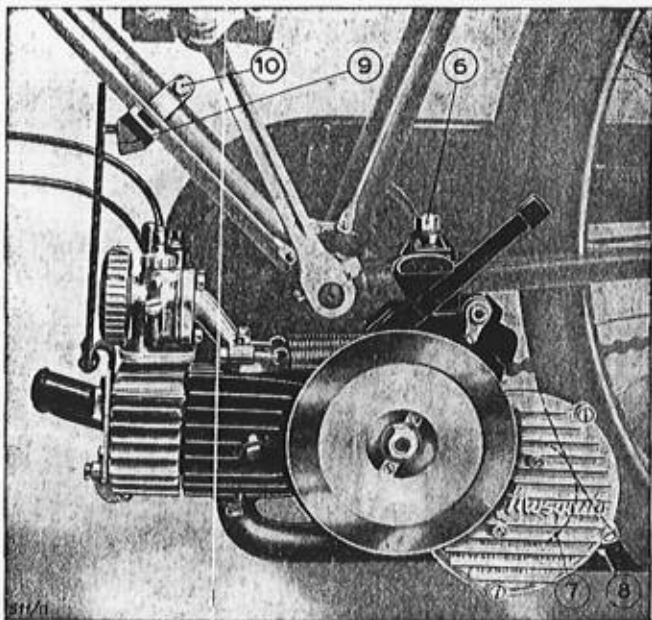


Fig. 3

two studs belonging to bracket 9. and in such a way that THE ROLLER IS NOT MORE THAN 1/8" (3-4 mm) AWAY FROM THE BACK TYRE. In this position the strip should just skim the carburettor air filter marked 12 running for this purpose the bracket along the tube.

Then fix cover plate marked 13., springwashers and tighten nuts marked 14.

The extra length of strip marked 11. stretching out of bracket 9., can be bent over as shown in figure 4, or cut off.

Bolt marked 10. can now be tightened.

At this stage ensure that the back wheel turns freely

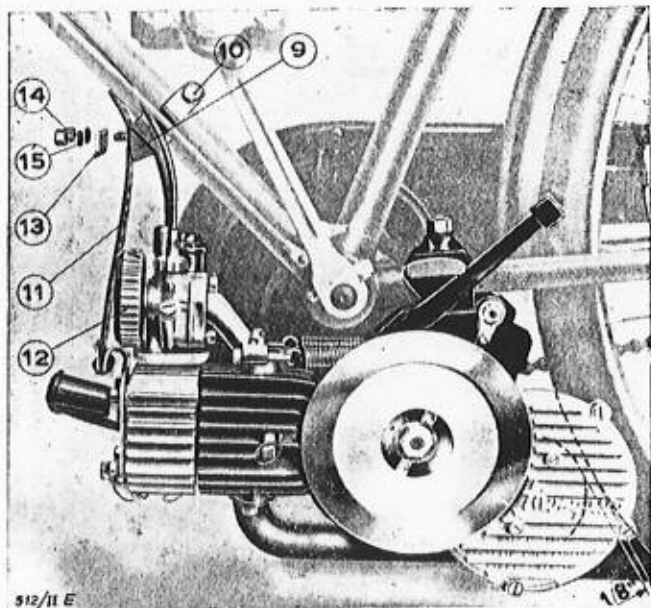


Fig 4

without touching the roller at any point, and that the cylinder is slightly inclined upwards when lever marked 1. is in the SWITCH-ON position. The perforated trip 11 should now be at right angles to the cylinder.

Please note the two important points at foot of pages 7 and 8:

- 1) When the engine is disconnected, the driving roller should be quite close to the tyre (well inflated).

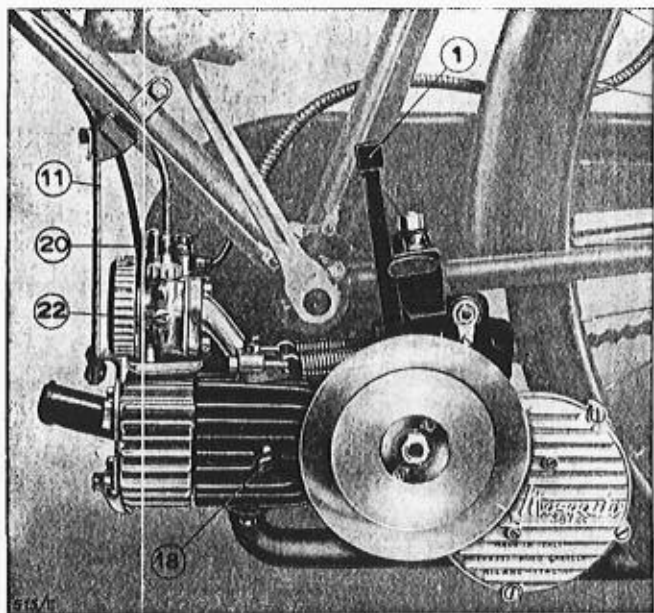


Fig. 5

- 2) When the engine is switched on, the cylinder should be in a horizontal position or slightly inclined upwards and the perforated strip marked 11 should be straight and at right angles to the cylinder (Fig. 5).

HOW TO FIX FUEL TANK AND ENGINE CONTROLS

Illustration No. 6 shows how the tank should be fixed. Special attention should be paid in order to ensure that tubes marked 16, are fixed on the outside of clip marked 17.

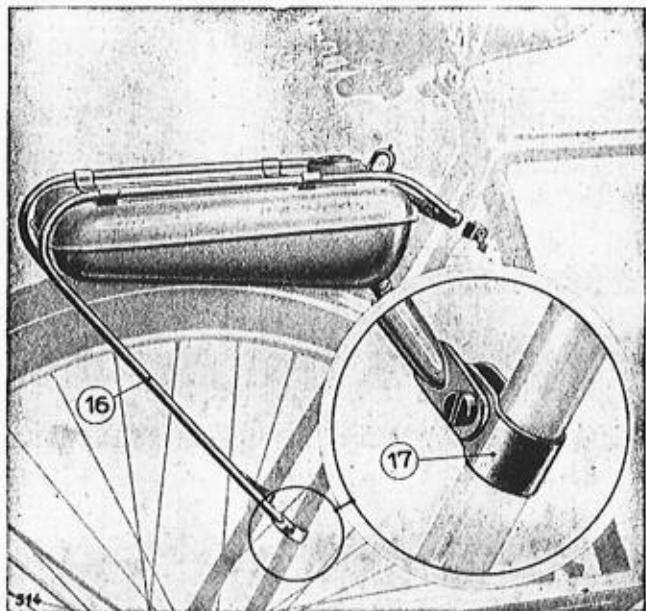


Fig. 6

Having fixed the tube of the carburettor and after having let in the mixture in the tank, it is necessary to expel the air from the pipe 24 (fig. 11) as indicated on page 20, paragraph 4).

The way to fix the controls is illustrated on page 12.

It is absolutely necessary to fix a good mudflap on the front mud guard, as close to the ground as possible, so as to protect the engine from any splash from the front wheel.

WORKING INSTRUCTIONS

It is necessary that the cyclist should keep in mind the fact that his motorised bicycle is not a motor-cycle and it should therefore not be subjected to excessive strain. When travelling over bad roads the speed should be reduced accordingly and the weight put on the pedals.

The engine is bench tested before delivery, but needs to be run in. Therefore one should take care not to travel at a speed exceeding 12-15 m.p.h. (20-25 Km/h) for the first 300 miles (500 Km).

PRELIMINARY OPERATIONS TO STARTING THE ENGINE

A) Fill the tank with petrol mixed with lubrication motor oil in the following proportions

- In summer: 5 measures (filler cap) - 3 oz. - heavy medium oil to 1 quart of petrol.
- In winter: 4 measures - 2 1/2 oz. - light oil to 1 quart of petrol.

The mixture should be carefully filtered through a clean cloth or preferably chamois leather, and then poured into the tank.

To be mixed with petrol we recommend the lubricating motor oil MOBIL OIL « A » of the SOCONY - VACUUM OIL COMPANY which may be used indifferently in summer and in winter.

B) Move the lever marked 1. to the engaged position (fig. 5).

HOW TO START THE ENGINE

- A) Open the petrol cock.
- B) Rotate the air filter marked 12 in the direction of the arrow marked "Avviamento" (Start). Open the gas control very nearly fully.
- C) If the engine is cold press up and down two or three times, the carburettor pump marked 20 (fig. 5). There is

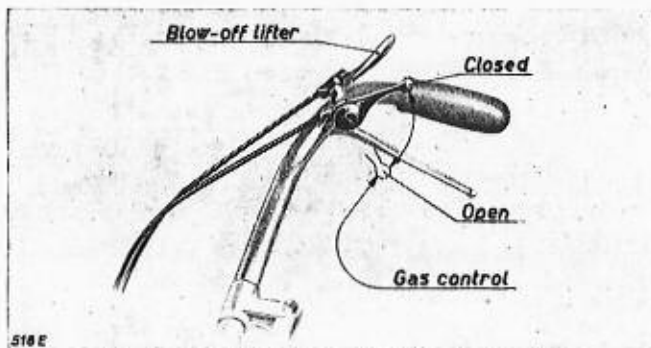


Fig. 7

no need to do this if the engine is warm. Get on the saddle, and raise the blow-off lifter.

After a few turns of the pedals, release the blow-off lifter. After the engine has started firing keep on helping it with a few more turns of the pedals. Then set the speed by adjusting the gas control. After a few hundred yards the engine will be getting warmer and the exhaust may not be so uniform (four - stroke - working) turn the air filter marked 12, in the position marked "Marcia" (Running). This can be done with one's foot and therefore there is no need to stop the bicycle.

The blow-off lifter should NOT be used to set the speed in lieu of the gas control.

- D) In winter when the engine is very cold, it may stop after firing a few strokes. In this case press the carburettor pump down again until the engine is running regularly.

HOW TO STOP THE ENGINE

Close the gas control and a few yards before stopping, raise the blow-off lifter until the bicycle is stopped. If the engine is required to stop for several minutes or longer it is advisable to shut the petrol cock and disconnect the engine.

It is absolutely to be avoided to reduce too much the speed (or to stop) by operating only with the bicycle brakes, without reducing (or closing) the throttle.

THE CARBURETTOR. Details, the knowledge of which may be useful.

The screw marked 23 (fig. 11) reduces the flow of the fuel into the carburettor and is designed to prevent petrol overflowing the constant level tank, as it may occur on bad roads. The petrol must flow along the end portion of the screw to get into the carburettor and is therefore slowed down.

STARTING PUMP 20 (fig. 5).

The starting pump of the carburettor, is not to be confused with ordinary devices that help to raise the petrol level temporarily in the constant level tank of the carburettor. It is more efficient and does not produce overflowing.

By pressing down this pump, a small amount of fuel is injected in the jet chamber under the screw marked 22 (fig. 5). By the use of this pump one can also detect two irregularities: if, when pressing the pump one notices that there is less resistance than the average, this means that the fuel is not

coming through. (It may be that there is no more fuel in the tank or the cock is shut off, or that the filters or the tubes are obstructed, or the screw marked 23 (fig. 11) is dirty).

If there is a greater resistance than the average, it means that the carburettor jet is obstructed. Sometimes a good squirt from the pump is sufficient to free the calibrated hole of the jet from any dirt which may be obstructing it.

Whenever one dismantles the carburettor whether it is for a periodical clean-out (See "MAINTENANCE") or for any other reason (for instance: carburettor getting choked - pag. 23 point 2) care should be taken when handling the floating valve which is obviously very light and delicate. Before reassembling, pour some petrol into the container so as to allow the valve to float and to facilitate its conical point (**which should be pointing upwards**) being located in the recess in the lid.

CARBURATION

In order to ensure that the engine when new may be run in easily, the engine is delivered set for the use of a rich carburation. It is therefore, usually necessary to re-set the carburation after the first few hundred miles by changing the jet. This re-setting should be done when the engine is warm, i.e., after running about two miles, with airfilter set in the position marked "**Marcia**" (**Running**). If the carburation is correct, the exhaust of the engine should gradually turn into a uniform humming, at speeds between 10 and 18 m.p.h. (15-30 Km/h). At a speed below 10 m.p.h. on a level road on a windless day, it is possible that the firing may not be uniform, i.e., that the engine may be working on four strokes.

If, however, the engine keeps working on four strokes at a greater speed than 10 m.p.h., or if only runs smoothly on two strokes when going uphill or when the brakes are gently applied to the bicycle, or after shutting the petrol cock, then it is necessary to substitute the jet with another one having the next lower number. Excepting, of course, the case of

accidental damage (perforation) of the float or imperfect tightness of the constant level device (see pag. 23, point 2).

It, however, the jet size has been reduced too much, there will be difficulty in starting the engine even if warm, and it may be inclined to stop or to miss firing when one tries to accelerate.

The **corrector** marked 12, of which the carburettor is provided, serves the purpose of changing the proportion between air and fuel.

With the corrector completely turned downward the richest carburation is obtained (which is a favourable condition in starting); when the corrector is turned in the highest position the carburation is the poorest (which is the normal working condition).

With an intermediate position of the corrector proportionally intermediate conditions of carburation are obtained.

Therefore, when required, in case of low temperature or to overcome very steep gradient, the corrector can be used to obtain the most favorable carburation by turning it down partially or completely.

The corrector contains an **air-filter** which consists of a metal grid preventing the dust from being sucked into the engine together with air. This filter must be periodically cleaned (see "Maintenance") by removing from its seat the iron straw and rinsing it with petrol. Before reassembling the filter plunge the iron straw into lubricating oil and leave it drop for some minutes.

MAINTENANCE

- A) Inspect frequently the grooves of the transmission roller and keep them clean.**
- B) Every 200 or 300 Km (150-200 miles) take out and clean the plug. (See page 22, para. 7). Check the gap between the points. (It should be about .020" - .5 mm).**

In case the sparking plug must be changed, the instructions given on page 3 "TECHNICAL DATA" are to be followed.

- C) Every 1000 Km (600-700 miles),** dismantle the exhaust, remove the cylinder head and scrape the inside of it carefully and clean the head of the piston, particularly the edges corresponding to the two transfer ports in the walls of the cylinder. Clean also the exhaust-port.

The exhaust-port can be opened by turning the fly-wheel until the piston reaches the lowest point on its stroke, (inner dead point).

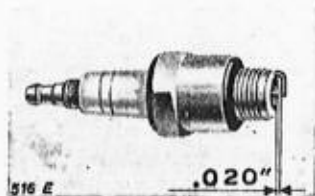


Fig. 8

Care should be taken to remove accurately from the cylinder bore the dust and the carbon deposits produced by scraping, to avoid their going between the piston and the cylinder.

When re-assembling the cylinder head, the nuts should be tightened little by little, and changing from one to the other diametrically opposite, i.e., cross-like fashion.

Also it is to be avoided to tighten too much the nuts because when the engine gets warm the stress of the studs increases.

Every second time (that is every 2000 Km - 1200 miles) remove the alluminium bottom of the silencer; remove the support of the silencing mass (without removing same) and

clean its end of the carbon deposits, and particularly the 4 holes on the bottom. Handle the fiberglass of which the silencing mass is composed, as little as possible, so as not to damage it and in order to avoid the troublesome itching that it causes to the skin on contacting it. Before re-assembling the silencer, the exhaust-pipe must be inspected and cleaned from possible other deposits.

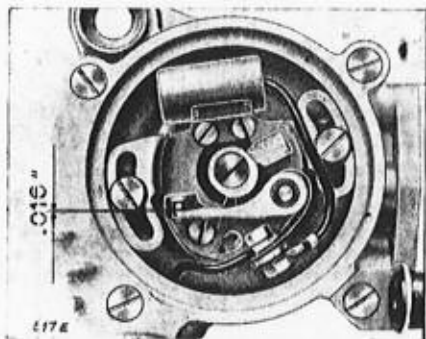


Fig. 9

Ask the authorized Agents the necessary spare fiberglass (Ref. No. 307-3-266 Fiberglass Packing for Silencer).

However the conditions of the silencing mass affect only the acoustic and not the engine output, because the exhaust gas does not go through it.

It is advisable to handle the fiberglass protecting one's hands with old leather gloves, so as to avoid the above mentioned trouble.

- D) Every 3000 Km (2,000 miles),** dismantle cylinder head, cylinder and the exhaust, and decarbonise thoroughly them.

Dismantle also the piston rings from the piston (keeping them one after other in order to replace them in their respective previous position) and scrape the carbon deposits off their inner walls and their grooves in the piston. The plugs 18 (fig. 5) are pressed in and turned in a determined way. **They should not be removed or turned around, with a presumed view to tighten them thoroughly.** Dismantle and clean the tank and filter of the carburetor. Check, clean and re-set the points of the breaker removing the lid of the box on the opposite side of the fly-wheel. (Gap between points should be .016" - .4 mm See fig. 8).

- E) Every 6000 Km (3500 miles),** dismantle fly-wheel for checking. Should one find, by touching with one's fingers, that there is some sand or sediments in the grease, dismantle the gear-box cover also, take off the grease completely; put **very little** (1/2 oz.) new grease **on the teeth of the gears only.** (Use only "Mobilgrease N. 5" of the "Vacuum Oil Company"). When re-assembling take care of the timing. Secure correct timing by rotating the roller until the tooth which is marked is in line with corresponding mark on the case (side pick-up holder, see Fig. 10), or is slightly lower (not more than one groove of the roller). It should never be higher than the scratch on the case. The roller being in this position, fix the fly-wheel so as to make the arrow engraved on it coincide with the one engraved on the gears case cover (Fig. 5). In this position the points of the breaker should just begin to open.

Having removed the engine from the bicycle, dismantle the suspension spindles (at least the lower one) clean and re-assemble after having renewed the grease in the space between the two bronze bushes.

Tighten carefully the nuts of the axes before inserting their stops. A part from the run mileage, this operation must be carried out whenever it is noticed that the swinging movement of the suspension is not completely free.

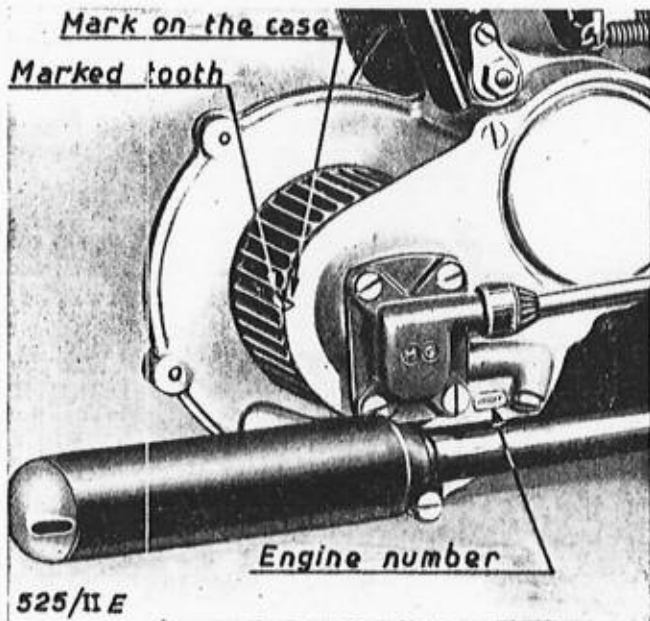


Fig 10

The work explained in paragraphs D) and E) should be carried out only by skilled operators. It is advisable, therefore, that non-competent users get in touch with the agent representing the manufacturer.

OPERATION TROUBLES

A) The engine does not want to start or keeps stopping.

- 1) The petrol cock may be shut. **Open it.**
- 2) There is no petrol in the tank. **Refill with petrol mixed with oil in the right proportion after filtering mixture through clean cloth or rather chamois leather.**
- 3) The jet of the carburettor is obstructed. **Undo the screw marked 22 fig. 5, and take out the jet. Suck the conical end of the jet to extract any dirt that may be in it, or push through the jet hole the specially supplied steel wire only and clean the jet with it. Look in the jet against the light and make sure that the hole is clear. Press the pump marked 20 once or twice before re-assembling the jet. The fuel squirting from the jet chamber would drive out any sediment which might otherwise cause the same trouble at a later date.**
- 4) The screw marked 23 which regulates the flow of petrol (fig. 11) is dirty (this trouble may arise especially during the first days of usage of the en- **Shut off the petrol cock, remove the screw 23 and clean its end a); refit it to its place without tightening it. Then open the cock of the tank, so that the mixture flows out for a few moments, removing thereby possible air bubbles or impurities. Then shut the cock and tighten the screw.**
If the mixture should not flow out, on

gine, because of minute residual impurities or, if the engine has been stopped longtime. **Or there are air bubbles into the pipe 24.**

- 5) The petrol pipe is obstructed or the filters are dirty.

having undertaken this operation see paragraph. 5). The operation of discharge of air bubbles from the pipe 24 must be undertaken every time the fuel pipe is removed.

Dismantle pipe marked 24, and clean the filter that is in it. Before re-assembling open the petrol cock to check if petrol is flowing from the pipe. If it does not, dismantle the petrol pipe and blow through it; check if petrol is coming out of the petrol cock when open. If it does not, it is necessary to dismantle the cock in order to clean its filter.

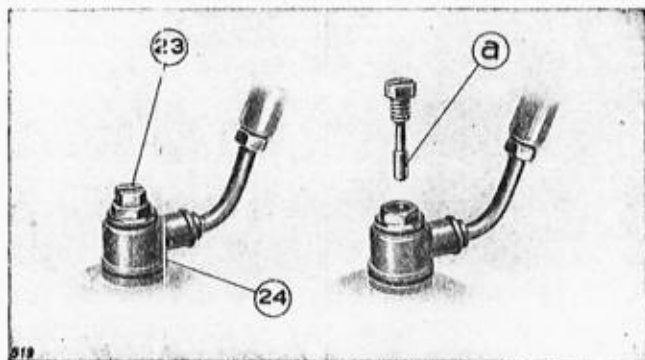


Fig. 11

6) The engine is choked with petrol:

If the carburettor is choked, because of excessive use of the pump or because the needle valve is leaky and the petrol is dripping outside, close the petrol cock and fully open the throttle. Then pedal until the engine starts. If after doing this the engine still refuses to start, remove the plug and having found it wet, dry it, and before putting back, pedal round a few turns in order to free the engine from the excess of petrol.

7) The plug is dirty

Remove the plug: clean the points and scrape the insulating part of the centre electrode and its housing. Better still, get the plug sand-blasted at your local garage station. Check the gap between the points (.020" - .5 mm, fig. 8). If necessary, use some fine emery cloth to remove from the electrodes points any oxidation. **When fitting the plug again, take care that it is put on at the correct angle. The plug should be screwed on by hand only, the spanner only serving the purpose of tightening the packing.** Before re-assembling the plug, test it as follows: Connect the plug with the cable from the magnet, and hold it against the cylinder block, then raise the back wheel from the ground and turn the engine by half a turn by means of the pedal. There should be a spark between plug points. If on the other hand the spark is in-

ternal, it means that the plug is not properly cleaned or may be faulty. In the latter case, replace the plug with a new one. Should there still not be a spark, it is advisable to get in touch with the manufacturer's agent or seek expert advice.

- 8) The blow-off valve is sticking.

Try and turn the stem of the valve by using a plyers. Should this not be sufficient cure remove cylinder head and grind the valve.

- B) The engine is not pulling, i.e., it does not reach its normal speed.**

- 1) The engine is missing. When opening the throttle fully, the engine tends to slow down.**

The carburation is poor. **Turn gradually the corrector 12 downwards** (see fig. 4). Should this operation not be sufficient try to replace the carburettor jet with one next larger in size. There might be an air leak in the carburettor. Check and tighten all nuts.

- 2) The exhaust of the engine is not uniform. It becomes so, only at a speed greater than 15 mph.**

The carburation is too rich. **Turn up completely the corrector** (this is the normal working position). Should not be obtained a satisfactory result, try to replace the jet of the carburettor with one next smaller in size. At times, this trouble might be due to the carburettor getting choked owing to the float needle not working properly. This can be checked readily by shutting off

the petrol cock while the engine is running. In this case, dismantle and thoroughly overhaul the carburettor. Most likely the float and the tank lid want to be replaced because their respective needle and seat are worn or the float is perforated.

Should the trouble persist, check, under consideration of the run mileage, whether the engine needs cleaning as per chapter « maintenance » point C).

- 3) The noise from the exhaust is fainter. The engine is four stroking at all speeds.**

Excessive carbon deposits in the transfer and outlet ports. Also exhaust pipe and silencer may be obstructed. See paragraph C) on « maintenance ».

- 4) Lack of compression.**

Inspect the blow-off valve and make sure it does not leak. (See paragraph A, point 8). Check all the nuts of the cylinder head and tighten them if necessary. Again, if this is of no avail, dismantle the cylinder and check if the piston rings are free in their respective grooves. If they are free, that means that the same are worn out and need changing. Have the engine checked by the authorized workshop.

- C) The transmission roller skids, i.e., the engine increases its revolutions without corresponding increasing speed of the bicycle.**

- | | |
|--|---|
| 1) The tyre is insufficiently inflated. | Inflate it |
| 2) The tension springs are not taut enough, or one spring is broken. | Inspect and replace springs with new ones if necessary. On wet or muddy roads, pull the springs completely. |
| 3) The gap between the driving roller and the tyre is excessive. | Verify if the engine is fixed in the correct position, as shown on page 7-9 and check whether the nut 6 is properly tightened (fig. 2). |

STANDARD TOOLS PROVIDED WITH EVERY ENGINE.

- One plug spanner combined with screw-driver for inspection of the carburettor jet.
- One length of wire to clean carburettor jet.

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