Instructions for the Operation & Maintenance of

Ransomes

18 in. ‘GAZELLE’ Mk II
MOTOR LAWN MOWER
Instructions for the Operation & Maintenance of Ransomes 18 in. "GAZELLE" Mk II Motor Lawn Mower RANSOMES, SIMS & JEFFERIES, LIMITED IPSWICH.
OPERATING INSTRUCTIONS

SECTION 1.

BEFORE STARTING.
1. Make sure that the petrol tank is filled with the correct mixture of oil and petrol. (See instructions on tank), \(\frac{1}{4}\) pint of oil to 1 quart of petrol.

As the useful life and amount of good service the engine will give depends almost entirely upon the way it is lubricated, especially during the early stages of its life, it is advisable always to use one particular brand of oil, and to ensure that the oil is thoroughly mixed with the petrol before putting into the fuel tank.

RECOMMENDED LUBRICANTS

For Engine

<table>
<thead>
<tr>
<th>Brand</th>
<th>Type</th>
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<tbody>
<tr>
<td>SHELL</td>
<td>Tractor Oil 50 or Golden Shell</td>
</tr>
<tr>
<td>VACUUM</td>
<td>Mobiloil D</td>
</tr>
<tr>
<td>WAKEFIELD</td>
<td>Castrol XXL</td>
</tr>
<tr>
<td>PRICE'S</td>
<td>Motorine B de Luxe</td>
</tr>
<tr>
<td>ANGLO</td>
<td>Essolube 50</td>
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2. Make sure the cutting cylinder is free, and correctly adjusted, (see under “Cutting Adjustments”) by turning over the clutch shaft with the hand once or twice.

3. Lubricate the following:
   (a) The clutch shaft bearing (lubricator F (Fig. 1) on top of left hand side frame).
   (b) The cutting cylinder bearings (lubricators on the inside of each side frame. E (Fig. 1).
   (c) The chain drive (lubricator G (Fig. 1) on top left hand side frame).
   (d) Wood roll spindle. (This can be oiled in between the rolls and at each end).

4. Adjust the height of the handle to suit the operator by slackening off the two lower lock nuts (D see Fig. 1) on
either side frame. When the correct height is found tighten up the lock nuts.

Note.—To ensure easy running of the machine put as little weight on the wood rolls as possible, (i.e. do not press down hard on the handle, but endeavour to push the machine about on its pneumatic tyres using the wood rolls merely as a guide to determine the height of cut).

To start engine when cold.
1. Pull on petrol tap beneath tank.
2. Close carburettor strangler by lifting end of lever.
3. Press tickler at side of carburettor body until petrol is seen to drip.

4. Open carburettor control lever on handle bar about one third of its full opening.

5. Wind starting rope around pulley on flywheel magneto in a clockwise direction, one end in pulley notch, the other end being gripped in, but not round the hand. Then give a brisk pull to rotate the engine, pulling the rope clear of the starting pulley.

6. After the engine has started, gradually open strangler as engine warms up.

**TO START WHEN HOT.**

The same procedure should be adopted except that it should not be necessary to close strangler or to flood carburettor by pressing tickler.

**FAILURE TO START.**

If the engine will not start after a reasonable number of trials, ascertain whether this is due to lack of compression, faulty fuel supply, or faulty ignition.

**FUEL SUPPLY.**

Depress tickler at side of carburettor body. If fuel is reaching float chamber it will spurt out of vent at top of tickler.

**IGNITION SYSTEM.**

Unscrew sparking plug from cylinder head and place it with ignition cable attached, on a metal portion of the engine. When the engine is rotated a spark should be visible at the plug points, if the plug and ignition system are in order. If there is no spark try a new plug or, alternatively, check whether a spark occurs at the end of the ignition cable when this is held about one-eighth inch away from a clean metal part of the engine.
If the engine will not start after these preliminary tests, tilt the machine back onto its handle so that the drain plug on the engine crankcase is directly under the crankshaft. Remove drain plug and drain off any oil which may have accumulated in the crankcase.

If after this the engine will not start a more detailed examination may be required.

**Compression** should be felt when the engine is rotated at normal starting speeds with throttle partly open.

**RUNNING IN.**

Whilst the engine is new, it is advisable to add a little extra oil to the petrol.

**THE MACHINE AT WORK**

**SECT. II.**

The cutting cylinder is driven by the engine through a centrifugal clutch. This arrangement ensures that:

(a) The cutting cylinder is automatically disengaged from the engine for starting.

(b) The engine is automatically protected from overloads and thus prevented from stalling.

(c) A single throttle lever gives the operator full command of the machine. If after starting, the throttle lever is fully closed, the engine should be idling and the cutting cylinder should remain stationary. As the throttle is opened up so the cutting cylinder will automatically take up the drive. Should the cutting cylinder at any time fail to take up the drive when the throttle is fully opened, close the throttle and free the cutting cylinder by turning the clutch shaft (do not attempt to turn the cutting cylinder). When the obstruction is cleared, open up the throttle and continue cutting.
CUTTING ADJUSTMENTS.

To Alter Height of Cut. Rotate handwheel C (See Fig. 1) directly behind the engine in the desired direction. (See arrow on handwheel).

Caution. The machine should never be used with the bottom blade pressing on the lawn. If it does, the spiral cutters are liable to be damaged by the bottom blade being forced upwards, the machine will work heavily and the turf will be badly marked. It is a fallacy to think that grass can be cut shorter by having the bottom blade hard on or touching the ground. If it is just clear of ground it does not press the grass down and a cleaner cut is made.

To Adjust Bottom Blade. When properly adjusted the knives should revolve freely and at the same time be able to cut a leaf or piece of writing paper held at the edge of the bottom blade. This test should be made over the entire width of blade.

To Set the Bottom Blade. Tilt the machine backwards on to the handle, slacken off the two rear locking screws A (see Fig. 1) either side of the bottom blade. To bring the blade closer to the knives turn the two forward adjusting nuts B (See Fig. 1) in a clockwise direction. When the necessary adjustment is made and the knives are just touching the bottom blade throughout the whole length without causing any frictional pressure, lock up the two rear locking screws A. If the bottom blade is set hard onto the cutting cylinder no cleaner cut is obtained, but extra work and undue wear is put on the machine.

MAINTENANCE AND REPAIRS

SECT. III.

ENGINE.

PETROL FILTER.

A filter gauze is fitted to bolt connecting pipe to carburetter, and also to fuel tap in tank. These filters should be examined occasionally and cleaned by dipping in petrol.
CARBURETTER.
This is the Villiers "Junior" type having a single control lever to throttle, and attached to the throttle is a taper needle which provides a correctly adjusted mixture at all throttle openings. The taper needle is set at works before delivery, but if it is desired to make adjustments at any time, proceed as follows:—

First remove the throttle by unscrewing the top ring of the carburettor. At the top of the throttle there is a small screw, turning this in a clockwise direction—which lowers the needle—will give a weaker setting. For correct setting, screw down needle until the engine just begins to spit and run unevenly indicating too weak a mixture. Then raise needle just enough to ensure that the engine will run smoothly and evenly when warm by unscrewing the adjusting screw by approximately half a turn at a time.

If the float cup has to be removed at any time for cleaning, etc., do not use too much force in tightening the bottom nut when re-assembling.

SPARKING PLUG.
Clean and reset the points .020 in. gap after each 100 hours operation.

Adjustment of the gap should be done by moving the points attached to the outer body of the plug. Never bend the centre pin. Keep the outside of the plug insulation free from water and dirt. When unscrewing the plug in the cylinder head, should any undue stiffness be experienced, do not use force but examine thread for any particles of grit or carbon which may be present. These must be removed, otherwise the threads in the cylinder head may be damaged. It is a good plan to smear a little graphite grease on the plug threads before replacing.

CONTACT BREAKER.
The contact breaker points should be checked occasionally to see that they are clean, that the gap when fully opened is between .012 in. and .016 in., and that they open and close
properly; to obtain access to points proceed as follows:—

Remove starting pulley (unscrew the central screw) and flywheel cover plate which is secured by three screws.

MAGNETO TIMING.

When the engine is built the magneto is timed so that the contact points commence to open when the piston is 5/32 in. before top dead centre. An arrow is then stamped on the face of flywheel boss in line with the timing mark cut in end of driving shaft, and the flywheel securely fixed to taper shaft by using a hammer on the tommy bar of box spanner provided with engine.

Subsequent timing is simplified by placing the timing marks opposite, but it is advisable to check before finally tightening flywheel.

FLYWHEEL REMOVAL.

The cam operating the contact breaker is riveted to the flywheel which is driven by a taper on the crankshaft; and if alteration to magneto timing is necessary, the flywheel must be released, by unscrewing the centre nut with the box spanner provided in the tool kit. This nut has a right-hand thread and is imprisoned in the flywheel and it should be unscrewed until the flywheel is just free to revolve on the crankshaft. When re-assembling check the timing (see “Magneto Timing”), both before and after tightening up the flywheel securing nut. This nut must be tightened up hard by hitting with a hammer on the end of the tommy bar.

The taper of shaft and cam must be clean and dry; if any oil is present on the surfaces it will be impossible to secure an effective drive.

DECARBONISING.

Decarbonising the Villiers Two-Stroke Engine is quite straightforward, because of the simplicity of this type of unit, the following points, however, are worth special attention.

When removing and replacing the cylinder, care should be taken not to twist it round the piston—it should be pulled
off or pushed on straight so that the rings cannot catch in any of the ports and break.

All carbon should be removed from inside the piston head, as well as from the top of the piston and from the cylinder head.

The ports in the cylinder—particularly the exhaust port—should receive careful attention, and should be kept clean, but on no account must the size or shape of these parts be altered by filing.

Piston ring grooves must be kept free from carbon in order to leave the rings quite free. Piston rings should be bright round their surface, which makes contact with the cylinder bore. Should wear cause the joint gap to exceed \( \frac{1}{32} \) in. when in the cylinder, the piston ring should be replaced.

Carbon will form on the gudgeon pin at either side of the small end bush, and this should be carefully removed, otherwise difficulty will be experienced in removing the pin from the piston. The small end bush and the piston bosses should be kept quite free from carbon.

It is of the utmost importance that silencers and exhaust pipes are kept quite clean internally, and that a heavy deposit of carbon is not allowed to accumulate. This would cause back pressure and loss of power.

It is important that air leaks should be avoided.

The connection between carburettor and induction pipe must be absolutely airtight, and after dismantling an engine, new washers should always be fitted at the induction pipe joint and cylinder base joint, if the original ones have been disturbed.

**NOT FOR RESALE**

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**HINTS AND TIPS**

1. Always thoroughly mix the oil and petrol before putting in tank.

2. It is wise to filter your petrol mixture through a fine wire gauze when putting in tank.

3. Do not flood carburettor before starting when the engine is warm.
4. Stop engine by turning off fuel tap if engine is not to be used for several days.
5. Do not experiment with cheap sparking plugs, use type recommended.
6. Always quote engine number when ordering spares or asking for advice. The number with prefix letters and or numbers is stamped on crankcase below cylinder base, at rear of engine.
7. Crank shafts should only be taken apart by a skilled mechanic. Special tools are required for ensuring alignment when re-assembling, and as the makers have these facilities, repairs can be undertaken by them at the lowest cost.
8. It is important that air leaks should be avoided at the following points:—
   (a) Between inlet pipe and cylinder.
   (b) Between inlet pipe and carburettor.
   (c) Between cylinder base and crankcase.
   (d) Between the two halves of crankcase.
9. When decarbonising the engine it is very important that silencers and exhaust pipes are also cleaned out.
10. Avoid all sharp bends in the carburettor control cables.

ADJUSTMENT OF DRIVING CHAIN.
To attain access to the driving chain, first remove side wheel by undoing the single set screw in the wheel centre and withdrawing the wheel with the wheel retaining cap. The chain case cover can then be removed by undoing the two self locking nuts. The adjustment of the chain is made by first loosening the idler sprocket and then sliding it in its slot in the desired direction. When the adjustment has been made the idler sprocket should then be securely locked. When correctly adjusted the chain should have a \( \frac{1}{8} \) in. side play on each side of the centre line on the longest free length. Although the idler sprocket runs on an oilite bush it is advisable to oil it occasionally.