

RUNNING INSTRUCTIONS

for

VILLIERS "MAR-VIL" and "CENTURY" TWO-STROKE STATIONARY ENGINES

"MARK 4" MODELS WITH GRAVITY FEED TANKS

This List applies to Engines numbered with the prefixed letters—
MVEC. — MVE. — BCUE. — BCUD.

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BEFORE STARTING (I.)

Mix well together $\frac{1}{2}$ gallon of petrol and two full measures ($\frac{1}{2}$ pint) of Patent Castrol XL OIL. The oil measure is fixed inside the filler cap on top of tank. Pour into tank through a filter.

IMPORTANT.—On no account should oil be poured directly into the tank.

The petrol tap has "Main" and "Reserve" positions. Before starting see that the lever is pushed to end of slot away from the marking "RES," should the engine then stop through lack of petrol the reserve supply in the tank can be used by moving tap lever to "RES."

TO START (II.)

- (a) To start from cold.

Open petrol tap by pushing end marked "ON."

Close carburetter strangler by moving lever upwards in direction of arrow stamped on, and open control lever on top of tank, clockwise $\frac{1}{2}$ full movement. Flood carburetter by depressing tickler on side of carburetter body.

Pull starting handle or depress foot lever quickly to rotate engine, repeat if necessary. Allow handle or lever to return slowly.

When engine starts, gradually return strangler to normal position with knurled knob pressed right down, giving full amount of air. Control engine speed by carburetter control on tank.

- (b) To start when hot.

Do not flood carburetter.

Proceed as item (a) but give full air immediately engine starts.

CAUTION.—The engine should never be allowed to run for long periods with strangler closed.

TO STOP ENGINE (III.)

Push control lever on tank back to closed position (anti-clockwise). If necessary to turn off petrol, close tap by pushing end marked "OFF."

CAUSES OF FAILURE TO START (IV.)

- (1.) Continual operations of the starter with the carburetter strangler lever in the starting position will cause a very rich mixture to collect in the engine. This will oil up the sparking plug, resulting in some difficulty in starting.
- (2.) Empty fuel tank.
- (3.) Sparking plug faulty.
- (4.) Magneto contact points dirty or wrongly set.
- (5.) Choked filter gauzes. one in carburetter end of petrol pipe, one on petrol tap in tank.
- (6.) Dirt or water in the petroil, causing choking in the carburetter jet.
- (7.) Incorrect setting of the carburetter jet needle.
- (8.) Loose sparking plug lead.
- (9.) Cylinder head nuts may be loose.

NON-STARTING (V.) REMEDIES FOR ABOVE CAUSES OF FAILURE.

- (1.) Clean the sparking plug ; open the strangler (giving full air) and operate the starter in the usual way.
- (2.) Refill tank.
- (3.) Remove plug from the cylinder, and with the lead attached, lay it on the outside of the cylinder. Revolve the engine by means of the starter, and, if no spark is seen, the plug should be cleaned, or a new one fitted. If there is still no spark, the magneto contact points may require cleaning.
- (4.) To clean the magneto contact points, first remove the crankshaft nut, pulley and aluminium cover. This makes the contact points accessible between the flywheel spokes. Turn the flywheel until the points are closed. Open the points with the finger, then insert a piece of stiff paper, such as a v iting card; afterwards, release the points and withdraw paper.

IMPORTANT.—Do not file the contact points.

Efficient running and constant speed of the engine is dependent upon the correct setting of the contact points. Adjustment is rarely necessary, but if, however, it is required, proceed as follows :

With the points fully open, loosen the lock nut (bottom nut) with the spanner provided ; then turn the point until the gap is exactly $\frac{1}{16}$ " using the feeler gauge provided on the spanner for this purpose. Afterwards tighten up lock nut.

(5 & 6.) Dirt or water in the petroil will cause bad starting and erratic running. To clean the carburetter and gauze, remove petrol pipe, then carburetter by releasing clip. Clean gauze with petrol. Do not alter the carburetter needle setting. When replacing carburetter, push right home on stub.

If water in the tank is found to be causing bad starting, the tank should be drained thoroughly.

- (7.) The carburetter needle is adjusted for the correct running before leaving the works and should not be altered.

(8.) See that the high tension lead is connected securely to the plug.

(9.) See that cylinder head nuts are tight.

REGULATION OF SPEED (VI.)

The governor can be set to cut out ignition at any speed between 1,200 and 1,800 r.p.m. The standard speed is 1,750 r.p.m. The governor is set to the required speed before leaving the works and should not again be interfered with, as re-adjustment of the governor entails re-setting of the carburetter.

Should it become necessary to re-set Governor, greater cutting out speed is obtained by increasing the spring pressure on contact breaker arm, and vice versa.

HINTS AND TIPS (VII.)

EXHAUST PIPE.

To avoid unpleasant leaks, the fixing of the exhaust pipe should be secure.

BELT DRIVES.

If the engine drives by means of a belt, see that this is not too tight, as this prevents easy starting and causes the belt to wear out. Undue heating of the crankshaft bearings may also be caused.

DECARBONISING.

If, after some time, the engine loses power, or over-heats, formation of carbon may be the cause. In this case, remove parts as follows :—

Remove exhaust pipes or silencer, then cylinder head and cylinder. Scrape off carbon by means of a scraper or screwdriver, being careful not to damage head. Great care should be exercised in removing the piston rings to prevent breakage. Carbon should be carefully cleaned from rings and grooves.

After excessive running, the carbon may be so hard that it will be necessary to break the rings to remove them. (It is advisable to keep a set of spare rings for emergency.)

When replacing piston rings, see that the rings fit properly in their grooves and over ring stops.

REMOVING FLYWHEEL.

The flywheel should not be removed if avoidable. To do so, first remove pulley and then use "Hammer-tight" spanner, as made by the Villiers Engineering Company Limited. After first becoming free, the nut will tighten up and further blows are required to free it. When off, a piece of iron should be placed across the poles.

TIMING OF ENGINE.

The timing should be such that the contact breaker points are just opening when the piston is $\frac{3}{32}$ " before the top dead centre. This is obtained by turning the engine until the piston is at top dead centre, when the arrow on armature plate should register with mark on inner rim of flywheel.

CORRECT MIXTURE.

Correct mixture of oil and petrol is most important. Too much oil causes oiled up plugs, and too little oil, over-heating, loss of power, and undue wear.