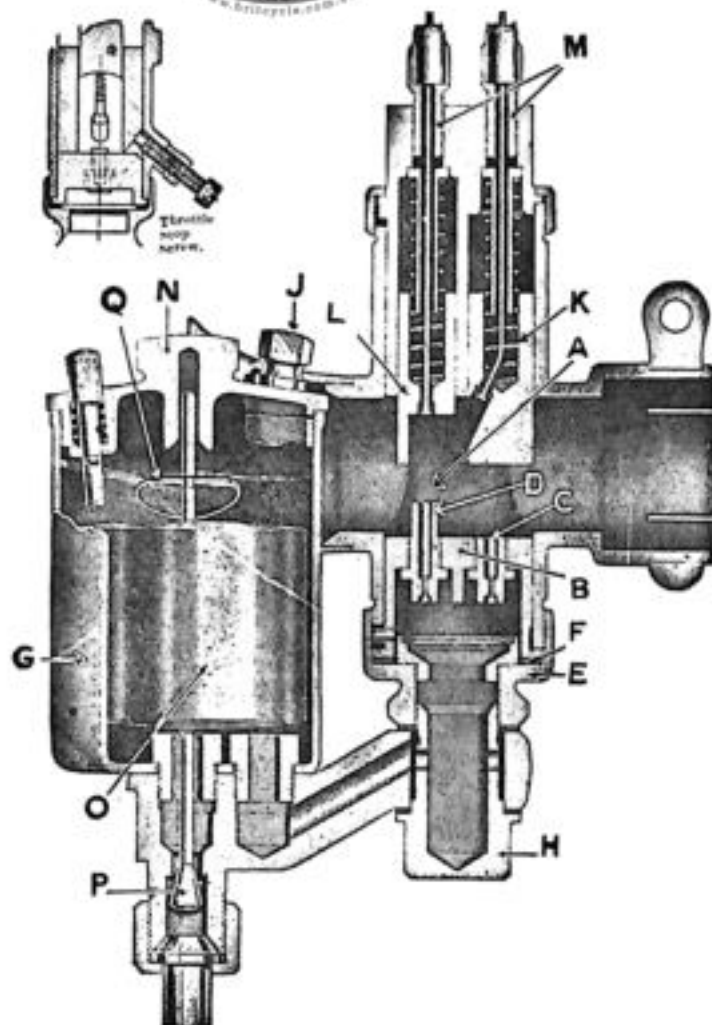


## AMAL NON-NEEDLE CARBURETTER (Section View).

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The above illustration also describes carburetters made in the years 1929/30/31, which were known as Binks 2 jet type.

Carburetters for small engines work on the principle described in the above illustration (see particulars page 6).

## AMAL NON-NEEDLE CARBURETTER. How it Works.

The petrol tap having been turned on, petrol will flow past the Needle Valve P until the quantity of petrol in the Float Chamber G is sufficient to raise the Float O, when the Needle Valve P will prevent a further supply entering the Float Chamber.

The action of the Float can readily be understood, for, as the quantity of fuel in the Float Chamber is used, the Float O will drop, carrying with it the Needle P, and admitting a further supply.

Thus, automatically, the petrol level is kept constant.

In connection with the Float Chamber, it must be clearly understood that any alteration to our standard level can only have detrimental results.

The Float Chamber having filled to its correct level, the fuel passes along the passages through the diagonal holes in the Jet Plug H, when it will be in communication with the Main Jet D and the Pilot Jet C, the level in these Jets being, obviously, the same as that maintained in the Float Chamber.

Imagine the Throttle Valve K very slightly open. As the piston descends, a partial vacuum is created in the Carburetter, causing a rush of air through the through-way A, and drawing fuel from the Pilot Jet C. The Pilot Jet, being situated immediately beneath the base of the Throttle Valve, is subjected to a heavy depression, so as to obtain the necessary mixture for "Idling" and small loads.

In the case of the Main Jet D, which is the longer of the two, and situated near the Carburetter Air Intake, at small throttle openings it is inoperative, and the mixture is governed entirely by the size of the Pilot Jet.

The Throttle K being almost closed, it will be seen that the Pilot Jet C is situated in an extremely restricted area. In consequence, the passage of the air from the main through-way will be restricted, and at the same time a high depression will exist on the Pilot C. At this position of the Throttle, it will readily be seen that not only is the Main Jet D shrouded by the Throttle Valve, but also the area of the Mixing Chamber in which it is housed is infinitely bigger than the area of the through-way exposed to the suction of the Engine, in consequence of which no fuel is drawn from the Main Jet.

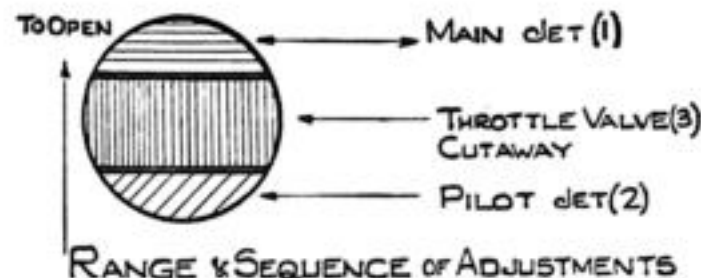
As the Throttle Valve K is raised, the area immediately above the Pilot Jet C is increased, and in consequence the suction or depression on this Jet diminishes, and at the same time increases on the Main Jet, so a balance between the two Jets is obtained throughout the whole range.

## TUNING THE CARBURETTER.

There are three ways in which the quality of the mixture can be varied, and these are given hereunder in the order in which the adjustments should be made.

1. Main Jet (affects the mixture from  $\frac{1}{8}$  to full throttle).
2. Pilot Jet (affects the mixture from closed to  $\frac{1}{8}$  throttle).
3. Throttle Valve Cut-away (affects mixture from  $\frac{1}{8}$  to  $\frac{3}{4}$ -throttle).

The following diagram clearly indicates the part of the throttle range over which each adjustment is effective.



1. **Main Jet.** Fit the smallest size Main Jet which gives maximum speed. For touring conditions we advise this to be obtained with the Air Lever three-quarter open.

2. **Pilot Jet.** This affects "slow running" and slow pulling only, and the smallest size should be selected which gives the best "Idling." At the same time, care must be taken not to reduce the size of the Pilot Jet unduly, otherwise difficulty will be experienced in obtaining a correct blend with the Main Jet.

**Blend of Main and Pilot.** If any trouble is experienced due to a weak spot between the Pilot and Main Jet, it can usually be cured by increasing the Pilot Jet one size.

3. **Throttle Valve Cut-away.** Richness at  $\frac{1}{8}$  to  $\frac{3}{4}$  throttle can be rectified by fitting a "Cut-away" Throttle Valve. The standard cut-aways are from "O," which is flat bottom, to No. 5, which is cut away  $\frac{1}{8}$  in.

**Starting Up.** With a cold Engine, depress the Carburetter Tickler, close Air Valve, open Throttle about one-eighth, ignition about three-quarter advanced, when, if the ignition system is in good order, no difficulty should be experienced in obtaining an "easy start."

With a warm Engine it is unnecessary to flood Carburetter but the Air Lever should be closed.

If the Float Chamber is unduly flooded, excessive richness of mixture will prevent the Engine starting. Open Throttle fully and revolve Engine smartly until excess of fuel is exhausted; then proceed as before, without again flooding.



## MAINTENANCE of the CARBURETTER.

To maintain the efficiency of the Carburetter, you are strongly advised to periodically clean it. This is best done by entirely dismantling and washing each part in clean petrol.

Renew any worn parts, as: Needle Valve, if head has a distinct ridge at the point of seating; Throttle Valve, if excessive side play is present; Mixing Chamber Union Nut Washer, if worn or damaged; see that Filter under Jets is clean.

In re-assembling, no brute force is necessary. Make sure that: Needle Valve enters top of Float Chamber Cover easily; that Mixing Chamber is fitted vertically and pushed right home on engine stub; that Washer is good, if flange fitting in cylinder; that Needle Valve Clip Q registers correctly in groove; that Jets are fitted in their correct places.

**NOTE.**—It is important, when ordering Spare Parts, that the number stamped on the Mixing Chamber side is quoted. The Jets for Carburetters 1929 and onwards are not interchangeable with those of previous years.

Only the following parts of the 1930 Carburetters are interchangeable with those of the 1929 pattern:—

*Jets, Float Chambers, Holding Bolts, all Fibre Washers, Mixing Chamber Cap, Throttle Valve Springs.*

## LOCATION OF TROUBLE.

### ENGINE STOPS SUDDENLY.

As far as the Carburetter is concerned, this can only be caused by:—(1). Shortage of fuel. (2). Broken or obstructed petrol pipes. (3). Tank cock inadvertently closed. (4). Obstructed jets. (5). Broken or detached throttle valve cable.

All these points are readily checked by depressing the Float Chamber Tickler, when, if the Carburetter is in order, petrol will be seen to emerge from round the Mixing Chamber Union Nut; at the same time ascertain that the Throttle Valve is working.

If no petrol issues from the Carburetter when the Tickler is depressed, ascertain that there is fuel in the tank. Remove petrol pipe union from Float Chamber; if no flow, either pipe or petrol cock is obstructed, the cure for either being obvious.

If this is in order, remove Float Chamber Cover and see that the Float Needle is not bent and is working smoothly. Withdraw the Float and inspect Float Chamber and passage in Float Chamber neck, for water or foreign matter. If the foregoing are in order, it will be necessary to remove the Jets.

### MIS-FIRING DUE TO EXCESS OR LACK OF FUEL.

**Excess of Fuel.** Punctured Float, foreign matter between Needle Valve and Seating, Needle Clip out of position, Main Jet or Pilot Jet unscrewed, Mixing Chamber Union Nut loose, causing a leakage of petrol round jet block.

**Lack of Fuel.** Partial obstruction of Fuel Supply; obstruction in Carburetter Passages or in Jets. If the obstruction is only due to water or small foreign bodies in the Jets, this can frequently be cured by placing the palm of the hand over the Air Intake of the Carburetter when the Engine is running, at the same time opening the Throttle Lever.

The Engine will cease to fire for a few seconds, and then, if the obstruction is cleared, will resume firing regularly. If this is of no avail, the fuel line and Float Chamber must then be inspected. If this is unavailing, the only procedure is to remove the Jets and clear the obstruction. Vent holes in Tank Filler Cap or Float Chamber Cover obstructed.

## SMALLEST CARBURETTERS.

### Types 52, 53, and 93 for Small Engines.

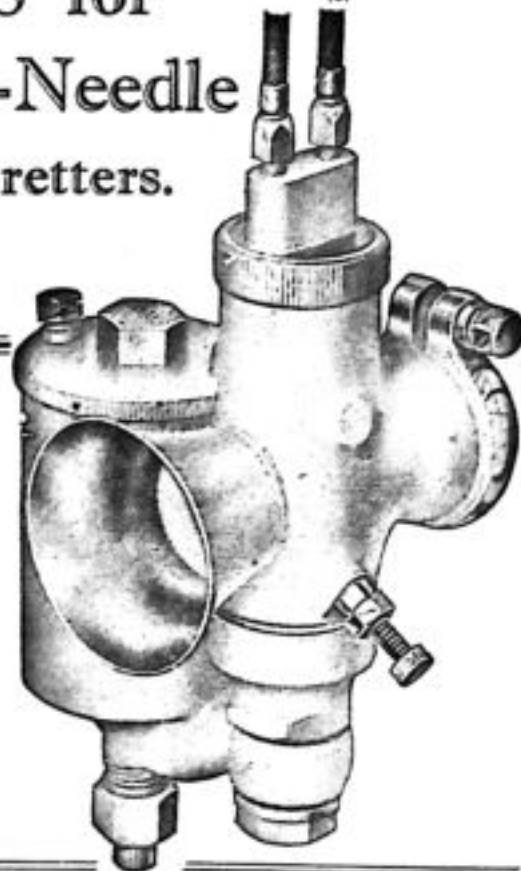
The design of these very small carburetters follows the general principle of the Non-Needle Carburetter, as illustrated on page 2, but as the appearance and construction differ somewhat the following should be noted:—

- (a) The Float Chamber and Mixing Chamber are in one casting and when the carburetters are supplied with single lever control a starting strangler is attached to the air intake to facilitate starting and this should be turned to the fully open position as soon as the engine has fired. On some models a gauze type air filter is fitted; on the end of the plate of this filter is a small knob which operates a strangler—by pushing in the knob the strangler is closed and as soon as the engine has fired the knob must be pulled outwards.
- (b) No throttle stop is fitted. If the throttle is to be propped open slightly adjustment can be made on the cable adjusting screw.
- (c) Only top feed Float Chambers are made, with the needle valve attached to the float. Owing to the often exposed position of these Carburetters we recommend owners to keep the carburetters clean and to see that the tickler (if fitted) does not get stuck down through grit. Flooding is caused by this or by dirt on the needle seat, or by a punctured float.
- (d) The jets function on the same principle as illustrated on page 2, but they are of smaller dimensions and are therefore not interchangeable with the larger carburetters. These jets are screwed in with the aid of a screw-driver and whilst they should be screwed firmly home care should be taken not to damage them by an unsuitable screw-driver.
- (e) General tuning instructions are to be carried out as indicated on page 4, bearing in mind the special features just mentioned.

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# AMAL

## HINTS & TIPS for Non-Needle Carburetters.



List No.  
315A.

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