

AMAL

LIST No. 493

LIST No. 1

INSTRUCTIONS FOR TYPE 335 AMAL CARBURETTER

with NEEDLE-JET control
and STARTING STRANGLER
operated from a single lever
on the handlebar.

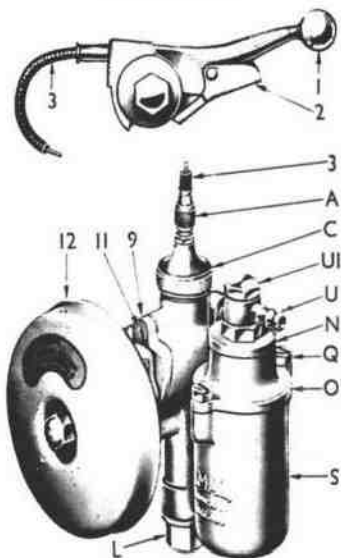


Fig. 1

AMAL LIMITED,
HOLDFORD ROAD, WITTON, BIRMINGHAM, 6,
England.

Phone: Birmingham, Birchfields 4571 (P.B.X. 6 lines).
Telegrams: AMALCARB, PHONE BIRMINGHAM.

HOW IT WORKS. Starting and speed are all controlled by a lever on the handlebar operating a piston throttle in the carburettor.

Fuel is fed to the mixing chamber by a float chamber (S) which maintains a normal level in the jet when the engine is running and when the engine is stopped, it prevents the overflow of fuel. The float chamber is air vented through the cover (O) via a passage outside the float chamber.

The fuel is fed to the float chamber(s) through a filter gauze (M) above the needle seating and this gauze is held down by a spring under the screwed cover (N). The fuel passes through the filter and thence through a small orifice which, on the under side, is the needle seating (T) for the float needle (V). As the fuel passes through and the chamber fills, the float and needle rise until the conical end of the needle sits tight on its seating; the petrol level is then attained (it is unalterable) in the jet passage and as fuel is used the action of the float keeps the jet amply supplied.

When the engine is running, air is drawn in through the air filter (I) past the strangler passage (9) and through to the mixing chamber (H) where it passes across the outlet of the needle jet (J) to mix with the fuel spraying therefrom, and thence to the engine. The amount of air and fuel are automatically controlled from the handlebar by a lever (L) operating a cable leading to the throttle and as the lever is opened and closed the throttle opens or closes the air passage through the mixing chamber.

MIXTURE CONTROL. The throttle (G) is of the piston type sliding up and down; it has two slots down its length, one facing the intake and numbered (4) is there for the operation of the strangler tail (5). The other narrower slot running the whole length of the throttle is a guide to prevent the throttle from turning round or from being put in the wrong way round; this groove fits over the key inside the mixing chamber. The throttle (G) has a cutaway on the air intake side at its end nearer the jet—which cutaway can have different angles to operate for the purposes of mixture control at lower speeds. The throttle (G) carries a taper needle (F) which protrudes into the needle jet (J); there are several positions for this needle in the throttle so that the mixture may be adjusted correctly by its relation to the throttle opening. The needle travels up and down as the throttle is moved because the needle clip (E) rests on the throttle and is held there by the throttle spring (D). The throttle needle is accurately ground to a suitable taper and slides in the needle jet which has an accurate bore, the differences in diameters providing a means of controlling the flow from the main jet to correct the mixture at mid-throttle openings.

In conclusion: a correct mixture is maintained at all throttle openings, viz. —

At full throttle, by the size of the main jet.

At small openings, by the throttle cutaway and, in intermediate positions, by the position of the needle.

CARBURETTER CONTROL. The 335 carburettor is fitted with a new type of starting device which takes the form of a beak shaped strangler (8) fitted in the air intake (9) of the mixing chamber, and which is operated by the over-opening of the throttle lever.

To avoid accidental usage of the strangler, the lever control is fitted with a small spring loaded trigger (2), which has to be depressed to enable the extra throttle opening to be obtained which closes the beak strangler.

REMOVING AND REPLACING THROTTLE.

To withdraw the throttle valve one simply unscrews the mixing chamber cap (C), when the throttle valve assembly complete can be pulled straight out. The important thing to remember however, is when assembling same, (having removed the air filter) that the strangler (8) must be fully depressed to its closed position (see fig. 4, page 3) with the aid of a screwdriver or some blunt instrument introduced through the air intake of the carburettor. Then, holding it (8) in this fully closed position the throttle (G) should be introduced into the mixing chamber, and the mixing chamber cap (C) screwed on a few threads. The screwdriver or suchlike can then be withdrawn from the main air intake which will allow the beak strangler to return to its fully open position, and the throttle slide (G) will then be quite free in the body. The mixing chamber top (C) can then be fully tightened and the carburettor is ready for operation.

It is important to observe the last mentioned sequence of operations, otherwise any attempt to force the throttle valve into the mixing chamber without so doing will result in the tail (4) of the beak strangler being bent, which will entirely upset its operation.

ILLUSTRATION SHOWING THROTTLE CLOSED AND STRANGLER OPEN AS WHEN ABOUT TO START WITH A WARM ENGINE.

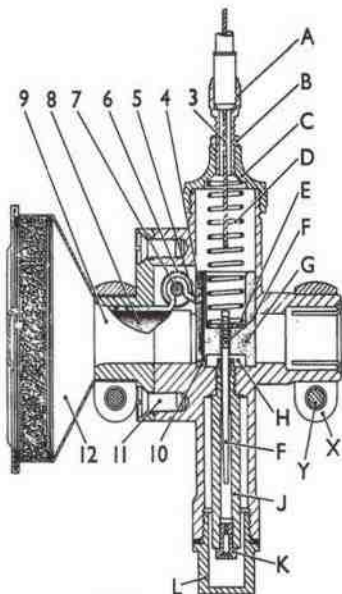


Fig. 2

IMPORTANT NOTES.

ON THE OPERATION OF THE STARTING STRANGLER BY SIMPLY DEPRESSING THE TRIGGER ON THE CONTROL LEVER ON THE HANDLEBAR AND OVER-OPENING THE LEVER BEYOND ITS NORMAL TRAVEL.

INDEX.

- | | |
|---|---|
| 1. Control Lever T.355 Oil. | 7. Strangler Valve Pivot. |
| 2. Control Lever Trigger. | 8. Strangler Valve. |
| 3. Control Cable. | 9. Air Filter Carrier. |
| 4. Groove in Throttle for Strangler Tail. | 10. Step in Throttle Groove (see page 4). |
| 5. Strangler Valve Tail. | 11. Air Filter Carrier Screws. |
| 6. Strangler Valve Return Spring. | 12. Air Filter. |

ILLUSTRATION SHOWING THROTTLE
WIDE OPEN AND STRANGLER OPEN
AS FOR NORMAL RUNNING ON FULL
POWER.

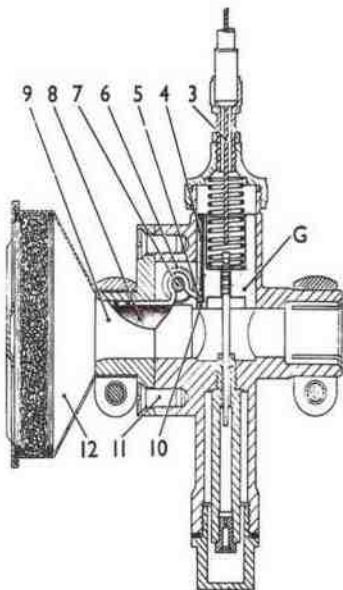


Fig. 3

STRANGLER OPERATION. Dealing with the mechanical operation of the strangler (8) this is a spring loaded beak situated in the air intake of the carburettor, which has a tail (5) which engages with a slot machined in the throttle valve (4). This beak strangler is normally held by a return spring (6) in a fully open position, that is, offering no obstruction to the passage of air through the main air intake. When the throttle valve (G), however, has moved up to its full throttle position (see fig. 3), the end of the slot previously referred to presses against a tail (5) on the other end of the strangler (8), with the result that on over-opening the throttle valve (see fig. 4 on page 5) this firmly closes the strangler valve and restricts the passage of air through the main air intake.

ILLUSTRATION SHOWING THROTTLE OVER-OPENED AND STRANGLER SHUT AS FOR STARTING FROM COLD.

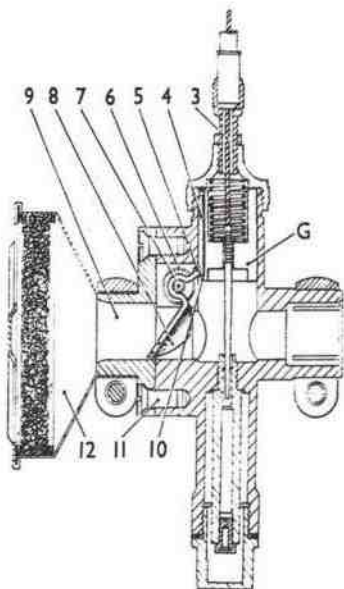


Fig. 4

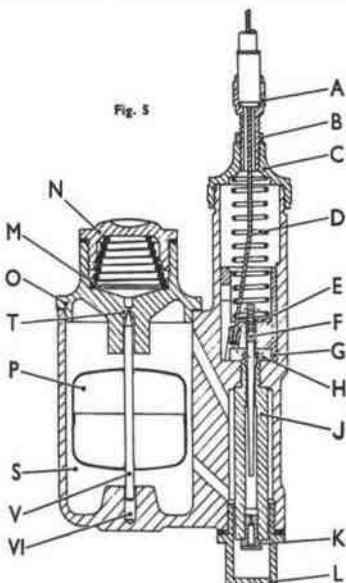
STARTING FROM COLD. The sequence of operation, therefore, when starting the machine from cold, is to fully over-open the throttle lever by depressing the spring trigger (2) on same, which means that by so doing, the back strangle is fully closed.

As soon as the engine fires the throttle lever should then be closed to the desired road speed, during which action of course, the spring trigger, having been released, will click back into place and thus prevent the rider inadvertently putting the device into operation again should the throttle be opened fully.

The main advantage of this system is that with very cold conditions where it may be found that some strangulation is again necessary in a short time after having started, the above outlined procedure can again be indulged in without any trouble from the rider's point of view, such as having to dismantle and reset a strangulation device.

INDEX NAMES OF PARTS AND SECTION SHOWING FLOAT CHAMBER, THROTTLE NEEDLE AND NEEDLE JET, AND MAIN JET.

Fig. 5



INDEX NAMES OF PARTS AND SECTION

- | | |
|---------------------------------|---------------------------------|
| A. Cable Adjuster. | O. Float Chamber Cover. |
| B. Cable Adjuster Lock Nut. | P. Float. |
| C. Mixing Chamber Cap. | Q. Float Chamber Cover |
| D. Throttle Spring. | Screw. |
| E. Needle Clip. | S. Float Chamber. |
| F. Taper Needle (for Throttle). | T. Valve Seat for Float Needle. |
| G. Throttle Valve. | U. Petrol Pipe Inlet. |
| H. Mixing Chamber. | U1. Petrol Pipe Inlet Lock Nut. |
| J. Needle Jet. | V. Float Needle. |
| K. Main Jet. | VI. Needle Valve Guide. |
| L. Jet Chamber Plug Screw. | W. Needle Jet Chamber Plug |
| M. Gauge Petrol Filter. | Screw for 325.1 (Fig. 4). |
| N. Fuel Filter Cover. | X. Outlet Clip. |

GUARANTEE.

The Company take all possible reasonable care in the manufacture and the quality of their products. Purchasers are informed that, any part proved to be defective in manufacture or quality, and returned to the works within six months of its purchase new, will be replaced. The Company must respectfully point out however, that its responsibility and that of its agents, stockists and dealers, is limited to this Guarantee, and that they cannot, under any circumstances, be held responsible for any loss or for any contingent or resulting liability arising through any defect. These conditions of sale and use also apply when the Company's products form part of the original equipment of machines purchased new.

PREPARATION. Follow the Engine Makers' instructions about fuel mixtures, etc., verify that the ignition is in good order and that the sparking plug is clean. Now from the carburettor point of view check up to see that when the throttle lever is open and the trigger is holding against projection on the lever base, that the throttle is wide open (see fig. 3 on page 4). To do this remove the air filter (12) and look inside. If the throttle is not wide open then adjust the cable adjuster (A) to bring the bottom of the throttle level with the crest bore in the mixing chamber.

Observe at the same time the action of the strangler (8) by depressing the trigger (2) on the lever (1) and over-opening the throttle (see fig. 4 on page 5). Bring back the throttle lever to the shut position and note that the throttle shuts easily.

The cable (3) between the lever and the carburettor should be in an easy position so the turning of the handlebar does not cause movement in the inner wire.

STARTING COLD. SEE FOOTNOTE ON PAGE 5.

STARTING WARM. Only open the throttle a little and start pedalling then, as you pedal, move the throttle gradually by opening and closing till the engine fires. After the engine has started, if opening the throttle tends at first to cause the engine to falter, close down a little until the engine is warmer.

DRIVING. As far as the carburettor is concerned there is only the throttle lever to attend to. For economies sake drive on as small a throttle opening as possible and keep the throttle lever steady; suddenly opening and closing the throttle wastes fuel.

MAINTENANCE AND FAULTS. Ensure that the petrol tap and pipe are clear also that the jet (K), the float chamber (5) and their passages are free from impurities and water. The air filter (12) should also be kept clean by immersing in petrol and afterwards dipping in clean oil which should be allowed to drain away.

EXCESSIVE PETROL CONSUMPTION. This is nearly always caused by flooding due to impurities in the float chamber and around the needle valve seating. The float needle is guided in the base of the float chamber (VI), so also see that this pocket is not filled up with sediment. A bent float needle will cause flooding so, when refitting the float chamber cover, place the needle seating projection carefully over the needle guide when the blunt end of the needle has already been placed in its guide (VI) at the base of the float chamber.

If the taper end of the float needle after long use has a deep groove in it, replace it and never try to grind the needle in.

See that the main jet (K) and the needle jet (J) are screwed up gently but firmly. If the engine falters as you open the throttle wide, look out for a choked main jet (K). If the acceleration is poor as you open up the throttle, you might raise the needle (F) by one notch. On the other hand, after long use if the performance was good but the consumption heavier than usual, you might drop the needle (F) by one notch.

You are not likely to have to tune the carburettor when purchased new, but here follow some instructions:—

HINTS & TIPS ON CARBURETTOR TUNING.

Provided the petrol-oil mixture is to the engine-makers' specification and is well mixed, and that there is an ample flow to the carburettor, any incorrect carburation must be due either to too weak or too rich a mixture. If the mixture is suspected to be rich make sure that the float chamber is not flooding: if flooding, clean out all impurities in the petrol pipe and float chamber. Before "tuning" the carburettor, decide at what throttle opening any fault appears. A weak mixture is evident by spitting in the carburettor or by inability to open throttle. A rich mixture is evident by lumpy running, four and eight stroking, and oily sparking plugs.

If the error appears at:—

Full throttle, alter the main jet (K). The jets are numbered and the larger the number the larger the jet. At full throttle a weak mixture is remedied by a larger jet, and vice-versa.

At small throttle openings, select a throttle (G) with different cutaway. A larger cutaway weakens the mixture, and the smaller one richens it.

At half throttle, adjust the needle position. Lowering the needle (F) weakens the mixture; raising it richens the mixture.

When the above has been attended to, any correction to the slow running must be done by the cutaway of the throttle.

HORIZONTAL MODEL FOR B.S.A. WITH DOWN-DRAUGHT INDUCTION.

Section showing throttle half open and with the starting strangler open.

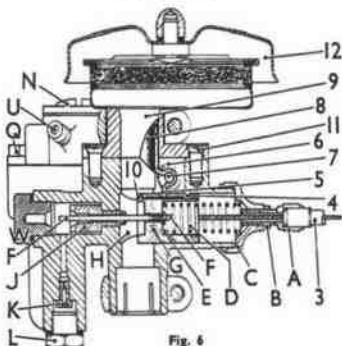


Fig. 6

Section below showing float chamber (5), fuel filter (M), and main jet (K) chamber.

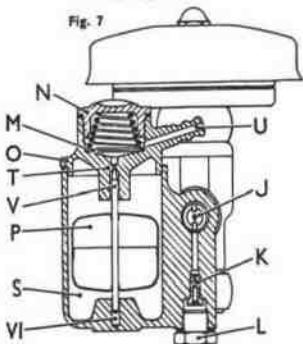


Fig. 7

The operation of this down-draught carburettor with horizontal throttle is the same as other models, therefore the same instructions hold good.

The only difference is in construction, namely, that instead of the main jet (K) being screwed into the needle jet (J), it is screwed into a separate passage leading to the needle jet chamber, and is covered by a plug screw (L). The needle jet is gun at by undoing the special plug screw (W).