

# AMAL

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LIST No. 517

ISSUE No. 1

## Hints and Tips for Amal Carburettors Types 360 and 362

AS USED ON MOTOR ASSISTED  
PEDAL CYCLES, AGRICULTURAL  
AND STATIONARY ENGINES

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### SERVICE ARRANGEMENTS.

There are many Amal Service Stockists appointed amongst the Motorcycle Trade in Great Britain and over-seas, who stock genuine Amal spare parts and retail them at our list prices. You are strongly advised to purchase genuine Amal spares through them. Genuine Amal spares are packeted under the name AMAL.

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### 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.

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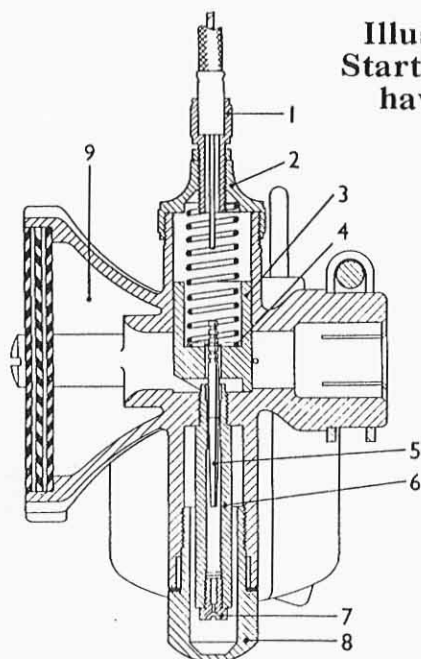
**AMAL LTD., HOLDFORD ROAD, WITTON,  
BIRMINGHAM 6, ENGLAND**

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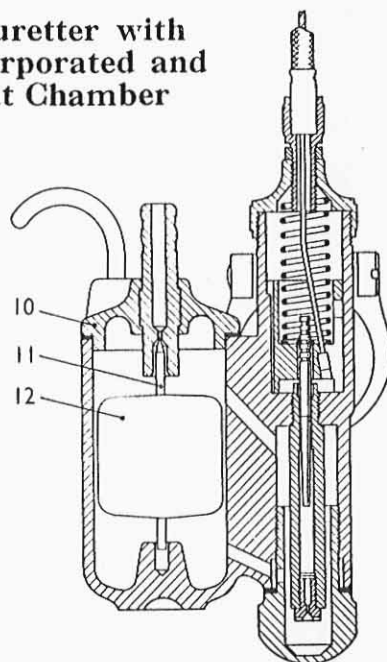
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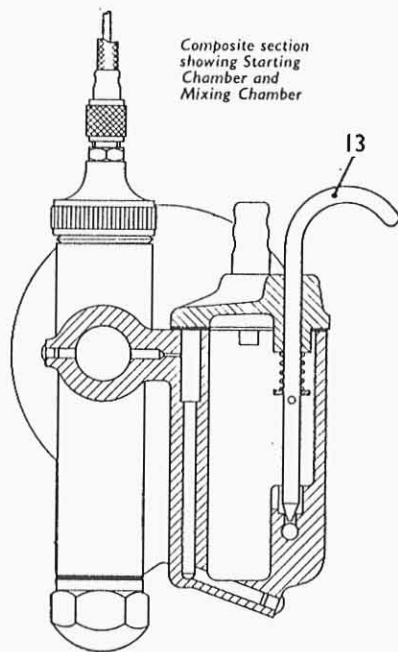
## Illustrations of Carburetter with Starting Chamber incorporated and having a top fed Float Chamber



Section through Mixing Chamber showing air intake and cross bore.



Section through Float Chamber and Mixing Chamber



Composite section showing Starting Chamber and Mixing Chamber

### DESCRIPTION.

The Type 360 and 362 carburettors are designed for small engines. The type numbers vary according to the type of starting device incorporated for use when the engine is cold. Type 360 has a starting chamber, and Type 362 a strangler. The throttle is operated by a cable with a suitable control. Air filter elements are incorporated in the main air intake. The carburetter is attached to the engine cylinder stub or inlet pipe by a clip fitting.

### HOW CARBURETTER WORKS.

The float chamber maintains a constant level of fuel at the jet and cuts off the supply when the engine stops. On fuel flowing from the float chamber the float (12) falls, and its needle (11) coming away from its seating allows fresh fuel to enter. (A bottom feed float chamber has in its base a needle seating in which works a cone headed type needle). Depression caused by movement of the engine piston causes, via the throttle opening, air to flow into the main air intake (9) and fuel to flow through the needle jet (6) into the cross bore and mix with the incoming air forming a fuel/air mixture.

Correct fuel/air proportions for various throttle openings are governed by: The size of the main jet (7) which controls the amount of fuel fed to the needle jet (6) at 3/4 to full open throttle. The taper of the jet needle (5) which operating in the needle jet (6) controls the amount of fuel fed at lesser openings. The parallel portion of the jet needle (5) which, on entering the bore of the needle jet (6), and in conjunction with the amount of cutaway on the throttle valve (3), controls the idling mixture.

There are two types of starting devices for use when the engine is cold. The Starting Chamber Type in which fuel is fed direct to the carburetter bore on the engine side of the throttle valve (3) from a well, formed by a division wall in the float chamber. Sufficient fuel for cold starting is allowed to fill the well by raising a needle (13) in its cover. The Strangler Type consisting of a shutter fitted to the main air intake (9) which when closed prevents air flowing into the intake thus increasing the flow of fuel.

### STARTING INSTRUCTIONS.

Follow the Engine Maker's instructions regarding recommendations about type of fuel or mixture to be used.

Starting engine from cold when a strangler shutter is incorporated in the main air intake of the carburetter. Close strangler shutter, set throttle valve about 1/4 open, start engine and when it commences firing open the strangler shutter and throttle down to an idling speed. If on opening the strangler the engine begins to falter, partly close again until engine runs regularly, then fully open strangler and leave open.

Starting engine from cold when a starting chamber is incorporated in the carburetter. Raise hook-ended needle in the top of the float chamber for 5 to 7 seconds, thus allowing starting chamber to fill with fuel, set throttle valve about 1/4 open, start engine, and when engine is running regularly throttle down to idling speed. No further operation of the starting needle should be necessary.

Starting when engine is warm in the case of a carburetter incorporating a strangler shutter, this should be in its fully open position, and in the case of a carburetter incorporating a starting chamber, the starting chamber needle should not be raised, thus keeping the chamber empty of fuel. In both cases the throttle should be slightly opened and the engine started.

### MAINTENANCE

**Removing and fixing carburetter.** If the carburetter is removed from the induction pipe, see that on re-fixing it is pushed right home on the pipe, before locking the clip. Never fit the carburetter to a pipe on which it is slack, nor ever drive it on to a tight one. The carburetter should be a good push fit on to the inlet pipe, and should be pushed on true with a screwing motion, after having put a little oil on the pipe. Erratic slow running can be caused if there are air leaks at the point of attachment of the carburetter to the cylinder.

**Dismantling when inspecting or tuning.** The float chamber, float or its needle and, if incorporated, the starting chamber and its needle, may be inspected by removing the float chamber cover (10), which is secured by two hexagon headed pins. In the case of a bottom feed float chamber the float needle is removed by pushing the needle downwards through the float and extracting it through the needle seating in the base of the float chamber, on re-assembling see that the spring bow on the float top engages with the groove in the needle. Ensure that the needles are located in their respective seats, when replacing the cover and that the joint washer is undamaged.

The throttle valve complete with jet needle and attached to the cable can be withdrawn from the carburetter after the knurled mixing chamber top (2) has been unscrewed.

To separate the throttle valve and jet needle from the cable release the cable at the control end and push the inner cable forward until the nipple in the throttle valve clears its hole, then withdraw the cable through the slot in the throttle valve, the nipple passing through the hole at the extreme end of the slot. On re-assembling pass the nipple through this hole via the inside of the throttle valve, ensure that the portion of the jet needle clip (4) that falls in towards the jet needle is opposite the slot in the throttle valve, and then draw the cable forward until the nipple will pass over the end of the throttle valve and sink into its hole. On putting back this throttle valve assembly into the body, see that the key in the carburetter body engages the key-way opposite the cable slot in the throttle valve, and that the jet needle is entering the needle jet, before attempting to push the assembly home. Access to the main jet is by removing the main jet cover nut (8) and withdrawing the filter gauze. When replacing the main jet take care not to over-tighten.

**Filter Gauze** (not shown on illustration). A filter gauze, which is a push fit over the main jet and needle jet, should be periodically examined and cleaned if necessary by washing in clean petrol.

**Fuel Feed.** Ensure that the fuel tap and pipe are kept clear.

**Floatchamber.** Ensure that there is no continual flooding of the float chamber.

**Excessive Fuel Consumption** may be due to continual flooding of the float chamber: check that the float needle is not worn or bent, that the float is not leaking, that no impurities have got into the float chamber and lodged on the float needle seating. On models which incorporate a starting chamber for use when the engine is cold, check also that the starting needle, is not bent or damaged and that there are no impurities lodged on its

# The Carburetter of Records & Successes

(5)

(6)

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seating. Nearly all flooding with new machines is due to impurities (grit, fluff, etc.) in the fuel tank—so clean out the float chamber periodically until the trouble ceases. If the trouble persists, the fuel tank may be drained, swilled out, etc.

**Cable Controls.** See that the cable control fully opens and closes the throttle valve (3), a cable adjuster (1) with locknut is provided in the top of the carburetter and can be adjusted until correct movement is obtained.

**Air Filter Elements** should be kept free from obstruction. Periodically these should be removed and washed in petrol, then dipped in thin oil and allowed to drain, and replaced in carburetter.

## FAULTY MIXTURES, ITS SIGNS AND CAUSES.

There are only two possible faults in carburation, either richness or weakness of mixture. Before testing for incorrect mixture, verify the correctness of fuel feed and that there are no air leaks, check over ignition, timing, etc.

### INDICATIONS OF :—

#### RICHNESS.

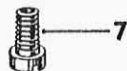
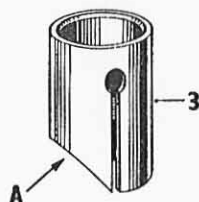
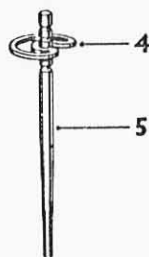
- Black smoke in exhaust.
- Petrol spraying out of carburetter.
- Four strokes, eight-stroking.
- Two strokes, four-stroking.
- Heavy, lumpy running.
- Sparking plug sooty.

#### WEAKNESS.

- Spitting back in carburetter.
- Erratic slow running.
- Overheating.
- Poor acceleration.
- Engine goes better if :—
- Throttle valve is not wide open, or if strangler is fitted this is partly closed, or if starting chamber is incorporated, this is kept supplied with fuel.

If richness or weakness is present, check if caused by :—

- |  |   |
|--|---|
| <p>(1) Petrol feed.</p> <p>(2) Air leaks.</p> <p>(3) Defective or worn parts.</p> <p>(4) Air filter elements obstructed.</p> | <p>Choked filter gauze on main jet. Check that the main jet, needle jet and passages are clear and that there is ample flow of fuel. Check there is no flooding of the float chamber or continual supply of fuel to the starting chamber if one is incorporated.</p> <p>At the connection of the carburetter to the engine.</p> <p>As a loose fitting throttle valve, worn needle jet, or loose needle jet or main jet.</p> |
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## HOW TO TUNE UP.

Illustrated above are the parts to tune up with, they are :—

**The Main Jet (7).** Each main jet is calibrated and numbered, so that its exact discharge is known. Two main jets of the same number are alike, never reamer a main jet out, get another one of the right size, the bigger the number the bigger the flow, the numbers varying, for example, 20, 22, 25, 27, 30, 32.

**The Throttle Valve (3).** The slope at (A) is called the cutaway, and its number is stamped on the bottom. Throttle valves can be had with different cutaways—the bigger the cutaway and number, the weaker the mixture produced for small throttle openings.

**The Jet Needle (5).** The jet needle is positioned in the throttle valve by the jet needle clip (4). The top of the jet needle is grooved and by springing the clip off and springing it on again in another groove the position of the jet needle in the throttle valve is altered, either being raised or lowered.

To remedy weakness or richness, proceed as follows :—

- | Position of Throttle.                               | To cure richness.                       | To cure weakness.                        |
|---|---|--|
| At 3/4 to full throttle.                            | Fit smaller main jet.                   | Fit larger main jet.                     |
| At 1/4 to 3/4 open, as for general running.         | Lower jet needle.                       | Raise jet needle.                        |
| Up to 1/4 opening, as for idling and light running. | Fit throttle valve with larger cutaway. | Fit throttle valve with smaller cutaway. |

Finally, if any alteration has been made to the throttle valve cutaway, it may be necessary to alter the jet needle position again : putting in a throttle valve of smaller cutaway may require the jet needle lowering by a groove, and alternatively a larger cutaway may necessitate raising the jet needle.

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