

# AMAL

£2

**MK2 Amal  
concentric  
carburettors  
Fitting & tuning  
instructions**

## MK 2 Amal concentric carburetters

### Fitting and tuning instructions

When fitting the Mk 2 Amal Concentric Carburettor to your engine, check the following points:

- 1 The rubber flange adaptor fits correctly with no air leaks. Do not overtighten the clips, which could split the rubber.
- 2 The throttle cable is of adequate length and there is adequate movement of the inner wire for the throttle valve to close completely.
- 3 Petrol pipes must be connected tightly to the banjo to prevent leaks and in such a way that the carburettor is not prevented from moving on its rubber mounting adaptor.
- 4 There must be a good connection to the air cleaner if one is used.

#### Starting from cold

Depress lever, or if cable operated, open the handlebar lever. This will introduce the cold start jet system which is completely separate from the main jet system. It will introduce over-rich mixture on the engine side of the throttle valve. Do not open the throttle valve more than one quarter or the cold starting system will not work so well. The jet normally fitted is number 50. This can be changed for alternative sizes if extreme conditions are experienced.

#### Tuning sequence

To obtain correct carburation for any stated fuel, assuming that the correct size carburettor is fitted, the sequence is as follows:

- 1 main jet for power at full throttle
- 2 pilot air adjuster for idling speed
- 3 cutaway for take-off from the pilot jet
- 4 needle jet and needle position for clean carburation between one quarter and three quarters

#### 1st: Main jet

If at full throttle the engine runs 'heavily' and does not pull at full power, the main jet is generally too large. If the engine fades and perhaps deteriorates with possible detonation, then the jet is too small. With the correct size the engine should run freely at maximum rpm giving good power. When testing for the correct main jet, give careful attention to sparking plug readings; the correct colour will be light brown or chocolate colour surrounding the central electrode.

#### 2nd: Pilot jet

The pilot system governs engine tickover and can affect pickup and transmission to the main system. Choose a jet that when the engine is set for steady idling, the pilot screw is one to one-and-a-half turns from its seat. If the adjuster is further on its seat, a larger jet is needed, conversely if the adjuster is screwed out a long way a smaller jet is needed. There are two alternative pilot jet locations; the one in the float bowl is generally considered best for four stroke engines, that located in the body beneath the air tube usually best for two stroke engines. This is not a hard and fast rule and the reverse may sometimes be the case. Irrespective of engine type, when the carburettor is mounted in a down draught attitude, the pilot jet should be placed in the mixing chamber body.

#### Throttle valve cutaway

The throttle valve governs transition from idling to the main system and also influences response at small throttle openings. When opening the throttle, if the engine fades or spits back through weakness, a smaller cutaway is needed. If the engine runs unevenly and heavily, a larger cutaway is needed. The main influence of the throttle valve takes effect up to one third throttle opening.

#### Needle jet and needle position

These influence the range from one quarter to three quarters throttle: the needle jet, mainly the lower half of the range and the needle the upper part of this range. It is important to get the right combination. Usually the needle jet supplied with the carburettor is the correct one for that instrument. Raising the needle produces a richer mixture and lowering, conversely, a weaker mixture. If it is necessary to go to the extreme of the adjustment in either direction, then probably the next sized needle jet, up or down, could be utilised usefully with some further re-adjustment of the needle position. There are two different systems for four stroke and two stroke engines; refer to the parts list to ensure that the correct type is used. Always use the correct combination of needle and needle jet as a set.

### Air jet

This controls the amount of air which pre-atomises the fuel before it enters the mixing chamber body. Normally the air jet fitted as standard for the particular size of carburettor should be correct, but it is a component that can be changed should the depression on the main jet need to be influenced. Fitting a smaller jet will increase the depression while a larger jet will reduce the depression.

All of these adjustments overlap to some extent and in order to obtain the optimum setting it may be necessary to go through this procedure more than once to get the final degree of accuracy.

### Air filters

These may affect the jet setting, so if one is fitted afterwards to the carburettor the main jet may have to be smaller. If a carburettor is set with an air filter and the engine is run without it, take care not to over-heat the engine due to too weak a mixture.

### Effect of altitude on carburettor

Increased altitude tends to produce a rich mixture. The greater the altitude, the smaller the main jet required. Carburettors ex-works are set for altitudes up to 3,000 feet approximately. Carburettors used constantly at altitudes 3,000 feet to 6,000 feet should have a reduction in main jet size of 5 per cent and thereafter, for every 3,000 feet in excess of 6,000 feet altitude, further reductions of 4 per cent should be made.

### Tuning twin engines with twin carburettors

(Where each cylinder has its own carburettor)  
First slacken the throttle stop screws and put the twist grip into the shut position to allow the throttles to close: there should be a slight backlash in the cables which backlash can be obtained, if necessary, by screwing in the cable adjusting screws on the top of the carburettor. Then, with the handlebars in the normal position, and with the throttles closed, adjust the cable adjusting screws so that on the slightest opening of the twist grip both throttles begin to open simultaneously.

To set the carburettors, follow the tuning sequence given previously, and bear in mind these 'hints' which may be useful: main jet sizes are selected by checking the effect of the mixture on the sparking plugs after running at full throttle on a straight road:

the smallest pair of jets that gives the maximum speed is usually correct provided that the plugs do not show any signs of excessive heat. It might be that for critical tuning, one carburettor might require a slightly different jet size from the other.

For slow running, set the twist grip to make the engine run slowly but just faster than 'tickover': then gently screw in the throttle stops to just hold the throttles in that position, and return the twist grip into the shut position, leaving the engine running on the throttle stops.

Next set each carburettor, according to instructions already given for pilot jet settings, to obtain the idling by screwing down the throttle stop screws and adjusting the pilot air screws accordingly.

For setting the pilot, a fairly satisfactory method is to detach one sparking plug lead, and set the pilot adjusting screw on the other cylinder as a single unit, and then reversing the process to the other cylinder. When both leads are connected to the sparking plugs, the engine may run slightly quicker than desirable: a slight adjustment of the throttle stop screws will put this right. It is essential that the speed of idling on both cylinders is approximately the same, as this will either make or mar the smoothness of the get-away on the initial opening of the throttle.

It is essential with twin carburettors that the throttle slides are a good fit in the bodies, and also that there is no suspicion of air leaks at either of the flange attachments to the cylinder.

For the lower end of the throttle range, which is always the more difficult to set, one can only take great pains to ensure that the control cables are perfectly adjusted without any excessive backlash, or difference in the amount of backlash between one carburettor and another: otherwise one throttle slide will be out of phase and so result in lumpy running.

To check the opening of the throttle simultaneously, shut the twist grip so that the throttles are resting on the throttle stop screws in their final position of adjustment: then insert the fingers into the air intakes and press them on the throttles and with the other hand gently open by the twist grip and feel the throttles lift off their stops at the same time.

#### Alcohol fuels

When using alcohol fuels it is important to use a carburettor intended for this purpose.

#### Recommended settings

The following chart indicates approximate settings for each bore size of carburettor intended for 2 stroke and 4 stroke engines:

#### 2 stroke

bore size	main jet	needle jet	needle position	throttle valve	pilot jet	air jet
2522	120	-106	3	3	25	2-5
2624	140	-106	3	3	25	2-5
2626	160	-106	3	3	25	2-5
2627	180	-106	3	3	25	2-5
2928	200	-107	3	3	25	2-5
2930	240	-107	3	3	25	2-5
2932	280	-107	3	3	25	2-5
2034	320	-107	3	3	25	2-5
2036	360	-108	3	3	25	2-5
2038	400	-108	3	3	25	2-5
2040	440	-108	3	3	25	2-5

#### 4 stroke

bore size	main jet	needle jet	needle position	throttle valve	pilot jet	air jet
120	-105	3	3	25	3-5	
140	-105	3	3	25	3-5	
160	-105	3	3	25	3-5	
180	-105	3	3	25	3-5	
200	-106	3	3	25	3-5	
220	-106	3	3	25	3-5	
240	-106	3	3	25	3-5	
260	-106	3	3	25	3-5	
300	-106	3	3	25	3-5	
320	-106	3	3	25	3-5	
340	-106	3	3	25	3-5	

Please refer to Amal sales Announcement No 11 for explanatory assembly diagram and parts list.

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Printed in England at The Kynoch Press, Birmingham B6 7BA