

## PARTS TO TUNE UP



**THROTTLE ADJUSTING SCREW (26).** Set this screw to hold the throttle open sufficiently to keep the engine running when the twist grip is off. An "o" ring is fitted to the screw to hold this adjustment by friction.

**MAIN JET (29).** The main jet controls the petrol supply when the throttle is more than three-quarters open, but at smaller throttle openings although the supply of fuel goes through the main jet, the amount is diminished by the metering effect of the needle in the needle jet. Each jet is calibrated and numbered so that its exact discharge is known and two jets of the same number are alike. NEVER REAMER A JET OUT, GET ANOTHER OF THE RIGHT SIZE. The bigger the number the bigger the jet.

To remove the main jet, remove the float chamber, the exposed main jet can then be unscrewed from the jet holder (28).

**NEEDLE AND NEEDLE JET (22 and 24).** The needle being taper either allows more or less petrol to pass through the needle jet as the throttle is opened or closed throughout the range except when idling or nearly full throttle. The taper needle position in relation to the throttle valve can be set according to the mixture required by repositioning the jet needle clip in any of three positions thus raising or lowering it. Raising the needle richens the mixture and lowering it weakens the mixture at throttle openings from one quarter to three quarters open (see fig 5, page 7). The throttle needles are marked with a single groove around the top diameter for use on the 600 series carburetter, the 900 series carburetter needles are identified by three grooves around the top of the needle, throttle needles identified by two grooves are used on certain models for both series 600 and 900 carburetters.

**THROTTLE VALVE CUT-AWAY.** The atmospheric side of the throttle is cut away to influence the depression on the main fuel supply and thus gives a means of tuning between the pilot and needle jet range of throttle opening. The amount of cut-away is recorded by a number marked on the throttle valve, viz., 622/3 means throttle valve type 622 with No.3 cut-away; larger cut-aways, say 4 and 5, give weaker mixtures and 2 a richer mixture.

**AIR VALVE (3)** is used only for starting and running when cold, and for experimenting with, otherwise run with it wide open.

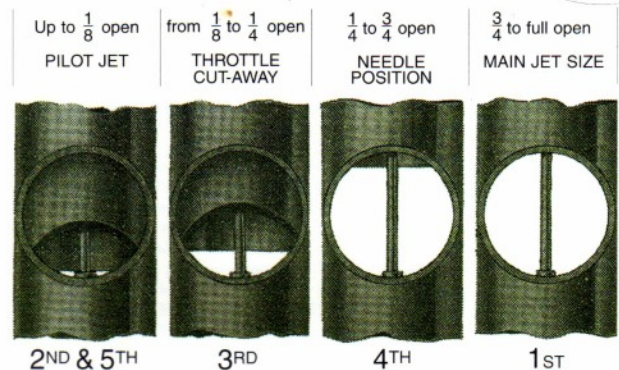
**TICKLER (25),** a small plunger spring loaded, fixed in the carburetter body. When pressed down on the float, the needle valve is allowed to open and so "flooding" is achieved. Flooding temporarily enriches the mixture until the level of the petrol subsides to normal.

**ALCOHOL FUELS.** When using alcohol fuels the following new components are necessary. A metallic banjo preferably double feed if not already fitted, float chamber 622/051, banjo bolt washer 13/163, needle jet 622/100, jet needle 622/099 or 928/099 according to type of carburetter, filter gauze 376/093B and banjo washer 14/175. The main jet must be increased for straight alcohol by approximately 150%. The final setting must be a question of trial and error according to the nature of the fuel used.

When using alcohol fuels it is advisable to err on the rich side to avoid engine overheating.

## HOW TO TUNE UP

### PHASES OF AMAL NEEDLE JET CARBURETTER THROTTLE OPENINGS



### SEQUENCE OF TUNING (FIG 5)

TUNE UP IN THE FOLLOWING ORDER

**NOTE.** The carburetter is automatic throughout the throttle range - the air valve should always be wide open except when used for starting or until the engine has warmed up. We assume normal petrols are used.

**READ REMARKS ON PAGES 6 AND 7** for each tuning device and get the motor going perfectly on a quiet road with a slight up gradient so that on test the engine is pulling.

**1ST MAIN JET** with throttle in position 1 (fig 5). If at full throttle the engine runs "heavily" the main jet is too large. If at full throttle by slightly closing the throttle or air valve the engine seems to have better power, the main jet is too small. With a correct sized main jet the engine at full throttle should run evenly and regularly with maximum power. If testing for speed work ensure that the main jet size is sufficient for the mixture to be rich enough to keep the engine cool, and to verify this examine the sparking plug after taking the first run, declutching and stopping - the engine quickly. If the plug body at its end has a cool appearance the mixture is correct: if sooty, the mixture is rich: if however there are signs of intense heat, the mixture is too weak and a larger main jet is necessary.

**2ND PILOT JET** (fig 5) with throttle in positions 2 and 5. With engine idling too fast with the twist grip shut off and the throttle shut down on to the throttle adjusting screw, and ignition set for best slow running: (1) Screw out throttle adjusting screw until the engine runs slower and begins to falter, then screw pilot air adjusting screw in or out to make engine run regularly and faster. (2) Now gently lower the throttle adjusting screw until the engine runs slower and just begins to falter, adjust the pilot air adjusting screw to get best slow running: if this 2nd adjustment makes engine run too fast, go over the job again a third time. Both the throttle adjusting screw and pilot air screw have an "o" ring fitted to hold the adjustment by friction.

**3RD THROTTLE CUT-AWAY** with throttle in position 3 (fig 5). If, as you take off from the idling position, there is objectionable spitting from the carburetter, slightly richen the pilot mixture by screwing in the air screw sufficiently, but if this is not effective, screw it back again, and fit a throttle with a smaller cut-away. If the engine jerks under load at this throttle position and there is no spitting, either the jet needle is much too high or a larger throttle cut-away is required to cure richness.

**4TH NEEDLE** with throttle in position 4 (fig 5). The needle controls a wide range of throttle opening and also the acceleration. Try the needle in the lower position, viz., with the clip in the groove at the top; if acceleration is poor and with air valve partially closed the results are better, raise the needle by two grooves; if very much better try lowering needle by one groove and leave it where it is best. If mixture is still too rich with clip in groove No. 1 nearest the top; the needle jet probably wants replacement because of wear. If the needle itself has had several years' use replace it also.

**5TH FINALLY** go over the idling again for final touches.