

PARTS TO TUNE UP WITH

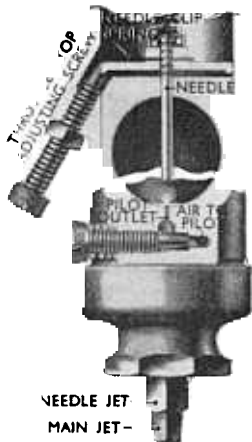
(a) This fig. 4 is two diagrammatic sections of the carburetter to show :—

1. The throttle stop screw.
2. The pilot air screw.

(b) **THROTTLE STOP SCREW**
Set this screw to prop the throttle open sufficiently to keep the engine running when the twist grip is shut off.

(c) **PILOT AIR SCREW**
This screw regulates the strength of the mixture for "idling" and for the initial opening of the throttle. The screw controls the suction on the pilot petrol jet by metering the amount of air that mixes with the petrol.

NOTE.—The air for the pilot jet may be admitted internally or externally according to one or other of the designs, but there is no difference in tuning.



(d) **MAIN JET.** 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. Spare jets ARE SEALED.

To get at the main jet, undo the float chamber holding bolt Q (page 2). The jet is screwed into the needle jet so if the jet were tight, hold the needle jet O carefully with a spanner, whilst unscrewing the main jet.

(e) **NEEDLE AND NEEDLE JET.** The needle is attached to the throttle and 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 needle jet is of a defined size and is only altered from standard when using alcohol fuels.

The taper needle position in relation to the throttle opening can be set according to the mixture required by fixing it to the throttle with the needle clip spring in a certain groove (see illustration above), thus either raising or lowering it. Raising the needle richens the mixture and lowering it weakens the mixture at throttle openings from quarter to three-quarters open (see illustration, page 7).

(f) **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, viz., 6/3 means throttle type 6 with No. 3 cut-away; larger cut-aways, say 4 and 5, give weaker mixtures and 2 and 1 richer mixtures.

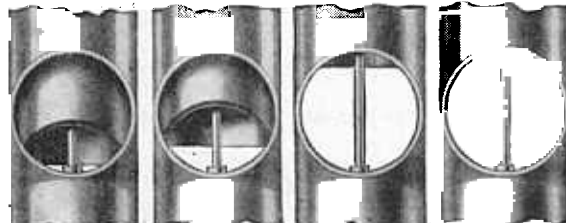
(g) **AIR VALVE** is used only for starting and running when cold, and for experimenting with, otherwise run with it wide open.

(h) **TICKLER,** a small plunger spring loaded in the float chamber lid. When pressed down on the float, the needle valve is pushed off its seat and so "flooding" is achieved. Flooding temporarily enriches the mixture until the level of the petrol subsides to normal.

HOW TO TUNE UP

PHASES OF AMAL NEEDLE JET CARBURETTER THROTTLE OPENINGS

Up to 1/4 open | from 1/4 to 1/2 open | 1/2 to 3/4 open | 3/4 to full open
PILOT JET | THROTTLE CUT-AWAY | NEEDLE-POSITION | MAIN JET SIZE



SEQUENCE OF TUNING

TUNE UP IN THE FOLLOWING ORDER ONLY, by so doing you will not upset good results obtained.

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 5 AND 6 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 (§d, page 6).
Test the engine for full throttle; if when at full throttle, the power seems better with the throttle less than wide open or with the air valve closed slightly the main jet is too small. If the engine runs "heavily" the main jet is too large. If testing for speed work, note the jet size is rich enough to keep engine cool, and to verify this, examine the sparking plug after taking a fast run, declutching, and stopping engine quickly. If the plug body at the end has a bright black appearance the mixture is correct; if sooty, the mixture is rich; or if a dry grey colour, the mixture is too weak and a larger jet is necessary.

2nd PILOT JET WITH THROTTLE IN POSITIONS 2 AND 3
With engine idling too fast with the twist grip shut off and the throttle shut down on to the throttle stop screw, and ignition set for best slow running: (1) Loosen stop screw nut and screw down until engine runs slower and begins to falter, then screw the pilot air screw in or out to make engine run regularly and faster. (2) Now gently lower the throttle stop screw until the engine runs slower and just begins to falter, then lock the nut lightly and begin again to adjust the pilot air screw to get best slow running; if this 2nd adjustment makes engine run too fast, go over the job again a third time. Finally, lock up tight the throttle stop screw nut without disturbing the screw's position.

3rd THROTTLE CUT-AWAY with throttle in position 3 (§f, page 6).
If, as you take off from the idling position, there is objectionable spitting from the carburetter, slightly richen the pilot mixture by screwing the air screw in about half a turn, 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 throttle needle is much too high or a larger throttle cut-away is required to cure richness.

4th NEEDLE with throttle in position 4 (§e, page 6).
The needle controls a wide range of throttle opening and also the acceleration. Try the needle in as low a position as possible, viz., with the clip in a groove as near the end as possible; 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.

Note, if mixture is still too rich with clip in groove No. 1 nearest the end—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.