

ADJUSTMENT AND TUNING.

The S.U. carburettor is of the automatically expanding choke type in which the cross-sectional area of the air passage, and the effective orifice of the jet, is variable.

The choice of the needle, which governs the effective orifice of the jet, is only settled for a particular engine after considerable testing, both on the engine test bed and later on Road Test, and it is not, therefore, a common requirement that the needle type should be changed from the maker's original specification.

If any doubt arises as to the correctness of the type fitted, this can be checked by first removing the suction chamber and then slackening the side needle screw, when the needle can be pulled out and its marking by letters or numbers, checked. These identifying letters or numbers may be rolled around the shank or stamped on the flat end of the shank.

When detaching the suction chamber and piston unit from instrument (necessary when checking or changing it will be necessary, owing to lack of headroom, to lift the inner piston, away from the carburettor body, and this will call for a certain amount of care and manual dexterity, as after the two side screws have been removed the suction chamber can be lifted a limited amount; then one hand is required to lift the piston upwards inside the chamber against the mild load of the inner compression spring, whilst the second hand steadies the suction chamber; after which the complete unit can be moved sideways clear of the main instrument—great care must be taken, however, to see that the jet needle is not bent in the process. When re-fitting the suction chamber and piston the procedure is, of course, reversed, and the piston should be held as high up as possible inside the suction chamber whilst the whole unit is carefully guided into the position bore and jet in the main body.

It should be noted that where some alteration to mixture strength is required, it is the needle alone that is changed; the jet size remaining constant throughout a given range of carburettors.

When re-inserting the needle, the normal setting is with the shoulder (or junction between the straight part of the tapered working section of the needle, and its shank) just flush with the bottom of the piston rod into which it is inserted. This normal setting should only be changed by inserting the needle, say, a further $\frac{1}{32}$ " further in, if the position of the jet adjusting nut for normal running needs to be lower than three full turns downwards from its topmost possible position.

After checking, if this is considered necessary, the type of needle fitted, tuning of the carburettor is necessarily confined to correct idling adjustment. This operation should only be attempted after the engine has attained normal running temperature, and is carried out by means of the throttle stop screw (2), which governs the amount of throttle opening for idling, and the jet stop nut (18), which gives an enrichening effect when screwed downwards, and a weakening effect when screwed upwards.

A correct idling mixture gives an even beat with a colourless exhaust—too rich a mixture gives a trace of black in the exhaust with a rhythmic or regular misfire—too weak a mixture gives a splashy irregular type of misfire with a marked tendency to stop when only partially warm.

A second check on the correctness of the mixture strength may be made by unscrewing the hexagon headed 2 B.A. plug screw (29), immediately under the air intake (set in an angular position); and then with the engine idling a thin wire nail or similar type of metal rod is carefully pushed upwards until it lifts the suction piston, then any amount of manual lift over $\frac{1}{32}$ " should cause the engine to stop from weakness of mixture, and therefore, this setting can be taken as correct; if, on the other hand, a lift of approximately $\frac{1}{16}$ " causes the engine to