

# Instructions for Installation and Operation of O.S. In-Flight Control Needle-Valve

The purpose of the O.S. In-Flight Control (IFC) Needle-Valve is to enable fuel/air mixture strength to be adjusted by radio control.

With a well-designed carburettor (such as any of the current O.S. types) it is not difficult to adjust the standard needle-valve, before the model is released, to give satisfactory performance throughout the flight. Nevertheless, conditions sometimes arise whereby an inadequate or excessive amount of fuel is delivered to the engine in flight, causing it to run too weak or too rich. The O.S. IFC needle-valve, linked, via an additional servo, to an extra radio channel, enables the pilot to make the necessary mixture correction by means of one of the auxiliary levers on his transmitter.

The O.S. IFC Needle-Valve can be fitted to O.S. carburettors of any of the following Type Nos: 2D, 4D, 4E, 6B, 6P, 7D, 7L, 86, FS-70S, FS-91S, FS-120S-E and FS-120S-SP.

## INSTALLATION

1. Remove the original needle-valve assembly (A) from the carburettor by unscrewing it with the 7-8 mm wrench. Referring to Fig. 1, install the IFC as follows:
2. Insert the guide screw (B) in place of the original assembly and tighten it with the wrench.
3. Carefully engage the needle holder (C) with the guide screw (B). Note: do not force the needle-holder onto the guide screw; when properly engaged, the needle-holder is easily rotated with the fingers.
4. Rotate the needle-holder until it is fully home (approx. 2 turns - if necessary unscrew the needle (G) to allow the needle-holder to reach the fully closed position).
5. Now turn the needle holder (C) counter-clockwise one-quarter turn. Holding the needle-holder in this position, push the needle-valve control lever (D) onto the needle-holder (C) with the lever vertical or approximately at the mid-point of full servo control movement (See Fig. 2).
6. The control lever can be fitted with its arm in different positions, according to installation requirements. (See Fig. 1) Once these requirements have been decided, the lever can be locked in position by fitting the circlip (E) in the groove (F).

## OPERATION AND ADJUSTMENT

- \* Fill the fuel tank and operate the servo to bring the needle-valve control lever approximately one-quarter open from the fully closed (lean) position. (See Fig. 2).
- \* Start the engine and follow standard procedure for adjusting the needle-valve: i.e., open the throttle fully, gradually close the needle-valve until the engine is running at maximum speed, then set the needle-valve slightly on the rich side of this position.

### Caution!

In order to ensure precise control, the needle-valve (G) is fitted firmly in the needle-holder. If it is found that the needle-holder tends to rotate when the needle-valve is turned, it may be necessary to stop the engine so that both hands can be safely used to readjust the needle-valve.

**Note:** In this connection, please observe that it is only necessary to turn the needle-valve to an approximately correct setting manually. The optimum needle setting can be easily achieved, from this point, by actuating the needle-control servo.

## SENSITIVITY

- \* In order that the IFC can respond adequately to the limited rotational movement of the needle-valve control lever provided by the servo, it is designed to effect the equivalent of approximately one full turn of the needle-valve for only one-eighth of a turn of the needle-holder. In other words, only 5° of control lever movement towards the closed position will close the needle-valve by the same amount as 40° of rotation of the needle-valve in the needle-holder. Therefore, when operating the mixture control lever on the transmitter, move it slowly and a small amount at a time.
- \* Two needle-valves are supplied with each IFC assembly. Needle-A is fitted to the needle-holder when the unit leaves the factory. Needle-B is optional and has a more gradually tapered point. It is readily identified by a groove around the periphery of its adjusting knob. Needle-A is more sensitive in operation, but provides a wider range of mixture strength.
- \* The sensitivity and mixture control range of the IFC can also be adjusted by inserting the servo pushrod in the alternative holes provided in the control lever and servo output arm.

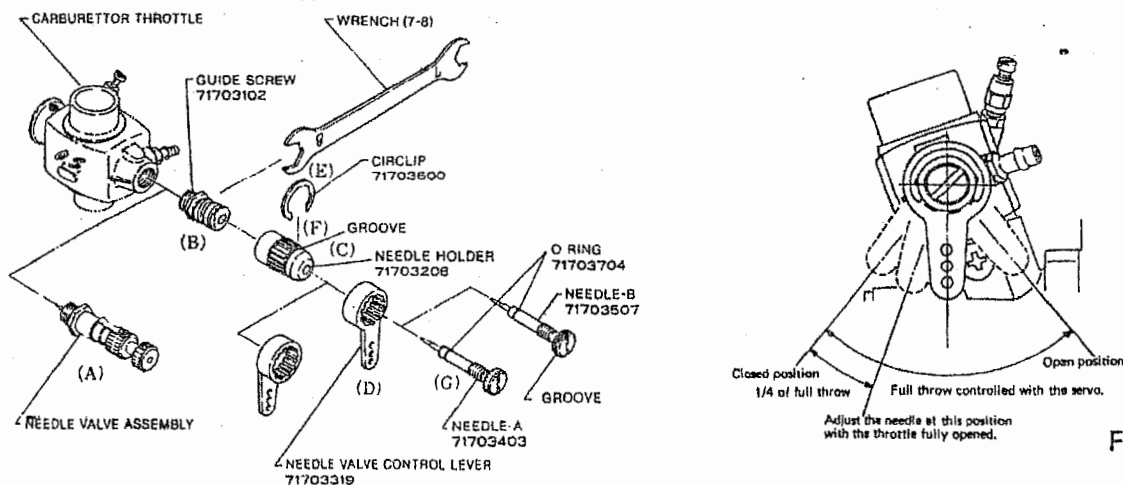


Fig. 2

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