

# INSTRUCTIONS FOR O.S. FS-90 FOUR STROKE CYCLE ENGINE

## IMPORTANT

Before attempting to operate your FS-90, please read through this instruction leaflet so as to familiarize yourself with the controls and other features of the engine. Also, please pay careful attention to the recommendations contained in the "Safety Instructions and Warnings" leaflet enclosed.

The O.S. FS-90 is an aircooled, overhead-valve four-stroke-cycle engine for model aircraft use. A development of the O.S. FS-60, the world's first quantity-produced four-stroke model aircraft engine, it continues to offer the quiet, scale-like operation for which the FS-60 is famous, but with greatly increased power due to its 50 percent larger displacement and highly developed cylinder-head and valve-gear. The engine is ideal for scale models, but is also suitable for aerobatic aircraft where local conditions may prohibit the operation of noisier engines. The FS-90 can be installed in any airframe intended for the FS-60, FS-75 or FS-80, as its mounting dimensions are same and it is only two ounces heavier than the FS-60.

The FS-90 is built to the highest technical standards throughout and has its camshaft, as well as its crankshaft, supported in ball bearings at both ends. Properly cared for, it will have a useful life many times that of ordinary model engines.

## INSTALLATION

Use a strong engine mount, at least as firm as is used for two stroke engines of similar size. Installation should be made in such a way that maintenance, checking and valve timing adjustments can be done easily.

## INSTALLATION OF CHOKE VALVE

The FS-90 is equipped with a spring-loaded choke valve. Insert an L-shaped actuating rod into the hole in the hexagonal part and secure it by tightening the set-screw. If the rod length is more than about 40 mm (1½ in.) its outer end should be supported to avoid vibration.

**CAUTION!** Never apply an electric starter with the choke closed. Such an action will cause an excess quantity of fuel to be drawn into the cylinder and result in an hydraulic lock that may damage the engine.

## FUEL

The FS-90 runs on standard commercially available model glowplug engine fuels. Fuels containing castor-oil and/or synthetic lubricants are acceptable, but for the best performance and reliability, a fuel containing 5 ~ 15% nitromethane is recommended.

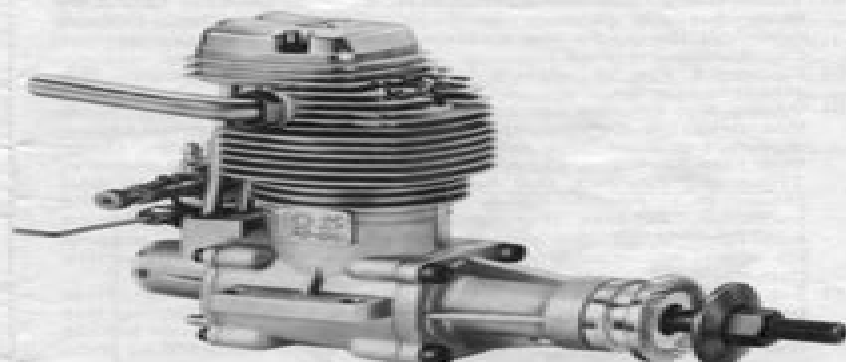
## GLOW PLUG

With a four-stroke engine, ignition of the fuel charge takes place at every fourth stroke of the piston instead of every second stroke. Because of this, conventional two-stroke glowplugs do not suit this engine. The special O.S. Type F glowplug supplied is recommended.

## PROPELLERS

Although it is possible, by using a smaller propeller, to run the FS-90 at revolutions in excess of the practical r.p.m. upper limit quoted in the specifications above, it is advisable to employ one of the following prop sizes in order to fully utilize the engine's relatively high torque and to preserve its 'realistic' four-cycle sound.

Suggested propeller sizes are: 12 x 7-8, 13 x 6-7, 14 x 6-7, 15 x 6 and 16 x 6.



## SPECIFICATIONS

Displacement	14.96 c.c. (0.913 cu. in.)
Bore	27.7 mm. (1.091 in.)
Stroke	24.8 mm. (0.976 in.)
Practical R.P.M.	2,000 ~ 11,000 r.p.m.
Output	1.3 ps/11,700 r.p.m.
Weight	645 gr. (22.77 oz.)

## DRIVE WASHER

The drive washer is designed to accept set-screws to prevent the propeller from slipping. Insert the set-screws into the drive washer and drill small holes in the propeller boss to fit the set-screws, as shown in the illustration, then tighten the propeller.

Two kinds of set-screws are supplied. The shorter ones are for use when the propeller is in direct contact with the drive washer. The longer ones are for use with a spinner backplate. In the latter case, corresponding holes for the set-screws should be drilled in the backplate also.



## STARTING

It is advisable to use an electric starter for starting, although hand-starting is also possible. The procedure when using an electric starter is as follows.

- 1) Open the throttle valve fully and unscrew the needle-valve approximately 5 turns from the fully closed position.
- 2) It is preferable to use the choke valve for priming, although you can prime the engine through the exhaust pipe if you wish.
- 3) Close the choke valve and turn the propeller counter-clockwise 1 turn by hand. Release the choke valve.

## CAUTION:

Do not turn the propeller more than 2 turns with choke closed, otherwise the engine may suck in too much fuel and become flooded.

# Os 90 Fs Manual

**Justin Winsor**



## Os 90 Fs Manual:

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