

# INSTRUCTIONS FOR O.S. PA-102 PUMP SYSTEM

The O.S. PA-102 Pump System consists of the unique O.S. Type PD-02 diaphragm fuel pump and matching large-throat carburettor (O.S. Type 86) and has been developed specifically for 10 cc (0.61 cu.in.) class FAI pattern contest engines.

The O.S. Pump System provides more power and ensures that fuel is delivered to the carburettor at the pressure necessary to maintain optimum mixture strength, irrespective of fuel tank location or aircraft

## PIPING

- For piping, use heavy duty silicone fuel tubing of approximately 2.5 mm bore and 5 mm outer diameter.
- A feature of the O.S. Pump System is that the fuel tank does not have to be placed close behind the engine, but tube lengths should be kept as short as possible. Take care not to cause any kinks in the "plumbing".

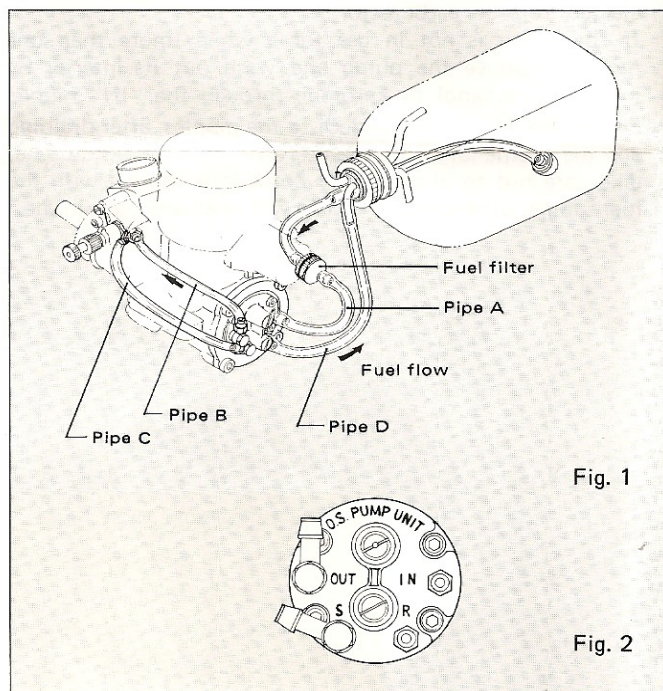


Fig. 1

Fig. 2

- Pipe A: To draw the fuel from the fuel tank to the pump.  
 Pipe B: To deliver the fuel from the pump to the carburettor.  
 Pipe C: To pick up the boost pressure in the carburettor.  
 Pipe D: To return the excess fuel to the fuel tank.

## FUEL TANK

If the fitting of the "klunk" type fuel pick-up weight in the fuel tank is incorrect, the weight may stick to the tank wall, resulting in an irregular fuel flow to the carburettor, or, alternatively, in the fuel flow being cut off during the course of sharp aerobatic manoeuvres. Therefore, it is advisable to make slots in the end of the weight, with a file or hacksaw blade, as shown in Fig. 4. Thoroughly wash out the weight to remove any minute particles of metal before reinstalling it in the tank.

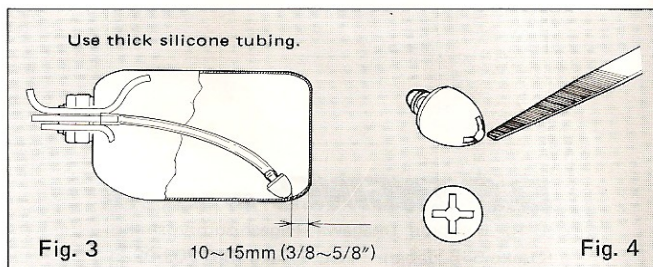


Fig. 3

Fig. 4

## WARNINGS

### Do not disassemble the pump

Never take the pump unit apart. Once the pump has been dismantled, its original performance may not be restored when it is reassembled.

### Do not insert anything into the nipples

Inserting a pin, etc., into the nipples is likely to damage the pump and render it inoperative.

### Use fuel filters

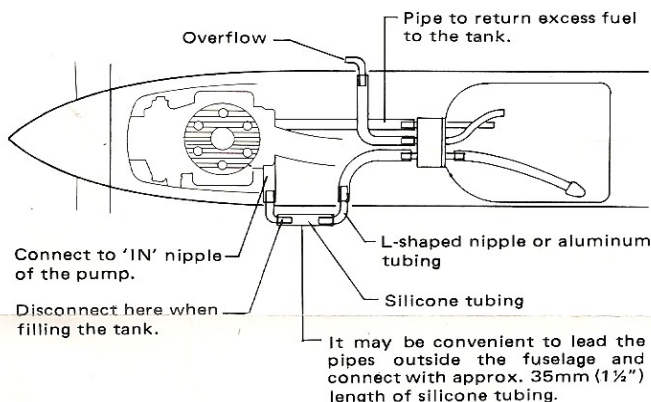
Any foreign matter entering the Pump System may interfere with its correct functioning and may even damage the pump diaphragm. Be sure to filter all fuel before filling the tank and, most important, use a good quality fine filter in the delivery tube between the tank and pump.

### Do not attempt to adjust the pump screws

Both adjusting screws are accurately adjusted and sealed with paint at the factory. If the screw setting is disturbed, it cannot be re-set at its optimum position without the aid of special instruments.

## INSTALLATION

Here is an example of a typical installation.  
 (Top view, upright engine installation.)



Note: A fuel filter is omitted in the above sketch.

## STARTING THE ENGINE

1. Fill the fuel tank.
2. Open the needle-valve approx. 2 ~ 2½ turns from the fully closed position.
3. Turn the propeller by hand, while watching fuel pipes A and B, until fuel is pumped as far as the carburettor. It may be necessary to turn the propeller through about 20 revolutions, depending on the length of pipe from tank to pump. Make a mental note of the number of revolutions required for fuel to reach the carburettor. However, note that it may be necessary to turn the propeller a few more revolutions if the pump is being used for the first time, or if no fuel has remained in the pump from previous use.

4. Turn the propeller two extra revolutions to prime the engine. Do not turn the prop more than this or the engine will be over-primed.

5. Connect the battery to the glowplug and start the engine.

**Note:** If the engine is over-primed (i.e. flooded), pinch the fuel delivery tube (Pipe B) with a suitable clip or clamp before attempting to start the engine. If the engine remains over-primed and unwilling to start, close the needle-valve completely, remove the glow-plug and flip the propeller briskly to eject excess fuel from the cylinder via the glowplug hole.

6. Fuel may be observed in Pipe C while the engine is running. This is quite normal.

7. Check that sufficient fuel can reach the engine to cause it to run rich (for running-in purposes, etc.) when the needle-valve is more than 3 turns open. If the engine cannot be made to run rich, check as follows:

- \* Make sure that the fuel filter or carburettor is not partially obstructed with foreign matter.
- \* Make sure that there are no holes in the piping or air bubbles in the fuel flow.
- \* Make sure that the fuel does not "froth" in the tank when the engine is running. This can occur if the tank is not properly insulated from vibration.
- \* Make sure that the fuel pick-up weight is not being partially obstructed by contact with the tank wall. (Refer to previous instructions under "FUEL TANK".)

In the unlikely event that the engine cannot be persuaded to run rich, or fuel does not flow through Pipe D, after checking the above, it is possible that a fault has developed in the pump. In this case, consult the O.S. engine distributor in your country.

## ADJUSTMENTS

Adjustment of the PA-102 System is confined to the Type 86 carburettor. No adjustments to the pump are called for. These are factory set. Carburettor adjustment broadly follows the procedure for setting up a conventional suction-feed system. See separate instruction leaflet for O.S. Type 86 carburettor.

## MAINTENANCE

If, after use, the fuel system is left unattended for a lengthy period, there will be a tendency for the methanol content of the fuel to evaporate sufficiently for the oil content to "gum" the internal parts of the pump. Therefore, it is advisable, at the end of the day's flying, to empty the fuel tank, invert the engine, and pump out the remaining fuel in the system by rotating the propeller until no more fuel is ejected from the carburettor.

If the pump is not in use for a while (more than one month), remove the pump and wash out its interior by injecting methanol or kerosene through the "IN" nipple. Fit the sealing caps (provided) to the nipples, after draining out the methanol or kerosene. Note: if you use kerosene, take care not to allow this to come into contact with the fuel tubing, otherwise the tubing will swell and deteriorate.

**O. S. PUMP SYSTEM**  
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