

# OPERATOR'S MANUAL

## YS.FUTABA 61R-AR Long Stroke (Rear exhaust/ YS0091)

### SPECIFICATIONS

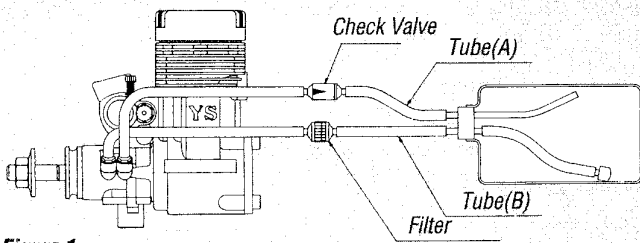
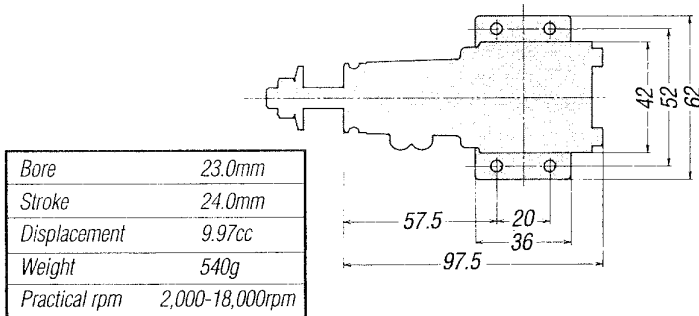


Figure 1



### FEATURES

The YS .61-AR is designed for pattern competition and incorporates several exclusive features for optimum performance. The long stroke design of the .61-AR improves efficiency and increases power to allow the use of larger propellers.

A new crankshaft design with two steel rings keeps the rear bearing isolated from residual fuel, thus preventing rust. The regulator circulates fresh fuel directly to the rear bearing for lubrication while running.

A new liner material made of chromed aluminum is used for better heat dissipation and reduced weight. A new port design produces more power.

The cylinder head is machined from bar stock aluminum, as opposed to cast aluminum, which produces a nicer finish and better heat dissipation. The .61-AR is a direct replacement for the .61-FR and uses the same mounting bolt pattern.

### TROUBLESHOOTING

Problem	Cause	Solution
<b>Unstable high speed</b>	1. Needle valve set too lean	Re-adjust peak position
	2. Foreign material in carburetor or filter	Clean each
	3. Low tank pressure	(See below)
	4. Inappropriate glow plug or fuel	
<b>Unstable low speed</b>	1. Incorrect fuel/air ratio	Re-adjust diaphragm
	2. Low tank pressure	(See below)
	3. Check valve malfunction	Clean
	4. Foreign material in carburetor	Clean
	5. Incorrect glow plug or fuel	
<b>Low tank pressure</b>	1. Bent or damaged fuel line	Check each tube
	2. Damage to tank or pressure leakage	Inspect
	3. Check valve stoppage	Remove stoppage
<b>Weak</b>	1. Foreign material in throttle	Clean

### INSTALLATION

1. Connect the engine to the tank as shown in fig. 1. Since high pressure is applied to the tank, tighten all connections carefully. Care must be taken to prevent pressure leakage due to undertightening of the check valve or by kinking the fuel lines.
2. Use a fuel filter in the fuel line.
3. Match the direction of the check valve arrow to fig. 1

### START-UP

1. Remove tube (B) from the filter; remove tube (A) from the check valve, then fill the tank. (CAUTION: If tank is filled, remove tube (A) first; then tube (B). Fuel will eject if tube (B) is removed first while the tank is pressurized.)
2. Open the needle valve 1 1/2 turns from the fully closed position.
3. Open the throttle fully and slowly turn the propeller ten turns. This primes the system by pressurizing the tank and feeding fuel to the carburetor.
4. Pour several drops of fuel into the carburetor.
5. Close the throttle approximately 25% and connect the glow plug cord.
6. Start engine.

### BREAK-IN

To maximize engine performance and increase durability, use this procedure:

1. Use the same size or smaller propellers as you intend to use in flying.
2. Use any good quality 2 stroke fuel, which includes synthetic or castor oil additives.
3. During the break in operations, throttle should be fully open.
4. The engine should be set to run rich, and then run for 20 minutes at this setting.
5. Mount the engine and fly it ten times at this setting.

This concludes the break-in procedure. It is advisable to keep the needle valve open a bit more than necessary so as to keep the moving parts lubricated, even after the break-in period.

### HIGH SPEED ADJUSTMENTS

1. Adjustment of high speed is done by the carburetor needle valve. When the needle valve is turned clockwise, the mixture is richer.
2. When the engine is started, open the throttle gradually. Next, find the peak position (highest rpm) by adjusting the needle valve. Set the rpm slightly less than peak (the needle should be returned 30-45 degrees to the left of peak position) The engine may stop if the throttle is opened to full immediately after start-up. Wait until the engine temperature rises and then open the throttle slowly.
3. For flying, it is advisable to use a slightly richer setting. By using a richer mixture, the engine temperature is maintained and rpm stability improves.

### LOW SPEED ADJUSTMENT

Carburetor adjustment for low speed is factory pre-set. No adjustment is required until after the break-in period. After break-in use this procedure if necessary.

1. Adjustment of low speed idling is done by the diaphragm regulator/regulator valve screw. When the diaphragm is turned clockwise, the mixture is leaned. When it is turned counter-clockwise the mixture is richened. (For reference: The engine is assembled with the head of the diaphragm valve screw flush with the regulator body. Adjustments should be made in 1/8" to 1/4" turn increments).
2. The diaphragm valve can be set after the high speed needle valve has been set. Close the throttle gradually; then fully open the throttle just before the engine stops. The adjustment condition is satisfactory at low speed if revolution is smooth at this time. Set the number of idling revolutions by throttle barrel limit screw. If the throttle is quickly opened and the mixture is too rich, turn the diaphragm adjustment screw clockwise 1/8 to 1/4 turn at a time to achieve smooth throttle response. If the mixture is too rich it is possible to stop the engine (flooding) when the throttle is opened.
3. When the revolution is stabilized, close the throttle further and repeat the above adjustment to idle evenly at 2,500 rpm or less.

### REAR BEARING LUBRICATION

The rear bearing is isolated from the crankcase with two steel rings mounted to the crankshaft to prevent rust from residual fuel. The regulator circulates fresh fuel directly to the rear bearing for lubrication while running. Should the engine be stored for a prolonged period, the rear bearing can be lubricated by following these steps: 1. Remove oil plug screw. (#46 of the parts diagram.)

2. Remove one of fuel nipple #41 and screw into the oil filler hole.
3. Attach a piece of fuel line to the nipple and inject or drip oil to lubricate rear bearing. Do not use petroleum base oil as it will attack the silicone parts of the engine.

