

# OPERATOR'S MANUAL

**YS.Futaba 60F.S** (Side exhaust/Part no. YS0030)

**YS.Futaba 60F.R** (Rear exhaust/Part no. YS0040)

## SPECIFICATIONS

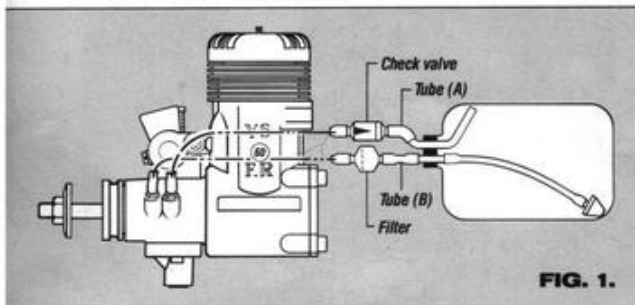
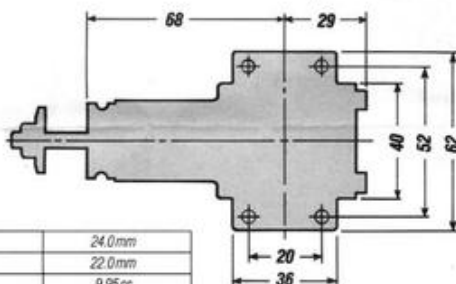


FIG. 1.



Bore	24.0mm
Stroke	22.0mm
Displacement	9.95cc
Weight	500g
Practical rpm	2,000-18,000rpm

## FEATURES

The YS.Futaba 60F.S and 60F.R are class 60 engines designed for pattern flying models.

These engines feature superior fuel delivery incorporating the YS pressurization system, butterfly type throttle and new carburetor design. The carburetor uses simplified construction that does not require adjustment other than the familiar needle valve.

Both versions of the YS.Futaba 60F are suitable for the novice as well as expert R/C flyer.

## TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
Unstable high speed	1. Needle valve set too lean	Readjust peak position
	2. Foreign material in carburetor or filter	Clean each
	3. Low tank pressure	(See below)
	4. Inappropriate glow plug or fuel	
Unstable low speed	1. Incorrect fuel/air ratio	Readjust diaphragm
	2. Low tank pressure	(See below)
	3. Check valve malfunction	Clean
	4. Foreign material in the carburetor	Clean
	5. Incorrect glow plug or fuel	
Low tank pressure	1. Bent or damaged fuel line	Check each tube
	2. Damage to the tank or pressure leakage	Inspect
Weak mixture	1. Foreign material in the throttle	Clean
	2. Foreign material in the filter	Clean
	3. Foreign material in the carburetor	Clean
	4. Low tank pressure	(See above)
	5. Bent or damaged tube	Check each tube
Fuel flows after stopping	1. Check valve malfunction	Clean
	2. Foreign material in the carburetor	Clean
	3. Loosened valve adjustment screw	Readjust

## GLOW PLUG

Select the most appropriate glow plug from those designed specifically for R/C operation. The selection of glow plug greatly affects the maximum engine output and low flying stability. If rpm's decrease or stop when the booster cord is removed, replace the plug.

## 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. We recommend the YS.Futaba filter.
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 three 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 the engine.

## BREAK-IN

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

1. Use the same size or smaller propeller as you intend to use in flying (11 x 7 $\frac{1}{4}$  to 11 x 8).
2. Use any good quality 2 stroke fuel, which includes synthetic or castor oil additives.
3. During the break-in operation, open the throttle fully.
4. Rotate the propeller two or three turns, opening the needle valve as far as needed without stopping. Then rotate the needle valve  $\frac{1}{2}$  turn back from peak position and run for 30 minutes (4-cycle operation).
5. Mount the engine and fly it ten times at a speed 1,000 rpm lower than peak rpm.

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 ADJUSTMENT

1. Adjustment of high speed is done by the carburetor needle valve. When the needle valve is turned clockwise, the mixture is leaner. When it is turned counterclockwise, 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 mixture setting. By using a richer mixture, the engine temperature is maintained and rpm stability improves.

## LOW SPEED ADJUSTMENT

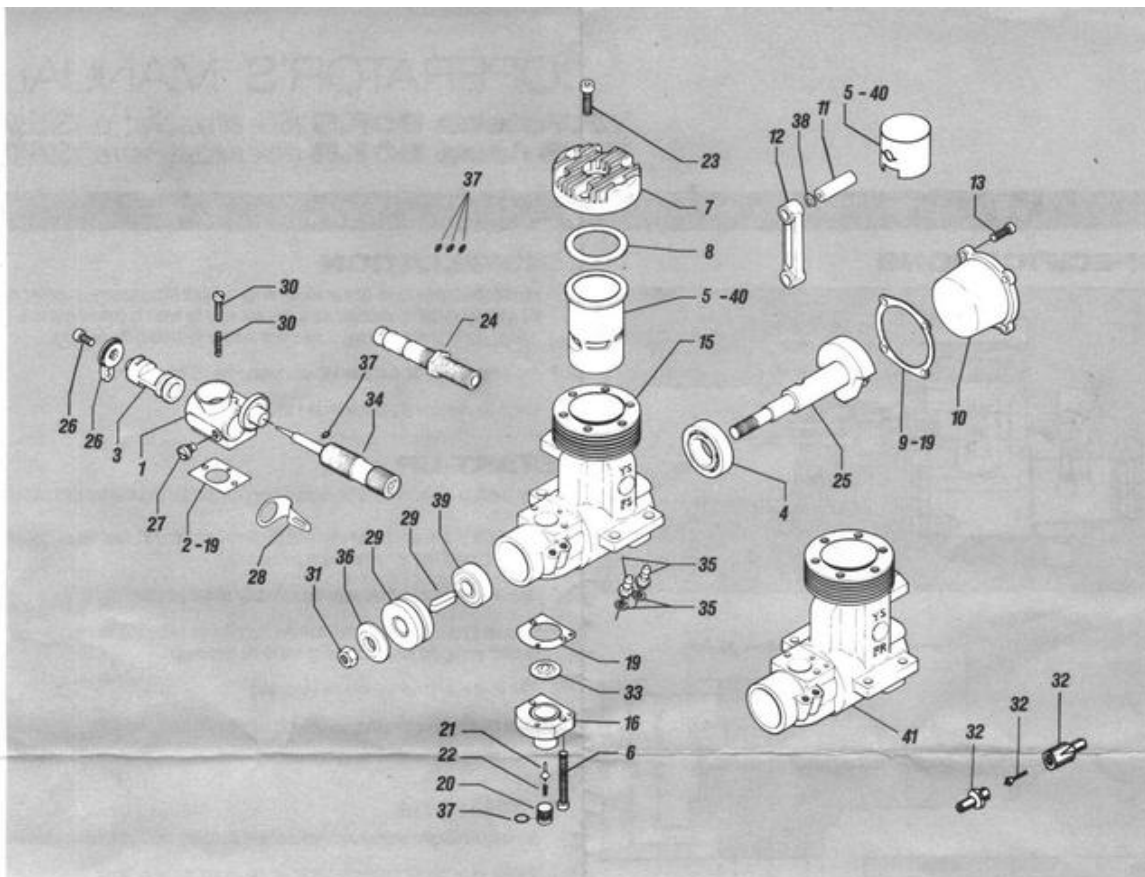
Carburetor adjustment for low speed is factory pre-set. No adjustment is required until after the break-in period. After break-in use this procedure if necessary.

1. Adjustment of low speed revolution is done by the diaphragm/regulator valve screw. When the diaphragm is turned clockwise, the mixture is leaned. When it is turned counterclockwise 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  $\frac{1}{8}$  to  $\frac{1}{4}$  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  $\frac{1}{8}$  to  $\frac{1}{4}$  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.

## PROPELLER AND MUFFLER SELECTION

The YS.Futaba engine is designed for use with a tuned pipe. The intermediate length between the muffler and exhaust adaptor depends mainly on the propeller size and the type of fuel. Generally, when the diameter and pitch of the propeller increase, the intermediate (header) length should increase as well. It must also be increased with lower nitro content fuel blends.

Continued on other side.



## PARTS LIST

The specifications may be changed without prior notice.

### YS.Futaba 60F.S

#	PART #	DESCRIPTION	QTY	#	PART #	DESCRIPTION	QTY
1	YS0250-60FS	Throttle body	1	24	YS0365-60FS	Needle socket	1
2	YS0255-60FS	Throttle gasket	1	25	YS0370-60FS	Crankshaft	1
3	YS0260-60FS	Throttle barrel	1	26	YS0375-60FS	Throttle arm/screw set	1
4	YS0265-60FS	Rear ball bearing	1	27	YS0380-60FS	Throttle barrel retainer screw	1
5	YS0270-60FS	Linear/piston set side exhaust	1	28	YS0385-60FS	Needle valve detente spring	1
6	YS0275-60FS	Throttle reg mounting screws	1	29	YS0390-60FS	Drive washer set	
7	YS0280-60FS	Cylinder head	1	30	YS0395-60FS	Throttle stop screw/spring set	
8	YS0285-60FS	Cylinder head gasket	1	31	YS0400-60FS	Prop nut	1
9	YS0290-60FS	Back plate gasket	1	32	YS0405-60FS	Check valve	1
10	YS0295-60FS	Back plate	1	33	YS0410-60FS	Diaphragm	1
11	YS0300-60FS	Wrist pin	1	34	YS0415-60FS	Needle valve	1
12	YS0305-60FS	Con rod	1	35	YS0420-60FS	Fuel nipples/washers set	
13	YS0310-60FS	Back plate screws	6	36	YS0425-60FS	Prop washer	1
14	YS0315-60FS	Mixture control (Not pictured)	1	37	YS0430-60FS	O ring set	
15	YS0320-60FS	Crank case	1	38	YS0435-60FS	Wrist pin retainer	1
16	YS0325-60FS	Regulator body	1	39	YS0440-60FS	Front ball bearing	1
17	YS0330-60FS	Throttle set (Complete Carburetor)	1	<b>YS.Futaba 60F.R</b>			
18	YS0335-60FS	Spinner (Not pictured)	1	40	YS0240-60FR	Piston liner rear exhaust	1
19	YS0340-60FS	Gasket set (All Gaskets)	1	41	YS0245-60FR	Crankcase	1
20	YS0345-60FS	Regulator adjustment screw	1				
21	YS0350-60FS	Regulator plunger	1				
22	YS0355-60FS	Plunger spring	1				
23	YS0360-60FS	Cylinder head screws	6				

### DIAPHRAGM AND CHECK VALVE DISASSEMBLY

#### Diaphragm:

1. Remove the adjustment screw of the valve, and then remove the inside valve and spring.
2. Clean the inside with alcohol or appropriate cleaner. Reassemble.
3. Screw in the valve adjustment screw until flush with the diaphragm body. Refer to "Low speed adjustment."

#### Check valve:

1. Open the valve by rotating the body counterclockwise.
2. Reassemble the check valve carefully.

**IMPORTANT!** Silicone rubber is used in many parts of the YS.Futaba engine. Use only glow fuel or methanol for cleaning. Gasoline and other volatile solutions will damage the silicone if used.

### WARRANTY

Strict quality control is implemented by our factory in all phases, from parts manufacturing to final assembly. If performance deteriorates or if a part fails due to a manufacturing error, YS.Futaba will repair or replace the engine at no charge.

Should the engine be modified, incorrectly assembled or abused there will be a nominal charge for parts and labor.

# YSFutaba

Futaba Corporation of America  
555 West Victoria Street  
Compton, CA 90220