

FIG.1

### SPECIFICATIONS

BORE	30.4mm
STROKE	25.8mm
DISPLACEMENT	18.73cc
WEIGHT	730g
RPM	2,000 ~ 13,000rpm

### BREAK-IN

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

1. Use the same size (or slightly smaller) propeller than you intend to use in flying.
2. Use a good quality fuel which contains 15-30% nitromethane and an oil content of 15-20%. Synthetic or castor oil can be used, or a combination of synthetic and castor. Do not use four cycle fuel due to low oil content.
3. The needle valve should be set so that the engine is running at a rich setting. Run the engine approximately 20 minutes with this setting.
4. Mount the engine to the model and fly ten times with this setting. This concludes the break-in procedure. It is advisable to always use a slightly rich setting to keep the moving parts lubricated, even after the break-in period.

### HIGH SPEED ADJUSTMENT

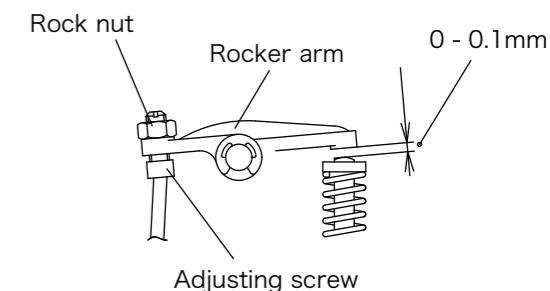
1. Adjustment of high speed is done by the high speed needle valve. When it is turned clockwise, the mixture is leaner. When it is turned counterclockwise, the mixture is richer. A good starting position for the high speed needle valve is 1 1/2 - 2 turns open from fully close position.
2. When the engine is started, open the throttle gradually. Next, find the peak position (highest RPM) by adjusting the needle valve. Then the needle valve should be opened approximately 1/8 of a turn from full RPM to achieve best performance. The engine may stop if the throttle is opened to full immediately after starting. 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

This engine is equipped with a low speed needle valve to adjust the mixture from low to mid throttle. This needle valve is located on the side of the throttle barrel opposite the throttle arm (FIG.1).

1. Open the low speed needle to 2 turns from fully closed position.
2. The low speed needle valve should be set after the high speed needle valve has been adjusted. Close the throttle gradually to a idle (approximately 2300rpm). Let it idle for 20 to 30 seconds and then slowly advance the throttle. The adjustment is satisfactory at low speed if transition is smooth at this time.
3. If the engine is running rough on idle, the low speed mixture is rich. If the engine starts to speed up and dies on idle or starts to detonate, when advancing the throttle, the mixture is lean. Turn the low speed needle valve clockwise to richen and counterclockwise for a leane mixture (note that the direction of the low speed needle valve is opposite the high speed needle valve). Adjustments to the low speed needle valve should be 1/8 to 1/4 of a turn increment at a time to achieve smooth throttle response.

FIG.2



### TAPPET CLEARANCE ADJUSTMENT

1. Tappet clearance is factory preset. No adjustment is necessary unit after 1 hour of operation(including break-in period).
2. Clearance adjustment should be done when the engine is cool. When the engine temperature is high, clearance is higher due to thermal expansion.
3. The proper clearance setting should be at 0 - 0.1mm. The adjustment is achieved by loosing the locknut (FIG.2) and turning the adjusting screw. Tighten the locknut after the adjustment is achieved. After the initial 1 hour adjustment, this procedure should be performed after every 2 hours of use.

### CAMGEAR TIMING ADJUSTMENT

If for some reason you have to disassemble your engine, please follow these important steps on reassembling the cam gear.

1. Remove the carburetor and backplate assembly. Notice the impression made on the crankshaft counterweight. Position it directly straight down or in line with the case outer seam line.
2. When reinstalling the cam gear, the side with a point mark should be facing the opening of the gear box. Note that it should also be mounted with the point mark located towards the top of the engine just below the cam followers.

**IMPORTANT!** Silicone rubber is used in many parts of the YS 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 a part fails due to a manufacturing error, YS will repair or replace the engine at no charge in the period of one year from date of purchase. Warranty does not cover normal maintenance.

Should the engine be modified, incorrectly assembled or abused, there will be a normal charge for parts and labor. The use of four cycle fuel due to the low oil content will also void warranty.

### FEATURES

The FZ115S is the most powerful 110 class four cycle engine available. This engine offers many exclusive features that have been proven on other YS engines.

Supercharged system with simplified structure to keep weight to a minimum while still retaining maximum efficiency.

Air chamber that uses crankcase pressure coupled with a double throttle valve system which allows a bigger charge of fuel and air mixture to enter the intake valve for more power.

Fuel injection system for superior throttle response. This system is unaffected by tank position or by the attitude of the model.

### GIOW PLUG

Select the most appropriate glow plug from those designed specifically for 4 cycle engines. Glow plug selection greatly affects the maximum engine output and low idle. If RPM's decrease or stop when the booster cord is removed, replace the plug.

We recommend YS #4 (P0040) or OS Type F.

### 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. Always uses a fuel filter ( not included ). We recommend the YS filter ( 6720 ).
3. Match the direction of the check valve arrow to FIG.1, with the arrow facing towards the tank.

### PROPELLER INSTALLATION

Due to the high torque of the FZ115S engine, we have equipped it with double locknuts for safety.

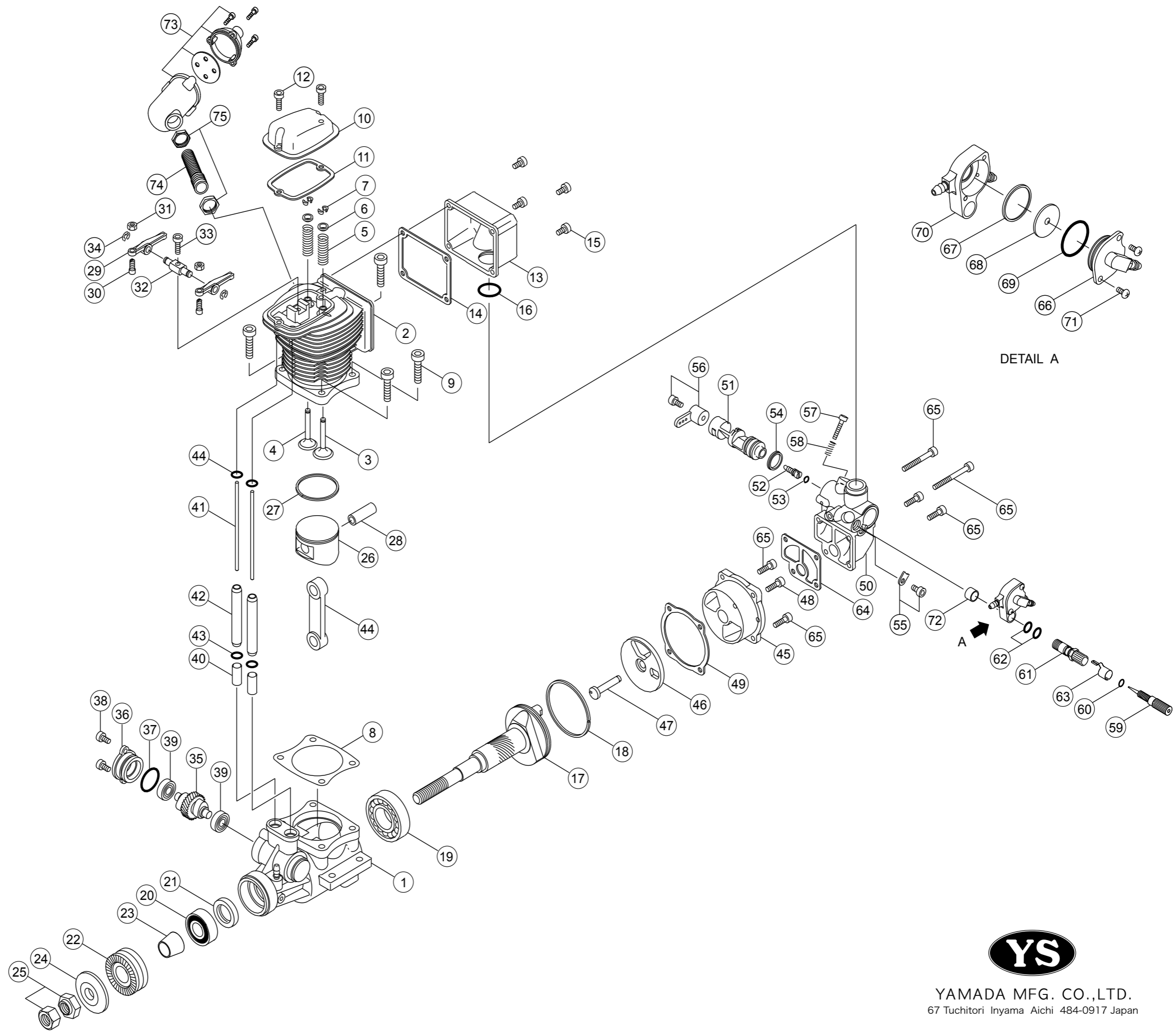
1. Mount the propeller and tighten the rear nut. Next, tighten the front nut as shown in FIG.1.
2. Select a good quality propeller that will turn in the 7,000 to 11,000rpm range. We recommend sizes 14x11-12, 15x10-11, 16X8.

### 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 or under pressure ,remove tube(A) first, then remove tube(B). Fuel will eject if tube(B) is removed first while the tank is pressurized.
2. Open the needle valve 1 1/2~ 2 from the fully closed position.
3. Open the throttle about 10% from the idle position and slowly turn the propeller ten turns. This primes the system by pressurizing the tank and sending fuel to the carburetor.
4. Pour several drops of fuel into the carburetor.
5. Close the throttle to the idle position and connect the glow plug cord. The engine is now ready for starting.

**Do not attempt to start at full throttle, as this is very dangerous.**

NO.	PARTS#	NAME	QTY
1	G2001	Crank case	1
	G2002A	Cylinder head assembly	
2	G2002	Cylinder head	1
3	F9103	Intake valve	1
4	F9104	Exhaust valve	1
5	F1209	Valve spring set	2
6	F9106	Spring retainer set	2
7	F9107	Valve spring retainer clips	4
8	F7308	Cylinder gasket	1
9	F7309	Head screws	4
10	F9112	Valve cover	1
11	F9113	Valve cover gasket	1
12	F9114	Valve cover screws	2
13	F9115	Rear air chamber	1
14	F9116	Air chamber gasket	1
15	F9117	Air chamber screws	4
16	F9118	Air chamber O ring	1
17	G2017	Crankshaft	1
18	F7318	Crankshaft ring	
19	G2019	Rear bearing	1
20	R6211	Front bearing	1
21	F9122	Front bearing oil seal	1
22	F9323	Drive washer	1
23	F9324	Drive washer retainer	1
24	F1266	Propeller washer	1
25	F2267	Propeller nut set	2
26	G2026	Piston	1
27	F1224	Piston ring	1
28	F7329	Wrist pin	1
29	F9131	Rocker arm set	2
30	F1213	Tappet adjusting screw set	2
31	F1214	Tappet adjusting lock nuts	2
32	F9134	Rocker arm shaft	1
33	F9135	Rocker arm screw	1
34	F1217	E ring set	2
35	F1235	Cam gear	1
36	F9138	Cam gear cover	1
37	F1233	Cam gear cover O-ring	1
38	F9140	Cam gear cover screws	2
39	F1242	Cam gear bearing set	2
40	F1236	Cam followers set	2
41	F9143	Push rods	2
42	F9144	Push rod covers	2
43	F1239	Push rod cover O rings	4
44	G2045	Con rod	1
	G2046A	Back plate assembly	
45	G2046	Back plate	1
46	G2047	Disc valve	1
47	G2048	Disc valve pin	1
48	G2049	Disc valve set screw	1
49	F9152	Back plate gasket	1
50	G2051	Carburetor body	1
51	G2052	Throttle barrel	1
52	F9156	Low speed needle valve	1
53	F9157	Low speed needle valve O-ring	1
54	F9358	Throttole barrel seal	1
55	R6124	Throttle barrel retainer	1
56	F1260S	Throttle arm set	1
57	F1258	Throttle stop screw	1
58	F1259	Throttle stop spring	1
	G2060	Needle valve set	
59	F1545	Needle valve	1
60	F1546	Needle valve O-ring	1
61	G2062	Needle socket	1
62	G1060	Needle socket O-ring	3
63	F1557	Needle valve detent	1
64	F9164	Carburetor gasket	1
65	F7367	Carburetor screws	6
	G1066A	Regulator assembly	
66	S1036	Regulator body A	1
67	S1038	Diaphragm	1
68	S1039	Regulator valve	1
69	S1041	Regulator valve O ring	1
70	G1070	Regulator body B	1
71	G1071	Regulator screws	2
72	G2073	Regulator spacer	1
	F9377A	Muffler set	
73	F9377	Muffler assembly	1
74	F9378	Exhaust pipe	1
75	F9379	Rock nuts	2
	F1272	Check valve	1
	G2080	Gasket set	4
	G2081	O ring set	11



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