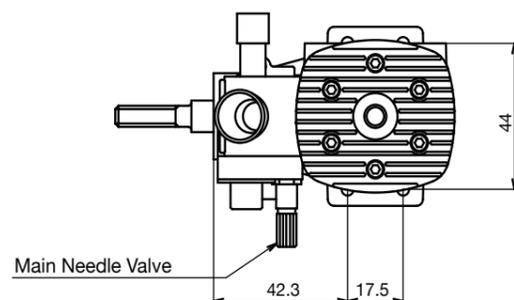


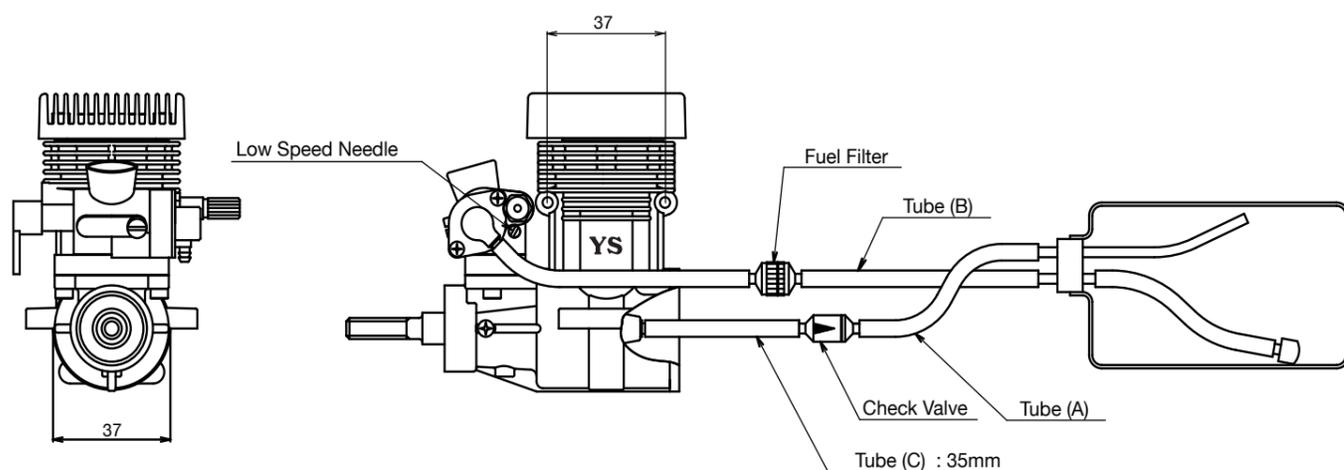
# OPERATOR'S MANUAL

## 50ST (Helicopter Engine)



### SPECIFICATIONS

Bore	22,0mm
Stroke	21,5mm
Displacement	8,17cc
Weight	398g
Practical rpm	2,000-20,000rpm



### FEATURES

The YS 50ST Engine features the patented YS regulated fuel system for positive fuel flow during all types of flight conditions.

Factory authorized parts and service available worldwide.

### CAUTIONS

1. Take care not to touch the engine immediately after shutdown to avoid painful burns.
2. Do not attempt to fly with engine problems as it can be dangerous. Fix the problem prior to flying.
3. When starting the engine, do not use full throttle but set throttle to low speed before applying the glow driver.
4. This engine is intended for helicopter use. Aircraft conversion parts are available from our service department.
5. This engine is intended for use by experienced modelers only. If you are not properly trained to operate this engine, please get assistance from a skilled modeler.
6. The user is responsible for operating this engine in a safe manner.

### INSTALLATION

1. The fuel lines should be connected to the fuel tank as shown in the above diagram. Be careful to install the check valve in the correct direction. Since the tank is exposed to high pressures, be sure that all connections are secure to prevent pressure leakage.
2. Since the engine is sensitive to dirt in the fuel, a fuel filter must be used.
3. Tube (C) should be set exactly at 35mm between the engine and the check valve.
4. The check valve is designed exclusively for the 50ST. Use only YS factory parts for replacement.

### MUFFLER

1. Use an expansion chamber muffler intended for 50 size helicopter engines. If there is a fuel tank pressure fitting on the muffler you choose, plug it, as it is not necessary to use muffler pressure with the YS system.
2. Please note that the use of tuned pipes and tuned muffler systems can interfere with the operation of the regulator system and result in poor engine performance.

### STARTING PROCEDURE

For the best overall performance with your 50ST Helicopter Engine, we recommend 30% nitro fuel blended especially for helicopter use. Lower nitro percentages may be used, but reduced performance will result.

1. Always remove tube (A) at the check valve first. The fuel tank is pressurized by the engine and you need to relieve the pressure. Then, disconnect tube (B) and fill between the filter and the tank. If you make a mistake in the procedure, fuel will squirt out. An easy method is to use T-Fittings between the check valve and the tank, and between the fuel filter and the tank with plugs that can be removed for pressure relief and fuel filling.
2. From the fully closed (clockwise) position, open the main needle valve 1,5 turns. Close the idle needle fully (clockwise) and open 1 turn. These are the initial settings and will be re-adjusted as you set up the engine and helicopter.
3. Open the throttle fully and run the engine with an electric starter for about 10 seconds without connecting the glow driver. This pressurizes the fuel tank and the engine is now ready for starting. Set the throttle barrel to low speed and connect the glow driver before starting the engine with the electric starter.
4. If the engine refuses to start, remove the glow driver, open the main needle valve 2 turns from its present setting and repeat Step 3. Return to low throttle and start the engine. After starting, return the main needle to its running setting before advancing the throttle.

### IDLE ADJUSTMENT

Begin with the idle needle with 1 turn open from closed (clockwise) and adjust from that point. Turning this needle clockwise will lean the fuel mixture, and counter-clockwise will richen the fuel mixture. Changes in fuel and weather conditions may require re-adjustment.

### HOVER ADJUSTMENT

Hover is adjusted with the main needle valve. There is some interaction between the hover setting and full throttle setting, so be aware that one adjustment will affect the other.

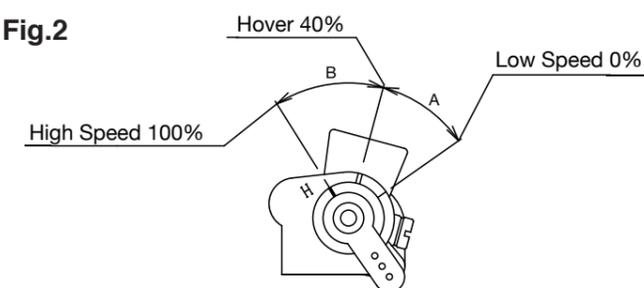
### HIGH SPEED ADJUSTMENT

High speed is also adjusted with the main needle valve. Turning the needle valve clockwise will lean the fuel mixture, and counter-clockwise will richen the fuel mixture. Adjust carefully as this setting will also affect the hover adjustment.

### THROTTLE LINKAGE

Set the throttle stick on the transmitter at the center, and adjust the linkage to put the mark on the carb body and the mark on the throttle barrel in line. Hovering should take place with the throttle stick near the center position if the linkage ratio is properly set. If the ratio is incorrect, the throttle barrel will be too far open at the center position on the stick and hovering will commence at a lower stick position.

Fig.2



### BREAK-IN

It is not necessary to mount this engine on a test stand for break-in. However, the engine should be adjusted slightly on the rich setting for the first few flights to ensure proper break-in. Always use a good quality fuel which contains 30% nitro and an oil content of 20-30%.

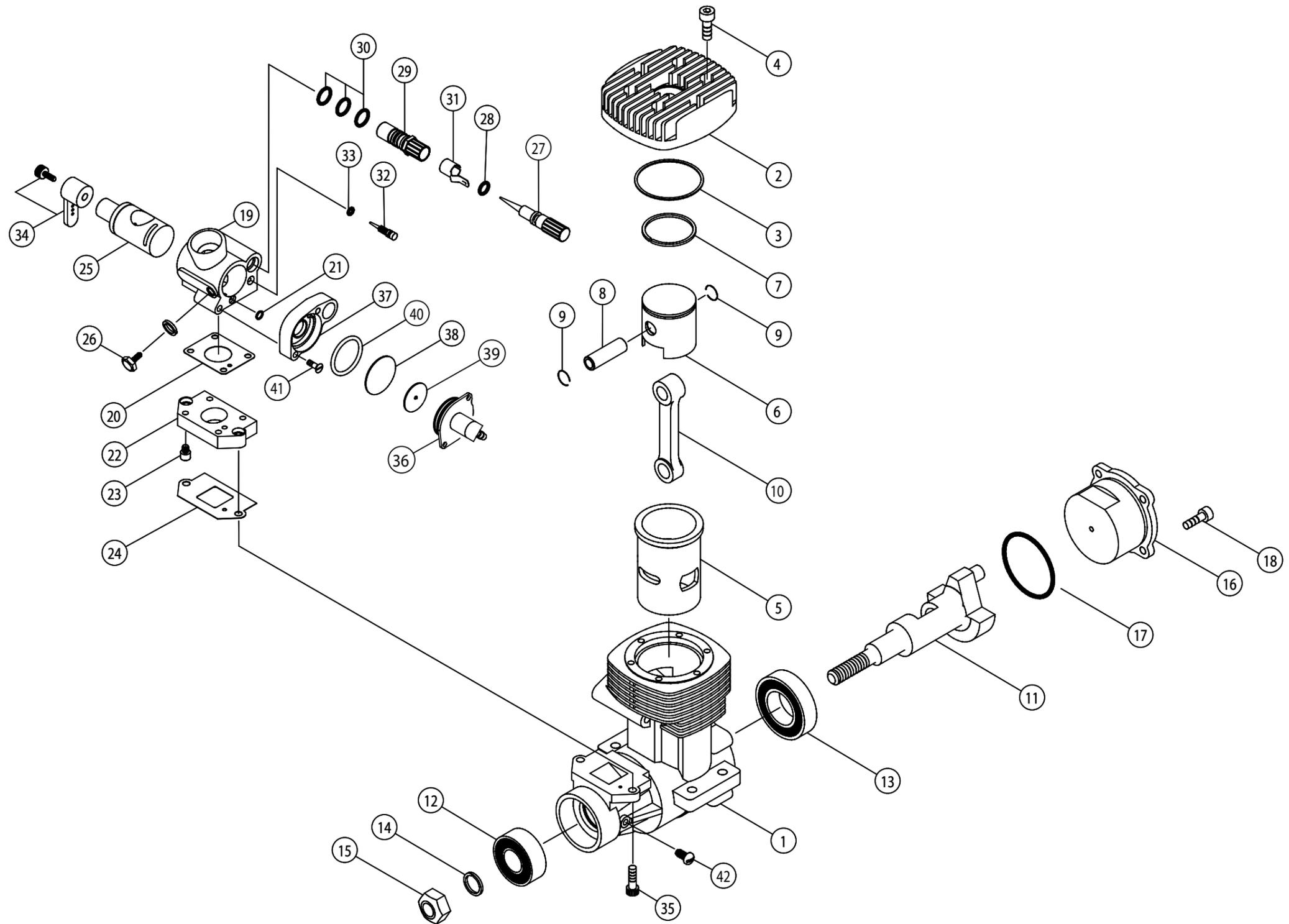
### GLOW PLIG

1. We have found that the glow plugs listed below will give the best engine performance;
  - YS #2
  - OS #8
  - Enya #3
2. Replace the glow plug when idling or top end performance decreases.

### IMPORTANT!

Silicone rubber is used in many parts of the YS Engine. Use only glow fuel for cleaning. Gasoline or other solvents will damage silicone if used.

NO.	PART#	DESCRIPTION	QTY
1	S1001	Crankcase	1
2	S1002	Cylinder head	1
3	S1003	Head gasket	1
4	S1004	Head set screws	6
	S1005S	Liner and piston set	
5	S1005	Liner	1
6	S1006	piston	1
7	S1007	Piston ring	1
8	S1008	Wrist pin	1
9	S1009	Wrist pin retainers	2
10	S1010	Con rod	1
11	S1011	Crankshaft	1
12	R6211	Front bearing	1
13	S1013	Rear bearing	1
14	R6115	Drive washer spacer	1
15	S1015	Prop nut	1
16	S1016	Back plate	1
17	S1017	Back plate O ring	1
18	S1018	Back plate set screws	4
19	S1019	Carburetor body	1
20	S1020	Carburetor gasket	1
21	S1021	Carburetor O ring	1
22	S1022	Carburetor insulator	1
23	S1023	Insulator set screws	4
24	S1024	Insulator gasket	1
25	S1025	Throttle barrel	1
26	F1262	Throttle barrel retainer screw	1
	S1027S	Needle valve set	
27	S1027	Needle valve	1
28	F1546	Needle valve O ring	1
29	S1029	Needle socket	1
30	S1030	Needle socket O ring	3
31	F1557	Needle valve detent	1
32	S5131	Low speed needle	1
33	S8133	Low speed needle O ring	1
34	F1260S	Throttle arm set	1
35	S1035	Carburetor screws	2
36	S1040	Regulator body A	1
37	S1037	Regulator body B	1
38	S1038	Diaphragm	1
39	S1049	Regulator valve	1
40	S1041	Regulator O ring	1
41	S1044	Regulator set screws	2
42	S1045	Crankcase plug	1
	S7144	Check valve	1
	S1046	Gasket set	2
	S1047	O ring set	8



#### 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 engine 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.



YAMADA MFG. CO.,LTD  
67 Tsuchitori Inuyama Aichi 484-0917 JAPAN  
TEL: 0568 67 0265 FAX: 0568 67 7801