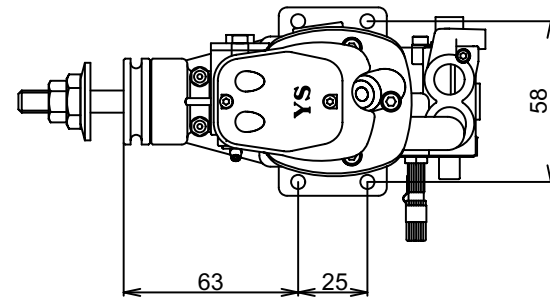
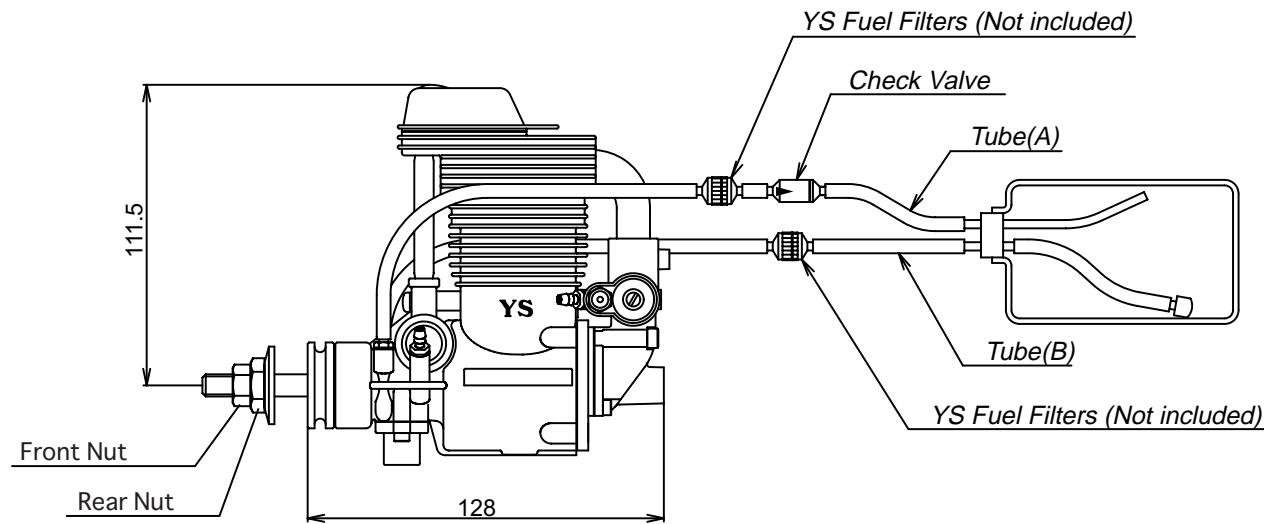


Fig.1



**SPECIFICATIONS**

Bore	32mm
Stroke	29mm
Displacement	23cc
Weight	895g
Practical rpm	2,000-11,000rpm



**FEATURES**

The new FZ140 Sport uses the best features of our very successful 120 and 140 engines, combined in an easy-to-operate and economical package. It is ideally suited to aircraft which previously used the YS120, as the mounting dimensions are the same. An added bonus is that the weights are essentially equal, and the FZ140 Sport will turn larger propellers for higher flight performance.

**GLOW 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 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 under-tightening of the check valve or by kinking the fuel lines.
2. Always use a fuel filter. We recommend the YS filter.
3. Match the direction of the check valve arrow to fig. 1, with the arrow facing towards the tank.
4. It is highly recommended that this engine be mounted on a vibration absorbing soft mount.

**PROPELLER INSTALLATION**

Due to the high torque of the FZ140 Sport, 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 8,000 to 9,000 range. We recommend sizes 14x14 through 16x11

**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 tube B. Fuel will eject if tube B is removed while the tank is pressurized.)
2. Open the needle valve 2 1/2 from the fully closed position.
3. Open the throttle fully and slowly turn the propeller 10 times. This primes the system by pressurizing the tank and sending fuel to the carburetor.
4. 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.**

**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 oil content of 20-24%. Synthetic oil is recommended, or a blend of synthetic oil and a small amount of castor oil may be used. 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 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 carburetor needle valve. When the needle valve 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 2 1/2 turns open from the fully closed 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 new 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)

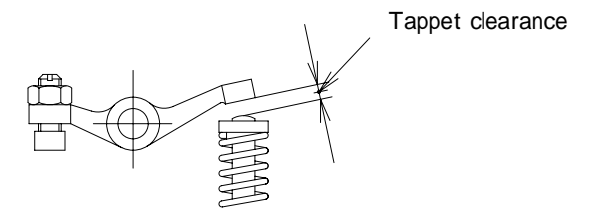
1. Open the low speed needle valve to 1 1/2 turns from fully closed position.
2. The low speed needle valve should be set after the high speed needle valve has been adjusted. Close the throttle gradually to an idle (approximately 2500rpm). Let it idle for 20 to 30 seconds and then slowly advance the 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 leaner 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.

**IMPORTANT!** The regulator adjusting screw on this engine is factory set. No further adjustments are necessary. If for some reason you have to disassemble the regulator assembly, the regulator adjusting screw should be set flush with the regulator body.

**TAPPET CLEARANCE ADJUSTMENT**

1. Tappet clearance is factory preset. No adjustment is necessary until 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 0.04-0.1mm. The adjustment is achieved by loosening 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.

Fig.2



**CAM GEAR 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.

**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 regulator screw until flush with the diaphragm body.

Check valve;

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

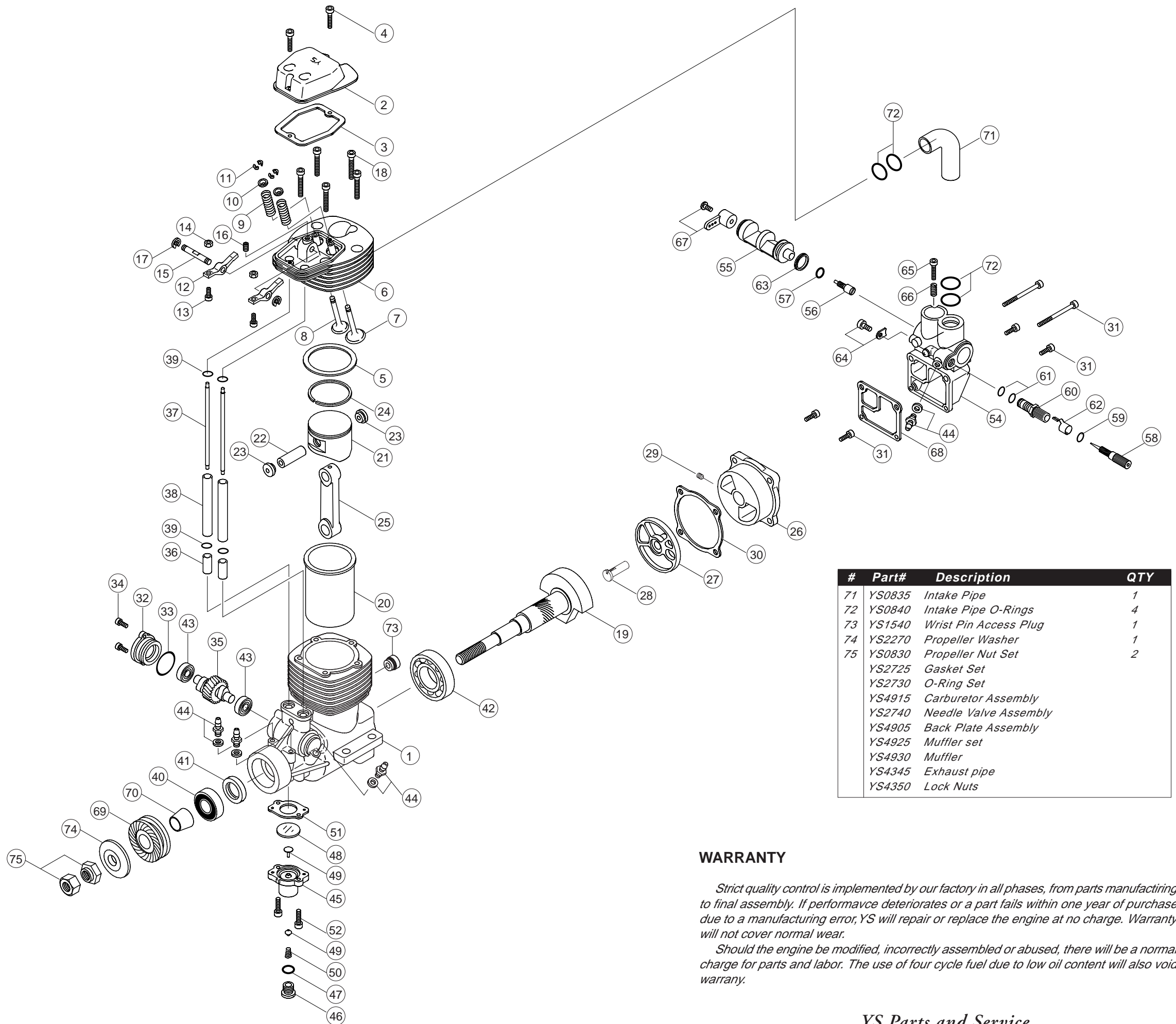
**MUFFLER INSTALATION**

We recommend mounting the muffler outside the cowling so that proper cooling can be achieved. If the muffler is mounted inside the cowling, extra cooling air is necessary to prevent muffler failure due to excessive heat build up.

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

# FZ140 Sport Parts LIST

#	Part#	Description	QTY
1	YS4890	Crankcase	1
2	YS0505	Valve Cover	1
3	YS0510	Valve Cover Gasket	1
4	YS0515	Valve Cover Screws	2
5	YS2605	Head Gasket	1
6	YS2610	Cylinder Head	1
7	YS2160	Intake Valve	1
8	YS2165	Exhaust Valve	1
9	YS2170	Spring Set	2
10	YS2175	Spring Retainer Set	2
11	YS2180	Spring Retainer Clip Set	4
12	YS0555	Rocker Arm Set	2
13	YS0560	Valve Adjuster Set	2
14	YS0565	Adjuster Nut Set	2
15	YS0570	Rocker Arm Shaft	1
16	YS0575	Shaft Set Screw	1
17	YS0580	E-Ring Clip Set	2
18	YS2615	Head Bolt Set	5
19	YS4900	Crankshaft	1
20	YS2625	Cylinder Liner	1
21	YS2630	Piston	1
22	YS0605	Wrist Pin	1
23	YS2635	Wrist Pin Retainer Set	2
24	YS2640	Piston Ring	1
25	YS2645	Connecting Rod	1
26		Back Plate	1
27		Disc Valve	1
28		Disc Valve Pin	1
29		Retainer screw	1
30	YS0645	Back Plate Gasket	1
31	YS2655	Back Plate Screw Set	6
32	YS0655	Cam Gear Cover	1
33	YS0660	Cam Cover O-Ring	1
34	YS2235	Cam Cover Screw Set	2
35	YS2660	Cam Gear	1
36	YS0675	Cam Followers	2
37	YS2665	Push Rod Set	2
38	YS2670	Push Rod Cover Set	2
39	YS0690	Push Rod Cover O-Ring set	4
40	YS1050	Front Bearing	1
41	YS2240	Front Bearing Oil Seal	1
42	YS0701	Rear Bearing	1
43	YS0705	Cam Bearing Set	2
44	YS0710	Fuel Nipple Set	6
45	YS0715	Regulator Body	1
46	YS0195	Regulator Adjusting Screw	1
47	YS0725	Regulator Adj Screw O-Ring	1
48	YS0730	Diaphragm	1
49	YS0176	Regulator Plunger	1
50	YS0180	Plunger Spring	1
51	YS0745	Regulator Gasket	1
52	YS0750	Regulator Screw Set	2
54	YS4210	Carburetor Body	1
55	YS4920	Throttle Barrel	1
56	YS2050	Low Speed Adjusting Screw	1
57	YS2060	Low Speed O-Ring	1
58	YS2690	High Speed Needle Valve	1
59	YS2695	High Speed Needle O-Ring	1
60	YS2700	High Speed Needle Seat	1
61	YS2705	Needle Seat O-Ring Set	2
62	YS2710	Needle Valve Detent	1
63	YS2255	Throttle Barrel Seal	1
64	YS1090	Throttle Barrel Retainer	1
65	YS0785	Throttle Stop Screw	1
66	YS0790	Throttle Stop Spring	1
67	YS0200	Throttle Arm	1
68	YS2260	Carburetor Gasket	1
69	YS2715	Drive Washer	1
70	YS2720	Drive Washer Retainer	1



#	Part#	Description	QTY
71	YS0835	Intake Pipe	1
72	YS0840	Intake Pipe O-Rings	4
73	YS1540	Wrist Pin Access Plug	1
74	YS2270	Propeller Washer	1
75	YS0830	Propeller Nut Set	2
	YS2725	Gasket Set	
	YS2730	O-Ring Set	
	YS4915	Carburetor Assembly	
	YS2740	Needle Valve Assembly	
	YS4905	Back Plate Assembly	
	YS4925	Muffler set	
	YS4930	Muffler	
	YS4345	Exhaust pipe	
	YS4350	Lock Nuts	

## 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 within one year of purchase due to a manufacturing error, YS will repair or replace the engine at no charge. Warranty will not cover normal wear.

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 low oil content will also void warranty.

## YS Parts and Service

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