**FZ140-Sport OPERATORS MANUAL / YS0093**

**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, lighten 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. Open the valve by rotating the body counterclockwise.
2. Remove the adjustment screw of the valve, and then remove the tube.( 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.)
3. Open the throttle valve 2 1/2 from the fully closed position.
4. Over the high 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.
5. 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.

**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. 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. 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.

**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 with alcohol or appropriate cleaner. Reassemble.
2. Check 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 INSTALLATION**

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.

**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. Change of 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.

**INSTALLATION**

1. Connect the engine to the tank as shown in fig.1. Since high pressure is applied to the tank, lighten 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.

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Specifications</th>
<th>YS63-5BQQFUDMFBSBODF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore</td>
<td>32mm</td>
</tr>
<tr>
<td>Stroke</td>
<td>29mm</td>
</tr>
<tr>
<td>Displacement</td>
<td>23cc</td>
</tr>
<tr>
<td>Weight</td>
<td>895g</td>
</tr>
<tr>
<td>Practical rpm</td>
<td>2,000-11,000rpm</td>
</tr>
</tbody>
</table>

**DIAPHRAGM AND CHECK VALVE DISASSEMBLY**

Diaphragm:
1. Remove the adjustment screw of the valve, and then remove the inside with alcohol or appropriate cleaner. Reassemble.
2. Check 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.
**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
1370 PORTER DRIVE MINDEN NEVADA 89423
Phone: 775-267-9252 Fax: 775-267-9690

Specifications may be changed without prior notice.  2003/JAN/11