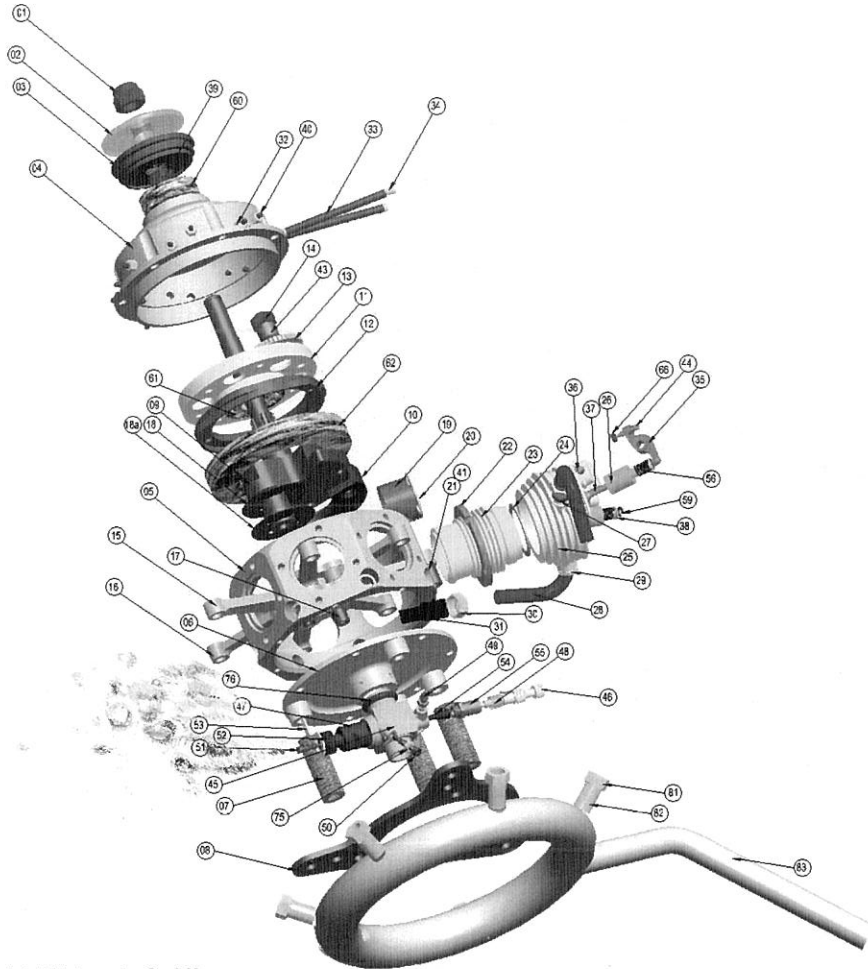


Seidel UMS ST 7 - 70 - Exploded View



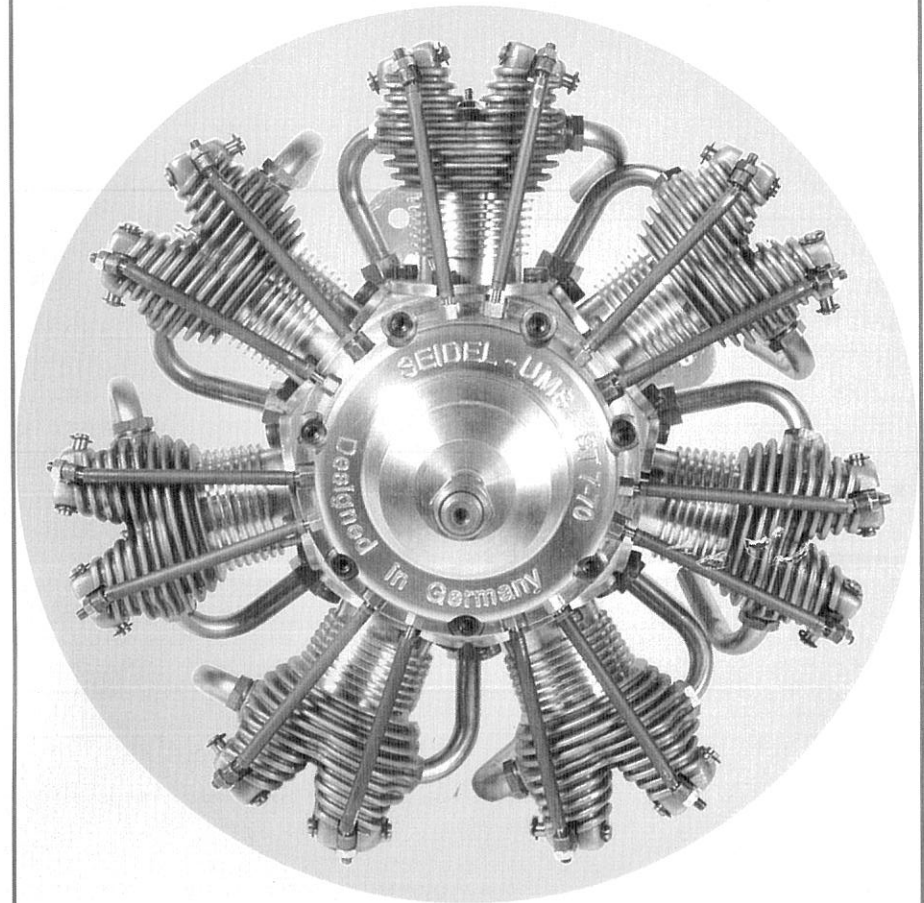
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SEIDEL UMS ST 7 - 70



Instruction Manual

SEIDEL UMS ST 7 - 70

Welcome to the elite family of SEIDEL UMS ENGINE owners.

This SEIDEL UMS ST 7-70 is very unique engine in all aspects – its appearance, the engine sound, ease of starting and the use of fuel.,etc

Mr. Wolfgang Seidel from Germany designed this engine after extensive research, spread over several years. It's a true replica of the original Radial engines of 1930 to 1940s era.

This engine was designed without any compromise, utilises highest precision components (470 individual parts)with the Best Quality Materials.

All the Engines are test run in the factory with the direct supervision of Mr. Seidel and then only are sent for dispatch. Thus the quality of each engine is maintained

Some of the key features of the SEIDEL UMS ST 7 - 70

- ✘ An attractive and reliable engine with best performance
- ✘ The cylinder heads and crank case is of aircraft aluminium.
- ✘ Heavy Duty Crank shaft on double Ball Bearings
- ✘ Billet Aluminium Pistons / hardened steel rings
- ✘ Hard Chromed and Lapped Cylinder Bores
- ✘ Hardened steel Cams.
- ✘ Carburetor jet valve incorporating of latest design with a split opening for smooth acceleration.

Warning

Model engines are not toys. Take utmost care in handling these engines. Don't wear loose shirts while starting the engine. Also, don't keep pens, pencils, cell phones, etc in your shirt pocket while starting the engine –there is every chance that they may fall in the rotating propeller and inflict serious injuries.

While starting the engine, keep pets and children away from the starting area. Spectators are not allowed to stand in front or on the sides of the propeller arc when the engine is being started. After starting the engine, the operator of the engine should stand behind the engine and make adjustments to the carburetor or needle valve.

Don't throw any objects in the running propeller to stop it. It should be stopped through the Transmitter or by quenching the fuel supply to the engine.

TIPS

It is very much essential to keep the wing loading of the model with in the specified limits .These Radial Engines are much suitable for Antique Biplanes (Scale Models) and the like.

The Radial Engines are intended for the appearance and the droning sound of original aircrafts.

TECHNICAL SPECIFICATION

Type	:	Four Stroke
Cylinders	:	7
Capacity	:	69.58 cc
Capacity per Cylinder	:	9.94 cc
Bore	:	22.5 mm
Stroke	:	25 mm
Power Maximum	:	3.0/ 4.0 Kw/cu
RPM	:	1000 – 6000 rev/min
Maximum RPM	:	6300 rev/min
Diameter of the engine	:	23 cm
Weight	:	2600 grams
Propeller (Depends on model)	:	22 x 10, 22 x 12, 24 x 8, 24 x 10, 24 x 12, 26 x 8
Glow Plug	:	OS Type F

Construction of the Engine

Your SEIDEL – UMS ST 70 Engine is manufactured and assembled with utmost precision, that distinguishes itself by its solidity, reliability for a very long time.

The engine uses two ball bearings for the crankshaft and one for Cam gear. A needle bearing for the connecting rod. The cylinder head is a V Type with its valve arrangement for precise firing. Lubrication oil is constantly circulating from the crank case. All the materials used are of the highest standard and quality. The latest CNC machines are used in the manufacture of the parts. Quality control is very stringent at every stage.

Maximum power is achieved in a proportionally small volume of engine.

Vibration is very very less in this engine, thanks to the radial type.

Mr.Seidel achieved the original radial engine's natural curves and power packed look in this smaller version.

GENERAL INFORMATION

The working and operation are similar to the original engines of full size aircrafts and the characteristics are also like the original radial engines with some peculiarity.

It must be noted that the radial engines of four stroke nature has low speed TORQUE engines with a maximum revolution of 6000 rpm. But don't run the engine always on the highest RPM with the large propellers which will tax the engine and will reduce the life of the engine. And when using smaller dia/pitch propeller, the engine will speed up highly which is not desirable to the piston and valves. Use discretion when operating the engine.

Don't ever modify the engine with other parts like valve springs, which will damage the engine.

Because of the circular type of the engine, there is possibility that the lower most cylinder may become rich or flooded like its original counterpart. Before starting the engine, remove the glow plug of the lower most cylinder and drain the fuel by rotating the propeller 4 or 5 times and then install the glow plug. Repeated priming may cause a hydraulic lock in the lower piston because of the constant oil accumulation in that cylinder – be very careful while starting with electric starters.

Don't run the engine for a prolonged period in a test bench or in the model with out flying. The engine may heat up due to inadequate cool air unlike when the model is flying.

INSTALLATION

There are three mounting holes pre drilled in the mounting lug at the back of the engine. So, fixing and removing the engine with just 3 bolts is much easier. Stainless steel screws are preferred for mounting. The engine can be directly mounted on the fire wall.

There must be at least a 10 to 15mm gap between the fire wall and the carburetor of the engine for smooth air flow to the carburetor.

The engine should be mounted in a way such that cylinder 1 should be on the top position (A cylinder just near to the two parallel beams of the mounting lug is the cylinder 1). See fig. A

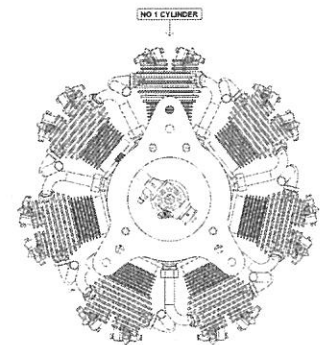


Fig. A.
Engine Mounting Position

Since the carburetor is at the back side of the engine and away from the rotating propeller, it is easy and safe to adjust the needle valve without fear of hitting by the propeller.

The fuel tank must be located within four inches from the back of the fire wall. The centre of the tank should be parallel to the carburetor that is in the same line so that there won't be any siphoning effect of fuel. There is no need of any separate fuel pump for pumping fuel to the engine. Always use fuel filter in the tank.

There should not be any nick or sharp bends to the fuel tubing to the engine.

We recommend the diameter of the fuel tube to be between 3 to 3.5mm.

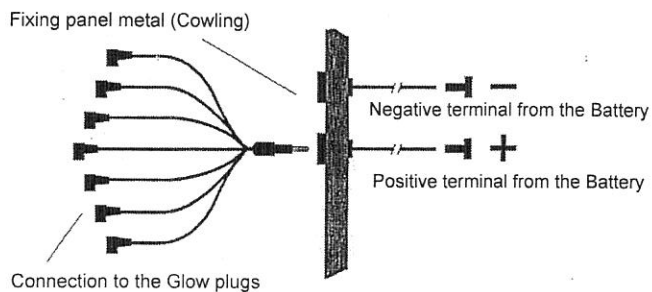
A 750ml tank is sufficient for a flight time of about 20-25 minutes (This depends on the throttle use)

The propeller is fixed with a hexagonal nut only. But there is a circlip on the outside of the hexagonal nut which is very important. In case, if there is a remote chance of the propeller becoming loose while the engine is being started, the propeller won't fly out and hit you. So, don't ever start the engine without the circlip in position.

It is easier for starting the engine, if you use on board glow starters/drivers. This insures good glow in the glow plugs at all times. It needs high capacity cells of 1.2v for starting. Use four numbers of 3300mAh or three numbers of 7000mAh Sub C cells.

You can also use an external starting medium to save weight. As mentioned earlier, use the four 3300mAh or three 7000mAh battery pack for starting as an external source. The wiring diagram is as below. The input glow driver socket should be located on the side of the cowling or at a convenient place. The wires connecting the battery to the glow plugs should not be too long which will reduce the glow.

Glow Plug Connection Diagram



FUEL

This SEIDEL – UMS ST 70 uses only 6 to 7% synthetic oil. There is no need for the additional use of nitro-methane. But if you prefer, you can add a little bit according to the Fuel Chart below.

You can mix your own fuel, but make sure that the methanol you use is of very high purity (99.9%)

The synthetic oil, of 6% to 7% is sufficient for your engine (for example GLISSOL – R). More percentage of oil will reduce the RPM / power.

Verify the Fuel chart.

GLOW FUEL CHART

	Methanol	%	Sythetic	%	Nitro	%
BREAKING IN						
1st Hour	900 ml	90%	100 ml	10%	Nil	
2 to 3 Hour	920 ml	92%	80 ml	8%	Nil	
FLYING						
1st Hour	930 ml	93%	70 ml	7%	Nil	
2 to 3 Hour	940 ml	94%	60 ml	6%	Nil	
WITH NITRO						
1st Hour	880 ml	88%	70 ml	7%	50 ml	5%
2 to 3 Hour	830 ml	83%	70 ml	7%	100 ml	10%

STARTING

Fill up the fuel tank with fuel. Make sure that the fuel tubes are properly connected to the carburetor.

Don't connect the glow power supply now.

Open the throttle fully (the barrel of the carburetor should be fully opened) .Place your thumb on the throat of the carburetor and rotate the propeller 3 or 4 times and see that the fuel is drawn to the engine.(Choking) Take your thumb off the carburetor and close the throttle to about 1/4th opening. Connect the glow battery (make sure that the four 3300mAh or three 7000mAh, 1.2v batteries are properly charged and give adequate power) Start the engine either with an electric starter or manually with a smart flick of the propeller.

The engine should start immediately. Leave the glow battery connected for about 10-15 seconds after the engine starts and then only remove it.

When the engine is fixed with the circular silencer, be careful when starting with an electric starter motor. In case, if the exhaust pipe in the silencer is closed or the carburetor is closed with thumb, when applying electric starter, the engine will over flood and a hydraulic lock will occur. And there is a possibility that engine will start in the reverse direction and inflict injuries to the operator.

RUNNING-IN

It is very much necessary to run in the engine (breaking in) properly for the engine to work perfectly for a long time. We recommend you to run the engine in a test bench before installing it in the model. It is very much needed for the engine to run at varied throttle positions. Run the engine for the first half hour to a maximum of $\frac{3}{4}$ th, throttle. During this run in period, run for about 3 or 4 minutes allowing adequate time for cooling. In this way the engine will be completely broken in and will be ready for its full potential. During the test bench running, it is preferable to have a blower to direct cool air towards the engine so that it won't get too hot during long running period.

CARBURETOR ADJUSTMENT

We set the carburetor for all general use in factory itself. Open the needle valve 2 full turns.

Open the throttle to about $\frac{1}{4}$ power (carburetor barrel should open about $\frac{1}{4}$) Reduce or increase the RPM to about 2000 RPM by adjusting the throttle lever.

Make sure that hot exhaust fume is being released in all the seven cylinders through their exhaust pipes. You can feel the hotness by touching the cylinder head with your fingers.

If the engine sputters or if some cylinder is not working, that indicates either too rich or too poor the fuel intake is.

In case the fuel is too lean, open the needle valve a bit more ($\frac{1}{4}$ turn) and restart the engine and see that all the cylinders are working (firing)

If the fuel intake is too rich, close the needle valve about $\frac{1}{4}$ turn and restart again and make sure all cylinders are working.

TIP

If the exhaust fumes coming out of the exhaust pipe in one or more cylinder are only minimally hot, it means that the fuel feed is not adequate. Open the needle valve a little (unscrew the needle valve a bit)

If oil spills through the exhaust pipes, it shows the fuel feed is too rich. Close the needle valve a bit (closing the needle valve – clockwise)

If the engine is running too lean, stop it immediately.

For stopping the engine, either close the throttle lever in the transmitter completely or quench the fuel feed.

If the engine continues to run at a very low RPM (below than recommended), there is every chance that some of the cylinders are not working due to lack of the glow plug filament not glowing properly.

Your Seidel Engine inhales fuel, oil & air through the crank case.

It relates that you get always the best output since the fuel is always inside the crankcase. But, it also means a little bit slow response while you are adjusting the needle valve.

So, don't over do with the needle valve adjustment at a time and expect the engine to respond immediately. Either close or open the needle valve only two notches at a time and wait for the engine to respond. After starting the engine, close or open the needle valve, so that the engine runs to the peak RPM. From this position, open the needle valve two notches so that the engine is not running too lean

IDLE ADJUSTMENT

There is a small screw in the centre of the throttle lever fixing nut. This is the idle adjustment screw. Turning the screw $\frac{1}{4}$ turn clockwise – turning towards the upper position leans the fuel / air mixture.

Turning the screw $\frac{1}{4}$ turn anticlockwise – turning the screw towards the lower/downward or unscrewing makes the fuel/air mixture a little rich.

TIP Screw towards top – Lean
 Screw towards down – Rich

Valve Adjustment

These adjustments should be carried out when the engine is cold. The gap in the cam is set at 0.1mm - 0.25mm at the factory during shipment of the engine.

If there is any need for fine tuning, it can be adjusted by the user. Use discretion.

A visual inspection is a must whenever the engine is running for the lever to oscillate properly in all the cylinders, security bolt and lever oscillating etc.

MAINTENANCE

There is no special maintenance required for your SEIDEL - UMS ST 7 - 70, since the lubrication oil in the fuel mixture, which passes through the crank case takes care of the engine. But still, it is better to put a few drops of synthetic or lubrication oil in the valves, cam and all the moving parts.

Put a few drops of oil in the carburetor bore and rotate the propeller 3 or 4 times so that the lube oil spreads to all the cylinders.

As an experienced flyer, you can adjust the engine for optimal performance. In case a major repair is essential, you are advised to send the engine to the manufacturer to carryout the repair.

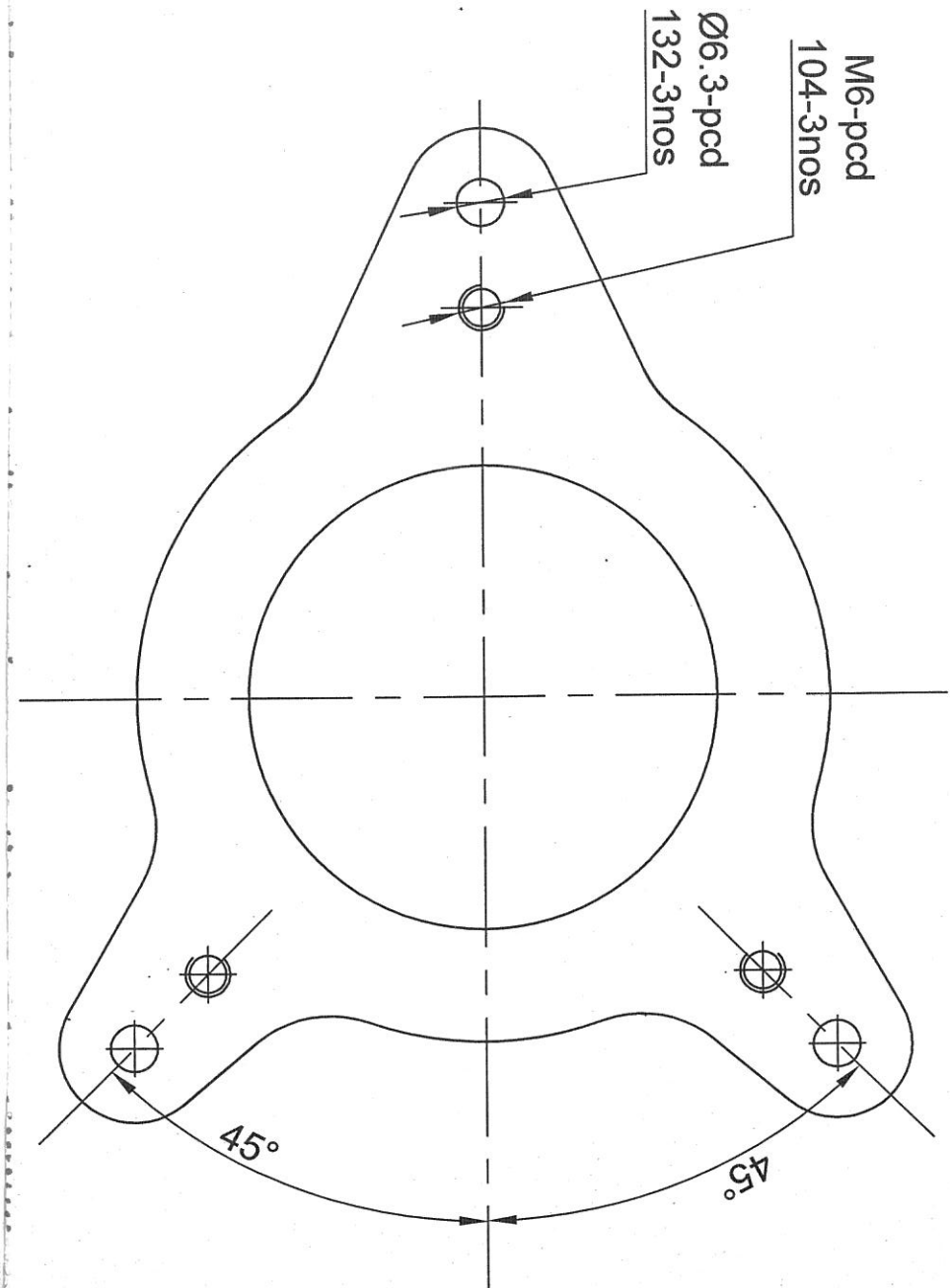
If the engine is opened by any other person apart from the authorized service agents of SEIDEL the guarantee is void.

SEIDEL - UMS is in no way responsible for any injuries or damage to property while operating the engine. It is the sole responsibility of the modeler who operates the engine to take utmost care while running the engine.

Due to constant development, there may be slight changes in the production engines.

*Thank you
Wishing you great take off and safe landings.*

Seidel UMS ST 7-70-Mounting Bracket Details



Seidel UMS ST 7 - 70 - Exploded View

1. Propeller Nut
2. Propeller Washer
3. Propeller Drive
4. Crankcase Top cover
5. Crank Case
6. Crankcase Bottom cover
7. Spacer
8. Base Plate
9. Crank Shaft
10. C. S. Balance Plate
11. Cam Gear
12. Cam
13. Intermedient Gear
14. Bush (I.G)
15. Connecting Rod (Main)
16. Connecting Rod (Small)
17. Connecting Rod Pin
18. Spring Washer (Inner)
- 18a. Spring Washer (Outer)
19. Piston
20. Piston Ring
21. Piston Pin (Small)
22. Cylinder Lock Plate
23. Cylinder
- 23a. Sleeve
24. Cylinder Head Washer
25. Cylinder Head
26. Valve Guide
27. In & Exhaust Pipe Washer
28. In & Exhaust Pipe
29. Lock Nut (In & Exhaust Pipe)
30. Lock Nut (In)
31. Manifold
32. Cam Pin Guide
33. Push Rod
34. Push Rod Pin
35. Rocker Arm
36. Rocker Arm Pin
37. Valve
38. Spring Stainer
39. P'Drive Lock Cone
40. Cam Pin
41. Bush(Piston Pin Small)
42. Circlip - Crank Shaft
43. Dowel IG Gear
44. Grub Screw (Dog)-Rocker Arm
45. Carb Body
46. Needle Screw
47. Barrel
48. Needle Screw Clip
49. Fuel Inlet Nipple
50. Barrel Locking Screw
51. Idle Jet
52. Barrel Holder
53. Throttle Lever
54. Needle Valve Insert
55. Needle Valve
56. Valve Spring
57. Circlip (Crank Shaft)
58. Circlip (Rocker Arm Pin-3.2)
59. Circlip (Valve)
60. 6002 ZE Ball Bearing
61. 6200 2RSR NSE Ball Bearing
62. 16009(SO410) DYZV Ball Bearing
63. 4900 Needle Bearing
64. Allen Screw (Cylinder)M4x7
65. Allen Screw (Crank BOT & TOP)M4x8
66. Nut(Dog Screw Rocker Arm)
67. CSK Allen Screw (CAM)M4x6
68. CSK Allen Screw (C. S. Balance) M5x8
69. CSK Allen Screw (Base Plate) M6x45
70. C. S. Allen Philips Screw M4x8
71. O-Ring (Inlet Pipe)
72. O-Ring (Bottom & Top CS Cover-75)
73. Spring Dowel Pin
74. Glow Plug
75. Barrel Locking Nut
76. O-Ring For Body
77. O-Ring Idle Jet
78. O-Ring (Needle Valve)
79. Barrel Spring
80. Grub Screw (Barrel)
81. Silencer
82. Connector
83. Locknut (Silencer & Connector)