DZ115cdi OPERATOR'S MANUAL

FIG 1

Bore	30.4mm
Stroke	25.8mm
Weight	760g (Engine, Plug) 100g (Ignition Box)
Displacement	18.73cc
Practical rpm	1,500~12,000rpm

* Please tap lightly with a small hammer, as the spark plug cap is tight fit to the spark plug.
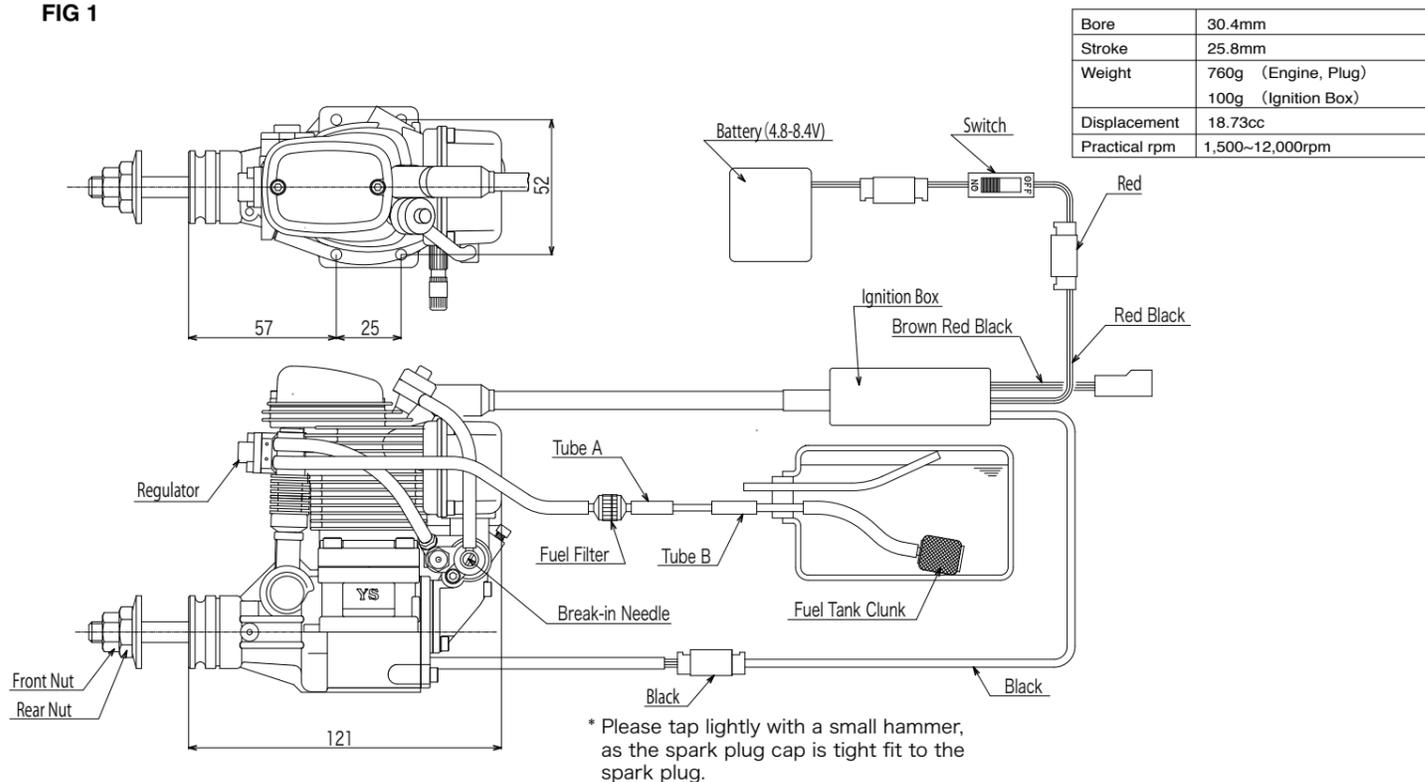
Safety Instructions

In order to use the engine, please read through this instruction manual carefully. This is a complex,high-performance engine. If you have any difficulties to understand any part of this instruction manual, please contact the hobby shop from whom you purchased the engine, or contact us directly.

1. The propeller double locknut assembly supplied with the engine must be used when mounting the propeller.
2. Always use a good quality propeller and follow the manufacturer's instructions.
3. Choose a propeller size that will not allow the engine to exceed the maximum practical RPM in flight.
4. Always ensure that no people are in front of or beside the propeller while the engine is running.
5. To start the engine, set the throttle to the idle position and use an electric starter.
6. After starting the engine, always move behind the propeller to adjust the needle settings.
7. The engine becomes extremely hot both during and after engine runs. Do not touch the engine, exhaust header, muffler, or any parts attached to the engine while it runs or before it has cooled down.
8. If the engine runs incorrectly, DON'T FLY.
9. Do not use this engine for anything other than radio controlled air planes. Do not use it for radio controlled helicopters.
10. You have full responsibility while you operate the engine. Please be extra careful for your safety and the safety of others whenever you operate the engine.

Installation

Connect the engine to the tank and CDI system as in "Fig.1".
The battery and switch for the CDI unit is not supplied with the engine. The soft mount and fuel filter are optional.

1. The recommended fuel tank size is 400cc to 500cc .
   A standard clunk type fuel tank may be used. If this type of tank is used, you must use the special clunk supplied with the engine. Please note that with this clunk, some fuel cannot be drained from the tank. As soon as any part of the clunk becomes exposed, the engine will stop due to air entering the fuel pump.
2. Always use a fuel filter. We recommend YS filter (6720). With this fiter, you must remove the cloth portion of the filter and leave both the metal filter screens in place.
3. Because of the engine's pump system,the tank may be placed near the aircraft's C.G positrion. The fuel level in the tank will not influence the engine.
4. Please pay consideration to avoid chafing of the ignition box's wires from vibration. Use the plastic "spiral wrap" supplied with the engine to wrap the shielded plug wire.
5. Please place the ignition box about 15cm away from the receiver. Some radio components may need to be over 30cm away from ignition components to avoid interference. Wrap the ignition box in foam rubber or other vibration absorbing material(in the same manner as the receiver is mounted), and fasten (e.g. using Velcro straps). Do not use the bracket holes to directly mount the ignition box to the aircraft.

Fuel

1. Use a good quality alcohol based model engine fuel containing 10% to 25% nitro, and oil content 10% to 25%. Do not use gasoline fuel.
2. When filling the tank, disconnect Fuel Tube "A" or Fuel Tube "B" (Fig.1)for filling, use a stopper on the Fuel Tube "A" to avoid flooding the engine.

Propeller

1. Due to the high power ooutput of the DZ115CDI engine, it is supplied with a double locknut system for added safety. Mount the propeler and tighten the rear nut, followed by the front nut. The rear nut has an offset shoulder that the recess of the front nut will secure itself against.
2. Please check and retighten propeller locknut periodically.
3. Select a propeller that will allow the engine to run at a maximum of between 8,000 to 10,000 RPM.
4. We recommend sizes 15X11, 16X10. Other propeller sizes may be used as long as the correct RPM range is maintained.

High Speed Needle Valve Adjustment

1. An electric starter is mandatory for this engine.
2. Turning the needle valve clockwise leans the mixture. Turning it couner-clockwise richens the mixture. A good starting position for the high speed needle valve is 2 turns open from the fully closed postion.
3. To prime the engie, check that the ignition is switched OFF before turning the engine over with an electric starter (throttle fully open)
4. Close the carburetor to the idle position, turn ignition ON and start the engine with an electric starter. Run the engine at a high idle RPM to warm it up.
5. Brake-in the engine with one or two tanks of fuel on the ground, with good rich mixture setting adjusting for the best high speed needle position.
6. To achieve best high speed needle valve position, run the engine with the throttle fully opened. Gradually turn the needle valve clockwise untill the RPM begins to drop. The position of the needle valve corresponding to the maximum engine RPM is referred to as the peak position. Turn the needle valve counter-clockwose approximately 1/4 turns from the peak position.

Break in needle

Open break-in needle half turn in counter clockwise direction while break-in. After break-in, close it to 1/6 turn or fully closed position. By this procedure, fuel flows into crankcase through break-in needle. It makes lubrication better and also prevents percolation (vapor rock) . We recommend to open it a little under high tempreture in summer time. NOTE: Engine power decrease as break-in needle open. When you need maximum power, close the needle fully.

Breake-in

1. Start the engine with high speed needle valve open 1 1/2 - 2 turns and the brek-in needle open 1/2 turn from the fully closed position and with the throttle at the idle position.
2. After starting the engine, increases the RPM gradually by operating the throttle. Do not suddenly apply full throttle.
3. If the mixture is too rich and the engine misfires, turn the needle valve clockwise to make the mixture leaner.
4. Breake-in the engine with one or two tanks of fuel (500cc) on the ground, running at the richest possible mixture setting.
5. Close the break-in needle till 1/6 or fully closed position after break-in.

Battery for CDI Unit

Use 4.8~8.4V Ni-Cd ,Ni-MH or Li-Po battery with a capacity of around 700mAh. This will be sufficient for 5-10 minutes flights.

Idling adjustment

1. Ideal idling range is between 1,500 and 2,000RPM.
2. When the regulator is turned counter-clockwise, the idle mixture is leaner. When the regulator is turned clockwise, the idle mixture is richer. Adjust regulator in 45 degree increments.
3. If idle mixture is too rich, the engine's RPM will gradually drop and the engine will eventually stop after continuous idling. Also if the engine stops when you change the attitude of the airplane on the ground, the idle mixture is too rich. If the engine's idle RPM is unstable during continuous idling, the idle mixture is too lean.

Spark Plug

Use spark plug supplied with the engine. The plug gap should be 0.30mm (0.013") - 0.45mm (0.018"). If plug gap become over 0.5mm (0.020") , the engine will misfire. If the gap exceeds 0.45mm, tap the element with a hammer reduce to the gap.

Tappets Adjustment

1. Tappet clearance is pre-set at the factory.
2. Clearance adjustment may need after one hour of running time due to initial wear. After adjustment, tappet clearance should be checked during normal maintenance after every 10 hours of running to main tain maximum performance.
3. Clearance adjustment should be done when the engine is cool.
4. The proper clearance setting is between 0mm (0.000") and 0.1mm (0.004"). The adjustment is achieved by loosening the locknut ("Fig.2") and turning the adjustment screw. The engine must be at top dead center on the compression stroke before any adjustments are made. This engine runs best with the valves set at a tight setting. If the valves are set too loose, power will be affected.

Fig2
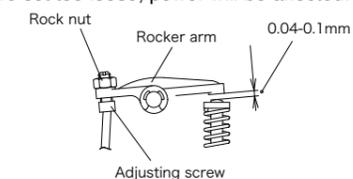
Cam Gear Timing

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 back plate assembly. Notice the impression mark or dot opposite the rod journal on the crankshaft.
2. This mark is to point straight down or lined up with the outer case seam line at the bottom and hold crankshaft securely.
3. Reinstall the cam with the dot facing you. After you fully installing cam and then check dot should be pointing straight down will give you right timing.

Cleaning

This engine uses silicon rubber in many parts. Please use methanol or model engine fuel for cleaning. Do not use Kerosene, Gasoline, Machine oil, Automobile parts cleaner or house hold lubricants to clean. It will harm silicon parts.

Engine Cooling

Be sure to secure cooling air for engine cooling. If it is not enough for the engine, it causes the regulator and carburetor heat up and makes vaporized or percolates the fuel. It gets deteriorations of engine performance or stop the engine. Please read carefully below for provision.

1. Please open air intakes and outlets as wide as possible.
2. Take off cowling when you make engine adjustment for a long time. When air temperature is high, it may heat up the regulator and carburetor to make vaporized or percolate the fuel even without cowling. If it happens, wait till engine well cooling down before you restart and adjust.

Rusting provision

Do not leave fuel in the engine after the final flight of the day. When you store the engine long period of time, a few drops (about 1cc) of lubricant oil must be put into the engine from carburetor and clank several times. Do not use Automobile engine oil.

Parts and Repair Service

If you can not find repair parts from hobby shops, you can order parts directly to our factory. We also do repair your engine at our factory. If you need repair service, please make detailed of states and send it together with the engine.

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.
Incorrectly assembled or abused, under improper usage, any modification will void this warranty and there will be a normal charge for parts and labor.

NO.	Item No.	Description	QTY
1	G5001	Crank case	1
	G5002A	Cylinder head assembly	
2	G5002	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	G5008	Cylinder head O ring	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	F2013	Intake tappet adjusting screw	1
31	F2014	Exhaust tappet adjusting screw	1
32	F1214	Tappet adjusting lock nuts	2
33	F9134	Rocker arm shaft	1
34	F9135	Rocker arm screw	1
35	F1217	E ring set	2
36	F1235	Cam gear	1
37	F9138	Cam gear cover	1
38	F1233	Cam gear cover O-ring	1
39	F9140	Cam gear cover screws	2
40	F1242	Cam gear bearing set	2
41	F1236	Cam followers set	2
42	G5042	Push rod	1
43	G5043	Push rod cover	1
44	F1239	Push rod cover O rings	4
45	G2045	Con rod	1
	G5146A	Back plate assembly	
46	G5146	Back plate	1
47	G5147	Disc valve	1
48	G2048	Disc valve pin	1
49	G2049	Disc valve set screw	1
50	F9152	Back plate gasket	1
	G5051A	Carburetor assembly	
51	G5051	Carburetor body with throttle	1
52	G5052	Throttle barrel seal	1
53	R6124	Throttle barrel retainer	1
54	F1260S	Throttle arm set	1
55	F1258	Throttle stop screw	1
56	F1259	Throttle stop spring	1
	F1545S	Needle valve set	
57	F1545	Needle valve	1
58	F1546	Needle valve O-ring	1
59	F1555	Needle socket	1
60	F1556	Needle socket O-ring	2
61	F1557	Needle valve detent	1
62	G7161	Break-in needle	1
63	G7162	Break-in needle O ring	1
64	F9164	Carburetor gasket	1
65	F7367	Carburetor screws	6
	G5065A	Fuel pump assembly	
66	G7163	Regulator body	1
67	F1245	Regulator adjusting screw	1
68	F1246	Regulator adjusting screw O-ring	1
69	G7166	Diaphram	1
70	F2051	Regulator spring	1
71	G7068	Regulator screw set	2
72	G5071	Fuel pump body with plunger	1
73	G7070	Pump valves	2
74	G7071	Pump valve springs	2
75	G7072	Pump plate	1
76	G7073	Pump screws	2
77	G7074	Pump gasket	1
78	G5078	Pump insulator	1
79	F2188	Insulator O ring	1
80	F2059	Pump bracket	1
81	G5081	Upper push rod	1
82	G5082	Lower push rod	1
83	E3063	Pump cap	1
84	F4088	Check valve	1
	F9377A	Muffler set	
85	F9377	Muffler assembly	1
86	F9378	Exhaust pipe	1
87	F9379	Rock nuts	2
	G2080	Gasket set	4
	G5087	O ring set	13
	F2083	Fuel tank clunk	1
	E2595	Ignition plug	1
	E0040	Ignition box 115	1

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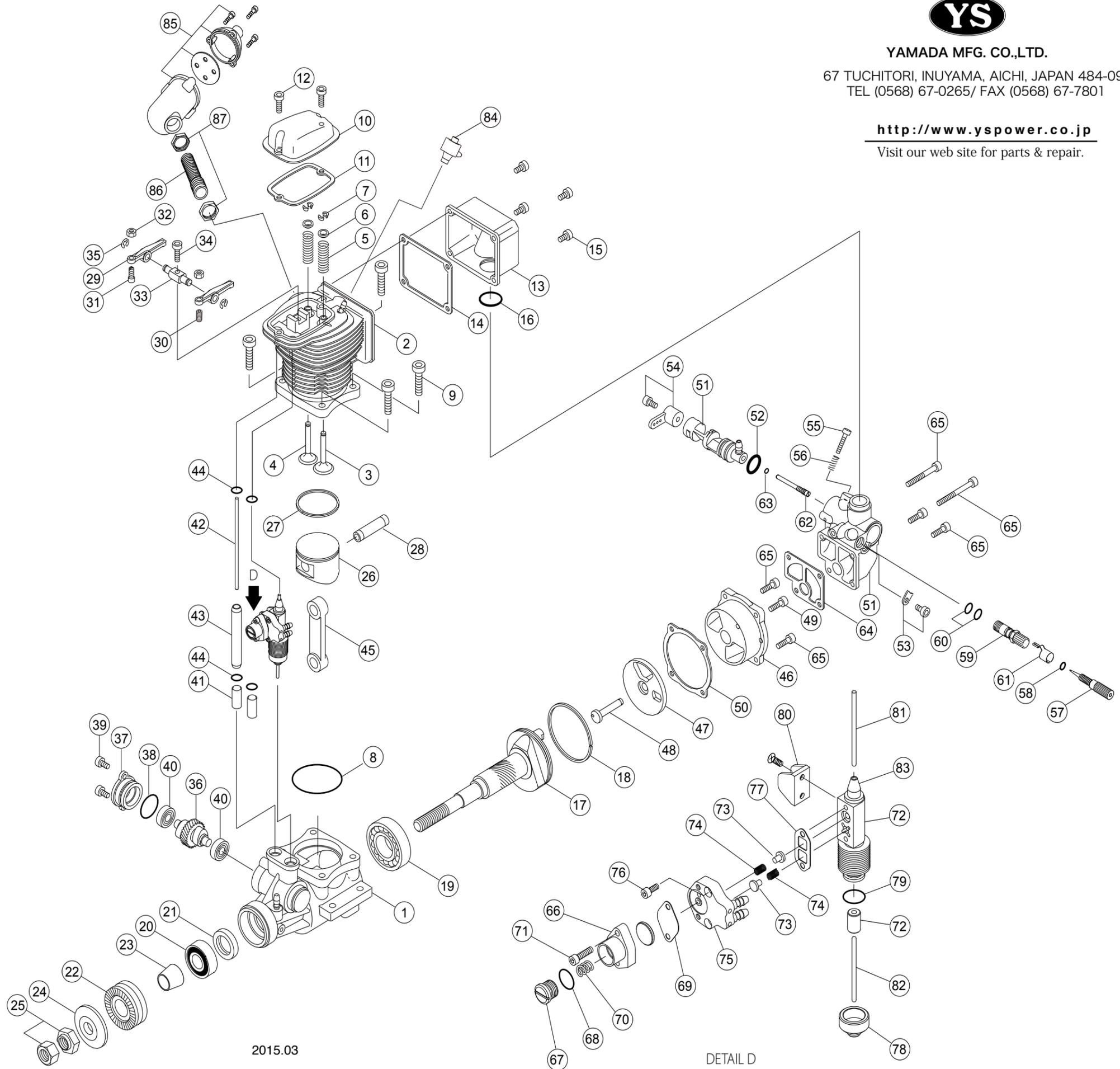
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