

# OPERATOR'S MANUAL YS0005

#### **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 airplanes. 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. A mount plate, mount spacers, mufflers and fuel filter are optional.

- 1 The pressure between the pump and the separate needle is high, so please use tube clips.
- 2 The recommended fuel tank size is 500cc to 700cc (18 to 24 oz). 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.
- 3 Always use a fuel filter. We recommend YS filter (YS1195). With this fiter, you must remove the cloth portion of the filter and leave both the metal filter screens in place.

- 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).

#### Fuel

- Use a good quality alcohol based model engine fuel containing 10% to 30% nitro, and oil content 10% to 25%.
  Do not use gasoline fuel.
- When filling the tank, disconnect Tube A or 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 output of TZ engine, it is supplied with a double locknut system for added safety. Mount the propeller 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 6,000 to 7,200 RPM.
- 4 We recommend sizes 21x10.5~23x10. Other propeller sizes may be used as long as the correct RPM range is maintained.

#### Engine start up

- 1 If you want to start for the first time after purchase, please open the needle about 2.5 turns.
- 2 Close the throttle completely, rotate it with an electric starter for about 10 seconds, and draw fuel under negative pressure. Please note that the fuel will not come even if the throttle is fully opened with no fuel in the pump. If the fuel is already coming to the pump, this action is not necessary.
- 3 Turn on the ignition switch and start with the electric starter.

#### Break-in (break-in operation)

- 1 Open the needle 2.5 turns and start it. Please use about 21x10.5 propeller about 15% nitro 18% oil fuel
- 2 Run for about 5 minutes at 2,000~3,000 rpm.
- 3 As soon as the rpm is raised, it repeats the action of lowering it to 2,000 rpm. Please run 2,000~3,000 rpm a little longer and increase the rpm.
- 4 Turn the needle gradually to the crockwise to get the rpm peak. Please break-in and run for about 30 minutes.
- 5 After the break-in operation, please take about 5 flights and the flight in a rich mixture.

### Needle adjustment (full operation)

- 1 After adjustment, the needle will be opened 1~2.5turns, but there are individual differences.
- 2 If you turn it to the clockwise, the mixer become leaner. If you turn it to the counter clockwise, it become richer. Please run in rich mixture.

## Idling adjustment

- 1 Please use it as it is at first. It is slightly rich mixture.
- 2 If it is too rich, turn the idling screw to the clockwise to become it leaner.
- 3 When it is completely closed, it will be the leanest.
- 4 The reaction is insensitive, so if it's rich, turn it more.

#### A battery

A battery of about 6-12V and 1,000mA is required as a power supply. For safety, use a power switch between the battery and the ignition box. When starting the engine, turn it on with a switch.

#### A plug

Please use the included ignition plug. The plug gap ranges from 0.30 to 0.40mm. If it is more than 0.45mm, it will be easy to misfire, so please adjust it.

## Tappets Adjustment (Fig. 2)

- 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 maintain 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.

## Timing of the cam gear (Fig. 3)

When disassembling, please adjust the timing as follows.

- 1 Fix the crankshaft to the upper dead point.
- 2 The right and left cam gears are different. There is one matching mark of the cam gear on the right bank and there are three matching marks on the left bank.
- 3 Set the right bank matching mark up and the left bank down along the push rod line. It doesn't matter if it's the other way around.

### RPM sensor (Fig. 4)

When replacing, please set it as shown in Figure 4. Please tighten RPM sensor screw lightly. Be careful not to tighten it too much.

## **Engine Mount (option)**

Mount Plate A \_ YS7384 Mount plate B \_ YS7389

Mount Spacer:

50mm\_YS7390 60mm\_YS7387 70mm\_YS7391

## Muffler ( option )

Muffler Type A \_ YS7384 Type B\_ YS7392

## 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 car-buretor to make vaporized or percolate the fuel even without cowl-ing. If it happens, wait till engine well cooling down before you restart and adjust.

## **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.

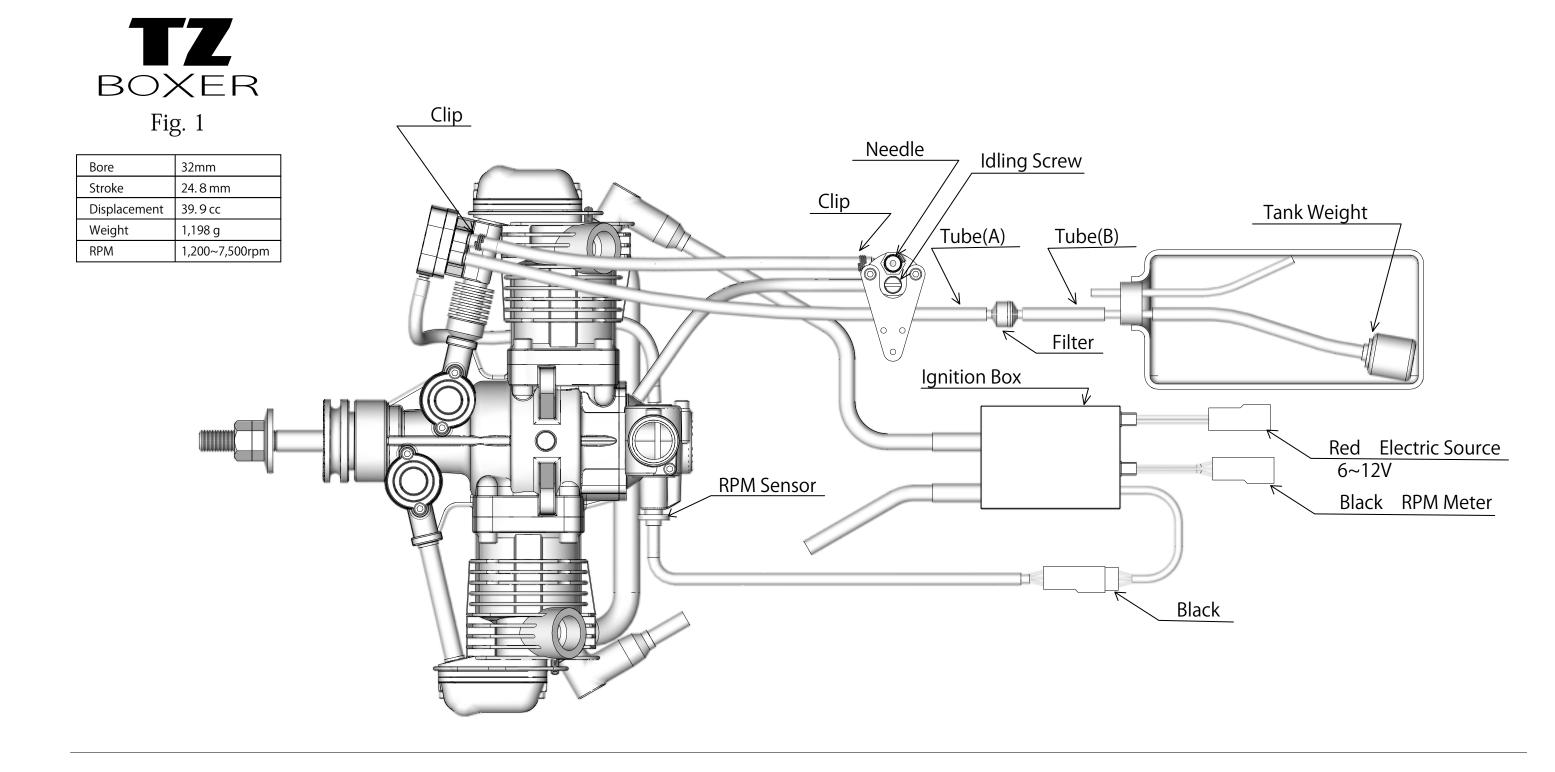
#### Warranty

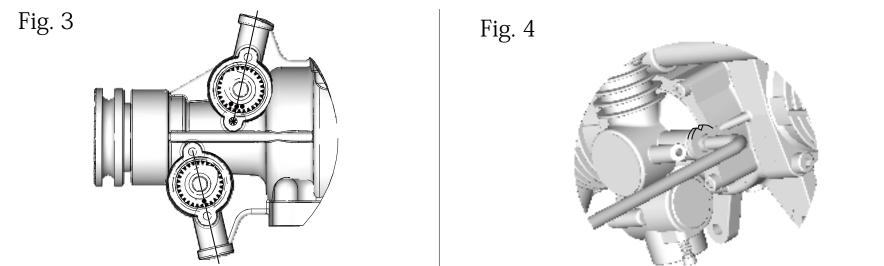
Strict quality control is implemented by our factory in all phases, from parts manufacturing to final assembly. If performance deteriorates or a part fails due to a manufacturing error, YS engine will repair or replace the engine at no charge in the period of one year from date of purchase.

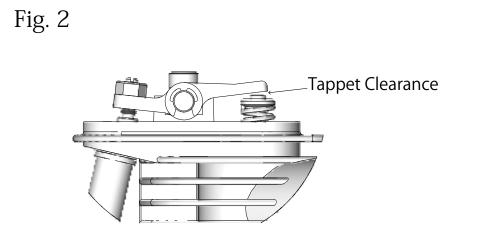
Warranty does not cover normal maintenance.

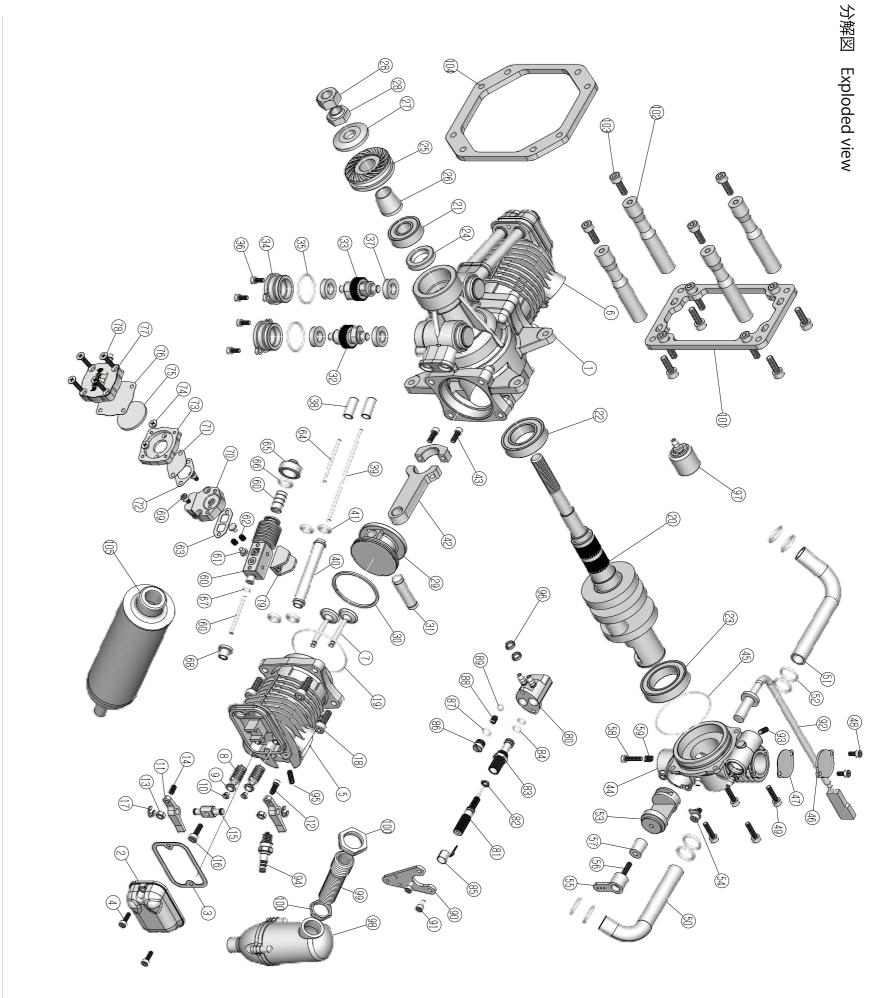
Incorrectly assembled or abused, under improper usage, any modification will void this warranty and there will be a normal charge for parts and labor.

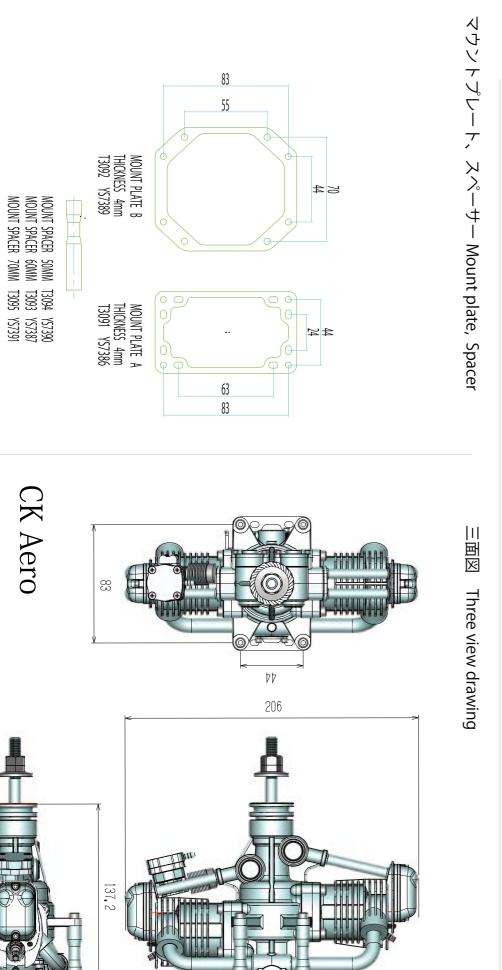
				<u> </u>	To 50 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
				_   -	Throttle stop screw	YS0785	228
				<u>-</u>	Throttle lever screws	YS7357	57
							5 5
				_	Throttle barrel retainer		54
					Throttle barrel	YS7356	53
26	O ring set	YS7395		ω	Intake pipe 0 rings	YS7355	52
51		YS7394		_	Intake pipe R	YS7354	51
2	Muffler type B 1 piece	YS7393		1	Intake pipe L	YS7353	50
2	Muffler type B set	YS7392	105	4	Rear cover screws	YS7352	49
4		YS7391		2	Rear cover cap screws	YS7351	48
4	Mount spacer 50mm	YS7390			Rear cover cap gasket	YS7350	47
	Mount plate B	YS7389	104		Rear cover cap	YS7349	46
00	screws	YS7388	103	_	Rear cover O ring	YS7348	45
4	Mount spacer 60mm	YS7387	102		cover	YS7347	44
	Mount plate A	YS7386	101		Rear cover assy.	YS7346	
2	Rock nuts	YS4350	100	4	Conrod scres	YS7345	43
2		YS4345	99	2	Conrod	YS7344	42
2	Muffler type A 1 piece	YS4340		8	Push rod cover O rings	YS0690	41
2	Muffler type A set	YS7384	98	3	Push rod covers	YS7343	40
	Fuel tank clunk	YS4720	97	ω	Push rods	YS7342	39
2	Tube clips	2109SA	96	4	Cam follwers	YS0675	38
	Ignition box	YS7383		4	gear	YS0705	37
2	Plug socket screw	YS7382	95	4	Cam gear screws	YS1840	36
2	Ignition plug	YS6130	94	2	Cam gear cover O ring	YS0660	35
1	RPM sensor screw	YS7381	93	2	Cam gear cover	YS7341	34
1		YS7380	92	1	Cam gear R	YS7340	33
2	Needle plate screws	YS7379	91	1	Cam gear L	YS7339	32
	Needle plate	87378	90	2	Wrist pin	YS7338	31
_	Idling valve	YS7377	89	2	Piston ring	YS7337	30
_		YS7376	88	2	Piston		29
	Idling screw O ring	YS7375	87	2	Propeller nuts	YS6145	28
	Idling screw	YS7374	86	1		YS0825	27
_	detent	YS2710	85	7	Drive washer retainer	YS2720	26
2	Needle socket O rings	YS2705	84	7	Drive washer	YS2715	25
1	Needle socket	0023SA	83	1	Oil seal	YS1730	24
1	Needle O ring	3692SA	82	1	Rear Bearing	YS7335	23
1	Needle valve	YS2690	81	1	Mid bearing	YS7334	22
1	Needle body	YS7373	80	7	Front bearing	YS7290	21
	Needle assy.	YS7372		1	Crankshaft with conrods	YS7333	20
	ket se	YS4665	79	2	Cylinder O rings		19
4	Regulator cover screws	YS7371	78	ω	Cylinder screws	YS7331	18
_	Regulator cover	YS7370	77	4		YS0580	17
	Diaghram	YS7369	76	2	Rocker arm screw	YS1810	16
1	Regulator plunger	YS7368	75	2	Rocker arm shaft	YS1800	15
2	Regulator plate screws	YS7367	74	1	Tappet adjusting screw	YS4510	14
7	Regutator plate	YS7366	73	4	Tappet adjusting nuts		13
_		YS7365	72	ω	Tappet adjusting screws		12
	Diaghram A	YS7364	71	4	Rocker arm 2 pieces	YS7328	11
1	Pump plate	YS4635	70	ω	pring clips	YS2040	10
2	Pump screws	YS4640	69	4	Spring retaners 2 piece		9
1	Pump cap	YS7362	68	4	Valve springs 2 piece	YS0540	∞
1	Pump body O ring	YS7361	67	4	Head valves 1 piece	YS1600	7
1	Insulator O ring	YS4660	66	7	Cylinder head R	YS7327	6
_	Pump insulator	YS7219	65		Cylinder head R assy.		
_	Pushrod lower	YS7360	64	7		YS7325	2
1	Pump gasket	YS4645	63		ler head L assy.		
2	Lead valve springs	YS5990	62	4	screws 2		4
2	Lead valves	YS4625	61	2	Valve cover gasket 1 piece	YS7323	ω
7	Pump body with plunger	YS7363	60	2	Valve cover	YS7322	2
	Pump assy.	YS7359		1	Crankcase	YS7321	_
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