

Thank you for purchasing the "Gbw gasoline engine 180X-GS". The essential information for the correct operation of it is described in this manual. Please be sure to read this manual carefully before using it and please keep this manual after read.

PACKAGE

- 180X-GS x 1pcs
- special tools (hex wrenches 2.5mm, 3.0mm and 4.0mm)
- GLOW PLUG GS NO.4
- ESTER SYSTEM CHEMOSYNTHESIS OIL NSiRX-0 500ml
- instruction manuals (general catalogue, instruction manual and safety guide)

TECHNICAL DATA

ENYA 180X-GS is innovative gasoline engine that ignited with the GLOW PLUG. Enya Metal Products paid attention to this reformative idea^{*1}, and succeeded in commercializing the engine^{*2}.

Please enjoy this reformative GLOW GASOLINE ENGINE.

- Special parts for the 180X-GS
 - Large heat sink head / Brass cylinder with hard chrome plate / Al by machining connecting rod / Gbw gasoline plug / Carburetor (Wabro) / Ester system chemosynthesis oil (NSiMoka)

- *1) This idea has applied for the patent. (PAT.P)
- *2) 180X-GS is a joint development by NSiMoka and Enya metal products.

PREPARATIONS BEFORE STARTING

- * FUEL
 - To obtain good results with ENYA 180X-GS, it is recommended to use high-octane gasoline for automobile engine. *Please never use the gasoline for real airplane and racing car.
- * OIL
 - It is necessary to mix oil with gasoline. Please use our set oil NSiRX-0 that is ester system chemosynthesis oil. • PRODUCT : ESTER SYSTEM OIL (part number: NSiRX-0)
- * FUEL TANK, TUBE and TANK FILTER
 - The tube in the tank and the tank must use the product only for gasoline, and use the weight with built-in the surface tension filter in the tank. • PRODUCT : TANK FILTER (part number: FT030)
- * PROPELLER
 - At first choose a well balanced 18x10 or 20x8 propeller of high quality for your 180X-GS. You can get smooth running and good idle with the propellers made of glass fibre as they perform as an adequate fly-wheel.
- * GLOW PLUG
 - Gbw plug must use the special products ENYA GLOW GASOLINE PLUG. • PRODUCT : GLOW GASOLINE PLUG GS NO.4 (part number: EP00804) • Wrench size is 8mm / Thread size is in-general.
- * STARTING EQUIPMENT
 - ELECTRIC STARTER
 - To start 180X-GS, use an electric starter. The starter is a product that can be used for 120 to 140 class, and the power supply recommends three cell Lipo battery.
 - PLUG HEATER
 - It is recommended that use the plug heater with electric current adjustment function. Test your battery to be sure that it can heat the gbw plug satisfactorily.

STARTING AND RUNNING

START PREPARATION
Prepare the gasoline fuel that contains the oil of 5%.

Mixture cart of gasoline and oil

GASOLINE (L)	BREAK IN	PRACTICAL	ECONOMICAL
	OIL (ml)		
	20:1	25:1	30:1
1	50	40	33.3
2	100	80	66.6
3	150	120	100.0
4	200	160	133.3
5	250	200	166.7

- HOW TO START
 - * Close the throttle valve by 80~ 90%. Run the engine with the starter (anticlockwise) until the fuel is sucked into the carburetor. Then, make the battery connection on the gbw plug, and run the engine with the starter again. The engine will start.
 - * After your engine starts, keep the throttle valve and wait 30 sec to 1 min for warmed up the engine and then detach the battery connection. The engine stalls easily if the throttle valve is opened when the engine is cold.
 - * Try hi-b and operation several times, and make sure that the engine has no tendency to stop.

SETTING OF THE CARBURETOR

There is hardly a necessity for adjusting the needle. The standard setting of each needle valve and the standard revolution of each position.

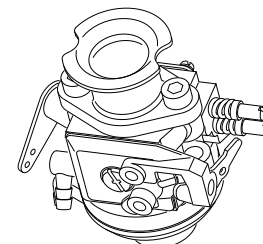
NEEDLE SETTING	
SLOW	1_1 / 2 TURN
HIGH	1_1 / 4 TURN

REVOLUTION	
SLOW	1 8 0 0 rpm
HIGH	7 0 0 0 rpm

LOW NEEDLE
Please adjust low needle first if it is necessary. Low needle can adjust the mixing ratio from idling to the throttle 60%. After your engine warmed up, close the throttle valve slowly and check the idle.

HIGH NEEDLE
After check the idle, open the throttle valve fully. Adjust the needle valve slowly to the best running position.

* THROTTLE ACCELERATION
There is a possibility of causing the defective acceleration by opening a rapid throttle. Please do not increase the speed where the throttle opens too



HIGH NEEDLE (indicated: H)

LOW NEEDLE (indicated: L)

PARTICULAR MENTION

- * HOW TO HANDLE GASOLINE
 - Gasoline is a fuel that ignites easily very much compared with methanol (alcohol). Therefore, it is necessary to take care enough about the handling. Please reduce the amount treated at a time with a special fuel can where it is put. Moreover, the fire is absolutely strict prohibition. Please never use the fire (also cigarette) when you treat the fuel.
- * BREAK IN
 - Break in your 180X-GS in about 2 hour, when beginning to use it.
 - Please use 20:1 fuels during break in.
 - Please make sure don't use in high speed and bad during break in.
- * OVERHEATING MEASURES
 - The gasoline model engine becomes a high temperature easily compared with methanol (alcohol) model engine. Please devise the Cowling shape to cool an engine. Recommend you to use stand off mount and aluminum spinner. They are effective of heat radiation.
- * AFTER RUNNING
 - Please drain fuel from the fuel tank of airplane and start the engine for burn rest of the carburetor fuel. This processing extends the life of carburetor. Moreover, it becomes easy to start the engine in next time.

TROUBLE CHECK LIST

Please confirm the following points of each case at the engine trouble.

IN CASE OF THE ENGINE DOESN'T RUN OR IT IS NOT EASY TO RUN

- Condition of the plug filament (thing that it is not broken)
- Heat the gbw plug satisfactorily
- The gbw plug has fix correctly
- Condition of the fuel tube and nipple (thing that it is not broken, disconnected and not clogged)
- Condition of the air line of the tank (thing that it is not clogged)
- Condition of the pump line tube and nipple (thing that it is not broken, disconnected and not clogged)
- Condition of the pump diaphragm of carburetor (thing that it is not broken)
- Condition of the metering diaphragm of carburetor (thing that it is not broken)
- The carburetor has fix correctly
- The cylinder head has fix correctly

IN CASE OF ENGINE UNSTEADY

- Confirm the above mentioned points first
- Condition of the tank in filter (thing that it is fix correctly)

IN CASE OF ENGINE STOP WHEN IT REMOVE THE PLUG HEAT

- Condition of the plug filament (thing that it is not broken)

IN CASE OF ENGINE STOP WHEN ENGINE BECOMES SLOW

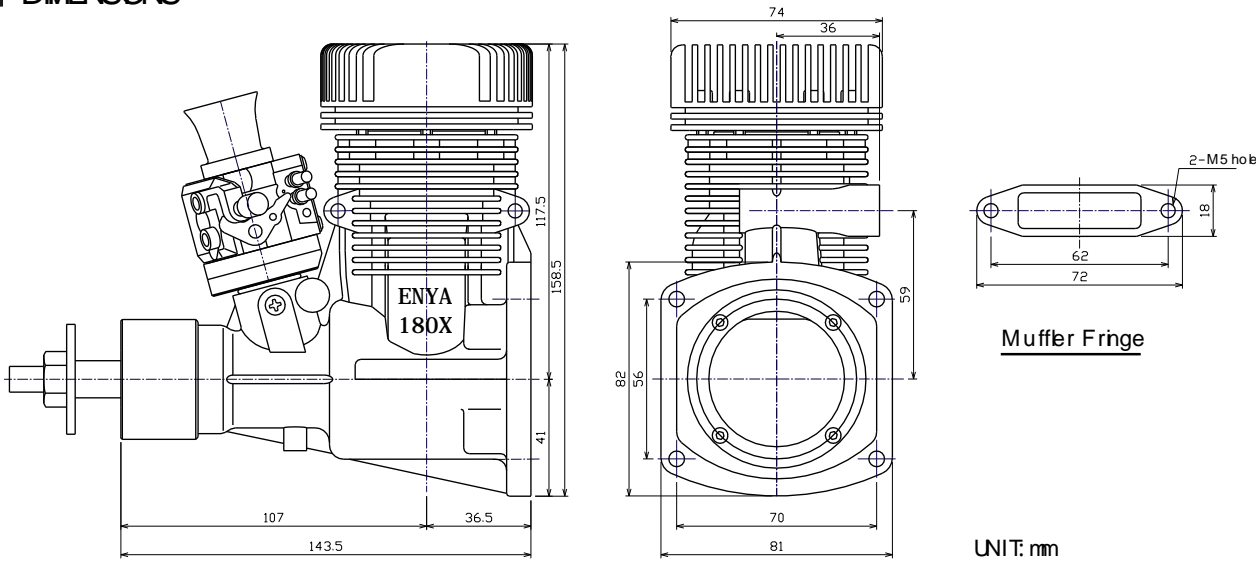
- Condition of the plug filament (thing that it is not broken)

SPECIAL ATTENTION

In general, model engine is very powerful and runs at very high speed. Never handle it carelessly. "Safety first" is most important in all respects when you run model engine.

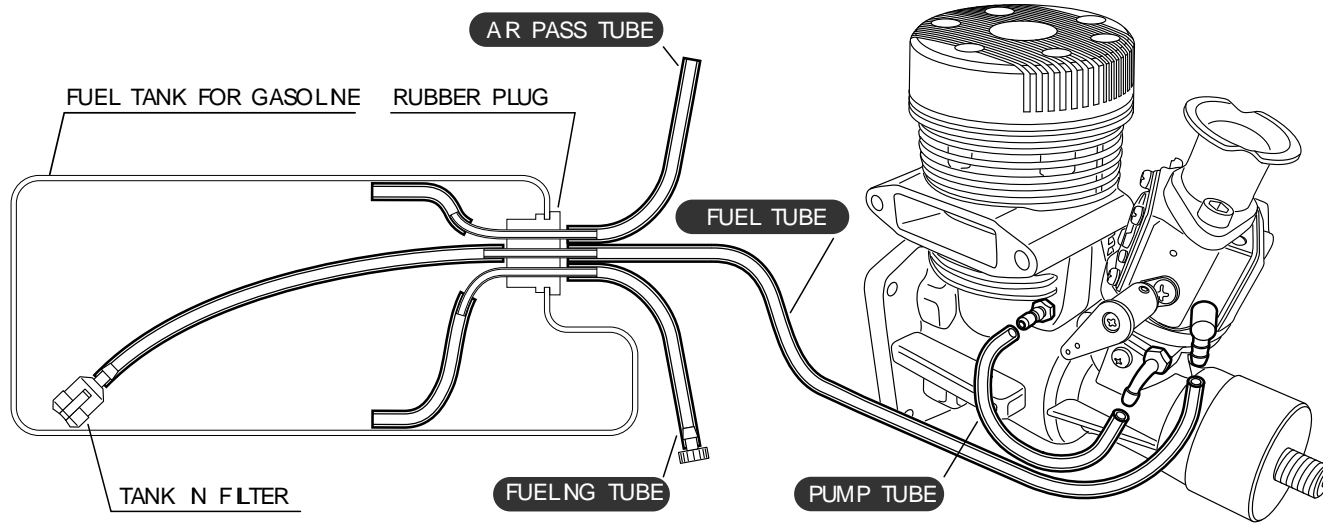
- Before you run your engine, take care of the following points.
 - Tighten the engine mounting screws and propeller nut once again.
 - Make sure that there are nobody near around (except your assistant).
 - When you fly your plane, it is most important to confirm that your radio control equipment works well. If you find a defective point on it, stop to fly your plane, and repair it perfectly.

Don't use an engine and the other parts concerned for uses except the radio control model.



180X-GS Specifications	
Displacement	29.06 cc
Bore x Stroke	34.0x 32.0 mm
Power/Revolution	3.2HP/ 8,000 rpm
Practical speed range	1,800~ 8,000 rpm
Weight	1,478 g (WO muffer)
Size of propeller	18x 10~ 20x 8 in.
Suitable weight of plane	5~ 10 kg
Gbw plug	ENYA GSNO 4

TUBE CIRCUIT DIAGRAM



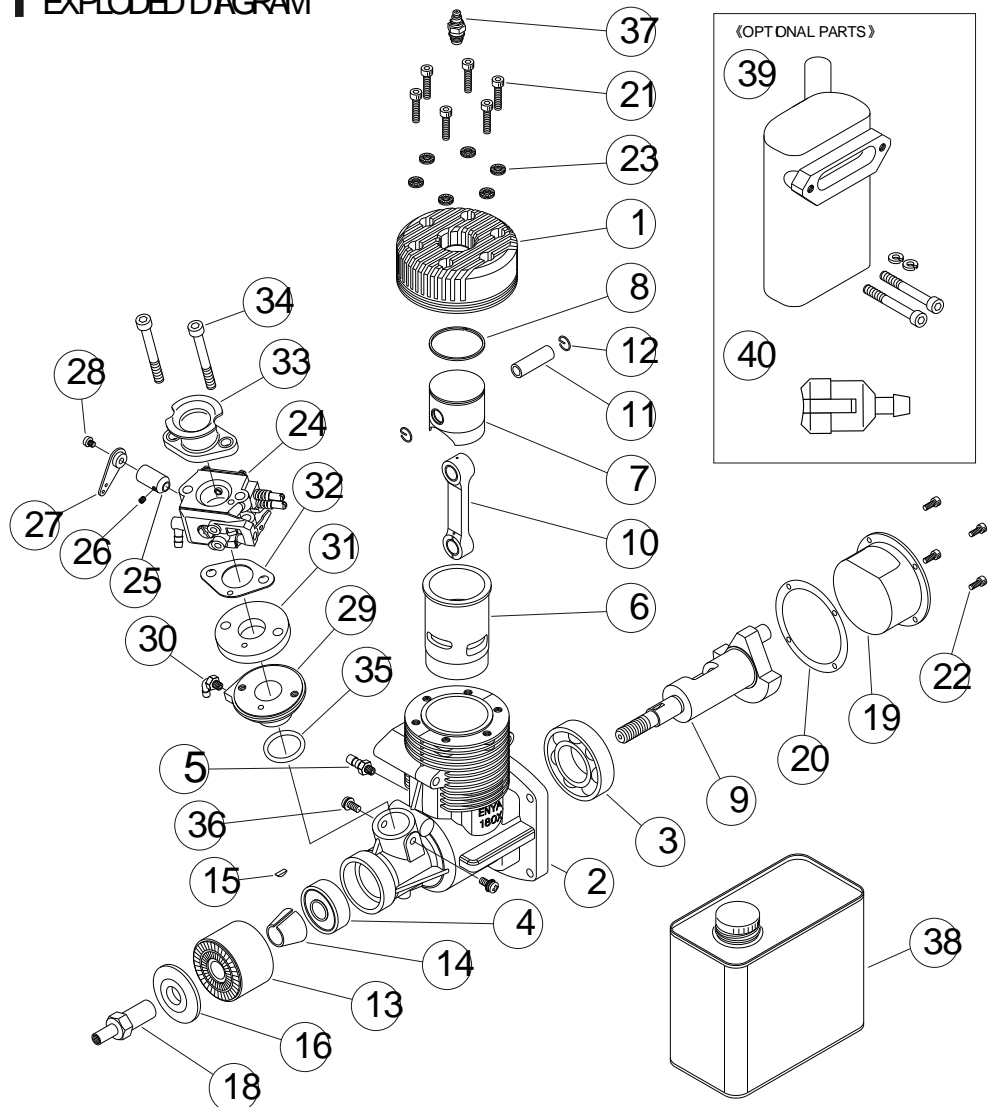
[ATTENTION OF PPGING]

- * Please use gasoline tube of commercial products [size : 6 x 3]. Please make sure each tube before start the engine, and change the tube to new one if the tube has any damage.
- * Please make sure put the tube to the each nipple, and fix the tube tightly by tube band.
- * Please make sure the things that separate the linkage and each tube.
- * The muffer pressure is not necessary for this engine.

PARTS LIST

No	DESCRIPTION	QTY	PART NUMBER
1	CYLINDER HEAD	1	180GS01
2- 5	CRANK CASE (W/BB)	1set	180GS03
2	CRANK CASE	1	180GS03A
3	BALL BEARING A	1	180GS03B
4	BALL BEARING B	1	180GS03C
5	PRESSURE NIPPLE (CRANK CASE)	1	M 603J
6- 8	CYLINDER LINER PISTON (ASSY)	1set	180GS04
6	CYLINDER LINER	1	180GS04A
7	PISTON	1	180GS04B
8	PISTON RING	1	180GS04C
9	CRANK SHAFT	1	180GS08
10	CONNECTING ROD	1	180GS05
11	PISTON PIN	1	180GS06
12	PISTON PIN STOP RING (2PCS)	1	180GS61
13	DRIVE WASHER	1	180GS10
14	DRIVE WASHER CORN	1	180GS10B
15	WOODRUFF KEY	1	180GS10C
16	PROPELLER WASHER	1	180GS12
17	CONICAL SPRING WASHER (2PCS)	1	180GS13
18	PROPELLER NUT	1	180GS14
19	BACK PLATE	1	180GS09
20	BACK PLATE GASKET	1	180GS16
21, 22	SETTING SCREW SET	1set	180GS15
21	HEAD SETTING SCREW	6	C4x 25
22	BACK PLATE SETTING SCREW	4	C3x 08
23	NORD-LOCK WASHER (6PCS)	1	180GS18
24- 36	CARBURETOR (ASSY)	1set	180GS80
24	CARBURETOR BODY (ASSY)	1set	180GS80A
25	THROTTLE LEVER SETTING STAY	1	180GS80B
26	STAY SETTING SCREW	1	604C63
27	THROTTLE LEVER	1	180GS80C
28	LEVER SETTING SCREW	1	S2540E
29	CARBURETOR SETTING ADAPTER	1	180GS80D
30	PRESSURE NIPPLE (CARBURETOR)	1	180GS80J
31	INSULATOR	1	180GS80E
32	GASKET	1	180GS80H
33	AIR FUNNEL	1	180GS80F
34	CARBURETOR ASSEMBLING SCREW (2PCS)	1	180GS80I
35	GASKET FOR CARB ASSY	1	180GS23
36	CARB ASSY SETTING SCREW (2PCS)	1	180GS80G
37	GS SPECIAL GLOW PLUG	1	EP00804
38	GS SPECIAL FUEL MKNING OIL	1	NSi RX- 0
(OPTIONAL PARTS)			
39	PISTON STYLE MUFFLER (ASSY)	1set	M 180X
40	TANK IN FUEL FILTER	1set	FT030

EXPLODED DIAGRAM



Specifications are subject to change without notice.