



# OWNER'S MANUAL

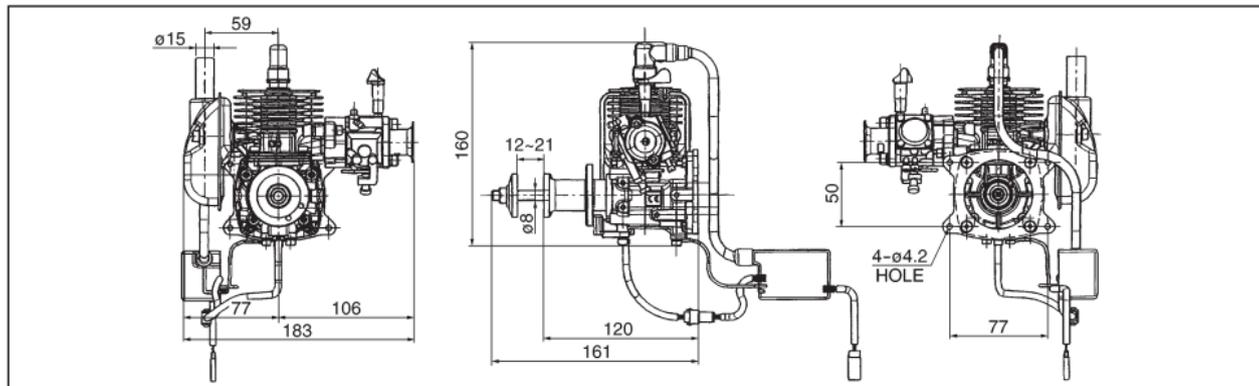
## Model: G200PU

### Model code: X374320000



Thank you for purchasing a ZENOAH engine.

- Please read this Service Manual thoroughly and use the engine correctly. (For safety reasons, please contact your sales dealer prior to using the engine if there is something about it that you do not understand.)
- This engine has been designed for radio control airplanes. Please use it in conjunction with the manuals for the models or radio control equipment you will be using.
- Modifications or use of the engine for other than its intended purpose is prohibited.
- We ask that the product be used only after it has been understood that the purchaser (user) shall bear all obligations and responsibilities stipulated by law, local ordinance and the like and that ZENOAH shall bear no responsibility whatsoever.



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## SPECIFICATIONS

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NO.	ITEMS	SPECIFICATIONS
1.	Engine model	G200PU
2.	Displacement	20.1cm <sup>3</sup>
3.	Bore x stroke	ø32mm x 25mm
4.	Weight	990g (not including DC Ignition Unit)
5.	Carburetor type	WT-811
6.	Ignition	Battery ignition; digital control
7.	Sparkplug	Champion Y82
8.	Rotating direction	Counterclockwise (from PTO side)
9.	Starting method	External motor
10.	Sensor gap	0.8 ~ 1.2mm (1.0mm ± 0.2mm)
11.	Fuel consumption	1.0ℓ / 9000rpm (at full throttle)
12.	Noise (at 2-meter points)	98dBA (APC 15x10)
13.	Battery capacity	4.8V / 1500 ~ 2700mA

## **⚠ SAFETY PRECAUTIONS ⚠**

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- **These safety precautions are to prevent you and those in the vicinity from incurring harm or damage. Make sure to observe these precautions and to constantly strive to ensure safety.**
- **Safe use of the engine is your personal obligation and responsibility. Constantly take care to act with good judgment as you enjoy your hobbies.**
- **Make sure never to touch the propeller when it is rotating. Also make sure that the propeller does not come in contact with the ground or with anything in its surroundings. Doing so could result in grave injury.**
- **The fuel is toxic. Do not let it get into your eyes or mouth. Store it in a cool place, out of the reach of infants and children. Improperly handled, it is a health hazard.**
- **Use of open flames around the fuel is prohibited, owing to the danger of fire occurring.**
- **To prevent burns, make sure not to touch the engine while it is operating or immediately after it has stopped.**
- **Do not run the motor in poorly ventilated places. When running it outside, do not breathe the exhaust, as it is a health hazard.**

## **⚠ SAFETY PRECAUTIONS ⚠**

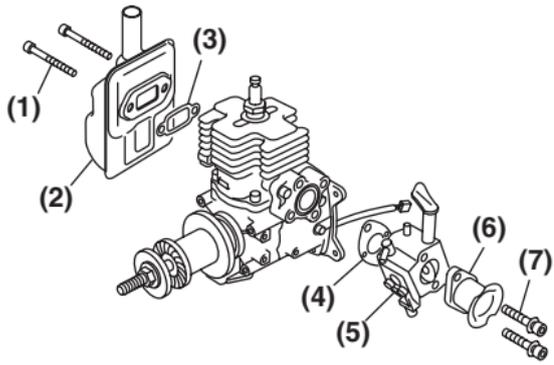
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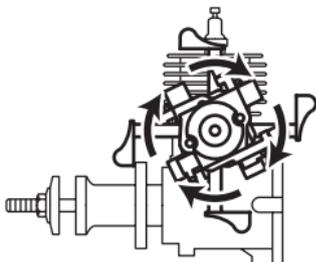
- **Special caution must be taken with all propellers used. Make sure to use them correctly, in keeping with the manufacturers' operating manuals, etc. Failure to do so could result in injury.**
- **Please wear clothing that facilitates your safety. Remove all scarves, overly long sleeves, neckties and the like. Failure to do so could result in injury.**
- **Please check to ensure that the direction in which the engine's throttle linkage operates and the amount it operates are correct. Failure to do so could result in engine damage.**
- **When starting the engine, make sure to be wearing protective eyewear and gloves and to use the starter. Failure to do so could result in injury.**
- **Do not run the motor on sandy soil or where there is a lot of gravel. Doing so could result in injury.**
- **When mounting the engine to a model, make sure to follow the model's operating manual. If necessary, reinforce the engine mounting unit and the peripheral parts.**

## ENGINE ASSEMBLY

The carburetor, muffler, and air funnel have not been assembled. Please assemble them correctly, following the diagram shown below.



No.	Part	Part no.	Quantity	Tightening Torque (N-m)
1.	Bolt	01252-30540	2	8.8
2.	Muffler	848EW015A0	1	
3.	Gasket	1140-13141	1	
4.	Gasket	848H7014C1	1	
5.	Carburetor set	848EW09710	1	
6.	Air funnel	848ES08300	1	
7.	Bolt	8488455000	2	3.4



The carburetor can be mounted anywhere 90 degrees apart on the top, bottom, left or right.

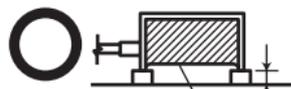
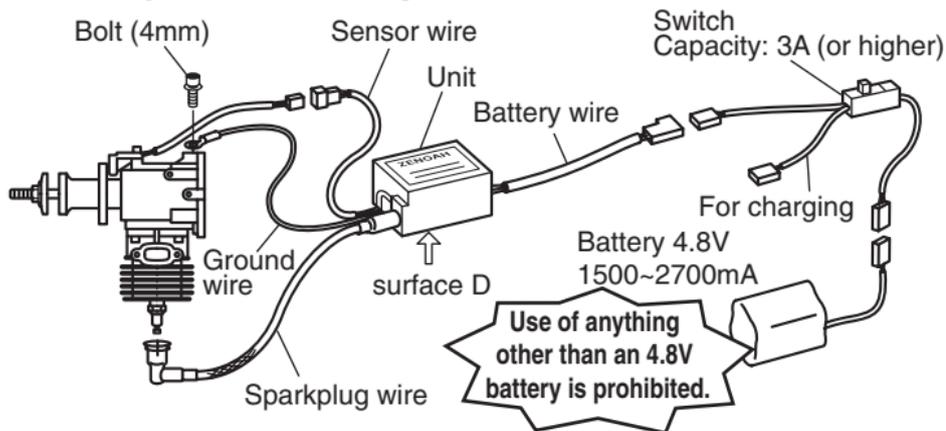
Mount the carburetor at a place where it is easy to do the linkage.

# DC IGNITION UNIT MOUNTING

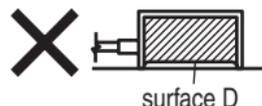
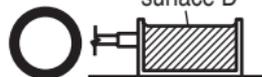
1. Make sure to install the power switch.
2. Push the sparkplug cap all the way over the sparkplug. (use gloves)
3. Fixate the unit within the fuselage, as shown in the diagram. Do not wrap the unit by the sponge, cloth or the like.
4. The temperature of the bottom surface (D) of the unit, in particular, will rise. Thus, when fixating surface (D), make sure to leave sufficient space (a gap).



**The temperature of the unit may rise to as high as 70~80°C, depending on the operating environment and conditions, but this is not abnormal. However, make sure not to touch this part or you could risk being burned.**

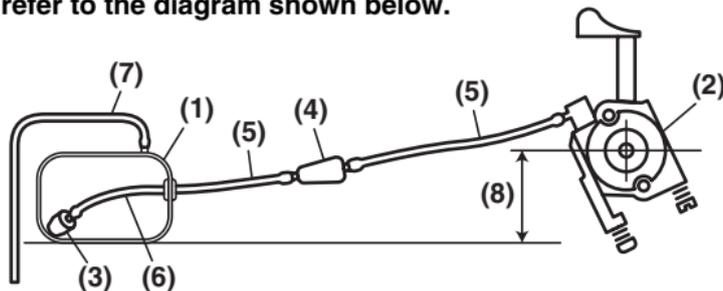


Gap: 5mm or more



## FUEL AND PIPING

- For gasoline, please use either regular or high octane, for cars. (The octane number should be 85 or higher.)
- For oil, use a high-performing mixed lubrication type of 2-cycle engine oil (F3C grade or ISO EGC grade) and make the fuel volume ratio 1 (oil) to 25-40 (gasoline).
- For fuel piping, refer to the diagram shown below.

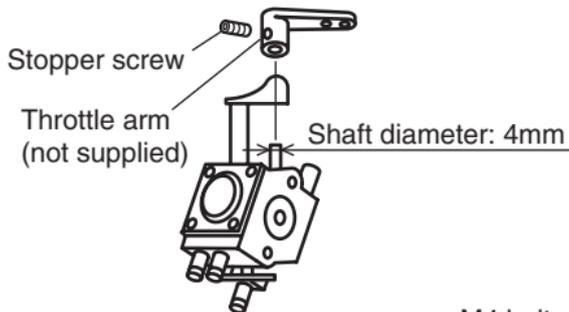


- Do not use a silicon tube.
- Clip the weight so that it does not come off when the engine is running.

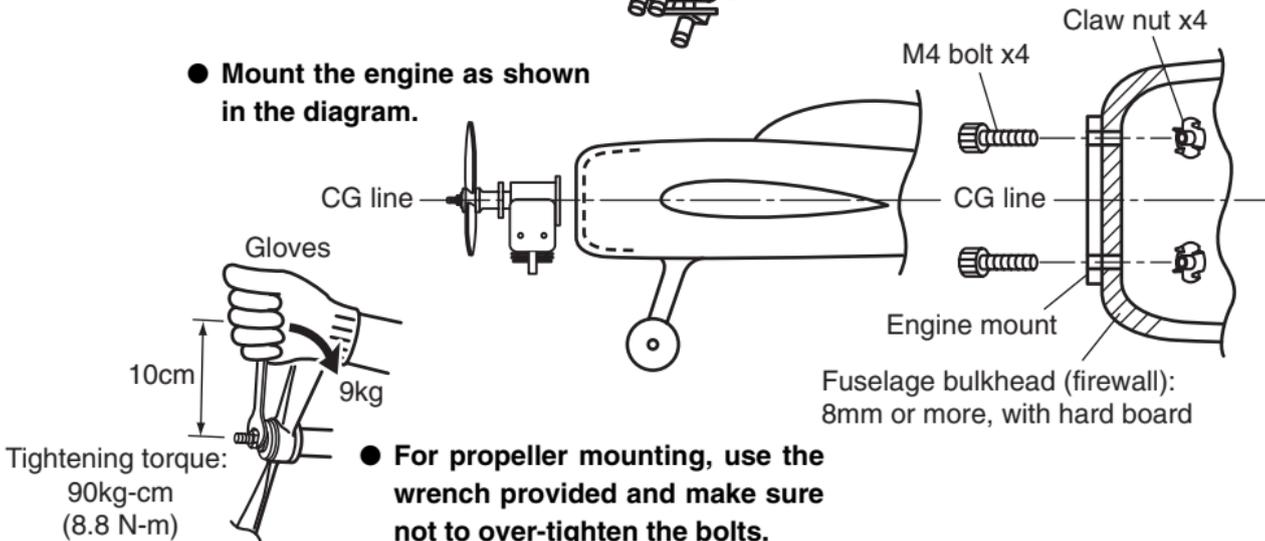
1. Fuel tank	Capacity of 300~400cc
2. Carburetor	
3. Weight or weight with felt filter	
4. Filter	Mesh, 300 or more
5. Fuel pipe	Gasoline-resistant rubber or vinyl tube with inner diameter of 2.5~3mm
6. Fuel pipe	Gasoline-resistant rubber tube
7. Air vent pipe	
8. Fuel head	100mm or less

# THROTTLE LINKAGE AND ENGINE MOUNTING

- Mount the throttle arm to the carburetor's throttle shaft as shown in the diagram or use the throttle valve stopper plate located at opposite side.



- Mount the engine as shown in the diagram.



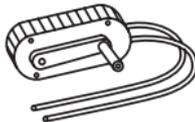
- For propeller mounting, use the wrench provided and make sure not to over-tighten the bolts.

## ITEMS TO CONFIRM BEFORE STARTING THE ENGINE **=====**

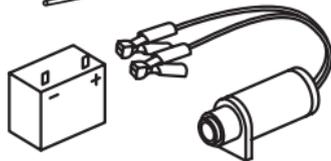
- Please determine the propeller to use in keeping with the airplane's size, gross weight, and flight characteristics. If necessary, consult with someone who has the proper experience.

Guidelines for an APC propeller: about 8.300rpm / 15x10, about 8,900rpm / 15x8

- Fuel pump for gasoline



- Electric starter device



- Make sure that during the fueling process, the fuel does not come in contact with the battery or that fuel that has overflowed does not come in contact with the muffler.
- Make sure there is no loosening of or abnormalities with the tightening, etc., of each part of the engine and model.
- Are there any problems with the linkage (in terms of its direction and actuation stroke)?
- Has the battery been sufficiently charged?
- Are there any propeller abnormalities (scratches, deformation, etc)?
- Re-tighten the muffler (for starting an engine from the second try on).
- Make sure that the fuel pipe and the wiring of the DC ignition unit and the like do not pass through the engine's muffler body and that the wiring and fuel pipe are not interferences.

## STARTING THE ENGINE

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- Close the choke lever and open the throttle valve 10% to 15%.
- Pressing the tip of the starter to the engine's spinner, press the start switch for 1-2 sec and let the engine rotate.
- If the engine has made an explosive sound, suspend the starting operation and start by opening the choke lever and rotating the engine using the starter. (Opening or closing the choke lever during engine operation is prohibited.)
- If the engine will not start, leave the choke lever in the open position and rotate the engine by pressing the starter for 1-2 sec. --- If the engine will not start, repeat this operation 2 or 3 times.

### (A) Points in starting

- During the first startup operation, does the fuel reach the carburetor?
- If the fuel reaches the carburetor, the choke should be open position.
- Is the ignition switch on?
- If there is absolutely no explosive sound, remove the sparkplug and check it.
- If the sparkplug became wet condition by over choking, dry it out, open the choke, and restart.

### (B) Cautions in starting

- One person must restrain the fuselage during the startup operation. (Thus, solo startup is prohibited.)
- With the sparkplug removed when using the starter for rotation or rotating the propeller by hand, make sure the ignition switch has been turned off.
- Rotation should be to the left. Confirm the direction of motor rotation in advance.

## ADJUSTMENTS AFTER ENGINE STARTUP

### (A) ADJUSTING THE IDLING

- After engine startup, set the idling at about 2000rpm, turn the L needle to the right (to reduce fuel), and search for the position for the max. engine speed. From that position, turn the L needle about 1/4 (90°) to the left (to increase fuel), set the idling speed with the idle screw or the transmitter.

### (B) ADJUSTING NUMBER OF ROTATIONS AT FULL THROTTLE

- Achieve full throttle slowly.

When the engine speed stabilizes, turn the H needle to the left and right to locate the position for the max. engine speed.

- From the position of the max. engine speed, open the H needle 1/8 (to increase fuel) to make the setting.  
In general, consider 100rpm to be the difference between the max. engine speed and the set engine speed.
- After making the setting, return to idling. Accelerate rapidly and confirm that there are no problems with acceleration. If acceleration is poor, open the L needle an additional 1/8th (45°) and confirm that acceleration is smooth. In this case, the idling will be low, so use the idle screw or transmitter to adjust it.
- This engine has had the carburetor set at the standard position at time of factory manufacture. Thus, no calibration is normally necessary.

In keeping, if poor acceleration or insufficient speed at full throttle or the like result, make adjustments in conformance with the main points of adjustment after engine startup.

However, the idling will change depending on the size of the propeller used, which will make adjustment using the idle screw or transmitter necessary.

Standard settings:

L:  $1\frac{1}{8}$  turns

H:  $1\frac{1}{2}$  turns

H needle    L needle



Idle screw

## BRAKE IN

- Different from a glow engine, this engine does not require any special brake in.
- After 5~10 tanks (2~3 hours), adjust the carburetor's L and H needles if necessary.
- After about 5 hours' running, the max. engine speed will be slightly increased from initial max.speed, owing to the engine having been conditioned.

## STOPPING THE ENGINE

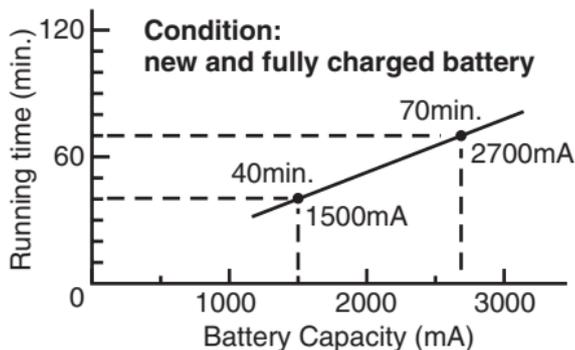
- To stop the engine, either use the transmitter to achieve full closed throttle or turn the battery switch off.
- When you have stopped the engine and when not operating the engine, make sure to keep the battery switch off.

## ENGINE RUNNING TIME

Because this engine uses a battery for power supply, the engine's continuous running time will depend on battery capacity.

Please refer to the table on the right for guidelines.

**Recommended battery: 4.8V / 1500~2700mA**



## MAINTENANCE

To ensure safe use of the engine, make sure of the items specified in the table below.

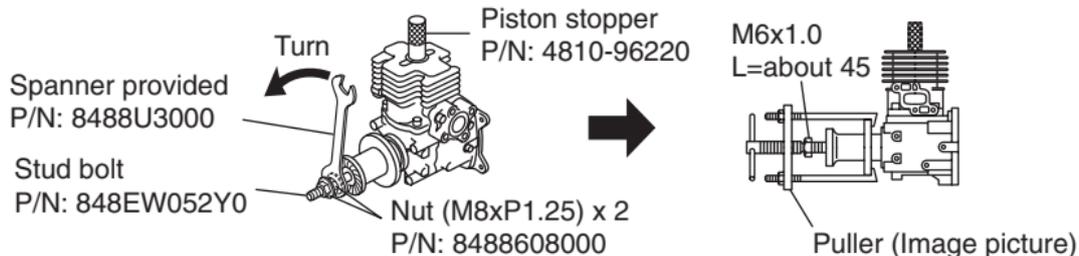
Item	Before using	Every 25h	Every 100h	Inspection
Leakage & breakage	✓	✓	✓	Cylinder, carburetor, muffler, crankcase, Fuel pipe, etc.
Idling stability	✓	✓	✓	Is it stable? Is acceleration okay?
Sparkplug	–	✓	✓	Remove deposit; adjust air gap
Cylinder	–	✓	✓	Check for wear & scratches
Piston/Ring	–	✓	✓	Check for wear & scratches
Muffler tightening bolt	✓	✓	✓	Retighten
Ignition unit	✓	✓	✓	Check for damage
Propeller hub (Stud)	✓	✓	✓	Check for damage to screws & for deformation
Crankshaft	–	–	✓	Check alignment
DC unit wiring	✓	✓	✓	Check for dislocation, cracks, wear, rattling, etc.
Stud/Nut	✓	✓	✓	Is there any slack or screw damage?

## TIGHTENING TORQUE CHART

Part	Screw Size	Tightening Torque		Remarks
		N-m	Kg-cm	
Cylinder	M4 (P0.7)	3.9	40	
Sparkplug	M10 (P1.0)	7.8	80	Using the tool provided
Muffler	M5 (P0.8)	8.5	90	
Crankcase	M4 (P0.7)	3.9	40	
Insulator	M4 (P0.7)	3.4	35	
Carburetor	M5 (P0.8)	3.4	35	
Sensor	M4 (P0.7)	1.7	20	
Stud (hub)	M6 (P1.0)	9.8	100	Using a piston stopper & LOCK TIGHT
Nut (propeller)	M8 (P1.25)	8.8	90	Using the tool provided
Engine mount	M4 (P0.7)	2.0	20	

## PROPELLER HUB REMOVAL

- Remove the propeller hub as specified below.



### CAUTION:

- Remove the sensor.
- Make sure that nut turned with a spanner is nut on the propeller hub side.
- Use a commercial puller of the appropriate size.
- When reassembling the stud bolt, apply LOCK TIGHT to the M6 thread part.

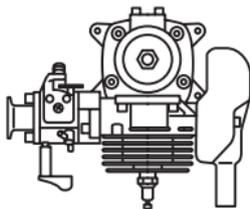
## OTHER INFORMATION

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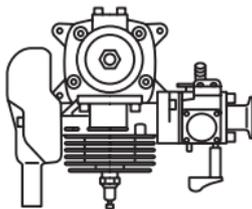
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This information is to enable our customers to enjoy radio control airplanes more, but all customers must take responsibility if they implement it.

- With this engine, the muffler side and the carburetor can be reversed by re-assembling the cylinder and piston.



Standard (A)



(B)

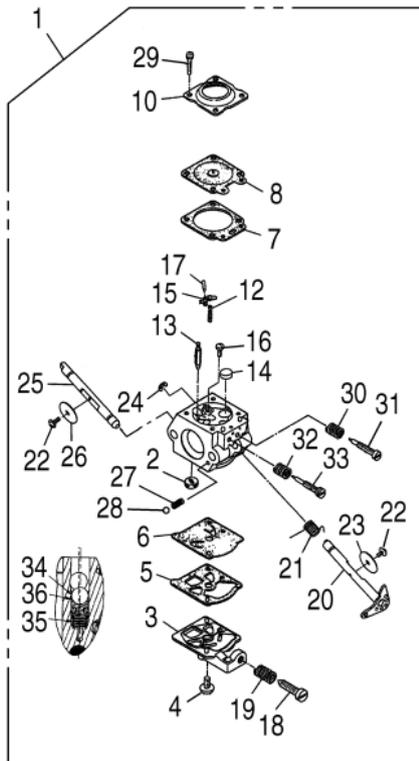
### CAUTION:

- When changing to (B), make sure to also re-assemble the piston or the cylinder, piston, etc, will be damaged.
- Please use a new snap ring (1260-41320) to prevent skipping of the piston pin.

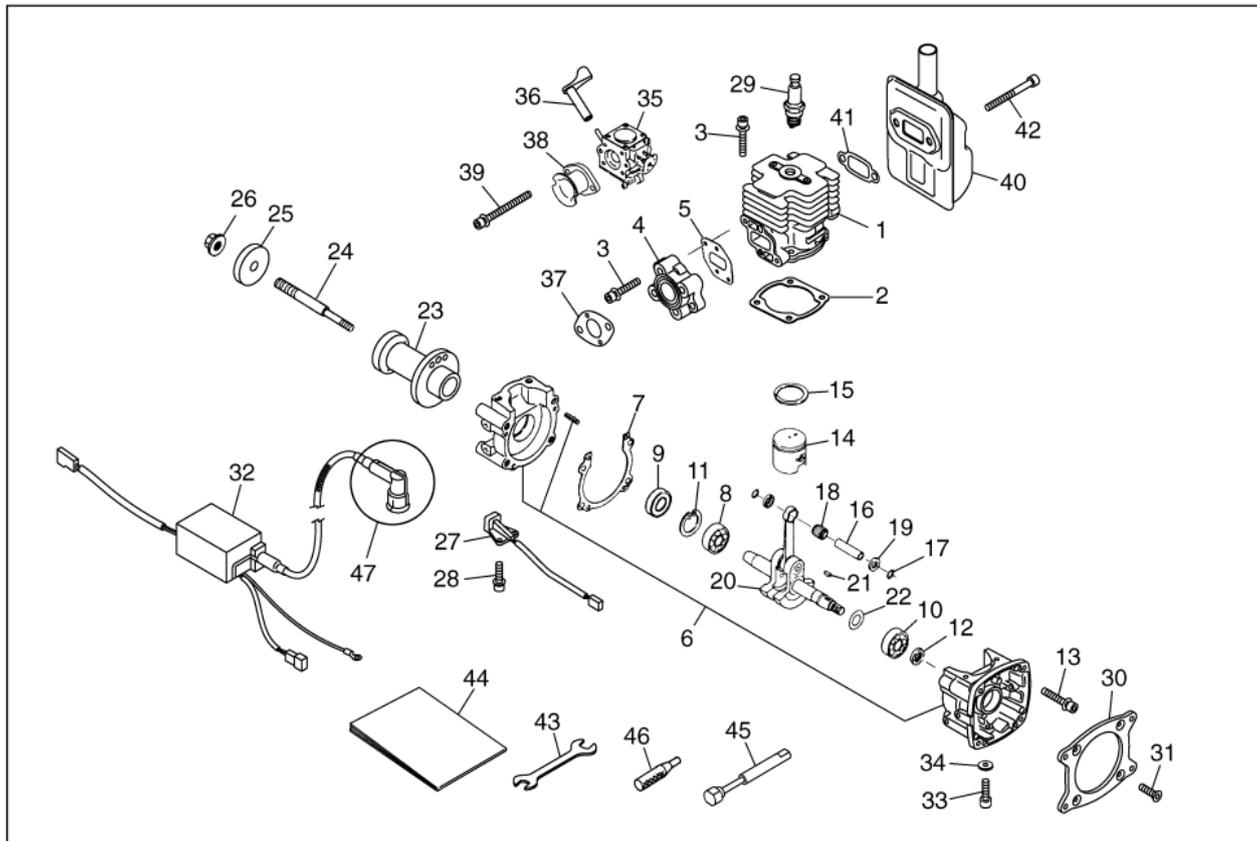
- The crankcase is made of magnesium. During processing, allow for sufficient cooling to avoid the risk of chips burning.
- In the event of even one crash, make sure to contact your service shop or dealer for inspection and repairs.

# PARTS LIST

KEY#	PART NUMBER	DESCRIPTION	Q'TY/ UNIT	REMARKS
1	848EW08100	CARBURETOR ASSY	1	
2	3306-81380	• SCREEN	1	
3	3080-81120	• COVER	1	
4	3310-81130	• SCREW	1	
5	3304-81140	• GASKET	1	
6	1172-81150	• DIAPHRAGM	1	
7	2850-81290	• GASKET	1	
8	3310-81260	• DIAPHRAGM	1	
10	3310-81280	• METERING COVER	1	
12	2867-81270	• SPRING	1	
13	3356-81310	• VALVE, inlet	1	
14	1480-81420	• PLUG, welch	1	
15	3310-81230	• LEVER	1	
16	3310-81240	• SCREW	1	
17	3310-81250	• PIN	1	
18	2630-81330	• SCREW	1	
19	3350-81380	• SPRING	1	
20	848EW081T0	• SHAFT, throttle	1	
21	2670-81410	• SPRING	1	
22	2880-81470	• SCREW	2	
23	1282-81340	• VALVE, throttle	1	
24	1148-81390	• RING	1	
25	T2070-81460	• SHAFT, choke	1	
26	2841-81451	• VALVE, choke	1	
27	3350-81350	• SPRING	1	
28	3350-81220	• BALL	1	
29	3310-81351	• SCREW	4	
30	1491-81160	• SPRING	1	
31	1148-81171	• NEEDLE, low speed	1	
32	3080-81320	• SPRING	1	
33	T2070-81330	• NEEDLE, high speed	1	
34	2812-81520	• BALL	1	
35	2810-81530	• SPRING	1	
36	2812-81510	• PISTON	1	



# PARTS LIST



# PARTS LIST

KEY#	PART NUMBER	DESCRIPTION	Q'TY/ UNIT	REMARKS	KEY#	PART NUMBER	DESCRIPTION	Q'TY/ UNIT	REMARKS
1	848EW012A1	CYLINDER	1		25	1152-43290	WASHER	1	
2	848EW012B0	GASKET, cylinder	1		26	8488608000	NUT	1	
3	8488441800	BOLT	6		27	848EW071N0	SENSOR	1	
4	848EW014A0	INSULATOR	1		28	8488441400	BOLT	2	
5	848EW014B1	GASKET, insulator	1		29	3699-92369	SPARK PLUG	1	Y82
6	848EW02110	CRANKCASE COMP.	1		30	848EW053X0	MOUNT PLATE	1	
7	848EW021D0	GASKET, case	1		31	3819-54780	SCREW	4	
8	1155-21240	BEARING	1		32	848EW07120	UNIT ASSY	1	
9	06034-06001	BEARING	1		33	01252-30410	BOLT	1	
10	T1600-21240	BEARING	1		34	01641-20405	WASHER	1	
11	04065-02812	SNAP RING	1		35	848EW08100	CARBURETOR ASSY	1	
12	T1600-21210	SEAL	1		36	T2070-82410	LEVER, choke	1	
13	3310-72150	BOLT	4		37	848H7014C1	GASKET	1	
14	848EW041A1	PISTON	1		38	848ES08300	AIR FUNNEL	1	
15	T2071-41210	RING	1		39	8488455000	BOLT	2	
16	1101-41310	PISTON PIN	1		40	848EW015A0	MUFFLER	1	
17	1260-41320	SNAP RING	2		41	1140-13141	GASKET, muffler	1	
18	5500-41410	BEARING	1		42	01252-30540	BOLT	2	
19	1101-41340	WASHER	2		43	8488U30000	SPANNER	1	
20	848EW04200	CRANKHAFT COMP.	1		44	848EW093A1	OWNER'S MANUAL	1	
21	848EW042D0	KEY	1		45	1101-96220	ROD ASSY	1	OPTION
22	1140-43250	SHIM	1		46	4810-96220	STOPPER	1	OPTION
23	848EW05290	HUB COMP.	1		47	X374320099	CAP REPAIR KIT	1	OPTION
24	848EW052Y0	STUD	1						

# WARRANTY

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## ● Scope of Application

This warranty applies only to the engines and parts manufactured by ZENOAH and sold directly or through distributors.

## ● Limit of Warranty

This warranty shall apply only to trouble resulting from material defects and inferior assemblies that ZENOAH acknowledges.

## ● Method and Limit of Compensation

- 1) Repair or replacement through the distributor, etc.
- 2) ZENOAH and its distributors shall not provide compensation for incidental loss to engine purchasers resulting from trouble.

## ● Term of Warranty

The term of warranty shall be three (3) months from the date of purchase, within one year from the date of manufacture.

## ● The warranty shall not cover the following, even if occurring during the term of warranty:

- 1) Any faults, failures caused from neglect of this OWNER'S MANUAL for proper operation and maintenance.
- 2) Dismantled or modified engines and parts
- 3) Expendable parts
- 4) Trouble resulting from submersion in water, from fire or from other natural disasters and calamities
- 5) Engines installed with parts that are not genuine



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