

KIPOR
WUXI KIPOR POWER CO.,LTD

The **COAST** Distribution System



IG6000 IG6000h Generator Service Manual

The Coast Distribution System, June 1, 2007

Preface

This manual covers the construction, function and servicing procedure of the Coast Distribution System KIPOR IG6000 model generator. This manual is principally concerned with the generator specifications, function, troubleshooting and repair. There is a separate manual to cover engine overhaul which includes the starting systems.

These models may be of significantly different design than the original KGE7000Ti and other models currently sold outside North America. Contact Kipor for current service information.

Careful observance of the instructions contained in this manual will result in safe and quality service work.

All information, illustrations, directions and specifications included in this publication are based on the latest product information available at the time of approval for printing.

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1. SPECIFICATIONS AND DIAGRAMS

1.1 General Specifications

Dimensions and weights

Model	IG6000	IG6000H
Overall length- in. (mm)	31.6 (802)	48.6 (1235)
Overall width- in. (mm)	19.5 (498)	25.6 (650)
Overall height- in. (mm)	24.6 (624)	30.3 (770)
Dry weight- lbs. (Kg)	209 (95)	223 (103)

Engine

Model	KG390GETi
Type	4-stroke, OHV, single cylinder
Displacement- cu.in. (cc)	23.7 (389)
Bore x stroke- in. (mm)	3.46 x 2.51 (88x64)
Maximum horsepower(KVA)	7.7/3600
Compression ratio	8.5:1
Cooling system	Forced air
Ignition system	Transistorized controlled ignition
Ignition timing	28°B.T.D.C
Spark plug	F7RTC
Carburetor	Horizontal float type
Air cleaner	Dry replaceable element
Governor	Inverter module control
Lubrication system	Forced splash
Oil capacity- qt. (L)	1.2 (1.1)
Starting system	Electric starter
Stopping system	Electric ground
Fuel	Automotive unleaded gasoline 87 octane

Generator

Model	KD50
Generator type	Multi pole rotation type
Generator structure	Self-ventilation drip-proof type
Excitation	Self-excitation (Magnet type)
Voltage regulation system	Pulse Width Modulation
Phase	Three phase
Rotating direction	Clockwise (Viewed from the generator)
Frequency regulation	AC-DC-AC conversion (Inverter type)

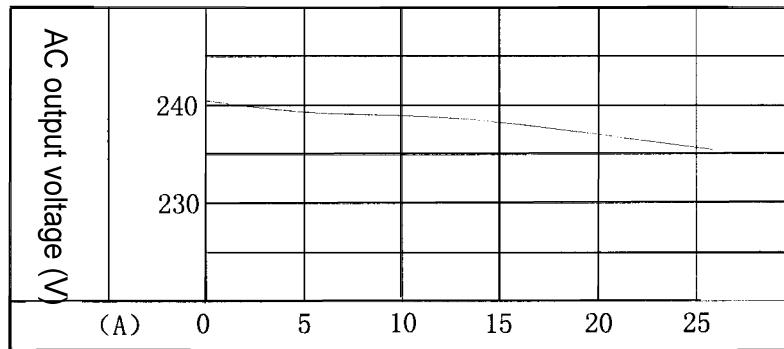
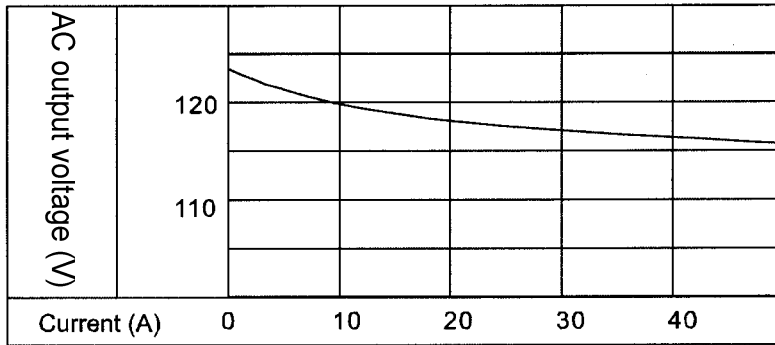
1.2 Generator Specifications

Model		IG6000
Maximum output (AC)		6.0 KVA
Rated output (AC)		5.5 KVA
Rated frequency (HZ)		60
Rated voltage (AC)		120/240
Maximum current (amp)		25/50
Rated current (amp) ★		23.9/45.8
Rated voltage (DC)		12V
Rated current (DC)		12A
Power factor		1.0
Voltage variation rate	Momentary	Max.10%
	Average	Max.1.5%
	Average time	Max. 3 seconds
Voltage stability		±1%
Frequency variation rate	Momentary	Max. .5%
	Average	Max. .5%
	Average time	Max. .05 second
Frequency stability		±0.1%
Insulation resistance		Min. 10MΩ
AC circuit protector- Amps 120/240 VAC		51.7/25.8
DC circuit protector		15A
Fuel tank capacity- gal (L)		5.9 (22)
Operating hours at rated load		6
Noise level dB @23' (7 m) no load-full load		63~70

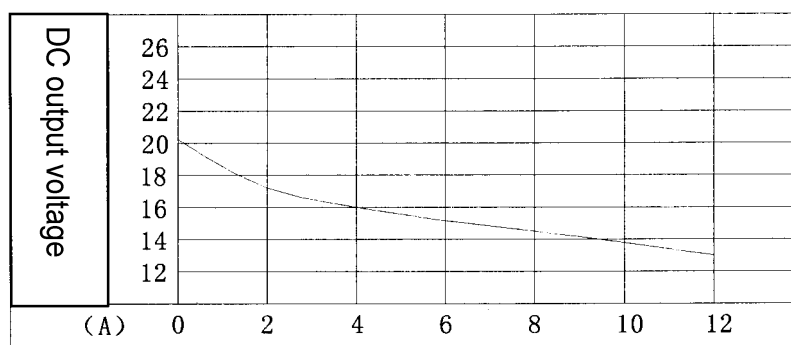
1.3 PERFORMANCE CURVES

The curves show performance of the generator under average conditions. Performance may vary depending upon ambient temperature, altitude and humidity.

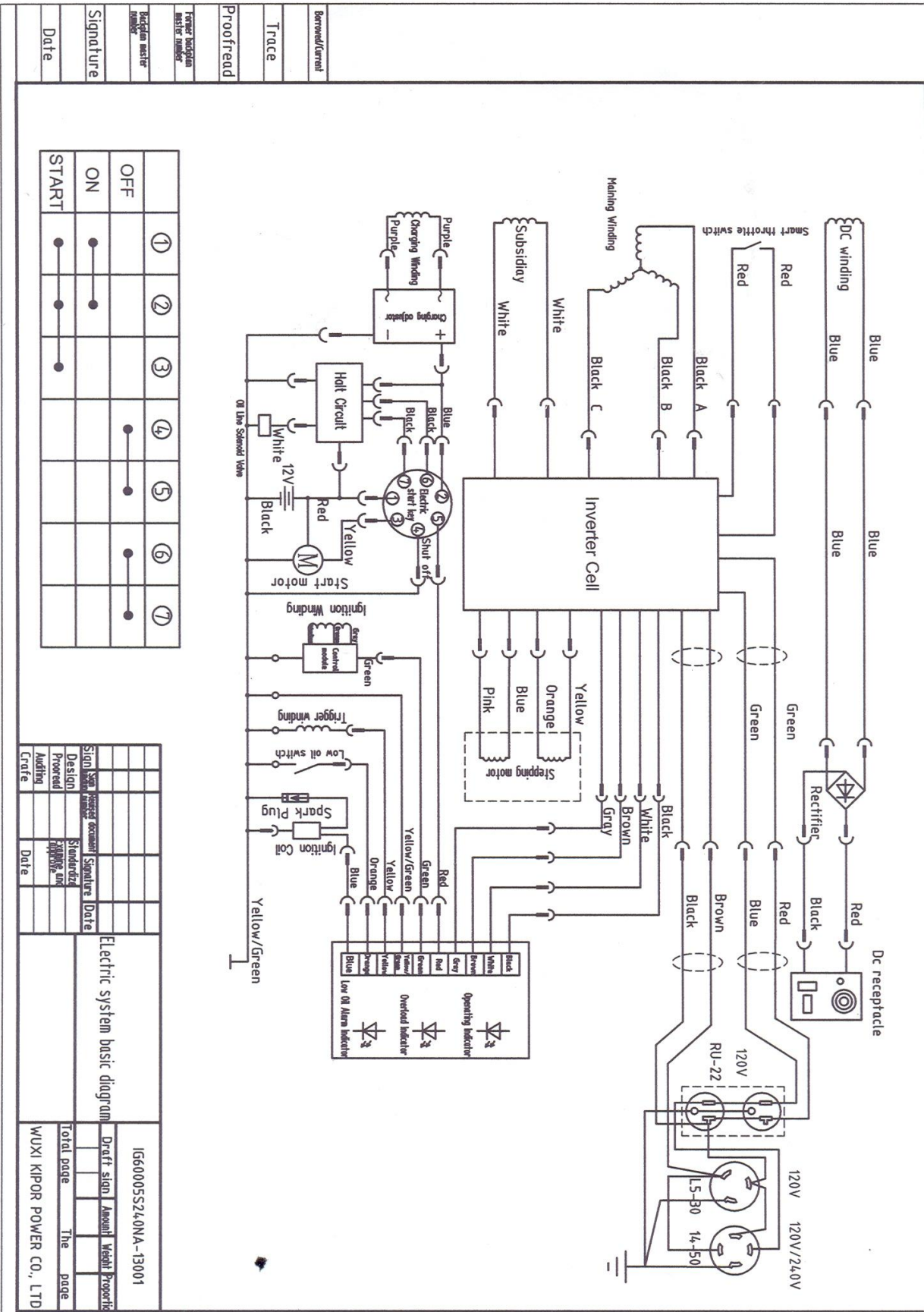
- AC External characteristic curves



- DC External characteristic curves



1.4 Wiring Diagram



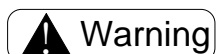
①	②	③	④	⑤	⑥	⑦
OFF						
ON						
START						

SIGNATURE		DATE		DATE	
DESIGN	PROOFREAD	AUDIT	DATE	DATE	DATE
Electric system basic diagram			1560005S240NA-13001		
Draft	sign	Amount	Width	Proportion	
Total page	The	page			
WUXI KIPOR POWER CO., LTD					

2. SERVICE AND MAINTENANCE

2.1 The importance of proper servicing

Proper servicing is essential to the safety of the operator and the reliability of the generator. Any error or oversight made by the technician while servicing can easily result in faulty operation and/or damage to the equipment or injury to the operator.



Warning

Improper servicing can cause an unsafe condition that can lead to serious injury or death. Follow the procedures and precautions in this shop manual carefully.

Some of the most important precautions are stated below.

2.2 Safety Precautions

Be sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and safety equipment. When performing maintenance or repairs, be especially careful of the following:

- Read the instructions before you begin, and be sure you have the tools and skills required to perform the tasks safely.
- Be sure that the engine is off before you begin any maintenance or repairs. This will reduce the possibility of several hazards:
 - Carbon monoxide poisoning from engine exhaust.
 - Burns from hot parts.
 - Injury from moving parts.
- Do not run the engine unless the instructions tell you to do so. Keep your hands and clothing away from rotating parts.
- To reduce the possibility of fire or explosion, exercise extreme caution when working around gasoline. Use only a nonflammable solvent, not gasoline, to clean parts. Keep cigarettes, sparks and flames away from all fuel-related parts.

2.3 Service Rules

- Use genuine KIPOR or KIPOR recommended parts and lubricants or their equivalents. Parts that do not meet Kipor's design specifications may damage the engine and void the warranty.
- Use special tools designed for the product when specified.
- Always install new gaskets, O-rings, etc. when reassembling components.
- Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly. After reassembly, check all parts for proper installation and operation.
- Many screws used in this machine are self-tapping. Be aware that cross-threading or over tightening these screws will strip the threads and ruin the hole.
- Use only metric tools when servicing this engine. Metric bolts, nuts and screws are not interchangeable with non-metric fasteners. The use of incorrect tools and fasteners will damage the engine.

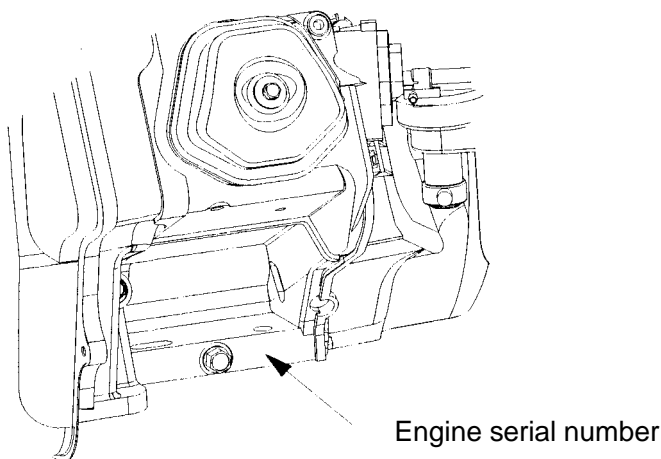
2.4 Electrical Precautions

- Hold the connector body to disconnect the connector. Do not disconnect by pulling the wire harness. To disconnect the locking connector, be sure to unlock first, and then disconnect.
- Check the connector terminals for bend, excessive extrusion, missing terminals, or other abnormalities before connecting the connector.
- To connect, insert the connector as far as it goes. If the connector is a locking type, be sure that it is locked securely.
- Check the connector cover for breakage and check whether the connector female terminal is not opened excessively. Then, connect the connector securely. Check the connector terminal for rust. Remove the rust using an emery paper or equivalent material before connecting the connector.
- Set the harness clips in the specified places of the frame securely, and secure the wire harnesses.
- Clamp the cables securely.
- Clamp the wire harnesses securely so that they do not interfere with the rotating parts, moving parts and hot parts.
- Route and connect the wire harnesses properly. Be sure that the harnesses are not slack, twisted or pulled overly taut.

- Route the wire harnesses properly so that they do not contact sharp edges and corners and the end of the bolts and screws on the body.
- If a wire harness must contact the end of the bolts or screws or sharp edges and corners, protect the contact part of the harness with a loom or by winding with electrical insulating tape. If the wire harness has a grommet, set the grommet securely.
- Take care not to pinch the wire harnesses during installation of a part. If a wire harness has damaged insulation, repair by winding with electrical insulating tape.
- When using an electrical tester like a volt/ohm meter or clamp on meter, read the manufacturer's operating instructions carefully before operating the tester. Be sure that the tester battery is fully charged and the meter is functioning properly

2.5 Serial Number and Bar Code Location

The engine serial number is stamped beside the engine oil drain plug. This number is used to identify the specific engine version.



The bar code is used by Coast Distribution to determine production date and warranty administration.



The bar code is found in three locations: on the generator, on the packing carton and on the inside cover of the operator's manual.

2.6 Alternator Maintenance Standards

Part	Item	Type	Standard (Ω)			Service limit
			120V/240V			
Ignition winding I	Resistance	Orange—Yellow/Green	0.22~0.24			——
		Gray—orange	0.15~0.17			
External charging winding	Resistance	Blue—blue	0.03~0.04			——
Built-in charging winding	Resistance	Purple—Purple	0.12~0.16			——
Sub winding	Resistance	White—white (green—green)	0.08~0.12			——
Main winding	Resistance	Black—black (red—red)	0.45~0.60	0.09~0.10	0.9~1.1	——

2.7 Fastening Torques

Item	Specification	Tightening torque	
		Ft lb.	N.m
Connecting rod bolt	M8	14.8~16.3	20~22
Cylinder cover bolt	M10×1.25×80	31.0~34.0	42~46
Spark plug	M14×1.25×19	18.4~22.2	25~30
Crankcase side cover bolt	M8×30	14.8~17.0	20~23
Rotor nut	M18×1.5	88.5~95.9	120~130
Rocker arm shaft bolt	M8×16	14.8~17.0	20~23
Adjusting nut of rocker arm shaft	M6×0.75	7.8~8.8	10~12
Standard torque	M5 bolt、nut	4.4~5.9	6~8
	M6 bolt、nut	5.9~7.4	8~10
	M8 bolt、nut	14.8~17.0	20~23
	M10 bolt、nut	40.6~44.3	55~60

Note: Use standard torque values for fasteners that are not listed in this table.

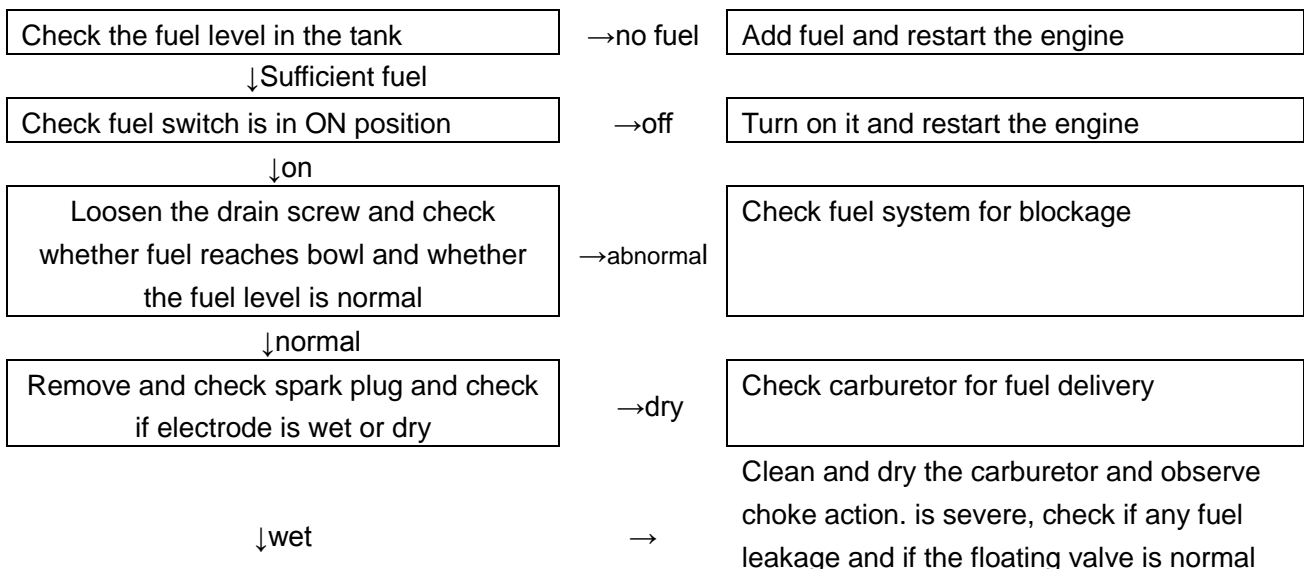
2.8 Troubleshooting

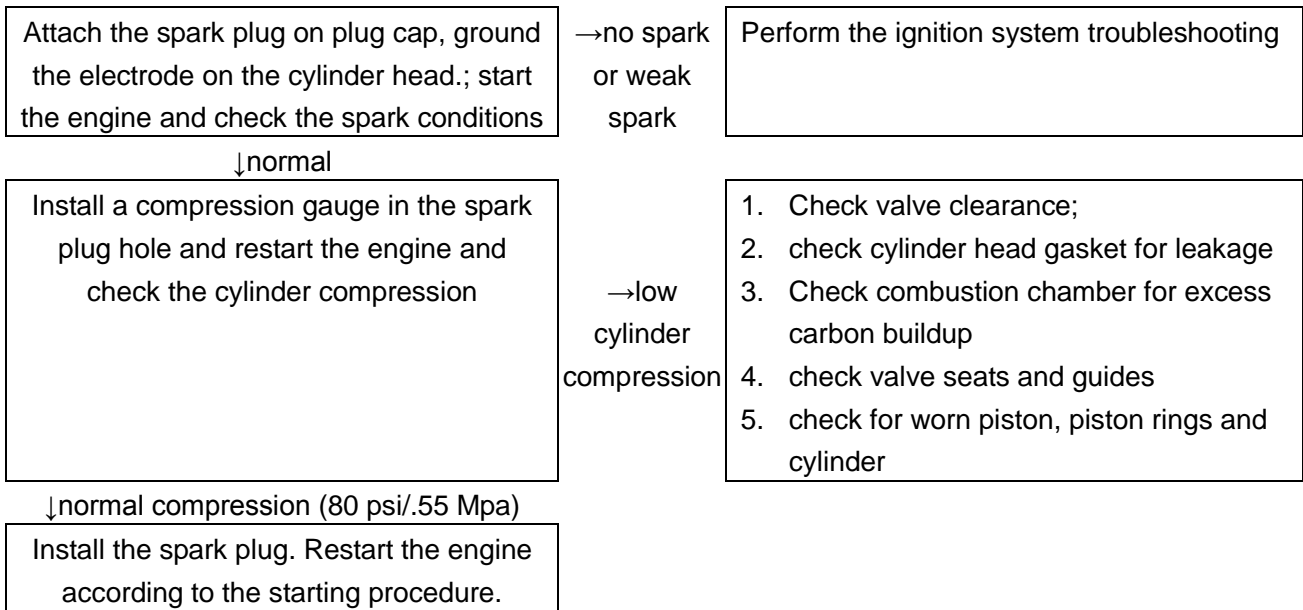
This section gives very general information regarding symptoms and possible causes. Refer to subsequent sections regarding testing and removal and replacement of specific components and systems. Engine overhaul is addressed in the IG6000 Engine shop manual.

2.8.1 General symptoms and possible causes

Engine does not start or hard starting	Fuel filter clogged	Clean
	Fuel hose clogged	Clean
	Fuel switch won't operate	Replace
	Carburetor defective	Clean and/or replace
	Ignition coil defective	Inspect and replace
	Spark plug defective	Inspect and replace
	Defective timing relay	Inspect and replace
	Trigger defective or improper air gap	Inspect and replace
	Spark plug cap disconnected	Install securely
	Oil level alarm defective	Inspect and replace
	Ignition coil defective	Inspect and replace
Valve clearance misadjusted	Adjust valves	
Engine speed does not stabilize	Carburetor faulty	Clean and/or replace
	Throttle control motor (stepping motor) defective	Inspect and replace
	Inverter unit defective	Inspect and replace
	Valve clearance misadjusted	Adjust valves

2.8.2 Hard starting or no start

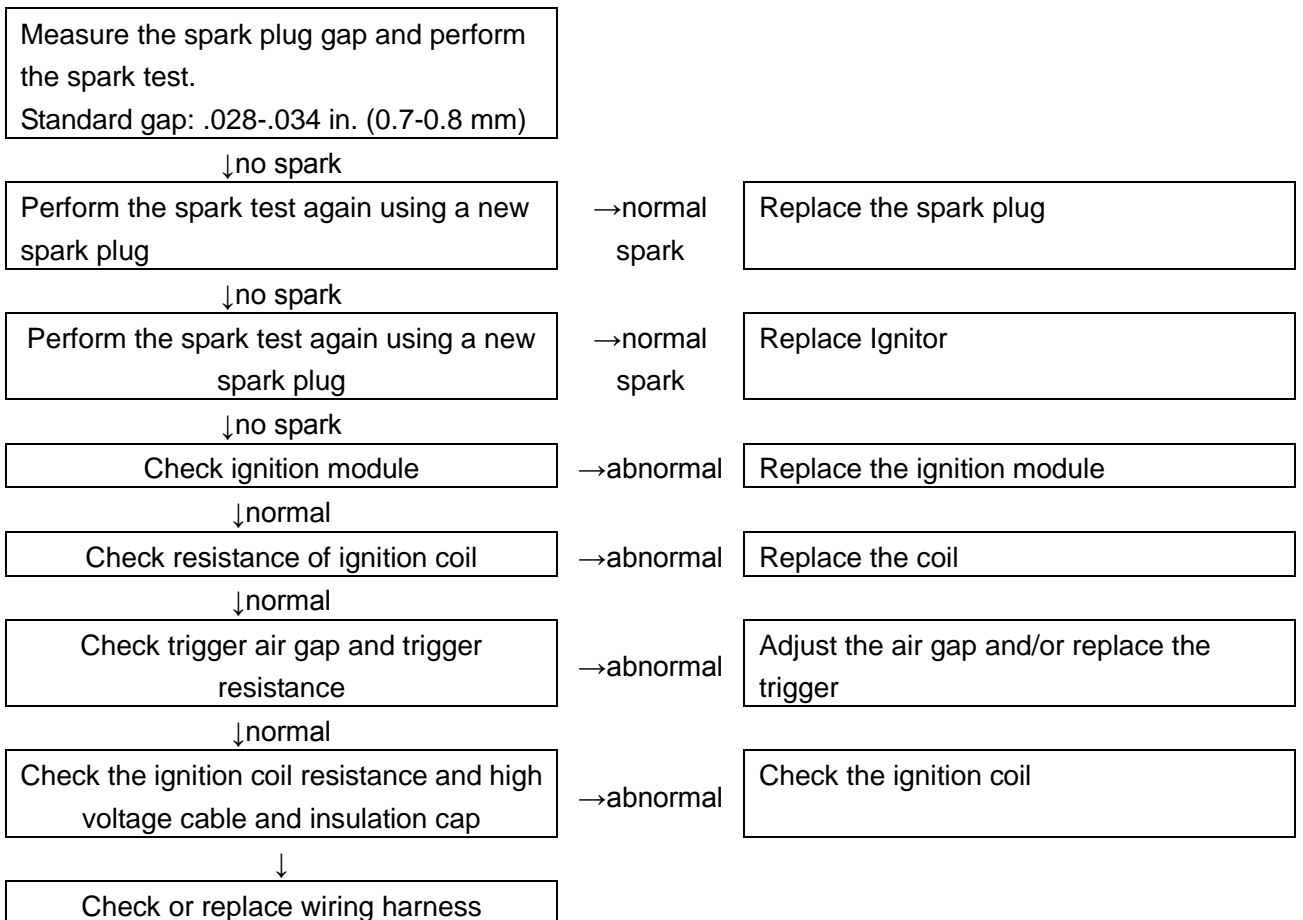




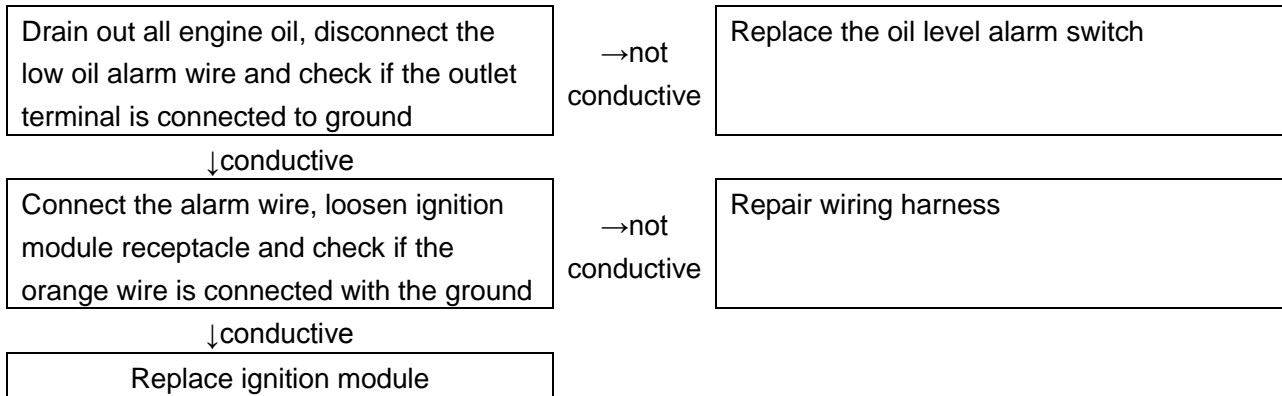
2.8.3 Ignition system troubleshooting

■Spark plug inspection

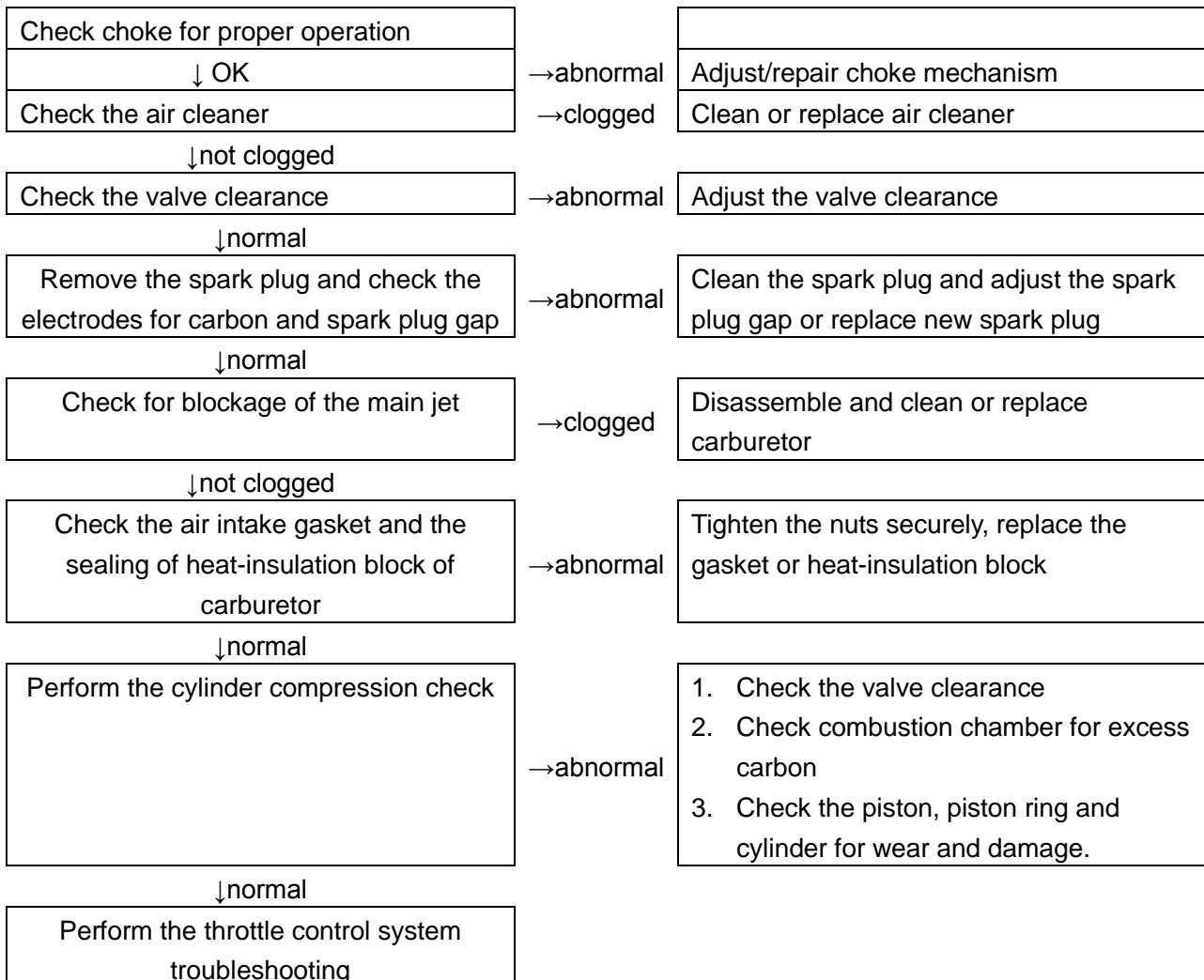
1. Remove spark plug
2. Attach the removed spark plug to the plug cap
3. Ground the negative electrode of the spark plug against the cylinder head or engine block and engage the electric starter and check to see if a spark jumps across the electrode.



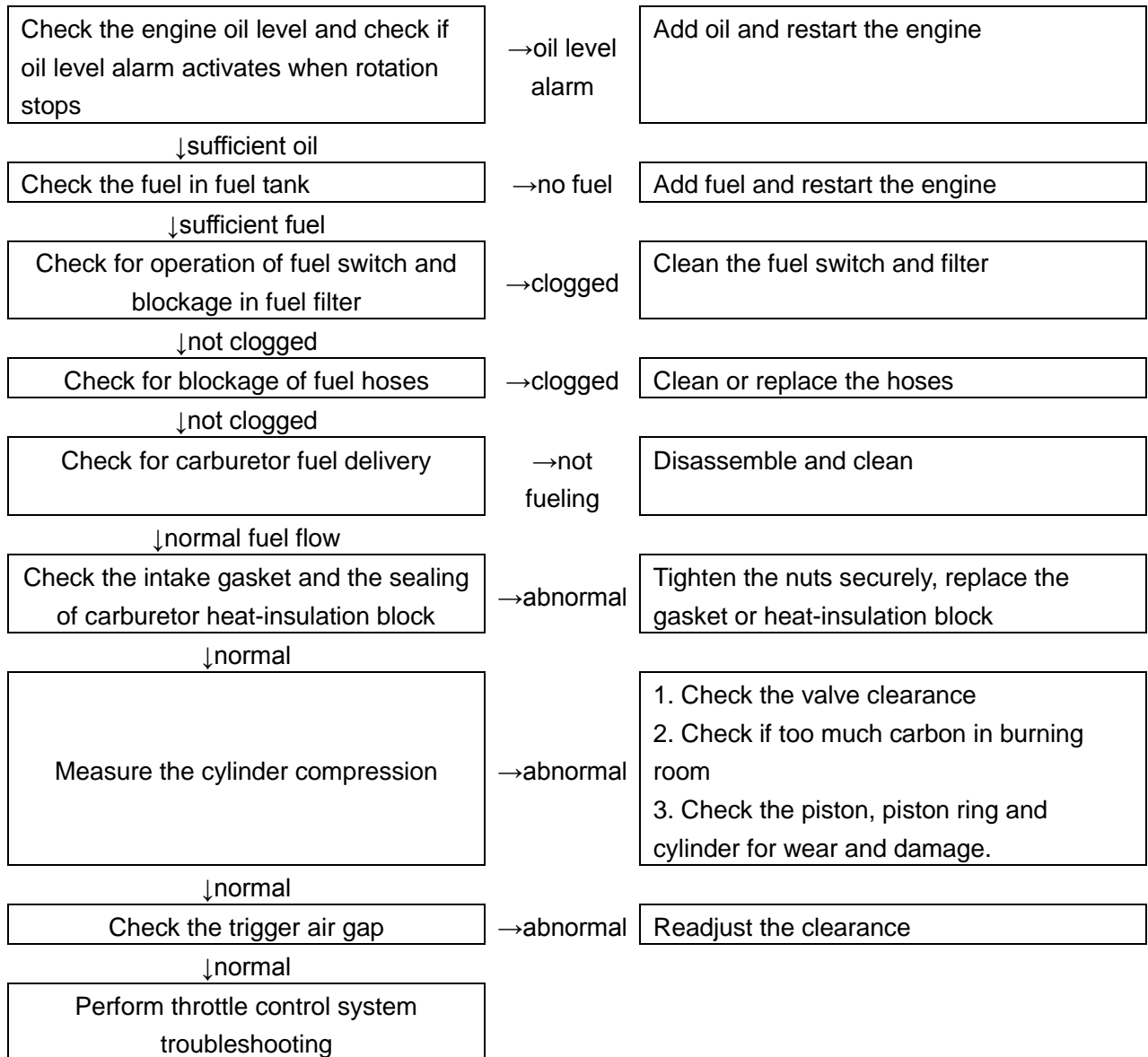
2.8.4 Engine oil level is low, but engine does not stop.



2.8.5 Engine speed does not increase or is unstable

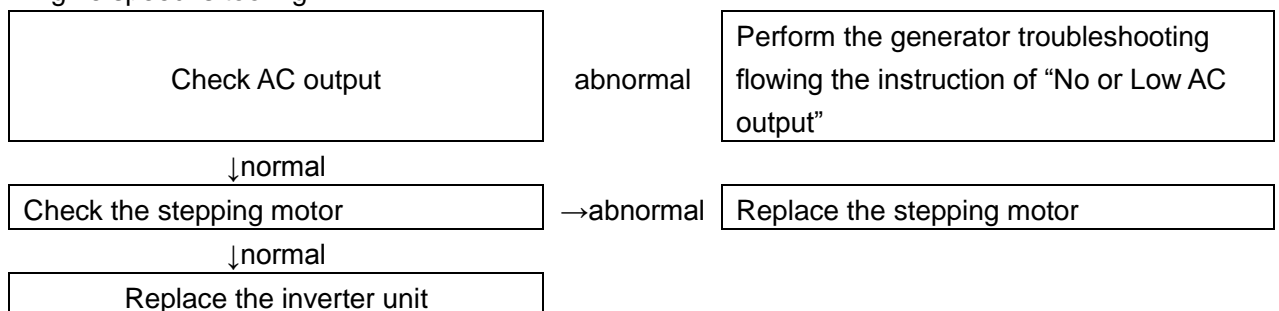


2.8.6 Engine stops after starting

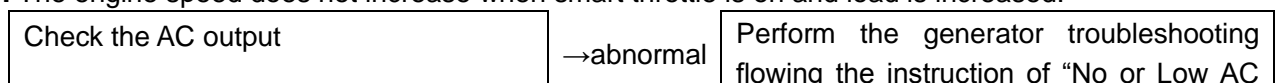


2.8.7 Throttle control system

a. Engine speed is too high



b. The engine speed does not increase when smart throttle is on and load is increased.



		output"
↓normal		
Check the stepping motor	→abnormal	Replace the stepping motor
↓normal		
Check the smart throttle switch	→abnormal	Replace the smart throttle switch
↓normal		
Check "Smart" switch wire	→abnormal	Repair or replace the wire harness
↓normal		
Replace the inverter unit		

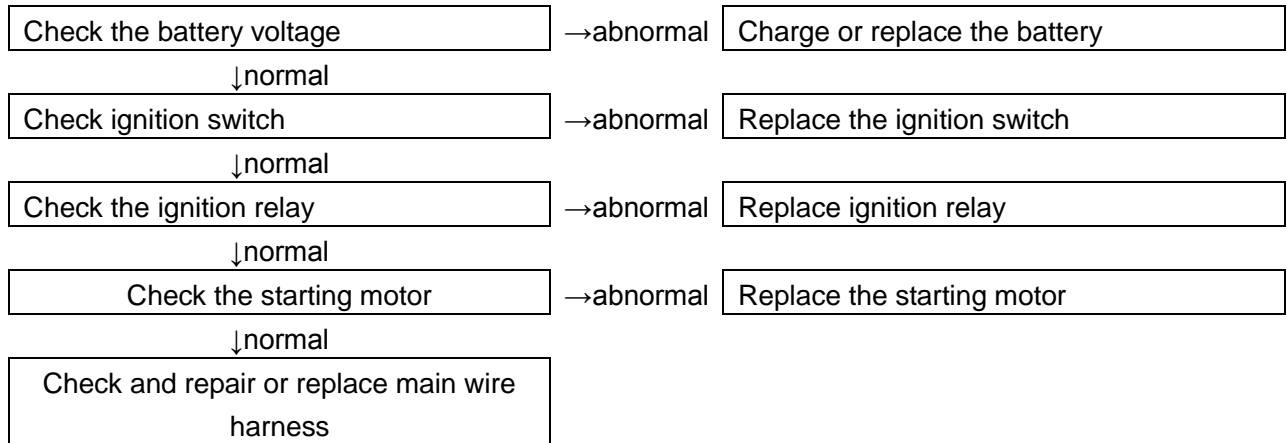
2.8.8 Low AC output

Is the overload indicator light ON?	→on	Disconnect the load, and restart the engine.
↓off		
Is the engine speed normal? Smart switch operation: On: 2500±100rpm Off: 3600±100rpm	→abnormal	Perform the throttle control system troubleshooting
↓normal		
Check the AC receptacle	→abnormal	Replace the receptacle
↓normal		
Check the AC output connector	→abnormal	Replace the connector
↓normal		
Disconnect the two 4P input connectors on the inverter unit. Disconnect spark plug cap or igniter connector, and measure the AC voltage of from the stator. The output voltage across pins 1-2, 2-3, and 1-3 should be 255 volts. Check both connectors.	→abnormal	1. Check the wiring of the stator leads in the harness. Repair or replace the harness. 2. Replace the alternator.
↓normal (255 volts)		
Replace inverter unit		

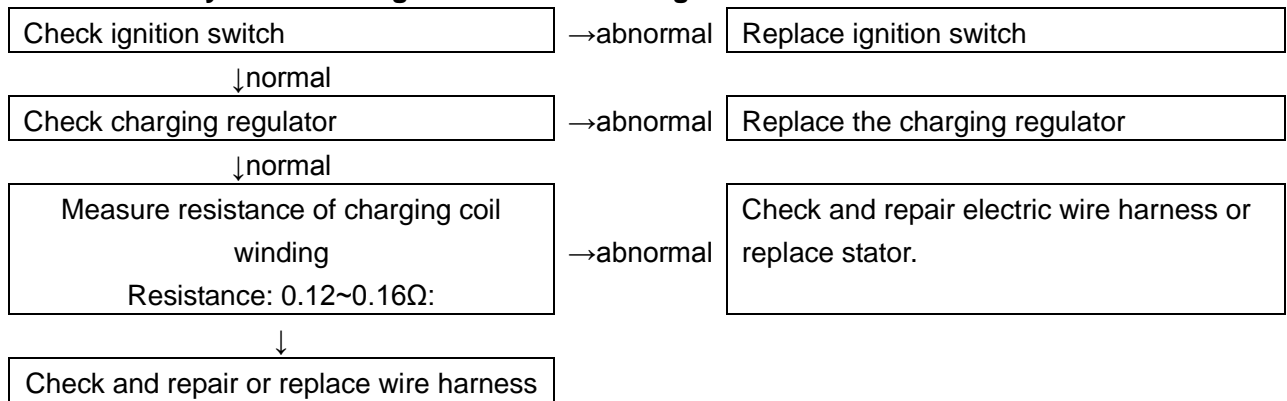
2.8.9 No AC output

Is the engine speed normal?	abnormal	Perform the throttle control system troubleshooting
↓normal		
Check AC receptacles	→abnormal	Repair wiring or replace receptacles2.7.9
↓normal		
Check the rectifier	→abnormal	Replace the rectifier
↓normal		
Measure the resistance between two blue wire on the rectifier Resistance:0.03~0.04Ω	→abnormal	Check and repair the wire harness or replace the stator
↓normal		
Rotor losses excitation, replace the rotor		

2.8.10 Electric Starter



2.8.11 The battery will not charge or maintain a charge



3. INSPECTION AND ADJUSTMENT

3.1 MAINTENANCE SCHEDULE

Regular service period(1) Item perform at every indicated month or operating hour interval, whichever comes first		Each use	Each month or every 10 hours	Every 3 months or every 50 hours	Every 6 months or every 100 hours	Every year or every 300 hours
Project						
Engine Oil	Check	●				
	Replace		●		●	
Air cleaner	Check	●				
	Replace			●*		
Spark plug	Clean-Adjust				●	
Spark Arrestor	Clean				●	
Valve clearance	Check-Adjust					●**
Fuel tank and filter	Clean					●**
Fuel line	Check	Every 2 years and replace if necessary				

Note:

* Service more often in dirty dusty conditions

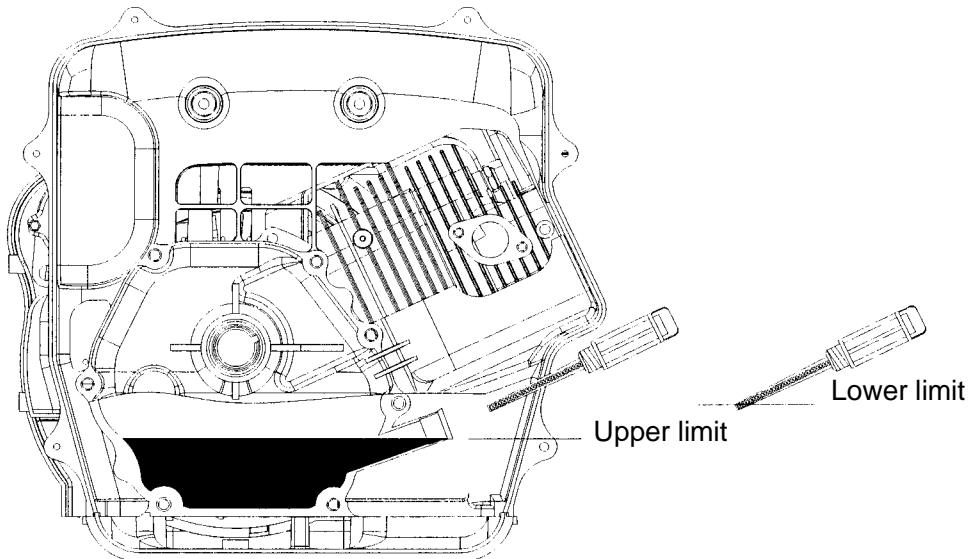
** Should be performed by trained service center personnel

3.2 Engine oil

● Checking the oil level

Stop the engine and check the oil level, be sure to put the engine on a flat floor when checking.

- (1) Remove the oil dipstick and check the level.



- (2) If the oil level is low, add to the edge of the oil filler port (upper limit).

● Engine oil change

- (1) Remove dipstick and oil drain bolt and drain out the used oil.
- (2) Tighten the oil drain bolt securely.

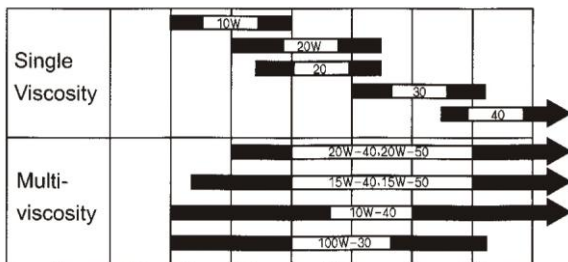
(3) Pour the specified amount of fresh engine oil through the oil filler port. (Engine oil capacity : 1.2 qt (1.1L))

※ **Recommended engine oil:**

Use a high-detergent, premium quality 4-stroke engine oil, certified to meet or exceed U.S. automobile manufacturer's requirements for API Service Classification SG, SF.

Select the appropriate viscosity for the average temperature in your area.

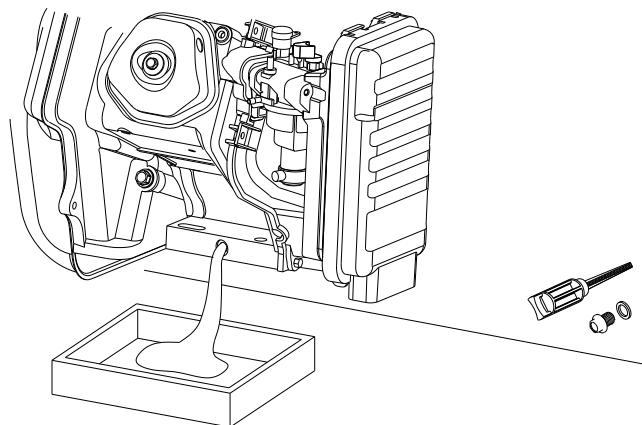
SAE Viscosity Grades



(4) After refilling, check the oil level again..

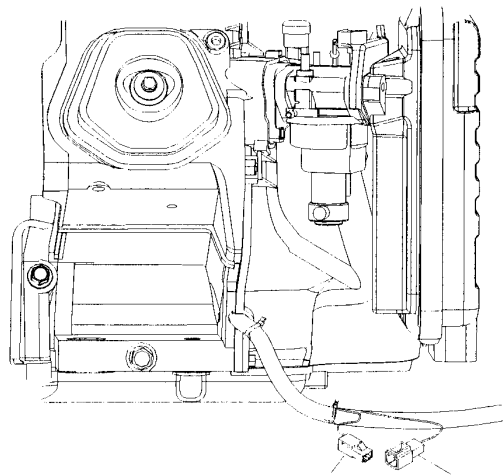
(5) Tighten the dipstick.

- drain the used oil while the engine is warm. Warm oil drains quickly and completely.
- please dispose of the used motor oil in a manner that is compatible with the environment. We suggest you take used oil in a sealed container to your local recycling center or service station for reclamation.



3.3 Low Oil alarm inspection

Disconnect the orange oil alarm wire when the engine stops and ground the terminal specified in the diagram and confirm that the alarm light is on and the engine stops or won't restart.



Outlet terminal of oil alarm

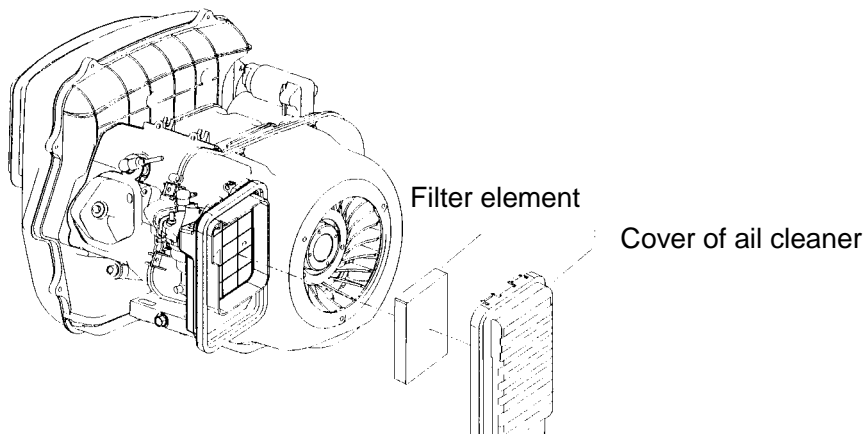
Outlet terminal of ignition module
Ground through engine cover

3.4 Air Cleaner

- (1) Open the door of cabinet.
- (2) Remove the air cleaner cover and remove the filter element.
- (3) Check the element for excessive dirt or damage. Replace as necessary

Caution:

- Excess oil will restrict air flow through the foam filter core and may smoke at the engine start.

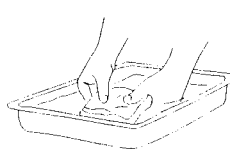


Clean

Twist to dry

Dip into oil

Squeeze out the excess oil



(4) Install the air cleaner element in the air cleaner case.

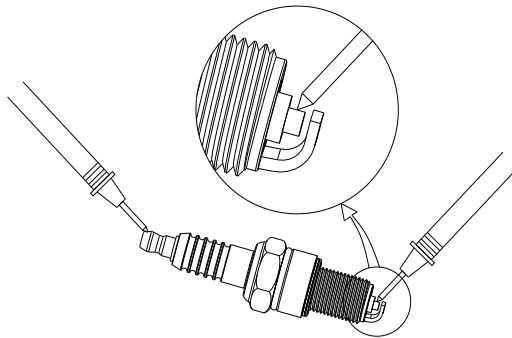
Caution

Do not operation the engine without an air filter element or with a damaged air filter. Rapid engine wear will result

3.5 Spark plug inspection and adjustment:

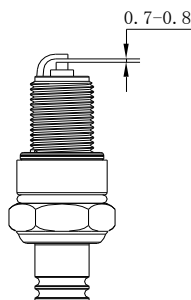
- (1) Remove the spark plug cap and remove the spark plug with plug sleeve
- (2) Remove carbon on the electrodes of spark plug with a wiew brush and check sealing washer for damage.
- (3) Check the resistance value of spark plug and replace if the resistance value is not within the stated value.

Resistance value of spark plug	3~9KΩ
--------------------------------	-------



(4) Measure the plug gap with a wire-type feeler gauge. If the gap is not compatible with the standard, adjust by bending the side electrode.

Spark plug gap	.028-.034 in. (0.7~0.8 mm)
Standard spark plug	F7RTC



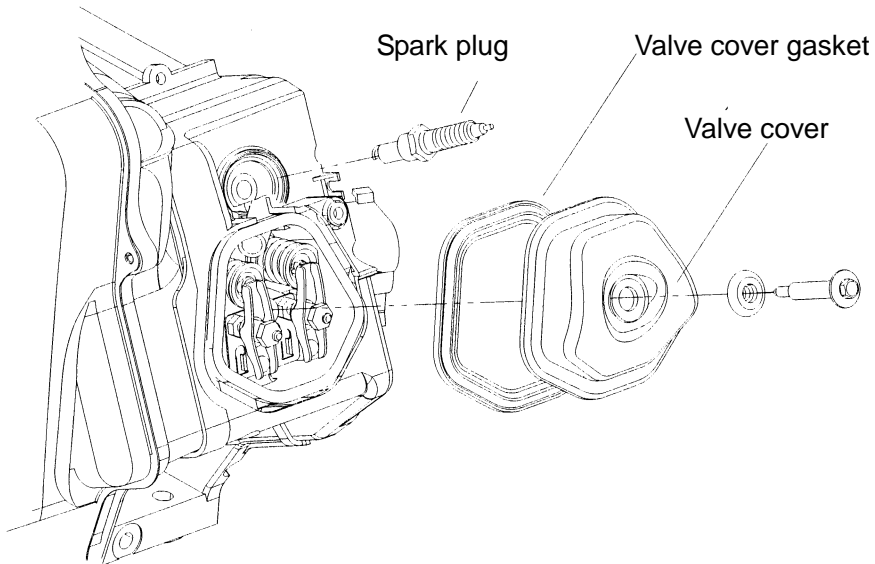
(5) Install the plug and tighten securely after adjustment.

3.6 Valve clearance adjustment

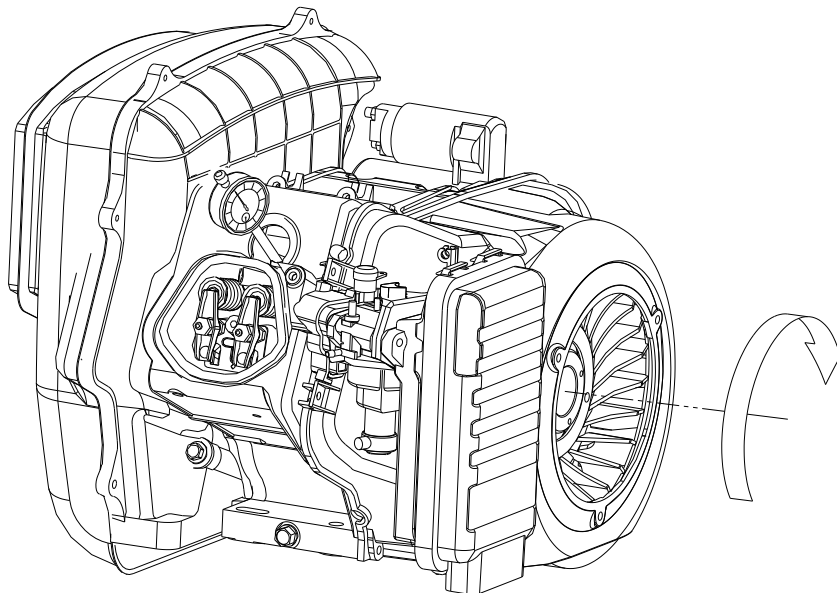
Caution

- Valve clearance inspection and adjustment must be performed on a cold engine.

- (1) Remove spark plug, valve cover bolt, valve cover and valve cover gasket.



- (2) Insert a feeler gauge in the spark plug installation hole; Rotate the engine so the piston is at top dead center and both intake and exhaust valves are closed.

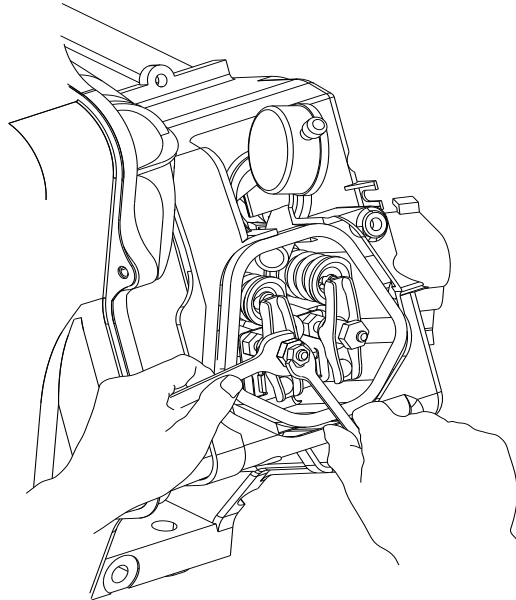


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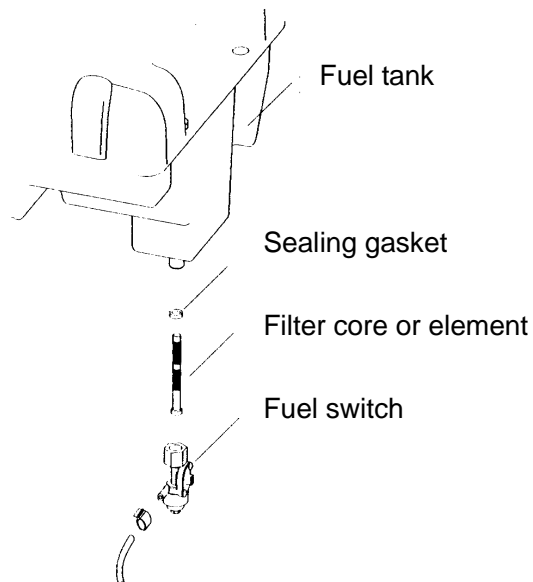
- (3) Insert a feeler gauge between the rocker arm and the valve and measure the valve clearance.

Valve clearance	intake: $.0039 \pm .0001$ in. (0.10 ± 0.02 mm) exhaust: $.0059 \pm .0001$ (0.15 ± 0.02 mm)
-----------------	---

- (4) If adjustment is necessary, proceed as follows:
- lock the rocker lever adjustment screw and loosen the nut.
 - move the rocker lever adjustment screw until the correct clearance is achieved.
 - tighten the nut on the rocker arm adjustment screw.
 - recheck the clearance.



3.7 Fuel switch and fuel filter cleaning

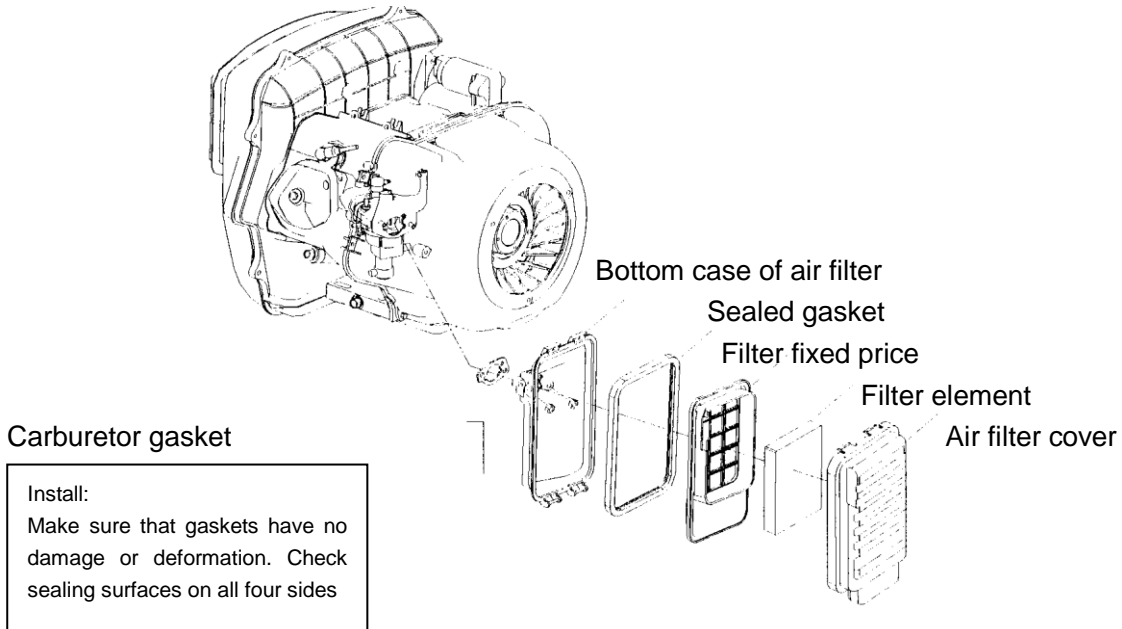


- Drain the fuel from the tank then remove the fuel tank.
- Loosen the connection nut between fuel switch and tank and remove the filter core.
- Open the fuel switch to start cleaning and dry it with compressed air.
- Remove any clogged foreign material from the fuel filter core and check the fuel filter for damage.
- Install the sealing gasket, filter core, and fasten the connection nut between fuel switch and oil tank.

4. AIR CLEANER AND MUFFLER

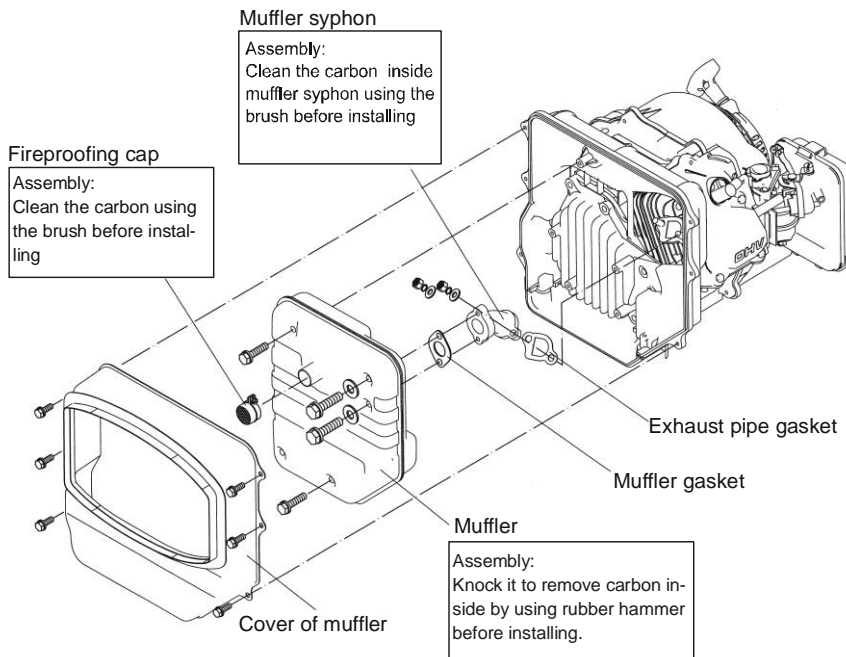
4.1 Air cleaner

- Disassemble and reassemble



4.2 Muffler

- Assembly

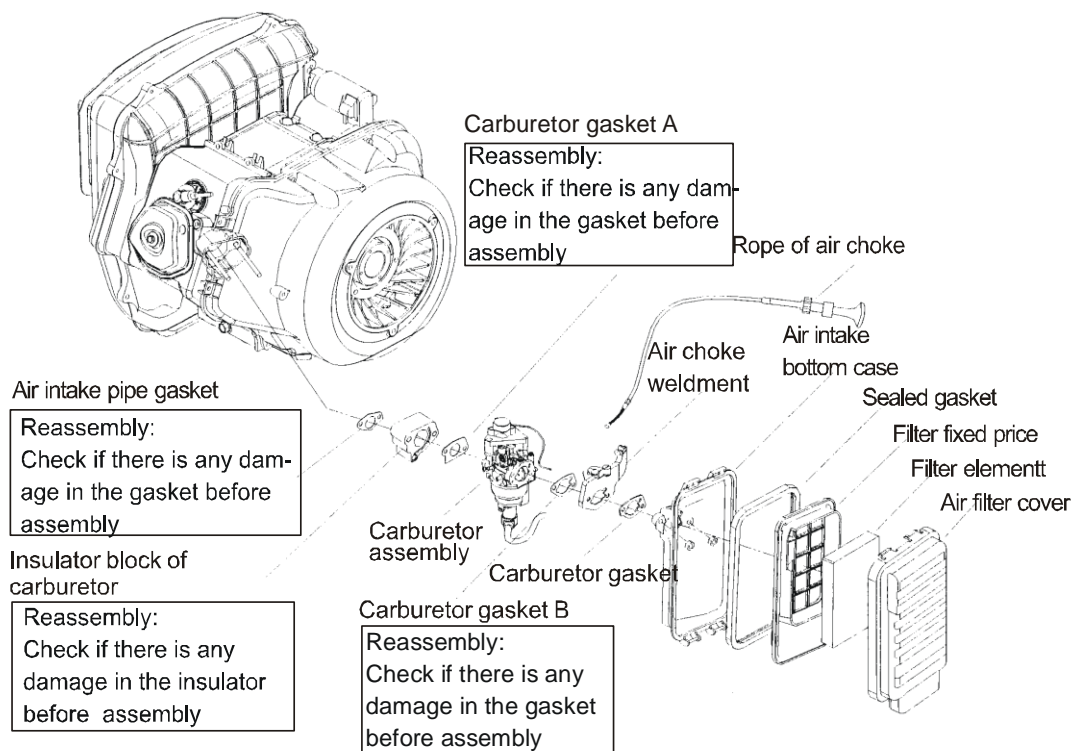


5. Carburetor

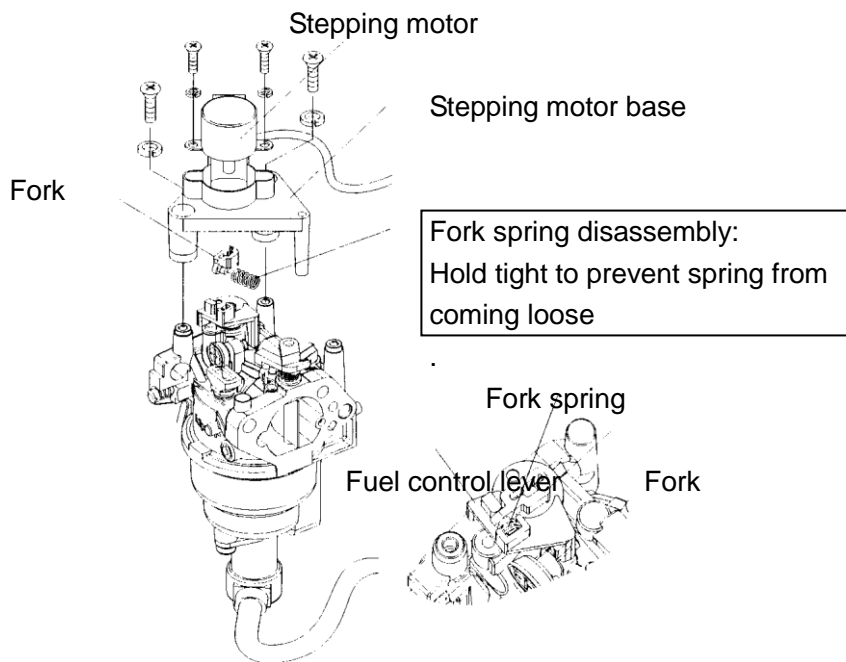
WARNING This carburetor is not to be rebuilt nor adjusted and no repair parts will be furnished. The only maintenance permitted other than cleaning is to replace the main jet for high altitude compensation.

5.1 Disassembly and reassembly

NOTE: loosen the drain bolt at the bottom of the bowl and drain fuel from the carburetor before removal.



• Disassembly and installation of stepping motor



5.2 Stepping motor/ fuel shutoff solenoid

1) Measure the resistance of outlet terminals of stepping motor

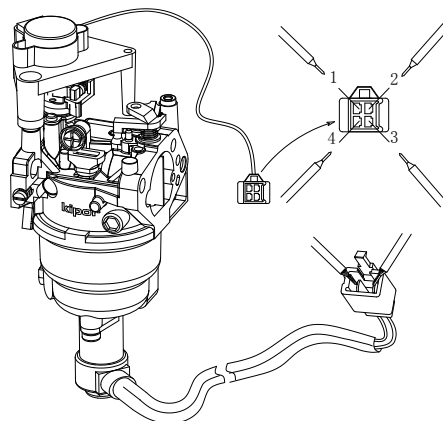
resistance value	1 and 3: 50~55Ω
	2 and 4: 50~55Ω

Replace the stepping motor if the resistance exceeds the standard.

2) Measure the resistance of fuel shutoff valve

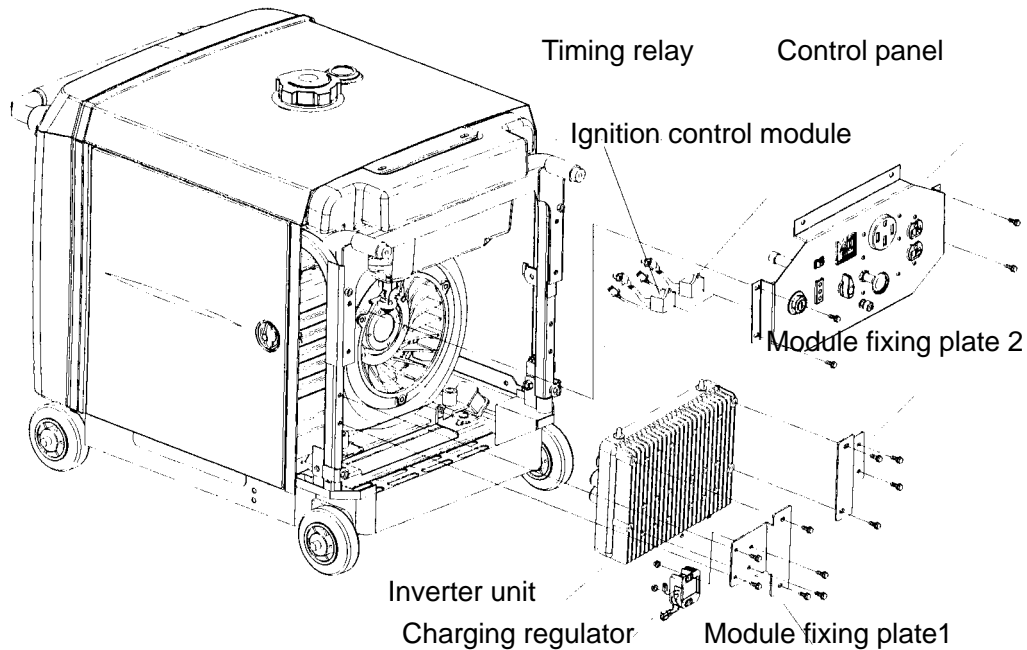
resistance value	6~8Ω
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Replace the throttle electromagnetic valve if the resistance exceeds the standard value



6. Control Panel and Inverter

6.1 Disassembly and reassembly



6.2 AC Receptacle

Check for evidence of burning or contact damage. Replace if either condition exists.

6.3 DC Receptacle

Connect both terminals of the receptacle with a jumper wire and check if the receptacle is conductive with two meter leads inserted into the panel; if not conductive, press the “Reset” button on the receptacle panel and measure it again. If there is still no continuity, replace the DC receptacle.

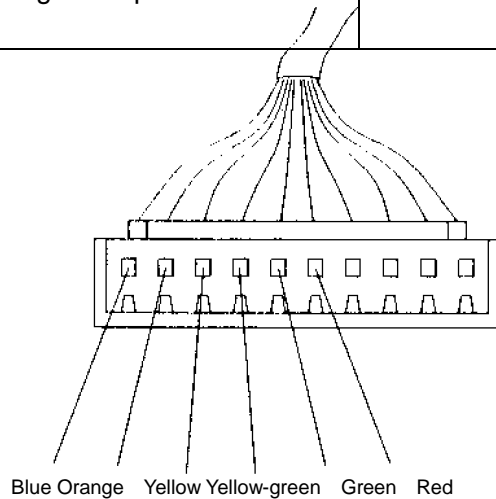
6.4 Smart Throttle Switch

The switch is conductive when “ON” and not conductive when “OFF”.

6.5 Ignition Module

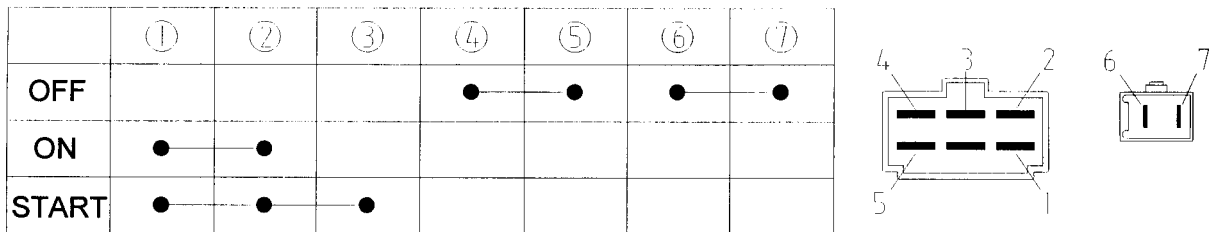
Remove the 10P connector from the module and connect one meter lead to the cover and the other lead to the 10P connector and measure resistance.

Color of wire	Circuit unit	Stipulated resistance
Blue	Primary coil of the ignition coil	0.8~1.3Ω
Orange	Oil level switch	No continuity under normal oil level
Yellow	Coil of trigger head	80~130Ω
Yellow/Green	ground	Continuity
Green	Power coil winding of module	0.37~0.41Ω
Red	Engine stop switch	Continuity when "OFF" and no continuity when "ON"



6.6 Ignition Switch

Check for continuity of each group of contacts with the switch in the off, on, and start positions.



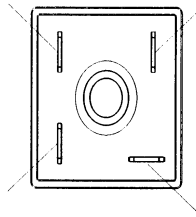
6.7 Bridge Rectifier

Measure the (positive voltage drop) of each leading feet of rectifier bridge with the diode checking (→|+ ∞)) function of the meter and the result should be compatible with the following standard.

Tester (+) \ Tester (-)	1	2	3	4
1		Infinity	Infinity	Infinity
2	Continuity		Infinity	Infinity
3	Continuity	Continuity		Continuity
4	Continuity	Infinity	Infinity	

(1) Negative terminal (-)

(2) AC terminal (~)



(3) AC terminal (~)

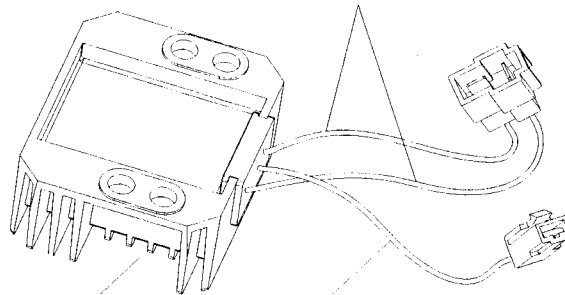
(4) Negative terminal (+)

6.8 Charging Regulator

Loosen the positive battery cable when starting the engine and connect a DC current meter between the positive cable and positive terminal. The indicated current cannot exceed 1.5A. If there is no current present, replace the regulator

DC charging voltage	13~14V
DC charging current	<1.5A

AC Input (blue)

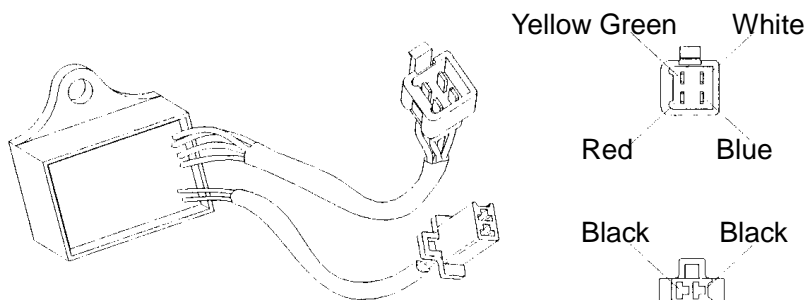


Shell grounding

Output positive pole (red)

6.9 Timing relay

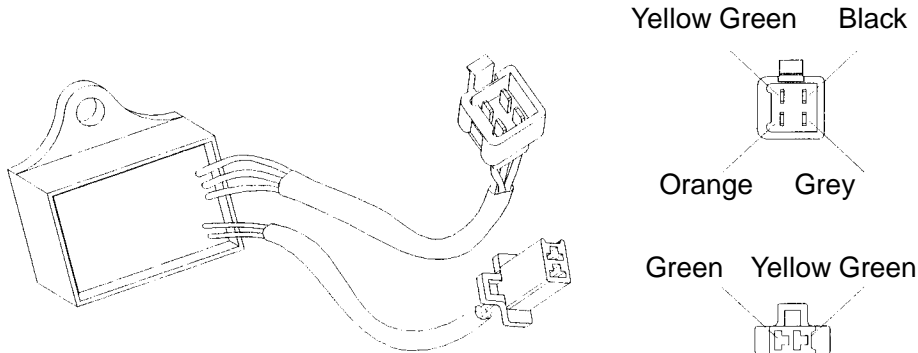
Put the ignition switch on the "OFF" position, connect a voltmeter to the white and yellow/green wires. Place the ignition switch in the "ON" position, hold on for 7 seconds and then place in the "OFF" position. A reading of 12V should be present for 7~12 seconds then the output should drop to 0 volts.



6.10 Ignition Control Relay

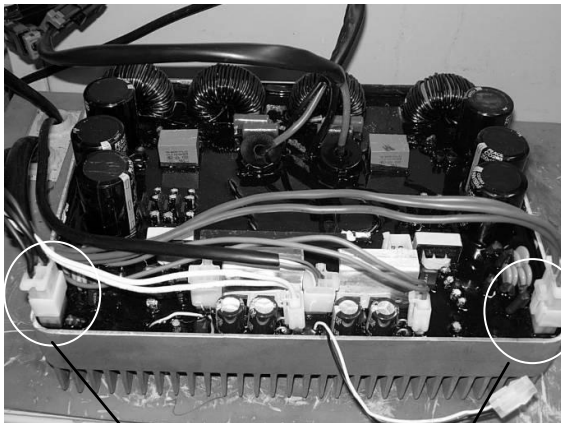
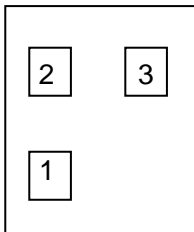
Start the engine, turn off the smart throttle and measure the voltage between green and yellow/green wires on the connection of the control module. Replace the ignition control module if the voltage exceeds stipulated voltage.

Ignition voltage (AC)	27~32V
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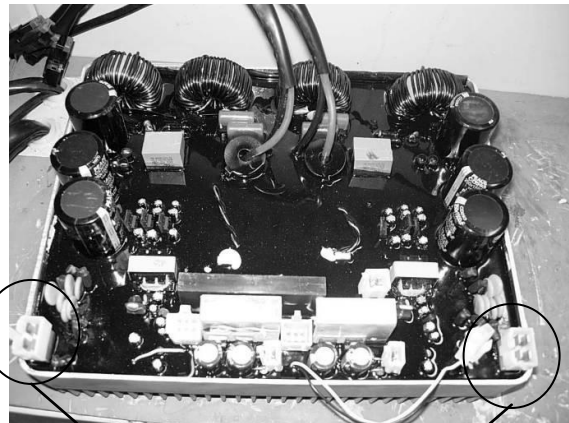


6.11 Inverter Module

Unplug the two stator input connections to the module. Start the engine and take a voltage reading at both 4P connections. Readings between pins 1-2, 2-3, 1-3 should be 255VAC ± 15V.



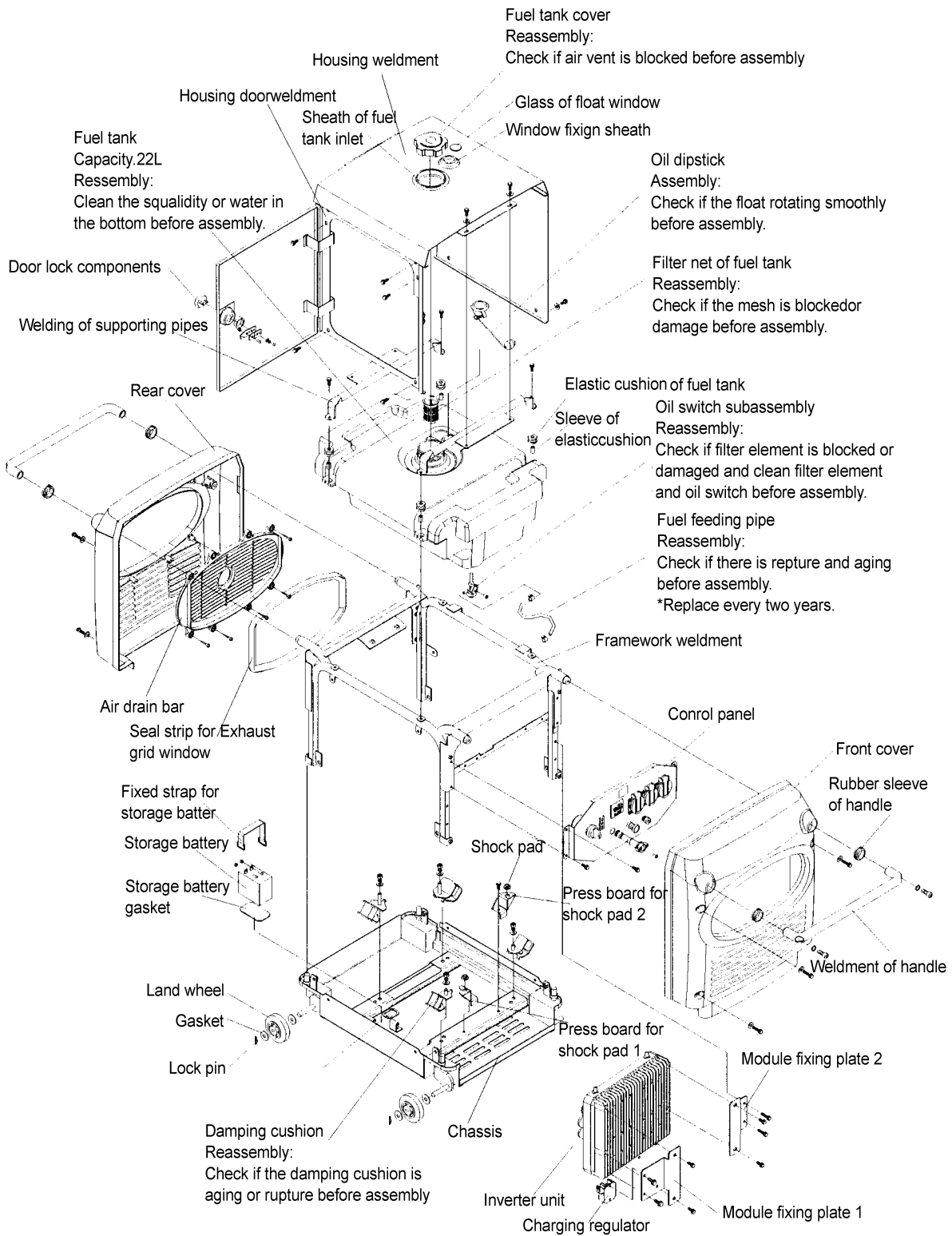
Alternator Input Terminals



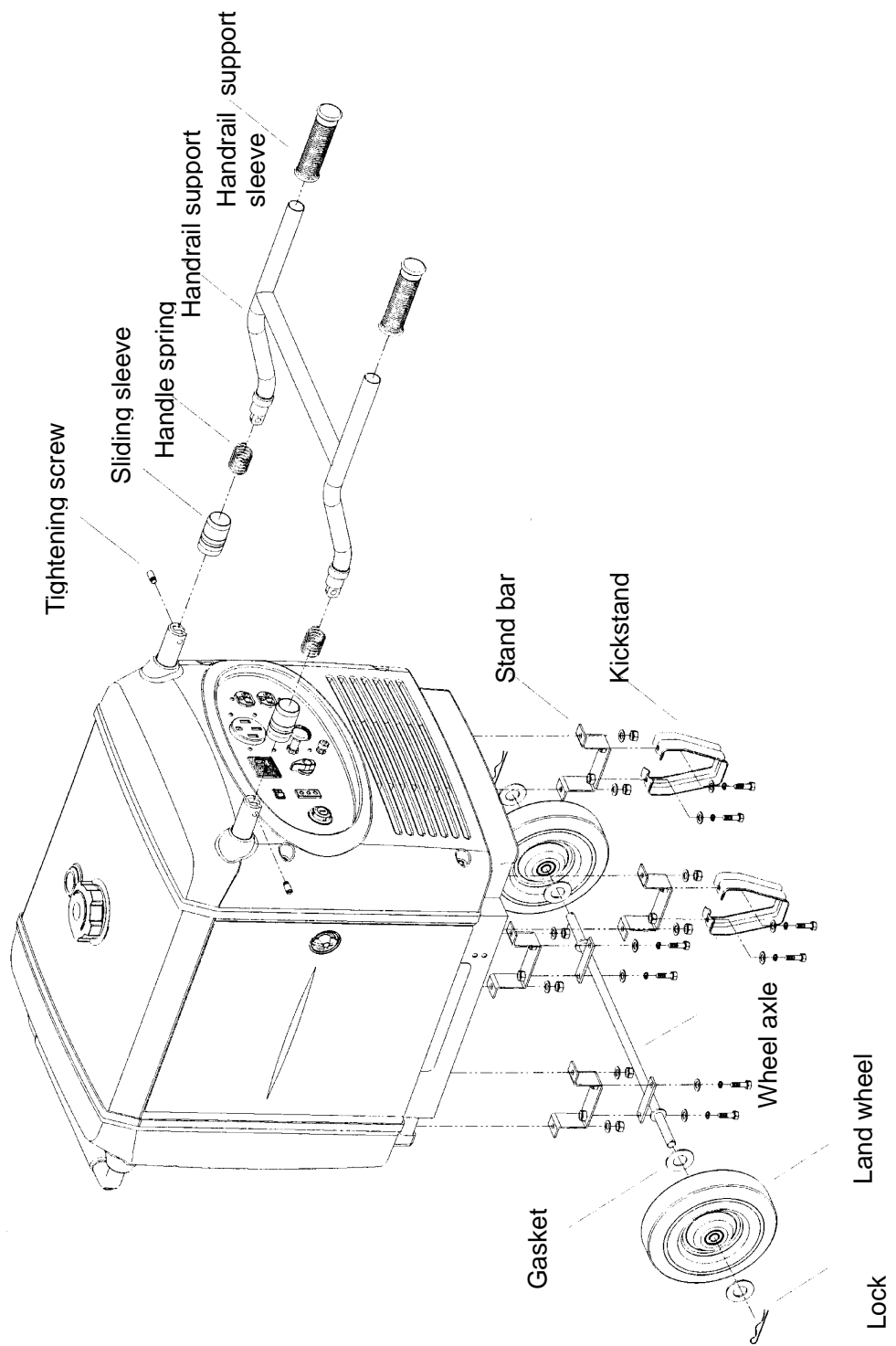
4P connectors

7. FRAME, HOUSING, AND FUEL TANK

7.1 Disassembly and reassembly

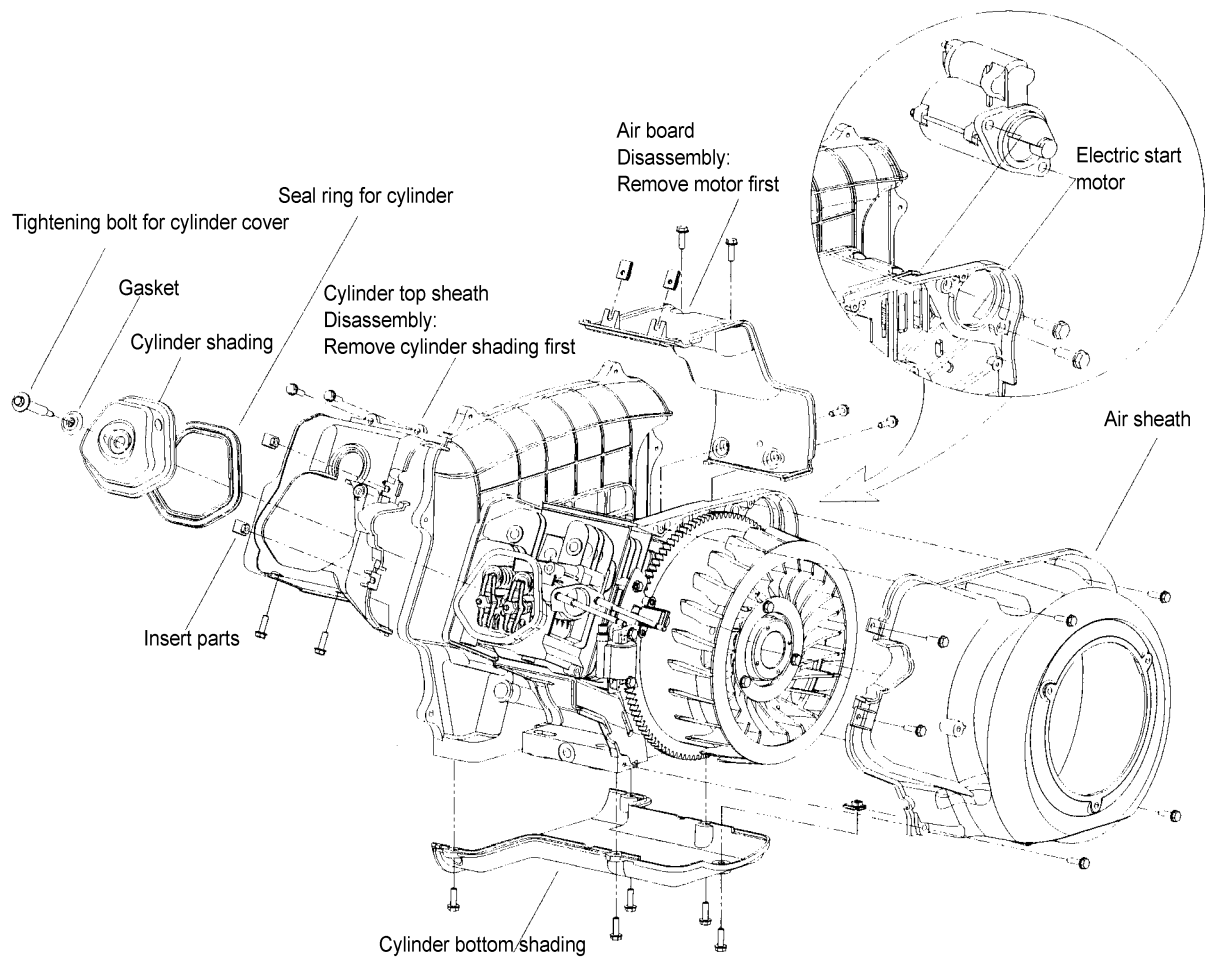


7.2 IG6000h handle assembly



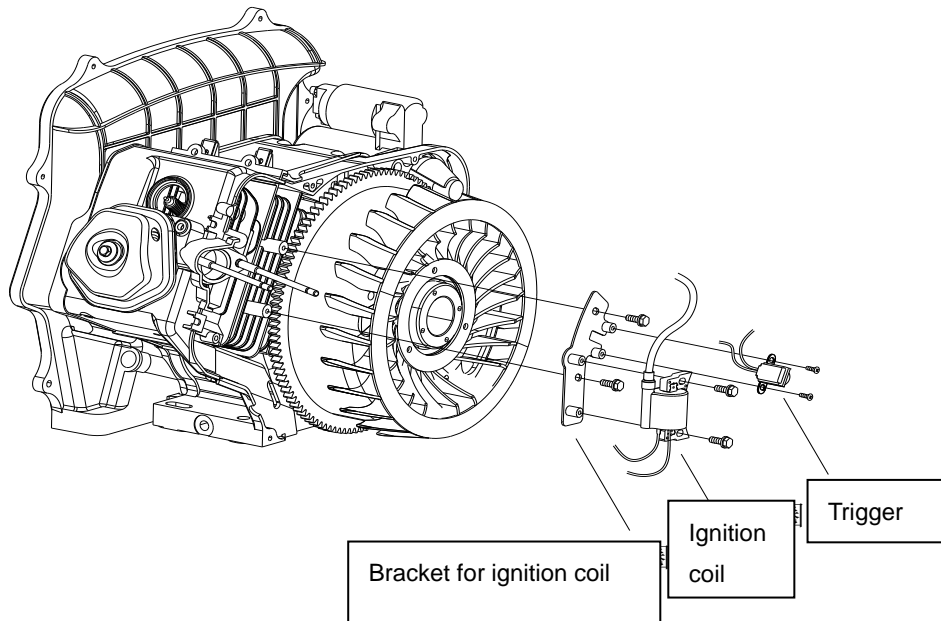
8. ALTERNATOR, IGNITION COIL, TRIGGER, STARTER MOTOR, FAN COVER

8.1 Component Identification



8.2 Ignition coil and trigger

8.2.1 Disassembly and reassembly

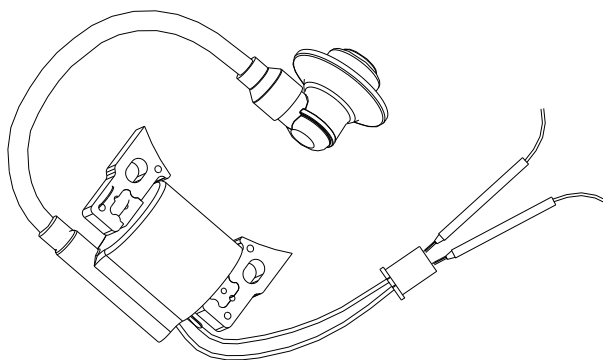


8.2.2 Inspection

a. Ignition coil

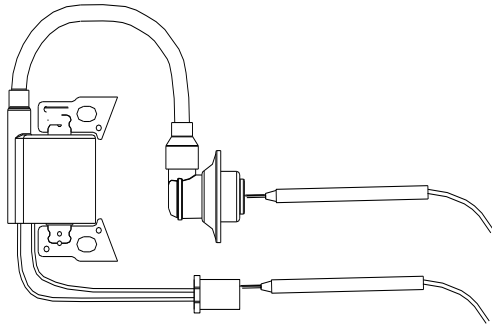
- using an ohmmeter, measure the primary resistance of the coil.

Primary resistance value	0.8~1.3Ω
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- measure the secondary resistance of the coil.

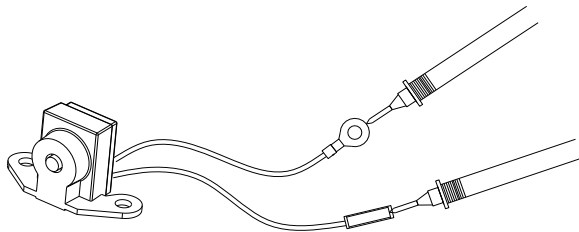
Secondary resistance value	15~21KΩ
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• **Trigger**

Measure the trigger resistance.

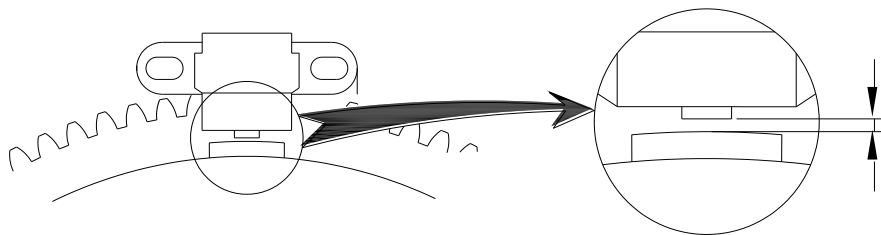
Trigger head resistance	80~130Ω
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• **Trigger Air Gap Adjustment**

Adjust the clearance between the trigger head and rotor.

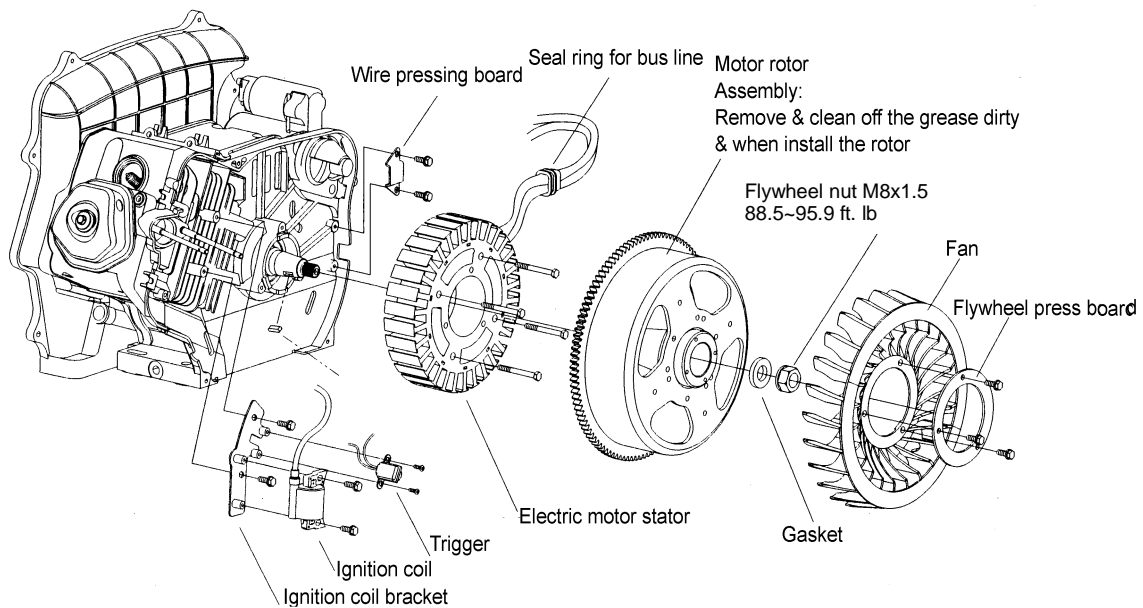
Trigger head clearance	.020-.029 in. (0.50~0.75 mm)
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Insert the feeler gauge between the bulge on the trigger head and the rotor to measure clearance. Loosen the two bolts on the bracket to obtain the proper. When tightening, apply equal torque to both mounting bolts to prevent “cocking” the trigger to one side. Recheck the clearance after the adjustment has been made.

8.3 Alternator

8.3.1 Disassembly and reassembly



8.3.2 Inspection

• Ignition coil

Resistance value	Orange-Yellow/green	0.22~0.24Ω
	Gray-Orange	0.15~0.17Ω

• External charging coil

Measure the resistance between the two blue wires

Resistance value	0.03~0.04Ω
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• Built-in charging coil

Measure the resistance between the two purple wires.

Resistance value	0.12~0.16Ω
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• Sub winding coil

Measure the resistance between two white wires (or green depending on the date of manufacture).

Resistance value	0.08~0.12Ω
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●**Main winding**

Measure the resistance between two wires in black.

Resistance value	0.45~0.60Ω
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NOTES: