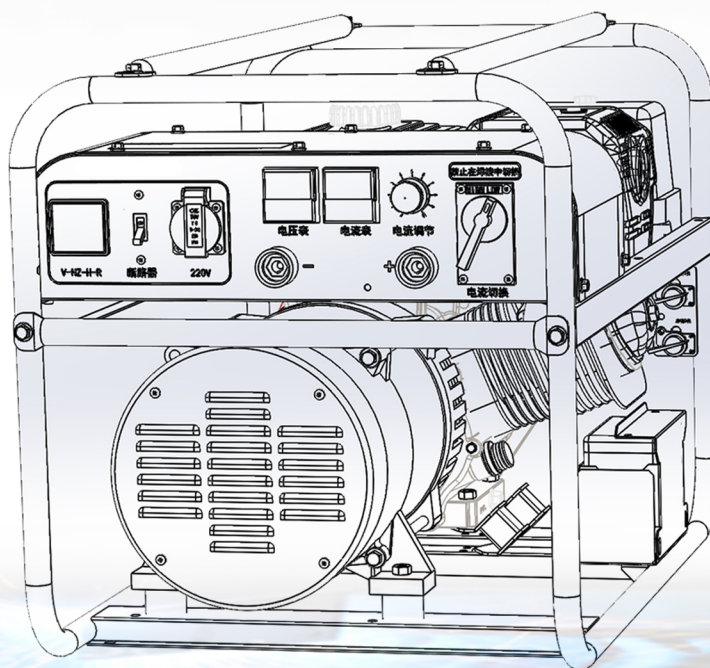


KOVOTM

**KH240AC/EW240G(AC)
ENGINE DRIVEN WELDER**

OPERATION MANUAL



FORWARD

Firstly, thank you very much for purchasing KOVO Engine Driven Welders.

This manual is the guidance that leads you to operate the engine driven welder in correct and safe way. Please go over and understand the correct ways of installation, inspection, operation and maintenance before touching the welder.

As for the detail of engine, please refer to the **Engine Manual** issued by the engine manufacturer.

Please keep the manual in available whenever you want instructions about the machine.

The **Operation Manual** is subject to change without notice due to the redesign for improvement of quality. If you have question, please contact our local distributor.

SIGNS FOR SAFETY

The following signs indicate a strong possibility of severe personal injury, loss of life and equipment damage if instructions are not followed.

WARNING



Causing loss of life or injury if misusing

CAUTION



Causing injury or equipment damage

IMPORTANCE



Shortening the welder life and performance

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Appendix

***Warranty Policy**

***Registration Form**

***Accessories List**

1. Safety precautions

1-1 General



Fuel precautions

- Please use the non-lead gasoline as fuel, and keep far away from fire when refueling.
- Your must stop the engine before refueling. Wipe off the spilled gasoline. Do not leave fuel and other inflammables near the exhaust pipe.

Emission precautions:

- Do not operate the welder inside a room, cave and other insufficient ventilated area because of poisonous emission to people and animals.

Operating precautions

- Do stop the engine for daily check, regular inspection, oil refilling and cleaning with reference to "Operation Manual"

Electric shock

- Please do not operate with wet hand(s) and in rainy and snowy day.
- Please connect the welding terminals after stopping. Do not touch the welding terminals during operating.
- Do not use cable with injured insulating cover.

Cleaning

- Use dry cloth or pressurized air for cleaning. Do not use water or detergent in case insulation trouble.

Also please beware of other safe precautions not covered by this manual.

1-2 Transportation



- Please tie the pipe frame of machine to the carrier of vehicle when transportation. Also put wheel-stopper.
- When loading or unloading, please hang the frame by rope and pulley horizontally. Do not lift the engine or generator portion.

1-3 Installation



- Place the machine in the level ground. The gradient does not exceed 5°
- Please remove obstacles blocking air inlet and outlet of machine away form wall.
- When you operate the machine on sandy soil, put a wooden board on the ground to avoid sand coming into the machine. The sand may cause insulation troubles.

- Please place the machine out of welding spatter
- Please refer to 1-1

1-4 Before operation

- Please wear proper protective clothes, leather gloves, hat and helmet.
- Please check before starting engine. Repair before restarting if any abnormal occur.
- Please refer to 1-1

1-5 During operation

- Please beware of injury by heat because the exhaust pipe with high-temperature when in the operation or just after stop.
- Please refer to 1-1

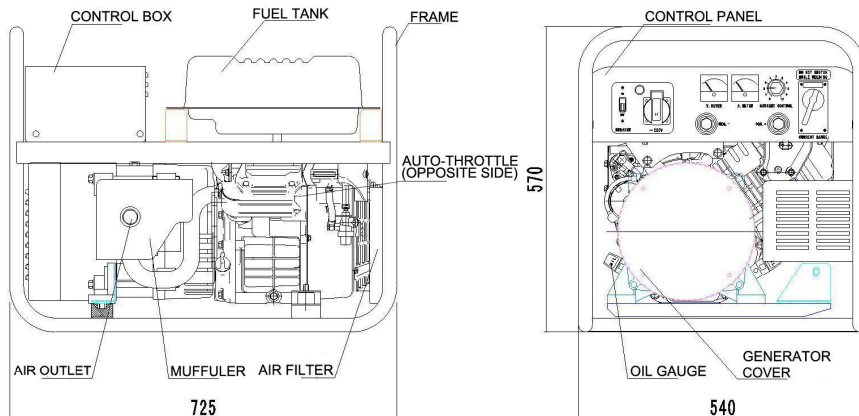
1-6 Storage of machine

- Keep in a dry, clean and low-salt room horizontally.
- Do not cover the machine with plastic cloth for long-term as to avoid getting rusty and inefficient insulation.
- When you put the machine in storage for long time, remove battery from machine, drain battery liquid. If any defective parts, repair them for the next operation.
- Please run engine at least once for 3 months and confirm the machine's condition.
- Refer to 1-1

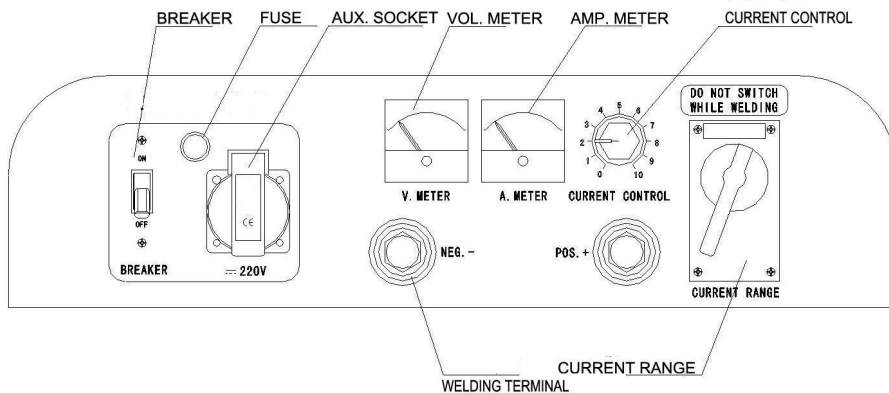
2 . Specifications

MODEL			KH240AC/ EW240G (AC)
Brushless			YES
W E L D E R	Rated Power	KW	6.3
	Rated Current	A	220
	Rated Voltage	V	28.8
	Open-circuit Voltage	V	75
	Duty Cycle	%	50
	Current Range	A	55~240
	Applicable Electrode	φmm	2.0~5.0
A U X.	Rated Power	KW	2.5
	Rated Voltage	ACV	220/120
	Rated Current	ACA	11/21
	Frequency	Hz	50(60)
	Coupling	—	Direct Coupling
E N G I N E	Name	—	HONDA GX390/ KOHLER CH440
	Type	—	4-stroke, single cylinder
	Displacement	L	0.389/0.429
	Output	H.P	13/14
	No-load Speed	rpm	3050(3650)
	Rated Speed	rpm	3000(3600)
	Start System	—	Recoil/Electric
	Fuel	—	Gasoline
	Cooling System	—	Air-cooled
	Lub. Oil Capacity	L	1.1
Fuel Tank Capacity		L	6.5/16
Dimensions		mm	820×534×584
Weight		Kg	95

3. Outline and Components



OUTLINE



CONTROL PANEL

4. Pre-check

4-1 Lubricating oil



- Check the amount and condition of lubricating oil before operation. Please insert the oil dipstick fully, and then pull out to check it. Make sure the oil stain is between Low and Full levels. Adding too much oil (higher than FULL level) may cause damages to the engine.
- Do not pull out the dipstick during operation. Hot oil will be spout, causing danger.
- Please adopt SE class of SF classification, and recommend SE10W30 for all season. Inferior oil shortens engine life.
- Do not mix two or more different types oil.

4-2 Fuel

- Make sure the amount of fuel is enough for your operation
- Please adopt non-lead gasoline (for automobiles)

4-3 Wiring and connector

- Please check and make sure all the wires and connectors are not injured or not loosened. If so, please deal with in time. After checking, start the engine to observe if the oil and fuel are leaked.

5. Features of machine

5-1 Characteristics

- Brushless alternator for easy maintenance
- Good welding performance for meeting kinds of welding requirement
- Auto-throttle devices for saving the fuel (*)

CAUTION



Welding power and auxiliary power cannot be operated simultaneously.

5-3 Protection system

- Once the welder or auxiliary power is gone out, stop the engine and restart till the problem is worked out.
- Please check fuse once no output
- Breaker can not be used for switch function.

6. Operation

6-1 Engine start

- Turn "OFF" the auxiliary power BREAKER
- Open the fuel cock
- Close the choke
- Turn "ON" the AUTO-THROTTLE(*)
- Pull the recoil start to start the engine, then open the choke (recoil start)
- Warm up the engine about 5 minutes in idle speed

IMPORTANCE



- When you start engine, do not restart in case cause the recoiling system problem.
- Please warm up the engine for approx. 5 minutes in idling speed. Immediate loading on cold engine makes shorter engine life.
- The alternator will be broken if welder or auxiliary power not used at rated speed.
- Please make sure there is no leakage of fuel or oil during engine operation.
- The speed control lever is painted by manufacturer. Do not adjust it by yourself. The engine will be in abnormal speed and damaged if you do not follow notes above.

6-2 Engine stop

- Disconnect the load, and run the engine in lower speed without load
- Turn the switch to "OFF" position to stop engine
- Close the fuel cock after stopping engine

6-3 Welding operation

6-3-1 Procedure

- Please choose adequate welding cable according to the welding work. Connect the welding cables before you start the engine.
- Start the engine (refer to 6-1)
- Select the current (LOW or HIGH) for your welding operation by switching current range. And adjust proper current with the welding output controller.

WELDING CURRENT RANGE TABLE

CURRENT CHANGER	LOW	HIGH
WELDING OUTPUT CONTROLLER(A)	60~105	100~240
WELDING ROD USED (mm)	2.0~ 3.2	2.5~5.0

IMPORTANCE


- In case of engine overload, reduce your load.
- The symptom: Exhaust gas becomes black color; revolving speed becomes slow apparently.

WARNING


- Do not touch the welding terminals, welding holders, and earth wire because of electric shock

CAUTION


- Do not switch over the current changer witch (HIGH-LOW) during welding operation. That may burn the switch.
- Do not leave the CURRENT RANGE at the middle point between HIGH and LOW positions, otherwise, it will be burnt.

6-3-2 Auto throttle

- Turn “OFF” the auto throttle, the engine run in rated speed condition.
- Turn “ON” the auto throttle, the engine is lower speed for fuel saving and noise reducing; when using auxiliary power or welding, the engine speed rises to the rated speed, and then in lower speed in seconds if no load.

6-3-3 Welding Cables

Please refer to the table below for proper welding cables

<div>A \ L</div>	20m	30m	40m	50m	60m	80m	100m
100A	22	22	22	22	22	30	38
150A	22	22	22	30	38	50	60
200A	22	22	30	38	50	60	80

(UNIT: mm²)

* Note: length means round cable length . voltage regulation drop with 5V

6-3-4 Welding polarity

Welding polarity	Straight	Reverse
Illustration		
	Thick metal plate, and steel alloy	Thin steel plate, and stainless steel

6-4 Auxiliary Power

6-4-1 Procedures

- Put the BREAKER "ON" position
- Connect the plug to the receptacle (the current can not exceed rated current)
- Turn "ON" the breaker to supply the power to the tool(s)

WARNING



- Do not connect or disconnect auxiliary plug(s) when the breaker is "ON"
- Do not connect the power to the commercial main supply. That cause serious electrical accidents, fire and etc.

IMPORTANCE



- Do not use auxiliary power in over-load condition.(within 2.5KW)
- If the breaker is tripped, stop the engine and check the load before you start over again.
- Breaker can not be used for Changer Switch.

7. Maintenance Schedule

To keep the best condition and safety operation of the machine, daily or periodical maintenance should be done correctly. Please follow this chapter for maintenance.

7-1 Daily maintenance

- Check wiring connections and screws if loosen or broken
- Removing the remains from the fuel tank
- Check the amount of oil and its color
- Drain water form fuel filter
- Check screws if loosen or broken

7-2 Maintenance for the first 8 operated hours

- Oil recommendation (refer to 4-1)
- The total amount of oil is 1.0L
- Please use SE 10W-30 type oil

7-3 Maintenance for each 25 hours

Clean the air filter

- The air filter should be taken out for cleaning, and changed if it is so dirty.
- Screw the knob tightly. Otherwise, once the dirty thing inhaled, the piston is worn, resulting in impotent output.

7-4 Maintenance for each 50 hours

- Replace lubricating oil into new

Table for temperature and oil viscosity

Ambient temperature (°C)									
-30	-20	-10	0	10	20	30	40		
Viscosity					SAE 10W-30				
						SAE 15W-40			

7-5 Maintenance for each 100 hours

- Replace lubricating oil filter into new one
- Inspect fuel pipe and wiring.
- Replace engine spark plug with resistor
- If the engine spark plug has no resistor, electrical noise may appear in electrical tools such as radio.
- Make sure the connectors and other parts are tightly connected. If some of those connections are loose, electrical heat may be generated. That may cause fire.

7-6 Maintenance for each 200 hours

Measure the insulation resistance of generator

- Disconnect all the load and welding load.
- Disconnect all wire to the generator
- Measure the insulation resistance between machine frame and each generator coils by 500V MΩ-tester: 1MΩ
- When measurement, stop the engine.
- In case the machine is out of operation for long period, or in case the machine has been wet, measure the resistance. If the values is less than 1MΩ, dry the machine until it regains the normal value(1MΩ)

7-7 Maintenance for each 500 hours

Clean the fuel tank

- Drain the fuel by removing the plug of fuel tank, and clean the remains from tank.
- Screw the plug tightly after cleaning.
- Do not clean during engine operation.

7-8 Maintenance for each 600 hours

- Inspect bearing
- Dismantle the end-bracket of generator to check if there is any unusual noise or vibration.
- If any of above, please replace the bearing. The bearing is sealed so that you do not need grease for it.

8. Trouble Shooting

Symptom	Causes	Treatment
Starting motor does not start Starting motor is slow Engine does not start	No fuel Inferior fuel Fuel filter choked Fuel Cock closed Lub. oil lack Air cleaner choked Bad spark plug Bad wire connection Bad ignition coil Insufficient batter	Fueling Replace Clean Open Fill Replace Replace Repair or replace Repair or replace Recharge
No welding power No aux. power	Bad WCR1010 Alternator broken Bad connection Broken fuse	Repair Repair Repair Replace
High voltage Low voltage	Bad WCR1010 Bad rectifier Bad current trans (CTCA) Over-loaded Bad engine speed Bad generator, field or exciter	Repair Replace Replace Reduce load Inspect Repair
Cannot weld Frequent arc cut Low welding current No welding controller function	Bad current adjustment Not proper cable Bad current controller Bad WCR1010 Bad engine speed Bad welding rod Sensor broken	Adjust Change cable Replace Repair Inspect Change rod Replace
Engine overloaded(black smoke, low speed)	Inferior fuel Bad diode Generator winding short	Replace Replace Repair
Unusual vibration Unusual noise Frequent engine stop	Bad shock absorber Loosen bolts Less oil Bad generator bearing	Fix Repair Add oil Replace

9. Preparation for Storage

9-1 Daily storage

Place machine horizontally in a less humidity and no dust area, and far away from sea water.

9-2 Storage for long period

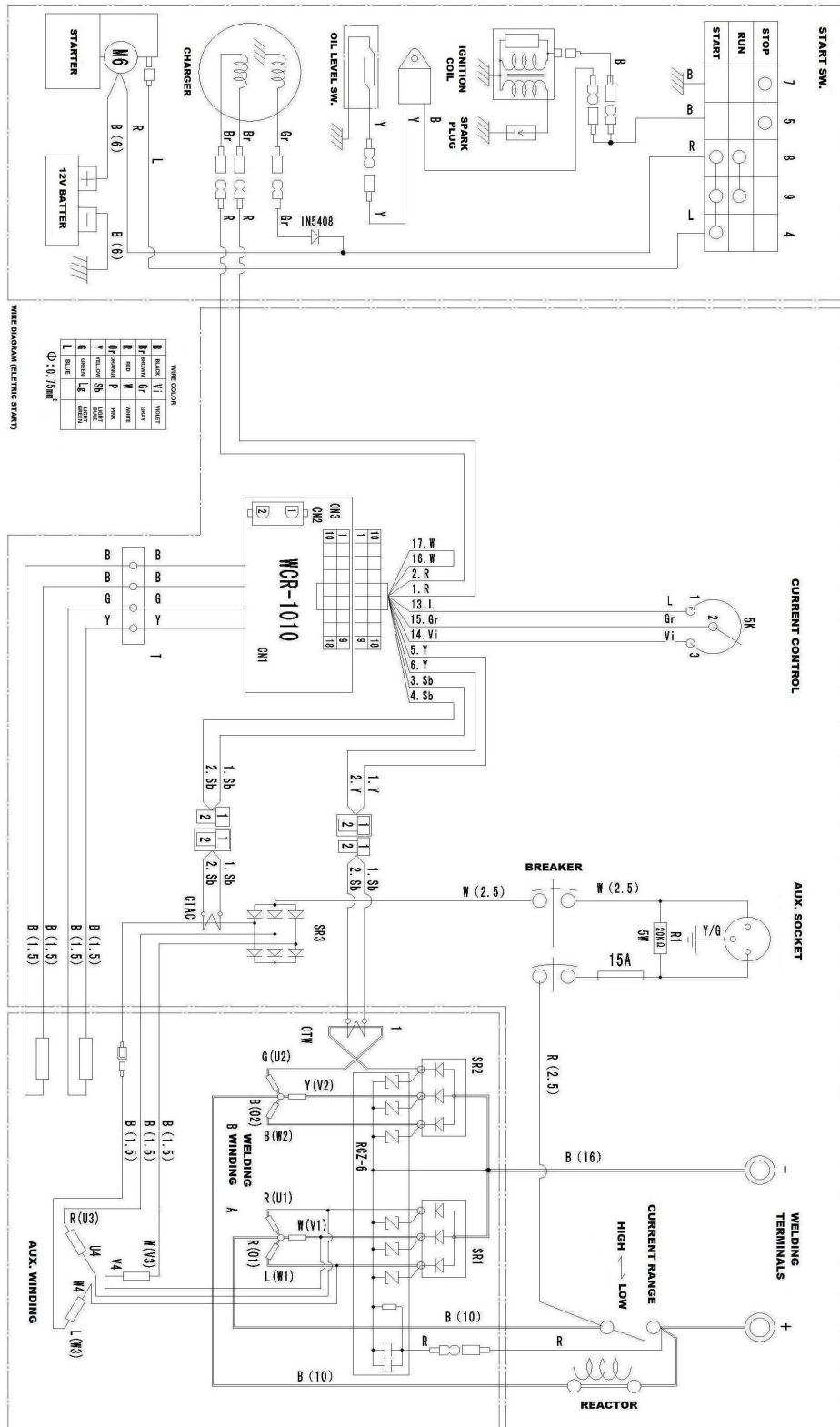
- Keep the machine in dry and less-dust room. Do not cover it by plastic cloth for long time in case it got rusty. If possible, keep it in the ceiling room in wild area.
- Clean inside the engine with new oil before storage for long time. Replace the oil and operate the engine for a while, then drain it before storage.
- Put a little oil on moving parts of engine.
- Drain all fuel from the tank.
- To avoid dust or humid air coming into engine, put cover on exhaust outlet or air inlet part when storage.
- All necessary repairs should be done for the next operation.
- Conduct maintenance operation at least once for 3 month.

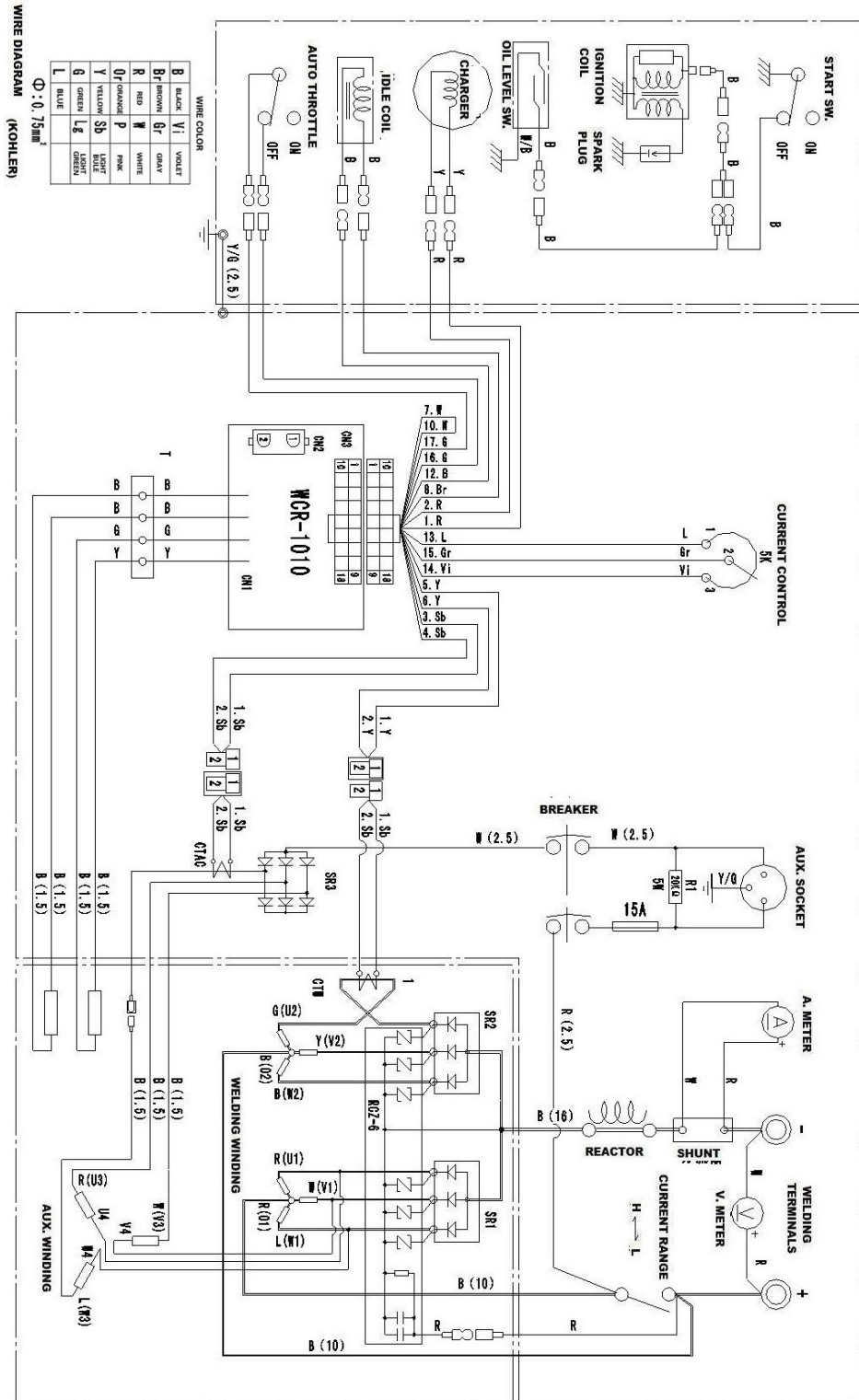
CAUTION



- Keep it in the hard and level ground.
- Do not pile other thing on the machine.

10. Wire Diagram





Warranty Policy

1. During the warranty period

- ① One (1) year after the date of sale to the original purchaser
- ② Services stations: Manufacturer, or authorized services shop.
- ③ The welder will be warranted against the default in design of manufacturer
- ④ The welder will be warranted against the defect in material and workmanship
- ⑤ The limited warranty shall not apply to consumable parts, the damages caused by misuse, negligence, accident and failure to follow the operation manual.
- ⑥ The limited warranty is inapplicable for fading, corrosion and rust due to the normal use or improper storage.
- ⑦ The charges will be on customer's account if the services happen outside of the services station. Amount=railway ticket (hard bed) for round trip + 400RMB*person/day
- ⑧ We shall arrange the training program in Beijing regularly as to instruct the customers to grasp operation, install and maintenance in right way.
- ⑨ We build the customers' document for one-to-one services.

2. Out of warranty period

Only parts and repair cost need paying if the repair happens in the services stations.

The customers should charge the fee for accommodation besides the basic cost and parts once services on site.

Amount=railway ticket (hard bed) for round trip + parts' price +400RMB*person/day

The customer should transport the machine to the factory or the nearest services station if the staff cannot repair on site.

3. Others

This warranty policy only applies to China Mainland. The separate warranty policy will be stipulated for the oversea customers.

Please contact services stations or our company directly if any questions.

The warranty will be effective after the customer return the "warranty policy"

Registration Form

Company name: _____

Address: _____

Tel: _____ Contact Person: _____

E-mail: _____

Model Purchased: _____ Serial No.: _____

Purchased Date: _____

Applications: (pipeline welding) (road construction) (emergency work) (welding job
outdoors) (others)

Registered date: _____

Please read the warranty carefully

Please return the registration form after 20days since you purchased.

Accessories List

MODEL: KH240AC/EW240G (AC)

Item No.	Description	Quantity	Remarks	Checked
1	Operation Manual	1	In box	
2	Welding Plug	2	In box	
3	Plug, Auxiliary power	1	In box	
4	Hex Wrench (4mm)	1	In box	
5	Certificate of inspection	1	Hang on	
6	Fuse	2	In box	
A	Oil	Filled		
B	Fuel	Not filled		



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