

TIGmig
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MIG WELDING MACHINE

KL-MIG 150E

230V~50Hz

Safety Instructions of Electric Welding Machine

Firstly Safety Precautions

- Read carefully the instructions in this manual before operation.
- Pay special attention to safety instructions ensuring safe operation of the machine and avoiding injuries to the user.
- The welding machine is designed and produced according to the protection standard. If the user does not operate as the safety instructions may cause injury.

MAIN FEATURES

- Two steps adjusting the current.
- Stepless manual wire feed adjustment.
- Ac single-phase input and output, portable, fan-cooling, thermostatic Protection, color carton.
- suitable for flux-cored wire(gasless), adapting to multiple welding requirements.
- European design, stable welding arc, less spatter, good weld joints, advanced technology and perfect performance.
- with complete accessories: min torch with cable, earth clamp with cable, protective mask, hammer, and power supply cable.

Secondly Safety Instructions Followed by You!

A. **Danger:** obey the following instructions for avoiding serious injuries to personnel

1. The welding machine is designed and produced for ensuring safety. Not following the safety instructions can cause accidents resulting in death or serious injury to personnel.
2. You must obey the related regulations and your internal standards for selection of input side power sources, construction and equipment sites, application, storage and distribution of high pressure gases, tool keeping and castoff treatment after welding, etc.
3. Keep redundant personnel away from welding workshops.
4. Keep the personnel using pacemaker away from the running machines and welding workshops without doctor's permissions, for the magnetic field produced by

switching on the machine has bad influences to the pacemaker function.

5. Make sure that the qualified experts or specialized personnel carry out installation, inspection and maintenance.
6. Be sure to understand all the instructions in the manual correctly before working and make the personnel who are competent and have sufficient knowledge of safe operation do any operating work.
7. The welding machine must not be used for any other purpose except welding.

B. Danger: obey the following instructions for avoiding electric shocks

* Contacting with live parts will cause fatal electric shocks or burns.

1. Protect against contact with live parts.
2. Make sure that electricians ground the welding machine and part materials.
3. Switch off and lock power supply of the switch cabinet before installation and maintenance. Begin your work after 5 minutes.
4. Do not use the wires with deficit power and harming insulating sleeves to expose its leads.
5. Make sure that wiring positions are insulated.
6. Do not use the uncovered machine.
7. Use the dry insulating gloves.
8. Use the securing net during the work at heights.
9. Make periodic checks and maintenances; reuse the machine after its damaged parts are repaired.
10. Switch off all the input powers before coming into disuse.
11. Use electrical protective equipment, when operating on the AC arc welding machine in narrow spaces or at heights.

C. Attention: to avoid dangers of welding arc, splash, welding slag and noises, etc. to yourself and others, please use the specified protecting appliances.

- Arc can cause eye irritations or skin burns.
 - Splash and welding slag can lead to eye or skin burns.
 - Noise can harm your audition.
1. Use the protecting appliances with strong shading function, when welding or monitoring the welding process.
 2. Wear the protecting glasses.
 3. Use the welding leather protective gloves, clothes, foot aids and aprons, etc.
 4. Set up the protecting shields around the welding workshops to prevent welding arc from harming others.
 5. Use silencing devices for insulating great noises.

D. Attention: to avoid dangers of welding soot and gases to yourself and others, please use the specified protecting appliances.

- Welding soot and gases are harmful to your health.

- During working in narrow spaces, asphyxiation can be caused by lacking oxygen.
1. To avoid accidents resulting in gas poisoning and asphyxiation, etc, please use the specified exhaust facilities, aided by breath-protecting appliances.
 2. During working in narrow spaces, make sure that operators are monitored by supervisors, air is thoroughly changed in time and breath-protecting appliances are offered on hand.
 3. Do not make any welding work in degreasing, washing and spraying workshops.
 4. Some harmful soot and gases can be produced by welding the steel plates with plating or painting layers, so it is necessary to use the breath-protecting appliances.

E. Attentions: to avoid the accidents resulting in fire, explosion or breakage, etc, obey the following regulations:

- Splash and hot materials that are just welded can cause fires.
 - Electrical heating will be caused, when the current circuit on these material like poor connections of cables and reinforcing steel bars etc. produces incomplete contacts.
 - Do not make any welding work on the vessels containing combustibles, otherwise explosions can be caused.
 - Do not weld any sealing vessel such as trough (tank) and tube, otherwise it can break.
1. Do not place any combustible in welding workshops.
 2. Do not make any welding work near to combustible gases.
 3. Do not make the hot materials that are just welded close to combustibles.
 4. Remove all the combustibles on the back, when welding on the well opening, ground and wall.
 5. Make sure that cable connections are insulated.
 6. The connections of cables on the material sides must be close to welding positions as much as possible.
 7. Do not weld any windpipe or sealing through containing gas.
 8. Place fire extinguishers near to welding workshops for ensuring safety.

F. Attentions: to avoid fires by deterioration of welding power insulations, obey the following regulations:

- If splash by welding and iron powders by grinding enter the power supply, deterioration of product insulations and even fires can be caused.
1. To prevent splash or iron powders from entering the power supply, keep the welding power away from any welding or grinding work.
 2. To avoid the insulation deterioration by accumulating dusts, periodic inspections or maintenances must be done.
 3. When splash or iron powders enter the power supply, switch off the switches of the welding machine and switch cabinet, and blow off them by using air.

G. Attentions: contacts with rotating parts can cause injuries, so you must obey the following regulations:

1. Do not use the uncovered machines.
2. The welding machine should be installed, operated, checked and maintained by the qualified and professional personnel.

Attention!

Under poor external condition, short stop may appear when starting the machine. The stops may influence other apparatuses (eg. Blinking of a lamp). If the MAINS-IMPEDANCE $Z_{max} < 0.250 \Omega$, such disturbances will not happen.

Thirdly Operating guides:

Load cycle rate

Load cycle rate is the proportion of actual working time in the whole working time (10 minutes is a cycle). For instance, load cycle rate 60% means that welding lasts six minutes and empty load lasts four minutes during the whole cycle. The rated cycle rate exists conversion corrections with the rated current. When using the machine under the rated current, the machine can be used under a high load cycle rate.

The formulation of load cycle rate is as follows:

$$\text{Load cycle rate of actual power supply} = \frac{(\text{Rated output current})^2 \times \text{rated load cycle rate}}{(\text{Actual output current})^2}$$

·The placement of welding machine:

Pay attention to the following points during placing the machine:

1. Please put it on the flat surface about 20cm away from the wall;
2. Please put it at dry and clean places without iron power, dust and paint;
3. Please put it away from rain and sea water.

Connection:

1. Grounding

(a) Grounding terminals are placed under the backboard of the housing; please be sure to ground the machine with an over 14mm² copper cord. Rated input voltage is 250V and grounding resistance is 10 Ω .

- Make sure that professional personnel (electrician) carry out any grounding work.

2. The side wiring of the power supply

The welding machine is equipped with a switch cabinet including overcurrent protectors, such as switch and fuse, etc. The output terminals of the cabinet are connected to input terminals of the welding machine. For capacity of cabinet and area of cable, please refer to the following table. Especially these overcurrent

protectors must be of suitable capacities and proper sizes for ensuring security.

3. Connection of welding ends

One end is connected to a welding cable; the other end is connected to the workpiece through the connecting cable. In order to ensure security, the workpiece should be grounded during working.

Fourthly Cautions

- Be sure to turn off power switches of the switch cabinet when connecting the cables.
- Connect the cables with copper terminals. After the cables are fixed with bolts or nuts, they must be insulated with insulating tapes.

Copper cables:

Type	Output Cable (mm ²)	Power supply Cable (mm ²)	Automatic air switch (releaser current) (A)
90A	≥10	≥1.5	30
100A	≥10	≥1.5	30
110A	≥10	≥1.5	30

The above-mentioned cables are copper cables.

• Methods

Please operate according to the following orders:

1. Turn on the power of the switch cabinet (ON).
2. Turn on the power of the welding machine
3. Adjust welding current.
4. Arc generating.
5. Welding work
6. End the welding work.
7. Turn off the power switch of the welding machine.
8. Turn off the power switch of the switch cabinet (OFF)

Fifthly Maintenance and repair

In order to extend the life, please pay attention to maintenance and repair in addition to any caution. Inspect and repair the welding machine once at least every six months according to the following requirements. Be sure to turn off the power switches of the switch cabinet and welding machine.

1. Use the insulating resistor to measure the resistances between the primary level winding and the second level winding or between each winding and grounding. It should be above 1Ω.
2. The dust can reduce the resistance character and make the winding overheated, so we must use compressed air to blow off the dust accumulated on windings and other parts.
3. Check if the power contact is overheated. If some burning traces are on the contact surface, please make the surface smooth.
4. Remove the iron core dust as much as possible, and then fill in oil. The most suitable oil is

molybdenum disulfide.

5. Carefully check bolts and screws for tightening. If any play is found, please fasten them thoroughly.

6. In case that any fault occurs to the machine or it needs repairing, please tell the machine model and product number to the supplier as soon as possible.

• **Cautions**

1. Please confirm rated specifications on the nameplate to avoid the unreasonable use before any operation.

2. Avoiding the overload operation.

(1) The serious overloads can burn the machine. Even if it isn't broken, its life will be shortened.

(2) The overload will cause the noise and make the current-adjusting handwheel can't turn freely.

3. The connection between the welding terminal and cable should be firm. Be aware that poor connection will make the part heated, or terminal and cable burned.

4. If the output cable is too long, it will make current circulation blocked and increase the power consumption. If too old cable makes the surface insulation damaged and unstable arc generate, please renew the cable.

5. Welding current is influenced by thickness of welded plate, size of welding rod, welding attitude, etc. The relations between diameter of welding rod and current value are shown in the table on right side. (Note: suitable for carbon steel and low alloy steel)

• **Cautions of Flux wire**

Diameter of Flux wire	Welding Current (A)
0.6	60-80
0.8	60-100
0.9	60-110

6. Be sure to turn off the power supply after finishing the job.

7. Do not use the machine so long time under the sun in summer and try to put it under the shield. In addition, put it away from the rain or at places with heavy humidity and much iron power and dust.

8. During the operation, the housing temperature is very high (50 to 70°C), but the winding should be used according to the load cycle rate due to H level insulations.

9. Cautions for suitable frequency

(1) Do not use any 60HZ welding machine in the 50HZ area.

(2) The 50HZ welding machine can be used in the 60HZ area, but output current, input capacity and power factors will change.

10. Try to keep voltage stable, the welding machine had better not run under the fluctuating voltage.

a. When the power voltage is below the rated input voltage of the machine:

(1) The welding current is quite low.

(2) Broken arc or unstable arc generates.

b. When exceeding the rated input voltage:

(1) The welding current is quite strong.

(2) Noises generate or the current-adjusting handwheel can't turn freely.

(3) The shortened life is resulted in.

11. To prevent the operator from accidental injuries, please remember to wear the

correct clothes and suitable protecting appliances.

Introduction of product types

KL-MIG welding machine

The is designed and manufactured in accordance with EN 60974-1.

Model and parameter:

Model Parameter	KL-MIG 100E	KL-MIG 130E	KL-MIG 150E
Rated output current (A)	90	100	110
Rated input voltage V	230	230	230
Rated frequency HZ	50	50	50
Max. input capacity KVA	2.6	3	3.5
Empty-load voltage V	26	26	27
Rated load cycle rate%	10	10	10
Rated load voltage V	18.5	19	19.5
Current range A	60-90	60-100	60-110
Diameter of suitable welding rod mm	0.6-0.9	0.6-0.9	0.6-0.9
Insulation grade	H	H	H
Weight Kg	15	15.5	16

INSTALLATION

The location of the welding machine should be free form excessive moisture or grinding dust, taking care of not obstructing, not even partially, the ventilation.

Meaning of graphic symbols on equipment:



Single-phase transformer with rectifier



Welding machine flat characteristic



-MIG-MAG arc welding



-Alternating current

U₀

-No-load voltage

Hz

-Alternating current cycles

I₂

-Welding



-Mains power

1 ~

-Number of phases

U₁/Hz

-Power voltage and cycles

I₁

-Input current absorption

IP

-Protection factor

H

-Insulating class

X

-Duty cycle

(max A/V)

-Max. output current using mixture shielding gas



Please pay attention that it couldn' t be showered when used in and it is forbidden using for ice- out .

In order to avoid injuring instability of arc welding, please conform to this standard use the correct method.

The fluctuating of power supply voltage : the limit is $\pm 10\%$ of the rating input voltage.

I-shape butt welding

thick (mm)	Diameter of welding silk (mmΦ)	current (A)	voltage (V)	speed (cm/min)	Distance Between nozzle (mm)	Item no.	Diameter of welding tray (mm)	Weight of welding silk(kg)
0.5	0.6	50~60		50~60	10	Awsetlt-11	100	1
0.8	0.8 0.9	60~70	16~16.5	50~60	10	Awsetlt-11	100	1
1.0	0.8 0.9	75~85	17~17.5	50~60	10	Awsetlt-11	100	1
1.2	0.8 0.9	80~90	17~18	50~60	10	Awsetlt-11	100	1
1.6	0.8 0.9	95~105	18~19	45~50	10	Awsetlt-11	1100	1
2.0	0.9	110~120	19~19.5	45~50	10	Awsetlt-11	100	1

Flat fillet weld T-shap joint

thick (mm)	Diameter of welding silk (mmΦ)	current (A)	voltage (V)	speed (cm/min)	Distance Between nozzle (mm)	Item no.	Diameter of welding tray (mm)	Weight of welding silk(kg)
0.8	0.6	60~70	17~17.5	50~60	10	Awsetlt-11	100	1
1.0	0.8	70~80	17~18	50~60	10	Awsetlt-11	100	1
1.2	0.9	85~90	18~19	50~60	10	Awsetlt-11	100	1
1.6	0.9	100~110	18~19.5	50~60	10	Awsetlt-11	100	1

Flat fillet welding joint (sheet metal)

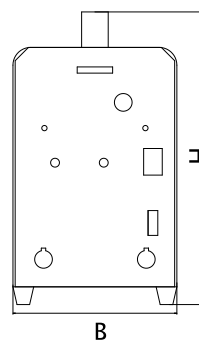
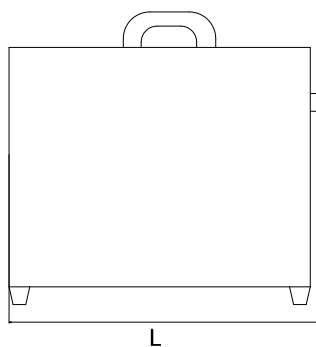
thick (mm)	Diameter of welding silk	current (A)	voltage (V)	speed (cm/min)	Distance Between nozzle (mm)	Item no.	Diameter of welding tray (mm)	Weight of welding silk(kg)
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	(mmΦ)							
1.8	0.6	50~60			10	Awsetlt-11	100	1
1.0	0.8	60~70	16~17	40~45	10	Awsetlt-11	100	1
1.2	0.8	80~90	18~19	45~50	10	Awsetlt-11	100	1
1.6	0.9	90~100	19~20	45~50	10	Awsetlt-11	100	1
2.3	0.9	100~130	100~130	45~50	10	Awsetlt-11	100	1

Corner joint (sheet metal)

thickness of plate (mm)	Diameter of wire (mmΦ)	Welding current (A)	Welding voltage (V)	Welding speed (cm/min)	Distance Between nozzle (mm)	Wire model.	Diameter of wire reel (mm)	wire Weight (kg)
1.2	0.6	60~65	16~17		10	Awsetlt-11	100	1
1.6	0.8,0.9	65~75	16~17	40~45	10	Awsetlt-11	100	1
2.3	0.8,0.9	80~100	19~20	40~45	10	Awsetlt-11	100	1
3.2	1.0,1.2	130~150	20~22	35~40	10~15	Awsetlt-11	100	1
4.5	1.0,1.2	150~180	21~23	30~35	10~15	Awsetlt-11	100	1

Overall dimension:



Size Model	L	B	H
100	360	185	330
130	360	185	330
150	360	185	330

Circuit Diagram of Electric Welding Machine:

