



COMMANDER PULSE MIG -HF DC TIG 2100

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## Machine Operating Safety

- Do not switch the function modes while the machine is operating. Switching of the function modes during welding can damage the machine. Damage caused in this manner will not be covered under warranty.
- Disconnect the electrode-holder cable from the machine before switching on the machine, to avoid arcing should the electrode be in contact with the work piece.
- Operators should be trained and or qualified.



**Electric shock: It can kill.** Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and internal machine circuits are also live when power is on. In MIG/MAG welding, the wire, drive rollers, wire feed housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is dangerous.

- Connect the primary input cable according to regulations.
- Avoid all contact with live electrical parts of the welding/cutting circuit, electrodes and wires with bare hands.
- The operator must wear dry welding gloves while he/she performs the welding/cutting task.
- The operator should keep the work piece insulated from himself/herself.
- Keep cords dry, free of oil and grease, and protected from hot metal and sparks.
- Frequently inspect input power cable for wear and tear, replace the cable immediately if damaged, bare wiring is dangerous and can kill.
- Do not use damaged, under sized, or badly joined cables.
- Do not drape cables over your body.
- We recommend (RCD) safety switch is used with this equipment to detect any leakage of current to earth.



**Fumes and gases are dangerous.** Smoke and gas generated whilst welding or cutting can be harmful to people's health. Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health. Do not breathe the smoke and gas generated whilst welding or cutting, keep your head out of the fumes

- Keep the working area well ventilated, use fume extraction or ventilation to remove welding/cutting fumes and gases.
- In confined or heavy fume environments always wear an approved air-supplied respirator.
- Welding/cutting fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the breathing air is safe.
- Do not weld/cut in locations near de-greasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapours to form highly toxic and irritating gases.
- Materials such as galvanized, lead, or cadmium plated steel, containing elements that can give off toxic fumes when welded/cut. Do not weld/cut these materials unless the area is very well ventilated, and or wearing an air supplied respirator.



**Arc rays:** harmful to people's eyes and skin. Arc rays from the welding/cutting process produce intense visible and invisible ultraviolet and infrared rays that can burn eyes and skin. Always wear a welding helmet with correct shade of

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filter lens and suitable protective clothing including welding gloves whilst the welding/cutting operation is performed.

- Measures should be taken to protect people in or near the surrounding working area. Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.



**Fire hazard.** Welding/cutting on closed containers, such as tanks, drums, or pipes, can cause them to explode. Flying sparks from the welding/cutting arc, hot work piece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and be sure the area is safe before doing any welding/cutting.

- The welding/cutting sparks & spatter may cause fire, therefore remove any flammable materials well away from the working area. Cover flammable materials and containers with approved covers if unable to be moved from the welding/cutting area.
- Do not weld/cut on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to the required Safety Standards to insure that flammable or toxic vapours and substances are totally removed, these can cause an explosion even though the vessel has been “cleaned”. Vent hollow castings or containers before heating, cutting or welding. They may explode.
- Do not weld/cut where the atmosphere may contain flammable dust, gas, or liquid vapours (such as petrol)
- Have a fire extinguisher nearby and know how to use it. Be alert that welding/cutting sparks and hot materials from welding/cutting can easily go through small cracks and openings to adjacent areas. Be aware that welding/cutting on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.



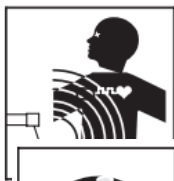
**Gas Cylinders.** Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Because gas cylinders are normally part of the welding/cutting process, be sure to treat them carefully. CYLINDERS can explode if damaged.

- Protect gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Insure cylinders are held secure and upright to prevent tipping or falling over.
- Never allow the welding/cutting electrode or earth clamp to touch the gas cylinder, do not drape welding cables over the cylinder.
- Never weld/cut on a pressurised gas cylinder, it will explode and kill you.
- Open the cylinder valve slowly and turn your face away from the cylinder outlet valve and gas regulator.



**Gas build up.** The build up of gas can causes a toxic environment, deplete the oxygen content in the air resulting in death or injury. Many gases use in welding/cutting are invisible and odourless.

- Shut off shielding gas supply when not in use.



- Always ventilate confined spaces or use approved air-supplied respirator.

**Electronic magnetic fields.** MAGNETIC FIELDS can affect Implanted Medical Devices.

- Wearers of Pacemakers and other Implanted Medical Devices should keep away.
- Implanted Medical Device wearers should consult their doctor and the device manufacturer before going near any electric welding, cutting or heating operation.



**Noise can damage hearing.** Noise from some processes or equipment can damage hearing.

- Wear approved ear protection if noise level is high.

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**Hot parts.** Items being welded/cut generate and hold high heat and can cause severe burns.

Do not touch hot parts with bare hands. Allow a cooling period before working on the welding/cutting gun. Use insulated welding gloves and clothing to handle hot parts and prevent burns.

### CAUTION

#### 1. Working Environment.

- i. The environment in which this welding/cutting equipment is installed must be free of grinding dust, corrosive chemicals, flammable gas or materials etc, and at no more than maximum of 80% humidity.
- ii. When using the machine outdoors protect the machine from direct sun light, rain water and snow etc; the temperature of working environment should be maintained within  $-10^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$ .
- iii. Keep this equipment 30cm distant from the wall.
- iv. Ensure the working environment is well ventilated.

#### 2. Safety Tips.

##### i. Ventilation

This equipment is small-sized, compact in structure, and of excellent performance in amperage output. The fan is used to dissipate heat generated by this equipment during the welding/cutting operation. Important: Maintain good ventilation of the louvres of this equipment. The minimum distance between this equipment and any other objects in or near the working area should be 30 cm. Good ventilation is of critical importance for the normal performance and service life of this equipment.

##### ii. Thermal Overload protection.

Should the machine be used to an excessive level, or in high temperature environment, poorly ventilated area or if the fan malfunctions the

Thermal Overload Switch will be activated and the machine will cease to operate. Under this circumstance, leave the machine switched on to

keep the built-in fan working to bring down the temperature inside the equipment. The machine will be ready for use again when the internal temperature reaches safe level.

##### iii. Over-Voltage Supply

Regarding the power supply voltage range of the machine, please refer to "Main parameter" table. This equipment is of automatic voltage

compensation, which enables the maintaining of the voltage range within the given range. In case that the voltage of input power supply

amperage exceeds the stipulated value, it is possible to cause damage to the components of this equipment. Please ensure your primary power supply is correct.

iv. Do not come into contact with the output terminals while the machine is in operation. An electric shock may possibly occur.

### ATTENTION! - CHECK FOR GAS LEAKAGE

At initial set up and at regular intervals we recommend to check for gas leakage

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Recommended procedure is as follows:

1. Connect the regulator and gas hose assembly and tighten all connectors and clamps.
2. Slowly open the cylinder valve.
3. Set the flow rate on the regulator to approximately 8-10 L/min.
4. Close the cylinder valve and pay attention to the needle indicator of the contents pressure gauge on the regulator, if the needle drops away towards zero there is a gas leak. Sometimes a gas leak can be slow and to identify it will require leaving the gas pressure in the regulator and line for an extended time period. In this situation it is recommended to open the cylinder valve, set the flow rate to 8-10 L/min, close the cylinder valve and check after a minimum of 15 minutes.
5. If there is a gas loss then check all connectors and clamps for leakage by brushing or spraying with soapy water, bubbles will appear at the leakage point.
6. Tighten clamps or fittings to eliminate gas leakage.

**IMPORTANT!** - We strongly recommend that you check for gas leakage prior to operation of your machine. We recommend that you close the cylinder valve when the machine is not in use.

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### Commander Pulse Mig ACDC TIG 2000 TECHNICAL DATA

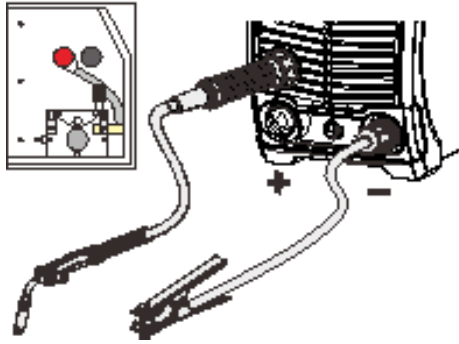
Gas Metal Arc Welding (GMAW) is an arc welding process where a consumable wire is fed by motor driven feed rolls to a welding gun, and where welding current is supplied from the welding power source. The welding arc is struck between the work piece and the end of the wire, which melts into the weld pool. The arc and the weld pool are both shielded by gas flow from the gun, or in the case of “self shielded” wires, by gases generated by the wire core. The process is very versatile in that by selection of the correct wire composition, diameter and shielding gas, it can be used for applications ranging from sheet-metal to heavy plate, and metals ranging from carbon steel to aluminum alloys.

TECHNICAL DATA	
Power Supply / Phases	240V +/- 15% 50/60Hz
Rated input power	MIG:40-210
	MMA:30-200
	TIG:20-200
Duty cycle	60%
Feeding mode	ALL IN ONE
Wire feeding speed	2-15M/min
Welding plate Thickness	0.5-5mm
Welding wire diameter	0.8-1.2
Size (mm)	460x220x375mm
Weight (kg)	15.6kg

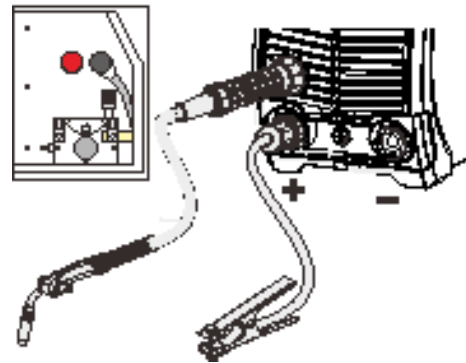
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## MIG INSTALLATION

MIG(DCEP)



Flux-cored(DCEN)



1. Connect the welding torch into the Euro Mig torch connection socket on the front panel, and tighten it.
2. Insert the earth cable plug into the required polarity and tighten -negative for gas shielded wires positive for gas less wires. + positive for gass wire. The weld power cable goes into the opposing negative or positive socket.
3. Connect Gas Line to Gas Regulator and connect the gas regulator to the Gas Cylinder. Carefully open the valve of the gas cylinder, set the flow to 5 l/min. (When using gasless wire)
4. Fit the correct type and size of drive rollers (see the chapter of wire feed roller selection)
5. Place the Wire Spool onto the Spool Holder. Feed the wire into the wire feeder inlet guide tube through to the drive roller.



6. At the wirefeed assembly, release the compression screw by swivelling it outwards. This allows the top roller arm to spring to the open position. The end of the welding wire can now be passed through the inlet guide, over the bottom driven roller, and into the output wire guide tube.
7. Check that the drive roll groove is correct for the wire in use. The appropriate size is stamped on the visible side of the installed roller. Check also that the correct size contact tip is fitted at the gun end.
8. Return the top roller arm to the closed position and adjust the compression screw to provide sufficient clamping of the drive roll to achieve constant wirefeed. Do not over tighten.
9. With the equipment energised, operate the gun switch to feed wire through the gun cable.



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## SIGNAL WIRING

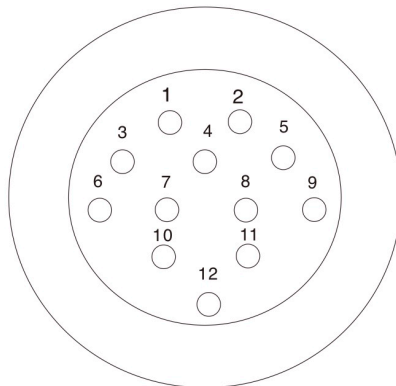
### Spool gun installation

- 1-Spool positive
- 2-Spool negative

### Push and Pull Gun installation

- 3-Spool positive
- 4-Spool negative
- 5-Signal input
- 6-Push pull positive+
- 7-Push pull negative-
- 8-Trigger
- 9-trigger

## WIRING



- 1 spool +
- 2 spool-
- 3 signal input min
- 4 signal input
- 5 signal input max
- 6 push pull +
- 7 push pull-
- 8 trigger
- 9 trigger
- 10 remote
- 11 remote

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### WIRE FEED ROLLER SELECTION

**Solid Hard Wire** - like Steel, Stainless Steel require a drive roller with a V shape groove for optimum grip and drive capability. Solid wires can have more

tension applied to the wire from the top pressure roller that holds the wire in the groove and the V shape groove is more suited for this. Solid wires are

more forgiving to feed due to their higher cross sectional column strength, they are stiffer and don't bend so easy.

**Soft Wire** - like Aluminium requires a U shape groove. Aluminium wire has a lot less column strength, can bend easily and is therefore more difficult to

feed. Soft wires can easily buckle at the wire feeder where the wire is fed into inlet guide tube of the torch. The U-shaped roller offers more surface area

grip and traction to help feed the softer wire. Softer wires also require less tension from the top pressure roller to avoid deforming the shape of the wire,

too much tension will push the wire out of shape and cause it to catch in the contact tip.

### Accessories:

V GROOVE DRIVE ROLLER - STEEL WIRE

2 x 0.8-0.9 V 1.0-1.2V

U GROOVE DRIVE ROLLER - ALUMINUM WIRE

2 x 1.0-1.2 U 0.8-0.9U

K GROOVE DRIVE ROLLER - Flux Cored Wire

2x 0.8/0.9K 1.0/1.2K



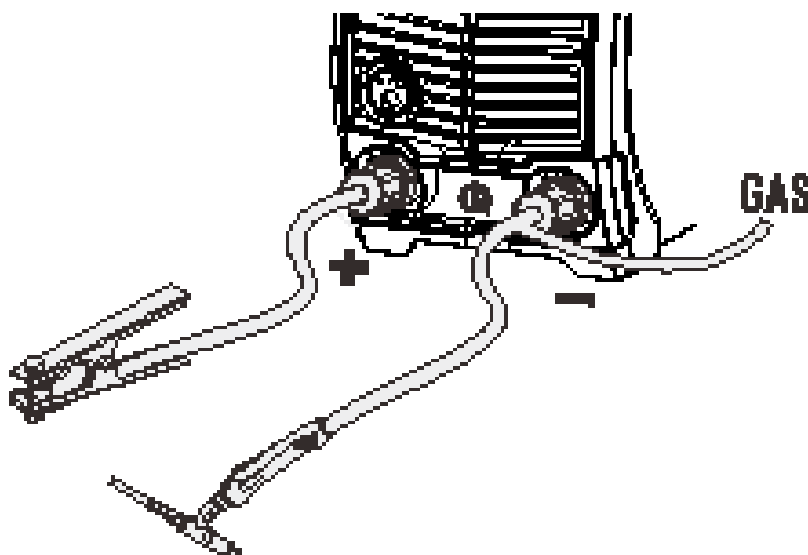
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### HF TIG INSTALLATION

In the TIG (Tungsten Inert Gas) method, the electric arc strikes under an inert gas (argon) shield, between the welded element and the non-fusible electrode made of pure tungsten or tungsten with additives.

The TIG method is especially recommended for aesthetic and high-quality joining of metals, without laborious mechanical treatment after welding. However, this requires proper preparation and cleaning of the edges of both welded elements. The mechanical properties of the additive material should be similar to the properties of the welded parts. The role of shielding gas is always played by pure argon, supplied in quantities depending on the welding current set.

### TIG(DCEN)



1. Connect the welding torch into the Euro Mig torch connection socket on the front panel, and tighten it.
2. Insert the earth cable plug into the positive socket. The TIG torch plug into negative socket.
3. Connect Gas Line from the torch to Gas Regulator and connect the gas regulator to the Gas Cylinder. Carefully open the valve of the gas cylinder, set the flow to 5 l/min.

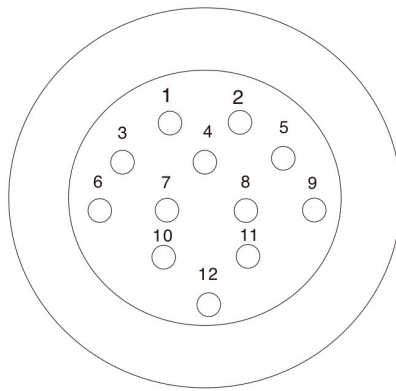
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### TIG REMOTE TORCH WIRING

#### TIG REMOTE TORCH INSTALLATION

- 3-Signal input minimum value
- 4-Signal input
- 5-Signal input maximum value
- 8-Trigger
- 9-Trigger

#### WIRING



- 1 spool +
- 2 spool-
- 3 signal input min
- 4 signal input
- 5 signal input max
- 6 push pull +
- 7 push pull-
- 8 trigger
- 9 trigger
- 10 remote
- 11 remote

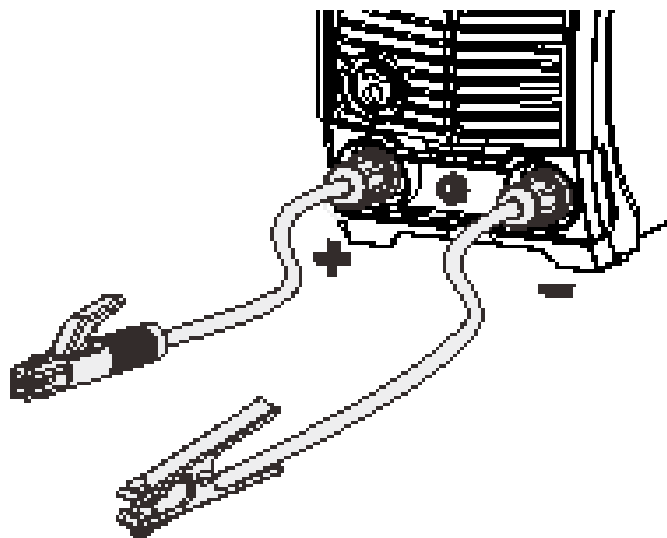
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### MMA INSTALLATION

Arc welding is also called the MMA (Manual Arc Welding) method and is the oldest and most versatile arc welding method.

The MMA method uses a coated electrode, consisting of a metal core covered with a lagging. An electric arc is created between the end of the electrode and the material being welded. Arc ignition is created by touching the electrode with the end of the workpiece. The welder feeds the electrode as it melts into the workpiece so as to maintain a constant arc length and at the same time moves its melting end along the welding line. The melting coating of the electrode gives off protective gases that protect the liquid metal from the influence of the surrounding atmosphere, and then solidifies and forms a slag on the surface of the lake, which protects the coagulating weld from cooling too quickly and harmful environmental influences.

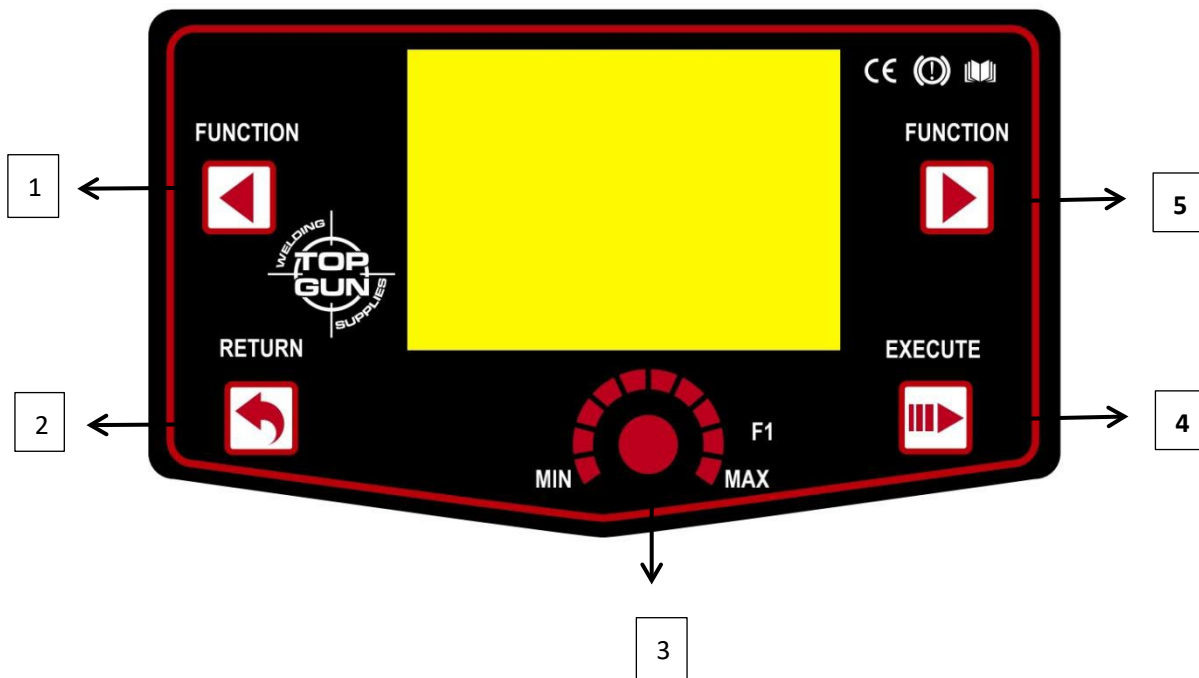
### STICK(DCEP)



Connect the welding and mass leads to the appropriate output connectors of the welder, according to the polarity recommended by the manufacturer of the electrodes you intend to weld.

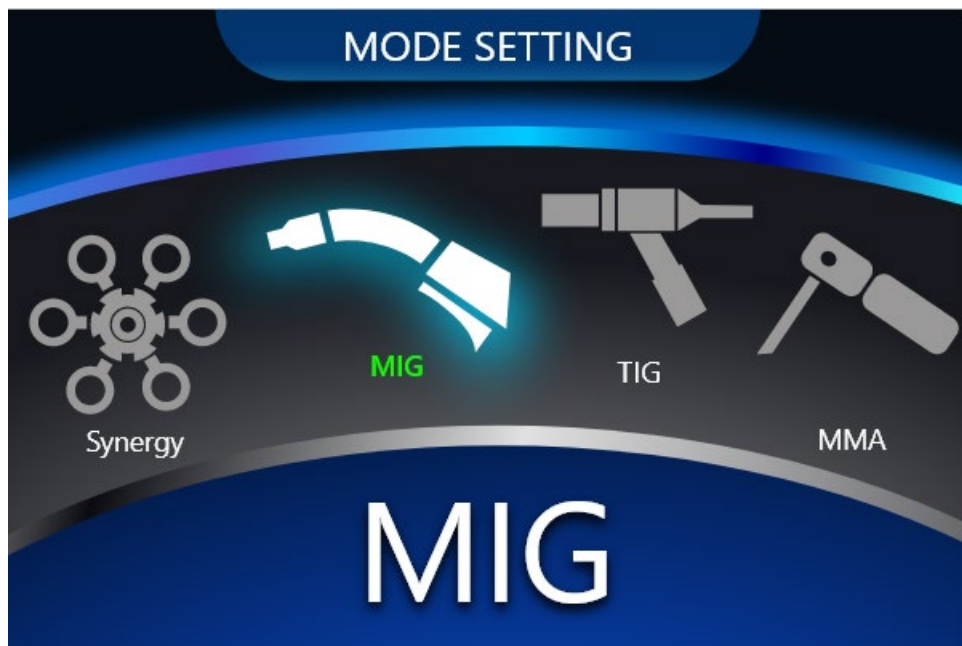
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### OPERATION PANEL INSTRUCTION



1	Function switch button to the left menu. Press over 5 seconds switch to data call page. <b>Function selection:</b> When you choose a function, the relative icon will be highlighted.
2	Return button, switch to the parent menu, or return. Press over 5 seconds will back to factory settings.
3	Data adjusting knob. According left or right button, to switch the relative menu, and turn this knob can adjust the data. Press to confirm current setting.
4	Execute button, press it can enter into sub-menu, or execute the current operation. Press over 5 seconds will save current data.
5	Function switch button to the right menu. Press over 5 seconds switch to data storage page.

1.WELDING MODE SETTING



Press button  or  to select the welding mode you want to do, then press  to next step.

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## 2.AUTO MODE

Under the Auto mode, you can select the material, thickness and the wire diameter, then you can start your welding, the machine will recommend the welding current, voltage and the wire feeding speed for you. Of course you can adjust them yourself according to the welding needs. Note: if you re-set the material and thickness, the system will recover to default data.

 <p>The screenshot shows the control panel with a central knob set to '3'. The material selection knob is highlighted, showing options: Carbon steel, Stainless steel, Al-Mg (selected), Al-Si, and Cu-Si. The current is 89A and voltage is 18.4V. The selected wire diameter is 1.2mm. The material selection knob is highlighted.</p>	<p><b>1.Selection of material</b> Spin the knob to select welding material. Number on the right correspond to the material on the left.</p>
 <p>The screenshot shows the control panel with a central knob set to '3.0'. The thickness knob is highlighted. The current is 85A and voltage is 13.5V. The selected wire diameter is 1.0mm.</p>	<p><b>2.Select of plate thickness</b> Spin the knob to adjust plate thickness.</p>
 <p>The screenshot shows the control panel with a central knob set to '4.5'. The wire diameter knob is highlighted, showing options: Wire φ 0.8mm, Wire φ 1.0mm, and Wire φ 1.2mm (selected). The current is 99A and voltage is 13.7V.</p>	<p><b>3.Selection of wire diameter</b> Select the corresponding wire diameter. The device will recommend the right voltage and current for you.</p>



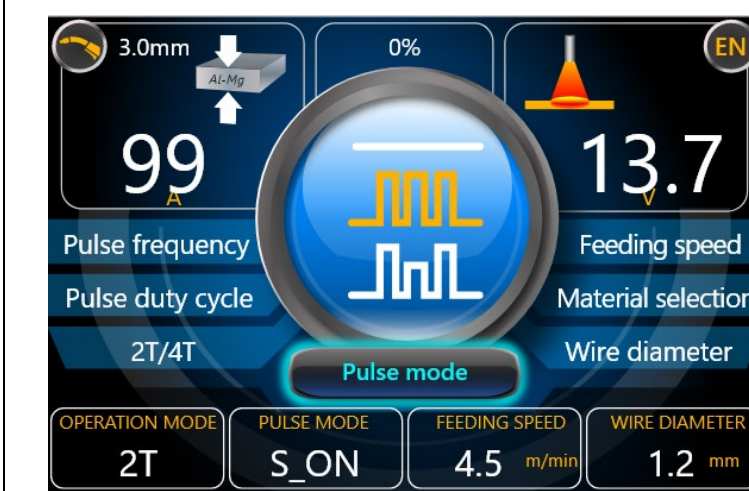
3.MIG MODE SETTING



**Selection of handle methods**

2-step welding: When you press the torch, it start to weld by holding the button, when release, it stop welding.

4-step welding: When you press the torch and then release, it start to weld. When press again, it stop welding. **4T mode is recommended in long time welding situation.**



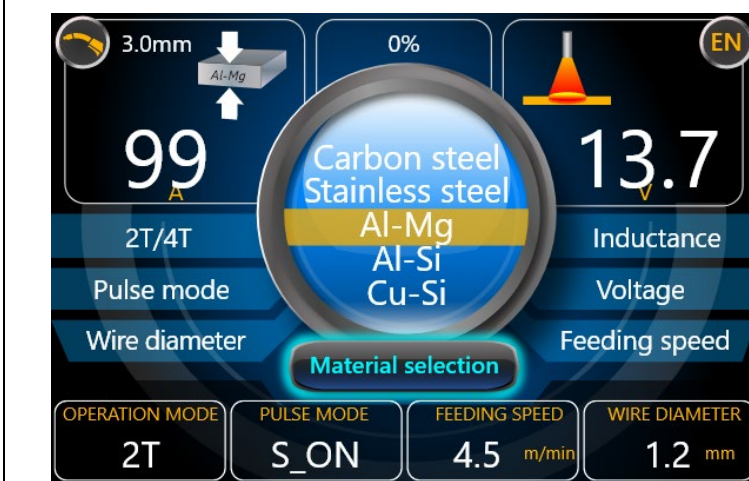
**Selection of welding pulse**

Please notice that pulse function only execute in synergy mode.

1 no pulse: when both lights off, the device is in no pulse mode.

2 Single pulse: when single pulse lights illuminates. (See chapter WELDING MIG / MAG WITH PULSE)



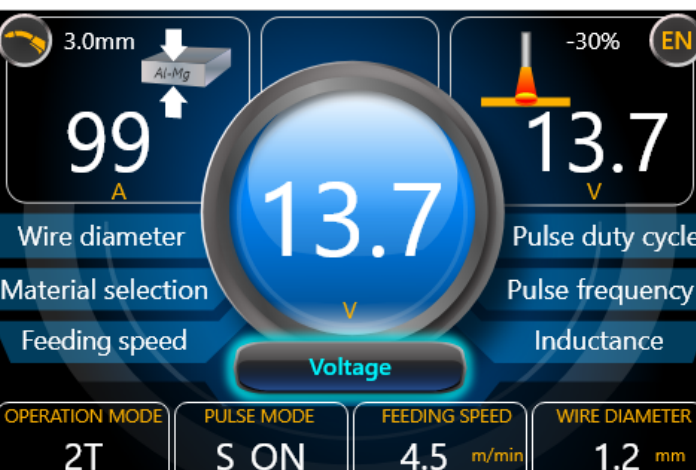
3 Dual pulse:when dual pulse lights illuminates.



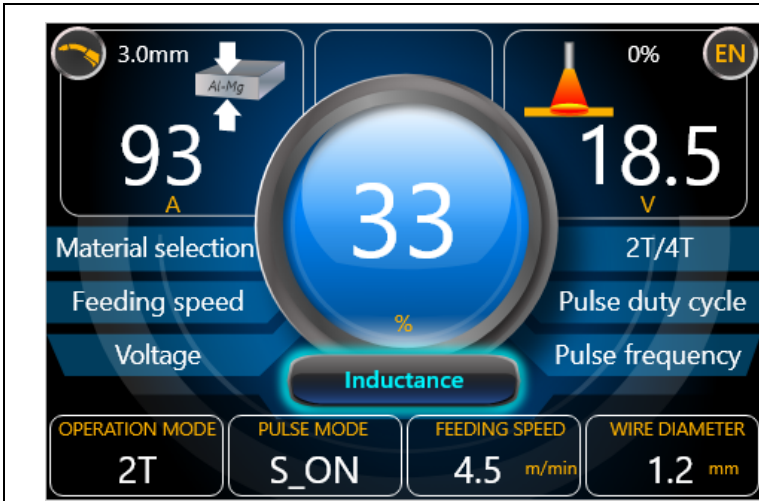
**Selection of welding material**

MIG machine can weld 5 kinds of materials. Press the button to choose corresponding materials. When AlSi/AlMg light illuminates means you choose AlSi. When AlSi/AlMg light flash means you choose AlMg. Silicon Bronze welding must in dual-pulse status.

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	<p><b>Selection of wire diameter</b></p> <p>Press the button to choose the the corresponding wire diameter 0.8/1.0/1.2mm.</p>
	<p><b>Selection of wire feeding speed</b></p> <p>Adjust the wire feeding data, until the left-top data can match the real thickness of the work.</p>
	<p><b>Selection of Voltage</b></p> <p>At the beginning, please adjust the data to "0", and try welding. If the arc too short, please adjust it higher, otherwise, adjust it lower.</p>

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## Inductance

At the first, please adjust the data to “0” then try welding, if the arc softer, you can adjust the inductance to negative a little; on the contrary, adjust it to positive.

**Note:** Inductance had setting up well by system, if have not other special technological needs, no need to change it.



## Select the “Peak feeding” function

adjust the data until the left-top data match the real thickness of the work piece.



## Selection of dual pulse frequency

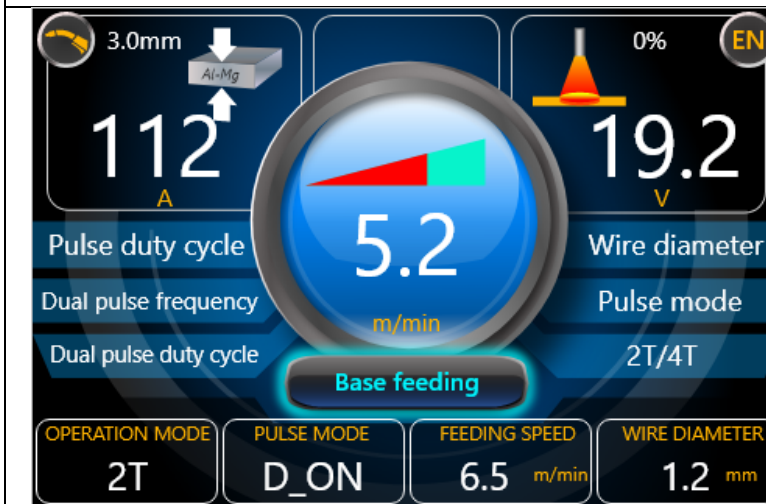
Recommended adjusting range is 1-2Hz according your welding swing.

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### Selection of dual pulse duty cycle

It's recommended to be used in range of 30%-40%.





### Selection of Base feeding function

Adjust the data. It's recommended to adjust within 70%-90% of the peak feeding.

## MEMORY FUNCTION

TGWMIG2004L possess 18 sets memories.

Long press  3 seconds to restore current setting.

Long press  3 seconds to recall setting.

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### MIG Welding Current-Wire Diameter And Plate Thickness Chart

Wire diameter	Plate thickness	1mm	2mm	3mm	4mm	5mm
AL-Si1.0/(4043) (DCEP)	Wire speed (M/min)	2.0	4.2	5.8	7.0	8.5
	Welding current (A)	24	58	85	107	133
	Arc voltage	16.0	18.3	19.2	21.0	22.5
AL-Si1.2/(4043) (DCEP)	Wire speed (M/min)	1.5	3.0	4.5	6.5	7.8
	Welding current (A)	27.0	64	100	143	173
	Arc voltage	16.5	17.8	19.5	22.5	24.5
Al-Mg1.0/(5356) (DCEP)	Wire speed (M/min)	2.5	6.0	8.0	11.0	12.5
	Welding current (A)	30	70	95	130	148
	Arc voltage	14.8	18.3	19.8	22.8	23.4
Al-Mg1.2/(5356) (DCEP)	Wire speed (M/min)	2.2	4.0	5.3	7.5	8.5
	Welding current (A)	33	65	89	128	141
	Arc voltage	15.7	17.2	17.7	19.3	20.0
AL1.0/(1070) (DCEP)	Wire speed (M/min)	2.8	5.3	7.0	8.5	10.0
	Welding current (A)	37	77	107	133	160
	Arc voltage	16.9	18.9	21.0	22.5	23.6
Al-Si 1.2/(1070) (DCEP)	Wire speed (M/min)	1.7	3.2	4.0	5.8	6.9
	Welding current (A)	30.0	68.0	88.0	127.0	152.0
	Arc voltage	16.7	18.0	18.8	21.6	22.9
Cu-Si 1.0/(CuSi) (DCEP)	Wire speed (M/min)	4.0	9.0	12.0	14.0	16.0
	Welding current (A)	70.0	156.0	200.0	237.0	260.0
	Arc voltage	19.0	23.8	25.5	27.0	29.0
Cu-Si 1.2/(CuSi) (DCEP)	Wire speed (M/min)	2.8	5.4	6.8	8.5	9.4
	Welding current (A)	72.0	153.0	194.0	220.0	241.0
	Arc voltage	19.7	23.5	25.6	28.5	29.6



**Instruction: Al and Al-Si wire both use Al-Si Function.**

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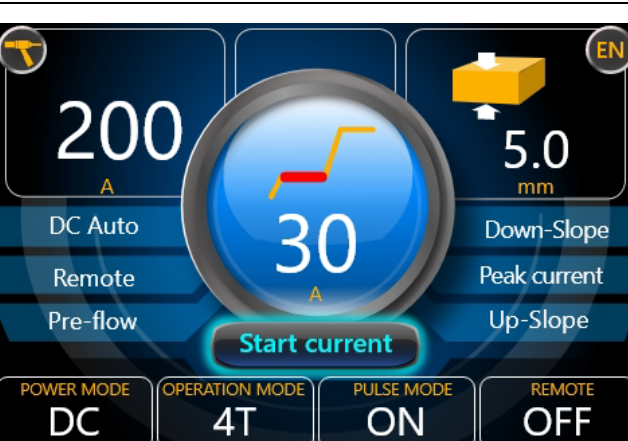
### HF TIG SETTING GUIDE

In the TIG (Tungsten Inert Gas) method, the electric arc strikes under an inert gas (argon) shield, between the welded element and the non-fusible electrode made of pure tungsten or tungsten with additives.

The TIG method is especially recommended for aesthetic and high-quality joining of metals, without laborious mechanical treatment after welding. However, this requires proper preparation and cleaning of the edges of both welded elements. The mechanical properties of the additive material should be similar to the properties of the welded parts. The role of shielding gas is always played by pure argon, supplied in quantities depending on the welding current set.

	<p><b>Selection of welding mode</b> Choose TIG welding mode.</p>
	<p><b>Selection of operate mode</b></p> <p><b>2t mode:</b> When you press the torch, it start to weld by holding the button, when release, it stop welding.</p> <p><b>4t mode: welding:</b> When you press the torch and then release, it start to weld. When press again, it stop welding. <b>4T mode is recommended in long time welding situation.</b></p> <p><b>4T-BL:</b> Select the 4TBL function and press OK button. The display will go to sub menu. In 4T BL mode, the machine will repeat the setting from pre flow, start current, Up-slop, peak current, down slop, ... lastly crater and post flow.</p> <p><b>Spot:</b> Select the spot function and press OK button. The display will go to sub menu. Which you can choose flow time and spot time.</p>

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	<p><b>Pulse mode</b></p> <p>Possessing no pulse and pulse functions.</p> <p>Pulse TIG welding is when the current output (amperage) changes between high and low current.</p>
	<p><b>Remote control</b></p> <p>This welder can matched with remote torch. Turn it on to activate remote control. (at the mean time peak current on panel control will shut down.)</p>
	<p><b>Pre-flow</b></p> <p>Before welding, drain out the air in the torch and let the gas protect the welding line, recommended setting 0.1-0.5 seconds.</p>
	<p><b>Start current</b></p> <p>On 4T mode, the welding current of the first time pull the trigger till to release it, recommended setting is 50% of peak current.</p>

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	<p><b>Up slope</b></p> <p>On 4T mode, the time from Start current to Peak current after release the torch trigger, recommended setting is 3 seconds.</p>
	<p><b>Peak current</b></p> <p>User can adjust the thickness and the system will recommend the peak current. If burning not enough, it can adjust it higher, but if burning through, adjust it lower and try again.</p>
	<p><b>Down slope</b></p> <p>On 4T mode, the time from peak current fall down to crater current after you pull the torch trigger, the recommended setting is 3 seconds.</p>
	<p><b>Crater current</b></p> <p>Provides selection for the amount of amperage required at the end of the weld.</p>



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	<p><b>Post Flow</b></p> <p>Provides selection for continued gas flow time at the end of the welding after the arc is out.</p>
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### WELDING POLARITY IN THE TIG METHOD

Negative polarity is used for most TIG welding operations. The welding gun is connected to the negative pole, while the earth gun is connected to the positive pole. In this way, the electrode consumption is reduced, the amount of heat accumulated in the welded material increases.

TIG WELDING CURRENT AND PLATE THICKNESS CHART				
Tungsten Diameter/ Plate Thickness	1.6mm	Amps.	2mm Amps.	2.4mm Amps.
24ga (0.61mm)	10		/	/
22ga (0.8mm)	20		20	
20ga (1.0mm)	30		30	30
18ga (1.024mm)	40		40	40
17ga (1.5mm)	50		50	50
14ga (2.0mm)	65		65	65
1/8"ga (3.0mm)	80		80	80
5/32"ga (4.0mm)	100		100	100
5/32"ga ≥(4.0mm)	/		100-150	100-150

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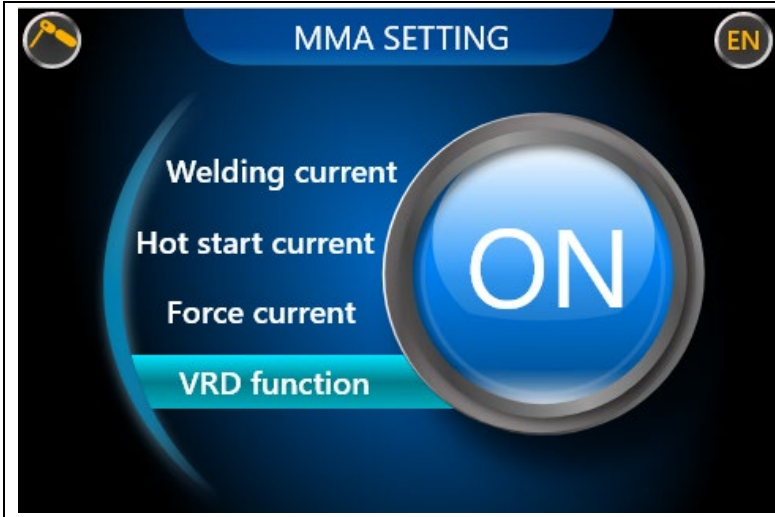
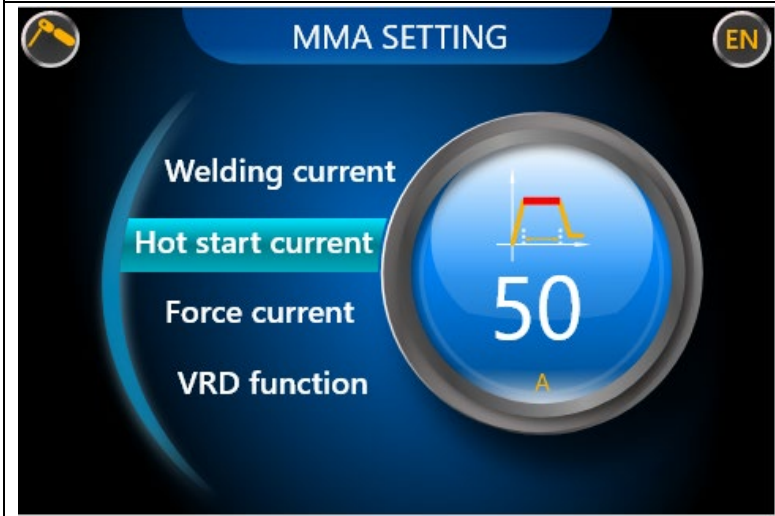

## MMA SETTING GUIDE

Arc welding is also called the MMA (Manual Arc Welding) method and is the oldest and most versatile arc welding method.

The MMA method uses a coated electrode, consisting of a metal core covered with a lagging. An electric arc is created between the end of the electrode and the material being welded. Arc ignition is created by touching the electrode with the end of the workpiece. The welder feeds the electrode as it melts into the workpiece so as to maintain a constant arc length and at the same time moves its melting end along the welding line. The melting coating of the electrode gives off protective gases that protect the liquid metal from the influence of the surrounding atmosphere, and then solidifies and forms a slag on the surface of the lake, which protects the coagulating weld from cooling too quickly and harmful environmental influences.

	<p><b>Selection of welding mode</b> Choose MMA welding mode.</p>
	<p><b>Selection of welding current</b> Press welding current, the machine will fit the thickness automatically.</p>

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 <p>MMA SETTING</p> <p>Welding current</p> <p>Hot start current</p> <p>Force current</p> <p><b>VRD function</b></p> <p>ON</p> <p>EN</p>	<p><b>VRD function</b></p> <p>Press the button to activate VRD function. When the green light illuminate. It means the VRD function is activated. Press the button again to turn off. We recommend user turn on VRD when using MMA welding.</p>
 <p>MMA SETTING</p> <p>Welding current</p> <p><b>Hot start current</b></p> <p>Force current</p> <p>VRD function</p> <p>50</p> <p>A</p> <p>EN</p>	<p><b>HOT CURRENT</b></p> <p>a function that makes welding easier. When the arc strikes, the welding current is temporarily increased to heat up the material and electrode at the point of contact, and to properly shape the penetration and weld face at the initial stage of welding.</p>
 <p>MMA SETTING</p> <p>Welding current</p> <p>Hot start current</p> <p><b>Force current</b></p> <p>VRD function</p> <p>50</p> <p>A</p> <p>EN</p>	<p><b>Force current</b></p> <p>Stabilizes the arc regardless of fluctuations in its length, reduces the amount of spatter.</p>

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<b>MMA WELDING ELECTRODE DIAMETER PLATE THICKNESS AND CURRENT DIAMETER</b>			
<b>Eelectrode Diameter/ Plate Thickness</b>	<b>2.5mm Amps.</b>	<b>3.2mm Amps.</b>	<b>4mm Amps.</b>
17ga (1.5mm)	30	/	/
14ga (2.0mm)	50	50	/
1/8"ga (3.0mm)	70	70	70
5/36"ga (4.0mm)	90	90	90
1/16"(5.0mm)	/	140	140
1/4"(6.0mm)	/	/	200

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### TROUBLE SHOOTING

Malfunctions	Solution
<p>The meter show nothing;</p> <p>Fan does not rotate;</p> <p>No welding output</p>	<ul style="list-style-type: none"> <li>➤ Confirm the power switch is on.</li> <li>➤ Power supply available for input cable.</li> <li>➤ Check if the three phase commute bridge is damaged.</li> <li>➤ There is malfunction occurs in the supplementary power source on control board (contact dealers).</li> </ul>
<p>The meter shows;</p> <p>Fan works normally;</p> <p>No welding output</p>	<ul style="list-style-type: none"> <li>➤ Check if all the sockets in the machine are connected well.</li> <li>➤ There is open circuit or badness of connect at the joint of output terminal.</li> <li>➤ The control cable on the torch is broken off or the switch is damaged.</li> <li>➤ The control circuit is damaged.(contact to dealers)</li> </ul>
<p>the meter shows;</p> <p>Fan works normally;</p> <p>Abnormal indicator lights.</p>	<ul style="list-style-type: none"> <li>➤ It might be over-current protection, please turn off the power switch; restart the machine after the abnormal indicator light winked.</li> <li>➤ It might be overheating protection, please wait for about 2-3 minutes until the machine renew without turn off the power switch.</li> <li>➤ It might be multifunction of inverter circuit. (contact dealers)</li> </ul>
<p>Power indicator light is not on, fan does not turn, no welding press output</p>	<ul style="list-style-type: none"> <li>➤ Power switch is broken</li> <li>➤ Verify that the electrical grid connected to the input electromechanical regulations has electricity</li> <li>➤ Enter whether there is a break in the cable</li> </ul>
<p>The power switch indicator is on and the fan does not turn</p>	<ul style="list-style-type: none"> <li>➤ It is possible that the input is misconnected to the 380V power supply, causing the over-voltage protection circuit to start, which is changed to the 220V power supply, and it can be started again.</li> <li>➤ 220V power instability (too long input line) or input line overlap on the grid,resulting in overvoltage protection</li> <li>➤ Open and close the power switch continuously for a short period of time, causing the over-voltage protection circuit to start, shut down and wait for 2-3 minutes before starting up again.</li> </ul>

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<p>When the fan turns, the abnormal indicator light is not on and there is no high frequency discharge sound, and no gas flow from the cutting torch</p>	<ul style="list-style-type: none"> <li>➤ The vh-07 plug-in voltage of multimeter to MOS panel should be about DC308V</li> <li>➤ The auxiliary power on MOS panel has a green indicator light. If the light is not on, the auxiliary power is not working</li> <li>➤ Control circuit problem, find the cause or contact the dealer to cut the control line on the gun.Cutting gun cable is broken.</li> </ul>
<p>Output current during cutting is not stable or not controlled by the potentiometer</p>	<ul style="list-style-type: none"> <li>➤ 1K potentiometers should be replaced if damaged.</li> <li>➤ Poor contact at various joints, especially connectors, shall be checked</li> </ul>
<p>Abnormal indicator light is not on, high frequency discharge sound, can not cut</p>	<ul style="list-style-type: none"> <li>➤ It may be overcurrent protection, please turn off the machine, and restart the machine after the abnormal light is off.</li> <li>➤ May be overheat protection, do not shut down waiting for 2-3 minutes machine can be restored to normal.</li> </ul> <p>It may be the inverter circuit fault, please unplug the power plug of the main transformer on the MOS panel (close to the wind</p>

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### **MAINTENANCE**

Regularly remove dust with clean, compressed air. If the welding machine is working in smoky conditions, in heavily polluted air, remove accumulated dust daily.

The compressed air pressure should be maintained at such a level as not to damage small parts inside the device max. 2-4 bar.

Regularly check the internal systems of the welder, check the correctness and reliability of connections (especially equipment and parts). If you notice rust and loose the connection, remove the rust or oxide coating with sandpaper, reconnect and tighten.

Avoid situations where water or steam can enter the device. If the welder gets wet, dry it and then check the insulation of the device (also between joints and contacts). After checking that everything is OK, you can continue working.

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## CIRCUIT

