WELDKAR®

USER MANUAL

WK TIG 2016 AC/DC HF PULSE

air-cooled/water-cooled

welding
equipment

www.weldkar.com

Important: Read this operating manual completely before using this equipment. Save this manual and keep it handy for quick reference. Pay particular attention to the safety instructions we have provided for your safety. Contact your distributor if you do not fully understand this manual.

1. Safety

The device is manufactured advanced technology and to recognized safety standards. In case of improper use or misuse, however, it can cause damage:

- Injury or death of the driver.
- Damage to the device and other tangible assets that are belong to the operating company.
- Inefficient operation.

All persons involved in the commissioning, operation, maintenance and service of the appliance must:

- Being adequately qualified.
- Have sufficient knowledge of welding.
- Read and follow these operating instructions carefully.

The operating instructions should always be at hand wherever the device is used. In addition to the operating instructions, attention must also paid to generally applicable and local regulations for prevention and environmental protection. Correct faults that may compromise safety before turning on the unit.
This is for your personal safety!

Environment:
Products are limited to use under suitable conditions. In extreme cases, the use of products, such as high temperature, low temperature, thunderstorm, will shorten the life of the machine and even cause damage.

An excessively high ambient temperature prevents the machine's heat dissipation from running smoothly, causing the machine's internal components to become severely heated. Typically, the maximum operating temperature is 104°F (40°C).

Low temperature may cause performance degradation or damage to components in the product, resulting in ice in the water tank. Usually, the lowest operating temperature is 14°F (-10°C). Keep warm and add antifreeze in the water tank if necessary.

Too humid an environment can lead to rust of the casing and circuit components.
In rainy weather, using products can lead to short circuit and other abnormalities. Try to avoid use in such an environment. If the device is wet, dry it promptly.

Driving parts and specific risk parts can cause damage to your body or others. The accompanying announcements are as follows. After taking some necessary protective measures you can

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use the engine safely.

Parts being welded generate and retain great heat and can cause severe burns. Touch hot parts not with bare hands. Let the welding gun cool down before working on it. Use insulated welding gloves and clothing to handle hot parts and burns.

There is a high risk of injury when the welding wire comes out of the welding torch. Always keep the welding torch away from the body.

Keep all safety guards, covers and -devices in place and in good condition. Keep hands, hair, clothing and tools away from V-speed gears, fans and all other moving parts when you are, for example st[illegible]erates or repairs equipment:

- Fans
- Gears
- Roll
- Assen
- Wire spools and welding wire

Many harmful phenomena, such as noise, bright light and harmful gas, will inevitably occur during the process. To prevent harmful phenomena from harming the human , it is necessary make proper preparations in advance.

Arc beams from the welding process produce intense visible and invisible ultraviolet and infrared rays that can damage eyes and skin burn.

- Use a shield with the appropriate filter and cover plates to protect your eyes from sparks and the jets of the arc when welding or observing open arc welding.
- Use appropriate clothing of durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- Protect other nearby personnel with suitable, non-flammable shielding and/or warn them not to look at the arc or expose themselves to the arc rays or hot splashes or metal.

Noise from some processes or equipment can damage hearing. You need to protect your ears from loud noise to prevent permanent hearing loss.

- Wear earplugs and/or ear muffs to protect your hearing from loud noise. Protect others in the workplace.
- Noise levels should be measured to ensuring that decibels (noise) do not exceed safe levels.

The accumulation of gas can create a toxic environment, reduce oxygen levels in the air resulting in death or injury.

Many gases in welding are invisible and odorless.

- Shut off the supply of shielding gas if it is not in .
- Always ventilate enclosed spaces or use an approved air-supplied respirator.

Welding can release fumes and gases that are hazardous to health. Avoid inhaling [illegible]pors and gases.

- Do not inhale the fumes and gases released during welding or cutting; keep your head out of the fumes. Use adequate ventilation and/or extraction at the arc to keep fumes and gases out of the breathing zone. Additional precautions are also required when welding on galvanized steel.
- Do not weld near chlorinated hydrocarbon vapors from degreasing, cleaning or spraying. The heat and jets from the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritants.
- Shielding gases used in arc welding can displace air and cause injury or death. Always provide adequate ventilation, especially in confined spaces, so that breathing air is safe.
- Read and understand the instructions of the manufacturer for this equipment and the consumables to be used, including the safety data sheet and follow your employer's safety practices.

Explosion: During use, careless operation can lead to fire, explosion, gas leakage or other hazards. Before using the product, we should take proper preventive

know measures to accidents.

Flying sparks from the welding arc, hot workpiece and hot equipment can cause fires and burns. Inadvertent contact of the electrode with metal objects.
may sparks, explosion, overheating or fire.
● Welding sparks and hot materials of welding can easily pass through small cracks and openings into adjacent areas.
● Avoid welding near hydraulic conduits.
● Have a fire extinguisher readily . When compressed gases are used in the , special precautions should be taken to a hazardous situation.
● Vented hollow castings or holders for the heating, cutting or welding. They can explode.
● Sparks and spatter come from the welding arc. Wear protective clothing.
● Connect the work cable as close to the welding area as possible. Work cables connected to the building frame or other locations outside the welding area increase the likelihood that welding current will pass through lifting chains, crane cables or other alternate circuits. This cause a fire or cause lifting chains or cables to overheat until they fail.

Gas cylinders contain gas under high pressure. If damaged, a cylinder can explode.
● Protect gas cylinders from excessive heat, mechanical shock, physical damage, slag, open flames, sparks and electric arcs.
● Make sure cylinders are firm and upright be held to tipping or tipping over.
● Never leave the welding electrode or ground terminal in contact
come with the gas cylinder and do not pull welding cables across the cylinder.
● Slowly open the cylinder valve and turn your face away from the cylinder exhaust valve and gas regulator.

Use only cylinders of compressed gas that contain the proper shielding gas for the process being used and properly functioning regulators designed for the gas and pressure used. All hoses, fittings, etc. must be suitable for the application and kept in good condition.
● Always keep cylinders upright and firm attached to an undercarriage or fixed support.
● Cylinders must be :
- Away from places where they can be hit or to physical damage.
- At a safe distance from arc welding or cutting and other sources of heat, sparks or flame.
● Make sure the electrode, electrode holder or other electrically "hot" parts never come in contact with a cylinder.
● Keep your head and face away from the cylinder valve outlet when you open the cylinder valve.
● The protective caps of the valves should always be in place and hand-tight except when the cylinder is in use or connected for operation.

Touching live electrical parts can cause lethal shock or severe burns. The electrode and working circuit are under electrical tension when the output is turned on. The input power circuit and internal machine circuits are also under voltage when the power is on.

Different products have different input voltage requirements, such as single-phase and three-phase. If the machine with three-phase electricity as the input voltage is phase
fail or voltage fluctuations, it may cause serious damage to the interior of the product.

All products must properly grounded before being connected to the power supply. In case of abnormal
situations, such as casing leakage, you must immediately turn off the power supply and the adjust professional service technician.

Do not snake cables or cords around the body or body parts. The electrode (electrode, tungsten electrode, welding wire, etc.) should
● Never be immersed.
● Never touch when current is flowing.

When the device is connected to the power supply, there is electricity inside the device. Do not touch the wires, circuit boards and related electrical parts.
to danger to life and property damage.

During MIG/MAG or TIG welding, the welding wire, wire spool, the drive rollers and all metal parts contact with the welding wire. Always place the wire feeder on an adequately insulated surface or use a suitable insulated wire feeder support.

Support measures to avoid EMC problems:
1. Power supply
If electromagnetic interference occurs despite correct mains connection, additional measures are required.
2. Welding cables should be as short as possible, should run close together and should be well separated from other cables.
3. Equipotential link
4. Grounding of the workpiece
If necessary, make a ground connection suitable capacitors.
5. Shielding, if necessary
● other nearby devices.
● the entire welding installation.

2. OVERVIEW

Features

- PFC technology: power factor more than 0.99. Multiple advantages such as energy conservation and input voltage of the welder.
- Input voltage, works with single phase: 110V/230V.
- TIG and HF start modes for versatility when welding around sensitive electronic equipment.
- Adjustable arc force, hot start and anti-stick control for greater control and ease of use in MMA welding.
- Electronic HF TIG arc ignition system for contamination-free and easy arc starting with low EMF interference
- High performance on thin surfaces without distortion.
- 2T/4T/ Spot welding
- New look and new panel design: very user-friendly.
- LCD screen for accurate setting and overview.
- Equipped with temperature, voltage and current sensors for high protection.
- Designed to with diesel generators and failures caused by voltage spikes.
- Up/Down button Remote control torch.
- Roller wheel ampere control on the torch.
- Integrated industrial trolley and water cooler.
- Wireless remote control. (optional)
- Foot pedal (optional)

WK TIG Series Features:

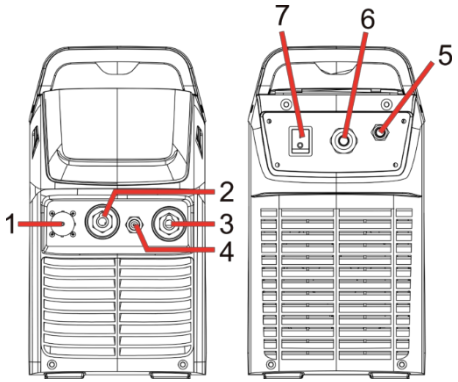
- AC/DC pulsed TIG and MMA, with IGBT and advanced PWM technology;
- Powerful MCU, digital control, digital display;
- Preset all parameters with hold procedure;
- HF/Lift TIG, up/downslope, gas aftercurrent, pulse frequency
- Intelligent protection: Overvoltage, overcurrent, overheating, when the aforementioned problems occur, the alarm indicator on the front panel lights up and the output power is turned off. It can protect itself and prolong the service life.

Parameters

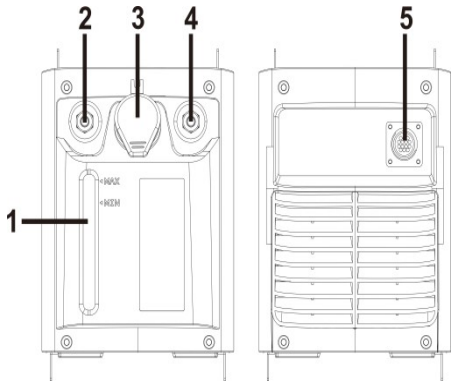
Models / Parameters	World Tig 2016 AC/DC							
Power source	1-110V±10%				1-230V±10%			
Frequency (Hz)	50/60							
	TIG AC	TIG DC	MMA AC	MMA DC	TIG AC	TIG DC	MMA AC	MMA DC
Rated input current (A)	31.4	33.0	36.6	39.0	20.1	20.8	28.7	30.2
Rated input power (kVA)	3.46	3.62	4.01	4.28	4.62	4.78	6.58	6.93
Welding current range (A)	10~160	3~160	10~130		10~200	3~200	10~200	
Max no-load voltage (V)	60	60	60	60	60	60	60	60
Slope up/slope down (S)	0~10							
Pre/Post flow (S)	0.1~2.0/ 0.0~10.0							
Pulse frequency (HZ)	0.5~999							
Range of pulse width (%)	5~95							
Power factor	0.99							
Efficiency (%)	77.2	72.6	83.9	78.2	82.0	76.5	88.9	82.0
Activity cycle (40℃ , 10mins)	60% 160A 100% 125A		60% 130A 100% 100A		60% 200A 100% 155A		35% 200A 60% 155A 100% 120A	
Circuit breaker	JD03-A1 30A							
Protection class	IP21S							
Cooling	AF							
Net weight (kg)	13.2							
Dimensions (mm)	550×190×360							

3. Installation and operation

Front and rear panel layout

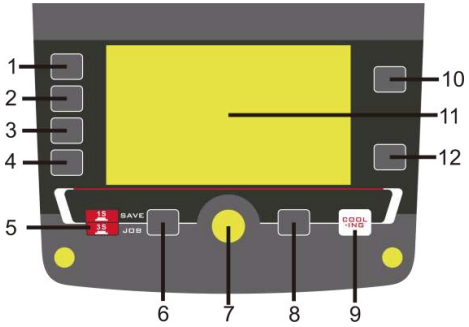


1	Remote control connection
2	"-" connection.
3	"+" connection.
4	Gas connection torch.
5	Entrance gas connection.
6	Power cable.
7	On/Off switch.



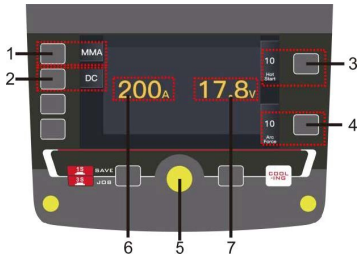
1. Water level
2. Water connection for TIG (red)
3. Filling opening
4. Water connection for TIG (blue)
5. Cooler connection

Control panel



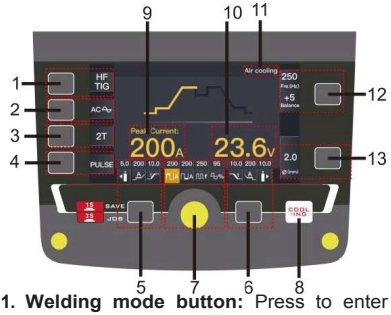
1. **Welding mode button:** Press to select the MMA/ HF TIG/ LIFT TIG welding mode.
2. **AC/DC**
3. **2T/4T**
4. **Pulse**
5. **JOB button (memory):** Press it for 3 seconds to open the JOB program and press it for 1 second to store the parameters in the JOB number.
6. **Div functions (gas pre-flow etc)**
7. **Button for selecting/adjusting parameters.**
8. **Div functions (gas pre-flow and post-flow etc)**
9. **Water cooler selection**
10. **Hot start/balance control.**
11. **Display**
12. **Knob diameter size etc.**

MMA display



1. **Welding mode button:** Press to enter MMA welding mode.
2. **Off-wave form button:** Press to DC output or AC square-wave output.
3. **Parameter A button:** Press to Hotstart. Setting range: 0~10.
4. **Parameter B button:** Press to Bow force. Setting range: 0~10.
5. **Parameter setting knob:** Turn knob to set the welding current and the value of Hot start and Arc force.
6. **Current display:** Displays the welding current during , otherwise the selected current.
7. **Welding voltage display:** the welding voltage.

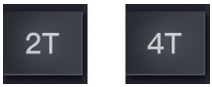
HF/LIFT TIG Display



1. **Welding mode button:** Press to enter HF TIG or LIFT TIG welding mode.

2. **DC/ AC button:** Press to DC output or AC wave output.

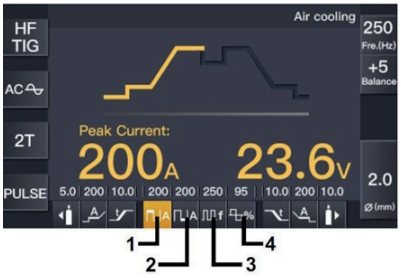
3. **2T/4T**



4. **Welding function button:** Press to select the No pulse/pulse/spot welding function. (There is no spot welding function in TIG welding mode for lifting here).

5. **Function A Button:** Press this to control gas pre-flow, starting flow, etc.
6. **Function B button:** Press to select Down/up slope etc.
7. **Parameter selection/adjustment knob:** Press the knob to the welding current and other parameters. Turn the knob to adjust the value of the parameters.
8. **Selection button: cooling modes**
9. **Ampere:** Displays the welding current during welding, otherwise displays the selected current.
10. **Voltage:** display voltage.
11. **Cooling display**
12. **Parameter A button:** Press to select AC Balance/ AC Frequency.
13. **Parameter B button:** Press to select the diameter.

TIG pulse display



1. **Peak current:** 3~200A (DC)/10~200A (AC).
2. **Base current:** 3~200A (DC)/10~200A (AC)
3. **Pulse frequency:** 0.5~999Hz.
4. **Pulse width:** 5~95%.

TIG Spot Screen

1. **Current display:** 3~200A (EQUAL current)/10~200A (DELETE current).
2. **Ton display:** 0.2~1.0s.
3. **Toff display:** off~10.0s.

JOB program (memory)

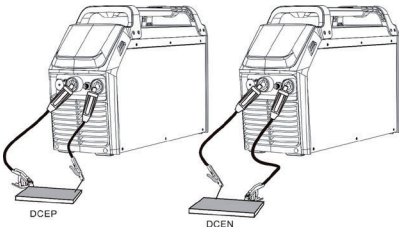
1. **Welding mode display:** The selected welding modes are displayed here.
2. **Display parameters:** All selected parameter values are displayed here.
3. **JOB number:** You can store a total of 1~10 JOB numbers or recall the selected parameters with the JOB button.
4. **Load/delete display:** Press the Function A/B key to recall/delete the parameter setting for the selected JOB number.

Installation and operation for MMA welding

Connection of output cables

There are two sockets available on this welder. For MMA welding, the electrode holder connected to the positive terminal, while the ground (workpiece) cable is connected to the negative terminal, this is known as DCEP. However, different electrodes require different polarity for optimum results and proper polarity must be observed
be paid attention, refer to the electrode manufacturer's information for proper polarity.

DCEP: Electrode connected to "+"
DCEN: Electrode connected to "-"
MMA (DC): Choose the connection of DCEN or DCEP according to the different electrodes. Refer to the electrode manual.
MMA (AC): No polarity connection requirements.



(1) Connect the ground cable to "-" and clockwise;
(2) Connect the ground clamp to the workpiece. The contact to the workpiece must make solid contact with clean, bare metal, with no corrosion, paint or deposits on the contact point.
(3) Connect the electrode wire to "+" and clockwise;

Electrode size

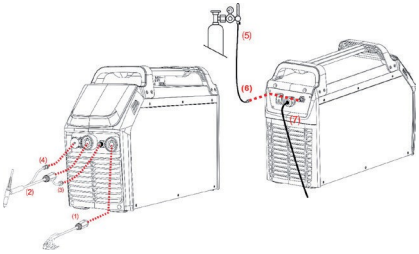
Average thickness of the material	Maximum Recommended Diameter Electrode
1.0~2.0 mm	2.5 mm
2.0~5.0 mm	3.2 mm
5.0~8.0 mm	4.0 mm
>8.0 mm	5.0 mm

Welding current (amperage)

Average thickness of the material	Maximum Recommended Diameter Electrode
1.0~2.0 mm	2.5 mm
2.0~5.0 mm	3.2 mm
5.0~8.0 mm	4.0 mm
>8.0 mm	5.0 mm

TIG welding

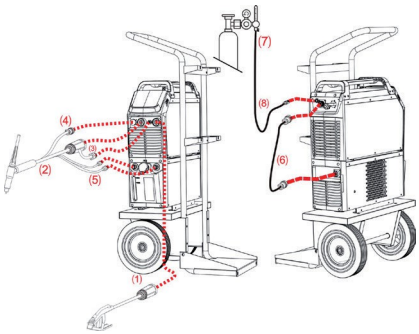
Setting up plant for TIG welding



(1) Plug the grounding cable into the positive terminal on the front of the unit and tighten.
(2) Plug the welding torch into the negative terminal on the front panel and tighten.
(3) Connect the gas line from the TIG gun to the exhaust connector on the front of the machine.
(4) Connect the torch switch control cable to the 12-pin connector on the front of the machine.
(5) Connect the gas regulator to the gas cylinder and connect the gas line to the gas regulator. Check for leaks!

(6) Connect the gas line to the inlet gas connection of the machine via the quick connector on the rear panel. Check for leaks!
(7) Connect the power cord of the welder to the output switch in the electrical box at the site. Turn on the power switch.
(8) Carefully open the valve of the gas cylinder and set the required gas flow rate.
(9) Select "Lift TIG" or "HF TIG" on the front panel.
(10) torch control 2T/4T.
(11) Set welding function NO PULSE/PULSE/SINGLE SPOT/MULTI SPOT.
(12) Setting current and TIG parameters, including Gas pre/post current etc.

Installation and operation for TIG welding



(1) Insert the st er of the grounding cable into the positive terminal on the front of the unit and tighten.
(2) Insert the st er of the welding torch into the negative terminal on the front panel and .
(3) Connect the gas line from the TIG gun the gas connector on the front of the machine.
(4) Connect the control cable from the torch switch to the connector on the front of the machine.
(5) Connect the water inlet and outlet of the TIG gun to the water inlet and outlet on the front of the water cooler.
(6) Connect the water cooler control cable to the connector on the rear panel of the welder.
(7) Connect the gas regulator to the gas cylinder and connect the gas line to the gas regulator. Check for leaks!
(8) Connect the gas line to the inlet gas connection of the machine via the quick connector on the rear panel. Check for leaks!
(9) Connect the power cord of the welder to the output switch in the electrical box at the site. Turn on the power switch.

Business Environment

- The altitude above sea level is less than 1,000 meters.
- Temperature range: -10°C~ +40°C.
- The relative humidity is lower than 90% (20°C).
- Preferably place the machine at an angle of no more than 15° above the floor.
- Protect the device from heavy rain or in hot conditions from direct sunlight.
- The content of dust, acid, corrosive gas in the surrounding air or dust must not exceed the normal standard.
- Ensure adequate ventilation during welding. There must be at least 30 cm free distance between the device and the wall.

Operational notifications

- Please read §1 carefully before using this equipment.
- Connect the ground wire to the machine.
- If you close the power switch, no-load voltage may be exported. Do not the output electrode with any part of your body.
- Before use, no people are allowed in the be nearby. Do not look at the bow in unprotected eyes.

- Make sure the machine is well ventilated to improve the working ratio.
- Turn off the motor when operation is to save energy.
- When the power switch turns off protectively due to a malfunction. Do not restart the device until the problem is resolved. Otherwise, the problem will get worse.

4. Maintenance and troubleshooting

Maintenance
To ensure that the arc welding machine works very efficiently and safely, it should be regularly . Let customers understand the maintenance methods and means of arc welding machine more, enable customers perform on simple examination and protection by themselves, try your best to reduce the failure rate and repair times of arc welding machine, so as to prolong its service life.

Warning: For safety while servicing the machine, turn off the power supply and wait 5 minutes, until the voltage of the capacitance has already dropped to the safe voltage of 36V!

date	Maintenance article
Daily research	Check that the knobs and switches on the front and back of the arc welder are smooth and correctly placed. If the knob is not correctly, correct it. If you cannot correct or repair the knob, replace immediately. After turning on the power, look/listen if the arc welder vibrates, whistles or has a strange smell. If any of the above problems, find out the reason get rid of it. If you cannot find out the reason, contact the local representative in this area or branch company. Check whether the fan is damaged and whether it rotates or can be normally. If the fan is damaged, replace it immediately. If the fan does not run after the arc welder has , check if anything in the blade is blocked. If the fan does not spin after solving the above problems, you can poke the blade by rotating the fan. If the fan runs normally, the starting capacity. If not, replace the fan. Check if the power cable is damaged. If the cable is damaged, it must be wrapped, insulated or replaced.
Monthly survey	Use the dry compressed air to clean the inside of arc welding machines. Especially for clearing dust on radiator, main voltage transformer, inductance, IGBT module, the diode and circuit board, etc.
Annual	Maintenance, inspection and validation

Troubleshooting

● Before arc welding machines are shipped from the factory, they have already been carefully debugged. Therefore, forbid anyone not authorized by us to make any modifications to the equipment!
● Maintenance must be carefully. If a wire becomes flexible or is , it can potentially cause danger to the user!
● Only professional service personnel authorized by us may overhaul the machine!
● Be sure to turn off the power of the arc welding machine before turning on the contouring appara- !
● If there is a problem and no authorized professional maintenance personnel, contact the local representative or branch office!

If there are some simple problems with the TIG series welding machines, please refer to the following revision table:

S/N	Problems		Reasons	Solution
1	Turn the power source, but the fan does not work		There is something in the fan	Clearing
			Fan starting capacitor damaged	Condenser replacement
			The fan motor damaged	Fan change
2	The maximum and minimum value displayed do not correspond with the set value.		The maximum value is not in accordance	Adjust the potentiometer Imax on the control card to.
			The minimum value is not consistent	Adjust the potentiometer in the power meter on.
3	No no-load voltage output (MMA)		The machine is damaged	Check the main circuit
4	Arc cannot be ignited (TIG)	There is a spark on the HF ignition plate .	The welding cable is not connected to the two outputs of the welding device.	Connect the welding cable to the output of the welding device.
			The welding cable damaged.	Repair or replace.
			The ground cable is unstably connected.	Check the ground cable.
			The welding cable is too long.	Use an appropriate welding cable.
			There is oil or dust on the workpiece.	Check it and remove it.
			The distance between tungsten electrode and workpiece is too large.	Reduce the distance (about 3 mm).
		There is no spark on the HF-ignition pr intplate.	The HF ignition board is not working.	Repair or replace Pr8
			Welding gun switch failure.	Check the switch of the welding gun, control cable and aero connector.
5	No gas flow (TIG)		Gas cylinder is tight or gas pressure is low	Opening or replacing the gas cylinder
			Something in the valve	Remove
			Solenoid valve is damaged	Change it
6	Gas always flows		Front panel gas test is on	The gas test on the front panel is off.
			Something in the valve	Remove
			Solenoid valve is damaged	Change it
			The pre-gas time adjustment knob on the front panel is damaged.	Repair or replace

7	The welding current cannot be adjusted	The welding current potentiometer on the connection on the front panel is incorrect or damaged.	Repair or replace the potentiometer
8	The displayed welding current does not match the actual value.	The min value displayed does not match with the actual value.	Set the potentiometer to the nutrition chart.
		The maximum value displayed does not correspond to the actual value.	Adjust the potentiometer Imax on the nutrition card to.
9	The penetration of molten pole is not enough.	The welding current is set too low	Increase the welding current

MMA welding - troubleshooting

The following table covers some common problems in MMA welding. In all cases of equipment failure, the manufacturer's recommendations should be strictly followed.

NO.	Problems	Possible reason	Proposed Solution
1	**No arc**	Incomplete welding circuit	Check that the ground cable is connected. Check all cable connections.
		Wrong mode selected	Make sure the MMA selector switch is selected
		No power supply	Check that the machine is turned on and power.
2	**Porosity - small cavities or holes due to gas bubbles in weld metal**	Arc length too long	Shorten the arc length
		Workpiece dirty, contaminated or damp	Remove moisture and materials such as paint, grease, oil and dirt, including mill scale from metal
		Moist electrodes	Use only dry electrodes
3	**Excessive splashing**	Current too high	Lower the current or choose a larger electrode
		Arc length too long	Shorten the arc length
4	**Weld seam is on top, lack of fusion**	Insufficient heat supply	Increase the amperage or choose a larger electrode
		Workpiece dirty, contaminated or damp	Remove moisture and materials such as paint, grease, oil and dirt, including mill scale from metal
		Poor welding technique	Use proper welding technique or seek assistance for proper technique
5	**Lack of penetration**	Insufficient heat supply	Increase the amperage or choose a larger electrode
		Poor welding technique	Use proper welding technique or seek assistance for proper technique
		Poor connection preparation	Check the design and fit of the joint, making sure the material is not too thick for the wire size.
6	**Excessive penetration - burnout**	Excessive heat input	Reduce the amperage or use a smaller electrode
		Incorrect welding speed	Try increasing the welding speed

7	**Uneven weld appearance**	Unsteady hand, shaky hand	Using two hands whenever possible to stand upright, practice your technique
8	**Distortion - movement of the base metal during welding**	Excessive heat input	Reduce the amperage or use a smaller electrode
		Poor welding technique	Use proper welding technique or seek assistance for proper technique
		Poor joint preparation and/or design	Check the design and fit of the joint, making sure the material is not too thick. Get assistance for the proper design and fit of the joint
9	**Electrode welding with different or unusual arc characteristics**	Wrong polarity	Change polarity, check electrode manufacturer for proper polarity

DC TIG welding - troubleshooting

The following table covers some common problems in DC TIG welding. In all cases of sto- rations to the equipment, the manufacturer's recommendations should be strictly followed.

NO.	Problems	Possible reason	Proposed Solution
1	Tungsten **burns away quickly**	Wrong gas or no gas	Use pure argon. Check that the cylinder has gas, is connected and turned on, and that the torch valve is open.
		Improper gas flow	Check that the gas is connected and that the hoses, gas valve and torch not blocked.
		Torch cap not properly mounted	Make sure the torch protective cap is positioned so that the O-ring is inside the torch housing.
		Wrong tungsten is used	If necessary, check and replace the tungsten type
		Tungsten oxidized after the weld is complete	Let the shielding gas flow for 10~15 seconds after stopping the arc. 1 second for every 10 amperes of welding current.
2	**Contaminated tungsten**	Tungsten touching in the molten bath	Make sure the tungsten is not in contact with the welding current. Raise the torch so that the tungsten is 2~ 5 mm from the workpiece.
		Touching the tungsten wire	Make sure the welding wire does not touch the tungsten during welding, feed the welding wire into the leading edge of the weld pool before the tungsten.
3	**Porosity - poor weld appearance and color**	Wrong gas/ poor gas flow/ gas leak	The gas is connected, the valve is ON, the gas hoses, gas valve and torch are not blocked. Adjust the gas flow rate between 20~40 CFH (6~12 l/min). Check hoses and fittings for leakage
		Contaminated base metal	Remove moisture and materials such as paint, grease, oil and dirt from base metal
		Contaminated welding wire	Remove all grease, oil or moisture from the additive metal
		Wrong welding wire	Check the filler wire and replace if necessary

4	**Yellowish residue/ smoke on the alumina nozzle & discolored tungsten**	Wrong gas	Use pure argon gas
		Improper gas flow	Set the gas flow rate between 20~40 CFH (10~20 l/min) flow rate
5	**Unstable arc during DC welding**	Contaminated base metal	Remove materials such as paint, grease, oil and dirt, including mill scale from base metal
		Tungsten is contaminated	Remove 10 mm of contaminated tungsten and regrind the tungsten.
		Arc length too long	Lower the torch so that the tungsten is 2~ 5 mm from the workpiece.
6	**Arc strays during DC welding**	Poor gas flow	Check and set the gas flow rate between 20~40 CFH flow rate
		Incorrect arc length	Lower the torch so that the tungsten is 2~ 5 mm from the workpiece.
		Tungsten incorrect or in poor condition	Check that the correct type of tungsten is . Remove 10 mm from the welding end of the tungsten and regrind the rod.
		Poorly prepared tungsten	Grinding marks should run longitudinally with tungsten, not circularly. Use proper grinding method and grinding wheel
		Contaminated base metal or welding wire	Remove contaminating materials such as paint, grease, oil and dirt including mill scale from the base metal. Remove all grease and oil from the filler metal.
7	**Arc starts difficult or not possible with DC welding**	Incorrect setting of the machine	Check that the machine is set correctly
		No gas, improper gas flow	Check that the gas is connected and the cylinder valve is open, check that the hoses, gas valve and torch are not blocked. Set the gas flow rate between 20~40 CFH.
		Wrong tungsten size or type	Check and change the size and or tungsten if necessary
		Loose connection	Check and tighten all connectors
		Ground terminal not connected to work	Where possible, connect the ground terminal directly to the workpiece.

List of error codes

Type of error	Error code	Description
Thermal relay	E01	Overheating (1st thermal relay)
	E02	Overheating (2nd thermal relay)
	E03	Overheating (3rd thermal relay)
	E04	Overheating (4th thermal relay)
	E09	Overheating (Programmed by default)
Welding machine	E10	Phase loss
	E11	No water
	E12	No gas
	E13	Under tension
	E14	Overvoltage
	E15	Overcurrent
	E16	Wire feed overload
Switch	E20	Fault in the button on the control panel at the switching on the machine
	E21	Other control panel malfunctions at the switching on the machine
	E22	Error in torch when turning on machine
	E23	Torch fault during normal working process
Accessory	E30	Disconnecting from cutting torch
	E31	Water cooler disconnected
Communications	E40	Connection problem between wire feeder and power source
	E41	Communication error

ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR WORK SHALL BE PERFORMED ONLY BY MANUFACTURER'S PERSONNEL OR BY MANUFACTURER'S DESIGNATED AUTHORIZED PERSONNEL.

Operating Instructions
Version 1 2024

This is a translation of the original instructions for use.

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