WOKIN

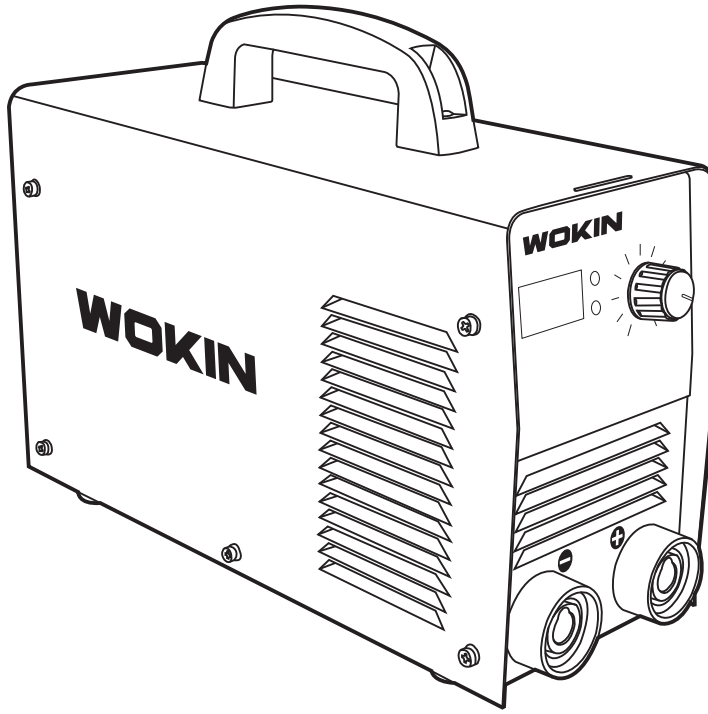
INVERTER MMA DC WELDING MACHINE

INSTRUCTION MANUAL

INDUSTRIAL

581116
160A
230V~
50/60Hz

581120
200A
230V~
50/60Hz



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SAVE THIS MANUAL!
You will need this manual for safety instructions, operating procedures and warranty.
Put it and the original sales receipt in a safe dry place for future reference.

IMPORTANT SAFETY INFORMATION

⚠ WARNING!

OPERATION AND MAINTENANCE OF ARC WELDING EQUIPMENT CAN BE DANGEROUS AND HAZARDOUS TO YOUR HEALTH.

To prevent possible injury, read, understand and follow all warnings, safety precautions and instructions before using the equipment.

Important Safety Precautions

GASES AND FUMES

Gases and fumes produced during the Arc welding or cutting process can be dangerous and hazardous to your

health.

1. Keep all fumes and gases from the breathing area. Keep your head out of the welding fume plume.
2. Use an air-supplied respirator if ventilation is not adequate to remove all fumes and gases.
3. The kinds of fumes and gases from the arc welding/cutting depend on the kind of metal being used, coatings on the metal, and the different processes. You must be very careful when cutting or welding any metals which may contain one or more of the following: Antimony/ Arsenic/ Barium/Beryllium/ Cadmium/ Chromium Cobalt/ Copper/ Lead/ Manganese/ Mercury/ Nickel/ Selenium/ Silver/ Vanadium
5. Always read the Material Safety Data Sheets (MSDS) that should be supplied with the material you are using. These MSDSs will give you the information regarding the kind and amount of fumes and gases that may be dangerous to your health.
6. Use special equipment, such as water or down draft welding/cutting tables, to capture fumes and gases.
7. Do not use the welding torch in an area where combustible or explosive gases or materials are located.
8. Phosgene, a toxic gas, is generated from the vapors of chlorinated solvents and cleansers. Remove all sources of these vapors.

ELECTRIC SHOCK

Electric Shock can injure or kill. The arc welding process uses and produces high voltage electrical energy. This electric energy can cause severe or fatal shock to the operator or others in the workplace.

1. Never touch any parts that are electrically "live" or "hot."
2. Wear dry gloves and clothing. Insulate yourself from the work piece or other parts of the welding circuit.
3. Repair or replace all worn or damaged parts.
4. Extra care must be taken when the workplace is moist or damp.
5. Install and maintain equipment according to NEC code, refer to relative standards
6. Disconnect power source before performing any service or repairs.
7. Read and follow all the instructions in the Operating Manual.

FIRE AND EXPLOSION

Fire and explosion can be caused by hot slag, sparks, or the arc weld.

1. Be sure there is no combustible or flammable material in the workplace. Any material that cannot be removed must be protected.
2. Ventilate all flammable or explosive vapors from the workplace.
3. Do not cut or weld on containers that may have held combustibles.
4. Provide a fire watch when working in an area where fire hazards may exist.
5. Hydrogen gas may be formed and trapped under aluminum workpieces when they are cut underwater, or while using a water table. Do not cut aluminum alloys underwater or on a water table unless the hydrogen gas can be eliminated or dissipated. Trapped hydrogen gas that is ignited will cause an explosion.

NOISE

Noise can cause permanent hearing loss. Arc welding/cutting processes can cause noise levels to exceed safe limits. You must protect your ears from loud noise to prevent permanent loss of hearing.

1. To protect your hearing from loud noise, wear protective ear plugs and/ or ear muffs. Protect others in the workplace.
2. Noise levels should be measured to be sure the decibels (sound) do not exceed safe levels.

ARC WELDING RAYS

Arc Welding/ Cutting Rays can injure your eyes and burn your skin. The arc welding/cutting process produces very bright ultra violet and infra red light. These arc rays will damage your eyes and burn your skin if you are not properly protected.

1. To protect your eyes, always wear a welding helmet or shield. Also always wear safety glasses with side shields, goggles or other protective eye wear.
2. Wear welding gloves and suitable clothing to protect your skin from the arc rays and sparks.
3. Keep helmet and safety glasses in good condition. Replace lenses when cracked, chipped or dirty.
4. Protect others in the work area from the arc rays. Use protective booths, screens or shields.

Transporting methods

These units are equipped with a handle for carrying purposes.

WARNING: ELECTRIC SHOCK can kill.

A DO NOT TOUCH live electrical parts. Disconnect input power conductors from de-energized supply line before moving the welding power source.

WARNING: FALLING EQUIPMENT can cause serious personal injury and equipment damage.

1. Lift unit with handle on top of case.

2. Use handcart or similar device of adequate capacity.

3. If using a fork lift vehicle, place and secure unit on a proper skid before transporting.

INSTALLATION RECOMMENDATION

Installation Environment

MMA A series is designed for use in hazardous environments.

Examples of environments with increased hazardous environments are -

In locations in which freedom of movement is restricted, so that the operator is forced to perform the work in a cramped (kneeling, sitting or lying) position with physical contact with conductive parts; In locations which are fully or partially limited by conductive elements, and in which there is a high risk of unavoidable or accidental contact by the operator, or in wet or damp hot locations where humidity or perspiration considerable reduces the skin resistance of the human body and the insulation properties of accessories.

Environments with hazardous environments do not include places where electrically conductive parts in the near vicinity of the operator, which can cause increased hazard, have been insulated.

Installation Location

Be sure to locate the welder according to the following guidelines:

1. In areas, free from moisture and dust.
2. In areas, not subjected to abnormal vibration or shock.
3. In areas, free from oil, steam and corrosive gases.
4. Place at a distance of 304.79mm or more from walls or similar that could restrict natural airflow for cooling.
5. In areas, not exposed to direct sunlight or rain.
6. Ambient temperature: between -10 degrees C to 40 degrees C.

WARNING!

We advise that this equipment be electrically connected by a qualified electrician.

The following Primary Current recommendations are required to obtain the maximum welding current and duty cycle from this Power Supply:

Model	Primary supply lead size	Minimum primary current circuit size	Current & Duty Cycle
581116	Minimum 2.5mm^2	230V/ 36.8 A	160A/26. 4V@35%
581120	Minimum 2.5mm^2	230V/46.7A	200A/28V@35%

Table 1 Primary current circuit sizes to achieve maximum current

Electrical Input Connections

WARNING: ELECTRIC SHOCK can kill; SIGNIFICANT DC VOLTAGE is present after removal of input power. DO NOT TOUCH live electrical parts

SHUT DOWN welding power source, disconnect input power employing lockout/ tagging procedures.

Lockout/ tagging procedures consist of padlocking line disconnect switch in open position, removing fuses from fuse box, or shutting off and red-tagging circuit breaker or other disconnecting device.

Electrical Input Requirements

Operate the welding power source from a single phase 50/60 Hz, AC power supply. The input voltage must match one of the electrical input voltages shown on the input data label on the unit nameplate. Contact the local electric utility for information about the type of electrical service available, how proper connections should be made, and inspection required.

The line disconnect switch provides a safe and convenient means to completely remove all electrical power from the welding power supply whenever necessary to inspect or service the unit.

According to Table 1 and below as a guide to select line fuses for the disconnect switch.

Phase	Input Voltage	Fuse Size	Model
1 phase	230V± 15% AC	40 Amps	581116
1 phase	230V± 15% AC	60 Amps	581120

Table 2

Notice: Fuse size is based on not more than 200 percent of the rated input amperage of the welding power source (Based on Article 630, National Electrical Code).

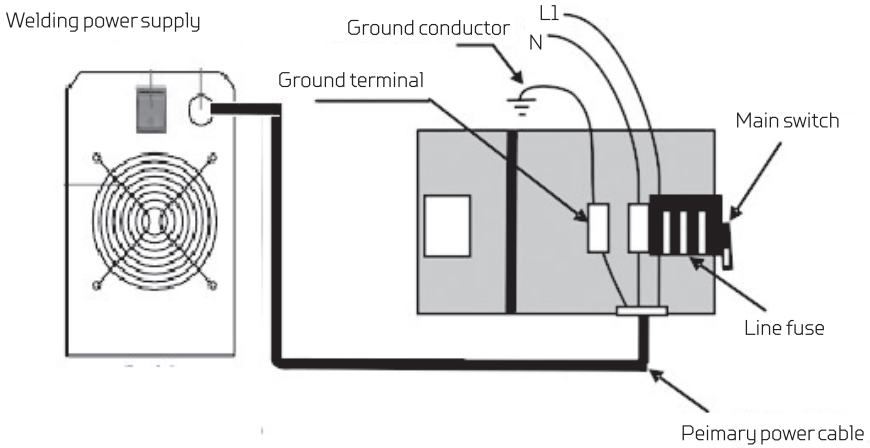


Figure 1 Electrical input connections

Duty cycle

The duty cycle of a welding power source is the percentage of a ten (10) minute period that it can be operated at a given output without causing overheating and damage to the unit. If the welding amperes decrease, the duty cycle increases. If the welding amperes are increased beyond the rated output, the duty cycle will decrease.

WARNING: Exceeding the duty cycle ratings will cause the thermal overload protection circuit to become energized and shut down the output until has cooled to normal operating temperature.

Continually exceeding the duty cycle ratings can cause damage to the welding power source.

NOTICE

Due to variations that can occur in manufacture products, claimed performance, voltages, ratings, all capacities, measurements, dimensions and weights quoted are approximate only. Achievable capacities and ratings in use and operation will depend upon correct installation, use, applications, maintenance and service.

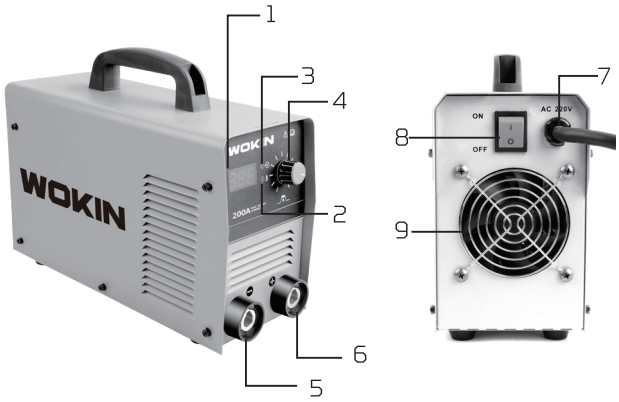
SPECIFICATIONS & SYMBOL LEGEND

MODEL	581116	581120
Input voltage and frequency	230V±15% 50/60Hz	230V±15% 50/60Hz
KVA @ max input	8.5 KVA	10.8KVA
Max current	160A	200A
Output current range MMA	30A-160A	30A-200A
Open circuit voltage	105V	108V
Duty cycle at 40°C	35%	35%
Dimensions (mm)	308x120x250	344x130x260

Symbol legend

A	Amperage		Stick (SMAW)
V	Voltage		Pulse Current Function (GTAW)
Hz	Hertz(frequency)	t	Spot Time (GTAW)
SEC	Seconds		Remote outputs control (Panel/Remote)
%	Percent		Remote Function
⎓	DC (Direct Current)		Arc Control (SMAW)
∿	AC (Alernating Current)	t_2	Gas Post-Flow time
	2T(GTAW)	t_1	Gas Pre-Flow time
	2T(GTAW)	VRD	Voltage Reduction Device Circuit
	Repeat Function (GTAW)	—	Negative
	SPOT Function (GTAW)	+	Positive
	High Frequency Starting(GTAW)		Gas Input
	Lift Sart (GTAW)		Gas Output

OPERATOR CONTROLS



1 . Digital Display
2. Warning Indicator
3. Input Indicator
4. Current Setting
5. Negative (-) Socket.
6. Positive (+) Socket.
7. Input Power Cable
8. Main Power Switch
9. Fan

WARNING

When the welder is connected to the primary supply voltage, the internal electrical components maybe at primary potential with respect to earth.

SET-UP (STICK)

Conventional operating procedures apply when using the welding power source, i.e. connect work lead directly to work piece and welding cable is used to electrode holder. Wide safety margins provided by the coil design ensure that the welding power source will withstand short-term overload without adverse effects. The welding current range values should be used as a guide only. Current delivered to the arc is dependent on the welding arc voltage, and as welding arc voltage varies between different classes of electrodes, welding current at any one setting would vary according to the type of electrode in use. The operator should use the welding current range values as a guide, and then finally adjust the current setting to suit the application.

⚠ **WARNING:**

Before connecting the work clamp to the work and inserting the electrode in the electrode holder make sure the Primary power supply is switched off.

CAUTION 2:

Remove any packaging material prior to use. Do not block the air vents at the front or rear of the Welding Power Source.

Symbol legend

· Connect work lead to negative terminal.
· Connect electrode lead to positive terminal.
· Switch machine on.
· Set welding current control (see table 5).

Workpiece thickness mm	2.0	3.0	4.0-5.0
Electrode diameter mm	2.0	3.2	3.2-4.0
Welding current (A)	40-80	70-120	90-160

BASIC ARC WELDING GUIDE

Electrode polarity

Stick electrodes are generally connected to the "+" terminal and the work lend to the "2 terminal but if in doubt consult the electrode manufacturers literature.

Effects of stick welding various materials High tensile and alloy steels

The two most prominent effects of welding these steels are the formation of a hardened zone in the weld area, if suitable precautions are not taken, the occurrence in this zone of under-bead cracks. Hardened zone and under-bead cracks in the weld area may be reduced by using the correct electrodes, preheating, using higher current settings, using larger electrodes size, short runs for larger electrode deposits or tempering in a furnace.

Manganese steels

The effect on manganese steel slow of cooling from high temperature is to embrittle it. For this reason it is absolutely essential to keep manganese steel cool during welding by quenching after each weld or skip welding to distribute the heat.

Cast iron

Most types of cast iron, expect white iron, are weldable. White iron, because of its extreme brittleness, generally cracks when attempts are made to weld it. Trouble may also be experienced when welding white-heart malleable, due to the porosity caused by gas held in this type of iron.

Copper and alloys

The most important factor is the high rate of heat conductivity of copper, so making preheating of heavy sections necessary to give proper fusion of weld and base metal.

Types of Electrodes

Arc welding electrodes are classified into a number of groups depending on their applications. There are a great number of electrodes used for specialized industrial purposes, which are not of particular interest for everyday general work. These include some low hydrogen types for high tensile steel, cellulose types for welding large diameter pipes, etc. The range of electrodes dealt with in this publication will cover the vast majority of applications likely to be encountered; are all easy to use and all will work on even the most basic of welding machines.

Metals being joined	Electrode	Comments
mild steel	6013	Ideal electrodes for all general purpose work. Features include out standing operator appeal, easy arc starting and low spatter.
mild steel	7014	All positional electrodes for use on mild and galvanized steel furniture, plates, fences, gates, pipes and tanks etc. Especially suitable for vertical-down welding.
cast iron	nickel 99%	Suitable for joining all cast irons except white cast iron.suitable for vertical-down welding.
stainless steel	318L-16	High corrosion resistance. Ideal for dairy work, etc. On stainless steels.
copper, bronze, brass etc.	bronze 5.7ERCUSI-A	Easy to use electrode for marine fittings, water taps and valves, water trough float arms, etc. Also for joining copper to steel and for bronze overlays on steel shafts.
high alloy steels, dissimilar metals, crack resistance, all hard-to-weld jobs	312-16	It will weld most problematical jobs such as springs, shafts, broken joins mild steel to stainless and alloy steels. Not suitable for Aluminum.

MAINTENANCE

If this equipment does not operate properly, stop work immediately and investigate the cause of the malfunction. Maintenance work must be performed by an experienced, qualified person only. Any electrical work must be performed by an electrician or other person properly trained in servicing electrical equipment. Do not permit untrained persons to inspect, clean or repair this equipment. Use only recommended replacement parts when servicing this machine.

Periodically clean the inside of the welding power source by using clean dry compressed air of not over 25psi as normal preventive maintenance. At the time of the cleaning, a full inspection of the welding machine and setup should be performed. Check warning labels on the machine for readability; replace if necessary. Check input and output connections as well as frame ground connections to the machine to insure that they are tight and the wires are not frayed or overheated. Inspect internal wiring of machine for loose or frayed connections; tighten or repair as necessary. It would also be advisable to check connections to wire feeders, fixtures, etc., at this time. Any damaged cable or hoses should be replaced.

DANGER: HIGH VOLTAGE is present internally even with the control power switch in the OFF position. Before inspecting, cleaning, or servicing, disconnect and lock out input power to the power source.

TROUBLESHOOTIING

⚠ WARNING!

There are extremely dangerous voltages and power levels present inside this product. Do not attempt to open or repair unless you are an accredited service agent and you have had training in power measurements and troubleshooting techniques.

If major complex subassemblies are faulty, then the welding power source must be returned to an accredited service agent for repair.

The basic level of troubleshooting is that which can be performed without special equipment or knowledge.

Check the item and excrescent phenomenon exclusion method

Fault	Cause	Remedy
The AC power indicator light is not lit and welding arc can not be established.	1. No power input or main power switches damage. 2. Indicator damage. 3. Indicator light is open circuit.	1. Check input power or replace main power switch. 2. Replace indicator light. 3. Replace indicator light.
The AC power indicator light on and welding arc can not be established.	1. Input voltage unstable. 2. PCB damage.	1. Connect stabilizer or reset power switch. 2. Replace PCB.
The warning indicator light on.	1. Over load. 2. IGBT damage.	1. Reduce current or wait moment. 2. Replace IGBT.
MMA (STICK) mode no open circuit voltage.	1. Function switch select to the MMA mode position. 2. PCB damage. 3. Damage.	1. Select to MMA mode. 2. Replace PCB. 3. Replace IGBT.
MMA (STICK) mode unstable welding arc.	PCB damage.	Replace PCB.
Fan does not run.	1. PCB damage. 2. Fan motor damage.	1. Replace PCB. 2. Replace fan motor.

Weld quality is dependent on the selection of the correct consumables, maintenance of equipment and proper welding technique.

Description	Possible Cause	Remedy
Excessive bead build-up or poor penetration or poor fusion at edges of weld.	Welding current is too low.	Increases weld current, and/ or faulty joint preparation.
Weld bead too wide and flat or undercut at edges of weld or excessive burn through.	Welding current is too high.	Decreases weld current.
Weld bead too small or insufficient penetration or ripples in bead are widely spaced apart.	Travel speed too fast.	Reduce weld speed.
Weld bead too wide or excessive bead build up or excessive penetration in butt joint.	Travel speed too low.	Increase travel speed.
Uneven leg length in fillet joint.	Wrong rong placement of filler rod.	Re-position filler rod.
Dirty weld pool.	1. Electrode contaminated through contact with work piece or filler rod material. 2. Gas contaminated with air.	1. Clean the electrode by grinding off the contaminates. 2. Check gas lines for cuts and loose fitting or change gas cylinder.
Electrode melts or oxidizes when an arc is struck.	1. Electrode is connected to the "+" terminal. 2. No gas flowing to welding region. 3. Torch is clogged with dust. 4. Gas hose is cut. 5. Gas passage contains impurities. 6. Gas regulator turned off. 7. Torch valve is turned off. 8. The electrode is too small for the welding current.	1. Connected the electrode to the "–"terminal. 2. Check the gas lines for kinks or breaks and gas cylinder contents. 3. Clean torch. 4. Replace gas hose. 5. Dismantle a soft tube from the torch then raise gas pressure and blow out impurities. 6. Turn on. 7. Turn on. 8. Increase electrode diameter or reduce the welding current.
Poor weld finish.	Inadequate shielding gas.	Increase gas flow or check gas line for gas flow problems
Arc flutters during TIG welding.	1. Tungsten electrode is too large for the welding current. 2. Absence of oxides in the weld pool.	1. Select the right size electrode. Refer to basic TIG welding guide. 2. Refer basic TIG welding guide for ways to reduce arc flutter.
Welding arc can not be established.	1. Work clamp is not connected to the work piece or the work/ torch leads are not connected to the right welding terminals. 2. Torch lead is disconnected. 3. Gas flow incorrectly set, cylinder empty or the torch valve is off.	1. Connect the work clamp to the work piece or connect the work/ torch leads to the right welding terminals. 2. Connect it to the "–" terminal. 3. elect the right flow rate, change cylinders or turn torch valve on.
Arc start is not smooth.	1. Tungsten electrode is too large for the welding current. 2. The wrong electrode is being used for the welding job. 3. Gas flow rate is too high. 4. Incorrect shielding gas is being used. 5. Poor work clamp connection to work piece.	1. Select the right size electrode. Refer to basic TIG welding guide. 2. Select the right electrode type. Refer to basic TIG welding guide 3. Select the correct rate for the welding job. 4. Select the right shielding gas. Refer to Basic TIG Welding Guide. 5. Improve connection to work piece.

Stick welding problems

Description	Cause	Remedy
Gas pockets or voids in weld metal (Porosity).	1. Electrodes are damp. 2. Welding current is too large. 3. Surface impurities such as: oil, grease, paint, etc.	1. Dry electrodes before use. 2. Reduce welding current. 3. Clean joint before welding.
Crack occurring in weld metal soon after solidification commences.	1. Rigidity of joint. 2. Insufficient throat thickness. 3. Cooling rate is too high.	1. Redesign to relieve weld joint of severe stresses or use crack resistance electrodes. 2. Travel slightly slower to allow greater build up in throat. 3. Preheat plate and cool slowly.
A gap is left by failure of the weld metal to fill the root of the weld.	1. Welding current is too low. 2. Electrode too large for joint. 3. Insufficient gap. 4. Incorrect sequence.	1. Increase welding current. 2. Use smaller diameter electrode. 3. Allow wider gap. 4. Use correct build-up sequence.
Portions of the weld run do not fuse to the surface of the metal or edge of the joint.	1. Small electrodes used on heavy cold plate. 2. Welding current is too low. 3. Wrong electrode angle. 4. Travel speed of electrode is too high. 5. Scale or dirt on joint surface.	1. Use larger electrodes and preheat the plate. 2. Increase welding current. 3. Adjust angle so the welding is directed more into the base metal. 4. Reduce travel speed of electrode. 5. Clean surface before welding.
Non-metallic particles are trapped in the weld metal (slag inclusion).	1. Non-metallic particles may be trapped in undercut from previous run. 2. Joint preparation too restricted. 3. Irregular depositsallow slag to be trapped. 4. Lack of penetration with slag trapped beneath weld bead. 5. Rust or mill scale is preventing full fusion. 6. Wrong electrode for position in which welding is done.	1. If bad undercut is present, clean slag out and cover with a run from a smaller diameter electrode. 2. Allow for adequate penetration and room for cleaning out the slag. 3. If very bad, chip or grind out irregularities. 4. Use smaller electrode with sufficient current to give adequate penetration. Use suitable tools to remove all slag from corners. 5. Clean joint before welding. 6. Use electrodes designed for position in which welding is done, otherwise proper control of slag is difficult.

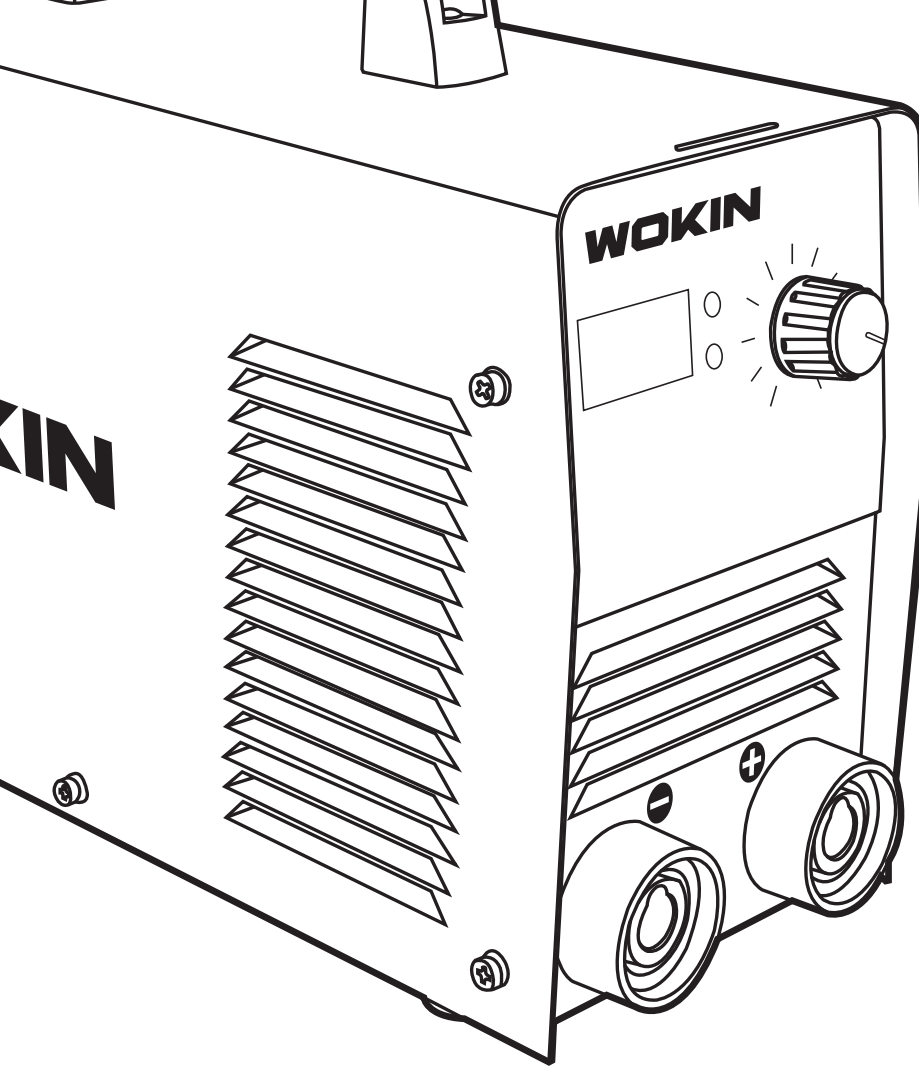
Power source problems

Description	Cause	Remedy
The welding arc can not be established.	1. The Primary supply voltage has not been switched on. 2. The welding power source switch is switched off. 3. Loose connections internally.	1. Switch on the primary supply voltage. 2. Switch on the welding power source. 3. Have an accredited service agent repair the connection.
Maximum output welding current can not be achieved with nominal Mains supply voltage.	Defective control circuit.	Have an accredited service agent inspect then repair the welder.
Welding current reduces when welding.	Poor work lead connection to the work piece.	Ensure that the work lead has a positive electrical connection to the work piece.
No gas flow when the torch trigger switch is depressed.	1. Gas hose is cut. 2. Gas passage contains impurities. 3. Gas regulator turned off.	1. Replace gas hose. 2. Disconnect gas hose from the rear of power source then raise gas pressure and blow out impurities. 3. Turn gas regulator on.

Notice:
Can move the equipments that the power supply doesn't fixedly mean to link to work with gearing at the some position.

Remark

Welding machines rear panels meet the plume to have good to turn on the earth grounding, by guarantees the welder safety. When welder operation, should wear protects the mirror, the glove, puts on protects the clothing.
When the electrical network voltage is higher than 220V/265V, the out-put will appear the class, the overload, the welding machine automatically has stopped outputting and giving the red candle demonstration warning.
Ambient temperatures high when big electric current long time continuous working, the welding machine has stopped because of the heat outputting, gets down until the temperature drop only then restores.
When welding machines do not use temporarily, its depository should maintain dryly, cleanly. The environment relative humidity is not bigger than 85%.
Storing ambient temperature is -25°C- +55°C.
When long-time does not use, every two months should electrify a time, a humidity month of every two week should electrify use a time, by use own thermal row of tide.



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