



BUILDING THE FUTURE

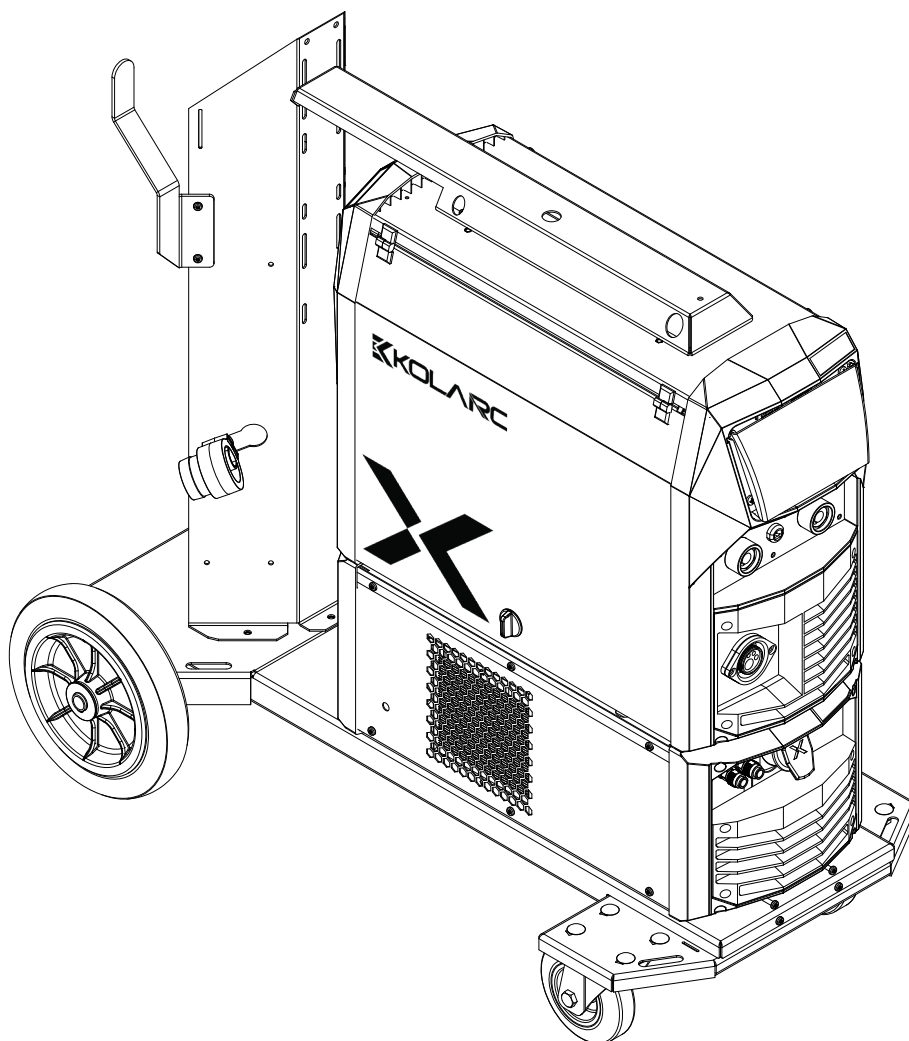
Operational Manual-OM

2024-01

Processes



Multiprocess Welding



**XM270C**

**OPERATION MANUAL**



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**EN**

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# Safety Instructions

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## Explanation of Safety Instructions

### **DANGER!**

Indicates an immediate danger.

- ▶ Death or serious injury may result if appropriate precautions are not taken.

### **WARNING!**

Indicates a possibly dangerous situation.

- ▶ Death or serious injury may result if appropriate precautions are not taken.

### **CAUTION!**

Indicates a situation where damage or injury could occur.

- ▶ Minor injury or damage to property may result if appropriate precautions are not taken.

### **NOTE!**

Indicates the possibility of flawed results and damage to the equipment.

## General

The device has been manufactured using state-of-the-art technology and according to recognized safety standards. If used incorrectly or misused, however, it can cause

- Injury or death to the operator or a third party
- Damage to the device and other material assets belonging to the operating company
- Inefficient operation of the equipment

All persons involved in the commissioning, operation, maintenance, and servicing of the device must

- Be suitably qualified
- Have knowledge of welding
- Have completely read and followed these Operating Instructions

The Operating Instructions must always be at hand wherever the device is being used. In addition to the Operating Instructions, all applicable local rules and regulations regarding accident prevention and environmental protection must also be followed.

All safety and danger notices on the device must

- Be kept in a legible state
- Not be damaged/marked
- Not be removed
- Not be covered, pasted, or painted over

For the location of the safety and danger notices on the device, refer to the section headed "General" in the Operating Instructions for the device.

Before switching on the device, remove any faults that could compromise safety.

**Your personal safety is at stake!**

## Intended Use

The device is to be used exclusively for its intended purpose.

# Safety Symbols



**ELECTRIC SHOCK** can kill.



**HOT PARTS** can cause severe burns.



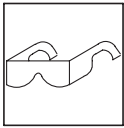
**FUMES AND GASES** can be hazardous.



**ARC RAYS** can burn eyes and skin.



**WELDING** can cause fire or explosion.



**FLYING METAL** or **DIRT** can injure eyes.



**BUILDUP OF GAS** can injure or kill.



**MAGNETIC FIELDS** can affect Implanted Medical Devices.



**NOISE** can damage hearing.



**CYLINDERS** can explode if damaged.



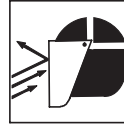
**FIRE OR EXPLOSION** hazard.



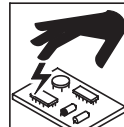
**FALLING UNIT** can cause injury.



**OVERUSE** can cause **OVERHEATING**.



**FLYING SPARKS** can cause injury.



**STATIC (ESD)** can damage PC boards.



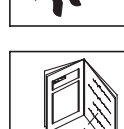
**MOVING PARTS** can cause injury.



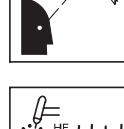
**WELDING WIRE** can cause injury.



**MOVING PARTS** can cause injury.



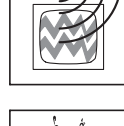
**READ INSTRUCTIONS.**



**H.F. RADIATION** can cause interference.



**ARC WELDING** can cause interference.



**EXPLODING PARTS** can cause injury.



**SHOCK HAZARD** from testing.

The device is intended exclusively for the welding process specified on the rating plate. Utilization for any other purpose, or in any other manner, shall be deemed to be "not in accordance with the intended purpose." The manufacturer is not responsible for any damage resulting from improper use.

Proper use also means

- Completely reading and obeying all instructions in the Operating Instructions
- Completely reading and obeying all safety instructions and danger notices
- Carrying out all the specified inspection and servicing work

Never use the device for the following applications:

- Thawing pipes
- Charging batteries
- Starting motors

The device is designed for operation in industry and business. The manufacture shall not be liable for any damage resulting from use in a living area.

The manufacture shall also not be liable for faulty or incorrect work results.

### **Environmental Conditions**

Operation or storage of the device outside the stipulated area will be deemed as not in accordance with the intended purpose. The manufacturer accepts no liability for any damage resulting from improper use.

Temperature range of the ambient air:

- During operation: -10°C to +40°C (14°F to 104°F)
- During transport and storage: -20°C to +55°C (-4°F to 131°F)

Relative humidity:

- Up to 50% at 40°C (104°F)
- Up to 90% at 20°C (68°F)

Ambient air: free of dust, acids, corrosive gases or substances, etc.  
Altitude above sea level: up to 2000 m (6561 ft. 8.16 in.)

### **Obligations of the Operating Company**

The operating company must only allow persons to work with the device if they

- Are familiar with the basic occupational safety and accident prevention regulations and are trained in handling the device
- Have read and understood these Operating Instructions, especially the section "Safety Rules," and have confirmed this with their signature
- Are trained according to the requirements for the work results

The safety-conscious work of the personnel must be checked regularly.

### **Obligations of Personnel**

All persons who are assigned to work with the device must do the following before beginning the work:

- Follow the basic regulations for occupational safety and accident prevention
- Read these Operating Instructions, especially the section "Safety Rules," and confirm that they have understood and will follow them by signing

Before leaving the workplace, ensure that no personal injury or property damage can occur in one's absence.

### **Grid Connection**

Devices with a high output can influence the energy quality of the grid due to their current consumption.

This may affect a number of device types in terms of:

- connection restrictions
- criteria regarding maximum permissible grid impedance \*)
- criteria regarding the minimum required short-circuit power \*)

\*) both at the interface with the public grid

See technical data

In this case, the operator or the person using the device should check whether or not the device is allowed to be connected, where appropriate through discussion with the power supply company.

**IMPORTANT!** Ensure secure grounding of the grid connection!

### **Personal Protection and Protection of Others**

You are exposed to numerous hazards while handling the device, for example:

- Flying sparks and pieces of hot metal
- Arc radiation that poses a risk of injury to the eyes and skin
- Hazardous electromagnetic fields that pose a risk of death for individuals with pacemakers
- Electrical risks from grid current and welding current
- Increased noise exposure
- Harmful welding fumes and gases

Wear suitable protective clothing when dealing with the device. The protective clothing must have the following properties:

- Flame resistant
- Insulating and dry
- Covering the entire body and in good condition with no damage
- Safety helmet
- Cuffless pants

Protective clothing involves the following:

- Protecting the face and eyes from UV radiation, heat and flying sparks with a face guard featuring a regulation-compliant filter
- Wearing regulation-compliant protective goggles with side protection behind the face guard
- Wearing rigid, wet-insulating footwear
- Protecting hands with appropriate gloves (featuring electrical insulation and thermal protection)
- Wearing ear protection to reduce noise exposure and protect against injury

Keep persons, especially children, away during the operation of the devices and during the welding process. If persons are in the vicinity, however:

- Instruct them about all hazards (blinding hazard due to arcs, risk of injury from flying sparks, welding fumes hazardous to health, noise exposure, possible hazard due to grid current or welding current, etc.)
- Provide suitable protective equipment or
- Construct suitable protective walls and curtains.

### **Danger from toxic gases and vapors**

Keep your head out of the welding fumes and gases.

Take the following precautionary measures for fumes and harmful gases:

- Do not breathe them in.
- Extract them from the work area using appropriate equipment.

Ensure that there is a sufficient supply of fresh air. Ensure that there is a ventilation flow rate of at least 20 m<sup>3</sup> per hour.

Use a welding helmet with air supply if there is insufficient ventilation.

If there is uncertainty as to whether the extraction capacity is sufficient, compare the measured toxic emission values against the permissible limit values.

The following components are factors that determine how toxic the welding fumes are:

- The metals used for the workpiece
- Electrodes
- Coatings
- Cleaning agents, degreasers, and the like
- The welding process used

Consult the corresponding material safety data sheets and manufacturer's instructions for the components listed above.

Recommendations for exposure scenarios, risk management measures and identifying working conditions can be found on the European Welding Association website under Health & Safety (<https://european-welding.org>).

Keep flammable vapors (such as solvent vapors) out of the arc radiation range.

When no welding is taking place, close the valve of the shielding gas cylinder or the main gas supply.

### **Danger from Flying Sparks**

Flying sparks can cause fires and explosions.

Never undertake welding near flammable materials.

Flammable materials must be kept at least 11 meters (36 ft. 1.07 in.) from the arc or protected with a certified cover.

Keep suitable, tested fire extinguishers on hand.

Sparks and pieces of hot metal may also get into surrounding areas through small cracks and openings. Take appropriate measures to ensure that there is no risk of injury or fire.

Do not undertake welding in areas at risk of fire and explosion, or on sealed tanks, drums, or pipes if these have not been prepared in accordance with corresponding national and international standards.

Do not undertake welding on containers in which gases, fuels, mineral oils, and the like are/were stored. Residues pose a risk of explosion.

### **Risks from grid current and welding current**

An electric shock can be fatal.

Do not touch voltage-carrying parts inside or outside the device.

During MIG/MAG welding and TIG welding, the welding wire, the wirespool, the feed rollers, as well as all pieces of metal that are in contact with the welding wire, are live.

Always place the wirefeeder on a sufficiently insulated base or use a suitable insulating wirefeeder holder.



Ensure suitable personal protection with dry temporary backing or cover with sufficient insulation against the ground potential. The temporary backing or cover must completely cover the entire area between the body and the ground potential.

All cables and leads must be secured, undamaged, insulated, and adequately dimensioned. Replace loose connections and scorched, damaged, or inadequately dimensioned cables and leads immediately.

Before every use, check power connections for secure fit by hand.

In the case of power cables with bayonet connectors, turn the power cable by at least 180° around the longitudinal axis and pretension.

Do not wrap cables or leads around your body or parts of the body.

Concerning the electrode (rod electrode, tungsten electrode, welding wire, etc.)

- Never immerse it in liquids to cool it
- Never touch it when the power source is switched on.

The open circuit voltage of a welding system may double, for example, between the electrodes of two welding systems. Touching the potentials of both electrodes at the same time may be life-threatening in some cases.

Have the grid and device supply lead regularly inspected by an electrician to ensure that the ground conductor is functioning properly.

Protection class I devices require a grid with a ground conductor and a connector system with ground conductor contact for proper operation.

Operation of the device on a grid without a ground conductor and on a socket without a ground conductor contact is only permitted if all national regulations for protective separation are observed.

Otherwise, this is considered gross negligence. The manufacturer accepts no liability for any damage resulting from improper use.

Use suitable equipment to ensure that the workpiece is sufficiently grounded if necessary.

Switch off unused devices.

When working at elevated heights, wear a safety harness to prevent falls.

Before working on the device, switch off the device and remove the grid plug.

Secure the device to prevent the grid plug from being connected and switched on again by applying a clearly legible and understandable warning sign.

After opening the device:

- Discharge all electrically charged components
- Ensure that all components are disconnected from the power supply.

If work is needed on voltage-carrying parts, bring in a second person who will switch off the main switch at the correct time.

### **Stray welding currents**

If the following instructions are not observed, stray welding currents may occur, which pose a risk of the following:

- Fire
- Overheating of components connected to the workpiece
- Destruction of ground conductors
- Damage to the device and other electrical equipment

Ensure that the workpiece terminal is securely connected to the workpiece.

Secure the workpiece terminal as close to the spot to be welded as possible.

Position the device with sufficient insulation against electrically conductive environments, e.g., insulation against electrically conductive floors or electrically conductive mounts.

Observe the following when using electrical distributors, double-headed retainers, etc.:  
Even the electrode of the welding torch/electrode holder not in use carries electric potential.  
Ensure that there is sufficient insulation when the unused welding torch/electrode holder is stored.

In automated MIG/MAG applications, only guide the wire electrode from the welding wire drum, large spool or wirepool to the wirefeeder with insulation.

### **EMC Device Classifications**

Devices in emission class A:

- Are only designed for use in industrial settings
- Can cause line-bound and radiated interference in other areas

Devices in emission class B:

- Satisfy the emissions criteria for residential and industrial areas. This is also true for residential areas in which the energy is supplied from the public low-voltage grid.

EMC device classification as per the rating plate or technical data.

### **EMC Measures**

In certain cases, even though a device complies with the standard limit values for emissions, it may affect the application area for which it was designed (e.g., when there is sensitive equipment at the same location, or if the site where the device is installed is close to either radio or television receivers). If this is the case, then the operating company is obliged to take appropriate action to rectify the situation.

Test and assess the immunity of equipment in the vicinity of the device in accordance with national and international provisions. Examples of interference-prone equipment that could be affected by the device:

- Safety devices
- Grid power lines, signal lines and data transfer lines
- EMC and telecommunications equipment
- Devices for measuring and calibrating

Supporting measures to avoid EMC problems:

#### **1. Grid power supply**

- If electromagnetic interference occurs despite a grid connection that complies with regulations, take additional measures (e.g., use a suitable grid filter).

#### **2. Welding power-leads**

- Keep them as short as possible
- Route them close together (also to avoid EMF problems)
- Route them far from other lines

#### **3. Equipotential bonding**

#### **4. Workpiece grounding**

- If necessary, establish grounding using suitable capacitors

#### **5. Shield, if necessary**

- Shield other devices in the vicinity
- Shield the entire welding installation

**EMF measures**

Electromagnetic fields may cause health problems that are not yet known:

- Effects on the health of persons close by, e.g., those with pacemakers and hearing aids
- Persons with pacemakers must seek advice from their doctor before staying in the immediate vicinity of the device and the welding process
- Keep distances between welding cables and the head/torso of the welder as large as possible for safety reasons
- Do not carry welding cables and hosepacks over one's shoulder or wrap them around one's body or body parts

**Particular Hazard Areas**

Keep hands, hair, loose clothing, and tools away from moving parts, such as:

- fans
- gears
- rollers
- shafts
- wirepools and welding wires.

Do not reach into rotating gears of the wire drive or into rotating drive parts.

Covers and side parts must only be opened/removed during maintenance and repair work.

During operation:

- Ensure that all covers are closed, and all side parts have been mounted properly.
- Keep all covers and side parts closed.

The protrusion of welding wire from the welding torch represents a high risk of injury (cuts to the hand, facial and eye injuries, etc.)

Therefore always hold the welding torch away from the body (devices with wirefeeder) and use suitable protective goggles.

Do not touch the workpiece during or after welding—burning hazard.

Slag may fly off cooling workpieces. Therefore, also wear regulation-compliant protective equipment when reworking workpieces and ensure that other persons are sufficiently protected.

Leave the welding torch and other parts with a high operating temperature to cool before working on them.

Special regulations apply in areas at risk of fire or explosion

- follow the appropriate national and international regulations.

Power sources for work in areas with increased electrical hazard (e.g. boilers) must be labeled with the symbol (Safety). However, the power source may not be located in such areas.

Risk of scalding due to leaking coolant. Switch off the cooling unit before disconnecting connections for the coolant supply or return.

When handling coolant, observe the information on the coolant safety data sheet. The coolant safety data sheet can be obtained from your service center or via the manufacturer's website.

Only use suitable load-carrying equipment from the manufacturer when transporting devices by crane.

- Attach chains or ropes to all designated attachments of the suitable load-carrying equipment.
- Chains or ropes must be the smallest angle possible from vertical.
- Remove gas cylinder and wirefeeder (MIG/MAG and TIG devices).

In the event of crane attachment of the wirefeeder during welding, always use a suitable, insulating wirefeeder hoisting attachment (MIG/MAG and TIG devices).

If the device is equipped with a carrier belt or handle, then this is used exclusively for transport by hand. The carrier belt is not suitable for transport by crane, counterbalanced lift truck or other mechanical lifting tools.

All lifting equipment (belts, buckles, chains, etc.), which is used in association with the device or its components, must be checked regularly (e.g. for mechanical damage, corrosion, or changes due to other environmental influences).

The test interval and scope must at least comply with the respective valid national standards and guidelines.

There is a risk of colorless, odorless shielding gas escaping without notice if an adapter is used for the shielding gas connection. Use suitable Teflon tape to seal the thread of the shielding gas connection adapter on the device side before installation.

### **Requirement for the shielding gas**

Especially with ring lines, contaminated shielding gas can cause damage to equipment and reduce welding quality.

Meet the following requirements regarding shielding gas quality:

- Solid particle size < 40  $\mu\text{m}$
- Pressure condensation point < -20 °C
- Max. oil content < 25 mg/m<sup>3</sup>

Use filters if necessary.

### **Danger from Shielding Gas Cylinders**

Shielding gas cylinders contain compressed gas and may explode if damaged. Shielding gas cylinders are an integral part of the welding equipment, so they must be handled very carefully.

Protect shielding gas cylinders with compressed gas from excessive heat, mechanical impact, slag, open flames, sparks, and arcs.

Mount the shielding gas cylinders vertically and secure them in accordance with instructions so they cannot fall over.

Keep shielding gas cylinders away from welding or other electrical circuits.

Never hang a welding torch on a shielding gas cylinder.

Never touch a shielding gas cylinder with an electrode.

Risk of explosion: Never weld on a compressed shielding gas cylinder.

Always use suitable shielding gas cylinders for the application in question and the correct matching accessories (controller, hoses, and fittings, etc.) Only use shielding gas cylinders and accessories that are in good condition.

If a valve on a shielding gas cylinder is open, turn your face away from the outlet.

When no welding is taking place, close the valve of the shielding gas cylinder.

Leave the cap on the valve of the shielding gas cylinder when the cylinder is not connected.

Follow the manufacturer's instructions and applicable national and international provisions for shielding gas cylinders and accessories.

**Danger Posed by Shielding Gas Leak**

Risk of asphyxiation due to uncontrolled shielding gas leak

Shielding gas is colorless and odorless and may suppress the oxygen in the ambient air in the event of leakage.

- Ensure there is a sufficient supply of fresh air with a ventilation flow rate of at least 20 m<sup>3</sup> per hour.
- Please observe the safety and maintenance information for the shielding gas cylinder or the main gas supply.
- When no welding is taking place, close the valve of the shielding gas cylinder or the main gas supply.
- Always check the shielding gas cylinder or main gas supply for uncontrolled gas leakage before each start-up.

**Safety Measures at the Setup Location and During Transport**

A toppling device can be deadly! Set up the device securely on an even, solid surface

- The maximum permitted tilt angle is 10°.

Special regulations apply in areas at risk of fire or explosion

- Follow the appropriate national and international regulations.

Use instructions and checks within the company to ensure that the vicinity of the workplace is always clean and organized.

Only set up and operate the device in accordance with the protection class shown on the rating plate.

When setting up the device, ensure that there is an all-round clearance of 0.5 m (1 ft. 7.69 in.) to allow cooling air to circulate unhindered.

Take care to ensure that the applicable national and regional guidelines and accident prevention regulations are observed when transporting the device, especially guidelines concerning hazards during transport and shipment.

Before transporting the device, completely drain the coolant and dismantle the following components:

- wirefeeder
- wirespool
- shielding gas cylinder

It is essential to conduct a visual inspection of the device to check for damage after it has been transported but before commissioning. Have any damage repaired by trained service technicians before commissioning the device.

**Safety Measures in Normal Operation**

Only operate the device when all safety devices are fully functional. If the safety devices are not fully functional, there is a danger of:

- Injury or death to the operator or a third party
- Damage to the device and other material assets belonging to the operating company
- Inefficient operation of the device

Safety devices that are not fully functional must be repaired before the device is switched on.

Never bypass or disable safety devices.

Before switching on the device, ensure that no one can be put in danger.

The device must be examined at least once a week for externally detectable damage and functionality of the safety devices.

Always secure the shielding gas cylinder well and remove before transporting by crane.

Only the original coolant from the manufacturer is suitable for use in our devices due to its properties (electrical conductivity, anti-freeze, material compatibility, flammability, etc.)

Only use appropriate original coolant from the manufacturer.

Do not mix original coolant from the manufacturer with other coolants.

Only connect system components from the manufacturer to the cooling unit circuit.

If there is damage due to use of other system components or other coolants, the manufacturer accepts no liability for this and all warranty claims are forfeited.

Cooling Liquid FCL 10/20 is not flammable. The ethanol-based coolant is flammable in certain conditions. Only transport the coolant in closed original containers and keep away from sources of ignition.

Properly dispose of used coolant according to national and international regulations. The coolant safety data sheet can be obtained from your service center or via the manufacturer's website.

When the system is cool, always check the coolant level before starting welding.

## **Maintenance and repair**

It is impossible to guarantee that bought-in parts are designed and manufactured to meet the demands made of them, or that they satisfy safety requirements.

- Use only original spare and wearing parts (also applies to standard parts).
- Do not carry out any modifications, alterations, etc. to the device without the manufacturer's consent.
- Components that are not in perfect condition must be replaced immediately.
- When ordering, please give the exact designation and part number as shown in the spare parts list, as well as the serial number of your device.

The housing screws provide the ground conductor connection for earthing the housing parts. Only use original housing screws in the correct number and tightened to the specified torque.

## **Safety Inspection**

The manufacturer recommends that a safety inspection of the device be performed at least every 12 months.

The manufacturer recommends calibrating power sources within the same 12-month interval.

A safety inspection by a certified electrician is recommended:

- After changes
- After alterations
- After repair, care, and maintenance
- At least every 12 months

For the safety inspection, follow the appropriate national and international standards and guidelines.

You can obtain more information about the safety inspection and calibration from your service center. The service center will provide the necessary documents upon request.

**Disposal**

Do not dispose of this device with normal domestic waste! To comply with the European Directive on Waste Electrical and Electronic Equipment and its implementation as national law, electrical equipment that has reached the end of its life must be collected separately and returned to an approved recycling facility. Any device that you no longer require must be returned to your dealer, or you must locate the approved collection and recycling facilities in your area. Ignoring this European Directive may have potentially adverse affects on the environment and your health!

**Safety Symbols**

Devices with the CE label satisfy the essential requirements of the low-voltage and electromagnetic compatibility directive (e.g. relevant product standards of the EN 60974 series).

Kolarc International GmbH declares that the device complies with Directive 2014/53/EU. The full text of the EU Declaration of Conformity is available on the following website: <http://www.kolarc.com>

Devices marked with the CSA test mark satisfy the requirements of the relevant standards for Canada and the USA.

**Data backup**

The user is responsible for backing up any changes made to the factory settings. The manufacturer accepts no liability for any deleted personal settings.

**Copyright**

Copyright of these Operating Instructions remains with the manufacturer.

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BUILDING THE FUTURE

## DECLARATION OF CONFORMITY

for European Community (CE marked) products.

**We KOLARC MAKİNE İMALAT SAN. VE TİC. A. Ş: 2014. Cd. No: 8/1, 06930 Alcı OSB/Sincan/Ankara, declares that the product(s) identified in this declaration conform to the essential requirements and provisions of the stated Standard(s).**

Product/Apparatus Identification:

**Product** - XM270 C

Standards

- **IEC 60974 -1:2021** Arc welding equipment - Part 1: Welding power sources
- **IEC 60974 -10:2020** Arc welding equipment - Part 10: Electromagnetic compatibility (EMC) requirements

Signature:

2024-02-12

**İlker OLUCAK**

**General Manager**

Date of Declaration

---

**Kolarc Makine İmalat Sanayi ve Ticaret AŞ**

☎ +90 (312) 577 18 18

✉ +90 (312) 577 19 19

📍 Alcı OSB Mahallesi 2014. Cadde No:8/1 06909 Sincan/ANKARA

📍 100. Yıl Mah. İzci Sok. Ekin Apt. No:24/5 06709 Çankaya/ANKARA

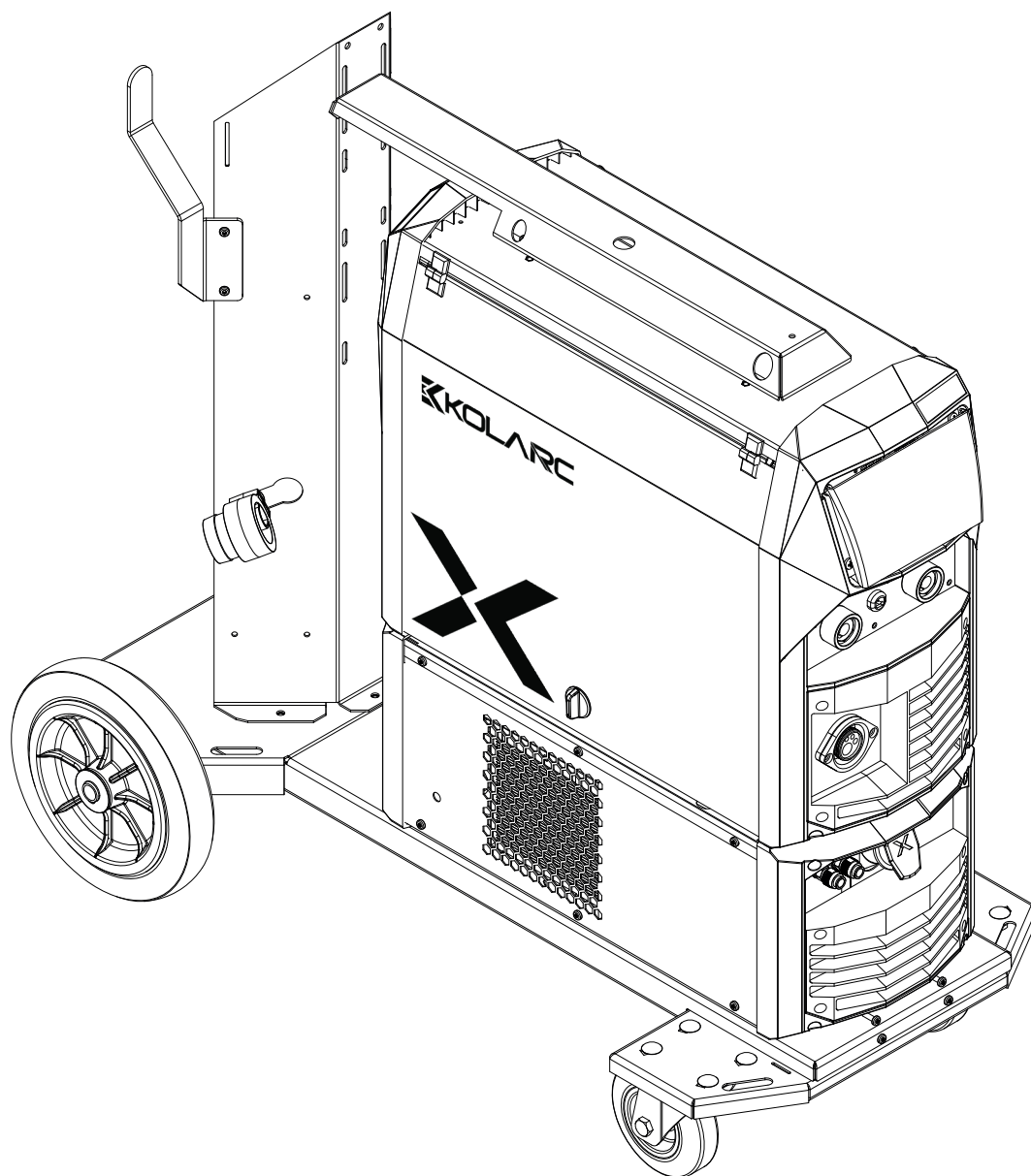
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# Introduction

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## Overview

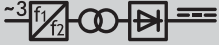





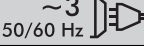




- (1) Wirefeeder (XM4)
- (2) Power source (XM270 C)
- (3) Cooling unit (WX)

A modular design and ability to easily extend the system guarantee a high degree of flexibility. The device is designed for the following welding processes:

- MIG/MAG Manual
- TIG (Lift Arc)
- MMA
- Gouging

## Power Label

<b>KOLARC</b>		Made in TÜRKİYE		
<b>Manufacturer:</b> Kolarc Makine İmalat Sanayi ve Ticaret A.Ş. Alcı OSB Mahallesi 2014.cadde No: 8/1 Sincan / Ankara				
<b>Model:</b> XM270C				
<b>Stock No:</b>		<b>Serial No:</b>		
		IEC 60974-1 IEC 60974-10		
	10A 14.5V / 270A 27.5V			
	X	60%	100%	
	I <sub>2</sub>	270A	210A	
	U <sub>2</sub>	27.5V	24.5V	
	5A 10.2V / 270A 20.8V			
	X	60%	100%	
	I <sub>2</sub>	270A	210A	
	U <sub>2</sub>	20.8V	18.4V	
	10A 20.4V / 270A 30.8V			
	X	60%	100%	
	I <sub>2</sub>	270A	210A	
	U <sub>2</sub>	30.8V	28.4V	
U <sub>0</sub> 60-75V	U <sub>1</sub>		I <sub>1</sub> max	I <sub>1</sub> eff
 IP21S	400 V	16 A	14.9 A	11.5 A
 50/60 Hz	S <sub>1,max</sub> = 10.3 kVA			



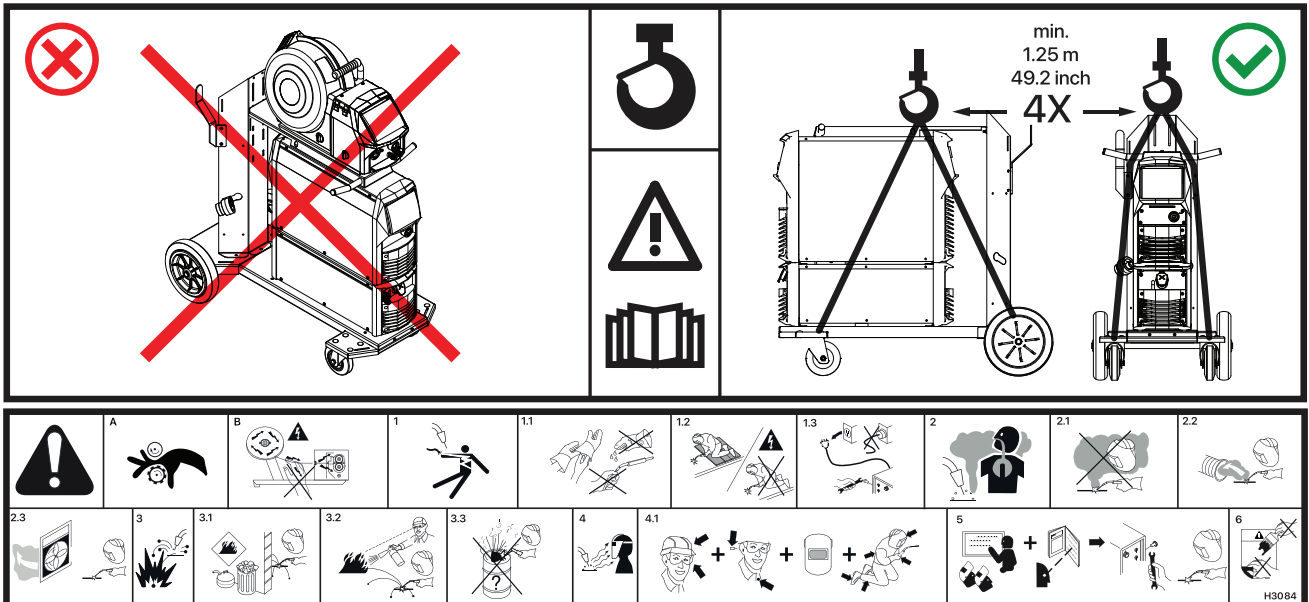
Do not use the functions described here until you have fully read and understood the following documents:

- These Operating Instructions
- All system component Operating Instructions, especially the safety rules



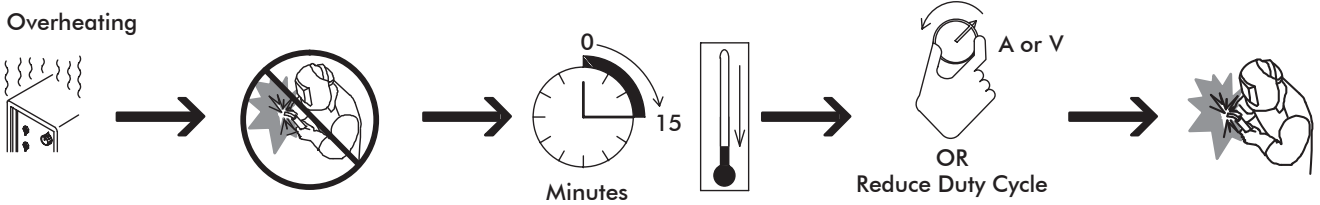
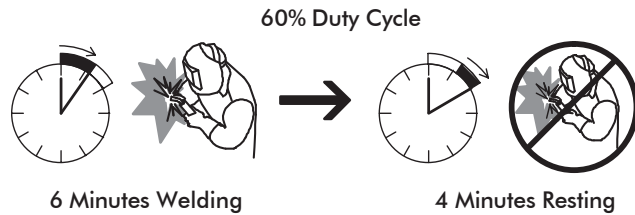
Welding is dangerous. The following basic requirements must be met:

- Adequate welding qualifications
- Appropriate protective equipment
- Exclusion of unauthorized persons

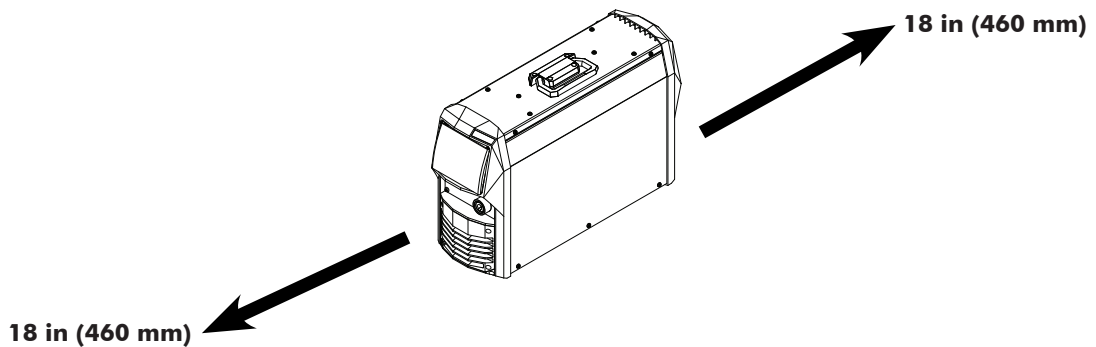


**Duty Cycle**

Duty Cycle is percentage of 10 minutes that unit can weld at rated load without overheating. If unit overheats, output stops, a Help message is displayed and cooling fan runs. Wait fifteen minutes for unit to cool. Reduce amperage or voltage, or duty cycle before welding.



**Selecting a Distance**



# Connecting Input Power

## General

If no mains cable is connected, a mains cable that is suitable for the connection voltage must be fitted before commissioning.

A strain-relief device for the following cable cross-sections is fitted to the power source:

Power source	Cable cross-section	
XM270C Pulse	AWG 10 *)	4x4

Strain-relief devices for other cable cross-sections must be designed accordingly.

## Safety

### **WARNING!**

**Danger from work that is not carried out properly.**

This can result in severe personal injury and damage to property.

- ▶ The work described below may only be performed by trained specialist personnel.
- ▶ Follow national standards and guidelines.

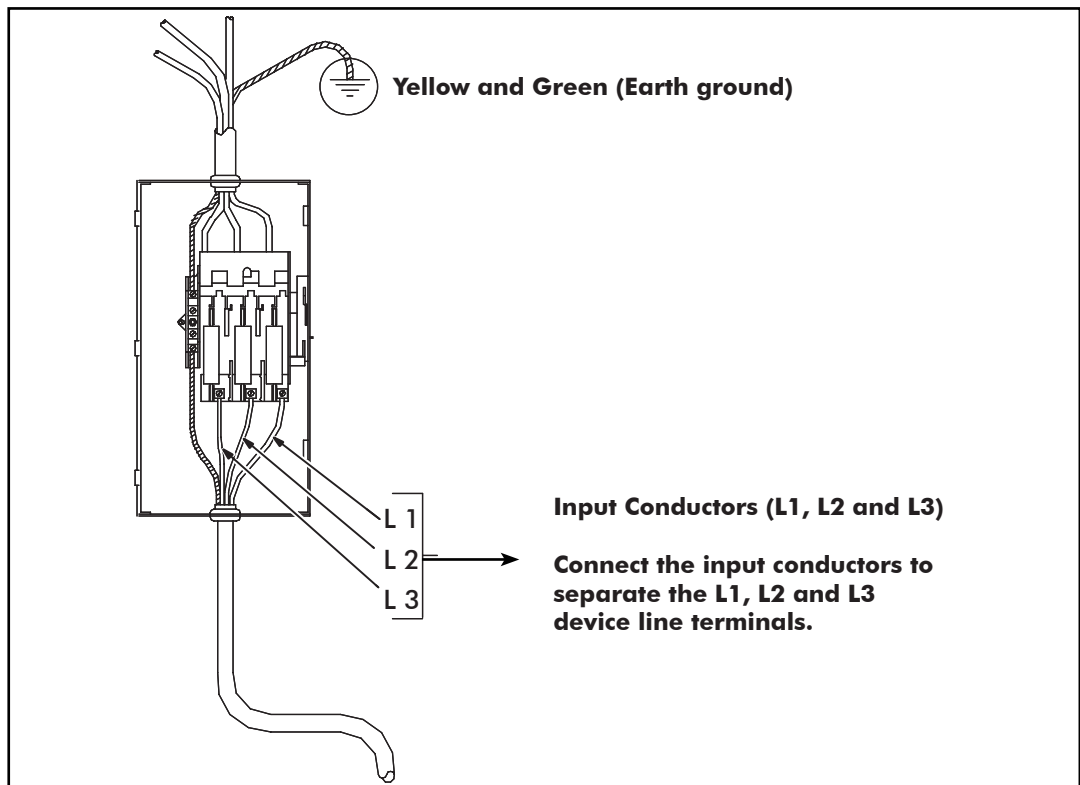
### **CAUTION!**

Danger from improperly prepared mains cable.

Short circuits and damage to property may result.

- ▶ Fit ferrules to all phase conductors and the ground conductor of the stripped mains cable.

## Connect the mains cable



## Generator-Powered Operation

---

### Generator powered operation

The power source is generator-compatible.

The maximum apparent power  $S_{1\max}$  of the power source must be known in order to select the correct generator output.

The maximum apparent power  $S_{1\max}$  of the power source is calculated for 3-phase devices as follows:

$$S_{1\max} = I_{1\max} \times U_1 \times \sqrt{3}$$

$I_{1\max}$  and  $U_1$  according to the device rating plate and technical data

The generator apparent power  $S_{\text{GEN}}$  needed is calculated using the following rule of thumb:

$$S_{\text{GEN}} = S_{1\max} \times 1.35$$

A smaller generator can be used when not welding at full power.

**IMPORTANT!** The generator apparent power  $S_{\text{GEN}}$  must not be less than the maximum apparent power  $S_{1\max}$  of the power source!

#### **NOTE!**

**The voltage delivered by the generator must never fall outside of the mains voltage tolerance range.**

The mains voltage tolerance is specified in the "Technical data" section.

## Commissioning

---

### Safety

#### **WARNING!**

##### **An electric shock can be fatal.**

If the power source is connected to the grid during installation, there is a danger of serious personal injury and property damage.

- ▶ Only carry out work on the device when the power source's power switch is in the - O - position.
- ▶ Only carry out work on the device when the power source has been disconnected from the grid.

#### **WARNING!**

##### **Danger of electrical current due to electrically conductive dust in the device.**

This can result in severe personal injury and damage to property.

### General

Commissioning is described with reference to a manual, Liquid-cooled MIG/MAG application.

### Information on system components

The steps and activities described below include references to various system components, such as

- Trolley
- Upright bracket
- Cooling units
- Wirefeeders
- Interconnecting hosepacks
- Welding torches, etc.

For more detailed information about installing and connecting the system components, please refer to the appropriate Operating Instructions for the system components.

## Welding processes and procedures for MIG/MAG welding

---

### General

In order to process a wide range of materials effectively, various welding processes, procedures, and welding characteristics are available on the XM4 wire feeder.

### Brief description of MIG/MAG standard synergic welding

MIG/MAG standard synergic

MIG/MAG standard synergic welding is a MIG/MAG welding process covering the entire power range of the power source with the following arc types:

Dip transfer arc

Droplet transfer occurs in the lower power range during the short circuit.

Intermediate arc

The droplet increases in size at the end of the wire electrode and is transferred in the mid power range during the short circuit.

Spray arc

A short circuit-free transfer of material in the high power range.

**Brief description of MIG/MAG pulsed synergic welding**

MIG/MAG pulsed synergic

MIG/MAG pulsed synergic welding is a pulsed arc process with a controlled material transfer. In the base current phase, the energy input is reduced to such an extent that the arc barely burns steadily and the surface of the workpiece is preheated. In the pulsing current phase, an accurately timed current pulse guarantees a precise detachment of the weld material droplet.

This principle guarantees low-spatter welding and precise operation throughout the entire power range.

**Brief description of Duo Pulse / Position welding**

Duo Pulse is used for standard synergic and pulsed synergic processes. Position is used in vertical-up and over head welding positions.

With the cyclic variation of the welding power between the two operating points, with Duo Pulse and Position, an aesthetic seam appearance and a discontinuous one input are obtained.

**Brief description of the gouging (Arc Air Gouging)**

In arc air gouging, an arc is ignited between a carbon electrode and the workpiece; the parent material is melted and blown out with compressed air.

The operating parameters for arc air gouging are defined in a special characteristic.

Applications:

- Removal of shrink holes, pores, or slag inclusions from workpieces
- Detaching sprues or the processing of entire workpiece surfaces in foundries
- Edge preparation for heavy plates
- Preparation and repair of weld seams
- Finishing of roots or defects
- Production of air gaps

## System Components

---

**General**

The functions are all arranged in an intuitive way on the control panel. The individual parameters required for welding can be

- Selected by means of buttons
- Changed using buttons or the selection dial
- Shown on the digital display during welding.

Due to the synergic function, all other parameters are also adjusted if a single parameter is changed.

**NOTE!**

**Because of software updates, certain functions may be available for your device but not described in these Operating Instructions or vice versa.**

In addition, individual figures may also differ slightly from the operating elements of your device. However, the function of these operating elements is identical.

**Safety**



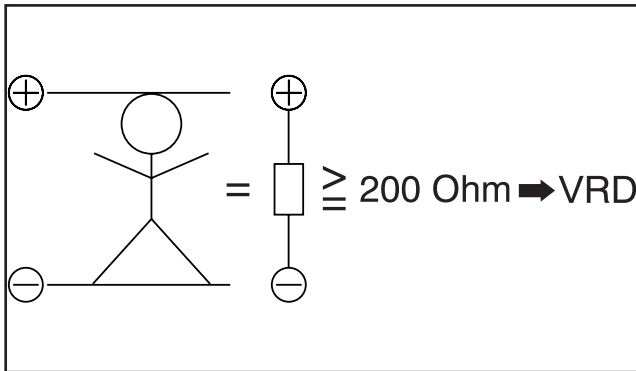
**WARNING!**

**Danger from incorrect operation and work that is not carried out properly.**

Serious personal injury and damage to property may result.

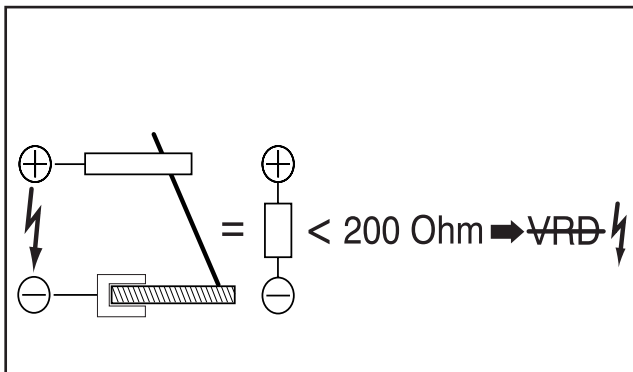
- ▶ Read and understand this document.
- ▶ Read and understand all the Operating Instructions for the system components, especially the safety rules.

## VRD: Safety principle



The welding circuit resistance is greater than the minimum body resistance (greater than or equal to 200 ohms):

- VRD is active
- Open circuit voltage is limited to 35 V
- Unintentional contact with the output voltage does not pose any danger



The welding circuit resistance is less than the minimum body resistance (less than 200 ohms):

- VRD is inactive
- No limitation of the output voltage to ensure adequate welding power
- Example: welding start

Applies to MMA welding mode:  
Within 0.3 seconds of the end of welding:

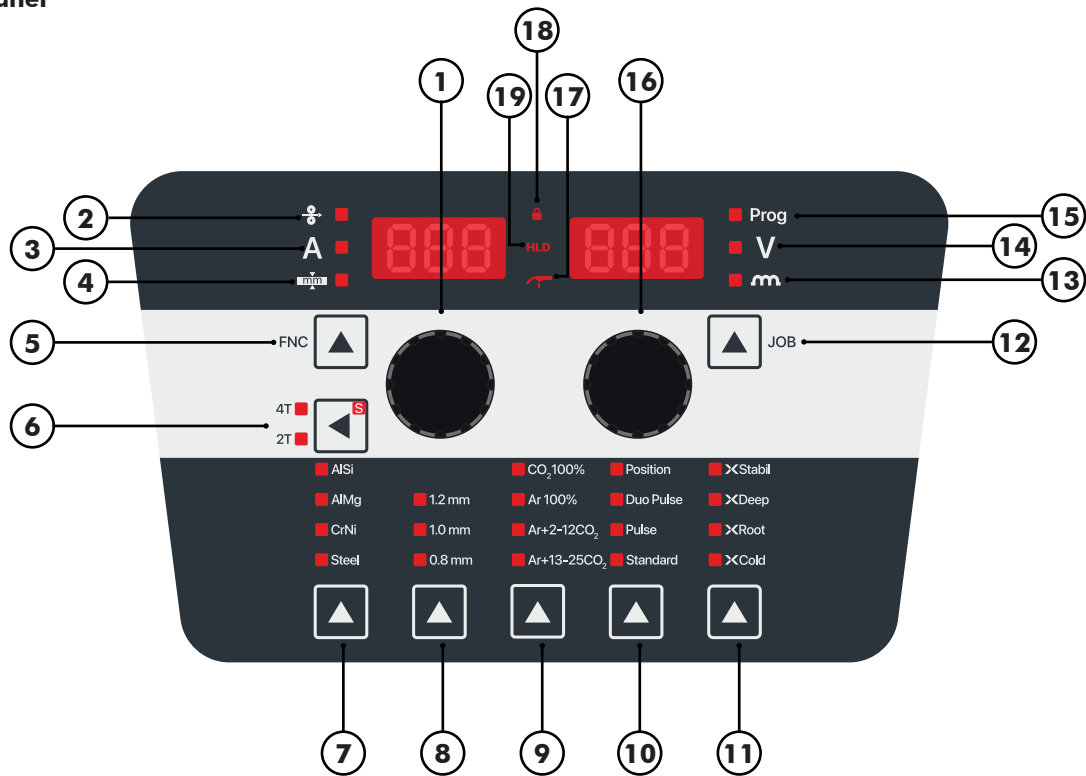
- VRD is active again
- Restriction of the output voltage to 35 V is ensured again

### NOTE!

XM270C power sources comes with the standard VRD safety parameters.



## Control panel



### (1) Selection Knob (left)

For changing the sheet thickness, welding current, and wire speed parameters rotate the black knob

### (2) Wire Feed Speed

It is used to control the wire feed speed (meter/minute)

### (3) Welding Current

Obtained from parameters set before the start of welding. The reference value is automatically displayed during the welding process besides its actual value is displayed. (Synergic-Pulse)

### (4) Material Thickness selection

In cases where the welding current to be used is unknown, the parameters are adjusted automatically by entering the material thickness (mm)

### (5) Function List selection

Enables fine tuning for background functions (see Function List given on page 26)

### (6) Trigger operating mode selection

Enables 2T, 4T, S2T and S4T. For application refer to the page number 27

### (7) Material type selection

For selecting the material used

### (8) Wire diameter selection

For selecting the wire diameter used

### (9) "Shielding gas" selection

For selecting the shielding gas used.

**(10) "Process" selection \*\*)**

Enables Synergic, Pulse, Duo Pulse and Position for same JOB application

**(11) Alternative quick Job selection**

Enables XColds XRoot XDeep and XStabil for JOB application

**(12) Job selection**

Synergic Job selection. The jobs can be selected from the Job List given on page 26

**(13) Pulse / arc-force dynamic correction**

For continuously correcting the droplet detachment force in MIG/MAG pulsed synergic welding

- ... reduced droplet detachment force
- 0 ... neutral droplet detachment force
- + ... increased droplet detachment force

For influencing the short-circuiting dynamic at the instant of droplet transfer in MIG/MAG standard synergic welding, MIG/MAG standard manual welding, and manual metal arc welding

- ... soft and low-spatter arc
- 0 ... neutral arc
- + ...harder and more stable arc

**(14) Voltage**

This helps you to see the voltage or adjust it once required

**(15) Program Memory**

This shows the working welding program memory.

**(16) Selection Knob (right)**

For changing the arc length correction, welding voltage, and arc-force dynamic parameters

**(17) Trigger indicator**

The indicator lights at 4T at the start of each triggering and when you release the trigger until the next triggering, and at 2T when you hold the trigger.

**(18) Lock indicator**

Allow to lock parameters and programs so that the user cannot change parameters, gas, process, job, etc. the user can only change programs.

**(19) Hold indicator**

At the end of each welding operation, the actual values for welding current and welding voltage are stored - the "HOLD" indicator lights up.

**NOTE!**

The required brief information on the welding processes and the quick jobs as denoted by 16 and 17 above is given in this manual ahead on page numbers 38 and 39 respectively

**Job List**



Standard-Pulse		0.8	1.0	1.2	
SG2 / SG3 G3Si1 / G4Si1	Ar+18%CO <sub>2</sub>	8	10	12	
	Ar+10%CO <sub>2</sub>	18	20	22	
	CO <sub>2</sub> 100%	28	30	32	
CNI	Ar+2.5%CO <sub>2</sub>	318 / 1.4576	38	40	42
		316 / 1.4430	68	70	72
		310 / 1.4842		520	522
		309 / 1.4332	538	540	542
		308 / 1.4316	58	60	62
		307 / 1.4370	48	50	52
		Duplex 2209 1.4462	78	80	82
	Ar+20%He+2%CO <sub>2</sub>	88	90	92	
CuSi	Ar100%	178	180	182	
	Ar+2.5%CO <sub>2</sub>	558	560	562	
CuAl	Ar100%	188	190	192	
	Ar100%	198	200	202	
CuSi Brazing	Ar+2.5%CO <sub>2</sub>	208	210	212	
	Ar100%	218	220	222	
CuAl Brazing	Ar+2.5%CO <sub>2</sub>	228	230	232	
	Ar100%	118	120	122	
AlMg4,5 Mn	Ar100%	128	130	132	
AlMg3	Ar100%	530	532		
AlSi	Ar100%	138	140	142	
	Ar+30%He	148	150	152	
Al99	Ar100%	158	160	162	
	Ar+30%He	168	170	172	

Application		0.8	1.0	1.2
Steel / FluxCore Metal	Ar+18%CO <sub>2</sub>	238	240	242
Steel / FluxCore Rutil	Ar+18%CO <sub>2</sub>	248	250	252
	CO <sub>2</sub> 100%			262
Steel / FluxCore Basic	Ar+18%CO <sub>2</sub>			602
CrNi / FluxCore Metal	Ar+2.5%CO <sub>2</sub>			272
CrNi / FluxCore Rutil	Ar+18%CO <sub>2</sub>			282
CrNi / FluxCore Rutil	CO <sub>2</sub> 100%			292
Steel FluxCore High Str.	Ar+18%CO <sub>2</sub>			592
Steel / FluxCore Rutil	Self Shielded			720

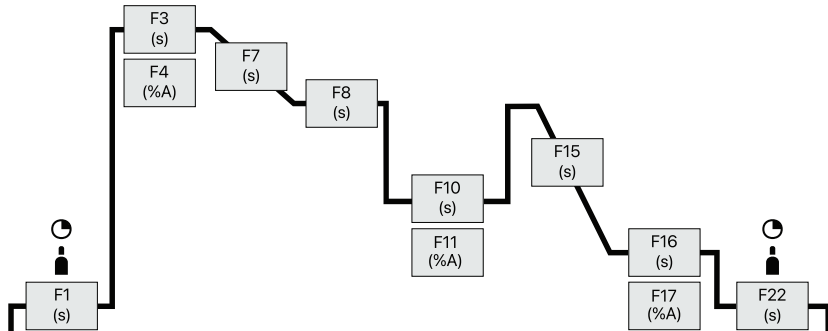
XDeep - Pulse		0.8	1.0	1.2
SG2 / SG3 G3Si1 / G4Si1	Ar+18%CO <sub>2</sub>	298	300	302
	Ar+10%CO <sub>2</sub>	308	310	312
CNI	Ar+2.5%CO <sub>2</sub>	318 / 1.4576		620
		316 / 1.4430		640
		310 / 1.4842		660
		309 / 1.4332		670
		308 / 1.4316		320
		307 / 1.4370		632
		Duplex 2209 1.4462		650
AlMg4,5 Mn	Ar100%			332
Al99	Ar100%			342
CrNi / FluxCore Metal	Ar+18%CO <sub>2</sub>	608	610	612

XRoot - Pulse		0.8	1.0	1.2
SG2 / SG3 G3Si1 / G4Si1	Ar+18%CO <sub>2</sub>			360
	CO <sub>2</sub> 100%			370
	Ar+10%CO <sub>2</sub>			500

XCold - Pulse		0.8	1.0	1.2
SG2 / SG3 G3Si1 / G4Si1	Ar+18%CO <sub>2</sub>	378	380	382
	CO <sub>2</sub> 100%	388	390	392
	Ar+10%CO <sub>2</sub>			510
CNI	Ar+2.5%CO <sub>2</sub>	318 / 1.4576	678	680
		316 / 1.4430	698	700
		308 / 1.4316	398	400
		307 / 1.4370	688	690
		Duplex 2209 1.4462	708	710
AlMg4,5 Mn	Ar100%			410
AlSi	Ar100%			420
Al99	Ar100%			430
CuSi Brazing	Ar100%	438	440	442
CuAl Brazing	Ar100%	448	450	452
AlSi Brazing	Ar100%			460
ZnAl Brazing	Ar100%			470
ZnAl (St to Al Welding)	Ar100%			490
Mg / Mg	Ar+30%He			572

Cladding		0.8	1.0	1.2
NiCr-6625 / 2.4831	Ar+30%He			100
	Ar+20%He+2%CO <sub>2</sub>			110
NiCr-6617 / 2.4627	Ar+30%He			552
CrNi / 309-2312 / 1.4332	Ar+2.5%CO <sub>2</sub>			542
Co - Based	Ar100%			532

**Function Graphic**



**Function List**



	Function	Description	Min	Max
MIG/MAG	F1	Gas pre-flow (s)	0	10
	F2	Start wire speed (m/min)	1	11
	F3	Start time (s)	0	10
	F4	Start current (%)	1	200
	F5	Start arc correction (V)	-9.9	+9.9
	F7	Start slope (s)	0	5
	F15	End down slope (s)	0.05	10
	F16	End time (s)	0	10
	F17	End current (%)	1	200
	F18	End arc correction (V)	-9.9	+9.9
	F20	End burn back (-)	10	200
	F21	End wire cut mode (-)	0	2
TIG	F22	Gas post-flow (s)	0	10
	F23	Smart trigger (-)	0	1
	F24	Penetration stabilizer (m/min)	0	5
	F31	TIG V stop limit (V)	10	30
	F32	TIG comfort stop sensitivity (V)	-2	+2
MMA	F25	Hot start time (s)	0	10
	F26	Hot start current (%)	1	200
	F27	Arc force (-)	-50	+50
	F28	Antistick (s)	0	2
	F29	VRD function (-)	0	1
	OTHERS	F34	Tack/stich mode (-)	0
F35		Cooling mode (-)	0	4
F36		Motor current (A)	0	-
F37		Motor current limit (A)	0.7	7
F38		Auto load default values (-)	0	1
F39		Motor control firmware (-)	-	-
F40		Power control firmware (-)	-	-
F41		Arc on time (h)	0	-
F42		Machine on time (h)	0	-
F45		Wire speed correction (m/min)	-2	+2
F49		Working mode	1	8
F50	RL cable calibration (mOhm)	0	30	

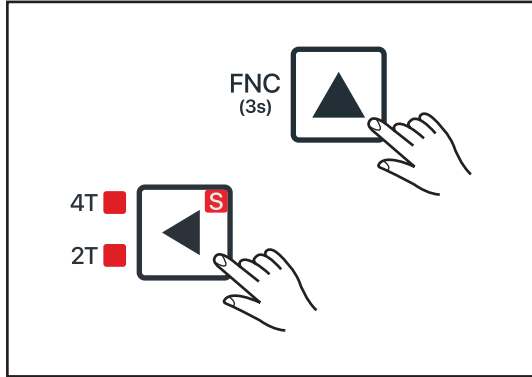
**FNC**

FNC key is pressed and hold for three seconds helps you to select the functions as given on the Function Table (given on page number 27)

**SPCL**

S Trigger key if pressed and hold for three seconds helps you to select between 2T/4T and S2T/S4T functions. Once the S Trigger or special 2T/4T is activated the LED denoted by letter S starts blinking.

**Activating/deactivating the FNC/2T/4T/S2T/S4T :**



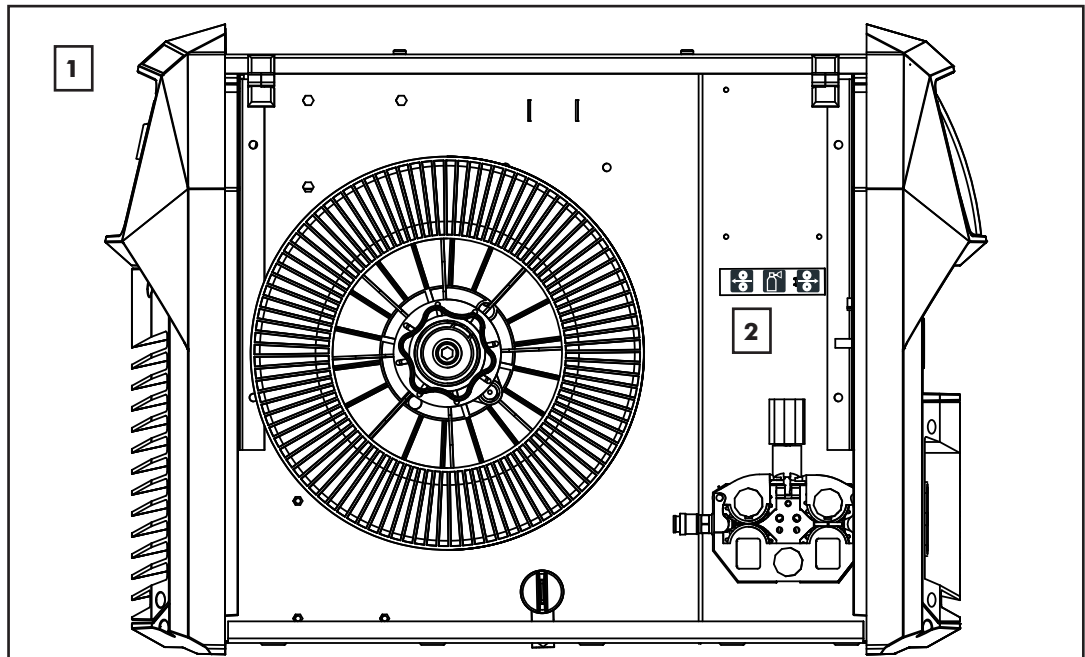
**Connections, switches and mechanical components**

**Side view**

wire feed buttons



gas test buttons



**(1) Wire spool holder with brake max. 300 mm (11.81 in.) diameter and max. 19 kg (41.89 lb.) standard wire spool for slot**

**(2) 4 roller drive**

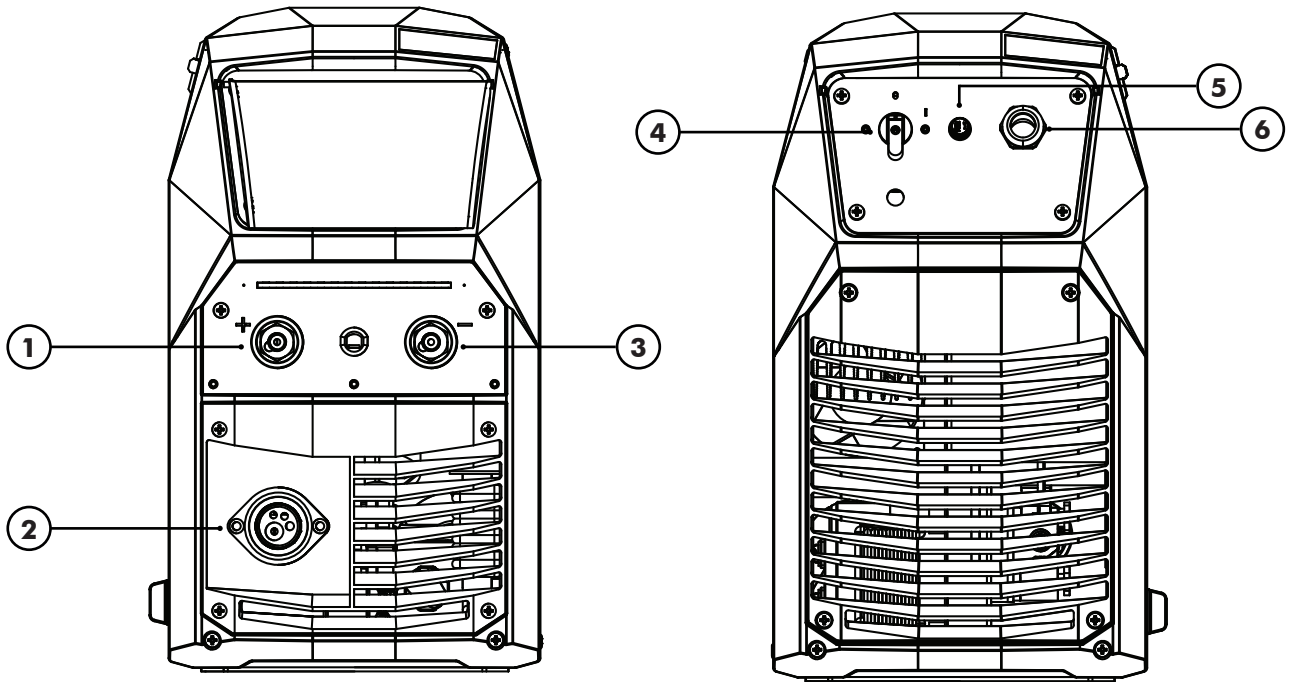


**This button when pressed and hold helps you to feed wire**



**This button when pressed and hold helps you to feed gas**








**XM270 C**  
power supply front  
rear view



- 
- (1) Ground Bayonet Socket +
- 
- (2) Torch Connection
- 
- (3) Ground Bayonet Socket -
- 
- (4) On/Off Switch: To enable and disable the power supply.
- 
- (5) 2 AMP Glass Fuse- CO<sub>2</sub> Heater
- 
- (6) Input Cable
-

## Cooling Unit Technical Data

### Standard Cooling Unit Label

 www.kolarc.com	Type: <b>Liquid Cooling Unit</b>	
	Stock No.: <b>XM270I00001</b>	
	Serial No. : <b>000001</b>	
IEC 60 974-2/-10Cl.A		IP23S
 50/60 Hz	$U_1$	$I_1$
	400V	1.2 A
	$P_{max}$ 4 bar (0.4 MPa)	$P_{1l/min}$ 2 kW
   		

### The technical specification of Xm-series cooling units:

**Input voltage:**  $U_1 = 1 \times 400 \text{ V}$

**Input current:**  $I_1 = 0.8 \text{ A}$

**Cooling capacity (1 l/min, +25°C):** 1360 W

**Max. liquid hose length:** 40 m

**Max. liquid flow (bypassed):** 7 l/min

**Max. liquid flow (torch 4 m 501-type):** 3.35 l/min

**Max pump pressure:** 4 bar

**Pump:** single-impeller peripheral pump

**Coolant capacity:** 5 l

**Coolant type:** 30 glycole-type; ethanol- / isopropanol-based

**Protection degree:** IP23s

**Dimensions (L x W x H):**

**WX:** 693 mm x 265 mm x 238 mm

**Weight (no coolant):** 16 kg

**Declaration of conformity:** CE

# Minimum Equipment For Welding Operations

---

## General

Depending on the welding process, a minimum level of equipment is required to work with the power source.  
The following describes the welding processes and the corresponding minimum equipment for welding operations.

## Air-cooled MIG/MAG welding

- Power source
- Grounding cable
- Air-cooled MIG/MAG welding torch
- Gas connection (shielding gas supply)
- Wirefeeder
- Air-cooled interconnecting hosepack
- Wire electrode

## Liquid-cooled MIG/MAG welding

- Power source
- Cooling unit
- Grounding cable
- Liquid-cooled MIG/MAG welding torch
- Gas connection (shielding gas supply)
- Wirefeeder
- Liquid cooling option
- Liquid-cooled interconnecting hosepack
- Wire electrode

## Manual metal arc welding

- Power source
- Grounding cable
- Electrode holder
- Rod electrodes

## Minimum equipment for arc air gouging

- XM270 C power source
- Grounding cable 70 mm<sup>2</sup>
- Welding torch
- Compressed air supply

## Before Installation And Initial Operation

---

### Safety

#### **WARNING!**

**Operating the device incorrectly can cause serious injury and damage to property.**

▶ Do not use the functions described here until you have fully read and understood the Operating Instructions.

#### **WARNING!**

**An electric shock can be fatal.**

If the power source is connected to the grid during installation, there is a danger of serious personal injury and property damage.

▶ Only carry out work on the device when the power source's power switch is in the - O - position.

▶ Only carry out work on the device when the power source has been disconnected from the grid.

### Intended use

The power source is intended exclusively for MIG/MAG, MMA, and TIG welding. Utilization for any other purpose, or in any other manner, shall be deemed to be not in accordance with the intended purpose.

The manufacturer shall not be held liable for any damages arising from such use.

Intended use also means

- Following all the instructions in these Operating Instructions
- Carrying out all the specified inspection and maintenance work

### Setup regulations

The device has been tested according to degree of protection IP 23. This means:

- Protection against penetration by solid foreign bodies with diameters > 12 mm (0.49 in.)
- Protection against spraywater at any angle up to 60° from the vertical

The device can be set up and operated outdoors in accordance with degree of protection IP 23.

Direct moisture (e.g., from rain) must be avoided.

#### **WARNING!**

**Toppling or falling devices can be deadly.**

▶ Place devices on a solid, level surface so that they remain stable.

#### **WARNING!**

**Danger of electrical current due to electrically conductive dust in the device.**

This can result in severe personal injury and damage to property.



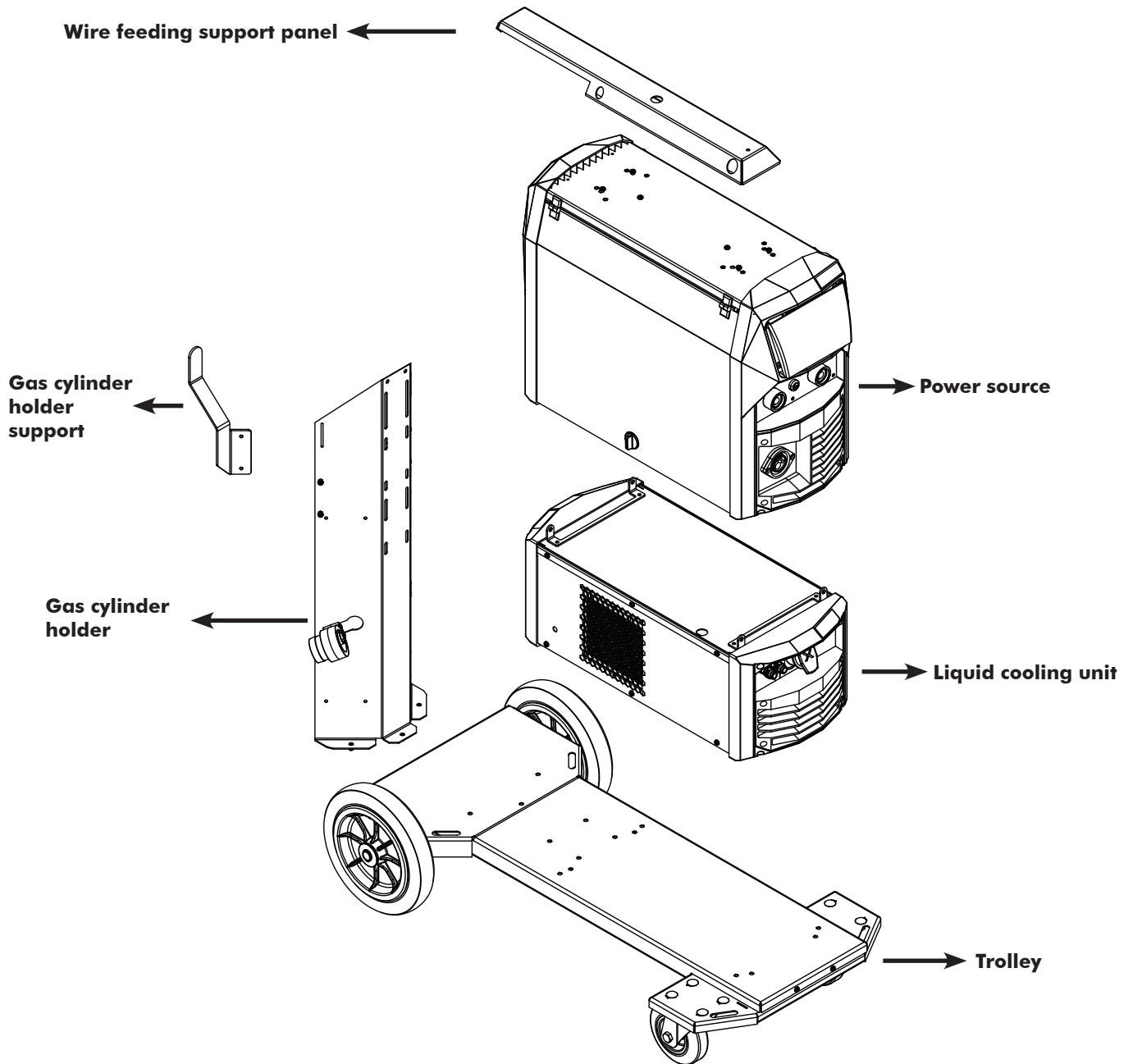
**Assembling  
system  
components  
(overview)**

**⚠ WARNING!**

**Work performed incorrectly can cause serious injury and damage.**

- ▶ The following activities must only be carried out by trained and qualified personnel.
- ▶ Please note the information in the "Safety instructions" chapter!

The following diagram is intended to provide you with an overview of how the individual system components are put together.



**Place the wirefeeder on the power source**

 **CAUTION!**

**Danger of personal injury and damage to equipment due to falling wirefeeder.**

- ▶ Ensure that the wirefeeder is firmly seated on the pivot pin and that the devices, upright brackets, and trolley are positioned securely.

**Connecting the interconnecting hosepack**

 **WARNING!**

**Fitting the device incorrectly can cause serious injury and damage to property.**

- ▶ Do not perform the steps described here until you have fully read and understood the Operating Instructions.

**NOTE!**

**When connecting the interconnecting hosepack, check that**

- ▶ All connections are connected properly
- ▶ All cables, leads, and hosepacks are undamaged and correctly insulated

**IMPORTANT!** Gas-cooled systems are not fitted with a cooling unit. The liquid connections therefore do not need to be connected for gas-cooled systems

**Correct routing of the interconnecting hosepack**

**IMPORTANT!** The duty cycle values (D.C.) of the interconnecting hosepack can only be achieved if it is correctly routed.

**Establishing a ground earth connection**

**NOTE!**

**When establishing a ground earth connection, observe the following points:**

- ▶ Use a separate grounding cable for each power source
- ▶ Keep positive cables and grounding cables together as long and as close as possible
- ▶ Physically separate the welding circuits of individual power sources
- ▶ Do not route several grounding cables in parallel; if parallel routing cannot be avoided, keep a minimum distance of 30 cm between the welding circuits
- ▶ Keep the grounding cables as short as possible, provide a large cable cross-section
- ▶ Do not cross over grounding cables
- ▶ Avoid ferromagnetic materials between the grounding cables and the interconnecting hosepack
- ▶ Do not wind long grounding cables - coil effect!  
Route long grounding cables in loops
- ▶ Do not route grounding cables in iron pipes, metal cable trays, or on steel beams, avoid cable ducts;  
(routing positive cables and grounding cables together in an iron pipe does not cause any problems)
- ▶ If several grounding cables are used, separate the part's ground points as far as possible and do not allow crossed current paths under the individual arcs.
- ▶ Use compensated interconnecting hosepacks (interconnecting hosepacks with integrated grounding cable)

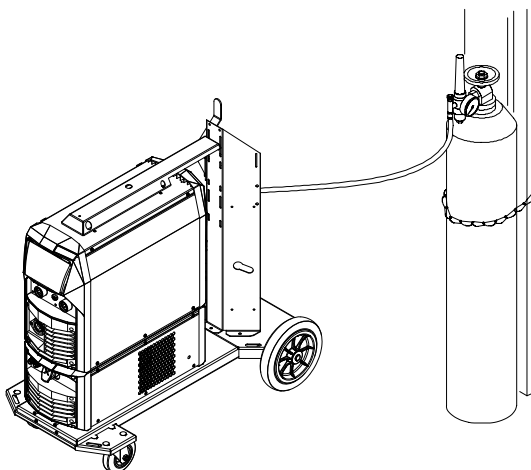
## Connecting the gas cylinder

### **WARNING!**

**Danger of severe injury and damage to property if gas cylinders fall over.**

When using gas cylinders:

- ▶ Place them on a solid, level surface in such a way that they remain stable
- ▶ Secure the gas cylinders to prevent them from falling over
- ▶ Install the VR holder option
- ▶ Observe the safety rules of the gas cylinder manufacturer



- 1-** Place the gas cylinder on the base of the trolley
- 2-** Secure the gas cylinder against falling using the cylinder strap in the upper area of the gas cylinder (but not on the neck of the cylinder)
- 3-** Remove the protective cap of the gas cylinder
- 4-** Briefly open the gas cylinder valve to remove any dirt
- 5-** Inspect the seal on the gas pressure regulator
- 6-** Screw the pressure regulator onto the gas cylinder and tighten it
- 7-** Connect the protective gas shield hose of the interconnecting hosepack to the pressure regulator using a gas hose

### **NOTE!**

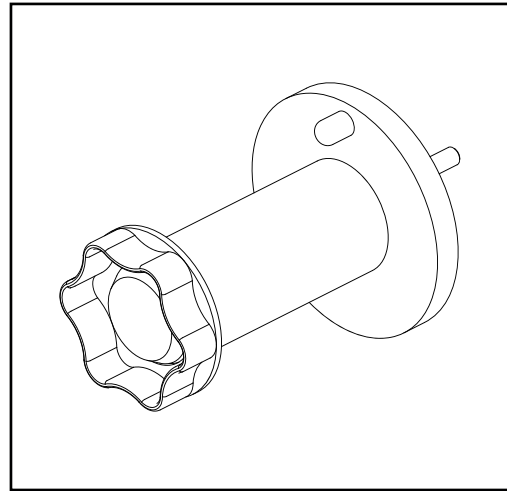
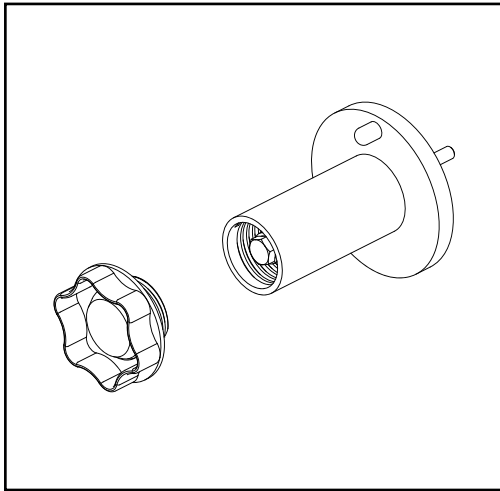
**US devices are supplied with an adapter for the gas hose:**

- ▶ Seal the outside thread on the gas solenoid valve using suitable means before screwing on the adapter.
- ▶ Test the adapter to ensure that it is gas-tight.

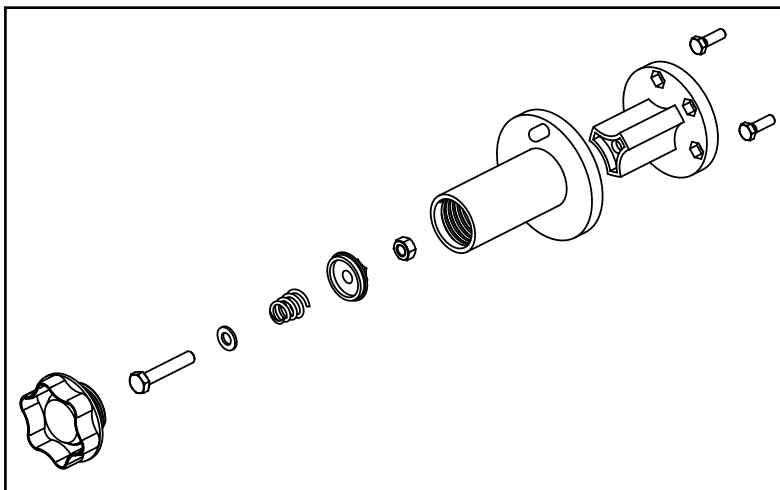
# Brake Cylinder

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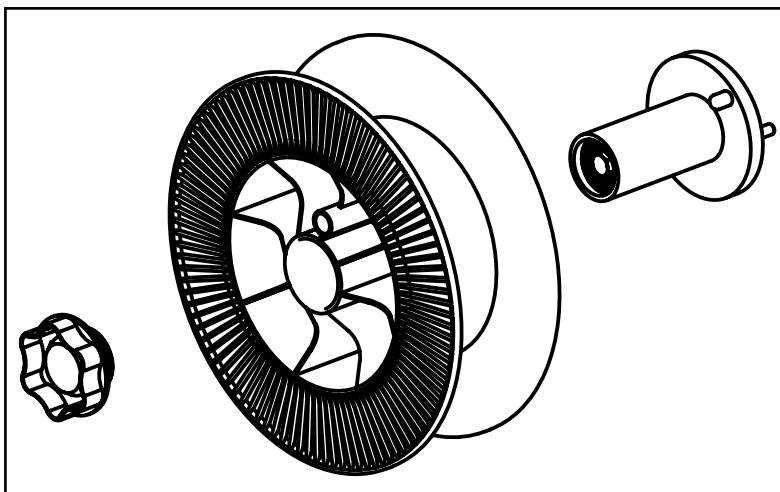
## Brake Cylinder Components



- ▶ Place the safety ring on the brake cylinder according to the image on the right.
- ▶ Be sure to correctly assemble the brake cylinder components according to the image below.



## Wire Feeding Reel



- ▶ Assemble the Wire Feed Roller and Brake Cylinder in accordance with the image.

**⚠ CAUTION!**

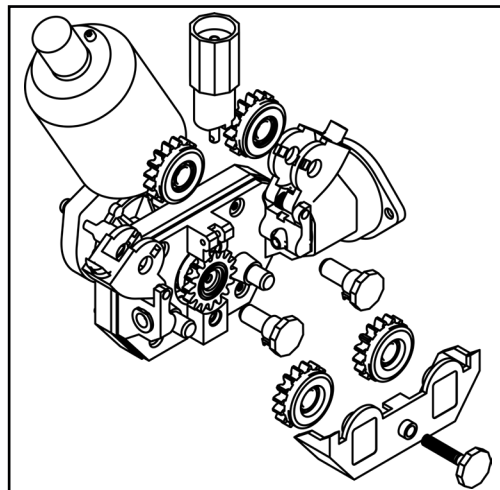
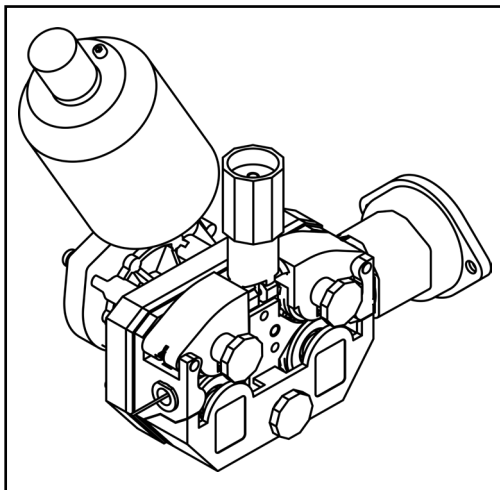
**Danger due to sudden raising of the feed rollers.**

Serious injuries may occur.

► Keep your fingers away from the left and right areas of the arm when unlocking the handle.

**1.** In this photograph we can see the wire feeder unit in its proper form

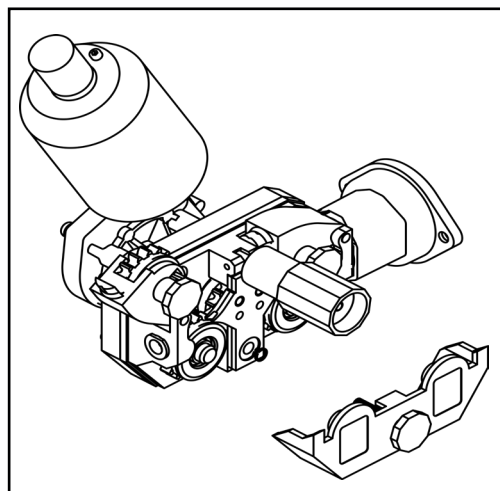
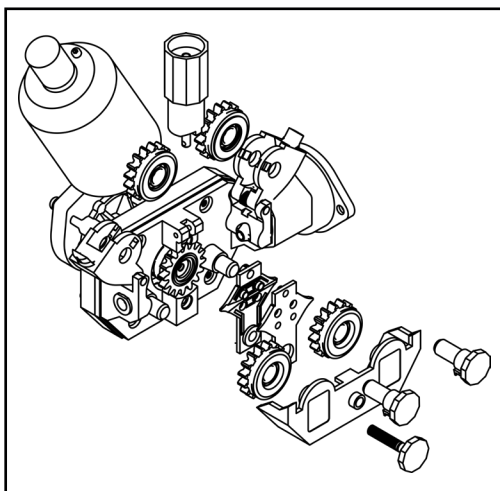
**2.** After removing the wire feeder motor cover you have to pull the wire feeder handle as indicated by the arrows to replace the rollers.



► Always install the 4 roller drive motor protective cover after replacing the feed roller.

**3.** Change the wirefeeder rollers, pressure rollers etc as per your needs.

**4.** Close the wire feeder roller properly



# MIG/MAG Welding

---

## Safety

### **WARNING!**

**Operating the device incorrectly can cause serious injury and damage to property.**

- ▶ Do not use the functions described here until you have fully read and understood the Operating Instructions.
- ▶ Do not use the functions described here until you have fully read and understood all of the Operating Instructions of the system components, especially the safety rules.

### **WARNING!**

**An electric shock can be fatal.**

If the power source is connected to the grid during installation, there is a danger of serious personal injury and property damage.

- ▶ Only carry out work on the device when the power source's power switch is in the - O - position.
- ▶ Only carry out work on the device when the power source has been disconnected from the grid.

## Preparation

**1-** Connect the liquid hoses of the welding torch to the corresponding connection sockets on the wirefeeder

(when using the cooling unit and liquid-cooled welding torch)

**2-** Insert mains plug

**3-** Set the power switch to ON

- All displays on the control panel briefly illuminate
- If present: The cooling unit starts to work

**IMPORTANT!** Observe the safety rules and operating conditions in the Operating Instructions for the cooling unit.

## Overview

MIG/MAG welding is composed of the following sections:

- MIG/MAG synergic welding
- MIG/MAG standard manual welding
- Spot welding

# MIG/MAG Synergic Welding

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## MIG/MAG synergic welding

1. Press the "Material" button (as denoted by 13 on page number 25) to select the filler metal to be used.
2. Press the "Wire diameter" button (as denoted by 14 on page number 25) to select the diameter of the wire electrode used.
3. Press the "Shielding gas" button (as denoted by 15 on page number 25) to select the shielding gas to be used.
4. Press the "Process" button (as denoted by 16 on page number 25) to select the desired welding process:

MIG/MAG standard synergic welding

MIG/MAG pulsed synergic welding

Or any other process of your choice

**IMPORTANT!** Under certain circumstances, it may not be possible to change welding parameters that have been set on the control panel of a system component - such as remote control or wirefeeder - on the control panel of the power source.

5. Use the "Parameter selection" button (as denoted by 5 on page number 25) by pressing one time to select the welding parameters to be used to specify the welding power:

	Sheet thickness (denoted by 4 on page 25)		Prog Memory (denoted by 15 on page 25)
	Welding current (denoted by 3 on page 25)		Voltage (denoted by 14 on page 25)
	Wire speed (denoted by 2 on page 25)		m Droplet correction (denoted by 13 on page 25)

6. Use the appropriate selection with the help of the above given instructions and rotating the black knobs to set the welding parameter.  
The value of the parameter is displayed on the digital display located on the panel.

The sheet thickness, welding current, wire speed, and welding voltage parameters are directly linked. It is sufficient to change one of the parameters, as the remaining parameters are immediately adjusted accordingly

All welding parameter set values remain stored until the next time they are changed. This applies even if the power source is switched off and on again. To display the actual welding current during welding, select the welding current parameter.

7. Open the gas cylinder valve

8. Adjust quantity of shielding gas:
  - Tap the Gas-test button given inside the wire feeding unit
  - Turn the adjusting screw on the bottom of the gas pressure regulator until the manometer displays the desired quantity of gas
  - Tap the Gas-test button again

9. Press the torch trigger and start welding

### CAUTION!

**Danger of injury and damage from electric shock and from the wire electrode** emerging from the torch.

When you press the torch trigger:

- ▶ Keep the welding torch away from your face and body
- ▶ Wear suitable protective goggles
- ▶ Do not point the welding torch at people
- ▶ Make sure that the wire electrode does not touch any conductive or grounded parts (e.g., housing, etc.)

## **XDeep**

### **Deep weld penetration**

Kolarc XDeep ensures exceptional welding performance, virtually eliminating spatter and reducing edge grooves. Ensuring a flat weld surface and symmetrical weld seam is achieved, even on sheets heavily oxidized or contaminated. These advantages such as enhanced and reliable penetration, and elevated speed not only reduce the welder's workload but also result in significant time savings.

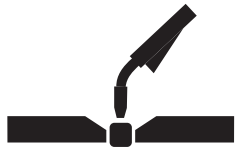


## **XDeep**

## **XRoot**

### **Highly efficient root welding**

XRoot enhances welding speed through energy-efficient short arc welding when compared to conventional arc welding methods. This method is suitable for a range of materials, including steel, stainless steel, and high alloy steels. Achieve superior gap bridging with heightened arc pressure for efficient root welding in diverse positions.



## **XRoot**

## **XCold**

### **Reduce excessive heat input**

The XCold welding solution, powered by its high-speed inverter power unit, enables precise control in welding applications where elevated temperatures can disrupt the weld pool balance and result in joint failure. It enables the creation of a flat, smooth weld surface with zero spatter.



## **XCold**



## XStabil

### Uniform welding quality

The XStabil welding solution enables the production of a very narrow and high-energy welding arc, accelerating the welding process and reducing the heat input. It maintains a consistent welding quality in your welding process by ensuring a uniform penetration depth, unaffected by changes in the free wire tip.



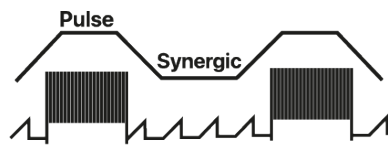
## XStabil

## Position

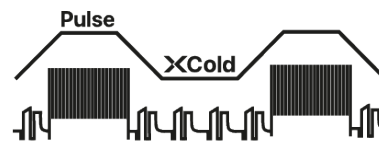
### Easy control in difficult welding positions

With the Kolarc Position welding solution, faster and easier control is achieved in difficult welding positions such as flat, horizontal, vertical, and overhead welding. Facilitating enhanced control during both high and low welding current cycles.

Kolarc Position cools the weld pool efficiently with low power while delivering strong penetration using high power. Provides a narrower throat thickness, less distortion, and easy control of the molten weld pool.



## Position



## Position

## Duo Pulse

### Full control of welding quality

Duo Pulse ensures a flat and uniform weld start, smooth fusion of metals, improved position welding, and enhanced control of the weld pool. Provides better control of high and low welding power cycles.



## Duo Pulse

**Corrections during welding** The arc length correction and arc-force dynamic parameters can be used to optimize the welding result.

Arc length correction:

- = shorter arc, reduced welding voltage
- 0 = neutral arc
- + = longer arc, increased welding voltage

Pulse / arc-force dynamic correction

For continuous correction of the droplet detachment force in MIG/MAG pulsed synergic welding

- reduced droplet detachment force
- 0 neutral droplet detachment force
- + increased droplet detachment force

For influencing the short-circuiting dynamic at the instant of droplet transfer during MIG/MAG standard synergic welding

- = soft, low-spatter arc
- 0 = neutral arc
- + =hard, stable arc

**IMPORTANT!** Under certain circumstances, it may not be possible to change welding parameters that have been set on the control panel of a system component - such as remote control or wirefeeder - on the control panel of the power source.

The welding parameter values are shown in the digital display located above.

All welding parameter set values remain stored until the next time they are changed. This applies even if the power source is switched off and on again. To display the actual welding current during welding, select the welding current parameter.

To display the actual welding current during welding:

- Press the "Parameter selection" button to select the welding current parameter
- The actual welding current is shown on the digital display during welding.

**7-** Open the gas cylinder valve

**8-** Adjust quantity of shielding gas:

- Tap the Gas-test button
- Turn the adjusting screw on the bottom of the gas pressure regulator until the manometer displays the desired quantity of gas
- Tap the Gas-test button again

**9-** Press the torch trigger and start welding

### **CAUTION!**

**Danger of injury and damage from electric shock and from the wire electrode** emerging from the torch.

When you press the torch trigger:

- ▶ Keep the welding torch away from your face and body
- ▶ Wear suitable protective goggles
- ▶ Do not point the welding torch at people
- ▶ Make sure that the wire electrode does not touch any conductive or grounded parts (e.g., housing, etc.)

**Corrections during welding** To obtain the best possible welding results, the arc-force dynamic parameter will sometimes need to be adjusted.

- 1- Press the "Parameter selection" button to select the arc-force dynamic parameter
- 2- Use the selection dial to set the desired arc-force dynamic value

The welding parameter value is shown in the digital display located above it.

## Manual Metal Arc (MMA) Welding

---

### Safety

#### **WARNING!**

**Operating the device incorrectly can cause serious injury and damage to property.**

- ▶ Do not use the functions described here until you have fully read and understood the Operating Instructions.
- ▶ Do not use the functions described here until you have fully read and understood all of the Operating Instructions of the system components, especially the safety rules.

#### **WARNING!**

**An electric shock can be fatal.**

If the unit is connected to the grid during installation, there is a danger of serious injury and damage to property.

- ▶ Only carry out work on the device if the power switch is in the - O - position.
- ▶ Only carry out work on the device when it has been disconnected from the grid.

### Preparation

- 1- Set the job 6 from the front panel
- 2- The job can be selected by holding and pressing the job button from the front panel for minimum 3 seconds
- 3- Once the parameters are selected the MMA mode is ready to work

**IMPORTANT!** Check the rod electrode packaging to determine whether the rod electrodes are for (+) or (-) welding.

- 4- Depending on the type of electrode, insert the grounding cable into the (-) current socket or into the (+) current socket and lock (on wire feeder)
- 5- Connect the other end of the grounding cable to the workpiece
- 6- Depending on the type of electrode, insert the bayonet connector of the electrode holder cable into the free current socket with opposite polarity and twist it clockwise to lock
- 7- Insert mains plug

 **CAUTION!**

**Danger of injury and damage from electric shock.**

When the power switch is switched to position ON, the rod electrode in the electrode holder is live.

► Ensure that the rod electrode is not touching any people or electrically conductive or grounded parts (housing, etc.)

- 1- Set the Job 6 for the MMA process and the front panel screens will show the electrode welding
- 2 - Once the "Process" is selected the electrode welding is ready

The welding voltage is applied to the welding socket with a three second time lag.

If the MMA welding process is selected, a cooling unit, if present, is automatically deactivated. It is not possible to turn it on.

**IMPORTANT!** Under certain circumstances, it may not be possible to change welding parameters that have been set on the control panel of a system component - such as remote control or wirefeeder - on the control panel of the power source.

- 3- Press the "Parameter selection (FNC)" button from the front panel to select the amperage parameter.
- 4- Use the selection knob from the left side of the panel to set the desired amperage.

The amperage value is displayed on the left-hand digital display.

All parameter set values that are set using the selection dial are saved until their next alteration. This applies even if the power source is switched off and on again.

**5- Initiate welding process**

To display the actual welding current during welding:

- Press the "Parameter selection (FNC)" button from the front panel to select the welding current (A) parameter
- The actual welding current is shown on the digital display during welding.

**Corrections during  
welding**

To obtain the best possible welding results, the arc-force dynamic parameter will sometimes need to be adjusted.

The welding parameter value is shown in the digital display located above it.

To influence the short-circuiting dynamic at the instant of droplet transfer:

- = soft, low-spatter arc
- 0 = neutral arc
- + = hard, stable arc

## **HotStart function (F25)**

To obtain the best possible welding result, the HotStart function will sometimes need to be adjusted.

### **Advantages**

- Improved ignition properties, even when using electrodes with poor ignition properties
- Better fusion of the parent material during the start-up phase, meaning fewer coldshut defects
- Slag inclusions largely avoided

### **Function**

F25 Hot-current time,  
0 - 2 s,  
Factory setting 0.5 s

F26 HotStart current,  
100 - 200%,  
Factory setting 150%

### **Function**

During the specified hot-start time (F25), the welding current is increased to a certain value. This value (F26) is higher than the selected welding current.

The Hot Start feature ensures that sufficient heating occurs on the base metal, which is still cold, while starting the welding process. In this way, the electrode is easily ignited and it is prevented from sticking to the workpiece

## **Anti-Stick function (F28)**

As the arc becomes shorter, the welding voltage may also fall so that the rod electrode is more likely to stick to the workpiece. This may also cause the rod electrode to burn out.

Electrode burn-out is prevented by activating the anti-stick function. If the rod electrode begins to stick, the power source immediately switches the welding current off. The welding process can be resumed without problems once the rod electrode has been detached from the workpiece.

The anti-stick (Ast) function can be activated and deactivated in the Setup menu for the setup parameters for MMA welding.

Thanks to its anti-stick feature, the annealing of the electrode and the burning of alloy components are prevented blocking damage to the electrode in case of unwanted material contact. In contact with the electrode and the workpiece, the welding current is turned off for a short time.

# Arc Air Gauging

---

## Safety

### **WARNING!**

**Operating the device incorrectly can cause serious injury and damage to property.**

- ▶ Do not use the functions described here until you have fully read and understood the Operating Instructions.
- ▶ Do not use the functions described here until you have fully read and understood all of the Operating Instructions of the system components, especially the safety rules.

### **WARNING!**

**An electric shock can be fatal.**

If the unit is connected to the grid during installation, there is a danger of serious injury and damage to property.

- ▶ Only carry out work on the device if the power switch is in the - ON - position.
- ▶ Only carry out work on the device when it has been disconnected from the grid.

## Preparation

**IMPORTANT!** A grounding cable with a cable cross-section of 120 mm<sup>2</sup> is required for arc air gouging.

- 1- Set the power switch to - ON -
- 2- Unplug the mains plug
- 3- Remove the MIG/MAG welding torch
- 4 - Insert the grounding cable into the (-) current socket and lock
- 5- Connect the other end of the grounding cable to the workpiece
- 6 - Insert the bayonet connector of the arc air gouging torch into the (+) current socket and twist it clockwise to lock
- 7- Connect the compressed air connection of the arc air gouging torch to the compressed air supply  
Working pressure: 5 - 7 bar (constant)
- 8- Clamp the carbon electrode so that the electrode tip protrudes approx. 100 mm from the arc air gouging torch; the air outlet openings of the arc air gouging torch must be at the bottom
- 9- Insert the mains plug
- 10- To open the job long press Job button for 3 seconds on the front pael and set job 7 by turning the right knob.

## Arc air gouging

### **CAUTION!**

**Danger of injury and damage from electric shock.**

When the power switch is switched to position - I -, the electrode in the arc air gouging torch is live.

- ▶ Ensure that the electrode is not touching any people or electrically conductive or grounded parts (housing, etc.).

## Querying The Source Circuit Inductance

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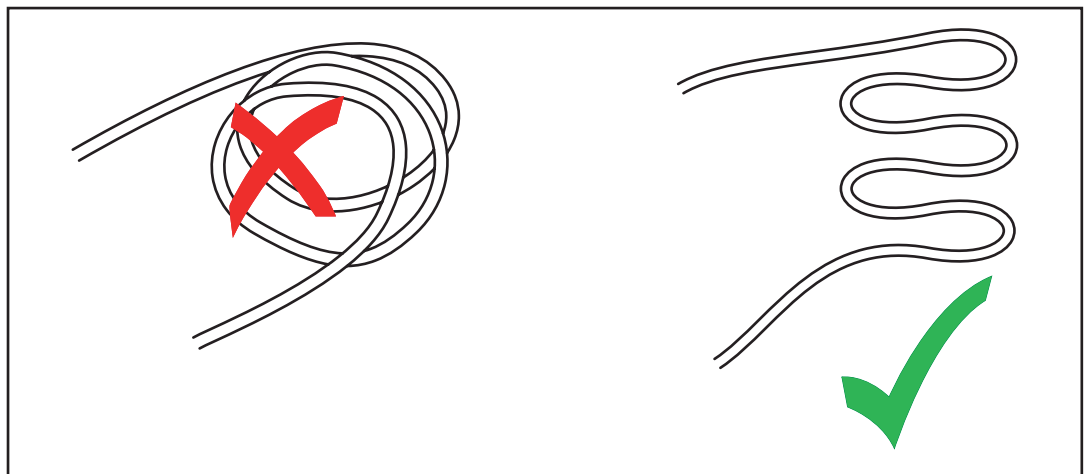
### General information

Significant effects of the placement of the hose packages on the welding circuit inductance has an impact on the welding process. The best possible welding result It is important to position the hosepack correctly in order to obtain

### Welding circuit its inductance shows

Welding circuit inductance finally calculated by means of setting parameter "**m**" is displayed. The actual setting of the welding circuit inductance is by calculation of the welding circuit resistance carried out simultaneously. By inductance symbol on the menu, you can calculate the inductance.

### Of the hose package correctly positioned



# Troubleshooting

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## General

The devices are equipped with an intelligent safety system, which largely negates the need for melting-type fuses. Melting-type fuses therefore no longer need to be replaced. After a possible malfunction has been remedied, the device is ready for use again.

## Safety



### **WARNING!**

**Work that is performed incorrectly can cause serious injury and damage to property.**

- ▶ Only trained and qualified personnel may carry out the activities described in the following.
- ▶ Follow the safety rules in the power source Operating Instructions



### **WARNING!**

**An electric shock can be fatal.**

Before opening the device:

- ▶ Set the power switch to - O -
- ▶ Unplug the device from grid power
- ▶ Attach a clear warning sign advising others not to switch the power source back on
- ▶ Use a suitable measuring instrument to ensure that electrically charged components (e.g., capacitors) are discharged



### **WARNING!**

**Danger due to insufficient ground conductor connection!**

This can result in severe personal injury and damage to property.

- ▶ The housing screws provide an adequate ground conductor connection for grounding the housing and should not be replaced under any circumstances by other screws that do not provide a reliable ground conductor connection.



## Error Resolution Table

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<b>A</b>	<b>V</b>	
<b>Err</b>	<b>01</b>	<b>Error-1</b> It is a phase error. Occurs when any of the phases does not reach the machine.
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>03</b>	<b>Error-3</b> It is an IGBT thermal fault. It occurs when IGBTs overheat. (It is used in the SAW model.)
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>04</b>	<b>Error-4</b> Transformer thermal fault. Occurs when the transformer overheats.
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>05</b>	<b>Error-5</b> It is an IGBT thermal fault. Occurs when IGBTs overheat.
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>06</b>	<b>Error-6</b> It is a diode thermal fault. Occurs when the output diode overheats.
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>08</b>	<b>Error-8</b> The panel board data receiving error. Occurs when the panel board and the motor board cannot communicate.
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>09</b>	<b>Error-9</b> Motor board data acquisition error. Occurs when the motor board and the control board cannot communicate.
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>10</b>	<b>Error-10</b> It is average current error. occurs when the adjusted average current did not draw
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>12</b>	<b>Error-12</b> It is high current error. Occurs when the machine draws high current.
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>14</b>	<b>Error-14</b> It is a high current protection fault. It usually occurs when there is an IGBT failure.
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>20</b>	<b>Error-20</b> Robot board data receiving error. occurs when the robot board cannot communicate with the control board
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>30</b>	<b>Error-30</b> It is high current of motor error. occurs when the motor current exceeds the motor current limit
<b>A</b>	<b>V</b>	
<b>Err</b>	<b>31</b>	<b>Error-31</b> No signal from Motor's encoder. Please check motor encoder cables.



BUILDING THE FUTURE

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