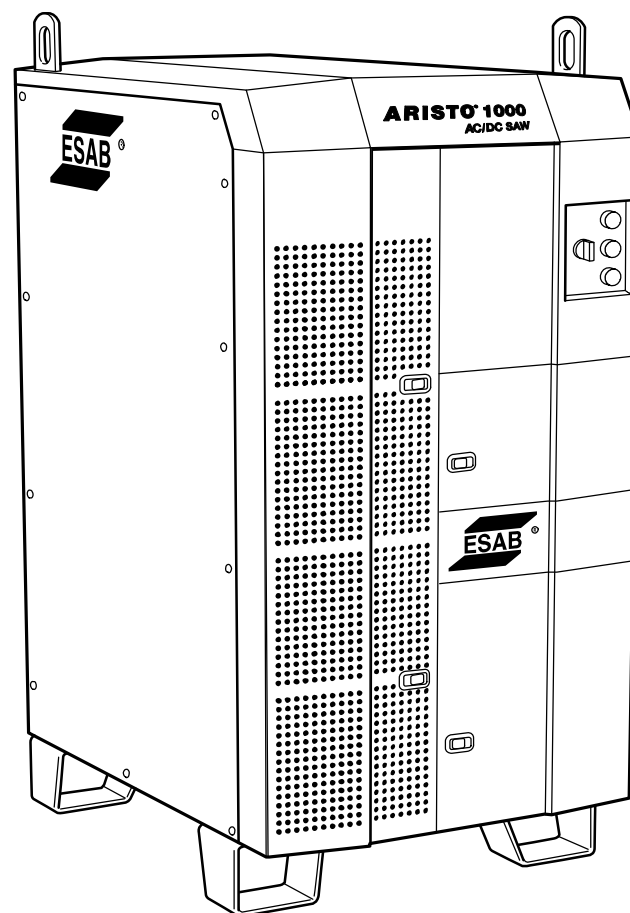


# ***Aristo<sup>®</sup> 1000***

## ***AC/DC SAW***



**Instruction manual**



## DECLARATION OF CONFORMITY

According to

The Low Voltage Directive 2006/95/EC, entering into force 16 January 2007

The EMC Directive 2004/108/EC, entering into force 20 July 2007

### Type of equipment

Welding power source

### Type designation etc.

Aristo™ 1000 AC/DC from serial number 145 xxx xxxx (2011 w.45)

Aristo™ 1000 AC/DC is designed for submerged arc welding (SAW), used together with Control Box PEK

### Brand name or trade mark

ESAB

### Manufacturer or his authorised representative established within the EEA

#### Name, address, telephone No, E-mail:

ESAB AB

Box 8004, SE-402 77 Göteborg, Sweden

Phone: +46 31 50 90 00, E-mail: info@esab.se

### Factory operating on behalf of the Manufacturer

#### Name, address:

ESAB AB, Welding Equipment

SE-695 81 Laxå, Sweden

### The following harmonised standard in force within the EEA has been used in the design:

EN 60974-1, Arc welding equipment – Part 1: Welding power sources

EN 60974-10, Arc welding equipment – Part 10: Electromagnetic compatibility (EMC) requirements

Additional information: Restrictive use, Class A equipment, intended for use in locations other than residential

**By signing this document, the undersigned declares as manufacturer, or the manufacturer's authorised representative established within the EEA, that the equipment in question complies with the safety requirements stated above.**

Gothenburg 2012-01-30

A handwritten signature in blue ink, appearing to read "Håkan Führ". The signature is fluid and cursive, written over a white background.

Håkan Führ

Global Automation Director

MD ESAB AB

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# 1 SAFETY

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Users of ESAB welding equipment have the ultimate responsibility for ensuring that anyone who works on or near the equipment observes all the relevant safety precautions. Safety precautions must meet the requirements that apply to this type of welding equipment. The following recommendations should be observed in addition to the standard regulations that apply to the workplace.

All work must be carried out by trained personnel well-acquainted with the operation of the welding equipment. Incorrect operation of the equipment may lead to hazardous situations which can result in injury to the operator and damage to the equipment.

1. Anyone who uses the welding equipment must be familiar with:
  - its operation
  - location of emergency stops
  - its function
  - relevant safety precautions
  - welding
2. The operator must ensure that:
  - no unauthorized person is stationed within the working area of the equipment when it is started up.
  - no-one is unprotected when the arc is struck
3. The workplace must:
  - be suitable for the purpose
  - be free from drafts
4. Personal safety equipment
  - Always wear recommended personal safety equipment, such as safety glasses, flame-proof clothing, safety gloves.
  - Do not wear loose-fitting items, such as scarves, bracelets, rings, etc., which could become trapped or cause burns.
5. General precautions
  - Make sure the return cable is connected securely.
  - Work on high voltage equipment **may only be carried out by a qualified electrician.**
  - Appropriate fire extinguishing equipment must be clearly marked and close at hand.



## WARNING

*Do not use the power source for thawing frozen pipes.*



# WARNING



**Arc welding and cutting can be injurious to yourself and others. Take precautions when welding and cutting. Ask for your employer's safety practices which should be based on manufacturers' hazard data.**

**ELECTRIC SHOCK - Can kill**

- Install and earth the unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing.
- Insulate yourself from earth and the workpiece.
- Ensure your working stance is safe.

**FUMES AND GASES - Can be dangerous to health**

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to take fumes and gases away from your breathing zone and the general area.

**ARC RAYS - Can injure eyes and burn skin.**

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

**FIRE HAZARD**

- Sparks (spatter) can cause fire. Make sure therefore that there are no inflammable materials nearby.

**NOISE - Excessive noise can damage hearing**

- Protect your ears. Use earmuffs or other hearing protection.
- Warn bystanders of the risk.

**MALFUNCTION - Call for expert assistance in the event of malfunction.**

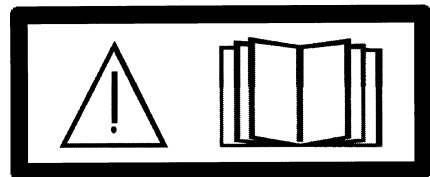
**Read and understand the instruction manual before installing or operating.**

**PROTECT YOURSELF AND OTHERS!**



**CAUTION**

*Read and understand the instruction manual before installing or operating.*



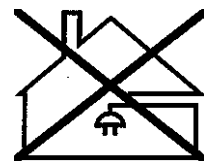
**CAUTION**

*This product is solely intended for arc welding.*

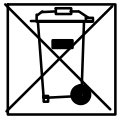


**CAUTION**

*Class A equipment is not intended for use in residential locations where the electrical power is provided by the public low-voltage supply system. There may be potential difficulties in ensuring electromagnetic compatibility of class A equipment in those locations, due to conducted as well as radiated disturbances.*



**ESAB can provide you with all necessary welding protection and accessories.**



**Dispose of electronic equipment at the recycling facility!**

In observance of European Directive 2002/96/EC on Waste Electrical and Electronic Equipment and its implementation in accordance with national law, electrical and/or electronic equipment that has reached the end of its life must be disposed of at a recycling facility.

As the person responsible for the equipment, it is your responsibility to obtain information on approved collection stations.

For further information contact the nearest ESAB dealer.

## 2 INTRODUCTION

**Aristo 1000** is a welding power source intended for high productivity submerged arc welding with direct current (DC) or alternating current (AC). The power source has many setting options for those who want to optimise their welding process.

The welding power source is used together with control unit PEK and the welding process parameters are regulated via it.

The power source is part of ESAB's A2 / A6 system, which means that most of the components from this system can be used with Aristo 1000.

Components such as:

- Welding tractors
- Column and boom
- Welding heads
- Positioning equipment
- Joint tracking equipment
- Flux handling systems.

**ESAB's accessories for the product can be found on page [27](#).**

## 3 TECHNICAL DATA

<b>Aristo 1000</b>	
<b>Mains voltage</b>	380 - 575 V, ± 10%, 3~ 50/60 Hz
<b>Mains supply</b>	S <sub>sc</sub> min 6.7 MVA
<b>Primary current</b>	I <sub>max</sub> 86 A
<b>Setting range</b>	14 - 50 V / 0 - 1000 A
<b>Permissible load</b> 100% duty cycle	1000 A / 44 V
<b>Power factor</b> at maximum current	0,93
<b>Efficiency</b> at maximum current	85 %
<b>Open-circuit voltage</b> with VRD U <sub>0</sub> max	121 VDC
<b>Apparent power</b> at maximum current	58,1 kVA
<b>Active power</b> at maximum current	52,0 kW
<b>No-load power</b>	200 W

<b>Aristo 1000</b>	
<b>Operating temperature</b>	-10 to +40° C
<b>Transportation temperature</b>	-20 to +55° C
<b>Dimensions l x w x h</b>	865 x 610 x 1320 mm
<b>Weight</b>	330 kg
<b>Insulation class</b>	H
<b>Enclosure class</b>	IP 23S
<b>Application class</b>	<b>S</b>

**Duty cycle**

The duty cycle refers to the time as a percentage of a ten-minute period that you can weld or cut at a certain load without overloading. The duty cycle is valid for 40° C.

**Enclosure class**

The IP code indicates the enclosure class, i. e. the degree of protection against penetration by solid objects or water. Equipment marked **IP 23S** is designed for indoor and outdoor use; however, should not be operated in precipitation.

**Application class**

The symbol **S** indicates that the power source is designed for use in areas with increased electrical hazard.

**Mains supply, S<sub>sc min</sub>**

Minimum short circuit power on the network in accordance with IEC 61000-3-12

## 4 INSTALLATION

***The installation must be carried out by a professional.***

The power source must be calibrated by a professional.



**CAUTION!**

*Installation shall be made to a symmetrical 3 phase system in respect to safety ground.  
Intended for fixed installation.*

**Note**

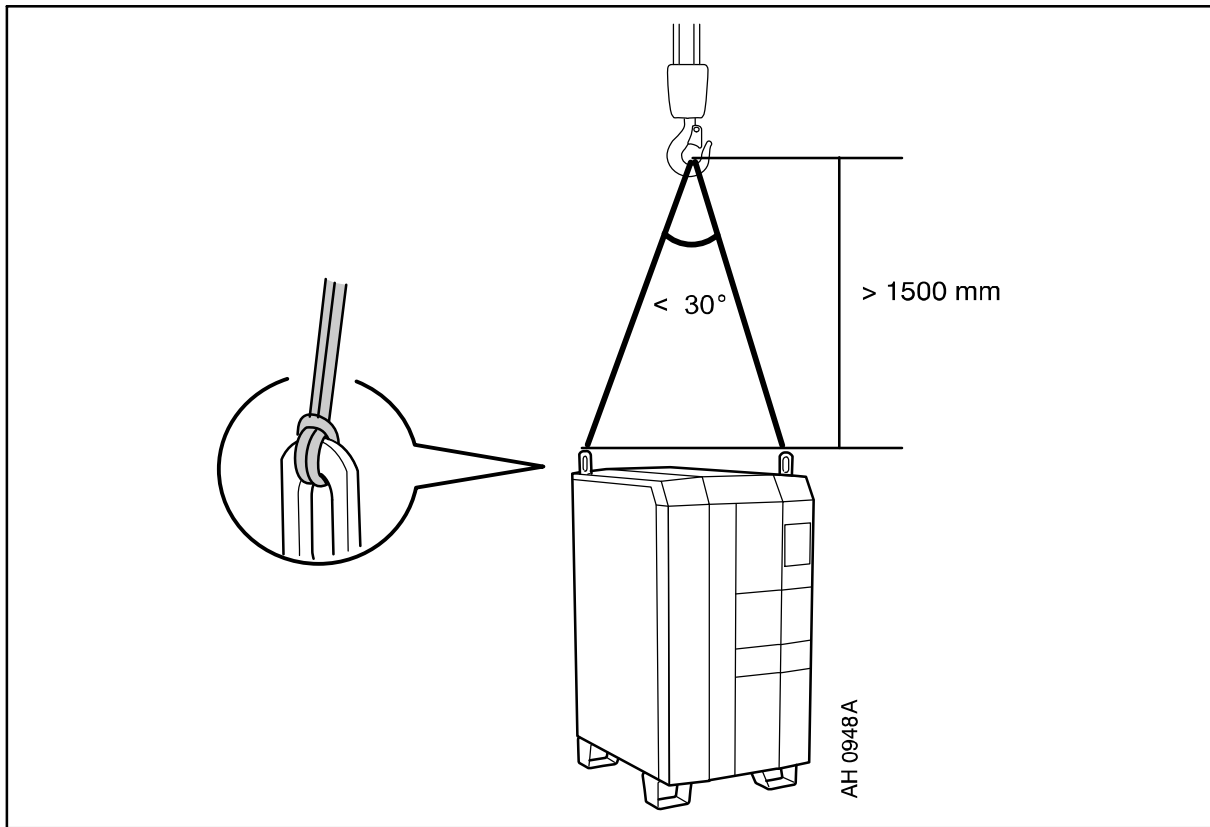
**Mains supply requirements**

High power equipment may, due to the primary current drawn from the mains supply, influence the power quality of the grid. Therefore connection restrictions or requirements regarding the maximum permissible mains impedance or the required minimum supply capacity at the interface point to the public grid may apply for some types of equipment (see technical data). In this case it is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment may be connected.


**Note**


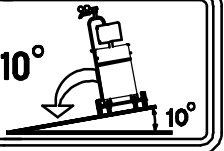
The power source can be connected for generator power. For more information, contact authorised ESAB service personnel.

### 4.1 Lifting instructions



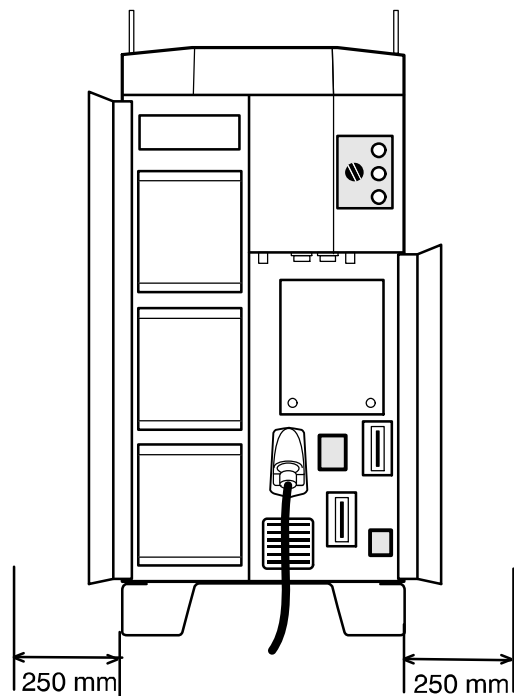
### 4.2 Location

 **WARNING**  
*Secure the equipment - particularly if the ground is uneven or sloping.*

  $> 10^\circ$  

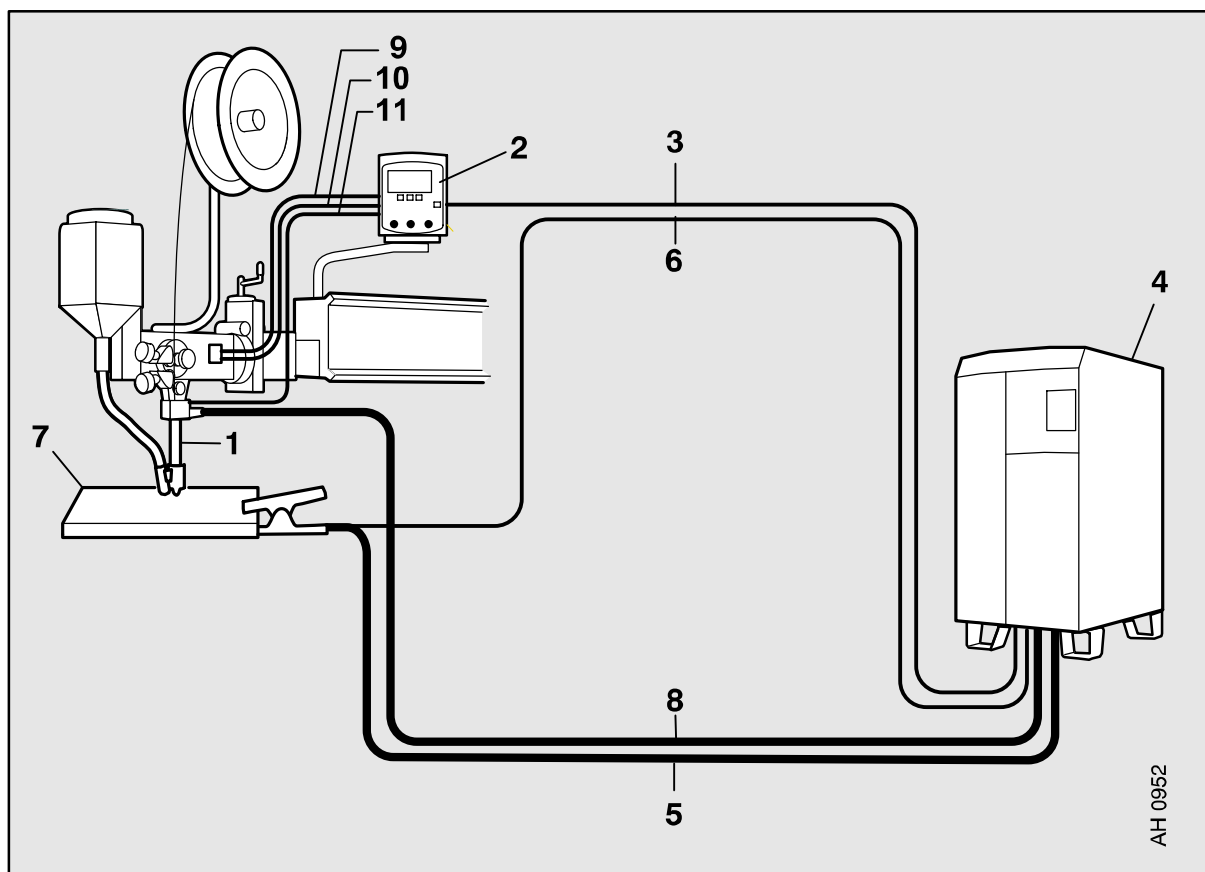
Position the welding power source so that its cooling air inlets and outlets are not obstructed, with a distance of at least 250 mm all the way around.

When installing the power source on the floor, see the dimensions according to the hole pattern on page 23.





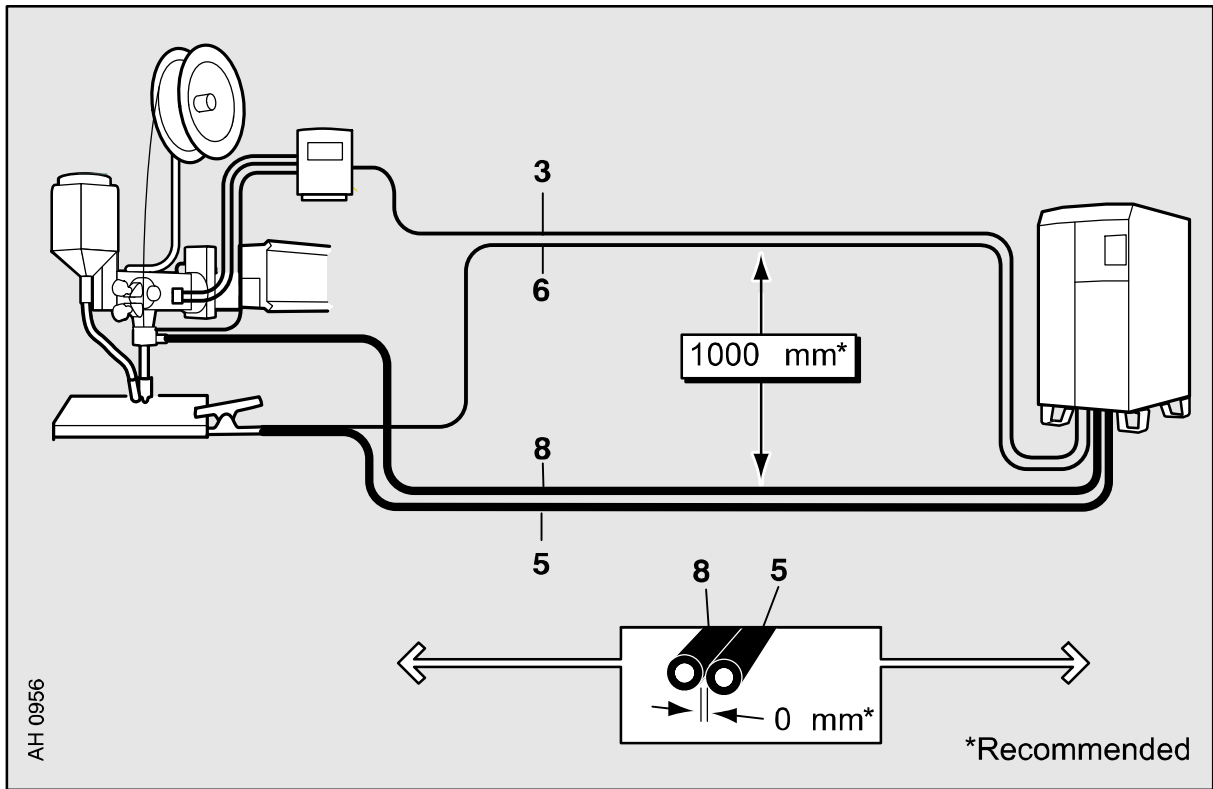
### 4.3 Example of welding equipment



AH 0952

- |   |                      |   |                              |    |                                    |
|---|----------------------|---|------------------------------|----|------------------------------------|
| 1 | Welding head         | 5 | Return cable                 | 9  | Measurement cable, speed           |
| 2 | Control unit         | 6 | Measurement cable, workpiece | 10 | Motor cable                        |
| 3 | Control cable        | 7 | Workpiece                    | 11 | Measurement cable, welding voltage |
| 4 | Welding power source | 8 | Welding cable                |    |                                    |

### 4.4 Cable routing



- 3 Control cable
- 5 Return cable
- 6 Measurement cable, workpiece
- 8 Welding cable

For more information regarding cable routing, see page 17 and onwards.

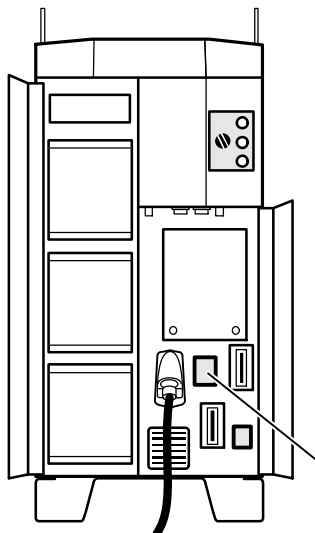
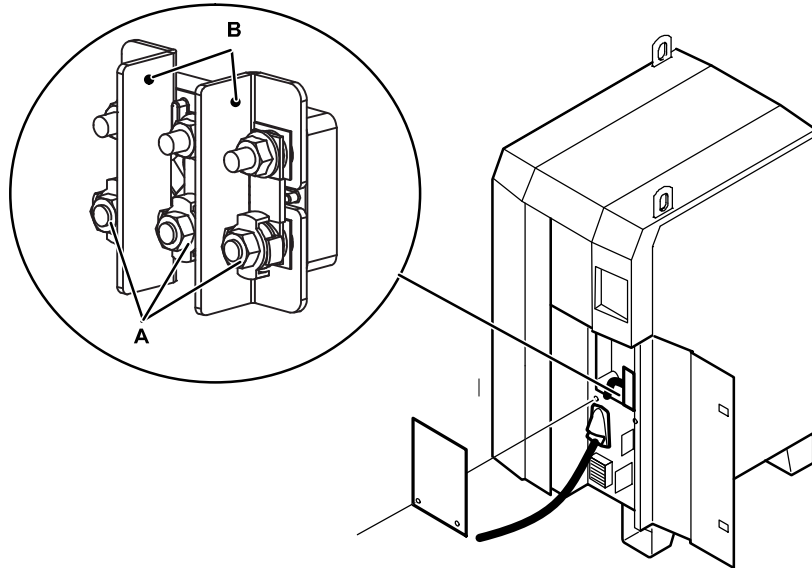
## 4.5 Mains power supply



### WARNING

*The welding power source is connected for 400 V at delivery. For other mains voltage, reconnect on the terminal block, according to the connection instructions on page 24.*

Tighten the screws **A** using a torque of 10 Nm. Ensure that the plastic protector **B** is still loose.



Make sure that the welding power source is connected to the correct mains voltage and that it is protected by the correct fuse rating. A protective earth connection must be made in accordance with regulations.

*Rating plate with supply connection data*

### Recommended fuse sizes




Aristo 1000								
50/60 Hz at DC welding								
<b>Mains voltage</b>	380V	400V	415V	440V	460V	500V	550V	575V
<b>Phase current <math>I_{1eff}</math></b>	86A	82 A	79A	74A	71A	66A	59A	57A
<b>Fuse anti-surge</b>	100A	100A	80A	80A	80A	80A	63A	63A

**Note!** *The fuse sizes as shown above are in accordance with Swedish regulations. Use the welding power source in accordance with the relevant national regulations.*

## 5 OPERATION

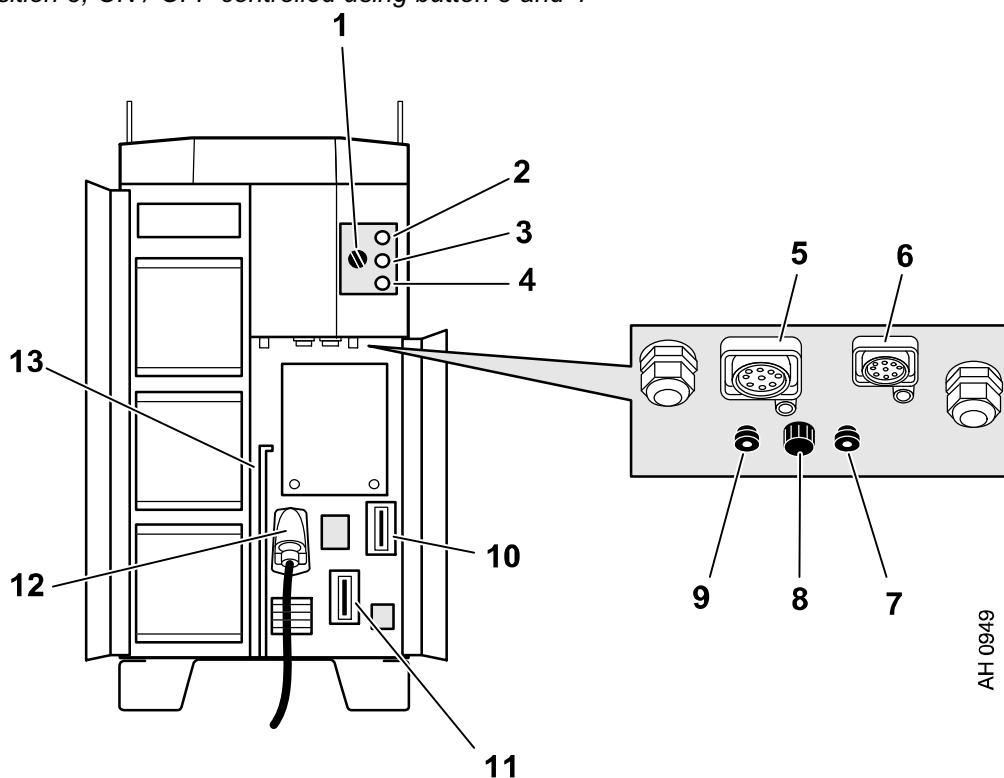
**General safety regulations for handling the equipment can be found on page 4. Read through before you start using the equipment!**

### 5.1 Connections and control devices

- |   |                                                                                                                   |    |                                                                                                                                        |
|---|-------------------------------------------------------------------------------------------------------------------|----|----------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Knob for setting control*                                                                                         | 7  | Connection black for measurement cable, workpiece                                                                                      |
| 2 | Fault indicating lamp orange                                                                                      | 8  | Fuse                                                                                                                                   |
| 3 | Push button white ON                                                                                              | 9  | Connection red for measurement cable, welding head                                                                                     |
| 4 | Push button black OFF                                                                                             | 10 | Connection for return cable                           |
| 5 | Connection for control unit PEK  | 11 | Connection for welding current cable to welding head  |
| 6 | Connection for service tool                                                                                       | 12 | Connection for mains voltage cable                                                                                                     |
|   |                                                                                                                   | 13 | Cable groove for signal cables                                                                                                         |

*\*) There are three knob positions:*

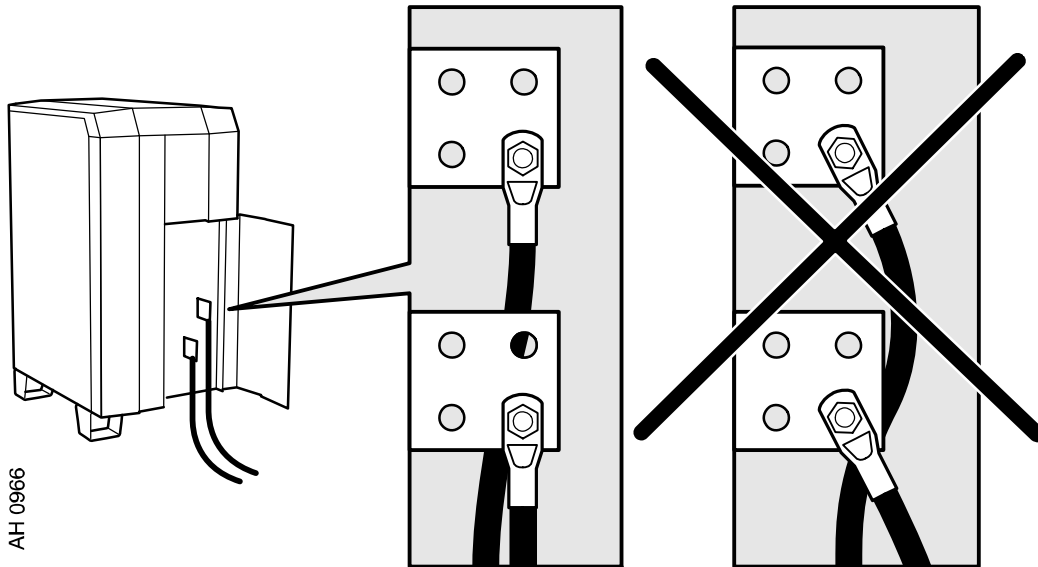
- *Position 1, ON / OFF of mains voltage controlled from remote control unit*
- *Position 2, ON / OFF blocked*
- *Position 3, ON / OFF controlled using button 3 and 4*




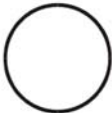
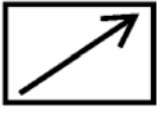


AH 0949

## 5.2 Connection of welding and return cable

Ensure that the welding and return cables are installed as illustrated.



## 5.3 Key to symbols

	Power source ON		Power source OFF
	Remote controlled start		Local control from the power source
	Fault indication		

## 5.4 Overheating protection

The welding power source has overheating protection that operates if the temperature becomes too high. When this occurs, the welding current is interrupted and the yellow indicating lamp comes on. A fault code appears in the control unit (PEK) settings panel.

The overheating protection resets automatically and the welding process can be restarted when the temperature has fallen.

---

## **6 MAINTENANCE**

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Regular maintenance is important for safe, reliable operation.

*Only those persons who have appropriate electrical knowledge (authorized personnel) may remove the safety plates to connect or carry out service, maintenance or repair work on welding equipment.*



### **CAUTION**

*All guarantee undertakings from the supplier cease to apply if the customer attempts any work to rectify any faults in the product during the guarantee period.*

### **6.1 Welding power source**

Check regularly that the welding power source is not clogged with dirt.

How often and which cleaning methods apply depend on:

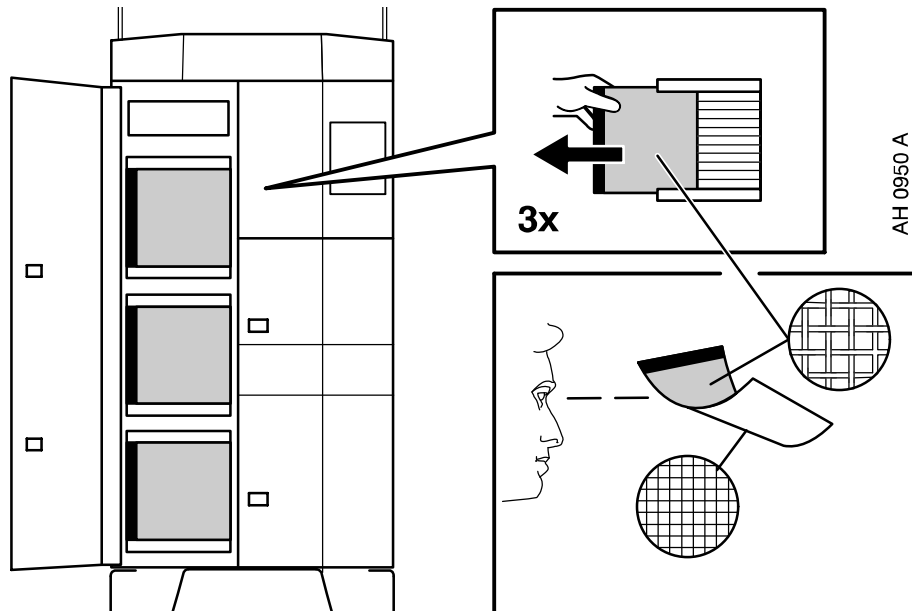
- welding process
- operation time
- placement
- surrounding environment

The power source should be regularly blown clean using dry compressed air at reduced pressure, see page 21. This should be done more frequently in dirty environments.

Clogged or blocked air inlets and outlets otherwise result in overheating. Orderingnumber for dust filter see page 26.

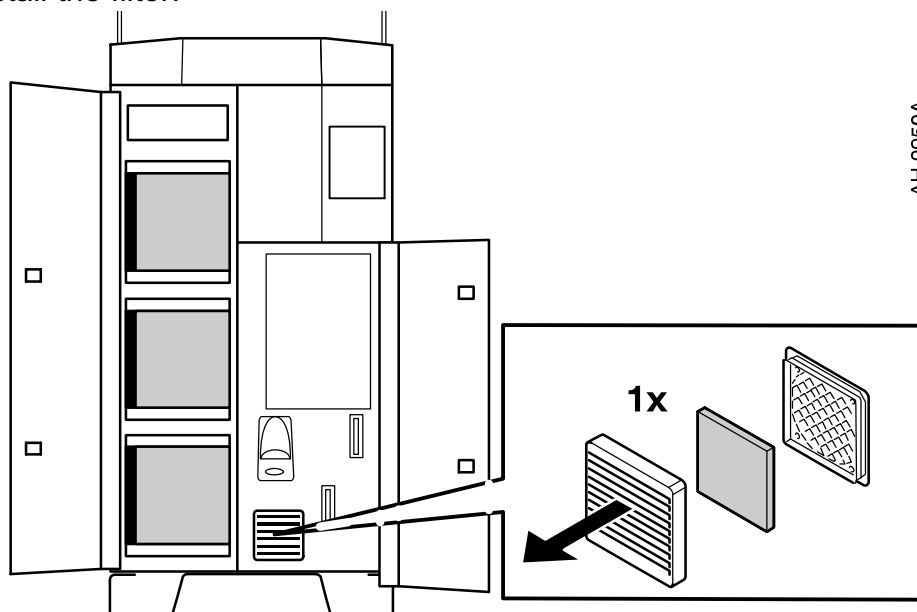
### Replacing and cleaning the dust filter

1. Release the dust filter according to the figure.
  2. Blow the filter clean with compressed air (reduced pressure).
  3. Reinstall the filter.
- Ensure that the filter with the finest mesh is placed towards the grille.



### Replacing and cleaning the air filter

1. Release the air filter according to the figure
2. Clean the filter with soap and water
3. Reinstall the filter.



## 7 FAULT-TRACING

*Try these recommended checks and inspections before sending for an authorized service technician.*

Type of fault	Corrective action
No arc.	<ul style="list-style-type: none"> <li>• Check that the mains voltage is switched on.</li> <li>• Check that the welding and return cables are correctly connected.</li> <li>• Check that the correct current value is set.</li> <li>• Check the mains power supply fuses.</li> </ul>
The welding current is interrupted during welding.	<ul style="list-style-type: none"> <li>• Check whether the thermal cut-outs have tripped (a fault code appears on the control module's panel).</li> <li>• Check the mains power supply fuses.</li> </ul>
The thermal cut-out trips frequently.	<ul style="list-style-type: none"> <li>• Check to see whether the dust filter is clogged.</li> <li>• Make sure that you are not exceeding the rated data for the welding power source (i.e. that the unit is not being overloaded).</li> <li>• Check that the welding power source is not clogged with dirt.</li> <li>• Check the ambient temperature.</li> </ul>
Poor welding performance.	<ul style="list-style-type: none"> <li>• Check that the welding current supply and return cables are correctly connected.</li> <li>• Check that the correct current value is set.</li> <li>• Check that the correct filler material (wire and powder) is used.</li> </ul>

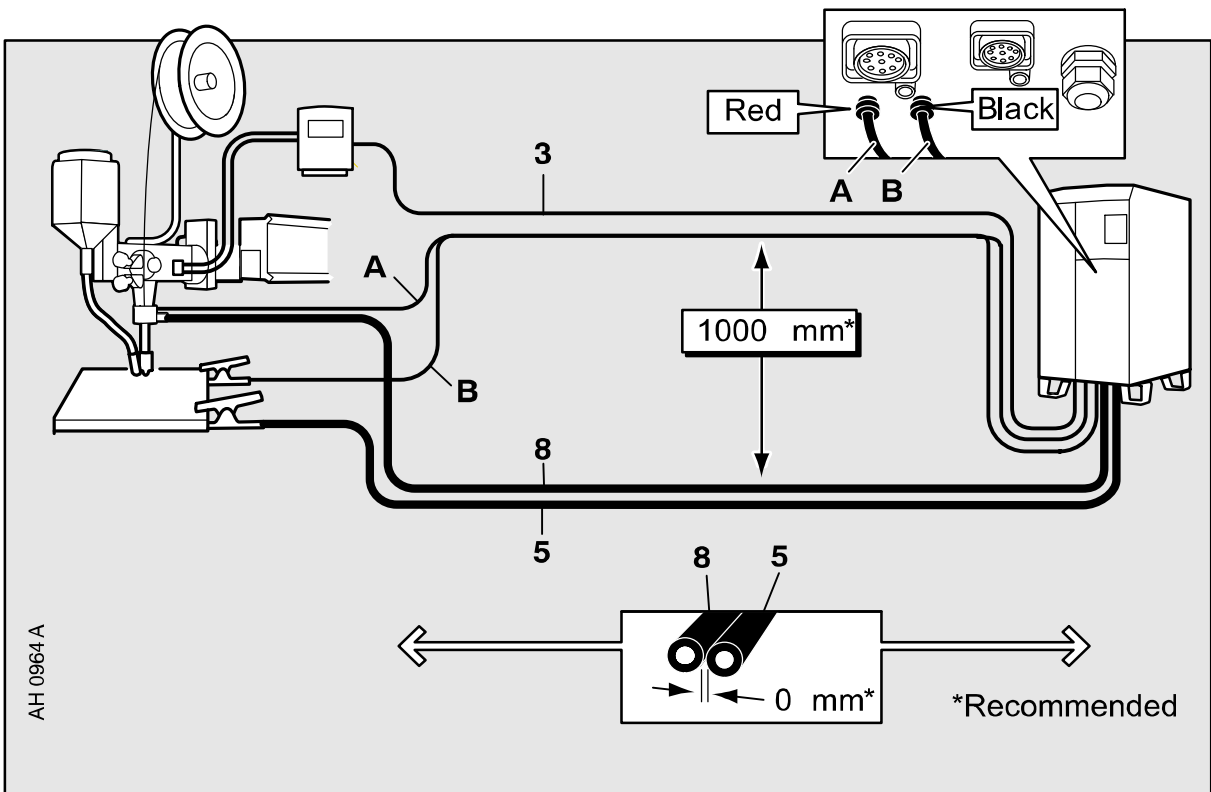
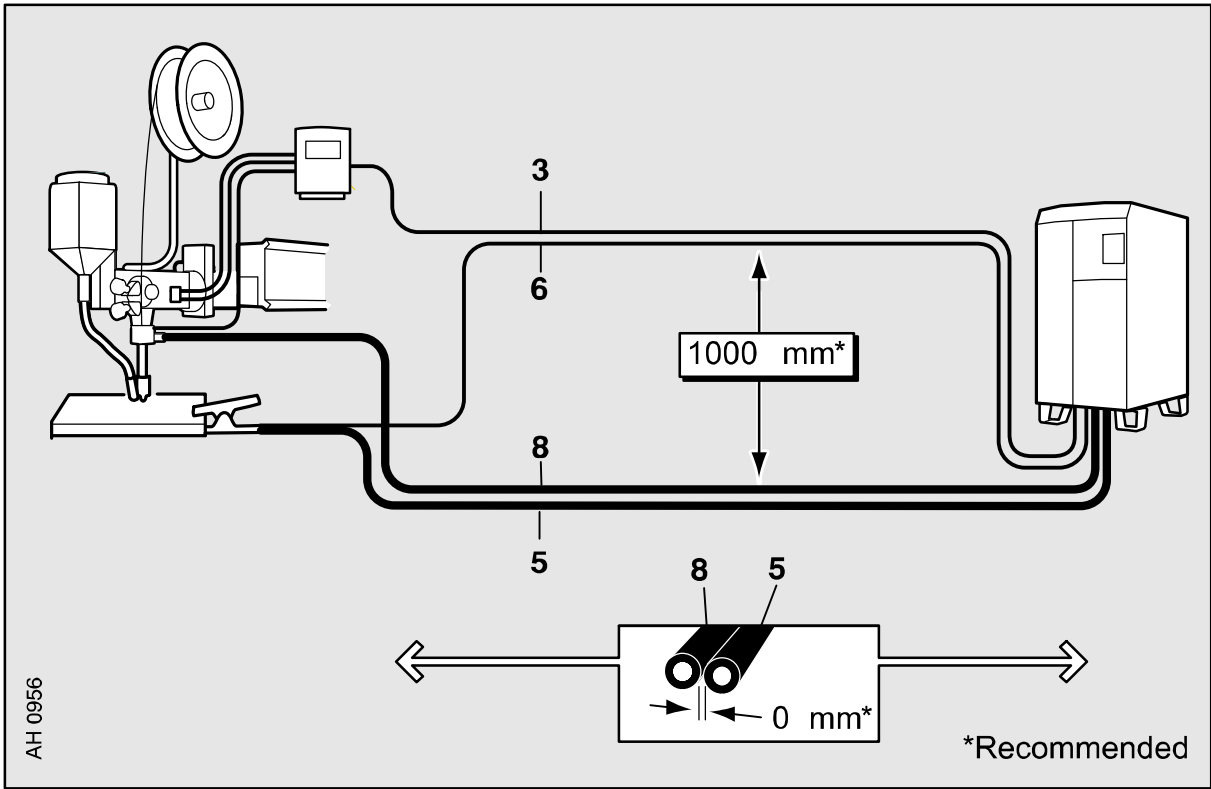
## 8 ORDERING SPARE PARTS

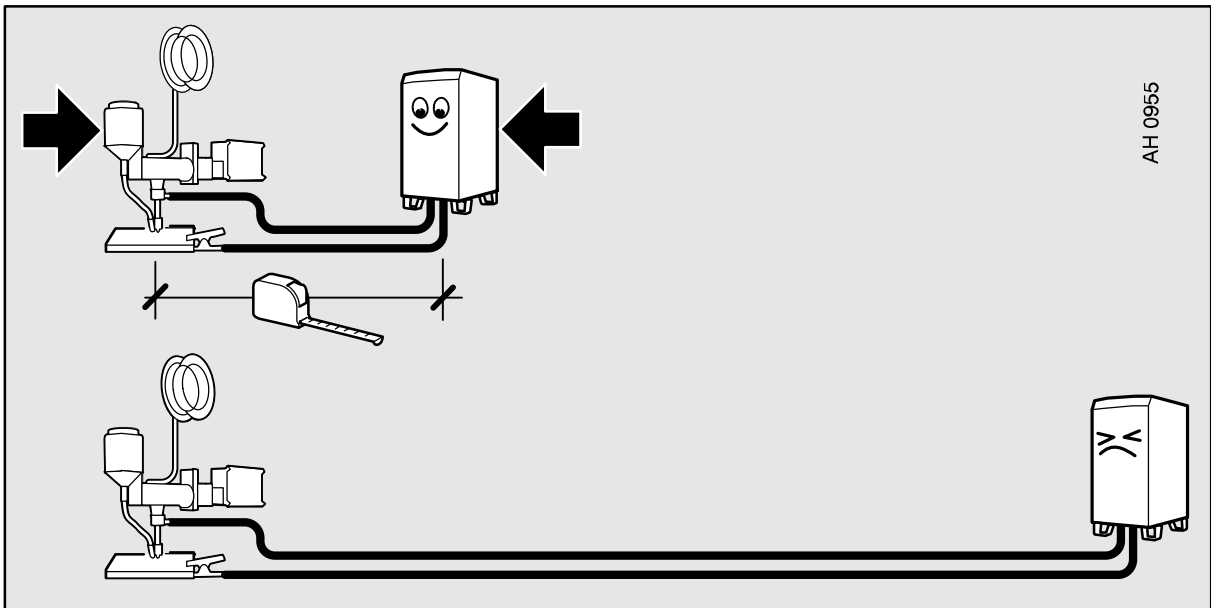
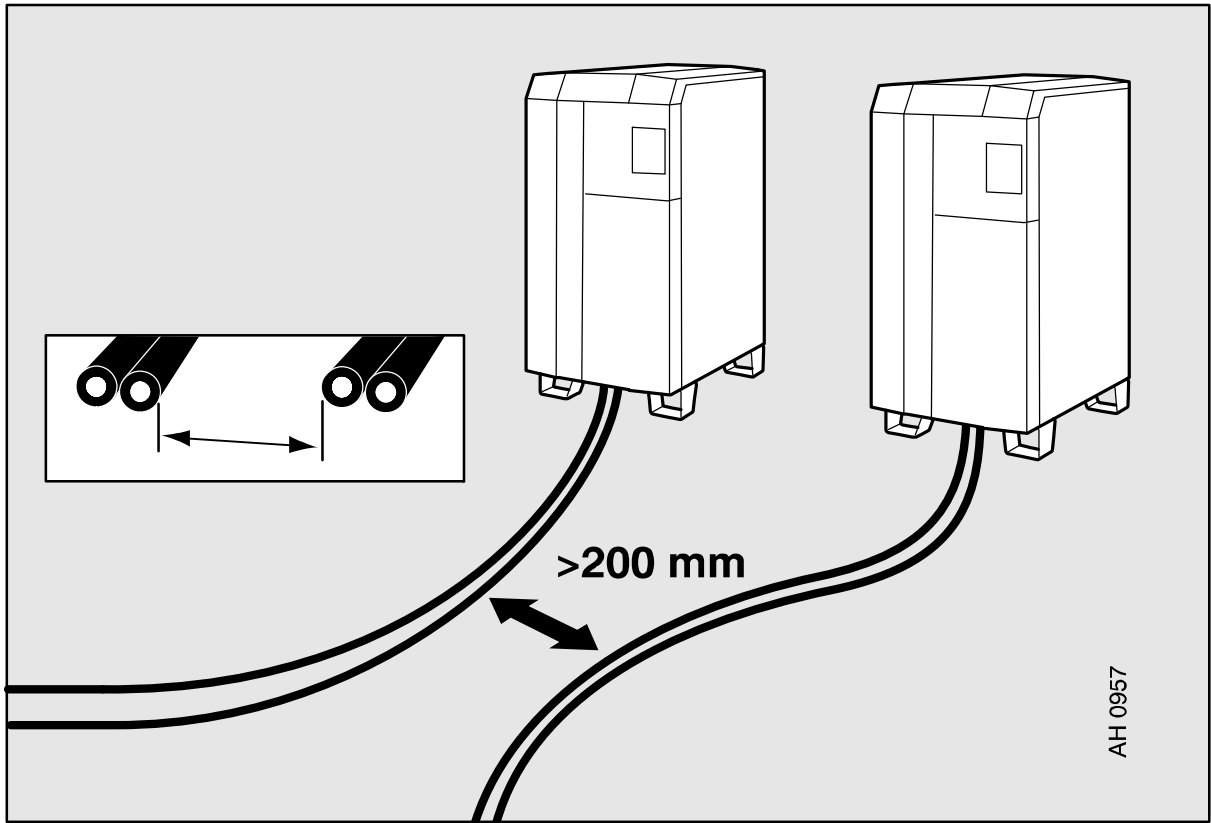
*Repair and electrical work should be performed by an authorised ESAB service technician. Use only ESAB original spare and wear parts.*

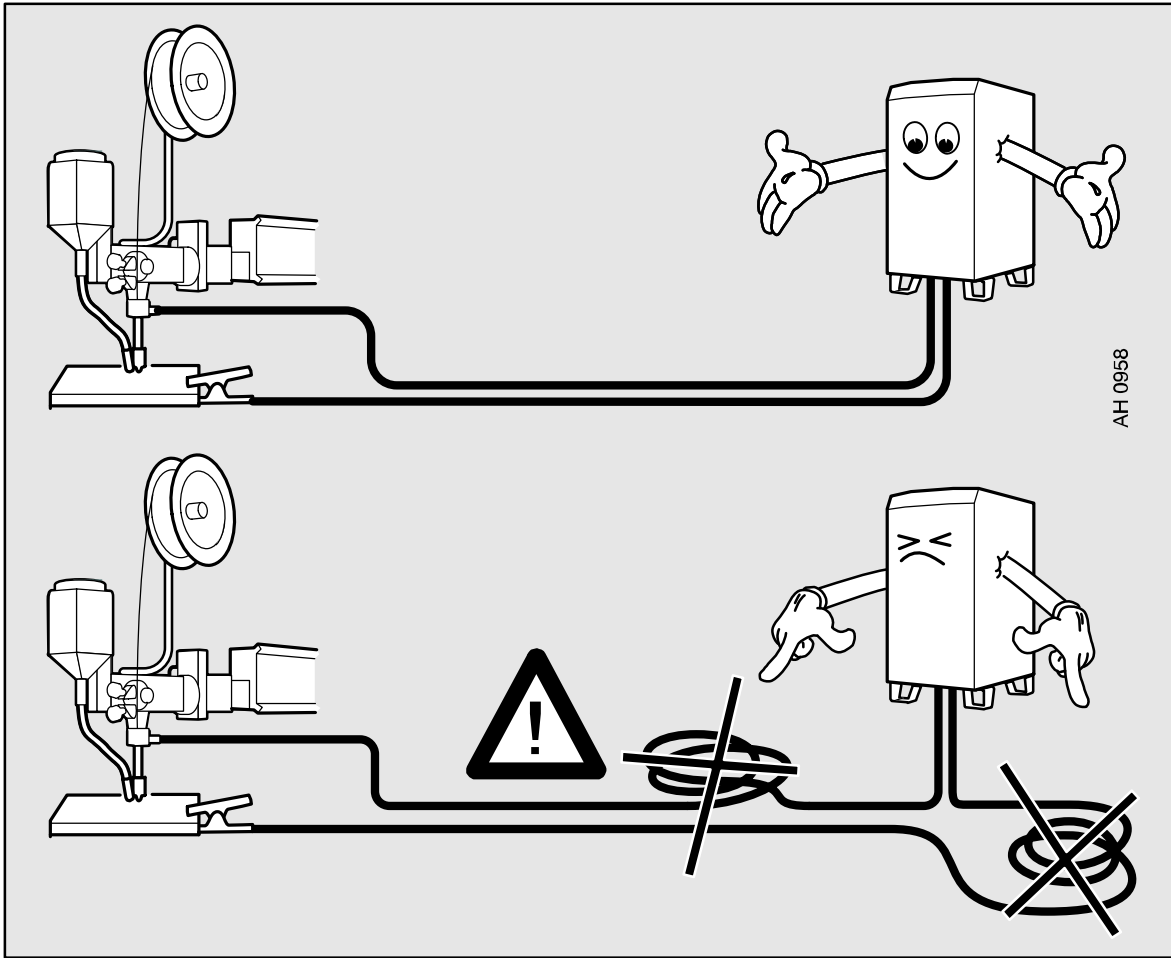
**Aristo 1000 is designed and tested in accordance with the international and European standards IEC-/EN 60974-1 and IEC-/EN 60974-10. It is the obligation of the service unit which has carried out the service or repair work to make sure that the product still conforms to the said standard.**

Spare parts may be ordered through your nearest ESAB dealer, see the last page of this publication.

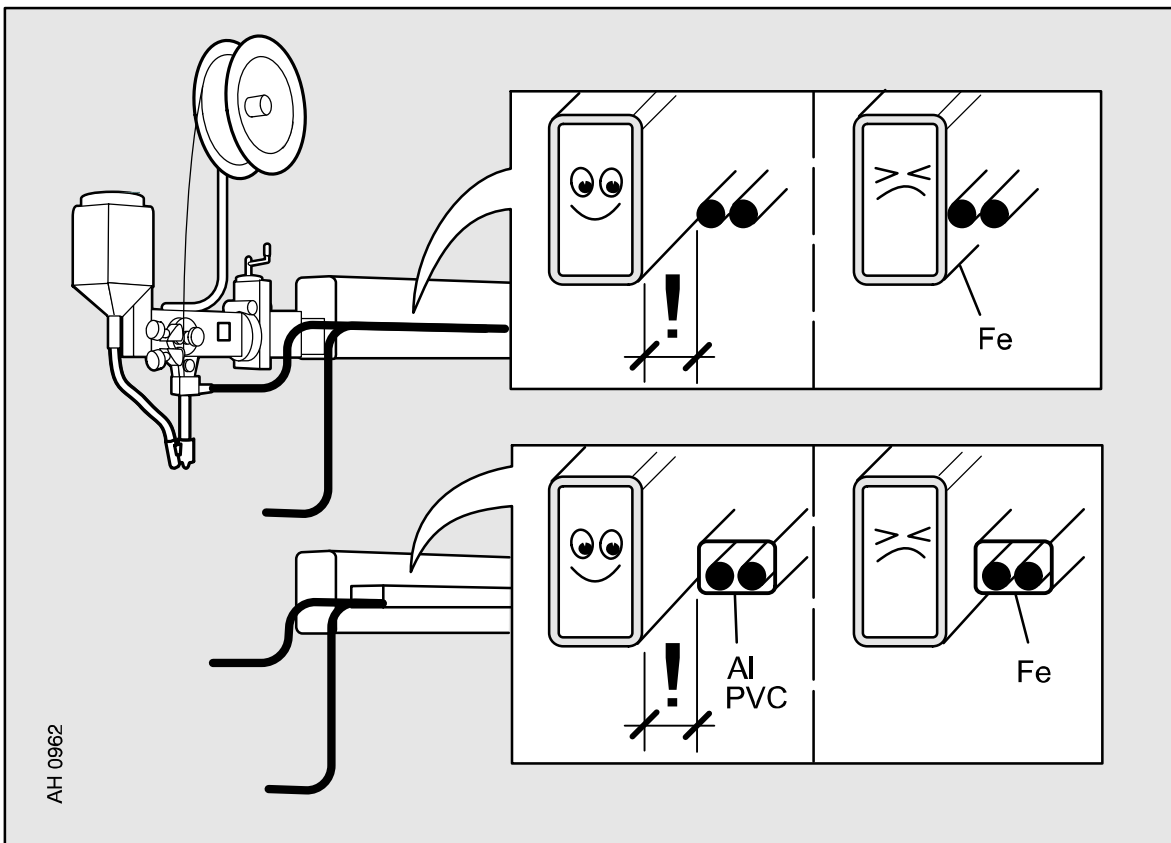




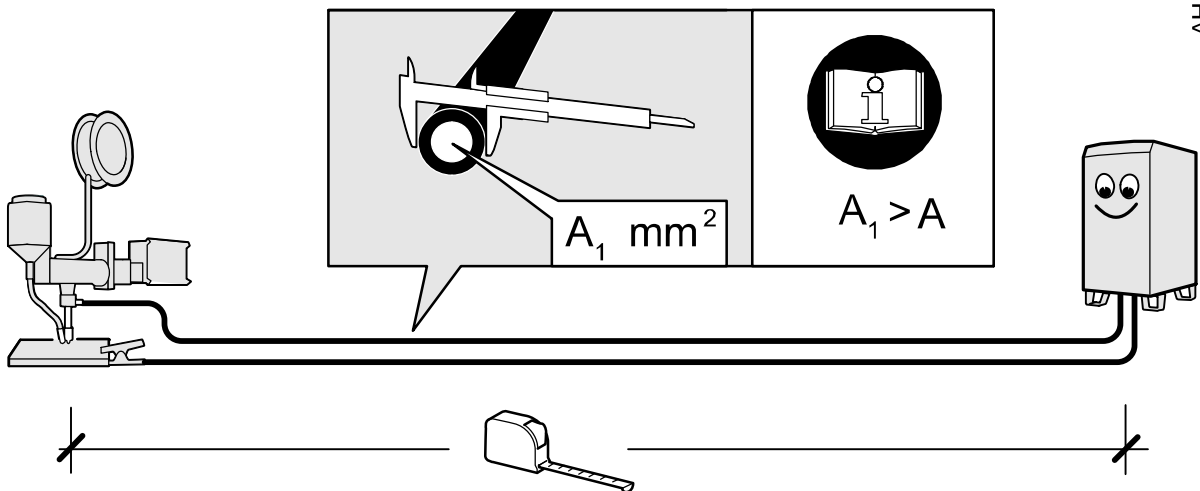
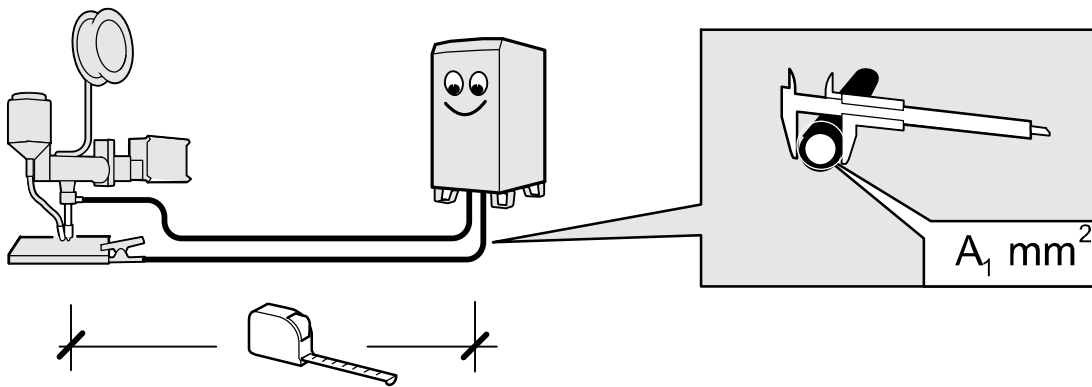
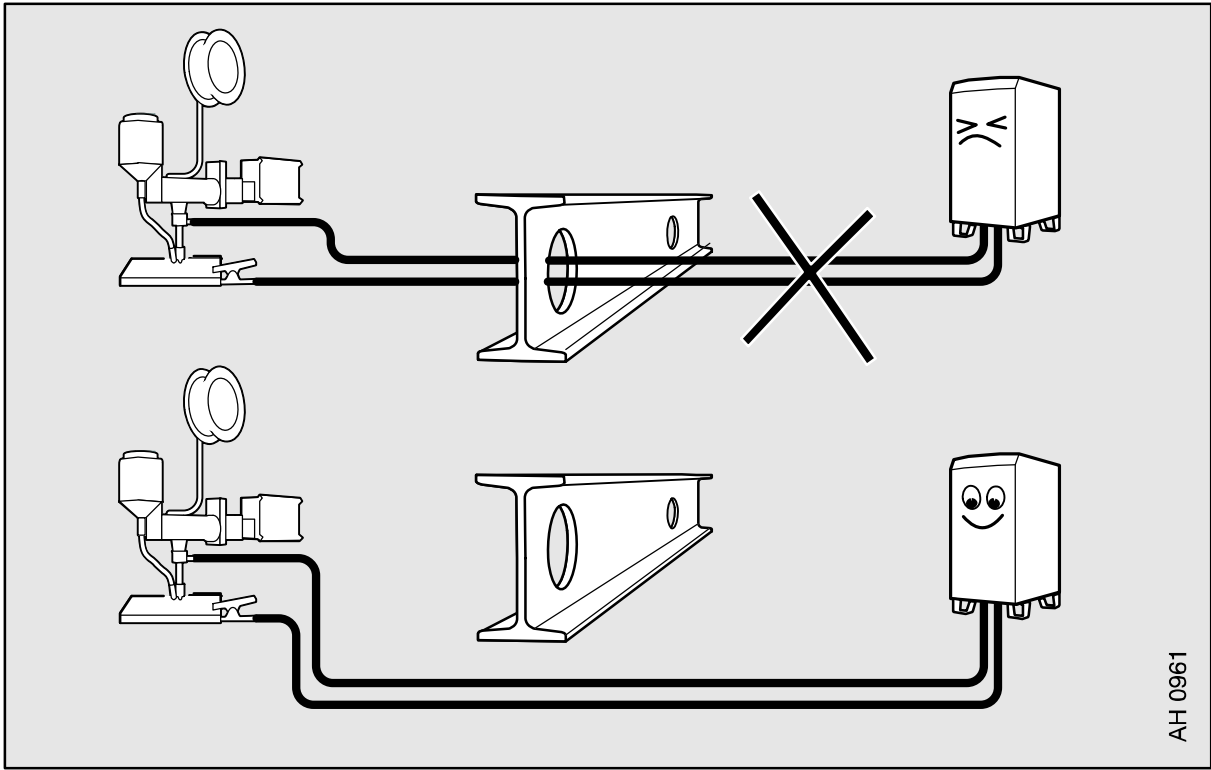




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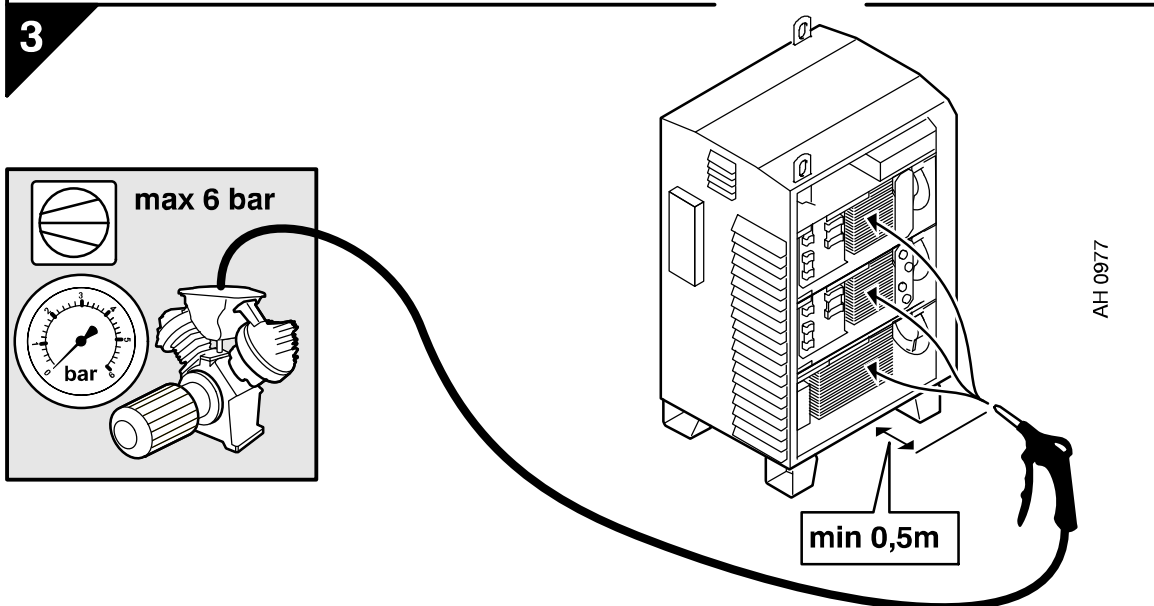
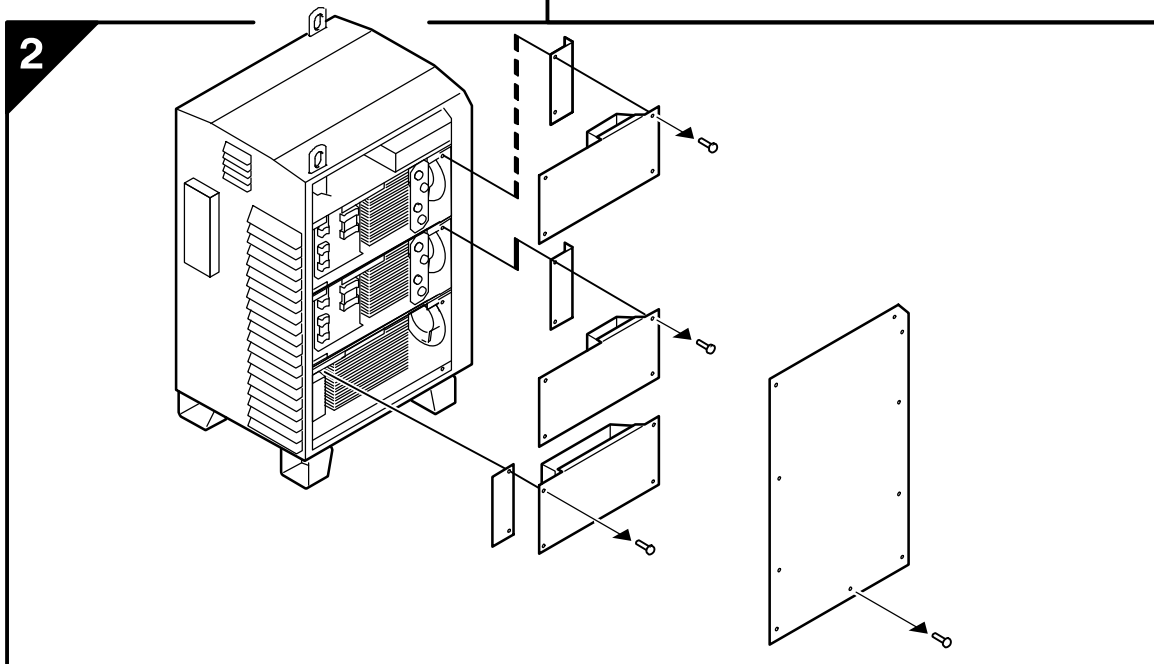
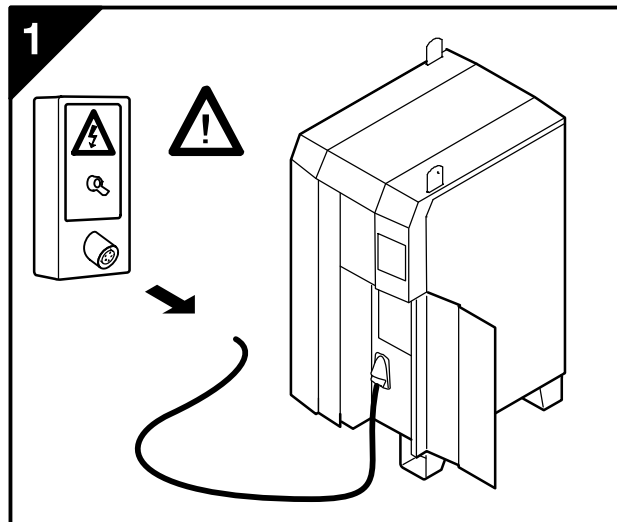


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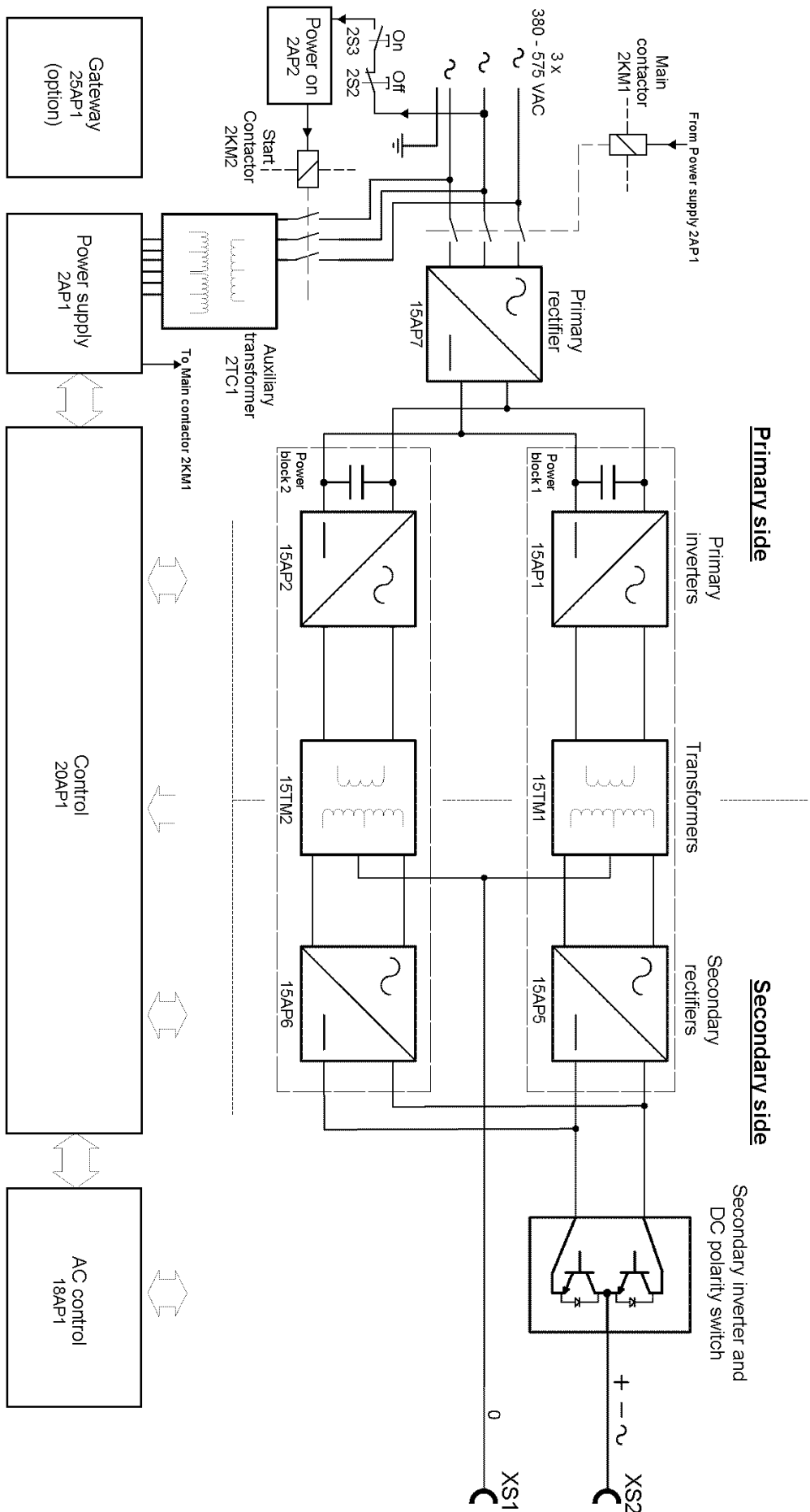


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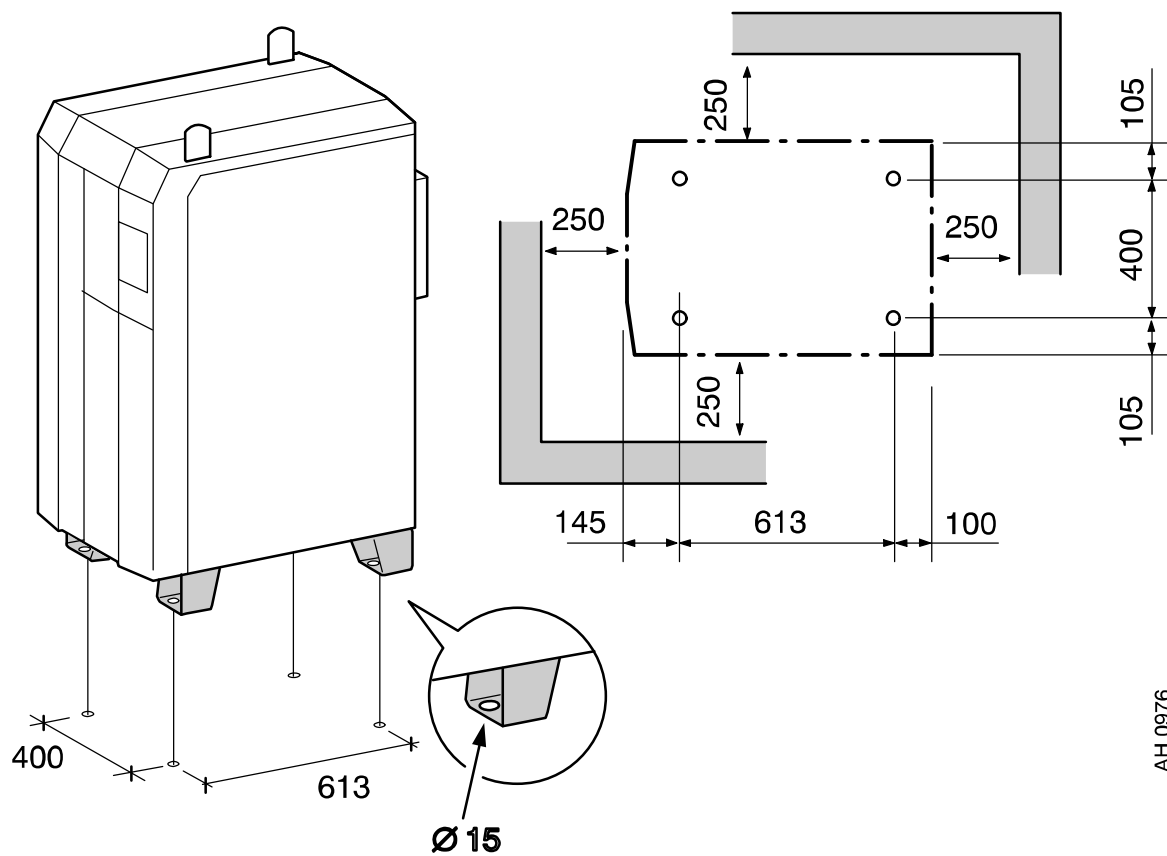
# Cleaning



# Diagram

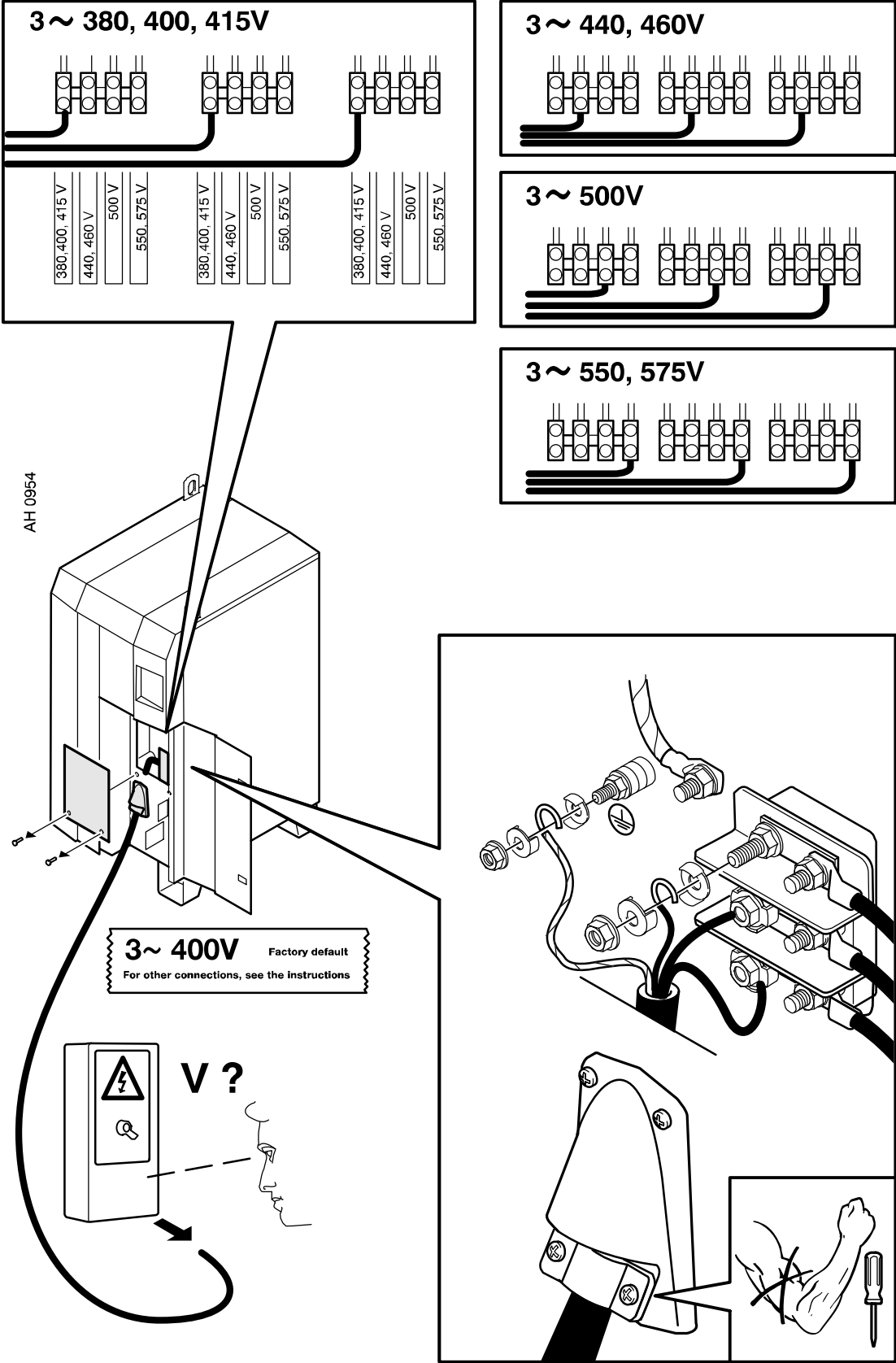


# Assembly instructions



AH 0976

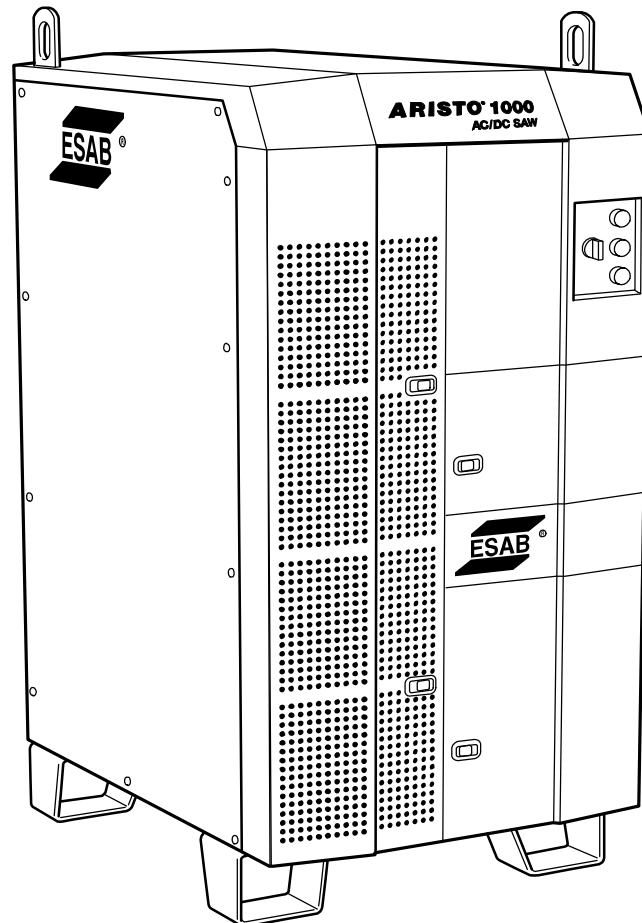
# Connection instruction





## Aristo 1000 AC/DC SAW

Order number



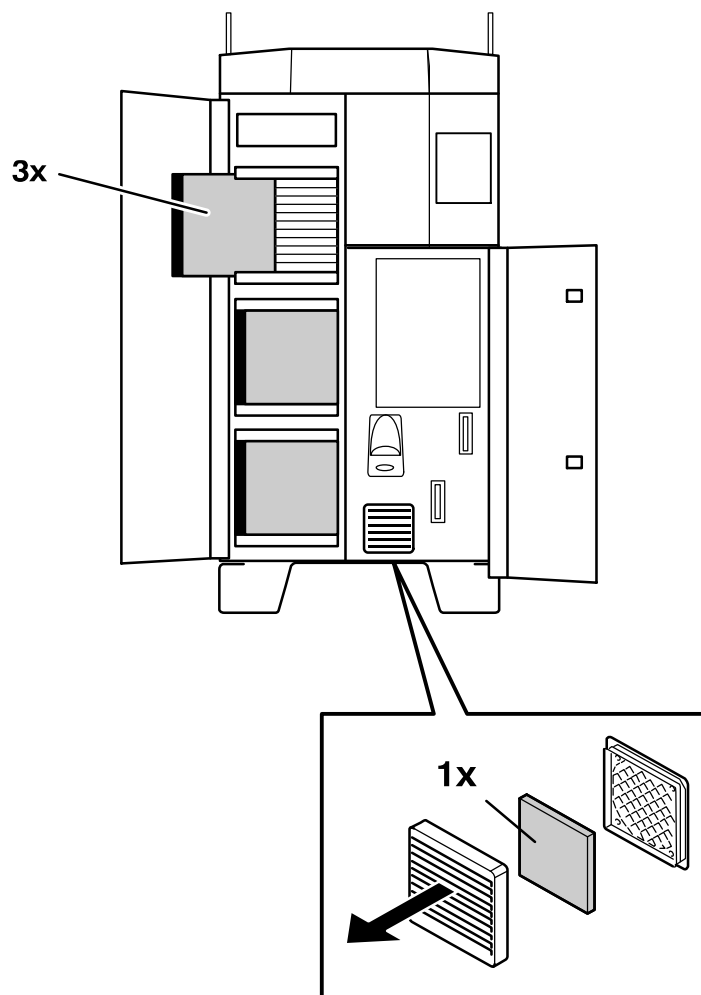
Ordering no.	Denomination	Type
0462 100 880	Welding power source	Aristo® 1000 AC/DC SAW
0740 800 205	Service manual	Aristo® 1000 AC/DC SAW
0459 839 050	Spare parts list	Aristo® 1000 AC/DC SAW
0740 801 030	Installation manual	For tandem and parallel connection of Aristo 1000 AC/DC SAW

Technical documentation is available on the Internet at [www.esab.com](http://www.esab.com)

# Aristo 1000 AC/DC SAW

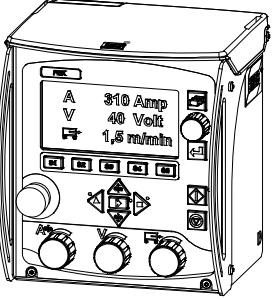
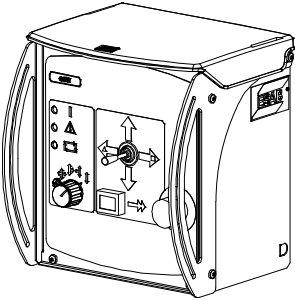
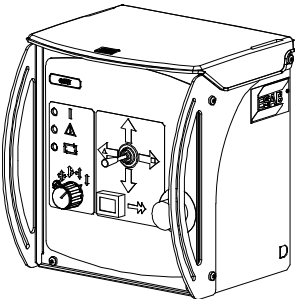
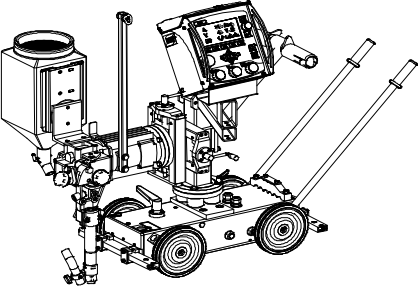
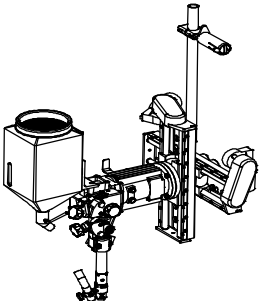
## Spare parts list

Qty	Ordering no.	Denomination
3	0458 398 003	Filter
1	0441 828 003	Airfilter

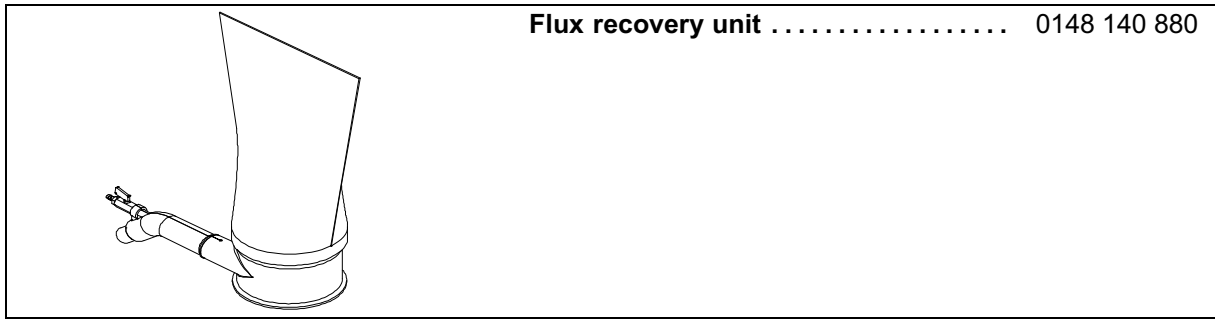


# Aristo 1000 AC/DC SAW

## Accessories

 A rectangular control unit with a digital display showing '310 Amp', '40 Volt', and '1,6 m/min'. It features several buttons and knobs on the front panel.	<b>Control unit PEK</b> ..... 0460 504 880
 A rectangular control unit with a central joystick and several indicator lights on the front panel.	<b>Joint tracking unit GMH</b> ..... 0460 503 881
 A rectangular control unit with a central joystick and several indicator lights on the front panel, similar to the GMH unit.	<b>Control unit for motorised slides PAV</b> 0460 502 881
 A complex mechanical assembly with a control panel on top, mounted on a base with wheels and a handle.	<b>Welding automat A6 Mastertrac</b> ..... 0461 235 880
 A mechanical assembly consisting of a control box and a welding head mechanism with a vertical support arm.	<b>Welding head A6 SF F1 SAW</b> ..... 0449 270 900

**Aristo 1000 AC/DC SAW**



For more information regarding components for the A2 / A6 system see separate brochures.



# NOTES

A series of horizontal dotted lines for writing notes.



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