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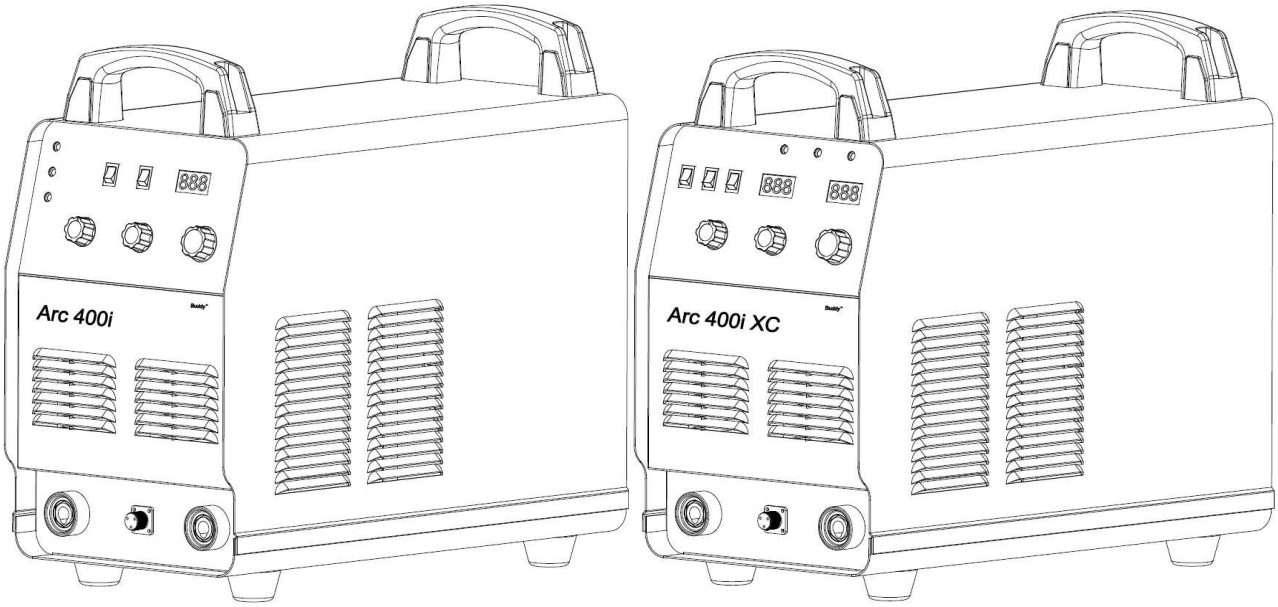
ESAB

Buddy™

Arc 400i

Arc 400i XC



Instruction manual

0463 333 074 GB 20120409

Valid for serial no. 203-xxx-xxxx, 204-xxx-xxxx

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1 SAFETY

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 qualified electricians.**
    - Appropriate fire extinguishing equipment must be clearly marked and close at hand.
    - Lubrication and maintenance must **not** be carried out on the equipment during operation.

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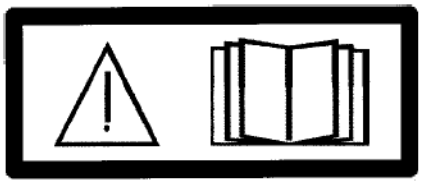
CAUTION!
Read and understand the instruction manual before installing or operating.



WARNING

Read and understand the instruction manual before installing or operating.
Arc welding and cutting can be injurious to yourself and others. Take precautions when welding & cutting.
Ask for your employer's safety practices which should be based on manufacturers' hazard data.
ELECTRIC SHOCK - Can kill

- Install and earth the welding 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 work-piece.
- 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!

WARNING!
Do not use the power source for thawing frozen pipes.

CAUTION!
This product is solely intended for arc welding only.

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

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2 INTRODUCTION

Arc 400i and Arc 400i XC are welding power sources intended for welding with coated electrodes (MMA welding) and TIG welding (scratch-start).

Arc 400i is intended for general use and Arc 400i XC is intended for both general and pipeline welding.

2.1 Equipment

The power source is supplied with an instruction manual and 2 male cable connectors

2.2 VRD

The power source is equipped with a Voltage Reduction Device (VRD) that needs to be internally switched on. It is effective for reducing the open circuit voltage (OCV) to less than 35V.

3 TECHNICAL DATA

Arc 400i / Arc 400i XC	
Mains voltage	400 V ± 15%, 3 ~ 50/60 Hz
Primary current	
I_{max}	27.6 A
I_{eff}	21.4 A
Setting range	
MMA	20 A / 20.8 V – 400 A / 36 V
TIG	20 A / 10.8 V – 400 A / 26 V
Permissible load at MMA	
60% duty cycle	400 A / 36 V
100 % duty cycle	310 A / 32.4 V
Permissible load at TIG	
60% duty cycle	400 A / 26 V
100 % duty cycle	310 A / 22.4 V
Power factor at maximum current	0.93
Efficiency at maximum current (MMA/TIG)	85%
Open-circuit voltage U_0 max	68 V DC (400i) 78 V DC (400i XC)
VRD function activated, U_r	< 35 V (~ 20 V)
Operating temperature	-10 to +40℃
Transportation temperature	-20 to +55℃
Dimensions lxwxh	540 x 280 x 510 mm
Weight	29 kg (400i), 31 kg (400i XC)
Insulation class	F
Enclosure class	IP21
Application class	S

Duty cycle
The duty cycle refers to the time as a percentage of a ten-minute period that you can weld at a certain load without overloading. The duty cycle is valid for temperatures up to 40℃

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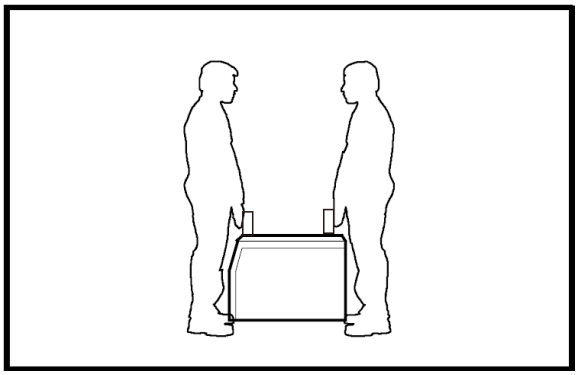
Enclosure class
The **IP** code indicates the enclosure class, i.e. the degree of protection against penetration by solid objects or water. Equipment marked **IP21** is designed for indoor use.

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

4 INSTALLATION

The installation must be executed by a professional

4.1 Lifting instructions



4.2 Location

Place the power source so that its cooling air inlets and outlets are not obstructed.

4.3 Mains supply

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.

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Make sure that the welding power source is connected to the correct supply voltage and that it is protected by the correct fuse rating. Please refer to the rating plate at the back of the machine for the mains supply requirement. A protective earth connection must be made in accordance with regulations.

Rating plate with supply connection data

Note! *The welding power source is designed for connection to a 400 volt system with four conductors. If the power source is to be used in countries with a higher or lower supply voltage, the power source must be connected via a safety transformer.*

Recommended fuse sizes and minimum cable area

Arc 400i / Arc 400i XC	
Mains voltage	400 V ± 15%, 3 ph
Mains cable area mm^2	4 G 4
Phase current I_{1eff}	22A
Fuse	
Anti-surge	32A
Type C MCB	40A

Note!

Use the welding power source in accordance with the relevant national regulations. (Check with relevant national regulations)

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5 OPERATION

General safety regulations for the handling of the equipment can be found on page 3. Read through before you start using the equipment!

5.1 Connections and control devices

1 Ammeter

2 Hot start control

3 Welding current control

4 Connection (-)
MMA: return cable or welding cable
TIG: torch

5 Connection for remote control unit

6 Connection (+)
MMA: return cable or welding cable
TIG: return cable

7 Arc force control

8 Fault Indication light (Yellow LED)

9 Power Indication light (White LED)

10 VRD Indication light (Green LED)

11 Remote/local control

12 MMA/TIG control

13 Voltmeter (For XC model only)

14 Cellulosic / Normal control (For XC model only)

15 Mains power supply switch, 1 / 0

5.2 Hot Start

Increase the welding current during a fixed time at the start of the welding process. Set the value of the hot start current by using the knob. This reduces the risk of incomplete fusion at the start of the weld.

5.3 Arc Force

The arc force is important in determining how the current changes in response to a change in the arc length. A lower value gives a calmer arc with less spatter.

5.4 Voltage Reduction Device (VRD)

The VRD switch (Switch 1) is located on the main PCB inside the machine.

CAUTION!
Switch off power source before removing cover

Remarks: Switch 2 is not used

5.5 Turning on the power source

Turn on the mains power by turning the mains switch to the “1” position.

If the mains power supply should be interrupted while welding is in progress, and then be restored, the power source will be energised.

Turn the unit off by turning the switch to the “0” position.

5.6 Connection of welding and return cable

The power source has two outputs, a positive terminal (+) and a negative terminal (-), for connecting welding and return cables. The output to which the welding cable is connected depends on the welding method or type of electrode used.

Connect the return cable to the other output on the power source. Secure the return cable’s contact clamp to the work piece and ensure that there is good contact between the work piece and the output for the return cable on the power source.

For MMA welding, the welding cable can be connected to the positive terminal (+) or negative terminal (-) depending on the type of electrode used. The connecting polarity is stated on the electrode packaging.

5.7 Protection (⏊)

Both machines are equipped with thermal overload protection, over and under voltage protection. Once activated, the yellow fault indication light will be lilted.

Thermal overload protection:
- Occurs when the machine is used beyond the recommended duty cycle.
- Protection resets automatically when the temperature has fallen within the set limits.

Over/under voltage protection:
- Occurs when input voltage exceeds the tolerance as stated in the technical data.
- Machine would need to be reset manually in order to clear the fault
- Ensure that the mains voltage are within tolerance.

5.8 MMA welding

For MMA welding, the welding power source is to be supplemented with:

- welding cable with electrode clamp
- return cable with contact clamp

5.9 Cellulosic / Normal mode (for XC model only)

Normal mode : For general use with all type electrodes

Cellulosic mode : For pipeline welding with cellulosic electrodes
This mode should not be used for normal welding as it might cause excessive spatter.

5.10 TIG welding

For TIG welding, the welding power source is supplemented with:

- a TIG torch with gas valve
- an argon gas supply
- an argon gas regulator
- tungsten electrode
- return cable with contact clamp

TIG welding melts the metal of the work-piece, using an arc struck from a tungsten electrode, which does not itself melt. The weld pool and the electrode are protected by shielding gas.

“Scratch-Start”
With “scratch-start” function, the tungsten electrode is scratched against the work-piece and the arc is struck at the preset current. The electrode is then lifted away from the work-piece to start welding.

5.11 Remote Control ( )

Settings can be made from the remote control unit.

The remote control unit must be connected to the remote control unit socket on the machine before activation. When the remote control unit is activated the panel is inactive.

If the remote control is activated without the remote control unit plugged in, an error code of “507” will be shown on the display.

6 MAINTENANCE

Regular maintenance is important for safe, reliable operation.
Only those persons who have appropriate electrical knowledge (authorized personnel) may remove the machine cover.

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

6.1 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
- arc time
- placement
- surrounding environment

It is normally sufficient to blow down the power source with dry compressed air (reduced pressure) once a year.

Clogged or blocked air inlets and outlets otherwise result in overheating.

6.2 Welding leads and clamps

Wear parts should be cleaned and replaced at regular intervals in order to achieve trouble-free welding.

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7 FAULT - TRACING

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

Type of fault	Corrective action
No arc.	● Check that the mains power supply switch is turned on. ● Check that the welding and return cables are correctly connected. ● Check that the correct current value is set. ● Check the mains power supply fuses.
The welding current is interrupted during welding	● Check whether the thermal cut-outs have tripped (a fault light is displayed on the control panel). ● Check the mains power supply fuses.
The thermal cut-out trips frequently	● Check to see whether the air inlets & outlets are being blocked. ● Make sure that you are not exceeding the rated data for the welding power source (i.e. that the unit is not being overloaded) ● Check that the welding power source is not clogged with dirt.
Poor welding performance	● Check that the welding current supply and return cables are correctly connected. ● Check that the correct current value is set. ● Check that the correct electrodes are being used.

8 ORDERING SPARE PARTS

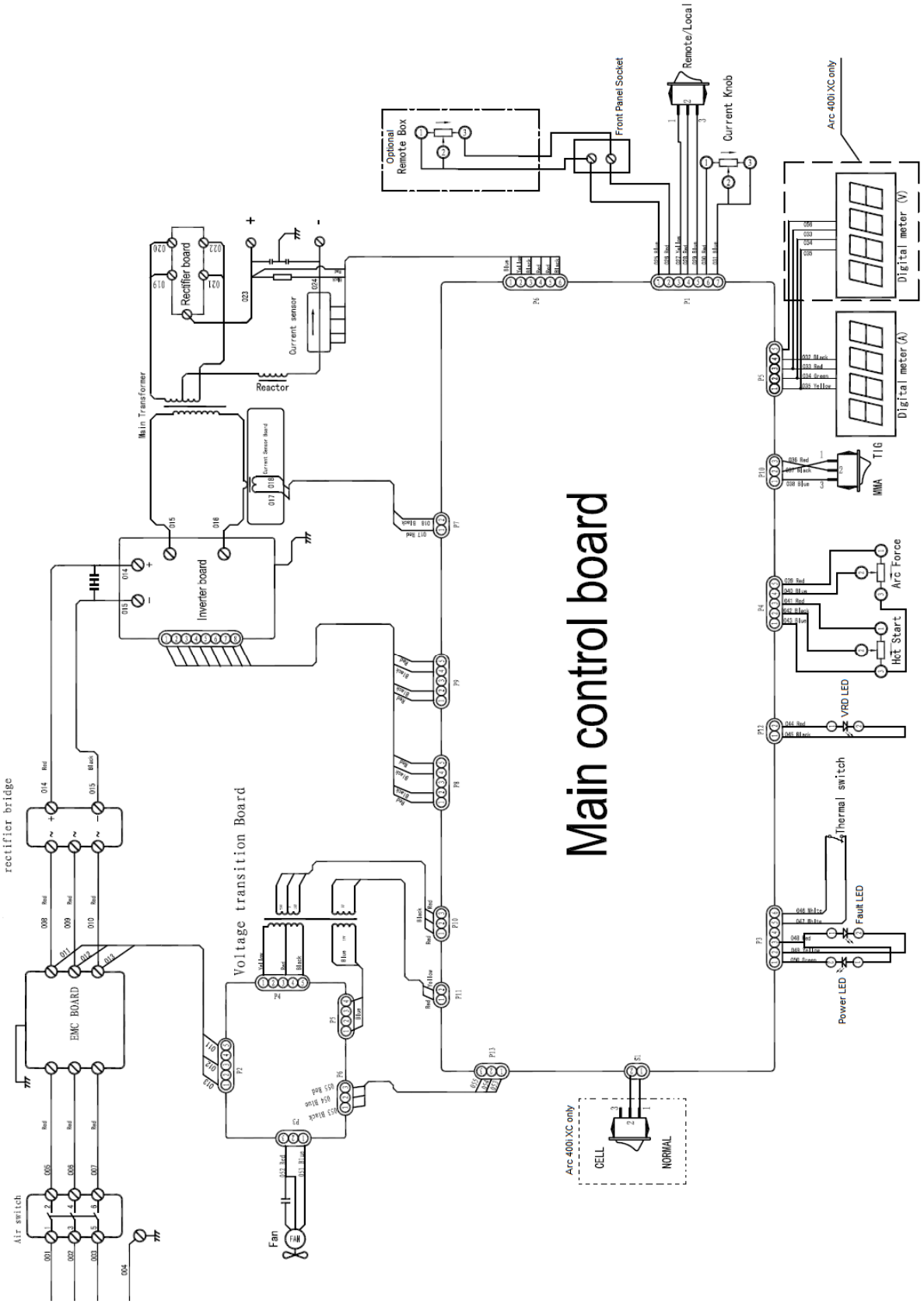
Repair and electrical work should be performed by an authorized ESAB serviceman. Use only ESAB original spare and wear parts.

To find the required spare part, please refer to the Spare Parts List as shown on page 13.

Spare parts may be ordered through your nearest ESAB dealer. See the last page of this publication to find the nearest ESAB office or dealers.

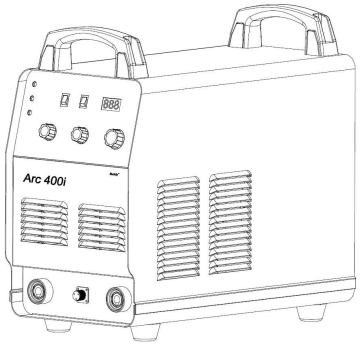
Arc 400i & Arc 400i XC

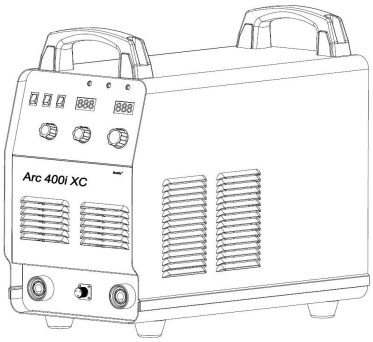
Diagram



Arc 400i & Arc 400i XC

Ordering Numbers



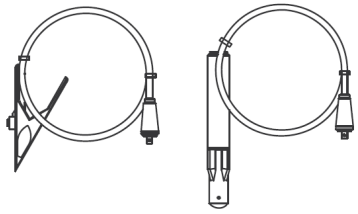


Ordering no.	Description	Type
0700 300 900	Welding power source	Buddy™ Arc 400i
0700 300 901	Welding power source	Buddy™ Arc 400i XC
0459 839 083	Spare parts list	Buddy™ Arc 400i & Buddy™ Arc 400i XC

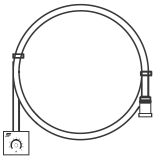
The spare parts list is available on the internet at www.esab.com

Arc 400i & Arc 400i XC

Accessories



MMA Kit 0700 300 910
Return cable with clamp
3 m 50 mm2
Welding cable with electrode holder
5 m 50 mm2



Remote Control, 10m 0700 300 911

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