GB

ESAB®

Buddy™

Arc 180
Arc 200

Instruction manual

0463 266 001 GB 20110902

Valid for serial no. 01107072134, 01108075972

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
Buddy™ Arc 180 & Buddy™ Arc 200

Type Designation etc.
Buddy™Arc 180, Stock code: 0700 300 885, from serial number 01107072134 (2011 wk32)
Buddy™Arc 200, Stock code: 0700 300 887, from serial number 01108075972 (2011 wk32)

Brand name or trade mark.
ESAB

Manufacturer or his authorised representative established within the EEA.
Name, address, telephone No, telefax No:

ESAB, Welding Equipment (EPG)
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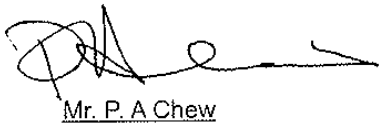
The following harmonised standard in force within the EEA has been used in the design:
EN 60974-1, Arc Welding Equipment - Part 1: Welding Power Sources
EN 60974-10, Arc Welding Equipment - Part 10: Electromagnetic Compatibility (EMC) requirements.

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.

Date
UK 2011-08-15

Signature



Mr. P. A Chew
Clarification

Position
Global Director
Enterprise Products Group

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1 SAFETY

Users of ESAB 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 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 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 equipment must be familiar with:
   - its operation
   - location of emergency stops
   - its function
   - relevant safety precautions
   - welding and cutting
2. The operator must ensure that:
   - no unauthorised 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 extinquishing equipment must be clearly marked and close at hand.
   - Lubrication and maintenance must **not** be carried out on the equipment during operation.

WARNING

Do not use the power source for thawing frozen pipes.

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WARNING

Arc welding and cutting can be injurious to yourself and others. Take precausions 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.

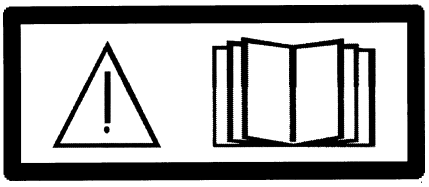
MALFUNCTION - Call for expert assistance in the event of malfunction.

Read and understand the instruction manual before installing or operating.

PROTECT YOURSELF AND OTHERS!

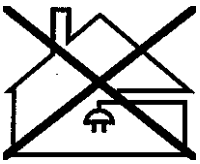
CAUTION

Read and understand the instruction manual before installing or operating.



CAUTION

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.



CAUTION

This product is solely intended for arc welding.

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.

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

2 INTRODUCTION

Arc 180 and Arc 200 are welding power sources intended for use with coated electrodes (MMA welding) and TIG welding (Live Arc).

ESAB's accessories for the product can be found on page 17.

2.1 Equipment

The power source is supplied with:

- 3 meter welding cable with electrode holder
- 3 meter return cable with return clamp
- instruction manual.

3 TECHNICAL DATA

	Arc 180	Arc 200
Mains voltage	230 V 1~ ±10%, 50/60 Hz	230 V 1~ ±10%, 50/60 Hz
Primary current I_{max}	36 A	40.7 A
Setting range MMA	5 A / 20.2 V - 180 A / 27.2 V	5 A / 20.2 V - 210 A / 28.4 V
Setting range TIG	5 A / 10 V - 180 A / 17.2 V	5 A / 10.2 V - 210 A / 18.4 V
Permissible load at MMA		
30 % duty cycle	180 A / 27.2 V	
35% duty cycle		200 A / 28.0 V
60 % duty cycle	130 A / 25.2 V	135 A / 25.4 V
100 % duty cycle	100 A / 24.0 V	120 A / 24.8 V
Permissible load at TIG		
35% duty cycle	180 A / 17.2 V	200 A / 18.0 V
60 % duty cycle	130 A / 15.2 V	135 A / 15.4 V
100 % duty cycle	100 A / 14.0 V	120 A / 14.8 V
Power factor at maximum current	0.72	0.71
Efficiency at maximum current	>80 %	>80 %
Open-circuit voltage U_0 max	59.8 V	66.3 V
Operating temperature	-10 to +40° C	-10 to +40° C
Transportation temperature	-20 to +55° C	-20 to +55° C
Sound pressure at no-load	<70 db (A)	<70 db (A)
Dimensions lxwxh	310 x 140 x 230 mm	360 x 140 x 230 mm
Weight	6 kg	7.5 kg
Enclosure class	IP 23S	IP 23S
Application class	S	S

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 **IP23** is designed for indoor and outdoor use.

Application class

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

4 INSTALLATION

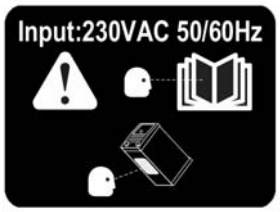
The installation must be carried out by a professional.

4.1 Location

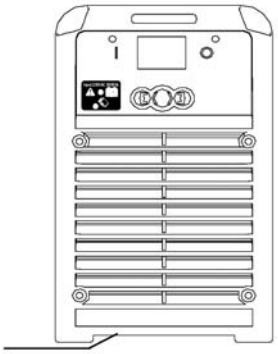
Position the power source such that its cooling air inlets and outlets are not obstructed.

4.2 Mains power supply

Make sure that the welding power source is connected to the correct supply voltage and that it is protected by the correct fuse rating. The outlet shall have a protective earth connection.



Rating plate with supply connection data



4.2.1 Recommended fuse sizes and minimum cable area

	Arc 180	Arc 200
Mains voltage	230V 1~ ±10%, 50/60 Hz	
Mains cable area mm^2	3 G 2.5	3 G 2.5
Phase current I_{1eff} **(TIG)**	14.7 A	16.6 A
Phase current I_{1eff} **(MMA)**	19.7 A	24.1 A

NOTE! *Use the 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

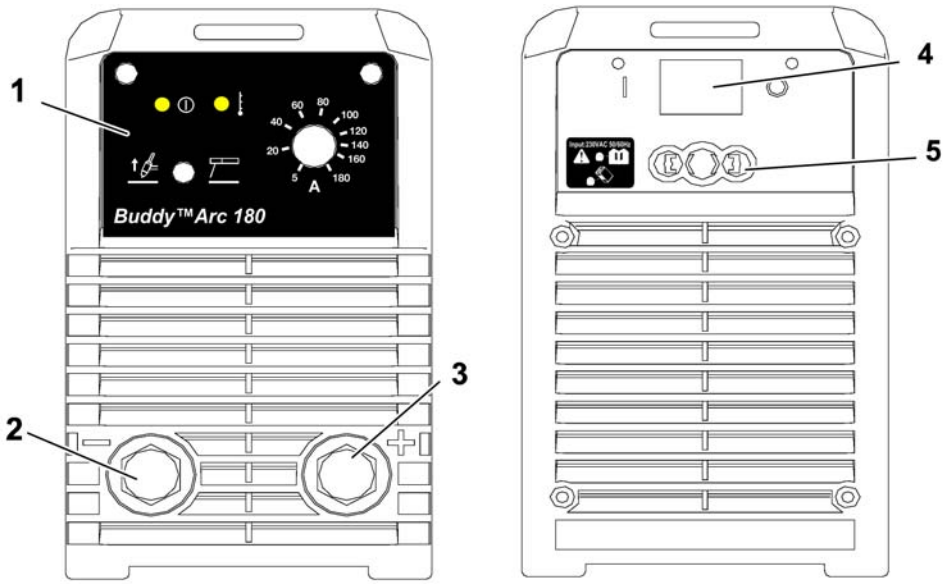
1 Control panel

2 Connection (-) for return cable, welding cable or TIG torch

3 Connection (+) for return cable or welding cable

4 Mains power supply switch 1/O

5 Connection for mains cable



5.2 Connection of welding and return cable

The power source has two outputs, a negative [-] terminal (2) and a positive [+] terminal (3), for connecting welding and return cables.

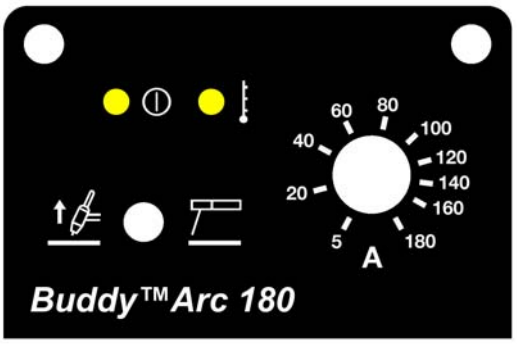
For MMA process the output to which the welding cable is connected depends on the type of electrode, please refer to electrode packaging for information relating to the correct electrode polarity.

For optional TIG process, connect the TIG torch power cable to the negative [-] terminal (2). Connect gas inlet nut to a regulated shielding gas supply.

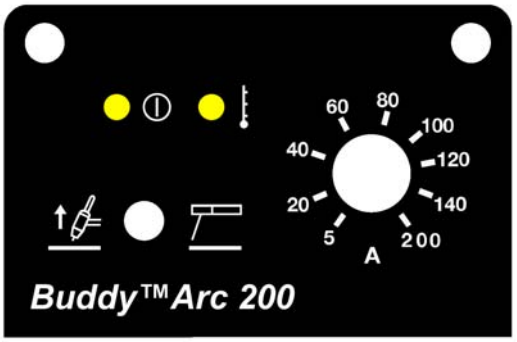
Connect the return cable to the remaining welding terminal on the power source. Secure the return cable's contact clamp to the work piece and ensure that there is good contact.

5.3 Symbols and Control panels

Arc 180



Arc 200



	Power ON Indicating lamp, white, power supply ON		Overheating Indicating lamp, yellow, overheating
	Scratch TIG		MMA welding

5.4 Overheating protection

The welding power source has a thermal overload trip which operates if the temperature becomes too high, interrupting the welding current and lighting a yellow indicating lamp on the front of the power source. The thermal overload trip resets automatically when the temperature has fallen.

5.5 MMA welding

Move process selector switch to desired welding process.

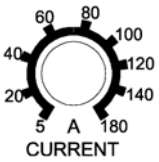
NOTE: Power source output is enabled.

Check welding cable polarity selection matches electrode requirements. Select desired welding current level.

5.5.1 Welding current setting

The Arc 180 power source has an adjustable welding current from 5 to 180 Amps.

The Arc 200 has an adjustable value from 5 to 200 Amps.



5.5.2 Striking the arc

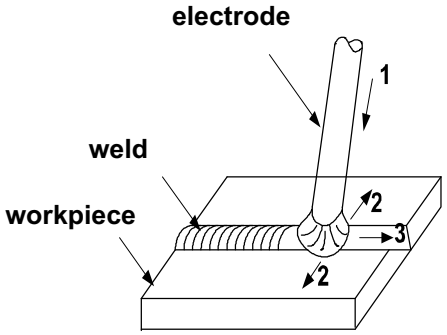
MMA welding may also be referred to as welding with coated electrodes. Striking the arc melts the electrode, and its coating forms protective slag.

If, when striking the arc, the tip of the electrode is pressed against the metal, it immediately melts and sticks to the metal, rendering continued welding impossible. Therefore, the arc has to be struck in the same way that you would light a match. Quickly strike the electrode against the metal and then raise it to give an appropriate arc length (approx. 2 mm). If the arc is too long, it will crackle and split before finally going out completely. Once the arc has been struck, move the electrode from left to right. The electrode should be at an angle of 60° to the metal.

5.5.3 Manipulation of electrode

In MMA welding, there are three motions to being matched in the end of electrode: the electrode moving to the molten pool along axes [1]; a small oscillation maybe neccessary to achieve the desired width of the melt pool [2]; the electrode moving along welding way [3].

The operator can choose the manipulation of electrode based on welding joint sharp, welding position, electrode spec, welding current and operation skill, etc.

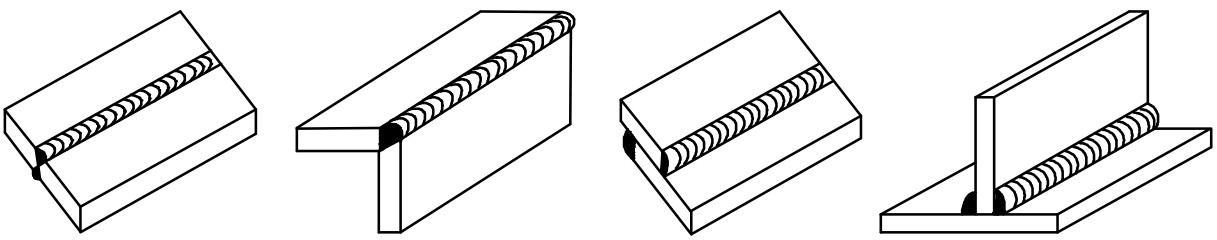


1 electrode moving
2 the electrode oscilliation (right and left)
3 the electrode move along weld

5.5.4 Anti-electrode pick-up

If, during the welding, the electrode would get in direct contact (touching) with the workpiece to form short circuit, the welding current will drop to a miminum to prolong the life of the electrode.

5.5.5 Joint forms in MMA



Butt joint *Corner joint* *Lap joint* *T joint*

5.5.6 Electrode selection

The electrode diameter selection is based on the workpiece thickness, welding position, joint form, welding layer, etc. Please refer to the recommendations on the electrode package for further details.

- To ensure good quality weld, the electrode should always be dried or dry stored. This to avoid hydrogen inclusion, blowholes and cold cracks.
- In the welding process, the arc must not be too long; otherwise, it will cause unstable arc burning, large spatter, light penetration, undercut, blowhole, etc. If the arc is too short, it will cause electrode stick.

5.6 TIG welding

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

TIG welding is particularly useful where high quality is demanded and for welding thin plate. The power sources also have good characteristics for TIG welding.

In order to TIG weld, the power sources must be equipped with:

- a TIG torch with gas valve (See Accessories, page 17)
- a welding gas cylinder (a suitable welding gas)
- a welding gas regulator (suitable gas regulator)
- tungsten electrode
- suitable auxiliary material, if necessary.

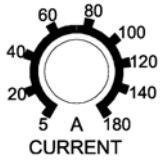
Move process selector switch to desired welding process.

NOTE: Power source output is enabled.

Check welding cable and TIG torch polarity matches electrode requirements.

Select desired welding current level.

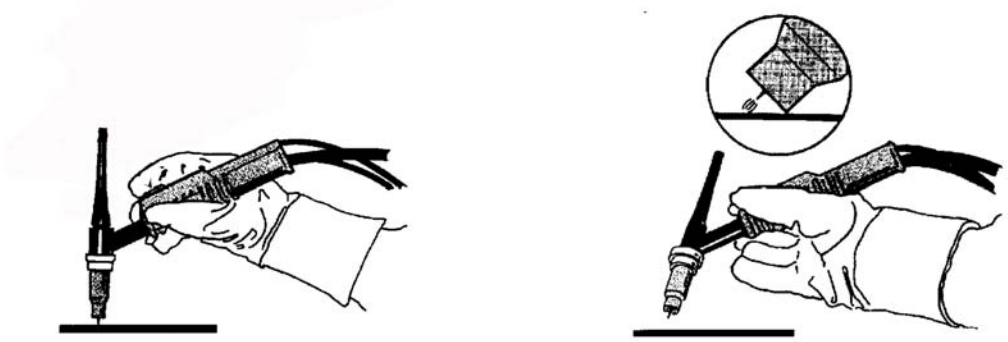
5.6.1 Welding current setting



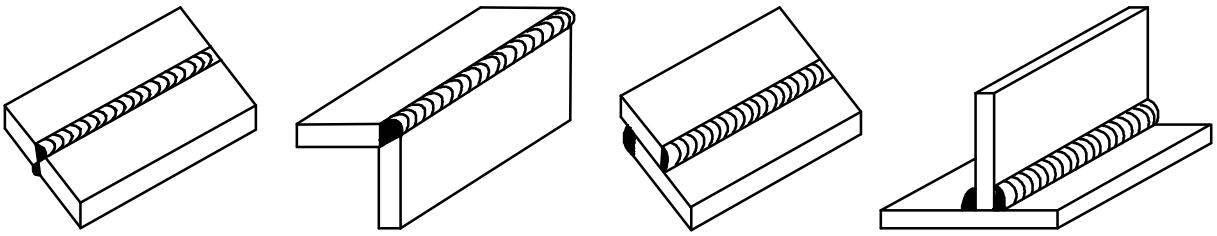
The Arc 180 power source has an adjustable welding current from 5 to 180 Amps. The Arc 200 has an adjustable value from 5 to 200 Amps.

5.6.2 Striking an Arc “Live TIG- start”

With “Live TIG start” the arc strikes when the tungsten electrode is brought into contact with the workpiece and then lifted away from it.



5.6.3 Joint forms in TIG



Butt joint *Corner joint* *Lap joint* *T joint*

6 MAINTENANCE

Regular maintenance is important for safe, reliable operation.

Only those persons who have appropriate electrical knowledge (authorized personnel) may remove the safety plates.

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 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 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 torch

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

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 current supply and return cables are correctly connected. • Check that the correct current value is set. • Check to see whether the MCB has tripped.
The welding current is interrupted during welding.	• Check whether the thermal cut-outs have tripped (indicated by the orange lamp on the front panel). • Check the mains power supply fuses.
The thermal cut-out trips frequently.	• Check to see whether the dust filter is clogged. • Make sure that you are not exceeding the rated data for the power source (i.e. that the unit is not being overloaded).
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. • Check the gas flow.

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.

Arc 180, Arc 200 is designed and tested in accordance with the international and European standards EN 60974-1 and 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.

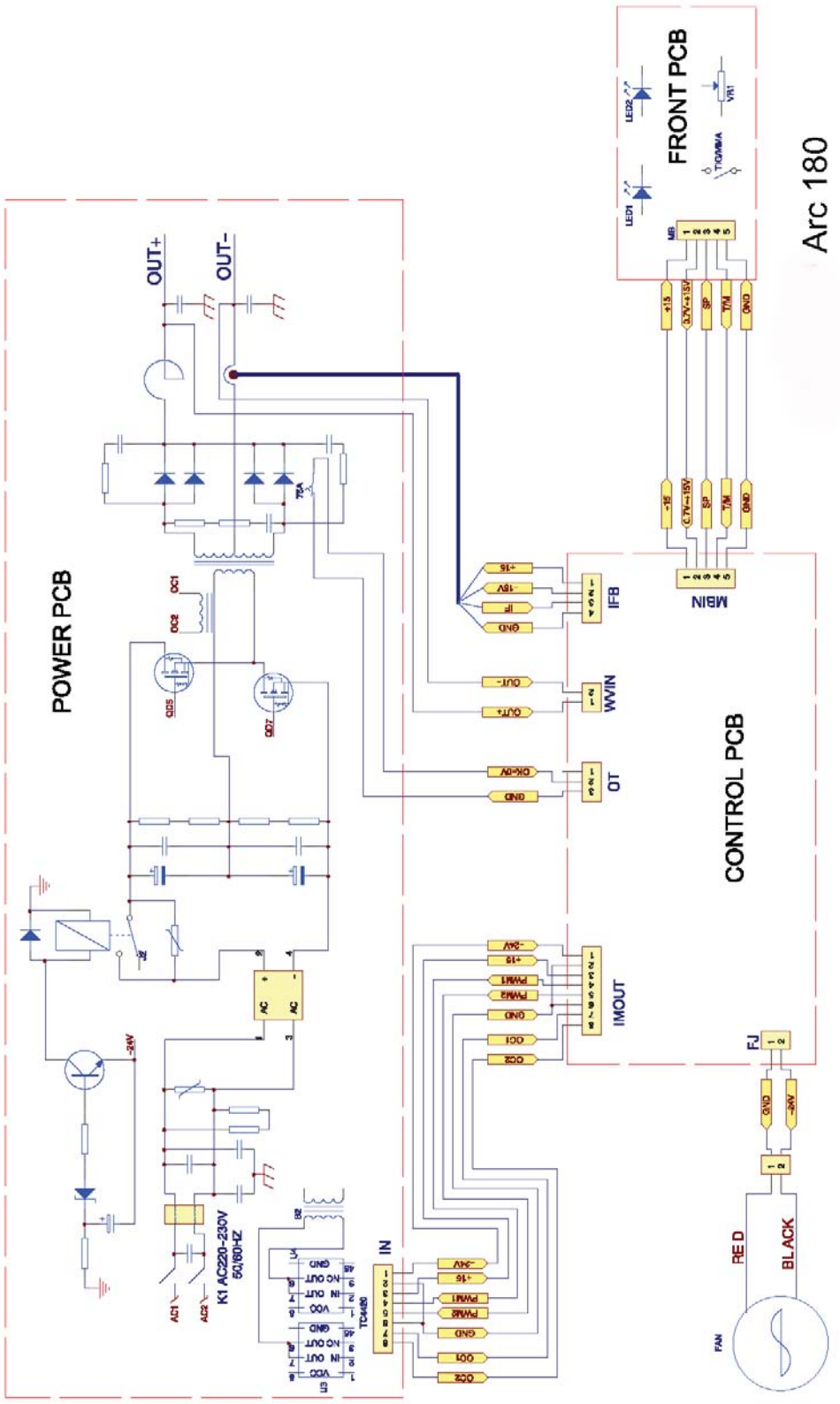
Spare parts may be ordered through your nearest ESAB dealer, see the last page of this publication.

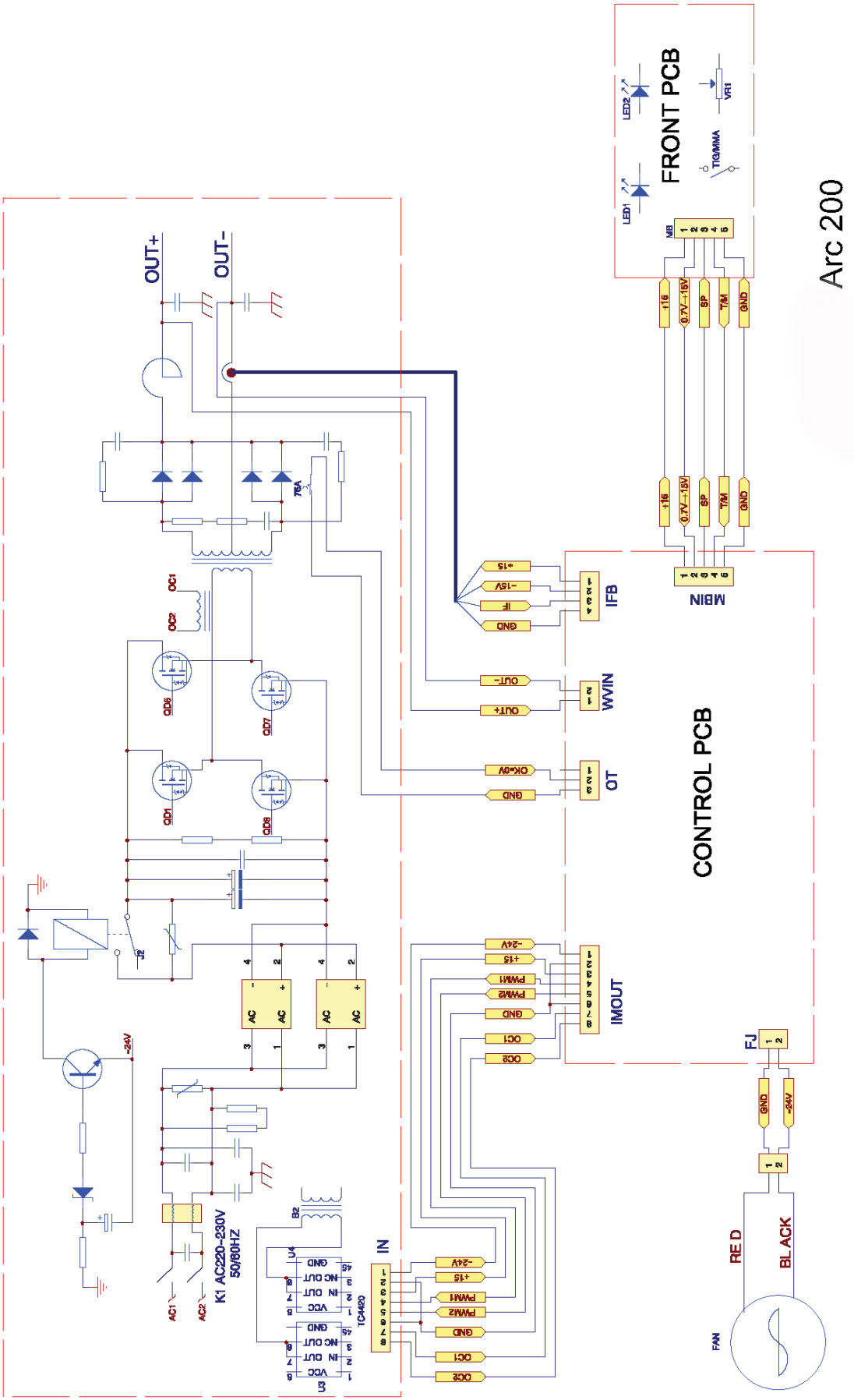
9 DISMANTLING AND SCRAPPING

Welding equipment primarily consists of steel, plastic and non-ferrous metals, and must be handled according to local environmental regulations.

Coolant must also be handled according to local environmental regulations.

Diagram


Arc 180
FRONT PCB
LED2
LED1
VR1
TIG/MMA
MB
MBIN
+15
-15
SP
TM
GND
POWER PCB
OUT+
OUT-
75A
OC1
OC2
QD5
QD7
CONTROL PCB
IFB
WVIN
OT
IMOUT
IN
FJ
-24V
PWM1
PWM2
OC1
OC2
K1 AC220-230V
50/60-HZ
AC1
AC2
RED
BLACK
FAN


Arc 200
FRONT PCB
LED2
LED1
VR1
TIG/MMA
MB
+15
0.7V--10V
SP
TM
GND
MBIN
CONTROL PCB
IFB
+15
-15V
IF
GND
WVIN
OUT-
OUT+
OT
OK=0V
GND
IMOUT
-24V
+15
PWM1
PWM2
GND
OC1
OC2
IN
FJ
GND
-24V
RED
BLACK
FAN
OUT+
OUT-
76A
OC1
OC2
QD6
QD7
QD1
QD8
J2
K1 AC220-230V
50/60HZ
AC1
AC2
B2
U4
U3
TC4420
VCC
IN
OUT
NC
GND

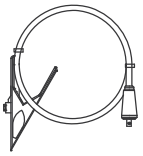
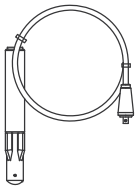
bh40e

Order number

Ordering no.	Denomination	Type
0700 300 885	Welding power source	Buddy™ Arc 180
0700 300 887	Welding power source	Buddy™ Arc 200
0459 839 066	Spare parts list	Buddy™ Arc 180 and Arc 200

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

Accessories

	**Return cable with clamp** . . . . . 0700 300 863 3 m 16 mm^2
	**Welding cable with electrode holder** . . . . . 0700 300 862 3 m 16 mm^2
	**TIG torch** . . . . . 0700 300 861 17, 4 m

NOTES

NOTES

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