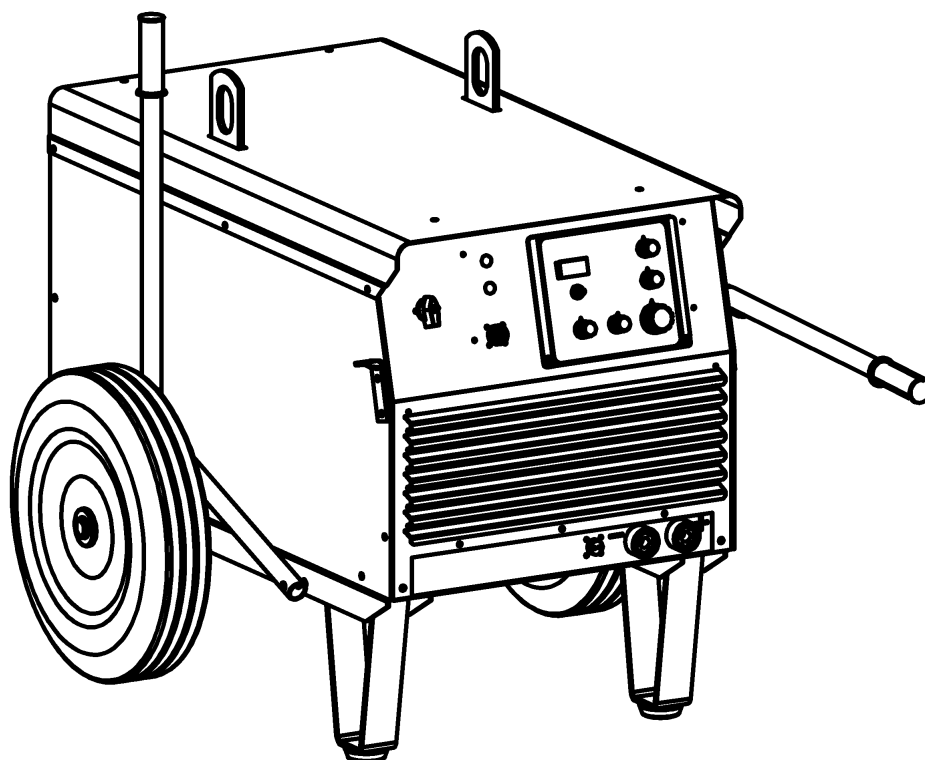


*Origo*<sup>TM</sup>

***Arc 410c***

***Arc 650c***

***Arc 810c***



**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 sources for MIG/MAG welding

### Type designation etc.

Arc 410c, 650c, 810c from serial number 734 xxx xxxx (2007 w.34), 749 xxx xxxx (2007 w.49) and 751 xxx xxxx (2007 w.51),

### Brand name or trade mark

ESAB

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

#### Name, address, telephone No, telefax No:

OZAS-ESAB Sp. Z o.o.  
Ul.A.Struga 10, 45-073 Opole, Poland  
Phone: +48 77 4019200, Fax: +48 77 4019201

### 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  
Opole, 2012-02-14

Signature

Dariusz Brudkiewicz  
Clarification

Position  
Managing Director  
OZAS-ESAB Sp. Z o.o.

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# 1 SAFETY

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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.

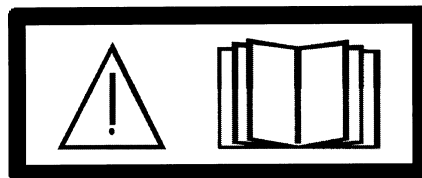
All work must be carried out by trained personnel well-acquainted with the operation of the equipment. Incorrect operation of the equipment may lead to hazardous situations which can result in injury to the operator and damage to the equipment.

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



**CAUTION**

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



**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!**

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



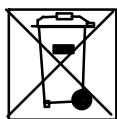
**WARNING**

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



**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.

## 2 INTRODUCTION

**Origo™ Arc 410c, Arc 650c, Arc 810c** are chopper controlled welding rectifiers designed for welding with coated electrodes, TIG welding and arc air gouging.

The welding rectifiers can cooperate with following remote control devices:

- wired  
MMA1, MMA2, AT1, AT1 CoarseFine
- wireless  
N02 (only with panel A12)

Origo™ Arc equipped with panel A12 is version with display, that allows current setting to be read from the front of the rectifier.

## 3 TECHNICAL DATA

	<b>Origo™ Arc 410c</b>	<b>Origo™ Arc 650c</b>	<b>Origo™ Arc 810c</b>
<b>Voltage</b>	230/400–415/500 V 3~ 50 Hz 230/440–460/550 V 3~ 50 Hz	230/400–415/500 V 3~ 50 Hz 230/440–460/550 V 3~ 50 Hz	230/400–415/500 V 3~ 50 Hz 230/440–460/550 V 3~ 50 Hz
<b>Maximum load</b>			
35 % duty cycle	400 A/36 V	650 A/44 V	800 A/44 V
60 % duty cycle	310 A/33 V	490 A/40 V	630 A/44 V
100 % duty cycle	240 A/30 V	400 A/36 V	500 A/430 V
<b>Setting range</b>	20A/20V–400A/36V	20A/20V–650A/44V	20A/20V–800A/44V
<b>Open circuit volt.</b>	53–70 V	53–70 V	53–70 V
<b>Open circuit output</b>			
at 400 V	390 W	510 W	520 W
<b>Power factor</b>			
(max current)	0,90	0,90	0,90
<b>Efficiency</b>			
(max current)	74 %	77 %	76 %
<b>Operating temperature</b>	–10 to +40° C	–10 to +40° C	–10 to +40° C
<b>Enclosure class</b>	IP 23	IP 23	IP 23
<b>Application class</b>	<b>S</b>	<b>S</b>	<b>S</b>
<b>Weight</b>	157 kg	223 kg	245 kg
<b>Dimens. l x w x h</b>	1310/800/780	1310/800/780	1310/800/780

### 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.*



### CAUTION

*This product is intended for industrial use. In a domestic environment this product may cause radio interference. It is the user's responsibility to take adequate precautions.*

### Lifting instructions

The power supply should be lifted by means of its lifting eye. The handle is only intended for pulling it along the ground.

- Check that the welding rectifier is configured for the **available mains supply** before connecting it to the mains.
- See Connecting to mains for cable rating and fuse rating.
- Connect the mains cable to the rectifier according to the relevant regulations and install a suitable fuse in the main fuse box.
- Make sure the welding rectifier is not covered or positioned so that cooling is obstructed.

### 4.1 Connecting to mains

	Origo™ Arc 410c	Origo™ Arc 650c	Origo™ Arc 810c
<b>Frequency</b>	50 Hz	50 Hz	50 Hz
<b>Voltage</b>	230/400–415/500 V	230/400–415/500 V	230/400–415/500 V
<b>Current at</b>			
100% duty cycle	27/16/13 A	57/33/26 A	71/41/33 A
60% duty cycle	38/22/18 A	69/40/32 A	99/57/46 A
35% duty cycle	54/31/25 A	109/63/50 A	130/75/60 A
<b>Fuse, slow</b>	63/25/20 A	80/50/35 A	100/63/50 A
<b>Cable area (4xmm<sup>2</sup>)</b>	10/4/4	25/10/6	35/10/10

	Origo™ Arc 410c	Origo™ Arc 650c	Origo™ Arc 810c
<b>Frequency</b>	60 Hz	60 Hz	60 Hz
<b>Voltage</b>	230/440–460/550 V	230/440–460/550 V	230/440–460/550 V
<b>Current at</b>			
100% duty cycle	27/14/12 A	57/30/24 A	71/37/30 A
60% duty cycle	38/20/16 A	69/36/29 A	99/52/42 A
35% duty cycle	54/28/23 A	109/57/46 A	130/68/55 A
<b>Fuse, slow</b>	63/25/20 A	80/50/35 A	100/63/50 A
<b>Cable area (4xmm<sup>2</sup>)</b>	10/4/4	25/10/6	35/10/10

**NB:** The mains cable areas and fuse sizes as shown above are in accordance with Swedish regulations. They may not be applicable in other countries: make sure that the cable area and fuse sizes comply with the relevant national regulations.


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## 5 OPERATION


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- Select suitable earth and return cables and connect them to the terminals marked “+” (5) and “-” (6) on the front of the rectifier. Connect the return cable to the work piece.
- Set switch (1) to position “I”. The lamp (3) will light, the fan and the contactor will operate in several seconds.


### 5.1 MMA welding

Set switch (4) to . In MMA mode implicitly “anti stick” function is ON. It prevents of sticking the electrode to workpiece during arc striking.

### 5.2 TIG welding

Set switch (4) to . In TIG mode output voltage of machine is ON after the welding torch switch is pressed. After arc initiation current rises from minimum possible value until it reaches the value set by operator.

### 5.3 Arc Air Gouging

Set switch (4) to . In Arc Air Gouging mode current should be set close to maximum value in order to ensure proper gouging conditions.

### 5.4 A11 panel operation

- Select the welding method using the switch (4)
- Set the welding current using the knob (3), it's dial is scaled in Amps
- Set the HOT START duration with knob (2)
- Set the ARC FORCE value with knob (1)

### 5.5 A12 panel operation

- Select the welding method using the switch (4)
- Set the welding current using the knob (3), if switch (6) is set towards “A”, then value of current is displayed on display (7)
- Set the HOT START duration with knob (2)
- Set the ARC FORCE value with knob (1)

A12 panel incorporates remote current control receiver that cooperates with N02 transmitter. In order to set the current remotely, the following steps must be undertaken:

- set switch (5) to “|)”)”
- set demanded current with knob on N02 transmitter



- put N02 on the work piece and make sure there is good electric contact between work piece and N02 metal bottom
- touch the metal disk on top of N02 with the electrode, hold it still until N02 control lamp turns off (changes of current value during transmission should be visible on A12 display)

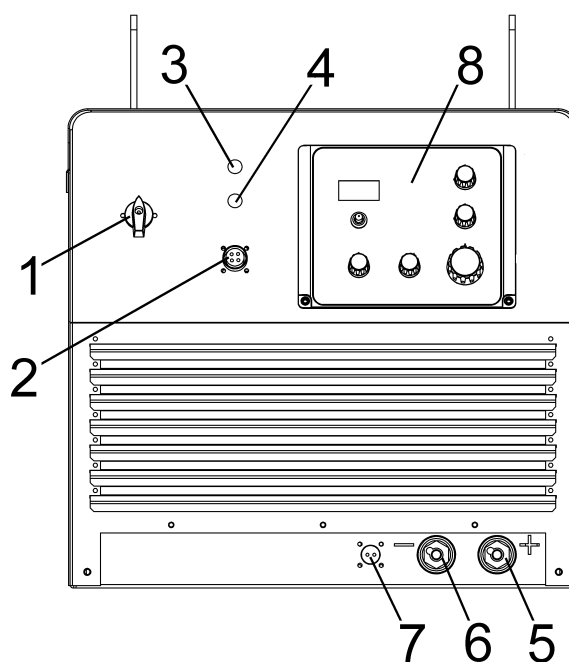
## 5.6 Wired remote control operation

- Connect wired remote control unit to socket (2) (wired remote control mode is turned on automatically)
- Set demanded current with knob on control unit (if A12 panel mounted, changes of current value during transmission should be visible on A12 display)

## 5.7 Controls and connections

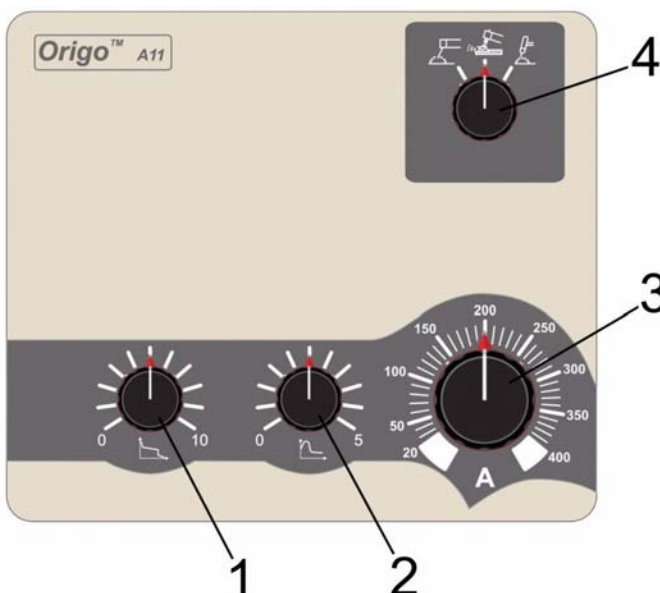
### 5.7.1 Origo™ Arc

1. Mains supply switch
2. Wired remote control socket
3. White lamp, power supply ON
4. Yellow lamp, thermal cut-out
5. “+” output terminal
6. “-” output terminal
7. TIG torch control socket
8. Panel (A11 / A12)



### 5.7.2 A11 panel

1. ARC FORCE knob
2. HOT START knob
3. Current setting knob
4. Method selector switch:  
Arc Air Gouging, MMA, TIG



### 5.7.3 A12 panel

1. ARC FORCE knob
2. HOT START knob
3. Current setting knob
4. Method selector switch:  
Arc Air Gouging, MMA, TIG
5. Local / wireless remote control switch
6. A/V measurement switch
7. Display



### 5.8 Overheating protection

If the internal temperature becomes too high, the welding is interrupted and disabled. This state is indicated by permanent lighting of the orange indicating lamp on the front of the unit. It resets automatically when the temperature falls down.

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## 6 MAINTENANCE

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**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.*

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

### **Cleaning**

Check regularly that the power source is free from dirt.

How often, and to what extent, cleaning should be carried out depends on the welding process, arc time, disposition and the surrounding environment. It will normally suffice to blow the power source clean using compressed air (reduced pressure) once a year.

If the power source is very dirty, brushing and vacuuming are recommended.

- Disconnect the welding power source from the mains current supply.
- Remove the adapter from the socket. Lock the socket to prevent unauthorised connection.

At fixed installations, the safety switch should be set to the off position. Lock the switch.

- Remove the power source's safety plates for best access.

After cleaning, all safety plates must be mounted before you connect the power source to the mains supply.

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## 7 ORDERING OF SPARE PARTS

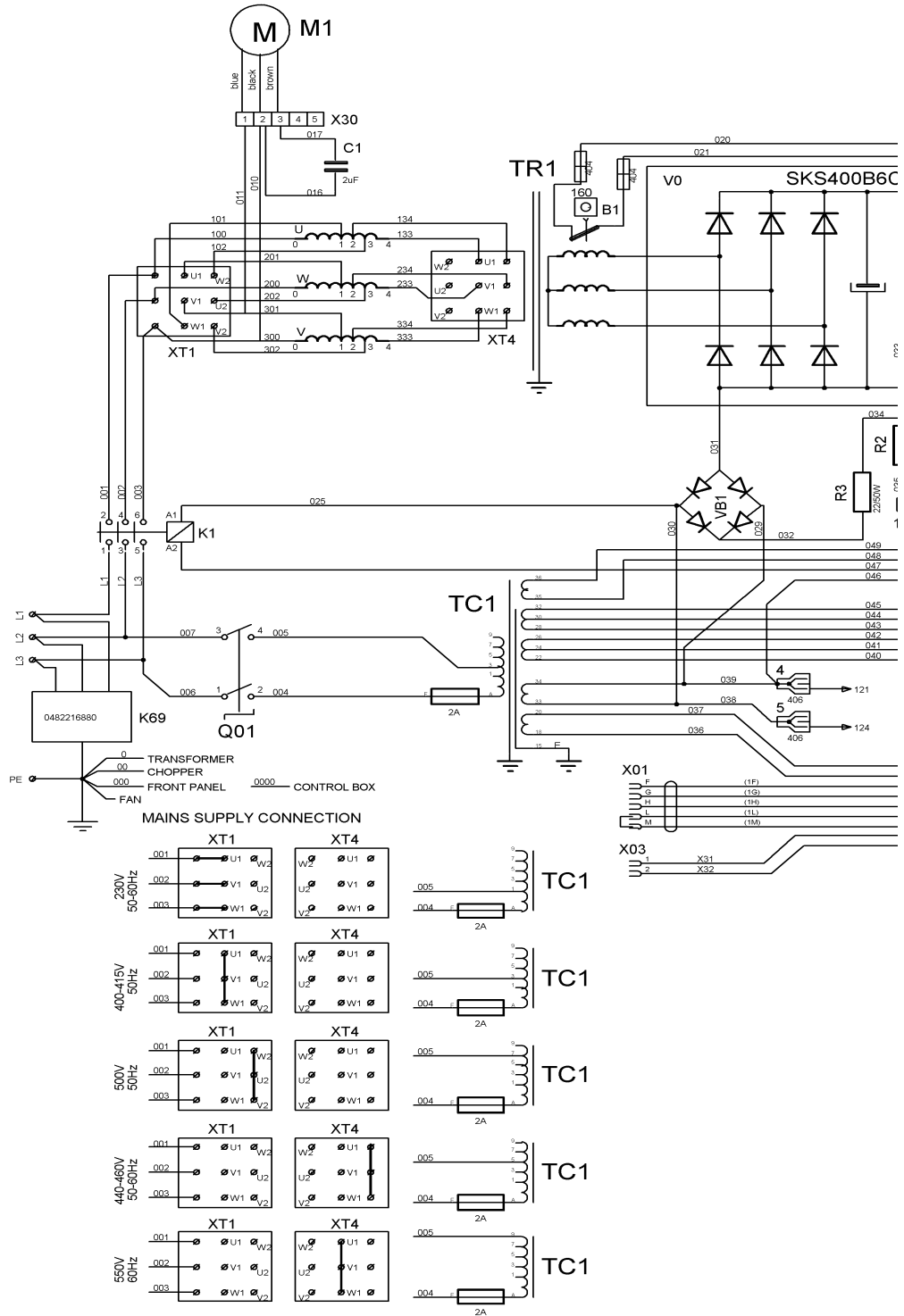
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**Origo™ Arc 410c, 650c, 810c is designed and tested in accordance with the international and European standards 60974-1 and 60974-10. It is the obligation of the service unit which has carried out the service or repair work to make sure that the product still conforms to the said standard.**

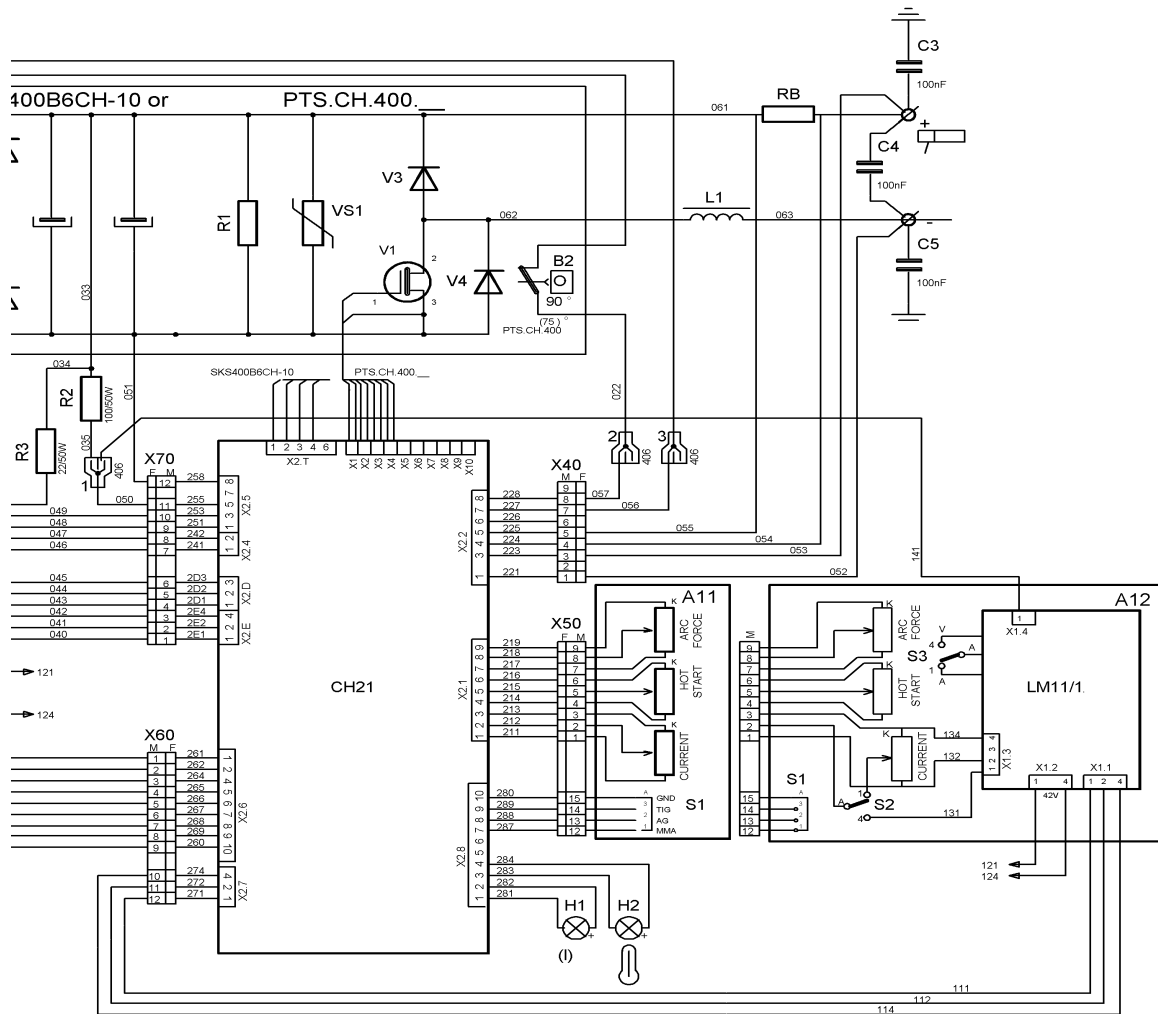
Spare parts may be ordered through your nearest ESAB dealer, see the last page of this publication.

# Diagram

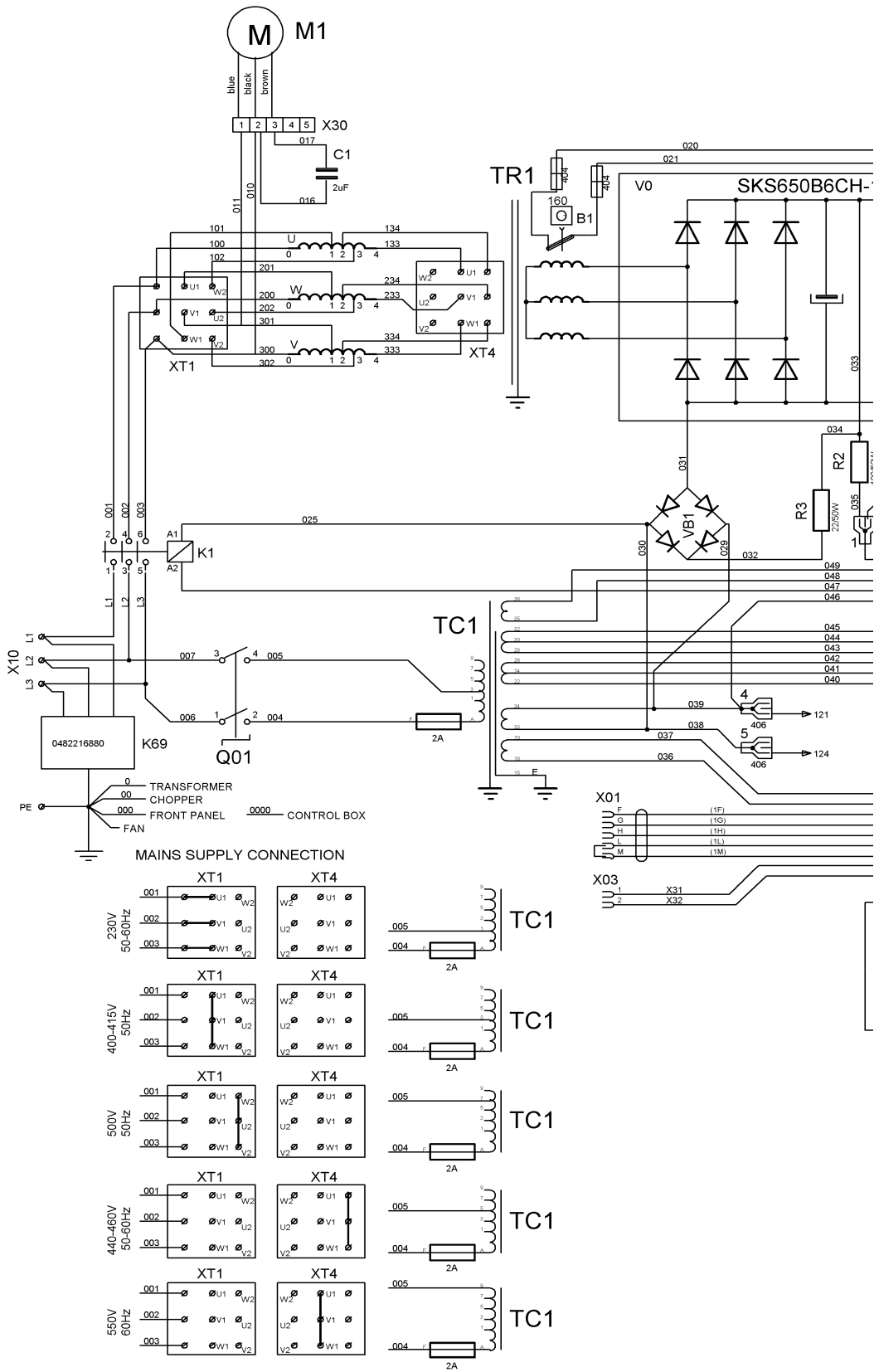
## Origo™ Arc 410c

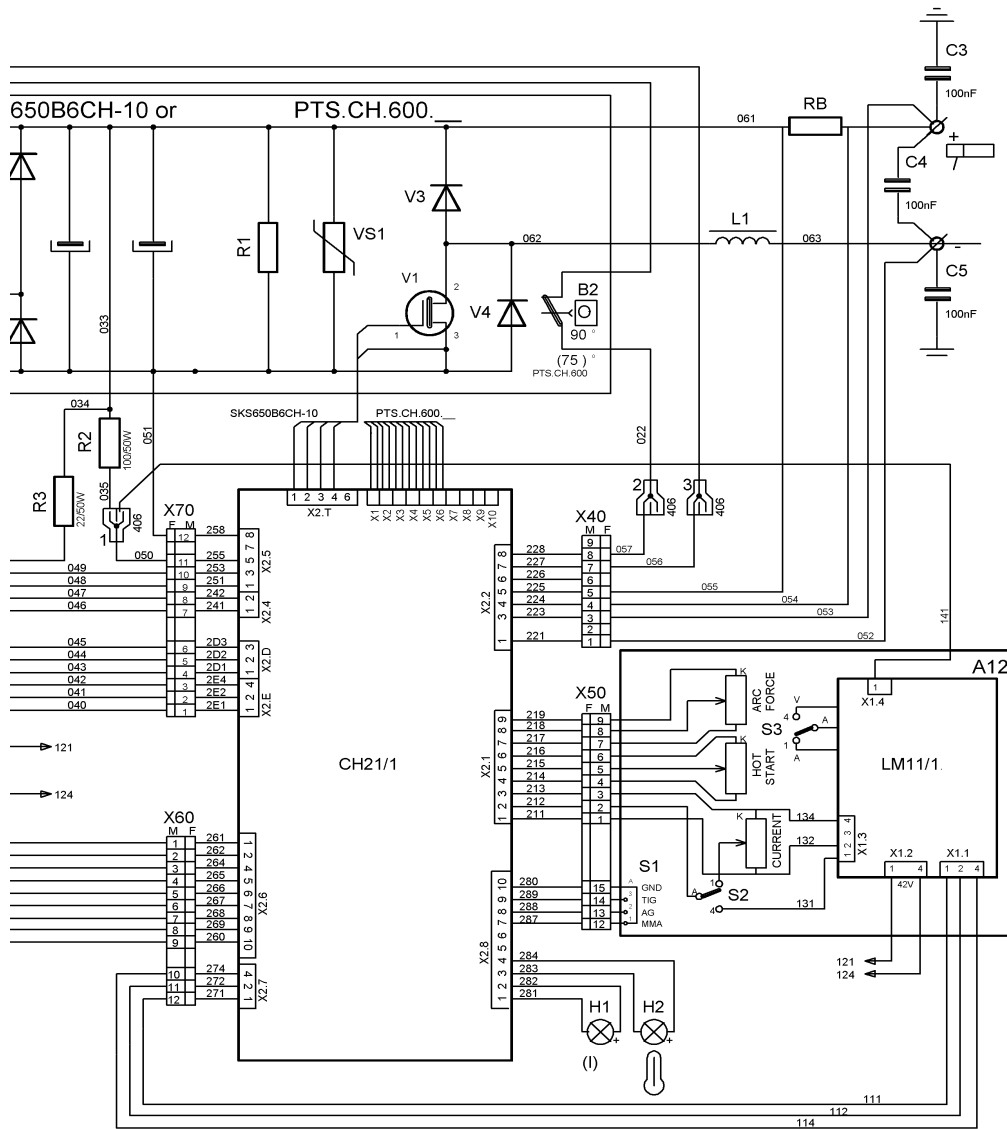


# Origo™ Arc 410c

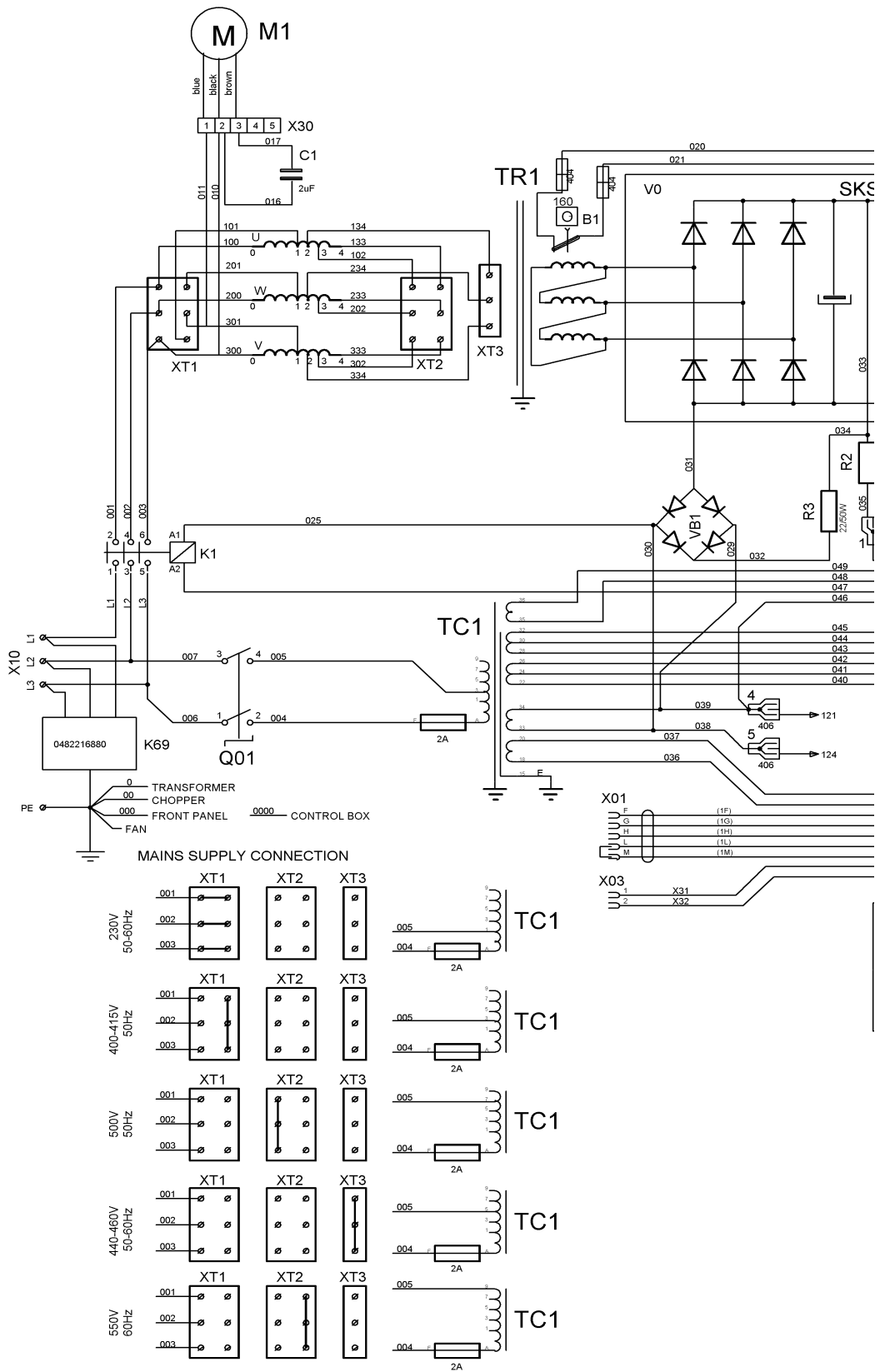


# Origo™ Arc 650c

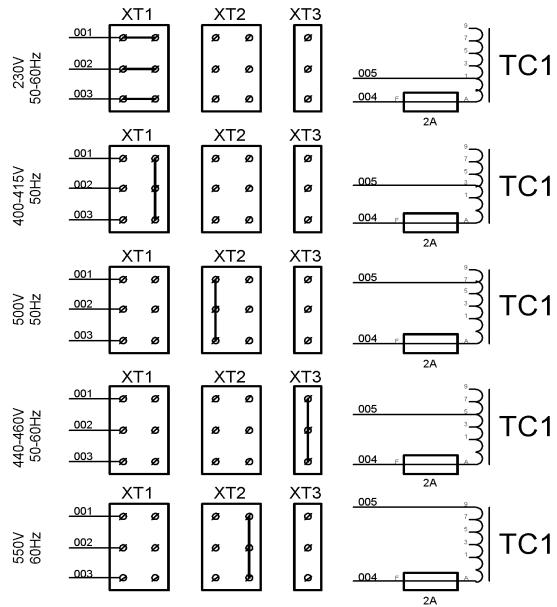




# Origo™ Arc 810c

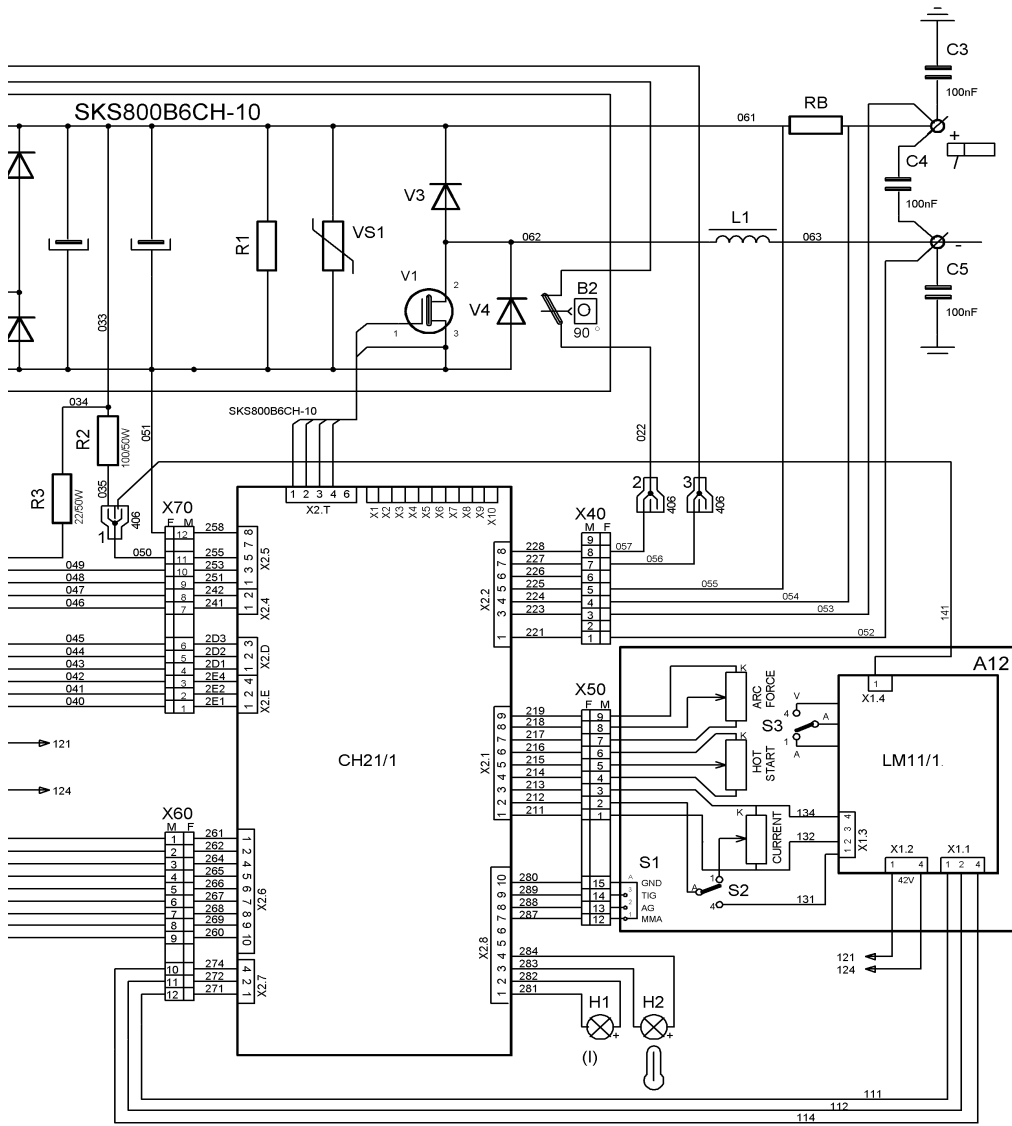


## MAINS SUPPLY CONNECTION

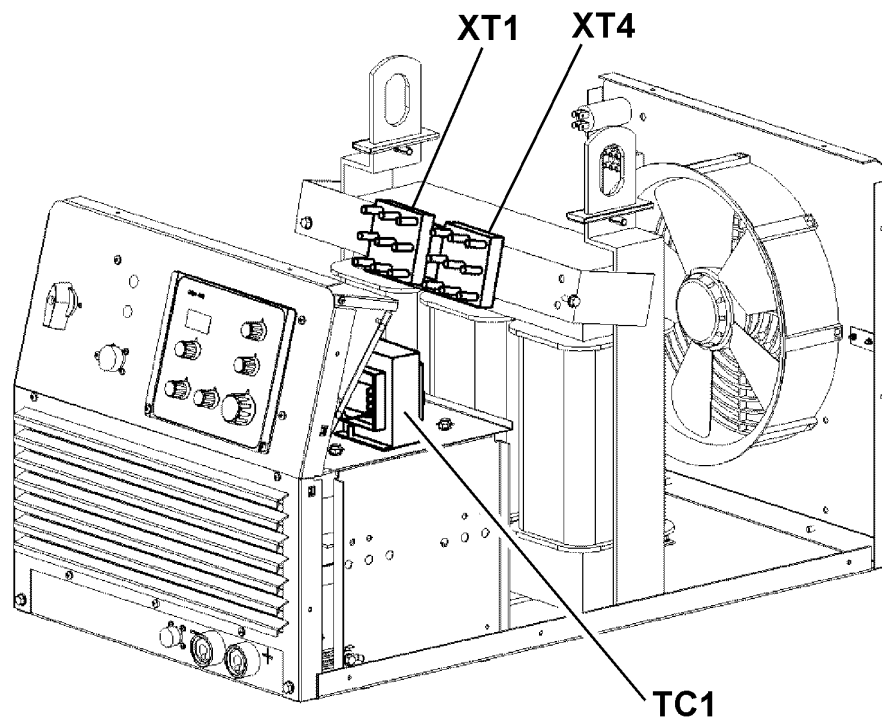
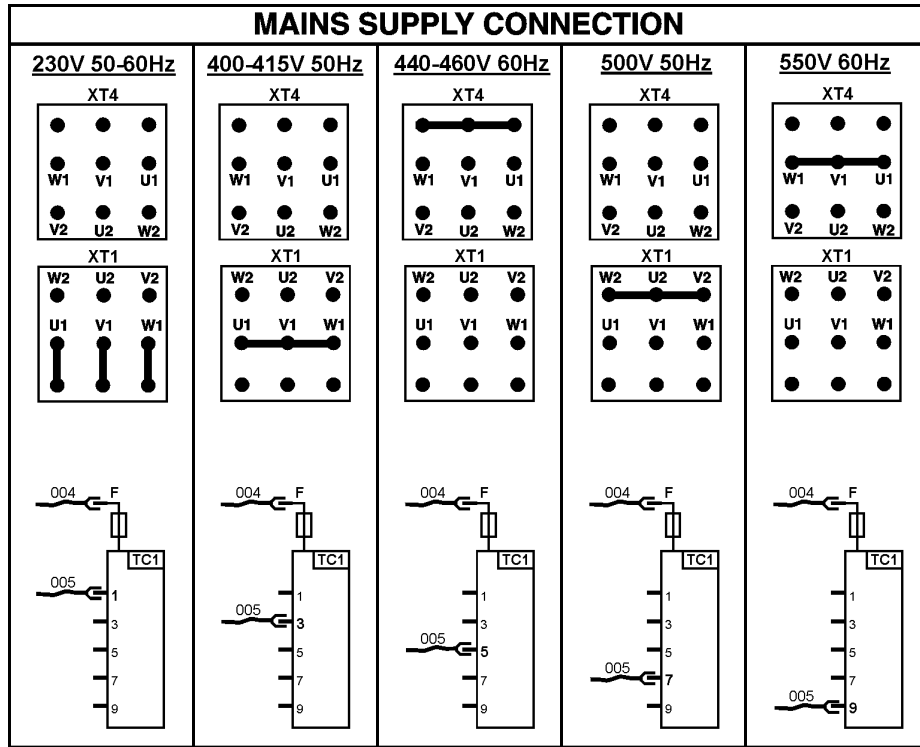




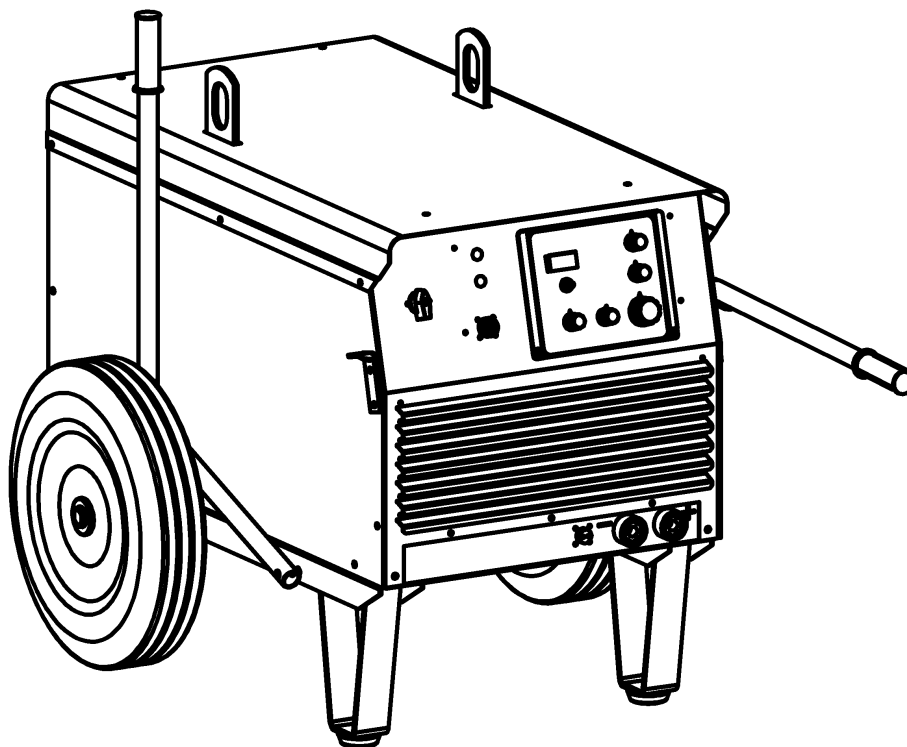
# Origo™ Arc 810c



# Diagram



## Producte type



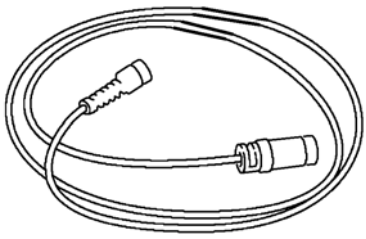
Valid for serial no. 734-xxx-xxxx, 749-xxx-xxxx, 751-xxx-xxxx

### Ordering numbers

0349 311 480	Origo™ Arc 410c, A12 offshore	230/400–415/500V 3~50Hz 230/440–460/550V 3~60Hz
0349 311 490	Origo™ Arc 410c, A12 stationary	230/400–415/500V 3~50Hz 230/440–460/550V 3~60Hz
0349 311 500	Origo™ Arc 650c, A12 offshore	230/400–415/500V 3~50Hz 230/440–460/550V 3~60Hz
0349 311 510	Origo™ Arc 650c, A12 stationary	230/400–415/500V 3~50Hz 230/440–460/550V 3~60Hz
0349 311 430	Origo™ Arc 810c, A12 offshore	230/400–415/500V 3~50Hz 230/440–460/550V 3~60Hz

## Producte type

### Accessories

	<b>Remote control units</b>	
	N02 wireless .....	0349 304 617
	MMA1 wired, 10m .....	0349 501 024
	MMA2 wired, 10m .....	0349 501 025
	AT1 wired .....	0459 491 896
	AT1 CoarseFine wired .....	0459 491 897
	<b>Remote cables</b>	
	5m analogue, 12 pole .....	0459 552 880
	10m analogue, 12 pole .....	0459 552 881
	15m analogue, 12 pole .....	0459 552 882
25m analogue, 12 pole .....	0459 552 883	

For more information of the accessories contact the nearest ESAB agency.



## NOTES

A series of 20 horizontal dotted lines for writing notes.



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