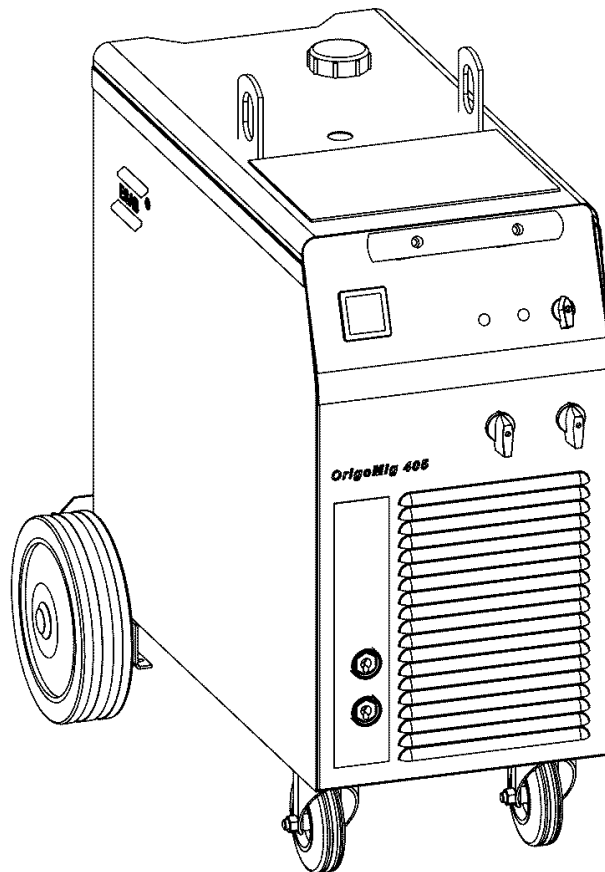


# *OrigoMig 405*



**Instruction manual**

<b>1 DIRECTIVE</b> .....	<b>3</b>
<b>2 SAFETY</b> .....	<b>3</b>
<b>3 INTRODUCTION</b> .....	<b>5</b>
3.1 Equipment .....	5
<b>4 TECHNICAL DATA</b> .....	<b>5</b>
<b>5 INSTALLATION</b> .....	<b>6</b>
5.1 Placing .....	6
5.2 Assembly of stabilizer .....	6
5.3 Assembly of components .....	7
5.4 Electrical installation .....	8
5.5 Mains power supply .....	9
<b>6 OPERATION</b> .....	<b>9</b>
6.1 Connection and control devices .....	10
6.2 Function explanations .....	10
<b>7 MAINTENANCE</b> .....	<b>11</b>
7.1 Inspection and cleaning .....	11
7.2 Topping up the coolant .....	11
<b>8 FAULT TRACING</b> .....	<b>12</b>
<b>9 ORDERING OF SPARE PARTS</b> .....	<b>12</b>
<b>DIAGRAM</b> .....	<b>13</b>
<b>ACCESSORIES</b> .....	<b>16</b>

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# 1 DIRECTIVE

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## DECLARATION OF CONFORMITY

ESAB Welding Equipment AB, S-695 81 Laxå, Sweden, gives its unreserved guarantee that welding power source OrigoMig 405 from serial number 410 complies with standard IEC/EN 60974-1, in accordance with the requirements of directive (73/23/EEC) and addendum (93/68/EEC) and with standard EN 60974-10 in accordance with the requirements of directive (89/336/EEC) and addendum (93/68/EEC).

---

Laxå 23.04.2004



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# 2 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 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 draughts
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.



# WARNING



**ARC WELDING AND CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING. 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 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.

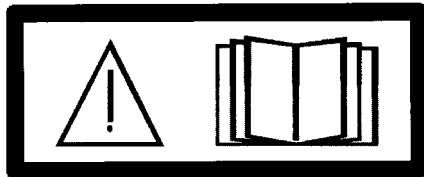
**NOISE – Excessive noise can damage hearing**

- 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!**



## WARNING!

Read and understand the instruction manual before installing or operating.



## WARNING!

Do not use the power source for thawing frozen pipes.



**This product is solely intended for arc welding.**

### 3 INTRODUCTION

The OrigoMig 405 are step switched power sources designed for MIG/MAG-welding together with wire feed units OrigoFeed 30-2 & OrigoFeed 30-4.

The power units are fan-cooled and equipped with thermal overload protection. The machines can be fitted with an instrument that displays current and voltage.

It incorporates a hold function and can be calibrated.

**ESAB's accessories for the product can be found on page 16.**

#### 3.1 Equipment

The power source is supplied with:

- Return cable 5m with return clamp
- Shelf for gas cylinder
- Guide pin for wire feed unit
- Instruction manual

### 4 TECHNICAL DATA

<b>Voltage</b>	400-415V, 3-50/60 Hz	230/400-415/500V 3-50 Hz 230/440-460 3-60Hz
<b>Permissible load</b> at 100 % duty cycle	280 A/28 V	280 A/28 V
at 60 % duty cycle	365 A/32 V	365 A/32 V
at 50 % duty cycle	400 A/34 V	400 A/34 V
<b>Setting range (DC)</b>	50A/16,5V-400A/34V	50A/16,5V-400A/34V
<b>Open circuit voltage</b>	17-45 V	17-45 V
<b>Open circuit power</b>	360 W	360 W
with cooling unit	600 W	600 W
<b>Efficiency</b> at max current	71%	71%
<b>Power factor</b> at max current	0,98	0,98
<b>Control voltage</b>	42 V, 50/60 Hz	42 V, 50/60 Hz
<b>Dimensions l x w x h</b>	812 x 552 x 925	812 x 552 x 925
<b>Weight</b>	142 kg	143 kg
with cooling unit	156 kg	156 kg
<b>Operating temperature</b>	-10 to +40°C	-10 to +40°C
<b>Enclosure class</b>	IP 23	IP 23
<b>Application classification</b>	<b>S</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 at a certain load without overloading.

#### 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.

## 5 INSTALLATION

*The installation must be executed by a professional.*

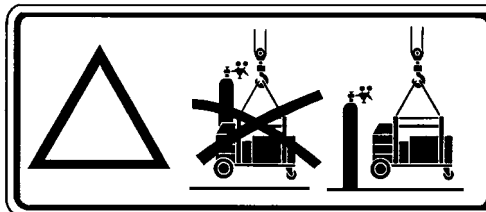


### WARNING!

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.

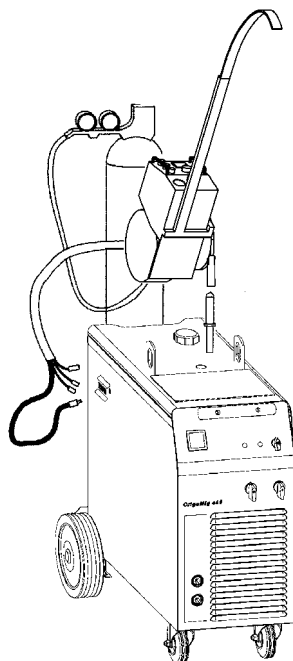


### 5.1 Placing

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

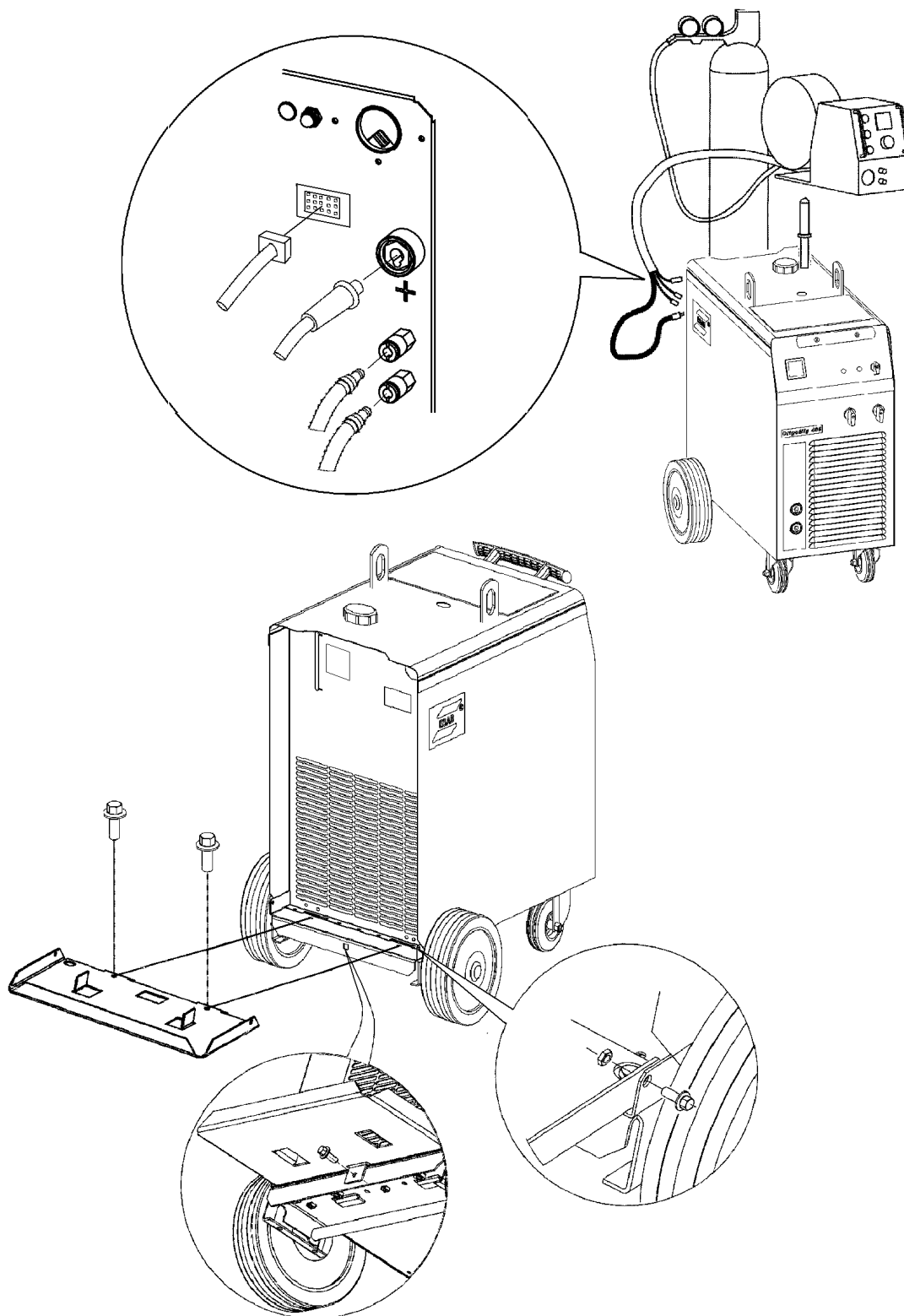
### 5.2 Assembly of stabilizer

Assemble the stabilizer if counter balance is to be installed on machine. The stabilizer is an accessory. Ordering number you can find on page 17.



**Attention!** Utilization of counter balance without stabilizer may cause the machine tipping over.

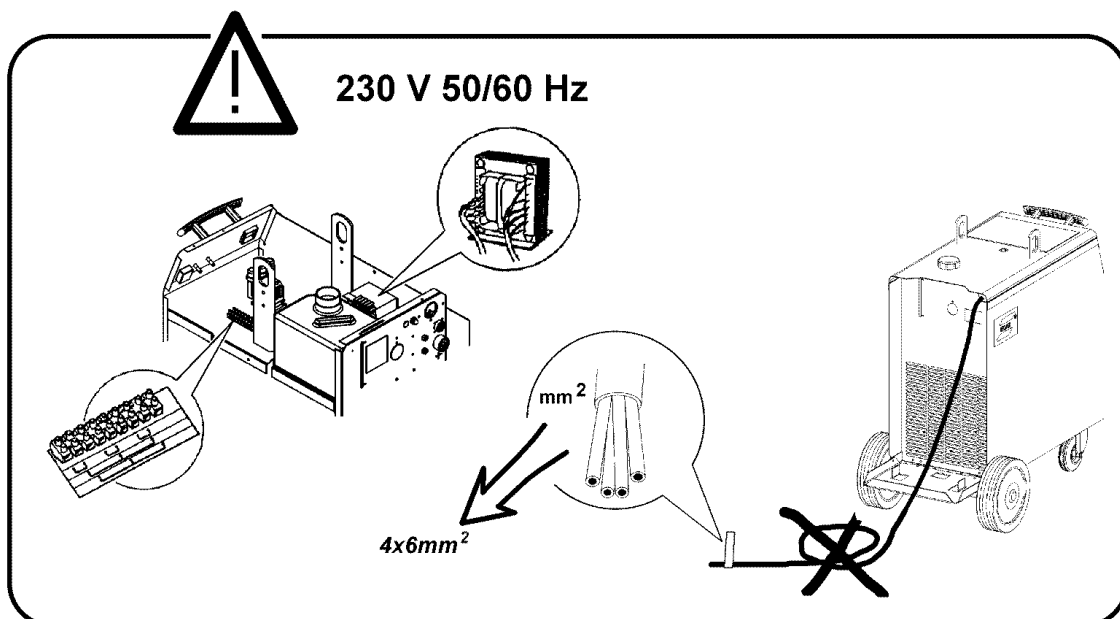
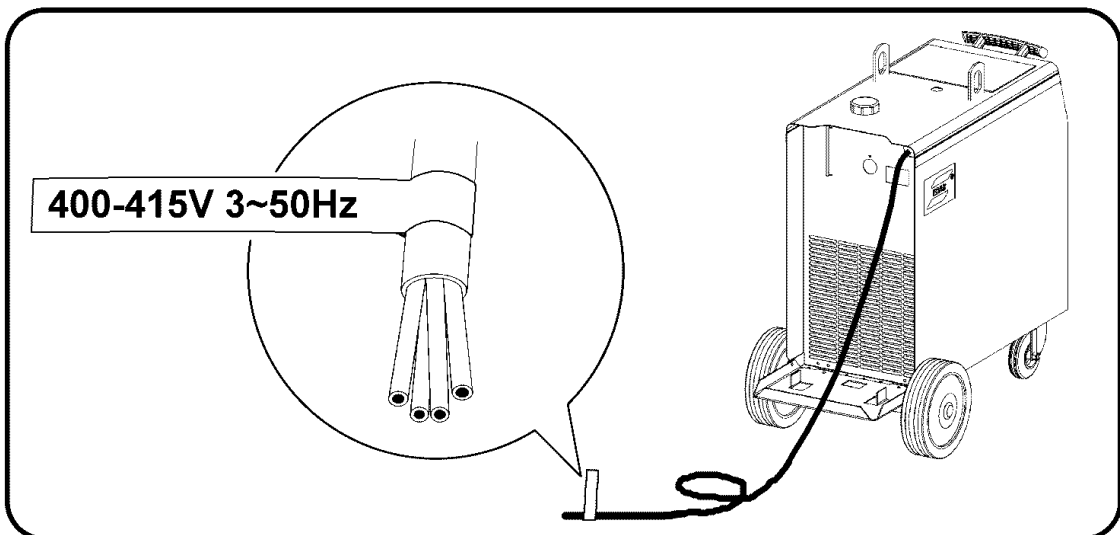
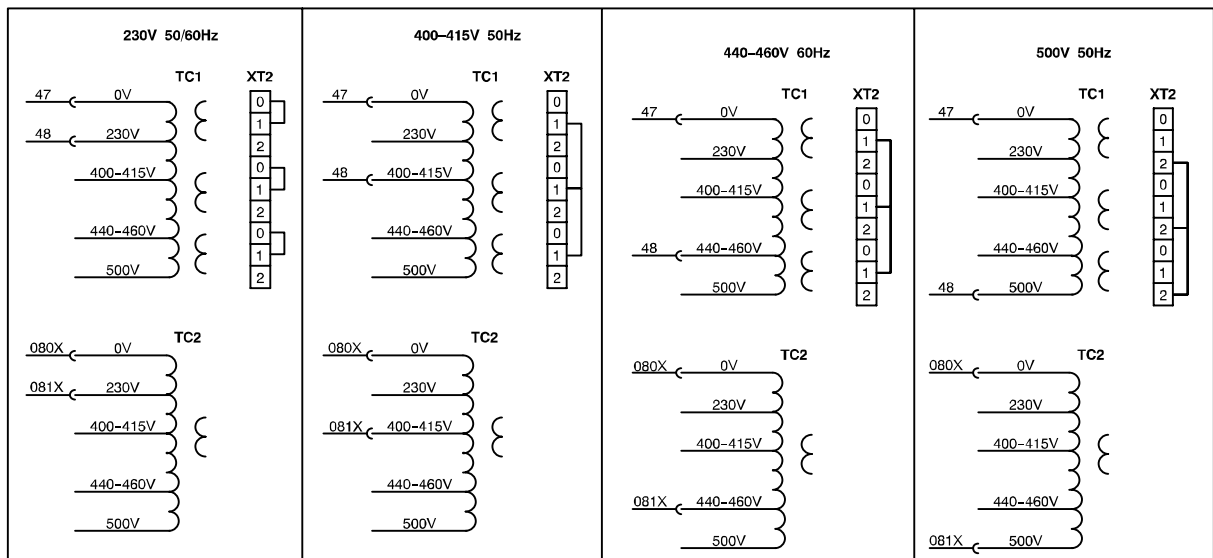
### 5.3 Assembly of components



**WARNING!**

During transport, the rear wheels of the power source are in their forward position. Before use, place the wheels in their rear position.

## 5.4 Electrical installation

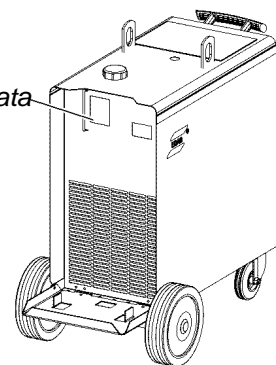




## 5.5 Mains power supply

Check that the unit is connected to the correct mains power supply voltage, and that it is protected by the correct fuse size. A protective earth connection must be made, in accordance with regulations.

Rating plate with supply connection data



	3~ 50 Hz	3~ 50/60 Hz	3~ 50 Hz	3~ 60 Hz	3~ 60 Hz
<b>Voltage V</b>	230	400/415	500	230	440/460
<b>Current A</b>					
at 100% duty cycle	28	16	13	28	14
at 60% duty cycle	42	24	19	41	21
at 50% duty cycle	45	28	20	45	22
<b>Cable area mm<sup>2</sup></b>	4 x 6	4 x 2,5	4 x 2,5	4 x 6	4 x 2,5
<b>Fuse, slow A</b>	25	20	20	25	20

**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.

## 6 OPERATION

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

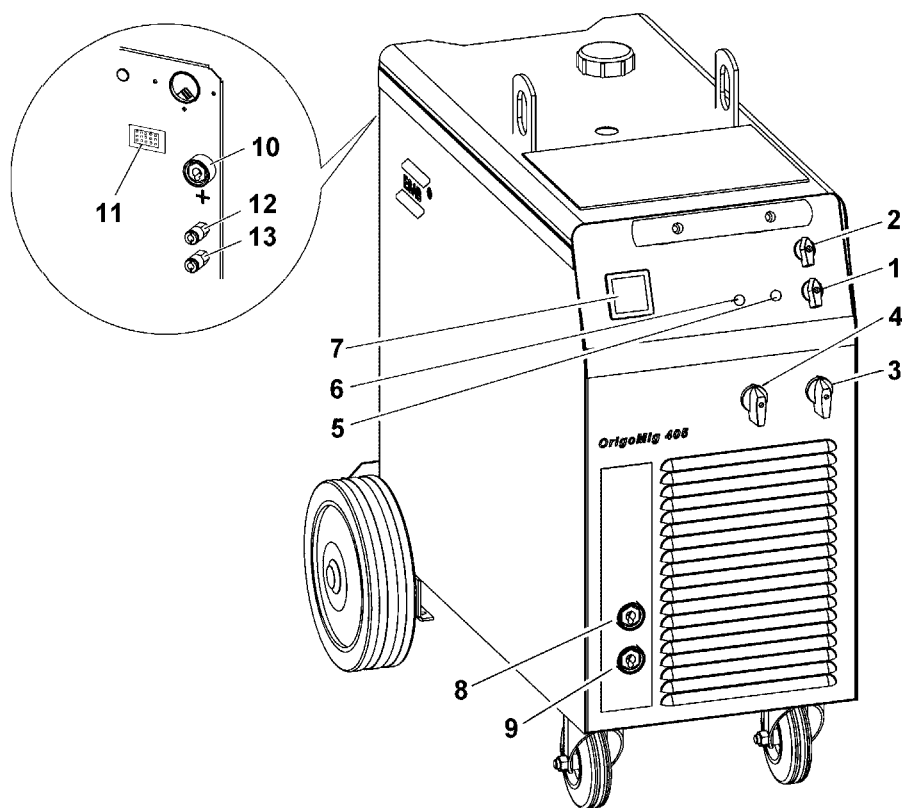


### **WARNING – TIPPING RISK!**

There is a risk of tipping while transportation and operation, if the welding machine leans more than 10°. In that case appropriate securing has to be provided !

## 6.1 Connection and control devices

- |   |   |    |  |
|---|---|----|--|
| 1 | Mains supply switch                             | 8  | Connection for return cable (-), high inductance         |
| 2 | Main supply switch for cooling unit             | 9  | Connection for return cable (-), low inductance          |
| 3 | Switch, precise control                         | 10 | Connection for welding current cable (+)                 |
| 4 | Switch, coarse control                          | 11 | Connection for control cable for wire feeder             |
| 5 | Indicating lamp, power supply ON                | 12 | Connection RED for cooling water from the wire feed unit |
| 6 | Orange indicating lamp, overheating             | 13 | Connection BLUE for cooling water to the wire feed unit  |
| 7 | Space for digital meter (optional), see page 16 |    |  |



## 6.2 Function explanations

### 6.2.1 Overheating protection

A thermal overload cutout protects against overheating. The cutout resets automatically when the unit has cooled.

### 6.2.2 Inductance connection

Higher inductance produces a more flowing weld and fewer spatters. Lower inductance produces a harsher sound and a stable, concentrated arc.

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## 7 MAINTENANCE

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*Regular maintenance is important for safe, reliable operation.*

**Note!**

*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.*

### 7.1 Inspection and cleaning

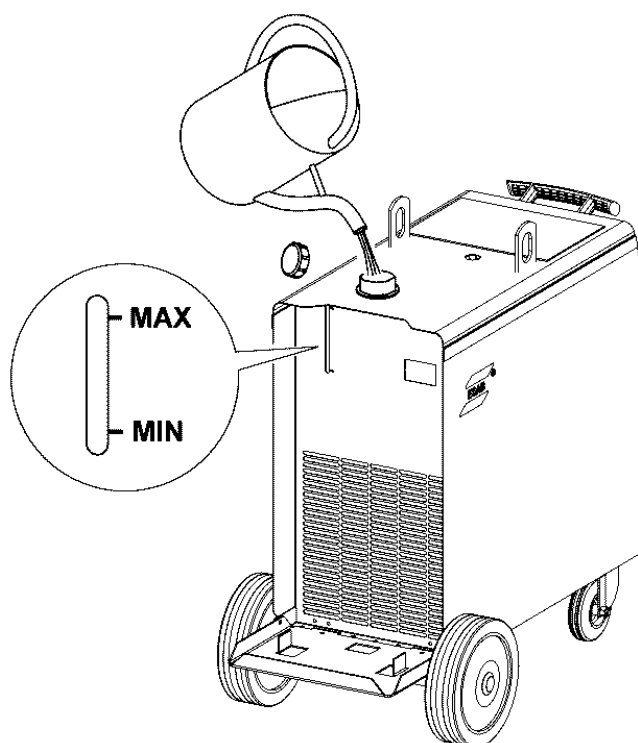
Check regularly that the power source is free from dirt.

The power source should be regularly blown clean using dry compressed air at reduced pressure. More frequently in dirty environments.

Otherwise the air inlet/outlet may become blocked and cause overheating.

### 7.2 Topping up the coolant

We recommend a 50/50 % mixture of water and ethylene glycol.



## **8 FAULT TRACING**

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

<b>Type of fault</b>	<b>Actions</b>
No arc	<ul style="list-style-type: none"> <li>• Check that the mains power supply switch is turned on.</li> <li>• Check that the welding current supply and return cables are correctly connected.</li> <li>• Check that correct current value is set.</li> <li>• Check to see whether the MCB has tripped.</li> </ul>
Welding current is interrupted during welding	<ul style="list-style-type: none"> <li>• Check whether the thermal overload trip has operated (indicated by the orange lamp on the front).</li> <li>• Check the main power supply fuses.</li> </ul>
Thermal overload trips operate frequently	<ul style="list-style-type: none"> <li>• Check to see whether the air inlets/outlets are clogged.</li> <li>• Make sure that you are not exceeding the rated data for the power source (i.e. that the unit is not being overloaded).</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 welding wires are being used.</li> <li>• Check the main power supply fuses.</li> </ul>

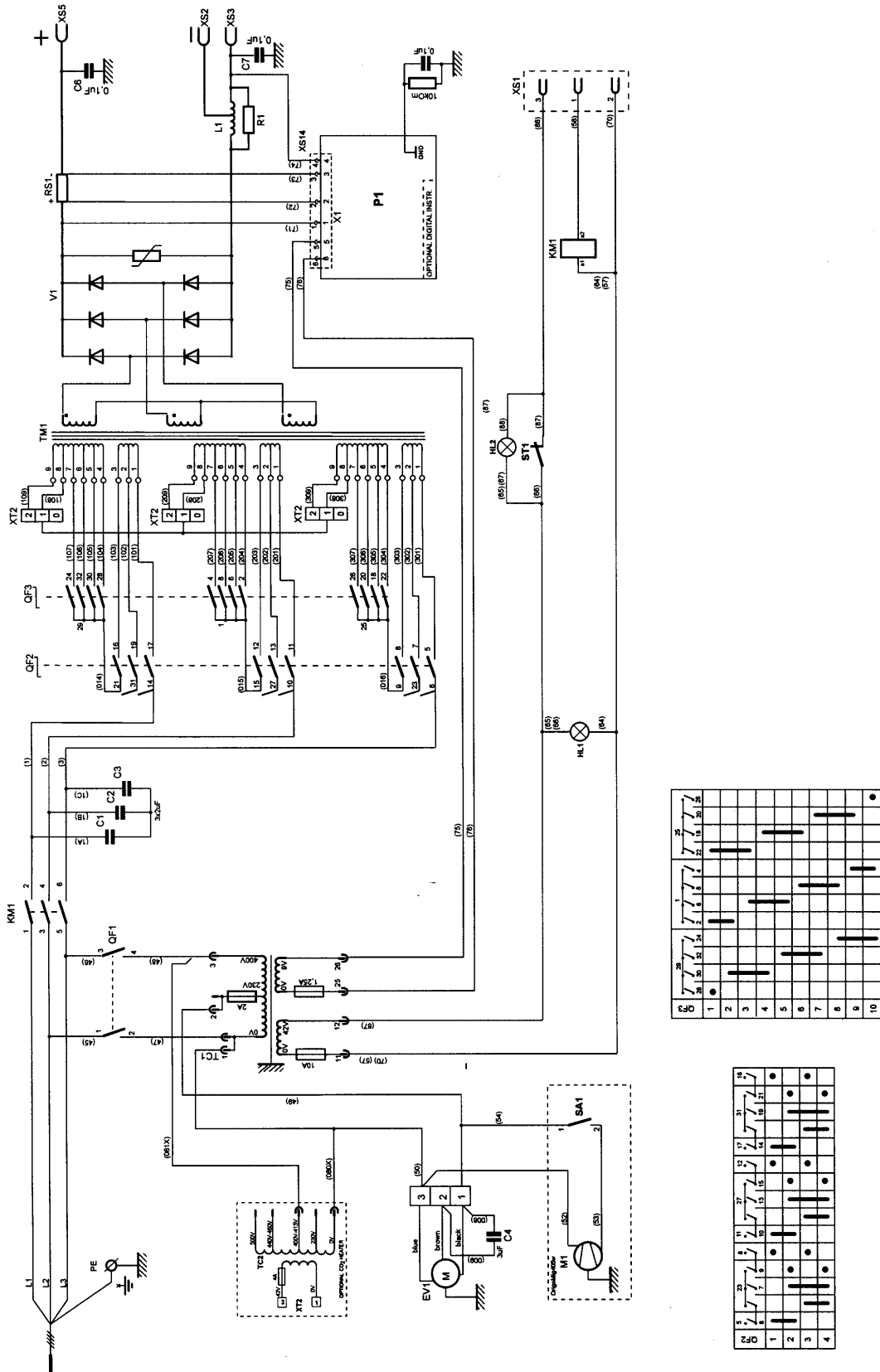
## **9 ORDERING OF SPARE PARTS**

**OrigoMig 405 is designed and tested in accordance with the international and European standards IEC/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.**

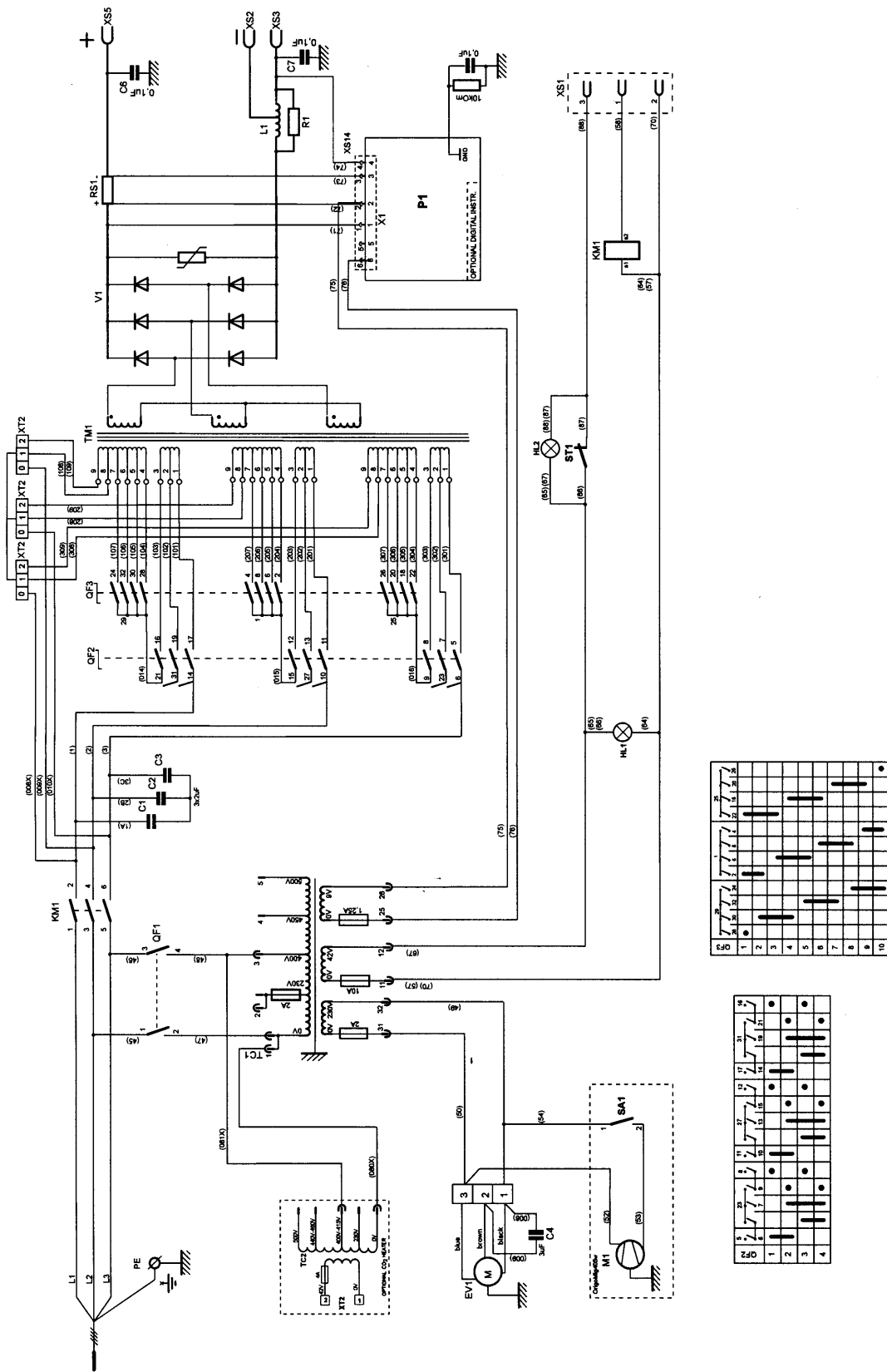
Spare parts may be ordered through your nearest ESAB dealer, see the last page of this publication.

# Diagram

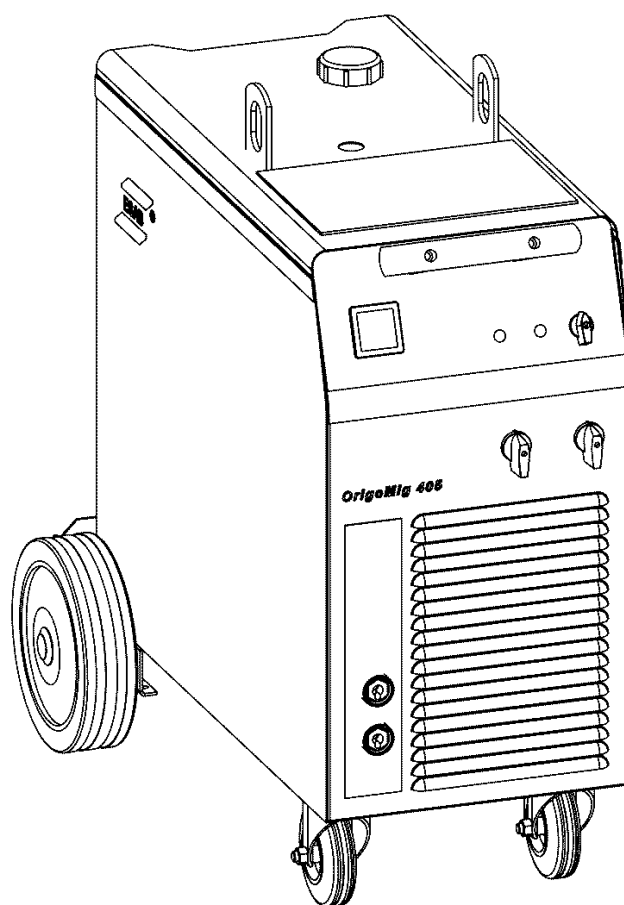
## OrigoMig 405, 400-415V



# OrigoMig 405, 230-500V



## OrigoMig 405

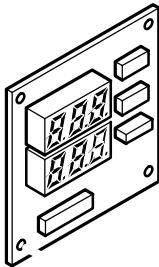
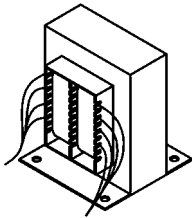
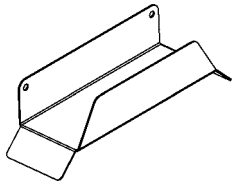


Valid for serial no. 410-XXX-XXXX

### Ordering numbers

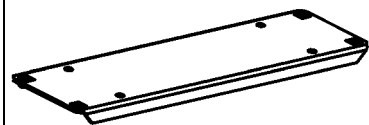
0349 306 517	OrigoMig 405	400-415V 3~50Hz
0349 306 594	OrigoMig 405	230/400-415/500V 3~50Hz; 230/440-460V 3~60Hz
0349 306 563	OrigoMig 405w	400-415V 3~50Hz
0349 306 595	OrigoMig 405w	230/400-415/500V 3~50Hz; 230/440-460V 3~60Hz

**Accessories**

<p>NO PICTURE AVAILABLE YET</p>	<p><b>OrigoFeed 30-2, open</b> ..... 0459 495 782</p>
<p>NO PICTURE AVAILABLE YET</p>	<p><b>OrigoFeed 30-4, open</b> ..... 0459 495 882</p>
	<p><b>Digital meter</b> ..... 0349 302 451</p>
	<p><b>Transformer kit for CO<sub>2</sub> heater</b> ..... 0349 302 250</p>
	<p><b>Cable holder</b> ..... 0349 303 362</p>



**Stabilizer** ..... 0349 303 474



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