



# **TAF 1251**



## **Instruction manual**



## EU DECLARATION OF CONFORMITY

According to  
The Low Voltage Directive 2014/35/EU, entering into force 20 April 2016  
The EMC Directive 2014/30/EU, entering into force 20 April 2016  
The RoHS Directive 2011/65/EU, entering into force 2 January 2013

**Type of equipment**

Welding power source

**Type designation**

TAF 1251 from serial number 126 xxx xxxx (2011 w26)

**Brand name or trade mark**

ESAB

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

**Name, address, and telephone No:**

ESAB AB  
Lindholmsallén 9, Box 8004, SE-402 77 Göteborg, Sweden  
Phone: +46 31 50 90 00, Fax: +46 31 50 92 22

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

EN 60974-1:2012, Arc Welding Equipment – Part 1: Welding Power Sources  
EN 60974-10:2014, Arc Welding Equipment – Part 10: Electromagnetic Compatibility (EMC) requirements

**Additional Information:**

Restrictive use, Class A equipment, intended for use in location 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**

**Signature**

**Position**

Gothenburg

A handwritten signature in blue ink that reads "Peter Kjällström". The signature is written in a cursive, flowing style.

2017-03-29

Peter Kjällström

Director Welding Automation

CE 2017

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# 1 SAFETY

## 1.1 Meaning of symbols

As used throughout this manual: Means Attention! Be Alert!

**DANGER!**

Means immediate hazards which, if not avoided, will result in immediate, serious personal injury or loss of life.

**WARNING!**

Means potential hazards which could result in personal injury or loss of life.

**CAUTION!**

Means hazards which could result in minor personal injury.

**WARNING!**

Before use, read and understand the instruction manual and follow all labels, employer's safety practices and Safety Data Sheets (SDSs).



## 1.2 Safety precautions

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 or other applicable operation of the equipment
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 or work is started with the equipment
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

**WARNING!**

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

**ELECTRIC SHOCK - Can kill**

- Install and ground the unit in accordance with instruction manual.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves or wet clothing.
- Insulate yourself from work and ground.
- Ensure your working position is safe

**ELECTRIC AND MAGNETIC FIELDS - Can be dangerous to health**

- Welders having pacemakers should consult their physician before welding. EMF may interfere with some pacemakers.
- Exposure to EMF may have other health effects which are unknown.
- Welders should use the following procedures to minimize exposure to EMF:
  - Route the electrode and work cables together on the same side of your body. Secure them with tape when possible. Do not place your body between the torch and work cables. Never coil the torch or work cable around your body. Keep welding power source and cables as far away from your body as possible.
  - Connect the work cable to the workpiece as close as possible to the area being welded.

**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.

**NOISE - Excessive noise can damage hearing**

Protect your ears. Use earmuffs or other hearing protection.

**MOVING PARTS - Can cause injuries**



- Keep all doors, panels and covers closed and securely in place. Have only qualified people remove covers for maintenance and troubleshooting as necessary. Reinstall panels or covers and close doors when service is finished and before starting engine.



- Stop engine before installing or connecting unit.
- Keep hands, hair, loose clothing and tools away from moving parts.

**FIRE HAZARD**



- Sparks (spatter) can cause fire. Make sure that there are no inflammable materials nearby.
- Do not use on closed containers.

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

**PROTECT YOURSELF AND OTHERS!**



**CAUTION!**

This product is solely intended for arc welding.



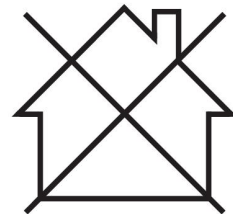
**WARNING!**

Do not use the power source for thawing frozen pipes.



**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.



**NOTE!**

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

In observance of European Directive 2012/19/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 has an assortment of welding accessories and personal protection equipment for purchase. For ordering information contact your local ESAB dealer or visit us on our website.**

## 2 INTRODUCTION

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**TAF 1251** is a remote-controlled, two-phase AC welding power source designed for high-throughput, mechanised submerged-arc welding (SAW).

The welding power source converts, via a thyristor bridge-rectifier, the secondary voltage's sine wave to a square wave with excellent arc ignition and welding characteristics.

The welding power source is fan cooled and is overload protected by a thermal cut-out. Re-setting takes place automatically as soon as the temperature has reduced to a permitted level.

### 3 TECHNICAL DATA

<b>TAF 1251</b>	
<b>Voltage</b>	346/400/415/500 V, 1~50 Hz 400/440/550 V, 1~60 Hz
<b>Primary current</b>	$I_{\max}$ 249 A
<b>Permissible load at: 100 % duty cycle</b>	1250 A / 44 V
<b>Setting range</b>	400 A / 28 V – 1250 A / 44 V
<b>No-load voltage</b>	73 V
<b>No-load power</b>	240 W
<b>Efficiency</b>	87%
<b>Power factor</b>	0.77
<b>Apparent power</b>	86.2 kVA
<b>Active power</b>	64.9 kW
<b>Weight</b>	608 kg
<b>Dimensions L × W × H</b>	774 × 598 × 1228
<b>Insulation class (transformer):</b>	<b>F</b>
<b>Enclosure class</b>	IP 23

#### 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 intended for indoor and outdoor use.



## 4 INSTALLATION

The installation must be carried out by a professional.



### NOTE!

#### Mains supply requirements

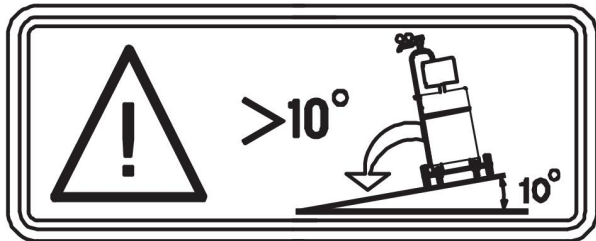
This equipment complies with IEC 61000-3-12 provided that the short-circuit power is greater than or equal to  $S_{scmin}$  at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with a short-circuit power greater than or equal to  $S_{scmin}$ . Refer to the technical data in the TECHNICAL DATA chapter.

### 4.1 Location



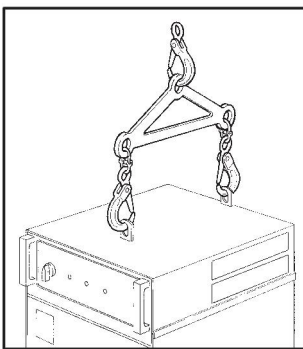
#### WARNING!

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



- Place the welding power source on a level foundation.
- Make sure there is nothing to prevent the cooling.

#### Lifting instructions



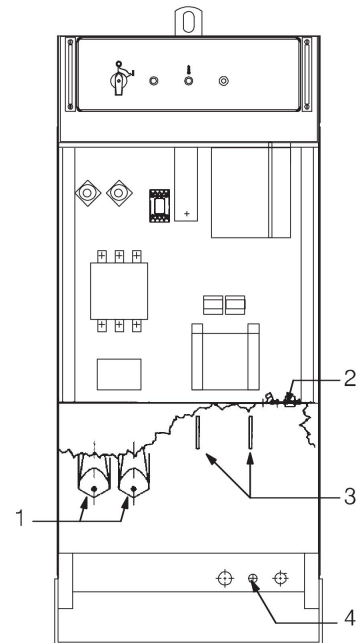
## 4.2 Connections

- On delivery the welding power source is connected for 400 V. For other supply voltage, switch over to the desired voltage on the main transformer and the control transformer according to the "CONNECTION INSTRUCTIONS" chapter.
- Make sure the mains cable has the right sectional area and fuse it with an adequate fuse according to applicable local directions (see "Mains connection" table below in this section).


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Connect the earth cable to the screw marked .

- Connect the mains cable to the main terminal blocks L1 and L3.
- Tighten the cable support (1).
- Connect the control cable between the welding power source and the control unit to the 28-pole contact (2) inside the welding power source.
- Connect the 1-pin measuring cable (4) for measuring the arc voltage to the return cable/welding head.



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Connect a suitable welding and return cable to the contacts (3) marked  on the front of the power source.

### Mains connection

TAF 1251	50 Hz			60 Hz	
	346	400 / 415	500	400 / 440	550
<b>Voltage (V)</b>	346	400 / 415	500	400 / 440	550
<b>Phase current <math>I_{1\text{eff}}</math> (A)</b>	249	212	170	212	170
<b>Cable area (mm<sup>2</sup>)</b>	2x(2x70+35)	2x(2x70+35)	2x95+50	2x(2x70+35)	2x95+50
<b>Fuse, slow (A)</b>	250	200	200	200	200



#### NOTE!

The mains cable areas and fuse sizes as shown above are in accordance with Swedish regulations. For other regions, supply cables must be suitable for the application and meet local and national regulations.

## 5 OPERATION

General safety regulations for handling the equipment can be found in the "SAFETY" chapter of this manual. Read it through before you start using the equipment!



### WARNING!

Never use the welding power source without side plates.

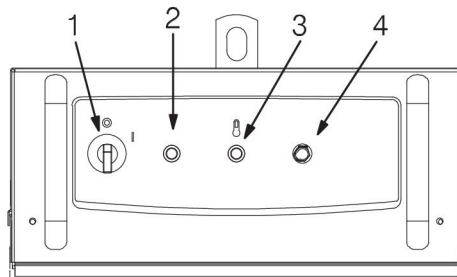


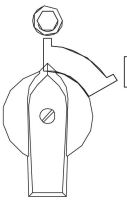

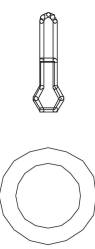

### NOTE!

The power source must be set to analogue mode to use the PEI control unit.

### 5.1 Controls

The front panel contains:



1.		<p>Main circuit-breaker for switching the mains voltage and the fan on and off in the welding power source.</p> <ul style="list-style-type: none"> <li>• Position "1" On</li> <li>• Position "0" Off</li> </ul>
2.		<ul style="list-style-type: none"> <li>• The indicator lamp (white) illuminates when the main switch is switched on.</li> </ul>
3.		<p>Indicator lamp for overheating (yellow)</p> <ul style="list-style-type: none"> <li>• The indicator lamp illuminates when the thermal cutout is deployed due to excess temperature in the welding power source.</li> <li>• The indicator lamp goes out when the temperature in the welding power source has decreased to a permitted level.</li> </ul>
4.		<p>Pushbutton resetting the automatic fuse FU2 for 42 V supply voltage.</p>

## 6 MAINTENANCE

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### CAUTION!

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

### 6.1 Cleaning

#### 6.1.1 Welding power source



### WARNING!

Blocked air inlets or outlets will lead to overheating.

- Clean the welding power source as necessary.  
Dry compressed air is recommended for the purpose.

#### 6.1.2 Contactor



### WARNING!

**Never** use compressed air to clean the contactor without first taking it apart completely.



### NOTE!

To ensure the reliable operation of the contactor, the magnetic parts must be kept clean.

If the contactor has to be cleaned it **must** be taken apart, and all the pieces be cleaned.

Alternatively, the contactor can be replaced.

## 7 ORDERING SPARE PARTS

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### **CAUTION!**

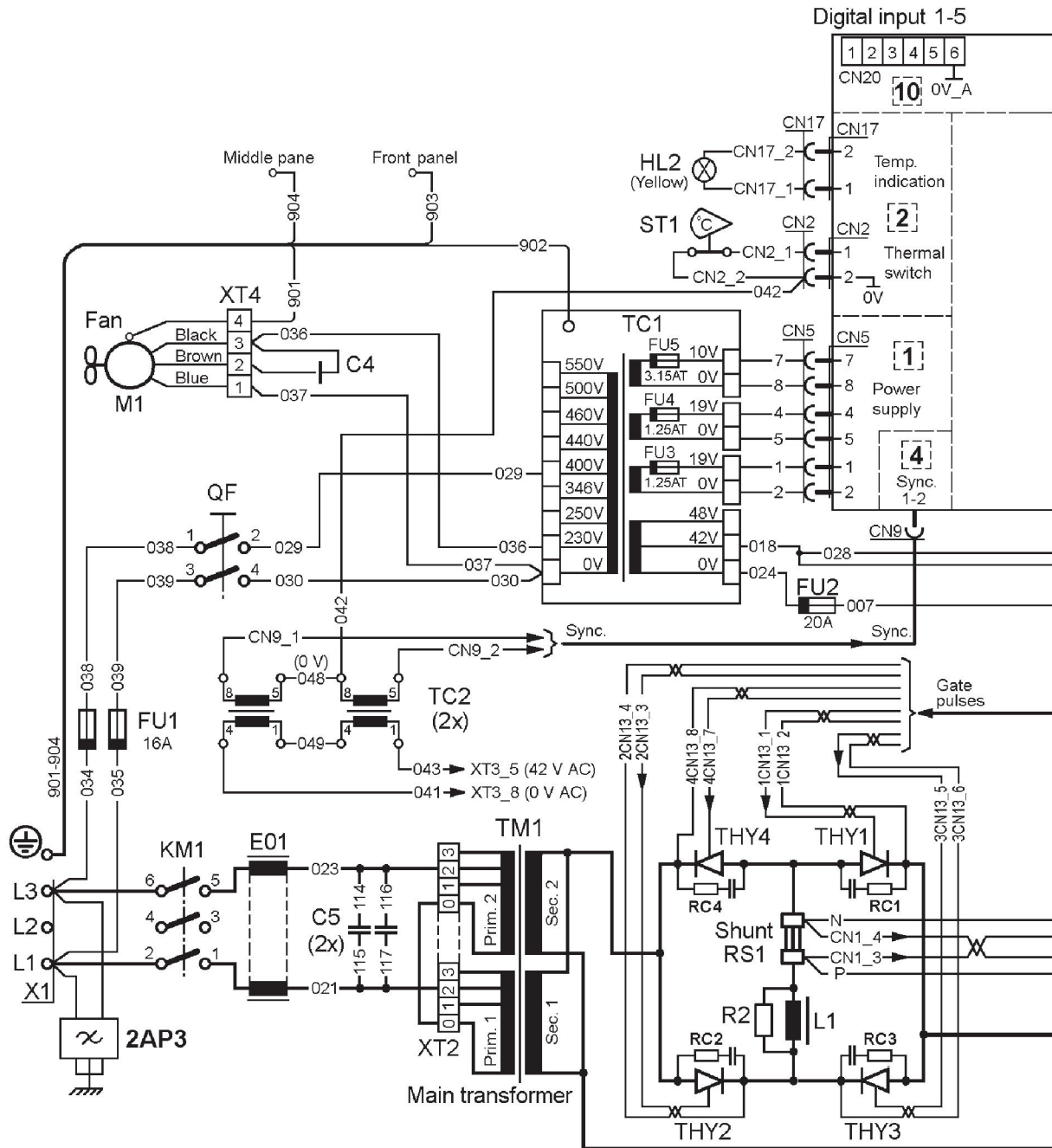
Repair and electrical work should be performed by an authorised ESAB service technician. Use only ESAB original spare and wear parts.

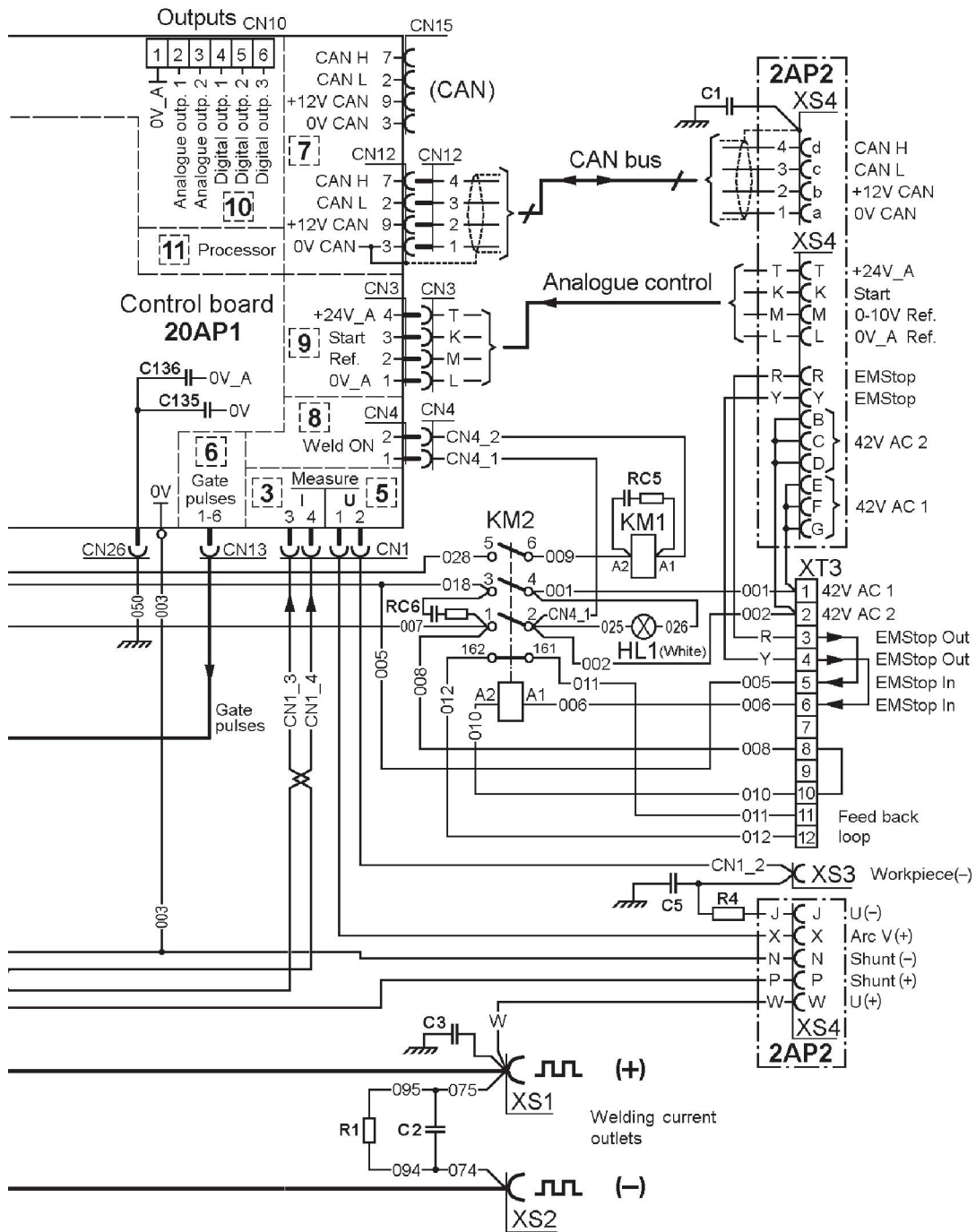
**TAF 1251 is designed and tested in accordance with the international and European standards EN 60974-1 and EN 60974-10. It is the obligation of the service unit which has carried out the service or repair work to make sure that the product still conforms to the said standard.**

Spare parts and wear parts can be ordered through your nearest ESAB dealer, see the back cover of this document. When ordering, please state product type, serial number, designation and spare part number in accordance with the spare parts list. This facilitates dispatch and ensures correct delivery.

# DIAGRAM

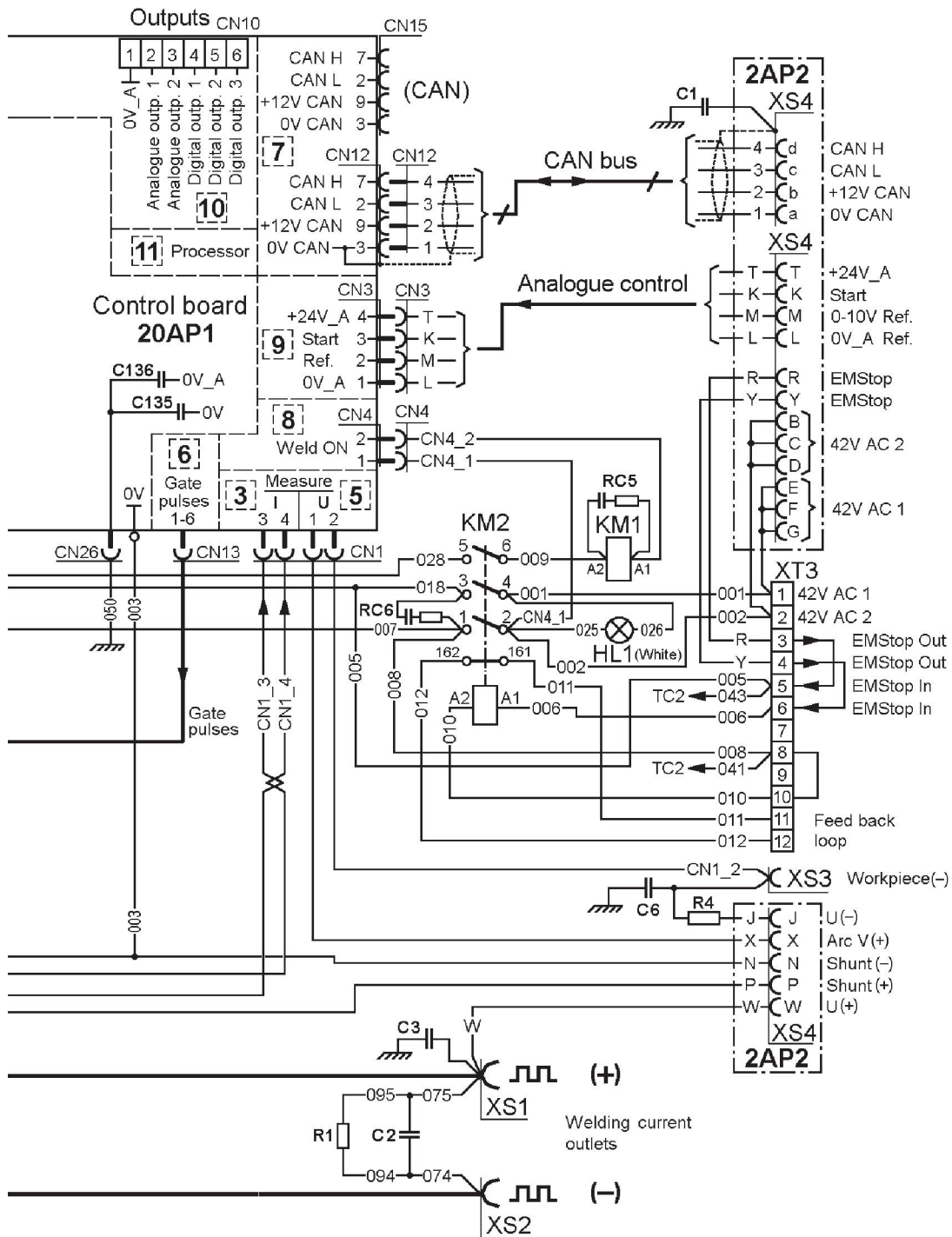
Valid for serial no. 935-xxx-xxxx





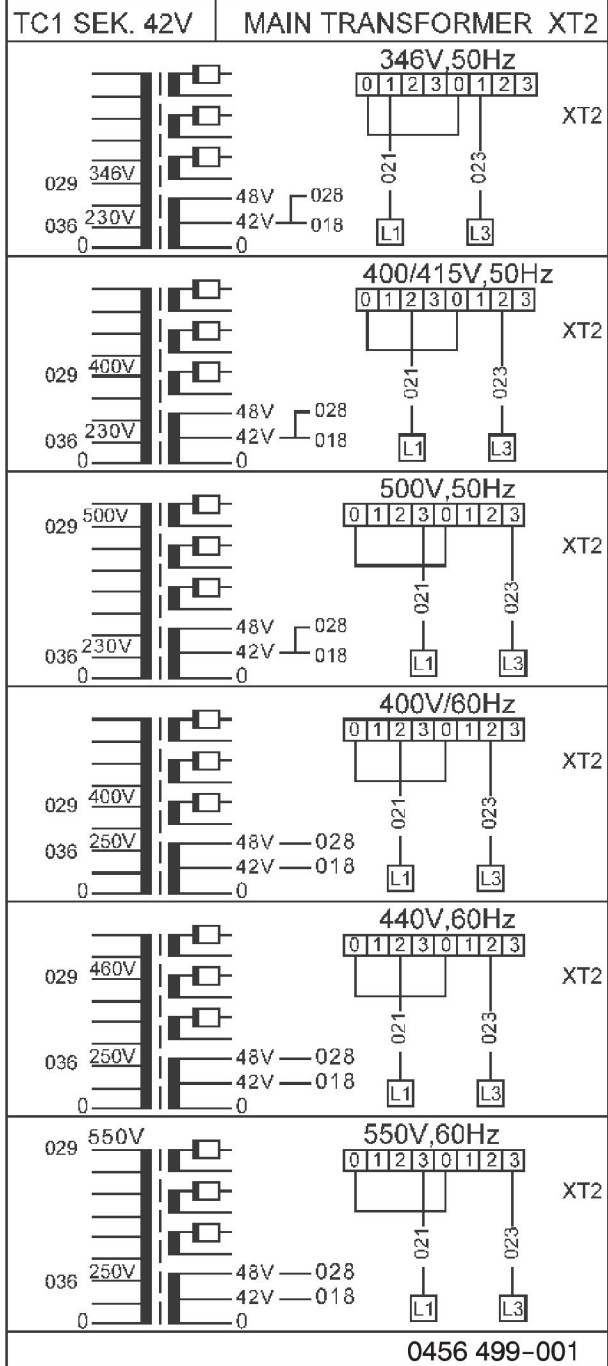






# CONNECTION INSTRUCTION

OMKOPPLING FÖR OLIKA NÄTSPÄNNINGAR.  
 CONNECTIONS FOR DIFFERENT SUPPLY VOLTAGES.  
 SCHALTUNGEN FÜR VERSCHIEDENE NETZSPANNUNGEN.  
 CONNEXIONS POUR DIFFERENTES TENSIONS RESAU.



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**ORDERING NUMBERS**

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Ordering no.	Denomination	Notes
0460 517 880	Welding power source	TAF 1251
0459 839 063	Spare parts list	TAF 1251

Instruction manuals and the spare parts list are available on the Internet at: [www.esab.com](http://www.esab.com)

# ESAB subsidiaries and representative offices

## Europe

### AUSTRIA

ESAB Ges.m.b.H  
Vienna-Liesing  
Tel: +43 1 888 25 11  
Fax: +43 1 888 25 11 85

### BELGIUM

S.A. ESAB N.V.  
Heist-op-den-Berg  
Tel: +32 15 25 79 30  
Fax: +32 15 25 79 44

### BULGARIA

ESAB Kft Representative Office  
Sofia  
Tel: +359 2 974 42 88  
Fax: +359 2 974 42 88

### THE CZECH REPUBLIC

ESAB VAMBERK s.r.o.  
Vamberk  
Tel: +420 2 819 40 885  
Fax: +420 2 819 40 120

### DENMARK

Aktieselskabet ESAB  
Herlev  
Tel: +45 36 30 01 11  
Fax: +45 36 30 40 03

### FINLAND

ESAB Oy  
Helsinki  
Tel: +358 9 547 761  
Fax: +358 9 547 77 71

### GREAT BRITAIN

ESAB Group (UK) Ltd  
Waltham Cross  
Tel: +44 1992 76 85 15  
Fax: +44 1992 71 58 03

ESAB Automation Ltd  
Andover

Tel: +44 1264 33 22 33  
Fax: +44 1264 33 20 74

### FRANCE

ESAB France S.A.  
Cergy Pontoise  
Tel: +33 1 30 75 55 00  
Fax: +33 1 30 75 55 24

### GERMANY

ESAB Welding & Cutting GmbH  
Langenfeld  
Tel: +49 2173 3945-0  
Fax: +49 2173 3945-218

### HUNGARY

ESAB Kft  
Budapest  
Tel: +36 1 20 44 182  
Fax: +36 1 20 44 186

### ITALY

ESAB Saldatura S.p.A.  
Bareggio (Mi)  
Tel: +39 02 97 96 8.1  
Fax: +39 02 97 96 87 01

## THE NETHERLANDS

ESAB Nederland B.V.  
Amersfoort  
Tel: +31 33 422 35 55  
Fax: +31 33 422 35 44

## NORWAY

AS ESAB  
Larvik  
Tel: +47 33 12 10 00  
Fax: +47 33 11 52 03

## POLAND

ESAB Sp.zo.o.  
Katowice  
Tel: +48 32 351 11 00  
Fax: +48 32 351 11 20

## PORTUGAL

ESAB Lda  
Lisbon  
Tel: +351 8 310 960  
Fax: +351 1 859 1277

## ROMANIA

ESAB Romania Trading SRL  
Bucharest  
Tel: +40 316 900 600  
Fax: +40 316 900 601

## RUSSIA

LLC ESAB  
Moscow  
Tel: +7 (495) 663 20 08  
Fax: +7 (495) 663 20 09

## SLOVAKIA

ESAB Slovakia s.r.o.  
Bratislava  
Tel: +421 7 44 88 24 26  
Fax: +421 7 44 88 87 41

## SPAIN

ESAB Ibérica S.A.  
San Fernando de Henares  
(MADRID)  
Tel: +34 91 878 3600  
Fax: +34 91 802 3461

## SWEDEN

ESAB Sverige AB  
Gothenburg  
Tel: +46 31 50 95 00  
Fax: +46 31 50 92 22

ESAB International AB

Gothenburg  
Tel: +46 31 50 90 00  
Fax: +46 31 50 93 60

## SWITZERLAND

ESAB Europe GmbH  
Baar  
Tel: +41 1 741 25 25  
Fax: +41 1 740 30 55

## UKRAINE

ESAB Ukraine LLC  
Kiev  
Tel: +38 (044) 501 23 24  
Fax: +38 (044) 575 21 88

## North and South America

### ARGENTINA

CONARCO  
Buenos Aires  
Tel: +54 11 4 753 4039  
Fax: +54 11 4 753 6313

### BRAZIL

ESAB S.A.  
Contagem-MG  
Tel: +55 31 2191 4333  
Fax: +55 31 2191 4440

### CANADA

ESAB Group Canada Inc.  
Mississauga, Ontario  
Tel: +1 905 670 0220  
Fax: +1 905 670 4879

### MEXICO

ESAB Mexico S.A.  
Monterrey  
Tel: +52 8 350 5959  
Fax: +52 8 350 7554

### USA

ESAB Welding & Cutting  
Products  
Florence, SC  
Tel: +1 843 669 4411  
Fax: +1 843 664 5748

## Asia/Pacific

### AUSTRALIA

ESAB South Pacific  
Archerfield BC QLD 4108  
Tel: +61 1300 372 228  
Fax: +61 7 3711 2328

### CHINA

Shanghai ESAB A/P  
Shanghai  
Tel: +86 21 2326 3000  
Fax: +86 21 6566 6622

### INDIA

ESAB India Ltd  
Calcutta  
Tel: +91 33 478 45 17  
Fax: +91 33 468 18 80

### INDONESIA

P.T. ESABindo Pratama  
Jakarta  
Tel: +62 21 460 0188  
Fax: +62 21 461 2929

### JAPAN

ESAB Japan  
Tokyo  
Tel: +81 45 670 7073  
Fax: +81 45 670 7001

### MALAYSIA

ESAB (Malaysia) Snd Bhd  
USJ  
Tel: +603 8023 7835  
Fax: +603 8023 0225

### SINGAPORE

ESAB Asia/Pacific Pte Ltd  
Singapore  
Tel: +65 6861 43 22  
Fax: +65 6861 31 95

## SOUTH KOREA

ESAB SeAH Corporation  
Kyungnam  
Tel: +82 55 269 8170  
Fax: +82 55 289 8864

## UNITED ARAB EMIRATES

ESAB Middle East FZE  
Dubai  
Tel: +971 4 887 21 11  
Fax: +971 4 887 22 63

## Africa

### EGYPT

ESAB Egypt  
Dokki-Cairo  
Tel: +20 2 390 96 69  
Fax: +20 2 393 32 13

### SOUTH AFRICA

ESAB Africa Welding & Cutting  
Ltd  
Durbanville 7570 - Cape Town  
Tel: +27 (0)21 975 8924

## Distributors

*For addresses and phone numbers to our distributors in other countries, please visit our home page*

[www.esab.com](http://www.esab.com)



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