

LAN 250/315/400

Svetslikriktare

Welding rectifier

Schweißgleichrichter

Redresseur de soudage

Rectificador de soldeo

**Generatore a corrente continua
per saldatura**

Lasgelykrichters

Svejseensretter

Hitsaustasasuuntaaja

Bruksanvisning och reservdelsförteckning

Instruction manual and spare parts list

Betriebsanweisung und Ersatzteilverzeichnis

Manuel d'instructions et liste des pièces détachées

Instrucciones de uso /Lista de repuestos

Istruzioni per l'uso /Elenco ricambi

Gebruiksaanwijzing /Reserveonderdelenlijst

Brugsanvisning og reservedelsfortegnelse

Käyttöohjeet /Varaosaluettelo

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WARNING

**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 keep fumes and gases 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.

MALFUNCTION

- Call for expert assistance in the event of malfunction.

**READ AND UNDERSTAND THE INSTRUCTION MANUAL
BEFORE INSTALLING OR OPERATING.**

PROTECT YOURSELF AND OTHERS!

INTRODUCTION

INTRODUCTION

LAN 250, 315 and 400 are the names of ESAB's new constant voltage welding rectifiers designed for semi-automatic welding (MIG/MAG).

Troubleshooting and repairs call for trade experience. As a rule any major adjustments should be carried out by specially trained personnel.

When contacting ESAB or its retailers please state model and serial number of the machine, which are marked on the rating plate.

TECHNICAL DESCRIPTION

The welding rectifiers are divided into the power unit on one side and the control unit on the other.

The power unit is cooled by a fan and contains the main transformer, rectifier, inductor, thermostatically controlled cooling fan and terminals for voltage selection.

The control unit has controls for switching on and off the mains supply and for setting the voltage. It also contains the ignition unit for easier starting, indicator lamps, welding cable socket, contactors and the control transformer.

The control socket, automatic fuses and welding cable socket are located on the rear panel.

The welding rectifiers are also supplied with a mains cable conforming to international standards for rubber and plastic coated cables.

The welding rectifiers also equipped with two handles, a pair of large rubber wheels and a pair of castors to allow easy movement. There are also two strong lifting lugs designed to allow transport by crane or traverse. The side and front panels of the casing can easily be removed for servicing and maintenance. At the rear of the machine is a shelf for a gas bottle and to allow fitting of a water cooling unit .

The LAN 250/315/400 are also prepared to take a voltmeter and ammeter, switching unit (Feed Selector) and pulse unit (Pulsaid).

The LAN 315/400 may also be fitted with a water cooling unit.

TECHNICAL DATA

TECHNICAL DATA

		LAN 250	LAN 315	LAN 400
Permissible load	60%	250A/27V	315A/30V	400A/34V
	80%	225A/25V	280A/29V	355A/32V
	100%	200A/24V	250A/27V	315A/30V
Setting range		45A/16V - 250/27V	45A/16V - 315A/30V	45A/15V - 400A/34V
Open circuit voltage		16-34V	16-40V	15-43V
Efficiency, power factor at		250A/27V	315A/30V	400A/34V
Efficiency η		0,75	0,75	0,80
Power factor λ		0,97	0,96	0,92
Control voltage		42V	42V	42V
Temperature class		F	F	F
Enclosure class		IP 23	IP 23	IP 23
Cooling		AF	AF	AF
Applications		S	S	S
Weight		150 kg	150 kg	192 kg
<p>Dimensions (lxwxh) 900x708x990 mm</p> <p>The LAN 250, 315 and 400 welding power sources fulfil the requirements of IEC 974.</p> <p>The LAN 250, 315 and 400 may be used with the following mains voltages:</p> <p style="text-align: center;">230/400/500V, 50 Hz 230/440/550V, 60 Hz</p>				

INSTALLATION

The LAN 250/315/400 are delivered as standard connected for 400V/50 Hz, but if specially ordered, may also be connected for other mains voltages (230/415/500V 50 Hz, 230/440/550V 60 Hz).

1. Put the power source in a suitable place and make sure that the rectifier is not covered or positioned so that cooling is obstructed
2. Check that the rectifier is connected for the correct mains supply. Earth the equipment in accordance with the applicable standards. The earth must be connected to the main earthing point marked \oplus on the plate to the left of the mains terminal XT1. Refer to the wiring diagram and the instructions on the inside of the side panel and see on page 113-114 in this instruction manual.
3. The mains cable supplied with the machine is dimensioned for mains voltages of 400V or higher. If the machine is connected to 230V or a longer mains cable is necessary then a heavier cable should be fitted.
4. Connect the control cable to the control socket XS1 marked 42V on the welding power source and to the wire feed unit.
5. Connect the welding cable from the wire feed unit to the socket XS2 marked (+) on the welding power source. Connect the return cable to the workpiece and to one of the sockets marked (-).
6. If a water cooling unit is used, connect this terminal XT3 (230V, 250VA). The earth lead must be connected to the main earthing point.

NOTE

There is a risk of tipping while transporting and storing if the welding equipment leans more than 10°. Note that the stabiliser (which is supplied with the unit) must be fitted to increase the stability, (i.e. when Feed Selector, Puls-Aid or counter balance are used). Fitting is carried out according to the instructions page 112.

OPERATION

OPERATION

Mains switch QF1, Coarse setting switch SA1 and fine setting switch SA2.

Power is supplied to the control circuit when the mains switch is set to position 1, the fan starts and indicator lamp HL1 is lit.

Set the arc voltage using the coarse setting switch SA1 (four settings) and the fine setting switch (ten settings). There are a total of 40 voltage settings.

Main contactor KM1

When the trigger on the welding gun is depressed the main contactor closes and the main transformer TM1 is connected in.

Main transformer TM1

The main transformer is of the three phase type and can be reconnected for various mains voltages and frequencies.

Rectifier bridge V1-V6

The rectifier bridge is a three phase bridge using parallel connected diodes. The diodes are mounted on large heat sinks in the path of incoming cold air. To protect the diodes against transient voltage spikes a capacitor C2 is connected across the welding terminals with a load resistor R1 connected in parallel. This protection is supplemented by two suppressing capacitors C3 and C4 connected between + and earth, and between - and earth.

Ignition kit V7

The purpose of the ignition kit is to improve the starting characteristics of the power source by short-circuiting the inductor at the moment of starting. This has the effect of increasing the rate of rise of the short circuit current so that a stable arc is formed immediately.

Control transformer TC1

The control transformer is a single phase transformer with a 42V secondary voltage rating and a power rating of 210 VA for the LAN 250, or 310 VA for the LAN 315/400, during continuous operation.

The secondary winding supplies the control output XS1, which is fused with a 10A slow automatic fuse FU1. LAN 315/400 has a three pin terminal XT3 (230V, 250VA max) intended for connection of a water cooling unit. This terminal is protected by two 5A automatic fuses, FU2 and FU3.

Inductor L1

The purpose of the inductor is to limit the short-circuiting voltage and produce a "quieter" weld with a minimum of spatter. The inductor is connected in series with the welding circuit and is fitted with a resistor connected in parallel. Welding socket A is used for welding thin sheet and socket C is used for heavier material.

Thermal cut-out ST1

The welding rectifier is equipped with a thermal cut-out which protects the equipment from overheating due to heavy loading or insufficient cooling. The thermal cut-out cuts off the control circuit and the main contactor opens, disconnecting the main transformer. The thermal cut-out is located on the rectifier bridge and is reset automatically when the power source has cooled down.

Cooling fan M1

The power unit is cooled by a two speeds operation fan.

Thermostat ST2

The thermostat is located on the rectifier heat sink and controls the speed of the fan via a capacitor, C5, connected in series. Normally the fan runs at reduced power, but if the temperature rises above 60 °C thermostat ST2 closes, supplying power to contactor KM2 which bypasses capacitor C5 and the fan speed increases to full. The thermostat automatically returns the fan to low speed once the power unit has cooled down enough.

MAINTENANCE

MAINTENANCE

The LAN 250/315/400 require very little maintenance. In normal use all that is needed is to clean the inside of the power source twice a year using compressed air at a reduced pressure.

Measurement of open circuit voltage

The open circuit voltage should be measured during the annual service or as a part of troubleshooting. Measurement can be made using a universal meter or voltmeter.

1. Disconnect the welding cable (+) from the power source.
2. Connect the meter between the positive terminal and one of the negative return terminals. Make sure the meter is connected for the right polarity.
3. Loosen the wire feed pressure roller so that wire cannot be fed forwards when the trigger is pressed.
4. Start measurements with switches SA1 and SA2 set to 4/10 (coarse setting/fine setting). Work downwards to 1/1.
5. Compare the measured values with the static characteristic for the power source. The open circuit voltage = the voltage of the power source when unloaded, i.e. when welding current = 0.

Measurement of arc voltage

Insert the meter probes between the rubber sheath and the cable on each of the welding cable terminals. Make sure that the probes make good contact with the brass part of the terminals. The arc voltage can now be measured during welding.

IMPORTANT

This welding equipment has been designed, manufactured and tested to the highest quality standards to ensure long and trouble free life. However, regular maintenance is an essential part of keeping the machine operating in a reliable and safe manner and your attention is drawn to any maintenance instructions that are contained in this manual.

In general, all welding equipment should be thoroughly inspected, tested and serviced at least annually. More frequent checking will be required when the equipment is heavily used.

Wear and tear, particularly in electro-mechanical and moving components, are gradual processes. Caught in time, repair costs are small and the benefits in performance, reliability and safety are significant. Left alone, they can put the equipment, and you at risk.

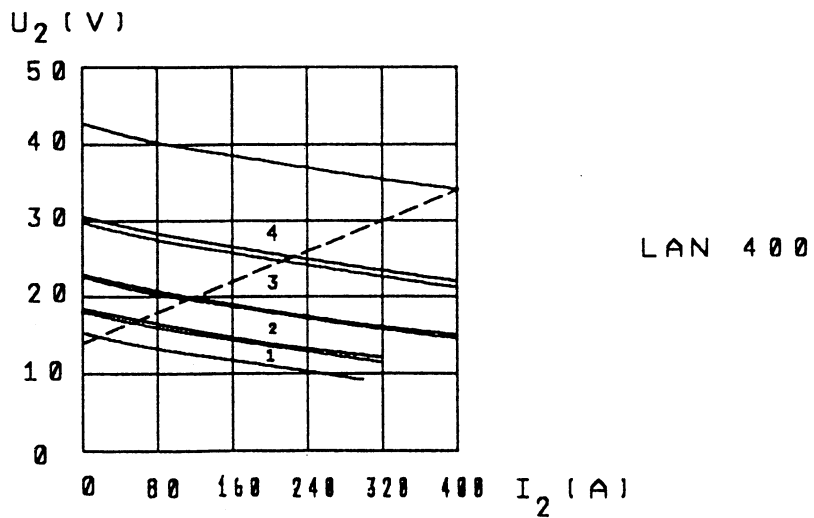
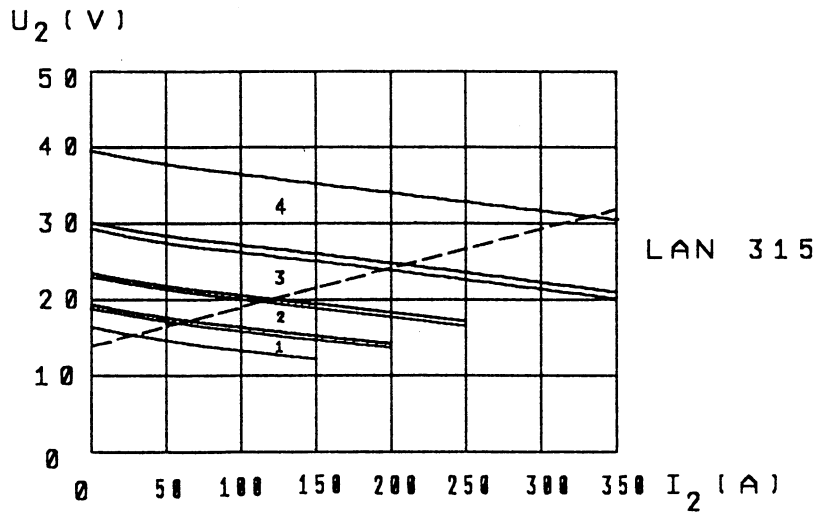
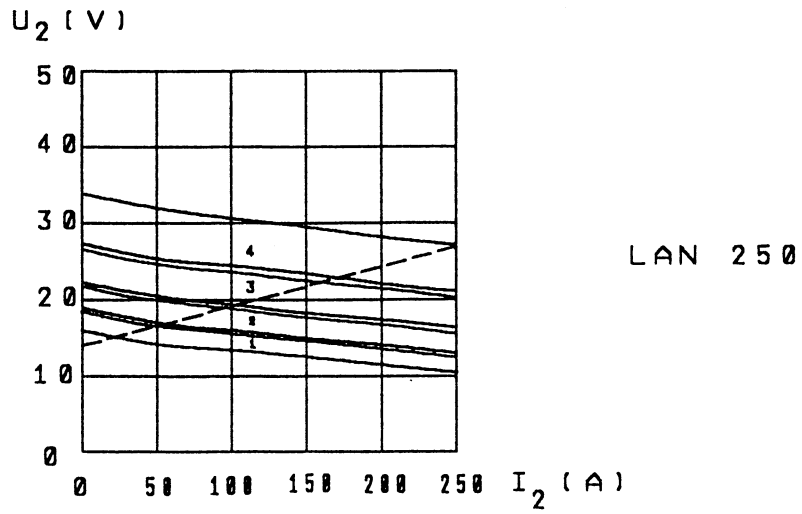
Have this equipment regularly inspected and maintained by an approved service centre.

ACCESSORIES

LAN 250	LAN 315	LAN 400	
1	1	1	319 429-886 Instrument set, analogue
1	1	1	368 123-883 Instrument set, digital
1	1	1	468 040-880 Switching unit
1	1	1	467 570-880 Pulse unit (with instrument) 400-500V
1	1	1	467 570-881 Pulse unit 400-500V
1	1	1	467 571-882 Pulse unit 230V
	1	1	156 820-880 Cooling unit OCD 1
	1	1	414 191-881 Cooling unit OCE 2H

STATIC CHARACTERISTICS

STATIC CHARACTERISTICS

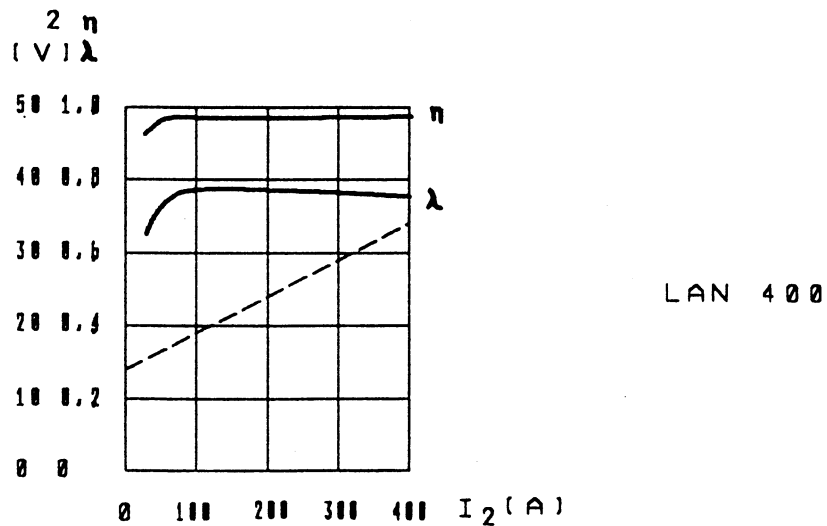
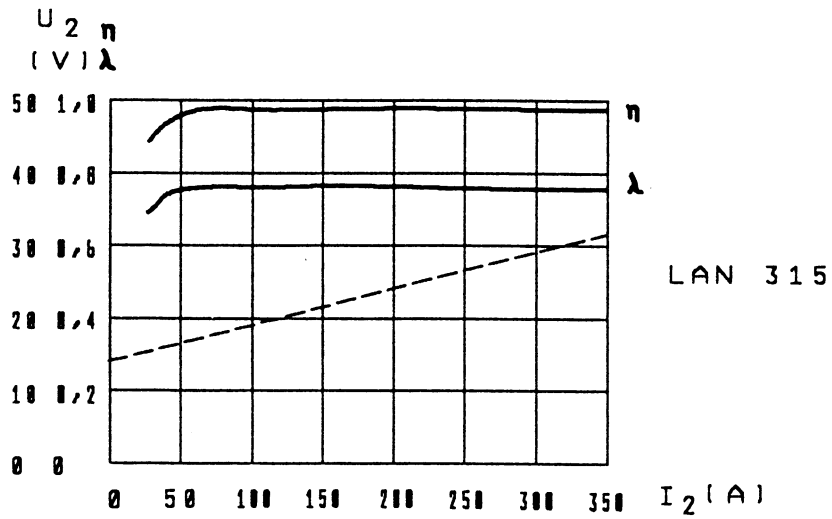
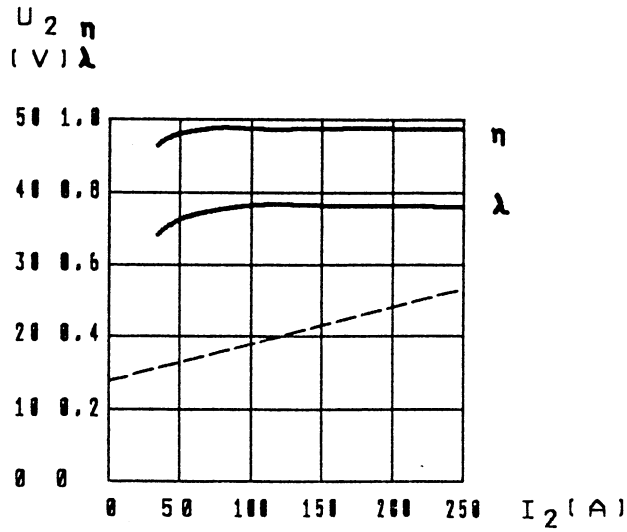


----- = Standardized load voltage acc to IEC 974

ba02sk

STATIC CHARACTERISTICS

EFFICIENCY η / POWER FACTOR λ



----- = Standardized load voltage acc to IEC 974

ba02ve

MAINS CONNECTION

MAINS CONNECTION

	LAN 250						
	3 ~ 50 Hz				3 ~ 60 Hz		
Voltage V	230	400	415	500	230	440	550
Current A							
60%	24	14	13	11	24	12	10
80%	21	12	11	10	21	11	9
100%	18	10	10	8	18	9	7
Fuse A slow	20	16	16	10	20	16	10
Cable mm ²	4x2,5 2,5	4x2,5 2,5	4x2,5 2,5	4x2,5 2,5	4x2,5 2,5	4x2,5 2,5	4x2,5 2,5

	LAN 315						
	3 ~ 50 Hz				3 ~ 60 Hz		
Voltage V	230	400	415	500	230	440	550
Current A							
60%	33	19	18	15	33	17	14
80%	27	16	15	13	27	14	12
100%	23	13	13	11	23	12	10
Fuse A slow	25	16	16	16	25	16	16
Cable mm ²	4x4 4	4x2,5 2,5	4x2,5 2,5	4x2,5 2,5	4x4 4	4x2,5 2,5	4x2,5 2,5

	LAN 400						
	3 ~ 50 Hz				3 ~ 60 Hz		
Voltage V	230	400	415	500	230	440	550
Current A							
60%	46	26	25	21	46	24	19
80%	38	22	21	18	38	20	16
100%	32	18	18	15	32	17	13
Fuse A slow	50	20	20	20	50	20	16
Cable mm ²	4x6 6	4x2,5 2,5	4x2,5 2,5	4x2,5 2,5	4x6 6	4x2,5 2,5	4x2,5 2,5