ESAB

LAG 200/315/400

Svetslikriktare
Welding rectifiers
Schweißgleichrichter
Redresseurs de soudage

Bruksanvisning och reservdelsförteckning
Instruction manual and spare parts list
Betriebsanweisung und Ersatzteilverzeichnis
Manuel d'instructions et liste des pièces détachées

317 090-017

Manual

Technical description

The LAG 200, 315 and 400 are three welding rectifiers of constant potential type designed for semi-automatic welding (MIG/MAG).
The rectifiers are divided vertically into two sections: the power section and the control section.
The fan-cooled power section includes the main transformer, rectifier, inductor, cooling fan and a connection block for mains voltage changeover. In addition, the LAG 400 has a 220 V~ terminal block for connection of a cooling unit.
The control unit is housed in a dustproof area in the front of the machine, which is entirely separated from the forced-draft cooled power unit. It includes the main on/off switch including the coarse setting and fine setting selector for welding current, a pilot lamp, terminals for control and welding cables, contactor, fuses and auxiliary transformer.
The rectifier is provided with two handles, two solid rubber wheels and two swivelling castors facilitating easy transport. For lifting by crane or traverse the rectifier is equipped with two heavy-duty lifting eyes. The side panels of the casing are easily removed for servicing and inspection.
The back of the rectifier is equipped with a platform, which holds a gas cylinder and optionally, a cooling unit.
The LAG 200/315/400 can be fitted with a counterbalance device for the welding gun and hose. The counterbalance device makes the welding gun and hose feel almost "weightless".

Mains and coarse setting selector K 32 and fine setting selector K 4
By setting the current selector to position 1, 2, 3 or 4, the operating circuit is alive, the cooling fan starts and the pilot lamp K 38 lights up. Coarse adjustment of arc voltage is controlled with the same selector, K 32, (four positions) and fine setting is controlled with fine setting selector K 4 (ten positions). In other words, 40 different arc voltage settings can be selected.

Mains contactor K 8
When pressing the welding gun trigger, the main contactor is activated and switches in the main transformer K 1.

Main transformer K 1
The main transformer is of three-phase type and can be run off various mains voltages and cycles.

Rectifier bridge K 2
The K 2 is a three-phase rectifier bridge with parallel snap-action diodes. The diodes, which are mounted according to polarity, are cooled by sturdy heatsinks mounted in the incoming flow of cooling air. To protect the diodes against any transient surge, a capacitor K 27:2 and a parallel-connected discharge resistor K 56 are placed across the welding current outlet.

Auxiliary transformer K 9
The auxiliary transformer is a single-phase full transformer with a 42 V secondary rated voltage and a rated capacity of 200 VA constant potential for LAG 200/315 and 400 VA for LAG 400. The secondary winding feeds the auxiliary current terminal K 24:3, which uses a 10 A slow fuse, K 21:2. LAG 400 has a 220 V~, max 200 VA terminal block K 50 intended for the connection of a cooling unit, secured on the primary side of the auxiliary transformer by two 4 A fuses, K 21:1.

Inductor K 12
The purpose of the inductor is to limit the short-circuiting current, giving "softer" welding with a minimum of spatter.

Cooling fan K 28
The power section is cooled by a low-speed, low-noise cooling fan, which is mounted in the top part of the power section.

Overload cut-out K 31
The welding rectifier is provided with a thermostat, which protects the rectifier against **overheating** caused by overload or impaired cooling. The thermostat interrupts the auxiliary current circuit, thereby switching off the main contactor and cutting out the main transformer. The thermostat is located on the rectifier bridge. It is automatically reset when the power unit has cooled.
The LAG 200, LAG 315 and LAG 400 are prepared for volt and ammeter connection.

Installation

Position the machine in a clean environment and make sure that it is not covered or positioned in such a manner that the flow of cooling air is obstructed. The fuses and cable areas recommended are in accordance with the Swedish regulations for rubber and plastic insulated cables. Modifications may be necessary for other countries, where the pertinent regulations may differ.

1. Make sure that the main transformer connection block K 30 and control transformer K 9 are wired for the correct voltage and that the correct fuses are used. See wiring diagram and connection instructions on the inside of the rectifier plate and on pages 12–15 in this manual.
2. Connect the machine to a three-phase mains supply and the control cable between the welding rectifier and the wire feed unit.
3. Connect the welding cable (+) between the welding rectifier and the wire feed unit and the earth return (–) between the welding rectifier and the workpiece. Make sure that the earth return is connected directly to the workpiece.

Maintenance and service

The LAG 200/315/400 require a minimum of service. Under normal conditions, it is sufficient to use dry compressed air under reduced pressure to blow the inside and outside of the machine clean once a year.

Measuring of open-circuit voltage
Open-circuit voltage should be measured during the annual overhaul and also trouble-shooting. Open-circuit voltage measurement is carried out with a universal instrument or voltmeter.

1. Lossen the welding cable (+) from the welding rectifier.
2. Connect the measuring instrument between one of the two terminals marked (–) and the terminal marked (+). Check that the instrument cables are connected correctly for the polarity in question.
3. Release the pressure roller in the feed unit to prevent the wire from being fed forward, when the trigger of the welding gun is trigged.
4. Commence measuring on selectors K 32 and K 4 with 4/10 settings (coarse position/fine position). Then move down to setting 1/1.
5. Compare the measured values with the static characteristics shown on page 9. Open-circuit voltage= welding rectifier voltage, when not under load, i.e. the welding current is=0.

Measuring of arc voltage
The measuring probe of the instrument is to be inserted between the rubber collar of the connector and the cable. Make sure that the probe is in contact with the brass of the cable connector. Arc voltage can now be measured while welding is being carried out.

Technical data

	LAG 200	LAG 315	LAG 400
Permitted load (DC), continuous operation	160 A/22 V	250 A/27 V	315 A/30 V
at 60% duty cycle	200 A/24 V	315 A/30 V	400 A/34 V
Setting range (DC)	30 A/15 V– 200 A/24 V	50 A/15 V– 315 A/30 V	70 A/15 A– 400 A/36 V
Auxiliary voltage	42 V	42 V	42 V
Max open-circuit voltage	33 V	39 V	46 V
Efficiency and power factor at	200 A/24 V	315 A/30 V	400 A/34 V
Efficiency (η) =	0,75	0,77	0,78
Power factor (λ) =	0,96	0,95	0,95
Temperature class.	H 180°C	H 180°C	H 180°C
Protection criteria	IP 22 AF	IP 22 AF	IP 22 AF
Application classification	K	K	K

Dimensions and weigths

Width	720 mm (28.35")	720 mm	720 mm
Depth	885 mm (34.84")	885 mm	885 mm
Height	930 mm (36.6")	930 mm	930 mm
Weight	120 kg (lbs 265)	160 kg (lbs 353)	200 kg (lbs 441)

LAG 200/315/400 satisfy VDE 0542 for welding rectifiers of constant voltage type.
SEN 8301 spec. ISO R 700, NF A 85 013.

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!