

LHI 425 Pipeweld

Welding Rectifier



Instruction Manual



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GENERAL INSTRUCTIONS

- These instructions refer to any equipment produced by ESAB S.A. adapting to individual characteristics of each model.
- Strictly follow the instructions in this manual and abide by the requisites and other aspects of the welding process to be used.
- Do not install, operate or repair this equipment without reading this manual before proceeding.
- Before installing, read the instruction manual of accessories and other parts (gas regulators, pistols or welding torches, horimeter, controls, meters, auxiliary relays, etc) which will be aggregated to the equipment and make sure the accessory is compatible.
- Make sure that all required material for welding was correctly specified and is duly installed as to meet all specifications of the intended application.
- When in use, make sure that:
 - * auxiliary equipment (torches, cables, accessories, electrode holder, pipes, etc.) are correctly and tightly plugged. Refer to respective manuals).
 - * shield gas is appropriate to the application process.
- For further information, about this or any other ESAB product, do not hesitate to contact our Technical Service Department or other ESAB authorised company.
- ESAB S.A. shall not be liable or in any way responsible for any accident, damage or production break caused by the non compliance with the instructions in this manual or with industrial safety rules.
- Accidents, damages or production break caused by installation, operation or repair of this or any other ESAB product performed by non-qualified staff are of entire responsibility of the owner or user of this equipment.
- Use of non-original parts and/or not approved by ESAB S.A. when repairing this or any other ESAB product is entirely responsibility of the owner or user and implies total loss of warranty.
- Warranty of any ESAB product will be automatically cancelled in case any of the instructions and recommendations in the Warranty Certificate and/or in this manual are not followed.

I M P O R T A N T !

This equipment was designed and produced according to national and international rules which regulates operation and safety criteria; consequently, the rules in this manual and specially those relating to operation and maintenance must be strictly followed not to cause problems in performance and not to cancel warranty.

1) SAFETY

This manual has the purpose to guide experienced people about installation, operation and maintenance for LHI 425 Pipeweld. DO NOT allow non-qualified personnel to install, operate or repair this equipment.

You must read and understand all information in this manual.

Remember that:



Electrical shock can kill



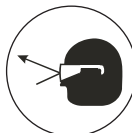
Welding smoke and gases can be harmful to your health



Electrical arcs burn the skin and hurt your sight



Noise in high level can damage your hearing



Spark and metal particles and wire end can hurt your eyes

- As any electrical machine or equipment, Power Source LHI 425 Pipeweld must be disconnected from the power network before performing any maintenance
- To perform any internal measuring or intervention which requires the equipment to be energized, make sure that:
 - * the equipment is correctly grounded;
 - * the site is not wet;
 - * all electrical connections, internal or external, are duly tightened.

2) DESCRIPTION

2.1) General

Three-phase power source for DC welding with electronic current adjustment. Sturdy, reliable, with excellent arc characteristics and recommended for **cellulosic electrodes** and highest standard applications with any electrode, they are suitable to be used in **pipe welding**, shipyards and steel construction.

LHI 425 Pipeweld ensure an extraordinary stability of the welding parameters and their "fast dynamic characteristic" allows to obtain quality results also with the most difficult cellulosic and basic electrodes.

- * Adjustable **Arc Force** for choosing the best welding arc dynamic characteristic.
- * Electrode **Antisticking** function.
- * Automatic compensation for mains voltage fluctuations within $\pm 10\%$.
- * Suitable for welding with any kind of electrode.
- * Gouging facility with carbon electrodes, and TIG welding.
- * "**Stand-by**" fan function on when demanded.
- * Overcurrent protection.
- * Protected electronic parts permit the equipment to be used in the most severe work conditions.
- * **Electronic Welding Current Adjustment** through easy-to-set calibrated, with the switch for low and high set.
- * **Digital A/V**.
- * **Remote Control** with cable from 5 up to 50 m (optional).
- * Truck system under solid rubber wheels (optional).

3) POWER FACTOR

Power factor is the proportion between the time that a welding machine can provide the maximum welding current (load time) and a reference time; according to international standards, reference time is 10 minutes.

The 60% Nominal Power Factor means that a machine can repeatedly provide its nominal welding current during periods of 6 min. (load) and is followed by a 4-minute rest (the machine does not provide welding current) (6 + 4= 10 min.). This process is repeatedly done so that the temperature of its internal components do not exceed the project stated limits. The same goes for any power factor value.

In LHI Rectifier the allowed power factor increases up to 100% as the used welding current decreases; conversely, the allowed power factor decreases as the welding current increases up to its maximum range.

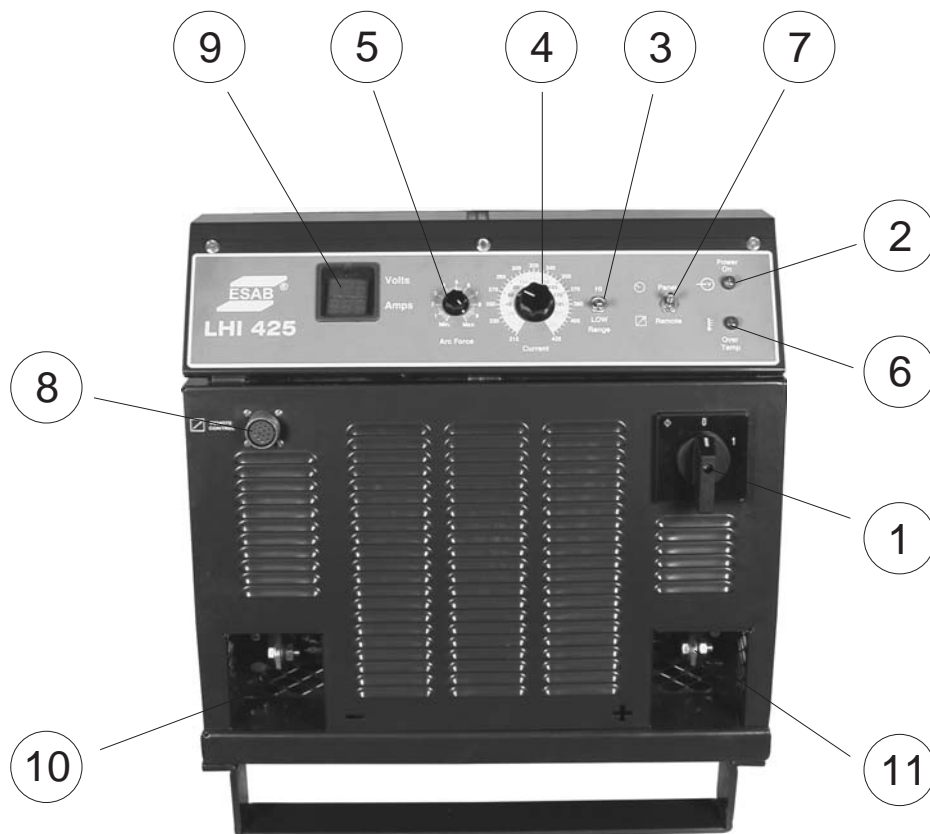
Table 4.1 shows authorised loads for LHI Rectifier.

4) TECHNICAL CHARACTERISTICS

TABLE 4.1

Current range (A)	5 - 425	
Nominal current (A) @ 100% (A)	300	
Maximum voltage at open circuit (V)	71	
Authorised load		
- Power factor (%)	60	100
- Current (A)	400	300
- Voltage (V)	36	32
Power Supply (V - Hz) Three-phase	230/460 - 60	
Apparent Nominal Power (KVA)	34,3	
Thermal Class	H (180°C)	
Size (w x l x h) - (mm) without truck	600 x 780 x 700	
Weight (Kg)	230	

5) CONTROLS



5.1) Front Panel

- 1) ON/OFF switch - allows the power source to be energized.
- 2) PILOT LAMP - if its on indicates that the power source is working.
- 3) HI/LOW switch - this switch determines in which range the current will be adjusted.
- 4) CURRENT POTENTIOMETER - to adjust the welding current value, in two ranges.
- 5) ARC FORCE potentiometer - its adjustment alters the short circuit current, the arc power penetration. The adjustment of ARC FORCE potentiometer is in the low part of the scale provides smaller values of the short circuit current and more stable arc. The adjustment on the upper part of the scale increases the short circuit value and the penetration.
- 6) High-temperature Pilot Lamp - in the case an internal over heating this lamp goes on and welding circuit are turned off, that is, the source does not provide welding current and the fan keeps on. When the internal temperature of the source goes back to its normal value the lamp turns off and the welding operation can be restarted.
- 7) LOCAL/REMOT - to select the command using the machine panel potentiometer or the remote control.
- 8) OUTLET - to connect the remote control.
- 9) DIGITAL VOLT/AMP. - its indicate voltage and current. Allows the reading of voltage and current after open arc welding.
- 10) OUTPUT NEGATIVE TERMINAL - for welding cable connection.
- 11) OUTPUT POSITIVE TERMINAL - for connect the electrode holder cable.

6) INSTALLING

6.1) Receiving

When you receive a LHI 425 Pipeweld, remove all packaging which involves the equipment and check for possible damage which could have happened by handling. Any complaints as to damage in shipping must be directed to the carrier company.

Carefully remove any obstacle to the cooling air.

Note: In case a LHI 425 Pipeweld is not installed immediately, keep it in the original packaging or stock it in a dry and ventilated place.

6.2) Working place

To have a safe and efficient operation many factors must be considered to determine where the welding machine should be installed. Proper ventilation and cleanliness are necessary to cool the equipment and for the operator's safety.

It is necessary to leave some room around the LHI 425 Pipeweld with at least 700 mm width for ventilation, operation as well as preventive or corrective maintenance.

Installation of any device to filter ambient air reduces the air volume available for machine refrigeration and can cause internal components overheating. Installation of any filtering device non authorised by the supplier cancels equipment warranty.

6.3) Power supply

The requisites for voltage supply are indicated in the nominal board. LHI 425 Pipeweld is designed to operate with three-phase 230 or 460 V in 60 Hz. They must have an independent feeding line with full

capacity to assure its best performance and reduce possible welding failures or damage caused by other equipment such as resistance welding machines, impact presser or electrical engines, etc.

For power supply of a LHI 425 Pipeweld the operator can use the input cable (4 conductors - 3 feeders and 1 grounding) or another one similar links with desired length. In any situation power supply must be through a properly dimensioned exclusive switch with protection fuses or circuit breakers.

Table below gives information for dimensioning cables and line fuses; eventually consult with local rules.

TABLE 6.1

Model	Voltage (V)	Consume in nominal load (A)	Conductors (copper - mm ²)	Fuses (A)
LHI 425 Pipeweld	230	66	10	80
	460	34	10	45

LHI 425 Pipeweld is supplied to operate from a 460V input .In case your input is different, primary connections must be changed as indicated in the electrical scheme. Removal of right side window gives direct access to terminal bars of primary connections.

IMPORTANT !

The grounding terminal is connected to the RECTIFIER chassis. It must be connected to an efficient grounding point of the general power supply system. DO NOT connect the grounding conductor of the input cable to any of the terminals of the ON/OFF switch, which would put the machine chassis under electrical tension.

All electrical connections must be firmly tightened to avoid sparking risks, overheating or circuit voltage drop.

NOTE: DO NOT USE THE NEUTRAL OF THE POWER SUPPLY SYSTEM FOR GROUNDING.

6.4) Welding Circuit

The good functioning of a LHI 425 Pipeweld also depends on the use of an insulated copper welding cable, which must be the shortest possible and compatible to the considered application(s), it must also be in good shape and firmly connected to its terminals; Electrical connections in the to-be-welded piece or in the work station and in the set "negative" terminal must be firm.

Whatever the length (the shortest possible) and whatever the used welding current, the welding cable must correspond to the maximum current which the used RECTIFIER can supply at power factor 60%.

Welding circuit electrical strength causes voltage drops which add to Rectifier natural internal drop, reducing the arc voltage and the maximum available current making the arc unstable.

7) OPERATION

After connecting the LHI 425 Pipeweld to the power supply system and connecting the electrode holder cable and the welding cable, proceed to the following operations:

- 1) Place the ON/OFF switch on the ON position;
- 2) Preset the switch HI/LOW;
- 3) Preset the welding current through the panel or remote control potentiometer. The potentiometer clockwise rotation increases the current value; anti clockwise rotation decreases current value;
- 4) Preset the Arc Force values;
- 5) Open the arc and, if necessary, readjust current or Arc Force, or both.

NOTE: the welding parameters value basically depend on the material and electrode diameter in use, on the thickness of the to-be-welded piece as well as on the welding position.

8) MAINTENANCE

8.1) General

In normal environment and operation conditions, LHI 425 Pipeweld does not require any special maintenance service. You must only clean it internally at least once a month, with low pressure, dry and oil-free compressed air.

After cleaning with compressed air, check the tightening of electrical and components connections. Check for possible cracks in the insulation of electrical wires or cables, including welding cable and other insulators. Replace them in case they are defective.

In case the refrigeration exhauster engine is damaged, its replacement is simple and its repair follow usual procedures for industrial engine.

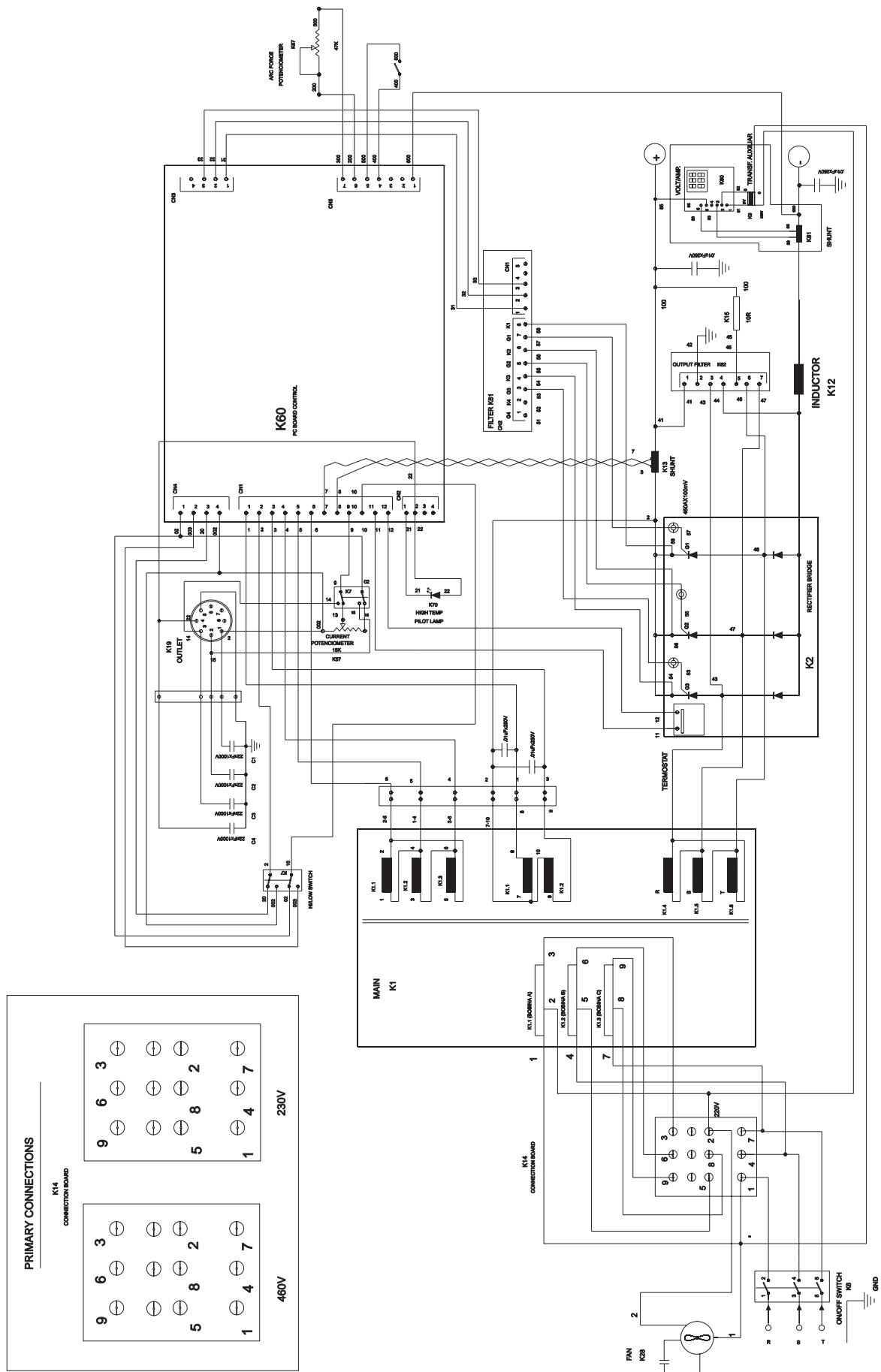
Overload due to lack of refrigeration or due to rectifier use in conditions other than the ones designed by ESAB can damage the rectifier bridge which will open or get into short circuit. In such circumstances, the in-empty voltage is inferior to designed value; replace the rectifier bridge (K2).

8.2) Repairing

To assure perfect functioning and performance of the ESAB equipment, use only original replacement parts supplied by ESAB or the ones with its approval. The use of non-original or not-approved parts leads to warranty cancellation.

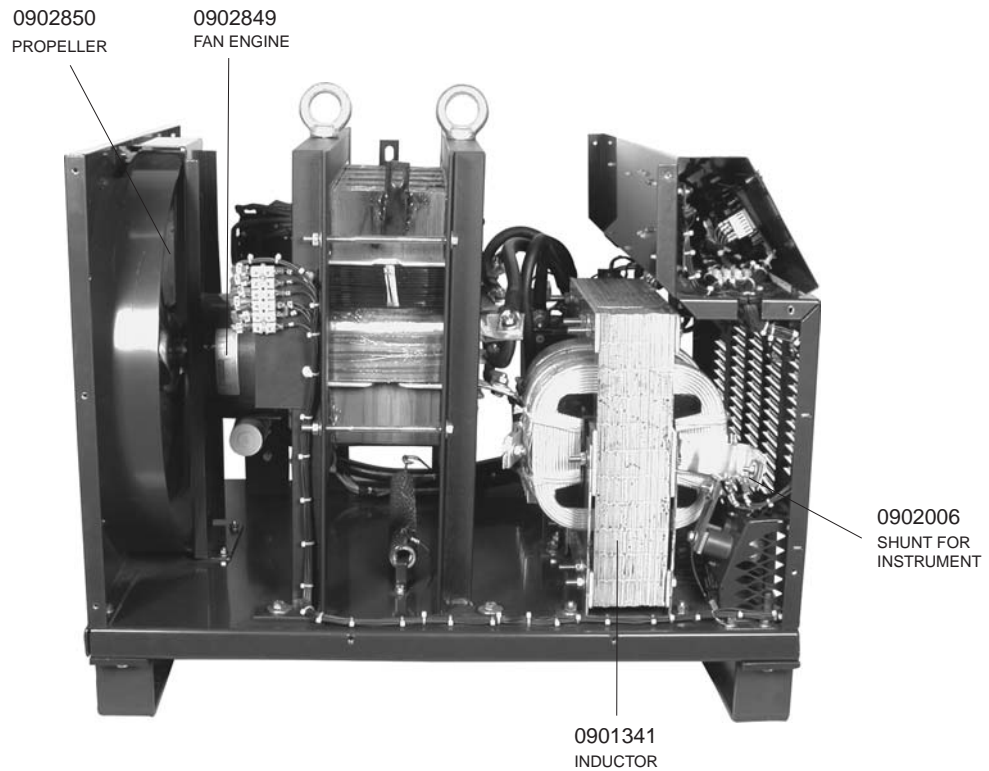
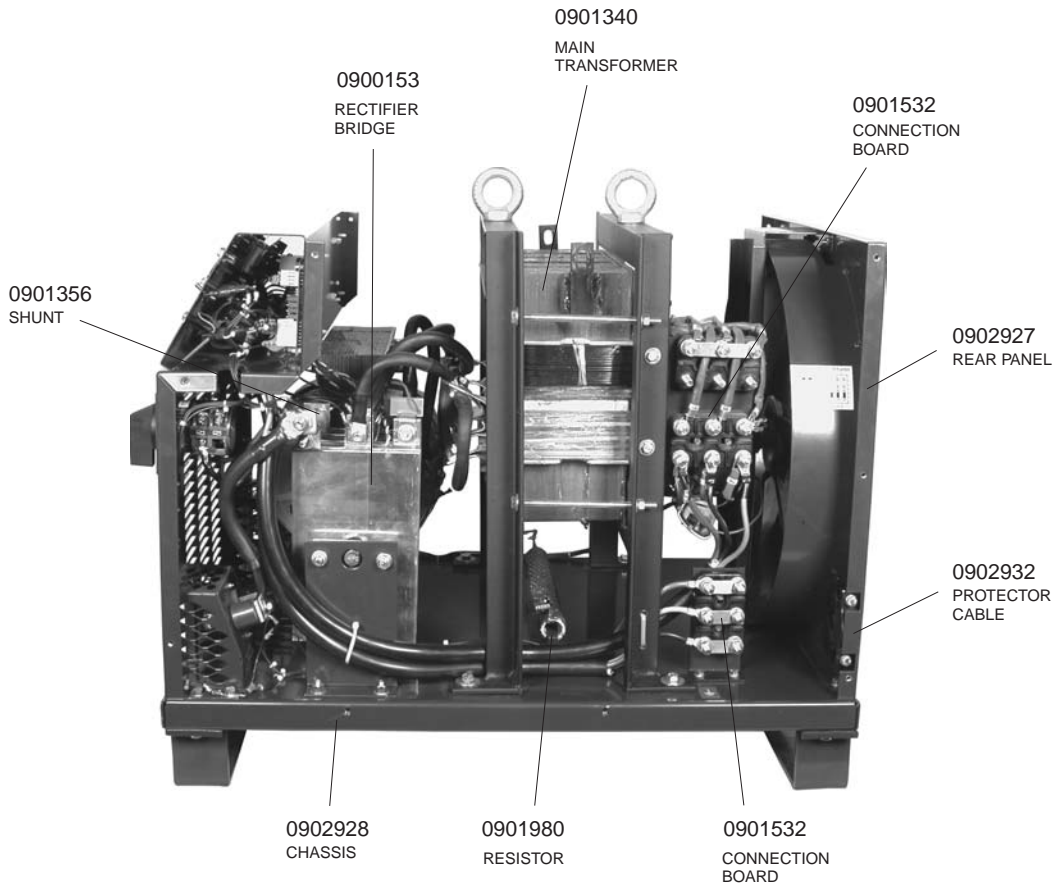
Replacement parts can be purchased at ESAB authorised services or sales branches as indicated at the last page of this manual. You must always indicate model and series number.

9) ELECTRICAL SCHEME

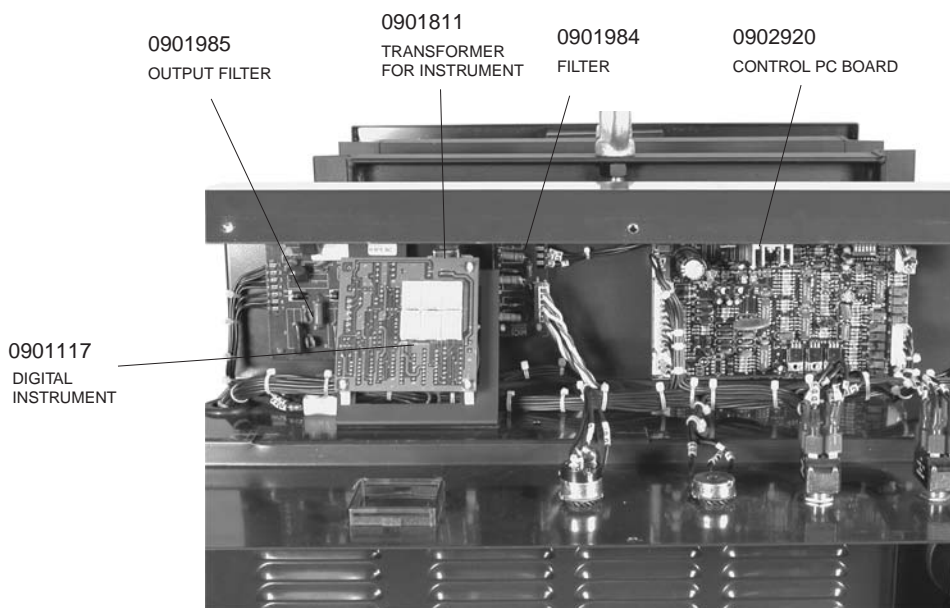
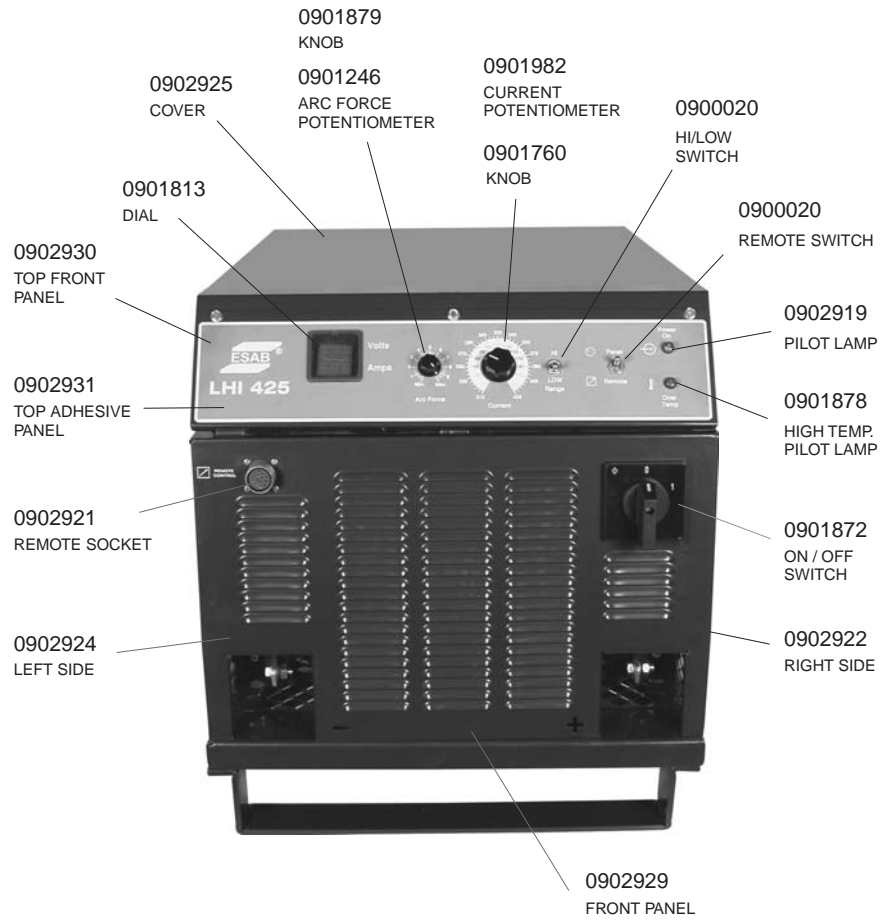


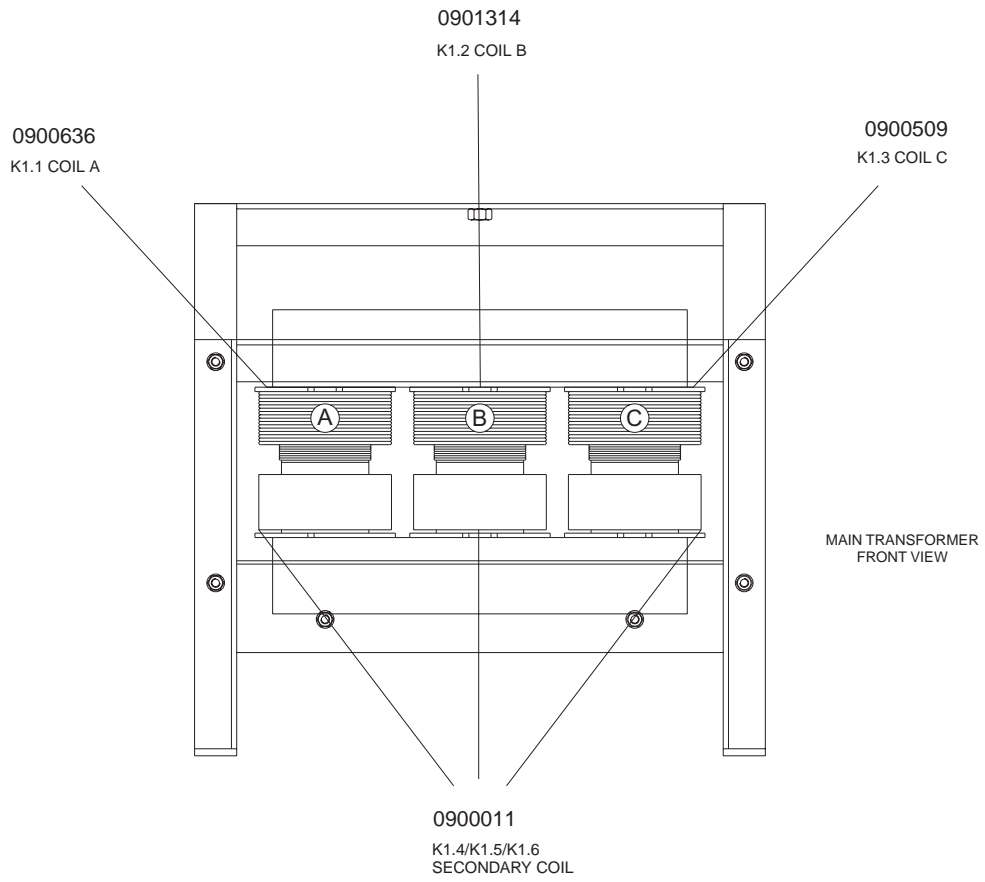
10) REPLACEMENT PARTS

10.1) LHI 425 Pipeweld



10.1) LHI 425 Pipeweld (cont....)





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WARRANTY

ESAB S/A warrants to the purchaser/User that ESAB equipment is produced under strict quality control, assuring its perfect functioning and characteristics, when installed, operated and kept according to the Instruction Manual of each product.

ESAB guarantees replacement or repair of any part or component of equipment produced by ESAB in normal use conditions, which may be defective due to production fault, for the warranty period stipulated for each equipment or model.

ESAB obligations in the herein warranty is limited only to repair or replacement of any part or component when duly proved by ESAB or an Authorised Servicer.

Pieces and parts like wheels and wire guides, Analogical or digital meters which may be damaged by any object, damaged electrical cable or commands, electrode holder or holders, welding or cut torch/pistol nipples, torches and their components, which are worn out by normal use of the equipment or any other damage caused by lack of preventive maintenance, are not covered by this warranty.

This warranty does not cover any ESAB equipment, part or component which could have been altered, subjected to incorrect use, had an accident or damage caused by shipping or atmospheric conditions, improper installation or maintenance, use of non original pieces or parts, any technical intervention of non-qualified personnel or non-authorized by ESAB or an application other than the equipment was designed and produced for.

Packaging and cost of shipping/freight - to and from - for any equipment which may need an ESAB technical service under this warranty, to be done at any ESAB facilities or any ESAB Authorised Servicer will be on purchaser/User's own expense and risk.

This warranty is valid only from the date of Receipt issued by ESAB or an ESAB Dealer.

The period of warranty for LHI 425 Pipeweld is of one year.

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WARRANTY CERTIFICATE

Model: () LHI 425 Pipeweld

Serial Number:



Customer Information

Company: _____

Address: _____

Telephone: (____) _____ Fax: (____) _____ E-mail: _____

Model: () LHI 425 Pipeweld

Serial Number:

Observations: _____

Observations: _____

Receipt Number: _____



Dear Customer,

We kindly ask you to fill in the above form and mail it to ESAB We want to know you better and thus service and offer technical services to you with ESAB high quality standards.

Please mail to:

ESAB S.A.

Rua Zezé Camargos, 117 - Cidade Industrial

Contagem - Minas Gerais

CEP: 32.210-080

Fax: (31) 3369-4440

Att: Departamento de Controle de Qualidade

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ESAB S/A has the right to alter technical characteristics of their equipment with no prior notice.

Belo Horizonte (MG)	Tel.: (31) 3369-4370	Fax: (31) 3369-4376	vendas_bh@esab.com.br
São Paulo (SP)	Tel.: (11) 5524-7433	Fax: (11) 5522-8079	vendas_sp@esab.com.br
Rio de Janeiro (RJ)	Tel.: (21) 2585-3332	Fax: (21) 2589-7176	vendas_rj@esab.com.br
Porto Alegre (RS)	Tel.: (51) 3346-4333	Fax: (51) 3346-4333	vendas_pa@esab.com.br
Salvador (BA)	Tel.: (71) 390-9300	Fax: (71) 390-9320	vendas_sa@esab.com.br

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