

CONTROL UNIT

# DAMPER BOX ESSENTIAL

SAFETY INSTRUCTIONS FOR OPERATING AND MAINTENANCE

No W000370749



ISSUE : EN  
REVISION : D  
DATE : 07 - 2024

Instructions

REF: 8695 8581

Original instructions

**LINCOLN**<sup>®</sup>  
**ELECTRIC**

**Thank you very much for the trust you have shown by choosing this piece of equipment. It will give you trouble-free service if it is used and maintained as recommended.**

**Its design, component specifications and manufacturing are in accordance with applicable European directives.**

**Please refer to the CE declaration enclosed to identify the directives applicable to it.**

**The manufacturer shall not be liable for any combination of parts not recommended by it.**

**For your safety, please follow the non-limitative list of recommendations and obligations, a large part of which are included in the Labour Code.**

**Please inform your supplier if you find any error in this instruction manual.**

# Table of contents

<b>A - GENERAL SAFETY INSTRUCTIONS .....</b>	<b>1</b>
1 - Electrical safety-----	1
2 - Personal protection -----	1
3 - Filtration of fumes and dust-----	2
<b>B - DESCRIPTION .....</b>	<b>3</b>
1 - Description of the equipment-----	3
2 - Technical data-----	3
3 - Technical description-----	4
3.1 <i>Front of Damper Box Essential</i> -----	4
3.2 <i>Composition of Damper Box Essential</i> -----	4
4 - Operating principle-----	5
<b>C - CONNECTION.....</b>	<b>6</b>
1 - Transformer connection -----	6
2 - Connection of a motorised damper-----	6
3 - Connection of a pneumatic damper -----	7
4 - Connection of the current sensor(AC/ DC)-----	7
5 - Connection of accessories -----	8
6 - Connection of light sensor -----	9
<b>D - MAINTENANCE .....</b>	<b>10</b>
1 - Electrical diagram-----	10
2 - Spare parts-----	14
<b>PERSONAL NOTES .....</b>	<b>16</b>

# REVISIONS

REVISION : C DATE : 05/21

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DESCRIPTION	PAGE
Update	

## INFORMATION

This technical literature is intended for the following machines or products:

- **DAMPER BOX ESSENTIAL** → W000370749



### **Use of the equipment:**

Please read this manual before you start handling, installing or using the machine. Keep the manual safe in a place known to the machine user and maintenance personnel until the machine is finally destroyed.

This manual explains how to transport, install, use and maintain the filter. It cannot in any event replace the experience of the user for operations of varying difficulty.

Before the filter is used by a new user, make sure that they have read this manual and understood all the explanations provided.

For any further information, please feel free to contact the technical departments of **Lincoln Electric**.



### **Machine guarantee:**

This machine is guaranteed for 12 months from the date of purchase.

During the first 12 months of use, defective parts shall be replaced free of charge providing the damage is not the result of improper use of the machine.

The machine guarantee shall cease automatically when the machine is no longer the property of the original buyer.

The terms of validity of the guarantee shall be subject to verification and acceptance by our sales department.

Any nonconforming use that could damage the machine shall not be covered by the guarantee. For the guarantee to operate, the equipment must be inspected by our technical department.



### **Assistance:**

**Lincoln Electric** is at your disposal for any work on your equipment.

Please send any requests to the technical department.

**HOT LINE (+33) 825 132 132**



### **Display and pressure gauge:**

Measurement instruments or displays of voltage, intensity, speed, accuracy etc. are to be considered as indicators, whether they are analogue or digital.



In spite of all the measures applied, invisible residual risks may still remain.

Residual risks can be reduced if the safety instructions are observed, the machine is used as recommended and general service instructions are followed.




























This manual and the product with which it is associated refer to the applicable standards in force.



Please read this document carefully before you install, use or maintain the machine. Keep this document in a safe place for future reference. This document must follow the machine described if there is a change in ownership of the machine and accompany it up to demolition.

# MEANING OF SYMBOLS

To make this document easier to understand, it contains pictograms with the meanings given below:

	Reading the manual/instructions is mandatory.		Indicates a hazard.
	Mandatory use of safety shoes.		Warning of an electricity risk or hazard.
	Mandatory use of hearing protection.		Warning of a risk or hazard due to an obstacle on the floor.
	Mandatory use of a safety helmet.		Warning of a risk or hazard of falling with a level change.
	Mandatory use of safety gloves.		Warning of a risk or hazard due to suspended loads.
	Mandatory use of safety glasses.		Warning of a risk or hazard due to a hot surface.
	Mandatory use of a safety visor.		Warning of a risk or hazard due to moving mechanical parts.
	Mandatory use of safety clothing.		Warning of a risk or hazard due to a closing movement of mechanical parts of a machine.
	Make sure you clean the working zone.		Warning of a risk or hazard due to laser radiation.
	Mandatory use of breathing protection.		Warning of a risk or hazard due to an obstacle at a height.
	Visual inspection required.		Warning of a risk or hazard due to the presence of a pointed part.
	Indicates a lubrication operation.		Wearers of pacemakers may not be admitted in the designated area.
	Requires maintenance action.		

# DECLARATION OF CONFORMITY



LINCOLN ELECTRIC FRANCE SAS  
Avenue Franklin Roosevelt  
76120 – LE GRAND QUEVILLY

## DAMPER BOX ESSENTIAL

### CE DECLARATION OF CONFORMITY

#### 1) CE/EU DECLARATION OF CONFORMITY

Dear customer,

This CE/EU declaration of conformity certifies that the supplied equipment complies with applicable laws and regulations when used in accordance with the enclosed instructions. Any other assembly or modification would void our certification. That is why you are asked to call in the manufacturer for any modifications you wish to make. Failing that, the company responsible for the modification must repeat the certification process. In that case, we would not be liable for the new certificate in any way. Please hand this document over to your technical department or purchasing department for filing.

**DESCRIPTION:** DAMPER BOX ESSENTIAL

**TYPE:** W000370749

**NUMBER:** See name plate

2) This equipment complies with European directives.

**2006/42/EC**

**2011/65/EU**

**2014/30/EU**

3) Based on the following harmonised standards:

- EN ISO 12100: 2010
- EN 60204-1: 2018

4) Air Treatment Products Manager, authorised to compile the technical manufacturing document.

Mr Patrick DEGROOTE  
LINCOLN ELECTRIC FRANCE SAS  
Avenue Franklin Roosevelt  
76120 – LE GRAND QUEVILLY

5) The Manufacturer.

LINCOLN ELECTRIC FRANCE SAS  
Avenue Franklin Roosevelt  
76120 – LE GRAND QUEVILLY

LE GRAND QUEVILLY,

17/07/2023





### 1 - Electrical safety

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#### Connection to the mains:

Before you connect your machine, please make sure that.

- The meter, the overintensity protection system and the electrical installation are compatible with its maximum power rating and its supply voltage.
- It can be connected, in a single-phase or three-phase with earth system, to a socket compatible with the plug on its power cord (mobile equipment).
- If the cable is connected to a fixed point, the earth connection, if there is one, may never be cut off by the system offering protection from electric shocks.
- The switch, if there is one, is set to OFF.

#### Operating position:

Arc welding and cutting requires strict compliance with safety requirements in respect of electrical currents.

#### Working on the machine:

Before any internal inspection or repairs, make sure that the machine has been disconnected from the electrical system by locking it out:

- Accidental connection of the cable of a fixed system has been made impossible,
- Switching off by means of a fixed connection device relates to all poles (phase and neutral. It must be in the Off position, with no possibility of being put into service by mistake.

Some machines have an HV/HF arc ignition circuit (indicated by a plate). Never work inside such a box. Any work on electrical installations must be carried out by individuals qualified for that purpose.

#### Maintenance:

From time to time, check that the machinery and its electrical accessories - connectors, flexible cables and extension cords - are correctly insulated and connected.

Work for maintaining and repairing insulating ducts and enclosures may not be carried out in a haphazard manner.

- All repairs are to be carried out by specialists, or better yet, defective accessories should be replaced.
- Regularly check that the electrical connections are tight, with no heating.

Any fans placed in a circuit in which the air is laden with dust must be cleaned from time to time. That is because the turbine may be fouled and become unbalanced, leading to increased noise and premature wear and tear of bearings. Maintenance is required at least after every six months, depending on the type of dust treated.

The fan is an essential element of your extraction system.

Incorrect operating or inadequate maintenance could make the operator less safe. That is why the fan must be maintained in perfect condition.

Your installation has been selected for a specific application. The turbine is characterised by an operating point based on extraction speed (speed of air in the piping) and head loss.

In accordance with the regulations of CARSAT and INRS, the system must be inspected from time to time to make sure that it continues to comply with its reference values.

### 2 - Personal protection

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#### **Risks of external injury relating to welding operations**

##### Whole body:

- The operator must be clothed and protected to suit the requirements of the job.
- Make sure that no part of the bodies of operators and helpers can come in contact with metal pieces or parts that are live or are liable to become live accidentally.
- Do not wind electricity cables around the body.
- Keep safety guards and panels in place
- The operator must always wear insulating personal protective equipment.
- The protection must be kept dry to prevent electric shocks if it is wet, or ignition in the presence of oil.

Personal protective equipment worn by operators and their helpers - gloves, aprons, safety shoes - offer the added benefit of protecting them from burns due to hot parts, splatter and slag.

Make sure the PPE is in good condition and replace it before it ceases to offer protection.

### **Face and eyes:**

It is indispensable to protect the following:

- Eyes, from arc flash injury (dazzling due to visible light from the arc, and infrared and ultraviolet radiation).
- Hair, face and eyes from welding splatter and projection of slag during weld cooling.

The welding mask, when used under or without a helmet, must always be equipped with a protective filter, the shade of which depends on the intensity of the welding arc current.

The coloured filter may be protected from impacts and splatter by a transparent glass located on the front of the mask.

If the filter is replaced, use another one with the same part number (shade number).

Individuals in the vicinity of the operator, especially any helpers, must be protected by means of suitable screens, anti-UV goggles or, if needed, masks with suitable protective filters.

### **Specific case of chlorine solvents in welding:** (used for cleaning or degreasing)

- The fumes from these solvents can be changed into toxic gases when subjected to arc radiation, including from a distance.
- Such solvents may therefore not be used in locations where electric arcs occur, if the solvents are not in a sealed enclosure.

### **Work in confined spaces**

#### **Examples:**

- Mine roads
- Piping and pipelines
- Ship docks, pits, manholes, cellars
- Tanks
- Ballast tanks
- Silos
- Reactors

Special precautions must be taken before undertaking welding operations in such enclosures, where suffocating and poisoning and fire and explosion risks are very great.

A work permit procedure setting out all the safety measures must systematically be set up.

Make sure that ventilation is appropriate, paying special attention to:

- under-oxygenation
- over-oxygenation
- excess fuel gas

## **3 - Filtration of fumes and dust**

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### **Important:**

Mechanical or electrostatic filtration systems are effective for the filtration of solid but not gaseous particles (outdoor discharge).

If recycling is effective (not recommended), make sure the workplace where the machine or machines are placed is properly ventilated, so as to not reach the OELV (occupational exposure limit values) for the specific gaseous pollutants generated by the process (welding, cutting).

### **Field of use**

#### **Filtration of solid particles and dry dust, non-flammable gas, with no risk of explosion.**

- Zinc, paper, flour, plant leaves, graphite, aluminium and other such dust is to be excluded, because electrostatic discharge or welding splatter would present a risk for those using the filter.
- The air flow through the filter medium must not be at a temperature above 80 °C.
- This machine is not designed for extracting chemicals.
- The choice of equipment is made to suit the pollutants to treat. Extraction at source of the pollutant is only effective if the machine is operating at its nominal power (air flow at the nozzle).

#### **Take particular care to:**

- Not obstruct the air outlet of the machine.
- Not introduce external elements into the filter (paper, cloths, cigarette butts etc.)
- Replace the filter medium with new original **Lincoln Electric** medium, which alone can guarantee the filtration characteristics.
- Replace the hoses if they are pierced.
- Regularly clean the metal pre-filter on those machines that have one.

### 1 - Description of the equipment



For your safety and optimum performance, please read this manual carefully before using the filter.

Automating extraction by a fume extraction torch so that it only operates when the torch is in use helps save electricity and reduce noise, and can allow you to reduce the fan power, based on a sensor diversity factor. Limiting extraction to the actual time of use will allow you to significantly save on the cost of heating the compensating flow in the winter period.



The **Damper Box Essential** is a control unit for a motorised damper. It is CE compliant and has a padlockable switch for isolation from the electrical system. It can be used to automatically or manually control the motorised damper with which it is used. As a result, when it is placed on an extraction panel, a table or arm, extraction will only operate when welding is actually under way.

#### **Benefits:**

- Simple connections.
- Extraction controlled on the basis of actual needs during welding.
- Heating savings.

#### **Delivery:**

- The box is supplied wired, with no other accessories or options.

### 2 - Technical data

- Power supply 230/400 V - 1 Ph - 50 Hz.
- 24 VAC power supply for motorised or pneumatic dampers.
- Automation by current sensor, 1 or 2 sensors connected in parallel.
- Dimensions: 340 x 230 x 180 mm

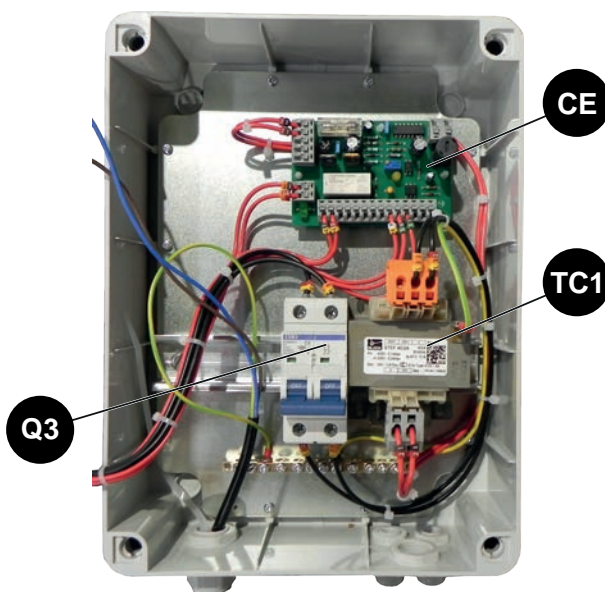
### 3 - Technical description

#### 3.1 Front of Damper Box Essential



1	Padlockable disconnecting switch
2	White power on indicator
3	Green opening indicator
4	Manual/Stop/Auto switch

#### 3.2 Composition of Damper Box Essential



Q3	Circuit breaker
TC1	230/400V – 24V transformer
CE	Control PCB

## 4 - Operating principle

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The box is powered up using the padlockable switch located on the front (1)

The On indicator (2) shows that the box is supplied with power, and the green indicator (3) shows the status of the motorised damper, open or closed.

Depending on your needs, set the selection switch (4) to the manual or automatic mode

In the automatic position, the damper is opened by the current sensor that detects the welding current, or by an outside contact (NO dry make contact output) signal.



### **MANUAL:**

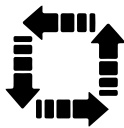
Set (4) between the Hand for manual starting up and 0 to shut down extraction.

### **AUTOMATIC WITH IR CURRENT SENSOR:**

Automatic starting up uses an IR current sensor (AC or AC/DC) placed on the welding cable, which opens the motorised or pneumatic damper when welding current is sensed, in order to extract fumes.

When the welding current stops, the shutting of the damper is delayed in relation to the stopping of the control signal, which keeps the damper from being operated too frequently during spot welding, and to allow the satisfactory extraction of residual fumes.

The delay is factory set to 60 seconds and is adjustable from 10 seconds to 9 minutes.



### **AUTOMATIC WITH WL-AST LIGHT SENSOR:**

(Available only with the LTA and LFA arm range)

Automatic starting up is by the light-sensitive cell which is mounted directly in the nozzle of the arm or by the forced operating switch located on the nozzle of the arm. The closing of the damper is delayed in relation to the stopping of the control signal (adjustable from 10 sec to 9 min).

### **AUTOMATIC WITH EXTERNAL CONTACT:**

Automatic starting up relies on a normally-open external contact, contact type torch rest, light sensor, welding or cutting power source, automatic machine etc.

The closing of the damper is delayed in relation to the stopping of the control signal (adjustable from 10 sec to 9 min).

## C - CONNECTION



Please refer to electrical diagram 95570501



Any work on the box may only be carried out by approved personnel, after the power to the box has been switched off.

### 1 - Transformer connection



Depending on the supply voltage, the transformer primary must be connected correctly.

400 V power supply



230 V power supply

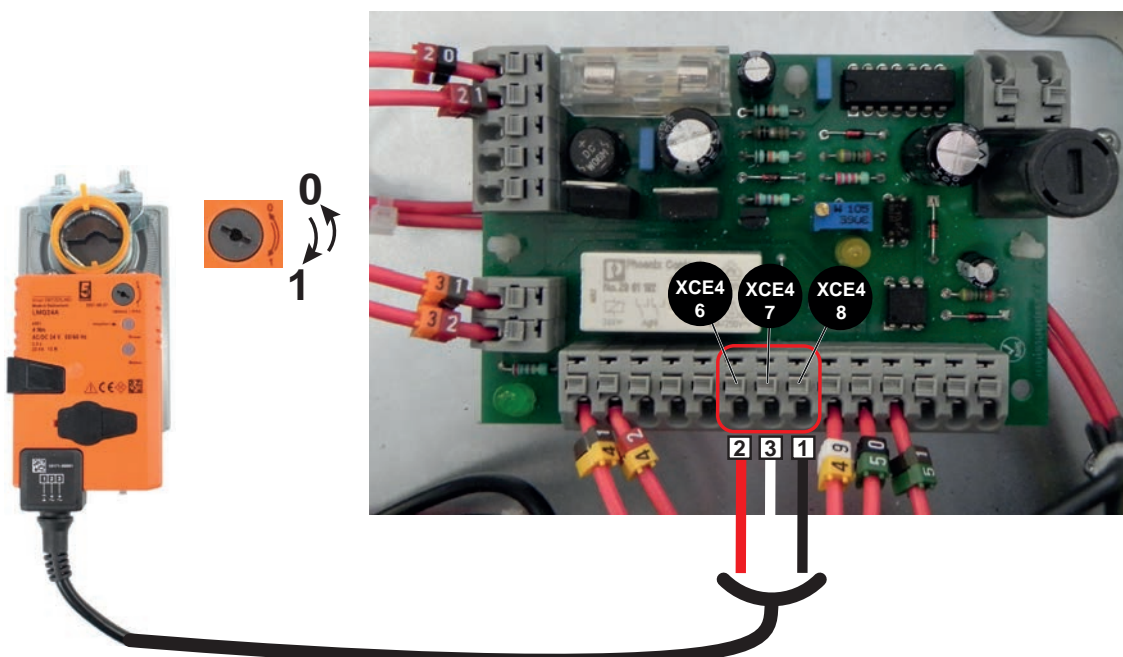


### 2 - Connection of a motorised damper

Wiring of the damper on the control board:

- Black wire 1 ➔ XCE4 - 6
- White wire 3 ➔ XCE4 - 7
- Red wire 2 ➔ XCE4 - 8

If needed, on the motorised damper, turn the switch from 0 to 1 to reverse the damper rotation direction

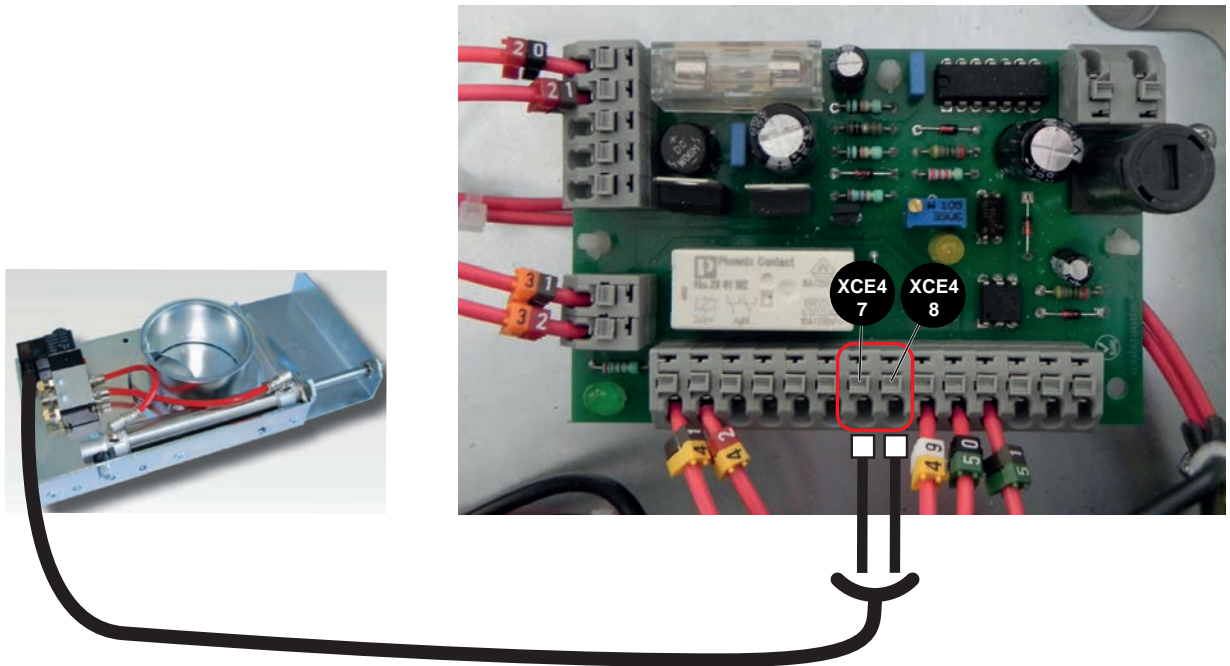




### 3 - Connection of a pneumatic damper

Wiring of the pneumatic damper on the control board at:

- XCE4 - 7
- XCE4 - 8



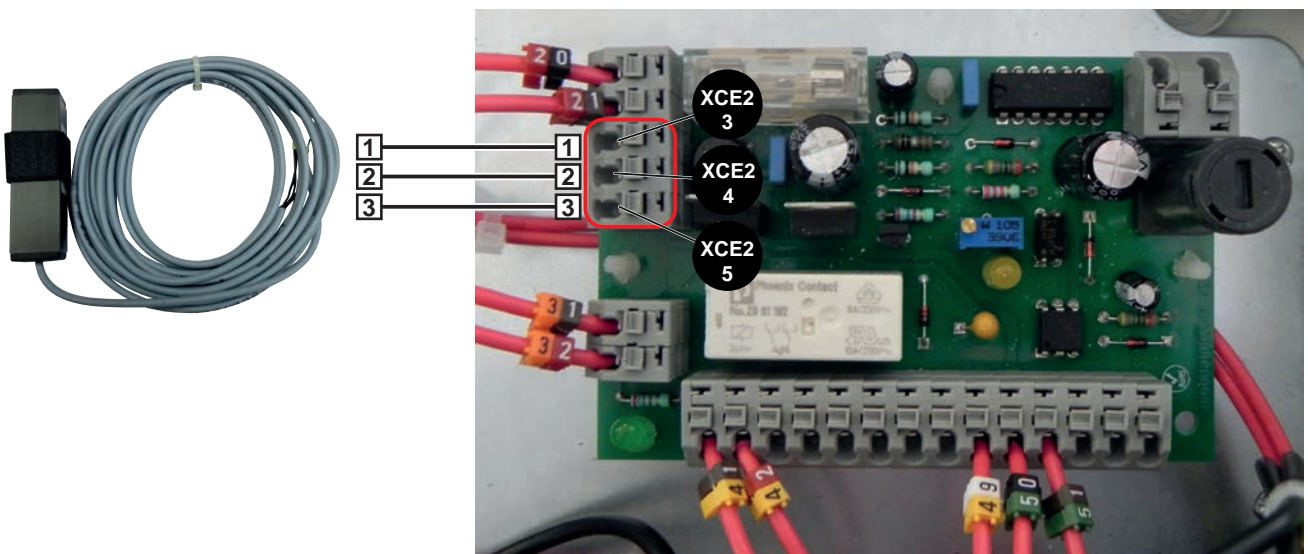
### 4 - Connection of the current sensor(AC/ DC)



Current sensor (W000379696)

Wiring of the current sensor on the control board:

- Black wire 1 ➔ XCE2 - 3
- White wire 2 ➔ XCE2 - 4
- Red wire 3 ➔ XCE2 - 5



## 5 - Connection of accessories



AC current clamp (W000380662)



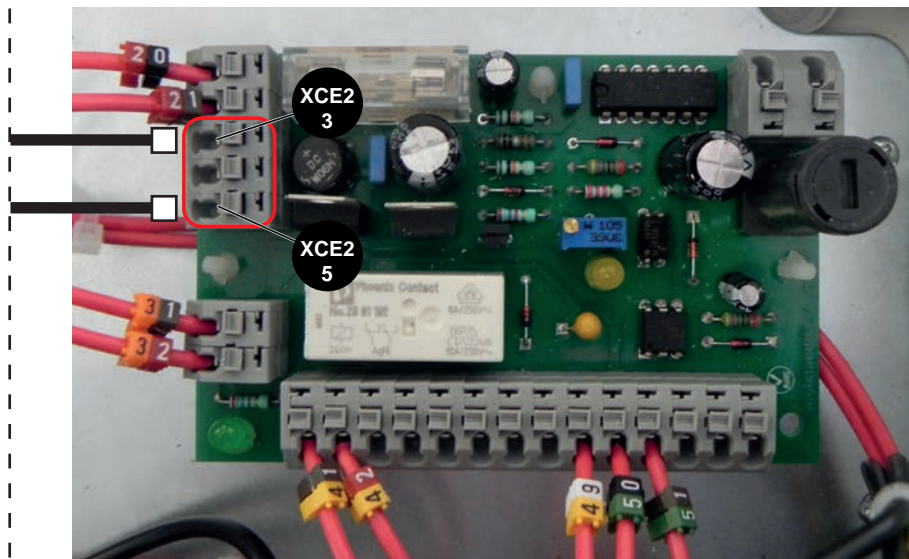
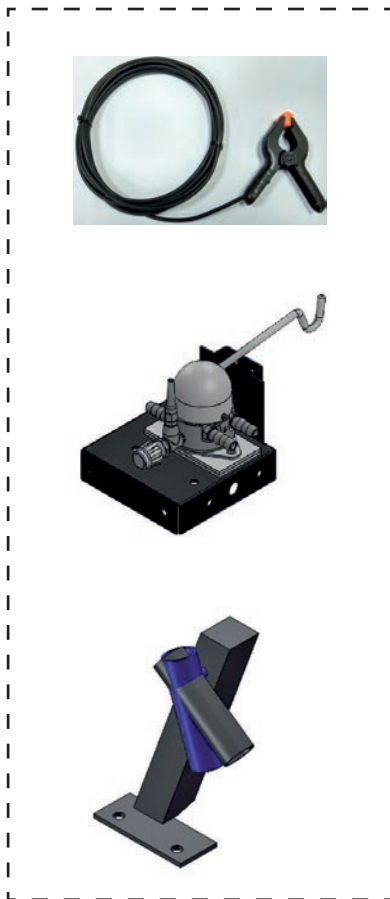
Gas saver sensor (W000380549) - Limit switch (W000380551)



Contact type torch rest (W000279767)

Wiring of accessories on the control board at:

- XCE2 - 3
- XCE2 - 5





## 6 - Connection of light sensor



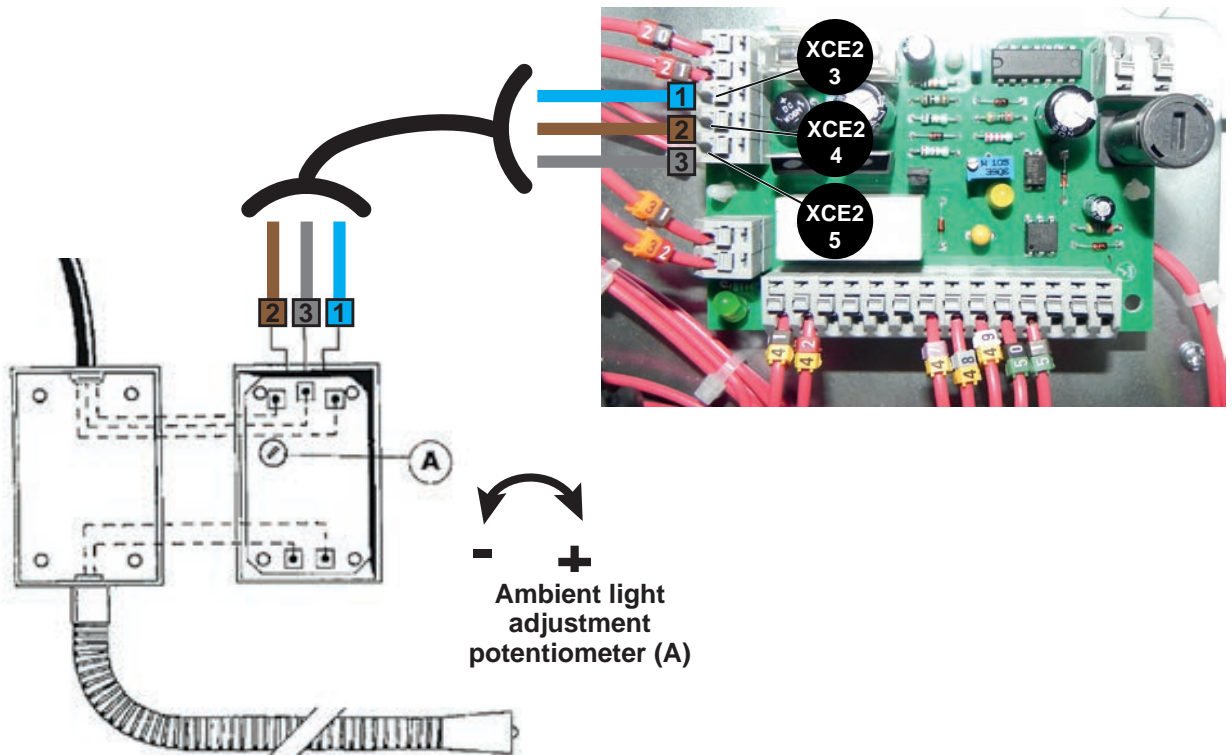
Light sensor (Ø 160 arm) (W000342208)

It senses the light from the welding arc or the torch flame.

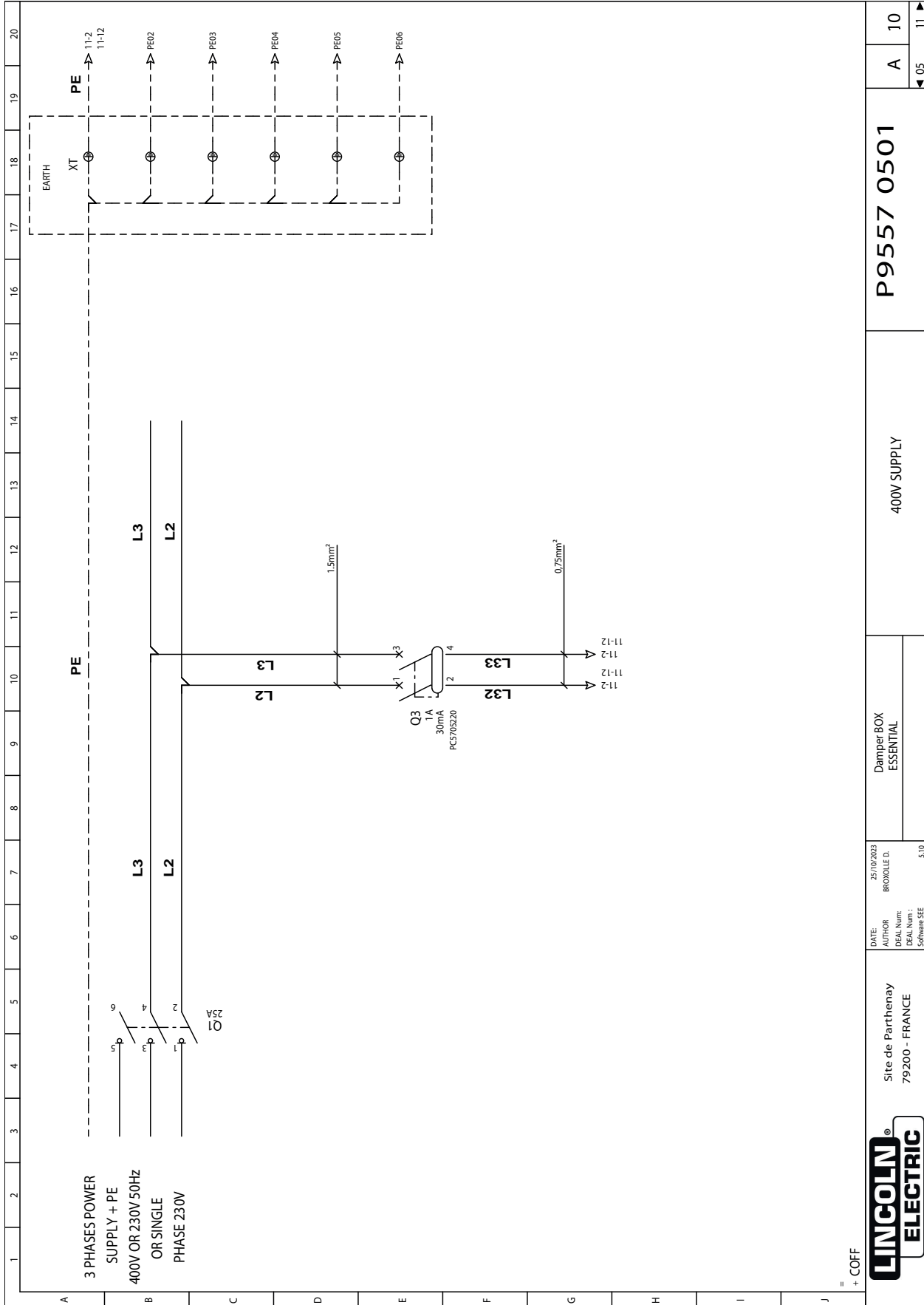
- It is used when the welding current cannot be sensed.
- Must be used along with the **Damper Box Essential** or the **Master Box Essential**.

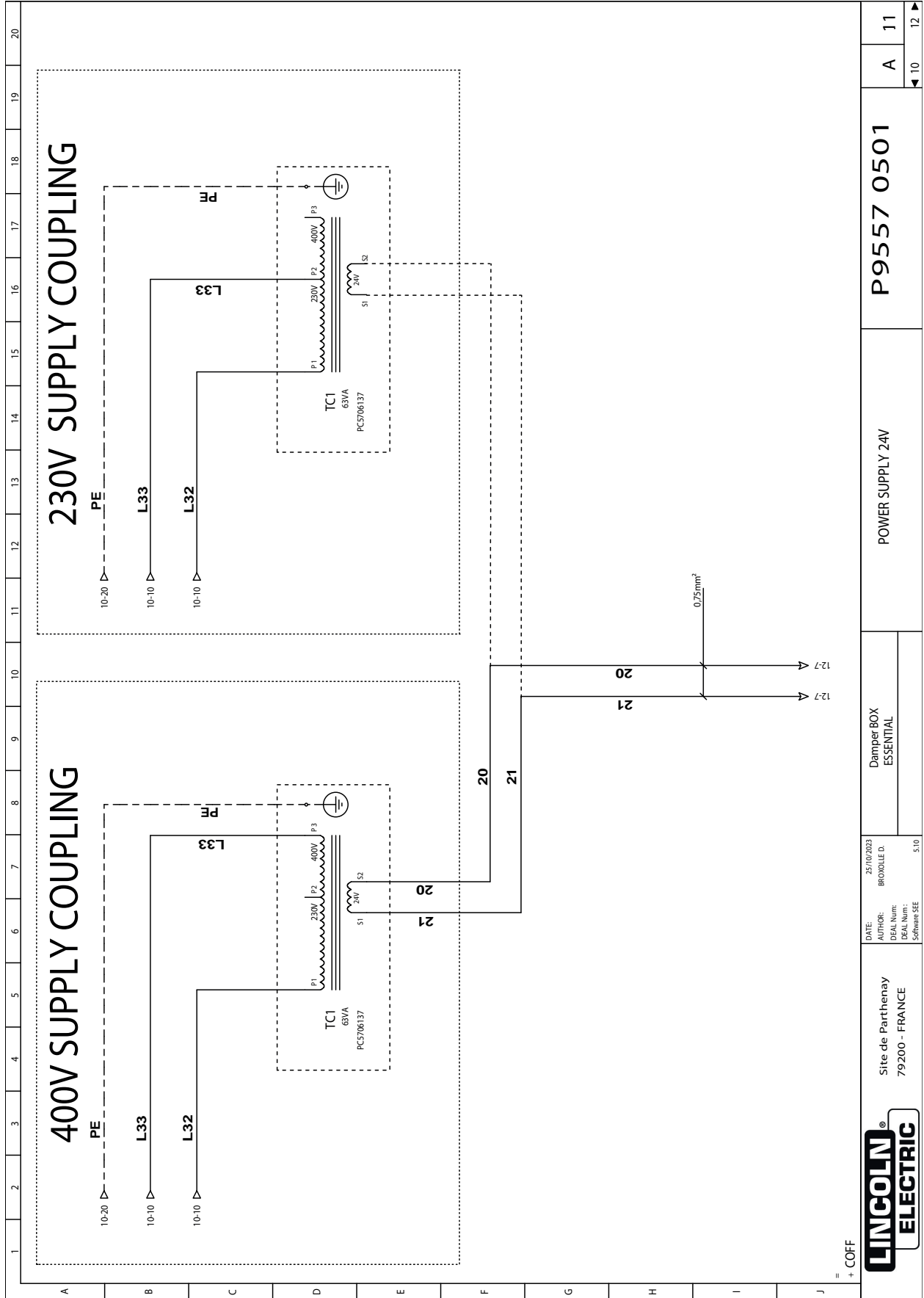
Wiring of the current sensor on the control board:

- Blue wire 1 ➔ XCE2 - 3
- Brown wire 2 ➔ XCE2 - 4
- Grey wire 3 ➔ XCE2 - 5



1 - Electrical diagram





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Site de Parthenay  
79200 - FRANCE

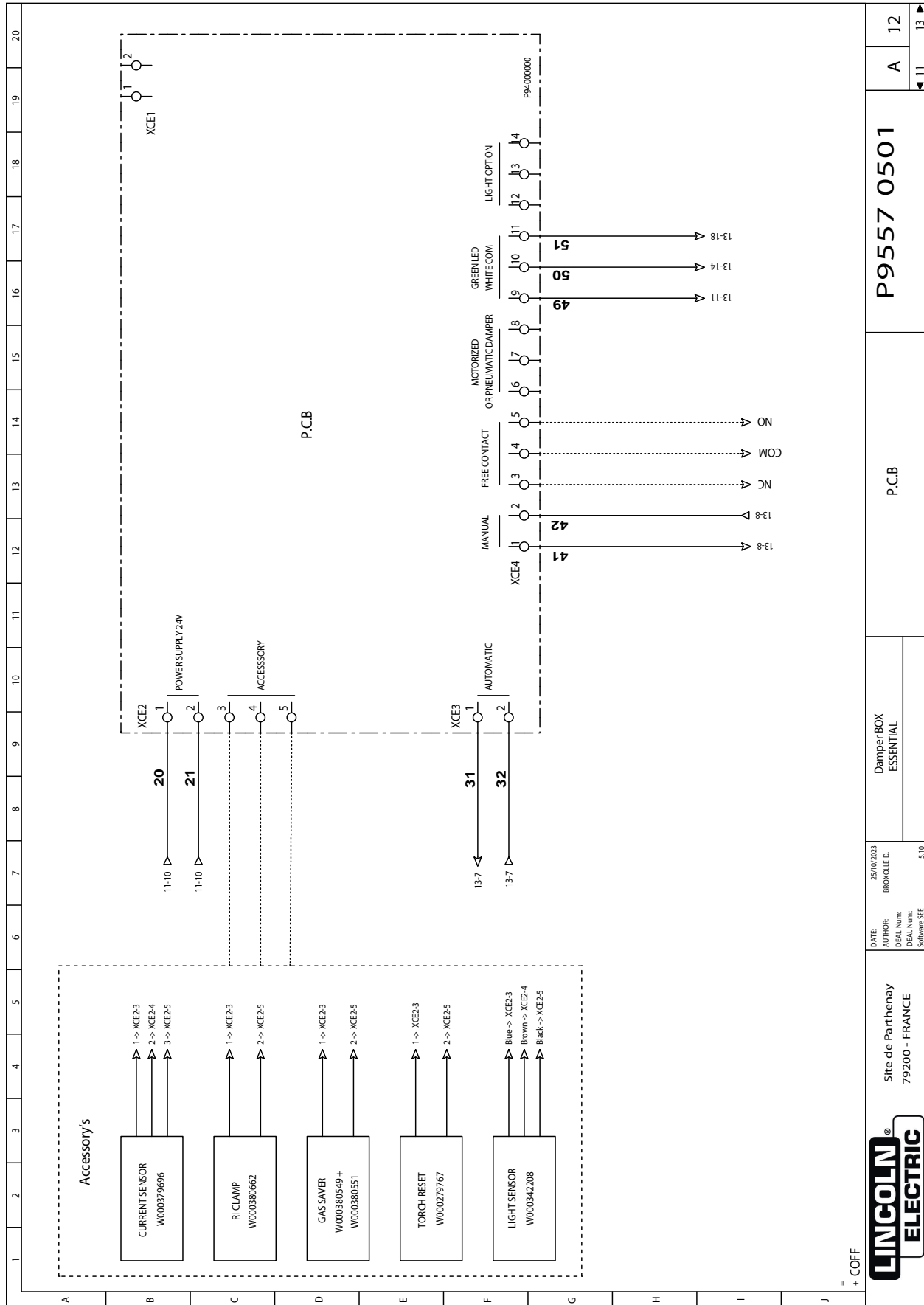
DATE: 25/10/2023  
AUTHOR: BROXOLE D.  
DEAL Num:  
DEAL Num:  
Software: SEE 5.10

DAMPER BOX  
ESSENTIAL

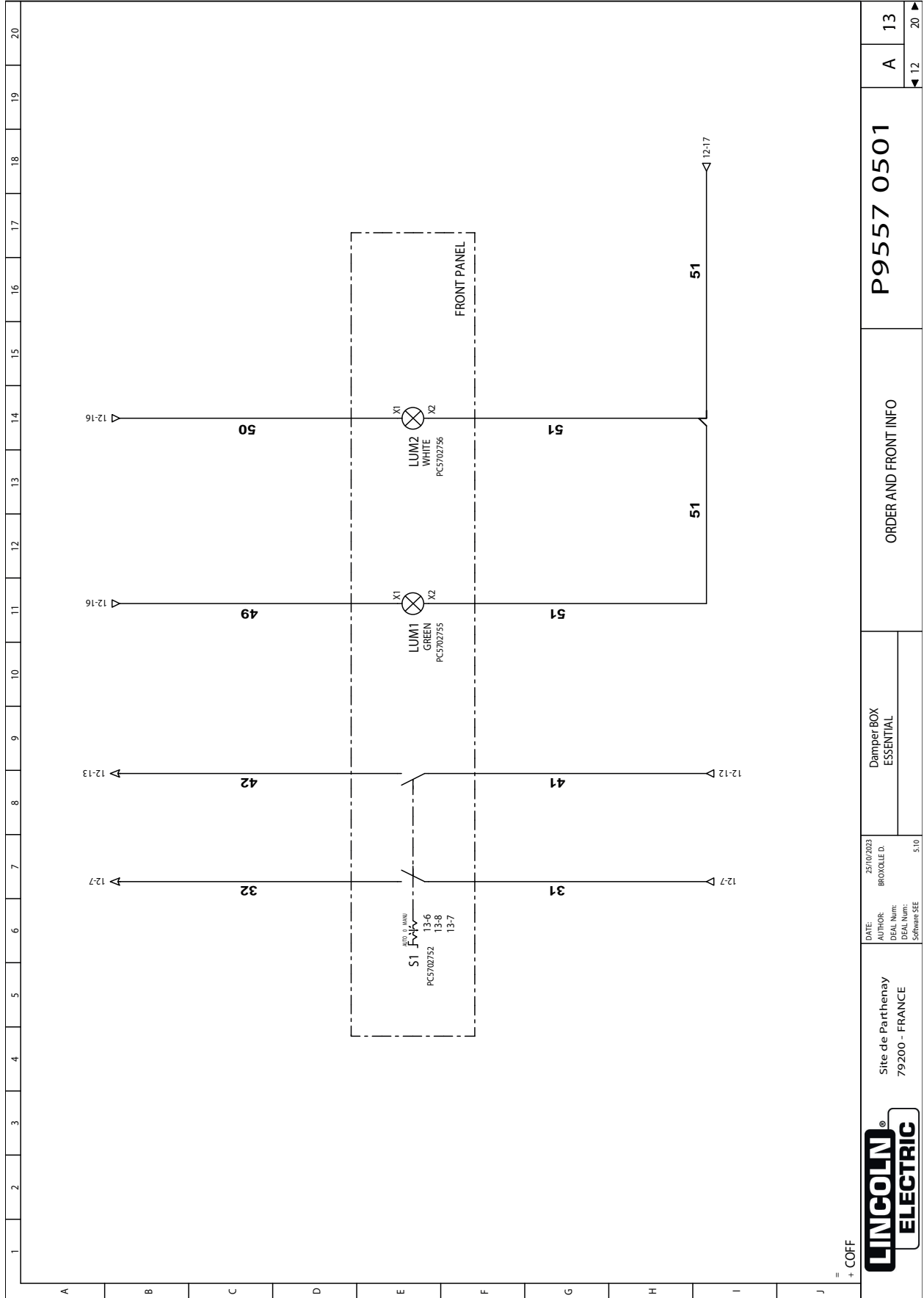
POWER SUPPLY 24V

P9557 0501

A	11
10	12



DATE: 25/10/2023		DAMPER BOX ESSENTIAL	P.C.B.	P9557 0501	A	12	
AUTHOR: BROXVALE D.							
DEAL Num: 5.10							
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<b>LINCOLN® ELECTRIC</b>							



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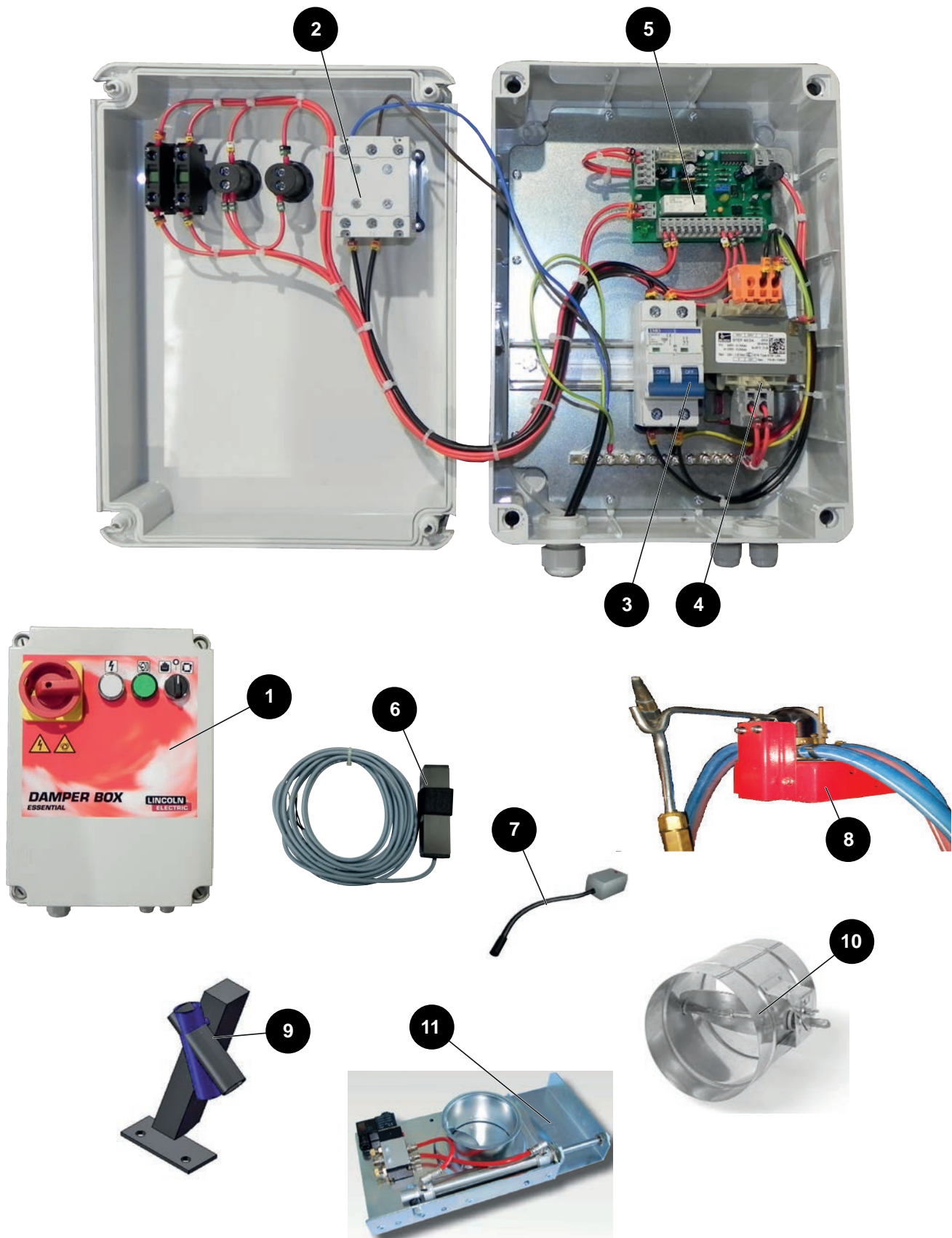


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Damper BOX  
ESSENTIAL

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A 13  
12 20



Reference		Description	Part number LINCOLN ELECTRIC
1		<b>DAMPER BOX ESSENTIAL</b>	W000370749
2	<b>INTER</b>	Isolator, 3P - 32A <i>IMO JEAMBRUN AUTOMATION: PM69-3032-RY64</i>	PC5702588
3	<b>Q3</b>	Circuit breaker, 2P - 1A - D 10KA <i>IMO JEAMBRUN AUTOMATION: B10D2001A</i>	PC5705220
4	<b>TC1</b>	Transformer, COM 230+400V / 230+24V - 63VA <i>ELEC SYSTEM: BLOSTEF40/24</i>	PC5706137
5		Printed circuit board	P94000000

**Options:**

Reference		Description	Part number LINCOLN ELECTRIC
6		Current sensor, L5M AC CC	W000379696
7		Light sensor	W000342208
8		Gas saver bracket	W000380549
		Limit switch	W000380551
9		Contact type torch rest	W000279767
10		Motorised damper, Ø 80 mm	W000380478
		Motorised damper, Ø 100 mm	W000380479
		Motorised damper, Ø 125 mm	W000380480
		Motorised damper, Ø 160 mm	W000380481
		Motorised damper, Ø 200 mm	W000380482
		Motorised damper, Ø 250 mm	W000380489
		Motorised damper, Ø 315 mm	W000370744
		Motorised damper, Ø 355 mm	W000379175
11		Motorised damper, Ø 400 mm	W000370743
		Pneumatic damper, HD 50 mm	W000372349
		Pneumatic damper, HD 63 mm	W000372364
	Pneumatic damper, HD 76 mm	W000372363	

