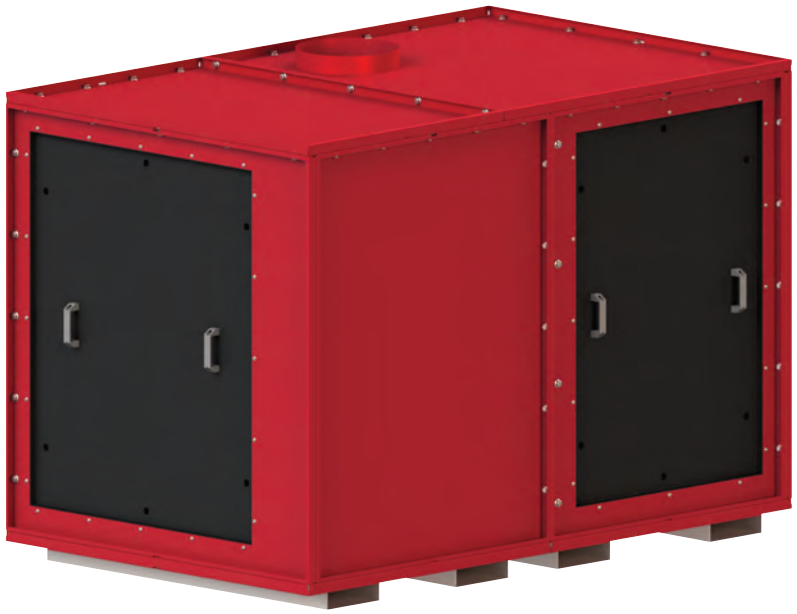
HIGH-VACUUM EXTRACTION UNITS

CHD 1000 - 2000 - 3000 - 4000

SAFETY INSTRUCTIONS FOR OPERATING AND MAINTENANCE

No EM61000120 - EM61000121 - EM61000122 - EM61000123 - EM61000124



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Instructions

REF: 8695 8422

Original instructions

LINCOLN 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

INFORMATION

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

- CHD 1000 high-vacuum extraction units, 20000 Pa ➜ EM61000120
- CHD 1000 high-vacuum extraction units, 25000 Pa ➜ EM61000121
- CHD 2000 high-vacuum extraction units, 25000 Pa ➜ EM61000122
- CHD 3000 high-vacuum extraction units, 25000 Pa ➜ EM61000123
- CHD 4000 high-vacuum extraction units, 25000 Pa ➜ EM61000124

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

HIGH-VACUUM UNITS

CHD 1000 - 2000 - 3000 - 4000

TYPE: EM61000120 - EM61000121 - EM61000122 -EM61000123 - EM61000124

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	Part number
CHD 1000, 20000 Pa	**EM61000120**
CHD 1000, 25000 Pa	**EM61000121**
CHD 2000, 25000 Pa	**EM61000122**
CHD 3000, 25000 Pa	**EM61000123**
CHD 4000, 25000 Pa	**EM61000124**

NUMBER: **See name plate**

2) This equipment complies with European directives.

☒ 2006/42/EC **☒ 2011/65/EC** **☒ 2014/30/EC**

3) Based on the following harmonised standards:

- **EN ISO 12100: 2010**
- **EN ISO 13850: 2008**
- **EN ISO 13857: 2008**
- **EN ISO 12499**
- **EN 60204-1: 2006/AC:2010**
- **EN ISO 61439-1: 2011**
- **EN ISO 61439-2: 2011**

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

CERGY, 07/09/2020

1 - Electrical safety

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 (Order of 14 December 1988).

Servicing

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 persons qualified for that purpose (Decree 88-1056 of 14 November 1988, Section VI, Art 46).

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 enclosures and ducts may not be carried out in a haphazard manner (Section VI, Art. 47 Decree 88-1056 of 14 November 1988).

- 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.

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 personal insulating protection (Order of 14 December 1988, Section III).
- The protection shall 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 (Standards NF S77-104 A 88-221 A88-222).

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).

Persons 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 (EN 139).

Specific case of chlorine solvents (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

Important

Note that CHD high-vacuum units may be used in combination with a self-cleaning cyclone filter of the 2 or 4 CD type

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 application:

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

- Zinc, paper, flour, plant leaves, graphite, aluminium from grinding and sanding etc. 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.

B - DESCRIPTION

1 - Description of the equipment

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

Sandwich panel construction on a metal structure optimises the weight and strength of the unit. It can be put in place easily thanks to its monobloc construction, which helps minimise noise. The equipment is managed by a PLC associated with a 5.7” HMI screen. That helps monitor the operating condition and ensure an effective and continuous extraction rate

The machine quality allows us to offer speedy deliveries, for a low cost of transport and installation. The system takes up little floor space and can be removed at any time.

Benefits:

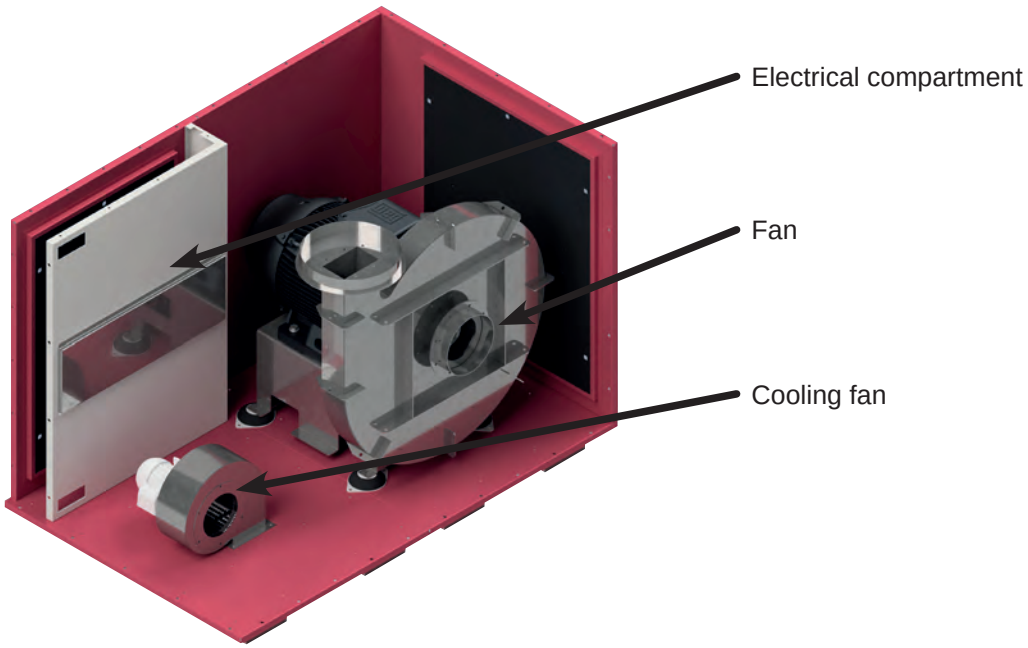
- The operating cycle is managed by a PLC associated with a 5.7” HMI screen.
- Three operating modes are possible: Manuel – Weekly clock – Automatic.
- Simple installation.
- Compact design.
- Low maintenance that can be scheduled from the human machine interface (HMI) screen.

Delivery: The unit is supplied as a single unit including the fan and the filtration components.

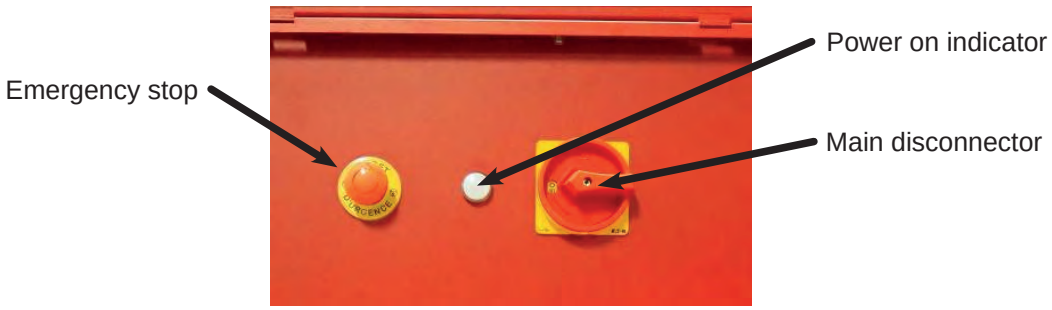
2 - Part numbers

CHD high-vacuum unit, 1000 m³/h at 20000 Pa	EM61000120
CHD high-vacuum unit, 1000 m³/h at 25000 Pa	EM61000121
CHD high-vacuum unit, 2000 m³/h at 25000 Pa	EM61000122
CHD high-vacuum unit, 3000 m³/h at 25000 Pa	EM61000123
CHD high-vacuum unit, 4000 m³/h at 25000 Pa	EM61000124
Roof for CHD 1000 – 2000 – 3000 – 4000 for outdoor installation without shelter	EM61000239
Pre-filter box with class EU2 medium (500 x 500 x 24) mm	EM61000127

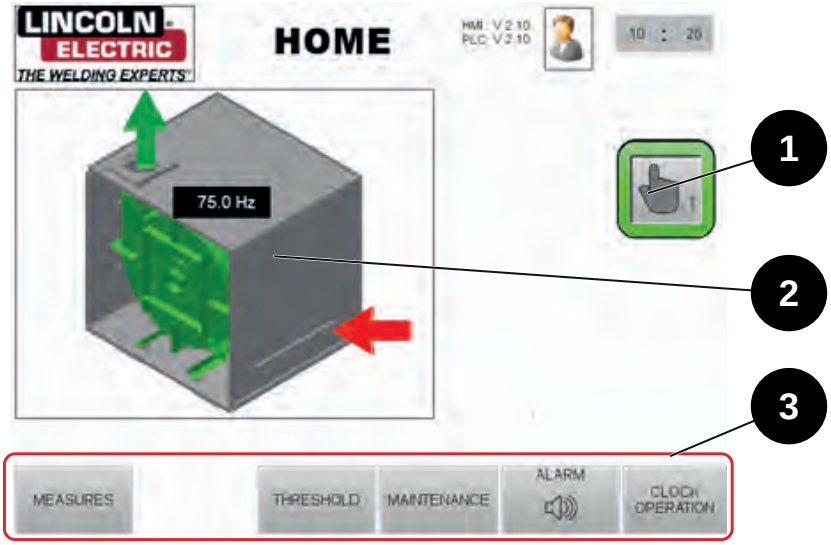
Filtration components



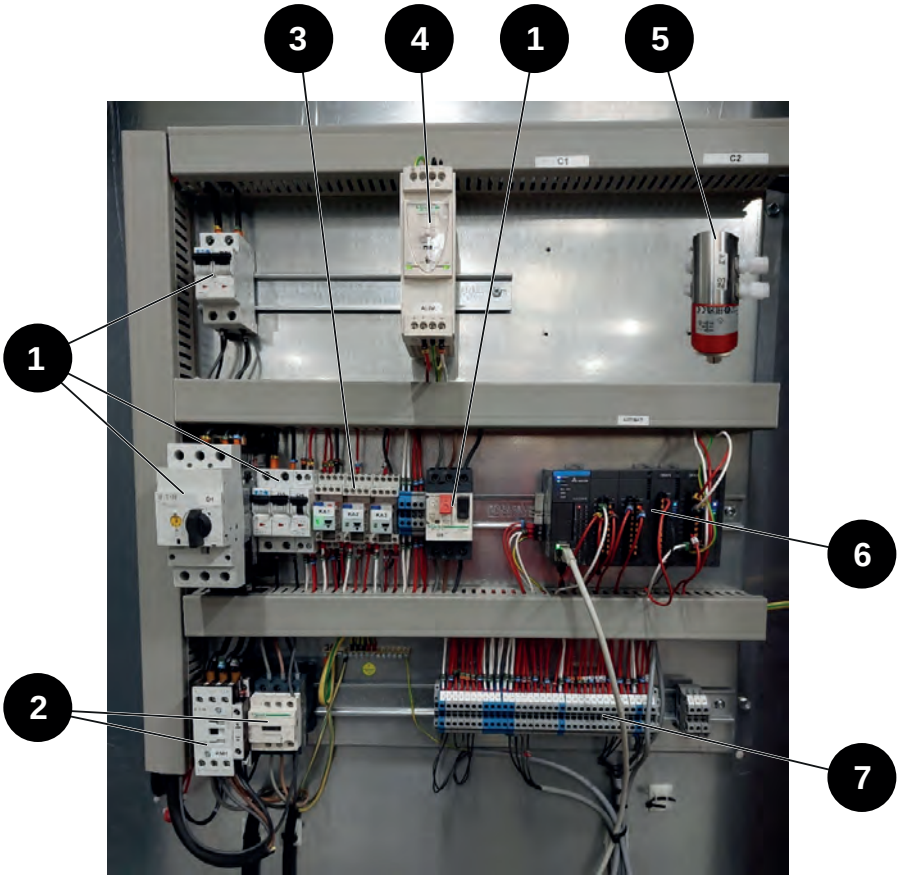
Components fixed to the unit



4 - Description of the HMI screen: Home page

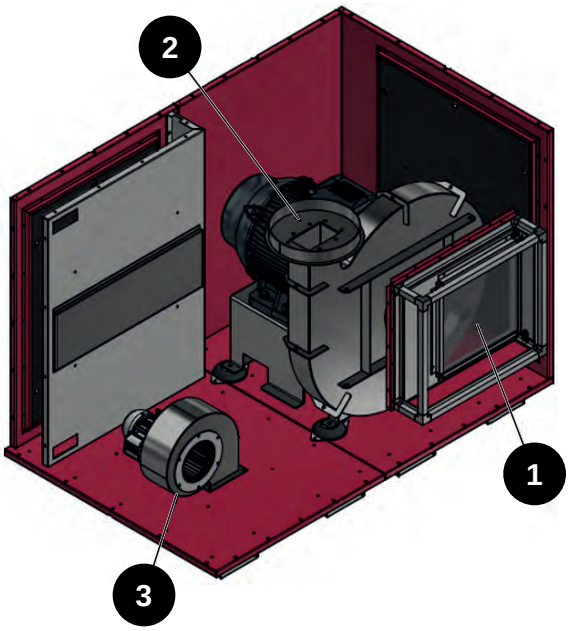


1	Operating mode: • Manual • Weekly clock • Automatic
2	Operating frequency
3	Page selection: • Measurements page • Thresholds page • Maintenance page • Alarms page • Clock page



1	Circuit breakers
2	Motor switch
3	Relay
4	400V/24V power supply
5	HV system vacuum switches
6	Programmable logic controller
7	Connecting terminal block

6 - Operating principle

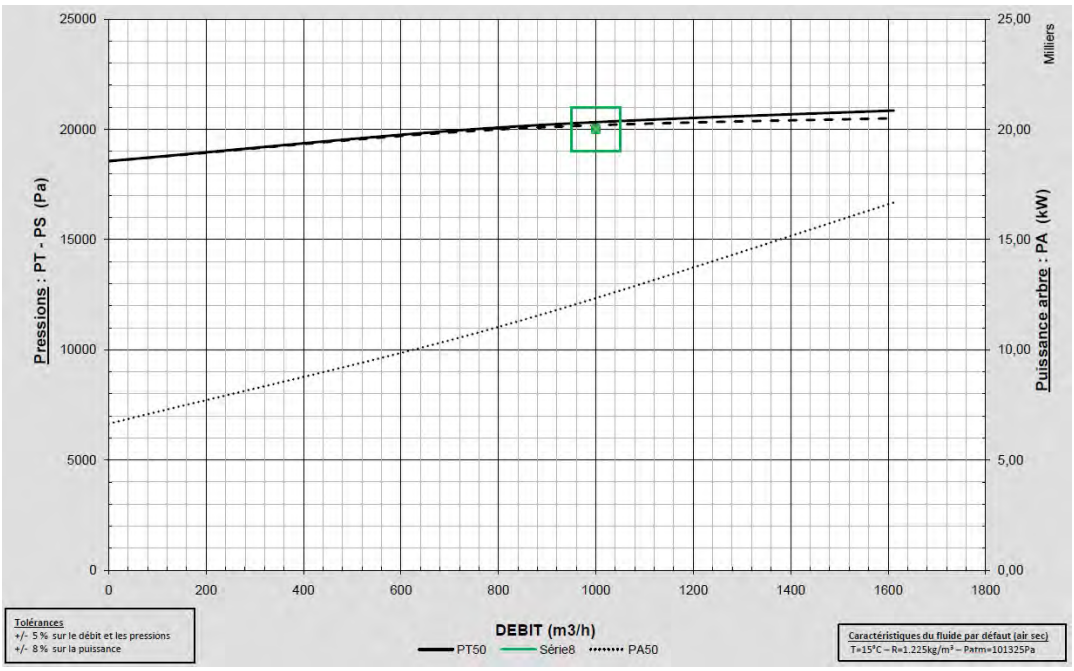


Operating principle of the high-vacuum unit	
1	Polluted air is taken into the unit through the pre-filter located on the panel on the side of the unit.
2	Polluted air is expelled by the turbine and discharged outside. (Upper part).
3	The internal cooling fan allows the removal of the calories emitted by the main turbine.

7 - CHD fan specifications

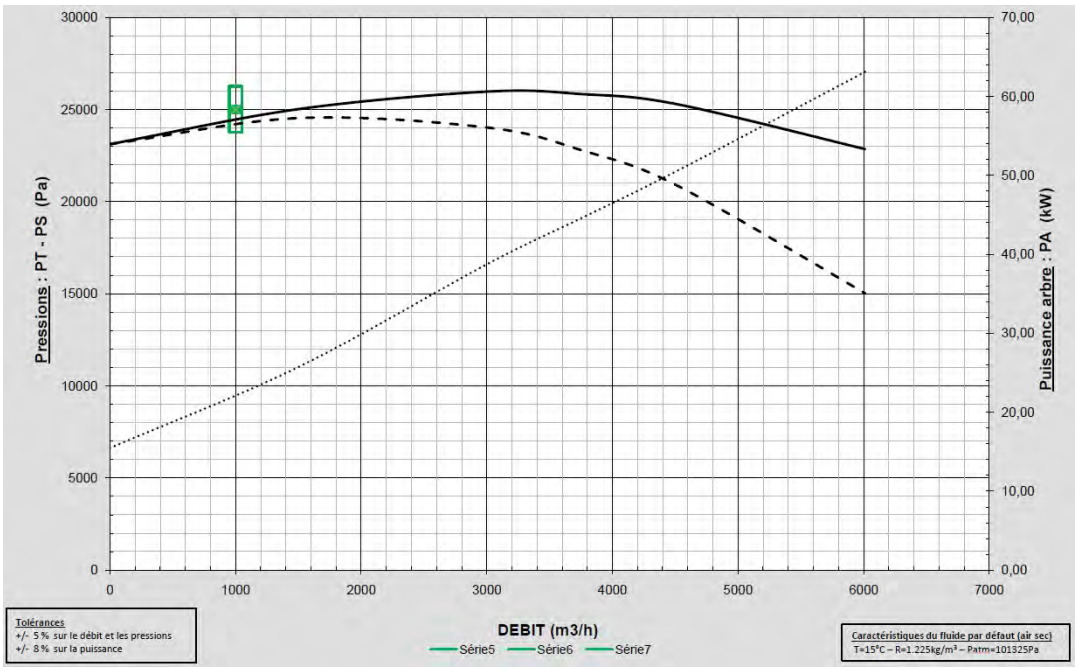
7.1 CHD 1000 m³/h - 20000 Pa fan

Type	Centrifugal fan, 15 kW - HPB 590 – 2 – SV87
Operating point	1000 m³/h at 20000 Pa at 87 Hz



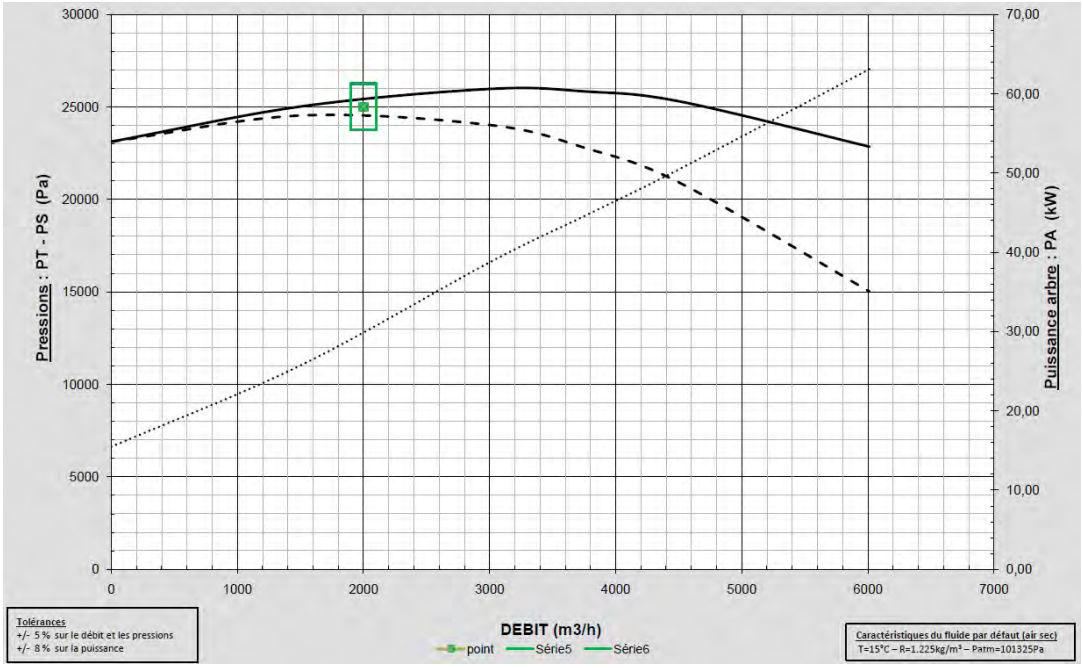
7.2 CHD 1000 m³/h - 25000 Pa fan

Type	Centrifugal fan, 22 kW - HPB 725 – 2 – SV75
Operating point	1000 m³/h at 24000 Pa at 75 Hz



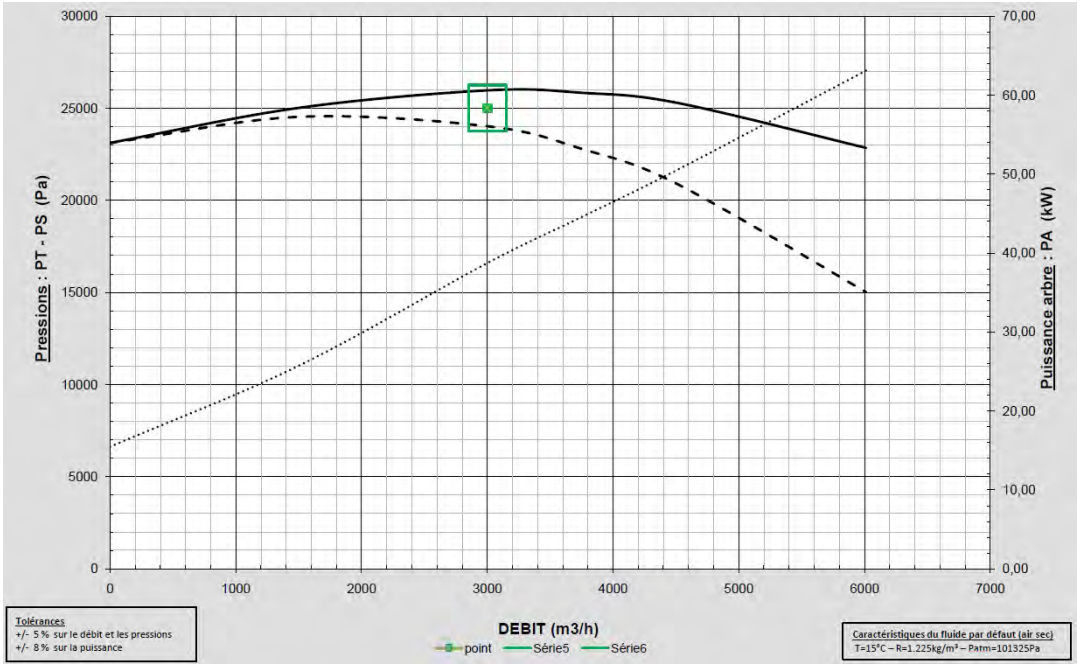
7.3 CHD 2000 m³/h - 25000 Pa fan

Type	Centrifugal fan, 37 kW - HPB 725 – 2 – SV75
Operating point	2000 m³/h at 24500 Pa at 75 Hz



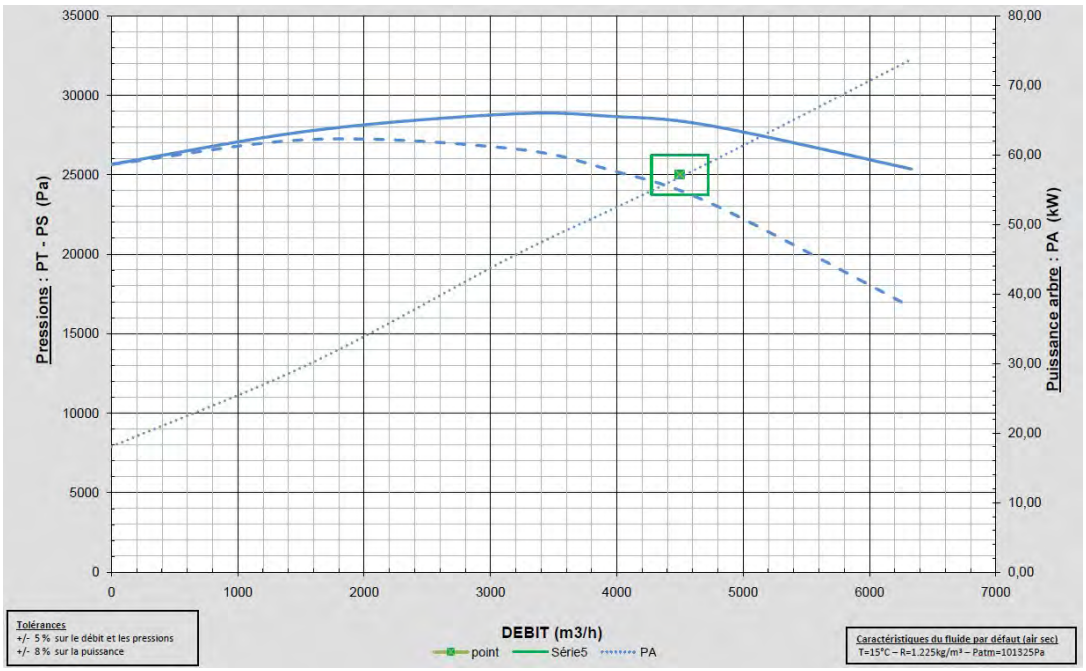
7.4 CHD 3000 m³/h - 25000 Pa fan

Type	Centrifugal fan, 45 kW - HPB 725 – 2 – SV75
Operating point	3000 m³/h at 24000 Pa at 75 Hz



7.5 CHD 4000 m³/h - 25000 Pa fan

Type	Centrifugal fan, 55 kW - HPB 725 – 2 – SV75
Operating point	4000 m³/h at 25000 Pa at 79 Hz

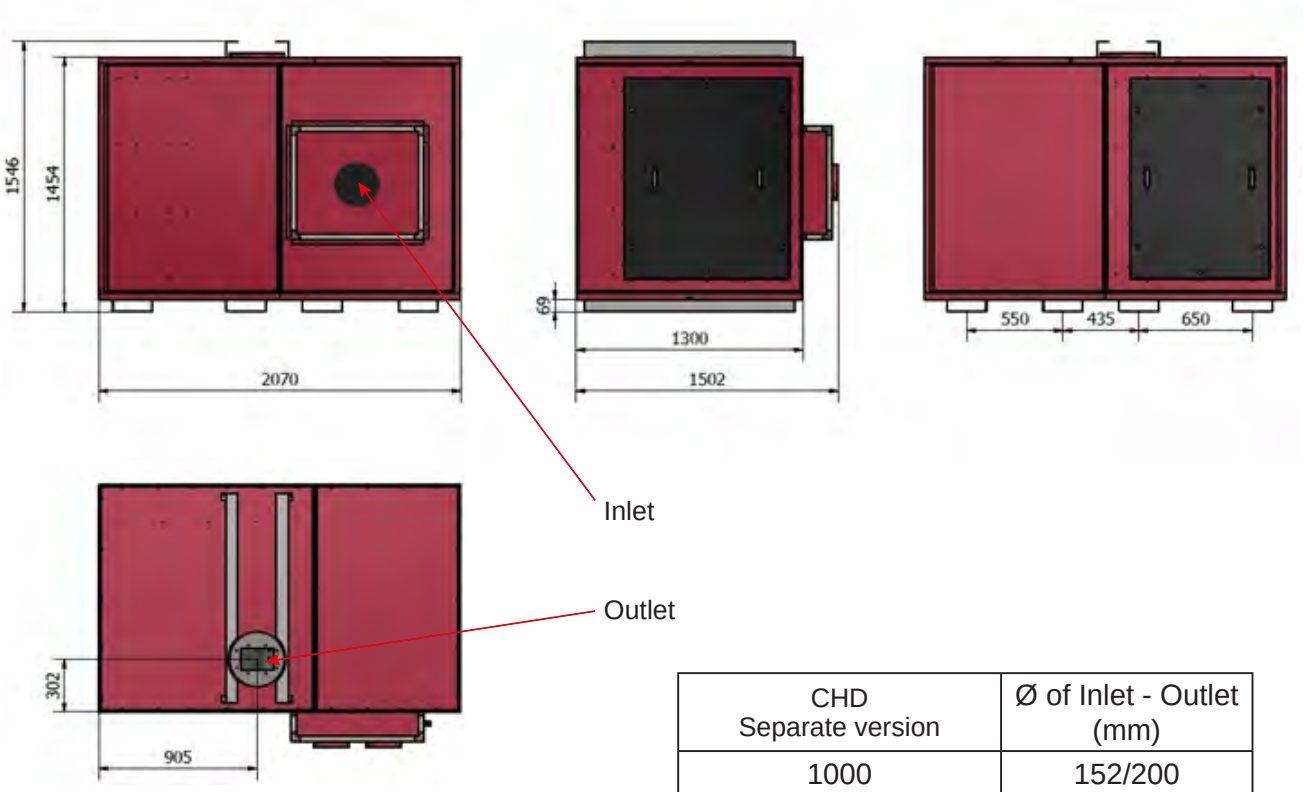


1 - Assembly

The unit is supplied in a single assembly and only needs to be positioned where it is needed, in the workshop or outside the building. The filter can be handled with a lift truck thanks to the fork pockets provided under the frame

Weight of CHD 1000 unit	700 Kg
Weight of CHD 2000 unit	800 Kg
Weight of CHD 3000 unit	950 Kg
Weight of CHD 4000 unit	1000 Kg

2 - Dimensions and location



CHD Separate version	Ø of Inlet - Outlet (mm)
1000	152/200
2000	152/250
3000	203/315
4000	250/315

- The clearance required for opening the doors is 600mm
- A 500 mm technical area over the perimeter of the unit must be provided.

3 - Step-by-step starting of the unit

For complete and easy starting up, here is the order in which the different key phases must be carried out:

- Electrical connection of the power supply to the three-phase 400 V system.
- Connection of the remote control with the HMI screen.
- HMI screen setup and configuration.

4 - Connection

4.1 Connection to the mains

- 400V - three phase, no neutral - 50 Hz power supply
- Compressed air supply, 5 Bars minimum

All the operations relating to the installation, such as those for assembly, putting into service and maintenance, are to be carried out by qualified personnel under the control of a responsible technician.

Recommendation

Electrical cable part number (kW)	System voltage, 50 Hz 400 V three phase	Part numbers of electrical cables
	Cable section (mm²)	Part number
15	4 x 4 mm²	W000010101
18.5	4 x 6 mm²	W000010102
22	4 x 10 mm²	W000010103
37	4 x 16 mm²	W000010104
45	4 x 25 mm²	W000010105
55	4 x 25 mm²	W000010105

4.2 Electricity supply

The power supply is to be connected to the terminals of the main disconnector on the side panel of the unit. Use multi-conductor cable suited to the power of the unit and connect the three phases to the three terminals of the disconnector and the earth to the earth bar provided.

4.3 Connecting the stack light

The stack light has three lights:

- White: Filter live
- Green: Filter operating
- Red: Variable frequency drive fault

4.4 Putting the unit into service

First of all, make sure that all the panels of the extraction unit are shut and locked

Set the main disconnector (located on the side panel) to position 1.
The white power indicator will go on.
The unit is now being supplied with power

Press the button on the HMI screen, and the fan will start.

Press the button on the HMI screen once again, and the fan will stop.

Check the rotation direction of the fan.
In order to ensure the right extraction rates and motor consumption, the motor must operate in the same direction as the arrow on its ventilation casing.
If that is not so, invert two of the three supply phases wired between the variable drive and the motor.

Emergency stop:
If there is any safety problem or if an electrical fault is found. The whole installation can be switched off by pressing the emergency stop button. After identifying and solving the problem, reset the emergency stop and follow the procedure given above for starting up.

Remote control in automatic mode:
Two operating modes are possible:

- Remote control using an external contact.
- Remote control with pushbutton (self holding)

Refer to the electrical diagram of the extraction system and the machine for the wiring.

5 - Variable drive configuration

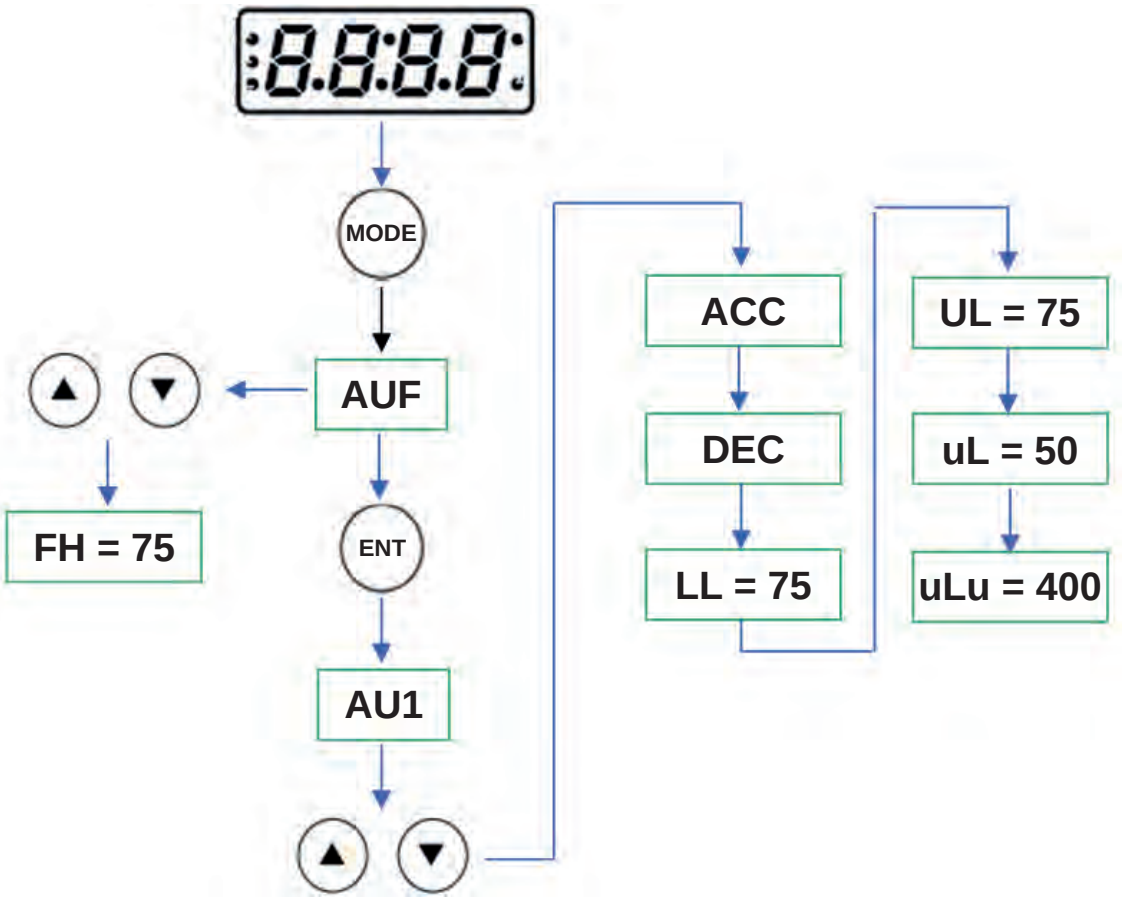
5.1 Operating principle

The variable drive is used for one of its most basic functions: Overspeed operating.
Thanks to the types of fan curve used, we can make a fan operate at a speed from 70 to 87 Hz.
With conventional starting up, it would not be possible to operate it above 50 Hz (electrical system frequency).
Thus, we can operate at overspeed while keeping the system vacuum constant.

5.2 Setup

Reference	Description	Comments
0	% Indicator	Goes on when a numerical value is displayed as a percentage.
	Hz indicator	Goes on when a numerical value is displayed in Hertz.
1	RUN indicator	Goes on when an activation control is triggered.
	PRG indicator	Goes on when the variable drive is in setup mode and flashes when it is in AUF mode.
	MON indicator	Goes on when the variable drive is in monitoring mode.
2	MODE key	Displays the operating frequency, settings and reasons for errors.
3	ENT enter key	
4	STOP key	Each press on the key when the Run indicator is on slows the device down till it stops completely.
5	RUN key	If you press this key when the Run indicator is on, the variable drive starts.
	RUN indicator	Goes on when you press the RUN key.
6	LOC REM local/remote key	Switches between the 2 modes.
	LOC REM key indicator	Goes on when the Local mode is activated
7	Down key	
	Up key	
	Indicators of keys	You can modify the frequency if it is on

5.3 Location of settings



NB 1: Before starting to set the variable drive, make sure that the screen indicates the following value: 0.00, which is the initial state.

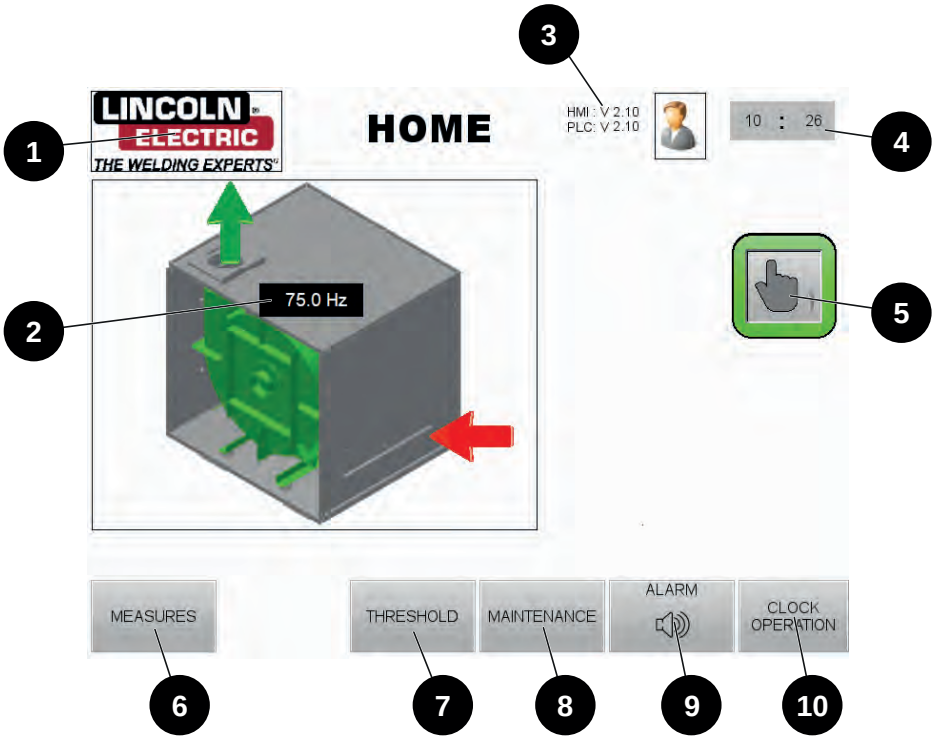
NB 2: To enter the setting, press Enter. To confirm the new value, press Enter once again.

5.4 Values of settings

Setting	Description	Versions				
		1000 m³/h 20000 Pa	1000 m³/h 25000 Pa	2000 m³/h 25000 Pa	3000 m³/h 25000 Pa	4000 m³/h 25000 Pa
CMOD	Variable drive control via input F	0				
FMOD	Limited speed setting on LL	1				
FH	Max frequency	87	75	75	75	79
UL	High-frequency regul.	87	75	75	75	79
LL	High-frequency regul.	87	75	75	75	79
uL	Customer mains frequency	50/60 Hz				
uLu	Customer mains voltage	400V				
F111	Allocation of input F to Run	2				
ACC	Acceleration time	9				
DEC	Deceleration time	20				
F132	FL relay outputs activated if variable drive fault	10				
F360	PID regulation by controller	**0**				
	Schneider controller					
	PID regulation via variable drive in VIA/CC	**1**				
	Delta controller					
F800	RJ45 communication: 19200 bps	1				
F801	RJ45 parity: even	1				
F802	Variable drive Modbus address	1				
F803	Communication ERR management disabled	0				
F807	Controller communication via RJ45	**0**				
	Schneider controller					
	Controller communication via series com	**1**				
	Delta controller					
F829	Modbus communication protocol selection	1				
F870	Read - variable drive	1				
F871	Read - frequency setting	3				
F875	Read - variable drive status info	1				
F876	Read - variable drive output frequency	2				
F877	Read - motor current	3				
F878	Read - motor rotation speed	11				
F879	Read - variable drive alarms	5				

1 - Configuration of the HMI screen

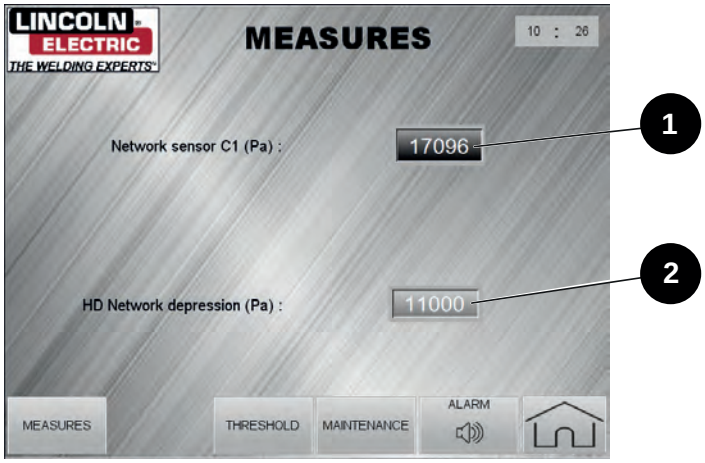
1.1 Home screen



1	Access to configuration settings
2	Operating frequency
3	Program versions for the HMI and PLC
4	Date and time setting
5	Operating mode: • Manual • Weekly clock • Automatic
6	Access to the Measurements screen
7	Access to the Threshold adjustment screen
8	Access to the Maintenance adjustment screen
9	Access to the Alarms screen
10	Access to the Clocks screen

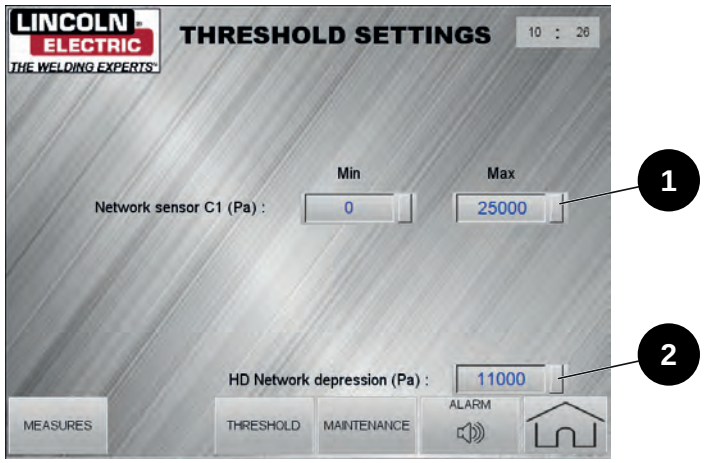
1.2 Real-time measurements screen, with or without flow variation

Real-time display of the different measurement data or regulations of the extraction unit.



1	HV system vacuum (in Pascal)
2	HV system vacuum safety threshold (in Pascal)

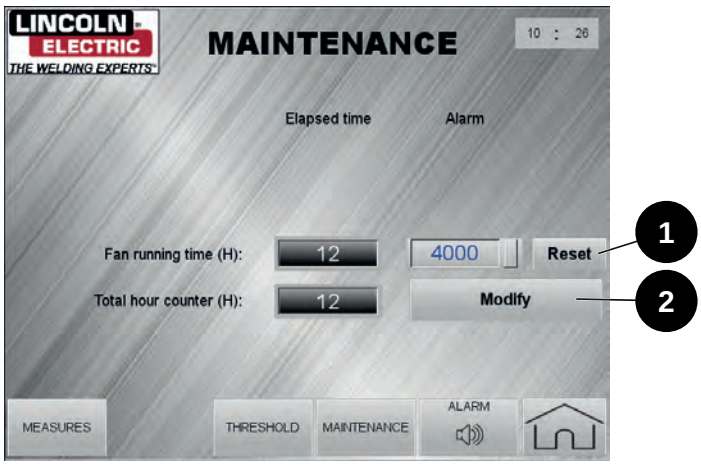
1.3 Threshold adjustment screen



1	Pressure switch adjustment - HV system vacuum (in Pascal)
2	HV system saturation alarm (in Pascal)

Factory values:
- Pressure switch adjustment - HV system vacuum = 0/25000 Pa
- HV system vacuum alarm = 11000 Pa

1.4 Maintenance adjustment screen

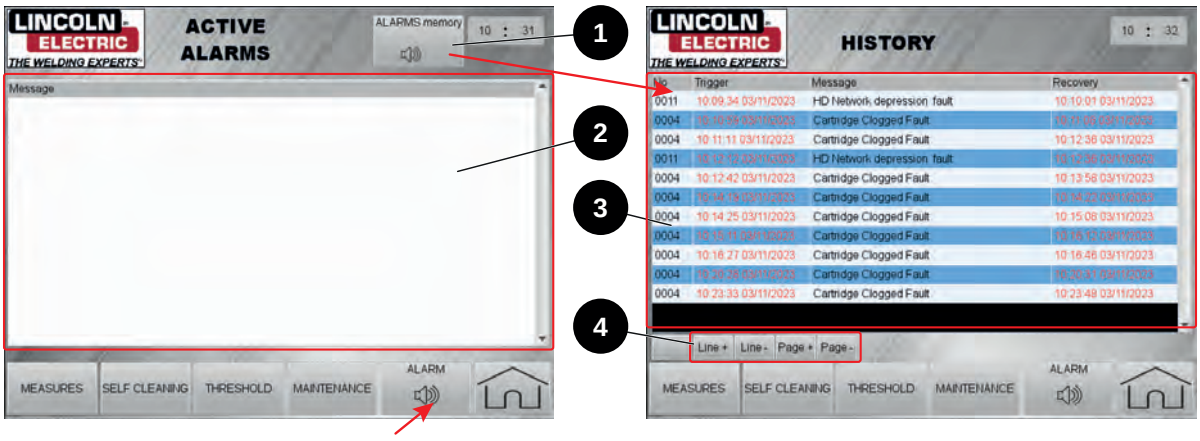


1	Fan operating time (in hours)
2	Total unit run time counter (in hours)

Factory values:
- Fan operating time = 4000 hours (check that there are no vibrations)

After maintenance is complete, log in to reset all the time counters
Login: **LINCOLN** and password: **MAINT** ☛ Reset key

1.5 Alarms screen



1	Access to alarms history
2	List of active alarms
3	Alarms history

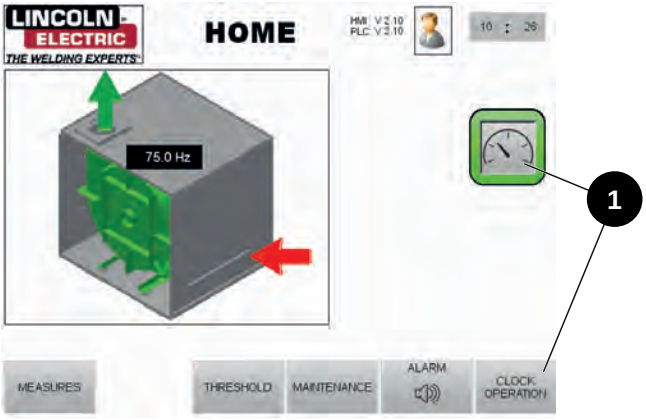
In the Alarms page, you will only find alarms that are active in real time.
Once the alarms have been acknowledged, they are logged on the Alarms history page.

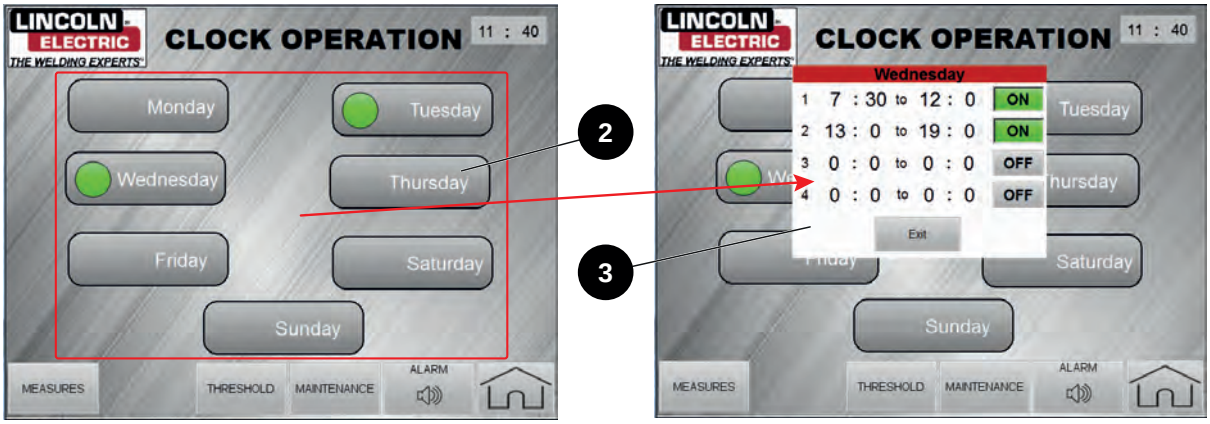
1.6 Clocks screen

The Clock page is accessible from the Home page or by clicking the Clock mode if it is activated

The days are active when the time slots are completed and activated

4 time slots are available per day: Activation or not, by selecting On/Off.

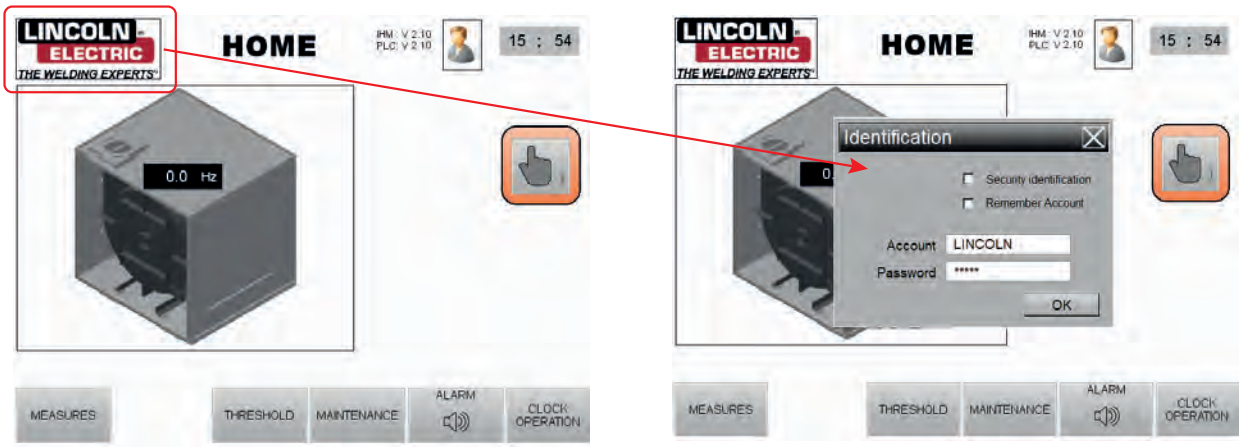




1	Access to the Clock page
2	Day of the week
3	Time slot settings zone

NB:
The time slots saved are only operational if the Clock mode has been selected in the **Mode** configuration page.

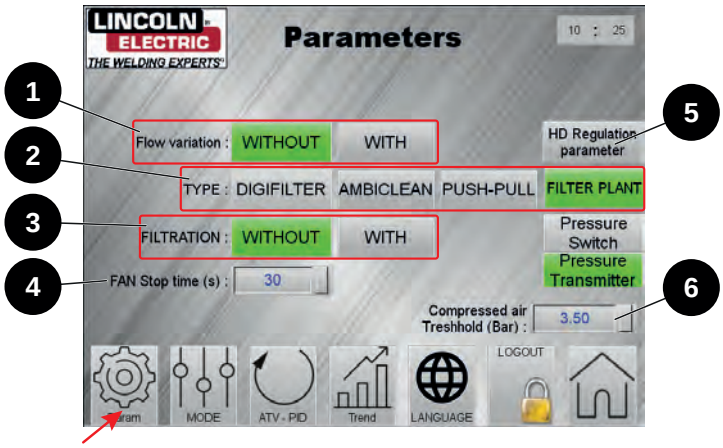
1.7 System screen



Press the Lincoln Electric logo.
After first entering the codes:

- Login: **LINCOLN**
- Password: **MAINT**

1.8 Settings



1	Speed variation setting ☛ None
2	Type of extraction ☛ HV unit
3	Filtration setting ☛ Without
4	Fan stopping time* ☛ 30 (in seconds) *only active in Auto mode
5	Vacuum damper regulation setting
6	Compressed air threshold alarm ☛ 3.5 (in bar) – Not active in CHD units

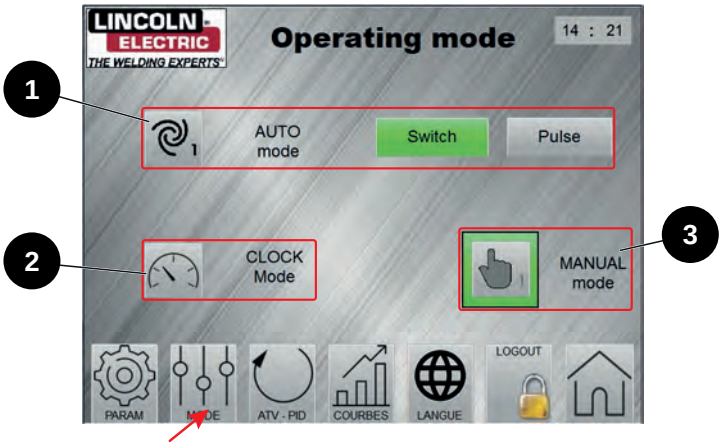
Permitted modifications:

- Fan stopping time
- Compressed air threshold

Factory values:

- Fan stopping time = 30 s
- Compressed air threshold = 3.5 bar (not active in CHD units)

1.9 Operating mode screen



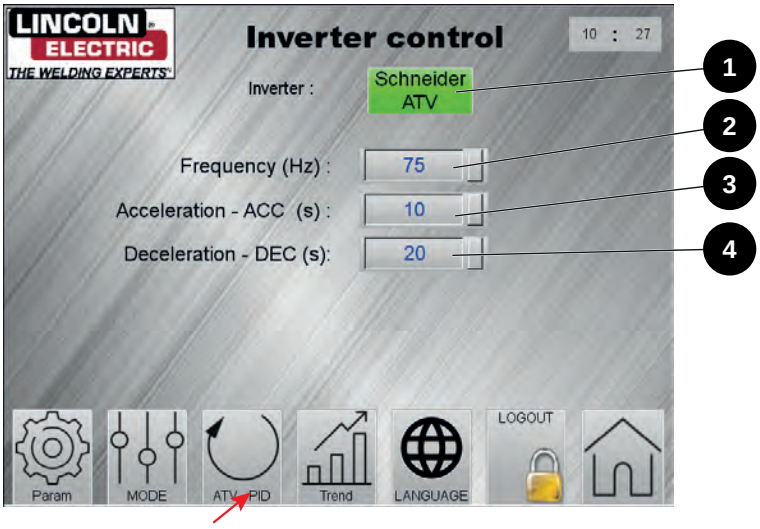
1	Automatic mode by external contact of the hold-to-run or pulse type
2	Automatic mode by time slot
3	Manual mode

Press the logo to select the desired mode.

NB:

The fan must be halted for the modes to become selectable

1.10 Variable drive control screen



1	Type of variable drive
2	Operating frequency setting (in hertz) • HV unit, 1000m3/h – 20.000Pa = 87Hz • HV unit, 1000m3/h – 25.000Pa = 75Hz • HV unit, 2000m3/h – 25.000Pa = 75Hz • HV unit, 3000m3/h – 25.000Pa = 75Hz • HV unit, 4000m3/h – 25.000Pa = 79Hz
3	Acceleration time setting ☛ 10 (in seconds)
4	Deceleration time setting ☛ 20 (in seconds)

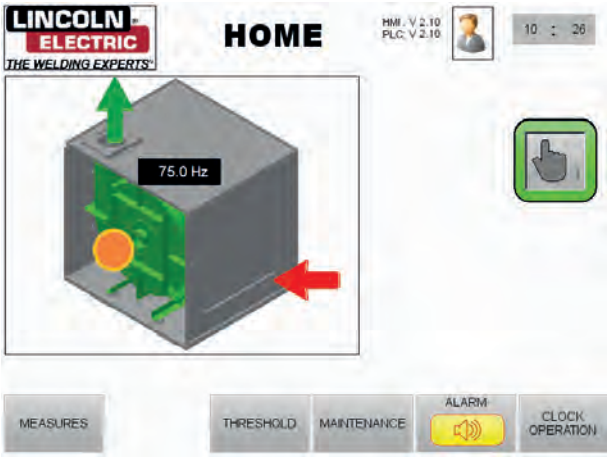
1.11 Languages screen

Choice of language depending on the country.

1.12 Maintenance alarms screen

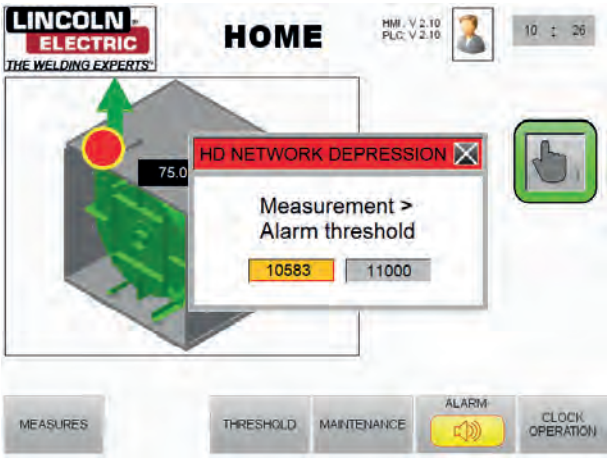
Display by an orange dot of the overrun of maintenance times:

- Fan operation



1.13 HV system alarms screen

Display of the values of the HV system vacuum alarm.
This screen is displayed when you press the red key.
The measured value is below the saved alarm limit (11000Pa).

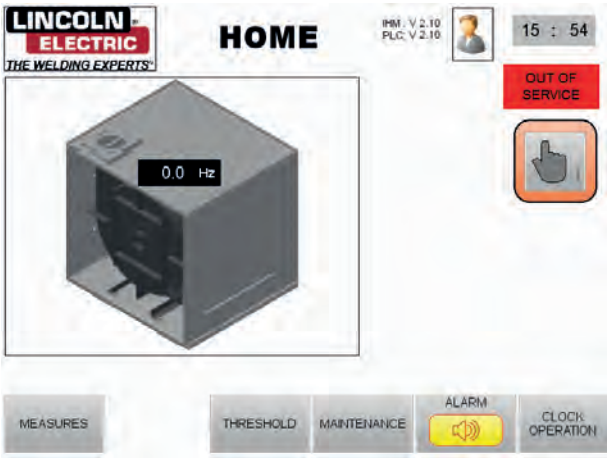


1.14 Out of service screen

The **HV UNIT** is out of service.

Possible causes:

- Emergency stop applied
- Variable drive fault ☛ report the variable drive error code to **Lincoln Electric**.



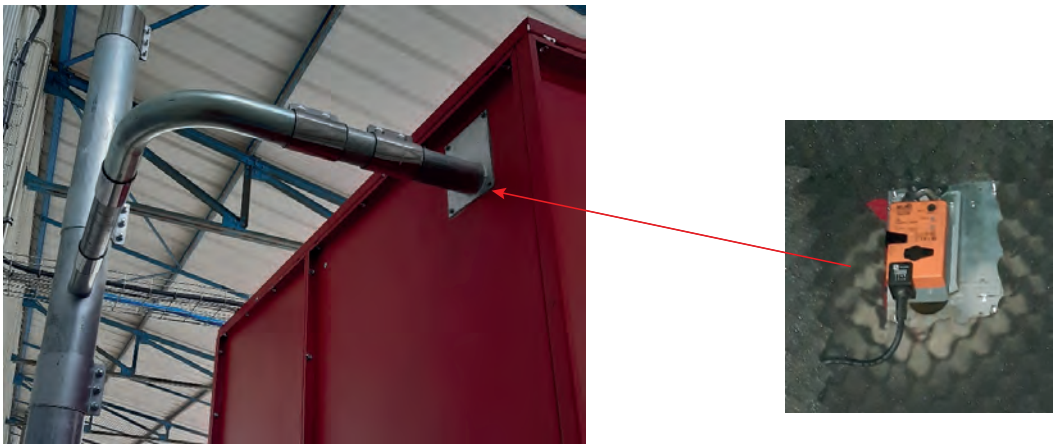
For more details, access the Alarms page

When the HV unit is out of service, the extraction system cannot be restarted.

- Check the emergency stops.
- Read the error message displayed on the screen of the variable drive, in the electrical cabinet of the unit.

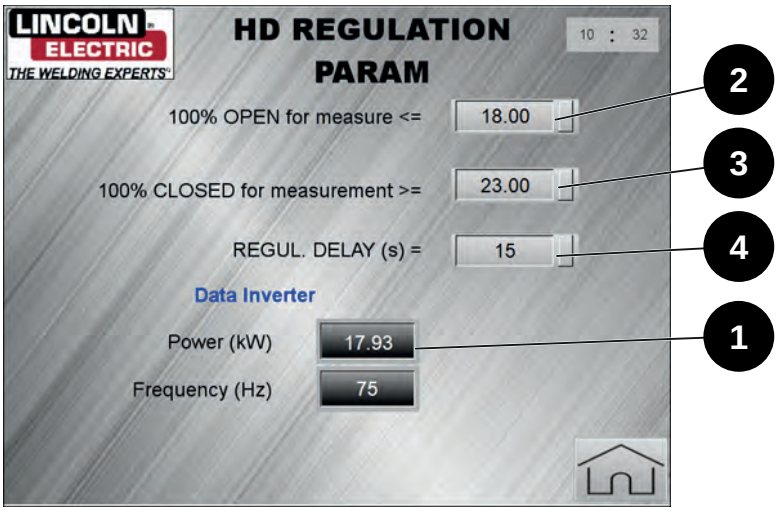
2 - Configuration of HV regulation

The high-vacuum turbine is cooled by the volume of air passing through the extraction system.
When only a few torches are used, the volume of air is not sufficient for cooling the extraction turbine.
In that case, the HV regulation must be adjusted appropriately using the branch damper and the system connection



On the HMI screen, in the HV regulation settings page,

- Read the power consumed in kW **when all the downward passages from the system are shut** (read the value on the home screen of the HMI or the HV regulation setting screen).
- In the 100% OPEN line, enter the read value.
- In the 100% CLOSED line, add 5 kW to the read value.
- Set a 15 to 30 second delay to avoid unintended changes when the operating point varies depending on the use of fume extraction torches.



NB:
The values stated above are for guidance must be adjusted when the unit is put into service.

1 - Care

Please read the manually carefully before you start any servicing work. Maintenance operations may only be carried out by specialised and qualified individuals. Behaviour that does not comply with the safety instructions provided could lead to major hazards for personnel and damage to property and/or the surroundings.

All routine and/or exceptional maintenance must be carried out with the machine disconnected from the supply system.
Advice for machine users: maintenance is to be carried out as described in the manual.

Electrical risks
Cutting and abrasion risks in filter area.
Mind the maintenance of the electrical cabinet. Hazards are indicated by a plate saying “HAZARDOUS VOLTAGE”.
In order to ensure the proper working of the machine, defective spare parts must be replaced with original spare parts from **Lincoln Electric**.

Before starting up the machine, make sure that the replaced parts are perfectly installed and that the tools used are removed from the machine.
Make sure that each safety device is in good condition and legible.

MAINTENANCE OF MECHANICAL PARTS

The machine requires negligible mechanical maintenance if it is used correctly in accordance with its technical characteristics.
Before any type of maintenance that is not clearly defined in these instructions, please make inquiries with the technical department of **Lincoln Electric**.
The performance of operations that may not be carried out or are contrary to the standards and procedures described in the manual would release **Lincoln Electric** from liability for any damage caused and would void the guarantee if it is still valid.

1.1 Fan

The rotating parts of fans (wheel, shaft, pulley) are very hazardous.

Check fan vibrations upon starting up. They must comply with ISO 14694 according to the tables below.
If they are not conforming, please contact us.
This regular inspection is required for the integrity of the fan.

Table 1 - Fan application category

Application	Power limits kW	Categories of application of fan
Households	≤ 0.15	BV-1
	> 0.15	BV-2
HVAC and farming	≤ 0.37	BV-2
	> 0.37	BV-3
Industrial processes and energy generation	≤ 300	BV-3
	> 300	See ISO 10816-3
Transport and maritime	≤ 15	BV-3
	> 15	BV-4
Traffic/tunnel	≤ 75	BV-3
	> 75	BV-4
Petrochemicals processes	≤ 37	BV-3
	> 37	BV-4
Computer chip manufacturing	None	BV-5

Table 2 - Vibration limits

Status	Category of application	Rigid assembly mm/s (rms).	Flexible assembly mm/s (rms).
Starting	BV-1	10	11.2
	BV-2	5.6	9
	BV-3	4.5	6.3
	BV-4	2.8	4.5
	BV-5	1.8	2.8
Alarm	BV-1	10.6	14
	BV-2	9	14
	BV-3	7.1	11.8
	BV-4	4.5	7.1
	BV-5	4	5.6
Stopping	BV-1	Depending on history	Depending on history
	BV-2	Depending on history	Depending on history
	BV-3	9	12.5
	BV-4	7.1	11.2
	BV-5	5.6	7.1

NB: Lincoln Electric markets fans of category BV3.

All maintenance operations are to be carried out with the power to the system switched off.
The user may not modify the construction of the fan in any way.

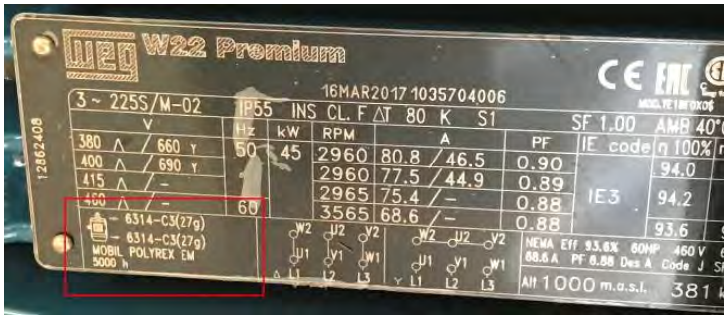
Check that dust is not being deposited in large quantities on the following:
- The motor ventilation blades.
- The fixed and rotating parts of the fan.

Clean if necessary.

The fan wheel must be clean and regularly cleaned in order to avoid a drop in efficiency or wheel unbalance.

Lubrication:
If the fan does not have a lubricator, no lubrication is required.

If the fan does have a lubricator, follow the instructions provided on the motor identification plate.



Motors with lubricators must be halted before lubrication. Proceed as follows:
- Before lubrication, clean the lubricator plug and the immediate vicinity carefully.
- Remove the lubricant entry protection.
- Pump approximately half the total lubricant indicated on the identification plate of the motor and make the motor run for one minute at nominal speed.
- Stop the motor and pump the remaining lubricant.
- Plug the lubricant inlet and put back the plug that shuts off lubricant removal.

Excess lubrication can lead to bearing overheating, which can make the bearing fail.
Type of lubricant to use: Mobil Polyrex EM

Rear lubricator

Front lubricator

Bearing maintenance:

Bearing inspection

As soon as the motor shows the following:

- noise or abnormal vibrations,
- abnormal heating of the bearing when it is lubricated correctly; the condition of the bearings must be inspected.

Damaged bearings must be replaced as soon as possible to prevent more significant damage to the motor and driven parts.
When a bearing needs to be replaced, **the other bearing must also be replaced.**
Seals must always be changed when bearings are changed.
The floating bearing must allow the expansion of the rotor shaft (make sure to identify it during disassembly).

Bearing housing overhaul

Housings with bearings with no lubricator
Disassemble the motor; remove the old lubricant and clean the bearings and accessories with grease remover.
Put fresh lubricant: the filling rate of the housing with fresh lubricant is 50% of the free space.

Housings with bearings with lubricator
Always start off by cleaning the waste grease channel
If using the type of grease identified on the nameplate, remove the covers and clean the lubricator heads.
If a different grease from that on the nameplate is being used, the motor must be dismantled and the bearings and accessories cleaned with degreasing agent (carefully clean the grease inlet and outlet pipes) to remove the old grease before relubrication.
For proper lubrication, fill the inner free spaces of bearing retainers, flanges and grease pipes and 30% of the bearing free space.
Then rotate the motor shaft to spread the grease.

Important:
Too much grease causes the bearing to overheat (statistics show that more bearings are damaged through too much grease than too little grease).

Important note:
Fresh grease must be recently manufactured, of equivalent performance and free from any impurity (dust, water, etc.).

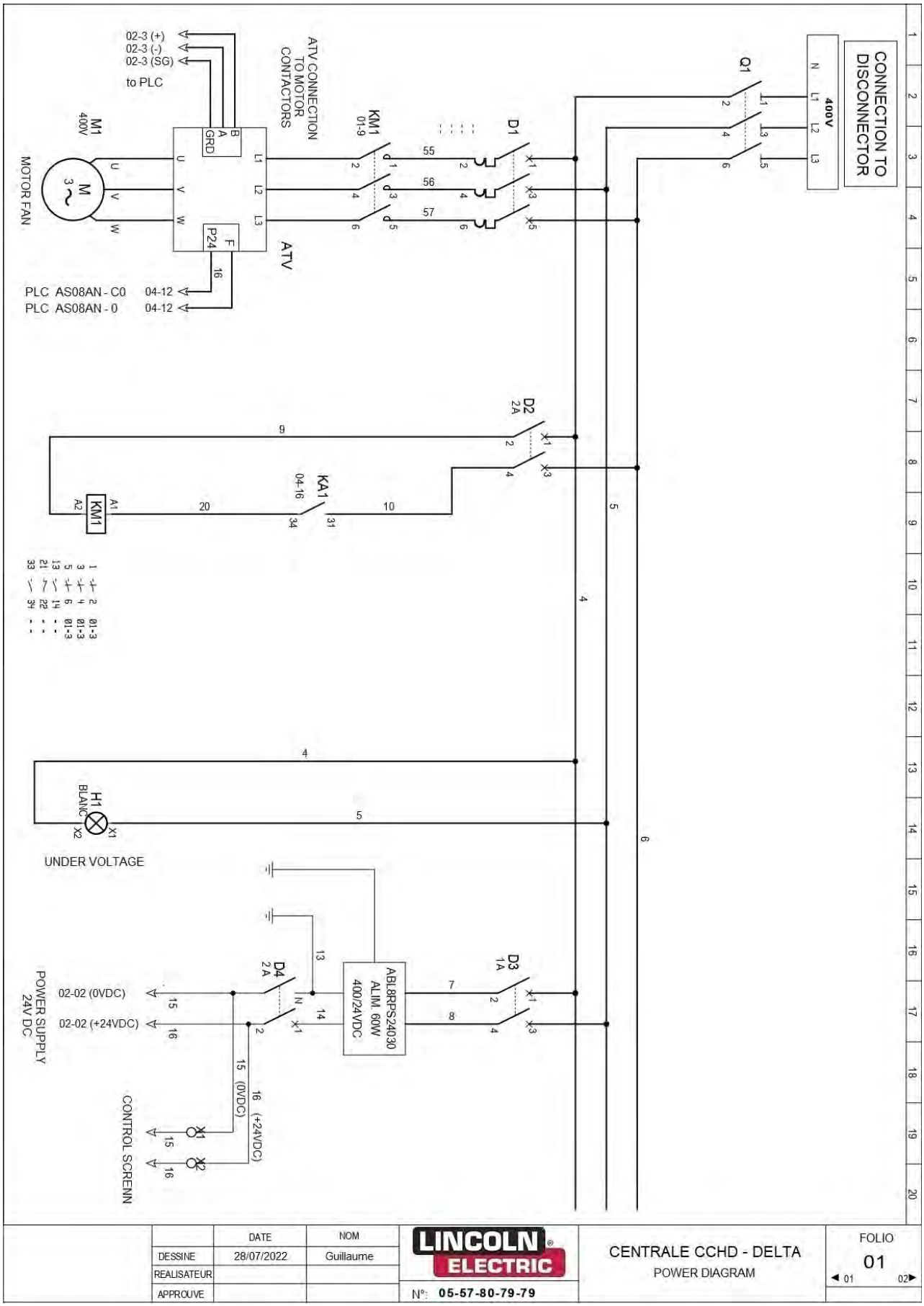
1.2 Maintenance of filtering elements

Pre-filter:

From time to time (every week at the start) as a preventive measure or whenever extraction no longer seems adequate:

Clean with compressed air in a very well ventilated room or by immersion in a solution of water + FILTERCLEAN 20L part no. W000342878 and dry with air (dilution depending on fouling, see label on drum).

Access to the pre-filter is from the panel on the side.



	DATE	NOM
DESSINE	28/07/2022	Guillaume
REALISATEUR		
APPROUVE		

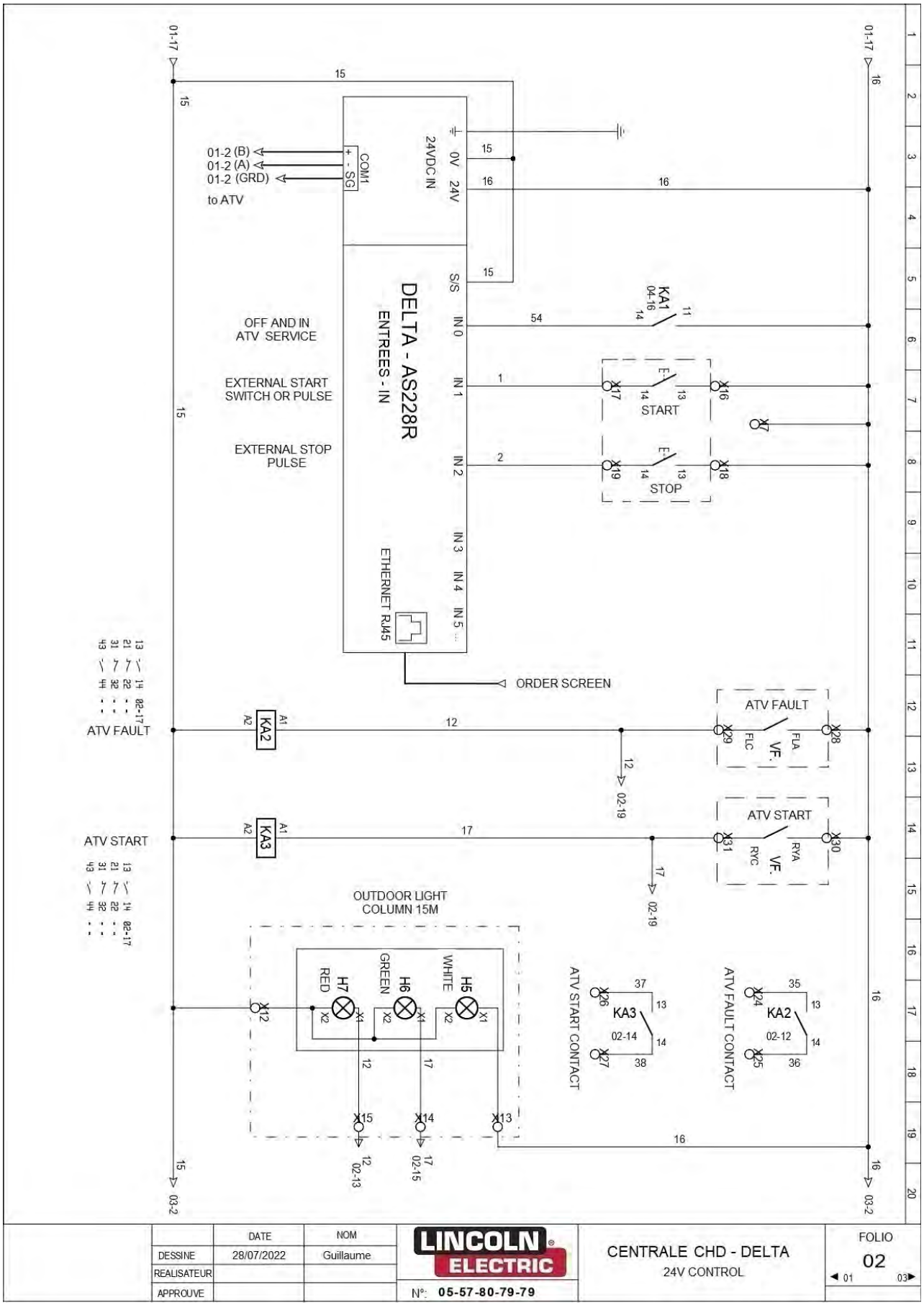
LINCOLN ELECTRIC

N°: 05-57-80-79-79

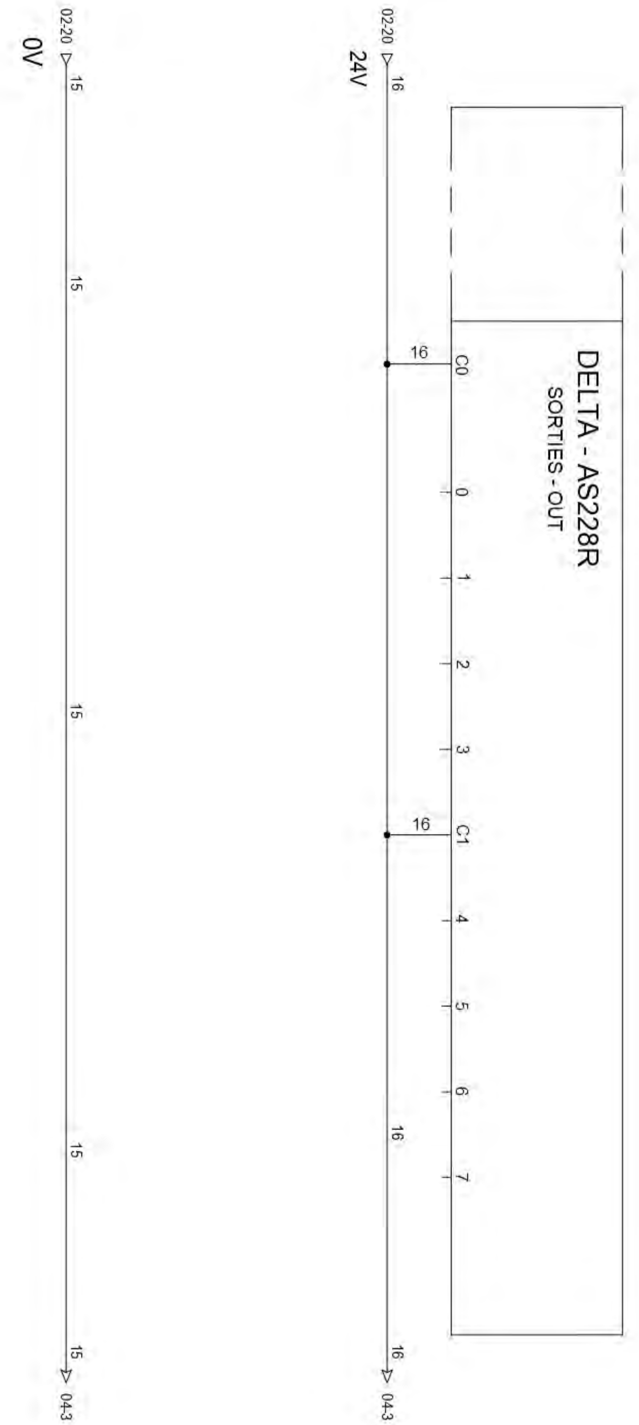
CENTRALE CCHD - DELTA
POWER DIAGRAM

FOLIO 01

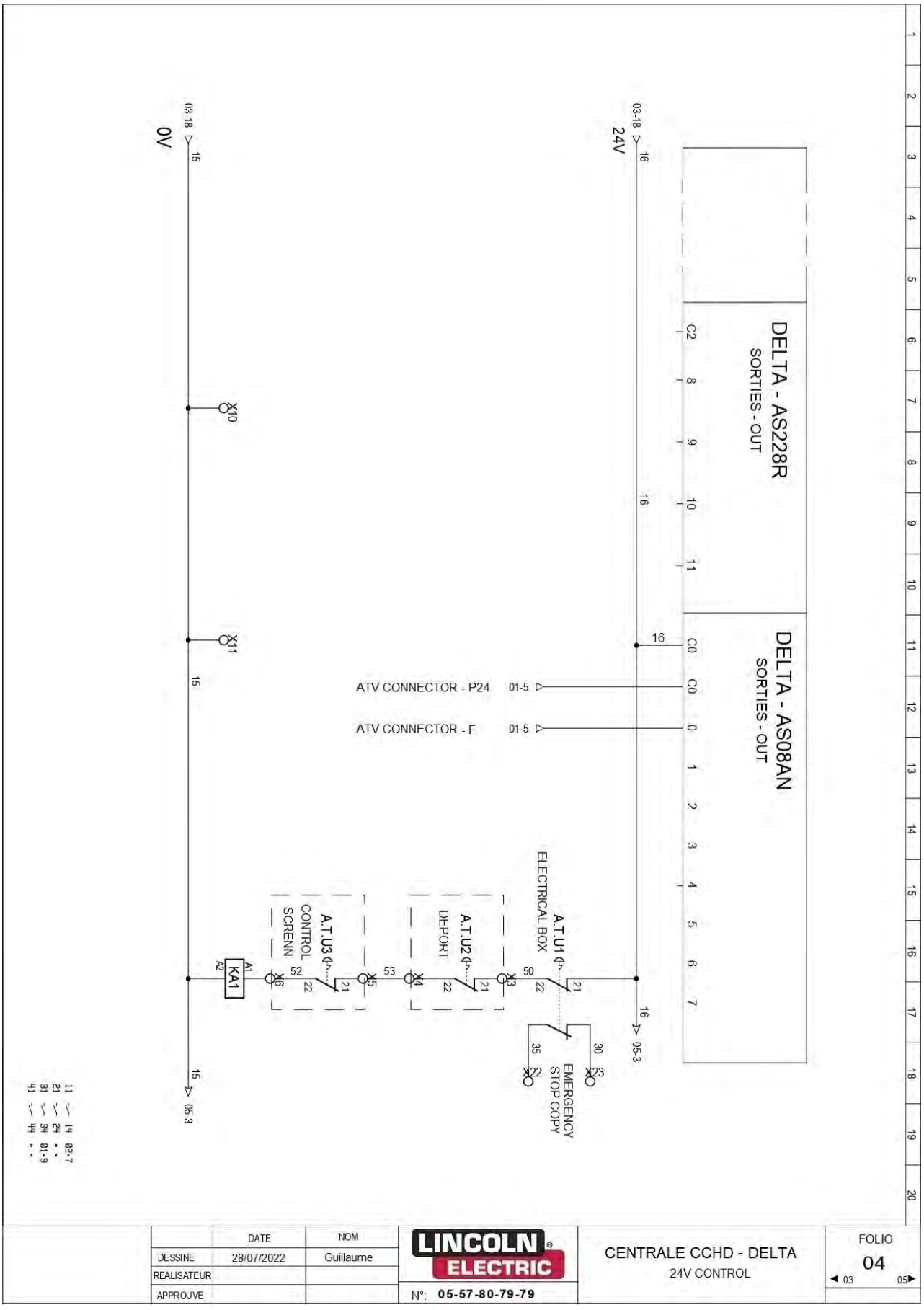
◄ 01 02►

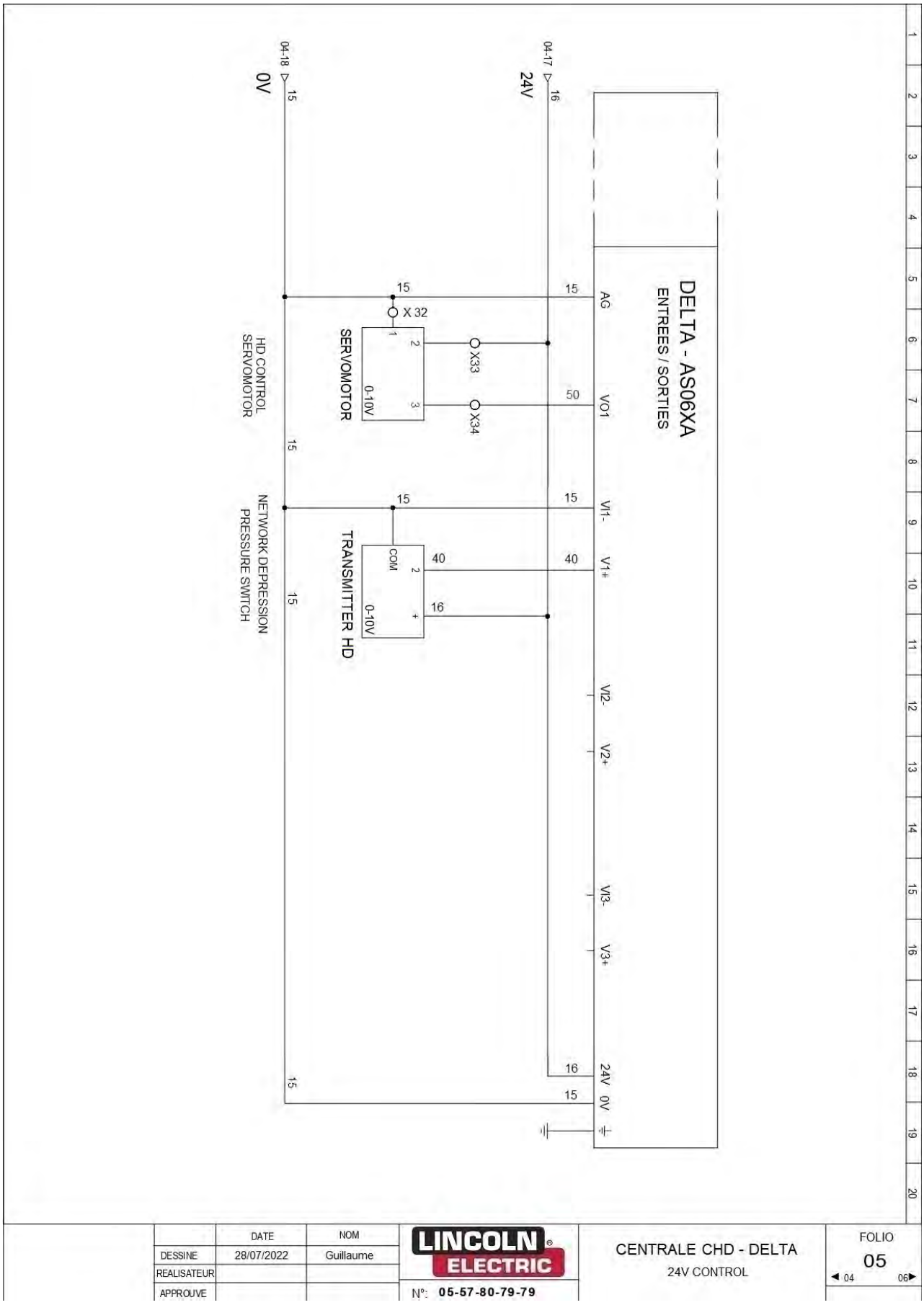


	DATE	NOM			
DESSINE	28/07/2022	Guillaume	LINCOLN ELECTRIC	CENTRALE CHD - DELTA 24V CONTROL	FOLIO 02 ◄ 01 03►
REALISATEUR					
APPROUVE			N°: 05-57-80-79-79		



		DATE	NOM	LINCOLN ELECTRIC	CENTRALE CHD - DELTA	FOLIO
	DESSINE	28/07/2022	Guillaume		24V CONTROL	03
	REALISATEUR					◄ 02 04►
	APPROUVE			N°: 05-57-80-79-79		


DELTA - AS228R
SORTIES - OUT
DELTA - AS08AN
SORTIES - OUT
24V
0V
ATV CONNECTOR - P24
ATV CONNECTOR - F
A.T.U1
ELECTRICAL BOX
A.T.U2
DEPORT
A.T.U3
CONTROL SCREEN
KA1
EMERGENCY STOP COPY
DESSINE
REALISATEUR
APPROUVE
DATE
28/07/2022
NOM
Guillaume
LINCOLN ELECTRIC
N°: 05-57-80-79-79
CENTRALE CCHD - DELTA
24V CONTROL
FOLIO
04



	DATE	NOM
DESSINE	28/07/2022	Guillaume
REALISATEUR		
APPROUVE		

LINCOLN ELECTRIC

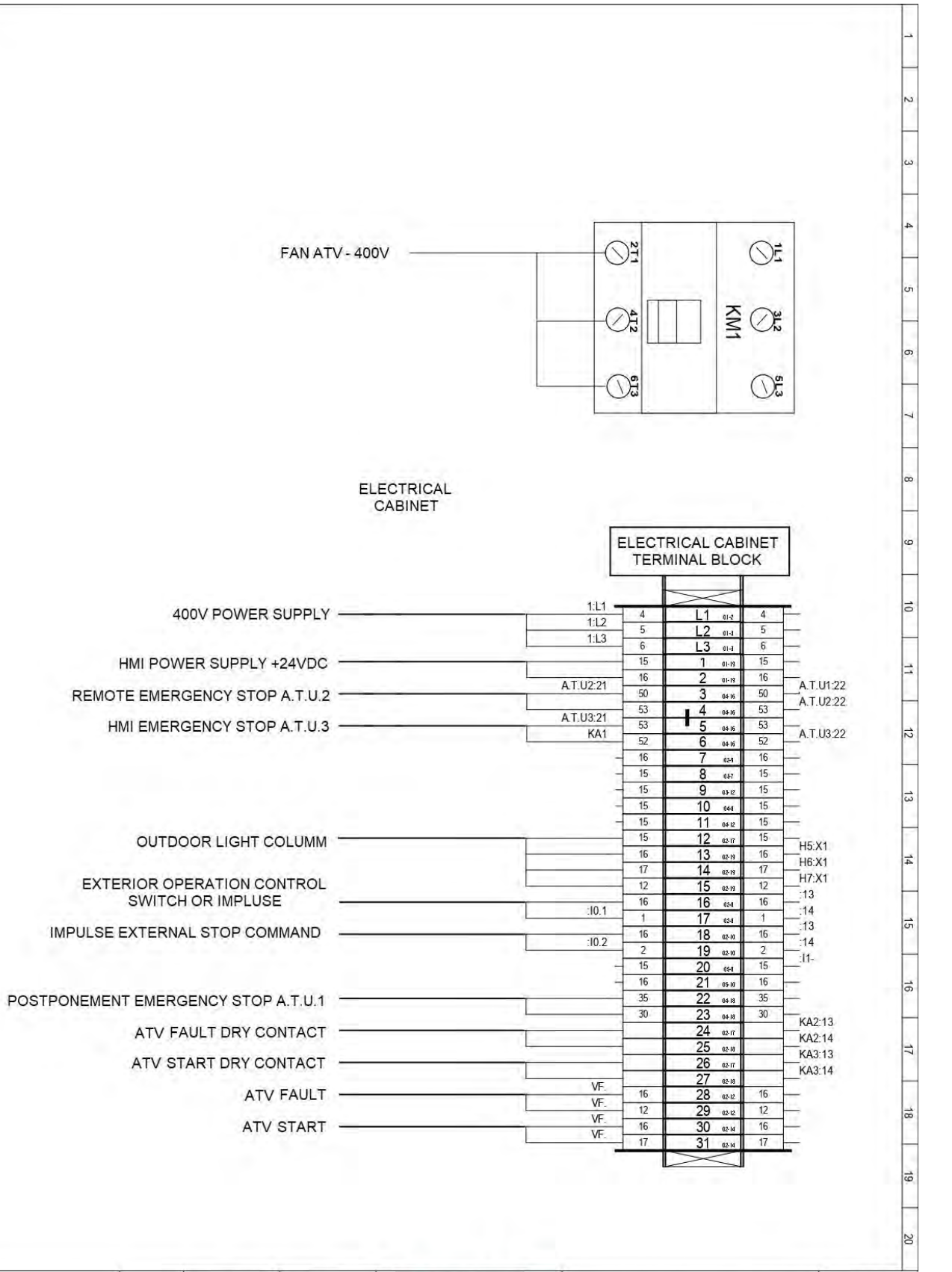
N°: 05-57-80-79-79

CENTRALE CHD - DELTA

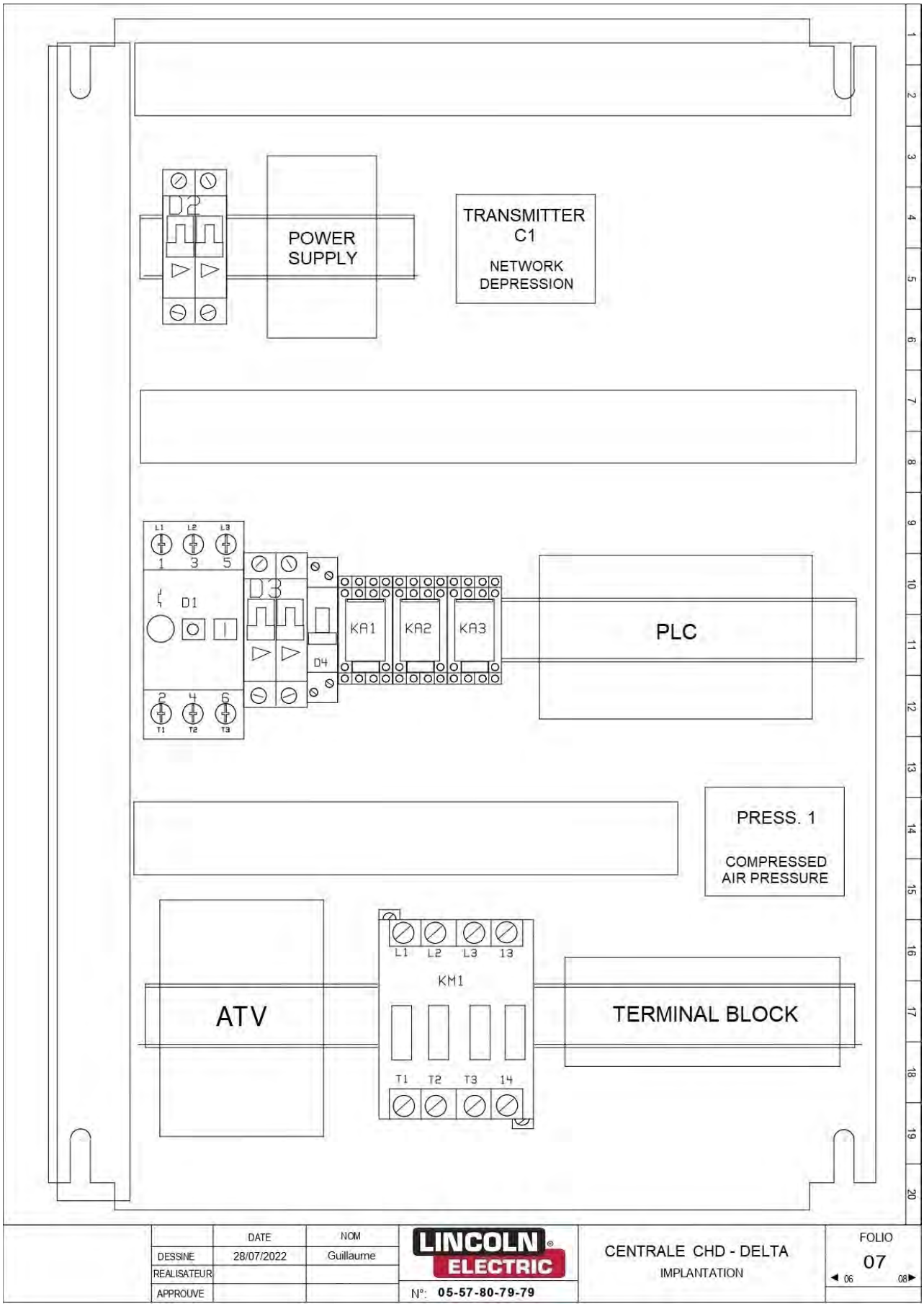
24V CONTROL

FOLIO 05

◄ 04 06►



		DATE	NOM			
	DESSINE	28/07/2022	Guillaume	LINCOLN ELECTRIC	CENTRALE CHD - DELTA	FOLIO 06
	REALISATEUR				Bornier : X	◄ 05 07►
	APPROUVE			N°: 05-57-80-79-79	X - 1/1	



	DATE	NOM
DESSINE	28/07/2022	Guillaume
REALISATEUR		
APPROUVE		

LINCOLN ELECTRIC

N°: 05-57-80-79-79

CENTRALE CHD - DELTA

IMPLANTATION

FOLIO 07

◄ 06 08►

Components specific to CHD 1000 - 20000 Pa

Description	Reference	Specifications	Part number LINCOLN ELECTRIC
45 A disconnector	Q1	OT63FT3	Please enquire
Motor circuit breaker	D1	GV3P40	Please enquire
15 kW – 400 V contactor	KM1	LC1D40AV7	Please enquire
Variable frequency drive	VF	Schneider ATV 212 – 15 kW	W000381524

Components specific to CHD 1000 - 25000 Pa

Description	Reference	Specifications	Part number LINCOLN ELECTRIC
63 A disconnector	Q1	VCF 3	Please enquire
Motor circuit breaker	D1	GV3P50	Please enquire
22 kW – 400 V contactor	KM1	LC1D50AV7	Please enquire
Contactor, 0.75kW – 400 V	KM2		Please enquire
Variable frequency drive	VF	Schneider ATV 212 – 22 kW	W000381527

Components specific to CHD 2000 - 25000 Pa

Description	Reference	Specifications	Part number LINCOLN ELECTRIC
80 A disconnector	Q1	VCF 4	Please enquire
Motor circuit breaker	D1	GV3P65	Please enquire
37 kW – 400 V contactor	KM1	LC1 D65AV7	Please enquire
Contactor, 0.75kW – 400 V	KM2		Please enquire
Variable frequency drive	VF	Schneider ATV 212 – 37 kW	W000381530

Components specific to CHD 3000 - 25000 Pa

Description	Reference	Specifications	Part number LINCOLN ELECTRIC
100 A disconnector	Q1	Eaton Y7 - 20378	Please enquire
Motor circuit breaker, 3P 100 A	D1	A9N18367	Please enquire
45 kW – 400 V contactor	KM1	LC1 D95AV7	Please enquire
Contactor, 0.75kW – 400 V	KM2		Please enquire
Variable frequency drive	VF	Schneider ATV 212 – 45 kW	W000381531

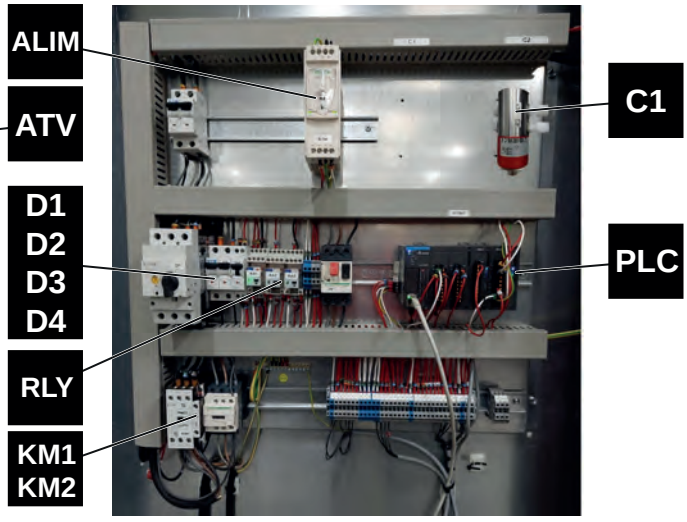
Components specific to CHD 4000 - 25000 Pa

Description	Reference	Specifications	Part number LINCOLN ELECTRIC
100 A disconnector	Q1	Eaton Y7 - 20378	Please enquire
Motor circuit breaker, 3P 125 A	D1	A9N18369	Please enquire
55 kW – 400 V contactor	KM1	LC1 D115AV7	Please enquire
Contactor, 0.75kW – 400 V	KM2		Please enquire
Variable frequency drive	VF	Schneider ATV 212 – 55 kW	W000381532

Components common to all CHD units

Description	Reference	Specifications	Part number LINCOLN ELECTRIC
400/24 VDC 60 W power supply	POWER	Schneider ABL8RPS244030	EM61000469
Two-pole circuit breaker, 2 A	D2	Schneider A9F74202	Please enquire
Two-pole circuit breaker, 1 A	D3	Schneider A9F74201	Please enquire
Phase + Neutral 2A circuit breaker	D4	Moeller PLG4 – C2/1N	Please enquire
5.7” colour screen, HMI	Screen	DELTAr	EM61000513
Complete PLC	PLC	DELTA	EM61000514
RJ45 cable – 15m			EM61000473
White 380 V indicator	H1	Schneider XB5AV5B1	Please enquire
Emergency stop	Emergency stop	Schneider ZB5AS844	Please enquire
Digital HV pressure switch, 25000Pa	C1		EM61000727

Description	Part number	Qty
Metal pre-filter (500 x 500 x 24) mm – Class EU2	W000379647	1
HCAS 240– 4 – 0.75 kW cooling fan	Please enquire	1
Crystal tube Ø10 – L10M	EM61000493	x
Quarter-turn lock	EM61000474	x
Kit of sealing strips + angle seals	EM61000475	x
HV unit damper servo motor	EM61000477	1


ALIM
ATV
D1
D2
D3
D4
RLY
KM1
KM2
C1
PLC

PERSONAL NOTES

Lincoln Electric France S.A.S.
Avenue Franklin Roosevelt 76120 Le Grand Quevilly
76121 Le Grand Quevilly cedex
www.lincolnelectriceurope.com