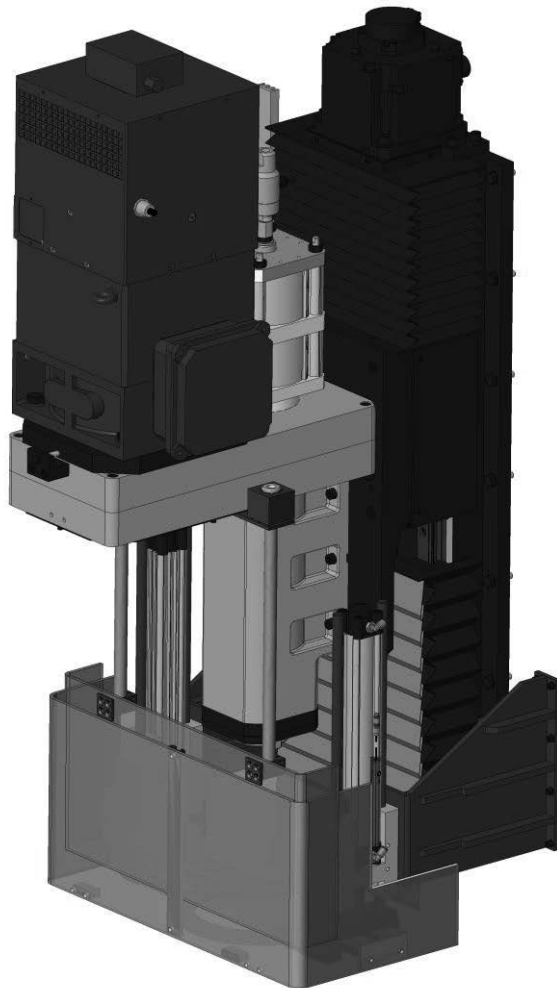


DRILLING UNIT OPTION

SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE



EDITION : EN
REVISION : C
DATE : 03-2019

Instructions for use

REF : **8695 4611**

Original instructions

LINCOLN[®]
ELECTRIC

Thank for the trust you have expressed by purchasing this equipment, which will give you full satisfaction if you follow its instructions for use and maintenance.

Its design, component specifications and workmanship comply with applicable European directives.

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

The manufacturer will not be held responsible where items not recommended by themselves are associated with this product.

For your safety,there follows a non-restrictive list of recommendations or requirements, many of which appear in the employment code.

CONTENTS

A - IDENTIFICATION	1
B - SAFETY INSTRUCTIONS.....	2
1 - GENERAL SAFETY INSTRUCTION S.....	2
2 - PARTICULAR SAFETY INSTRUCTIONS	2
C - DESCRIPTION	4
1 - DESCRIPTION.....	4
2 - TECHNICAL SPECIFICATIONS	5
3 - PNEUMATIC DIAGRAM	6
D - ASSEMBLY AND INSTALLATION	7
1 - CONDITIONS OF INSTALLATION	7
2 - PREPARING THE FLOOR	8
3 - MOUNTING OR MOVING THE MACHINE.....	8
4 - STARTING UP	8
E - OPERATOR MANUAL	9
1 - LIMITATIONS OF USE	9
2 - MANUAL MOVEMENT OF THE DRILLING BLOCK	10
3 - LOADING A DRILLING OR TAPPING PROGRAM	11
4 - CREATION OF NEW BITS	12
F - MAINTENANCE.....	13
1 - SERVICING.....	13
2 - TROUBLESHOOTING	14
3 - SPARE PARTS	15
PERSONAL NOTES	16

INFORMATIONS

DISPLAYS AND PRESSURE GAUGES

The measuring devices or displays for voltage, current, speed, pressure, etc., whether analog or digital, should be considered as indicators.

For operating instructions, adjustments, troubleshooting and spare parts see safety instructions for use and maintenance

- **HPC2** : 8695 4944
- Drill: supplier instructions EU1719
- Specific instructions of the machine



This option is only assembled in the assembly factory.

REVISIONS

REVISION C

03/19

DESIGNATION	PAGE
Create in English Language	

A - IDENTIFICATION

See identification of drill on document EU1719 (drill instructions)

B - SAFETY INSTRUCTIONS

1 - GENERAL SAFETY INSTRUCTIONS



Before using the process, make sure you read the manual, particularly the general safety instructions and those specific to this process.



The machine must be operated by a person trained in its use and hazards.



For general safety instructions, please refer to the specific manual supplied with the equipment: référence 8695 7050



Special security instructions are also recommended in the documentation of the machine, of the options or the extraction table.

In the operating phase, and also in the adjustment phase, appropriate personal protection is required (see the instructions for use of the drill for more details).

2 - PARTICULAR SAFETY INSTRUCTIONS

CONDITIONS OF USE

Before using the machine, make sure that all the guards are in place. In addition to the safety sensor, the Plexiglas guard protects from chip ejection and prevents direct access to the spindle. It may not be removed.



Before starting any work on the drilling unit, make sure that the power source is switched off

The emergency stop does not shut down the power supply of the drill.

The disconnecter of the main cabinet does not disconnect the power of the drilling unit cabinet



For any extended absence, the operator must shut off the supply of utilities (electricity and fluids).

Any work on the cabinet must be carried out by approved personnel.

It is forbidden to switch on photoelectric cells protection device if somebody is between the cells and the beam or the tool magazine.

Do not reset the safety light curtains if anybody is located inside the protected zone.



Two seconds before activating the drill, a stack light lights up on the drilling unit. It is important to move away from the drilling unit when that light is on (risk of pinching or collision).

The speed settings of the pressing cylinder have been sealed. It is important to not modify the settings, for your own safety and the proper working of the machine.



Clean the working area from time to time. Risk of slipping and falls



It is absolutely necessary to be protected from the risk of burns (direct or indirect contact)

Drilling may generate significant quantities of heat.

There is risk of burns at the tool and at the cut material

High-temperature metal splatter can be emitted during cutting.

Use non-flammable cutting oil.



The normal mode for loading/unloading tools is automatic tool loading (by the program)

If there is a new tool, put it manually into the magazine and declare it in the UI of the drill. The emergency stop must be engaged.

If that is impossible, the tool can be separated manually from the spindle. Two workers are required for this operation. It is imperative to go into the Maintenance mode on the main console before changing the tool manually. This mode prevents possible hazardous movements.



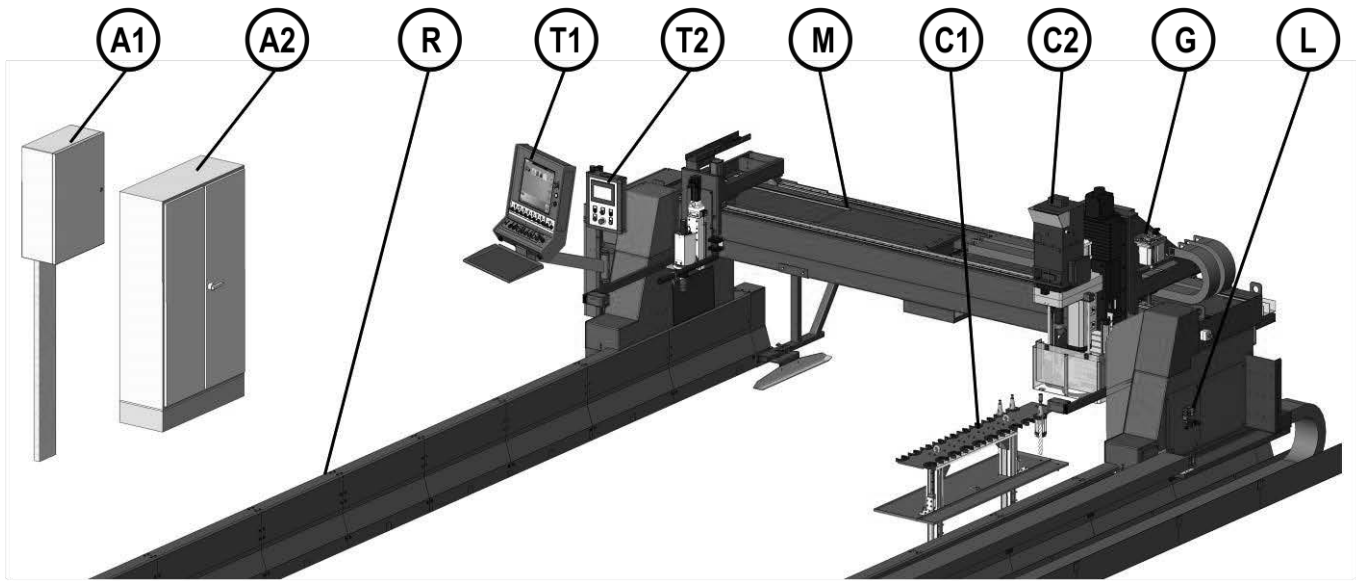
It is imperative to clamp the part before drilling. The pressing device is not sufficient for immobilising the piece. Risk of ejection or defective drilling.

Clamps are installed on the cutting table

For clamping the pieces, see the instructions of the cutting table.

C - DESCRIPTION

1 - DESCRIPTION



M	Beam assembly
R	Rolling track
C2	Drilling unit
C1	Tool magazine
T1	Machine control panel
T2	Drill control panel
A1	Disconnecting box
A2	Drill electrical cabinet
G	Greasing
L	Lubricationn

The automatic drilling unit has been designed for making holes with diameters 5 to 30 mm*. These holes may be through or blind, depending on their purpose.

Process parameters can be adjusted from the UI of the drill. It also has the settings to be made on the drilling unit (see drill instructions)

See details of the composition in the instructions of the drill.

* Some diameters may require preliminary holes.

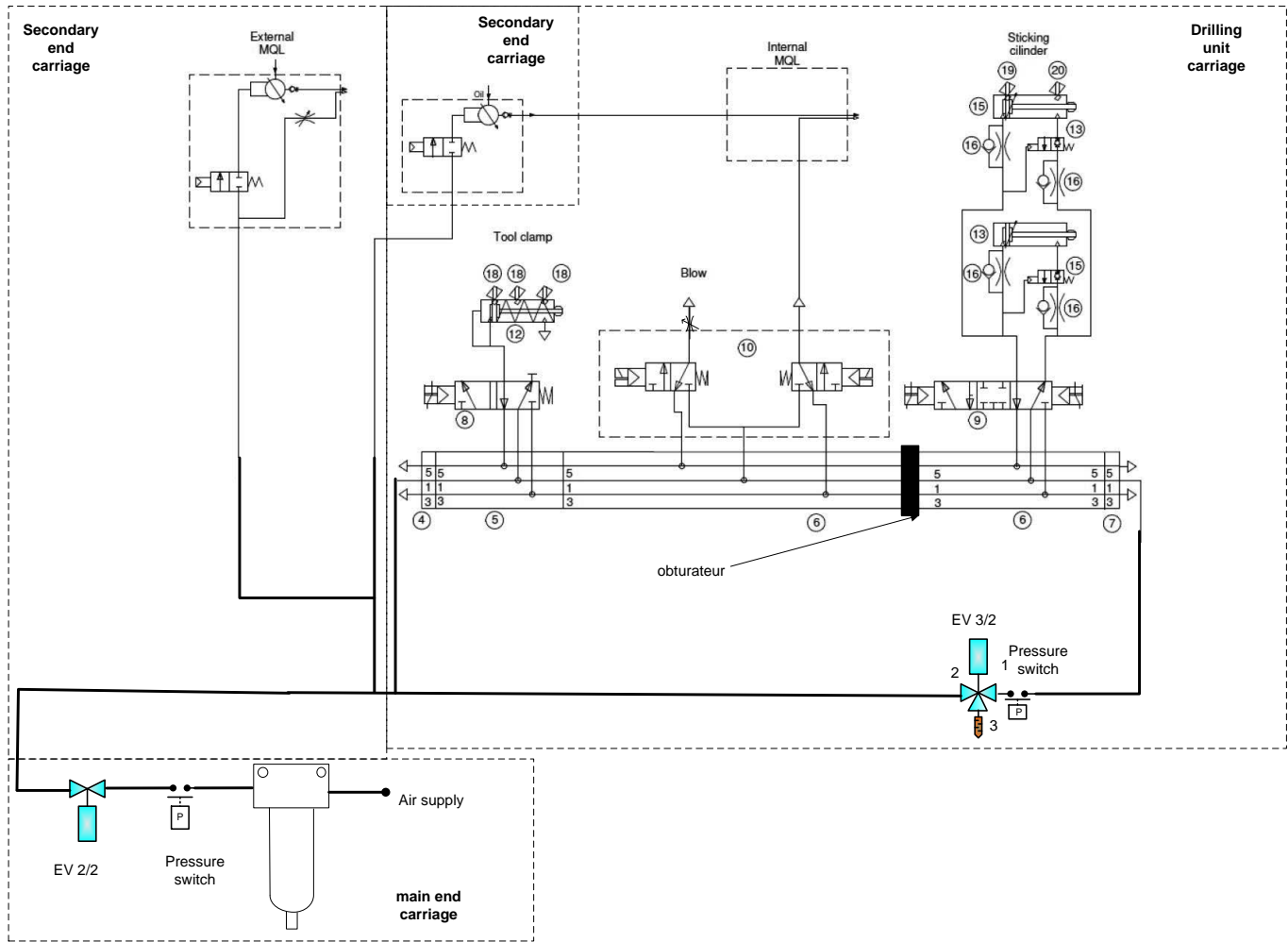
2 - TECHNICAL SPECIFICATIONS

Capacity in steel (max)	Ø 4 to 30 mm (Rm below 600 Mpa)*
Mandrel travel	400 mm
Minimum drill bit dimension	Ø 4, 90 mm (from the tool gauge to the end of the bit)
Maximum drill bit dimension	Ø 30, 270 mm (from the tool gauge to the end of the bit)
Spindle attachment	ISO 40 DIN 69871 for the taper ISO 40 DIN 69872 for the pull stud
Speed range	100 - 4500 rpm
Motor system	21 Kw - 400 V
Thrust force on the guide	4000 N
Pressing force	80 Kg
Vertical feed speed	10 m/min

See dimensions of the drilling unit in the drill instructions.

* Some diameters may require preliminary holes.

3 - PNEUMATIC DIAGRAM



D - ASSEMBLY AND INSTALLATION

1 - CONDITIONS OF INSTALLATION

THE LAYOUT OF THE INSTALLATION MUST COMPLY WITH SAFETY STANDARD
NF EN 547 - 1 -3 TO ENSURE PERSONAL PROTECTION.



THE FOLLOWING CONDITIONS MUST BE COMPLIED
WITH BEFORE INSTALLING THE EQUIPMENT



ELECTRICITY SUPPLY See layout drawing supplied

VERY IMPORTANT

In order to comply with European safety regulations, connection to the mains must be made using a wall box fitted with an individual disconnecting switch of suitable size according to the mains' voltage and to the consumption of the apparatuses.

This protective disconnecting switch will have to have a cutting capacity of 100kA.

We markets units meeting such requirements. Do not hesitate to contact us.

PNEUMATIC SUPPLY see supply drawing provided

The user must provide a source of compressed air with a regulator that can supply the required flow and pressure. The air must be clean, de-oiled and degreased.

QUALITY CLASS: as per standard ISO 8573-1

Solid pollutant class	Class 3	Grain size 5 μ m	Mass concentration 5mg/m ³
Water class	Class 3	Maximum dew point under pressure -20°C	
Total oil class	Class 5	Concentration 25 mg/m ³	

ARRANGEMENT OF CABLES AND FLEXIBLE HOSES

* The customer must provide the means to support and protect cables and flexible pipes from mechanical, chemical or thermal damage from their source up to the entrance to the cable drag chain and from the machine up to the entrance to the control console

2 - PREPARING THE FLOOR

See layout drawing supplied

The machine's layout requires a stable ground, for example an industrial ground.

Concrete slab in a single stretch made at least 21 days before (standard BAEL 93), 200 mm thick. The thickness of the slab and its reinforcement are given for guidance, and must be verified depending on the characteristics of the floor.

OR

Single concrete longitudinal member. 20 Mpa (350 kg/m³) concrete with metal reinforcement.

Flatness over the entire site with additional travelling tracks ± 10 mm. height difference: 30mm (5mm/m max).

3 - MOUNTING OR MOVING THE MACHINE

Contact Lincoln Electric if you want to mount or move the Drilling unit Option

4 - STARTING UP

Contact Lincoln Electric for starting up the drill option

Important: indispensable mechanical adjustments are required before any movement. Risk of damaging the equipment or malfunctioning.

E - OPERATOR MANUAL

The automatic drilling cycle faithfully follows high-technology machining centres. It includes the following:

- Automatic acquisition of the length of the bit
- Pressing and detection of the plate surface by an annular shoe
- Numeric guide for tapping
- An unjamming function to make it easier to clear material
- Central or external micro lubrication can limit cutting oil pollution and avoid complex implementation
- The chip breaker function to make chips easier to blow away and eliminate long and tedious spindle cleaning operations

1 - LIMITATIONS OF USE

Drilling tools can be damaged when they go through onto a plate support; even if the installation contains safety systems to protect the machine, drill bits must be considered to be consumable supplies.

The drilling depth precision depends mainly on the deformation of the plate and the job.

The use of tools with dimensions different from those recommended could damage the machine.

A new unmeasured tool could damage the machine.

In order to avoid a taper remaining blocked in the spindle, it is important to empty the spindle at the end of the program. That is done automatically or manually if the program has stopped before the end.

2 - MANUAL MOVEMENT OF THE DRILLING BLOCK

See the working of the console controls in the machine instructions.

Drill movement:

The left-right jog movement can be activated as required, Y, V or both

The selection is achieved using the following buttons on the manual strip



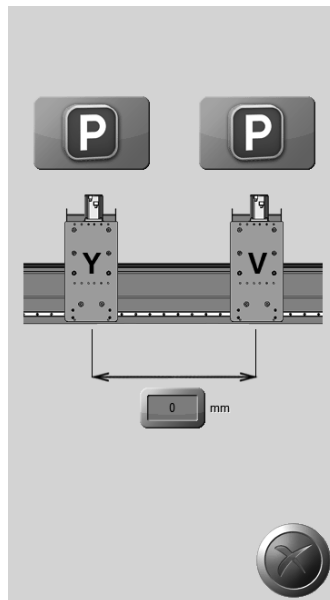
For the vertical movement of the spindle, see the instructions of the drill.

Note that blank jogging of the drill is permitted (e.g. to clear the tool), but the program must be reset after that. To shift a program, that must be done when plasma cutting is selected.

Jogging during drilling erases the program pause till the end of the jog (the tool does not move in XYV).

Parking control:

These operating controls only operate after the program has been loaded (NCRun)



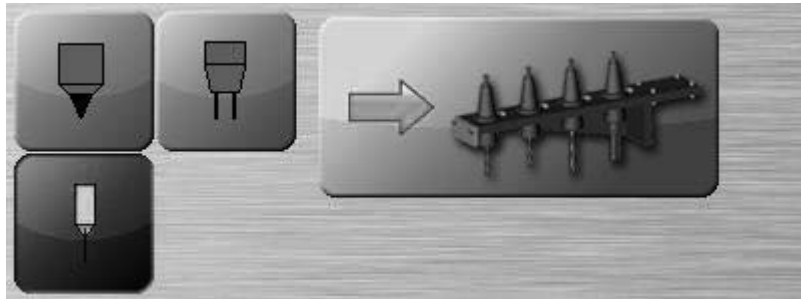
Four actions are then possible:

- Y in parking position
- V in parking position
- Definition of a distance between the two axes
- Exiting the page, cancelling the movement.

Once the movement starts, it can be paused by pressing the Stop Cycle button

Semi-automatic tool unloading controls

On the manual strip, press the Drill tool and then the drill button to unload the tool in the corresponding location.



The unloading sequence will be carried out.

If the button is greyed, that means that an alarm has made it impossible to start the sequence.

Semi-automatic controls are to be preferred to manual unloading.

Manual tool unloading

Following a drilling fault or a mains power failure, the tool may have to be removed manually. To do so, go to Maintenance mode, in Manual mode on the drill, then from the UI of the drill, activate the Release tool control. Important! It is preferable to work with another person for this action: one to control the valve via the UI and another to release the tool.

A pedal located close to the job may also be used for the same action. In that case, the same person can control release via the foot control of the tool and release/hold the tool.

Unblocking a bit or a tap

Following a drilling fault or a mains power failure, the tool may remain in the plate. In that case, stop the part program (program reset) and go to Manual mode on the drill. The tool up/down/rotate/release controls are present. For tapping, pressing the flashing Start button makes it possible to reverse the movement to take out the tap.

Other drill actuator controls

See the instructions of the drill

3 - LOADING A DRILLING OR TAPPING PROGRAM

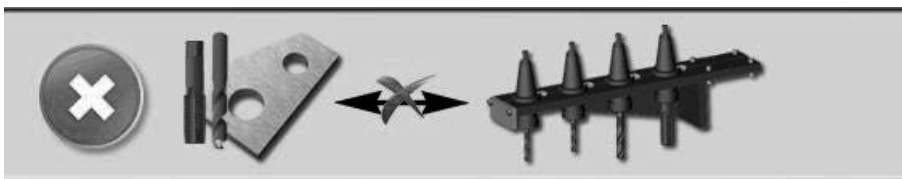
**REFER TO INSTRUCTIONS 8695 4944 OF HPC FOR STANDARD AND
DRILLING/TAPPING CONTROLS**

NB:

The program is to be validated (with material/thickness) for each new program with drilling, so that the drilling unit is given the thickness to drill.



It might happen that the tools are not present in the magazine; in that case, the button will flash and an image will be displayed while selecting the drill tools:



This image prevents program validation

To remove the block, there are two solutions:

- Modify the program to display the right tools
- Load the drill with the correct tools (material, type of machining (drilling or tapping and diameter) in the UI of the drill. Then press the button (4) to update the data of the HPC2 UI in relation to that of the drill.

Another possible error is as follows:



The UI has queried the drill but has not received a reply. In that case, switch on the drill cabinet or solve the connection problems.

4 - CREATION OF NEW BITS

New bits may be assigned in the tool magazine (or existing bits can be replaced).

See the instructions of the drill.

With a new bit, it is important to enter:

- The materials used (in upper case, separated by “;”)
- The drilling/tapping parameters
- Tool length.
- That the tool is to be measured automatically

Risk of damage to the equipment or malfunctioning if these fields are not completed.

F - MAINTENANCE


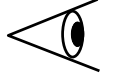
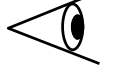
1 - SERVICING

- So that the machine continues to provide good service for as long as possible, a certain minimum of care and maintenance is necessary
- The frequency of this maintenance work is given on the basis of the production of one work station per day. Maintenance should be more frequent if production is greater.

Your maintenance department may photocopy these pages so that it can follow up maintenance dates and operations (tick as appropriate)

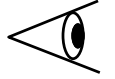
Weekly

Date of maintenance: / /

	General cleaning of the drill to eliminate drilling dust/chips and oil
	Check the pneumatic circuit (see following page)
	Check the grease level in the tank.
	Remove the chips inside the magazine close to the drill in order to not damage bundles and pipes.
	Oil the ISO 40 tapers to avoid oxidation.
	Do not leave the taper in the drilling unit (in the mandrel) when the machine is stopped.
	Check the lubricant level in the lubrication tank

Monthly

Date of maintenance : / /

	- Check the condition of all electrical cables, particularly close to the drilling unit and the cable drag chain (change them if required).
	FILTER PNEUMATIC CIRCUIT
	To keep the filter maximally effective and prevent head loss, it must be cleaned regularly. Standard filters have a semiautomatic purge for clearing any build-up in the tank. Standard filters have a semiautomatic purge for clearing any build-up in the tank.
	That semiautomatic purge operates when the air is cut off in the upstream pipe.
	In the event of continuous operation, provide for a periodic manual manoeuvre of the purge.
	The filter must be cleaned whenever a visible concentration of impurities and/or excess pressure loss are observed
	Alcohol may be used for cleaning. Then blow the inside the filtering element.

- Refer to the drill literature

2 - TROUBLESHOOTING

See the electrical diagram of the machine and that of the drilling unit

Alarms:

If there is an alarm specific to the drill, see the alarms on the UI of the drill.

The alarms indicating faults that affect the machine are indicated on the UI.

Fault	Probable causes	Potential remedies
01280 : Drill fault	The drill cabinet is not on The drill has a fault	Check on the drill UI and correct the fault.
01281 : Position of the drill that prohibits movement	The drill and/or the pressing cylinder are not in the high position or in the magazine entry position for machine movement	Manually put the drill/pressing cylinder in the safety position.
01282 : Drill in manual mode	The drill is in manual mode and a program with drilling or a drill movement is requested.	Put the drill in Auto mode
01283 : key in Plasma mode	The plasma/drill selector is in Plasma mode and a program with drilling or a drill movement is requested.	Put the mode selector into Drill mode and validate the activation of the axes.

3 - SPARE PARTS

See the drill instructions and the instructions specific to the machine.

