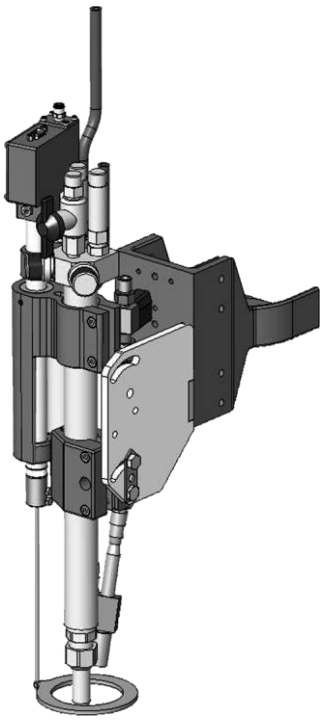
AUTOMATIC CUTTING INSTALLATION

ESSENTIAL OXYCUTTING

SAFETY INSTRUCTIONS FOR USE AND MAINTENANCE

INSTALLATION N° P07085005NG / P07085015NG



EDITION : EN
REVISION : F
DATE : 03-2024

Instructions for use

REF : **8695 4985**

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.

Finally we would ask you kindly to inform your supplier of any error which you may find in this instruction manual.

CONTENTS

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

ISEE N° : 8695 7050 : Safety instructions
8695 4986 : Optional Essential torch ignition
8695 4187 : Oxy Safe Piercing option
MACH HP torch option instruction manual
MACH OXY torch option instruction manual
8695 4673 : OXY VXK bevelling unit option

REVISIONS

REVISION B **10/16**

DESIGNATION	PAGE
Creation in several languages	

REVISION C **09/18**

DESIGNATION	PAGE
To change logos	

REVISION D **09/18**

DESIGNATION	PAGE
Update	E-23

REVISION E **09/21**

DESIGNATION	PAGE
Update + Addition **HPC III**	

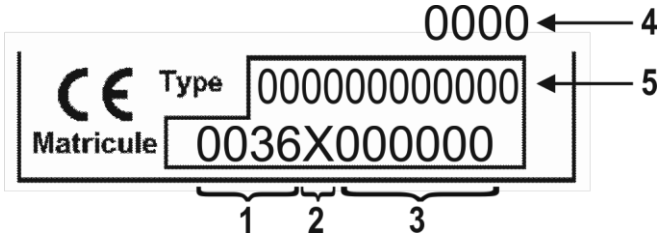
REVISION F **03/24**

DESIGNATION	PAGE
Imperial measurements added	

A - IDENTIFICATION

Please enter the number of your equipment in the following box.

Quote this information in all correspondence.



1	Manufacturing factory code	**4**	Year manufactured
2	Manufacturing year code	**5**	Product type
3	Product serial no.		

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, reference 8695 7050

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

2 - AIRBORNE NOISE

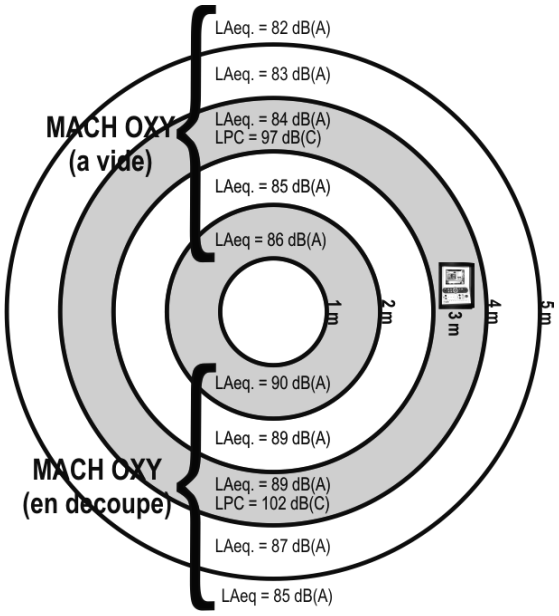
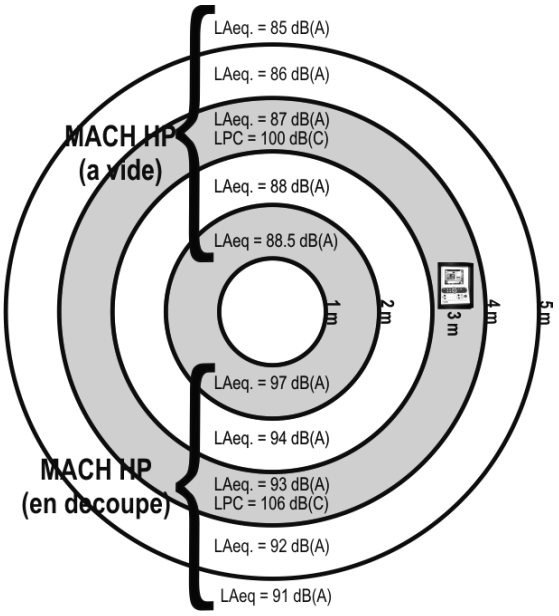
1 - Measurement Site Qualification

The machine was tested in the
LINCOLN ELECTRIC FRANCE
ZI rue Lavoisier, BP009
79200 PARTHENAY FRANCE.
central assembly building

This site has been qualified by APAVE (Nord Ouest)
5 rue de la Johardière
44800 Saint Herblain FRANCE

This qualification was the subject of Report n°12296847/2

2 - Measurements

MACH OXY	MACH HP
	

The use of a helmet is required with a noise level above 80dB, for the operator and for persons located nearby.

The noise generated by the process can cover external sound warnings.

3 - ELECTRICAL SAFETY

The flame cutting gas cabinet is supplied with 230V power. Risk of electric shock or electrocution. It is locked with a removable key.

After the work, lock the cabinet once again before switching on the power.

Any work on the cabinet must be carried out by approved personnel. The emergency stop does not shut down the power supply of the manifold box.

The remainder of the flame cutting installation is powered with 24VDC, +/-12VDC, 24VAC. The igniter manages high voltage at low intensity.

4 - USE OF PERSONAL PROTECTIVE EQUIPMENT

In the operating phase, and also in the adjustment phase, appropriate personal protection is required (see document 8695 7050 for more details).

Standard EN 169 requires the use of shade 7 dark glass for the outputs from this process.

5 - INSTRUCTIONS FOR THE USE OF GAS

See section 3, Safe use of gas of the document 8695 7050, particularly the use of oxygen, propane and acetylene.

Oxygen is an oxidant; it activates combustion.
Acetylene is corrosive to copper: do not use brass with more than 70% copper content
Fuel gases are particularly flammable materials

The machine is not designed for operating in an explosive atmosphere.

By definition, fuels are highly flammable. The machine does not generate ATEX zones in normal use or in the event of potential fuel leaks, if the conditions of installation, maintenance use and checking are followed. However, such potential leaks can be involved in the overall calculation of ATEX zoning of a plant or workshop. Upon request, we can supply the characteristics of our machine for such rating.

All our fittings and valves are placed in the open air. To avoid hazards, it is thus indispensable for the machine to be installed in a large and well ventilated workshop, and the sheet to cut must necessarily be placed on a extraction table that removes burnt gas and also unburnt fuel gas that may be present in the vicinity of the torches.
When the machine is not in use, the gas supplies must be shut

We have used the following hypotheses for the calculation of ATEX zoning:
- The machine may not be used in workshops with a volume less than 2000m^3 *(70000 pi^3)*
- The maximum gas supply pressure data stated in these instructions must be followed
- The machine may not be used in workshops with air renewal less than 6/hour
- The checking of leaks from valves and fittings is required every month.

If these conditions are not met, please contact us.

For cutting/welding workshops, a minimum air renewal rate of 15/hour is recommended.

6 - CONDITIONS FOR USE

The installation is designed to operate with an appropriate extraction table (please call us for rating). Regularly check the effectiveness of the extraction.
Under the standard EN ISO 15012-4 , the following speeds are required for oxycutting in respect of the table:
- 1 m/s *(3,3 pi/s)* for thicknesses below 100 mm *(4 po)*
- 1.2 m/s *(4 pi/s)* for thicknesses between 100 mm *(4 po)* and 200 mm *(8 po)*

The installation is designed to operate with only one type of fuel gas. Please contact us for all gas type changes.

The installation is designed for cutting steel. Take particular precautions for the cutting of other materials (painted steel, film-wrapped steel etc.) indicated by the manufacturer of the material.

No smoking and no disposing of debris or any combustible material in the cutting table or on the sheet.

For example, if oil is used on the sheet, it must not be combustible.

Adjust the method so that any impurities from the process are not thrown more than two metres around the torch.

The installation is designed to operate under the monitoring of an operator.

The installation is designed for working at an ambient temperature from 0°C *(32°F)* to 35°C *(95°F)*. The machine is designed for operating inside a workshop. If the machine must operate outside these conditions, please contact us.

Switch off the energy to the machine before maintenance.

7 - RISK OF HEATING

When the machine cuts pieces:

- that are small (e.g. where one dimension is less than 100 mm *(4 po)*),

- nested closely,

- with several torches set close to each other (e.g. 150 mm *(6 po)* - 500 mm *(20 po)*)

The sheet temperature may rise (above 300°C *(572°F)* for instance). As a result, the mechanical systems located near and above the oxycutting nozzles may be exposed to high temperatures and be damaged rapidly (components, pipes, wires).

Heating of parts also disrupts sensing, and thus adversely affects the cutting quality.

THE SOLUTION MAY CONSIST IN :

- modifying the cutting program to distance the succession of cuts while cutting the pieces,
- and/or using a cutting table with fume extraction so as to carry away as many calories as possible from the bottom of the sheet (so as to avoid the rise of calories above the sheet).

If these measures do not deliver the expected result, the customer should ask for assistance from the manufacturer.

C - DESCRIPTION

1 - POSSIBILITIES OF THE ESSENTIAL OXYCUTTING INSTALLATION

This is a complete installation made up of a series of industrial equipment (manifold box, solenoid-valve assembly, torches), specially designed to allow automatic thermal cutting with oxycutting.

NB: The speed and quality pair can be selected differently depending on the end destination of the cut parts.

Oxycutting is a process where metal is cut off by the localised and continuous combustion of a jet of pure oxygen.

Quality and productivity requirements: closer metallurgical, dimensional or geometrical tolerances, surface conditions, speed etc. make it necessary to use modern guiding machines.

The cutting values and speeds depend on the type of torch and gas used.

Gas usable with all torches:

- Propane
- Acetylene
- Natural gas

Oxycut Machoxy torch:

Cutting capacity: 6 mm *(0,25 po)* to 200 mm *(8 po)*

Mid sheet cutting possible up to 100 mm *(4 po)*

Mach HP torch:

Cutting capacity: 6 mm *(0,25 po)* to 200 mm *(8 po)*

Mid sheet cutting possible up to 100 mm *(4 po)*

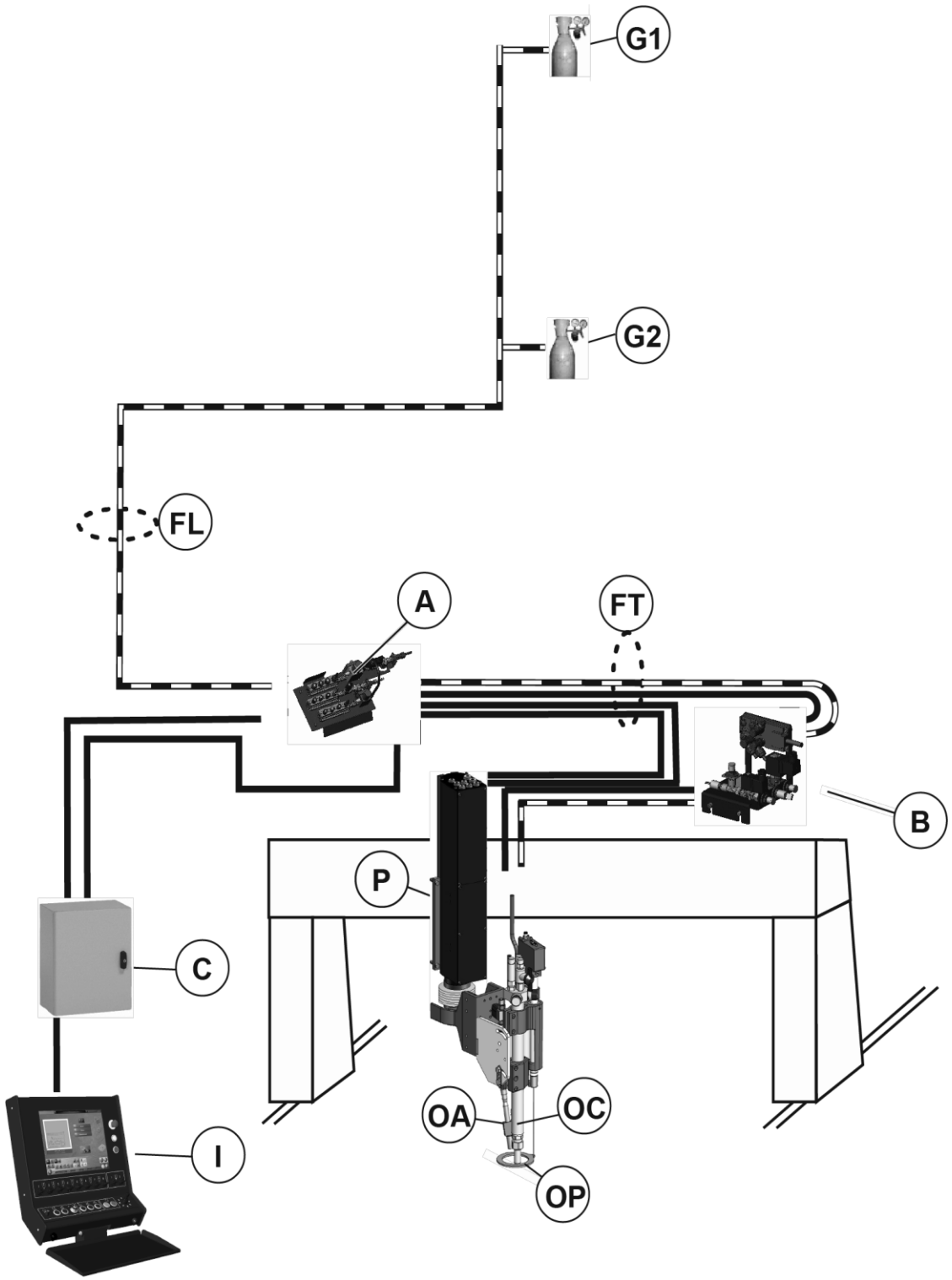
Mach HPi torch:

Cutting capacity: 6 mm *(0,25 po)* to 200 mm *(8 po)*

Mid sheet cutting possible up to 100 mm *(4 po)*

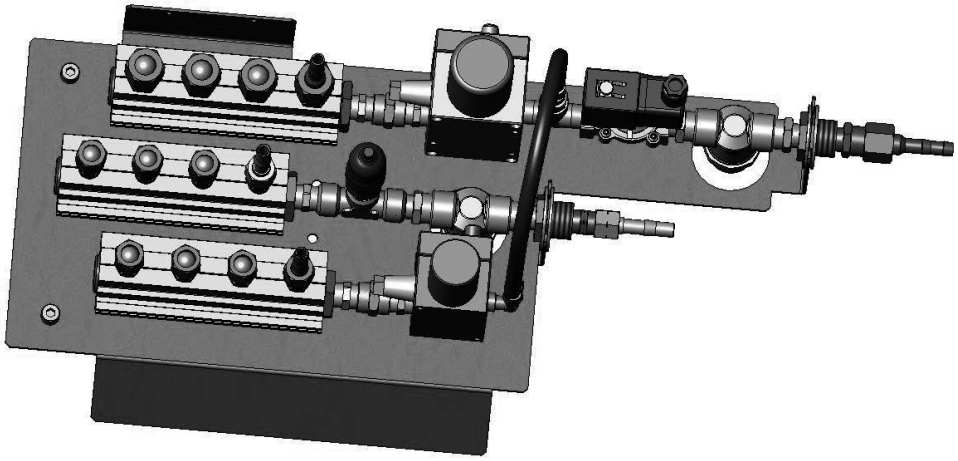
2 - INSTALLATION ON LINCOLN ELECTRIC MACHINE

This installation may be used in an integrated manner on a machine supplied by us. The main functions are accessible by the NC. This installation can manage the plasma cutting function for a maximum of 2 torches, and the oxycutting function for a maximum of 4 torches depending on the modules selected.



ESSENTIAL OXYCUTTING INSTALLATION		
ITEM	DESIGNATION	SPECIFIC INSTRUCTIONS
A	Essential oxy cutting gas assembly	-
B	Essential oxycutting solenoid valve assembly	-
C	Cycle function assembly	-
OP	Oxy Safe Piercing option	86954187
OA	Ignition option	86954986
OC	Torch option	Supplied with the torch
FL	Longitudinal bundles	-
FT	Transverse bundles	-
G1	Fuel	-
G2	Oxygen (Heating and Cutting)	-
I	Programming interface • **HPC DIGITAL PROCESS HPC II** • **HPC DIGITAL PROCESS HPC III**	 86954944 86954995
P	Tool holder	Supplied with the tool holder

3 - ESSENTIAL OXY CUTTING GAS ASSEMBLY (REF. A)



This box can power 1 to 4 torches.

You can use one gas assembly for cutting up to thickness:
- 200 mm *(8 po)* with 1 torch
- 80 mm *(3 po)* for 2 torches
- 60 mm *(2,3 po)* for 3 torches
- 50 mm *(2 po)* for 4 torches

Beyond that, another gas assembly must be installed.

A machine may have only one gas assembly, and thus 4 torches.

The functions of the assembly are as follows:
- Regulating the gas pressure going to the torches
- Flushing the cutting and heating oxygen line at the end of cutting/the program.

There is a specific box model for the use of acetylene.

For other fuel gases, the propane model is used.

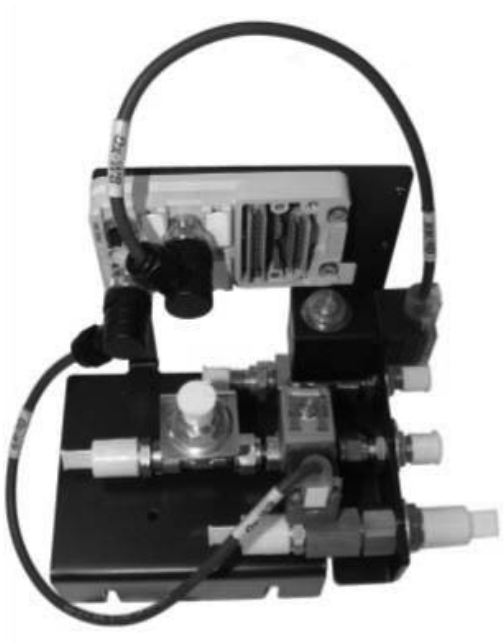
The box is supplied wired in the machine, as in the electrical diagram. If the electrical cable is replaced, please contact us.

4 - CYCLE FUNCTION ASSEMBLY

These cycle functions are integrated into the main cabinet of the machine. They are intended for:

- Controlling the disconnecting and analogue valves on the gas assembly.
- Controlling the valves that are on the solenoid valve assembly on each torch
- Controlling ignition, if the option is installed
- Controlling the sensing function and processing feedback from sensing, if the option is installed
- Controlling the tool holder position (vertical movement)

5 - ESSENTIAL OXYCUTTING SOLENOID VALVE ASSEMBLY (REF. B)



This assembly is present for each installed torch. It is assembled on the tool holder carriage.

The commands come from the oxy cutting gas assembly to which it is connected.

It includes the controls of solenoid valves dedicated to each torch, and the igniter controls.

There is a specific solenoid valve assembly model for the use of acetylene.

For other fuel gases, the propane model is used.

6 - LONGITUDINAL BUNDLES (FL)

Longitudinal bundles relating to oxycutting are standardised:

- Heating and cutting oxygen pipe, blue
- Fuel pipe: red for acetylene, orange for propane, natural gas, other fuel gases (propylene / ethylene)
- Air pipe: optional if the sensing option is present

7 - TRANSVERSE BUNDLES (FT)

Transverse bundles relating to oxycutting are standardised:

- Blue heating and cutting oxygen pipe: from gas assembly to solenoid valve assembly
- Fuel pipe: red for acetylene, orange for propane, natural gas; the other fuel gases, from the gas assembly to the solenoid valve assembly
- Solenoid valve control bundle: from the gas assembly to the solenoid valve assembly
- Tool holder control bundle: from the gas assembly to the tool holder
- Tool holder power bundle: from main cabinet to tool holder
- Air pipe: optional if the sensing option is present

8 - TOOL HOLDER (REFERENCE P)

The tool holder is used for raising and lowering the torch. There is one tool holder per torch.

It is powered from the main cabinet.

It has a torch holder ring that can be turned for bevel cutting or for vertical adjustment.

The motor commands come from the oxy cutting gas assembly to which it is connected.

Refer to the special documentation of the tool holder for more details.

9 - TORCH OPTION (REFERENCE OC)

The function of the torch is to diffuse and adjust the gas flows so as to achieve high quality cutting. The torch is fixed to the tool holder.

The Essential flame cutting installation is designed for working with Mach Oxy, Mach HP and Mach HPi torches.

Refer to the torch documentation for more details about the torches and associated options (consumables, angle adapters, strip cutting etc.)

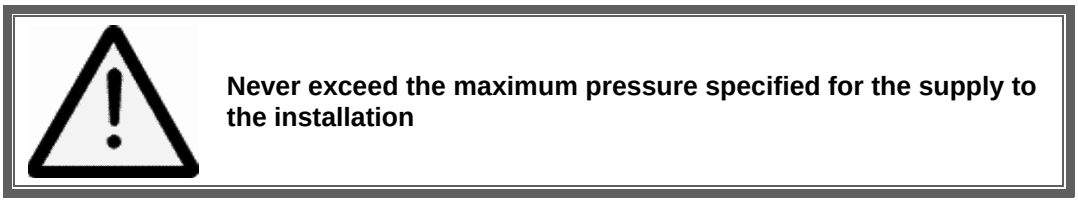
D - MONTAGE INSTALLATION

1 - CONDITIONS OF INSTALLATION

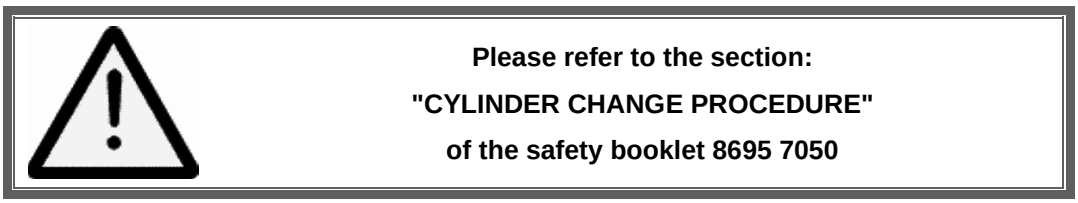
Also see the conditions for installing the machine and options in the associated documentation.

1.1 FLUIDS POWER SUPPLY

Provide the gas sources (cylinders, cylinder racks, evaporators etc.) below, each fitted with a regulator that can provide the recommended output and pressure values and a stop valve in case of arrival by pipe. Do not install gases other than those defined in this manual (risk of leaks).



Starting up the gas sources



If the sensing option is present, see the specifications for compressed air in the document 86954187 "Oxy Safe Piercing Option"

The customer must supply and install a device for isolating each source of energy (electricity, air, gas and water). The devices must be clearly identified. They must be of the locking type, with three ways if possible as regards gas.

The outputs are stated for one gas assembly and are to be multiplied depending on the number of gas assemblies.

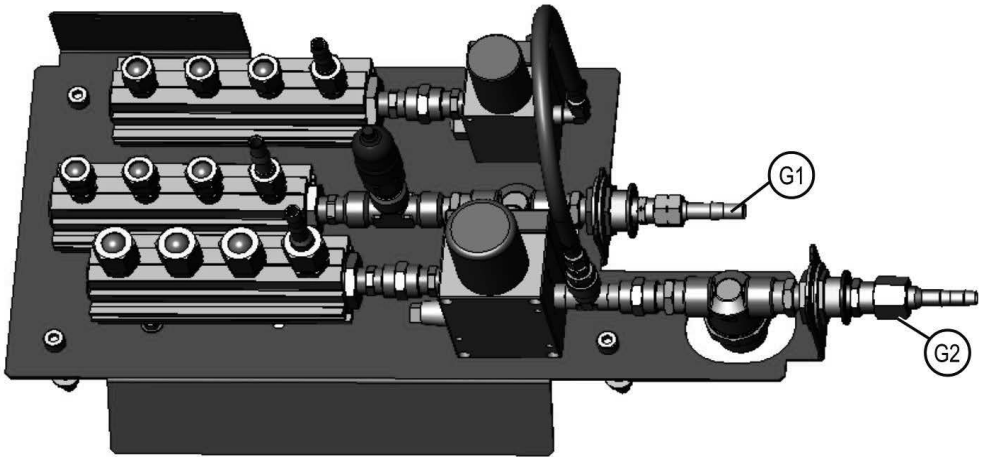
GAS SUPPLY							
The client should provide and install an isolating device on each source. These devices must be clearly identified and lockable..			The client should provide one Oxygen source fitted with a regulator capable of delivering the recommended flowrates and pressures. **Maximum Pressure 9 Bar *(130 PSI)* for oxygen.** Oxygen purity must be at least 99,5%.				
Gas			Supply at the entry to the machine				
Use		Nature	P in bars *(PSI)* +/- 10%	Max. output in m³/h *(ft/min)* for X torches			
				1	2	3	4
		 mm *(PO)*		200 *(8 po)*	80 *(3 po)*	60 *(2,3 po)*	50 *(2 po)*
MACH OXY	Cutting	Oxygen	8.2 *(118,9 PSI)*	22 *(13 ft/min)*	23.5 *(14 ft/min)*	23.5 *(14 ft/min)*	26 *(15,3 ft/min)*
	Heating – Oxidants	Oxygen					
	Heating – Fuel	Acetylene	1.4 *(20,3 PSI)*	0.85 *(0,50 ft/min)*	0.85 *(0,50 ft/min)*	1.05 *(0,62 ft/min)*	1.4 *(0,83 ft/min)*
	Heating – Fuel	Propane	1.8 *(26,1 PSI)*	0.6 *(0,36 ft/min)*	0.6 *(0,36 ft/min)*	1 *(0,59 ft/min)*	1.3 *(0,77 ft/min)*
MACH HP	Cutting	Oxygen	8.2 *(118,9 PSI)*	22 *(13 ft/min)*	23.5 *(14 ft/min)*	23.5 *(14 ft/min)*	26 *(15,3 ft/min)*
	Heating – Oxidants	Oxygen					
	Heating – Fuel	Acetylene	1.4 *(20,3 PSI)*	0.85 *(0,50 ft/min)*	0.85 *(0,50 ft/min)*	1.05 *(0,62 ft/min)*	1.4 *(0,83 ft/min)*
	Heating – Fuel	Propane	1.8 *(26,1 PSI)*	0.6 *(0,36 ft/min)*	0.6 *(0,36 ft/min)*	1 *(0,59 ft/min)*	1.3 *(0,77 ft/min)*

1.2 LAYOUT OF CABLES AND FLEXIBLE PIPES

The customer should provide the means for supporting and keeping away from mechanical, chemical, or thermal damage, the cables and flexible pipes from their source to the entry of the cable support chain

There must be no fitting inside technical gutters, as gas could build up in the gutter in the event of a leak.

2 - CONNECTION



The pipes pass in the longitudinal chain, then behind the beam, for connection to the gas assembly.
En **G2** (red washer), connect the fuel supply (red or orange pipe)
En **G1** (blue washer, at the front of the box), connect the oxygen supply (blue pipe)

LINCOLN ELECTRIC supplies gas supply pipes with the machine, and a series of fittings for adapting to the most common gas supply fittings:

- One olive fitting + M16x150 nut, right-hand pitch
- One olive fitting + M16x150 nut, left-hand pitch
- One olive fitting + M20x150 nut, right-hand pitch
- One olive fitting + G3/8 nut, right-hand pitch
- One olive fitting + G3/8 nut, left-hand pitch
- One nipple, G3/8 right-hand pitch/M16*150 right-hand pitch to adapt to a female fitting near the supply
- One nipple, G3/8 left-hand pitch/M16*150 left-hand pitch to adapt to a female fitting near the supply
- Important: fittings with a left-hand pitch are necessarily used for fuel gases: fittings with a right-hand pitch for the other gases (oxygen in this installation)

Important!

After connecting, make sure there are no leaks (gas and air) with an appropriate detector; check that no pipe is bent

E - OPERATOR MANUAL

1 - OPERATOR CONTROLS

1.1 UI CONTROLS

All the user interface controls are available in the documentation 86954944 or 86954995, in the sections relating to Essential oxycutting.

1.2 TORCH MOVEMENT CONTROLS

At any time (except if there is a fault or if the torch is not selected), the height of each torch can be modified in slow speed. To do so, use the buttons in the UI. (available in the documentation 86954944 or 86954995, in the sections relating to Essential oxycutting).

Caution: these height modifications can have an effect on the sensing height setpoints, if the option is present (see documentation 86954187).

2 - ADJUSTMENTS

2.1 PROCESS PARAMETER ADJUSTMENT

Process parameters can be adjusted from the UI. See the documentation 86954944 or 86954995, in the sections relating to Essential oxycutting.

The torches have valves for adjusting the heating flame. See the torch documentation.

The torches are adjusted as follows:

- Open the heating O2 valve fully
- Open the Fuel valve to position "I" for OXYCUT MACH torches, or approximately ¼ turn in the case of MACH HP and MACH HPi
- After the flame is ignited, adjust only the fuel valve to obtain a 'neutral' flame.

The part program particularities (size and location of striking, cutting quality etc.) also influence cutting quality. The post-processor must comply with the recommendations of **LINCOLN ELECTRIC**.

2.2 TOOL HOLDER HEIGHT

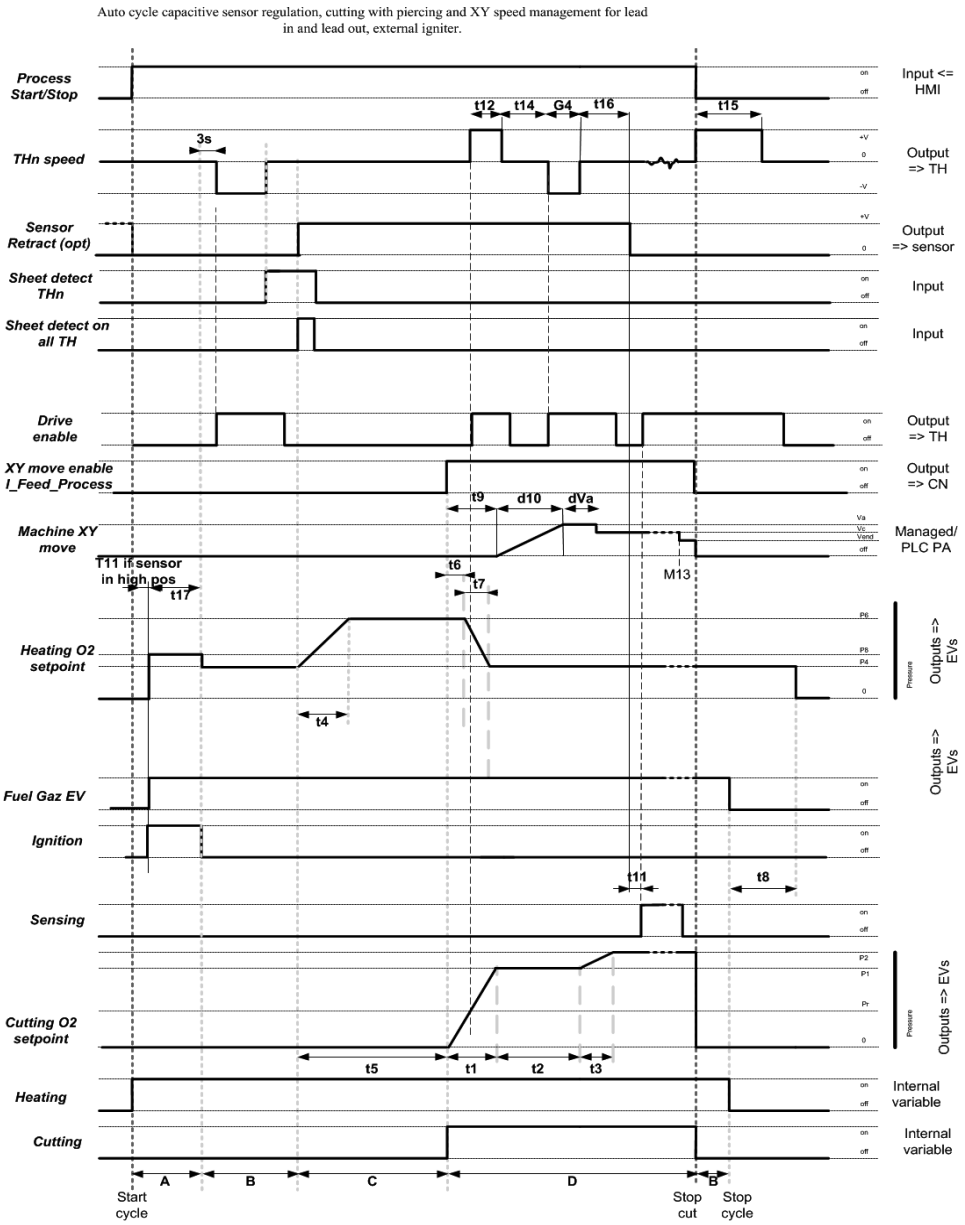
See specific documentation of tool holder

3 - GAS SUPPLY CHANGE

When the gas supply is changed (cylinder change, for example), we recommend the following:

- Shut the cylinder to change
- For the heating oxygen and fuel, make the torch operate for heating till the low-pressure alarm appears
- For cutting oxygen, use the manual cutting gas test control till the pressure in the pipe is low.
- Press the emergency stop button
- Change the cylinder in accordance with the supplier's recommendations.
- Check that there is no dust or pollution, particularly on the oxygen line (risk of ignition)
- Check that there is no leak after each cylinder change.

4 - CYCLE



Above is a cycle for a machine with the ignition and sensing options activated

A	Ignition phase (see documentation of ignition option 8695 4986)
B	Heating phase; torch down to drilling height
C	Overheating phase: sheet piercing. This stage does not exist with sheet-edge starts.
D	Cutting stage: the cutting pressure increases gradually (no step in the case of sheet edge) and it moves from overheating pressure to heating pressure. Then the XY movement starts.

At the end of the cut, if the program is not completed, heating resumes up to the next strike (B). At the end of the part program, the torch goes out.

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)

Monthly		
Date of maintenance : / /		
		- Check that the gas circuit operates properly: pressure gauge, pressure regulator, electrovalve, valve, couplings, etc. Note : any piping showing the slightest signs of fatigue, wear, damage, should be replaced by a standard identical pipe.
		- Check the condition of all the electrical cables, especially near the torches and in the cable support chain (change them if required). Check that electrical wires are tightened.
		***FILTRE CIRCUIT GAZ*** Dust in the filters reduce the available output and can lead to explosions. Clean the filter with non-greasy degreasing agent**.** Read the safety data sheet carefully and take all the steps indicated Dry well afterwards. Before reassembly, apply either “1000 bulles” leak detector or soapy water on the plug thread. **Never use a greasy substance (such as oil or grease).**

We recommend replacing the pipes
- at the first sign of fatigue, wear and tear or damage
- no later than after every 3 years by the user in case of heavy-duty use,
- no later than after every 5 years in all other cases.

We recommend replacing the flame arrester non-returns:
- As soon as flame return occurs
- No later than after three years of use.

Caution:

Follow the rules below if a pipe or valves are replaced:

- **Use the spare parts recommended in this documentation.**
- **The pipes are standardised (colour, composition); they must be replaced by identical pipes. Gas pipes MAY NOT BE REPAIRED.**
- **The fittings must be changed, as they may be damaged while changing the pipes.**
- **Fittings must be degreased and cleaned of dust before assembly: risk of explosion.**
- **To change a valve on the unit, first take the line off its support, then take the valve off the line.**
- **Olive type fittings are screwed on directly.**
- **Adhesive must be applied on other fittings and valves. The adhesive must be compatible with oxygen. Risk of explosion.**
- **If acetylene is being used, tighten the fittings to standardised torque according to the diameter (please contact us). Risk of leaks and fire.**
- **The pipes in the cable drag chains many not be under strain, as that could lead to premature wear.**
- **A leak test (e.g. with 1000 bulles bubble leakage tester) must be carried out after each repair operation. Risk of explosion.**

Caution:

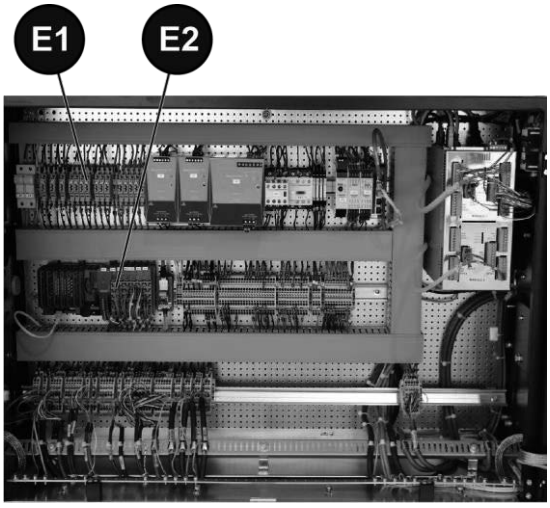
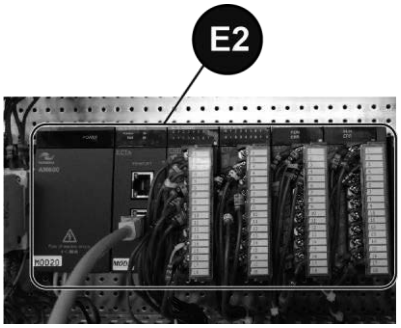
Whenever a flame arrester non-return is faulty, it must be replaced. No cutting without anti-return. Risk of explosion and fire.

2 - TROUBLESHOOTING

2.1 Electrical problems

Reminder: all work is to be carried out by approved and trained personnel

If any fault occurs in the oxycutting equipment due to an electrical problem, first check the fuses. Before opening the manifold box, switch the machine off. Using the emergency stop does not mean that there is no voltage in the box.

HPC Digital Process II	HPC Digital Process III
	

The fuses « **E1** » :
F14 and F15 power the motors of the tool holders (Description n : FUSE 5X20 5A 250V FSF)
(F10 to F16) switch off the 24V power to the rest of the process. (Description : FUSE 5X20 5A 250V FSF)

While troubleshooting, the **LINCOLN ELECTRIC** technician may ask you to check the status of the indicators inputs/outputs « **E2** », and also those on each of the solenoid valves, which have an indicator that goes on when the valve supply is on.
On the PLC, faulty inputs/outputs are red.

2.2 Explanation of alarms: overall process fault

These faults are common to the different processes

Alarm	Probable causes	Possible remedies
3 : Loss of communication with the PLC	Communication between the UI and the NC PLC has been interrupted for 10 seconds (watchdog)	Check proper Ethernet addressing and reset communication
50 : Extraction required for starting up	The process needs operating feedback from the extraction to start	Start up the extraction, and check if it is working correctly.
51 : The emergency stop is active!	The process cannot start without switching on the power to the machine	Remove the cause of the emergency stop and switch the power back on
52 : Fault: No air	The process (with optional probe) cannot start without compressed air	Check if air is present and if its pressure is sufficient.
01011 = Cycle stop for Head Collision. Jog in limited speed	Probe impact (oxycutting) or torch impact (plasma)	Correct the fault, raise the tool holder and clear the alarm

2.3 Explanation of alarms: oxycutting Essential

The alarms indicating flame cutting process faults are indicated on the UI

Alarm	Probable causes	Possible remedies
1071 : No operating feedback from the filter	The filter has been activated, but the feedback indicating that it is working properly is not correct	Check that the extraction system is being powered.
1201 : Cutting gas fault	Difference between the setpoint and the cutting oxygen measurement too large (>5% of the setpoint for 5 seconds).	Change the supply (empty) or open the supply valve
1202 : Heating gas fault.	Difference between the setpoint and the heating oxygen gas measurement too large (>10% of the setpoint for 5 seconds).	Change the supply (empty) or open the supply valve
1203 : Fuel gas fault.	Difference between the setpoint and the fuel gas measurement too large (>10% of the setpoint for 5 seconds).	Change the supply (empty) or open the supply valve
1204 : One of the torches is at its upper travel limit, while the tool holder is being regulated	One of the upper limit switches of a torch that is being regulated is active.	Mechanically raise the tool holder so that it can cut higher
1205 : One of the torches is at the lower limit	One of the low limit switches of the torches is active; this may be the limit switch sensor or the torch impact safety system	Correct the fault, raise the tool holder and clear the alarm

2.4 Other faults

Fault	Probable causes	Possible remedies
The tool-holder does not move	The torch has not been selected Lower limit switch (UI alarm) Probe impact (UI alarm) Upper limit switch (no alarm)	Select the torch manually Correct the fault and set the tool holder position if required. Correct the fault and clear the alarm Correct the fault and set the tool holder position if required.
Two torches cannot be selected	The two torches are not identical (type, probe)	Select two identical torches
Cutting cannot be started	Lack of extraction or ineffective extraction Air pressure too low	Start/clean the extraction before cutting Open the air valve or start the compressor
Cutting is not correct	Several possible causes.	Refer to the process training manual
Loss of gas pressure from a torch	Head loss due to non-return Cylinder empty	Change the non-return above the torch. Change the cylinder

3 - SPARE PARTS

How to order

The photos or sketches identify nearly every part in a machine or an installation

The descriptive tables include 3 kinds of items:

- **those normally held in stock:** ✔
- **articles not held in stock:** ✘
- **those available on request: no marks**

(For these, we recommend that you send us a copy of the page with the list of parts duly completed. Please specify in the Order column the number of parts desired and indicate the type and the serial number of your equipment.)

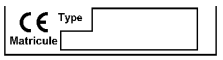
For items noted on the photos or sketches but not in the tables, send a copy of the page concerned, highlighting the particular mark.

For example:

✔	normally in stock
✘	not in stock
	on request

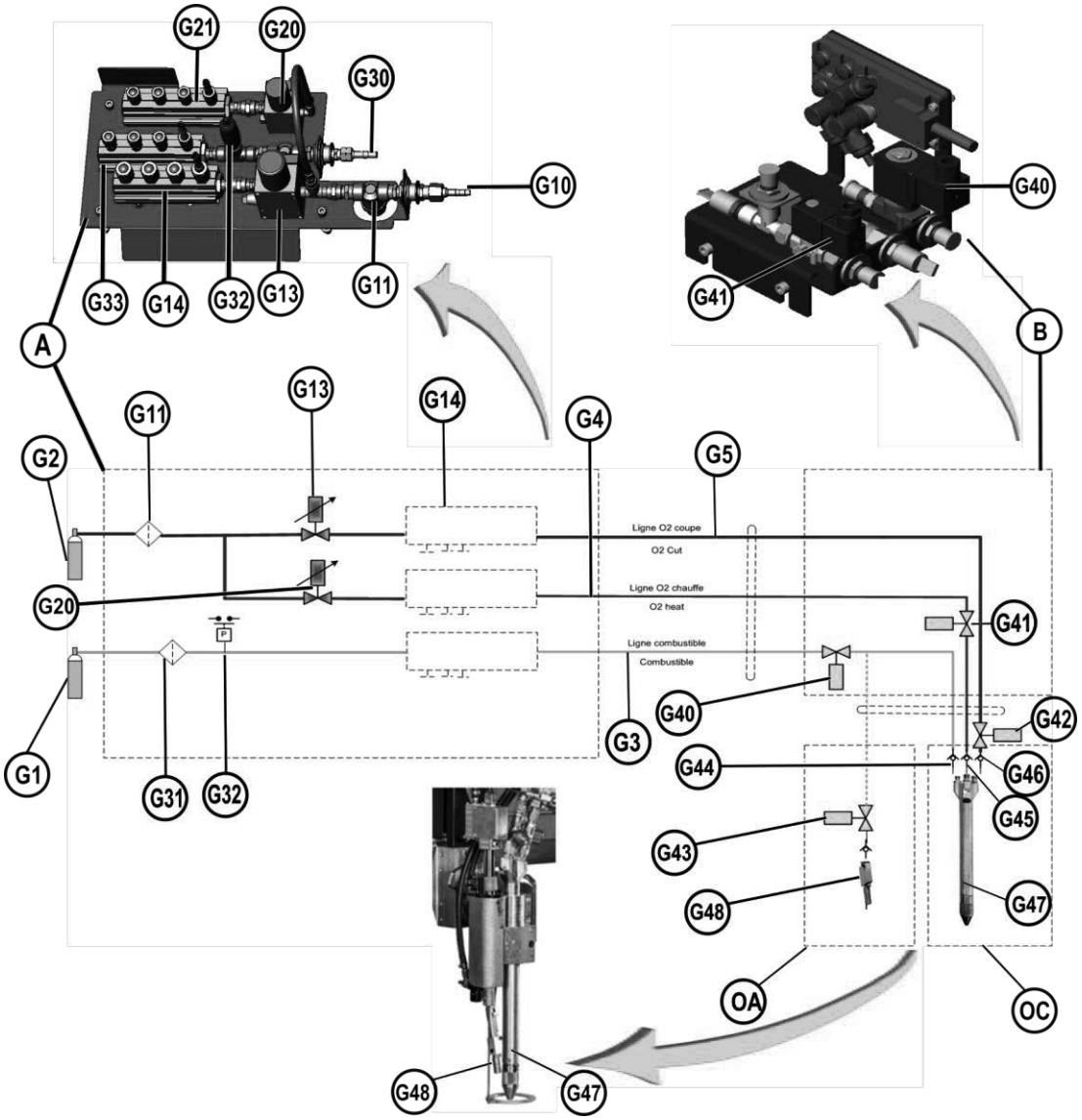
Item	Ref.	Stock	Order	Designation
1	W000XXXXXX	✔		Machine interface board
2	W000XXXXXX	✘		Flowmeter
3	9357 XXXX			Silk-screen printed front panel

- For parts order, give the quantity required and put the number of your machine in the box below.



TYPE:
Number:

3.1 Gas assembly and solenoid valve assembly

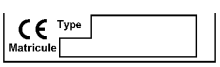


A	Gas assembly
B	Solenoid valve assembly
OA	Ignition option
OC	Torch option
G1	Fuel supply
G2	Oxygen supply (for heating and cutting)

✔	normally in stock
✘	not in stock
	on request

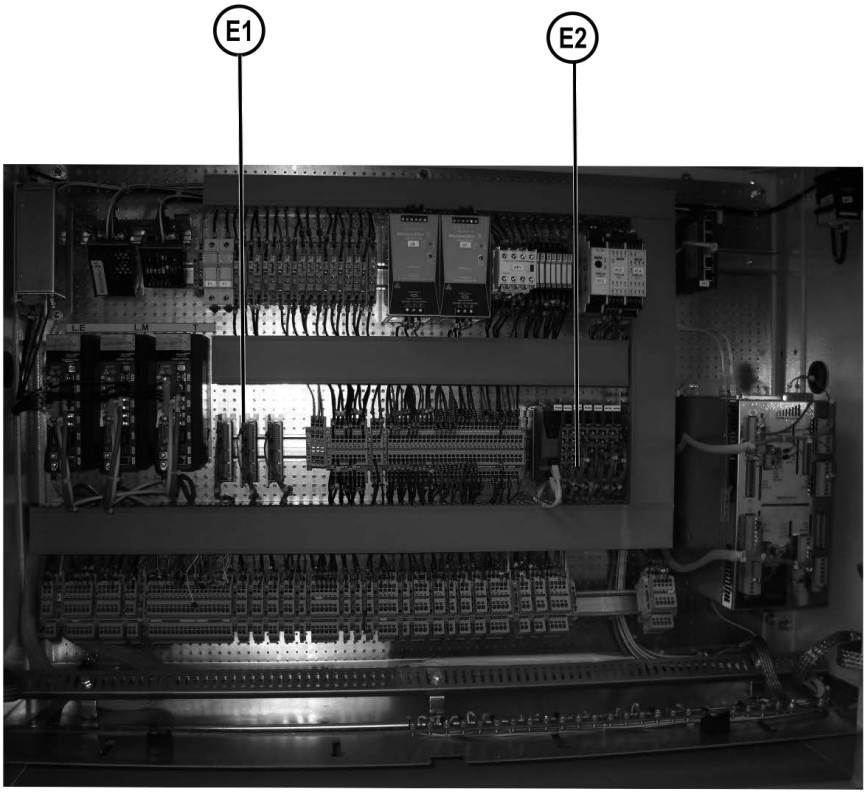
Item	Ref.	Stock	Order	Designation
G1+ G30	P07085062			Fuel supply pipe assembly, 40m
G2+ G10	P07085061			Oxygen supply pipe assembly, 40m
G11	W000400409			Steel gas filter (identical for all gases)
G13	W000381936	✔		Cutting O2 line: regulation valve
G14+ G21+ G33	P07085020			Simplified oxy manifold assembly (not present if only one torch)
G20	W000381935	✔		Heating O2 line: regulation valve
G31	W000400409			Steel gas filter (identical for all gases)
G32	W000400410			Fuel gas pressure switch
G3	P07085060			Transverse propane/acetylene (orange/red) pipe
G4	P07052947			Transverse heating oxygen pipe
G5	P07052946			Transverse cutting oxygen pipe
G40	W000381937			Propane line: selecting solenoid valve
	W000381938			Acetylene line: selecting solenoid valve
G41	W000381940			Cutting O2 line: Selecting solenoid valve
G42	W000381943			Heating O2 line: Selecting solenoid valve
G43	W000381937			Ignition solenoid valve- propane
	W000381938			Ignition solenoid valve- acetylene
G44	W000290913	✔		Fuel gas flame arrester => MACH OXY - MACH HP
G45	W000290912	✔		Oxygen flame arrester (heating) => MACH OXY - MACH HP
	W000290914	✔		Flame arrester G1/4 (heating) => for MACH HPi torch
G46	W000374692	✔		Oxygen flame arrester (cutting) => MACH HP
G47				Torch (see specific instructions)
G48				Ignition (see instructions 8695 4986)
	W000381948	✔		Strong adhesive compatible with oxygen

➢ For parts order, give the quantity required and put the number of your machine in the box below.



TYPE:
Number:

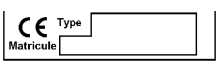
3.2 Process HPC2 and tool holder control system in main cabinet



✔	normally in stock
✘	not in stock
	on request

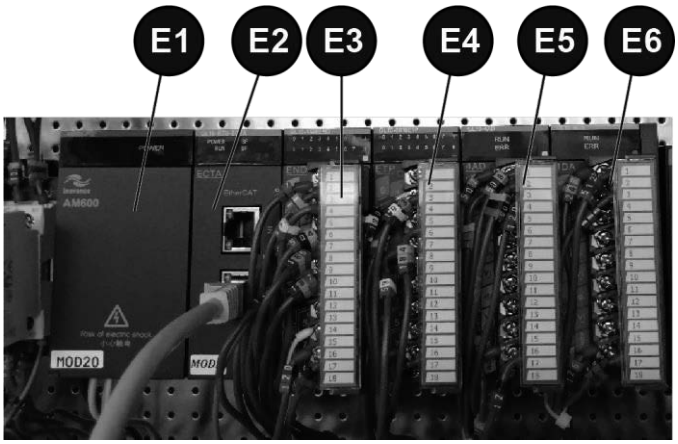
Item	Ref.	Stock	Order	Designation
E1	W000400411	✔		Step motor variable drive
E2	W000400412	✘		X20BC00G3 Ethercat coupler module
	W000400413	✘		X20PS9400 power supply module
	W000400414	✘		X20CM8281 input/output module
	W000383711	✘		X20BB80 back panel
	W000383702	✘		X20BM11 back panel
	W000383703	✘		X20TB12 terminal block

➢ For parts order, give the quantity required and put the number of your machine in the box below.



TYPE:
Number:

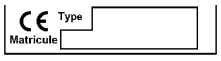
3.3 HPCIII process control assembly (main cabinet)



✔	normally in stock
✘	not in stock
	on request

Item	Ref.	Stock	Order	Designation
E1	AS-CS-C5703329	✔		GL10 power supply module
E2	AS-CS-C5703330	✔		GL10 EtherCAT module
E3	AS-CS-C5703324	✔		GL10 16 digital inputs module
E4	AS-CS-C5703325	✔		GL10 16 digital outputs module
E5	AS-CS-C5703326	✔		GL10 4 analog inputs module
E6	AS-CS-C5703327	✔		GL10 4 analog outputs module

- For parts order, give the quantity required and put the number of your machine in the box below.



TYPE:
Number:

Important: the input/output modules are powered with 230VAC.

PERSONAL NOTES

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