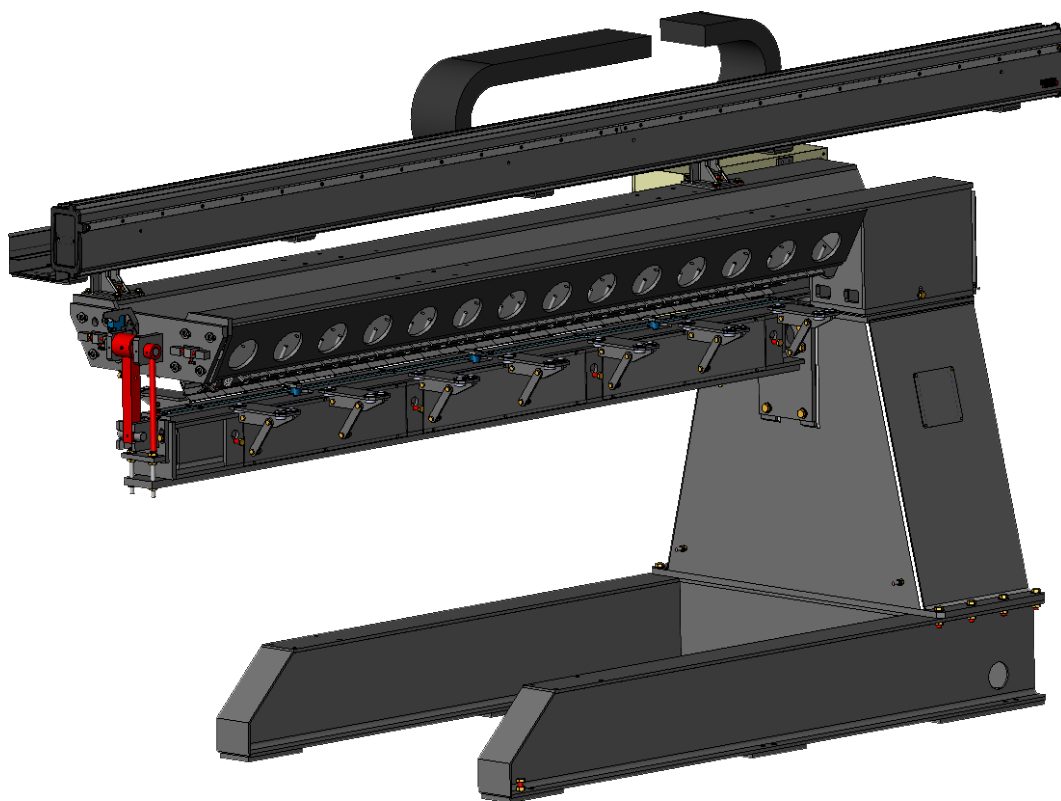


BENCH

# SEAM-MATIC EX-IT

**SAFETY INSTRUCTIONS FOR OPERATING AND MAINTENANCE**

MACHINE No P91233192NG; P91233292NG; P91233392NG; P91233492NG



ISSUE : EN  
REVISION : M  
DATE : 11 - 2023

Instruction manual

REF : 8695 6208

Original instructions

**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.**

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## INFORMATION



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.



### **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.



For operating instructions, adjustments, troubleshooting and spare parts, please refer to the special instructions for safe operating and maintenance.

This technical documentation is intended for the following machines/products:

- SEAM-MATIC EX-IT 32
- SEAM-MATIC EX-IT 42
- SEAM-MATIC EX-IT 52
- SEAM-MATIC EX-IT 62

## REVISIONS

REVISION : I DATE : 06/08

DESCRIPTION	PAGE
Creation in one language	

REVISION : J DATE : 09/08

DESCRIPTION	PAGE
Update + Newoffer spare parts	

REVISION : K DATE : 11/21

DESCRIPTION	PAGE
Update	F34 - F36

REVISION : L DATE : 09/08


























DESCRIPTION	PAGE
Update	C9

REVISION : M DATE : 11/23

DESCRIPTION	PAGE
Complete update	



## MEANING OF SYMBOLS

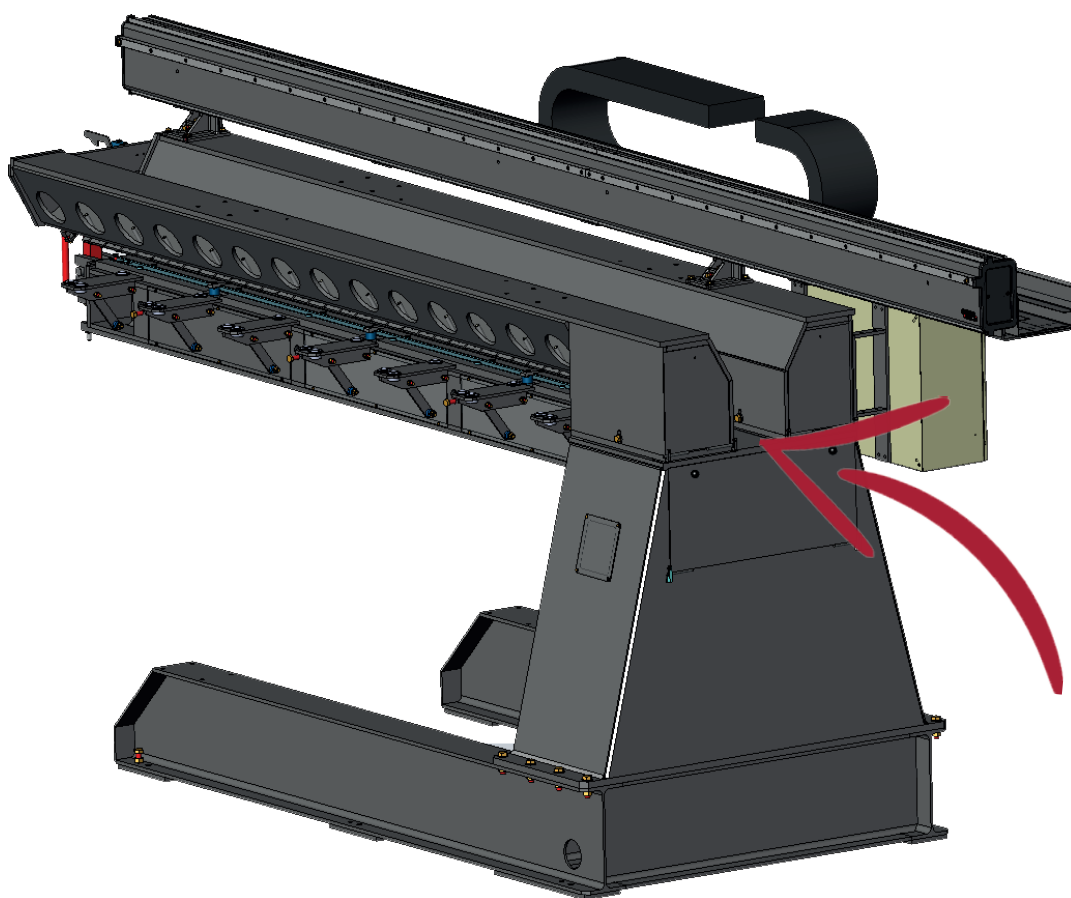
	Reading the manual/instructions is mandatory.		Indicates a hazard.
	Mandatory use of safety shoes.		Warning of an electricity risk or hazard.
	Mandatory use of hearing protection.		Warning of a risk or hazard due to an obstacle on the floor.
	Mandatory use of a safety helmet.		Warning of a risk or hazard 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.		



## A - IDENTIFICATION

Please note the registration number of your machine.

The information below should be provided in all correspondence.



## B - SAFETY INSTRUCTIONS



For general safety instructions, please refer to the specific manual supplied with the equipment.



### AIRBORNE NOISE:

Refer to the special instructions 8695 7051 supplied with the equipment.

## 1 - Particular safety instructions



No object is to be placed on the rolling tracks.



**“No climbing on the structure of the machine other than on platforms or gangways designed for that purpose.  
To access equipment at heights, the user must use accessing means in accordance with the regulations, such as a safe mobile gangway, an aerial lift etc.”.**



**Before using the machine, make sure that all the guards are in place.  
All guard covers must be screwed in.  
Only authorised personnel may access electrical cabinets, which must have locking systems.**



**The machine may only be operated by a single operator trained in safe use.**



**Clean the working area from time to time.**



This machine may only be moved by its designer, namely **Lincoln Electric**.



**Never modify the machine.**  
The bench **is not** designed for anchoring lifting equipment.



The use of Personal Protective Equipment (PPE) is **mandatory**.



**Machine maintenance** must be carried out **with all the energy supplies switched off**.  
The disconnection and padlocking of all energy sources is **mandatory**.



The emergency stop and safety lines must be interlocked and tested in accordance with the electricity diagram of the machine.



It is absolutely necessary to anchor the machine to the ground for safe use.



**For installation compliance, a system for extracting fumes must be put in place.**



**For installation compliance, a system for visual protection from radiation must be put in place.**



Cable bundles must be stored behind the electrical cabinet of the machine.



**Before use, the operator must make sure that there is no risk of collision with personnel.**



**In spite of all the measures taken, invisible residual risks may remain. Residual risks can be reduced by complying with safety instructions, using the equipment correctly and generally complying with the service instructions**



**During all clamping jaw movements, the operator is located near the control pedals. Any other individual in contact with the bench would be exposed to the risk of injury.**



**IMPORTANT! While handling plates, take the necessary precautions to avoid impacts on the machine.**

## 2 - Warning about the CE standard

1. When the **Seam-Matic** bench is supplied without any welding equipment, it is not considered to be a complete machine.  
In that case, the **Seam-Matic** bench is considered to be a machine component and may not be used before it is connected to the electrical system according to applicable standards. The installer will then prepare the CE declaration of conformity.
2. When the **Seam-Matic** bench is fitted with welding equipment, the whole installation, made up of the welding equipment and bench, is connected to an electrical cabinet, known as the primary cabinet, which particularly includes:
  - the power supply circuit for the welding power sources, drives etc. , with disconnecting devices and fuses.
  - the auxiliaries control circuit with safety transformers and fuses.
  - the starting up line grouping all the emergency stop controls.

This primary cabinet must comply with applicable standards.

In that case, the manufacturer of the complete installation applies CE marking and supplies the CE declaration of conformity.

### 3 - Precautions to take while welding on Seam-Matic benches

---

Edge-to-edge welding of plates generates high stresses in the plates DURING the welding operation. Those mechanical stresses are due to the rapid heating/cooling of the plates.

That results in the two plate edges to be welded moving apart or towards each other as the welding takes place. The deformation fluctuates according to the following:

- Plate thickness  
(it is easier to weld together 1 to 4 mm plates than 5 to 10 mm plates)
- Material  
(it is easier to weld together plates in low-alloy steel than in austenitic steel or light alloys)
- Welded length  
(it is easier to weld together 0.5 to 1 m than lengths above 2 m)
- Length/shell diameter ratio  
(it is easier to weld shells with a length:diameter ratio below 1)

The function of the **Seam-Matic** welding bench is to:

- Place the welded edges parallel to the movement of the welding torch, at the same altitude
- Hold the edges to weld so as to keep them from moving apart or closer as far as possible.



A **Seam-Matic** welding bench is not a “press” and cannot therefore correctly form plates that have undergone significant deformation before they are placed in the clamping jaws.

When the conditions (shapes, thicknesses, materials) do not make it possible to guarantee that the welded edges will not move apart while welding, **IT IS NECESSARY TO TACK WELD THE PLATES BEFORE WELDING THEM COMPLETELY.**

Often, tack welding over a few centimetres at the end of the bead before complete welding can remedy the problem. In difficult cases, tacks measuring a few centimetres may be needed at every 200 mm for example!

The experience of the salespeople and technicians of the **Lincoln Electric** group will generally help you find the right choice in principle. In disputed cases, tests on the customer's parts could remove any doubts by confirming an opinion through practical application.

To help the user make a choice, a table that is not comprehensive provides approximate indications. The variables that influence plate deformation are so numerous that they have not all been indicated in the table (e.g. the material and the length to diameter ratio). The user may not therefore consider that the stated values are contractually binding on the supplier.

#### EXAMPLES

##### It is very difficult to weld without preliminary tacking:

- a 3 m long shell with a 0.3 m diameter,  
because the length to diameter ratio = 10!
- a 2 m long shell with a 1 m diameter in 5 mm thick austenitic steel
- a 6 m long flat plate that is in 6 mm thick austenitic steel

##### It is easy to weld without preliminary tacking:

- a flat plate in 3 mm thick unalloyed steel, regardless of the length
- a shell in 2 mm thick light or copper alloy, 1 m long and 1 m in diameter

## 4 - Location



The operator station is located before the control console.

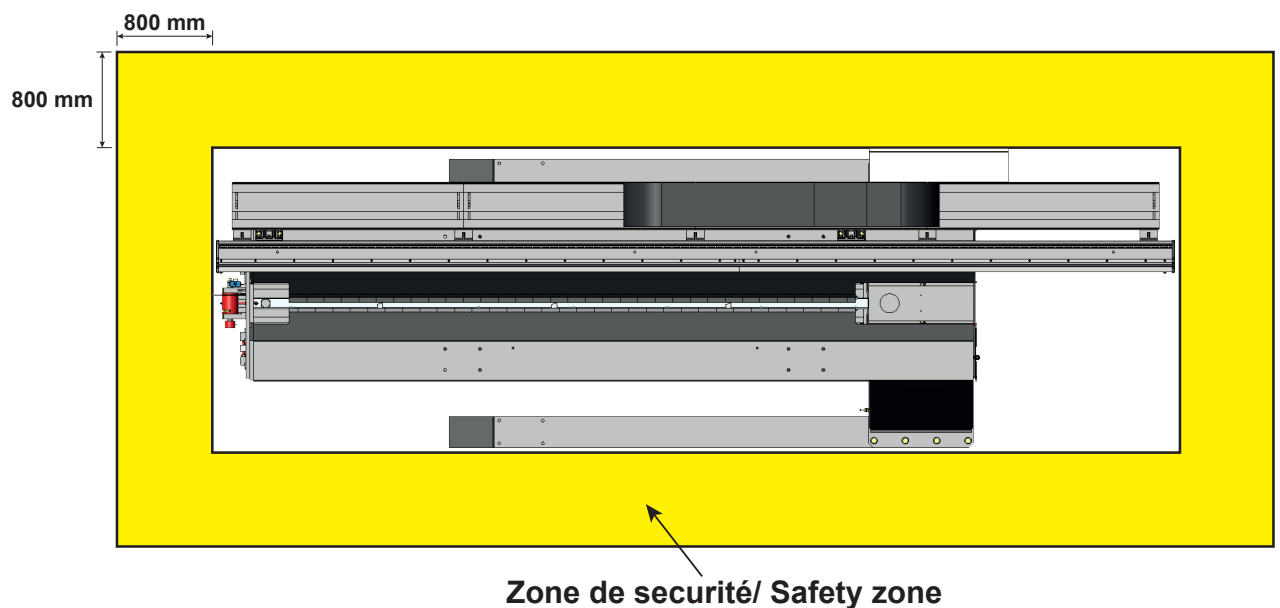
The machine you have purchased can be hazardous if you do not take certain precautions for use.

Make sure that no part of the machine can come within less than 500 mm from an obstacle.

**Important:** the operator passage way must absolutely be clear over a minimum width of 800 mm.

The floor should be marked out.

While accessing the marked area, any person could be hit by the machine or the cable drag chain.



### 1 - Description of Seam-Matic EX-IT bench

A longitudinal welding bench is used for automatically welding flat plates and shells from the inside: this piece of equipment is designed and configured specifically for welding processes such as Plasma, TIG, Plasma+TIG and MIG/MAG.

**Lincoln Electric Seam-Matic** benches are designed to effectively hold the edges of the plates to weld together and allow the precise movement of the welding torch in relation to the seam to weld. The technical specifications of our benches guarantee rarely equalled quality in terms of the welding result. The jaws are independent and their number keeps the plates very well placed.

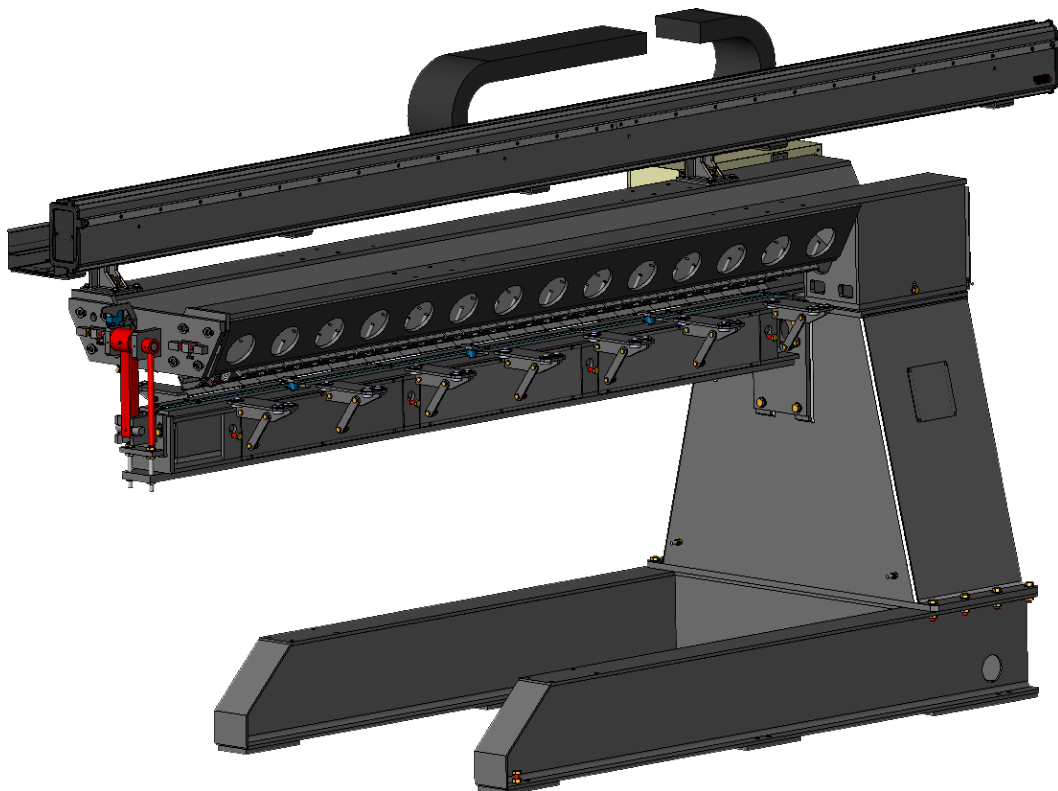
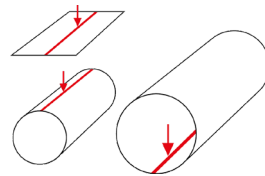
Further, the high pressure applied by the jaws can correct possible flatness defects in the plates. These jaws are made entirely in stainless steel, guaranteeing high-quality thermal exchange which is above all consistent over time.

The **Seam-Matic EX-IT** bench has a device for spacing the lines of jaws that is quickly adjustable to the thickness of the assembled plates.

The **Seam-Matic** bench is a strong welded structure; the shape of the upper beams allows excellent visibility of the weld seam.

Our **Seam-Matic** benches have been in use for over 30 years; depending on the application (material and process), they have a backing gas device and special backing bars, which are insulated and cooled.

Welding benches allow automatic welding of flat plates and shells from the inside.





## 2 - Detailed description

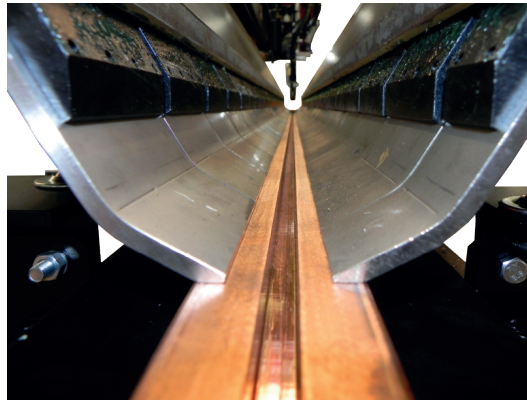
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The rigid mechanical structure including the pneumatic clamping system with its adjustments and the two rows of stainless steel jaws provides adjustable clamping pressure up to 2 x 3 tonnes per metre, and keeps the plate effectively clamped.

The clamping system is designed specifically to apply the clamping force in two stages: first, the jaws move down to clamp the plate, and then, the jaws apply horizontal force to keep the joint pressed during welding and thus ensure close contact between the plates to weld, which is particularly important in the plasma process.

The upper beams allow easy access to the welding equipment and improved visibility of the welding bead.

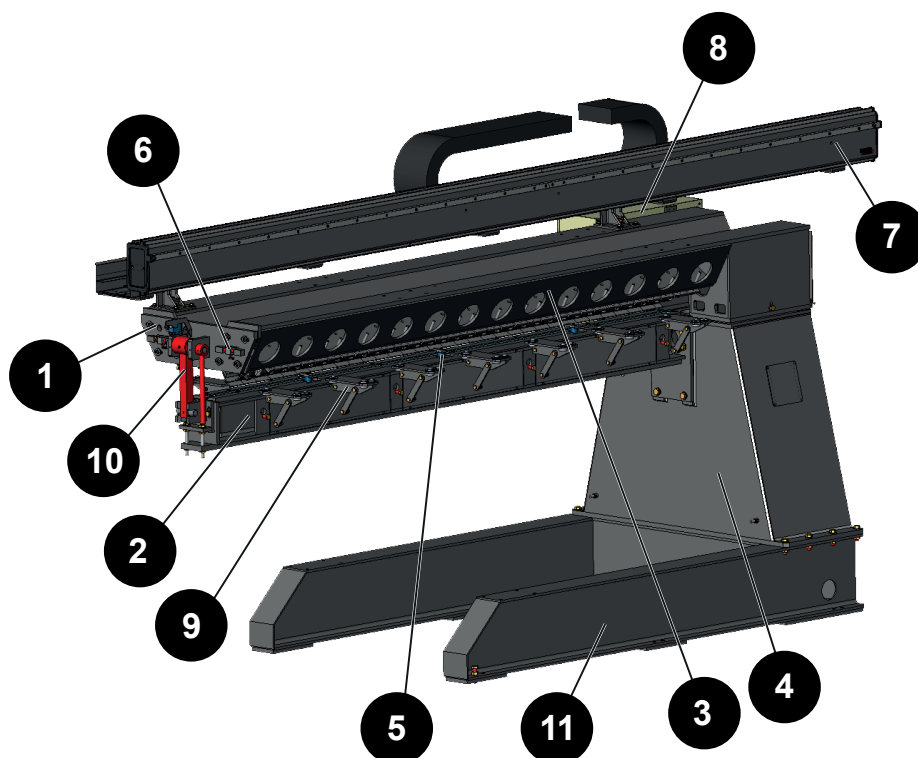
A cooled bar for backing gas that is adapted to the welding process supplies gas that protects from oxidation under the weld bead.



The **Seam-Matic EX-IT** bench has an “open” design, where a carriage rolling on a beam follows the weld over its entire length. That makes it easier to remove the welding head and reach the torch for maintenance.

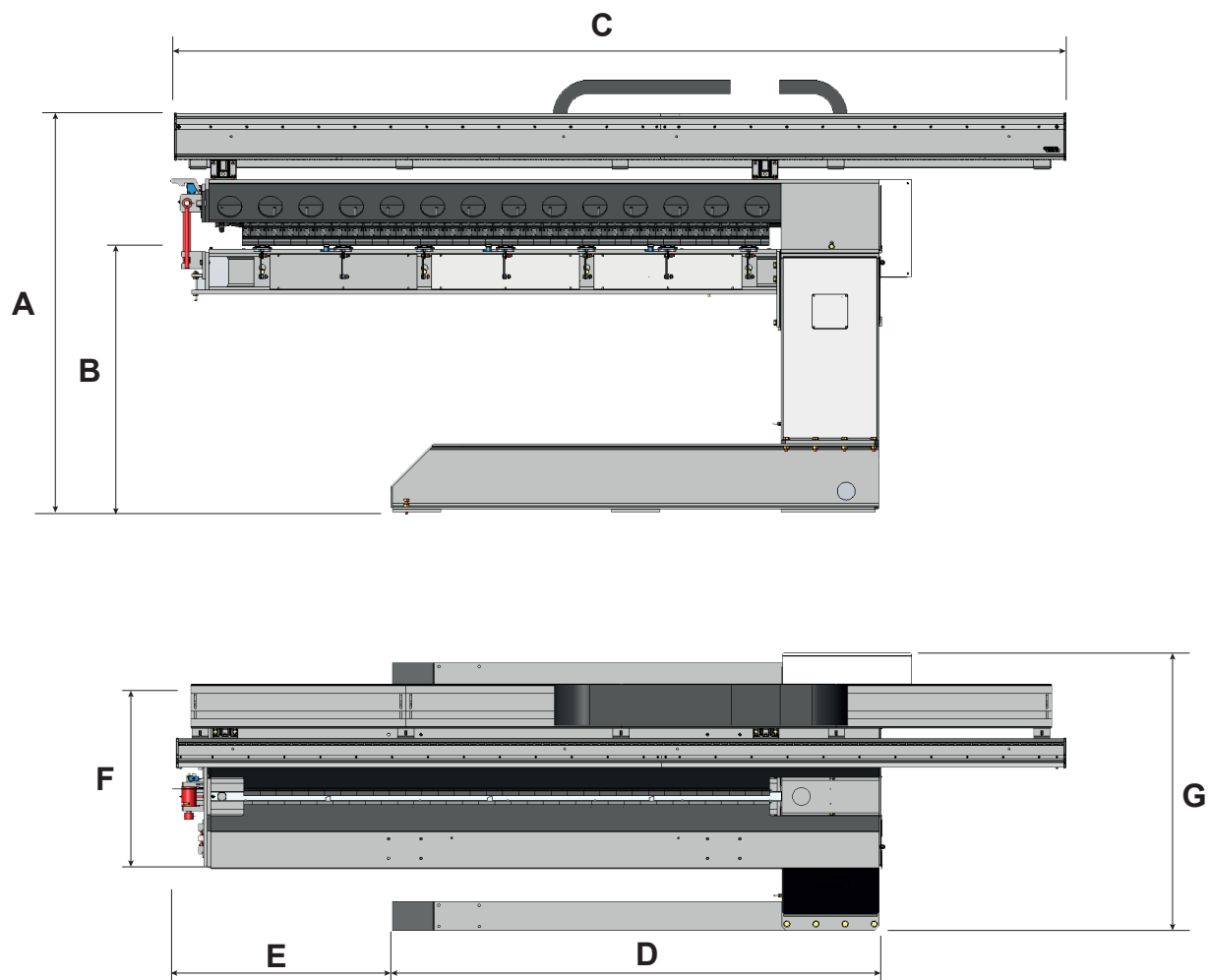
The two upper beams can be adjusted separately during alignment. That feature is useful if the plates to weld are of different thicknesses, since it allows precise adjustment of the distance between the jaws and the joint.

All the pneumatic clamping actions are controlled via pedals. The pneumatic circuit is also fully compliant with applicable CE safety rules.



Reference	Description
1	Front carriage
2	Backing bar frame: Carries the backing bar suited to the welding process (backing bar: piece that supports the weld pool and protects the back of the welding bead).
3	Upper beams: These hold the jaws that clamp the plates to weld.
4	Rear frame
5	Centring blades: They act as stops for positioning and lining up the first plate to weld.
6	Jaw spacing adjustment It is used to adjust the jaw support as close to the weld as possible.
7	Carriage travel beam: This beam can carry a CTP2 type carriage that supports the welding equipment.
8	Electrical-pneumatic cabinet: This cabinet contains the filters and regulators and the pneumatic valves of the clamping jaws and electrical connections.
9	Plate feed supports: These supports are height adjustable to suit the plates and the backing bar.
10	Locking of upper beams In the unlocked position, it is used to engage and clear the shells in the bench In the locked position, it takes up the force of the clamping jaws
11	Machine foot

## 4 - Dimensions



	SEAM-MATIC EX-IT 32	SEAM-MATIC EX-IT 42	SEAM-MATIC EX-IT 52	SEAM-MATIC EX-IT 62
A	2490	2536	2598	2689
B	1642	1637	1662	1688
C	5498	6497	7998	7998
D	3008	4008	5108	6113
E	1359	1359	1544	1879
F	1170	1155	1156	1254
G	1711	1706	1707	1805

## 5 - Specifications

	Nominal length of plates (mm)	Nominal weldable length including start and end portions (mm)	Work surface (mm)	Welding possible from the inside (mm)	Welding possible from the outside (mm)	
				Min. Ø	Min. Ø	Max. Ø
SEAM-MATIC EX-IT 32	3000	3250	1450	1500	380	1500
SEAM-MATIC EX-IT 42	4000	4250	1450	1500	480	1500
SEAM-MATIC EX-IT 52	5000	5250	1450	1550	580	1550
SEAM-MATIC EX-IT 62	6000	6250	1600	1600	600	1600

	Max weldable <u>WITHOUT</u> tack welding (mm)		Max weldable <u>WITH</u> tack welding (mm)	Spacing of jaws (mm)	Theoretical passing height with jaws raised (mm)
	Shells	Flat plates			
SEAM-MATIC EX-IT 32	See chart <b>G1</b>	1 to 5	1 to 10	10 to 30	40
SEAM-MATIC EX-IT 42		1 to 5	1 to 10	10 to 30	40
SEAM-MATIC EX-IT 52		1 to 5	1 to 10	10 to 30	40
SEAM-MATIC EX-IT 62		1 to 5	1 to 10	10 to 30	40

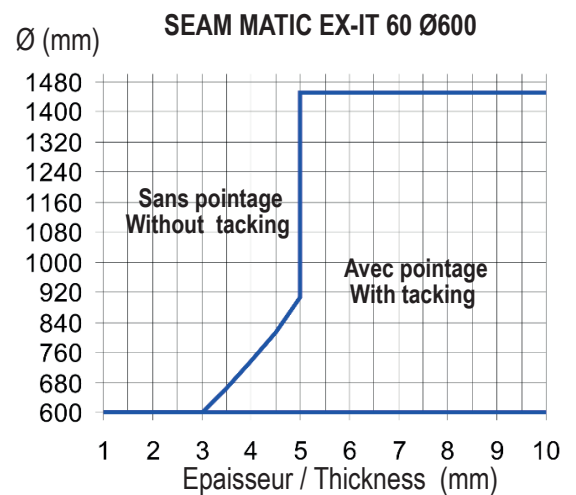
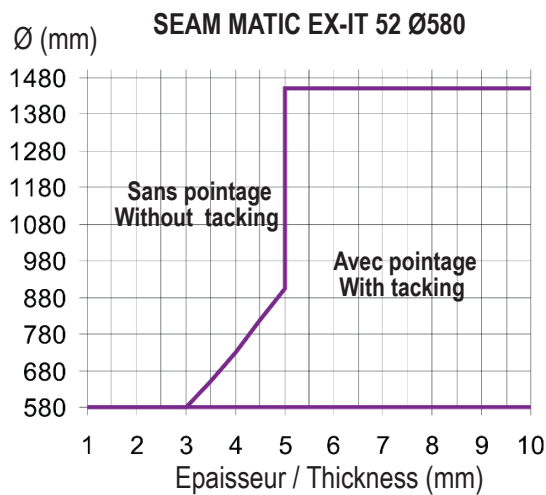
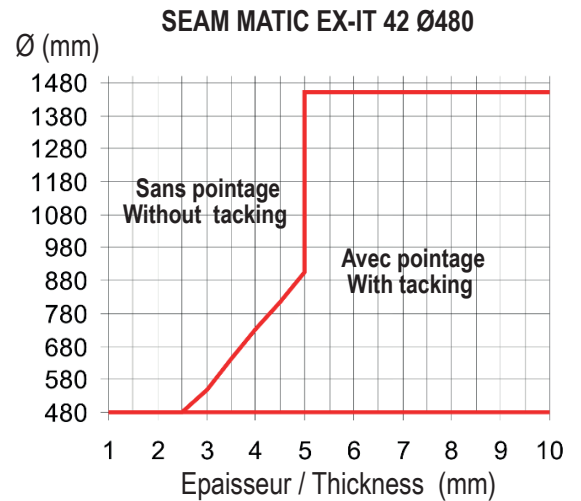
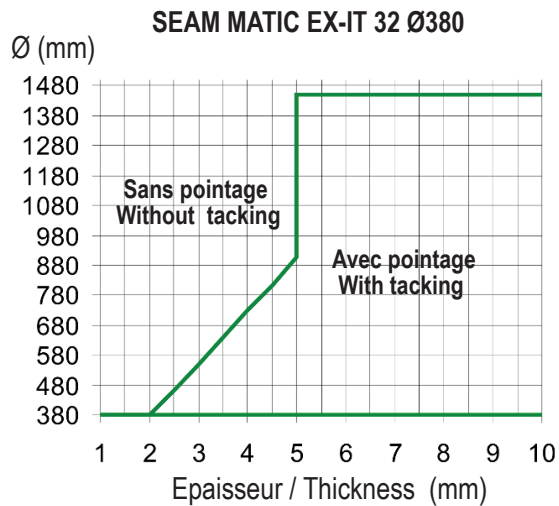
\* Depending on the diameter of the part.

- Powered carriage with speed regulation: 10 to 1000 cm/min
- CE conformity for the primary cabinet and pneumatic cabinet



NB: with the Plasma-TIG dual cathode process: the weldable length is reduced by 200 mm.

## Chart G1



The values are provided for guidance only, and may vary depending on the material, thickness, length and preparation of the part before welding.

### 1 - Installation conditions



The machine must be located in accordance with applicable safety standards to keep personnel safe.



The following conditions must be fulfilled before the equipment is installed.

#### **ELECTRICITY SUPPLY** see electrical diagram supplied

##### **VERY IMPORTANT**

The power cable (customer supply) must have a section suitable for the power rating of the installation.  
The customer is responsible for protecting the power cable and the installation itself.

Such protection must be appropriate for the neutral point treatment of the electricity supply.

The information required for rating the protection is provided on the identification plate of the machine.

#### **GAS SUPPLY** see layout drawing supplied

#### **PNEUMATIC SUPPLY** see layout drawing supplied

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 applicable standard

<b>Solid pollutant class</b>	Class 3	Grain size 5µm	Mass concentration 5mg/m <sup>3</sup>
<b>Water class</b>	Class 3	Maximum dew point under pressure –20°C	
<b>Total oil class</b>	Class 5	Concentration 25 mg/m <sup>3</sup>	



##### **Arrangement of cables and hoses**

The customer must provide the means to support and protect cables and hoses 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.

#### **TOOLS REQUIRED FOR INSTALLING THE MACHINE ON THE SITE**

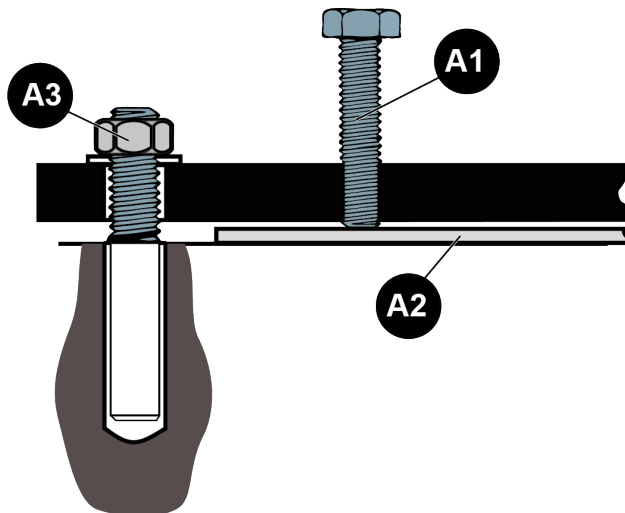
- Automatic precision level (sight or laser)
- Level offering accuracy of 1/10 per metre
- Hammer drill for concrete, Ø18 drill bit
- Long tape measure
- Chalk line
- Vacuum cleaner
- Two locking pliers or two clamps
- 24-mm open-ended spanner
- 24-mm ring spanner

## 2 - Floor preparation

The bench must be installed on a specially prepared floor; we recommend the use of a concrete screed, 20 Mpa (350 kg/m<sup>3</sup>), with one continuous metal reinforcement, which has been made for at least 21 days so as to provide adequate stability for the machine.

The thickness of the screed and its reinforcement must be suited to the characteristics of the floor.

Position plates (ref. **A2**) under the cylinders (ref. **A1**) for sufficient stability of the whole.

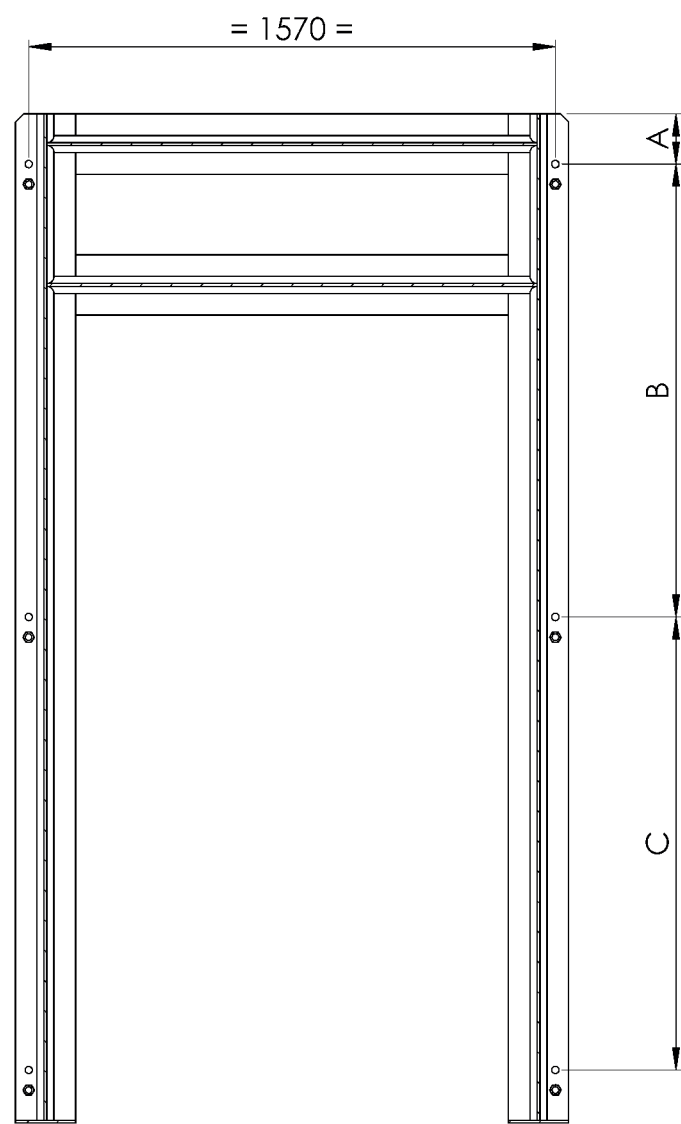


Longitudinal and transversal levelling must be inspected on the backing bar beam using a level offering accuracy of 1/10 per metre or a sight level.

4 mm thick 50 mm wide plate (ref **A2**) for supporting the screw jacks (ref **A1**). Length and number as below:

	Anchor (A3)				Plate quantity (A2)
	Type	Drilling Ø	Anchor	Quantity anchor	200 mm
<b>SEAM-MATIC EX-IT 32</b>	Chemical	Ø 18	M16 175/115	6	6
<b>SEAM-MATIC EX-IT 42</b>	Chemical	Ø 18	M16 175/115	6	6
<b>SEAM-MATIC EX-IT 52</b>	Chemical	Ø 18	M16 175/115	6	6
<b>SEAM-MATIC EX-IT 62</b>	Chemical	Ø 18	M16 175/115	6	6

ANCHORING



	SEAM-MATIC EX-IT 32	SEAM-MATIC EX-IT 42	SEAM-MATIC EX-IT 52	SEAM-MATIC EX-IT 62
A	150	150	225	230
B	1350	1850	2360	2860
C	1350	1850	2360	2920



### 3 - Slings



Slings are indicated as a principle, but are different for each machine depending on the model and equipment.



Slings provided for an unequipped bench; for an equipped bench, see the specific drawing supplied.



**WARNING:** Protect the sensitive parts while slinging.  
Use webbing



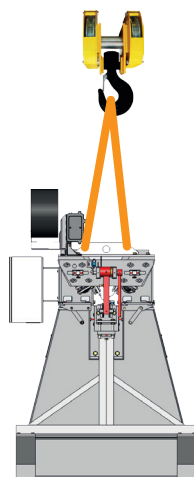
During any lifting operations, the use of appropriate PPE (Personal Protective Equipment) is **MANDATORY**.



The components of the installation may only be transported using the slinging points provided, with appropriate slinging equipment.



Operator protection:  
Helmet - Gloves - Safety shoes



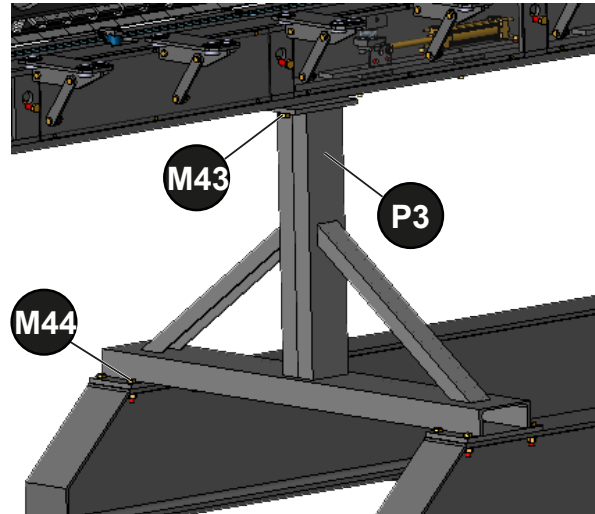
SEAM-MATIC EX-IT 32	5000 daN
SEAM-MATIC EX-IT 42	6500 daN
SEAM-MATIC EX-IT 52	8500 daN
SEAM-MATIC EX-IT 62	11000 daN

### Holding boom for transport

The holding boom with the reference **P3** protects the installation from potential deformation during transport.

This boom must be removed before putting the **Seam-Matic EX-IT** bench into service; proceed as follows:

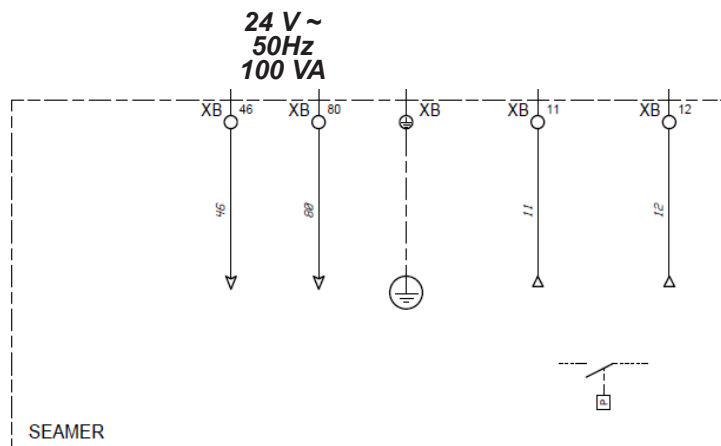
- Fully unscrew the two screws **M43**
- Fully unscrew the eight screws **M44**
- Remove the boom



## 4 - Connection

### 4.1 Electrical system

- If the **Seam-Matic EX- IT** bench is delivered with its welding equipment, the power and safety connections have already been made.
- If the bench is supplied unequipped, make the following connections:
  1. Supply 24 V - 100 VA power that is disconnected from the machine powering control to terminals 46 and 80 of the electrical-pneumatic cabinet.
  2. Wire the pressure loss contact to terminals 11 and 12 of the electrical-pneumatic cabinet in the circuit of the machine emergency stop line.



### 4.2 Welding

The ground cable of the welding equipment is to be connected to the frame of the **Seam-Matic EX-IT** bench (ref A2).

### 4.3 Compressed air

Connect a compressed air supply to the padlockable shut-off valve that supplies air to the whole installation (ref A3).



**DO NOT UPSET THE REGULATOR SETTING**

=> Pressure of jaws: 3 bar max.

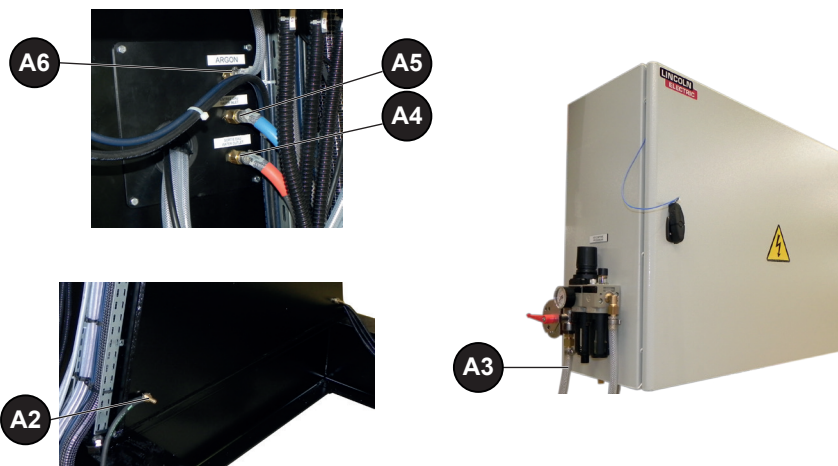
NB: Above that pressure, there is a risk of deforming the upper beams.

### 4.4 Water

Connect the 9x16 pipes from the cooler to the water return fittings (ref A4) and water inlet fittings (ref A5).

### 4.5 Gas

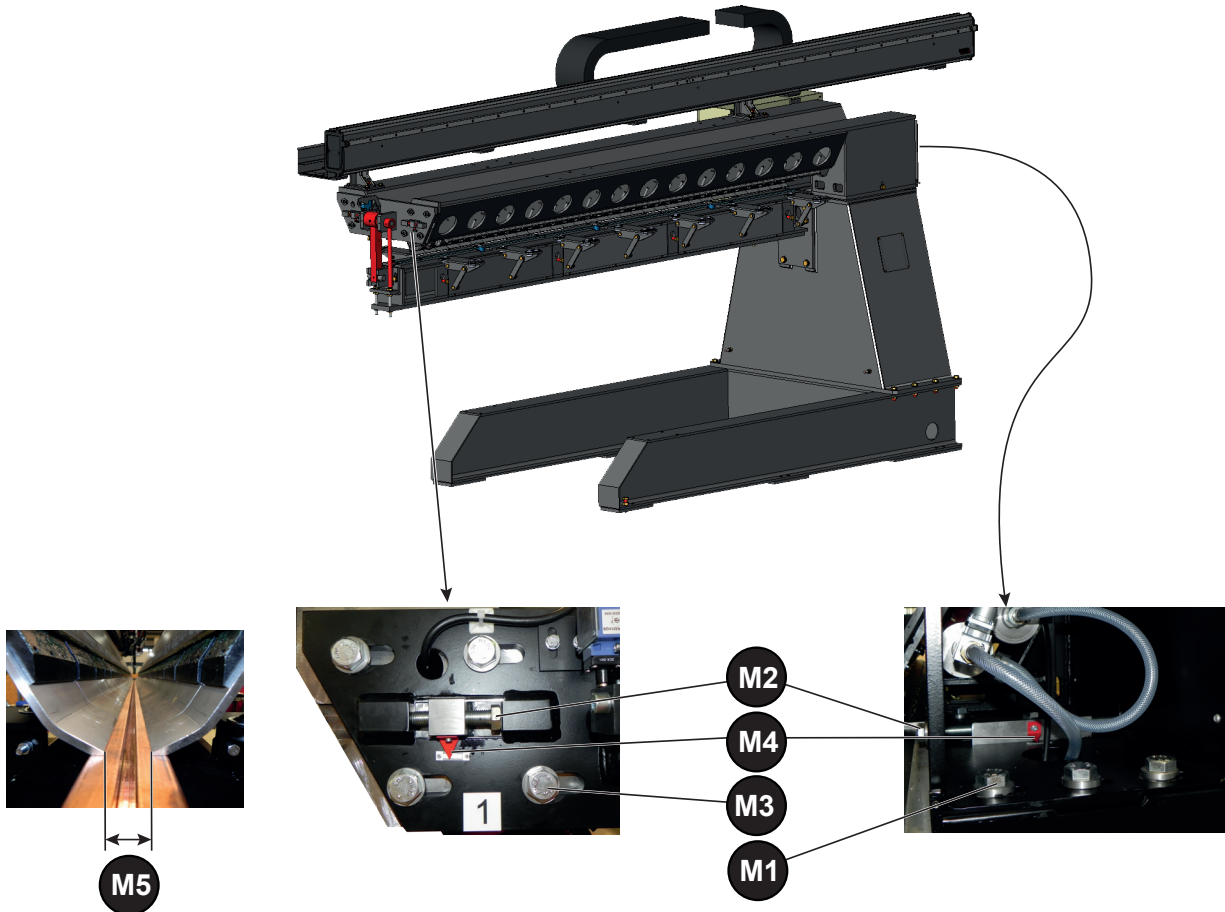
If the backing bar comprises backing gas protection, connect a Ø 6x12 pipe to supply argon (A6).



## 5 - Inspections and adjustments

All the adjustments are made in the factory when the **Seam-Matic EX-IT** bench is fitted with welding equipment. That means that there is no need to change them, unless they have been upset during transport or if the welding process is changed.

### 5.1 Adjustment of spacing and parallel alignment of the beam bearing the jaws



The spacing of the beams (**M5**) depends on the thickness of the plates to weld and the welding process. The spacing may be adjusted from 10 mm to 30 mm.

The jaws must not come in the way of nozzle travel and must apply the plate correctly against the backing bar.

Inspection of the parallel alignment of the upper beams in relation to the backing bar in the horizontal plane

The parallel alignment is inspected for each jaw line.



**NEVER LOOSEN THE TWO BEAMS TOGETHER**

Make sure that the beam holding system is locked.

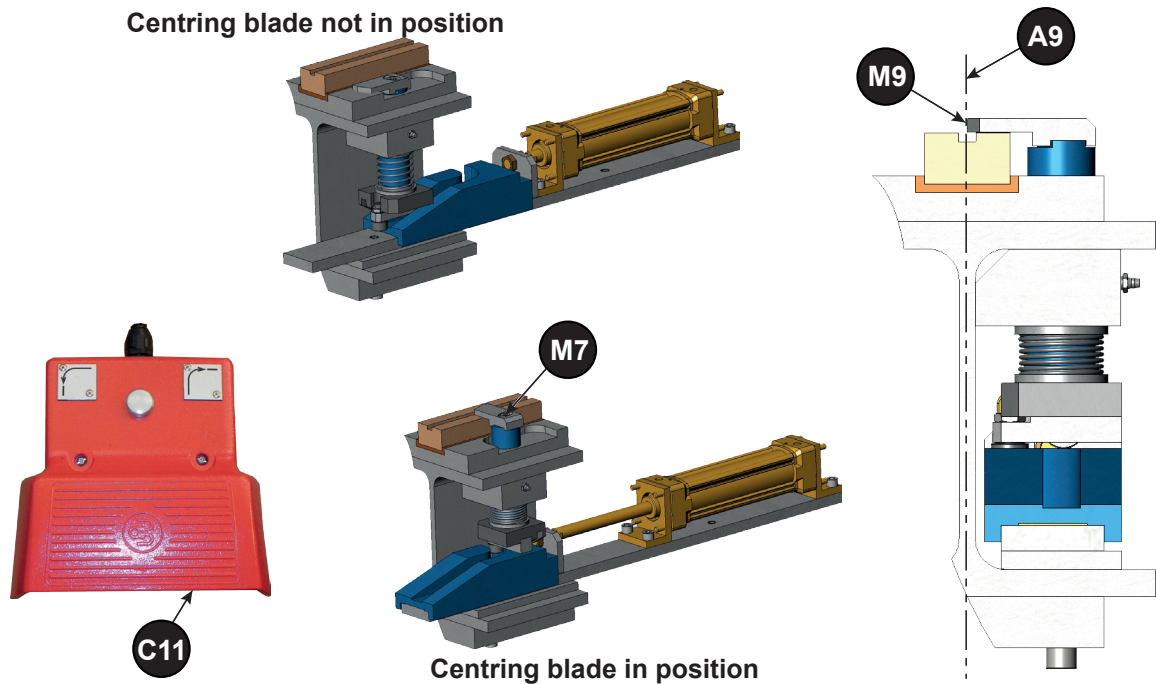
For adjustment, slightly loosen the 4 screws, (ref **M1**) on the front frame and the 2 screws (ref **M3**) on the rear frame

Adjust the spacing with the screws (**M2**) and screw back the screws (**M1**) and (**M3**).

The index (**M4**) must be on the same position on the two front and rear rules for the same jaw line.

## 5.2 Adjusting the centring blade or blades

This adjustment is to be made every time the jaw spacing is modified.  
Press the pedal (**C11**) of the centring blade control unit, and the centring blades will go into place.  
Loosen the screws **M7**.  
The outer surface **M9** must be lined up with the bar **A9**.  
Tighten the screws **M7**.



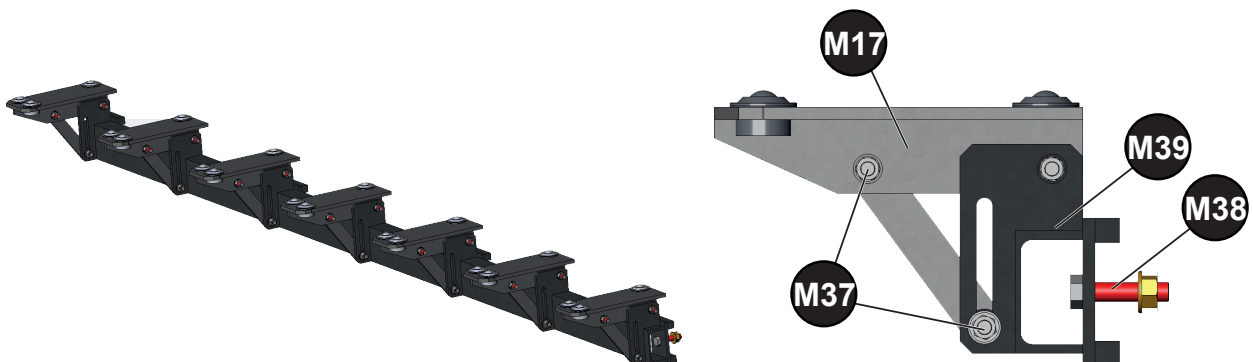
## 5.3 Plate support adjustment

For interior welding, the angle of the plate supports must be adapted to the diameter of the shells to weld; to that end:

- Slightly loosen the nuts (**M37**)
- Adjust the angle of the plate support ( **M17**)
- Lock the nuts (**M37**)
- Similarly adjust all the other plate supports

For exterior welding, the plate supports must be removed; to that end:

- Unscrew the screws **M38** in the recess of the fastening **M39**
- Remove the plate supports



#### 5.4 Verification of parallel alignment of beam CTP2

Beam **CTP2** supports the carriage on which the welding equipment is mounted.

The quality of weld seam tracking depends on the parallel alignment between beam and backing bar.

Beam **CTP2** is fixed to one of the jaw support beams, and so you need to adjust the parallel alignment after adjusting the spacing of the jaws or a change in backing bars.

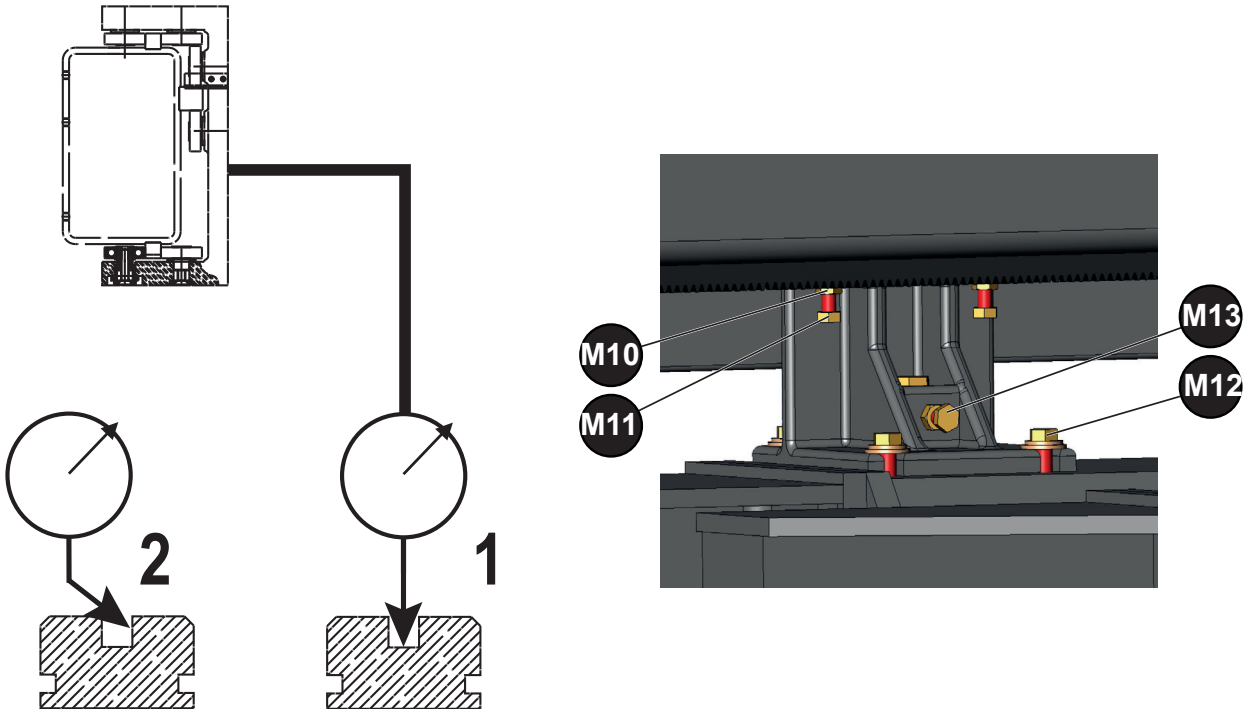
Place a comparator gauge support on the welding carriage so that the contact point of the comparator is in the groove of the backing bar.

##### Adjustments on the vertical plane in relation to the backing bar, ref. 1

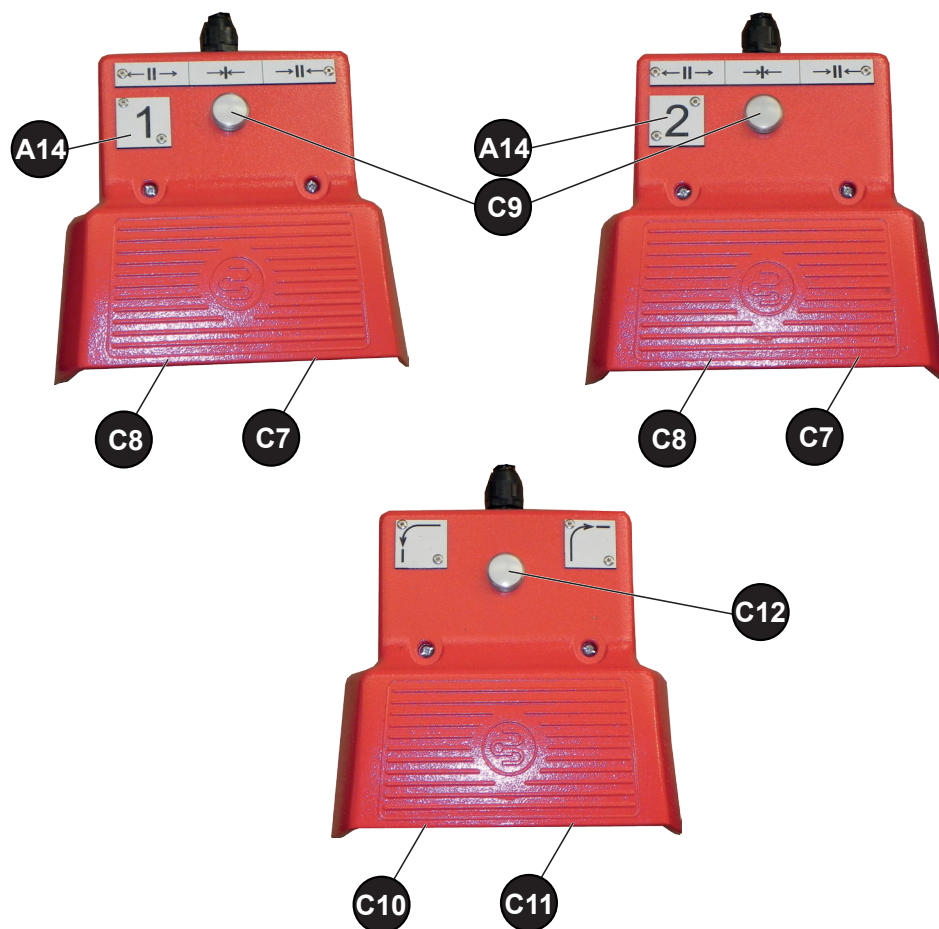
- Place the contact point of the comparator gauge vertically at the bottom of the groove.
- Move the carriage over the whole length of the backing bar.
- Loosen the nuts (**M10**) and adjust with the screws (**M11**) so as to obtain a maximum space of 0.3 mm for the total length of the backing bar.
- Tighten the nuts (**M10**) once again.

##### Adjustments on the horizontal plane in relation to the backing bar, ref. 2

- Place a comparator gauge with a lateral contact point on the side of the groove
- Move the carriage over the whole length of the backing bar
- Loosen the screws (**M12**) and adjust with the screws (**M13**) so as to obtain a maximum space of 0.4 mm for the length of the backing bar.



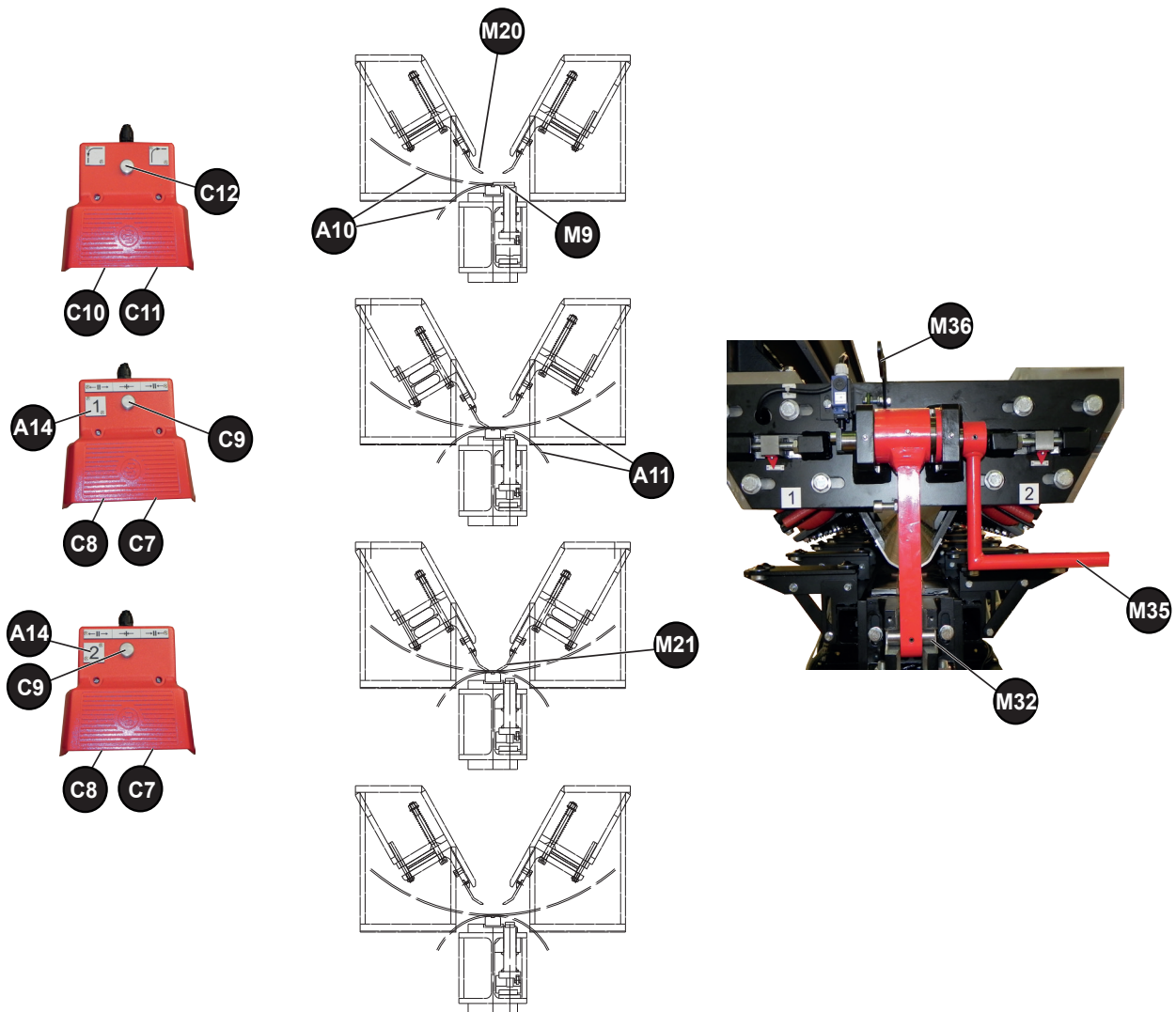
## 1 - Description of pedal controls



- The plates are held by tightening the jaws. The two jaw lines are referenced 1 and 2 (ref **A14**) on the control pedals and on the end of the beams.
- The jaws are tightened at slow speed, by pressing the pedal (ref **C7**).
- The beam must necessarily be locked to allow jaw tightening.
- For the centring blade, press the pedal **C11**.
- While tightening, releasing the pedal or unlocking the beam stops the downward movement of the jaws.
- Hold the pedal till the indicator (**A14**) goes on, corresponding to an increase in clamping pressure.
- Loosening is achieved by pressing the other pedal, (**C8**).



## 2 - Execution of a plate assembly cycle



- Check the tightening and adjustment of the plate supports (These must be adjusted according to the shell diameter or horizontally for welding flat plates).
- Clear the welding carriage to the parking position.
- Lock the clamp **M32** using the control arm **M35**.
- Set the centring blades **M9** by pressing the control pedal **C11** till the indicator **C12** goes on.
- Set the first side of the shell to weld, **A10**, in contact with the centring blades.
- Tighten the jaws 1 (left) **M20** using the pedal **C7** till the indicator **C9** goes on.
- Retract the centring blades by pressing the pedal **C10**.
- Place the second side of the shell to weld **A11** against that in place.
- Tighten the jaws (right) **M21**.
- WELD the next shell using the welding process installed (see process instruction).
- Loosen the jaws 1 and 2 using the pedals **C8**.
- Unlock the clamp **M32** and hang it at the top using the hook **M36**.
- Remove the welded shell from the front of the bench



### 1 - Care

For a long and trouble-free life, the machine requires a minimum level of care and maintenance.

The frequency of such maintenance is indicated for production in one work shift per day. For higher production rates, increase the maintenance frequencies accordingly.

Your maintenance department could photocopy these pages to track maintenance frequencies and times and the operations completed (tick the appropriate box).



#### **DO NOT UPSET THE REGULATOR SETTING**

=> Pressure of jaws: 3 bar max.

NB: Above that pressure, there is a risk of deforming the upper beams.



**Machine maintenance** must be carried out **with all the energy supplies switched off**.

The disconnection and padlocking of all energy sources is **mandatory**.

#### Pneumatic circuit:

##### • **Filter**

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.

That semiautomatic purge operates when the air is cut off in the upstream pipe.

In the event of continuous operation, provide for regular manual operating of the purge.

The filter must be cleaned whenever visible concentration of impurities and/or excess pressure loss are observed.

Alcohol may be used for cleaning. Then blow the inside the filtering element.

##### • **Lubricator**

For ordinary applications, you may use non-detergent pneumatic oil free from aggressive detergents, viscosity 2 to 3.5 Engler at 50°C, aniline point 90 to 105.

Recommended products:

LABO: prima 32

TOTAL: Azolla32 or ZS32

SHELL: Tellus S22 or Olna 22

ESSO: Spinesso 22

MOBIL: DTE light

BP: HLP 22 or 32

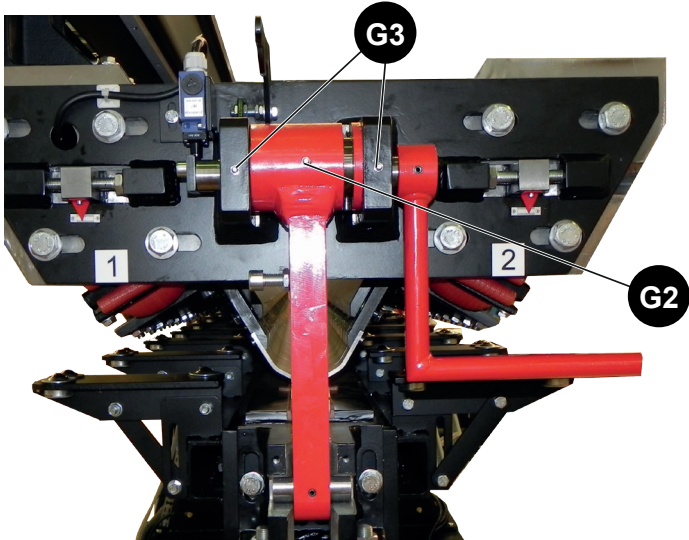
##### • **Adjustment**

To adjust the oil flow rate, apply pressure and then vent an air outlet to consume air and turn the button till the desired flow rate is obtained.

It is inspected via the viewing dome. On average, we suggest a rate of one or two drops per minute.

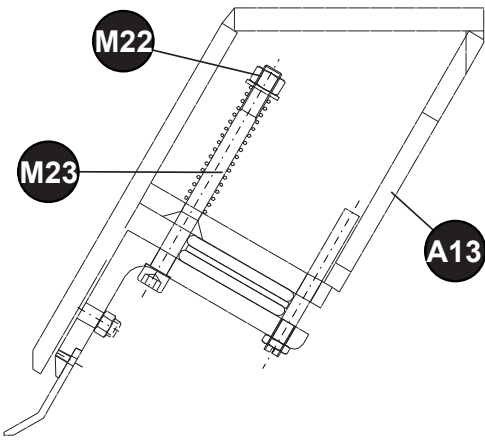
## 2 - Maintenance schedule

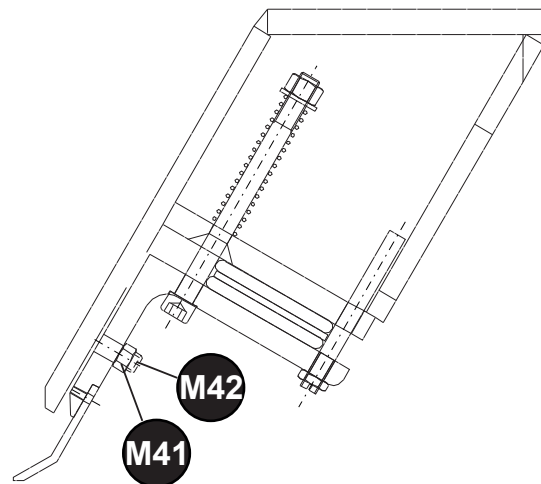
Sub-assembly	Component	Type of inspection	Action	Frequency			Time (in hours)			Step
				1 month	6 months	1 year	200	2500	6000	
Locking	Arm	-	Lubrication	X						A
Jaw line	Return spring	Visual	Test		X					B
	Clamping jaws	Visual	Test		X					C
Locking	Centring blade	Visual	Lubrication		X					C
Locking	Arm	Visual	Test		X					E
Locking	Limit switch	Visual	Test		X					F
Backing bar	Backing bar	Visual	Test		X					G
Bladder		Visual	Test		X					H

Step	Operation	OK	NOK
A	<u>Locking system</u>	✓	X
	<p>Lubricate the lubricating head (G2) and (G3)</p> 		

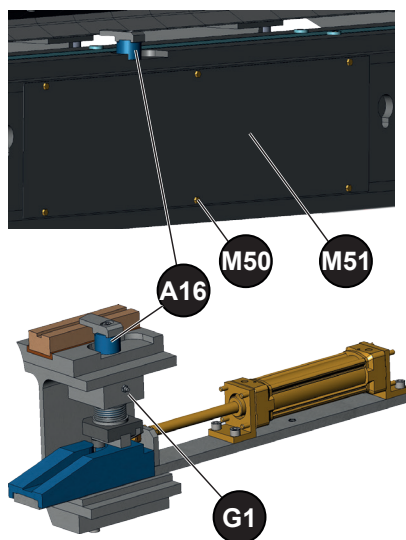



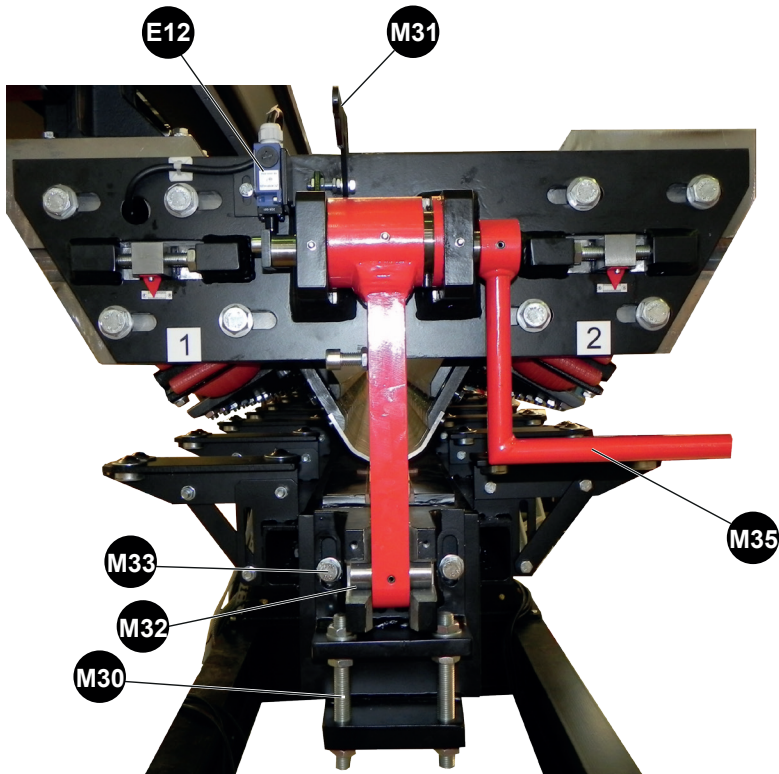
We recommend putting in place a traced system for tracking all your maintenance operations.

Step	Operation	OK	NOK
<b>B</b>	<u>Return spring</u>	✓	✗
	<p>Lower a row of jaws. For adjustment if required, pass your hand through the side holes of the beam (<b>A13</b>) and tighten the spring (<b>M23</b>) so as to set the turns against each other and then loosen (<b>M22</b>) over one turn.</p> 		

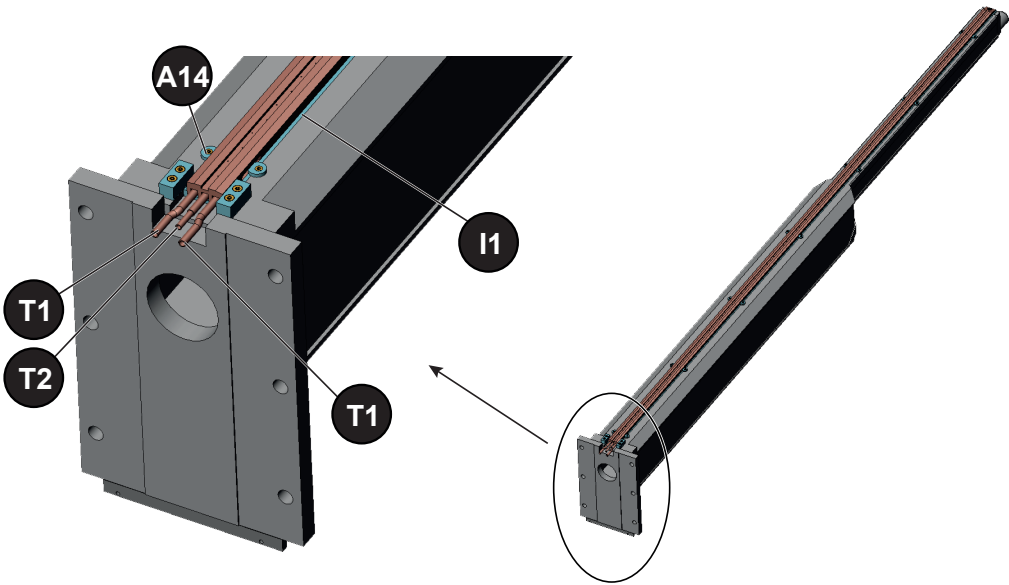
Step	Operation	OK	NOK
<b>C</b>	<u>Alignment of clamping jaws</u>	✓	✗
	<p>To adjust the alignment, use the hex screw <b>M42</b> mounted on the jaw supports. Remember to lock the lock nuts <b>M41</b> once again after adjustment. The pressure may not exceed 1 bar for this adjustment. Move the jaws two to three times, (up and down) and check the proper performance of the adjustment. The adjustment will ensure proper technical conductivity and seam regularity.</p> 		

Step	Operation	OK	NOK
D	<u>Lubrication of centring blades</u>	✓	✗
	<p>To access the centring blade lubricators, remove the guard plates <b>M51</b>; to that end:</p> <ul style="list-style-type: none"> <li>• Take off the guard plates <b>M51</b> by removing the screws <b>M50</b>.</li> </ul> <p>The lubricators <b>G1</b> are now accessible.</p> <p>There is a lubricator for each centring blade.</p> <ul style="list-style-type: none"> <li>• Put the centring blades in position</li> <li>• Remove any grease and powder residue (submerged arc welding) on the slides of the centring blades <b>A16</b>.</li> <li>• Move the centring blades down</li> <li>• Lubricate the centring blades at <b>G1</b></li> </ul>		



Step	Operation	OK	NOK
E	<u>Locking the beam</u>	✓	✗
	<p>If the levelling is correct, the clamp (M32) must easily fit in its slot.</p> <div style="border: 1px solid red; padding: 5px; margin: 10px 0;">  <p><b>This adjustment is made in the factory and must only be modified if absolutely necessary by Lincoln Electric personnel.</b></p> </div> <p>Proceed as follows if adjustment is required:</p> <ul style="list-style-type: none"> <li>• Loosen the jaws</li> <li>• Fasten the clamp (M32) using the handle (M35)</li> <li>• Unscrew the 2 screws (M33)</li> <li>• Adjust the locking height with the screws (M30) so as to set the backing bar and the rows of jaws parallel</li> <li><b>Important:</b> manoeuvre the 2 screws (M30) to the same extent to keep locking vertical</li> <li>• Tighten the 2 screws (M33)</li> </ul> 		

Step	Operation	OK	NOK
F	<u>Beam safety</u>	✓	✗
	<p>In the locked position, check that the sensor (E12) is engaged but not at the limit; a 2 mm residual gap is required.</p> <p>For adjustment, unscrew the screws of the sensor support and slide the sensor in the openings.</p>		

Step	Operation	OK	NOK
<b>G</b>	<u>Backing bar</u>	✓	✗
	<ul style="list-style-type: none"> <li>• 50 x 30 bar assembled with Permali insulation (I1)</li> <li>• Disconnect the water pipes <b>T1</b> and gas pipes <b>T2</b></li> <li>• Loosen the eccentric insulating washers <b>A14</b> and clear the grooves.</li> <li>• Replace the bar and then replace the washers <b>A14</b></li> <li>• Connect the water pipes <b>T1</b> and gas pipes <b>T2</b>.</li> </ul> 		

Step	Operation	OK	NOK
<b>H</b>	<u>Bladder</u>	✓	✗
	<p>Check the condition of the bladders and change them if needed.</p> <ul style="list-style-type: none"> <li>• Lower the jaw lines and put a flat bar between the frame and the jaw holder (Mind the length of the flat bar and the position)</li> <li>• Deflate the bladders.</li> <li>• Attach a string to the bladders and pull together.</li> <li>• Prepare new bladders (mind the position of the cone)</li> <li>• Put the new bladders in place.</li> <li>• Position the cone correctly in the rear frame.</li> <li>• Fasten the ends of the bladders.</li> <li>• Connect the compressed air system</li> <li>• Put the bladders under pressure to free the flat bars.</li> </ul>		

### 3 - Spare parts

#### Ordering procedure:

Almost all the parts of a machine or installation are referenced in the photographs and sketches.

#### **The descriptive tables contain three types of item:**

- items normally held in stock: ✓
- items not held in stock: ✕
- articles upon request: no reference

(For such parts, please complete the list of parts page and send us a copy. In the Order column, state the number of parts required and indicate the type and number of your equipment.)

For items referenced in the photographs or sketches but not included in the tables, please send us a copy of the relevant page and highlight the relevant reference.

#### **Example:**

✓	normally held in stock.
✕	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description
E1	W000XXXXXX	✓		Machine interface board
G2	W000XXXXXX	✕		Flow meter
A3	P9357XXXX			Printed front plates

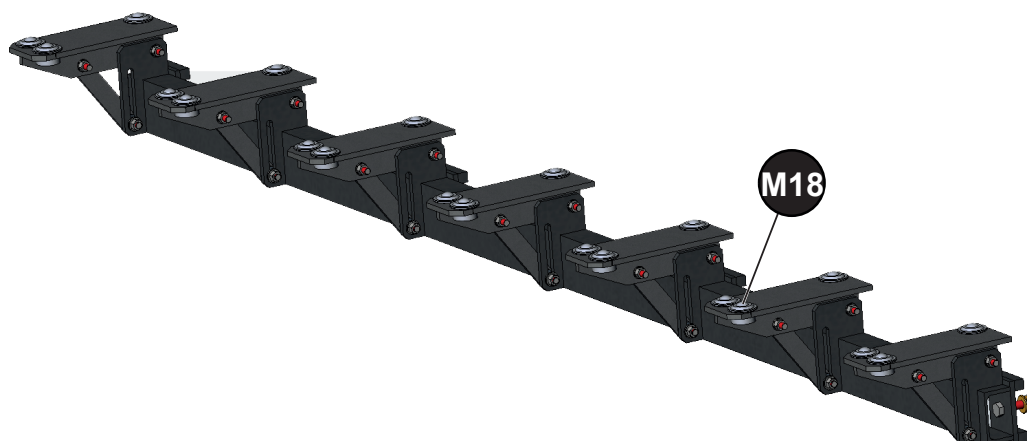
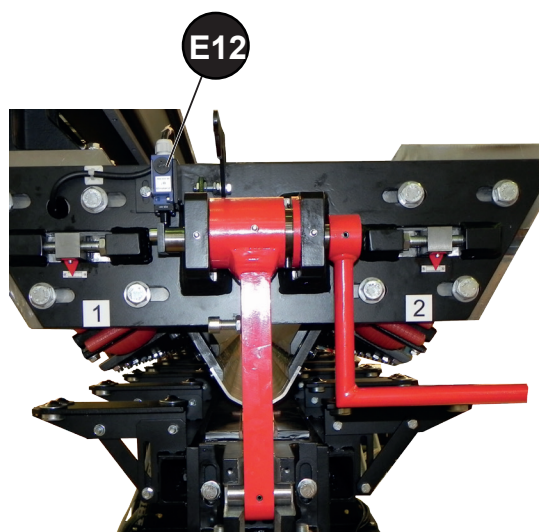
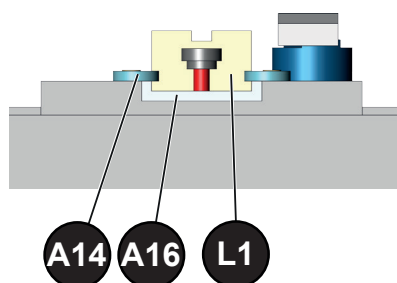
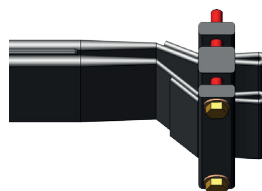
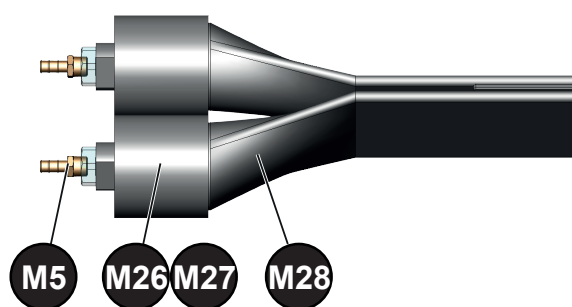
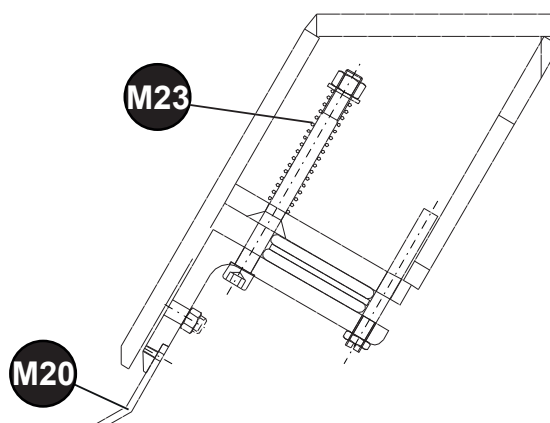
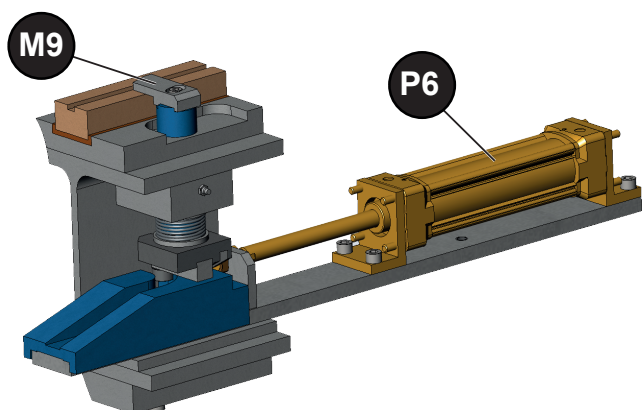
- While ordering parts, please indicate the quantity and note the number of your machine in the box above.

CE Type

Matricule

TYPE:

Number:




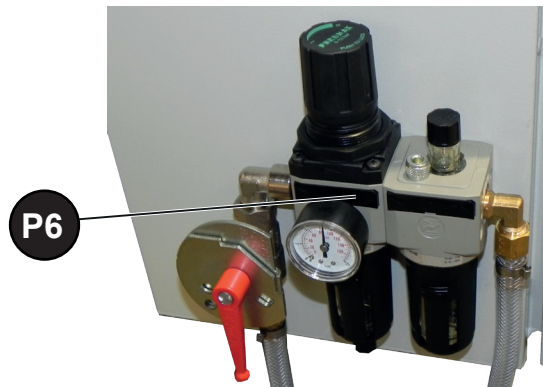
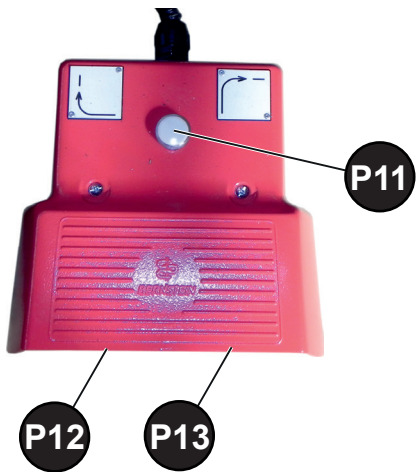
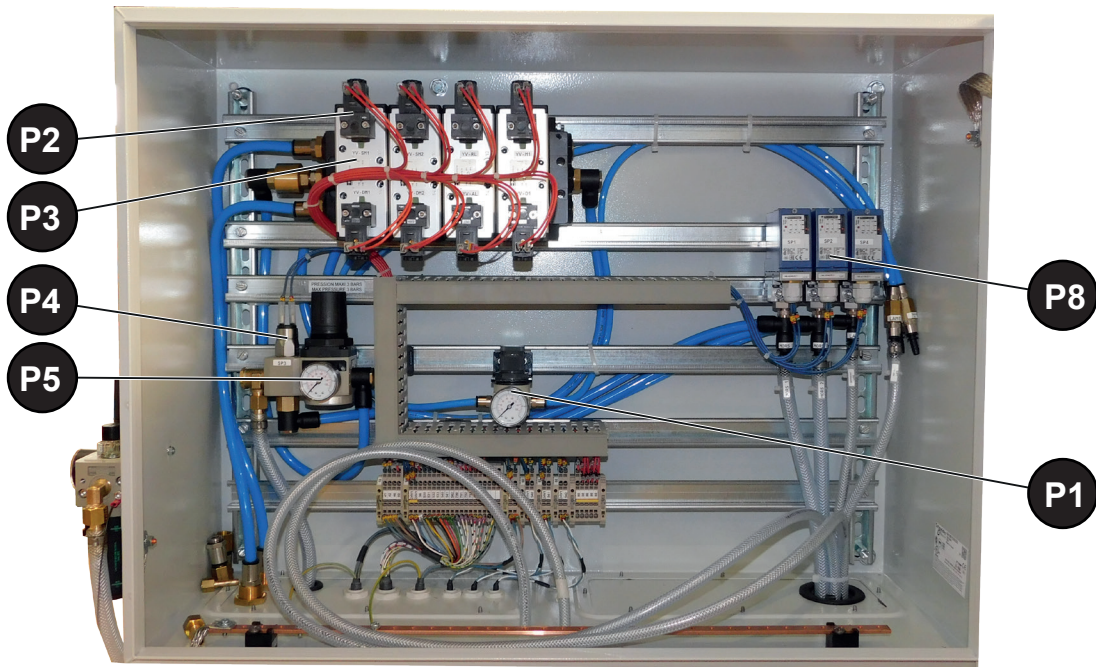


✓	normally held in stock.
✗	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description
<b>M9</b>	P91237372			Stop
<b>P6</b>	PC6202594			Cylinder C150
<b>M20</b>	P91232112			Jaw, 50
	P91232111			Jaw, 100
<b>M23</b>	P91236553			Compression spring, 28x3.5x130
<b>M5</b>	PC5901332			Grooved socket
<b>M26</b>	P91236264			Male taper
<b>M27</b>	P91236265			Female taper
<b>M28</b>	P91231443			Bladder Ø70
<b>A14</b>	P91231437			Holding stop
<b>A16</b>	P91236333			Backing bar insulation, 32
	P91236434			Backing bar insulation, 42
	P91236533			Backing bar insulation, 52
	P91236633			Backing bar insulation, 62
<b>L1</b>				Backing bar (depending on process)
<b>E12</b>	W000365870			Limit stop assembly
<b>M18</b>	P91232116			Bearing ball

- While ordering parts, please indicate the quantity and note the number of your machine in the box above.


 Type <input type="text"/> Matricule <input type="text"/>	TYPE:
	Number:



✓	normally held in stock.
✗	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description
<b>P1</b>	PC5900457			Pressure gauge, Ø40 0/10 bar G1/8
	PC5907035			Regulator 0-8 bar
<b>P2</b>	PC5900245			Control solenoid valve
<b>P3</b>	PC5900118			Pneumatic valve
<b>P4</b>	PC5901102			Pressure switch sensor, 0-10B 1/4" G
<b>P5</b>	PC5902409			Regulator 0- 8 bar G3/ 8
	PC5900457			Pressure gauge, Ø40 0/10 bar G1/8
<b>P6</b>	PC5902408			Pneumatic filter, G3/8
	PC5900547			Pressure gauge, Ø40 0/10 bar G1/8
<b>P8</b>	PC5901106			Pressure switch, 0.4-4 bar 1/4G
	PC5901110			Pressure switch, 0.6-10 bar 1/4G
<b>P11</b>	PC5702664			Pedal indicator lamp
<b>P12</b> <b>P13</b>	PC5702602			Control pedal

- While ordering parts, please indicate the quantity and note the number of your machine in the box above.

 Type <input type="text"/> Matricule <input type="text"/>	TYPE:
	Number:

