BOOM

LINC-MATIC CB
LM-LF
B-series

SAFETY INSTRUCTIONS FOR OPERATING AND MAINTENANCE

LINC-MATIC CB-LM: AS-PM-95240600 - AS-PM-95240601 - AS-PM-95240602 - AS-PM-95240603
LINC-MATIC CB-LF: AS-PM-95240610 - AS-PM-95240611 - AS-PM-95240612 - AS-PM-95240613

ISSUE : EN
REVISION : B
DATE : 05 - 2021

Instruction manual

REF : 8695 6060

Original instructions

LINCOLN® ELECTRIC

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

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

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

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

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

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

Table of contents

INFORMATION

DISPLAYS AND PRESSURE GAUGES

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.

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

· **LINC-MATIC CB-LF 3032B**
· **LINC-MATIC CB-LF 4042B**
· **LINC-MATIC CB-LF 5052B**
· **LINC-MATIC CB-LF 6062B**
· **LINC-MATIC CB-LM 3032B**
· **LINC-MATIC CB-LM 4042B**
· **LINC-MATIC CB-LM 5052B**
· **LINC-MATIC CB-LM 6062B**

REVISIONS

REVISION : B DATE : 05/21

DESCRIPTION	PAGE
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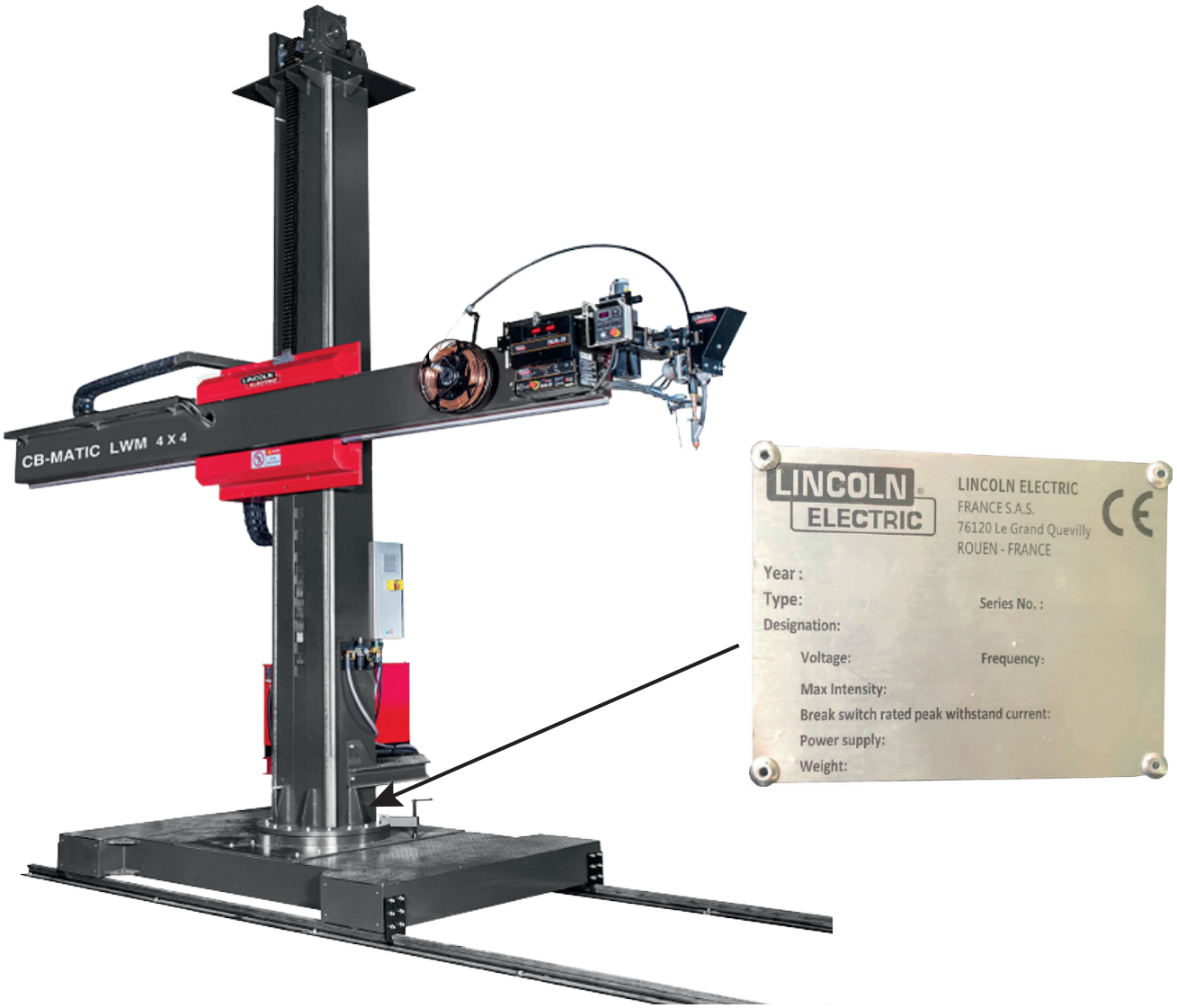
A - IDENTIFICATION

The information below should be provided in all correspondence.



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.

Do not stand under the arms of the boom.

"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.

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

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 boom **is not** designed for anchoring lifting equipment.

Store cable bundles behind the electrical cabinet of the boom.

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**.
Sliding block **maintenance** may only be carried out **with all the energy supplies switched off**, when the covers are removed.

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

LINC-MATIC CB LF boom with fixed column:

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

LINC-MATIC CB LM boom with powered carriage:

- Check that the anti-tilt clamps have been reassembled correctly before use.
- Make sure that the mechanical stops have been assembled at the end of the rails.

Slinging eyes (at the top of the column)

- This slinging eye may not be used for handling the complete boom. It may **only** be used to assemble the boom.
- Apply the lifting safety instructions
- Apply the lifting procedure specific to the boom

Do not exceed the permissible load at the end of the arm (see technical specifications).

Before use for welding, lock the rotation of the column with the support screws.

Make sure that no part of the machine can come within less than 500 mm of an obstacle according to the safety standards NF EN 349.

Important: the operator passage way must absolutely be clear over a minimum width of 800 mm according to safety standards NF EN 547-1-3.

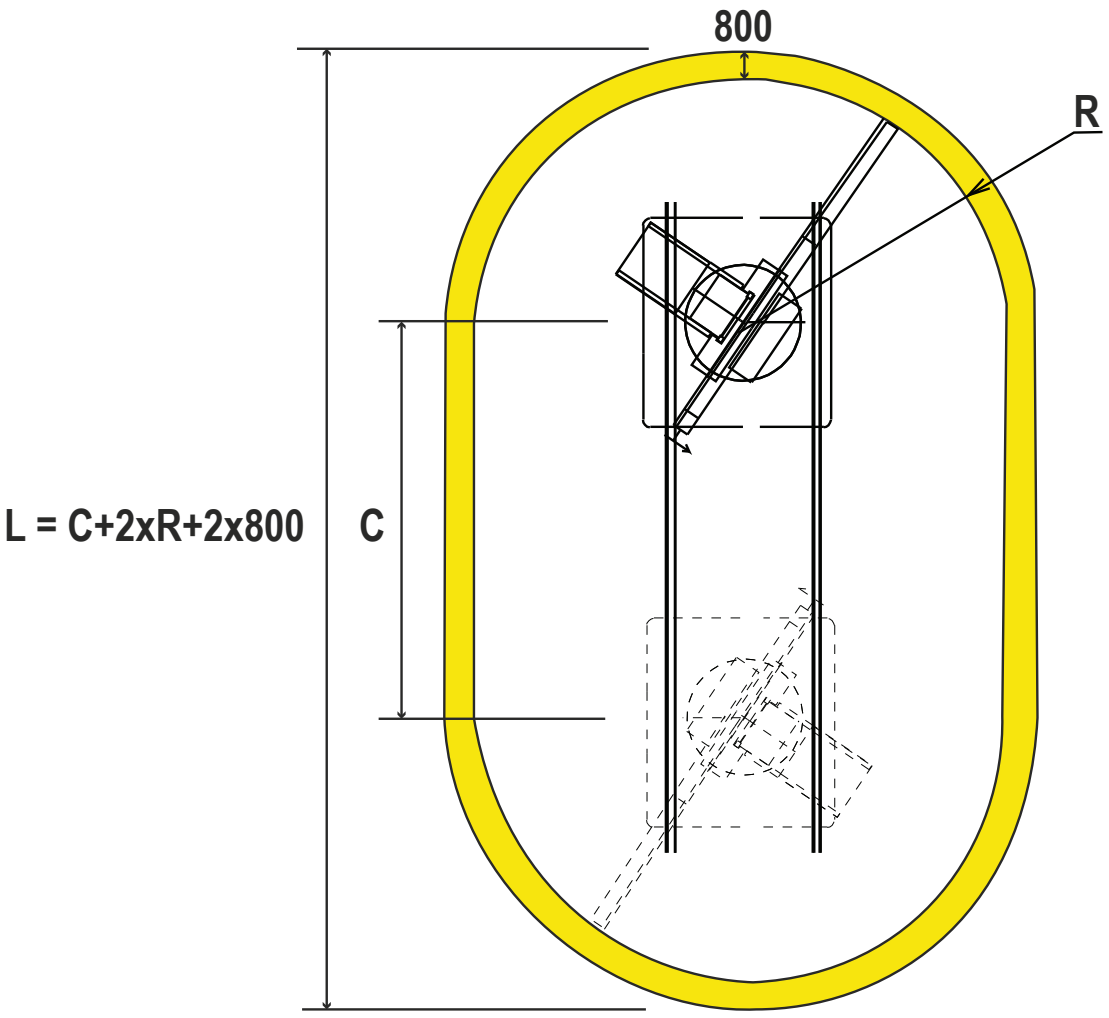
The floor should be marked out as shown in the drawing opposite.

NB:

- **R** (max dimension with the arm out at the electric stops) must be measured.
- **C** is the useful travel dimension of the boom carriage.

Type	Dimension R (in mm)
LINC-MATIC CB-LM 3032C	5425
LINC-MATIC CB-LM 4042C	6425
LINC-MATIC CB-LM 5052C	7425
LINC-MATIC CB-LM 6062C	8425

		Dimension C (in mm)
Rail length (in metres)	10	6720
	20	16720



1 - Description

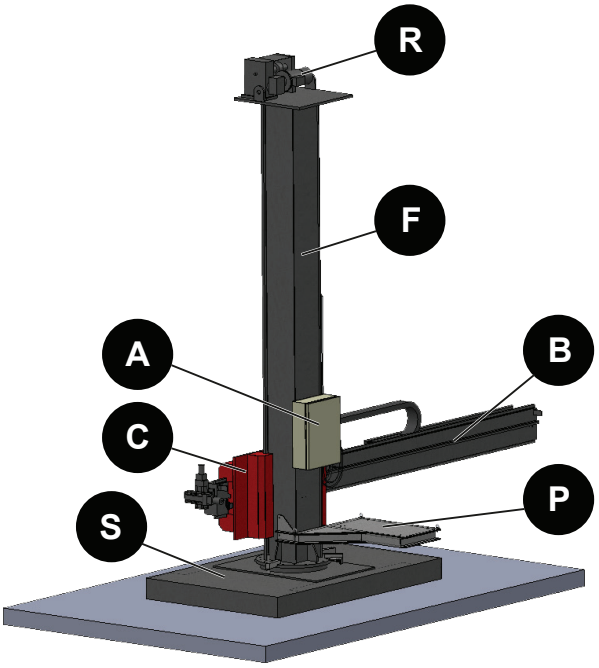
This welding boom dedicated to Submerged Arc (SA) welding makes it possible to position and move an automatic welding head.

It is particularly designed for fabricating cylindrical bodies and also metal structures.

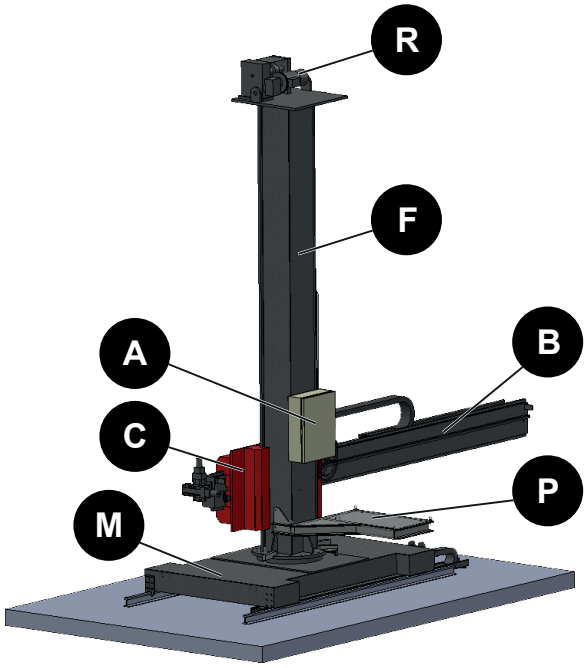
2 - Type of boom

The boom is available in:

"**LINC-MATIC CB-LF**" fixed version with base



"**LINC-MATIC CB-LM**" powered carriage version



A	Control and power cabinet
B	Arm
C	Sliding block
F	Column
R	Lifting power system
M	Powered carriage
S	Base
P	Welding platform

3 - Column (ref.: F)

It is made up of bent mechanically welded metal. Two rolling tracks over the entire height ensure stable and smooth vertical movement of the arm support sliding block.

The column has a vertical rack over its entire height, which acts as safety gear if the lifting system fails.

It is fixed to the carriage or the base by means of a slewing ring with a large diameter. Manual column rotation is limited to between -180° and +180° with no noticeable effort or play, thus allowing full manoeuvrability and easy arm positioning.

It is stopped from rotating by two screws with manually tightened bearings that are very easily accessible.

A plate that acts as the seat for the lifting geared motor and a slinging eye for handling (column alone) with a travelling crane can be found at the top.

The column is supplied with a cable drag chain that carries the connection bundles up to the arm.

As an option, column rotation can be powered by a motor.

4 - Lifting (ref.: R)

The up and down movement is carried out by means of a three-phase geared motor with a fixed speed.

The geared motor placed at the top of the column operates through a pinion on a double-link chain that is oversized for the load to lift.

5 - Sliding block (ref: C)

It joins the column to the arm and allows the arm to move vertically and horizontally by means of wheels.

An (anti-descent) safety gear inserts a clamp in the column rack to prevent the sliding block from falling suddenly if the chain breaks.

6 - Powered carriage (ref: M)

This mechanically welded carriage supports the whole structure of the boom and moves on tracks made up of rails anchored to the floor. The rails are positioned so that their distance between sides is 1800 mm.

It is guided by flanged wheels that press against the sides of the rails.

In order to keep the boom safe from tipping over, the carriage has four clamps that grasp the rails.

The carriage may not be used for welding movements.

7 - Arm (ref: B)

The arm supports the welding head and is supplied with a cable drag chain that carries the connection bundles up to the welding head.

The arm is the welding centre line of the boom.

8 - Base (ref: S)

The mechanically welded construction of the base supports the complete boom structure.

The base must be anchored to the floor.

9 - Electrical cabinet (ref: A)

The electrical cabinet powers all the boom functions. Power to the welding equipment (welding power source) and the outside shafts (rotator, positioner etc.) is not supplied from this cabinet, but by a power supply outside the boom.

A remote welding head control is used to control the movements that are useful for operation (arms, lifting, crossed slides).

A second remote control is used for moving the carriage to put the boom in place.

10 - Options

Guide rail:

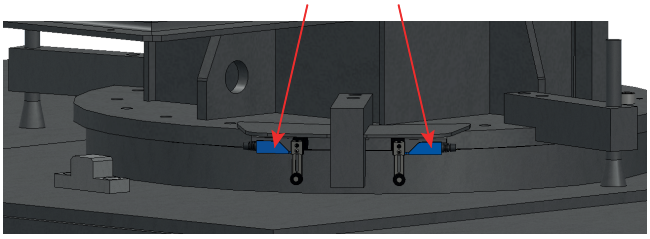
Three types of rail are available and compatible with this boom.

- LW rail (10 metres long)
- LE rail (6 metres long)
- Burback rail (6 metres long)

They are supplied in pairs.

Column rotation:

The powered option is designed to be assembled in the factory, and must be specified with the order. Powered rotation is controlled using a second remote control and rotation is stopped by limit switches.



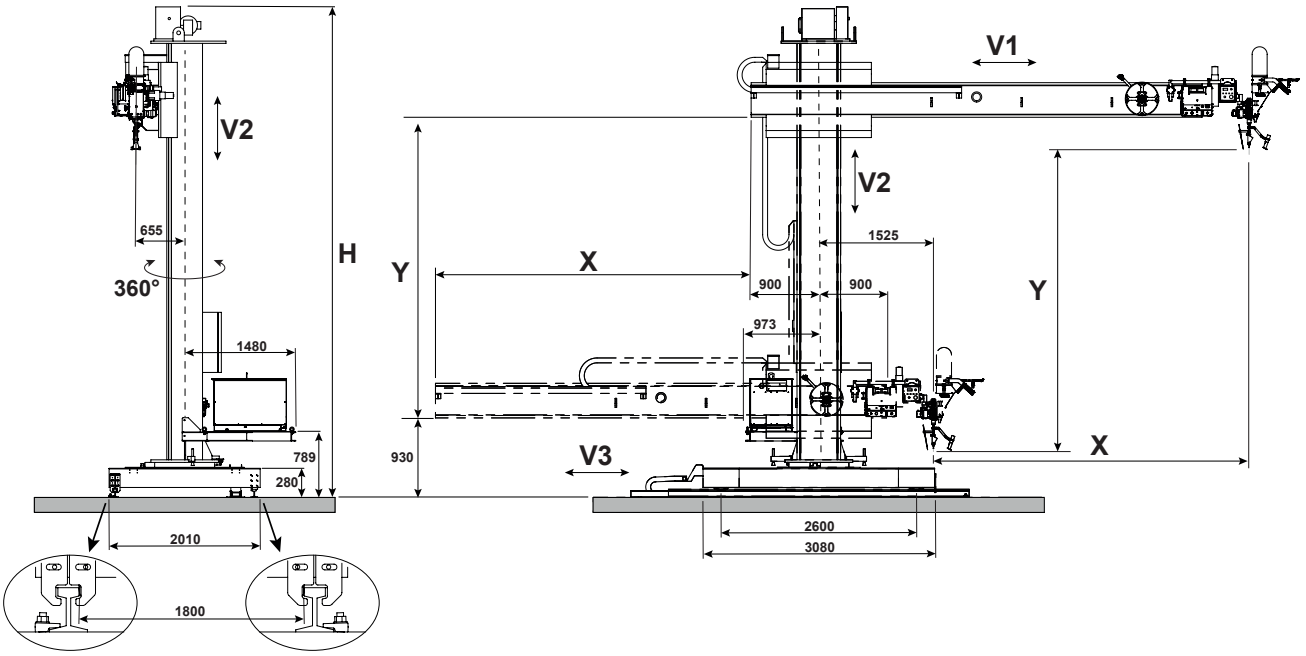
Longitudinal cable drag chain:

AS-PP-95240621: Basic 10-metre long cable drag chain

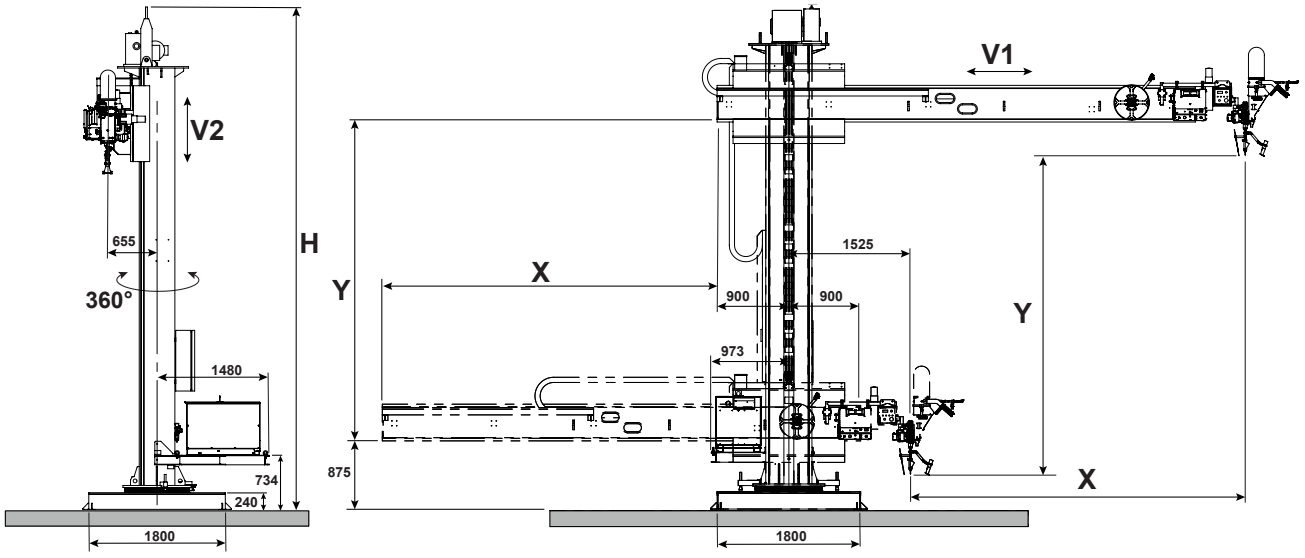
AS-PP-95240622: Guide

AS-PP-95240623: Supplemental 10-metre long cable drag chain

11 - Dimensions and travel ranges of LINC-MATIC CB-LM boom



12 - Dimensions and travel ranges of LINC-MATIC CB-LF boom

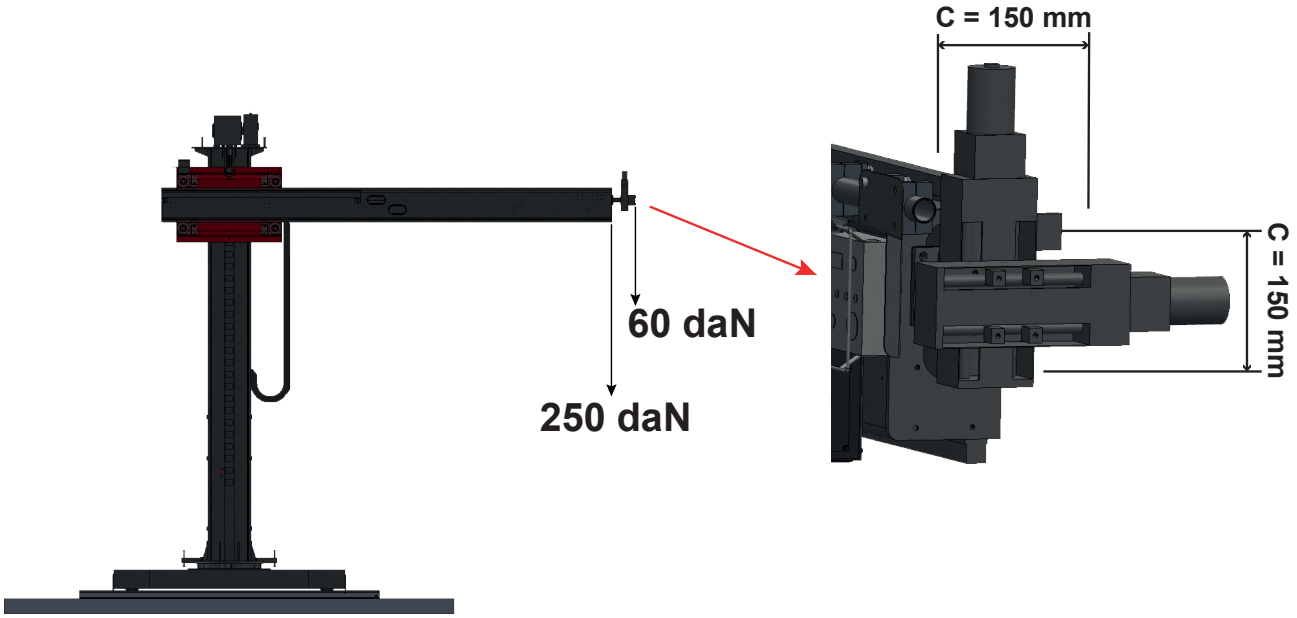


Part number	Type	Vertical travel (mm) “Y”	Horizontal travel (mm) “X”	Height (mm) “H”	Weight (kg)
AS-PM-95240600	LINC-MATIC CB-LM 3032B	3000	3200	5500	4900
AS-PM-95240601	LINC-MATIC CB-LM 4042B	4000	4200	6500	5200
AS-PM-95240602	LINC-MATIC CB-LM 5052B	5000	5200	7550	5500
AS-PM-95240603	LINC-MATIC CB-LM 6062B	6000	6200	8550	5800
AS-PM-95240610	LINC-MATIC CB-LF 3032B	3000	3200	5340	4500
AS-PM-95240611	LINC-MATIC CB-LF 4042B	4000	4200	6340	4800
AS-PM-95240612	LINC-MATIC CB-LF 5052B	5000	5200	7390	5100
AS-PM-95240613	LINC-MATIC CB-LF 6062B	6000	6200	8390	5400

13 - Technical specifications

Type	Speed of arm (mm) “V1”	Speed of lifting (mm) “V2”	Speed of carriage (mm) “H”	Electricity supply	Power (kVA)	Pneumatic supply (m³(n)/h)
LINC-MATIC CB-LM 3032B	17.7 to 175	100	40 to 400	3 x400V	Boom alone: 10 kVA Boom + welding equipment: 90 kVA max	5 bars: 12 6 bars: 14 7 bars: 16
LINC-MATIC CB-LM 4042B						
LINC-MATIC CB-LM 5052B						
LINC-MATIC CB-LM 6062B						
LINC-MATIC CB-LF 3032B						
LINC-MATIC CB-LF 4042B						
LINC-MATIC CB-LF 5052B						
LINC-MATIC CB-LF 6062B						

- The load at the end of the arm may not exceed 250 daN.
- The load at the end of the slides may not exceed 60 daN.



1 - Installation conditions

The machine must be located in accordance with safety standard NF EN 547 -1 -3 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.

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 standard ISO 8573-1

Solid pollutant class	Class 3	Grain size 5µm	Mass concentration 5mg/m3
Water class	Class 3	Maximum dew point under pressure –20°C	
Total oil class	Class 5	Concentration 25 mg/m3	

Arrangement of cables and 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 - Floor preparation

The floor does not need any particular preparation for installing the machine; however, we recommend a concrete floor for the machine to be satisfactorily stable.

- Thickness of concrete slab: 200mm
- Flatness over the entire area: ± 5mm
- Height difference over the entire area: 30mm
- Height difference: 5 mm/m
- Concrete slab in one piece
- 20 MPa (350kg/ m³) concrete with metal reinforcement (according to BAEL 91 99 revision rules)

The thickness of the slab and its metal reinforcement are provided for guidance and must be adapted to the characteristics of the floor.

3 - Handling of LINC-MATIC CB LM and LF

For obvious reasons relating to transport convenience, the boom is dismantled for shipment into several parts that need to be reassembled on the site.

The shipped **LINC-MATIC CB LM** boom includes:

- the column with the sliding block
- the powered carriage
- the equipped platform*
- the arm and the welding equipment*
- the electrical cabinet and the control console

The shipped **LINC-MATIC CB LF** boom includes:

- the base and the column with the sliding block
- the equipped platform*
- the arm and the welding equipment*
- the electrical cabinet and the control console

*: Only if the **LINC-MATIC CB** boom is delivered with welding equipment

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

Slinging given for an unequipped boom; for an equipped boom, see the specific drawing supplied.

WARNING: Protect the sensitive parts while slinging.

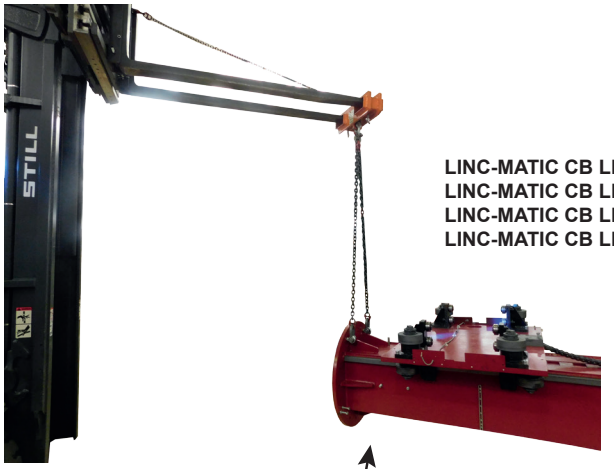
Use webbing

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

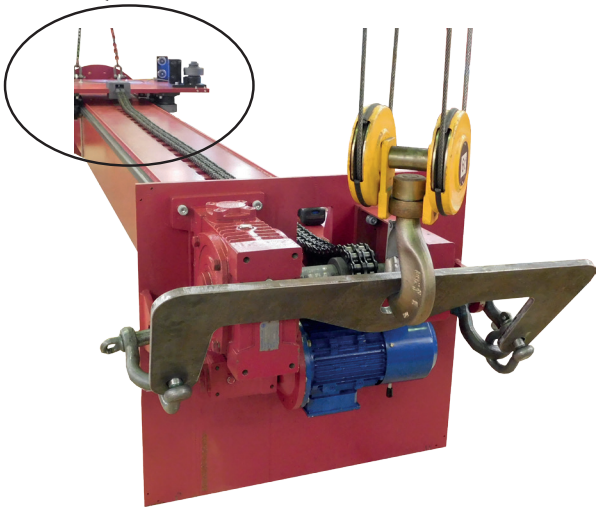
The components of the installation may only be transported using the slinging points provided, with appropriate slinging equipment.

Column

The column is to be lifted with two pieces of lifting equipment to avoid the pendulum effect.



LINC-MATIC CB LM-LF 3032B : 2500 daN
LINC-MATIC CB LM-LF 4042B : 2750 daN
LINC-MATIC CB LM-LF 5052B : 3050 daN
LINC-MATIC CB LM-LF 6062B : 3300 daN



Arm

LINC-MATIC CB LM-LF 3032B : 580 daN
LINC-MATIC CB LM-LF 4042B : 690 daN
LINC-MATIC CB LM-LF 5052B : 810 daN
LINC-MATIC CB LM-LF 6062B : 920 daN

Operator protection:
Helmet - Gloves - Safety shoes

Carriage

1500 daN

Base

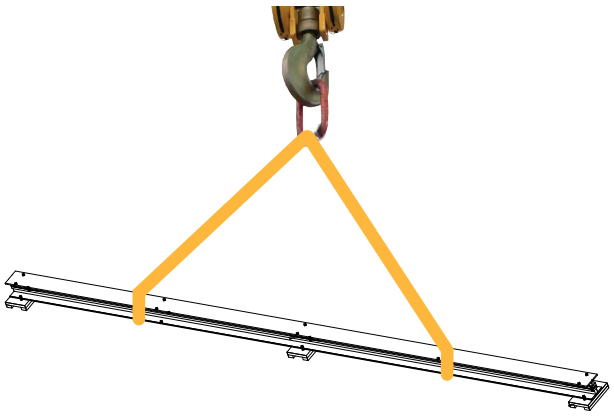
1200 daN

Platform

150 daN

Guide rails

- LW rail (10 metres): : 260daN
- LE rail (6 metres): 150 daN
- Burback rail (6 metres): 260 daN



Electrical cabinet

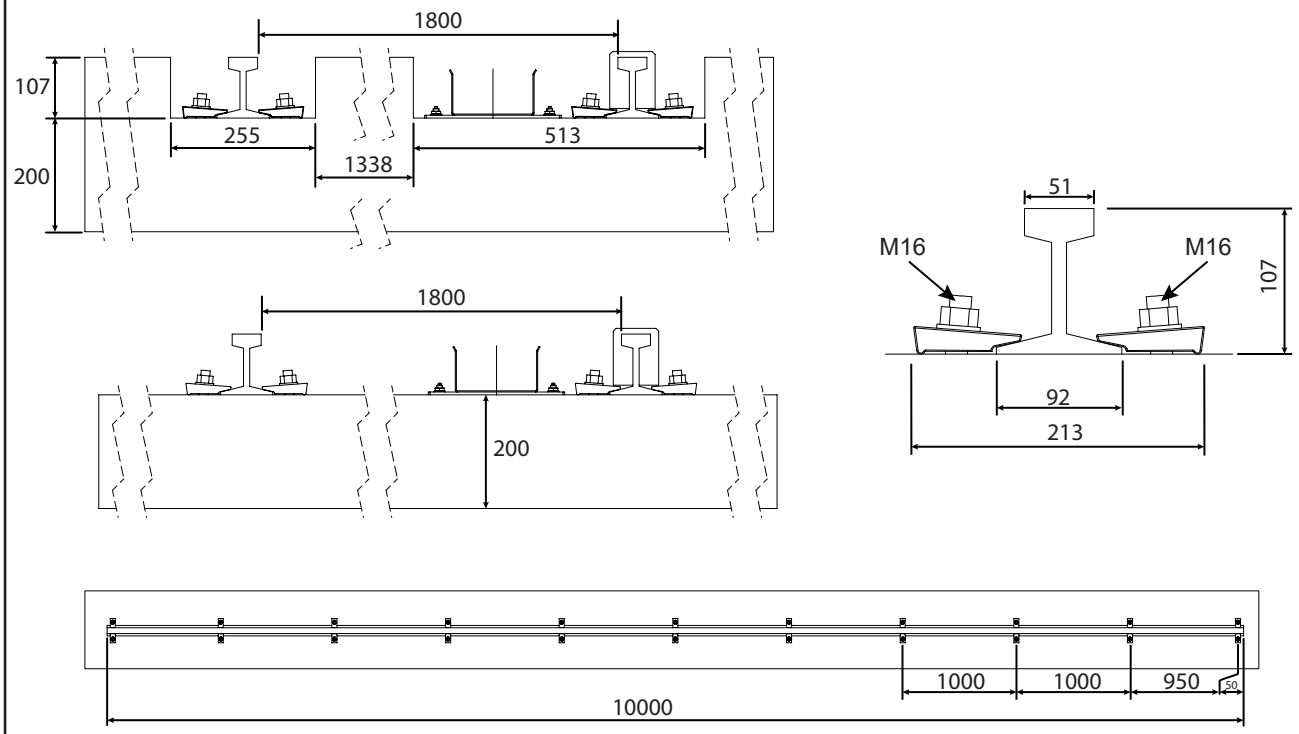
50 daN

Operator protection:
Helmet - Gloves - Safety shoes

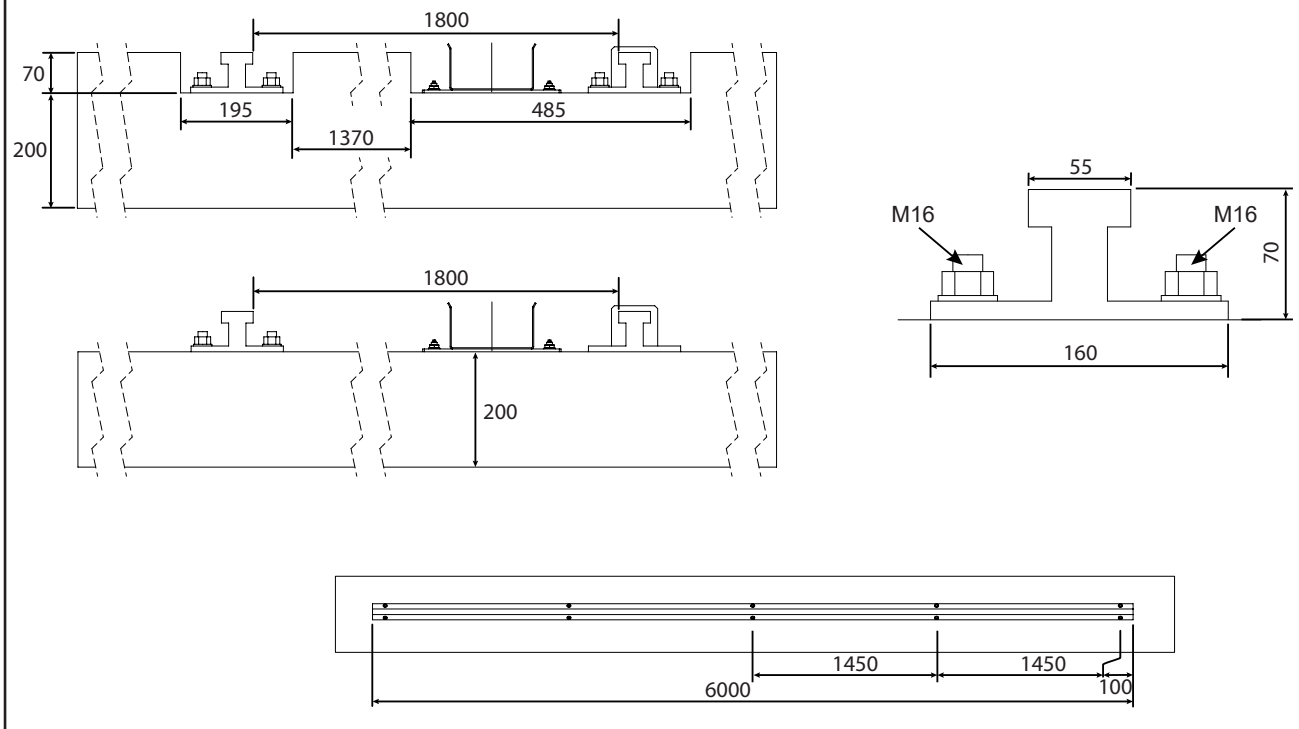
1 - Installation on rails (LINC-MATIC CB LM)

Mark and drill the anchor locations.

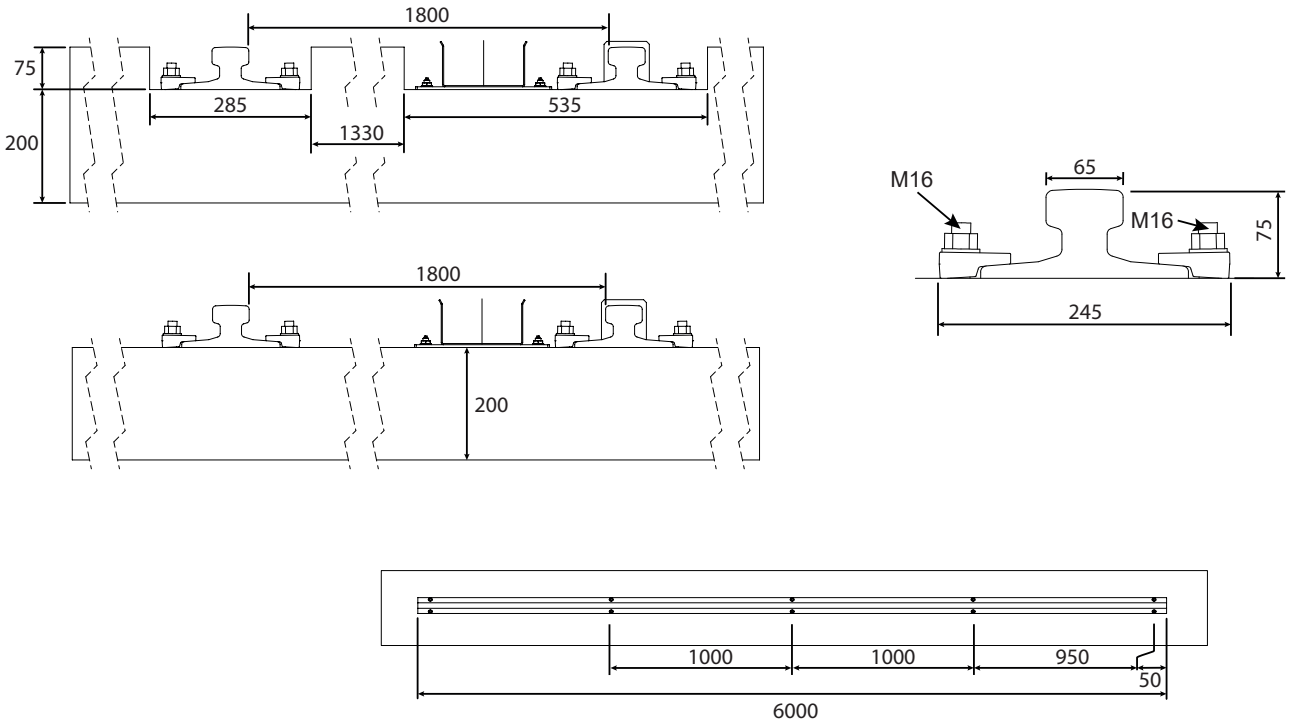
LW rail



LE rail

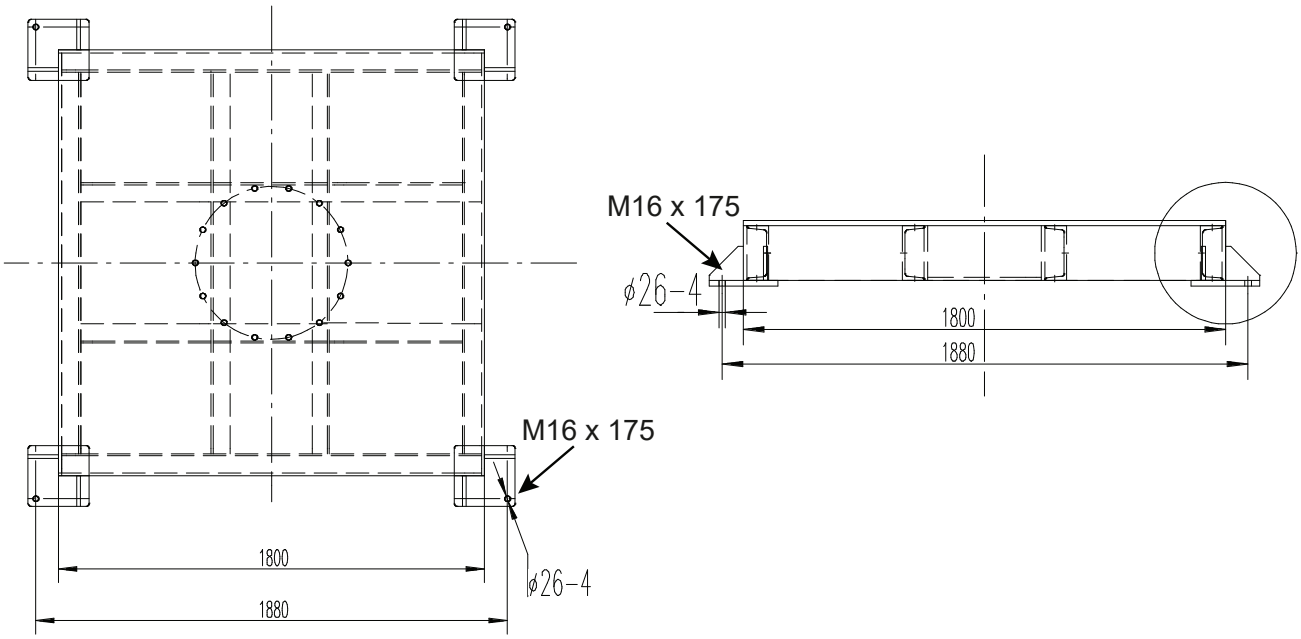


Burbach rail



2 - Installation of the base (LINC-MATIC CB LF)

Mark and drill the anchor location as shown in the layout drawing.



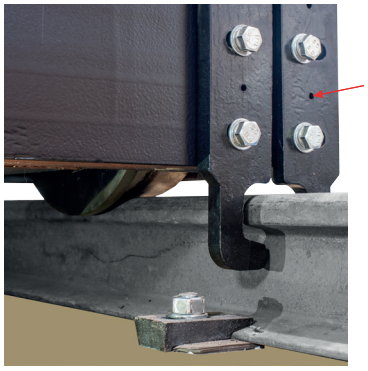
5 - Dimensions of the LINC-MATIC CB boom

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

While reassembling a **LINC-MATIC CB LM** boom, first position and anchor the tracks on the floor, place the carriage on the rails, making sure the flanged wheels are between the rails.

Assemble the 4 sets of rail clamps on the carriage with, for each, six M12X40 Allen screws (tightening torque: 50 Nm).

Drill back and add pins once the clamps have been put in place.



Raise the column to the vertical using the slinging eyes provided at its top (see the Handling section).

For safe work, you will need to use a travelling crane with spreader type equipment (supplied) and a lift truck fitted with a slinging system (not supplied).

POSITION OF THE SLIDING BLOCK (IMPORTANT):

Position the sliding block as close as possible to the bottom of the column before any lifting operation

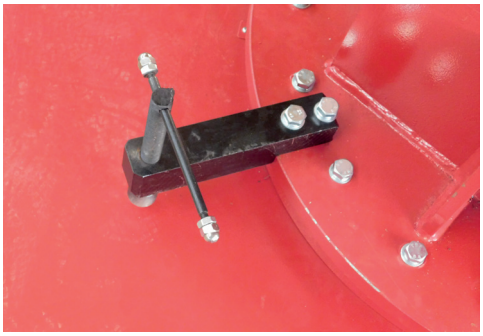
Fasten the column to the carriage with 18 M16 x 65 hex head screws.

Use a torque wrench with a 24 piece to obtain a tightening torque of 100 Nm.

Make sure that the column turns over 180.

IMPORTANT! Do not take off the hoist without locking the fastening screws.

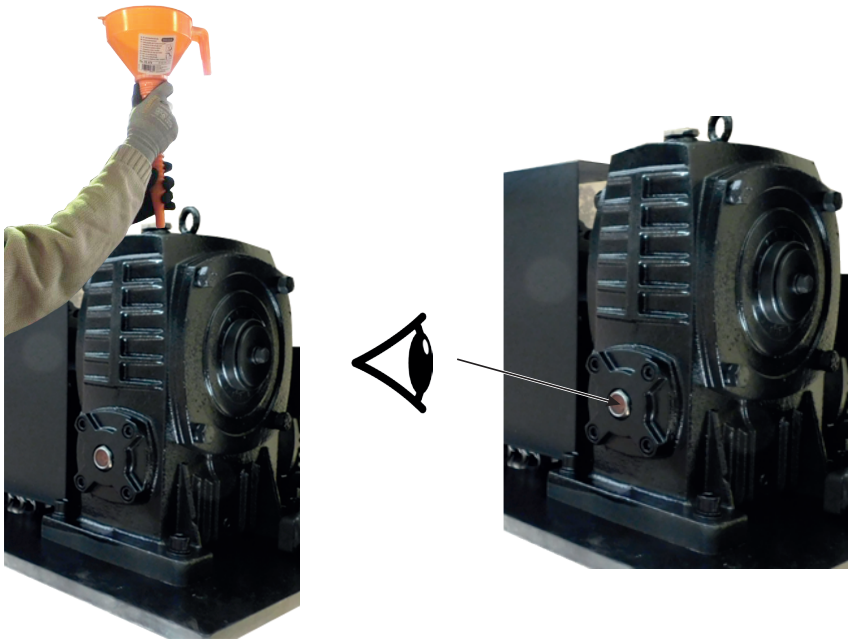
Install the 2 column locking systems with the 2 M16 x 65 hex head screws each.



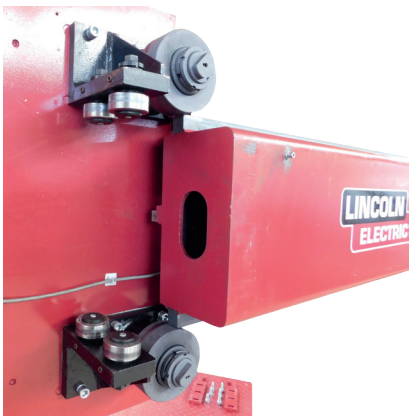
Lock the rotation of the column

Fill the lifting reducer with oil up to the level, i.e. approximately 4.5 litres.
We recommend using oil

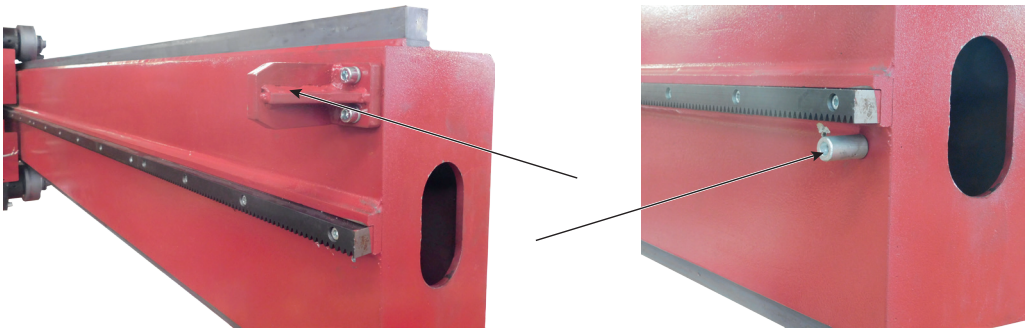
For safety reasons, the reducer is supplied with no oil.
Fill the lifting reducer with oil up to the level, i.e. approximately 4.5 litres, when the column is vertical.
Refer to the "Lifting system maintenance" section



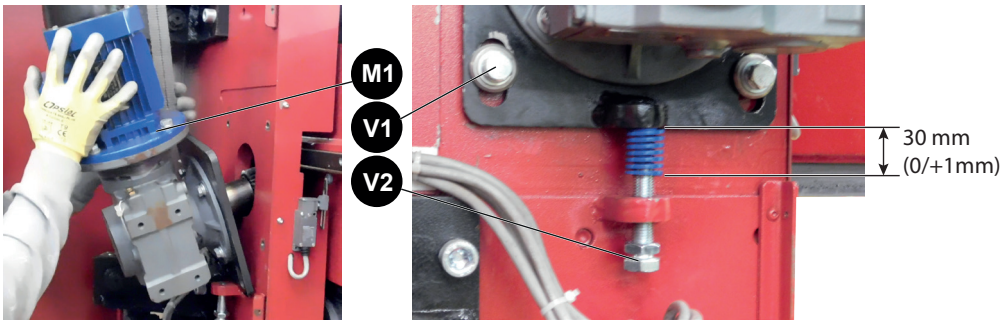
Position the slings on the arm, 2 metres away from each end and insert the rack assembly downward between the already adjusted eccentric rollers



Fasten the mechanical stop with 2 M10 X 40 Allen screws and fasten the 2 electrical limit switches with 2 M 5 X 30 Allen screws



Assemble the geared motor of the arm **M1** and its plate with 4 M12 X 45 hex head screws **V1**.

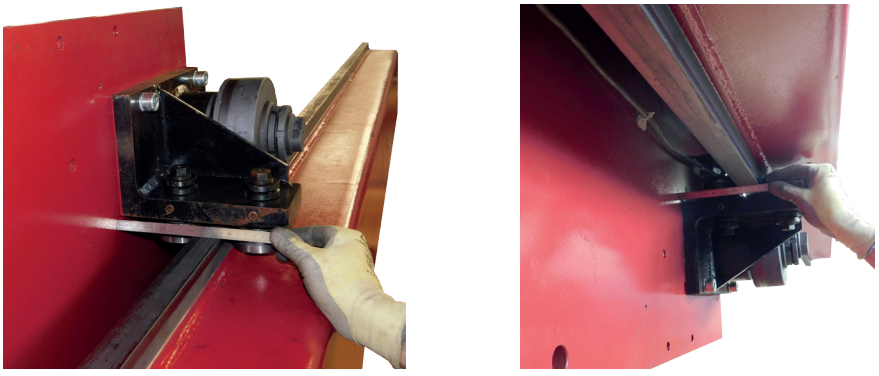


Once the geared motor is in place, do not tighten the screws V1 completely.

While adjusting the geared motor pinion in the arm rack, tighten the M16 X 65 screws **V2** till the spring is compressed to the dimension indicated above.

For proper arm operation, it is absolutely necessary to observe the 30 mm (0/+1) dimension.

The arm is aligned by eccentric rollers. The setting is carried out in the factory.
Make sure that the arm is parallel to the sliding block by measuring the same dimension above and below the arm.



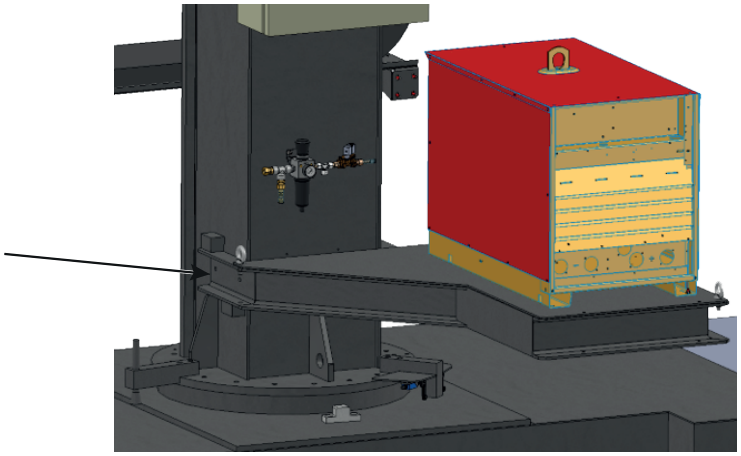
Make sure that the arm is level using a level placed on the arm rail.

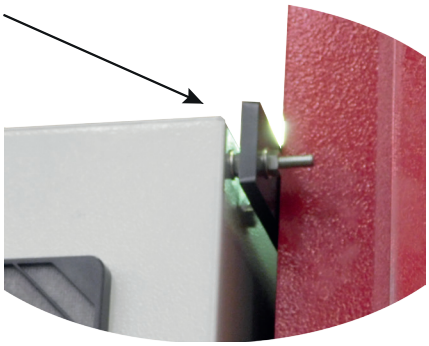
If the parallel alignment and levelling is not correct, the eccentric rollers must be adjusted; please contact the After-Sales Service department of **Lincoln Electric**

6 - Reassembling the platform and the electrical cabinet

Install the platform with 4 M 12 X 35 hex head screws. Check that the platform is horizontal and fully supported by the column reinforcements.

Install the electrical cabinet with 4 M8 X 50 hex head screws. The cabinet is fixed onto the two support bars mounted on the column.





7 - Installing the cable drag chain of the arm

Assemble the transverse duct **G1** with 4 M8 X 20 Allen screws.

Assemble the longitudinal duct **G2** on the arm with 3 M8 X 16 Allen screws.

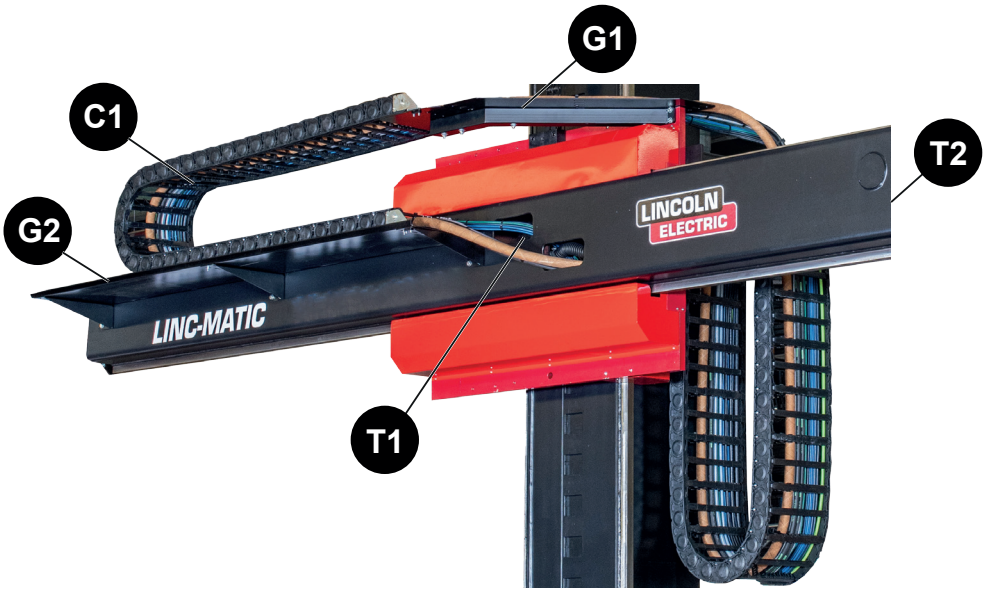
To assemble the cable drag chain **C1** on the two ducts **G1** and **G2**, you need to prepare all the bundles, air hoses and welding cables on the floor in the open cable drag chain (with the exception of the boom remote control bundle).

Leave about 7 metres of bundle between the chain exit and the connections of the welding head.

Close the links of the chain, position it on the arm.

Place the cable drag chain **C1** on the two ducts **G1** and **G2** with 4 M6 X 16 Allen screws and 4 M6 X 16 Allen screws.

Insert the cables and bundles assembly through the lateral hole **T1** attached to a tube that passes through the hole **T2** located at the end of the arm. That tube will guide and help the bundle exit through the end of the arm



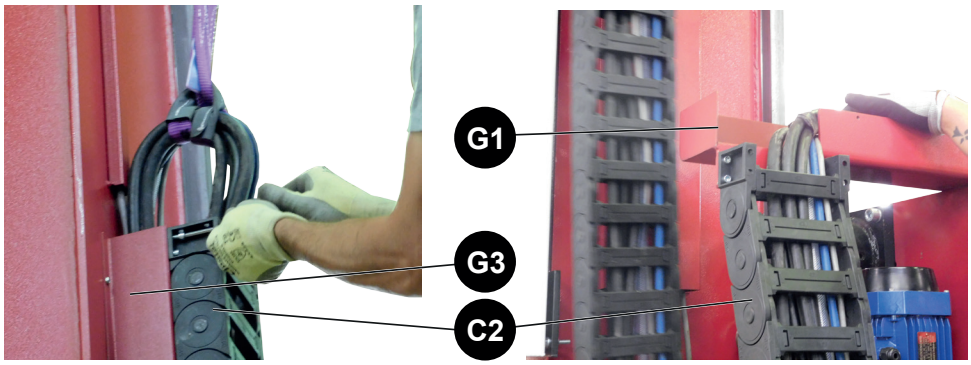
8 - Installing the cable drag chain of the column

Assemble the vertical cable drag chain **C2** on the duct **G1** and the vertical duct **G3** (the vertical duct on the column is already assembled); to do so, prepare the bundles, air hoses and welding cables on the floor in the open cable drag chain. The close the links of the chain.

Use a travelling crane to handle the assembly.

Route the bundles in the vertical duct **G3** (with the exception of the boom remote control bundle).

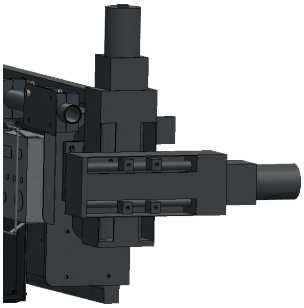
Place and fasten the cable drag chain **C2** on the two ducts **G1** and **G3**.



9 - Assembling the slides

Assemble the vertical slide, then the horizontal slide on the end of the beam with 4 M10 X 30 hex head screws.

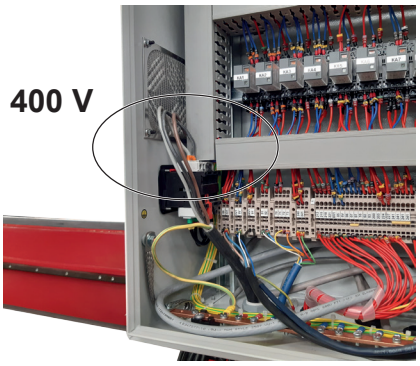
Check the horizontal and vertical adjustment using a spirit level.

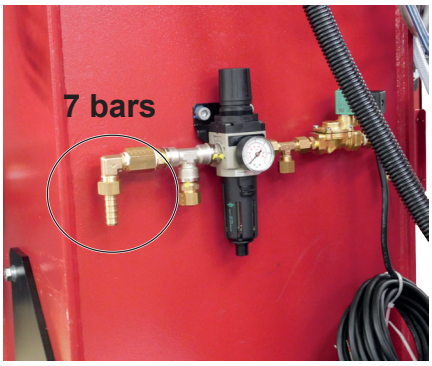


10 - Electrical and pneumatic connections

Connect the cables using the supplied electrical diagram.

Connect the electrical and pneumatic supplies using the supplied electrical diagram.

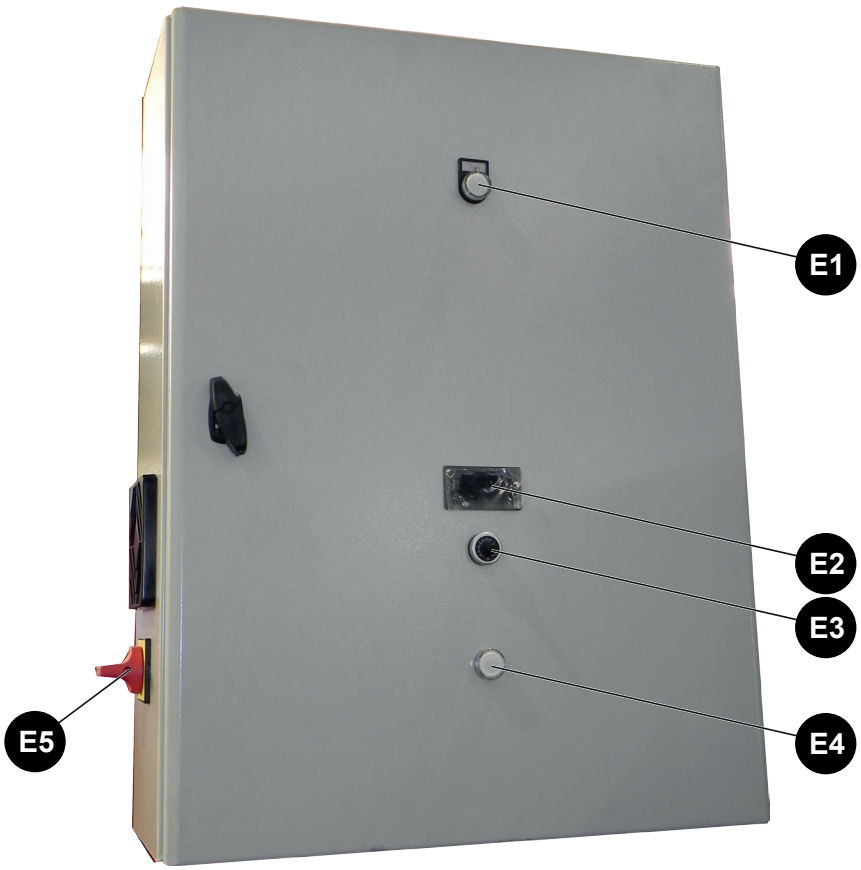




See electrical diagram:

- **95240690 for connections with NA5 equipment,**
- **95240691 for connections with NA3 equipment,**
- **95240692 for connections with MAXsa equipment.**

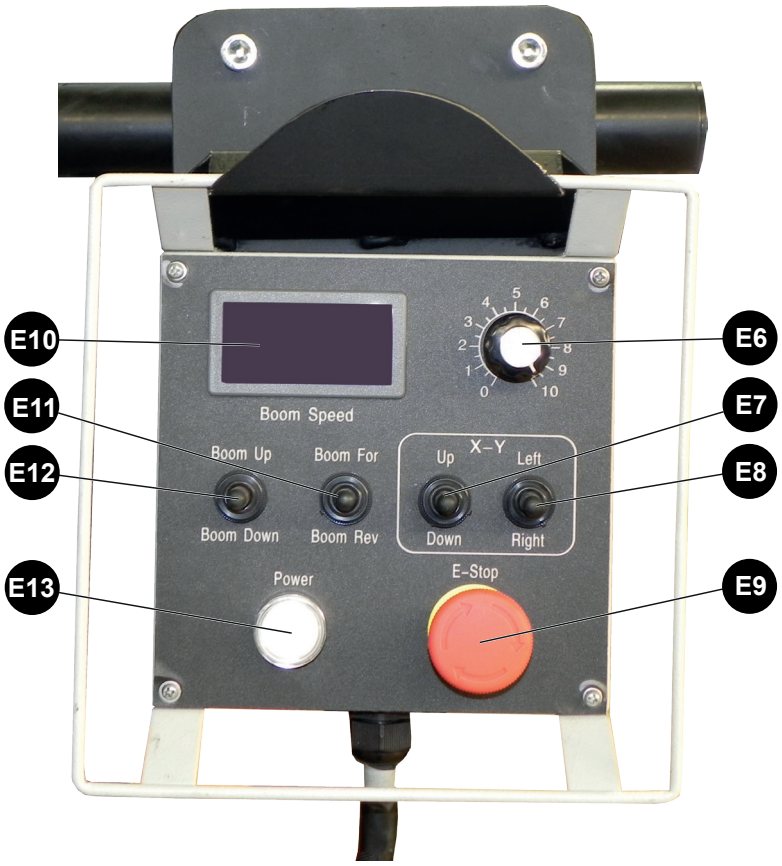
1 - Control buttons on cabinet



E1	Power on indicator
E2	Carriage speed display option (only on **LINC-MATIC CB LM**)
E3	Carriage speed setting potentiometer (only on **LINC-MATIC CB LM**)
E4	Powering up
E5	Main machine disconnector

2 - Control buttons on operator console

Welding head control console
(15 metre bundle outside the cable drag chain)



Remote control
(3 metre bundle)

E6	Arm speed setting potentiometer
E7	Head slide up/down movement
E8	Head slide left/ right movement
E9	Emergency stop
E10	Arm speed display
E11	Boom arm left right movement
E12	Boom up/down movement
E13	Powering up
E14	Boom column rotation movement (optional)
E15	Movement type selection: Boom rotation or Carriage
E16	Boom carriage forward/back movement
E17	Emergency stop

REMINDER: The operator station is located before the control console.
The machine is designed to work with only one operator.

POWERING UP:

- Set the disconnector **E5** to the position **I**; the indicator **E1** will go on.

STARTING UP:

- Make sure that the emergency stops are released.
  => on the console **E9**
  => on the remote control **E17**
- Start up the boom by pressing **E4** or **E13**, indicators **E4** and **E13** will go on.

SHUTTING DOWN:

- Use an emergency stop

POWERING DOWN:

- Set the disconnector **E5** to position "**0**"

WARNING: Power continues to be supplied upstream from the disconnector.

4 - Starting a welding cycle

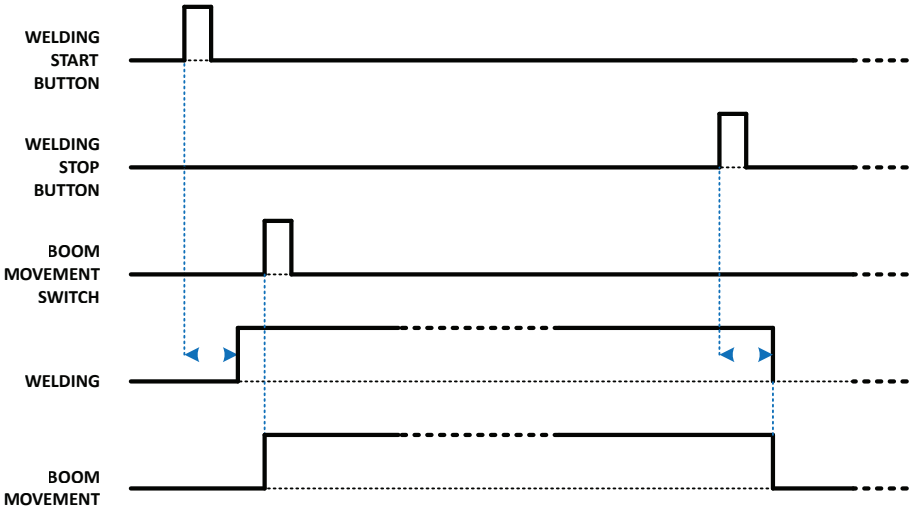
To execute movements and/or cycles, refer to the instructions of the associated welding equipment.

5 - Welding cycle diagram

There are two modes for starting a welding cycle with the arm movement:

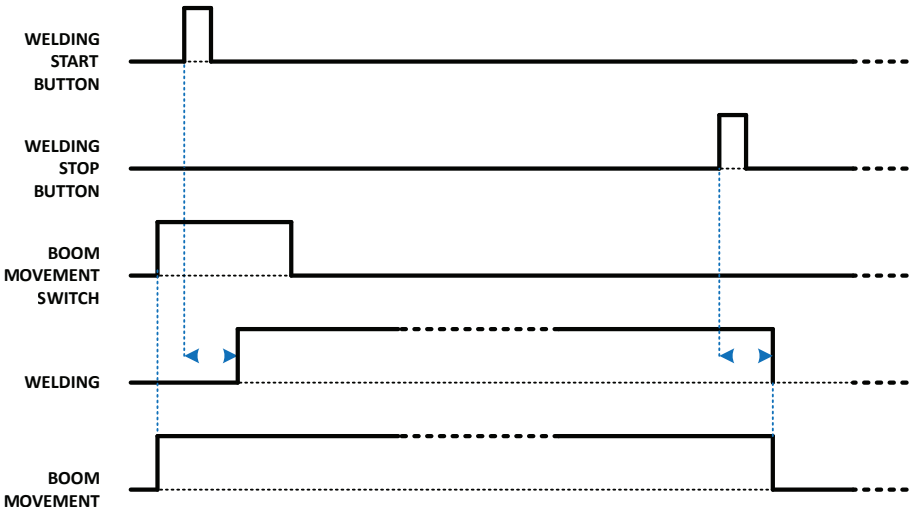
➥ **Contact striking**

Press the pushbutton for starting welding on the control unit of the equipment and wait for the arc to be established.
Then briefly switch the arm movement switch on the remote control of the boom in the selected direction. The movement will be maintained automatically when welding equipment feedback is present.
Press the welding stop button on the welding equipment control unit; the movement stops automatically after the arc has gone off.



➥ **Striking on the fly**

Hold the arm movement switch on the remote control of the boom in the selected direction. Press the pushbutton for starting welding on the control unit of the equipment and wait for the arc to be established.
Release the arm movement switch on the remote control of the boom; the movement will be maintained automatically when welding equipment feedback is present.
Press the welding stop button on the welding equipment control unit; the movement stops automatically after the arc has gone off.



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).

Before working on the machine, it is ***MANDATORY*** to lock out all the supplies of utilities to the machine (electricity, air, gas etc.).
Locking an emergency stop button is not sufficient.

WARNING: All work at heights (maintenance, troubleshooting etc.) on the boom must be carried out with appropriate personnel lifting equipment.

REMINDER: Sliding block **maintenance** may only be carried out **with all the energy supplies switched off**, when the covers are removed.

The condition of the chain is crucial for the up-and-down movement of the arm, sliding block and automatic welding head assembly. It must be monitored and any link with anomalies must be replaced.

WARNING: The chain must be kept clean, lubricated, absolutely free from oxidation, and flexible (no seizing point between links).

IMPORTANT: The chain may only be lubricated after it is cleaned. Clean with hot water and solvent.

Grease MAY NOT BE USED for the chain.

REMINDER: At least once a year, cause the entire vertical displacement system (motor winch, triple chain, pinion, safety gear, limit switch contact) to be inspected by a safety body or **Lincoln Electric** personnel.

The removal and/or replacement of mechanical components of the **LINC-MATIC CB** boom are **FORBIDDEN**. Contact the After-Sales Service department of **Lincoln Electric**.

2 - Maintenance schedule

Sub -assembly	Component	Type of inspection	Action	Frequency			Time (in hours)			Step
				1 month	6 months	1 year	200	2500	6000	
Lifting	Brake	Operating	Test		X					A
	Reduction gear	Visual	Lubrication		X					B
		-	Change				X	X		
	Geared motor	-	Replacement*						X	C
	Pinion	Visual	Cleaning Lubrication		X					D
			Replacement*	Depending on visual inspection						
	Chain	Visual	Cleaning Lubrication	X						E
			Replacement*	Depending on visual inspection						
		Dimensional	-	X						
	Limit switch	Operating	Test		X					F
Safety gear	Assembly	Operating	Test		X					G
Column	Rail	Visual	Cleaning	X						H
	Rotation brake	Operating	-		X					I
Sliding block	Roller	Visual	-		X					J
Arm	Rack	Visual	Cleaning	X						K
	Rail	Visual	Cleaning	X						L
	Limit switch	Operating	Test		X					M
Arm motor drive	Pinion	Visual	Cleaning Lubrication		X					N
	Reduction gear	Visual	Lubrication		X					O
Rotation motor system	Reduction gear	Visual	Lubrication		X					P
	Pinion	Visual	Cleaning Lubrication		X					Q
	Limit switch	Operating	Test		X					R
Carriage	Bearing housing	-	Lubrication		X					S
	Reduction gear	Visual	Lubrication		X					T
	Pinion	Visual	Cleaning Lubrication		X					U
	Clamp**	Visual	-	X						V
			-		X					W
Guide	Body and worm	Visual	Cleaning	X						X

*: Contact the After-Sales Service department of **Lincoln Electric**

**: Immediate inspection in the event of an impact

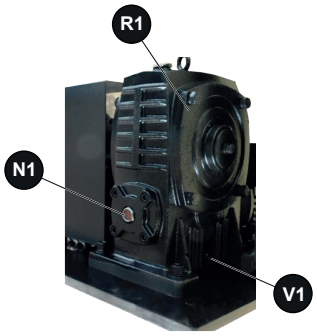
We recommend putting in place a traced system for tracking all your maintenance operations.

Step	Operation	OK	NOK
A	*Brake*	✔	✘
	Periodic inspection by the Maintenance department of the working of the brake		

Step	Operation	OK	NOK
B	*Reduction gear*	✔	✘

The geared motors must be maintained to offer maximum efficiency by carrying out the scheduled maintenance operations recommended by their manufacturers.
Proper maintenance will offer best performance, a longer life and safe working.

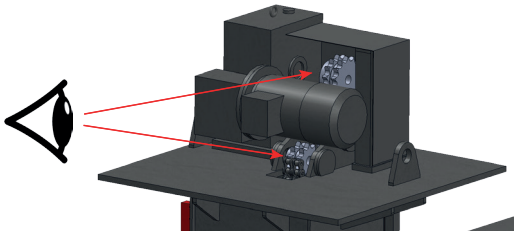
Check visually for leaks.



R1: filling plug
V1: draining plug
N1: level plug
Quantity of oil: 4.5 litres
Type of “synthetic” oil:
- OMALA S4 WE 320
- Klübersynth GH 6 320
- Mobil Glygoyle 320
- Alphasyn PG320
- Carter SY 320

Step	Operation	OK	NOK
D	*Pinion*	✔	✘

Check if the pinion is clean. Clean with hot water and solvent.



Step	Operation	OK	NOK
E	*Chain*	✔	✘

Visual inspection

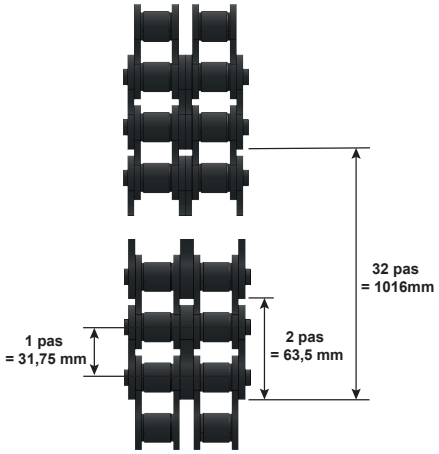
- No corrosion → if corroded, the chain must be changed.
- Flexibility: no stiffness or seizing of articulations → if not flexible, the chain must be changed
- Cleanliness: no fouling or build-up of grease and dust → if the chain is fouled, clean it with grease remover/mechanical solvent, then oil it
- Presence of lubricant: chain not dry → if the chain is dry, oil it

Oil over the whole functional length of the chain with a brush, using non-detergent mineral oil with viscosity appropriate for the operating temperature.

- Operating temperature (°C) 0 to 50°C
- Recommended viscosity grade (ISO - VG) 46 to 150

Once the boom is operating, carry out several lifting cycles to spread the oil and allow it to penetrate. Wipe away any excess lubrication.

Verification of wear



Change the triple chain if extension is greater than 2%.
The length is measured on 32 links (32 increments):

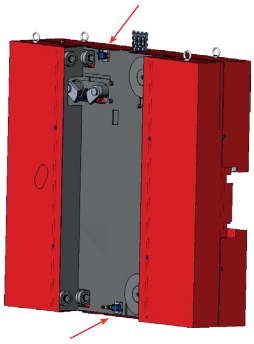
- Normal length: 1,016 mm
- Max. length: 1,036 mm

Take the measurement:

- with a tape measure,
- with the sliding block down,
- with the chain stretched by the load,
- at 3 points (at the sliding block, at the middle and under the lifting plate)

Step	Operation	OK	NOK
F	*Limit switch*	✔	✘

Test the upper and lower limit switches of the lifting mechanism.
The triggering of a limit switch must stop the movement.



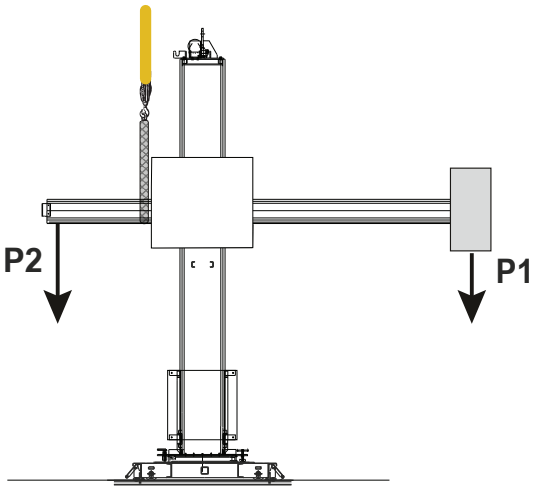
4 - Maintenance of safety gear

Step	Operation	OK	NOK
G	*Safety gear*	✔	✘

Procedure for verifying the safety gear

This operation may be carried out at any sliding block height. Preferably select a low position for more safety.

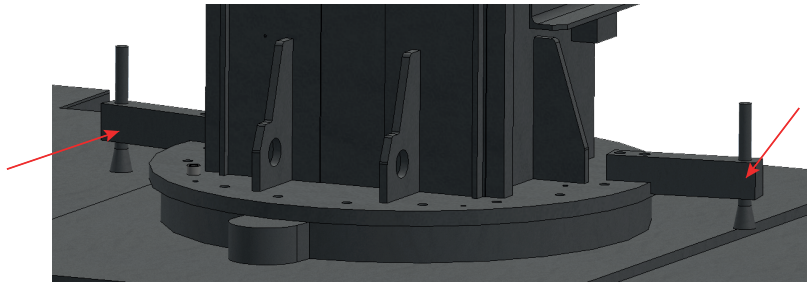
- Move the arm forward or back to balance the loads in relation to the column (P1=P2)
- Lift the boom arm over approximately 20 cm using lifting equipment and webbing (placed as close to the column as possible)
- Release the webbing. The arm must descend by a few cm and then be blocked in place
- If it is not blocked, the safety gear is not working. Contact the After-Sales Service department of **Lincoln Electric**
- To release the block, lift the arm again with the webbing
- Raise the arm using the control buttons till the webbing is no longer taut and remove the webbing
- Remove the strap.



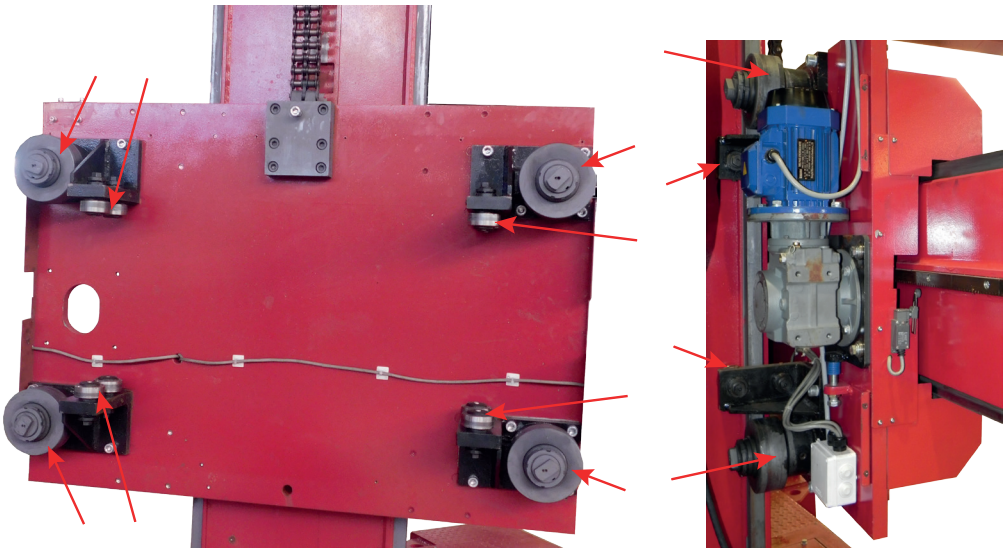
5 - Column maintenance

Step	Operation	OK	NOK
H	*Rail*	✔	✘

Check the condition of the rails (=> clean, with no foreign body).
To avoid oxidation, you may apply sliding varnish of the type:
✓ Adermos 800 (Molydal)

Step	Operation	OK	NOK
I	*Rotation brake*	✔	✘
	Inspect operation. 		

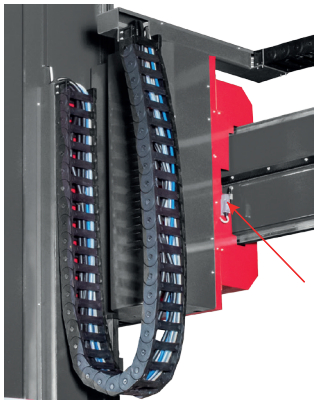
6 - Sliding block maintenance

Step	Operation	OK	NOK
J	*Roller*	✔	✘
	After removing the covers of the sliding block, check the condition of the rollers (=> clean, with no damage). 		

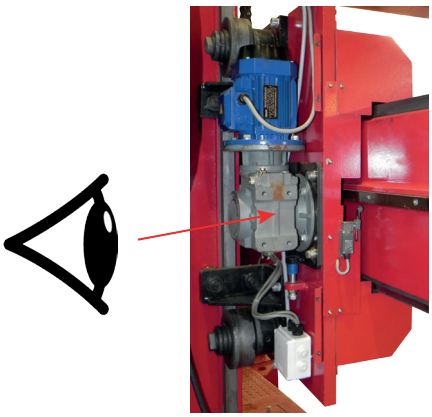
7 - Arm maintenance

Step	Operation	OK	NOK
K	*Rack*	✔	✘
	Brush the toothed side without adding grease. To avoid oxidation, you may apply sliding varnish of the type: ✓ Adermos 800 (Molydal)		

Step	Operation	OK	NOK
L	*Rail*	✔	✘
	Check the condition of the rails (=> clean, with no foreign body). To avoid oxidation, you may apply sliding varnish of the type: ✓ Adermos 800 (Molydal)		

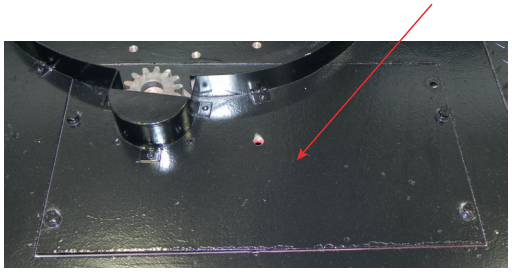
Step	Operation	OK	NOK
M	*Limit switch*	✔	✘
	Test the left and right limit switches of the arm movement mechanism. The triggering of a limit switch must stop the movement. 		

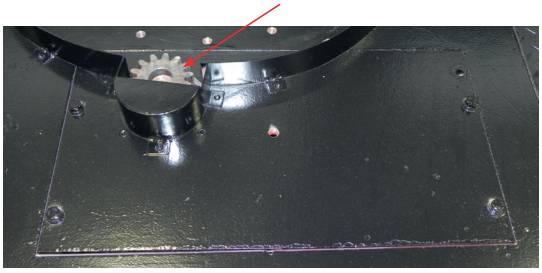
8 - Arm motor maintenance

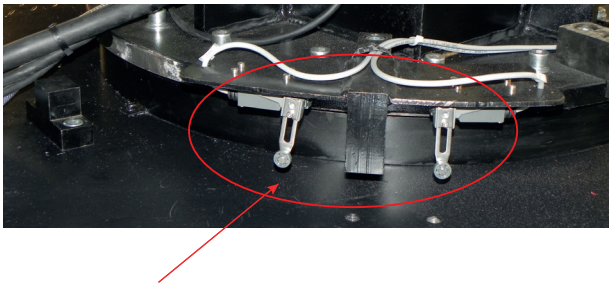
Step	Operation	OK	NOK
N	*Pinion*	✔	✘
	After removing the covers of the sliding block, check the condition of the pinion (=> clean, with no foreign body). To avoid oxidation, you may apply sliding varnish of the type: ✓ Adermos 800 (Molydal) 		

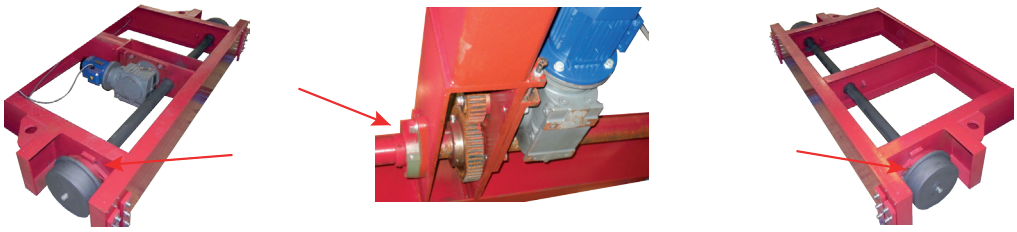
Step	Operation	OK	NOK
O	*Reduction gear*	✔	✘
	After taking off the covers of the sliding block, carry out the following checks: · visually for leaks. · visually check the overall condition of the reduction gear		

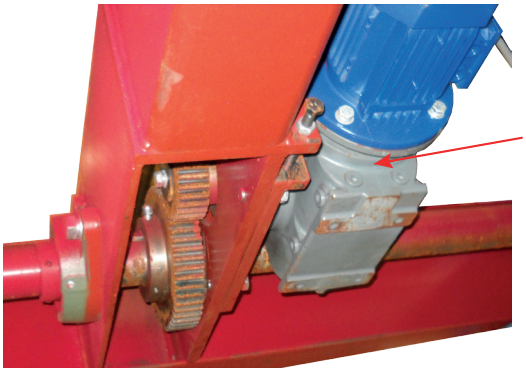
9 - Column rotation maintenance

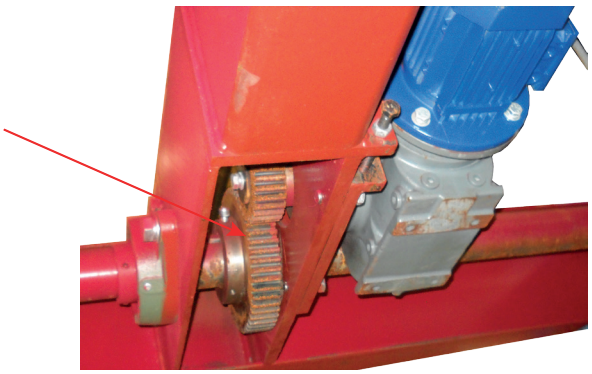
Step	Operation	OK	NOK
P	*Reduction gear*	✔	✘
	After taking off the guard cover, verify: · visually for leaks. · visually check the overall condition of the reduction gear 		

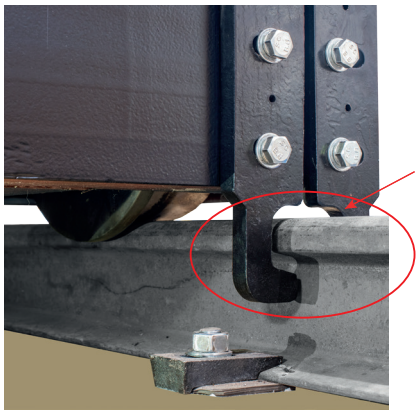
Step	Operation	OK	NOK
Q	*Pinion*	✔	✘
	After removing the guard covers, check the condition of the pinion (=> clean, with no foreign body). To avoid oxidation, you may apply sliding varnish of the type: ✓ Adermos 800 (Molydal) 		

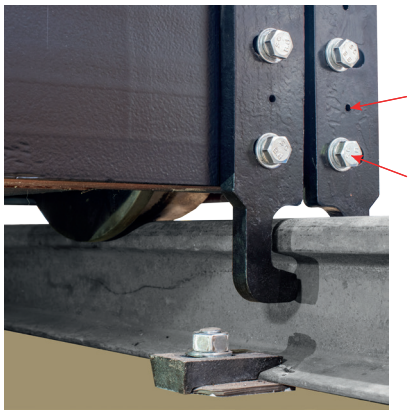
Step	Operation	OK	NOK
R	*Limit switch*	✔	✘
	Test the limit switches of the column rotation movement. The triggering of a limit switch must stop the movement. 		

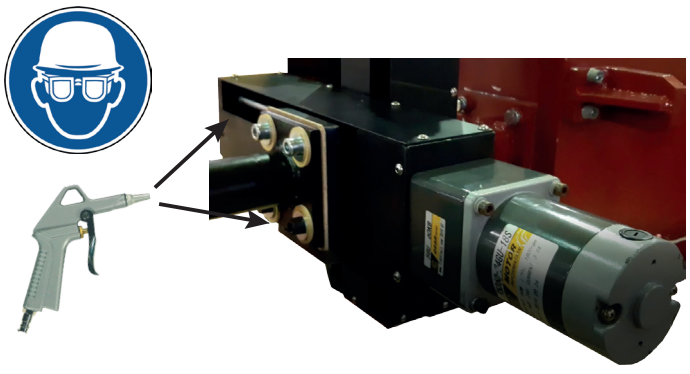
Step	Operation	OK	NOK
S	*Bearing housing*	✔	✘
	After taking off the guard covers, lubricate the bearings. ✓ ESSO BEACON EP2 		

Step	Operation	OK	NOK
T	*Reduction gear*	✔	✘
	After taking off the guard cover, verify: · visually for leaks. · visually check the overall condition of the reduction gear 		

Step	Operation	OK	NOK
U	*Pinion*	✔	✘
	Check the condition of the pinions (=> clean, with no foreign body). To avoid oxidation, you may apply sliding varnish of the type: ✓ Adermos 800 (Molydal) 		

Step	Operation	OK	NOK
V	*Clamp*	✔	✘
	The clamps must not rub against the rails. The clamps must be positioned correctly ➜ 5 mm from the rail in all directions. 		

Step	Operation	OK	NOK
W	*Clamp*	✔	✘
	Check the fastening of the clamps and the presence of pins. Tightening torque 50 Nm. 		

Step	Operation	OK	NOK
X	*Body and worm*	✔	✘
	Blow air on and in the slide to remove dust. 		

Problem	Cause	Solution
Incorrect operation of arm, lifting or rotation	Limit switch triggered	Adjust the position
	Motor overload	Verify the reduction gear
	Variable drive malfunction	Verify the variable drive
	Motor malfunction	Verify the motor
	Contactor or relay malfunction	Replace the contactor or relay
	Transformer malfunction	Verify the transformer
Faulty slide operation	Limit switches malfunction	Verify or replace the limit switches
	Contactor or relay malfunction	Replace the contactor or relay
	Limit switch triggered	Adjust the position
The arm motor operates, but the speed cannot change	Potentiometer malfunction	Verify or replace the potentiometer
	Variable drive malfunction	Read the manual
The speed display is not correct	No +5VDC power supply	Check the power supply
	Potentiometer malfunction	Verify or replace the potentiometer
	Display malfunction	Verify the display
Safety gear does not lock		Verify the lifting chain
		Verify the spring
Powering up impossible		Make sure that the emergency stops are not engaged

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.)

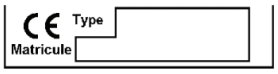
For items referenced in the photographs or sketches but not included in the tables, please send us a copy of the relevant page and highlight the relevant reference.

Example:

✔	normally held in stock.
✘	not in stock
	upon request.

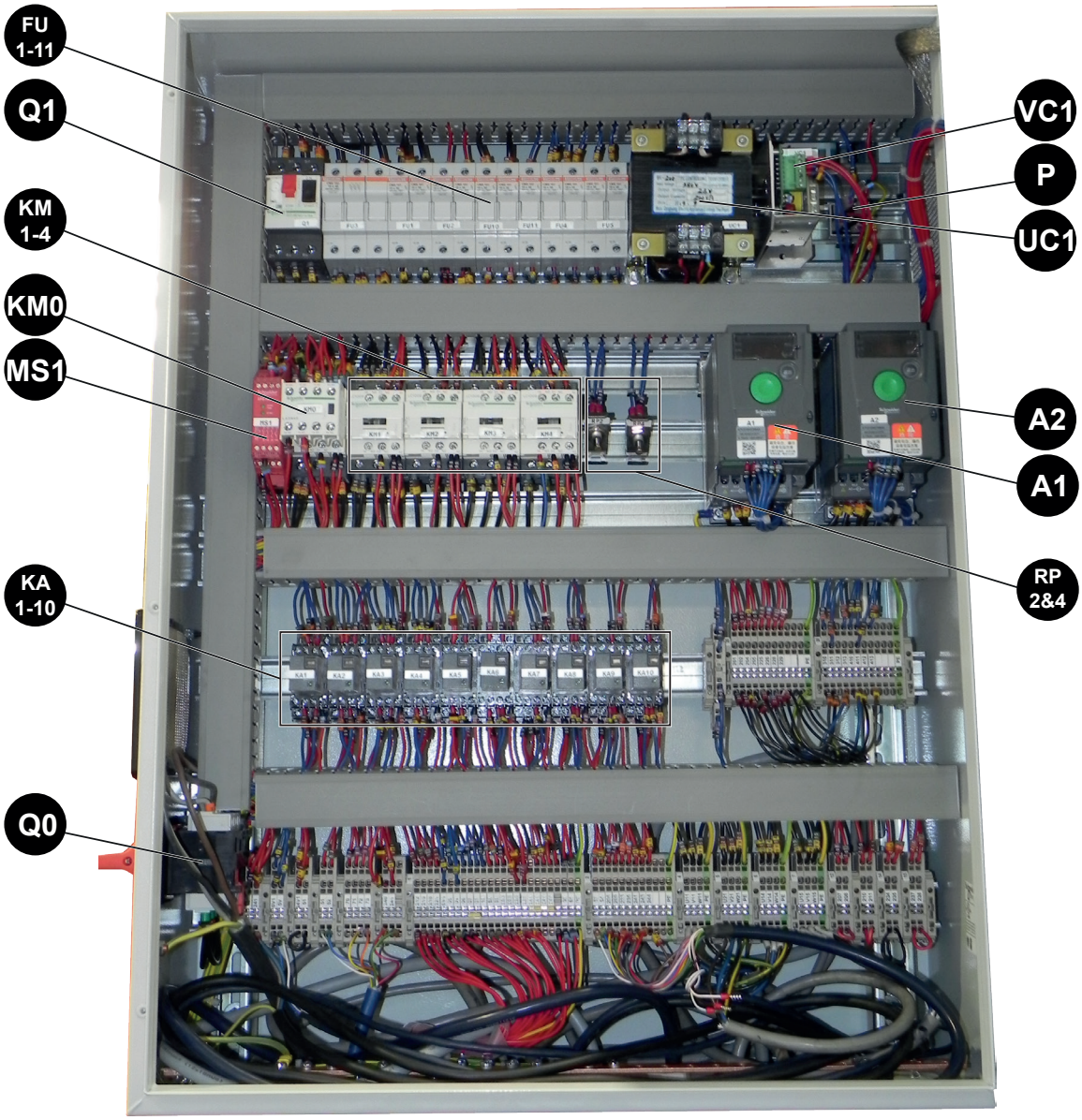
Ref.	Part no	Stock	Order	Description
E1	W000XXXXXX	✔		Machine interface board
G2	W000XXXXXX	✘		Flow meter
A3	P9357XXXX			Printed front plates

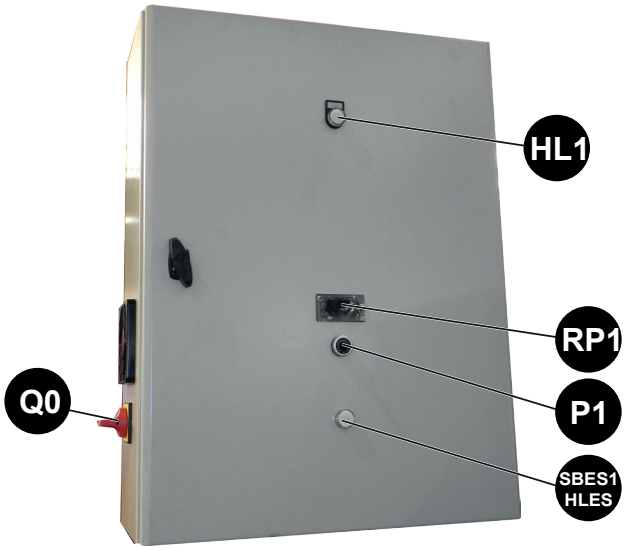
- While ordering parts, please indicate the quantity and note the number of your machine in the box above.

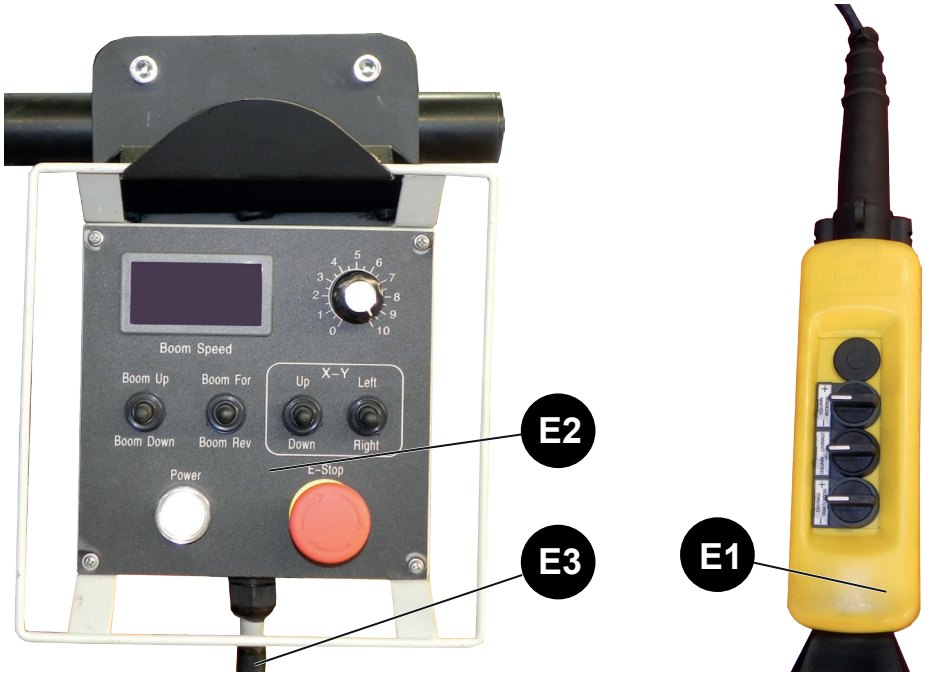


TYPE:	
Number:	

Electrical cabinet







✔	normally held in stock.
✘	not in stock
	upon request.

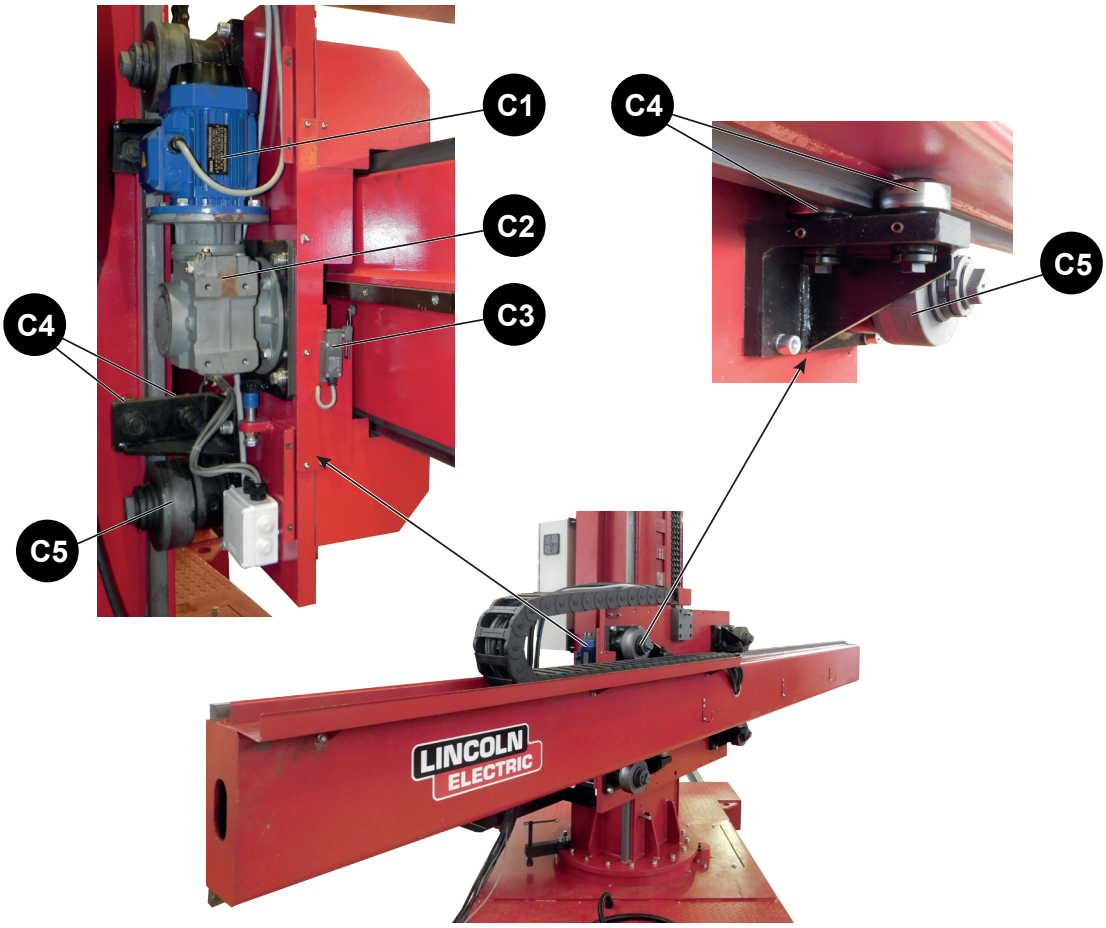
Ref.	Part no	Stock	Order	Description
Q1				3P- 6A motor circuit breaker
UC1	AS-PS-T0300000			Transformer, 380VAC/24VAC - 200VA
VC1	AS-PS-T0300001			Transformer, 400VAC/5VDC - 1A
KM1-4				LC1D09B7 contactor
KM0				LC1D32B7 contactor
				Additive contact, LADN40
MS1				Safety module, XPSAC5121
KA1-10				Relay, 24VAC - 3A - 250V
Q0				25A disconnector
A1	AS-PS-T0300003			Variable drive, ATV310H075N4A (arm shaft)
A2	AS-PS-T0300004			Variable drive, ATV310H075N4A (carriage shaft)
RP2&4				Potentiometer, PE30L0FL472KAB
RP1				Carriage speed digital display (carriage speed option)
P1				Potentiometer, LA42DWQ-22 5K (carriage speed option)
P	AS-PS-T0300002			Diode bridge rectifier
HL1				White luminous head + body
SBES1				Head of white luminous pushbutton body
				Pushbutton body
E2	AS-PS-T0300005			Console + 15 metre bundle
E3	AS-PS-T0300006			15 metre bundle
E1	AS-PS-T0300007			4 metre yellow remote control

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

CE Type
Matricule

TYPE:
Number:

Sliding block



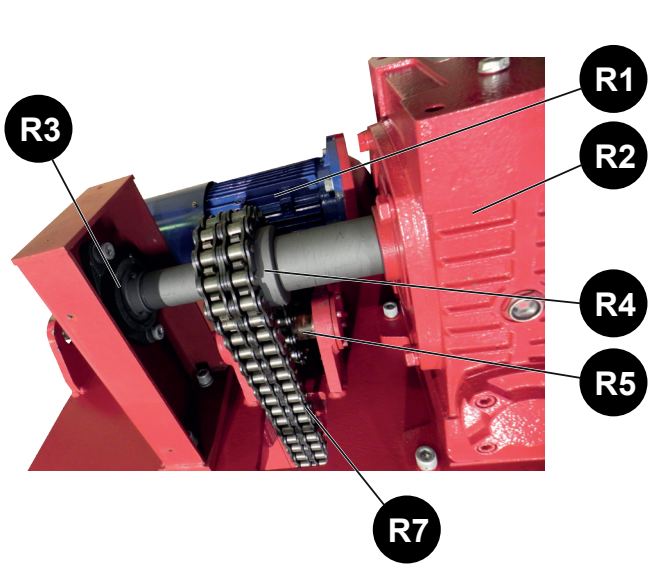
✔	normally held in stock.
✘	not in stock
	upon request.

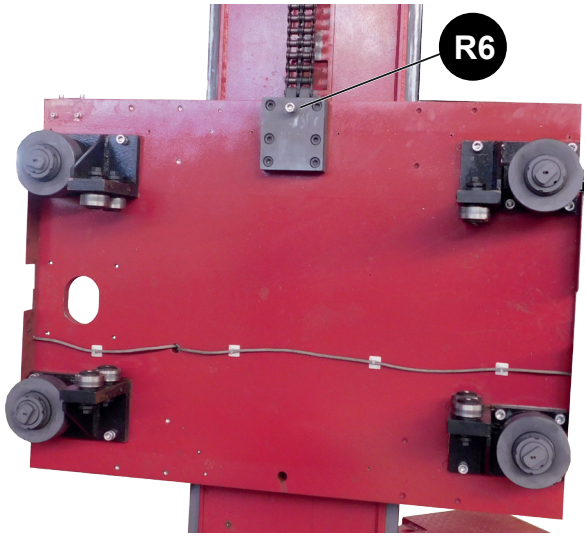
Ref.	Part no	Stock	Order	Description
C1				Motor
C2				Reduction gear
				Pinion
C3				Complete limit switch (arm)
				Sliding block roller assembly (arm and column)
C4				Lateral guide roller
C5				Support roller

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

CE Type / Matricule	TYPE:
	Number:

Lifting





✔	normally held in stock.
✘	not in stock
	upon request.

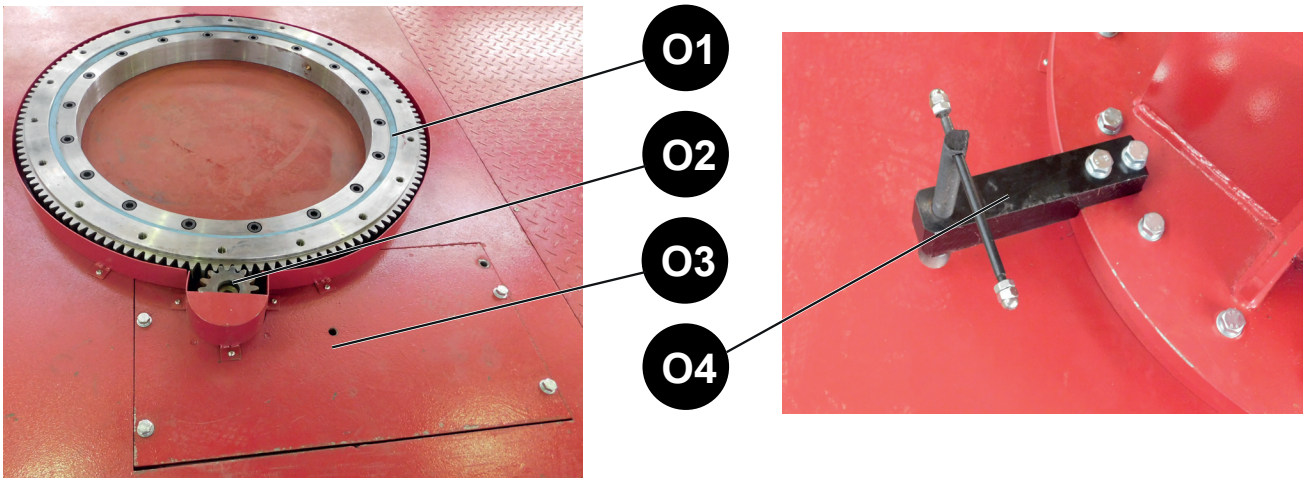
Ref.	Part no	Stock	Order	Description
R1				Motor
R2	AS-PS-T0300008			Reducer (for boom **LINC-MATC CB LM-LF 3032** and **4042**)
	AS-PS-T0300012			Reducer (for boom **LINC-MATC CB LM-LF 5052** and **6062**)
R3				Bearing housing
				Bearing
R4				Motor shaft pinion
R5				Idle pinion
R6				Safety gear spring
R7				Triple chain
				Triple rapid attachment
				Complete limit switch (lifting)

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

CE Type
Matricule

TYPE:
Number:

Rotation



✔	normally held in stock.
✘	not in stock
	upon request.

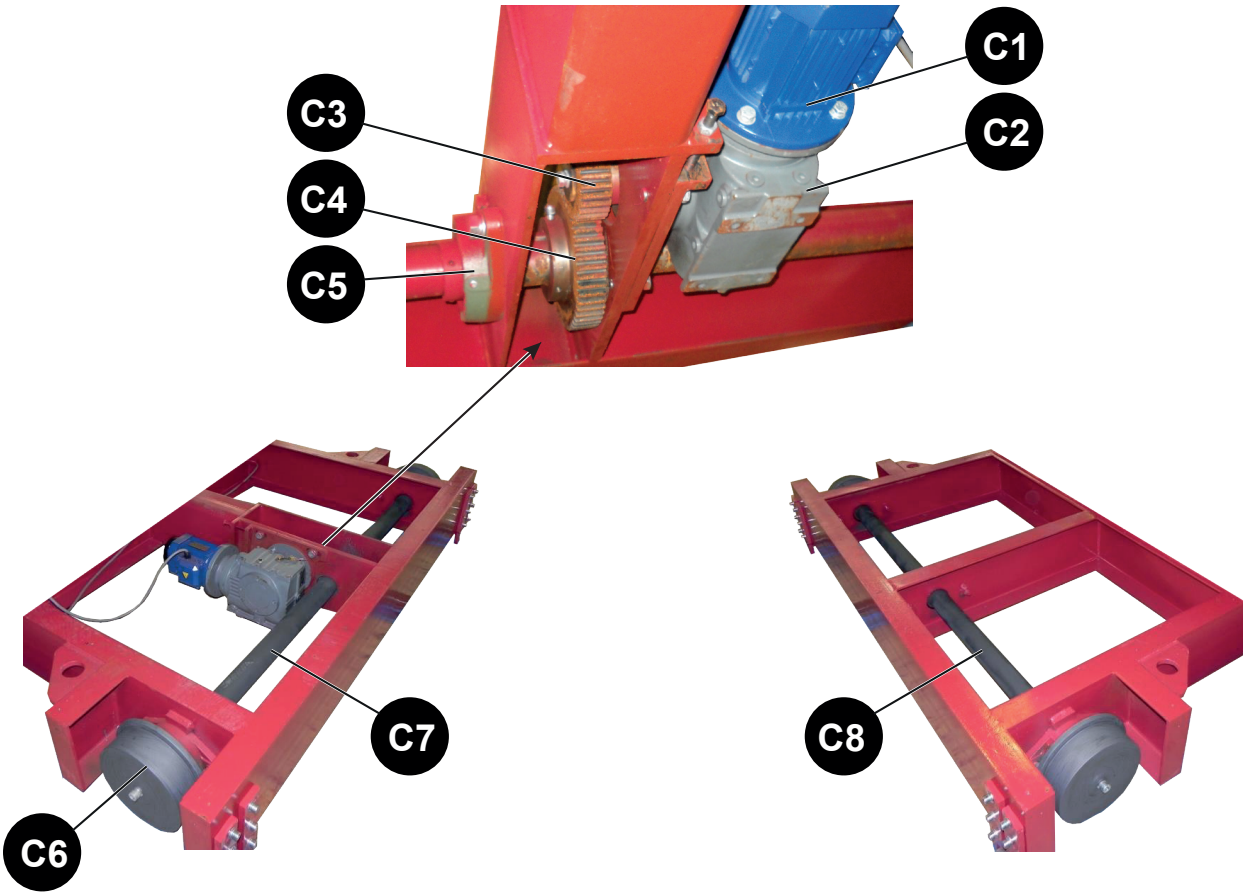
Ref.	Part no	Stock	Order	Description
O1				Notched ring
O2				Pinion
O3				Motor
				Reduction gear
O4				Rotation indexing

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

CE Type
Matricule

TYPE:	
Number:	

Carriage



✔	normally held in stock.
✘	not in stock
	upon request.

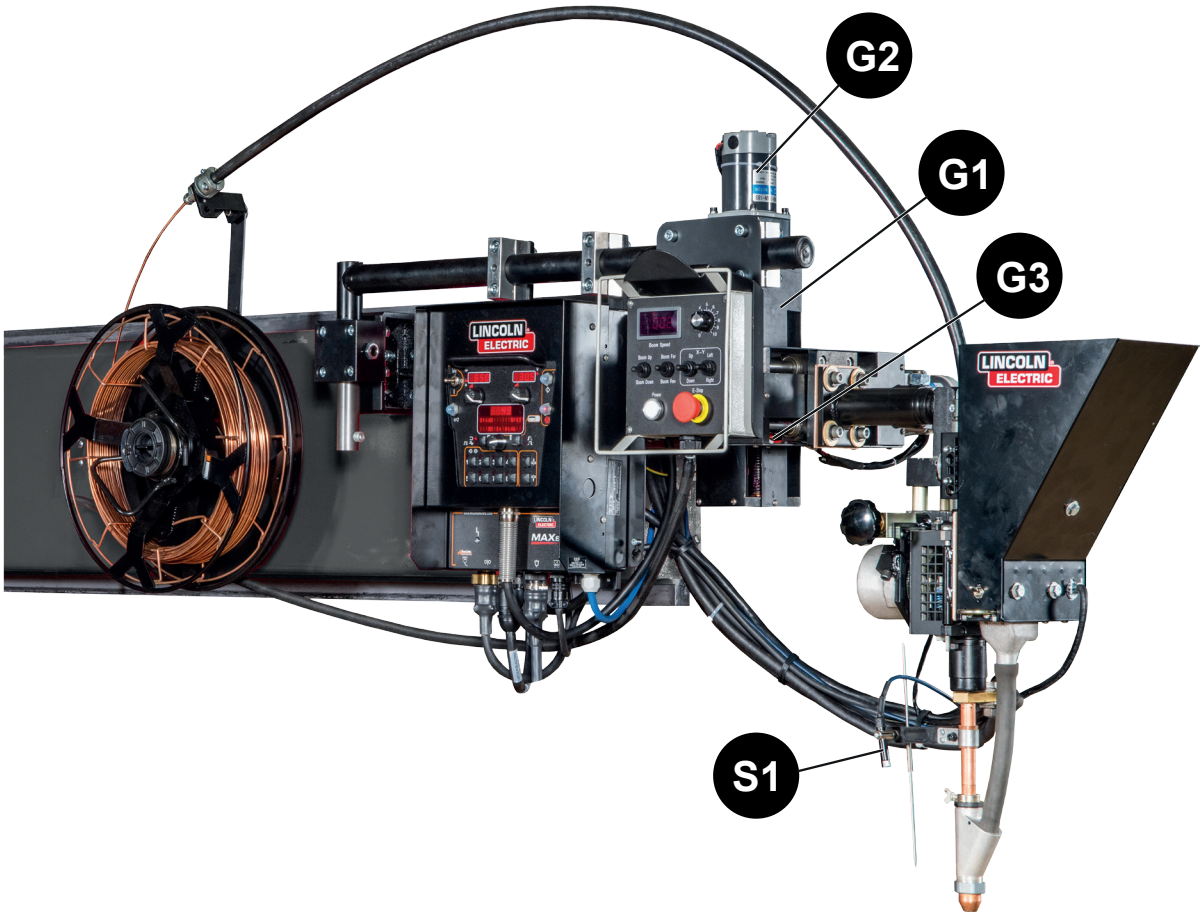
Ref.	Part no	Stock	Order	Description
C1				Motor
C2				Reduction gear
C3				Drive pinion
C4				Carriage shaft ring
C5				Bearing housing
C6				Flanged wheel
C7				Drive shaft
C8				Idle shaft

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

CE Type
Matricule

TYPE:
Number:

Slide and laser spotlight



✔	normally held in stock.
✘	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description
G1	AS-PS-T0300009			Complete slide
G2	AS-PS-T0300010			Motor + slide reducer
G3	AS-PS-T0300011			Limit switch (x2)
S1	AS-WP-95092920			Laser spotlight + 30 m bundle

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

CE Type
Matricule

TYPE:
Number:

PERSONAL NOTES

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