

BOOM

LINC-MATIC CB

LM-LF

C-series

SAFETY INSTRUCTIONS FOR OPERATING AND MAINTENANCE

LINC-MATIC CB-LF: AS-XP-95240700 - AS-XP-95240701 - AS-XP-95240702 - AS-XP-95240703
LINC-MATIC CB-LM: AS-XP-95240710 - AS-XP-95240711 - AS-XP-95240712 - AS-XP-95240713



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Instruction manual

REF : 8695 6061

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.

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INFORMATION

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

- LINC-MATIC CB-LF 3032C
- LINC-MATIC CB-LF 4042C
- LINC-MATIC CB-LF 5052C
- LINC-MATIC CB-LF 6062C
- LINC-MATIC CB-LM 3032C
- LINC-MATIC CB-LM 4042C
- LINC-MATIC CB-LM 5052C
- LINC-MATIC CB-LM 6062C



These instructions and the product covered by them refer to the applicable standards.



Please read these instructions carefully before installing, using or maintaining the machine. Keep these instructions in a safe place for future reference. These instructions must accompany the described machine or equipment if there is a change in ownership, up to the time of destruction.



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.

REVISIONS


























REVISION : B DATE : 03/22

DESCRIPTION	PAGE
"Full stop" and "Brush" added	

REVISION : C DATE : 11/24

DESCRIPTION	PAGE
Update	10

MEANING OF SYMBOLS

	Reading the manual/instructions mandatory.		Indicates a hazard.
	Use of safety shoes mandatory.		Warning of an electrical risk or hazard.
	Use of auditory protection mandatory.		Warning of a risk or hazard due to an obstacle on the ground.
	Use of safety helmet mandatory.		Warning of a risk or hazard of falling, with a level difference.
	Use of safety gloves mandatory.		Warning of a risk or hazard due to suspended loads.
	Use of safety glasses mandatory.		Warning of a risk or hazard due to the presence of a hot surface.
	Use of safety visor mandatory.		Warning of a risk or hazard due to moving mechanical parts.
	Use of safety clothing mandatory.		Warning of a risk or hazard due to the closing movement of moving mechanical parts of a machine.
	Cleaning the working area mandatory.		Warning of a risk or hazard due to the presence of a laser radiation.
	Use of breathing protection mandatory.		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

The information below should be provided in all correspondence.



LINCOLN ELECTRIC CE
79201 PARTHENAY CEDEX - FRANCE

Year: _____ Serial N°: _____
Type: _____
Designation: _____

Voltage: _____ Frequency: _____
Max Intensity: _____
Break switch rated peak withstand current: _____
Power supply: _____
Weight: _____

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.



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.



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.

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.

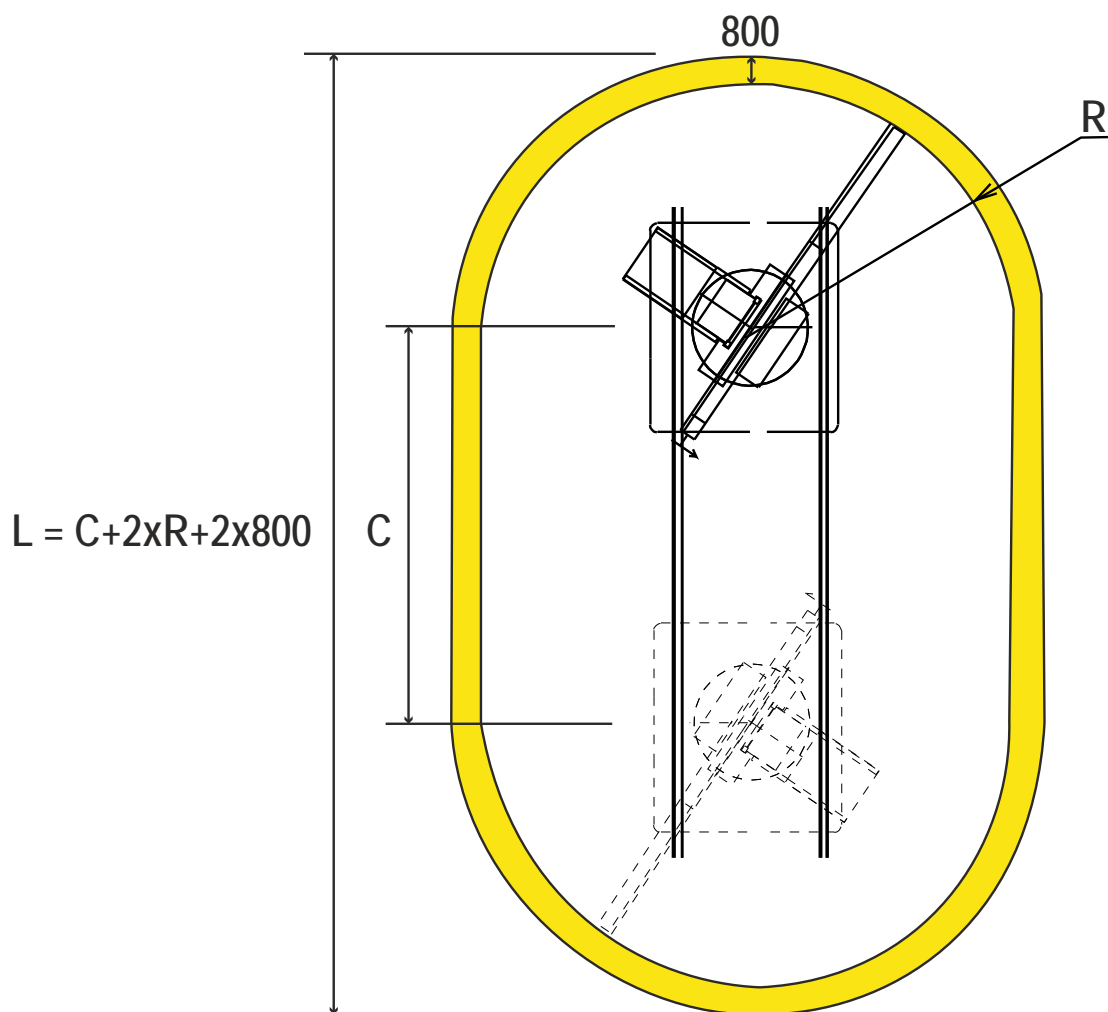
The floor should be marked out as shown in the drawing opposite.

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

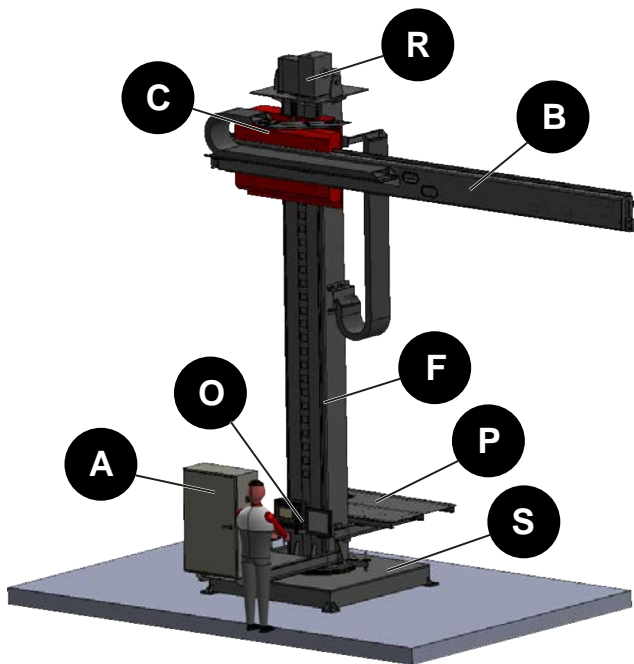
This welding boom dedicated to Submerged Arc (SA) welding makes it possible to position and move an automatic welding head.

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

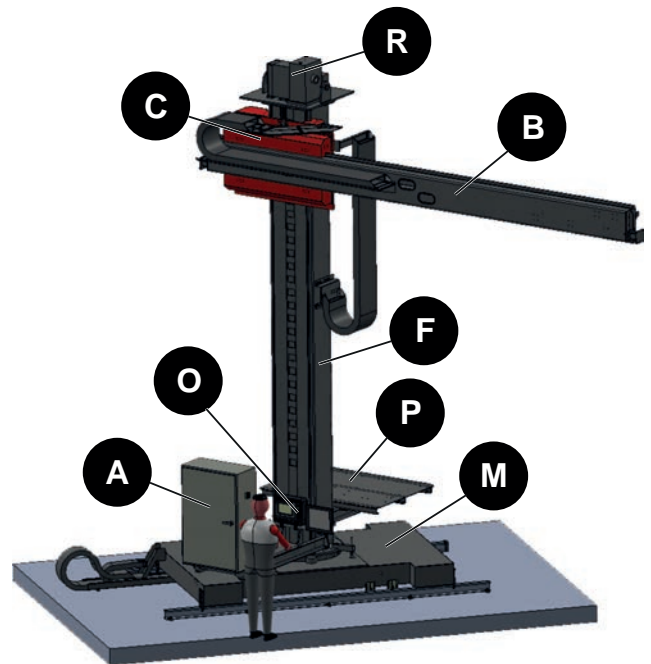
2 - Type of boom

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
O	Control console

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 $+180^{\circ}$ 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.

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.

NB: If the carriage is a welding axis, the front and rear of the carriage have mechanical Full Stop limit switches that stop carriage movement if it ever hits an obstacle. Rail scrapers (brushes) are also present close to the rollers.

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.

10 - RC-MATIC remote control

A remote control away from the welding head makes it possible to control the movements of the axes of the LINC-MATIC CB C-series, and also the management of flux control, wire feeding, laser spotlight and crossed **SLIDEMATIC** slides.

It has an emergency stop for safety.

This remote control has a 5-metre long spiral cord; at the rear of the remote control, there is a magnet for easily placing it close to the welding head.

11 - Pilot Pro control console (ref: O)

The **PILOT PRO** control cabinet offers great flexibility in use and high reliability while managing the machine and welding cycle. It is ready for:

- 2 external analogue/digital axes,
- 1 on/off control.
- process equipment control (memory with 1000 programs)
- user profile management
- alarms history
- data exchange via USB stick.

12 - Options

Guide rail:

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

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

Longitudinal cable drag chain:

A cable drag chain makes it possible to place all the cables and pipes and protect them during the movements of the **LINC-MATIC CB C-series**.

Disconnecting box:

Lincoln Electric offers two types of disconnecting box depending on the number of power sources installed on the **LINC-MATIC CB C-series**. This box provides the electricity supply required by the installation. The function of this cabinet is to separate each of the elements in the installation from the customer's power supply system (**LINC-MATIC CB C-series**, **POWERWAVE** etc.)

- Primary power supply box for 1 **POWERWAVE** (single-wire head): AS-XP-95240726
- Primary power supply box for 2 **POWERWAVE** (tandem head): AS-XP-95240727

Welding with AS-XP-95240736 carriage:

In order to use the powered carriage as a welding axis, this optional feature is absolutely necessary. This option includes:

- front and rear Full Stop limit switches
- rail scrapers (brushes)

Part number	Type	Vertical travel (mm) "Y"	Horizontal travel (mm) "X"	Height (mm) "H"	Weight (kg)
AS-XP-95240710	LINC-MATIC CB-LM 3032C	3000	3200	5500	6400
AS-XP-95240711	LINC-MATIC CB-LM 4042C	4000	4200	6500	6700
AS-XP-95240712	LINC-MATIC CB-LM 5052C	5000	5200	7550	7000
AS-XP-95240713	LINC-MATIC CB-LM 6062C	6000	6200	8550	7300
AS-XP-95240700	LINC-MATIC CB-LF 3032C	3000	3200	5340	6000
AS-XP-95240701	LINC-MATIC CB-LF 4042C	4000	4200	6340	6300
AS-XP-95240702	LINC-MATIC CB-LF 5052C	5000	5200	7390	6600
AS-XP-95240703	LINC-MATIC CB-LF 6062C	6000	6200	8390	6900

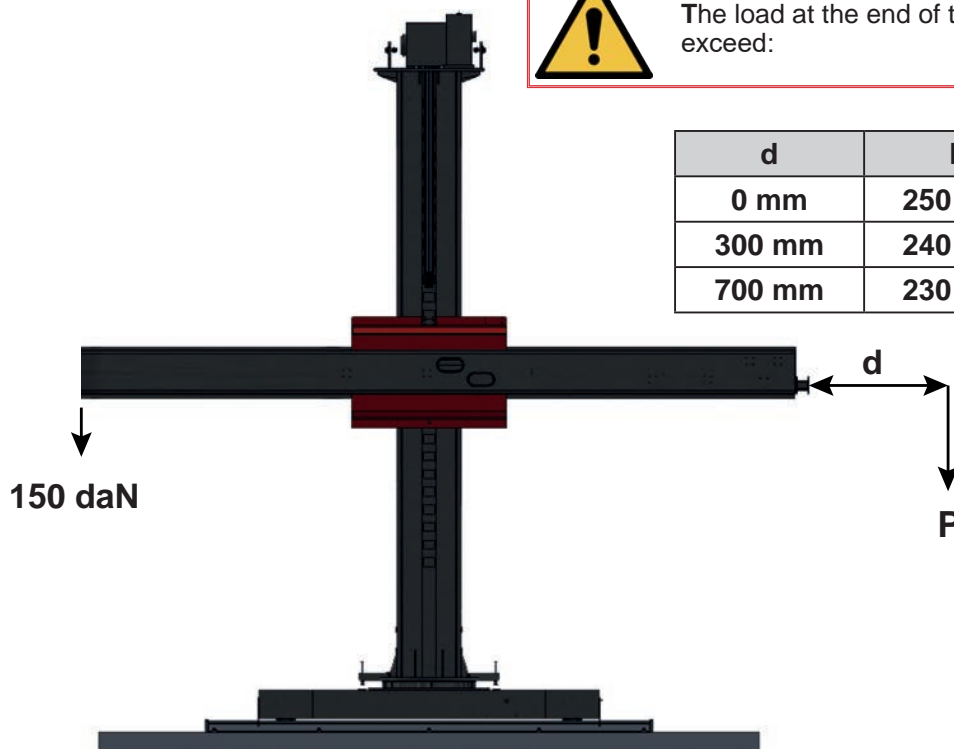
15 - Technical specifications

Type	Speed of arm (cm/min) "V1"	Speed of lifting (cm/min) "V2"	Speed of carriage (cm/min) "V3"	Power supply	Power (kVA)	Pneumatic supply (m ³ (n)/h)
LINC-MATIC CB-LM 3032C	17.7 to 175	100	40 to 400	3 x400V	<u>Boom alone:</u> 10 kVA <u>Process:</u> 55 kVA per power source	5 bars: 12 6 bars: 14 7 bars: 16
LINC-MATIC CB-LM 4042C						
LINC-MATIC CB-LM 5052C						
LINC-MATIC CB-LM 6062C						
LINC-MATIC CB-LF 3032C						
LINC-MATIC CB-LF 4042C						
LINC-MATIC CB-LF 5052C						
LINC-MATIC CB-LF 6062C						



The load at the end of the arm may not exceed:

d	P
0 mm	250 daN
300 mm	240 daN
700 mm	230 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: ± 5 mm
- 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 welding equipment and arm
- the electrical cabinet and the control console

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

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



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.



Arm

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



Operator protection:
Helmet - Gloves - Safety shoes

Carriage

1500 daN



Platform (1 power source version)

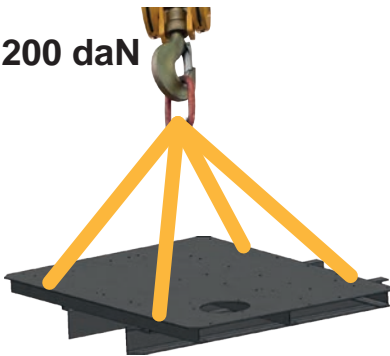
Base

1200 daN



Platform (2 power sources version)

200 daN



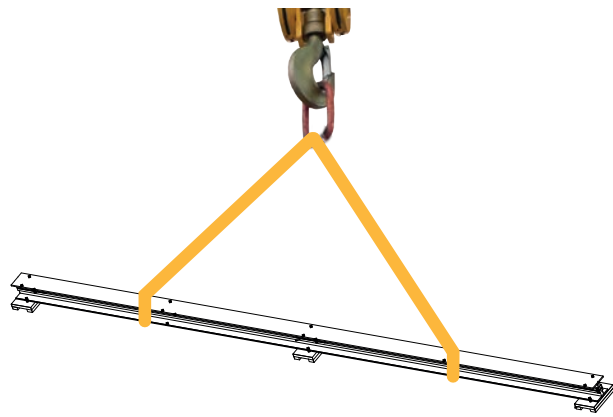
Electrical cabinet

150 daN



Guide rails

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

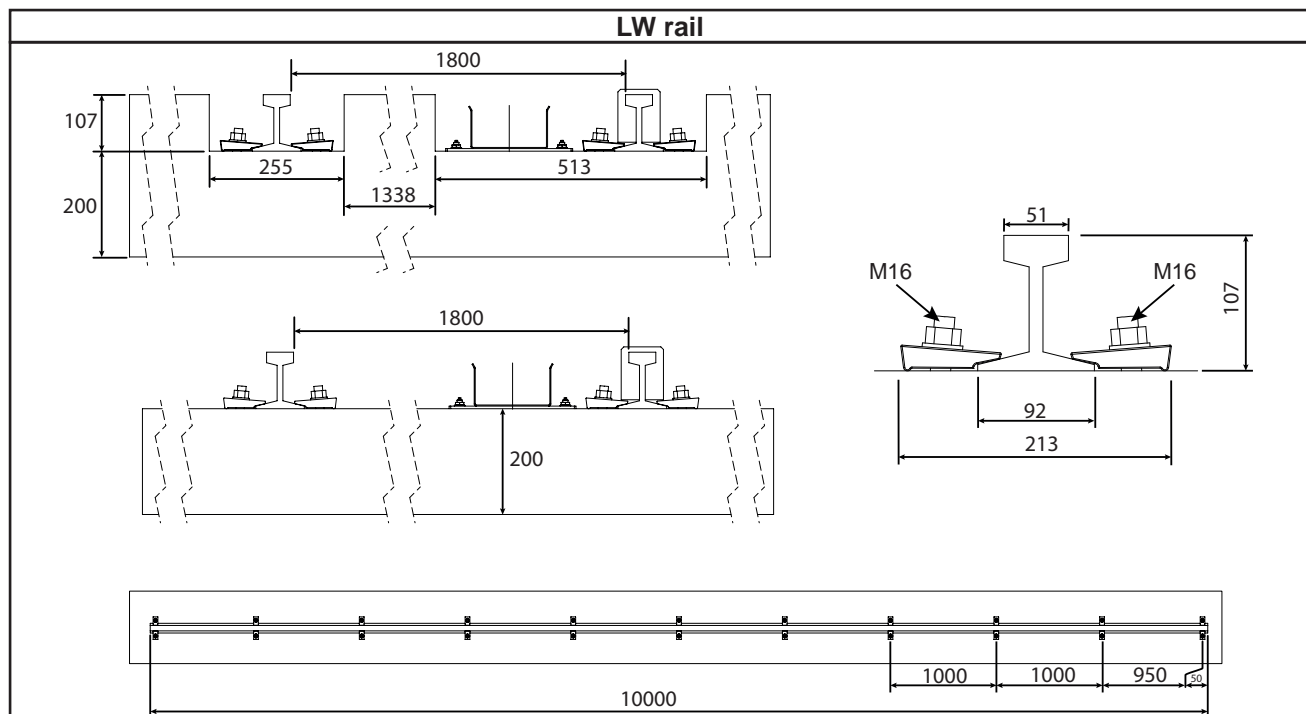


Operator protection:
Helmet - Gloves - Safety shoes

4 - Installation on the ground of a LINC-MATIC CB LM and LF

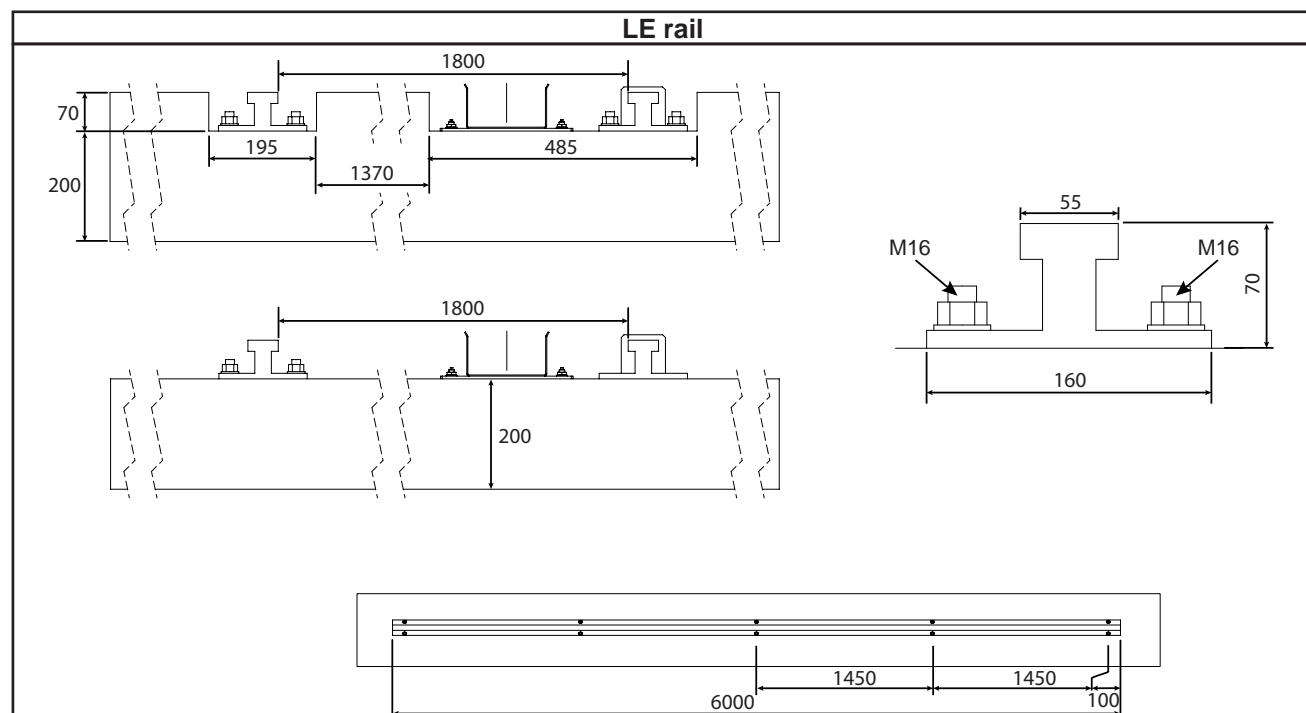
1 - Installation on rails (LINC-MATIC CB LM)

Mark and drill the anchor locations.

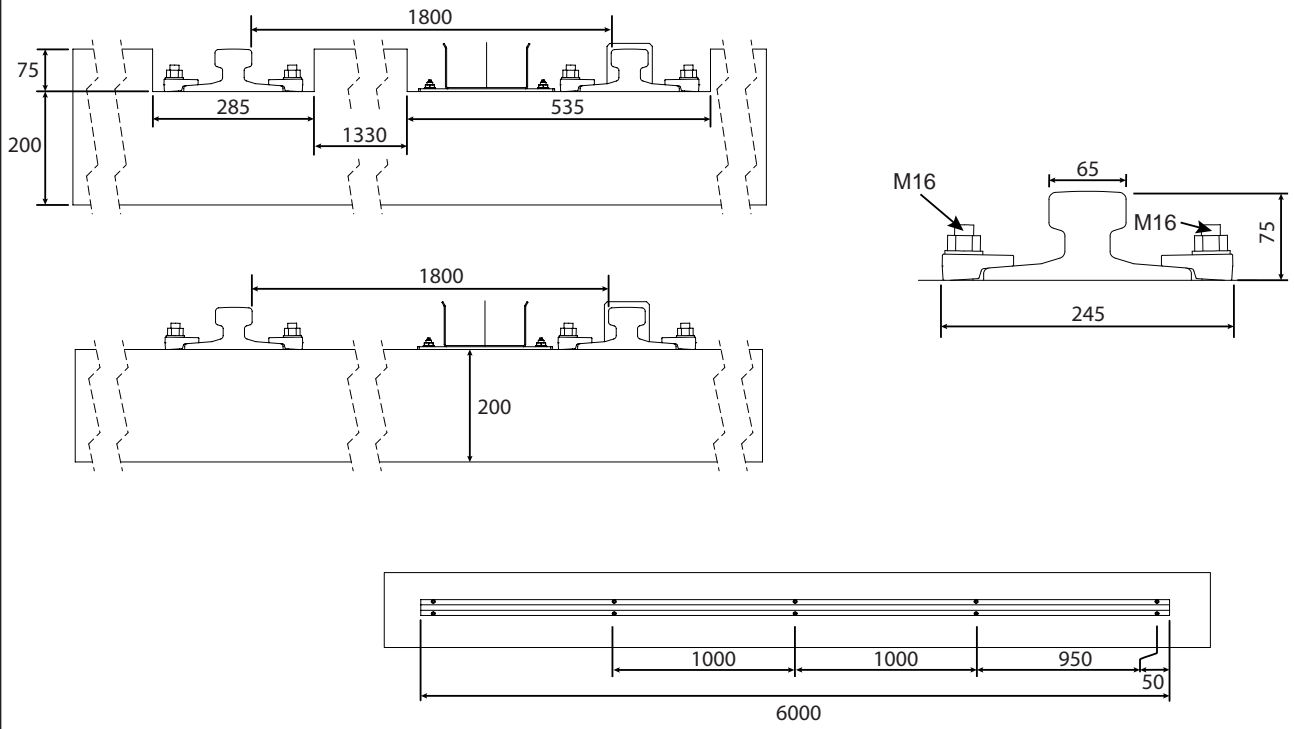


The installation of LW rails makes it necessary to break in the rollers and rail combination when starting up. To do so:

- Run the carriage in both directions over the whole length of the travel path, then brush away the metal residue on the rails and rollers with a metal brush.
- Complete three to and fro movements and remove the metal residue on the rails and rollers once again with a metal brush.
- Carry out another to and fro movement to check that the rollers and rail no longer generate metal residue.

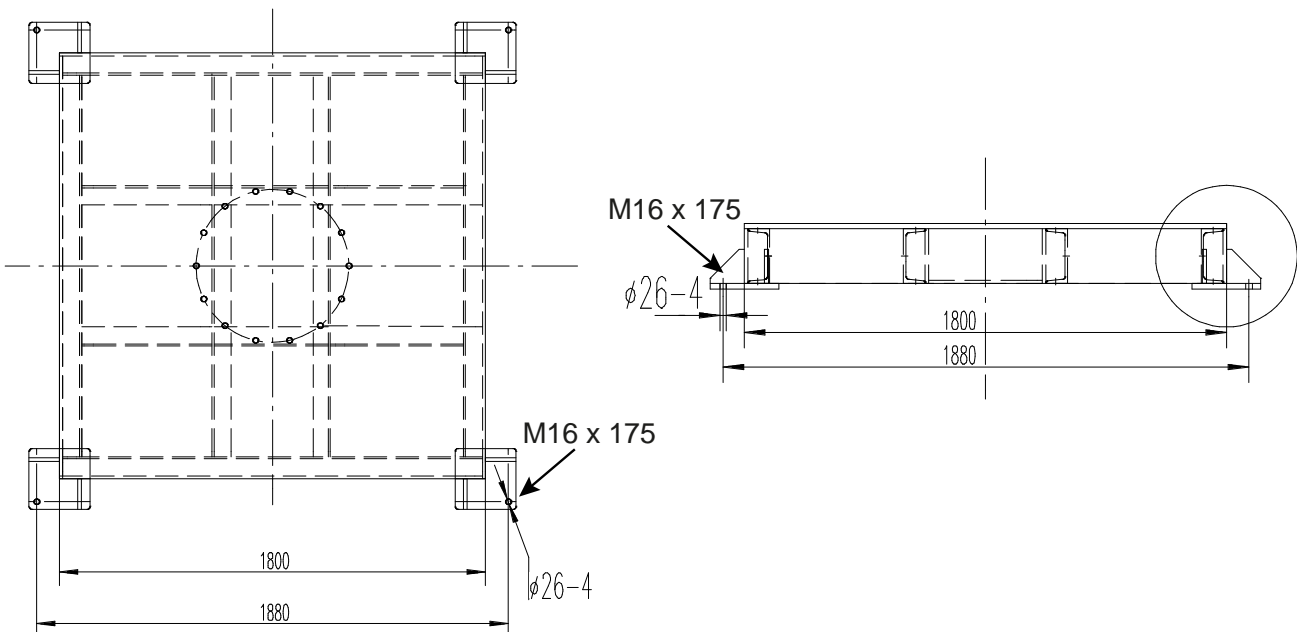


Burbach rail



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

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



5 - Reassembly 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 four 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).



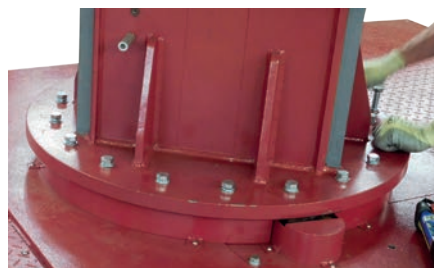
For safe work, you will need to use a travelling crane with spreader type equipment (supplied) and a lift truck fitted with a slinging system (not supplied).



POSITION OF THE SLIDING BLOCK (IMPORTANT):
Position the sliding block as close as possible to the bottom of the column before any lifting operation
The chain must be taut.

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.

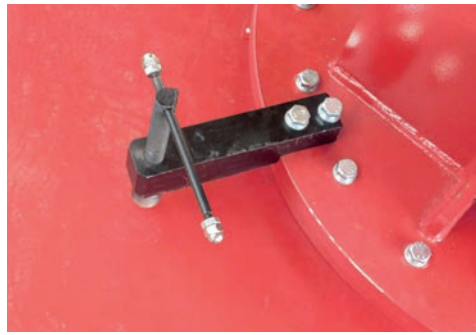


Make sure that the column turns over ± 180 .



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.



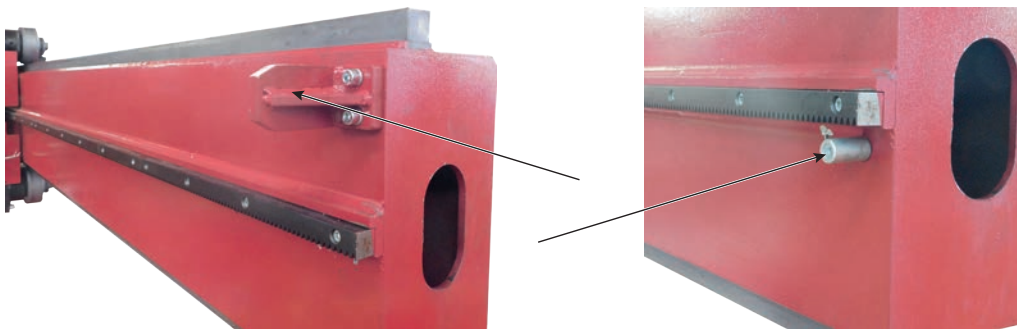
Lock the rotation of the column

Take off the plug and put the vent (in the pocket for transport)

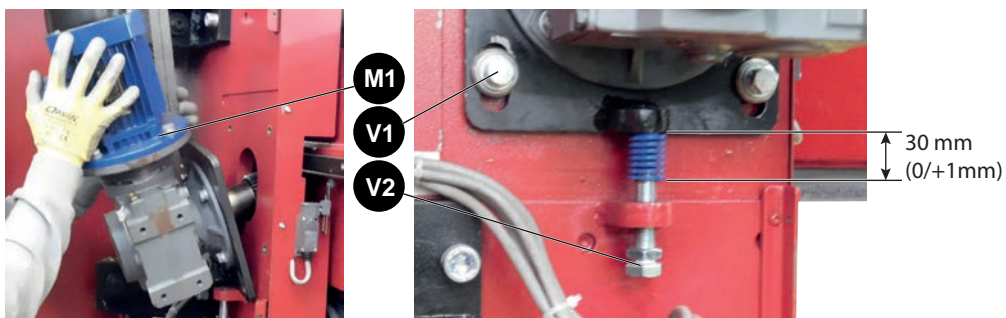
Position the slings on the arm, 2 metres away from each end and insert the rack assembly downward between the already adjusted eccentric rollers



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.

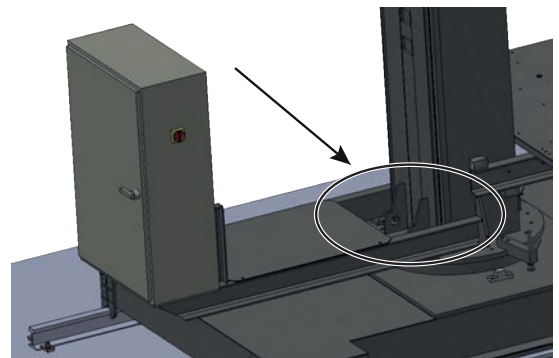
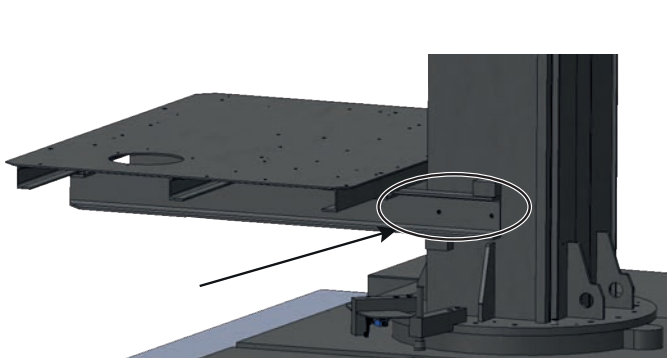


If the parallel alignment and levelling is not correct, the eccentric rollers must be adjusted; please contact the After-Sales Service department of **Lincoln Electric**

6 - Reassembly of the platform and 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.

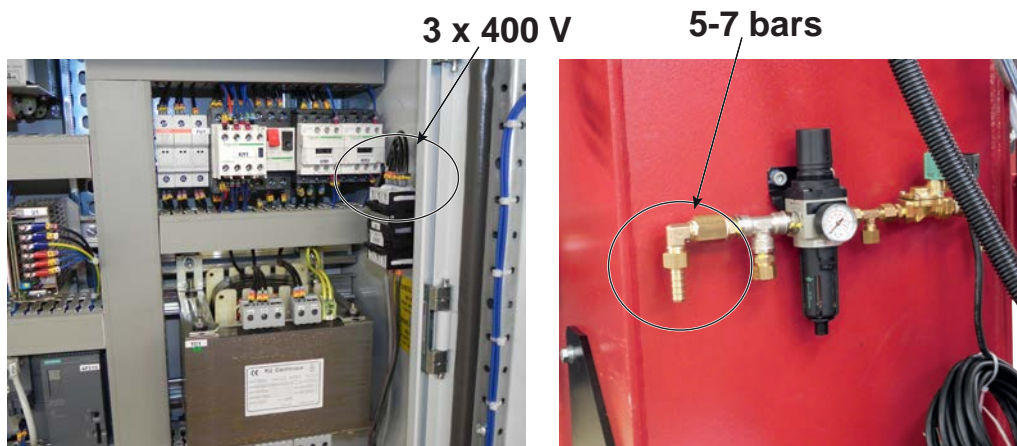
Install the electrical cabinet with 4 M8 X 50 hex head screws. The cabinet is fixed onto the two support bars mounted on the column.



7 - 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 diagrams:

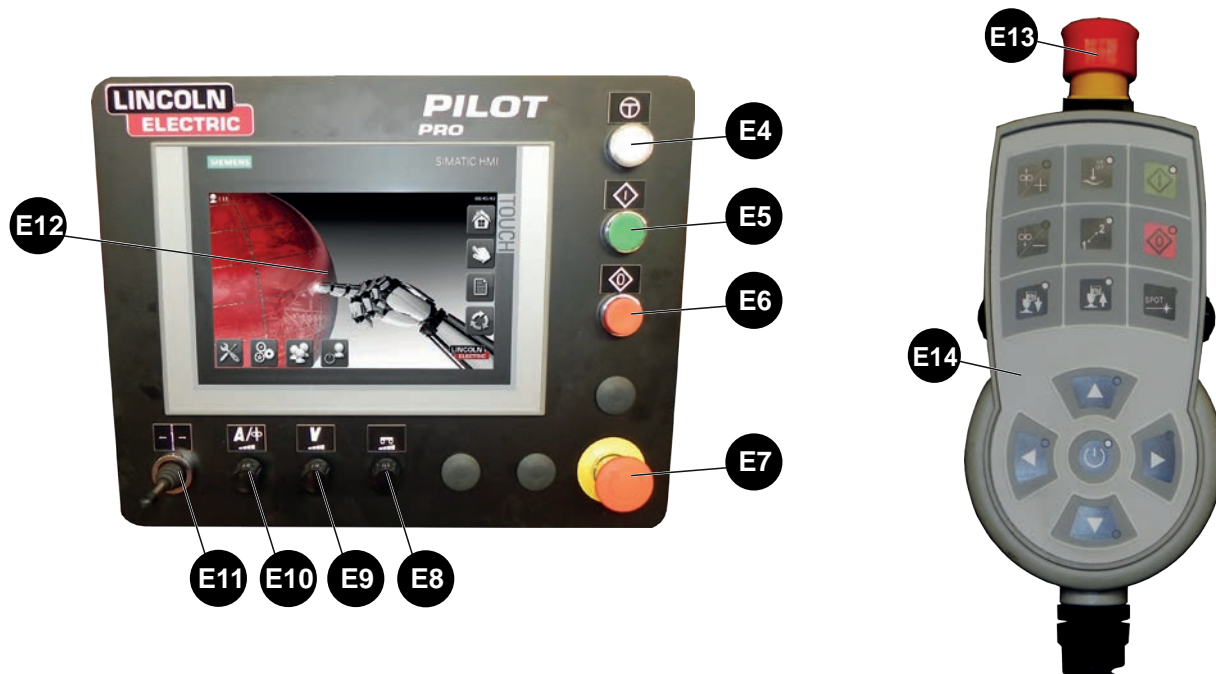
- 95240790 for connecting the cabinet
- 95240726 optional disconnecting box, single-wire head version (1 power source)
- 95240727 optional disconnecting box, tandem head version (2 power sources)

1 - Control buttons on cabinet



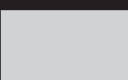


































E1	Power on indicator
E2	Main machine disconnect
E3	Emergency stop

2 - Control buttons on operator console



E4	Starting up
E5	Cycle start
E6	Cycle stop
E7	Emergency stop
E8	Carriage speed potentiometer
E9	Voltage setting potentiometer
E10	Intensity/wire speed setting potentiometer
E11	SLIDEMATIC slide movement
E12	Pilot Pro (see instructions for Pilot Pro)
E13	Emergency stop
E14	RC-MATIC remote control

3 - RC-MATIC remote control buttons

Reference	Condition			Description
S1				Emergency stop
S2 S3				Repeat function
S4		+		Wire retract
		+		Increase cycle speed
S5				Sensing On/Off
S6				Cycle start
S7		+		Wire feed
		+		Decrease cycle speed
S8				Function 1 Selection
				Function 2 Selection
S9				Cycle stop
S10				Flux test
S11				Flux recycling
S12				Laser spotlight
S13		+		C200 slide raising movement
		+		Boom arm raising movement
S14		+		C200 slide leftward movement
		+		Boom arm leftward movement
S15				Remote control validation
S16		+		C200 slide rightward movement
		+		Boom arm rightward movement
S17		+		C200 slide lowering movement
		+		Boom arm lowering movement

4- Starting up and shutting down



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

POWERING UP:

- Set the disconnecter **E2** to the position **I**; the indicator **E1** will go on.

STARTING UP:

- Make sure that the emergency stops are released.
 - => on the **E3** cabinet
 - => on the control cabinet of the **Pilot Pro E7**
 - => on the **RC-MATIC** remote control **E13**
- Start up the boom by pressing **E4**; the indicator **E4** will light up.

SHUTTING DOWN:

- Use an emergency stop

POWERING DOWN:

- Set the disconnecter **E2** to position "**0**"



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

5 - Starting a welding cycle



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

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	
		-	Foreign exchange				X	X			
	Geared motor	-	Replacement*						X	C	
	Pinion	Visual	Cleaning Lubrication		X					Depending on visual inspection	D
			Replacement*								
	Chain	Visual	Cleaning Lubrication	X						Depending on visual inspection	E
Replacement*											
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	
Carriage	Bearing housing	-	Lubrication		X					P	
	Scraper	Visual	Replacement		X					Q	
		Dimensional	Adjustment		X					R	
	Reduction gear	Visual	Lubrication		X					S	
	Full stop	Operating	Test		X					T	
	Limit switch	Operating	Test		X					U	
	Pinion	Visual	Cleaning Lubrication		X					V	
Clamp**	Visual	-	X							W	
		-	X							X	
Electrical cabinet	Filter	Visual	Cleaning	X						Y	
	Electrical contact	Visual	Tightening				X			Z	
Control console	Pilot Pro	Visual	Cleaning	X						AA	

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


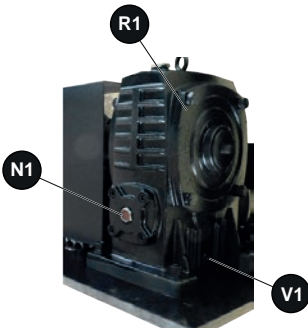
** : Immediate inspection in the event of an impact

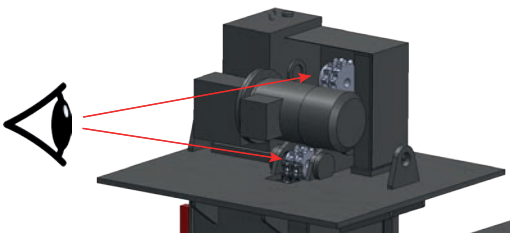


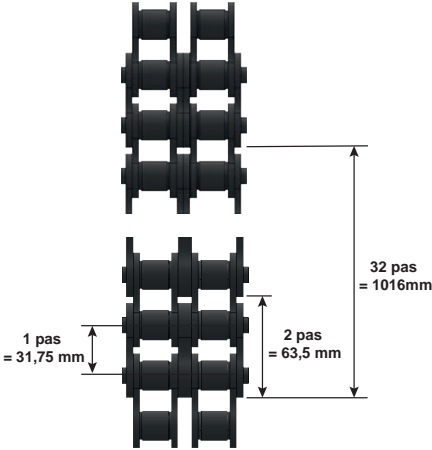
We recommend putting in place a traced system for tracking all your maintenance operations.

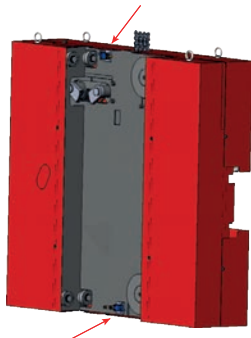
3 - Lifting system maintenance

Step	Operation	OK	NOK
A	<u>Brake</u>	✓	✗
	Periodic inspection by the Maintenance department of the working of the brake		


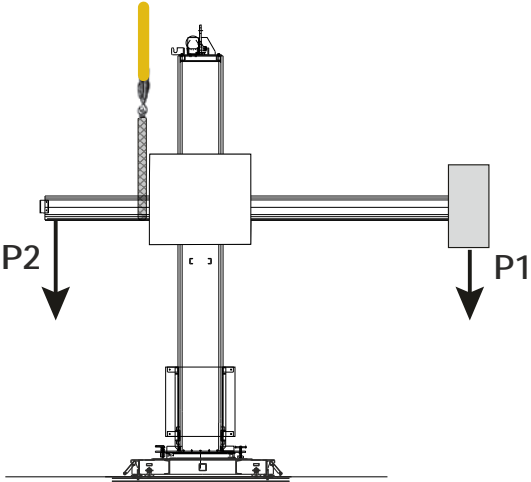
Step	Operation	OK	NOK
B	<u>Reduction gear</u>	✓	✗
	<div style="border: 1px solid red; padding: 5px; margin-bottom: 10px;">  <p>All reduction gear must be maintained to offer maximum efficiency by carrying out the scheduled maintenance operations recommended by the manufacturers. Proper maintenance will offer best performance, a longer life and safe working.</p> </div> <p>Check visually for leaks.</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>R1: filling plug V1: draining plug N1: level plug Quantity of oil: 4.5 litres Type of "synthetic" oil:</p> <ul style="list-style-type: none"> • OMALA S4 WE 320 • Klübersynth GH 6 320 • Mobil Glygoyle 320 • Alphasyn PG320 • Carter SY 320 </div> </div>		

Step	Operation	OK	NOK
D	<u>Pinion</u>	✓	✗
	<p>Check if the pinion is clean. Clean with hot water and solvent.</p> 		

Step	Operation	OK	NOK
E	<u>Chain</u>	✓	✗
	<p><u>Visual inspection</u></p> <ul style="list-style-type: none"> • 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 <p>Oil over the whole functional length of the chain with a brush, using non-detergent mineral oil with viscosity appropriate for the operating temperature.</p> <ul style="list-style-type: none"> - Operating temperature (°C) 0 to 50°C - Recommended viscosity grade (ISO - VG) 46 to 150 <p>Once the boom is operating, carry out several lifting cycles to spread the oil and allow it to penetrate. Wipe away any excess lubrication.</p> <p><u>Verification of wear</u></p> <div style="display: flex; align-items: center;">  <div style="margin-left: 20px;"> <p>Change the triple chain if extension is greater than 2%.</p> <p>The length is measured on 32 links (32 increments):</p> <ul style="list-style-type: none"> • Normal length: 1,016 mm • Max. length: 1,036 mm <p>Take the measurement:</p> <ul style="list-style-type: none"> • 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) </div> </div>		


Step	Operation	OK	NOK
F	<u>Limit switch</u>	✓	✗
	<p>Test the upper and lower limit switches of the lifting mechanism.</p> <p>The triggering of a limit switch must stop the movement.</p> <div style="text-align: center;">  </div>		

4 - Maintenance of safety gear

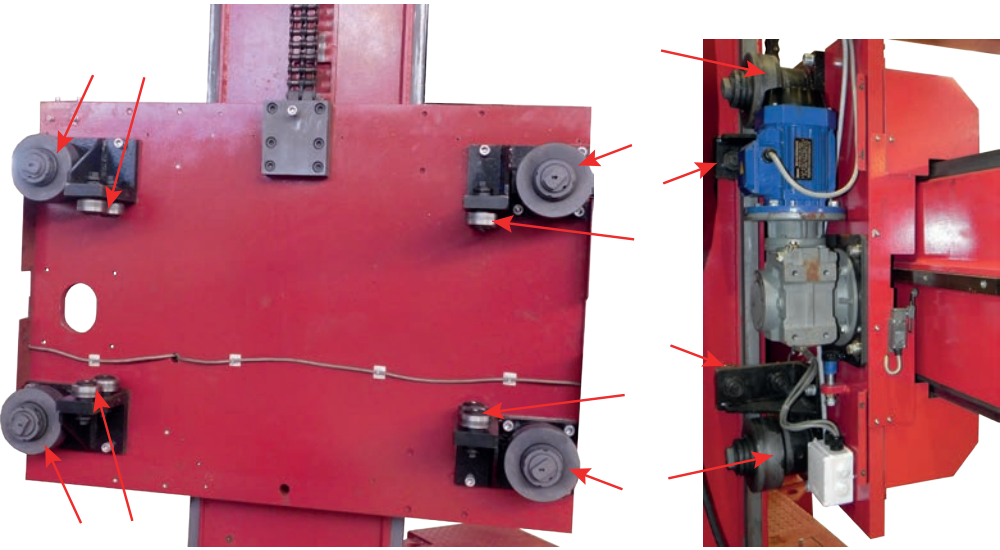
Step	Operation	OK	NOK
G	<i>Safety gear</i>	✓	✗
	<p>Procedure for verifying the safety gear</p> <div style="border: 1px solid red; padding: 5px; margin-bottom: 10px;">  <p>This operation may be carried out at any sliding block height. Preferably select a low position for more safety.</p> </div> <ul style="list-style-type: none"> • 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 webbing. <div style="text-align: center; margin-top: 20px;">  </div>		

5 - Column maintenance

Step	Operation	OK	NOK
H	<i>Rail</i>	✓	✗
	<p>Check the condition of the rails (=> clean, with no foreign body). To avoid oxidation, you may apply sliding coating of the type: ✓ Adermos 800 (Molydal)</p>		

Step	Operation	OK	NOK
I	<i>Rotation brake</i>	✓	✗
	<p>Inspect operation.</p> 		

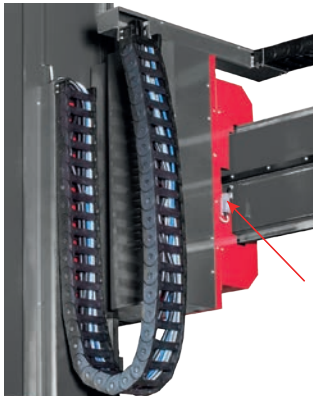
6 - Sliding block maintenance

Step	Operation	OK	NOK
J	<i>Roller</i>	✓	✗
	<p>After removing the covers of the sliding block, check the condition of the rollers (=> clean, with no damage).</p> 		

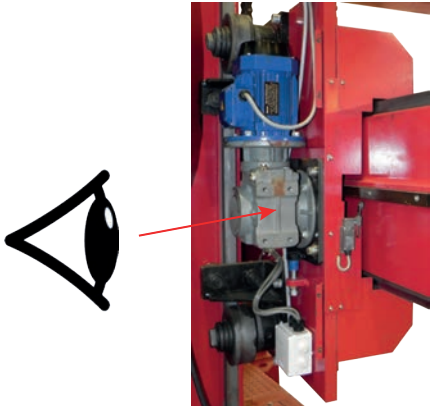
7 - Arm maintenance

Step	Operation	OK	NOK
K	<u>Rack</u>	✓	✗
	Brush the toothed side without adding grease. To avoid oxidation, you may apply sliding coating of the type: ✓ Adermos 800 (Molydal)		

Step	Operation	OK	NOK
L	<u>Rail</u>	✓	✗
	Check the condition of the rails (=> clean, with no foreign body). To avoid oxidation, you may apply sliding coating of the type: ✓ Adermos 800 (Molydal)		

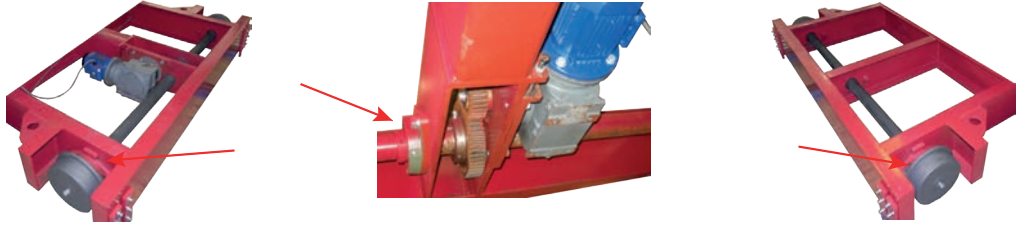
Step	Operation	OK	NOK
M	<u>Limit switch</u>	✓	✗
	Test the left and right limit switches of the arm movement mechanism. The triggering of a limit switch must stop the movement.		
			

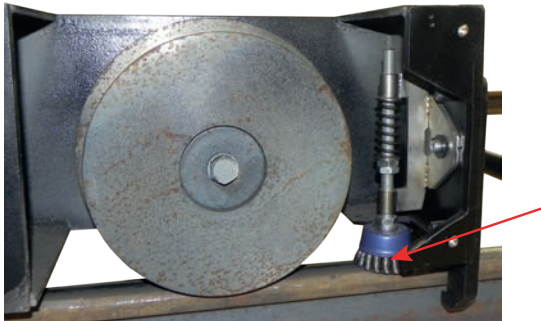
8 - Arm motor maintenance

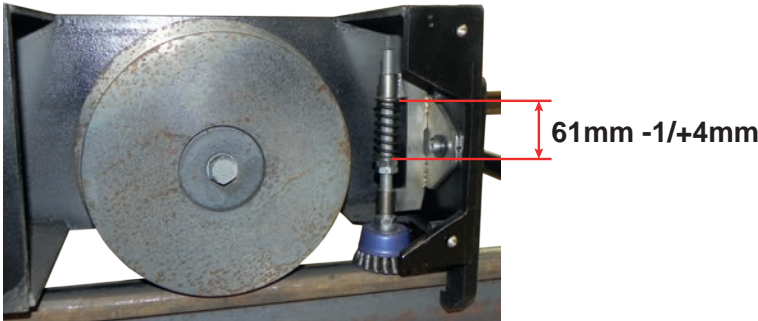
Step	Operation	OK	NOK
N	<u>Pinion</u>	✓	✗
	After removing the covers of the sliding block, check the condition of the pinion (=> clean, with no foreign body). To avoid oxidation, you may apply sliding coating of the type: ✓ Adermos 800 (Molydal)		
			

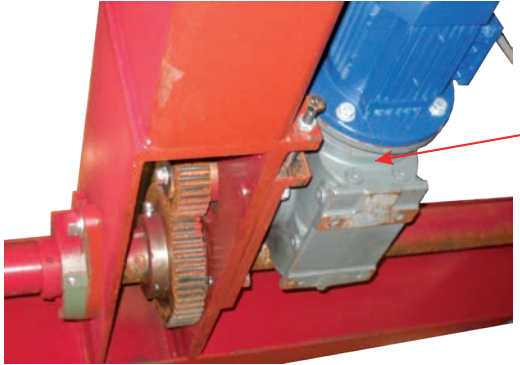
Step	Operation	OK	NOK
O	<u>Reduction gear</u>	✓	✗
	After taking off the covers of the sliding block, carry out the following checks: <ul style="list-style-type: none"> visually for leaks. visually check the overall condition of the reduction gear 		

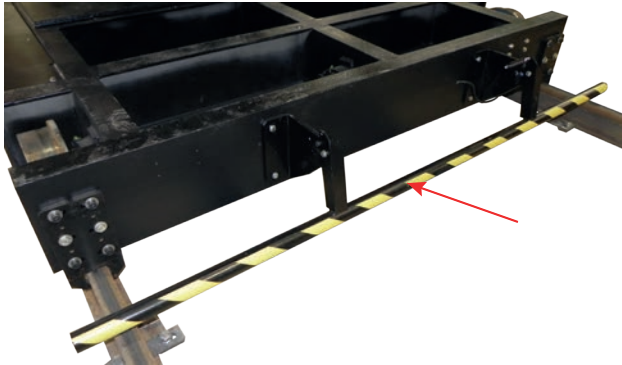
9 - Carriage maintenance

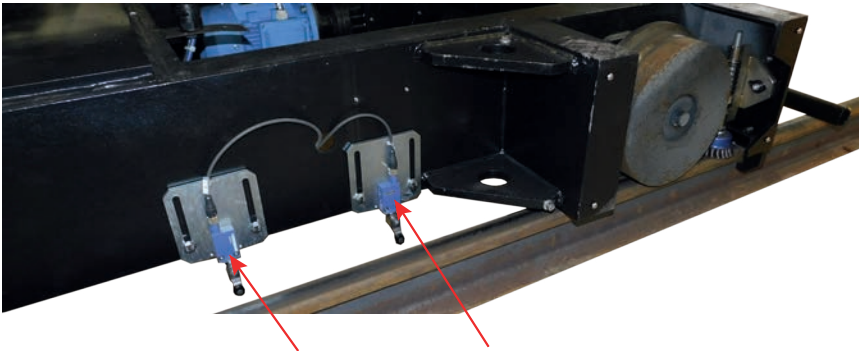
Step	Operation	OK	NOK
P	<u>Bearing housing</u>	✓	✗
	After taking off the guard covers, lubricate the bearings. ✓ ESSO BEACON EP2		
			

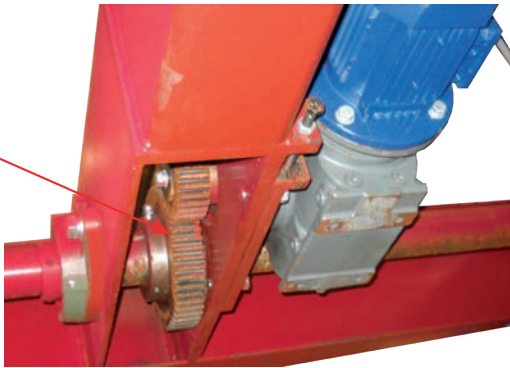
Step	Operation	OK	NOK
Q	<u>Scraper</u>	✓	✗
	Check the condition of the scrapers (=> clean and not damaged). Change them if they are damaged or worn (before the metal body of the brush rubs against the rail).		
			


Step	Operation	OK	NOK
R	<u>Scraper</u>	✓	✗
	Adjusting the brushes: <ul style="list-style-type: none"> when the brush is in contact with the rail, the spring must be compressed to length 61 mm (-1/+4mm). 		
			


Step	Operation	OK	NOK
S	<u>Reduction gear</u>	✓	✗
	<p>After taking off the guard cover, verify:</p> <ul style="list-style-type: none"> visually for leaks. visually check the overall condition of the reduction gear 		

Step	Operation	OK	NOK
T	<u>Full stop</u>	✓	✗
	<p>Test the full stop limit switches. The triggering of a limit switch must stop the movement.</p> 		

Step	Operation	OK	NOK
U	<u>Limit switch</u>	✓	✗
	<p>Test the carriage limit switches. The triggering of a limit switch must stop the movement.</p> 		

Step	Operation	OK	NOK	
V	<u>Pinion</u>	✓	✗	
	<p>Check the condition of the pinions (=> clean, with no foreign body).</p> <ul style="list-style-type: none"> • Keep the teeth clean • Lubricate with dry lubricant such as Adermos 850 • Adjusting the teeth allowance: <ul style="list-style-type: none"> - loosen the adjustment screws - put the bottom of the teeth in contact with the pinion/ring pair by manually pushing the power assembly. - Manually bring the adjusting screws into contact and then loosen them by 1/6th of a turn. - Tighten the nuts of the adjusting screws and the screws of the power plate with a key. 			
				

Step	Operation	OK	NOK	
W	<u>Clamp</u>	✓	✗	
	<p>The clamps must not rub against the rails. The clamps must be positioned correctly → 5 mm from the rail in all directions.</p>			
				

Step	Operation	OK	NOK	
X	<u>Clamp</u>	✓	✗	
	<p>Check the fastening of the clamps and the presence of pins. Tightening torque 50 Nm.</p>			
				

10 - Electrical cabinet maintenance

Step	Operation	OK	NOK
Y	<i>Filter</i>	✓	✗
	Clean the filter with compressed air		

Step	Operation	OK	NOK
Z	<i>Electrical equipment</i>	✓	✗
	Inspect and tighten all the electrical contacts		

11 - Control console maintenance

Step	Operation	OK	NOK
AA	<i>Control console</i>	✓	✗
	Clean with a moist cloth, washing up liquid or monitor cleaning foam.		

12 - Troubleshooting

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
	Contact or relay malfunction	Replace the contactor or relay
	Transformer malfunction	Verify the transformer
The arm motor operates, but the speed cannot change	Potentiometer malfunction	Verify or replace the potentiometer
	Variable drive malfunction	Read the manual
The 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:

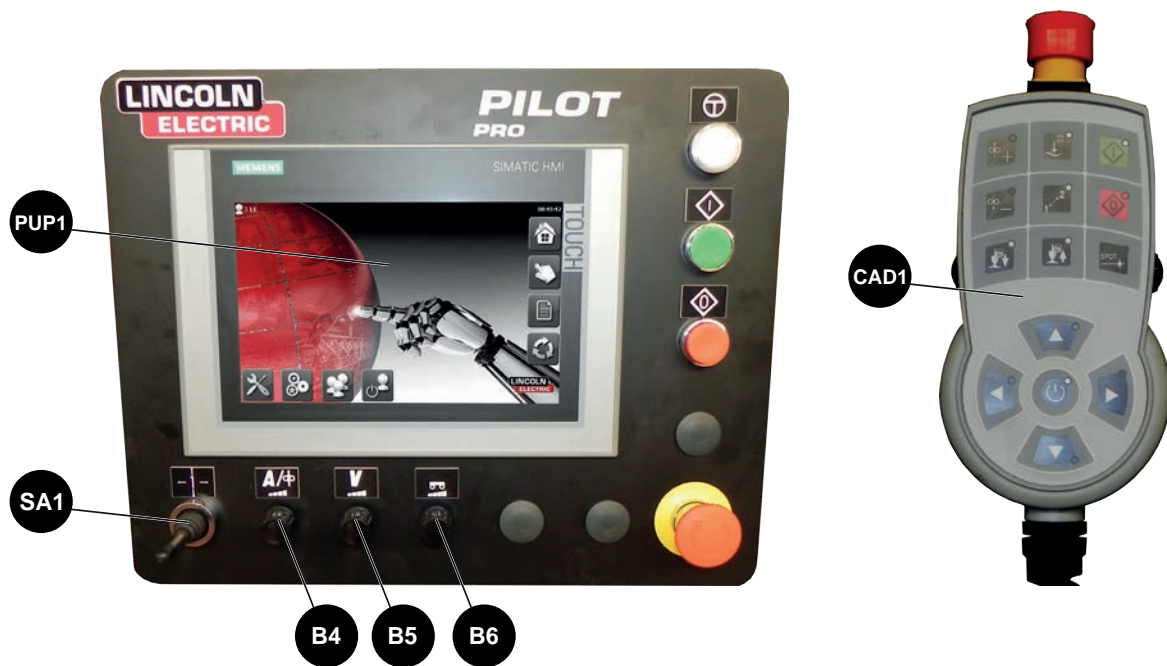
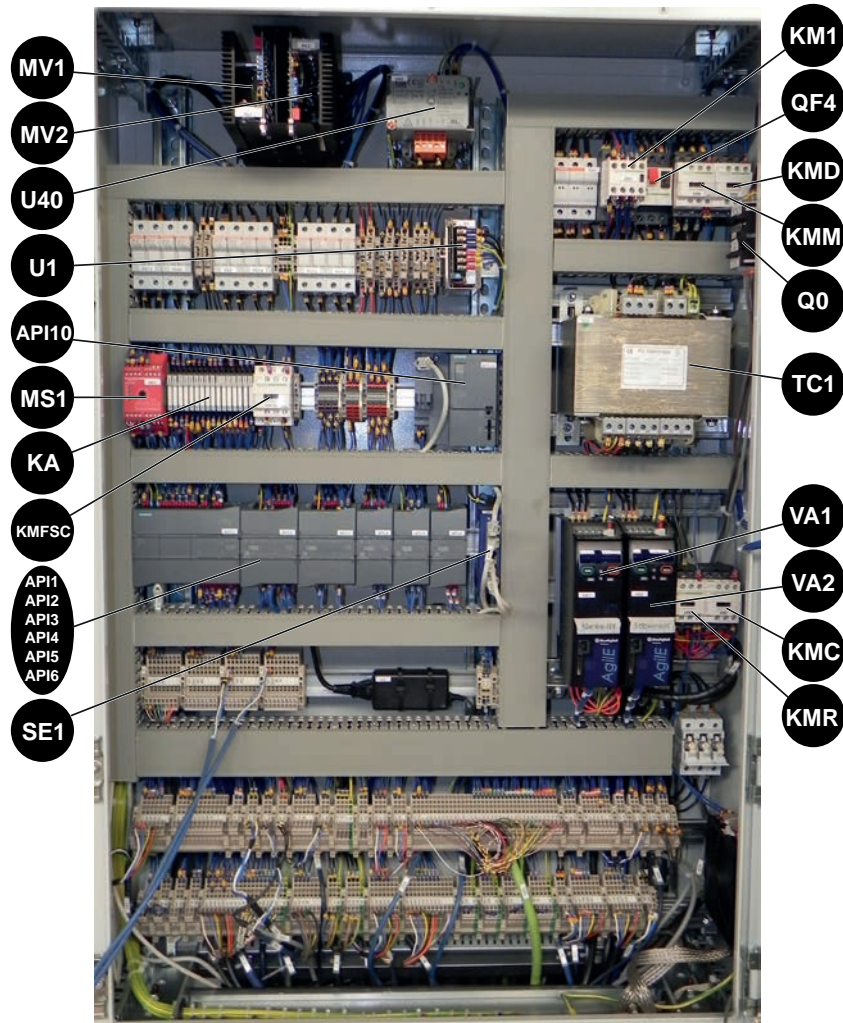
Ref.	Part no	Stock	Order	Description
E1	W000XXXXXX	✓		Machine interface board
G2	W000XXXXXX	✗		Flow meter
A3	P9357XXXX			Printed front plates

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

- 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:


Electrical cabinet



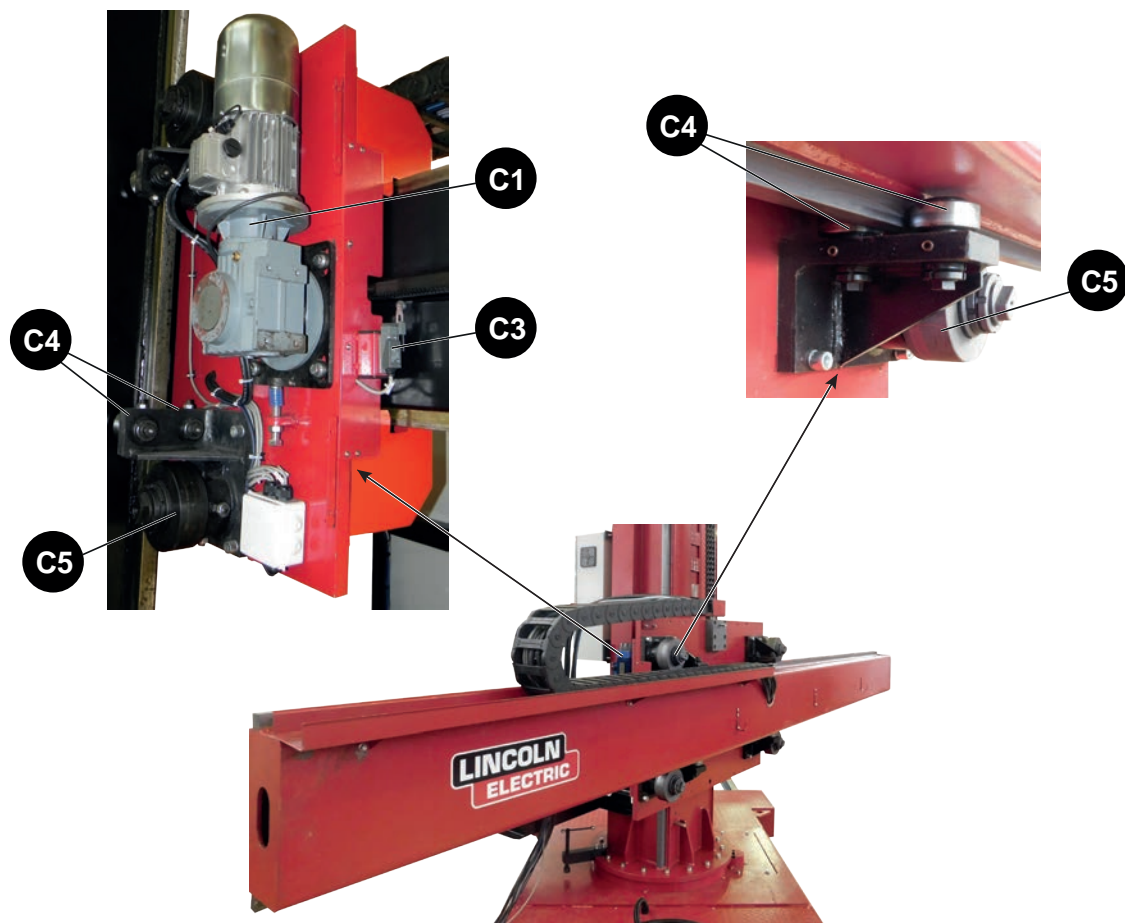
✓	normally held in stock.
✗	not in stock upon request.

Ref.	Part no	Stock	Order	Description
KM1	PC5701707			Contactor, LC1D25BD
QF4	PC5705278			Motor circuit breaker, 3P 4-6.3A GV2ME10
KMD KMM	PC5701026			Change-over contactor, 6F O+C 24VDC 12A
Q0	PC5702422			Disconnecter, 3P - 25A
TC1	PC5706105			Transformer, 230+400V/3x42V - 1260VA
VA1 VA2	PC5700236			Frequency variator, 0.55K 400TP AGL402 05F
KMC KMR	PC5701026			Change-over contactor, 6F O+C 24VDC 12A
MV1 MV2	P91241590			Variable drive, CC 0,18K 42SINGLE 5000RPM
U40	PC5706111			Power supply, 230+400V/24VDC - 5A
U1	PC5706226			Power supply, 230/-12VDC +12VDC
API10	PC5703683			PLC, 1512SP-1 PN ET200SP
MS1	PC5512538			Safety module, XPSATE5110
KA	PC5701726			Relay, 24VAC/DC - 1RT - 6A
KMFSC	PC5701733			Contactor, 3C+2O - 24VDC CAD32BD
API	PC5703671			PLC, 1215C 14I/10O 2EA 2SA
	PC5703673			Module, 16I/16O On/Off S7-120
	PC5703672			Module, 16I On/Off S7-1200
	PC5703680			Module, 2O Analogue S7-1200
	PC5703681			Module, 4I/2O Analogue S7-1200
SE1	PC5703997			Ethernet switch
PUP1	PC5703730			9" touch display, TP900 COMFORT
SA1	PC5702477			Four-direction manipulator
B4 B5 B6	PC5708030			Encoder
CAD1	P95307551			Remote control

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

	TYPE:
	Number:

Sliding block



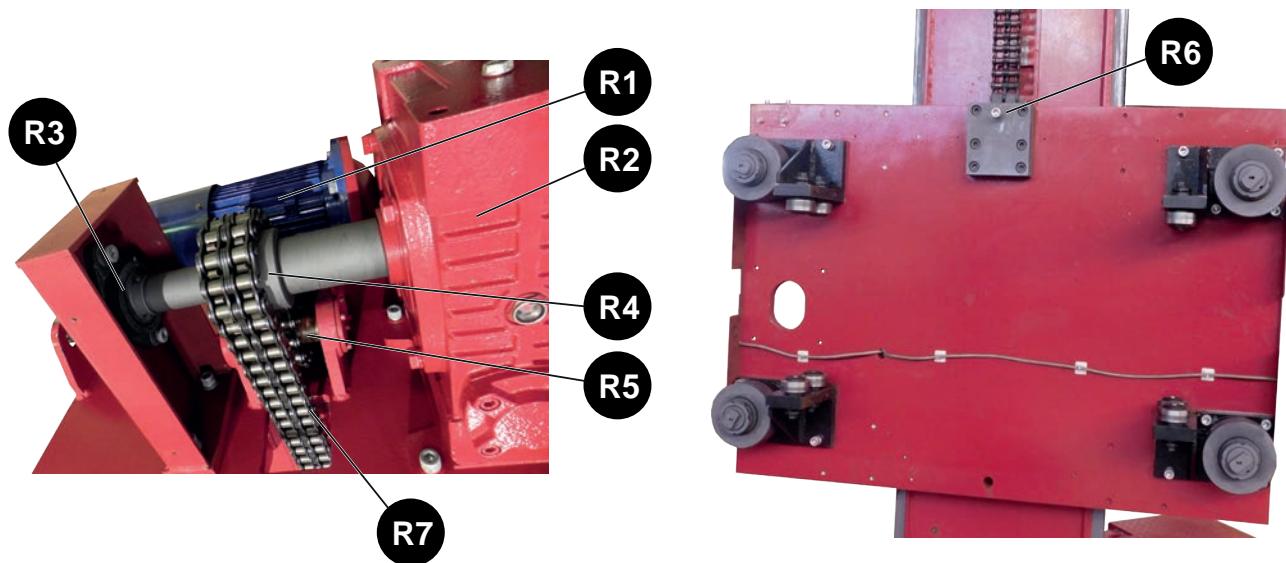
✓	normally held in stock.
✗	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description
C1	DI002549			Geared motor, WR75 UF1 D30 180 B5 V6 BN80A4
	DI002548			Shaft pinion
	P95248610			Encoder, 5000pts
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 <input type="text"/> Matricule <input type="text"/>	TYPE:	<input type="text"/>
	Number:	<input type="text"/>

Lifting



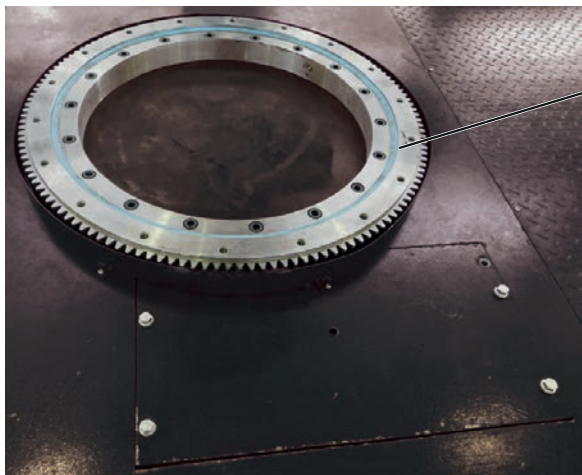
✓	normally held in stock.
✗	not in stock
	upon request.

Ref.	Part no	Stock	Order	Description
R1				Motor
R2	AS-PS-T0300008			Reduction gear (for boom LINC-MATC CB LM-LF 3032 and 4042)
	AS-PS-T0300012			Reduction gear (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)

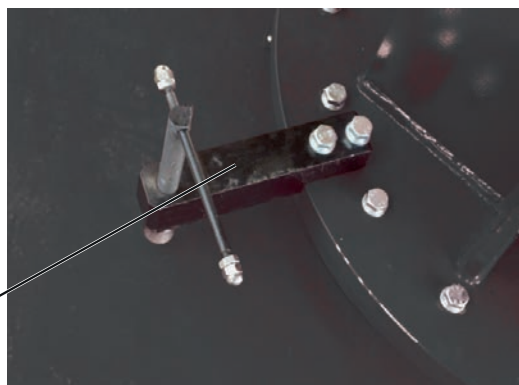
- While ordering parts, please indicate the quantity and note the number of your machine in the box above.

	TYPE:
	Number:

Rotation



01




04

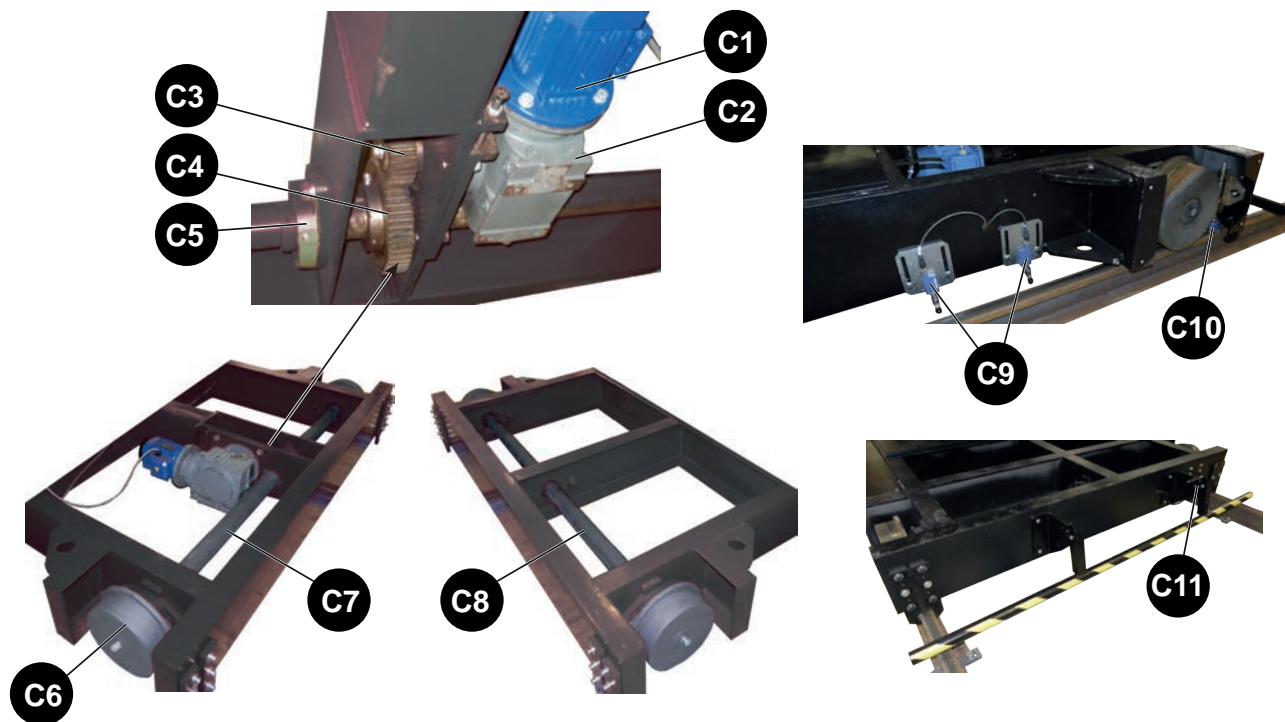
<input checked="" type="checkbox"/>	normally held in stock.
<input checked="" type="checkbox"/>	not in stock upon request.

Ref.	Part no	Stock	Order	Description
01				Notched ring
04				Rotation indexing

- 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:

Carriage



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
C9				Limit switch
C10	AS-PS-95240824			Brush scraper
C11				Limit switch

normally held in stock.
 not in stock upon request.

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

CE Type <input style="width: 80%;" type="text"/> Matricule <input style="width: 80%;" type="text"/>	→	TYPE: <input style="width: 95%;" type="text"/> Number: <input style="width: 95%;" type="text"/>
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