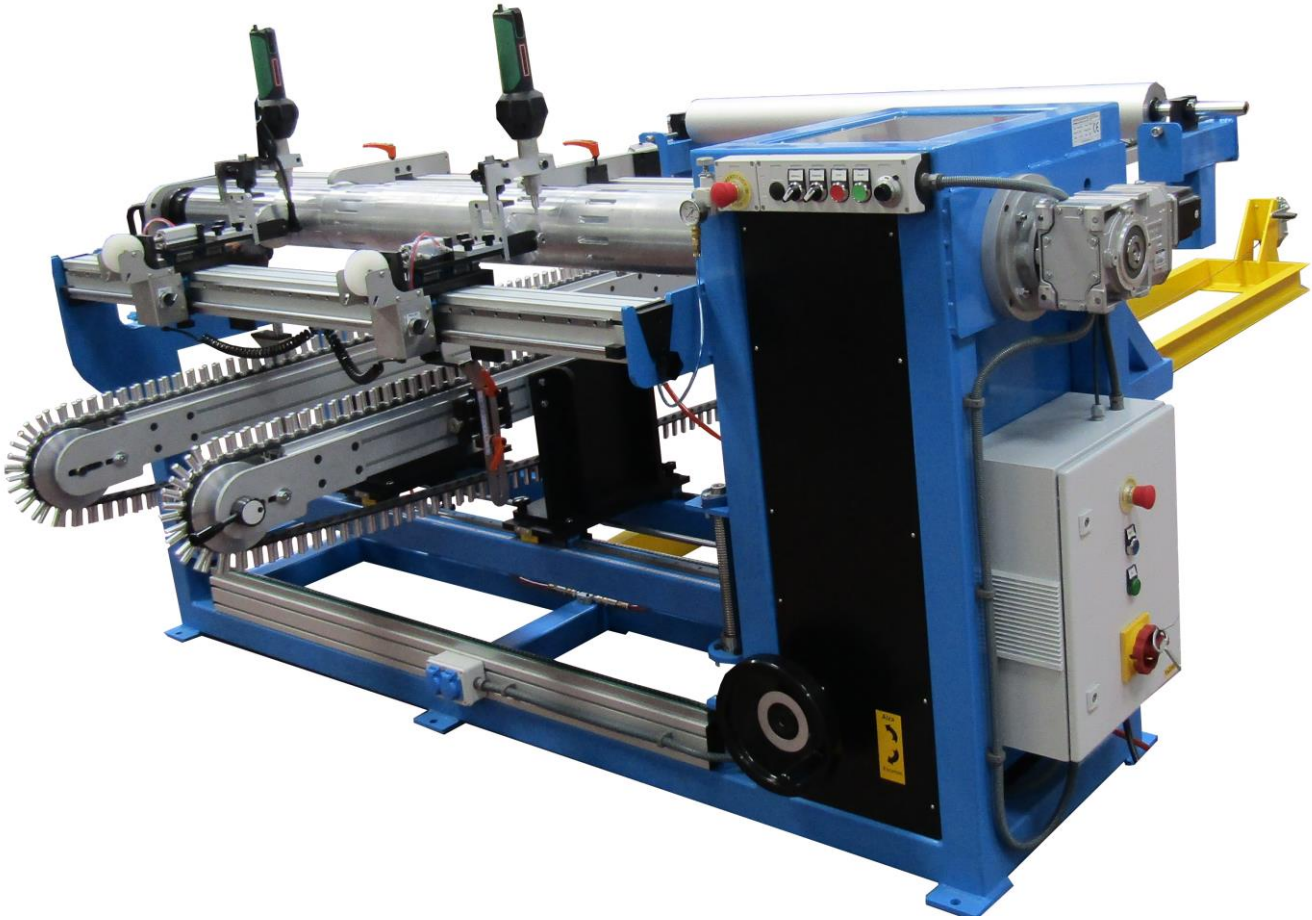
(Original) Use and maintenance manual

Type: Sidewall + V-Guide welder
Model: LRBW-150



IMPORTANT:

Read this user manual and follow the instructions and warnings before operating this device.

Any modification or transformation performed on this machine may cause loss of the manufacturer's guarantee and liability.

This manual must always remain near to the machine and visible to all the operating and maintenance staff, for any future consultation, forming part of the equipment.

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- CE Declaration of conformity:

WE DECLARE, under our responsibility, that the machine:
- Type: Sidewall and ropes welding machine
- Brand: ERM Engineering
- Model: LRBW-150
- Serial No.: xxxxxx
- Manufacturer date: 2021

Inspired by the directives of the Official Journal of the European Communities:

2006/42/CE Machinery Directive
2014/35/UE Low Voltage Directive
2014/30/UE Electromagnetic Compatibility Directive

Complies with the design and construction specifications of the European Standards on General Machine Safety:

EN 349 – EN 614-1 – EN 614-2 – EN 12100 – EN 11161-1 - EN 1005-1 – EN 1005-2 – EN 1005-3 - EN 1005-4 – EN 13849-1 – EN 13849-2 – EN 894-3 – EN 13850 - EN 13857 – EN 61310-1 EN 60204-1 - EN 14118 - EN 14120 – EN 13732-1

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Arenys de Munt (Barcelona)-SPAIN
Date: 2021/08

- Description:

Continuous longitudinal profile and sidewall welder for conveyor belts using a jet of hot air at the point of intersection of the two materials. Fitted with speed, temperature and pressure controls for different types of material.

- Technical Characteristics:

Dimensions	2740x1200x1670 mm (LxWxH)
Weight	738 kg
Max. Belt Width	1500 mm
Min. continuous operation	850 mm
Pulley diameter	100 mm
Max. Belt Thickness	8 mm
Motor	0.25 kW
Leister Welder	1600 X 2 and 3400W X2

- Standard equipment:

- One motor frame
- Two welding ropes heads
- Two welding sidewall units
- Four chains with pins 2x25 and 2x70
- Pulleys 10x6 / 13x8 / 17x11 (two sets)

- Warnings and safety:

- ERM Engineering recommends the users of this machine to fully read this user's manual prior to its use to guarantee safe work.
- It also advises and recommends equipment not being used by unqualified staff who have not received prior training from ERM Engineering
- A copy of this manual delivered along with the machine must always remain at hand during its use, both for the production operators as well as the maintenance managers.

NOTE: ERM Engineering shall not be held liable under any case for damage caused by undue or improper use of this equipment.

- Any repairs or modification of the machine performed by personnel not qualified by ERM Engineering or use of non-original spare parts provided by persons unrelated to the company, shall give rise to loss of the manufacturer's guarantee.
- During use of the machinery and industrial use, people are subject to the risk of damage or injury by mechanical elements in linear or gyrating movement, high voltage electric components and static components under high temperature, due to which, during design

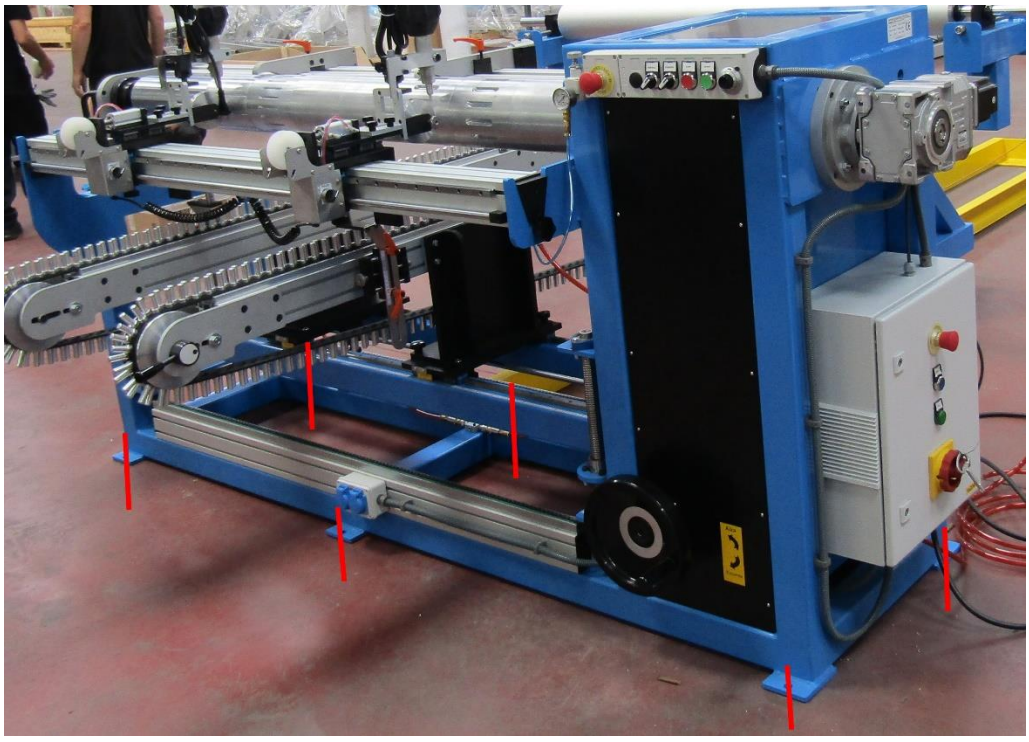
and construction of its equipment, ERM Engineering. has aimed to reduce and minimise those risks by including protection devices and safety systems based on the European Community Council Directives.

– Pay special attention to the following danger, prohibition and obligation signs located at different places on the machinery:

- Installation and start-up:

Site the machine in well ventilated places or under a fume exhaust hood.

IMPORTANT: Fix the frame on the floor with 6 steel bolts 14/15mm.

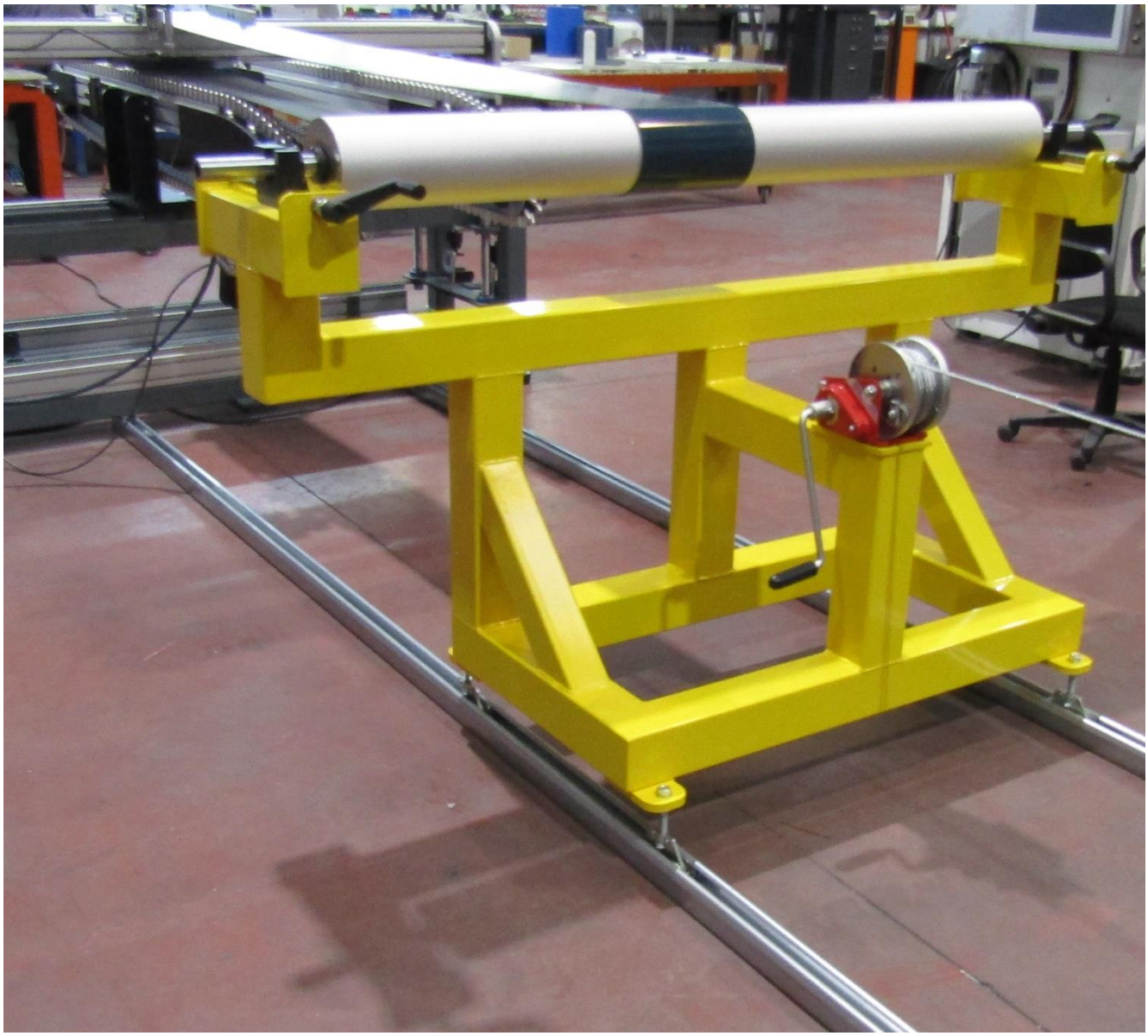


THE FUMES PRODUCED WHEN WELDING SOME MATERIALS ARE TOXIC AND MAY CAUSE IRRITATION OF THE RESPIRATORY TRACT.

Place the welder in such a way to simplify placement and removal of continuous belts on the open side of the machine frame.

Allow sufficient free space for movement of material.

Fix the tension rails on floor, always centred with motor drum. Always 1000mm between centre of rails.



- **Electrical Connection:**

Connect the machine to a suitable single-phase 1 X 230 V power supply bearing in mind the power consumption 7000 W.

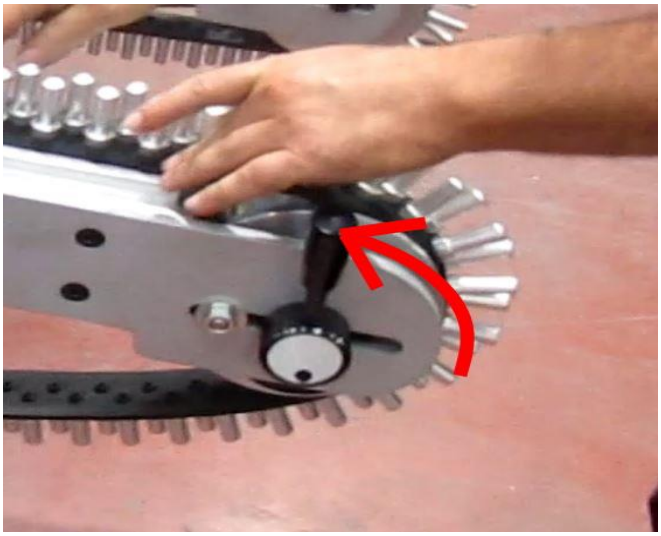
It must also be connected to a compressed air supply through the input tube 10mm internal diameter to input between 5 and 8 bar.

- **Operation for V-Guides:**

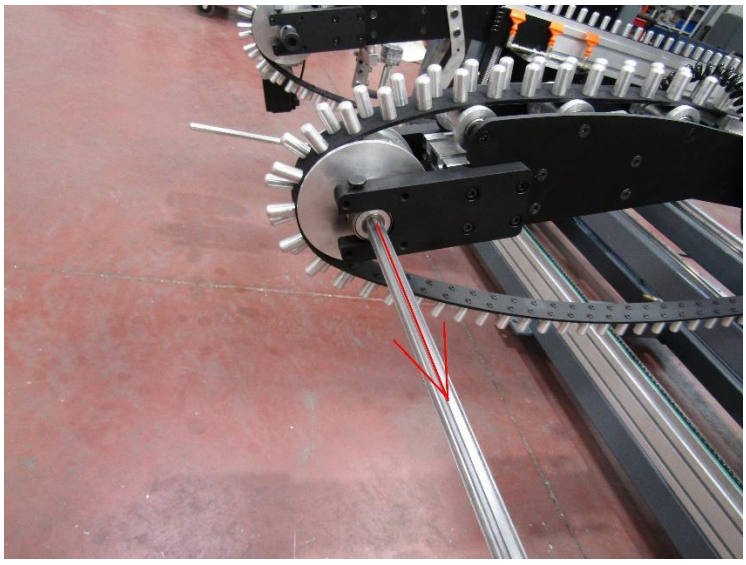
To use the machine for V-guides, is necessary to remove the sidewall heads and assemble the V-guides unit.

To disassemble the sidewall heads;

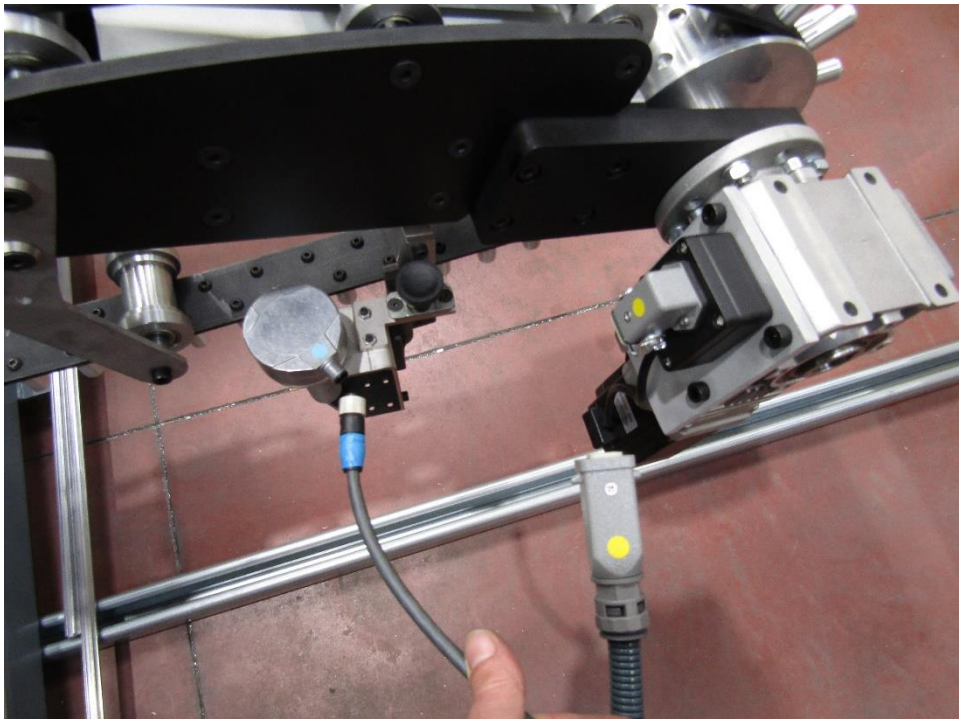
- ✓ Relax the sidewall belts turning the handler 90º to take out the cardan shaft.



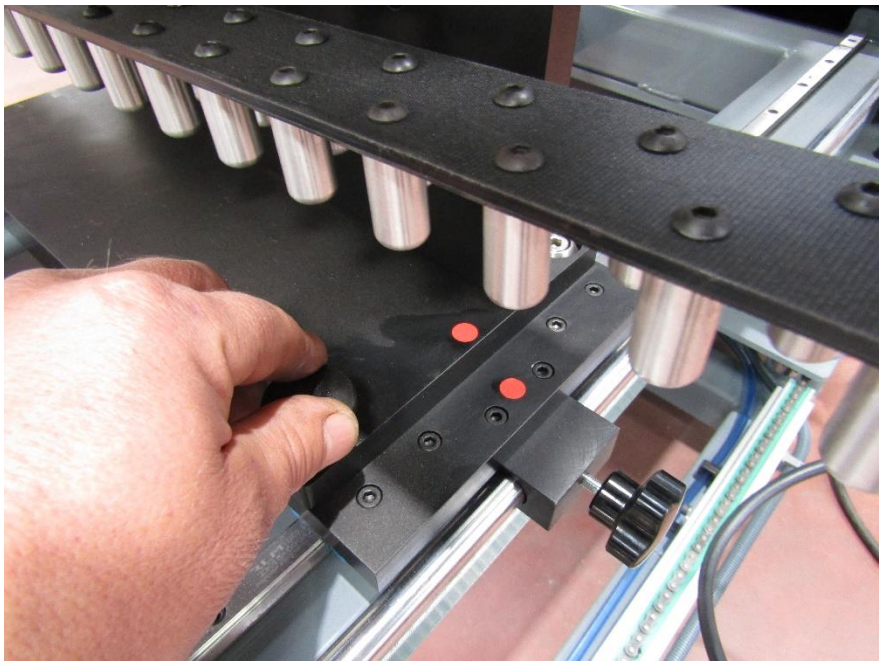
Pull the cardan transmission out the pulleys.



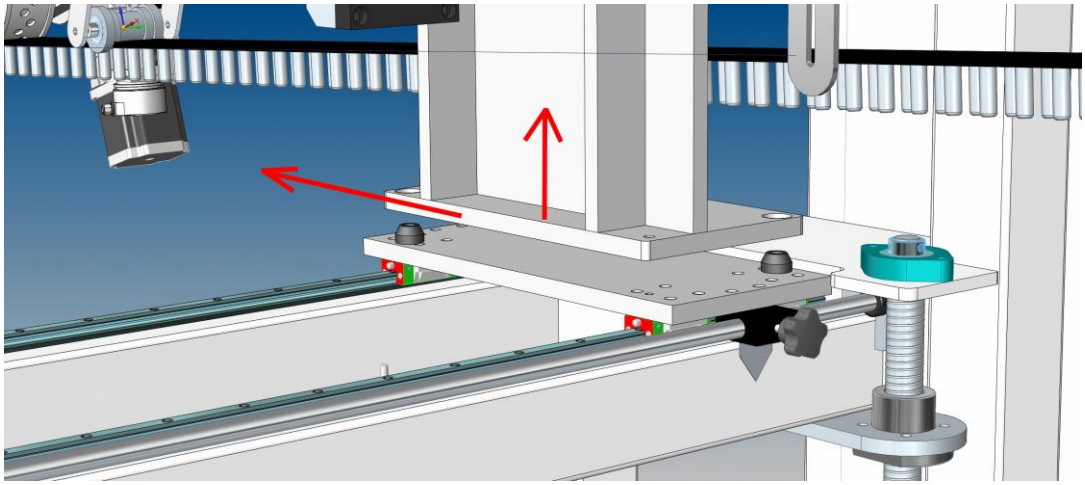
Disconnect the pulley motor socket and encoder cable.



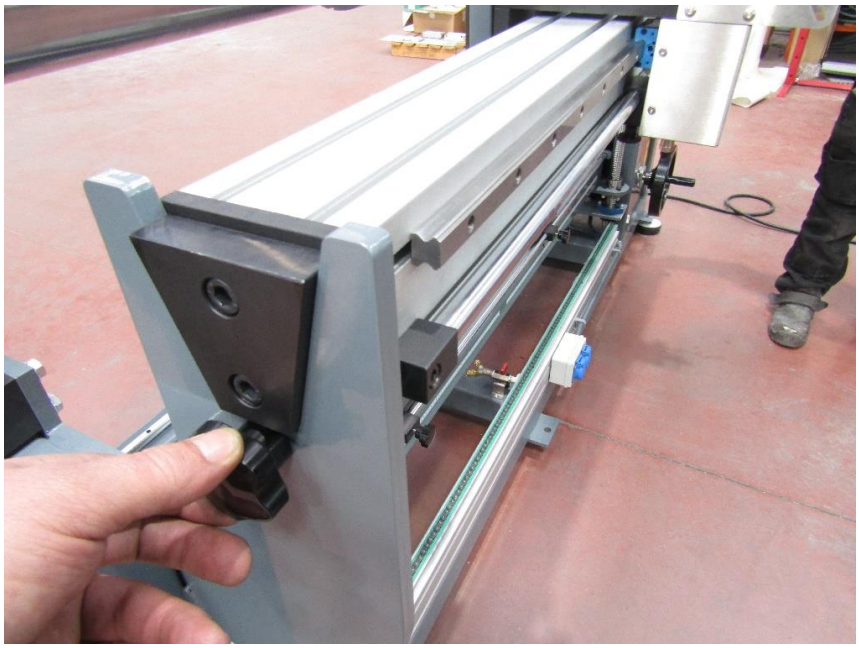
Loosen the feet handlers to remove the sidewall brackets lifting them from the base and pulling them out:



Lift the arm 20/30mm and remove.



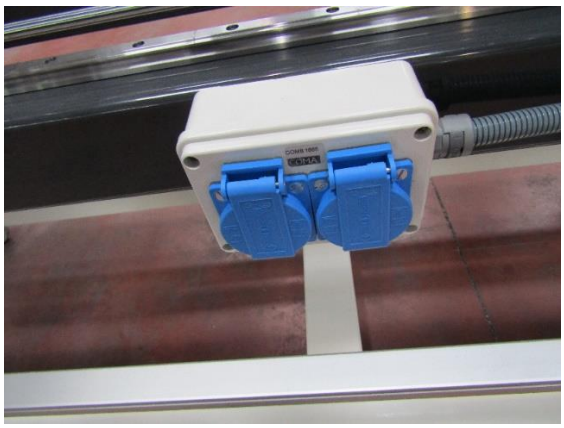
After removing these two units, assemble the V-guide unit, as seen here fixing two knobs in both sides:



Next:

1. Connect the air supply:

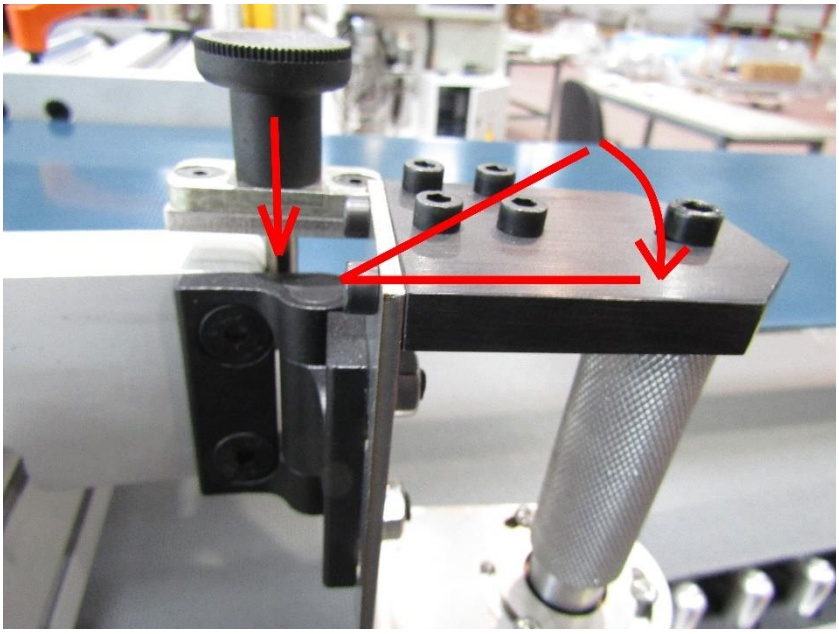
2. Both Leister unit cable in down socket:



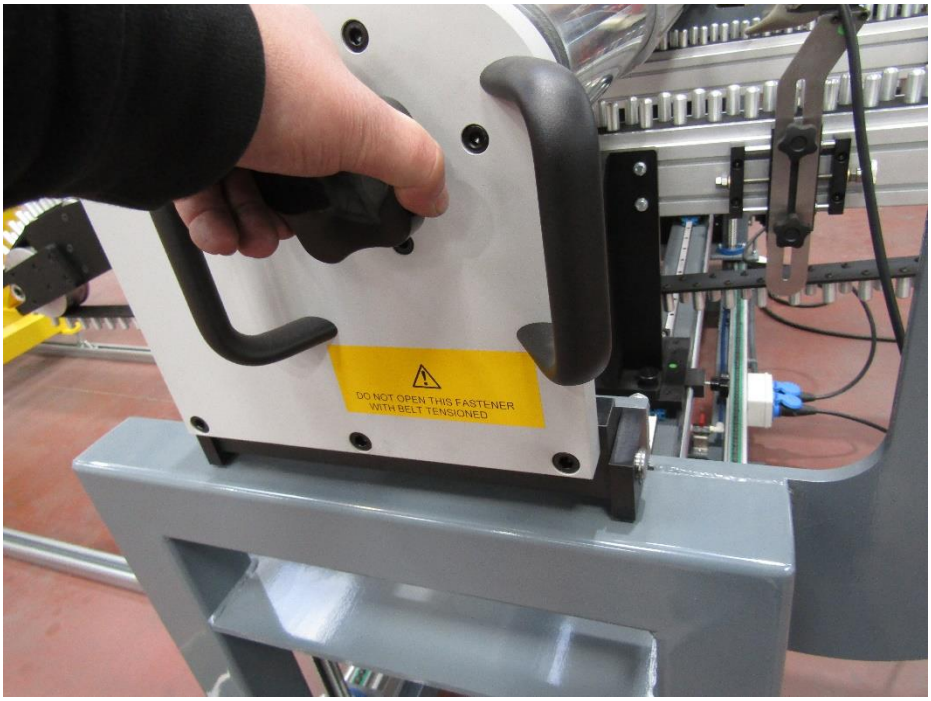
Select and change, if necessary, the pulley corresponding to the profile to be processed by the machine:

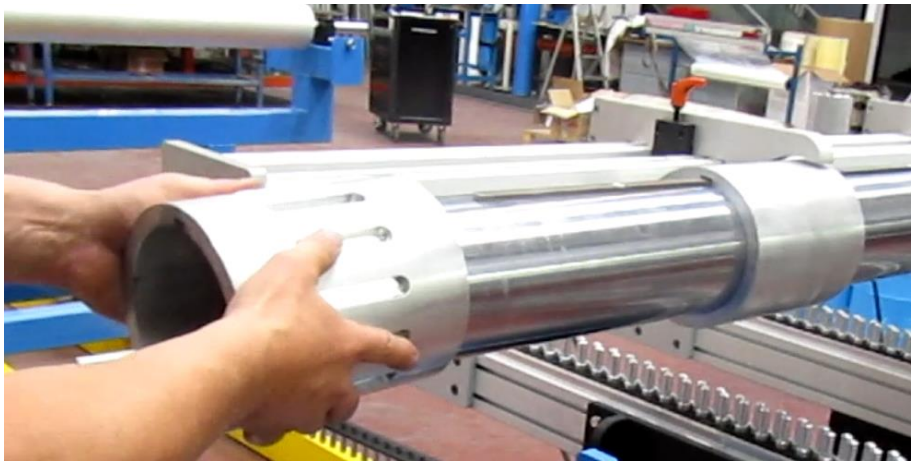
- **Load the belt inside machine**

Before load the belt it is important to separate the measuring wheel to avoid breakage of the system:



Open the bracket of drum to introduce the corresponding bushings and endless belt.

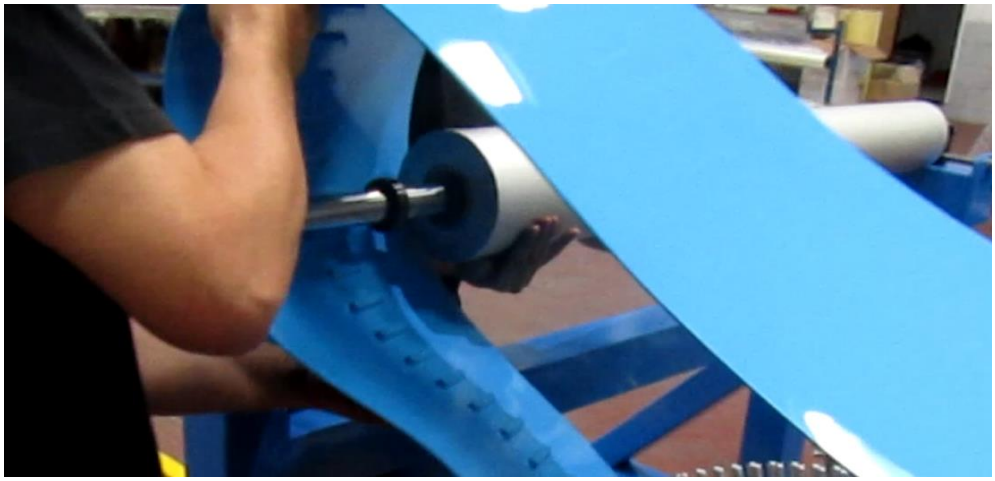




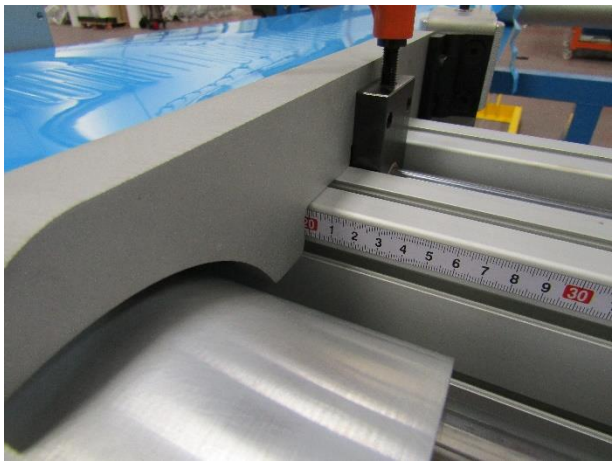
Close the bracket again and fix with knob to close the frame using plate to prevent any movement or deformation caused by the pressure of pulleys or belt tension.

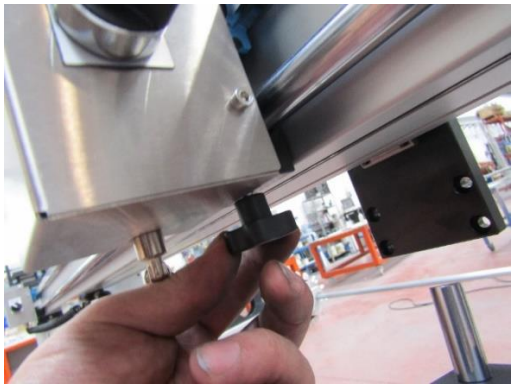
⚠ **No tension the belt without bracket complete closed.**

⚠ **No open this bracket with belt tensioned.**

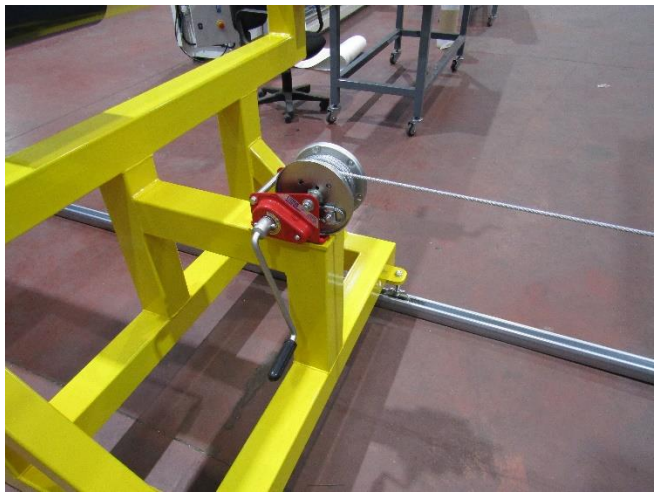


Place the belt on the welding table and centre the side guides so that the belt advances evenly and without any side travel. It is also possible to move the welding carriage by loosening the holding bolt:

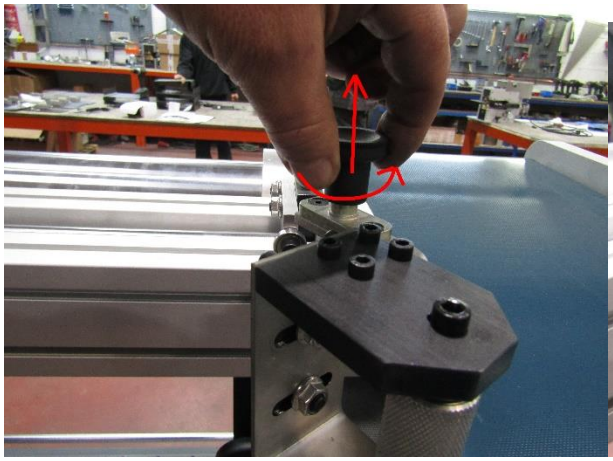




Once the belt is placed in position, tension the belt using the winch.



Now we can attach the measuring wheel:

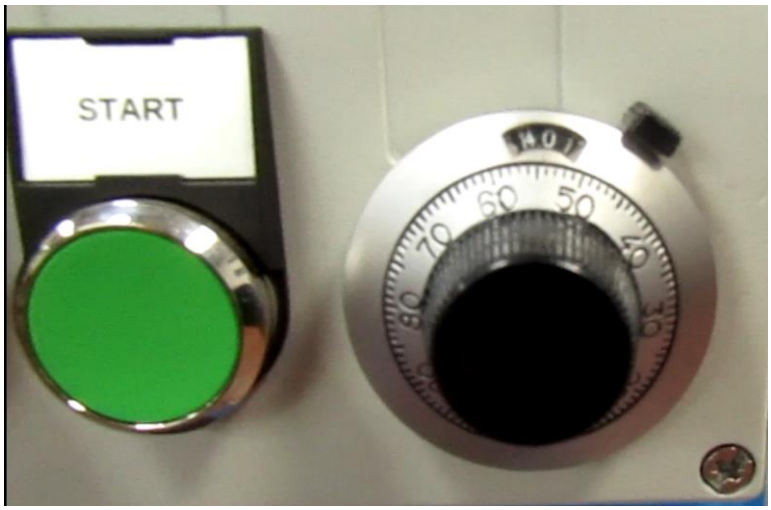


We recommend starting the motor at maximum speed to centre the belt during tension operation to facilitate positioning.

To start the motor:

Turn on the electrical box rotating the red switch and pressing the blue button to RESET.

After turning on the electrical box, press START button and adjust the speed with potentiometer



For V-guides, sidewall switch OFF in left position and FORW/REV in right position.

Start the Leister welder by pressing the black button located on the rear and adjust the temperature using the knob of Leister depending on the type of weld to be performed:

NOTE: For perfect welding, the welder should be pre-heated for about 3 minutes before starting to work.

Introduce one end of the profile into the rear of the machine until completing one turn of the welding pulley as shown in the photo:

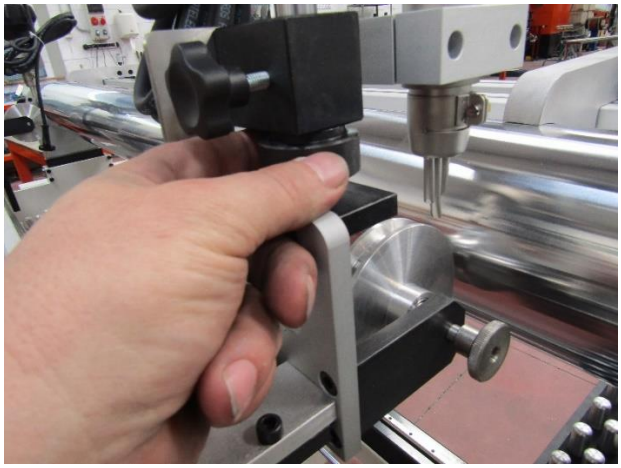
Lower the pulleys using the drive system located on the front of the welding carriage so that they press the belt and are driven by the motor roller.

After the welder has been pre-heated, begin welding by turning Leister to start while at the same time pressing the green button on the control panel to start the motor.

During the welding process it is always possible to change any of the three settings: temperature, belt speed and pulleys pressure.

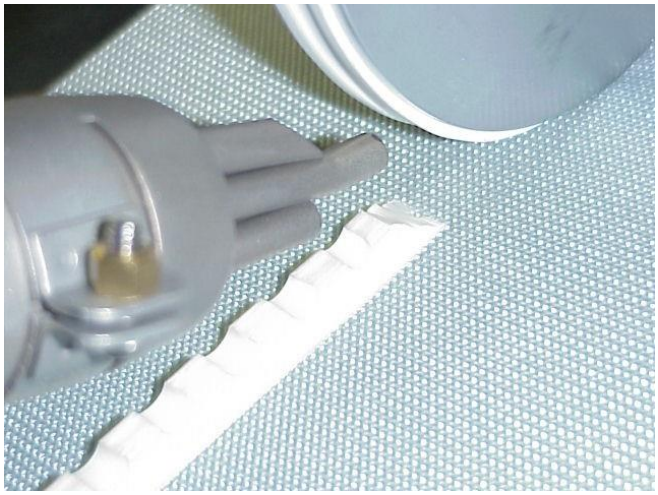
Also, you can adjust the distance or hight of nozzle.

Change the position of the welder by first loosening the screws and then tightening them again once it is adjusted:



All these settings have a direct effect on the quality of the weld so a test should be performed before welding the belt just to make sure all the settings are correct.

The position, angle and proximity of the welder is also very important for the temperature setting. Increasing the distance or angle in relation to the profile reduces the effectiveness of the bond between the materials.



Note that any changes made to the temperature will not become effective until a few minutes have elapsed. Adjusting the welding rate using the control potentiometer BELT SPEED has immediate results.

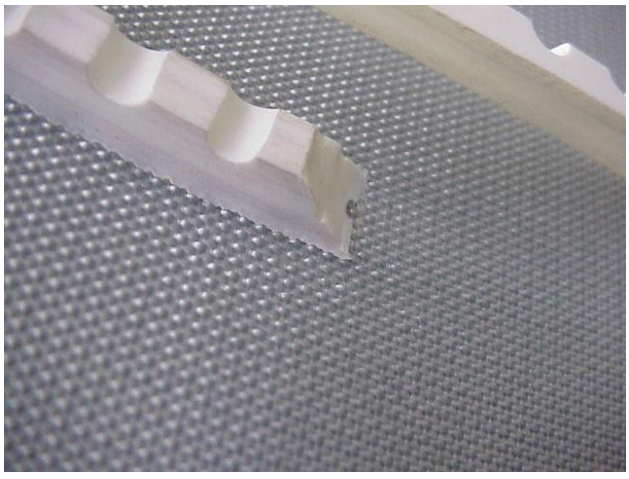
Adjust the pressure by moving the pressure control knob located on the piston of the welding pulley this adjustment only becomes effective on operating the pulley drive system, even though it only affects the welding pulley.

NOTE: Check the weld by attempting to pull the welder joint apart. It should not come apart cleanly, that is, without tearing.

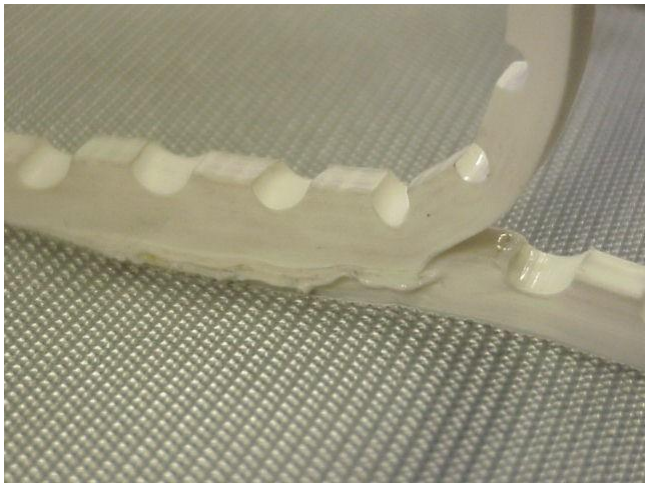
If this test is to be performed on a profile welded to fabric, wait at least 12 hours to allow the components of the size to set before performing the test.

Normally the sizes used for welding on fabric are two-component and require some hours to fully set.

In the case of welding continuous belts, make a cut at the beginning of the weld at an angle of about 45º:



Continue welding to this point and the stop the forward drive motor while at the same time pressing the control to withdraw the Leister:



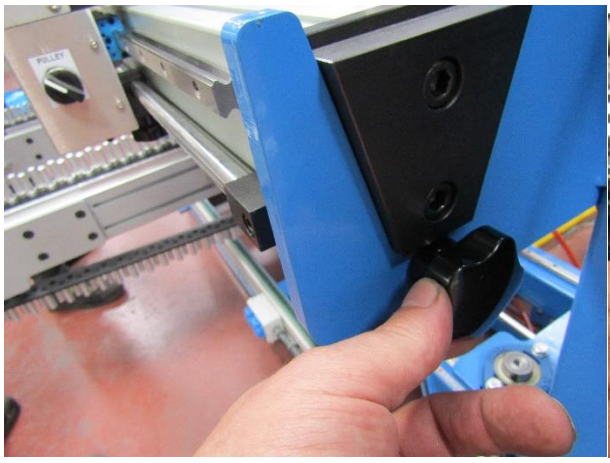
After overlapping the weld and once the profile has cooled, cut it and form the excess to match the original shape.

Shut the welder down by adjusting the temperature of the Leister to 0 and allowing it to operate for about 5 minutes to cool the heater element.

NOTE: Not completing this cooling process, that is turning off the blower when the heater element is still hot, could cause the heater element to fuse because of the increased temperature inside the tube.

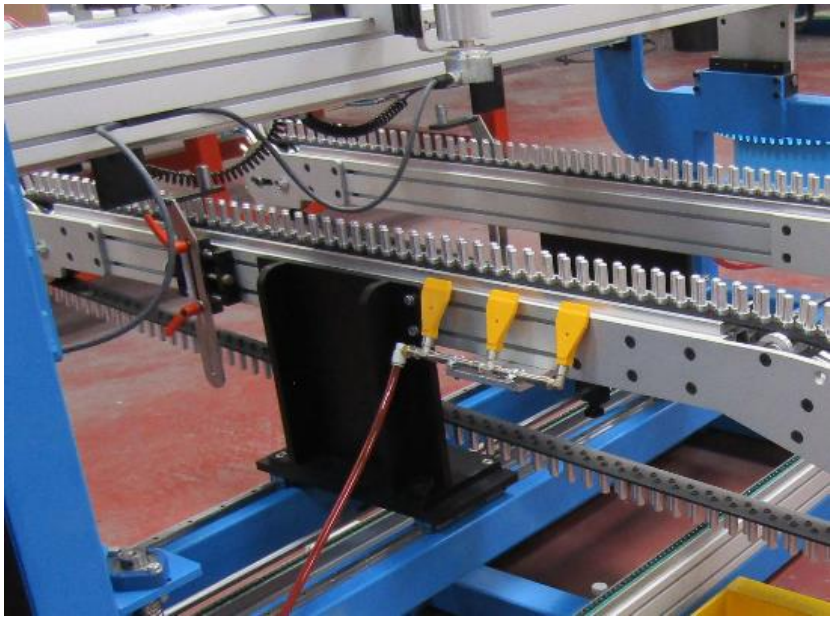
- ## Operation for sidewalls:

Remove the ropes welder device, to remove this one, disconnect the air tube and lose the two handles in both sides:



Disconnect the electrical cable of Leister and air tube, get up the aluminium profile to take away this rope's device.

After this preparation, assemble the sidewall heads on the support plates and fix the handles:



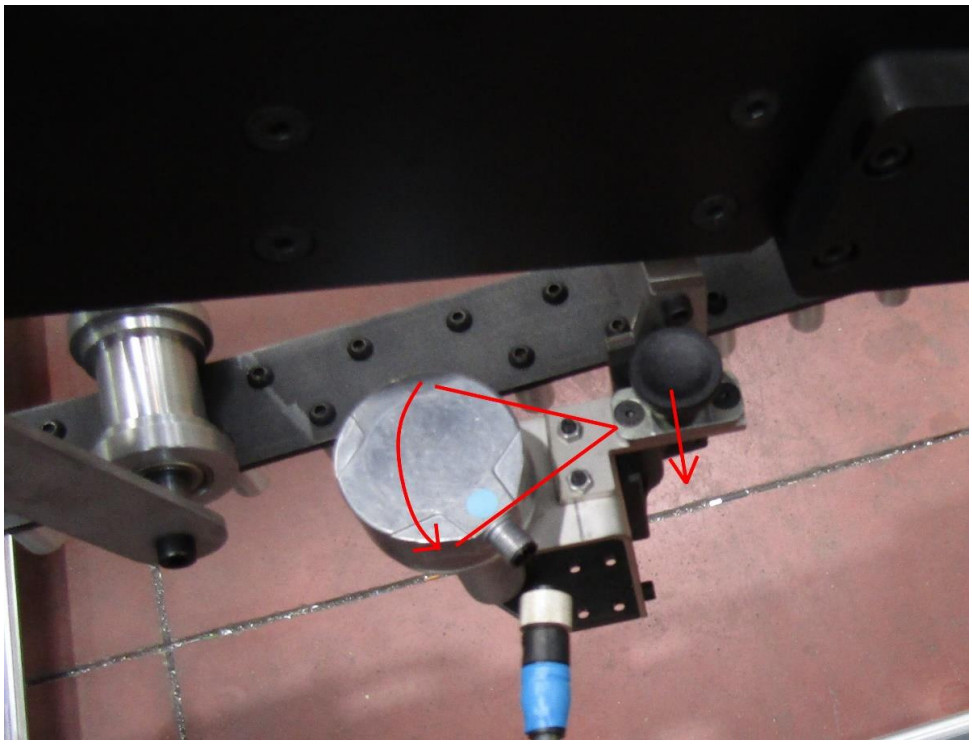
Choose the set of chain with correct height.

The machine was delivered with two sets of pins belts and two sets of pulleys (PVC and PU):

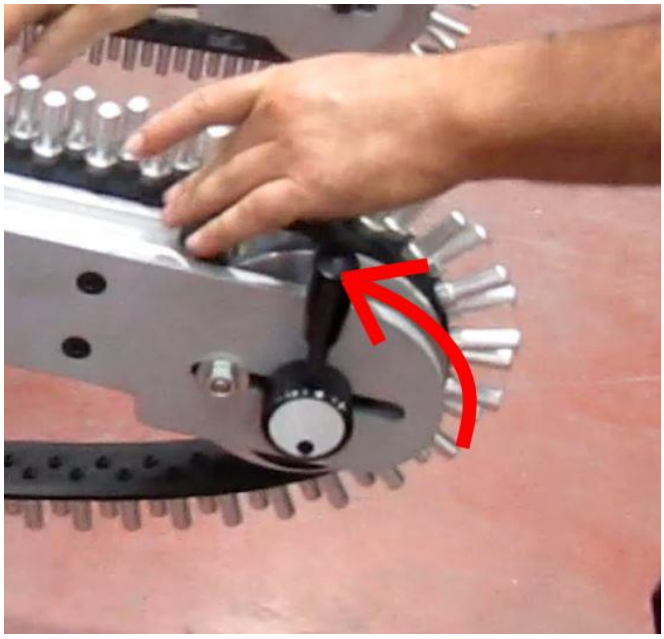
The <u>low pins</u> for side wall 35-40-50-60mm / The <u>high pins</u> for sidewall 80-100mm.

- ## <u>Replace the belt pins and pulleys</u>

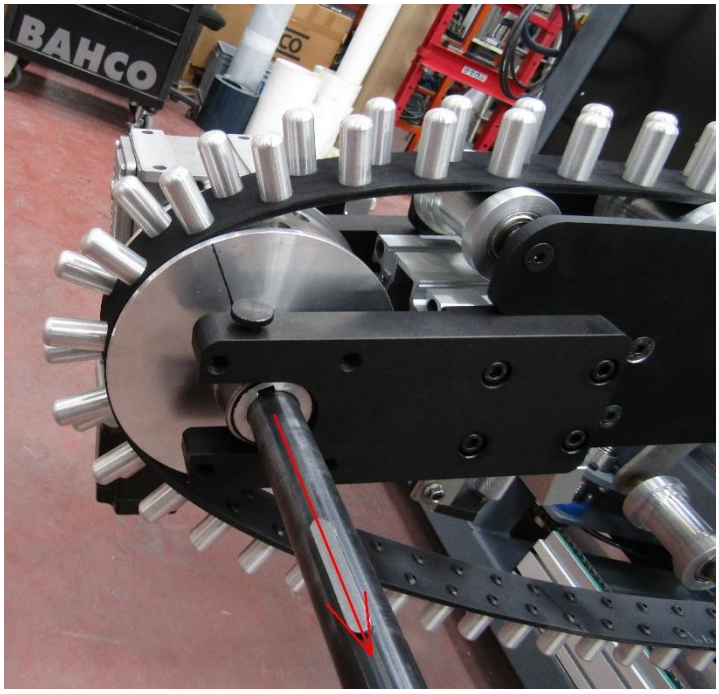
To replace the belt pins, first pull the encoder bracket and fix with the bolt to separate of belt.



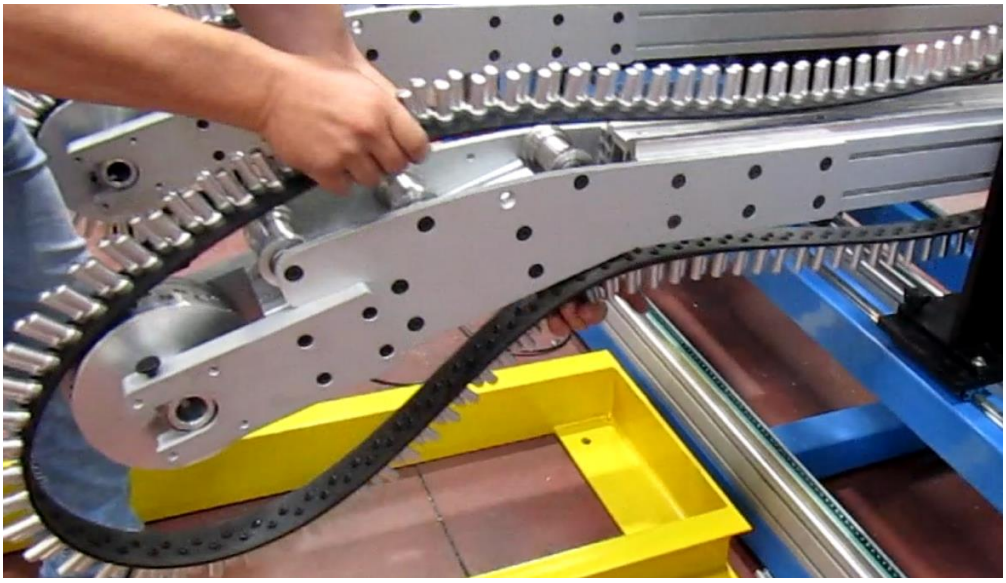
After this, untense the belt rotating the handler 90º to up.



Take out the motor shaft with belt relaxed.

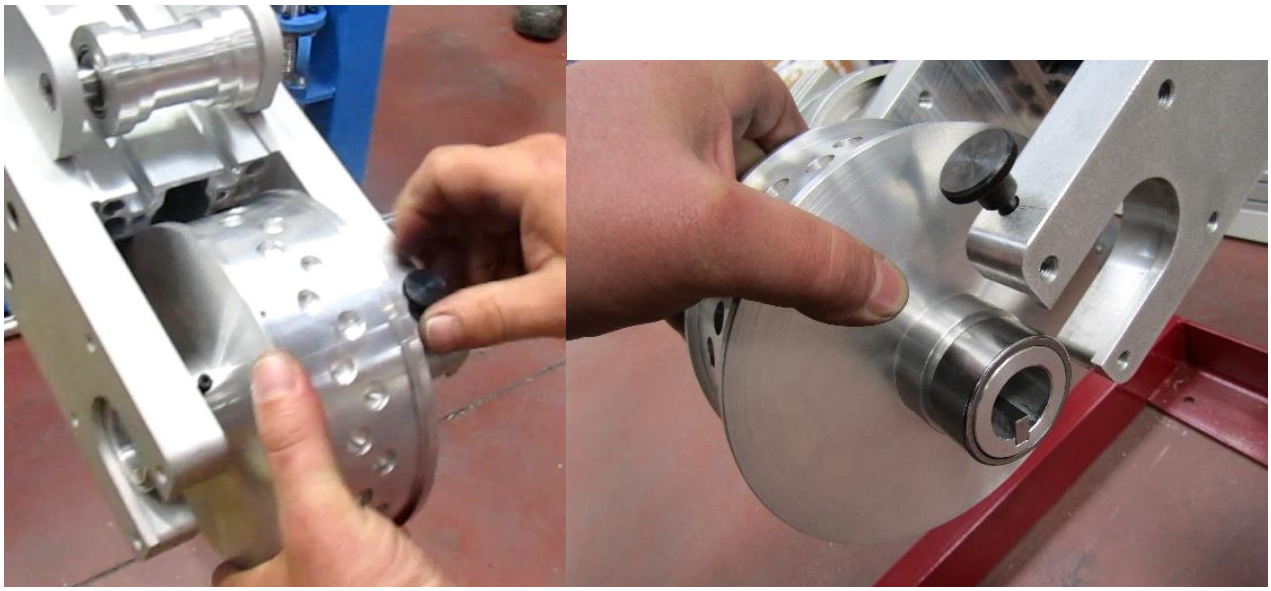


Them remove the belt.

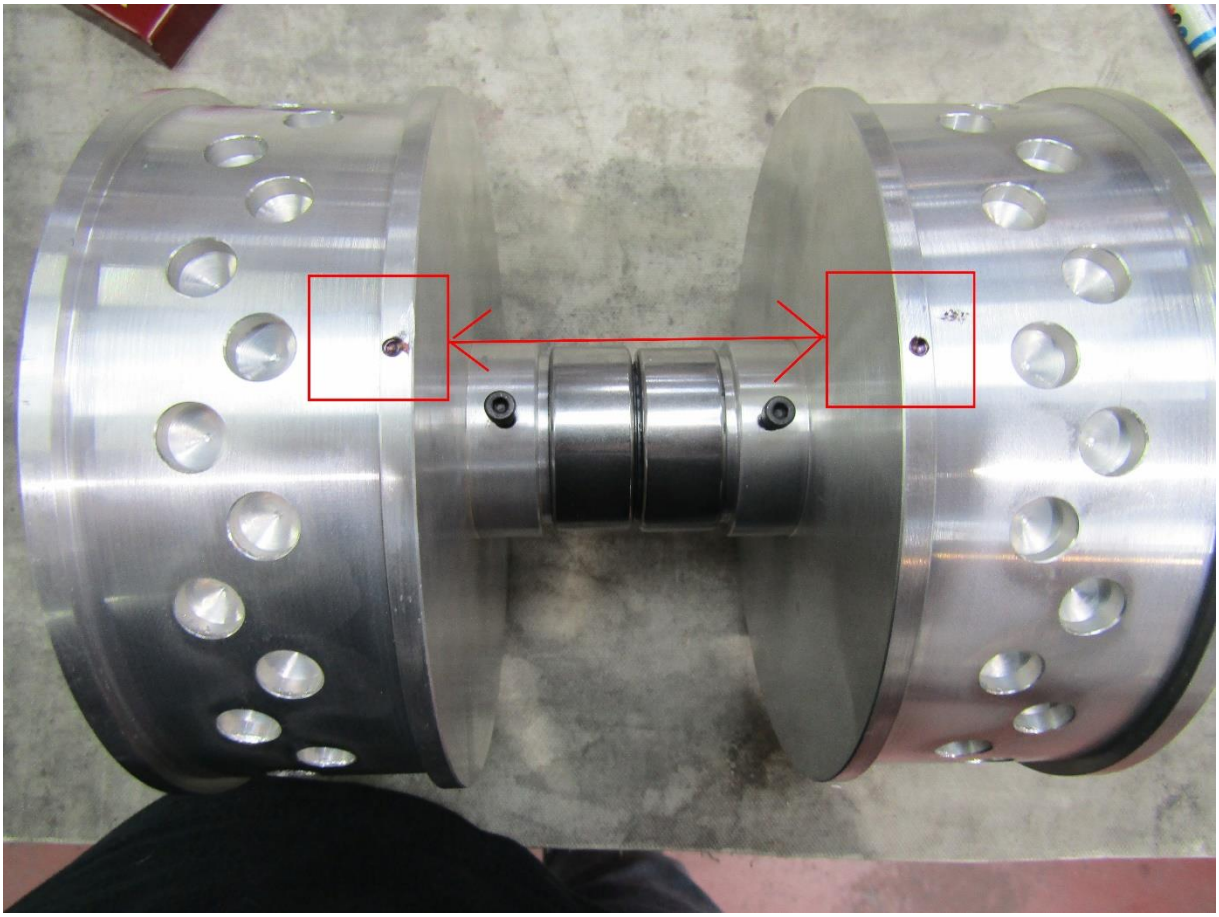


To replace the motor pulleys, loosen the black knob three or four turns and take out the pulley.

This knob is to prevent the pulley from falling to the ground without the belt.

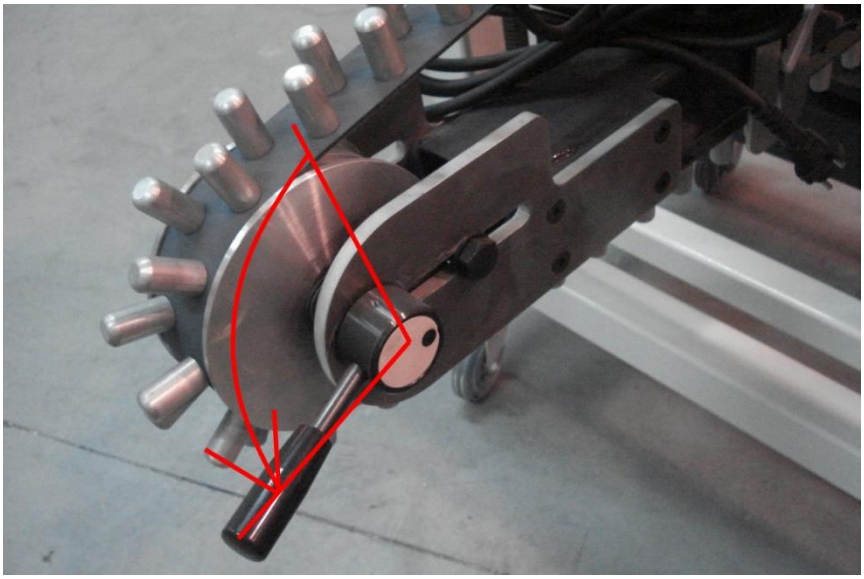


Assemble the new pulleys but always with the black mar symmetrical as shown in the picture, this way the sidewall will be symmetrical geometry with the bearing in both sides and fix the knob again.

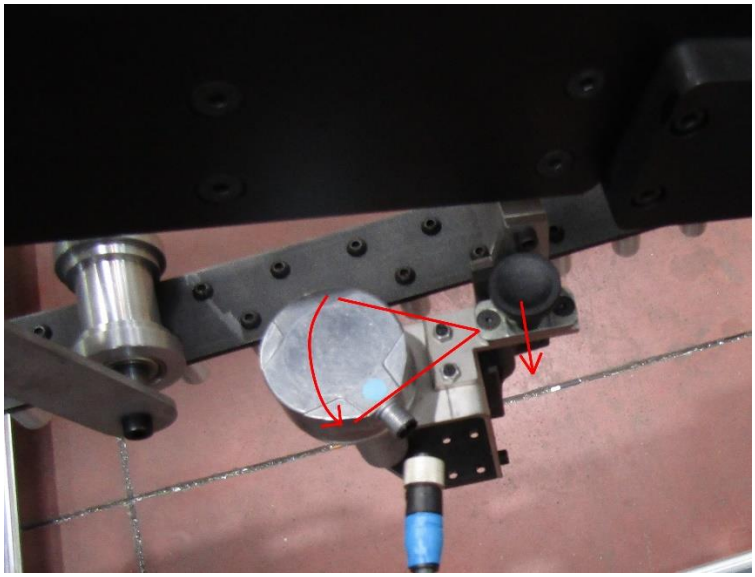


When new pulleys are installed, introduce the belt, after tensioning the belt, check that the bolts of pins are inside the pulley holes.

To tension or slacken the belt, turn 90º lap the handle:

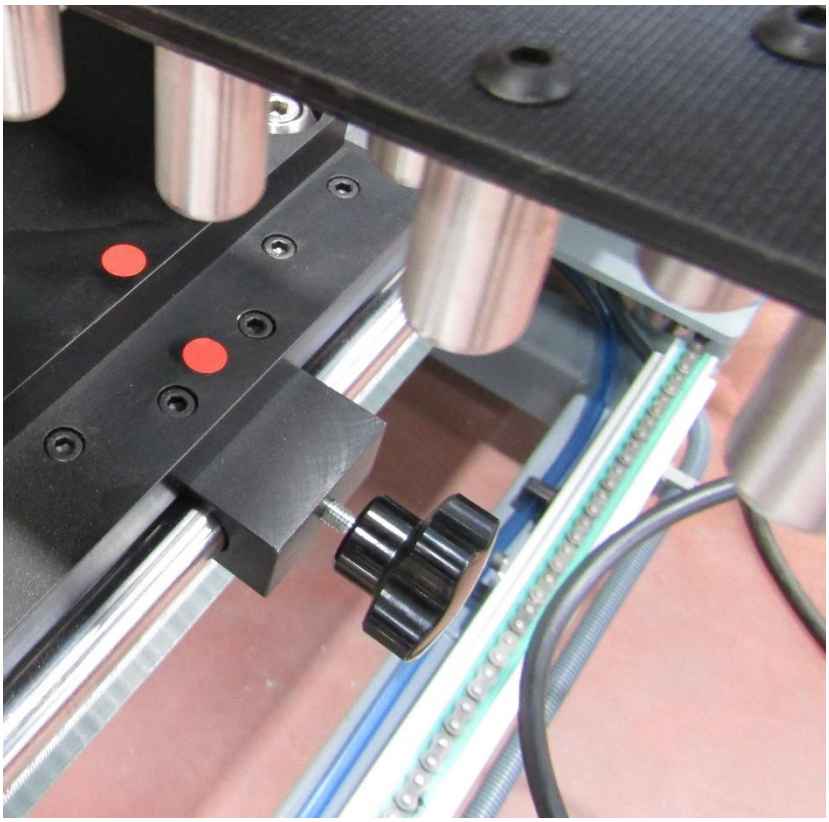


Once the new belts are installed, put the encoder in contact with the belt again.

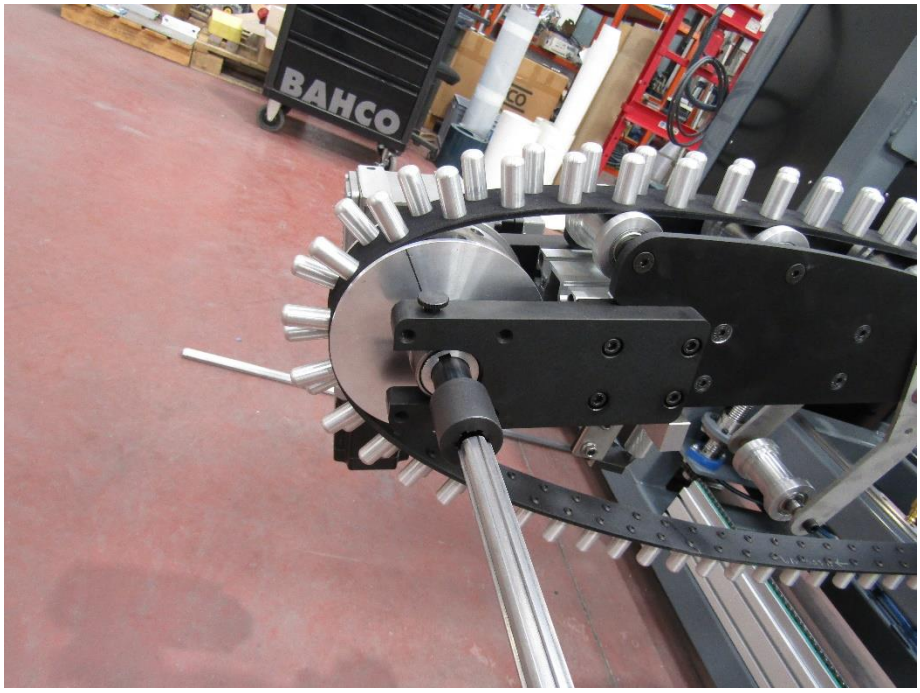


After this, adjust the width and fix the heads tighten the bottom knobs at the right measure.

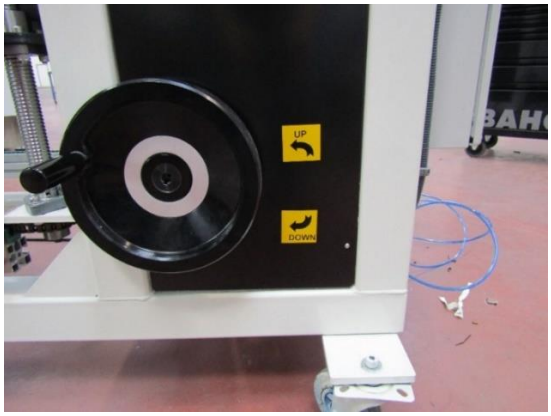
NOTE: The measure is always the center of the wave.



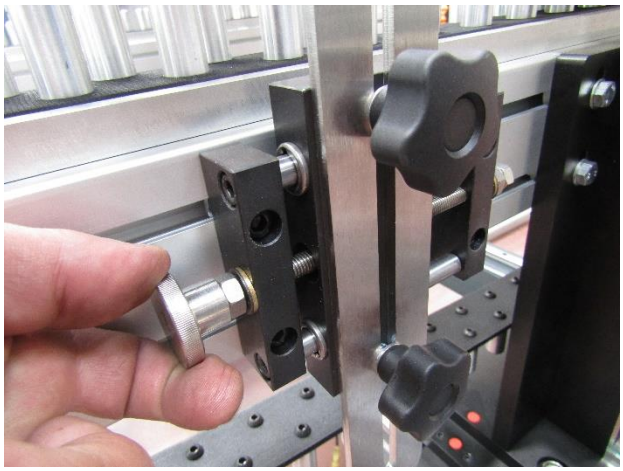
Once the heads are fixed in correct position, insert the transmission shaft the two pulleys until connect to the arm transmission, when the shaft is inserted in the two pulleys, rotate the pulleys until they coincide with the motor shaft mark and insert it up to the line marked on the shaft.



1. The height of heads rotating the top handles:



2. The Leister height:



Then load the belt in centre of drum and tension.

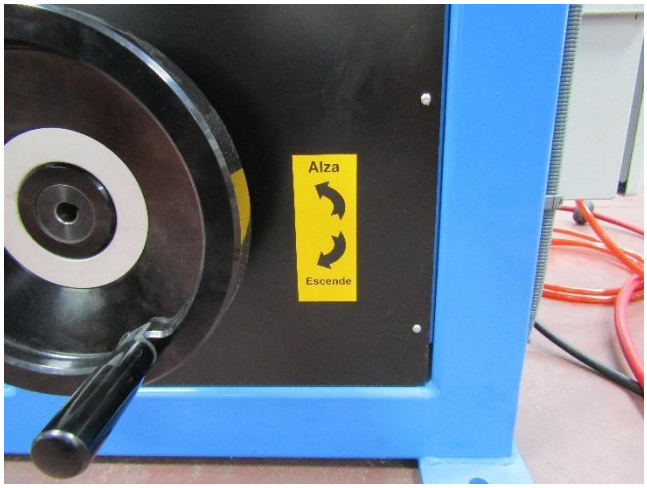
Select the buttons SIDEWALL and FORW/REV to right position.

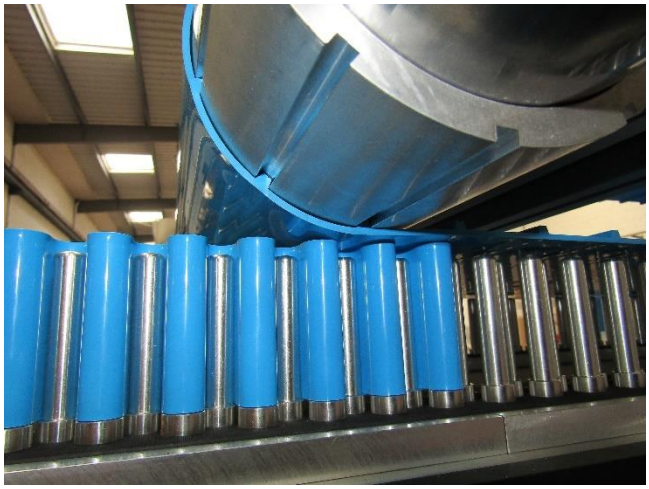
Start the movement of belt and sidewall motor with green button minimum during 5 seconds to automatic synchronize both speeds.

NOTE: When starting the machine, the PLC makes a pattern to synchronize the linear speeds of both encoders.

Load the sidewall in both belts and forward until sidewall are just down the belt to adjust the height of chains.

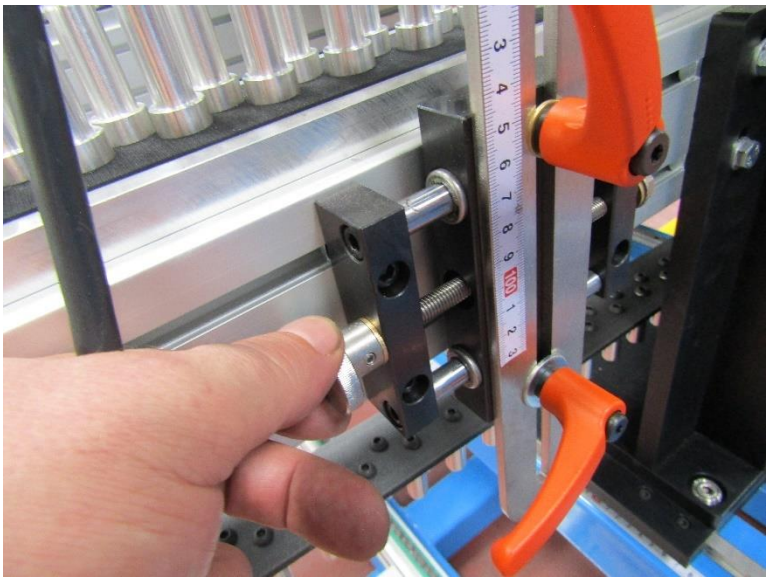
Depending on the pressure that we want, we UP or DOWN the wheel.





Then we can assemble the Leisters and adjust the height.

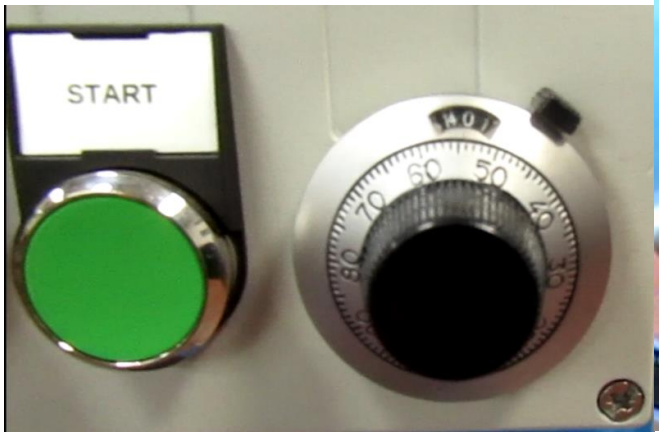
During welder operation, we can adjust the proximity of nozzle with this bolt:



Turn the Leister as out as possible of the belt and press the black wheel for 5 seconds to preheat it.

When Leister is ON you can adjust the temperature rotating this wheel and adjust the air caudal pressing on time the wheel and rotating.

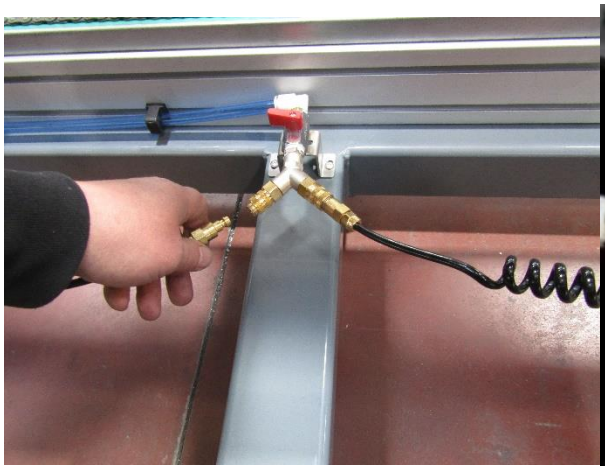
When both Leister are at temperature, turn both at the same time and press the green button to start, immediately, fix the Leister with black knob.

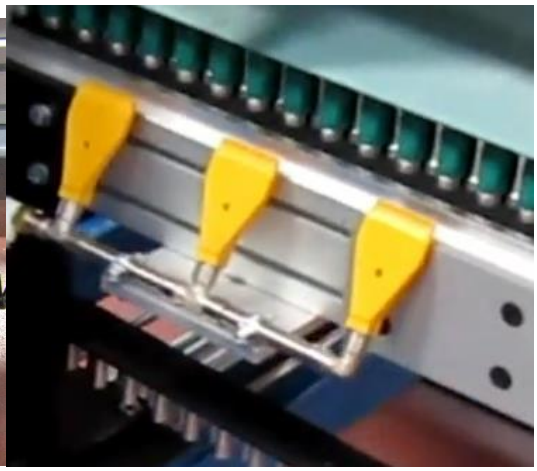


We recommend adjusting the speed between 0-05 and 0-06 and temperature 340/380ºC.

Caudal between 20 and 30.

For operation with PU belts, we also recommend using the air-cooling nozzles, open the air valve.





- Care and maintenance

- Because various chemical components are used during the welding process, there is an accumulation of highly corrosive waste in the welding area (rollers, pulleys, guides, etc.) and so they should be cleaned regularly to ensure correct operation.

- Do not grease or lubricate any component of the machine, as these components are self-lubricated, and the mixture of different lubricants could cause jamming or seizing.

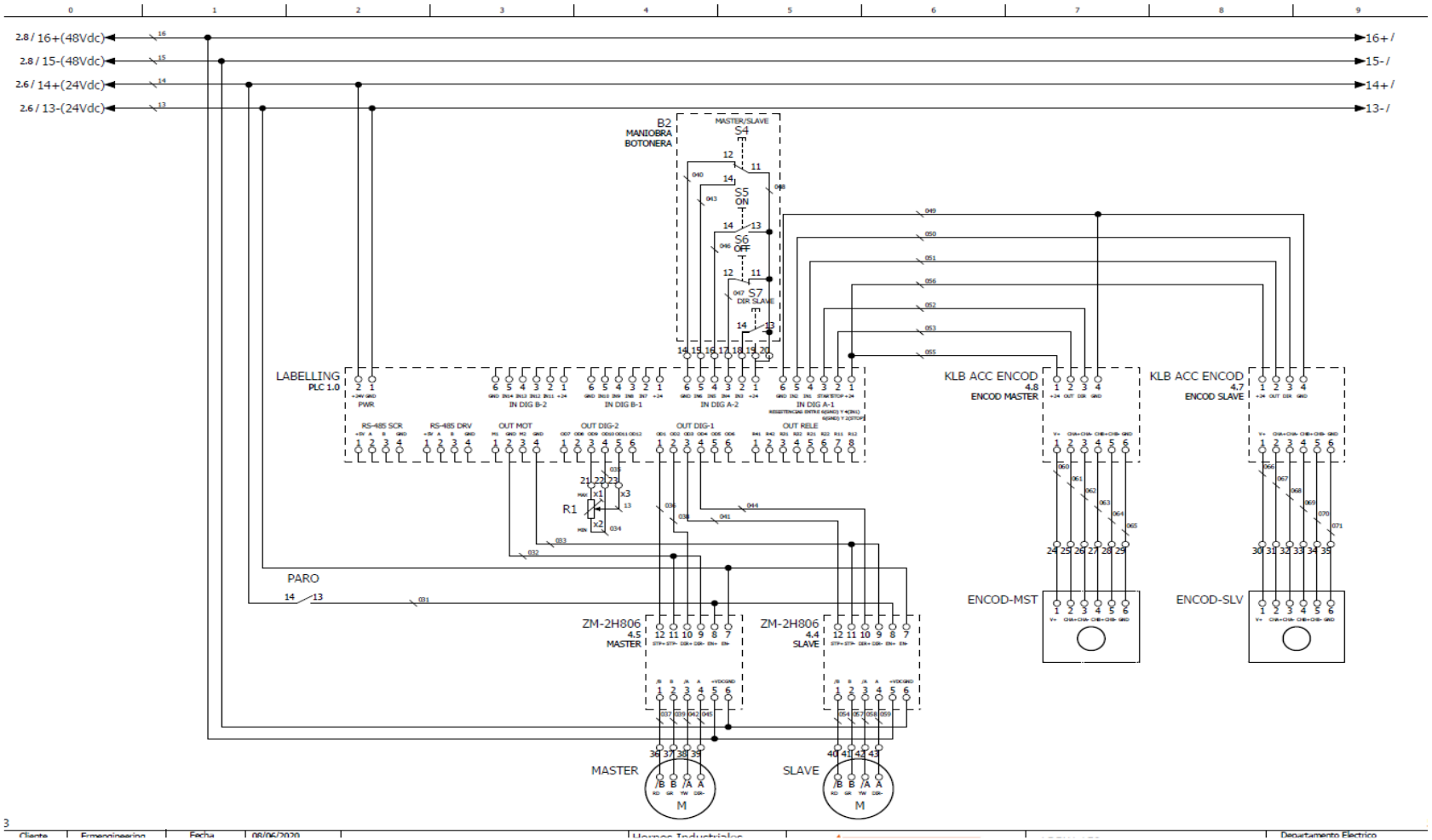
- Make sure the machine frame is always closed to prevent any deformation of the structure.

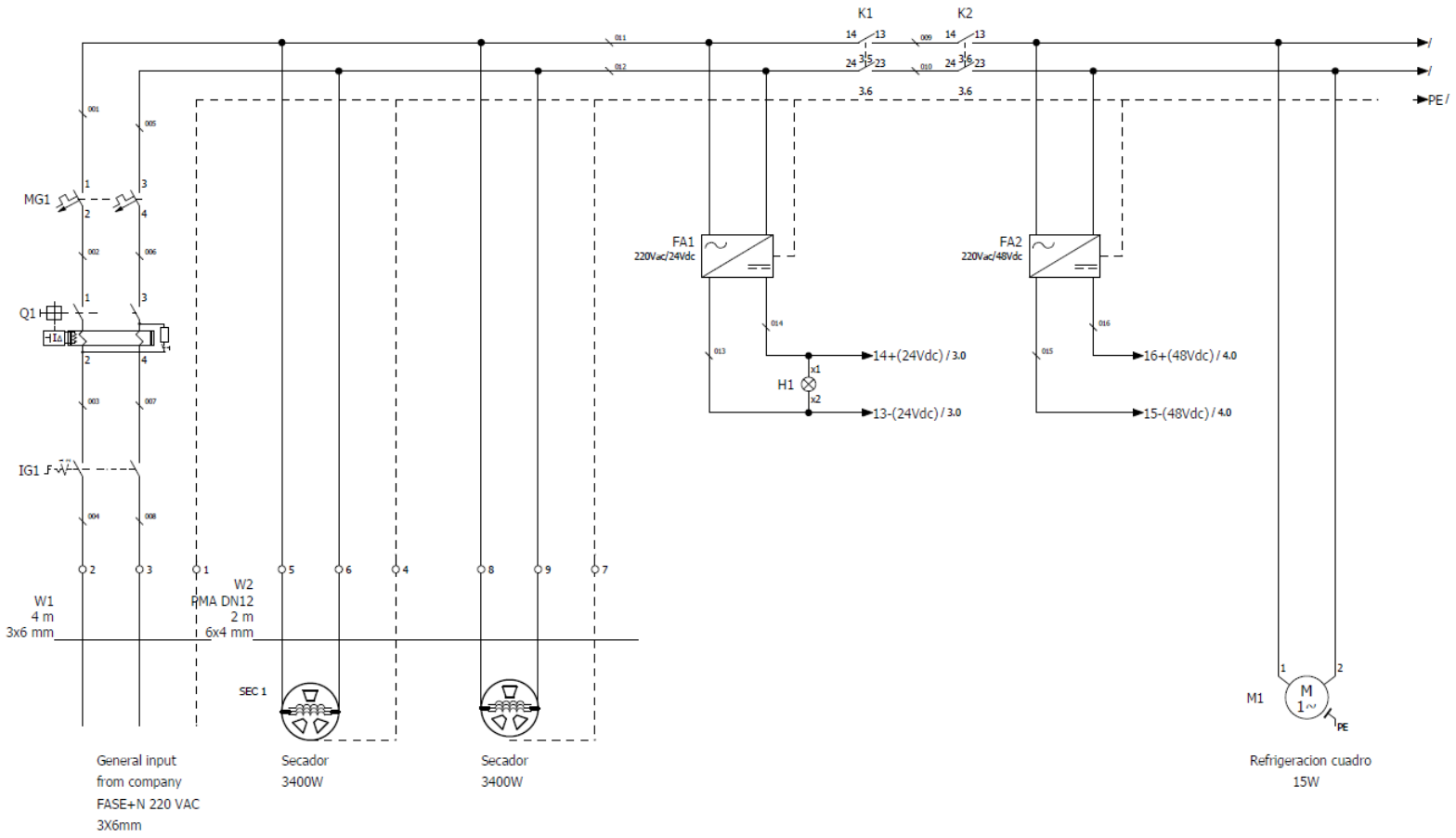
- Always make sure the black intake grille on the rear of the Leister is clean, if it is blocked this would reduce the air flow rate and alter the weld quality.

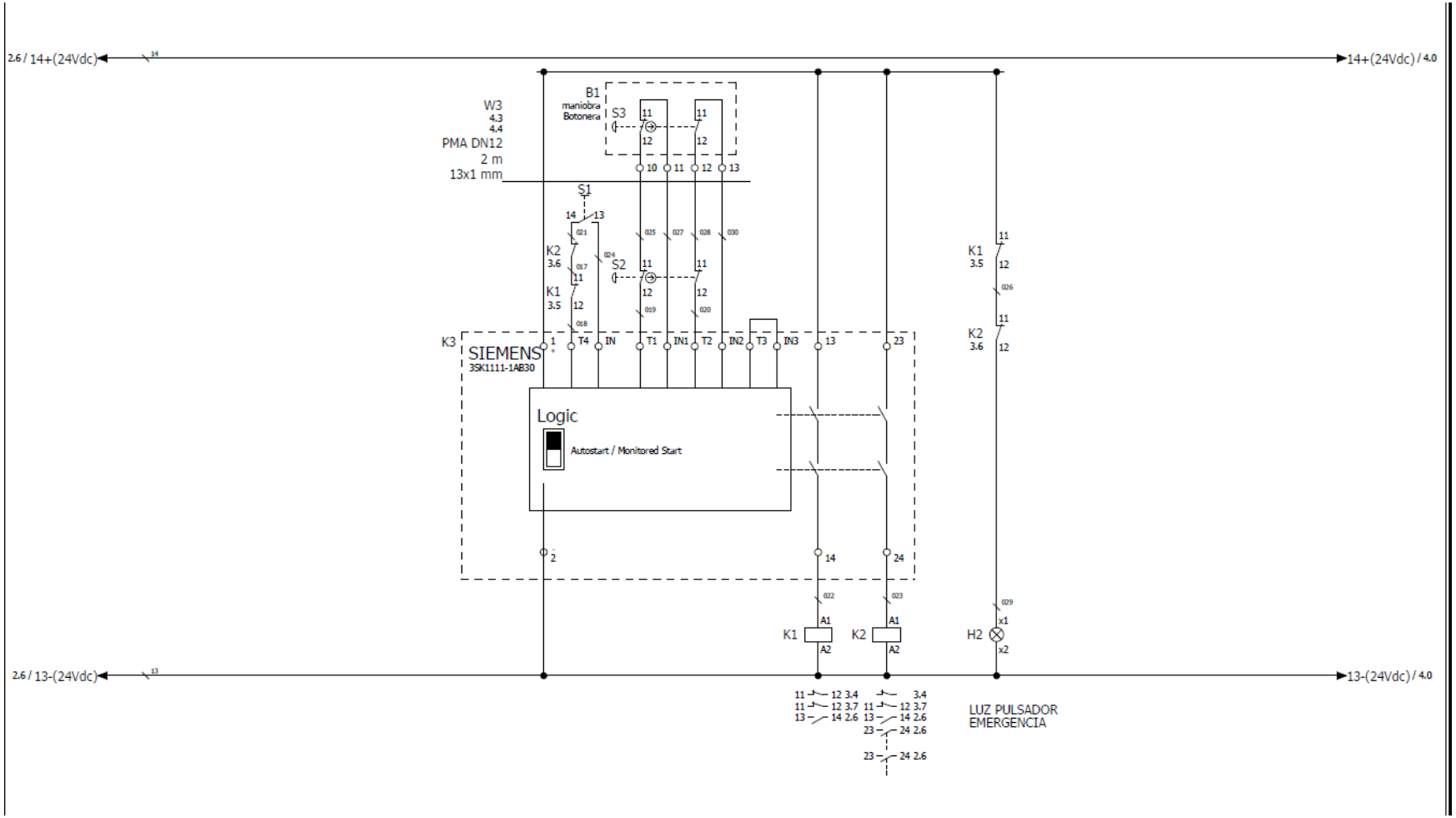
- Protect the pulleys from knocks that could mark or damage their profiles as they would cause imperfections in the welding.

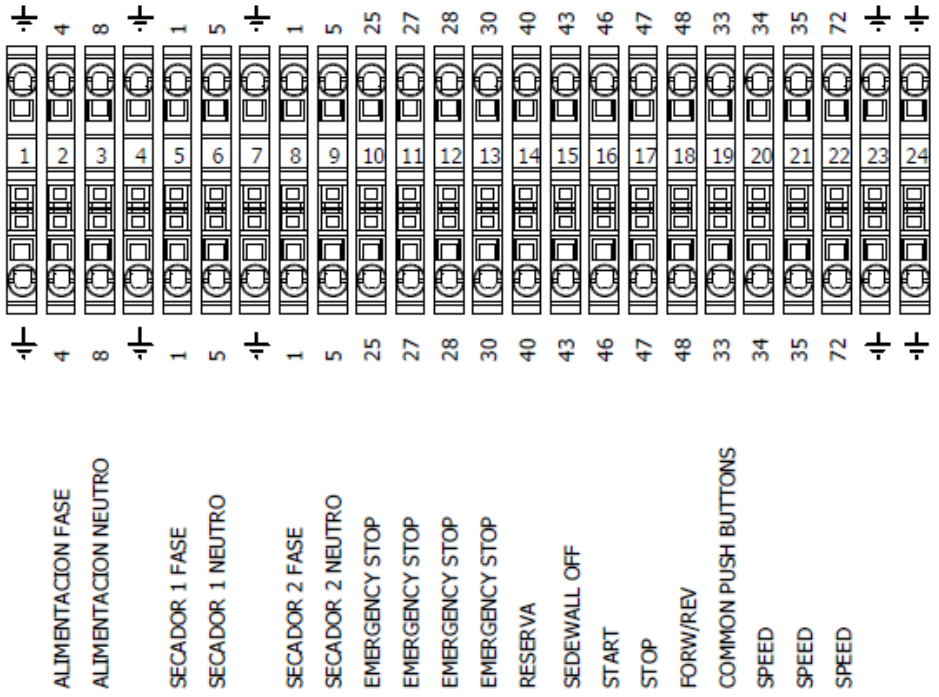
- In the event of unusual noises in the welder, check the condition of the brushes. They have relative wear.

- **Electrical drawings:**



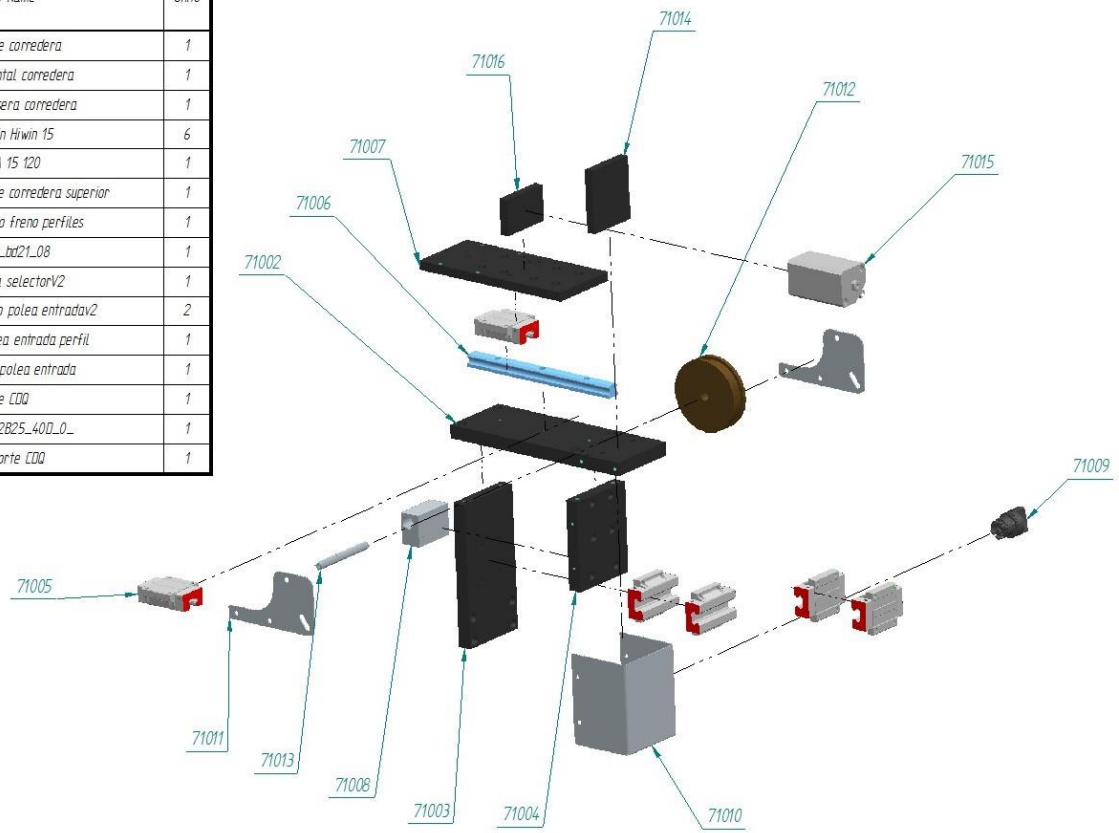

K1
K2
MG1
Q1
IG1
FA1
220Vac/24Vdc
FA2
220Vac/48Vdc
H1
14+(24Vdc) / 3.0
13-(24Vdc) / 3.0
16+(48Vdc) / 4.0
15-(48Vdc) / 4.0
PE
M1
W1
4 m
3x6 mm
W2
RMA DN12
2 m
6x4 mm
SEC 1
General input
from company
FASE+N 220 VAC
3X6mm
Secador
3400W
Secador
3400W
Refrigeracion cuadro
15W


2.6 / 14+(24Vdc)
14+(24Vdc) / 4.0
W3
4.3
4.4
PMA DN12
2 m
13x1 mm
B1
maniobra
Botonera
S3
S1
S2
K2
3.6
K1
3.5
K3
SIEMENS
3SK1111-1AB30
Logic
Autostart / Monitored Start
H2
LUZ PULSADOR
EMERGENCIA
2.6 / 13-(24Vdc)
13-(24Vdc) / 4.0

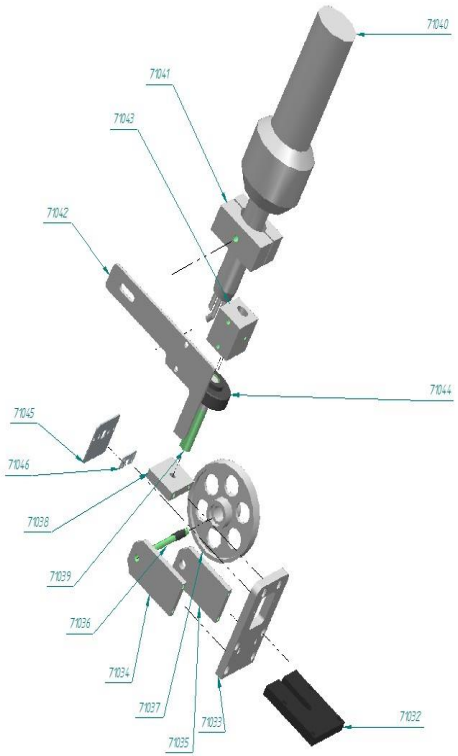

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
4 4 8 1 5 1 5 25 27 28 30 40 43 46 47 48 33 34 35 72
ALIMENTACION FASE
ALIMENTACION NEUTRO
SECADOR 1 FASE
SECADOR 1 NEUTRO
SECADOR 2 FASE
SECADOR 2 NEUTRO
EMERGENCY STOP
EMERGENCY STOP
EMERGENCY STOP
EMERGENCY STOP
RESERVA
SEDEWALL OFF
START
STOP
FORW/REV
COMMON PUSH BUTTONS
SPEED
SPEED
SPEED

- **Spare parts:**

Part Number	Part Name	Units
71002	Base corredera	1
71003	frontal corredera	1
71004	trasera corredera	1
71005	Patin Hiwin 15	6
71006	GUIA 15 120	1
71007	Base corredera superior	1
71008	Dado freno perfiles	1
71009	xb4_bd21_08	1
71010	Caja selectorV2	1
71011	Lado polea entradav2	2
71012	Polea entrada perfil	1
71013	Eje polea entrada	1
71014	Tope CDQ	1
71015	CDQ2B25_400_0_	1
71016	Soporte CDQ	1



Part Number	Part Name	Units
71032	Pestaña horquilla Ruiz	1
71033	PASAMANO Poleas Ruiz	1
71034	PASAMANO HORQUILLA ROSCADO	1
71035	PASAMANO HORQUILLA	1
71036	EJE POLEAS	1
71037	Polea sellado	1
71038	BASE GIRO DADO	1
71039	VASLA 20 GIRO	1
71040	LEISTER TBG	1
71041	BRIDA LEISTER	1
71042	BRAZO GIRATORIO v2	1
71043	DADO GIRO	1
71044	MANDO GRAFIL	1
71045	Apoyo perfil v2	1
71046	Tapa apoyo perfil	1



Part Number	Part Name	Units
71042	TUBO 1310X60	1
71043	PLACA TUERCAS MOTIZ	2
71044	LATERAL ROSCADO BRAZO	2
71045	NERVIOS BRAZO	2
71046	Lateral para tensor brazo	2
71047	POLEA tensora TO	1
71048	POLEA CORREA MOTRIZ 25x10	1
71049	Soporte rodamiento HK Motriz	1
71050	Soporte rodamiento HK	1
71051	PLACA POLEA TENSORA-1	2
71052	EJE POLEA TENSORA	1
71053	ESCUADRA BRAZOS	1
71054	PASAMANO CORREA	1
71055	6004 20-42-12	2
71056	20x12	2
71057	Excentrica brazo	2
71058	Tope excentrica brazo	2
71059	Control_Lever_GN_750_50_B14_M	1
71060	6000 10-26-8	1
71061	Mistral	1
71062	Corredera Mistral	1
71063	Base giro Mistral	1
71064	Brazo Mistral	1
71065	vc_692_40_p_m8x30	2
71066	din_466_m8_ni	1
71067	Bearing_HK4020_V1050	2
71068	Leister electron	1
71069	BRIDA LEIST.	1
71070	VF-VF 30-49 F1 1660 P63 B14 VS CW4 60 28 BN motore trifase 56A 4 230-400-50 IP55 CLF B14	1
71071	Eje VR	1

Part Number	Part Name	Units
71072'	Flat Adjustable Lever GN 125-45-M12-E	1