(Original) Use and maintenance manual

Type: Auto-Puncher for Conveyor Belts
Model: AFP-200

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: Automatic Puncher
- Brand: ERM Engineering
- Model: AFP-200
- 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 1005-1 – EN 1005-2 – EN 1005-3 – EN 1005-4 – EN 14118 - EN 12100– EN 13850 – EN 13857 – EN 14118 - EN 14120 – EN 60204-1 – EN 11161 – EN 61310-1 - EN 13849-1 – EN 13849-2 – EN 60204-1

General Manager: Eduardo Ramos Martínez

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

- Transport and unloading the machine:

Due to the fragility of some components of the machine, wood packaging is required with reinforced board to attach it to the base by bolts through the openings in the rubber feet.

To keep the weight of the load well balanced, moving the punch cutting head to halfway across its run before proceeding to pack is recommended.

For sea transport, the linear rails and drive screw located at the bottom of the cutting head must be lubricated and full plastic cover provided.

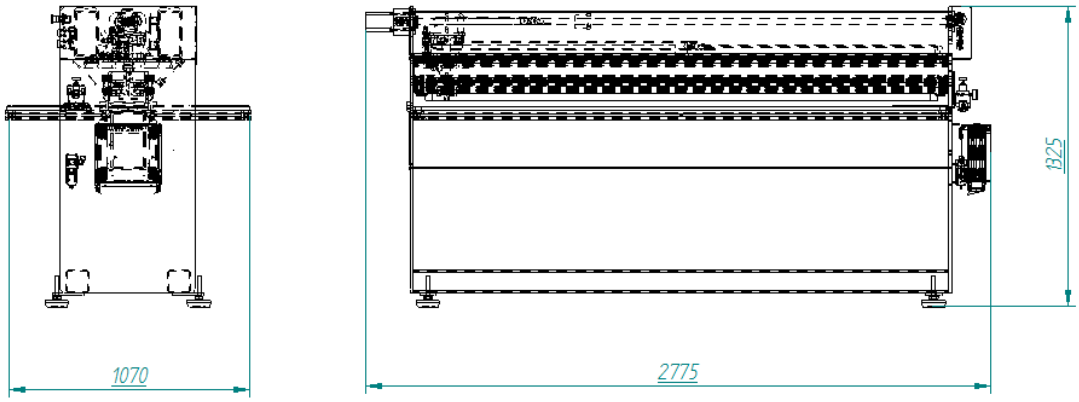
A pallet truck must be used to move the machine, lifting it by the bottom cross bars of the bench just as shown in the picture.

Fit the four rubber feet and proceed to level.

- Dimensions and weights:

Total weight: 615 Kg

Measurements: 2775x1070x1325 mm.



- Installation and connection:

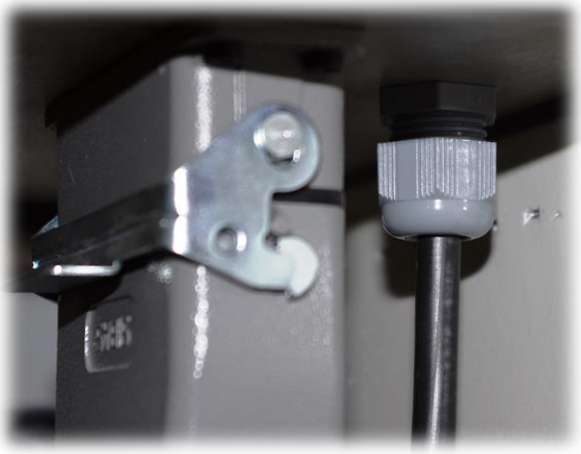
Provide compressed air through a tube with a minimum interior diameter of 8 mm., connected to the intake.

⚠ WARNING: DO NOT LUBRICATE THE COMPRESSED AIR that supplies the machine, all pneumatic elements are self-lubricated.

WARNING: Avoid the entry of air with humidity or condensation. For this, it is recommended to use a compressor with a drying unit.

NOTE: While the compressed air is connected, we will hear a slight air leak coming from the pressure regulator. This is not an abnormality.

NOTE:
One must bear in mind that the air consumption of this punch cutter is 220 litres/minute.
Connect the power cable to the control board at 230v monophasic.



NOTE:
It is recommendable for the air and power lines to be run from above to prevent the staff tripping or falling.

- ## Description:

Pneumatic punch cutter with a motorised head to cut conveyor belts in zigzag, with ball screw activated by a stepper motor and positioning control. Pressure and punch cutting time control.

- Exchangeable cutting heads for different cutting geometries, with the possibility of programming diverse forward steps.
- Support bench with material positioning guides.

This punch cutter is especially designed to cut thermoplastic materials with interior fabric.

- Technical characteristics:

Dimensions	2775 x 1070 x 1325 (l x w x h)
Weight	615 Kg
Max. thickness	8 mm.
Voltage	1 x 230
Power	0.40 kW
Max. pressure	7 bar
Belt width	2010 mm.
Advance speed	1 metre/minute

- Using instructions:

⚠WARNING:
HAND AND ARM TRAPPING HAZARD WITH THIS DEVICE DUE TO THE MOVEMENT OF THE CUTTING HEAD. GREAT CARE MUST ALSO BE TAKEN BETWEEN THE CUTTING HEAD AND SUPPORT PLATE, AS THERE IS THE DANGER OF LIMBS BEING SEVERED

Once the machine electrical and air connections are made, proceed to start it up using the ON switch.

Check that the regulator pressure is between 2 and 6 bar according to the cutting head installed.

Safety systems and messages

This die cutter has been equipped with the following safety systems:

1- EMERGENCY STOP
This system allows an emergency stop to be performed at any time using the two push buttons located at both ends of the bench.

MESSAGE: EMERGENCY BUTTON PRESSED

To deactivate it, we must unlock the push button and then press RESET to return the head to the starting point.

2- TREAD BAR
This device does not allow engagement of the cutting head if the bar holding the belt is not lowered.

MESSAGE: CLAMP OPEN
To deactivate it, all one need do is lower the bar and press START.

3- DOOR OPEN

This device detects that the rear door of the blade head is open.

MESSAGE: COVER OPEN

The door must be closed to deactivate it.

4- CYLINDER DETECTOR

This device does not allow displacement of the head because it detects that the cutting cylinder is not raised. This may happen due to lack of air or failure of the detector.

MESSAGE: CYLINDRE WRONG

To deactivate it, provide the machine with air or replace the detector.

1. **CYLINDER DETECTOR**

This device does not allow displacement of the head because it detects that the cutting cylinder is not raised. This may happen due to lack of air or failure of the detector.

Message: CYLINDER DETECTOR

To deactivate it, provide the machine with air or replace the detector.

Programming:

We must know the functions of the push buttons on the board to program the die cutter.

1. **RESET**

   This must be pressed after an emergency stop or position the head at the starting point after STOP.

2. **A-A**

   Selection of the A-A program
   This program is used in the majority of cases, to always operate on the left guide rail and cut the belts performing the first end with the coverage on top and the second end with the fabric on top, both for direct finger die cutting as well as finger over finger die cutting.

3. **A-B**

   Selection of the A-B program
   This program is only used in cases of diagonal belts, or belts with an hi profile, to operate the first end on the left guide rail and the second on the right guide rail, always with the coverage on top.

4. **STOP**

   Allows the cutting process to be halted at any moment, to change the time or cutting pressure, for example.

   On pressing START, it will continue the process without losing the positioning memory

5. **START**

   Starts the cutting process or acts to reboot following a STOP.

6. **WIDTH**

   We shall use this button to program the width of the belt in centimeters using the keyboard, accept the value and press ENTER

7. **STEP**

   We shall use this button to program the cutting step depending on the assembled head, using the keyboard set the number in millimetres, between 3mm to 50mm, to accept the value press ENTER.

8. **TIME**

   We shall use this button to program the cut time with the keyboard, the values accepted are between 3 to 10, to accept press ENTER.

9. **ESC**
   We shall us this button to correct or delete any wrong value during programming

Belt cutting measurements for the different punches.

80 x 10 90º.....	100 mm. Longer
80 x 10 75 º.....	100 mm. Longer
120 x 15 90 º.....	135 mm. Longer
50 x 20 finger overlapping 90º.....	125 mm. Longer (cloth opening 130mm.)

Changing punch:

⚠**WARNING:**
When changing punches, switching off the equipment at the OFF switch is recommended for greater safety.

Open the sliding door.

Loosen the 2 bolds using a 13 mm. spanner.

Take out the punch and insert the new one.

Retighten the 2 bolts.

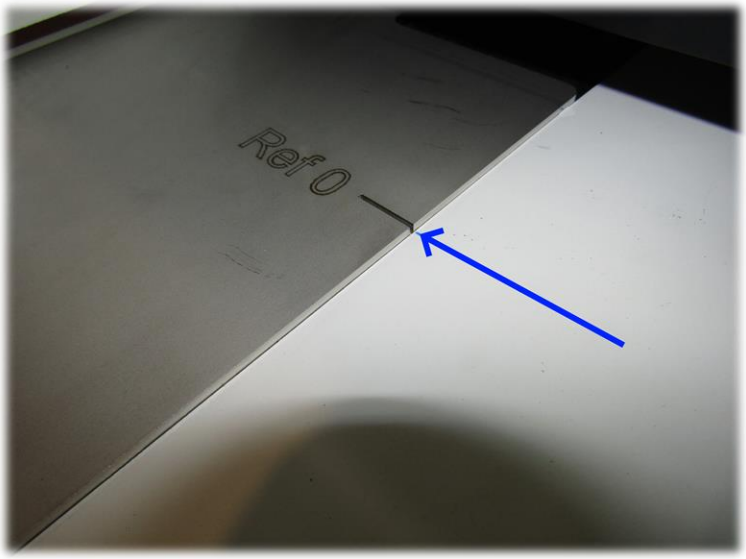
Close the sliding door and program the correct step in button STEP XX and ENTER

NOTE:
The cutting pressure must be adjusted for each type of punch or material.

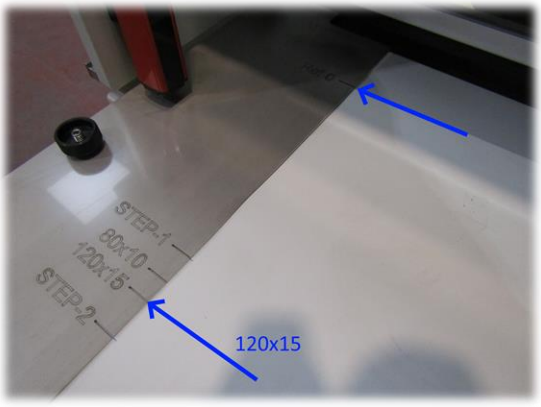
If not, excess pressure may cause the blades to break or premature wear of the cutting nylon.

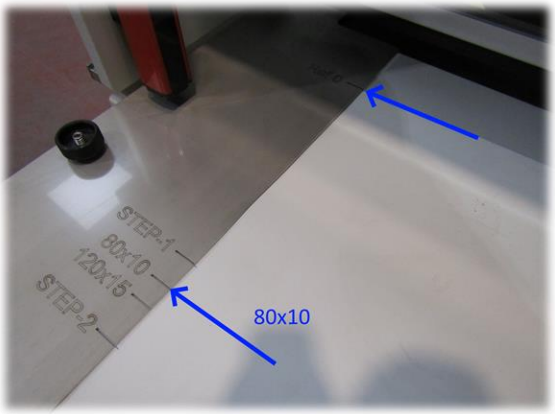
PUNCH CUTTING A-A direct finger.

First place the first end of the belt by the guide with the cover upward and place the end of the belt just by the Ref. 0 mark.



Then pencil in the insert measurement for the relevant material according to the punch required.



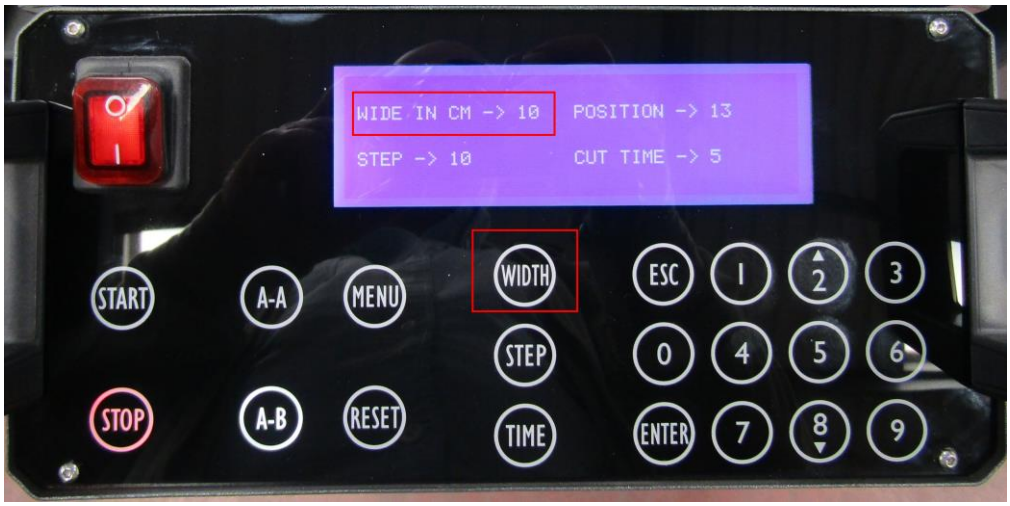


Then place the belt under the tread bar until the mark made coincides with Ref. 0, ensuring it is fully in contact with the guide.

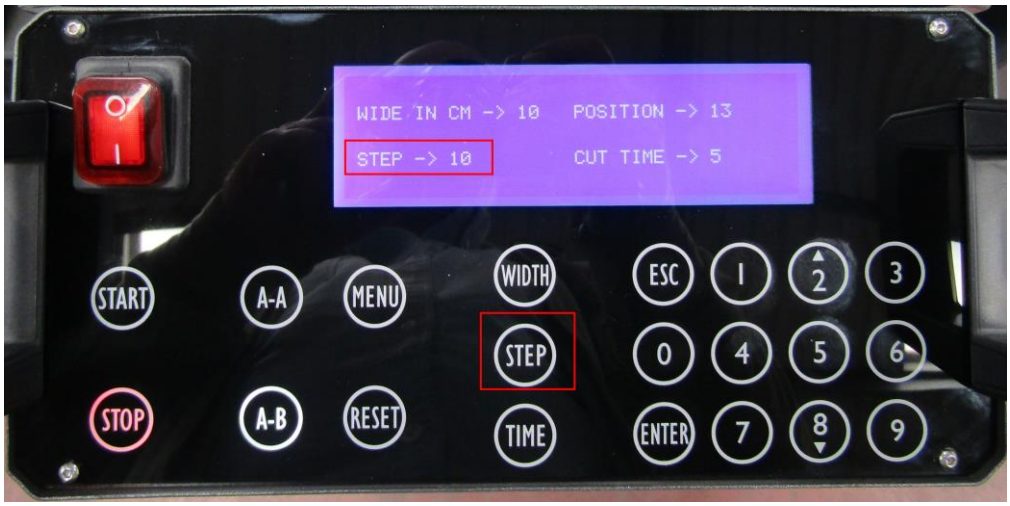
Lower the tread bar using the down push button.

We select function A-A if it is not activated.

We use the WIDTH button to adjust the width of the belt in centimeters and press ENTER.



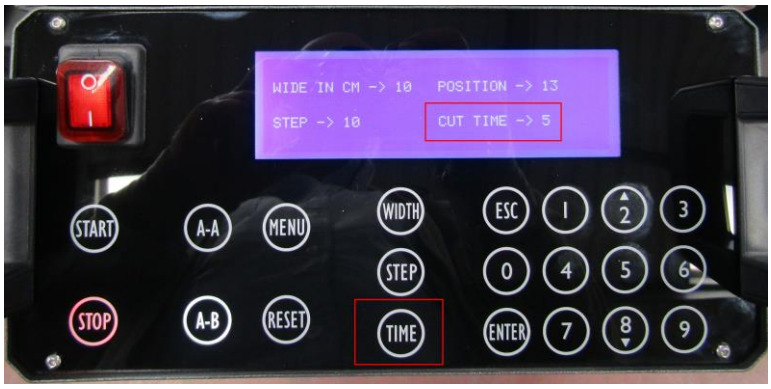
Check the STEP is correct. If not, use the STEP button and input the required value with between 5 and 30 then press ENTER.



NOTE:
The values programmed shall not be lost, even when the equipment is switched off; the program always memorizes the last values input.

We press START to begin cutting at the first end.

NOTE:
During the cutting process, no programmed value may be changed, except the cutting time. To do so, we press STOP after change that value with TIME button enter the value between 03 and 07 and ENTER to save that value, Them, press START to continue.



NOTE:
The programmed values will not be lost, even if the equipment is switched off. The program always memorises the last values input.

Press START to begin cutting at the first end.

Once the first cut is completed, release the belt by pressing the bar raise button.
Place the second end of the belt by the Left side by the guide and position the end of the belt just by the Ref. 0 mark.

Then mark the insert measurement is pencil for the relevant material, according to the required punch.

Then place the belt under the tread bar until the mark made is next to Ref. 0 and make sure it is fully in contact with the guide.

Lower the tread bar using the drop push button and press START.

Once the operation has concluded, release the material by raising the tread bar.

PUNCH CUTTING A-A diagonal

Select the A-A function if not activated.

Insert punch 80x10 75º
Program the step to 10 mm.
Adjust the cutting pressure between 4 and 6 bar

Program the width in centimeters 4% wider than the belt width.

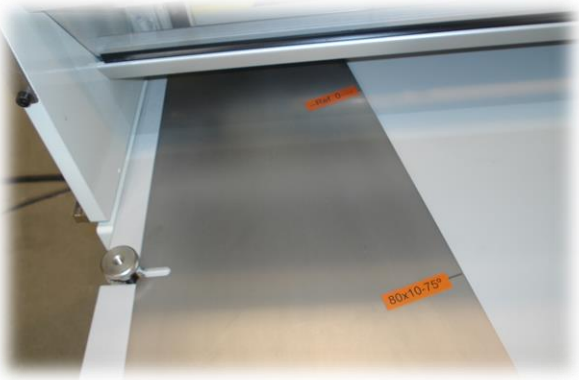
Example: if the belt is 400 mm. wide, program 42 instead of 40.

Replace the 90º straight guide and fit the new 75º diagonal guide.

To do so, release the two nuts that hold it to the bench.

Extract the straight guide rail by separating it from the side of the machine.

Insert the new 75º guide plate the same way.



Move the guide right up to the side of the machine and fix it down by tightening the two nuts.

Place the cut belt on the 75º diagonal by the supplementary guide to mark the advance measure of 80x10 75º from Ref. 0.

Then insert the belt until the mark made is level with Ref 0.

Lower the tread bar using the drop push button and press START

Once the first cut has concluded, note that the head will be positioned at point 0 at the opposite end of the control board. On reaching this point, release the belt by pressing the raise bar button.

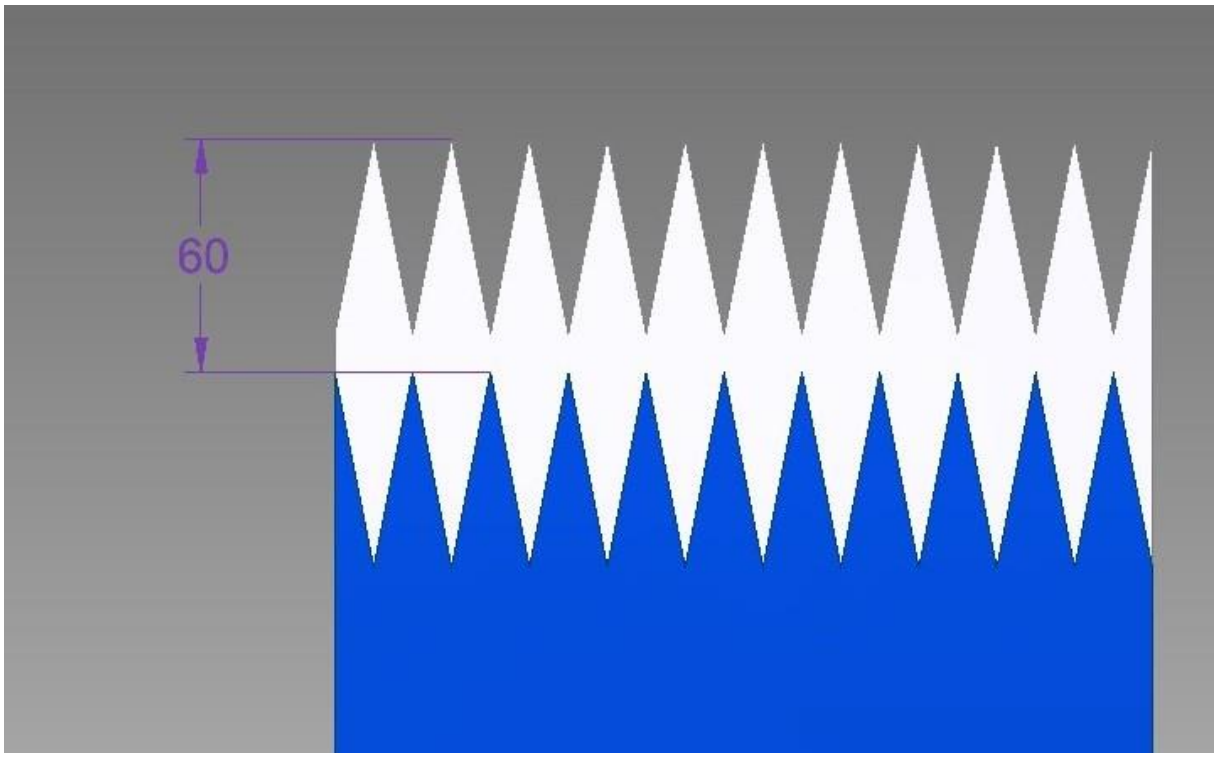
Place the second end of the band at the other end of the bridge next to the right diagonal guide and with the cover upward too, positioning the end of the belt right at the Ref. 0 mark, to pencil the insert mark for the material that will be 80x10 75º.

Then insert the material until the mark matches Ref. 0, lower the tread bar and press START.

PUNCH CUTTING finger over finger:

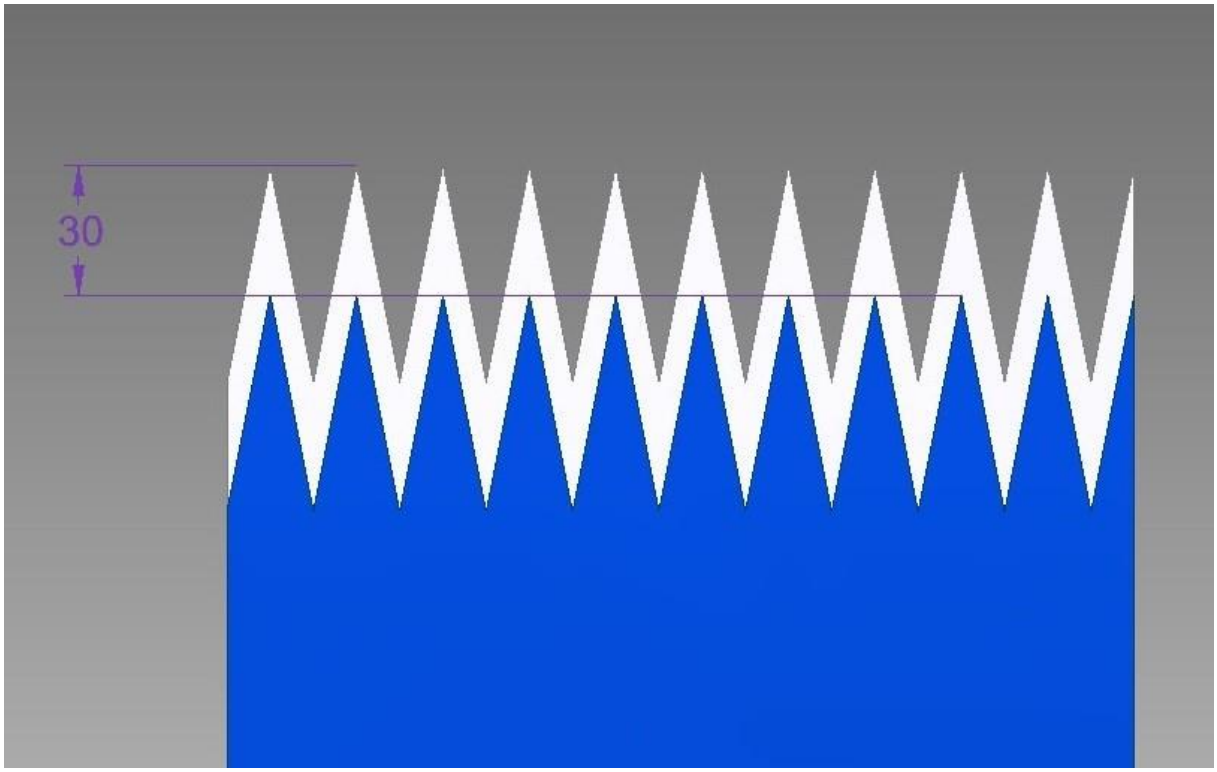
For finger over finger there are two possibilities about different geometries

With program A-B



With this function A-B the puncher always changes the step when return the head in second operation.

With program A-A and A-B pressing together both buttons for three seconds.



With this function A-A + A-B the puncher changes the step each two operations.

NOTE:

This type of punch cutting requires prior separation of the cloths using the PS-15 separation device

Separate the cloths of the belt 130 mm. at both ends.

Fit 50x20 mm. punch.
Check that the A-B function is activated.

Program STEP 20 mm. and the required width in centimeters.

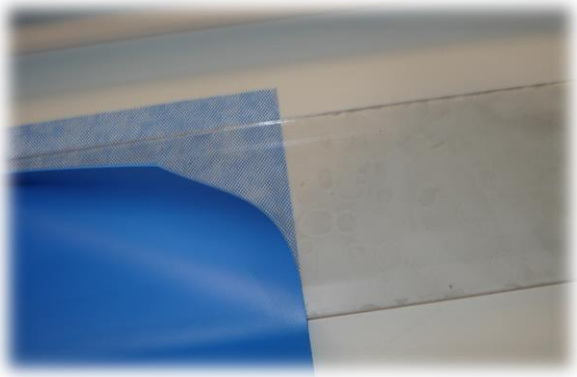
Adjust the pressure to 2 bar, as the cutting surface is less due to the blade length.

NOTE:
To perform finger on finger cutting, the two ends of the belt must be done on the same side of the machine. The A-B program changes the step progress every two operations.

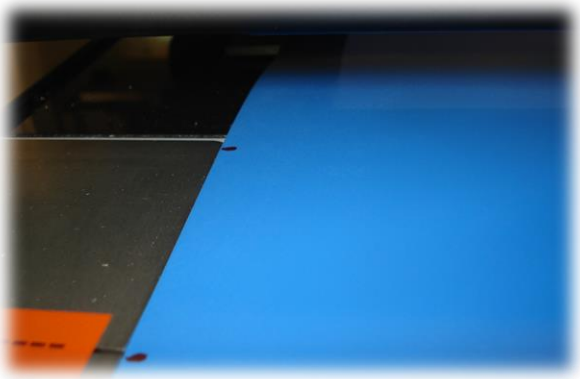
Place the first end of the belt next to the guide and position the end of the belt just by the Ref. 0 mark.

Then mark the two material insert measures for STEP-1 and STEP-2 in pencil.

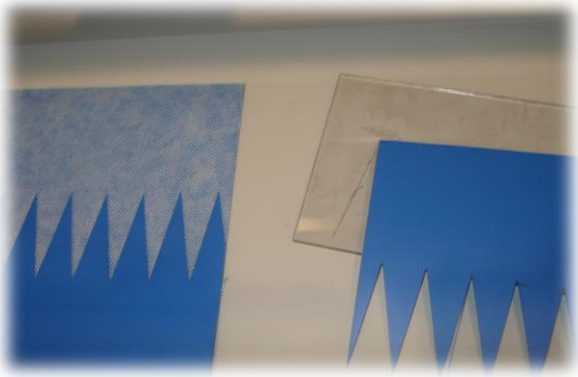
After making the two marks (STEP-1 and STEP-2) place the cut-proof plate between the previously separated cloths, so it comes out on both sides.



Insert the end of the belt with the cut-proof plate up to the second mark, STEP-2.

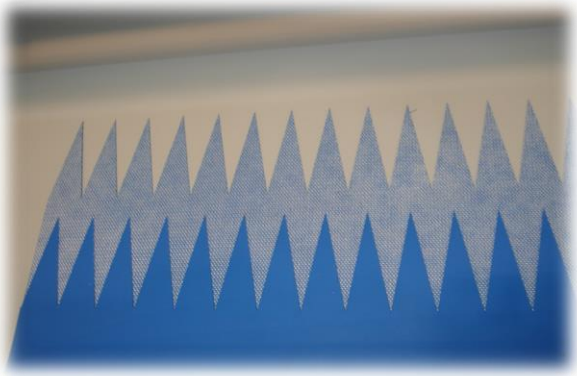


Lower the tread bar by pressing the drop button and press START.
Once the first cutting operation is completed, withdraw the surplus material and cut-proof plate.



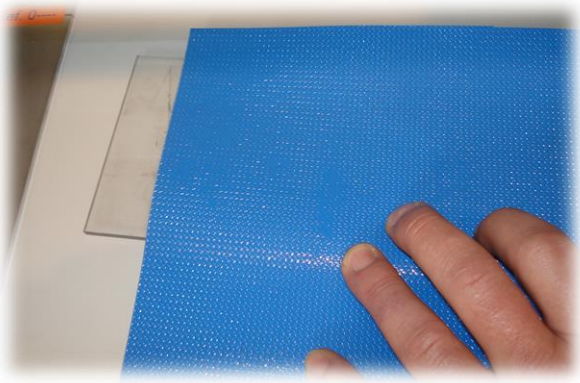
Then put the same end in again, but on the STEP-1 mark.

Lower the tread bar and press START to conclude the first end.

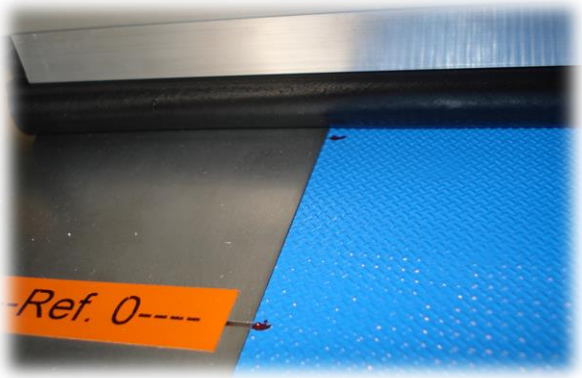


Place the second end of the belt, with the opposite face upward on the same side and repeat the same operations, first performing STEP-2 with the cut-proof plate in the middle of the material, and then withdraw the plate to do STEP-1.

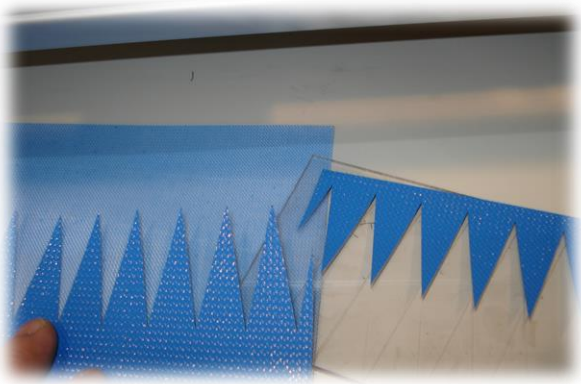
After placing the two marks (STEP-1 and STEP-2), insert the cut-proof plate between the previously separated cloths so it comes out on both sides.



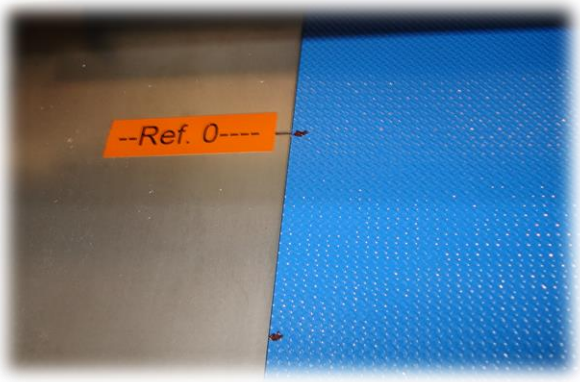
Place the end of the belt with the cut-proof plate in up to the second mark STEP-2



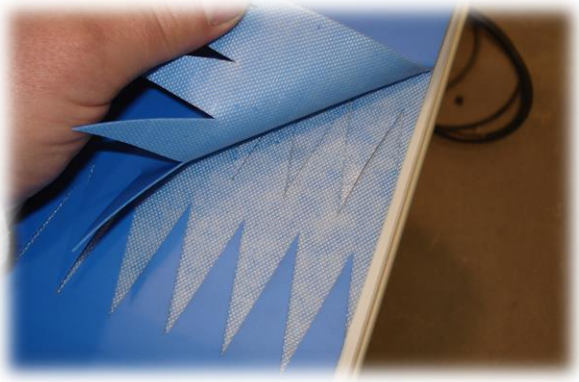
Once the first cutting operation is completed, withdraw the surplus material and cut-proof plate.



Then insert the same end again, but on the STEP-1 mark.



Then lower the tread bar and press START to complete the second end.

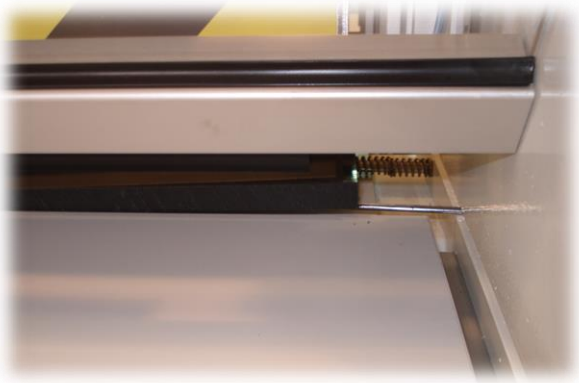


Changing support plate:

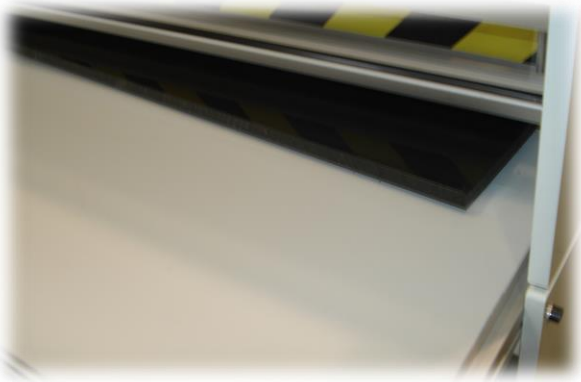
The guide strip is removed to change or turn the support plate.

Fully remove the plate displacement nut.

Use a screwdriver to lever in the jig opening to lift and withdraw the plate.



Remove the plate from the side of the table under the tread bar.



Maintenance and care:

- Keep the screw and linear guides dust free and well lubricated with low density, low silicone content lubricant oil.
- Replace the blades or the polypropylene bench when imperfect cuts are observed.
- Periodically move the polypropylene base 2 or 3 mm. to even out the wear.
- Empty out the water and clean the air intake filter basin if there is condensation in the line.

- Troubleshooting:

The board does not turn on.

Check whether the switch LED turns red to determine a possible problem in the electric power line to the machine.

The head does not move at all.

Check that the cylinder is upward and that the grid (cylinder cutting detector) is on.

The head moves but does not cut.

Check that the electro-valve is working and that the connector LED is on.

Check that the regulator pressure is above 2 bar.

Check that the cutting time is programmed between 05 and 10.

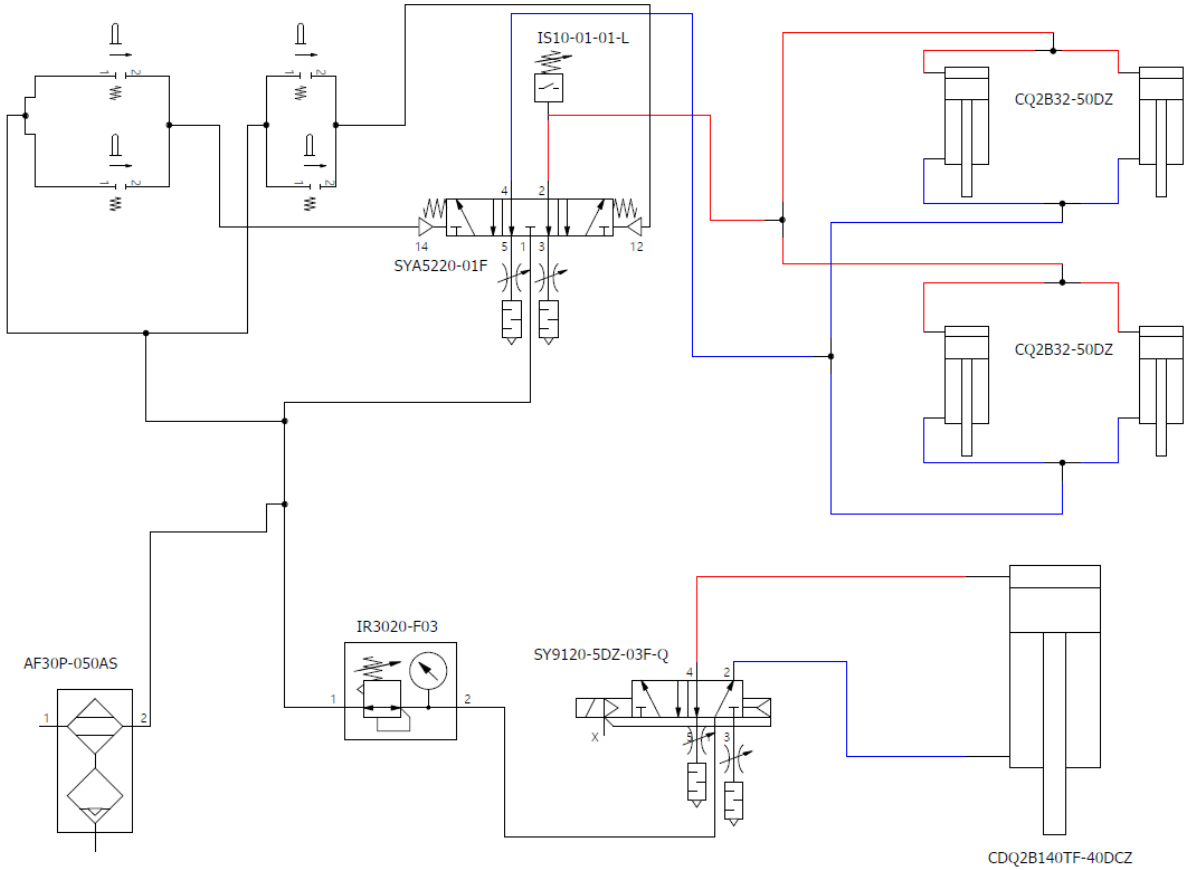
The belt is not cut across the full width.

Check that the intake pressure does not drop during cutting due to compressed air supply shortage.

Check the thickness of the polypropylene plate

NOTE:
In the event of any problem, pay special attention to the messages on the screen to find what is wrong.

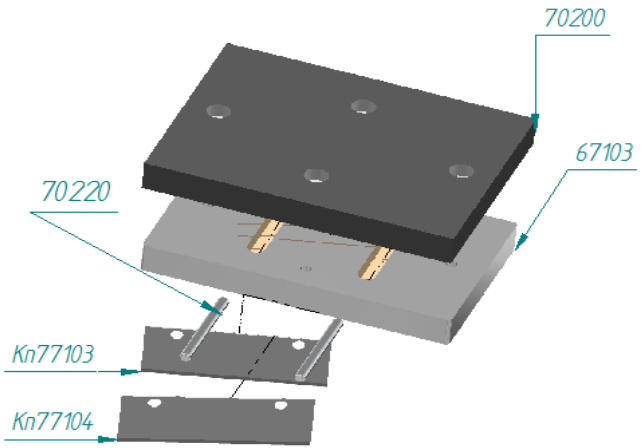
- **Pneumatic scheme:**



- **Spare parts:**

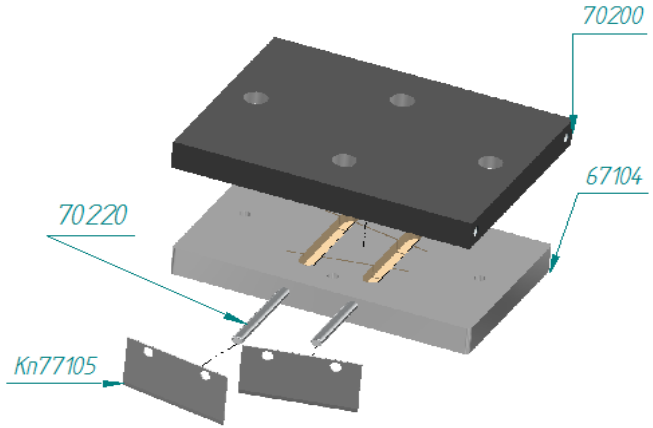
PUNCHING PLATE 80X10 70º

Number	Part name	Units
Kn77103	cuchilla 0.7x79.5-70.par	1
Kn77104	cuchilla 0.7x82.5-70.par	1
70200	Distancial troquel 120 DC.par	1
70220	Pasador troquel.par	2
67103	TROQUEL-80X10-70.par	1



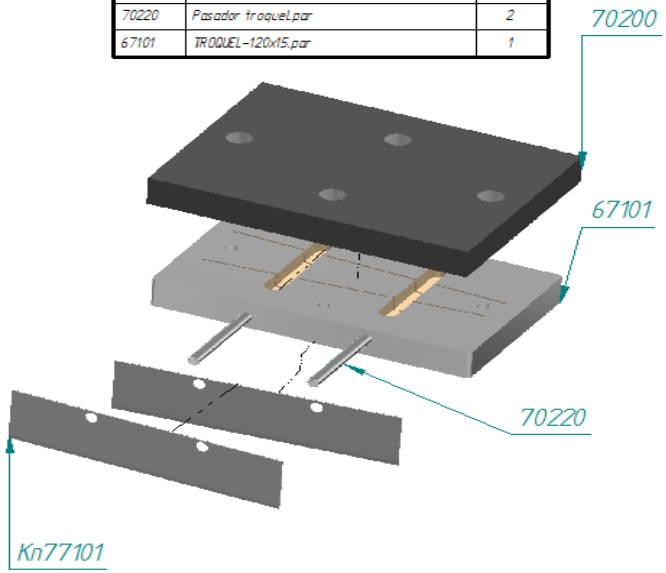
PUNCHING PLATE 50X20

Number	Part name	Units
Kn77105	cuchilla 0.7x52.5.par	2
70200	Distancial troquel 120 DC.par	1
70220	Pasador troquel.par	2
67104	TROQUEL-50x20.par	1



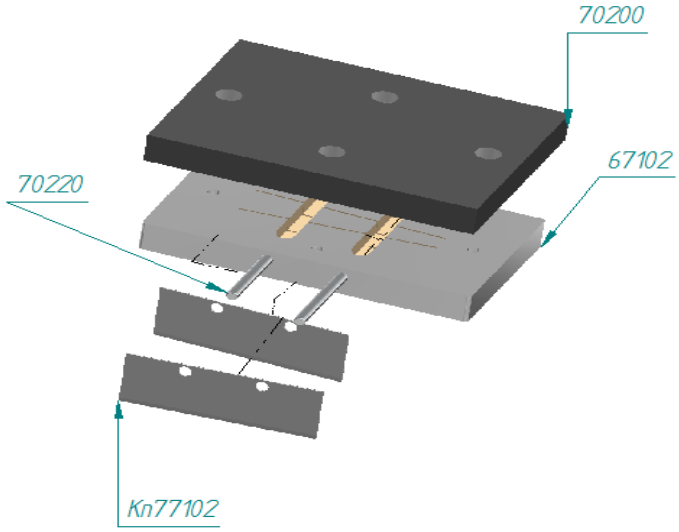
PUNCHING PLATE 120X15

Number	Part name	Units
Kn77101	cuchilla 0.7x122xdoble bisel normal.par	2
70200	Distancial troquel 120 DC.par	1
	m_443_11_ae_v0.par	1
70220	Pasador troquel.par	2
67101	TROQUEL-120x15.par	1

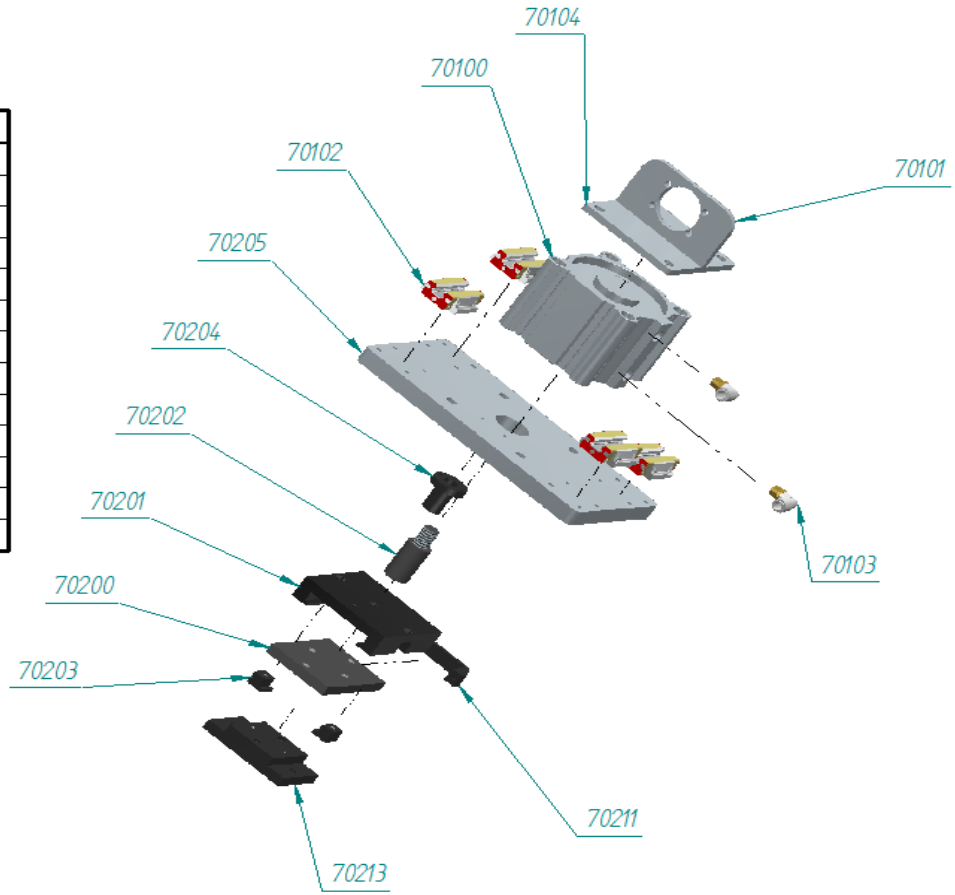


PUNCHING PLATE 80X10

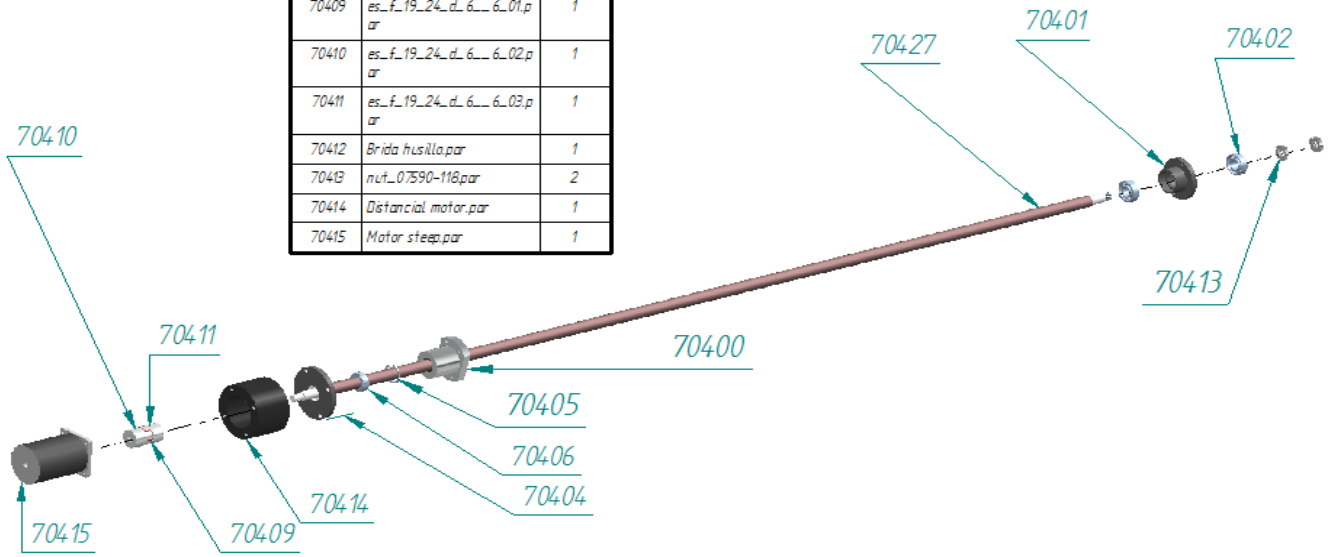
Number	Part name	Units
Kn77102	cuchilla 0.7x82xdoble bisel normal.par	2
70200	Distancial troquel 120 DC.par	1
70220	Pasador troquel.par	2
67102	TROQUEL-80X10.par	1



Number	Part name	Units
70101	Ala brida.par	1
70201	Base distancial.par	1
70205	Base patines.par	1
70100	CD1028140TF-400CZ.asm	1
70200	Distancial troquel 120 DC.par	1
70202	Enlace troque AFP.par	1
70103	K02L12-035.par	2
70211	m_443_11_ae_v0.par	1
70102	Patin Hiwin 20.par	4
70203	Pestaña troquel.par	2
70213	Postizo troquel.par	1
70204	Soporte guia cabeza.par	1
70104	Tapa cilindro.par	1



Number	Part name	Units
70400	Brida husillo tuerca.asm	1
70401	BRIDA BANCADA 2.par	1
70402	Bearing_DIN_628_1_1993_7204_B_v9.00.par	2
70404	BRIDA BANCADA.par	1
70405	Guard_ring_B_DIN_472_40x1.75_A_v10.00.par	1
70406	6004 20-42-12.par	1
70427	Husillo DC2000.par	1
70408	es_f_19_24_d_6___6.asm	1
70409	es_f_19_24_d_6___6_01.par	1
70410	es_f_19_24_d_6___6_02.par	1
70411	es_f_19_24_d_6___6_03.par	1
70412	Brida husillo.par	1
70413	nut_07590-118.par	2
70414	Distancial motor.par	1
70415	Motor steep.par	1



Número de elemento	Nombre archivo (sin extensión)	Cantidad
1	Placa polipro 1650x200x15	2

Number	Part name	Units
100100	Barra pisador.par	1
100101	CQ2B25_400_0_.par	2
100102	Placa CQ2 pisador.par	2
100104	Cinta pisador.par	1
100107	KQ2L04_M5.par	4
100108	Aluminio pisador.par	1
100109	Goma pisador.par	1

- **Electric schemes**

TECELMAC automatismos

Automatismos Tecelmac S.L.
C/ Travessera de Can Pàmies, 4-6. Pol. Ind. Molí de Les Planes
08470, Sant Celoni (Barcelona)
Telf. : 93.848.73.69 Mail: tecelmac@tecelmac.com

CLIENTE	:	ERMENGINEERING
DENOM. INSTALACIÓN	:	CAJA CONTROL TROQUELADO
NUM. PROYECTO	:	19292
FABRICANTE	:	ERMENGINEERING
TIPO ESQUEMAS	:	ELÉCTRICOS
NORMATIVA	:	DIN
FORMATO-VERSIÓN	:	EPLAN P8
LUGAR INSTALACIÓN	:	ARENYS DE MUNT
RESPONSABLE PROYECTO	:	J.S.P.
FECHA REALIZACIÓN	:	22/05/2018
ELABORADO POR	:	BPUIG

CARACTERÍSTICAS TÉCNICAS

TENSIÓN DE ALIMENTACIÓN	:	230V +PE
TENSIÓN DE MANDO	:	48 V
POTENCIA	:	4 kW
CANTIDAD TOTAL PÁGINAS	:	12

+IND/2

			Date	22/05/2018	ERMENGINEERING	CAJA CONTROL TROQUELADO	TECELMAC automatismos	PORTADA PROYECTO	= GEN
			Ed.	BPUIG					+ POR
			Appr						19292
Modification	Date	Name	Original			Subs. por			Pag. 1 / Pag. 12

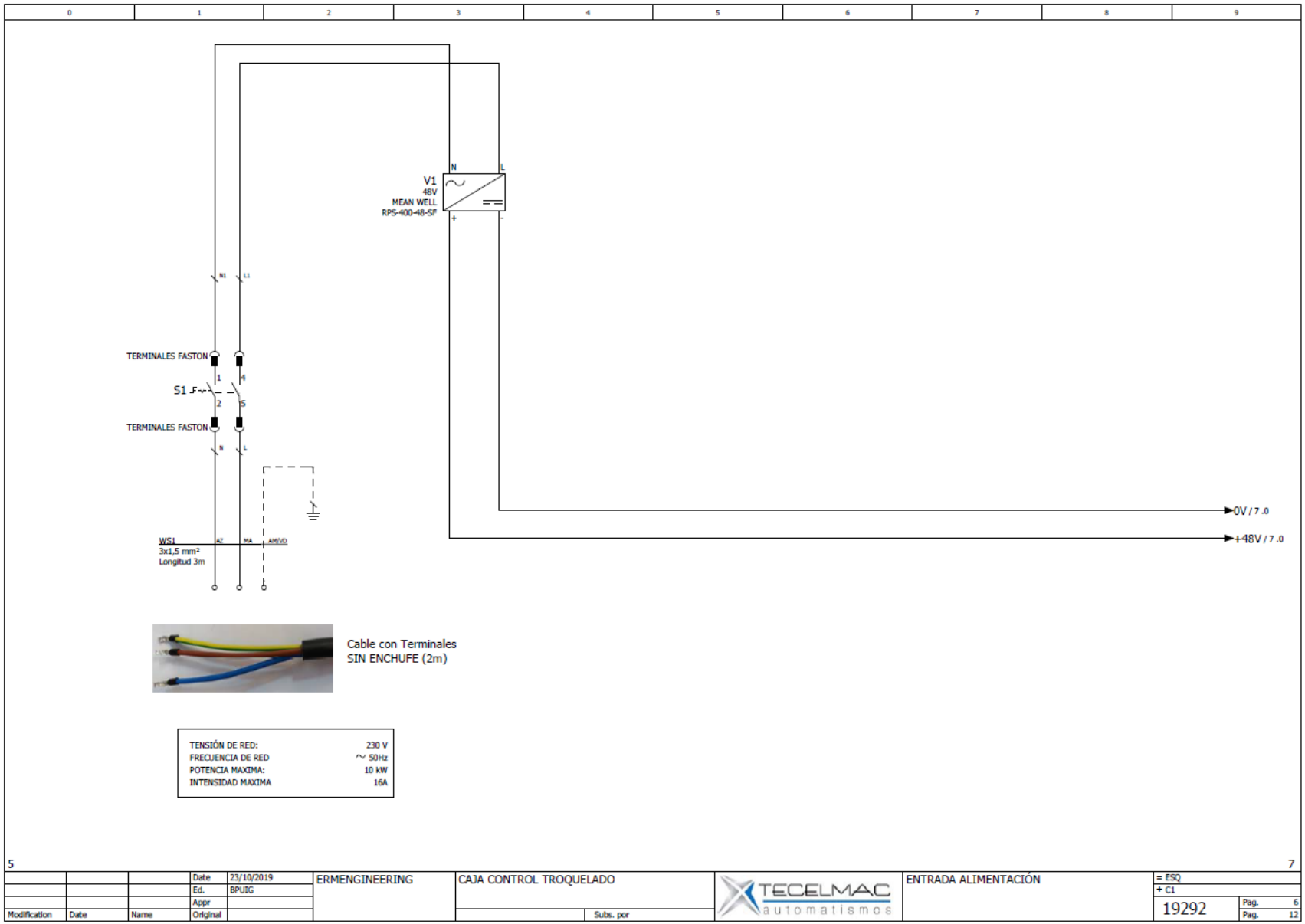
Índice de páginas

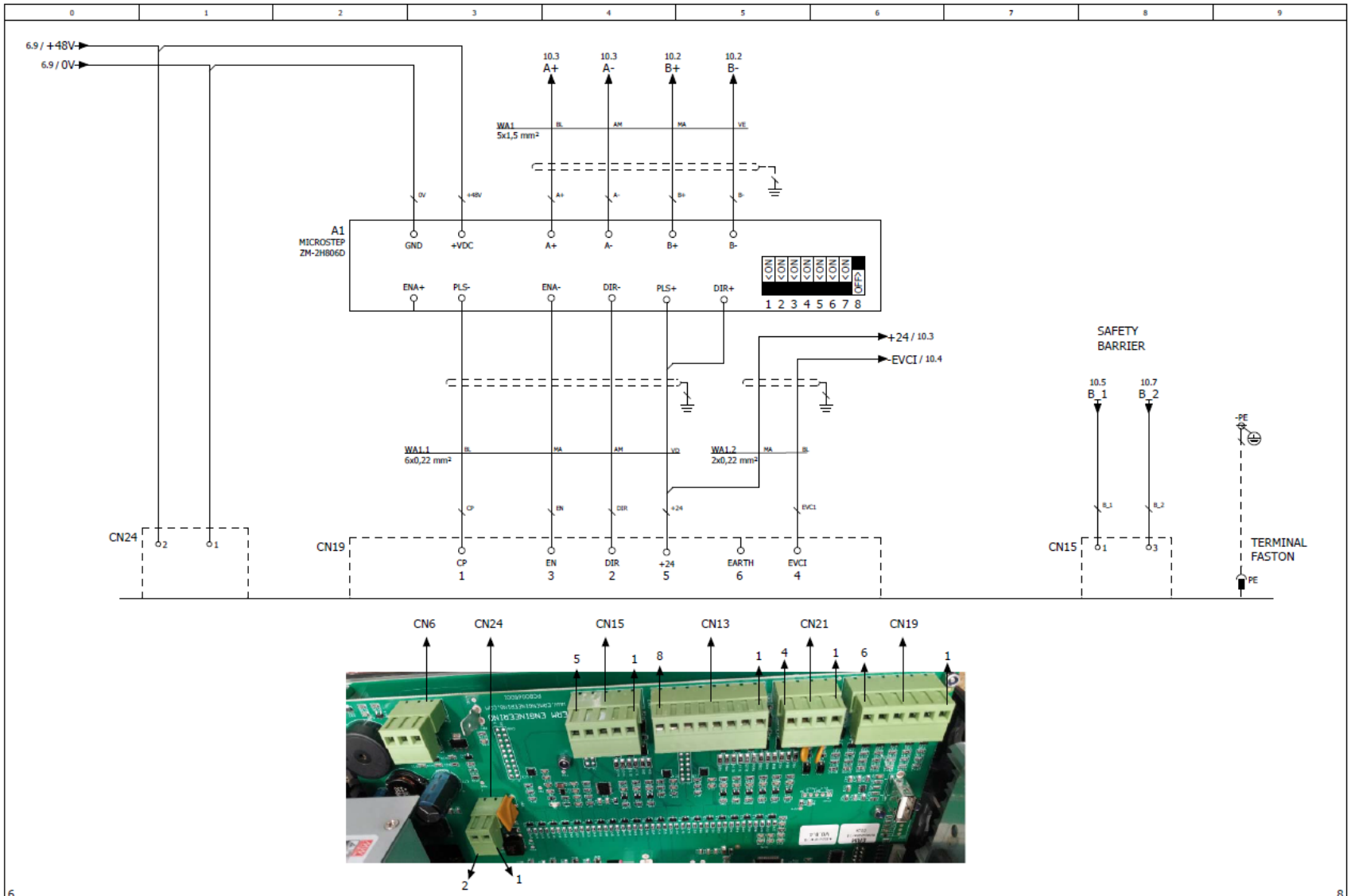
Columna X:una página automática hasido manualmente modificada F06_001

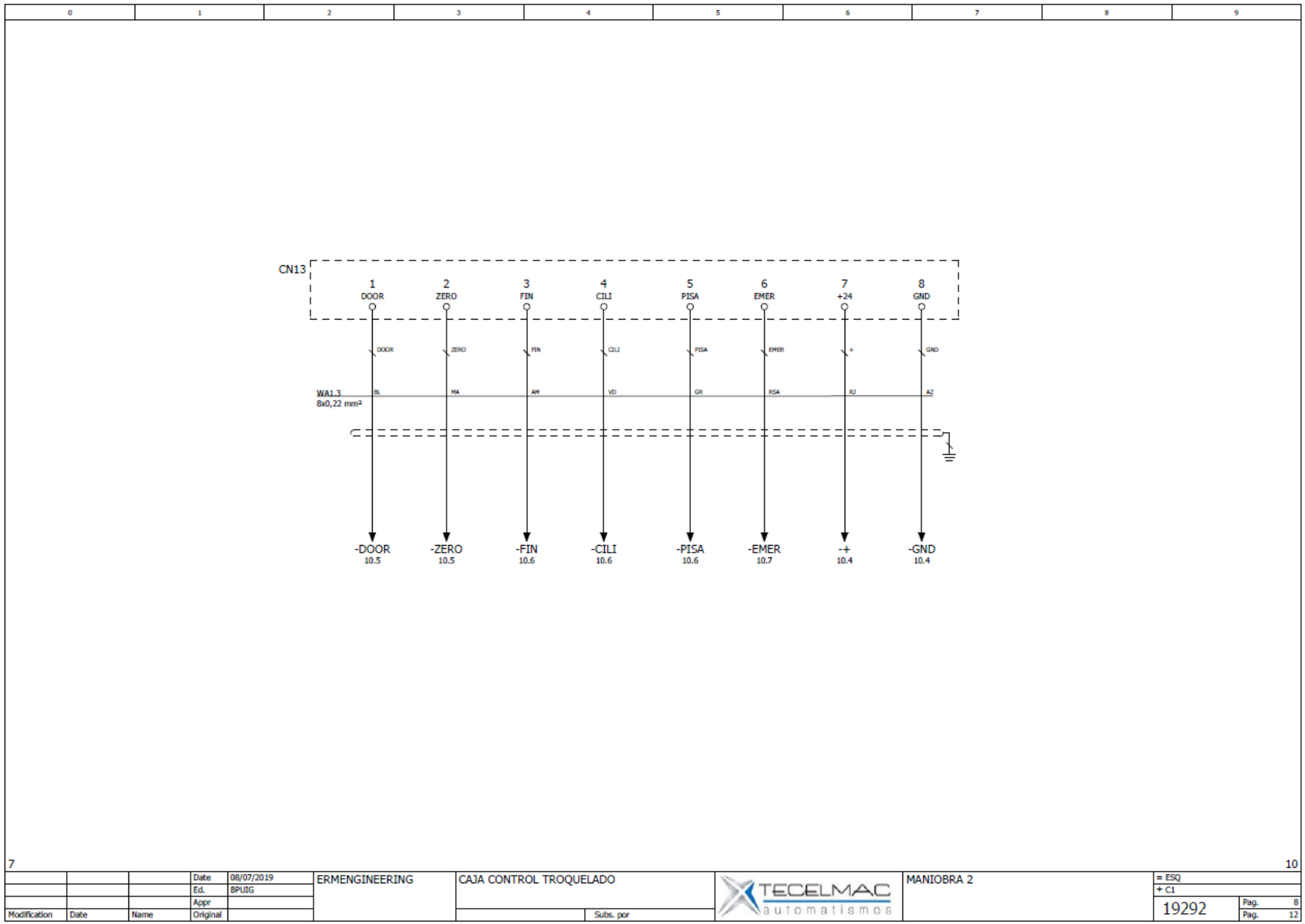
Página	Descripción de página	Número de página	Fecha	Editado por	X
=GEN+POR/1	PORTADA PROYECTO	1	22/05/2018		X
=GEN+IND/2	ÍNDICE DE PÁGINAS	2	23/10/2019		
=ESQ+C1/4	PORTADA ARMARIO C1	4	22/05/2018		X
=ESQ+C1/5	RELACIÓN DE BORNEROS Y CONECTORES	5	22/05/2018		X
=ESQ+C1/6	ENTRADA ALIMENTACIÓN	6	05/08/2019		
=ESQ+C1/7	MANIOBRA 1	7	23/10/2019		
=ESQ+C1/8	MANIOBRA 2	8	08/07/2019		
=ESQ+C1/10	CONECTOR 16 PINS	10	23/10/2019		
=ESQ+C1/11	DRIVER	11	05/08/2019		
=ESQ+C1/12	PLACA	12	12/07/2019		
=ESQ+C1/13	TIERRAS	13	26/09/2019		
=ESQ+C1/14	BORNERO CAJA	14	23/10/2019		

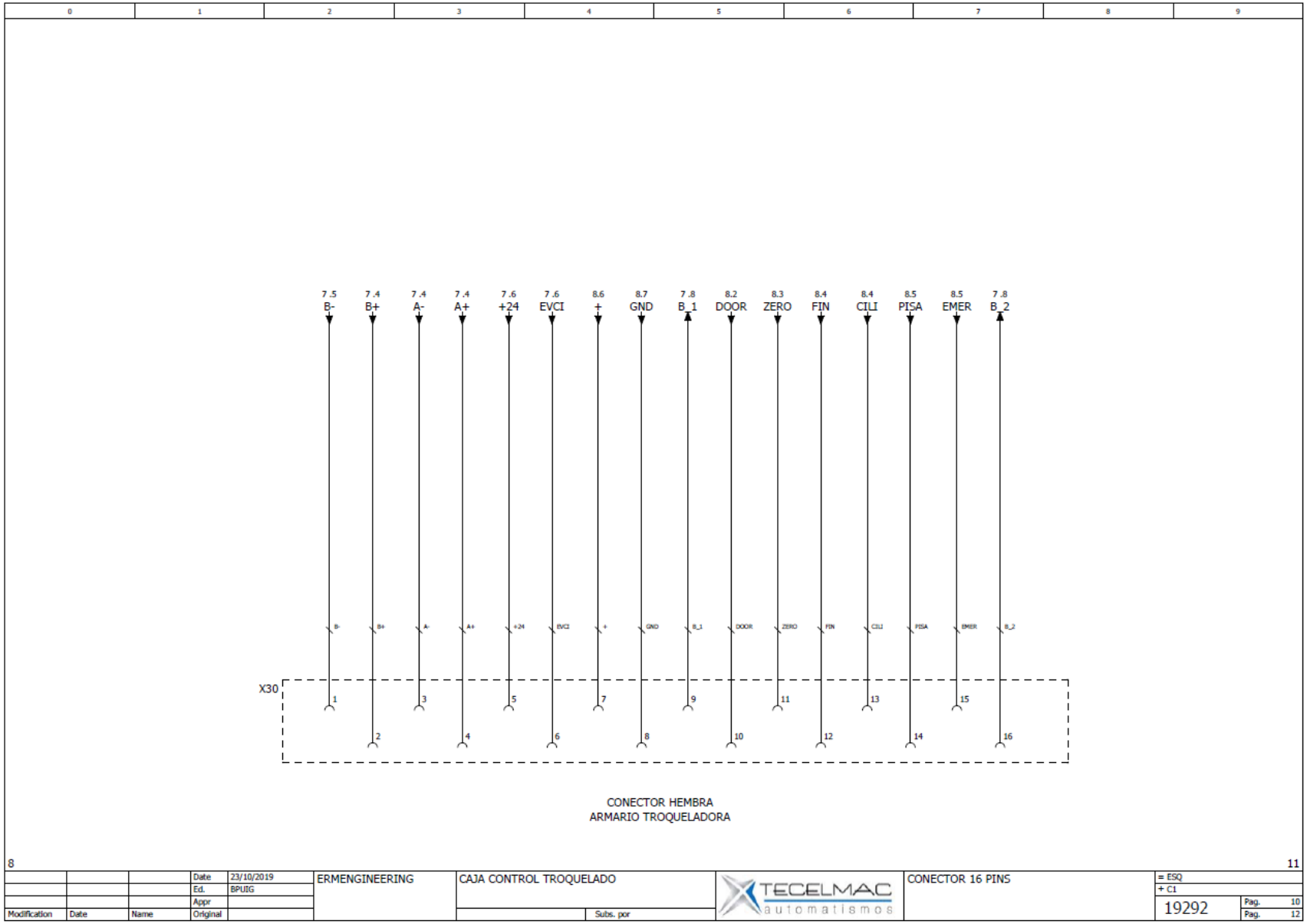
+POR/1 =ESQ+C1/4

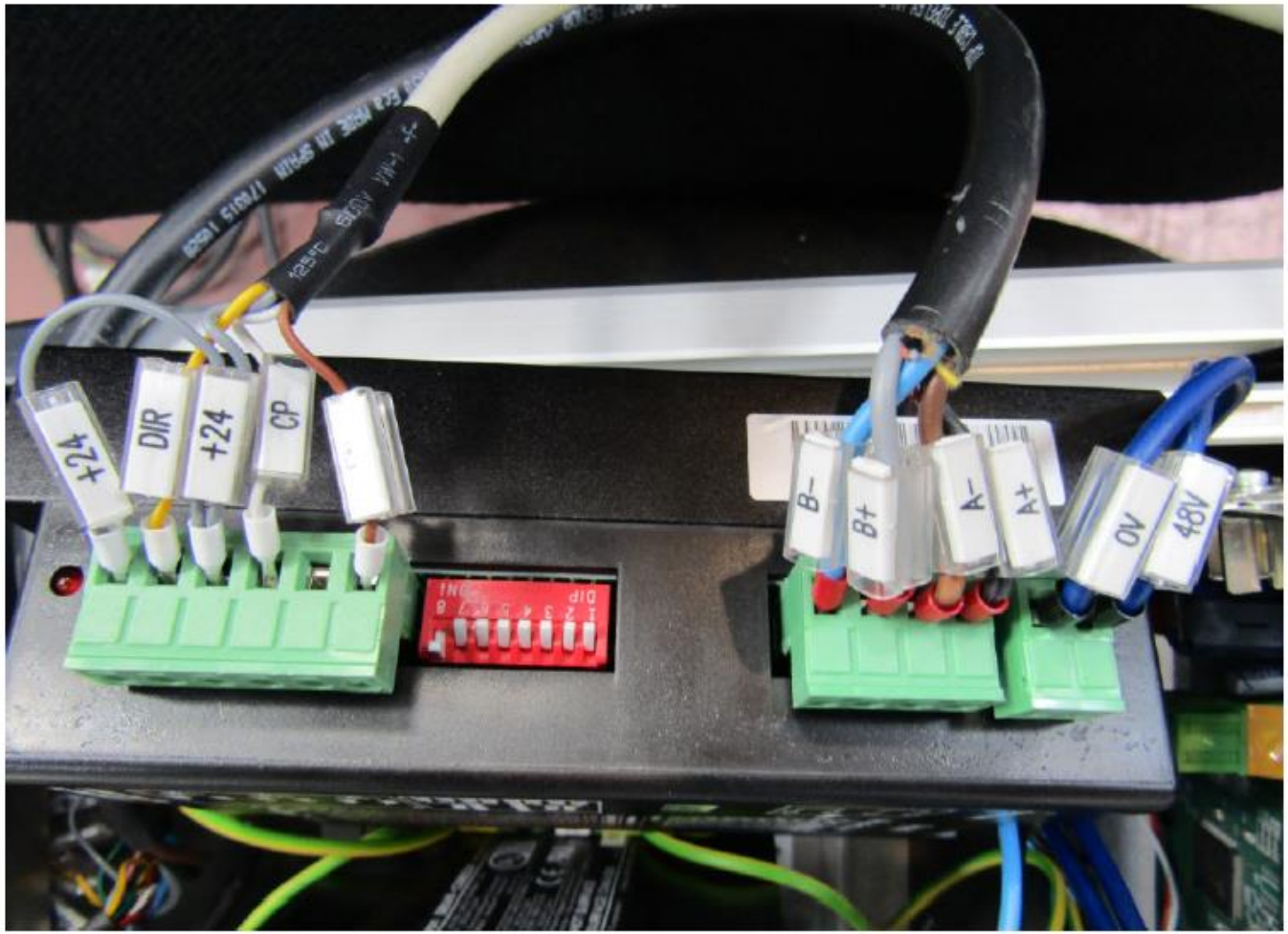
			Date	23/10/2019	ERMENGINEERING	CAJA CONTROL TROQUELADO	TECELMAC automatismos	ÍNDICE DE PÁGINAS	= GEN
			Ed.	BPUIG					+ IND
			Appr						19292 Pag. 2
Modification	Date	Name	Original			Subs. por			Pag. 12


V1
48V
MEAN WELL
RPS-400-48-SF
N
L
+
-
TERMINALES FASTON
S1
1
4
2
5
TERMINALES FASTON
WS1
3x1,5 mm²
Longitud 3m
0V / 7 .0
+48V / 7 .0
Cable con Terminales
SIN ENCHUFE (2m)
TENSIÓN DE RED: 230 V
FRECUENCIA DE RED ~ 50Hz
POTENCIA MAXIMA: 10 kW
INTENSIDAD MAXIMA 16A
ERMENGINEERING
CAJA CONTROL TROQUELADO
TECELMAC automatismos
ENTRADA ALIMENTACIÓN
19292


6.9 / +48V
6.9 / 0V
10.3 A+
10.3 A-
10.2 B+
10.2 B-
WA1 5x1,5 mm²
A1 MICROSTEP ZM-2H806D
GND
+VDC
ENA+
PLS-
ENA-
DIR-
PLS+
DIR+
1 2 3 4 5 6 7 8
+24 / 10.3
EVCI / 10.4
WA1.1 6x0,22 mm²
WA1.2 2x0,22 mm²
SAFETY BARRIER
10.5 B_1
10.7 B_2
-PE
CN24
CN19
CN15
CP 1
EN 3
DIR 2
+24 5
EARTH 6
EVCI 4
TERMINAL FASTON
CN6
CN24
CN15
CN13
CN21
CN19
Date 23/10/2019
Ed. BPUIG
Appr
Modification Date Name Original
ERMENGINEERING
CAJA CONTROL TROQUELADO
Subs. por
TECELMAC automatismos
MANIOBRA 1
= ESQ
+ C1
19292
Pag. 7
Pag. 12


CN13
1 DOOR
2 ZERO
3 FIN
4 CILI
5 PISA
6 EMER
7 +24
8 GND
WA1.3
8x0,22 mm²
-DOOR 10.5
-ZERO 10.5
-FIN 10.6
-CILI 10.6
-PISA 10.6
-EMER 10.7
-+ 10.4
-GND 10.4
7
10
ERMENGINEERING
CAJA CONTROL TROQUELADO
MANIOBRA 2
Date 08/07/2019
Ed. BPUIG
Appr
Original
Modification
Date
Name
Subs. por
= ESQ
+ C1
19292
Pag. 8
Pag. 12


0
1
2
3
4
5
6
7
8
9
7.5 B-
7.4 B+
7.4 A-
7.4 A+
7.6 +24
7.6 EVCI
8.6 +
8.7 GND
7.8 B_1
8.2 DOOR
8.3 ZERO
8.4 FIN
8.4 CILI
8.5 PISA
8.5 EMER
7.8 B_2
X30
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
CONECTOR HEMBRA
ARMARIO TROQUELADORA
8
11
Date 23/10/2019
Ed. BPUIG
Appr
Modification Date Name Original
ERMENGINEERING
CAJA CONTROL TROQUELADO
Subs. por
TECELMAC automatismos
CONECTOR 16 PINS
= ESQ
+ C1
19292
Pag. 10
Pag. 12


+24
DIR
+24
CP
B-
B+
A-
A+
0V
48V