(Original) Use and maintenance manual

Type: Automatic die cutter 2000mm
Model: DC-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 die cutter
- Brand: ERM Engineering
- Model: DC-200
- Serial No.: 810133
- Manufacturer date: 2022

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: 2022/10

- Description:

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

Exchangeable cutting heads for different cutting geometries, with possibility of programming diverse forward steps.

Support bench with material positioning guides.

This die cutter is especially designed to cut thermoplastic materials with interior tissue.

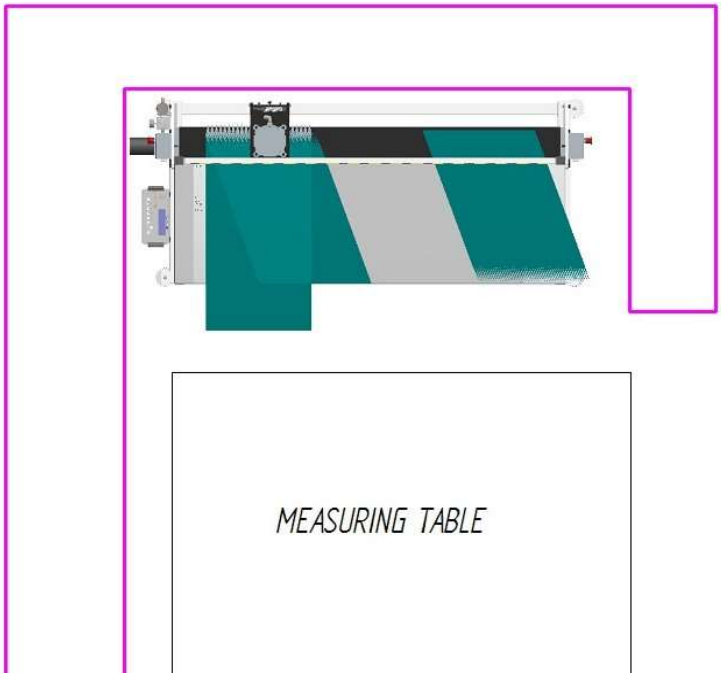
- Technical characteristics:

Dimensions	2677x930x1160 (l x w x h)
Weight	315 Kg
Max. Thickness	8 mm.
Voltage	1x230V
Power	0.40kW
Max. pressure	7 bar

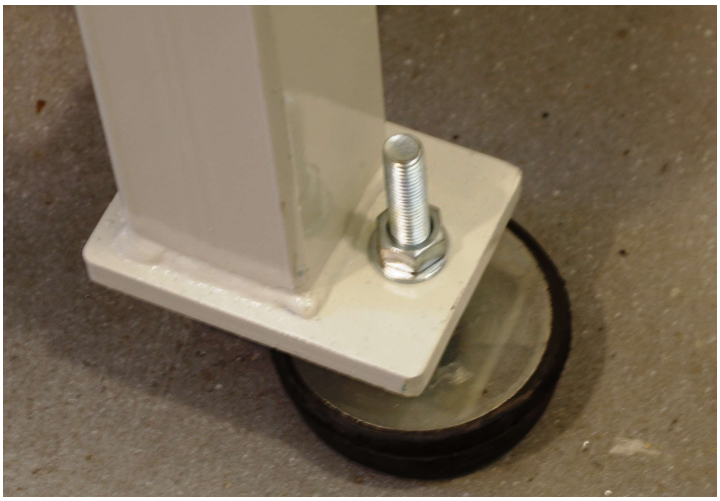
- Installation and connection

Place the machine near the measuring table, or right after it, in order to avoid the material to be cut coming into contact with the ground.

Leave 1 metre free on the four sides to facilitate personnel access when operating.



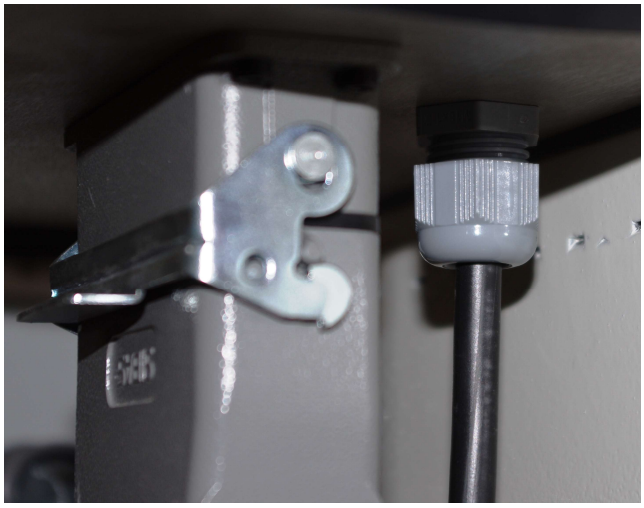
Level and balance the machine by means of the regulation bolts on the rubber feet.



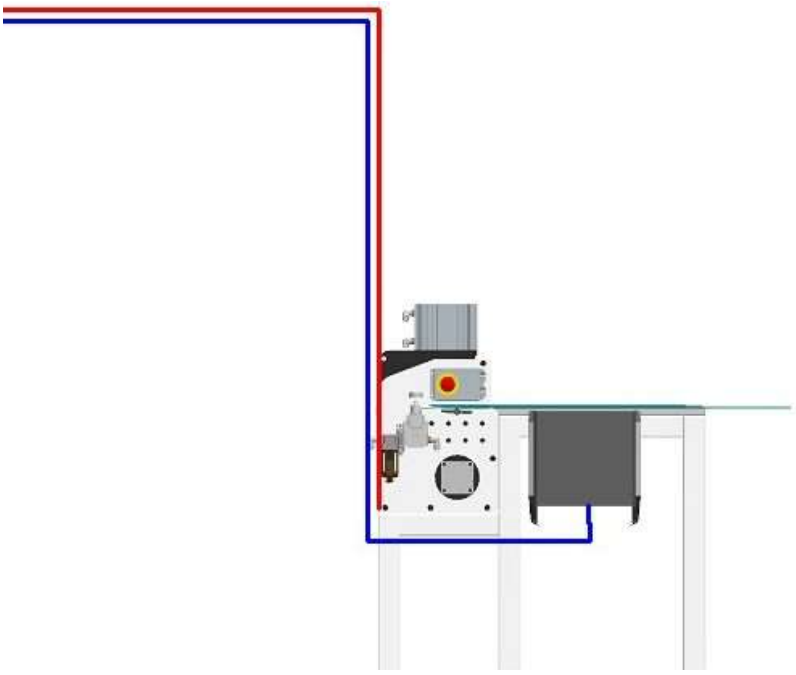
Provide compressed air through a tube with minimum interior diameter of 8 mm. connected to the intake.

NOTE: We must bear in mind that air consumption by this die cutter is 220 litres/minute

We shall connect the power cable to the control board at 230v. monophasic.



NOTE: It is recommended that the two supplies of air and power be run, hanging from above, to prevent personnel tripping or falling.



- **Using instructions:**

WARNING:
THIS DEVICE INVOLVES THE HAZARD OF HANDS AND ARMS BEING TRAPPED BY THE MOVEMENT OF THE CUTTING HEAD
GREAT CARE MUST ALSO BE TAKEN BETWEEN THE CUTTING HEAD AND THE SUPPORT PLATE, AS THERE IS A DANGER OF CUTTING LIMBS.

Once the machine is connected to the mains and provided with air, we shall proceed to start it up using the ON switch.

We shall check that the regulator pressure is between 2 and 6 bar.

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.

CLAMP OPEN
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 we need is to 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

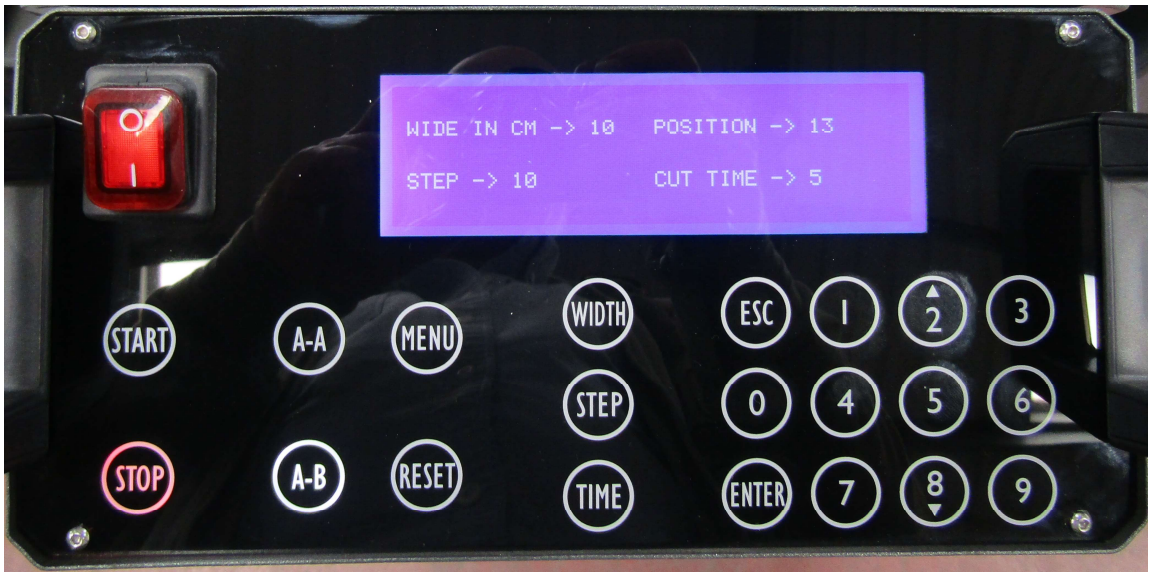
This device does not allow displacement of the head because it detects that the cutting cylinder is not raised. This may happen due to lack of air or failure of the detector.

MESSAGE: CYLINDRE WRONG

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

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 centimetres with the numerical keyboard, to accept the number entered push ENTER.

7- STEP

We shall press this button to program the cutting process by means of the head assembled, with the numerical keyboard, introduce the value in milometers, between 3mm to 50mm, to accept the numerical value, press ENTER

8- TIME

We shall press this button to program the cut time using the numerical keyboard the numbers accepted are between 3 to 10, to accept the number press ENTER

9- ESC

We shall use this key to correct or delete any wrong number when programming

Belt cutting measures for the different dies:

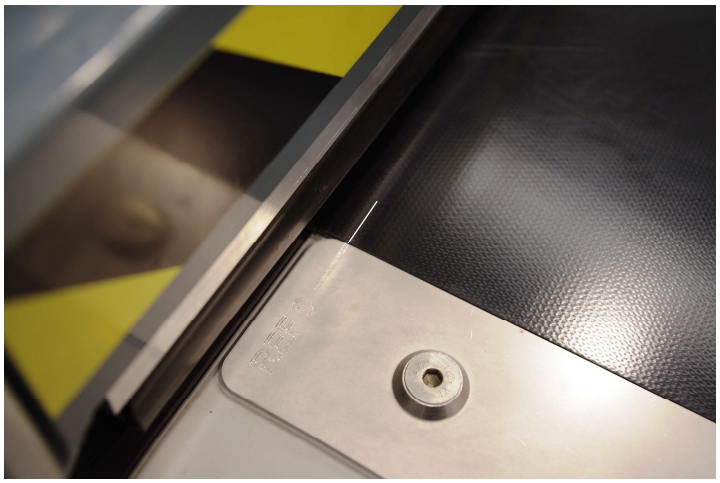
80 x 10 90º……100 mm. Longest
80 x 10 70º……100 mm. Longest
120 x 15 90º……130 mm. Longest
50 x 20 finger over finger 90º……120 mm. Longest

DIE CUTTING A-A Direct finger

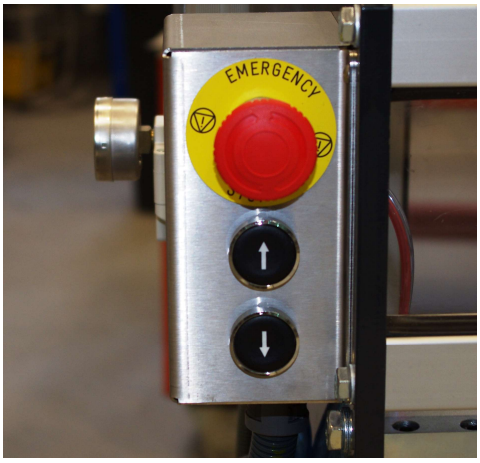
First, we place the first end of the belt on the left side by the guide rail with the coverage on top and position the end of the belt just by the 0 Ref. mark.

We then mark the measure to input the relevant material with a pencil, according to the die we want to use.

We then place the belt under the tread bar until the mark made matches up with 0 Ref. and we make sure it is fully in contact with the guide rail.



We lower the tread bar by pressing the down button.



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

We press WIDTH to input the numerical value of the width of the belt in centimetres and accept pressing ENTER.

We check that the STEP is correct. If it is not, we use the STEP key and input the desired value after ENTER.

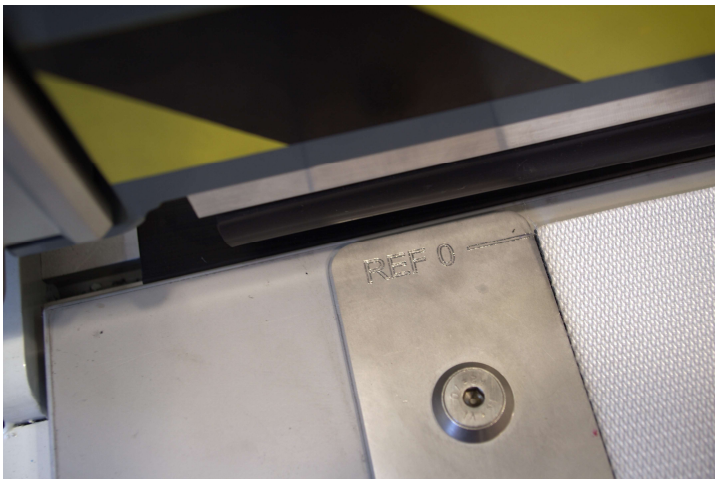
NOTE: The values programmed shall not be lost, even when the equipment is switched off; the program always memorises the last values input.

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 and change that value pressing TIME, modifying the cute time and accept pressing ENTER.
After we press START to continue.

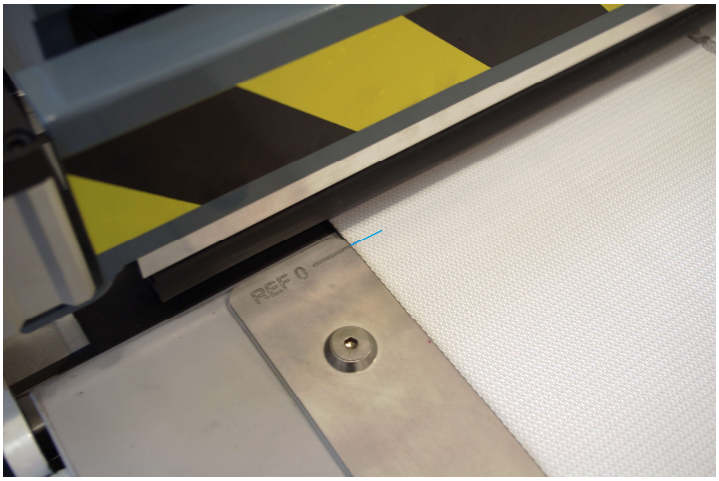
Once the first cut is completed, we release the belt by pressing the raise bar button.

We place the second end of the belt on the left side by the guide rail, but the opposite way, that is, with the coverage down, and position the end of the belt just on the 0 Ref. mark.



Then mark the measurement to feed in the material with a pencil, according to the die one wishes to use.

We then feed in the belt under the holding bar until the mark made aligns with 0 Ref. and we make sure it is fully in contact with the guide rail.



We lower the tread bar using the down push button and press START.

Once the operation is completed, we release the material by raising the tread bar.

DIE CUTTING A-A Finger over finger

NOTE: For this type of die cutting, one requires prior separation of the fabrics with the ply separator device PS-15

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

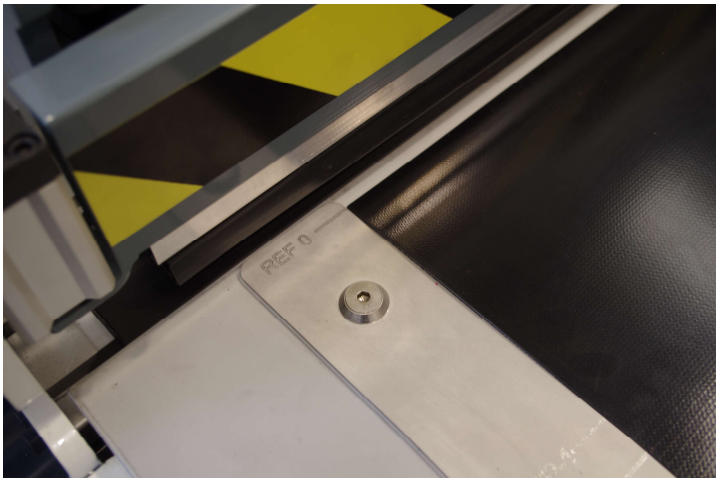
We mount the 50x20 mm die.

We check that the A-A function is activated.

We program STEP 20 mm. and the required width in centimetres.

We shall regulate the pressure to 3 bar, as the cutting pressure is less due to the length of the blades.

We place the first end of the belt on the left side, by the guide rail, and place the end of the belt just on the O Ref. mark.



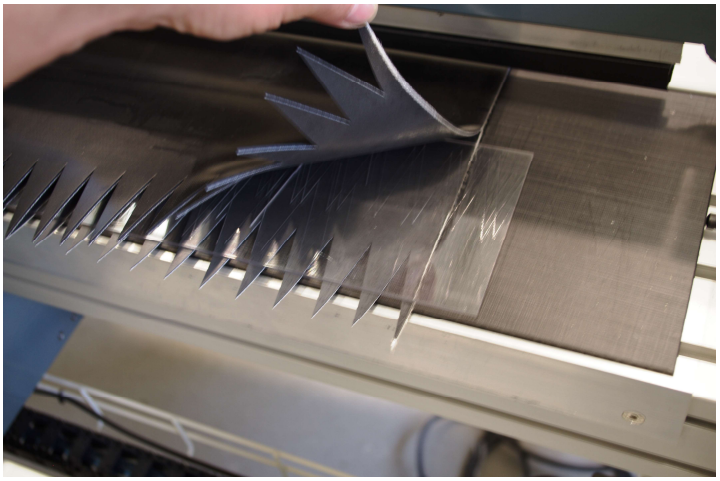
Then pencil mark the two measures to insert the material for the stops STEP-1 and STEP-2.

We then insert the material up to the first mark STEP-1.

We lower the tread bar using the push button to lower it and press START.

Once the first cutting operation has ended, we shall withdraw the surplus material.

We shall place the anti-cut plate between the two cloths up to the end of the separator cut.

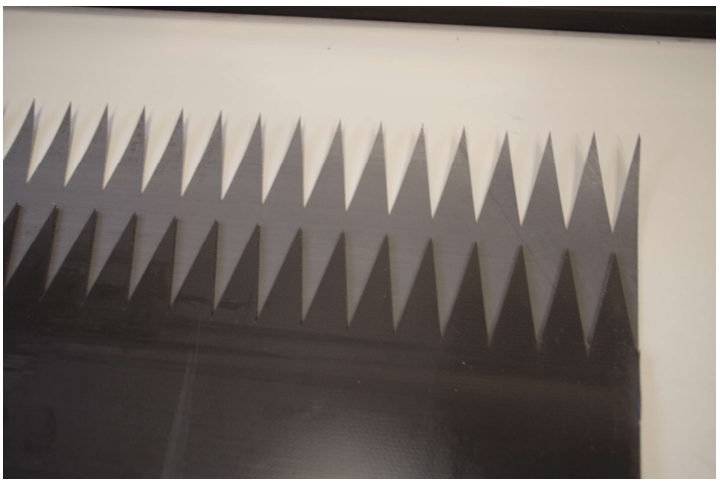


Once the anti-cut plate has been placed inside, we insert the material up to the second mark STEP-2.

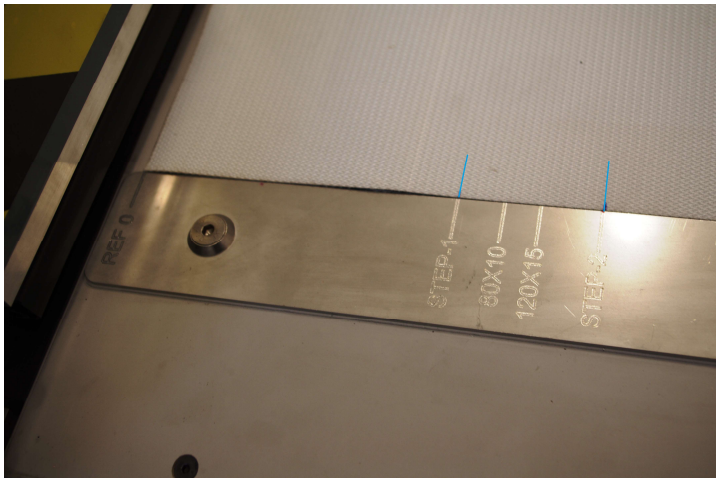
We reduce the cutting pressure to 2 bar, as the second cut shall only cut the top fabric.

We lower the tread bar and press START.

On finishing the second cut, we withdraw the surplus material and the anti-cut plate.

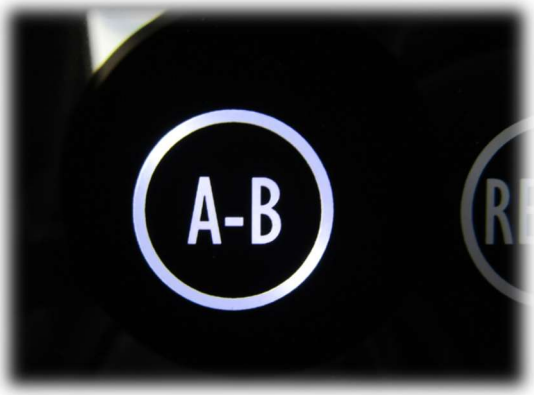


We place the second end of the belt with the opposing face upward on the same left side and repeat the same operations.



DIE CUTTING A-B for High profile belts at 90º

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

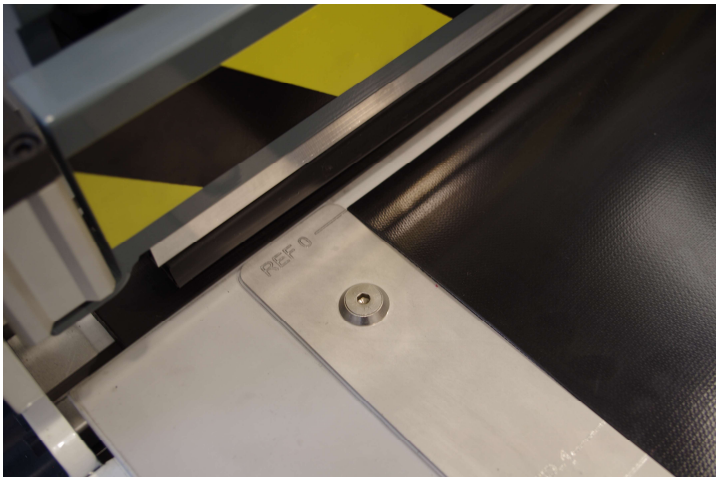


We mount the die chosen: 80x10 or 120x15.

We program the relevant gauge for the die mounted and program the width in centimetres.

We adjust the cutting pressure according to the hardness of the belt and the blade length.

First, we place the first end of the belt on the left side by the guide rail and then position the end of the belt just by the 0 Ref. mark, in order to mark the relevant material insertion measurement according to the die we wish to cut with.



We then place the belt under the holding bar until the mark made aligns with 0 Ref. and make sure that it is fully in contact with the guide rail.

We lower the tread bar using the down push button.

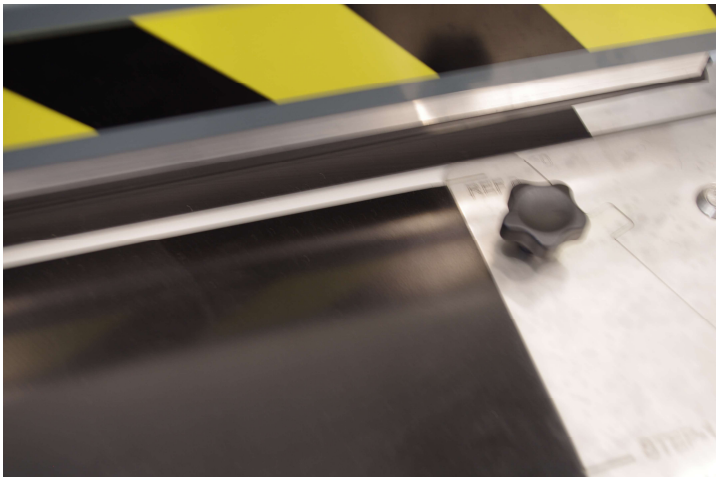
Using the + / - buttons, we adjust the belt width in centimetres and press OK.

We check that the STEP is correct and, if that is not the case, using the MENU key, we jump to the field STEP and input the desired value with + / - and then OK.

We press START to start cutting at the first end.

Once the first cut has been performed, we observe that the head shall be positioned at point 0 of the end opposite the control board. On reaching that point, we release the belt by pressing the bar up button.

We place the second end of the belt on the right side next to the right guide rail and, with the coverage also on top, we position the final end of the belt just at the 0 Ref. mark, to pencil the mark with the measurement for insertion of the relevant material according to the die we wish to cut with.



We then place the belt under the holding bar until the mark made matches 0 Ref. and we make sure it is fully in contact with the guide rail.

We lower the tread bar using the down push button and press START.

Once the operation has ended, we release the material by raising the pressing bar.

DIE CUTTING A-B Diagonal 70º

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

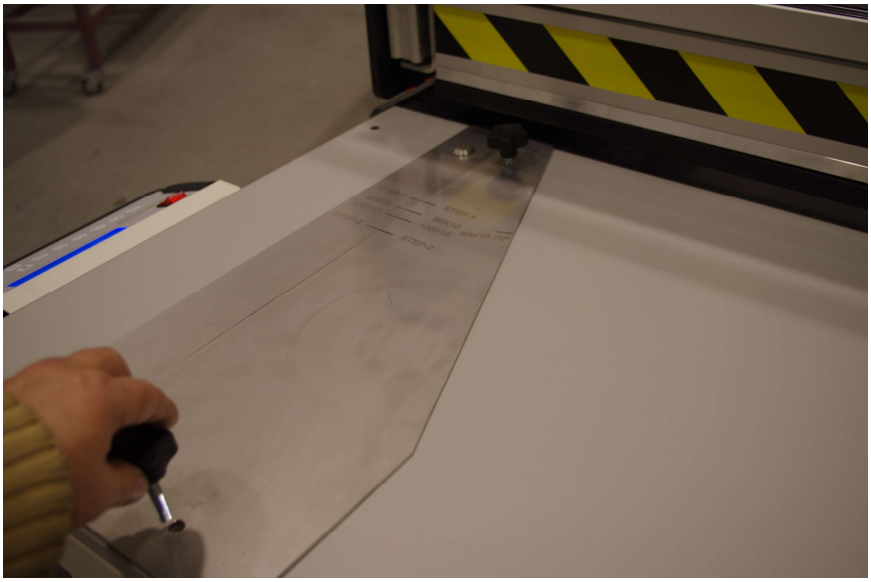
We mount die 80x10 70º.

We program the STEP to 10mm.

We adjust the cutting pressure to 4 // 6bar

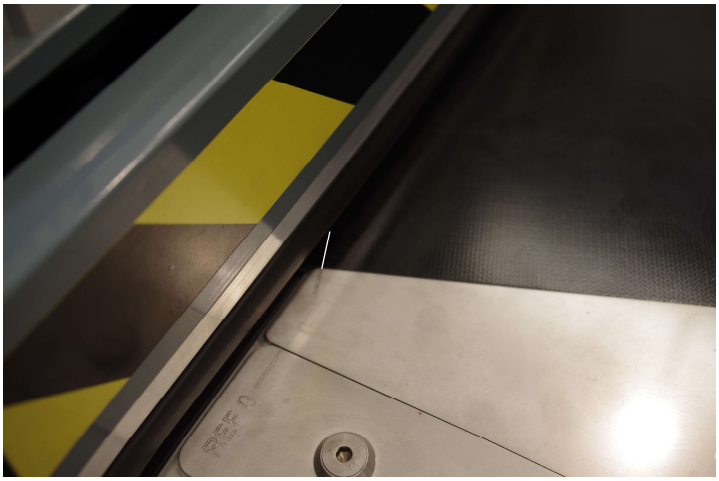
We program the width in centimetres 10% wider than the belt width.
Example: if the belt is 400mm. wide, we will program 44 instead of 40.

We remove de diagonal guide of right side and place in the left side.



We place the belt that has already been cut in diagonal at 70º along with the supplementary guide to mark from 0 Ref. with the advance measurement of 80x10 70º.

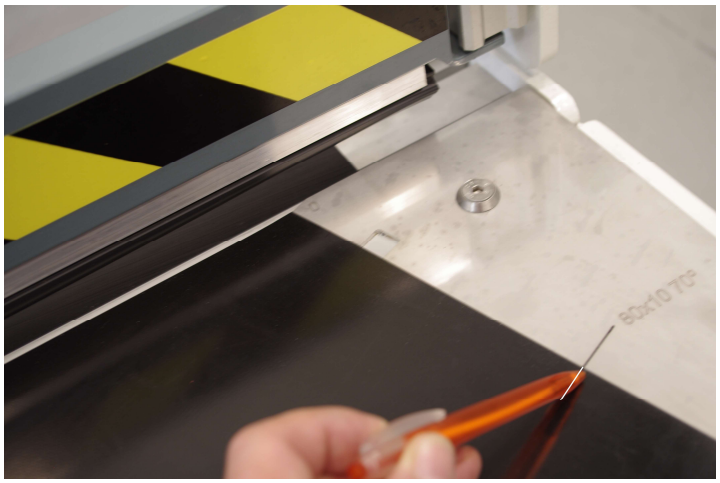
We then insert the belt until it aligns with the mark made at point 0 Ref.



We lower the tread bar using the down push button and press START.

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

We place the second end of the belt on the right side, by the right diagonal guide and with the coverage also on top, and position the far end of the belt just at the 0 Ref. mark, to pencil the measurement mark to insert the material, that will be 80x10 70º.

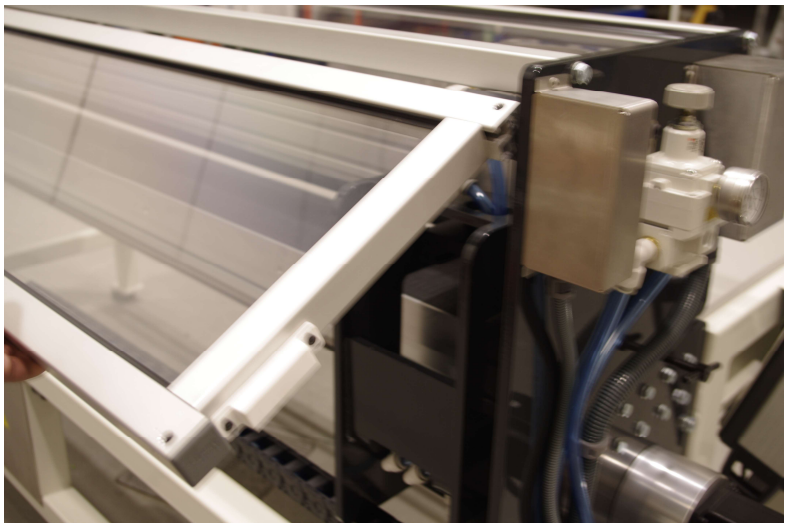


We then insert the material till the mark aligns with 0 Ref. and lower the tread bar and press START.

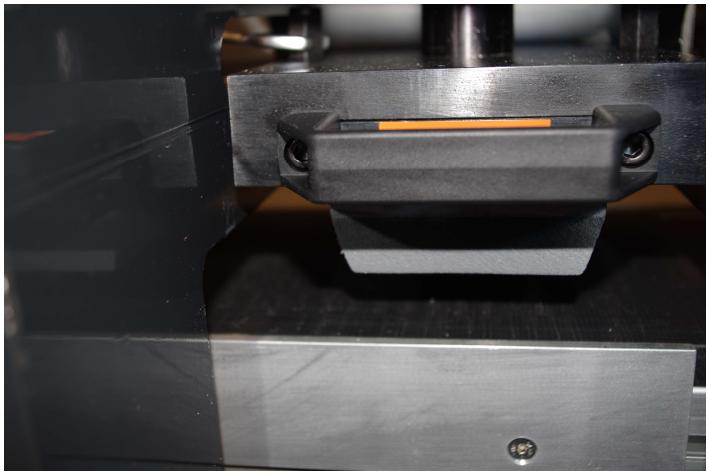
Changing die head

WARNING:
When changing the die, it is recommended to turn off the equipment with the OFF switch for greater safety.

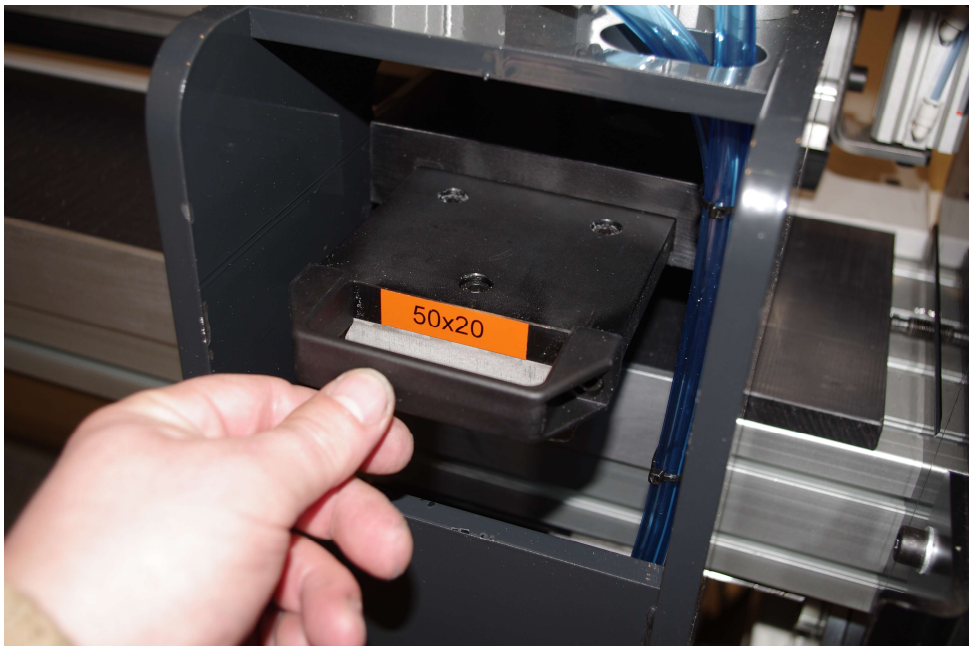
We open the rear door.



We loosen the 2 bolts using a 13mm Allen key.



We remove the die and install the new one.



We tighten the 2 bolts again.

We close the rear door and program the correct gauge on MENU …. STEP … OK

NOTE: We must adjust the cutting pressure for each type of die or material. Otherwise, excess pressure may cause breakage of the blades, or deterioration of the cutting nylon.

- Care and maintenance

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

Turn or change the polypropylene table when the surface is impaired, to do this, turn off the machine and loosen the knob displacement.

After this, open the door and replace this table for a new one.

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.

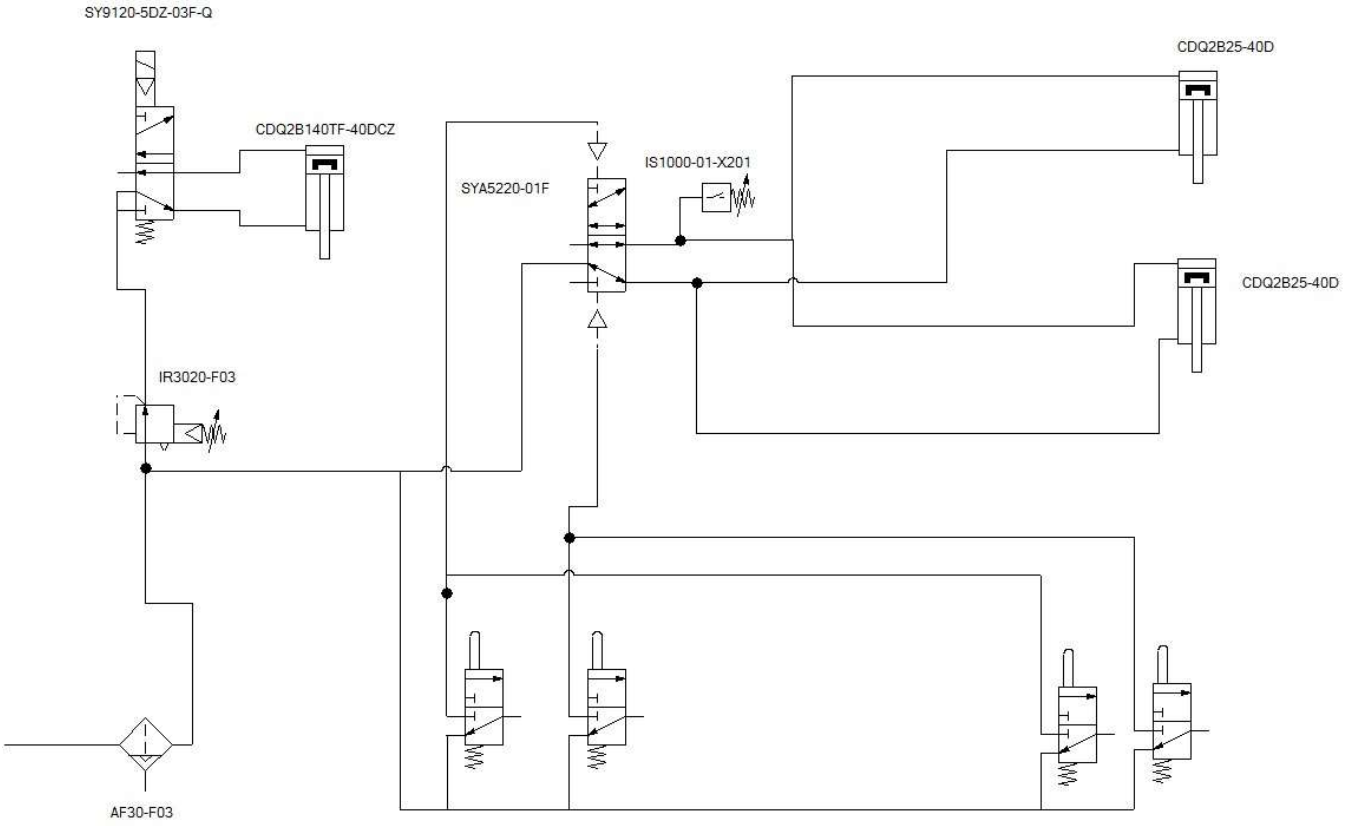
The belt is not cut across the full width.

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.

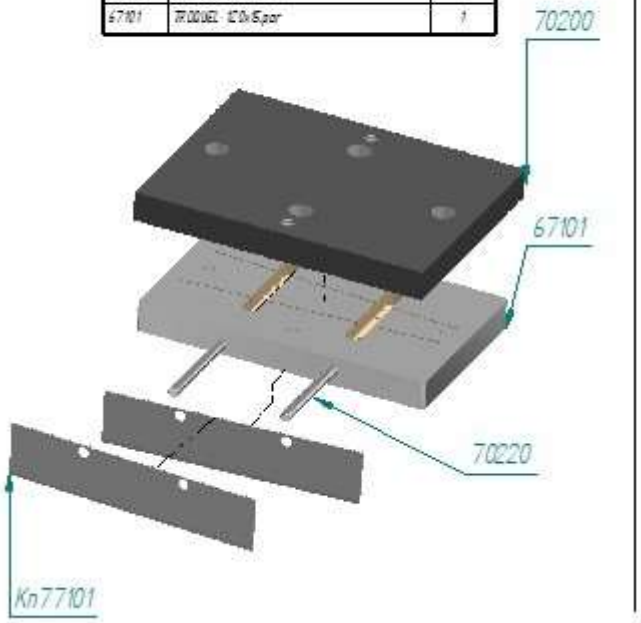
- **Pneumatic drawing**



- **Spare parts**

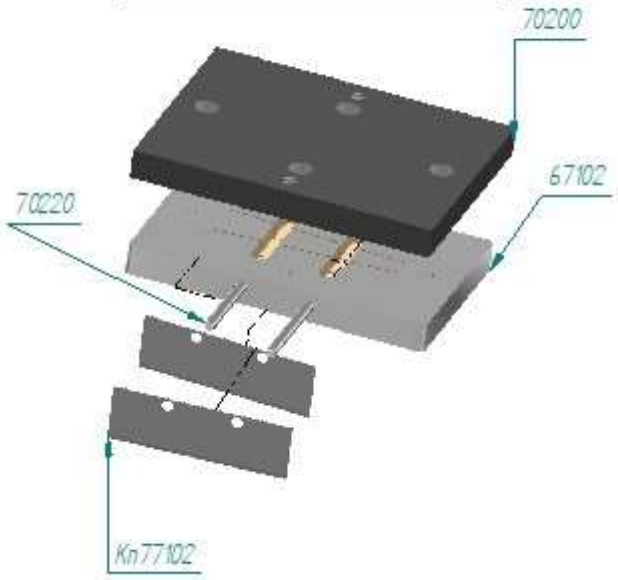
PUNCHING PLATE 120X15

Number	Part name	Units
Kn77101	cuchilla 0.7x120 doble bisel normal,par	2
70200	Distancial troquel 120 CC,par	1
70220	Pasador troquel,par	2
67101	TROQUEL 120x15,par	1



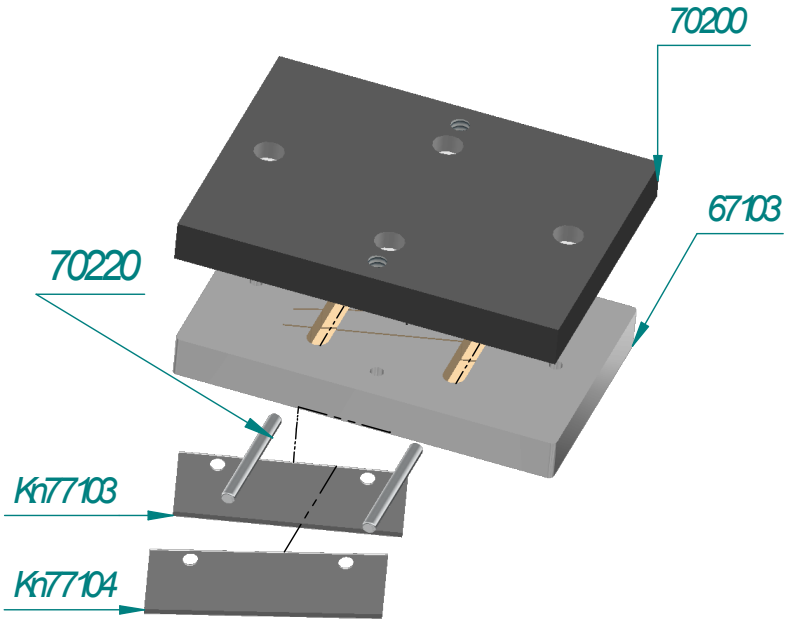
PUNCHING PLATE 80X10

Number	Part name	Units
Kn77102	cuchilla 0.7x80 doble bisel normal,par	2
70200	Distancial troquel 120 CC,par	1
70220	Pasador troquel,par	2
67102	TROQUEL 80x10,par	1



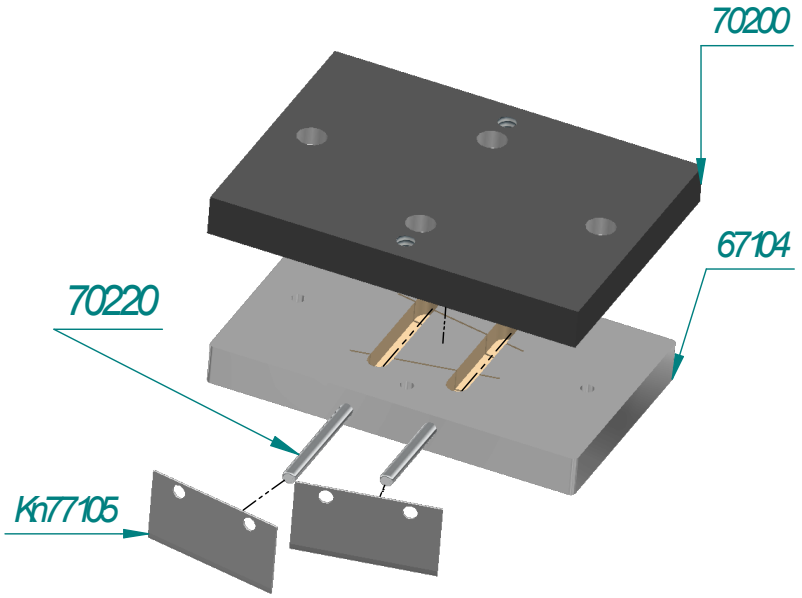
PUNCHING PLATE 80X10 70°

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

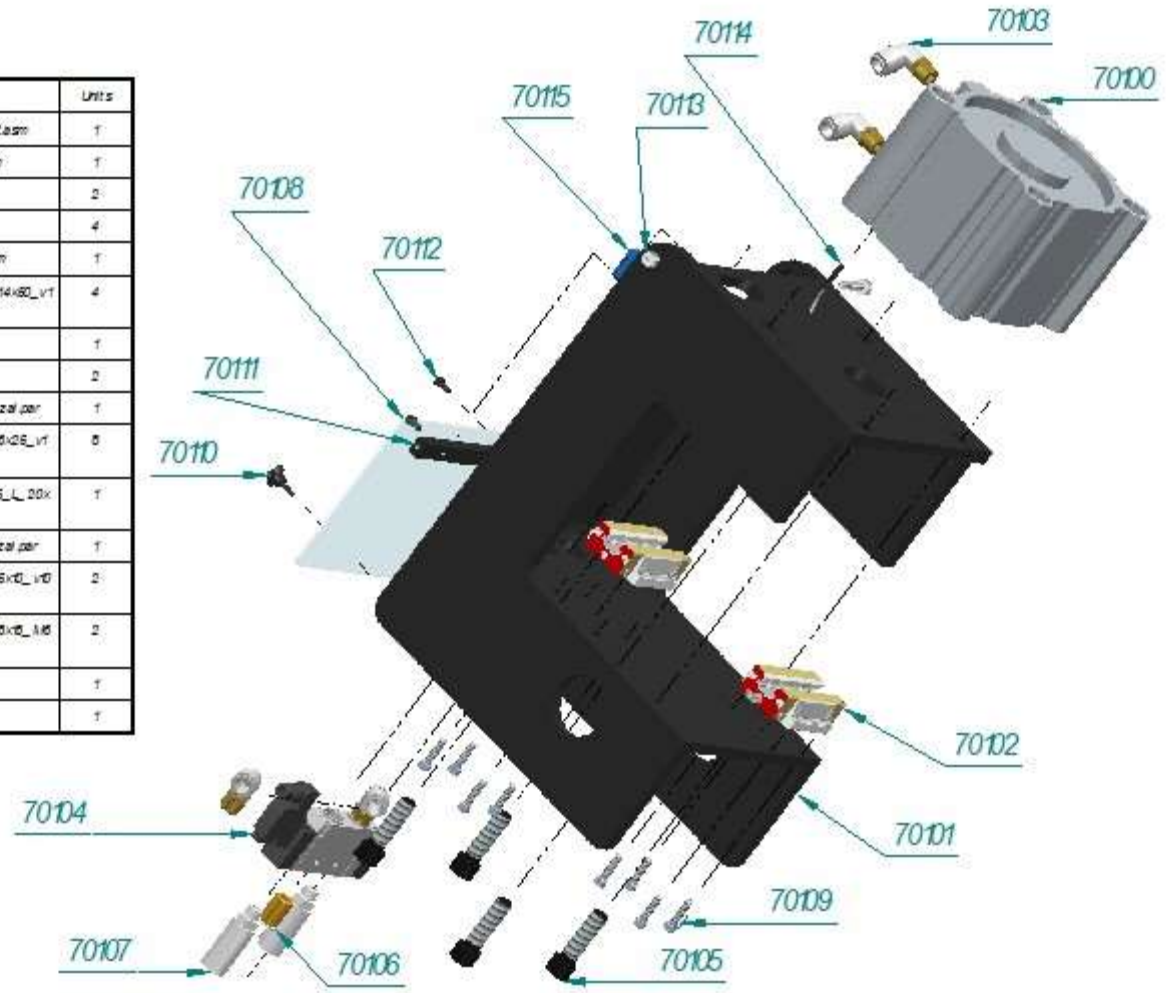


PUNCHING PLATE 50X20

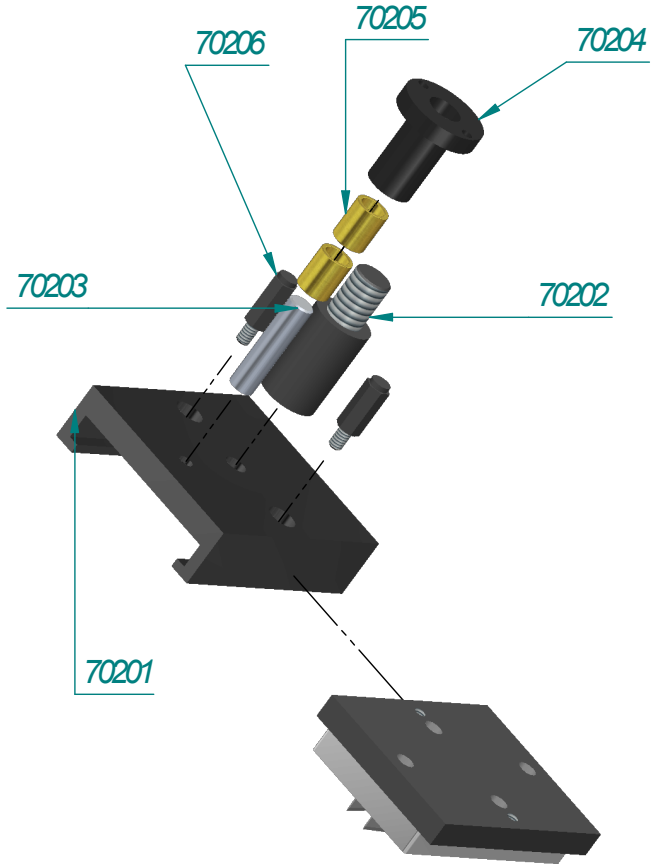
Number	Part name	Units
Kn77105	cuchilla 0.7x52.5.par	2
70200	Distancial troquel 120 DO.par	1
70220	Pasador troquel.par	2
67104	TROQUEL-50x20.par	1



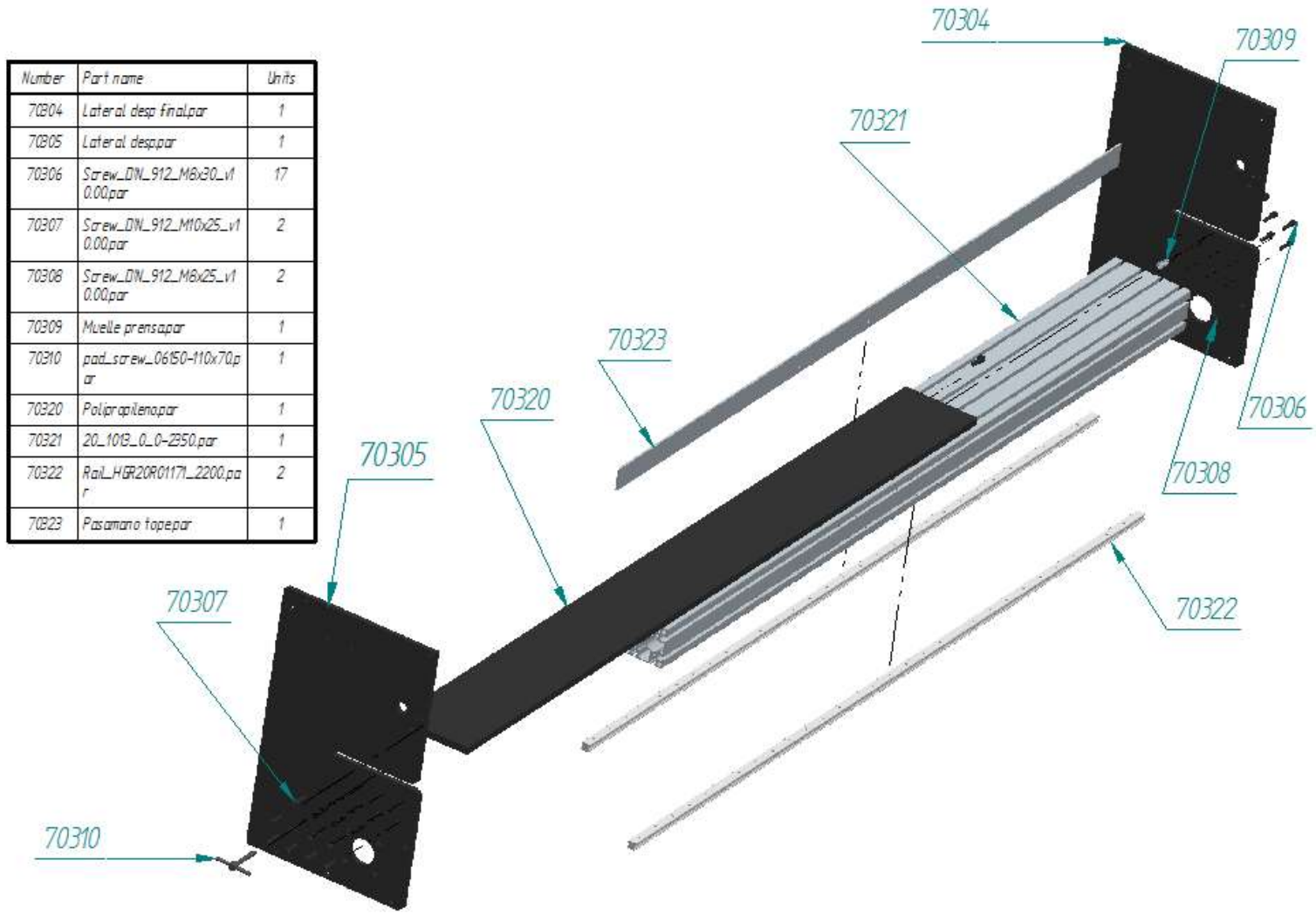
Number	Part name	Units
70100	CDQ2B40TF-40002.asm	1
70101	Cabeza CD600.asm	1
70102	Patin Hiwin 20.par	2
70103	KQ2L12-03S.par	4
70104	SY120-5D2-03.asm	1
70105	Screw_DIN_912_M14x60_v10.00.par	4
70106	KQ2S10-03S.par	1
70107	ANA1-02.par	2
70108	Tapa trasera cabezal.par	1
70109	Screw_DIN_912_M6x25_v10.00.par	6
70110	Retn_grip_DIN_6336_L_20x16_v10.00.par	1
70111	Bisagra tapa cabezal.par	1
70112	Screw_DIN_912_M5x10_v10.00.par	2
70113	Screw_ISO_7379_5x16_M5_v10.00.par	2
70114	D-A93.par	1
70115	Micro puerta.par	1



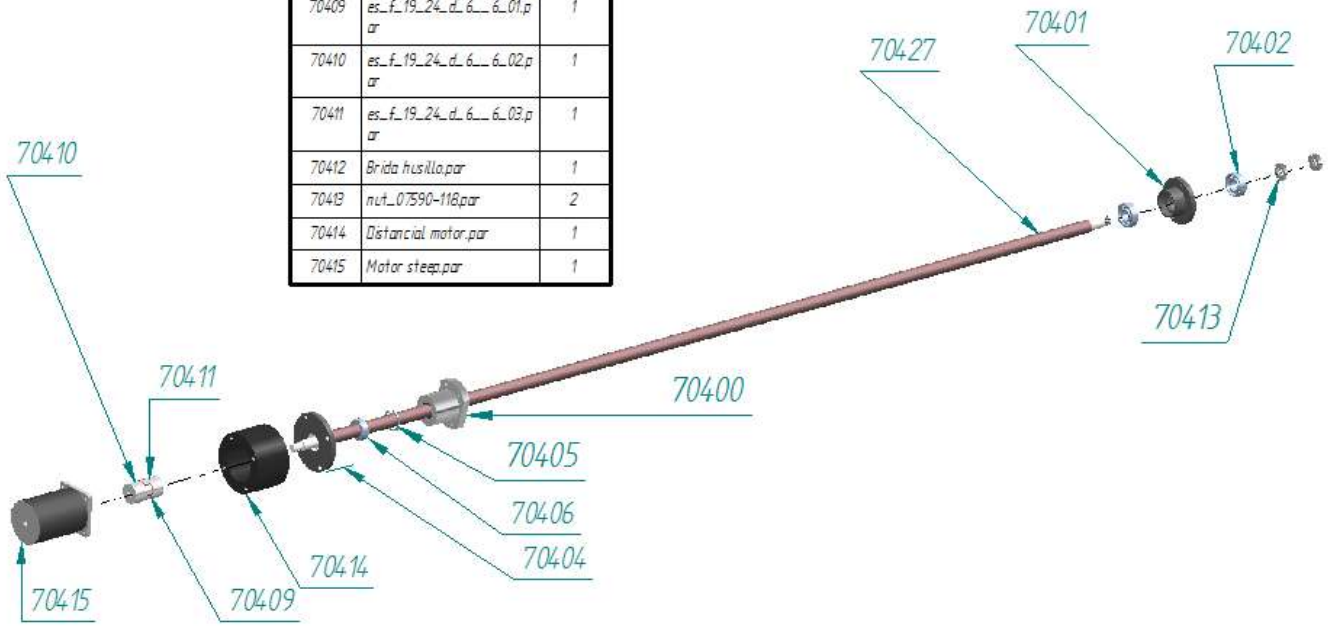
Number	Part name	Units
70201	Base distancial par	1
70202	Enlace troquel par	1
70203	Guia cabezal par	1
70204	Soporte guia cabeza par	1
70205	Selfoil 15x20x25 par	2
70206	Tornillo troquel par	2



Number	Part name	Units
70304	Lateral desp final.par	1
70305	Lateral desp.par	1
70306	Screw_DIN_912_M6x30_v1 0.00.par	17
70307	Screw_DIN_912_M10x25_v1 0.00.par	2
70308	Screw_DIN_912_M6x25_v1 0.00.par	2
70309	Muelle prensa.par	1
70310	pad_screw_06150-110x70.par	1
70320	Polipropileno.par	1
70321	20_1013_0_0-2350.par	1
70322	Rail_HGR20R01171_2200.par	2
70323	Pasamano tope.par	1



Number	Part name	Units
70400	Brida husillo tuercaasm	1
70401	BRIDA BANCADA 2.par	1
70402	Bearing_DIN_626_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_07590-116.par	2
70414	Distancial motor.par	1
70415	Motor steep.par	1



- Electrical drawing

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.

CARACTERÍSTICAS TÉCNICAS

TENSIÓN DE ALIMENTACIÓN	:	230V +PE
TENSIÓN DE MANDO	:	48 V
POTENCIA	:	4 kW

FECHA REALIZACIÓN	:	22/05/2018
ELABORADO POR	:	BPUIG
CANTIDAD TOTAL PÁGINAS	:	12

+IND/2

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

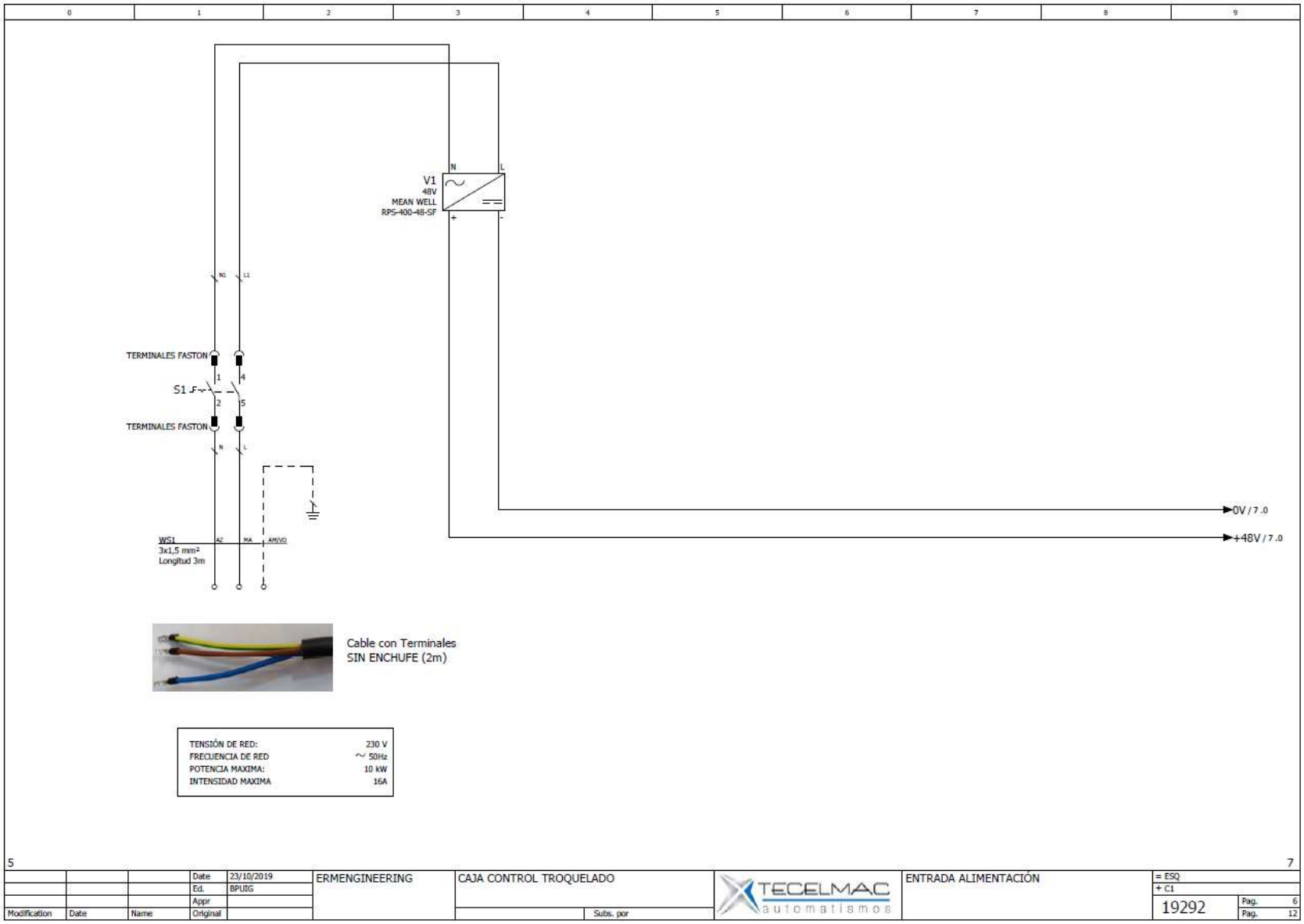
Índice de páginas

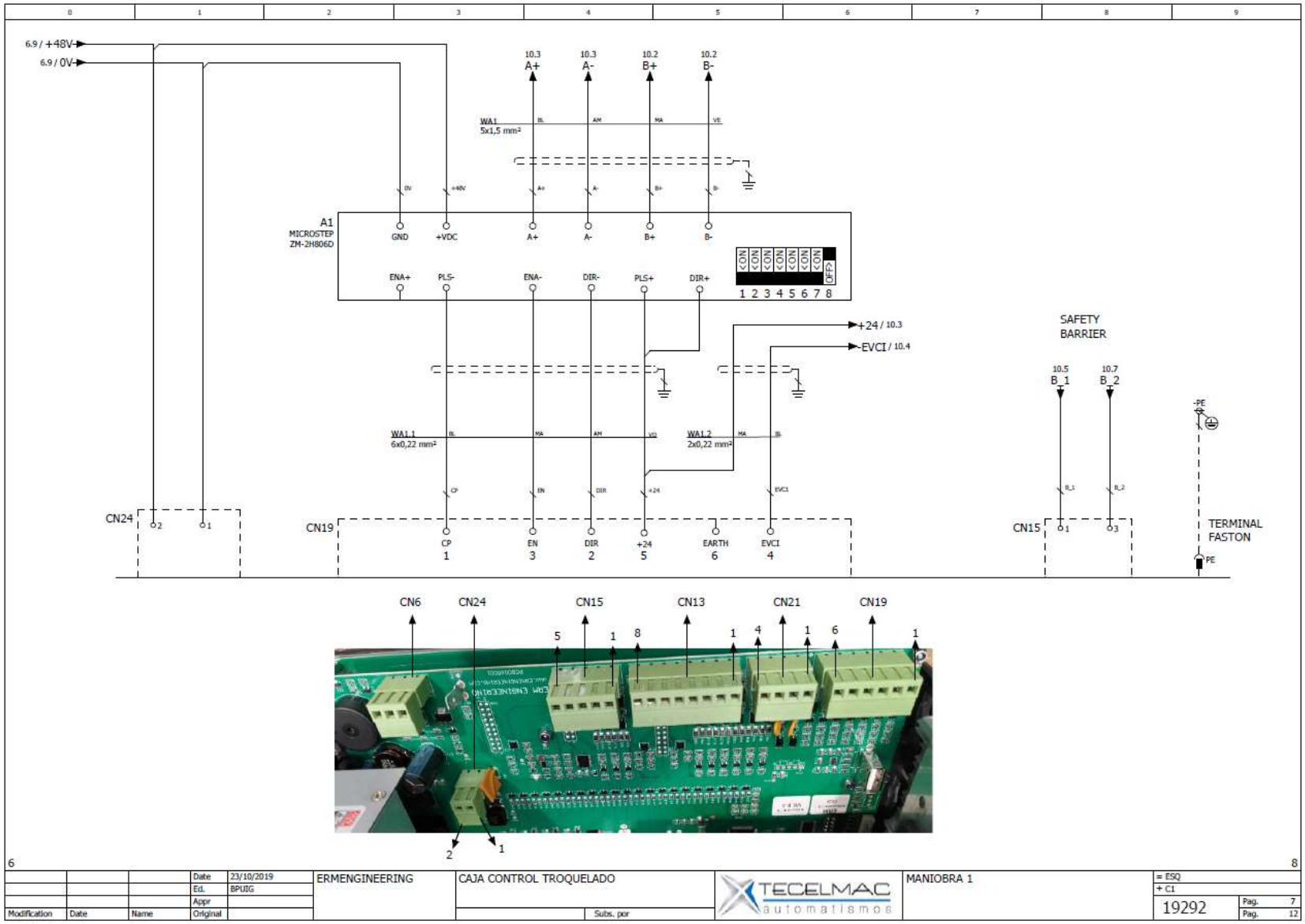
Columna X:una página automática hasido manualmente modificada F06_001

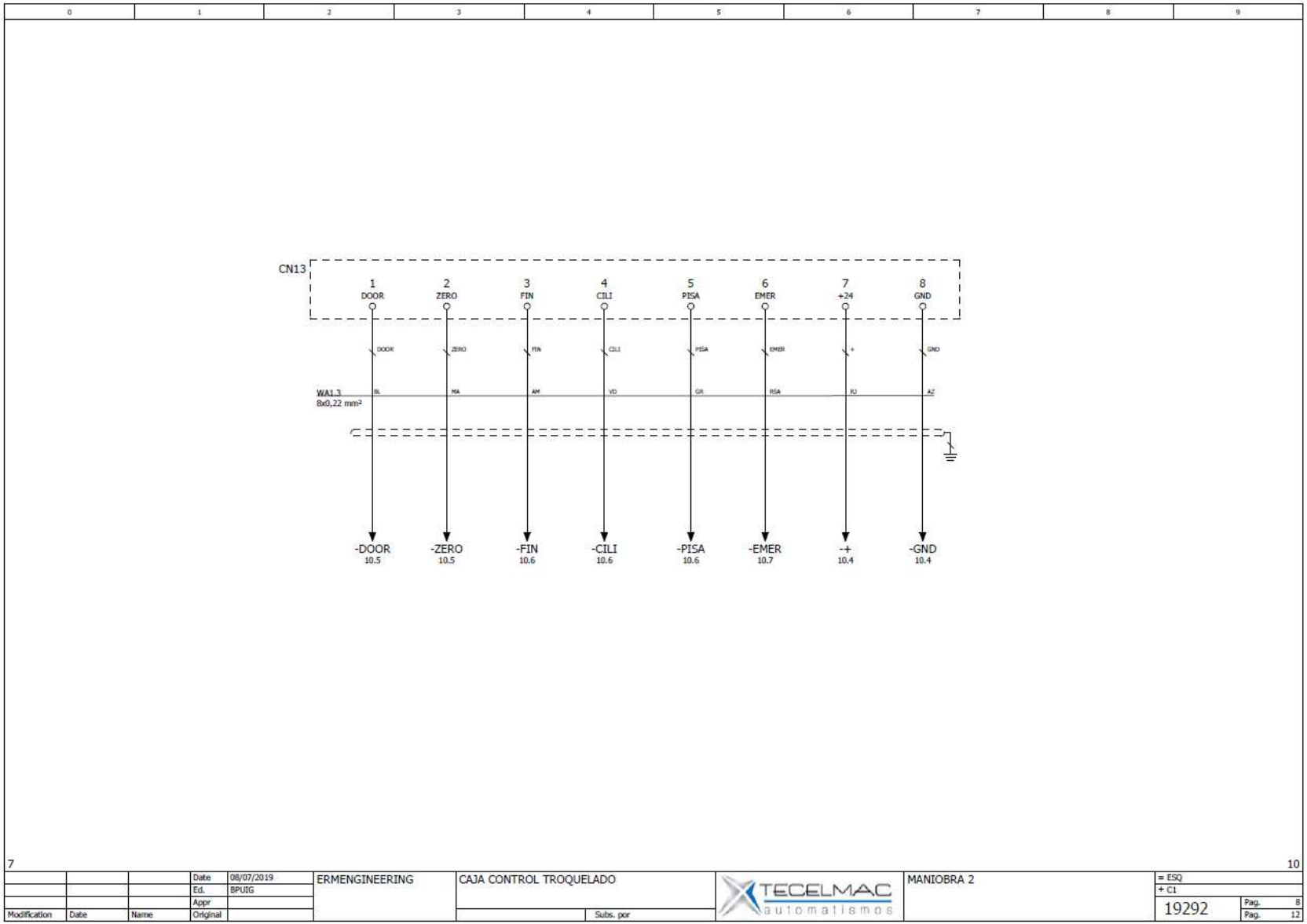
Página	Descripción de página	Número de página	Fecha	Editado por	X
=GEN+POR/1	PORTADA PROYECTO	1	22/05/2018		X
=GEN+IND/2	ÍNDICE DE PÁGINAS	2	23/10/2019		
=ESQ+C1/4	PORTADA ARMARIO C1	4	22/05/2018		X
=ESQ+C1/5	RELACIÓN DE BORNEROS Y CONECTORES	5	22/05/2018		X
=ESQ+C1/6	ENTRADA ALIMENTACIÓN	6	05/08/2019		
=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		

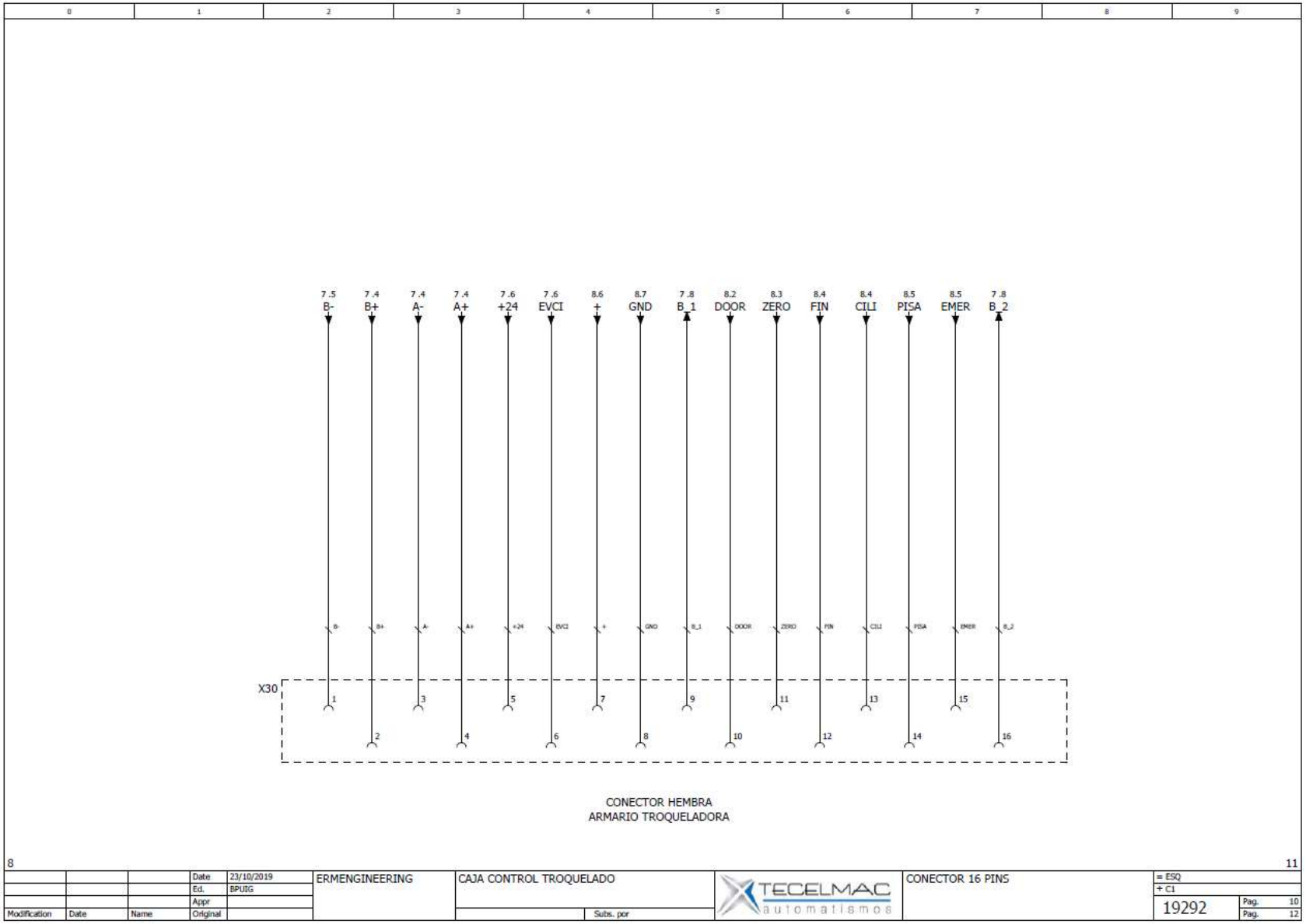
+POR/1 =ESQ+C1/4

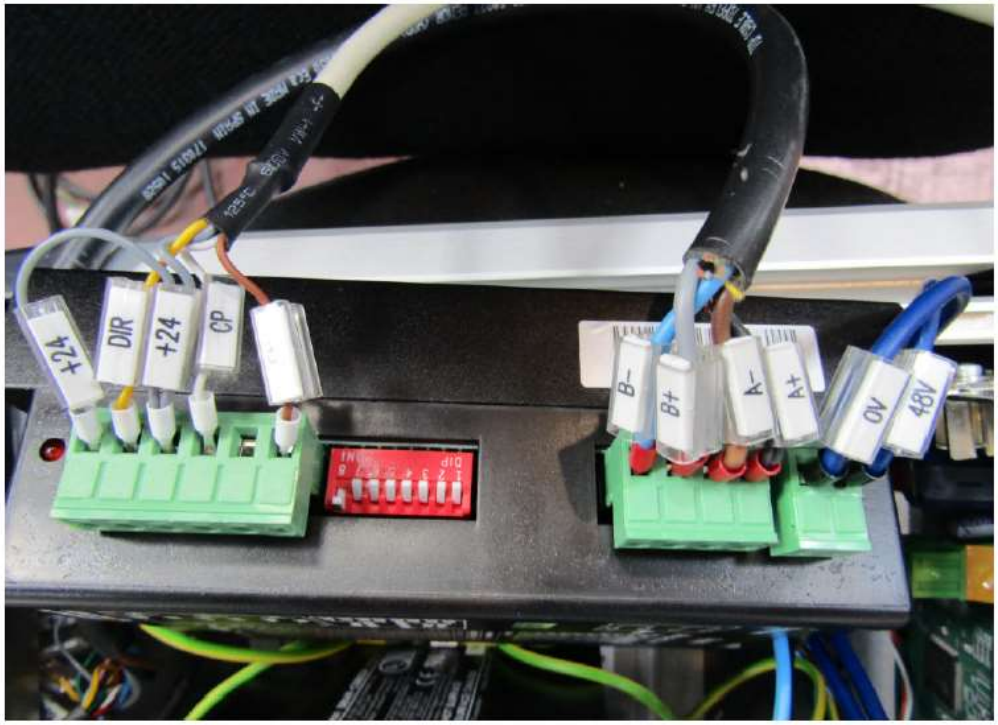
			Date	23/10/2019	ERMENGINEERING	CAJA CONTROL TROQUELADO	ÍNDICE DE PÁGINAS	= GEN
			Ed.	BPUIG				+ IND
			Appr					19292 Pag. 2
Modification	Date	Name	Original			Subs. por		Pag. 12


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
TERMINAL FASTON
CN24
CN19
CP 1
EN 3
DIR 2
+24 5
EARTH 6
EVCI 4
CN15
CN6
CN13
CN21
Date 23/10/2019
Ed. BPUIG
Appr
Original
ERMENGINEERING
CAJA CONTROL TROQUELADO
Subs. por
TECELMAC automatismos
MANIOBRA 1
= ESQ
+ C1
19292
Pag. 7
Pag. 12

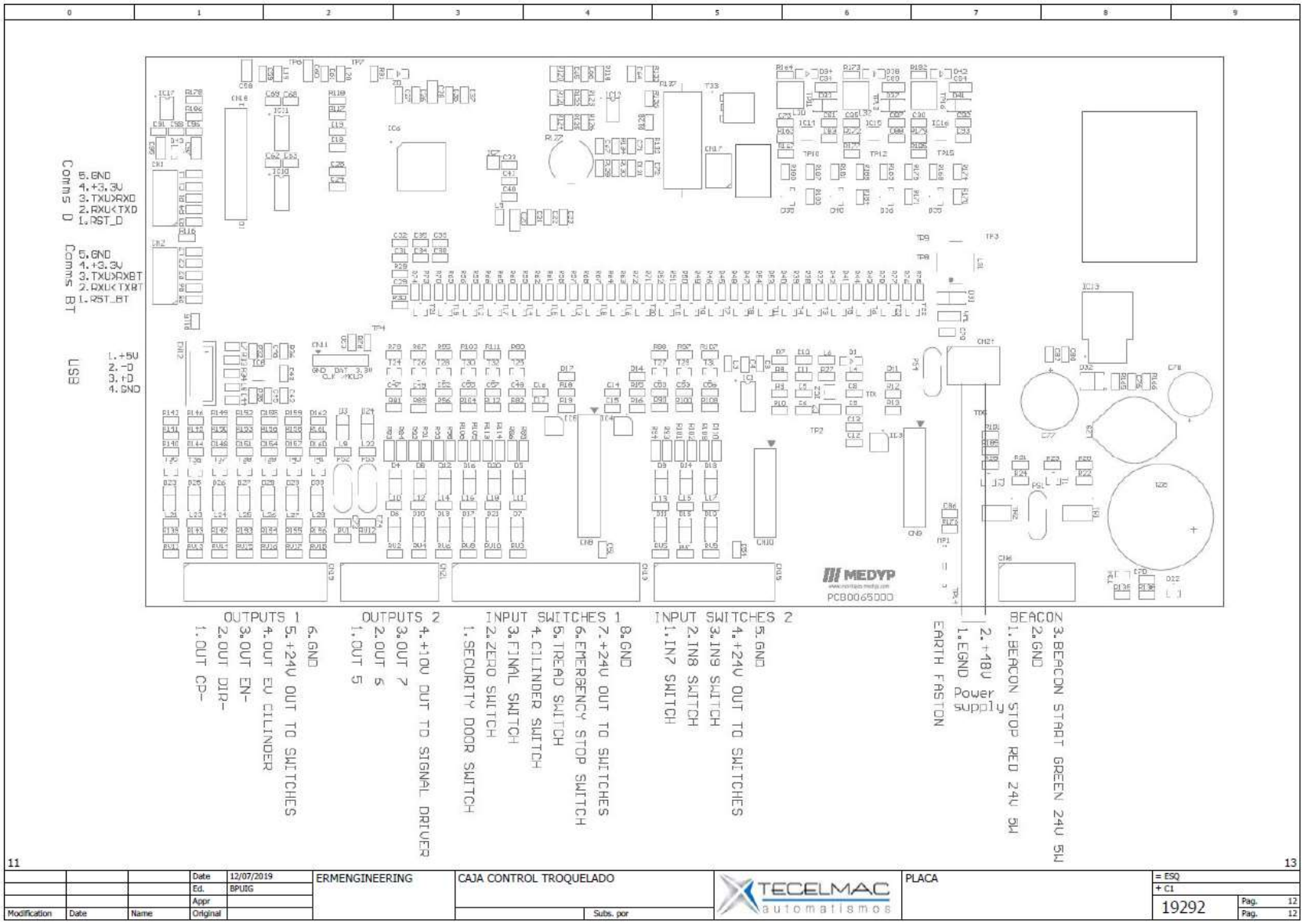

CN13
1 DOOR
2 ZERO
3 FIN
4 CILI
5 PISA
6 EMER
7 +24
8 GND
WA1.3
8x0,22 mm²
-DOOR 10.5
-ZERO 10.5
-FIN 10.6
-CILI 10.6
-PISA 10.6
-EMER 10.7
-+ 10.4
-GND 10.4
7
10
Date 08/07/2019
Ed. BPUIG
Appr
Modification Date Name Original
ERMENGINEERING
CAJA CONTROL TROQUELADO
Subs. por
TECELMAC automatismos
MANIOBRA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


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



*POSAR ELS TERRES A
LA XAPA DE INOX!!!!!!

10									12
			Date	05/08/2019	ERMENGINEERING	CAJA CONTROL TROQUELADO	TECELMAC automatismos	DRIVER	= ESQ
			Ed.	BPUIG					+ C1
			Appr						19292 Pag. 11
Modification	Date	Name	Original			Subs. por			Pag. 12


Comms D
5.GND
4.+3.3V
3.TXD>RXD
2.RXD<TXD
1.RST_D
Comms BT
5.GND
4.+3.3V
3.TXD>RXBT
2.RXD<TXBT
1.RST_BT
USB
1.+5V
2.-D
3.+D
4.GND
MEDYP
PCB0065000
OUTPUTS 1
1.OUT CD-
2.OUT DIR-
3.OUT EV-
4.OUT EV CILINDER
5.+24V OUT TO SWITCHES
6.GND
OUTPUTS 2
1.OUT 5
2.OUT 6
3.OUT 7
4.+10V OUT TO SIGNAL DRIVER
INPUT SWITCHES 1
1.SECURITY DOOR SWITCH
2.ZERO SWITCH
3.FINAL SWITCH
4.CILINDER SWITCH
5.TREAD SWITCH
6.EMERGENCY STOP SWITCH
7.+24V OUT TO SWITCHES
8.GND
INPUT SWITCHES 2
1.IN7 SWITCH
2.IN8 SWITCH
3.IN9 SWITCH
4.+24V OUT TO SWITCHES
5.GND
EARTH FASTON
1.GND Power supply
2.+18V
BEACON
1.BEACON STOP RED 24V 5W
2.GND
3.BEACON START GREEN 24V 5W
11
13
Date 12/07/2019
Ed. BPUIG
Appr
Original
Modification
Date
Name
ERMENGINEERING
CAJA CONTROL TROQUELADO
Subs. por
TECELMAC automatismos
PLACA
= ESQ
+ C1
19292
Pag. 12
Pag. 12