(Original) Use and maintenance manual

Type: Timing belt welder & milling machine
Model: LTSE-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.

Index:

Page

- **CE Declaration of conformity: 3**
- **Description: 4**
- **Technical Characteristics: 4**
- **Standard equipment: 4**
- **Warnings and safety: 4**
- **Installation and start-up: 5**
- **Preparation & Operation: 8**
  - *Preparation 8*
  - *Operation 11*
  - *a) Grinding 12*
  - *b) Welding 12*
- **Care and maintenance: 15**
- **Electric Schemes: 16**

- CE Declaration of conformity:

WE DECLARE, under our responsibility, that the machine:
- Type: Timing belt welder
- Brand: ERM Engineering
- Model: LTSE-200
- Serial No.: 73103
- Manufacturer date: 2023

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

General Manager: Eduardo Ramos Martínez

Arenys de Munt (Barcelona)-SPAIN
Date: 2023/01

- Description:

Continuous longitudinal welder and milling V-guides for timing belts using a milling tool to pull out fabrics and hot air blower to weld a profile. Fitted with speed, temperature and pressure controls for different types of material.

- Technical Characteristics:

Dimensions of Milling head	760x730x1650 mm (LxWxH)
Dimensions of Tension trolley	2650x870x1260 mm (LxWxH)
Weight	538 kg
Max. Belt Width	200 mm
Max. Belt Thickness	20 mm
Motor milling	1x 750 W
Motor belt	1x 120 W
Leister Welder	1x 1600 W
Vacuum machine	1x 550 W
Voltage	3x400 V 50/60 Hz
Air pressure	6 bar

- Standard equipment:

- One Leister head
- One milling head
- 5 V-guides pulleys (K6-K8-K10-K13-K17)
- 5 Milling tools (K6-K8-K10-K13-K17)
- One vacuum system

- 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:

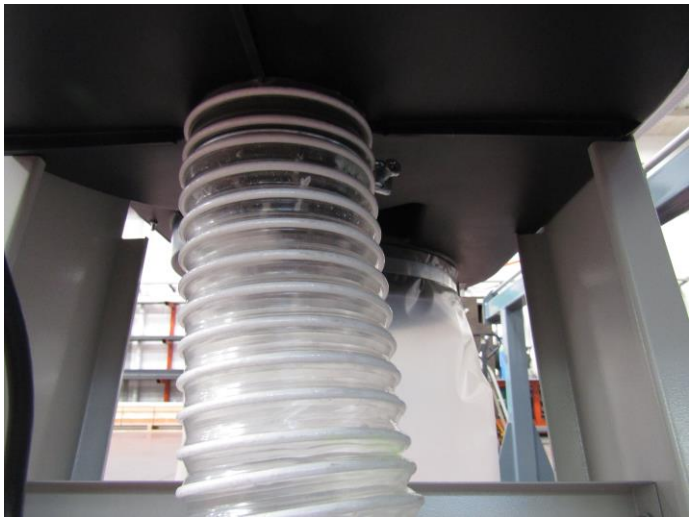
Site the machine in working area and fix on the floor with steel bolts.

ATTENTION: DO NOT USE THE MACHINE IF NOT FIXED ON THE FLOOR; RISK OF FALLING.

Place the tensioner body aligned (complete perpendicular) with the driver roller.

NOTE: Depending on the strap length we can distance the tensioning body from the drive head.

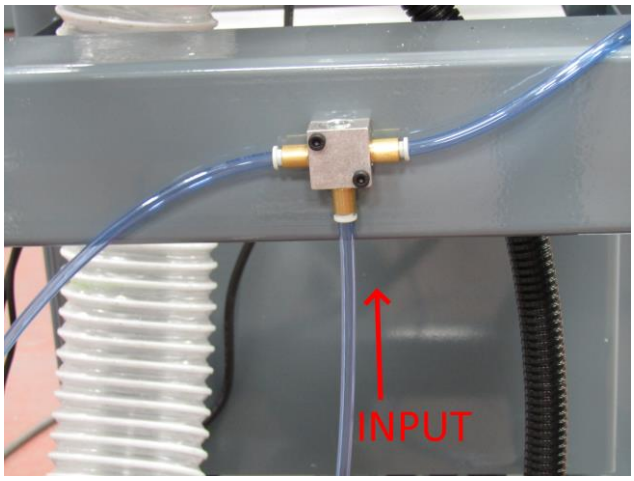
Install the vacuum cleaner beside the machine and connect the tube coming from the milling head bottom.



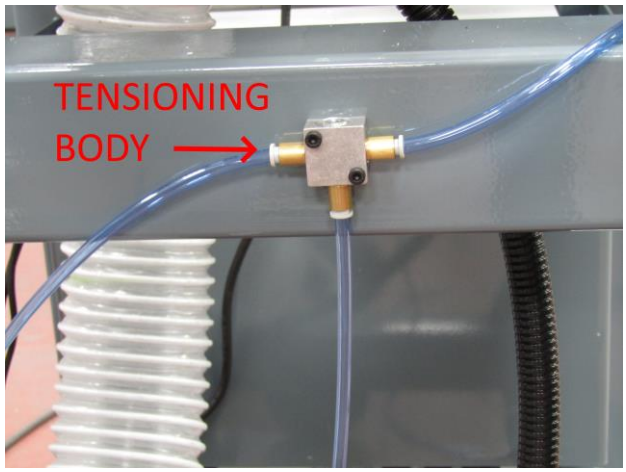
Connect the power supply cable 3 phases (3x400V+N) from the main control box:

Then connect the VACUUM CLEANER cable and the LEISTER cable to their respective sockets behind the control box:

It must also be connected to a compressed air supply with input pressure 6 bar.



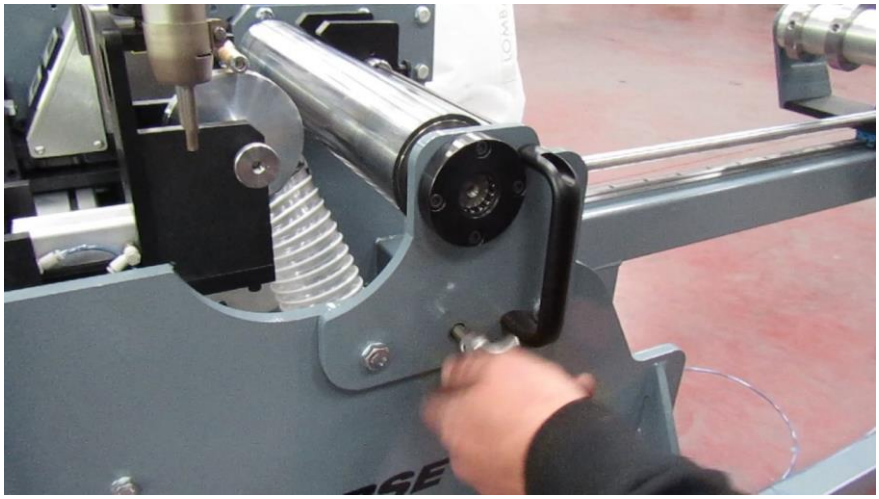
Connect the air tube of the tensioning body to the driving body.



- **Preparation & Operation:**

Preparation

Remove the control knob from the support plate of the drive roller:

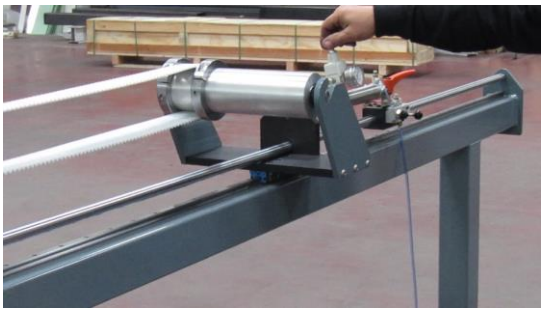


And remove the support from the driver roller to insert the “endless” belts:

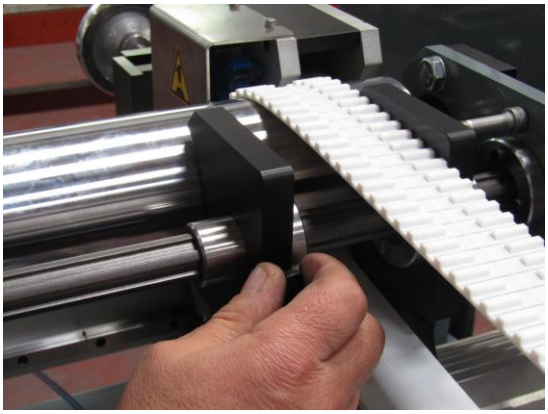
Insert the belt and then reassemble and fix the plate.

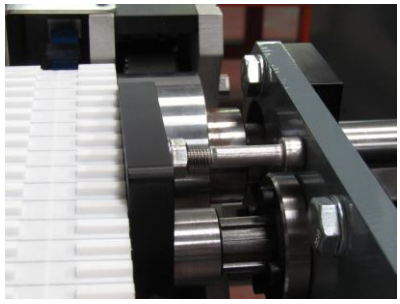
NOTE: Do not operate or tension the belt without this fastening element, could cause mechanical damage.

Place the tension roller inside the strap and tension the strap activating the valve of the tensor cylinder, after adjusting the belt with the rings of the cylinder depending of its width. Then we will adjust the tension roller to the size of the tape, loosening the tension cylinder moving it to the size required.



Once the strap is tensioned, adjust the right guide.



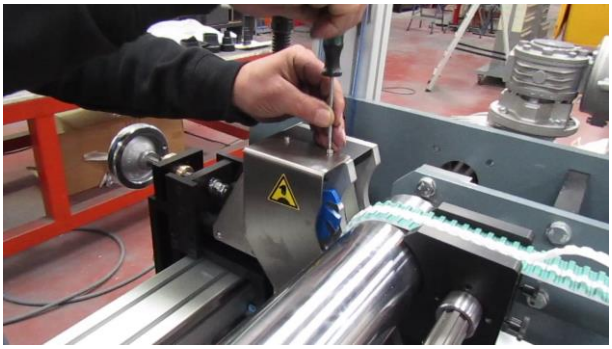


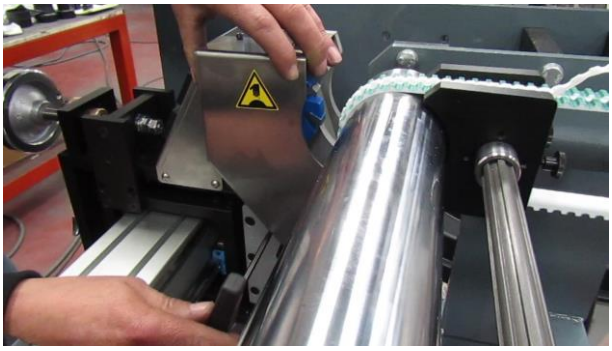
The left guide always must be fixed to the top of the left bolt, touching the frame.
In this way we always keep the 0 point of digital measuring system on the edge of the belt.

To achieve a good centering of the strap, it is recommended to start-up the drive motor to the highest speed.

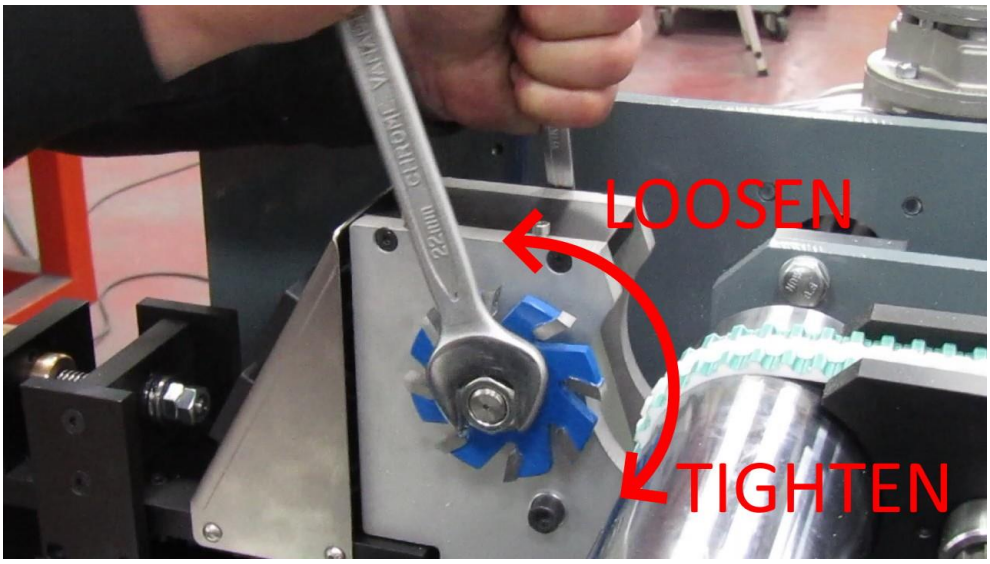
Select the milling tool to the size required and assemble it, for this operation we will press the two emergency stop or turn off the control box.

Remove the cover





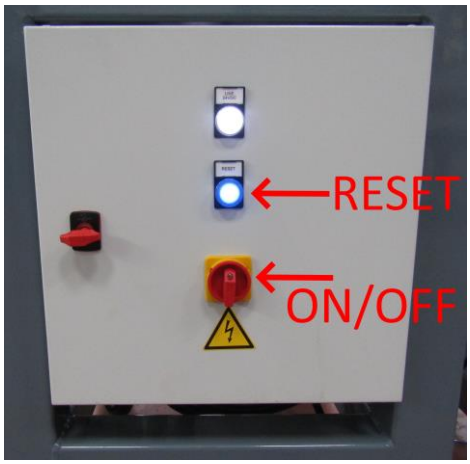
and using a 22mm key and 13mm key in the opposite shaft side to break the rotation.

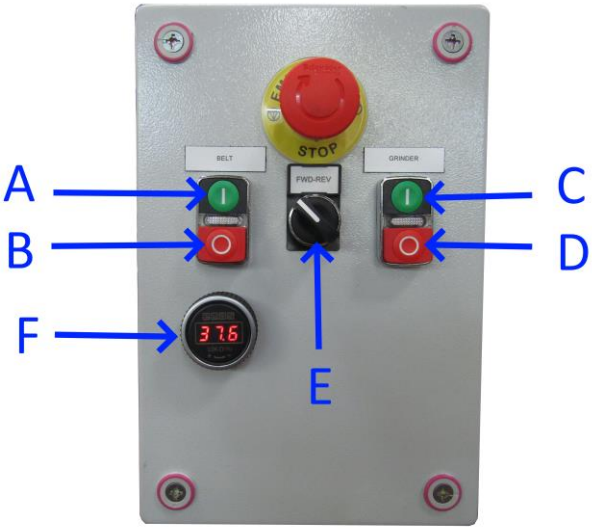


⚠ **WARNING: take care with the milling tools, can cause cut injuries.**

Operation

Turn on the line and reset the system



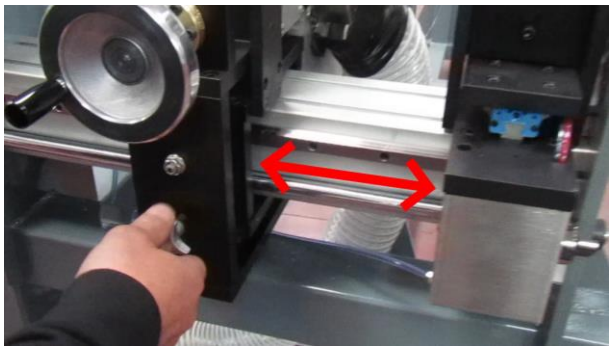


A- Belt ON
B- Belt OFF
C- Grinder ON
D- Grinder OFF
E- FORWARD/REVERS selector
F- Potentiometer

a) Grinding

Once the belt it is settled on the machine, and the selected grinder is installed, we will adjust the position of the grinding head, helped by the lower digital meter, taking present that the measure that you read in the down display is the distance between the milling wheel centre and the left guide (0 point).

When the milling head is in position, fix with the knob



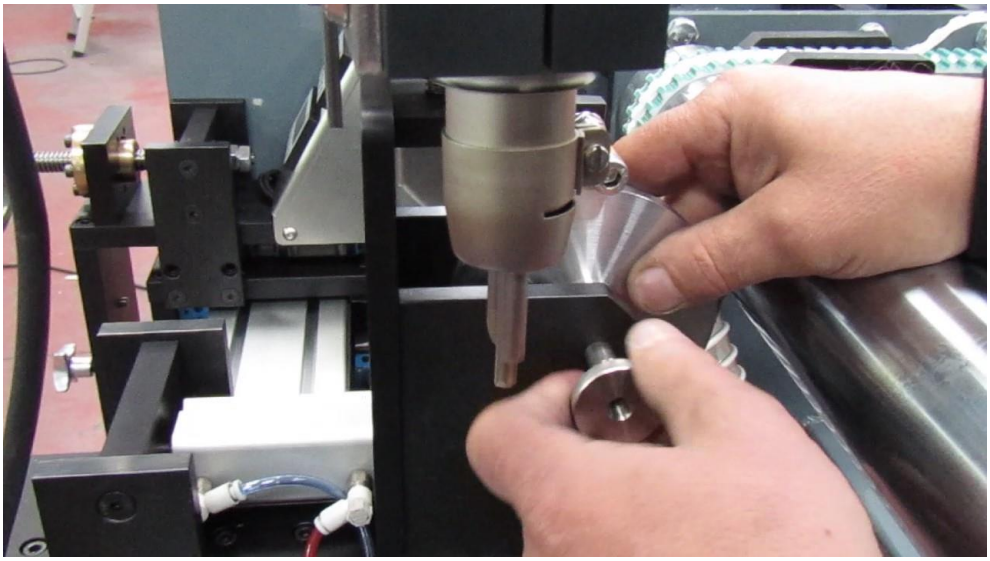
Then we approach the grinder to the belt with the manual wheel and helped by the upper digital meter.

Turn on the belt in forward mode.
Turn on the grinder before or when approaching the grinding head to the belt.

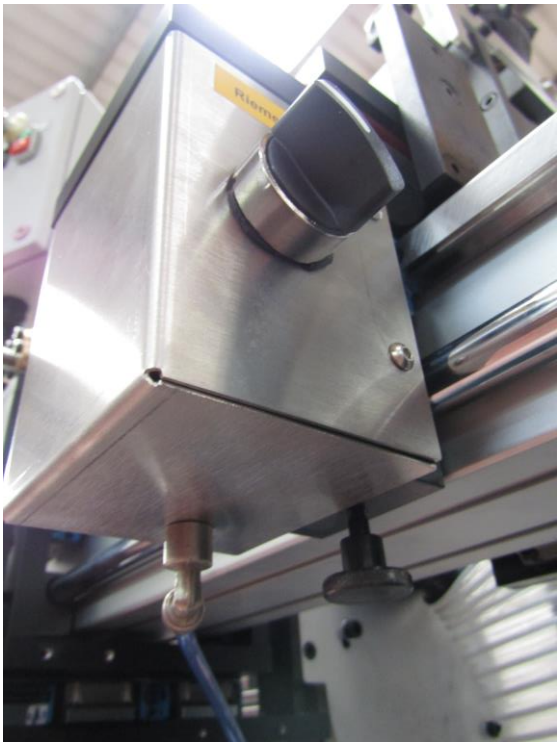
NOTE: The vacuum system it's ON automatically once the grinder button's ON it's pulsed.

b) Welding

Select the pulley to the size required and place it in the welding head.



Move the welding head to the position required, to achieve this we must release the brake from the welding head.



Start the Leister to preheat and adjust the weld temperature.

Select revers mode.
Adjust the belt speed with the potentiometer and pulley pressure with the pressure regulator.

NOTE: Any change made to the temperature will not become effective until a few minutes have elapsed. Adjusting the welding speed using the control potentiometer has immediate results.

NOTE: Check the weld by attempting to pull the welder joint.

- 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.
  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.

- **Electric Schemes:**

TECELMAC automatismos

Automatismos Tecelmac S.L.
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08470, Sant Celoni (Barcelona)
Telf. : 93.848.73.69 Mail: tecelmac@tecelmac.com

CLIENTE	:	ERMENGINEERING
DENOMINACIÓN	:	MAQUINA LRSE-180
PROYECTO	:	22493

TIPO DE ESQUEMAS	:	ELÉCTRICOS
FORMATO-VERSIÓN	:	EPLAN P8 2.9
FABRICANTE (EMPRESA)	:	ERMENGINEERING
LUGAR DE INSTALACIÓN	:	ARENYS
RESPONSABLE DEL PROYECTO	:	JSP
FECHA DE CREACIÓN	:	18/10/2022
ELABORADO POR	:	BPUIG

CARACTERÍSTICAS TÉCNICAS

LÍNEA DE SUBMINISTRO	:	3F+N+PE
TENSIÓN DE ALIMENTACIÓN	:	400 V
FRECUENCIA DE RED	:	50 Hz
POTENCIA MAX.	:	1Kw
TENSIÓN DE MANDO	:	24Vdc
CANTIDAD TOTAL DE PÁGINAS	:	22

Cliente	Localidad	ARENYS	Fecha de creación	18/10/2022	TECELMAC automatismos	Pág.	PORTADA PROYECTO	Nº de proyecto
ermengineering belting fabrication equipment	País	ESP	Editado por	BPUIG		Descripción del proyecto	MAQUINA LRSE-180	22493
	Fabricante	ERMENGINEERING	Aprovado por	JSP				Hoja 1
	Versión	1.0	Fecha modificación	20/10/2022				

Indice de páginas

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Asignación	Página	Descripción de página	Fecha	Responsable
	1	PORTADA PROYECTO	18/10/2022	TALLER
	2	ÍNDICE DE PÁGINAS	20/10/2022	TALLER
	4	CODIGO COLORES	18/10/2022	TALLER
=ESQ +AE1				
	1	PORTADA ARMARIO -AE1-	18/10/2022	TALLER
	&LAY 1	LAYOUT PLACA	19/10/2022	TALLER
	&LAY 2	LAYOUT ENVOLVENTE	20/10/2022	TALLER
	&LAY 3	LAYOUT ENVOLVENTE	20/10/2022	TALLER
	&LAY 5	LAYOUT BOTONERA	20/10/2022	TALLER
	&BOR 1	Plano de hileras de bornes =ESQ+AE1-X1	20/10/2022	TALLER
	&BOR 2	Plano de hileras de bornes =ESQ+AE1-X2	19/10/2022	TALLER
	&BOR 3	Plano de hileras de bornes =ESQ+AE1-X4	19/10/2022	TALLER
	&BOR 4	Plano de hileras de bornes =ESQ+AE1-X5	19/10/2022	TALLER
	&BOR 5	Plano de hileras de bornes =ESQ+AE1-X6	19/10/2022	TALLER
	&EL 1	PORTADA ESQUEMAS -AE1-	18/10/2022	TALLER
	&EL 2	ENTRADA ALIMENTACIÓN	20/10/2022	TALLER
	&EL 3	ALIMENTACIONES 230VAC	19/10/2022	TALLER
	&EL 4	ALIMENTACION VARIADOR	19/10/2022	TALLER
	&EL 5	MOTORES RASCADORES	19/10/2022	TALLER
	&EL 15	ALIMENTACIÓN 24VDC	19/10/2022	TALLER
	&EL 20	RELÉ DE SEGURIDAD	19/10/2022	TALLER
	&EL 22	MANIOBRA MOTOR VARIADOR	20/10/2022	TALLER
	&EL 23	MANIOBRA MOTOR DIRECTO	19/10/2022	TALLER

1 4

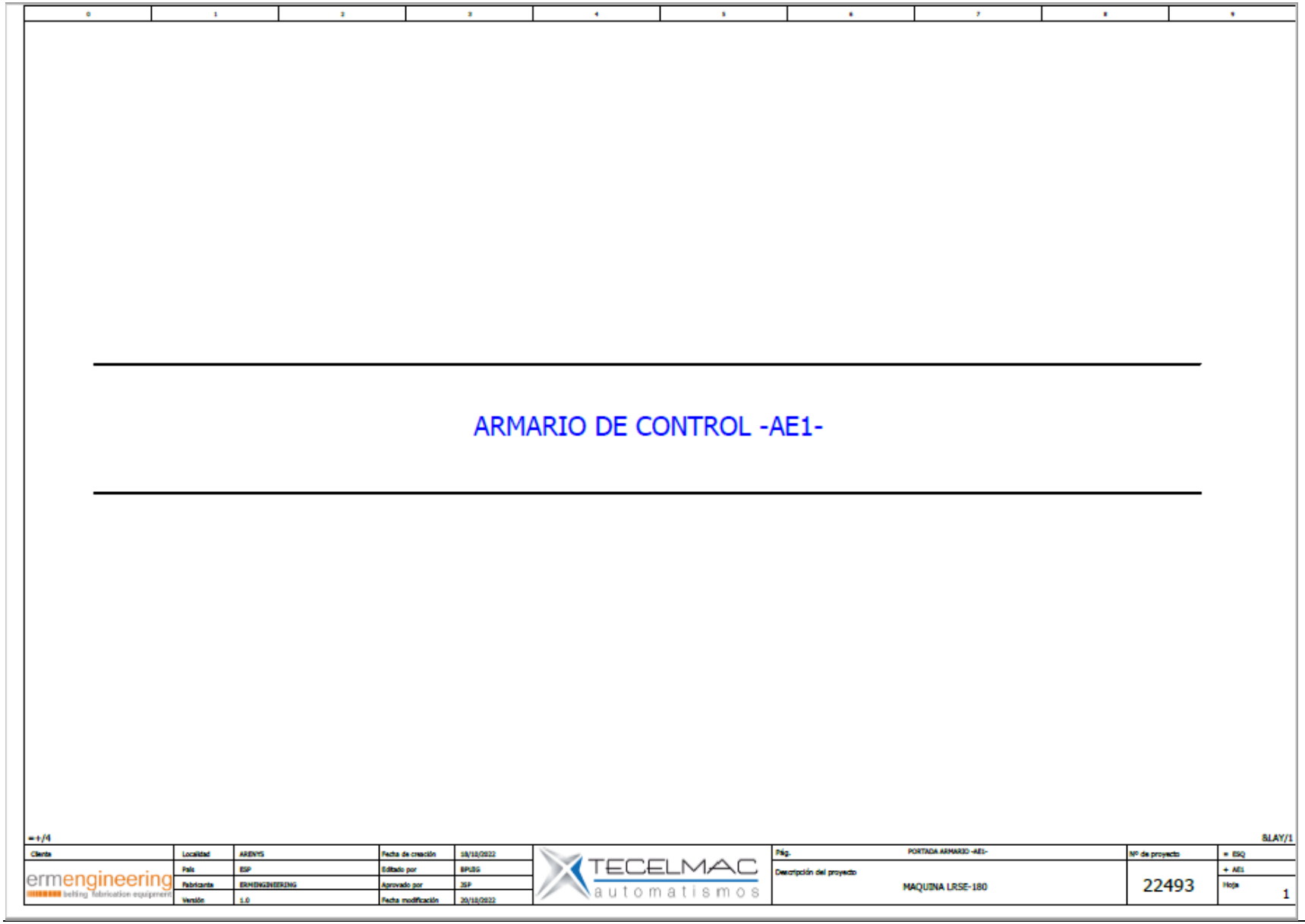
Cliente	Localidad	ARENYS	Fecha de creación	18/10/2022	TECELMAC automatismos	Pág. ÍNDICE DE PÁGINAS	Nº de proyecto	=
ermengineering belting fabrication equipment	País	ESP	Editado por	BPUIG		Descripción del proyecto MAQUINA LRSE-180	22493	+
	Fabricante	ERMENGINEERING	Aprovado por	JSP				Hoja 2
	Versión	1.0	Fecha modificación	20/10/2022				

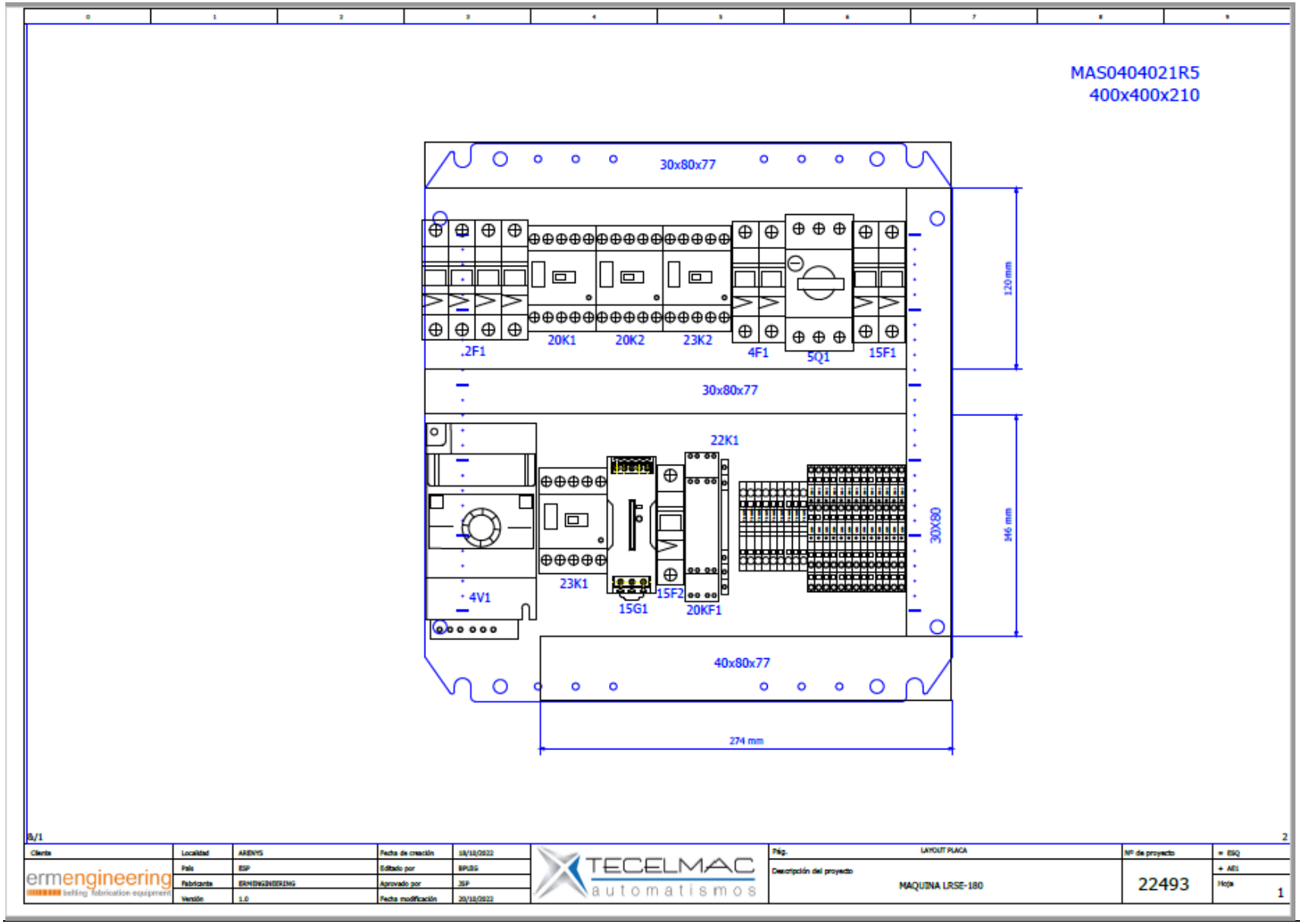
Color del conductor	
Circuitos	**Color hilo**
Corriente principal CA	Negro
Conductor Neutro	Azul Claro
Circuito de Control CC	Azul oscuro
Circuito de Control CA	Rojo
Tensión Ajena	Naranja
Circuitos libre Potencial	Naranja
Circuito de Protección	Amarillo/Verde

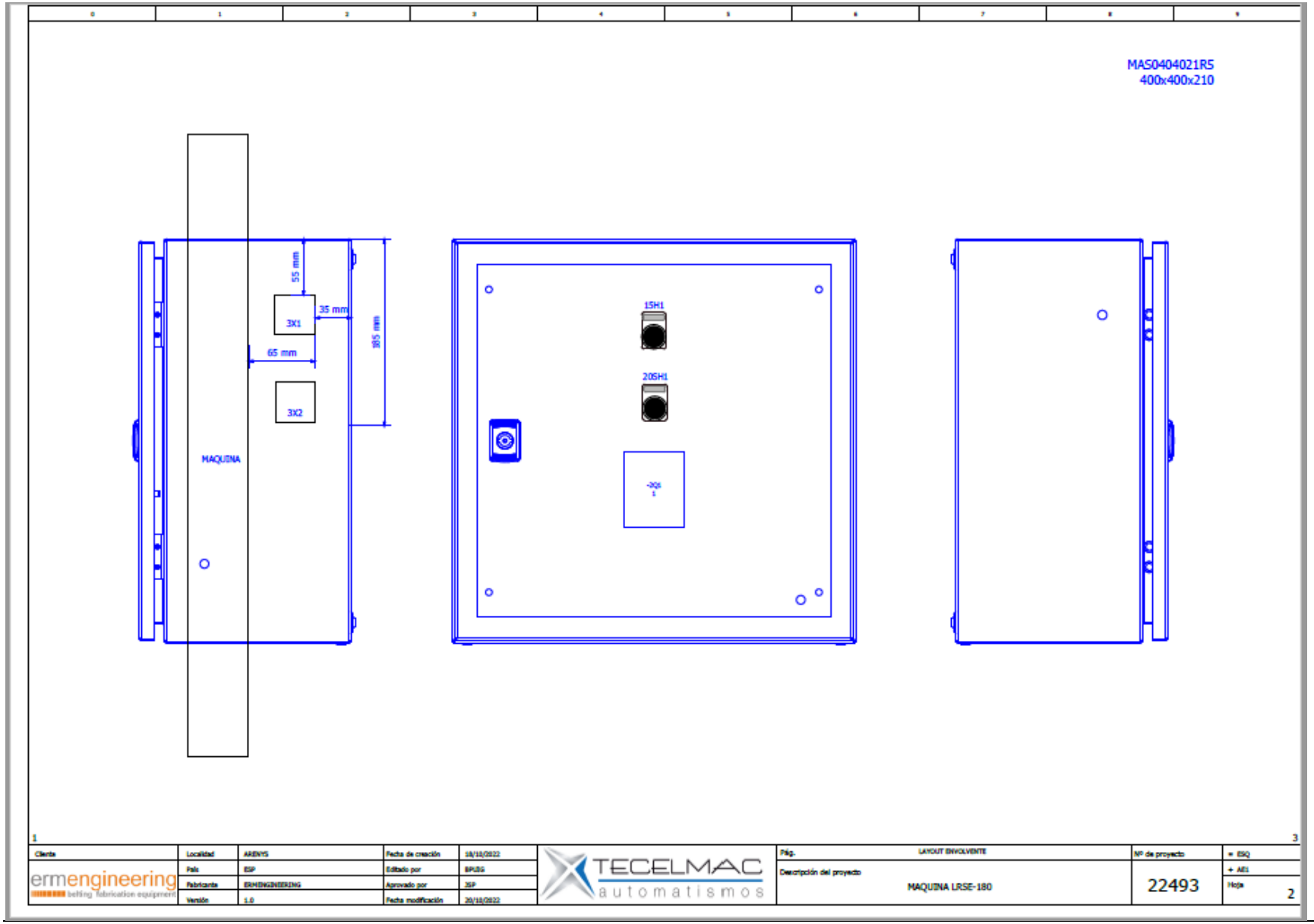
Identificación colores / Colour Code / Code Couleur			
			Abreviacion / Abreviation
NEGRO	BLACK	NOIR	BK
MARRON	BROWN	MARRON	BN
ROJO	RED	ROUGE	RD
NARANJA	ORANGE	ORANGE	OG
AMARILLO	YELLOW	JAUNE	YE
VERDE	GREEN	VERT	GN
AZUL	BLUE	BLUE	BU
VIOLETA	VIOLET	VIOLET	VI
GRIS	GREY	GREY	GY
BLANCO	WHITE	BLANC	WH
ROSA	PINK	ROSE	PK
TURQUESA	TURQUOISE	TURQUOISE	TQ
VERDE-AMARILLO	GREEN-YELLOW	VERT-JAUNE	GNYE

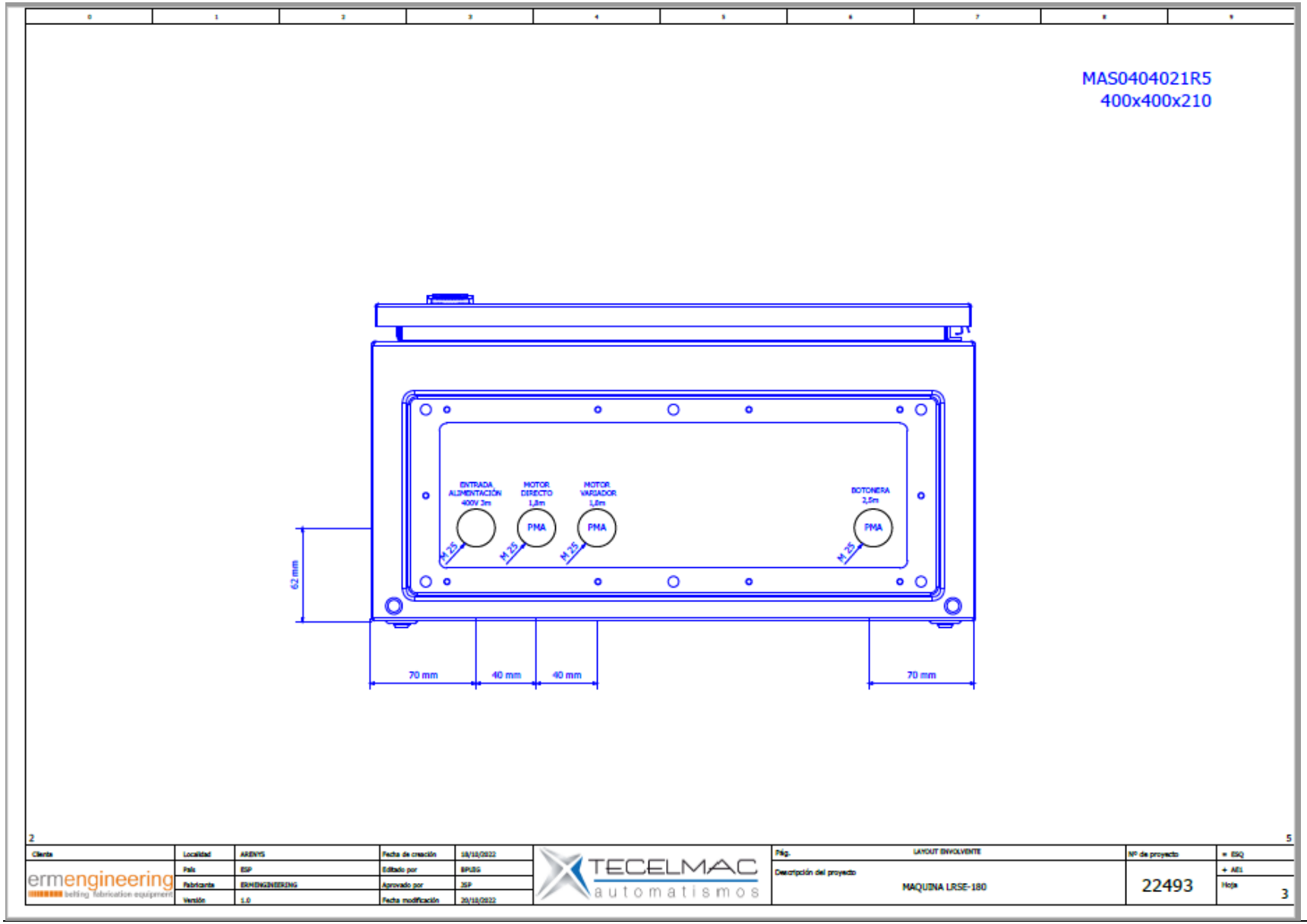
2 =ESQ+AE1/1

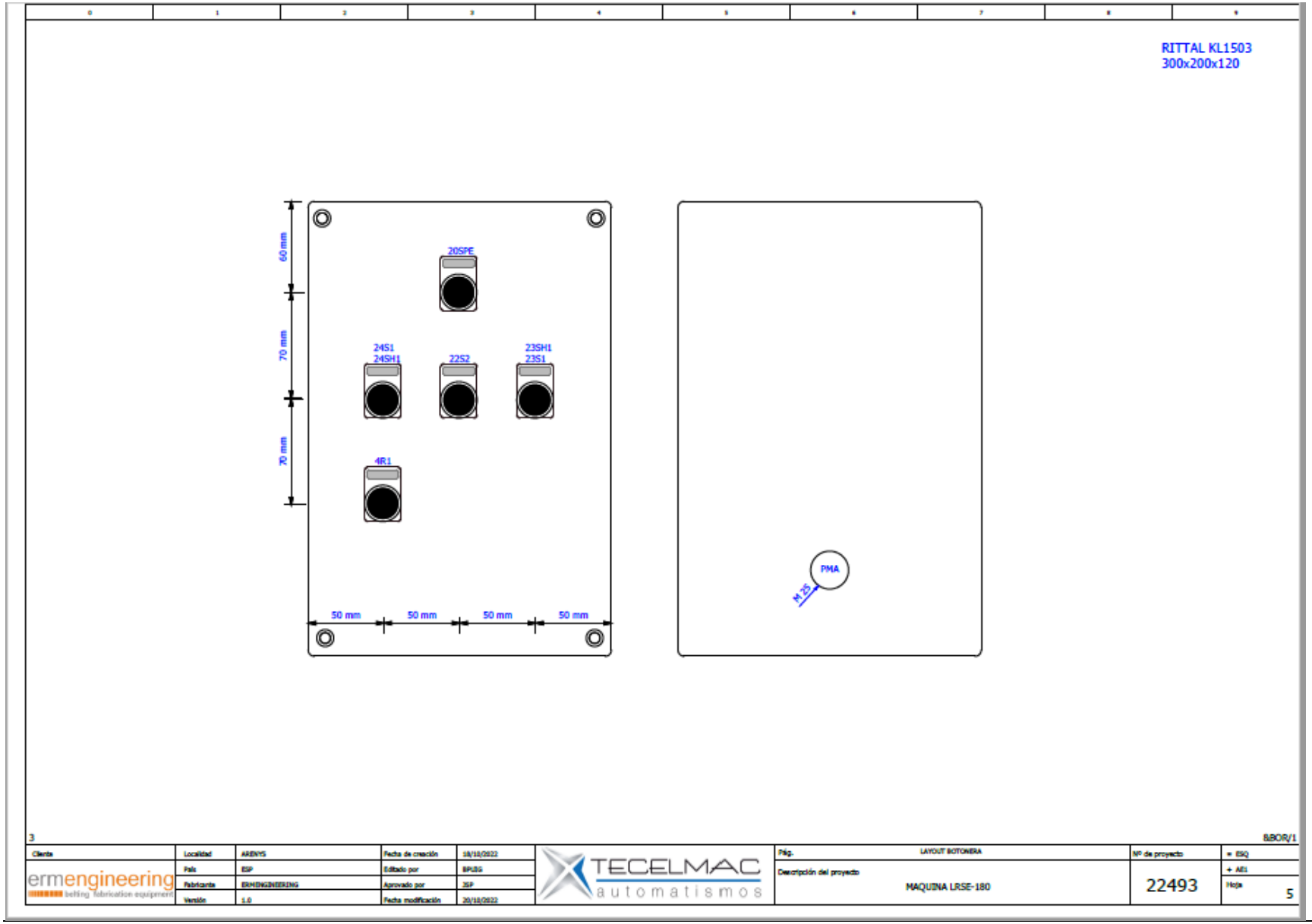
Cliente	Localidad	ARENYS	Fecha de creación	18/10/2022	TECELMAC automatismos	Pág.	CODIGO COLORES	Nº de proyecto	=
ermengineering belting fabrication equipment	País	ESP	Editado por	BPUIG		Descripción del proyecto	MAQUINA LRSE-180	22493	+
	Fabricante	ERMENGINEERING	Aprovado por	JSP					Hoja 4
	Versión	1.0	Fecha modificación	20/10/2022					


ARMARIO DE CONTROL -AE1-
=+/4
SLAY/1
Cliente
Localidad
ARENYS
Fecha de creación
18/10/2022
País
ESP
Editado por
BPUIG
Fabricante
ERMENGINEERING
Aprovado por
JSP
Versión
1.0
Fecha modificación
20/10/2022
TECELMAC
automatismos
Pág.
PORTADA ARMARIO -AE1-
Descripción del proyecto
MAQUINA LRSE-180
Nº de proyecto
22493
= ESQ
+ AE1
Hoja
1


MAS0404021R5
400x400x210
30x80x77
.2F1
20K1
20K2
23K2
4F1
5Q1
15F1
120mm
30x80x77
22K1
23K1
4V1
15G1
15F2
20KF1
30X80
146 mm
40x80x77
274 mm
ermengineering
belting fabrication equipment
TECELMAC
automatismos
LAYOUT PLACA
MAQUINA LRSE-180
22493


MAS0404021R5
400x400x210
55 mm
35 mm
65 mm
385 mm
3X1
3X2
MAQUINA
15H1
20SH1
-2Q6
1
TECELMAC
automatismos
ermengineering
belting fabrication equipment
LAYOUT ENVOLVENTE
MAQUINA LRSE-180
22493
2


MAS0404021R5
400x400x210
ENTRADA ALIMENTACIÓN 400V 3m
MOTOR DIRECTO 1,8m
MOTOR VARIADOR 1,8m
BOTONERA 2,5m
PMA
PMA
PMA
M 25
M 25
M 25
M 25
62 mm
70 mm
40 mm
40 mm
70 mm
2
5
Cliente
Localidad
ARENYS
Fecha de creación
18/10/2022
País
ESP
Editado por
BPUIG
Fabricante
ERMENGINEERING
Aprovado por
JSP
Versión
1.0
Fecha modificación
20/10/2022
ermengineering
belting fabrication equipment
TECELMAC
automatismos
Pág.
LAYOUT ENVOLVENTE
Descripción del proyecto
MAQUINA LRSE-180
Nº de proyecto
22493
Hoja
3


RITTAL KL1503
300x200x120
60 mm
70 mm
70 mm
20SPE
24S1
24SH1
22S2
23SH1
23S1
4R1
50 mm
50 mm
50 mm
50 mm
PMA
M25
3
8BOR/1
Cliente
Localidad
ARENYS
Fecha de creación
18/10/2022
País
ESP
Editado por
BPUIG
Fabricante
ERMENGINEERING
Aprovado por
JSP
Versión
1.0
Fecha modificación
20/10/2022
ermengineering
belting fabrication equipment
TECELMAC
automatismos
Pág.
LAYOUT BOTONERA
Descripción del proyecto
MAQUINA LRSE-180
Nº de proyecto
22493
= ESQ
+ AE1
Hoja
5

Plano de hileras de bornes

F12_001

Número de artículo					
Carril portabornes			Rótulo de regletas	Ángulo final detrás	Tapa lateral
Borne					
Número de artículo	Número de tipo	Sección	Portarótulo de bornes	Puente	Protector
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608640000	ZPE 2.5	2.5			

=ESQ+AE1-X1

'	L1	
'	L2	
'	L3	
'	N	
'	PE	

&LAY/5

Cliente	Localidad	ARENYS	Fecha de creación	18/10/2022	TECELMAC automatismos	Pág.	Plano de hileras de bornes =ESQ+AE1-X1	Nº de proyecto	= ESQ
ermengineering belting fabrication equipment	País	ESP	Editado por	EPUIG		Descripción del proyecto	MAQUINA LRSE-180	22493	+ AE1
	Fabricante	ERMENGINEERING	Aprovado por	JSP					Hoja 1
	Versión	1.0	Fecha modificación	20/10/2022					

Plano de hileras de bornes

F12_001

Número de artículo					
Carril portabornes			Rótulo de regletas	Ángulo final detrás	Tapa lateral
Borne					
Número de artículo	Número de tipo	Sección	Portarrótulo de bornes	Puente	Protector
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608640000	ZPE 2.5	2.5			

=ESQ+AE1-X2

	1	
	2	
	3	
	PE	

Cliente	Localidad	ARENYS	Fecha de creación	18/10/2022	TECELMAC automatismos	Pág. Plano de hileras de bornes =ESQ+AE1-X2	Nº de proyecto	= ESQ
ermengineering belting fabrication equipment	País	ESP	Editado por	BPUIG				+ AE1
	Fabricante	ERMENGINEERING	Aprovado por	JSP		Descripción del proyecto MAQUINA LRSE-180	22493	Hoja 2
	Versión	1.0	Fecha modificación	20/10/2022				

Plano de hileras de bornes

F12_001

Número de artículo					
Carril portabornes			Rótulo de regletas	Ángulo final detrás	Tapa lateral
Borne					
Número de artículo	Número de tipo	Sección	Portarrótulo de bornes	Puente	Protector
WEI.1608570000	ZDU 2.5/4AN	2.5			
WEI.1608570000	ZDU 2.5/4AN	2.5			
WEI.1608570000	ZDU 2.5/4AN	2.5			
WEI.1608570000	ZDU 2.5/4AN	2.5			

=ESQ+AE1-X4

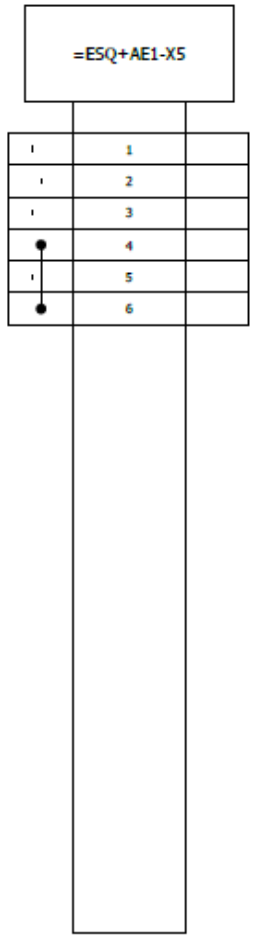
	0V	
	0V	
	24V1	
	24V1	
	24V1	
	24VE	
	24VE	

Cliente	Localidad	ARENYS	Fecha de creación	18/10/2022	TECELMAC automatismos	Pág.	Plano de hileras de bornes =ESQ+AE1-X4	Nº de proyecto	= ESQ
ermengineering belting fabrication equipment	País	ESP	Editado por	EPUIG		Descripción del proyecto	MAQUINA LRSE-180	22493	+ AE1
	Fabricante	ERMENGINEERING	Aprovado por	JSP					Hoja 3
	Versión	1.0	Fecha modificación	20/10/2022					

Plano de hileras de bornes

F12_001

Número de artículo					
Carril portabornes			Rótulo de regletas	Ángulo final detrás	Tapa lateral
Borne					
Número de artículo	Número de tipo	Sección	Portarrótulo de bornes	Puente	Protector
WEI.1674300000	ZDK 2.5	2.5			
WEI.1674300000	ZDK 2.5	2.5			
WEI.1674300000	ZDK 2.5	2.5			



Cliente	Localidad	ARENYS	Fecha de creación	18/10/2022	TECELMAC automatismos	Pág.	Plano de hileras de bornes =ESQ+AE1-X5	Nº de proyecto	= ESQ
ermengineering belting fabrication equipment	País	ESP	Editado por	EPUIG		Descripción del proyecto		22493	+ AE1
	Fabricante	ERMENGINEERING	Aprovado por	JSP		MAQUINA LRSE-180			Hoja 4
	Versión	1.0	Fecha modificación	20/10/2022					

Plano de hileras de bornes

F12_001

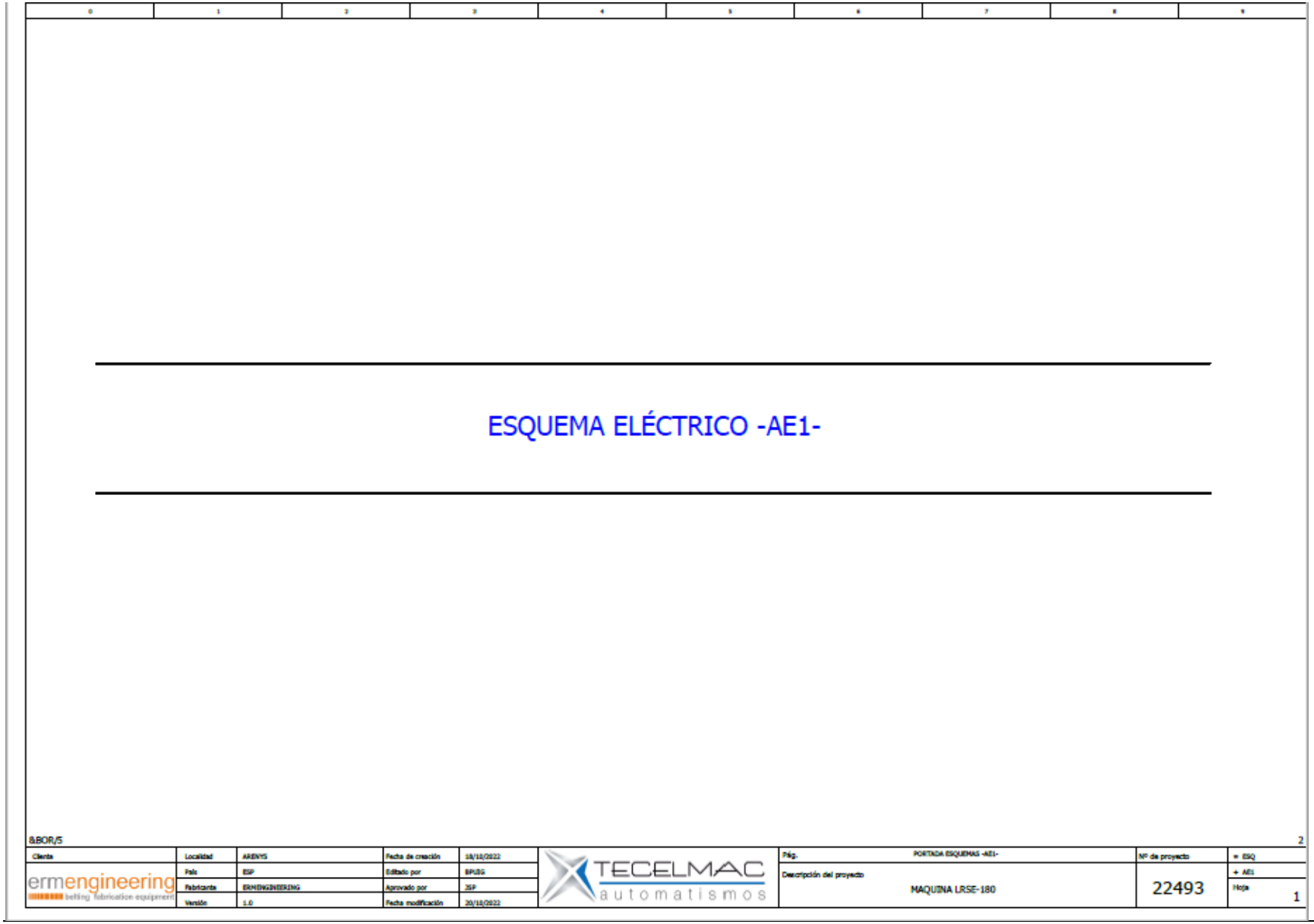
Número de artículo					
Carril portabornes			Rótulo de regletas	Ángulo final detrás	Tapa lateral
Borne					
Número de artículo	Número de tipo	Sección	Portarrótulo de bornes	Puente	Protector
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			
WEI.1608510000	ZDU 2.5	2.5			

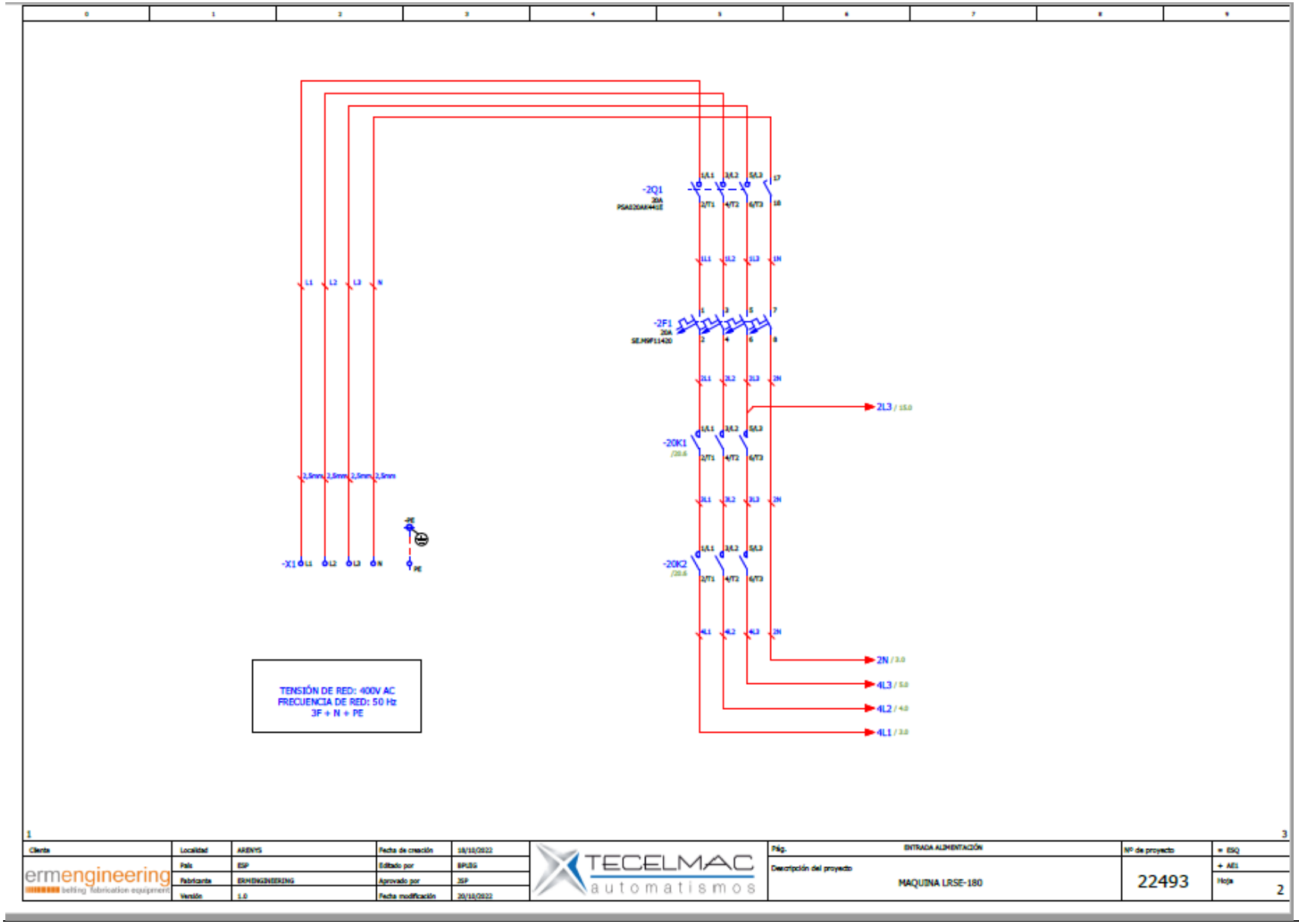
=ESQ+AE1-X6

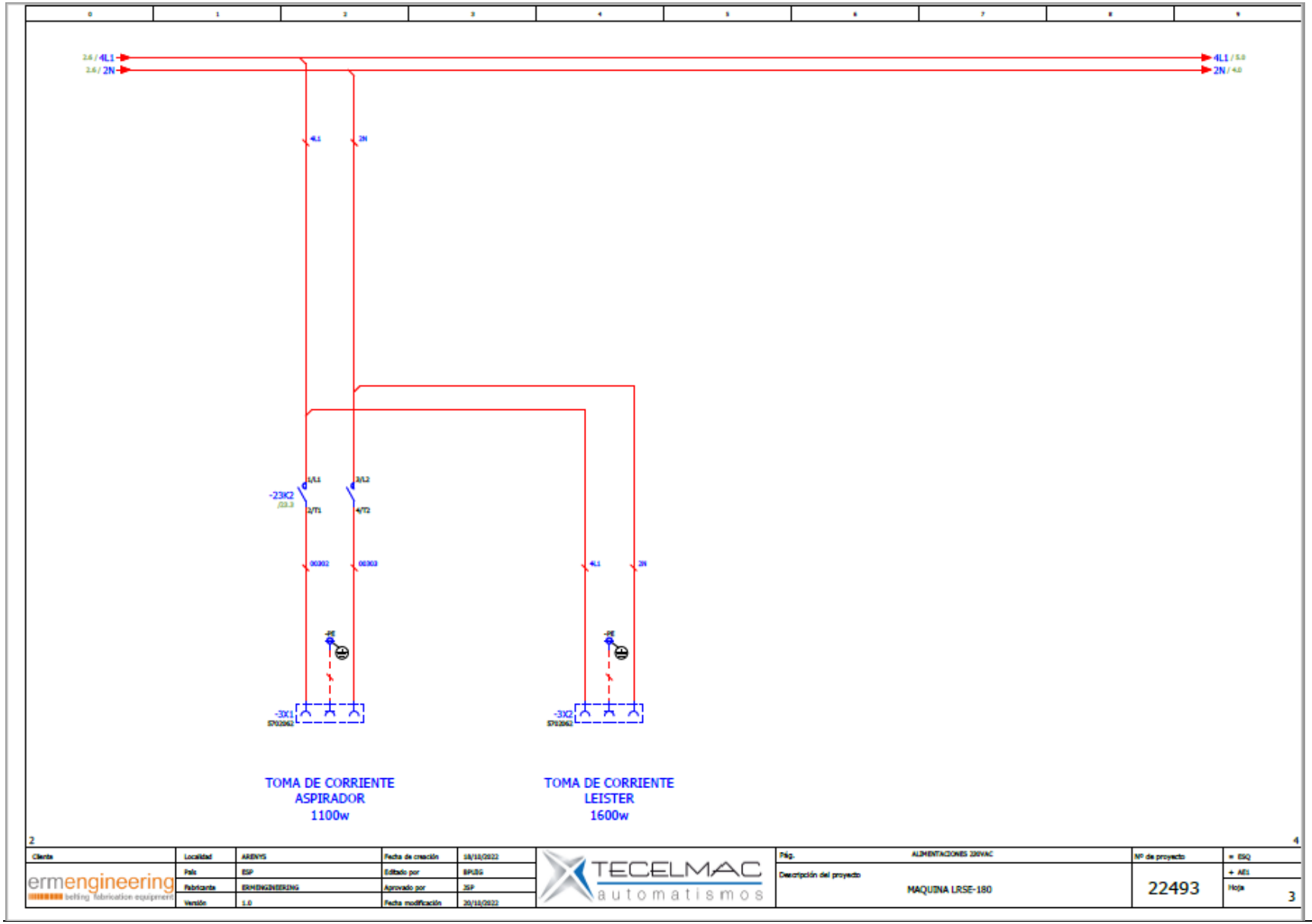
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	

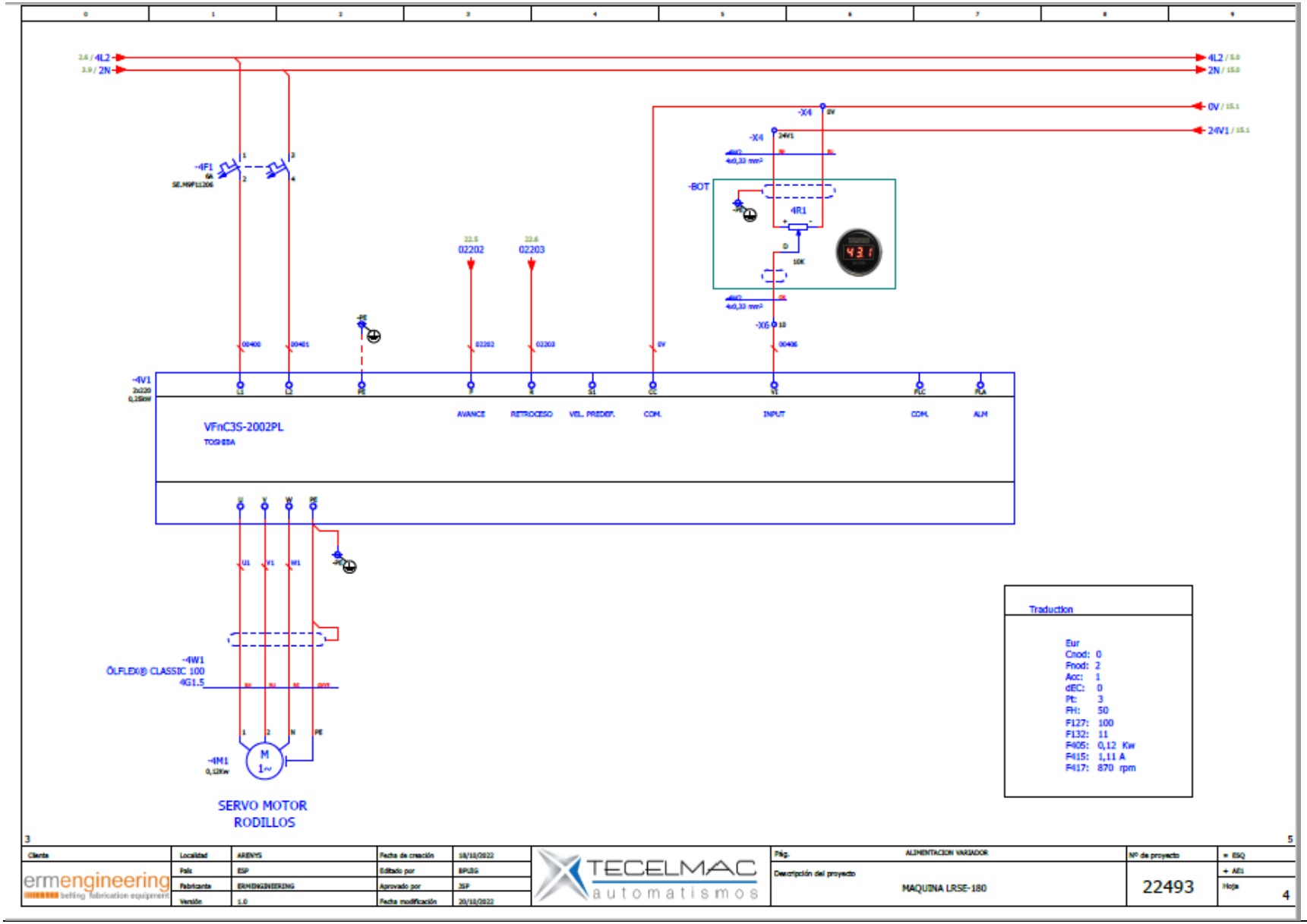
4 &EL/1

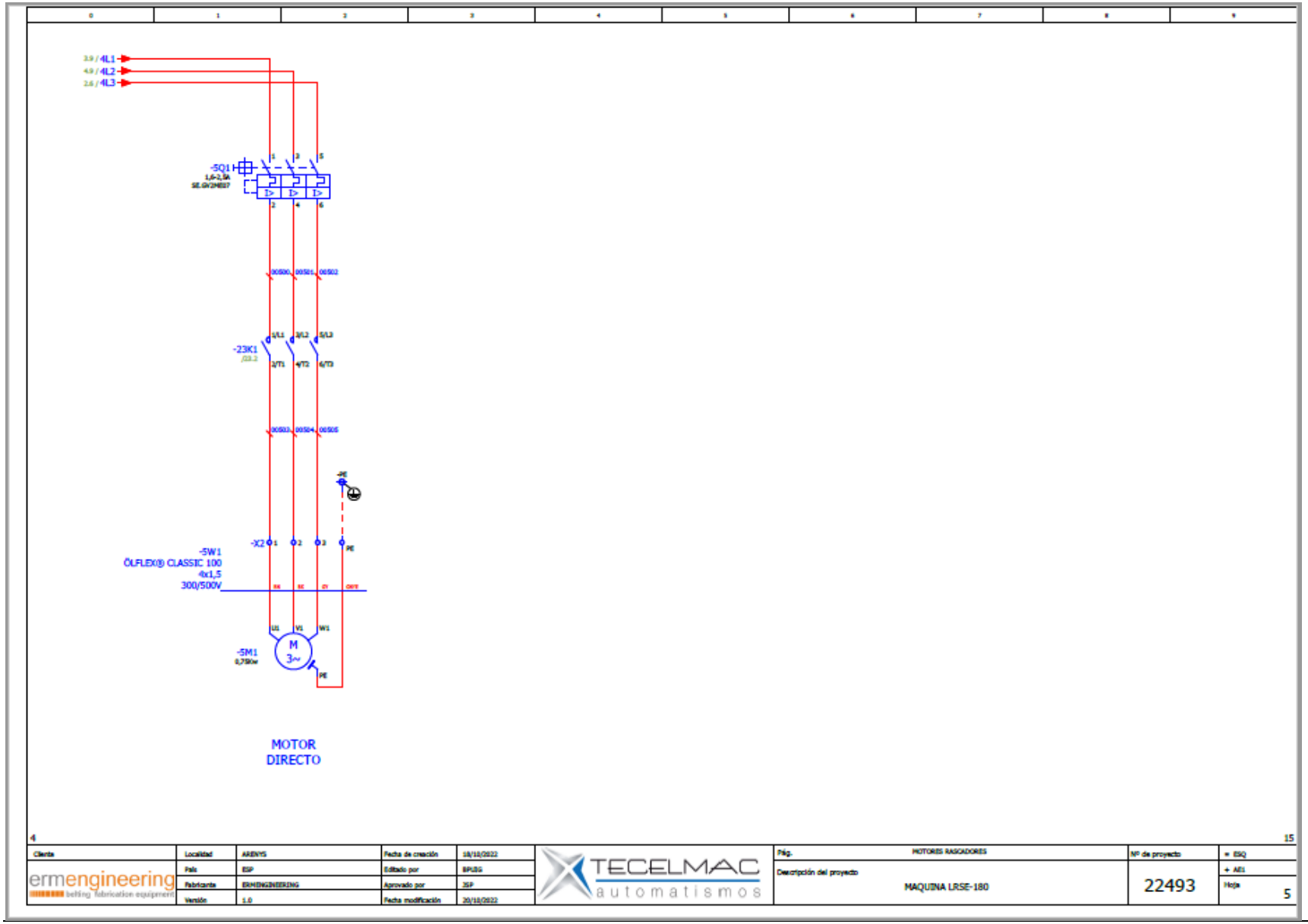
Cliente	Localidad	ARENYS	Fecha de creación	18/10/2022	TECELMAC automatismos	Pág. Plano de hileras de bornes =ESQ+AE1-X6	Nº de proyecto	= ESQ
ermengineering belting fabrication equipment	País	ESP	Editado por	BPUIG		Descripción del proyecto MAQUINA LRSE-180	22493	+ AE1
	Fabricante	ERMENGINEERING	Aprovado por	JSP				Hoja 5
	Versión	1.0	Fecha modificación	20/10/2022				

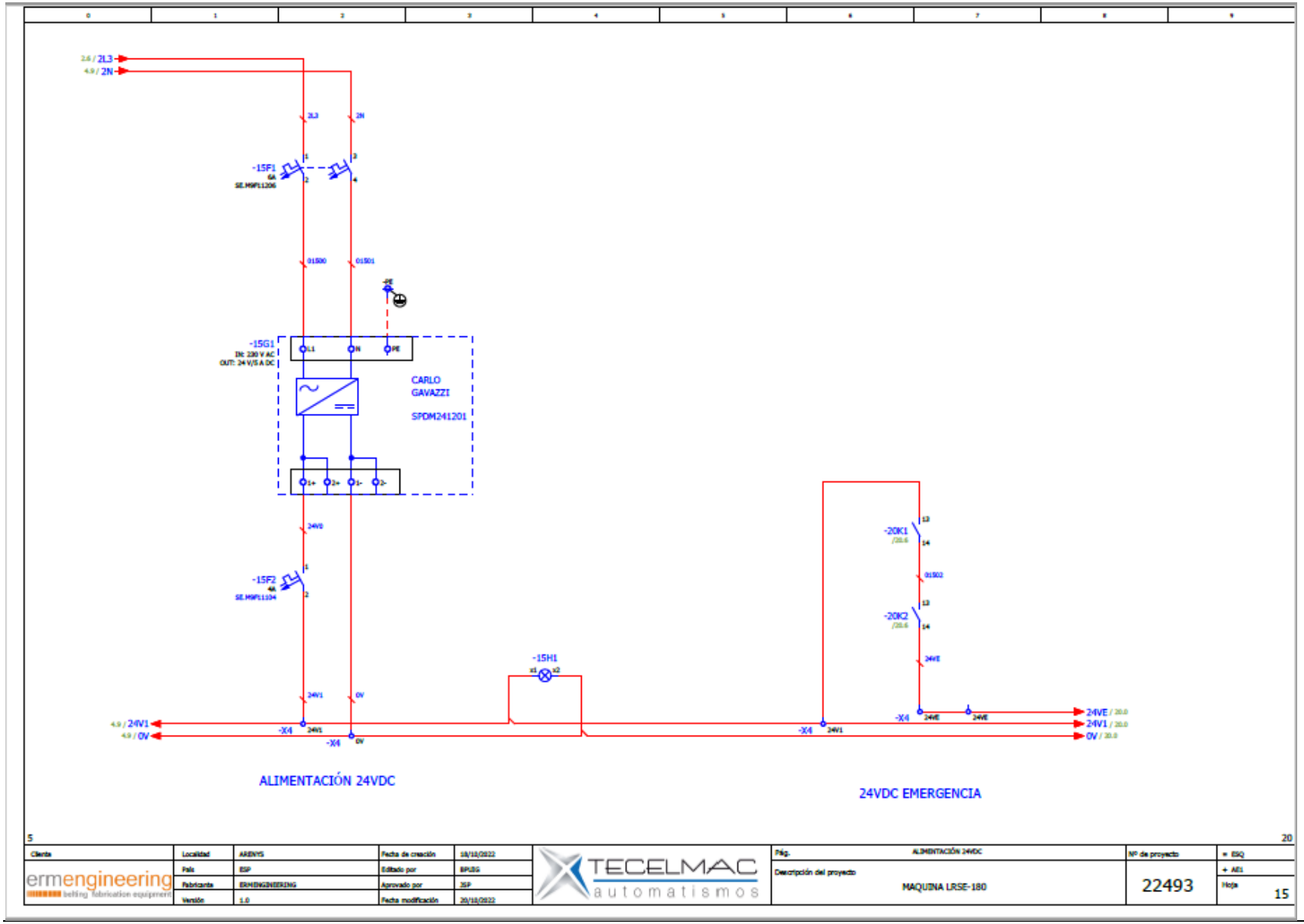

ESQUEMA ELÉCTRICO -AE1-
&BOR/5
2
Cliente
Localidad
ARENYS
Fecha de creación
18/10/2022
País
ESP
Editado por
País
Fabricante
ERMENGINEERING
Aprovado por
JSP
Versión
1.0
Fecha modificación
20/10/2022
TECELMAC
automatismos
Pág.
PORTADA ESQUEMAS -AE1-
Descripción del proyecto
MAQUINA LRSE-180
Nº de proyecto
22493
Hoja
1

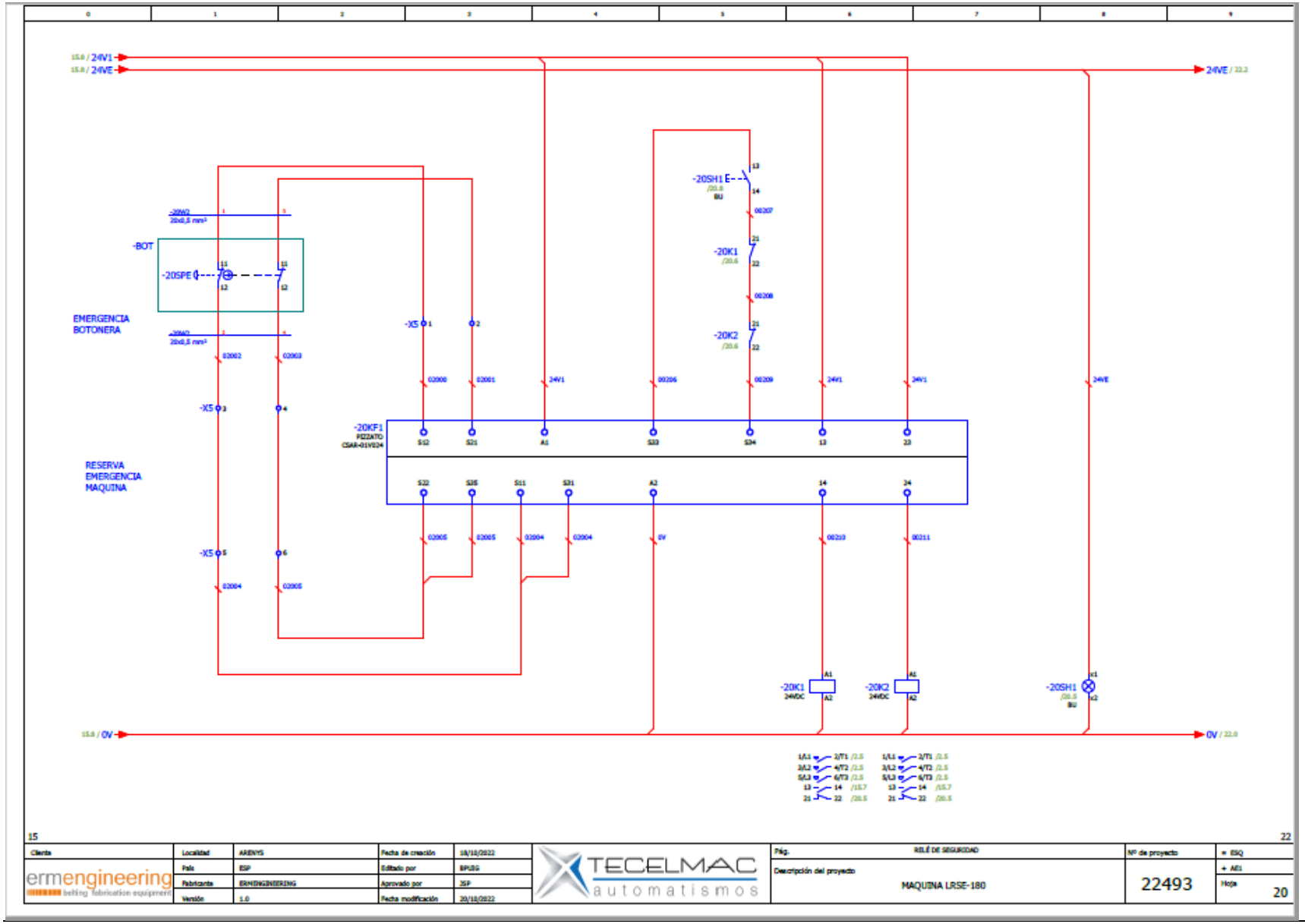

-2Q1
-2F1
-20K1
-20K2
-X1
L1
L2
L3
N
PE
2L3
2N
4L3
4L2
4L1
TENSIÓN DE RED: 400V AC
FRECUENCIA DE RED: 50 Hz
3F + N + PE
Cliente
Localidad
ARENYS
País
ESP
Fabricante
ERMENGINEERING
Versión
1.0
Fecha de creación
18/10/2022
Editado por
BPUIG
Aprovado por
JSP
Fecha modificación
20/10/2022
TECELMAC
automatismos
Pág.
ENTRADA ALIMENTACIÓN
Descripción del proyecto
MAQUINA LRSE-180
Nº de proyecto
22493
= ESQ
+ AE1
Hoja
2

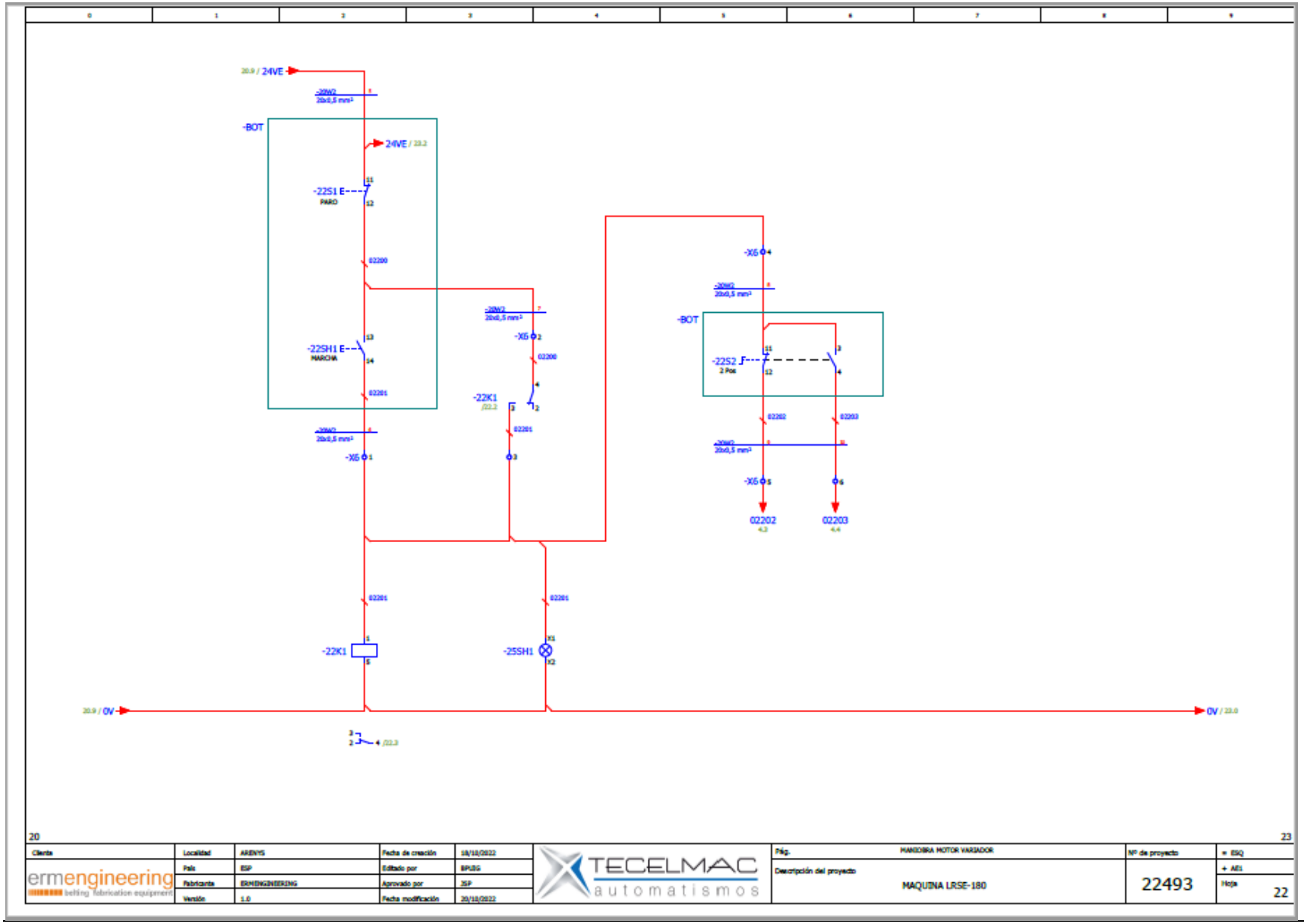

2.6 / 4L1
2.6 / 2N
4L1 / 5.0
2N / 4.0
4L1
2N
-23K2
/23.3
1/L1
3/L2
2/T1
4/T2
00302
00303
-3X1
-3X2
TOMA DE CORRIENTE
ASPIRADOR
1100w
TOMA DE CORRIENTE
LEISTER
1600w
Cliente
Localidad
ARENYS
País
ESP
Fabricante
ERMENGINEERING
Versión
1.0
Fecha de creación
18/10/2022
Editado por
EPUIG
Aprovado por
JSP
Fecha modificación
20/10/2022
TECELMAC
automatismos
Pág.
ALIMENTACIONES 230VAC
Descripción del proyecto
MAQUINA LRSE-180
Nº de proyecto
22493
= ESQ
+ AES
Hoja
3

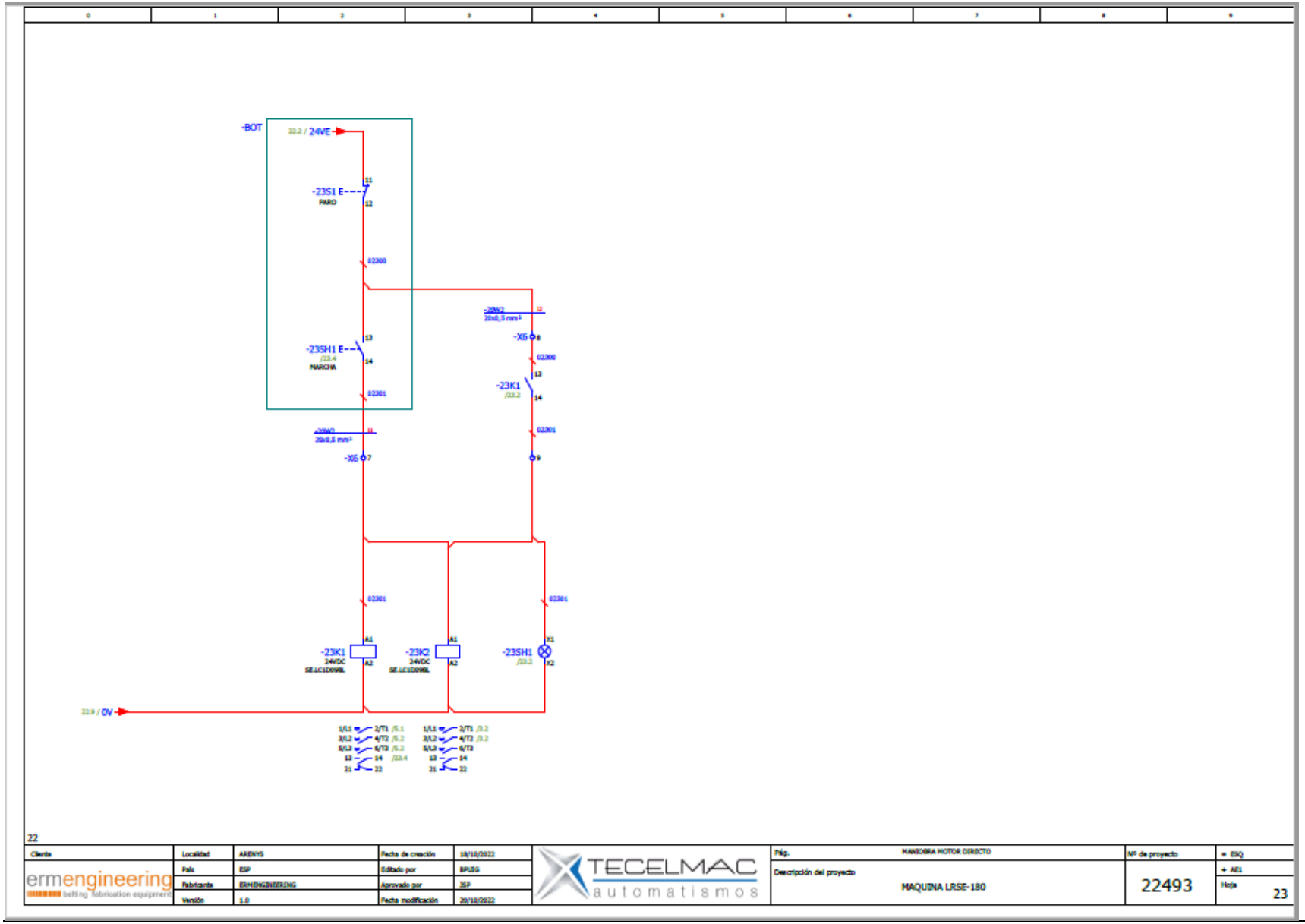

4L2
2N
0V
24V1
-4F1
-BOT
4R1
02202
02203
-X4
-X6
-4V1
VFnC3S-2002PL
TOSHIBA
AVANCE
RETROCESO
VEL. PREDEF.
COM.
INPUT
COM.
ALM
-4W1
ÖLFLEX® CLASSIC 100
4G1.5
-4M1
SERVO MOTOR
RODILLOS
Traduction
Eur
Cmod: 0
Fmod: 2
Acc: 1
dEC: 0
Pt: 3
FH: 50
F127: 100
F132: 11
F405: 0,12 Kw
F415: 1,11 A
F417: 870 rpm
ermengineering
TECELMAC
automatismos
ALIMENTACION VARIADOR
MAQUINA LRSE-180
22493
4


3.9 / 4L1
4.9 / 4L2
2.6 / 4L3
-SQ1
-23K1
-5W1
ÖLFLEX® CLASSIC 100
4x1,5
300/500V
-X2
-5M1
M
3~
MOTOR
DIRECTO
ermengineering
belting fabrication equipment
Cliente
Localidad
ARENYS
Fecha de creación
18/10/2022
País
ESP
Editado por
BPUIG
Fabricante
ERMENGINEERING
Aprovado por
JSP
Versión
1.0
Fecha modificación
20/10/2022
TECELMAC
automatismos
Pág.
MOTORES RASCADORES
Nº de proyecto
+ ESQ
Descripción del proyecto
MAQUINA LRSE-180
22493
+ AEI
Hoja
5


2L3
2N
-15F1
-15G1
CARLO GAVAZZI
SPDM241201
-15F2
-15H1
-20K1
-20K2
24VE
24V1
0V
-X4
ALIMENTACIÓN 24VDC
24VDC EMERGENCIA
TECELMAC automatismos
ermengineering belting fabrication equipment
MAQUINA LRSE-180
22493
15


15.8 / 24V1
15.8 / 24VE
24VE / 22.2
-BOT
-20SPE
EMERGENCIA
BOTONERA
-X5
RESERVA
EMERGENCIA
MAQUINA
-20KF1
FIZZATO
CSAR-01V024
-20SH1 E
BU
-20K1
-20K2
24V1
24VE
0V
15.8 / 0V
0V / 22.0
-20K1
24VDC
-20K2
24VDC
-20SH1
BU
15
22
Cliente
Localidad
ARENYS
Fecha de creación
18/10/2022
ermengineering
belting fabrication equipment
País
ESP
Editado por
BPUIG
Fabricante
ERMENGINEERING
Aprovado por
JSP
Versión
1.0
Fecha modificación
20/10/2022
TECELMAC
automatismos
Pág.
RELÉ DE SEGURIDAD
Nº de proyecto
+ ESQ
Descripción del proyecto
MAQUINA LRSE-180
22493
+ AES
Hoja
20


24VE
-BOT
-22S1 E
PARO
-22SH1 E
MARCHA
-22K1
-X6
-22S2
2 Pos
02202
02203
-25SH1
0V
TECELMAC
automatismos
ermengineering
belting fabrication equipment
MAQUINA LRSE-180
22493
22


-BOT
22.2 / 24VE
-23S1 E
PARO
-23SH1 E
MARCHA
-X6
-23K1
-23K2
-23SH1
24VDC
SELCIDOWL
22.9 / 0V
22
Cliente
Localidad
ARENYS
Fecha de creación
18/10/2022
País
ESP
Editado por
BPUIG
Fabricante
ERMENGINEERING
Aprovado por
JSP
Versión
1.0
Fecha modificación
20/10/2022
ermengineering
belting fabrication equipment
TECELMAC
automatismos
Pág.
MANIOBRA MOTOR DIRECTO
Nº de proyecto
Descripción del proyecto
MAQUINA LRSE-180
22493
Hoja
23