

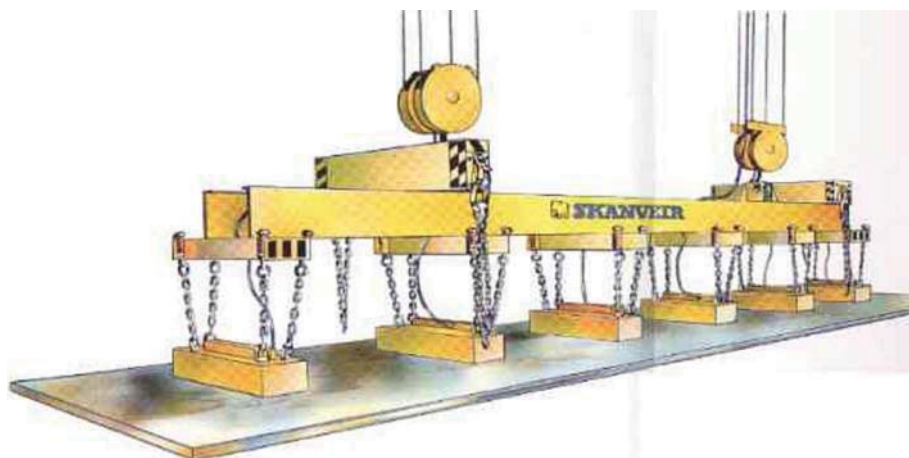
INSTRUCTION

HOLDING MAGNETS SYSTEM

Work no 3271

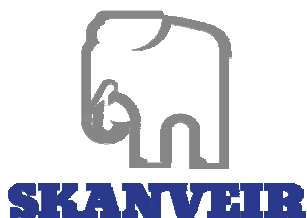
PEMA PBW-18

Pemamek Oy / Bilfinger



2014





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1	DECLARATION OF CONFORMITY TECHNICAL DATA
2	INSTALLATION-, COMMISSIONING AND SAFETY INSTRUCTIONS
3	OPERATION AND MAINTENANCE INSTRUCTIONS
4	MECHANICAL DRAWINGS
5	ELECTRICAL DRAWINGS
6	SPARE PARTS

1 DECLARATION OF CONFORMITY TECHNICAL DATA



EC DECLARATION BY THE MANUFACTURER

Manufacturer: Skanveir Oy

Address: Televisiotie 8,
 FIN-15860 HOLLOLA

Herewith declares that

Holding magnets system PEMA PBW-18

Work no 3271, Pemamek Oy / Bilfinger

(description of the machinery: make, type, serial number etc.)

is intended to be incorporated into machinery or to be assembled with other machinery to constitute machinery covered by Directive 2006/42/EY, as amended;

**and furthermore declares that
the following (parts/clauses of) harmonized standards have been used**

EN ISO 12100-1, EN ISO 12100-2, EN 1050, EN 13155

and furthermore declares that is not allowed to put the machinery into service until the machinery into which it is to be incorporated or of which it is to be a component has been found and declared to be in conformity with the provisions of Directive 98/37/EC and with national implementing legislation, i.e. as a whole, including the machinery referred to in this declaration.

Hollola 30.9.2014

(signature)

Kim Vepsäläinen, managing director

(full name and identification of the person empowered to sign on behalf of the manufacturer)

TECHNICAL DATA

HOLDING MAGNETS SYSTEM, work 3271

Environment	Indoors, ambient temperature +5°...+40°C, air humidity 20-90%	
Magnet	MPS250x450x110-310W/110VDC	
	- Pemamek item	108409
	- 18 pcs	
	- Tear-off force	4 200 kg
	- Duty cycle (ED%)	90%
	- Length	250 mm
	- Width	450 mm
	- Height	110 mm
	- Weight	80 kg
	- Voltage	110 VDC
	- Amperage (cold)	2,8 A
	- Power consumption (cold)	310 W
	- Surface treatment	E120/2-FeSa2½
	- Color	RAL 1007

Magnets' Control Unit and back-up batteries

Control unit	SMV100PRT-2A/110V	
	1 pcs	
Uin	400VAC	50Hz
Uout	110VDC	
Alive selections	2 pcs	
Power consumption, selection 1	9x310W	
Power consumption, selection 2	9x 310W	
Total power	5580 W	
Demagnetising of all at release	yes	
Cabinets		
Transformer cabinet	1200x2100x400 mm	
Indoors, temperature	+5 ...+40 °C	
air humidity	20 – 90 %	
IP-class	54	



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TYPE

SMV100PRT-2A/110V

YEAR OF
MANUFACTURE

2014

SERIAL NUMBER

3271

NET WEIGHT Kg

MAX PERMITTED
LOAD Kg

2. INSTALLATION-, COMMISSIONING AND SAFETY INSTRUCTIONS

ATTENTION!

**PB BACK-UP BATTERIES
ARE NOT GOOD FOR
TEMPERATURES OVER 40°C!
ALREADY AT 40°C THEIR
EXPECTED LIFETIME IS
REDUCED TO 1/4TH
OF DESIGN LIFETIME,
AND IN HIGHER
TEMPERATURES THE
BATTERIES GET EASILY
DESTROYED.**

TRANSPORTATION AND STORAGE

Transportation

Back-up batteries transportation:
See instructions of manufacturer.

Storage

The magnetic lifting beam must be stored on the proper stand so that the magnets hang free without touching the floor or plate.

Note! This magnetic lifting beam does not include a storage stand. A separate storage stand is required.

Normal storage temperature is $-15^{\circ}\text{C} \dots +35^{\circ}\text{C}$.

Back-up batteries must be stored in cool dry area. Do not store batteries in direct sunlight. Batteries are supplied charged but will lose capacity during storage. See batteries manual for effect of storage time and temperature to capacity.

INSTALLATION

Location and conditions

In its normal version Skanveir magnetic lifting beam is intended for use indoors in dry conditions. Alternations are mentioned in technical data (see part 1). Normal operating temperature is $+10^{\circ}\text{C} \dots +40^{\circ}\text{C}$.

Do not install the back-up batteries in direct sunlight or hot location.
See instructions of battery manufacturer.

Back-up battery box intended for cold outdoor conditions is provided with a thermostatically controlled heater.

Suspension

Skanveir magnetic lifting beam is typically delivered ready-assembled. It is then suspended to the hoist equipment on the installation site and connected to the power source. Suspension to the crane has to be defined together with an expert.

If the magnetic lifting beam has been disassembled for transport, the parts are inspected and assembled according to assembly drawings.

Electrical system

Magnet's control unit and back-up batteries are normally mounted to crane by crane supplier or customer. The same applies to power supply and control wiring between crane control unit and magnets' control unit, and wiring between the crane and the beam.

Install (if there is) the temperature compensation sensor (coiled inside the magnets' control unit) between the batteries as shown in below example photo.



COMMISSIONING

Before switching on power to magnets' control unit check it's installation and electrical connections.

Make sure to check

- Mechanical and electrical connection
- Magnetisation of all the magnets. Note! When checking magnetisation with eg. ferromagnetic steel piece be aware of strong forces and take care not to leave your hand between the metal piece and magnet.
- Function of alarm lights.

SAFETY RULES

Operating principle

The magnet is fastened to the load with a force being proportional to the magnetomotive force generated by the coil, the air gap between the magnet and the load, and thickness of material to be hold and it's ferromagnetic properties. Large air gap might be caused for example snowy, icy or dirty surface of the load.

Load of a single magnet shall not be higher than max. load of a single magnet indicated in technical data (see part 1).

Daily inspections

At the beginning of a work shift the operation of the alarm equipment should be tested and the magnets and attachments should be checked to ensure they are in proper condition and that the controls and indicators function as intended.

Safety considerations

NEVER STAND OR WALK OVER THE MAGNETS! IT'S NOT SAFE, AND MAGNETS ARE NOT CONSTRUCTED TO BE A PART OF WALKING AREA.

- Area of magnets must be isolated and marked with paintings and signs. Operators must be instructed properly not walk on magnets.
- Safety boots containing metal may catch the magnetic field and result in jamming or falling of a person walking over or next to the magnets.
- It is dangerous for persons with heart pacer to be in the vicinity of the magnets.
- Be aware that magnets get hot at continuous duty.

3. OPERATION AND MAINTENANCE INSTRUCTIONS

MAINTENANCE

1. Magnets

The magnets surface must be cleaned daily. Debris on surface results in air gap and reduced holding force. Metal debris on the magnet may bury down through insulation into coil and result in short circuit and burning of the coil. If the magnet is damaged the system must not be used before repairing or replacing with a new magnet.

Be aware that magnets surface will become hot at continuous duty. Let it cool down before maintenance.

2. Suspension

The attachments must be checked during every maintenance operation of magnets.

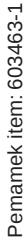
3. Cables

The cables and connections between magnets and control unit must be checked weekly and replaced as necessary.

4. Control unit

If the electric central unit is fitted with a fan and forced ventilation, the fan shall be maintained and the filters cleaned at regular intervals according to environmental conditions, once a year at the minimum.

4. MECHANICAL DRAWINGS

[illegible]

Rev	Changes	Date	Designer	Approved		

5. ELECTRICAL DRAWINGS

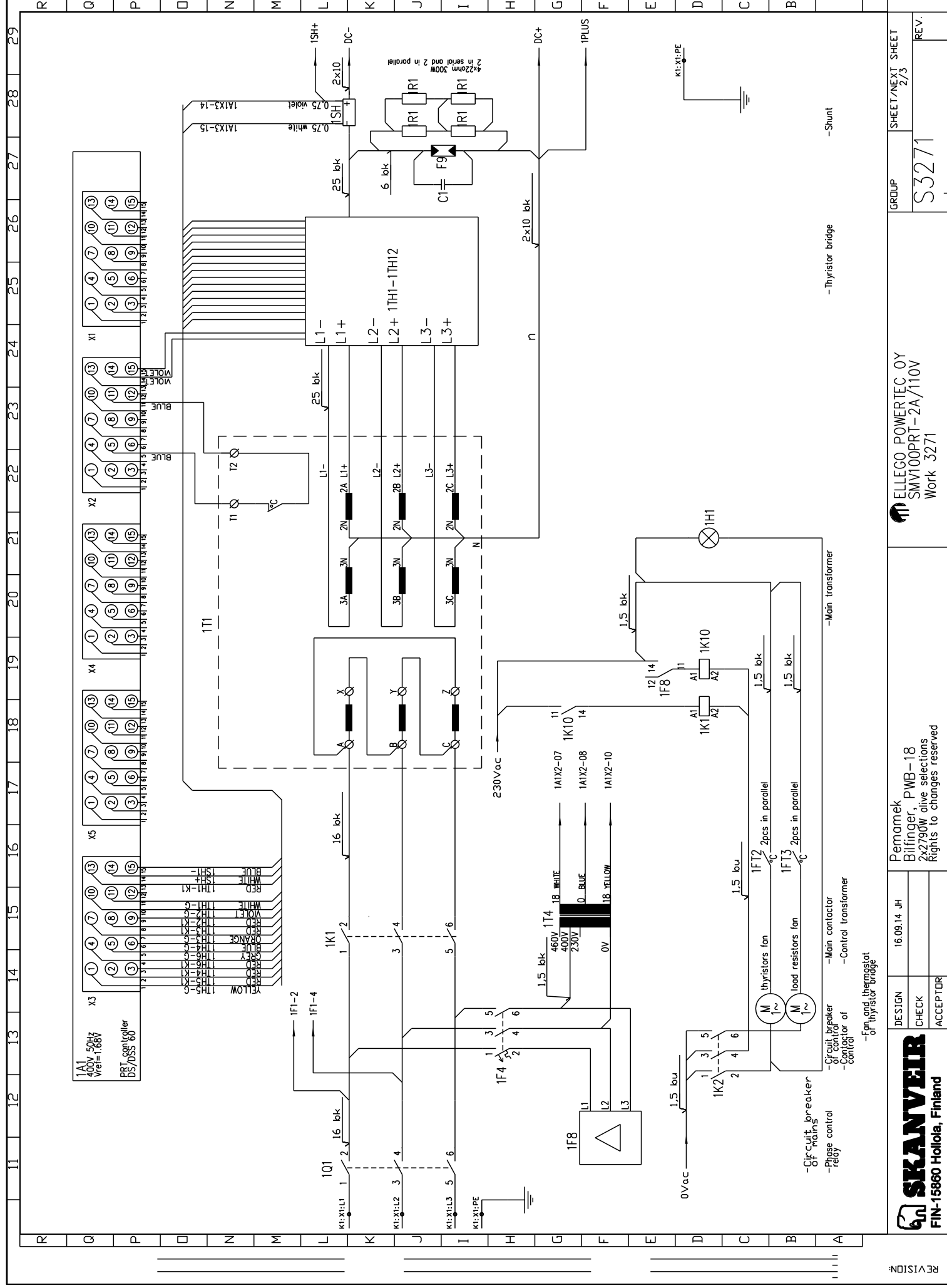
***CONTROL UNIT FOR
MAGNET CRANE 110V***

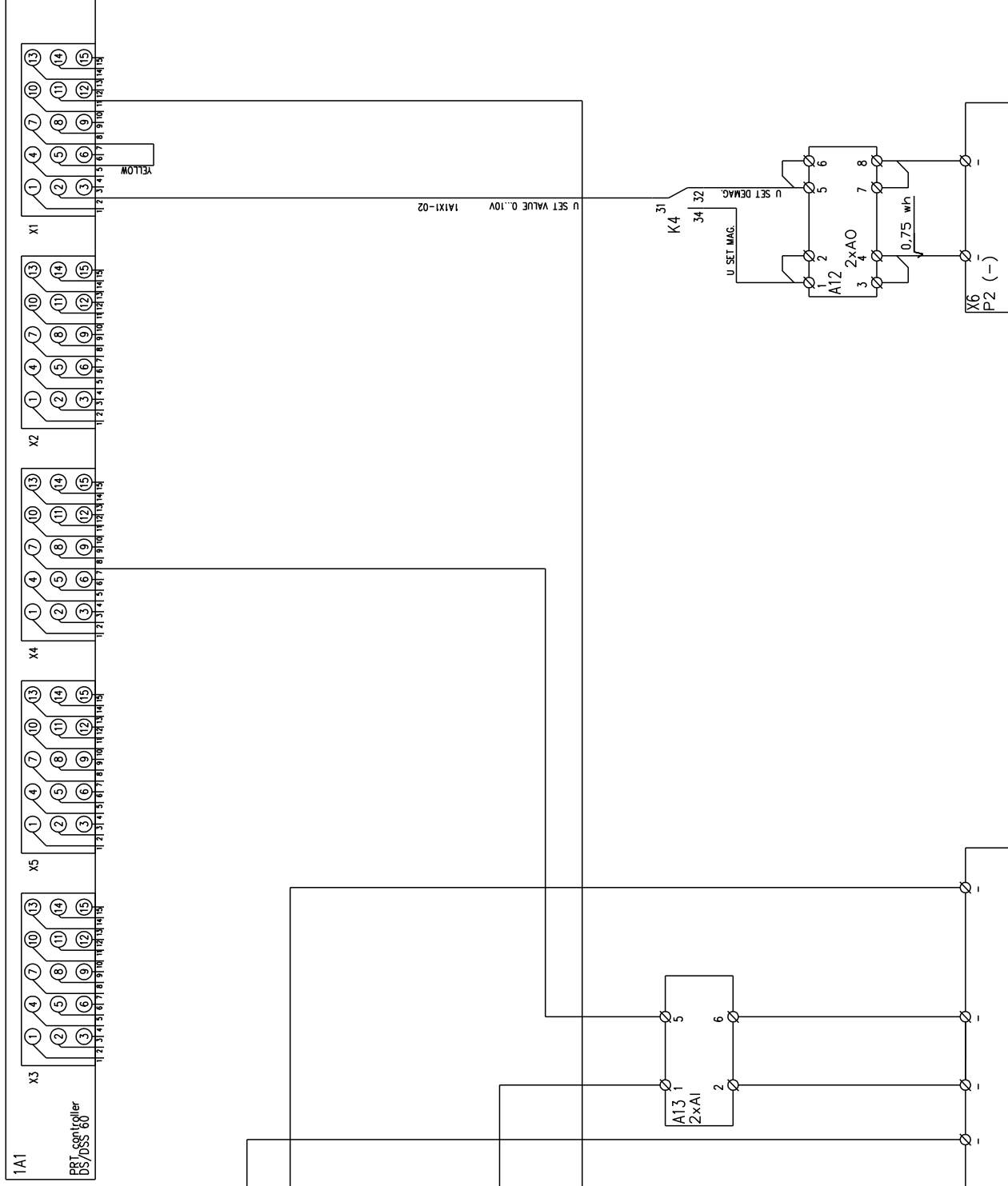
Serial No. 1444 15153/1

SMV100PRT-2A /110V

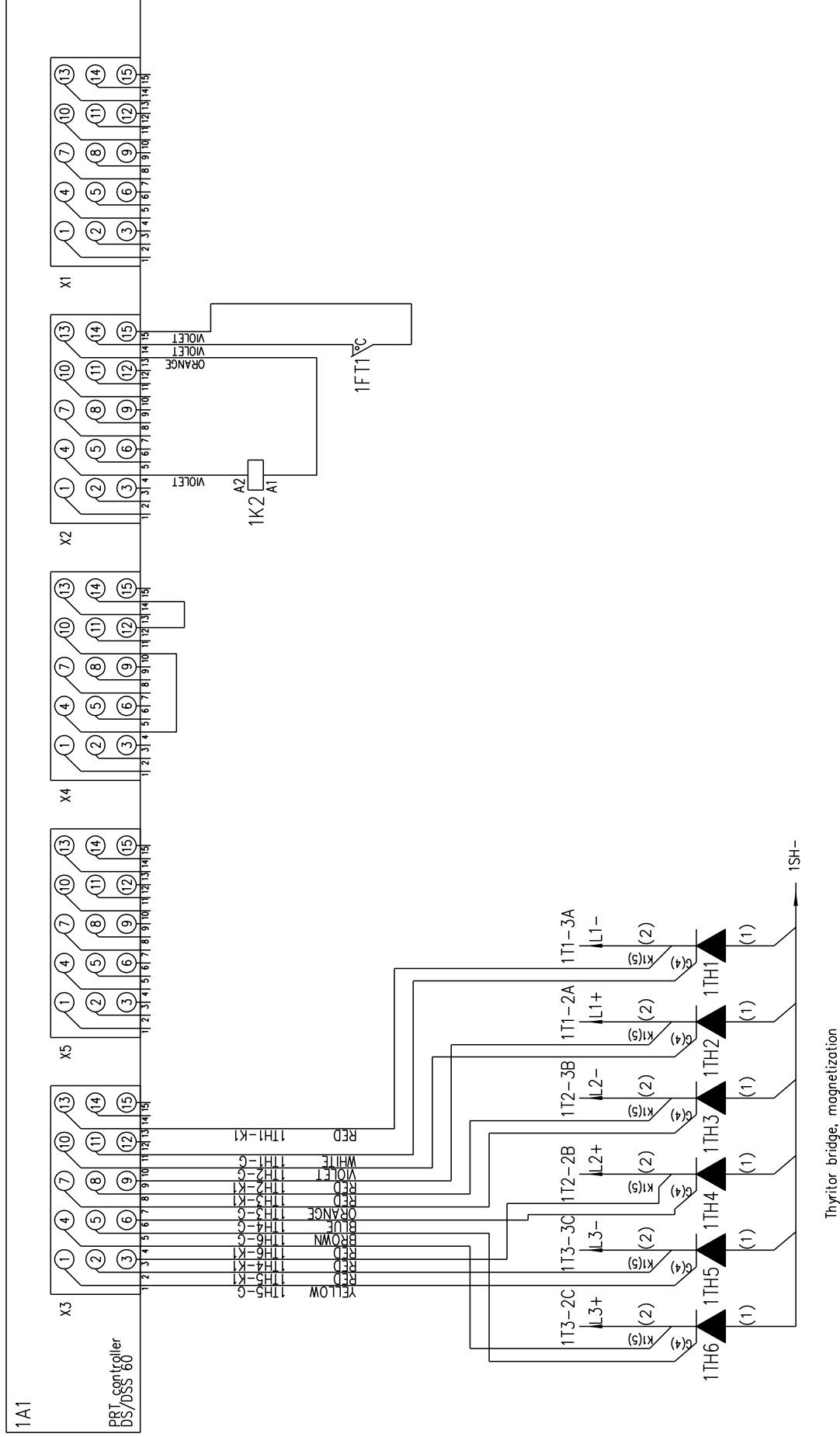
Bilfinger 3271

<u>Pemamek Bilfinger, PBW-18, 3271</u>		V0022338	3x400Vac 50Hz	Ellego Powertec Oy	
Part list	MCB Selections [qty] Power / selection / W (selections 1,2) Magnets	2 2790 18	Magnet power	310 W	
21.11.2014			Total Power	5580	
Code	Part description	Part type	Deliverer	Qty	Part label
RTS8204500	Cabinet 1200X2000X400	8204500	Rittal	1	
RTS8104	Side wall 400x2000	8104235	Rittal	2	
RTS8601200	Front / rear plate of base	8601200	Rittal	2	
P1405271JH	Assembly plate tooling picture	1405271jh-1.dwg		1	
RTS8601040	Side plate of base	8601040	Rittal	2	
P1211291MM	Transformer assembly plate	1211291mm.DWG	Sate Steel	1	
P1212031MM	Bushing plate to cabels	1212031mm.DWG	Sate Steel	1	
A014301	Indication lamp, mains	SEL-22D-230-VIHR	Klinkmann	1	1H1
A016045	Fan	A13B23HTB	Etra	2	M1.1, M1.2
B017005	Thermostat	US-602SYTK050	Perel	2	1FT2, 1FT3
A016050	Fan	A12B23HTB	Etra	2	M2.1, M2.2
A016004	Cover of fan	127x127	Etra	2	M1.1, M1.2
A016005	Cover of fan	120x120	Etra	2	M2.1, M2.2
E004008	Transformer PRT 110/100 DS 3x400Vac 50Hz	Tnr. 31240	Trafotek	1	1T1
B013206	Phase protection relay	DPA01CM60	Carlo Gavazzi	1	1F8
B023063	Main switch	NZMN1-A63	Eaton	1	1Q1
B023352	Extension of shaft	NZM1/2-XV4	Eaton	1	1Q1
B023054	Door handle	NZM1-XTVD	Eaton	1	1Q1
B033013	Main contactor	100-C60KF00 230V	Klinkmann	1	1K1
B033001	Control contactor	100-C09KJ10	Klinkmann	1	1K2
C005007	Thyristor	SKKT92/12E	Semikron	6	1TH1-1TH12
A008005	Shunt	100 A / 60mV	Takowa	1	1SH
E008042	Control transformer	440-400-0/230-0/18-0-18	Trafomic	1	1T4
C0001925	Logic unit control transformer	400Vac +/- 5%/2x115, 1500VA	Trafomic	1	T2
A010002	Circuit breaker	PLS6-C10/3, 242945	Eaton	1	1F4
R003050	PRT controller DS/DSS60	DSS60	Ellego Powertec	1	1A1
R003054	Polarity controller NV6	NV6	Ellego Powertec	1	1A2
R003330	Feedback card	90k + 2x10k parallel / 2x10k parallel	Ellego Powertec	1	1A20 (R5,R6,R7)
B013024	Auxiliary relay	60.13.8.230.0040	Klinkmann	1	1K10
B014005	Base of relay	Type 90.21	Oem-Automatic	1	1K10
B008015	Fuse connector M4/8 SF	115 157.25	Klinkmann	1	1F2
A009001	Glass tube fuse	S506-2-B 1AT	Perel	1	1F2
C0048305	Normal load resistor	22ohm 300W, 652-659	Farnell	4	1R1
F009007	Cooling element	400 mm KS125.7-3400R	Saloteam	2	
P0804294_MTO	Cooling element for load resistor ,	Tooling picture 0804294_MTO.DWG	Saloteam	1	
F009006	Cooling element for load resistor	L-P 3344 (PRT profile)	Purso	1	
P0804292_MTO	Cover of cooling element for load resistor	0804292_MTO.DWG	Sate Steel	1	
P0804291_MTO	Fan mounting kit for cooling element cover	0804291_MTO.DWG	Sate Steel	1	
A010210	Circuit breaker of control transformer	PLS6-C10/2, 242876	Eaton	1	F5
B032804	DC -bus bar varistor	SPCT2-280/1, 248172	Eaton	1	F9
A010324	Circuit breaker of magnet	PLS6-C6/1-DC, 243119	Eaton	18	F11-F28 (Idc = 2,8 A)
A010035	Auxiliary contact of circuit breaker	ZP-IHK, 286052	Eaton	18	F11-F28 (Idc = 2,8 A)
B033022	Selection contactor	100-C30KF00 230V	Klinkmann	2	K11-K12 (Idc = 25,4 A)
B033151	Mechanical interlock of contactor	100-FL11 230 V	Klinkmann	2	K11.0-K12.0
R003160	Filter card, magnets	SVV03	Ellego Powertec Oy	2	A4-A5
B013024	Auxiliary relay on full power	60.13.8.230.0040	Klinkmann	1	K1
B013024	Safety circuit relay 230Vac	60.13.8.230.0040	Klinkmann	1	K6
B014005	Base of relay	Type 90.21	Klinkmann	5	K1,K4,K4.1,K6, K7
B013024	Auxiliary relay	60.13.8.230.0040	Klinkmann	3	K4,K4.1,K7
B004053	DC -bus bar capacitor 12 uF	1.27.6SC2 MKP	Trafomo	1	C1
B013124	Auxiliary relays 24Vdc, selections	60.13.9.024.0040	Klinkmann	2	KS1-KS2
B014005	Base of relay	Type 90.21	Klinkmann	2	KS1-KS2
B013124	Auxiliary relay 24Vdc, PRT control	60.13.9.024.0040	Klinkmann	5	1K101-1K05
B014005	Base of relay	Type 90.21	Klinkmann	5	1K101-1K05
C008021	Power supply 230Vac/24Vdc-5A	DRA120-24FSA	Gycom	1	G1
C0107835	Potential line module	FLK-PVB 2/36	Phoenix Contact	1	X6
CE201173	Muistimoduuli ET200S (IM151 CPU, 3.3V NFLASH, 128k)	6ES7953-8LG11-0AA0	Siemens	1	A10
C0111644	CPU IM151-7 CPU ET200S	6ES7151-7AA21-0AB0	Siemens	1	A10
C0107027	Performance module 24Vdc, PM-E 24VDC, ET200S	6ES7138-4CA01-0AA0	Siemens	1	A11
C0110747	Base of power supply ET200S (TM-E15S23-A0)	6ES7193-4CD20-0AA0	Siemens	2	A11, A23
A001204	Analog output 2xAO, ET200S	6ES7135-4FB01-0AB0	Siemens	1	A12
A001203	Analog input 2xAI, ET200S	6ES7134-4FB01-0AB0	Siemens	1	A13
C0108723	Digital input, 4xDI, ET200S	6ES7131-4BD01-0AA0	Siemens	4	A14-A17
C0108724	Digital output, 4xDO, ET200S	6ES7132-4BD01-0AA	Siemens	2	A18-A19
A001202	Relay output 2xRO, ET200S	6ES7132-4HB01-0AB0	Siemens	2	A21, A22
A001205	Performance module 230Vac, PM-E AC24-230V, ET200S	6ES7138-4CB11-0AB0	Siemens	1	A23
A001201	Digital input 230Vac, 2xDI, ET200S	6ES7131-4FB00-0AB0	Siemens	1	A24
C0110622	Couplin unit ET200S, TM-E15S26-A1	6ES7193-4CA40-0AA0	Siemens	2	A21-A22
A001207	Couplin unit ET200S, TM-E15S24-01	6ES7193-4CB20-0AA0	Siemens	9	A12-A20
A001206	Couplin unit ET200S, TM-E15S24-A1	6ES7193-4CA20-0AA0	Siemens	1	A24
B007305	PE -bus bar KNA4.108P	KNA4.108P	Elektroskandia	1	PE
B008018	Terminal block M16/12	115.129.14	Klinkmann	3	L1-L3
B008019	PE-connector M16/12P input	165.130.23	Klinkmann	1	PE
B008002	Terminal block M4/6, prt gnd	115.116.07	Klinkmann	4	PRT_GND
H029024	Parallel short cut to terminal block M4/6,	BJM6, 4 terminals	Klinkmann	1	
B008001	PE-Connector M4/6P, magnet	165.113.16	Klinkmann	1	X2:PE
B0080025	Terminal block M4/6 D2	115.271.22	Klinkmann	18	X2:1-18, X2:-
B008018	Terminal block M16/12	115.129.14	Klinkmann	2	A10-A20
B017010	Thermostat	US-602SXTFBL085	Perel	2	1FT1





Wiring of control 0,75 mm2



REVISION:



DESIGN
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ACCEPTOR

Pemamek
Bilfinger, PWB-18
2x2790W alive selections
Rights to changes reserved

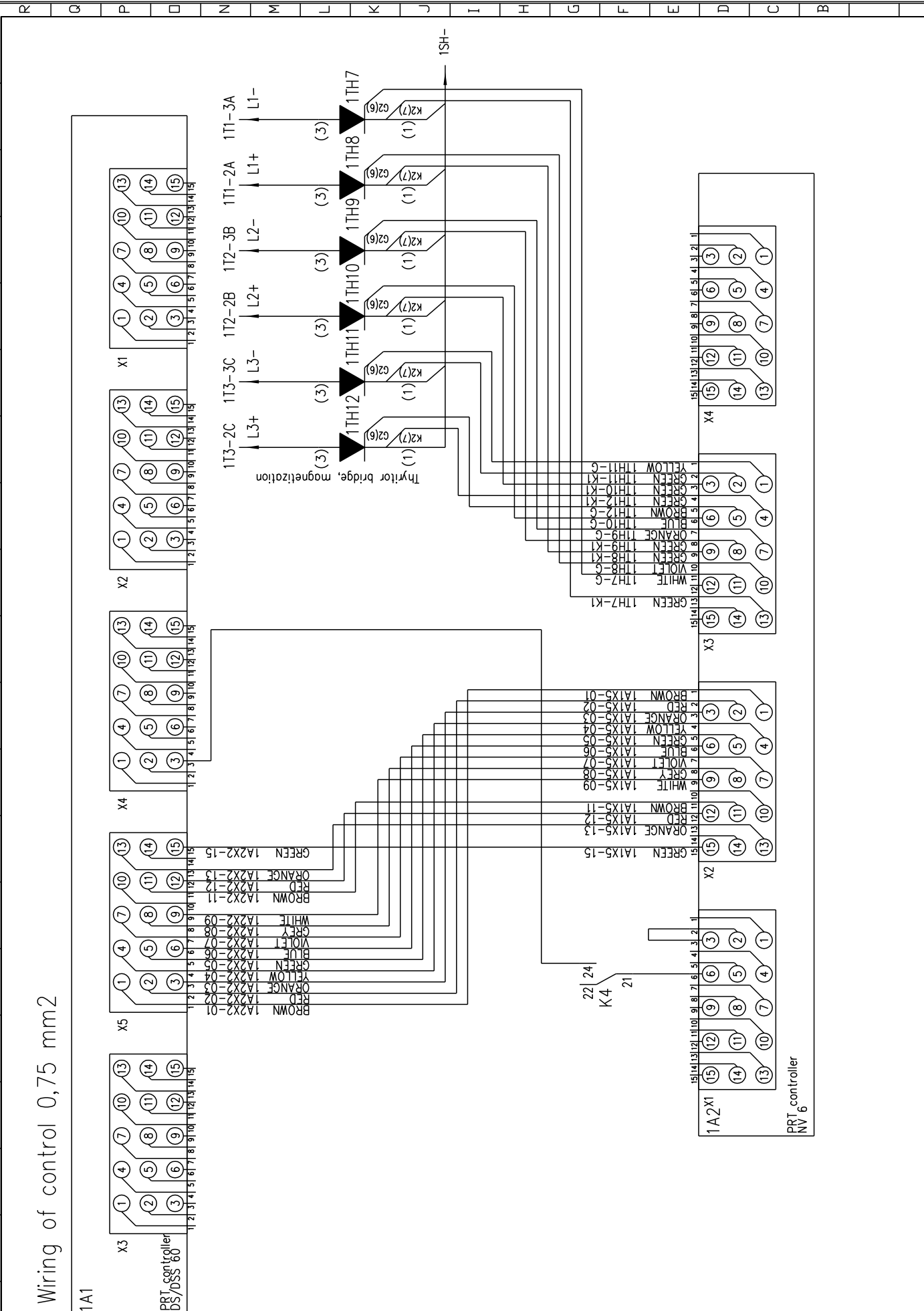
ELLEGO POWERTEC OY
SMV100PRT-2A/110V
Work 3271

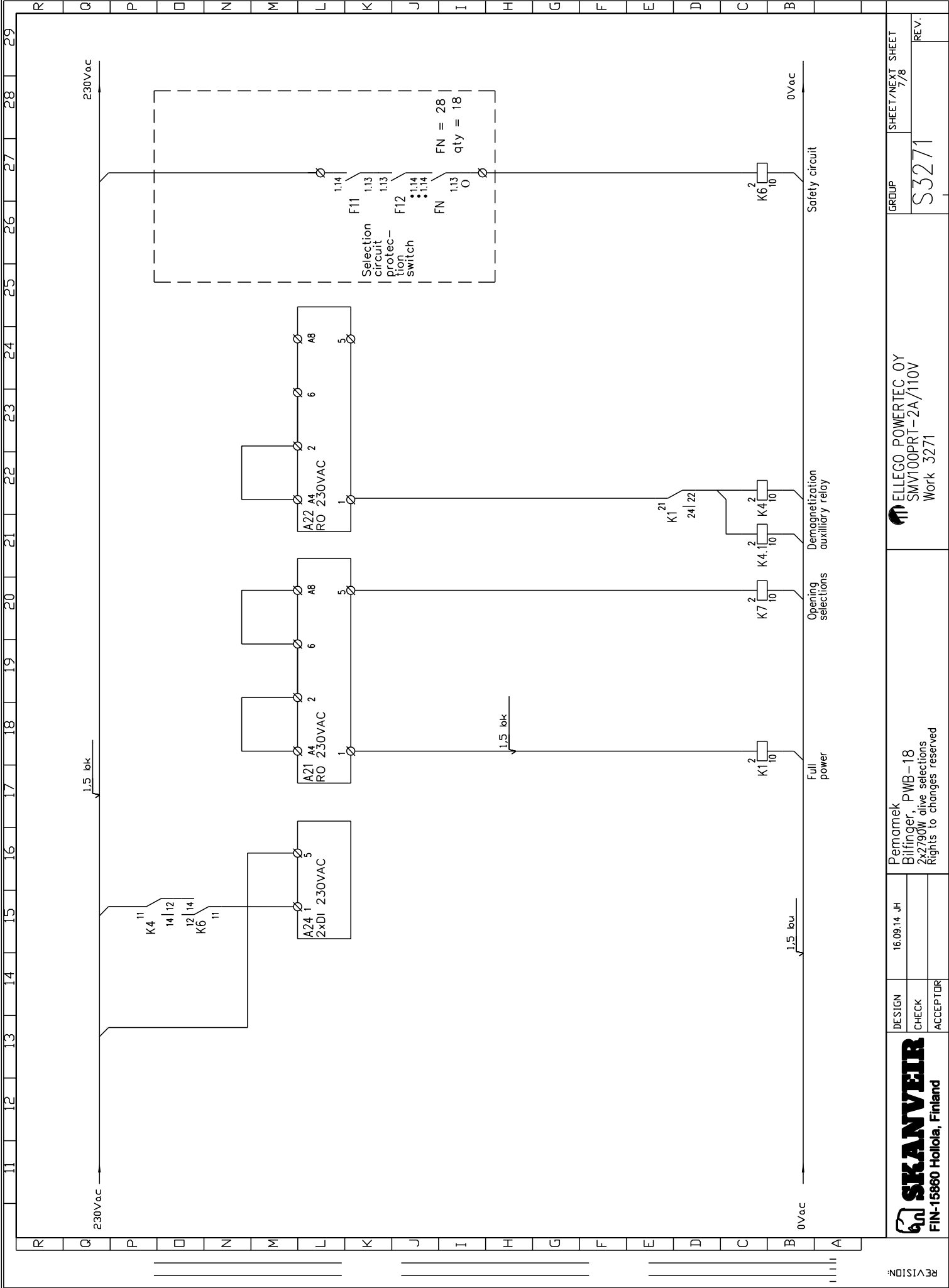
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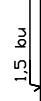
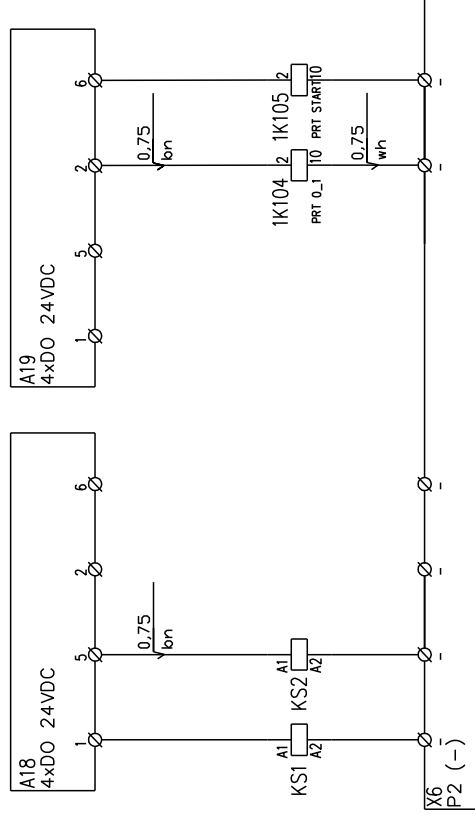
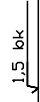
16.09.14 JH

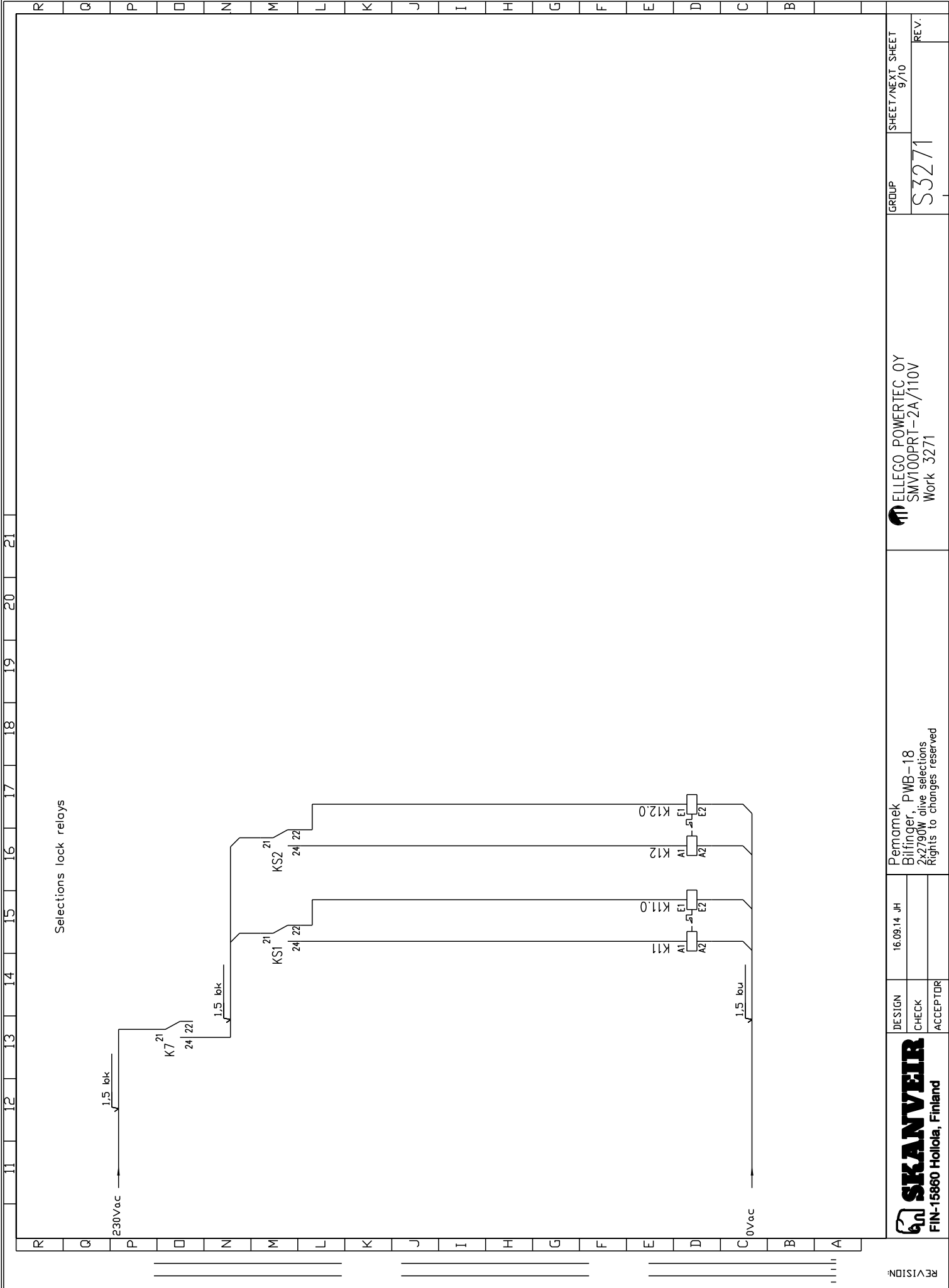
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Bilfinger,
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ELLEGO POWERTEC OY
SMV100PRT-2A/110V
Work 3271

GROUP

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Bilfinger, 2x2790W alive selections
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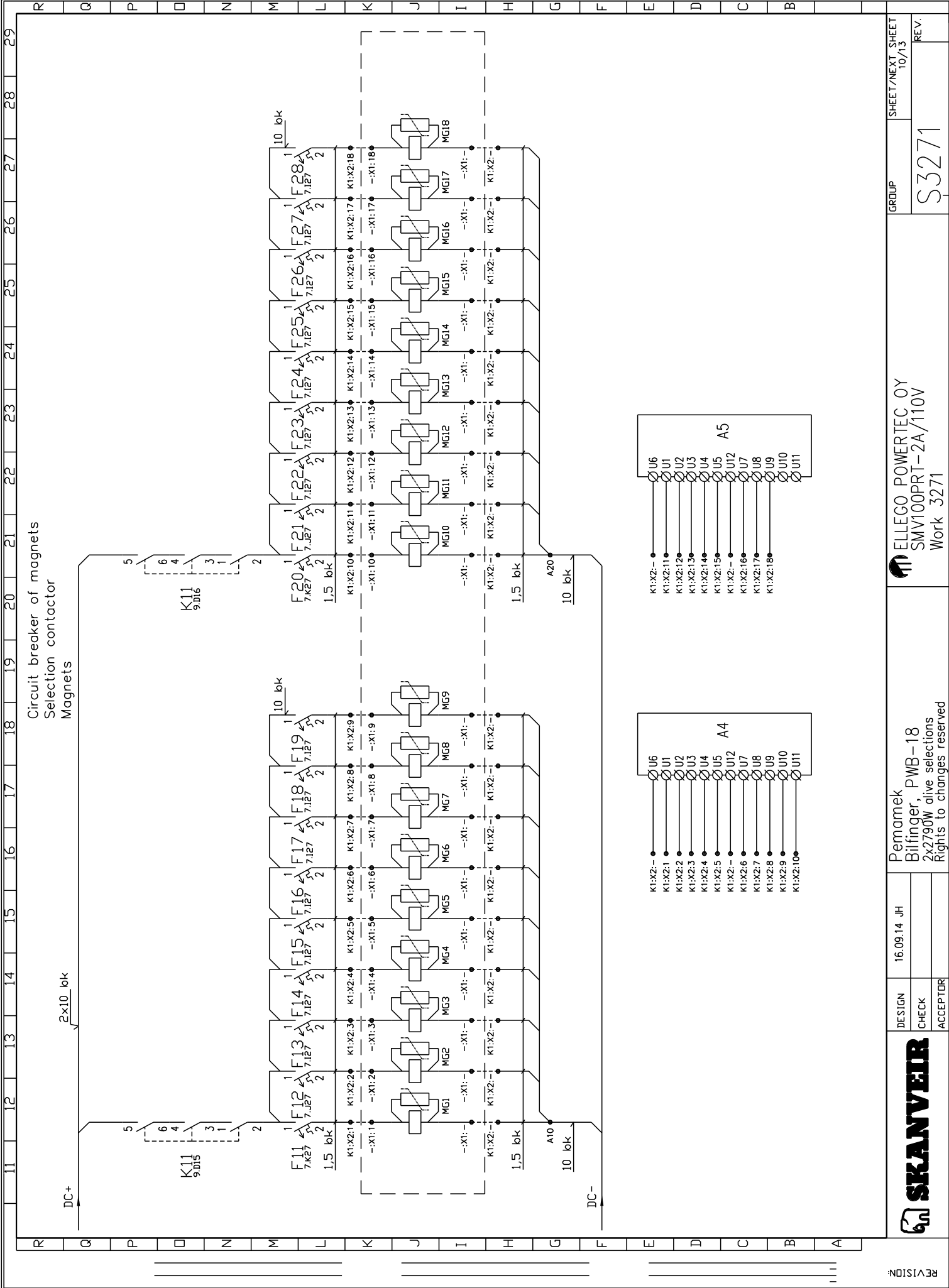
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SMV100PRT-2A/110V
Work 3271

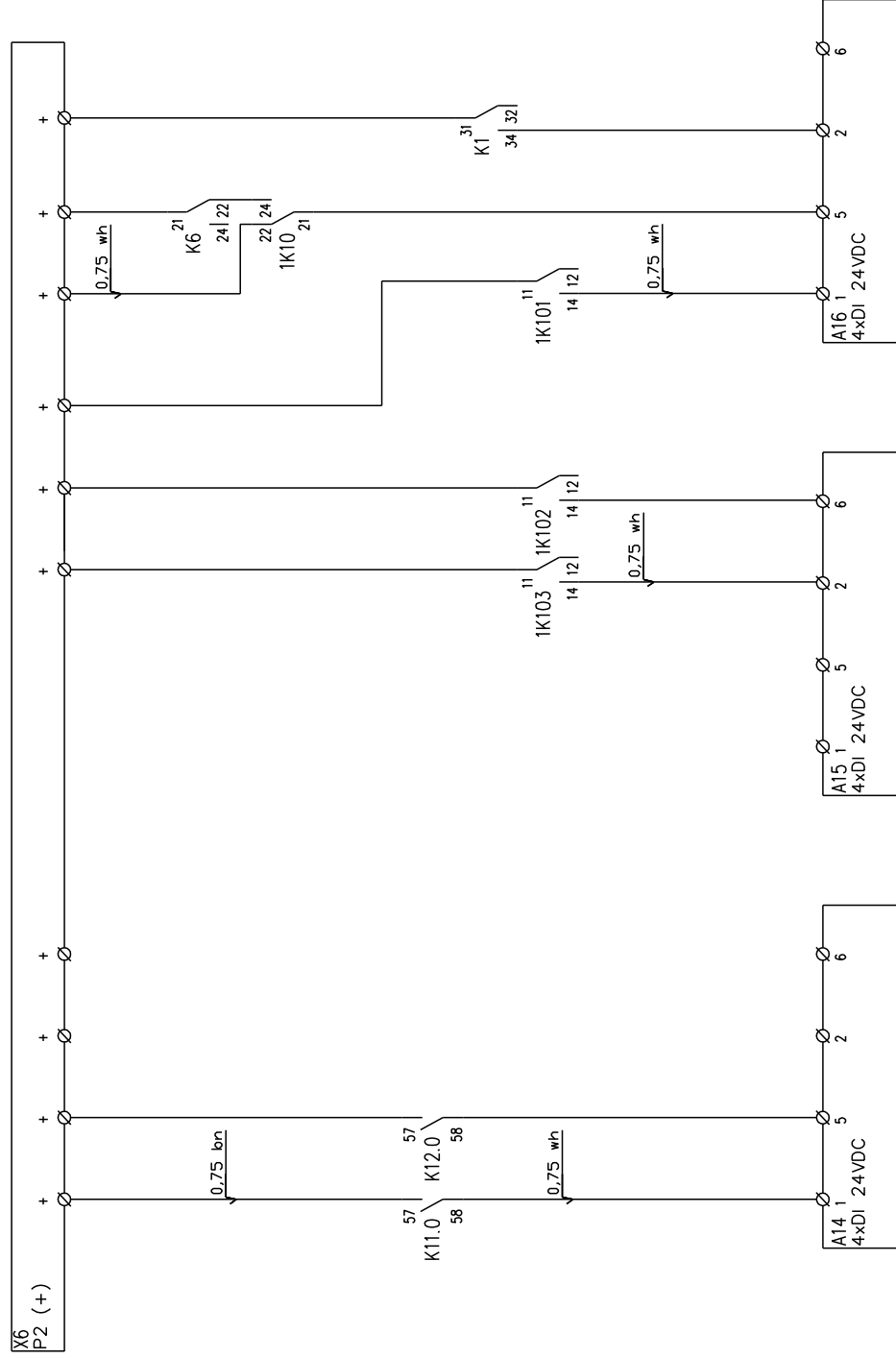
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6. SPARE PARTS

SPARE PARTS

Mechanical spare parts can be found in the assembly drawings enclosed, where they are listed according to their characteristics (part 4).

Spare parts of the electric equipment can be found in the instrumental list of the electric documents (see part 5).

Spare parts can be ordered from
Skanveir Oy tel. +358 (0)3 7803230 Fax. +358 (0)3 7808091,
email skanveir@skanveir.com