

Maho MH400E Retrofit

Maho MH400E Retrofit

0	02-11-25	johan	
REV.	DATE	NAME	CHANGES
			REVISION 0
			CONTRACT : User data 1 User data 2
			SCHEME 01

1-Maho MH400E Retrofit

Drawing	Description	Function	Location	Revision	Date	Created by	Folder	Folder description
01	Cover page	=F0	+L1	0	02-11-25	johan		
02	Drawings list	=F0	+L1	0	02-11-25	johan		
03	Drawings list	=F0	+L1	0	23-12-25	johan		
04	Locations list 1/1	=F0	+L1	0	10-12-25	johan		
05	Functions list 1/1	=F0	+L1	0	28-12-25	johan		
06	Mains power	=F0	+L1	0	06-12-25	johan	1	Schemas
07	Main drive	=F1	+L1	0	02-11-25	johan	1	Schemas
08	Hydraulics	=F3	+L1	0	23-11-25	johan	1	Schemas
09	Lubrication	=F4	+L1	0	07-12-25	johan	1	Schemas
10	Control transformer	=F6	+L1	0	07-12-25	johan	1	Schemas
11	24V Power supply	=F6	+L1	0	05-11-25	johan	1	Schemas
12	Linear encoders	=F7	+L1	0	22-11-25	johan	1	Schemas
13	Servomotor X-axis	=F7=F1	+L1	0	27-12-25	johan	1	Schemas
14	Servomotor X-axis PLC	=F7=F1	+L1	0	27-12-25	johan	1	Schemas
15	Servomotor Y-axis	=F7=F2	+L1	0	10-12-25	johan	1	Schemas
16	Servomotor Y-axis PLC	=F7=F2	+L1	0	26-12-25	johan	1	Schemas
17	Servomotor Z-axis	=F7=F3	+L1	0	27-12-25	johan	1	Schemas
18	Servomotor Z-axis PLC	=F7=F3	+L1	0	27-12-25	johan	1	Schemas
19	Gearbox motors	=F8	+L1	0	05-11-25	johan	1	Schemas
20	Gearbox switches	=F8	+L1	0	07-12-25	johan	1	Schemas
21	Cooling unit/heat exchanger	=F26	+L1	0	10-12-25	johan	1	Schemas
22	Safety	=F36	+L1	0	23-11-25	johan	1	Schemas
23	Control cabinet	=F0	+L1	0	30-11-25	johan	2	Layouts
24	-X001--X110--X120	=F36	+L1	0	28-12-25	johan	3	Terminal strips
25	-X130--X210	=F0	+L1	0	28-12-25	johan	3	Terminal strips
26	X211-Limit switches Y-axis(1/2)	=F7=F2	+L1	0	28-12-25	johan	3	Terminal strips
27	X211-Limit switches Y-axis(2/2)	=F7=F2	+L1	0	28-12-25	johan	3	Terminal strips
28	-X230--X231	=F8	+L1	0	28-12-25	johan	3	Terminal strips
29	-X232--X310--X311	=F8	+L1	0	28-12-25	johan	3	Terminal strips
30	-X312--X410--X420	=F3	+L1	0	28-12-25	johan	3	Terminal strips
31	-X430--X440--X450	=F7=F2	+L1	0	28-12-25	johan	3	Terminal strips
32	List of wires by line style	=F0	+L1	0	26-12-25	johan	1	Wires
33	List of wires by line style	=F0	+L1	0	26-12-25	johan	1	Wires
34	List of wires by line style	=F0	+L1	0	26-12-25	johan	1	Wires

	Maho MH400E Retrofit					REVISION	
						0	
		0	02-11-25	johan			
		REV.	DATE	NAME	CHANGES	SCHEME	
CONTRACT:	LOCATION: +L1	Control cabinet			User data 1	User data 2	02

-> 1-Maho MH400E Retrofit

Drawing	Description	Function	Location	Revision	Date	Created by	Folder	Folder description
35	List of wires by line style	=F0	+L1	0	26-12-25	johan	1	Wires
36	List of wires by line style	=F0	+L1	0	26-12-25	johan	1	Wires
37	List of wires by line style	=F0	+L1	0	29-12-25	johan	1	Wires
38	List of wires by line style	=F0	+L1	0	29-12-25	johan	1	Wires
39	List of wires by line style	=F0	+L1	0	29-12-25	johan	1	Wires
40	List of wires by line style	=F0	+L1	0	29-12-25	johan	1	Wires
41	List of wires by line style	=F0	+L1	0	29-12-25	johan	1	Wires
42	Bill Of Materials grouped by manufacturer	=F0	+L1	0	23-12-25	johan	2	BOM
43	Bill Of Materials grouped by manufacturer	=F0	+L1	0	23-12-25	johan	2	BOM
44	Bill Of Materials grouped by manufacturer	=F0	+L1	0	23-12-25	johan	2	BOM
45	Bill Of Materials grouped by manufacturer	=F0	+L1	0	23-12-25	johan	2	BOM
46	Bill Of Materials grouped by manufacturer	=F0	+L1	0	28-12-25	johan	2	BOM
47	List of the cables	=F0	+L1	0	27-12-25	johan	3	Cables
48	PLC Inputs / Outputs list	=F0	+L1	0	28-12-25	johan	4	PLC inputs/outputs
49	PLC Inputs / Outputs list	=F0	+L1	0	28-12-25	johan	4	PLC inputs/outputs
50	PLC Inputs / Outputs list	=F0	+L1	0	28-12-25	johan	4	PLC inputs/outputs

	Maho MH400E Retrofit					REVISION	
						0	
		0	23-12-25	johan			
		REV.	DATE	NAME	CHANGES	SCHEME	
CONTRACT:	LOCATION: +L1	Control cabinet			User data 1	User data 2	03

Location Mark	Description
+L1	Control cabinet
+L1+L1	Pumps
+L1+L2	Transformer compartment
+L2	Gearbox
+L3	Spindle motor
+L1+L3	Door
+L4	X-axis
+L5	Y-axis
+L6	Z-axis
+L7	Control panel

	Maho MH400E Retrofit					REVISION	
						0	
		0	10-12-25	johan			
		REV.	DATE	NAME	CHANGES	SCHEME	
CONTRACT:	LOCATION: +L1	Control cabinet			User data 1	User data 2	04

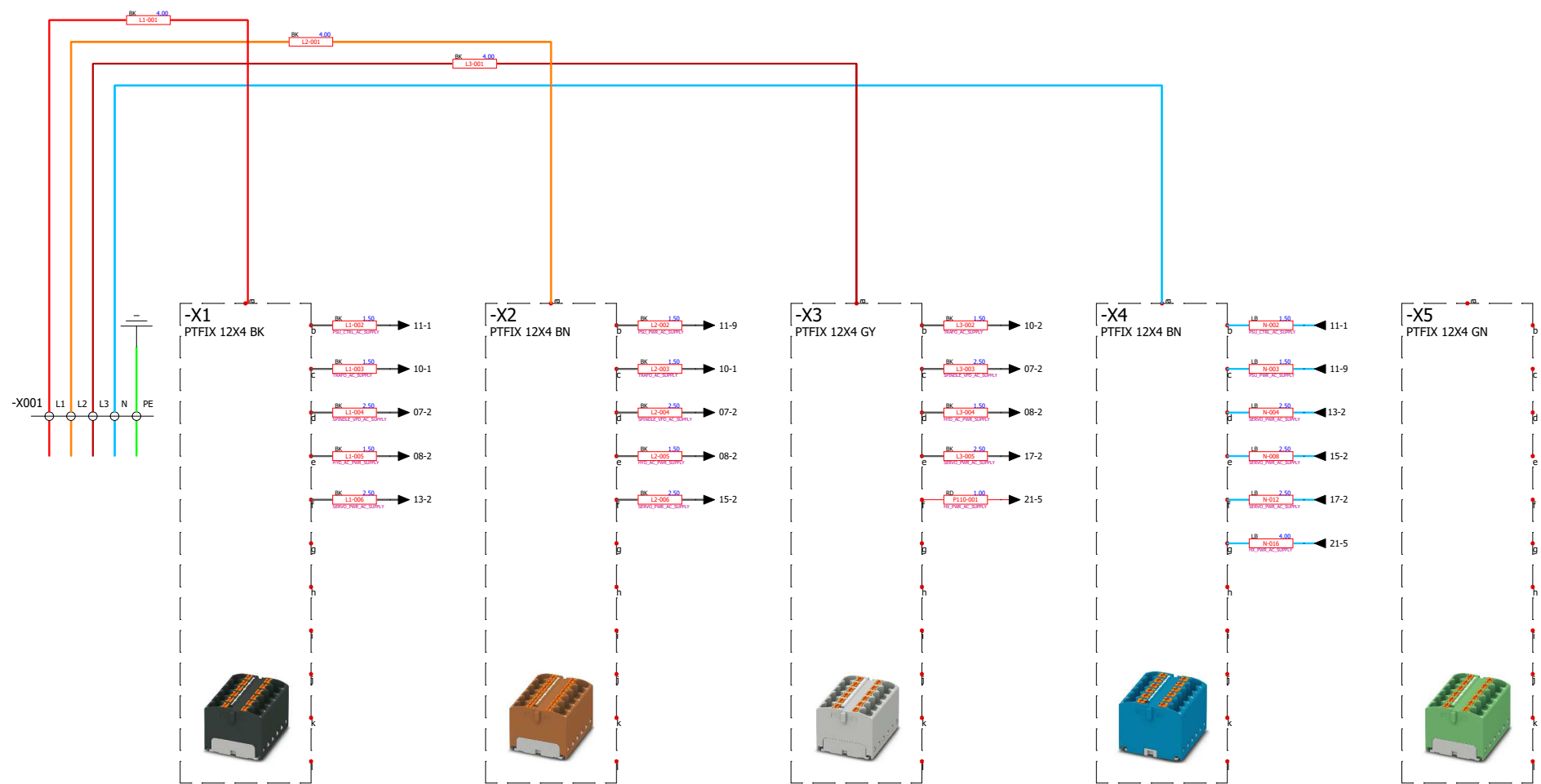
Function Mark	Description
=F0	Main function
=F1	Main drive
=F2	Coolant system
=F3	Hydraulic system
=F4	Lubrication
=F5	Tool clamp
=F6	Control voltage, machine light, cabinet
=F7	Drive technology in general
=F7=F1	X-axis
=F7=F2	Y-axis
=F7=F3	Z-axis
=F8	Spindle speed switching
=F13	Enclosure/machine housing
=F9	5th axis
=F10	Reserved
=F11	4th axis
=F12	Swiveling milling head
=F14	Horizontal milling spindle, quill
=F15	Positioning controller
=F16	CNC control, monitor, handheld
=F17	Copy control
=F18	Tool changer
=F19	Tool magazine
=F20	Chip conveyor
=F21	PC-based control
=F22	Temperature compensation
=F23	Pallet changer
=F24	Spindle orientation
=F25	Relay board
=F26	Cooling unit/heat exchanger
=F27	Reserved
=F28	Pallet station
=F29	Reserved
=F30	Tool breakage monitoring
=F31	Cutting force monitoring
=F32	Free M-function

Function Mark	Description
=F33	Reserved
=F34	Fault indicator
=F35	Probe/measuring sensor
=F36	Safety Circuit
=F37	Reserved

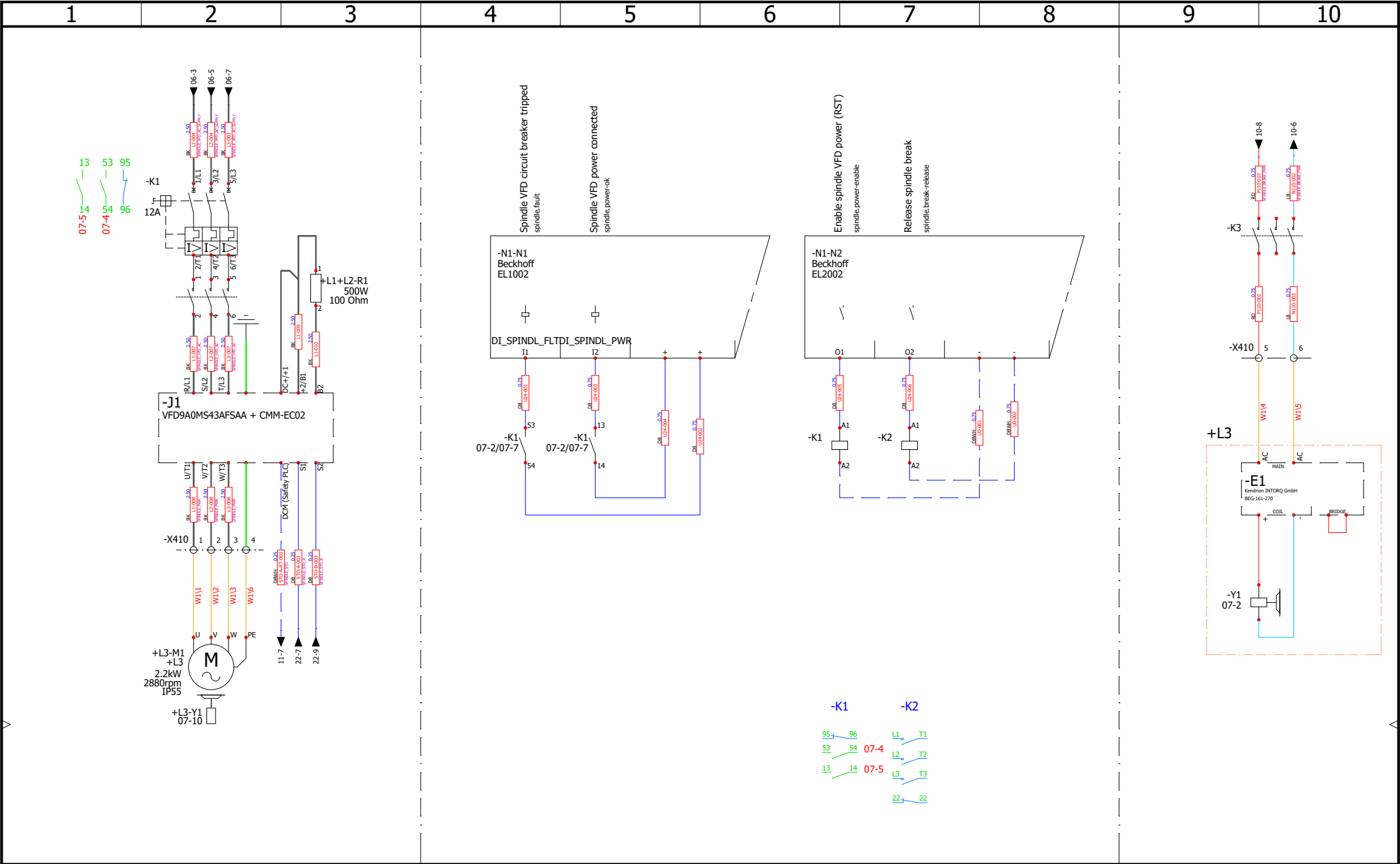
	Maho MH400E Retrofit				REVISION
					0
		0	28-12-25	johan	
		REV.	DATE	NAME	CHANGES
CONTRACT:	LOCATION: +L1	Control cabinet			SCHEME
		User data 1			05
		User data 2			

1	2	3	4	5	6	7	8	9	10
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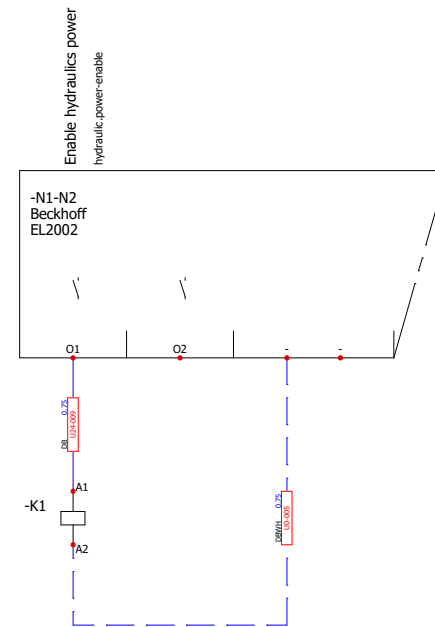
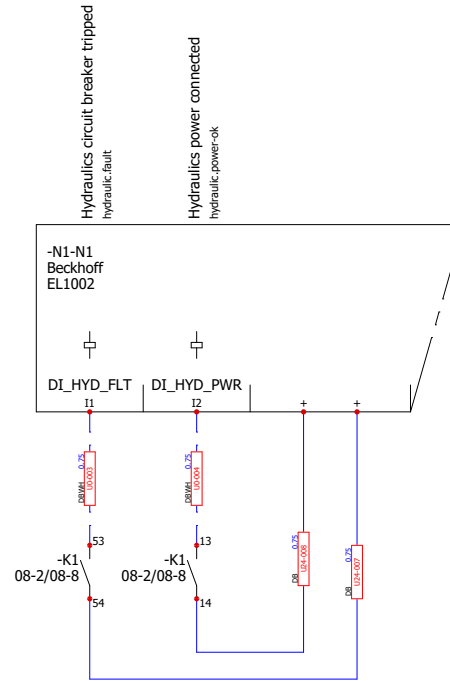
REMARK: In accordance with selectivity requirements, no local overcurrent protective device is installed.
Protection is ensured by the upstream B16 circuit breaker in the main distribution board (MDB).



FUNCTION: =F0Main function		LOCATION: +L1Control cabinet		Maho MH400E Retrofit Mains power				REVISION			
								0			
				006-12-25johan							
				REV. DATE		NAME		CHANGES			
				User data 1				User data 2		SCHEME	
										06	



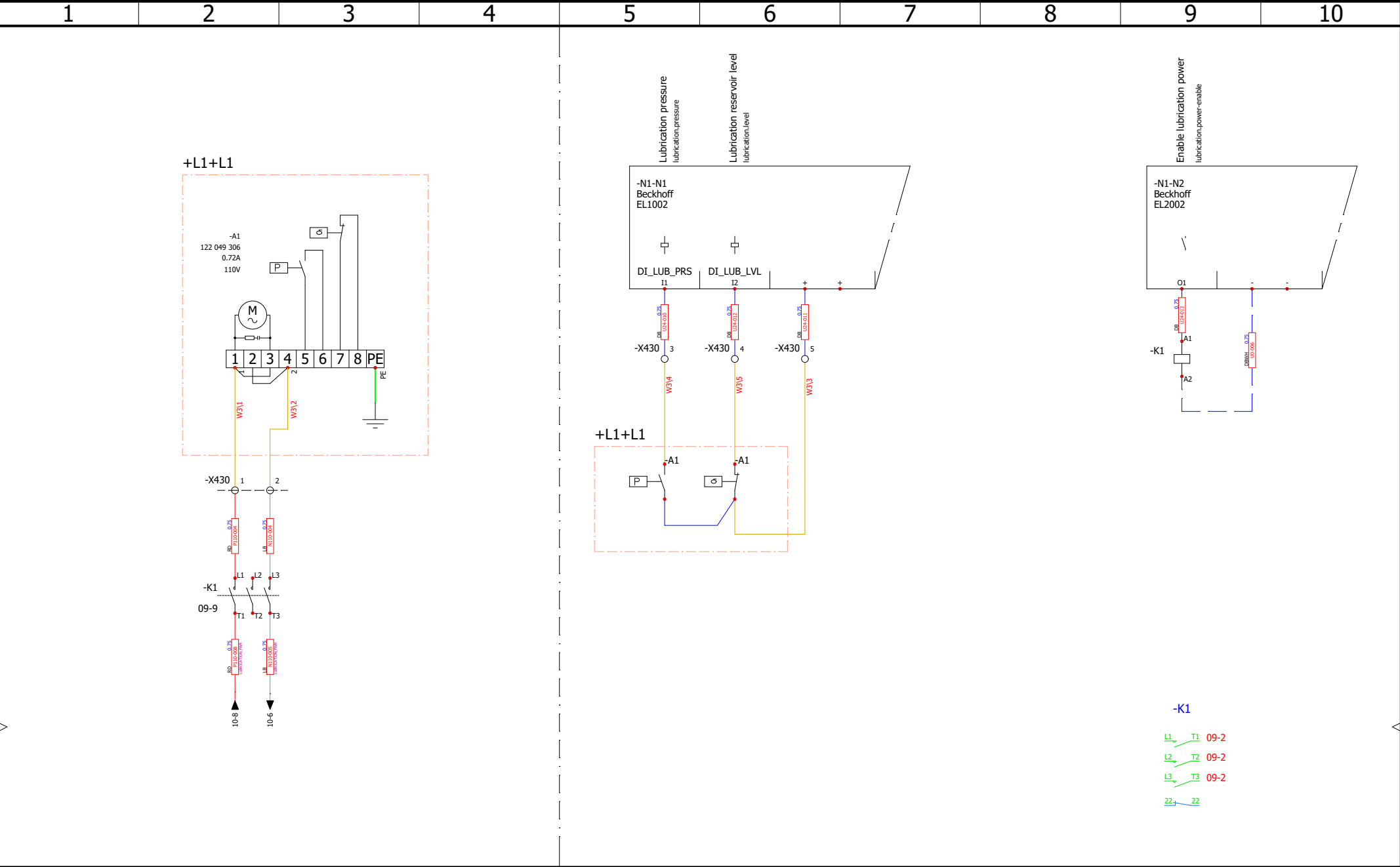
FUNCTION: =F1	Main drive	LOCATION: +L1	Maho MH400E Retrofit Main drive	Control cabinet	User data 1	User data 2	REVISION
							0
							SCHEME
							07



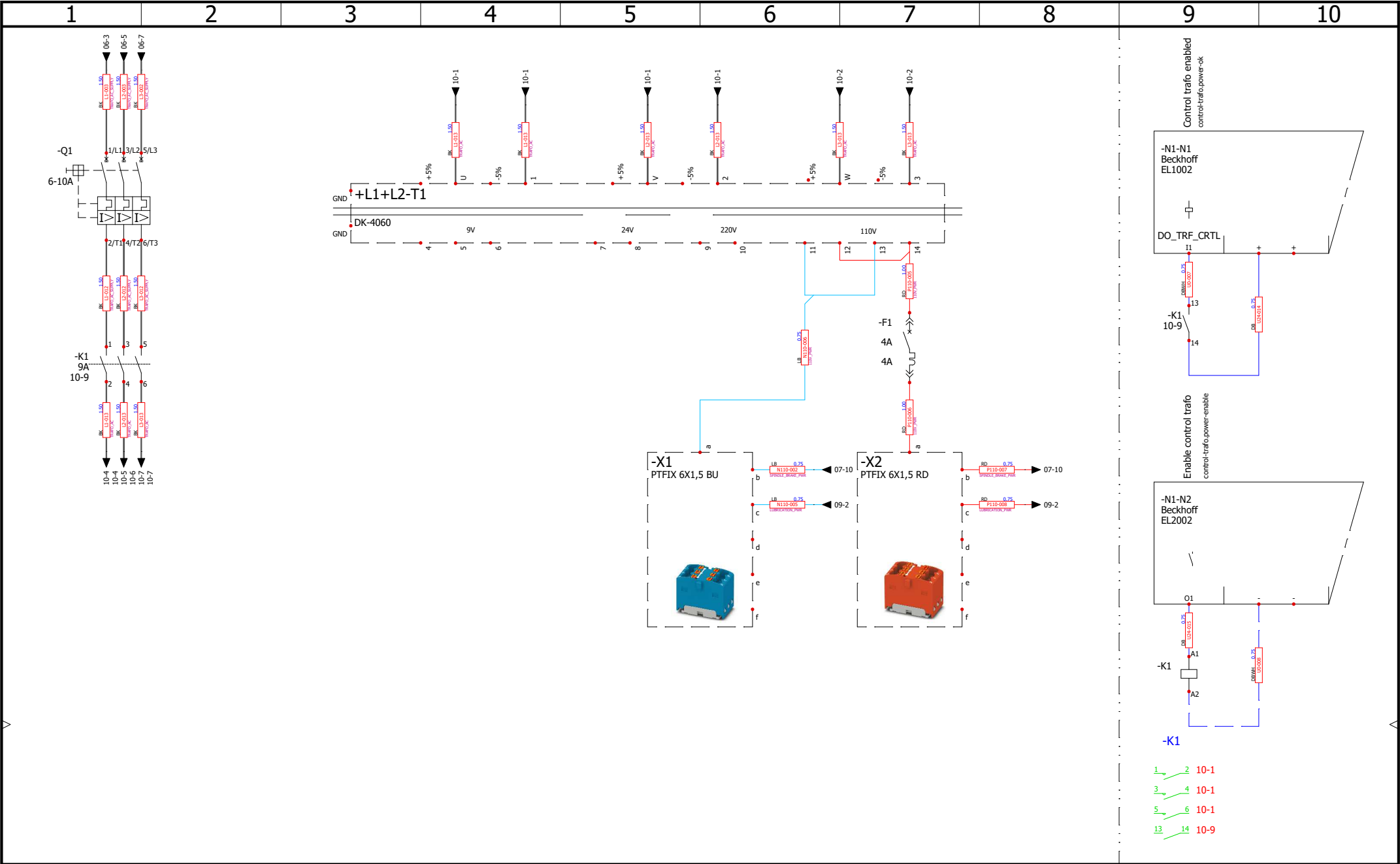
$\begin{array}{r} 95 \\ 53 \end{array}$ $\begin{array}{r} 96 \\ 54 \end{array}$ 08-5
 $\begin{array}{r} 13 \\ 14 \end{array}$ 08-5

FUNCTION:	=F3	Hydraulic system	LOCATION:	+L1	Control cabinet
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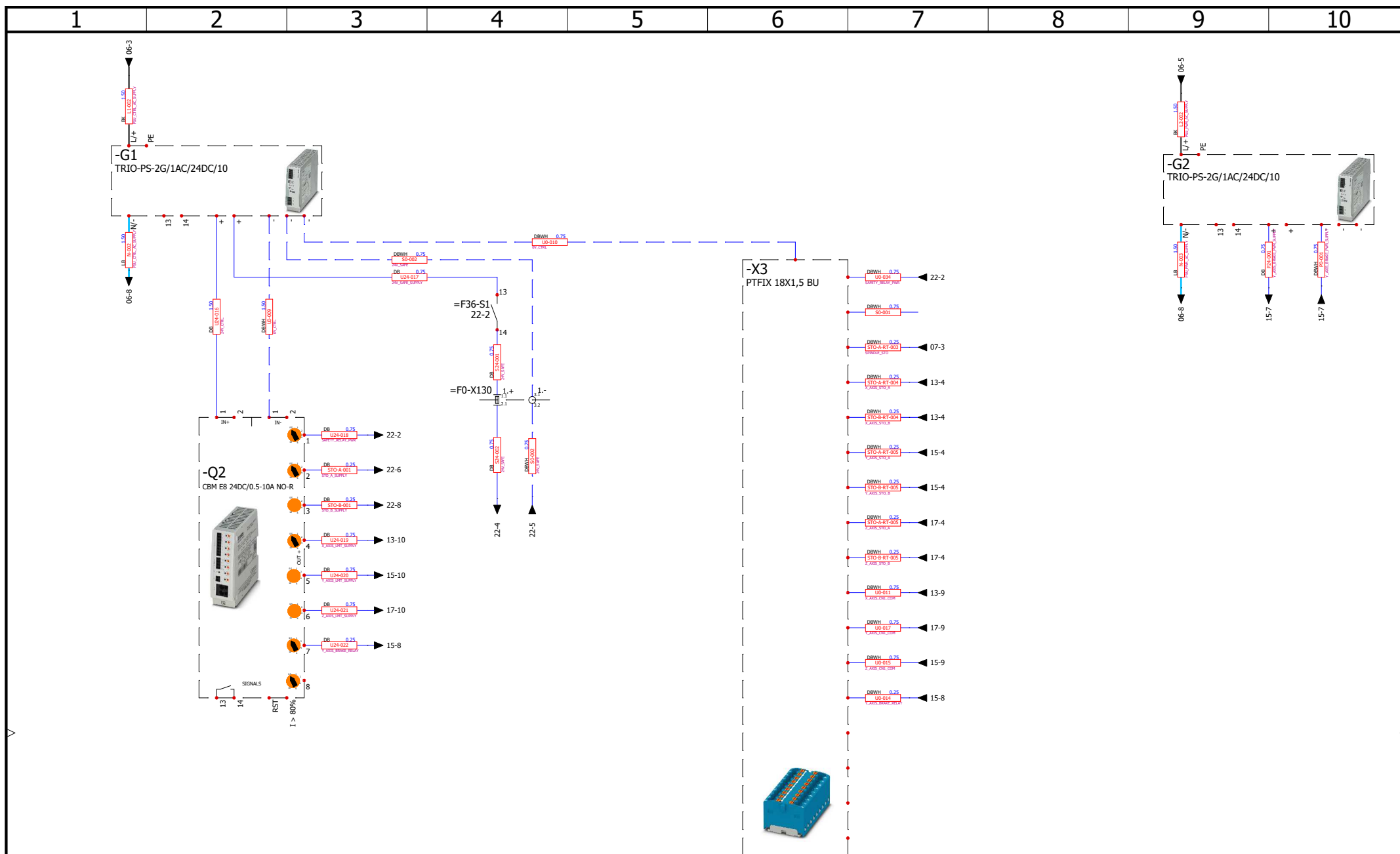
Document realized with version : 2025.5.0.0053



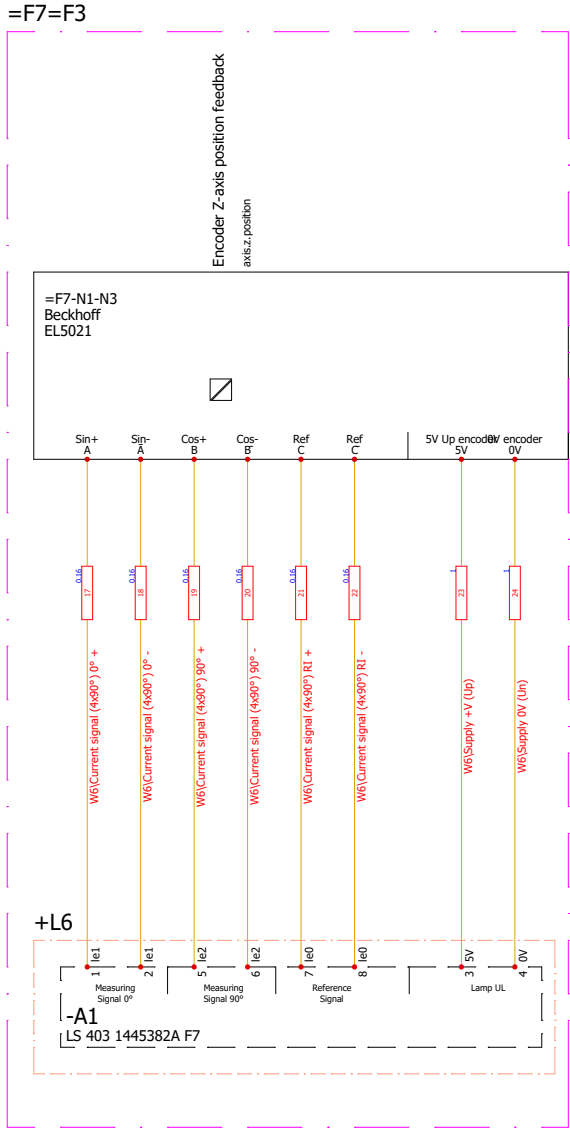
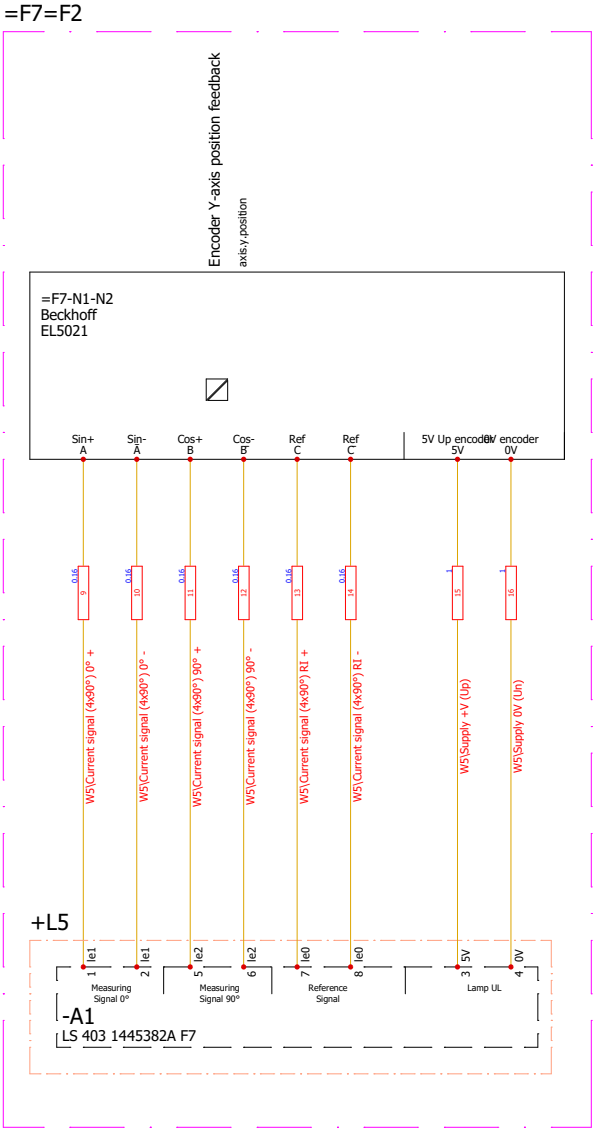
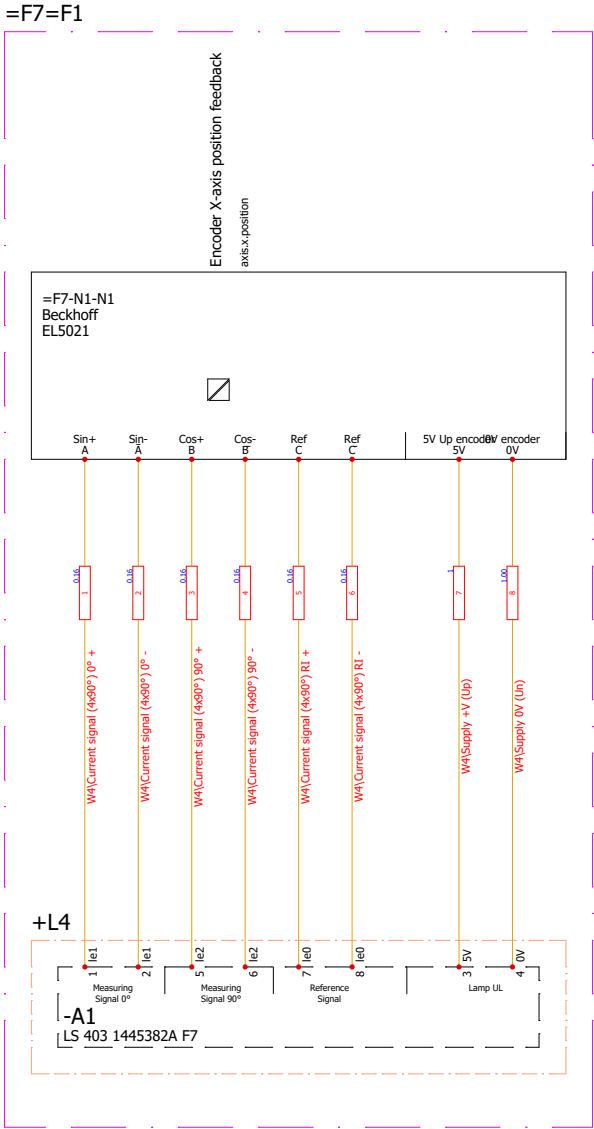
FUNCTION: =F4		LOCATION: +L1		Control cabinet		User data 1		User data 2		REVISION 0	
Lubrication										SCHEME 09	



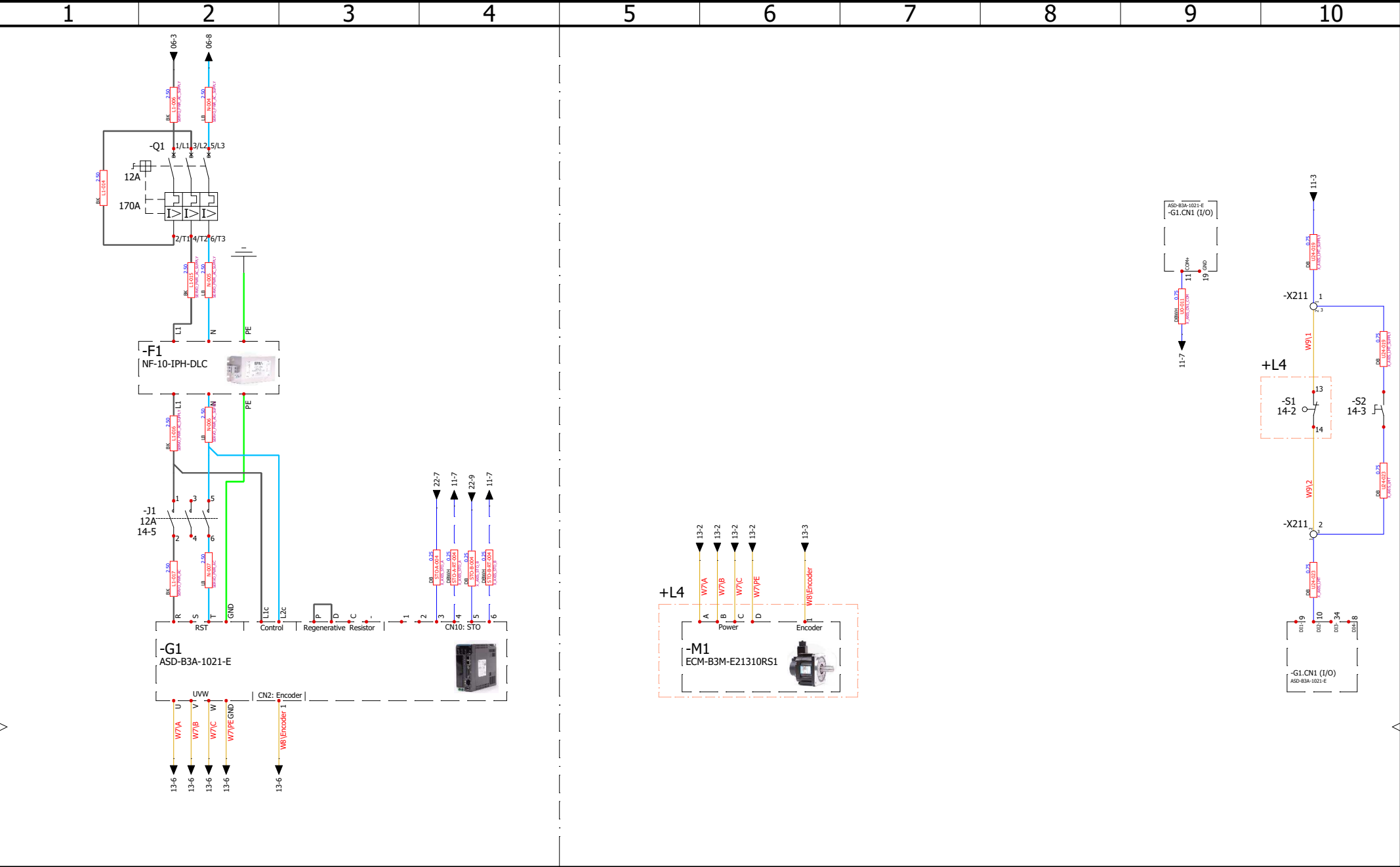
FUNCTION: =F6 Control voltage, machine light, cabinet	LOCATION: +L1 Control cabinet	Maho MH400E Retrofit Control transformer								REVISION
										0
		0	07-12-25	johan						
		REV.	DATE	NAME	CHANGES		SCHEME			
		User data 1				User data 2		10		



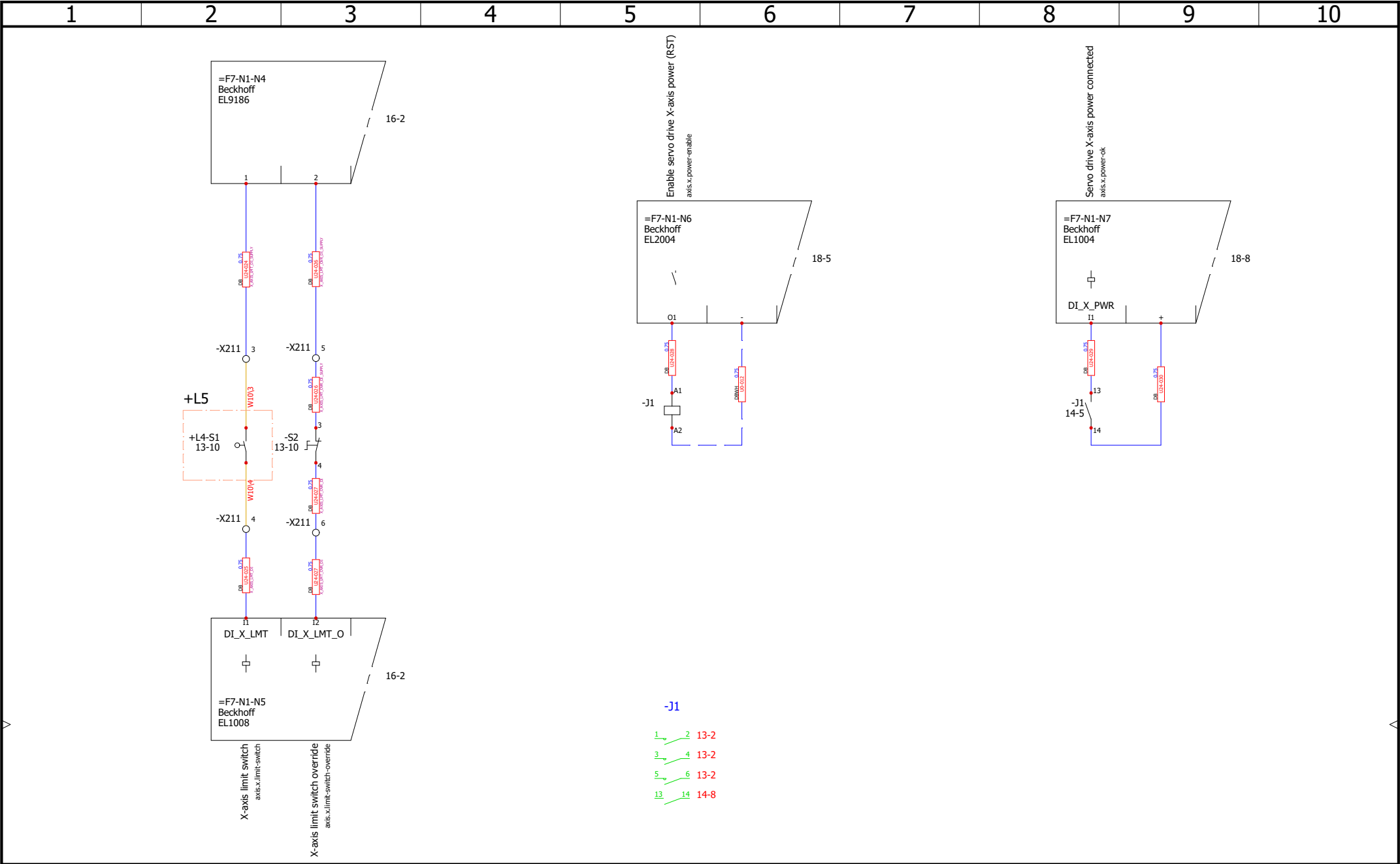
FUNCTION: =F6 Control voltage, machine light, cabinet		LOCATION: +L1 Control cabinet		REVISION 0	
				0	05-11-25
				johan	
				REV.	DATE
				NAME	CHANGES
				User data 1	User data 2
				SCHEME 11	



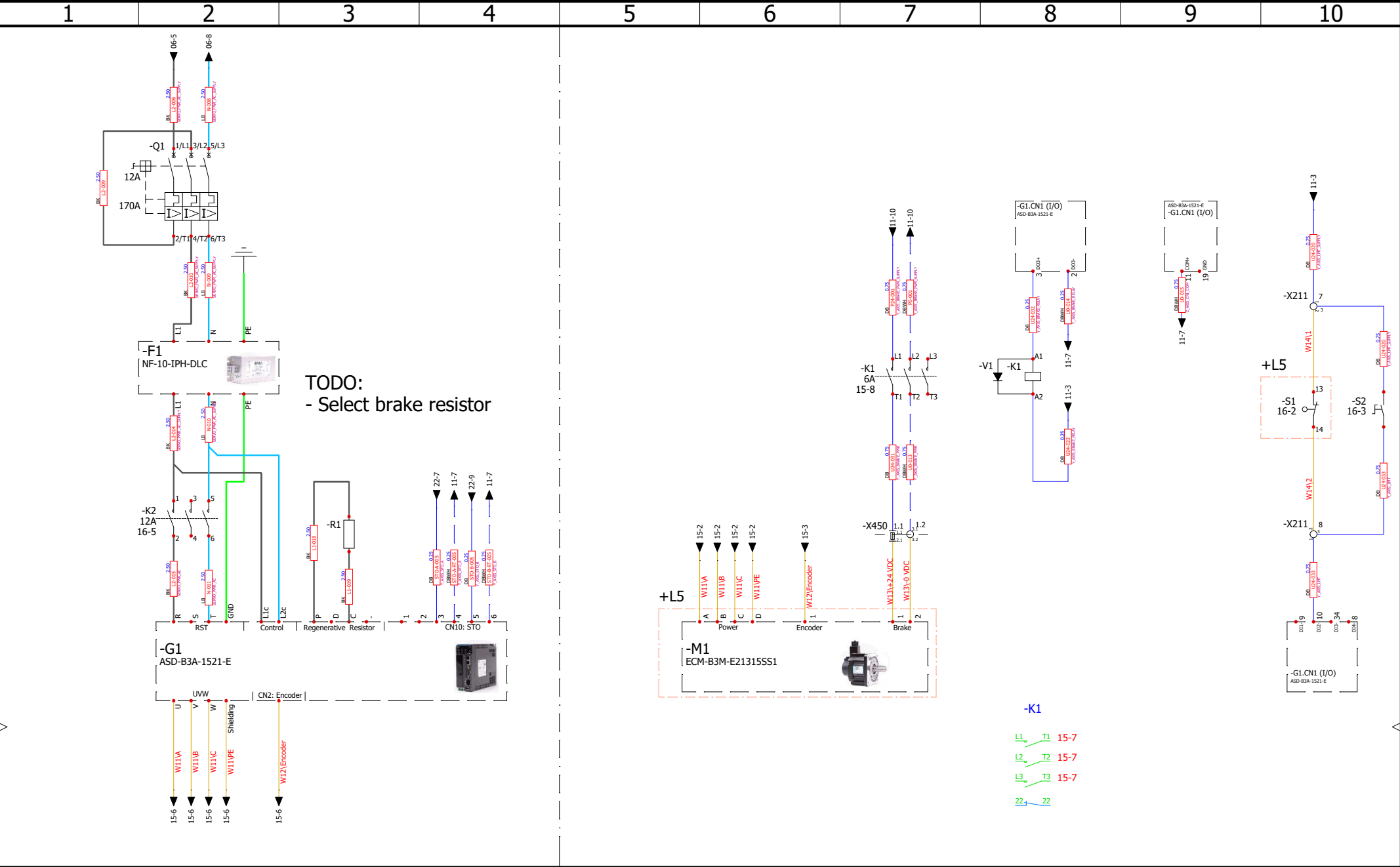
		Maho MH400E Retrofit Linear encoders						REVISION		
								0		
				0	22-11-25	johan				
				REV.	DATE	NAME	CHANGES	SCHEME		
FUNCTION: =F7		Drive technology in general		LOCATION: +L1		Control cabinet		User data 1	User data 2	12



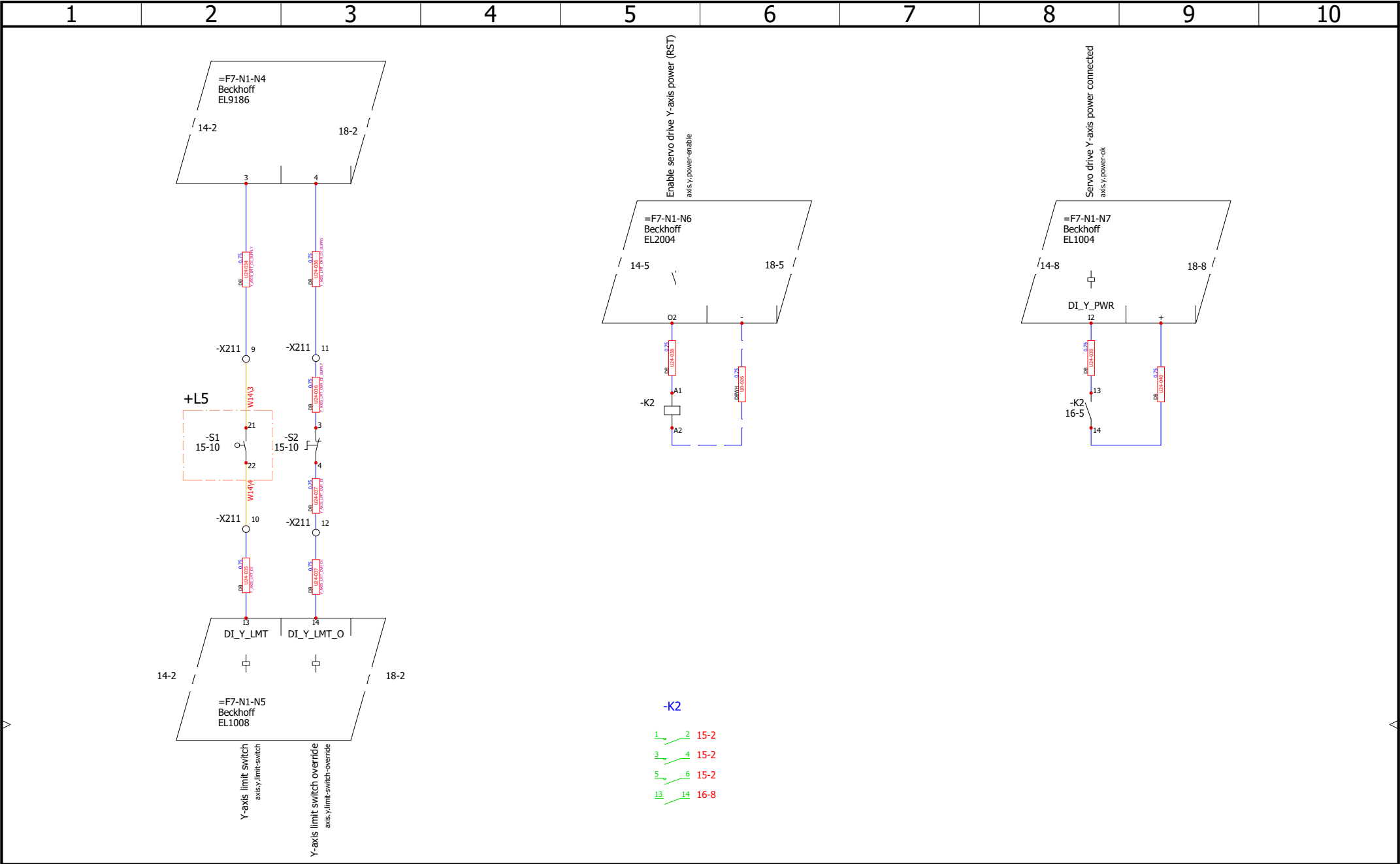
FUNCTION: =F7=F1		X-axis		LOCATION: +L1		Control cabinet		REVISION 0	
Maho MH400E Retrofit		Servomotor X-axis		REV. 0		DATE 27-12-25		johan	
								NAME	
								CHANGES	
								User data 1	
								User data 2	
								SCHEME	
								13	



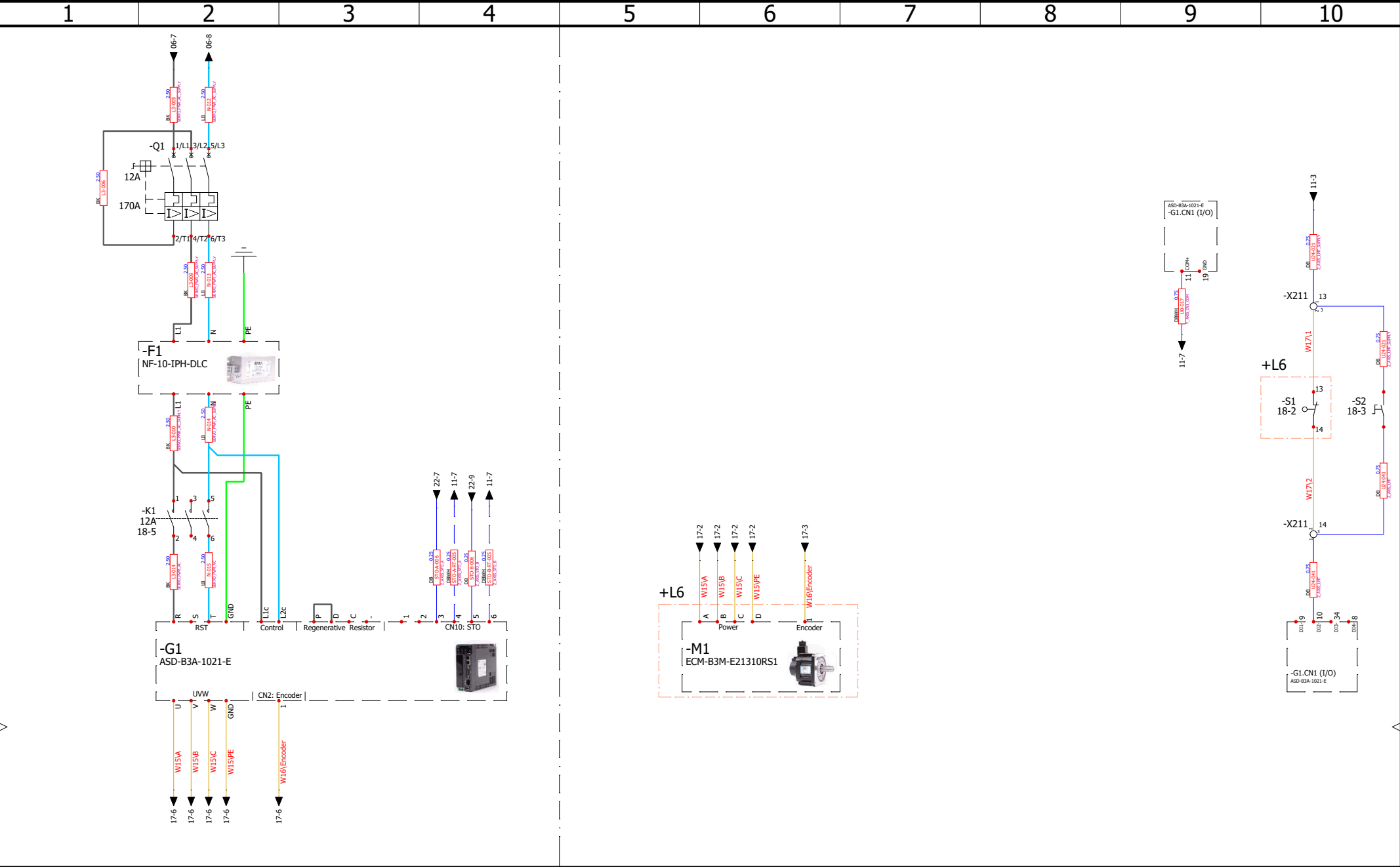
		Maho MH400E Retrofit Servomotor X-axis PLC						REVISION				
								0				
				0	27-12-25	johan						
				REV.	DATE	NAME	CHANGES					
FUNCTION: =F7=F1		X-axis		LOCATION: +L1		Control cabinet		User data 1		User data 2		SCHEME
												14



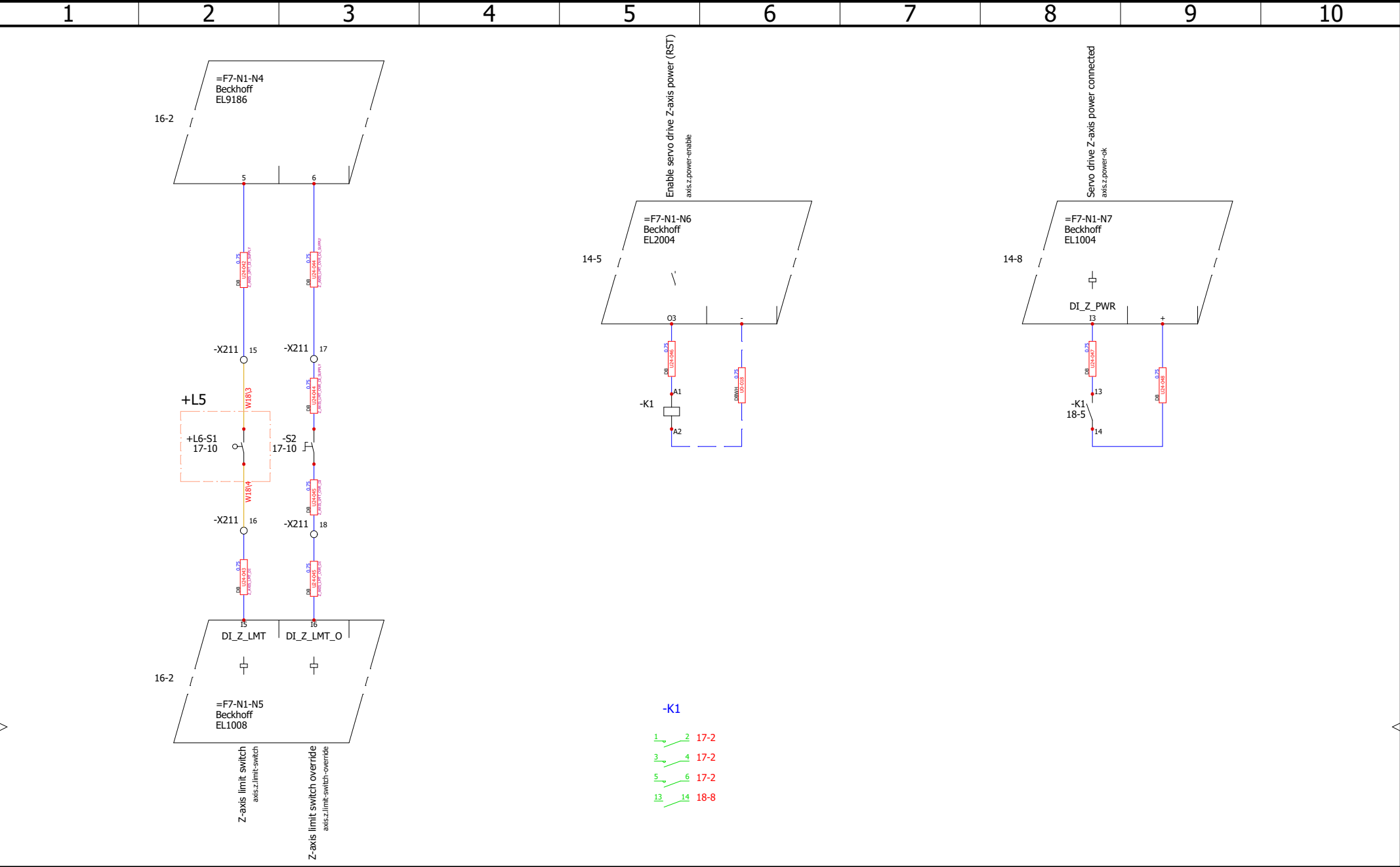
FUNCTION: =F7=F2		Y-axis		LOCATION: +L1		Control cabinet		REVISION 0	
Maho MH400E Retrofit Servomotor Y-axis								SCHEME 15	
REV.		DATE		NAME		CHANGES			
0		10-12-25		johan					
User data 1						User data 2			



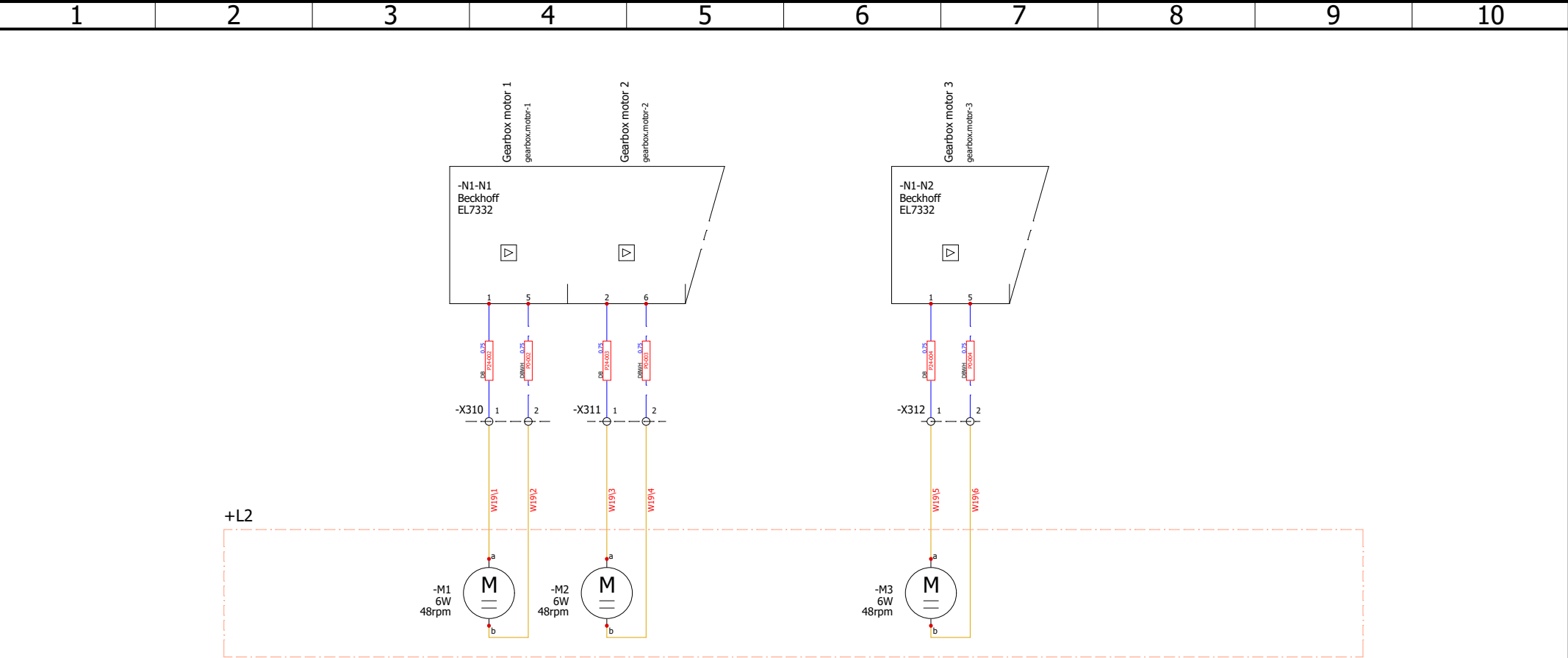
FUNCTION: =F7=F2		Y-axis		LOCATION: +L1		Control cabinet		Maho MH400E Retrofit Servomotor Y-axis PLC				REVISION					
								0				0					
												26-12-25				johan	
																0	
REV.		DATE		NAME		CHANGES		SCHEME		16							
User data 1								User data 2									



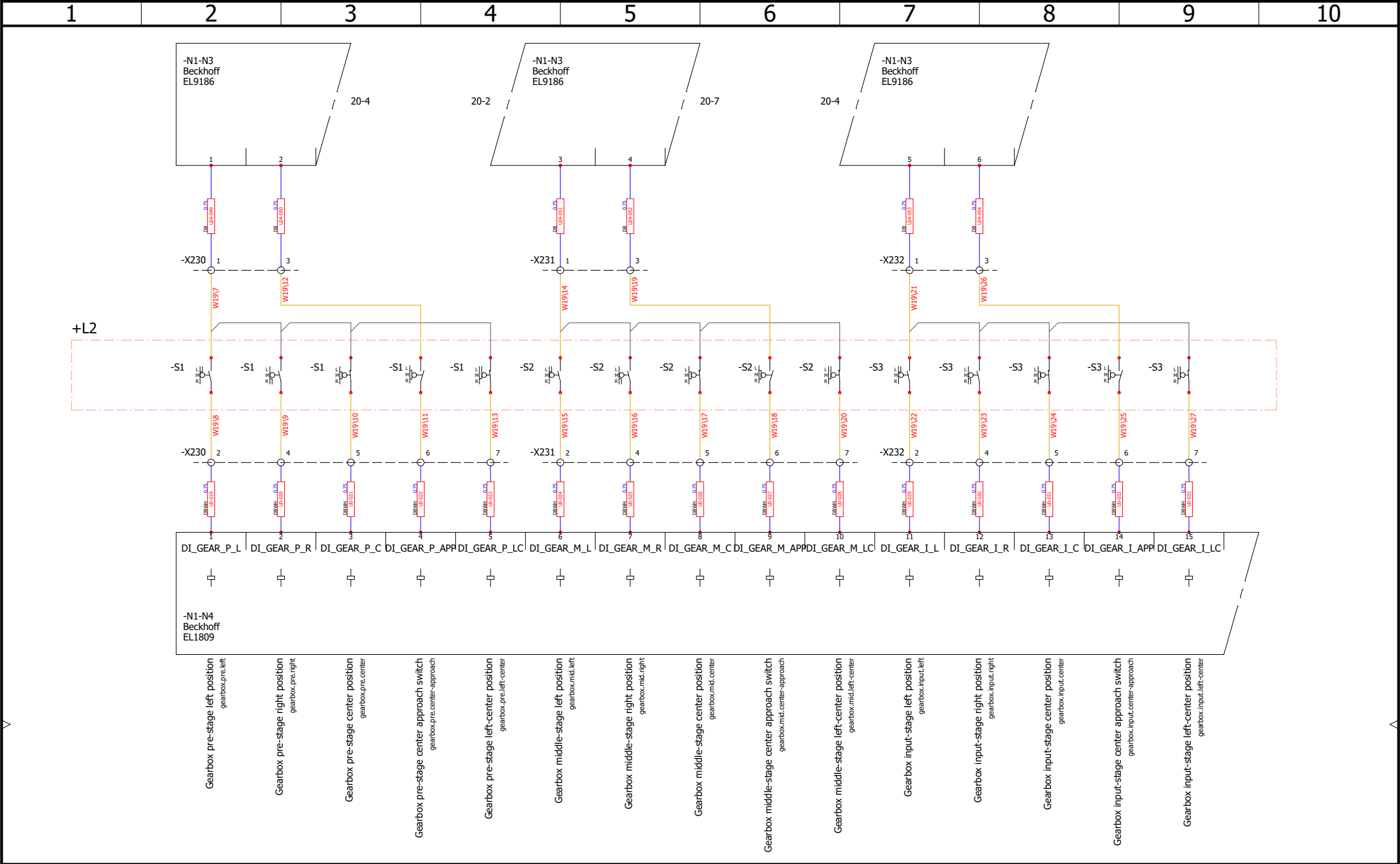
		Maho MH400E Retrofit Servomotor Z-axis						REVISION		
								0		
				0	27-12-25	johan				
				REV.	DATE	NAME	CHANGES			
FUNCTION: =F7=F3		Z-axis	LOCATION: +L1	Control cabinet		User data 1			User data 2	SCHEME
										17



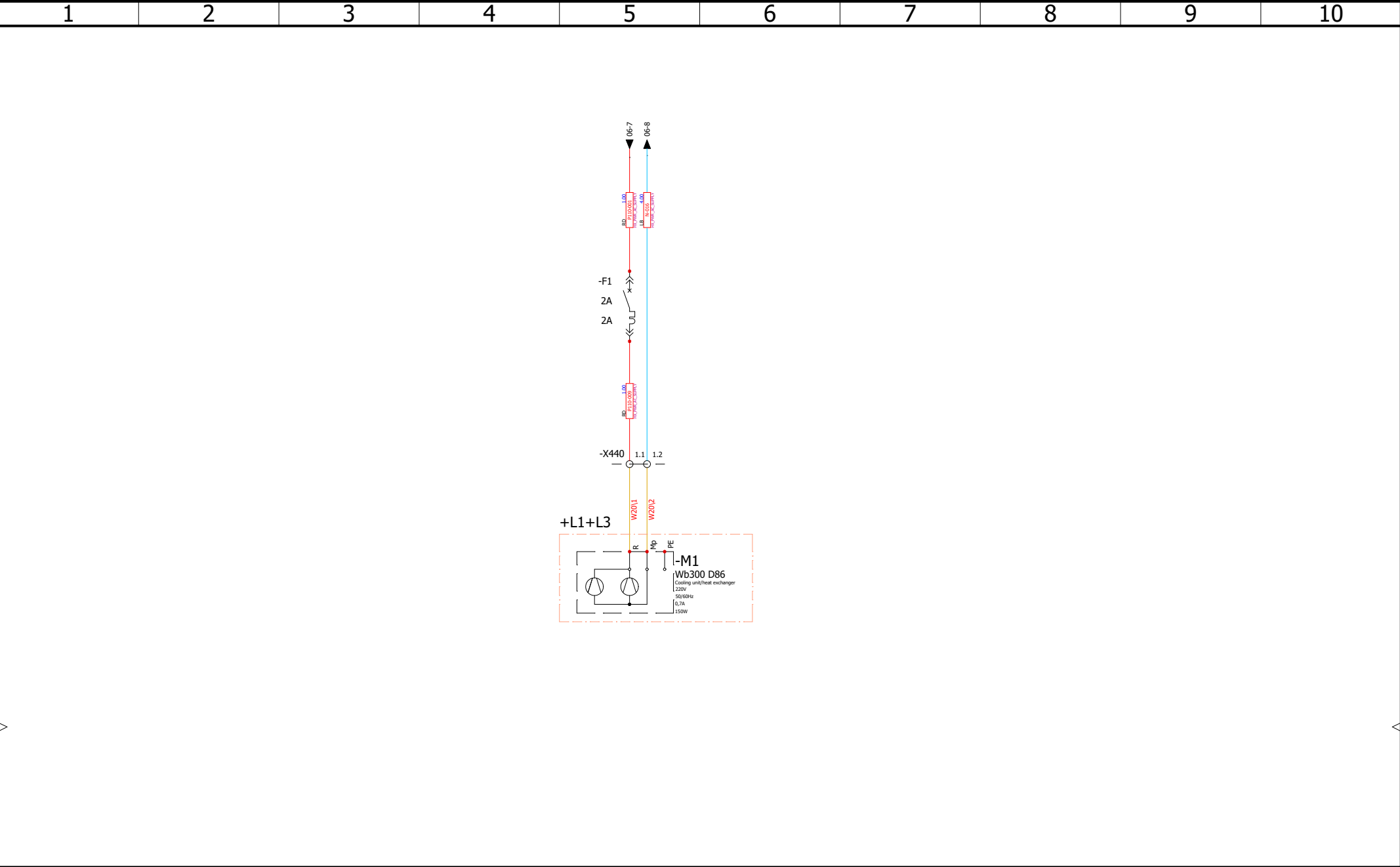
		Maho MH400E Retrofit Servomotor Z-axis PLC						REVISION		
								0		
				0	27-12-25	johan				
				REV.	DATE	NAME	CHANGES	SCHEME		
FUNCTION:	=F7=F3	Z-axis	LOCATION:	+L1	Control cabinet			User data 1	User data 2	18



FUNCTION: =F8	Spindle speed switching	LOCATION: +L1	Control cabinet	Maho MH400E Retrofit Gearbox motors				REVISION			
								0			
				0		05-11-25		johan		SCHEME	
				REV.		DATE		NAME		CHANGES	
								User data 1		User data 2	

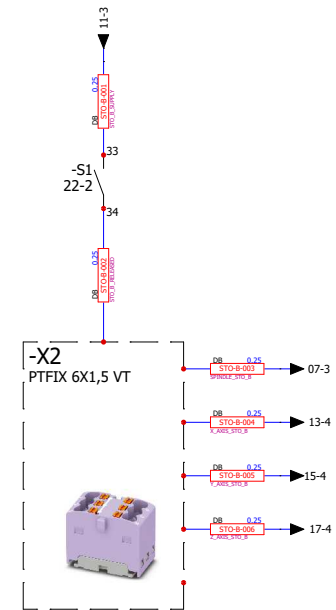
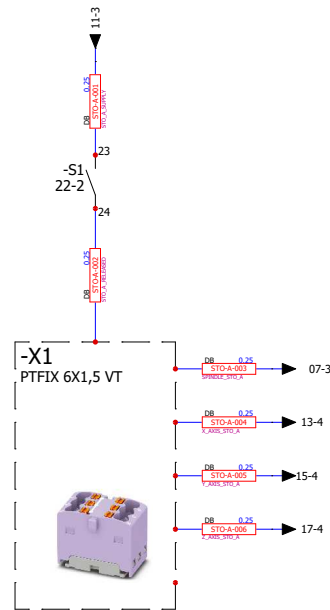
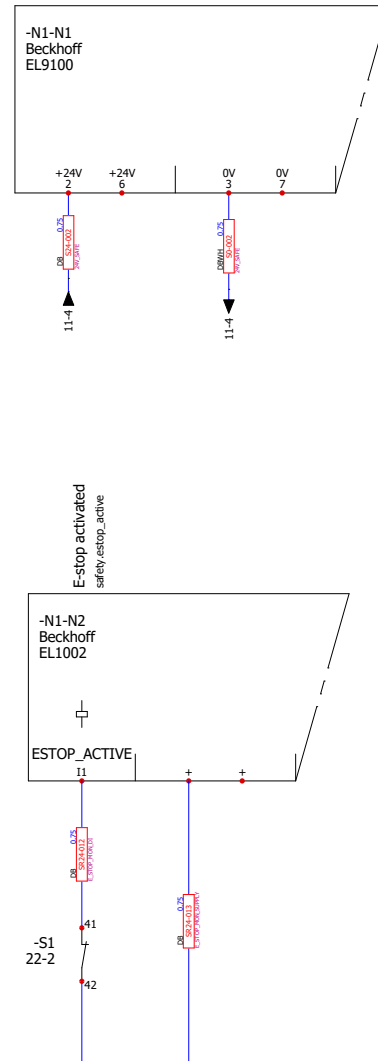
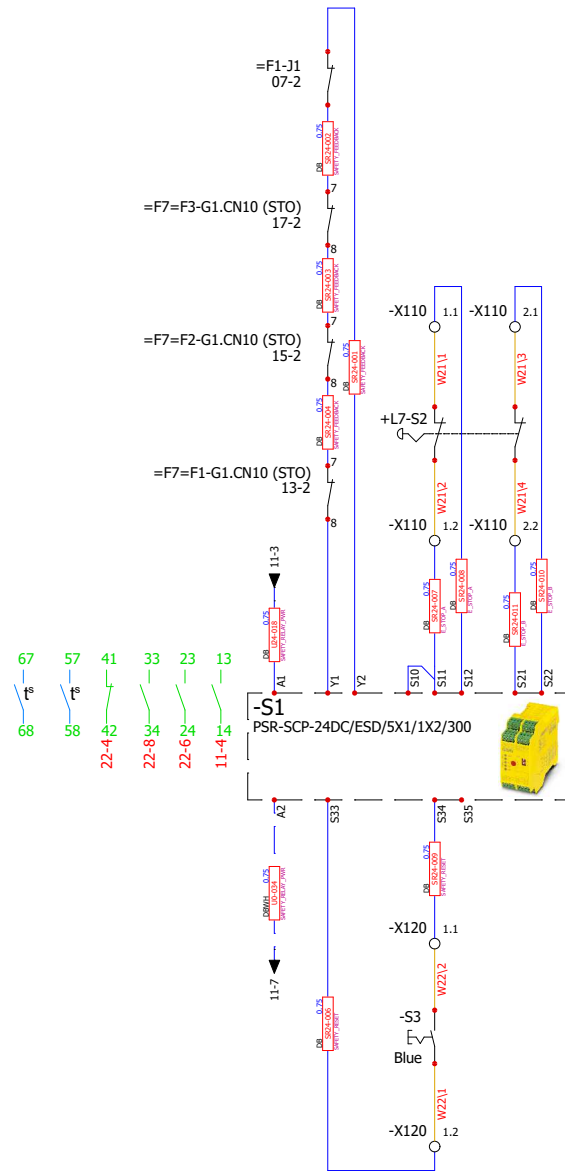


		Maho MH400E Retrofit Gearbox switches						REVISION	
								0	
				0	07-12-25	johan			
				REV.	DATE	NAME	CHANGES	SCHEME	
FUNCTION:	=F8	Spindle speed switching	LOCATION:	+L1	Control cabinet	User data 1		User data 2	20



FUNCTION: =F26 Cooling unit/heat exchanger		LOCATION: +L1 Control cabinet		Maho MH400E Retrofit Cooling unit/heat exchanger						REVISION			
										0			
				0		10-12-25		johan				SCHEME	
				REV.		DATE		NAME		CHANGES			
				User data 1				User data 2		21			

TODO: set VFD feedback contact terminal numbers



TODO:

- SELECT E-STOP SWITCH, RESET BUTTON AND DOOR SWITCHES
- Add switch on top of spindle cap

FUNCTION:

=F36

Safety Circuit

LOCATION:

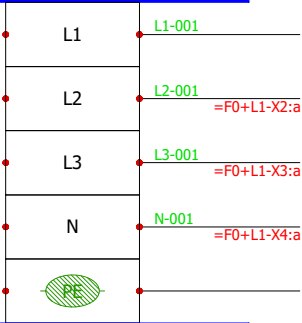
+L1

Maho MH400E Retrofit
Safety

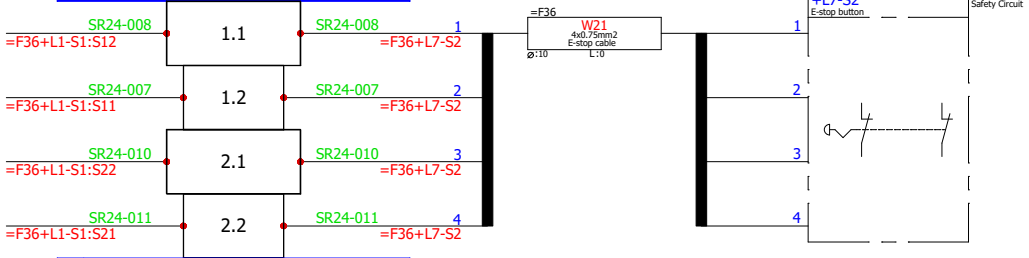
Control cabinet

REVISION			
0			
0	23-11-25	johan	
REV.	DATE	NAME	CHANGES
User data 1			User data 2
SCHEME			
22			

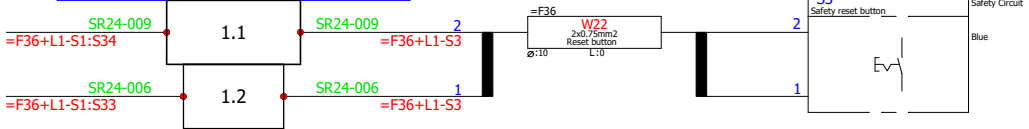
=F0-X001
Mains power



-X110
E-stop



-X120
Reset button



Maho MH400E Retrofit

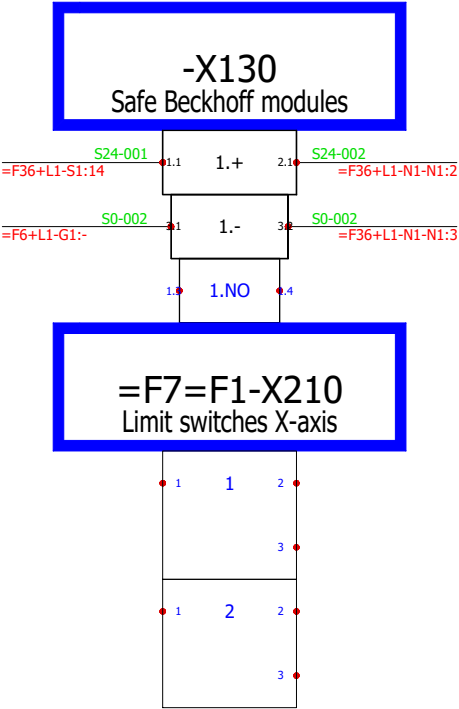
CONTRACT:

LOCATION:

+L1

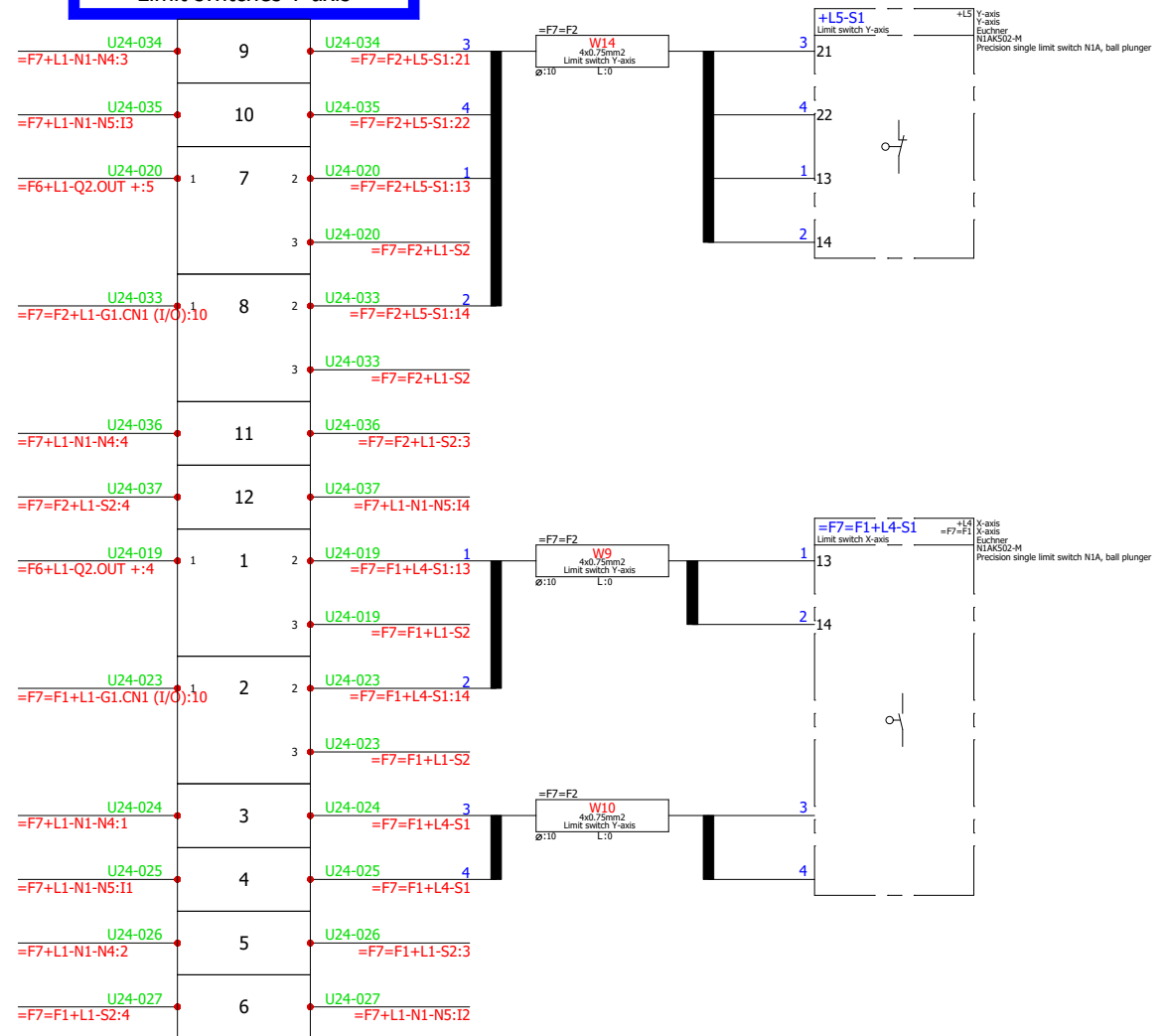
Control cabinet

				REVISION
				0
0	28-12-25	johan		
REV.	DATE	NAME	CHANGES	SCHEME
User data 1			User data 2	24



	Maho MH400E Retrofit					REVISION	
						0	
		0	28-12-25	johan			
		REV.	DATE	NAME	CHANGES	SCHEME	
CONTRACT:	LOCATION: +L1	Control cabinet			User data 1	User data 2	25

-X211



Maho MH400E Retrofit

				REVISION
				0
0	28-12-25	johan		
REV.	DATE	NAME	CHANGES	SCHEME
User data 1			User data 2	26

CONTRACT:

LOCATION:

+L1

Control cabinet

	...
User data 1	

User data 2

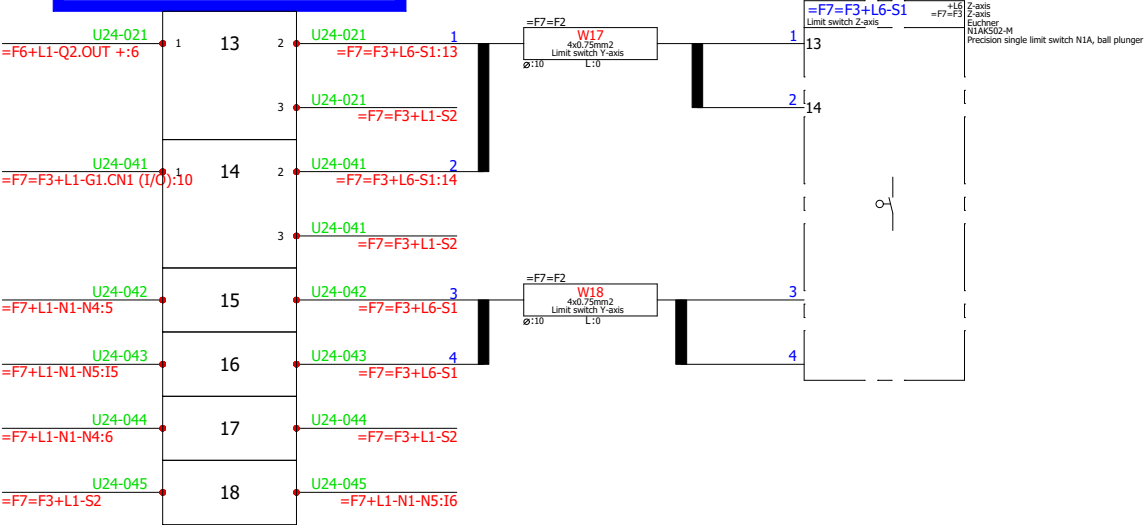
REVISION

0

SCHEME

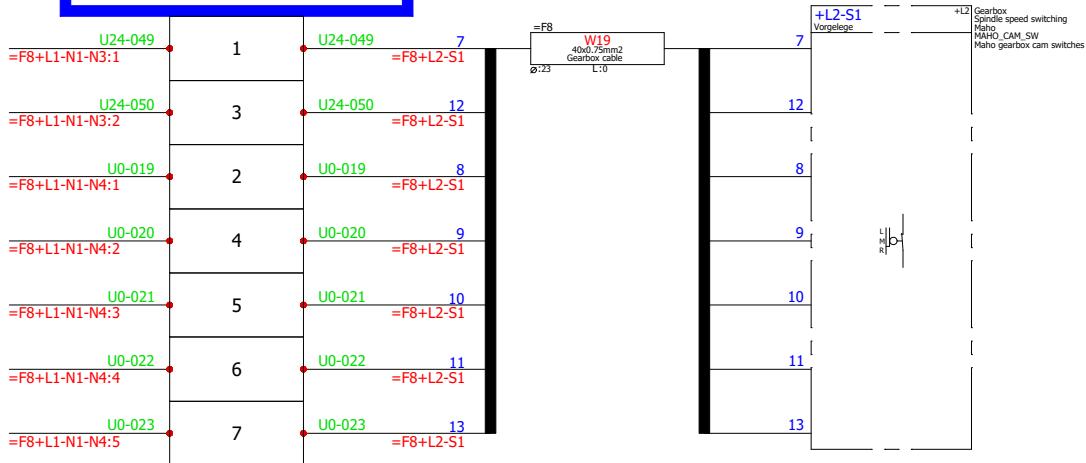
26

-X211
Limit switches Y-axis

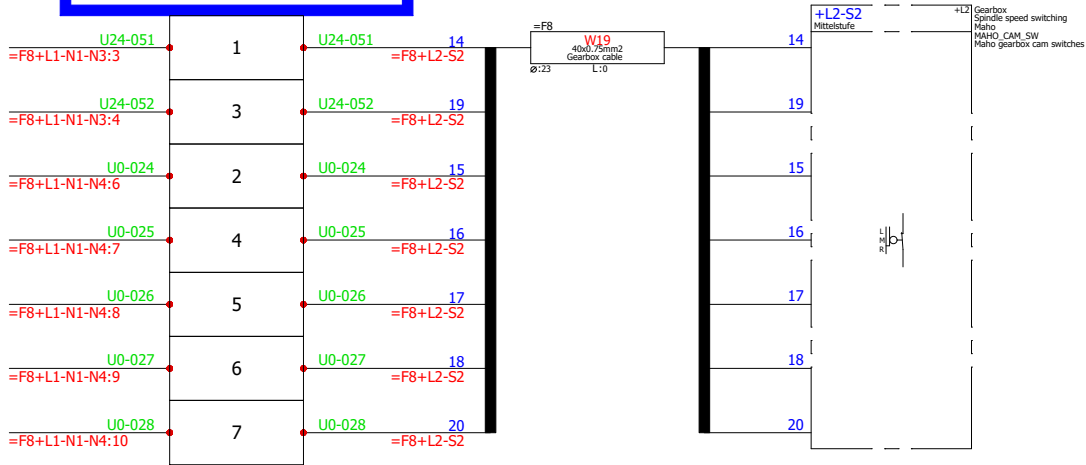


CONTRACT:	LOCATION: +L1	Maho MH400E Retrofit	REV.	DATE	NAME	CHANGES	User data 1	User data 2	REVISION 0	SCHEME 27

-X230
Gearbox switches X-axis

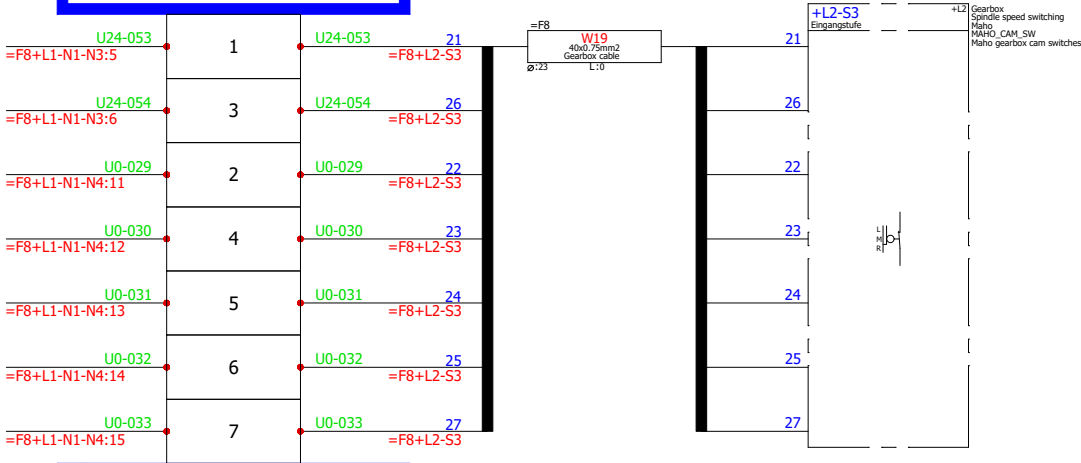


-X231
Gearbox switches Y-axis

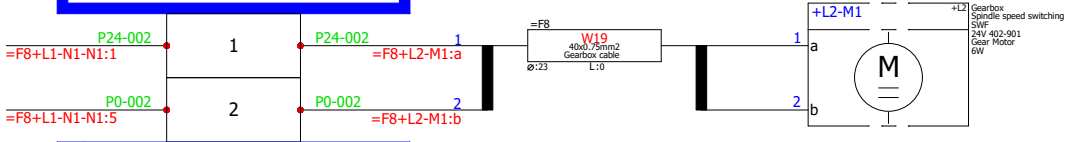


CONTRACT:	LOCATION: +L1	Maho MH400E Retrofit	REV.	DATE	NAME	CHANGES	User data 1	User data 2	REVISION 0	SCHEME 28

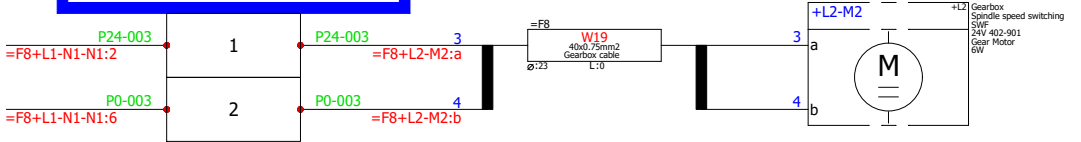
-X232
Gearbox switches Z-axis



-X310
Gearbox motors X-axis

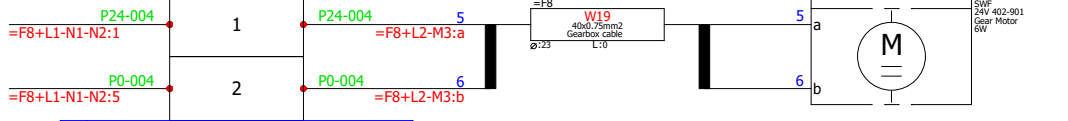


-X311
Gearbox motors Y-axis

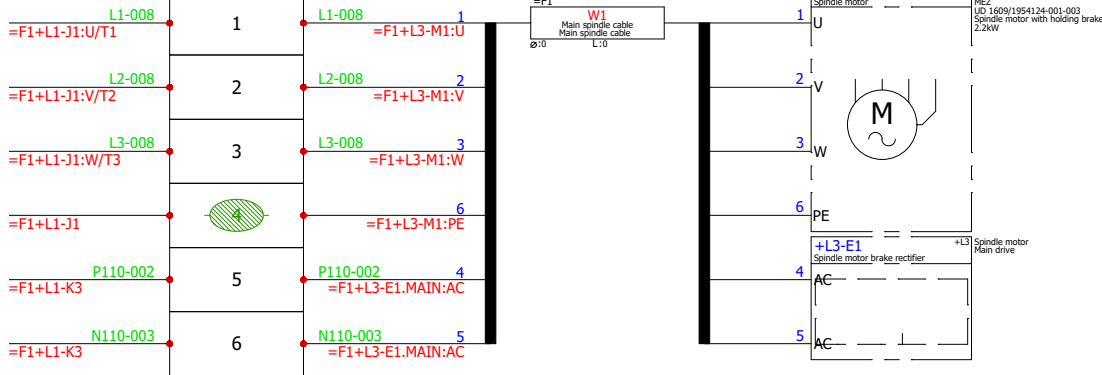


	Maho MH400E Retrofit					REVISION	
						0	
		0	28-12-25	johan			
		REV.	DATE	NAME	CHANGES	SCHEME	
CONTRACT:	LOCATION: +L1	Control cabinet			User data 1	User data 2	29

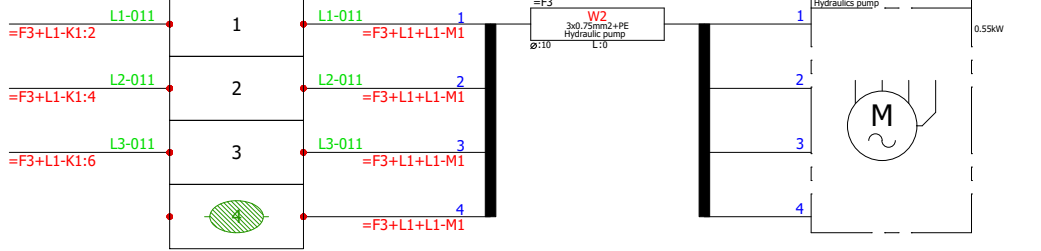
=F8-X312
Gearbox motors Z-axis



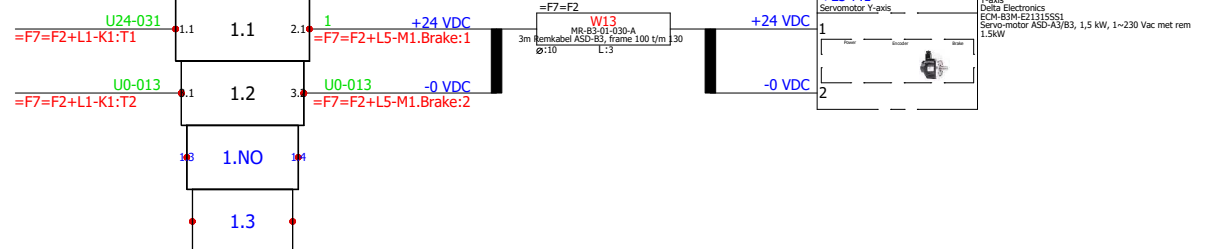
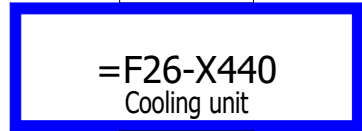
=F1-X410
Main drive



-X420
Hydraulics



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Bader

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	8481			Wb300 D86	=F26+L1+L3-M1	1	Maho Cooling unit

Beckhoff

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	1423			EK1100	=F16+L1-N1	1	
2	4147, 4372, 5642, 5878, 8291			EL1002	=F3+L1-N1-N1, =F1+L1-N1-N1, =F6+L1-N1-N1, =F4+L1-N1-N1, =F36+L1-N1-N2	5	EtherCAT Terminal, 2-channel digital input, 24 V DC, 3 ms
3	4828			EL1004	=F7+L1-N1-N7	1	EtherCAT Terminal, 4-channel digital input, 24 V DC, 3 ms
4	6649			EL1008	=F7+L1-N1-N5	1	EtherCAT Terminal, 8-channel digital input, 24 V DC, 3 ms
5	4967			EL1809	=F8+L1-N1-N4	1	EtherCAT Terminal, 16-channel digital input, 24 V DC, 3 ms
6	4154, 4379, 5649, 5885			EL2002	=F3+L1-N1-N2, =F1+L1-N1-N2, =F6+L1-N1-N2, =F4+L1-N1-N2	4	EtherCAT Terminal, 2-channel digital output, 24 V DC, 0.5 A
7	4837			EL2004	=F7+L1-N1-N6	1	EtherCAT Terminal, 4-channel digital output, 24 V DC, 0.5 A
8	4528, 4661, 4664			EL5021	=F7+L1-N1-N1, =F7+L1-N1-N2, =F7+L1-N1-N3	3	EtherCAT Terminal, 1-channel encoder interface, SinCos, 1 VPP
9	1430, 1436			EL7332	=F8+L1-N1-N1, =F8+L1-N1-N2	2	EtherCAT Terminal, 2-channel motion interface, DC motor, 24 V DC, 1 A
10	4736			EL9100	=F36+L1-N1-N1	1	EtherCAT Terminal, potential supply, 24 V DC, 10 A
11	5225, 6659			EL9186	=F8+L1-N1-N3, =F7+L1-N1-N4	2	EtherCAT Terminal, potential distribution, 8 x 24 V DC

Delta Electronics

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	1351		x	VFD9A0MS43AFSAA + CMM-EC02	=F1+L1-J1	1	
2	1353	1351		CMM-EC02	=F1+L1-J1	1	
3	1352	1351		VFD9A0MS43AFSAA	=F1+L1-J1	1	
4	13995, 16878			ASD-B3A-1021-E	=F7=F1+L1-G1, =F7=F3+L1-G1	2	Servo-drive ASD-B3, 1 kW, 1~230 Vac
5	12662			ASD-B3A-1521-E	=F7=F2+L1-G1	1	Servo-drive ASD-B3, 1.5 kW, 1~230 Vac
6	4139			BR500W100	=F1+L1+L2-R1	1	Remweerstand 500 Watt, 100 Ohm
7	14007, 14498			ECM-B3M-E21310RS1	=F7=F1+L4-M1, =F7=F3+L6-M1	2	Servo-motor ASD-A3/B3, 1 kW, 1~230 Vac

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-> Delta Electronics

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
8	8111			ECM-B3M-E21315SS1	=F7=F2+L5-M1	1	Servo-motor ASD-A3/B3, 1,5 kW, 1~230 Vac met rem

EPA

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	7749, 13610, 14236			NF-10-IPH-DLC	=F7=F2+L1-F1, =F7=F1+L1-F1, =F7=F3+L1-F1	3	Separate mains filter 10 to 35 amps, 230Vac

Euchner

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	7950, 13740, 14364			N1AK502-M	=F7=F2+L5-S1, =F7=F1+L4-S1, =F7=F3+L6-S1	3	Precision single limit switch N1A, ball plunger

Heidenhain

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	3030, 3474, 3543			LS 403 1445382A F7	=F7=F1+L4-A1, =F7=F2+L5-A1, =F7=F3+L6-A1	3	

Kendrion INTORQ GmbH

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	12229			BEG-161-270	=F1+L3-E1	1	6-pole Bridge Rectifier
2	12226			BFK458-12E	=F1+L3-Y1	1	Spring-applied brake

Legrand

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	4088			009213		1	

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Maho

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	4933, 4938, 4943			MAHO_CAM_SW	=F8+L2-S1, =F8+L2-S2, =F8+L2-S3	3	Maho gearbox cam switches
2	4085			MAHO_MH400E_CONTROL_CABINET		1	Maho MH400E control cabinet

MEZ

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	8443			UD 1609/1954124-001-003	=F1+L3-M1	1	Spindle motor with holding brake

OBO

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	5834, 5836, 5844			CABLIX 8030 S		3	Bedradingskoker CABLIX Set 80x30 7030 Polyvinylchloride steingrau RAL
2	5838, 5840			CABLIX 8040 S		2	Bedradingskoker CABLIX Set 80x40 7030 Polyvinylchloride steingrau RAL

Phoenix Contact

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	12765			CBM E8 24DC/0.5-10A NO-R	=F6+L1-Q2	1	Electronic circuit breaker
2	2228			PSR-SCP-24DC/ESD/5X1/1X2/300	=F36+L1-S1	1	Safety relay
3	11044, 11046, 13842, 13858, 11219, 11333, 14409, 14424			PT 2,5-TWIN	=F7=F1+L1-X210-1, =F7=F1+L1-X210-2, =F7=F1+L1-X211-1, =F7=F1+L1-X211-2, =F7=F2+L1-X211-7, =F7=F2+L1-X211-8, =F7=F3+L1-X211-13, =F7=F3+L1-X211-14	8	PT 2,5-TWIN
4	15157, 16540			PTCB E1 24DC/4A NO	=F0+L1-X130-1, =F7=F2+L1-X450-1	2	Elektronische beveiligingsschakelaar 4A
5	12347			PTFIX 6X1,5 BU	=F6+L1-X1	1	Distribution block
6	12333			PTFIX 6X1,5 RD	=F6+L1-X2	1	Distribution block
7	7587, 7597			PTFIX 6X1,5 VT	=F36+L1-X1, =F36+L1-X2	2	Distribution block
8	9692			PTFIX 12X4 BK	=F0+L1-X1	1	Distribution block

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-> Phoenix Contact

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
9	9695, 9701			PTFIX 12X4 BN	=F0+L1-X2, =F0+L1-X4	2	Distribution block
10	9704			PTFIX 12X4 GN	=F0+L1-X5	1	Distribution block
11	9698			PTFIX 12X4 GY	=F0+L1-X3	1	Distribution block
12	8088			PTFIX 18X1,5 BU	=F6+L1-X3	1	Distribution block
13	12057			PTTB 2,5	=F26+L1-X440-1	1	PTTB 2,5 - Double-level terminal block
14	11768, 11769, 11786			PTTB 2,5 OG	=F36+L1-X110-1, =F36+L1-X110-2, =F36+L1-X120-1	3	PTTB 2,5 OG - Double-level terminal block
15	2370, 8202			TRIO-PS-2G/1AC/24DC/10	=F6+L1-G1, =F6+L1-G2	2	

Schneider Electric

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	4512		x	Motor starter hydraulics pump	=F3+L1-K1	1	
2	4518		x	Motor starter main spindle	=F1+L1-K1	1	
3	4515, 4521	4512, 4518		GV2AF01	=F3+L1-K1, =F1+L1-K1	2	Linery FT - Combinatieblok voor GV2, LC1 K/LP1 K
4	4513	4512		GV2ME06	=F3+L1-K1	1	MOTOR CIRCUIT BREAKER 1-1.6
5	4519	4518		GV2ME16	=F1+L1-K1	1	MOTOR CIRCUIT BREAKER 9-14
6	4514, 4520	4512, 4518		GVAD0110	=F3+L1-K1, =F1+L1-K1	2	Foutsignaalcontact N/C + Hulpcontact N/O - Accessoires TeSys GV2
7	4516	4512		LP4K0910BW3	=F3+L1-K1	1	TeSys K - Contactor 3M - HC: 1M - AC-3<=440V 9A - Stuurspanning: 24V DC LV
8	4522	4518		LP4K1210BW3	=F1+L1-K1	1	TeSys K - Contactor 3M - HC: 1M - AC-3<=440V 12A - Stuurspanning: 24V DC LV
9	12472			A9F74102	=F26+L1-F1	1	iC60N - Installatieautomaat 1P - In=2A - C-Karakteristiek
10	12289			A9F74104	=F6+L1-F1	1	iC60N - Installatieautomaat 1P - In=4A - C-Karakteristiek
11	15524			GV2ME14	=F6+L1-Q1	1	MOTOR CIRCUIT BREAKER 6-10
12	7941, 13731, 14355			GV2ME16	=F7=F2+L1-Q1, =F7=F1+L1-Q1, =F7=F3+L1-Q1	3	MOTOR CIRCUIT BREAKER 9-14
13	12697			LA4KC1B	=F7=F2+L1-V1	1	TeSys K - Ontstorningsmodule - 12-48V DC - Bi-diode
14	12404, 12711, 16108, 12156			LP1K0601BD	=F4+L1-K1, =F7=F2+L1-K1, =F1+L1-K2, =F1+L1-K3	4	TeSys K - Contactor 3M - HC: 1V - AC-3<=440V 6A - Stuurspanning: 24V DC
15	5619			LP4K0910BW3	=F6+L1-K1	1	TeSys K - Contactor 3M - HC: 1M - AC-3<=440V 9A - Stuurspanning: 24V DC LV

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-> Schneider Electric

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
16	13703, 14327, 7890			LP4K1210BW3	=F7=F1+L1-J1, =F7=F3+L1-K1, =F7=F2+L1-K2	3	TeSys K - Contactor 3M - HC: 1M - AC-3<=440V 12A - Stuurspanning: 24V DC LV
17	7960, 13748, 14372, 6430			XB5AD25	=F7=F2+L1-S2, =F7=F1+L1-S2, =F7=F3+L1-S2, =F7=F1+L1+L3-S3	4	Harmony XB5, Keuzeschakelaar, Kunststof, 2 standen, Blijft in stand, Ø22mm, 1 NO + 1 NC, Zwart

SWF

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	1522, 1531, 1515			24V 402-901	=F8+L2-M1, =F8+L2-M2, =F8+L2-M3	3	Gear Motor

Trafobau Schuster GmbH

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	5484			DK-4060	=F6+L1+L2-T1	1	

Willy Vogel Zentralschmierung

	IDs	Assembly IDs	Is assembly	Reference	Mark	Quantity	Description
1	5707			122 049 306	=F4+L1+L1-A1	1	

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Control voltage, machine light, cabinet

Mnemonic	Type	Mark	Description	HAL pin
DO_TRF_CRTL	EL1002	=F6+L1-N1-N1	Control trafo enabled	control-trafo.power-ok
DI_TRF_CTRL	EL2002	=F6+L1-N1-N2	Enable control trafo	control-trafo.power-enable

Hydraulic system

Mnemonic	Type	Mark	Description	HAL pin
DI_HYD_FLT	EL1002	=F3+L1-N1-N1	Hydraulics circuit breaker tripped	hydraulic.fault
DI_HYD_PWR	EL1002	=F3+L1-N1-N1	Hydraulics power connected	hydraulic.power-ok
DO_HYD_PWR	EL2002	=F3+L1-N1-N2	Enable hydraulics power	hydraulic.power-enable

Lubrication

Mnemonic	Type	Mark	Description	HAL pin
DI_LUB_LVL	EL1002	=F4+L1-N1-N1	Lubrication reservoir level	lubrication.level
DI_LUB_PRS	EL1002	=F4+L1-N1-N1	Lubrication pressure	lubrication.pressure
DO_LUB_PWR	EL2002	=F4+L1-N1-N2	Enable lubrication power	lubrication.power-enable

Main drive

Mnemonic	Type	Mark	Description	HAL pin
DI_SPINDL_FLT	EL1002	=F1+L1-N1-N1	Spindle VFD circuit breaker tripped	spindle.fault
DI_SPINDL_PWR	EL1002	=F1+L1-N1-N1	Spindle VFD power connected	spindle.power-ok
DO_SPINDL_BREAK	EL2002	=F1+L1-N1-N2	Release spindle break	spindle.break-release
DO_SPINDL_PWR	EL2002	=F1+L1-N1-N2	Enable spindle VFD power (RST)	spindle.power-enable

Safety Circuit

Mnemonic	Type	Mark	Description	HAL pin
ESTOP_ACTIVE	EL1002	=F36+L1-N1-N2	E-stop activated	safety.estop_active

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Spindle speed switching

Mnemonic	Type	Mark	Description	HAL pin
DO_GEAR_M1	EL7332	=F8+L1-N1-N1	Gearbox motor 1	gearbox.motor-1
DO_GEAR_M2	EL7332	=F8+L1-N1-N1	Gearbox motor 2	gearbox.motor-2
DO_GEAR_M3	EL7332	=F8+L1-N1-N2	Gearbox motor 3	gearbox.motor-3
DI_GEAR_I_APP	EL1809	=F8+L1-N1-N4	Gearbox input-stage center approach switch	gearbox.input.center-approach
DI_GEAR_I_C	EL1809	=F8+L1-N1-N4	Gearbox input-stage center position	gearbox.input.center
DI_GEAR_I_L	EL1809	=F8+L1-N1-N4	Gearbox input-stage left position	gearbox.input.left
DI_GEAR_I_LC	EL1809	=F8+L1-N1-N4	Gearbox input-stage left-center position	gearbox.input.left-center
DI_GEAR_I_R	EL1809	=F8+L1-N1-N4	Gearbox input-stage right position	gearbox.input.right
DI_GEAR_M_APP	EL1809	=F8+L1-N1-N4	Gearbox middle-stage center approach switch	gearbox.mid.center-approach
DI_GEAR_M_C	EL1809	=F8+L1-N1-N4	Gearbox middle-stage center position	gearbox.mid.center
DI_GEAR_M_L	EL1809	=F8+L1-N1-N4	Gearbox middle-stage left position	gearbox.mid.left
DI_GEAR_M_LC	EL1809	=F8+L1-N1-N4	Gearbox middle-stage left-center position	gearbox.mid.left-center
DI_GEAR_M_R	EL1809	=F8+L1-N1-N4	Gearbox middle-stage right position	gearbox.mid.right
DI_GEAR_P_APP	EL1809	=F8+L1-N1-N4	Gearbox pre-stage center approach switch	gearbox.pre.center-approach
DI_GEAR_P_C	EL1809	=F8+L1-N1-N4	Gearbox pre-stage center position	gearbox.pre.center
DI_GEAR_P_L	EL1809	=F8+L1-N1-N4	Gearbox pre-stage left position	gearbox.pre.left
DI_GEAR_P_LC	EL1809	=F8+L1-N1-N4	Gearbox pre-stage left-center position	gearbox.pre.left-center
DI_GEAR_P_R	EL1809	=F8+L1-N1-N4	Gearbox pre-stage right position	gearbox.pre.right

X-axis

Mnemonic	Type	Mark	Description	HAL pin
19	EL5021	=F7+L1-N1-N1	Encoder X-axis position feedback	axis.x.position
DI_X_LMT	EL1008	=F7+L1-N1-N5	X-axis limit switch	axis.x.limit-switch
DI_X_LMT_O	EL1008	=F7+L1-N1-N5	X-axis limit switch override	axis.x.limit-switch-override
DO_X_PWR	EL2004	=F7+L1-N1-N6	Enable servo drive X-axis power (RST)	axis.x.power-enable
DI_X_PWR	EL1004	=F7+L1-N1-N7	Servo drive X-axis power connected	axis.x.power-ok



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Y-axis

Mnemonic	Type	Mark	Description	HAL pin
20	EL5021	=F7+L1-N1-N2	Encoder Y-axis position feedback	axis.y.position
DI_Y_LMT	EL1008	=F7+L1-N1-N5	Y-axis limit switch	axis.y.limit-switch
DI_Y_LMT_O	EL1008	=F7+L1-N1-N5	Y-axis limit switch override	axis.y.limit-switch-override
DO_Y_PWR	EL2004	=F7+L1-N1-N6	Enable servo drive Y-axis power (RST)	axis.y.power-enable
DI_Y_PWR	EL1004	=F7+L1-N1-N7	Servo drive Y-axis power connected	axis.y.power-ok

Z-axis

Mnemonic	Type	Mark	Description	HAL pin
21	EL5021	=F7+L1-N1-N3	Encoder Z-axis position feedback	axis.z.position
DI_Z_LMT	EL1008	=F7+L1-N1-N5	Z-axis limit switch	axis.z.limit-switch
DI_Z_LMT_O	EL1008	=F7+L1-N1-N5	Z-axis limit switch override	axis.z.limit-switch-override
DO_Z_PWR	EL2004	=F7+L1-N1-N6	Enable servo drive Z-axis power (RST)	axis.z.power-enable
DI_Z_PWR	EL1004	=F7+L1-N1-N7	Servo drive Z-axis power connected	axis.z.power-ok

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