1	**Electrics / Electronics** **Block Diagram, Cable List, Interface List, Terminal List**
2	**Control Cabinet, PLC, Power Unit**
3	**Operator Stations, Boxes, Pendants**
4	**INTERSTOP Process Control**
5	**Stroke Measuring System VIC 112**
6	
7	
8	
9	
10	
11	
12	

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Customer : Red October via Rokop
Project No.: 2014/419

8. Electrics/Electronics

8.1	Electric Block Diagram	Электрич. диаграмма (схема) блоков
8.2	Cable Diagram	кабельная диаграмма
8.3	Concept 6-Strand	Понятие 6 "берегов"
8.4	Interface List	Список внешних устройств ?
8.5	Terminal and Cable Diagram	Выводов и кабельная схемы

ЭП2-770-36-4

NO.	TITLE
1	ELECTRIC BLOCK DIAGRAM
2	ELECTRIC BLOCK DIAGRAM
3	ELECTRIC BLOCK DIAGRAM
4	ELECTRIC BLOCK DIAGRAM
5	CABLE LIST
6	CABLE LIST
7	CONECEPT 6-STRANDS
8	
9	
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3П2-770-36-5

		DATE	18.05.95	
		DRAWN	Za	
		CHECKED	Za	
		NORM		
REVISION	DATE	NAME		

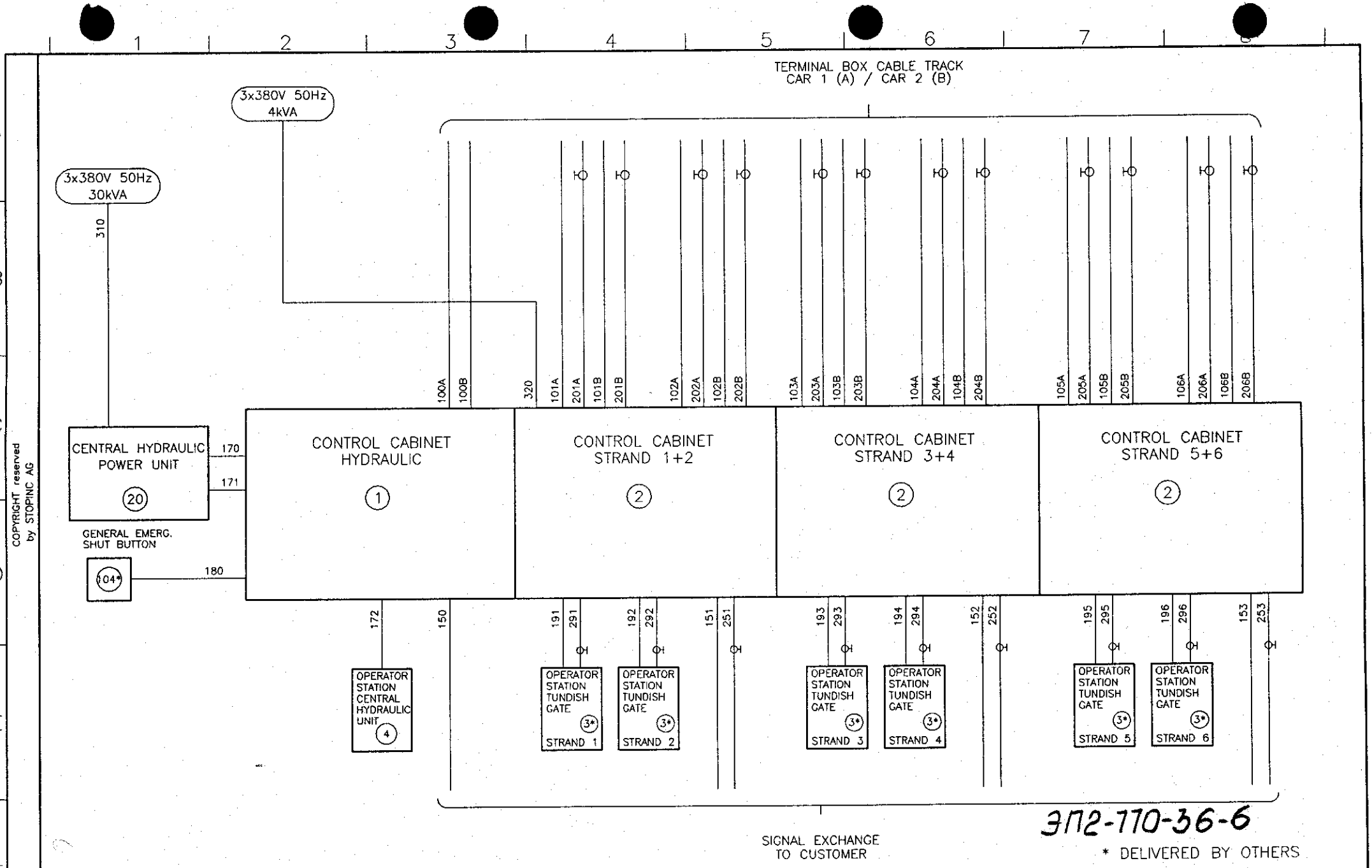
RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

ELECTRIC BLOCK DIAGRAM

E | 116698 | SHEET 1 | NEXT 2



3П2-770-36-6

* DELIVERED BY OTHERS

a	04.10.95	Za	DATE	18.05.95
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			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

RED OCTOBER VOLGOGRAD
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2014/419

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INTERSTOP
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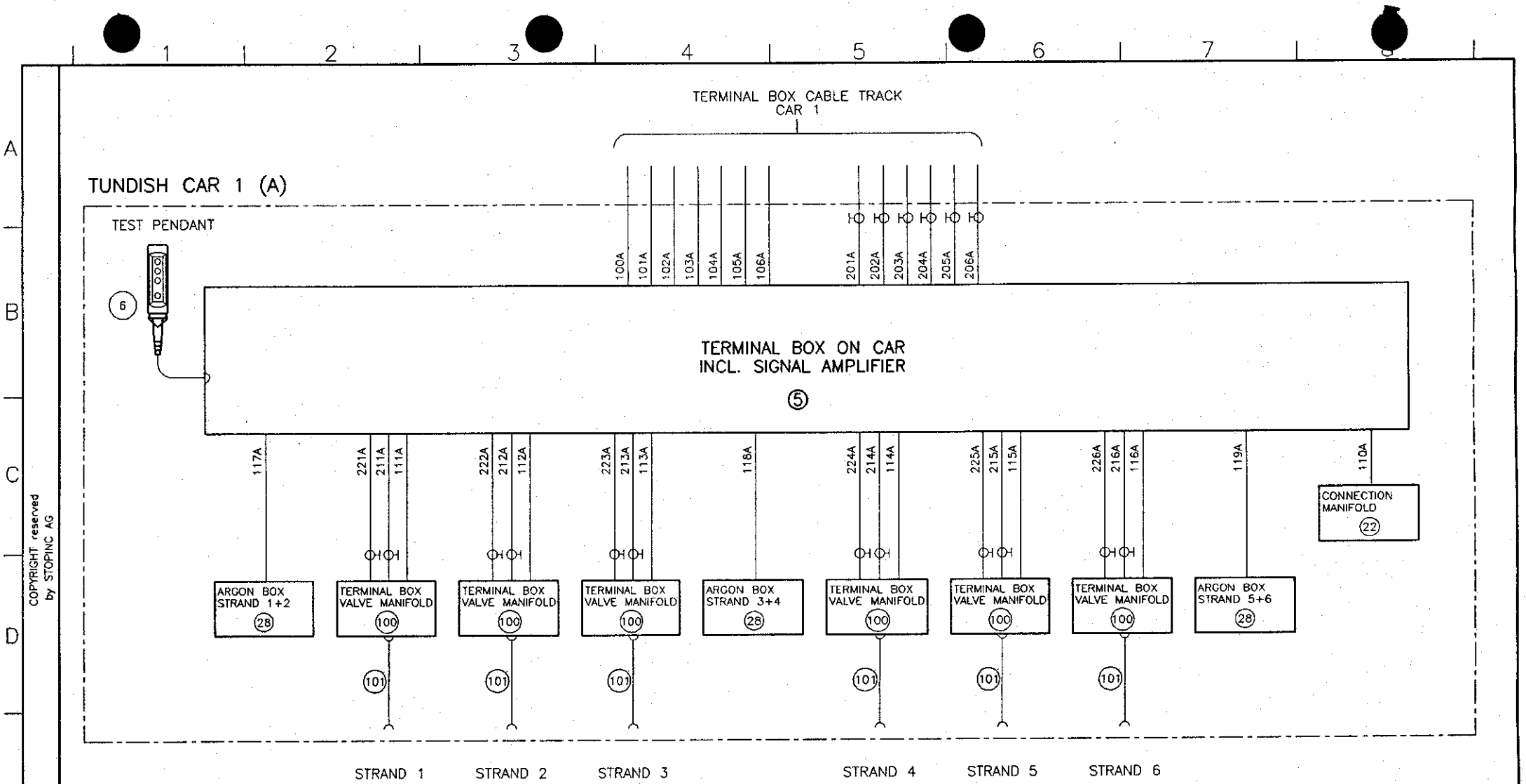
CH-8341 BAAR

ELECTRIC BLOCK DIAGRAM
CABLE DIAGRAM

E | 116698 | SHEET 2 | NEXT 3



3112-770-36-7

a	04.10.95	Za	DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	ELECTRIC BLOCK DIAGRAM CABLE DIAGRAM
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

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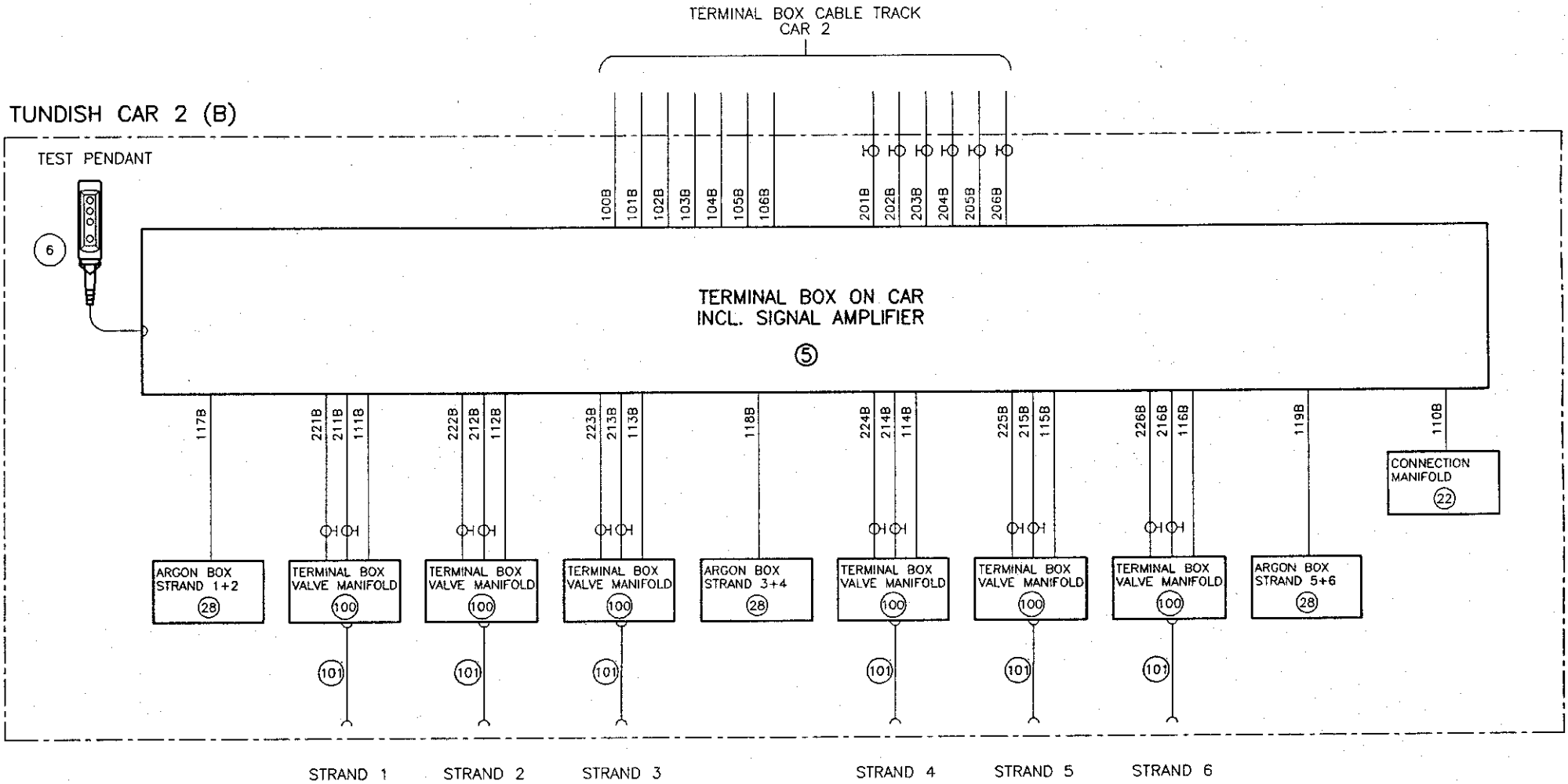
E	116698	SHEET	3
		NEXT	4



3172-770-36-8

a	04.10.95	Za	DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	ELECTRIC BLOCK DIAGRAM CABLE DIAGRAM
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

E	116698	SHEET	4
		NEXT	5

	KABEL–NR. CABLE–NO.	VON FROM	NACH TO	KABEL CABLE TYP TYPE	ADERN CORES	RES. SPARE	LAENGE LENGTH (m)	ø (mm2)	BEMERKUNG REMARK
1	100A 100B	Control cabinet hydraulic	Terminal box on car 1/2	1.5 mm2	21				24V DC
2	101A 101B	Control cabinet strand 1	Terminal box on car 1/2	1.5 mm2	16				24V DC
3	102A 102B	Control cabinet strand 2	Terminal box on car 1/2	1.5 mm2	16				24V DC
4	103A 103B	Control cabinet strand 3	Terminal box on car 1/2	1.5 mm2	16				24V DC
5	104A 104B	Control cabinet strand 4	Terminal box on car 1/2	1.5 mm2	16				24V DC
6	105A 105B	Control cabinet strand 5	Terminal box on car 1/2	1.5 mm2	16				24V DC
7	106A 106B	Control cabinet strand 6	Terminal box on car 1/2	1.5 mm2	16				24V DC
8									
9									
10									
11	110A 110B	Terminal box on car 1/2	Terminal box connection manifold	1.5 mm2	10				24V DC
12	111A 111B	Terminal box on car 1/2	Terminal box valve manifold strand 1	1.5 mm2	8				24V DC
13	112A 112B	Terminal box on car 1/2	Terminal box valve manifold strand 2	1.5 mm2	8				24V DC
14	113A 113B	Terminal box on car 1/2	Terminal box valve manifold strand 3	1.5 mm2	8				24V DC
15	114A 114B	Terminal box on car 1/2	Terminal box valve manifold strand 4	1.5 mm2	8				24V DC
16	115A 115B	Terminal box on car 1/2	Terminal box valve manifold strand 5	1.5 mm2	8				24V DC
17	116A 116B	Terminal box on car 1/2	Terminal box valve manifold strand 6	1.5 mm2	8				24V DC
18									
19	117A 117B	Terminal box on car 1/2	Argon box strand 1+2	1.5 mm2	12				24V DC
20	118A 118B	Terminal box on car 1/2	Argon box strand 3+4	1.5 mm2	12				24V DC
21	119A 119B	Terminal box on car 1/2	Argon box strand 5+6	1.5 mm2	12				24V DC
22									
23									
24									
25	150	Control cabinet hydraulic	signal exchange	1.5 mm2	16				24V DC
26	151	Control cabinet strand 1+2	signal exchange	1.5 mm2	30				24V DC
27	152	Control cabinet strand 3+4	signal exchange	1.5 mm2	30				24V DC
28	153	Control cabinet strand 5+6	signal exchange	1.5 mm2	30				24V DC
29									
30									
31									
32	170	Control cabinet hydraulic	Central hydraulic power unit	1.5 mm2	30				24V DC
33	171	Control cabinet hydraulic	Central hydraulic power unit	1.5 mm2	30				24V DC
34	172	Control cabinet hydraulic	Op.station hydraulic unit	1.5 mm2	20				24V DC
35									
36									
37	180	Control cabinet hydraulic	General emergency shut button	1.5 mm2	2				24V DC
38									
39									
40									
41	191	Control cabinet strand 1+2	Op.station tundish gate strand 1	1.5 mm2	21				24V DC
42	192	Control cabinet strand 1+2	Op.station tundish gate strand 2	1.5 mm2	21				24V DC
43	193	Control cabinet strand 3+4	Op.station tundish gate strand 3	1.5 mm2	21				24V DC
44	194	Control cabinet strand 3+4	Op.station tundish gate strand 4	1.5 mm2	21				24V DC
45	195	Control cabinet strand 5+6	Op.station tundish gate strand 5	1.5 mm2	21				24V DC
46	196	Control cabinet strand 5+6	Op.station tundish gate strand 6	1.5 mm2	21				24V DC
47									
48									
49	310	Centr. hydraulic power unit	CUSTOMER main supply	6mm2	4+PE				3 x 380V 50Hz
50	320	Control cabinet strand 1+2	CUSTOMER main supply	6mm2	4+PE				3 x 380V 50Hz

3172-770-36-9

REVISION	DATE	NAME		
a	04.10.95	Za	DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	

ORIGIN | REPL.FOR

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ROKOP
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH–6341 BAAR

CABLE LIST

E | 116698 | SHEET 5 | NEXT 6

	KABEL–NR. CABLE–NO.	VON FROM	NACH TO	KABEL CABLE TYP TYPE	 ADERN CORES	BEMERKUNG REMARK
1						
2	201A 201B	Control cabinet strand 1	Terminal box on car 1/2	signal cable	8x1.5mm2	signal shielded
3	202A 202B	Control cabinet strand 2	Terminal box on car 1/2	signal cable	8x1.5mm2	signal shielded
4	203A 203B	Control cabinet strand 3	Terminal box on car 1/2	signal cable	8x1.5mm2	signal shielded
5	204A 204B	Control cabinet strand 4	Terminal box on car 1/2	signal cable	8x1.5mm2	signal shielded
6	205A 205B	Control cabinet strand 5	Terminal box on car 1/2	signal cable	8x1.5mm2	signal shielded
7	206A 206B	Control cabinet strand 6	Terminal box on car 1/2	signal cable	8x1.5mm2	signal shielded
8						
9						
10						
11	211A 211B	Terminal box on car 1/2	Term.box valve manifold strand 1	signal cable	2x1.0mm2	signal shielded
12	212A 212B	Terminal box on car 1/2	Term.box valve manifold strand 2	signal cable	2x1.0mm2	signal shielded
13	213A 213B	Terminal box on car 1/2	Term.box valve manifold strand 3	signal cable	2x1.0mm2	signal shielded
14	214A 214B	Terminal box on car 1/2	Term.box valve manifold strand 4	signal cable	2x1.0mm2	signal shielded
15	215A 215B	Terminal box on car 1/2	Term.box valve manifold strand 5	signal cable	2x1.0mm2	signal shielded
16	216A 216B	Terminal box on car 1/2	Term.box valve manifold strand 6	signal cable	2x1.0mm2	signal shielded
17						
18	221A 221B	Terminal box on car 1/2	Term.box valve manifold strand 1	signal cable	3x2x0.75mm2	STOPINC delivery
19	222A 222B	Terminal box on car 1/2	Term.box valve manifold strand 2	signal cable	3x2x0.75mm2	STOPINC delivery
20	223A 223B	Terminal box on car 1/2	Term.box valve manifold strand 3	signal cable	3x2x0.75mm2	STOPINC delivery
21	224A 224B	Terminal box on car 1/2	Term.box valve manifold strand 4	signal cable	3x2x0.75mm2	STOPINC delivery
22	225A 225B	Terminal box on car 1/2	Term.box valve manifold strand 5	signal cable	3x2x0.75mm2	STOPINC delivery
23	226A 226B	Terminal box on car 1/2	Term.box valve manifold strand 6	signal cable	3x2x0.75mm2	STOPINC delivery
24						
25						
26						
27						
28	251	Control cabinet strand 1+2	PLC CUSTOMER	signal cable	24x1.0mm2	Interface signal
29	252	Control cabinet strand 3+4	PLC CUSTOMER	signal cable	24x1.0mm2	Interface signal
30	253	Control cabniet strand 5+6	PLC CUSTOMER	signal cable	24x1.0mm2	Interface signal
31						
32						
33						
34						
35						
36						
37						
38						
39						
40						
41						
42						
43						
44						
45	291	Control cabinet strand 1+2	Op.station tundish gate strand 1	signal cable	10x1.0mm2	signal shielded
46	292	Control cabinet strand 1+2	Op.station tundish gate strand 2	signal cable	10x1.0mm2	signal shielded
47	293	Control cabinet strand 3+4	Op.station tundish gate strand 3	signal cable	10x1.0mm2	signal shielded
48	294	Control cabinet strand 3+4	Op.station tundish gate strand 4	signal cable	10x1.0mm2	signal shielded
49	295	Control cabniet strand 5+6	Op.station tundish gate strand 5	signal cable	10x1.0mm2	signal shielded
50	296	Control cabniet strand 5+6	Op.station tundish gate strand 6	signal cable	10x1.0mm2	signal shielded

REVISION	DATE	NAME		
b	04.10.95	Za	DATE	18.05.95
a	21.08.95	Za	DRAWN	Za
			CHECKED	Za
			NORM	

ORIGIN | REPL.FOR

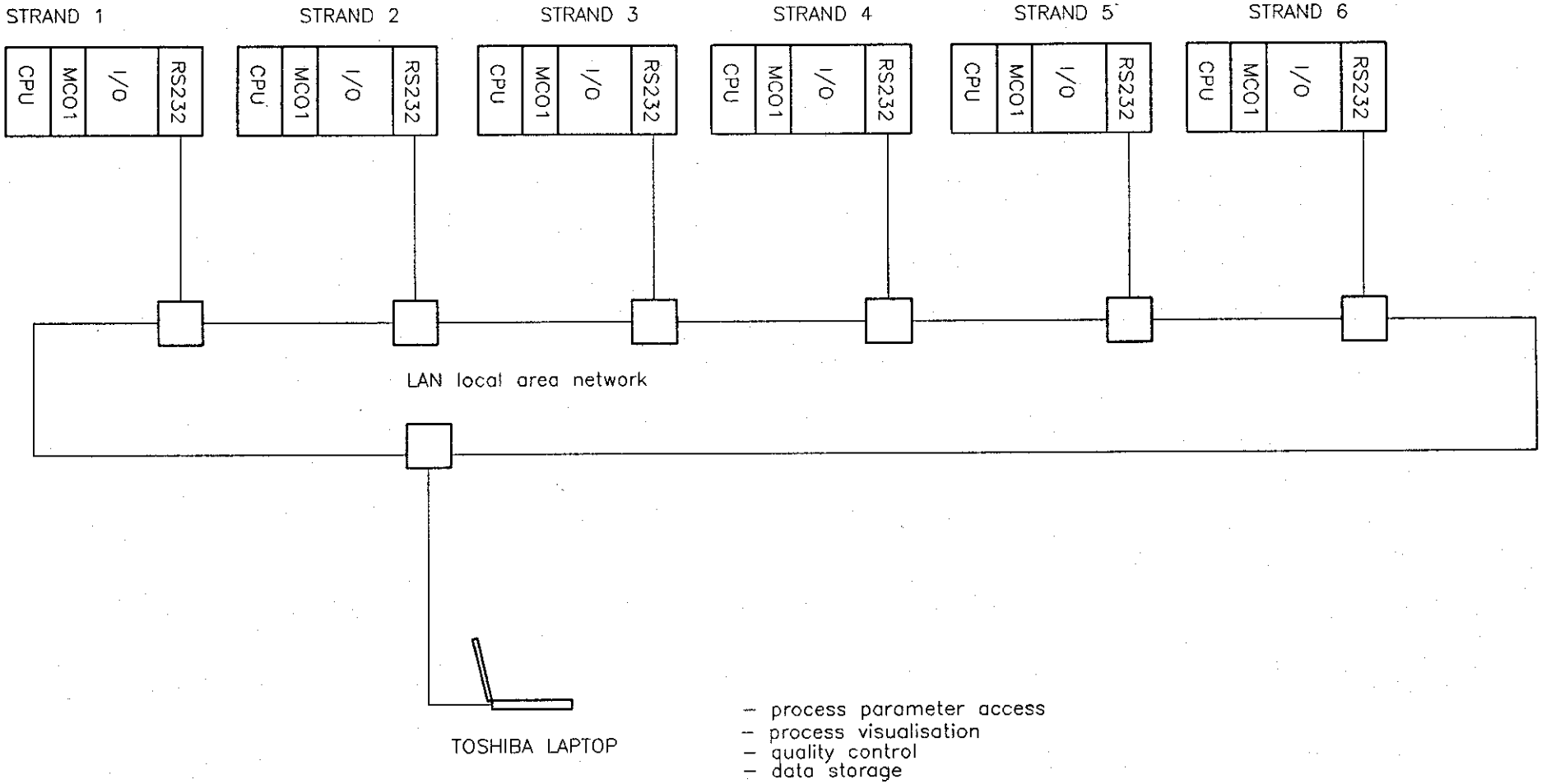
RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH–6341 BAAR

CABLE LIST

3N2-770-36-10

E | 116698 | SHEET 6 | NEXT 7



ЭП2-770-36-11

a	21.08.95	Za	DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONCEPT 6 – STRAND
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

E | 116698 | SHEET 7 | NEXT –

NO.	TITLE
1	COVERSHEET
2	POWER SUPPLY
3–4	CONTROL CABINET TO CENTRAL HYDRAULIC POWER UNIT
10–19	CONTROL CABINET TO CAR 1
20–29	CONTROL CABINET TO CAR 2
30–32	CONTROL CABINET TO OPERATOR STATION TUNDISH GATE
33–36	CONTROL CABINET TO CUSTOMER

3172-770-36-12

			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

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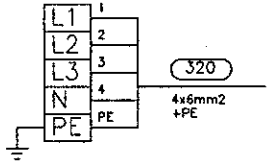
CH-6341 BAAR

TERMINAL AND CABLE
DIAGRAMM

E | 118011 | SHEET 1 | NEXT 2

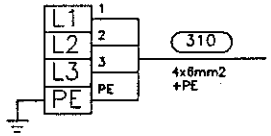
ITEM 02
CONTROL CABINET
STRAND 1+2

X320



MAIN POWER SUPPLY
3x220V, 50Hz, 5kVA

ITEM 20
CENTRAL HYDRAULIC
POWER UNIT



MAIN POWER SUPPLY
3x380V, 50Hz, 40kVA

3172-770-36-13

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET POWER SUPPLY	= / +
			DRAWN	Za				E 118011 SHEET 2 NEXT 3
			CHECKED	Za				
			NORM					
REVISION	DATE	NAME			ORIGIN	REPL.FOR		

ITEM 01
CONTROL CABINET
HYDRAULIC

X170

20	1
21	2
20	1
401	2
402	3
403	4
404	5
421	6
421	3
422	7
422	4
423	8
423	5
431	9
431	6
432	10
432	7
433	11
433	8
434	12
435	13
436	14
437	
437	
440	15
440	9
441	16
442	17
442	10
443	18
444	19
445	20
445	11
446	21
446	12
448	22
449	23

118011_04

170
1.5mm2
30x

ITEM 20
CENTRAL HYDRAULIC
POWER UNIT

X170

1	20	GND
2	401	PUMP 1
3	402	PUMP 2
4	403	PUMP 3
5	404	HEATING
6	421	FAULT PUMP 1
7	422	FAULT PUMP 2
8	423	FAULT PUMP 3
9	431	PUMP 1 ON
10	432	PUMP 2 ON
11	433	PUMP 3 ON
12	434	HEATING ON
13	435	COOLING ON
14	436	COOLING WATER OFF
15	440	OIL LEVEL LOW
16	441	OIL LEVEL TO LOW
17	442	TEMPERATURE HIGH
18	443	TEMPERATURE TO HIGH
19	444	TEMPERATURE LOW
20	445	SYS.PRESSURE LOW
21	446	FILTER ALARM
22	448	PRESSURLESS CIRCUIT P1
23	449	PRESSURLESS CIRCUIT P2

172
1.5mm2
20x

ITEM 04
OPERATOR STATION
HYDRAULIC UNIT

1	20	GND
2	21	+24VDC
3	421	FAULT PUMP 1
4	422	FAULT PUMP 2
5	423	FAULT PUMP 3
6	431	PUMP 1 ON
7	432	PUMP 2 ON
8	433	PUMP 3 ON
9	440	OIL LEVEL LOW
10	442	TEMPERATURE HIGH
11	445	SYS. PRESSURE LOW
12	446	FILTER ALARM
13	451	LAMPTEST
14	468	PUMP 1 ON
15	469	PUMP 2 ON
16	470	PUMPS OFF

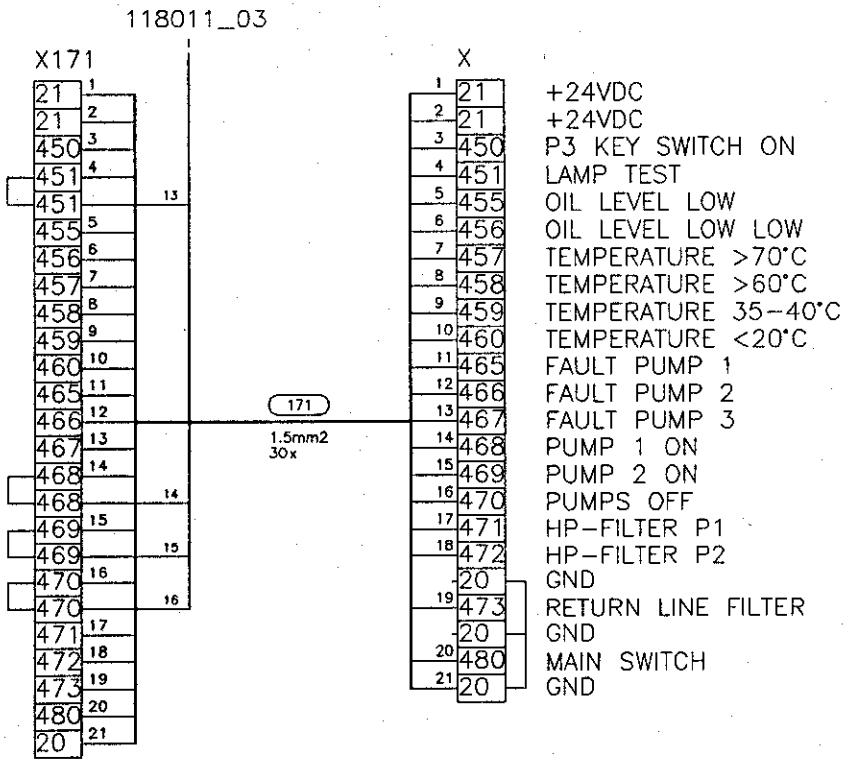
ЭП2-770-36-14

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CENTRAL HYDRAULIC POWER UNIT
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	118011	SHEET	3
		NEXT	4

ITEM 01
CONTROL CABINET
HYDRAULIC

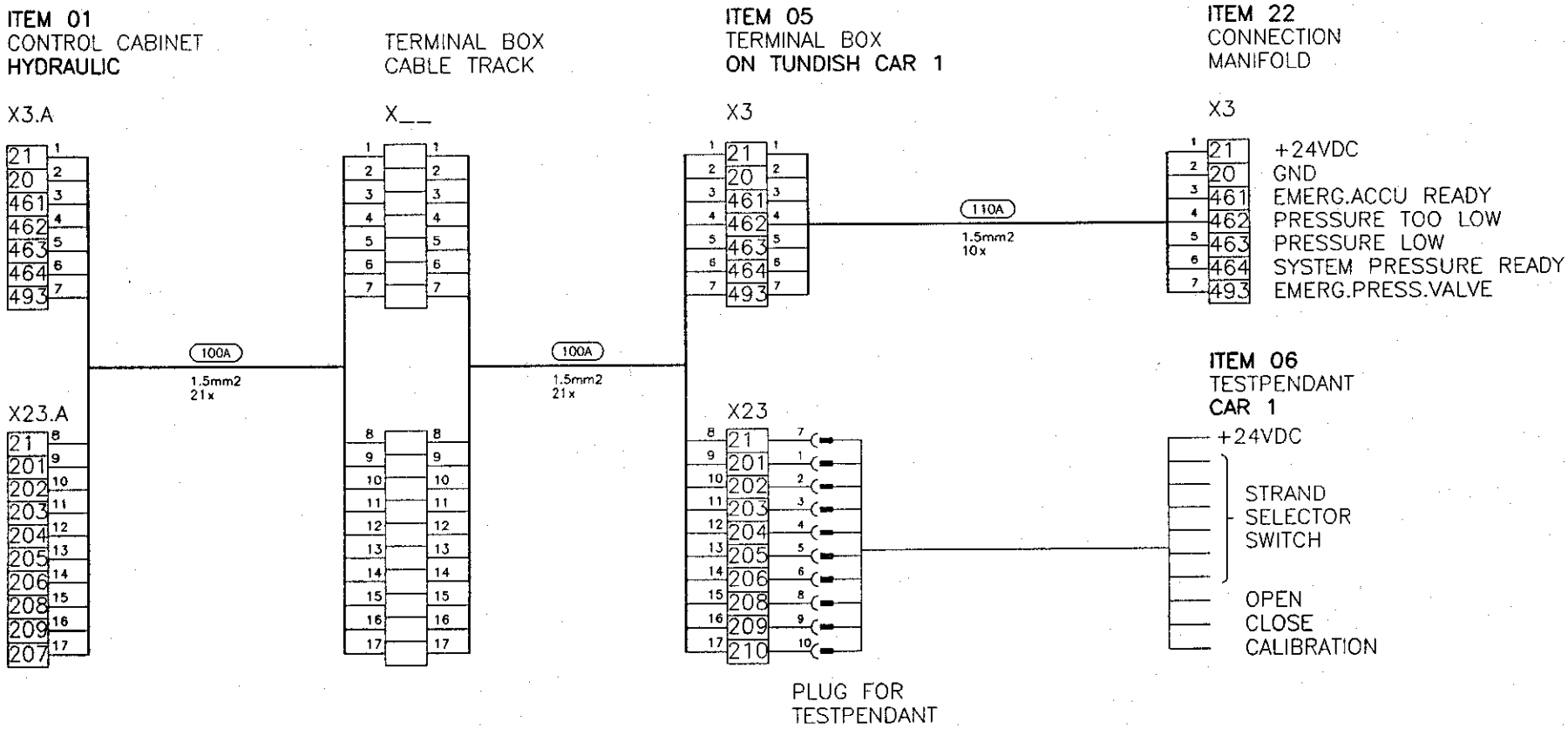
ITEM 20
CENTRAL HYDRAULIC
POWER UNIT



3172-770-36-15

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CENTRAL HYDRAULIC POWER UNIT
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

E	118011	SHEET	4
		NEXT	10



3112-770-36-16

			DATE	18.05.95
			DRAWN	Za
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			NORM	
REVISION	DATE	NAME		

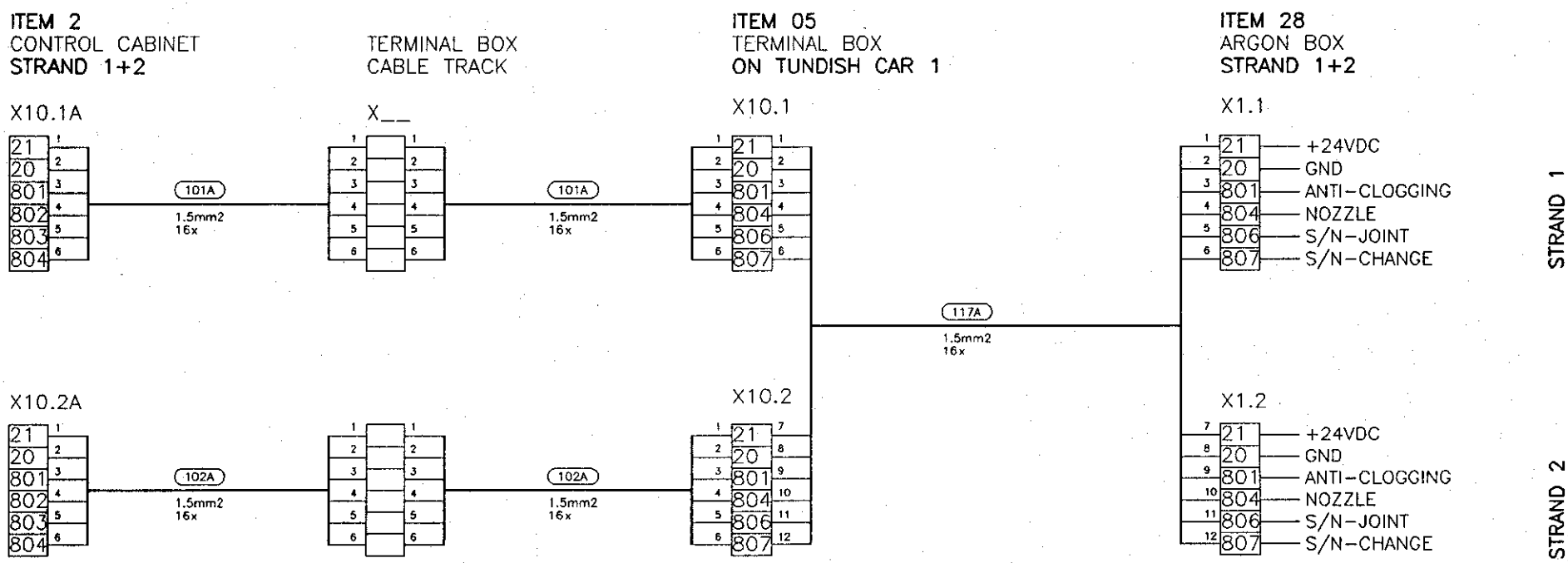
RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschoft
CH-6341 BAAR

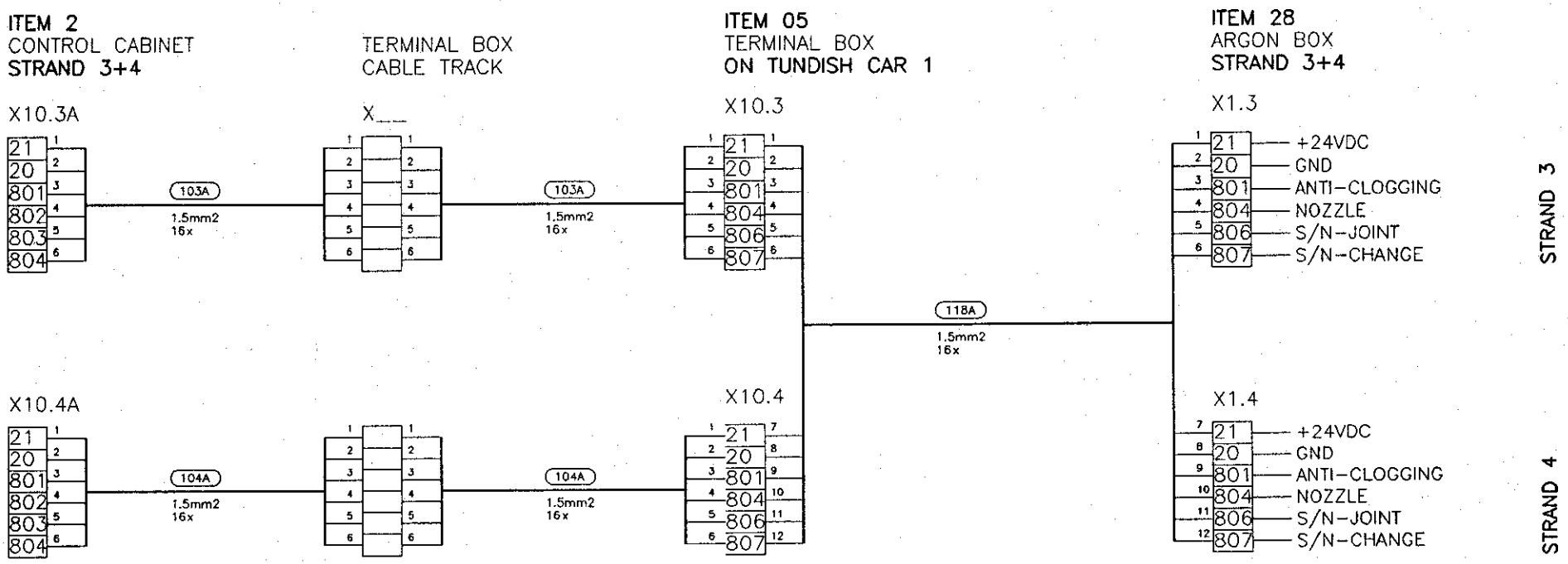
CONTROL CABINET TO
CAR 1

E | 118011 | SHEET 10 | NEXT 11



3172-770-36-17

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 1	= / +
			DRAWN	Za				E 118011 SHEET 11 NEXT 12
			CHECKED	Za				
			NORM					
REVISION	DATE	NAME			ORIGIN	REPL.FOR		



3172-770-36-18

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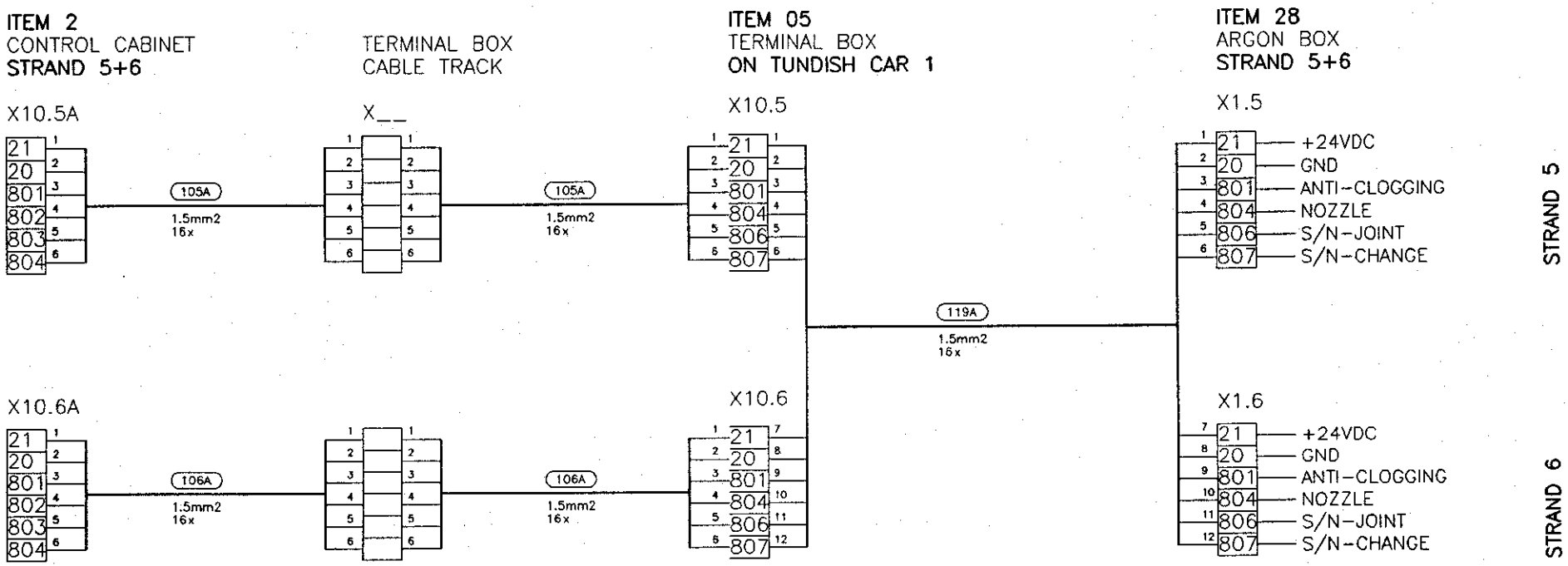
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

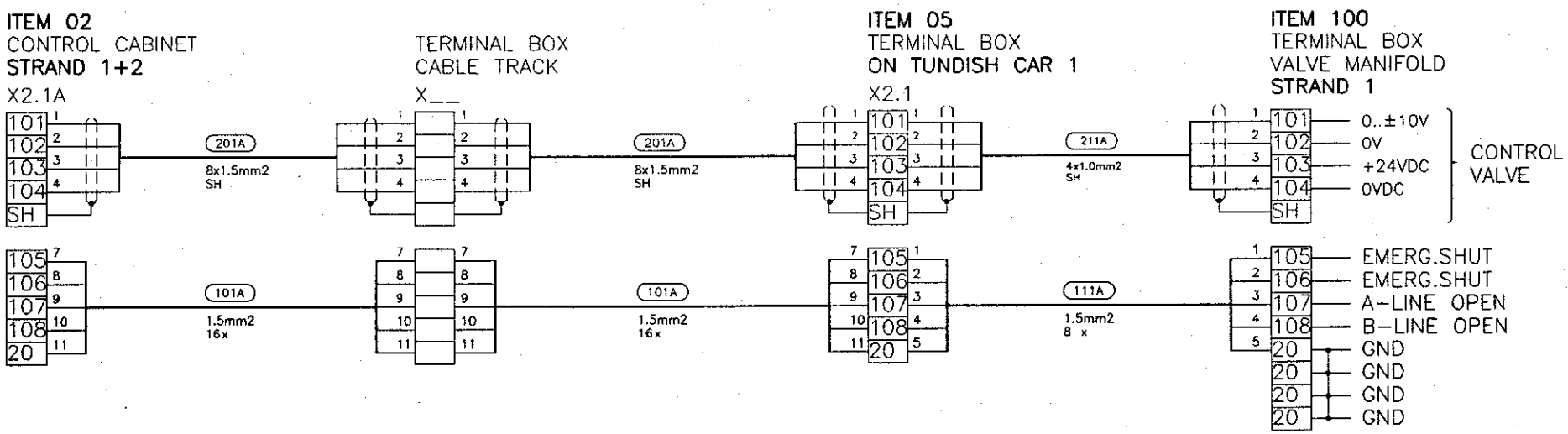
		=	
		+	
E	118011	SHEET	12
		NEXT	13

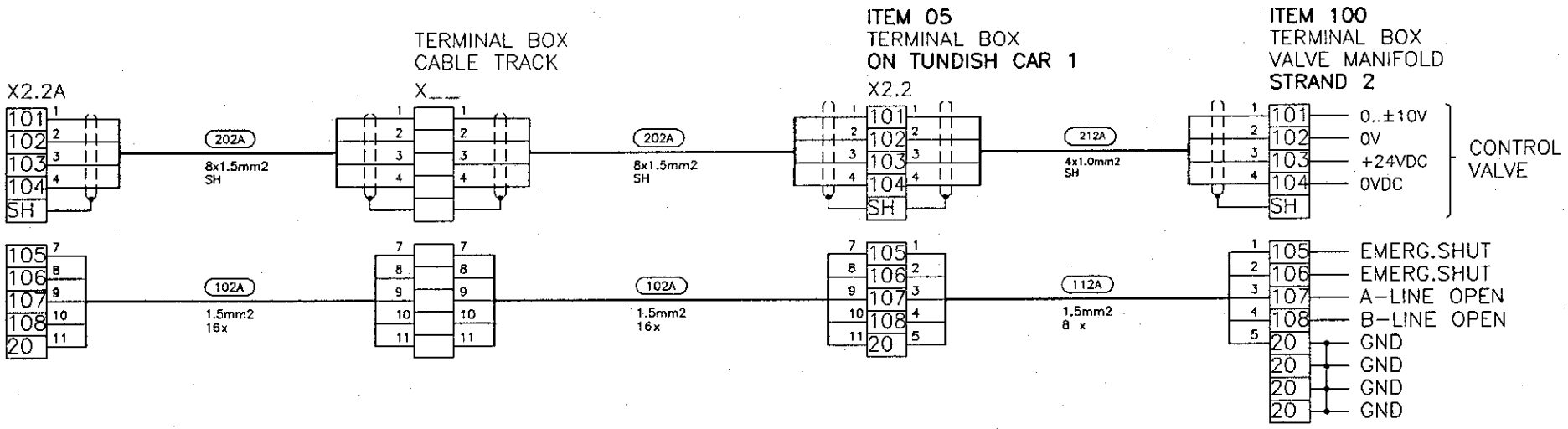


3172-770-36-19

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 1
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	118011	SHEET	13
		NEXT	14

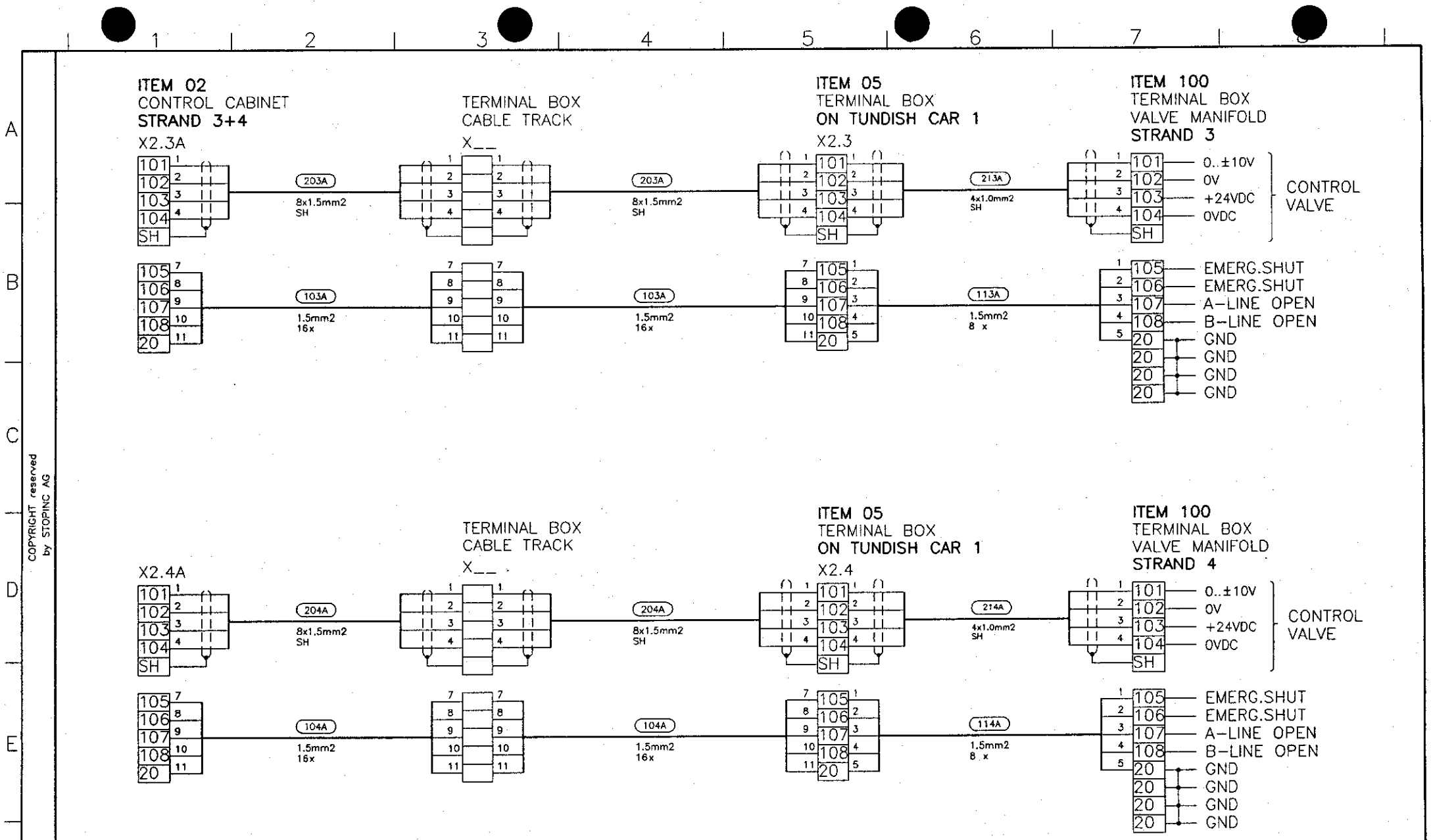




3172-770-36-20

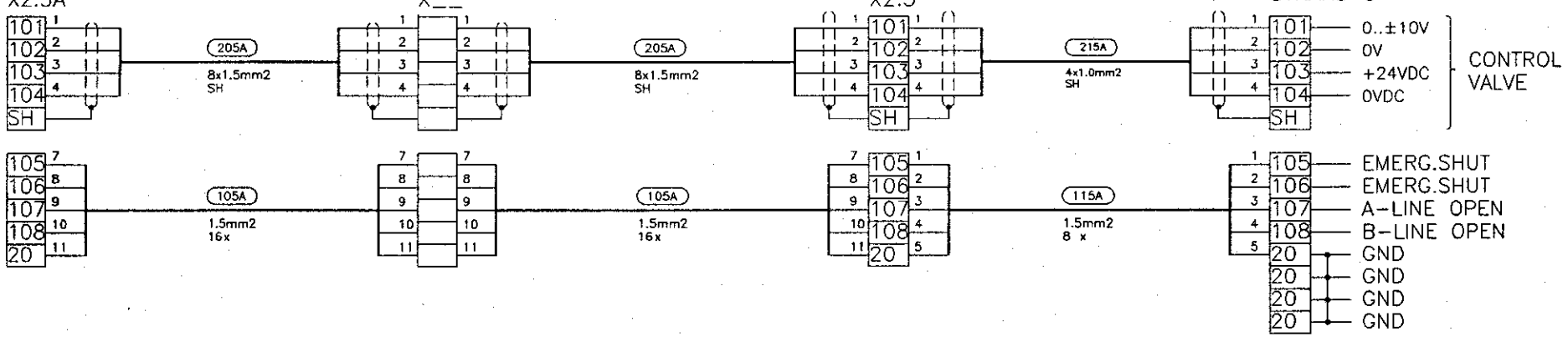
			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA	CONTROL CABINET TO CAR 1
			DRAWN	Za		INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

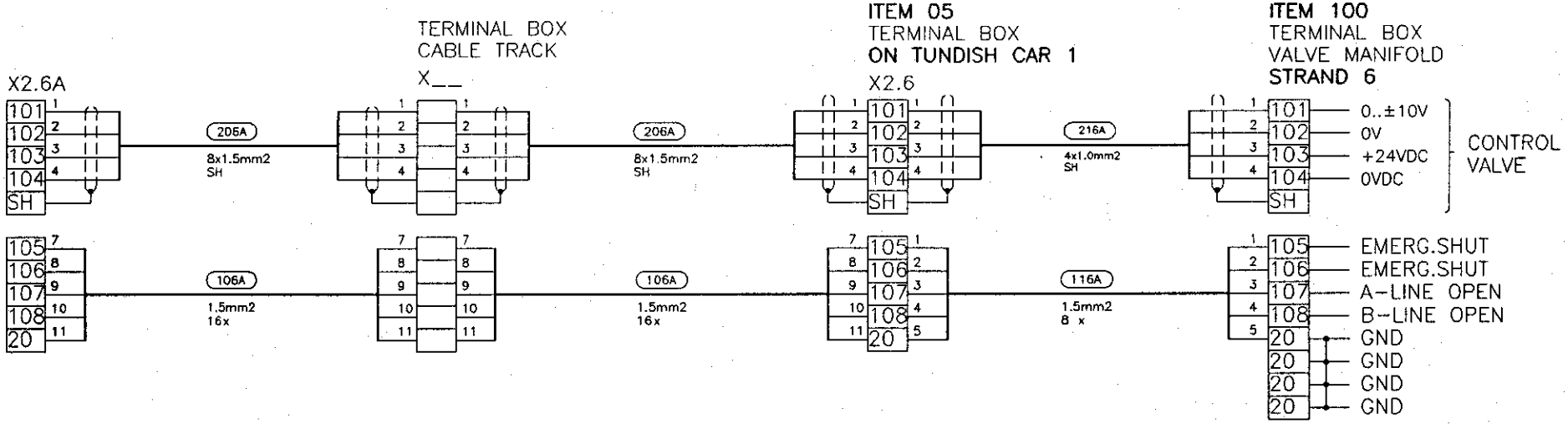
		=	
		+	
E	118011	SHEET	14
		NEXT	15



3M2-770-36-21

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 1	= +
			DRAWN	Za				E 118011 SHEET 15 NEXT 16
			CHECKED	Za				
			NORM					
REVISION	DATE	NAME			ORIGIN	REPL.FOR		





3M2-770-36-22

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 1
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

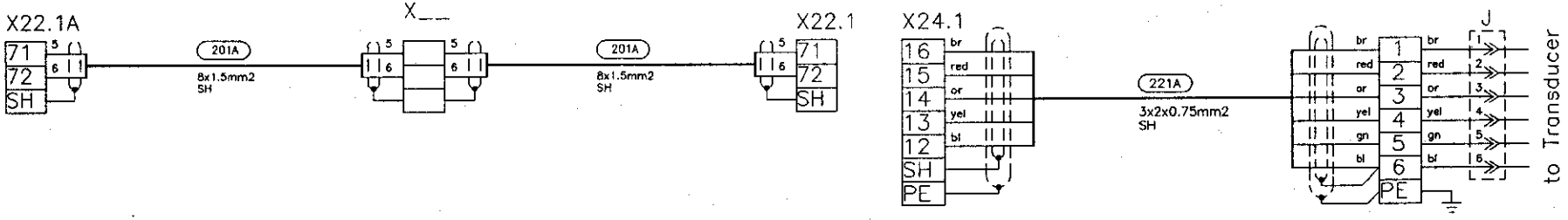
E | 118011 | SHEET 16 | NEXT 17

ITEM 02
CONTROL CABINET
STRAND 1+2

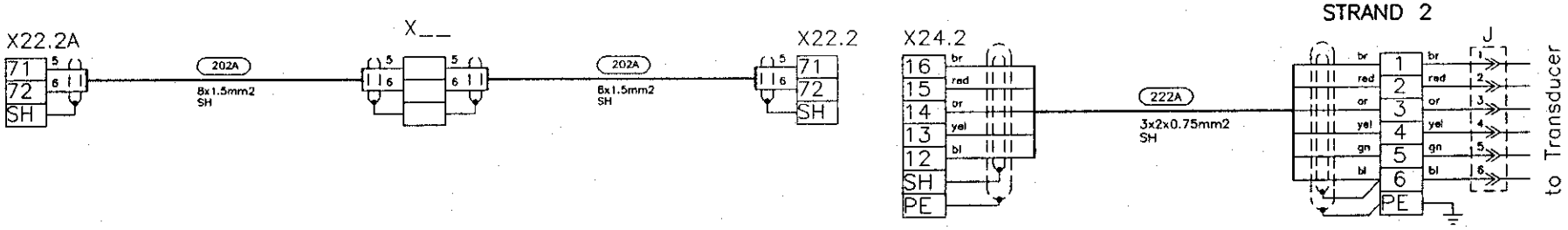
TERMINAL BOX
CABLE TRACK

ITEM 05
TERMINAL BOX
ON TUNDISH CAR 1

ITEM 100
TERMINAL BOX
VALVE MANIFOLD
STRAND 1



ITEM 100
TERMINAL BOX
VALVE MANIFOLD
STRAND 2



3112-770-36-23

		DATE	18.05.95	
		DRAWN	Za	
		CHECKED	Za	
		NORM		
REVISION	DATE	NAME		

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

CONTROL CABINET TO
CAR 1

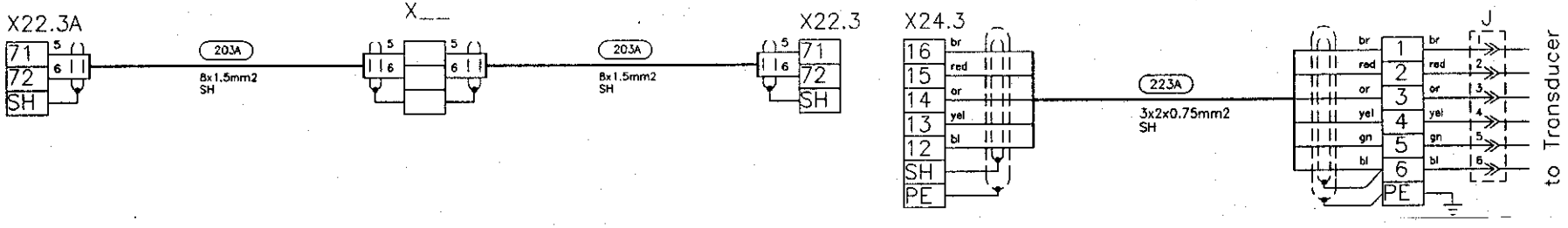
E | 118011 | SHEET 17 | NEXT 18

ITEM 02
CONTROL CABINET
STRAND 3+4

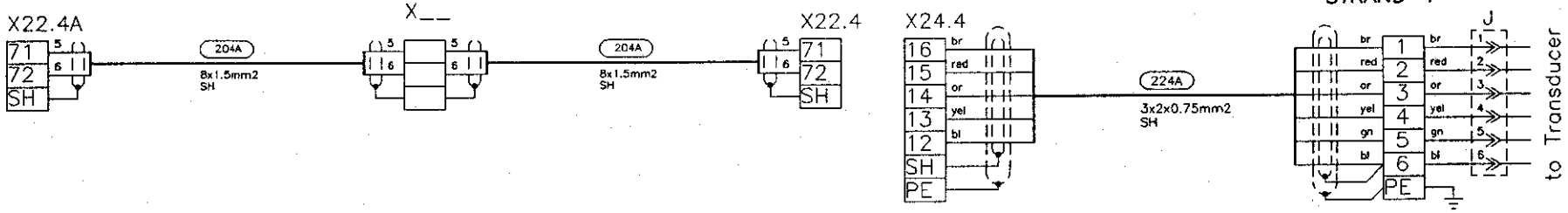
TERMINAL BOX
CABLE TRACK

ITEM 05
TERMINAL BOX
ON TUNDISH CAR 1

ITEM 100
TERMINAL BOX
VALVE MANIFOLD
STRAND 3



ITEM 100
TERMINAL BOX
VALVE MANIFOLD
STRAND 4



3112-770-36-24

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 1
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

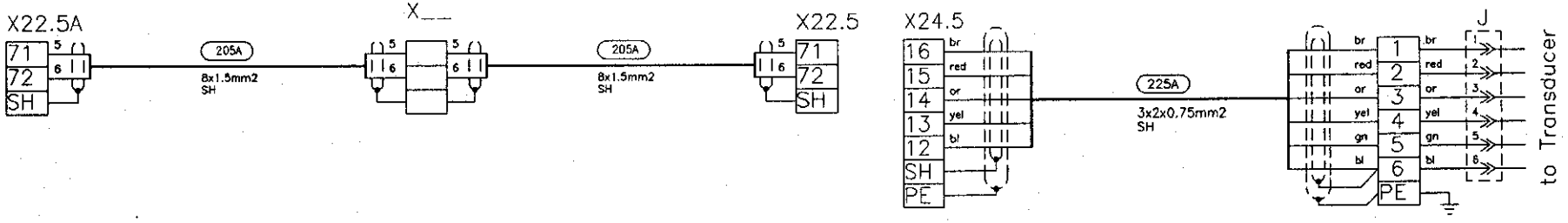
			= / +
E	118011	SHEET	18
		NEXT	19

ITEM 02
CONTROL CABINET
STRAND 5+6

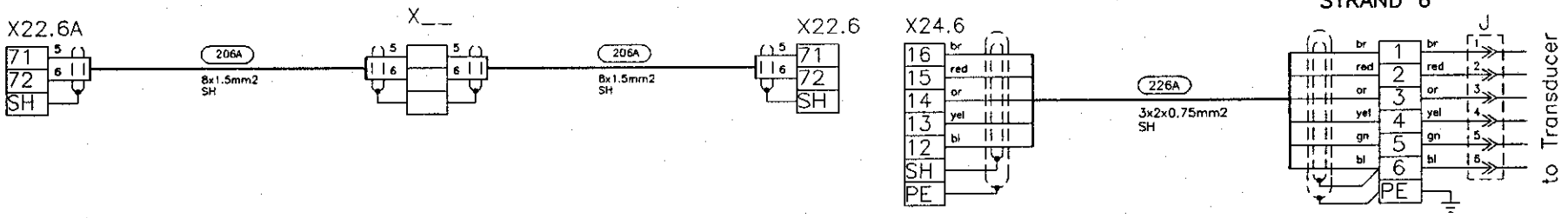
TERMINAL BOX
CABLE TRACK

ITEM 05
TERMINAL BOX
ON TUNDISH CAR 1

ITEM 100
TERMINAL BOX
VALVE MANIFOLD
STRAND 5



ITEM 100
TERMINAL BOX
VALVE MANIFOLD
STRAND 6



3172-770-36-25

			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

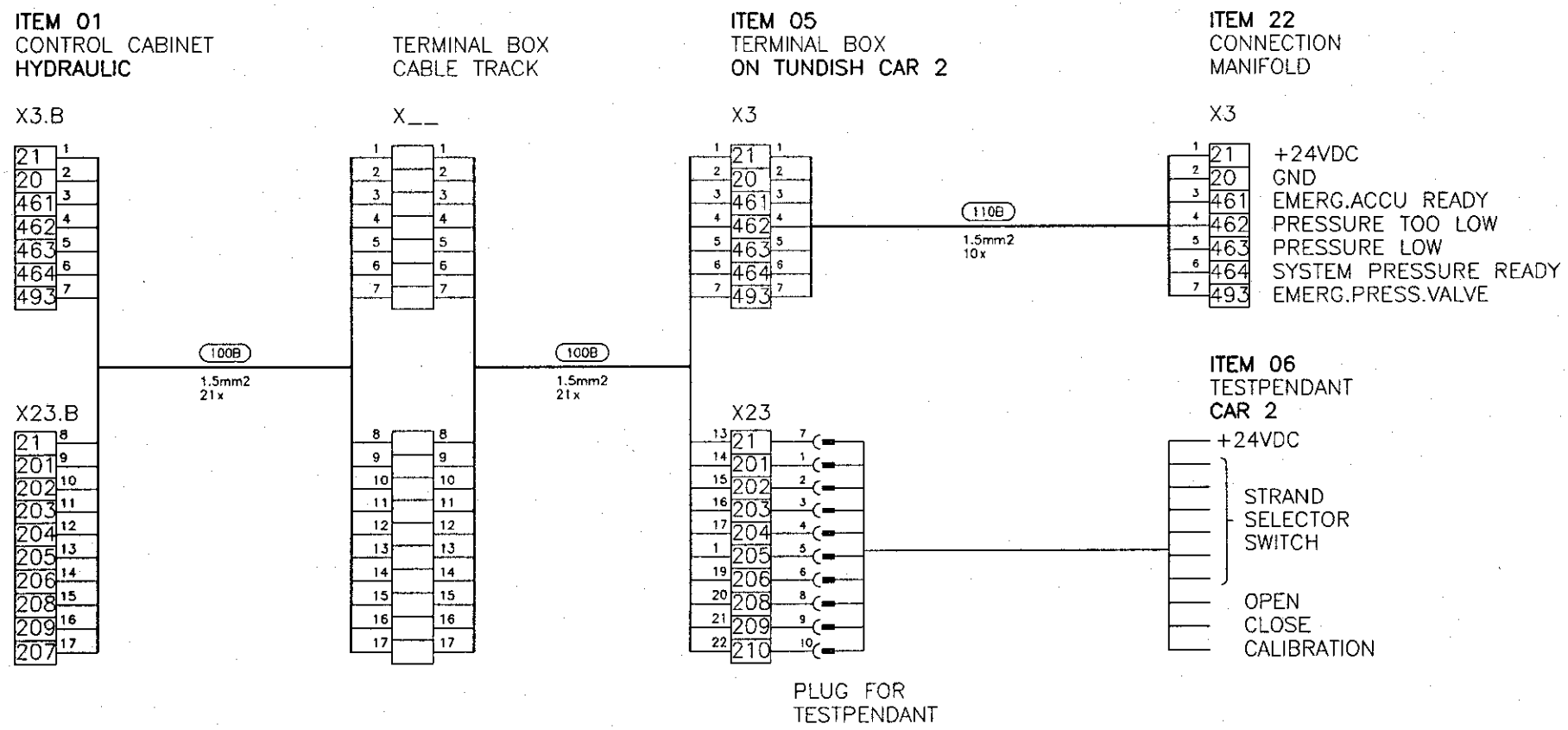
RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

CONTROL CABINET TO
CAR 1

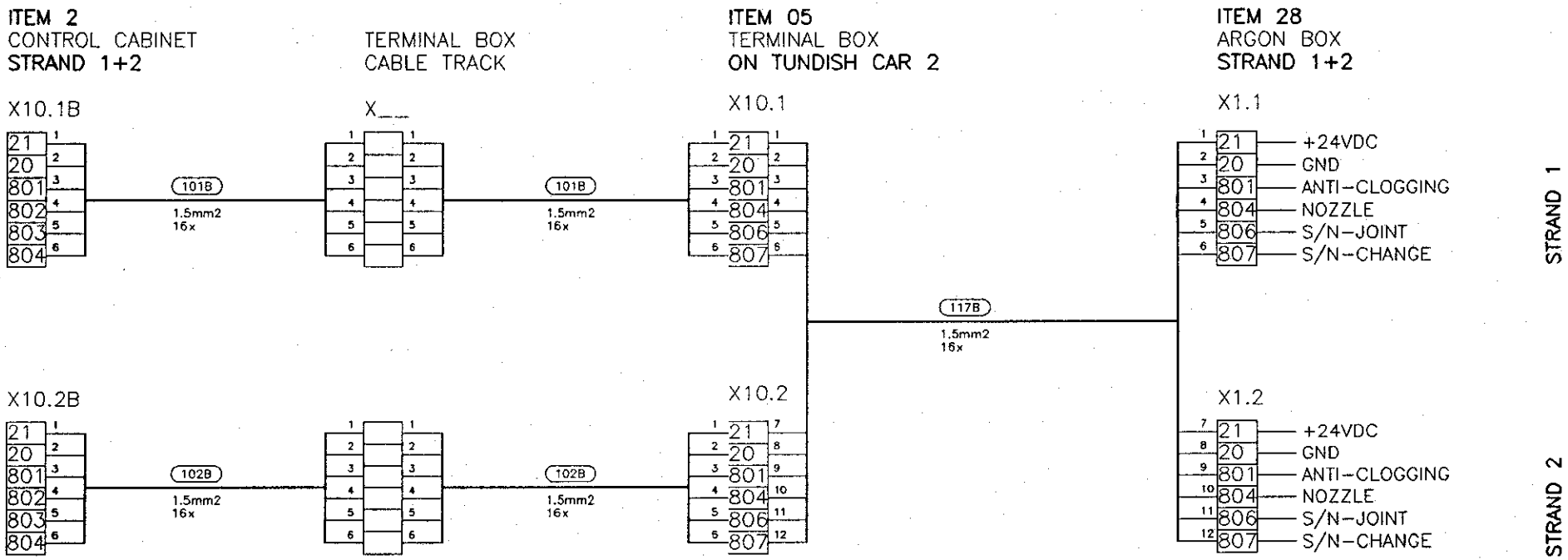
E | 118011 | SHEET 19 | NEXT 21



ЭП2-770-36-26

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 2
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

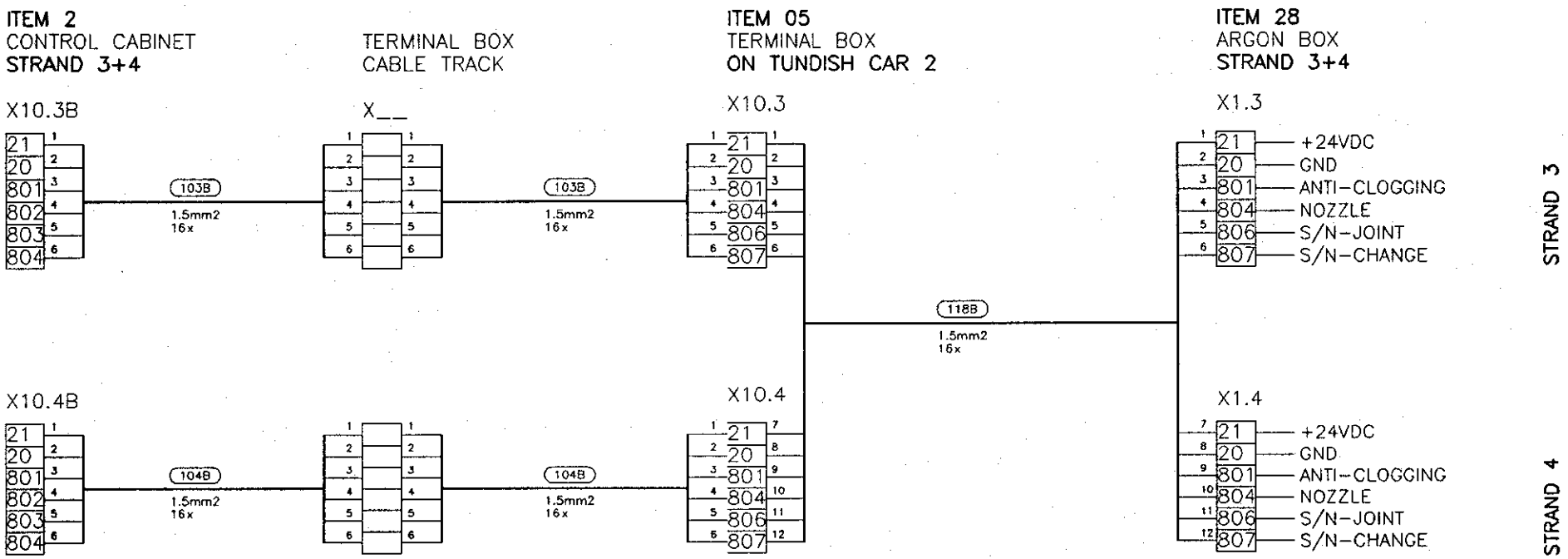
E	118011	SHEET	20
		NEXT	21



3T2-770-36-27

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 2
			DRAWN	Za			
			CHECKED	Za			
			NORM.				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

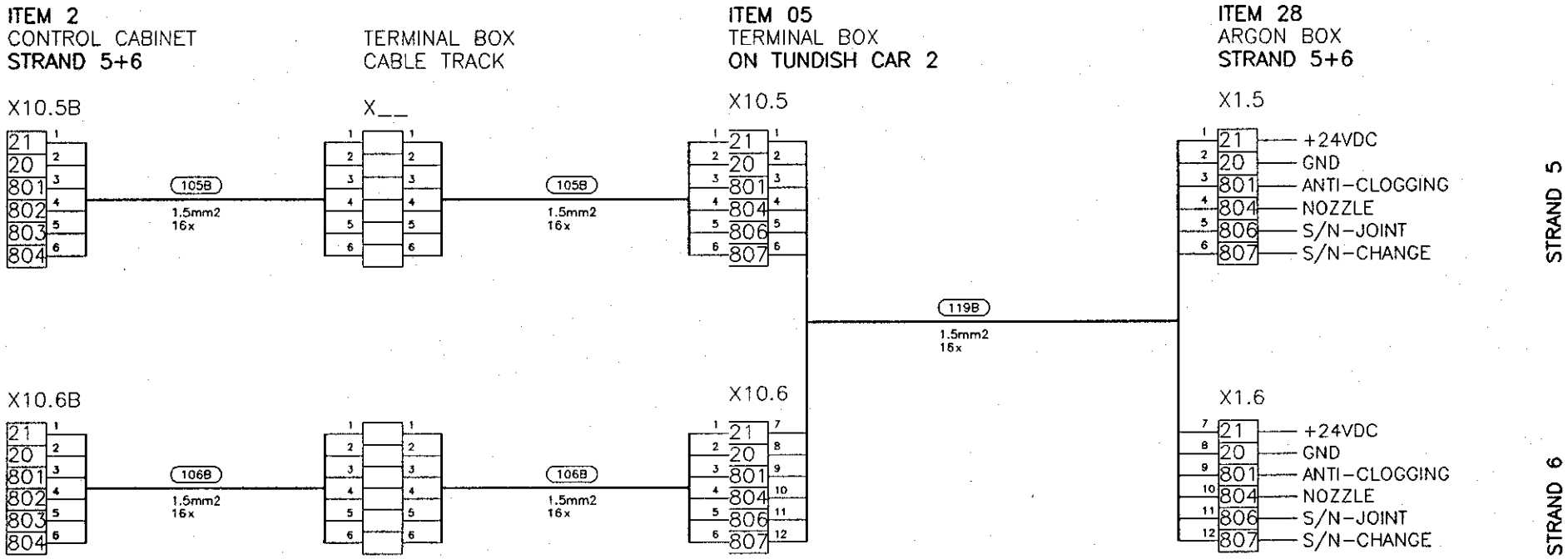
E	118011	SHEET	21
		NEXT	22



3112-770-36-28

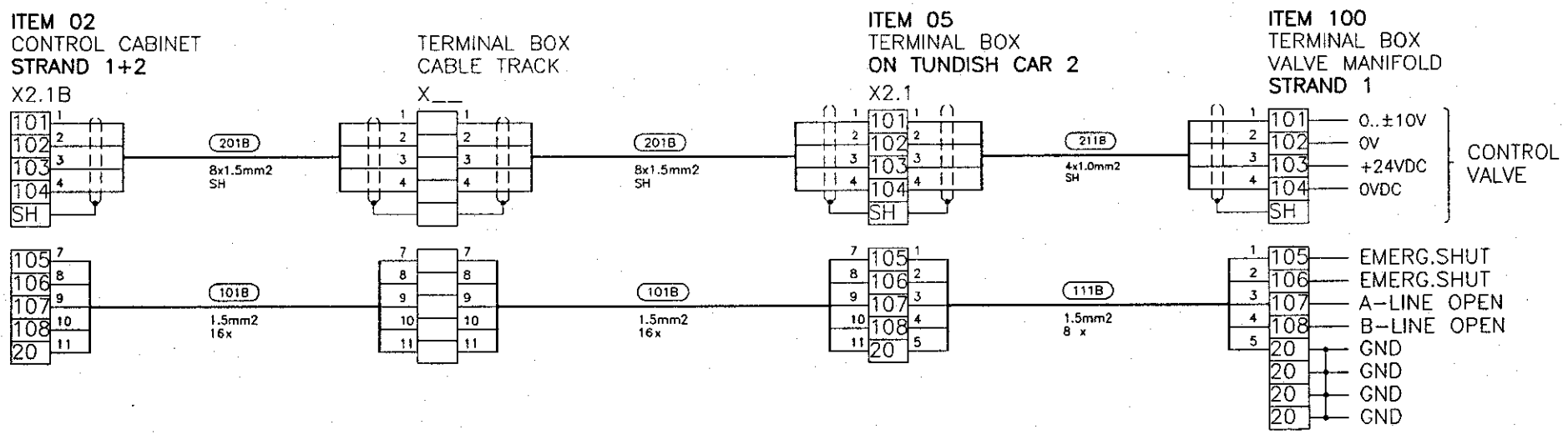
			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 2
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

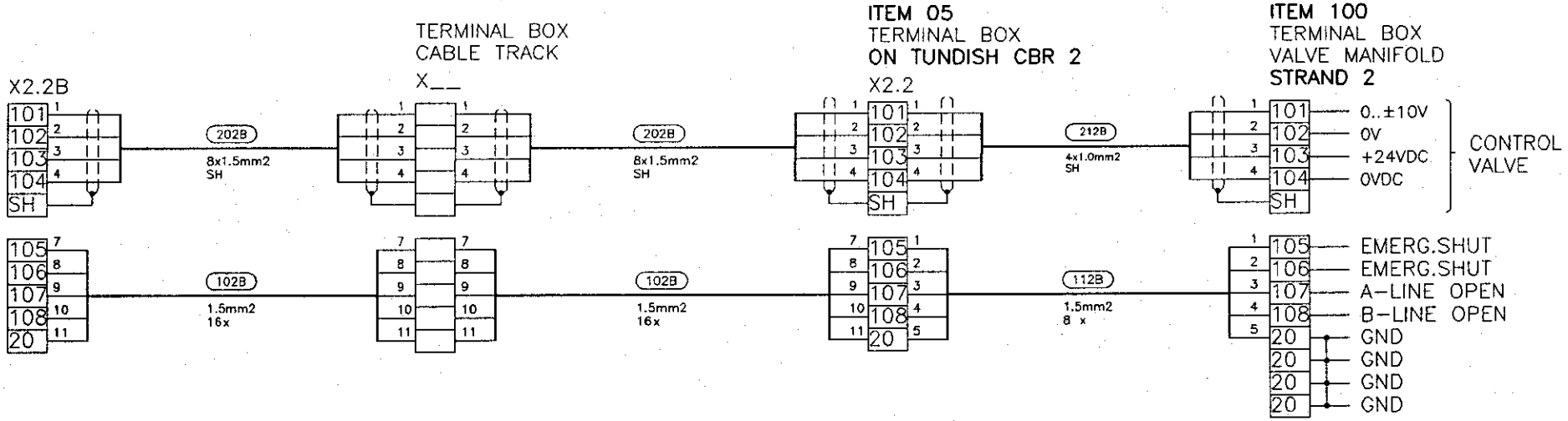
		=	
		+	
E	118011	SHEET	22
		NEXT	23



3N2-770-36-29

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 2	E 118011 SHEET 23 NEXT 24
			DRAWN	Za				
			CHECKED	Za				
			NORM					
REVISION	DATE	NAME			ORIGIN	REPL.FOR		

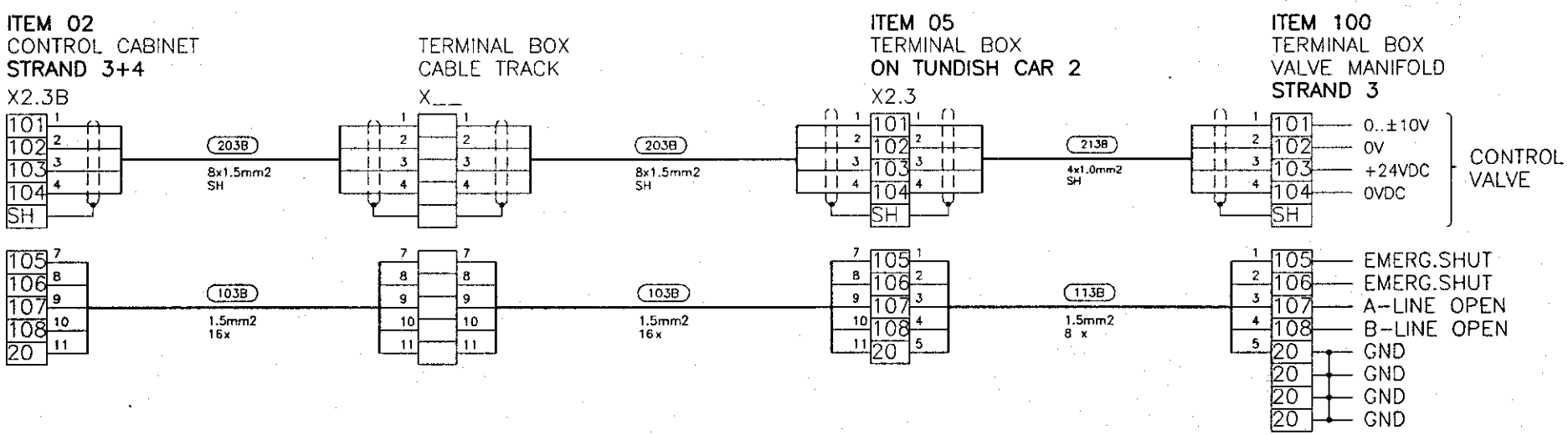


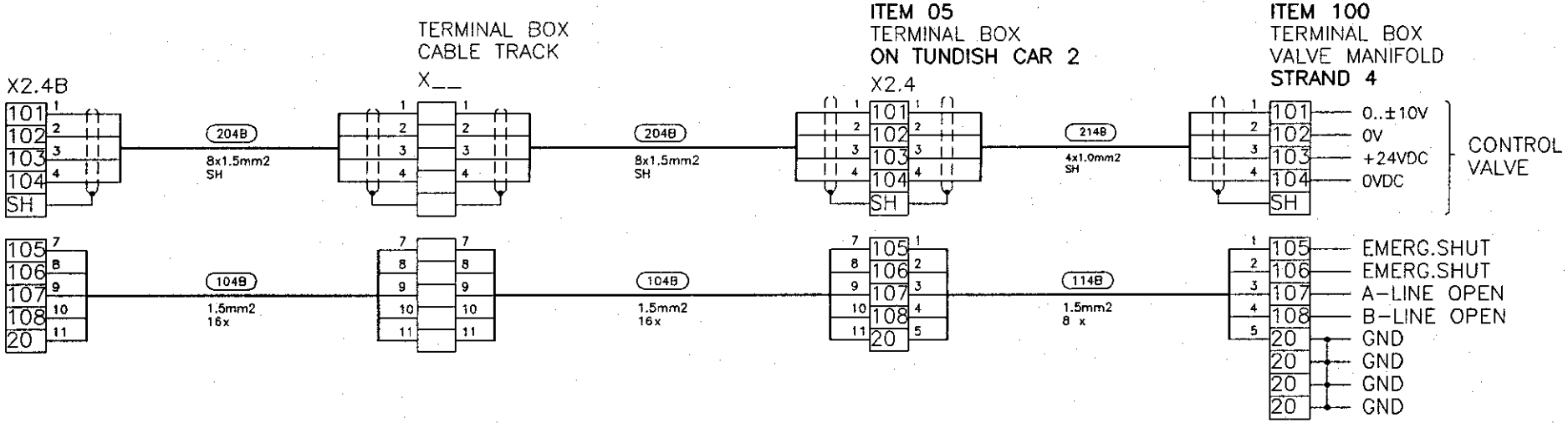


3T2-770-36-30

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 2
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	118011	SHEET	24
		NEXT	25

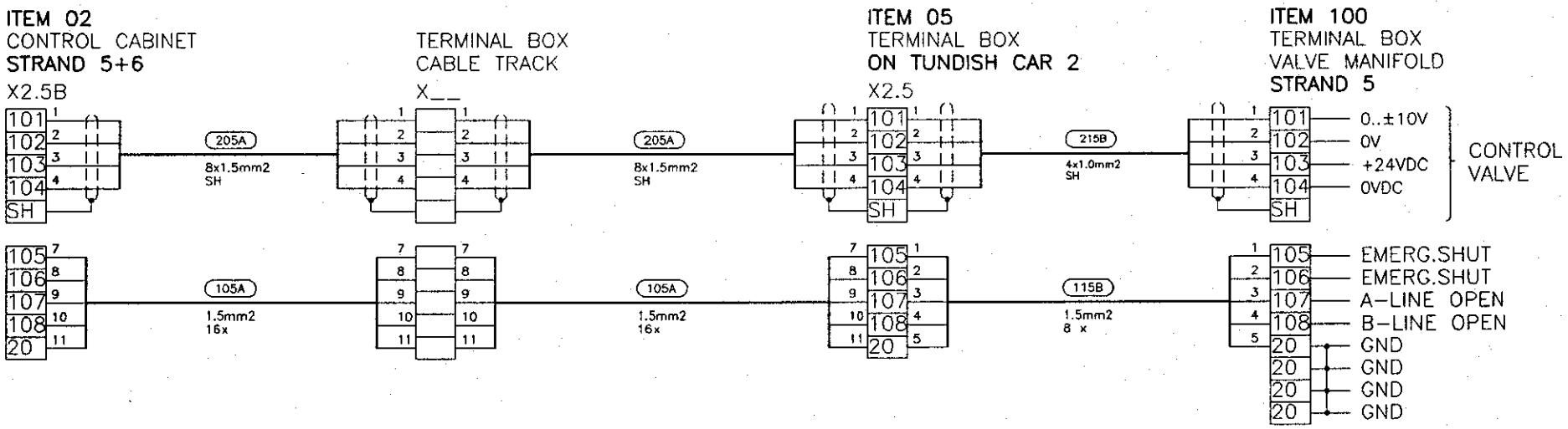


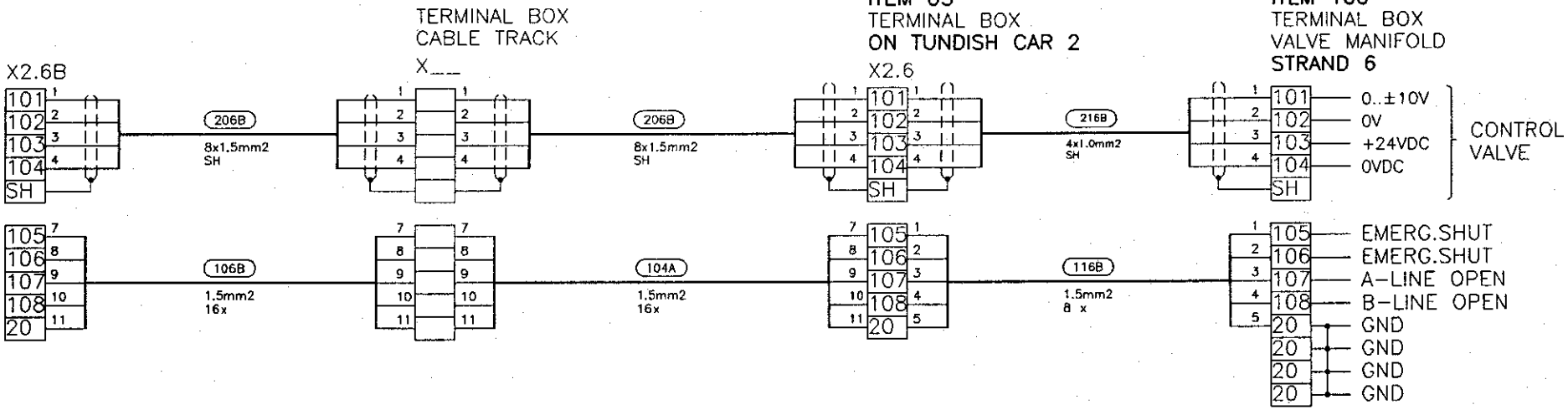


3172-770-36-31

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 2
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	118011	SHEET	25
		NEXT	26





3172-770-36-32

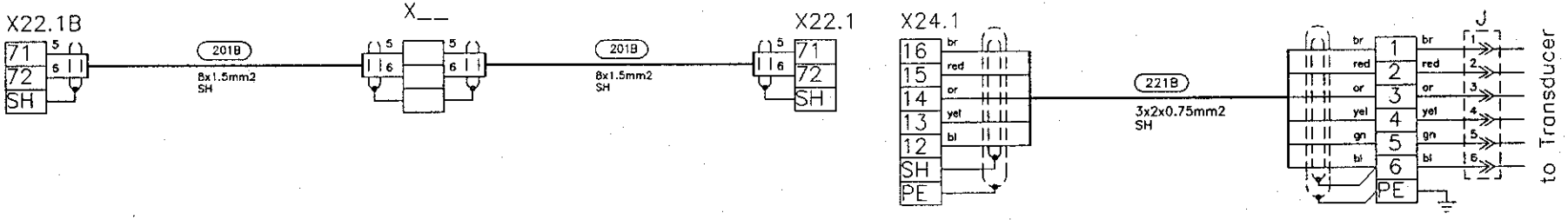
			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 2	E 118011 SHEET 26 NEXT 27
			DRAWN	Za				
			CHECKED	Za				
			NORM					
REVISION	DATE	NAME			ORIGIN	REPL.FOR		

ITEM 02
CONTROL CABINET
STRAND 1+2

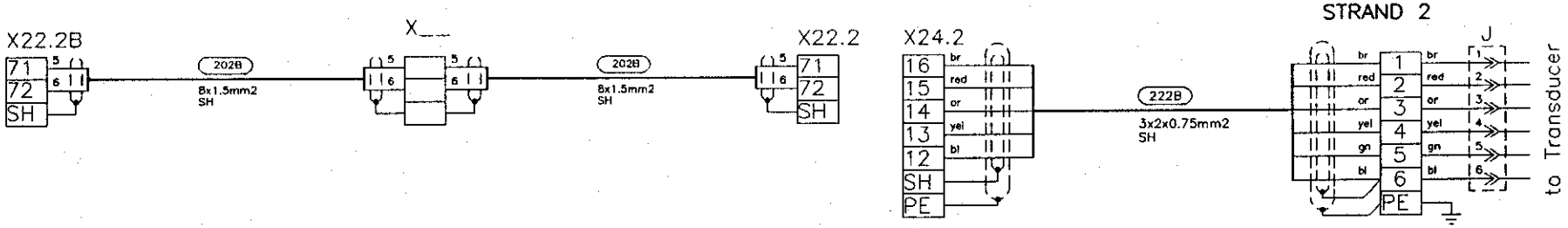
TERMINAL BOX
CABLE TRACK

ITEM 05
TERMINAL BOX
ON TUNDISH CAR 2

ITEM 100
TERMINAL BOX
VALVE MANIFOLD
STRAND 1



ITEM 100
TERMINAL BOX
VALVE MANIFOLD
STRAND 2



372-770-36-33

			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

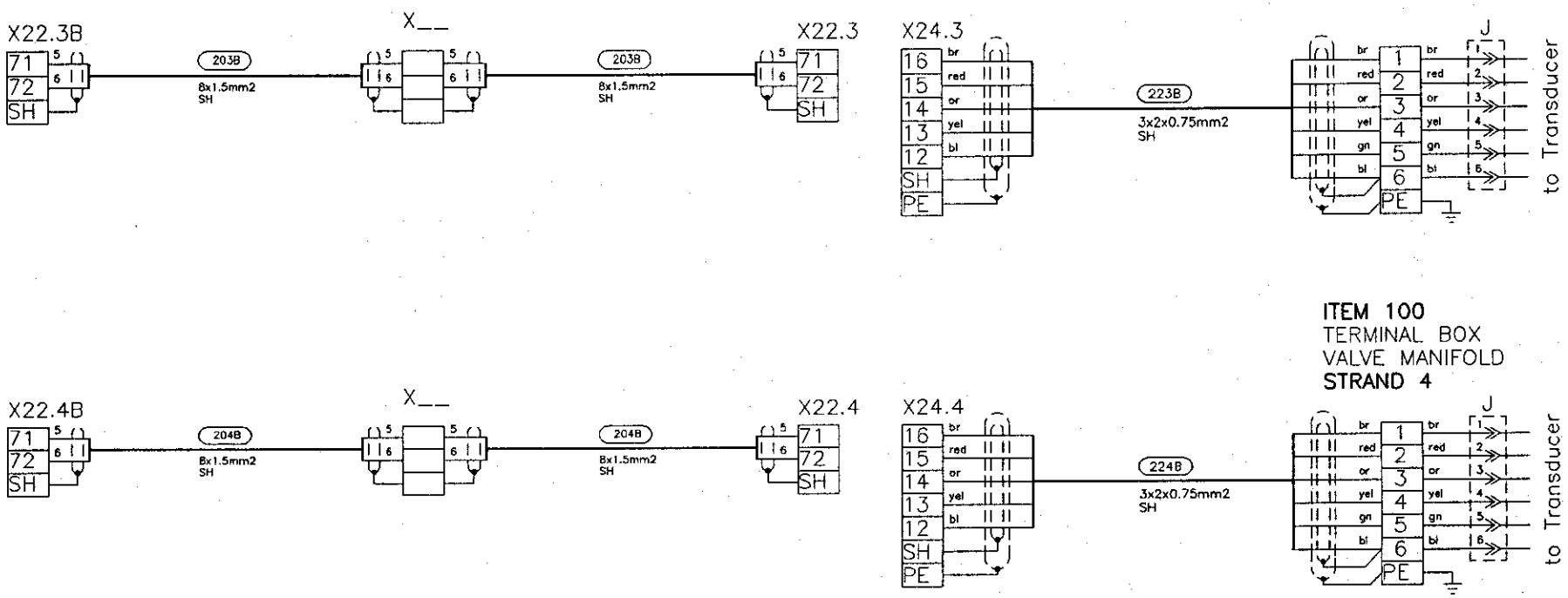
RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

CONTROL CABINET TO
CAR 2

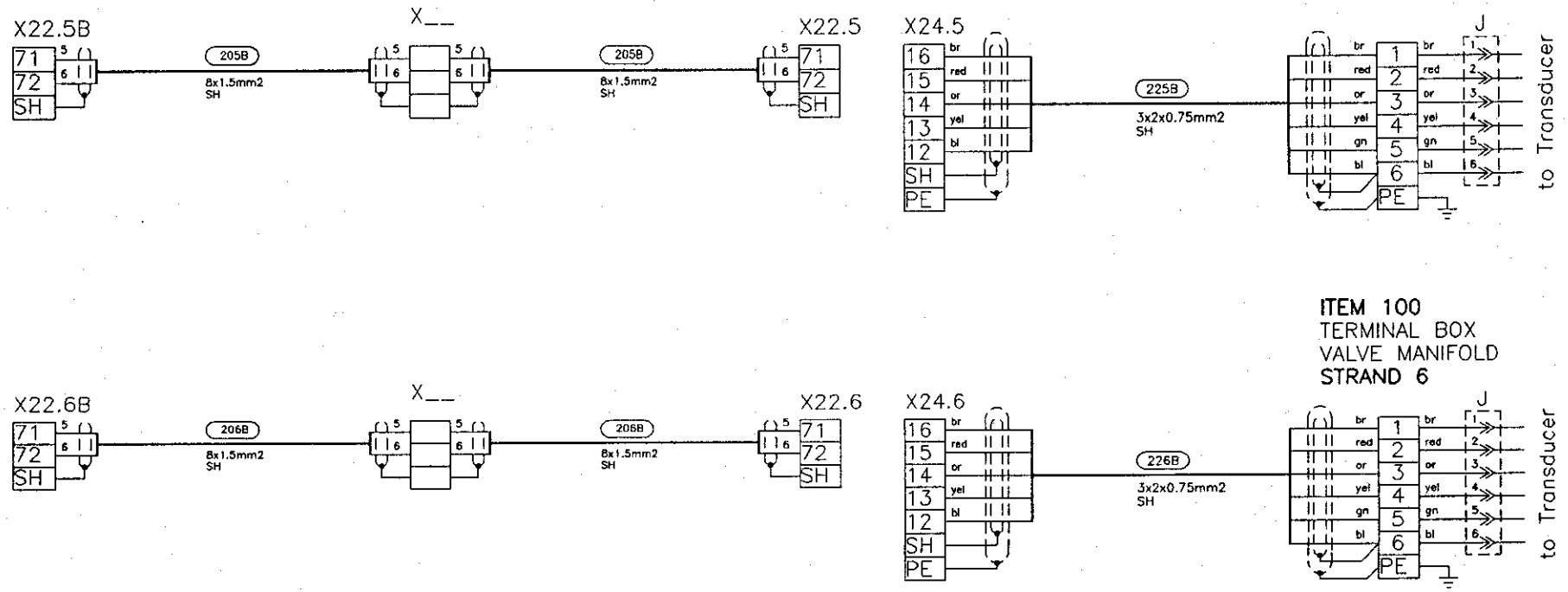
E | 118011 | SHEET 27 | NEXT 28



3112-770-36-34

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 2
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	118011	SHEET	28
		NEXT	29



3П2-770-36-35

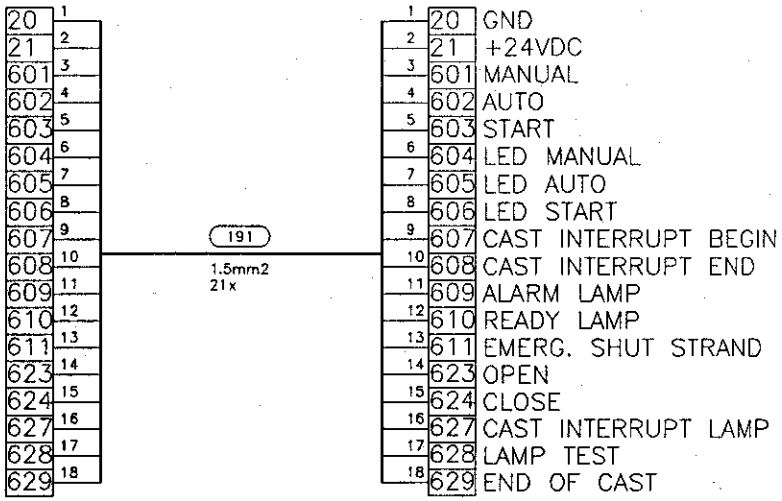
			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CAR 2
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	118011	SHEET	29
		NEXT	30

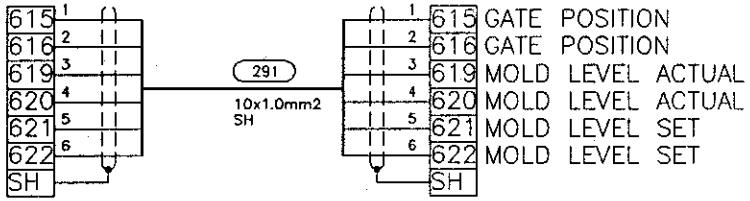
ITEM 02
CONTROL CABINET
STRAND 1+2

ITEM 03
OPERATOR STATION
STRAND 1

X27.1



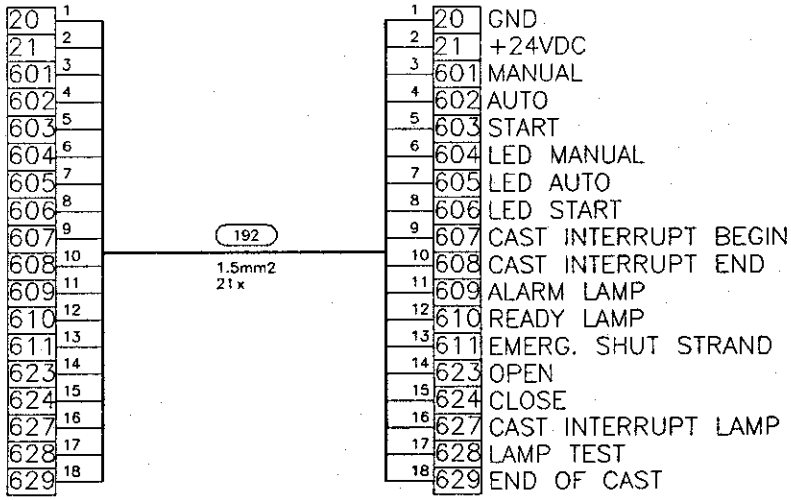
X27.1



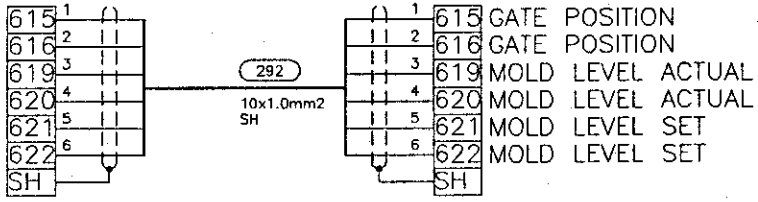
ITEM 02
CONTROL CABINET
STRAND 1+2

ITEM 03
OPERATOR STATION
STRAND 2

X27.2



X27.2



3172-770-36-36

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO OPERATOR STATION TUNDISH GATE
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

E	118011	SHEET	30
		NEXT	31

ITEM 02
CONTROL CABINET
STRAND 3+4

ITEM 03
OPERATOR STATION
STRAND 3

X27.3

20	1	1	20 GND
21	2	2	21 +24VDC
601	3	3	601 MANUAL
602	4	4	602 AUTO
603	5	5	603 START
604	6	6	604 LED MANUAL
605	7	7	605 LED AUTO
606	8	8	606 LED START
607	9	9	607 CAST INTERRUPT BEGIN
608	10	10	608 CAST INTERRUPT END
609	11	11	609 ALARM LAMP
610	12	12	610 READY LAMP
611	13	13	611 EMERG. SHUT STRAND
623	14	14	623 OPEN
624	15	15	624 CLOSE
627	16	16	627 CAST INTERRUPT LAMP
628	17	17	628 LAMP TEST
629	18	18	629 END OF CAST

193
1.5mm2
21x

X27.3

615	1	1	615 GATE POSITION
616	2	2	616 GATE POSITION
619	3	3	619 MOLD LEVEL ACTUAL
620	4	4	620 MOLD LEVEL ACTUAL
621	5	5	621 MOLD LEVEL SET
622	6	6	622 MOLD LEVEL SET
SH		SH	

293
10x1.0mm2
SH

ITEM 02
CONTROL CABINET
STRAND 3+4

ITEM 03
OPERATOR STATION
STRAND 4

X27.4

20	1	1	20 GND
21	2	2	21 +24VDC
601	3	3	601 MANUAL
602	4	4	602 AUTO
603	5	5	603 START
604	6	6	604 LED MANUAL
605	7	7	605 LED AUTO
606	8	8	606 LED START
607	9	9	607 CAST INTERRUPT BEGIN
608	10	10	608 CAST INTERRUPT END
609	11	11	609 ALARM LAMP
610	12	12	610 READY LAMP
611	13	13	611 EMERG. SHUT STRAND
623	14	14	623 OPEN
624	15	15	624 CLOSE
627	16	16	627 CAST INTERRUPT LAMP
628	17	17	628 LAMP TEST
629	18	18	629 END OF CAST

194
1.5mm2
21x

X27.4

615	1	1	615 GATE POSITION
616	2	2	616 GATE POSITION
619	3	3	619 MOLD LEVEL ACTUAL
620	4	4	620 MOLD LEVEL ACTUAL
621	5	5	621 MOLD LEVEL SET
622	6	6	622 MOLD LEVEL SET
SH		SH	

294
10x1.0mm2
SH

3N2-770-36-37

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR
			DRAWN	Za		CONTROL CABINET TO OPERATOR STATION TUNDISH GATE
			CHECKED	Za		E 118011 SHEET 31 NEXT 32
			NORM			
REVISION	DATE	NAME			ORIGIN / REPL.FOR	

ITEM 02
CONTROL CABINET
STRAND 5+6

X27.5

20	1
21	2
601	3
602	4
603	5
604	6
605	7
606	8
607	9
608	10
609	11
610	12
611	13
623	14
624	15
627	16
628	17
629	18

195
1.5mm2
21x

ITEM 03
OPERATOR STATION
STRAND 5

1	20	GND
2	21	+24VDC
3	601	MANUAL
4	602	AUTO
5	603	START
6	604	LED MANUAL
7	605	LED AUTO
8	606	LED START
9	607	CAST INTERRUPT BEGIN
10	608	CAST INTERRUPT END
11	609	ALARM LAMP
12	610	READY LAMP
13	611	EMERG. SHUT STRAND
14	623	OPEN
15	624	CLOSE
16	627	CAST INTERRUPT LAMP
17	628	LAMP TEST
18	629	END OF CAST

X27.5

615	1
616	2
619	3
620	4
621	5
622	6
SH	

295
10x1.0mm2
SH

1	615	GATE POSITION
2	616	GATE POSITION
3	619	MOLD LEVEL ACTUAL
4	620	MOLD LEVEL ACTUAL
5	621	MOLD LEVEL SET
6	622	MOLD LEVEL SET
	SH	

ITEM 02
CONTROL CABINET
STRAND 5+6

X27.6

20	1
21	2
601	3
602	4
603	5
604	6
605	7
606	8
607	9
608	10
609	11
610	12
611	13
623	14
624	15
627	16
628	17
629	18

196
1.5mm2
21x

ITEM 03
OPERATOR STATION
STRAND 6

1	20	GND
2	21	+24VDC
3	601	MANUAL
4	602	AUTO
5	603	START
6	604	LED MANUAL
7	605	LED AUTO
8	606	LED START
9	607	CAST INTERRUPT BEGIN
10	608	CAST INTERRUPT END
11	609	ALARM LAMP
12	610	READY LAMP
13	611	EMERG. SHUT STRAND
14	623	OPEN
15	624	CLOSE
16	627	CAST INTERRUPT LAMP
17	628	LAMP TEST
18	629	END OF CAST

X27.6

615	1
616	2
619	3
620	4
621	5
622	6
SH	

296
10x1.0mm2
SH

1	615	GATE POSITION
2	616	GATE POSITION
3	619	MOLD LEVEL ACTUAL
4	620	MOLD LEVEL ACTUAL
5	621	MOLD LEVEL SET
6	622	MOLD LEVEL SET
	SH	

3П2-770-36-38

REVISION	DATE	NAME		
			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	

ORIGIN | REPL.FOR

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

CONTROL CABINET TO
OPERATOR STATION TUNDISH GATE

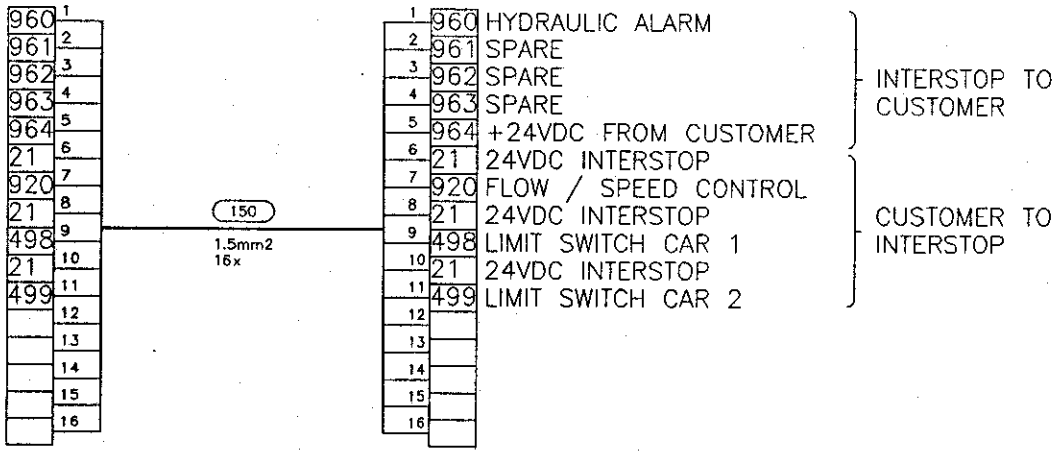
E | 118011 | SHEET 32 | NEXT 33

ITEM 02
CONTROL CABINET
HYDRAULIC

X150

PLC CASTER
CUSTOMER
HYDRAULIC

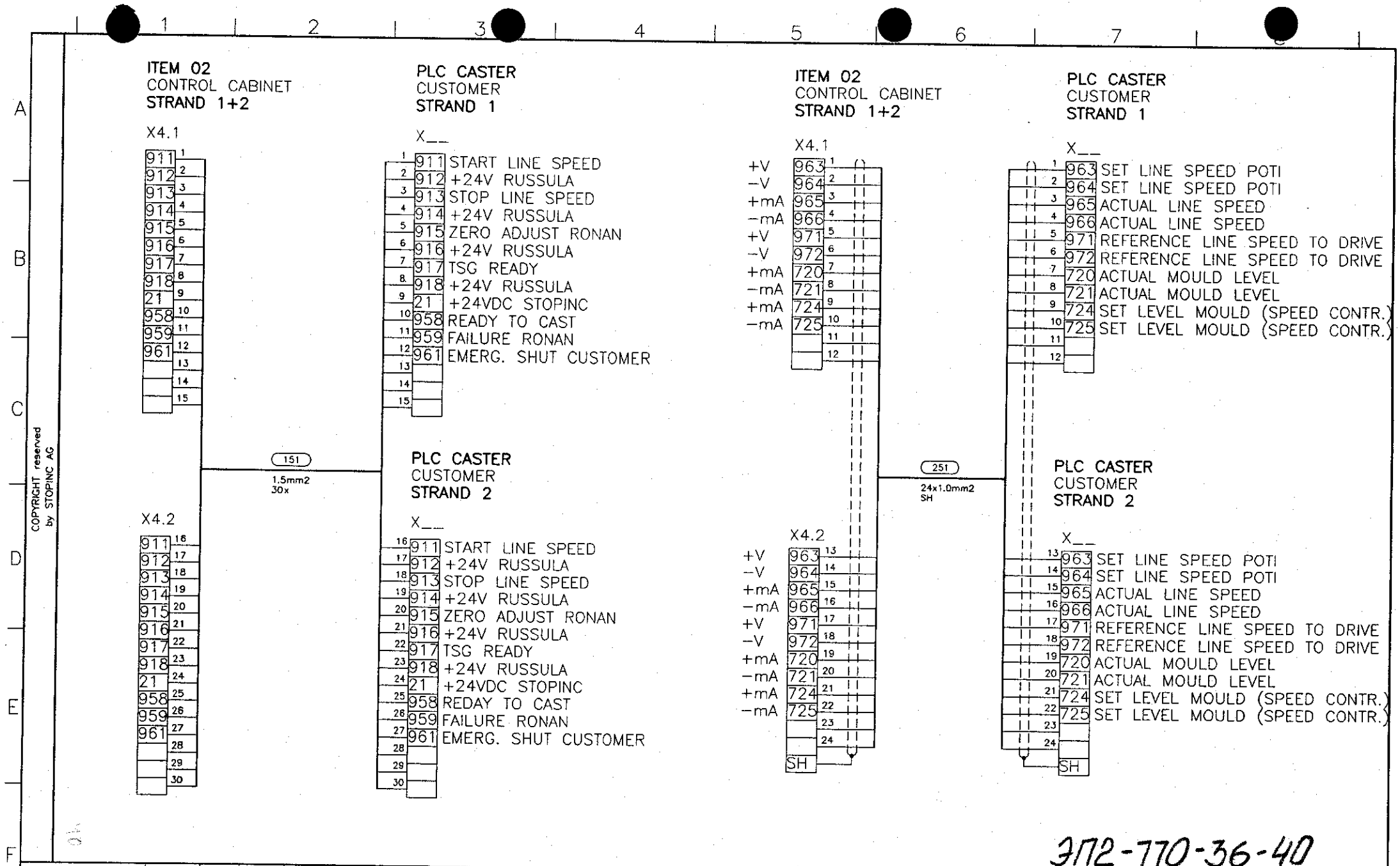
X__



3112-770-36-39

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CUSTOMER
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	118011	SHEET	33
		NEXT	34



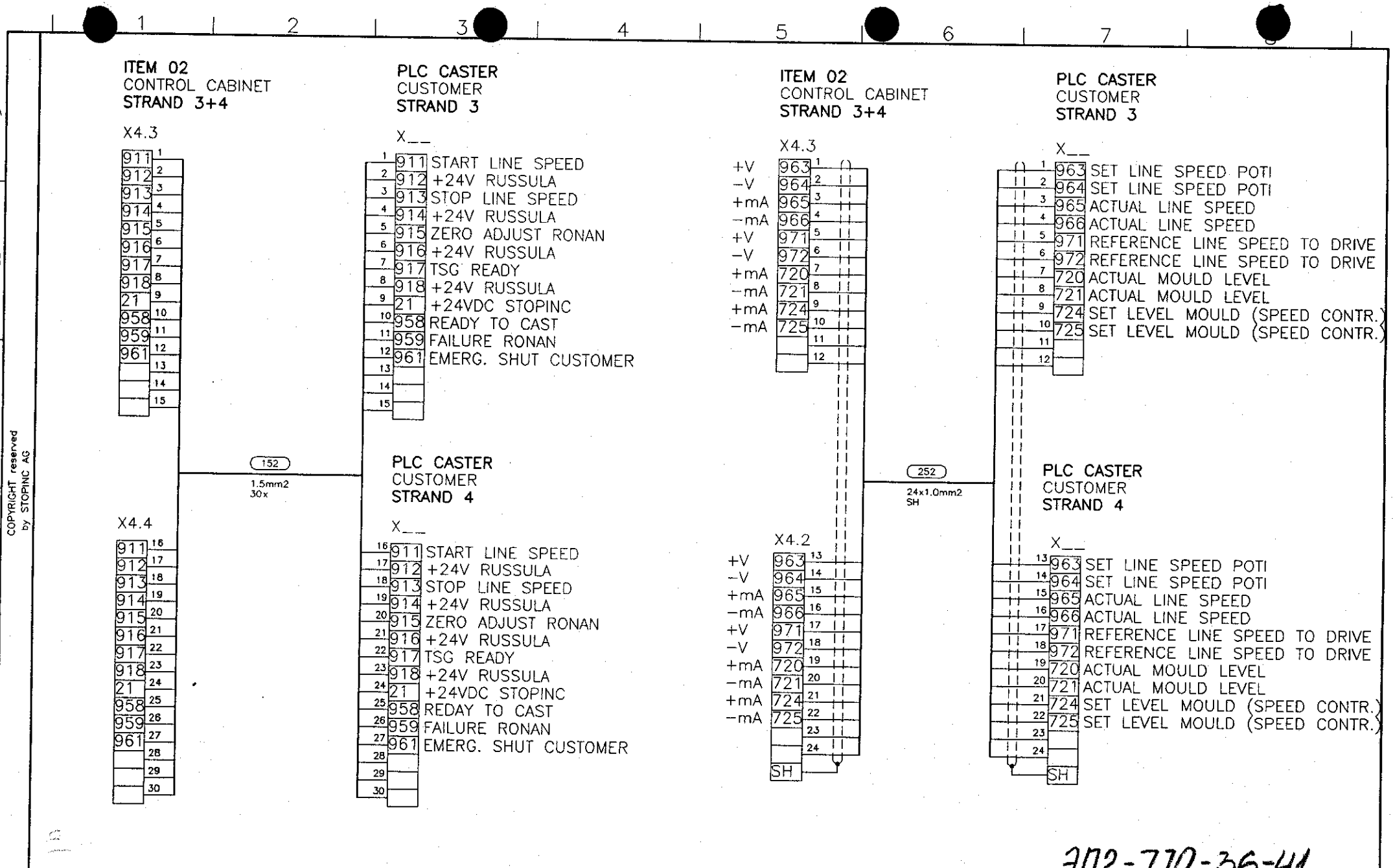
3172-770-36-40

		DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419
		DRAWN	Za	
		CHECKED	Za	
		NORM		
REVISION	DATE NAME	ORIGIN	REPL.FOR	

ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

CONTROL CABINET TO CUSTOMER

E | 118011 | SHEET 34 | NEXT 35



3172-770-36-41

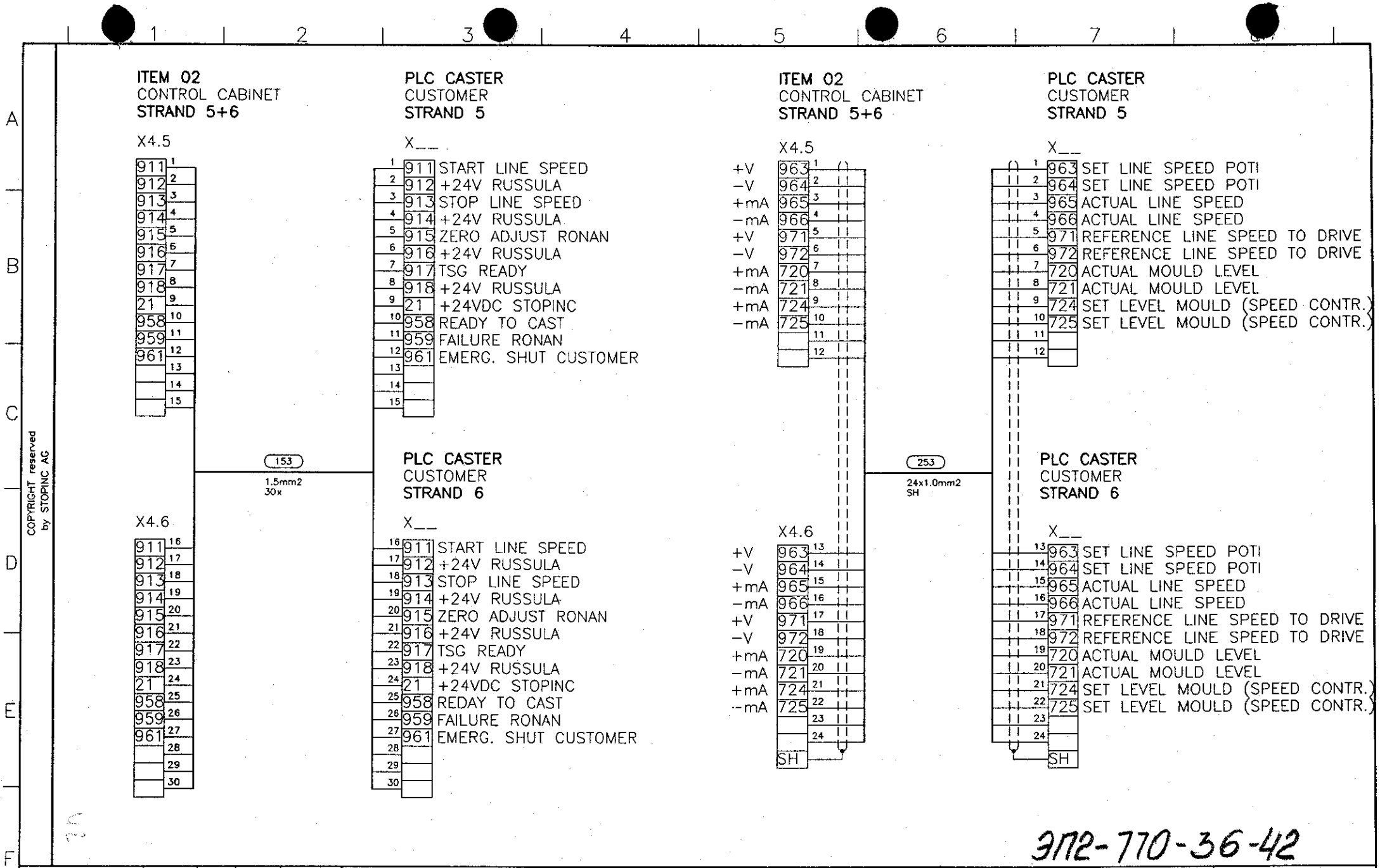
			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME	ORIGIN	REPL FOR

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

CONTROL CABINET TO CUSTOMER

E | 118011 | SHEET 35 | NEXT 36



3172-770-36-42

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CONTROL CABINET TO CUSTOMER
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	118011	SHEET	36
		NEXT	–

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Customer : Red October via Rokop
Project No.: 2014/419

8. Electrics/Electronics

8.6	Control Cabinets	контрольный шкаф
8.7	PLC	
8.8	Power Unit 2011	энергетический узел 2011

ЭП2-770-36-43

NO.	TITLE
1	COVERSHEET
2	CABINET LAYOUT
3	FUNCTIONAL DESCRIPTION
4	TERMINAL STRIP 2737 HYDRAULIC
5	TERMINAL STRIP STRAND
6	LAN SETUP
7	LAN FRONT
8	MULTICONTROL HYDRAULIC
9	HYDRAULIC INPUT/OUTPUT LIST
10	MULTICONTROL STRAND 1-6
11	STRAND 1-6 INPUT/OUTPUT LIST
12	
13	
14	
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16	
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20	

3772-770-36-44

REVISION	DATE	NAME		
			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	

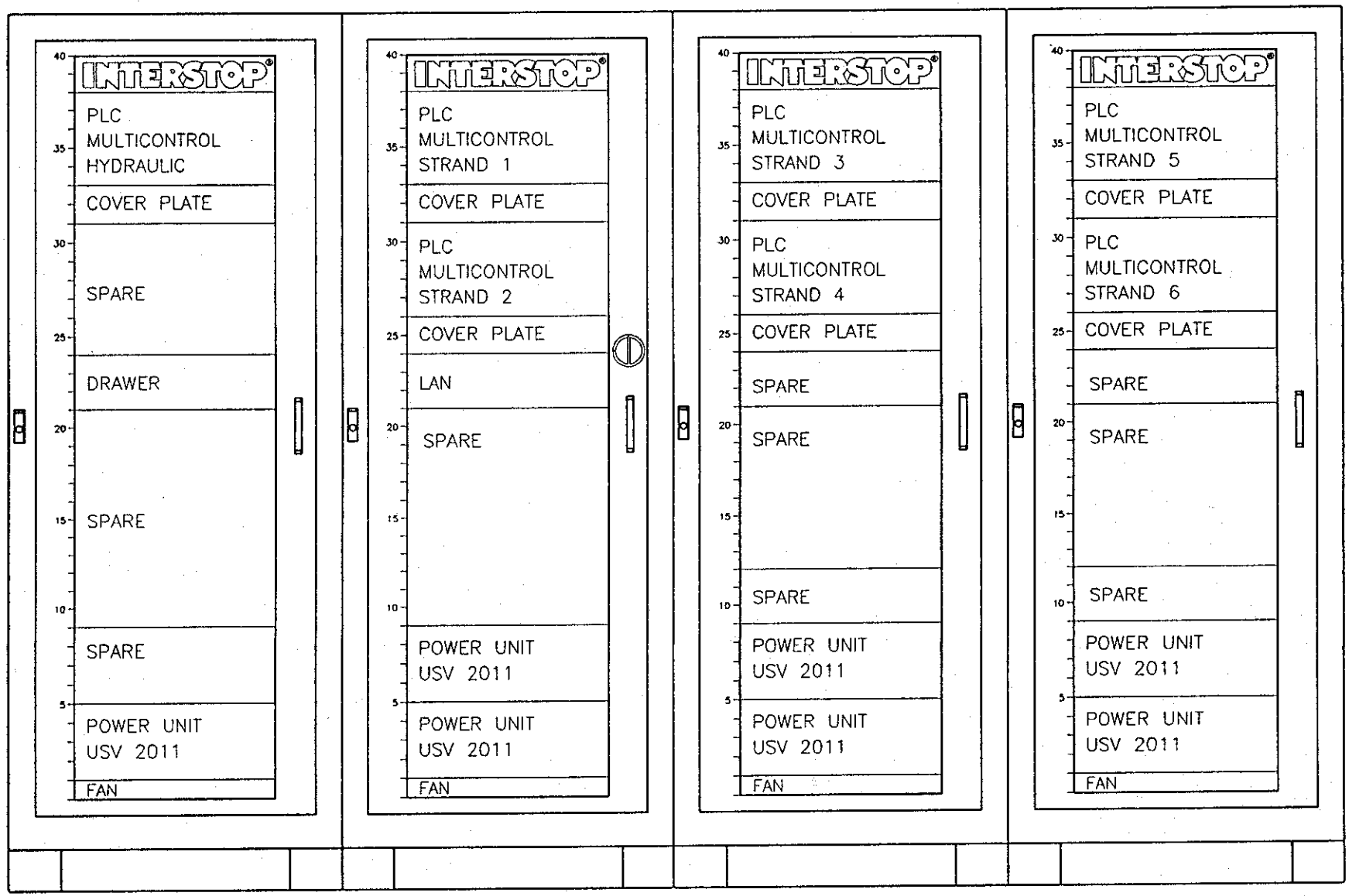
ORIGIN | REPL.FOR

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

CABINETS
COVERSHEET

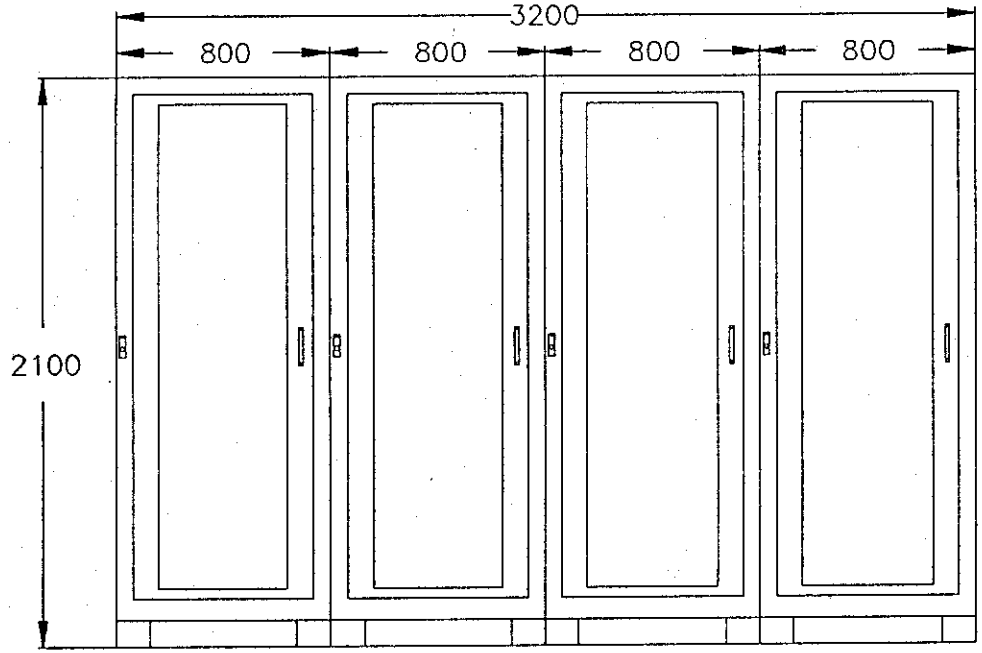
E | 116900 | SHEET 1 | NEXT 2

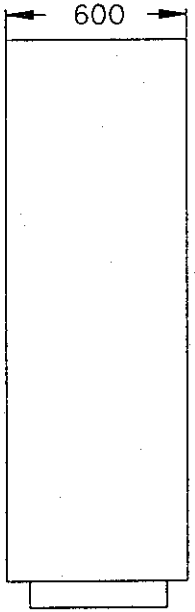


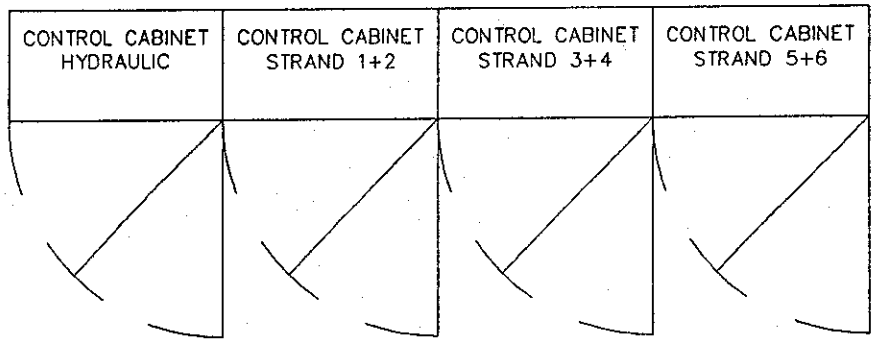
3172-770-36-45

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CABINET LAYOUT
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

E	116900	SHEET	2
		NEXT	3







9172-770-36-46

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CABINET FUNCTIONAL DESCRIPTION
			DRAWN	Zo			
			CHECKED	Zo			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

E | 116900 | SHEET 3 | NEXT 4

E29	E16	
E2A	E17	
E2B	E0C	
E2C	E0D	
E2D	E25	
E2E	E26	
E2F	E27	
A40	E28	
A4B		
A4D		
A4E		
A4F		

960		X4.1
961		
962		
963		
964		
956		X180
957		
21		X3.B
499		
499		
21		X3.B
498		
498		
21		X3.B
20		
461		
462		
463		
464		
494		
21		X3.A
20		
461		
462		
463		
464		
493		

21		X2.B
201		
202		
203		
204		
205		
206		
207		
208		
209		
21		X2.A
201		
202		
203		
204		
205		
206		
207		
208		
209		
21		X170
21		
20		
20		
401		
402		
403		
404		
421	421	X171
422	422	
423	423	
431	431	
432	432	
433	433	
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437	437	
440	440	
441	441	
442	442	
443	443	
444	444	
445	445	
446	446	
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449		

450		X171
451		
455		
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468	468	
469	469	
470	470	
471		
472		
473		
480		
488	488	488
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490	490	490
491	491	491
492	492	492
495	495	495
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20	20	20
20	20	20
20	20	20

X220.0

9172-770-36-47

TERMINAL LIST
HYDRAULIC

E | 116900 | SHEET 4 | NEXT 5

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

REVISION	DATE	NAME
	DATE	18.05.95
	DRAWN	Za
	CHECKED	Za
	NORM	

E17	A66	X4.1
E17	A67	
E5F	A6C	
E5E	A6D	
	A6E	
	A6F	
	A73	
	A74	
963	964	
963	964	
965	966	
965	966	
724	725	
724	725	
722	723	
722	723	
720	721	
720	721	
71	72	X22.1B
71	72	
71	72	X22.1A
71	72	
21		X4.1
20		
911		
912		
913		
914		
915		
916		
917		
918		
958		
959		
961		
971		
972		
615		X27.1
616		
619		
620		
621		
622		
630		
631		
632		
633		

21		X27.1
20		
601		
602		
603		
604		
605		
606		
607		
608		
609		
610		
611		
623		
624		
627		
628		
629		
21		X10.1B
20		
801		
804		
806		
807		
21		X10.1A
20		
801		
804		
806		
807		
21		X2.1B
20		
101		
102		
103		
104		
105		
106		
107		
108		

21			X2.1A
20			
101			
102			
103			
104			
105			
106			
107			
108			
201	201	201	
207	207	207	
208	208	208	
209	209	209	
494	494	494	
201	201	201	
207	207	207	
208	208	208	
209	209	209	
488	488	488	
489	489	489	
490	490	490	
491	491	491	
492	492	492	
493	493	493	
495	495	495	
498	498	498	
499	499	499	
920	920	920	
41	41	41	X220.1
41	41	41	
21	21	21	
21	21	21	
21	21	21	
21	21	21	
21	21	21	
21	21	21	
21	21	21	
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20	20	20	
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20	20	20	
20	20	20	
20	20	20	

Xnnn.1 ==> STRAND 1 A ==> CAR 1
Xnnn.2 ==> STRAND 2 B ==> CAR 2
Xnnn.3 ==> STRAND 3
Xnnn.4 ==> STRAND 4
Xnnn.5 ==> STRAND 5
Xnnn.6 ==> STRAND 6

372-770-36-48

TERMINAL LIST
STRAND 1/2/3/4/5/6

E 116900 SHEET 5 NEXT 6

ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

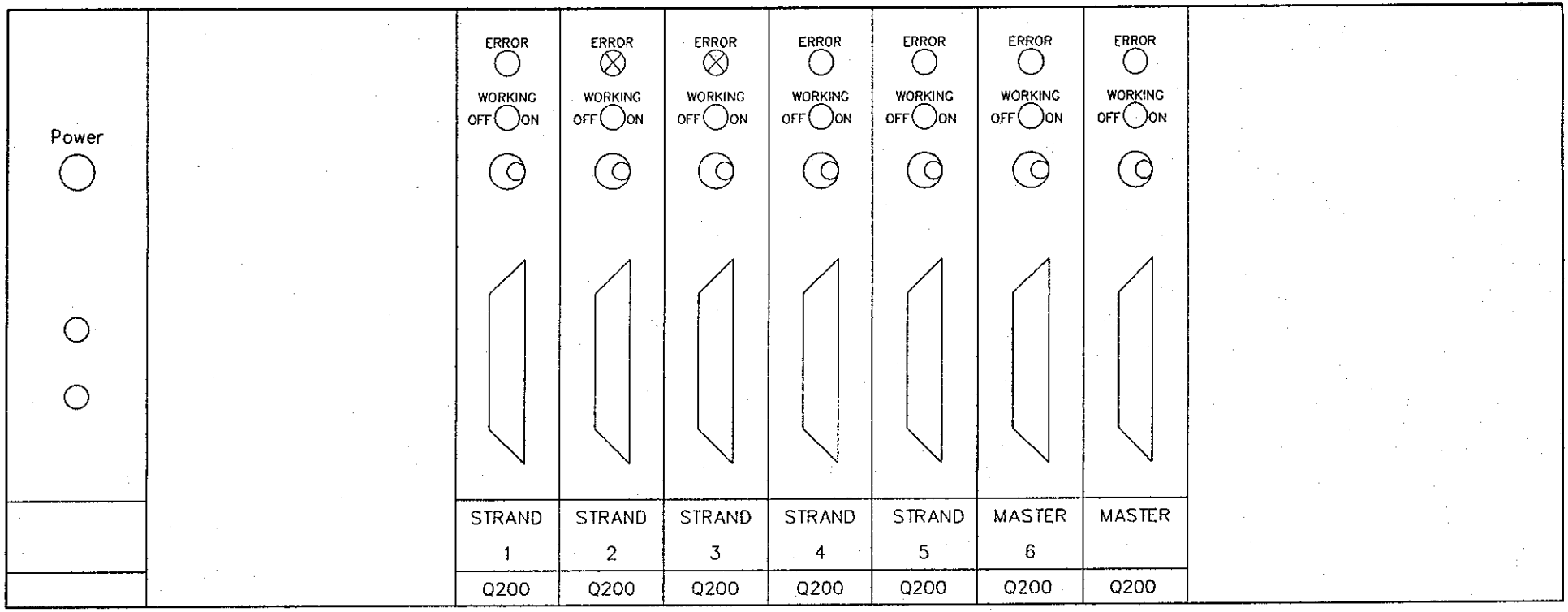
REVISION	DATE	NAME
	DATE	18.05.95
	DRAWN	Za
	CHECKED	Za
	NORM	

Serie Nr.	Adress	Name	Baude, Parity, Data, Stop	Mode	Response Mode
1-11-27	004	STRAND 1	2400, N, 8, 1	DATAGRAM	None
1-11-28	005	STRAND 2	2400, N, 8, 1	DATAGRAM	None
1-11-29	006	STRAND 3	2400, N, 8, 1	DATAGRAM	None
1-11-30	007	STRAND 4	2400, N, 8, 1	DATAGRAM	None
1-11-31	008	STRAND 5	2400, N, 8, 1	DATAGRAM	None
1-11-32	009	STRAND 6	2400, N, 8, 1	DATAGRAM	None
1-11-33	010	MASTER	9600, N, 8, 1	DATAGRAM	None

3772-770-36-49

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	LAN SETUP
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

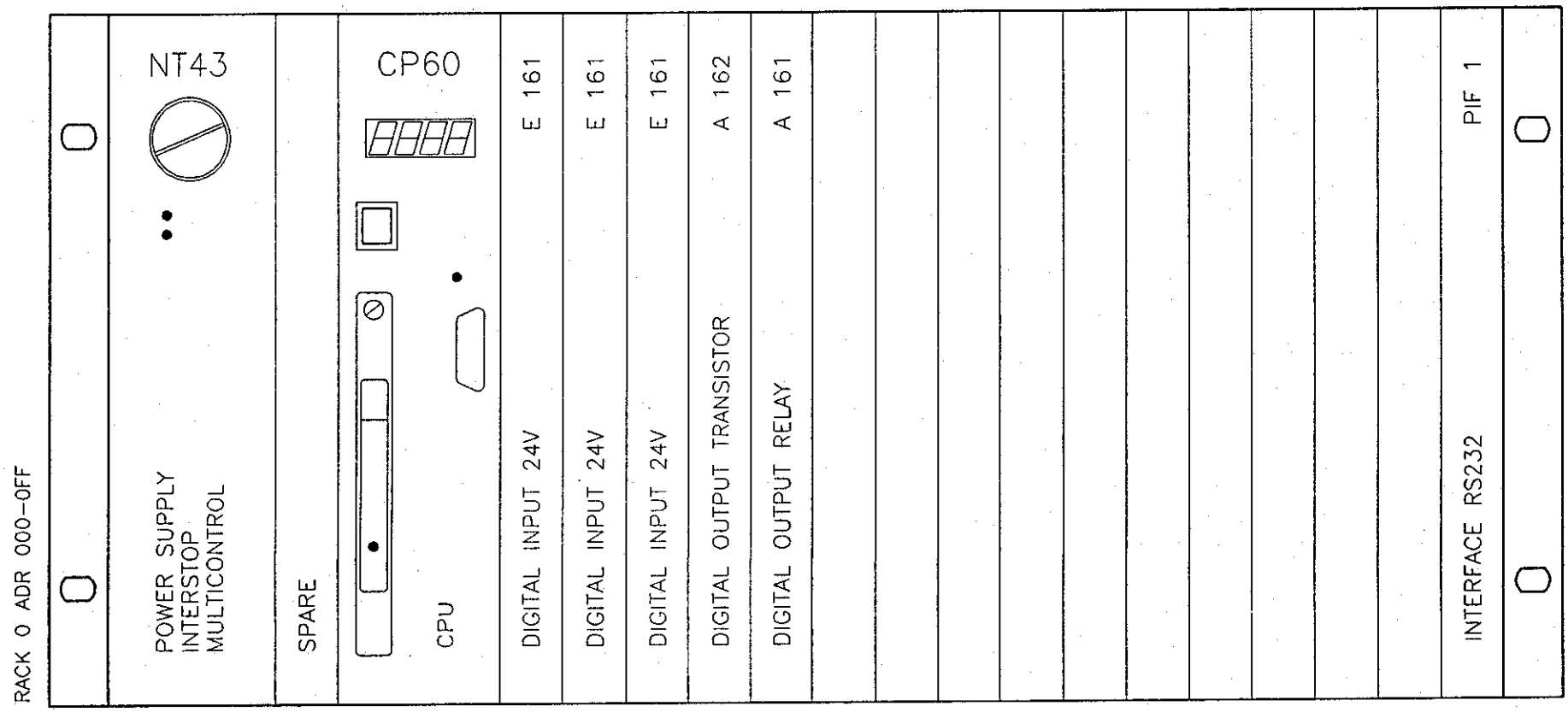
		=	
		+	
E	116900	SHEET	6
		NEXT	7



3112-770-36-50

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	LAN FRONT
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

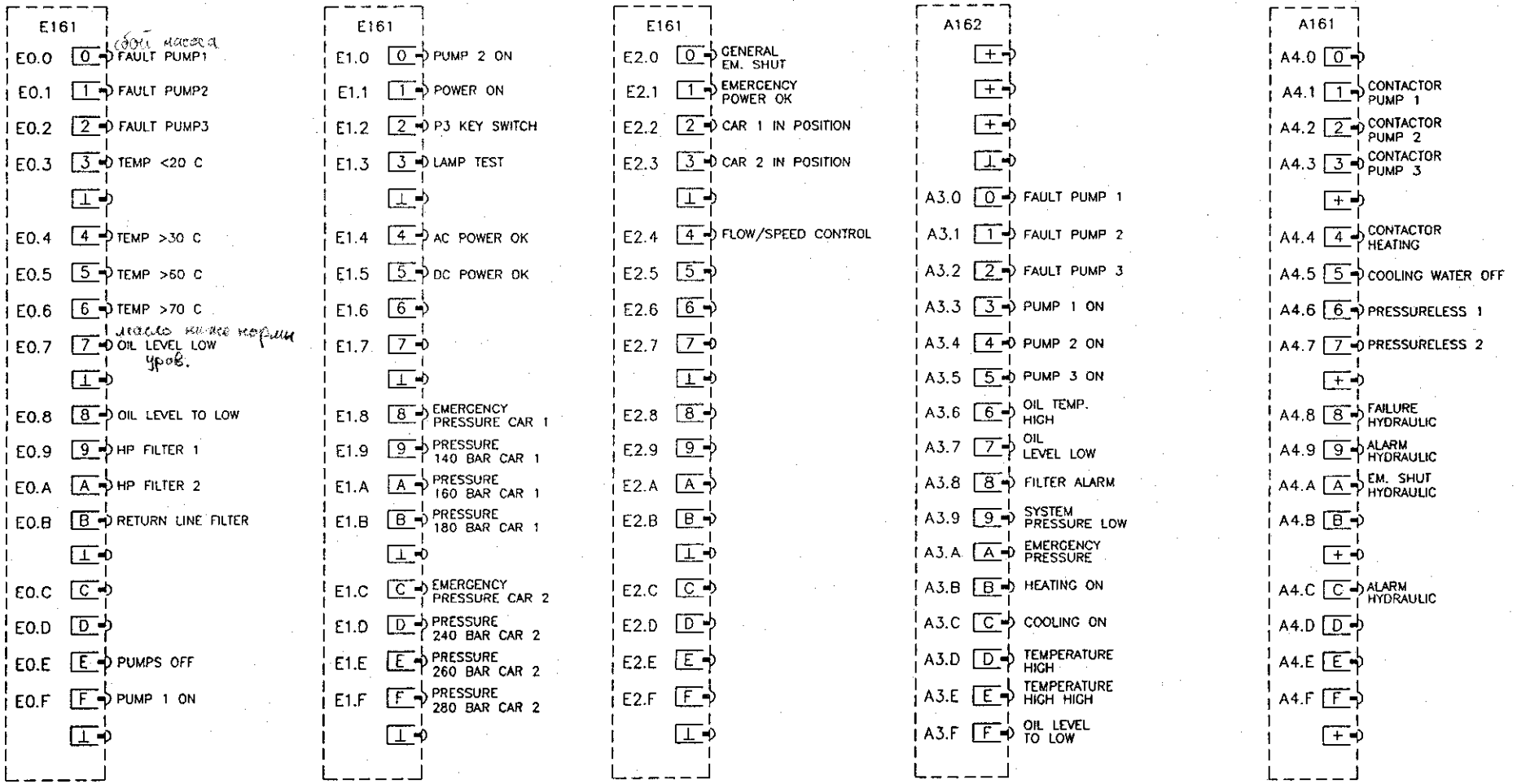
		=	
		+	
E	116900	SHEET	7
		NEXT	8



3172-770-36-51

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	HYDRAULIC MULTICONTROL
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	116900	SHEET	8
		NEXT	9



3П2-770-36-52

			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

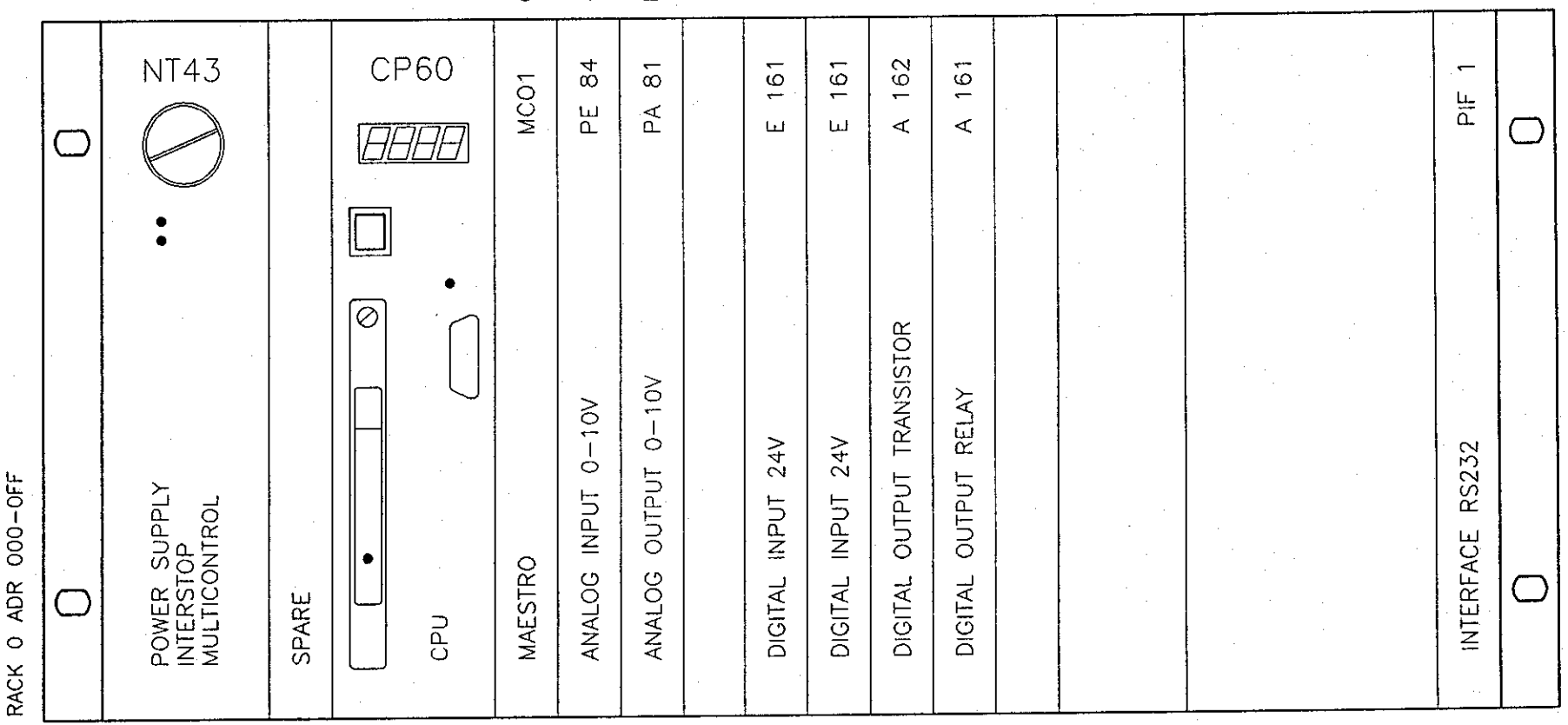
RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

HYDRAULIC INPUT/OUTPUT LIST

E	116900	SHEET	9
		NEXT	10



3112-770-36-53

			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

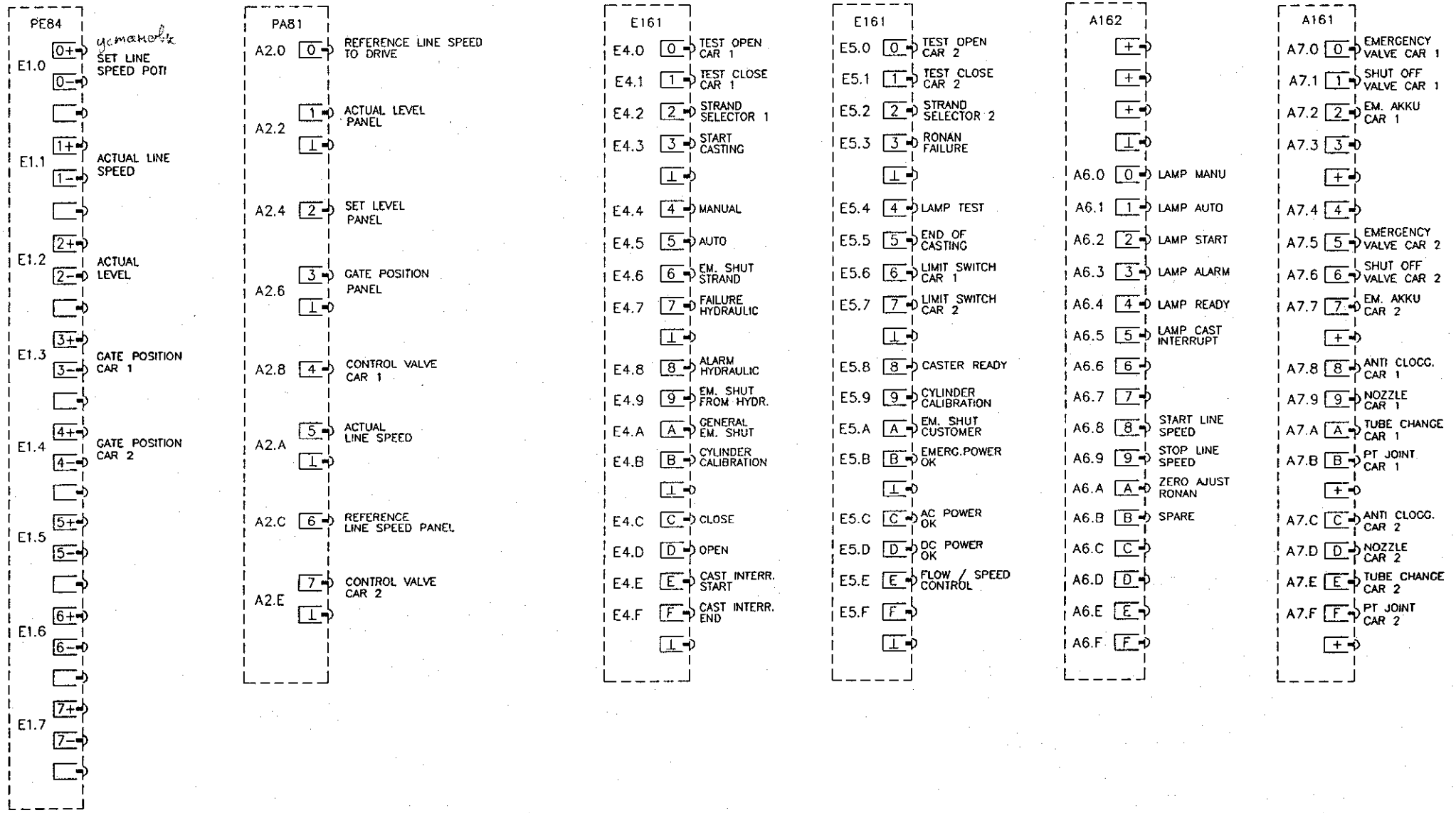
RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

STRAND 1 – 6
MULTICONTROL

E | 116900 | SHEET 10 | NEXT 11



3N2-770-36-54

		DATE	18.05.95	
		DRAWN	Za	
		CHECKED	Za	
		NORM		
REVISION	DATE	NAME		

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

STRAND 1-6
INPUT/OUTPUT
LIST

=
+

E | 116900 | SHEET 11
NEXT -

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333 555, Fax (042) 31 28 64, Telex 862 128 ist ch

INTERSTOP

Order Parts List

STEUERSCHRANK 4-TEILIG KOMPL.
2100x2400x600 HxBxT
ROKOP PENNSYLV. USA 2014/419

Part no.: 116901 Project no. 2014/419
Dwg no. : E116900 ROKOP
kg/piece:

Page : 1
Print : 09/06/95
Issue : 03/04/95
Doc no. : 8341

3100-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
1	P	**112834** CONTROL CABINET PS 4806 4-PARTS STANDARD			1	pcs
3	P	**114716** CONTROL SWITCHES, TIME RELAYS a.s.o.			1	pcs
4	P	**114528** BUILDERS' FITTINGS (Cables, hoses a.s.o.)			1	pcs
5	P	**112829** PLC RACK COMPLETE HYDRAULIC			1	pcs
7	P	**112830** PLC RACK COMPLETE STRAND			6	pcs
9		**109618** EMERGENCY POWER UNIT 2x24VDC/6-7A TYPE USV 2011			7	pcs
11		**114941** COVER PLATE 19" 1HU			1	pcs
13		**114943** COVER PLATE 19" 3HU			3	pcs
14		**114944** COVER PLATE 19" 4HU			1	pcs
15		**114947** COVER PLATE 19" 7HU			1	pcs
17		**114949** COVER PLATE 19" 9HU			1	pcs
19		**114952** COVER PLATE 19" 12HU			3	pcs

End of list

312-770-36-55

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

CONTROL SWITCHES,
TIME RELAYS a.s.o.

Part no.: 114716 Project no. 2014/419 Page : 1
Dwg no. : ROKOP Print : 09/06/95
kg/piece: Issue : 03/04/95
Doc no. : 8344

3100-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
1		**106490** MAIN CONTROL SWITCH 32A/11KW TYPE 3LD1 204-0TB53			1	pcs
3		**107133** PROTECTIVE MOTOR SWITCH 16-25A 1NO/1NC TYPE 3VU16 00-1MN00	E106479		1	pcs
5		**105873** OVER-CURRENT RELEASE 10A/1 POLE TYPE 5SX2 110-3			21	pcs
7		**104493** RELAY 1NO/1NC 8A/150W 24VDC TYPE EGR 3/24V	E104510		20	pcs
9		**107127** TIME RELAY MULTIFUNCTION 1NO/NC TYPE 7PU43 20-2AN20	E107129		5	pcs
11		**112821** FAN 19" TYPE SK 3140			4	pcs

End of list

3172-770-36-56

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

PLC RACK COMPLETE HYDRAULIC

Part no.: 112829 Project no. 2014/419 Page : 1
Dwg no. : ROKOP Print : 09/06/95
kg/piece: Issue : 03/04/95
Doc no. : 8345

3100-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
1		**104464** RACK MULTICONTROL 19" TYPE ECR165-0			1	pcs
3		**114750** POWER SUPPLY MODULE NT43 24VDC/7A TYPE ECNT43-0			1	pcs
5		**104478** BATTERY LITHIUM TYPE BRLITB-0			1	pcs
7		**109863** CENTRAL PROCESSING UNIT CP60 TYPE ECCP60-01			1	pcs
9		**104596** USER PROGRAMME MEMORY FP128 128KB FLASH-PROM TYPE ECFP128-0			1	pcs
11		**104471** DIGITAL INPUT MODULE E161 24V AC/DC TYPE ECE161-0			3	pcs
13		**104472** DIGITAL OUTPUT MODULE A162 24VDC/2A TRANSISTOR TYPE ECA162-01			1	pcs
15		**104473** DIGITAL OUTPUT MODULE A161 220VAC/2A RELAY TYPE ECA161-01			1	pcs
17		**112836** SLOT COVER FOR ONE SLOT TYPE ECBL01-0			2	pcs
19		**114746** SLOT COVER FOR TWO SLOTS			1	pcs

372-770-36-57

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
		TYPE ECBL02-0				
21		114747 SLOT COVER FOR FOUR SLOTS TYPE ECBL04-0			2	pcs
23		104467 PARALLEL PROCESSOR PP40 TYPE ECCPP40-01			1	pcs
25		104475 USER PROGRAMME MEMORY EE32 16KB EEPROM / 16KB RAM TYPE ECEE32-0			1	pcs
27		104474 INTERFACE MODULE PIF1 RS232/TTY TYPE MDPIF1-0			1	pcs
29		112835 COVER FOR CABLES 19" TYPE ECMB01-0			1	pcs

End of list

372-770-36-58

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

PLC RACK COMPLETE STRAND

Part no.: 112830 Project no. 2014/419
Dwg no. : ROKOP
kg/piece:

3100-018.FOE

Page : 1
Print : 09/06/95
Issue : 03/04/95
Doc no. : 8346

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
1		**104464** RACK MULTICONTROL 19" TYPE ECR165-0			1	pcs
3		**114750** POWER SUPPLY MODULE NT43 24VDC/7A TYPE ECNT43-0			1	pcs
5		**104478** BATTERY LITHIUM TYPE BRLITB-0			1	pcs
7		**109863** CENTRAL PROCESSING UNIT CP60 TYPE ECCP60-01			1	pcs
9		**104596** USER PROGRAMME MEMORY FP128 128KB FLASH-PROM TYPE ECFP128-0			1	pcs
11		**116295** MAESTRO CO-PROCESSOR MCO1 WITH 1MB EPROM TYPE MCO1			1	pcs
15		**108811** ANALOG INPUT MODULE PE84 0-10V TYPE ECPE84-0			1	pcs
17		**104469** ANALOG OUTPUT MODULE PA81 0-10V TYPE ECPA81-0			1	pcs
19		**104471** DIGITAL INPUT MODULE E161 24V AC/DC TYPE ECE161-0			2	pcs
21		**104472**			1	pcs

3172-770-36-59

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 31 28 64, Telex 862 128 ist ch

INTERSTOP

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
		DIGITAL OUTPUT MODULE A162 24VDC/2A TRANSISTOR TYPE ECA162-01				
23		**104473** DIGITAL OUTPUT MODULE A161 220VAC/2A RELAY TYPE ECA161-01			2	pcs
25		**112836** SLOT COVER FOR ONE SLOT TYPE ECBL01-0			3	pcs
27		**114746** SLOT COVER FOR TWO SLOTS TYPE ECBL02-0			1	pcs
29		**114747** SLOT COVER FOR FOUR SLOTS TYPE ECBL04-0			1	pcs
31		**104474** INTERFACE MODULE PIF1 RS232/TTY TYPE MDPIF1-0			1	pcs
33		**112835** COVER FOR CABLES 19" TYPE ECMB01-0			1	pcs

End of list

3172-770-36-60

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

PLC RACK COMPLETE STRAND

Part no.: 112830 Project no. 2014/419 Page : 1
Dwg no. : ROKOP Print : 09/06/95
kg/piece: Issue : 05/04/95
Doc no. : 8381

3100-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
1		104464 RACK MULTICONTROL 19" TYPE ECR165-0			1	pcs
3		114750 POWER SUPPLY MODULE NT43 24VDC/7A TYPE ECNT43-0			1	pcs
5		104478 BATTERY LITHIUM TYPE BRLITB-0			1	pcs
7		109863 CENTRAL PROCESSING UNIT CP60 TYPE ECCP60-01			1	pcs
9		104596 USER PROGRAMME MEMORY FP128 128KB FLASH-PROM TYPE ECFP128-0			1	pcs
11		116295 MAESTRO CO-PROCESSOR MCO1 WITH 1MB EPROM TYPE MCO1			1	pcs
15		108811 ANALOG INPUT MODULE PE84 0-10V TYPE ECPE84-0			1	pcs
17		104469 ANALOG OUTPUT MODULE PA81 0-10V TYPE ECPA81-0			1	pcs
19		104471 DIGITAL INPUT MODULE E161 24V AC/DC TYPE ECE161-0			2	pcs
21		104472			1	pcs

372-770-36-61

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 31 28 64, Telex 862128 ist ch

INTERSTOP

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
		DIGITAL OUTPUT MODULE A162 24VDC/2A TRANSISTOR TYPE ECA162-01				
23		**104473** DIGITAL OUTPUT MODULE A161 220VAC/2A RELAY TYPE ECA161-01			1	pcs
25		**112836** SLOT COVER FOR ONE SLOT TYPE ECBL01-0			3	pcs
27		**114746** SLOT COVER FOR TWO SLOTS TYPE ECBL02-0			1	pcs
29		**114747** SLOT COVER FOR FOUR SLOTS TYPE ECBL04-0			1	pcs
31		**104474** INTERFACE MODULE PIF1 RS232/TTY TYPE MDPIF1-0			1	pcs
33		**112835** COVER FOR CABLES 19" TYPE ECMB01-0			1	pcs

End of list

3M2-770-36-62

NO.		INDEX
2–4	POWER SUPPLY 3x380V/220V	
9	POWER SUPPLY LAN	
10,11	EMERGENCY SYSTEM	
13–19	BERTHOLD STRAND 1–4 / POWER SUPPLY PLC	
30–36	HYDRAULIC/LADLE PLC	
40–49	STRAND 1 PLC	
50–59	STRAND 2 PLC	
60–69	STRAND 3 PLC	
70–79	STRAND 4 PLC	
80–89	STRAND 5 PLC	
90–99	STRAND 6 PLC	

3П2-770-36-63

REVISION	DATE	NAME		
			DATE	14.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	

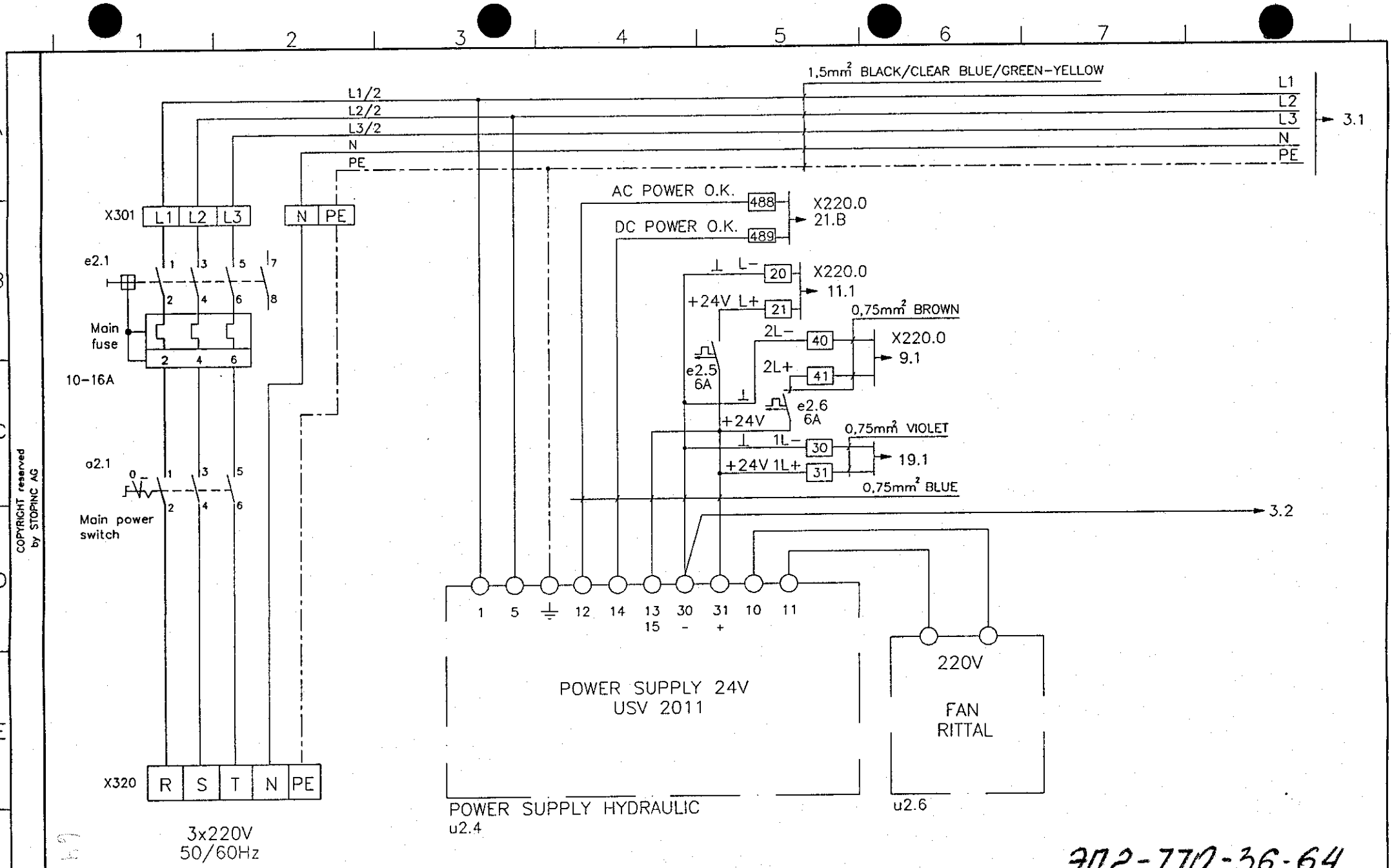
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

ELECTRICAL DIAGRAM
PLC

E	116902	SHEET	1
		NEXT	2



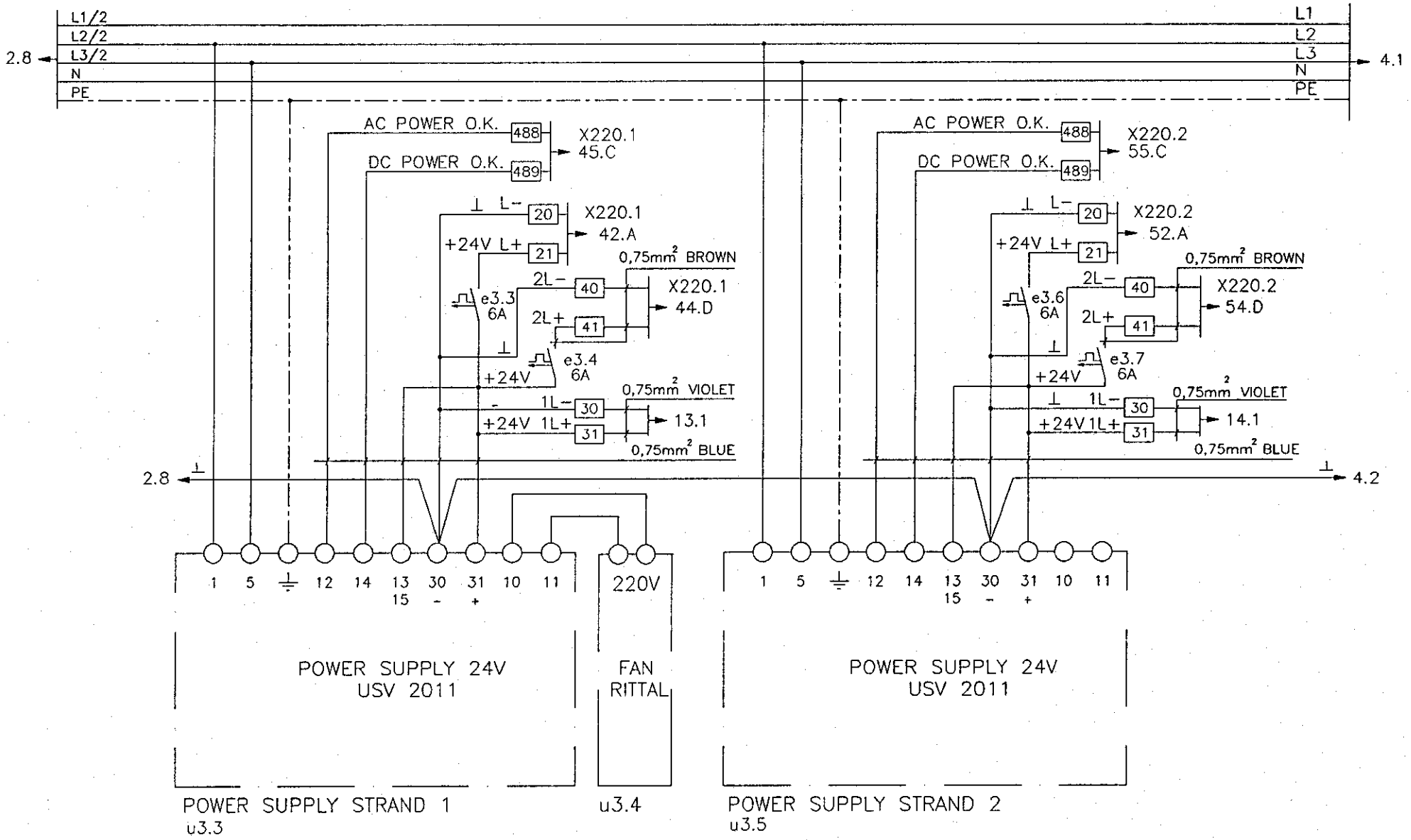
3П2-770-36-64

		DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419
		DRAWN	Za	
		CHECKED	Za	
		NORM		
REVISION	DATE	NAME		ORIGIN / REPL.FOR

ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stoping Aktiengesellschaft CH-6341 BAAR

CABINET HYDRAULIC
POWER SUPPLY
3x220V

E	116902	SHEET	2
		NEXT	3



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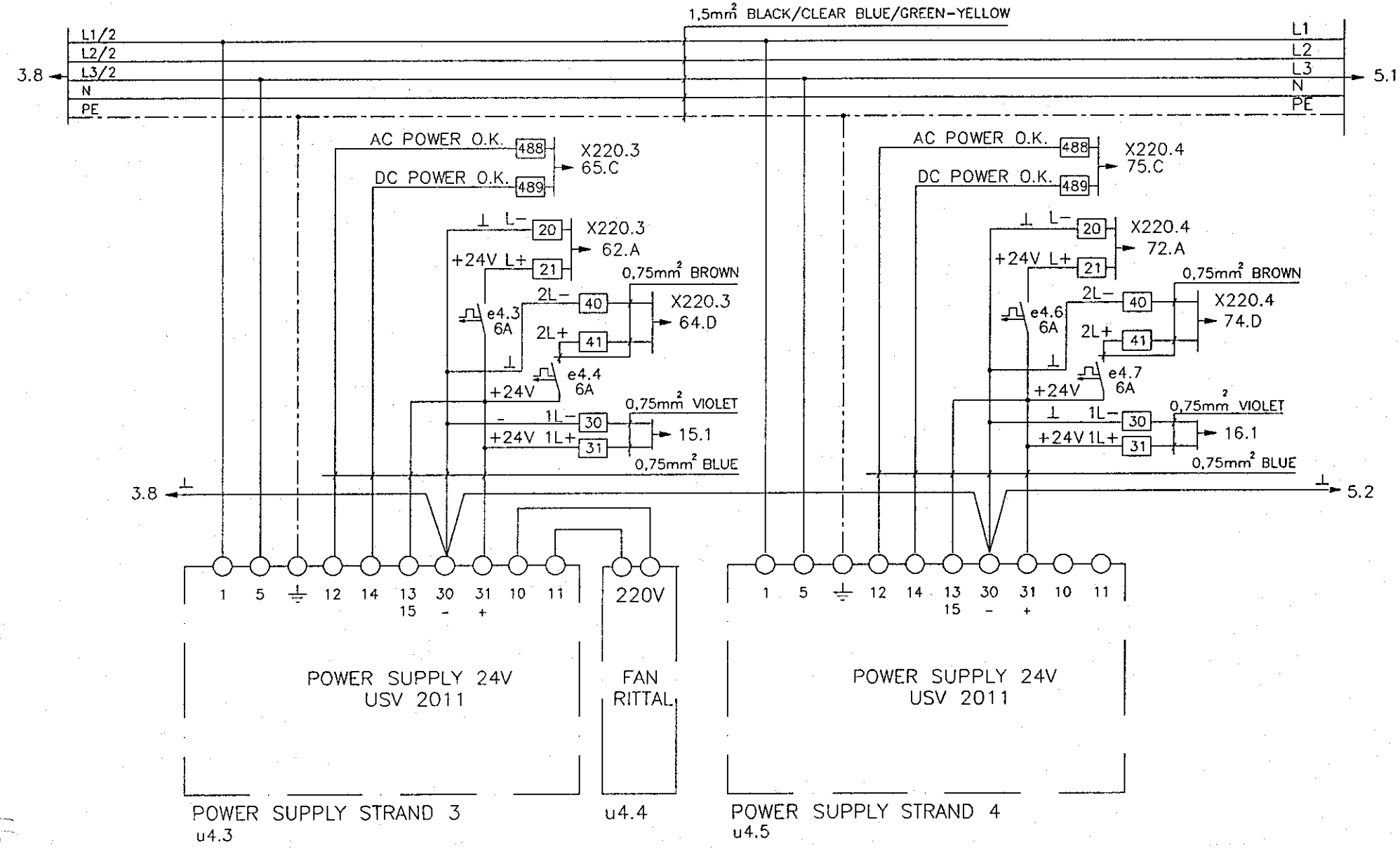
3172-770-36-65

			DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	POWER SUPPLY 3x220V
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

=			
+			
E	116902	SHEET	3
		NEXT	4



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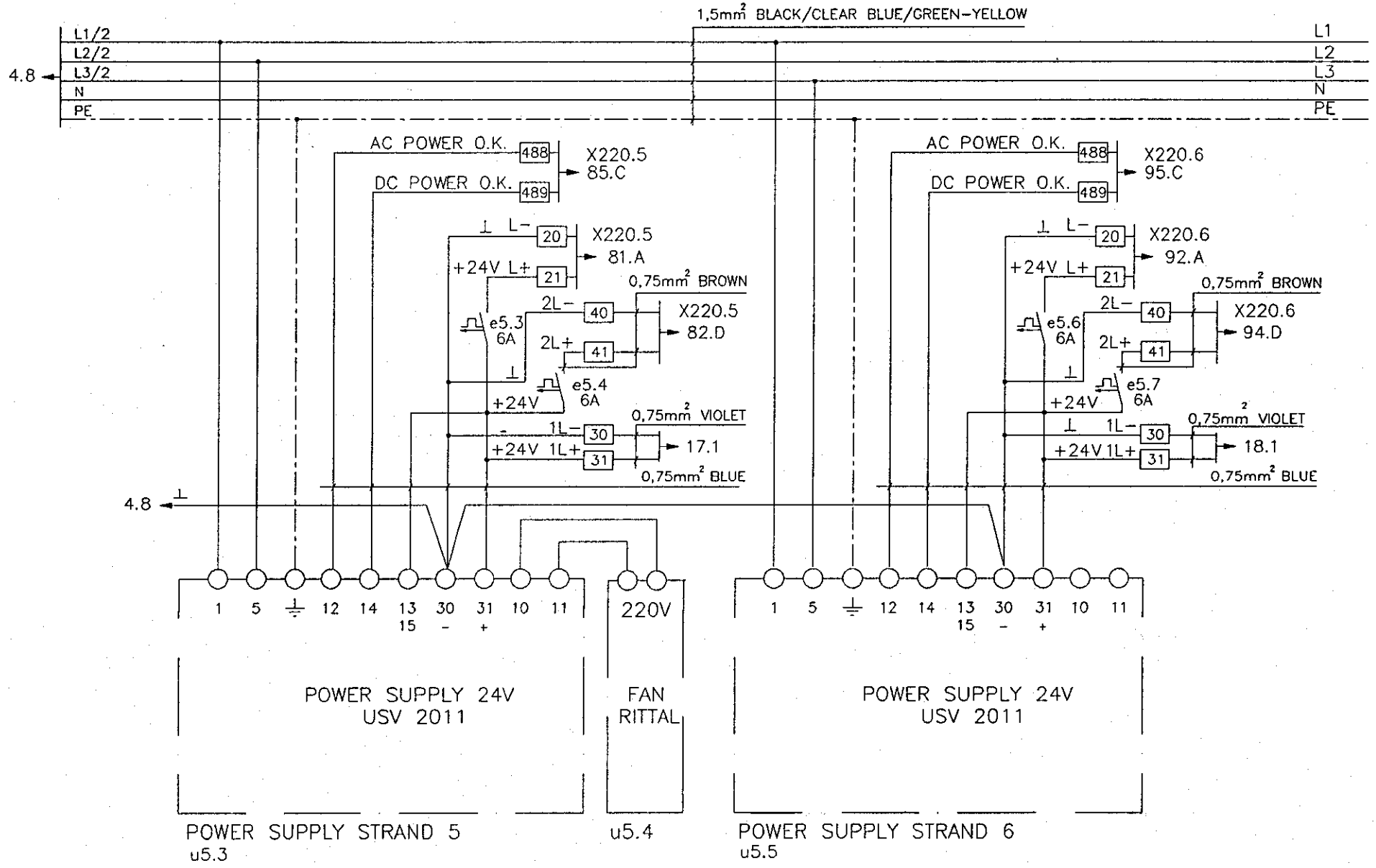
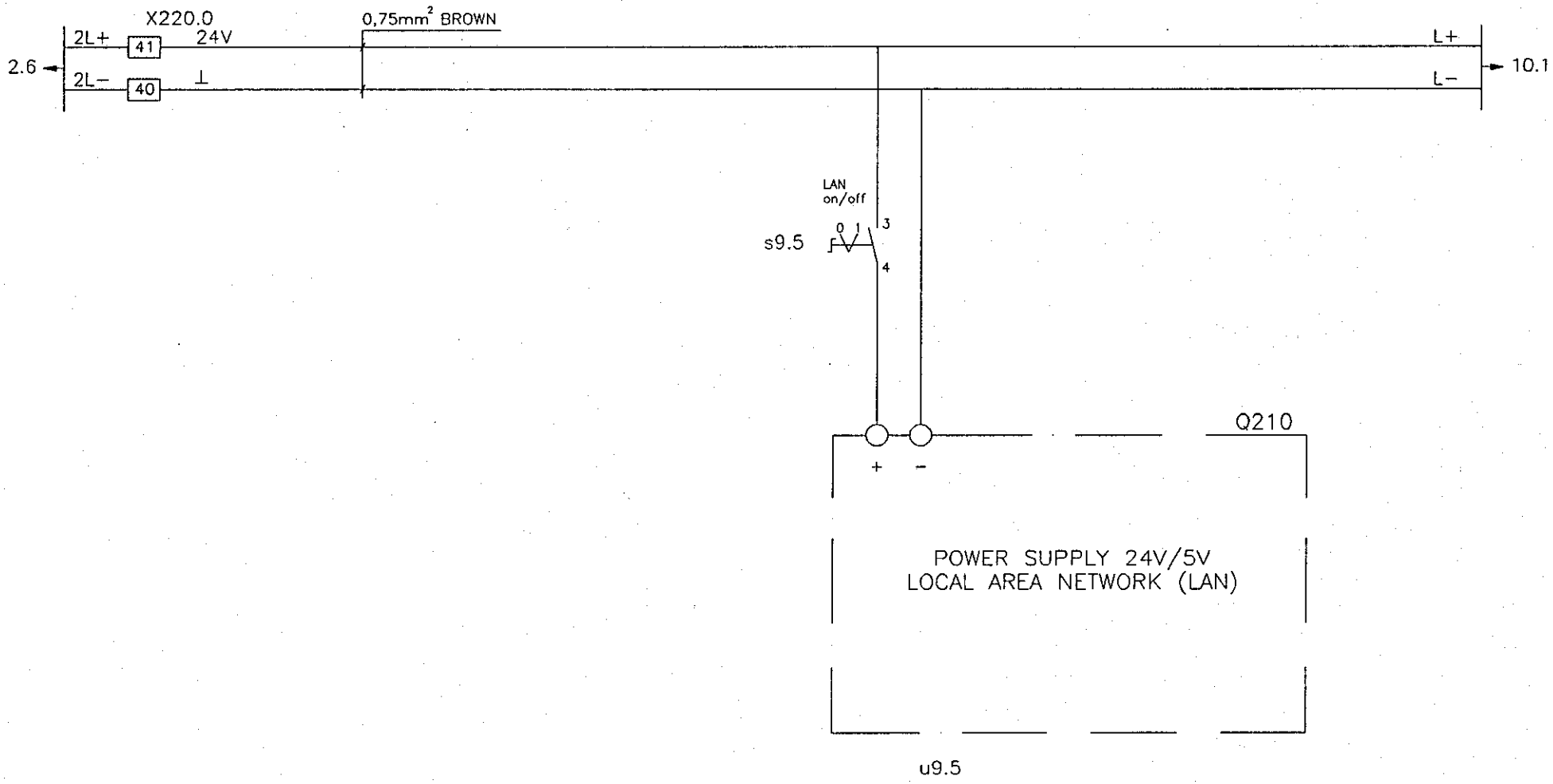
			DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	POWER SUPPLY 3x220V
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

E	116902	SHEET	4
		NEXT	5



			DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	POWER SUPPLY 3x220V
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

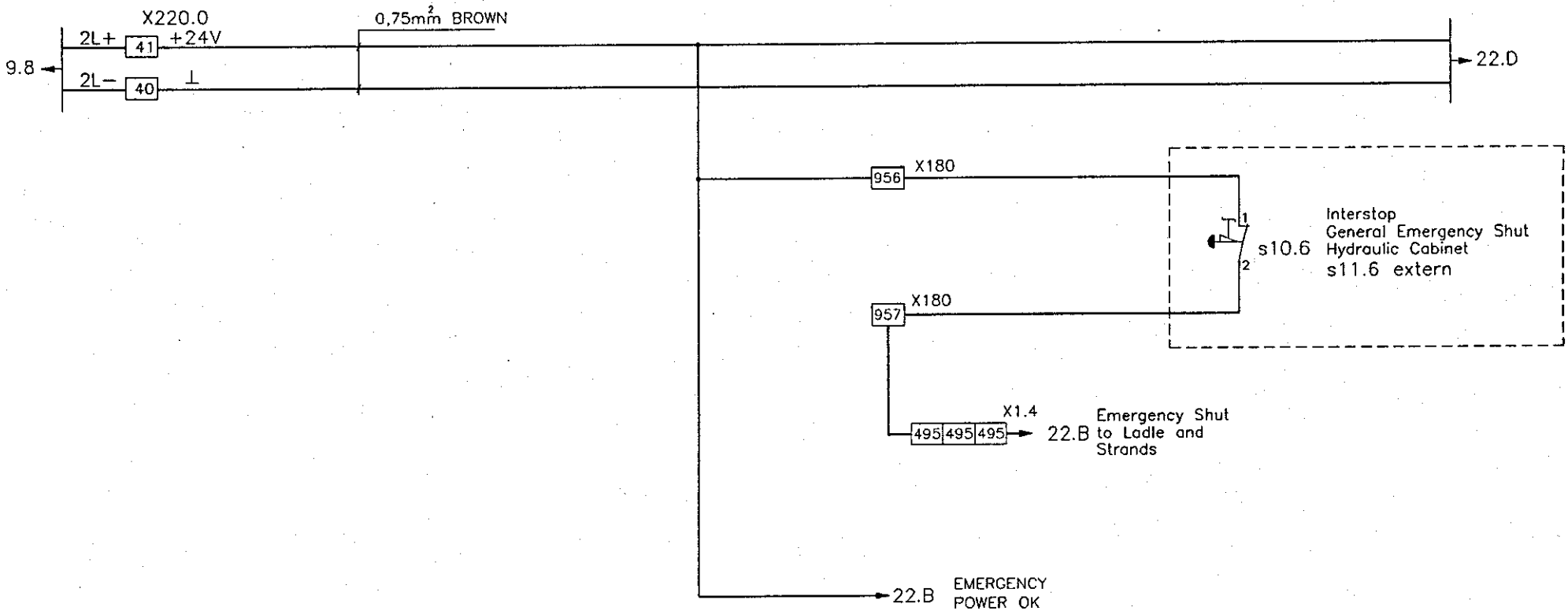
=			
+			
E	116902	SHEET	5
		NEXT	9



372-770-36-68

			DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	CABINET HYDRAULIC POWER SUPPLY LAN
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	116902	SHEET	9
		NEXT	10

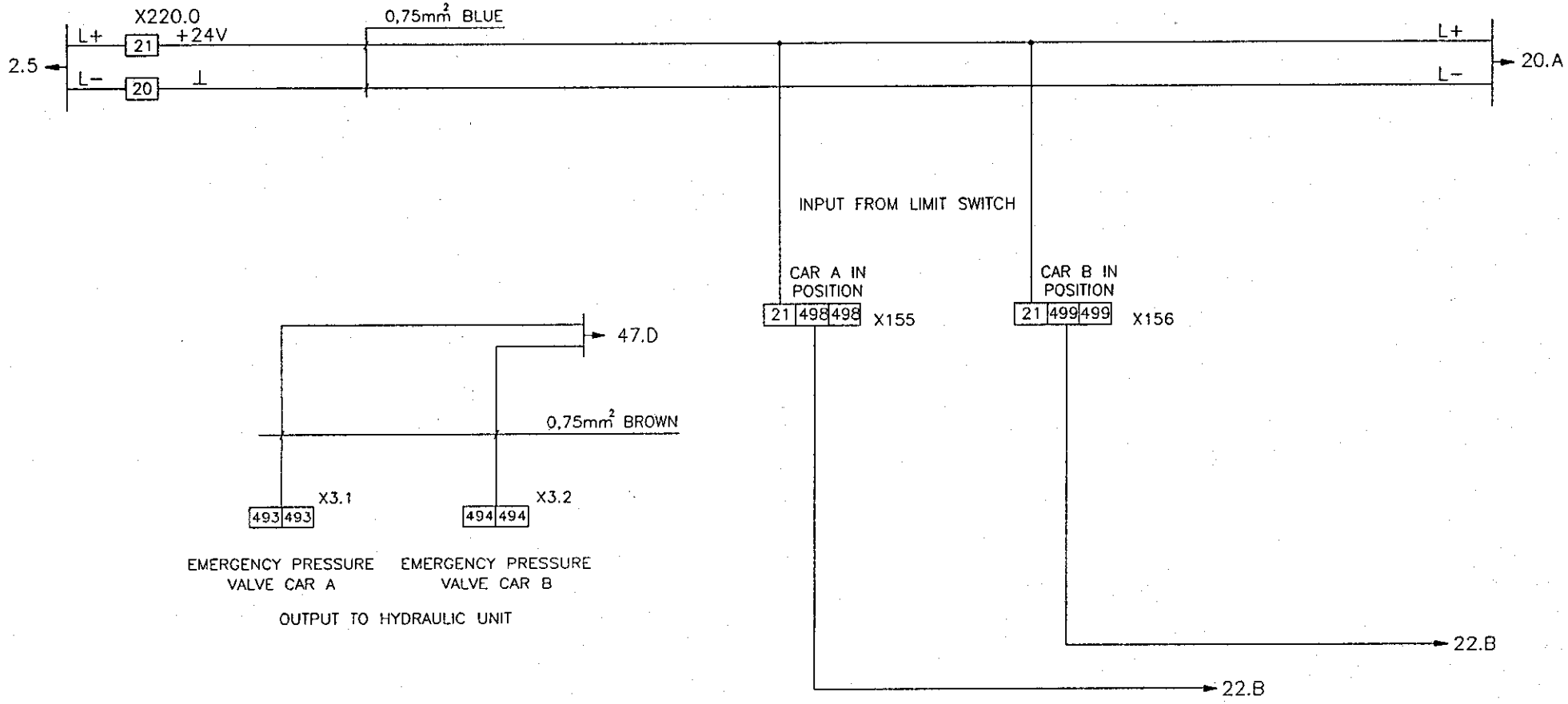


CABINET HYDRAULIC

ЭП2-770-36-69

			DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	EMERGENCY SYSTEM
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

=			
+			
E	116902	SHEET	10
		NEXT	11



CABINET HYDRAULIC

3T2-770-36-70

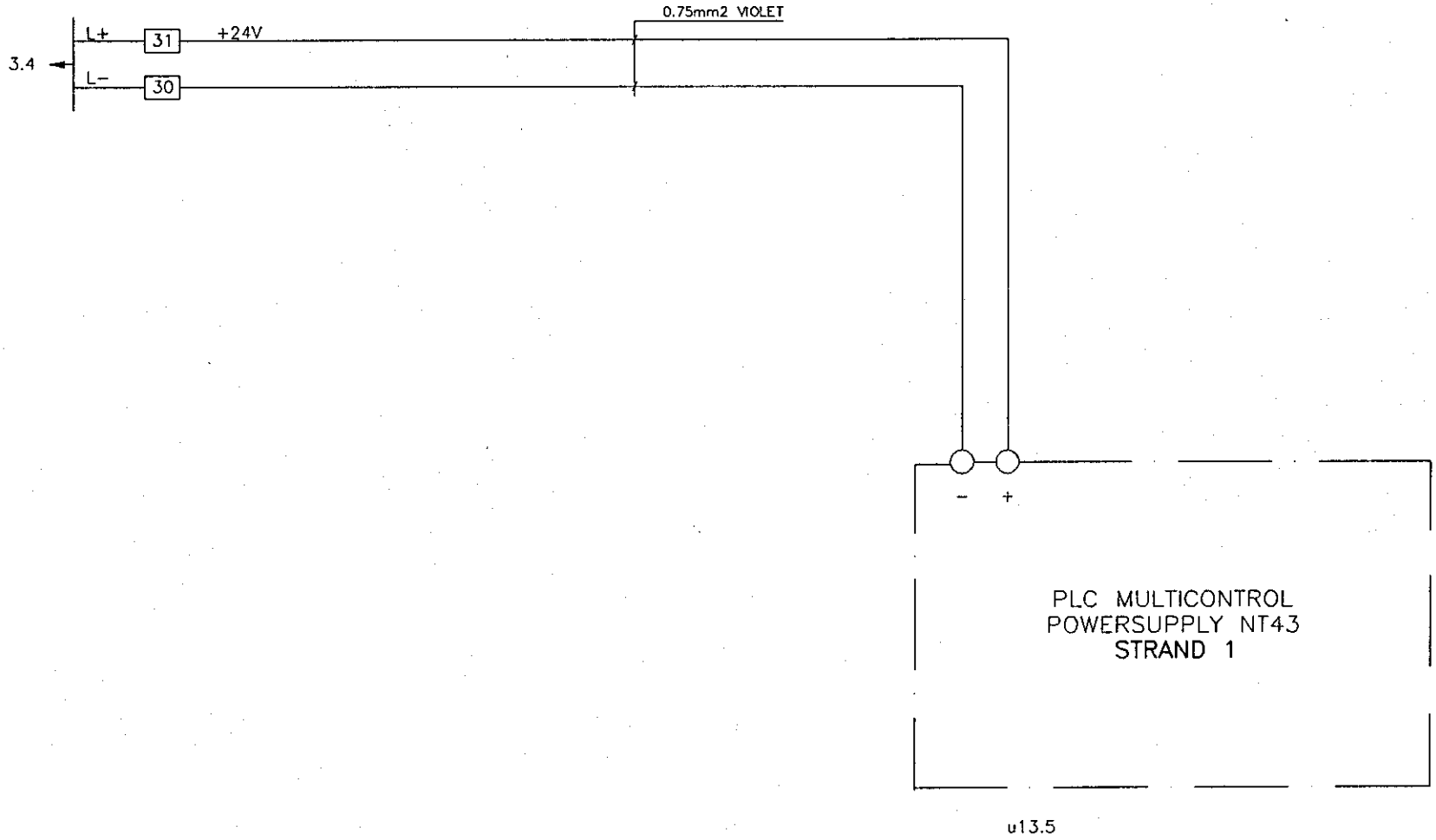
		DATE	14.05.95	
		DRAWN	Za	
		CHECKED	Za	
		NORM		
REVISION	DATE	NAME	ORIGIN	REPL.FOR

RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

EMERGENCY SYSTEM

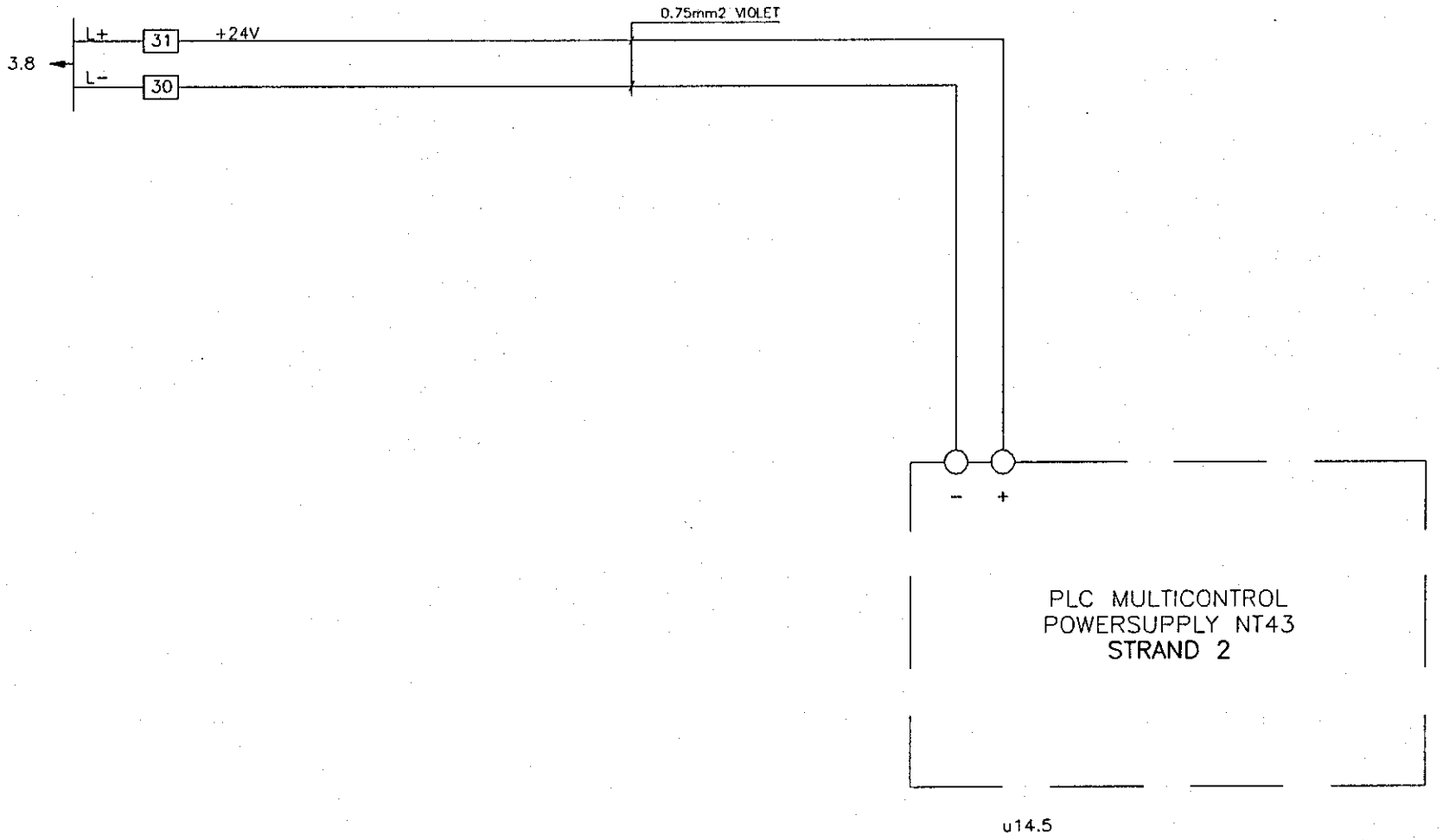
E	116902	SHEET 11
		NEXT 13



372-770-36-71

			DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	POWER SUPPLY +24V
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

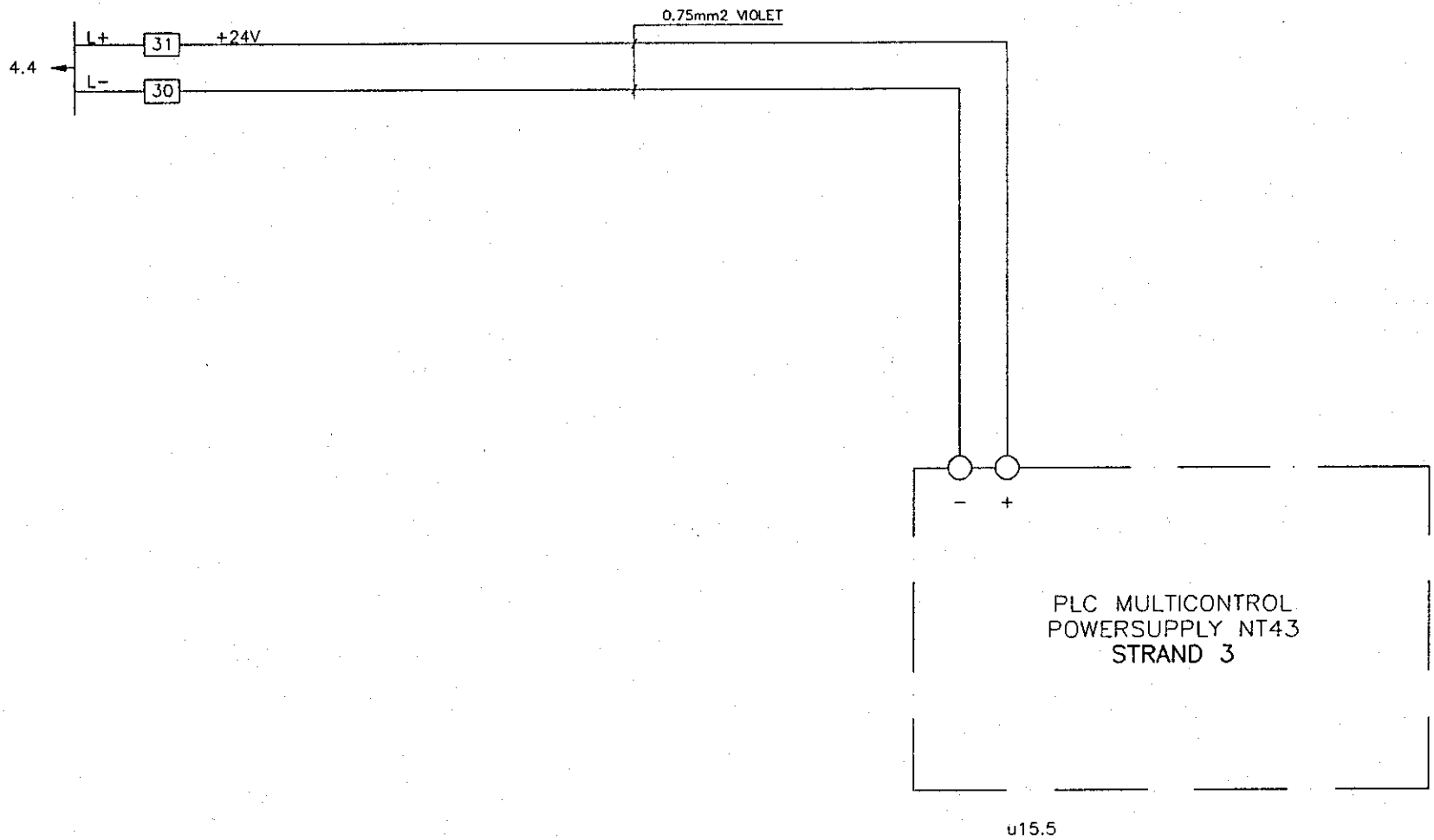
=			
+			
E	116902	SHEET	13
		NEXT	14



372-770-36-72

			DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	POWER SUPPLY +24V
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	116902	SHEET	14
		NEXT	15



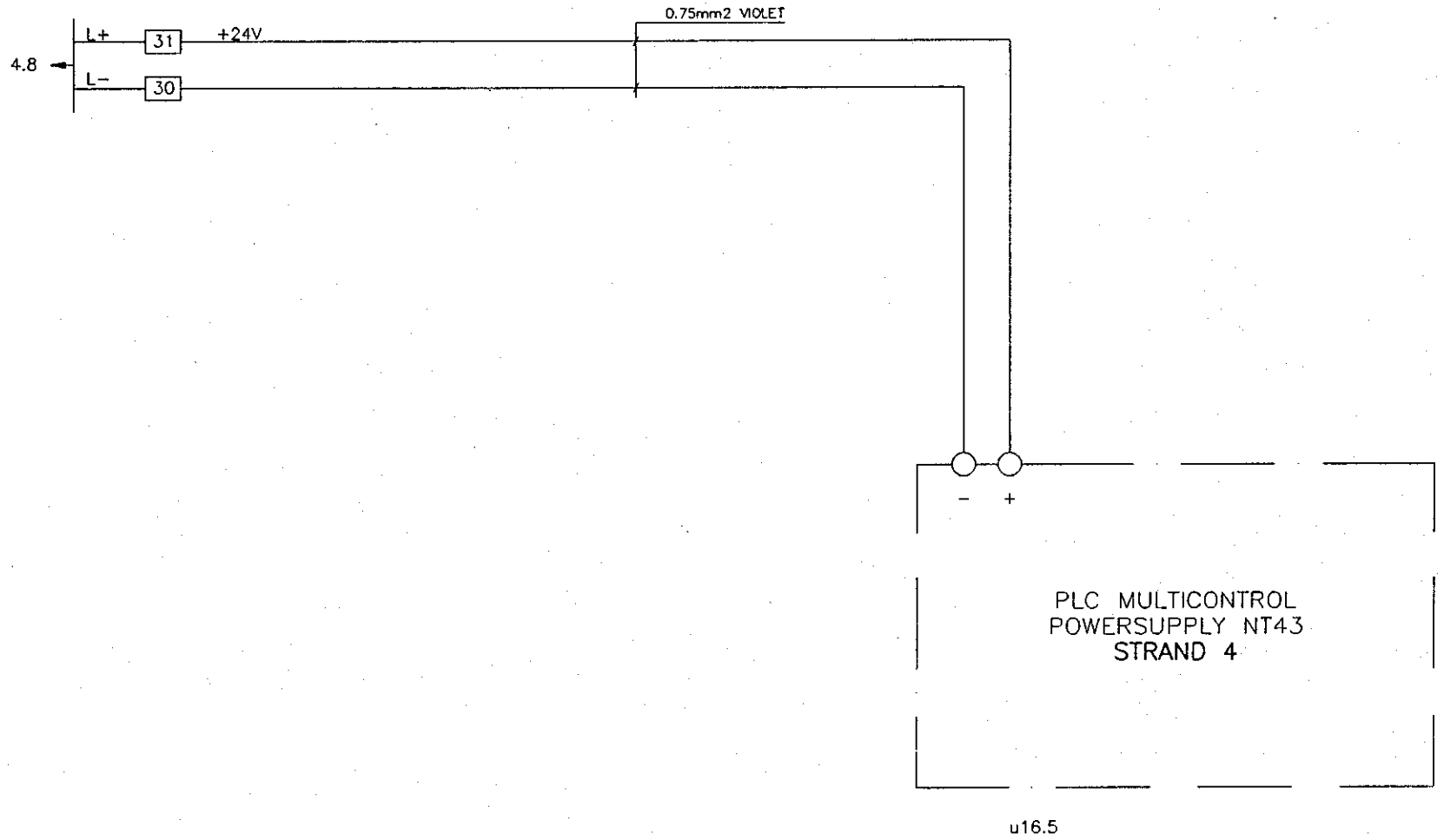
3172-770-36-73

		DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419
		DRAWN	Za	
		CHECKED	Za	
		NORM		
REVISION	DATE NAME	ORIGIN	REPL.FOR	

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

POWER SUPPLY
+24V

		=	
		+	
E	116902	SHEET	15
		NEXT	16



3112-770-36-74

			DATE	14.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

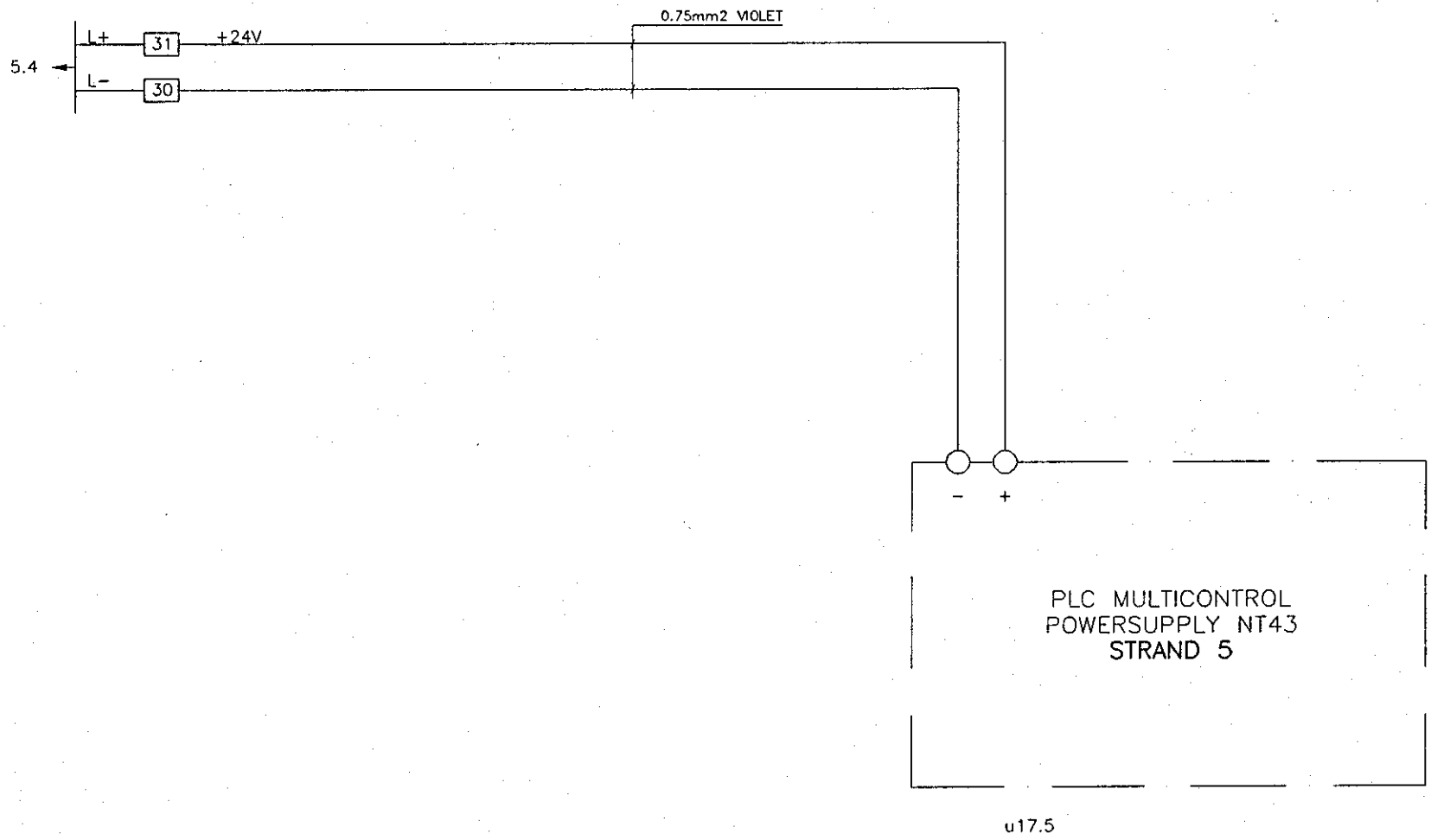
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

POWER SUPPLY
+24V

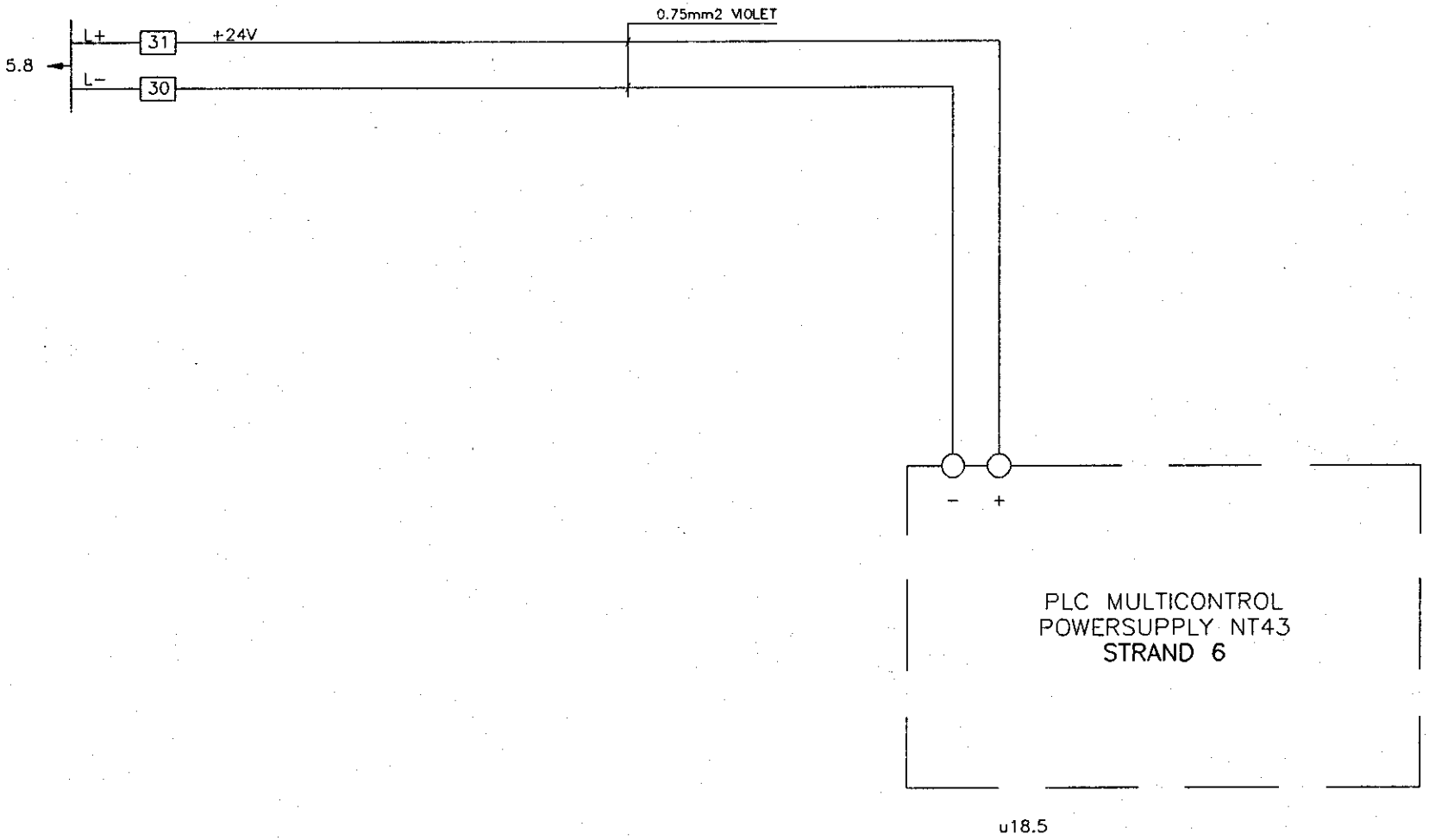
E	116902	SHEET 16
		NEXT 17



3772-770-36-75

			DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	POWER SUPPLY +24V
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL FOR	

		=	
		+	
E	116902	SHEET	17
		NEXT	18



3172-770-36-76

			DATE	14.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

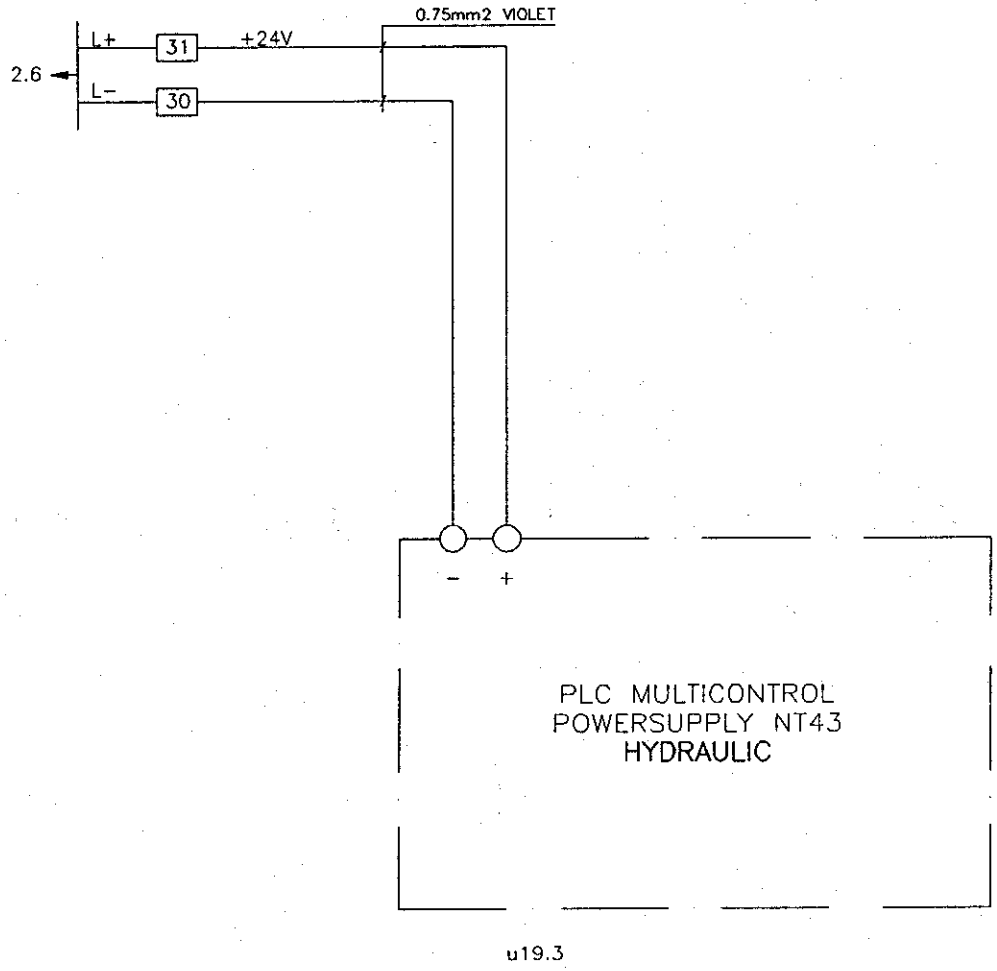
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

POWER SUPPLY
+24V

		=	
		+	
E	116902	SHEET	18
		NEXT	19



CABINET HYDRAULIC

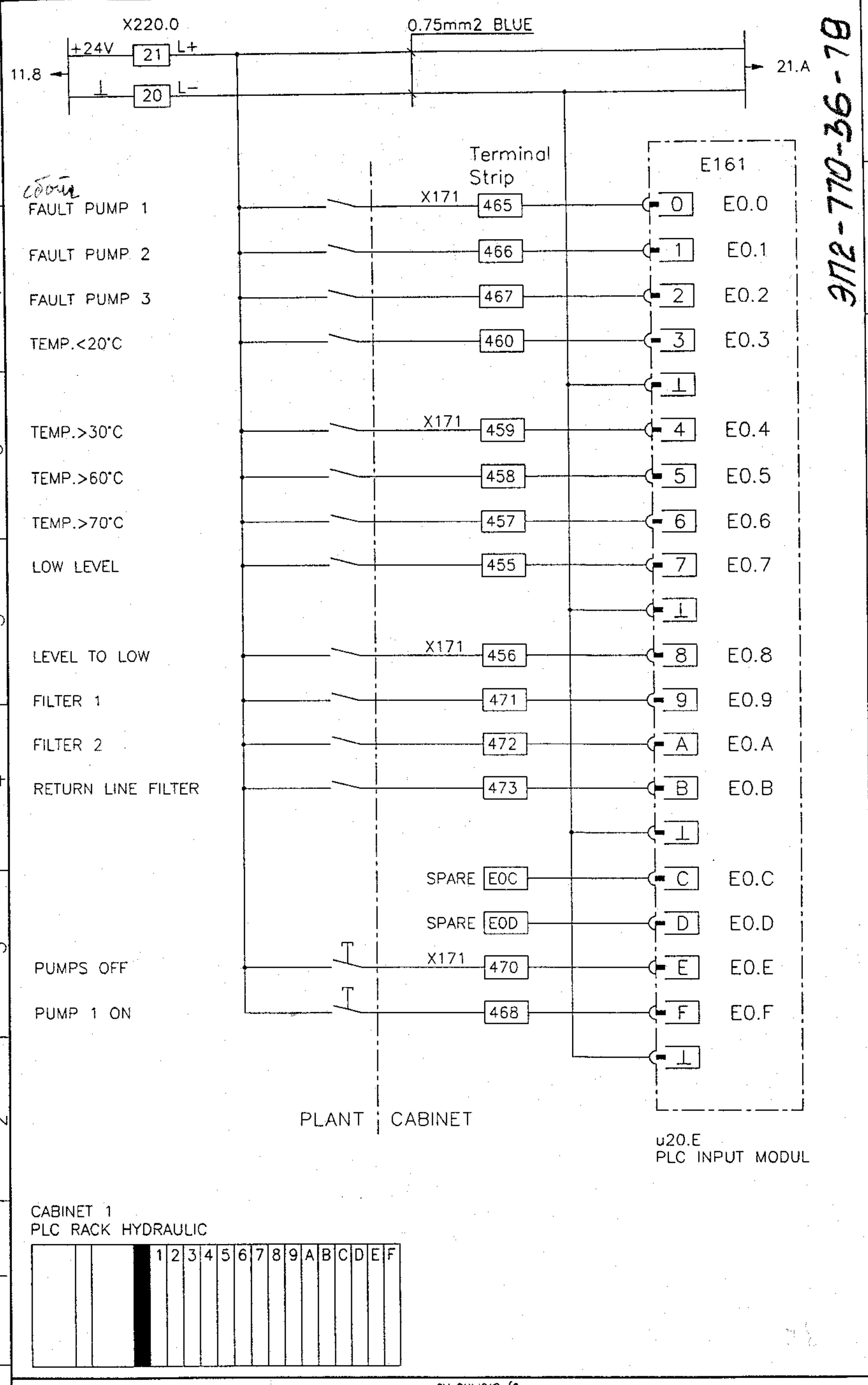
3П2-770-36-77

			DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA USA	POWER SUPPLY +24V
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

= +

E | 116902 | SHEET 19 | NEXT 20



SHEET 20
NEXT 21
= +
116902
E

HYDRAULIC
PLC

ROKOP PITTSBURGH, PENNSYLVANIA USA
INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

DATE	14.05.95
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ORIGIN
REPL.FOR
NAME
DATE
REVISION

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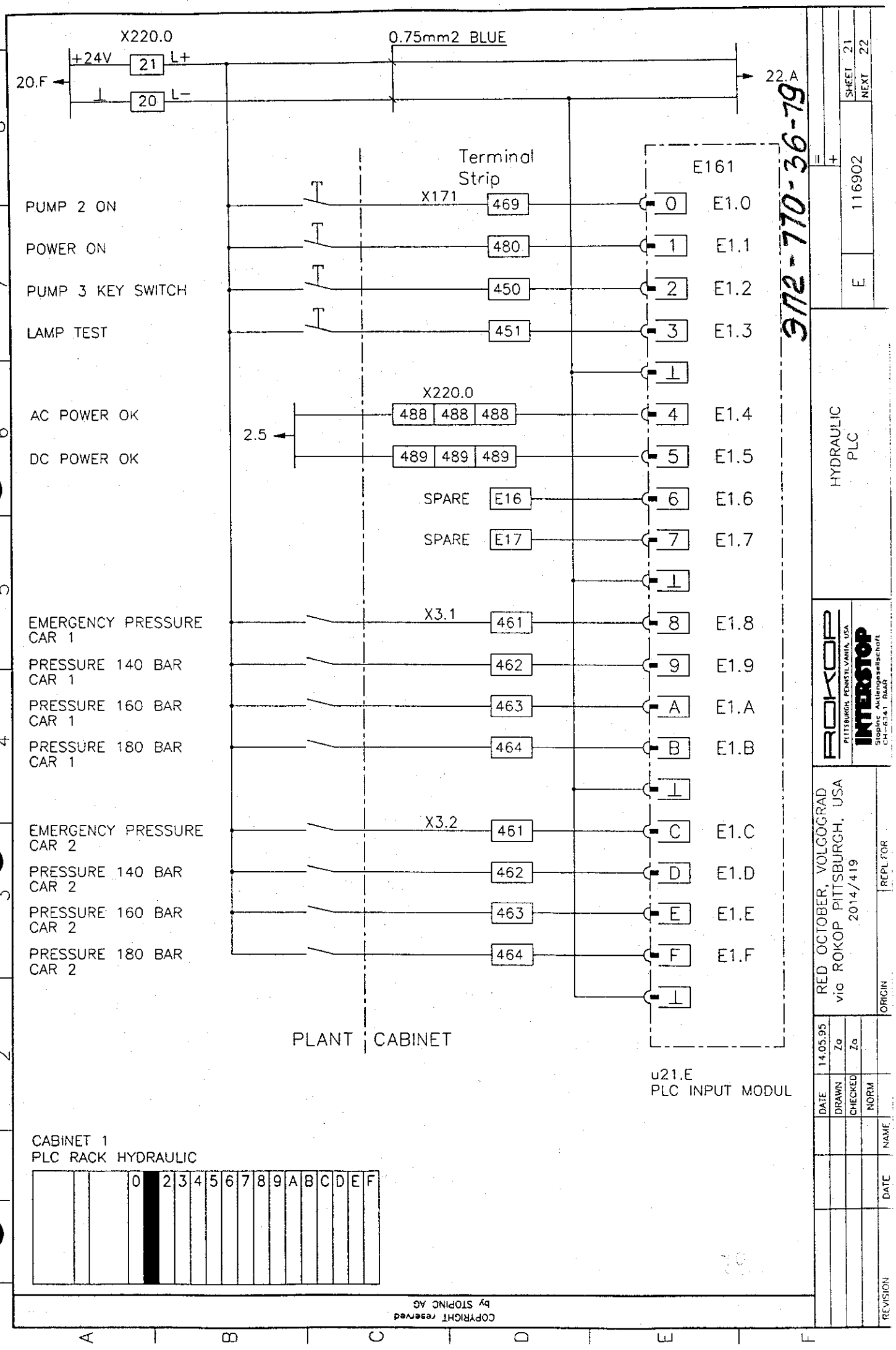
X220.0
+24V
21
L+
20.F
20
L−
0.75mm2 BLUE
22.A
Terminal Strip
E161
X171
PUMP 2 ON
469
0
E1.0
POWER ON
480
1
E1.1
PUMP 3 KEY SWITCH
450
2
E1.2
LAMP TEST
451
3
E1.3
X220.0
AC POWER OK
488 488 488
4
E1.4
2.5
DC POWER OK
489 489 489
5
E1.5
SPARE
E16
6
E1.6
SPARE
E17
7
E1.7
X3.1
EMERGENCY PRESSURE CAR 1
461
8
E1.8
PRESSURE 140 BAR CAR 1
462
9
E1.9
PRESSURE 160 BAR CAR 1
463
A
E1.A
PRESSURE 180 BAR CAR 1
464
B
E1.B
X3.2
EMERGENCY PRESSURE CAR 2
461
C
E1.C
PRESSURE 140 BAR CAR 2
462
D
E1.D
PRESSURE 160 BAR CAR 2
463
E
E1.E
PRESSURE 180 BAR CAR 2
464
F
E1.F
PLANT
CABINET
u21.E
PLC INPUT MODUL
CABINET 1
PLC RACK HYDRAULIC
0 2 3 4 5 6 7 8 9 A B C D E F
9112-770-36-79
SHEET 21
NEXT 22
E
116902
HYDRAULIC
PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Sigma Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
ORIGIN
REPL FOR
DATE 14.05.95
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NORM
NAME
DATE
REVISION
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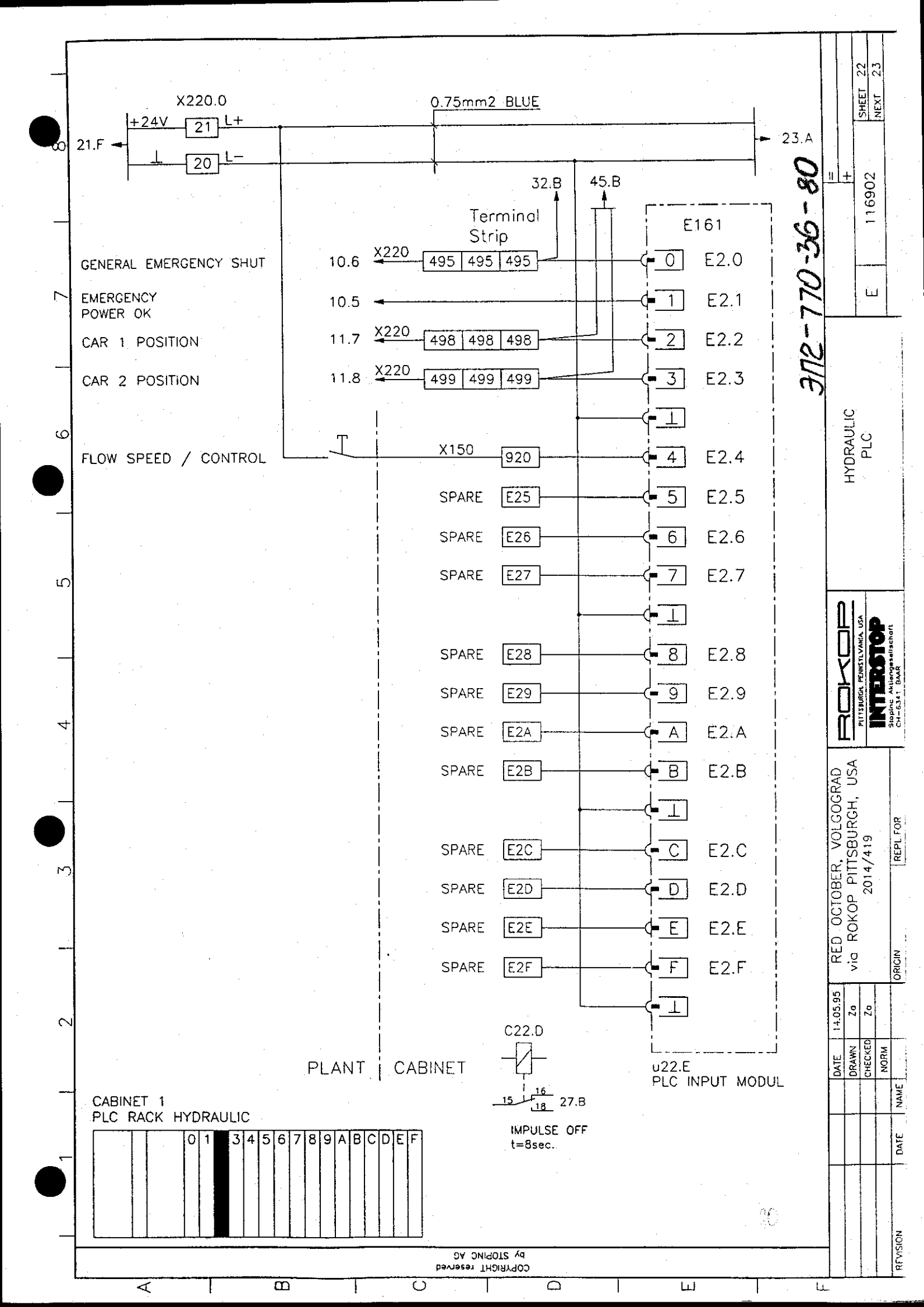
A B C D E F
1 2 3 4 5 6 7 8


X220.0
+24V
21
L+
20
L-
0.75mm2 BLUE
21.F
23.A
32.B
45.B
Terminal Strip
E161
GENERAL EMERGENCY SHUT
10.6
X220
495 495 495
0
E2.0
EMERGENCY POWER OK
10.5
1
E2.1
CAR 1 POSITION
11.7
X220
498 498 498
2
E2.2
CAR 2 POSITION
11.8
X220
499 499 499
3
E2.3
FLOW SPEED / CONTROL
X150
920
4
E2.4
SPARE
E25
5
E2.5
SPARE
E26
6
E2.6
SPARE
E27
7
E2.7
SPARE
E28
8
E2.8
SPARE
E29
9
E2.9
SPARE
E2A
A
E2.A
SPARE
E2B
B
E2.B
SPARE
E2C
C
E2.C
SPARE
E2D
D
E2.D
SPARE
E2E
E
E2.E
SPARE
E2F
F
E2.F
C22.D
15
16
18
27.B
IMPULSE OFF
t=8sec.
PLANT
CABINET
u22.E
PLC INPUT MODUL
CABINET 1
PLC RACK HYDRAULIC
0 1 3 4 5 6 7 8 9 A B C D E F
3T2-770-36-80
SHEET 22
NEXT 23
E
116902
HYDRAULIC
PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERROP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
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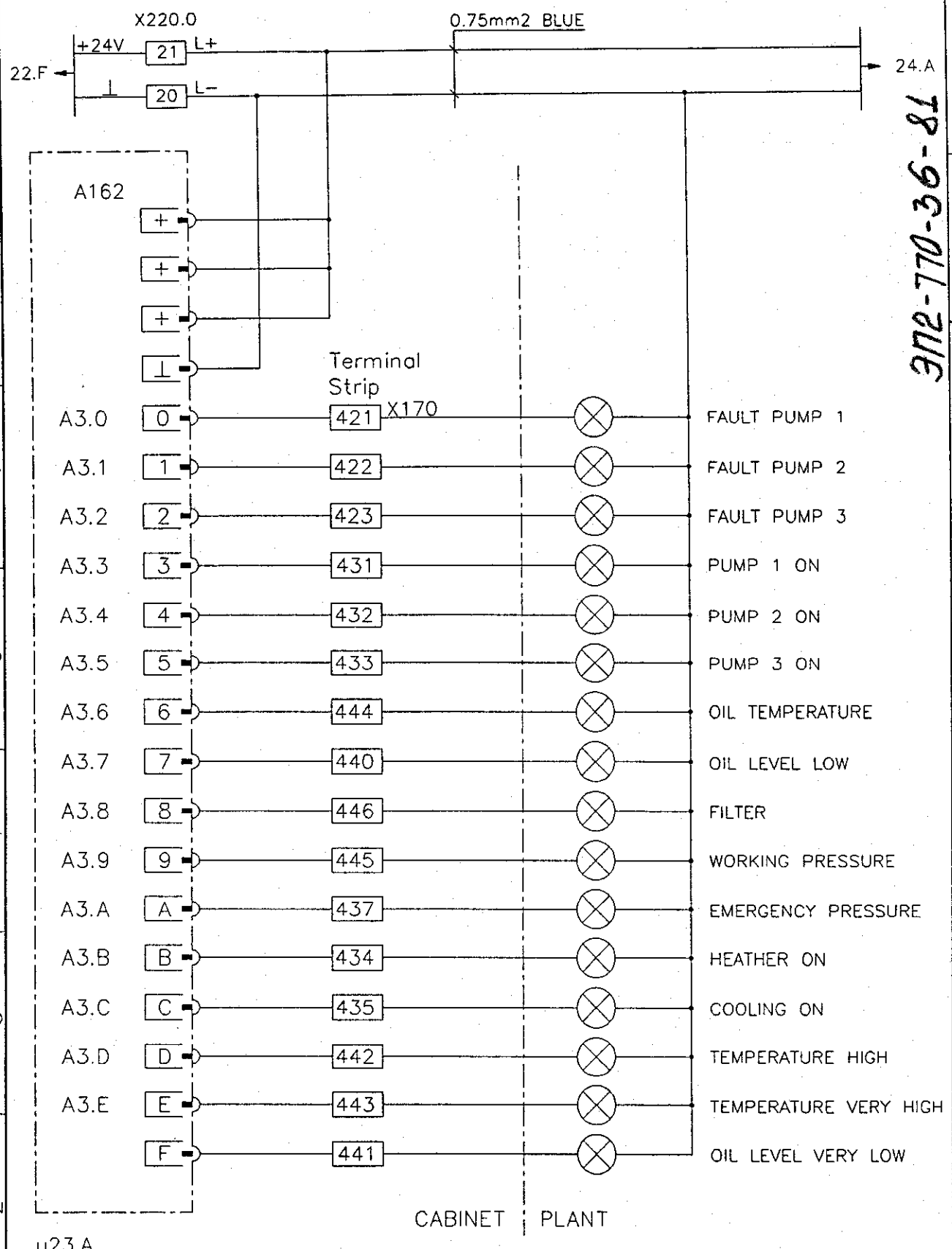

372-770-36-81

SHEET 23
NEXT 24

E 116902

HYDRAULIC PLC

ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

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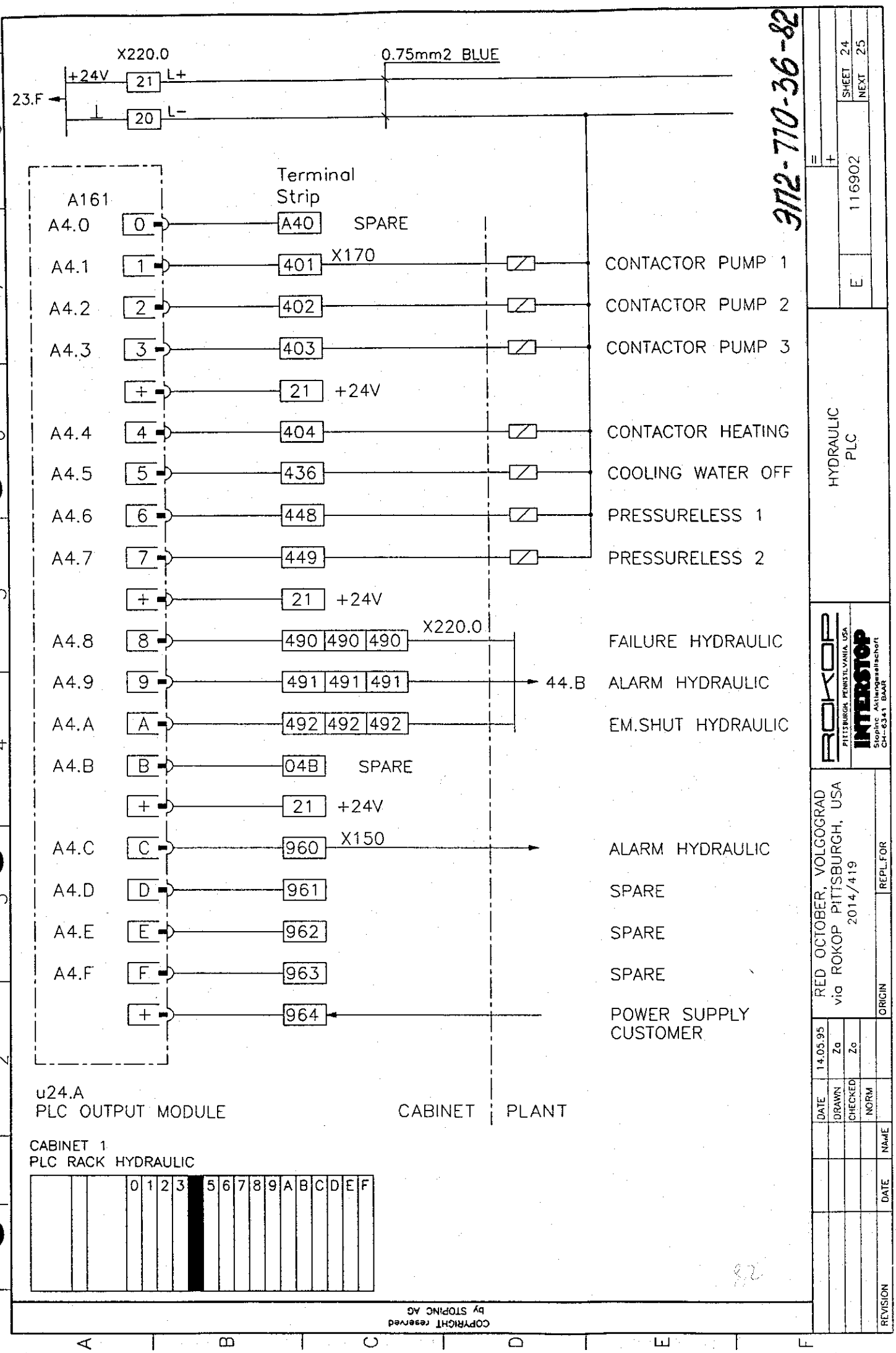
81


3112-770-36-82
X220.0
0.75mm2 BLUE
+24V
21
L+
23.F
20
L-
Terminal Strip
A161
A4.0 0 A40 SPARE
A4.1 1 401 X170 CONTACTOR PUMP 1
A4.2 2 402 CONTACTOR PUMP 2
A4.3 3 403 CONTACTOR PUMP 3
+ 21 +24V
A4.4 4 404 CONTACTOR HEATING
A4.5 5 436 COOLING WATER OFF
A4.6 6 448 PRESSURELESS 1
A4.7 7 449 PRESSURELESS 2
+ 21 +24V
X220.0
A4.8 8 490 490 490 FAILURE HYDRAULIC
A4.9 9 491 491 491 44.B ALARM HYDRAULIC
A4.A A 492 492 492 EM.SHUT HYDRAULIC
A4.B B 04B SPARE
+ 21 +24V
A4.C C 960 X150 ALARM HYDRAULIC
A4.D D 961 SPARE
A4.E E 962 SPARE
A4.F F 963 SPARE
+ 964 POWER SUPPLY CUSTOMER
u24.A
PLC OUTPUT MODULE
CABINET
PLANT
CABINET 1
PLC RACK HYDRAULIC
0 1 2 3 5 6 7 8 9 A B C D E F
SHEET 24
NEXT 25
E 116902
HYDRAULIC PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
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A B C D E F
1 2 3 4 5 6 7

3112-770-36-83

LOCAL AREA NETWORK

PIF-1

Q200

1
2 GREEN
3 BROWN
7 ⊥ WHITE
5
8
6
20

2
3
7

u25.D
CONNECTOR
SUB-D 25POL
MALE

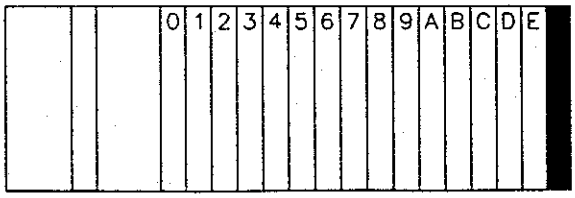
u25.B
CONNECTOR
SUB-D 25POL
MALE

HYDRAULIC

u25.A
PLC RS232

u25.E

CABINET 1
PLC RACK HYDRAULIC



HYDRAULIC PLC

E 116902

SHEET 25
NEXT 41

ROKOP PITTSBURGH, PENNSYLVANIA, USA
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RED OCTOBER, VOLGOGRAD
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2014/419

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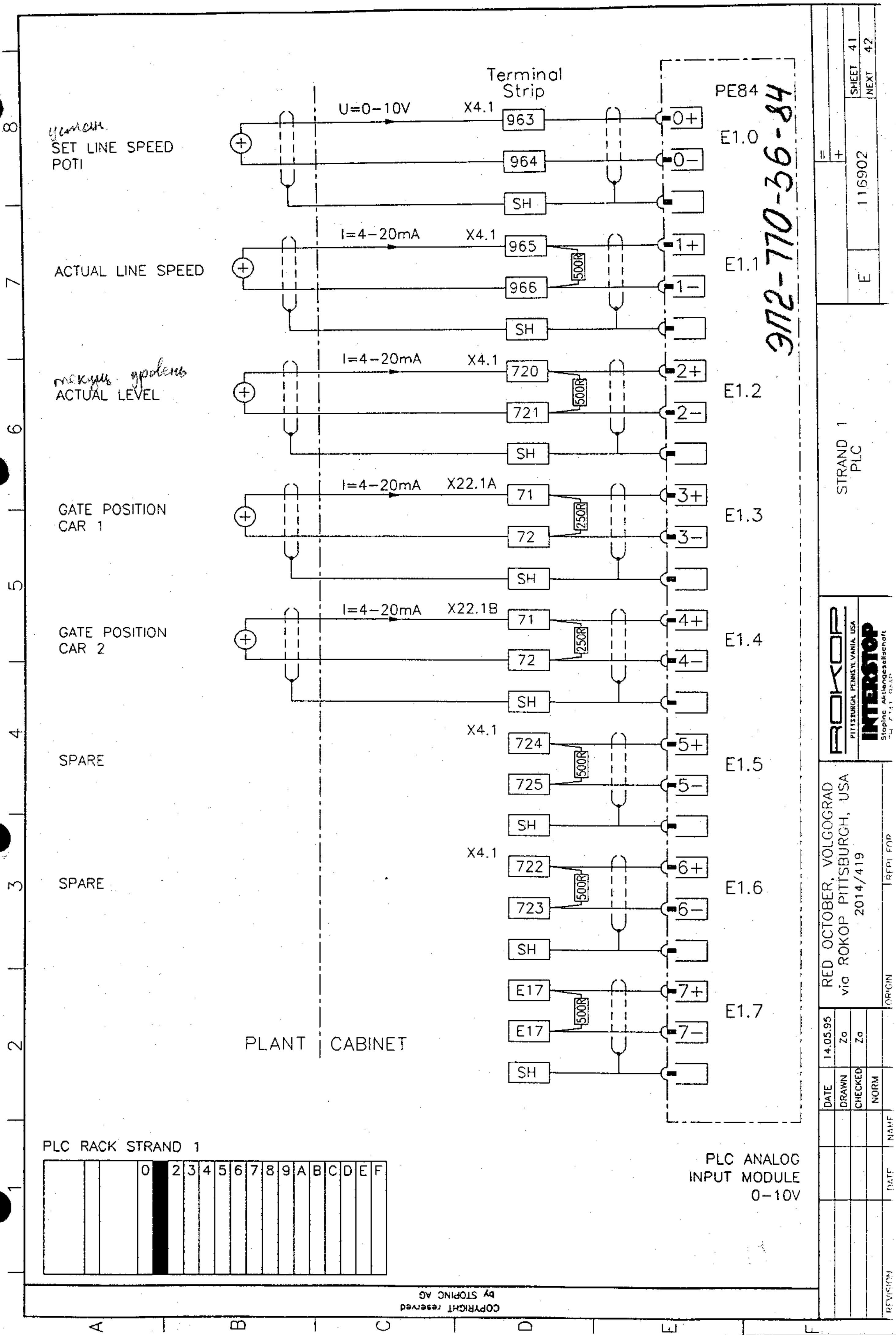
REVISION | DATE | NAME


Terminal Strip
PE84
ЭП2-770-36-84
SET LINE SPEED POTI
U=0-10V
X4.1
963
964
SH
0+
0−
E1.0
ACTUAL LINE SPEED
I=4−20mA
X4.1
965
966
500R
1+
1−
E1.1
ACTUAL LEVEL
I=4−20mA
X4.1
720
721
500R
2+
2−
E1.2
GATE POSITION CAR 1
I=4−20mA
X22.1A
71
72
250R
3+
3−
E1.3
GATE POSITION CAR 2
I=4−20mA
X22.1B
71
72
250R
4+
4−
E1.4
SPARE
X4.1
724
725
500R
5+
5−
E1.5
SPARE
X4.1
722
723
500R
6+
6−
E1.6
E17
E17
500R
7+
7−
E1.7
PLANT
CABINET
PLC RACK STRAND 1
0 2 3 4 5 6 7 8 9 A B C D E F
PLC ANALOG INPUT MODULE 0−10V
SHEET 41
NEXT 42
116902
E
STRAND 1 PLC
ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stopinc Aktiengesellschaft
RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA
2014/419
DATE 14.05.95
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CHECKED Zo
NORM
ORIGIN
REPL FOR
REVISION
DATE
NAME
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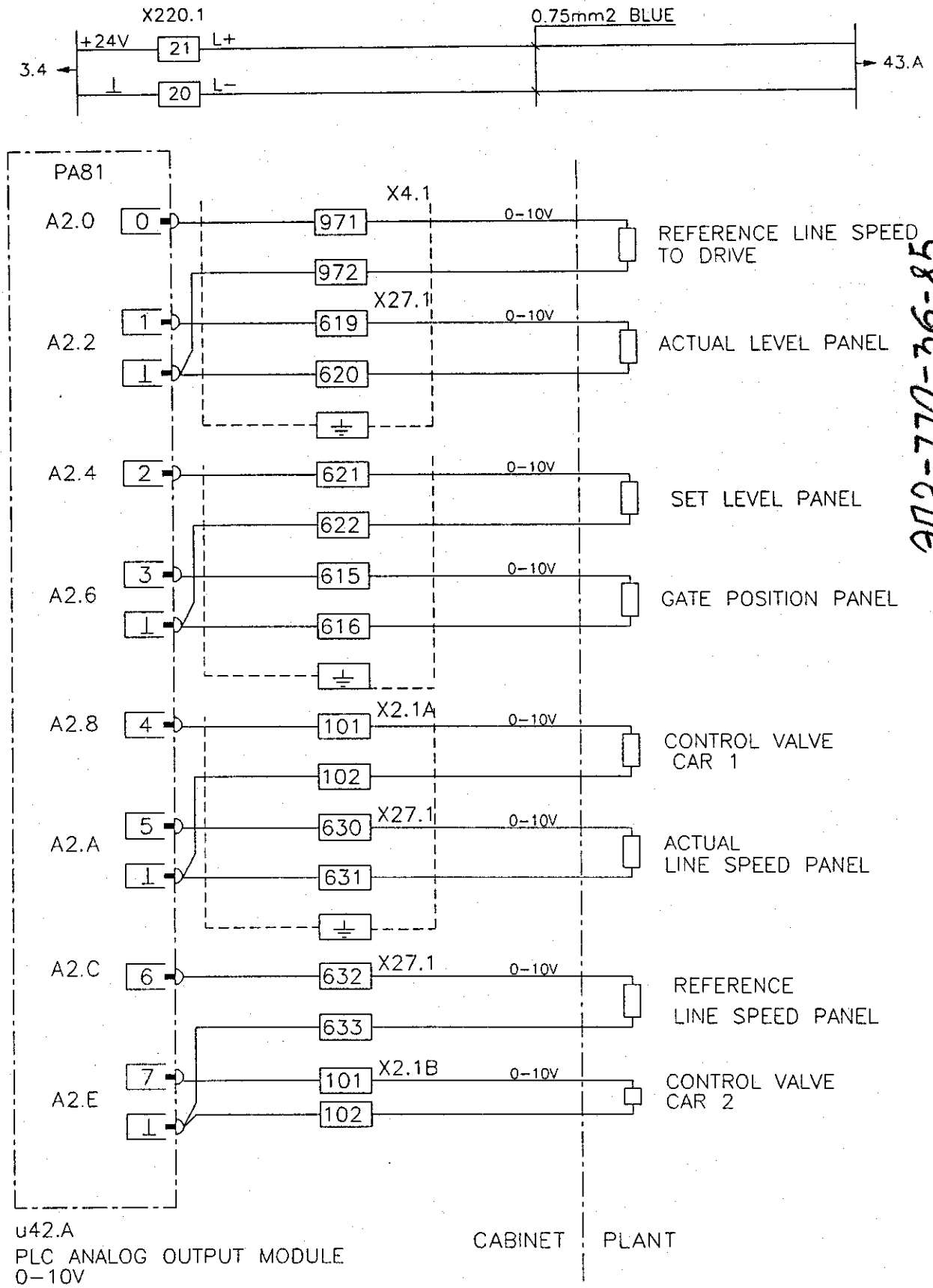
A B C D E F
1 2 3 4 5 6 7 8


X220.1
+24V
21
L+
3.4
⊥
20
L−
0.75mm2 BLUE
43.A
PA81
A2.0
0
X4.1
971
0–10V
REFERENCE LINE SPEED TO DRIVE
972
X27.1
1
A2.2
619
0–10V
ACTUAL LEVEL PANEL
⊥
620
A2.4
2
621
0–10V
SET LEVEL PANEL
622
A2.6
3
615
0–10V
GATE POSITION PANEL
⊥
616
A2.8
4
X2.1A
101
0–10V
CONTROL VALVE CAR 1
102
A2.A
5
X27.1
630
0–10V
ACTUAL LINE SPEED PANEL
⊥
631
A2.C
6
X27.1
632
0–10V
REFERENCE LINE SPEED PANEL
633
A2.E
7
X2.1B
101
0–10V
CONTROL VALVE CAR 2
⊥
102
u42.A
PLC ANALOG OUTPUT MODULE
0–10V
CABINET
PLANT
PLC RACK STRAND 1
0 1 3 4 5 6 7 8 9 A B C D E F
3T2-770-36-85
STRAND 1
PLC
E
116902
SHEET 42
NEXT 43
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
ORIGIN
REPL.FOR
DATE 14.05.95
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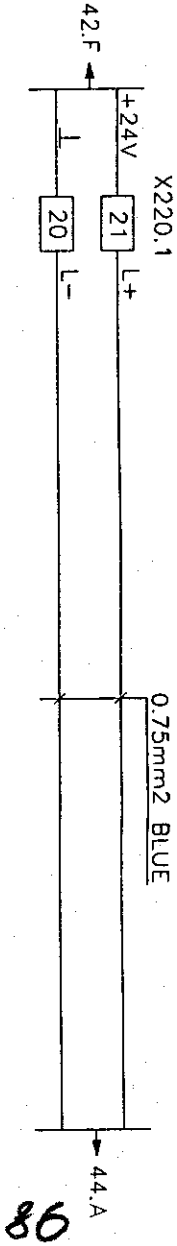

3172-770-36-86

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			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

RED OCTOBER, VOLGOGRAD
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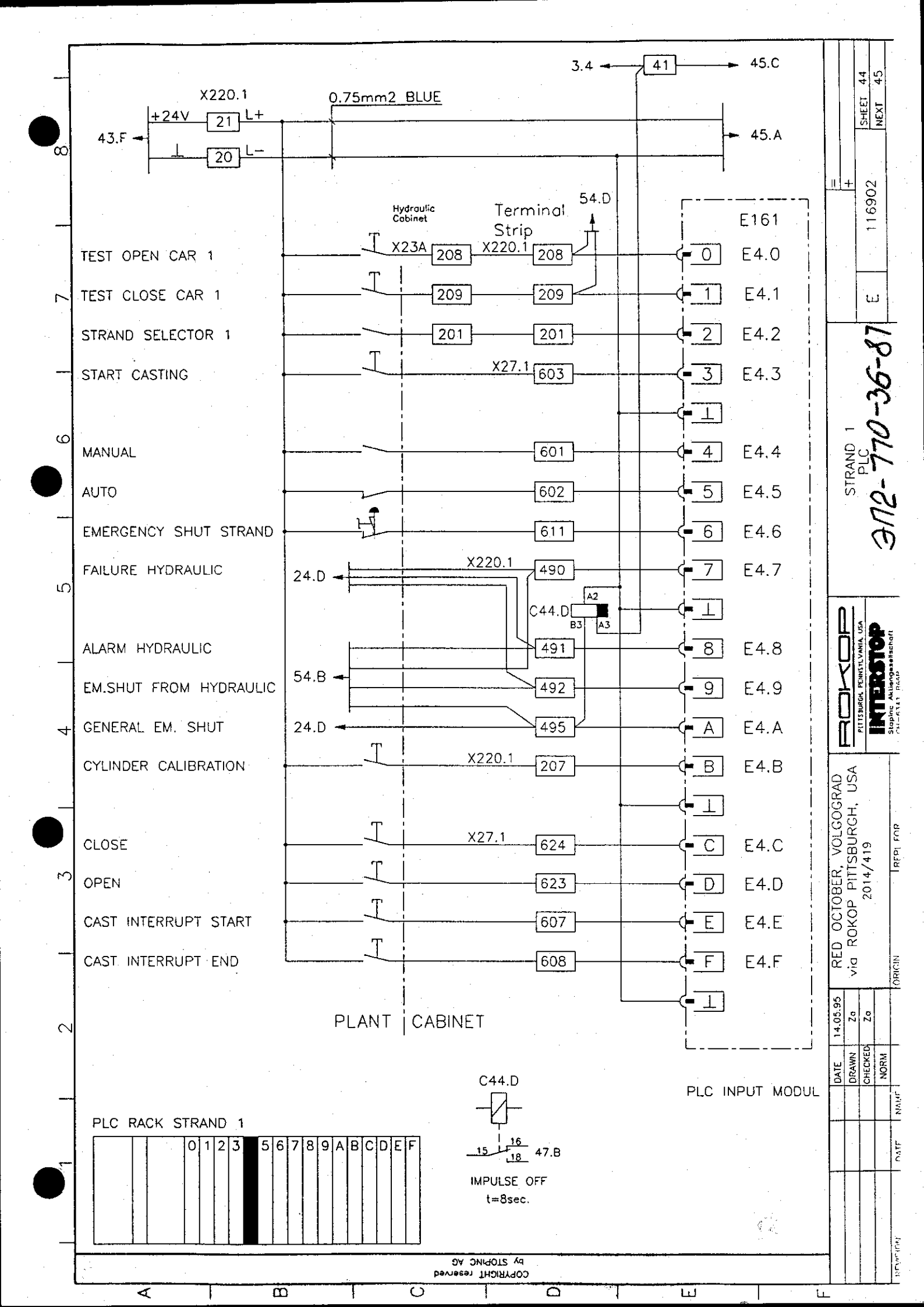
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

STRAND 1
PLC

		=	
		+	
E	116902	SHEET	43
		NEXT	44


3.4
41
45.C
X220.1
0.75mm2 BLUE
+24V
21
L+
43.F
20
L-
45.A
Hydraulic Cabinet
Terminal Strip
54.D
E161
TEST OPEN CAR 1
X23A
208
X220.1
208
0
E4.0
TEST CLOSE CAR 1
209
209
1
E4.1
STRAND SELECTOR 1
201
201
2
E4.2
START CASTING
X27.1
603
3
E4.3
MANUAL
601
4
E4.4
AUTO
602
5
E4.5
EMERGENCY SHUT STRAND
611
6
E4.6
FAILURE HYDRAULIC
24.D
X220.1
490
7
E4.7
A2
C44.D
B3
A3
ALARM HYDRAULIC
491
8
E4.8
54.B
EM.SHUT FROM HYDRAULIC
492
9
E4.9
GENERAL EM. SHUT
24.D
495
A
E4.A
CYLINDER CALIBRATION
X220.1
207
B
E4.B
CLOSE
X27.1
624
C
E4.C
OPEN
623
D
E4.D
CAST INTERRUPT START
607
E
E4.E
CAST INTERRUPT END
608
F
E4.F
PLANT
CABINET
PLC INPUT MODUL
PLC RACK STRAND 1
0 1 2 3 5 6 7 8 9 A B C D E F
C44.D
15
16
18
47.B
IMPULSE OFF
t=8sec.
SHEET 44
NEXT 45
116902
STRAND 1
PLC
372-770-36-87
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
RED OCTOBER, VOLGOGRAD
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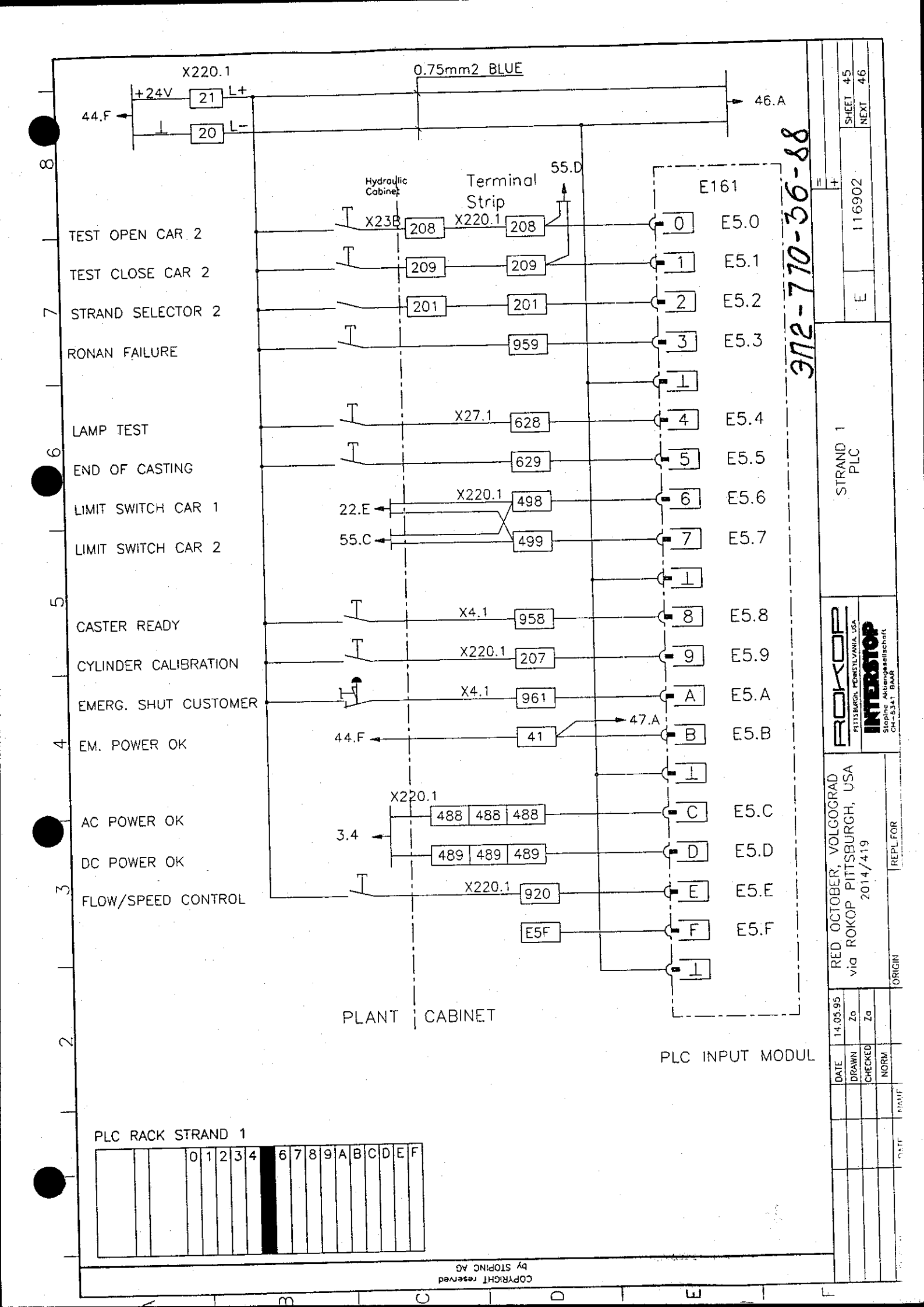
X220.1
+24V
21
L+
20
L-
44.F
0.75mm2 BLUE
46.A
Hydraulic Cabinet
Terminal Strip
55.D
E161
X23B
X220.1
TEST OPEN CAR 2
TEST CLOSE CAR 2
STRAND SELECTOR 2
RONAN FAILURE
LAMP TEST
END OF CASTING
LIMIT SWITCH CAR 1
LIMIT SWITCH CAR 2
CASTER READY
CYLINDER CALIBRATION
EMERG. SHUT CUSTOMER
EM. POWER OK
AC POWER OK
DC POWER OK
FLOW/SPEED CONTROL
208
209
201
959
628
629
498
499
958
207
961
41
488
489
920
E5F
22.E
55.C
47.A
3.4
X27.1
X4.1
E5.0
E5.1
E5.2
E5.3
E5.4
E5.5
E5.6
E5.7
E5.8
E5.9
E5.A
E5.B
E5.C
E5.D
E5.E
E5.F
PLANT
CABINET
PLC INPUT MODUL
PLC RACK STRAND 1
0 1 2 3 4 6 7 8 9 A B C D E F
3N2-770-36-88
SHEET 45
NEXT 46
116902
STRAND 1 PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
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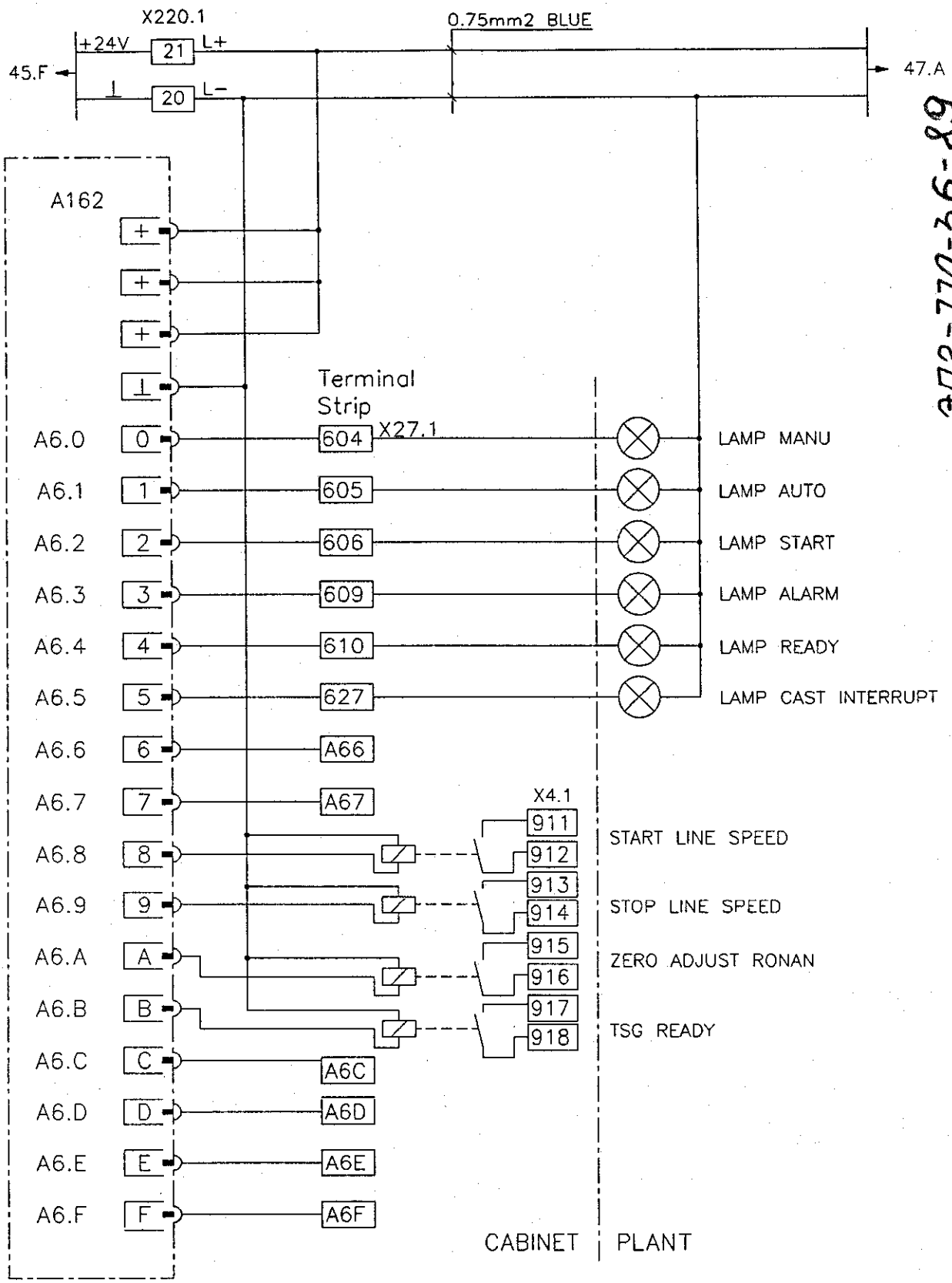
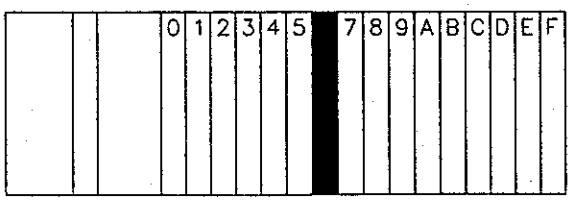


PLC OUTPUT MODULE

PLC RACK STRAND 1



3772-770-36-89

SHEET 46
NEXT 47

E 116902

STRAND 1
PLC

ROKOP PITTSBURGH PENNSYLVANIA USA
INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

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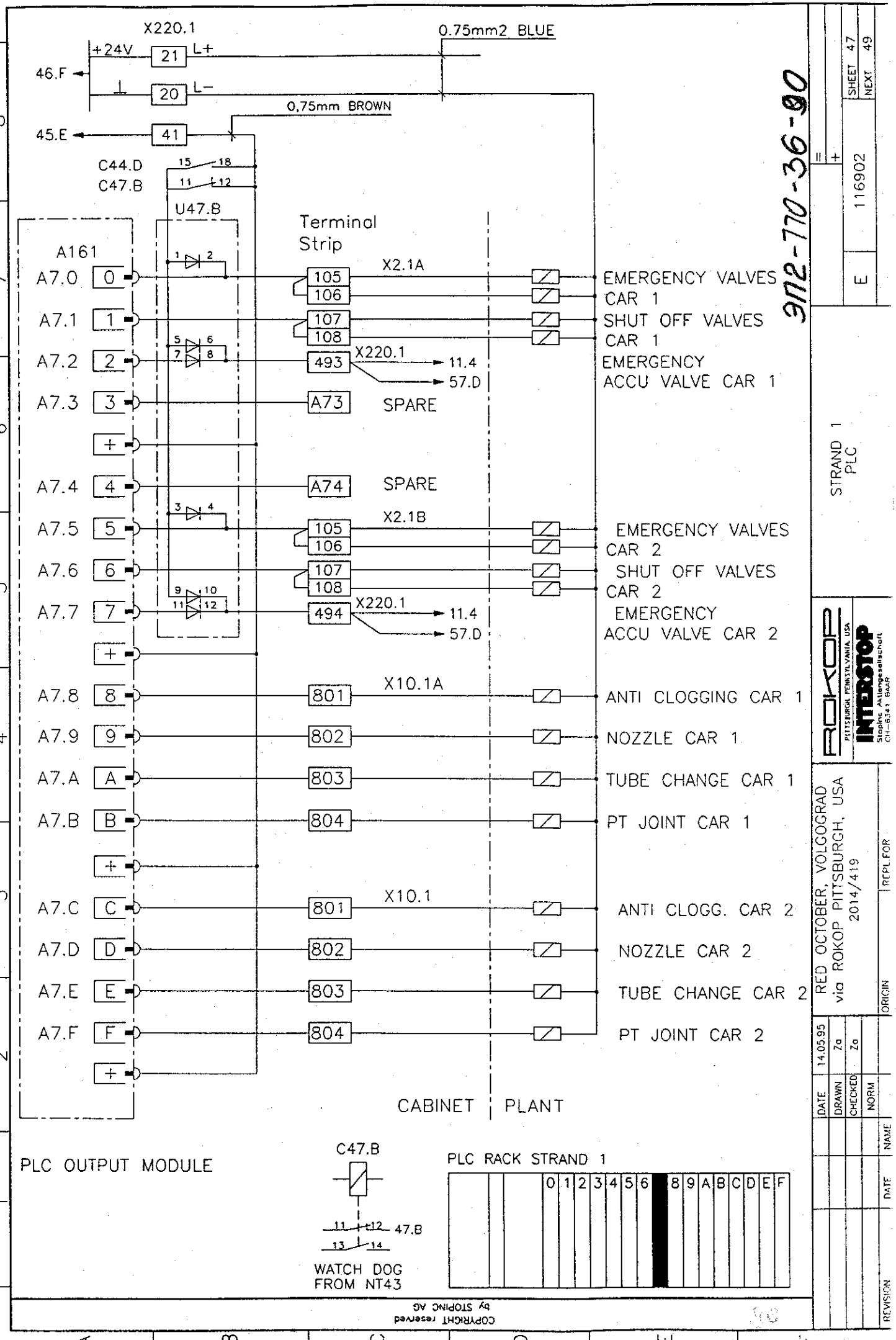
X220.1
+24V
21
L+
0.75mm2 BLUE
46.F
20
L−
0,75mm BROWN
45.E
41
C44.D
C47.B
15
18
11
12
U47.B
Terminal Strip
A161
A7.0 0
A7.1 1
A7.2 2
A7.3 3
+
A7.4 4
A7.5 5
A7.6 6
A7.7 7
+
A7.8 8
A7.9 9
A7.A A
A7.B B
+
A7.C C
A7.D D
A7.E E
A7.F F
+
X2.1A
105
106
107
108
493
A73
X220.1
11.4
57.D
SPARE
A74
SPARE
X2.1B
105
106
107
108
494
X220.1
11.4
57.D
X10.1A
801
802
803
804
X10.1
801
802
803
804
EMERGENCY VALVES CAR 1
SHUT OFF VALVES CAR 1
EMERGENCY ACCU VALVE CAR 1
EMERGENCY VALVES CAR 2
SHUT OFF VALVES CAR 2
EMERGENCY ACCU VALVE CAR 2
ANTI CLOGGING CAR 1
NOZZLE CAR 1
TUBE CHANGE CAR 1
PT JOINT CAR 1
ANTI CLOGG. CAR 2
NOZZLE CAR 2
TUBE CHANGE CAR 2
PT JOINT CAR 2
CABINET
PLANT
PLC OUTPUT MODULE
C47.B
11
12
47.B
13
14
WATCH DOG FROM NT43
PLC RACK STRAND 1
0 1 2 3 4 5 6 8 9 A B C D E F
3N2-770-36-90
E
116902
SHEET 47
NEXT 49
STRAND 1 PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stoplinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
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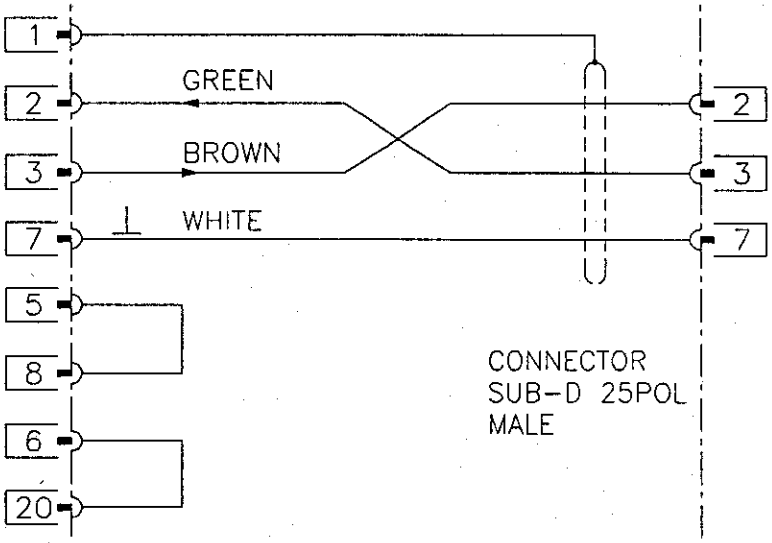
372-770-36-91

PIF-1

LOCAL AREA NETWORK Q200



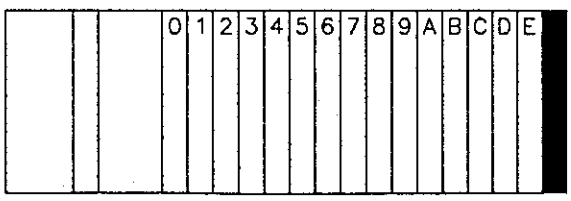
CONNECTOR SUB-D 25POL MALE

CONNECTOR SUB-D 25POL MALE

STRAND 1

PLC RS232

PLC RACK STRAND 1



STRAND 1 PLC

E 116902 SHEET 49 NEXT 51

RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419

ROKOP PITTSBURGH, PENNSYLVANIA, USA

INTERSTOP Stopinc Aktiengesellschaft

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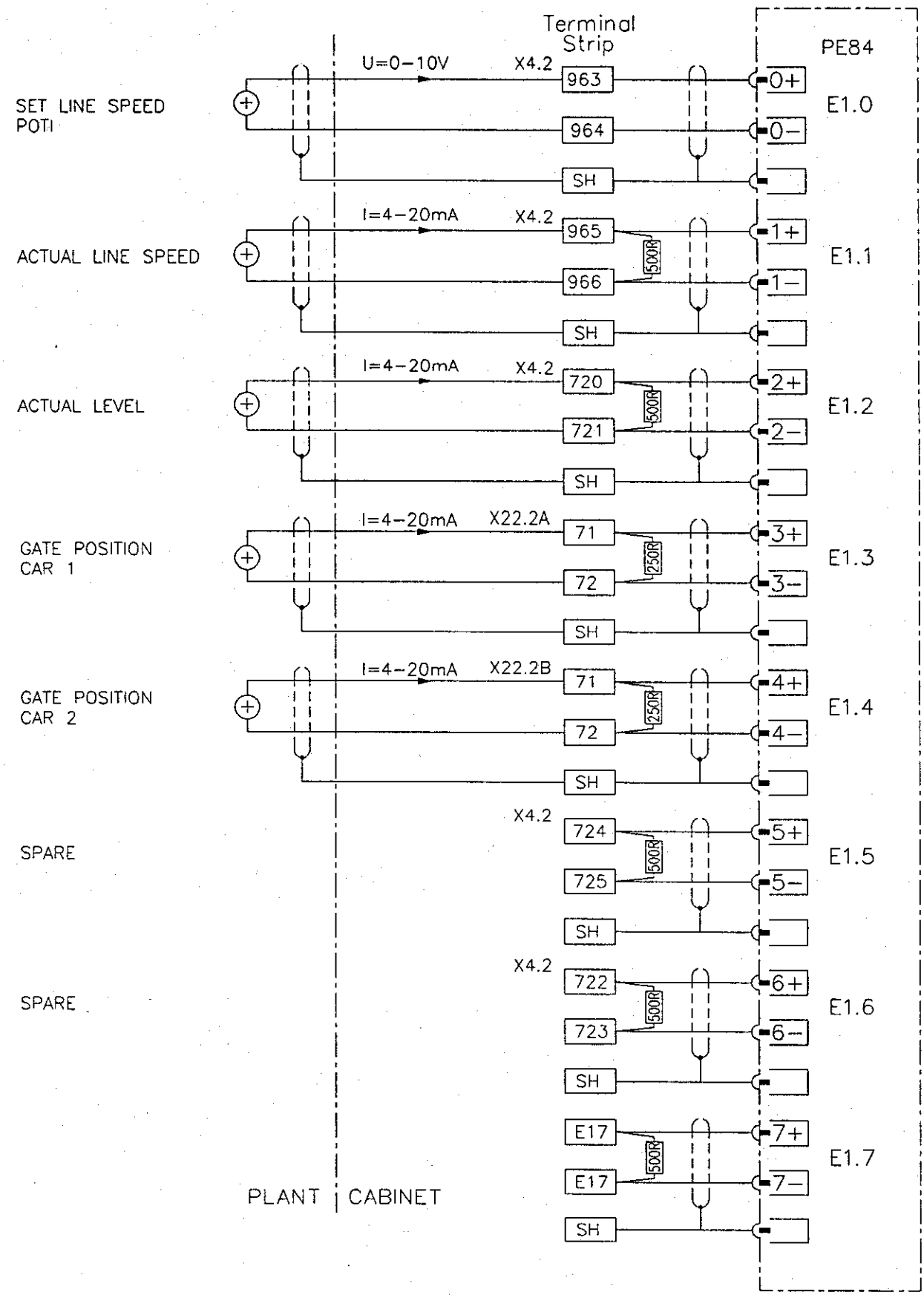

PLC RACK STRAND 2

0	2	3	4	5	6	7	8	9	A	B	C	D	E	F

PLC ANALOG INPUT MODULE 0–10V

STRAND 2 PLC

372-770-36-92

E 116902

SHEET 51 NEXT 52

ROKOP PITTSBURGH, PENNSYLVANIA, USA

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RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419

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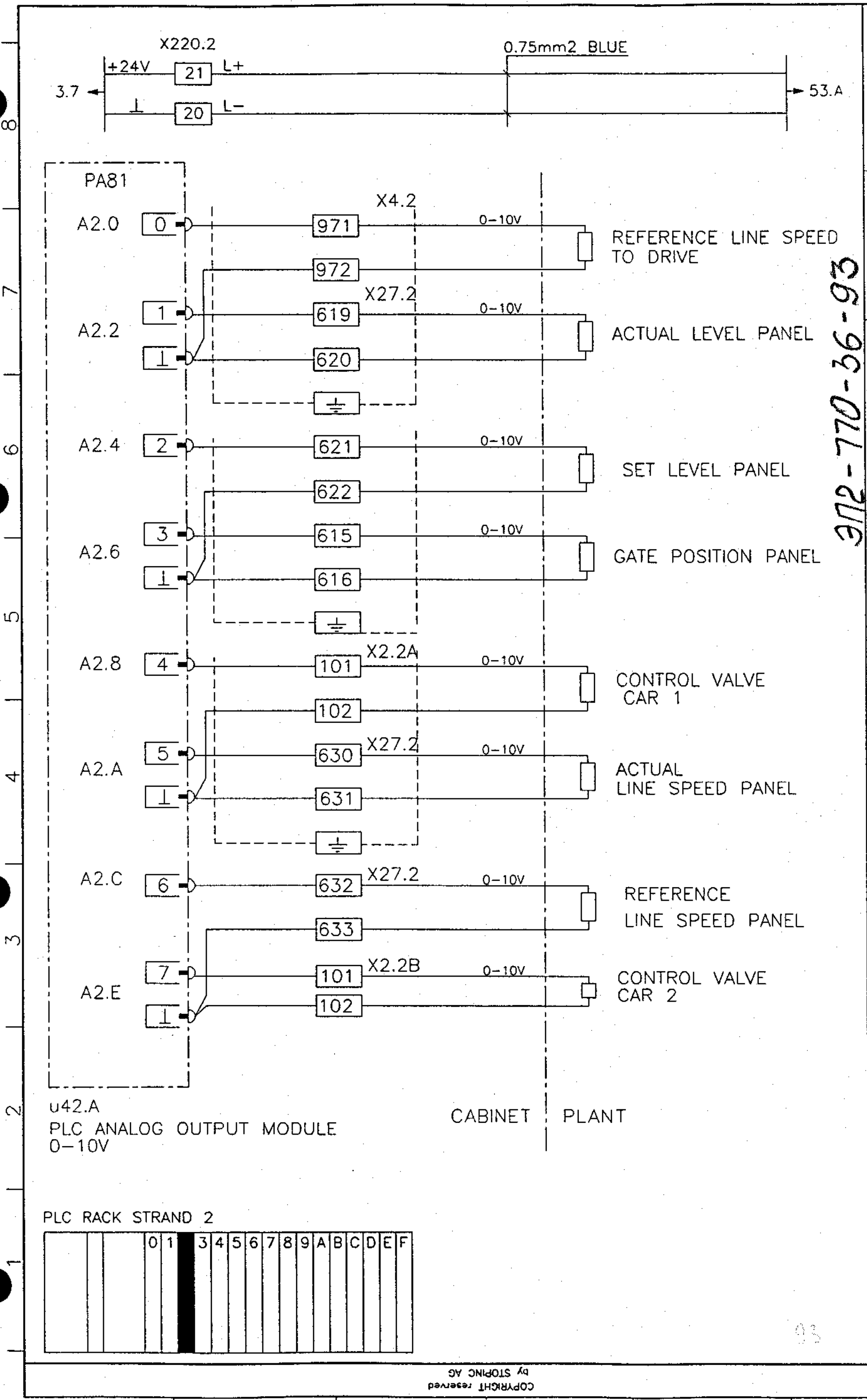

SHEET 52
NEXT 53
116902
E
STRAND 2 PLC

ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419

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REPL FOR
NAME
DATE
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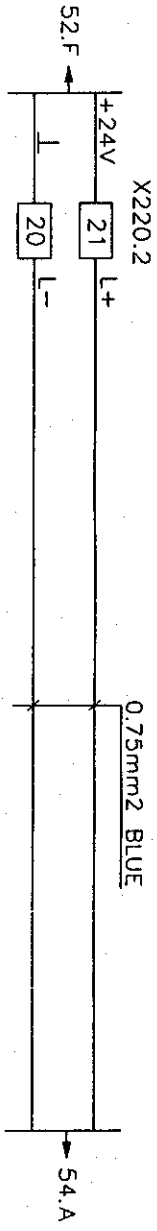

ЭП2-770-36-94

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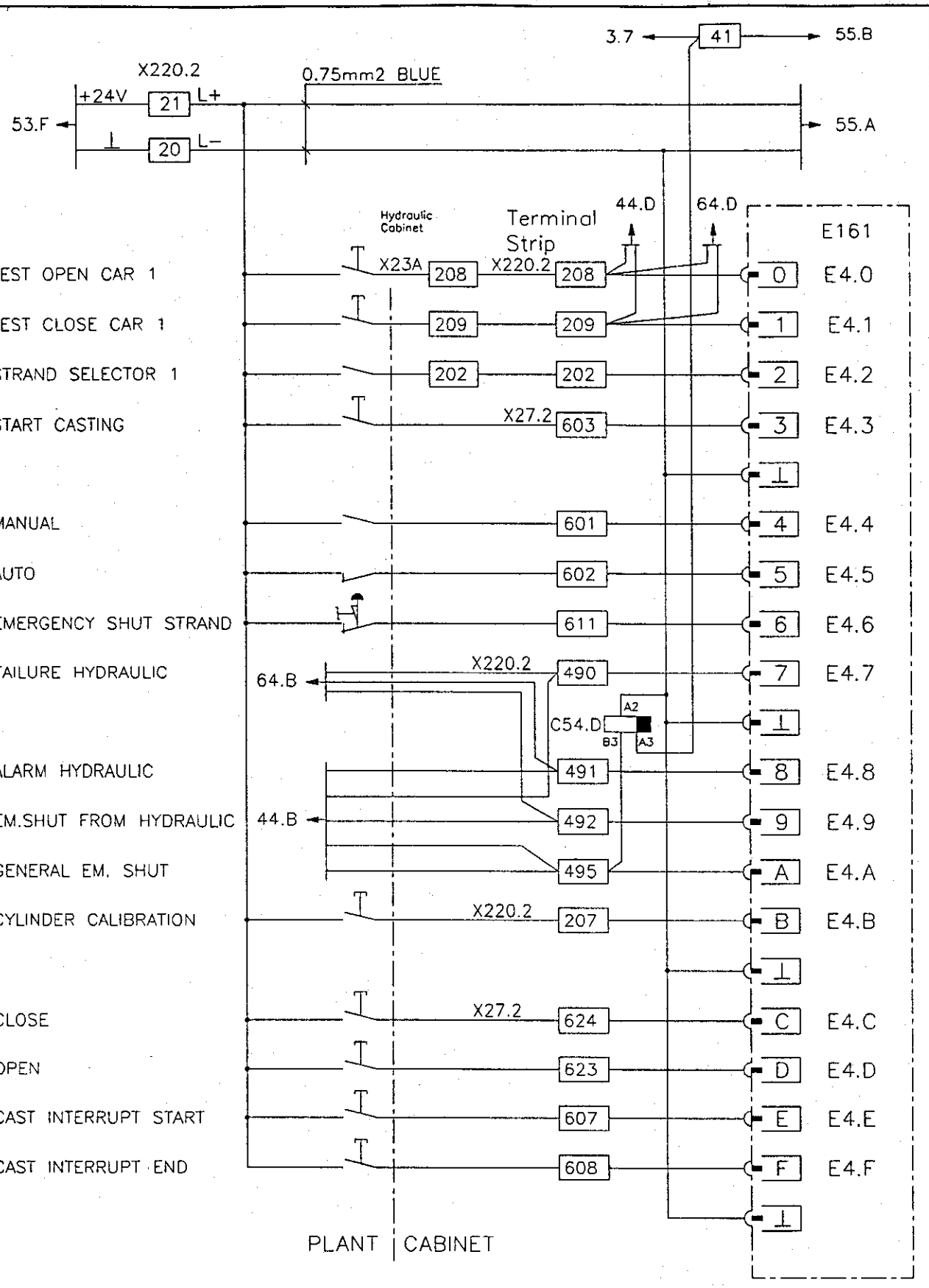
		DRAWN	Za	
		CHECKED	Za	
		NORM		
REVISION	DATE NAME	ORIGIN	REPL.FOR	

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

STRAND 2
PLC

		=	
		+	
E	116902	SHEET	53
		NEXT	54


3.7
41
55.B
X220.2
0.75mm2 BLUE
+24V
21
L+
53.F
20
L-
55.A
Hydraulic Cabinet
Terminal Strip
44.D
64.D
E161
TEST OPEN CAR 1
X23A
208
X220.2
208
0
E4.0
TEST CLOSE CAR 1
209
209
1
E4.1
STRAND SELECTOR 1
202
202
2
E4.2
START CASTING
X27.2
603
3
E4.3
MANUAL
601
4
E4.4
AUTO
602
5
E4.5
EMERGENCY SHUT STRAND
611
6
E4.6
FAILURE HYDRAULIC
64.B
X220.2
490
7
E4.7
C54.D
A2
B3
A3
ALARM HYDRAULIC
491
8
E4.8
EM.SHUT FROM HYDRAULIC
44.B
492
9
E4.9
GENERAL EM. SHUT
495
A
E4.A
CYLINDER CALIBRATION
X220.2
207
B
E4.B
CLOSE
X27.2
624
C
E4.C
OPEN
623
D
E4.D
CAST INTERRUPT START
607
E
E4.E
CAST INTERRUPT END
608
F
E4.F
PLANT
CABINET
PLC INPUT MODUL
C54.D
15
16
18
57.B
IMPULSE OFF
t=8sec.
PLC RACK STRAND 2
0 1 2 3 5 6 7 8 9 A B C D E F
SHEET 54
NEXT 55
116902
STRAND 2
PLC
912-770-36-95
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
ORIGIN
REPL.FOR
DATE 14.05.95
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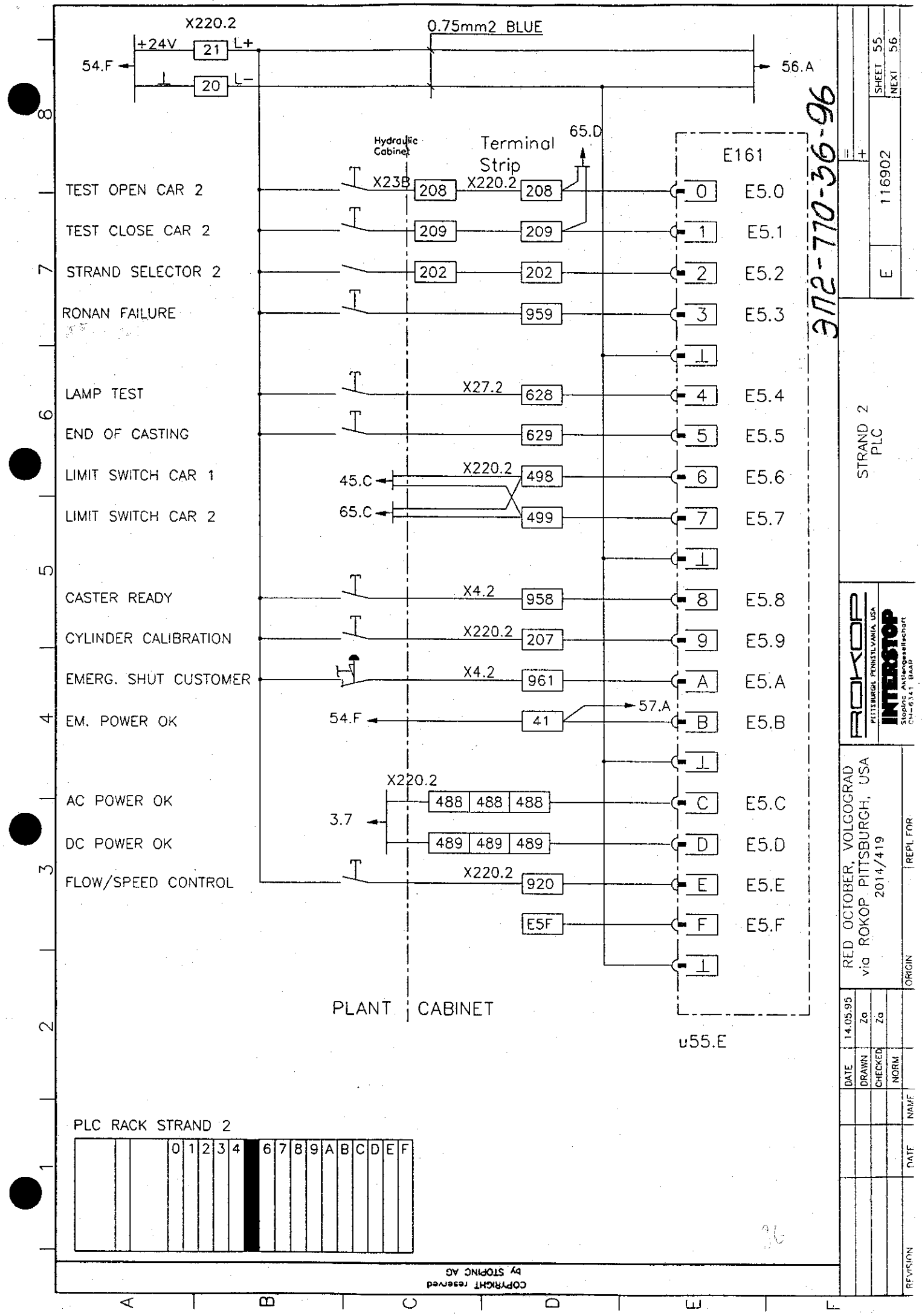
X220.2
+24V
21
L+
54.F
20
L-
0.75mm2 BLUE
56.A
Hydraulic Cabinet
Terminal Strip
65.D
E161
TEST OPEN CAR 2
X23B
208
X220.2
208
0
E5.0
TEST CLOSE CAR 2
209
209
1
E5.1
STRAND SELECTOR 2
202
202
2
E5.2
RONAN FAILURE
959
3
E5.3
LAMP TEST
X27.2
628
4
E5.4
END OF CASTING
629
5
E5.5
LIMIT SWITCH CAR 1
X220.2
45.C
498
6
E5.6
LIMIT SWITCH CAR 2
65.C
499
7
E5.7
CASTER READY
X4.2
958
8
E5.8
CYLINDER CALIBRATION
X220.2
207
9
E5.9
EMERG. SHUT CUSTOMER
X4.2
961
A
E5.A
EM. POWER OK
54.F
41
57.A
B
E5.B
AC POWER OK
X220.2
488 488 488
C
E5.C
3.7
DC POWER OK
489 489 489
D
E5.D
FLOW/SPEED CONTROL
X220.2
920
E
E5.E
E5F
F
E5.F
PLANT
CABINET
u55.E
PLC RACK STRAND 2
0 1 2 3 4 6 7 8 9 A B C D E F
3T2-770-36-96
SHEET 55
NEXT 56
E
116902
STRAND 2
PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stoplnc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
ORIGIN
REPL FOR
DATE 14.05.95
DRAWN Za
CHECKED Za
NORM
NAME
DATE
REVISION
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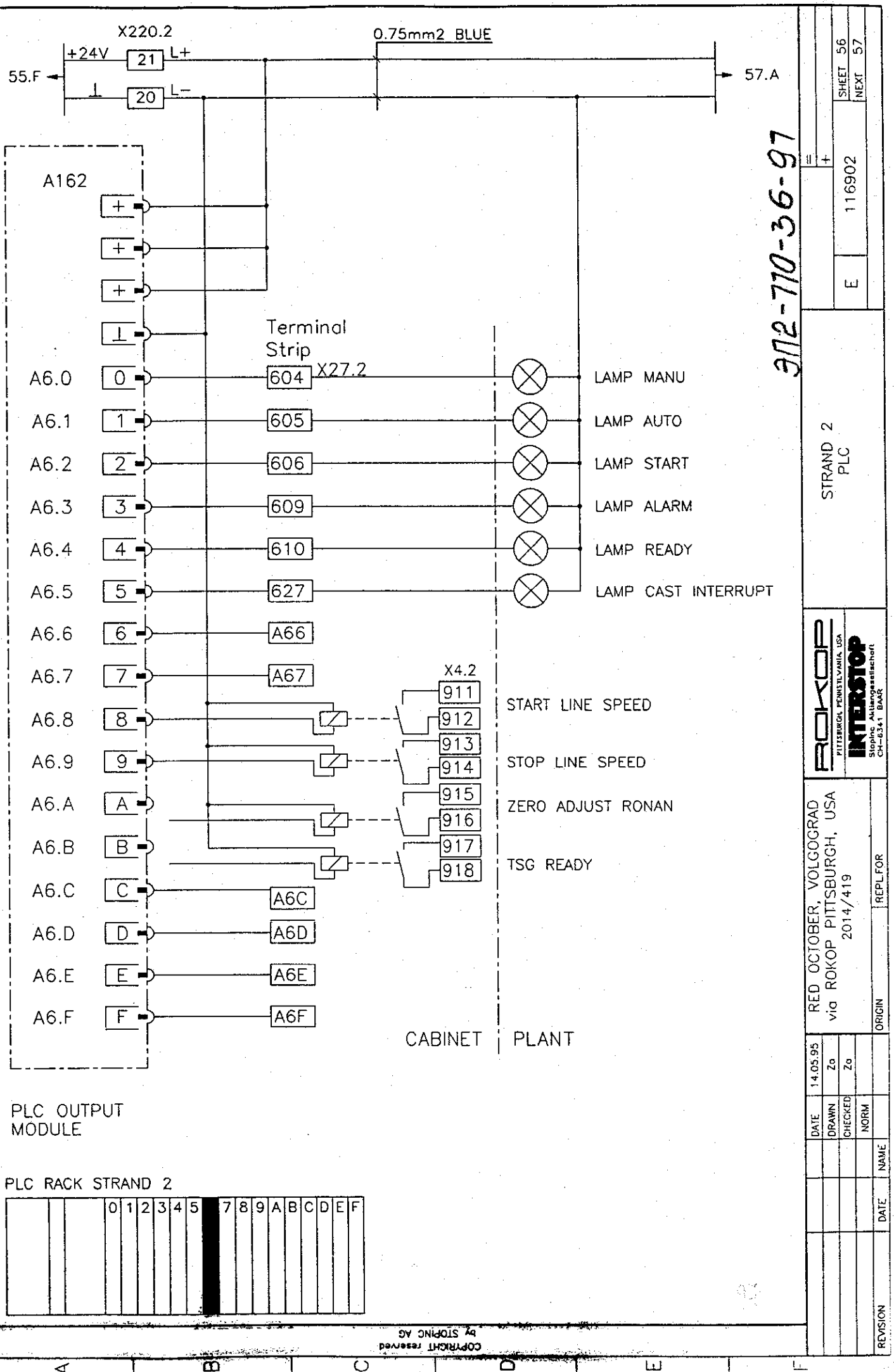
A
B
C
D
E
F
8
7
6
5
4
3
2
1


X220.2
+24V
21
L+
55.F
20
L-
0.75mm2 BLUE
57.A
A162
+
+
+
⊥
Terminal Strip
X27.2
A6.0 0 604 LAMP MANU
A6.1 1 605 LAMP AUTO
A6.2 2 606 LAMP START
A6.3 3 609 LAMP ALARM
A6.4 4 610 LAMP READY
A6.5 5 627 LAMP CAST INTERRUPT
A6.6 6 A66
A6.7 7 A67
X4.2
A6.8 8 911 912 START LINE SPEED
A6.9 9 913 914 STOP LINE SPEED
A6.A A 915 916 ZERO ADJUST RONAN
A6.B B 917 918 TSG READY
A6.C C A6C
A6.D D A6D
A6.E E A6E
A6.F F A6F
CABINET
PLANT
PLC OUTPUT MODULE
PLC RACK STRAND 2
0 1 2 3 4 5 7 8 9 A B C D E F
372-770-36-97
SHEET 56
NEXT 57
E
116902
STRAND 2
PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
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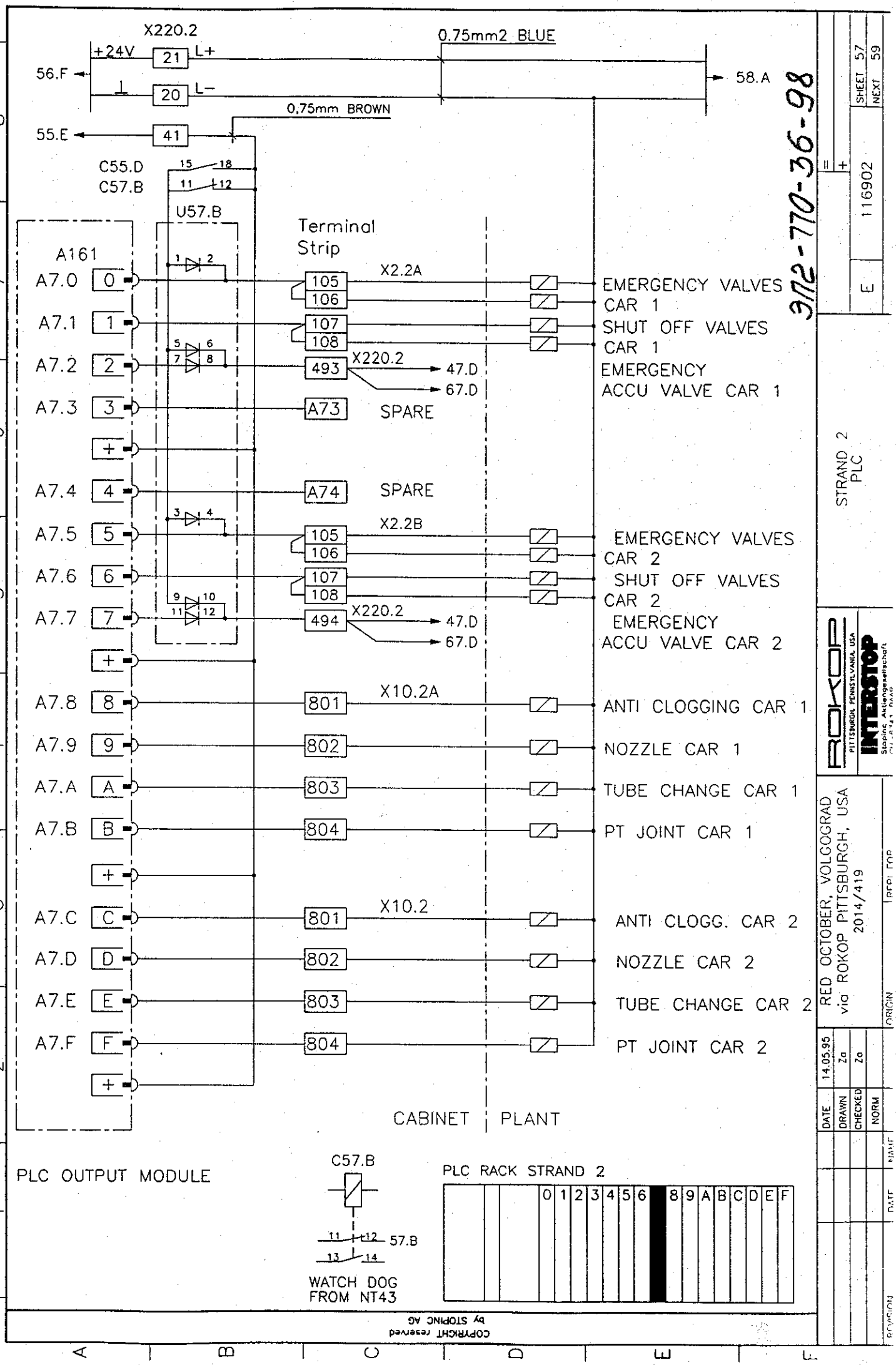
X220.2
+24V
21
L+
56.F
20
L−
0.75mm2 BLUE
58.A
0,75mm BROWN
55.E
41
C55.D
C57.B
15
18
11
12
U57.B
A161
Terminal Strip
A7.0 0
A7.1 1
A7.2 2
A7.3 3
+
A7.4 4
A7.5 5
A7.6 6
A7.7 7
+
A7.8 8
A7.9 9
A7.A A
A7.B B
+
A7.C C
A7.D D
A7.E E
A7.F F
+
X2.2A
105
106
107
108
493
X220.2
47.D
67.D
A73
SPARE
A74
SPARE
X2.2B
105
106
107
108
494
X220.2
47.D
67.D
X10.2A
801
802
803
804
X10.2
801
802
803
804
EMERGENCY VALVES CAR 1
SHUT OFF VALVES CAR 1
EMERGENCY ACCU VALVE CAR 1
EMERGENCY VALVES CAR 2
SHUT OFF VALVES CAR 2
EMERGENCY ACCU VALVE CAR 2
ANTI CLOGGING CAR 1
NOZZLE CAR 1
TUBE CHANGE CAR 1
PT JOINT CAR 1
ANTI CLOGG. CAR 2
NOZZLE CAR 2
TUBE CHANGE CAR 2
PT JOINT CAR 2
CABINET
PLANT
PLC OUTPUT MODULE
C57.B
11
12
57.B
13
14
WATCH DOG FROM NT43
PLC RACK STRAND 2
0 1 2 3 4 5 6 8 9 A B C D E F
3/2-770-36-98
SHEET 57
NEXT 59
E
116902
STRAND 2
PLC
ROKOP
PITTSBURGH PENNSYLVANIA USA
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NORM
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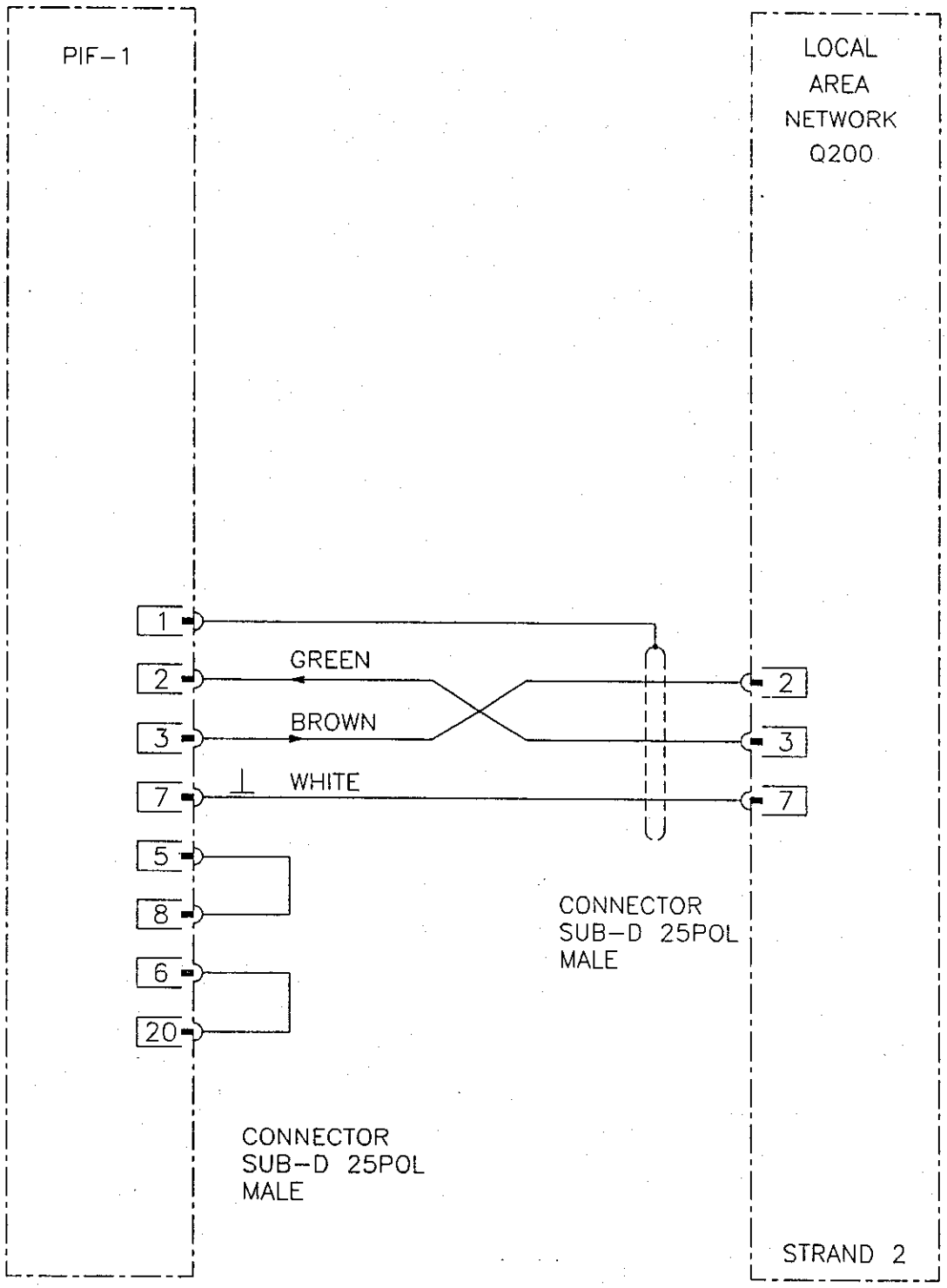
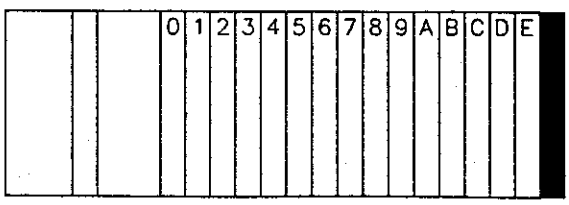


PLC RS232

PLC RACK STRAND 2



9/12-770-36-99

E | 116902 | SHEET 59 | NEXT 61

STRAND 2
PLC

ROKOP PITTSBURGH PENNSYLVANIA USA
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	DATE	14.05.95
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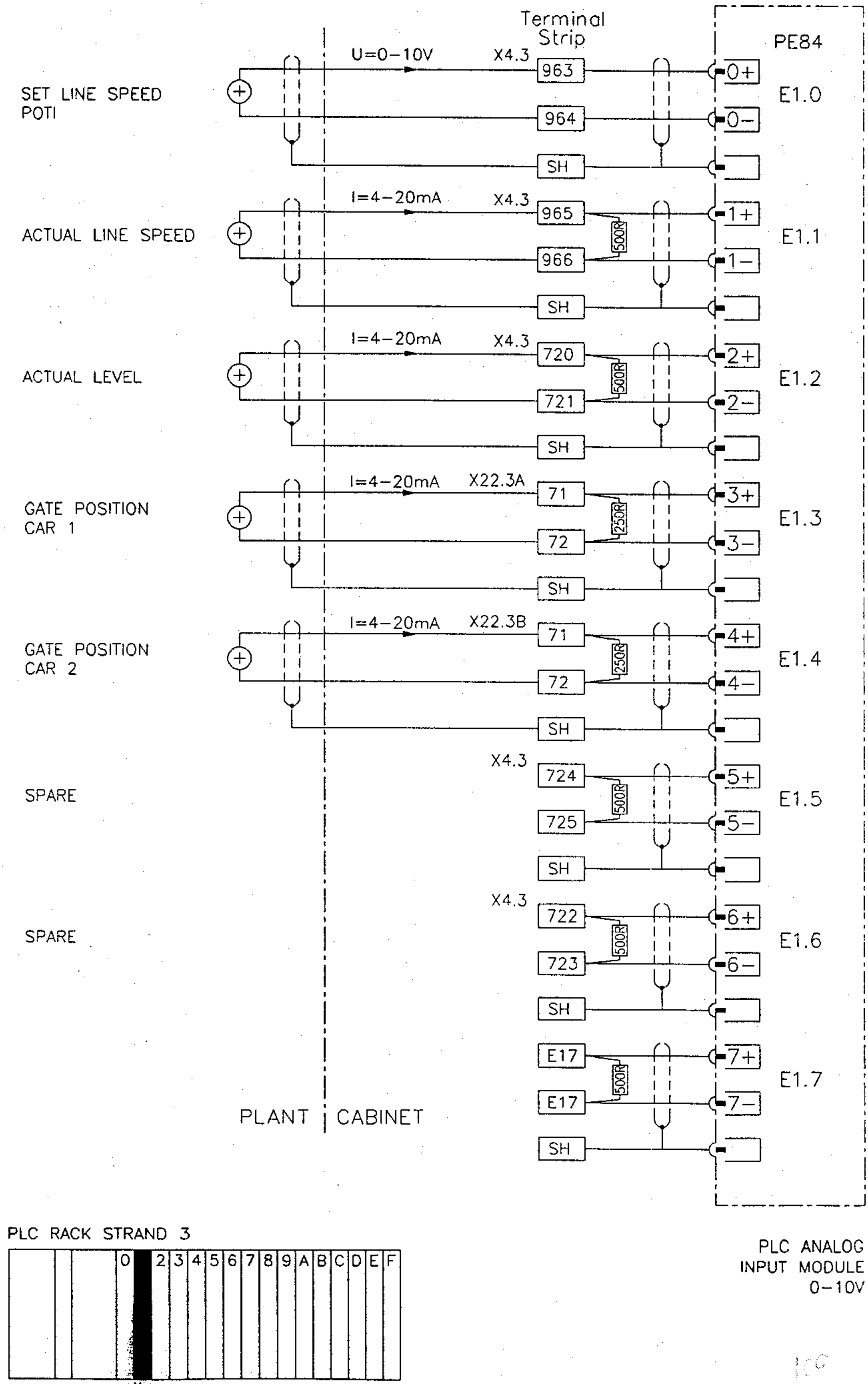
	NORM	

REVISION | DATE | NAME



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SHEET 61
NEXT 62
= + 116902
E

STRAND 3 PLC
972-770-36-100

ROKOP PITTSBURGH, PENNSYLVANIA, USA
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DATE
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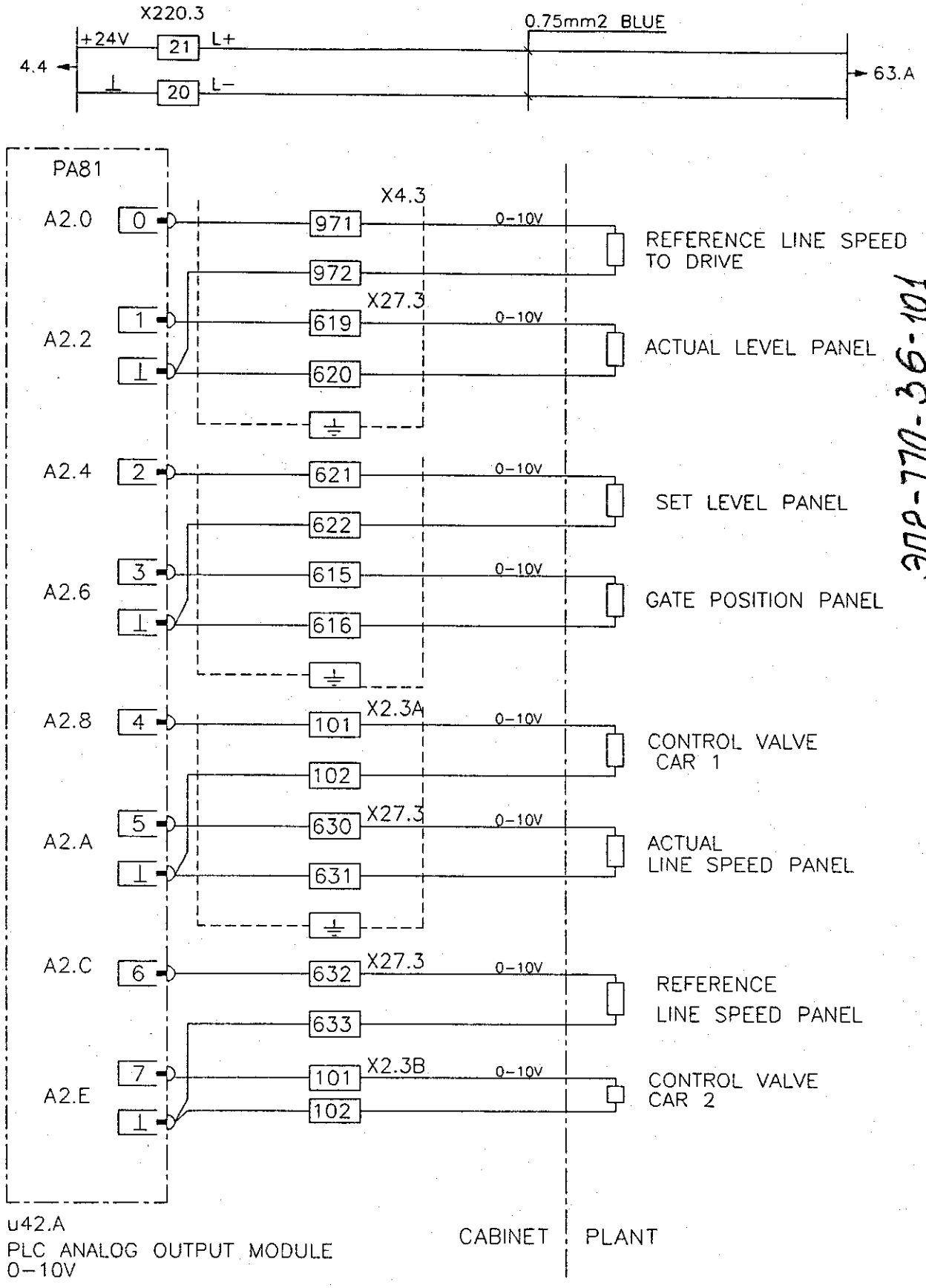
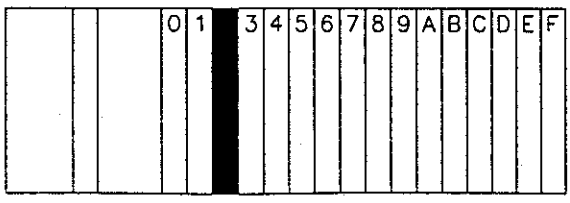


PLC RACK STRAND 3



3112-770-36-101

STRAND 3
PLC

E | 116902 | SHEET 62 | NEXT 63

ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

RED OCTOBER, VOLGOGRAD
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ORIGIN | REPL.FOR

	DATE	NAME
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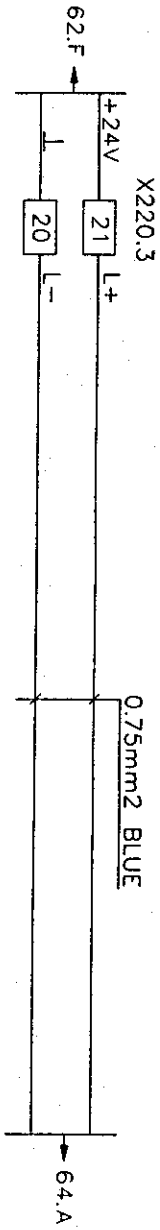
NORM	Za	

REVISION | DATE



ЭП2-770-36-102

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		CHECKED	Za	
		NORM		
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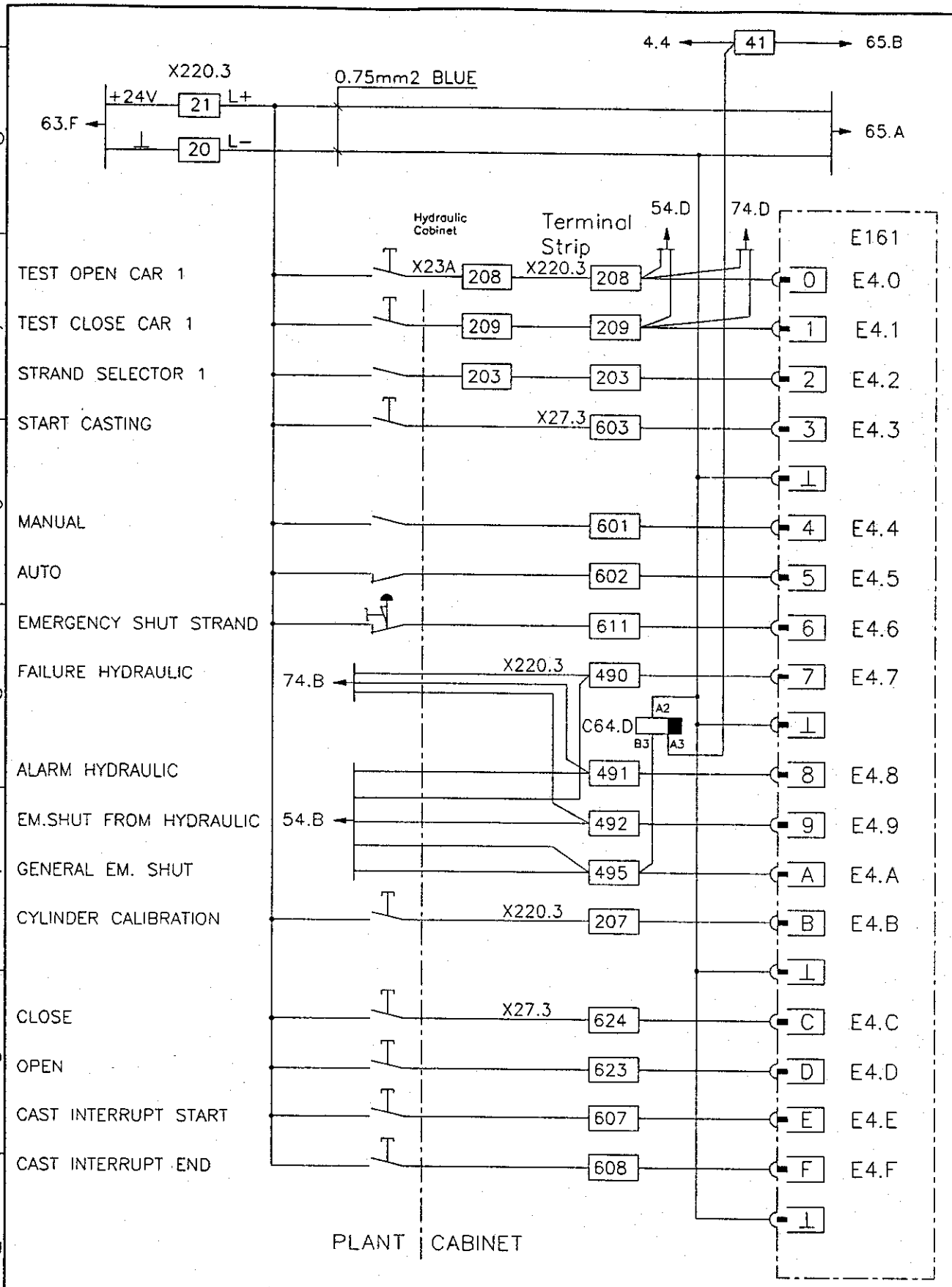
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

STRAND 3
PLC

E	116902	SHEET	63
		NEXT	64


4.4
41
65.B
X220.3
+24V
21
L+
0.75mm2 BLUE
63.F
20
L-
65.A
Hydraulic Cabinet
Terminal Strip
54.D
74.D
E161
TEST OPEN CAR 1
X23A
208
X220.3
208
0
E4.0
TEST CLOSE CAR 1
209
209
1
E4.1
STRAND SELECTOR 1
203
203
2
E4.2
START CASTING
X27.3
603
3
E4.3
MANUAL
601
4
E4.4
AUTO
602
5
E4.5
EMERGENCY SHUT STRAND
611
6
E4.6
FAILURE HYDRAULIC
74.B
X220.3
490
7
E4.7
C64.D
A2
B3
A3
ALARM HYDRAULIC
491
8
E4.8
EM.SHUT FROM HYDRAULIC
54.B
492
9
E4.9
GENERAL EM. SHUT
495
A
E4.A
CYLINDER CALIBRATION
X220.3
207
B
E4.B
CLOSE
X27.3
624
C
E4.C
OPEN
623
D
E4.D
CAST INTERRUPT START
607
E
E4.E
CAST INTERRUPT END
608
F
E4.F
PLANT
CABINET
PLC INPUT MODUL
C64.D
15
16
18
67.B
IMPULSE OFF
t=8sec.
PLC RACK STRAND 3
0 1 2 3 5 6 7 8 9 A B C D E F
SHEET 64
NEXT 65
116902
E
STRAND 3
PLC
372-770-36-103
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
ORIGIN
REPL.FOR
DATE 14.05.95
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NAME
DATE
REVISION
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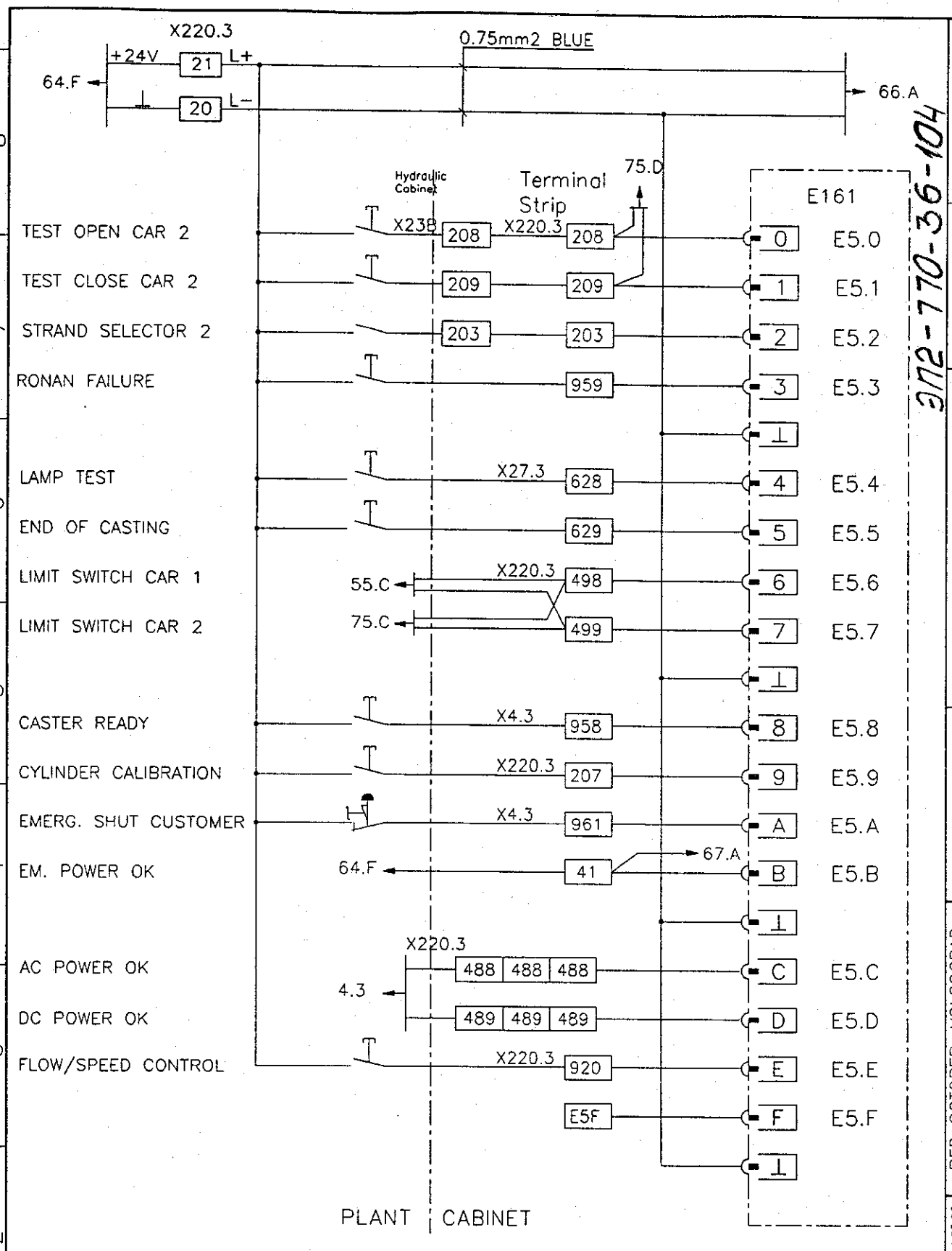

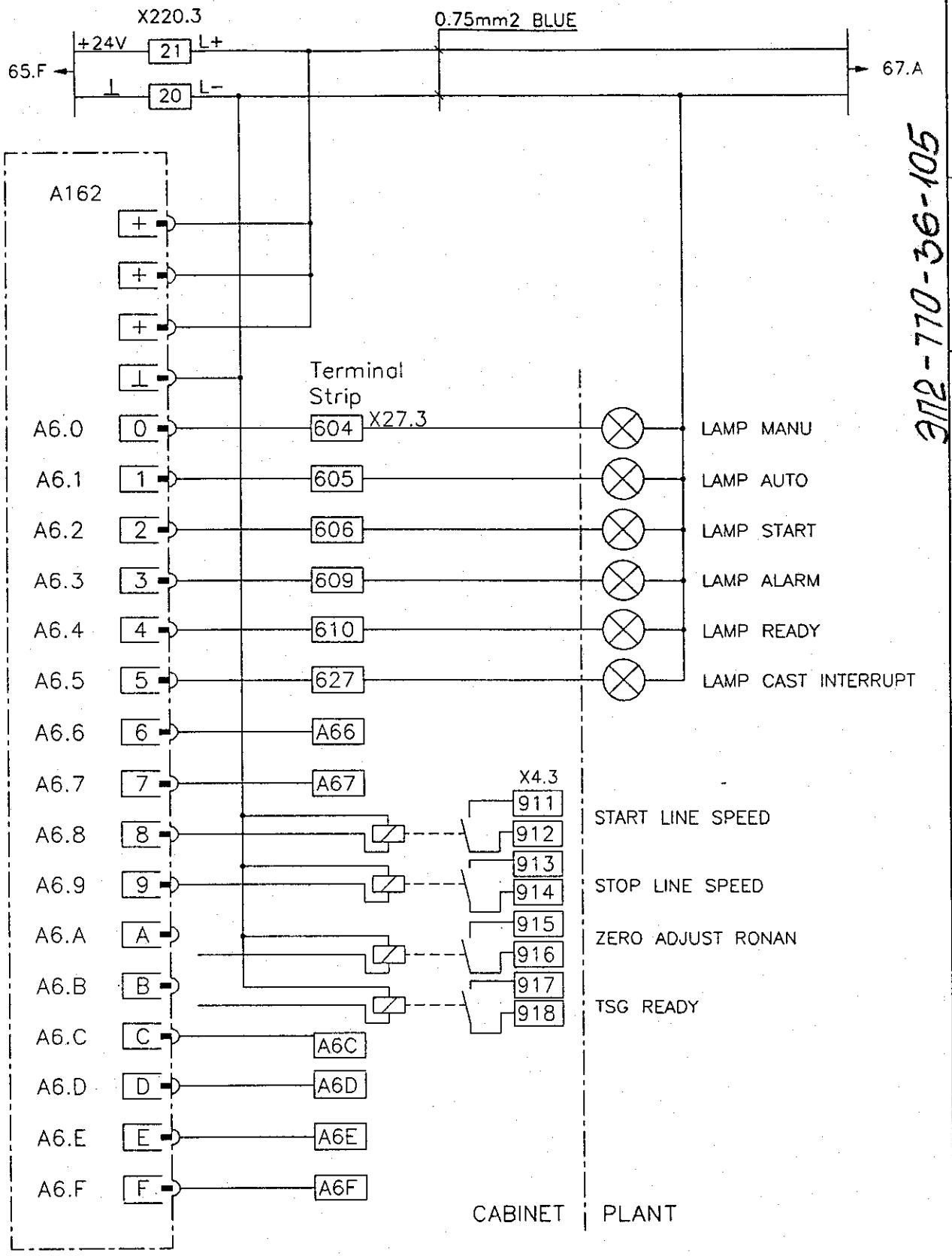
X220.3
+24V
21
L+
65.F
20
L-
0.75mm2 BLUE
67.A
A162
Terminal Strip
X27.3
A6.0 0 604 LAMP MANU
A6.1 1 605 LAMP AUTO
A6.2 2 606 LAMP START
A6.3 3 609 LAMP ALARM
A6.4 4 610 LAMP READY
A6.5 5 627 LAMP CAST INTERRUPT
A6.6 6 A66
A6.7 7 A67
X4.3
A6.8 8 911 912 START LINE SPEED
A6.9 9 913 914 STOP LINE SPEED
A6.A A 915 916 ZERO ADJUST RONAN
A6.B B 917 918 TSG READY
A6.C C A6C
A6.D D A6D
A6.E E A6E
A6.F F A6F
CABINET
PLANT
PLC OUTPUT MODULE
PLC RACK STRAND 3
0 1 2 3 4 5 7 8 9 A B C D E F
3112-770-36-105
SHEET 66
NEXT 67
E
116902
STRAND 3
PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
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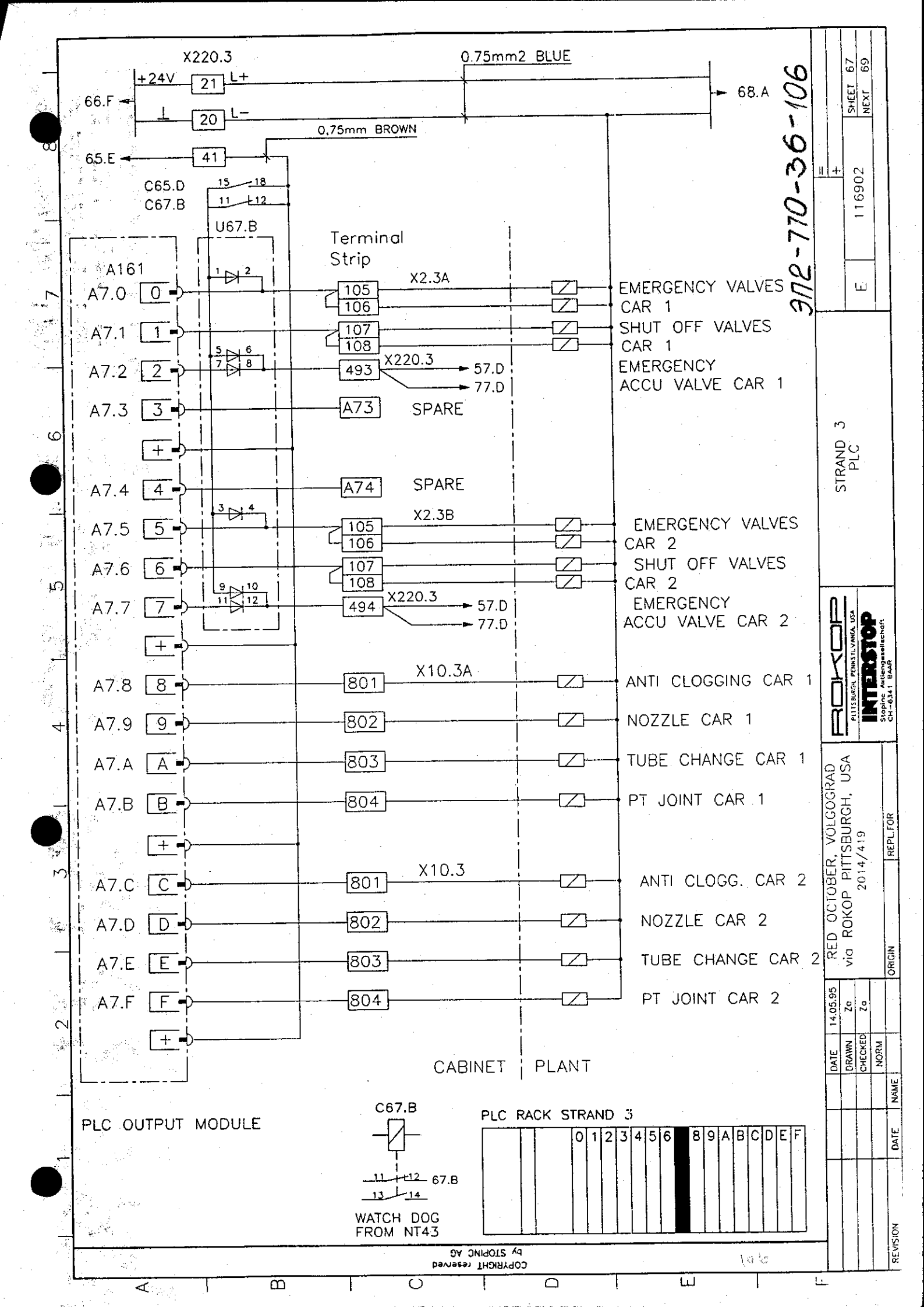
X220.3
+24V
21
L+
66.F
20
L-
0.75mm2 BLUE
68.A
0.75mm BROWN
65.E
41
C65.D
C67.B
15
18
11
12
U67.B
Terminal Strip
A161
A7.0
0
A7.1
1
A7.2
2
A7.3
3
+
A7.4
4
A7.5
5
A7.6
6
A7.7
7
+
A7.8
8
A7.9
9
A7.A
A
A7.B
B
+
A7.C
C
A7.D
D
A7.E
E
A7.F
F
+
X2.3A
105
106
107
108
493
X220.3
57.D
77.D
A73
SPARE
A74
SPARE
X2.3B
105
106
107
108
494
X220.3
57.D
77.D
X10.3A
801
802
803
804
X10.3
801
802
803
804
EMERGENCY VALVES CAR 1
SHUT OFF VALVES CAR 1
EMERGENCY ACCU VALVE CAR 1
EMERGENCY VALVES CAR 2
SHUT OFF VALVES CAR 2
EMERGENCY ACCU VALVE CAR 2
ANTI CLOGGING CAR 1
NOZZLE CAR 1
TUBE CHANGE CAR 1
PT JOINT CAR 1
ANTI CLOGG. CAR 2
NOZZLE CAR 2
TUBE CHANGE CAR 2
PT JOINT CAR 2
CABINET
PLANT
PLC OUTPUT MODULE
C67.B
11
12
67.B
13
14
WATCH DOG FROM NT43
PLC RACK STRAND 3
0 1 2 3 4 5 6 8 9 A B C D E F
3P2-770-36-106
SHEET 67
NEXT 69
116902
E
STRAND 3
PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
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DATE 14.05.95
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NAME
DATE
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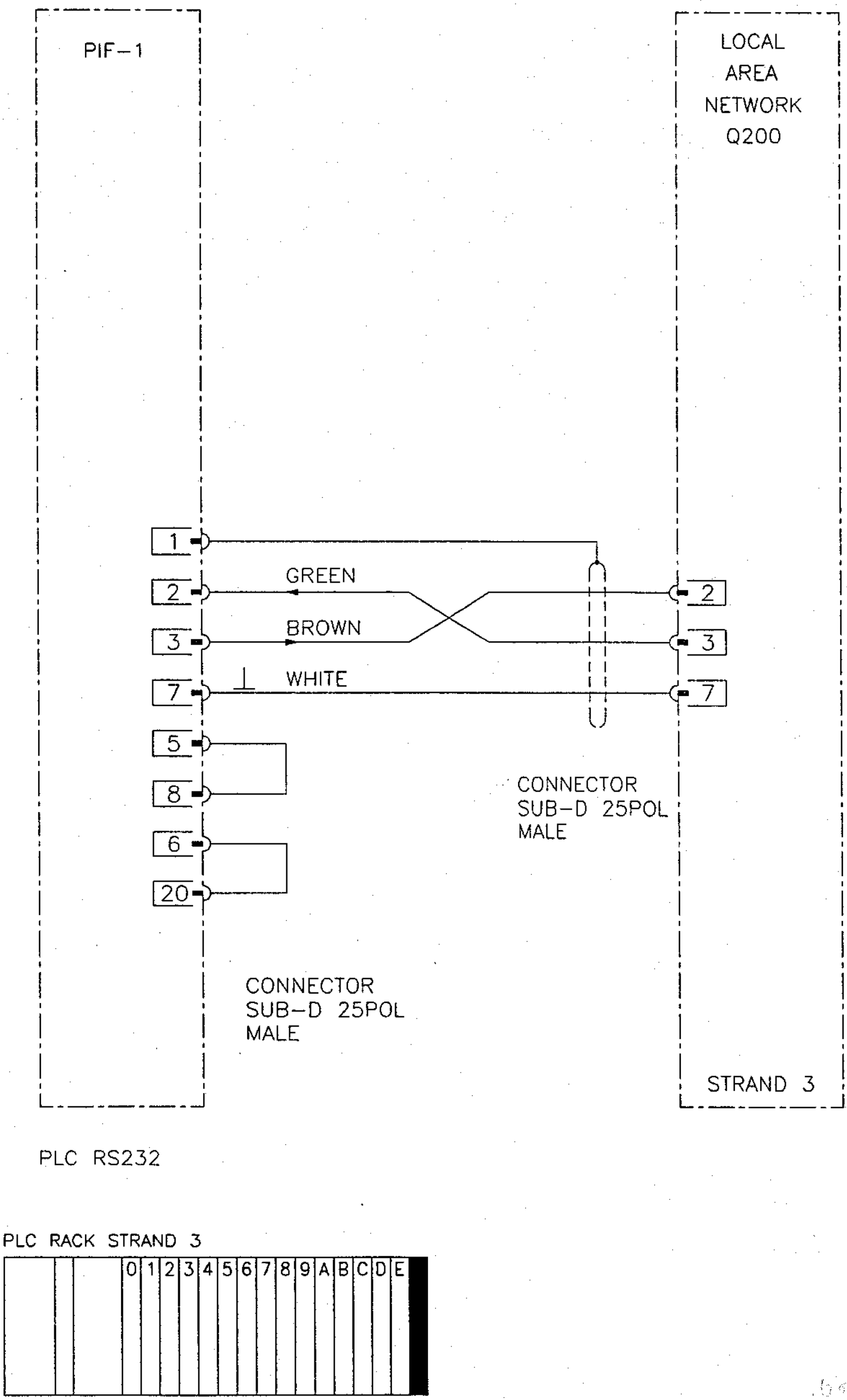

ЭП2-770-36-107

SHEET	69
NEXT	71

E 116902

STRAND 3
PLC

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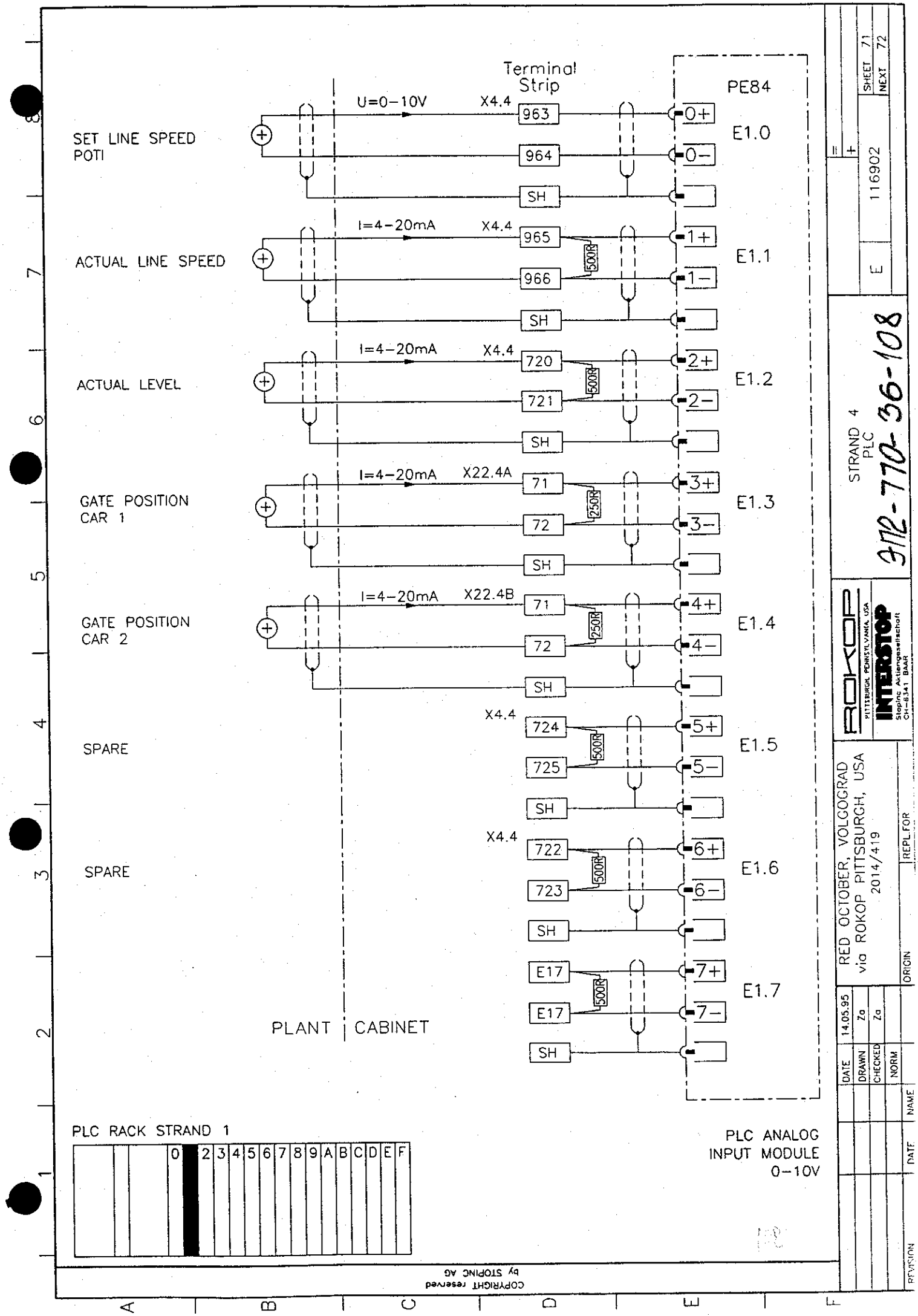
NORM	

ORIGIN
REPL.FOR
NAME
DATE
REVISION


Terminal Strip
PE84
SET LINE SPEED POTI
U=0–10V
X4.4
963
964
SH
0+
0–
E1.0
ACTUAL LINE SPEED
I=4–20mA
X4.4
965
966
500R
1+
1–
E1.1
ACTUAL LEVEL
I=4–20mA
X4.4
720
721
500R
2+
2–
E1.2
GATE POSITION CAR 1
I=4–20mA
X22.4A
71
72
250R
3+
3–
E1.3
GATE POSITION CAR 2
I=4–20mA
X22.4B
71
72
250R
4+
4–
E1.4
SPARE
X4.4
724
725
500R
5+
5–
E1.5
SPARE
X4.4
722
723
500R
6+
6–
E1.6
E17
E17
500R
7+
7–
E1.7
PLANT | CABINET
PLC RACK STRAND 1
0 2 3 4 5 6 7 8 9 A B C D E F
PLC ANALOG INPUT MODULE 0–10V
STRAND 4 PLC
372-770-36-108
SHEET 71
NEXT 72
116902
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
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Stopinc Aktiengesellschaft
CH-6341 BAAR
DATE 14.05.95
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NORM
NAME
DATE
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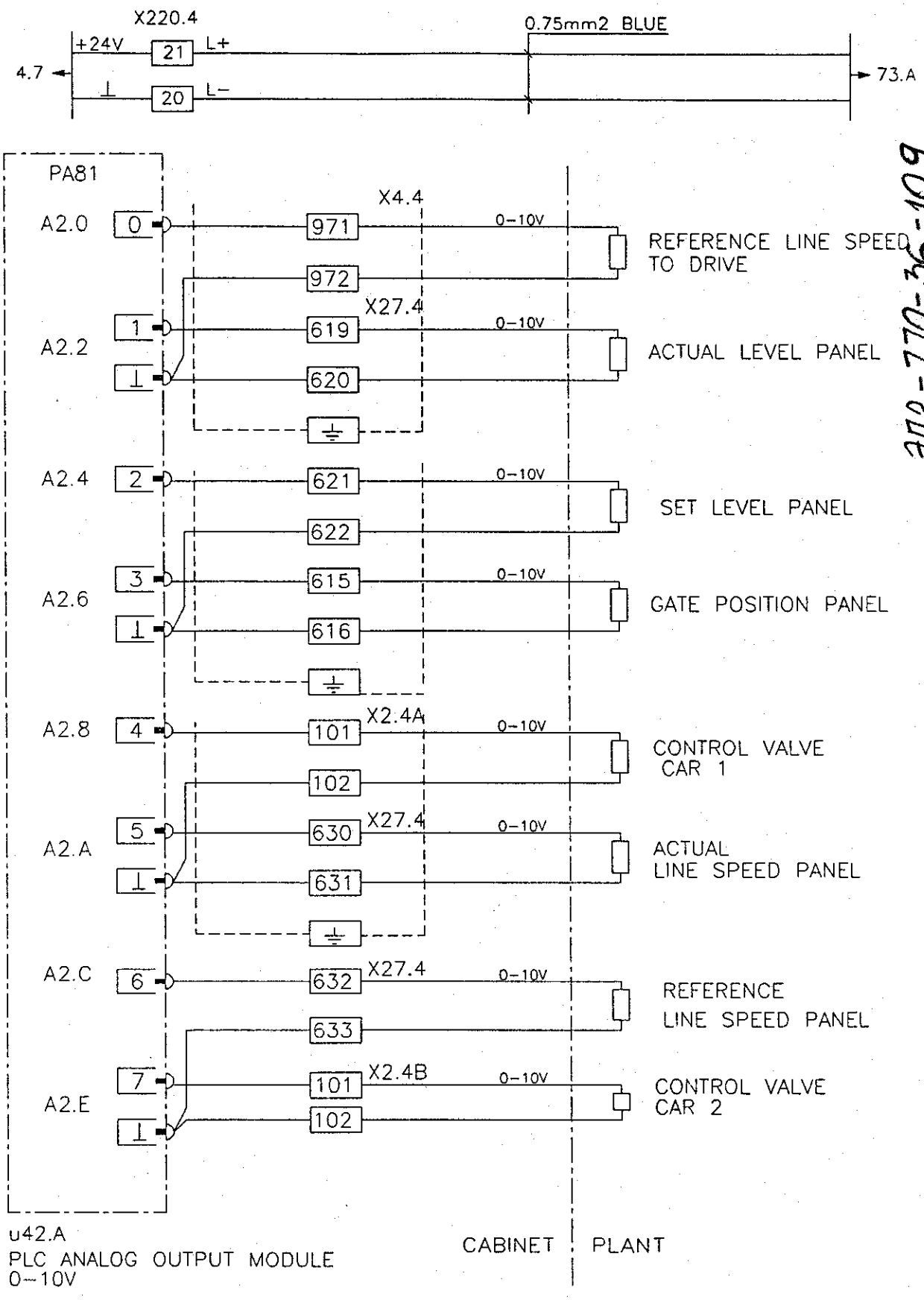
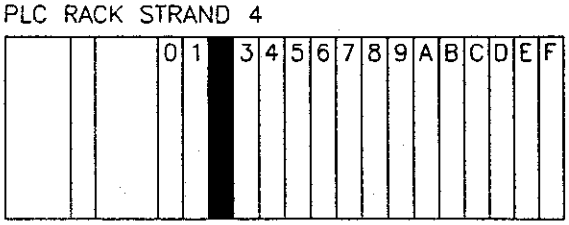


3T2-770-36-109

PLC RACK STRAND 4



SHEET 72
NEXT 73
116902
STRAND 4
PLC

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ORIGIN	14.05.95	Za	Za	
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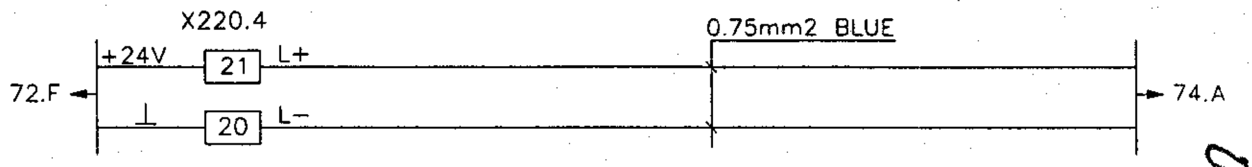

3112-770-36-110

STRAND 4
PLC

116902

E

SHEET 73
NEXT 74

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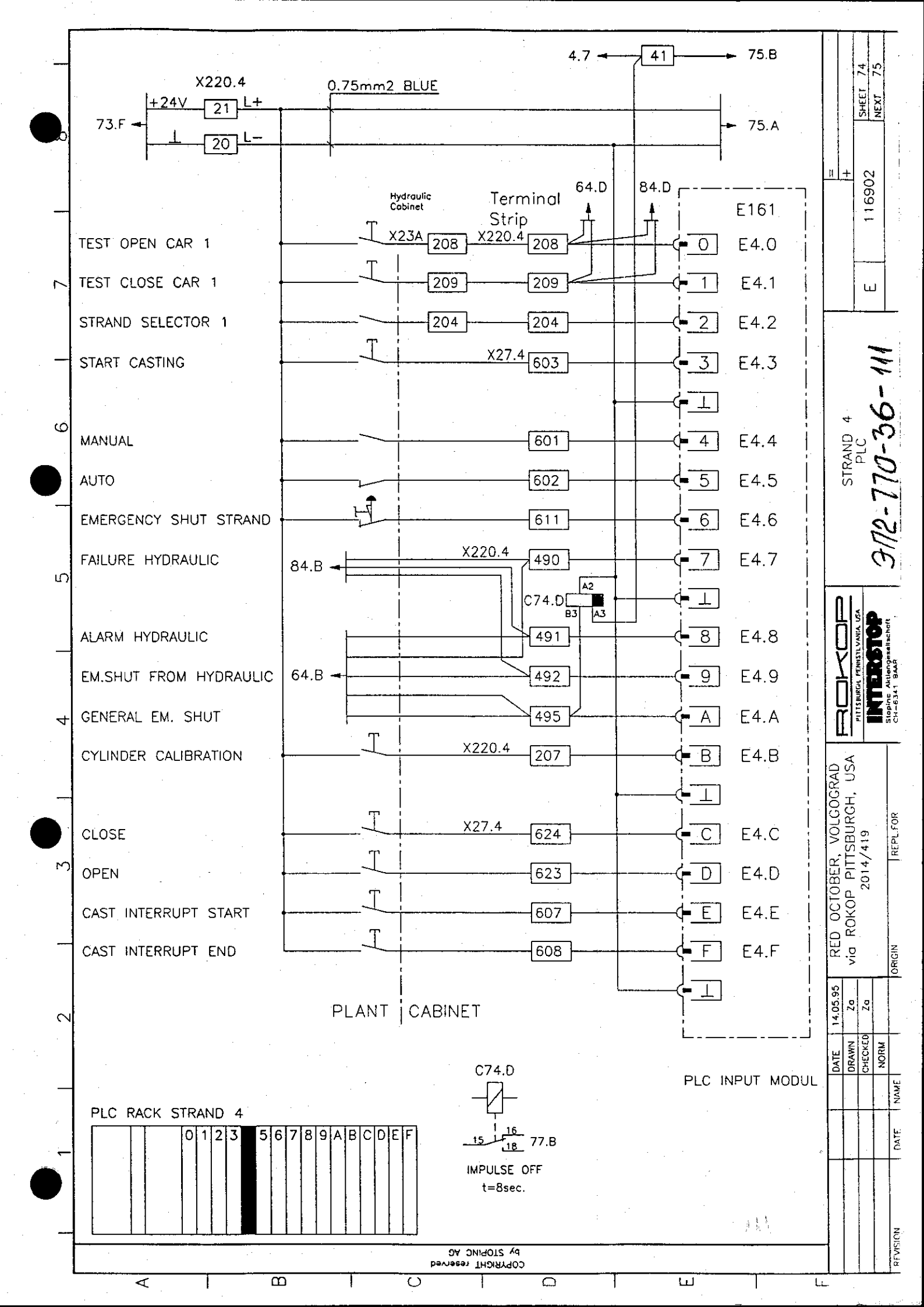
4.7
41
75.B
X220.4
0.75mm2 BLUE
+24V
21
L+
73.F
20
L-
75.A
Hydraulic Cabinet
Terminal Strip
64.D
84.D
E161
TEST OPEN CAR 1
X23A
208
X220.4
208
0
E4.0
TEST CLOSE CAR 1
209
209
1
E4.1
STRAND SELECTOR 1
204
204
2
E4.2
START CASTING
X27.4
603
3
E4.3
MANUAL
601
4
E4.4
AUTO
602
5
E4.5
EMERGENCY SHUT STRAND
611
6
E4.6
FAILURE HYDRAULIC
84.B
X220.4
490
7
E4.7
C74.D
A2
B3
A3
ALARM HYDRAULIC
491
8
E4.8
EM.SHUT FROM HYDRAULIC
64.B
492
9
E4.9
GENERAL EM. SHUT
495
A
E4.A
CYLINDER CALIBRATION
X220.4
207
B
E4.B
CLOSE
X27.4
624
C
E4.C
OPEN
623
D
E4.D
CAST INTERRUPT START
607
E
E4.E
CAST INTERRUPT END
608
F
E4.F
PLANT | CABINET
PLC INPUT MODUL
PLC RACK STRAND 4
0 1 2 3 5 6 7 8 9 A B C D E F
C74.D
15
16
18
77.B
IMPULSE OFF
t=8sec.
SHEET 74
NEXT 75
E
116902
STRAND 4
PLC
9112-770-36-111
ROKOP
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
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2014/419
ORIGIN
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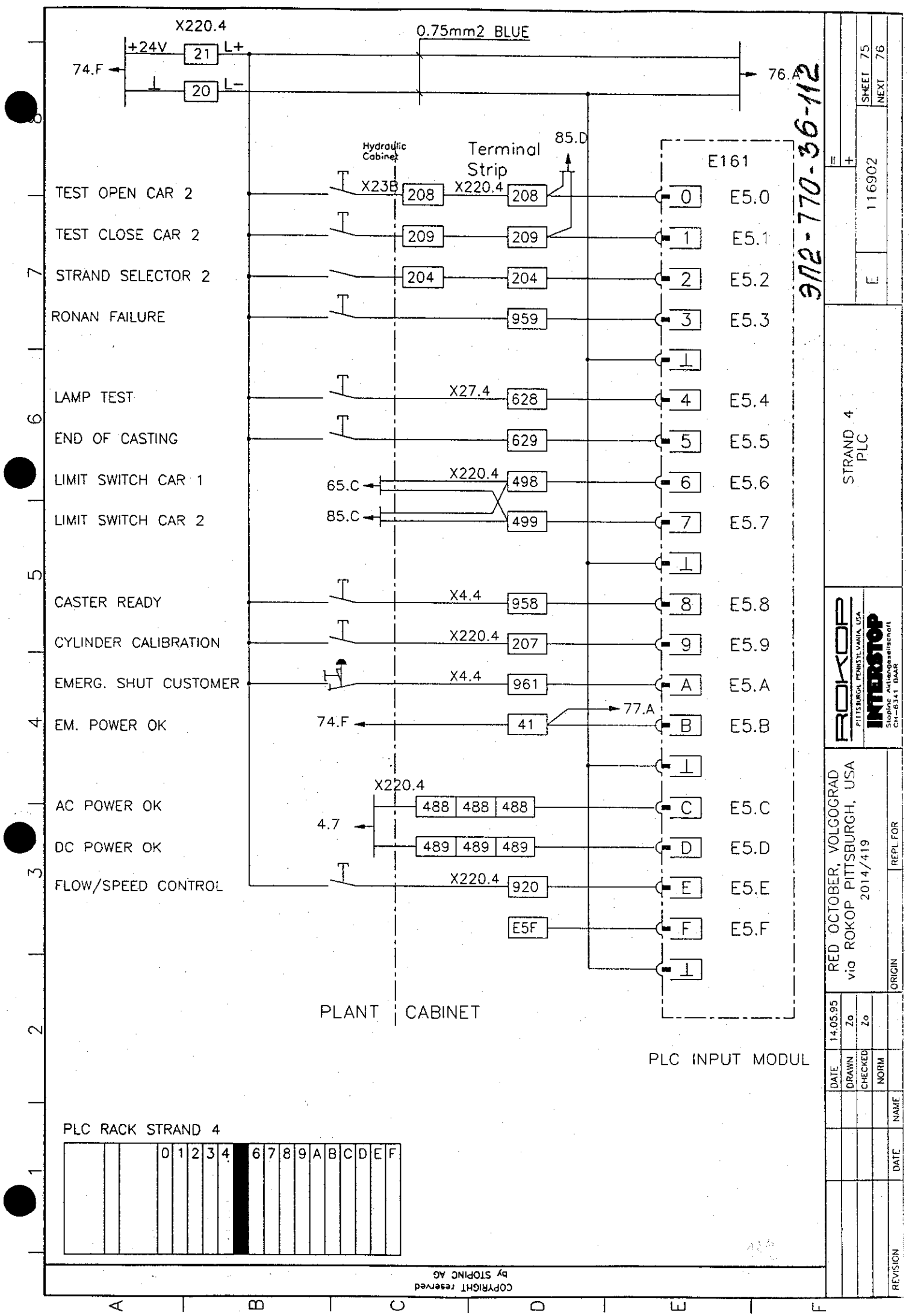
A B C D E F
1 2 3 4 5 6 7 8


X220.4
+24V
21
L+
74.F
20
L-
0.75mm2 BLUE
76.A
9N2-770-36-112
Hydraulic Cabinet
Terminal Strip
85.D
E161
TEST OPEN CAR 2
X23B
208
X220.4
208
0
E5.0
TEST CLOSE CAR 2
209
209
1
E5.1
STRAND SELECTOR 2
204
204
2
E5.2
RONAN FAILURE
959
3
E5.3
LAMP TEST
X27.4
628
4
E5.4
END OF CASTING
629
5
E5.5
LIMIT SWITCH CAR 1
65.C
X220.4
498
6
E5.6
LIMIT SWITCH CAR 2
85.C
499
7
E5.7
CASTER READY
X4.4
958
8
E5.8
CYLINDER CALIBRATION
X220.4
207
9
E5.9
EMERG. SHUT CUSTOMER
X4.4
961
A
E5.A
EM. POWER OK
74.F
41
77.A
B
E5.B
X220.4
AC POWER OK
488 488 488
4.7
C
E5.C
DC POWER OK
489 489 489
D
E5.D
FLOW/SPEED CONTROL
X220.4
920
E
E5.E
E5F
F
E5.F
PLANT
CABINET
PLC INPUT MODUL
PLC RACK STRAND 4
0 1 2 3 4 6 7 8 9 A B C D E F
SHEET 75
NEXT 76
116902
STRAND 4
PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
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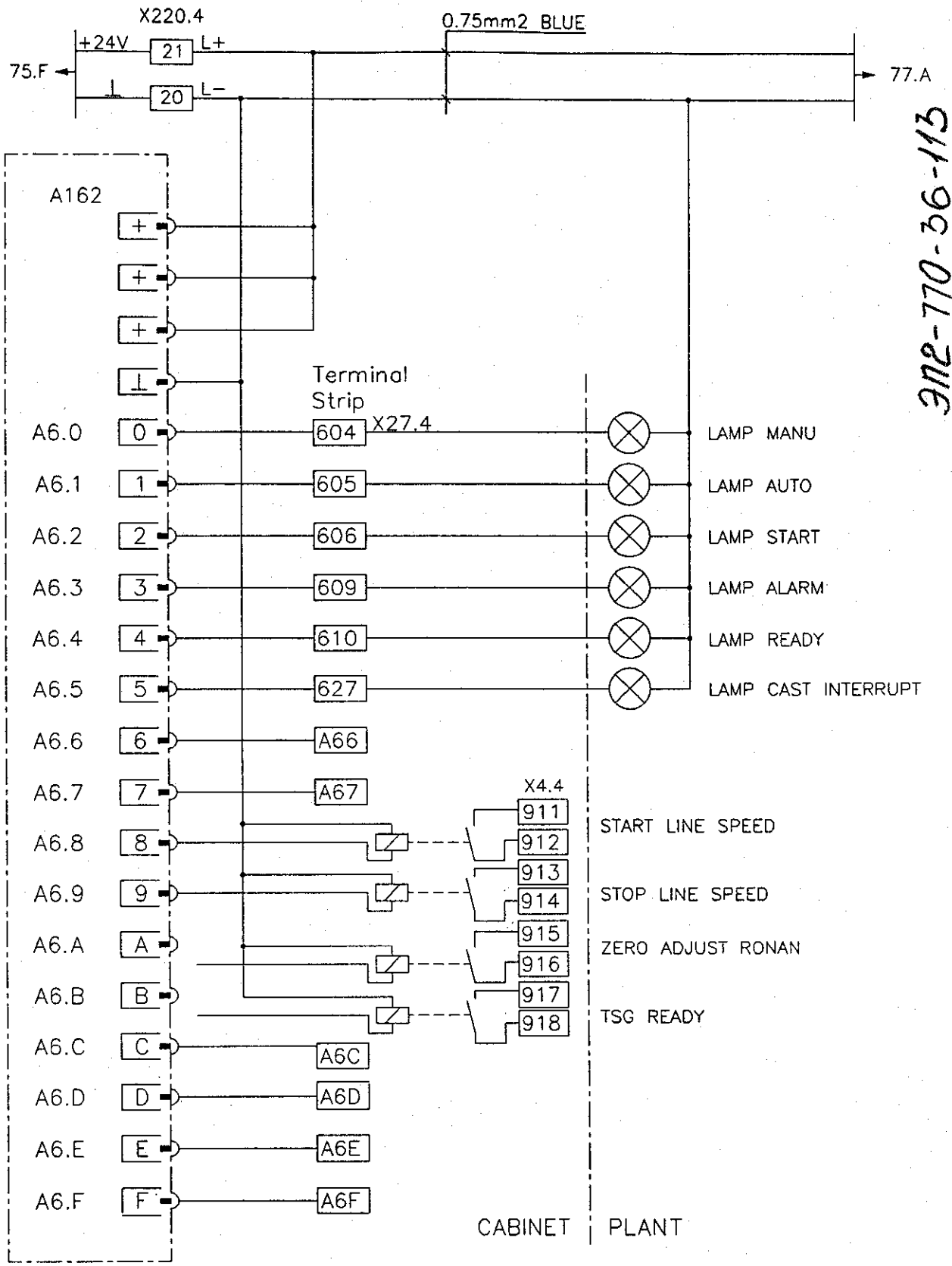
X220.4
+24V
21
L+
20
L-
75.F
0.75mm2 BLUE
77.A
A162
+
+
+
⊥
Terminal Strip
X27.4
A6.0 0 604 LAMP MANU
A6.1 1 605 LAMP AUTO
A6.2 2 606 LAMP START
A6.3 3 609 LAMP ALARM
A6.4 4 610 LAMP READY
A6.5 5 627 LAMP CAST INTERRUPT
A6.6 6 A66
A6.7 7 A67
X4.4
A6.8 8 911 912 START LINE SPEED
A6.9 9 913 914 STOP LINE SPEED
A6.A A 915 916 ZERO ADJUST RONAN
A6.B B 917 918 TSG READY
A6.C C A6C
A6.D D A6D
A6.E E A6E
A6.F F A6F
CABINET
PLANT
PLC OUTPUT MODULE
PLC RACK STRAND 4
0 1 2 3 4 5 7 8 9 A B C D E F
3N2-770-36-113
SHEET 76
NEXT 77
E
116902
STRAND 4
PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stäpfnc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
ORIGIN
REPL. FOR
DATE 14.05.95
DRAWN Za
CHECKED Za
NORM
NAME
DATE
REVISION
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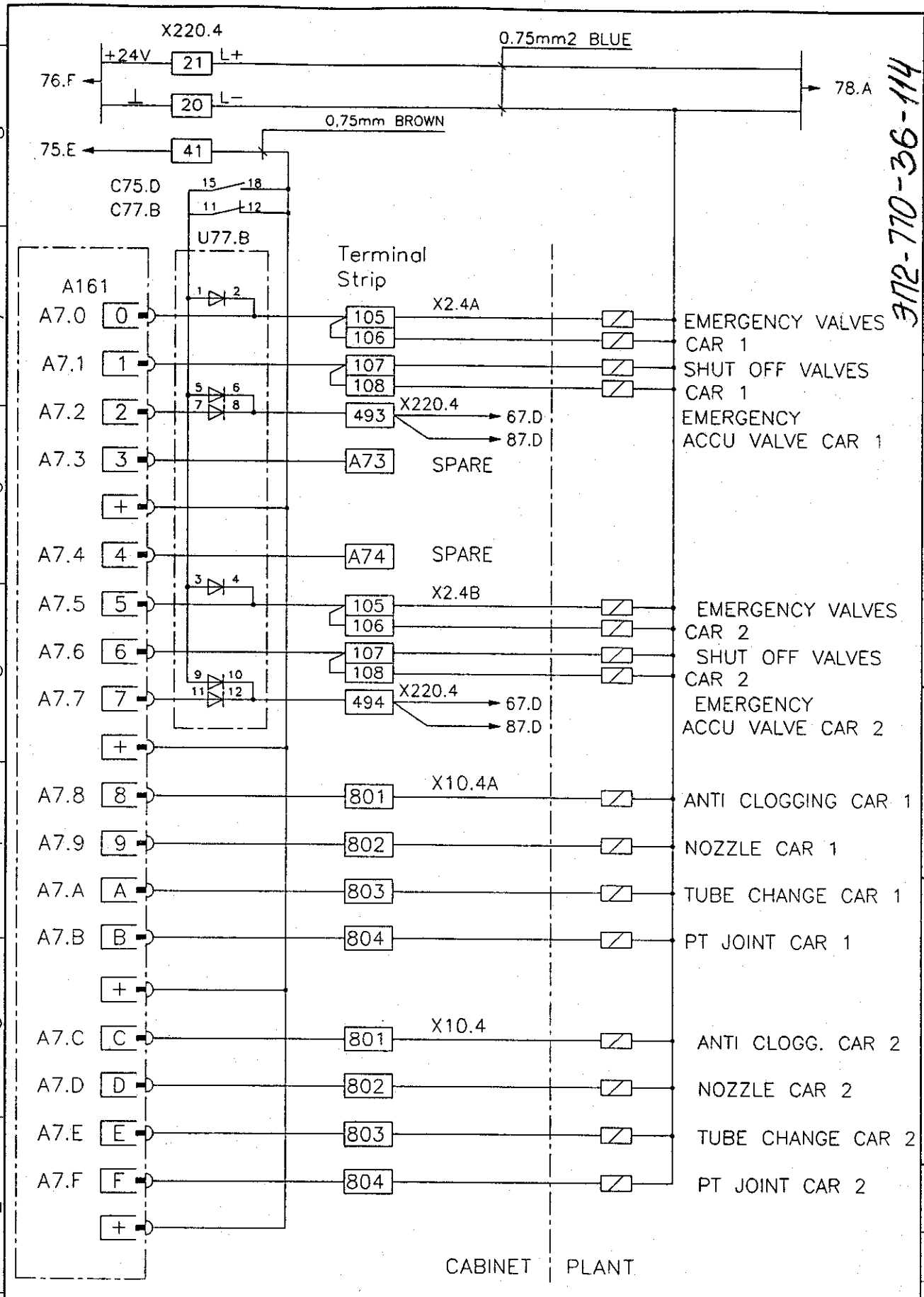

PLC OUTPUT MODULE

C77.B

11 12 77.B

13 14

WATCH DOG FROM NT43

PLC RACK STRAND 4

0	1	2	3	4	5	6		8	9	A	B	C	D	E	F

3112-770-36-114

SHEET 77 NEXT 79

E 116902

STRAND 4 PLC

ROKOP PITTSBURGH, PENNSYLVANIA, USA

INTERSTOP Sissach Aktiengesellschaft CH-4450 SISSACH

RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419

ORIGIN REPL.FOR

	DATE	NAME
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NORM		

REVISION DATE

3112-770-36-115

PIF-1

LOCAL AREA NETWORK Q200

1		
2	GREEN	2
3	BROWN	3
7	⊥ WHITE	7
5		
8		
6		
20		

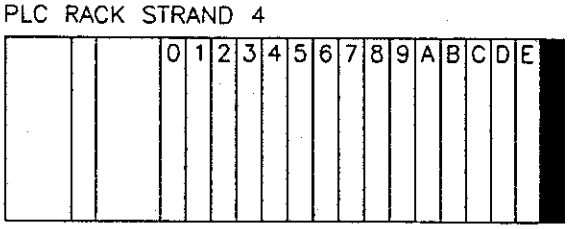
CONNECTOR SUB-D 25POL MALE

CONNECTOR SUB-D 25POL MALE

STRAND 4

PLC RS232

PLC RACK STRAND 4



STRAND 4 PLC

E 116902 SHEET 79 NEXT 81

ROKOP PITTSBURGH, PENNSYLVANIA USA

INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419

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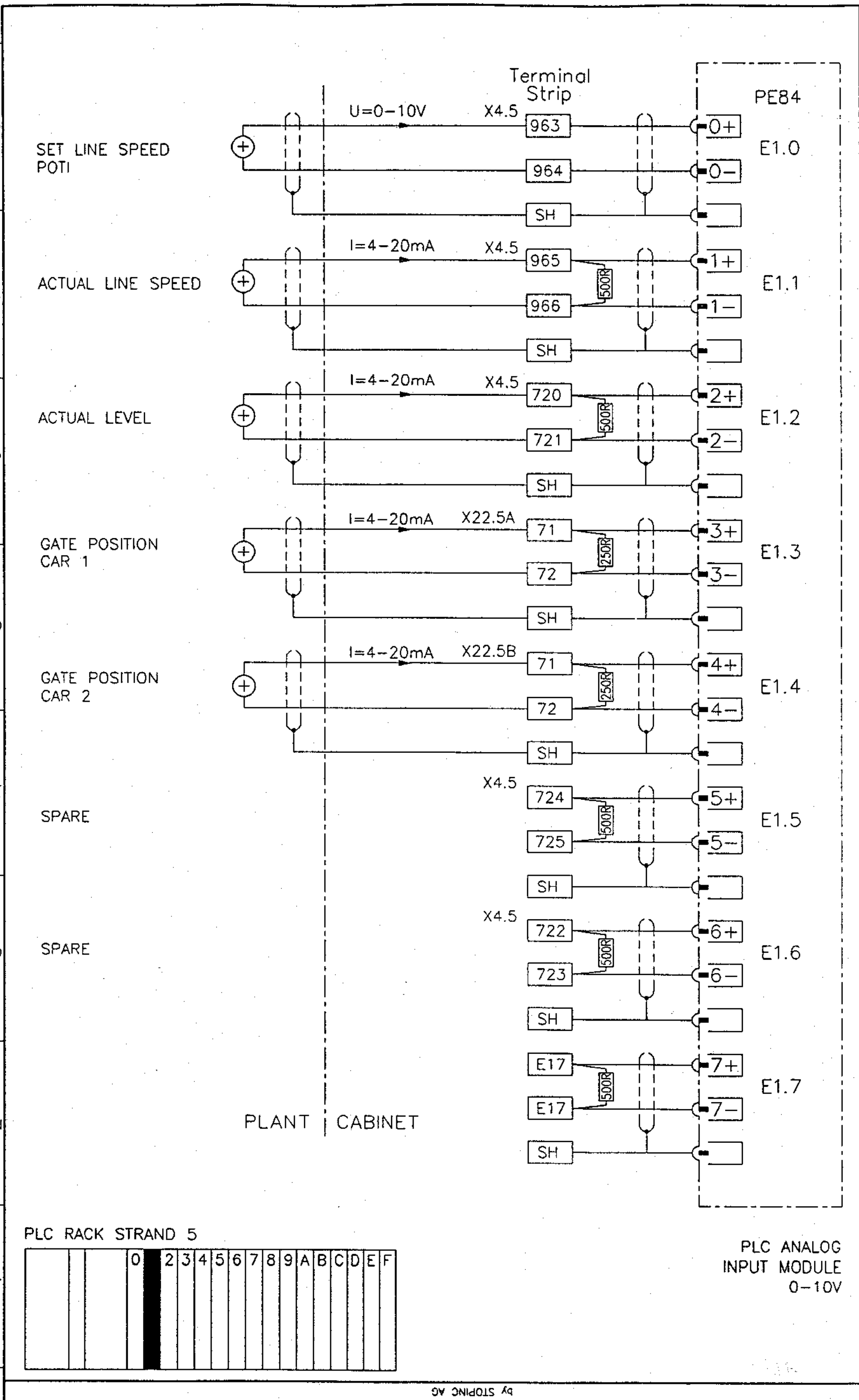
	DATE	DRAWN	CHECKED	NORM
	14.05.95	Za	Za	

REVISION | DATE | NAME



SHEET 81
NEXT 82
116902
E

STRAND 5
PLC

372-770-36-116

ROKOP PITTSBURGH PENNSYLVANIA USA
INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

DATE	14.05.95
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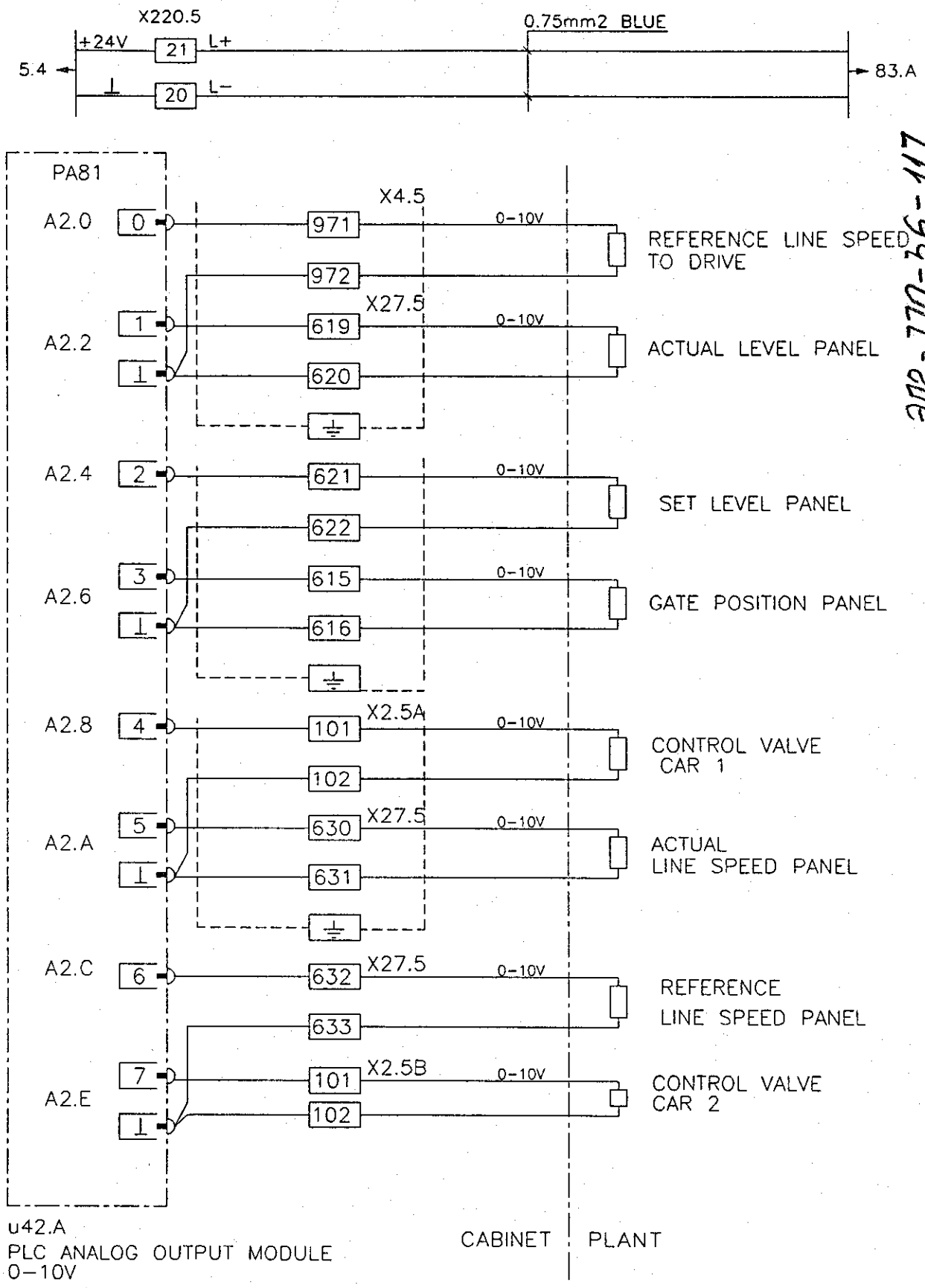
REPL.FOR
ORIGIN
REVISION
DATE
NAME



3112-770-36-117

SHEET 82
NEXT 83

E | 116902

STRAND 5
PLC

ROKOP
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

	DATE	NAME
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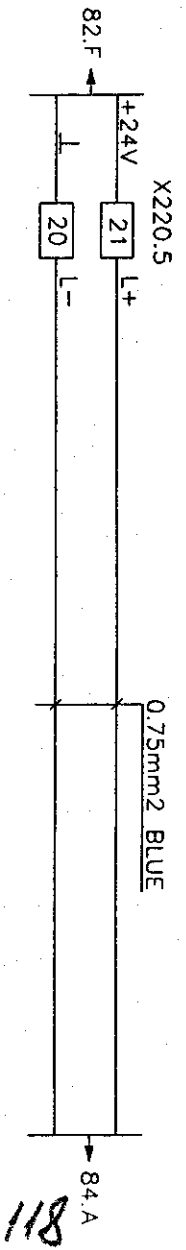
CHECKED		Za
NORM		

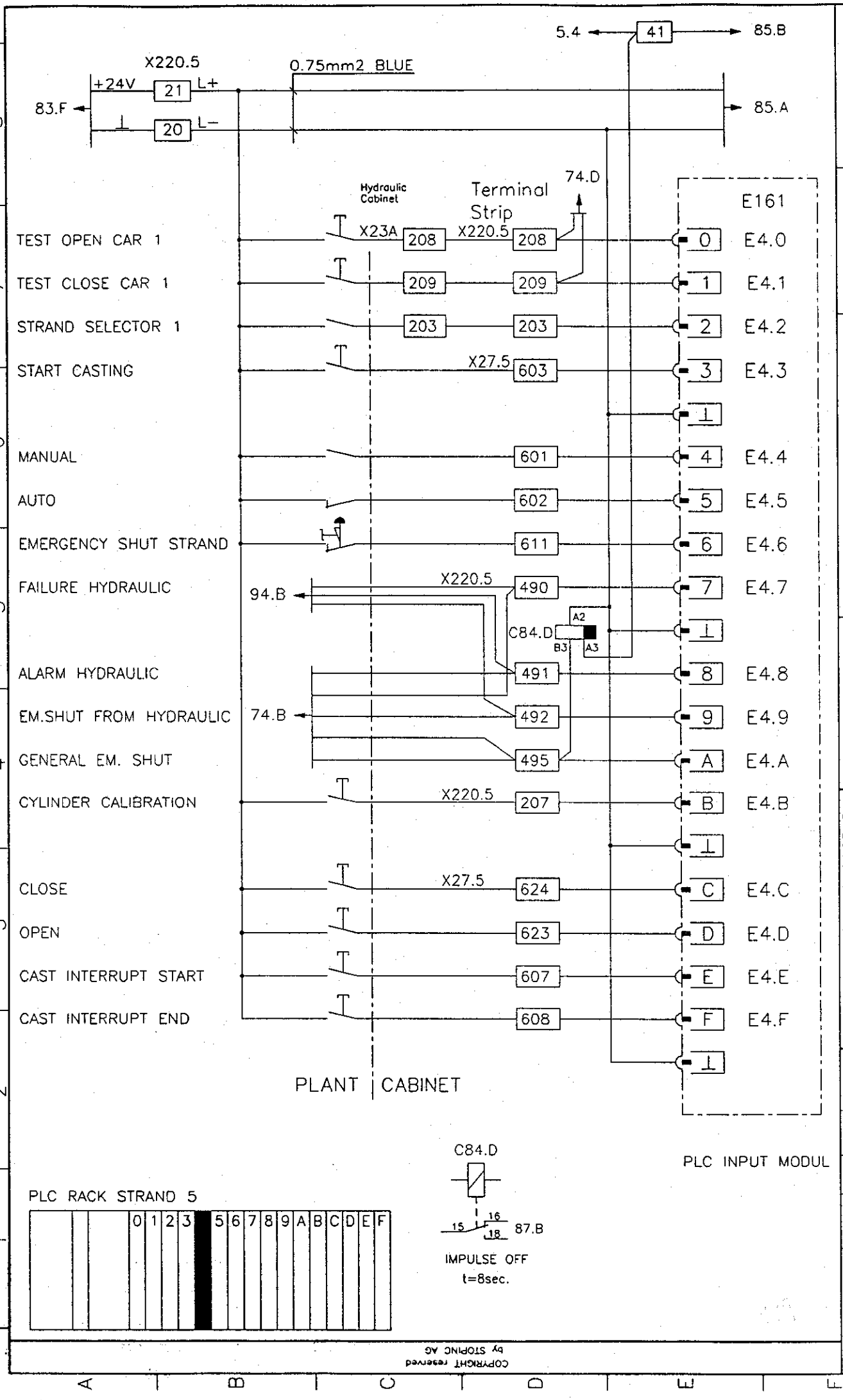
REVISION | DATE



3M2-770-36-118

			DATE	14.05.95	RED OCTOBER, VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH PENNSYLVANIA USA	STRAND 5 PLC
			DRAWN	Za			
			CHECKED	Za		INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	116902	SHEET	83
		NEXT	84


5.4
41
85.B
X220.5
+24V
21
L+
0.75mm2 BLUE
83.F
20
L−
85.A
Hydraulic Cabinet
Terminal Strip
74.D
E161
TEST OPEN CAR 1
X23A
208
X220.5
208
0
E4.0
TEST CLOSE CAR 1
209
209
1
E4.1
STRAND SELECTOR 1
203
203
2
E4.2
START CASTING
X27.5
603
3
E4.3
MANUAL
601
4
E4.4
AUTO
602
5
E4.5
EMERGENCY SHUT STRAND
611
6
E4.6
FAILURE HYDRAULIC
94.B
X220.5
490
7
E4.7
C84.D
A2
B3
A3
ALARM HYDRAULIC
491
8
E4.8
EM.SHUT FROM HYDRAULIC
74.B
492
9
E4.9
GENERAL EM. SHUT
495
A
E4.A
CYLINDER CALIBRATION
X220.5
207
B
E4.B
CLOSE
X27.5
624
C
E4.C
OPEN
623
D
E4.D
CAST INTERRUPT START
607
E
E4.E
CAST INTERRUPT END
608
F
E4.F
PLANT
CABINET
PLC INPUT MODUL
C84.D
15
16
18
87.B
IMPULSE OFF
t=8sec.
PLC RACK STRAND 5
0 1 2 3 5 6 7 8 9 A B C D E F
SHEET 84
NEXT 85
116902
STRAND 5
PLC
972-770-36-119
ROKOP
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
ORIGIN
REPL.FOR
DATE 14.05.95
DRAWN Za
CHECKED Za
NORM
NAME
DATE
REVISION
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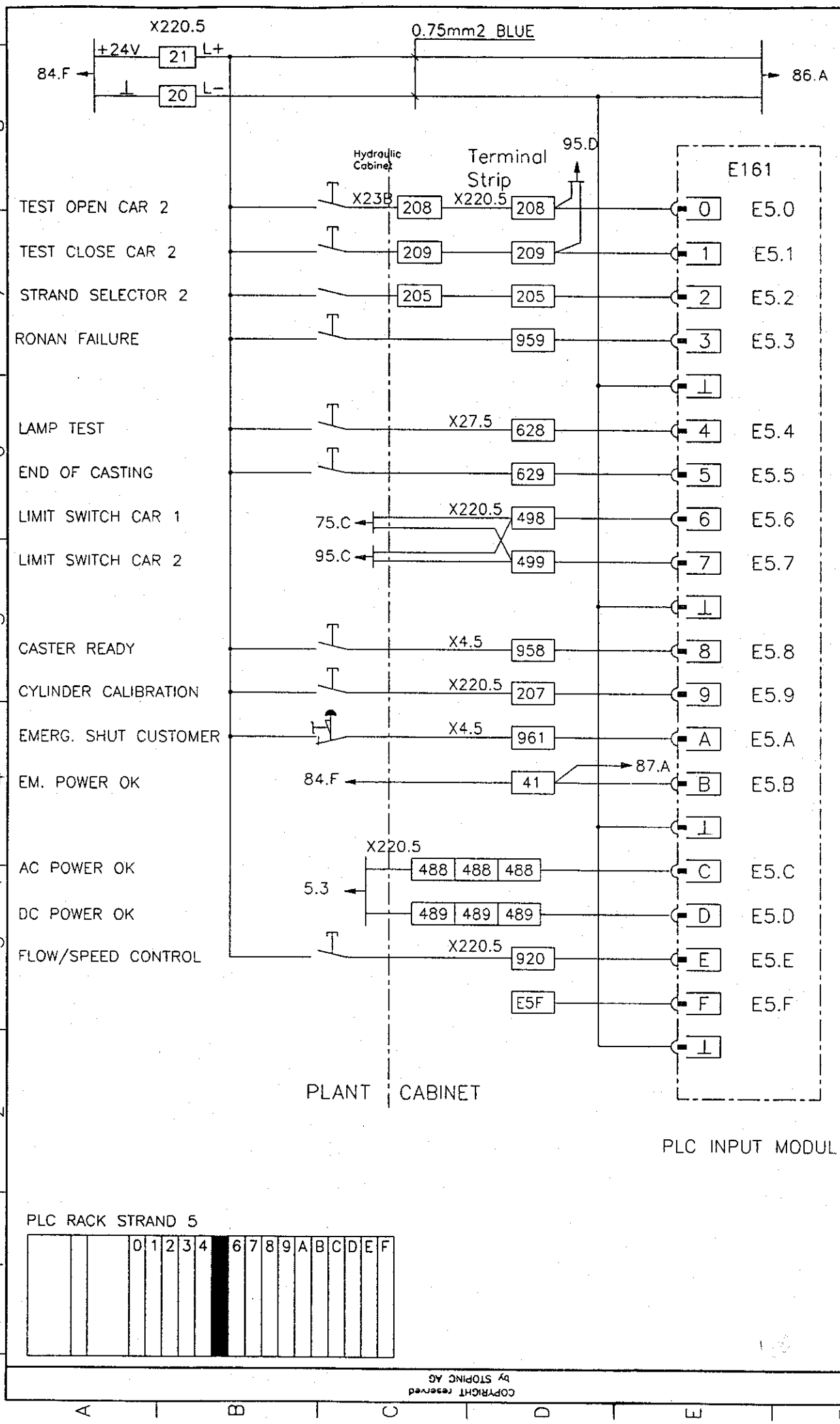
X220.5
+24V
21
L+
84.F
20
L-
0.75mm2 BLUE
86.A
Hydraulic Cabinet
Terminal Strip
95.D
E161
TEST OPEN CAR 2
X23B
208
X220.5
208
0
E5.0
TEST CLOSE CAR 2
209
209
1
E5.1
STRAND SELECTOR 2
205
205
2
E5.2
RONAN FAILURE
959
3
E5.3
LAMP TEST
X27.5
628
4
E5.4
END OF CASTING
629
5
E5.5
LIMIT SWITCH CAR 1
75.C
X220.5
498
6
E5.6
LIMIT SWITCH CAR 2
95.C
499
7
E5.7
CASTER READY
X4.5
958
8
E5.8
CYLINDER CALIBRATION
X220.5
207
9
E5.9
EMERG. SHUT CUSTOMER
X4.5
961
A
E5.A
EM. POWER OK
84.F
41
87.A
B
E5.B
AC POWER OK
X220.5
488 488 488
C
E5.C
5.3
DC POWER OK
489 489 489
D
E5.D
FLOW/SPEED CONTROL
X220.5
920
E
E5.E
E5F
F
E5.F
PLANT
CABINET
PLC INPUT MODUL
PLC RACK STRAND 5
0 1 2 3 4 6 7 8 9 A B C D E F
STRAND 5
PLC
372-770-36-120
SHEET 85
NEXT 86
116902
E
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
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NAME
DATE
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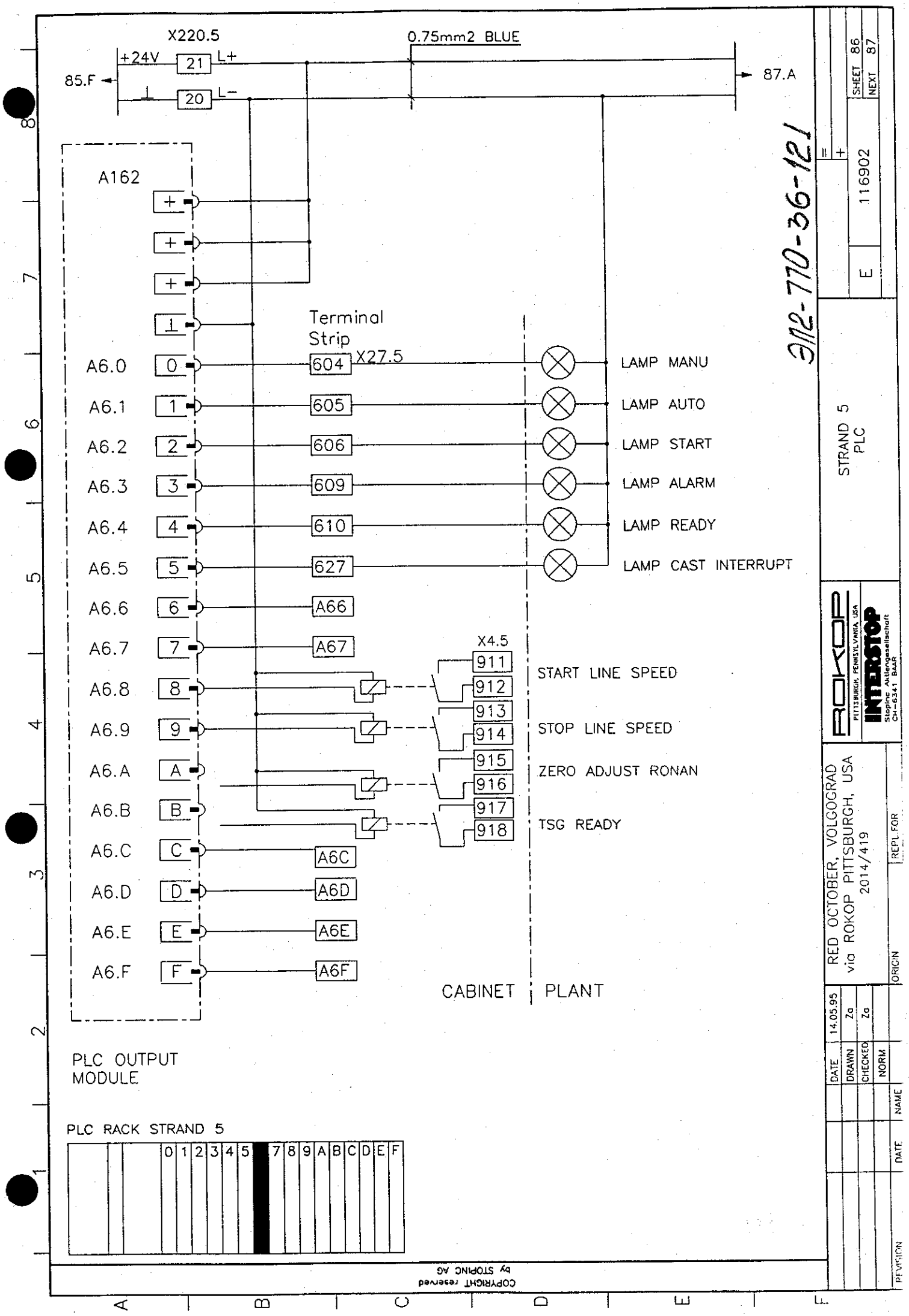
X220.5
+24V
21
L+
85.F
⊥
20
L-
0.75mm2 BLUE
87.A
A162
+
+
+
⊥
Terminal Strip
X27.5
A6.0 0 604 LAMP MANU
A6.1 1 605 LAMP AUTO
A6.2 2 606 LAMP START
A6.3 3 609 LAMP ALARM
A6.4 4 610 LAMP READY
A6.5 5 627 LAMP CAST INTERRUPT
A6.6 6 A66
A6.7 7 A67
X4.5
A6.8 8 911 912 START LINE SPEED
A6.9 9 913 914 STOP LINE SPEED
A6.A A 915 916 ZERO ADJUST RONAN
A6.B B 917 918 TSG READY
A6.C C A6C
A6.D D A6D
A6.E E A6E
A6.F F A6F
CABINET
PLANT
PLC OUTPUT MODULE
PLC RACK STRAND 5
0 1 2 3 4 5 7 8 9 A B C D E F
3112-770-36-121
SHEET 86
NEXT 87
E
116902
STRAND 5
PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stoppinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
ORIGIN
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CHECKED Za
NORM
NAME
DATE
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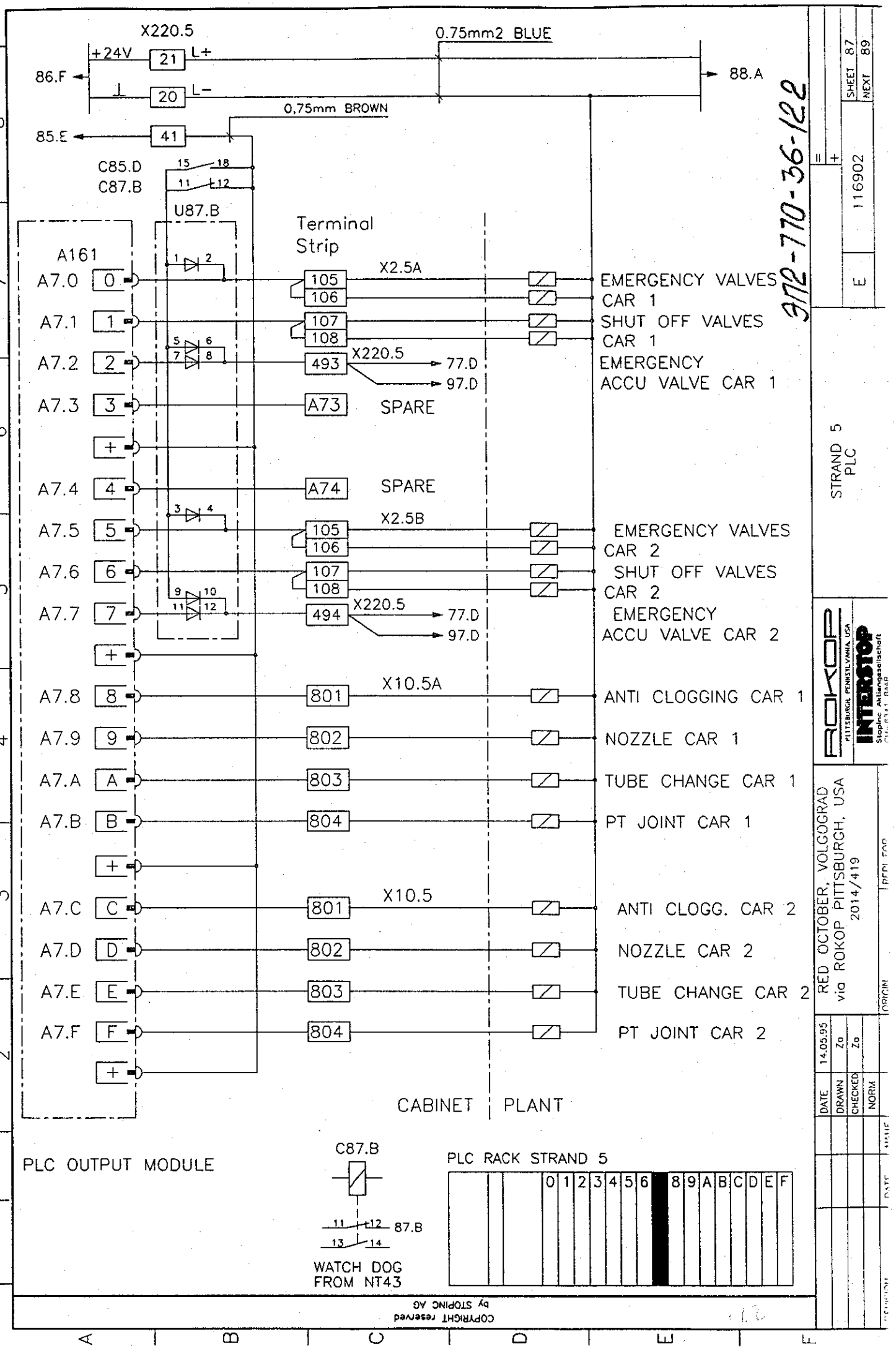
X220.5
+24V
21
L+
20
L-
86.F
88.A
0.75mm2 BLUE
0,75mm BROWN
85.E
41
C85.D
C87.B
15
18
11
12
U87.B
A161
Terminal Strip
X2.5A
X2.5B
X220.5
X10.5A
X10.5
A7.0
A7.1
A7.2
A7.3
A7.4
A7.5
A7.6
A7.7
A7.8
A7.9
A7.A
A7.B
A7.C
A7.D
A7.E
A7.F
105
106
107
108
493
494
A73
A74
801
802
803
804
77.D
97.D
SPARE
EMERGENCY VALVES CAR 1
SHUT OFF VALVES CAR 1
EMERGENCY ACCU VALVE CAR 1
EMERGENCY VALVES CAR 2
SHUT OFF VALVES CAR 2
EMERGENCY ACCU VALVE CAR 2
ANTI CLOGGING CAR 1
NOZZLE CAR 1
TUBE CHANGE CAR 1
PT JOINT CAR 1
ANTI CLOGG. CAR 2
NOZZLE CAR 2
TUBE CHANGE CAR 2
PT JOINT CAR 2
CABINET
PLANT
PLC OUTPUT MODULE
C87.B
87.B
WATCH DOG FROM NT43
PLC RACK STRAND 5
0 1 2 3 4 5 6 8 9 A B C D E F
972-770-36-122
SHEET 87
NEXT 89
116902
E
STRAND 5 PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
DATE 14.05.95
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CHECKED Zo
NORM
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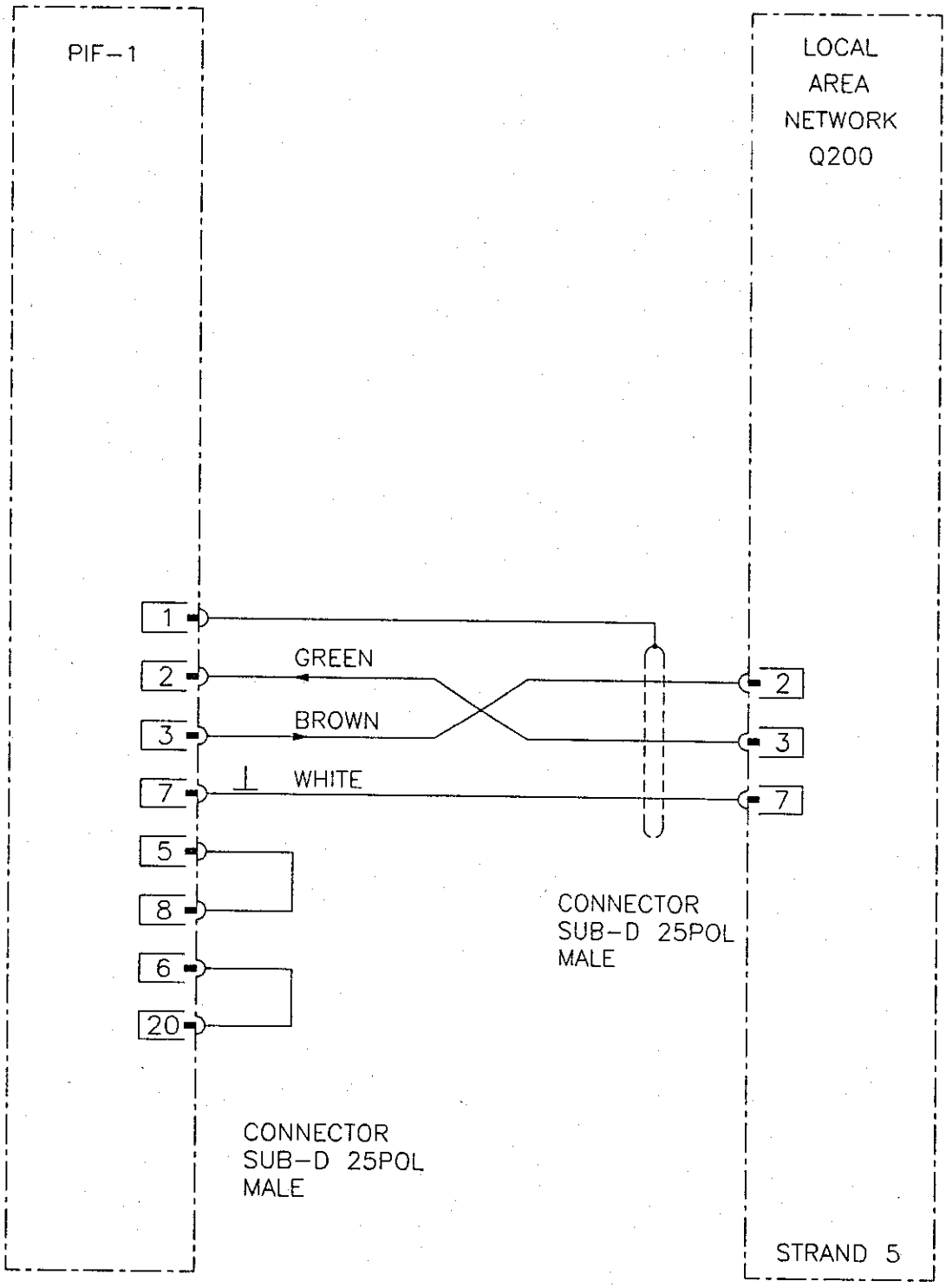
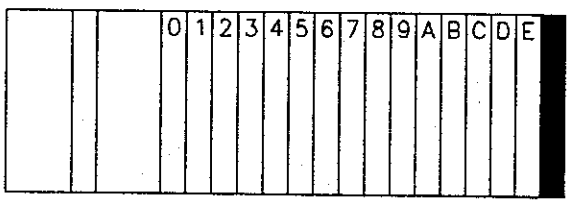


PLC RACK STRAND 5



3772-770-36-123

STRAND 5
PLC

RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stäpfli Aktiengesellschaft CH-6341 BAAR

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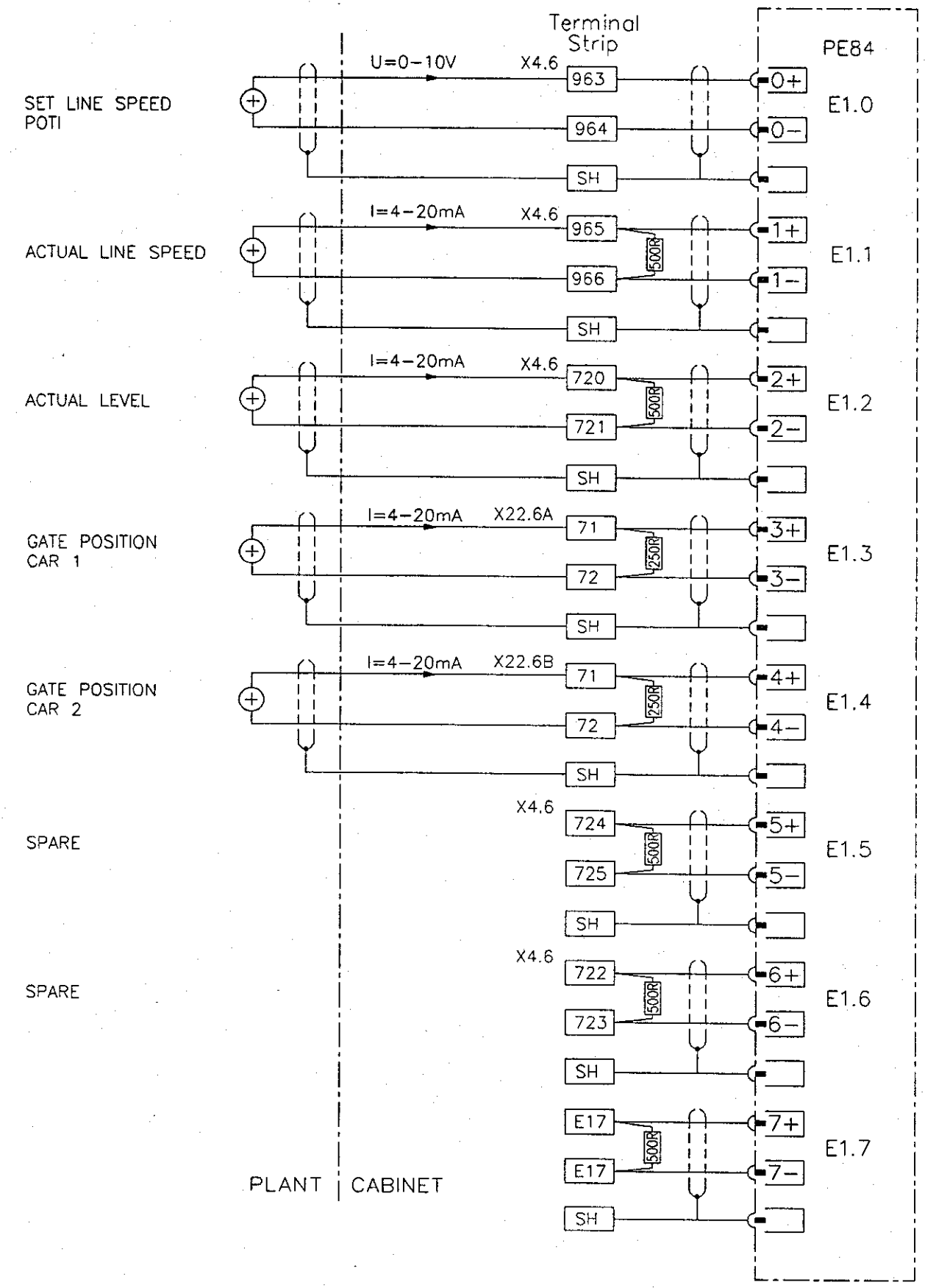
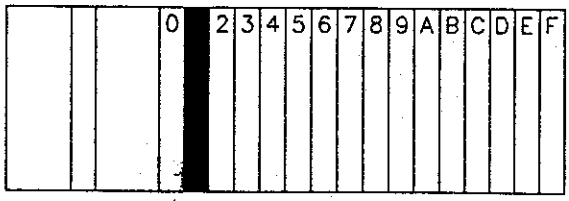


PLC RACK STRAND 6



PLC ANALOG INPUT MODULE 0-10V

STRAND 6
PLC

372-770-36-124

E 116902

SHEET 91
NEXT 92

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-5141 RAAR

RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

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	NORM			
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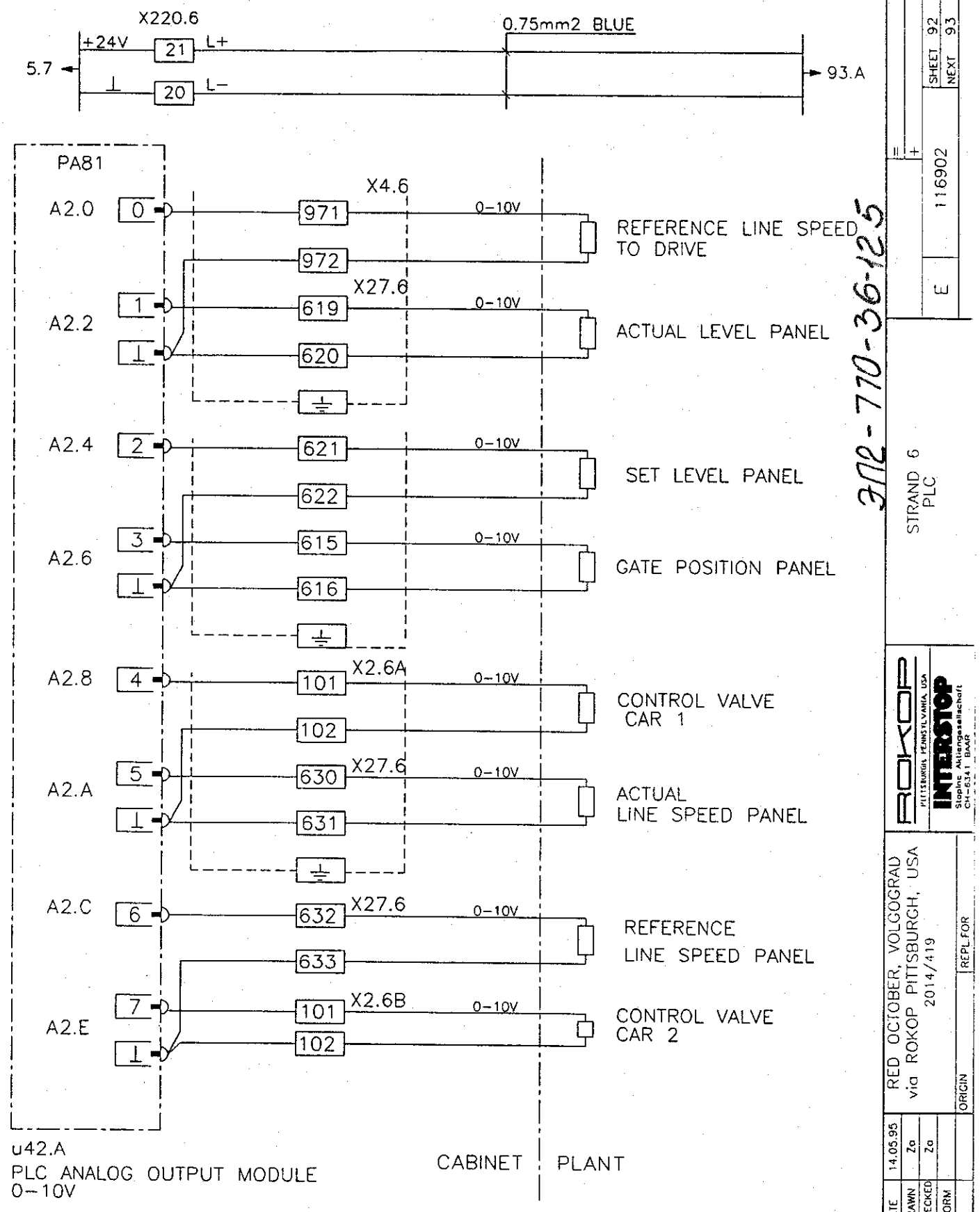
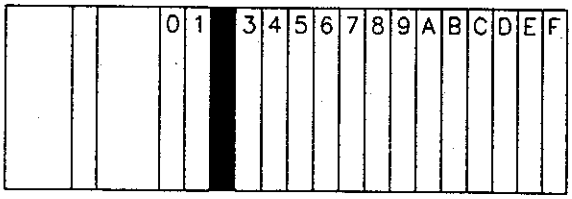


PLC RACK STRAND 6



372-770-36-125

STRAND 6
PLC

E 116902 SHEET 92 NEXT 93

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

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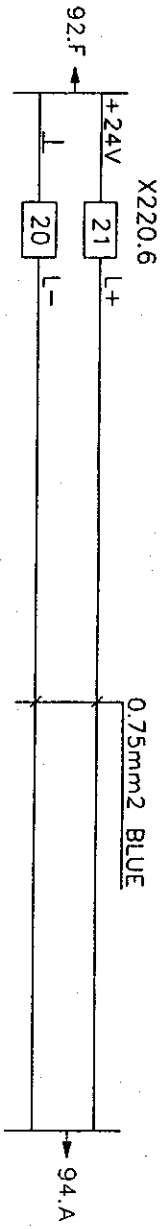
REVISION | DATE



372-770-36-126

			DATE	14.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

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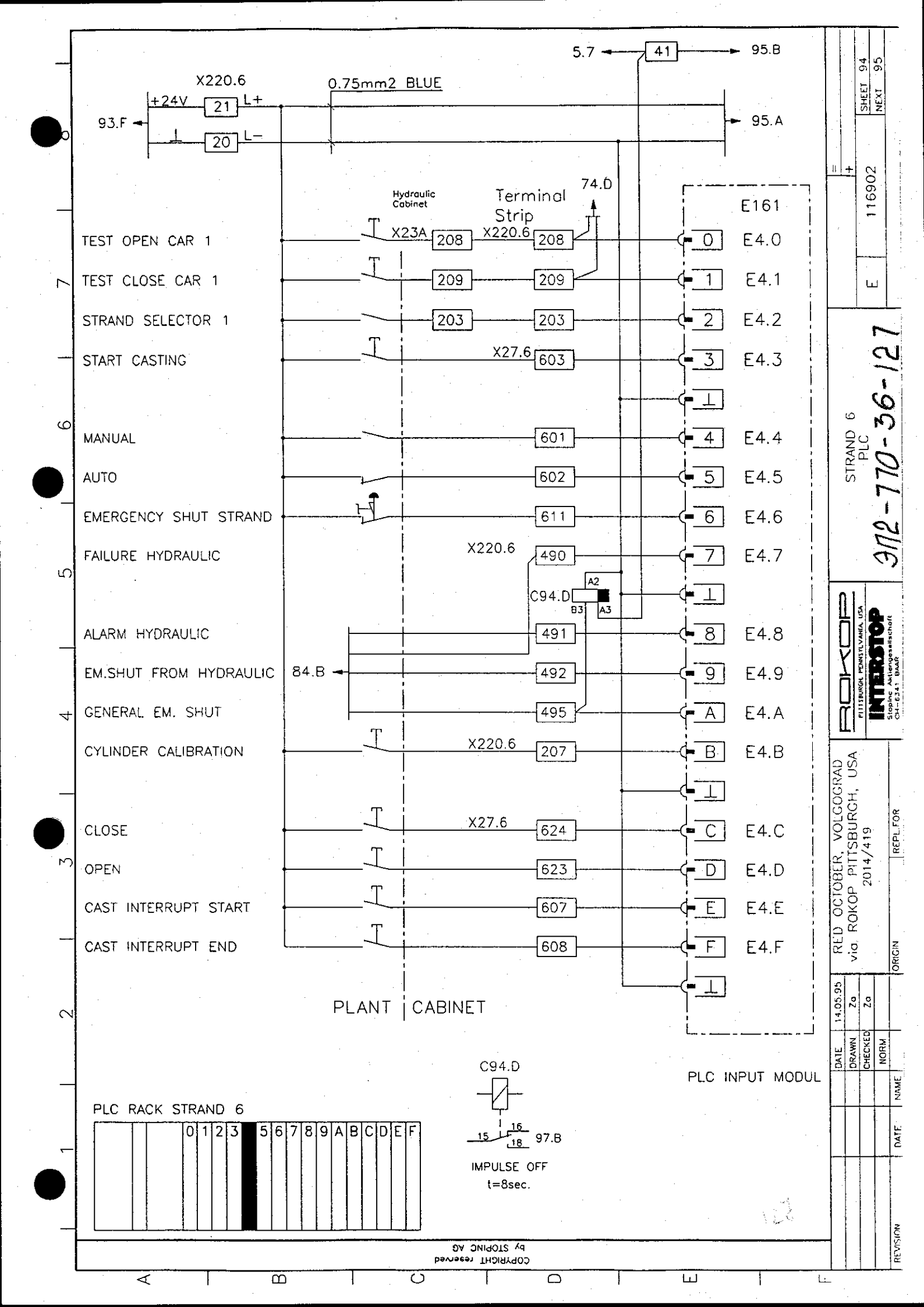
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

STRAND 6
PLC

E	116902	SHEET 93
		NEXT 94


5.7
41
95.B
X220.6
+24V
21
L+
0.75mm2 BLUE
93.F
20
L-
95.A
Hydraulic Cabinet
Terminal Strip
74.D
E161
TEST OPEN CAR 1
X23A
208
X220.6
208
0
E4.0
TEST CLOSE CAR 1
209
209
1
E4.1
STRAND SELECTOR 1
203
203
2
E4.2
START CASTING
X27.6
603
3
E4.3
MANUAL
601
4
E4.4
AUTO
602
5
E4.5
EMERGENCY SHUT STRAND
611
6
E4.6
FAILURE HYDRAULIC
X220.6
490
7
E4.7
C94.D
A2
B3
A3
ALARM HYDRAULIC
491
8
E4.8
EM.SHUT FROM HYDRAULIC
84.B
492
9
E4.9
GENERAL EM. SHUT
495
A
E4.A
CYLINDER CALIBRATION
X220.6
207
B
E4.B
CLOSE
X27.6
624
C
E4.C
OPEN
623
D
E4.D
CAST INTERRUPT START
607
E
E4.E
CAST INTERRUPT END
608
F
E4.F
PLANT
CABINET
PLC INPUT MODUL
C94.D
15
16
18
97.B
IMPULSE OFF
t=8sec.
PLC RACK STRAND 6
0 1 2 3 5 6 7 8 9 A B C D E F
SHEET 94
NEXT 95
116902
STRAND 6
PLC
372-770-36-127
ROKOP
PITTSBURGH PENNSYLVANIA USA
INTERROTOP
Stoppinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
REPL.FOR
ORIGIN
DATE 14.05.95
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CHECKED Za
NORM
NAME
DATE
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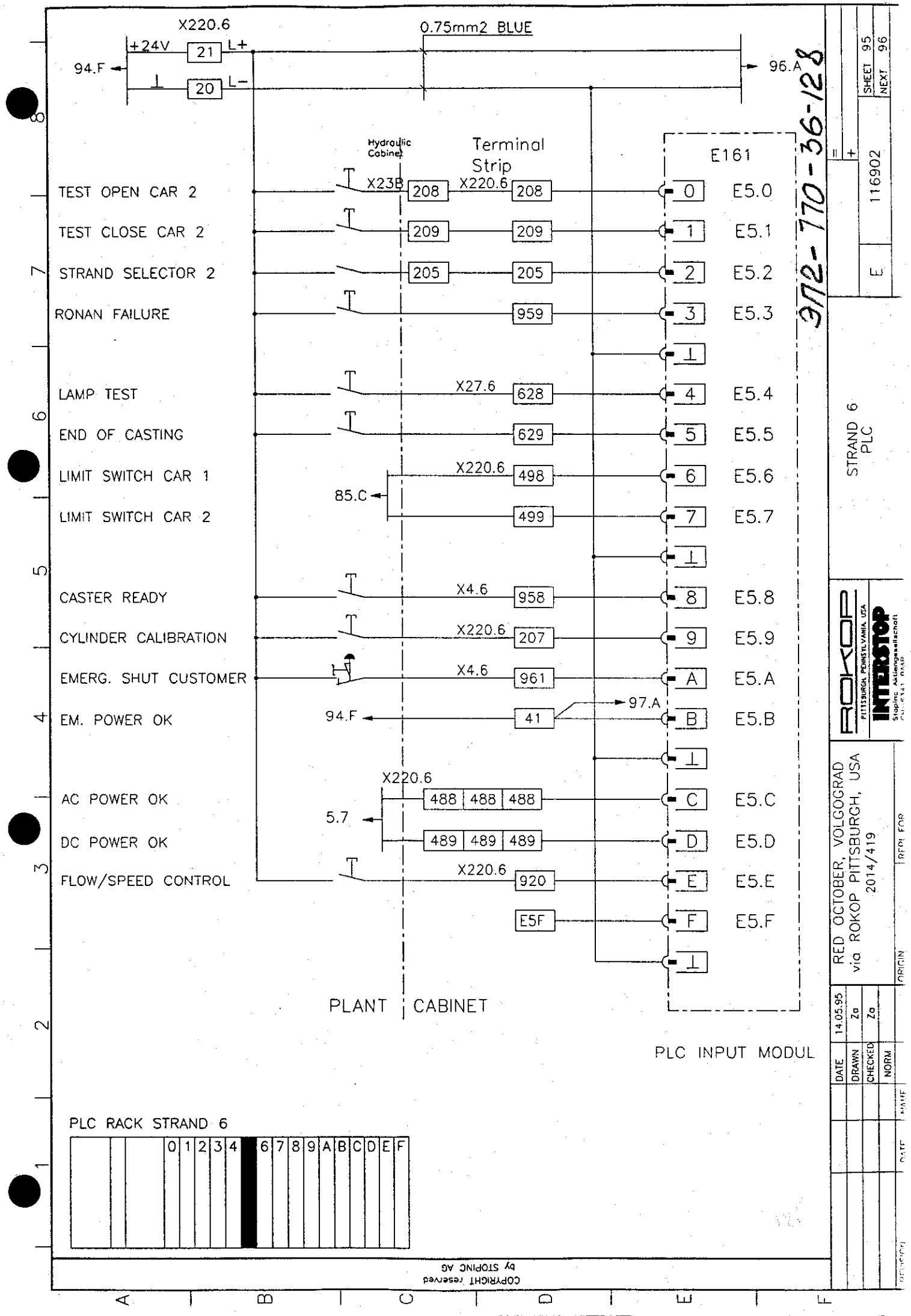
X220.6
+24V
21
L+
94.F
20
L-
0.75mm2 BLUE
96.A
Hydraulic Cabinet
Terminal Strip
E161
X23B
208
X220.6
208
TEST OPEN CAR 2
0
E5.0
TEST CLOSE CAR 2
209
209
1
E5.1
STRAND SELECTOR 2
205
205
2
E5.2
RONAN FAILURE
959
3
E5.3
LAMP TEST
X27.6
628
4
E5.4
END OF CASTING
629
5
E5.5
LIMIT SWITCH CAR 1
X220.6
498
6
E5.6
85.C
LIMIT SWITCH CAR 2
499
7
E5.7
CASTER READY
X4.6
958
8
E5.8
CYLINDER CALIBRATION
X220.6
207
9
E5.9
EMERG. SHUT CUSTOMER
X4.6
961
A
E5.A
EM. POWER OK
94.F
41
97.A
B
E5.B
X220.6
AC POWER OK
488 488 488
C
E5.C
5.7
DC POWER OK
489 489 489
D
E5.D
FLOW/SPEED CONTROL
X220.6
920
E
E5.E
E5F
F
E5.F
PLANT
CABINET
PLC INPUT MODUL
PLC RACK STRAND 6
0 1 2 3 4 6 7 8 9 A B C D E F
3172-770-36-128
SHEET 95
NEXT 96
116902
STRAND 6
PLC
ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
RED OCTOBER, VOLGOGRAD
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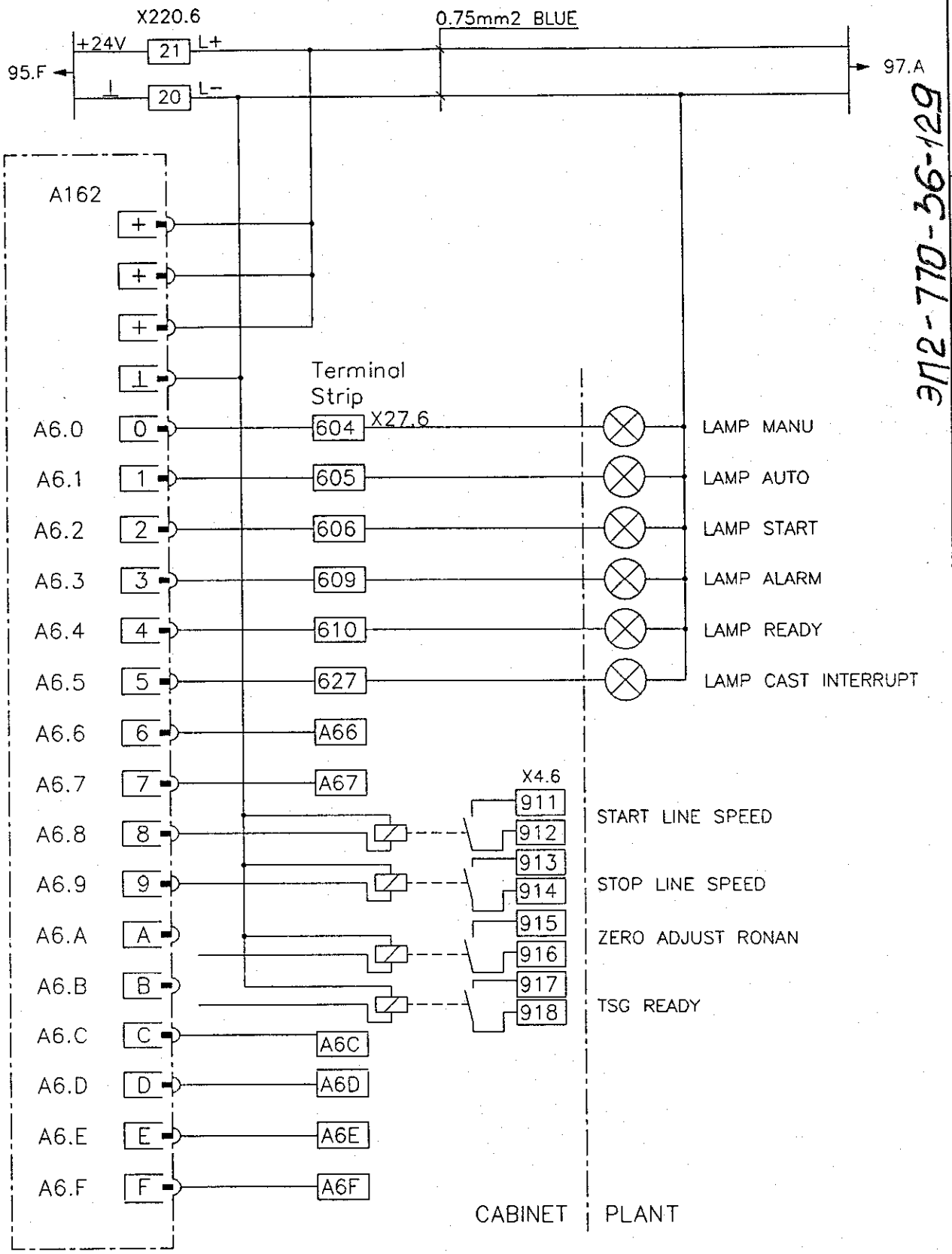

3112-770-36-129

SHEET 96
NEXT 97
E
116902

STRAND 6
PLC

ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stoppic Aktiengesellschaft CH-4341 BAAR

RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
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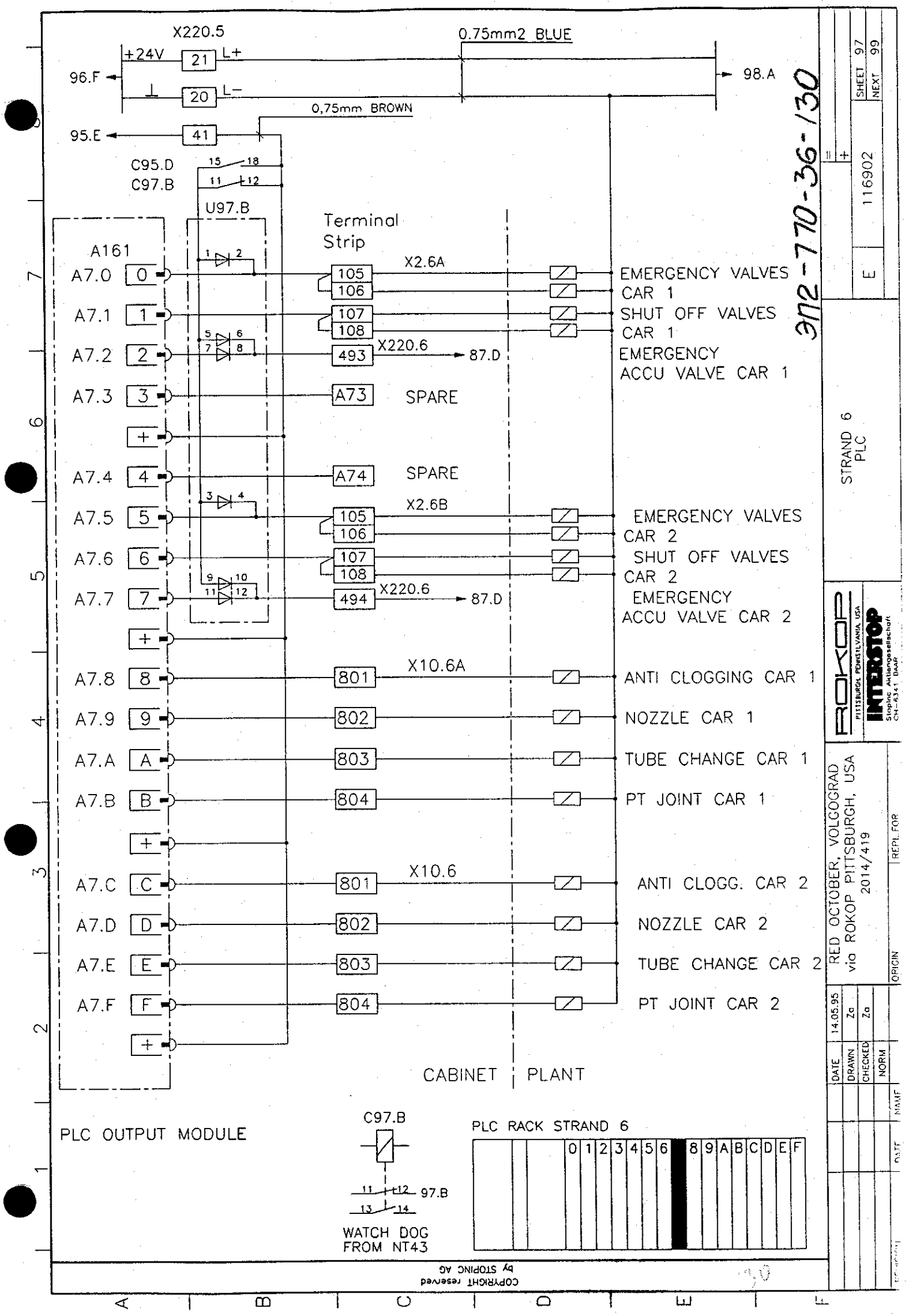
X220.5
+24V
21
L+
0.75mm2 BLUE
96.F
98.A
20
L−
0,75mm BROWN
95.E
41
C95.D
C97.B
15
18
11
12
U97.B
A161
Terminal Strip
X2.6A
A7.0
0
105
106
EMERGENCY VALVES CAR 1
A7.1
1
107
108
SHUT OFF VALVES CAR 1
A7.2
2
493
X220.6
87.D
EMERGENCY ACCU VALVE CAR 1
A7.3
3
A73
SPARE
+
A7.4
4
A74
SPARE
X2.6B
A7.5
5
105
106
EMERGENCY VALVES CAR 2
A7.6
6
107
108
SHUT OFF VALVES CAR 2
A7.7
7
494
X220.6
87.D
EMERGENCY ACCU VALVE CAR 2
A7.8
8
X10.6A
801
ANTI CLOGGING CAR 1
A7.9
9
802
NOZZLE CAR 1
A7.A
A
803
TUBE CHANGE CAR 1
A7.B
B
804
PT JOINT CAR 1
A7.C
C
X10.6
801
ANTI CLOGG. CAR 2
A7.D
D
802
NOZZLE CAR 2
A7.E
E
803
TUBE CHANGE CAR 2
A7.F
F
804
PT JOINT CAR 2
CABINET
PLANT
PLC OUTPUT MODULE
C97.B
11
12
97.B
13
14
WATCH DOG FROM NT43
PLC RACK STRAND 6
0 1 2 3 4 5 6 8 9 A B C D E F
3n2-770-36-130
SHEET 97
NEXT 99
E
116902
STRAND 6
PLC
ROKOP
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR
RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419
ORIGIN
REPL. FOR
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DATE
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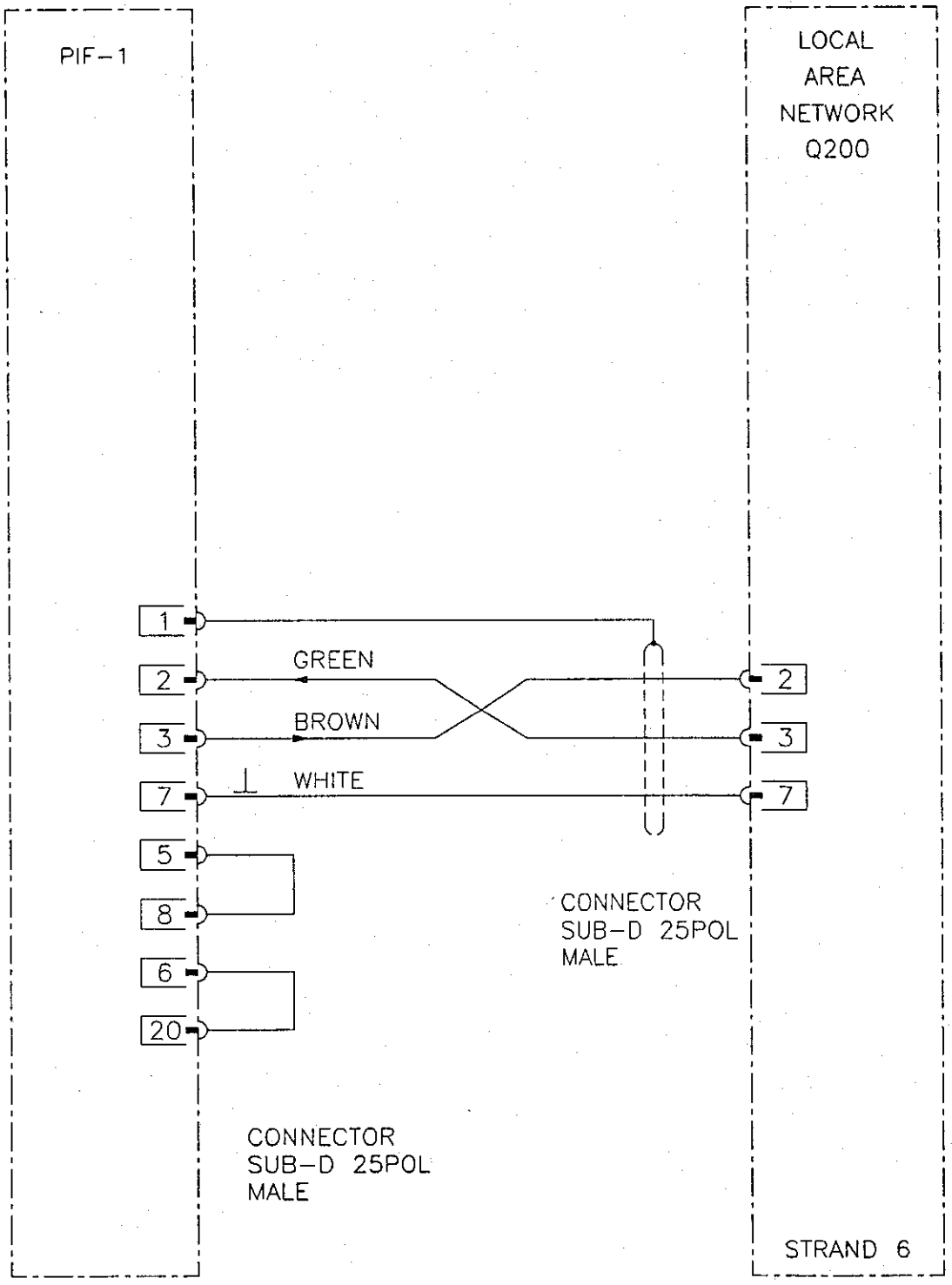
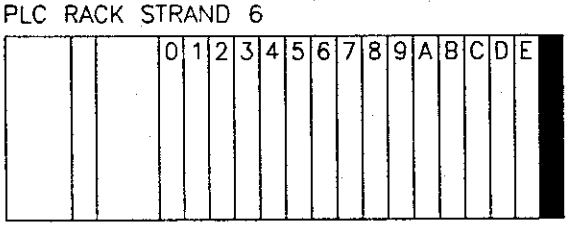


PLC RS232

PLC RACK STRAND 6



302-770-36-131

STRAND 6
PLC

RED OCTOBER, VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stoplnc Aktiengesellschaft CH-6341 BAAR

	DATE	NAME
DRAWN	14.05.95	Za
CHECKED		Za
NORM		

REVISION | DATE | ORIGIN | REPL.FOR

SHEET 99
NEXT –

E 116902

Stopinc Aktiengesellschaft

Zugerstrasse 76a, CH-6341 Baar, Schweiz ☎ (042) 333555, Telefax (042) 312864, Telex 862128 ist ch

INTERSTOP

Swiss manual.

INTERSTOP Power Unit USV 2011

General

The interrupted power-supply "USV 2011" has an out-put of 24VDC/6-7A. With correctly charged accumulators the unit is able to supply the full output current (2 x 24VDC/6-7A) up to about 15 minutes after a fail of the input voltage.

The "USV 2011" is also equiped with an insulated 220VAC output **maximum** chargable with **100 VA.** This output voltage is available via a plug-in on the front and a connector at the back.

Input and output voltages are connected on screw terminals on the back of "USV 2011".

Function

After connecting one of the different input-voltages (110/220/240/380/440 and 500VAC) the unit can be switched on with a main switch in the secondary circuit of the power supply. A 220V insulated AC output voltage, chargable up to a maximum of 100VA is then available. Additionally the two built-in switcher-electronic-cards SR5 312420 each supply a 24VDC/6-7A output voltage.

Independent of these output voltages a charger unit charges the built-in accumulators to be ready for an eventual use of the unit as uninterrupted power supply.

When the input voltage fails the DC output of the "USV 2011" is available without interruption for a maximum duration of 15 minutes. At the same time the "Power fail" is indicated on the front and relais contacts available on the rear side.

The unit can only be switched on when input-voltage is available. A start-on with accumulator voltage only is not possible.

3112-770-36-132

02

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Power Unit USV 2011

Installation

After placing (screwing) the fuses and connecting correctly the in- and output voltages the built-in accumulators must be charged during 12-14 hours in order to enable a correct function of the USV. Immediately after switchung on the unit, the charging procedure is starting.

Attention: **For security reasons all the fuses of the "USV 2011" must be removed before any transportation of the unit.**

Fuse

	Value	Dimensions
Main (input)	6,3 AT (220V)	32 x 6,3mm
Output 220VAC	1 AT	"
Out 24VDC 1	10 AT	"
Secondary	20 AT	"
Out 24VDC 2	10 AT	"

T = slow

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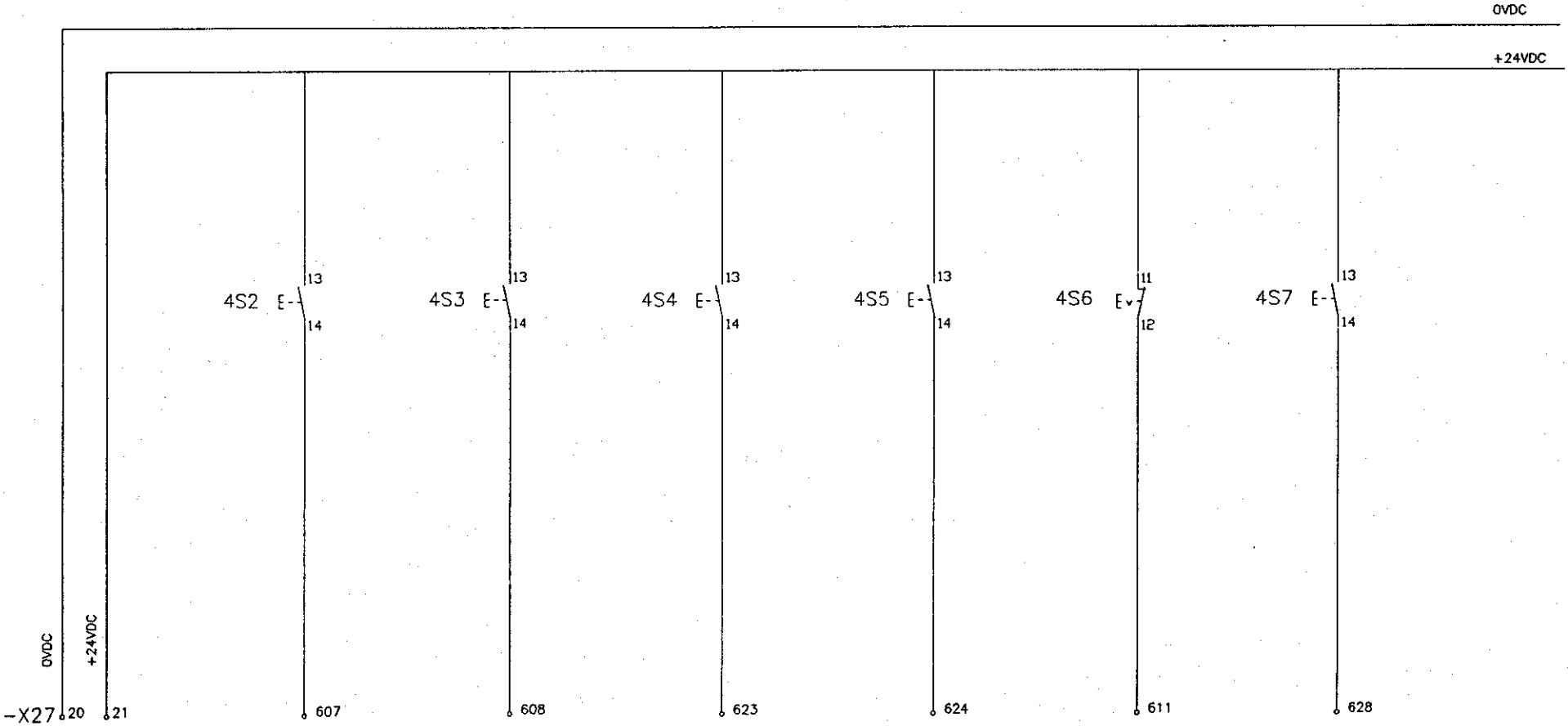


9172-770-36-142

GIESSUNTERBRUCH	OEFFNEN	SCHLIESSEN	NOT-ZU	LAMPENTEST
BEGINN ENDE				
CAST INTERRUPT	OPEN	CLOSE	EMERGENCY SHUT	LAMP TEST
BEGIN END				

			DATE	25.02.94	STANDARD	
			DRAWN	Za		
			CHECKED	Za		
			NORM			
REVISION	DATE	NAME			ORIGIN	REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

BEDIENUNGSSTATION VERTEILERSCHIEBER
OPERATOR STATION TUNDISH GATE
TYPE BS-VS : ITEM 3
STEUERUNG / CONTROL

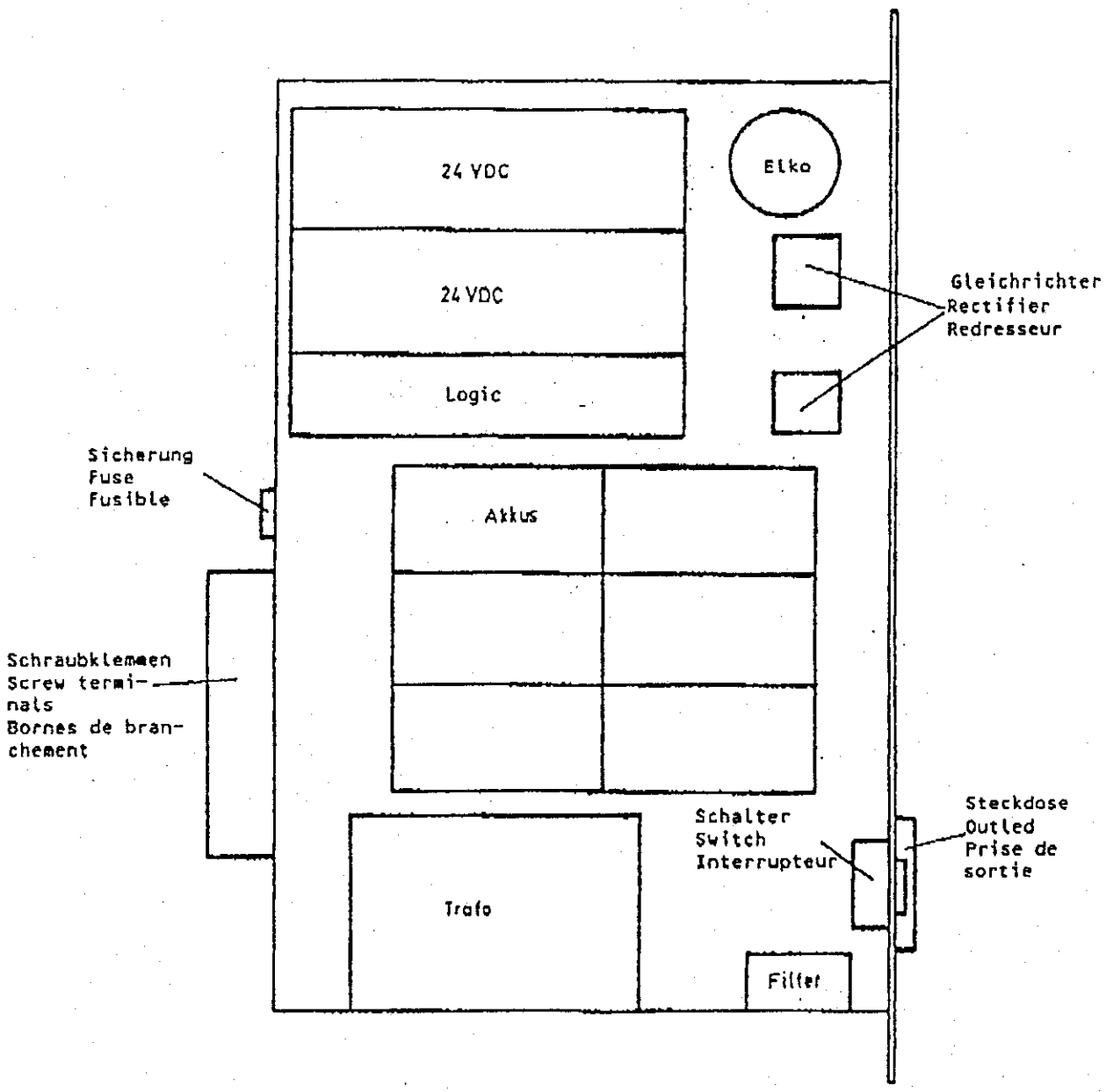
		=	
		+	
E	116027	SHEET	4
		NEXT	5

Stopinc Aktiengesellschaft
Zugerstrasse 76a, CH-6341 Baar, Schweiz ☎ (042) 333555, Telefax (042) 31 28 64, Telex 862128 ist ch

INTERSTOP

Interstop Power Unit USV 2011

FUNKTIONSSCHALTBILD
MOUNTING DIAGRAMM
PLAN DE MONTAGE



372-770-36-135

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INTERSTOP

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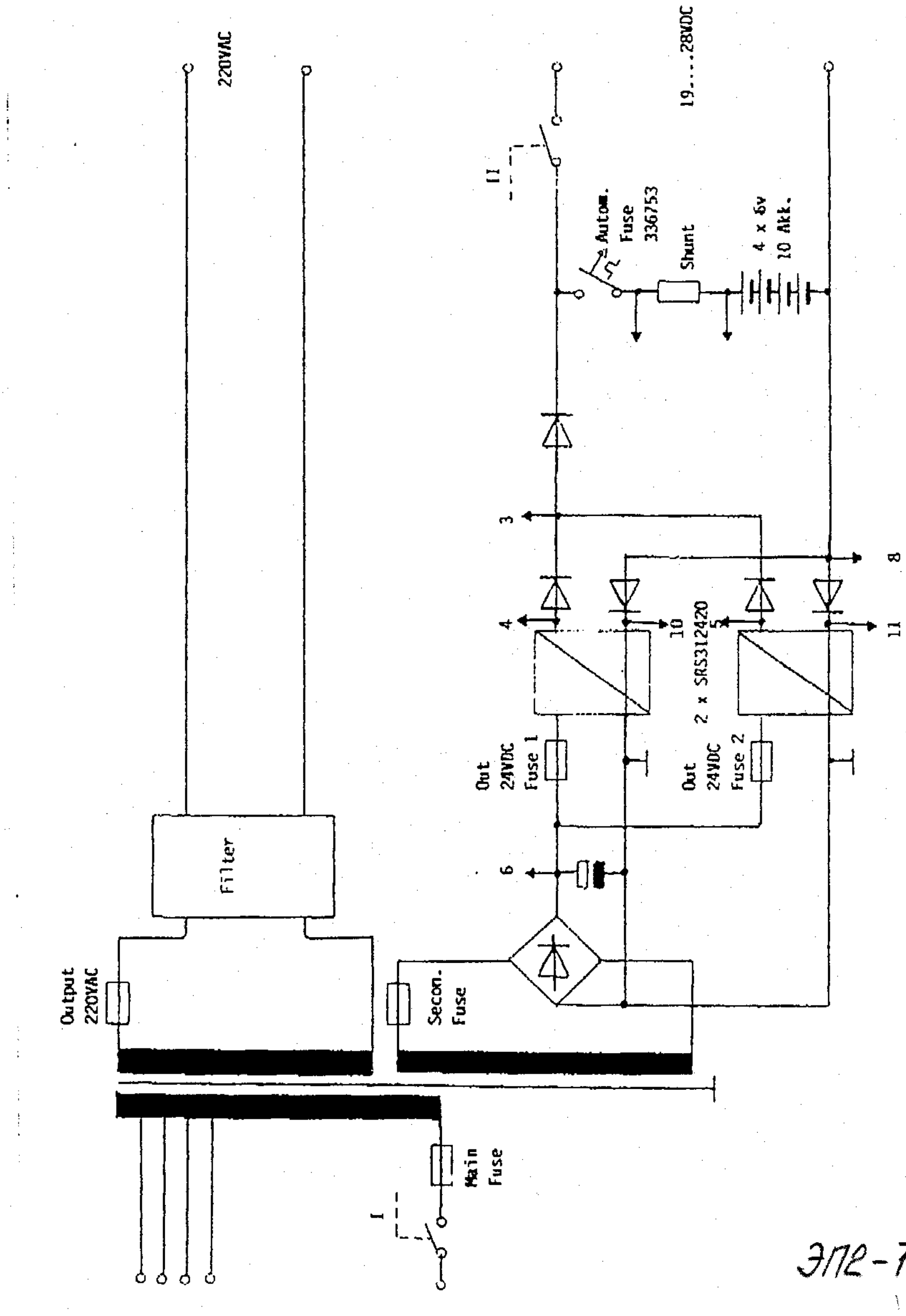
Interstop Power Unit USV 2011



ЭП2-770-36-136

Stopinc Aktiengesellschaft

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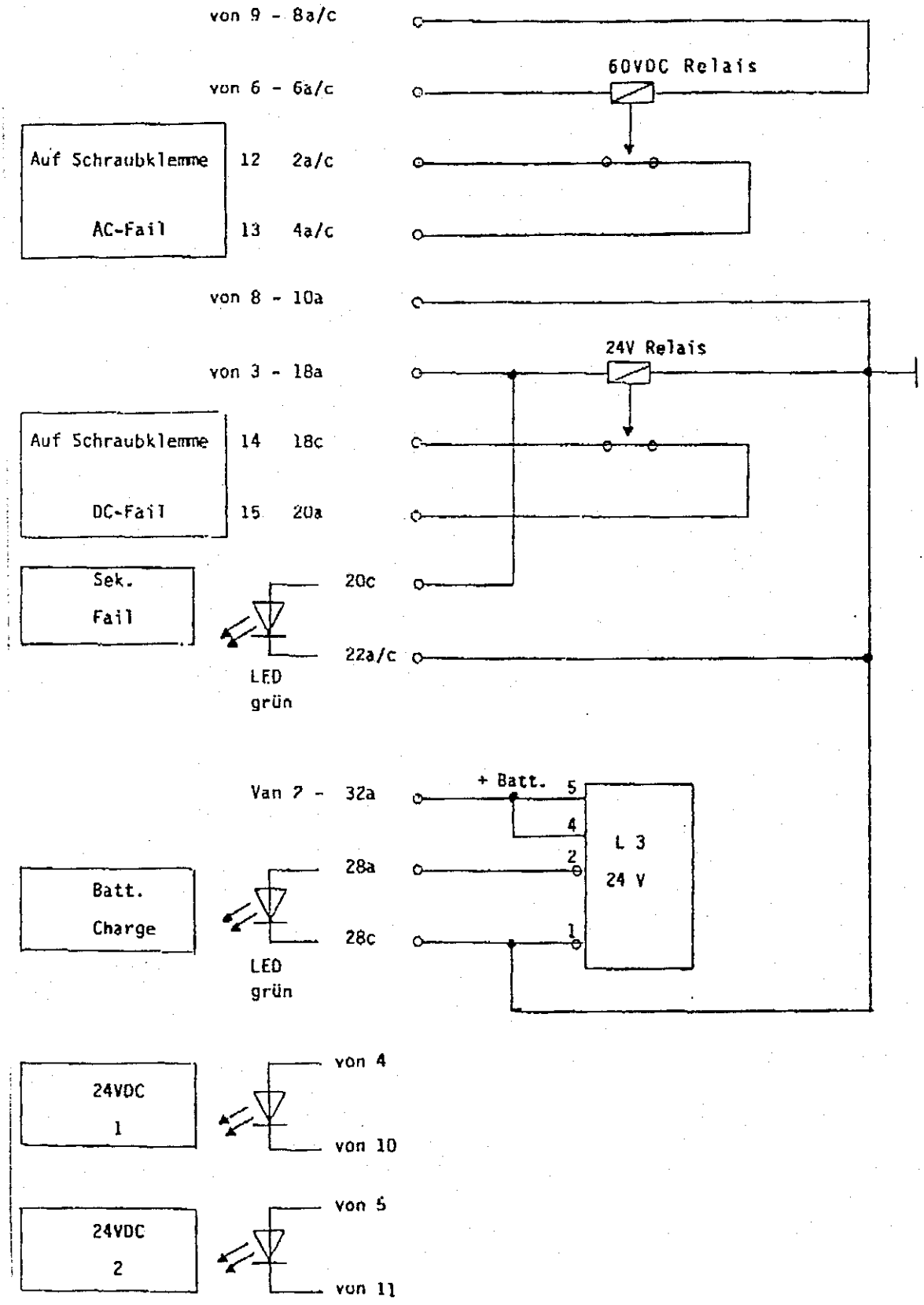
INTERSTOP

Interstop Power Unit USV 2011



372-770-36-137

Stopinc Aktiengesellschaft

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INTERSTOP

Customer : Red October via Rokop
Project No.: 2014/419

8. Electrics/Electronics ?

оператор. пост пром ковша , программа 3 (Базовое машино строение)

8.9 Operator station tundish gate, Item 3, (Basic engineering)
оператор. пост центр. гидравл. узла, программа 4

8.10 Operator station central hydraulic unit, Item 4
Ящик выводной и усиление сигнала, прогр 5

8.11 Terminal and signal amplifier box, Item 5
Проверка надписей (втулок) пр 6

8.12 Test pendant, Item 6
эл. центр. гидр. узел прогр 20

8.13 Electric central hydraulic unit, Item 20
Выводной ящик клапана надписания и сигн кабеля прогр 100 (21

8.14 Terminal box valve manifold and signal cable, Item 100 (21)
Выв. ящик надписания сигн

8.15 Terminal box connection manifold, Item 22 прогр 22
ящик эл. контроля газа

8.16 Electrical control gas box, Item 28 прогр 28
эл. контроль проверки гидравл. узла прогр 40

8.17 Electrical control test hydraulic unit, Item 40

8.18 Signal cable, Item 101 Сигнальный кабель прогр. 101
Втулки (надписи) прогр. 103 (для проверки гидравл узла

8.19 Pendant, Item 103 (for tests hydraulic unit)

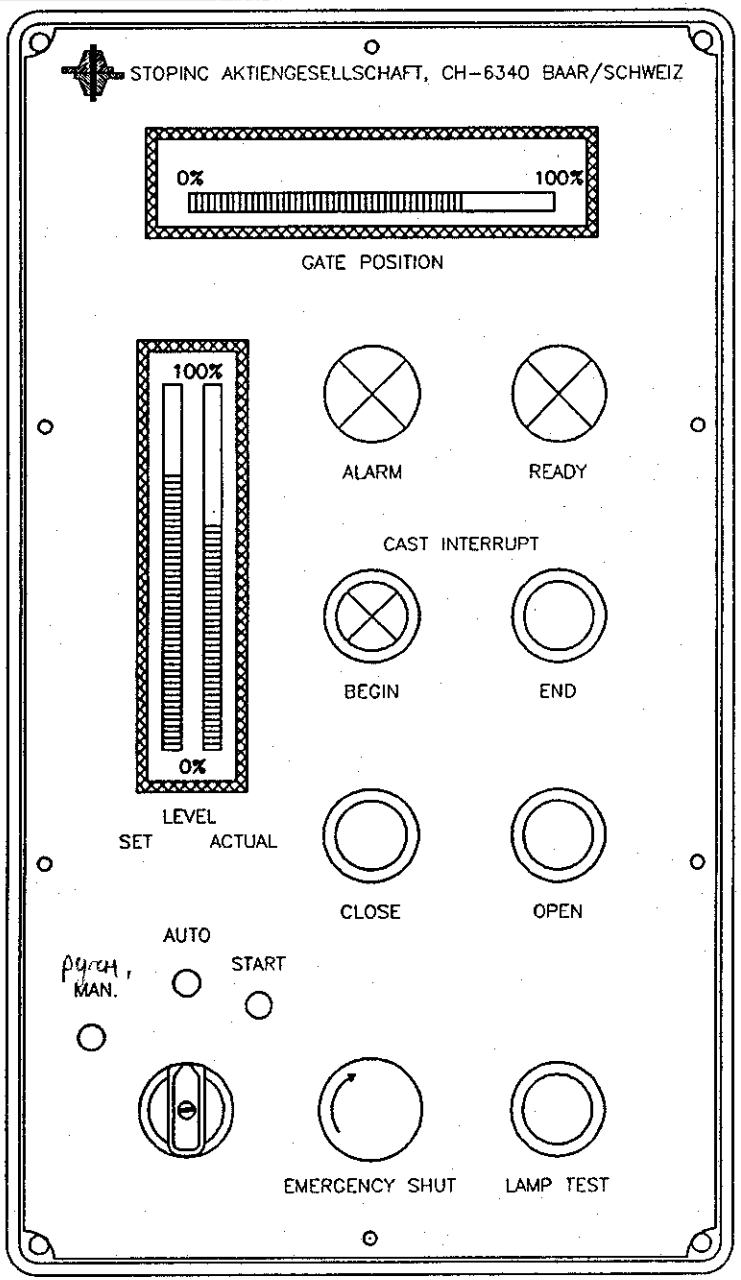
ЭП2-770-36-138

NO.	TITEL	TITLE
1	INHALTSVERZEICHNIS	COVERSHEET
2	ANSICHT	VIEW
3	AUFBAU	LAYOUT
4	STEUERUNG	CIRCUIT DIAGRAM
5	ANZEIGE	INDICATION
6	ANSCHLUSSPLAN	TERMINAL ARRANGEMENT
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
	STUECKLISTE / PARTSLIST	116028

372-770-36-139

			DATE	25.02.94	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	BEDIENUNGSSTATION VERTEILERSCHIEBER OPERATOR STATION TUNDISH GATE TYPE BS-VS : ITEM 3 INHALTSVERZEICHNIS/COVERSHEET
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	116027	SHEET	1
		NEXT	2



BESCHREIBUNG	DESCRIPTION			
NIVEAU	LEVEL			6P3
SCHIEBERPOSITION	GATE POSITION			6P1
LAMPENKONTROLLE	LAMP TEST			4S7
ALARM	ALARM	ROT	RED	5H5
GIESSBEREIT	READY	GRUEN	GREEN	5H6
GIESSUNTERBRUCH BEGINN	CAST INTERR. BEGIN	GRUEN	GREEN	4S2/5H7
GIESSUNTERBRUCH ENDE	CAST INTERRUPT END			4S3
SCHLIESSEN	CLOSE			4S5
OEFFNEN	OPEN			4S4
NOT-ZU	EMERGENCY SHUT			4S6
MANUAL	MANUAL			5H2
AUTO	AUTO			5H3
START	START			5H4
MANUAL/AUTO/START	MANUAL/AUTO/START			5S1

3M2-770-36-140

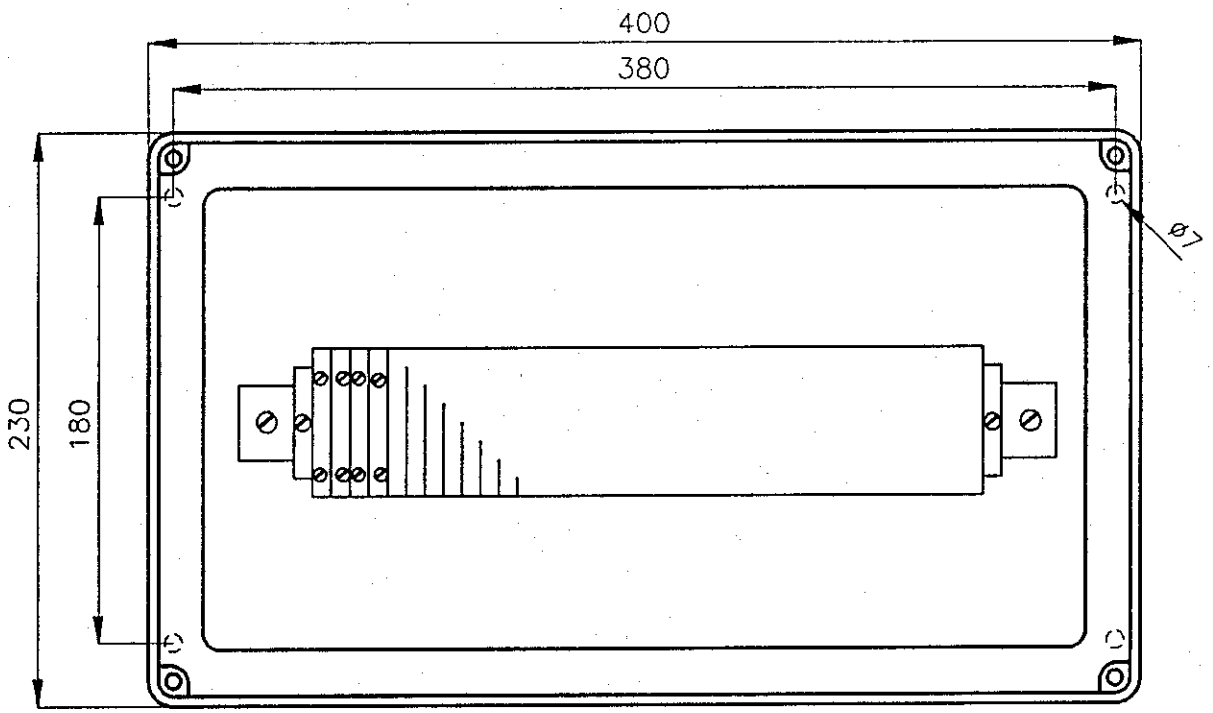
REVISION	DATE	NAME		
		DATE	25.02.94	
		DRAWN	Za	
		CHECKED	Za	
		NORM		
ORIGIN		REPL.FOR		

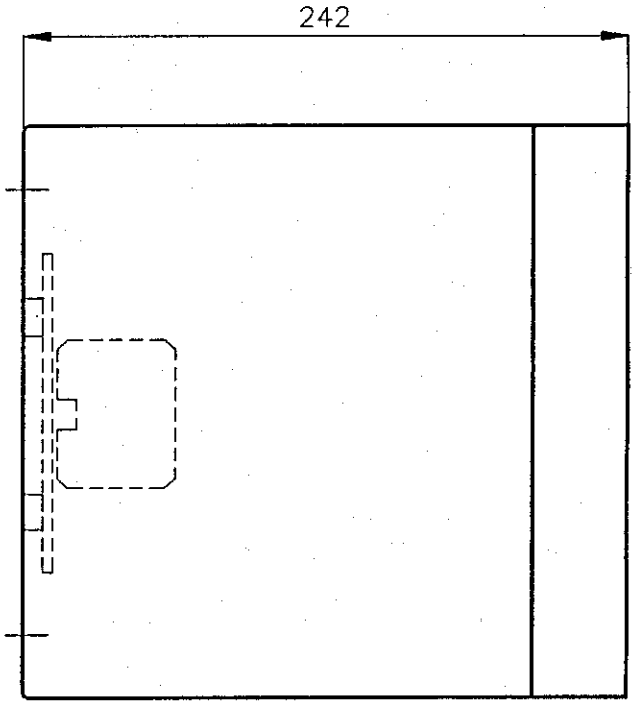
STANDARD

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

BEDIENUNGSSTATION VERTEILERSCHIEBER
OPERATOR STATION TUNDISH GATE
TYPE BS-VS : ITEM 3
ANSICHT / VIEW

		=	
		+	
E	116027	SHEET	2
		NEXT	3





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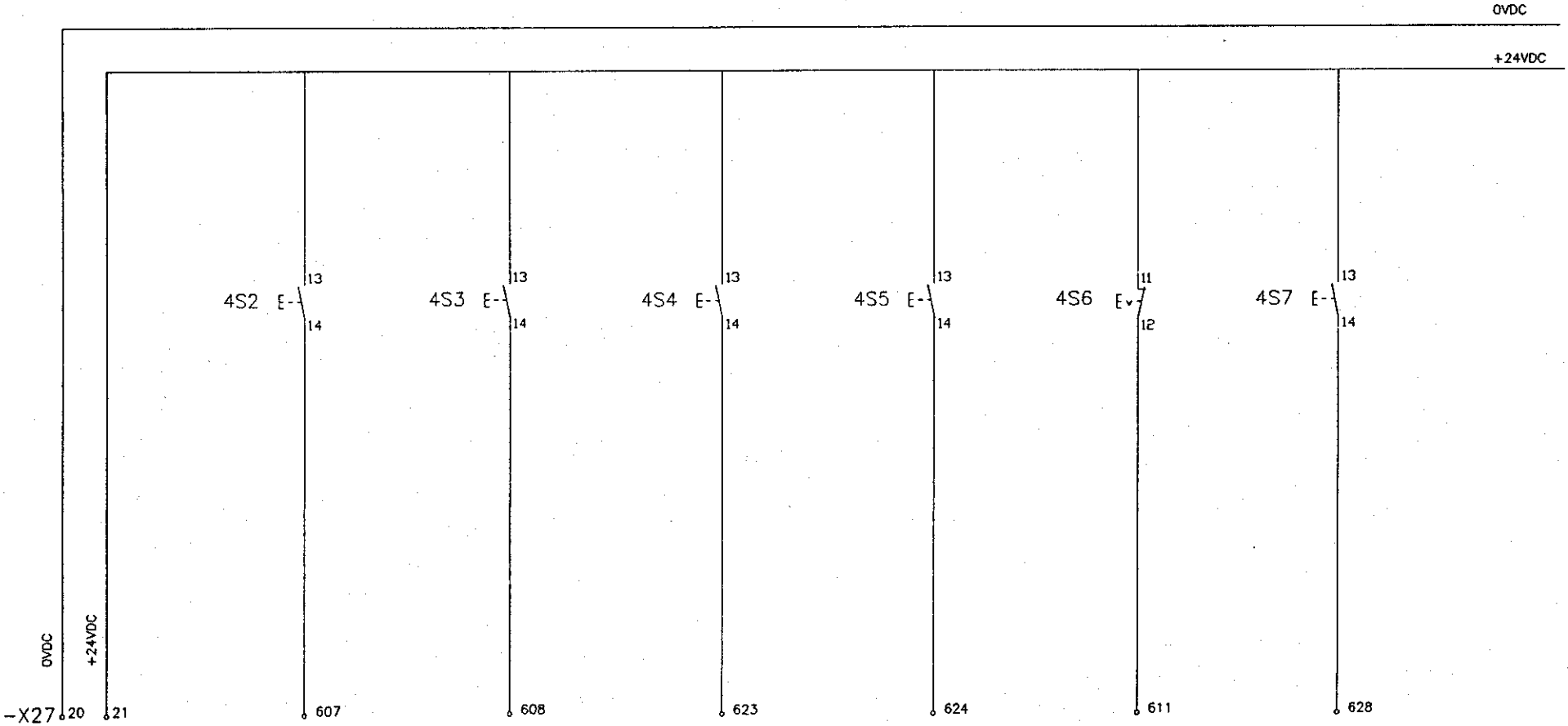
			DATE	25.02.94	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	BEDIENUNGSSTATION VERTEILERSCHIEBER OPERATOR STATION TUNDISH GATE TYPE BS-VS : ITEM 3 AUFBAU / LAYOUT
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	116027	SHEET	3
		NEXT	4



9172-770-36-142

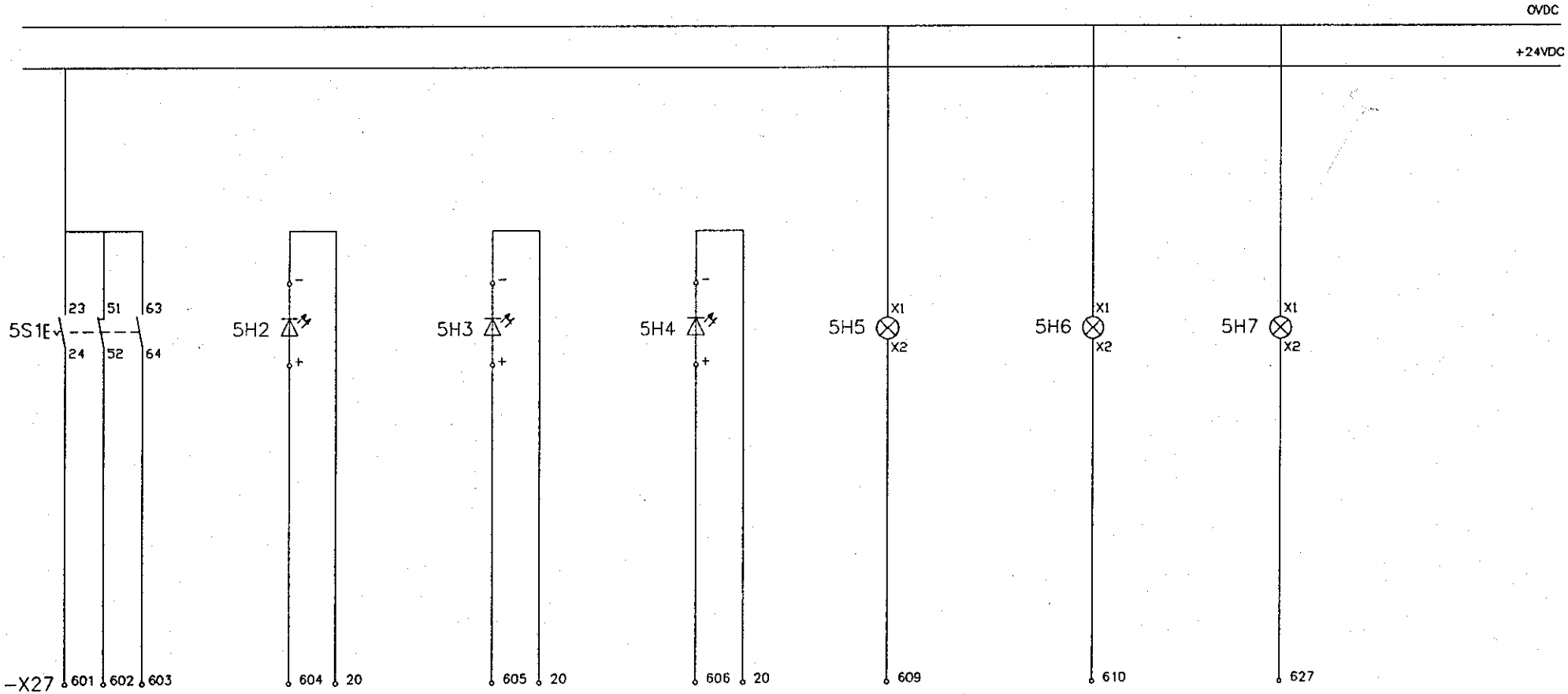
GIESSUNTERBRUCH	OEFFNEN	SCHLIESSEN	NOT-ZU	LAMPENTEST
BEGINN ENDE				
CAST INTERRUPT	OPEN	CLOSE	EMERGENCY SHUT	LAMP TEST
BEGIN END				

			DATE	25.02.94	STANDARD	
			DRAWN	Za		
			CHECKED	Za		
			NORM			
REVISION	DATE	NAME			ORIGIN	REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

BEDIENUNGSSTATION VERTEILERSCHIEBER
OPERATOR STATION TUNDISH GATE
TYPE BS-VS : ITEM 3
STEUERUNG / CONTROL

		=	
		+	
E	116027	SHEET	4
		NEXT	5



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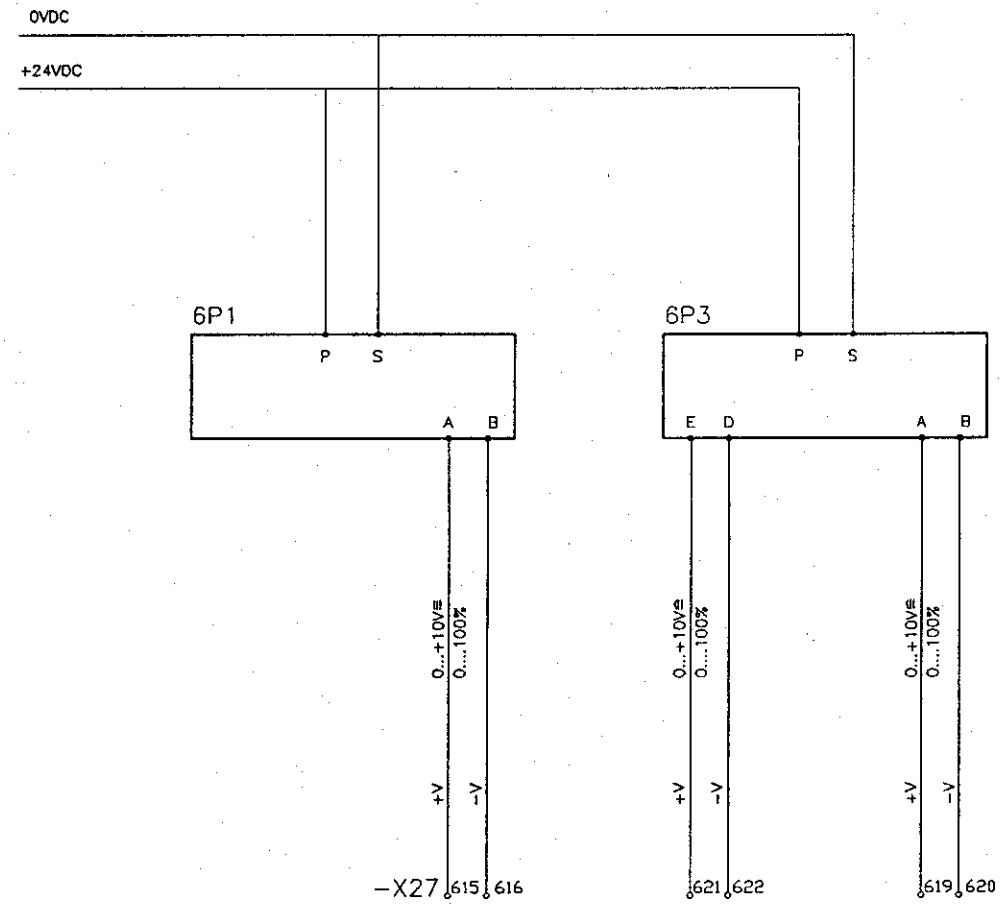
3T2-770-36-143

MANUAL	START	MANUAL	AUTO	START	ALARM	GIESSBEREIT	GIESSUNTERBRUCH
AUTO							
MANUAL	START	MANUAL	AUTO	START	ALARM	READY	CAST INTERRUPT
AUTO							

			DATE	25.02.94	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA	BEDIENUNGSSTATION VERTEILERSCHIEBER OPERATOR STATION TUNDISH GATE TYPE BS-VS : ITEM 3 ANZEIGE / DISPLAY
			DRAWN	Za		INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

=			
+			
E	116027	SHEET	5
		NEXT	6



3172-770-36-144

SCHIEBERPOSITION	NIVEAU
SOLL	IST
GATE POSITION	LEVEL
SET	ACTUAL

REVISION	DATE	NAME		
			DATE	25.02.94
			DRAWN	Za
			CHECKED	Za
			NORM	

STANDARD

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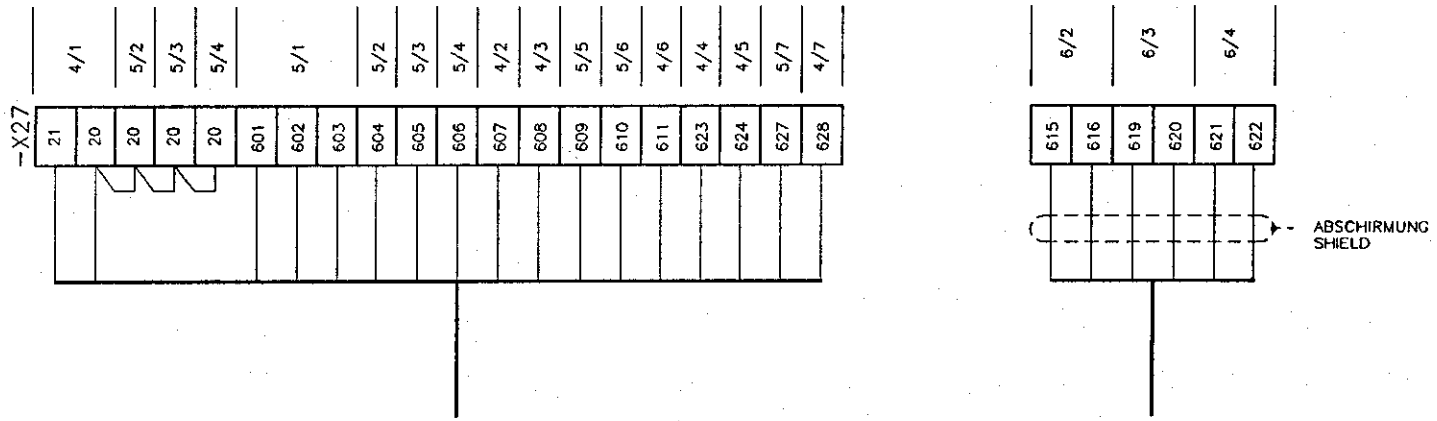
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

BEDIENUNGSSTATION VERTEILERSCHIEBER
OPERATOR STATION TUNDISH GATE
TYPE BS-VS : ITEM 3
ANZEIGE /DISPLAY

E	116027	SHEET	6
		NEXT	7

BLATT/STROMPFAD
SHEET/CIRCUIT PATH



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			DATE	25.02.94	STANDARD	ROKOP PITTSBURGH PENNSYLVANIA USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	BEDIENUNGSSTATION VERTEILERSCHIEBER OPERATOR STATION TUNDISH GATE TYPE BS-VS : ITEM 3 ANSCHLUSSPLAN / CABLE ARRANG.
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

=			
+			
E	116027	SHEET	7
		NEXT	–

NO.	TITEL	TITLE
1	INHALTSVERZEICHNIS	COVERSHEET
2	ANSICHT	VIEW
3	AUFBAU	LAYOUT
4	STEUERUNG PUMPEN	CONTROL PUMPS
5	ALARM	ALARM
6	ALARM	ALARM
7	ANSCHLUSSPLAN	TERMINAL ARRANGEMENT
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
	STUECKLISTE / PARTSLIST	106522

3172-770-36-146

REVISION	DATE	NAME		
			DATE	4.04.91
			DRAWN	Za
			CHECKED	Za
			NORM	

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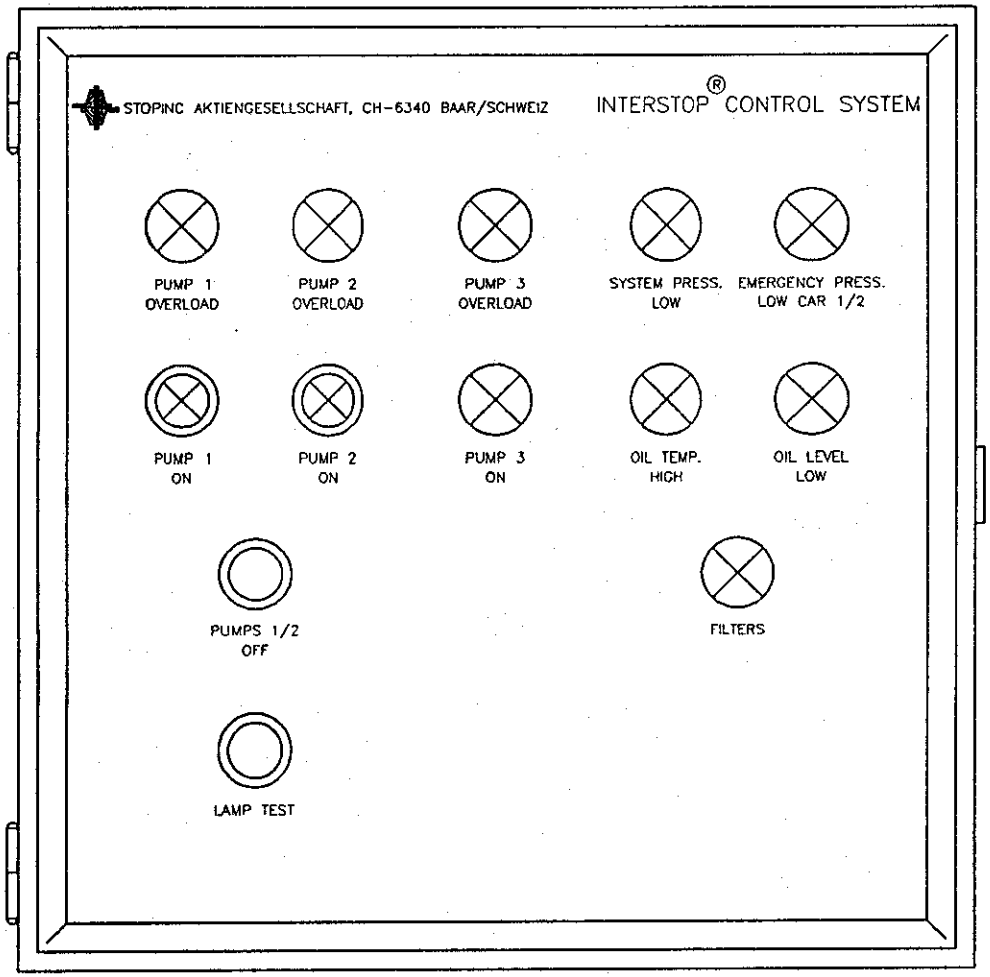
STANDARD

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

BEDIENUNGSSTATION ZNTR. HYDR. AGGREGAT
OPERATOR STATION CENTRAL HYDRAULIC UNIT
TYPE BS-A01-A05 : ITEM 4
INHALTSVERZEICHNIS / COVERSHEET

E | 106521 | SHEET 1 | NEXT 2

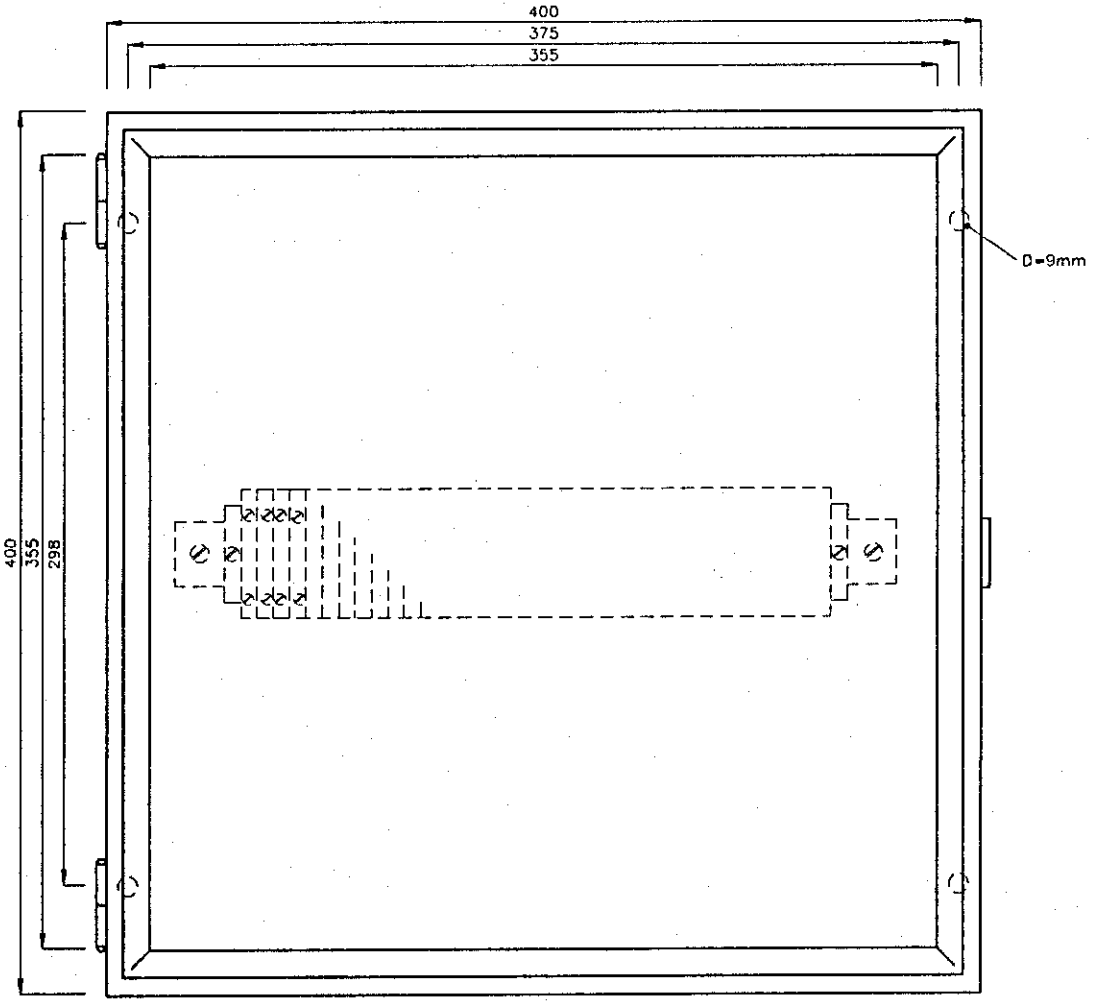


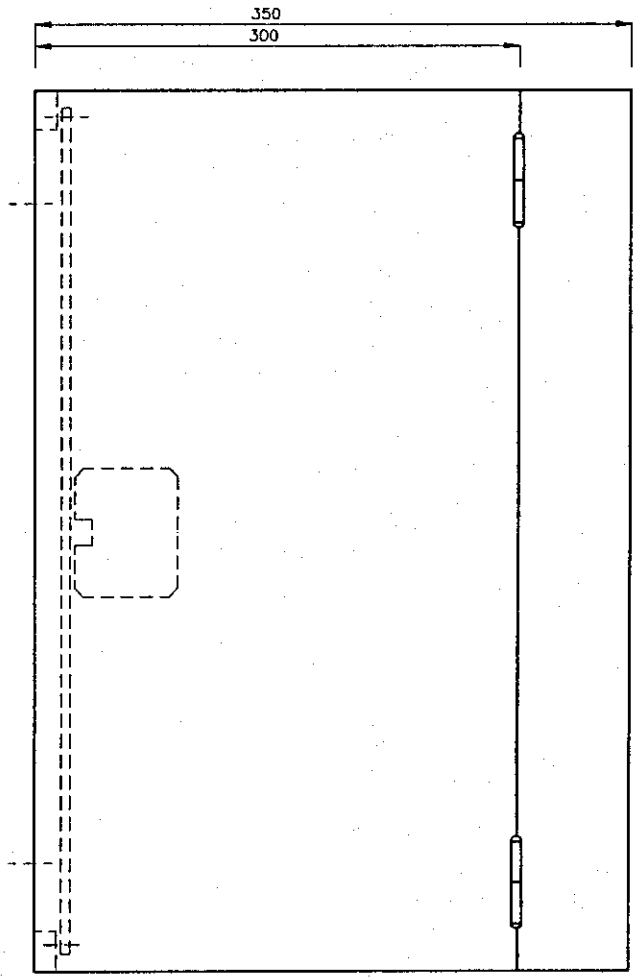
	BESCHREIBUNG	DESCRIPTION			
1	PUMPE 1 STOERUNG	PUMP 1 OVERLOAD	ROT	RED	5H1
2	PUMPE 2 STOERUNG	PUMP 2 OVERLOAD	ROT	RED	5H2
3	PUMPE 3 STOERUNG	PUMP 3 OVERLOAD	ROT	RED	5H3
4	PUMPE 1 EIN	PUMP 1 ON	GRUEN	GREEN	4S3/5H4
5	PUMPE 2 EIN	PUMP 2 ON	GRUEN	GREEN	4S4/5H5
6	PUMPE 3 EIN	PUMP 3 ON	GRUEN	GREEN	5H6
7	PUMPEN 1/2 AUS	PUMPS 1/2 OFF	ROT	RED	4S2
8	LAMPEN TEST	LAMP TEST	GELB	YELLOW	4S5
9	SYSTEM DRUCK TIEF	SYSTEM PRESURE LOW	ROT	RED	6H2
10	NOTDRUCK TIEF	EMERGENCY PRESSURE LOW	ROT	RED	5H7
11	OEL TEMP. HOCH	OIL TEMP. HIGH	ROT	RED	6H1
12	OEL NIVEAU TIEF	OIL LEVEL LOW	ROT	RED	5H8
13	FILTER	FILTERS	ROT	RED	6H3

3172-770-36-147

			DATE	4.04.91	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA	BEDIENUNGSSTATION ZNTR. HYDR. AGGREGAT
			DRAWN	Za		INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	OPERATOR STATION CENTRAL HYDRAULIC UNIT
			CHECKED	Za			TYPE BS-A01-A05 : ITEM 4
			NORM				ANSICHT / VIEW
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

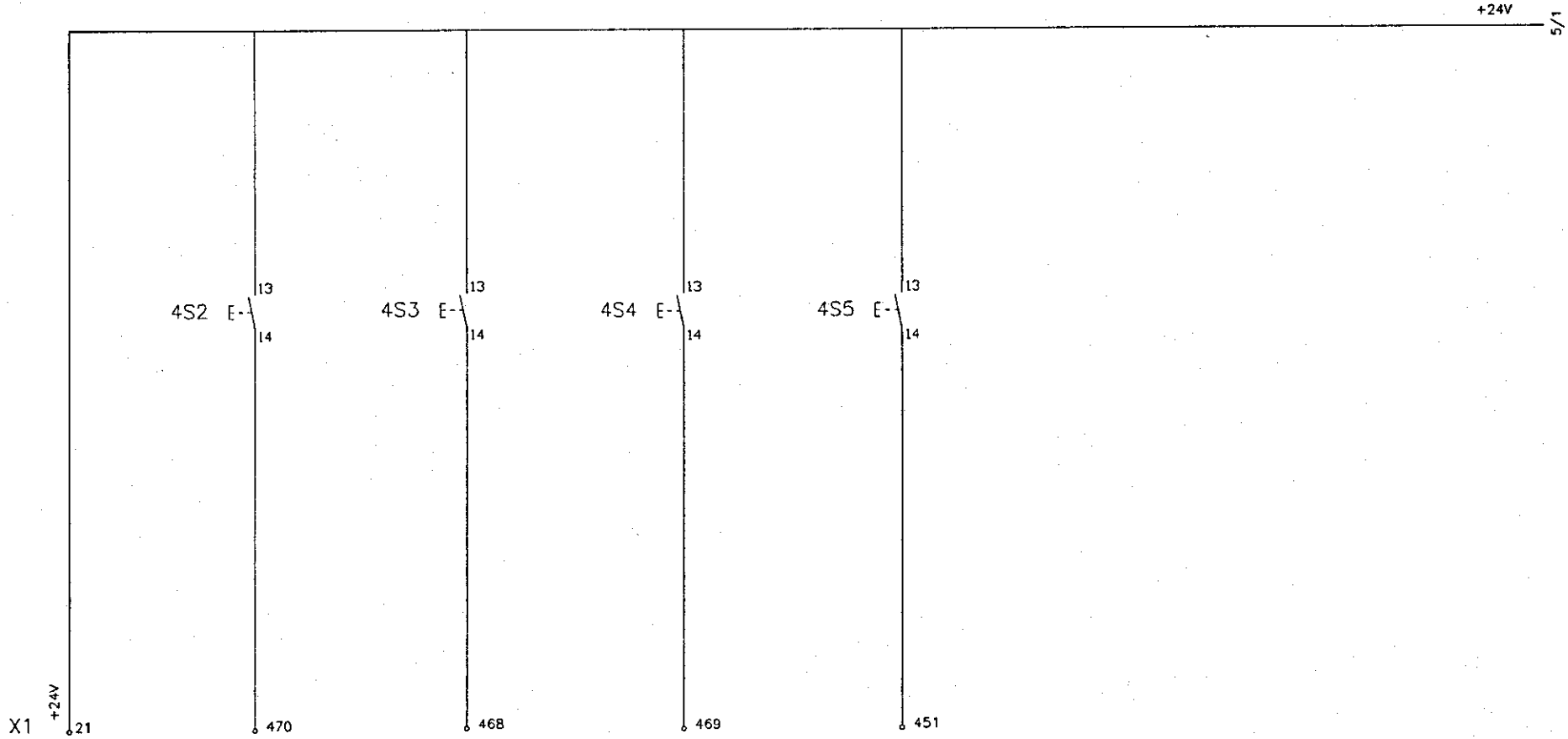
		=	
		+	
E	106521	SHEET	2
		NEXT	3





3172-770-36-148

			DATE	4.04.91	STANDARD	ROKOP PITTSBURGH PENNSYLVANIA USA	BEDIENUNGSSTATION ZNTR. HYDR. AGGREGAT
			DRAWN	Za		INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	OPERATOR STATION CENTRAL HYDRAULIC UNIT
			CHECKED	Za			TYPE BS-A01-A05 : ITEM 4
			NORM				AUFBAU / LAYOUT
REVISION	DATE	NAME			ORIGIN	REPL.FOR	E 106521 SHEET 3 NEXT 4



3П2-770-36-149

PUMPEN 1/2 AUS	PUMPE 1 EIN	PUMPE 2 EIN	LAMPENTEST
PUMPS 1/2 OFF	PUMP 1 ON	PUMP 2 ON	LAMP TEST

			DATE	4.04.91	STANDARD	
			DRAWN	Za		
			CHECKED	Za		
			NORM			
REVISION	DATE	NAME			ORIGIN	REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

BEDIENUNGSSTATION ZNTR. HYDR. AGGREGAT
OPERATOR STATION CENTRAL HYDRAULIC UNIT
TYPE BS-A01-A05 : ITEM 4
STEUERUNG PUMPEN/PUMPS CONTROL

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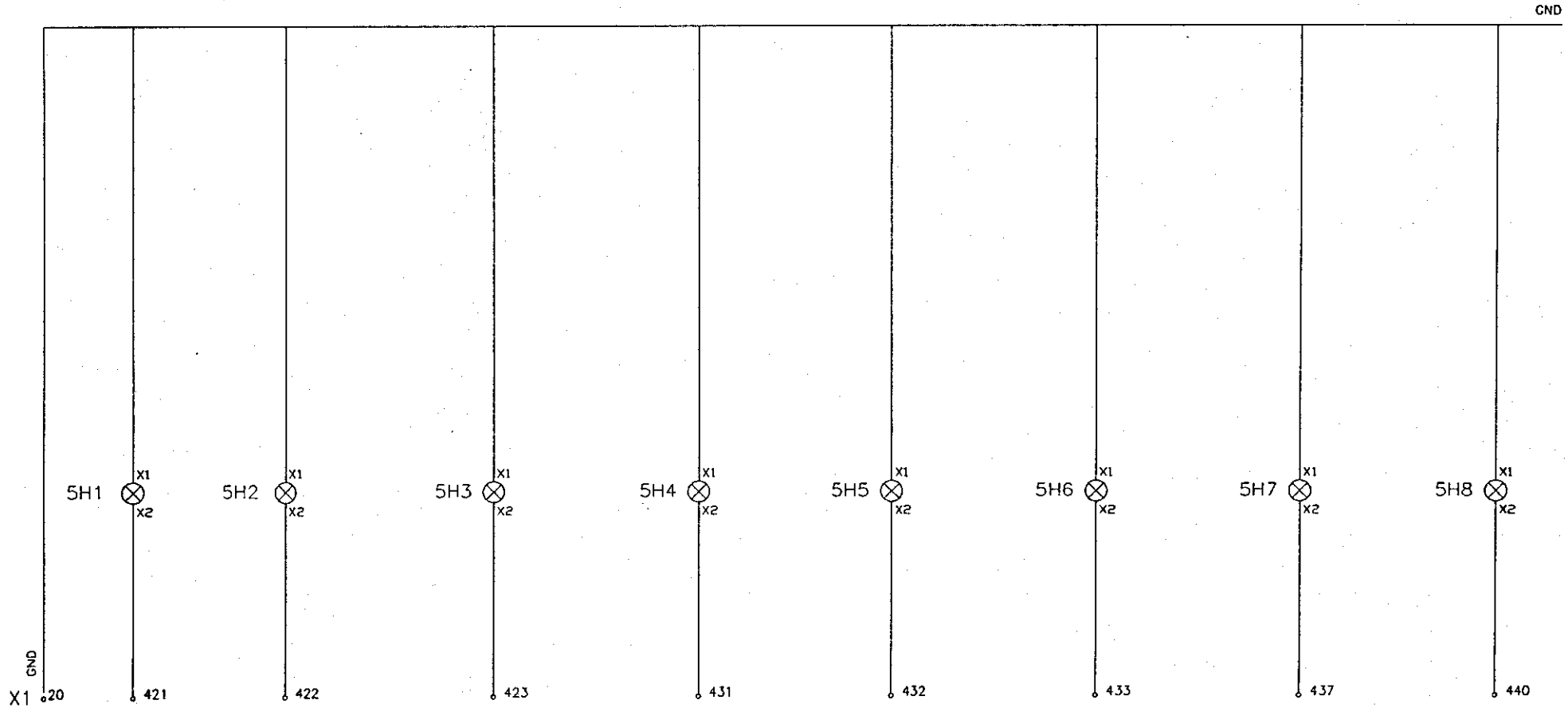
+

E	106521	SHEET 4
		NEXT 5



372-770-36-150

PUMPE 1 STOERUNG	PUMPE 2 STOERUNG	PUMPE 3 STOERUNG	PUMPE 1 EIN	PUMPE 2 EIN	PUMPE 3 EIN	NOTSPEICHERDRUCK TIEF	OEL NIVEAU TIEF
PUMP 1 FAILURE	PUMP 2 FAILURE	PUMP 3 FAILURE	PUMP 1 ON	PUMP 2 ON	PUMP 3 ON	EMERENCY PRESSURE LOW	OIL LEVEL LOW

			DATE	4.04.91
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

STANDARD

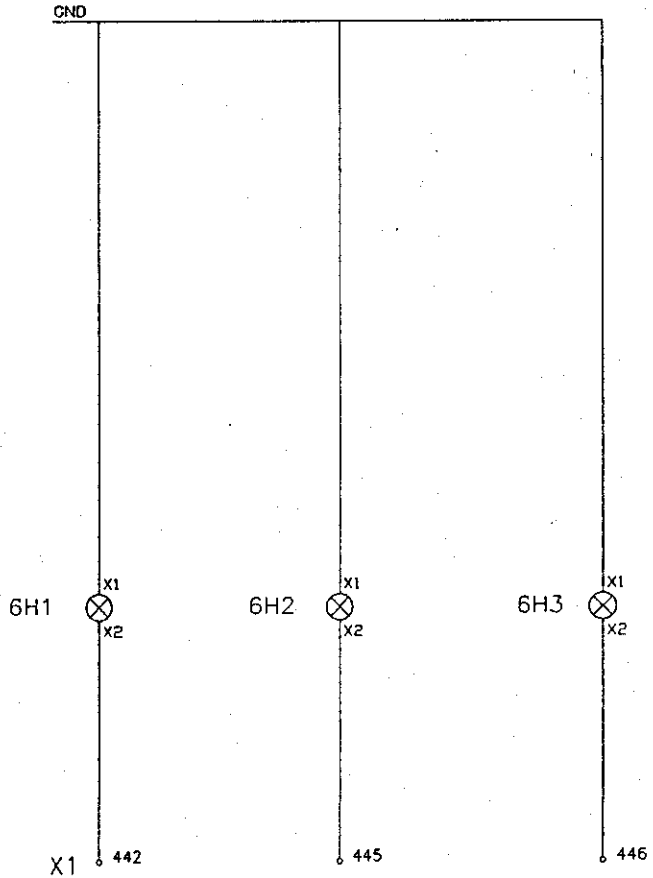
ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

BEDIENUNGSSTATION ZNTR. HYDR. AGGREGAT
OPERATOR STATION CENTRAL HYDRAULIC UNIT
TYPE BS-A01-A05 : ITEM 4
ALARME / ALARM

=
+

E | 106521 | SHEET 5 | NEXT 6



372-770-36-151

OEL TEMP. HOCH	SYSTEM DRUCK TIEF
OIL TEMP. HIGH	SYSTEM PRESSURE LOW

FILTER

FILTERS

REVISION	DATE	NAME

DATE	4.04.91
DRAWN	Za
CHECKED	Za
NORM	

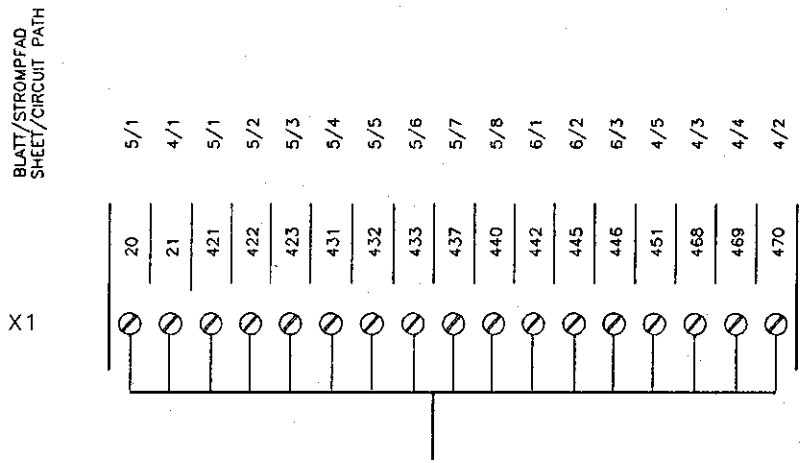
STANDARD

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

BEDIENUNGSSTATION ZNTR. HYDR. AGGREGAT
OPERATOR STATION CENTRAL HYDRAULIC UNIT
TYPE BS-A01-A05 : ITEM 4
ALARME /ALARM

E | 106521 | SHEET 6 | NEXT 7



3T2-770-36-152

			DATE	4.04.91	STANDARD	
			DRAWN	Za		
			CHECKED	Za		
			NORM			
REVISION	DATE	NAME			ORIGIN	REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

BEDIENUNGSSTATION ZNTR. HYDR. AGGREGAT
OPERATOR STATION CENTRAL HYDRAULIC UNIT
TYPE BS-A01-A05 : ITEM 4
ANSCHLUSSPLAN / CABLE ARRANG.

=
+

E	106521	SHEET 7
		NEXT -

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 31 28 64, Telex 862128 ist ch

INTERSTOP

Order Parts List

OPERATOR STATION CENTRAL
HYDRAULIC UNIT
TYPE BS-A01-A05

Part no.: **106522** Project no. 2014/419 Page : 1
Dwg no. : ROKOP Print : 09/06/95
kg/piece: Issue : 04/04/95
Doc no. : 8353

3100-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
		********** Item no. : 4 ********** Electrical diagram : E106521 **********				
1		**116060** CONTROL CASE WxHxD 400x400x270mm TYPE SK 400			1	pcs
3		**113368** FRONTPLATTE FP-A01-A05/RUSS STANDARD RUSSISCH	E113368		1	pcs
5		**104837** MOUNTING RAIL TYPE TS 35x7.5	E104836	1	0.355	m
7		**104847** TERMINAL 4mm2 TYPE WDU 4	E104842		17	pcs
9		**104881** PE-TERMINAL 4.0mm2 GREEN-YELLOW TYPE WPE 4	E104874		1	pcs
11		**104861** END PLATE TYPE WAP2.5-10	E104859		1	pcs
13		**104841** END RETAINER TYP WEW35/2	E104840		2	pcs
15	P	**112610** ILLUMINATED PUSH BUTTON GREEN COMPLETE 1NO			2	pcs

3M2-770-36-153

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 31 28 64, Telex 862128 ist ch

INTERSTOP

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
		4S3+5H4/4S4+5H5				
17	P	**112580** PUSH-BUTTON YELLOW COMPLETE 1NO			1	pcs
		4S5				
19	P	**112560** PUSH-BUTTON RED COMPLETE 1NO			1	pcs
		4S2				
21	P	**112601** SIGNAL LAMP RED COMPLETE 30V/2W			8	pcs
		5H1/5H2/5H3/5H7/5H8/6H1/6H2/6H3				
23	P	**112603** SIGNAL LAMP GREEN COMPLETE 30V/2W			1	pcs
		5H6				

3172-770-36-154

End of list

NO.	TITEL	TITLE
1	INHALTSVERZEICHNIS	COVERSHEET
2	ANSICHT	VIEW
3	AUFBAU	LAYOUT
4	SIGNALVERSTAERKER 1/2	AMPLIFIER 1/2
5	SIGNALVERSTAERKER 3/4	AMPLIFIER 3/4
6	SIGNALVERSTAERKER 5/6	AMPLIFIER 5/6
7	TESTSTEUERBIRNE	TEST PENDANT
8	KLEMMENPLAN	TERMINAL ARRANGEMENT
9	KLEMMENPLAN	TERMINAL ARRANGEMENT
10	KLEMMENPLAN	TERMINAL ARRANGEMENT
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
	STUECKLISTE / PARTSLIST	108185

3N2-770-36-155

REVISION	DATE	NAME		
			DATE	14.02.91
			DRAWN	Za
			CHECKED	Za
			NORM	

ORIGIN | REPL.FOR

STANDARD

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMEN UND SIGNALVERSTAERKERKASTEN
TERMINAL AND SIGNAL AMPLIFIER BOX
TYPE KSVK-6 : ITEM 05
INHALTSVERZEICHNIS/COVERSHEET

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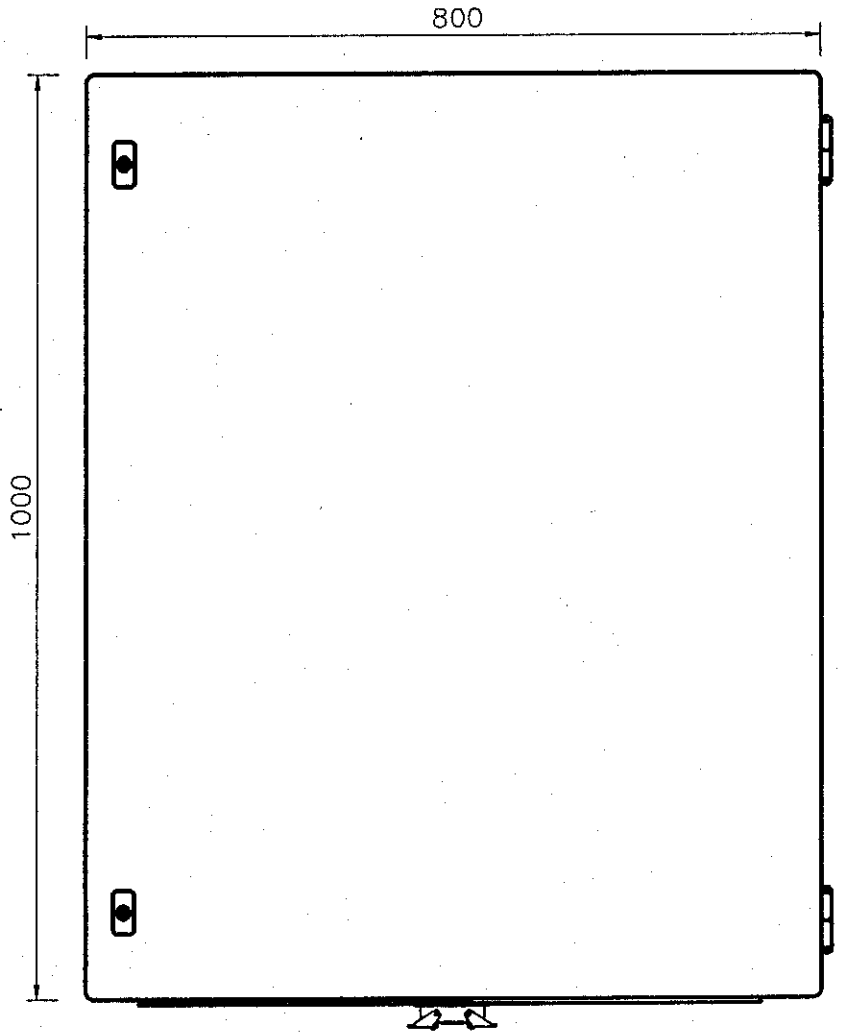
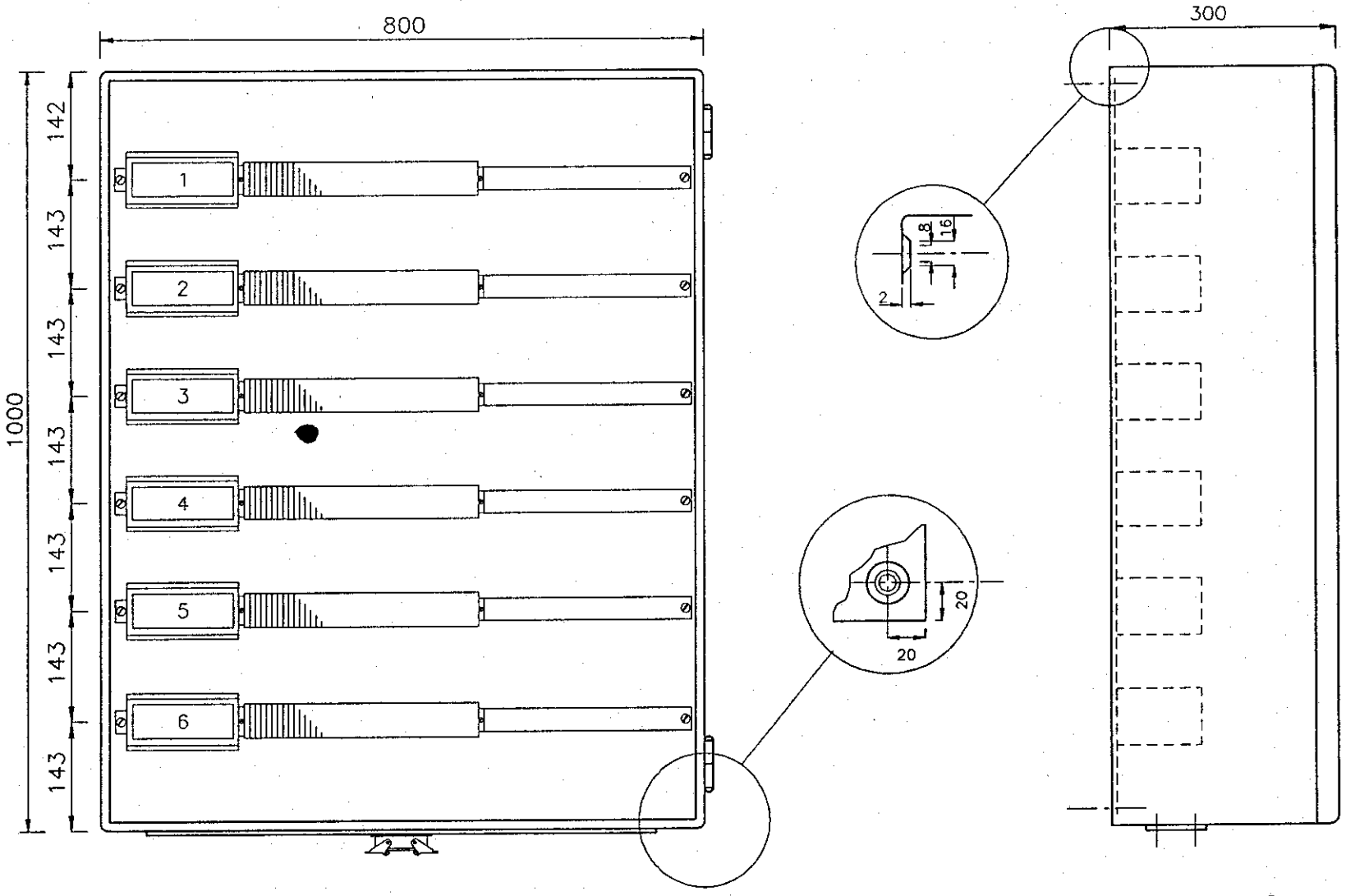
E | 108184 | SHEET 1 | NEXT 2



372-770-36-156

			DATE	14.02.91	STANDARD	ROKOP PITTSBURGH PENNSYLVANIA USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	KLEMMEN UND SIGNALVERSTAERKERKASTEN TERMINAL AND SIGNAL AMPLIFIER BOX TYPE KSVK-6 : ITEM 05 ANSICHT / VIEW
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

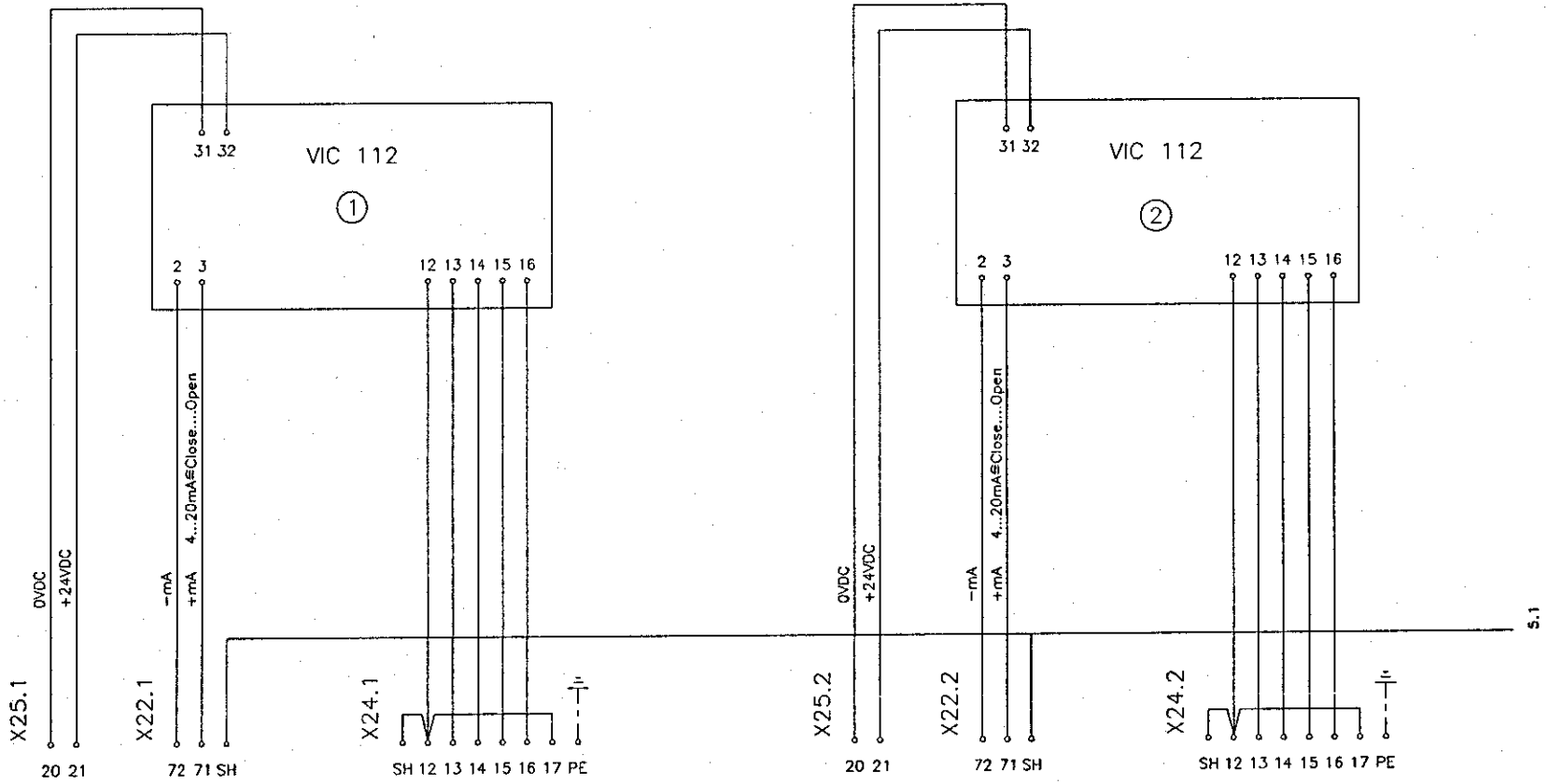
		=	
		+	
E	108184	SHEET	2
		NEXT	3



3772-770-36-157

			DATE	14.02.91	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	KLEMMEN UND SIGNALVERSTAERKERKASTEN TERMINAL AND SIGNAL AMPLIFIER BOX TYPE KSVK-6 : ITEM 05 AUBAU / LAYOUT
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

=			
+			
E	108184	SHEET	3
		NEXT	4



3N2-770-36-158

VERSTAERKER STRANG	VERSTAERKER STRANG
1	2
AMPLIFIER STRAND	AMPLIFIER STRAND
1	2

			DATE	14.02.91
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

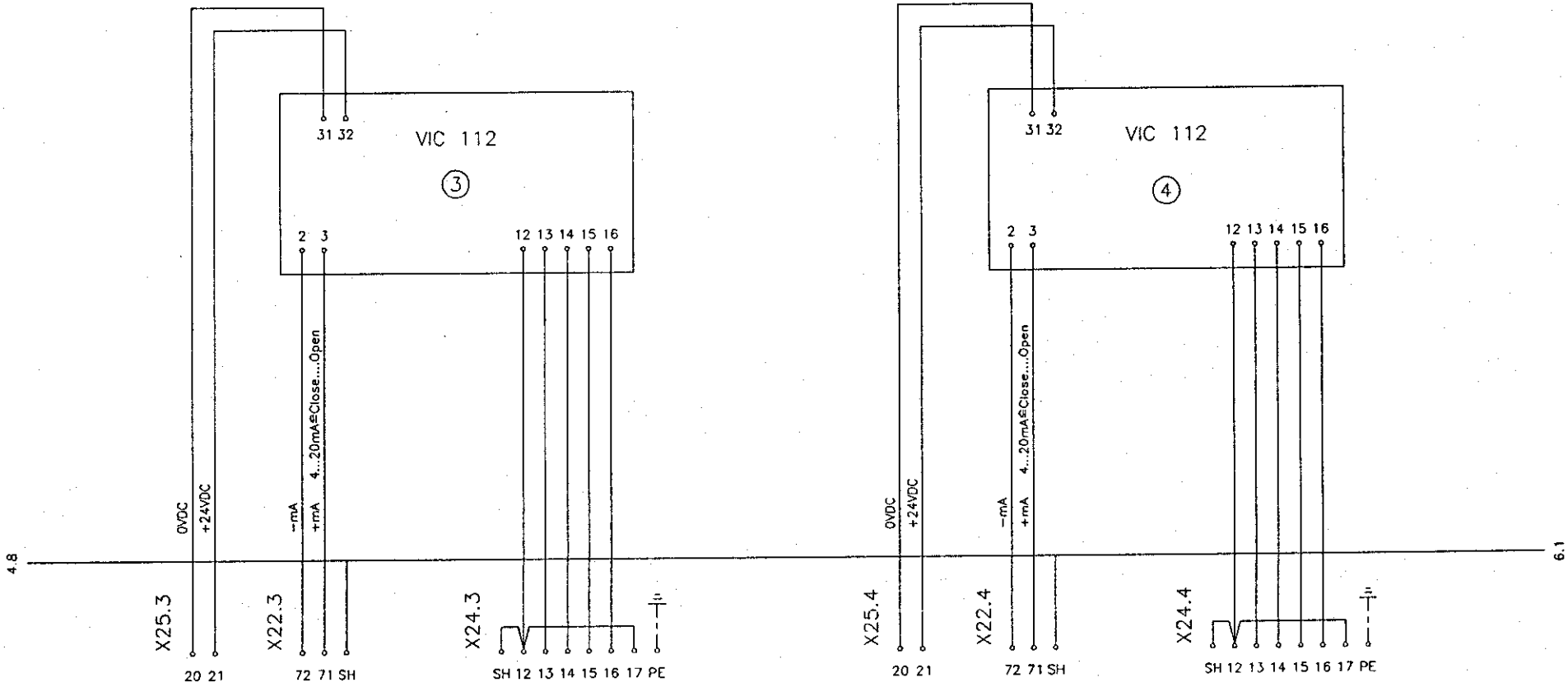
STANDARD

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMEN UND SIGNALVERSTAERKERKASTEN
TERMINAL AND SIGNAL AMPLIFIER BOX
TYPE KSVK-6 : ITEM 05
VERDRAHTUNGSPLAN / CIRCUIT DIAGRAM

		=	
		+	
E	108184	SHEET	4
		NEXT	5



3112-770-36-159

VERSTAERKER STRANG	VERSTAERKER STRANG
3	4
AMPLIFIER STRAND	AMPLIFIER STRAND
3	4

			DATE	14.02.91
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

STANDARD

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMEN UND SIGNALVERSTAERKERKASTEN
TERMINAL AND SIGNAL AMPLIFIER BOX
TYPE KSVK-6 : ITEM 05
VERDRAHTUNGSPLAN / CIRCUIT DIAGRAM

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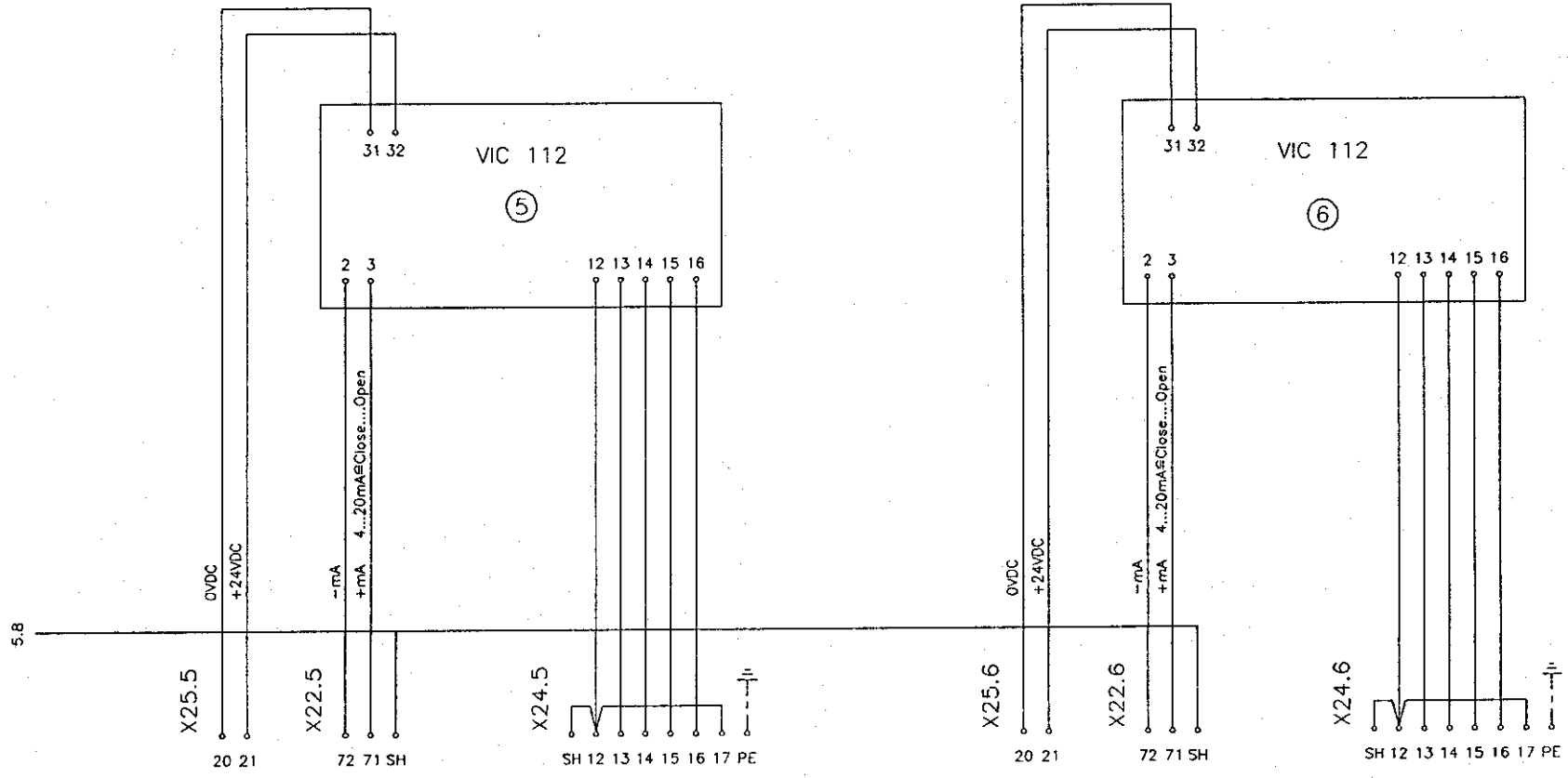
E | 108184 | SHEET 5 | NEXT 6



3N2-770-36-160

VERSTAERKER STRANG	VERSTAERKER STRANG
5	6
AMPLIFIER STRAND	AMPLIFIER STRAND
5	6

			DATE	14.02.91	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	KLEMMEN UND SIGNALVERSTAERKERKASTEN TERMINAL AND SIGNAL AMPLIFIER BOX TYPE KSVK-6 : ITEM 05 VERDRAHTUNGSPLAN / CIRCUIT DIAGRAM
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

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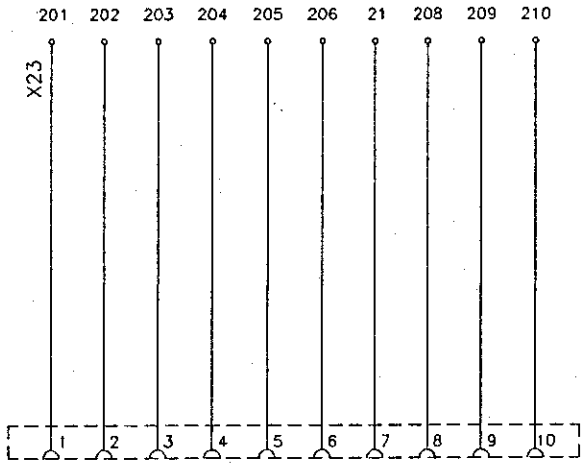
+			
E	108184	SHEET	6
		NEXT	7



372-770-36-161

APPARATEDOSE TESTSTEUERBIRNE

SOCKET FOR TEST PENDANT

AMPLIFIER

REVISION	DATE	NAME

DATE	14.02.91
DRAWN	Za
CHECKED	Za
NORM	

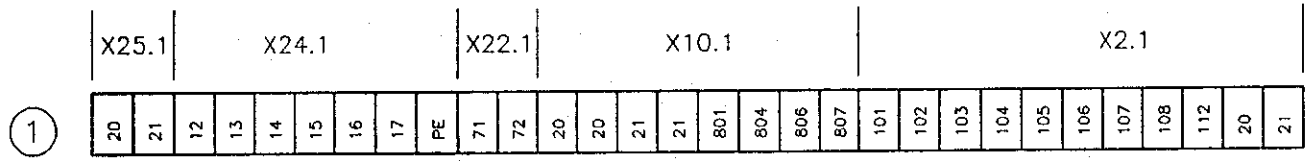
STANDARD

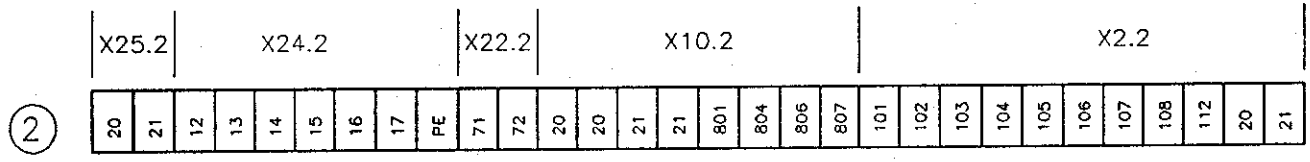
ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMEN UND SIGNALVERSTAERKERKASTEN
TERMINAL AND SIGNAL AMPLIFIER BOX
TYPE KSVK-6 : ITEM 05
VERDRAHTUNGSPLAN / CIRCUIT DIAGRAM

E	108184	SHEET 7
		NEXT 8





3172-770-36-162

SPEISUNG	ZYL.SIGNAL	ZYL.POSITION	ARGON KASTEN	VENTILBLOCK
VERSTAERKER				
POWER SUPPLY	ZYL.SIGNAL	ZYL.POSITION	ARGON-BOX	VALVE MANIFOLD
AMPLIFIER				

REVISION	DATE	NAME		
			DATE	14.02.91
			DRAWN	Za
			CHECKED	Za
			NORM	

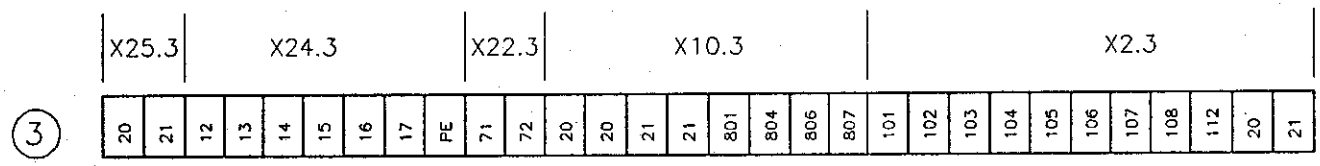
ORIGIN | REPL.FOR

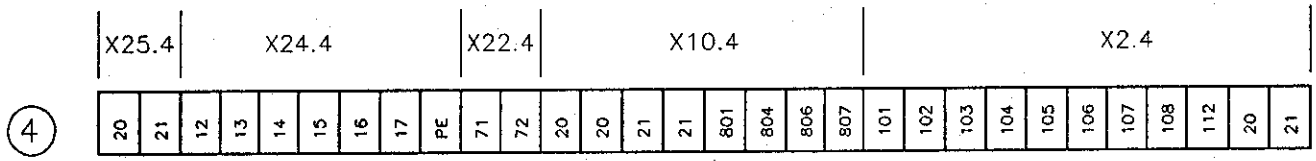
STANDARD

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMEN UND SIGNALVERSTAERKERKASTEN
TERMINAL AND SIGNAL AMPLIFIER BOX
TYPE KSVK-6 : ITEM 05
KLEMMENPLAN / TERMINAL ARRANGEMENT

		=	
		+	
E	108184	SHEET	8
		NEXT	9





3172-770-36-163

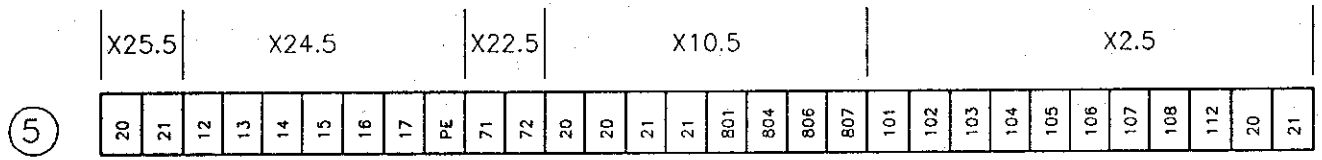
SPEISUNG	ZYL.SIGNAL	ZYL.POSITION	ARGON KASTEN	VENTILBLOCK
VERSTAERKER				
POWER SUPPLY	ZYL.SIGNAL	ZYL.POSITION	ARGON-BOX	VALVE MANIFOLD
AMPLIFIER				

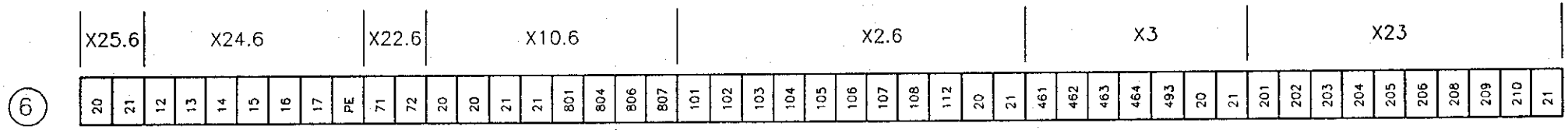
			DATE	14.02.91	STANDARD	
			DRAWN	Za		
			CHECKED	Za		
			NORM			
REVISION	DATE	NAME			ORIGIN	REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMEN UND SIGNALVERSTAERKERKASTEN
TERMINAL AND SIGNAL AMPLIFIER BOX
TYPE KSVK-6 : ITEM 05
KLEMMENPLAN / TERMINAL ARRANGEMENT

		=	
		+	
E	108184	SHEET	9
		NEXT	10





3172-770-36-164

SPEISUNG	ZYL.SIGNAL	ZYL.POSITION	ARGON KASTEN	VENTILBLOCK	VERTEILERBLOCK	TESTSTEUERBIRNE
VERSTAERKER						
POWER SUPPLY	ZYL.SIGNAL	ZYL.POSITION	ARGON-BOX	VALVE MANIFOLD	CONNECTION MANIFOLD	TEST PENDANT
AMPLIFIER						

REVISION	DATE	NAME

DATE	14.02.91
DRAWN	Za
CHECKED	Za
NORM	

STANDARD

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMEN UND SIGNALVERSTAERKERKASTEN
TERMINAL AND SIGNAL AMPLIFIER BOX
TYPE KSVK-6 : ITEM 05
KLEMMENPLAN / TERMINAL ARRANGEMENT

=
+

E | 108184 | SHEET 10 | NEXT –

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 31 28 64, Telex 862128 ist ch

INTERSTOP

Order Parts List

TERMINAL AND SIGNAL
AMPLIFIER BOX
TYPE KSVK-6

Part no.: 108185 Project no. 2014/419
Dwg no. : ROKOP
kg/piece:

Page : 1
Print : 04/04/95
Issue : 04/04/95
Doc no. : 8359

3101-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		Item no. : 05 Electrical diagram : E108184					
1		**105180** CONTROL BOX WxHxD 800x1000x300mm TYPE AE 1180	E104889		1	pcs	RITTAL
3		**104837** MOUNTING RAIL TYPE TS 35x7.5	E104836	6	0.5	m	WEIDMUELLER
5		**104847** TERMINAL 4mm2 TYPE WDU 4	E104842		184	pcs	WEIDMUELLER
7		**104861** END PLATE TYPE WAP2.5-10	E104859		26	pcs	WEIDMUELLER
9		**104881** PE-TERMINAL 4.0mm2 GREEN-YELLOW TYPE WPE 4	E104874		6	pcs	WEIDMUELLER
11		**104841** END RETAINER TYP WEW35/2	E104840		12	pcs	WEIDMUELLER
13		**106831** AMPLIFIER VIC 112/M2-DC230 12/24VDC TYPE 214-112-000-021/01/xx/xx	E105416		6	pcs	VIBROMETER
15		**105000** APPARATUS SOCKET Han10E TYPE 09 30 010 0301	E104998		1	pcs	HARTING

3172-770-36-165

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 31 28 64, Telex 862 128 ist ch

INTERSTOP

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
17		**104994** FEMALE INSERT Han10E F TYPE 09 33 010 2701	E104990		1	pcs	HARTING

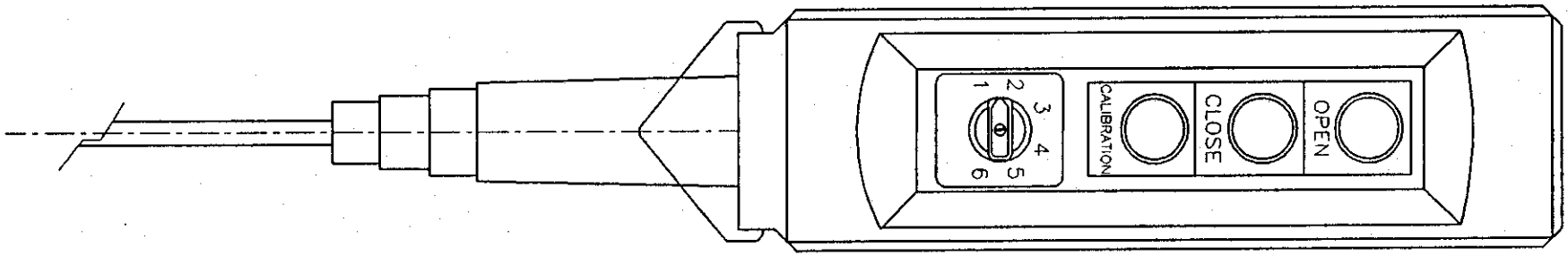
3172-770-36-166

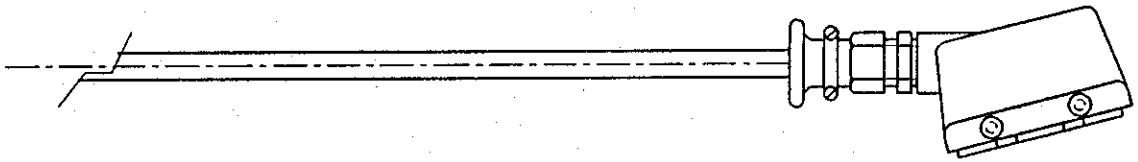
End of list

NO.	TITEL	TITLE
1	IHALTSVERZEICHNIS	COVERSHEET
2	AUFBAU	LAYOUT
3	VERDRAHTUNGSPLAN	CIRCUIT DIAGRAM
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
	STUECKLISTE / PARTSLIST	107149

372-770-36-167

			DATE	21.09.90	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA	TESTSTEUERBIRNE TEST PENDANT TYPE BO42/6 : ITEM 6 INHALTSVERZEICHNIS / COVERSHEET
			DRAWN	Za		INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	
			CHECKED	Za			E 107148 SHEET 1 NEXT 2
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	





3772-770-36-168

			DATE	21.09.90
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

STANDARD

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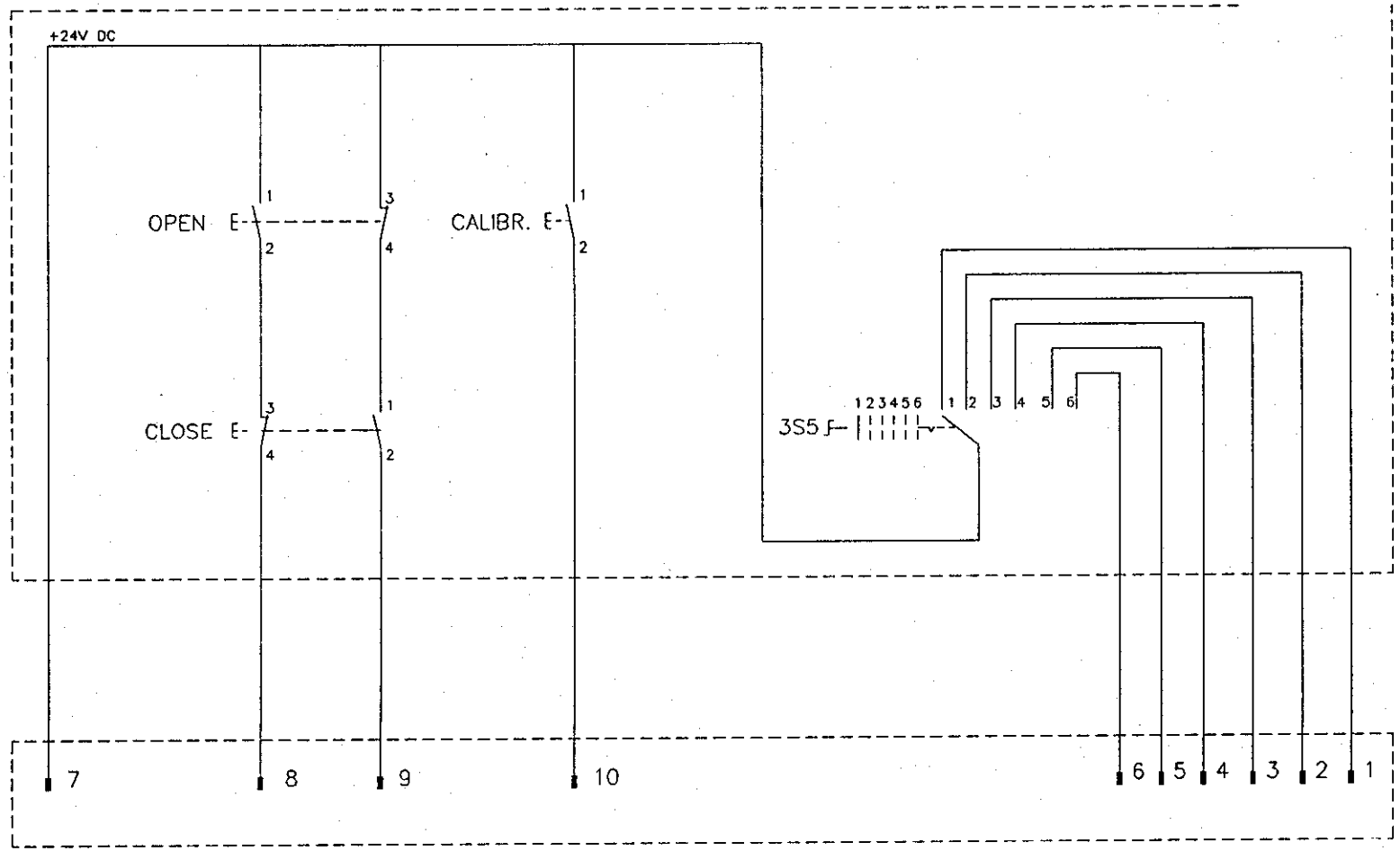
Stopinc Aktiengesellschaft
CH-6341 BAAR

TESTSTEUERBIRNE
TEST PENDANT
TYPE BO42/6 : ITEM 6
AUFBAU / LAYOUT

=
+

E | 107148 | SHEET 2 | NEXT 3



3112-770-36-169

+24V DC	SCHLIESSEN	OEFFNEN	KALIBRIERUNG	STRANG
	CLOSE	OPEN	CALIBRATION	STRAND 1–6

			DATE	21.09.90
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

STANDARD

ORIGIN | REPL.FOR

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INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

TESTSTEUERBIRNE
TEST PENDANT
TYPE 8042/6 : ITEM 6
VERDRAHTUNGSPLAN / CIRCUIT DIAGRAM

		=	
		+	
E	107148	SHEET	3
		NEXT	–

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

TEST PENDANT
TYPE BO42/6

Part no.: 107149 Project no. 2014/419 Page : 1
Dwg no. : ROKOP Print : 06/06/95
kg/piece: Issue : 05/04/95
Doc no. : 8360

3101-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		Item no. : 06 Electrical diagram : E107148					
1		**101967** PENDANT TYPE XAC-B04	E101966		1	pcs	TELEMECANIQUE
3		**101972** PUSH-BUTTON BLACK TYPE ZB2-BP2	E101966		3	pcs	TELEMECANIQUE
5		**101971** CONTACT ELEMENT 1NC/1NO TYPE ZB2-BZ105	E101966		3	pcs	TELEMECANIQUE
7		**118028** INSCRIPTION PLATE INSCRIPTION "OPEN" RUSIAN			1	pcs	OTTH GRAVUREN
8		**118029** INSCRIPTION PLATE INSCRIPTION "CLOSE" RUSIAN			1	pcs	OTTH GRAVUREN
9		**118032** INSCRIPTION PLATE INSCRIPTION "CALIBRATION" RUSIAN			1	pcs	OTTH GRAVUREN
11		**106193** SELECTOR SWITCH TYPE 418006 / 1,1,1,1,1,1			1	pcs	TSCHUDIN+HEID
13		**106194** KNOB			1	pcs	TSCHUDIN+HEID

3T2-770-36-170

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Doc no. 8360 TEST PENDANT Date: 06/06/95

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		TYPE 464503					
15		**106195** INSCRIPTION PLATE INSCRIPTION "1-6" TYPE 493052			1	pcs	TSCHUDIN+HEID
17		**114958** CABLE TYPE SIFLEX-PUR N 12x1.0mm2		1	10	m	LÜTZE
19		**104991** APPARATUS PLUG Han10E TYPE 09 30 010 1521	E104990		1	pcs	HARTING
21		**104993** MALE INSERT Han10E M TYPE 09 33 010 2601	E104990		1	pcs	HARTING
23		**104738** CABLE-GLAND PG16 TRUMPET TYPE 1816.01	E104727		1	pcs	AGRO

3112-770-36-171

End of list

NO.	TITEL	TITLE
1	INHALTSVERZEICHNIS	COVERSHEET
2	NETZ/PUMPEN	POWER/PUMPS
3	PUMPENSTEUERUNG	PUMP CONTROL
4	LAMPEN	LAMPS
5	LAMPEN	LAMPS
6	LAMPEN	LAMPS
7	MELDUNGEN AN PLC	MESSAGES TO PLC
8	MELDUNGEN AN PLC	MESSAGES TO PLC
9	MELDUNGEN AN PLC	MESSAGES TO PLC
10	ANSICHT	VIEW
11	AUFBAU	LAYOUT
12	KLEMMENPLAN	TERMINAL ARRANGEMENT
13		
14		
15		
16		
17		
18		
19		
20		
	STUECKLISTE / PARTSLIST	107146

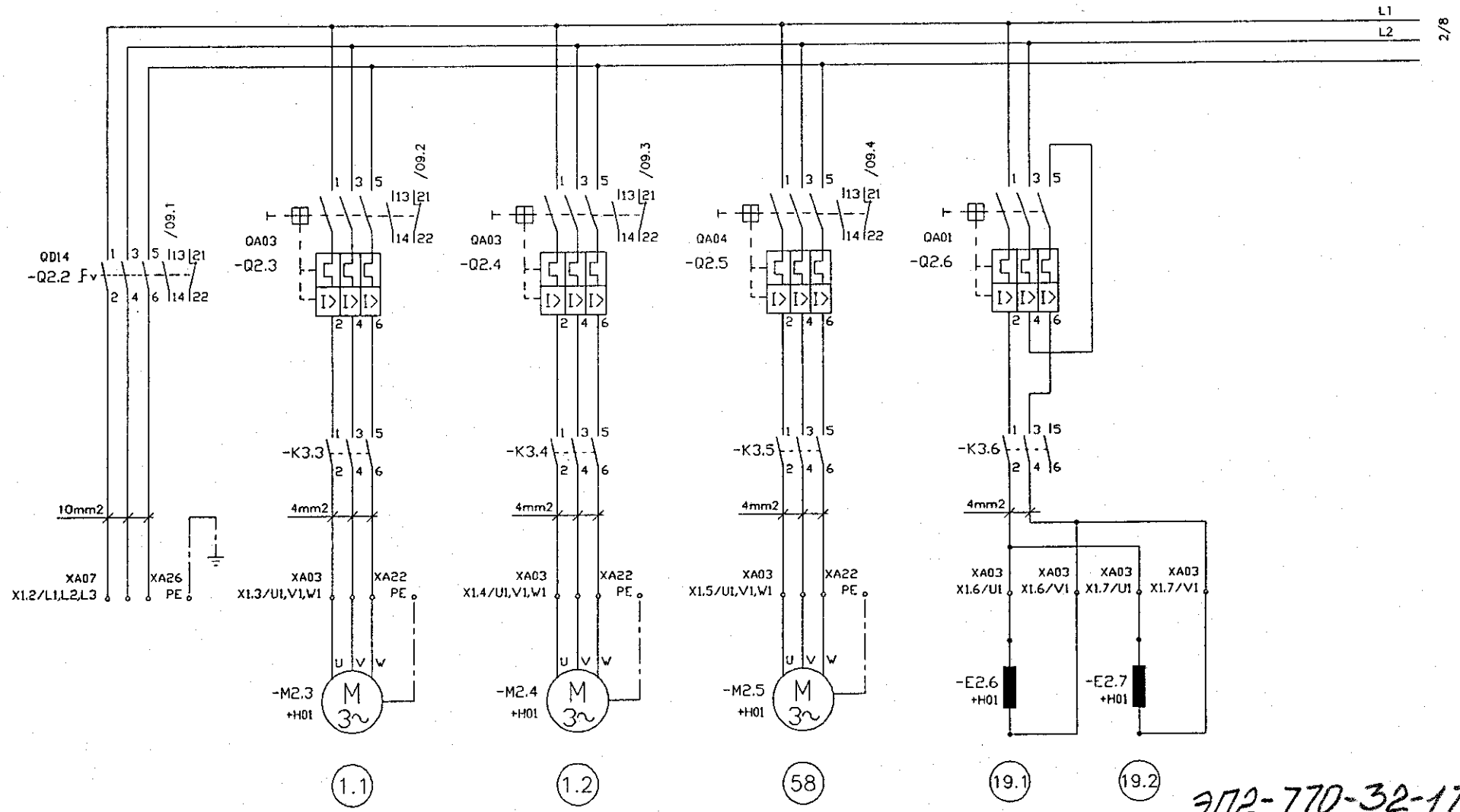
GERAETE NR. :
UNIT NO.

HYDR. SCHEMA NR. :
HYDR. DIAGRAM NO.

9172-770-36-172

			DATE	14.05.95	ROKOP PENNSYLVANIA USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	ZENTRALES HYDRAULIK AGGREGAT CENTRAL HYDRAULIC UNIT TYPE EST-A02 : ITEM 20 INHALTSVERZEICHNIS/COVERSHEET
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	107145	SHEET	1
		NEXT	2



3172-770-32-173

EINSPEISUNG	PUMPE 1	PUMPE 2	PUMPE 3	HEIZUNG	HEIZUNG
POWER INPUT	PUMP 1	PUMP 2	PUMP 3	HEATING	HEATING
3x380V	11kW	11kW	1,5kW	1kW	1kW
50 Hz	1450U/Min	1450U/Min	1450U/Min		

		DATE	14.05.95	
		DRAWN	Za	
		CHECKED	Za	
		NORM		
REVISION	DATE	NAME		

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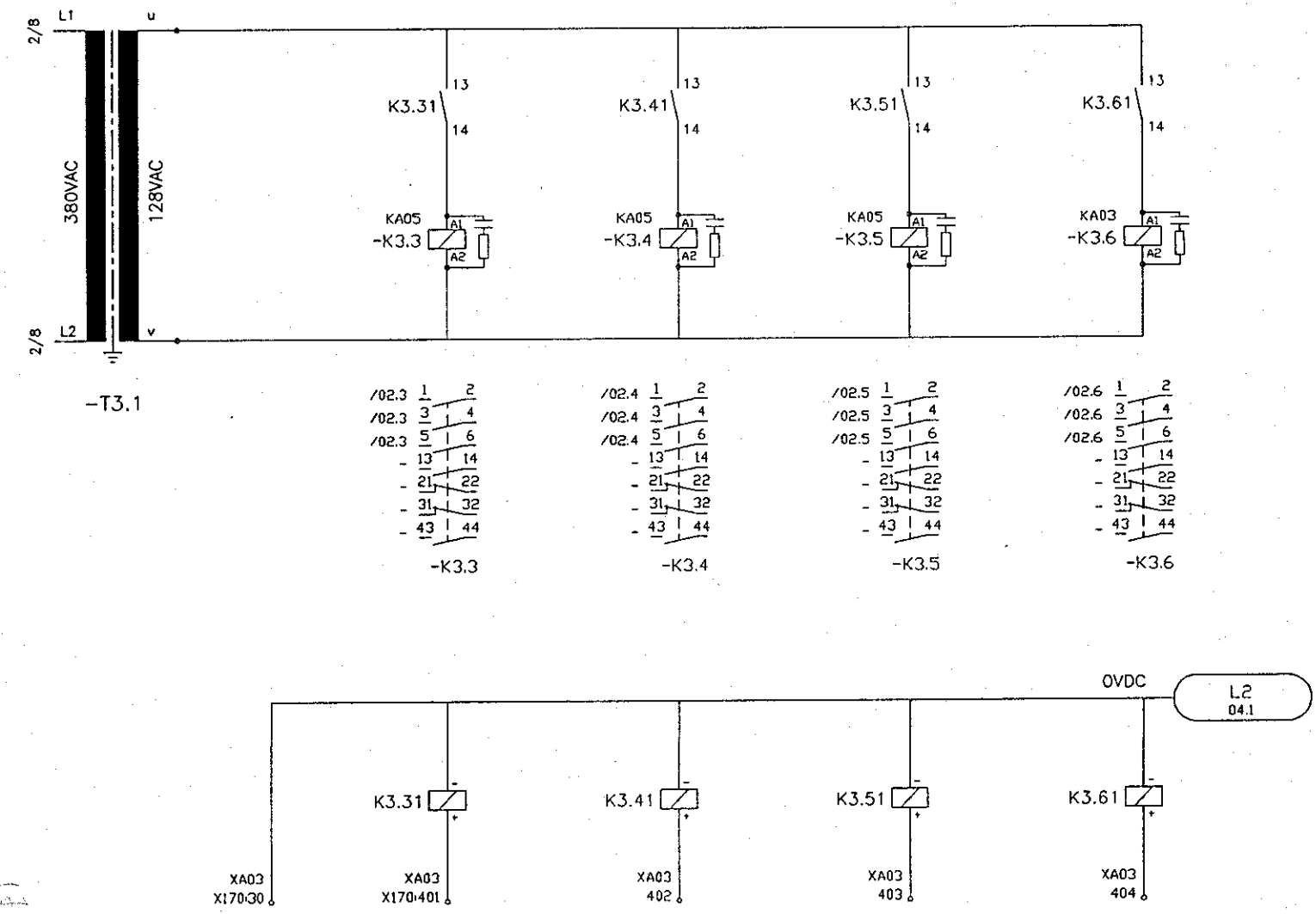
ZENTRALES HYDRAULIK AGGREGAT
CENTRAL HYDRAULIC UNIT
TYPE EST-A02 : ITEM 20
NETZ/PUMPEN / POWER/PUMPS

E	107145	SHEET	2
		NEXT	3



372-770-36-174

HAUPTSCHUETZ	HAUPTSCHUETZ	HAUPTSCHUETZ	HAUPTSCHUETZ
PUMPE 1	PUMPE 2	PUMPE 3	HEIZUNG
CONTACTOR	CONTACTOR	CONTACTOR	CONTACTOR
PUMP 1	PUMP 2	PUMP 3	HEATING

			DATE	14.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

ROKOP PENNSYLVANIA
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2014/419

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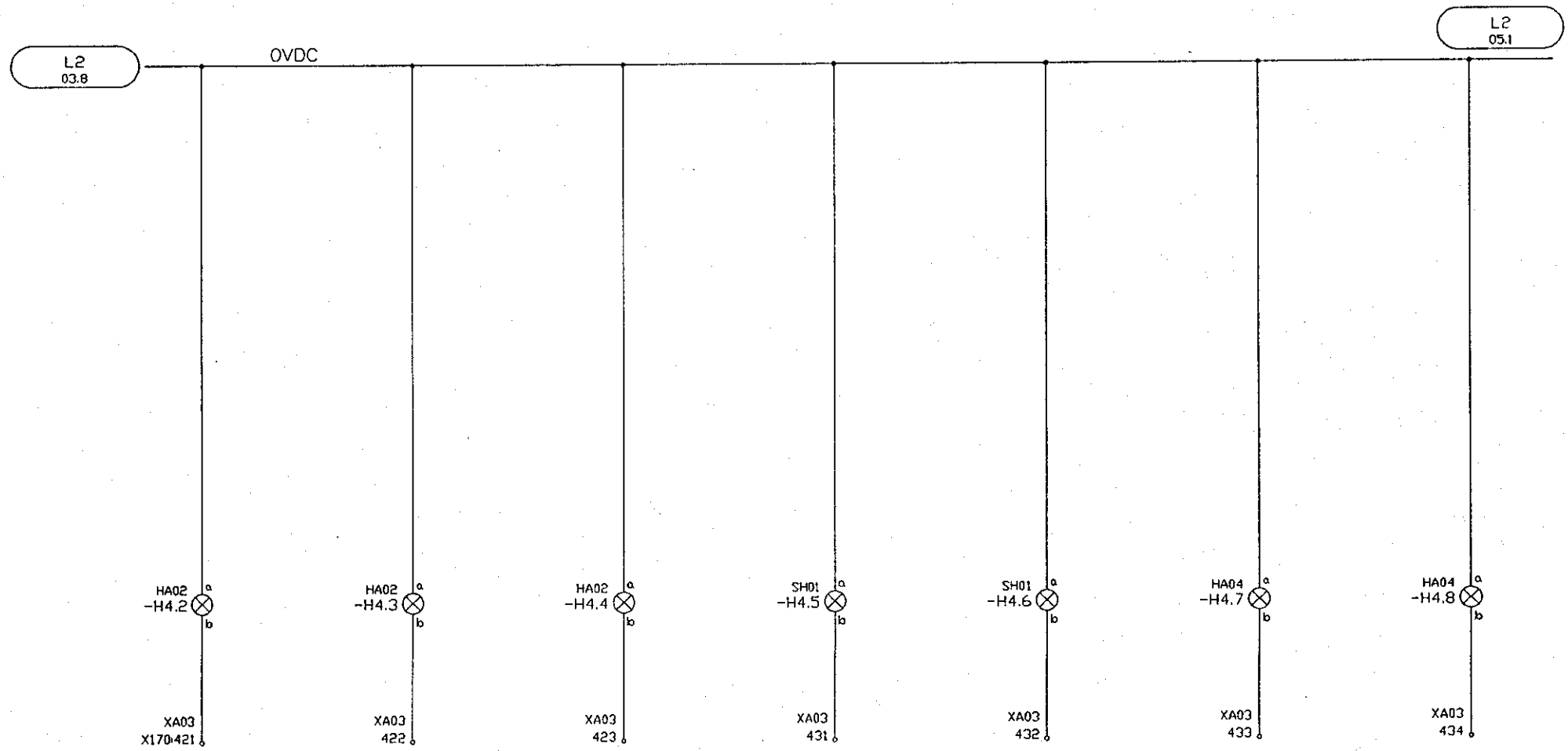
CH-6341 BAAR

ZENTRALES HYDRAULIK AGGREGAT
CENTRAL HYDRAULIC UNIT
TYPE EST-A02 : ITEM 20
PUMPENSTEUERUNG / PUMP CONTROL

	=		
	+		
E	107145	SHEET	3
		NEXT	4



3172-770-36-175

PUMPE 1 STOERUNG	PUMPE 2 STOERUNG	PUMPE 3 STOERUNG	PUMPE 1 EIN	PUMPE 2 EIN	PUMPE 3 EIN	HEIZUNG EIN
PUMP 1 FAILURE	PUMP 2 FAILURE	PUMP 3 FAILURE	PUMP 1 ON	PUMP 2 ON	PUMP 3 ON	HEATING ON

REVISION	DATE	NAME		
		DATE	14.05.95	
		DRAWN	Za	
		CHECKED	Za	
		NORM		
ORIGIN	REPL.FOR			

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CH-6341 BAAR

ZENTRALES HYDRAULIK AGGREGAT
CENTRAL HYDRAULIC UNIT
TYPE EST-A02 : ITEM 20
LAMPEN / LAMPS

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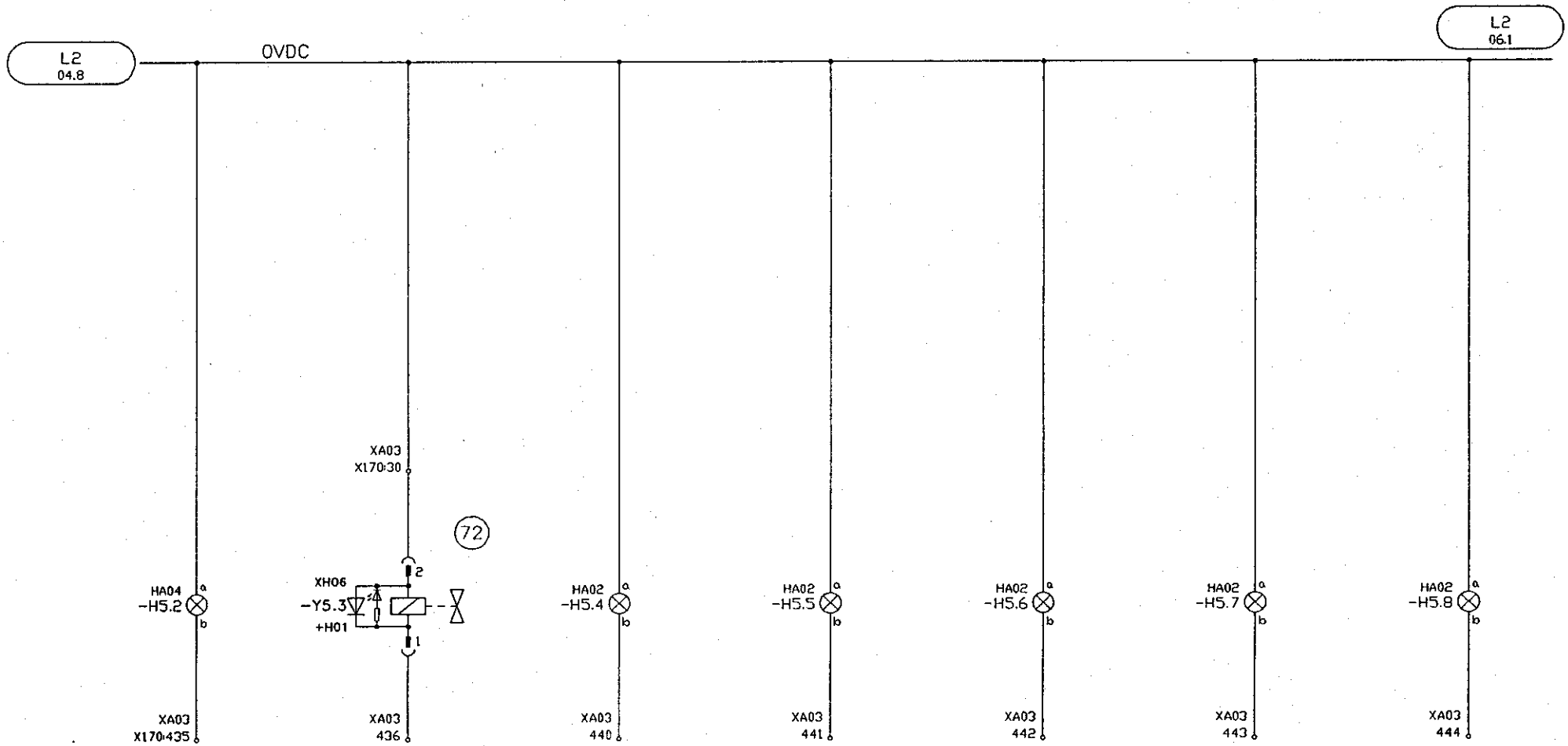
	+		
E	107145	SHEET	4
		NEXT	5



3172-770-36-176

KUEHLUNG EIN	KUEHLWASSER AUS	OEL NIVEAU TIEF	OEL NIVEAU ZU TIEF	OEL TEMP. HOCH	OEL TEMP. ZU HOCH	OEL TEMP. TIEF
COOLING ON	COOLING WATER OFF	OIL LEVEL LOW	OIL LEVEL TOO LOW	OIL TEMP. HIGH	OIL TEMP. TOO HIGH	OIL TEMP. LOW

REVISION	DATE	NAME

DATE	14.05.95
DRAWN	Za
CHECKED	Za
NORM	

ORIGIN | REPL.FOR

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ZENTRALES HYDRAULIK AGGREGAT
CENTRAL HYDRAULIC UNIT
TYPE EST-A02 : ITEM 20
LAMPEN / LAMPS

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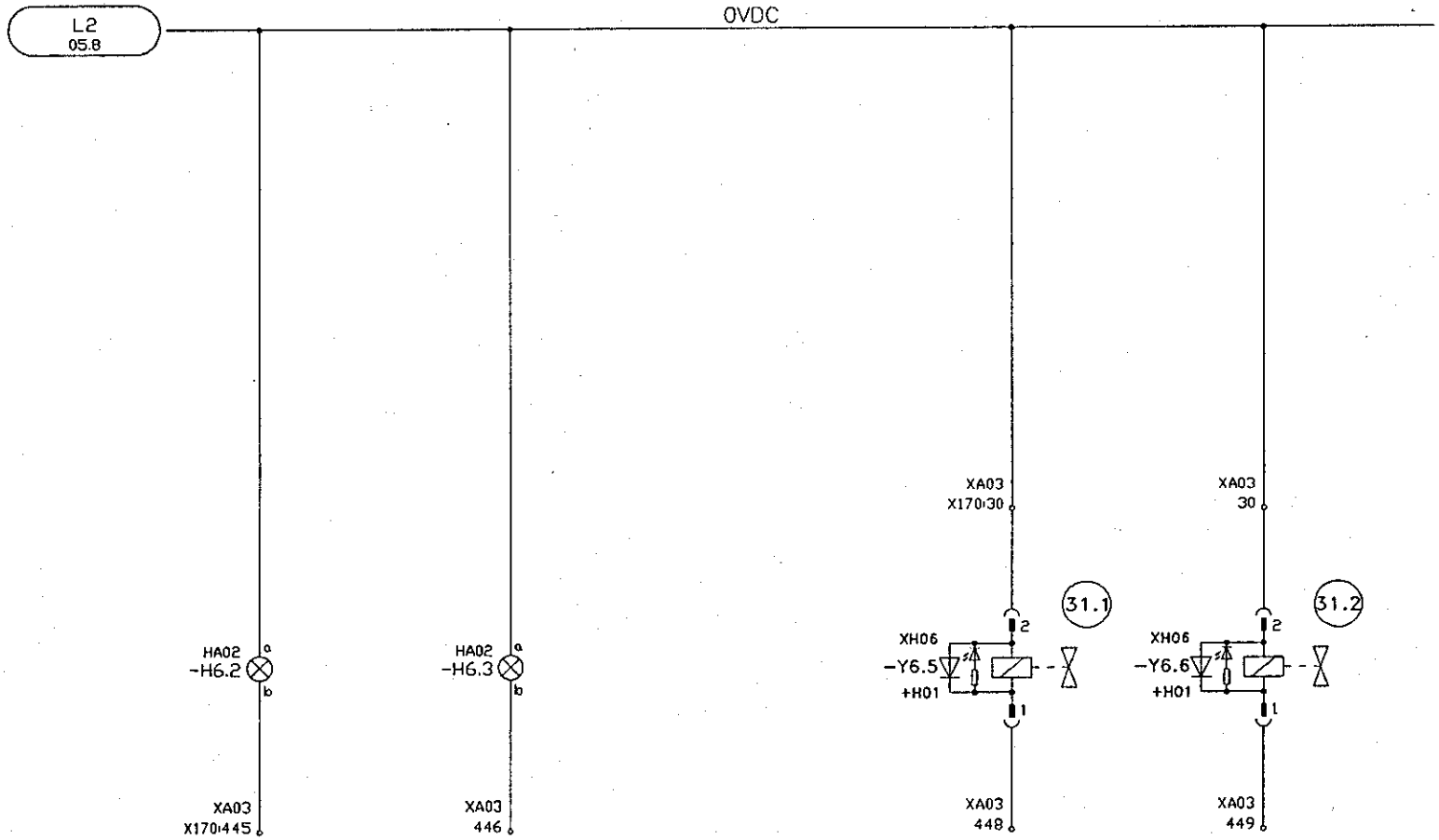
E | 107145 | SHEET 5 | NEXT 6



3N2-770-36-177

ARBEITSSPEICHER	FILTERALARM	DRUCKLOSER UMLAUF	DRUCKLOSER UMLAUF
DRUCKALARM		PUMPENKREIS 1	PUMPENKREIS 2
SYSTEM PRESSURE	FILTER ALARM	PRESSURELESS CIRCUIT	PRESSURELESS CIRCUIT
LOW		PUMP 1	PUMP 2

REVISION	DATE	NAME

DATE 14.05.95
DRAWN Za
CHECKED Za
NORM

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CH-6341 BAAR

ZENTRALES HYDRAULIK AGGREGAT
CENTRAL HYDRAULIC UNIT
TYPE EST-A02 : ITEM 20
LAMPEN / LAMPS

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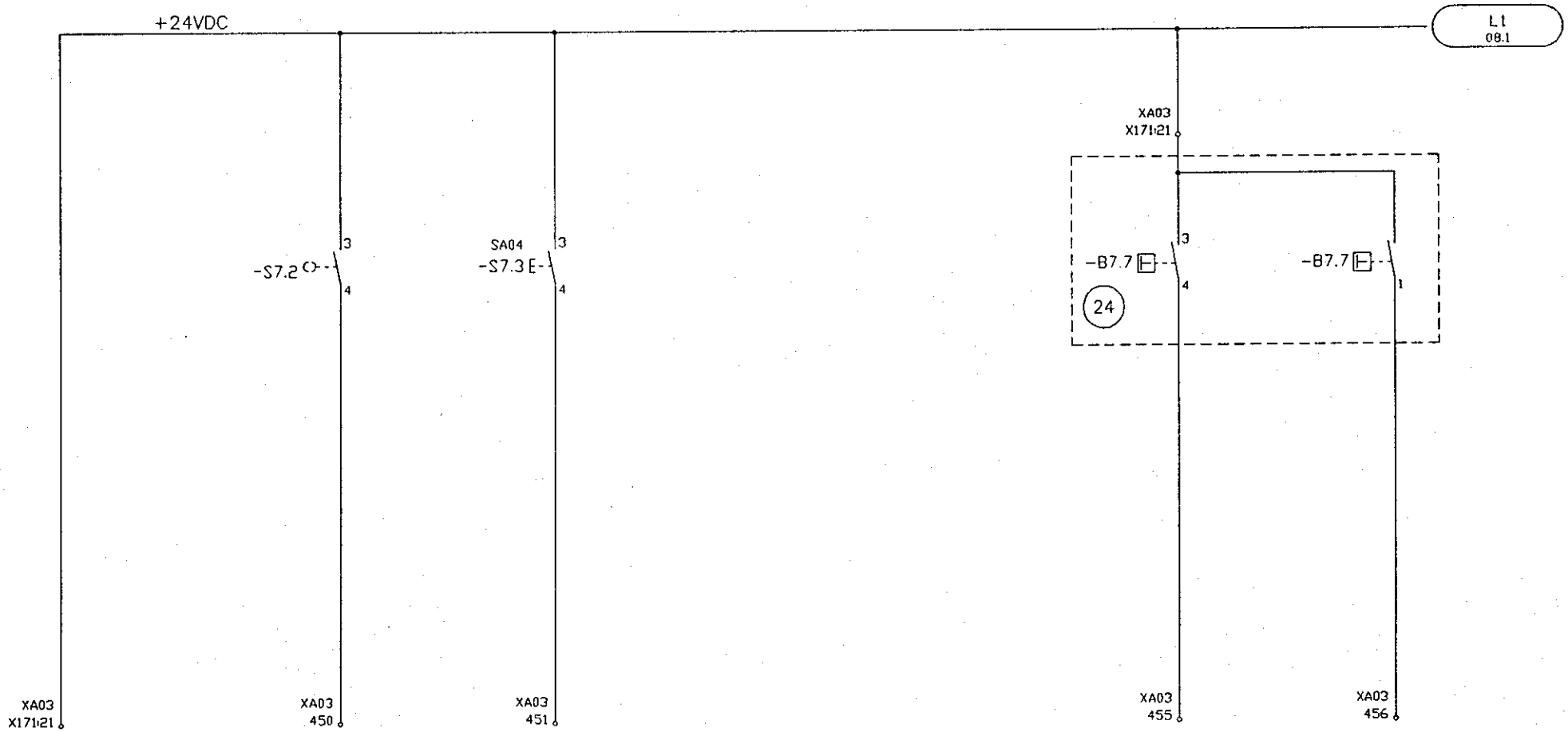
E | 107145 | SHEET 6 | NEXT 7



9172-770-36-178

EINSPEISUNG	SCHLUESSELSCHALTER	LAMPENTEST	OEL NIVEAU TIEF	OEL NIVEAU ZU TIEF
24VDC	PUMPE 3 EIN			
INPUT	KEY SWITCH	LAMP TEST	OIL LEVEL LOW	OIL LEVEL TOO LOW
24VDC	PUMP 3 ON			

		DATE	14.05.95	ROKOP PENNSYLVANIA USA 2014/419
		DRAWN	Za	
		CHECKED	Za	
		NORM		
REVISION	DATE	NAME	ORIGIN	REPL.FOR

ROKOP PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR

ZENTRALES HYDRAULIK AGGREGAT
CENTRAL HYDRAULIC UNIT
TYPE EST-A02 : ITEM 20
MELDUNGEN AN PLC / MESSAGE TO PLC

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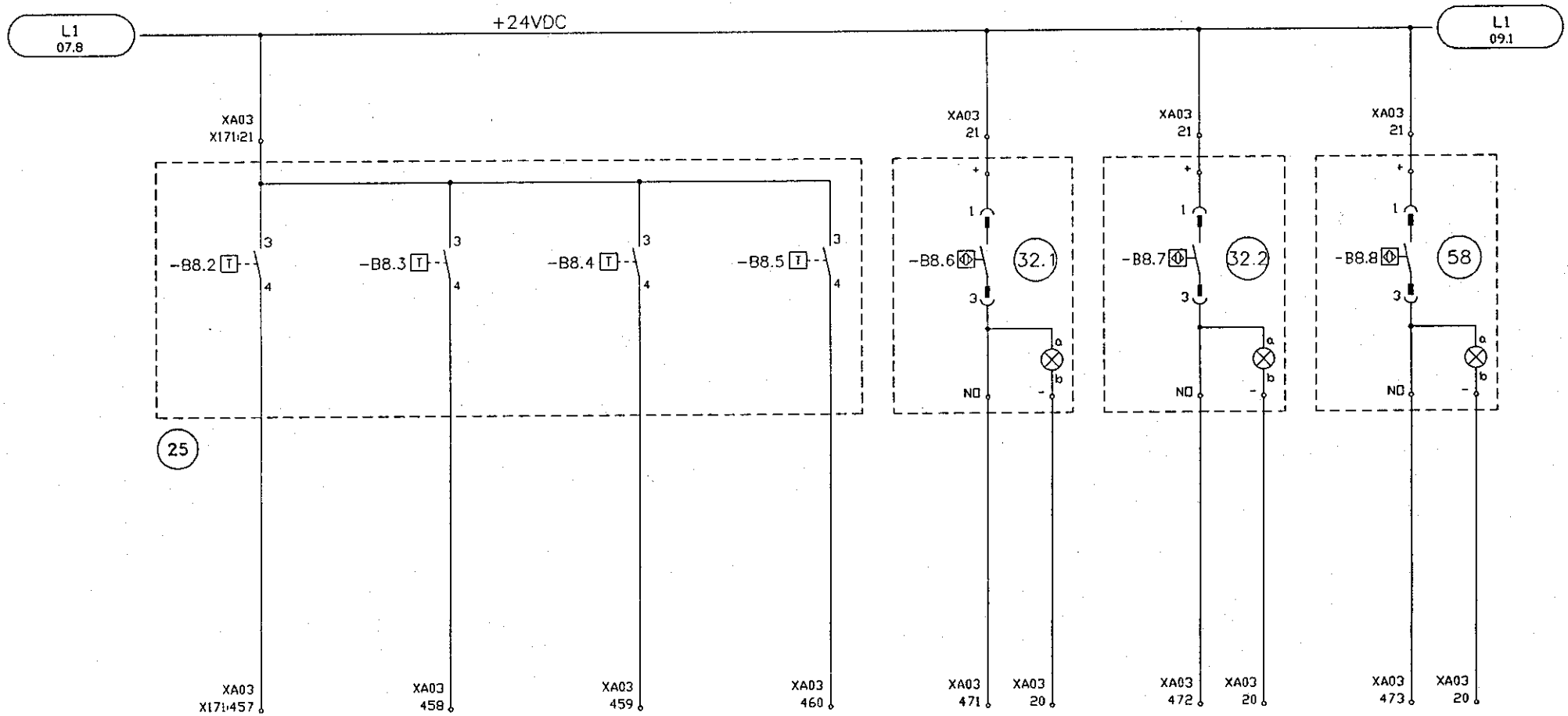
E	107145	SHEET	7
		NEXT	8



3112-770-36-179

OEL TEMPERATUR / OIL TEMPERATURE				HOCHDRUCKFILTER PUMPE 1 / HP FILTER PUMP 1	HOCHDRUCKFILTER PUMPE 2 / HP FILTER PUMP 2	RUECKLAUFFILTER / FILTER RETURN LINE
>70° C	>60° C	35-40° C	<20° C			

			DATE	14.05.95	ROKOP PENNSYLVANIA USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR
			DRAWN	Za		ZENTRALES HYDRAULIK AGGREGAT CENTRAL HYDRAULIC UNIT TYPE EST-A02 : ITEM 20 MELDUNGEN AN PLC / MESSAGE TO PLC
			CHECKED	Za		
			NORM			
REVISION	DATE	NAME			ORIGIN / REPL.FOR	

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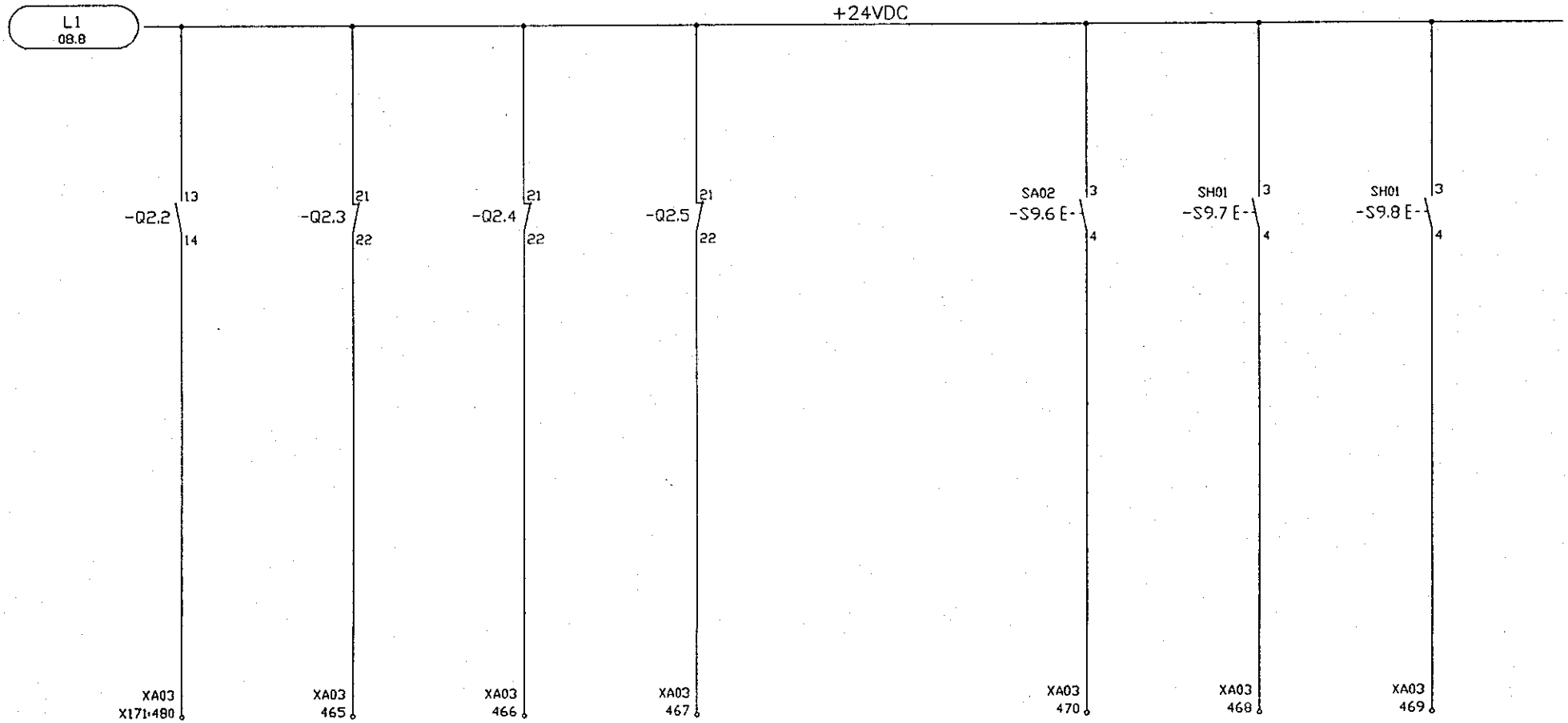
E	107145	SHEET	8
		NEXT	9



9172-770-36-180

HAUPTSCHALTER	STOERUNG PUMPE 1	STOERUNG PUMPE 2	STOERUNG PUMPE 3	PUMPEN 1+2 AUS	PUMPE 1 EIN	PUMPE 2 EIN
MAIN SWITCH	PUMP 1 FAILURE	PUMP 2 FAILURE	PUMP 3 FAILURE	PUMPS 1+2 OFF	PUMP 1 ON	PUMP 2 ON

			DATE	14.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

ROKOP PENNSYLVANIA
USA
2014/419

ORIGIN | REPL.FOR

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Stopinc Aktiengesellschaft
CH-6341 BAAR

ZENTRALES HYDRAULIK AGGREGAT
CENTRAL HYDRAULIC UNIT
TYPE EST-A02 : ITEM 20
MELDUNGEN AN PLC / MESSAGE TO PLC

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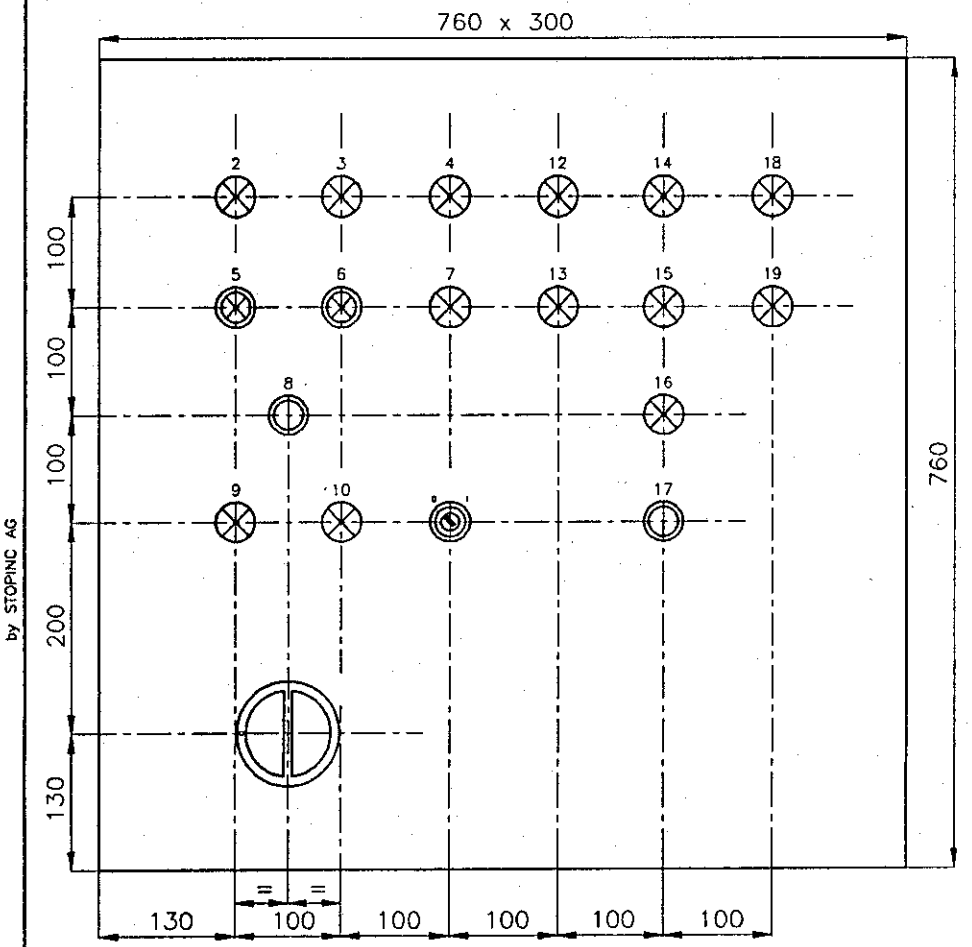
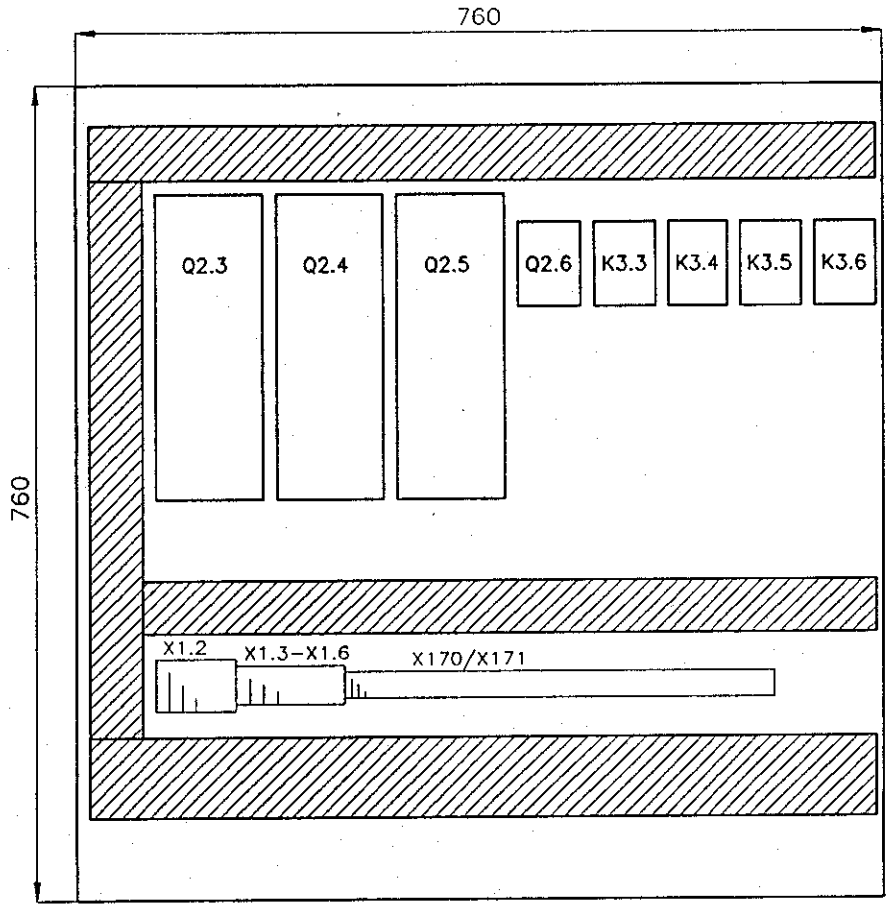
E | 107145 | SHEET 9 | NEXT 10

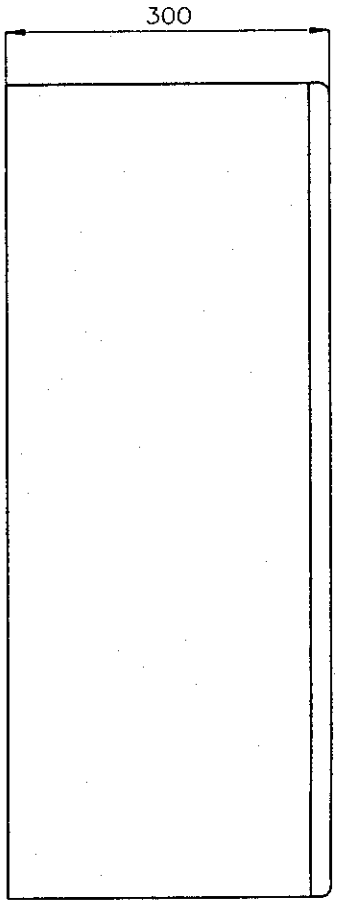


1	HAUPTSCHALTER	MAIN-SWITCH		Q2.2
2	PUMPE 1 STOERUNG	PUMP 1 FAILURE	RED	H4.2
3	PUMPE 2 STOERUNG	PUMP 2 FAILURE	RED	H4.3
4	PUMPE 3 STOERUNG	PUMP 3 FAILURE	RED	H4.4
5	PUMPE 1 EIN	PUMP 1 ON	GREEN	H4.5/S9.7
6	PUMPE 2 EIN	PUMP 2 ON	GREEN	H4.6/S9.8
7	PUMPE 3 EIN	PUMP 3 ON	GREEN	H4.7
8	PUMPEN 1+2 AUS	PUMP 1+2 OFF	RED	S9.6
9	HEIZUNG EIN	HEATING ON	GREEN	H4.8
10	KUEHLUNG EIN	COOLING ON	GREEN	H5.2
11	SCHLUESSELSCH. P3	KEY-SWITCH PUMP 3		S7.2
12	OEL NIVEAU TIEF	OIL LEVEL LOW	RED	H5.4
13	OEL NIVEAU ZU TIEF	OIL LEVEL TOO LOW	RED	H5.5
14	OIL TEMP. ZU HOCH	OIL TEMP. TOO HIGH	RED	H5.7
15	OIL TEMP. HOCH	OIL TEMP. HIGH	RED	H5.6
16	OIL TEMP. TIEF	OIL TEMP. LOW	RED	H5.8
17	LAMPENTEST	LAMP CONTROL	YELLOW	S7.3
18	DRUCK TIEF	PRESSURE LOW	RED	H6.2
19	FILTERALARM	FILTER ALARM	RED	H6.3

372-770-36-181

			DATE	14.05.95	ROKOP PENNSYLVANIA USA 2014/419	ROKOP PITTSBURGH PENNSYLVANIA USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	ZENTRALES HYDRAULIK AGGREGAT CENTRAL HYDRAULIC UNIT TYPE EST-A02 : ITEM 20 ANSICHT / VIEW	= / +
			DRAWN	Za				E 107145 SHEET 10 NEXT 11
			CHECKED	Za				
			NORM					
REVISION	DATE	NAME			ORIGIN	REPL.FOR		





3112-770-36-182

			DATE	14.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

ROKOP PENNSYLVANIA
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2014/419

ORIGIN | REPL. FOR

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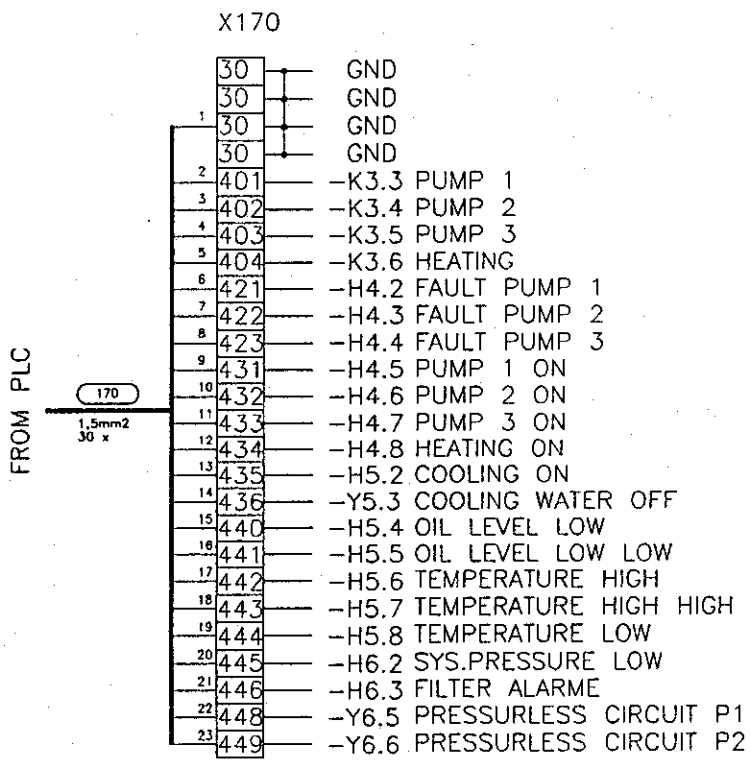
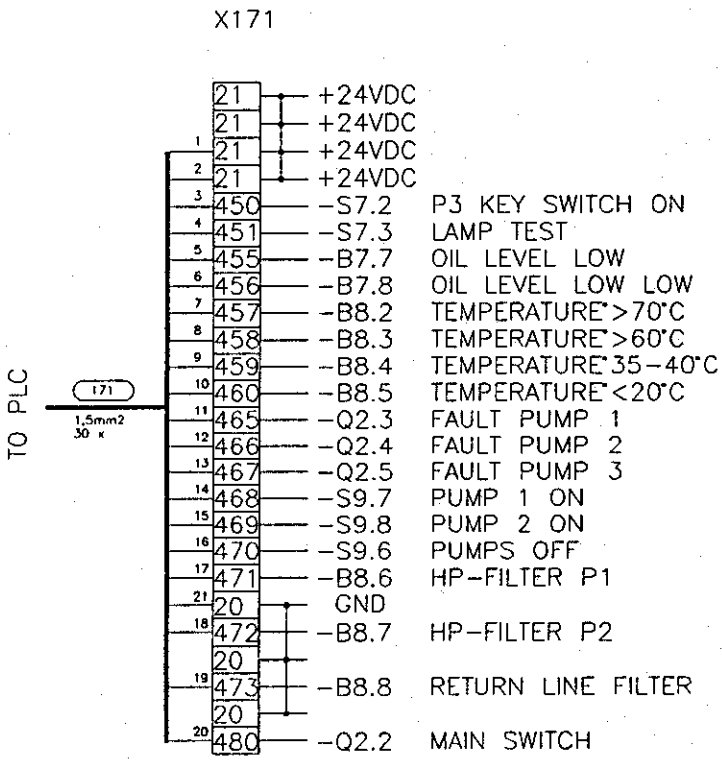
CH-6341 BAAR

ZENTRALES HYDRAULIK AGGREGAT
CENTRAL HYDRAULIC UNIT
TYPE EST-A02 : ITEM 20
AUFBAU / LAYOUT

E | 107145 | SHEET 11 | NEXT 12





372-770-36-183

			DATE	14.05.95	ROKOP PENNSYLVANIA USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	ZENTRALES HYDRAULIK AGGREGAT CENTRAL HYDRAULIC UNIT TYPE EST-A02 : ITEM 20 KLEMMENPLAN / TERMINAL DIAGRAM
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL FOR	

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E	107145	SHEET	12
		NEXT	–

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

ELECTRICAL CONTROL
CENTRAL HYDRAULIC UNIT
TYPE EST-A02

Part no.: 107146 Project no. 2014/419 Page : 1
Dwg no. : ROKOP Print : 07/06/95
kg/piece: Issue : 11/04/95
Doc no. : 8130

3101-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		Item No. : 20 Unit No. : H-5385 Electrical diagram : E107145 Hydraulic diagram : B116763 Main power supply : 3x380V / 50Cycl.					
1		**112809** CONTROL BOX WxHxD 760x760x300mm TYPE AE 1073	E104889		1	pcs	RITTAL
3		**116945** MAIN CONTROL SWITCH 100A/37KW TYPE P3-100/EA/SVB/N/HI11 -Q2.2			1	pcs	KLÖCKNER MÖLLER
4		**116939** TRANSFORMER 1x380/128/115V 50/60Cyc. ±10% 128V/1.7A 115V/0.7A -T3.1			1	pcs	WAGNER+GRIMM
5		**116947** COMPACT MOTOR STARTER 2.5-4A 04A/1.5KW 1NO/1NC TYPE PKZMO-4/SE00-11(110V/50Hz) Q2.5+K3.5/Q2.6+K3.6			2	pcs	KLÖCKNER MÖLLER
5		**116948** AUXILIARY SWITCH NHI11 TYPE NHI11-PKZ0			2	pcs	KLÖCKNER MÖLLER
7		**116949** COMPACT MOTOR STARTER 16-25A			2	pcs	KLÖCKNER MÖLLER

3N2-770-36-184

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		25A/11KW 1NO/1NC TYPE PKZ2/ZM-25/SE1A/11 (110V/50Hz)					
		Q2.3+K3.3/Q2.4+K3.4					
7		**116950** AUXILIARY SWITCH NHI11 TYPE NHI11-PKZ2			2	pcs	KLÖCKNER MÖLLER
13		**104837** MOUNTING RAIL TYPE TS 35x7.5	E104836	1	1.5	m	WEIDMUELLER
15		**104847** TERMINAL 4mm2 TYPE WDU 4	E104842		70	pcs	WEIDMUELLER
17		**104881** PE-TERMINAL 4.0mm2 GREEN-YELLOW TYPE WPE 4	E104874		4	pcs	WEIDMUELLER
19		**104850** TERMINAL 16mm2 TYPE WDU 16	E104842		3	pcs	WEIDMUELLER
21		**104884** PE-TERMINAL 16.0mm2 GREEN-YELLOW TYPE WPE 16	E104874		1	pcs	WEIDMUELLER
23		**104861** END PLATE TYPE WAP2.5-10	E104859		2	pcs	WEIDMUELLER
25		**104862** END PLATE TYPE WAP16-35	E104859		1	pcs	WEIDMUELLER
27		**104841** END RETAINER TYP WEW35/2	E104840		2	pcs	WEIDMUELLER
29		**104493** RELAY 1NO/1NC 8A/150W 24VDC TYPE EGR 3/24V	E104510		4	pcs	WEIDMUELLER
		-K3.31/-K3.41/-K3.51/-K3.61					
37	P	**112601** SIGNAL LAMP RED COMPLETE 30V/2W			10	pcs	

372-770-36-185

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		-H4.2/-H4.3/-H4.4/-H5.4/-H5.5 -H5.6/-H5.7/-H5.8/-H6.2/-H6.3					
39	P	**112603** SIGNAL LAMP GREEN COMPLETE 30V/2W			3	pcs	
		-H4.7/-H4.8/-H5.2					
41	P	**112610** ILLUMINATED PUSH BUTTON GREEN COMPLETE 1NO			2	pcs	
		-S9.7+H4.5/-S9.8+H4.6					
43	P	**112580** PUSH-BUTTON YELLOW COMPLETE 1NO			1	pcs	
		-S7.3					
45	P	**112560** PUSH-BUTTON RED COMPLETE 1NO			1	pcs	
		-S9.6					
47	P	**112650** KEY SELECTOR SWITCH ESS21S1 COMPLETE EF03.1			1	pcs	
		-S7.2					
49		**105100** PLUG FOR VALVE TYPE mPm 182-09-T-C3-24V DC	E104697		3	pcs	TRACHSEL
		-Y5.3/-Y6.5/-Y6.6					

372-710-36-186

End of list

NO.	TITEL	TITLE
1	INHALTSVERZEICHNIS	COVERSHEET
2	AUFBAU	LAYOUT
3	VERDRAHTUNGSPLAN	CIRCUIT DIAGRAM
4	VERDRAHTUNGSPLAN	CIRCUIT DIAGRAM
5	KLEMMENPLAN	TERMINAL ARRANGEMENT
6		
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	STUECKLISTE / PARTSLIST	109092

3112-770-36-187

			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMENKASTEN VENTILBLOCK TUNDISH
TERMINAL BOX VALVE MANIFOLD TUNDISH
TYPE KK-TS/S2-1.0 ; ITEM 100
INHALTSVERZEICHNIS / COVERSHEET

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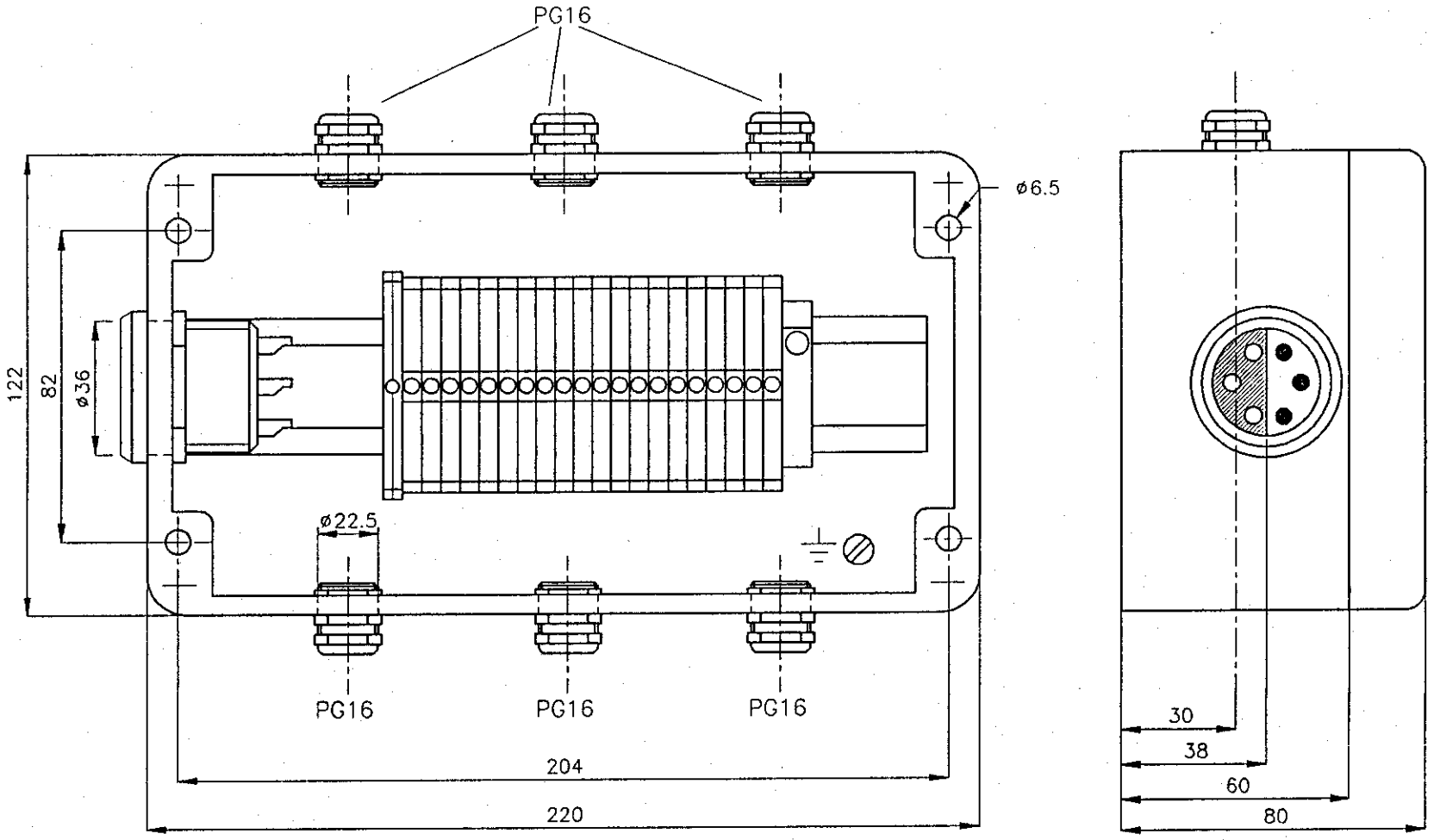
+

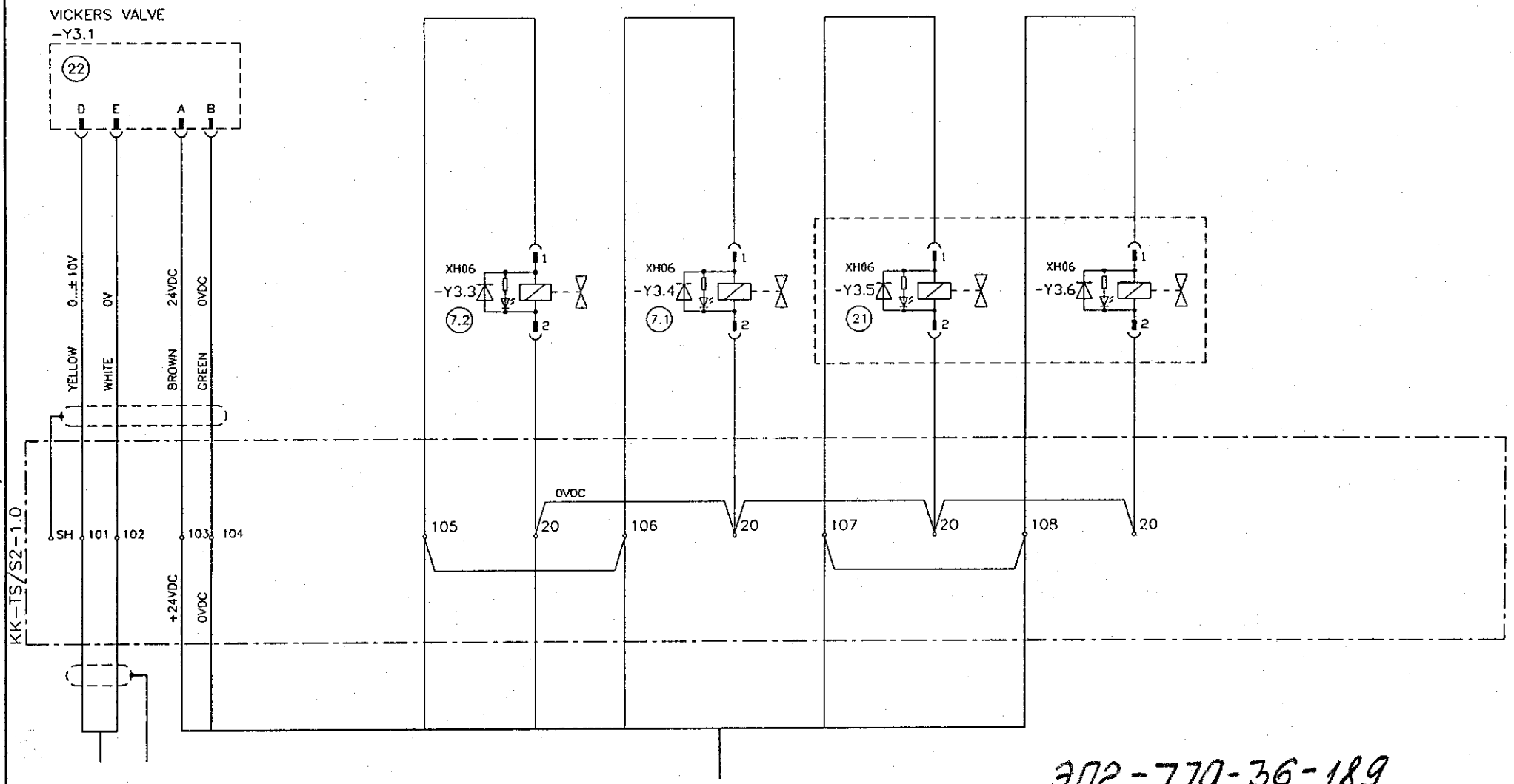
E	116696	SHEET 1
		NEXT 2



372-770-36-188

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH, PENNSYLVANIA, USA / INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	KLEMMENKASTEN VENTILBLOCK TUNDISH TERMINAL BOX VALVE MANIFOLD TUNDISH TYPE KK-TS/S2-1.0 : ITEM 100 AUFBAU / LAYOUT
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

=			
+			
E	116696	SHEET	2
		NEXT	3



372-770-36-189

PROPORTIONALVENTIL	NOTSCHLIESS-VENTIL	ABSPERRVENTIL	
	LEITUNG A	LEITUNG B	LEITUNG A OFFEN	LEITUNG B OFFEN
PROPORTIONAL VALVE	EMERGENCY SHUT VALVE	SHUT OFF VALVE	
	LINE A	LINE B	A-LINE OPEN	B-LINE OPEN

			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMENKASTEN VENTILBLOCK TUNDISH
TERMINAL BOX VALVE MANIFOLD TUNDISH
TYPE KK-TS/S2-1.0 : ITEM 100
VERDRAHTUNGSPLAN / CIRCUIT DIAGR.

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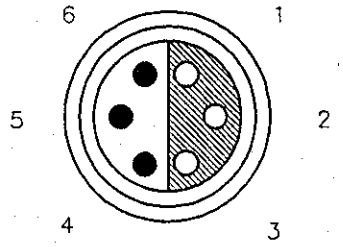
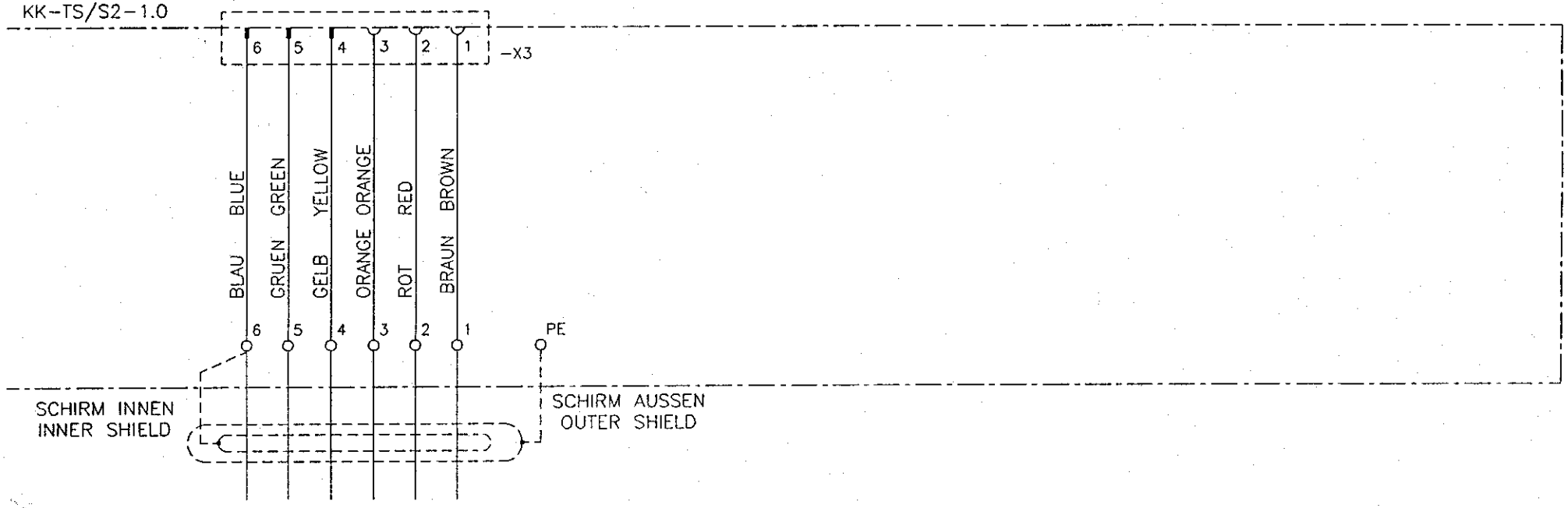
E | 116696 | SHEET 3 | NEXT 4





3172-770-36-190

SIGNALKABEL ZYLINDERSIGNAL

SIGNALCABLE STROKEPOSITION

			DATE	18.05.95
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

RED OCTOBER VOLGOGRAD
via ROKOP PITTSBURGH, USA
2014/419

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMENKASTEN VENTILBLOCK TUNDISH
TERMINAL BOX VALVE MANIFOLD TUNDISH
TYPE KK-TS/S2-1.0 : ITEM 100
VERDRAHTUNGSPLAN / CIRCUIT DIAGR.

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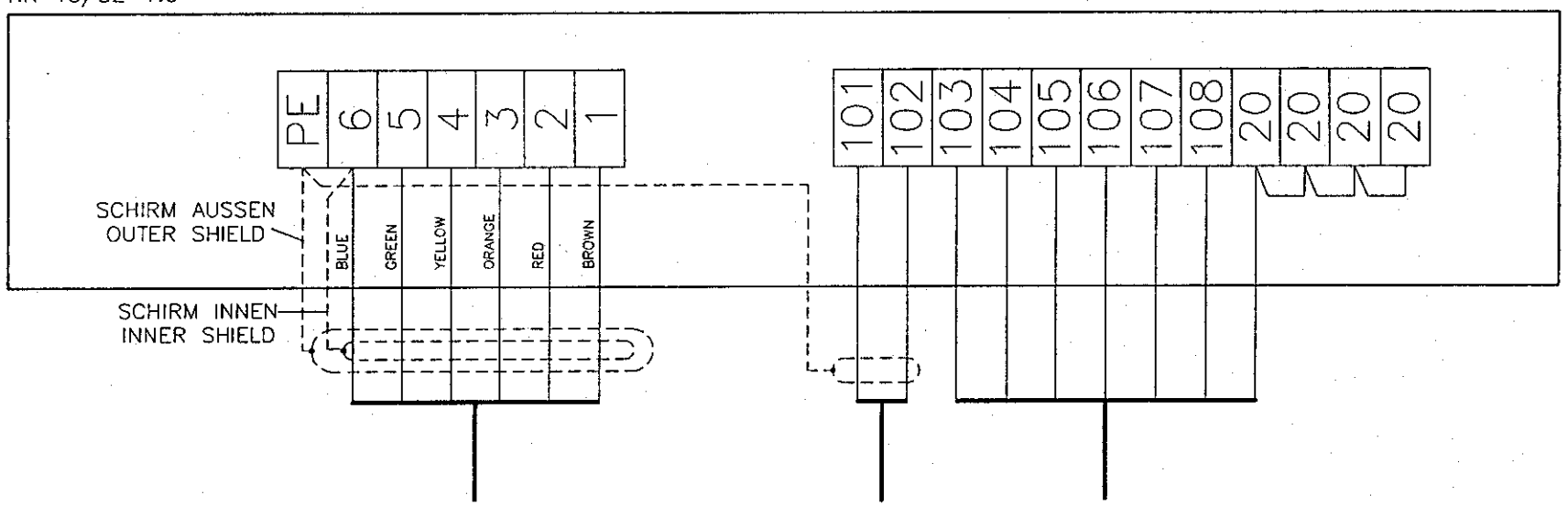
E | 116696 | SHEET 4 | NEXT 5

KK-TS/S2-1.0



372-770-36-191

			DATE	18.05.95	RED OCTOBER VOLGOGRAD via ROKOP PITTSBURGH, USA 2014/419	ROKOP PITTSBURGH PENNSYLVANIA USA / INTERSTOP Stoping Aktiengesellschaft CH-6341 BAAR	KLEMMENKASTEN VENTILBLOCK TUNDISH TERMINAL BOX VALVE MANIFOLD TUNDISH TYPE KK-TS/S2-1.0 : ITEM 100 KLEMMENPLAN / TERMINAL DIAGR.
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	116696	SHEET	5
		NEXT	–

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 31 28 64, Telex 862 128 ist ch

INTERSTOP

Order Parts List

TERMINAL BOX VALVE MANIFOLD
TYPE KK-TS/S2-1.0

Part no.: 109092 Project no. 2014/419
Dwg no. : ROKOP
kg/piece:

Page : 1
Print : 31/05/95
Issue : 05/04/95
Doc no. : 8382

3101-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		Item no. : 100 Electrical diagram : E116696					
1		**101962** ENCLOSURE 220x122x80mm TYPE CA-240	E101958		1	pcs	BERNSTEIN
3		**104837** MOUNTING RAIL TYPE TS 35x7.5	E104836	1	0.12	m	WEIDMUELLER
5		**104847** TERMINAL 4mm2 TYPE WDU 4	E104842		18	pcs	WEIDMUELLER
7		**104881** PE-TERMINAL 4.0mm2 GREEN-YELLOW TYPE WPE 4	E104874		1	pcs	WEIDMUELLER
9		**104861** END PLATE TYPE WAP2.5-10	E104859		1	pcs	WEIDMUELLER
11		**104841** END RETAINER TYP WEW35/2	E104840		1	pcs	WEIDMUELLER
13		**105188** CABLE-GLAND PG16 TWIN TYPE 1316.02.12	E105197		2	pcs	AGRO
15		**104716** CABLE-GLAND PG16 TYPE 1116.60	E104713		4	pcs	AGRO

3M2-770-36-192

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
16		**104723** LOCK-NUT PG16 TYPE 8016	E104720		6	pcs	AGRO
17		**104327** APPARATUS SOCKET TYPE ERA 5S 306 CTL	E104325		1	pcs	LEMO
27		**105100** PLUG FOR VALVE TYPE mPm 182-09-T-C3-24V DC	E104697		4	pcs	TRACHSEL

3N2-770-36-193

End of list

NO.	TITEL	TITLE
1	INHALTSVERZEICHNIS	COVERSHEET
2	AUFBAU	LAYOUT
3	ANSCHLUSSPLAN	TERMINAL ARRANGEMENT
4		
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	STUECKLISTE / PARTSLIST	106370

3172-770-36-194

REVISION	DATE	NAME		
			DATE	12.02.93
			DRAWN	Za
			CHECKED	Za
			NORM	

ORIGIN | REPL.FOR

STANDARD

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMENKASTEN VERTEILERBLOCK
TERMINAL BOX CONNECTION MANIFOLD
TYPE KK-VTB 100 : ITEM 22
INHALTSVERZEICHNIS/COVERSHEET

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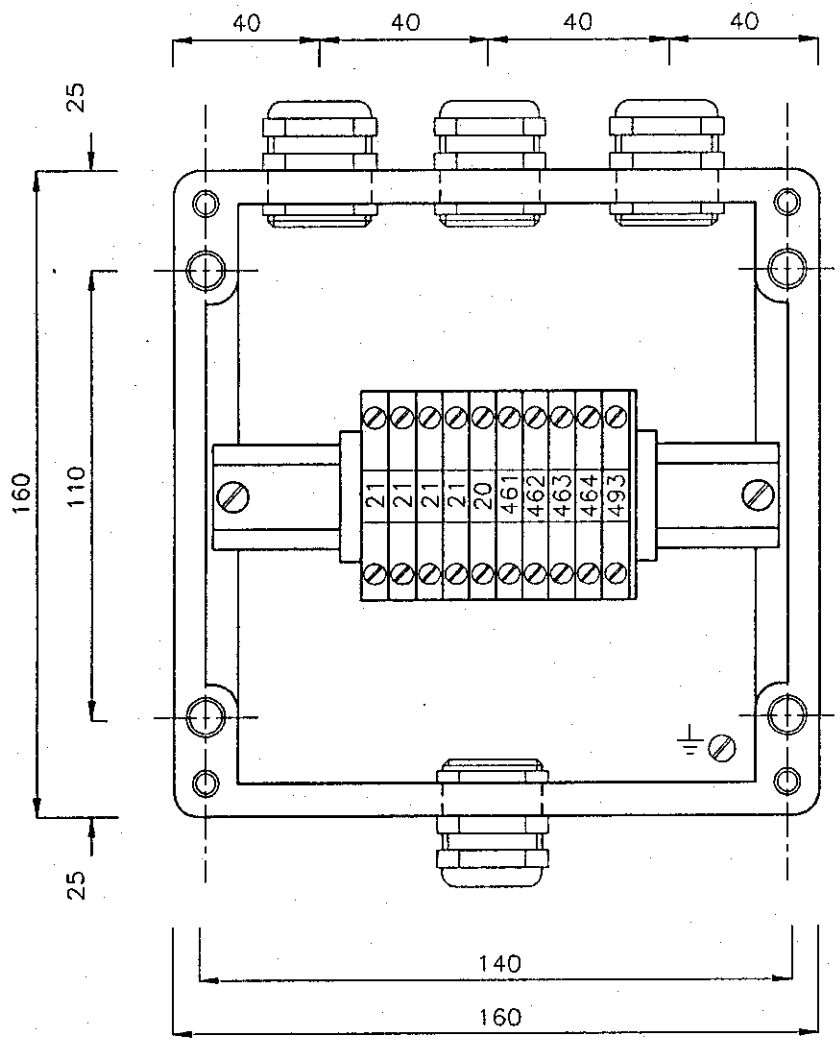
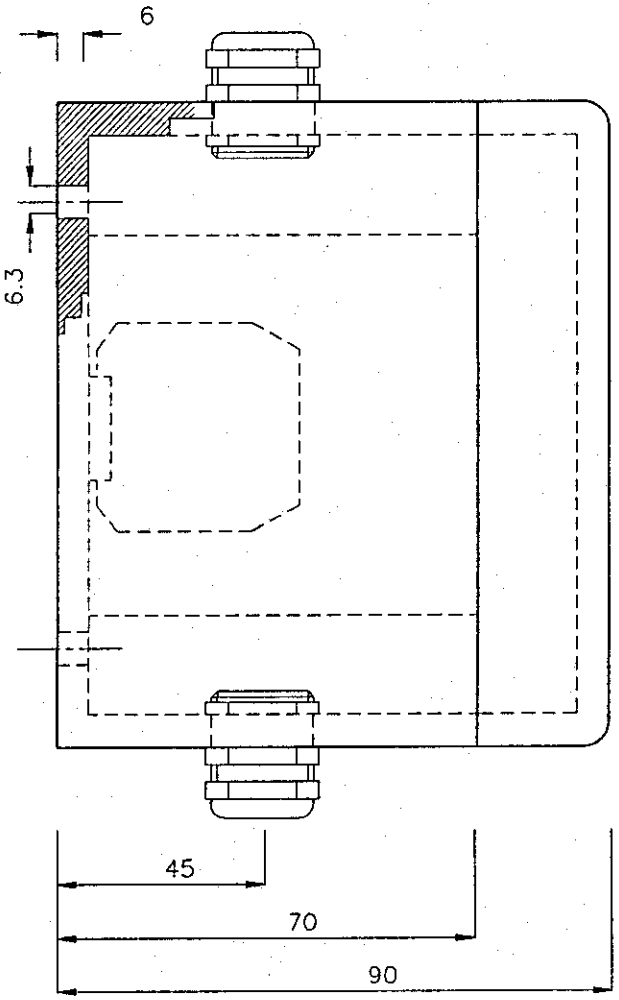
E | 106369 | SHEET 1 | NEXT 2

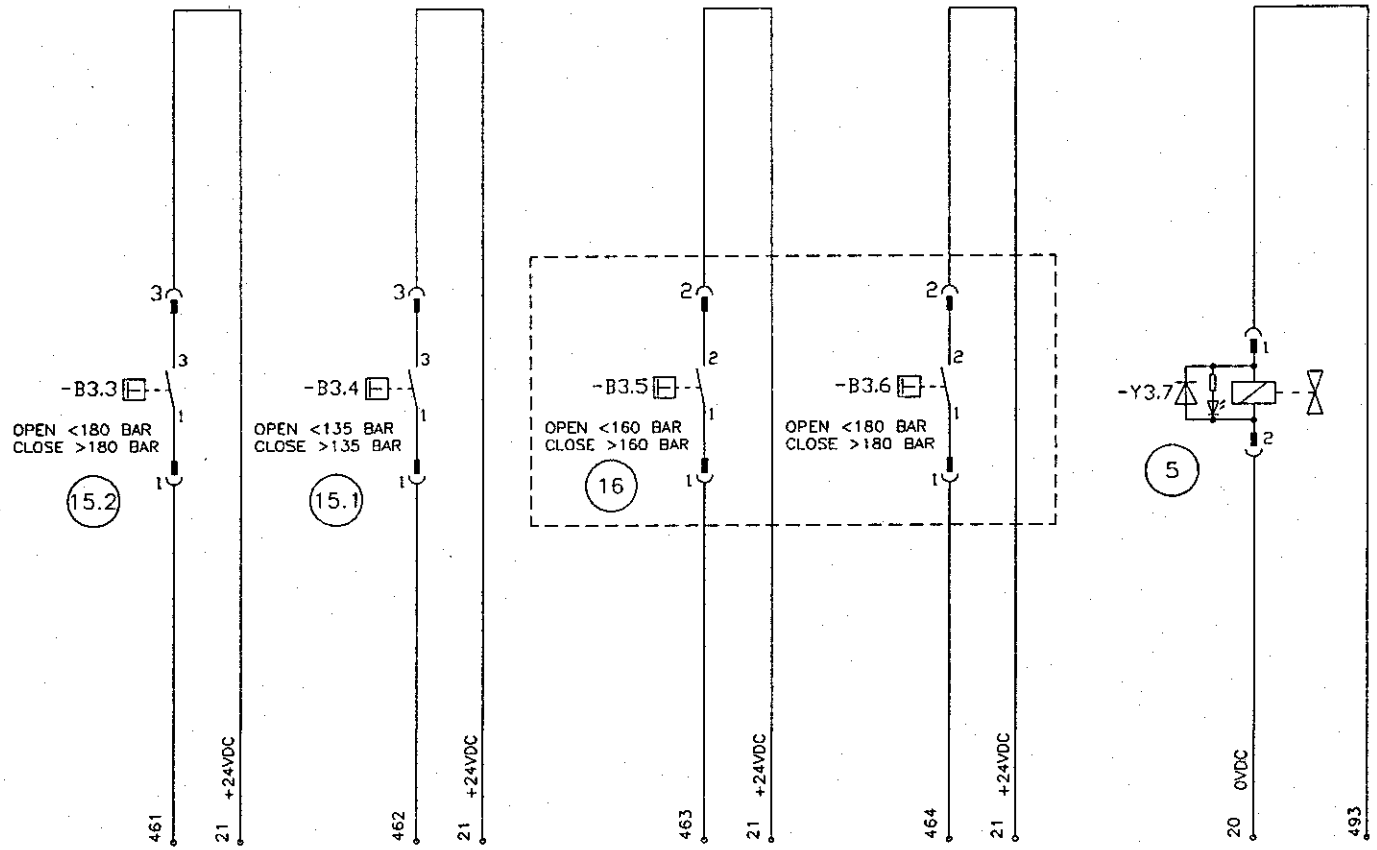




3172-770-36-195

			DATE	12.02.93	STANDARD	ROKOP PITTSBURGH PENNSYLVANIA USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	KLEMMENKASTEN VERTEILERBLOCK TERMINAL BOX CONNECTION MANIFOLD TYPE KK-VTB 100 : ITEM 22 AUFBAU / LAYOUT
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	106369	SHEET	2
		NEXT	3



372-770-36-196

NOTSPEICHERDRUCK	SYSTEM DRUCK	SYSTEM DRUCK	SYSTEM DRUCK	NOTSPEICHERVENTIL
< 180 BAR	< 135 BAR	< 160 BAR	< 180 BAR	
EMERGENCY ACCU PRESSURE	SYSTEM PRESSURE	SYSTEM PRESSURE	SYSTEM PRESSURE	EMERGENCY PRESSURE VALVE
READY	TOO LOW	LOW	READY	

REVISION	DATE	NAME		
			DATE	12.02.93
			DRAWN	Za
			CHECKED	Za
			NORM	
ORIGIN		REPL.FOR		

STANDARD

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

KLEMMENKASTEN VERTEILERBLOCK
TERMINAL BOX CONNECTION MANIFOLD
TYPE KK-VTB 100 : ITEM 22
VERDRAHTUNGSPLAN / CIRCUIT DIAGRAM

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E | 106369 | SHEET 3 | NEXT –

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

TERMINAL BOX CONNECTION MANIFOLD
TYPE KK-VTB 100

Part no.: 106370 Project no. 2014/419 Page : 1
Dwg no. : ROKOP Print : 16/03/95
kg/piece: Issue : 08/03/95
Doc no. : 8142

3101-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		**********					
		* Item no. : 22 *					
		* Electrical diagram : E106369 *					
		* Hydraulic diagram : D106765 *					
		**********					
1		**106183** ENCLOSURE 160x160x90mm TYPE CA-280	E101958		1	pcs	BERNSTEIN
3		**104837** MOUNTING RAIL TYPE TS 35x7.5	E104836	1	0.15	m	WEIDMUELLER
5		**104847** TERMINAL 4mm2 TYPE WDU 4	E104842		9	pcs	WEIDMUELLER
7		**104861** END PLATE TYPE WAP2.5-10	E104859		1	pcs	WEIDMUELLER
9		**104841** END RETAINER TYP WEW35/2	E104840		2	pcs	WEIDMUELLER
11		**105188** CABLE-GLAND PG16 TWIN TYPE 1316.02.12	E105197		2	pcs	AGRO
13		**104716** CABLE-GLAND PG16 TYPE 1116.60	E104713		1	pcs	AGRO
15		**104723** LOCK-NUT PG16 TYPE 8016	E104720		3	pcs	AGRO
17		**105100**	E104697		1	pcs	TRACHSEL

3M2-770-36-197

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		PLUG FOR VALVE TYPE mPm 182-09-T-C3-24V DC					

3172-770-36-198

End of list

NO.	TITEL	TITLE
1	IHALTSVERZEICHNIS	COVERSHEET
2	VERDRAHTUNGSPLAN	CIRCUIT DIAGRAM
3	ANSCHLUSSPLAN	TERMINAL ARRANGEMENT
	STUECKLISTE / PARTSLIST	106989

ARGON SCHEMA :
ARGON DIAGRAM

ZUSAMMENSTELLUNG :
ASSEMBLY DRAWING
PARTSLIST

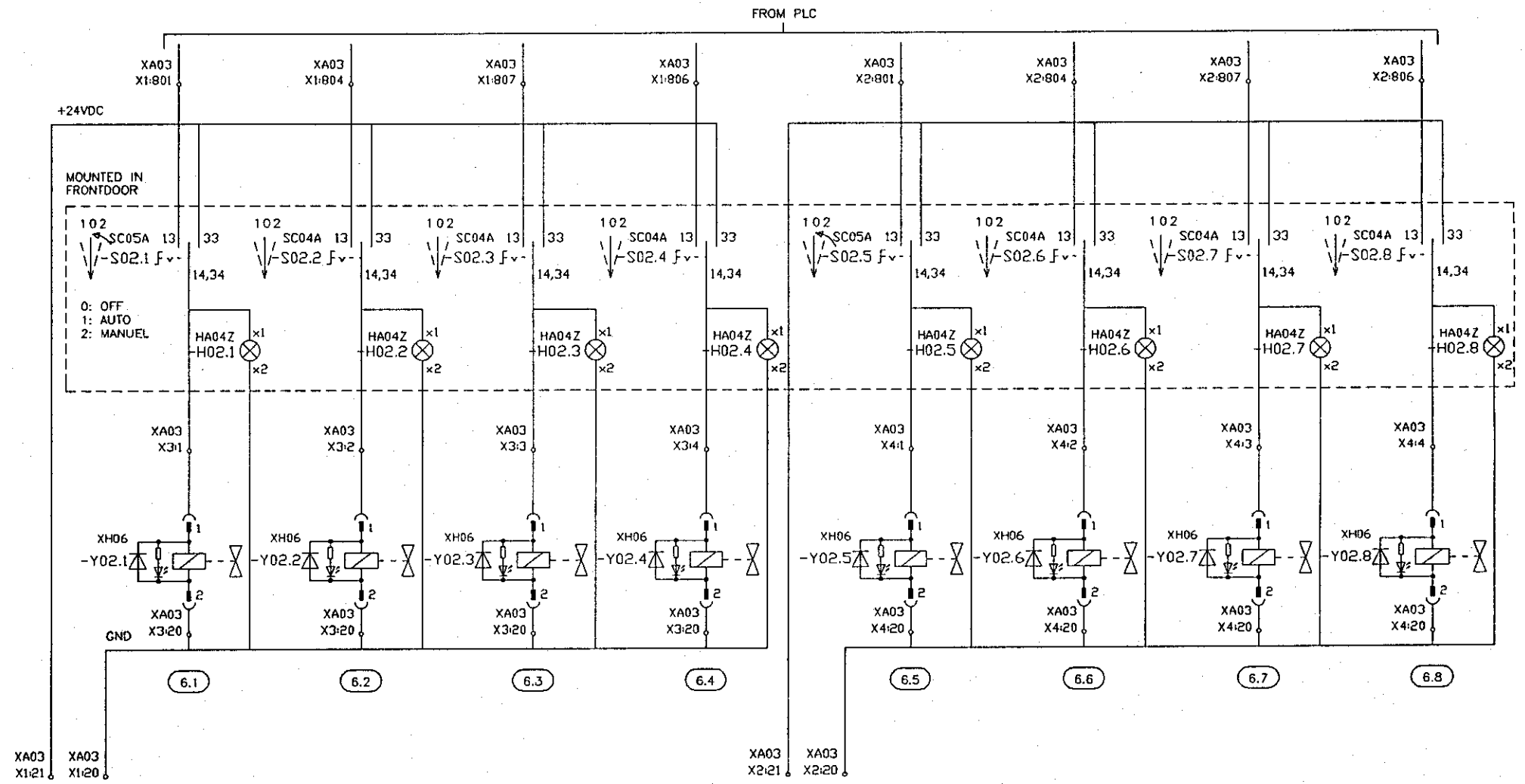
3112-770-36-199

REVISION	DATE	NAME			ORIGIN	REPL.FOR
			DATE	12.02.91	STANDARD	
			DRAWN	Za		
			CHECKED	Za		
			NORM			

ROKOP
PITTSBURGH PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

ELEKTROSTEUERUNG GAS-KONTROLL-KASTEN
ELECTRICAL CONTROL GAS-CONTROL-BOX
TYPE EST-AR13-2 : ITEM 28
INHALTSVERZEICHNIS / COVERSHEET

		=	
		+	
E	106988	SHEET	1
		NEXT	2



3772-770-36-200

SPEISUNG	ANTICLOGGING	STRANG 1(3)	ETA FUGE	ANTICLOGGING	STRANG 2(4)	ETA FUGE	
24VDC/5A		HUELSE	ETA WECHSEL		HUELSE	ETA WECHSEL	
POWER SUPPLY	ANTICLOGGING	STRAND 1(3)	S/N-JOINT	ANTICLOGGING	STRAND 2(4)	S/N-JOINT	
		NOZZLE	S/N-CHANGE		NOZZLE	S/N-CHANGE	

REVISION	DATE	NAME		
			DATE	12.02.91
			DRAWN	Za
			CHECKED	Za
			NORM	

ORIGIN | REPL.FOR

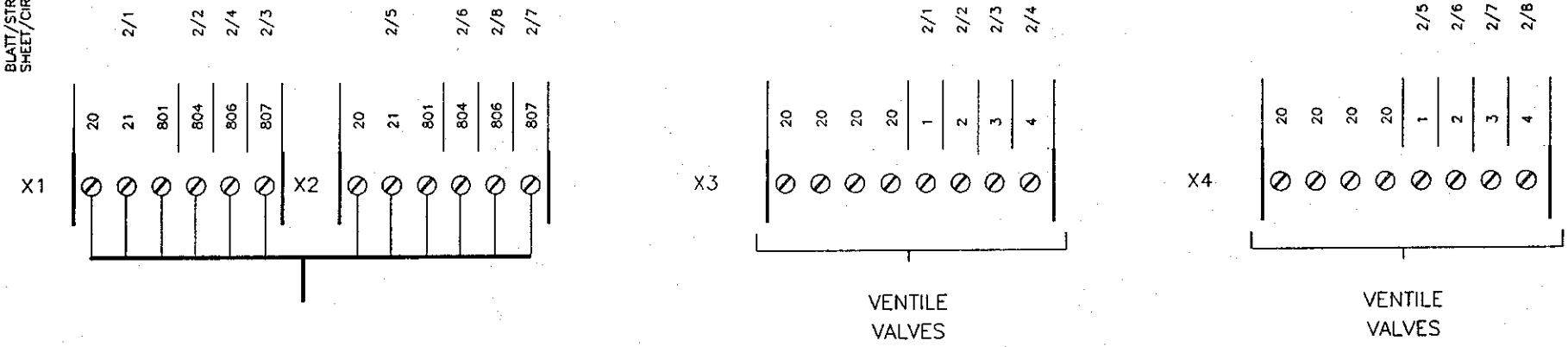
STANDARD

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

ELEKTROSTEUERUNG GAS-KONTROLL-KASTEN
ELECTRICAL CONTROL GAS-CONTROL-BOX
TYPE EST-AR13-2 : ITEM 28
VERDRAHTUNGSPLAN / CIRCUIT DIAGRAM

E | 106988 | SHEET 2 | NEXT 3

BLATT/STROMPFAD
SHEET/CIRCUIT PATH



372-770-36-201

			DATE	12.02.91	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA	ELEKTROSTEUERUNG GAS-KONTROLL-KASTEN
			DRAWN	Za		INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	ELECTRICAL CONTROL GAS-CONTROL-BOX
			CHECKED	Za			TYPE EST-AR13-2 : ITEM 28
			NORM				ANSCHLUSSPLAN / CABLE ARRANGEMENT
REVISION	DATE	NAME			ORIGIN	REPL.FOR	E 106988 SHEET 3 NEXT –

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

ELECTRICAL CONTROL
GAS-CONTROL-BOX
TYPE EST-AR13-2

Part no.: 106989 Project no. 2014/419
Dwg no. : ROKOP
kg/piece:

Page : 1
Print : 09/06/95
Issue : 17/03/95
Doc no. : 8259

3100-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
		Item No. : 28 Unit No. : AR-3160 - 3165 Electrical diagram : E106988 Assembly drawing : C116771 Gas flow diagram : C116772				
1		104837 MOUNTING RAIL TYPE TS 35x7.5	E104836	1	0.2	m
3		104847 TERMINAL 4mm2 TYPE WDU 4	E104842		28	pcs
5		104881 PE-TERMINAL 4.0mm2 GREEN-YELLOW TYPE WPE 4	E104874		1	pcs
7		104861 END PLATE TYPE WAP2.5-10	E104859		2	pcs
9		104841 END RETAINER TYP WEW35/2	E104840		4	pcs
11	P	112670 SELECTOR SWITCH EWS32 COMPLETE EF03.1/EF03.3 -S02.2/S02.3/S02.4/-S02.6 -S02.7/S02.8			6	pcs
13	P	112675 SELECTOR SWITCH EWTS32 COMPL. EF03.1/EF03.2			2	pcs

3112-770-36-202

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 31 28 64, Telex 862128 ist ch

INTERSTOP

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit
		-S02.1/S02.5				
15	P	**112603** SIGNAL LAMP GREEN COMPLETE 30V/2W -H02.1/-H02.2/-H02.3/-H02.4 -H02.5/-H02.6/-H02.7/-H02.8			8	pcs
17		**105100** PLUG FOR VALVE TYPE mPm 182-09-T-C3-24V DC -Y02.1/-Y02.2/-Y02.3/-Y02.4 -Y02.5/-Y02.6/-Y02.7/-Y02.8	E104697		8	pcs

3112-770-36-203

End of list

NO.	TITEL	TITLE
1	INHALTSVERZEICNHIS	COVERSHEET
2	ANSICHT	VIEW
3	AUFBAU	LAYOUT
4	NETZ	MAIN POWER
5	SPEISUNG 24V DC	POWER ±24V DC
6	STEUERUNG VENTILE	CONTROL VALVES
7	ANSCHLUSSPLAN	CABLE ARRANGEMENT
8		
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20		
	STUECKLISTE / PARTSLIST	107527

GERAETE NR.
UNIT NO. H-5386

HYDR. SCHEMA NR.
HYDR. DIAGRAM NO. D116775

3112-770-36-204

REVISION	DATE	NAME		
			DATE	12.11.90
			DRAWN	Za
			CHECKED	Za
			NORM	

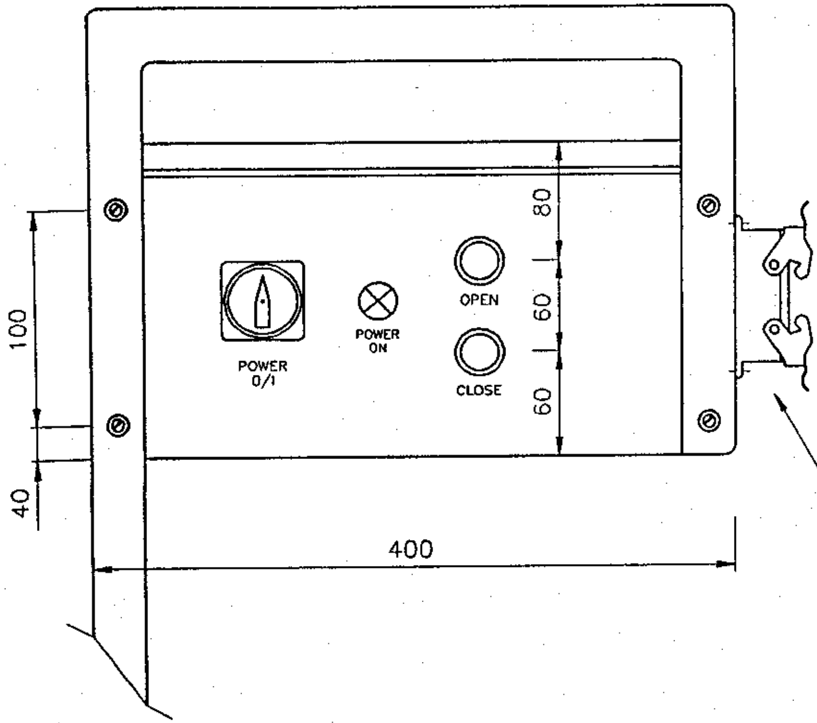
ORIGIN | REPL. FOR

STANDARD

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

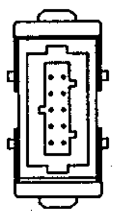
ELEKTROSTEUERUNG TEST HYDR. AGGREGAT
ELECTRICAL CONTROL TEST HYDR. UNIT
TYPE EST-T01-1/2 : ITEM 40/90
INHALTSVERZEICHNIS/COVERSHEET

E | 107526 | SHEET 1 | NEXT 2



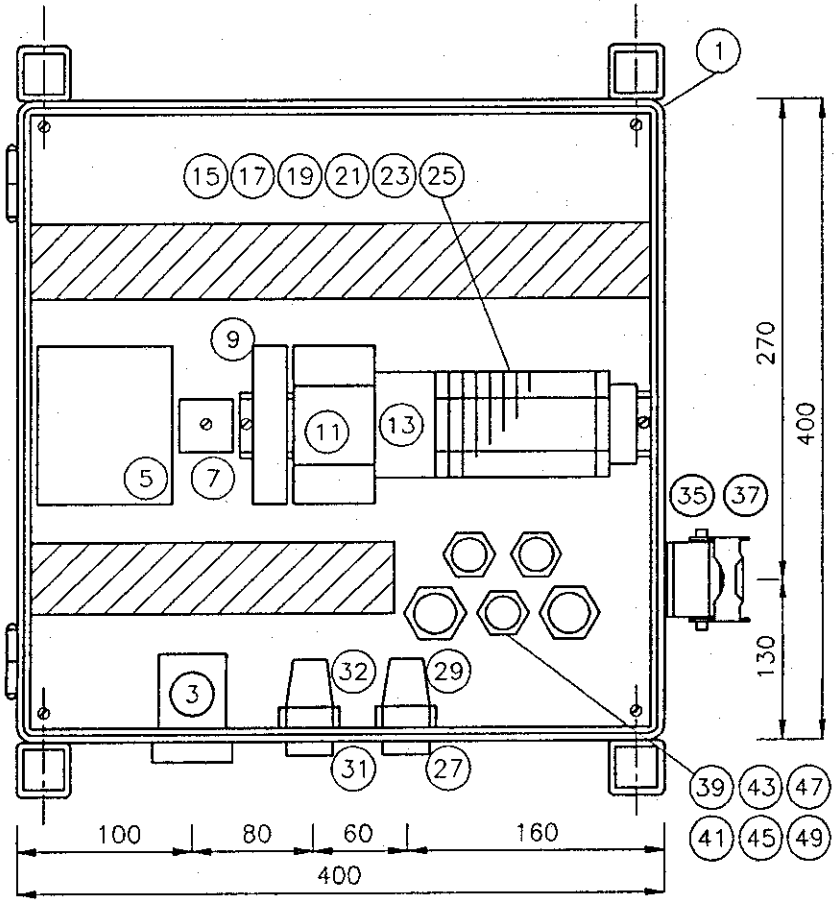
BESCHREIBUNG	DESCRIPTION			
HAUPTSCHALTER	MAIN-SWITCH			4Q1
NETZ EIN	POWER ON	GRUEN	GREEN	5H5
OEFFNEN	OPEN			6S1
SCHLIESSEN	CLOSE			6S2

MONTAGEAUSSCHNITT
CUT-OUT 60x35mm



ЭП2-770-36-205

REVISION	DATE	NAME	DATE	12.11.90	STANDARD	ROKOP PITTSBURGH PENNSYLVANIA USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	ELEKTROSTEUERUNG TEST HYDR. AGGREGAT ELECTRICAL CONTROL TEST HYDR. UNIT TYPE EST-T01-1/2 ANSICHT / VIEW	ITEM 40/90	= +
			DRAWN	Za				E	107526
			CHECKED	Za	ORIGIN	REPL.FOR		SHEET 2	NEXT 3
			NORM						



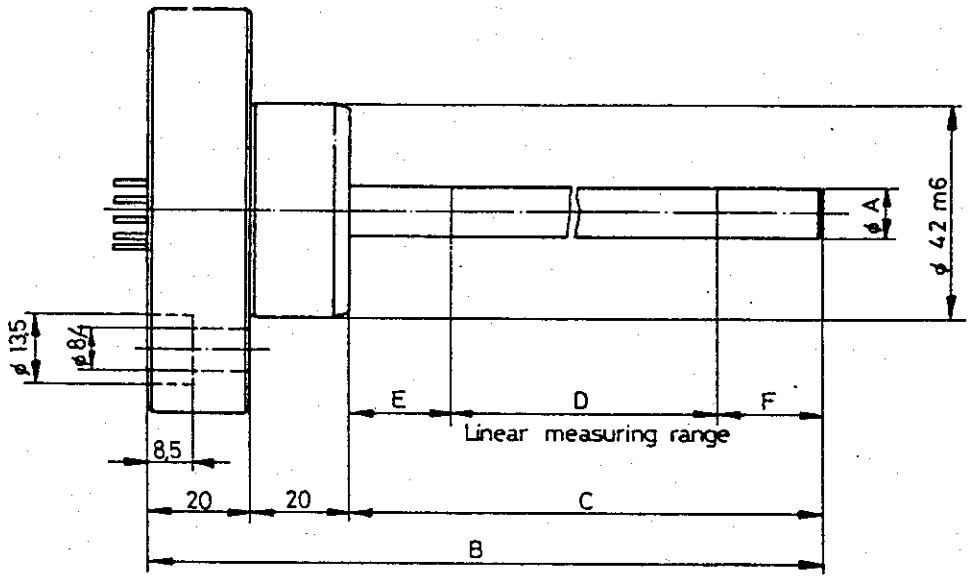
3772-770-36-206

			DATE	12.11.90	STANDARD	
			DRAWN	Za		
			CHECKED	Za		
			NORM			
REVISION	DATE	NAME			ORIGIN	REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

ELEKTROSTEUERUNG TEST HYDR. AGGREGAT
ELECTRICAL CONTROL TEST HYDR. UNIT
TYPE EST-T01-1/2 : ITEM 40/90
AUFBAU / LAYOUT

		=	
		+	
E	107526	SHEET	3
		NEXT	4



ORDERING No.	TYPE	ø A	B	C	D	E	F
111-230-000-013	DC 230	10	165	125	80	20	25
111-231-000-013	DC 231	10	215	175	130	20	25
111-232-000-013	DC 232	10	285	245	200	20	25

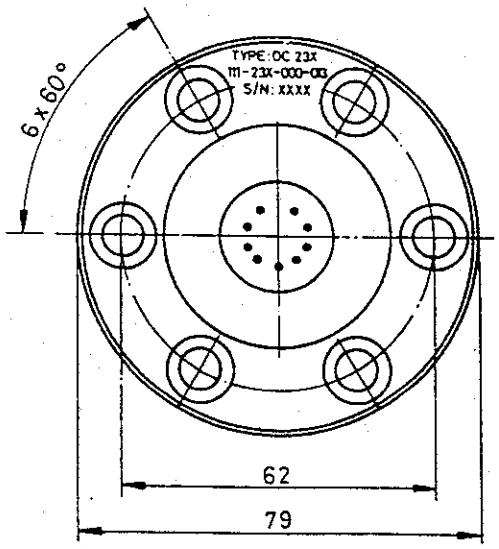
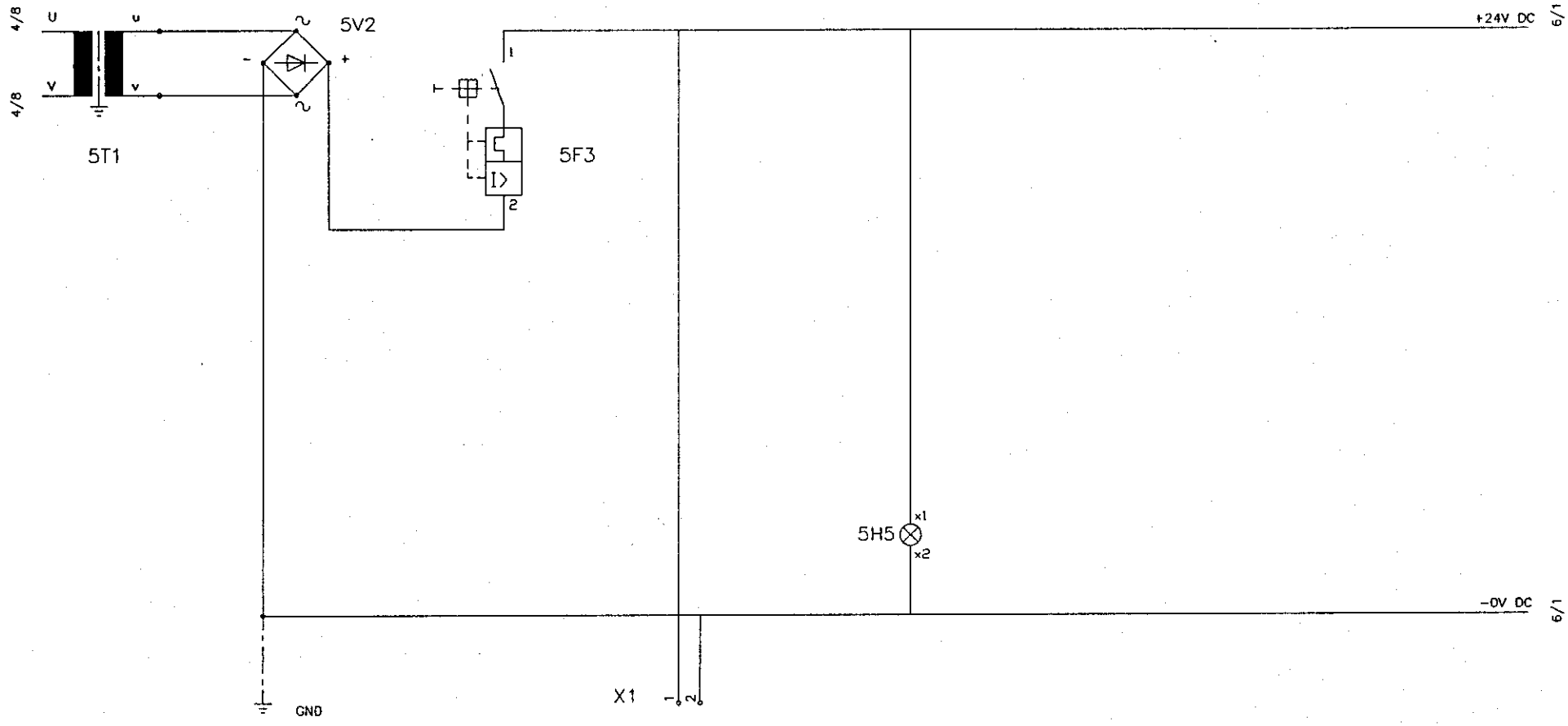


Fig. 1

3112-770-86-280



ЭП2-770-36-208

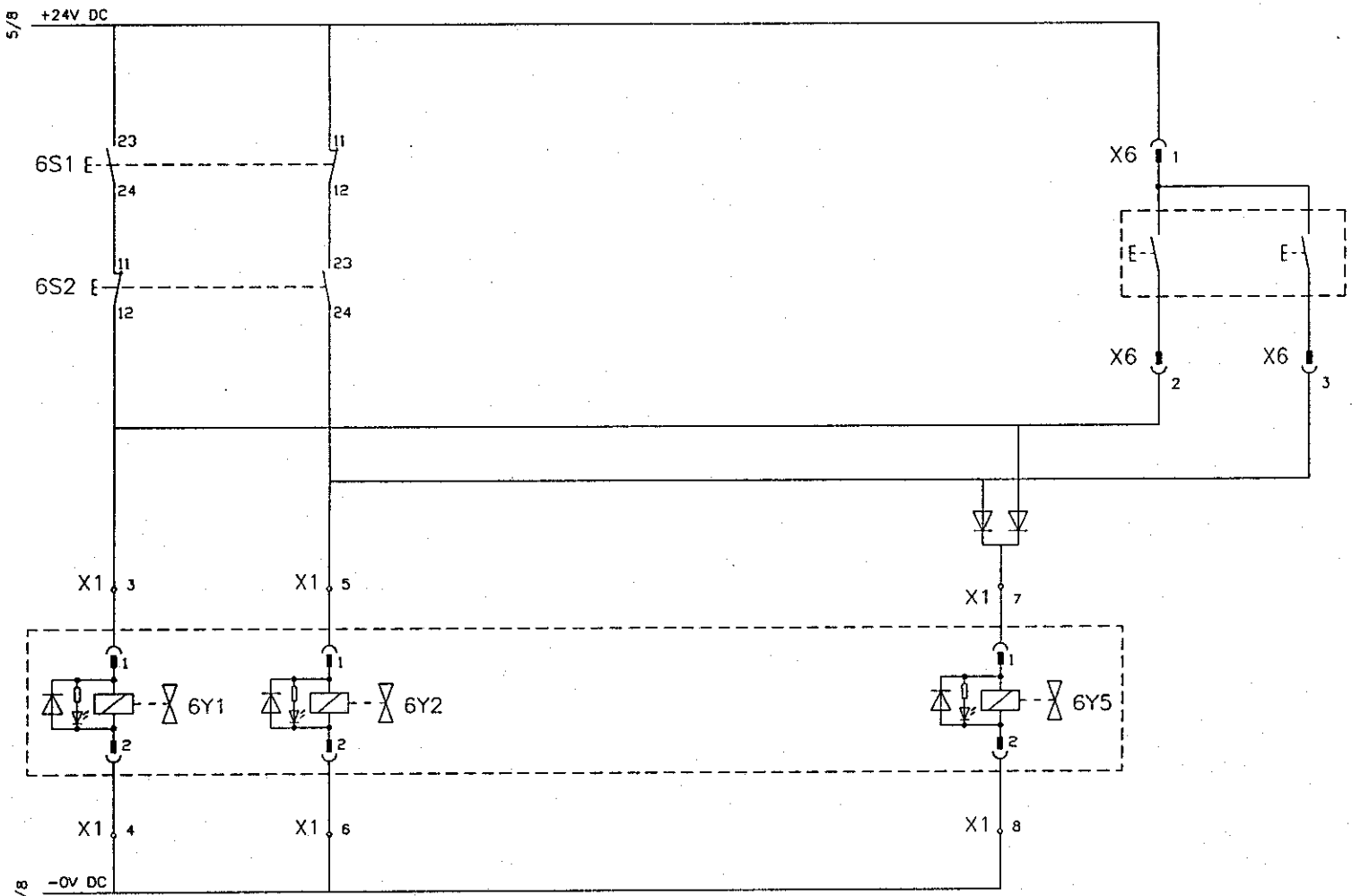
TRAFO	24VDC	NETZ EIN
TRANSFORMER		POWER ON
PRIM. 1x380V AC/50Hz ±10%		
SEK. 24V AC		

REVISION	DATE	NAME			ORIGIN	REPL.FOR
			DATE	12.11.90	STANDARD	
			DRAWN	Za		
			CHECKED	Za		
			NORM			

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

ELEKTROSTEUERUNG TEST HYDR. AGGREGAT
ELECTRICAL CONTROL TEST HYDR. UNIT
TYPE EST-T01-1/2 : ITEM 40/90
SPEISUNG ±24V DC / POWER ±24V DC

		=	
		+	
E	107526	SHEET	5
		NEXT	6



3112-770-36-209

OEFFNEN	SCHLIESSEN	DRUCKLOSER UMLAUF	STEUERBIRNE
OPEN	CLOSE	PRESSURELESS CIRCUIT	PENDANT

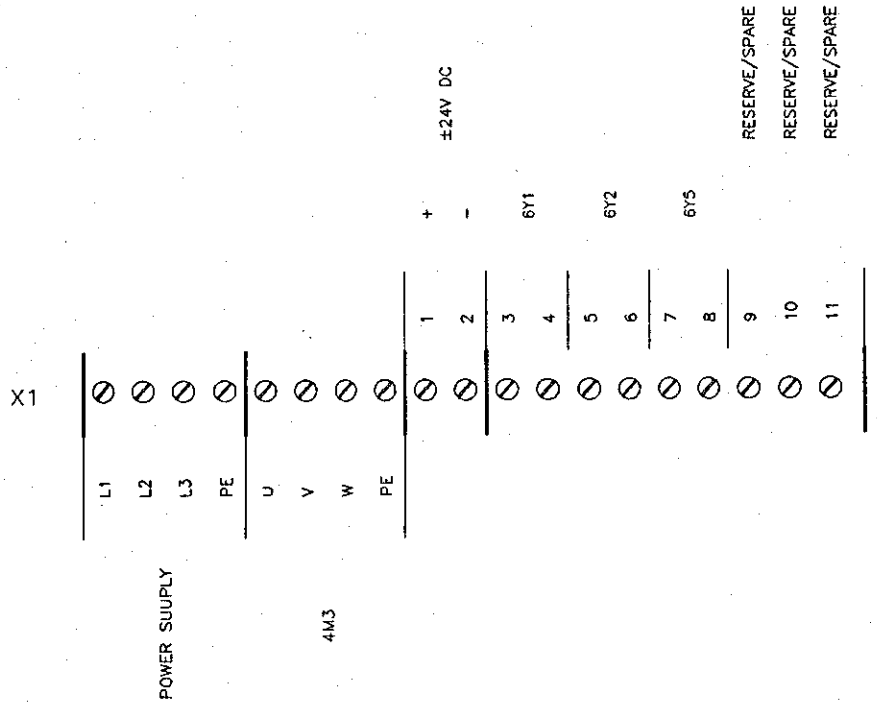
REVISION	DATE	NAME		
			DATE	12.11.90
			DRAWN	Za
			CHECKED	Za
			NORM	
ORIGIN		REPL.FOR		

STANDARD

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

ELEKTROSTEUERUNG TEST HYDR. AGGREGAT
ELECTRICAL CONTROL TEST HYDR. UNIT
TYPE EST-T01-1/2 : ITEM 40/90
STEUERUNG VENTILE / CONTROL VALVES

E	107526	SHEET	6
		NEXT	7



3112-770-36-210

			DATE	12.11.90
			DRAWN	Za
			CHECKED	Za
			NORM	
REVISION	DATE	NAME		

STANDARD

ORIGIN | REPL.FOR

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

ELEKTROSTEUERUNG TEST HYDR. AGGREGAT
ELECTRICAL CONTROL TEST HYDR. UNIT
TYPE EST-T01-1/2 : ITEM 40/90
ANSCHLUSSPLAN / CABLE ARRANGEMENT

E	107526	SHEET 7
		NEXT -

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 31 28 64, Telex 862128 ist ch

INTERSTOP

Order Parts List

ELECTRICAL CONTROL
TEST HYDRAULIC UNIT
TYPE EST-T01-1/2

Part no.: 107527 Project no. 2014/419 Page : 1
Dwg no. : ROKOP Print : 20/03/95
kg/piece: Issue : 20/03/95
Doc no. : 8268

3101-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		Item No. : 90 Unit No. : H-5386 Electrical diagram : E107256 Hydraulic diagram : D116775 Main power supply : 3x380V / 50Cycl.					
1		**105845** CONTROL BOX WxHxD 400x400x200mm TYPE 53019	E104887		1	pcs	SAREL
3		**106490** MAIN CONTROL SWITCH 25A/8KW TYPE 3LC3 047-1TB53 4Q1	E106488		1	pcs	SIEMENS
5		**108113** TRANSFORMER 1x380/24V 50/60Cyc. 280VA ±10% 5T1			1	pcs	
7		**105119** RECTIFIER 35A/420VAC KBPC 3506 SILICON TYPE 60 00 36 5V2	E105117		1	pcs	DISTRELEC
9		**105871** OVER-CURRENT RELEASE 06A/1 POLE TYPE 5SX2 106-3 5F3			1	pcs	SIEMENS

3TL2-770-36-2AL1

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
11		**107786** PROTECTIVE MOTOR SWITCH 4-6A 1NO/1NC TYPE 3VU13 00-1MK00 4F3	E106476		1	pcs	SIEMENS
13		**104519** DIODE 1N4007GP 1A/1000V TYPE 1N4007GP	E104520		2	pcs	DISTRELEC
15		**104837** MOUNTING RAIL TYPE TS 35x7.5	E104836	1	0.25	m	WEIDMUELLER
17		**104847** TERMINAL 4mm2 TYPE WDU 4	E104842		17	pcs	WEIDMUELLER
19		**104881** PE-TERMINAL 4.0mm2 GREEN-YELLOW TYPE WPE 4	E104874		2	pcs	WEIDMUELLER
21		**104861** END PLATE TYPE WAP2.5-10	E104859		1	pcs	WEIDMUELLER
23		**104865** BARRIER TYPE WTW2.5-10	E104863		4	pcs	WEIDMUELLER
25		**104841** END RETAINER TYP WEW35/2	E104840		2	pcs	WEIDMUELLER
27	P	**112556** PUSH-BUTTON BLACK COMPLETE 1NO/1NC 6S1/6S2			2	pcs	
29	P	**112603** SIGNAL LAMP GREEN COMPLETE 30V/2W 5H5			1	pcs	
31		**105000** APPARATUS SOCKET Han10E TYPE 09 30 010 0301	E104998		1	pcs	HARTING

3172-770-36-212

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		6X6					
33		**104994** FEMALE INSERT Han10E F TYPE 09 33 010 2701	E104990		1	pcs	HARTING
		6X6					
35		**104714** CABLE-GLAND PG11 TYPE 1111.60	E104713		3	pcs	AGRO
37		**104721** LOCK-NUT PG11 TYPE 8011	E104720		3	pcs	AGRO
39		**104716** CABLE-GLAND PG16 TYPE 1116.60	E104713		1	pcs	AGRO
41		**104723** LOCK-NUT PG16 TYPE 8016	E104720		1	pcs	AGRO
43		**104717** CABLE-GLAND PG21 TYPE 1121.60	E104713		1	pcs	AGRO
45		**104724** LOCK-NUT PG21 TYPE 8021	E104720		1	pcs	AGRO
47		**105100** PLUG FOR VALVE TYPE mPm 182-09-T-C3-24V DC	E104697		3	pcs	TRACHSEL
		6Y1/6Y2/6Y5					

3172-770-36-213

End of list

NO.	TITEL	TITLE	
1	INHALTSVERZEICHNIS	COVERSHEET	
2	AUFBAU	LAYOUT	
3	ANSCHLUSSPLAN	TERMINAL ARRANGEMENT	
	STUECKLISTE / PARTSLIST	105433	L= 1.0m
	STUECKLISTE / PARTSLIST	105435	L= 1.5m
	STUECKLISTE / PARTSLIST	105436	L= 2.0m
	STUECKLISTE / PARTSLIST	105437	L= 2.5m
	STUECKLISTE / PARTSLIST	105438	L= 3.0m
	STUECKLISTE / PARTSLIST	105439	L= 3.5m
	STUECKLISTE / PARTSLIST	105440	L= 4.0m
	STUECKLISTE / PARTSLIST	105441	L= 4.5m
	STUECKLISTE / PARTSLIST	105442	L= 5.0m
	STUECKLISTE / PARTSLIST	105443	L= 5.5m
	STUECKLISTE / PARTSLIST	105444	L= 6.0m

3172-770-36-214

REVISION	DATE	NAME		
			DATE	11.09.90
			DRAWN	Za
			CHECKED	Za
			NORM	
ORIGIN		REPL.FOR		

STANDARD

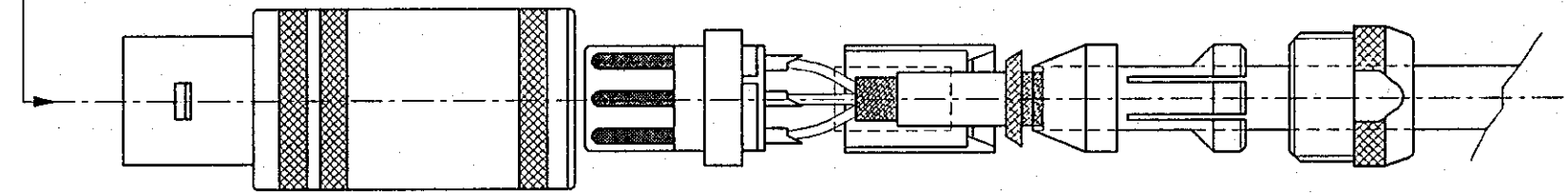
ROKOP
PITTSBURGH, PENNSYLVANIA USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

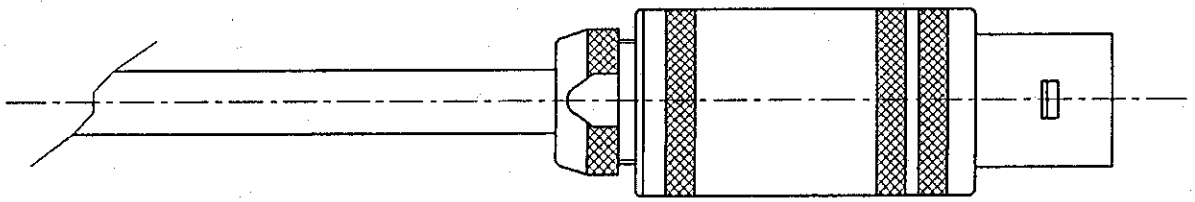
SIGNALKABEL
SIGNAL CABLE
TYPE SK-L5/6 : ITEM 101
INHALTSVERZEICHNIS/COVERSHEET

=
+

E | 105434 | SHEET 1 | NEXT 2

ANSICHT
VIEW
A



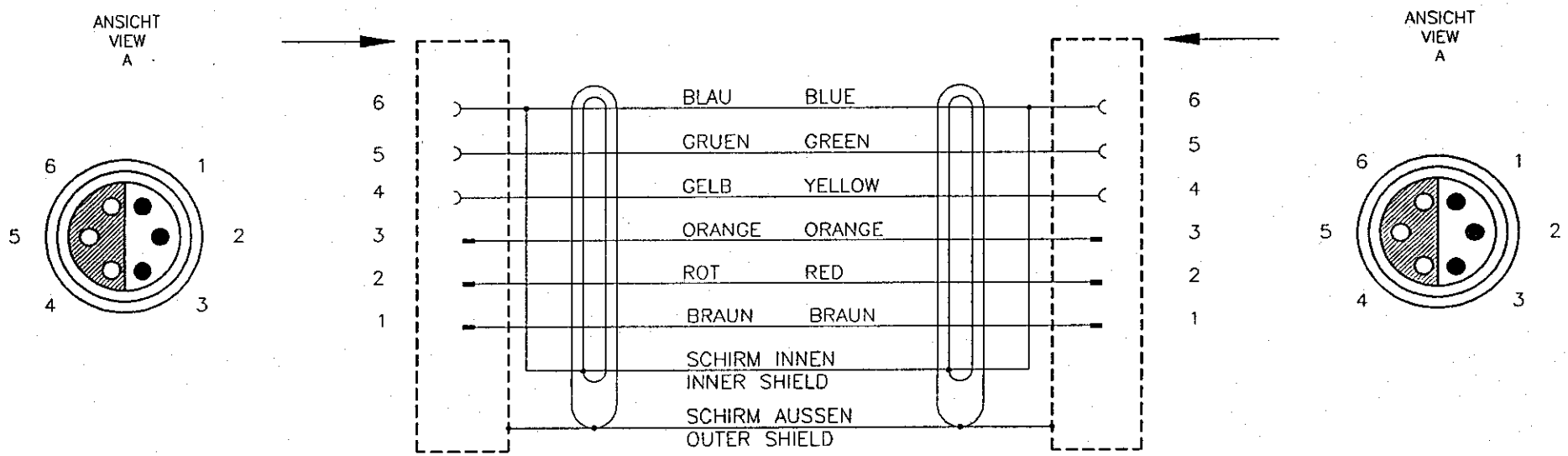


SCHIRM AUSSEN IN BEIDEN STECKERN GEKLEMMT!
SCHIRM INNEN IN BEIDEN STECKERN MIT PIN NR. 6 VERBUNDEN!
OUTER SHIELD CONNECTED IN BOTH PLUGS!
INNER SHIELD CONNECTED ON BOTH SIDE WITH PIN NO. 6!

372-770-36-215

			DATE	11.09.90	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	SIGNALKABEL SIGNAL CABLE TYPE SK-L5/6 : ITEM 101 AUFBAU / LAYOUT
			DRAWN	Za			
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

		=	
		+	
E	105434	SHEET	2
		NEXT	3



3112-770-36-216

APPARATESTECKER	KABEL	APPARATESTECKER
PLUG	CABLE	PLUG

REVISION	DATE	NAME			ORIGIN	REPL.FOR
			DATE	11.09.90	STANDARD	
			DRAWN	Za		
			CHECKED	Za		
			NORM			

ROKOP
PITTSBURGH, PENNSYLVANIA, USA
INTERSTOP
Stopinc Aktiengesellschaft
CH-6341 BAAR

SIGNALKABEL
SIGNAL CABLE
TYPE SK-L5/6 : ITEM 101
VERDRAHTUNGSPLAN / CIRCUIT DIAGRAM

E | 105434 | SHEET 3 | NEXT –

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

SIGNAL CABLE L=2.5m
TYPE SK-L5/06

Part no.: **105437** Project no. 2014/419
Dwg no. : ROKOP
kg/piece:

Page : 1
Print : 06/06/95
Issue : 16/05/95
Doc no. : 8890

3101-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
1		**104322** APPARATUS PLUG TYPE FFA 5S 306 CTA C13	E104324		2	pcs	LEMO
3		**104886** SILICON CABLE DOUBLE SHIELDED 200°C TYPE SIHFP 3x2x0.75mm2 SPECIAL	E104746	1	2.5	m	LÜTZE

3N2-770-36-217

End of list

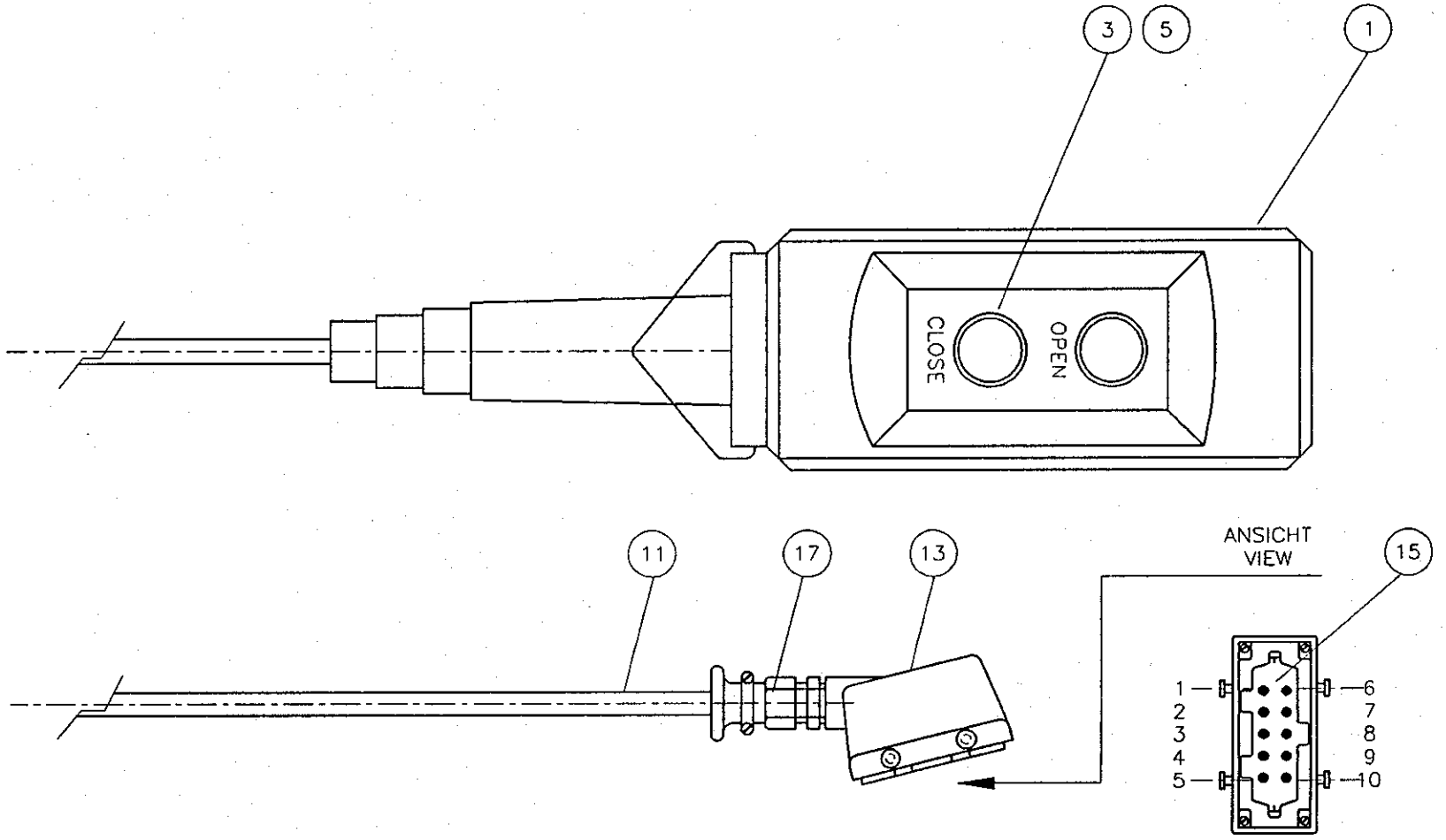
NO.	TITEL	TITLE
1	INHALTSVERZEICHNIS	COVERSHEET
2	ANSICHT	VIEW
3	STEUERUNG	CIRCUIT DIAGRAM
	STUECKLISTE	101478 D
	PARTSLIST	103167 E

218

3112-770-36-218

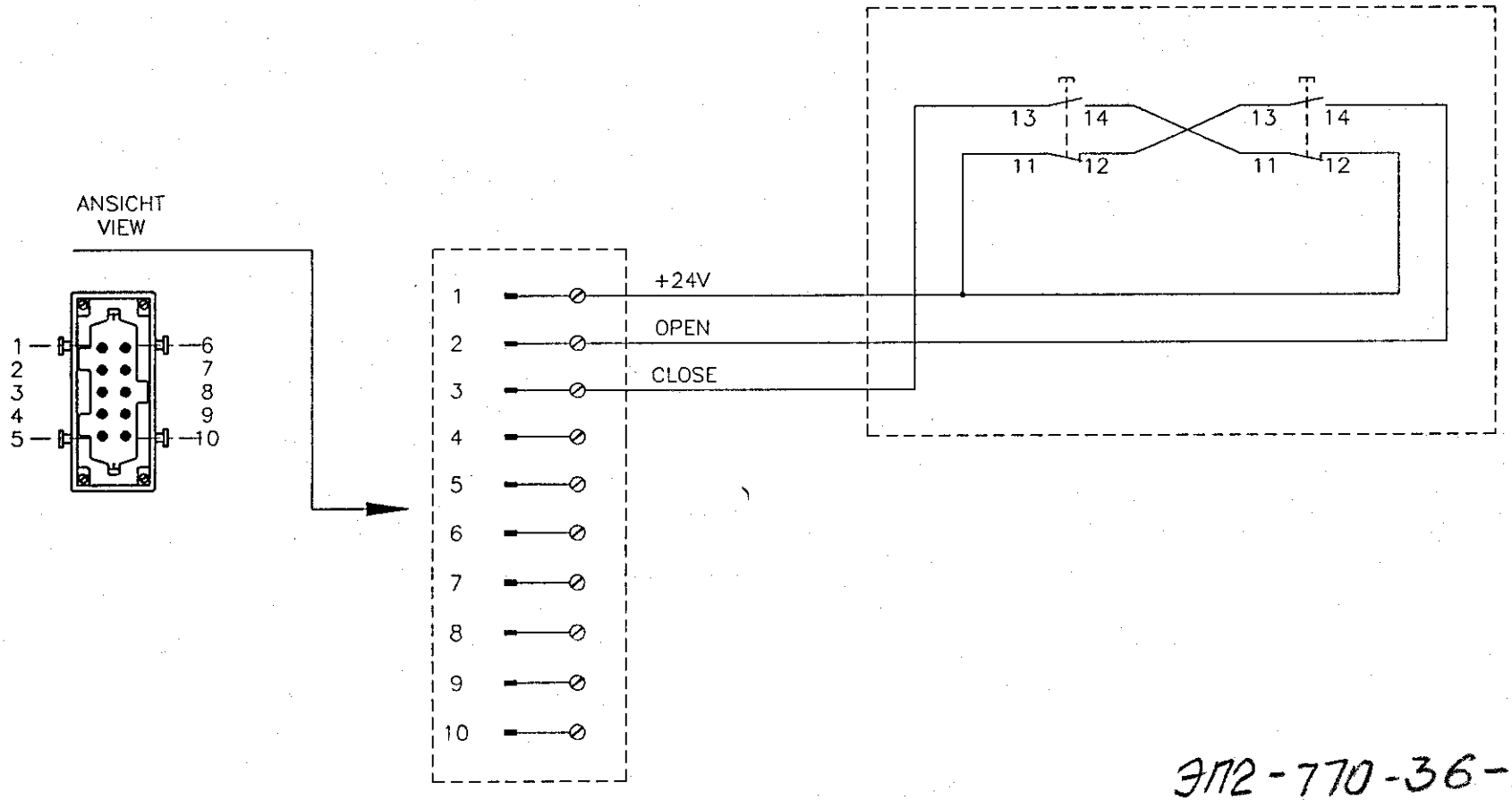
		DATE	11.10.90	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	STEUERBIRNE
		DRAWN	Za			PENDANT
		CHECKED	Za			TYPE B020-HAN10E : ITEM 103
		NORM				INHALTSVERZEICHNIS/COVERSHEET
REVISION	DATE	NAME		ORIGIN / REPL.FOR		

=			
+			
E	100963	SHEET 1	NEXT 2



3172-770-36-219

			DATE	11.10.90	STANDARD	ROKOP PITTSBURGH PENNSYLVANIA USA	STEUERBIRNE PENDANT TYPE BO20-HAN10E : ITEM 103 ANSICHT / VIEW	= +
			DRAWN	Za		INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR		E 100963 SHEET 2 NEXT 3
			CHECKED	Za				
			NORM					
REVISION	DATE	NAME			ORIGIN	REPL.FOR		



3112-770-36-220

APPARATESTECKER	STEUERBIRNE
PLUG	PENDANT

			DATE	11.10.90	STANDARD	ROKOP PITTSBURGH, PENNSYLVANIA, USA	STEUERBIRNE PENDANT TYPE 8020-HAN10E : ITEM 103 VERDRAHTUNGSPLAN / CIRCUIT DIAGRAM
			DRAWN	Za		INTERSTOP Stopinc Aktiengesellschaft CH-6341 BAAR	E 100963 SHEET 3 NEXT –
			CHECKED	Za			
			NORM				
REVISION	DATE	NAME			ORIGIN	REPL.FOR	

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

PENDANT BO20-Han10E/R
STANDARD RUSSIAN

Part no.: 118033 Project no. 2014/419 Page : 1
Dwg no. : ROKOP Print : 07/06/95
kg/piece: Issue : 07/06/95
Doc no. : 8367

3101-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
		Item no. : 103 Electrical diagram : E100963					
1	P	**107794** PENDANT BO20-Han10E STANDARD WITHOUT LEGEND PLATES HARTING PLUG			1	pcs	
3		**118028** INSCRIPTION PLATE INSCRIPTION "OPEN" RUSSIAN			1	pcs	OTTH GRAVUREN
5		**118029** INSCRIPTION PLATE INSCRIPTION "CLOSE" RUSSIAN			1	pcs	OTTH GRAVUREN

3772-770-36-221

End of list

Stopinc Aktiengesellschaft

Zugerstrasse 76a, Postfach 375, CH-6341 Baar ☎ (042) 333555, Fax (042) 312864, Telex 862128 ist ch

INTERSTOP

Order Parts List

PENDANT BO20-Han10E
STANDARD WITHOUT LEGEND PLATES
HARTING PLUG

Part no.: 107794 Project no. 2014/419 Page : 1
Dwg no. : ROKOP Print : 07/06/95
kg/piece: Issue : 04/04/95
Doc no. : 8368

3101-018.FOE

Pos.	Bg	Part no. / Designation	Dwg no.	Factor	Qty	Unit	Brand
1		**101965** PENDANT TYPE XAC-B02	E101966		1	pcs	TELEMECANIQUE
3		**101972** PUSH-BUTTON BLACK TYPE ZB2-BP2	E101966		2	pcs	TELEMECANIQUE
5		**101971** CONTACT ELEMENT 1NC/1NO TYPE ZB2-BZ105	E101966		2	pcs	TELEMECANIQUE
7		**105407** CABLE TYPE Gdv 4x1.5mm2	E105406	1	10	m	HUBER+SUHNER
9		**104991** APPARATUS PLUG Han10E TYPE 09 30 010 1521	E104990		1	pcs	HARTING
11		**104993** MALE INSERT Han10E M TYPE 09 33 010 2601	E104990		1	pcs	HARTING
13		**104738** CABLE-GLAND PG16 TRUMPET TYPE 1816.01	E104727		1	pcs	AGRO

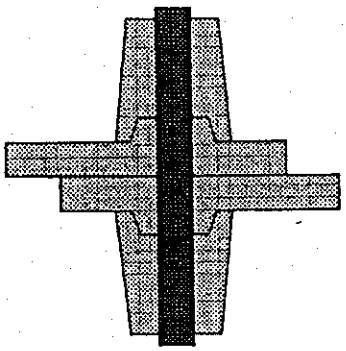
3N2-770-36-222

End of list

MANUAL

INTERSTOP PROCESS CONTROL SYSTEM

01.01.1994



INTERSTOP®

Stopinc Aktiengesellschaft, Postfach, CH-6341 Baar, Schweiz
Telefon 042 / 33 35 55, Telex 862 128, Telefax 042 / 31 28 64

ЭП2-770-36-223

INTERSTOP PROCESS CONTROL SYSTEM

3172-770-36-224

3112-770-36-226

ЭП2-770-36-227

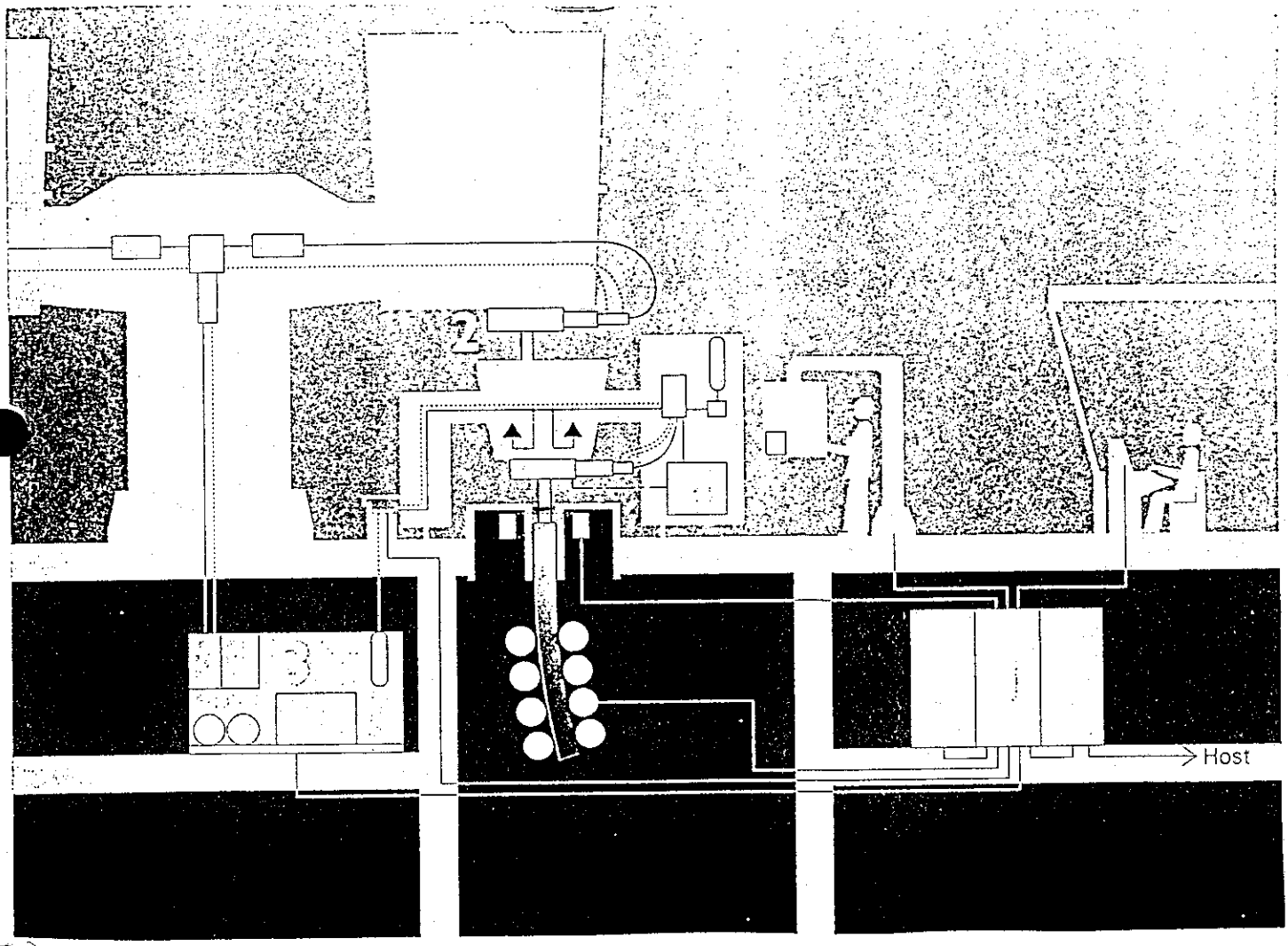
1. Interstop Process Control System

1.1 Introduction

The IPC system is an upgrade for the automatisation of any industrial process.

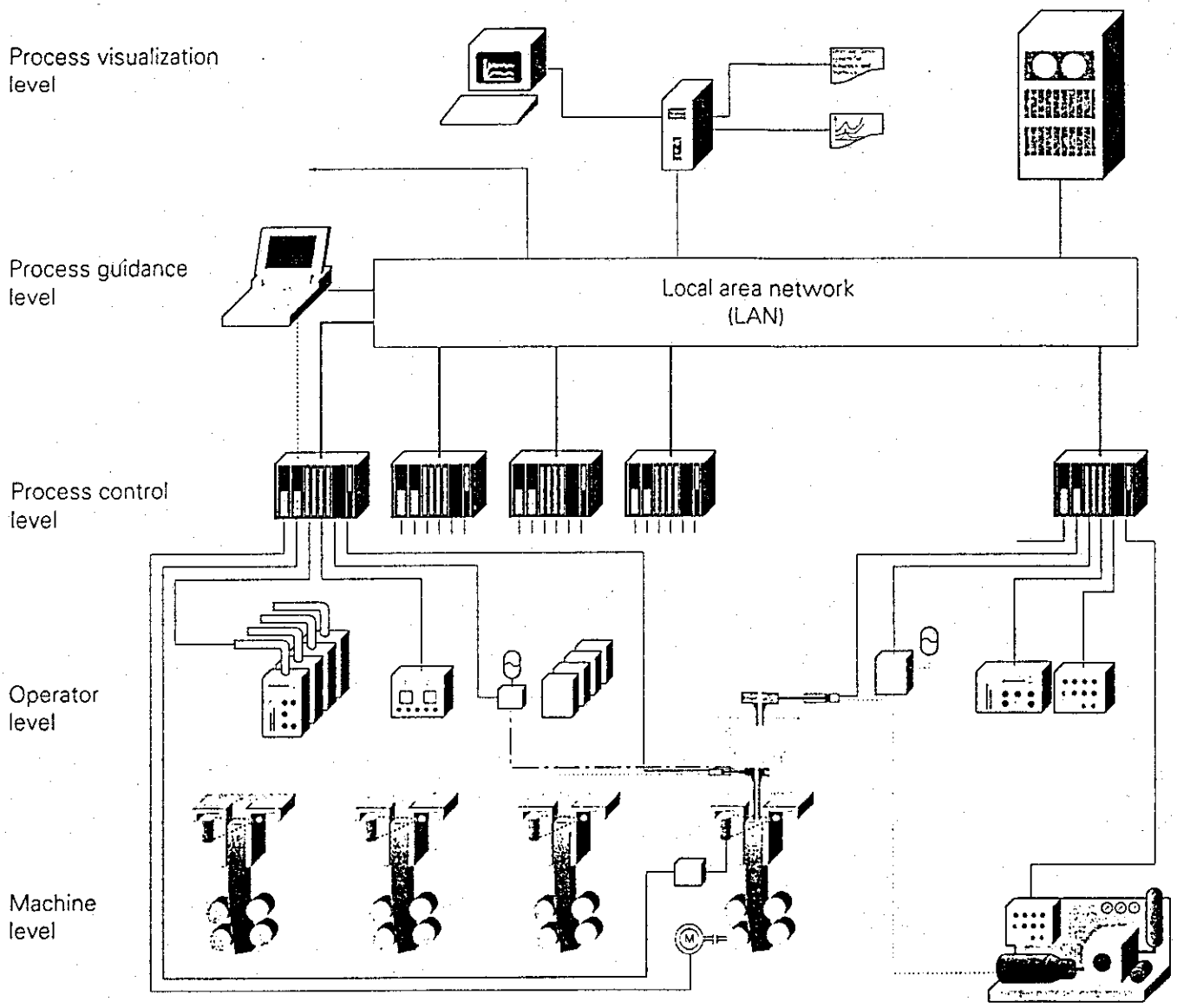
Among many new functions the programming of traditional controller functions helps to increase the productivity and keep the efficency of the equipment on a high level.

The IPC system is flexibel, very fast, easy to handle and can be used for a wide area of industrial automatisation. This begins with the controlling of machines (for example hydraulic units), programming of flexibel PID controlling loops and process visualisation systems.



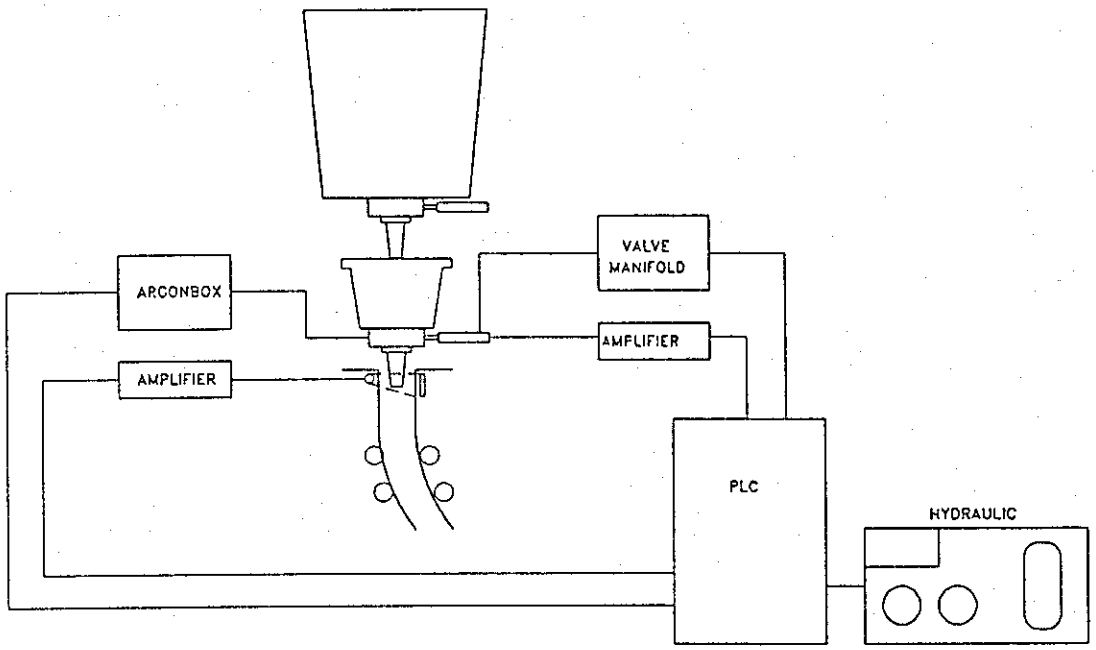
1.2 General application

This picture shows the IPC system in a continuous casting machine.



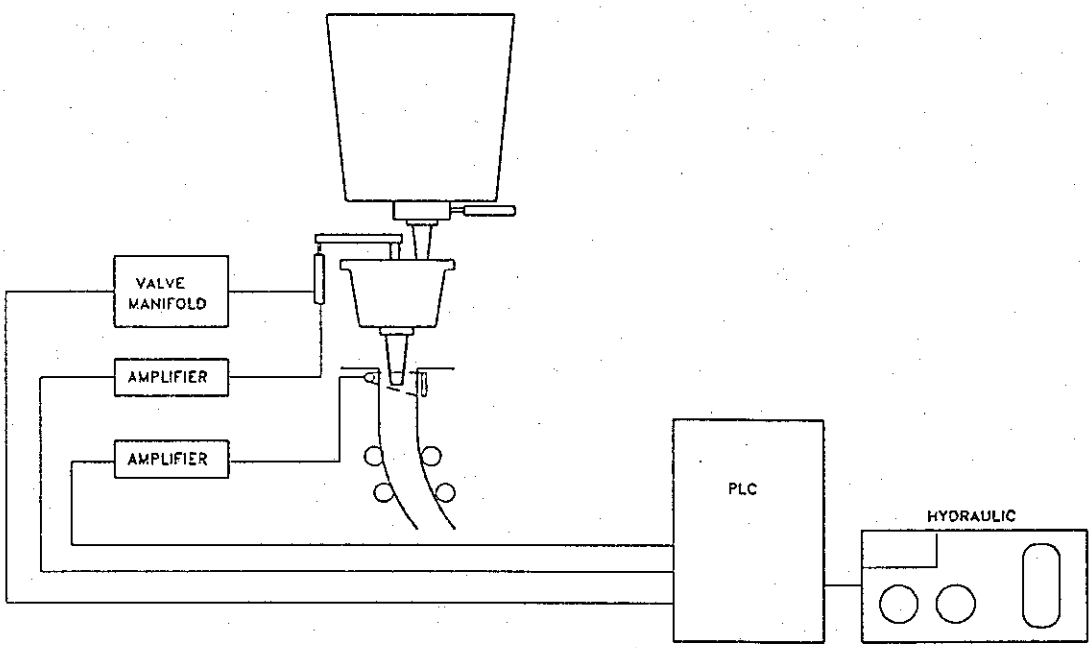
3N2-770-36-229

1.3 The IPC system in use with tundish gates



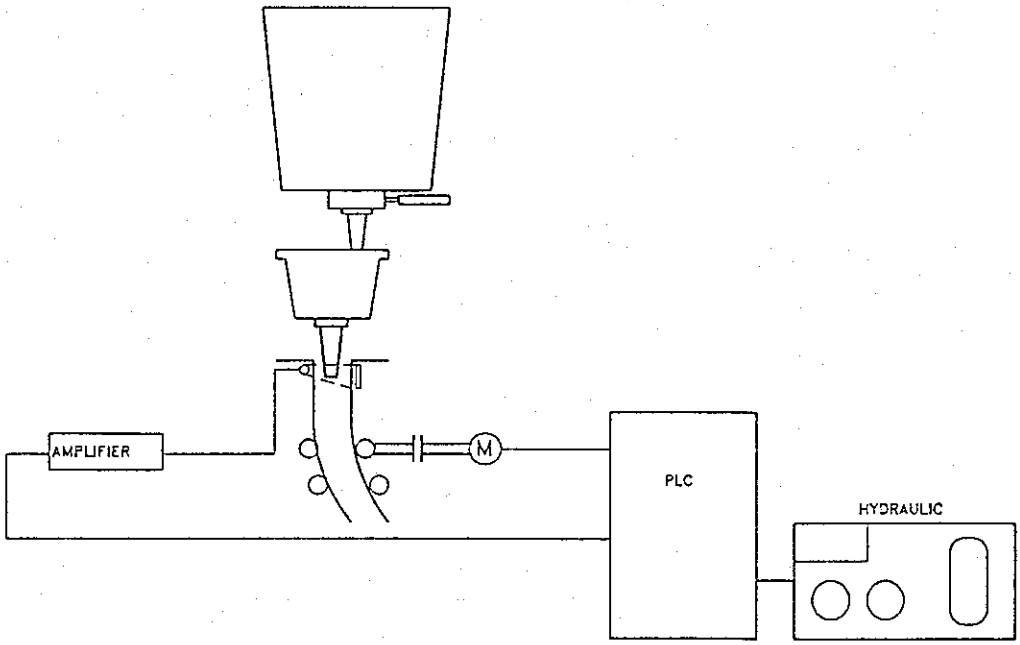
The slide gate controlling is actually a flow control.
By changing the residual surface (moving the gate middle plate) the amount of steel flowing into the mold will be controlled. Because of the hard environment conditions (temperatur, change in viscosity of the oil,) a position controlling loop for the cylinder and a level controlling loop for the mold level is used simultaneously.
Usually a continuous casting machine has two tundish cars therefore we have two position controlling loops.

1.4 The IPC system in use with stopper rods



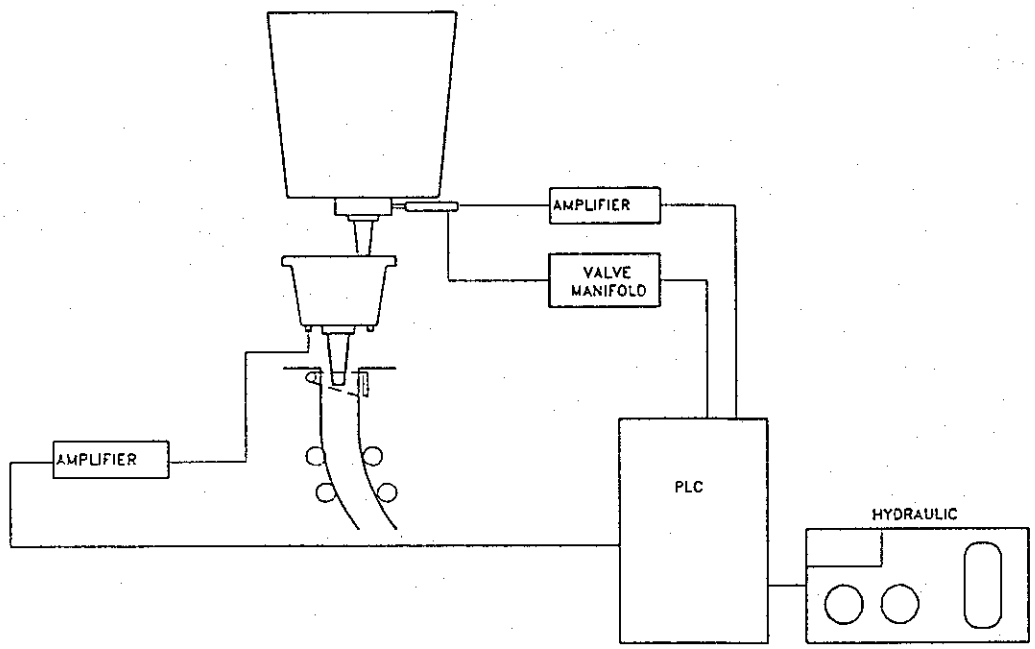
The stopper rod controlling is also a flow control. By changing the residual surface (up and down of the stopper rod) the amount of steel flowing into the mold will be controlled. This change of flow is extremly unlinear and needs an adaption of the controller to the stopper rod. The stopper cylinder is also controlled with a position controlling loop.
The automatic start up considers the different proceeding method of the stopper rod compared to the tundish gate.

1.5 The IPC system in use with metering nozzles



For the operation with metering nozzles the flow of steel into the mold is nearly constant and the withdrawal speed must be controlled.
The controlling loops for the motor circuits are usually delivered from the manufacturer of the drive system. The IPC system has a controlling loop for the set value of the withdrawal speed.

1.6 The IPC system in use with ladle gates

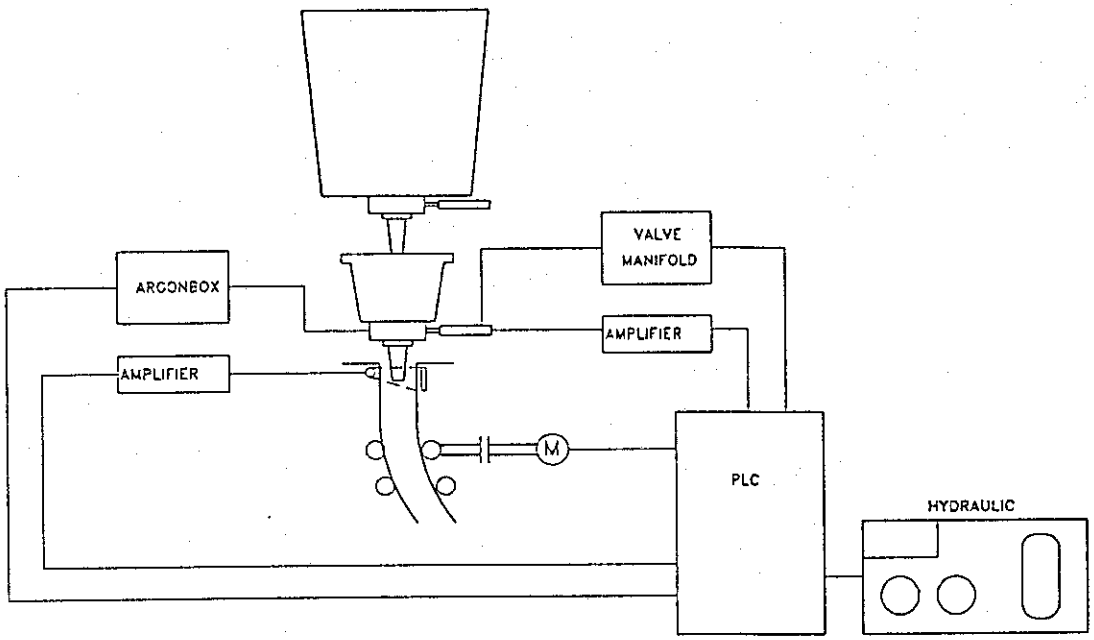


The amount of steel flowing to the tundish is controlled by changing the residual surface of the ladle gate.
There are two proceeding methods possible:

The proceeding method with feed back of the cylinder position gives a very good accuracy of the tundish level and less wear of the refractory material (less movements of the plate). Changing environment conditions have no influence to the controlling.

The proceeding method with no feed back gives a less accurate tundish level. A compromise between controlling accuracy and wear of the refractory material has to be made.

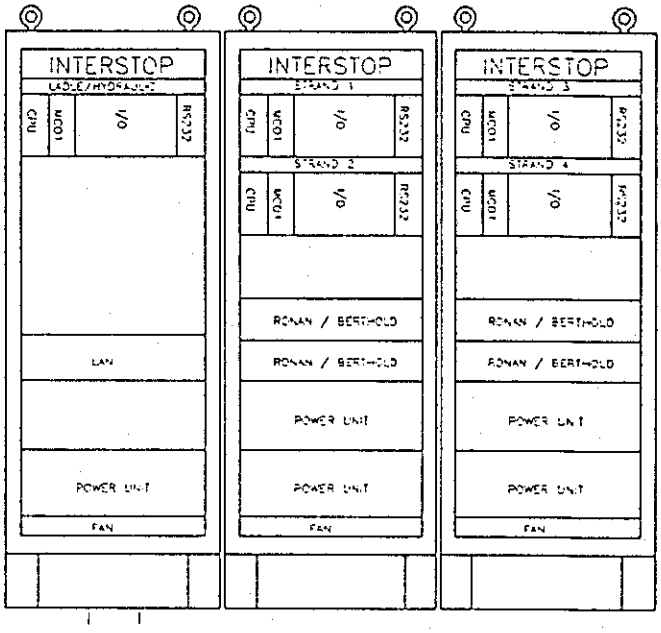
1.7 The IPC system in a combined use



Sometimes only a part of the production will be casted with tundish gates and the rest with metering nozzles. With the IPC system it is possible to work with this combination. The controlling loops must have different parameters therefore a set for both procedures are stored in the PLC.

2. Hardware

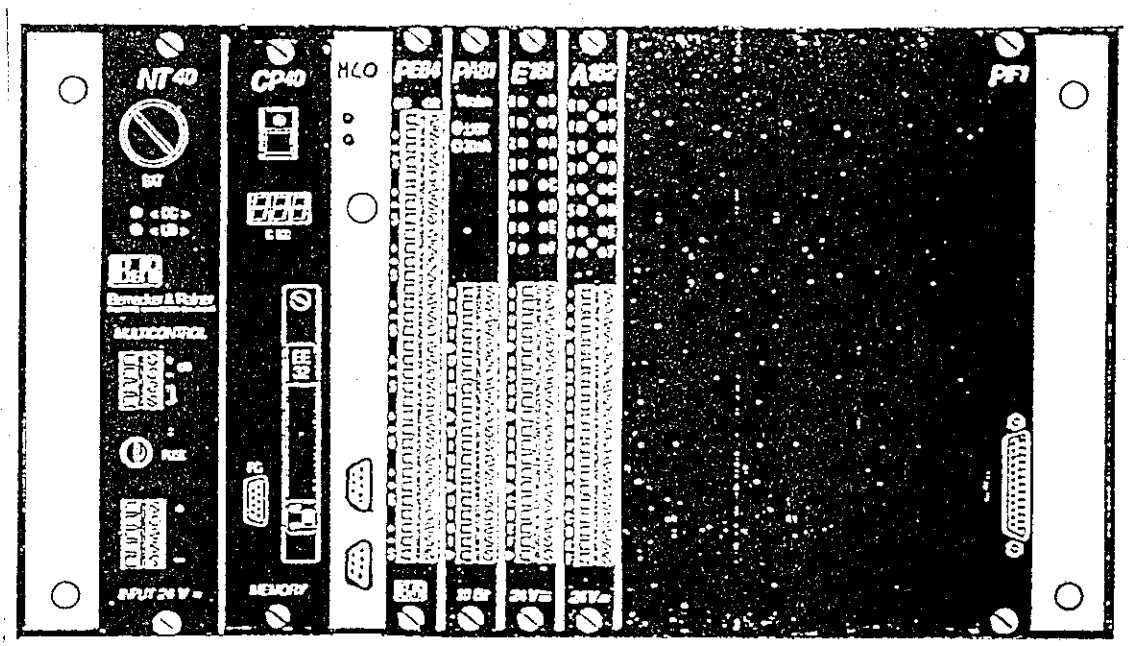
2.1 Control cabinets



Because of the block architecture of the IPC system it can be expanded easily and the structure is very clear.
There is one process controller for each strand and also for the tundish level controlling.
The process controller is implemented in a PLC (programmable logic controller). Each PLC has its own independent power supply for the CPU and for the in- and outputs.
A central emergency power system feeds the IPC system in case of power loss.
All PLC's are connected to a token ring LAN (local area network) over a normal serial interface.

The PLC is built in a multiprocessor technology (main- and coprocessor) to grant a fast speed even with several PID loops.
The main processor is for the process logic and the co processor is for the process controlling (PID loops).

2.2 PLC



The hardware of the PLC consists of the following parts:

a) Rack

b) Power supply

c) Mainprocessor CPU with EEPROM memory

d) Coprozessor MCO1 with EEPROM memory

e) Serial interface

f) Analog input module(s)

g) Analog output module(s)

h) Digital input module(s)

i) Digital output module(s) transistor

k) Digital output module(s) relay

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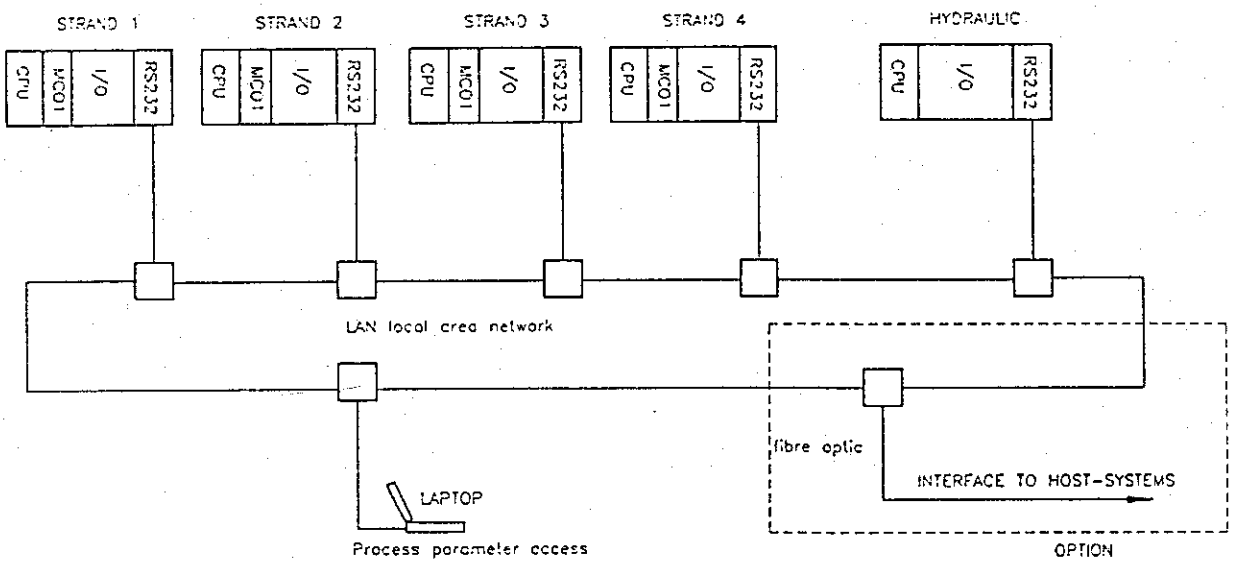
The PLC has a main- and a coprocessor for fast and efficient controlling loops.
The process logic software is stored on a EEPROM memory on the main processor board. The process controlling software is also stored on EEPROM but on the coprocessor board.
The memory can be changed easily because it is pluged in.
The process parameter are stored in a RAM memory and buffered with a rechargable battery. So the parameters are stored over months in case of power loss.
The whole PLC is powered with 24V. Therefore an easy power backup is realised with a rechargable battery.
A three digit display on the main processor board shows the actual process status and gives an immediat information about the proper function.

372-770-36-237

2.3 Local area network



All PLC's are connected to a token ring LAN. This allows a central acces to all process data and a central parametering of the PLC's.
Each PLC works completely independent and also without LAN.
With the LAN the process data will be sent to the Interstop process visualisation system or to a host system.

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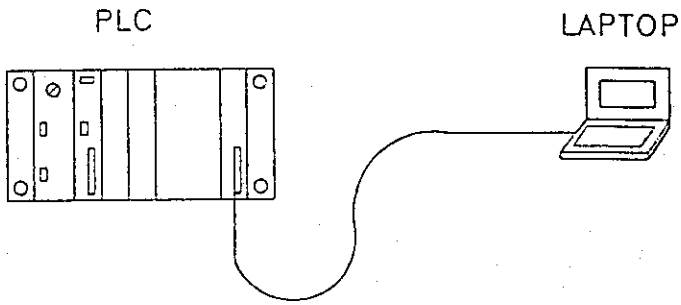
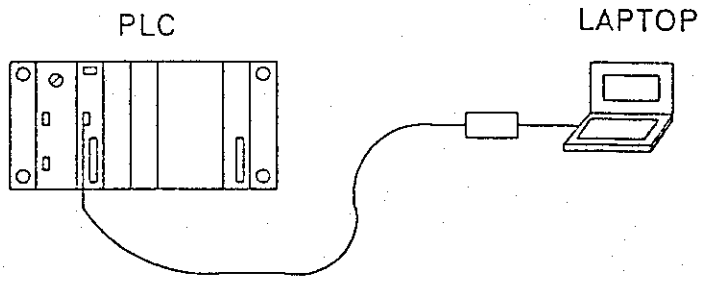
3. Software

3.1 Priciple of the programable controller

The software is divided into the process logic on the main processor (CPU) and the process controlling on the coprocessor (MCO).
The parametering can be made over the local serial interface with the laptop or central over the LAN with the process visualisation system.



The programming is done with the laptop and sent to the programming interface on the main processor board.
For this purpose a programming interface must be added to the laptop.

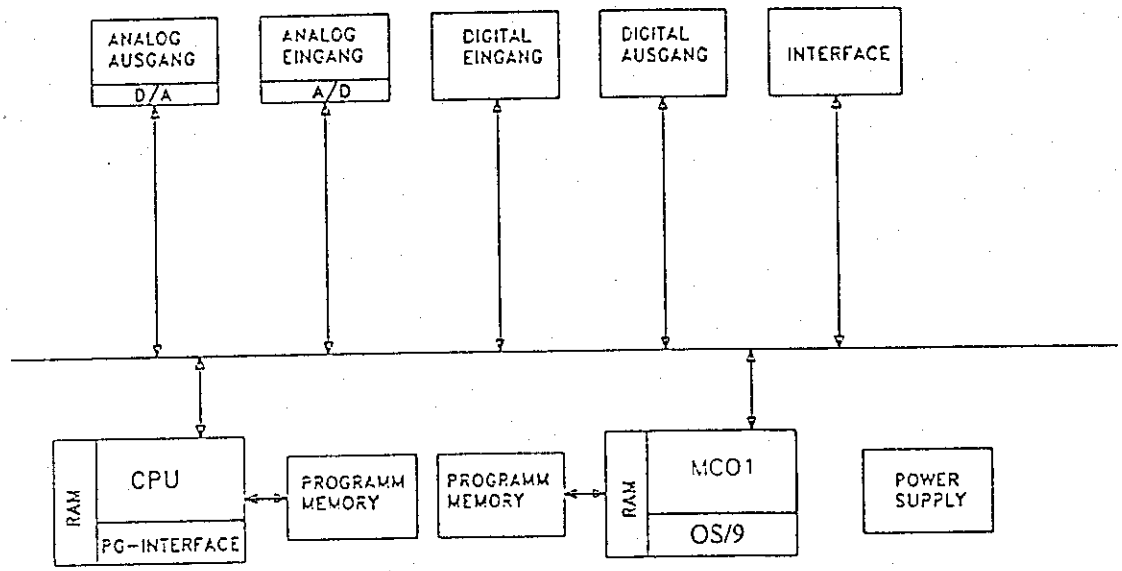


Because the PLC's are equiped with EEPROM (electrically erasable programmable read only memory) the programm is stored in case of power loss and nevertheless can be overwritten within seconds with the laptop.

The controller software is universal. Different controllers can be realised with the help of the parameter sets:

- Tundish gate controller
- Ladle gate controller
- Withdrawal speed controller
- Stopper rod controller

3.2 Function diagram CPU/MCO



CPU tasks

- logic functions
- Communication with I/O
- Diagnose
- Safety fuctions
- Communication with LAN
- Communication with PPU

MCO tasks

- PID controlling loops
- Speed controller
- Tundish gate controller
- Ladle gate controller
- Stopper rod controller
- Communication with CPU

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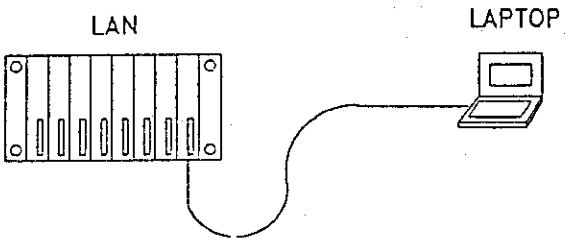
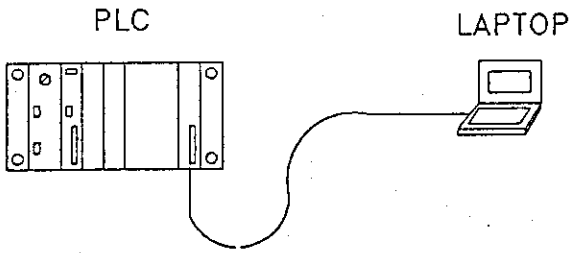
3.3 Parametering

The parametering can be done with the laptop over the serial interface or the process visualisation system over the LAN.

The parameters that maybe have to be changed during operation are all in the parameter screens. Therefore a programm change is not neccessary at all.






```
INTERSTOP              Flow Control Technology                  Parametersatz

Strang   1

Angiessphase                                  Anticlogging
   Angiessposition     85.0 %                     Start          95.0 %
   Lochrand            50.0 %                     Cycle           4.0 Sekunden
   Ausbrand             720 Sek/1000              Pulslänge       1.0 Sekunden
   Integrator Stopp       1 Sekunden              Prevent           0 Sekunden
Niveau Soll
   Niveau Soll         60.0 %
   Oszill. Amplitude    8.0 %
   Oszill. Periode     10.0 Min.

Niveauregler PID-Satz
   K PID              0.26                       Filterzeit 1    0.50 Sekunden
   K Integrator    0.0500 1/Takt                 Filterzeit 2    0.50 Sekunden
   K Diff.            4.0 Takt                   Takt            0.10 Sekunden
                                                 D-Filter           4 Takt
   Toleranzband       0.0 %                      Max. Schieber  100.0 %
   Offset +/- 2%        0 1=-,2=+                Lochrand        41.6 %

  ESC=zurueck  PgUp=Weitere Parameter, F1-F6=Strang 1-6,F10=Passwort loeschen
```

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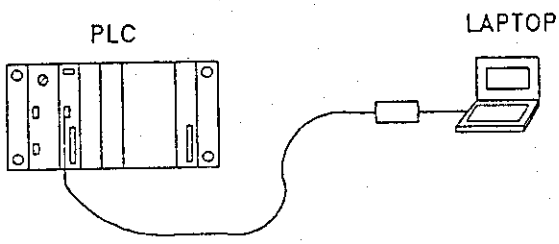
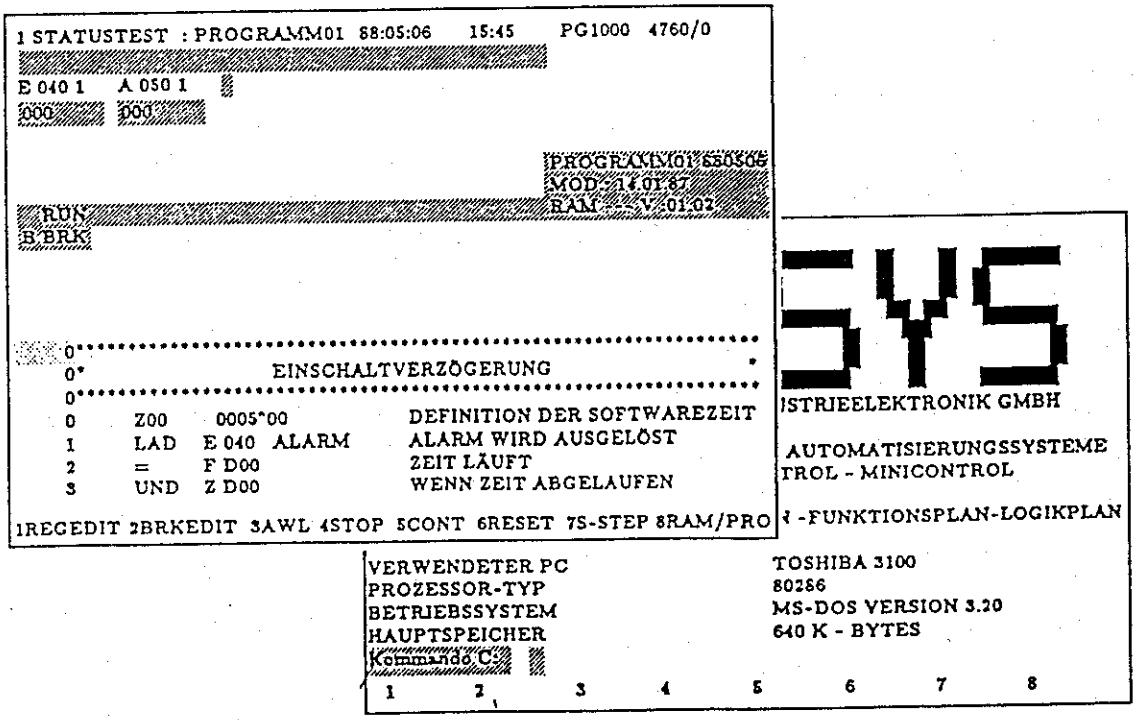
3.4 Programming

The software can be changed off-line in the laptop and stored on harddisk or floppy disk. To transfer the software to the PLC the laptop must be connected to the programming interface on the main processor board (on-line).





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3.5 Programming language

The programms are written in statement list. They are completed with a lot of comments.

In statement list there is a possibility of subroutines and real jumps. This is neccessary because of the time critical PID loops.
That kind of programming grants cycle times of max. 100ms for the level controlling loop and 50ms for the position controlling loops.

Ausschnitt aus einem Programm in Anweisungliste:

```
00629          RET
00630  *
00630  *       Schritt 10: Auto-Betrieb
00630  *
00630  SI10    NOP
00631          CLR       M    100  Manu lampe
00632          CLR       M    102  Start lampe
00633          SET       M    101  Auto lampe
00634          SET       M    183  Manu/Auto   controler
00635          CLR       M    181  Start up controler
00636          CLR       M    190  no oszillation
00637          LD        #     00000
00638          =D        C    884  antiglogging delay timer &
00639          RET
00640  *
00640  SV10    NOP
00641          LAD       E    04E  TUBE CHANGE START
00642          SP0       V101
00643          LAD       #     011
00644          SPU       NEXT
00645  V101    NOP
00646          LAD       E    04C  CLOSE
00647          OD        E    04D  OPEN
00648          =         M    151  von auto zu manu
00649          OD        E    044  MANUAL
00650          SP0       V103
00651          LAD       #     004
00652          SPU       NEXT
00653  V103    NOP
00654          LR        C
00655          VR
               SP>
```

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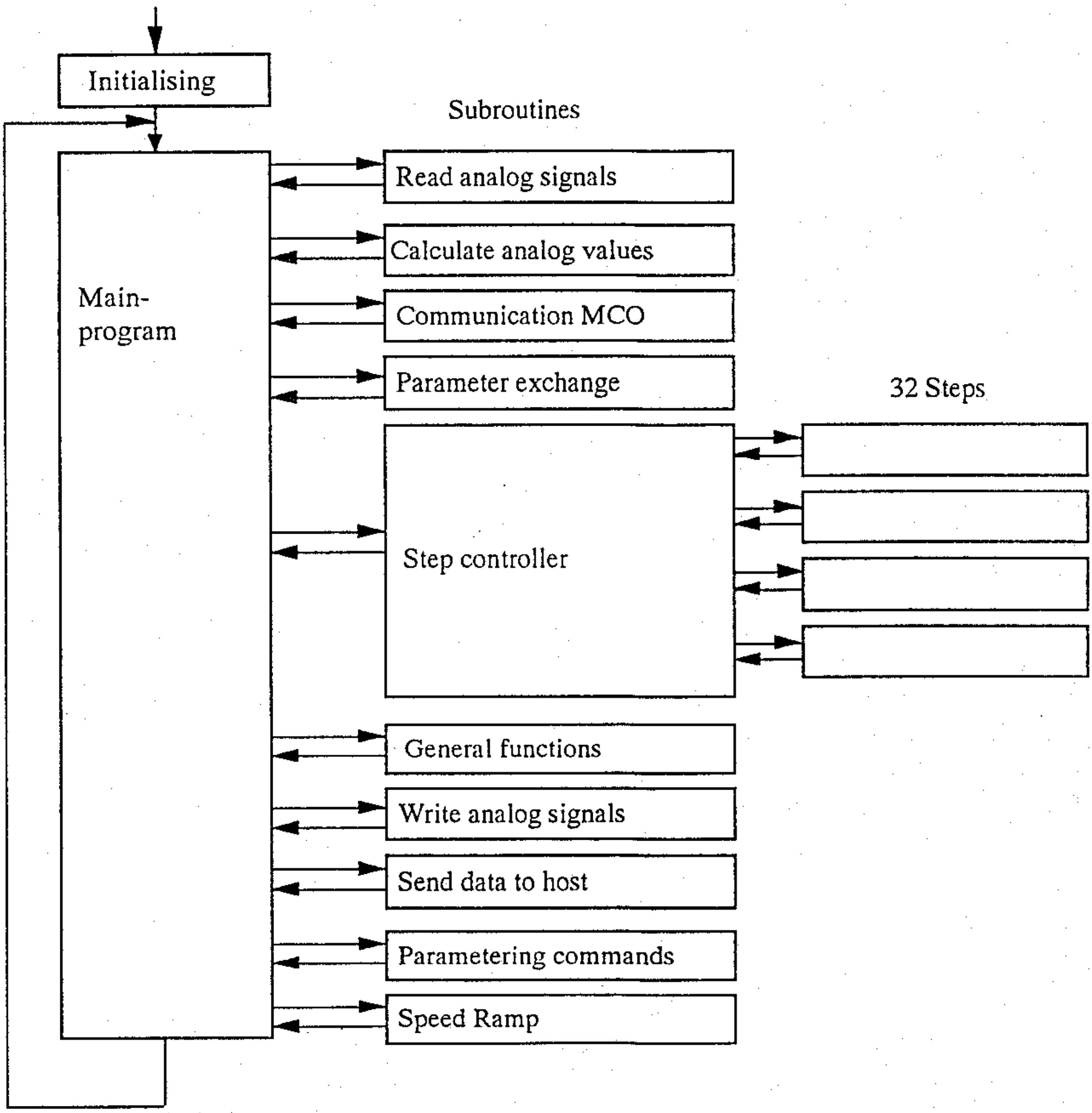
3.6 Software structure

A severe structured programming is neccessary to give a good overview to the programms.
The in- and outputs are set over 1-bit memorys and not directly. This is much better for programm changes afterwards.
The programming with subroutines and real jumps gives a good cycle time and a very short response time.



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3.7 PLC status

A three digit display on the main processor board shows the actual process status and gives an immediat information about the proper function.

Display	Ladle gate controller	Tundish gate controller
01	Emergency shut	Emergency shut
02	No ladle in casting position	No car in casting position
03	Ladle in casting position	Car in casting position
04	--	Manual after automatic
05	--	Manual during cast interrupt
06	Begin of auto start up	Begin of auto start up
07	Wait for tundish level	Berthold zeroing
08	Switchover manual - Auto	--
09	Switch over Manual - Auto	Wait for steel
10	Automatic casting	Automatic casting
11	Switchover auto - manual	Begin of cast interrupt
12	--	Cast interrupt
13	--	End of cast interrupt
14	--	End of cast
15	--	Manual during auto start up
16		

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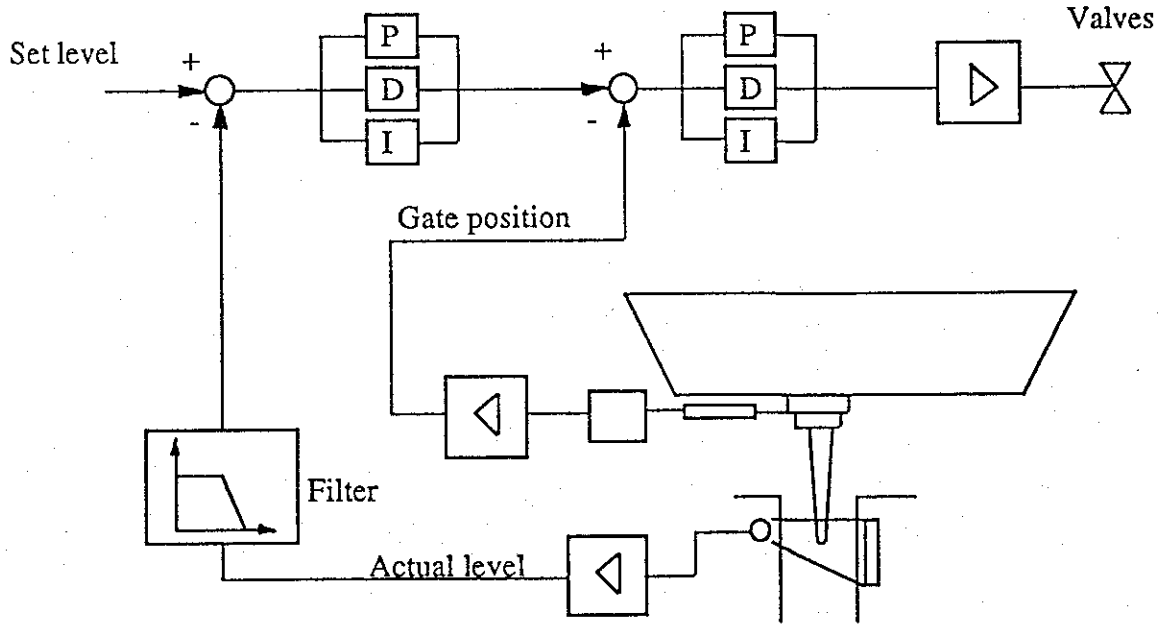
Display	Hydraulik	Speed controller
01	During emergency shut hy	Emergency shut
02	Pump 1, 2 or 3 failure	--
03	Pump 1 or 2 on	--
04	Working pressure <160 bar	--
05	Working pressure <140 bar	--
06	Emergency pressure low	--
07	Oiltemperatur high	--
08	Oiltemperature to high	--
09	Oil level low	--
10	Pump 1 added	--
11	Pump 2 added	--
12	180 bar reached	--
13	No working pressure	--
14	Pump 1 2x added	--
15	Pump 2 2x added	--
16	No response after adding pumps	--
21		End of cast
22		No car in casting position
23		Car in casting position
26		Begin of auto start up
27		Berthold zeroing
29		Wait for steel
30		Automatic casting

4.1 Controller principle / introduction

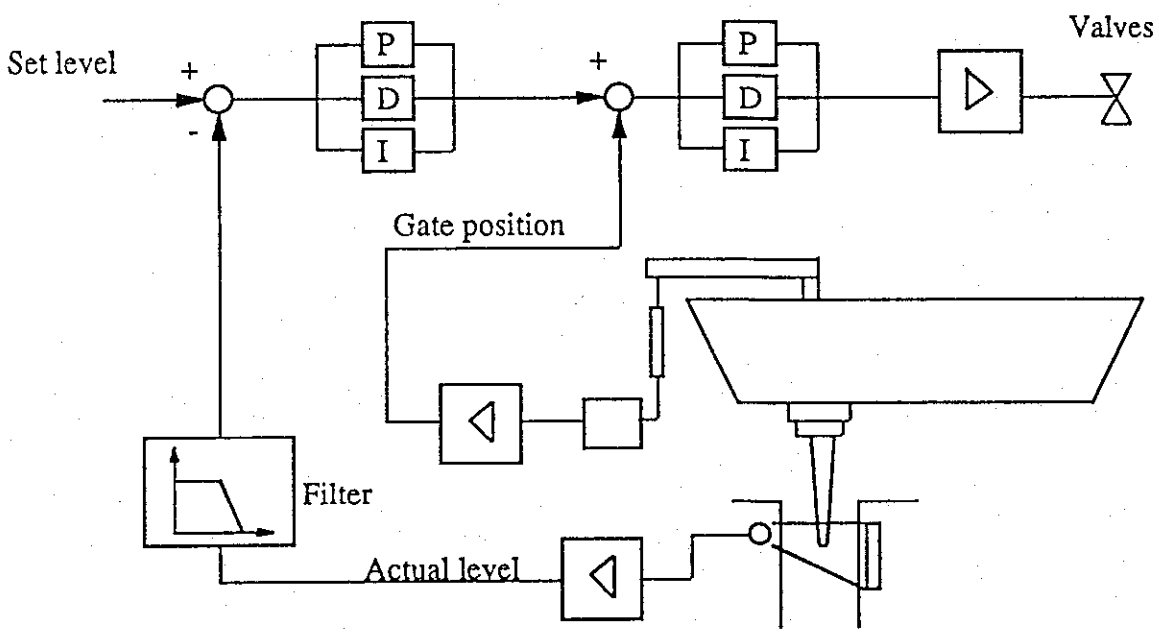
4.1.1 Tundish gate

The tundish gate controls the amount of liquid steel flowing into the mold. The connection between the gate and the hydraulic cylinder is made with a coupling device. The mechanical play gives an unlinear positioning. The influence of this unlinearity is kept very small with the oscillation of the cylinder. The oscillation also overcomes the static friction.
Because of the rough and changing environment conditions it is neccessary to use a controlling loop for the positioning.



4.1.2 Stopper rod

The controller principle with the stopper rod is the same as with the tundish gate.
An oscillation is also used with the stopper rod. It helps also to prevent the stopper from clogging.



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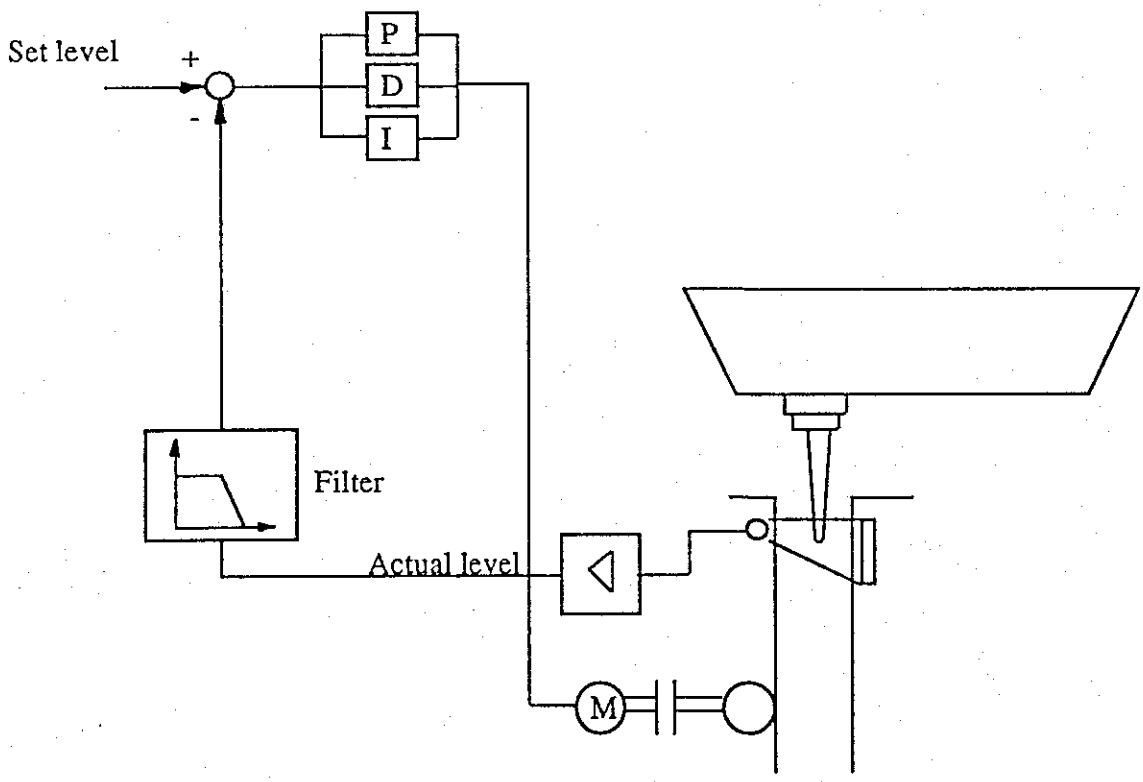
4.1.3 Speed control

With metering nozzles the flow of liquid steel can not be changed. Therefore the withdrawal speed must be controlled.
The IPC system controls the speed with the speed set value.



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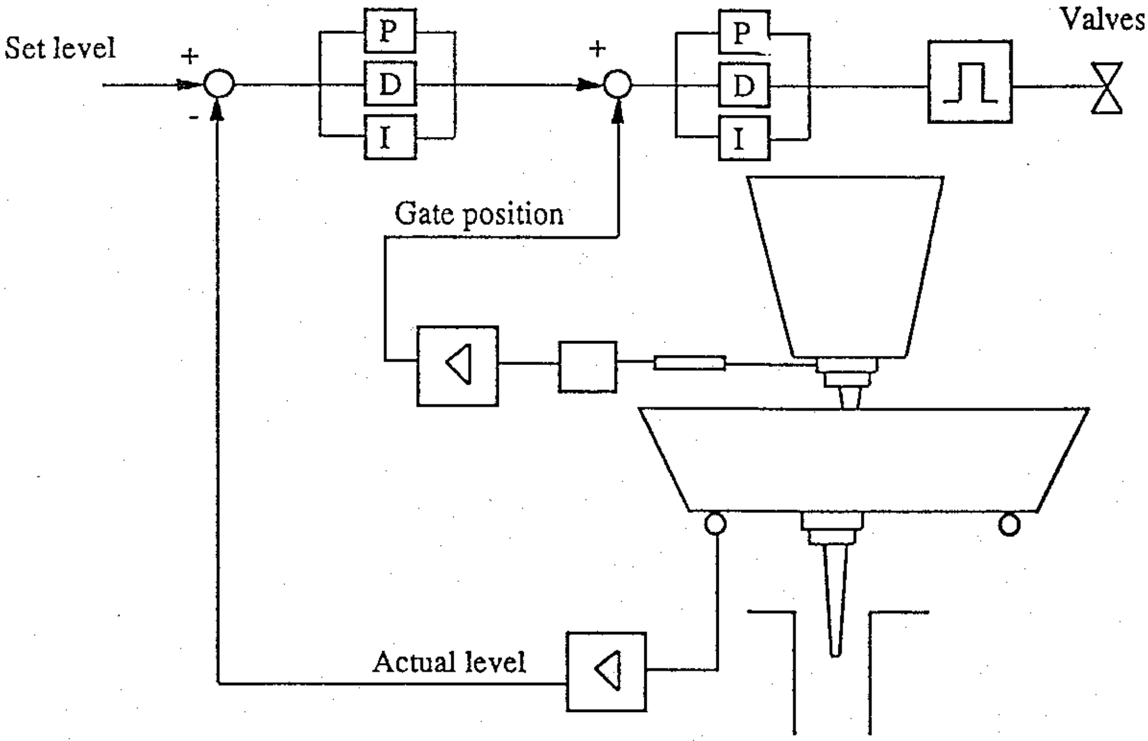
4.1.4 Ladle gate

It is important to move the ladle gate as little as possible to keep the wear of the refractory low. Therefore an oscillation of the gate is out of question and a pulse output is added to the controller output.
The ladle gate can also be operated without a feed back of the cylinder position signal but the environment conditions have much more influence.



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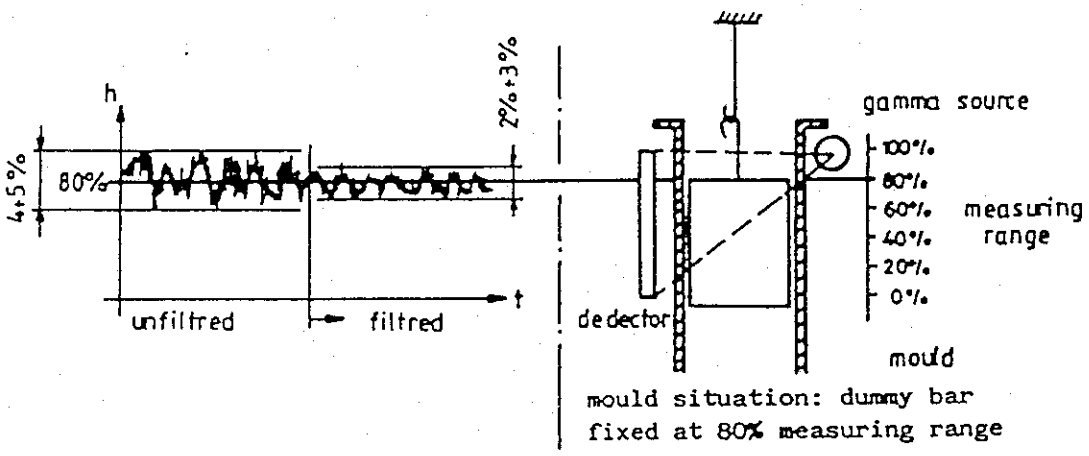
4.2 Characteristic of the level signal

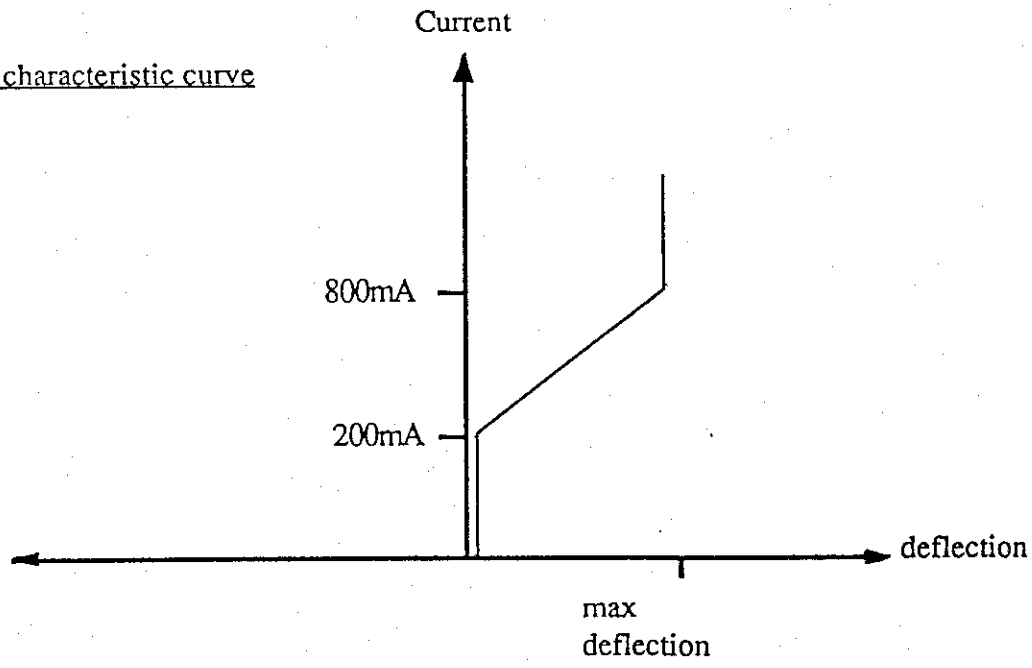
A radiometric system is usually used to measure the mold level. This system produces a noisy signal because of the random radioactive decay.
The minimum statistical error is +/- 2% of the measuring range (smaller measuring range - smaller error).



4.3 Unlinearity of the proportional valve

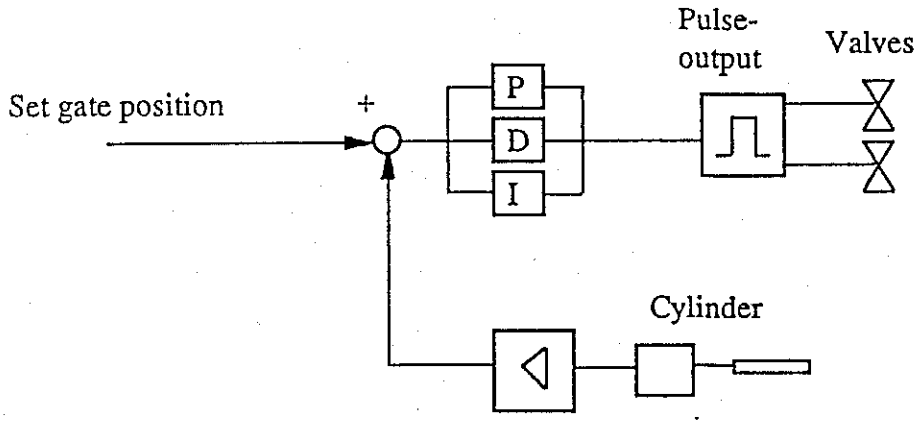
The proportional valve for the operation of the hydraulic cylinder (ladle gate and tundish gate) is very unlinear in the range close to zero. A current of 200mA is neccessary to get a minimum oil flow. This unlinearity is compensated in the controller output signal.

Valve characteristic curve

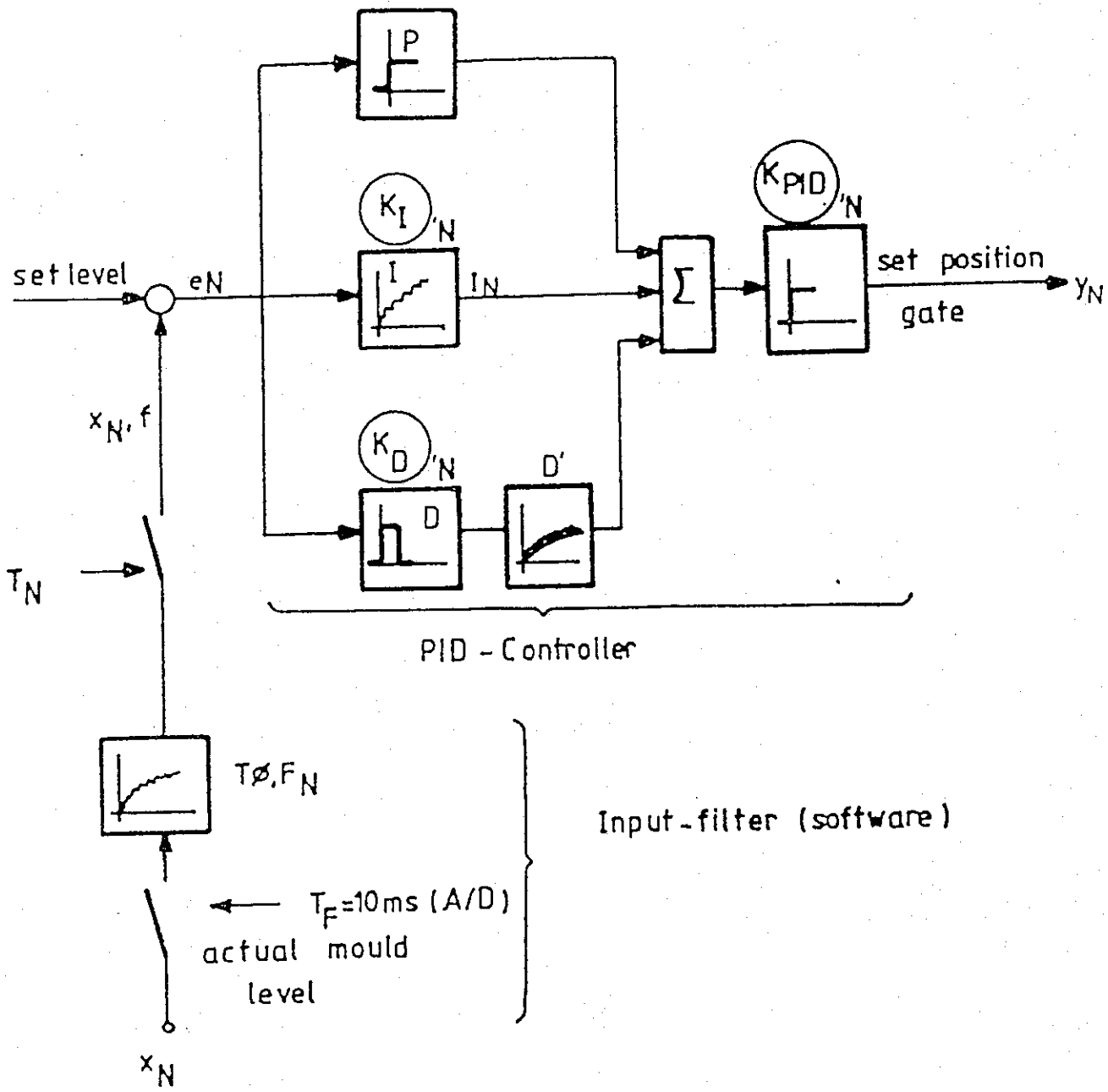


4.4 Pulse output

It is not neccessary to use a proportional valve for the ladle gate. Simple on/off valves are used. Therefore the valves must be activated with pulses. A special pulse output is added to the controller output.



4.5 Blockdiagram of a controlling loop



K_I = Integral gain

K_D = derivative gain

D' = modified diff. gain

K_{PID} = general PID gain

T_N = scanning period (adj.)

T_F = sampling period

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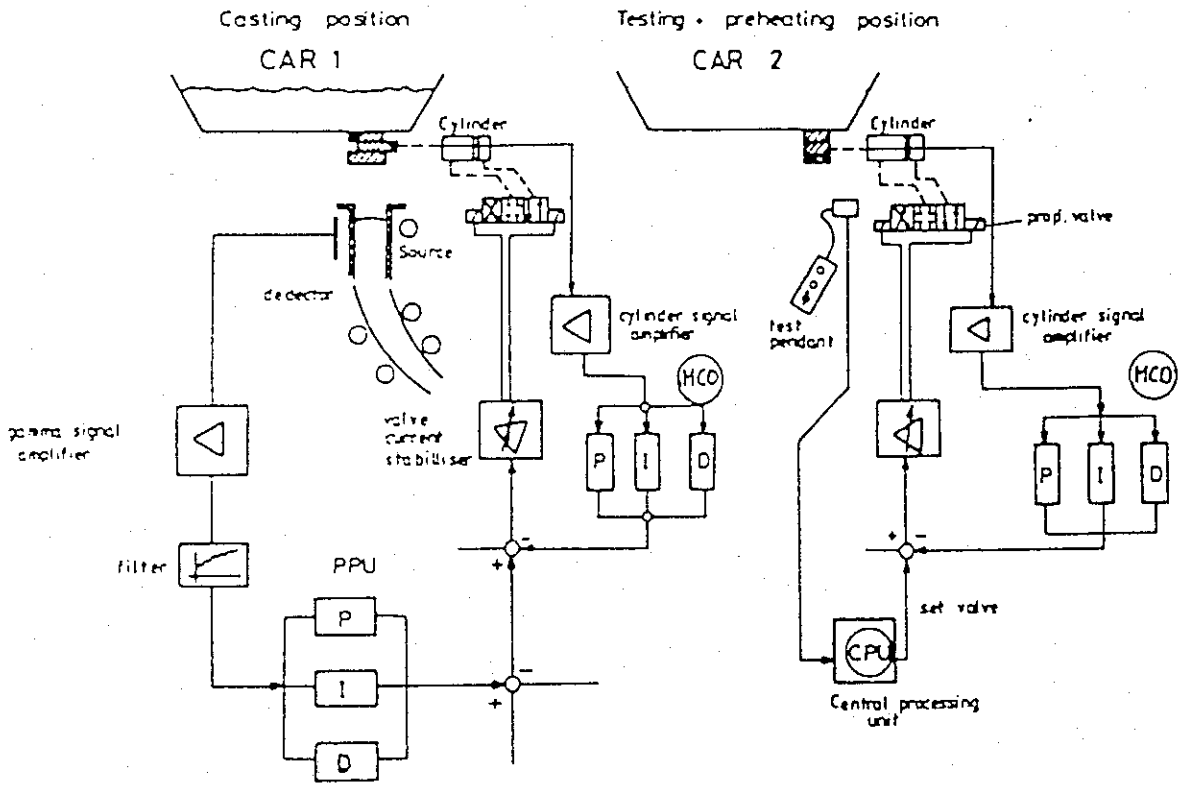
4.6 The three controlling loops

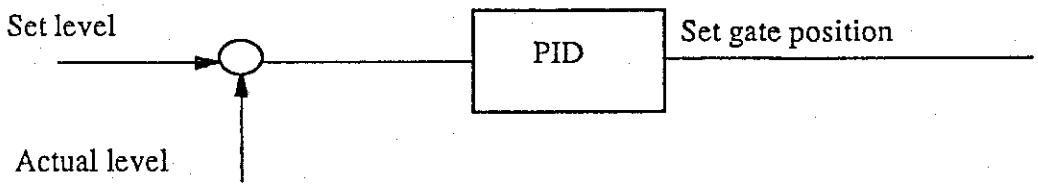
The three PID controlling loops are processed sequentialy in the MCO. The operating system OS/9 guarantees the right cycle times of the controlling loops.



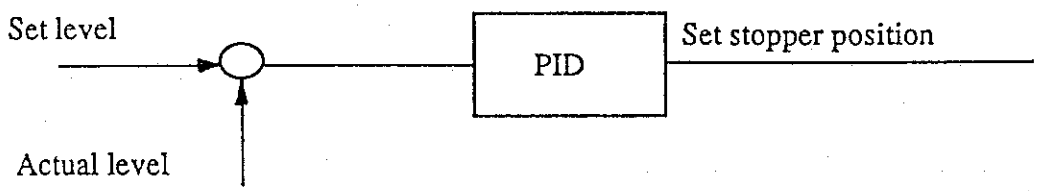
4.7 Level controlling loop

The level controlling loop compares the set and the actual level and calculates the output signal depending on the PID values.

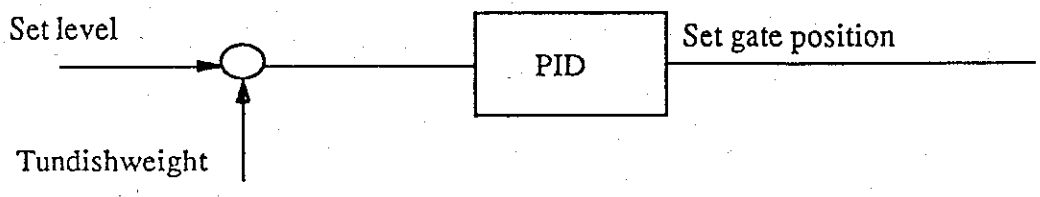
4.7.1 Level controlling loop for the tundish gate



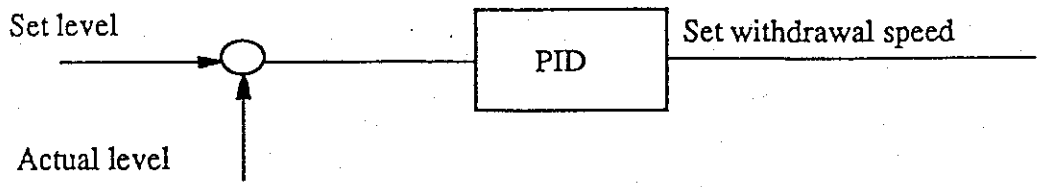
4.7.2 Level controlling loop for the stopper rod



4.7.3 Level controlling loop for the ladle gate



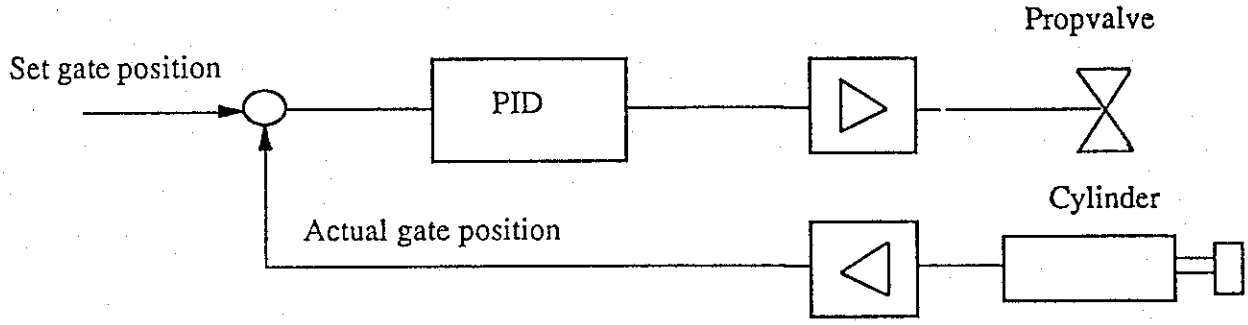
4.7.4 Level controlling loop for the metering nozzle



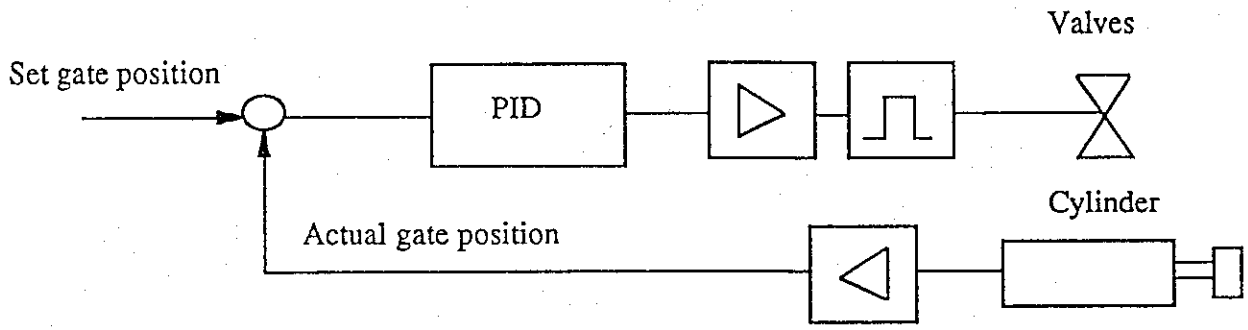
4.8 Position controlling loop

The position controlling loop compares the set and actual value of the cylinder position and calculates an output signal depending on the PID values.

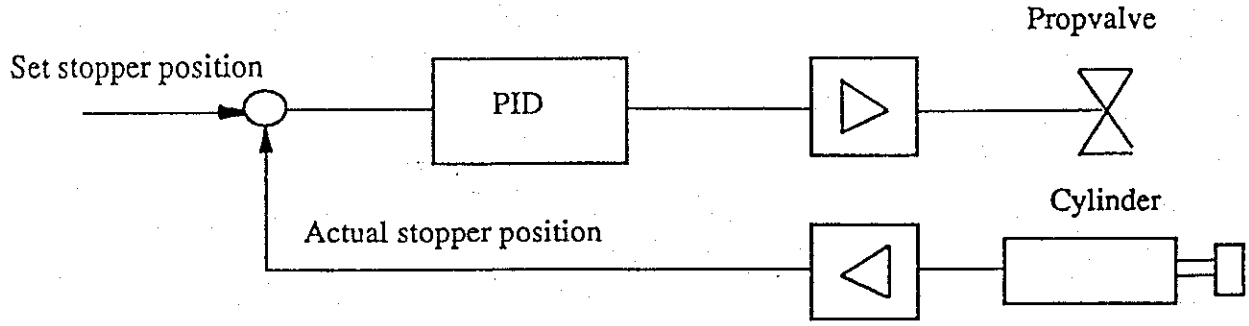
4.8.1 Position controlling loop for the tundish gate



4.8.2 Position controlling loop for the ladle gate



4.8.3 Position controlling loop for the stopper rod



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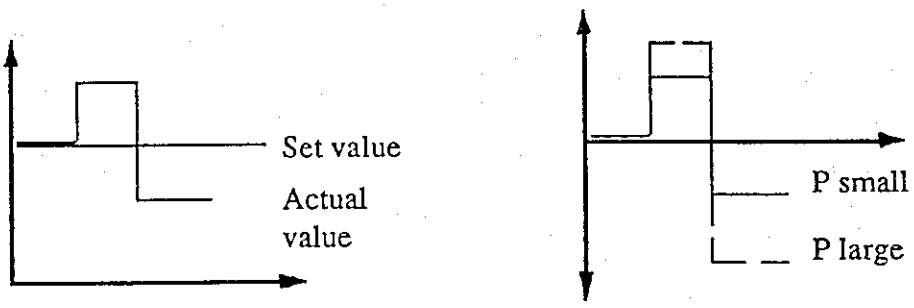
4.9 PID-Characteristic

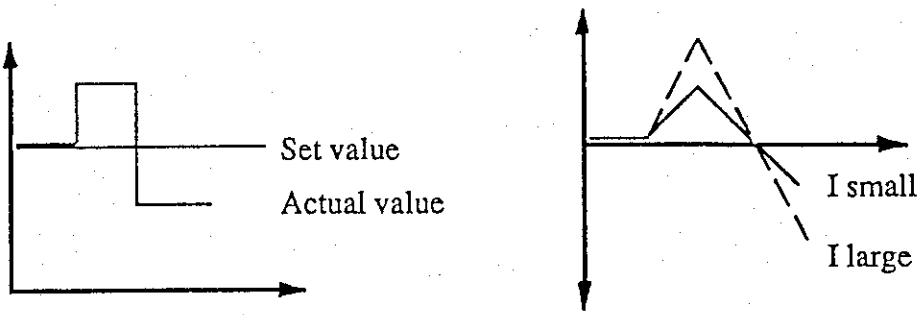
4.9.1 P-Part

A change of the correcting element is done proportional to the difference between set and actual value. The P-part is actually an amplifier.



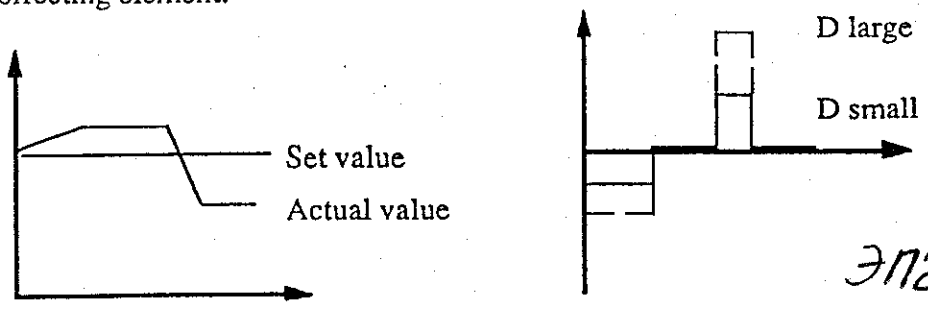
4.9.2 I-Part

The I-part integrates the difference between set and actual value during the time.



4.9.3 D-Part

The D-part is the differential of the actual value. A fast changing actual value gives a bigger change of the correcting element.



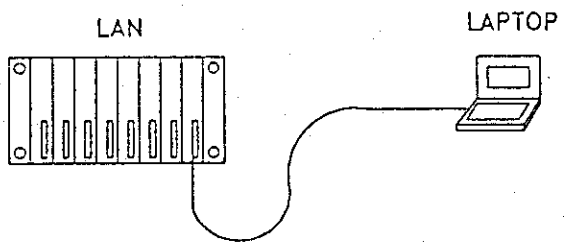
5. Parametering

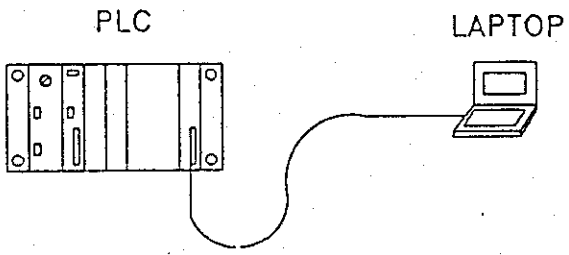
5.1 Parametering software

The parametering can be done either with the laptop over the serial interface or with the process visualisation system over the LAN.

The parameters that maybe have to be changed during operation are all in the parameter screens. Therefore a programm change is not neccessary at all.

For the parametering the connection must be established and the software started. The parametering software now reads the actual parameters from the PLC. As soon as this is finished the parameters can be changed.





5.2 Parameter lists

For each operation method a complete set of parameters is used. Therefore a combinated operation (i.e. tundish gate and metering nozzle) is possible.

PARAMETERS TUNDISH GATE CONTROLLER

Start up		**Anticlogging**	
Startup position	%	Start	%
Startup minimum	%	Cycle	sec.
Wear	sec/1000	Pulselength	sec.
I-Stop	sec	Prevent	sec.
Set level			
Set level	%		
Oscill. amplitude	%		
Oscill. period	min.		

Parameters levelcontroller

Levelcontroller PID1			
K PID		Filtertime 1	sec.
K I	1/cycle	Filtertime 2	sec.
K D	cycle	Cycle	sec.
		D-Filter	cycle
Toleranzband	%	Maximum gate	%
Offset +/-2%	%	Minimum gate	%

Parameters positioncontroller

	car1	car2
K PID		
Offset +/-10%		%
Deadband		%
Minimum output		V
Oscillation		
Amplitude		%
Period		sec
Cycle		sec
Maximum output		%
Minimum output		%

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PARAMETERS FOR LADLE GATE CONTROLLER

Miscallenous parameters

Start up		Set level	
Startup position	%	Set level	%
Startup minimum	%	Oscill. amplitude 0	%
Wear	sec/1000	Oscill. period	min.
I-Stop	sec		

Levelcontroller PID1

K PID		Filtertime 1	sec.
K I	1/cycle	Filtertime 2	sec.
K D	cycle	Cycle	sec.
		D-Filter	cycle
Toleranzband	%	Maximum gate	%
Offset +/-2%	%	Minimum gate	%

Parameters positioncontroller

Arm 1 and 2

K PID	
Offset +/-10%	%
Minimum pulse time	cycle
Maximum pulse time	cycle
Correct time	cycle

Oscillation

Amplitude	%
Period	sec
Cycle	sec

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PARAMETERS FOR SPEED CONTROLLER

Start up

Start up speed	%
Min. start up speed	%
Min. reduction	sec/1000
I-stop	sec

Set level

Set level	%
Oscill. amplitude	%
Oscill. period	min

Levelcontroller PID

K PID		Filtertime 1	sec
K Integrator	1/cycle	Filtertime 2	sec
K Diff.	cycle	Cycle	sec
		D filter	cycle
Toleranceband	%	Max. speed	%
Offset	%	Min. speed	%

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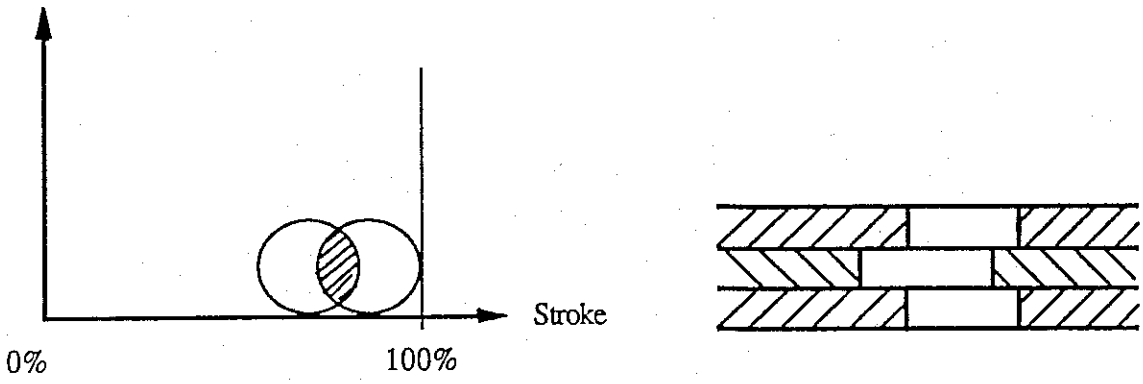
5.3 Parameters

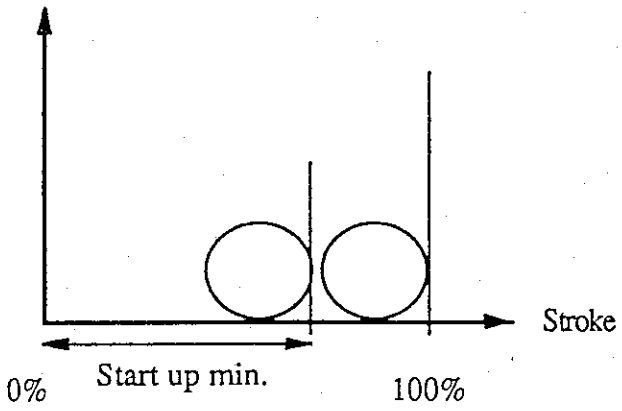
5.3.1 Start up position [%]

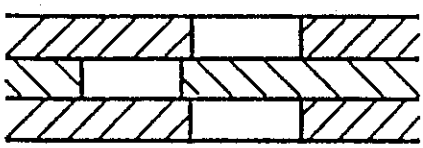
The parameter "start up position" sets the gate to a specific position during automatic startup. This allows to fill up the mold slowly and prevents the mold packing from washing away.
If the start up position is too small the pouring channel can freeze. If the refractory material will be changed to another bore size the start up position must be adjusted.
The parameter is scaled in % of the full cylinder stroke.



5.3.2 Start up minimum [%]

The parameter "start up minimum" sets the minimum position which the cylinder can take when it is driven by the controller. This position should be a bit smaller than the stroke minus the bore size.





Example:

Bore size:	32 mm
Stroke:	80 mm
Start up minimum (%):	$=100-\frac{(1.1 * 32)}{0.8}$
	$=56\%$

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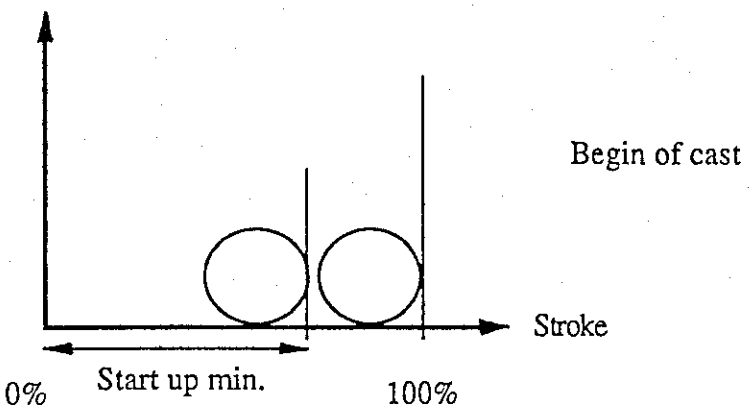
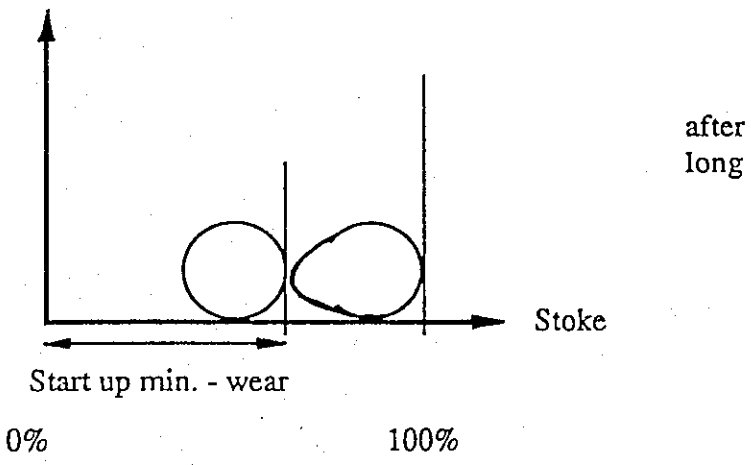
5.3.3 Wear [sec/1000]

The "start up minimum" position has to be changed during casting because the refractory material gets worn out.
The parameter "wear" says how many seconds elapses until the position is changed 1/1000 of the stroke.
The wear depends on the refractory material, the casting time and the aggressiveness of the steel and must be determined by checking the used refractory material.





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5.3.4 I-stop [sec]

With the parameter "I-stop" the I-part of the PID controller can be delayed for a few seconds after switching on.

Typical values are:	Billet / bloom:	2 - 5 sec
	Slab:	3 - 10 sec

5.3.5 Set level [%]

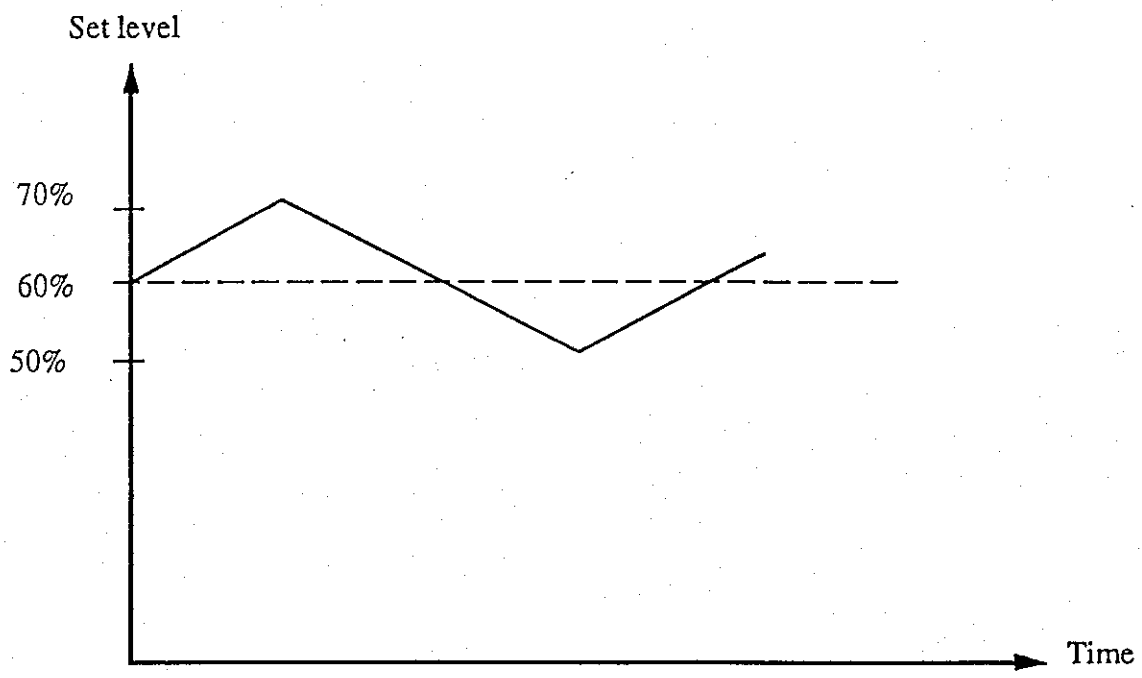
This is the set level in % of the measuring range.
For a proper operation the set mold level should be between 50% and 70%.

5.3.6 Osc. amplitude [%] and osc. periode [min]

These parameters give an oscillation on the set mold level to keep the wear of the pouring tube low. The amplitude is in % of the full measuring range and the period in minutes.

Example:

Set level:	60%
Osc. amplitude:	10%
Set level during casting:	50% bis 70%

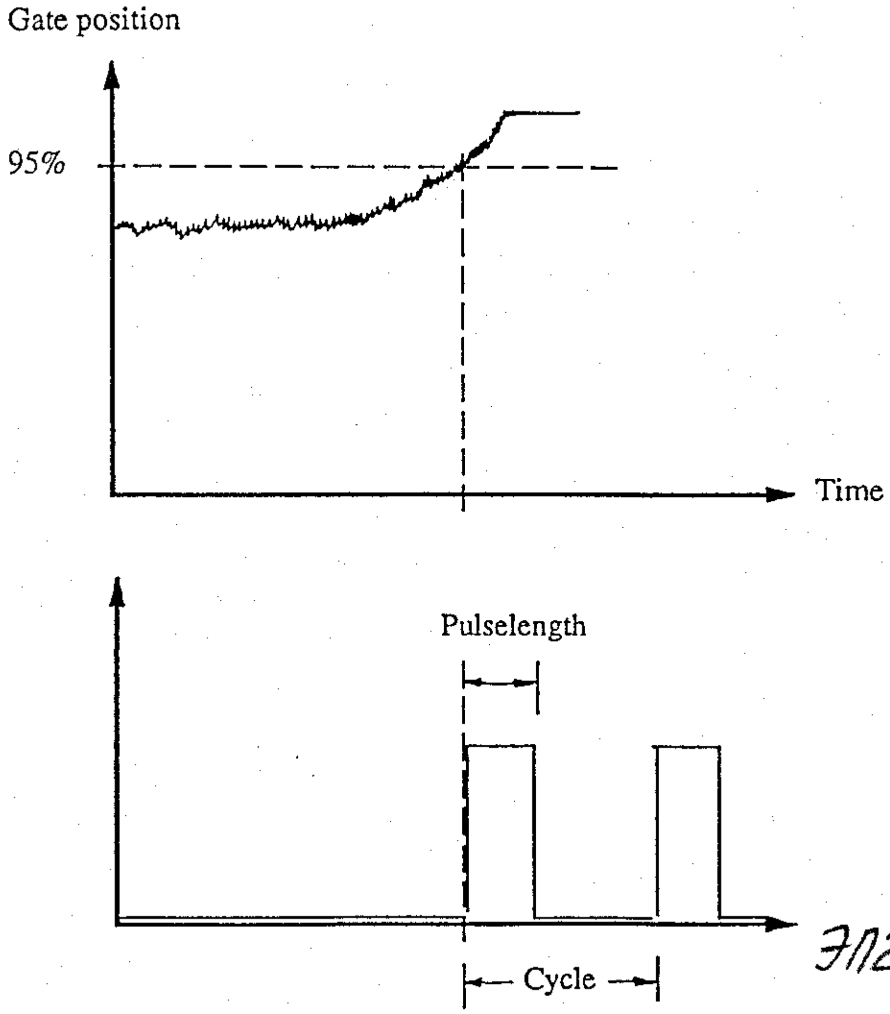


5.3.7 Anticlogging

Anticlogging means a strong argon pulse into the nozzle and is depending on the cylinder position or can be activated periodically.

Start [%]:	The cylinder position when the anticlogging is activated
Cycle [sec]:	The repeat time of the pulses in seconds
Pulselength [sec]:	The length of the öulse in seconds
Prevent [sec]:	The repeat time of the pulses independent of the cylinder position

Typical values are:	Start:	95%
	Cycle:	4 sec
	Pulselength:	1 sec
	Prevent:	0 (not activ)



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5.3.8 Level controller PID

The parameters of the level controlling loop for the P-,I- and D-part.

Typical values are:	K PID:	0.15 bis 0.35
	K I	0.04 bis 0.10
	K D:	2.0 bis 6.0

5.3.9 Toleranceband [%]

For special use the level controller can be made inactiv in a small band around the set level (i.e. for the ladle gate).
The toleranceband is given in % of the measuring range.

5.3.10 Offset

For test purpose an offset can be added to the level controlling loop (a difference between set and actual level).
During casting this parameter must be set to zero.

5.3.11 Filtertime 1/2 [sec]

If the level signal is strongly noisy a filter can help. With the parameters "filtertime 1/2" a two step filter can be activated. But this filter also has a delay so it should be kept as small as possible.
If no filter is used the values must be zero.

Typical values are:	Filtertime 1:	0 bis 1.0
	Filtertime 2:	0 bis 1.0

5.3.12 Cycle [sec]

This is the cycle time of the level controlling loop and must not be changed after the commissioning. A typical value is 100ms and only for special use (very fast) it can be lowered.

5.3.13 D-Filter

With a noisy level signal short peaks can come to the controller. Therefore the signal is filtered again before the D-part is calculated.
This parameter is scaled in cycles and must be multiplied with the cycle time to get the filtertime.

5.3.14 Maximum gate [%]

For special use the output signal of the level controlling loop (set value of the cylinder position) can be limited. In normal use there is no limitation of this signal.

Normal value is: Max. gate: 100%

5.3.15 Minimum gate [%]

This is not a parameter to change. Here the system shows the minimum start up position minus the wear.

5.3.16 Parameters position controller

These parameters are for the two position controlling loops (car 1 and 2) and have the same function as already written.

Typical values are:	K PID:	1.5 bis 3.0
	Totband:	0.1

5.3.17 Minimum output [V]

This is the minimum voltage from the controller output to the proportional valve amplifier to correct the unlinearity in the neutral point.

Typical value is:	Minimum output:	1.1 bis 1.4 V

5.3.17 Oscillation

With the parameters "amplitude" and "period" the cylinder oscillation will be set. The oscillation should at least compensate the mechanical play.

Typical values are:	Amplitude:	15 bis 25 %
	Period:	0.8 bis 1.5 sec.

5.3.18 Cycle [sec]

This is the cycle time of the position controlling loop and must not be changed after the commissioning. A typical value is 50ms and only for special use it can be lowered.

5.3.20 Max. / Min. output [%]

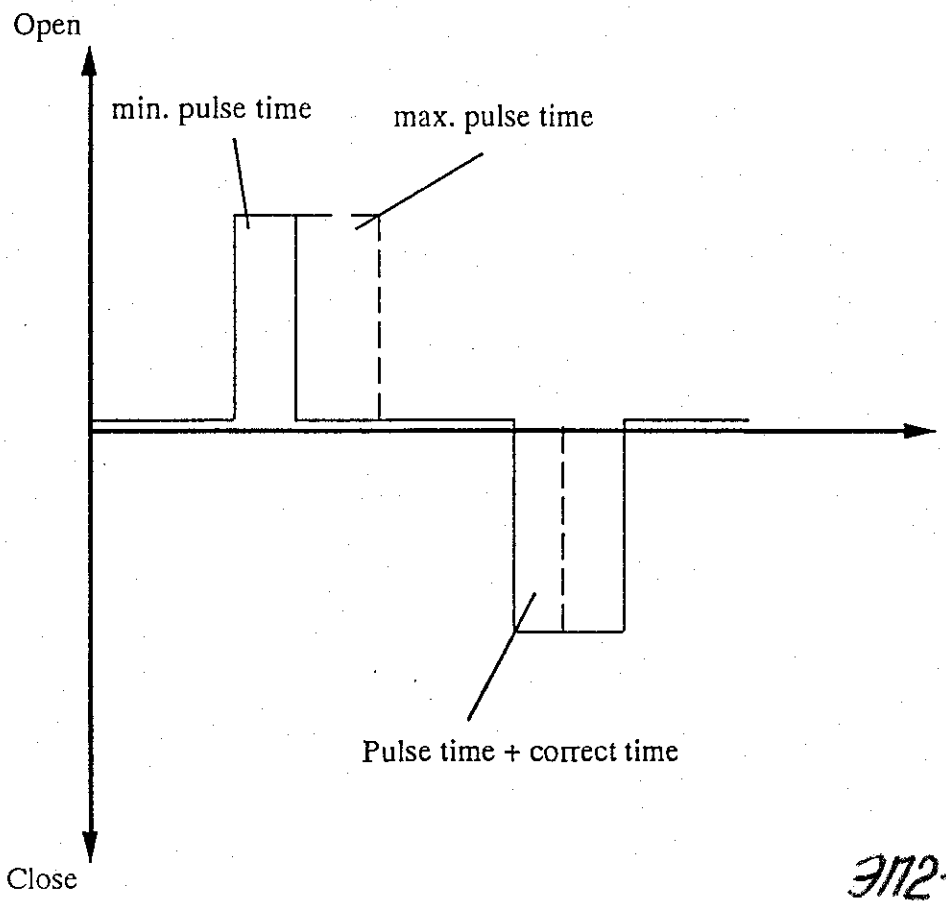
For special use the output signal of the position controlling loop can be limited. Normally the full stroke for the positioning is used.

Normal values are:	Maximum output:	100%
	Minimum output:	0%

5.3.21 Parameters pulse output

A controller with pulse output is used for the ladle gate to prevent the gate from moving continuously. There are four parameters to set this function.
The parameter "min. pulse time" is the shortest possible pulse time and should be set that the mechanical play and the delay because fo long hydraulic tubes are compensated.
The max. pulse time is the longest possible pulse and limits the movement of the cylinder that can be done with one pulse only.
Correct time is to compensate the mechanical play. If the moving direction of the cylinder is changed this time will be added to the normal pulse length.

Typical values are:	Min. pulse time:	6 - 10
	Max. pulse time:	10 - 15
	Correct time:	3 - 5



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6. Calculations

6.1 Residual surface

For the calculation of the steel flow through the gate the residual surface of two overlapping circles must be calculated first.

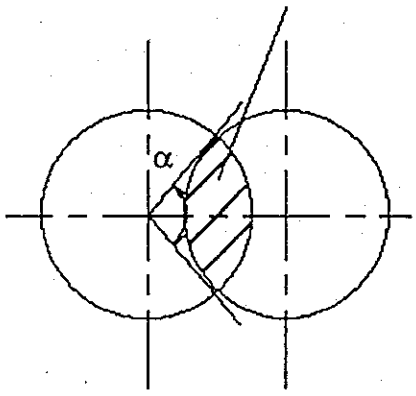
The following values must be inserted in the formula:

Stroke [mm]:	H
Bore size [mm]:	D
Gate position [mm]:	l
Shift angle:	α

Residual surface: $A = \frac{D^2 * \alpha}{4} - \frac{D^2 * \sin(\alpha/2) * \cos(\alpha/2)}{2}$

$$\alpha = 2 * \arccos\frac{(H-l)}{D}$$

Residual surface A



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Example of a calculation

Stroke (mm) = 80

Bore size (mm) = 32

Stroke minus opening mm	Residual surface mm2	Residual surface %	Alpha	Stroke %
32	0,00	0,00	0,00	60,00
31	5,31	0,66	0,50	61,25
30	14,94	1,86	0,71	62,50
29	27,32	3,40	0,87	63,75
28	41,86	5,20	1,01	65,00
27	58,21	7,24	1,13	66,25
26	76,14	9,47	1,24	67,50
25	95,47	11,87	1,35	68,75
24	116,05	14,43	1,45	70,00
23	137,76	17,13	1,54	71,25
22	160,51	19,96	1,63	72,50
21	184,21	22,90	1,71	73,75
20	208,78	25,96	1,79	75,00
19	234,15	29,11	1,87	76,25
18	260,26	32,36	1,95	77,50
17	287,05	35,69	2,02	78,75
16	314,46	39,10	2,09	80,00
15	342,46	42,58	2,17	81,25
14	370,98	46,13	2,24	82,50
13	399,99	49,73	2,30	83,75
12	429,45	53,40	2,37	85,00
11	459,31	57,11	2,44	86,25
10	489,54	60,87	2,51	87,50
9	520,09	64,67	2,57	88,75
8	550,94	68,50	2,64	90,00
7	582,05	72,37	2,70	91,25
6	613,38	76,27	2,76	92,50
5	644,90	80,19	2,83	93,75
4	676,58	84,13	2,89	95,00
3	708,39	88,08	2,95	96,25
2	740,29	92,05	3,02	97,50
1	772,25	96,02	3,08	98,75
0	804,25	100,00	3,14	100,00

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6.2 Filling time

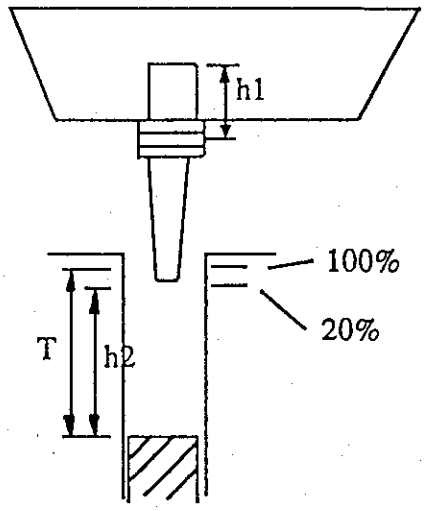
To calculate the mold filling time the following dimensions must be known:

Residual surface [mm2]:	A
Depth of mold [mm]:	B
Length of mold [mm]:	L
Measuring range [mm]:	L2
Depth of mold [mm] (Dummy bar to 100% level):	T
Ferrostatic height [mm]:	h1

Filling height h2= T- 0,8 * L2

Filling speed $v = \sqrt{\frac{2 * 9{,}81 * h1}{1000}} * \frac{0{,}9 * A}{B * L}$

Filling time: $t = \frac{h2}{1000 * v}$



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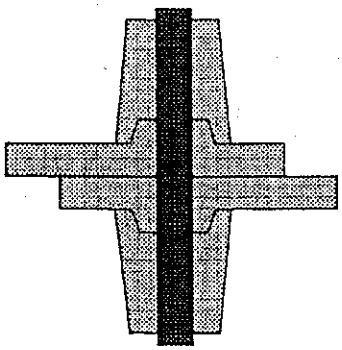
Instruction Manual

for

Stroke Measuring System

01.01.94



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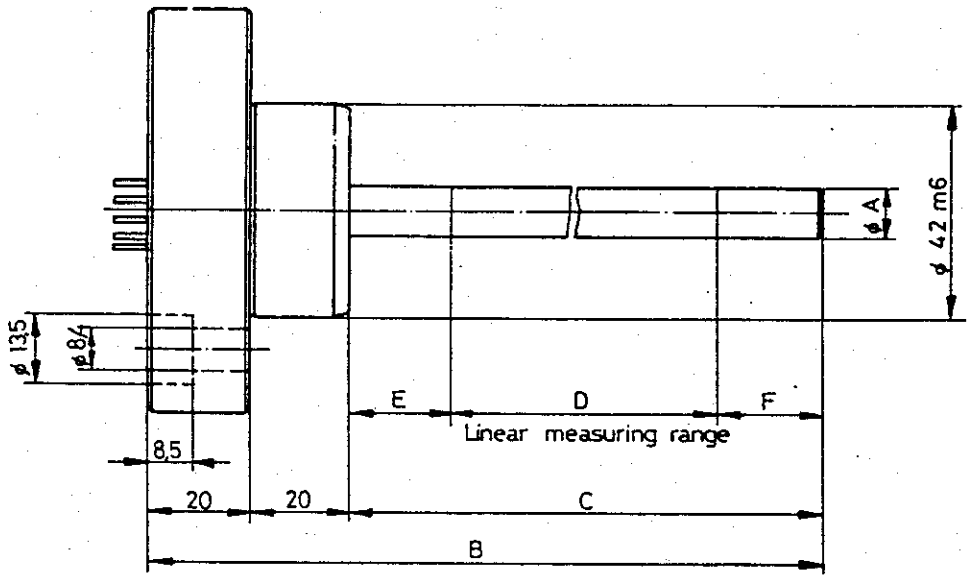


ORDERING No.	TYPE	ø A	B	C	D	E	F
111-230-000-013	DC 230	10	165	125	80	20	25
111-231-000-013	DC 231	10	215	175	130	20	25
111-232-000-013	DC 232	10	285	245	200	20	25

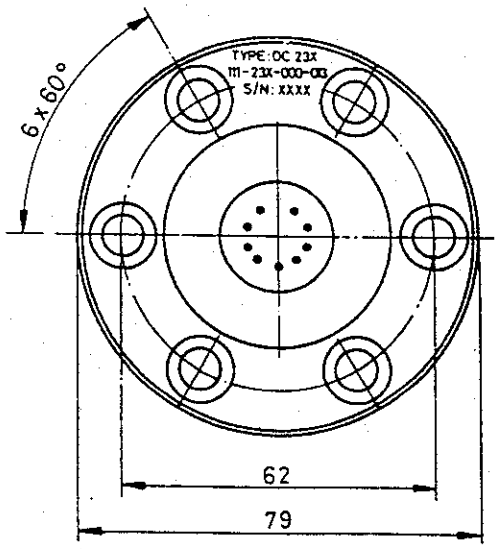


Fig. 1

3112-770-86-280

1. INTRODUCTION

The displacement measuring systems VIC 112 + DC 23... have been developed by to suit measurement in high-temperature industrial installations.

The systems consist of two elements:

- transducer : type DC 230, 231 or 232
- electronics: conditioner type VIC 112 with AC power supply for version 01 and DC power supply for version 02.

2. MECHANICAL CONSTRUCTION

2.1. Transducers

The measuring elements are installed inside a steel housing, protection class HL-P, HS-C, HS-D, pressure resistant up to 300 bars.

The measuring tube is made of Anticorodal B (Al Mg Si 1).

2.1.1. Dimensions

Figure 1 provides the mechanical dimensions of the 3 transducer types DC 230, 231 and 232.

2.1.2. Mounting

The transducer is fastened by means of 6 cheese head hexagon socket screws M8.

Sealing is ensured by an O-ring on the cylindrical surface of the transducer, diameter 42 m6. The choice of the O-ring and the groove dimensions will depend on the operating pressure (informations can be obtained at the O-ring specialist).

The transducer sensor has to be screened when applied near important magnetic fields.

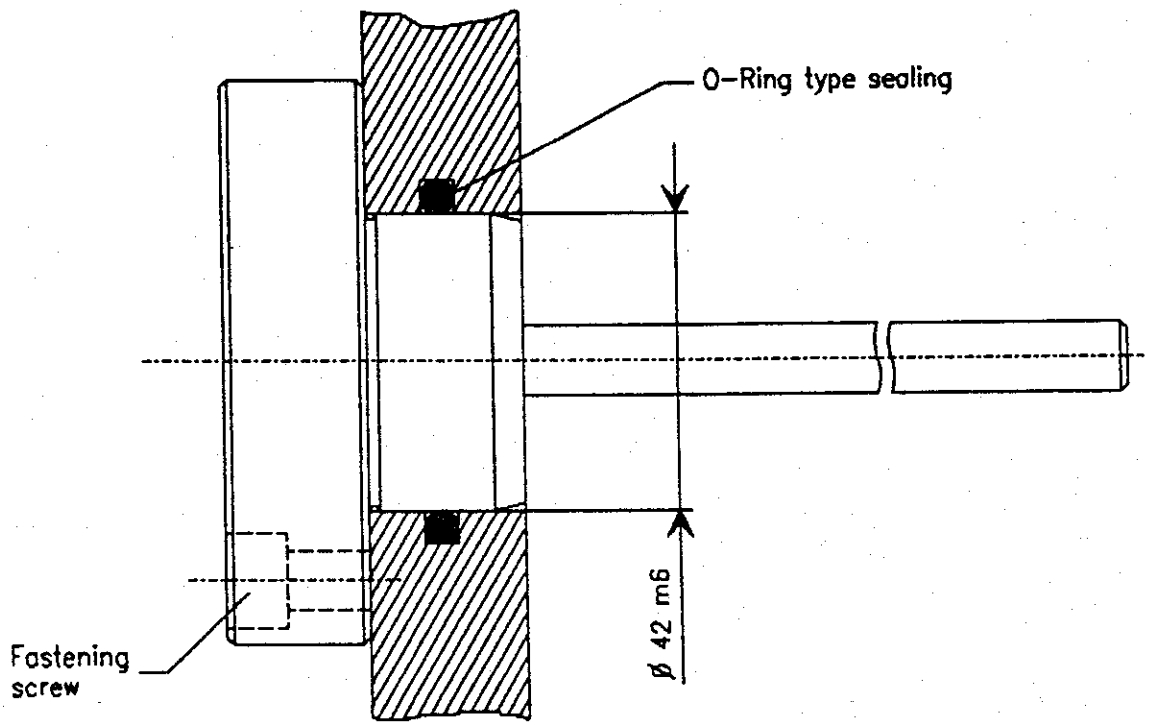


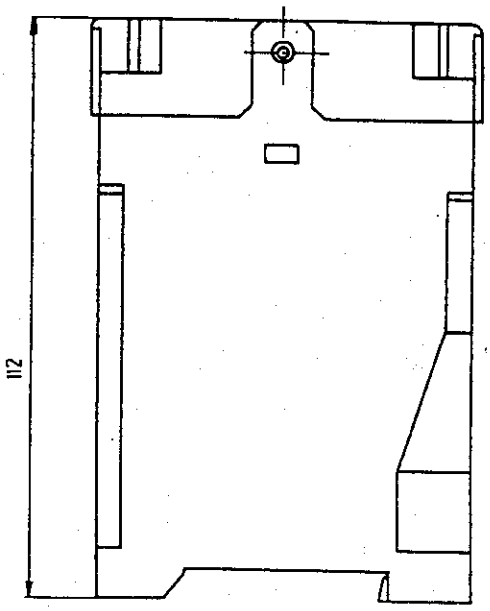
Fig. 2

2.2. VIC 112

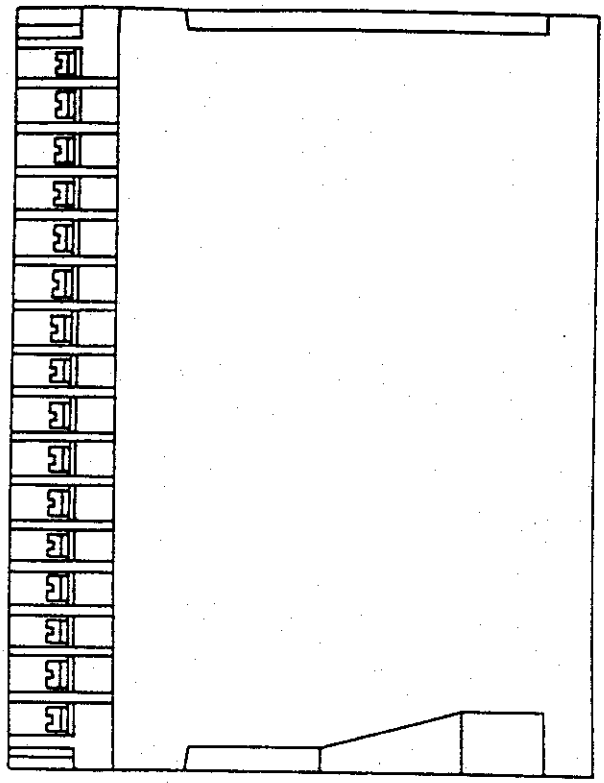
The VIC 112 consists of:

- 1 power supply circuit
- 2 conditioner circuits

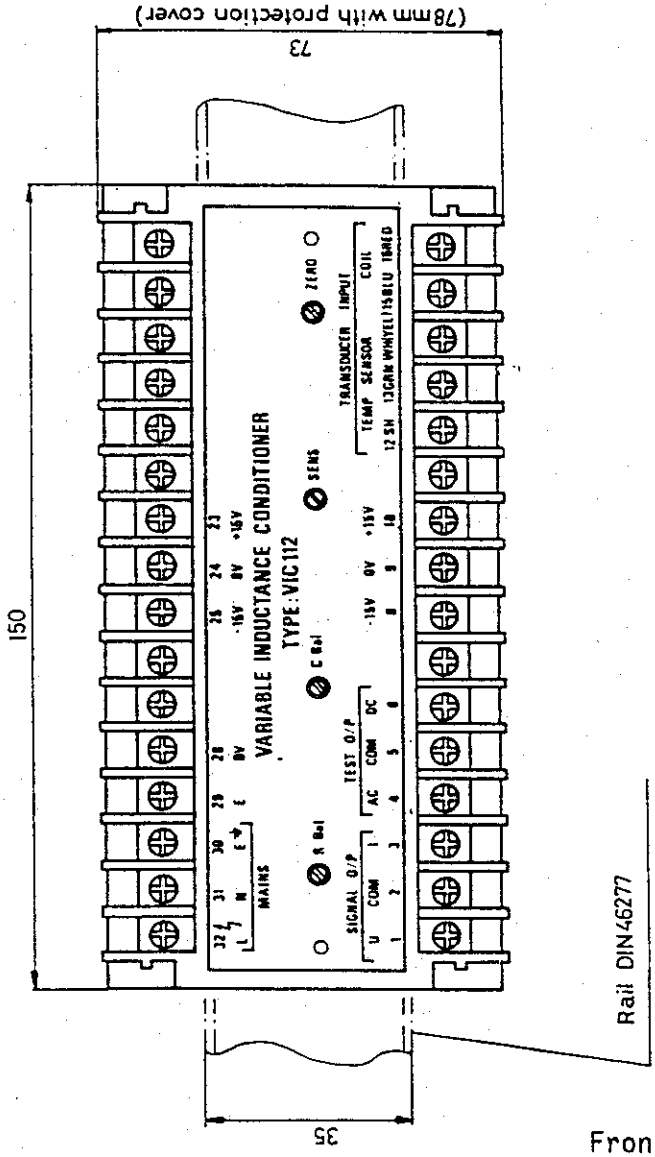
This electronics is built into a plastic housing fastened on a rail DIN 46277 (35 mm) or with 2 screws (M4 or M5). Figure 3 provides the dimensions of the housing.



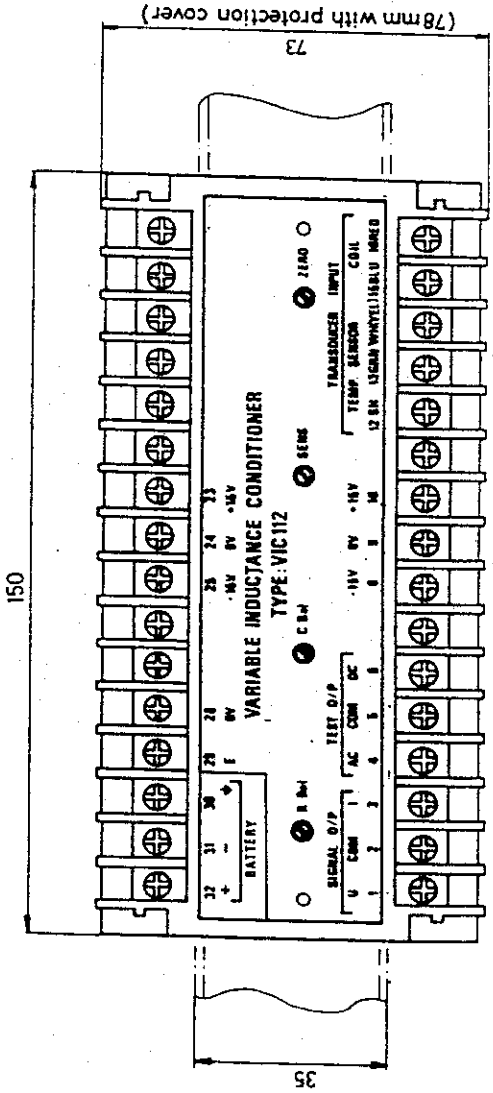
Profile view



Side view



VIC 112 Version 01



VIC 112 Version 02

Front view
Fig. 3

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3. ELECTRICAL CONNECTIONS

3.1. Connector of DC 230 / 231 / 232

The below diagram shows the plugging layout of the transducer's measuring elements.

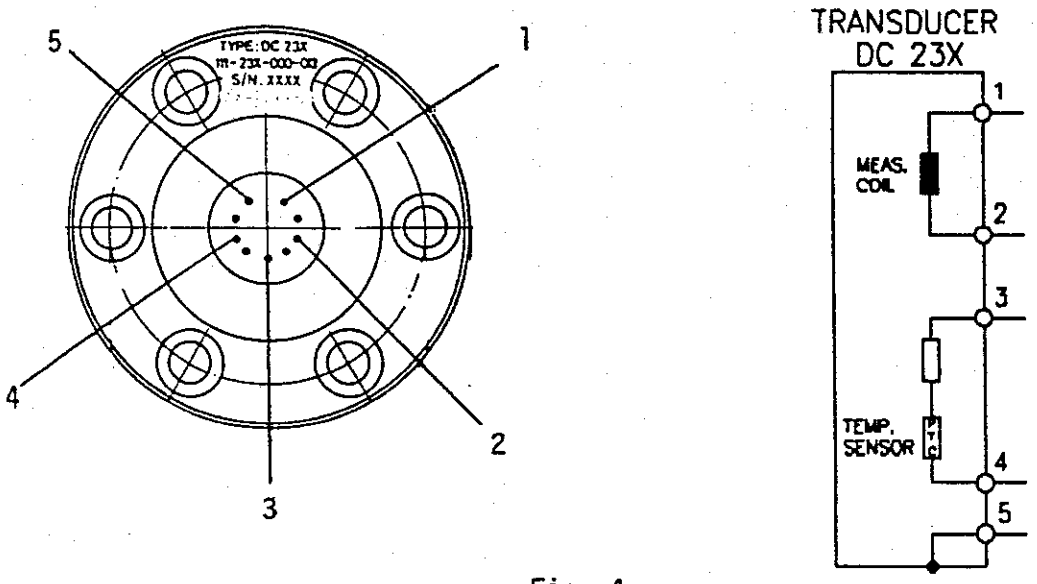

Fig. 4

3.2. Connector of VIC 112

All electrical connections are effected through screw terminals on the front.

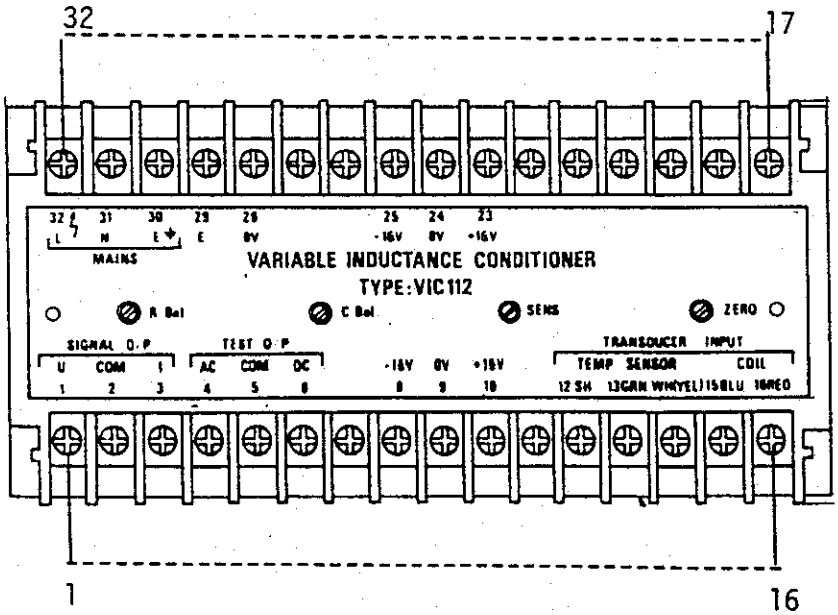

Fig. 5

Note: Terminals 8, 9, 10, 23, 24, 25 (0 , -15 V, +15 V), and 4, 5, 6 can be used as test points.

3.3. Connection of the VIC + DC system

3.3.1.

- VIC 112 Version 01, AC power supply
  Earth ——> terminal 30
  Neutral ——> terminal 31
  Phase ——> terminal 32

- VIC 112 Version 02, DC power supply
  Earth ——> terminal 30
  - ——> terminal 31
  + ——> terminal 32

3.3.2. Connection of DC 230 / 231 / 232 to VIC 112

The below diagram (fig. 6) shows the connection layout of the transducer to the electronics.

Note: The temperature compensation is precalibrated for cable lengths between 2 m and a maximum of 30 m.

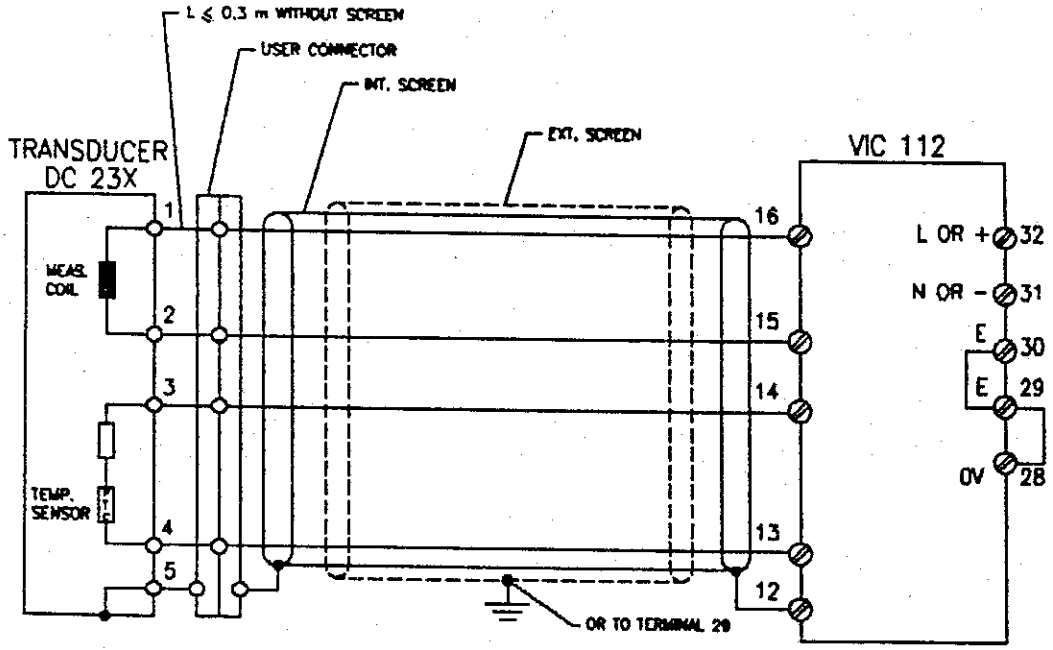

Fig. 6

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3.3.3. Output Voltage

For the readout of analog output voltage connect a voltmeter between terminals 1 (signal) and 2 (0 V) of the VIC 112.

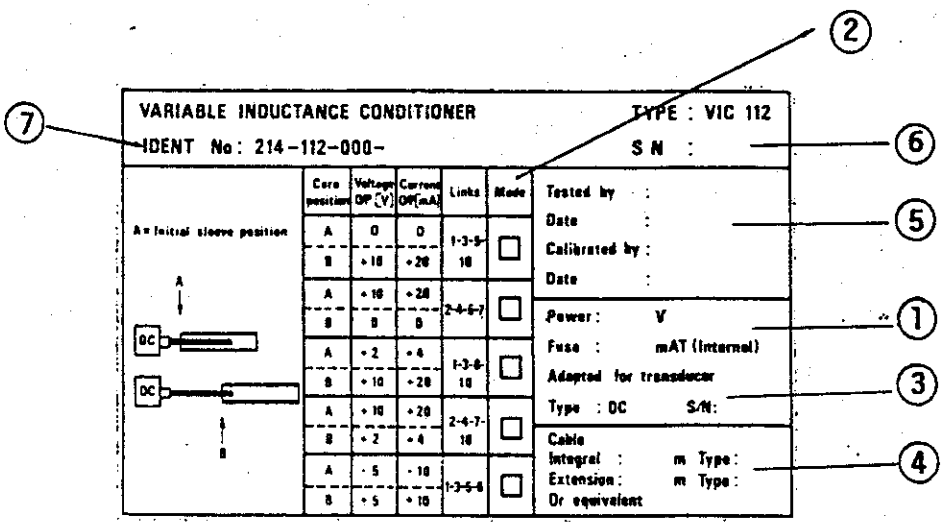
3.3.4. Output Current

For the readout of analog output current connect a milliampmeter between terminals 3 (signal) and 2 (0 V) of the VIC 112.

4. SETTING INTO OPERATION

A considerable part of the starting operations depends on the version. This is why it is important to identify correctly the version being set into operation. The sticker on the VIC housing guarantees easy identification.

4.1. Identification sticker

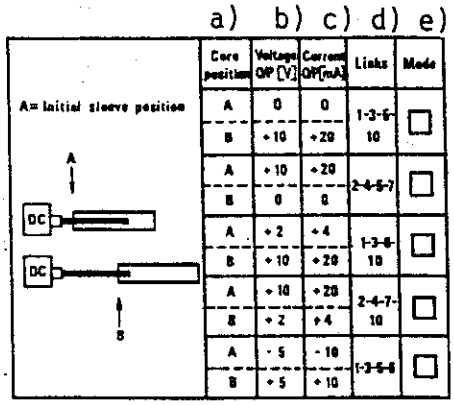


(1) Indication of the AC or DC power supply voltage and of the fuse values.

For the modification of these values see paragraph 5.1.

(2) Operating mode:

Definition of the voltage and current output values of a given position of the transducer measuring tube.



a) tube position

b) output voltage

c) output current

d) jumpers

e) calibration

For modifications of operating modes see paragraph 5.2.

(3) Transducer type:

Identification of the transducer type for which the electronics has been set. For all changes of the transducer type, this adjustment has to be modified

Example: DC 231 cannot replace DC 230.

It is possible to replace one transducer by another of the same type and by keeping the same cable length. It is also advisable to repeat the adjustment of the R and C balance (see paragraph 4.2).

(4) Cable:

Identification of the type and length of cable for which the installation adjustment has been done.

For all modifications see paragraph 5.3.

(5) Test and calibration certificate

(6) Serial number

(7) Identification number:

VIC 112 version 01
Ident. Nr.: 214-112-000-XXX/XX/XX/XX

VERSION: 012

OPTION GROUPS

If one option group is identified by 99", a number S (SXXX) is to be added to the end of the identification number.
Example: 214-112-000-012/99/01/01/S001

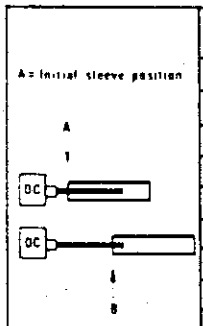
Ident. Nr.: 214-112-000-XXX/XX/XX/XX

OPTION GROUP 1: Transducer type

Option Nr.	Transducer type
01	DC 230
02	DC 231
03	DC 232

Ident. Nr.: 214-112-000-XXX/XX/XX/XX

OPTION GROUP 2: Core position (operating mode)



Core position	Voltage O/P V	Current O/P mA	Links	Option Nr.
A	0	0	1-3-5-10	01
B	+10	+20		
A	+10	+20	2-4-6-7	02
B	0	0		
A	+2	+4	1-3-8-10	03
B	+10	+20		
A	+10	+20	2-4-7-10	04
B	+2	+4		
A	-5	-10	1-3-5-6	05
B	+5	+10		

Ident. Nr.: 214-112-000-XXX/XX/XX/XX

OPTION GROUP 3: Power supply

Option Nr.	Power supply		
	50-60 Hz	Solder link	Fuse F1
01	220 VAC	c and d	50 mAT
02	240 VAC	c and e	50 mAT
03	110 VAC	a, b and d	100 mAT

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VIC 112 version 02
Ident. Nr.: 214-112-000-XXX/XX/XX/XX

VERSION: 021

OPTION GROUPS

If one option group is identified by 99", a number S (SXXX) is to be added to the end of the identification number.
Example: 214-112-000-021/99/01/01/S001

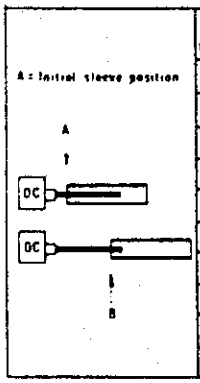
Ident. Nr.: 214-112-000-XXX/XX/XX/XX

OPTION GROUP 1: Transducer type

Option Nr.	Transducer type
01	DC 230
02	DC 231
03	DC 232

Ident. Nr.: 214-112-000-XXX/XX/XX/XX

OPTION GROUP 2: Core position (operating mode)



Core position	Voltage OP V	Current OP mA	Links	Option Nr.
A	0	0	1-3-5-10	01
B	+10	+20		
A	+10	+20	2-4-5-7	02
B	0	0		
A	+2	+4	1-3-8-10	03
B	+10	+20		
A	+10	+20	2-4-7-10	04
B	+2	+4		
A	-5	-10	1-3-5-6	05
B	+5	+10		

Ident. Nr.: 214-112-000-XXX/XX/XX/XX

OPTION GROUP 3: Power supply

Option Nr.	Power supply		
		Solder link	Fuse F1
01	12 VDC	a	800 mAT
02	24 VDC	b	400 mAT

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4.2. Adjustment of R and C balance

This adjustment is identical for all versions of VIC 112 and must be effected before the adjustment of the outputs.

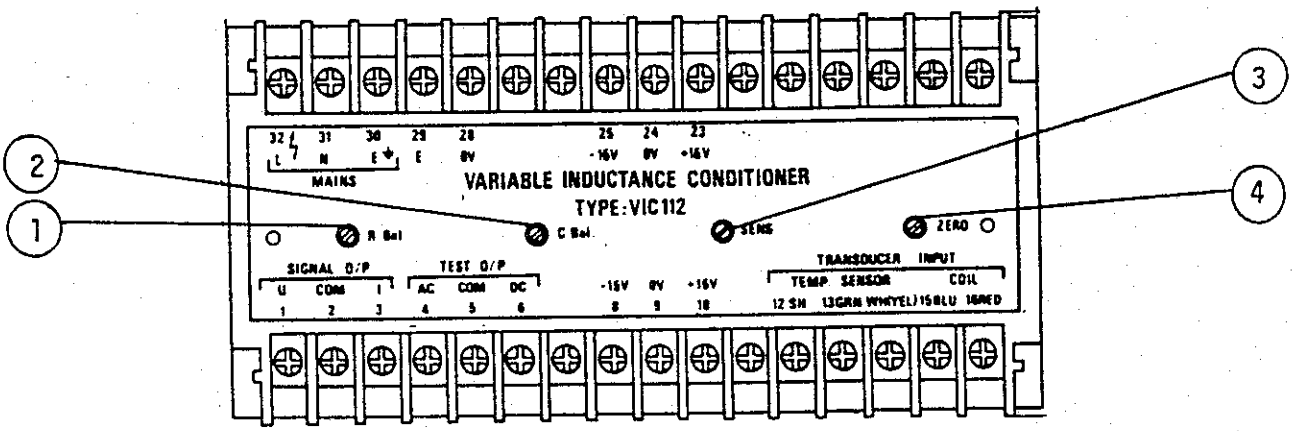


Fig. 7 (front view)

- Connect an AC millivoltmeter (scale 100 mV) between terminals 4 (AC test) and 5 (COM)
- Adjust with potentiometers R balance and C balance (① and ② in figure 7) the lowest possible voltage on terminal 4 (AC test)
- Repeat R and C balance adjustment several times
- Remove millivoltmeter AC
- Connect DC millivoltmeter (scale 100 mV) between terminals 6 (DC test) and 5 (COM)
- Adjust with potentiometer C balance (② in figure 7) the voltage of DC test to 0 V
- Remove millivoltmeter

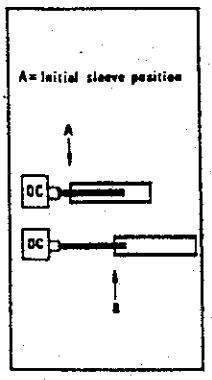


Fig. 8

4.3. Output adjustment

Select from 4.3.1 to 4.3.5 the paragraph which corresponds to the version used.

4.3.1. Version 214-112-000-XXX /XX/01/XX

a) Output voltage

- Perform R and C balance adjustments (paragraph 4.2.)
- Connect DC voltmeter between terminals 1 (U O/P) and 2 (COM)
- Enter the transducer tube into position A of figure 8.
- Adjust voltage (U O/P) to 0 V with potentiometer ZERO (④ of figure 7)
- Pull out tube to rated measuring distance (position B of figure 8)
- Adjust output voltage to 0 V with potentiometer SENS (③ of figure 7)

b) Output current

Proceed in the same way as described in a), but connect in series a DC milliampmeter between terminals 3 (I O/P) and 2 (COM).

Adjusted values: Tube in position A, figure 8 = 0 mA

Tube in position B, figure 8 = +20 mA

4.3.2. Version 214-112-000-XXX /XX/02/XX

a) Output voltage

- Perform R and C balance adjustments (paragraph 4.2)
- Connect DC voltmeter between terminals 1 (U O/P) and 2 (COM)
- Enter the transducer tube into position A of figure 8.
- Adjust output voltage to +10 V with potentiometer ZERO (④ of fig. 7)
- Pull out tube to rated measuring distance (position B of figure 8)
- Adjust output voltage to 0 V with potentiometer SENS (③ of figure 7)

b) Output current

Proceed in the same way as described in a), but connect in series a DC milliampmeter between terminals 3 (I O/P) and 2 (COM).

Adjusted values: Tube in position A, figure 8 = +20 mA

Tube in position B, figure 8 = 0 mA

4.3.3. Version 214-112-000-XXX /XX/03/XX

Proceed in the same way as described in 4.3.1, but take the following output values:

	Current	Voltage
tube in position A, figure 8 =	+4 mA	+2 V
tube in position B, figure 8 =	+20 mA	+10 V

4.3.4. Version 214-112-000-XXX /XX/04/XX

Proceed in the same way as described in 4.3.2, but take the following output values:

	Current	Voltage
tube in position A, figure 8 =	+20 mA	+10 V
tube in position B, figure 8 =	+4 mA	2 V

4.3.5. Version 214-112-000-XXX /XX/05/XX

Proceed in the same way as described in 4.3.1, but take the following output values:

	Current	Voltage
tube in position A, figure 8 =	-10 mA	-5 V
tube in position B, figure 8 =	+10 mA	+5 V

5. CALIBRATION

The operations described in paragraphs 5.1. and 5.2. imply the opening of the housing and demand certain safety measures.

First insert a screw driver into the openings on the side of the housing and press lightly until the lid opens. Then remove the whole by hand. The circuits are held to the lid by the connector. The circuits can be removed by pulling them backwards. Remove the power supply circuit first.

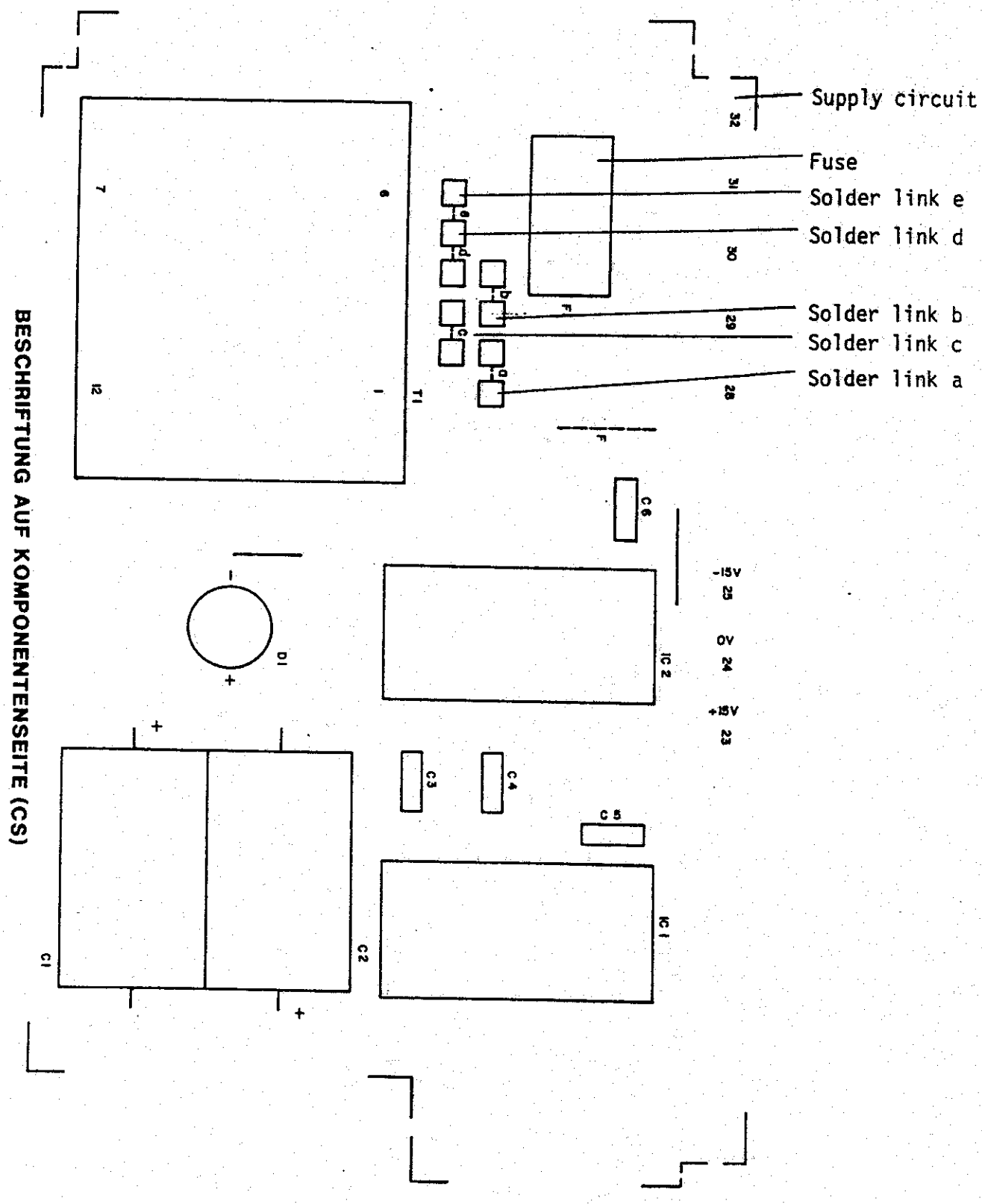
Before closing replace the conditioner circuit first, the power supply circuit next and plug both to the lid.

CAUTION: When plugging the circuit boards make sure that they are placed correctly. The circuit board contact numbers must correspond with the screw terminal contact numbers.

5.1. Mains power supply

To connect the VIC conditioner to mains supply, the solder links of the supply circuit (figure 9) must be placed according to the below table:

	mains voltage	fuse	solder link
VIC 112 Version 01	110 V (50 - 60 Hz)	100 mAT	a, b and d
	220 V (50 - 60 Hz)	50 mAT	c and d
	240 V (50 - 60 Hz)	50 mA	c and e
VIC 112 Version 02	12 VDC	800 mAT	a
	24 VDC	400 mAT	b



BESCHRIFTUNG AUF KOMPONENTENSEITE (CS)

Fig. 9

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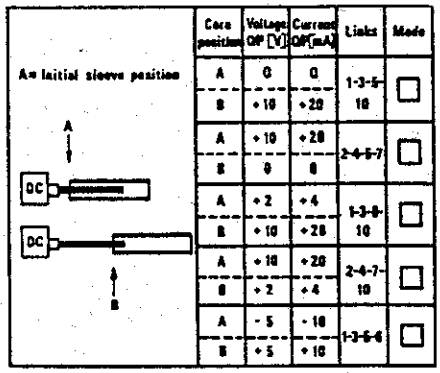
5.2. Operating mode

To modify the operating mode, the conditioner jumpers have to be placed according to the below table.

Then the adjustments of R and C balance and of outputs can be effected according to paragraphs 4.1. and 4.2.



Core position	Voltage OP [V]	Current OP [mA]	Links	Mode
A	0	0	1-3-5-10	
B	+10	+20		
A	+10	+20	2-4-6-7	
B	0	0		
A	+2	+4	1-3-8-10	
B	+10	+20		
A	+10	+20	2-4-7-10	
B	+2	+4		
A	-5	-10	1-3-6-9	
B	+5	+10		

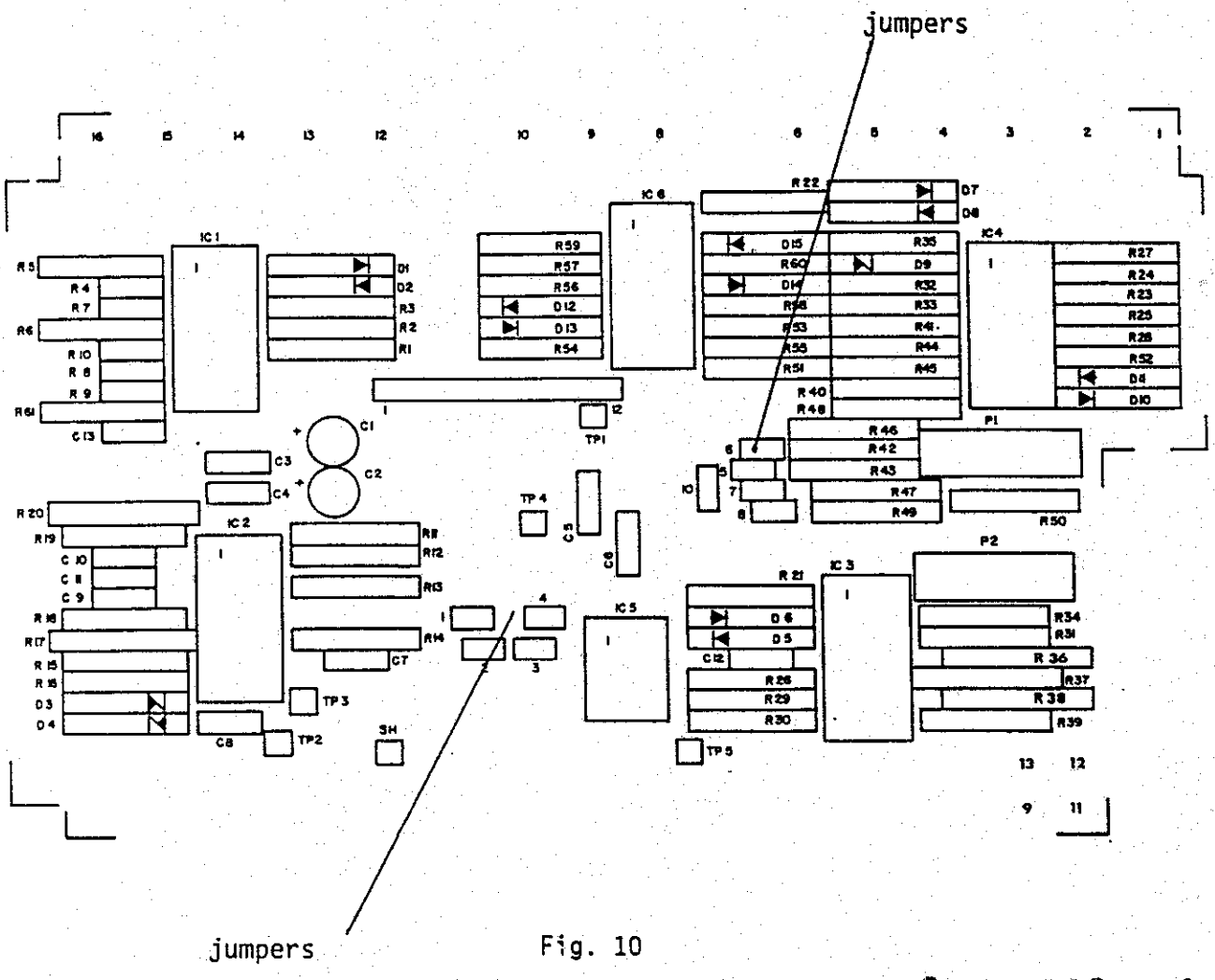


Fig. 10

3M2-770-36-297

5.3. Cable length

The length of the cable connecting the transducer DC and the electronics VIC 112 is important for the calibration of the system.

Modifications of the cable length are only possible between 2 and a maximum of 30 m, and we recommend to readjust the R and C balance after every modification.