

## **Service Manual**

# **BendMate 2000**

## **BM 2000**

### **Installation 2.1**

**CNC Control** : VectoNum-ECO  
**Amplifier** : Mayr  
**I/O Modul** : Digi I/O+ C.-Board

**from**  
**Machine No.** : 174.021



**Bitte beachten!**

Diese Dokumentation beschreibt die Anlage bzw. das Gerät mit allen Zusätzen und Sonderausstattungen! Bindend für den Lieferumfang ist der Liefervertrag.

Vervielfältigungen dieser Unterlagen sowie Verwertung ihres Inhalts, auch auszugsweise, sind ohne unsere ausdrückliche Genehmigung nicht statthaft. Konstruktionsänderungen vorbehalten.

ELCEDE GMBH D-73230 KIRCHHEIM/TECK

**Please Note!**

This manual describes apparatus including all auxiliary and special equipment. The items delivered in any particular case will be in accordance with the Delivery Contract.

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ELCEDE GMBH D-73230 KIRCHHEIM/TECK

## LED –Error-Message for BM 2000 Inst. 2.1

### Amplifier - Axis X und C:

○	Operation	LED 1: green	<i>see internal Fuse 5 A / T</i>
○	Fault	LED 2: red	<i>Amplifier Board defective</i>
○	→ I max	LED 3: yellow	<i>Current load too high</i>
○	Release	LED 4: yellow	<i>see relay K 8</i>

### Power Supply:

○	T1 Power	LED 1: green	<i>Power Supply 24 V / 4,2 A</i>
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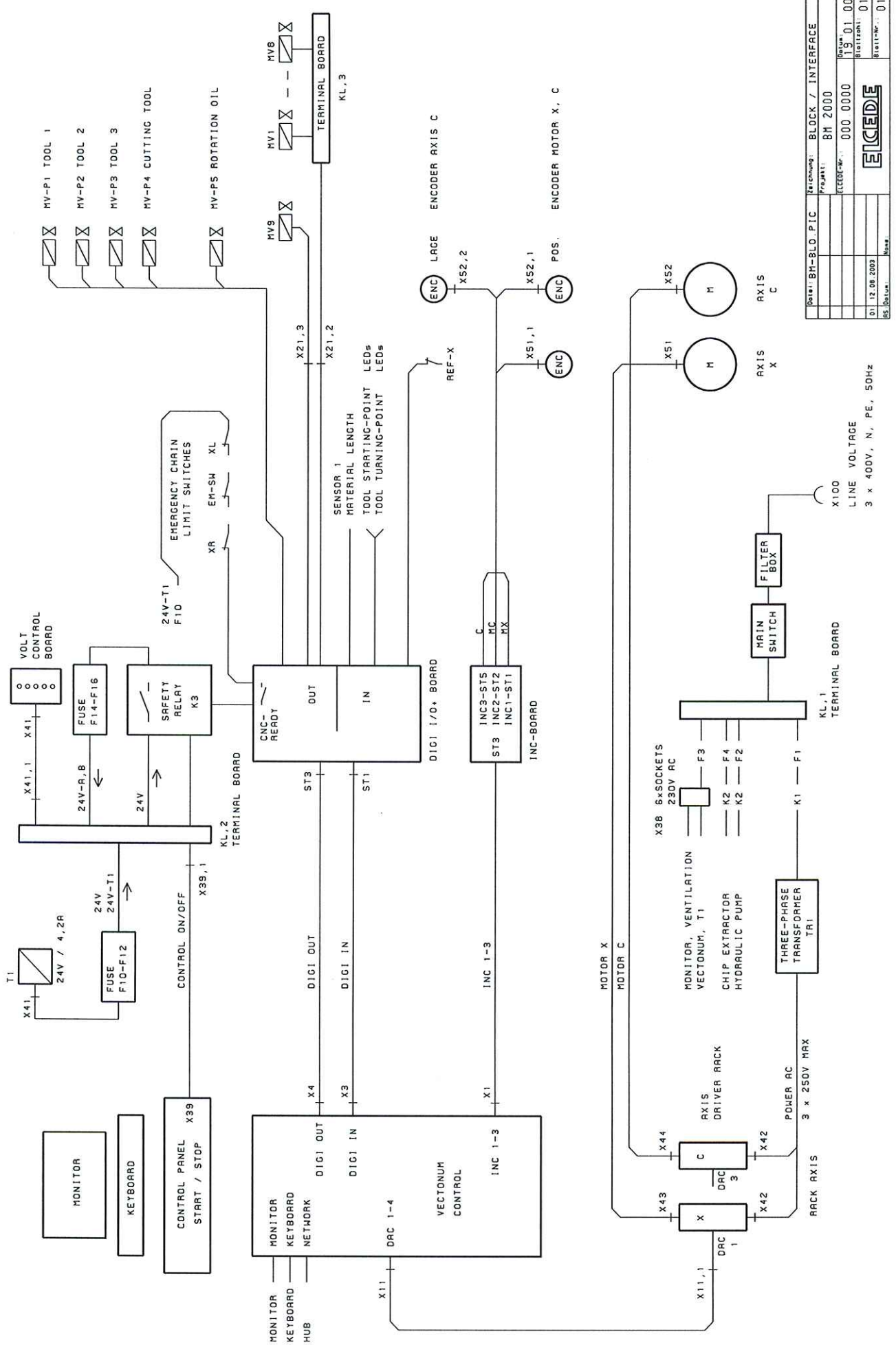
### Voltage Control Board:

○	F 11	LED 1: green	<i>24 V Fuse 3,15 A / T</i>
○	F 14	LED 2: green	<i>24 V Fuse 2 A / T</i>
○	F 15	LED 3: green	<i>24 V Fuse 1,6 A / T</i>
○	F 12	LED 4: green	<i>24 V Fuse 2 A / T</i>
○	F 12	LED 5: green	<i>24 V Fuse 2 A / T</i>
○	MP 7 = F 10	LED 6: green	<i>24 V Fuse 200 m A / T</i>
○	MP 12	LED 7: green	<i>Limit Switch Control</i>
○	MP 2	LED 8: green	<i>CNC Ready</i>

**Sicherungssatz f. BM 2000  
Fuse Set for BM 2000**

**Nr.: 806. 0010**

<b>F 10</b>	<b>200mA / T</b>	<b>600.0209</b>
<b>F 11</b>	<b>3,15 A / T</b>	<b>600.0221</b>
<b>F 12</b>	<b>2 A / T</b>	<b>600.0219</b>
<b>F 14</b>	<b>2 A / T</b>	<b>600.0219</b>
<b>F 15</b>	<b>1,6 A / T</b>	<b>600.0218</b>
<b>T 1</b>	<b>800mA / T</b>	<b>600.0215</b>
<b>PC</b>	<b>4 A / T</b>	<b>600.0222</b>
<b>DIGI I/O+</b>	<b>6,3 A / T</b>	<b>600.0224</b>
<b>LAMP L1</b>	<b>30 V / 1, 2 W BA9s</b>	<b>607.0003</b>



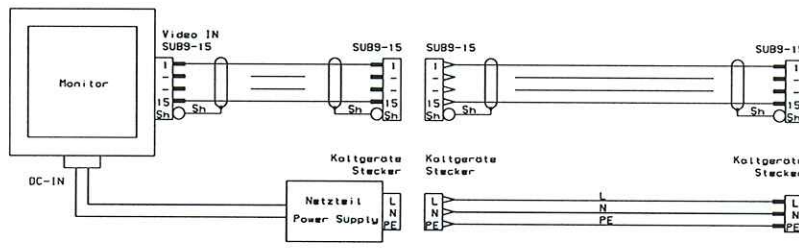
Detail: BM-BLO-PIC	Verzeichnung: BLOCK / INTERFACE
Proj.Nr.: BH 2000	Reviz.: 19.01.00
Exec.Nr.: 000 0000	Blattzahl: 01
Dt: 12.08.2003	Blatt.Nr.: 01
GS: [Signature]	Blatt.Nr.: 01

LINE VOLTAGE  
3 x 400V, N, PE, 50Hz





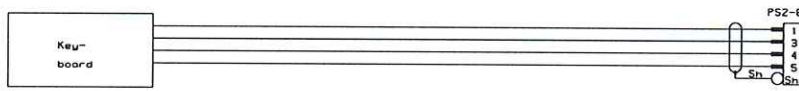
Titel: BH-DAT.PIC	Zerlegung	DATA TRANS. TERMINALS
Projekt: BH 2000	Proj-Nr:	19 01 00
ECCEBE-Nr.: 000.0000	Station: 01	Blatt-Nr.: 01
01 23 08 2002	Rev:	
ES Date:		
<b>ELCEDE</b>		



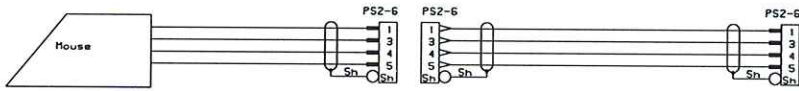
VectoNum  
Monitor Terminal

Socket  
Power Supply

N=L3 only by  
POWER SUPPLY 3x208V/220V

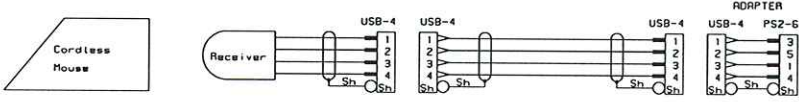


VectoNum  
Keyboard Terminal



VectoNum  
House Terminal

ODER  
or



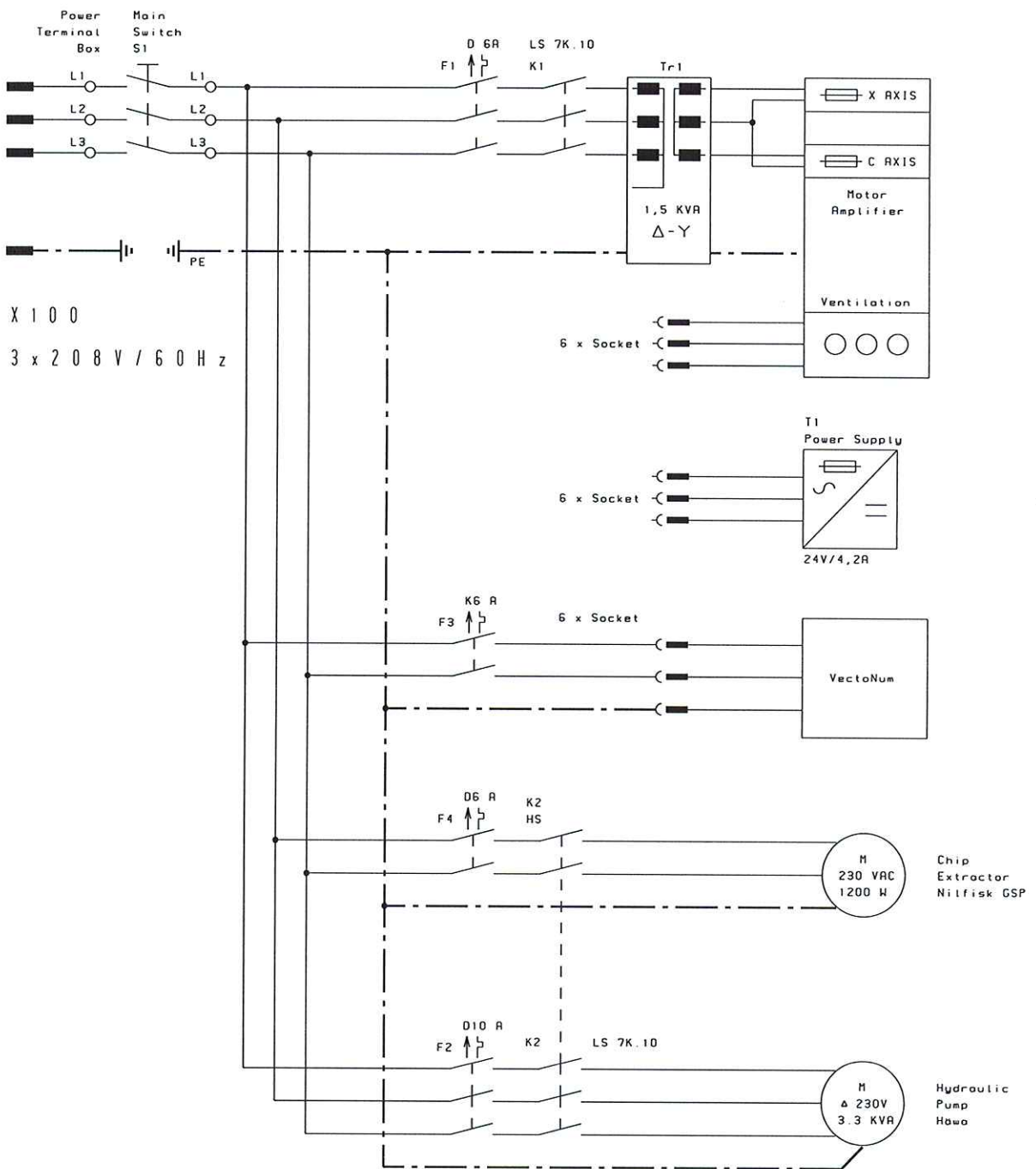
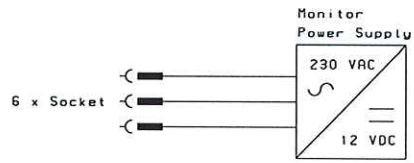
VectoNum  
House Terminal



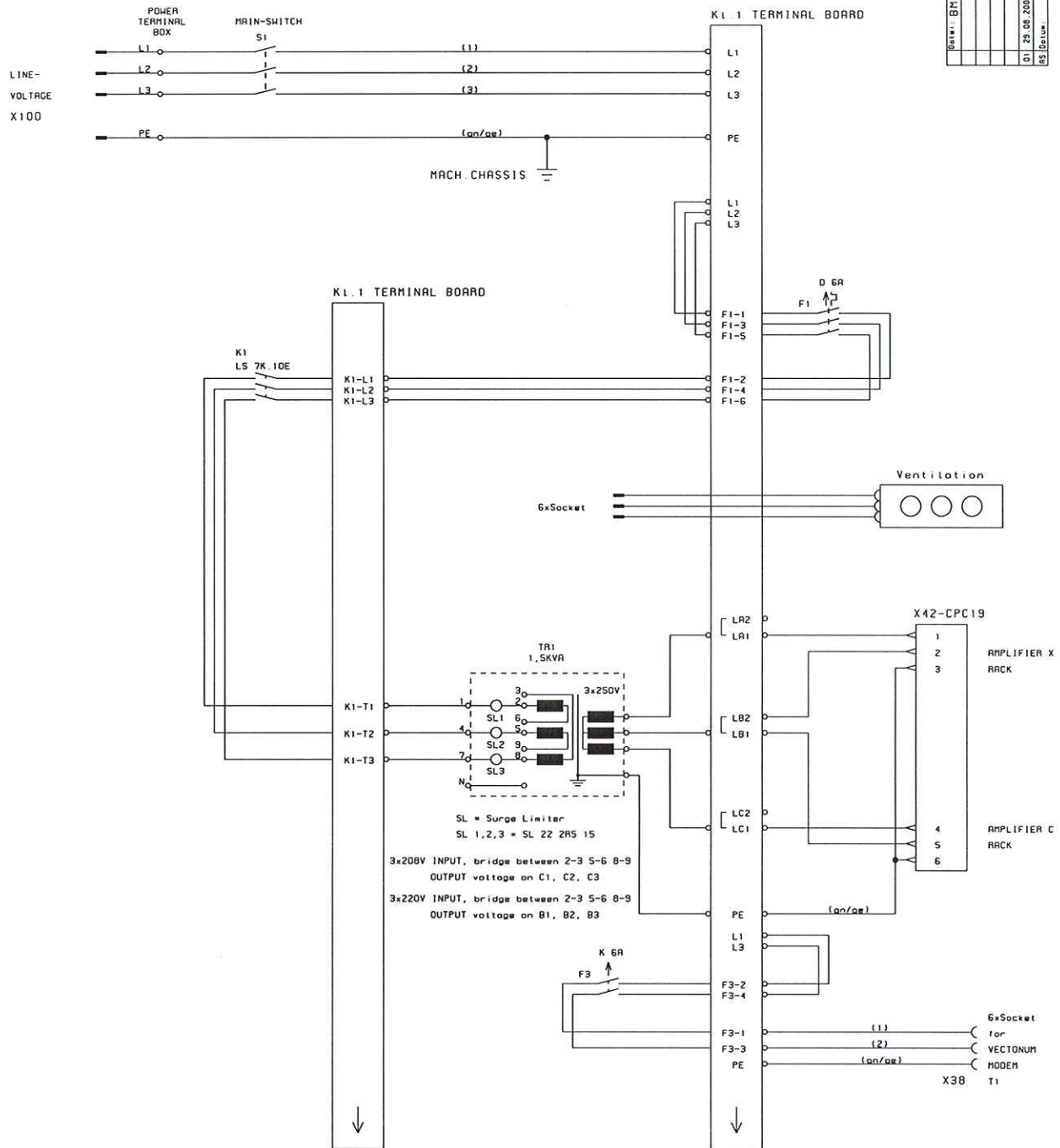
## **Mains Supply**

**3 x 208V / 220V 60 Hz**

Order: BMA-CUR.PIC	Execution: SUPPLY OF CURRENT
Project: 8M 2000	Day: 19.01.00
ELCER-№: 000.0000	Electrification: 01
	№: 01
22.07.2003	№: 01
RS	№: 01

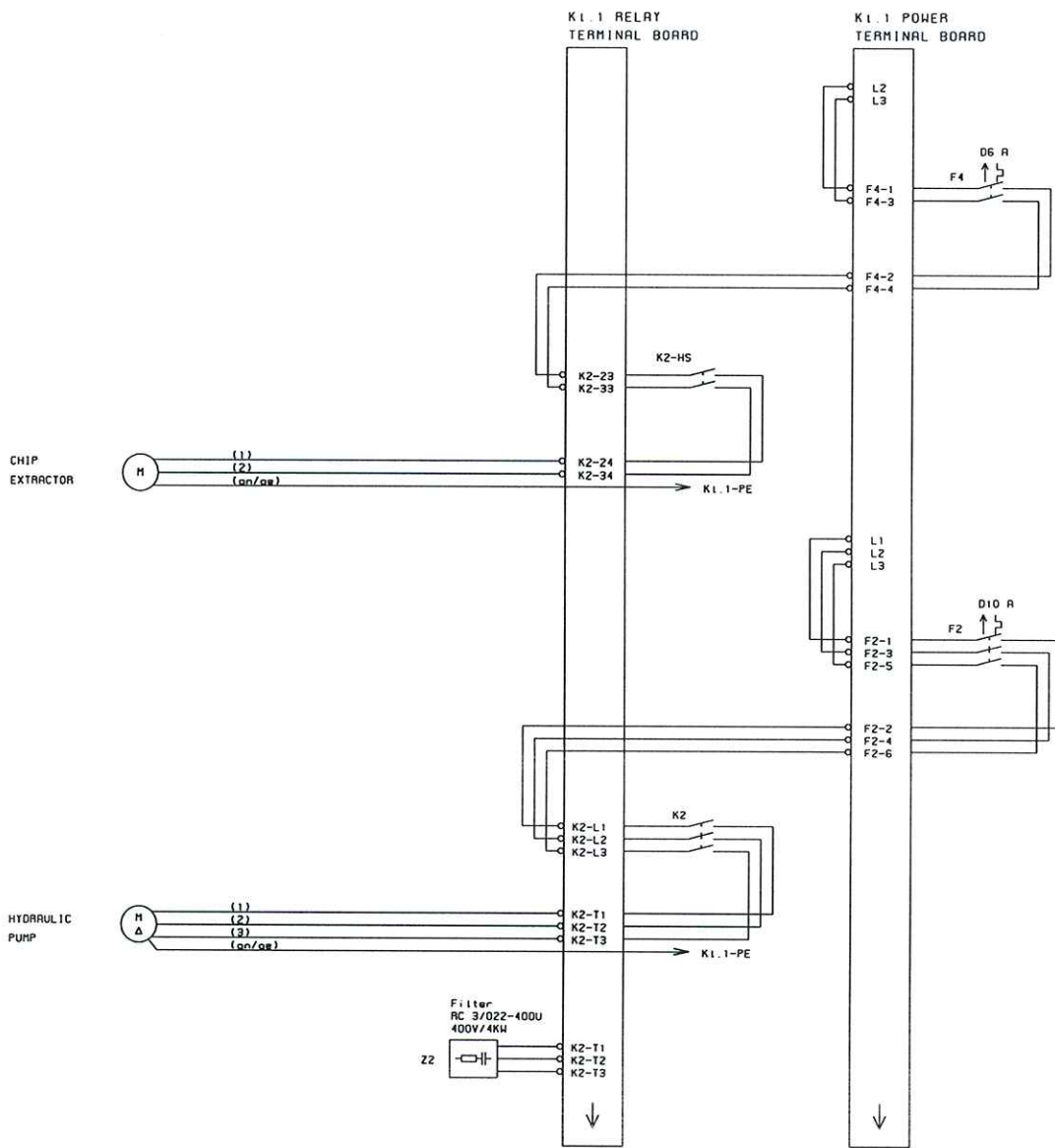


Doc No.: BMA-AC-PIC	Revision: AC-CONNECTION
Project: BM 2000	Date: 19 01 00
ELCEBE No.: 000 0000	Revision: 01
<b>ELCEBE</b>	
AS Date: 23 08 2002	Name: 01



Interface No.: X38, X42, X100, Mojr-X1/2,  
K1.1 Terminal Board

Date: BMA-PEX.PIC		Zerlegung: PUMP / EXTRACTOR	
Project: BM 2000		Drum: 13.01.00	
ECCODE-Nr.: 000 0000		Ektion: 01	
Blatt-Nr.: 01		Blatt-Nr.: 01	
01	22.11.2002	Name:	
05	Druck:		

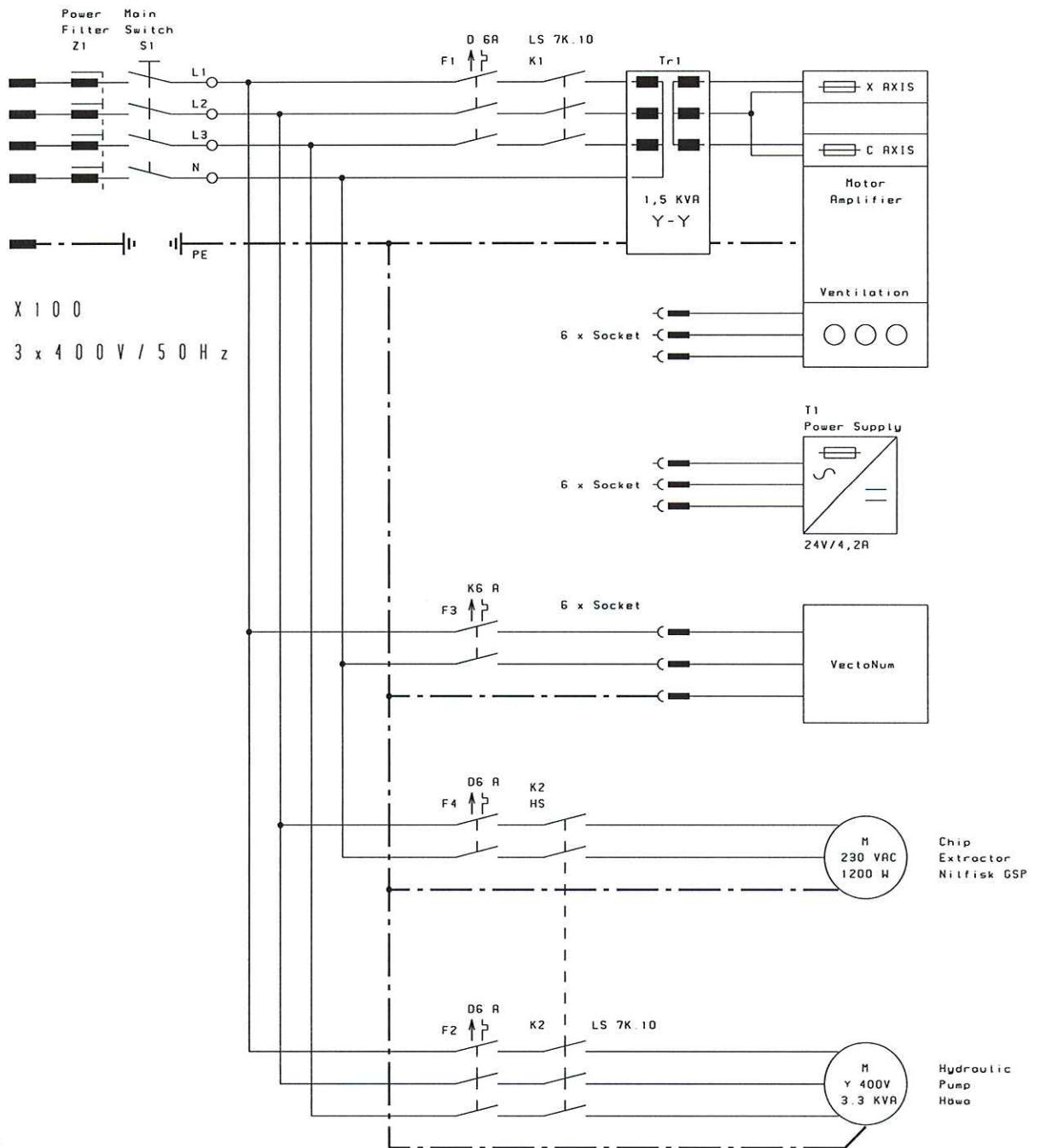
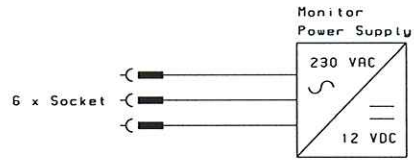


Interface No.: Chip Extractor, Hydraulic Pump,  
KI.1 Relay + Power Terminal Board

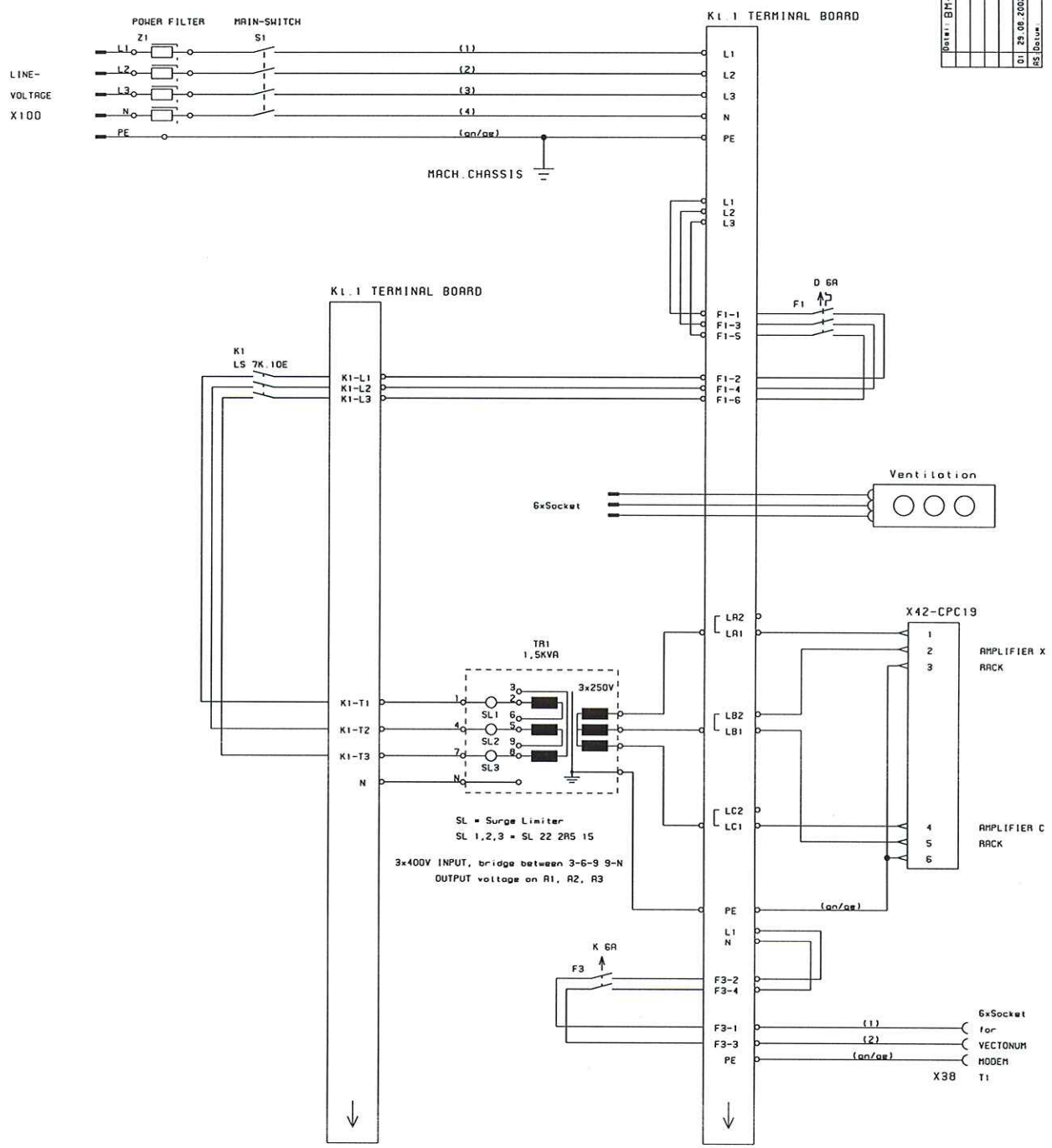
# **Mains Supply**

**3 x 400V 50 Hz**

Project Name:	BH-CUR-PIC	Project No.:	BM 2000
Project Title:	SUPPLY OF CURRENT	Project Date:	19.01.00
Project No.:	000.0000	Project No.:	01
Project Date:	21.07.2003	Project No.:	01
Project Name:	ELCEDIA		

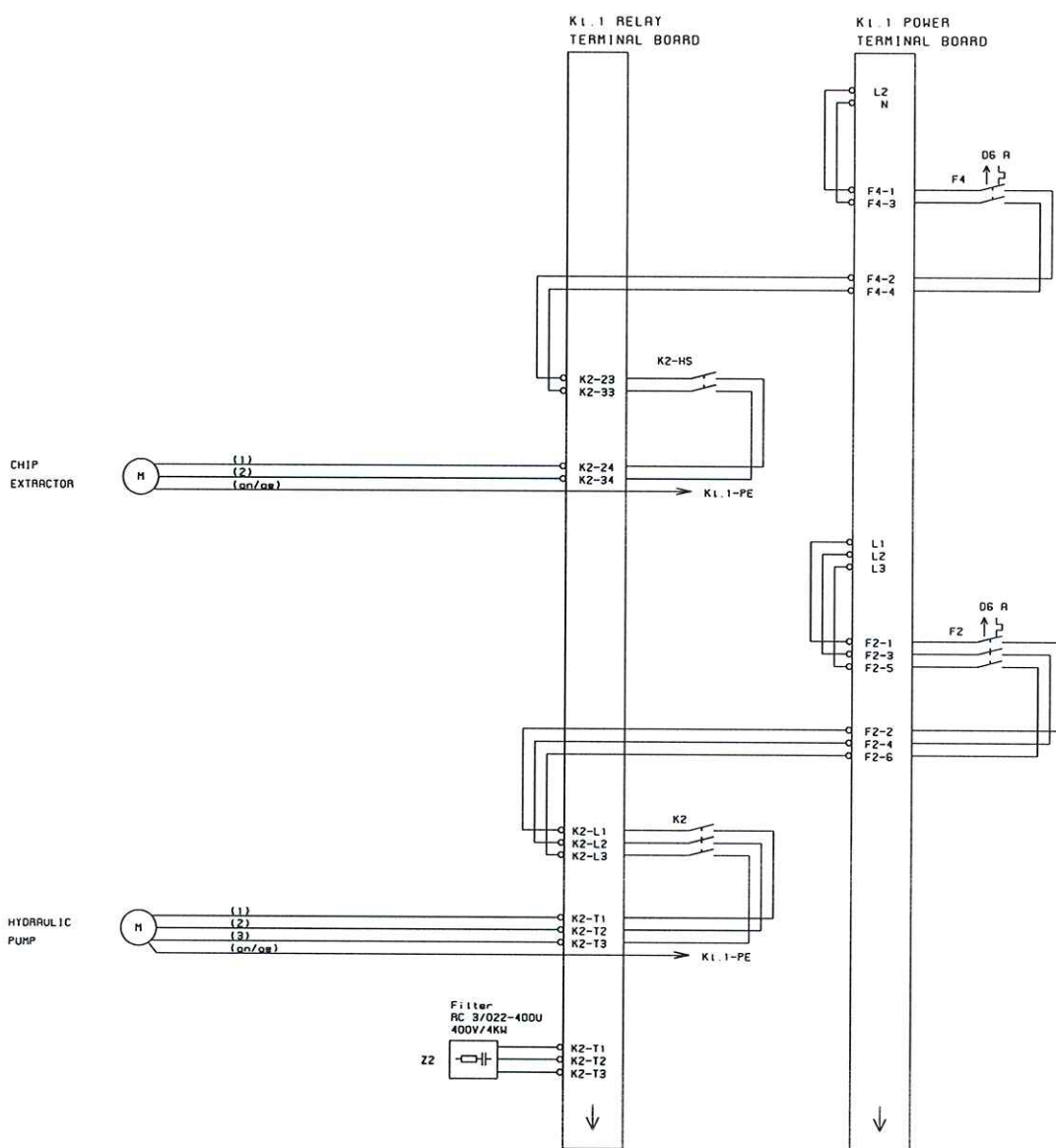


Blatt: BM-AC-PIC	Bezeichnung: RC-CONNECTION
Projekt: BM 2000	Datum: 19.01.00
ELCEB-Nr.: 000.0000	Blatt/Nr.: 01
<b>ELCEDE</b>	
01 23.08.2002	Blatt/Nr.: 01
RS (Autor)	Blatt/Nr.: 01



Interface No.: X38, X42, X100, Mayr-X1/2,  
K1.1 Terminal Board

Order No.	BM-PEX-PIC	Zeichnung	PUMP / EXTRACTOR
Project No.	BM 2000	Scale	1:1
ECCEBE-Nr.	000.0000	Electron No.	01
OS Date	01.12.11.2002	Blatt-Nr.	01
<b>ELCEDE</b>			

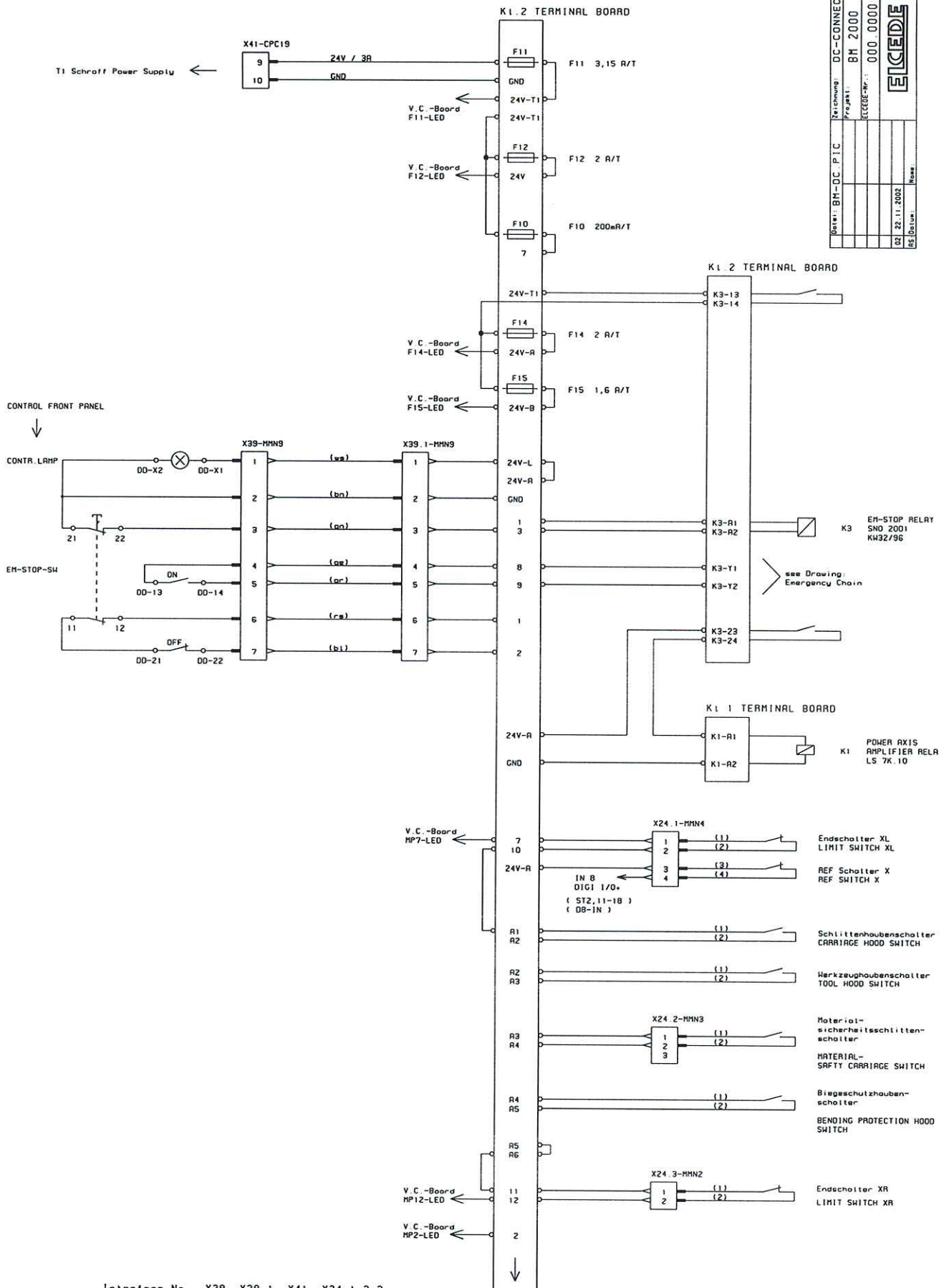


Interface No.: Chip Extractor, Hydraulic Pump,  
K1.1 Relay + Power Terminal Board



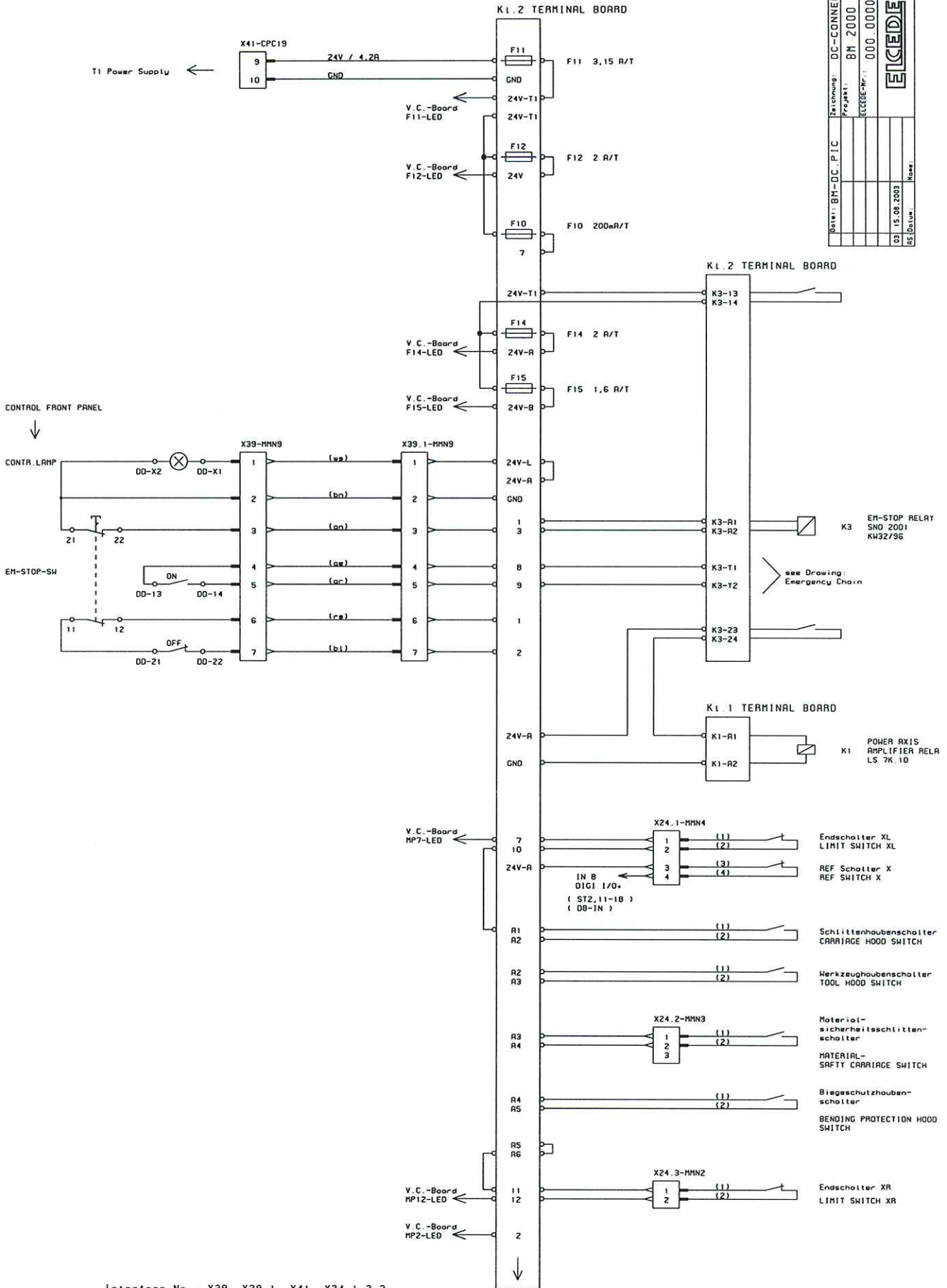
# DC Supply

Date: BM-DC-PIC		Zeichnung: DC-CONNECTION	
Projekt: BM 2000		Volumen: 01	
ELCEDE-Nr.: 000.0000		Blatt-Nr.: 01	
02.22.11.2002		Blatt-Nr.: 01	
IS: 02.11.2002		Name:	



Interface No.: X39, X39.1, X41, X24.1,2,3,  
K1.2 Terminal Board

Name: BH-DC-PLC		Zusammenhang: DC-CONNECTION	
Projekt: 8M 2000		Datum: 19.01.00	
ELENOR-Nr.: 000.0000		Blatt-Nr.: 01	
03.15.08.2003		Blatt-Nr.: 01	
RS-Datum:		Name:	
		<b>ELCEDE</b>	

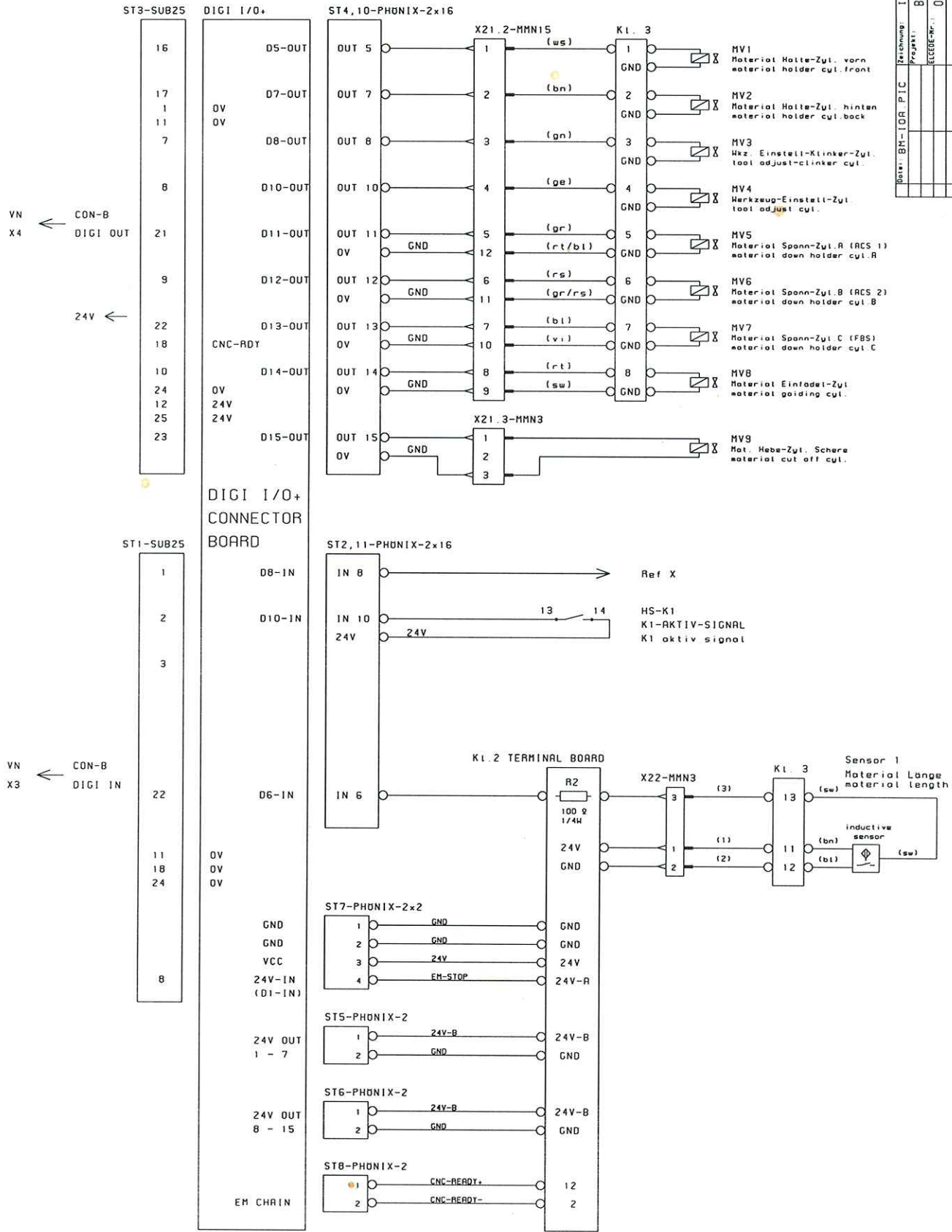


Interface No.: X39, X39.1, X41, X24.1,2,3,  
K1.2 Terminal Board

Teil (A)

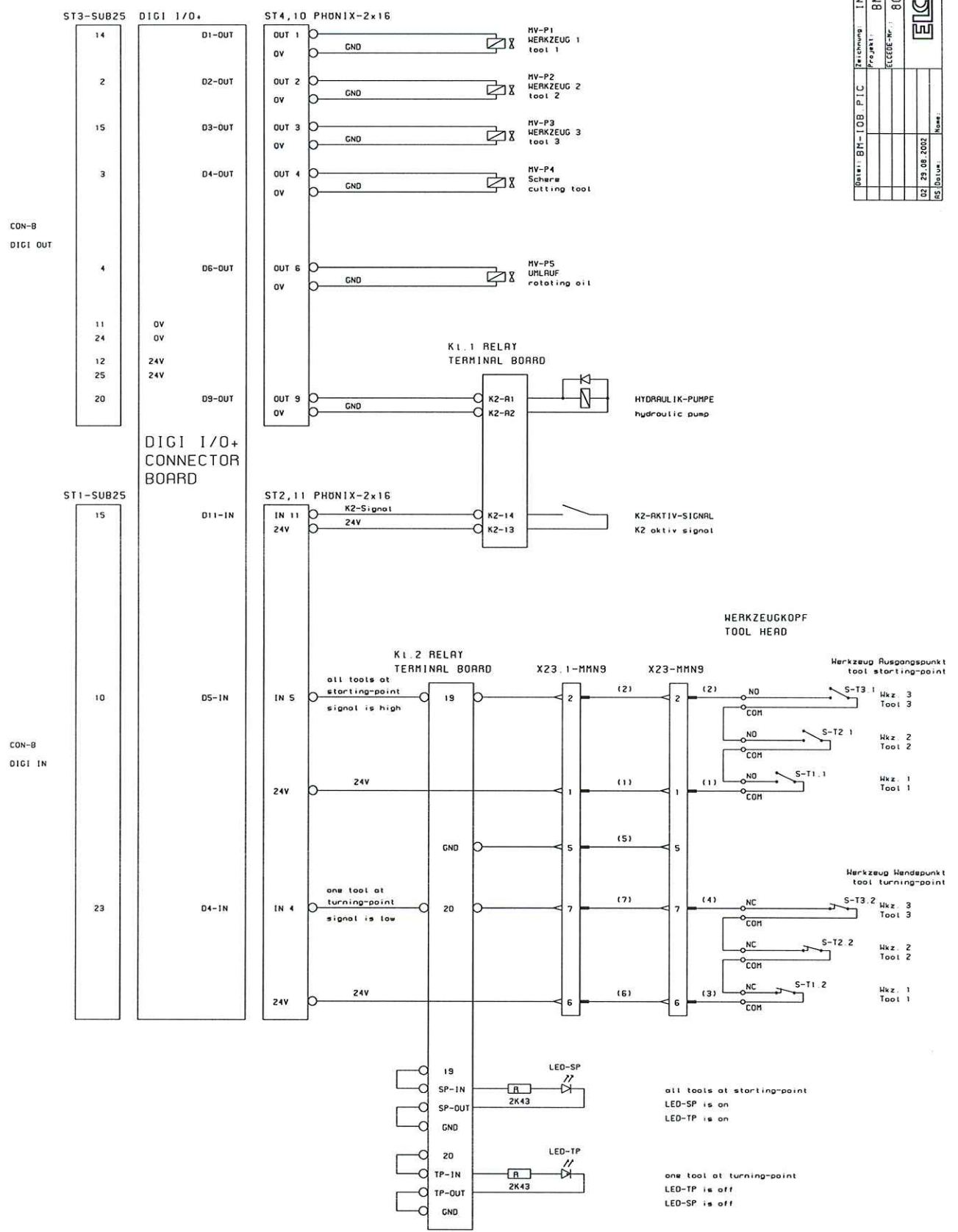
part (A)

Projekt:	BM 2000
Rechnung:	IN/OUT CON B (A)
ELCODE-Nr.:	000.0000
Datum:	19.01.00
Bruttogr.:	01
Bruttogr.:	01
Bruttogr.:	01
<b>ELCIDE</b>	
Name:	



Teil (B)  
part (B)

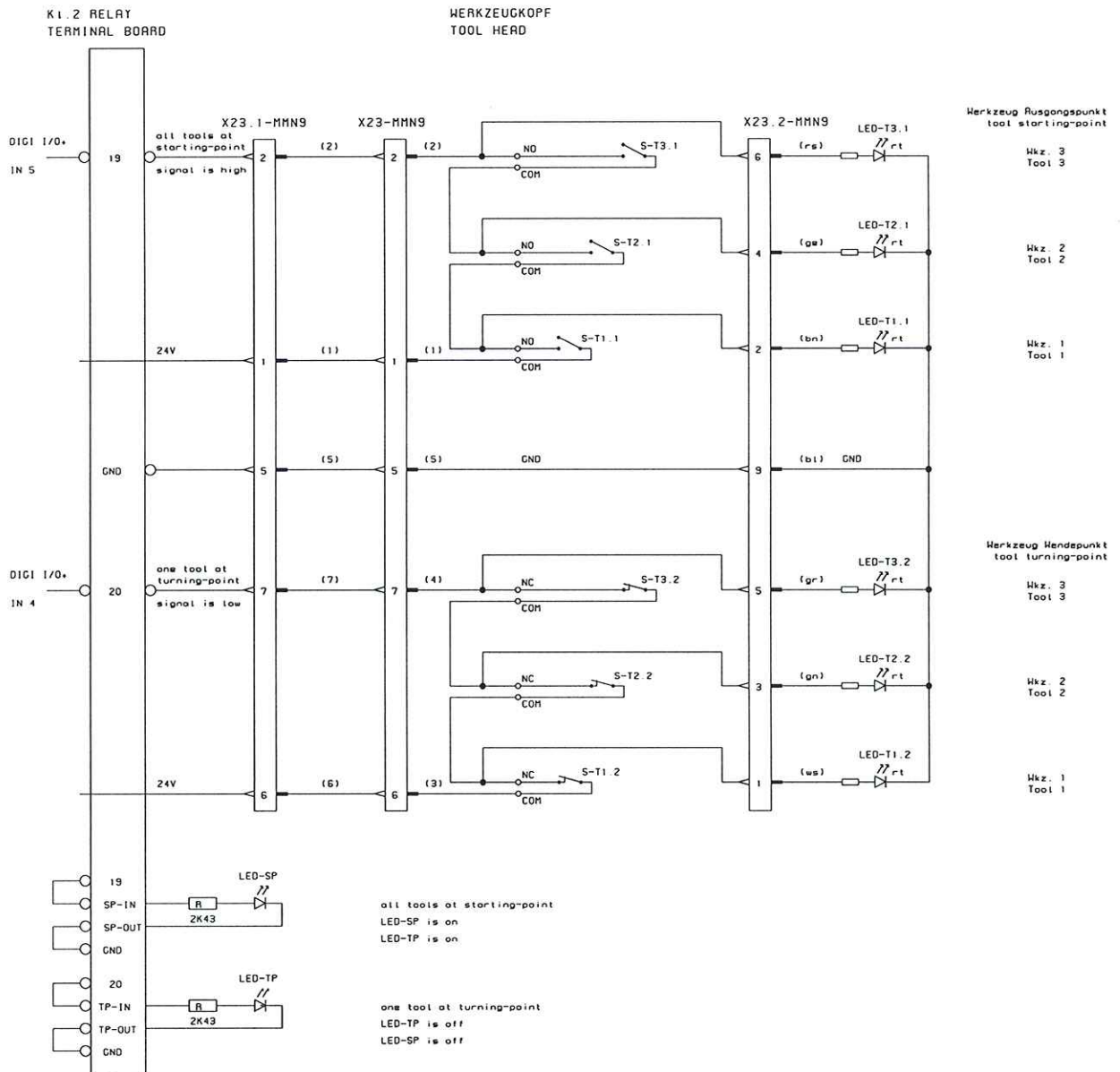
Order: BM-LOB	PIC	Function: IN/OUT CON B (B)
Project: 8M 2000	Quantity: 807,0000	Date: 19.01.00
ELCUBE-Nr.: 807,0000	Sheet: 01	Sheet: 01
<b>ELCUBE</b>		
Date: 23.08.2002	Name:	RS



Ab Maschinen-Nr.: 174.020

from machine no.: 174.020

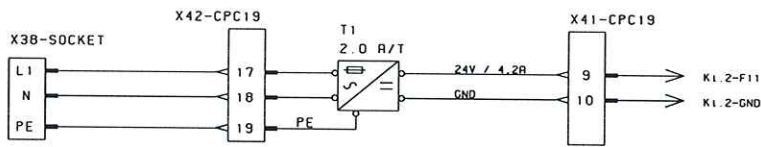
Unter-Nr.:	BH-TM-PIC	Zeichnung:	TOOL HEAD
Projekt-Nr.:		Projekt-Nr.:	BH 2000
ECR-Nr.:		ECR-Nr.:	807.0000
Blatt-Nr.:		Blatt-Nr.:	01
Blatt-Nr.:		Blatt-Nr.:	01
<b>ELCIDE</b>			



Interface Nr.: X23, X23.1, X23.2, KI.2

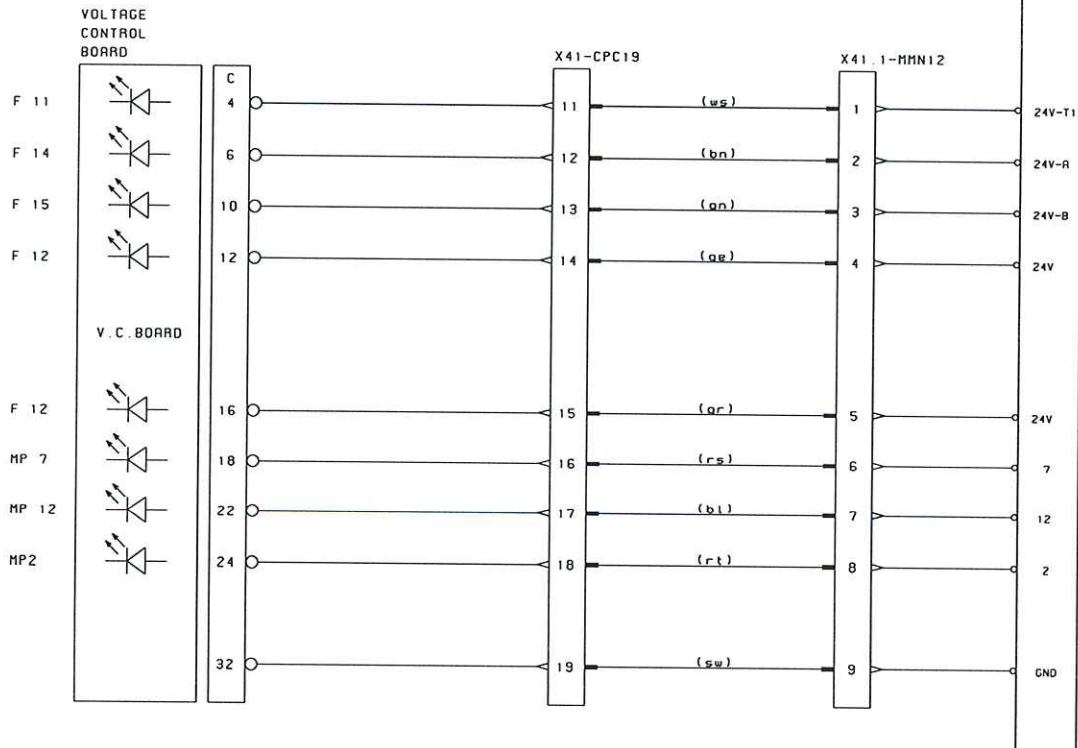
Zeichnung:	RECK PART R DC-SUPPLY
Projekt:	BH 2000
ECCODE-Nr.:	000.0000
Blatt-Nr.:	19.01.00
Blattanzahl:	01
Blatt-Nr.:	01
<b>EICEDIE</b>	
DZ:	21.07.2003
RS:	02.08.03
Name:	

UNTIL MACHINE No: 174.031  
T1 Schroff POWER SUPPLY 24V/3A  
INPUT FUSE : 0.8 A/T  
OUTPUT FUSE : 4.0 A/T



N=L3 only by  
POWER SUPPLY 3x208V

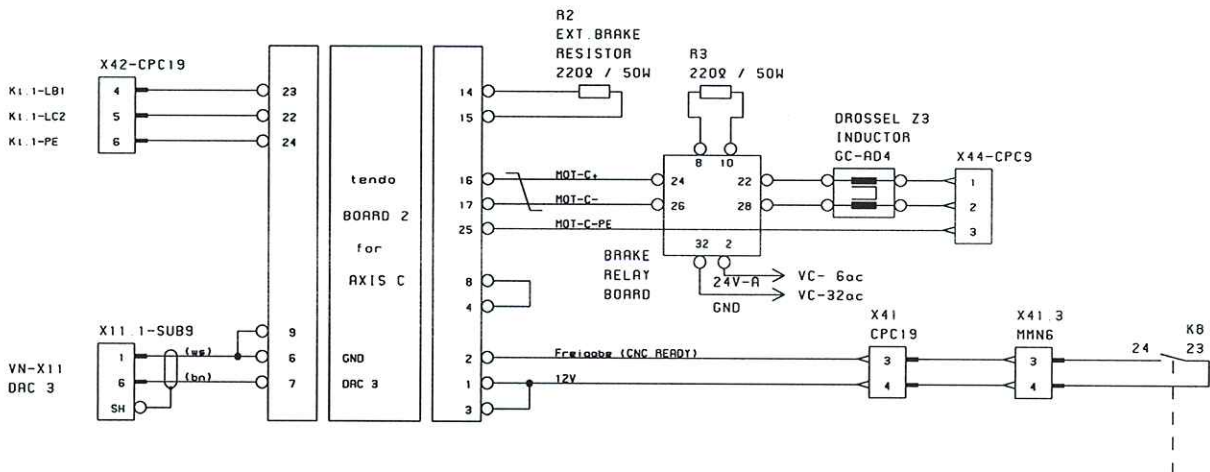
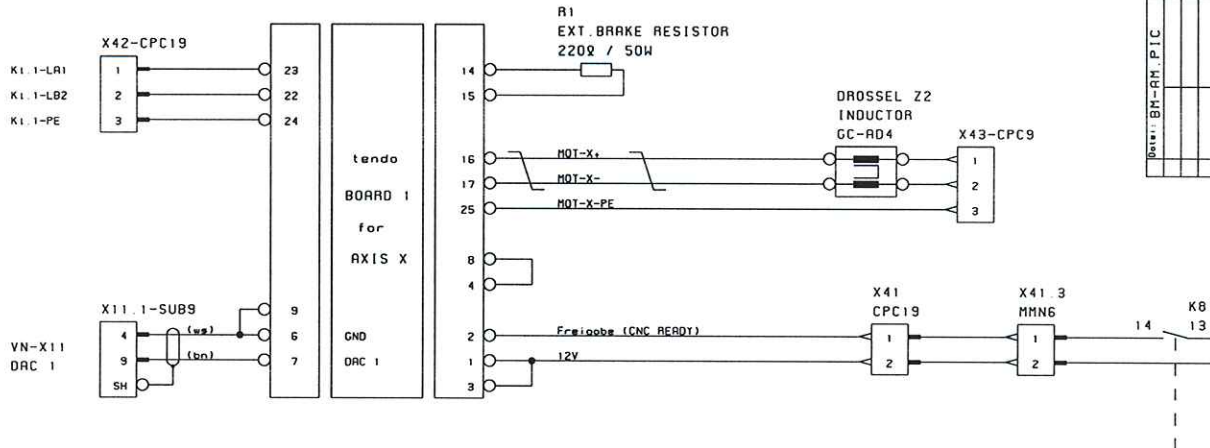
K1.2 TERMINAL BOARD



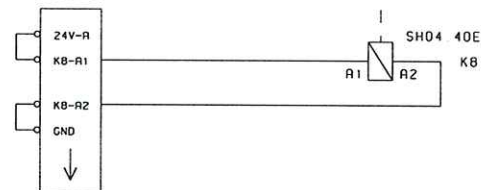
Interface No.: X38, X41, X41.1, X42,  
V.C.-Board, K1.2 Terminal Board

Nummerierung der Bauteile gilt nur im Achs-Verstärker-Rack  
 Numbers for electronic elements only for the amplifier rack

Rechnung:	AMPLIFIER
Projekt:	BM 2000
ELCDE-Nr.:	000 0000
Blattzahl:	01
Blatt-Nr.:	01
<b>ELCDE</b>	
Datum:	19.01.00
Rev.:	01
Rev.:	01

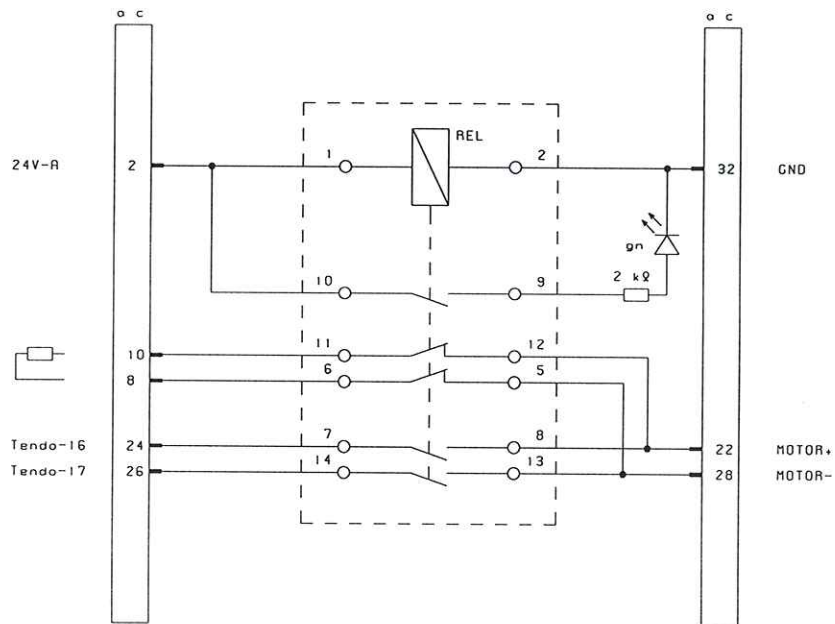


K1.2 TERMINAL BOARD

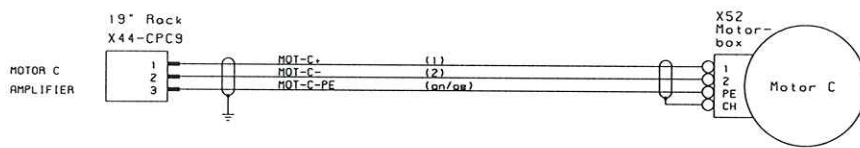
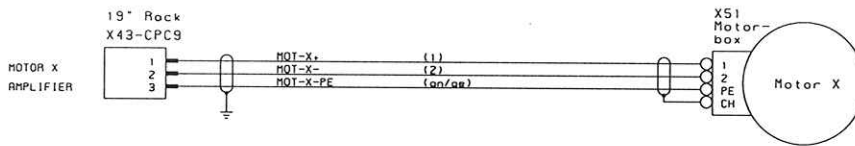


Interface No.: X11.1, X41, X41.3, X42, X43, X44,  
 AMPLIFIER CONNECTION BOARD 1,2,  
 BRAKE RELAY BOARD, K1.2 Terminal Board





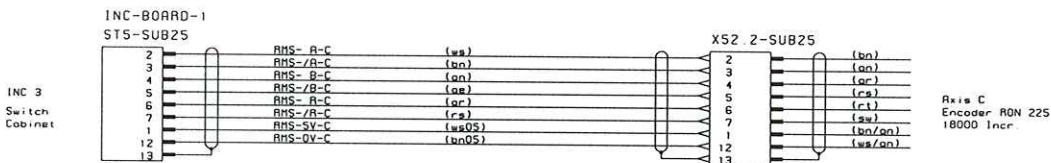
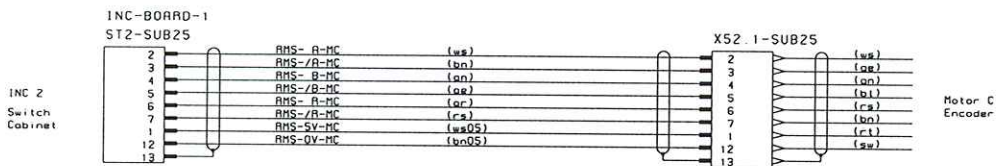
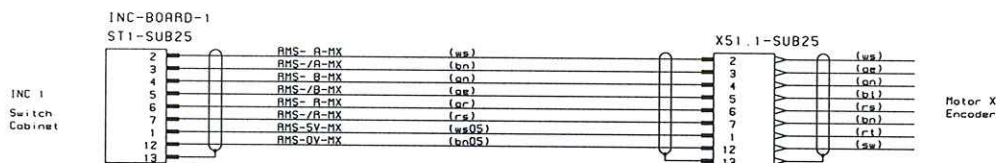
Blatt-Nr.: BM-BRA-PIC	Zeichnung: BRAKE RELAY
Projekt: BM 2000	Blatt-Nr.: 19 01 00
ETC00-Nr.: 000.0000	Blatt-Nr.: 01
<b>ETC00</b>	
PS-Status:	Notiz:



Interface No.: X43, X44, X51, X52,  
AMPLIFIER CONNECTION BOARD X, C

Motor: BM-MOT.PIC		Bezeichnung: MOTOR CONNECTION	
Projekt: BM 2000		Datum: 18.01.00	
ETEBE-Nr.: 000.0000		Blattzahl: 01	
BS-Status:		Name:	
		<b>ELCEDI</b>	
		Blatt-Nr.: 01	

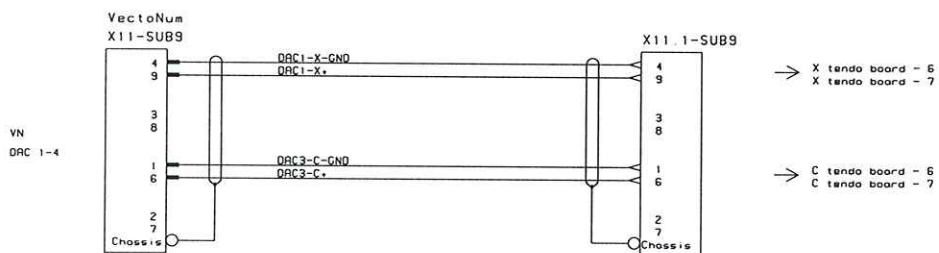
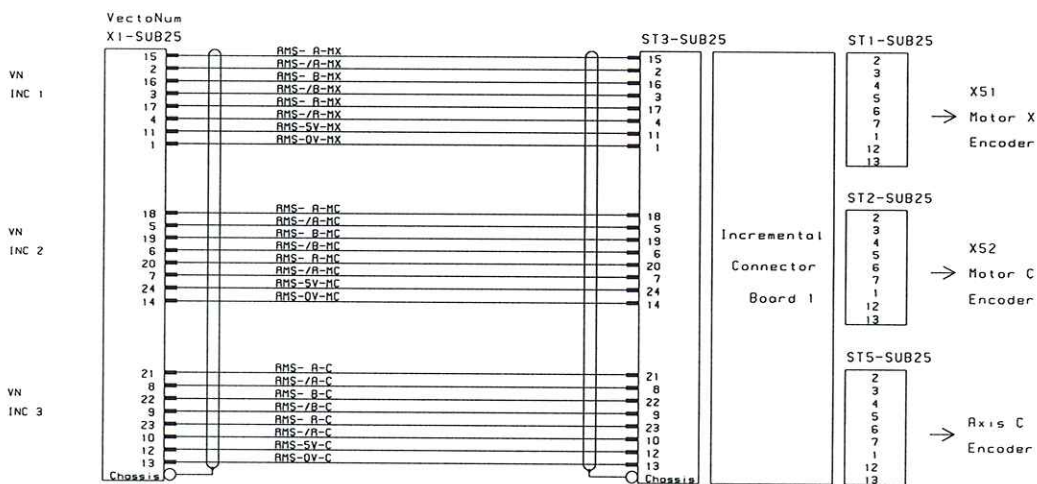
Geräte: BM-DD PIC	Bezeichnung: ENCODER-CONNECTION
Projekt: BM 2000	Opus: 19.01.00
ECRGE-Nr.: 000.0000	Blattzahl: 01
	Blatt-Nr.: 01
<b>ETCEDE</b>	
RS-Datum:	Name:



Interface No.: X51.1, X52.1, X52.2.

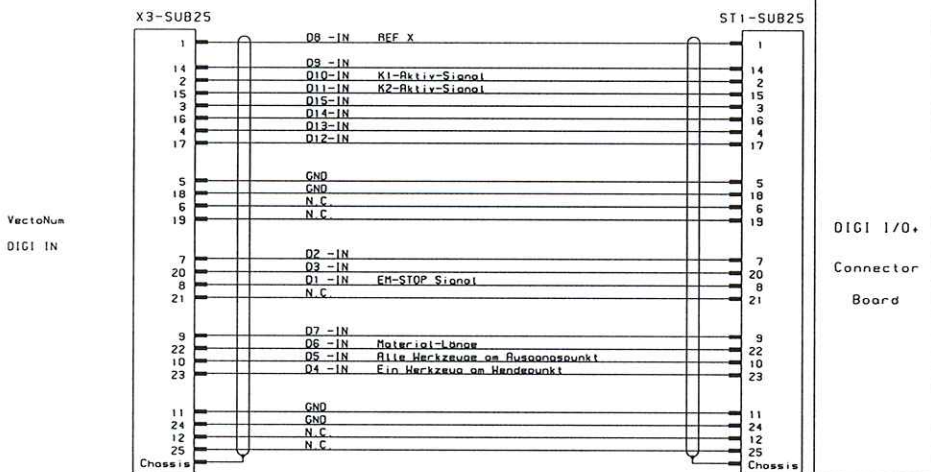
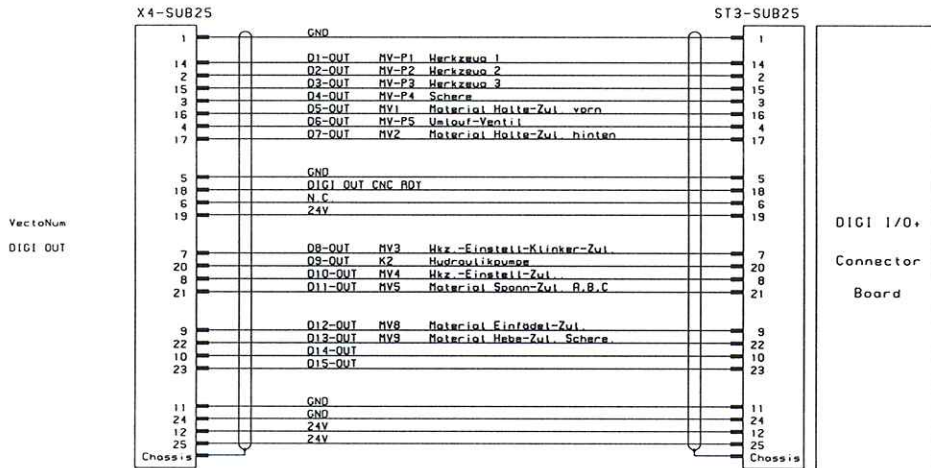
INC-BOARD-1: ST1, ST2, ST5

Blatt: BH-VC PIC	Zeichnung: VECTONUM-CONNECTION
Projekt: BM 2000	Blatt-Nr.: 19.01.00
ELCEDER-Nr.: 000.0000	Blattzahl: 01
<b>ELCEDER</b>	
RS Datum:	Neuer: 01



Interface No.: X1, X11,  
INC-BOARD-1: ST3

Unter-Nr.: BH-DI-PIC	Zeichnung	DIGI I/O+ CONNECTION
	Projekt	BM 2000
	ETEC-Nr.:	000.0000
	Blatt-Nr.:	19.01.00
	Blatt-Nr.:	01
	Blatt-Nr.:	01
	<b>ELCEDIE</b>	
	Rev.	01



Interface No. : X3, X4,  
DIGI I/O : ST1, ST3