

JAKOBSEN

**DIAGRAM
DIAGRAM
0286062.0**



**SJ618/824/1026/1032/1424/1432
AUTOMATIC 8bit MACHINE**

Buhl 8bit Control Unit (1984-1985)

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v2

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v1

1. FUNCTIONAL DESCRIPTION OF SJM MICROPROCESSOR CONTROL SYSTEM
(CST)

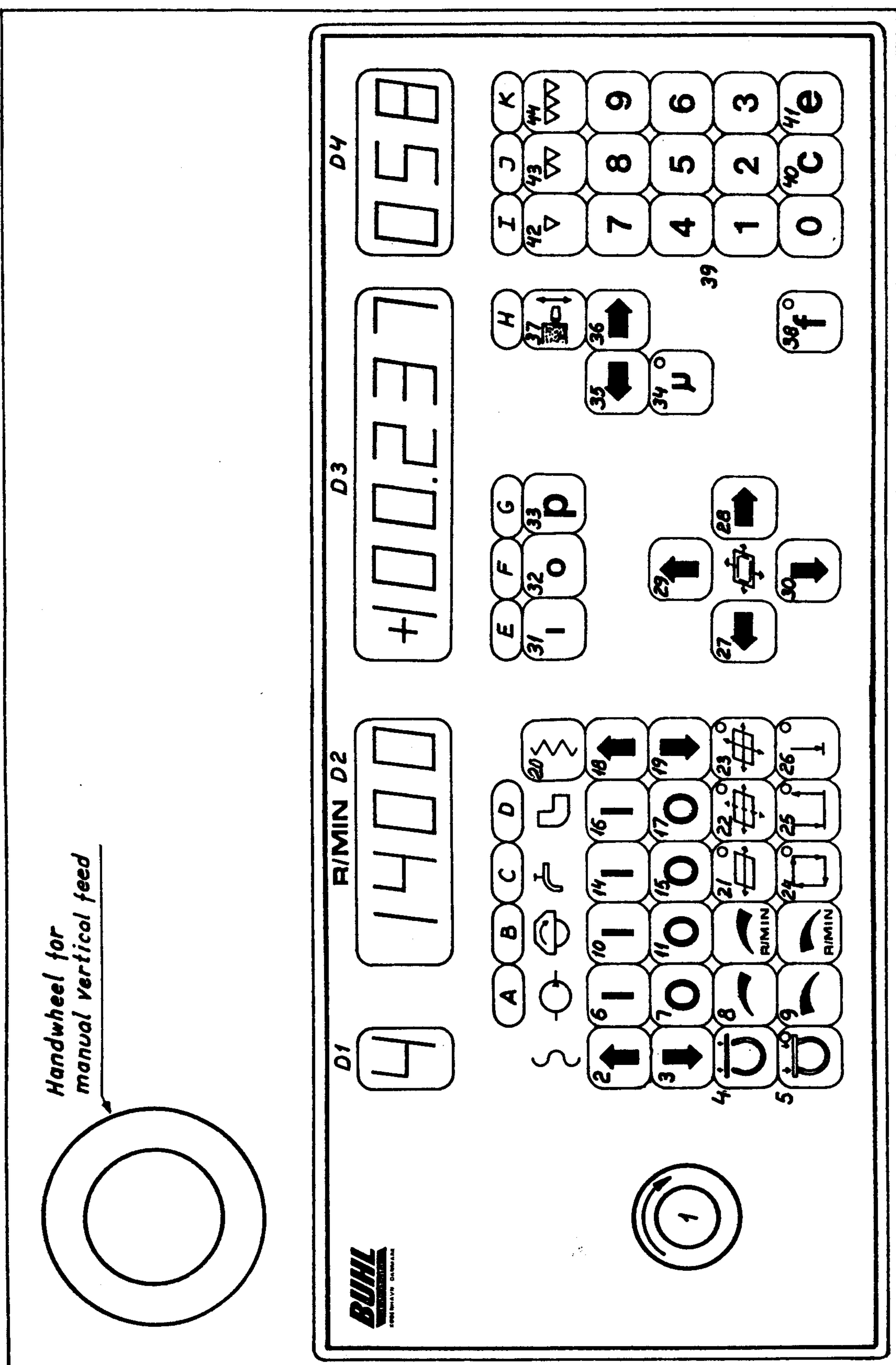
This control system is based on microprocessor 8085 technology, which means that it forms a part of a microcomputer system. It partly receives commands from the operator via the touch-panel and executes commands and preprogrammed sequences and supervises the state of the machine.

When going through the main functional groups, references will be made to the touchpanel in section 1.1. Numbers and letters refer to the indications on the figure.

v1

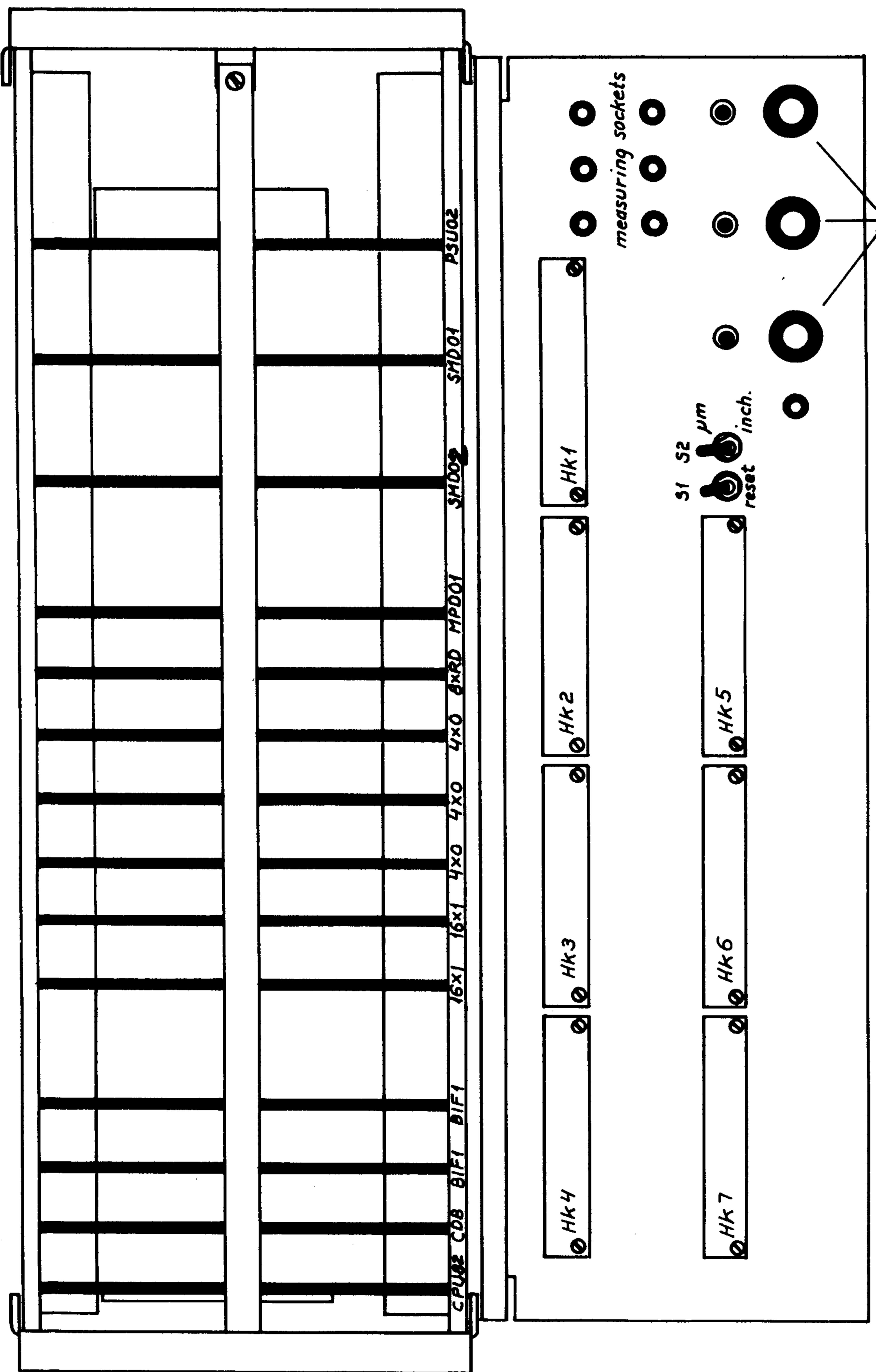
1.1

FRONTPANEL



v1

1.2



fuses for the microprocessor

v4

1.3 PROGRAMMES1 Emergency stop, main switch

When the red key is pressed it is locked and breaks the voltage to the motors and magnetic chuck.

The electronic control system will not be interrupted.

The key is released by turning it clockwise.

2&3 Power rapid vertical feed

When pressing 2 the wheelhead is moved rapidly upwards and correspondingly a press on 3 results in a rapid downward movement of the wheelhead. The power rapid feed motor stops when the key is released or when one of the vertical limit switches has been reached.

Rapid vertical feed is only possible if the machine is operating in manual mode and if the wheelhead is not moved by the stepping motor. Furthermore the magnetic chuck must be switched on.

When 2 or 3 has been pressed it will last about one second until the next function can be performed.

4,5 8&9 Electro Magnetic chuck

The magnetic chuck is activated by pressing 4 and de-activated by pressing 5.

The holding power of the magnetic chuck is increased by pressing 8 and reduced by pressing 9.

Adjustment to the magnetic chuck is only possible if the machine does not run in automatic cycle.

v2

The display D1 will indicate progressive numbers (4 til 9) by increasing/decreasing holding power of the chuck (8 and 9).

If the magnetic chuck is de-activated and 5 is repressed, the chuck will be demagnetized.

The demagnetization is carried out when the display D1 indicates the value 0.

Interruption of the magnetization results in stoppage of the hydraulic pump and a light-emitting diode is lit on 5.

6&7

Hydraulic pump

When pressing 6 the hydraulic pump starts and it stops when pressing 7.

The lamp A is lit to indicate that the motor is running.

It is only possible to start the pump if the magnetic chuck is switched on.

The pump stops automatically in following cases:

- if the hydraulic side-mounted wheel dresser is swung out from its normal working position.
- if the magnetic chuck is interrupted.
- if the manual table control is engaged.

10&11

Grinding wheel motor

When pressing 10, the grinding motor starts and it stops when pressing 11.

The lamp B is lit to indicate that the grinding motor is running.

v1

14&15

Coolant pump and filter

When pressing 14 the coolant pump and coolant filter, if any, are started and they are stopped by pressing 15.

The lamp C is lit to indicate that the coolant pump and the coolant filter, if any, are operating.

16&17

Dust exhausting system

The dust exhausting system (option) is started when pressing 16 and is stopped when pressing 17.

The lamp D is lit to indicate that the dust exhausting system is operating.

18&19

Vertical continuous feed

The vertical movement of the wheelhead is continuous when nothing else is specified (default).

When pressing 18 respectively 19 the wheelhead moves continuously upwards respectively downwards.

18 and 19 are preprogrammable for movement in steps by one step per activation. This programming is described in section 1.4.1.

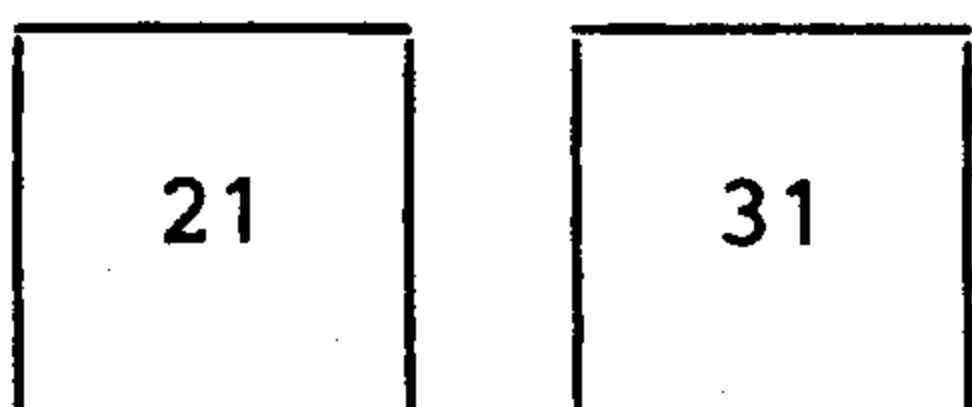
When the wheelhead moves continuously the display D3 will indicate its relative position in um or inch x 0.0001. The switch S2 on the rack is set before powering-up to determinate um or inch readouts.

This display function can be reset at any time by pressing the CLEAR key (40).

v1

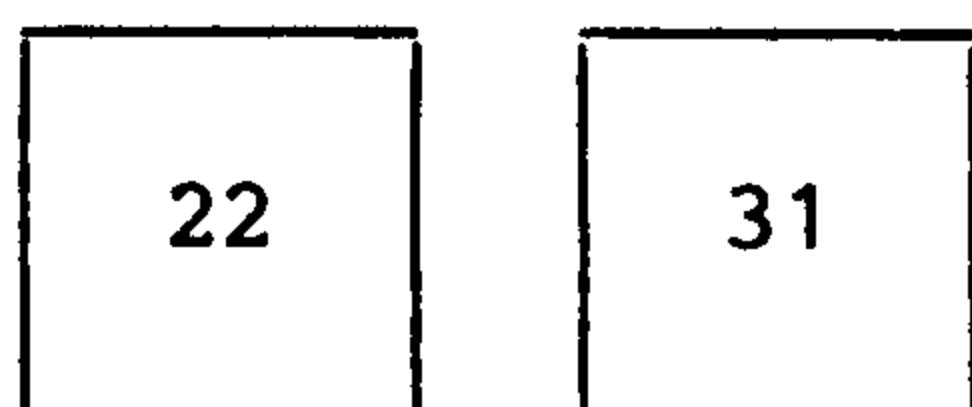
21,22&23 Preselection of table/saddle movement

Table movement for plunge grinding is selected by following key combination:



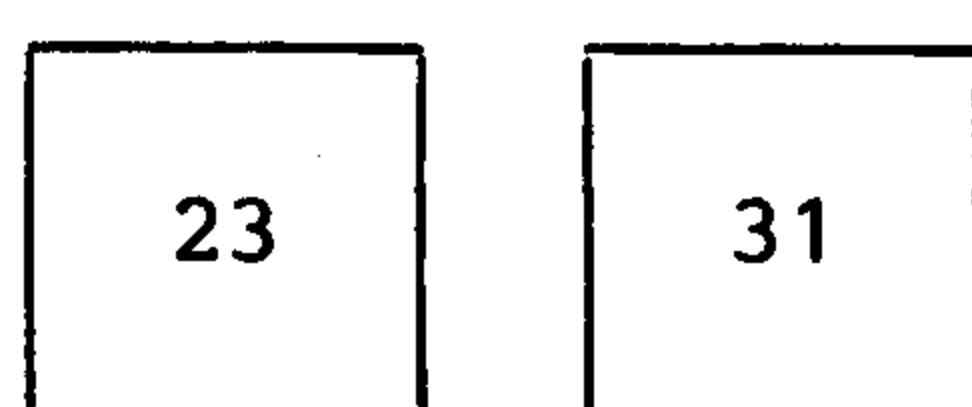
A light-emitting diode is lit when plunge grinding is started.

Table/saddle movement for surface grinding with cross feed in steps is selected by following key combination:



A light-emitting diode is lit when surface grinding with stepwise cross feed is started.

Table/saddle movement for surface grinding with continuous cross feed is selected by following key combination:



A light-emitting diode is lit when surface grinding with continuous cross feed is started.

v2

Selection of a new table/saddle movement during an existing movement is effected by just entering the movement required as described above. The table/saddle movements are stopped by pressing 32. When the movements are stopped the table will move to the right and stops at the limit switch BH.

These movements imply:

- that the hydraulic pump is switched on
- that the saddle lock is disengaged

If these conditions are not fulfilled it is indicated by an error message on display D3.

27&28

Push-button operated table movement

When pressing 27 the table moves to the left.

When pressing 28 the table moves to the right.

The table movement implies:

- that the hydraulic pump is switched on
- that the manual table control is disengaged
- that the machine is not operating in automatic cycle

29&30

Push-button operated saddle movement

When pressing 29 the saddle moves towards the column of the machine.

When pressing 30 the saddle moves towards the operator.

The saddle movement implies:

- that the hydraulic pump is switched on
- that the saddle lock is disengaged
- that the machine is not operating in automatic cycle

v4

33

Parking position

By pressing 33 the table and saddle move to the parking position, i.e. table to the right and saddle towards the operator.

The lamp G is lit when table and saddle are in the parking position.

The parking position implies:

- that the hydraulic pump is switched on
- that the saddle lock is disengaged
- that the machine is not operating in automatic cycle

35&36

Infeed of dressing diamond

The infeed movement of the dressing diamond is 1 um (.0001 In) when nothing else is specified (default). When pressing 35 the dressing diamond moves towards the grinding wheel and when pressing 36 it moves away from the grinding wheel.

35 og 36 are preprogrammable for movement in steps by one step per activation. This programming is described in section 1.4.2.

Hydraulic movement of dressing diamond

When pressing 37 the dressing diamond moves across the grinding wheel. When repressing 37 the dressing diamond moves back again.

The lamp H is lit as long as the dressing operation goes on.

v1

This function is only possible if:

- the grinding wheel motor is switched on
- the hydraulic pump has been started
- the dresser is activated

Electronic handwheel for vertical movement

The electronic handwheel is placed on the control panel above the touchpanel.

When the handwheel is activated the display D3 will indicate the relative position of the wheelhead in um/.0001". This display function can be reset at any time by means of 40 (clear).

For both vertical feed movements, the upward movement releases positive display increments and the downward movement releases negative display increments.

24

Automatic cycle

This key is used for specifying or clearing an automatic cycle as well as for finishing a cycle specification for execution of manual operations. Afterwards the specific cycle can for instance be recalled and started as described under 31.

25

Retract of wheelhead to starting position on completion of cycle.

This key is used either for programming the wanted function mode or for changing it during programme execution.

v1

26

Specification of wanted parking position of wheelhead
on completion af cycle.

This key is used either for programming the wanted function mode or for changing it during programme execution.

A light-emitting diode on the key is lit to indicate that this function is specified.

31

Start of table/saddle movements and automatic cycle

This key is used to start the automatic cycle and/or the pre-selected table/saddle movements.

A lamp is lit to indicate that the machine operates automatically.

When starting an automatic cycle or a preselected table/saddle movement, the table and the saddle will move between their respective stop dogs.

32

Stop of table/saddle movements and automatic cycle

This key is used to stop the automatic cycle and/or the preselected table/saddle movements.

A lamp in section F is lit to indicate that the machine can be operated manually.

34

Specification or control of wheeldressing

This key has 4 functions:

1. Programming of wheeldressing in cycle.
2. Control calling up of dressing infeed.
3. Change of diamond infeed during programme execution.
4. Programming of extra dressing operation as mentioned under infeed of dressing diamond.

v1

When programming the wheeldressing there are 3 possibilities:

- a. When nothing else is specified, no dressing will be executed during cycle.
- b. Standard dressing, i.e. dressing before rough grinding and before finish grinding with a fixed number of um/.0001" is specified as follows:

34

xx
Diamond infeed
in um/.0001

41

- c. Specified wheeldressing, i.e. dressing each time a fixed number of um/.0001" has been ground off (roughing area only), is specified by following sequence. Immediately after standard dressing has been specified.

34

xx
number of ground
um/.0001" between
each dressing

41

Calling up or changing of dressing specification in existing cycle is selected as follows:

34 (value shown in D3 and D4)

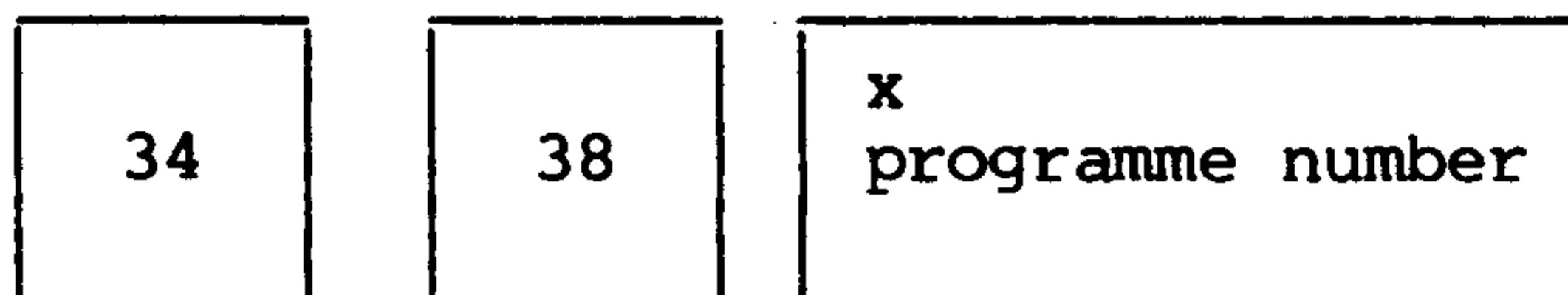
followed by input of same value or amended dressing value selected as follows:

xx
downfeed rate
in um/.0001"

41

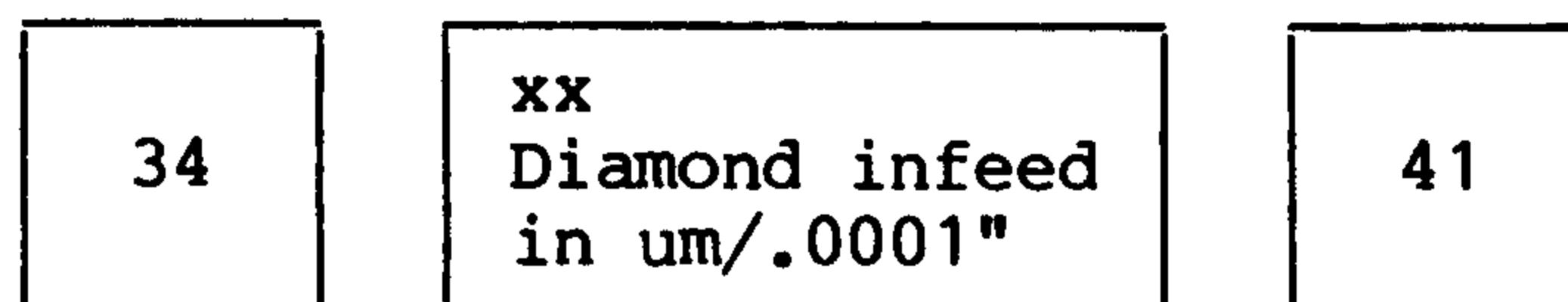
v2

Calling up of dressing specifications stored in one of the 10 programmes (numbered 0-9) is selected as follows:



followed by activation of 34

Change of diamond infeed during programme execution is selected by following key combination:



38

Function key

This key is used in connection with storing of fixed programmes. The 10 programmes have to be numbered from 0 til 9. Besides, the key is used for recalling of stored programmes. For a more detailed description please see section 1.4.

39

Numerical touchpanel

This is used for input of numerical values.

40

Clear key

This key is used for clearing the entered values in connection with sequence programming and for clearing display D3 when electronic handwheel or keys for vertical continuous movement have been used. There is moreover an escape-function, which can be used when programming. Press the C-button (40) for this function and hereafter (41).

41

Enter

This key is always used to finish the entering of a numerical value.

v1

42

Specification of rough grinding

This key is used in connection with programming:

When 42 has been pressed, an input of total rough grinding depth, shown on display D3, and downfeed rate for rough grinding, shown on display D4, have to follow in the order as mentioned above.

The lamp I is lit when programming.

Calling up or changing of total rough grinding area as well as downfeed rate specification in existing cycle is selected as follows:

42 (value shown in D3 and D4)

followed by input of same value or amended value for total rough grinding area selected as follows:

xx
total rough grinding
area in um/.0001"

41

followed by input of same value or amended value for downfeed rate selected as follows:

xx
downfeed rate in
um/.0001"

41

The key can moreover be used for calling up rough grinding specifications in the stored programmes by following sequence:

42

38

x
Programme
number

followed by activation of 42

V1

When rough grinding is executed during programme execution the lamp I is lit.

Besides, the following key combination is used when rough grinding down feed rate is to be changed during the programme execution.

42

xx
new value for rough
grinding down feed
in um/.0001"

41

43

Specification of finish grinding

This key is used in connection with programming:

When pressing 43, an input of the total finish grinding depth, shown on the display D3, and downfeed rate for finish grinding, shown on display D4, have to follow in the order as mentioned above.

The lamp J is lit when programming.

Calling up or changing of finish grinding area as well as downfeed rate specification in existing cycle is selected as follows:

43 (value shown in D3 and D4)

followed by input of same value or amended value for total finish grinding area selected as follows:

xx
total finish grinding
area in um/.0001"

41

v1

followed by input of same value or amended value for downfeed rate selected as follows:

xx
downfeed rate in
um/.0001"

41

Besides, the button can be used for calling up finish grinding specifications in stored programmes by following key sequence:

43

38

xx
Programme
number

followed by activation of 43.

When finish grinding is executed during programme execution the lamp J is lit.

Besides, following key combination is used when finish grinding down feed rate is to be changed during programme sequence:

43

xx
New value for finish
grinding downfeed in
um/.0001"

41

44

Specification of spark-out

This key is used in connection with programming;

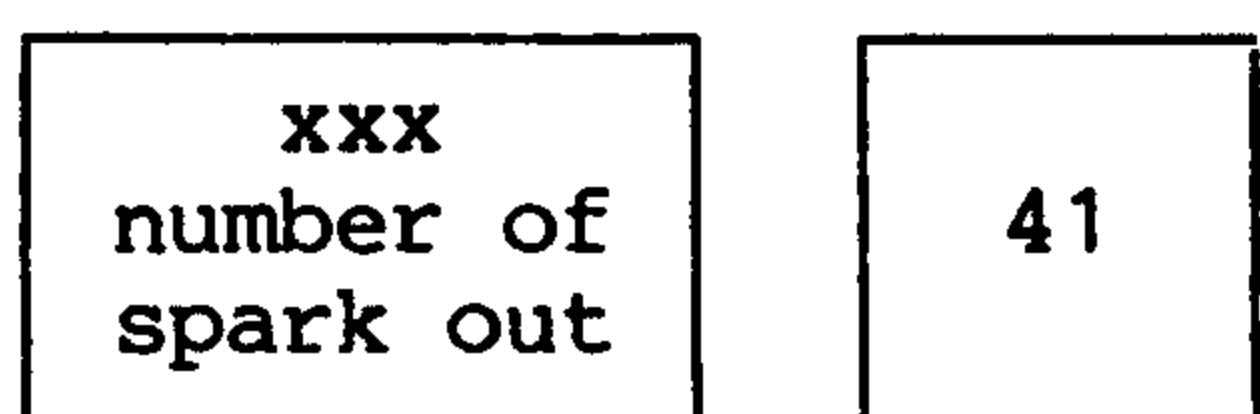
When pressing 44, an input of the number of spark-outs, shown on display D4, has to follow.

The lamp K is lit during programming of this key.

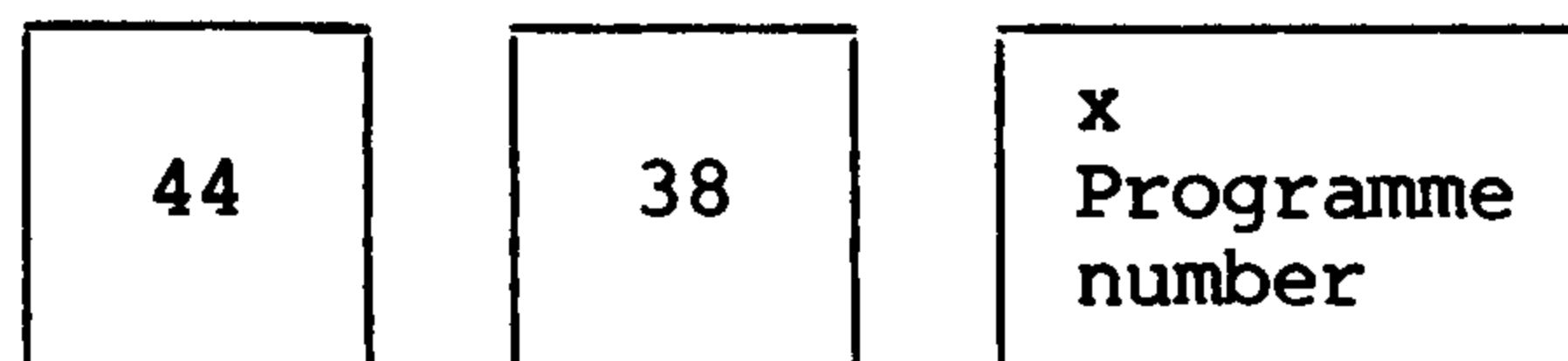
v1

Calling up or changing of number of spark-out specifications in existing cycle is selected as follows:

44 (number shown in D4)
followed by input of same number or amended number of spark-out passes selected as follows:



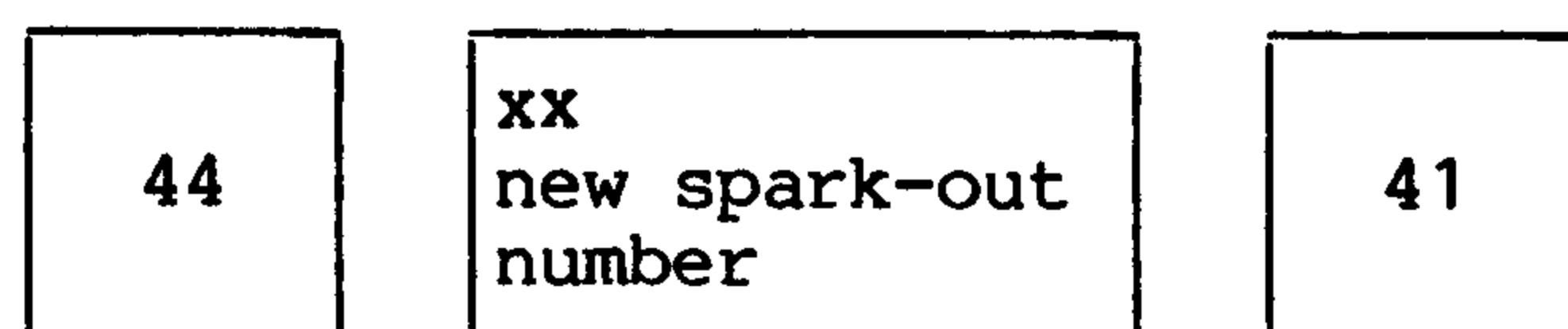
Besides, the key can be used for calling up spark-out specifications in the stored programmes by following key sequence:



followed by activation of 44.

When the spark-out is carried out during programme execution the lamp K is lit.

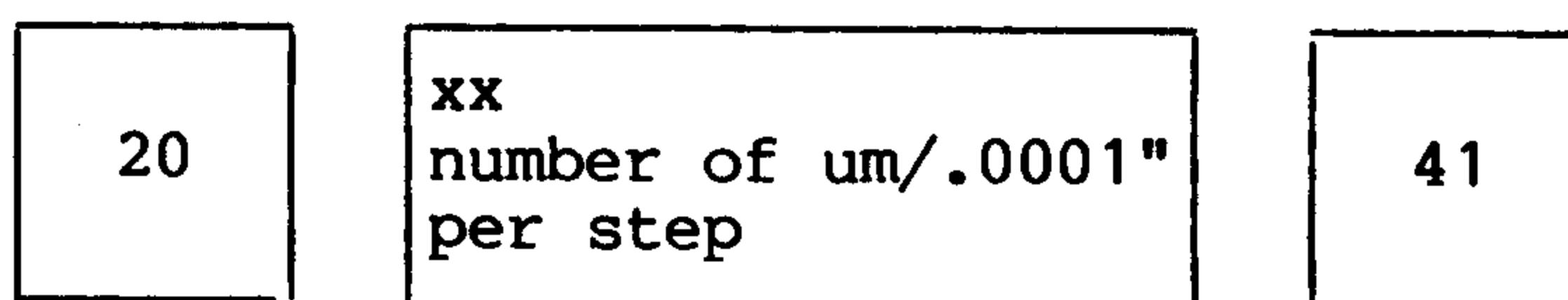
Besides, following key combination is used when the number of spark-outs is to be changed during programme execution:



v1

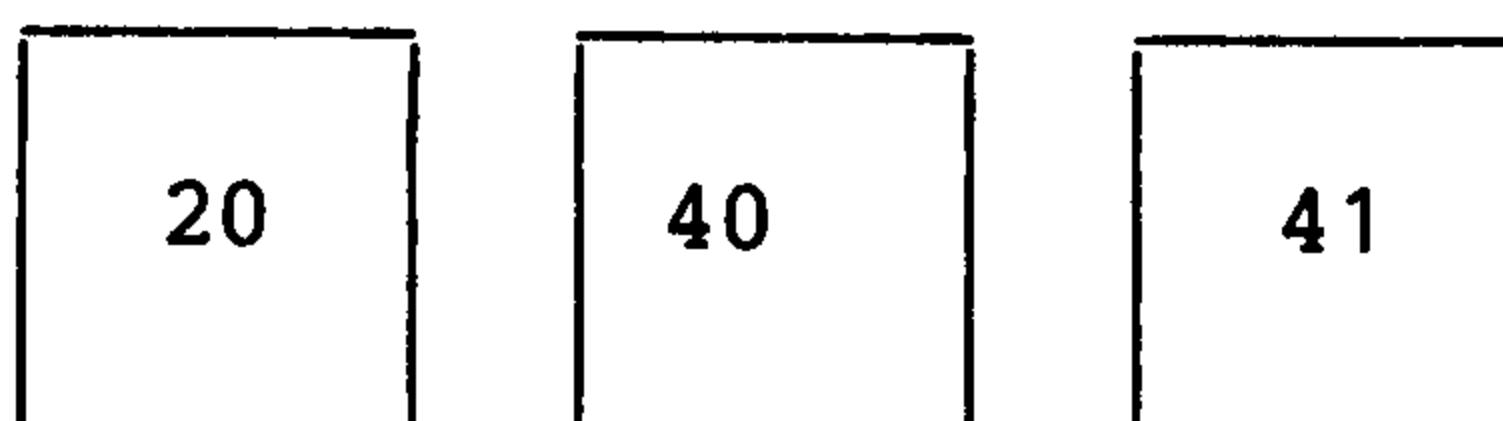
1.4 PROGRAMMING

1.4.1 Programming of vertical continuous feed in steps is selected by following key sequence:

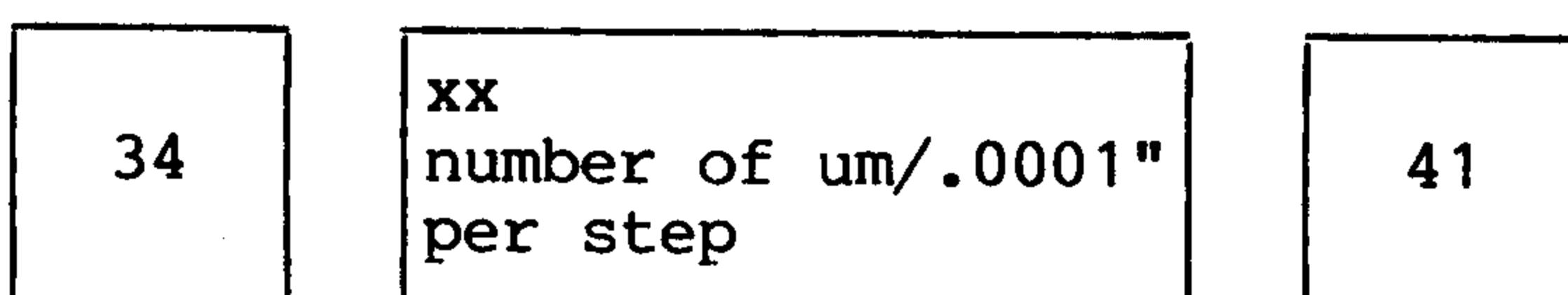


The programmed number of um/.0001" per step is shown on display D4.

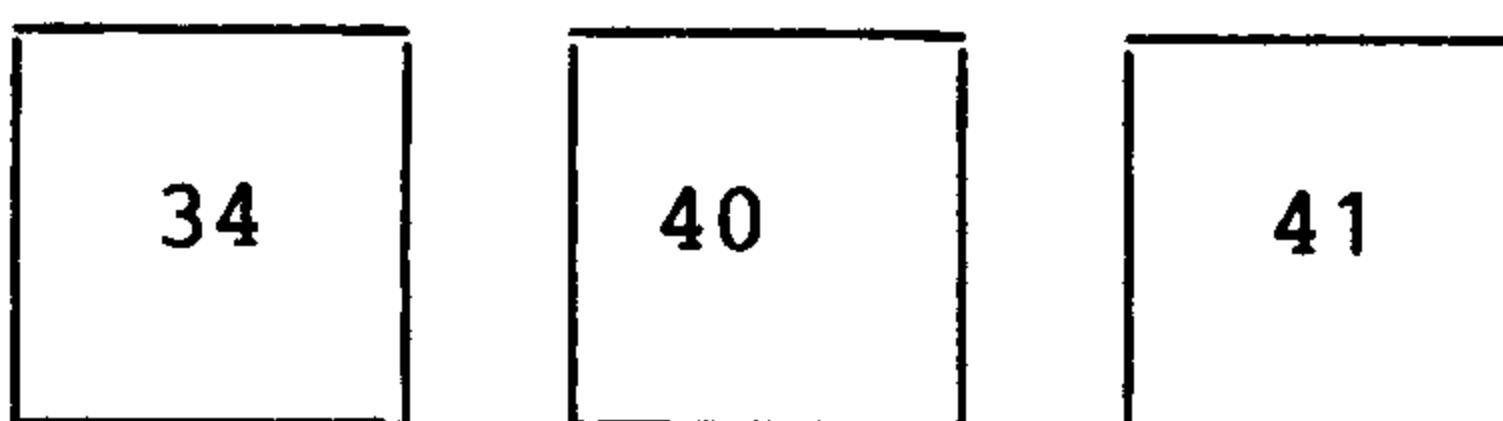
The continuous vertical movement in steps can be changed back to a full continuous movement by following key combination:



1.4.2 Programming of infeed movement of the dressing diamond in steps is selected by following key sequence:



The programmed number of um/.0001" per step is shown on display D4. The infeed movement in steps of the diamond can be changed back to a full continuous movement by following key combination:

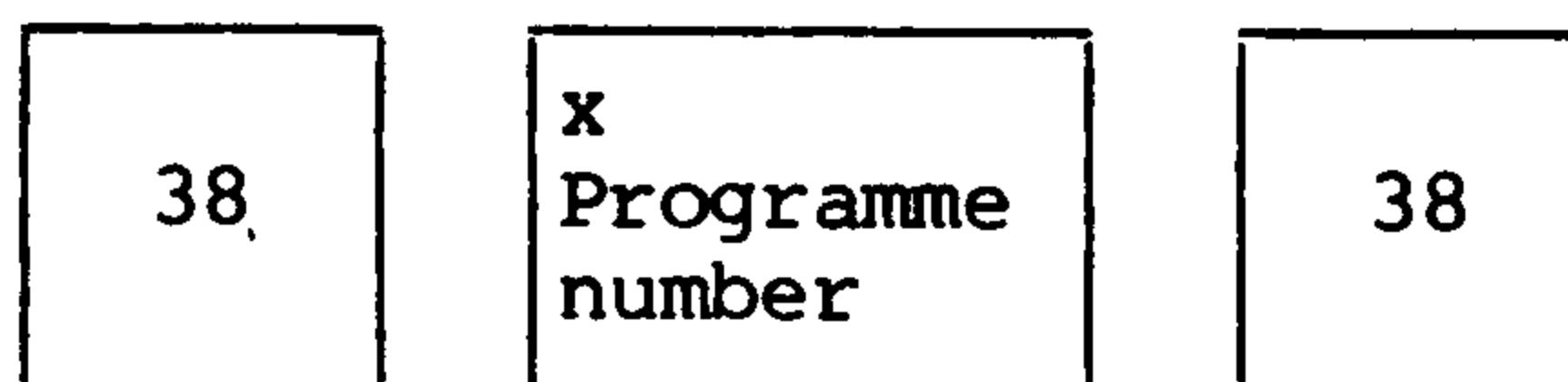


v2

- 1.4.3 Programming of the automatic cycle is specified when pressing 24. Clearing of an existing cycle can be executed by pressing (24) and hereafter the clear key (40) and the enter key (41) or there can be programmed a new cycle.
The programming and execution can be made according to the diagram at the next page (1.4.4).

A fixed storing of the automatic cycle can be executed by following key combination:

Switch off 24, then press

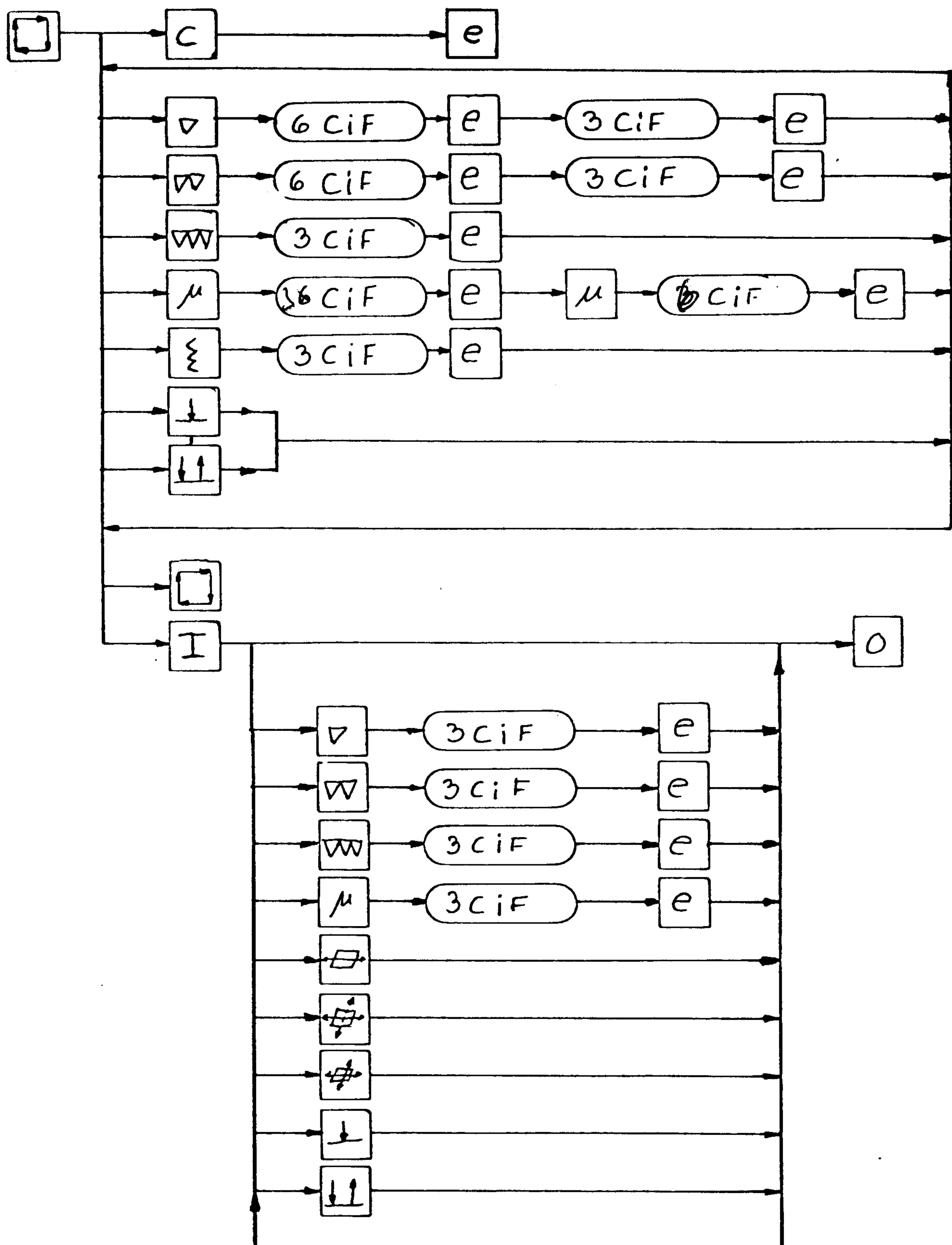


Both when an automatic cycle and a fixed programme are executed, dressing of the wheel is compensated automatically, if specified.

v1

1.4.4

SYNTAX FOR PROGRAMMING OF AUTOMATIC CYCLE

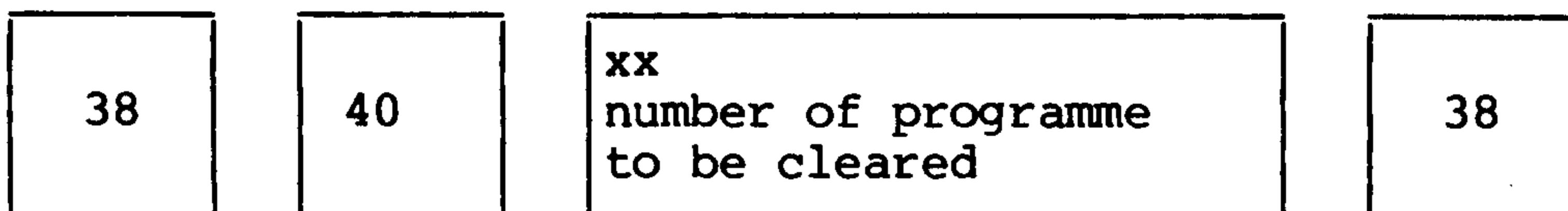


v2

1.4.5 PROGRAMMING, CONTROL AND STORAGE OF FIXED PREPROGRAMMED GRINDING SEQUENCES.

Programming, control and storage of fixed preprogrammed grinding sequences are executed according to the diagram at the next page (1.4.6).

Clearing of a stored programme is selected by following key combination:



Calling up and execution of a stored programme is selected by following key combination:

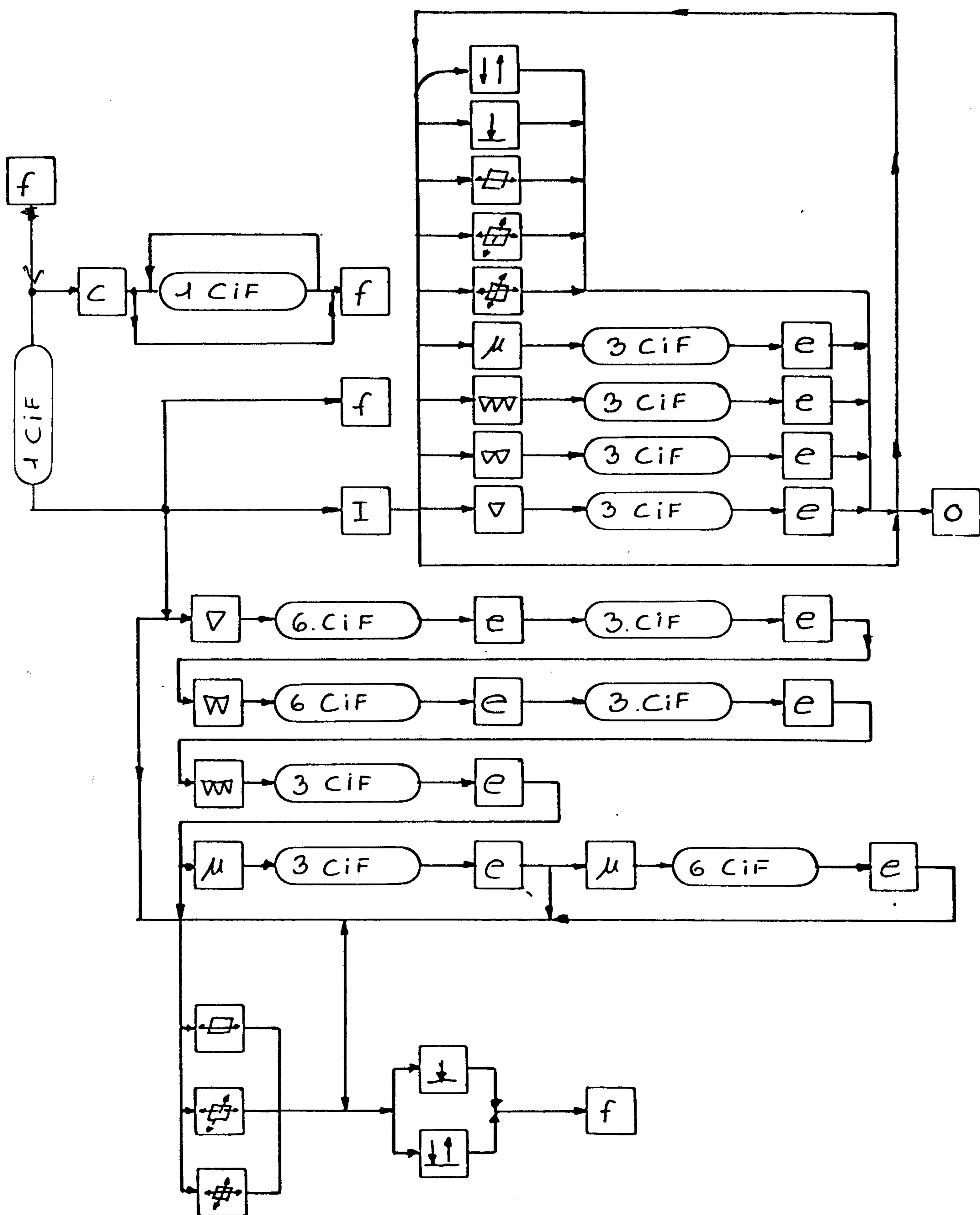


During execution of a programme the machine runs automatically. The lamp E is lit. In this state it is possible to change the following:

v1

1.4.6

SYNTAX FOR PROGRAMMING, CONTROL AND STORAGE



- infeed rate during rough grinding, as mentioned under 42.
- infeed rate during finish grinding, as mentioned under 43.
- number of spark-out, as described under 44.
- Diamond infeed, as described under 34.
- Table and saddle movement subject to the following rules:
 - a. It is always possible to change table movement for plunge grinding.
 - b. Changes from cross feed movement in steps to continuous cross feed movement and vice versa are permissible.
 - c. Change of wheelhead position on completion of grinding.

These changes are executed by entering of new respective values.

During execution of a programme the lamps H, I, J and K are lit when these functions are executed.

The preprogrammed values for table/saddle movement as well as the final wheelhead position on the light-emitting diodes are shown in 21, 22 , 23, 25 and 26.

v1

1.5 INPUTS, BOARD 16XI, 24-30V

Name	Description
HJ-S △	RELAYxSPINDLExTRIANGLE
HJ-S*	RELAYxSPINDLExASTERISK
HJHP	RELAYxHYDRAULICxPUMP
HJKP	RELAYxCOOLANTxPUMP
HJKF	RELAYxCOOLANTxFILTER
HJVO	RELAYxVERTICALxUP
HJVN	RELAYxVERTICALxDOWN
HJST	RELAYxDUST EXHAUSTING SYSTEM
BP.	TABLExPARK
BV.	TABLExLEFT
BH.	TABLExRIGHT
SP	SADDLExPARK
ST	SADDLExBACKWARDS
SF	SADDLExFORWARDS
AT	DRESSERxBACKWARDS
AF	DRESSERxFORWARDS
AS	DRESSERxBLOCKING
VT	VERTICALxTOP
VB	VERTICALxGROUND
MS	MANUALxSADDLE
HP	HYDxMOVEMENTxSTOP
SL	SADDLExLOCK

v1

OUTPUTS, BOARD 8XRD, SOLID STATE RELAY, 100mA

M-△	MOTORxSPINDLEXTRIANGLE
M-*	MOTORxSPINDLEXASTERISK
MHP	MOTORxHYDRAULICxPUMP
MKP	MOTORxCoolANTxPUMP
MKF	MOTORxCoolANTxFILTER
MVO	MOTORxVERTICALxUP
MVN	MOTORxVERTICALxDOWN
MST	MOTORxDUST EXHAUSTING SYSTEM

OUTPUTS, BOARD 4X0, SOLID STATE RELAY, 100 mA

V05	VALVExV5	, Free-run
V01	VALVExV01	, Free-run

OUTPUTS, BOARD 4X0, VALVE, 2,5 Amp

V3B	VALVExV3B	, Saddle out
V03A	VALVExV03A	, Table right
V03B	VALVExV03B	, Table left
V02	VALVExV02	, Table stop
V2	VALVExV2	, Saddle stop
V4A	VALVExV4A	, Saddle fast
V3A	VALVExV3A	, Saddle in
V6	VALVExV6	, Dresser
V4B	VALVExV4B	, Saddle control

v1

<u>1.6</u>	<u>FUNCTION</u>	<u>CARD TYPE</u>	<u>STANDARD</u>	<u>CARD POSITION</u>
	CPU	CPU82B	X	13
	Console Driver Board	CDB01	X	12
	BUS Interface	BIF 1	X	11-10
	Input SL, NP, MS, VB, VT, AS, AF, AT, SF, SP, BV	16XI	X	8
	Input HJST, HJVN, HJVO, HJKF, HJKP, HJHP, HJ-S*, SJ-S , ST, BH, BP	16XI	X	7
	Output V24, V01, V05, V3B	4X0	X	40
	Output V4B, V6, V3A, V4A	4X0	X	39
	Output V2, V02, V03B, V03A	4x0	X	38
	Output MST, MVN, MVO, MKF, MKP, MHP, M-* , M-△	8XRD	X	37
	Magnetic chuck driver	MPD01		36
	Stepping motor driver	SMD02	X	34
	Dresser			
	Stepping motor driver	SMD01	X	32
	Vertical feed			
	Power Supply	PSU02	X	30

v2

1.7

SURVEY OF LIGHT-EMITTING DIODES ON 16X1

<u>Board 8</u>	<u>Board 7</u>
	HJST
	HJVN
SL	HJVO
HP	HJKF
MS	HJKP
VB	HJHP
VT	HJ-S*
AS	HJ-S △
AF	
	AT
SF	ST
SP	BH
BV	BP
Lamp-Test: (important: only with the motor switched-off)	

v1

SURVEY OF LIGHT-EMITTING DIODES ON 8XRD

Board 97



MST
MUN
MVO
MKF
MKP
MHP
M-*
M- △

Lamp-Test: (important: only with the motor switched-off)

SURVEY OF LIGHT EMITTING DIODES ON 4X0

Board 40

Board 39

Board 38



V24	V4B	V2
V01	V6	V02
V05	V3A	V03B
V3B	V4A	V03A

Lamp-Test: (important: only with the motor switched-off)

v1

2. ALARMS AND TROUBLESHOOTING

The microprocessor control system has two levels of error indication.

Level 1 : Errors shown when powering up are indicated as:

Err xxxx Hxx

Where Hxx is an alarm code, which is only given for powering-up when the microprocessor control system releases an internal hardware error.

By using the ENTER key (E) it is possible to step through the alarms, if any.

See the alarm codes on the next page.

Level 2 : System alarms are shown when the machine is operating and they can be reset by means of CLEAR key (c).

See the alarm codes on the following page.

v1

2.1

POWER-UP ALARMS

H1	CPU pos. 13	Stack error
H2	CPU pos. 13	Romsum error
H3	CPU pos. 13	Timer 8156 error
H4	CPU pos. 13	2K RAM error
H5	CDB/bit 0 pos. 12	error
H6	CDB/bit 1 pos. 12	error
H7	CDB/bit 2 pos. 12	error
H8	CDB/bit 3 pos. 12	error
H9	CDB/bit 4 pos. 12	error
H10	CDB/bit 5 pos. 12	error
H11	CDB/bit 6 pos. 12	error
H12	CDB/bit 7 pos. 12	error
H13	BIF pos. 10 - 11	error
H14	ADC pos. 9, channel 0	error
H15	16XI pos. 8	error
H16	16XI pos. 7	error
H20	4X0 pos. 40	error
H21	4X0 pos. 39	error
H22	4X0 pos. 38	error
H23	8XRD pos. 37	error
H24	MPD pos. 36	error
H25	SMD pos. 35	error
H26	SMD pos. 34	error
H30	No programmes stored	

v3

2.2

SYSTEM ALARMS

The main programme of the control system includes the construction of error situation checks covering machine state errors and the most common operator errors. These error messages and a short description of their causes are described below :

0. Tried to start saddle wenn manual saddle or saddle lock is set.
1. Tried to start table/saddle while hydraulic pump is stopped.
2. Tried to start table/ saddle in opposite direction while moving.
3. Tried to start table/saddle while hydraulic movements are blocked.
4. Tried to start parking while saddle is moving.
5. Tried to start parking while hydraulic movements are blocked.
6. Tried to start parking while manual saddle movement is activated.
7. Tried to start wheeldressing while grinding motor is stopped.
8. Tried to start wheeldressing while dresser blocking device is activated.
9. System error, MKP off and HJKP on
10. System error, MS* off and HJS* on
11. System error, MHP off and HJHP on
12. System error, MKF off and HJKF on
13. System error, MVO/MVN off and HJVO/HJVN on
14. Dresser blocking device or manual table movement activated.
15. Vertical movement on upper and lower limit switch.
16. Tried to start parking while table is moving.
17. Tried to start parking while saddle lock is engaged.
20. Illegal key pressed.

v3

101. System error, MS* on and HJS* off
102. System error, MHP on and HJHP off
103. System error, MKP/MKF on and HJKP/HJKF off
104. System error, MST on and HJST off
201. Tried to start dresser stepping motor while dresser is not positioned on limit switch.
202. Tried to start dresser stepping motor while dresser blocking device is activated.

Microprocessorcontrol

Terminalstrips (HK1-HK7)
Fuses
(See section 1.2)

Power
Supply
Relays
T1

Power Supply PU82
or PU84
for Microprocessor
T2 and T4

Magnetic
chuck
T3

F1.1 F1.2 F1.3 F2.1 F2.2 F2.3 F3.1 F3.2 F3.3 F4.1 F4.2 F4.3 F5 F6 F7 F8

Solid State Relays

1 (K1) 4 (K4) 8 (V01)

2 (K2) 5 (K5) 9 (V5)

3 (K3) 10 (K11-12 X)

7 (K7) X

K11x K1 K12x K2 K3 K4 K5 K6x K7x V24
FR11x FR1 FR2 FR3 FR6x FR7x

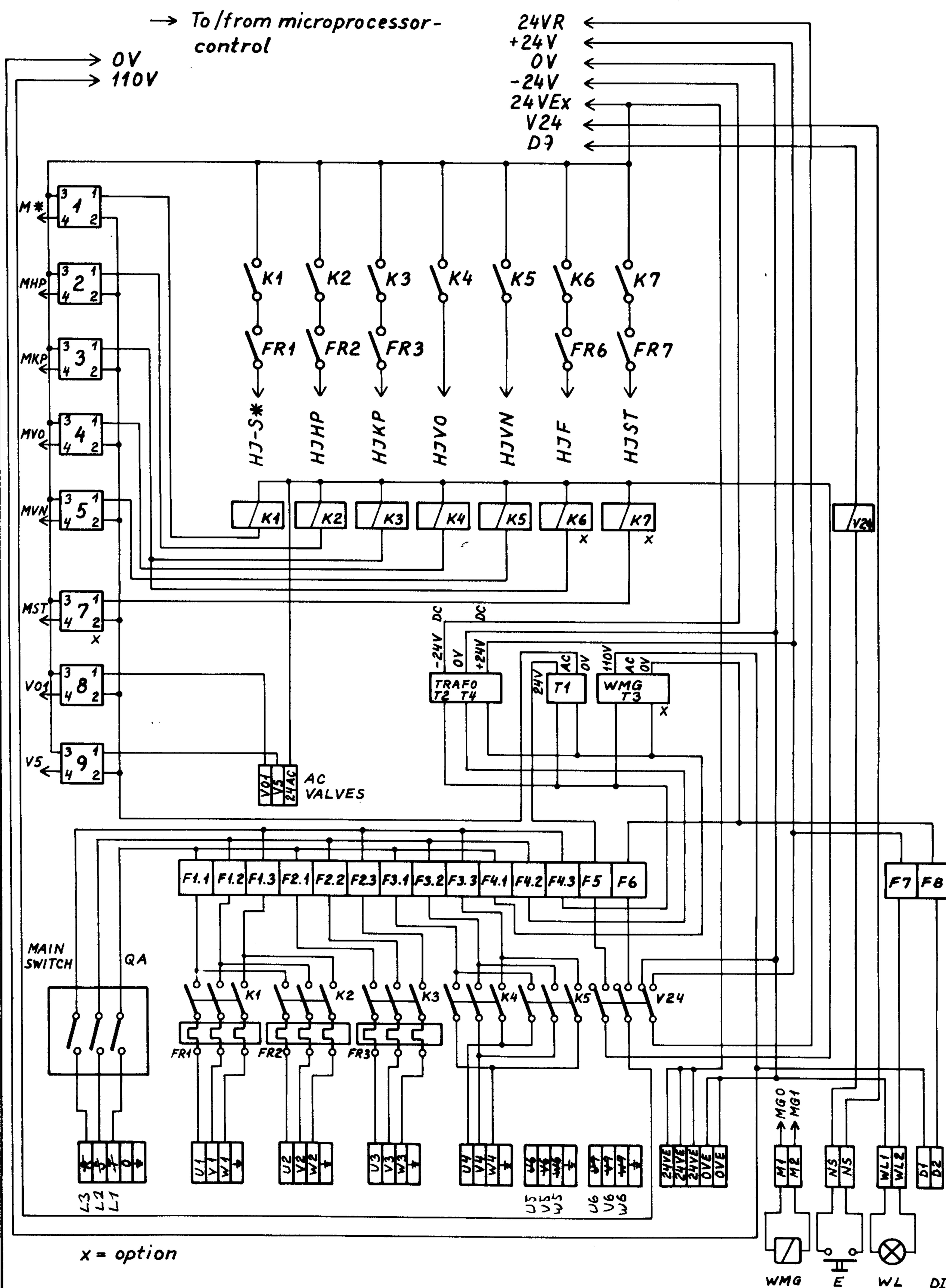
QA

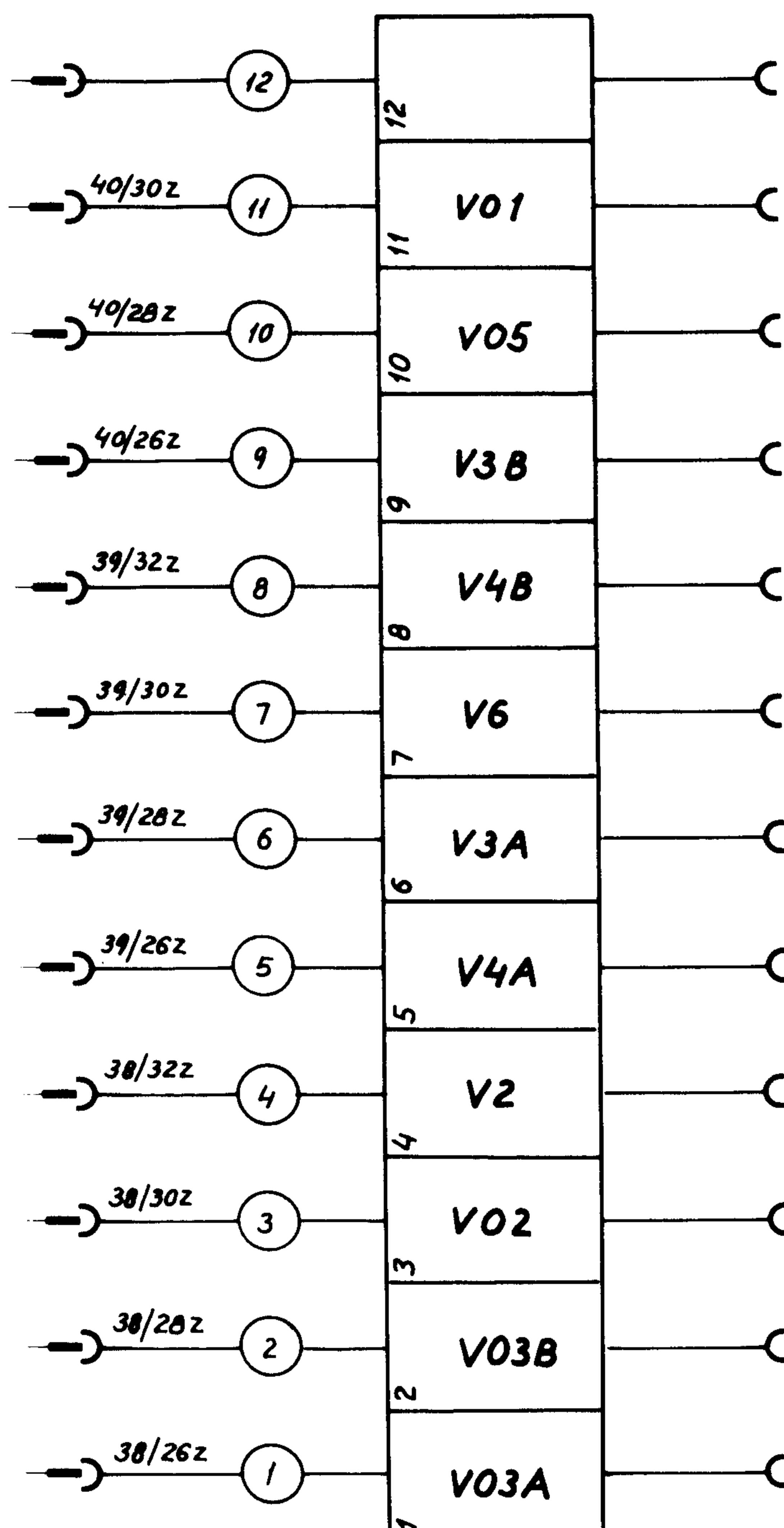
LINE

M1-M7

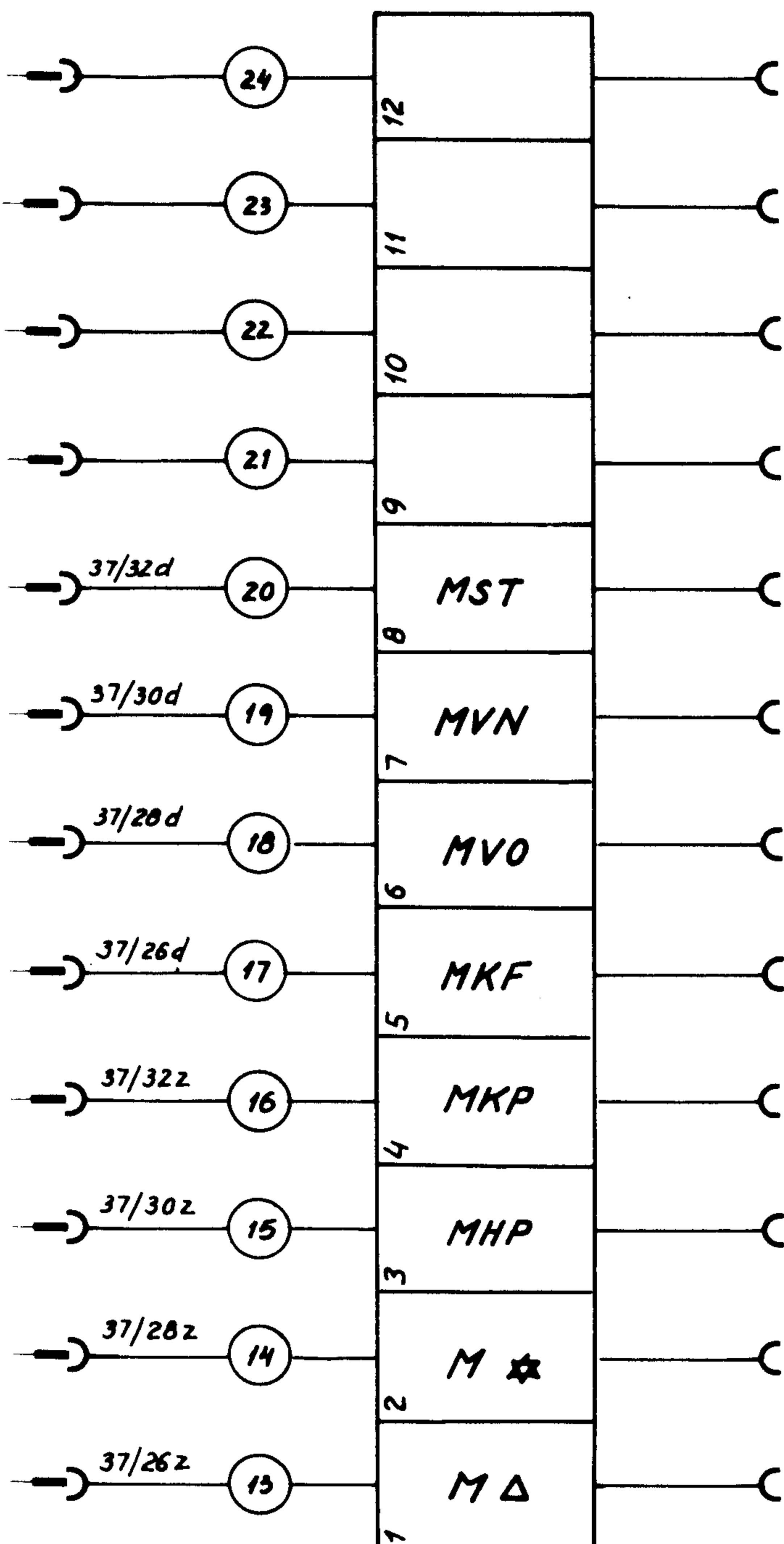
CONTROL

X = optional

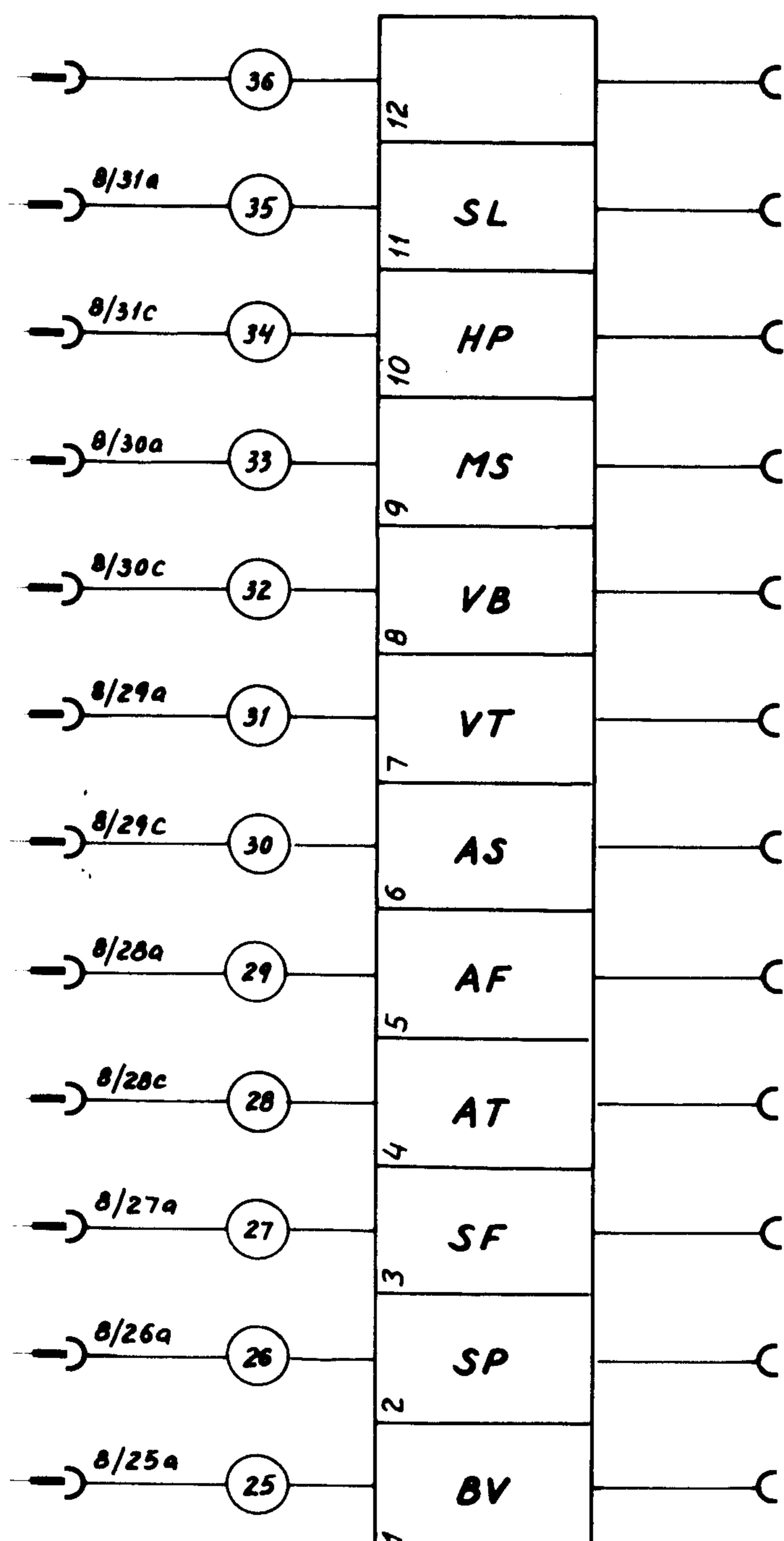




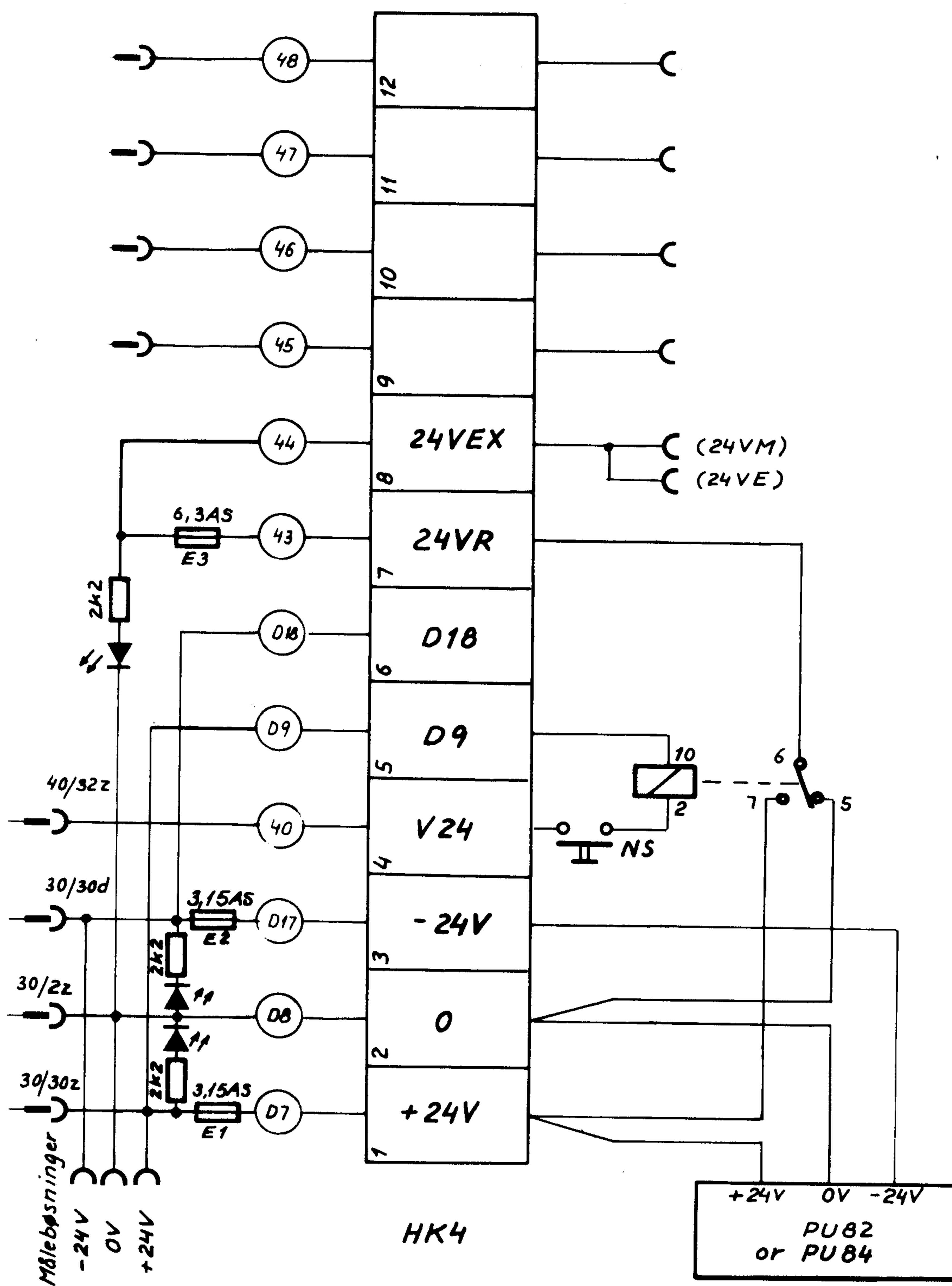
HK1

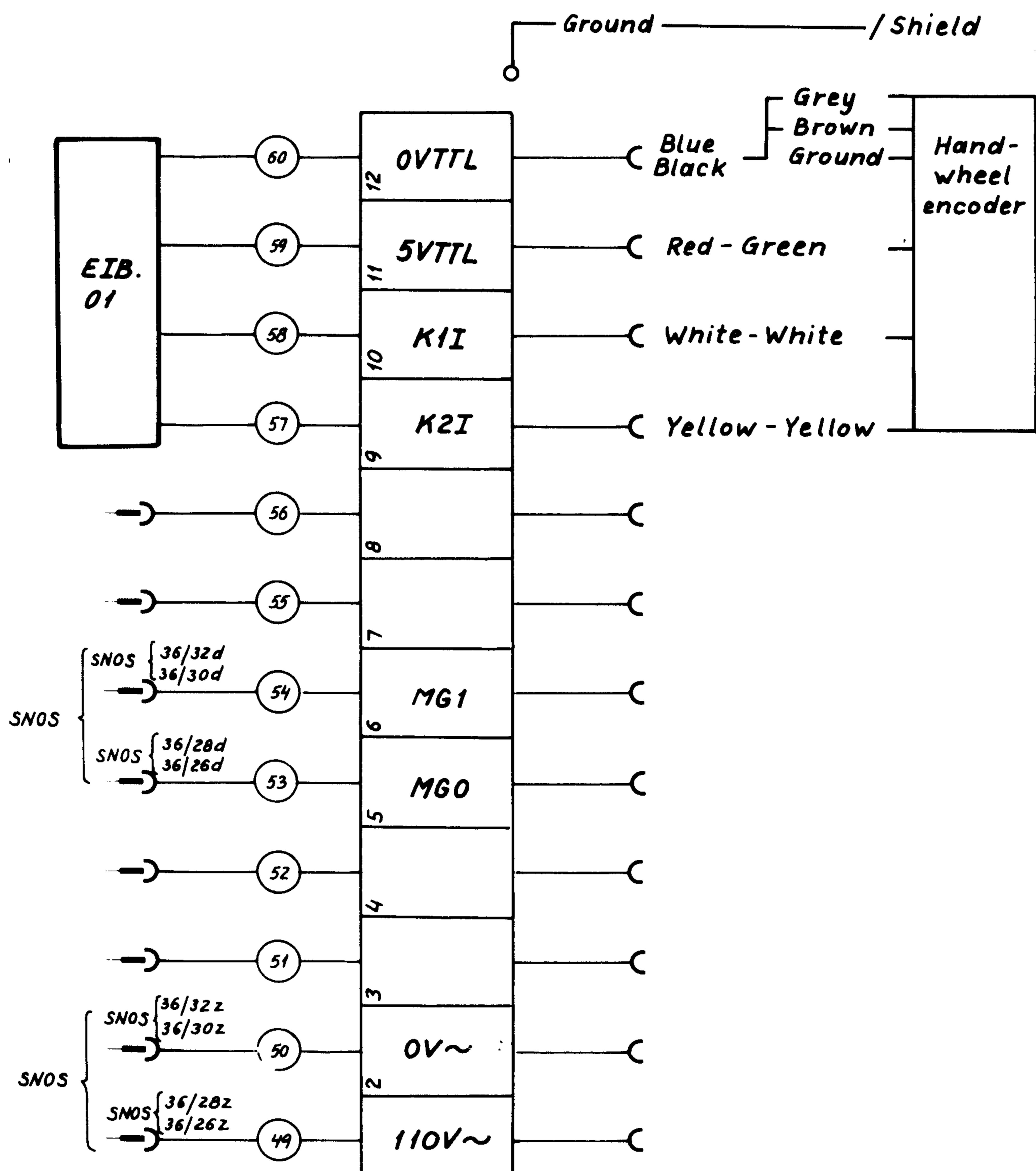


HK 2

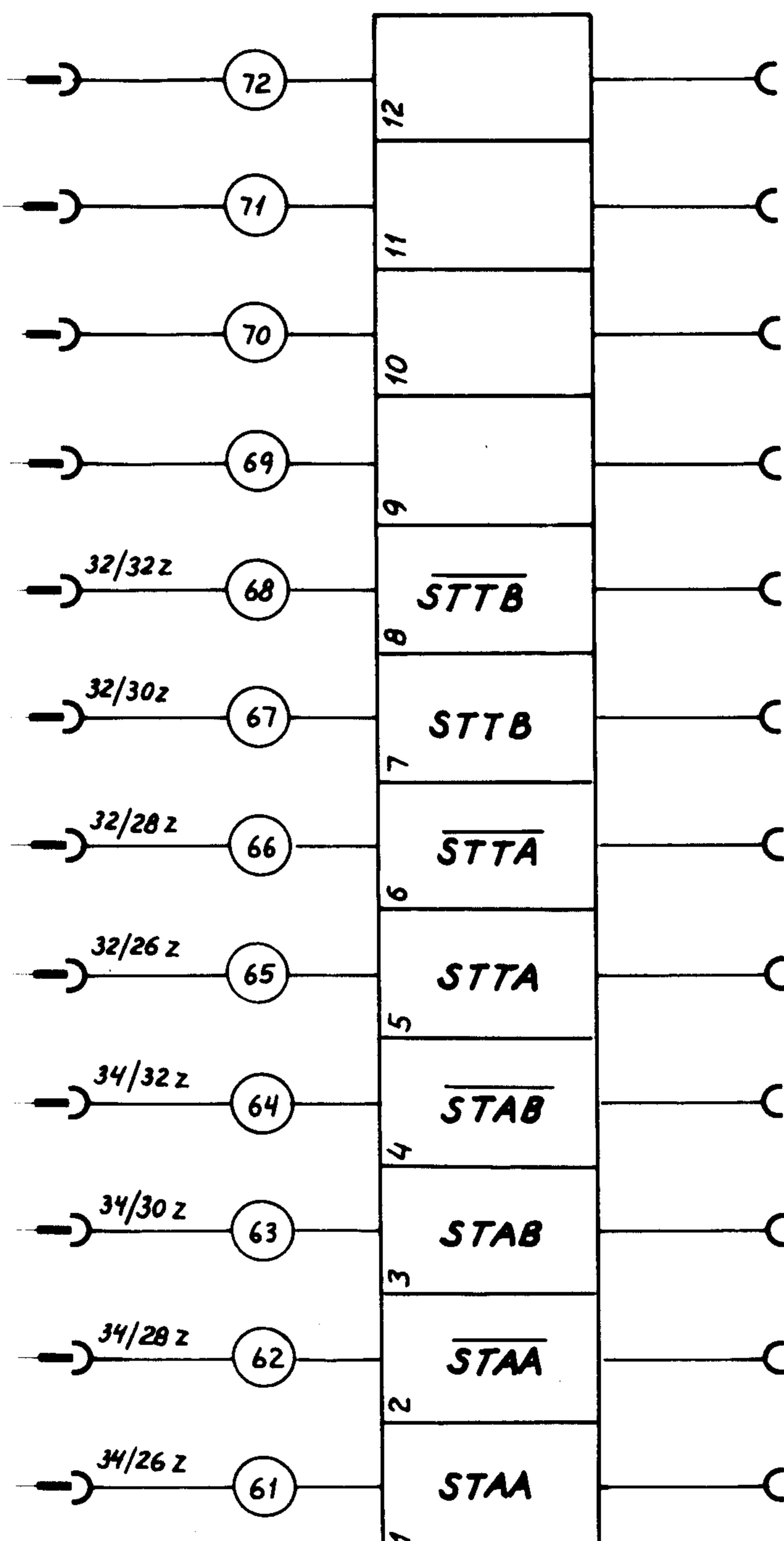


HK3





HK5

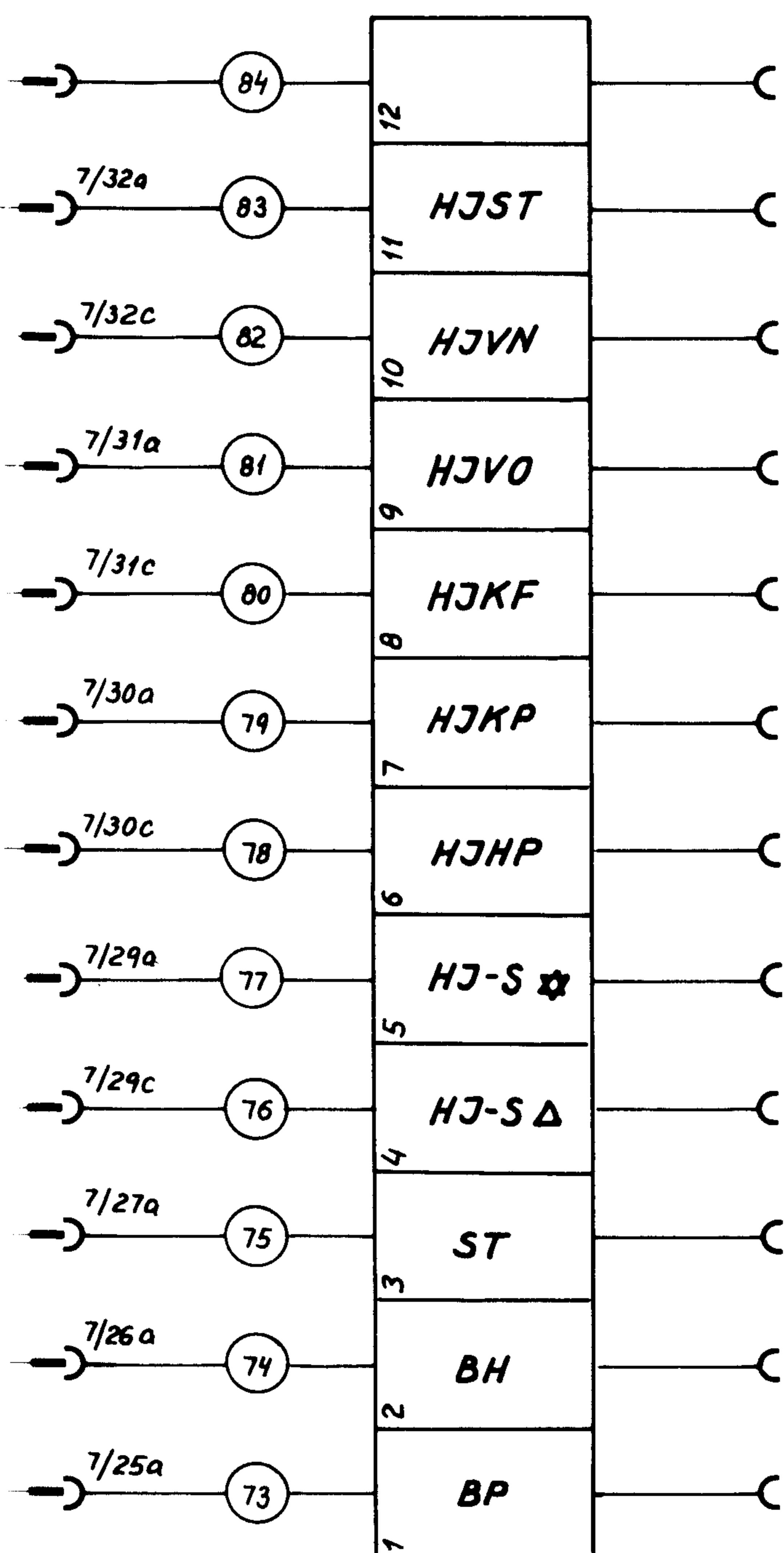


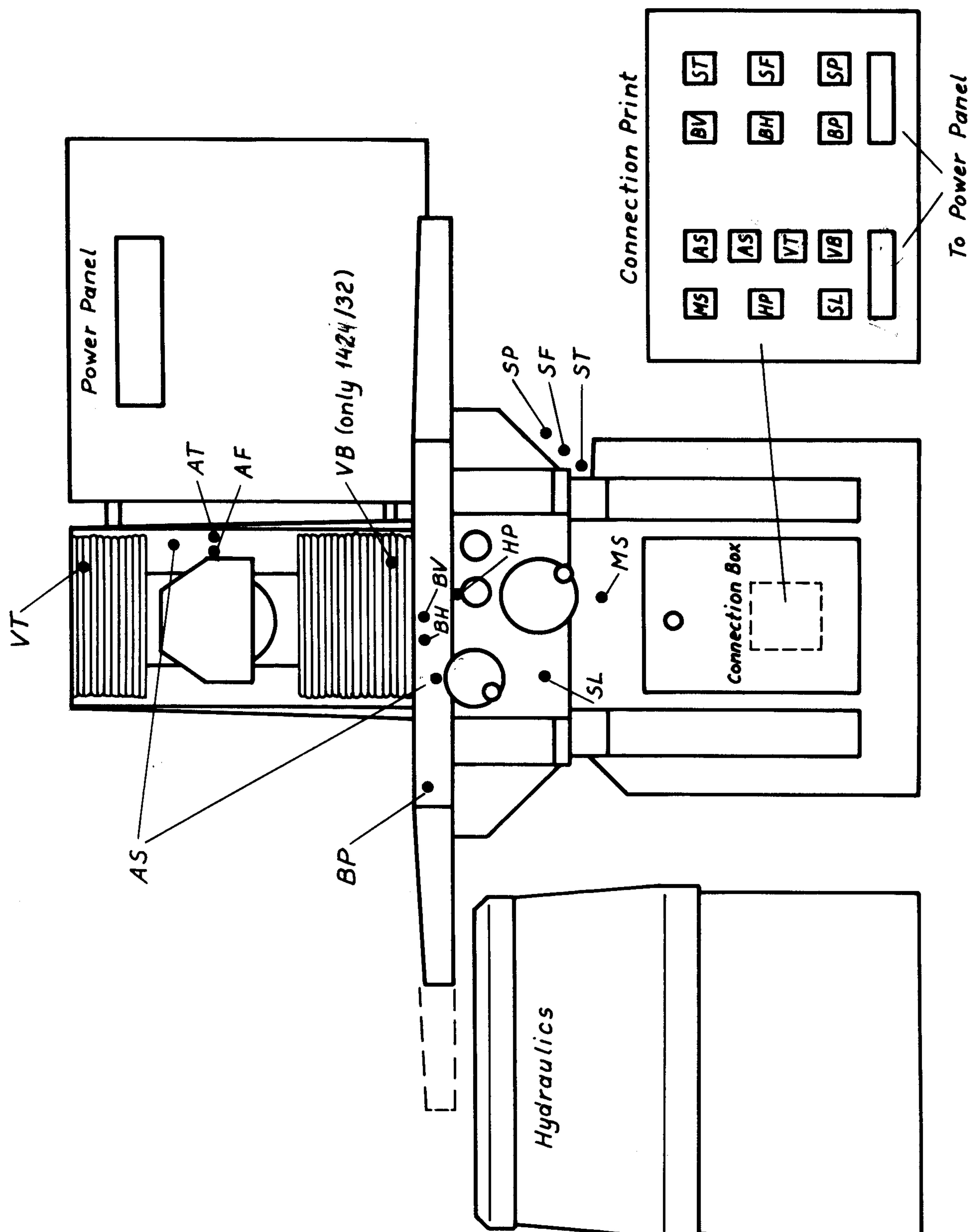
HK6

HK Terminalstrips

6637 GB
39 KAB. A01

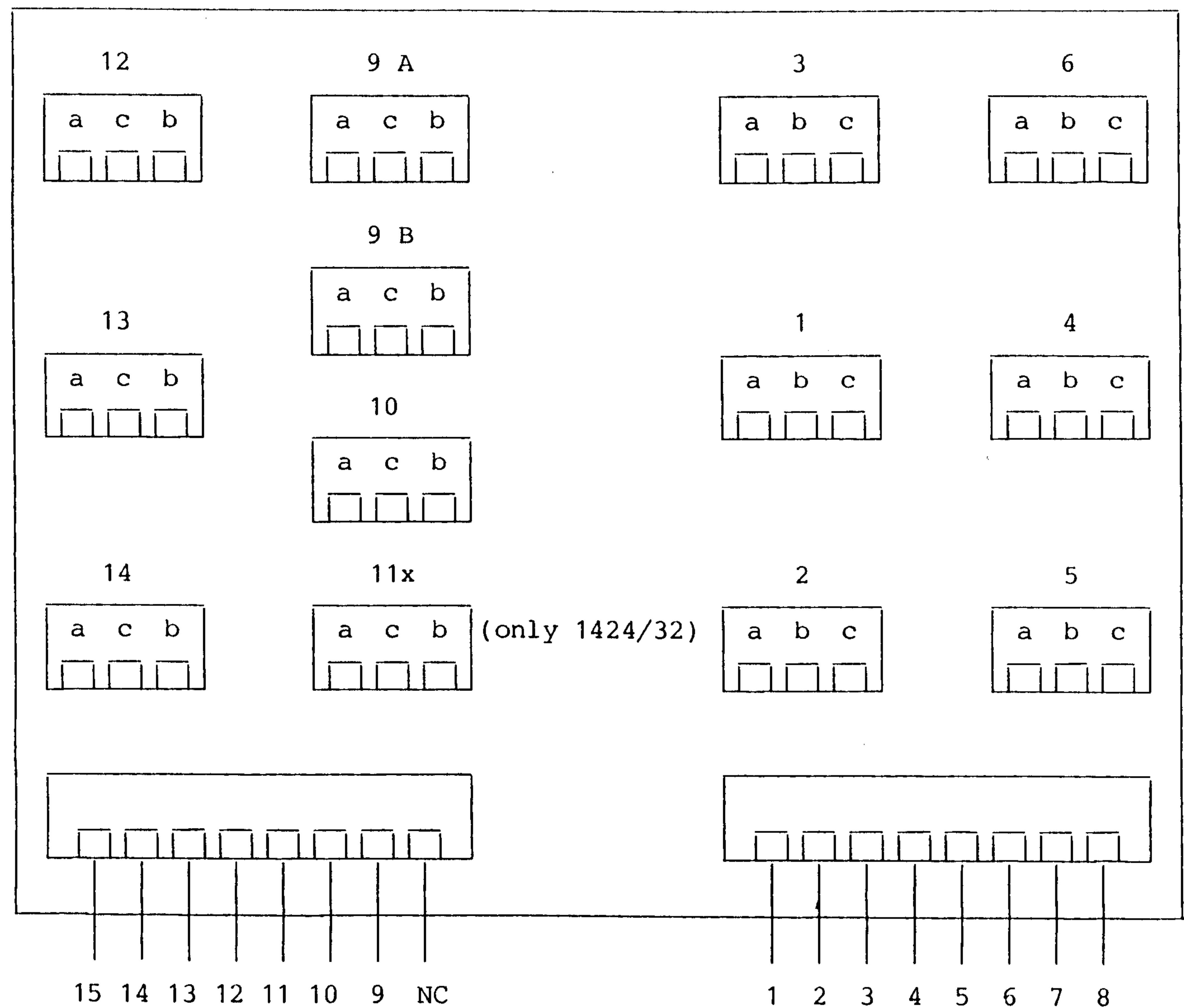
860414 JN/Be





Micro switches

Limit switches, inductive



to the rear panel

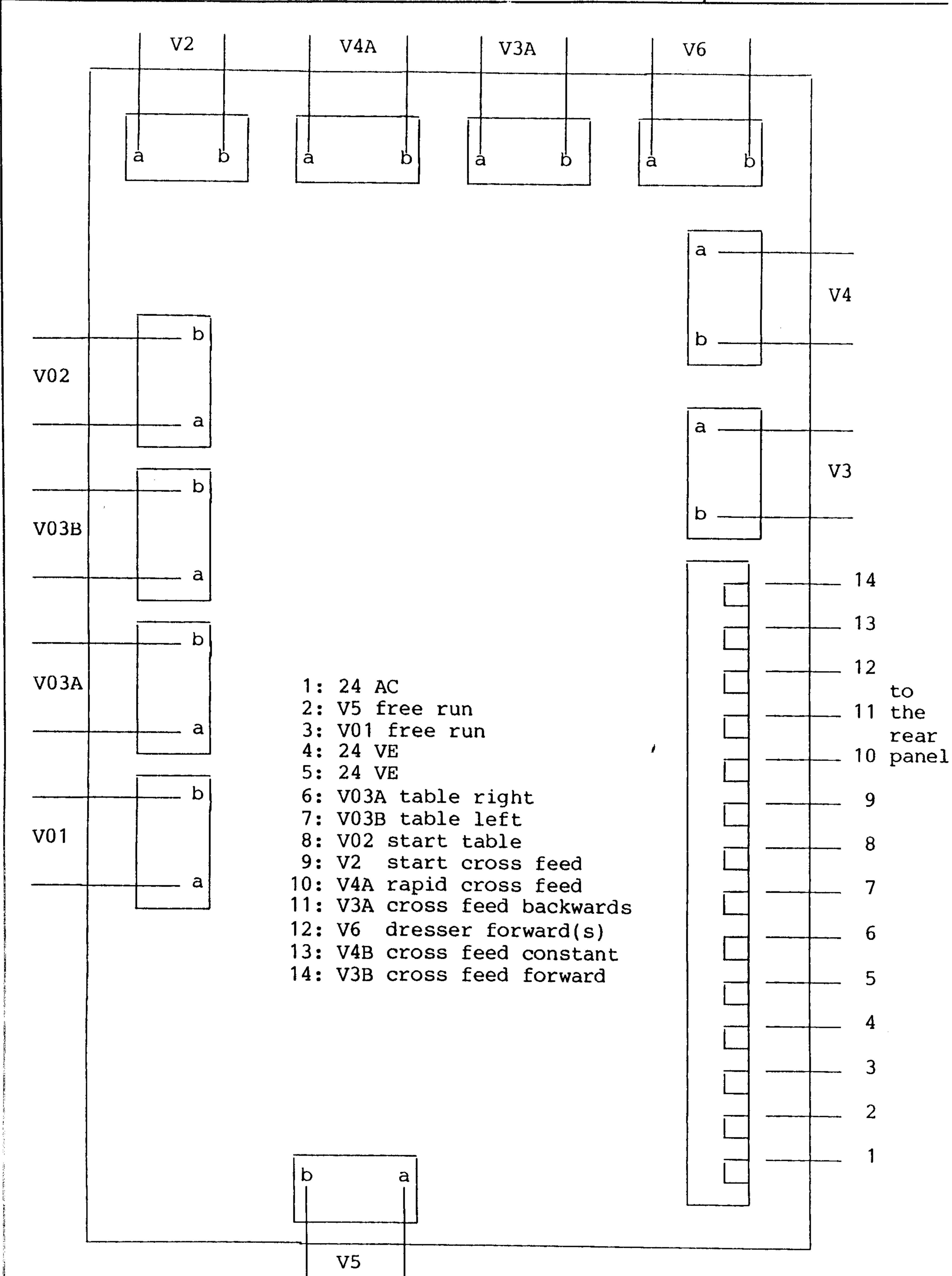
to the rear panel

a: brown (+)
b: black (n.c.)
c: blue (n.o.)

a: brown (+)
b: black (S)
c: blue (O)

9A: AS Dresser blocking
9B: MB Manual table
10: VT Vertical top
11: VB Vertical bottom - only 1424/32
12: MS Manual cross movement
13: HP Table stop
14: SL Saddle lock
15: 24VE

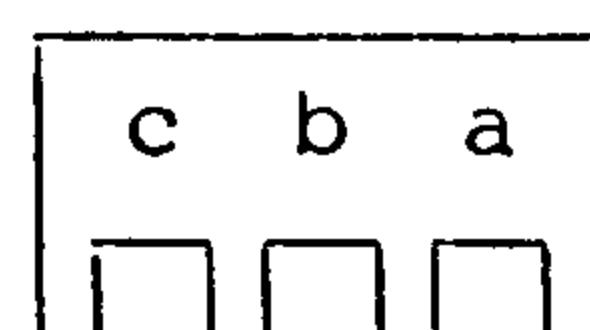
1: BH Table right
2: BP Table parking
3: BV Table left
4: SF Saddle forwards
5: SP Saddle parking
6: ST Saddle backwards
7: 24VE
8: 0VE



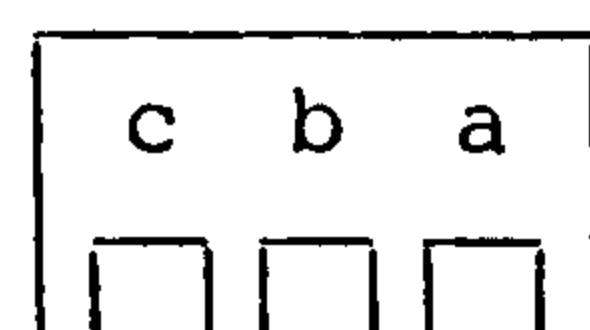
0	24		<u>S</u>	S	S	<u>S</u>			
V	A	A	V	N.	N.	T	T	T	T
E	T	F	E	C.	C.	A	A	A	A
10	9	8	7	6	5	4	3	2	1



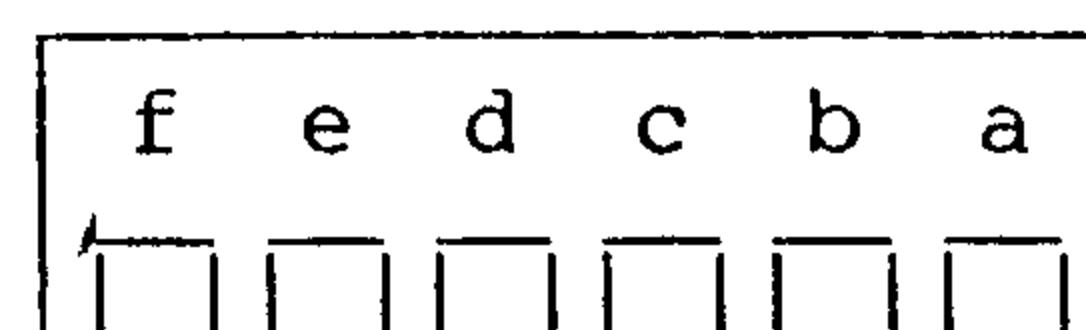
1



2



3



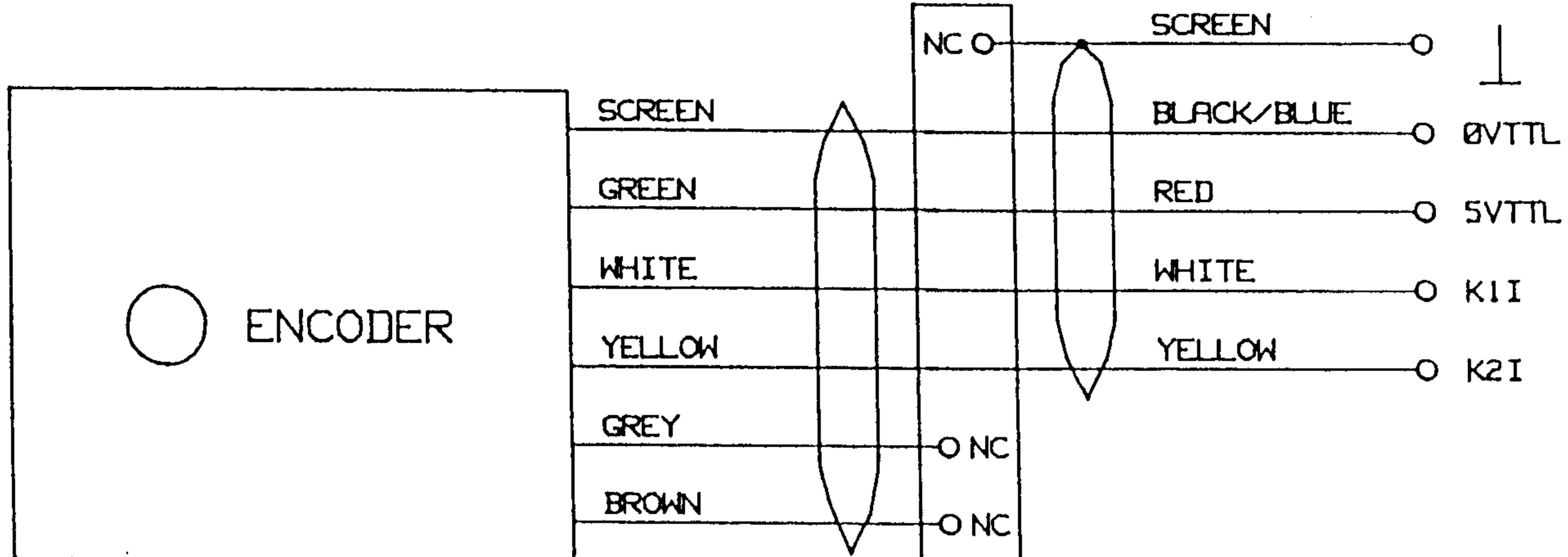
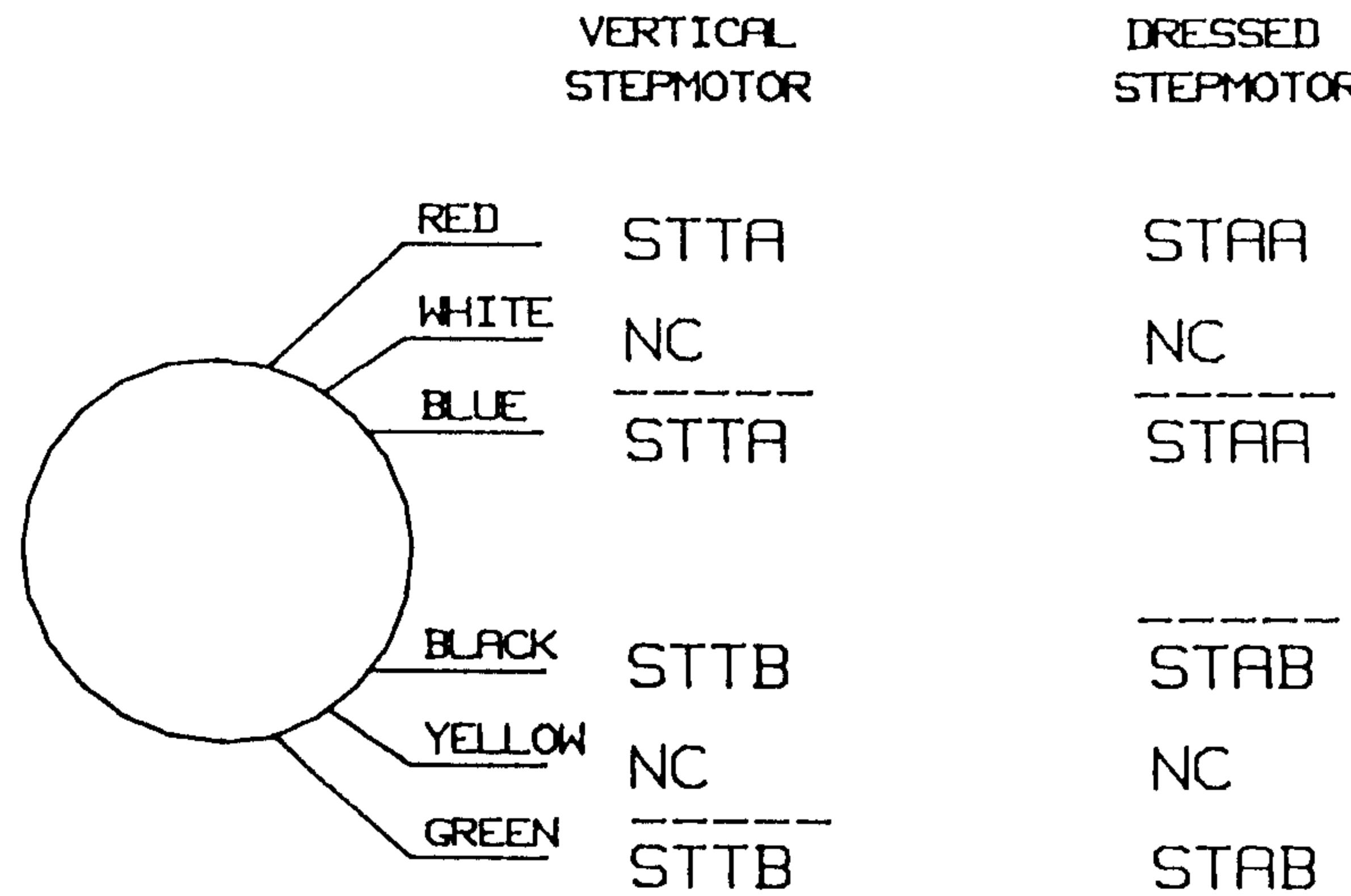
1: AT Dresser backwards
2: AF Dresser forwards

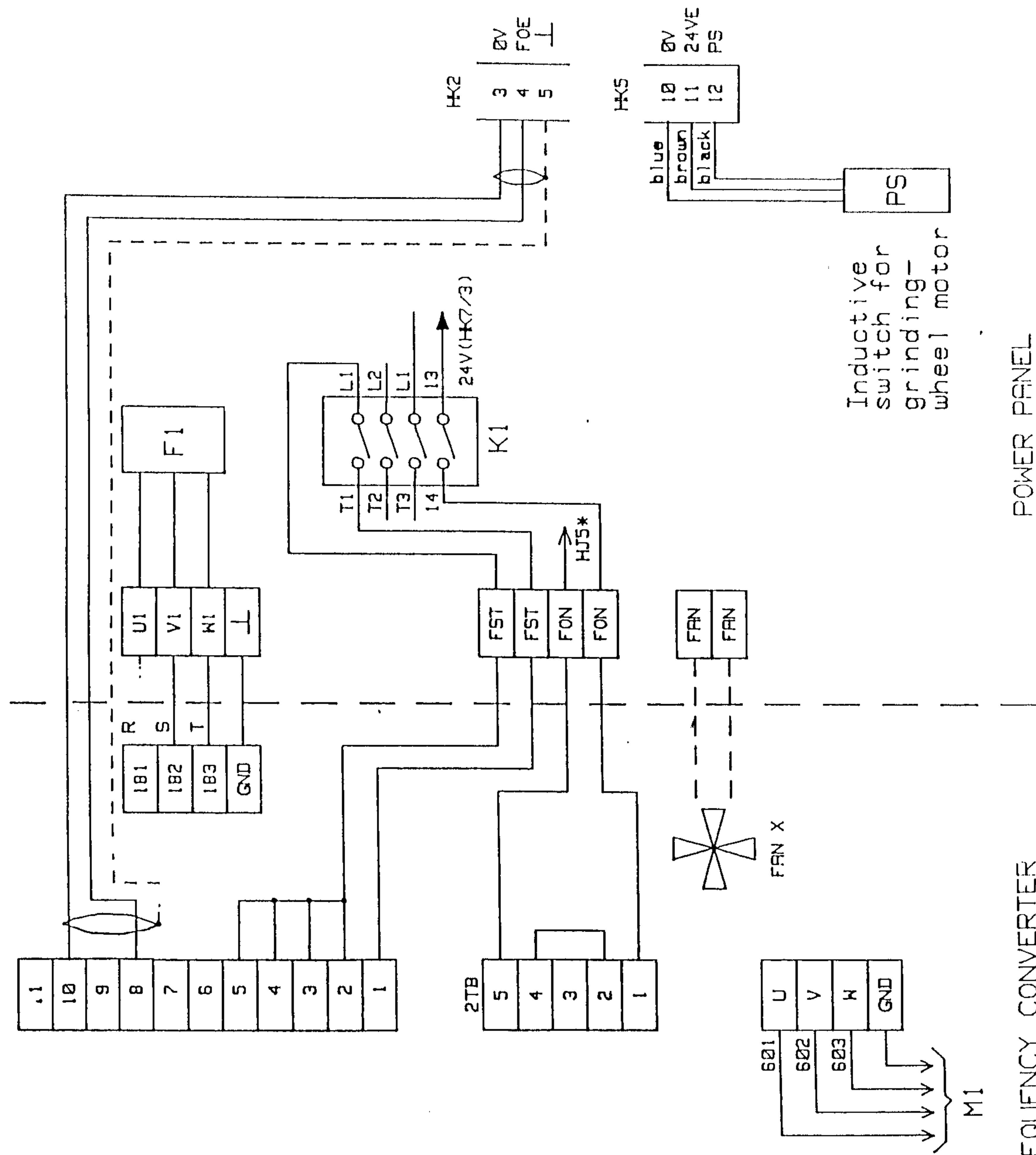
a: brown (+)
b: black (S)
c: blue (O)

3: Dresser stepping
motor

a: blue STAA
b: red STAA
c: green STAB
d: black STAB
e: yellow N.C.
f: white N.C.

STEPPING MOTOR AND HAND WHEEL ENCODER





Grinding wheel Speed

The grinding wheel speed is adjustable by means of the buttons 12 and 13, faster by means of the button 12 and slower by means of the button 13.

The display D2 shows the number of revolutions per minute when the grinding motor is on, and the output in percentage of the frequency converter when the grinding wheel is off. The grinding wheel can only be restarted when the number of revolutions is less than 100 per minute.

The grinding wheel and the hydraulic pump will stop automatically if the number of revolutions is less than 500 and error 205 is indicated.

Error 101 is indicated if the frequency converter falls out.

Connection diagramme for the frequency converter is shown on page 61.

The number of revolutions shown in diagramme D2 is adjusted on the trimpotentiometer below the handle on the ADC 50 card, position 9 (yellow handle) while the actual number of revolutions of the motor is measured.

v4

3.5

Europa SJ 618 - SJ 824			
Item	3*220V 50Hz	3*380V 50Hz	3*400/440V 50Hz
M1	2,2 kW 8,1A	2,2 kW 4,7A	2,2 kW 4,6A
M2	2,2 kW 9,9A	2,2 kW 5,7A	2,2 kW 5,0A
M3	0,18 kW 1,3A	0,14kW 0,27A	0,14kW 0,27A
M4	0,18 kW 1,3A	0,37kW 1,3A	0,18kW 0,27A
M5	0,12 kW 0,78A	0,12kW 0,45A	0,12kW 0,4A 1)
M6		0,55kW 1,4A	0,55kW 1,3A
FR1	7-10A	4-6A	4-6A
FR2	7-10A	4-6A	4-6A
FR3	1-1,6A	0,25-0,4A	0,25-0,4A
FR6	1-1,6A	0,4-0,63A	0,4-0,63A
FR7	0,63-1A	1-1,6A	1-1,6A
F1	25A	16A	16A
F2	6A	2A	2A
F3	6A	6A	6A
F4.1	4A	4A	4A
F4.2	2A	2A	2A
F4.3	4A	4A	4A
F5	4A	4A	4A
F6	3,15A	3,15A	3,15A
F7	4A	4A	4A
F8	1A	1A	1A
In	22A	14A	14A

NOTES : 1) COSEMA 30

v5

Europa,

SJ 1026/32 - SJ 1424/32

Item	3*220V 60Hz	3*380V 50Hz	3*380V 50Hz
M1	4kW 13,4A	4kW 8,8A	4kW 8,8A
M2	2,2kW 8,8A	2,2kW 5,7A	2,2kW 5,7A
M3	0,14kW 0,52A	0,14kW 0,27A	1,1kW 2,5A 2)
M4	0,37kW 2,5A	0,37kW 1,3A	0,37kW 1,3A
M5	1,1kW 5,1A 2)	0,12kW 0,45A 1)	
M6	0,55kW 2,8A	0,55kW 1,4A	0,55kW 1,4A
FR1	13-18A	7-10A	7-10A
FR2	7-10A	4-6A	2,5-4A
FR3	0,4-0,63A	0,25-0,4A	0,25-0,4A
FR6	4-6A	0,4-0,63A	
FR7	2,5-4A	1-1,6A	1-1,6A
F1	25A	25A	25A
F2	6A	2A	6A
F3	6A	6A	6A
F4.1	4A	4A	4A
F4.2	2A	2A	2A
F4.3	4A	4A	4A
F5	4A	4A	4A
F6	3,15A	3,15A	3,15A
F7	4A	4A	4A
F8	1A	1A	1A
In	33A	16A	20A

NOTES : 1) COSEMA M30
2) CYKLON

v4

Europa, SJ 1026/32 - SJ 1424/32

Item	3*380V 50Hz	3*220/240V 60Hz	3*400/440V 50Hz
M1	5,5kW 12A	7,5kW 28A	4kW 8A
M2	2,2kW 5,7A	2,2kW 9,3A	2,2kW 5A
M3	0,14kW 0,27A	0,14kW 0,36A	0,14kW 0,27A
M4	0,37kW 1,3A	0,37kW 2,1A	0,37kW 1A
M5	0,12kW 0,45A 1)	0,12kW 0,7A 1)	0,12kW 0,4A 1)
FR1	10-13A	23-32A	7-10A
FR2	4-6A	7-10A	4-6A
FR3	0,25-0,4A	0,25-0,4A	0,25-0,4A
FR6	0,4-0,63A	0,63-1A	0,4-0,63A
FR7	1-1,6A	1,6-2,5A	1-1,6A
F1	25A	50A	25A
F2	2A	2A	2A
F3	6A	6A	6A
F4.1	4A	4A	4A
F4.2	2A	2A	2A
F4.3	4A	4A	4A
F5	4A	4A	4A
F6	3,15A	3,15A	3,15A
F7	4A	4A	4A
F8	1A	1A	1A
In	22A	43A	15A

NOTES : 1) COSEMA M30

v5

3.6

ITEM	STD.	OPT.	DESCRIPTION
K1	X		Relay, grinding wheel
K2	X		Relay, hydraulic pump
K3	X		Relay, coolant pump
K4	X		Relay, grinding wheel down
K5	X		Relay, grinding wheel up
K6		X	Relay, coolant filter
K7		X	Relay, dust collector
K8	X		Relay, electronic supply
V24	X		Relay, emergency and power-up
K11		X	Relay, grinding wheel, star
K12		X	Relay, grinding wheel, triangle
WMG		X	Magnetic chuck controller
E	X		Push button, latching, emergency stop
WL	(X)	X	Working lamp
DI	(X)	X	Digital read-out
QA	X		Mains switch
HC1		X	Hour counter
T1	X		Transformer, control voltage, relays
T2	X		Transformer, electronic supply
T3		X	Transformer, magnetic chuck
T4	(X)	X	Transformer, working lamp
1-9	X	X	Solid state relays
F1-F8	X	X	Fuses
FR1-FR8	X	X	Motorprotections

VT

1.1

FRONT PANEL

