

# **STUDER** INTERNATIONAL

---

D820-48 Software up-date Version 2.0

SI 141/90

10.85.7170 (E)

## **Service Information**

CONTENTS :

1. APPLICATION, CONTROL SHEET
2. MODIFICATION INSTRUCTIONS
3. SOFTWARE COMPATIBILITY LIST
4. INSTRUCTIONS FOR USING THE PARAMETER BACK-UP PROGRAM 'NV-PARA'
5. D820-48 / SW V 2.0: IMPROVEMENTS & NEW FEATURES
6. APPENDIX: LAYOUTS

## 1. APPLICATION

This update contains the software version 2.0 for the STUDER D820-48 digital multitrack. It replaces all former software releases.

The software (EPROMs) has to be changed on the following PCBs:

Inside the machine:

- CPU	1.862.655.20
- PIF	1.862.656.20
- SSTC	1.862.659.21
- Display Panel uP-Board	1.862.815.20
- Tape Deck MPU	1.862.781.20
- Capstan Control Unit	1.862.764.20

Inside the remote controls:

- Channel Remote uP-Board	1.328.602.20
- Autolocator uP-Board	1.328.612.20
- PAI Proc. Rembus Board	1.328.631.20

Note that the index no. of these PCBs does not change. The reason for this is the fact that the software released so far with the machine (Version 1.7.2) was not an official release. From version 2.0 onwards, the old system will become effective again, i.e. a SW update will result in an increase in the index no. of the PCB.

### IMPORTANT :

On the first 10 machines (serial numbers 1001..1010), the record currents for the Time Code and Cue tracks have been set too low. They have to be corrected according to the following table:

RECORD CURRENTS for CUE1, CUE2, TC
------------------------------------

Serial Nr.	Head	Value (in HEX)
1002	NEW	E2
	SYNC	D1
1003	NEW	CE
	SYNC	CA
1005	NEW	C5
	SYNC	BF
1007	NEW	D6
	SYNC	EC
1010	NEW	D0
	SYNC	D3

In the menu, go to SET: RECORD CURRENT  
S026: MAN AUX REC CUR  
→ TAPE: A(B) HEAD: NEW(SYNC)  
TRK: CUE1(CUE2,TC) SET: XX

The record current setting for the RT track does not change !

Please also correct these values in the parameter file on the floppy disk that came with the machine. (Refer to paragraph 4 of this document)

Please inform us when the update is completed by sending back the enclosed control sheet.



## 2. MODIFICATION INSTRUCTIONS

### a) Preparatory steps:

The parameter back-up program NV-PARA currently saves only the Tape Tension settings as well as the Record Current settings. For this reason it is necessary to write down the SETUP and FUNCTIONS settings before clearing the RAMs.

- Write down the setup of the machine:

- \* SET: AUDIO INPUT
- \* SET: AUDIO OUTPUT
- \* SET: CROSSFADE TIME

.  
.  
.

- Write down the function setting:

- \* FCT: AUDIO
- \* FCT: AUX TRACKS
- \* FCT: CLOCK REFERENCE

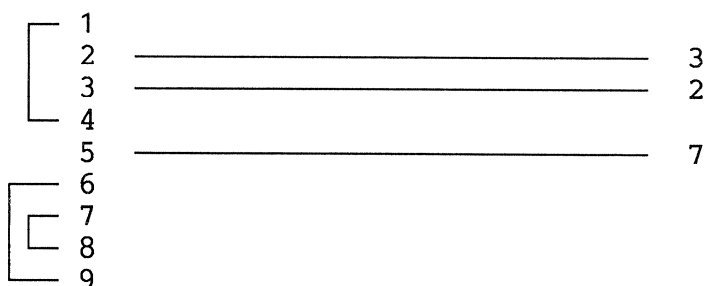
.  
.  
.

- b) Exchange the EPROMs as indicated on the list on page 7.
- c) Clear the RAMs (ICs 22 & 23) on the CIF-Board 1.862.654.20. All settings will be lost now.
- d) Remove the 2 jumpers on the CPU-Board 1.862.655.20, as indicated on page 19.
- e) Load the data (Record Currents, Tape Tensions) back into the machine from the floppy disk by means of the program NV-PARA. (see instructions in paragraph 4 of this document.) You need to connect the serial RS232 port of your PC to the TERMINAL port on the CPU-Board (1.862.655.20) of the D820-48.

The cable connections are as follows:

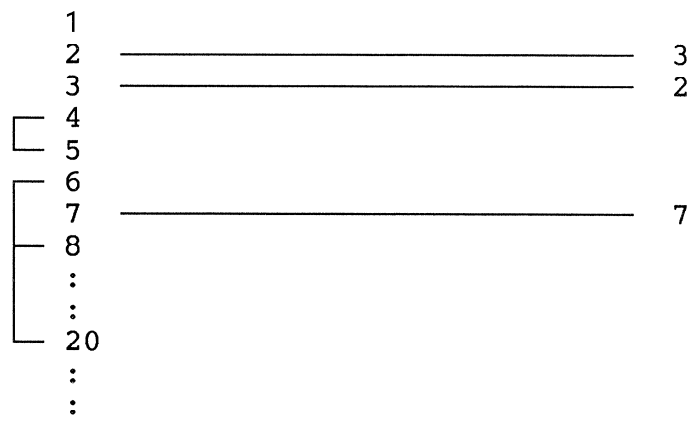
PC: 9 Pin

D820-48: 25 Pin



or: PC: 25 Pin

D820-48: 25 Pin



It is best to switch the PC on first, then the D820-48, then start the NV-PARA program.

D820-48 SOFTWARE V. 2.0
-------------------------

- CPU 1.862.655.20 (CPU Piggy-Bag 1.862.686.20)

1.862.924.20	IC 1	29/90
1.862.925.20	IC 2	29/90
1.862.926.20/1	IC 3	29/90
1.862.926.20/2	IC 4	29/90
1.862.926.20/3	IC 5	29/90
1.862.926.20/4	IC 6	29/90

- PIF 1.862.656.20

1.862.937.20	IC 35	29/90
1.862.938.20	IC 43	29/90
1.862.939.20	IC 61	29/90
1.862.940.20	IC 68	29/90

- SSTC 1.862.659.21

1.862.967.20	IC 40	29/90
1.862.968.20	IC 50	29/90

- DISPLAY PANEL uP BOARD 1.862.815.20

1.862.825.20	IC 28	29/90
1.862.826.20	IC 29	29/90

- TAPE DECK MPU 1.862.781.20

1.862.797.20/1	IC 18	29/90
1.862.797.20/2	IC 16	29/90

- CAPSTAN CONTROL UNIT 1.862.764.20

1.862.796.20	IC 17	25/90
--------------	-------	-------

- CHANNEL REMOTE uP BOARD 1.328.602.20

1.328.899.20	IC 5	29/90
--------------	------	-------

- AUTOLOCATOR uP BOARD 1.328.612.20

1.328.898.20	IC 4	29/90
--------------	------	-------

- PAI PROC. REMBUS BOARD 1.328.631.20 (PARALLEL AUDIO IF)

1.328.896.20	IC 514	29/90
--------------	--------	-------



### 3. SOFTWARE COMPATIBILITY LIST

D820-48 SOFTWARE COMPATIBILITY LIST	
Issue 1	Date: 20.8.90 / WAG

PCB	HARDWARE #	IC	WW/YY	SOFTWARE #	CHECKSUM
CPU (Piggy-Bag	1.862.655.20	1	29/90	1.862.924.20	612B
	1.862.686.20)	2	29/90	1.862.925.20	5623
		3	29/90	1.862.926.20/1	1A7C
		4	29/90	1.862.926.20/2	A71E
		5	29/90	1.862.926.20/3	2015
		6	29/90	1.862.926.20/4	1ECO
PIF	1.862.656.20	35	29/90	1.862.937.20	1978
		43	29/90	1.862.938.20	7A05
		61	29/90	1.862.939.20	4BA7
		68	29/90	1.862.940.20	7047
SSTC	1.862.659.21	40	29/90	1.862.967.20	C3C0
		50	29/90	1.862.968.20	CC89
TCG	1.862.685.21	31	10/90	1.862.980.21	
		32	10/90	1.862.981.21	
RT	1.862.657.22	17	32/89	1.862.956.20	
		18	32/89	1.862.957.20	
		48	19/90	1.862.958.22	
		67	19/90	1.862.959.22	
MAPRO	1.862.652.21	25	19/90	1.862.913.21	
		26	19/90	1.862.914.21	
TD MPU	1.862.781.20	18	29/90	1.862.797.20/1	F178
		16	29/90	1.862.797.20/2	C437
CAPSTAN MPU	1.862.764.20	17	25/90	1.862.796.20	E43E
DP uP	1.862.815.20	28	29/90	1.862.825.20	B5C5
		29	29/90	1.862.826.20	8F5A
CR uP	1.328.602.20	5	29/90	1.328.899.20	C421
AL uP	1.328.612.20	4	29/90	1.328.898.20	6A3C
PAI uP	1.328.631.20	514	29/90	1.328.896.20	FA02
RDP uP	1.328.625.20	28	29/90	1.328.894.20	
		29	29/90	1.328.895.20	

Legend: DP = Display Panel  
 CR = Channel Remote Control  
 AL = Autolocator (Tape Deck Controller)  
 PAI = Parallel Audio Interface  
 RDP = Remote Display Panel  
 uP = Microprocessor Board

#### 4. INSTRUCTIONS FOR USING THE PARAMETER BACK-UP PROGRAM 'NV-PARA'

Every D820-48 is delivered with a 3.5" floppy disk which contains

- the data transfer program NV-PARA (file NV\_PARA.EXE)
- the parameter set for this machine (file \*\*\*\*\_PAR.DAT), where \*\*\*\* equals the serial number of the machine
- instructions (file READ\_ME.1ST)

You will need this program every time you change the CPU-software on the D820-48 since all parameters will be lost upon clearing the RAMs.

The program NV\_PARA.EXE enables the transfer of these parameters between any IBM-compatible PC and the D820-48.

The files \*\*\*\*\_PAR.DAT and MAIN\_PAR.DAT are ASCII files which both contain the following parameters of the D820-48:

- All Record Currents
- All Erase Currents
- All Tape Tensions
- the SET DATA DENSITY parameter .

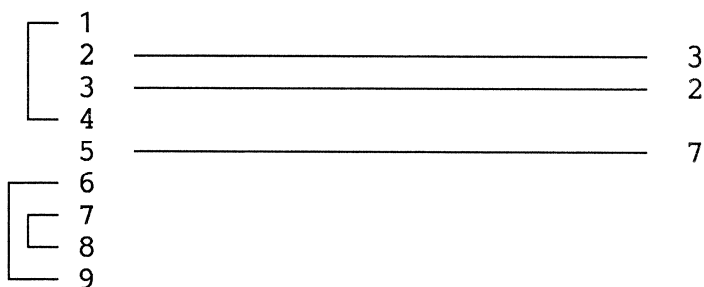
These files can be read and/or processed by any text editor. They can also be printed out by the MS-DOS command  
TYPE MAIN\_PAR.DAT > PRN ,  
provided a printer is connected to the PC.

#### -> HOW TO USE THE PROGRAM

1. switch off both the D820-48 and the PC
2. Connect the RS232 interface on the PC (Port com1) to the TERMINAL port on the CPU of the D820-48. You therefore need a 3-wire connection, with the hardware handshakes shorted on the PC-side of the connection.

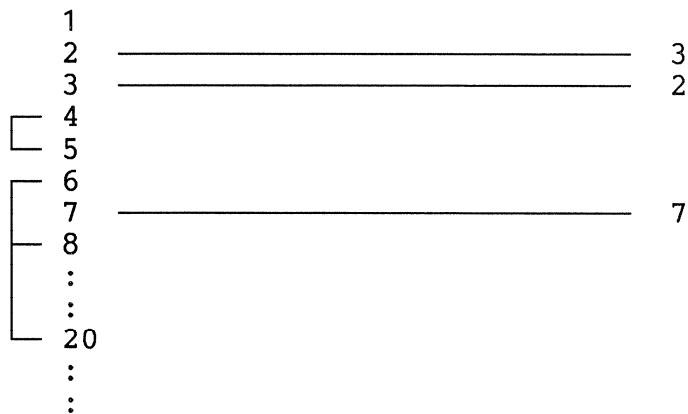
PC: 9 Pin

D820-48: 25 Pin



or: PC: 25 Pin

D820-48: 25 Pin



3. switch on the PC, then the D820-48 (the machine must be in STOP);

4. (1) type 'a:nv\_para' to start the program;

you will get the following message on the screen:

```
[S]lave Mainparameters on Disk  
[L]oad Mainparameters from Disk  
Your choice <S,s / L,l or ESC> ?
```

(2) press 'S' or 's' to save the parameters from the D820-48 to the disk

(3) press 'L' or 'l' to load the parameters from the disk to the D820-48

Note: The program uses 'MAIN\_PAR.DAT' as the default filename; if you want to use a different filename, simply overwrite it.

(4) press 'ESC' to quit the program

(5) the program will first check the RS232 connection. If it is alright, the program starts the data transfer from or to the D820-48; If a problem occurs, the message

```
COMMUNICATION ERROR !  
Retry the communication test <y,n> ?  
[<n> exits the program]
```

will appear on the screen. In this case, check the connection between the PC and the D820-48.

(6) Upon termination of the transfer, the message 'DATA TRANSFER TERMINATED' will appear on the screen and the program will exit to DOS.

5. Data structure of '\*\*\*\*\_PAR.DAT' :

Example:

```
; TAPE TENSION (PLAY LEFT)
/13 0
61
;
:
:
; DIGITAL CHANNEL RECORD CURRENTS TAPE A NEW HEAD (1)
/47 00 00 FE (2)
AA AA AA AA AA ..... AA AA AA AA AA AA (3)
BB BB BB BB BB ..... BB BB BB BB BB BB (4)
;
:
; AUX TRACKS ERASE CURRENTS TAPE B
/5D 01
AA BB CC DD
```

Description:

Every new line has to start in the first row, it may have a maximum of 80 characters and it has to end with a <CR,LF> (ASCII code : 0D 0A).

- (1) Comments have to start with a ';' and are ignored by the program.
- (2) Commands to the D820-48 start with a '/' and are followed without a blank by the actual command in HEX. If the command consists of several bytes, these are separated by blanks. The command has to be terminated with <CR>, again without a blank.
- (3) The data corresponding to the command appear in the next line in the first row. Several data bytes are separated by blanks. A <CR> after the last byte will terminate the line.
- (4) If a data set consists of more bytes than fit in a line, the remaining data bytes will appear in the following lines. Every line is terminated with a <CR>.

## 5. D820-48 / Software V 2.0: Improvements and new features

### 1. Default User Keys

The User Keys 1..4 are now programmed as follows:

USER 1 :	TC LOCK (ON/OFF)	(LED BRIGHT = ON)
USER 2 :	TC INPUT (GEN/EXT)	(LED BRIGHT = GEN)
USER 3 :	ADVANCE OUTPUT (ON/OFF)	(LED BRIGHT = ON)
USER 4 :	LIBRARY WIND (ON/OFF)	(LED BRIGHT = ON)

Note: The User Keys are not yet freely assignable. This should be available with the next SW release.

### 2. LC Display: S030: EXT MOVE PULSES

The Move Pulse frequency of an external master machine can be entered now in the LCD menu. This concerns the operation with the internal synchronizer.

### 3. LCD: Tape Tensions

The values in the LCD menu for the tape tensions are now entered in HEX in the same way as on the STUDER analog tape machines.

### 4. LCD: F061: SLOW LOCK

The function SLOW LOCK will be removed from the LCD menu.

### 5. LCD: INPUT/OUTPUT LEVELS

To avoid any misinterpretations, the designation of the levels in the LCD menu is changed to:

```
SET: LEVELS
S022: INP CLIP LEVEL    and
S023: OUTP PEAK LEVEL
```

### 6. LCD: Setting of millisecond-values

Wherever milliseconds have to be set in the LCD menu, the setting can now be done digit-wise, i.e. for the ones, tenths and hundreds separately. The digit to be set has to be selected with the cursor.

## 7. Range of the Timer Display

The range of the different timer displays is as follows:

MODE:	TIME DISPLAY:	DIFFERENCE:
TIMER	-9.59.59.999..99.59.59.999	
WATCH	-9.59.59.999..99.59.59.999	
TC(30)	0.00.00.000..23.59.59.29	-9.59.59.29...23.59.59.999
RT(48)	0.00.00.000..74.33.54.999	-9.59.59.999..74.33.54.999
(44.1)	0.00.00.000..81.09.33.999	-9.59.59.999..81.09.33.999
(44.0)	0.00.00.000..81.14.25.999	-9.59.59.999..81.14.25.999

Note: In internal synchronizer operation, the minimum difference that can be displayed is -9h59m59s; if the actual value of the difference is below this minimum value, a 'u' for underflow will be displayed.

## 8. UNLOAD

After pressing UNLOAD, the pinch roller does not move in again.

## 9. ALL ENABLE Key

The ALL ENABLE key is no longer mandatory for selecting ALL INPUT, ALL REPRO, ALL READY, ALL SAFE. It remains however operational.

## 10. CHANNEL OFF muting

The analog and digital outputs of the channels de-selected with the CHANNEL OFF function are now muted.

## 11. Indication of Locate Addresses

By pressing STOP + LOC1..LOC5/ZEROLOC/LOCSTART/ROLLBACK, the corresponding locate address will appear in the timer display.

## 12. Default PREROLL/POSTROLL values

The default PREROLL and POSTROLL values are now set to 5 s.  
(Previously 0 s)

## 13. INTERNAL SYNCHRONIZER

### - Audio de-mute during Lock-up :

The short de-mute of the audio outputs during the lock phase when using the internal synchronizer has now been removed.

### - Undesired Offset between TC + Audio :

This undesired offset (approx. 60 ms) has now been removed.

- Falling out of LOCK when pressing PLAY :

Punch In/Out in the LOCK state is now possible, i.e. the machine does not fall out of LOCK when PLAY is pressed.

- ENABLE OFFSET Function :

The ENABLE OFFSET function can only be switched ON/OFF on the Tape Deck Controller. It is therefore switched to ON upon power-up of the D820 MCH as the default setting.

- see also points 2 & 4.

14. INTERNAL TC GENERATOR

The internal TC Generator now works also at 29.97 Fr/s + 48 kHz.

15. EXTERNAL VIDEO CLOCK

The D820 MCH now also locks to EXT VIDEO CLOCK 25 Fr/s + 44.1 kHz.

16. DIGITAL INPUT selected without applying an EXTERNAL CLOCK

The digital audio outputs are now muted when DIGITAL INPUT is selected without applying a valid external clock (indicated by a flashing red EXT CLOCK Led).

17. PARALLEL REMOTE & SYNCHRONIZER Ports

The transport tallies (signals BR-REW, BR-FORW, BR-REC, BR-PLAY, BR-STOP) are now static on these ports, i.e. the tally will become active (signal goes low) as soon as the corresponding key is pressed on the D820 MCH as opposed to a 'flashing' tally until the corresponding status is achieved.

18. PING-PONG INPUT/REPRO switching

In PING-PONG operation, the source signal can be either the INPUT or the REPRO signal of the channel selected as the source (so be careful when switching between INPUT and REPRO on the source channel during PING-PONG !). However, due to the hardware architecture of the D820 MCH, only ANALOG INPUT is possible. For this reason the source channel will be automatically switched to ANALOG INPUT in PING-PONG mode.

Note: - As PING-PONG is only possible with the D820 MCH in INSERT RECORD mode, monitoring of the PING-PONG operation is not possible. By switching the destination channels to INPUT however, the source signal can be heard on these channels during RECORD.

19. PING-PONG Configuration Restore

The INPUT/REPRO and SAFE/READY configurations selected before activating PING-PONG will now be restored after quitting the PING-PONG operation.

## 20. AES/EBU Interface Handling

OUTPUT: Channels A & B of the AES/EBU format are freely assignable to all 48 channels, also CH A = CH B is possible. The AES/EBU output signal is **always** available, both in INTERNAL and EXTERNAL CLOCK modes.

INPUT: Channels A & B are freely assignable to all 48 channels, but CH A  $\neq$  CH B ! The AES/EBU input signal can only be received with the D820 MCH in EXTERNAL CLOCK mode.

OPERATION: 1. SET: AUDIO INPUT  
               S002: DIGITAL FORMAT = AES/EBU

          2. SET: INTERFACE  
               S018: 2CH AES INPUT  
               S019: 2CH AES OUTPUT

Note: - When DIGITAL FORMAT = AES/EBU is selected, the D820 MCH **automatically** switches to EXTERNAL CLOCK and EXT CLOCK REF = AES/EBU. In this mode it **cannot** be switched back to INTERNAL CLOCK, unless DIGITAL FORMAT is set to SDIF ! This will be corrected in the next SW release.

- When DIGITAL FORMAT = AES/EBU is selected, the two AES/EBU input channels (CH A & CH B) will be **automatically** set to DIGITAL INPUT and the remaining 46 channels will be set to ANALOG INPUT. If the AES/EBU input channels are re-selected in the SET: INTERFACE menu, the switch-over ANALOG  $\rightarrow$  DIGITAL and DIGITAL  $\rightarrow$  ANALOG will be done automatically.

## 21. ADVANCED OUTPUT Mode

The delays for the ADVANCED OUTPUT MODE are now correct.

APPLICATION: The signal processing delays of a digital mixing console can be considerably longer than those of an analog mixing console. To ensure correct overdubbing operation in this case, the output signal of the D820 MCH can be advanced, as compared to normal operation. To achieve this, the output signal is routed via a different signal path. The delay of this alternative signal path can be selected according to the table below.

ADVANCED OUTPUT DELAY:					
NR:	ANAL. OUT	DIG. OUT	ANAL. OUT	DIG. OUT	SAMPLES
0	+479 $\mu$ s	0 $\mu$ s	+522 $\mu$ s	0 $\mu$ s	0
1	+166 $\mu$ s	-313 $\mu$ s	+182 $\mu$ s	-340 $\mu$ s	15
2	0 $\mu$ s	-479 $\mu$ s	0 $\mu$ s	-522 $\mu$ s	23
3	-166 $\mu$ s	-646 $\mu$ s	-182 $\mu$ s	-703 $\mu$ s	31
4	-334 $\mu$ s	-813 $\mu$ s	-363 $\mu$ s	-884 $\mu$ s	39
5	-500 $\mu$ s	-979 $\mu$ s	-544 $\mu$ s	-1066 $\mu$ s	47
6	-646 $\mu$ s	-1125 $\mu$ s	-703 $\mu$ s	-1225 $\mu$ s	54
Fs = 48 kHz			Fs = 44.1 kHz		



OPERATION: 1. SET: AUDIO OUTPUT  
 S003: ADV OUTP DELAY  
 CH: SET:

2. FCT: AUDIO  
 F001: ADV OUTPUT ON/OFF (Standard User Key 3)

Note: - The ADVANCED OUTPUT mode can only be selected with the D820 MCH in INSERT RECORD mode.  
 - When ADVANCED OUTPUT mode is selected, it is active on all channels, but the setting for the different channels can be chosen individually.  
 - When performing punch-ins with ADVANCED OUTPUT mode selected, it is **not** possible to hear the crossfade from REPRO to INPUT. The signal will remain in REPRO in this case, due to a different signal path.

Examples:

a) compensate a signal processing delay of approx. 1 ms of a digital mixing console, for correct overdubbing operation. If the digital mixing console is entered in the digital domain (i.e. via the digital output of the D820 MCH), the following setting would have to be selected:

all channels: SET: AUDIO OUTPUT  
 S003: ADV OUTP DELAY  
 CH: ALL SET: 5

This corresponds to an advancement of 979  $\mu$ s (48 kHz), resp. 1066  $\mu$ s (44.1 kHz) relative to Normal Output mode.

b) **advance** the analog output of channel 10 by 500  $\mu$ s (48 kHz) compared to the analog output of all other channels:

CH 10 : SET: AUDIO OUTPUT  
 S003: ADV OUTP DELAY  
 CH: 10 SET: 5

all others channels: SET: AUDIO OUTPUT  
 S003: ADV OUTP DELAY  
 CH: XY SET: 2

c) **delay** the analog output of channel 20 by 479  $\mu$ s (48 kHz) compared to the analog output of all other channels:

CH 20 : SET: AUDIO OUTPUT  
 S003: ADV OUTP DELAY  
 CH: 20 SET: 0

all others channels: SET: AUDIO OUTPUT  
 S003: ADV OUTP DELAY  
 CH: XY SET: 2

d) To achieve synchronous trackbouncing via the analog path (as opposed to digital ping-pong), the ADVANCED OUTPUT mode should be set to:

SET: AUDIO OUTPUT  
S003: ADV OUTP DELAY  
CH: ALL SET: 2

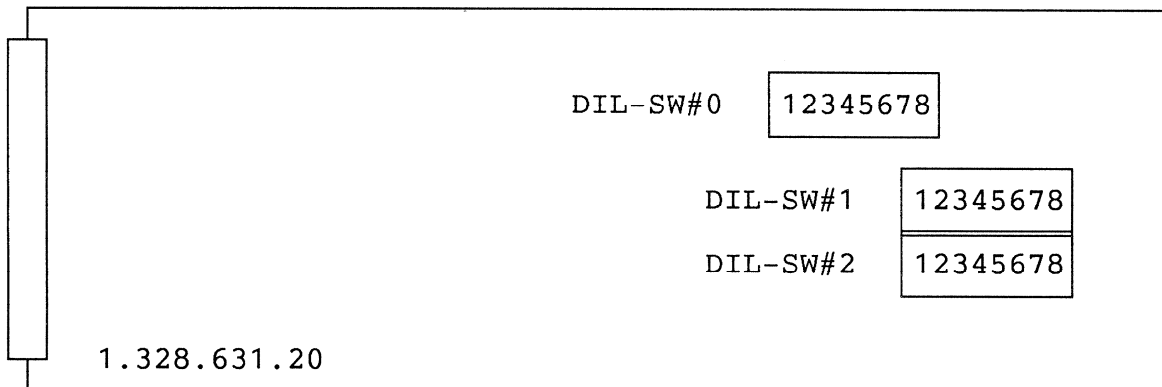
## 22. PARALLEL AUDIO INTERFACE (PAI)

- The READY tallies on the PAI are now static (not flashing).
- The PAI has to be switched on/off in the LCD menu:

FCT: REMOTE  
F052: PAI ON/OFF

It cannot be switched on/off with the REMOTE key.

- The DIL-switches on the PROCESSOR REMBUS PCB (1.328.631.20) carry the following functions:



SW#0: REMBUS ADDRESS SELECT

1,2 : ON  
3..8: OFF

SW#1: PAI CONFIGURATION SWITCH #1

1: Digital Audio Group #1 (CH 1..CH 8)  
2: Digital Audio Group #2 (CH 9..CH16)  
3: Digital Audio Group #3 (CH17..CH24)  
4: Digital Audio Group #4 (CH25..CH32)  
5: Digital Audio Group #5 (CH33..CH40)  
6: Digital Audio Group #6 (CH41..CH48)  
7: Cue Tracks  
8: TC Track

SW#2: PAI CONFIGURATION SWITCH #2

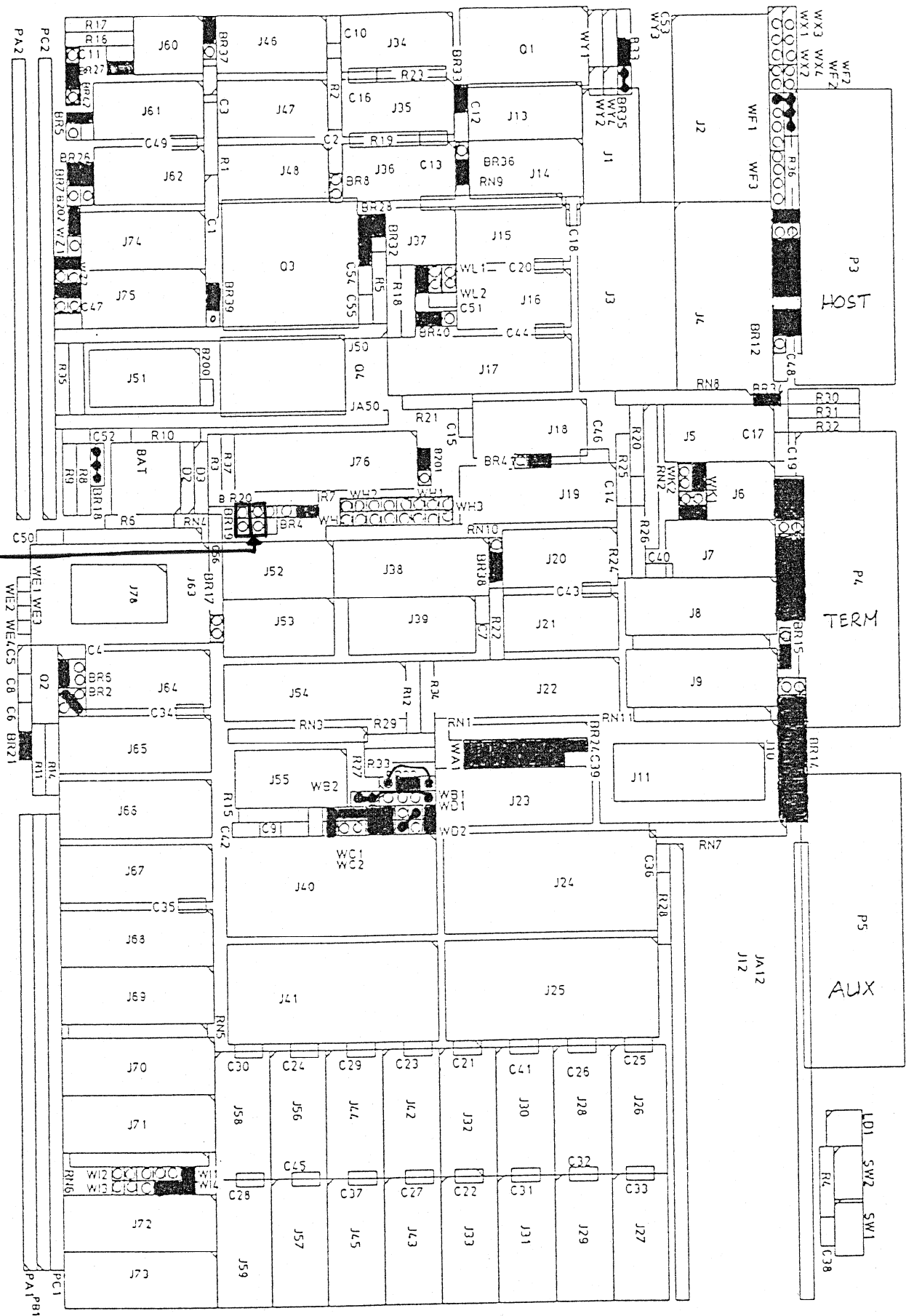
- 1: ALL READY
- 2: ALL SAFE
- 3: ALL INPUT
- 4: ALL REPRO
- 5: REHEARSE
- 6: MASTER SAFE
- 7: AUTO INPUT
- 8: AUTO MUTE

To activate a function from the PAI, the corresponding DIL-switch has to be set to the ON position. In this case, the function thus selected will be de-activated on the Display Panel and the Channel Remote Control.

23. Functions that are not yet implemented with V 2.0

- CUE PREVIEW
- EXT BIPH CYCLE TIME
- HOLD
- RECORD MUTE
- TAPE GUARD selection
- TEST mode
- Programming of the USER KEYS
- VARISPEED INDICATION ENHANCED
- TAPE DECK CONTROLLER:
  - Auxiliary Register FR/MS switchover
  - CALCULATOR mode
  - EDIT WAIT / EDIT LOCK
  - User Keys
  - AOR (Auto Offset Retention)

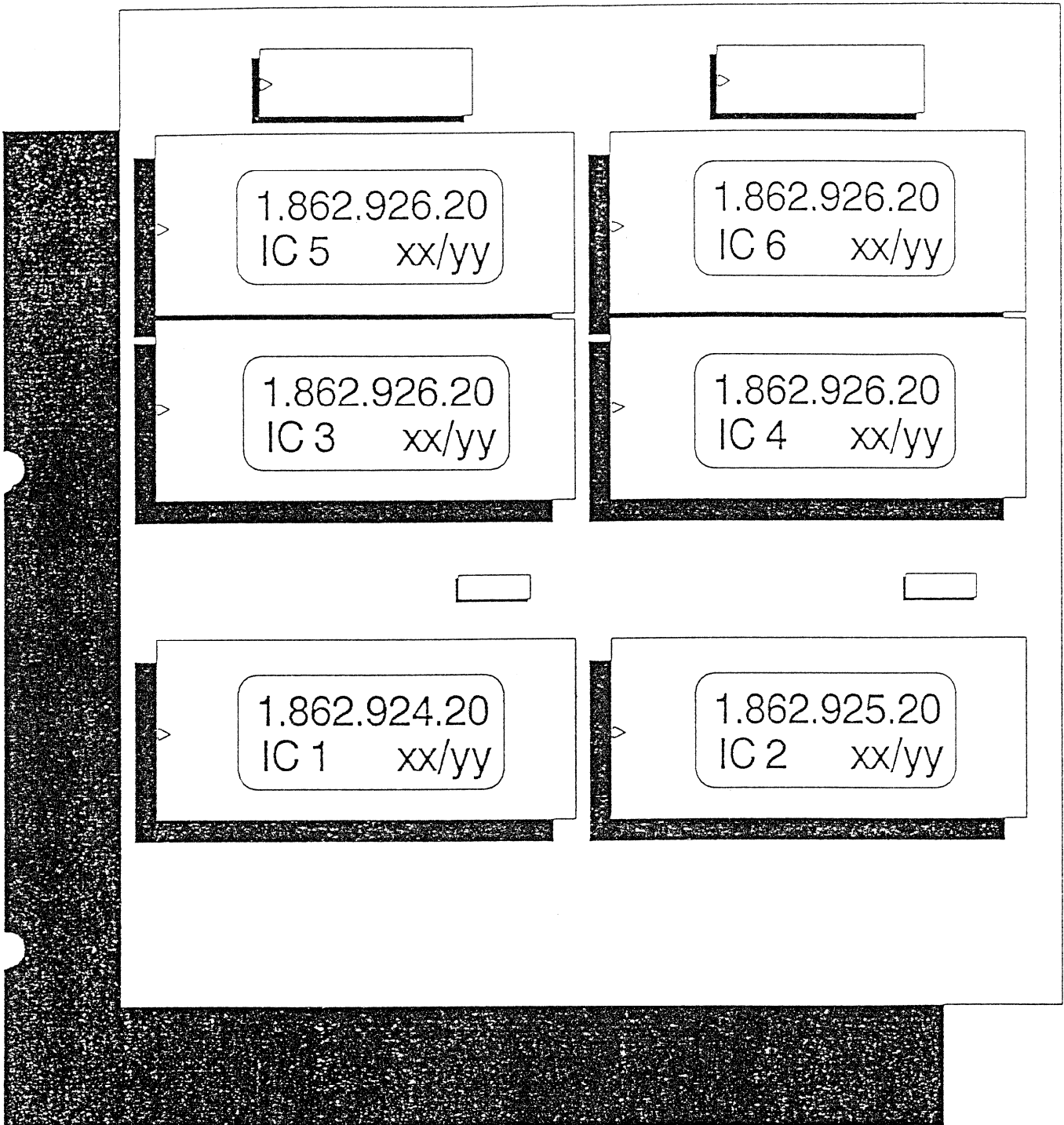
Take  
these  
2  
Jumpers  
out!



JUMPER LOCATION DIAGRAM

D820MCH: CPU-BOARD / SW V. 2.0

1.862.655.20



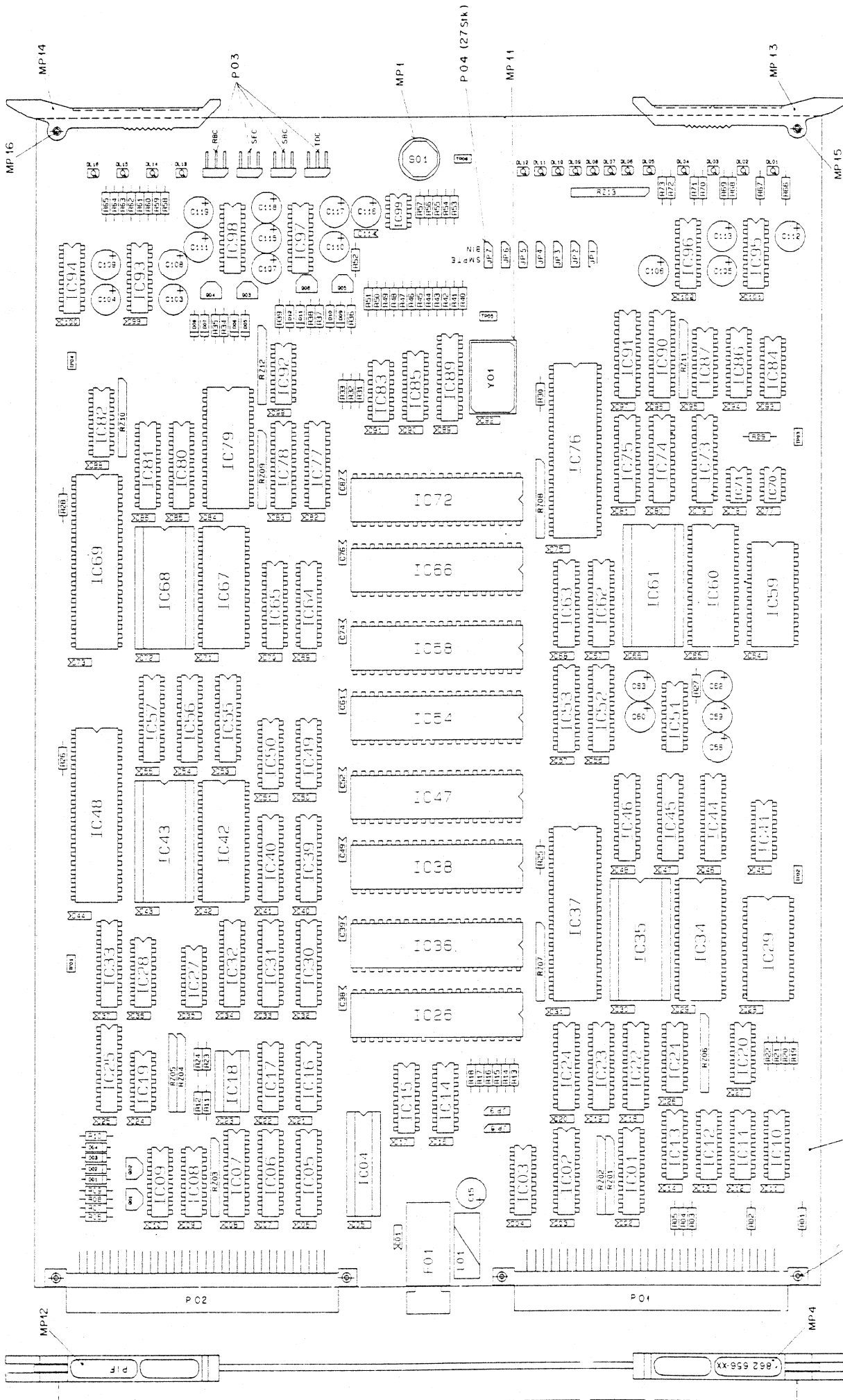
IC1: CPU BOOT H 1.862.924.20 / 50.14.2004  
 IC2: CPU BOOT L 1.862.925.20 / 50.14.2004  
 IC3..6: CPU MAIN 1.862.926.20 / 50.14.2006

Note: IC4/6=H, IC3/5=L, H=High/Even/Upper, L=Low/Odd/Lower

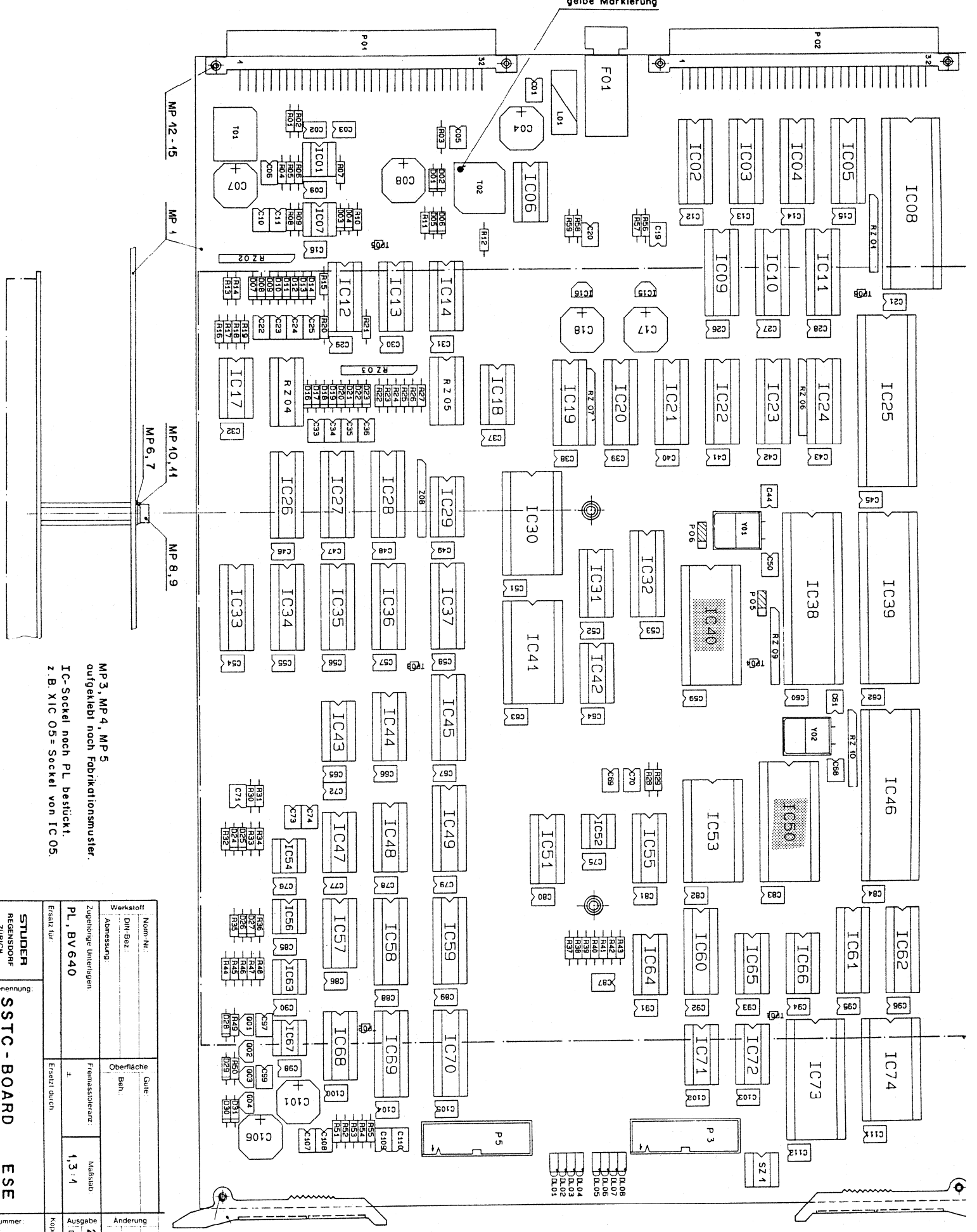
D820MCH: CPU PIGGY-BACK

DSe, May/90

1. 862. 686. 20



Blatt Nr. Blatt Best. Abmessung	Blatt Best. Abmessung	Material 1.3.4	Datum 6.9.89
Zeichnungs-Identifikator PL_BV 640	Zeichnungs-Identifikator PL_BV 640	Zeichnungs-Identifikator 1.3.4	Zeichnungs-Identifikator 6.9.89
Ersteller STUBER REGENSDORF ZÜRICH	Ersteller STUBER REGENSDORF ZÜRICH	Ersteller STUBER REGENSDORF ZÜRICH	Ersteller STUBER REGENSDORF ZÜRICH
PERIPHERAL INTERFACE ESE			Nummer 1.862.656-20

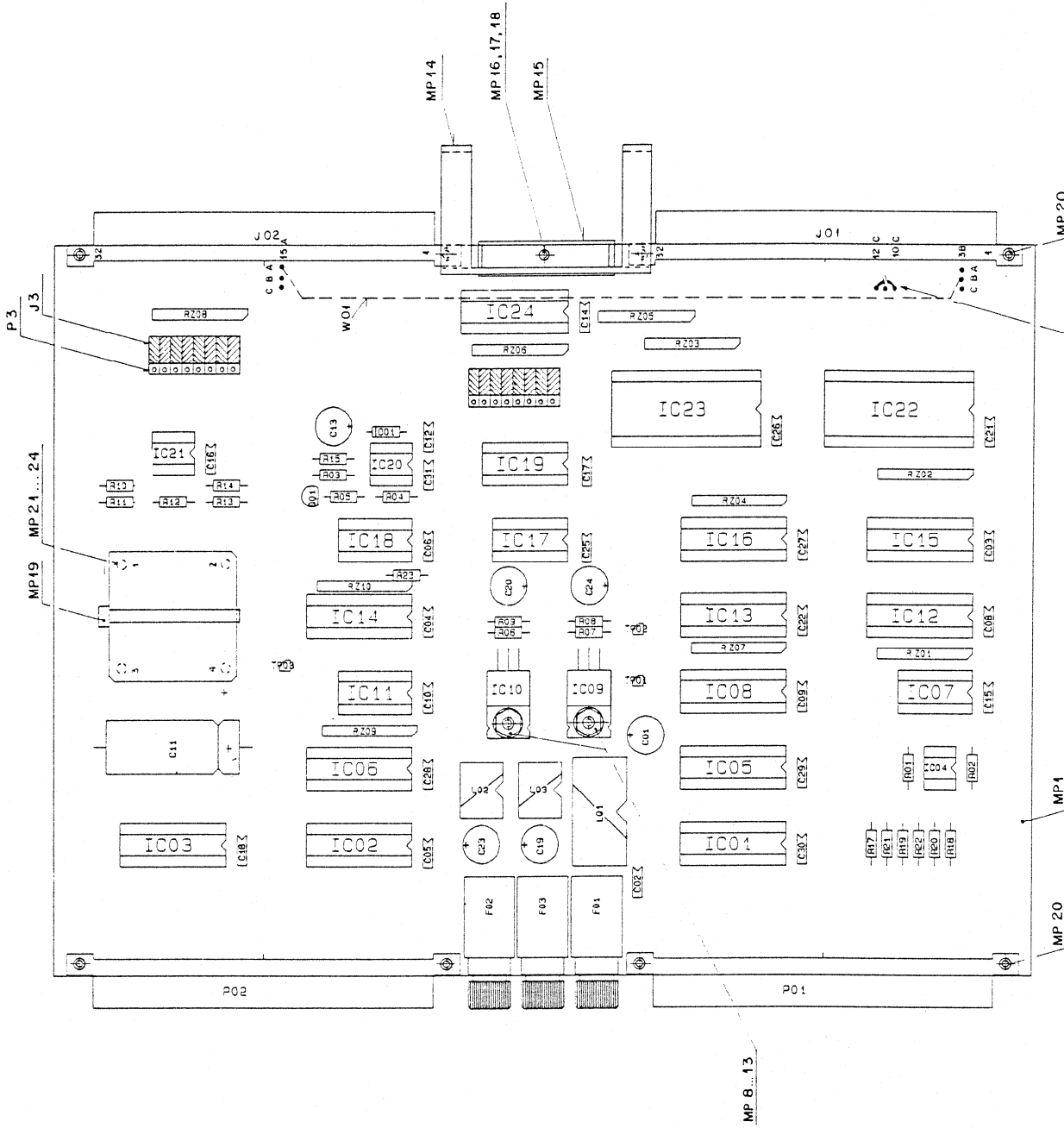


MP 3, MP 4, MP 5  
 ausgeleitet nach Fabrikationsmuster.  
 IC-Steckel nach PL bestückt.  
 z. B. XIC 05 = Steckel von IC 05.

Norm-Nr.:		Güte:	
OH-Bez.:		Oberfläche:	
Werkstoff:		Beh.:	
Anmessung:		Fremdstromverz.:	
Zugenergie Untereinigen:		Maßstab:	
P.L. BV 640		1:3:1	
Ersatz für:		Ausgabe:	
Ersatz durch:		Datum:	
Kopie für:		26.6	
Anmerkung:		Änderung:	

**SSTC - BOARD ESE**

Nummer: 1.862.659.21

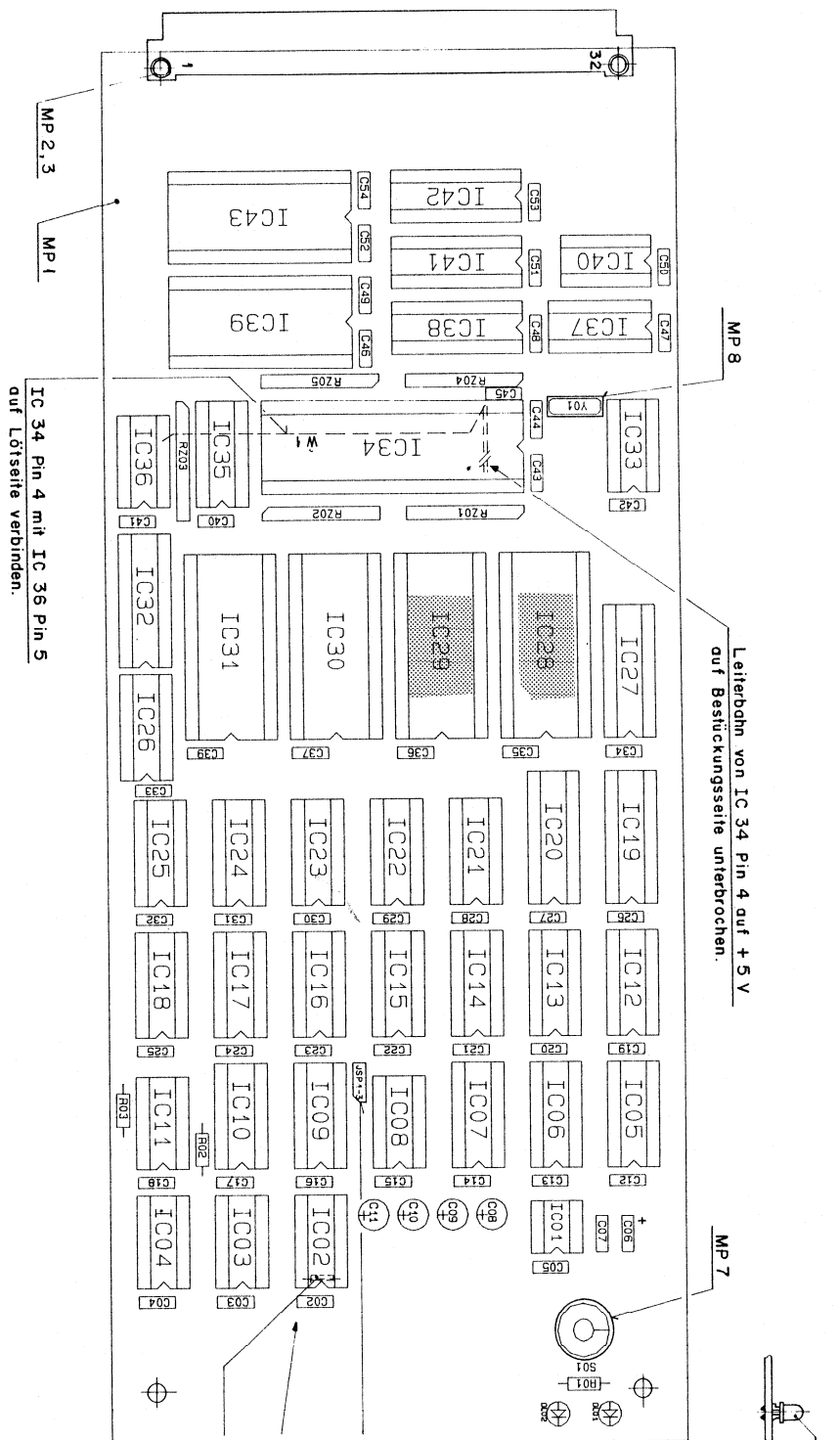


Norm-Nr DIN Bez Abmessung	Guete	Material 1,3 : 1	Ausgabe 19.6.90	Uebersicht
	Boeh			
Zugehoerige Unterbaugrupp PL, BV 640	Fremdsteuerung	Ersatz fuer	Datum	Gez.
				Gez.
Ersatz fuer	Ersatz durch	Kuenge für		

Leiterbahn auf Bestückungsseite aufgetrennt

STUDER CPU INTERFACE





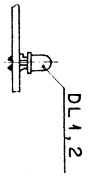
IC 34 Pin 4 mit IC 36 Pin 5 auf Lötseite verbinden.

Leitbahn von IC 34 Pin 4 auf + 5 V auf Bestückungsseite unterbrochen.

IC 02 Pin 1 mit Pin 14 auf Lötseite verbinden

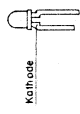
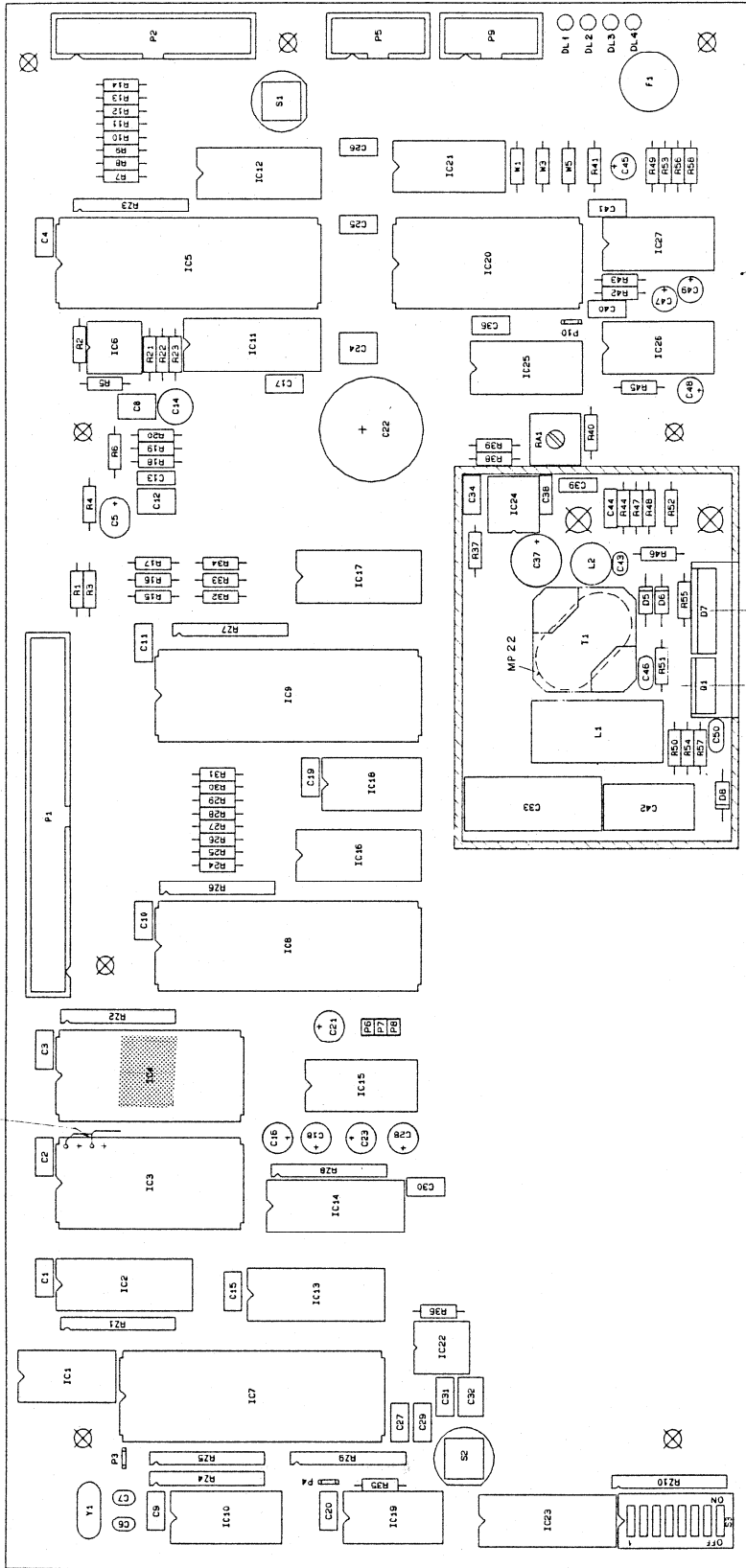
65.99.0111  
64.01.0104  
10 mm lang

JSP 1... 3



Ersatz für:		Ersetzt durch:	
STUDER REGENSDORF ZÜRICH		DP MP 6803 + SERBUS TRM / REC ESE	
Benennung:		Nummer:	
1.3.4		1.862.815-20	
Norm-Nr.:		Änderung:	
DIN-Bez.:		15.6.90	
Abmessung:		1.3.4	
Zugehörige Unterlagen:		Datum	
PL		Gez.	
Werkstoff:		Gepr.	
Oberfläche:		Gas	
Beh.:		Index	
Fräsmaschinenanz.:		1	
Maßstab:		1	
±		1	
Kopie für:		11	

③ auf Lötseite Verwendung  
IC 3 / PIN 26 → Leiterbahn  
herstellen



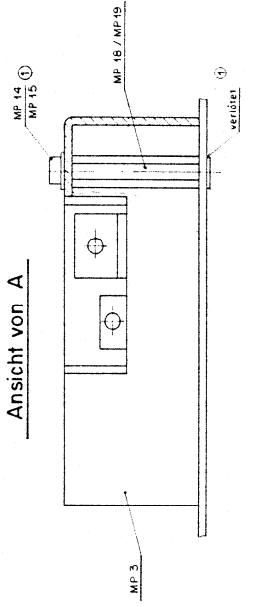
MP 1

MP 13 / MP 14 / MP 8 / MP 9 /  
MP 21 / MP 5

MP 12 / MP 10 / MP 6 / MP 7  
MP 20 / MP 4

A

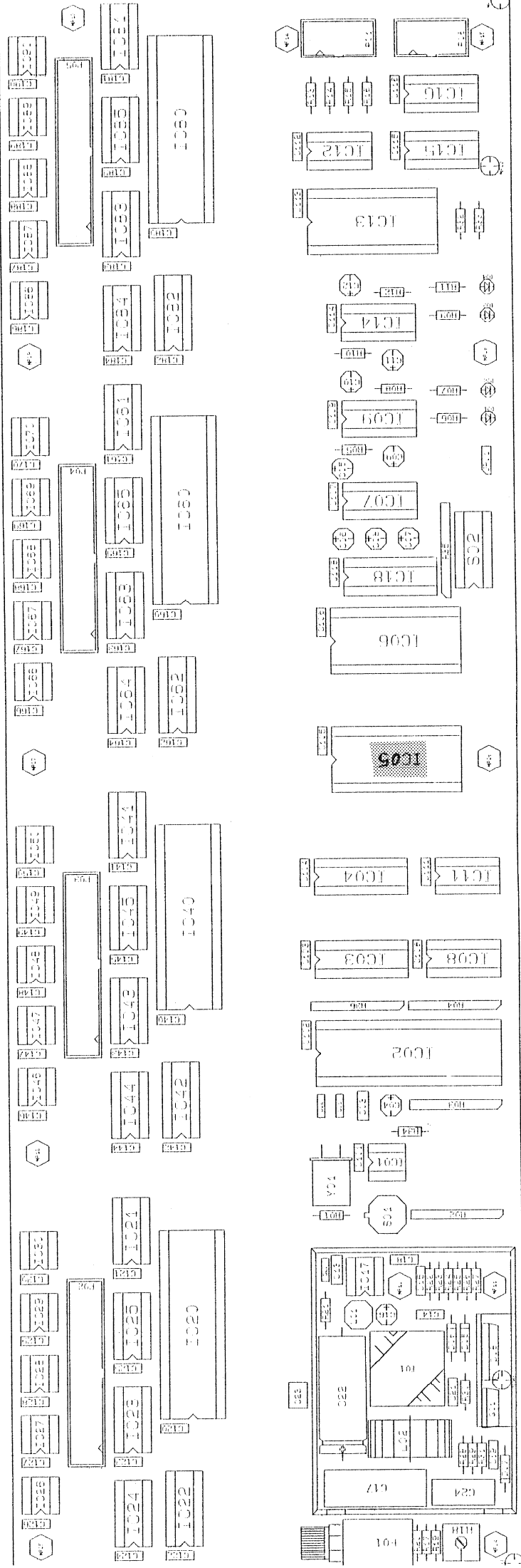
Ansicht von A



Nummer:	24 4 90	24 4 90	24 4 90
Druck:	13 2 90	13 2 90	13 2 90
Version:	1 19 90	1 19 90	1 19 90
Zustimmung:	2 1	2 1	2 1
Erstellt:			
Geprüft:			
Freigegeben:			
Projekt-Nr.:			
AL REMBUS + PROC., ESE			
STUDER RECHENWERK BRUNNEN			

27 27 55 LAR  
4. 328. 602-111

CR REMBUS + PROD.



CR REMBUS + PROC. A. 328. 602. 20

