```
10  DTU IN (1)
20  DTU FX (1,1)
30  REM 98 T
40  DTU FX (2,2)
50  REM 97 T
60  DTU DF (2)
70  REM IN 51, 52, 53, 54, 55, 59, 60, 61, 63 T
80  REM OUT 56, 58, 62 T
90  MPGMV (4, 2,4)   CH
100 MPGMV (5, 0,6)   CL
110 MPGMV (6, 5)     DH
120 MPGMV (7, 0)     DL
130 MPGMV (10, 5)    DH
140 MPGMV (11, 0)    DL
150 DTU TP (2, 1, 1, 500)
160 REM 56, 58, 62 T
170 REM 51, 52, 53, 54, 55, 59, 60 61, 63
180 DSPLAY " GUT JC "
190 STOP
500 DSPLAY " SCHLECHT "
```

CH = 2,4V

CL = 0,6V

DH = 5V

DL = 0V

```
10  DTUIN(1)
15  DTUDF(1)
17  REM 14,97,98
20  DTUFX(2,1)
30  REM 98
40  DTUFX(1,2)
50  REM 2
60  DTUDF(2)
70  REM IN 51,52,53,54,55,59,60
80  REM OUT 56,58,62
90  MPGMV(4,2,4)
100  MPGMV(5,6)
110  MPGMV(6,6)
120  MPGMV(7,0)
130  MPGMV(10,5)
140  MPGMV(11,0)
150  DTUTP(2,1,1,500)
160  REM 56,58,62 T
170  REM 51 ,52,53,54,55,59,60 T
180  DSPLAY "GUTES IC"
500  DSPLAY "SCHLECHTES IC"
```

DVM → J10 + J7

```
10 DTHIN (1)
20 PSW (1, 2, 4)
~~30 PSW (13, 7, 1)~~
40 PAUSE
```

CNT 17 → J 11
SYNTH ~~CNT 8~~ → J 28
SYNTH

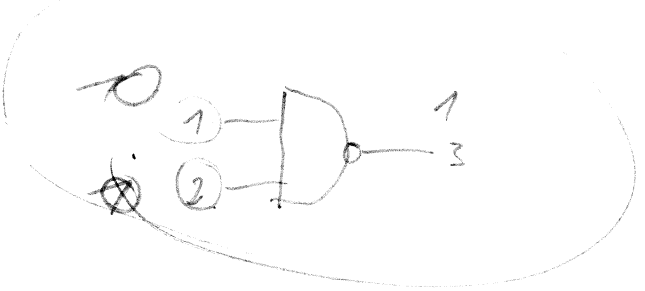
```
10  DTU IN (1)
20  PSW (1,2,1)
30  DMM (1,0,10,3)
40  DMMR (1,1,V)
50  DSPLAY V
60  GOTO 40
```

~~45~~

```
10  DTU IN (1)
20  PSW (2,3,7)
30  PSW (14,1,2)
40  count ("IN, PE, Mi ~~100~~, A+, AL .000, HO, WA" Ø)
50  count("READ", V)
60  DSPLAY " Frequenz ist " V;
70  END
```

```
10  DTU IN (1)
20  FOR U = 11 TO 14
30  FOR S = 1 TO 4
40  FOR G = 1 TO 4
50  PSW (U, S, G)
55  WAIT 1000
60  NEXT S
65  WAIT 1000
70  NEXT G
75  WAIT 1000
80  NEXT U
~~90  DSPLAY~~
90  END
```

Rev ~~1~~, 5



TOD'S (Test-orientiertes Disc-System) Rev. G

Bootstrap-Loader SA 2,

P = Progr. Counter

70 → P

DSP = Ausdruck auf CRT

DEL = Mem. löschen

SAVE = Stanzen am Perforator

LOAD = Lesen von Photo-Reader (vorher DEL)

PSU(2,10,1)

PSU(11,2,4)

PSU(12,4,1)

DCP (P,V) DC Power (Set-up)

where:

P - Power Supply Number

V - Voltage (+ Only)

Special Case

DCP (0,0) = Enable only

DCP (0,1) = Enable and set to zero

These calls only effect resister program cards.

MPGMV (P,V)

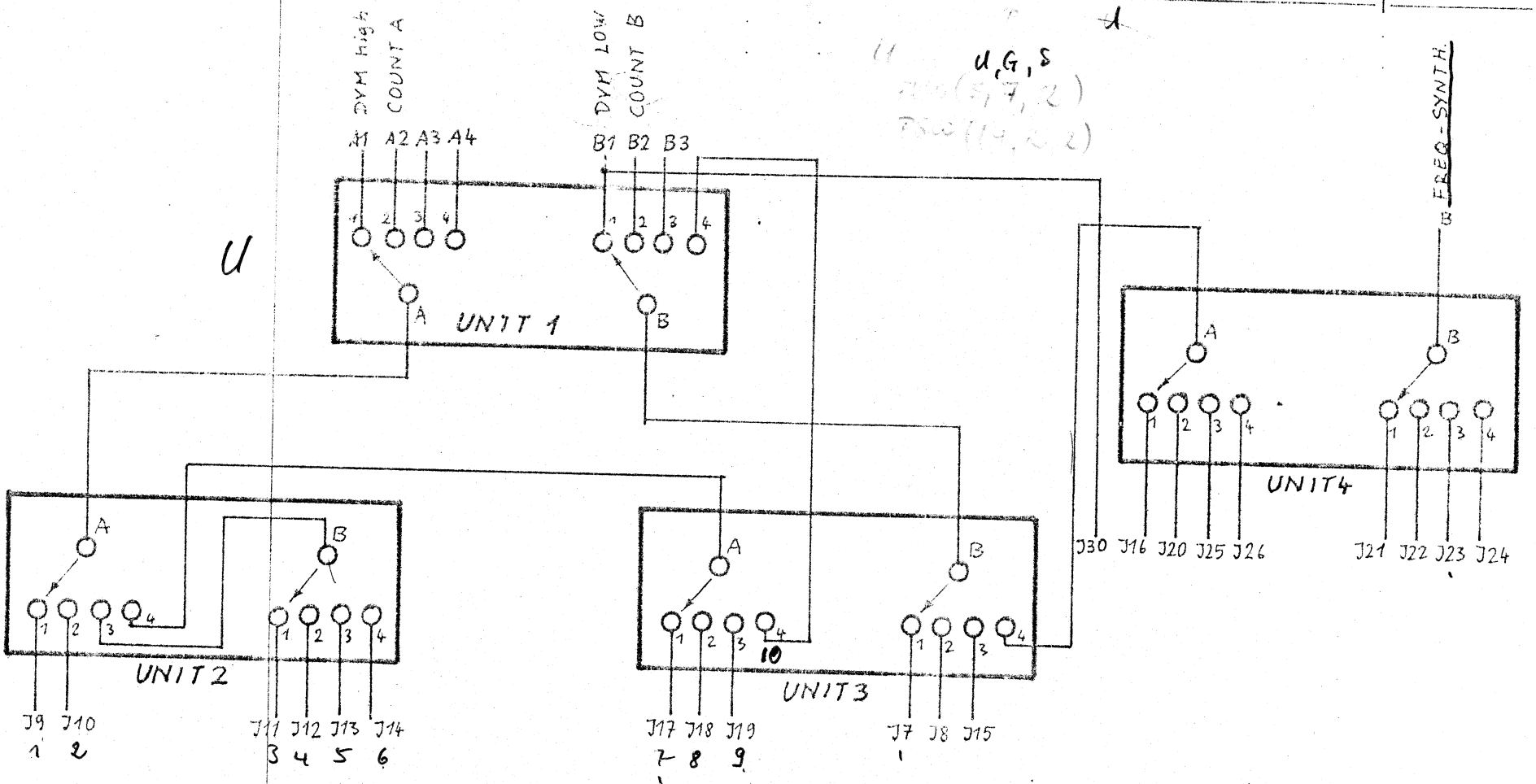
where:

P - Power Supply Number

V - Voltage (+ or -)

SCALE: FULL SIZE UNLESS OTHERWISE SPECIFIED — SEPIA

SYM	REVISIONS	DATE



ITEM	QTY.	MATERIAL-DESCRIPTION	MATL-PART NO.	MATL-DWG. NO	MATL-SPEC.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES

THIRD ANGLE PROJECTION

TOLERANCES: XX ± 0,5 mm or ± 0,4 mm
XX.X ± 0,2 mm or ± 0,1 mm
STRIKE OUT ONE XX AND ONE XX.X
SEE CORP. STD. 608

DO NOT SCALE THIS DRAWING

DRAWN BY	DATE	
ENGINEER		
RELEASE TO PROD.		
SUPERSEDES DWG.		

VHF-SWITCHES VERBINDUNGEN
TITLE

HEWLETT hp PACKARD

NEXT ASSEMBLY

PART NUMBER

A-

FINISH

SCALE

a-Burotechnik 12 6399 75

MPGSC(C) CONTROL CALL

where:

C = Control Variable

C	DTE	SYE	TME
0 =	0	0	0
1 =	0	0	1
2 =	0	1	0
3 =	0	1	1
4 =	1	0	0
5 =	1	0	1
6 =	1	1	0
7 =	1	1	1

DEFINITIONS:

DTE is Data Transfer Enable*
0 = Output uneffected
1 = Output is effected

SYE is System Enable
0 = Disable all units
1 = Enable all units

TME is Timing Mode Enable
0 = Handshake mode (fastest)
1 = Wait for Hardware Time-outs

*effective only on cards with dual-rank storage, and for gate-relay on Relay Register cards.

MPGSD (U,S,D) OUTPUT CALL

where:

U - Multiprogrammer unit number, from 1 to 16***

S - Slot number to be programmed (in the last unit indicated by "U") from 0 to 14. Corresponds to last two digits of slot-number in unit.

D - Data word that is output to the unit/slot indicated. The 12-bit octal word has the range from 0000 to 7777.

NOTE: MPGSC(0) is used to enable all supplies.

				MODEL	STK NO
				BY	DATE
				APPD	SHEET NO OF
ECR	P.C. NO	APPROVED	DATE	SUPERSEDES	DWG NO
	REVISIONS				

DTU IN (1) Initialize

DTU DF (M)
- M = 1 Löscht alles vorherige; Pins neu definiert
- M = 2 Fügt REM ... Pins hinzu
- M = 3 Nimmt REM ... Pins weg

Test-Counter auf 0;
DTUSD auf 10 µs
DTUSS auf intern

DTU FX (P, F)
- P = 1 low
- P = 2 high
- Polarität

F = 1 Löscht vorherige FX's; REM ... Pins neu definiert
F = 2 Fügt REM ... Pins hinzu
F = 3 Nimmt REM ... Pins weg

(Nur Status-Änderung; Pegel unverändert)

DTU TP (P, Y, S, E) Polarität
- P = 1 low
- P = 2 high

Y = 1 Testbeginn beim 1. bez. Test
Y = 2 Test fortsetzen
Y = 3 Letzten Test wiederholen, Test fortsetzen

S = 1 Norm. Testablauf bei Fehler
S = 2 Nach jedem Test → nach "E"

E ; Basic-Programm-Line

DTU RS (C, T, P(1), N) Read
- Pin
- Status

C = 1 alle
C = 2 gute
C = 3 fehlerhafte

T = 1 Input-Pins
T = 2 Output-Pins
T = 3 Fixed-Pins

P(1), N : Basic-Array in den Daten reinkommen. ≙ aus Anf. DIM P

N = Anzahl d. Pins

DTU RC (R, V) Read Test-Counter

R = 1 Rücksetzen auf 0; V = 0
R = 2 Lesen, speichern in "V"

DTU SD (D) D Delay-Zeit in µs (max 4095)

DTU SS (S) Synchronisation: S = 1 intern S = 2 extern

DTU CA (M, A(I), N, E)
- M = 1 Beginnt
- M = 2 fortsetzt
- M = 3 beendet

} die Create-Operation

A(I), N: Basic-Array, wo Daten gespeichert werden (2 Words per Elem)

E: Basic-Line, wo Programm hinspringt, wenn Daten nicht in A[I] gespeichert werden können

DTU TA (Y, S, E, A(I), N, E1) Y, S, E wie bei DTU TP; A[I], N Basic-Array, wo Daten gespeichert sind (I) Test-Anfang; E1 Basic-Line, wo Programm hinspringt (z. B. wenn Fehler).

DTU GP (P, C) Polarity
- P = 1 low
- P = 2 high

C = 1 Permute in binary sequence
C = 2 Permute in gray-code sequence
C = 3 no permute

REM PER
REM PER

generiert Pattern

LEN (F, S, R) F = ∅ : Return length S: String Array R: Returned length or length to set in String
F ≠ ∅ : Set length

SMOVE(STR1, F, L, STR2, F) STR1: String Array 1 STR2: String Array 2
F : First char. of Array 1 F : First char. of Array 2
L Last char. of Array 1

SPRNT (A) Print string array on LU 6

SDSPL (A) Display string array on LU 2

FTA (N, A(1)) convert variable to string N: Floating point Number
A : Destination array to hold the ASCII strings

ATF(A(1), F, L, R) A: String Array, F: First character, L: Last character
R: Return Value - floating point number

BRED (A, D(1)) A: Address string D(1) Destination Array for data received

BSTAT (B, A(1)) B: Bus Number (octal), A(1) Array name of destination of string

SCOMP (S1, F, L, S2, F, R) S1: String Array 1, F: First character of comparison (string 1)
L: last character of comparison (string 1)
S2: String Array 2; F: First character of comparison (string 2)
R: Return value (match indicator) ∅: implies a match
< ∅: implies string 1 < string 2
> ∅: implies string 1 > string 2

SINPT (A) A: Storage for Input String

TIME (X, V) X = 1 Read time, return 3 variables in V (6 Word buffer)
X = 2 Enable set and wait for clock to be set
X = 3 Start time interval
X = 4 ~~Inter~~ Stop interval calculate and return elapsed time in V

CTR (F, A(1), B(1)) Computing Counter 5360A
F: Function (∅ - 1); A(I): source data; B(I): objekt data

BID (B, WT, RT) B: Bus Number (octal); WT: Write time-out value; RT: Read time-out value

BCMD (A, D) A: Address string; B: Data String

VACUUM (F,D)

F = 0 - Vakuum aus
1 Vakuum ein
2 "Pumpen" (Vakuum ein, Beobachtung, wieder ausschalten)
3 Vakuum nicht beeinflussen

D = 0 Daten vom letzten Test
1 Daten vom zweiten Test
2 Werte zurücksetzen
3 Daten zur Leitzentrale

(Vorsicht: 10 = ein, "aus")

TIME (X,Y)

X = 1 Real time operation. Time value in Y
2 Elapsed time measurement. Time value in Y
3 Start time interval
4 Stop interval counter and return elapsed Time

Y: Start of a 4 word BUFFER for 3 floating point words (Start, stop, gap) Y = 0 not used to terminate

TTL (X)

POWER - SUPPLY

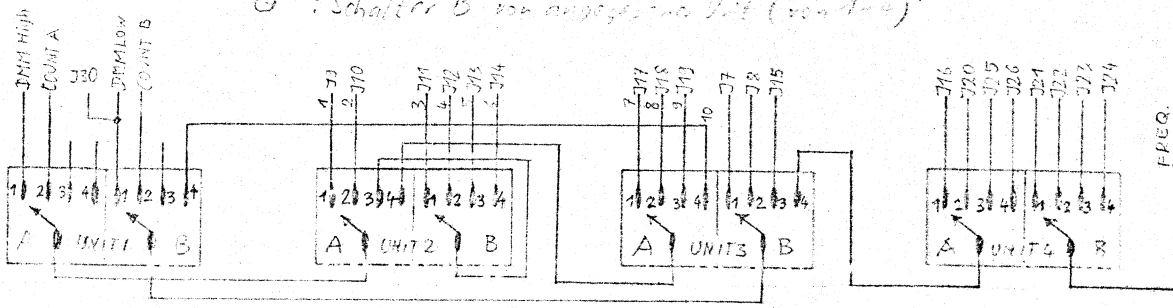
X	1	2	3	4	5	6	7	8	9	10	11	12	13		
0	0	0	0	N	N	N	N	N	N	N	N				
1	5	0	0	2.4	0.4	4.8	0.1	2.4	0.4	4.8	0.1				
2	5	-12	-12	N	N	N	N	N	N	N	N				
3	0	0	0	0.4	0.1	0.5	0	0.4	0.1	0.5	0				
	UUT Power + DTU-500 1	UUT Supply 2	UUT Supply 3	Compare high	Compare low	Drive high	Drive Low	Compare high	Compare low	Drive high	Drive low	UUT Supply 12	UUT Supply 13		
				A-Referenz DTU1-96 121-216				B-Referenz DTU37-120 217-240							

N: NO CHANGE

PSW (U,S,G)

U von 1 bis 4: Schaltet Schalter A und B von Unit 1 auf ≙ Wert von U; gleichzeitig zeigt S die Schaltstellung von Unit 2 und [B (wie A)] auf der in Sammelschienen Ausgang. G gibt von Unit 3 Schalter B die Stellung an.

Von 11 bis 14: U-10 gilt auf jeweilige Unit (13 z.B. für Unit 3)
S : Schalter A von angegebener Unit (von 1-4)
G : Schalter B von angegebene Unit (von 1-4)



DCP (P,V)

DC-POWER P: PS-Number ; V: Spannung (neue +) DCP(0,0): Ende only; DCP(0,1) Sense selected for Resistor program - card!

MPGM (P,V)

Multiprogrammer P: PS-Number (4 bis 11) ; V: Spannung (+ oder -)

DMM (U,F,R,T)

Digitalmeter: U: Unit (1); F: Function (0) DC mit Sample + Hold (Standard)
1 OHMS
2 AC
3 TEST
4 DC mit (S/H) in Trigger and Hold
5 DC mit S/H in Argument and Hold

R: Range (range ET7500-17215) (10) (auto)

T Trigger: (0) Programmed Sample
1 Console initiated
2 Ext. Trigger Pulse
(3) None (DMM2 Control)

DMM2 (U,F,R,T)

Digitalmeter: U: Unit (1); F: Mode: siehe ET7500-17215; (1) ; R: siehe Spannungsbereich; T: siehe DMM

PGL (U,G)

U = 1 bis 6 ≙ Last 1 bis 6 ; G: Lastgröße (Plus oder Minus) in Amp. (20 mA Schritte)
U negativ: PS2 wird auf Wert G (in Volt) programmiert.

max: 6 Amp / Unit

PGL (3,20) = Last Nr. 3 auf 20mA

HEWLETT-PACKARD CO.

PATCH PANEL INTERFACE

PIN ASSIGNMENT FOR VACUUM FIXTURE

CONNECTOR	FIXTURE PIN	FUNCTION
J1-1 to 50	1 ⟶ 50	DTU PINS 1 ⟶ 50
J2-1 to 50	51 ⟶ 100	DTU PINS 51 ⟶ 100
J3-1 to 50	101 ⟶ 150	DTU PINS 101 ⟶ 150
J4-1 to 50	151 ⟶ 200	DTU PINS 151 ⟶ 200
J5-1 to 40	201 ⟶ 240	DTU PINS 201 ⟶ 240
J5-41 & 42	241 ⟶ 242	PS #12 PLUS (W) 23, 24
J5-43 & 44	243 ⟶ 244	PS #12 MINUS (X) 23, 24
J5-45 & 46 & 47	245 ⟶ 247	PS #13 PLUS (U) 23, 24
J5-48 - 50	248 ⟶ 250	PS #13 MINUS (V) 23, 24
J6-1 & 2	251 ⟶ 252	PROGRAMMABLE LOAD #1 (N) 26
J6-3 & 4	253 ⟶ 254	PROGRAMMABLE LOAD #2 (P) 27
J6-5 & 6	255 ⟶ 256	PROGRAMMABLE LOAD #3 (R) 28
J6-7 & 8	257 ⟶ 258	PROGRAMMABLE LOAD #4 (S) 29
J6-9 & 10	259 ⟶ 260	PROGRAMMABLE LOAD #5 (T) 30
J6-11 & 12	261 ⟶ 262	PROGRAMMABLE LOAD #6 (U) 31
J6-13 to 24	263 ⟶ 274	NC
J6-25	275	MICRO LOGIC CARD INPUT BIT Ø (BUTTON)
J6-26 & 27	276 ⟶ 277	PS #1 PLUS
J6-28 & 29	278 ⟶ 279	PS #1 GND & DTU GND
J6-30 & 31	280 ⟶ 281	PS #2 PLUS
J6-32 & 33	282 ⟶ 283	PS #2 MINUS
J6-34 & 35	284 ⟶ 285	PS #3 PLUS
J6-36 & 37	286 ⟶ 287	PS #3 MINUS
J6-38	288	EXT FLAG EXTERNAL SYNC B33
J6-39	289	EXT COMMAND D33
J6-40	290	TRIGGER FOR 3490 SAMPLE/HELD F33
J6-41	291	NC
J6-42 to 49	292 ⟶ 299	MICRO LOGIC CARD INPUT BITS 8 ⟶ 15 (BD NUMBER)
J6-50	300	MICRO LOGIC CARD GND J33

271-2741 (N) 26 - (W) 24

+5V PS

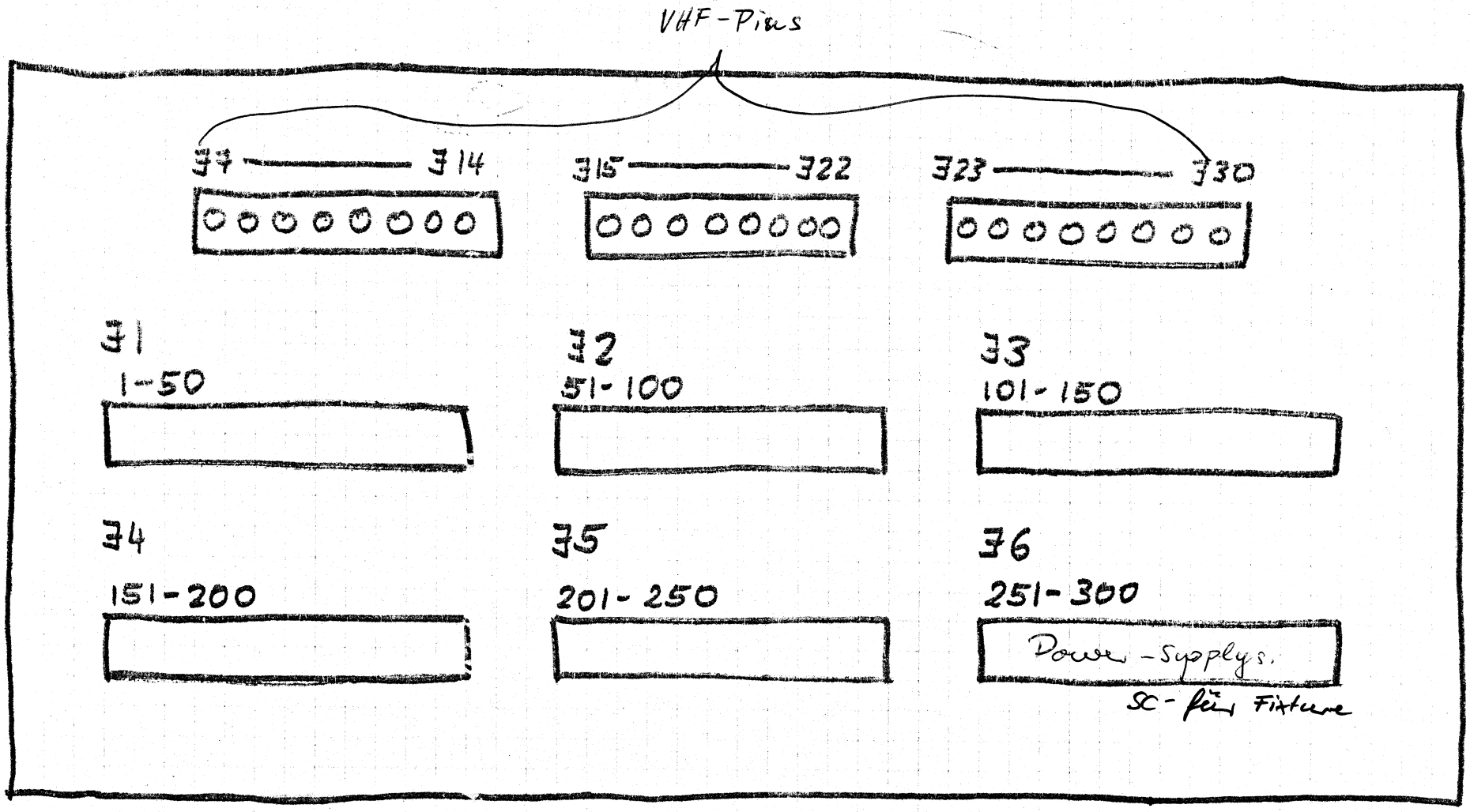
Ref A 1-96 201-216

Ref B 97-200 217-240

LTR	PC NO	APPROVED	DATE
	REVISIONS		

MODEL	STK NO
VACUUM FIXTURE PIN ASSIGNMENT - PATCH PANEL INTFC	
BY Bob Kuseski	DATE 6-10-74
APPD	SHEET NO 1 OF 2
SUPERSEDES	DWG NO A-ET-7441-95002-1

FORM NO 7830-006-L



ATS SCHNITTSTELLE PIN BELEGUNG

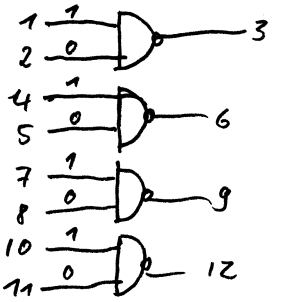
J1 - J5 = DTU Pins

DRAUFSICHT SYSTEM

```
10  DTU IN (Ø)
15  DIM T(12)
20  DTU DF (1)

30  REM IN  1,2,4,5,7,8,10,11 T

40  REM OUT 3,6,9,12 T

50  MPGMV (4,2,4)  | CH
60  MPGMV (5,0,8)  | CL
70  MPGMV (7,2,5)  | DH
80  MPGMV (6,0,7)  | DL
90  DTU TP (2,1,1, 5000)

100 REM 3,6,9,12 T

110 REM 1,4,7,10,3,6,9,12 T
```

P = 2
y = 1
S = 1
E = 5000

TTL



CH = 2,4V
CL = 0,8V
DH = 2,5V
DL = 0,7V

```
5000  DTU RC (2,T)
5010  PRINT "TEST";T;" FEHLERHAFT"
5020  DTU RS (3,2,T(1),4)
5030  FOR X = 1 TO 12
5035  IF T(X) = 0 GOTO 6020
5040  PRINT T(X)
5050  NEXT X
```

DTU RS

z.B. 10 DIM P (100)

⋮

100 DTURS (3, 2, P(1)/100)

} Es werden alle fehlerhafte Pins (Output) max 100 ausgedruckt.

DTU DF = Pins definieren

DTU FX = Fixed bestimmte Pins auf best. Level

DTU IN = INIT

DTU RC = Test-Counter zählt die Tests bis 4095

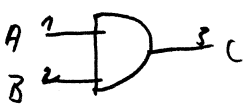
DTU DT =

~~DTU~~ DTU DF (M) = Pins werden als Eing or. Ausg. definiert.

Beispiel

```
10  DTU IN(Ø)   ← Zahl hat nichts zu bedeuten.
```

```
10  DTU DF (M)
20  REM IN  100,120   ← DTU-Pins 100 und 120 input.
```



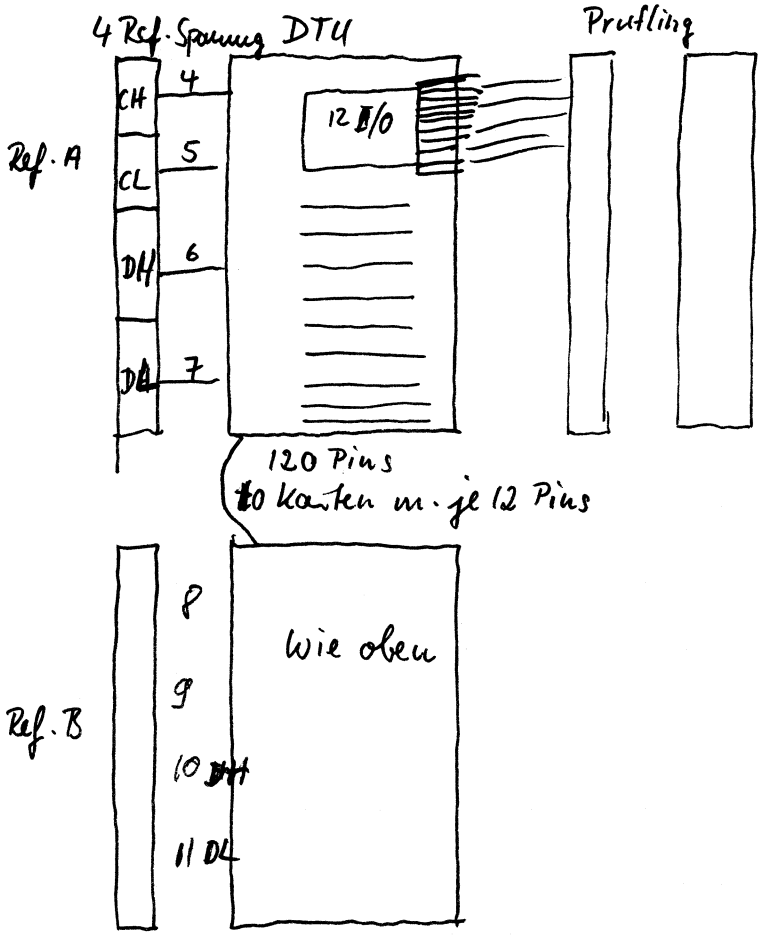

```
100 DTU TP (2, Y, S, 5000)   ← Zeilennummer-Sprung
110 Rem T   ← Zeile muß mit T abgeschl. werden.
120 Rem 1,2,3 T
```

```
100  Rem P < Pins>T
                 2.B 10,20, 100, 110
110  Rem  0, 1, 0, 1  T
```

} Die DTU-Pins können auf best. Pegel gesetzt. werden.

DTU

MPGMV



CH = Comparity High

CL = " Low

DH = Driver High

DL = " Low

Um z.B. ~~PS-Unit~~ DL anzusprechen, muß PS-Unit 5 Progr.

Insgesamt 240 DTU Pins

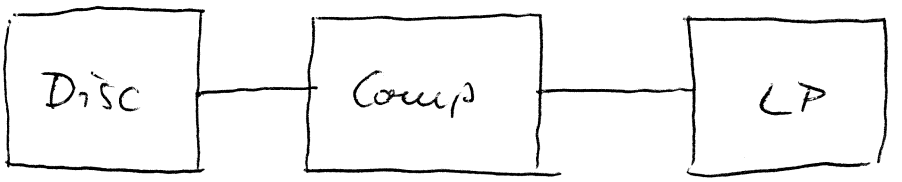
Pins 1-96 liegen an Ref. A

Pin 97-120 " " Ref B

Pins 121-216 " " Ref A

Pins 217-240 " " Ref. B

File-Nummer-Liste



1 Disc hat 4 × 202 Spuren

Bei FN-List = (Ref.-Nr.) T-List. Dies ist eine FN-Liste geordnet.

Delete	File-Nummer	F-Type	Sector	OFFSET	Parameter
D	1	0	ooooo	ooooo	A, B, C

CTL A
CTL S/R

Basic = Ref. Nr. 3

Librarian = Ref. Nr. 2

TODS 09500 - 93296

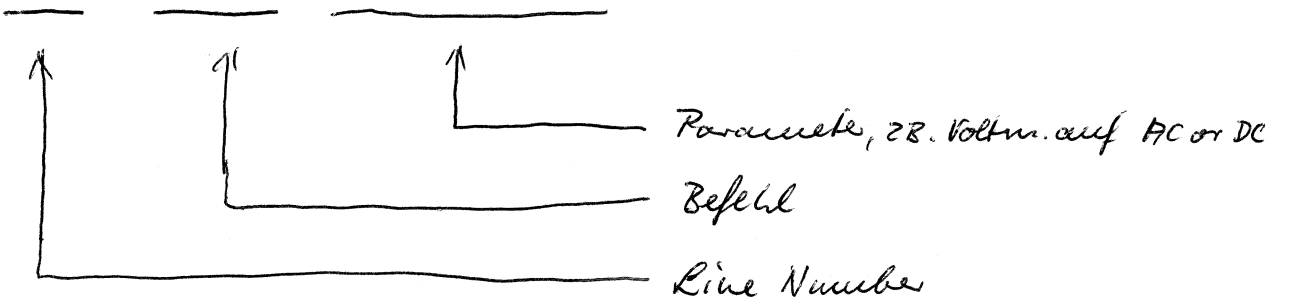
ATS-BASIC 09500 - 90104

DSP = Listet Progr. auf Bildsch. aus

List = " " Printer

Load = Ladet Programm von Photoleser in Sourceform, d.h. in Ascii-Form

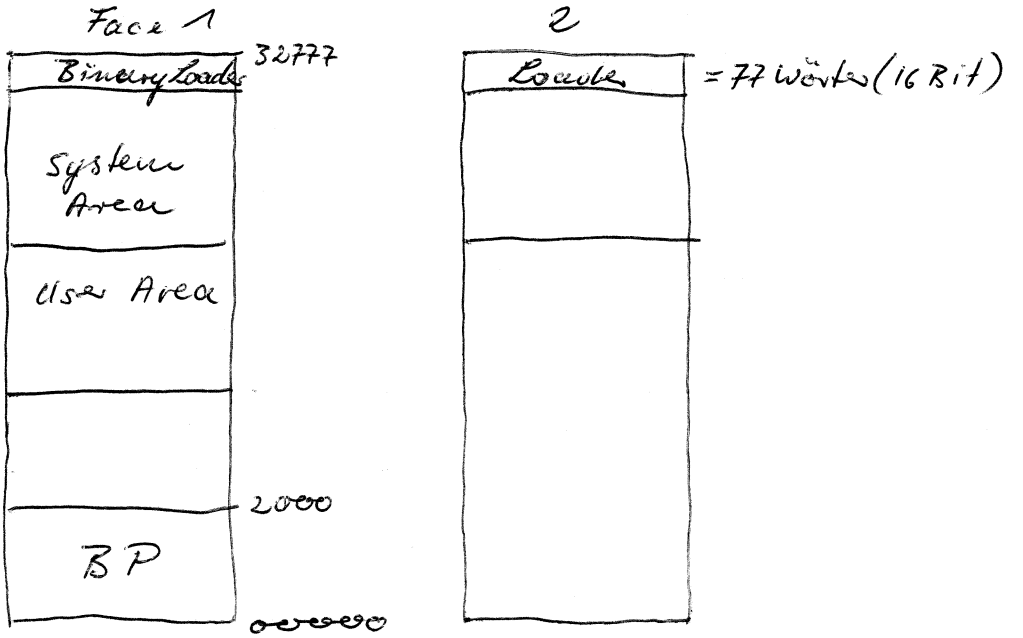
SAVE = Bringt den Inhalt des Speichers auf Lochstreifen



CTL C = Run wenn Syst. in Wartestellung

CTL R = Run von Anfang an

CTL S = Stop wenn Interrupt per Software nicht abgeschaltet

Delete = Löscht den Speicherbereich in dem das Testprogr. steht.

CTL A = Betriebssystem geht auf Progr. Request und fragt nach PRN ausschliesslend mittels CTL R oder CTL S drücken