Home computer NMS8280/00/16

Service
Service
Service

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Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used

Service Manual

(GB) SPECIFICATION

Microprocessor	: Z80A
Memory	: 48k ROM 16k disk ROM 128k video RAM 128k user RAM
Video processor	: V9938
MSX controller	: S-3527
Floppy-disk drive	: 2x3.5", 1 MB
Interfaces	: RF output (UHF channel E36) VIDEO/AUDIO output VIDEO/AUDIO input SCART Cassette recorder 2 joysticks Printer 2 cartridge slots
Keyboard	: QWERTY /00/16
Power supply voltage	: 220V ± 10%, 50Hz

(NL) SPECIFICATIE

Microprocessor	: Z80A
Geheugen	: 48k ROM 16k disk ROM 128k video RAM 128k gebruikers RAM
Videoprocessor	: V9938
MSX controller	: S-3527
Floppy-disk drive	: 2x3.5", 1 MB
Interfaces	: RF uitgang (UHF kanaal E36) VIDEO/AUDIO uitgang VIDEO/AUDIO ingang SCART Cassette recorder 2 handbedieningen Printer 2 cartridge sleuven
Toetsenbord	: QWERTY /00/16
Voedingsspanning	: 220V ± 10%, 50Hz

(F) CARACTERISTIQUES TECHNIQUES

Micro processeur	: Z80A
Mémoire	: 48k ROM 16k ROM à disque 128k RAM vidéo 128k RAM utilisateur
Processeur vidéo	: V9938
Controle MSX	: S-3527
Lecteur de disquette	: 2x3.5", 1 MB
Interfaces	: Sortie RF (Canal UHF E36) Sortie VIDEO/AUDIO Entrée VIDEO/AUDIO SCART Magnétophone cassette 2 poignées Imprimante 2 "slots" cartouche
Clavier	: QWERTY /00/16
Tension d'alimentation	: 220V ± 10%, 50Hz

(D) TECHNISCHE DATEN

Mikroprozessor	: Z80A
Speicher	: 48k ROM 16k Disk-ROM 128k Video-RAM 128k Gebrauchers-RAM
Videoprozessor	: V9938
MSX-Steuereinheit	: S-3527
Floppy Disk-Laufwerk	: 2x3.5", 1 MB
Schnittstellen	: RF Ausgang (UHF Kanal E36) VIDEO/AUDIO-Ausgang VIDEO/AUDIO-Eingang SCART Cassettenrecorder 2 Handbedienungen Drucker 2 Kassettenschlitze
Tastatur	: QWERTY /00/16
Versorgungsspannung	: 220V ± 10%, 50 Hz

(I) DATA TECNICI

Microprocessore	: Z80A
Memoria	: 48k ROM 16k ROM a disco 128k RAM video 128k RAM utilizzatori
Processore video	: V9938
MSX di controllo	: S-3527
Lettore di dischetto	: 2x3.5", 1 MB
Interfaccie	: Uscita RF (Canale UHF E36) Uscita VIDEO/AUDIO Entrata VIDEO/AUDIO SCART Registratore a cassetta 2 leve manuali Stampa 2 connetori per cartuccia
Tastiera	: QWERTY /00/16
Tensione d'aliment.	: 220V ± 10%, 50 Hz

Documentation Technique Service Dokumentation Documentazione di Servizio Huolte-Ohje Manual de Servicio Manual de Serviçic

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

Subject to modification
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Printed in The Netherlands

PHILIPS

Published by
Service Consumer Electronics

CS 9 254

(GB)

CAUTION

1. The exchange of cartridges should take place with the set turned off.

2. ESD

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

ALIGNMENTS

RTC clock frequency

- Connect a frequency meter via a 10:1 probe to test point TP107 and connect the mass terminal of the probe with test point TP111.
- Set the frequency on TP107 to 32.768 kHz by means of VC101.

FDC

1. Read-pulse width

- Connect TP108 with TP109.
- Connect an oscilloscope via a 10:1 probe with TP106 and connect the mass terminal of the probe with TP109.
- Adjust the pulse width on TP106 for 0.5 µs by means of VR102, see figure 1.
- Interrupt the connection between TP108 and TP109.

2. VCO frequency

- Connect a frequency meter via a 10:1 probe to TP102 and connect the mass terminal of the probe with TP109.
- Switch the computer on.
- Connect TP108 with TP109.
- Using VR104, set the frequency on TP102 to 250 kHz.
- Interrupt the connection between TP108 and TP109.

Analog Unit

1. Clock adjustment

- Connect via a 10:1 probe a frequency meter to TP309 and connect the ground of the probe with TP316 (GND).
- Connect via a 10:1 probe an oscilloscope to TP308 and connect the ground of the probe to TP314 (GND).
- Displace the video mix slide to the graphics mode.
- Adjust VC301 for a frequency of 3,554,688 ± 20 Hz on TP309.
- Adjust VC302 for a voltage of 1,2 ± 0,1 V on TP308 (see figure 2).
- Check once again if the frequency at TP309 is 3,554,688 ± 20 Hz.

2. Burst frequency

- Connect via a 10:1 probe a frequency meter to TP310 and connect the ground of the probe to TP316 (GND).
- Displace the video mix slide to the graphics mode.
- Adjust VR306 for a frequency of 4,443,619 ± 20 Hz on TP310.
- Displace the video mix slide to the "EXT" mode.
- Check once again if the frequency at TP310 is 3,443,619 ± 20 Hz.

3. Burst position

- Connect via a 10:1 probe an oscilloscope to the video input of the modulator (pin 3) and connect the ground of the probe to TP316 (GND).
- Displace the video mix slide to the graphics mode.
- Adjust VR304 for a period time T1 (see Fig. 3) of 5 ± 0,2 ms.

4. PAL delay line

4a. - Connect the TV pattern generator (PM5515) to the video input of the computer.
- Switch the pattern generator to the "DEM" mode.
- Displace the video mix slide to the "EXT" mode.

4b. Amplitude error.
- Adjust by means of VR303 the picture so that venetian blinds do not occur in the first two blocks of field 3 (Fig. 4).

4c. Phase error.
- Adjust by means of T303 the picture so that venetian blinds do not occur in the third and fourth block of field 3 and in the first block of field 1.

5. Phase subcarrier

- First perform the above-mentioned point 4a.
- Adjust by means of VR305 the picture so that all four blocks of field 3 (see Fig. 4) become grey.

6. Video signal level

- Connect via a 10:1 probe an oscilloscope to TP303 and connect the ground to TP316 (GND).
- Connect the TV pattern generator (PM5515) to the video input of the computer.
- Switch the pattern generator to the "Colour bar" mode.
- Displace the digitize level slide until amplitude A (see Fig. 5) on TP303 becomes 1 ± 0,05 Vpp.
- Adjust VR302 for an equal amplitude level of B, C and D (see Fig. 5).

7. Video mix level

7a. - Connect via a 10:1 probe channel 1 of an oscilloscope to TP312 and connect the ground to TP314 (GND).
- Connect via a 10:1 probe channel 2 of an oscilloscope to TP311.
- Displace the video mix slide to the graphics mode.

7b. - Perform the following BASIC command : COLOR 14,15,15
- Adjust VR307 until the amplitudes of the signals on TP312 and TP311 become equal.
- Connect via a 10:1 probe channel 2 of the oscilloscope to TP313.
- Adjust VR308 until the amplitudes of the signals on TP312 and TP313 become equal.

7c. - Displace the video mix slide until the amplitude of the signal on TP312 becomes 0,4 ± 0,02 Vpp.
- Adjust VR310 until the amplitudes of the signals on TP312 and TP313 become equal.
- Connect via a 10:1 probe channel 2 of the oscilloscope to TP311.
- Adjust VR309 until the amplitudes of the signals on TP312 and TP311 become equal.

Floppy Disk Drive

1. Required measuring equipment

- Dual trace oscilloscope, for example PM3211.
- Alignment disk, code nummer 4822 395 30274.
- FDD test cartridge, code number 4822 397 30171.

2. Use of the FDD test cartridge

- Switch the computer off and insert the FDD cartridge.
- Switch the computer on again.
- Type: "CALL FDDTEST" and press the <RETURN> key.
- Select the disk drive test.
- The functions in the disk drive test are used for adjusting the disk drive.

3. Radial alignment

A) - Connect channel A of the oscilloscope via a 10:1 probe with test point TPN (for a survey of the test points, see figure 6.)
   - Connect channel B via a 10:1 probe with test point TPP.
   - Connect the mass terminal of the probe with GND.
   - Oscilloscope alignments
     - Trigger externally with the index signal (IC140 pin 13 in the computer)
     - Sensitivity time basis: 20 ms/div.
     - Sensitivity channel A and channel B: 5mV/div.
     - Invert channel B.
     - Add channel A and channel B.

B) - Place the alignment disk in the drive and read continuously track 40, side 0 (with <F3>).
   - Check that the cat's eye pattern (see figure 7) is visible on track 40.
   - If the correct cat's eye pattern is not visible, stop the reading action (with <ESC>).
   - Loosen the screws A (see figure 6) of the stepping motor a quarter turn.
   - Read track 40, side 0 continuously (with <F3>).
   - Rotate the stepping motor (by means of a screwdriver in alignment point B, see fig. 6) until all lobes of the cat's eye pattern have the same amplitude.
   - Tighten the screws A of the stepping motor again and check the cat's eye pattern once more. Repeat the alignment, if necessary.
   - Stop the reading action with <ESC>.
   - Read track 00, side 0 continuously (with <F3>) and increase the track number with the <CURSOR UP> key to track 40. Check the cat's eye pattern again.
   - Stop the reading action (with <ESC>).
   - Read track 79, side 0 continuously (with <F3>) and lower the track number to track 40 with the <CURSOR DOWN> key. Check the cat's eye pattern again.

4. Alignment track 00 sensor

Method 1

- Carry out point A of the radial alignment, however with the sensitivity of the time base at 5 µs/div.
- Place the alignment disk in the drive and read continuously track 00, side (0 with <F3>).
- Check whether a 62.5 kHz signal (a '1F' data pattern) is present on track 00.
- If the signal is not present, adjust the track 00 sensor until the 62.5 kHz signal will be visible.
- Check if the 62.5 kHz signal is only present on track 00 and not on track 01.

Method 2

- First check the radial alignment.
- Connect the input of the oscilloscope with test point TPT and ground.
- Read track 00, side 0 (with <F3>).
- Increase the track number to track 02 (with the <CURSOR UP> key) and measure the voltages across the track 00 sensor. These voltages should be:
  - 4.5V on track 00
  - 4.5V on track 01
  - 0 V on track 02
- If the measured values do not correspond with the values given above, decrease the track number by 1 to track 01.
- Adjust the track 00 sensor until the voltage across the sensor is 4.5 V at track 01.
- Check the voltages across the sensor at track 00, track 01 and track 02.
- Step to track 02 and lower the track number to track 00. Meanwhile check the voltage across the track 00 sensor at track 02, track 01 and track 00.

5. Azimuth inspection

- Carry out point A of the radial alignment, however with the sensitivity of the time base at 0.5 ms/div.
- Place the alignment disk in the drive and read continuously track 40, side 0 (with <F3>).
- Check the azimuth burst wave pattern (see figure 8).
- A tolerance of ±30' is allowed. Greater deviations may cause compatibility problems. The head unit cannot be adjusted further.

6. Index burst alignment

- Connect channel A of the oscilloscope via a 10:1 probe with test point TPN.
- Connect channel B via a 10:1 probe with the index signal (IC140 pin 13 in the computer).
- Connect the mass terminal of the probe, connected to channel A, with GND.
- Oscilloscope alignments:
  - Trigger on channel B.
  - Sensitivity time base: 0.1 ms/div.
  - Sensitivity channel A: 2 mV/div.
  - Sensitivity channel B: 0.2V/div.
- Insert the alignment disk in the floppy drive and read track 40, side 0 continuously (with <F3>).
- Adjust VR2 for a period time T (see figure 9) of 400 ± 200 µs.

7. Side 1

- Check alignments 3 to 6 for side 1.

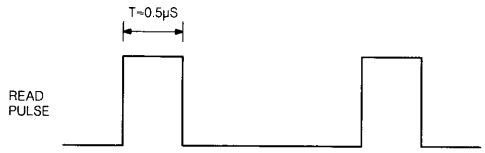

Fig. 1

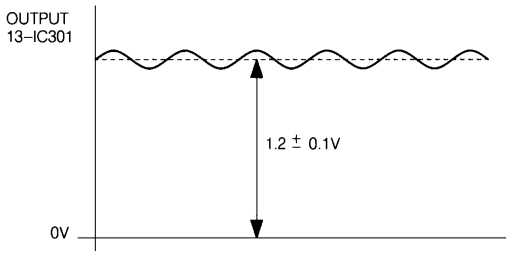

Fig. 2

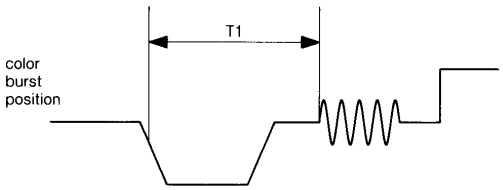

Fig. 3

FIELD				
1	G–Y=0		Y=50%	
2	1) +(R–Y)	1) –(R–Y)	2) +(B–Y)	2) –(B–Y)
3	1) +(R–Y)	1) –(R–Y)	2) ±(B–Y)	2) ∓(B–Y)
4	Y=50%			

1) B–Y=0
2) R–Y=0

Fig. 4

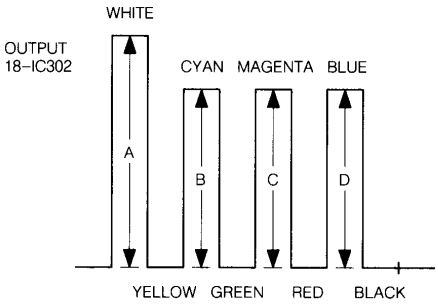

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Fig. 5

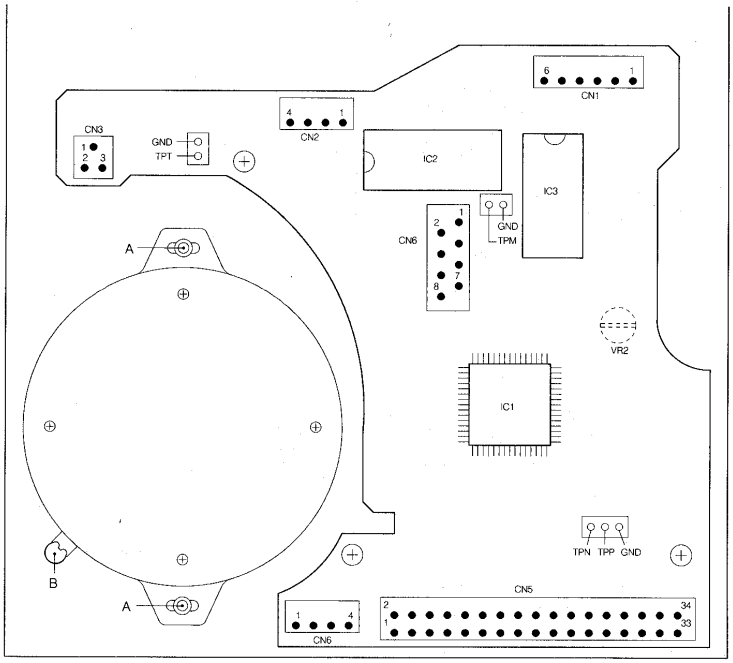

Fig. 6

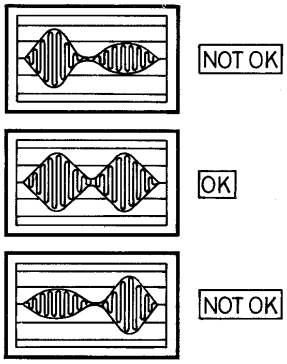

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Fig. 7

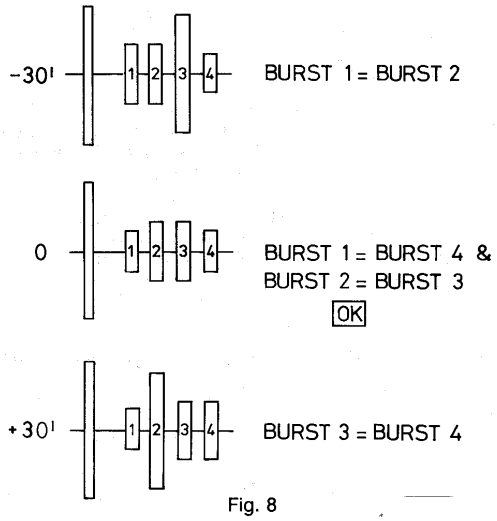

Fig. 8

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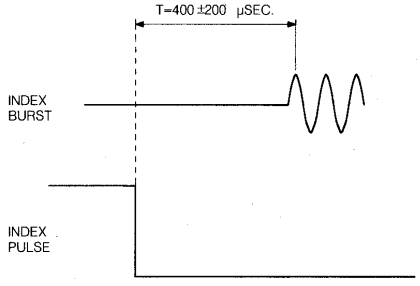

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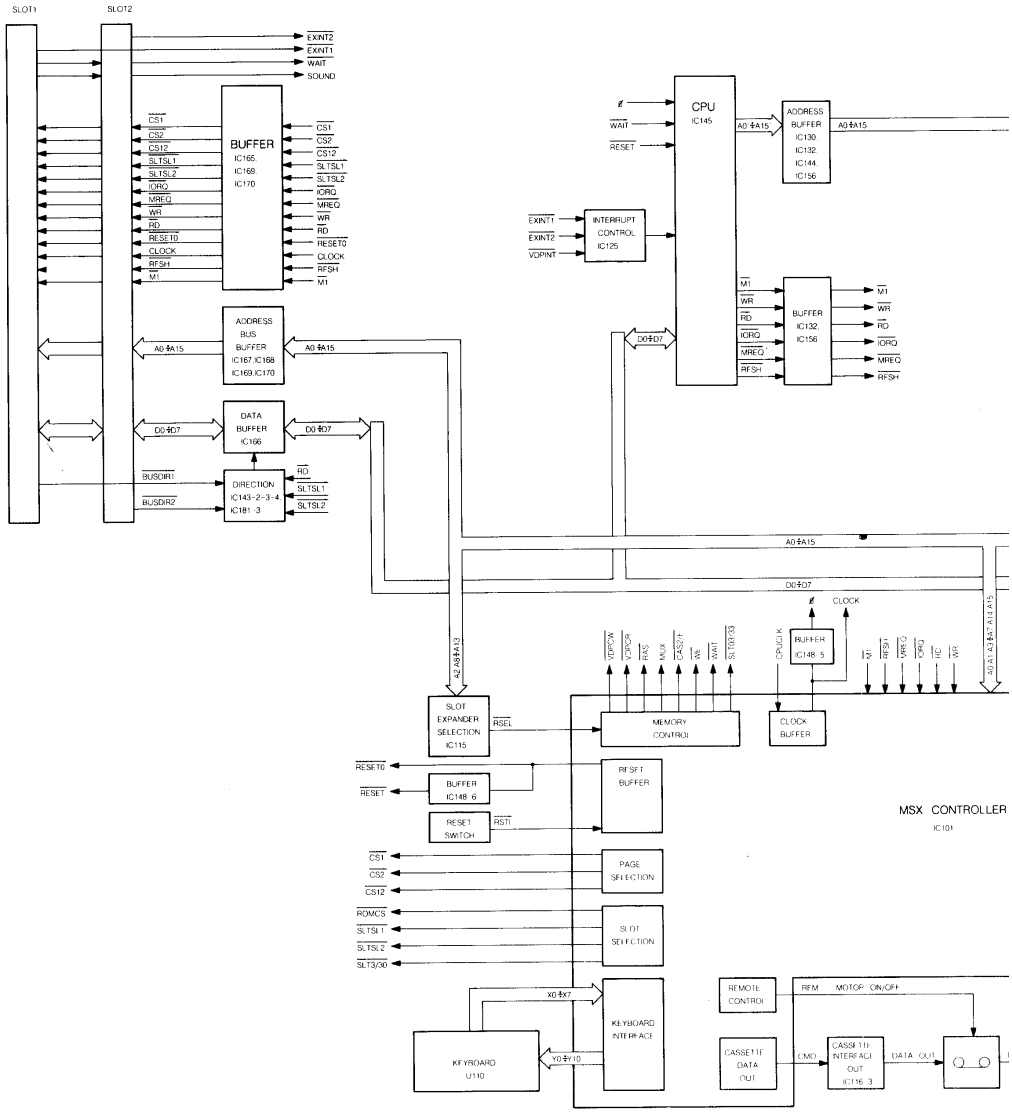
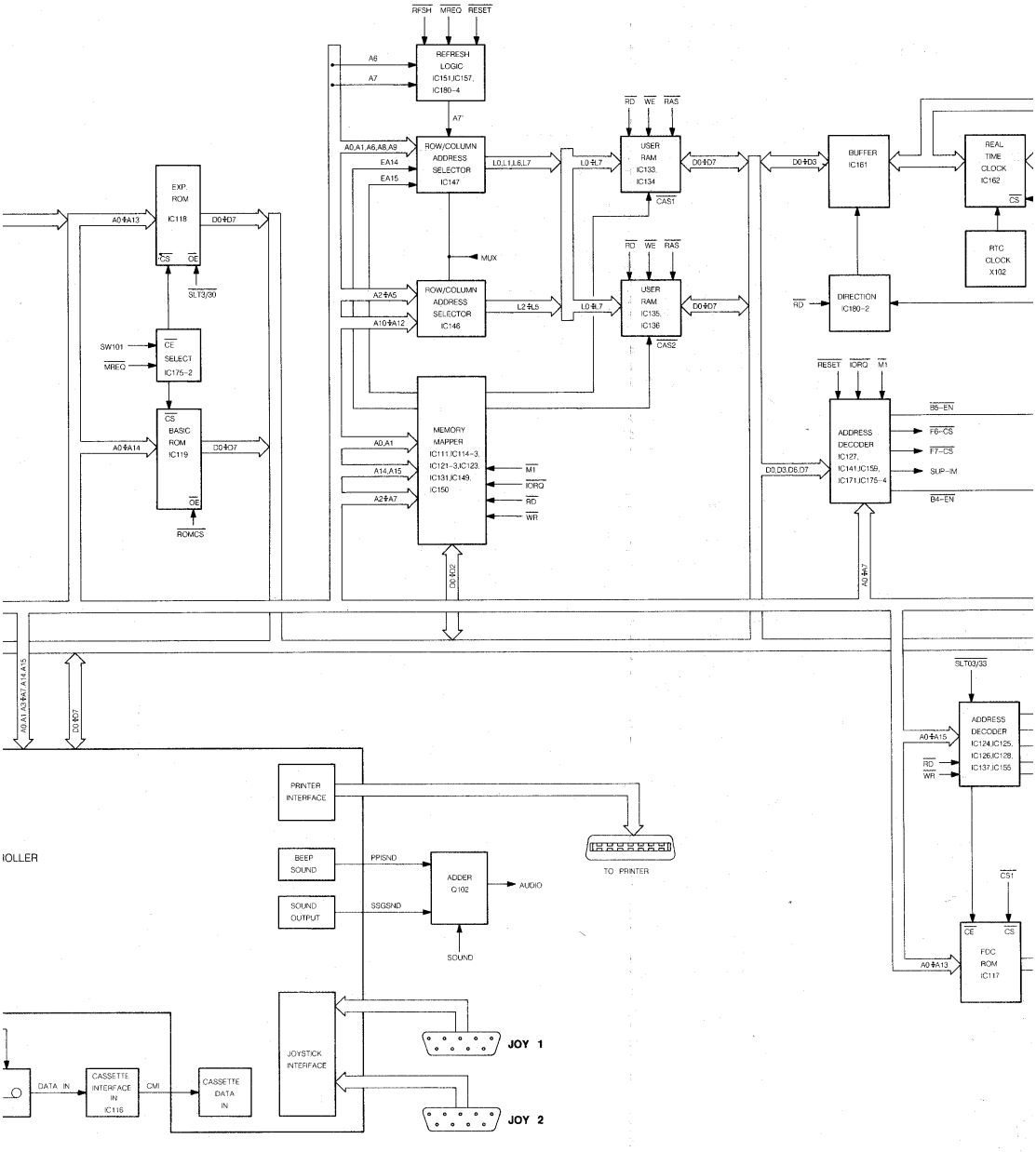
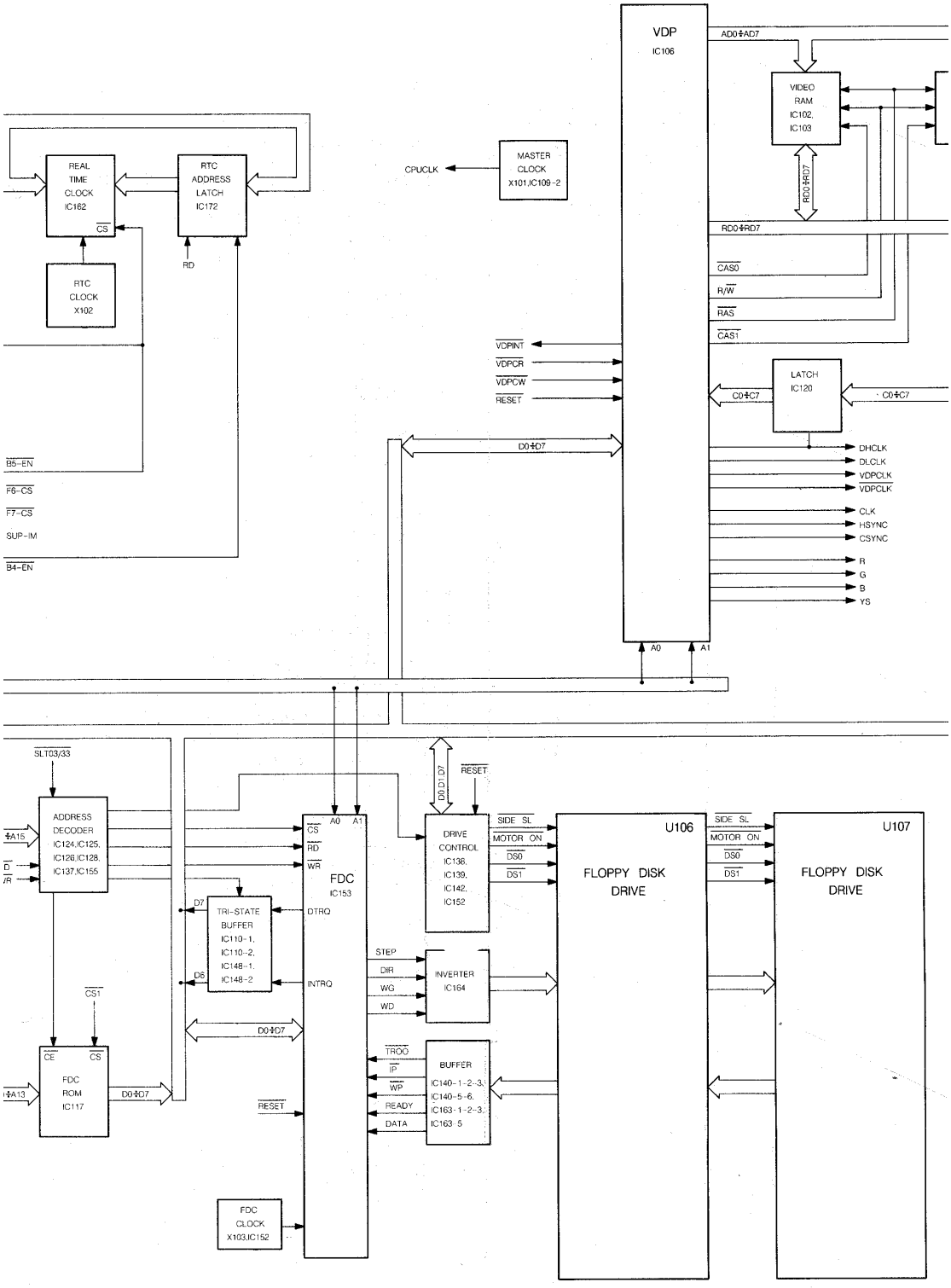
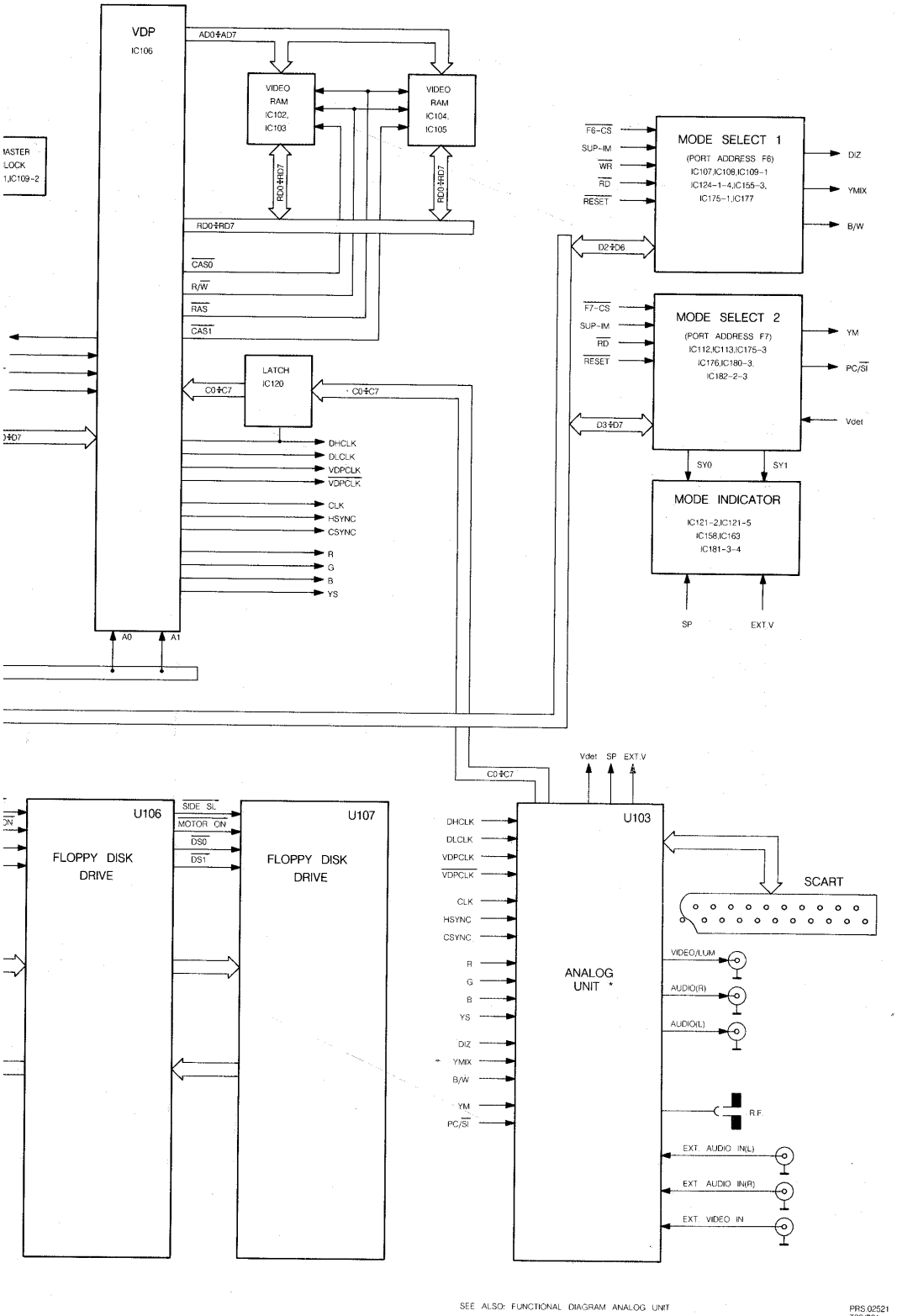
Fig. 9

FUNCTIONAL DIAGRAM




RFSH MREQ RESET
REFRESH LOGIC IC151,IC157, IC180-4
A6
A7
A7'
A0,A1,A6,A8,A9
EA14
EA15
ROW/COLUMN ADDRESS SELECTOR IC147
L0,L1,L6,L7
MUX
A2-A5
A10-A12
ROW/COLUMN ADDRESS SELECTOR IC146
L2-L5
L0-L7
USER RAM IC133, IC134
USER RAM IC135, IC136
RD WE RAS
CAS1
CAS2
D0-D7
D0-D3
BUFFER IC161
REAL TIME CLOCK IC162
CS
RTC CLOCK X102
DIRECTION IC180-2
RD
EXP. ROM IC118
A0-A13
CS OE
SLT3/3Ø
SW101
MREQ
CE SELECT IC175-2
BASIC ROM IC119
A0-A14
ROMCS
MEMORY MAPPER IC111,IC114-3, IC121-3,IC123, IC131,IC149, IC150
A0,A1
A14,A15
A2-A7
M1
IORQ
RD
WR
D0-D22
RESET IORQ M1
ADDRESS DECODER IC127, IC141,IC159, IC171,IC175-4
D0,D3,D6,D7
B5-EN
F6-CS
F7-CS
SUP-IM
B4-EN
A0-A7
A0,A1,A2,A7,A14,A15
D0-D7
SLT03/33
ADDRESS DECODER IC124,IC125, IC126,IC128, IC137,IC155
A0-A15
RD
WR
CS1
CE CS
FDC ROM IC117
A0-A13
PRINTER INTERFACE
TO PRINTER
BEEP SOUND
SOUND OUTPUT
PPISND
SSGSND
ADDER IC102
AUDIO
SOUND
IOLLER
JOYSTICK INTERFACE
JOY 1
JOY 2
DATA IN
CASSETTE INTERFACE IN IC116
CMI
CASSETTE DATA IN


VDP
IC106
AD0~AD7
VIDEO RAM IC102, IC103
RD0~RD7
REAL TIME CLOCK IC162
RTC ADDRESS LATCH IC172
RTC CLOCK X102
CS
RD
MASTER CLOCK X101,IC109-2
CPUCLK
CAS0
R/W
RAS
CAS1
VDPINT
VDPCR
VDPCW
RESET
LATCH IC120
C0~C7
D0~D7
DHCLK
DLCLK
VDPCLK
VDPCLK
CLK
HSYNC
CSYNC
R
G
B
YS
A0
A1
B5-EN
F6-CS
F7-CS
SUP-IM
B4-EN
SLT03/33
ADDRESS DECODER IC124,IC125, IC126,IC128, IC137,IC155
FDC IC153
CS
RD
WR
DRIVE CONTROL IC138, IC139, IC142, IC152
SIDE SL
MOTOR ON
DS0
DS1
U106
FLOPPY DISK DRIVE
U107
FLOPPY DISK DRIVE
TRI-STATE BUFFER IC110-1, IC110-2, IC148-1, IC148-2
D7
D6
DTRQ
INTRQ
STEP
DIR
WG
WD
INVERTER IC164
CS1
CE
FDC ROM IC117
TROO
IP
WP
READY
DATA
BUFFER IC140-1-2-3, IC140-5-6, IC163-1-2-3, IC163-5
FDC CLOCK X103,IC152



SEE ALSO: FUNCTIONAL DIAGRAM ANALOG UNIT

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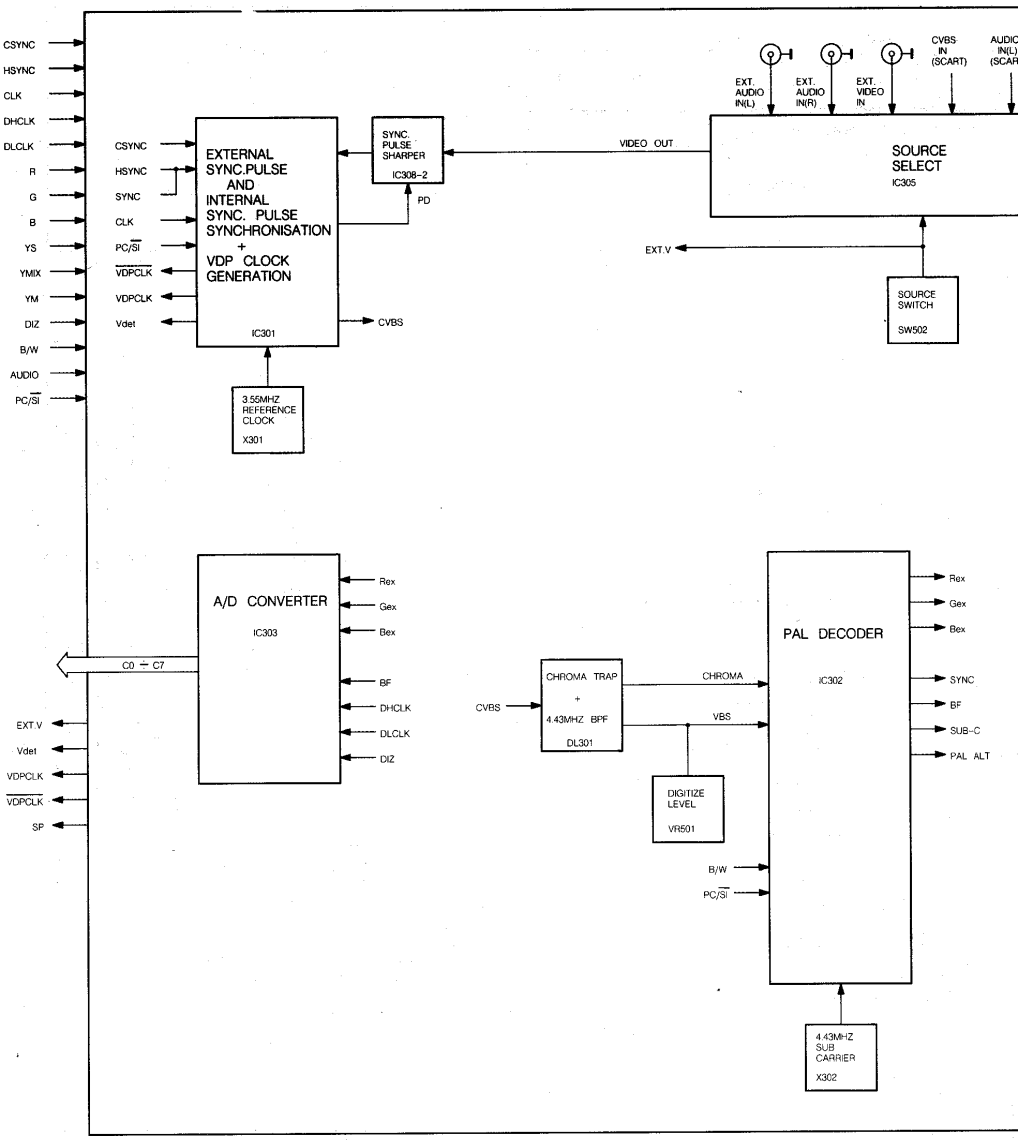
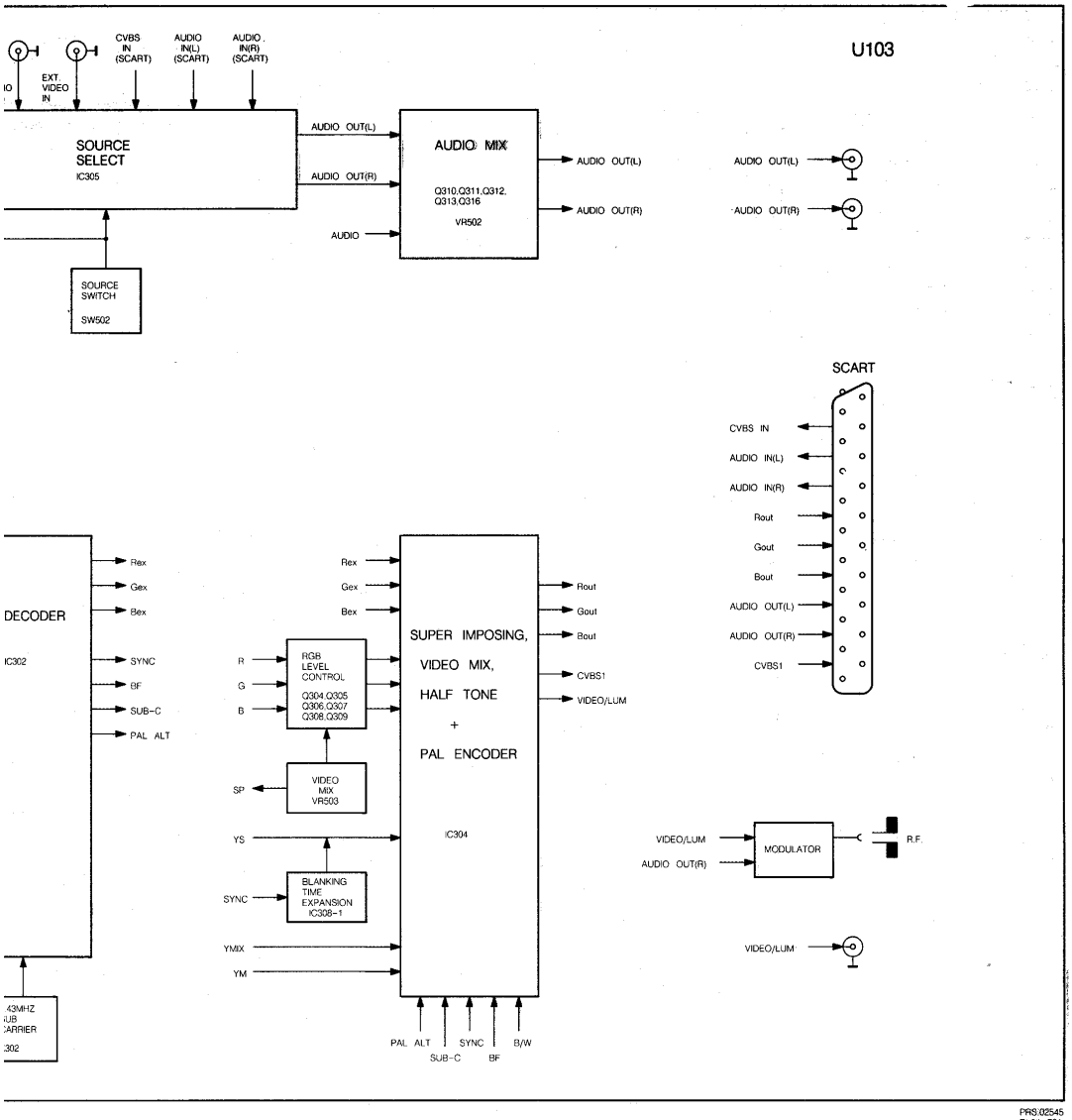

CSYNC
HSYNC
CLK
DHCLK
DLCLK
R
G
B
YS
YMIX
YM
DIZ
B/W
AUDIO
PC/SI
EXT. AUDIO IN(L)
EXT. AUDIO IN(R)
EXT. VIDEO IN
CVBS IN (SCART)
AUDIO IN(L) (SCAR
SOURCE SELECT
IC305
VIDEO OUT
EXT.V
SOURCE SWITCH
SW502
EXTERNAL SYNC.PULSE AND INTERNAL SYNC. PULSE SYNCHRONISATION + VDP CLOCK GENERATION
IC301
SYNC. PULSE SHARPER
IC308-2
PD
CVBS
3.55MHZ REFERENCE CLOCK
X301
VDPCLK
Vdet
A/D CONVERTER
IC303
C0 ~ C7
Rex
Gex
Bex
BF
DHCLK
DLCLK
DIZ
SP
CHROMA TRAP + 4.43MHZ BPF
DL301
CHROMA
VBS
DIGITIZE LEVEL
VR501
PAL DECODER
IC302
SYNC
SUB-C
PAL ALT
4.43MHZ SUB CARRIER
X302



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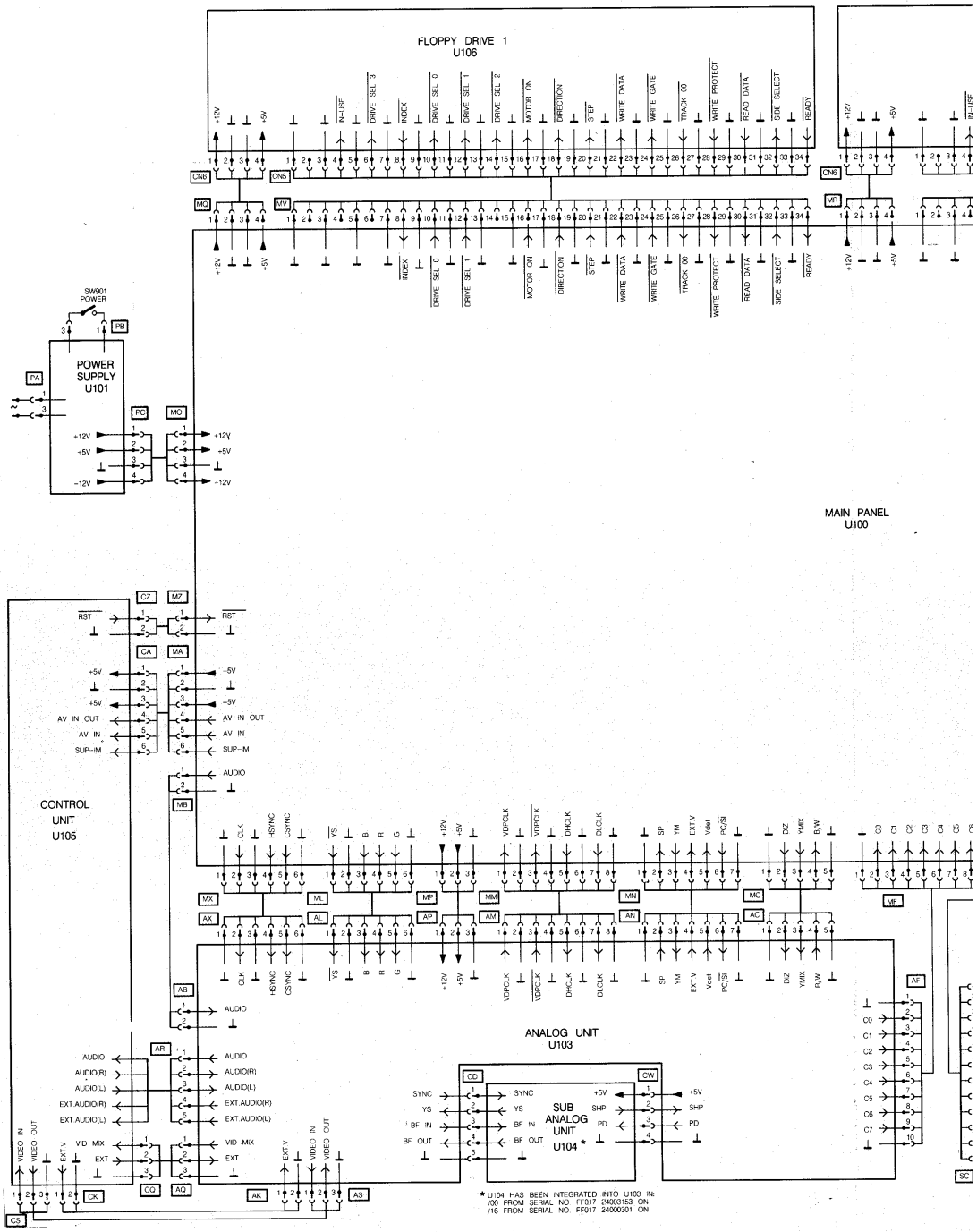
WIRING DIAGRAM



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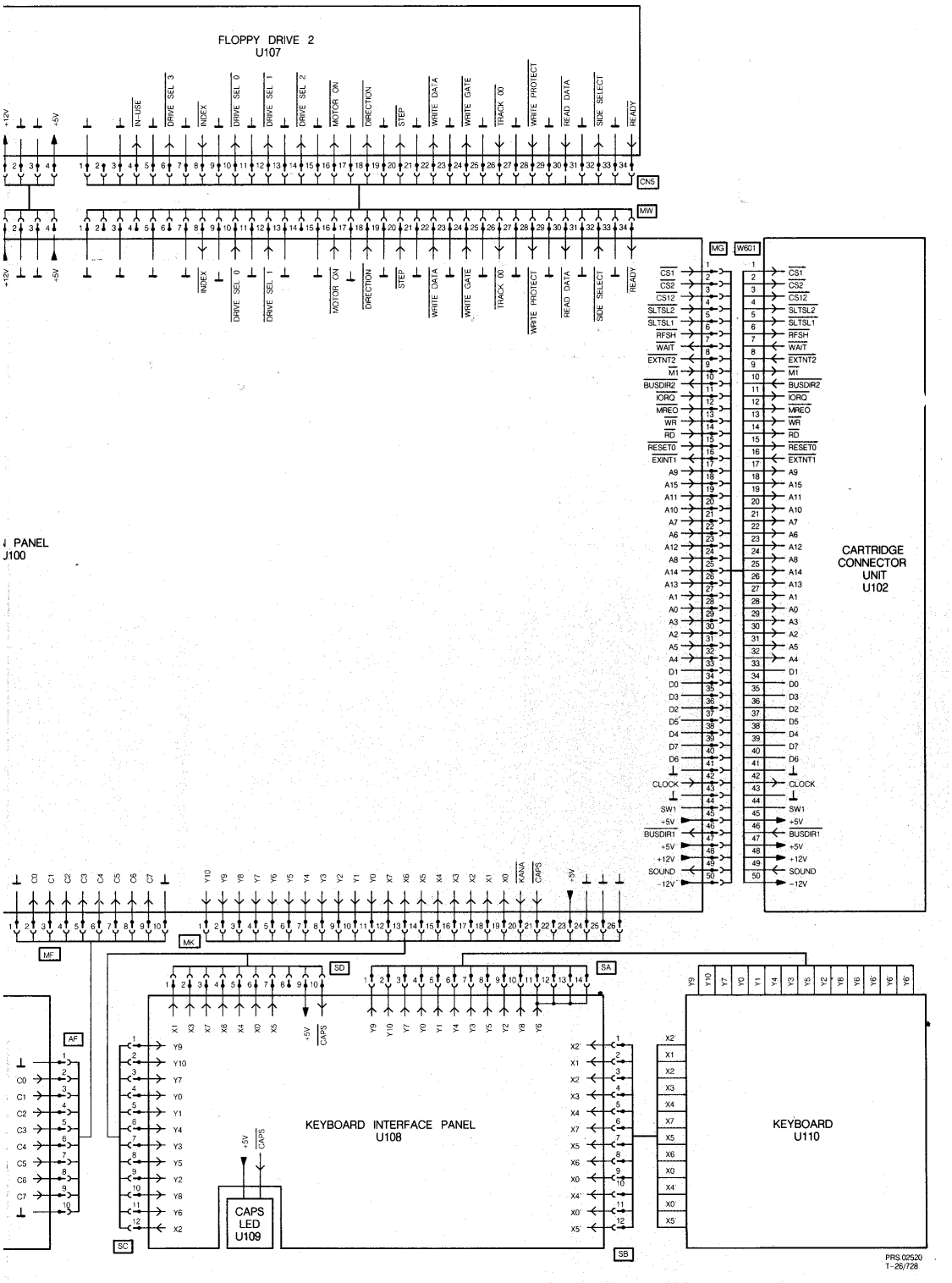
FLOPPY DRIVE 2
U107
CN5
MW
MG
W601
CARTRIDGE
CONNECTOR
UNIT
U102
PANEL
J100
MF
MK
SD
SA
AF
SC
SB
KEYBOARD INTERFACE PANEL
U108
CAPS
LED
U109
KEYBOARD
U110
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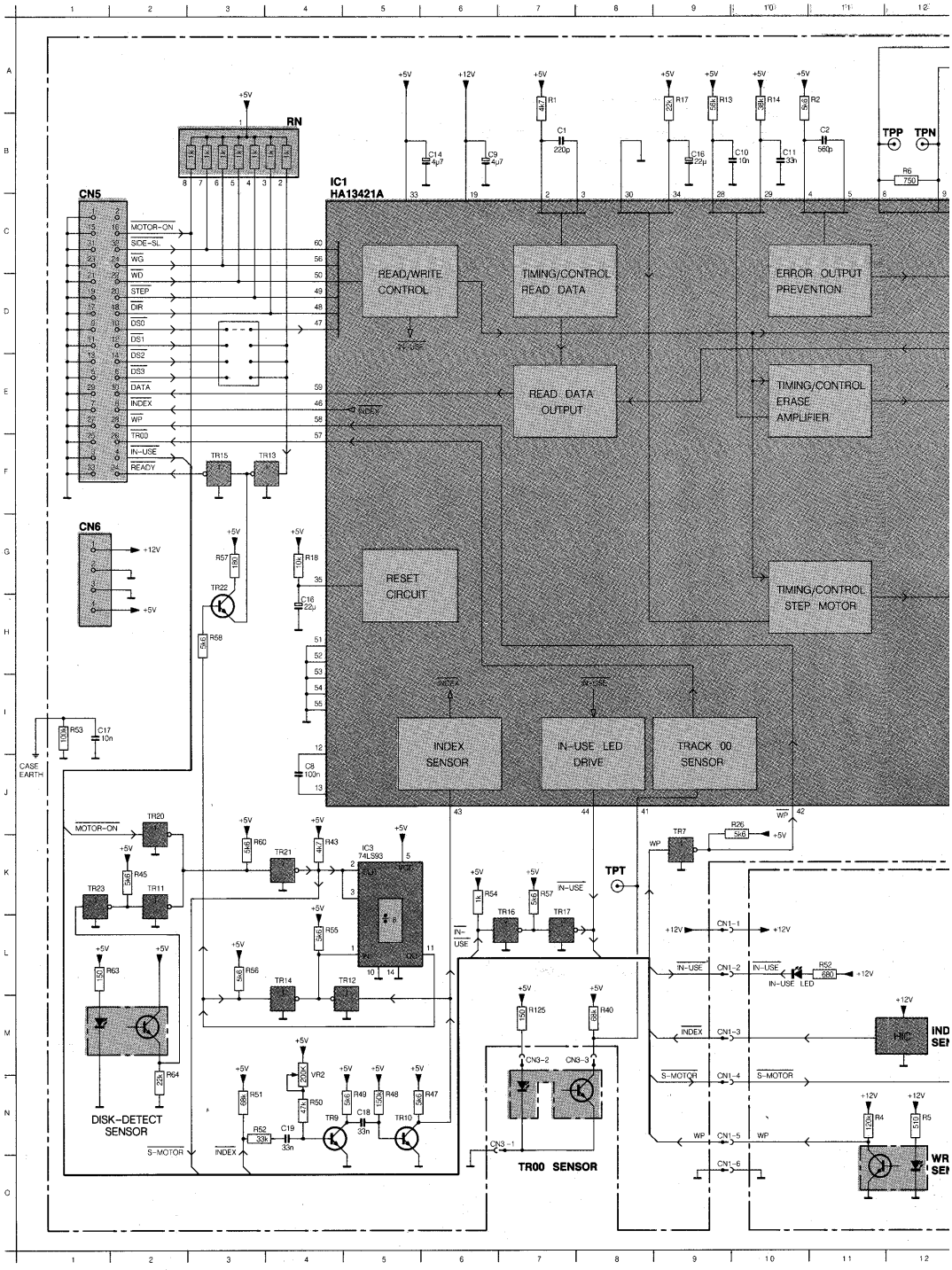
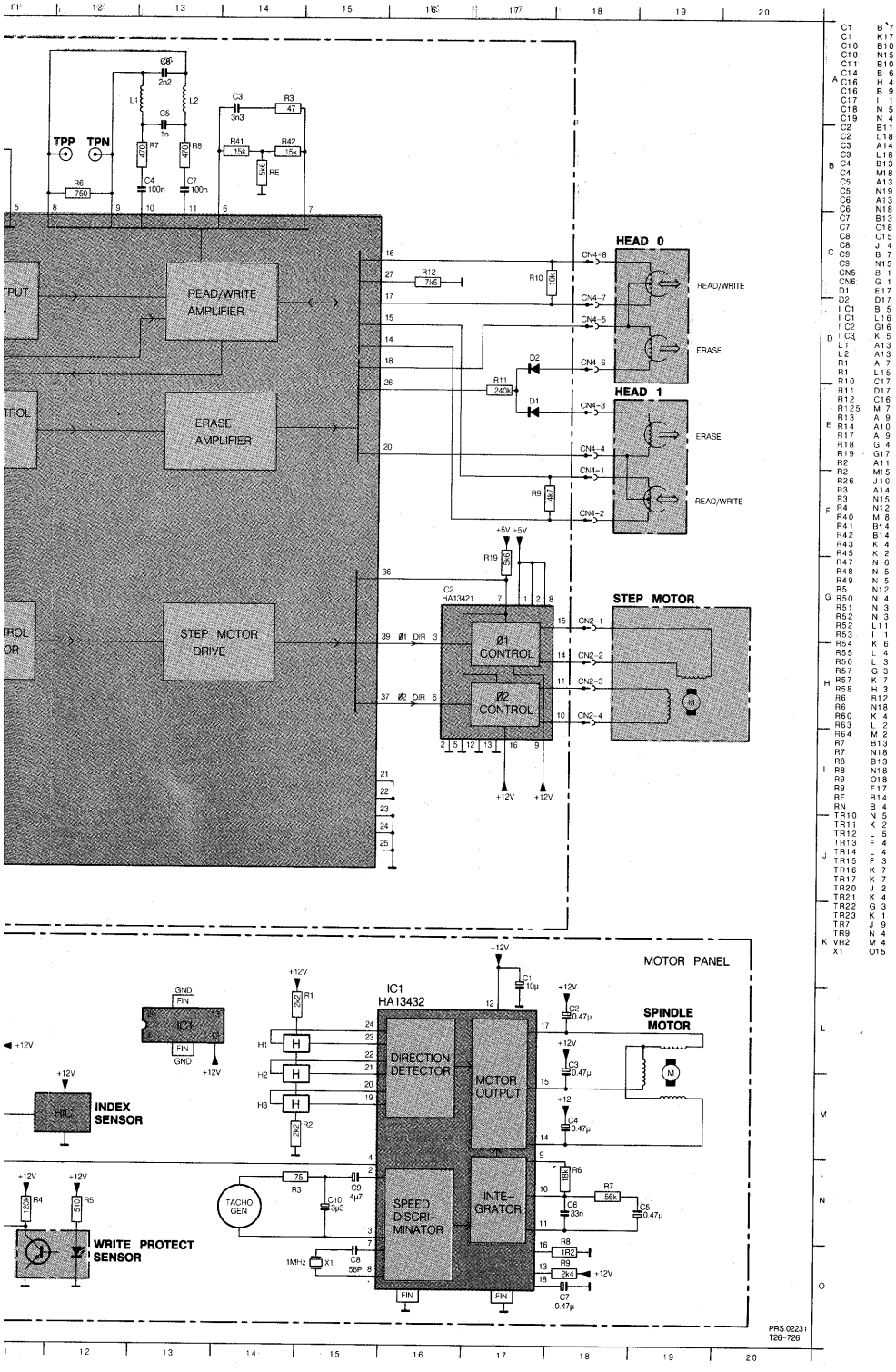
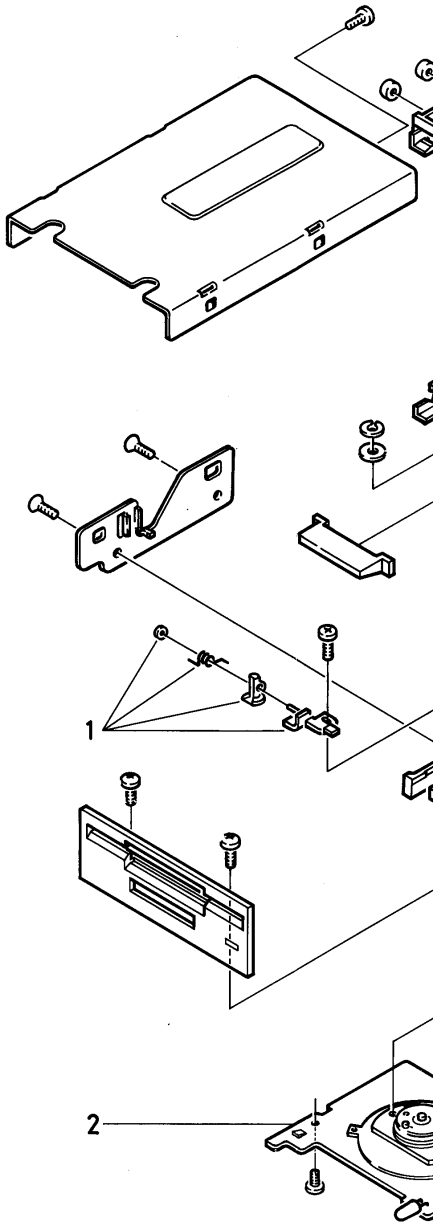

IC1
HA13421A
READ/WRITE CONTROL
TIMING/CONTROL READ DATA
ERROR OUTPUT PREVENTION
READ DATA OUTPUT
TIMING/CONTROL ERASE AMPLIFIER
RESET CIRCUIT
TIMING/CONTROL STEP MOTOR
INDEX SENSOR
IN-USE LED DRIVE
TRACK 00 SENSOR
CN5
CN6
RN
MOTOR-ON
SIDE-SL
WG
WD
STEP
DIR
DS0
DS1
DS2
DS3
DATA
INDEX
WP
TR00
IN-USE
READY
TPP
TPN
TPT
DISK-DETECT SENSOR
TR00 SENSOR
IN-USE LED
CASE EARTH
S-MOTOR
HIC

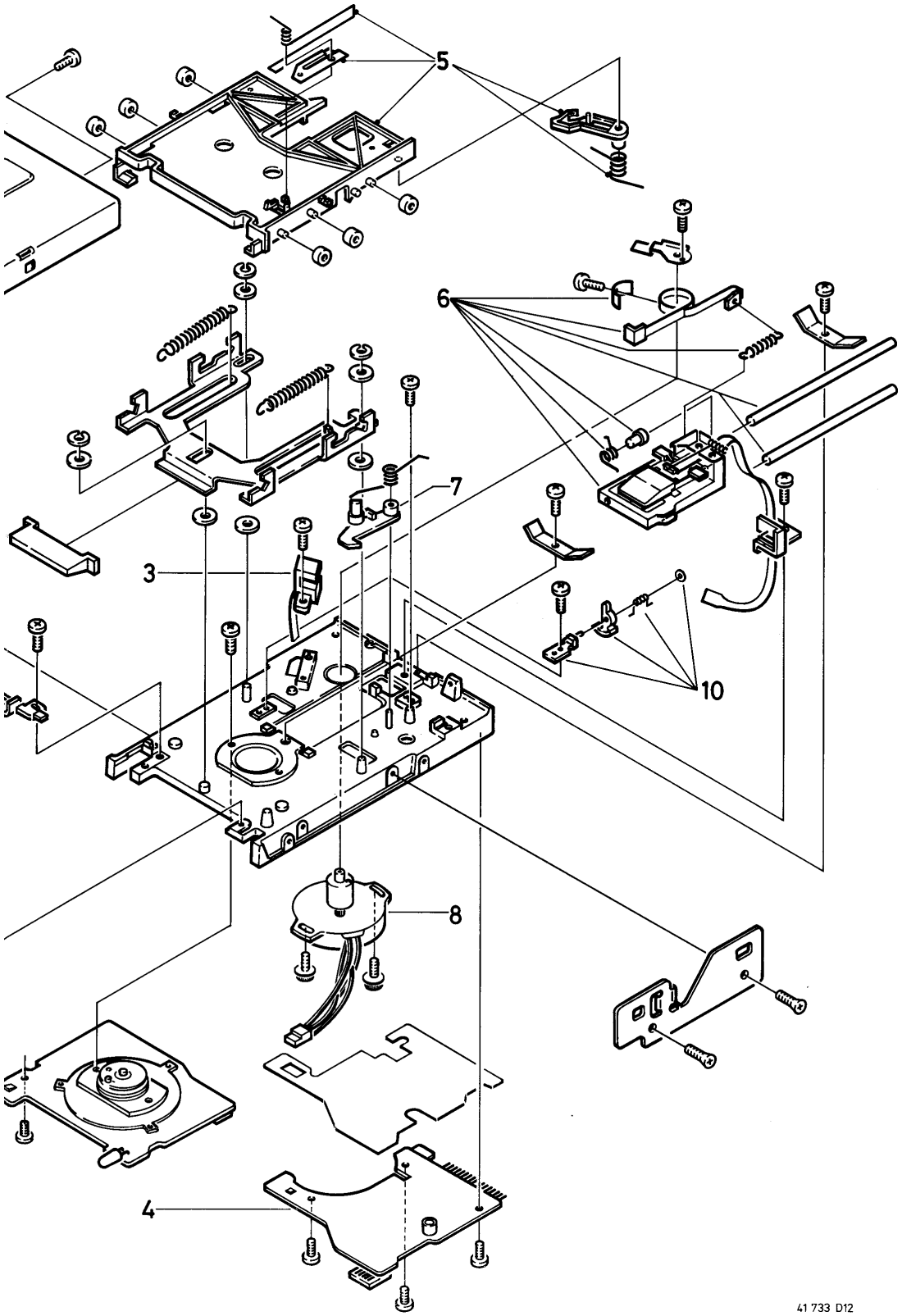

HEAD 0
HEAD 1
READ/WRITE AMPLIFIER
ERASE AMPLIFIER
STEP MOTOR DRIVE
IC2 HA13421
Ø1 CONTROL
Ø2 CONTROL
STEP MOTOR
MOTOR PANEL
IC1 HA13432
DIRECTION DETECTOR
MOTOR OUTPUT
SPEED DISCRI-MINATOR
INTE-GRATOR
SPINDLE MOTOR
INDEX SENSOR
WRITE PROTECT SENSOR
TACHO GEN
PRS.02231
T26-726

EXPLODED VIEW FDD

FDD PARTS LIST

1	4822 277 10978	Write protect switch assy
2	4822 212 22744	Spindle motor + PCB
3	4822 130 10011	Track 00 sensor
4	4822 212 22743	Complete printed board
5	4822 404 60381	Disk holder assy
6	4822 693 91126	Carriage assy
7	4822 404 60382	Eject hook bracket
8	4822 361 30236	Stepper motor
10	4822 277 10979	Disk detect switch assy




5
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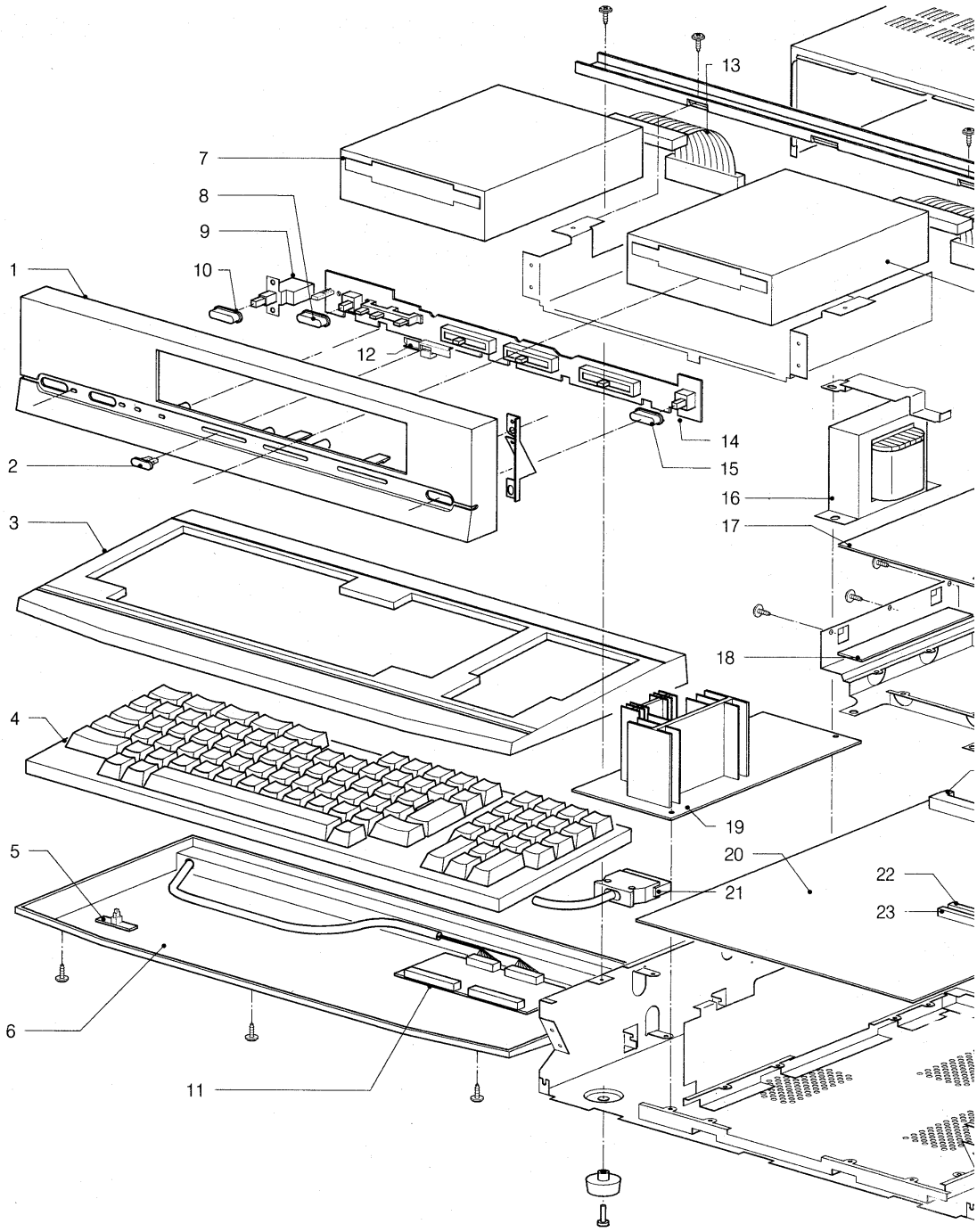
41 733 D12

MECHANICAL PARTS LIST

1	4822 432 10613	Front panel
2	4822 411 61359	Slide knob
3	4822 432 10593	Keyboard upper case
4	4822 273 20259	Keyboard /00
	4822 693 91125	Keyboard /16
5	4822 212 22687	Caps LED unit
6	4822 432 10592	Keyboard lower case
7	4822 693 91114	Floppy drive
8	4822 413 31468	Source select knob
9	4822 276 12167	Mains switch
10	4822 410 25574	Power on knob
11	4822 212 22683	Keyboard interface panel
12	4822 404 60391	Spacer
13	4822 321 22388	Cable connector
14	4822 219 81061	Control unit
15	4822 410 25575	Reset knob
16	4822 148 80768	Transformer
17	4822 219 81057	Analog unit
	4822 219 81072	Analog unit (modified)*
18	4822 219 81063	Sub analog unit
19	4822 219 81055	Power supply
20	4822 219 81056	Main panel /00
	4822 219 81062	Main panel /16
21	4822 321 22291	Keyboard cable
22	4822 265 61108	Connector
23	4822 265 61108	Connector
24	4822 321 22289	Cable connector
25	4822 693 91114	Floppy drive
26	4822 265 51179	SCART connector
27	4822 264 30214	Connector audio out (L)
28	4822 264 30219	Connector audio out (R)
29	4822 264 30215	Connector video/lum out
30	4822 273 20278	Switch
31	4822 413 31467	Knob
32	4822 264 30214	Connector audio in (L)
33	4822 264 30219	Connector audio in (R)
34	4822 264 30215	Connector video in
35	4822 212 10215	Modulator
36	4822 265 51181	Keyboard connector
37	4822 267 50709	Printer connector
38	4822 266 40148	Joystick connector
39	4822 266 40148	Joystick connector
40	4822 267 50711	Recorder connector
41	4822 265 61109	Connector (50 p)
42	4822 212 22686	Cartridge connector unit
43	4822 256 91171	Cartridge holder

* The sub analog unit is integrated in this unit.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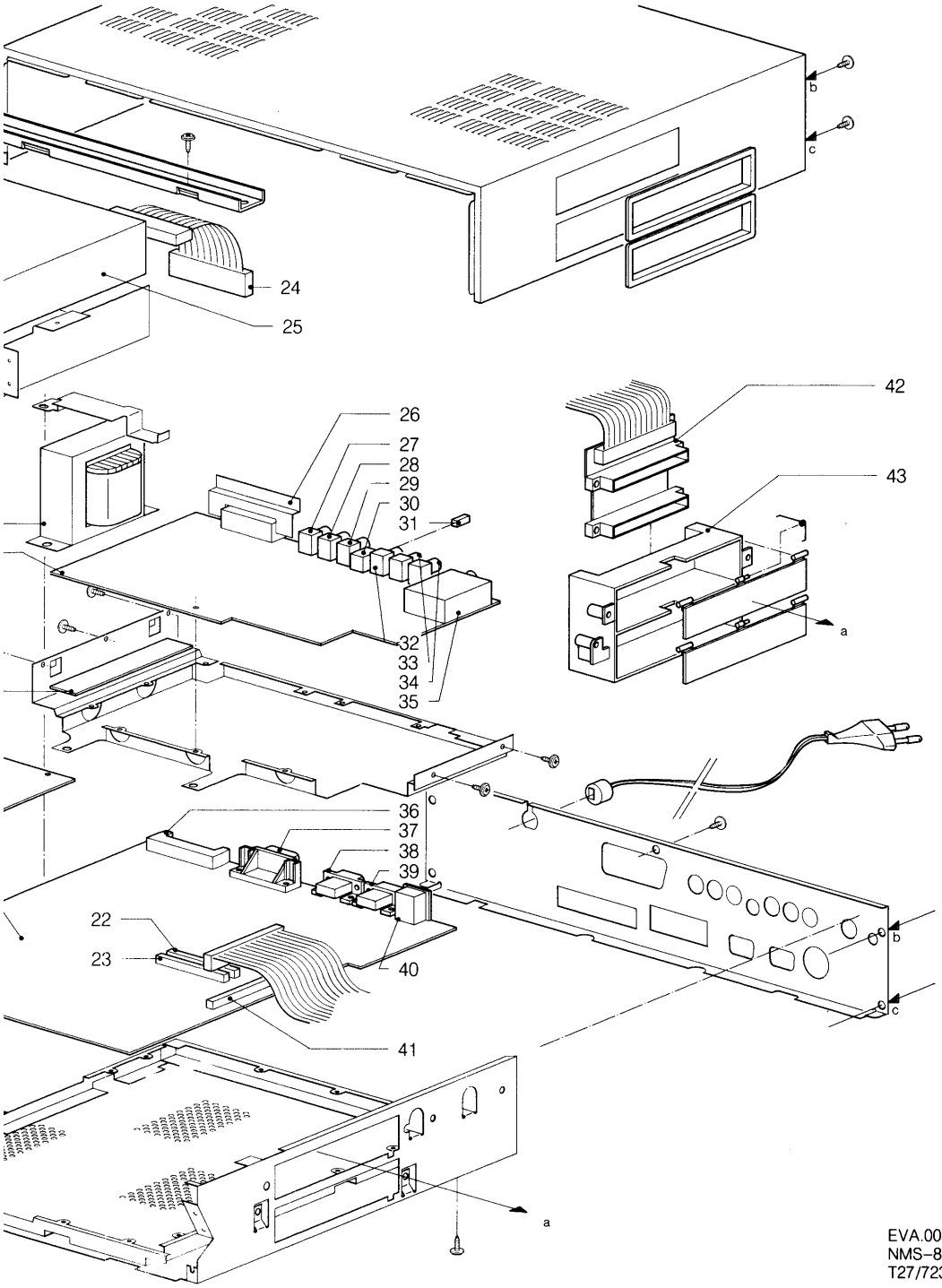
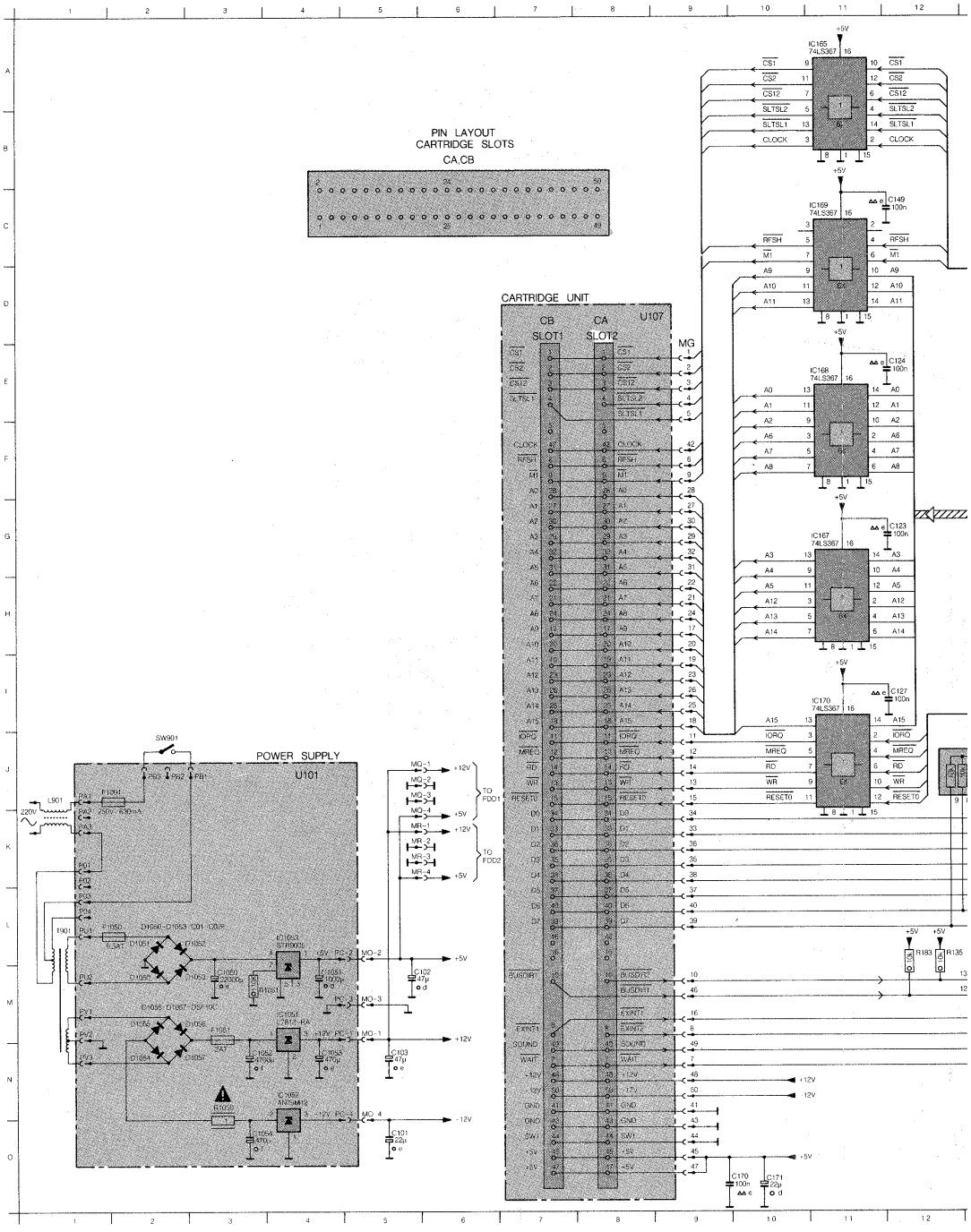
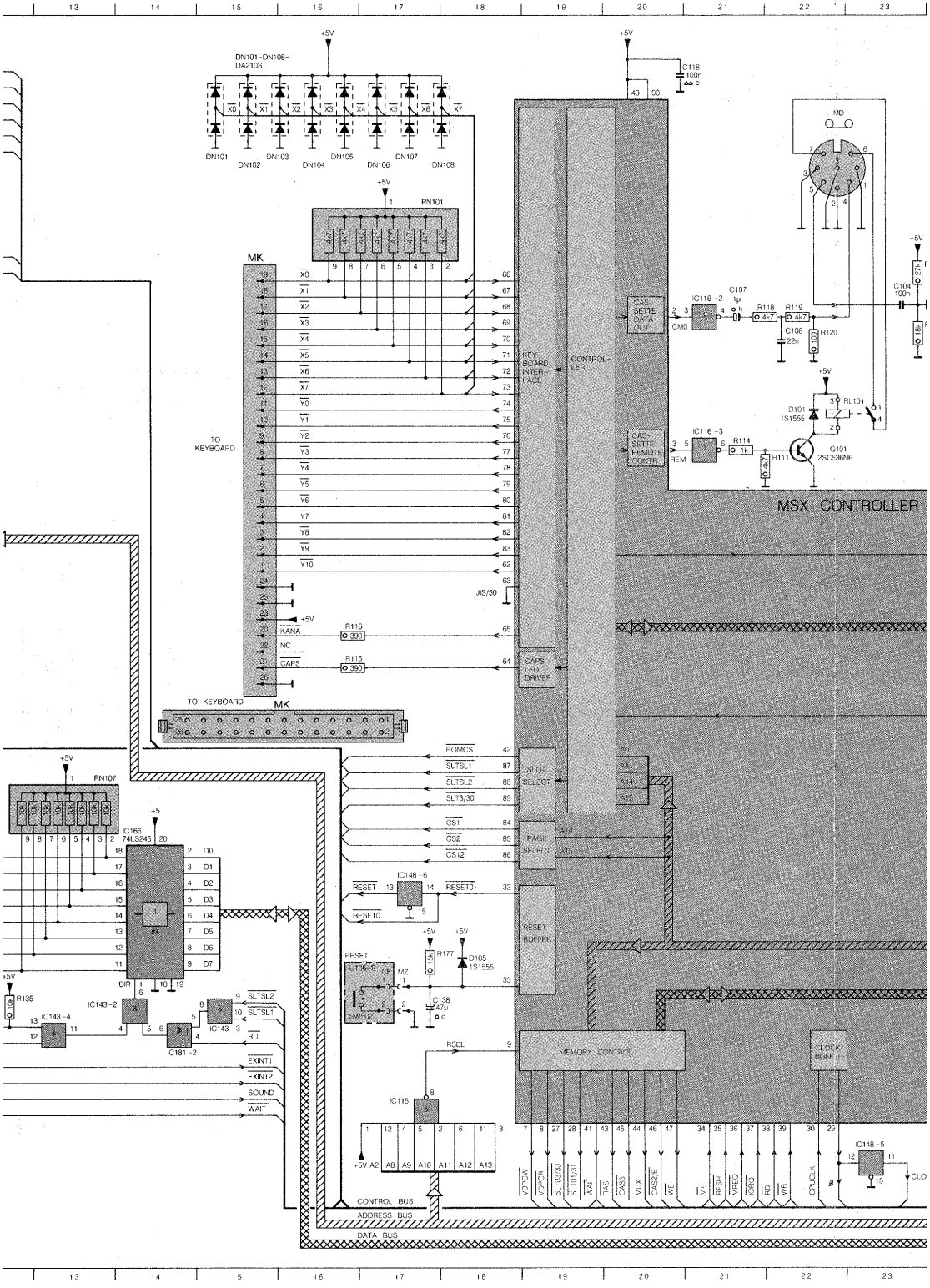


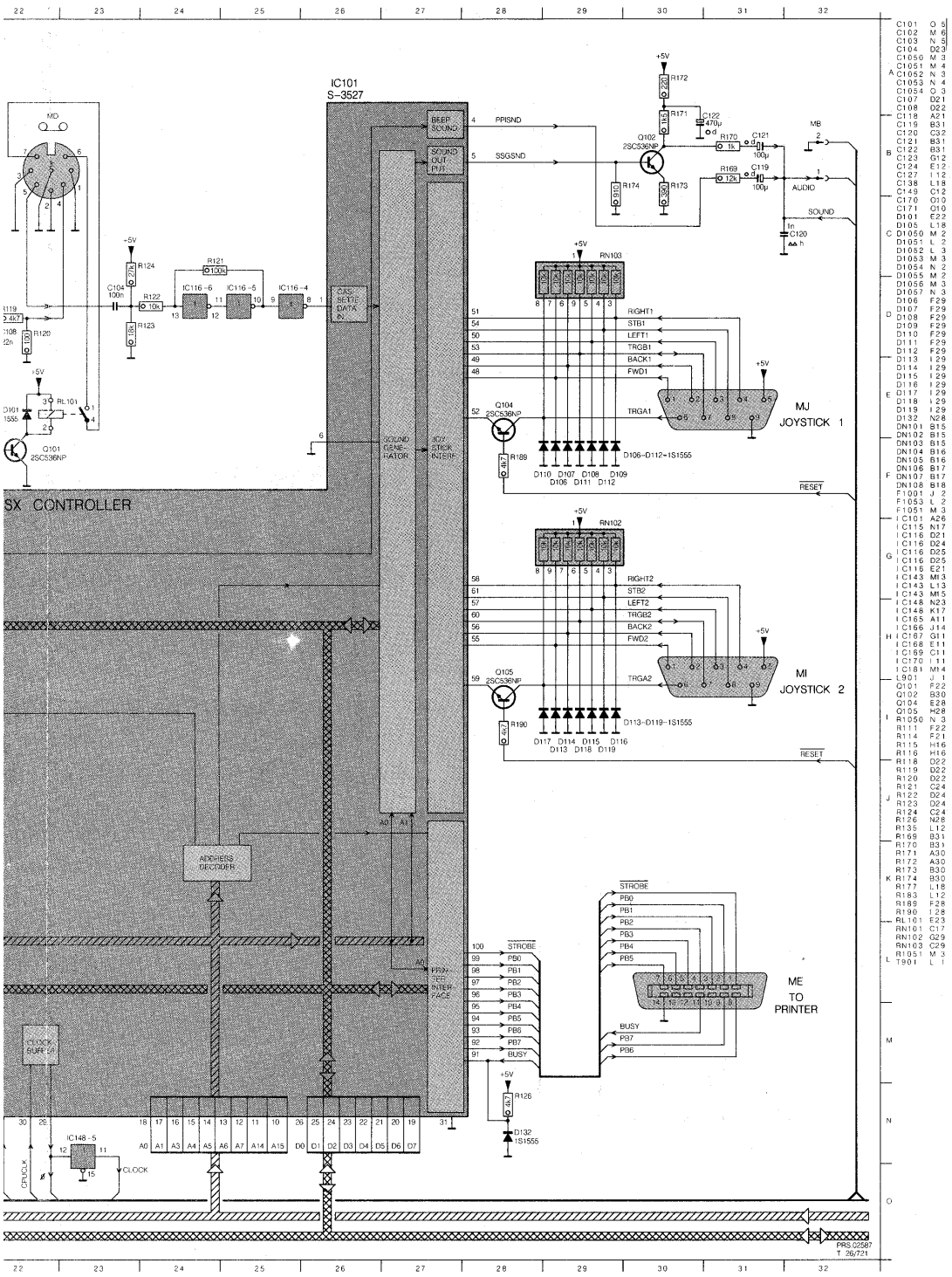
EVA.00359
NMS-8280
T27/723

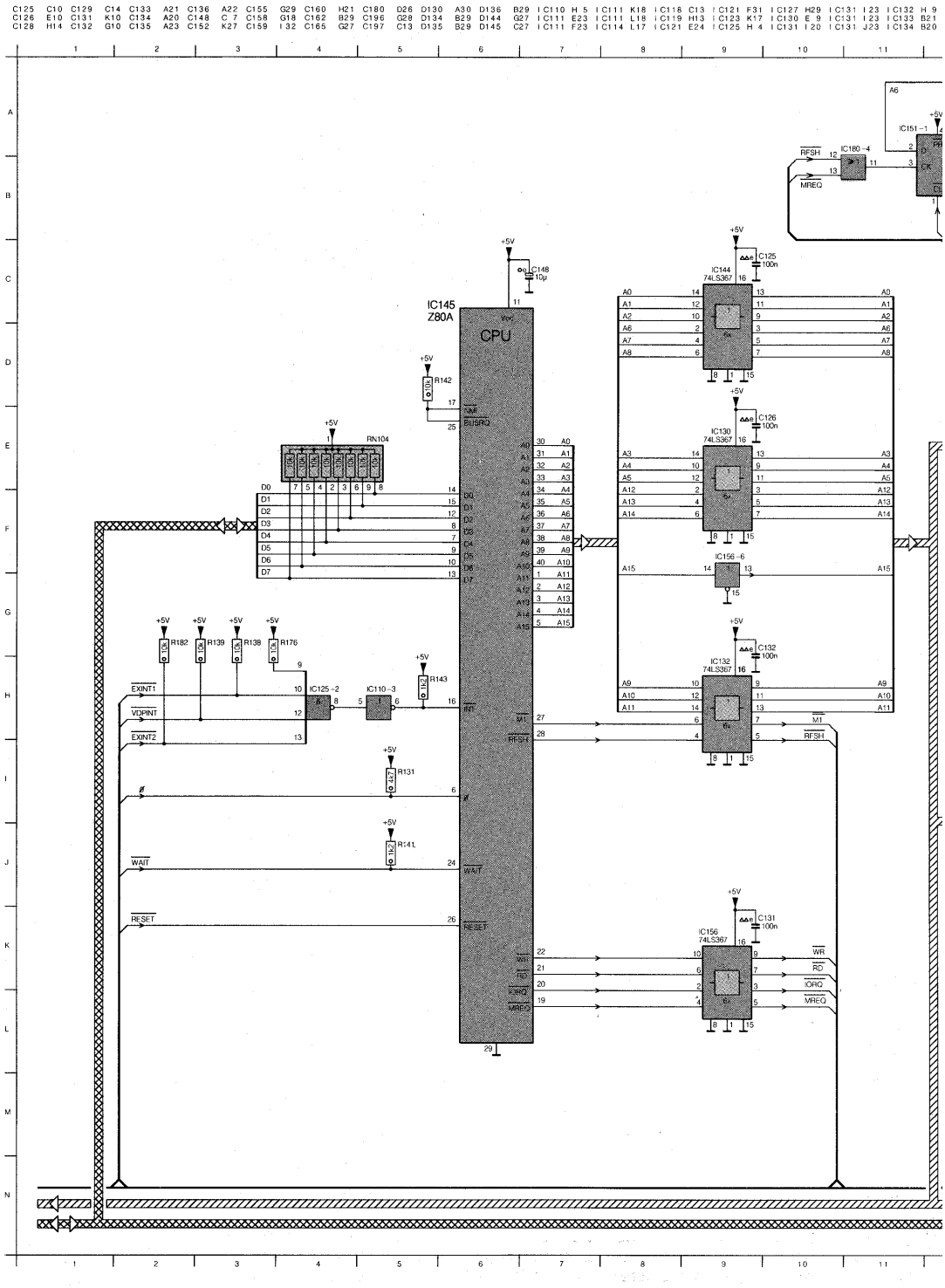
CS 9 270

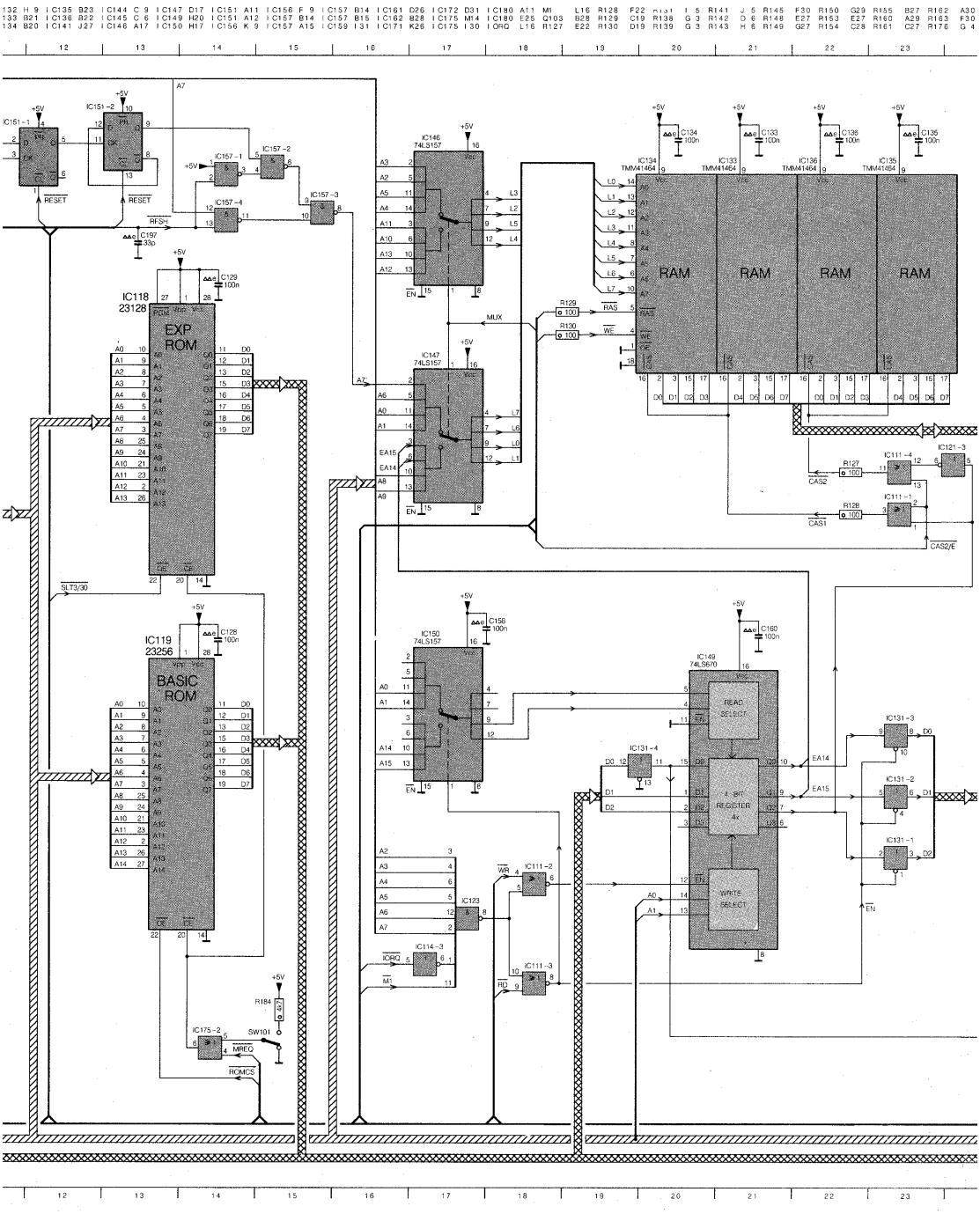

PIN LAYOUT
CARTRIDGE SLOTS
CA,CB
CARTRIDGE UNIT
CB
CA
SLOT1
SLOT2
U107
MG
POWER SUPPLY
U101
SW901
L901
220V
IC165
74LS367
IC169
74LS367
IC168
74LS367
IC167
74LS367
IC170
74LS367
C149
100n
C124
100n
C123
100n
C127
100n
C170
100n
C171
22µ
R183
10k
R135
10k
TO FDD1
TO FDD2
+5V
+12V
-12V
CS1
CS2
CS12
SLTSL2
SLTSL1
CLOCK
RFSH
M1
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
A11
A12
A13
A14
A15
IORQ
MREQ
RD
WR
RESET0
BUSDIR
EXINT
SOUND
WAIT
GND
SW1
MQ-1
MQ-2
MQ-3
MQ-4
MR-1
MR-2
MR-3
MR-4

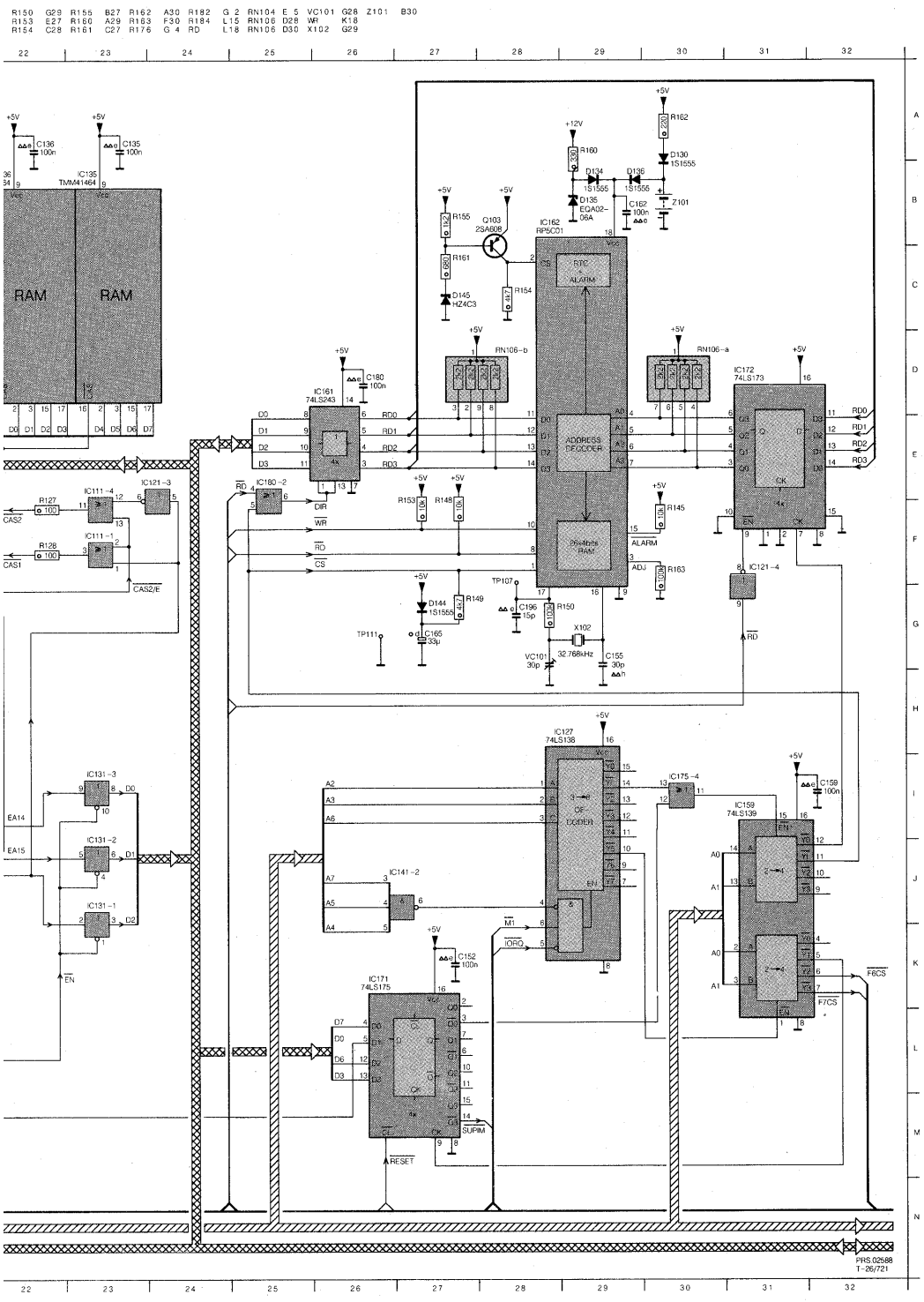
CS 9 271


MSX CONTROLLER
MK
TO KEYBOARD
KEY BOARD INTER-FACE
CONTROL-LER
CAS-SETTE DATA-OUT
CAS-SETTE REMOTE CONTR.
CAPS LED DRIVER
SLOT SELECT
PAGE SELECT
RESET-BUFFER
MEMORY CONTROL
CLOCK BUFFER
KANA
CAPS
NC
JIS/50
ROMCS
SLTSL1
SLTSL2
SLT3/30
CS1
CS2
CS12
RESET
RESET0
RESET1
RSEL
WAIT
SOUND
EXINT1
EXINT2
RD
CONTROL BUS
ADDRESS BUS
DATA BUS
MD
CMD
REM
DN101-DN108-DA210S
RN101
RN107
IC166 74LS245
IC116-2
IC116-3
IC148-6
IC148-5
IC143-2
IC143-3
IC143-4
IC181-2
IC115
D101 1S1555
D105 1S1556
RL101
C101 2SC536NP
C104 100n
C107 1µ
C108 22n
C118 100n
C138 47µ
R114 1k
R116 390
R115 390
R118 4k7
R119 4k7
R120 10k
R135 10k
R177 10k
+5V




IC145
Z80A
CPU
BUSRQ
INT
NMI
RESET
WAIT
M1
RFSH
HALT
WR
RD
IORQ
MREQ
IC144
74LS367
IC130
74LS367
IC132
74LS367
IC156
74LS367
IC156-6
IC125-2
IC110-3
IC180-4
RN104
R142
R143
R131
R141
R182
R139
R138
R176
C148
10µ
C125
C126
C132
C131
100n
EXINT1
VDPINT
EXINT2
RFSH
MREQ
A6
IC151-1
+5V

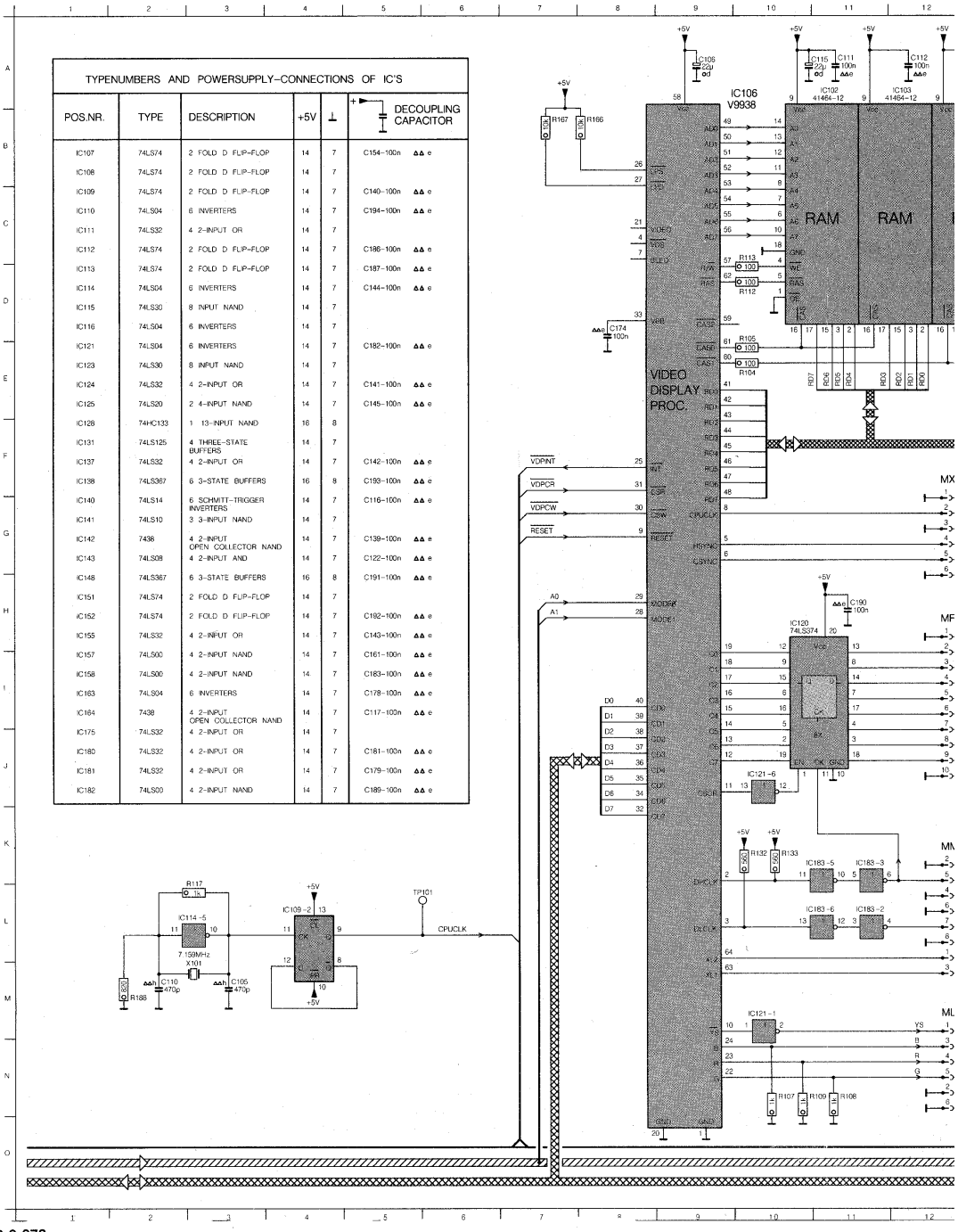

IC118
23128
EXP ROM
IC119
23256
BASIC ROM
IC146
74LS157
IC147
74LS157
IC150
74LS157
IC149
74LS670
READ SELECT
4 BIT REGISTER 4x
WRITE SELECT
IC134
TMM41464
IC133
TMM41464
IC136
TMM41464
IC135
TMM41464
RAM
RAM
RAM
RAM
IC151-1
IC151-2
IC157-1
IC157-2
IC157-3
IC157-4
IC175-2
IC111-1
IC111-2
IC111-3
IC111-4
IC114-3
IC121-3
IC123
IC131-1
IC131-2
IC131-3
IC131-4
C197 33p
C129 100n
C128 100n
C158 100n
C160 100n
C134 100n
C133 100n
C136 100n
C135 100n
R129 100
R130 100
R127 160
R128 160
R184 8
SW101
RESET
RFSH
MUX
RAS
WE
CAS2
CAS1
CAS2/E
SLT3/90
MREQ
ROMCS
IORQ
M1
WR
RD
EN

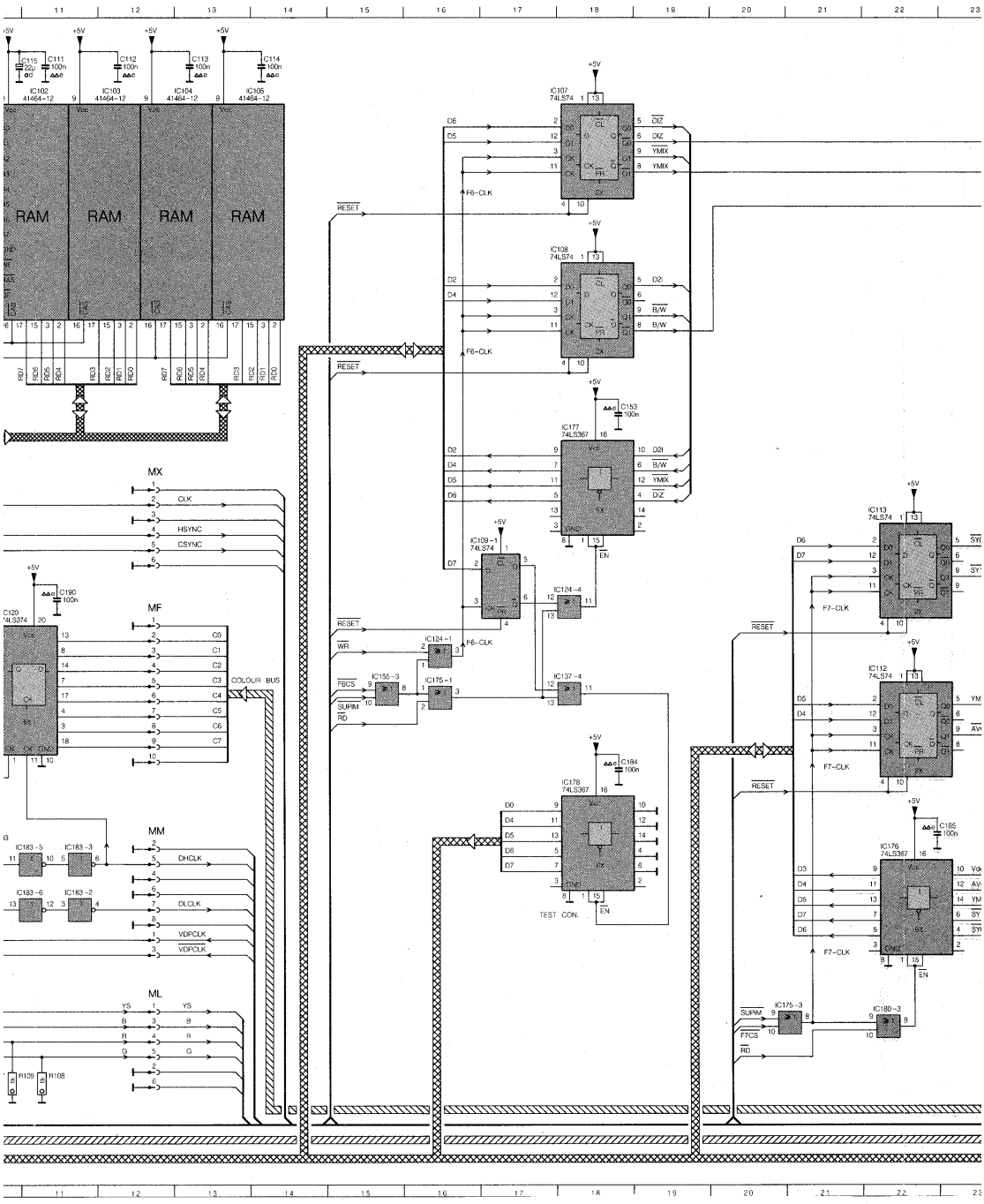

R150 G29 R155 B27 R162 A30 R182 G 2 RN104 E 5 VC101 G28 Z101 B30
R153 E27 R160 A29 R163 F30 R184 L15 RN106 D28 WR K18
R154 C28 R161 C27 R176 G 4 RD L18 RN108 D30 X102 G29
RAM
RAM
TMM41464
IC135
IC161 74LS243
IC162 RP5C01
IC172 74LS173
IC127 74LS138
IC159 74LS139
IC171 74LS175
ADDRESS DECODER
256*4bits RAM
RTC + ALARM
IC131-3
IC131-2
IC131-1
IC111-4
IC111-1
IC121-3
IC121-4
IC180-2
IC141-2
IC175-4
RN106-b
RN106-a
Q103 2SA608
D145 HZ4C3
D130 1S1555
D134 1S1555
D136 1S1555
D135 EQA02-06A
D144 1S1555
Z101
X102 32.768kHz
VC101 30p
TP107
TP111
C136 100n
C135 100n
C180 100n
C159 100n
C152 100n
C162 100n
C196 15p
C165 33p
C155 30p
R162 220
R160 330
R155 1k2
R161 680
R154 4k7
R153 10k
R148 10k
R145 10k
R163 100k
R150 100k
R149 1k
R127 100
R128 100
PRS.02688
T-26/721

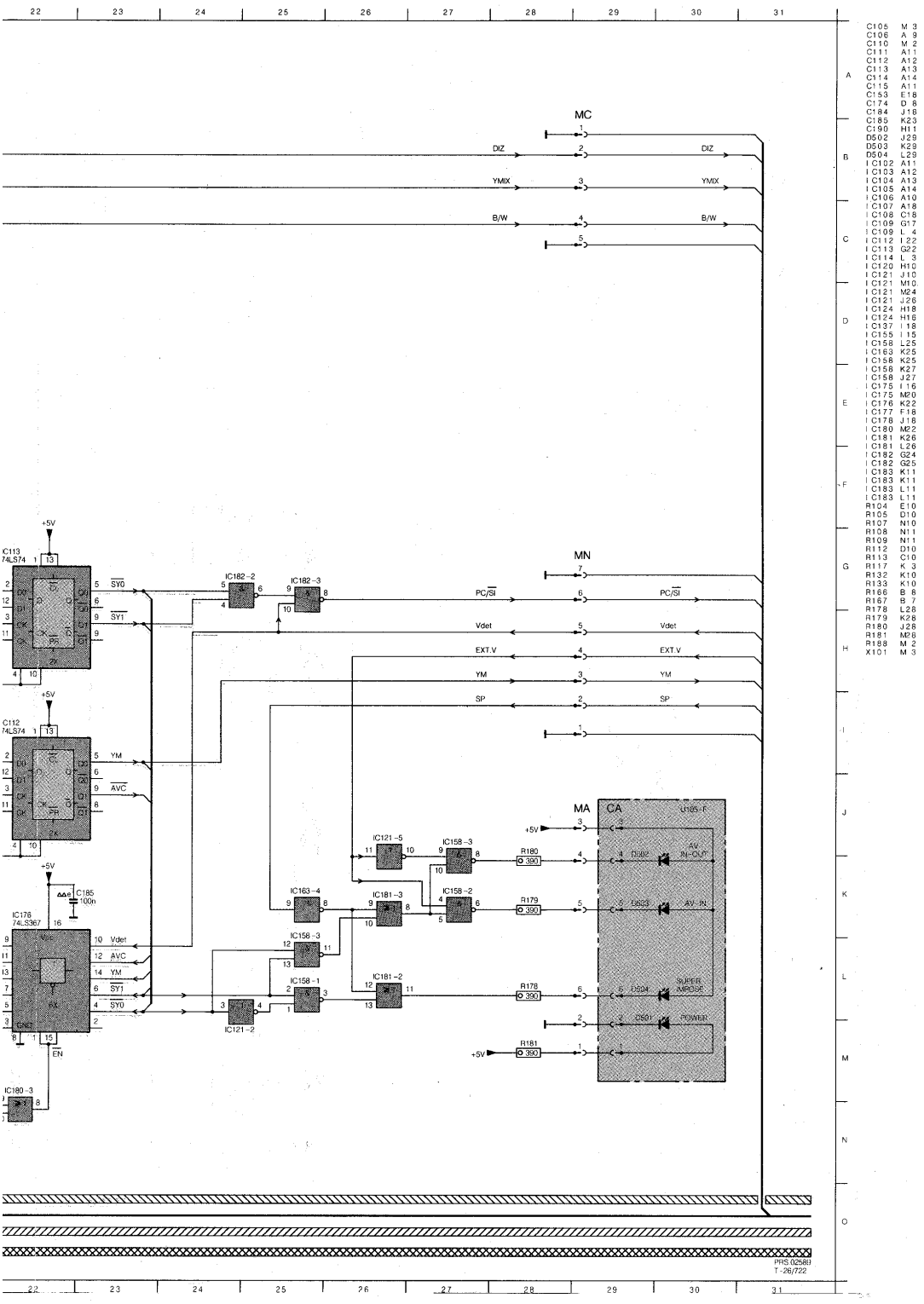
CS 9 272

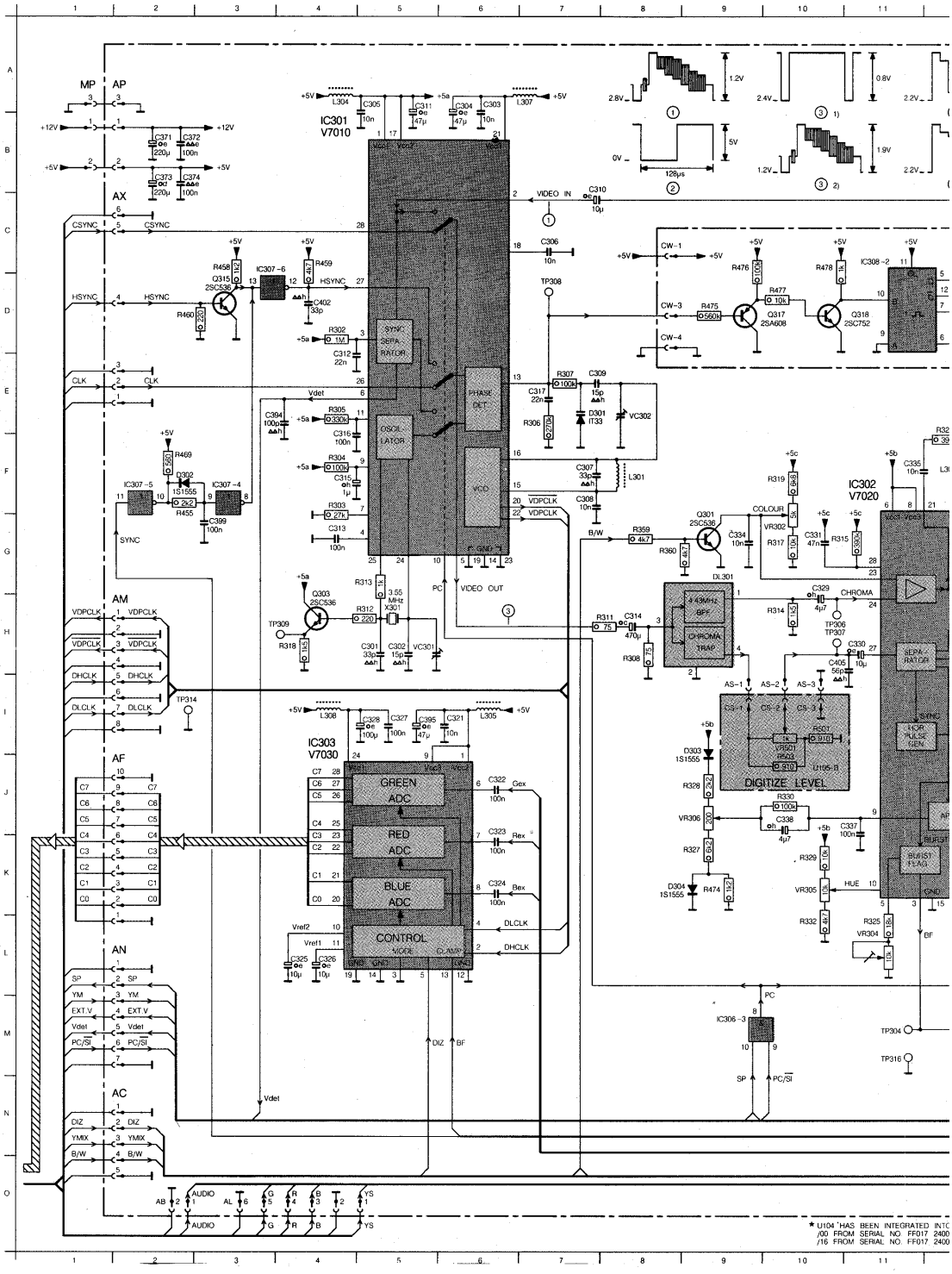
TYPENUMBERS AND POWERSUPPLY–CONNECTIONS OF IC'S

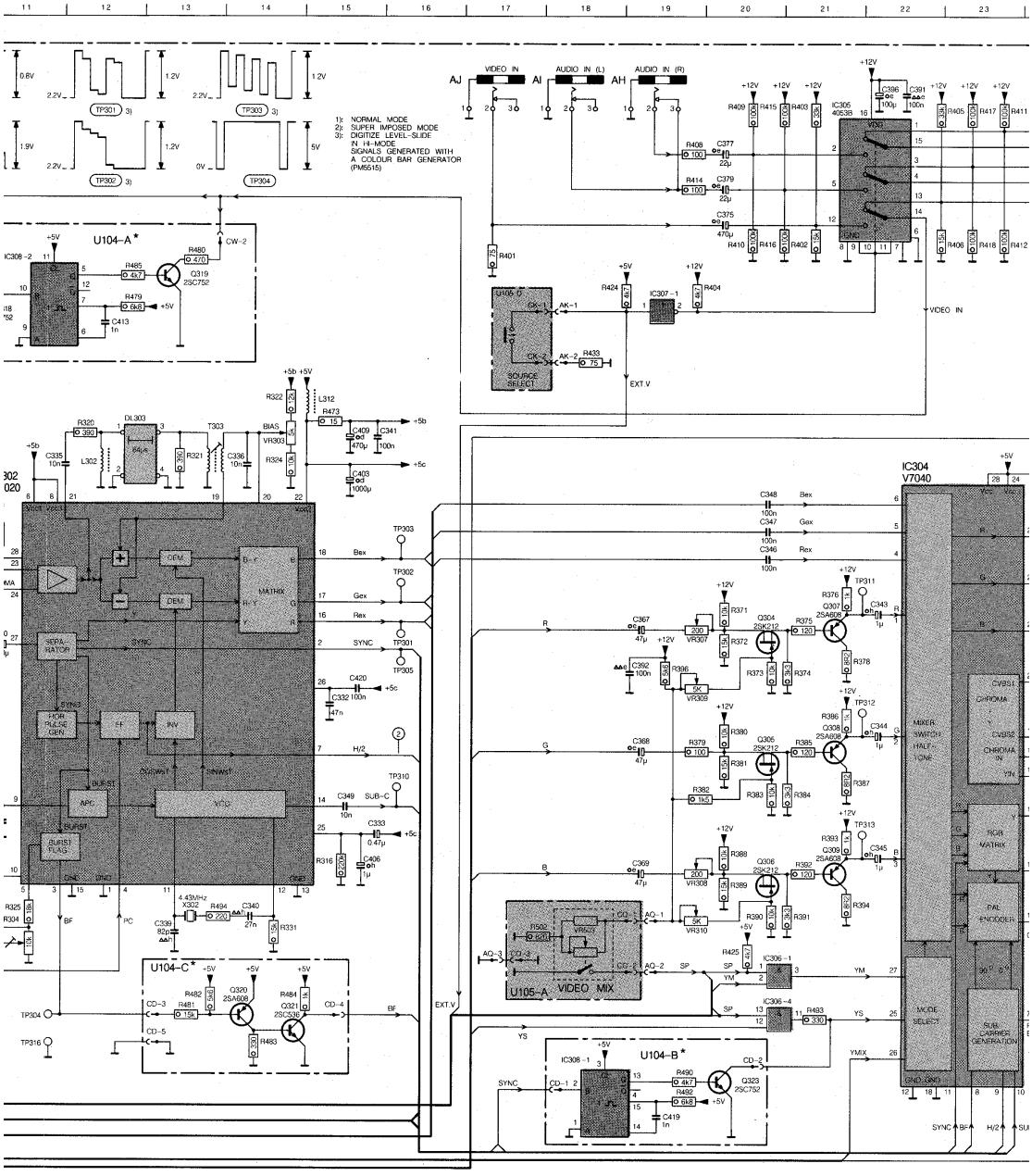
POS.NR.	TYPE	DESCRIPTION	+5V	⊥	+ DECOUPLING CAPACITOR
IC107	74LS74	2 FOLD D FLIP-FLOP	14	7	C154-100n ΔΔ e
IC108	74LS74	2 FOLD D FLIP-FLOP	14	7	
IC109	74LS74	2 FOLD D FLIP-FLOP	14	7	C140-100n ΔΔ e
IC110	74LS04	6 INVERTERS	14	7	C194-100n ΔΔ e
IC111	74LS32	4 2-INPUT OR	14	7	
IC112	74LS74	2 FOLD D FLIP-FLOP	14	7	C186-100n ΔΔ e
IC113	74LS74	2 FOLD D FLIP-FLOP	14	7	C187-100n ΔΔ e
IC114	74LS04	6 INVERTERS	14	7	C144-100n ΔΔ e
IC115	74LS30	8 INPUT NAND	14	7	
IC116	74LS04	6 INVERTERS	14	7	
IC121	74LS04	6 INVERTERS	14	7	C182-100n ΔΔ e
IC123	74LS30	8 INPUT NAND	14	7	
IC124	74LS32	4 2-INPUT OR	14	7	C141-100n ΔΔ e
IC125	74LS20	2 4-INPUT NAND	14	7	C145-100n ΔΔ e
IC128	74HC133	1 13-INPUT NAND	16	8	
IC131	74LS125	4 THREE-STATE BUFFERS	14	7	
IC137	74LS32	4 2-INPUT OR	14	7	C142-100n ΔΔ e
IC138	74LS367	6 3-STATE BUFFERS	16	8	C193-100n ΔΔ e
IC140	74LS14	6 SCHMITT-TRIGGER INVERTERS	14	7	C116-100n ΔΔ e
IC141	74LS10	3 3-INPUT NAND	14	7	
IC142	7438	4 2-INPUT OPEN COLLECTOR NAND	14	7	C139-100n ΔΔ e
IC143	74LS08	4 2-INPUT AND	14	7	C122-100n ΔΔ e
IC148	74LS367	6 3-STATE BUFFERS	16	8	C191-100n ΔΔ e
IC151	74LS74	2 FOLD D FLIP-FLOP	14	7	
IC152	74LS74	2 FOLD D FLIP-FLOP	14	7	C192-100n ΔΔ e
IC155	74LS32	4 2-INPUT OR	14	7	C143-100n ΔΔ e
IC157	74LS00	4 2-INPUT NAND	14	7	C161-100n ΔΔ e
IC158	74LS00	4 2-INPUT NAND	14	7	C183-100n ΔΔ e
IC163	74LS04	6 INVERTERS	14	7	C178-100n ΔΔ e
IC164	7438	4 2-INPUT OPEN COLLECTOR NAND	14	7	C117-100n ΔΔ e
IC175	74LS32	4 2-INPUT OR	14	7	
IC180	74LS32	4 2-INPUT OR	14	7	C181-100n ΔΔ e
IC181	74LS32	4 2-INPUT OR	14	7	C179-100n ΔΔ e
IC182	74LS00	4 2-INPUT NAND	14	7	C189-100n ΔΔ e



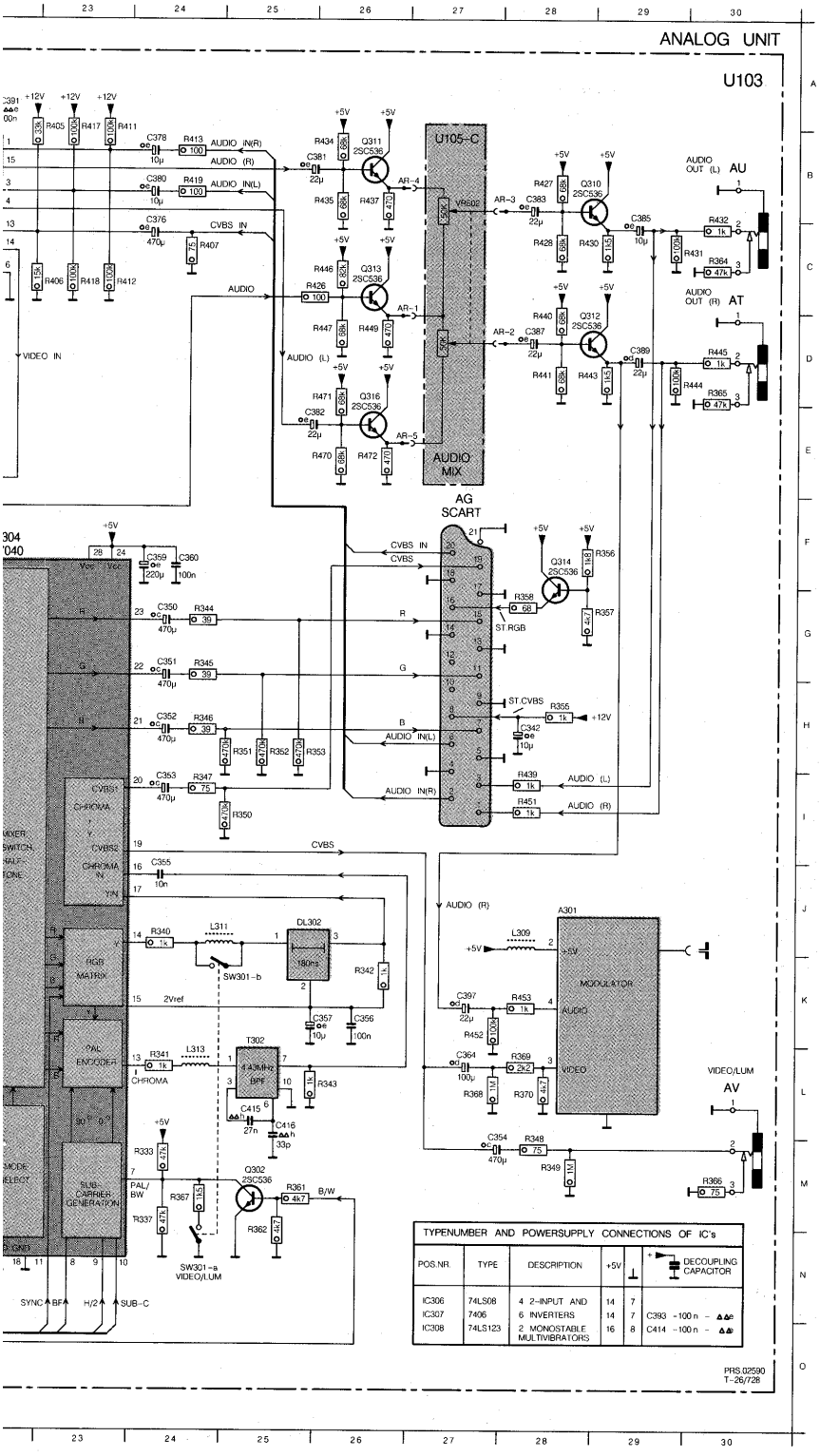

RAM
RAM
RAM
RAM
MX
CLK
HSYNC
CSYNC
MF
COLOUR BUS
MM
DHCLK
DLCLK
VDPCLK
VDPCLK
ML
YS
B
R
G
R109
R108
IC107 74LS74
IC108 74LS74
IC177 74LS367
IC109-1 74LS74
IC178 74LS367
IC113 74LS74
IC112 74LS74
IC176 74LS367
IC120 74LS374
IC124-1
IC124-4
IC155-3
IC175-1
IC137-4
IC183-5
IC183-3
IC183-6
IC183-2
IC175-3
IC180-3
C115
C111
C112
C113
C114
C153
C184
C185
C190
RESET
F6-CLK
F7-CLK
WR
F6CS
F7CS
SUPIM
RD
TEST CON.
EN



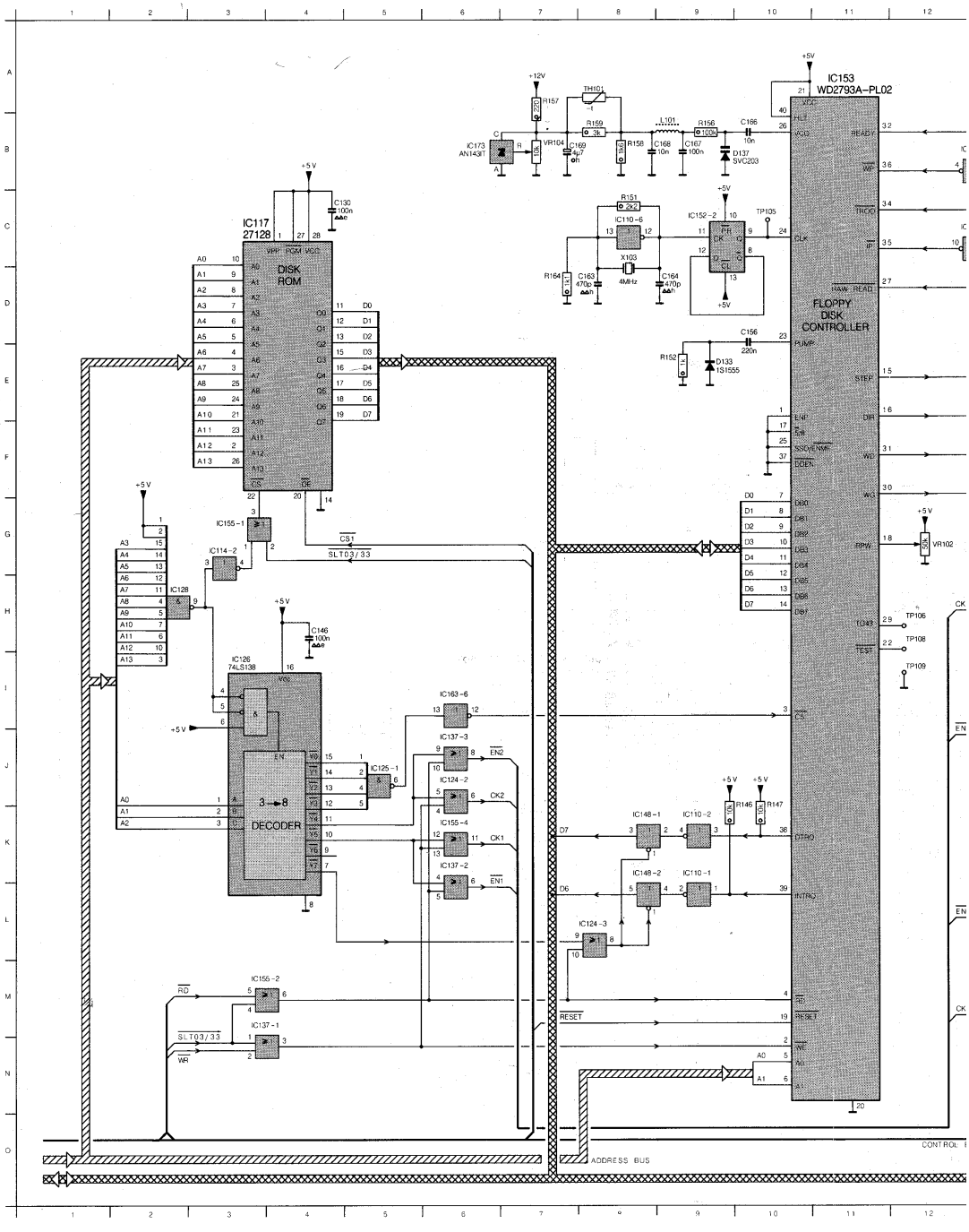

MP
AP
AX
AM
AF
AN
AC
IC301
V7010
IC303
V7030
IC302
V7020
VIDEO IN
VIDEO OUT
SYNC SEPA-RATOR
PHASE DET
OSCIL-LATOR
VCO
GREEN ADC
RED ADC
BLUE ADC
CONTROL
DIGITIZE LEVEL
CHROMA TRAP
4.43MHz BPF
COLOUR
CHROMA
HUE
BURST FLAG
HOR. PULSE GEN.
SEPA-RATOR
CSYNC
HSYNC
CLK
VDPCLK
DHCLK
DLCLK
Vdet
PC
BF
DIZ
YMIX
B/W
SP
YM
EXT.V
PC/SI
AUDIO
TP314
TP309
TP306
TP307
TP308
TP304
TP316
★ U104 HAS BEEN INTEGRATED INTO
/00 FROM SERIAL NO. FF017 2400
/16 FROM SERIAL NO. FF017 2400

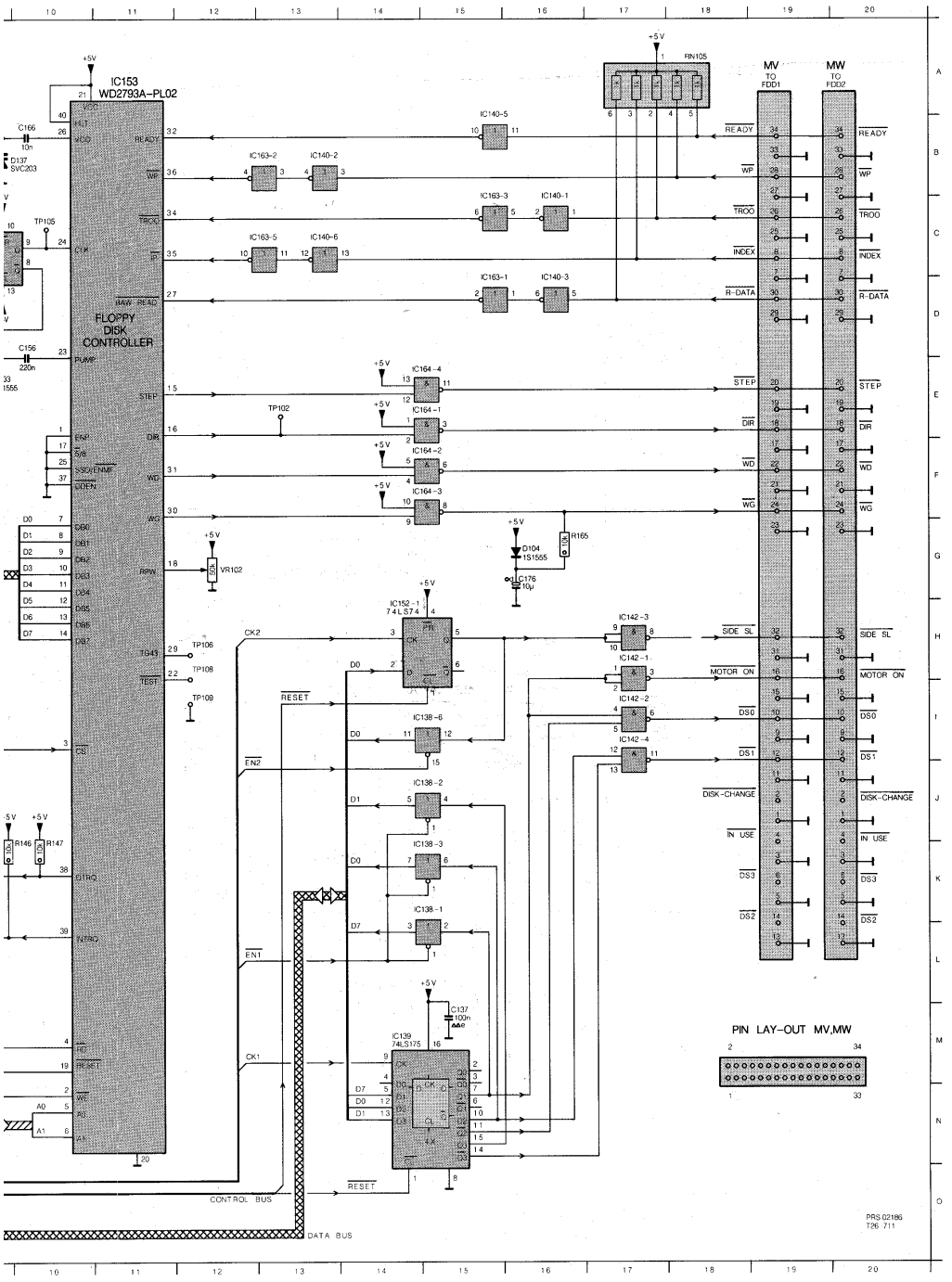


IEEN INTEGRATED INTO U103 IN:
IERIAL NO. FF017 24003153 ON
IERIAL NO. FF017 24000301 ON



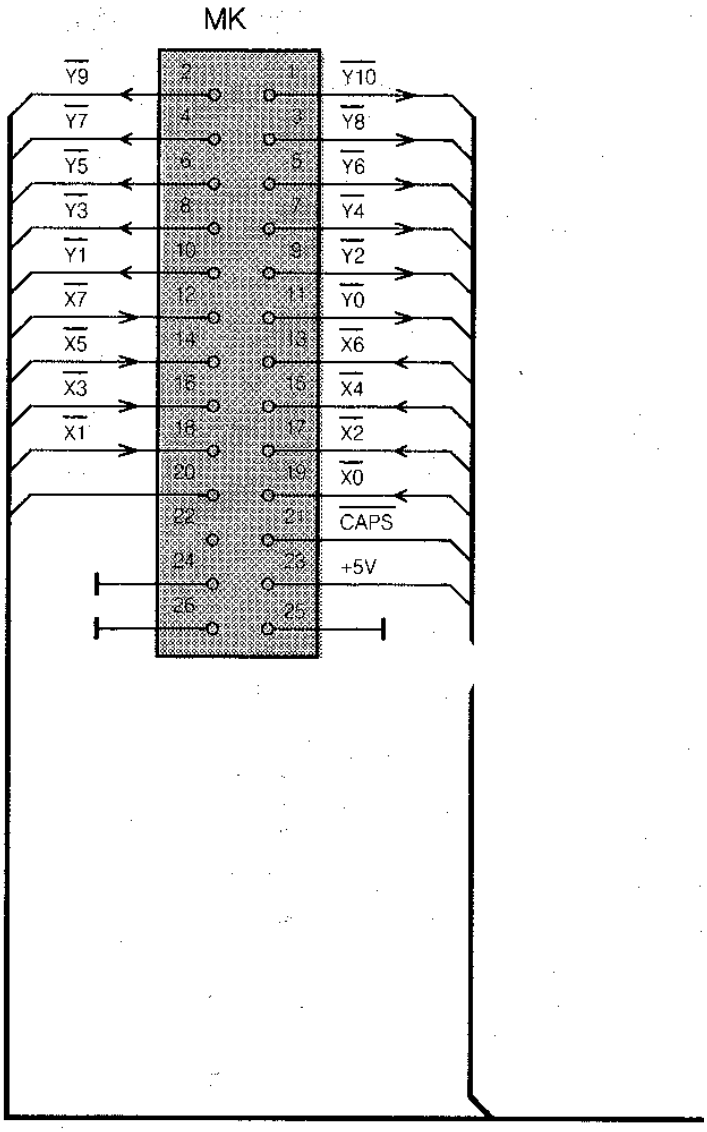
A301	J28	R303	F 4	R493	M21
C301	H 5	R304	F 4	R494	L13
C302	H 5	R305	E 4	R501	I 10
C303	A 6	R306	E 7	R502	L17
C304	A 6	R307	E 7	R503	J10
C305	A 5	R308	H 8	SW301	N24
C306	C 7	R311	H 8	SW801	K25
C307	F 7	R312	H 5	T302	K25
C308	F 7	R313	G 5	TP301	H16
C309	E 7	R314	H10	TP302	G16
C310	B 7	R315	G10	TP303	G16
C311	A 5	R316	K15	TP304	M11
C312	D 4	R317	G10	TP305	I 16
C313	G 4	R318	H 4	TP306	H10
C314	H 8	R319	F10	TP307	H10
C315	F 4	R320	E12	TP308	D 7
C316	E 4	R321	F13	TP309	H 4
C317	E 7	R322	E14	TP310	J16
C321	I 6	R324	F14	TP311	G22
C322	J 6	R325	L11	TP312	I 22
C323	J 6	R327	K 9	TP313	J22
C324	K 6	R328	J 9	TP314	I 2
C325	L 4	R329	K10	TP316	M11
C326	L 4	R330	J10	U103	A30
C327	I 5	R331	L14	U104	C12
C328	I 5	R332	L10	U104	L13
C329	G10	R333	M24	U104	M19
C330	H11	R337	M24	U105	J10
C331	G10	R340	J24	U105	M17
C332	I 15	R341	L24	U105	B27
C333	J 15	R342	K26	U105	D17
C334	G 9	R343	L26	VC301	H 5
C335	F11	R344	G24	VC302	E 8
C336	F14	R345	G24	VR302	G10
C337	J11	R346	H24	VR303	F14
C338	J10	R347	I 24	VR304	L11
C339	L13	R348	L28	VR305	K10
C340	L14	R349	M28	VR306	J 9
C341	F16	R350	I 25	VR307	H19
C342	H28	R351	H25	VR308	K19
C343	H22	R352	H25	VR309	I 19
C344	I 22	R353	H26	VR310	L19
C345	K22	R355	H28	VR501	I 10
C346	G20	R356	F29	VR502	B27
C347	G20	R357	G29	VR503	L18
C348	F20	R358	G28	X301	H 5
C349	J 15	R359	G 8	X302	L13
C350	G24	R360	G 8		
C351	G24	R361	M25		
C352	H24	R362	N25		
C353	I 24	R364	C30		
C354	L28	R365	D30		
C355	J24	R366	M30		
C356	K26	R367	M24		
C357	K26	R368	L27		
C359	F24	R369	L28		
C360	F24	R370	L28		
C364	L27	R371	H20		
C367	H19	R372	H20		
C368	I 19	R373	I 20		
C369	K19	R374	L21		
C371	B 2	R375	H21		
C372	B 2	R376	H21		
C373	B 2	R378	H21		
C374	B 2	R379	I 19		
C375	C20	R380	I 20		
C376	B24	R381	J20		
C377	B20	R382	J19		
C378	B24	R383	J20		
C379	B20	R384	J21		
C380	B24	R385	I 21		
C381	B25	R386	I 21		
C382	E25	R387	J21		
C383	B28	R388	K20		
C385	B29	R389	K20		
C387	D28	R390	L20		
C389	D29	R391	L21		
C391	A22	R392	K21		
C392	H19	R393	K21		
C394	E 4	R394	L21		
C395	I 5	R396	I 19		
C396	A22	R401	C17		
C397	K27	R402	C21		
C399	G 3	R403	A21		
C402	D 4	R404	D20		
C403	F15	R405	A23		
C405	H10	R406	C23		
C406	K15	R407	C24		
C409	F15	R408	B19		
C413	D12	R409	A20		
C415	L25	R410	C20		
C416	L25	R411	A23		
C419	N19	R412	C23		
C420	I 15	R413	B24		
D301	E 7	R414	B19		
D302	F 2	R415	A20		
D303	I 9	R416	C20		
D304	K 8	R417	A23		
DL301	G 9	R418	C23		
DL302	J25	R419	B24		
DL303	E12	R424	D18		
I C302	F11	R425	L20		
I C303	I 4	R426	C25		
I C304	F22	R427	B28		
I C305	A21	R428	C28		
I C306	M 9	R430	C28		
I C306	M20	R431	C30		
I C306	L20	R432	B30		
I C307	F 2	R433	E18		
I C307	F 3	R434	B26		
I C307	C 3	R435	B26		
I C307	D19	R437	B26		
I C308	C11	R439	L28		
I C308	M18	R440	D28		
L301	F 8	R441	D28		
L302	F12	R443	D28		
L304	A 4	R444	D30		
L305	I 6	R445	D30		
L307	A 7	R446	C26		
L308	I 4	R447	D26		
L309	J28	R449	D26		
L311	J25	R451	I 28		
L312	E15	R452	K27		
L313	L24	R453	K28		
Q301	F 9	R455	F 2		
Q302	M25	R458	C 3		
Q303	G 4	R459	C 4		
Q304	H20	R460	D 2		
Q305	I 20	R469	F 2		
Q306	K20	R470	E26		
Q307	H21	R471	D26		
Q308	I 21	R472	E26		
Q309	K21	R473	E15		
Q310	B28	R474	K 9		
Q311	B26	R475	D 9		
Q312	D28	R476	C 9		
Q313	C26	R477	D10		
Q314	F26	R478	C10		
Q315	D 3	R479	D12		
Q316	D26	R480	C13		
Q317	D10	R481	M13		
Q318	D11	R482	M13		
Q319	D13	R483	M14		
Q320	M14	R484	M14		
Q321	M14	R485	C12		
Q323	N20	R490	N19		
R302	D 4	R492	N19		

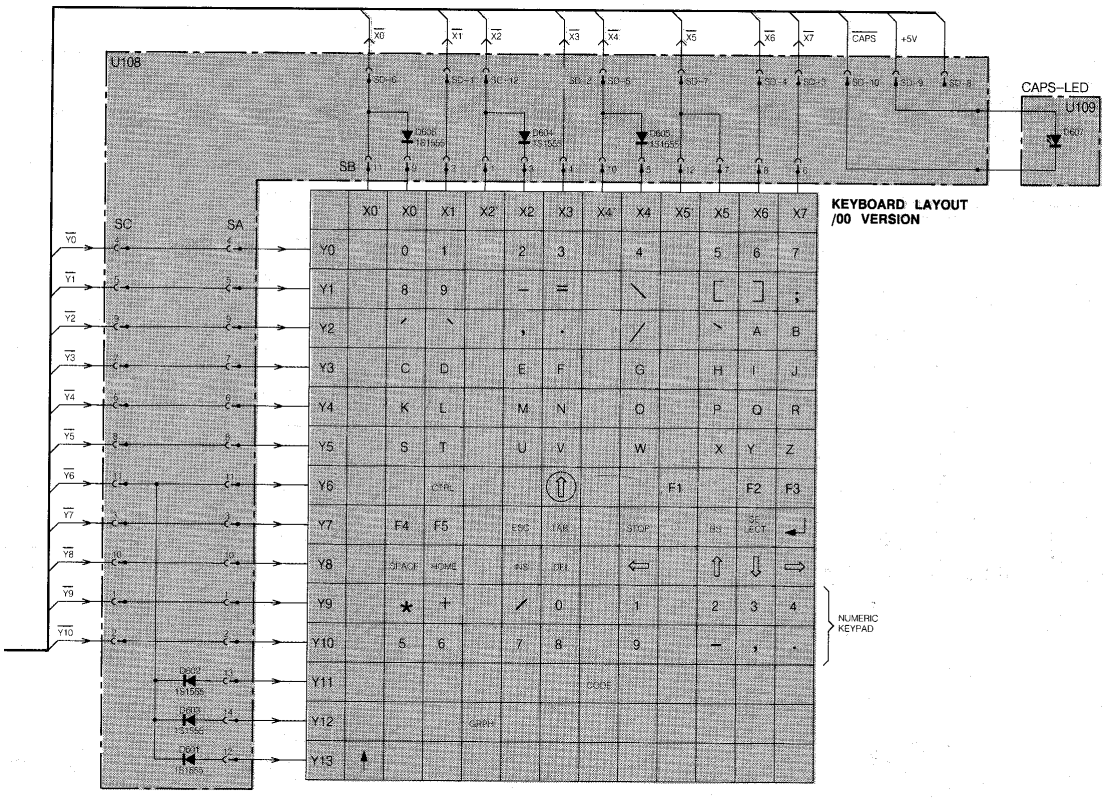

IC153
WD2793A-PL02
FLOPPY
DISK
CONTROLLER
IC117
27128
DISK
ROM
IC128
74LS138
3→8
DECODER
IC163-6
IC137-3
IC124-2
IC155-4
IC137-2
IC125-1
IC155-1
IC114-2
IC155-2
IC137-1
IC148-1
IC110-2
IC148-2
IC110-1
IC124-3
IC152-2
IC110-6
IC173
AN1431
TH101
X103
4MHz
D133
1S1555
D137
SVC203
VR104
VR102
TP105
TP106
TP108
TP109
CS1
SLT03/33
RD
WR
RESET
EN1
EN2
CK1
CK2
ADDRESS BUS
CONTROL



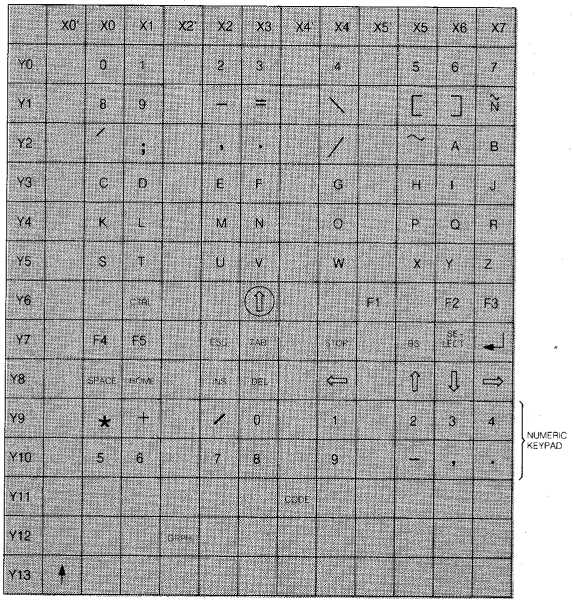
C130 C 5
C137 M1 5
C146 H 4
C156 D10
C163 D 8
C164 D 9
C166 B10
C167 B 9
C168 B 9
C169 B 8
C176 G16
D104 G16
D133 E 9
D137 B10
I C110 C 8
I C110 K 9
I C110 K 9
I C114 G 3
I C117 C 3
I C124 J 6
I C124 L 8
I C125 J 5
I C126 I 3
I C128 H 2
I C137 J 6
I C137 K 6
I C137 M 3
I C138 K15
I C138 K15
I C138 J15
I C138 I15
I C139 M14
I C140 A15
I C140 B13
I C140 B16
I C140 C13
I C140 C16
I C142 H17
I C142 H17
I C142 I17
I C142 I17
I C148 K 8
I C148 K 8
I C152 H14
I C152 C 9
I C153 A11
I C155 G 3
I C155 K 6
I C155 M 3
I C163 I 6
I C163 B13
I C163 B15
I C163 C13
I C163 C15
I C164 E15
I C164 E15
I C164 F15
I C164 F15
I C173 B 6
L101 B 9
R146 J10
R147 J10
R151 C 8
R152 E 9
R156 E 9
R157 A 7
R158 B 8
R159 B 8
R164 D 7
R165 G16
RN105 A18
TH101 A 8
VR102 G12
VR104 B 7
X103 C 8

CS 7 583


MK
$\overline{Y9}$
$\overline{Y7}$
$\overline{Y5}$
$\overline{Y3}$
$\overline{Y1}$
$\overline{X7}$
$\overline{X5}$
$\overline{X3}$
$\overline{X1}$
2
4
6
8
10
12
14
16
18
20
22
24
26
1
3
5
7
9
11
13
15
17
19
21
23
25
$\overline{Y10}$
$\overline{Y8}$
$\overline{Y6}$
$\overline{Y4}$
$\overline{Y2}$
$\overline{Y0}$
$\overline{X6}$
$\overline{X4}$
$\overline{X2}$
$\overline{X0}$
$\overline{CAPS}$
+5V

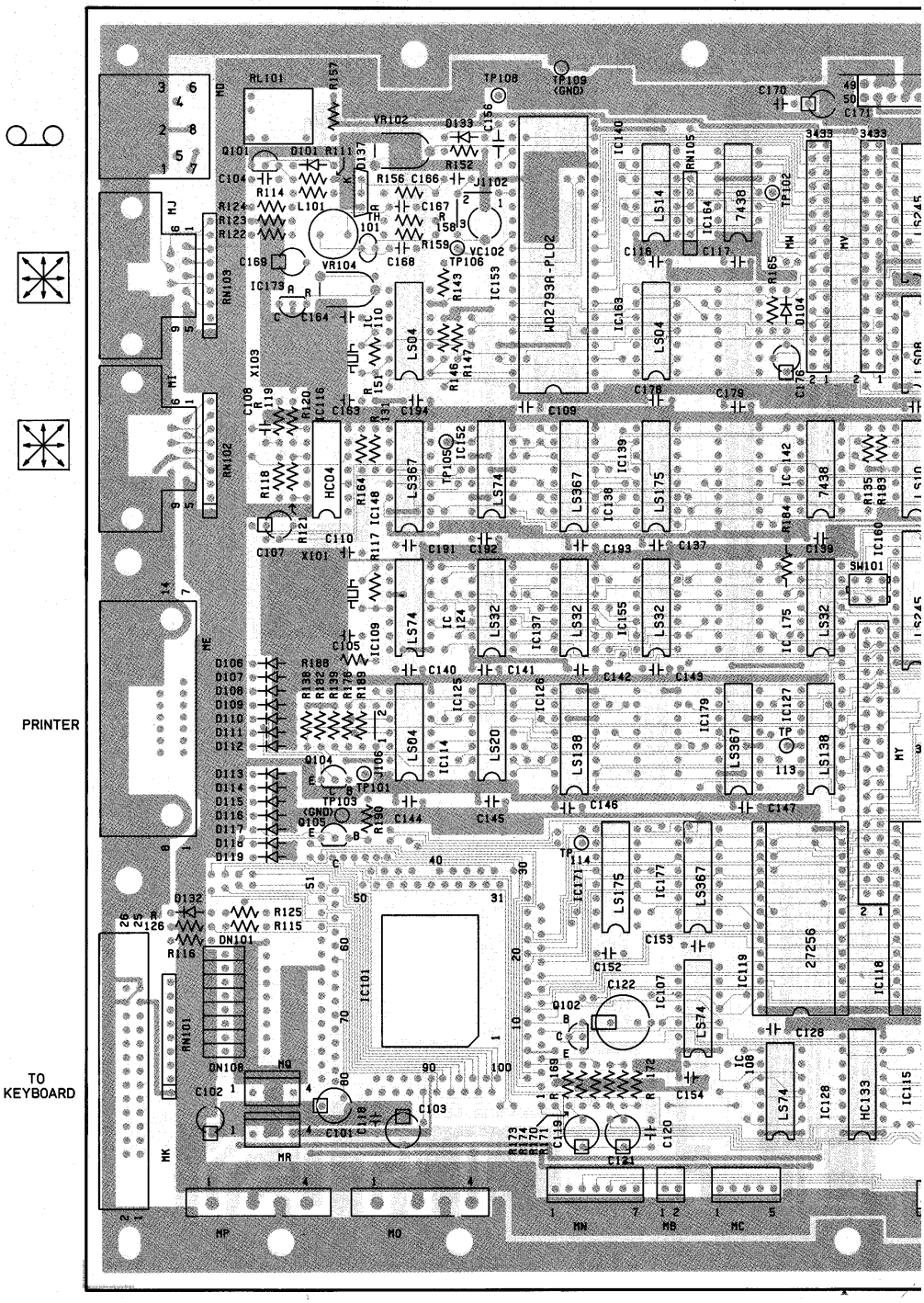


KEYBOARD LAYOUT /16 VERSION

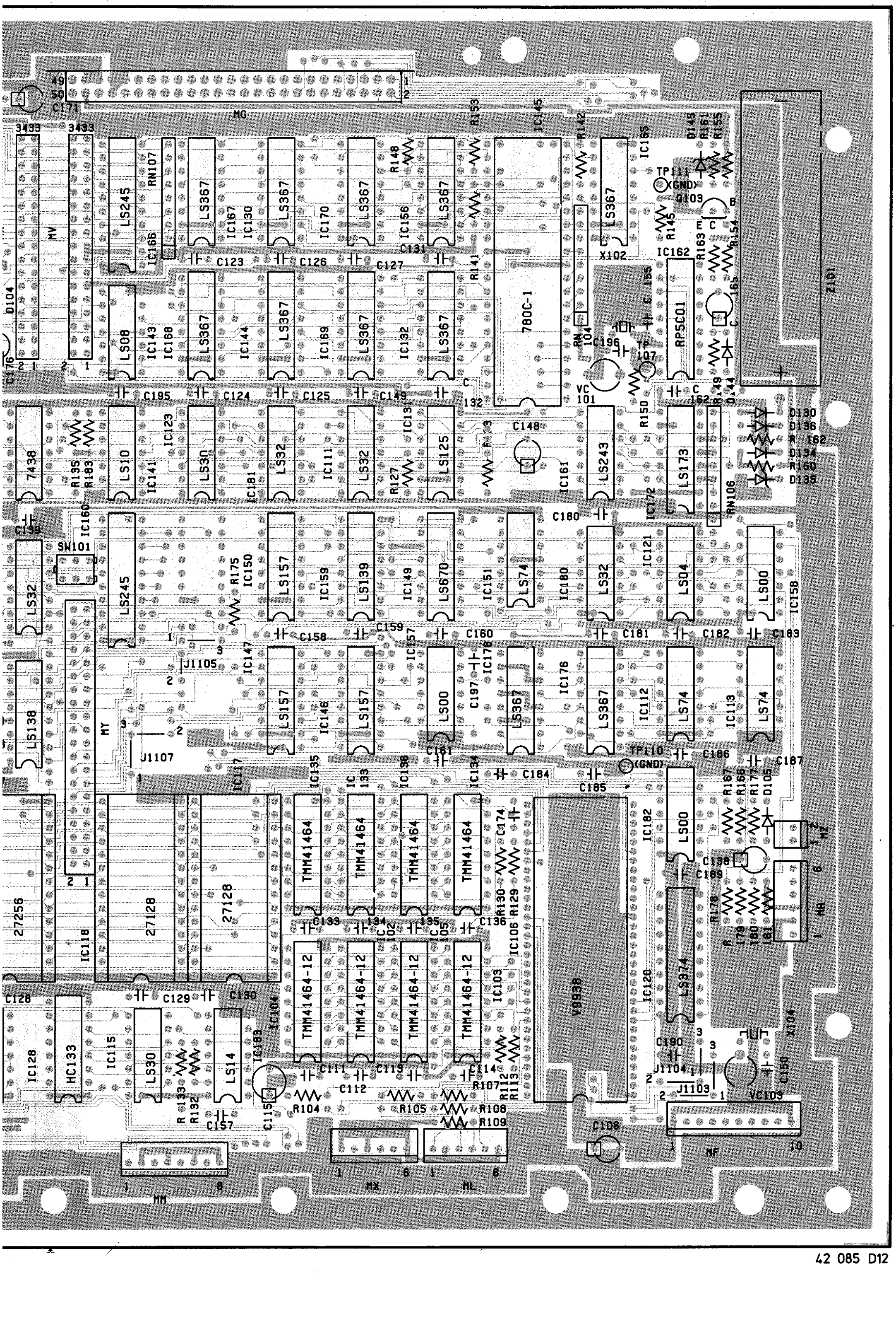


PRS 02658
T07-722

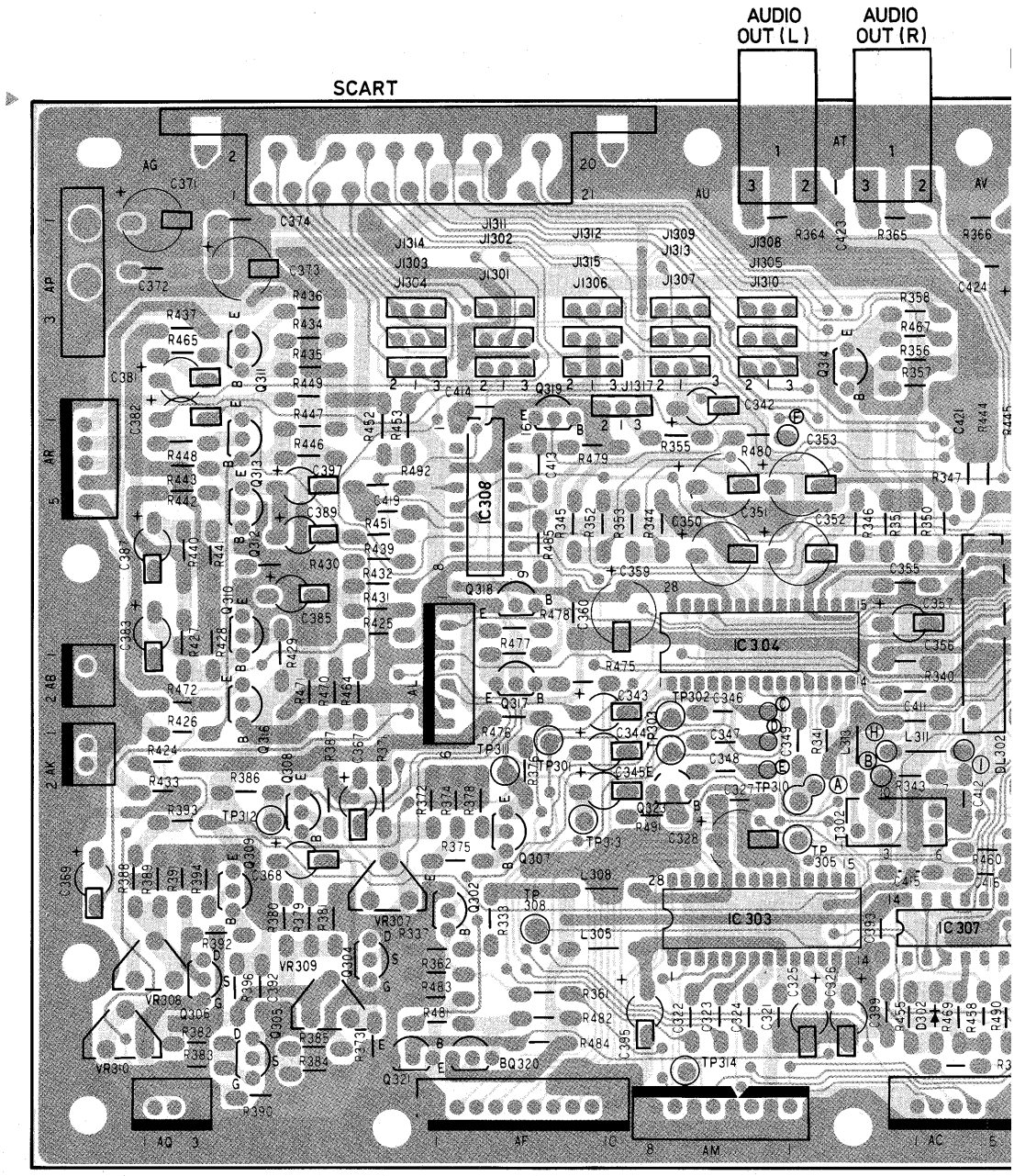
MAIN PRINTED BOARD



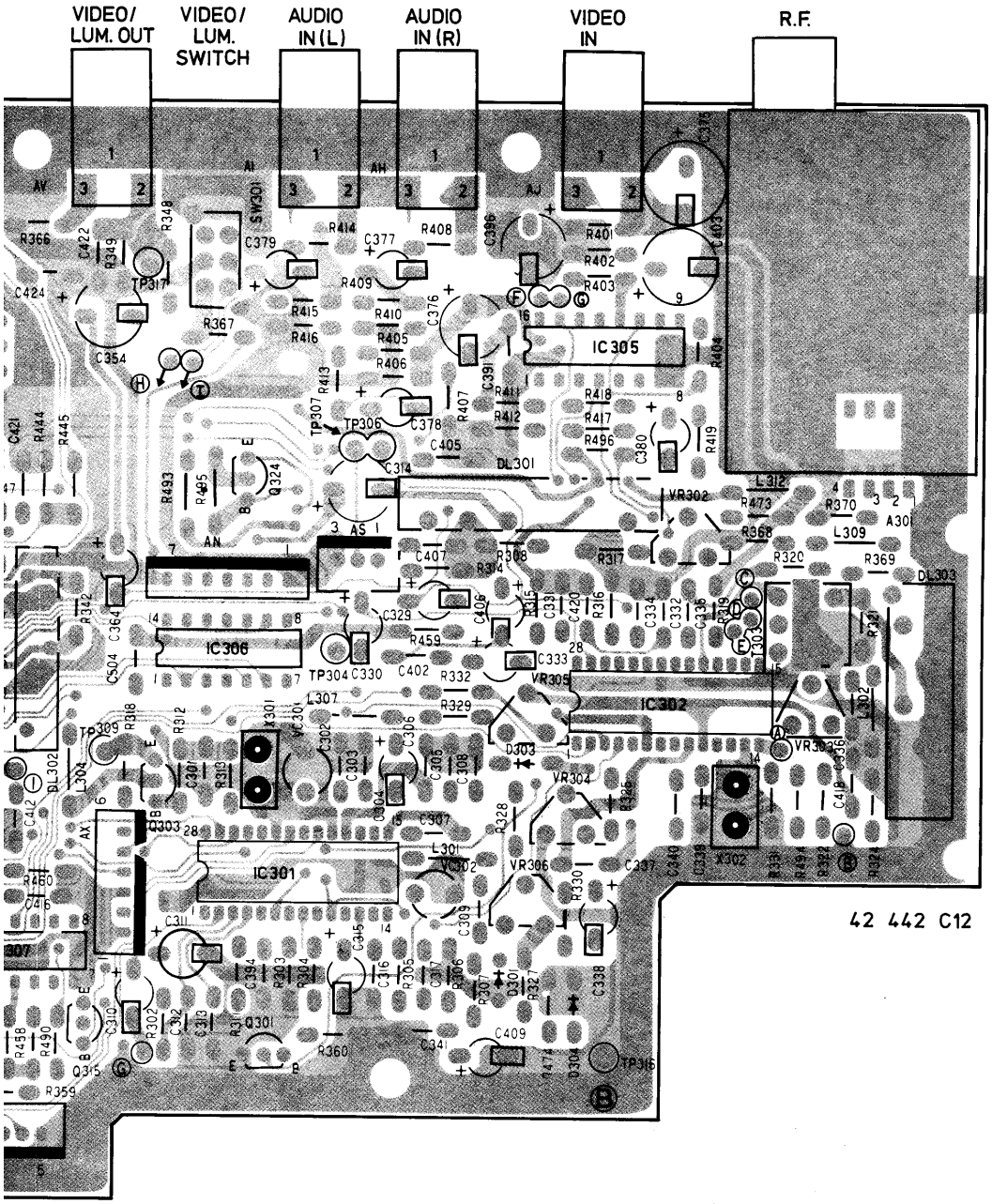
CS 9 277


MG
MV
MY
Z101
V9938
780C-1
RP5C01
LS245
LS367
LS08
LS10
LS30
LS32
LS125
LS243
LS173
LS157
LS139
LS670
LS74
LS04
LS00
LS138
LS374
LS14
HC133
7438
27256
27128
TMM41464
TMM41464-12
SW101
J1105
J1107
J1104
J1103
TP111 (GND)
TP110 (GND)
TP 107
VC 101
VC103
X102
X104
MM
MX
ML
MF
MZ
MA

42 085 D12

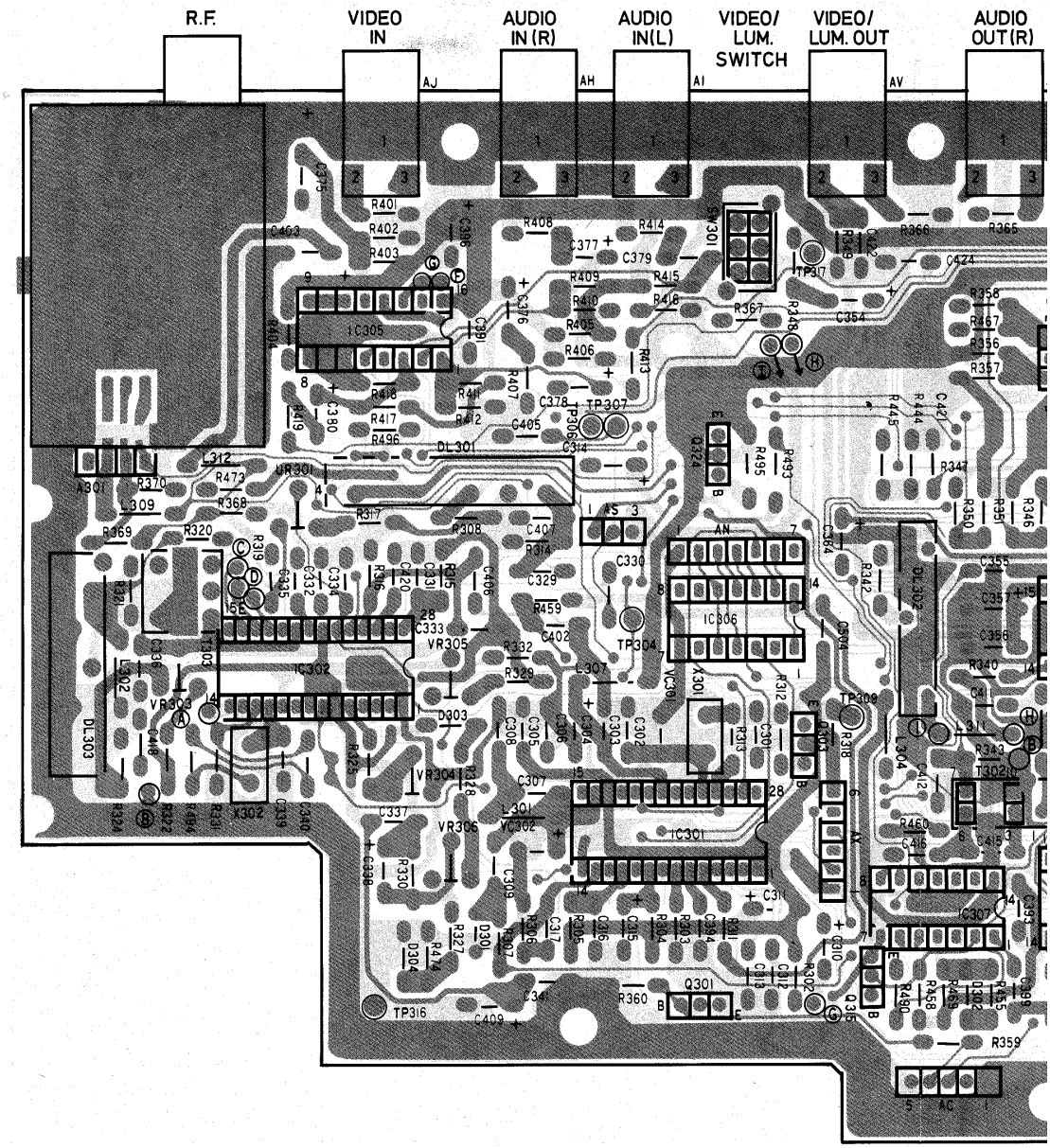

AUDIO OUT (L)
AUDIO OUT (R)
SCART
IC 304
IC 303
IC 307
IC 308

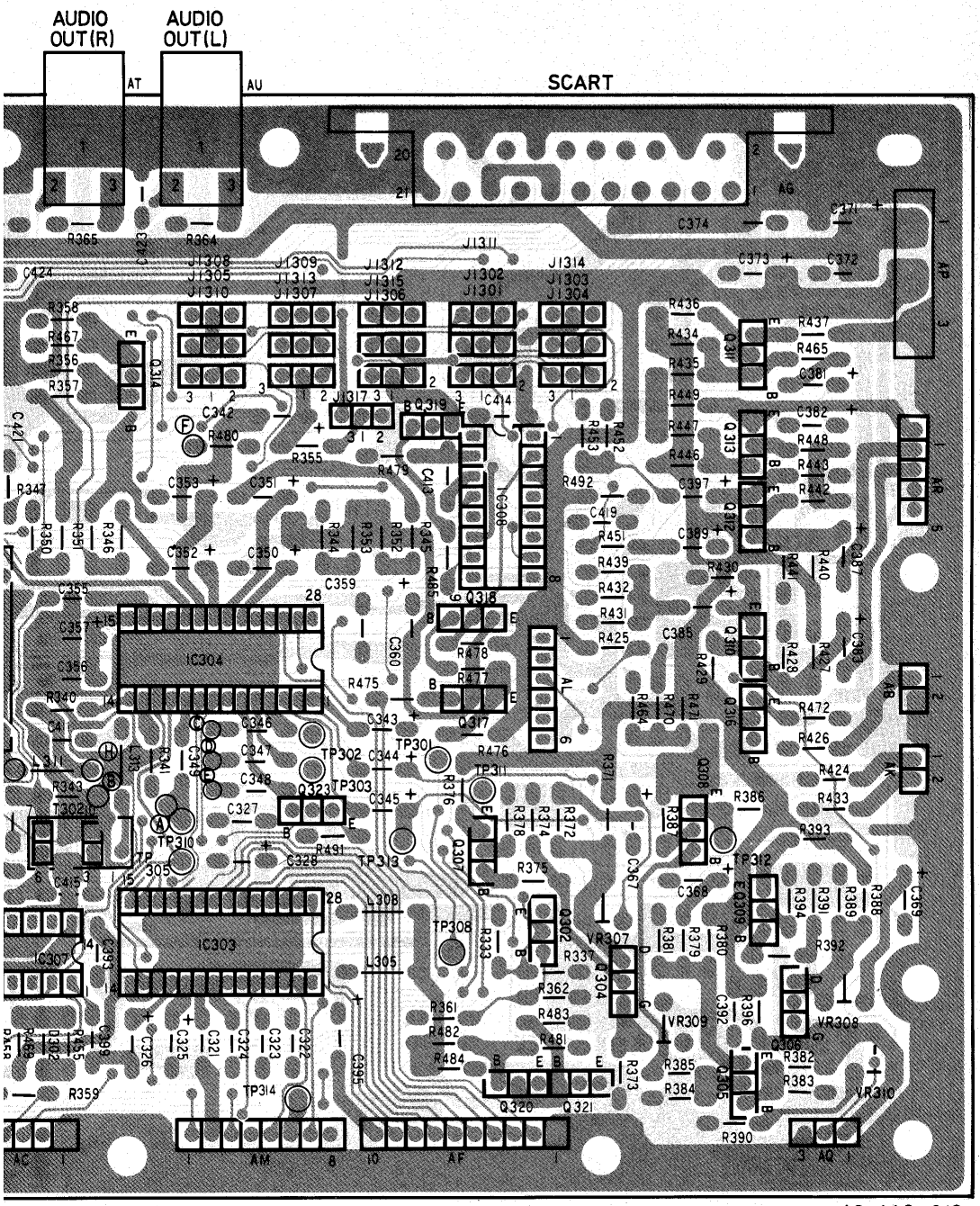
ANALOG UNIT (Component side)
For: /00 from serial no. FF017 24003153 on
/16 from serial no. FF017 24000301 on



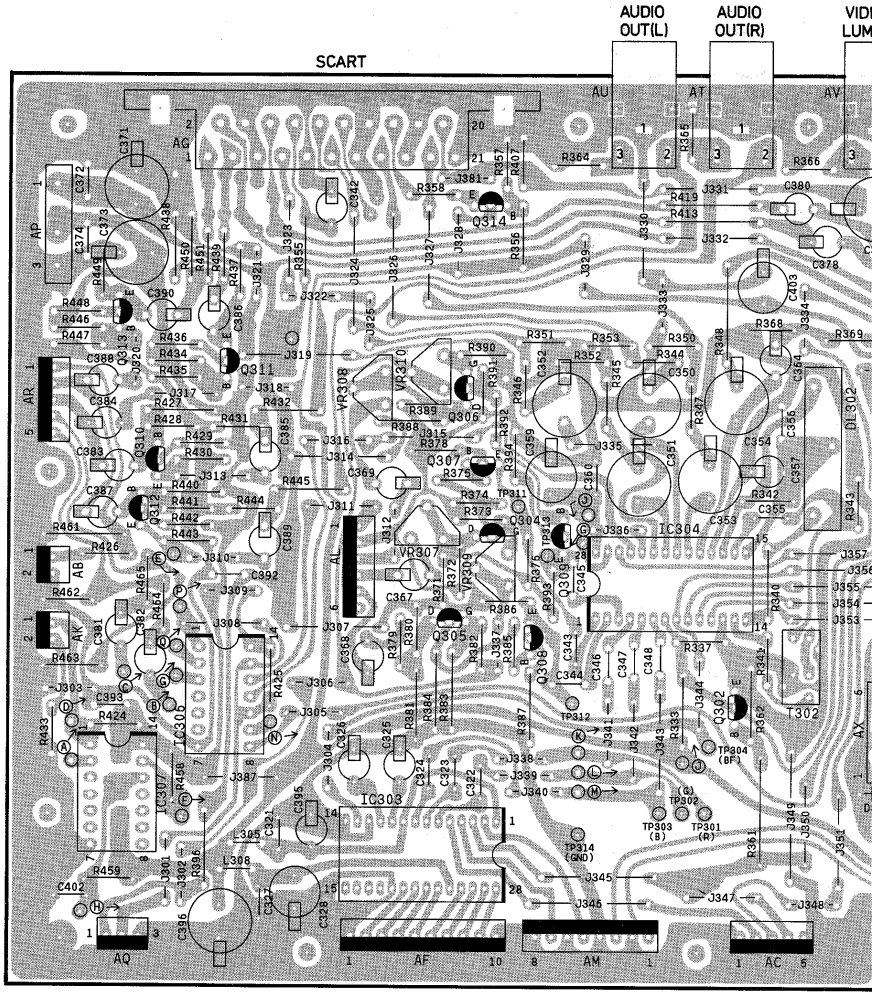
CS 9 278

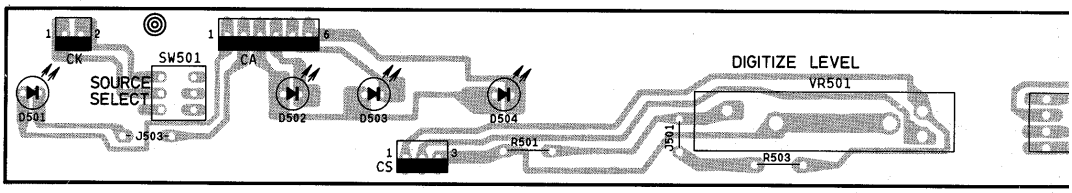
ANALOG UNIT (Copper side)
For: /00 from serial no. FF017 24003153 on
/16 from serial no. FF017 24000301 on



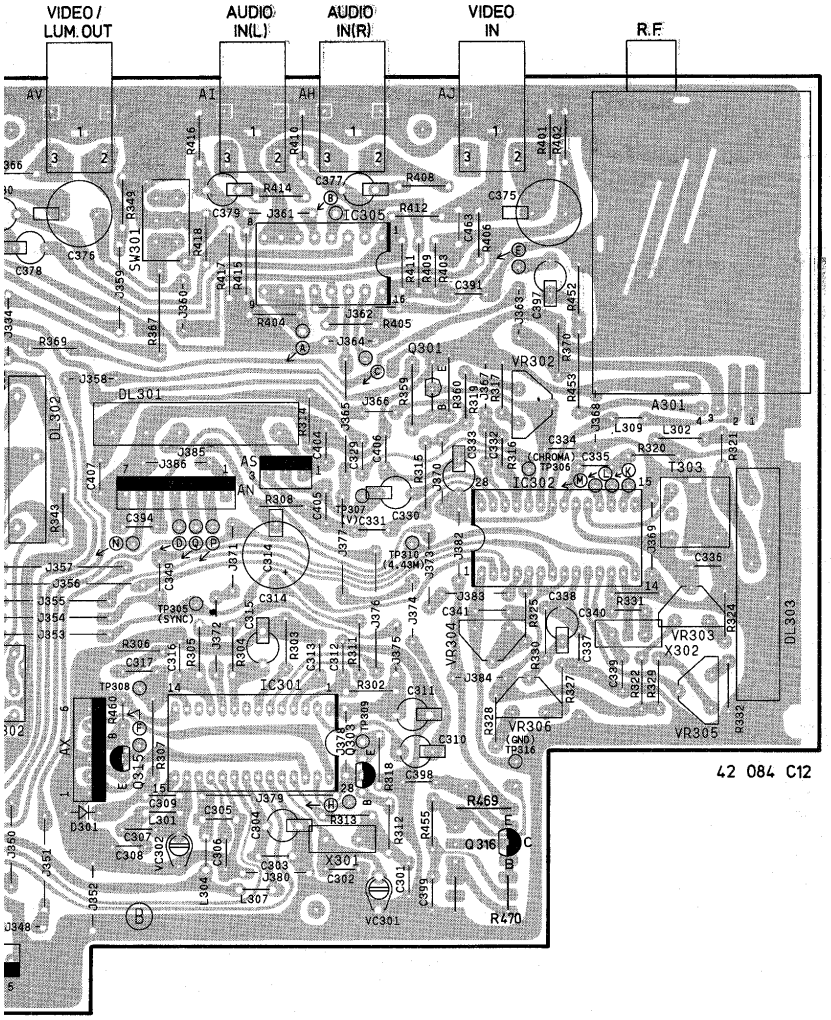

AUDIO OUT(R)
AUDIO OUT(L)
SCART
AT
AU
AG
AP
AQ
AR
AK
AL
AM
AC
AF
IC304
IC303
IC307
IC300

42 443 C12


SCART
AUDIO OUT(L)
AUDIO OUT(R)
IC304
IC303
IC305
IC307
T302
Q314
Q311
Q306
Q307
Q304
Q305
Q308
Q302
VR307
VR308
VR309
VR310
AQ
AF
AM
AC

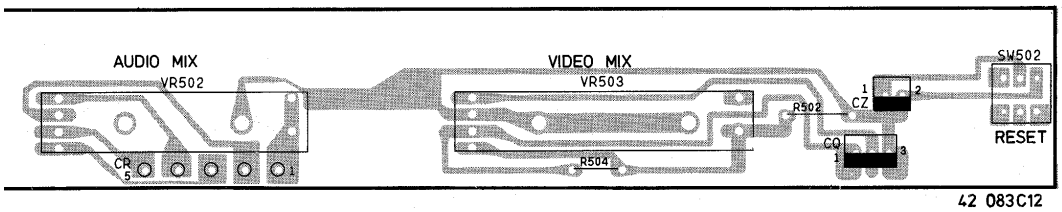

CK
SW501
SOURCE SELECT
CA
D501
D502
D503
D504
J503
CS
R501
DIGITIZE LEVEL
VR501
J501
R503

ANALOG UNIT



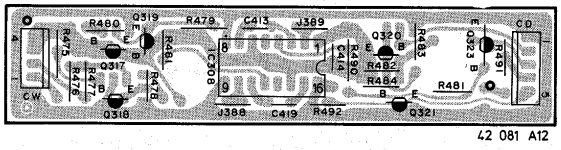
42 084 C12

CONTROL UNIT



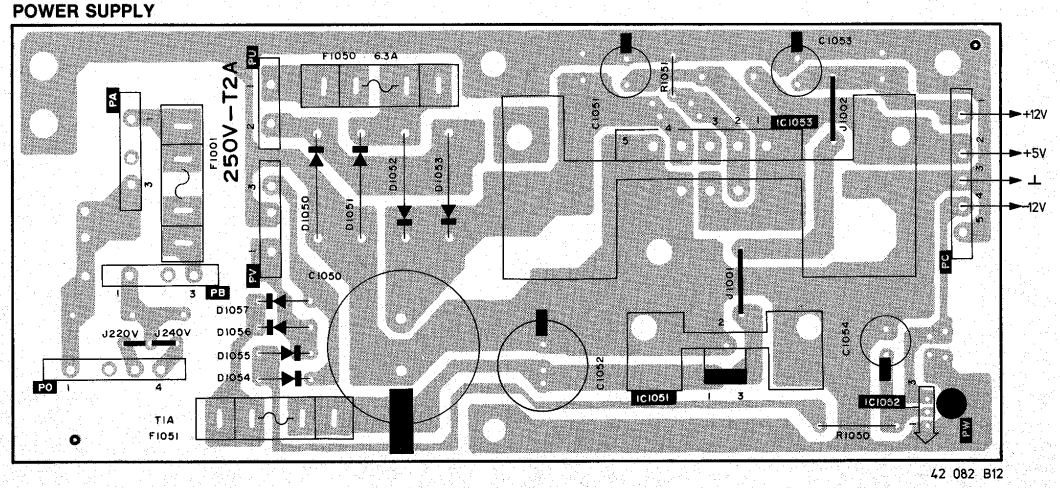
42 083C12

SUB ANALOG UNIT



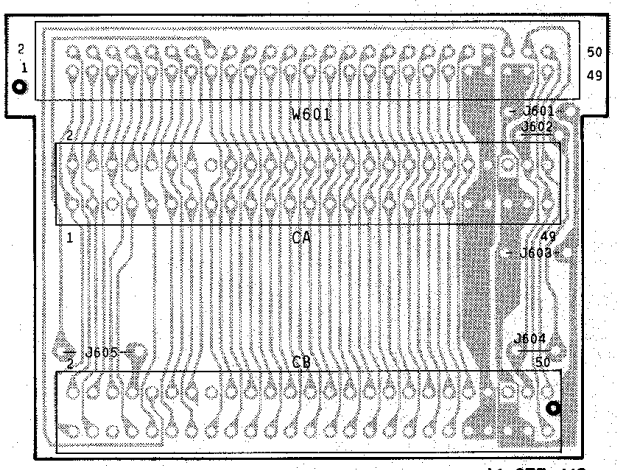
42 081 A12

POWER SUPPLY



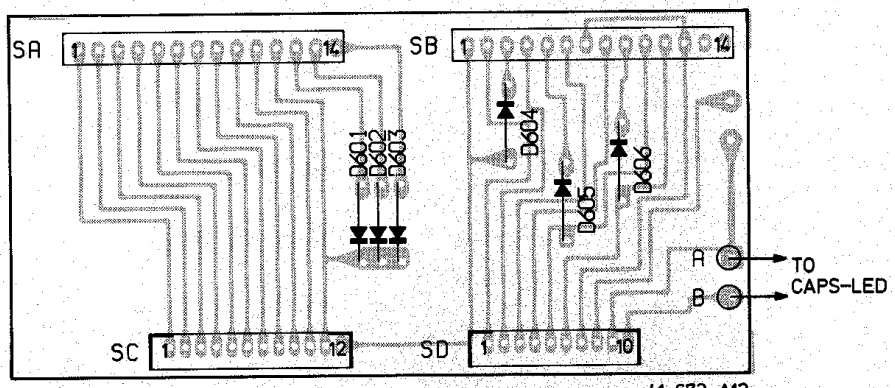
42 082 B12

CARTRIDGE UNIT



41 675 A12

KEYBOARD INTERFACE UNIT



41 673 A12

MAIN PRINTED BOARD

U100	Main printed board/00	4822 219 81056
	Main printed board/16	4822 219 81062
IC101	S-3527	4822 209 11097
IC102-IC105	81464-12	4822 209 83426
IC106	V9938	4822 209 83425
IC107-IC109	74LS74	4822 209 71408
IC110	74LS04	4822 209 70979
IC111	74LS32	4822 209 71402
IC112,IC113	74LS74	4822 209 71408
IC114	74LS04	4822 209 70979
IC115	74LS30	4822 209 83428
IC116	74HC04	4822 209 70194
IC117	DISK-ROM	4822 209 51209
IC118	EXP. ROM /00	4822 209 51212
	EXP. ROM /16	4822 209 51282
IC119	BASIC-ROM /00	4822 209 51211
	BASIC-ROM /16	4822 209 51279
IC120	74LS374	5322 209 70543
IC121	74LS04	4822 209 70979
IC123	74LS30	4822 209 83428
IC124	74LS32	4822 209 71402
IC125	74LS20	4822 209 71411
IC126,IC127	74LS138	4822 209 71403
IC128	74HC133	4822 209 83416
IC130	74LS367	4822 209 71406
IC131	74LS125	4822 209 83413
IC132	74LS367	4822 209 71406
IC133-IC136	81464-12	4822 209 83426
IC137	74LS32	4822 209 71402
IC138	74LS367	4822 209 71406
IC139	74LS175	4822 209 71399
IC140	74LS14	4822 209 83427
IC141	74LS10	4822 209 71412
IC142	7438	4822 209 71413
IC143	74LS08	4822 209 71407
IC144	74LS367	4822 209 71406
IC145	Z80A	4822 209 10569
IC146,IC147	74LS157	4822 209 71404
IC148	74LS367	4822 209 71406
IC149	74LS670	4822 209 71422
IC150	74LS157	4822 209 71404
IC151,IC152	74LS74	4822 209 71408
IC153	WD2793A	4822 209 11146
IC155	74LS32	4822 209 71402
IC156	74LS367	4822 209 71406
IC157,IC158	74LS00	4822 209 71401
IC159	74LS139	4822 209 71409
IC161	74LS243	4822 209 71417
IC162	RP5C01	4822 209 83431
IC163	74LS04	4822 209 70979
IC164	7438	4822 209 71413
IC165	74LS367	4822 209 71406
IC166	74LS245	4822 209 71405
IC167-IC170	74LS367	4822 209 71406
IC171	74LS175	4822 209 71399
IC172	74LS173	4822 209 71416
IC173	AN1431T	4822 209 71418
IC175	74LS32	4822 209 71402
IC176-IC178	74LS367	4822 209 71406
IC180-IC181	74LS32	4822 209 71402
IC182	74LS00	4822 209 71401
IC183	74LS14	4822 209 83427

Q101,Q102	2SC536NP	4822 130 41397
Q103	2SA608	4822 130 41202
Q104,Q105	2SC536NP	4822 130 41397
DN101-DN108	DA210S	4822 130 80157
D101, D104-D119, D130-D134, D136,D144	1S1555	4822 130 31031
D135	EQA02-06A	4822 130 80155
D137	SVC203	4822 130 80156
D145	HZ4C3 Zener	4822 130 80109
RN101	8x4K7	4822 111 91302
RN102-RN104	8x10K	4822 111 91304
RN105	5x1K	4822 111 91305
RN106	8x2K2	4822 111 91303
RN107	8x10K	4822 111 91304
TH101	N.T.C. SDT-100	4822 116 30295
VR102	Variable 50K	4822 100 20611
VR104	Variable 10K	4822 100 20612
C104	100n 50V mylar	4822 121 42944
C108	22n 50V mylar	4822 121 42417
C156	220n 50V mylar	4822 121 42996
C166	10n 50V mylar	4822 121 42946
C167	100n 50V mylar	4822 121 42944
C168	10n 50V mylar	4822 121 42946
VC101	Trimmer	4822 125 50333
X101	7.159 MHz	4822 242 71787
X102	32.768 kHz	4822 242 71345
X103	4 MHz	4822 242 71665

VARIOUS

RL101	Relay	4822 280 20277
Z101	NI-CD Accumulator	4822 138 10213
L101	Coil	4822 157 52909
SW101	Service switch	4822 276 12227

ANALOG UNIT

U103	Complete analog unit	4822 219 81057
	Analog unit (modified)*	4822 219 81072
IC301	V7010	4822 209 71832
IC302	V7020	4822 209 71833
IC303	V7030	4822 209 71834
IC304	V7040	4822 209 71835
IC305	4053BP	4822 209 11523
IC306	74LS08	4822 209 71407
IC307	7406	5322 209 86327
Q301-Q303	2SC536NP	4822 130 41397
Q304-Q306	2SK212	4822 130 41662
Q307-Q309	2SA608	4822 130 41202
Q310-Q316	2SC536NP	4822 130 41397
D301	1T33 vari cap	4822 130 80343
D302-D304	IS555	4822 130 31031
VR302,VR303	Variable 5K	4822 100 20627
VR304,VR305	Variable 10K	4822 100 20625
VR306-VR308	Variable 200 Ω	4822 100 20626
VR309,VR310	Variable 5K	4822 100 20627
DL301	Delay line	4822 320 40159
DL302	Delay line	4822 320 40158
DL303	1H delay line	4822 320 40161
L301	1 µ	4822 157 53107
L302	3µ9	4822 157 53105
L304,L305, L307,L308, L309	4µ7	4822 157 53106
L311	220 µ	4822 157 53104
L312	Coil	4822 157 53108
L313	15 µ	4822 157 53181
C303,C305, C306,C308	10n 50V mylar	4822 121 90038
C312	22n 50V mylar	4822 121 42417
C313,C316	100n 50V mylar	4822 121 42944
C317	22n 50V mylar	4822 121 42417
C321	10n 50V mylar	4822 121 90038
C322-C324, C327	100n 50V mylar	4822 121 42944
C331,C332	47n 50V mylar	4822 121 43016
C333	0,47µ 35V tantal	4822 124 10672
C334-C336	10n 50V mylar	4822 121 90038
C337,C341, C346-C348	100n 50V mylar	4822 121 42944
C349,C355	10n 50V mylar	4822 121 90038
C356,C360 C399,C420	100n 50V mylar	4822 121 42944
VC301,VC302	18p variable	4822 125 50349

VARIOUS

X301	3.55 MHz crystal	4822 242 71788
X302	4.43 MHz crystal	4822 242 71393
T302	4.43 BPF	4822 242 71789
T303	Transformer	4822 148 80769

* The sub analog unit is integrated in this unit.

SUB ANALOG UNIT

U104	Complete sub analog unit	4822 219 81063
IC308	74LS123	5322 209 85602
Q317	2SA608	4822 130 41202
Q318,Q319	2SC752	4822 130 60709
Q320	2SA608	4822 130 41202
Q321,Q323	2SC536	4822 130 41397
C413	1n 50V mylar	4822 121 42945
C414	10n 50V mylar	4822 121 42944
C419	1n 50V mylar	4822 121 42945

POWER SUPPLY

U---		
U101	Complete power supply	4822 219 81055
IC1051	L7812-RA	4822 209 71421
IC1052	AN79M12	4822 209 71414
IC1053	STR9005	4822 209 71831
D1050-D1053	C01-02F	4822 130 80342
D1054-D1057	DSF10C	4822 130 32508
VARIOUS		
R1050	Fusible resistance	4822 113 90219

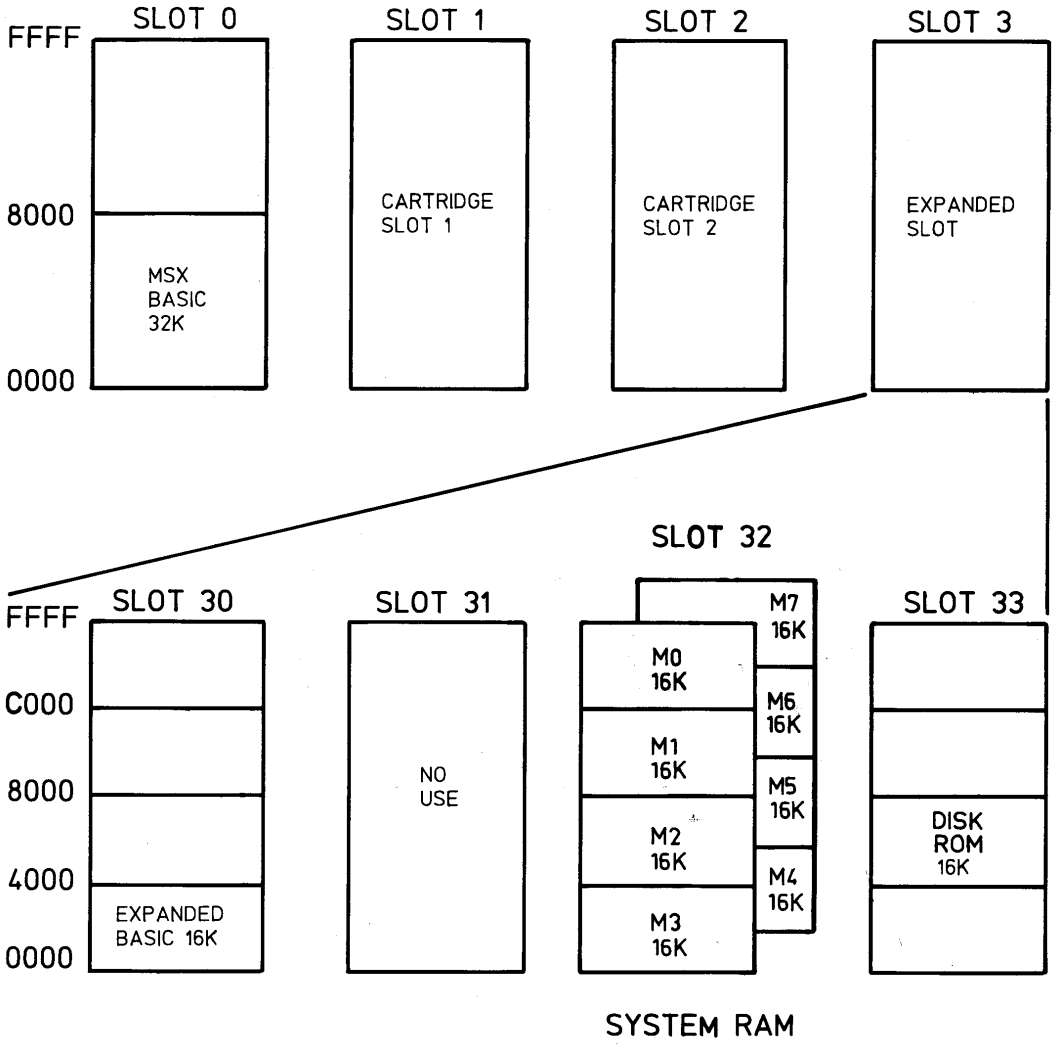
FLOPPY DRIVE

U---		
U106	Complete drive	4822 693 91114
U107	Complete drive	4822 693 91114
	Alignment disk	4822 395 30274

CONTROL UNIT

U---		
U105	Complete unit	4822 219 81061
D501-D503	Green LED	4822 130 80345
D504	Orange LED	4822 130 80344
VR501	1k variable	4822 100 20631
VR502	10k variable	4822 100 20629
VR503	50k variable	4822 100 20628
VARIOUS		
SW501	Source select switch	4822 273 20277
SW502	Reset switch	4822 273 20276

MEMORY LAY-OUT



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SYMBOLS USED IN CIRCUIT DIAGRAMS

SYMBOL	TYPE	$t_{P\ amb}^{70°}$	TOLERANCE	SERIES
	SFR16T	0.5	1E - 3M 5%	E24
	SFR25H	0.5	1E - 10M 5%	E24
	MRS25	0.6	1E - 1M 1%	E24
	MR30	0.5	1E - 1M 1% (2%)	E24
	VR37	0.5	220K - 33M 5%	E24
	PR37	1.6	1E - 1M 5%	E24
	VR68	1	100K - 68M 5%	E24
	MRS 16T	0.4	10R – 100K	E24/E96

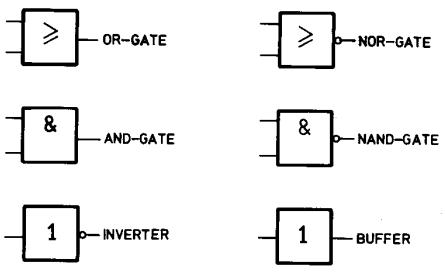
SYMBOL	TYPE	VOLTAGE DC	TOLERANCE
	POLYESTER FLATFOIL	SEE NOTE	10%
	PLATE CERAMIC	SEE NOTE	DEPENDING ON CAPACITY
	ELCO MINIATURE SINGLE	SEE NOTE	-10+50%
	ELCO SINGLE ENDED	SEE NOTE	±20%

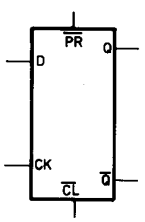
NOTE:

*

	f = 25V	q = 200V	x = 1000V	E = 20V
	g = 40V	r = 250V	z = 1600V	F = 35V
a = 2.5V	h = 63V	s = 300V	A = 1.6V	G = 50V
b = 4V	j = 100V	t = 350V	B = 6V	H = 75V
c = 6.3V	l = 125V	u = 400V	C = 12V	I = 80V
d = 10V	m = 150V	v = 500V	D = 15V	
e = 16V	n = 160V	w = 630V		

39 301 A13





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