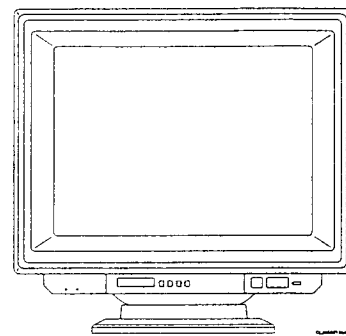


Service
Service
Service

DAN TECHNOLOGY
CD-1746 TR.



Service Manual

Horizontal frequencies
30 to 66 kHz

Contents

Page

1. Technical data	1.2
2. Connection facilities	2.1
Control locations and functions	2.3
3. Warnings and notes	3.1
4. Mechanical instructions	4.1
5. Wiring diagram	5.1
6. Electrical diagrams and PCB lay-outs	
Block diagram	6.1
Print lay-out Video and Input Panel	6.3
Circuit diagram A, Video and Input Panel	6.5
Print lay-out Digital Panel	6.8
Circuit diagram B, Digital Panel	6.11
Print lay-out Supply + Deflection Panel	6.14
Circuit diagram C, Deflection diagram	6.17
Circuit diagram D, Supply diagram	6.20
Print lay-out EMI and Power Indicator Panel	
7. Electrical adjustments	7.1
8. Repair tips	8.1
9. Exploded view	9.1
10. Mechanical parts lists	10.1
Electrical parts lists	10.1



Technical data

General

Mains voltage	: 90 - 270 V
Mains frequency	: 50 / 60 Hz
Power consumption	: 110 W (normal) 120 W (max.)
Operating temperature	: 0°C to 40°C
Weight	: 23 kg
Width x Depth x Height	: 422 x 440 x 425 mm
Video signal	: 0.7 or 1.0 Vp-p 75 Ω switchable

Sync. signal

- separate sync.	: TTL-level
- composite sync.	: TTL-level
- composite sync.	: on Green

Picture tube

Type	: Trinitron
Size	: 17 inch
Light transmission	: 42.0 % (dark glass)
Deflection angle	: 90 Degree
EHT voltage	: 26 kVolt
Pitch	: 0.26 mm
Phosphor	: Medium short (P22)

Video

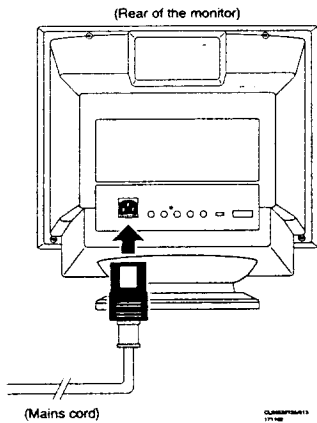
Dot rate	: 110 MHz
Visible screen within mask area	: 370 mm x 299 mm
Vertical frequency	: 50 - 100 Hz
Sync. polarity	: positive or negative
Vertical shift range	: 10 mm Min.
Horizontal frequency	: 30 to 66 kHz
Sync. polarity	: positive or negative
Horizontal shift	: 20 mm Min.

Geometry distortion

Pincushion, barrel	: Horizontal 4 mm Max. Vertical 4 mm Max.
horizontal tilt (rotation)	: 2,5 mm Max.
Non-linearity	: 7% (31.5/35.2/35.5/48.4/ 61.9kHz) : 8% (other modes)

* specifications are subject to change without notice

Connection to the mains



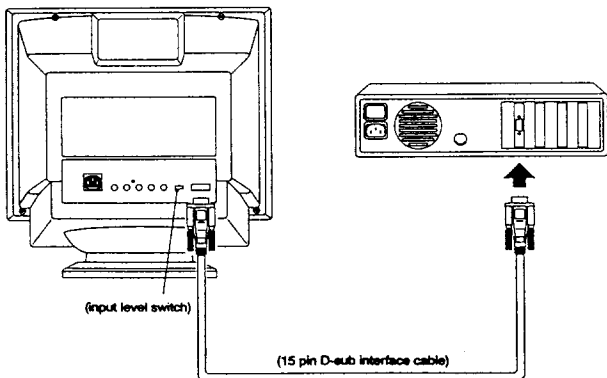
This monitor is set to operate at a mains supply of 100-240 volts AC±10%, 50-60 Hz. If the Mains voltage in your home is different from this, consult your dealer. Connect one end of the mains cord to the mains socket at the rear of monitor, and the other end to the mains supply.

Connection to the computer

NOTE: Please be sure the AC power to your computer is " OFF" before connecting or disconnecting any display peripheral. Failure to do so may cause serious personal injury as well as permanent damage to your computer equipments.

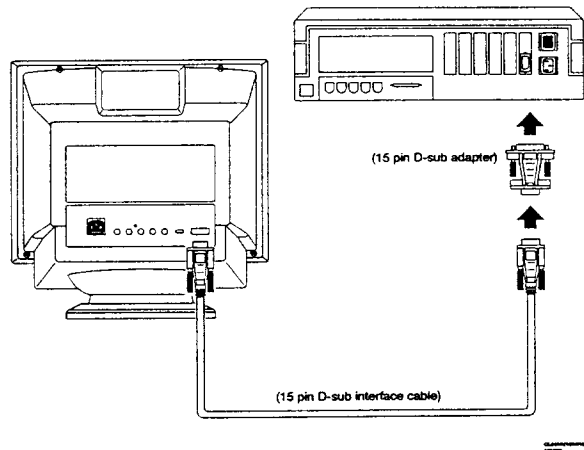
1. IBM PC, PC/XT, PC/AT, PS/2 ,or the compatibles:

- Make sure the "D-SUB/BNC" switch on the front of the monitor is on the 'D-sub' position.
- Connect one end of the 15-pin D-sub interface cable to the D-sub connector at the rear of monitor.
- Connect the other end of the computer at the video connector on the video adapter, and fix it firmly with the screws on the plug.
- Set the "Input level" switch to 1.0Vp-p position, when display is too bright.



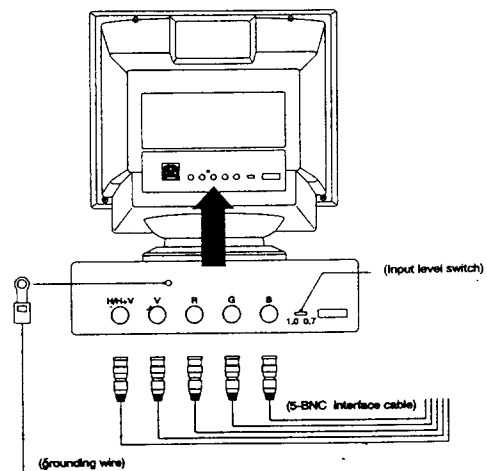
2. Apple Macintosh II and SE families:

- Make sure the "D-SUB/BNC" on the front of the monitor is to the 'D-sub' position.
- Connect one end of of the 15-pin D-sub interface cable to the D-sub connector at the rear of the monitor.
- Connect the 15-pin D-sub adapter to the interface cable.
- Connect the 15-pin D-sub adapter to the computer at the video connector on the video card.
- Fix both connectors firmly with the screws on the plugs.



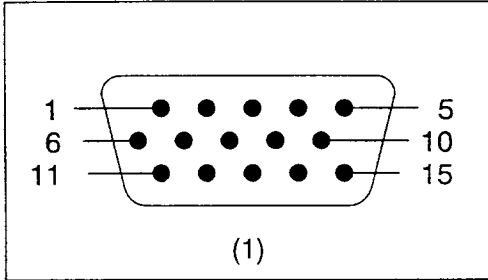
3. Computer with video adapter of BNC connector:

- Make sure the "D-SUB/BNC" on the front of the monitor is to the 'BNC' position.
- Connect your BNC cable (this cable is not provided with the monitor) according to the BNC connector assignment at the rear of the monitor.
- Connect the ground wire to the "grounding" connector at the rear of the monitor, and fix it firmly with screw driver.
- Set the "Input level" switch to 1.0Vp-p position, when display is too bright.

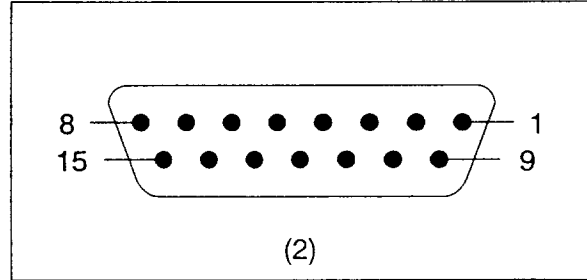


Connection facilities

Pin assignment 15p 'D' shell
(3 rows)



Pin assignment 15p 'D' shell
(2 rows)



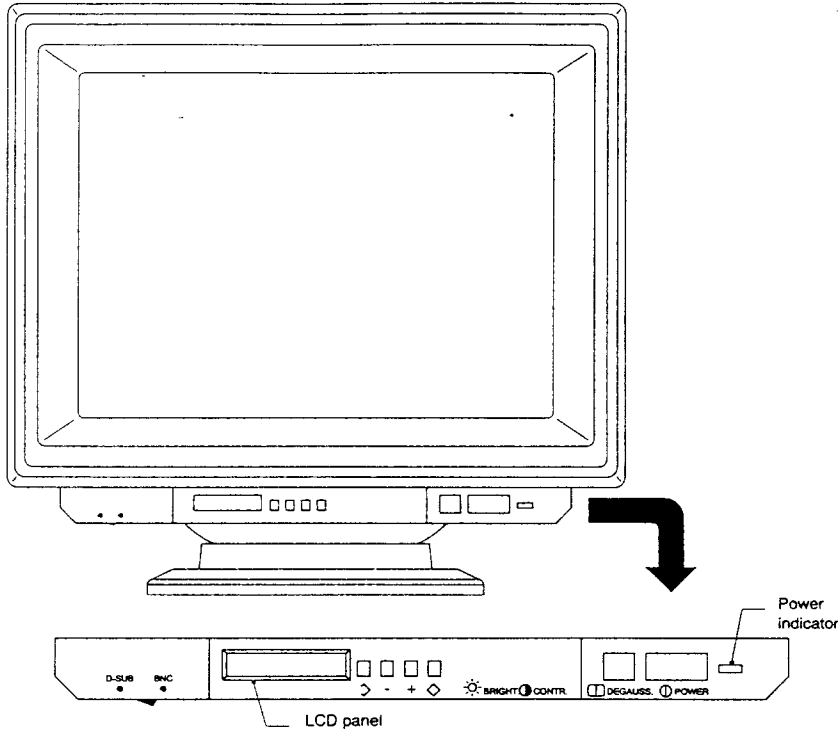
CL26532135/016
181192

INPUT-OUTPUT SIGNALS

15 pins D-Shell connector

D-Shell adapter (3 rows to 2 rows)

Pin	Assignment	Sensitivity	Terminal impedance	Assignment	Sensitivity	Terminal impedance
1	Red Video input	RGB-analog	75 Ω	Red ground		
2	Green Video input/ sync. on green	RGB-analog	75 Ω	Red Video input/ sync. on green	RGB-analog	75 W
3	Blue Video input	RGB-analog	75 Ω	Composite sync.		2.2 kΩ
4	Ident output (connected to 10)			Sync. ground		
5	Self test input (ground)			Green Video input	RGB-analog	75 Ω
6	Red Video ground			Green ground		
7	Green Video Ground			Not connected		
8	Blue Video ground			Not connected		
9	Not connected (no pin)			Blue Video input	RGB-analog	75 Ω
10	Logic ground			Not connected		
11	Ident output (connected to 10)			Not connected		
12	Not connected			Not connected		
13	Horizontal sync. (or Hor. + Vert. sync)	TTL Level L= 0 - 0.8V H= 2.4 - 5V	2.2 kΩ pull down	Blue ground		2.2 kΩ (pull down)
14	Vertical sync.	TTL Level L= 0 - 0.8V H= 2.4 - 5V	2.2 kΩ pull down	Not connected		2.2 kΩ (pull down)
15	Not connected (no pin)			Not connected		



"D-SUB"/ "BNC"

- Switch to "D-SUB" position, when the monitor is connected with a D-sub interface cable.
- Switch to "BNC" position, when the monitor is connected with a BNC interface cable.

SELECT

- Press this knob to select the adjustment item which is displayed on the LCD panel in the following order:

LEVEL I

- a) SET H-SHIFT : to adjust the image position horizontally
- b) SET H-SIZE : to adjust the image width
- c) SET V-SHIFT : to adjust the image position vertically
- d) SET V-SIZE : to adjust the image height
- e) SET H.CONVERGENCE : to adjust the blue/red horiz. lines to converge with the green horiz. lines
- f) SET V.CONVERGENCE : to adjust the blue/red vert. lines to converge with the green vert. lines
- g) -(CURSOR) : to access LCD display characters (for user-set mode only)

If only necessary, you can select the adjustment item **LEVEL II** by pressing ">" and "+" simultaneously for 3 seconds, then the following order will be displayed on the LCD panel:

LEVEL II

- h) SET PIN/BARREL : to adjust the image geometry

- i) SET TRAPEZOID : to adjust the image geometry
- j) SET PARALLELOGRAM : to adjust the image geometry
- k) SET UNBALANCE : to adjust the image geometry

"+" and "-"

- (adjustment a-f) :* Press "+" or "-" to adjust the respective magnitude.
- (adjustment g) :* Press "+" to access characters (space 0,1...9, A, B,...Z)
- * Press "-" to access character , in backward order.
- * Press "+" and "-" simultaneously to move the cursor.

SAVE

- Press this knob to save the result of the adjustment.

POWER

- Press this knob, the green LED lights (power indicator) and the power is ON.
- Press this knob, the green LED disappears and the power is OFF.

DEGAUSS.

- Press this knob to eliminate the colour impurity.

CONTR.

- Used to adjust contrast.

BRIGHT.

- Used to adjust brightness.

Control locations and functions

Adjustment

This monitor is pre-set with 11 modes as indicated in table below:

For video adapter in line with factory preset mode e.g 1024x768 48.4KHz/60Hz

A) M01-M11 (factory pre-set mode)

- * Press knob \odot to switch on the monitor.
- * The LCD panel will display the default mode e.g.

M09 1024x768 60

- * The image will be in right size (H+V), centering and geometry.

B) M12-M22

- * M12-M22 is preserved for any adjustment of factory pre-set mode (M01-M11). if you are not satisfied with the image result of factory pre-set mode, you may adjust it according to the following procedure:

- * Press knob \odot to switch on the monitor.
- * The LCD panel will display the default mode e.g.

M09 1024x768 60

- * Press knob \triangleright to select the adjustment item.
- * Press "+" or "-" to adjust the magnitude.
- * Press knob \diamond to save the result of adjustment.
- * The LCD panel will display immediately e.g.

M20 1024x768 60

For non-standaard video adapter e.g. 1024x768 72Hz:

M23-M26

- * Press power knob \odot to switch on the monitor.
- * The LCD panel will display:

New Mode

- * Press knob \triangleright to select the adjustment item.
- * Press "+" or "-" to adjust the magnitude.
- * Press "+" or "-" to access LCD display character.
- * Press knob \diamond to save all adjustments, the LCD will display immediately e.g.

M23 1024x768 72 or

M23 (resolution and refresh rate will not display if not registered by CURSOR adjustment)

- * You may save by press knob \diamond after each adjustment, or you may do it after all the adjustments are completed; however the latter is recommended.

- * The LCD display will revert to default if the user does not press \diamond to save the adjustment result after 30 seconds. However the adjusted configuration will remain exist until power off, but not be memorized.

- * The **RECALL** function: you may erase all the user set modes (M12 to M26) by pressing and holding the knobs " \triangleright " and "-" simultaneously for 2 seconds. The letter **RECALL** will display on the LCD.



- * LCD module Backlight
When power on, the LCD module acting with backlight. The backlight will be turned off after 60 seconds automatically. The LCD display will be turned on again pressing "selection" or "save" keys.

(factory pre-set mode table)

	Mode.	Resolution	Frequency		Sync. Polarity	
			H (KHz)	V(Hz)	H	V
M01	VGA	640x350	31.5	70	+	-
M02	VGA	640x400	31.5	70	-	+
M03	VGA	640x480	31.5	60	-	-
M04	MAC II	640x480	35.0	66.7	Composite sync. on green	
M05	SVGA	800x600	35.2	56	+/-	+/-
M06	SVGA	800x600	37.8	60	+	+
M07	SVGA	800x600	48.0	72	+	+
M08	8514A	1024x768	35.5	87 *	+	+
M09		1024x768	48.4	60	-	-
M10		1024x768	56.0	70	+/-	+/-
M11		1280x1024	61.9	58.6	Composite sync. on green	

* Interlaced

Warnings

1. Safety regulations require that the unit should be returned in its original conditions and that components identical to the original components are used.
The safety components are indicated by the symbol 
2. In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 3.1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is 0 V (after approx. 30s).
3. **ESD** 
All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten the life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the earth of the unit. Keep components and tools also at this same potential.
4. When repairing a unit, always connect it to the mains voltage via an isolating transformer.
5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.
6. It is recommended that safety goggles are worn when replacing the picture tube.
7. When making settings, use plastic rather than metal tools.
This will prevent any short-circuit and the danger of a circuit becomes unstable.
8. Never replace modules or other components while the unit is switched on.
9. Together with the deflection unit the picture tube is used as an integrated unit. Adjustment of this unit during repair is therefor not recommended.
10. After repair the wiring should be fastened once more in the cable clamps for this purpose.

Notes

1. The direct voltages and oscillograms are average voltages.
They have been measured by using the Service test software and under the following conditions:
 - Signal pattern: grey scale
 - Mode: 56.0kHz/70Hz 1024*768
 - Adjust brightness and contrast control for the mechanical mid-position (click position)
2. The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.
3. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

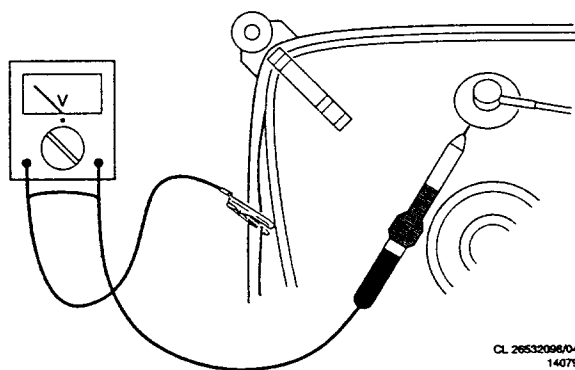


Fig. 3.1

Mechanical instructions

Location of the Panels (see Fig. 4.1)

1. Deflection + Supply panel (1102)
2. Video panel (1104)
3. Input + Terminal panel (1103)
4. Digital + Sync panel (1105)
5. Emi panel (1106)
6. Key + Control panel (1107)
7. LCD panel (1108)
8. Power indicator panel (1110)

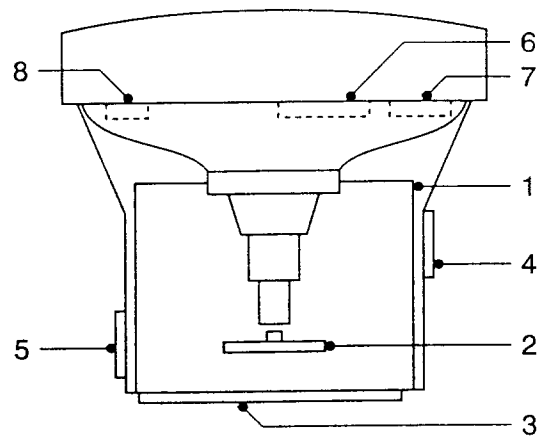
General

To be able to perform measurements and repairs on the "circuit boards", the monitor should be placed in the service position first:

1. Remove the back cover by 4 screws.
2. Remove the metal shielding by 12 screws.
3. Remove the metal cover for the "EMI-panel" (if necessary by 6 screws)
4. Turn the set 90 Degree counter-clockwise (see Fig 4.2).
5. Remove the pedestal with the metal shielding by 4 screw and 2 plastic clamps.
6. Remove the "Digital+Sync panel" by 1 screw and remount this panel on a specified slot which is existing on the metal frame (see Fig.4.3).
7. Remove the "Input + Terminal panel" by 5 screws, then stand-up the "Input+Terminal panel" between the metal frame and the work bench.
8. Connect an "extension cable (4822 321 61504)" for the connection between the "EMI-panel" and the "Input+Terminal panel".

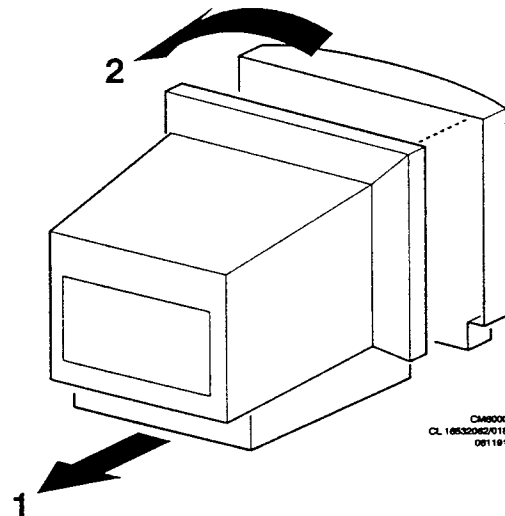
Repair instructions

1. Deflection + Supply panel
 - Place the set into the Service position.
 - Remove the "Deflection + Supply panel" by 4 screws.
 - Isolate the "HOT ground" (on the power supply circuit) and the "Command ground" (on the metal frame).
 - Before switching on the set, connect the set to an isolating transformer.
2. Video panel
 - Place the set into the Service position.
 - De-solder 3 soldering joints (shielding) of the solder side of the panel.
 - Remove the shielding on the solder side.
 - De-solder 10 soldering joints (shielding) on the component side of the panel.
 - Remove the shielding on the component side.
3. Input + Terminal panel
 - Place the set into the Service position.
 - Remove 2 screws (on the 15 pins "D" Shell connector).
 - Remove 2 fixing screws.
 - De-solder 10 soldering joints (BNC-socket).
 - Remove the metal bracket.



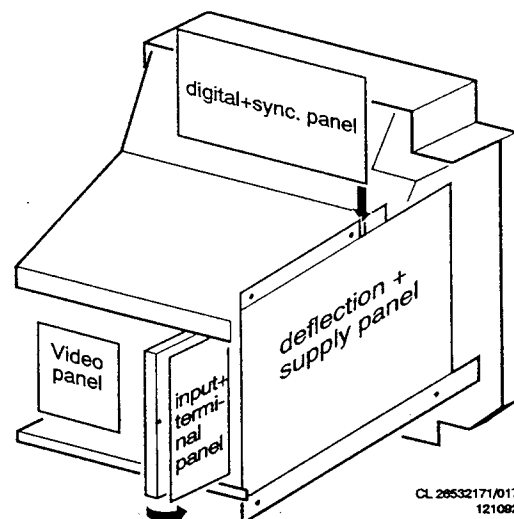
CM6000
CL 16532062/016
270192

Fig. 4.1



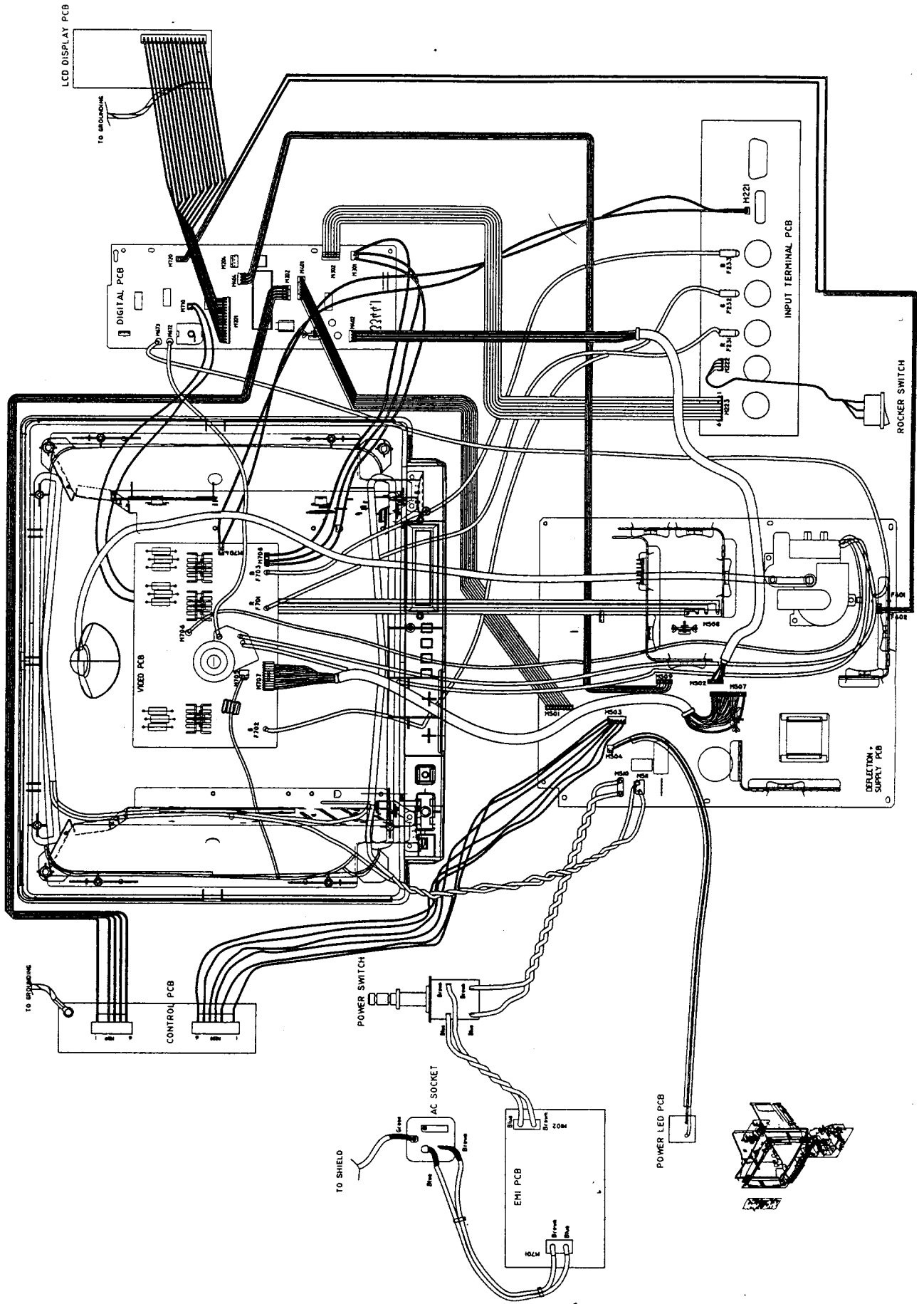
CM6000
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001191

Fig. 4.2

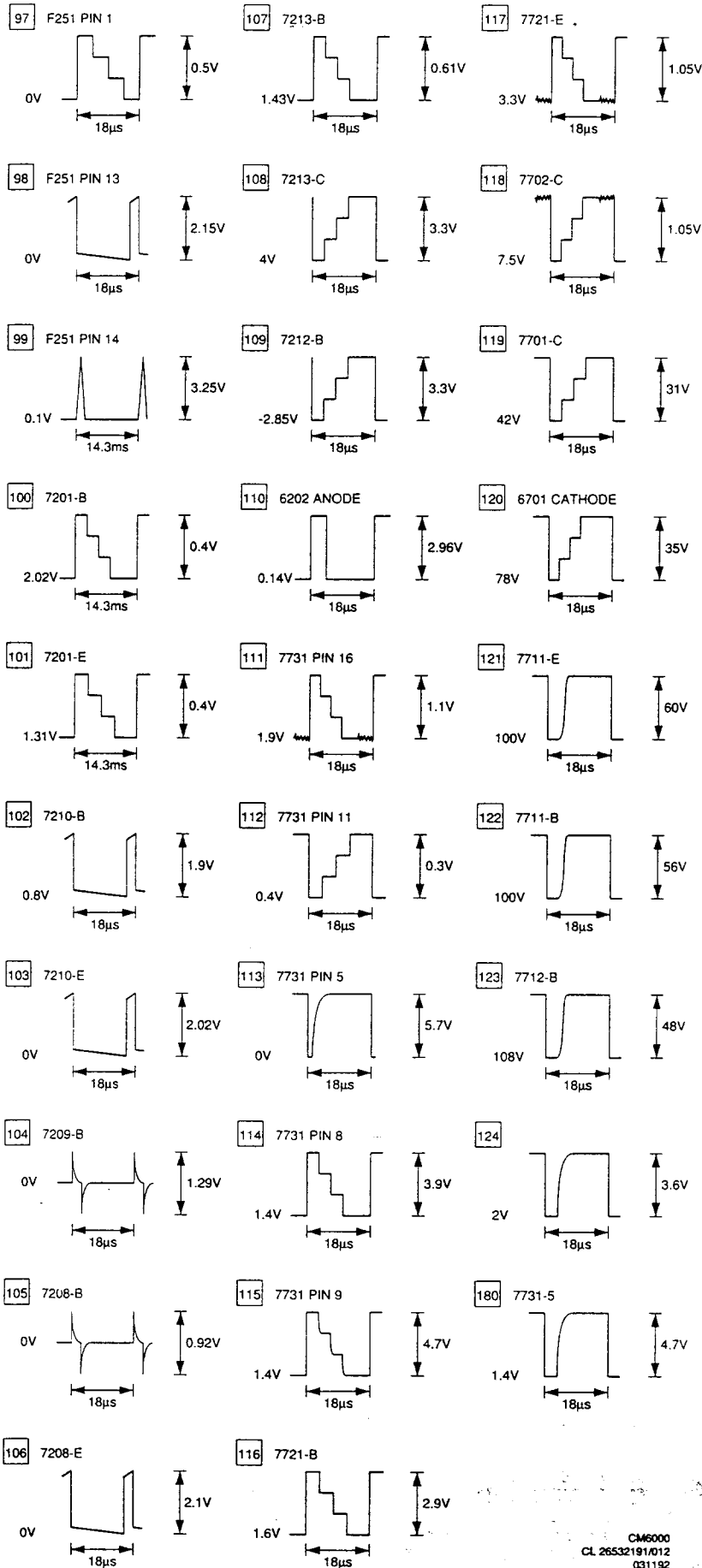


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121082

Fig. 4.3



WAVE FORMS FOR DIAGRAM **A**

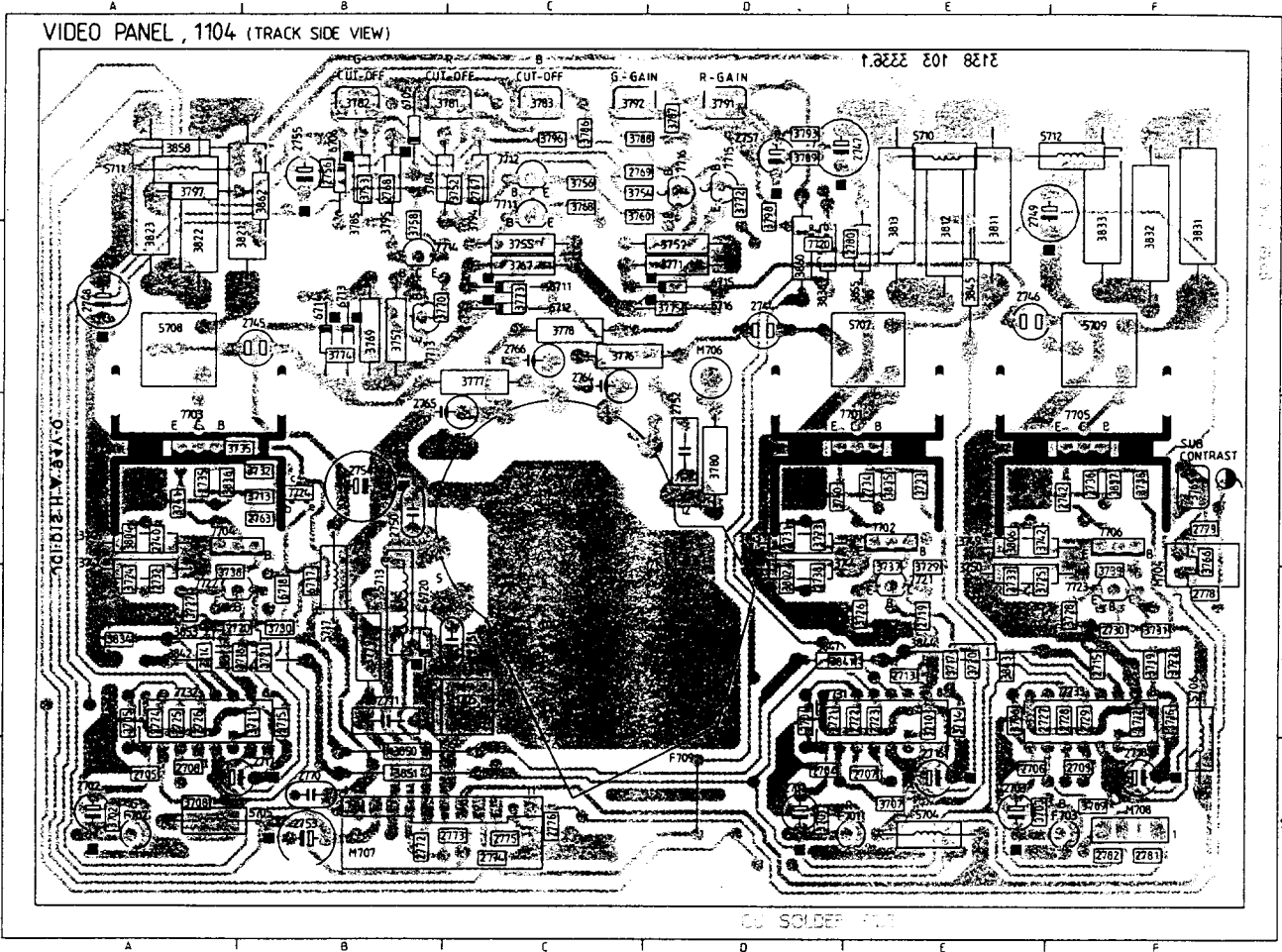


2701 D5
2702 A5
2703 E5
2704 D5
2705 A5
2706 E5
2707 E5
2708 A5
2709 F5
2713 E4
2714 A4
2715 F4
2716 E5
2717 B5
2718 F5
2719 E4
2720 A4
2721 D4

1207 B2
2207 A1
2208 A1
2209 A1
2210 E1
2211 D1
2212 C1
2213 C1

Print layout Input / Video

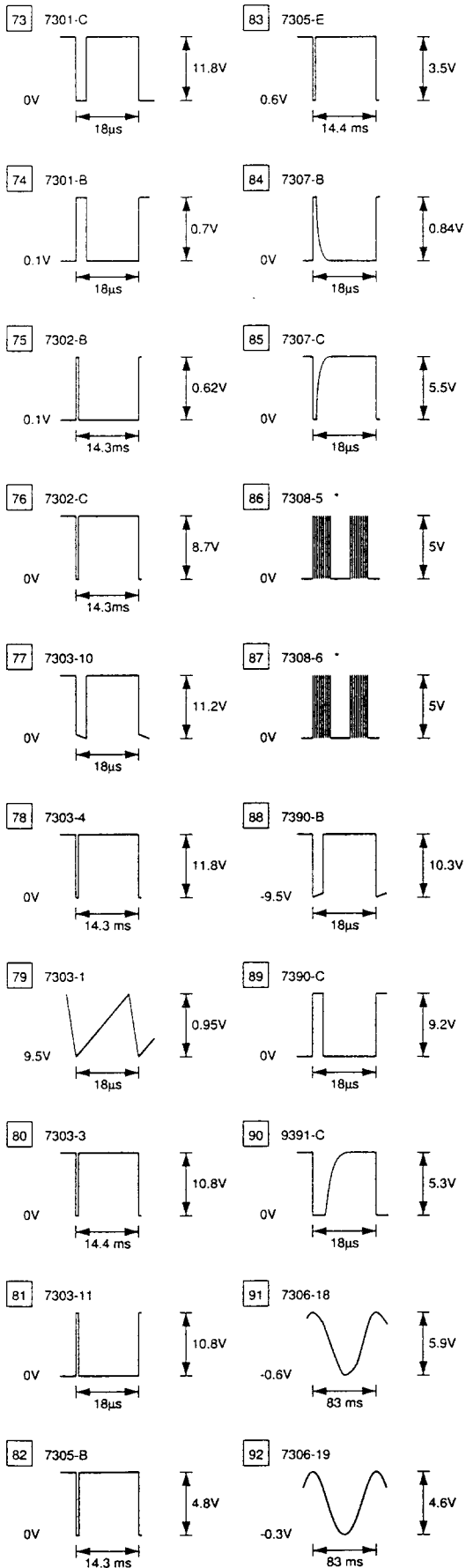
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2702 A5	2723 A4	2745 B2	2768 B1	3705 A4	3723 D3	3742 E3	3767 C2	3785 B1	3813 E2	3850 B5	6705 B1	7712 C1	M705 C4
2703 E5	2724 A4	2746 E2	2769 C1	3706 E4	3724 A4	3743 D3	3768 C1	3786 C1	3821 A2	3851 B5	6706 B1	7713 B2	M706 D2
2704 D5	2725 A4	2747 E1	2770 B5	3707 E5	3725 E4	3744 D3	3769 B2	3787 D1	3822 A2	3853 A4	6711 C2	7714 B2	M707 B5
2705 A5	2726 A4	2748 A2	2771 B4	3708 A5	3726 E4	3746 A3	3770 B2	3788 C1	3823 A2	3855 E2	6712 C2	7715 D1	M708 F5
2706 E5	2727 F4	2749 E2	2772 B5	3709 F5	3727 A4	3747 A3	3771 D2	3789 D1	3831 F2	3858 A1	6713 B2	7716 D1	
2707 E5	2728 F4	2750 E3	2773 C5	3710 E4	3728 F4	3749 E3	3772 D1	3791 D1	3832 F2	3860 D2	6714 B2	7720 D2	
2708 A5	2729 F4	2751 C4	2774 C5	3711 B4	3729 E3	3750 E4	3773 C2	3792 C1	3833 F2	3862 B1	6715 D2	7721 E4	
2709 F5	2730 F4	2752 D3	2775 C5	3712 F4	3730 F4	3752 C1	3774 B2	3793 D1	3834 A4	3864 A4	6716 D2	7723 F4	
2713 E4	2731 D3	2753 B5	2776 C5	3713 F3	3731 F4	3753 B1	3775 B2	3794 C1	3835 E3	3865 E3	5705 B5	6717 B4	
2714 A4	2732 A4	2754 B3	2778 F4	3714 E4	3732 B3	3754 C1	3776 C2	3795 B1	3836 A3	3866 A3	5706 F4	6718 B4	
2715 F4	2733 E4	2755 B1	2779 F3	3715 B4	3733 E3	3755 C2	3777 C2	3796 C1	3837 F3	3867 F3	5707 E2	6720 B4	
2716 E5	2734 E3	2756 B1	2780 E2	3716 F4	3734 A3	3756 C1	3778 C2	3797 A1	3838 D2	3868 D2	5708 A2	7701 E3	
2717 B5	2735 A3	2757 D1	2781 F5	3717 E4	3735 F3	3757 B2	3779 B4	3798 D1	3841 D4	3869 D1	5709 F2	7702 E3	
2718 F5	2736 F3	2763 B3	2782 F5	3718 B4	3737 E3	3758 B1	3780 D3	3802 D4	3842 A4	3844 A4	5710 E1	7703 A3	
2719 E4	2738 D4	2764 C2	3701 D5	3719 F4	3738 A4	3759 D1	3781 B1	3804 A3	3843 A3	3844 A3	5711 A1	7704 A3	
2720 A4	2740 A3	2765 B3	3702 A5	3720 E4	3739 F4	3760 C1	3782 B1	3806 E3	3844 E4	3845 E4	5712 F1	7705 F3	
2721 D4	2742 F3	2766 C2	3703 E5	3721 B4	3740 D3	3765 F3	3783 C1	3811 E2	3845 E2	5713 B4	7706 F3	7709 D5	



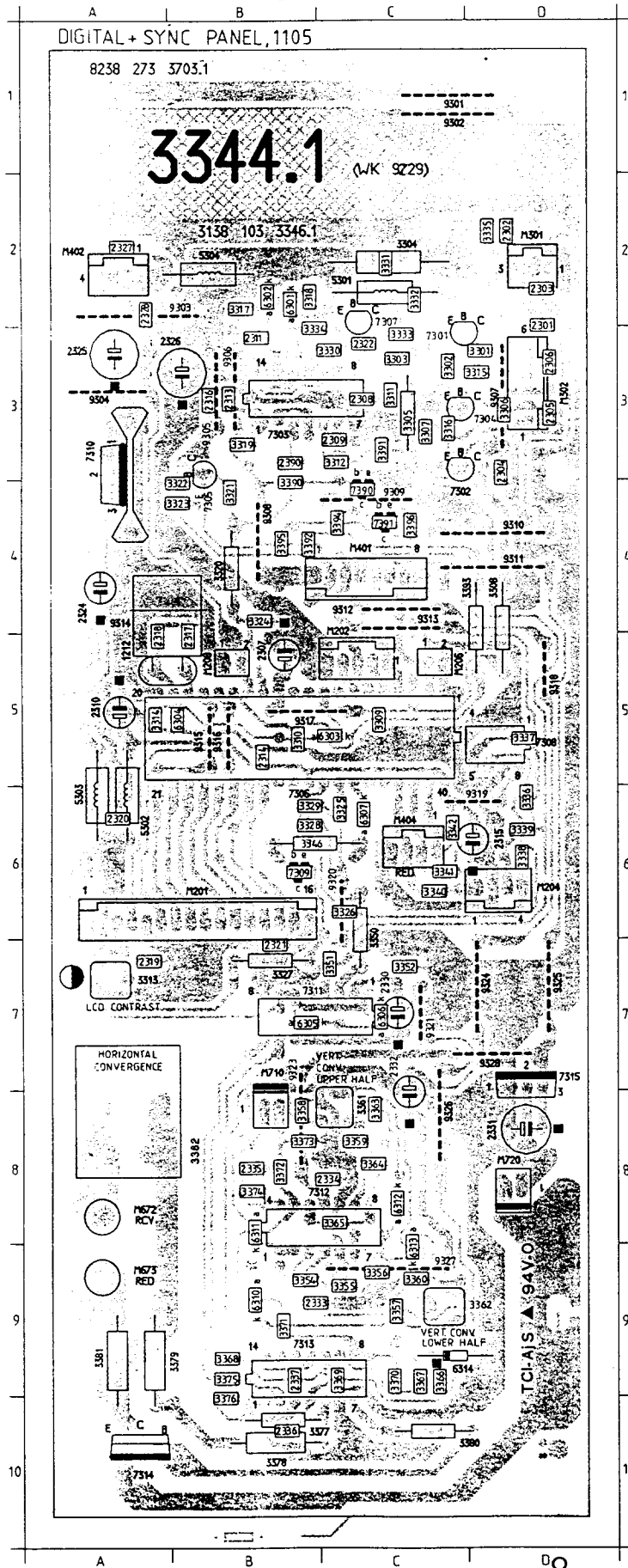
1207 B2	2214 A1	2223 C1	2232 E2	3227 B1	3235 D1	3243 E2	3266 C2	3274 F2	3286 C1	5202 F1	7204 C1	7212 B1	F255 C2
2207 A1	2216 F1	2224 C1	2233 E2	3228 D1	3236 C1	3244 D1	3267 A2	3277 B1	3290 B1	5203 F1	7205 B1	7213 B1	F256 F2
2208 A1	2217 B1	2225 C1	2234 E2	3229 C1	3237 C1	3245 C2	3268 A2	3279 B1	3291 B2	5204 E1	7206 B1	F231 D1	F257 E2
2209 A1	2218 A1	2226 C1	2227 F1	3230 C1	3238 E1	3261 D1	3269 F2	3280 B1	3292 C2	5205 F2	7207 F1	F232 D1	M221 B1
2210 E1	2219 B1	2227 C1	3223 A1	3231 D1	3239 E1	3262 D2	3270 F2	3281 B1	3293 C1	6202 D1	7208 E1	F233 C1	M222 E1
2211 D1	2220 A1	2228 E1	3224 A1	3232 C1	3240 E1	3263 C1	3271 E2	3283 A1	3294 D1	7201 E1	7209 E1	F251 B1	M223 F1
2212 C1	2221 D1	2229 E1	3225 D1	3233 C1	3241 E1	3264 D2	3272 E2	3284 B1	3295 E1	7202 D1	7210 E1	F253 D2	
2213 C1	2222 D1	2231 E2	3226 C1	3234 D1	3242 E1	3265 B1	3273 F1	3285 A1	5201 E1	7203 C1	7211 B1	F254 D2	



WAVE FORMS FOR DIAGRAM **B**



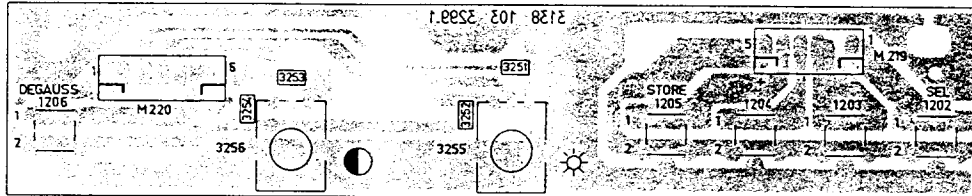
* I²C data information

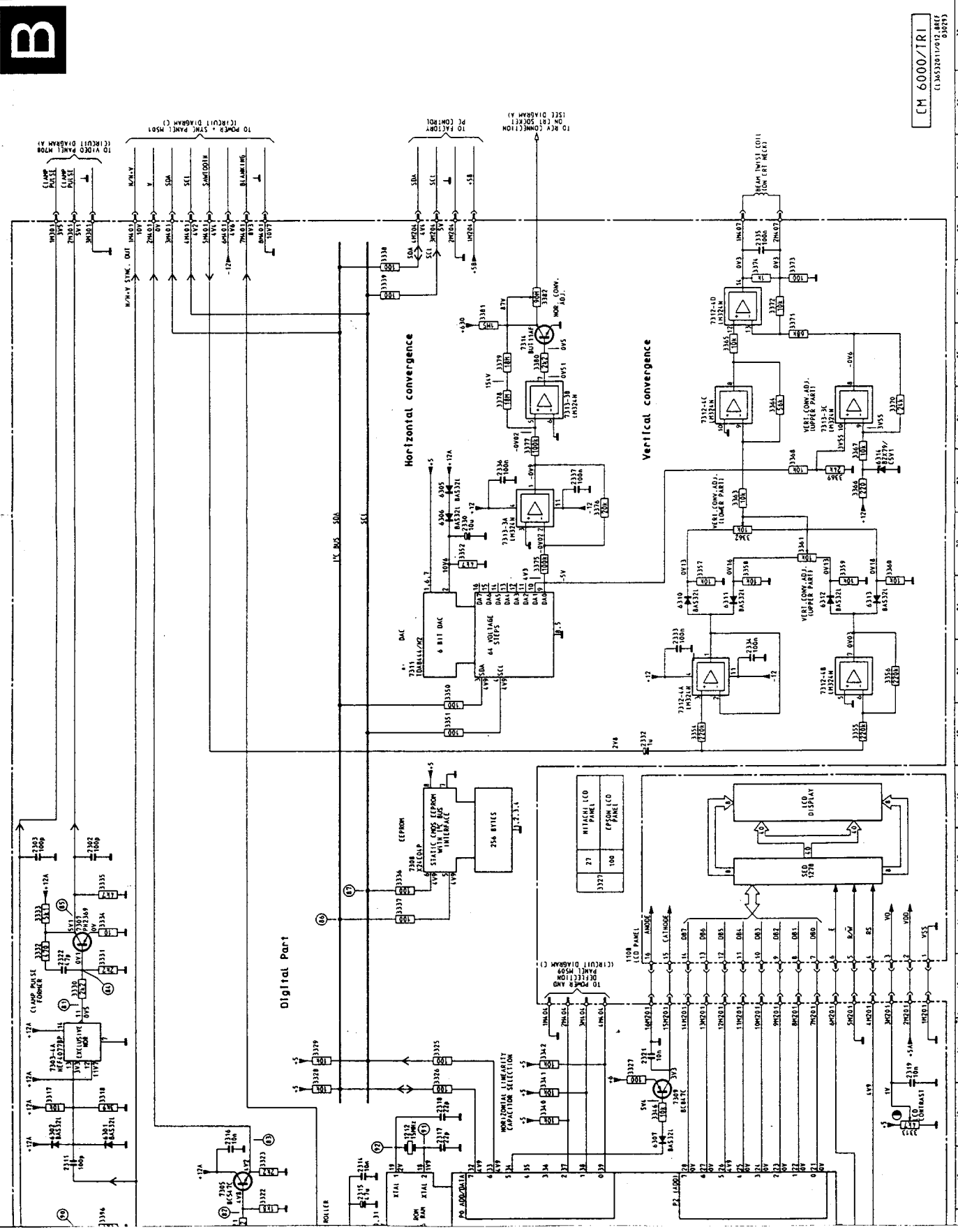


- 1212 A5
- 2301 D2
- 2302 D2
- 2303 D2
- 2304 D3
- 2305 D3
- 2306 D3
- 2307 B5
- 2308 C3
- 2309 C3
- 2310 A5
- 2311 B3
- 2313 B3
- 2314 B5
- 2315 D6
- 2316 B3
- 2317 B5
- 2318 A5
- 2319 A7
- 2320 A6
- 2321 B7
- 2322 C3
- 2324 A4
- 2325 A3
- 2326 B3
- 2327 A2
- 2328 A2
- 2330 C7
- 2331 D8
- 2332 C7
- 2333 B9
- 2334 C8
- 2335 B8
- 2336 B10
- 2337 B9
- 2360 A6
- 2390 B3
- 3301 D3
- 3302 C3
- 3303 C3
- 3304 C2
- 3305 C3
- 3306 D3
- 3307 C3
- 3308 D4
- 3309 C5
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- 3313 A7
- 3314 A5
- 3315 D3
- 3316 C3
- 3317 B2
- 3318 B2
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- 3331 C2
- 3332 C2
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- 3392 B4
- 3393 D4
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- M302 D3
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Print layout Control

KEY + CONTROL PANEL , 1107 (TRACK SIDE VIEW)

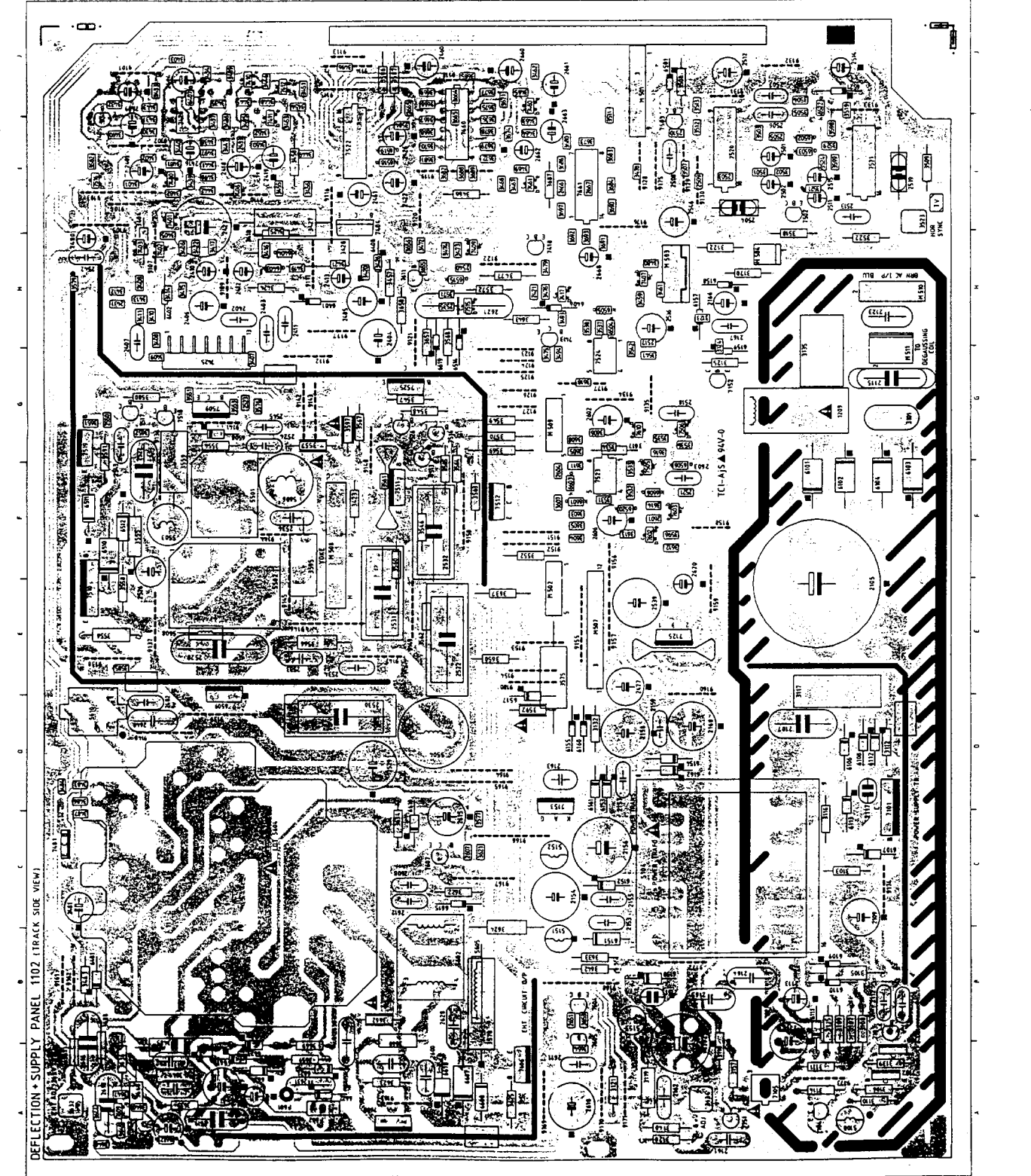




B

CM 6000/TRI
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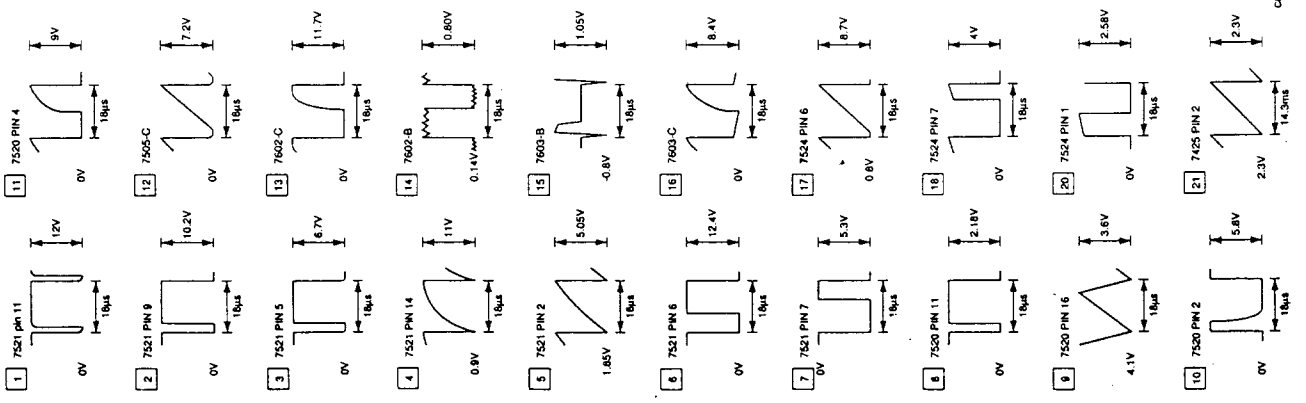
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1205	M 1	3394	E 10
1206	M 1	3395	E 11
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1208	M 1	3397	E 11
1209	M 1	3398	E 11
1210	M 1	3399	E 11
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1212	M 1	3401	E 11
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1231	M 1	3420	E 11
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1234	M 1	3423	E 11
1235	M 1	3424	E 11
1236	M 1	3425	E 11
1237	M 1	3426	E 11
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1239	M 1	3428	E 11
1240	M 1	3429	E 11
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1243	M 1	3432	E 11
1244	M 1	3433	E 11
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1246	M 1	3435	E 11
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DEFLECTION + SUPPLY PANEL 1102 (TRACK SIDE VIEW)

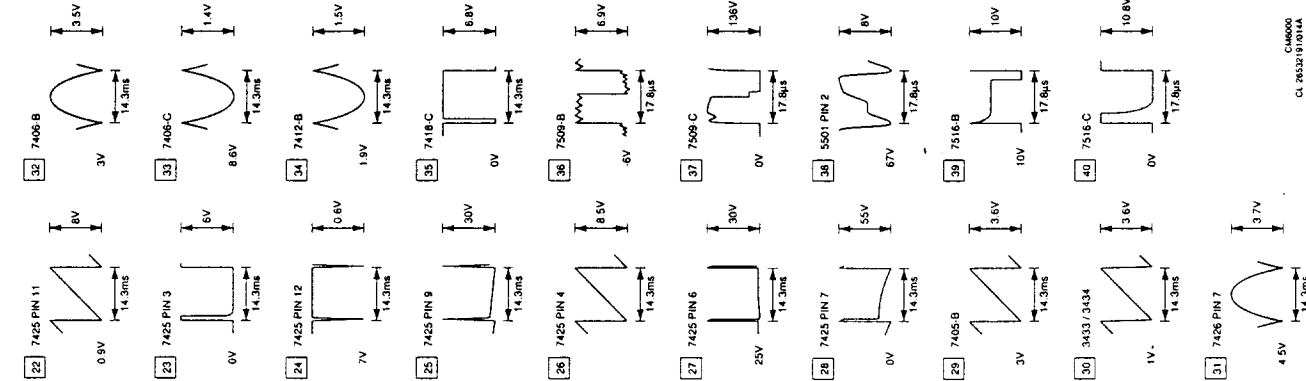
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2131	80	2674	J18	3278	29	7490	J4
2132	81	2675	J19	3279	30	7490	J4
2133	82	2676	J20	3280	31	7490	J4
2134	83	2677	J21	3281	32	7490	J4
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2279	228	2822	J166	3426	177	7490	J4
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2288	237	2831	J175	3435	186	7490	J4
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WAVE FORMS FOR DIAGRAM C



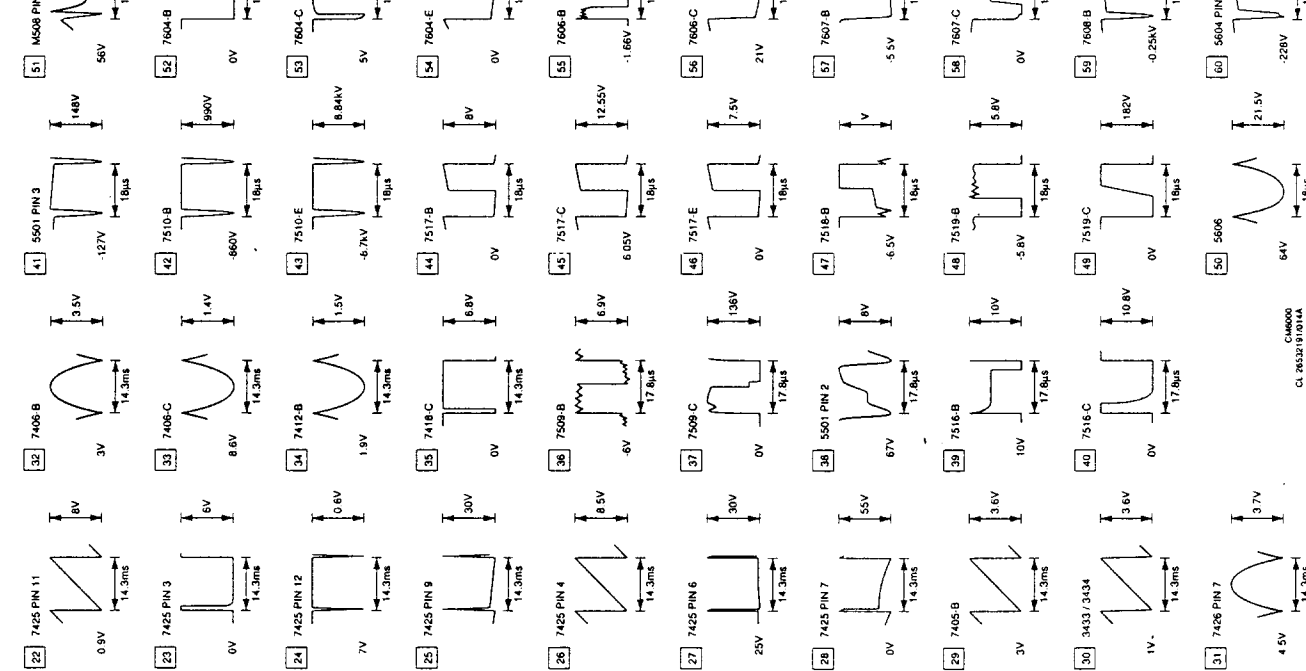
CM6000 CL 36332001014 00095

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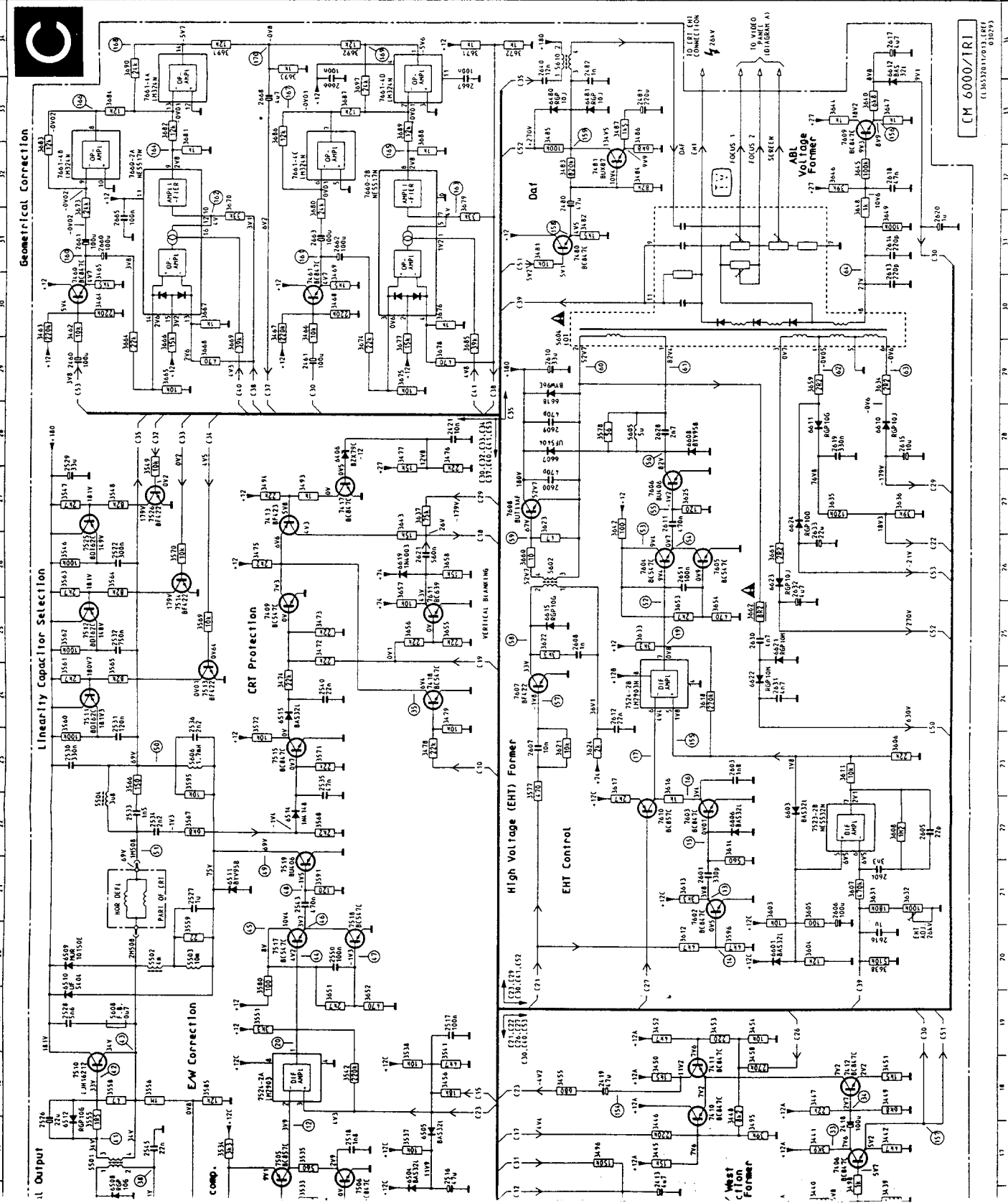


CM6000 CL 26332101014 031192

WAVE FORMS FOR DIAGRAM C



CM6000 CL 26332001014 00095



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Circuit diagram Supply

6.26 4CM6088/.T

6.25 4CM6088/.T

WAVE F

65 7105

66 7105

67 7153

68 5104

69 5104

70 5104

71 5104

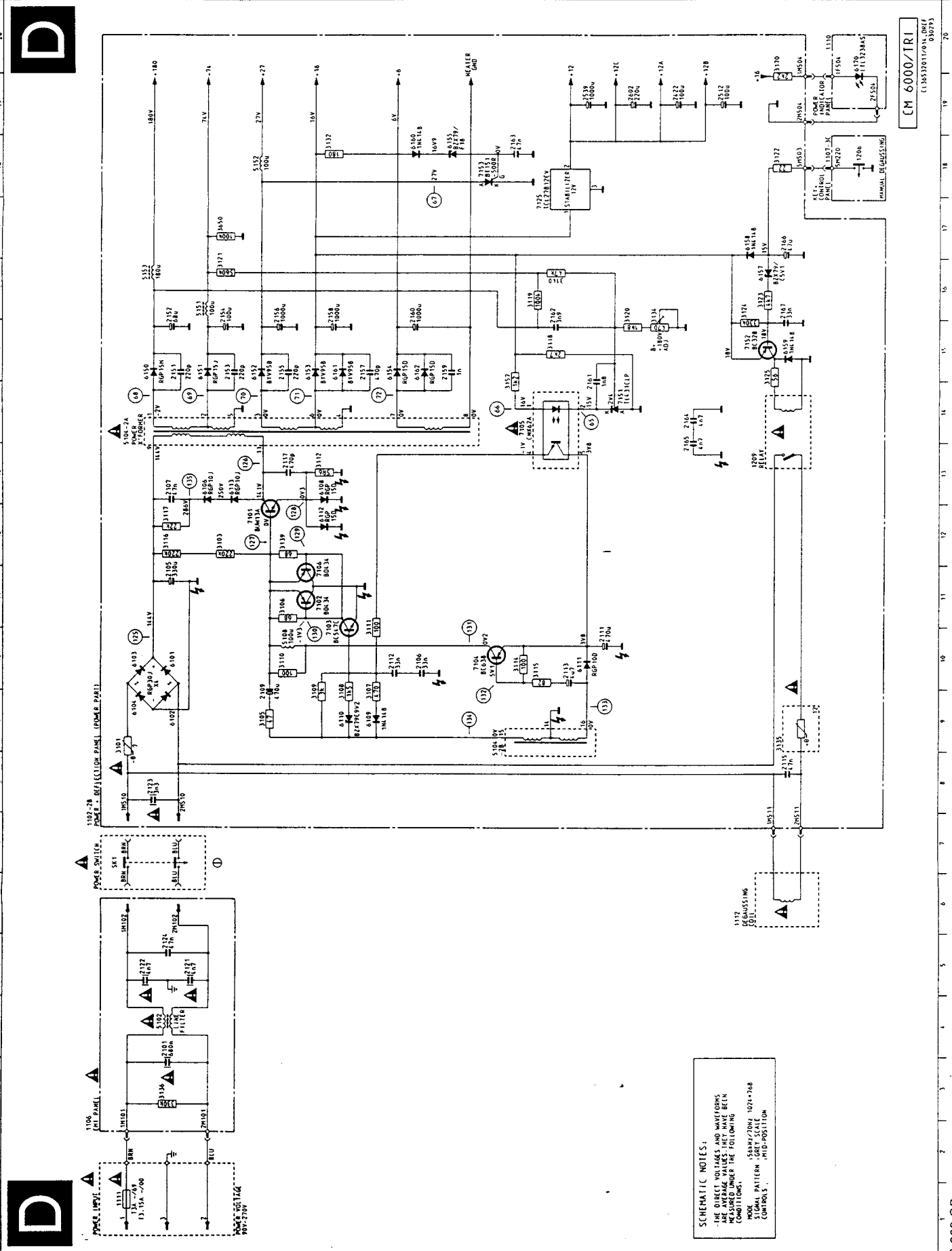
72 5104

73 7304

74 6101

130V

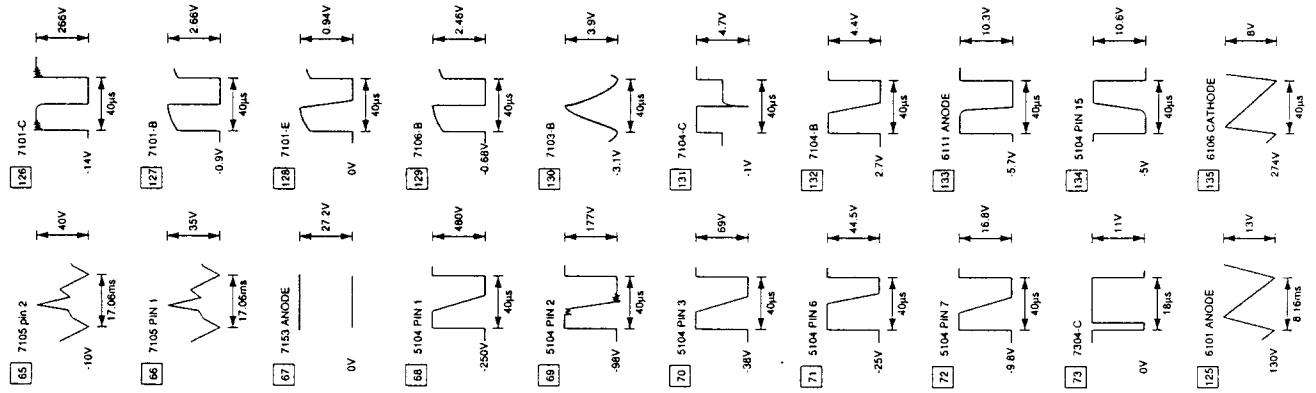
1002 B 7
1106 M 8
1107 M 8
1110 W 9
1111 L 6
1112 L 6
1206 M 8
1207 M 8
2101 C 1
2102 C 1
2103 C 1
2104 C 1
2105 C 1
2106 C 1
2107 C 1
2108 C 1
2109 C 1
2110 C 1
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2112 C 1
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2164 C 1
2165 C 1
2166 C 1
2167 C 1
2168 C 1
2169 C 1
2170 C 1
2171 C 1
2172 C 1
2173 C 1
2174 C 1
2175 C 1
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2178 C 1
2179 C 1
2180 C 1
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2500 C 1



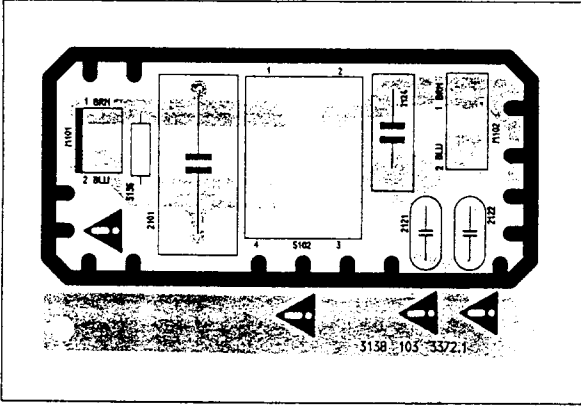
SCHEMATIC NOTES:
 - THE OBJECT VOLTAGES AND WAVEFORMS
 ARE AVERAGE VALUES AND HAVE BEEN
 MEASURED UNDER THE FOLLOWING
 CONDITIONS:
 SIGNAL PATTERN 50%
 SIGNAL SCALE 10V
 CONTROL POSITION
 MID-POSITION

CM 6000
 CL 2632/82/015
 031192

WAVE FORMS FOR DIAGRAM D



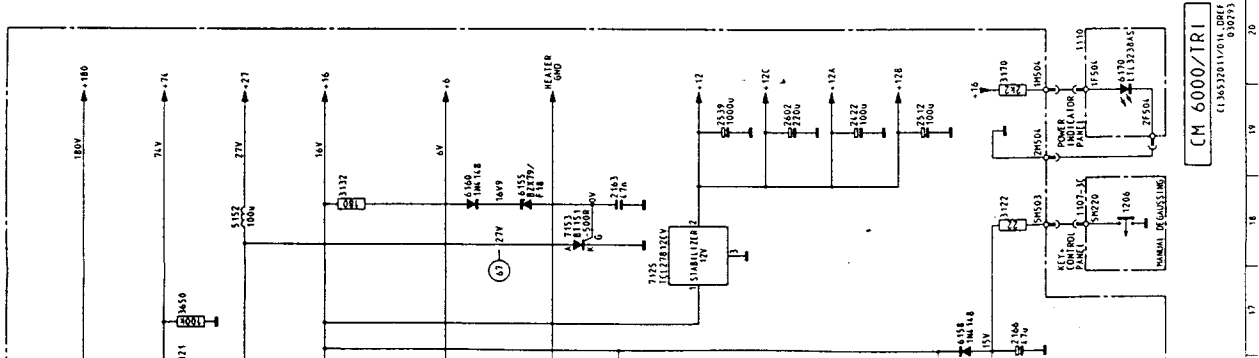
EMI PANEL, 1106 (COMPONENT VIEW)



POWER INDICATOR PC BOARD (viewed from the component side)



D



General:

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with an "ATI VGA 1024 V6-1.04/PH Beta 4" interface card (1024 * 768) is used as the video signal source. The signal patterns are selected from the "Service test software" package.

Installation instruction for the ATI Interface card:

- Place the monitor (if possible) in east-west direction.
- Place the ATI interface card in the computer.
- Select the "VSETUP" file from the "UTILITY" DISK" belonging to the card.
- Select "8-bits" or "16-bits" ROM operation depends on the computer type.
- Select "ANALOG MONITOR".
- Select the "MAGNAVOX CM5000" as monitor type.
- Re-boot your computer again.
- Put the floppy disk with the "Service test software" package in the computer and select the test pattern indicated for the following settings.

Remark:

Above mentioned ATI-card is only usable up to mode 1024*768. For higher resolutions, a special generator is needed (e.g. Chroma 2000 or equivalent).

1. Settings on the PCB's, see Fig. 7.1.

1.1 B+ supply voltage (3134)

- Video signal: cross-hatch pattern in the 1024*768 56 kHz/70 Hz mode.
- Set the brightness front control 3255 and the contrast front control 3256 to the minimum position.
- Preset trimming potentiometer 3134 in mid-position.
- Connect a DC Voltmeter between the "+" pole of capacitor 2152 (on power supply) and ground (common ground).
- Set the B+ trimming potentiometer 3134 so that the reading on the DC meter is $180V \pm 0,5V$.

1.2 High-Voltage EHT (3632)

- Connect a "High-Voltage Voltmeter" between the high-voltage connection of the picture tube and earth.
- Set the EHT trimming potentiometer 3632 so that the "High-voltage voltmeter" reads $26kV \pm 0,2kV$.

1.3 Horizontal Synchronization (3523)

- Video Signal: Cross-hatch pattern in the 640*480 31.5kHz/60Hz mode.
- Position both the brightness front control 3255 and the contrast front control 3256 in the mechanical mid-position.
- Connect a DC Voltmeter to the junction of the capacitors 2501/2502 and ground (nearly to IC7520).
- Adjust trimming potentiometer 3523 so that the reading on the DC voltmeter is $5.8V \pm 0.1V$.

1.4 Focus setting

- * Focus 2 (vertical focus), middle key on LOT.
- * Focus 1 (horizontal focus), top key on LOT.

- Signal: Apply a "@" pattern in the 1024 * 768 56kHz/70Hz mode.
- Set the brightness front control 3255 at mechanical mid position.-Set the contrast front control 3256 at mechanical max. position.
- Adjust the vertical focus key (on LOT) so that the vertical lines in the east and west part on the screen have optimum sharpness.
- Adjust the horizontal focus key (on LOT) so that the horizontal lines in the top and bottom of the screen have optimum sharpness.

1.5 Cut off points of the picture tube

- * VG2 (screen key, bottom key on LOT)
- * Cut off points of the picture tube (3781, 3782, 3783)

- Signal: Black pattern in the 1024 * 768 56kHz/70 Hz mode.
- Place the cut-off trimming potentiometers 3781, 3782, 3783 and the sub-contrast potentiometer 3765 to the central position for pre-setting.
- Set the VG2 setting key to the minimum position.
- Set the brightness front control 3255 at center click-point and the contrast front control 3256 at mechanical mid-position.
- Using the VG2 setting key, increase the VG2 voltage until a colour is just visible (the colour may be red,green or blue).
- Then set the cut-off points trimming potentiometers belonging to the two colours not yet visible (3781, 3782 or 3783) so that an optimum white background colour is obtained.
- Set the contrast front control 3256 to maximum in order to check that the background colour remains the same even at maximum contrast.
- Then set the contrast front control 3256 to the central position again.

1.6 White "D"

- * R.G.B. amplification (3791, 3792,)
- * Sub-contrast (3765)
- Degaussing the monitor manual before the settings.

R.G.B. amplification

- Signal: White pattern in the 1024*768 56 kHz/70 Hz mode.
- set the trimming potentiometers 3791 and 3792 so that an optimum colour is produced in the white window.

Subcontrast (3765)

- * Method 1 (with photometer)
- Signal: White window pattern in the 1024*768 56 kHz/70 Hz mode.
- Place the photometer in the centre of the screen.
- Set the subcontrast control 3765 so that the photometer shows 40 ± 1 Foot Lamber.
- Using the contrast front control 3256, slowly adjust the contrast from maximum to minimum in order to check that "white" remains the same.

Electrical instructions

- * Method 2 (without photometer)
- Signal: white pattern in the 1024*768 56kHz/70Hz mode.
- Set the contrast front control 3256 and the brightness front control 3255 to maximum and the subcontrast control 3765 in the mid-position.
- Then turn the subcontrast control 3765 slowly until the brightness no longer increase. This happens when the ABL (automatic beam-current limiter) comes into operation.

1.7 LCD Contrast adjustment (3313)

- Adjust potentiometer 3313 (contrast control for LCD-module) to get an overall sharpness as well as excellent foreground and background characteristics.

2. Factory default modes

General:

In the factory the most popular modes are stored in the memory (default modes).

The default modes are called M01 to M11. (See also Chapter 2 "Control location and functions".)

Changing a default mode is possible by closing 1 of the 2 jumpers (M206, M208) on the Digital and Sync Panel.

The Digital and Sync Panel is reachable when the back cover is removed.

Below in the table the combinations are mentioned.

	M206	M208	Function
2.1	open	open	Factory defaults protection
2.2	short	open	IC7306 (microprocessor) no function
2.3	open	short	Store 10 parameters for preset modes

During the adjustment, do not remove or

Note 1. remount the jumpers to prevent any component damaged.

Note 2. When remove or remount the jumpers, the monitor must be turned off.

Note 3. For the off-line of finished goods, both jumpers (M206, M208) are under "OPEN" position.

3. Picture geometry settings

3.1 Picture geometry settings, M01 to M11 (Exclusive Special Modes M04 and M11) general:

- Short circuit "Service Jumper M208" (pin1 and pin2)
- Turn on the monitor.
- Set brightness front control 3255 at center click position and the contrast front control 3256 in the mechanical maximum position.
- Video signal: Cross-hatch pattern in the 640*350 31,5 kHz/70 Hz Mode (M01).

Level 1 Adjustments (see chapter 2)

3.1.1 Horizontal picture centring

- Press front control "SEL" key (▷) to select "SET H-SHIFT" function.
- Press front control "+" or "-" key to adjust horizontal phase so that the horizontal centring of the picture is correct on the screen.

3.1.2 Picture width

- Press front control "SEL" key (▷) to select "SET H-SIZE" function.
- Press front control "+" or "-" key to adjust the horizontal width so that the picture width is 300mm ± 3mm

3.1.3 Vertical picture centring

- Press front control "SEL" key (▷) to select "SET V-SHIFT" function.
- Press front control "+" or "-" key to adjust vertical phase so that the vertical centring of the picture is correct on the screen.

3.1.4 Picture height

- Press front control "SEL" key (▷) to select "SET V-Size" function.
- Press front control "+" or "-" key to adjust vertical height so that the picture height is 225mm ± 3mm.

3.1.5 Horizontal convergence (3382)

- Press front control "SEL" key (▷) to select "H.CONV." function.
- Adjust 3382 (on Digital Panel) until the horizontal convergence on the screen is optimum.

3.1.6 Vertical convergence (3361,3362)

- Press front control "SEL" key (▷) to select "V.CONV." function.
- Press "-" or "+" key to adjust the optimum vertical center convergence.
- Adjust 3361 (on Digital Panel) for optimum vertical convergence in upper half of screen.
- Adjust 3362 (on Digital Panel) for optimum vertical convergence in lower half of screen.

Level 2 adjustments (see chapter 2)

3.1.7 East-west pincushion distortion

- Press front control "SEL" key (▷) and "+" key at the same time for 3 seconds to select "PIN/BARREL" function.
- Press front control "+" or "-" key to adjust the linearity so that the vertical lines on the right and left of the picture are straight.

3.1.8 Trapezoid distortion

- Press front control "SEL" key (▷) to select "TRAPEZOID" function.
- Press front control "+" or "-" to adjust trapezoid distortion so that an optimum square cross-hatch pattern is obtained.

3.1.9 Paralello distorsion

- Press front control "SEL" key (▷) to select "PARALELLO" function.
- Press front control "+" or "-" key to adjust Paralello distortion so that an optimum square cross-hatch pattern is obtained.

3.1.10 Unbal-pin distorsion

- Press front control "SEL" key (▷) to select "UNBAL-PIN" function.
- Press front control "+" or "-" key to adjust Unbal-pin distortion so that an optimum square cross-hatch pattern is obtained.

3.1.11 Press "SAVE" key (◁) to save the mode parameters.

3.1.12 Turn off the monitor.

3.1.13 Open the jumper M208 to prevent any hamper for new setting protection.

3.1.14 Apply following video signal with cross-hatch pattern in different frequency and resolution for the settings of M02 to M10.

Repeat each time the steps 3.1.1 to 3.1.11. (Do not readjust 3361,3362 and 3382 again)

- M02	640 *400	31,5 kHz/70 Hz
- M03	640 *480	31,5 kHz/60 Hz
- M05	800 *600	35,2 kHz/56 Hz
- M06	800 *600	37,8 kHz/60 Hz
- M07	800 *600	48,0 kHz/72 Hz
- M08	1024*768	35,5 kHz/87 Hz
- M09	1024*768	48.4 kHz/60 Hz
- M10	1024*768	56.0 kHz/70 Hz

3.2 Picture geometry settings, M04 and M11 (Special Modes)

General:

- Short circuit "Service jumper M208"(pin1 and pin2).
- Turn on the monitor.
- Set brightness front control 3255 at center click position and the contrast front control 3256 in the mechanical max. position.
- Video signal:

For the above mentioned Special Modes a pattern generator(e.g. CHROMA 2000 or equivalent) or video adaptor (up to 64kHz) is needed as signal source.

3.2.1 Special Mode (M04)

For the Chroma 2000 timing chart for mode M04, see below.

M04 640*480 35 kHz/67 Hz, Pixel MHz = 30.24

Horizontal

Frame border	: 0.000μS
Total size	: 28.571μS
Display size	: 21.164μS
Rear porch	: 3.175μS
Sync width	: 2.116μS
Sync polarity	: Sync on green

Vertical

Frame border	: 0.000mS
Total size	: 15.000mS
Display size	: 13.714mS
Rear porch	: 1.114mS
Sync width	: 0.086mS
Sync polarity	: Sync on green

Then repeat the steps 3.1.1 to 3.1.11.

3.2.2 Special Mode (M11)

For the Chroma 2000 timing chart for mode M11, see below

M11 1280*1024 61.91kHz/58.63Hz, Pixel MHz = 105.00

Horizontal

Frame border	: 0.000μS
Total size	: 16.15μS
Display size	: 12.19μS
Rear porch	: 2,2μS
Sync width	: 1.5μS
Sync polarity	: sync on green

Vertical

Frame border	: 0.000mS
Total size	: 17.057mS
Display size	: 16.540mS
Rear porch	: 0.468mS
Sync width	: 0.048mS
sync polarity	: sync on green

Then repeat the steps 3.1.1 to 3.1.11

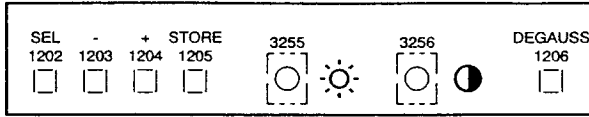
3.2.3 Turn off the monitor.

3.2.4 Open the jumper M208 to prevent any hamper for new setting protection.

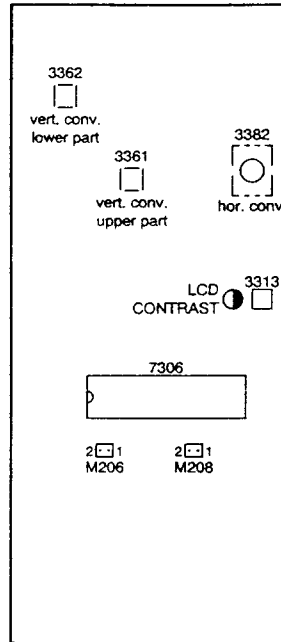
Electrical instructions

LOCATION OF ADJUSTING COMPONENTS

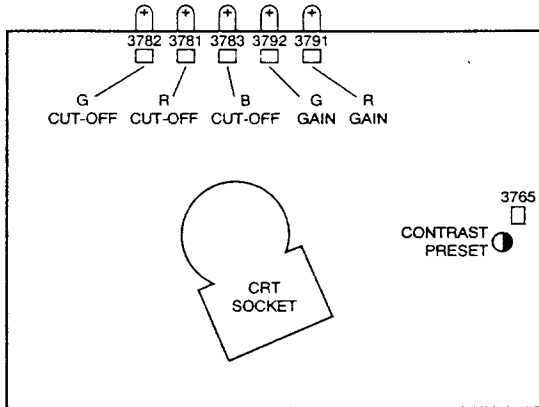
Key + control panel (component view)



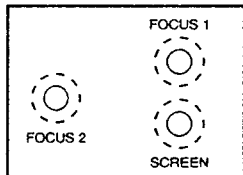
Digital + sync panel (component view)



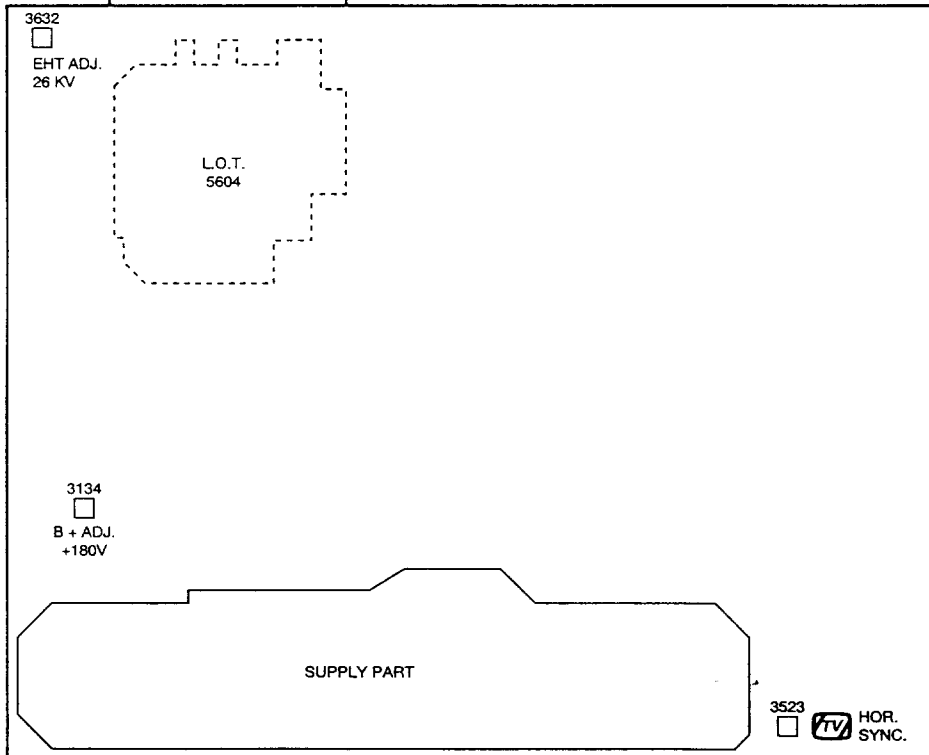
Video panel (S.M.D. side view)



L.O.T. (side view)



Power + deflection panel (S.M.D. side view)



REMARK: = hole in screening plate

Fig. 7.1

Repair tips

Warning

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 unit via a wrist wrap with resistance.



Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity.
The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2. Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 8.1A) or:
- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 8.1B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 8.1C).

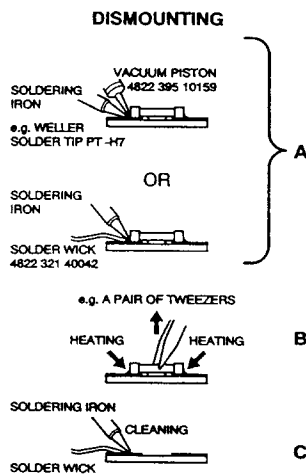


Fig. 8.1

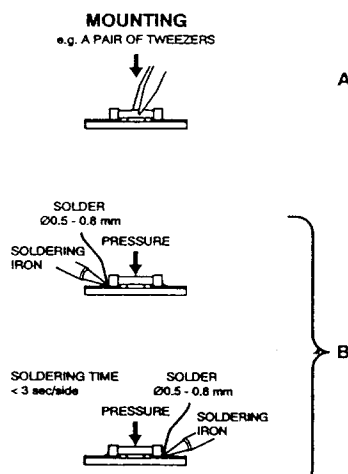


Fig. 8.2

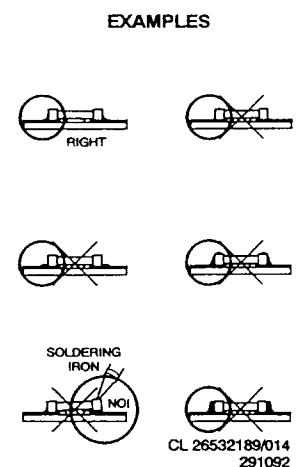


Fig. 8.3

Caution on removal:

- When handling the soldering iron, use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250°C).
- The chip, once removed, must **never** be reused.

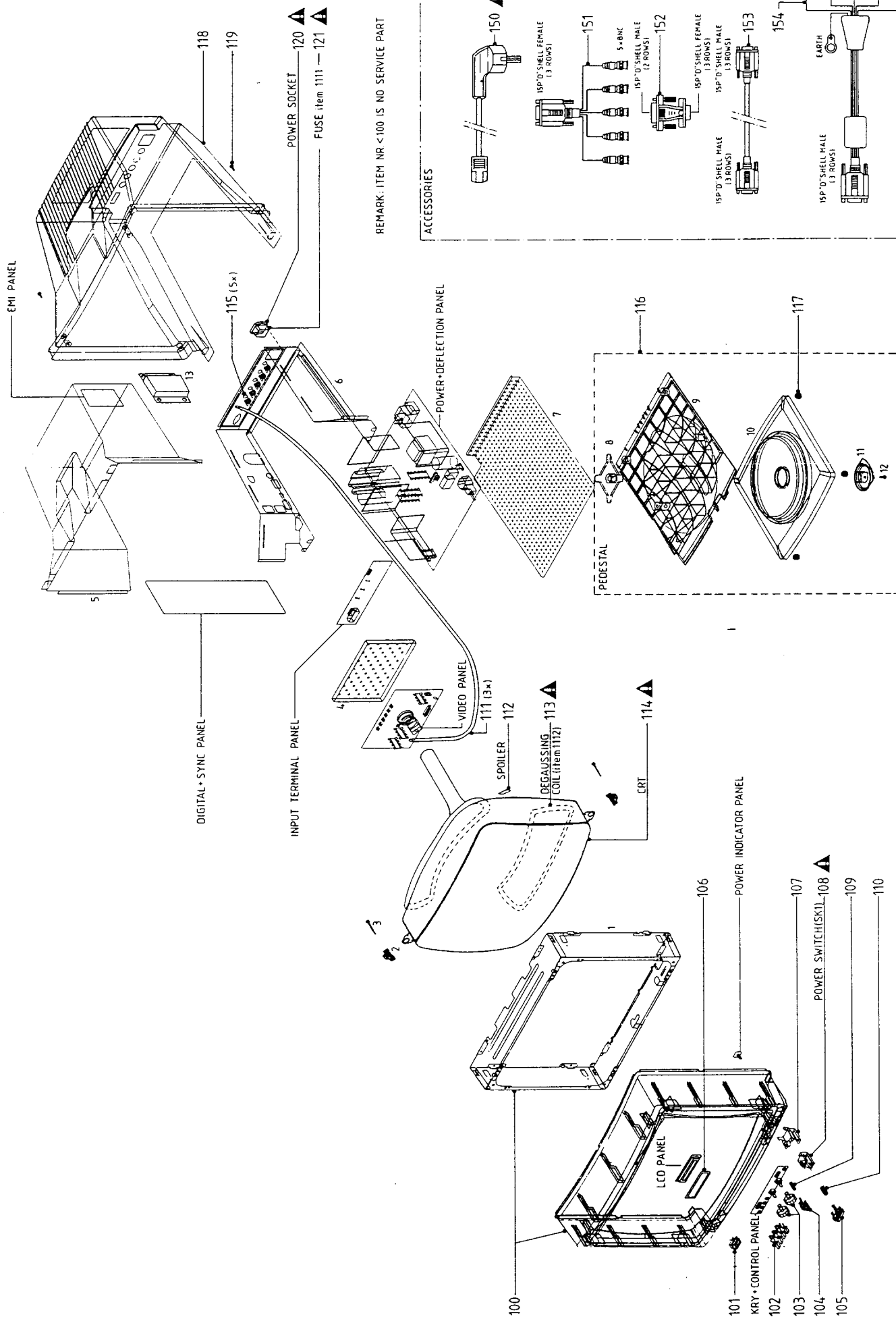
1.3 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig. 8.2A).
- Next complete the soldering of the terminals of the component (see Fig. 8.2B).

Caution when attaching SMDs:

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible; care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250°C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 8.3).

Exploded view



REMARK: ITEM NR <100 IS NO SERVICE PART

ACCESSORIES

Main panel 1102

Parts indicated on exploded view

100	4822 430 20099	Front cabinet (with item -104,105,106,109,110)
101	4822 277 11369	Rocker switch
102	4822 413 31693	Push button (4 fol) Knob
103	4822 413 41651	Knob
104	4822 410 61226	Push button (degaussing)
105	4822 410 61812	Push button (power)
106	4822 381 11319	Lens (LCD display)
107	4822 432 92868	Housing (power switch)
108	▲ 4822 276 11504	Power switch (SK1)
109	4822 492 52324	Spring
110	4822 492 52324	Spring
112	4822 526 20183	Spoiler
113	▲ 4822 157 70296	Degaussing coil (item 1112)
114	▲ 4822 131 20528	Picture tube M41KNP16X (item 1100)
115	4822 267 10281	BNC socket
116	4822 462 10517	Pedestal
117	4822 466 61517	Pad
118	4822 438 10398	Rear cover
119	4822 502 13763	Screw
120	▲ 4822 265 30955	Power socket
121	▲ 4822 070 33152	Fuse T3,15A/250V (item 1111) for -/00
	▲ 4822 253 30374	Fuse T3A/250V (item 1111) for -/69

Accessories

150	▲ 4822 321 10676	Power cord
151	4822 321 61241	I/F cable (short) 5XBNC male-15p "D" Shell female
152	4822 263 50197	Adapter 15p "D" Shell female 3 rows -15p "D" Shell male 2 rows
153	4822 321 61529	I/F cable 15p "D" Shell male-15p "D" Shell male
154	4822 321 61411	I/F cable (long) 5xBNC male-15p "D" Shell male

Auxilliary tools

4822 321 61504	Extension cable 3p-3p for EMI panel to Power socket
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Various

4822 265 30888	6P (M503)
4822 265 20561	2P (M504)
4822 265 30375	4P (M508)
4822 265 20564	2P (M510)
4822 265 30891	2P (M511)
4822 255 40893	Insulator for 7512, 7525
4822 466 92891	Plate for 7101
4822 255 40893	Plate for 7510, 7519, 7606, 7608
4822 492 62076	Spring for transistors
5322 390 20011	Silicon grease

1209 ▲ 4822 280 70358 Relay

-II-

2105	4822 124 42159	330µF 20% 400V
2106	5322 121 42489	33nF 5% 250V
2107	4822 121 43516	47nF 400V
2109	4822 124 40198	470µF 20% 16V
2111	4822 124 40198	470µF 20% 16V

2112	5322 121 42489	33nF 5% 250V
2113	4822 124 40246	4,7µF 20% 63V
2115	4822 121 43385	47nF 20% 250V
2117	4822 126 11454	470pF 2KV
2123	▲ 4822 126 12097	3,3nF 20% 250V

2151	4822 126 12356	220pF 10% 2KV
2152	4822 124 42158	68µF 20% 250V
2153	4822 122 33645	220pF 500V
2154	4822 124 40755	100µF 20% 100V
2155	4822 122 33645	220pF 500V

2156	4822 124 42195	1000µF 35V
2157	4822 122 33646	470pF 10% 500V
2158	4822 124 40214	1000µF 20% 25V
2159	5322 122 32331	1nF 10% 100V
2160	4822 124 42172	1000µF 16V

2161	4822 121 70184	1,8nF 5% 100V
2162	4822 121 43366	3n9 400V
2163	4822 121 43695	47nF 10% 100V
2164	4822 122 33535	4,7nF 20% 400V
2165	4822 122 33535	4,7nF 20% 400V

2166	4822 124 80132	47µF 20% 25V
2167	4822 121 43912	33nF 10% 100V
2401	4822 124 41659	4,7µF 20% 25V
2402	4822 121 43695	47nF 10% 100V
2403	4822 121 43693	10nF 100V

2404	4822 124 41334	470µF 20% 35V
2405	4822 124 22336	100µF 20% 40V
2406	4822 124 22336	100µF 20% 40V
2407	4822 121 70106	100nF 5% 100V
2408	4822 122 32542	47nF 10% 63V

2409	4822 124 22678	100µF 20% 16V
2410	4822 124 22681	47µF 20% 16V
2411	4822 121 43699	220nF 100V
2412	4822 124 22678	100µF 20% 16V
2413	4822 124 41659	4,7µF 20% 25V

2414	4822 124 22678	100µF 20% 16V
2415	4822 124 40763	2,2µF 100 V
2416	4822 124 22686	10µF 16V
2418	4822 124 22678	100µF 20% 16V
2419	4822 124 22681	47µF 20% 16V

2421	4822 122 32442	10nF 50V
2422	4822 124 22678	100µF 20% 16V
2423	4822 124 40214	1000µF 20% 25V
2426	4822 124 22686	10µF 16V
2431	4822 122 31727	470pF 2% 63V

2460	4822 124 22678	100µF 20% 16V
2461	4822 124 22678	100µF 20% 16V
2477	4822 124 42359	47µF 100V
2480	4822 124 22681	47µF 20% 16V
2481	5322 124 41817	220µF 16V

-II-

2482	4822 122 33352	1nF 10% 1KV
2501	4822 124 22686	10µF 16V
2502	4822 124 22686	10µF 16V
2503	4822 122 31797	22nF 10% 63V
2504	4822 121 70185	1,8nF 2% 50V

2505	4822 122 32442	10nF 50V
2506	4822 121 43696	100nF 100V
2507	4822 121 43699	220nF 100V
2508	4822 121 43699	220nF 100V
2509	4822 122 31965	220pF 2% 63V

2510	4822 122 33496	100nF 10% 63V
2511	4822 124 22669	1µF 20% 50V
2512	4822 124 22678	100µF 20% 16V
2513	4822 121 70184	1,8nF 5% 100V
2514	4822 124 22669	1µF 20% 50V

2515	4822 124 40763	2,2µF 100 V
2516	4822 124 22681	47µF 20% 16V
2517	4822 121 43699	100nF 10% 63V
2518	4822 121 70184	1,8nF 5% 100V
2519	4822 121 70192	560pF 5% 100V

2521	5322 122 31842	330pF 2% 63V
2522	4822 121 70242	300nF 5% 250V
2523	4822 122 32442	10nF 50V
2524	4822 121 70191	4,7nF 5% 250V
2526	4822 124 80405	22µF 20% 100V

2527	4822 121 70095	1µF 10% 100V
2528	4822 121 43677	5,6nF 5% 1,6KV
2529	4822 124 42161	33µF 20% 250V
2530	4822 121 43681	330nF 250V
2531	4822 121 70241	120nF 5% 250V

2532	4822 121 70239	750nF 5% 250V
2533	4822 121 43906	1,5nF 10% 400V
2534	4822 126 10206	2,2nF 10% 500V
2535	4822 122 32542	47nF 10% 63V
2536	4822 126 11388	2,2nF 1KV

2539	4822 124 42339	1000µF 25V
2540	4822 122 31797	22nF 10% 63V
2542	4822 121 43699	220nF 100V
2543	4822 121 43698	470nF 100V
2545	4822 121 43907	22nF 20% 250V

2546	4822 124 22678	100µF 20% 16V
2550	4822 122 33496	100nF 10% 63V
2600	4822 126 12267	470pF 5% 1KV
2601	5322 122 31842	330pF 2% 63V
2602	5322 124 41817	220µF 16V

2603	4822 121 70184	1,8nF 5% 100V
2604	5322 122 33446	3,3nF 10% 63V
2605	4822 122 32482	22pF 2% 63V
2606	4822 124 22678	100µF 20% 16V
2607	4822 122 32442	10nF 50V

2608	4822 122 33968	1nF 5% 500V
2609	4822 126 11136	470pF 10% 2KV
2610	4822 124 42161	33µF 20% 250V
2611	4822 121 43698	470nF 100V
2612	4822 121 43907	22nF 20% 250V

2613	4822 126 12095	220pF 10% 2KV
2614	4822 126 12095	220pF 10% 2KV
2615	4822 124 80107	10µF 20% 250V
2616	4822 121 70095	1µF 10% 100V
2617	4822 124 41659	4,7µF 20% 25V

2618	4822 121 40336	47nF 10% 250V
2619	4822 121 43916	330nF 10% 250V
2620	4822 124 22669	1µF 20% 50V
2621	4822 121 70101	560nF 5% 250V
2628	4822 121 51464	2,7nF 5% 400V

2630	4822 122 10377	4,7nF 10% 10KV
2631	4822 122 10377	4,7nF 10% 10KV

2632	4822 124 42156	4,7µF 20% 400V
2633	4822 124 42199	22µF 20% 50V
2640	4822 121 51173	12nF

Spare parts lists

Main panel 1102

3614	4822 051 10561	560Ω 2% 0,25W
3616	4822 051 10102	1k 2% 0,25W
3617	4822 050 12702	2k7 1% 0,4W
3618	4822 051 10224	220k 2% 0,25W
3621	4822 051 10103	10k 2% 0,25W
3622	4822 050 23302	3k3 1% 0,6W
3623	4822 050 24709	47Ω 1% 0,6W
3624	4822 116 83629	2k 5% 5W
3625	4822 050 21201	120Ω 1% 0,6W
3631	4822 050 21804	180k 1% 0,6W
3632	4822 100 11163	100k 30%LIN 0,1W
3633	4822 050 23302	3k3 1% 0,6W
3634	4822 050 22208	22Ω 1% 0,6W
3635	4822 116 80556	120k 0,25W
3636	4822 116 82963	39k 1%
3637	4822 050 27503	75k 1% 0,6W
3638	4822 116 80944	510k 1%
3640	4822 051 10682	6k8 2% 0,25W
3642	4822 116 83973	100Ω 5% 1W
3643	4822 050 21503	15k 1% 0,6W
3644	4822 051 10102	1k 2% 0,25W
3645	4822 051 10104	100k 2% 0,25W
3646	4822 051 10393	39k 2% 0,25W
3647	4822 051 10102	1k 2% 0,25W
3648	4822 116 80545	1k 5% 0,5W
3649	4822 050 21004	100k 1% 0,6W
3650	4822 050 21004	100k 1% 0,6W
3651	4822 051 10272	2k7 2% 0,25W
3652	4822 051 10471	470Ω 2% 0,25W
3653	4822 051 10272	2k7 2% 0,25W
3654	4822 051 10471	470Ω 2% 0,25W
3655	4822 051 10223	22k 2% 0,25W
3656	4822 051 10223	22k 2% 0,25W
3657	4822 050 21003	10k 1% 0,6W
3658	4822 050 21503	15k 1% 0,6W
3659	4822 050 22208	22Ω 1% 0,6W
3660	4822 050 21009	10Ω 1% 0,6W
3661	4822 050 22208	22Ω 1% 0,6W
3662	4822 052 10828	8Ω 2% 0,33W
3664	4822 051 10223	22k 2% 0,25W
3665	4822 051 10103	10k 2% 0,25W
3666	4822 051 10153	15k 2% 0,25W
3667	4822 051 10102	1k 2% 0,25W
3668	4822 051 10471	470Ω 2% 0,25W
3669	4822 051 10393	39k 2% 0,25W
3670	4822 051 10333	33k 2% 0,25W
3671	4822 051 10102	1k 2% 0,25W
3672	4822 051 10102	1k 2% 0,25W
3673	4822 051 10243	24k 2% 0,25W
3674	4822 051 10223	22k 2% 0,25W
3675	4822 051 10103	10k 2% 0,25W
3676	4822 051 10102	1k 2% 0,25W
3677	4822 051 10153	15k 2% 0,25W
3678	4822 051 10471	470Ω 2% 0,25W
3679	4822 051 10333	33k 2% 0,25W
3680	4822 051 10243	24k 2% 0,25W
3681	4822 051 10102	1k 2% 0,25W
3682	4822 051 10123	12k 2% 0,25W
3683	4822 051 10123	12k 2% 0,25W
3684	4822 051 10123	12k 2% 0,25W
3685	4822 051 10393	39k 2% 0,25W
3686	4822 051 10123	12k 2% 0,25W
3687	4822 050 21203	12k 1% 0,6W
3688	4822 051 10102	1k 2% 0,25W
3689	4822 051 10123	12k 2% 0,25W
3690	4822 051 10243	24k 2% 0,25W
3691	4822 051 10123	12k 2% 0,25W
3692	4822 051 10123	12k 2% 0,25W
3693	4822 051 10102	1k 2% 0,25W
3697	4822 051 10243	24k 2% 0,25W

5104	4822 146 31191	Power trafo.
5108	4822 157 70293	100μH
5151	4822 157 70293	100μH
5152	4822 157 70293	100μH
5153	4822 156 21399	180μH (choke)
5501	4822 142 40327	Driver trafo.
5502	4822 157 70292	4mH
5503	4822 157 63218	10mH
5504	4822 157 70295	3,8μH
5602	4822 142 40327	Driver trafo.
5604	4822 140 10449	L.O.T.
5605	4822 157 53189	5μH
5606	4822 157 70294	1,7mH
5608	4822 526 10522	0,7μH
5610	4822 157 63212	DAF Trafo.
6101	4822 130 80572	RGP30J
6102	4822 130 80572	RGP30J
6103	4822 130 80572	RGP30J
6104	4822 130 80572	RGP30J
6106	4822 130 31393	RGP10J
6108	5322 130 31971	RGP15D
6109	4822 130 30621	1N4148
6110	4822 130 30862	BZX79-C9V1
6111	4822 130 31607	RGP10D
6112	5322 130 31971	RGP15D
6113	4822 130 31393	RGP10J
6150	5322 130 31969	RGP15M
6151	5322 130 33885	RGP15J
6152	4822 130 41486	BYV95B
6153	4822 130 41486	BYV95B
6154	5322 130 31971	RGP15D
6155	4822 130 31024	BZX79-F18
6157	4822 130 34233	BZX79-C5V1
6158	4822 130 30621	1N4148
6159	4822 130 30621	1N4148
6160	4822 130 30621	1N4148
6161	4822 130 41486	BYV95B
6162	5322 130 31971	RGP15D
6401	4822 130 31878	1N4003
6402	4822 130 30621	1N4148
6403	4822 130 80446	BAS32L
6404	4822 130 80446	BAS32L
6406	4822 130 34197	BZX79-C12
6407	4822 130 80446	BAS32L
6408	4822 130 34441	BZX79-C22
6480	4822 130 31393	RGP10J
6481	4822 130 31393	RGP10J
6501	4822 130 31024	BZX79-B18
6502	4822 130 80446	BAS32L
6503	4822 130 80446	BAS32L
6504	4822 130 80446	BAS32L
6505	4822 130 80446	BAS32L
6506	4822 130 80446	BAS32L
6508	4822 130 42489	RGP10G
6509	4822 130 82584	MUR10150E
6510	4822 130 80445	UF5404
6511	4822 130 41486	BYV95B
6512	4822 130 42489	RGP10G
6514	4822 130 30621	1N4148
6515	4822 130 80446	BAS32L
6517	4822 130 31878	1N4003
6518	4822 130 80446	BAS32L
6519	4822 130 80446	BAS32L
6520	4822 130 80446	BAS32L
6521	4822 130 34167	BZX79-F6V2
6522	4822 130 80446	BAS32L
6601	4822 130 80446	BAS32L
6603	4822 130 80446	BAS32L
6606	4822 130 80446	BAS32L
6607	4822 130 80445	UF5404

6608	4822 130 41486	BYV95B
6610	4822 130 31393	RGP10J
6611	4822 130 42489	RGP10G
6612	4822 130 80446	BAS32L
6615	4822 130 42489	RGP10G
6618	5322 130 32042	BYW96E
6619	4822 130 31878	1N4003
6621	4822 130 32148	RGP10M
6622	4822 130 32148	RGP10M
6623	4822 130 31393	RGP10J
6624	4822 130 31607	RGP10D
7101	5322 130 42047	BUW13A
7102	4822 130 40995	BD434
7103	4822 130 44503	BC547C
7104	4822 130 41087	BC638
7105	4822 130 80908	CNX62A
7106	4822 130 40995	BD434
7125	4822 209 81726	ICL7812CV
7151	4822 209 81397	TL431CLP
7152	4822 130 44104	BC328
7153	5322 130 24081	BT151-500R
7401	5322 130 42756	BC857C
7402	5322 130 42756	BC857C
7403	5322 130 42755	BC847C
7404	4822 130 62702	BDT62C
7405	4822 130 41594	PH2369
7406	5322 130 42755	BC847C
7407	5322 130 42755	BC847C
7409	5322 130 42755	BC847C
7410	5322 130 42755	BC847C
7411	5322 130 42755	BC847C
7412	5322 130 42755	BC847C
7413	4822 130 41646	BF423
7417	5322 130 42755	BC847C
7418	4822 130 44503	BC547C
7425	4822 209 63848	TDA4800/V1
7426	4822 209 31125	TEA2031A
7460	5322 130 42755	BC847C
7461	5322 130 42755	BC847C
7480	5322 130 42755	BC847C
7481	5322 130 44918	BUX87
7502	4822 130 44503	BC547C
7503	4822 130 44503	BC547C
7505	5322 130 42756	BC857C
7506	5322 130 42755	BC847C
7509	4822 130 60832	BF857
7510	4822 130 62701	LJH16212
7511	4822 130 62702	BDT62C
7512	4822 130 62702	BDT62C
7513	4822 130 41782	BF422
7514	4822 130 41782	BF422
7515	5322 130 42755	BC847C
7516	5322 130 42756	BC857C
7517	4822 130 44503	BC547C
7518	4822 130 44503	BC547C
7519	4822 130 42241	BU406
7520	4822 209 63299	TDA2595/V7
7521	4822 209 10866	HEF4528BP
7522	4822 209 63995	TDA8444/N2
7523	5322 209 86234	NE5532N
7524	4822 209 80635	LM2903N
7525	4822 130 62702	BDT62C
7526	4822 130 41782	BF422
7602	5322 130 42755	BC847C
7603	5322 130 42755	BC847C
7604	4822 130 44503	BC547C

Spare parts lists

Main panel

7605	4822 130 44503	BC547C
7606	4822 130 42241	BU406
7607	4822 130 41782	BF422
7608	4822 130 42679	BUT11AF
7609	5322 130 42755	BC847C
7610	5322 130 42756	BC857C
7611	4822 130 41053	BC639
7660	4822 209 63807	NE5517N
7661	4822 209 80587	LM324N

Input + Terminal panel

Various		
1103	4822 212 23994	Input + terminal panel
	4822 265 30889	3P (M222)
	4822 267 41002	Mini pin socket
	4822 277 21595	Slide switch (item 1207)
	4822 267 51145	Socket 15P "D" Shell (item F251)

2207	4822 124 80106	47 μ F 20% 16V
2208	4822 124 80106	47 μ F 20% 16V
2209	4822 124 80106	47 μ F 20% 16V
2210	4822 122 32442	10nF 50V
2211	4822 124 80106	47 μ F 20% 16V
2212	4822 124 80106	47 μ F 20% 16V
2213	4822 124 80106	47 μ F 20% 16V
2214	4822 124 80106	47 μ F 20% 16V
2216	4822 122 32442	10nF 50V
2217	4822 122 33496	100nF 10% 63V

2218	4822 122 32442	10nF 50V
2219	4822 122 33496	100nF 10% 63V
2220	4822 124 80106	47 μ F 20% 16V
2221	4822 122 33496	100nF 10% 63V
2222	4822 122 33496	100nF 10% 63V

2223	4822 122 33496	100nF 10% 63V
2224	4822 122 33496	100nF 10% 63V
2225	4822 122 33496	100nF 10% 63V
2226	4822 122 33496	100nF 10% 63V
2227	4822 124 80106	47 μ F 20% 16V

2228	4822 122 32442	10nF 50V
2229	4822 122 32442	10nF 50V
2231	4822 122 31767	150pF 2% 63V
2232	4822 122 31767	150pF 2% 63V
2233	4822 122 31767	150pF 2% 63V
2234	4822 122 31767	150pF 2% 63V

3222	4822 050 27509	75 Ω 1% 0,6W
3223	4822 050 27509	75 Ω 1% 0,6W
3224	4822 050 27509	75 Ω 1% 0,6W
3225	4822 051 10822	8k2 2% 0,25W
3226	4822 051 10822	8k2 2% 0,25W
3227	4822 051 10822	8k2 2% 0,25W
3228	4822 051 10822	8k2 2% 0,25W
3229	4822 051 10822	8k2 2% 0,25W
3230	4822 051 10822	8k2 2% 0,25W
3231	4822 051 10472	4k7 2% 0,25W
3232	4822 051 10472	4k7 2% 0,25W
3233	4822 051 10472	4k7 2% 0,25W
3234	4822 051 10472	4k7 2% 0,25W
3235	4822 051 10472	4k7 2% 0,25W
3236	4822 051 10472	4k7 2% 0,25W

3237	4822 051 10223	22k 2% 0,25W
3238	4822 051 10223	22k 2% 0,25W
3239	4822 051 10223	22k 2% 0,25W
3240	4822 051 10223	22k 2% 0,25W
3241	4822 051 10332	3k3 2% 0,25W

3242	4822 051 10332	3k3 2% 0,25W
3243	4822 050 27509	75 Ω 1% 0,6W
3244	4822 050 27509	75 Ω 1% 0,6W
3245	4822 050 27509	75 Ω 1% 0,6W
3261	4822 051 10101	100 Ω 2% 0,25W

3262	4822 051 10101	100 Ω 2% 0,25W
3263	4822 051 10101	100 Ω 2% 0,25W
3264	4822 051 10101	100 Ω 2% 0,25W
3265	4822 051 10101	100 Ω 2% 0,25W
3266	4822 051 10101	100 Ω 2% 0,25W

3267	4822 050 21003	10k 1% 0,6W
3268	4822 050 21003	10k 1% 0,6W
3269	4822 050 21003	10k 1% 0,6W
3270	4822 050 21003	10k 1% 0,6W

3271	4822 051 10101	100 Ω 2% 0,25W
3272	4822 051 10101	100 Ω 2% 0,25W
3273	4822 051 10101	100 Ω 2% 0,25W
3274	4822 051 10101	100 Ω 2% 0,25W
3277	4822 051 10473	47k 2% 0,25W

3279	4822 051 10474	470k 2% 0,25W
3280	4822 051 10391	390 Ω 2% 0,25W
3281	4822 051 20183	18k 5% 0,1W
3283	4822 051 20222	2k2 5% 0,1W
3284	4822 051 10223	22k 2% 0,25W

3285	4822 051 10104	100k 2% 0,25W
3286	4822 051 10102	1k 2% 0,25W
3290	5322 116 51882	0 Ω
3291	5322 116 51882	0 Ω
3292	5322 116 51882	0 Ω

3293	5322 116 51882	0 Ω
3294	5322 116 51882	0 Ω
3295	5322 116 51882	0 Ω

5201	4822 157 63863	3,9 μ H 10%
5202	4822 157 63863	3,9 μ H 10%
5203	4822 157 63863	3,9 μ H 10%
5204	4822 157 63863	3,9 μ H 10%
5205	4822 526 10522	BEAD 0,7 μ H

6202	4822 130 80446	BAS32L
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7201	4822 130 41594	PH2369
7202	4822 130 41594	PH2369
7203	4822 130 41594	PH2369
7204	4822 130 41594	PH2369
7205	4822 130 41594	PH2369

7206	4822 130 41594	PH2369
7207	4822 130 44503	BC547C
7208	4822 130 44503	BC547C
7209	4822 130 44503	BC547C
7210	4822 130 44503	BC547C

7211	4822 130 44196	BC548C
7212	4822 130 41594	PH2369
7213	4822 130 41594	PH2369

Spare parts lists

Video panel

- 1104 4822 212 30365 Video panel
- ▲ 4822 267 51188 CRT Socket (F709)
- 4822 265 20562 2P (M704)
- 4822 265 30895 2P (M705)
- 4822 265 10274 Mini pin jack (3x)

- 4822 265 20619 Wafer 11P (M707)
- 5322 390 20011 Silicon grease

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- 2701 4822 124 42171 22μF 25V
- 2702 4822 124 42171 22μF 25V
- 2703 4822 124 42171 22μF 25V
- 2704 4822 122 33496 100nF 10% 63V
- 2705 4822 122 33496 100nF 10% 63V

- 2706 4822 122 33496 100nF 10% 63V
- 2707 4822 122 33496 100nF 10% 63V
- 2708 4822 122 33496 100nF 10% 63V
- 2709 4822 122 33496 100nF 10% 63V
- 2713 4822 122 33496 100nF 10% 63V

- 2714 4822 122 33496 100nF 10% 63V
- 2715 4822 122 33496 100nF 10% 63V
- 2716 4822 124 80131 1000μF 20% 25V
- 2717 4822 124 80131 1000μF 20% 25V
- 2718 4822 124 80131 1000μF 20% 25V

- 2719 4822 122 33496 100nF 10% 63V
- 2720 4822 122 33496 100nF 10% 63V
- 2721 4822 122 33496 100nF 10% 63V
- 2722 4822 122 33496 100nF 10% 63V
- 2723 4822 122 33496 100nF 10% 63V

- 2724 4822 122 33496 100nF 10% 63V
- 2725 4822 122 33496 100nF 10% 63V
- 2726 4822 122 33496 100nF 10% 63V
- 2727 4822 122 33496 100nF 10% 63V
- 2728 4822 122 33496 100nF 10% 63V

- 2729 4822 122 33496 100nF 10% 63V
- 2730 4822 122 33496 100nF 10% 63V
- 2731 4822 122 31644 2,2nF 10% 63V
- 2732 4822 122 31644 2,2nF 10% 63V
- 2733 4822 122 31644 2,2nF 10% 63V

- 2734 4822 122 33496 100nF 10% 63V
- 2735 4822 122 33496 100nF 10% 63V
- 2736 4822 122 33496 100nF 10% 63V
- 2738 4822 122 31765 100pF 2% 63V
- 2740 4822 122 31765 100pF 2% 63V

- 2742 4822 122 31765 100pF 2% 63V
- 2744 4822 121 70096 1μF 160V
- 2745 4822 121 70096 1μF 160V
- 2746 4822 121 70096 1μF 160V
- 2747 4822 124 80105 22μF 20% 100V

- 2748 4822 124 80105 22μF 20% 100V
- 2749 4822 124 80105 22μF 20% 100V
- 2750 4822 122 32707 3,3nF 10%B 500V
- 2751 4822 122 33968 1nF 5% 500V
- 2752 4822 126 12098 10nF 10% 2KV

- 2753 4822 124 80105 22μF 20% 100V
- 2754 4822 124 80107 10μF 20% 250V
- 2755 4822 124 80104 10μF 20% 16V
- 2756 4822 122 32442 10nF 50V
- 2757 4822 124 80104 10μF 20% 16V

- 2763 4822 122 33496 100nF 10% 63V
- 2764 4822 252 60127 Spark gap
- 2765 4822 252 60127 Spark gap
- 2766 4822 252 60127 Spark gap
- 2767 4822 122 32442 10nF 50V

- 2768 4822 122 32442 10nF 50V
- 2769 4822 122 32442 10nF 50V
- 2770 4822 122 32707 3,3nF 10% 500V
- 2771 4822 122 33968 1nF 5% 500V
- 2772 4822 122 32442 10nF 50V

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- 2773 4822 122 32442 10nF 50V
- 2774 4822 122 32442 10nF 50V
- 2775 4822 122 32442 10nF 50V
- 2776 4822 122 32442 10nF 50V
- 2778 4822 122 32442 10nF 50V

- 2779 4822 122 32442 10nF 50V
- 2780 4822 122 32442 10nF 50V
- 2781 4822 122 31766 120pF 2% 63V
- 2782 4822 122 31766 120pF 2% 63V

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- 3701 4822 051 10759 75Ω 2% 0,25W
- 3702 4822 051 10759 75Ω 2% 0,25W
- 3703 4822 051 10759 75Ω 2% 0,25W
- 3704 4822 051 10103 10k 2% 0,25W
- 3705 4822 051 10103 10k 2% 0,25W

- 3706 4822 051 10103 10k 2% 0,25W
- 3707 4822 051 10221 220Ω 2% 0,25W
- 3708 4822 051 10221 220Ω 2% 0,25W
- 3709 4822 051 10221 220Ω 2% 0,25W
- 3710 4822 051 10399 39Ω 2% 0,25W

- 3711 4822 051 10399 39Ω 2% 0,25W
- 3712 4822 051 10399 39Ω 2% 0,25W
- 3713 4822 051 10682 6k8 2% 0,25W
- 3714 4822 051 10331 330Ω 2% 0,25W
- 3715 4822 051 10331 330Ω 2% 0,25W

- 3716 4822 051 10331 330Ω 2% 0,25W
- 3717 4822 051 10479 47Ω 2% 0,25W
- 3718 4822 051 10479 47Ω 2% 0,25W
- 3719 4822 051 10479 47Ω 2% 0,25W
- 3720 4822 051 10103 10k 2% 0,25W

- 3721 4822 051 10103 10k 2% 0,25W
- 3722 4822 051 10103 10k 2% 0,25W
- 3723 4822 051 10182 1k8 2% 0,25W
- 3724 4822 051 10182 1k8 2% 0,25W
- 3725 4822 051 10182 1k8 2% 0,25W

- 3726 4822 051 10271 270Ω 2% 0,25W
- 3727 4822 051 10271 270Ω 2% 0,25W
- 3728 4822 051 10271 270Ω 2% 0,25W
- 3729 4822 051 10229 22Ω 2% 0,25W
- 3730 4822 051 10229 22Ω 2% 0,25W

- 3731 4822 051 10229 22Ω 2% 0,25W
- 3732 4822 051 10223 22k 2% 0,25W
- 3733 4822 051 10331 330Ω 2% 0,25W
- 3735 4822 051 10331 330Ω 2% 0,25W
- 3736 4822 051 10331 330Ω 2% 0,25W

- 3737 4822 051 10109 10Ω 2% 0,25W
- 3738 4822 051 10109 10Ω 2% 0,25W
- 3739 4822 051 10109 10Ω 2% 0,25W
- 3740 4822 051 10109 10Ω 2% 0,25W
- 3741 4822 051 10109 10Ω 2% 0,25W

- 3742 4822 051 10109 10Ω 2% 0,25W
- 3743 4822 050 28209 82Ω 1% 0,6W
- 3744 4822 050 28209 82Ω 1% 0,6W
- 3746 4822 050 28209 82Ω 1% 0,6W
- 3747 4822 050 28209 82Ω 1% 0,6W

- 3749 4822 050 28209 82Ω 1% 0,6W
- 3750 4822 050 28209 82Ω 1% 0,6W
- 3752 4822 051 10272 2k7 2% 0,25W
- 3753 4822 051 10272 2k7 2% 0,25W
- 3754 4822 051 10272 2k7 2% 0,25W

- 3755 4822 116 83633 15k 5%
- 3756 4822 051 10681 680Ω 2% 0,25W
- 3757 4822 116 83633 15k 5%
- 3758 4822 051 10681 680Ω 2% 0,25W
- 3759 4822 116 83633 15k 5%

- 3760 4822 051 10681 680Ω 2% 0,25W
- 3765 4822 100 11319 4k7 Trim.pot
- 3766 4822 051 10562 5k6 2% 0,25W
- 3767 4822 050 23303 33k 1% 0,6W
- 3768 4822 051 10008 0Ω 5% 0,25W

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- 3769 4822 050 23303 33k 1% 0,6W
- 3770 4822 051 10008 0Ω 5% 0,25W
- 3771 4822 050 23303 33k 1% 0,6W
- 3772 4822 051 10008 0Ω 5% 0,25W
- 3773 4822 051 10105 1M 5% 0,25W

- 3774 4822 051 10105 1M 5% 0,25W
- 3775 4822 051 10105 1M 5% 0,25W
- 3776 4822 050 24709 47Ω 1% 0,6W
- 3777 4822 050 24709 47Ω 1% 0,6W
- 3778 4822 050 24709 47Ω 1% 0,6W

- 3779 4822 116 80547 1k 5 5% 0,5W
- 3780 4822 116 80548 15k 5% 0,5W
- 3781 4822 100 11212 2k2 30% pot.m.
- 3782 4822 100 11212 2k2 30% pot.m.
- 3783 4822 100 11212 2k2 30% pot.m.

- 3784 4822 050 11002 1k 1% 0,4W
- 3785 4822 050 11002 1k 1% 0,4W
- 3786 4822 051 10102 1k 2% 0,25W
- 3787 4822 051 10682 6k8 2% 0,25W
- 3788 4822 051 10682 6k8 2% 0,25W

- 3789 4822 051 10682 6k8 2% 0,25W
- 3791 4822 100 11212 2k2 30% pot.m.
- 3792 4822 100 11212 2k2 30% pot.m.
- 3793 4822 051 10152 1k5 2% 0,25W
- 3794 4822 050 13902 3k9 1% 0,4W

- 3795 4822 050 13902 3k9 1% 0,4W
- 3796 4822 051 10392 3k9 2% 0,25W
- 3797 4822 050 26801 680Ω 1% 0,6W
- 3798 4822 051 10229 22Ω 2% 0,25W
- 3802 4822 051 10151 150Ω 2% 0,25W

- 3804 4822 051 10391 390Ω 2% 0,25W
- 3806 4822 051 10151 150Ω 2% 0,25W
- 3811 4822 116 90834 180Ω 5%
- 3812 4822 116 90833 150Ω 5%
- 3813 4822 116 90834 180Ω 5%

- 3821 4822 116 90834 180Ω 5%
- 3822 4822 116 90833 150Ω 5%
- 3823 4822 116 90834 180Ω 5%
- 3831 4822 116 90834 180Ω 5%
- 3832 4822 116 90833 150Ω 5%

- 3833 4822 116 90834 180Ω 5%
- 3834 4822 051 20222 2k2 5% 0,1W
- 3835 4822 051 10102 1k 2% 0,25W
- 3836 4822 051 10102 1k 2% 0,25W
- 3837 4822 051 10102 1k 2% 0,25W

- 3838 4822 050 22202 2k2 1% 0,6W
- 3841 4822 051 10331 330Ω 2% 0,25W
- 3842 4822 050 23301 330Ω 1% 0,6W
- 3843 4822 051 10331 330Ω 2% 0,25W
- 3844 5322 116 51882 0Ω

- 3845 5322 116 51882 0Ω
- 3847 5322 116 51882 0Ω
- 3850 5322 116 51882 0Ω
- 3851 5322 116 51882 0Ω
- 3853 5322 116 51882 0Ω

- 3855 5322 116 51882 0Ω
- 3858 5322 116 51882 0Ω
- 3860 5322 116 51882 0Ω
- 3862 5322 116 51882 0Ω

Spare parts lists

Video panel

5704 4822 157 63863 3,9μH 10%
 5705 4822 157 63863 3,9μH 10%
 5706 4822 157 63863 3,9μH 10%
 5707 4822 158 30247 T-Coil 10%
 5708 4822 158 30247 T-Coil 10%

5709 4822 158 30247 T-Coil 10%
 5710 4822 157 63863 3,9μH 10%
 5711 4822 157 63863 3,9μH 10%
 5712 4822 157 63863 3,9μH 10%
 5713 4822 152 20587 7,5μH

5717 4822 157 63863 3,9μH 10%

6705 4822 130 3084 2BAV21
 6706 4822 130 3198 1BZX79-C3V9
 6711 4822 130 3084 2BAV21
 6712 4822 130 3084 2BAV21
 6713 4822 130 3084 2BAV21

6714 4822 130 3084 2BAV21
 6715 4822 130 3084 2BAV21
 6716 4822 130 3084 2BAV21
 6717 4822 130 8044 6BAS32L
 6718 4822 130 8044 6BAS32L

6720 4822 130 4248 9BYD33G

7701 4822 130 62279 2SC3953E
 7702 4822 130 62278 2SC3950E
 7703 4822 130 62279 2SC3953E
 7704 4822 130 62278 2SC3950E
 7705 4822 130 62279 2SC3953E

7706 4822 130 62278 2SC3950E
 7711 4822 130 41646 BF423
 7712 4822 130 41782 BF422
 7713 4822 130 41646 BF423
 7714 4822 130 41782 BF422

7715 4822 130 41646 BF423
 7716 4822 130 41782 BF422
 7720 5322 130 42136 BC848C
 7721 4822 130 41594 PH2369
 7722 4822 130 41594 PH2369

7723 4822 130 41594 PH2369
 7724 5322 130 42136 BC848C
 7731 4822 209 63873 LM1201N
 7732 4822 209 63873 LM1201N
 7733 4822 209 63873 LM1201N

Digital panel

Various

1105 4822 212 30366 Digital panel (complete)
 4822 265 41207 16P (M201)
 4822 265 30889 3P (M301)
 4822 265 30886 4P (M402,M204)
 4822 265 30887 5P (M202)

4822 265 30888 6P (M302)
 4822 265 31058 4p (M404)
 4822 265 41206 8P (M401)
 5322 255 44217 40P IC Socket for IC7306
 4822 267 51147 8P IC Socket for IC7308

4822 265 20563 2P jumper male M206, M208
 4822 267 31474 2P jumper female M206, M208
 4822 265 20616 1p (M672)
 4822 265 20561 2p (M720)
 4822 265 20615 2p

5322 390 20011 Silicon grease
 1212 4822 242 81162 Crystal (15MHz)

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2301 4822 122 32442 10nF 50V
 2302 4822 122 31765 100pF 2% 63V
 2303 4822 122 31765 100pF 2% 63V
 2304 4822 122 31765 100pF 2% 63V
 2305 4822 122 31765 100pF 2% 63V

2306 4822 122 32442 10nF 50V
 2307 4822 124 22686 10μF 16V
 2308 4822 122 33496 100nF 10% 63V
 2309 4822 122 33496 100nF 10% 63V
 2310 4822 124 22686 10μF 16V

2311 4822 122 31765 100pF 2% 63V
 2313 4822 122 32442 10nF 50V
 2314 4822 122 32442 10nF 50V
 2315 4822 124 22681 47μF 20% 16V
 2316 4822 122 32442 10nF 50V

2317 4822 122 32482 22pF 2% 63V
 2318 4822 122 32482 22pF 2% 63V
 2319 4822 122 32442 10nF 50V
 2320 4822 122 32442 10nF 50V
 2321 4822 122 32442 10nF 50V

2322 4822 122 31772 47pF 2% 63V
 2324 4822 124 22681 47μF 20% 16V
 2325 4822 124 80132 47μF 20% 25V
 2326 4822 124 22678 100μF 20% 16V
 2327 4822 122 32442 10nF 50V

2328 4822 122 32442 10nF 50V
 2330 4822 124 22686 10μF 16V
 2331 5322 124 41817 220μF 16V
 2332 4822 124 22669 1μF 20% 50V
 2333 4822 122 33496 100nF 10% 63V

2334 4822 122 33496 100nF 10% 63V
 2335 4822 122 33496 100nF 10% 63V
 2336 4822 122 33496 100nF 10% 63V
 2337 4822 122 33496 100nF 10% 63V
 2390 4822 122 32442 10nF 50V

2395 4822 122 33496 100nF 10% 63V
 2396 4822 122 33496 100nF 10% 63V

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3301 4822 051 20222 2k2 5% 0,1W
 3302 4822 051 20222 2k2 5% 0,1W
 3303 4822 051 10152 1k5 2% 0,25W
 3304 4822 116 83962 68Ω 5% 3W
 3305 4822 050 21502 1k5 1% 0,6W

3306 4822 051 20222 2k2 5% 0,1W
 3307 4822 051 20222 2k2 5% 0,1W
 3308 4822 050 22202 2k2 1% 0,6W
 3309 4822 051 20222 2k2 5% 0,1W

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3310 4822 051 10332 3k3 2% 0,25W
 3311 4822 051 10223 22k 2% 0,25W
 3312 4822 051 10474 470k 2% 0,25W
 3313 4822 100 11319 4k7 Trim.
 3314 4822 051 10563 56k 2% 0,25W

3315 4822 051 10102 1k 2% 0,25W
 3316 4822 051 10153 15k 2% 0,25W
 3317 4822 051 10103 10k 2% 0,25W
 3318 4822 051 10392 3k9 2% 0,25W
 3319 4822 051 10122 1k2 2% 0,25W

3320 4822 050 23302 3k3 1% 0,6W
 3321 4822 051 20222 2k2 5% 0,1W
 3322 4822 051 10182 1k8 2% 0,25W
 3323 4822 051 20222 2k2 5% 0,1W
 3324 4822 051 20222 2k2 5% 0,1W

3325 4822 051 10101 100Ω 2% 0,25W
 3326 4822 051 10101 100Ω 2% 0,25W
 3327 4822 050 21001 100Ω 1% 0,6W
 3328 4822 051 10103 10k 2% 0,25W
 3329 4822 051 10103 10k 2% 0,25W

3330 4822 051 20222 2k2 5% 0,1W
 3331 4822 051 20222 2k2 5% 0,1W
 3332 4822 051 10471 470Ω 2% 0,25W
 3333 4822 051 10512 5k1 2% 0,25W
 3334 4822 051 10109 10Ω 2% 0,25W

3335 4822 051 10472 4k7 2% 0,25W
 3336 4822 051 10101 100Ω 2% 0,25W
 3337 4822 051 10101 100Ω 2% 0,25W
 3338 4822 051 10101 100Ω 2% 0,25W
 3339 4822 051 10101 100Ω 2% 0,25W

3340 4822 051 10103 10k 2% 0,25W
 3341 4822 051 10103 10k 2% 0,25W
 3342 4822 051 10103 10k 2% 0,25W
 3346 4822 050 21003 10k 1% 0,6W
 3350 4822 050 21001 100Ω 1% 0,6W

3351 4822 051 10101 100Ω 2% 0,25W
 3352 4822 051 10472 4k7 2% 0,25W
 3354 4822 051 10224 220k 2% 0,25W
 3355 4822 051 10224 220k 2% 0,25W
 3356 4822 051 10224 220k 2% 0,25W

3357 4822 051 10103 10k 2% 0,25W
 3358 4822 051 10103 10k 2% 0,25W
 3359 4822 051 10103 10k 2% 0,25W
 3360 4822 051 10103 10k 2% 0,25W
 3361 4822 100 20166 10k 30% 0,1W pot.m.

3362 4822 100 20166 10k 30% 0,1W pot.m.
 3363 4822 051 10103 10k 2% 0,25W
 3364 4822 051 10563 56k 2% 0,25W
 3365 4822 051 10103 10k 2% 0,25W
 3366 4822 051 10221 220Ω 2% 0,25W

3367 4822 051 10103 10k 2% 0,25W
 3368 4822 051 10103 10k 2% 0,25W
 3369 4822 051 10243 24k 2% 0,25W
 3370 4822 051 10243 24k 2% 0,25W
 3371 4822 051 10683 68k 2% 0,25W

3372 4822 051 10103 10k 2% 0,25W
 3373 4822 051 10101 100Ω 2% 0,25W
 3374 4822 051 10102 1k 2% 0,25W
 3375 4822 051 10104 100k 2% 0,25W
 3376 4822 051 10203 20k 2% 0,25W

3377 4822 116 52234 100k 5% 0,5W
 3378 4822 117 10164 18M 0,25W
 3379 4822 117 10164 18M 0,25W
 3380 4822 050 22202 2k2 1% 0,6W
 3381 4822 050 21505 1M5 1% 0,6W

3382 4822 101 90239 90M 4kV pot.m.
 3390 4822 051 10273 27k 2% 0,25W
 3391 4822 051 20222 2k2 5% 0,1W
 3392 4822 051 10152 1k5 2% 0,25W
 3393 4822 050 23302 3k3 1% 0,6W

Spare parts lists

4CM6088/..T

10.7

Digital panel



3394	4822 051 10273	27k 2% 0,25W
3395	4822 051 10562	5k6 2% 0,25W
3396	4822 051 10472	4k7 2% 0,25W
3397	4822 051 10101	100Ω 2% 0,25W
3398	4822 051 10101	100Ω 2% 0,25W



5301	4822 157 63863	3,9μH 10%
5302	4822 157 63863	3,9μH 10%
5303	4822 157 63863	3,9μH 10%
5304	4822 157 63863	3,9μH 10%



6301	4822 130 80446	BAS32L
6302	4822 130 80446	BAS32L
6303	4822 130 80446	BAS32L
6304	4822 130 80446	BAS32L
6305	4822 130 80446	BAS32L

6306	4822 130 80446	BAS32L
6307	4822 130 80446	BAS32L
6310	4822 130 80446	BAS32L
6311	4822 130 80446	BAS32L
6312	4822 130 80446	BAS32L

6313	4822 130 80446	BAS32L
6314	4822 130 34233	BZX79-C5V1



7301	4822 130 41594	PH2369
7302	4822 130 44503	BC547C
7303	4822 209 10223	HEF4077BP
7304	4822 130 41594	PH2369
7305	4822 130 44503	BC547C
7306	4822 209 31992	SC87C51CGN40 WITH PROGRAM + Item 7308 (X24C04P WITH PROGRAM)
7307	4822 130 41594	PH2369
7308	See Item 7306	
7309	5322 130 42756	BC857C
7310	4822 209 80981	MC7805CT
7311	4822 209 63995	TDA8444/N2
7312	4822 209 80587	LM324N
7313	4822 209 80587	LM324N
7314	4822 130 42679	BUT11AF
7315	5322 209 85913	MC7912CT
7390	5322 130 42755	BC847C
7391	5322 130 42755	BC847C

Emi panel

Various

1106	▲ 4822 212 30367	EMI panel
	4822 265 30891	2P (M101)
	4822 265 20564	2P (M102)



2101	▲ 4822 121 70201	680nF 20% 250V
2121	▲ 4822 122 33535	4,7nF 20% 400V
2122	▲ 4822 122 33535	4,7nF 20% 400V
2124	4822 121 43385	47nF 20% 250V



3136	4822 053 21334	330k 5% 0,5W
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5102	▲ 4822 157 10292	Line filter (14mH)
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Control panel

1107	4822 212 23995	Control panel
1202	4822 276 13249	Switch
1203	4822 276 13249	Switch
1204	4822 276 13249	Switch
1205	4822 276 13249	Switch
1206	4822 276 13249	Switch



3251	4822 051 10332	3k3 2% 0,25W
3252	4822 051 10682	6k8 2% 0,25W
3253	4822 051 10102	1k 2% 0,25W
3254	4822 051 10392	3k9 2% 0,25W
3255	4822 100 20821	10k pot.meter

3256	4822 100 20817	10k pot.meter
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LCD panel

1108	4822 212 23991	LCD panel
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Power indicator panel

1110	4822 130 91094	Power indicator panel
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6170	4822 130 81701	LED LTL3238AS
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