

# Service Service Service

# Service Manual



Horizontal frequencies  
30 to 66 kHz

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Service  
Service  
Service

3202

# Product Survey

Product Survey's 1994-1 (4822 727 20334), 1994-2 (4822 727 20379) and 1994-3 (4822 727 21004) are herewith cancelled.

## SURVEY OF MODEL NUMBERS

MODEL	CHASSIS MANUAL:	PRODUCT FAMILY:	MODEL:	CHASSIS MANUAL:	PRODUCT FAMILY:
2CM5909/64A	2CM5109/74A	CM0200	4CM8290/54I	4CM8290/94I	CM1800
2CM5909/94A	2CM5109/74A	CM0200			
3CM5689/89T	3CM5689/69T	CM0200	4CM8294/74T	CM1800(USA:6581)	CM1800
			4CM8294/97T	CM1800	CM1800
4BM2790/00T	4BM2790/00T	BM0200			
			7CM5209/20T	7CM5209/00T	CM0200
4CM2299/20T	CM5600	CM6000 IV 20"	7CM5209/64I	7CM5209/74I	CM0200
			7CM5279/20T	7CM5209/00T	CM0200
4CM4270/95T	4CM4270/00T	CM0800	7CM5279/45T	7CM5209/00T	CM0200
4CM4279/20T	4CM4270/00T	CM0800	7CM5289/89T	7CM5209/00T	CM0200
4CM4279/25T	4CM4270/00T	CM0800	7CM5289/95T	7CM5209/00T	CM0200
4CM4279/26T	4CM4270/00T	CM0800	7CM5299/95B	7CM5209/00T	CM0200
4CM4280/27T	4CM4270/00T	CM0800	7CM5299/89T	7CM5209/00T	CM0200
4CM4290/27T	4CM4270/00T	CM0800	7CM5689/89T	7CM5209/00T	CM0200
4CM4780/54I	4CM4780/74I	CM0800			
			15C04201/74C	15C04201/74C	CM0200
4CM5209/44I	4CM5209/74I	CM0200	15C0420S/74J	15C04201/74C	CM0200
			15C04204/75C	15C04201/74C	CM0200
4CM5279/00T	CM2000-TRI	CM0200	15C0420S/97C	15C04201/74C	CM0200
4CM5279/05T	CM2000-TRI	CM0200	15C0420V/97C	15C04201/74C	CM0200
4CM5279/06T	CM2000-TRI	CM0200			
4CM5279/75B	CM2000-TRI	CM0200	17B1821W/00C	CM2800	CM2800
4CM5279/75T	CM2000-TRI	CM0200	17B1822N/97C	CM2800	CM2800
4CM5289/69T	CM2000-TRI	CM0200	17B18202/74C	CM2800	CM2800
4CM5289/44I	CM2000-TRI	CM0200	17B1822N/74C	CM2800	CM2800
4CM5299/69T	CM2000-TRI	CM0200			
			21B0725E/74C	CM0700	CM0700
4CM6088/20T	4CM6088/00T	CM2600	21B0725E/97C	CM0700	CM0700
4CM6088/31T	4CM6088/00T	CM2600	21B0725E/75C	CM0700	CM0700
4CM6282/20T	4CM6282/00T	CM3600			
4CM6282/94T	4CM6282/74I	CM3600	17A280BQ/02C	CM3800	CM3800
4CM8203/74I	4CM8203/74I	CM1800			
4CM8274/00T	CM1800	CM1800			
4CM8274/05T	CM1800	CM1800			
4CM8274/06T	CM1800	CM1800			
4CM8274/75T	CM1800	CM1800			



# 1. Technical data

## General

- Mains voltage	: AC 100 - 264 V 15 %
- Mains frequency	: 47 - 63 Hz
- Power consumption	: see table 100 W (max)
- Operating temperature	: 10°C to 40°C
- Weight	: 15 kg
- Dimensions (WxHxD)	: 367x384x395 mm

## Sync. signal

- Sync. level	: TTL level
- Sync. polarity	: positive or negative
- Vertical frequency	: 50 - 110 Hz
- Horizontal frequency	: 30 - 66 kHz

## Picture tube

- Size	: 15 inch
- Light transmission	: 57% (dark glass)
- Deflection angle	: 90 degrees
- EHT voltage	: 24.5 kVolt
- Pitch	: 0.28 mm
- Phosphor	: P22 medium short

## Image geometry

- Total geometrical distortion of the image (pincushion and barrel distance)	: 2.5 mm Max
- Horizontal tilt (rotation)	: ≤ 2 mm Max
- Image non linearity (according IEC 107-73.74)	: 5% Max horizontal 5% Max vertical

## Video

- Dot rate	: 110 mHz
- Video signal	: 0.7 Vpp Linear / 75 Ω
- Image size	: 280x210 mm
- H-Shift range	: to raster edges
- V-Shift range	: 10 mm


## Power Management

Power Management Definition					
VESA DPMS			POWER SAVING STATES		
MODE	VIDEO	H-SYNC	V-SYNC	POWER USED	POWER SAVING (%)
ON	Active	Yes	Yes	85 Watts	0%
Stand-by	Blanked	No	Yes	< 15 Watts	> 82%
Suspend	Blanked	Yes	No	< 15 Watts	> 82%
OFF	Blanked	No	No	< 5 Watts	> 94%

Note: The video will be blanked and the power LED color will change into following colors whenever the monitor goes into power management status.

Green LED light : "Normal" operation  
Yellow LED light : "Stand by" or "Suspend" mode  
Amber LED light : "OFF" mode

This monitor is Energy Star compliant when used with a computer equipped with DPMS.  
PHILIPS is a partner in the EPA's Energy Star Computer Program.

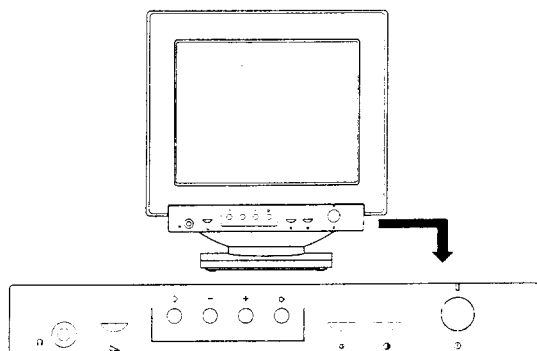


## Resolution modes and sync. polarities

MODE	RESOLUTION	HORIZONTAL	VERTICAL	REMARK	SYNC.	POL.
	(dots x lines)	FREQ. (kHz)	FREQ. (Hz)		H	V
VGA	640x350	31.5	70	Non-interlaced	+	-
VGA	640x400	31.5	70	Non-interlaced	-	+
VGA	640x480	31.5	60	Non-interlaced	-	-
VESA/75	640x480	37.5	75	Non-interlaced	+/-	+/-
MAC	640x480	35.0	67	Non-interlaced	+/-	+/-
VESA/56	800x600	35.2	56	Non-interlaced	+/-	+/-
VESA/60	800x600	37.8	60	Non-interlaced	+/-	+/-
VESA/75	800x600	46.9	75	Non-interlaced	+/-	+/-
VESA/72	800x600	48.0	72	Non-interlaced	+/-	+/-
QUADRA	832x624	49.7	75	Non-interlaced	+/-	+/-
8514/XGA	1024x768	35.5	87	Interlaced	+/-	+/-
VESA/60	1024x768	48.3	60	Non-interlaced	+/-	+/-
VESA/70	1024x768	56.5	70	Non-interlaced	+/-	+/-
VESA/75	1024x768	60.0	75	Non-interlaced	+/-	+/-
/60*	1280x1024	64.0	60	Non-interlaced	+/-	+/-

\* This resolution is applicable.

### Front controls



For an optimized adjustment of the picture following controls are available at the front.

#### ① POWER.

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

#### ② CONTR.

- Used to adjust contrast.

#### ☀ BRIGHT.

- Used to adjust brightness.

#### ➡ SAVE

- Used to save the result of the adjustment.

#### "+" or "-"

- Press "+" or "-" to select or adjust function.

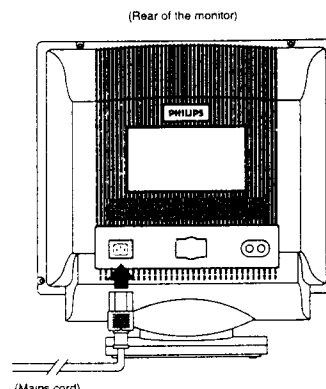
#### ◇ FUNCTION

- Press this knob to display the manual.

#### ▶ VOLUME (For 4CM8204/4CM8274/4CM8284/4CM8294)

- Used to adjust audio volume.

### Connection to the mains



#### Connecting to the mains

This monitor is set to operate at a mains supply of 100-240 volts AC (for 4CM8283/4CM8293/4CM8284/4CM8294); 220-240 volts AC (for 4CM8203/4CM8273/4CM8204/4CM8274). If the mains voltage in your home is not between 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

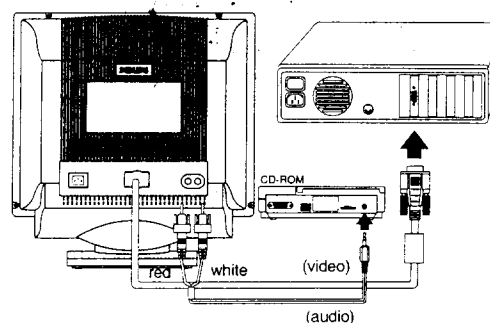
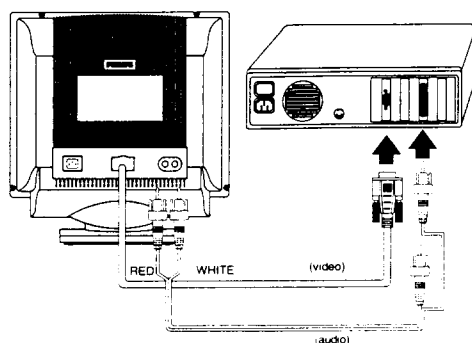
**WARNING:** Please be sure the AC power to your computer is "OFF" before connecting or disconnecting any display peripheral. Failure to do so may cause serious personal injury as well as permanent damage to your computer equipments.

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

- Connect the fixed 15-pin D-sub connector of the video signal cable to the computer at the video connector on the video card, and fix it firmly with the screws on the plug.

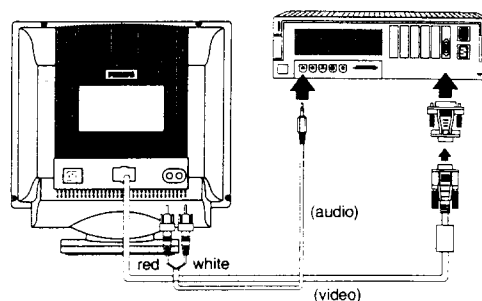
(For model 4CM8204/4CM8274/4CM8284/4CM8294:)

- Connect the audio cable to the input of audio connector, which located at the rear of monitor according to the following:
  - The red audio plug should be connected to the red audiophone connector.
  - The white audio plug should be connected to the white audiophone connector.
- Connect the other end of audio cable to the audio connector of media card at the rear of computer or CD-ROM according to the preceding description.

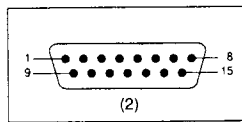
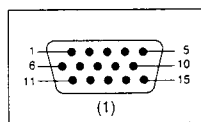


#### 2. Apple Macintosh series:

- Connect the 15-pin D-sub adapter to the signal cable and secured by screws.
- Connect the 15-pin D-sub adapter to the computer.
- Fix both screws of connector firmly.
- (For model 4CM8204/4CM8274/4CM8284/4CM8294:)
- Connect one end of audio cable (plug with RCA type) to the audio connectors at the rear of monitor according to the preceding description.
- Connect the other end of audio cable (mini type of earphone plug) to the audio connector at the rear of computer.



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



(1) The 15-pin D-sub connector (male) of the signal cable (IBM systems):

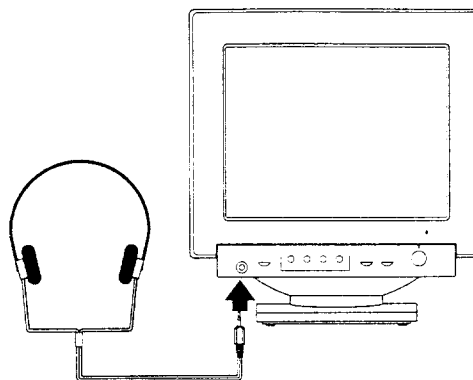
Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	No pin
2	Green video input	10	Logic ground
3	Blue video input	11	Identical output - connected to pin 10
4	Identical output - Connected to pin 10	12	No pin
5	Ground	13	H. Sync / H+V
6	Red video ground	14	V. Sync
7	Green video ground	15	No pin
8	Blue video ground		

(2) The 15-pin D-sub connector (male) of the adapter (Apple Macintosh systems):

Pin No.	Assignment	Pin No.	Assignment
1	Red ground	9	Blue video
2	Red video	10	Sense 2
3	Composite Sync, H+V	11	Composite Sync & V. Sync ground
4	Sense 0	12	V. Sync
5	Green video	13	Blue video ground
6	Green ground	14	H. Sync ground
7	Sense 1	15	H. Sync
8	Not connected		

## 3. Earphone Connection :

- Connect your earphone plug (must be minitype) to the earphone connector at the front panel of the monitor. (For model 4CM8204/4CM8274/4CM8284/4CM8294)



\* Because of a policy of continuous product improvement, the above specifications are subject to change without notice.

## 4. Mechanical instructions

### Location of the Panels (see Fig. 4.1)

1. Deflection + Supply panel
2. Video panel

### General

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

### Video panel

- Remove the rear cover (4 screws), see Fig 4.2.
- Remove the metal shielding by desolder 9 lags.

### Main panel

- Remove the pedestal (click construction).
- Remove the rear cover (4 screws).
- Remove the video panel from CRT.
- Disconnect the desired cable trees.
- Slide the main panel out of bottom plate, first release plastic clamp, see Fig. 4.1.
- Place Main panel in service position as shown in Fig. 4.3.

### Remark:

3 extension cables are required for the service position of the Main panel.

- 4822 321 61698 2p to 2p cable to degaussing coil.
- 4822 321 61699 2p to 2p extension cable to speaker.

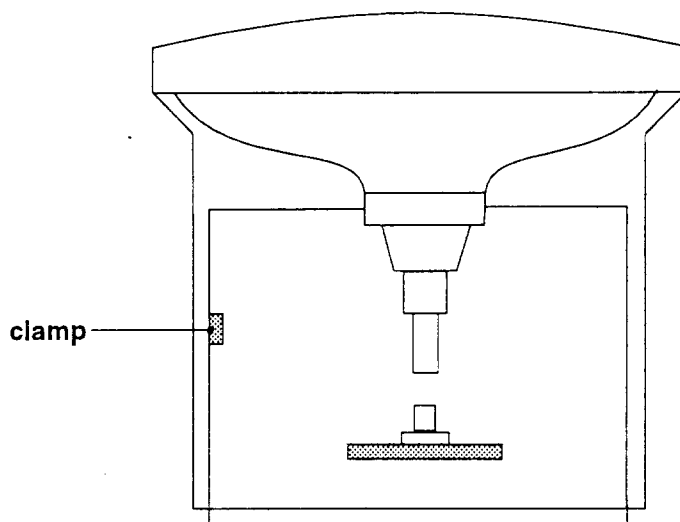


Fig. 4.1

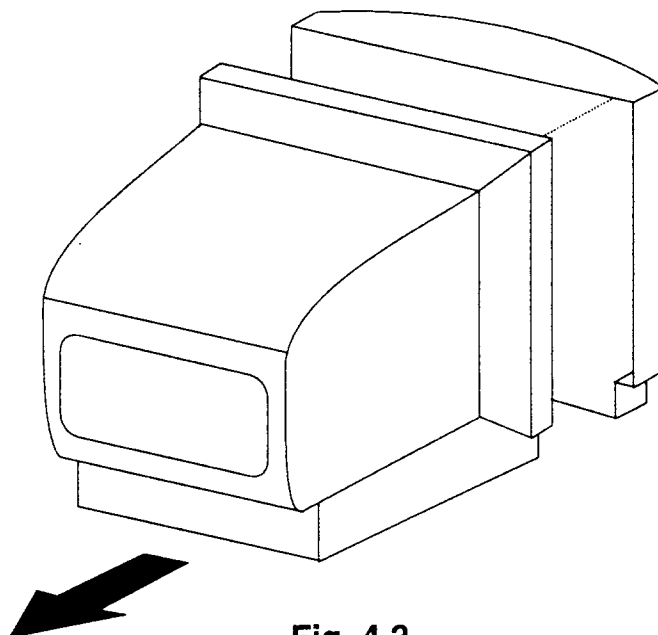


Fig. 4.2

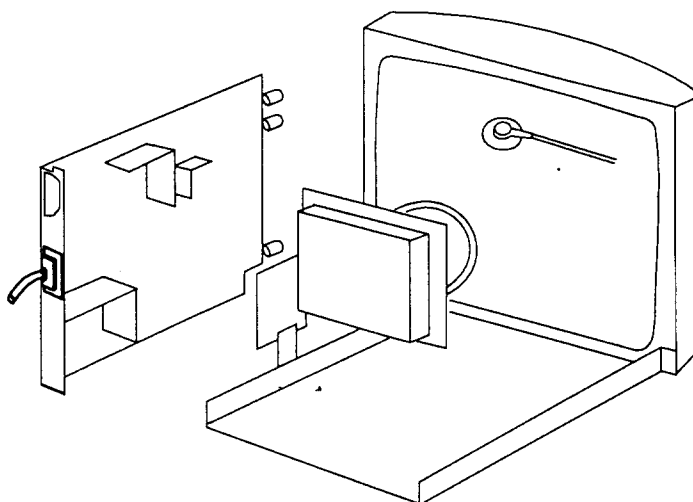




Fig. 4.3

## 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 testsoftware and under the following conditions:
  - Mode: 1024 \* 768 (56.5kHz/70Hz)
  - Signal pattern: grey scale
  - 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.

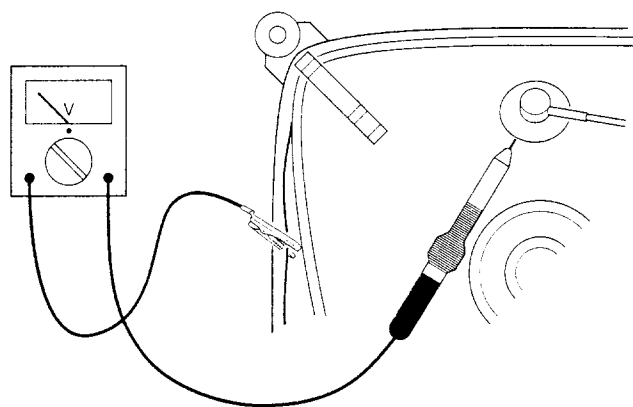
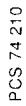


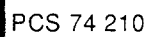
Fig. 3.1

## 3





## 6





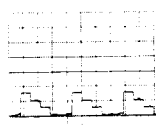
# Wave forms for diagram A

CM1800

8

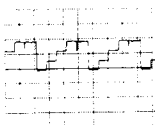
Vide

A1 Blue - in



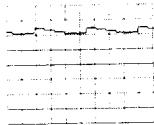
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A9 6302-A



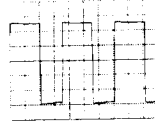
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A17 7712-B



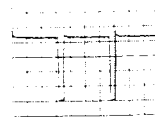
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A25 7714-E



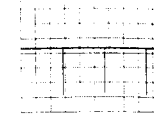
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A33 7717-E



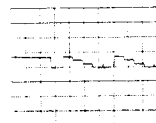
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A41 M302-12



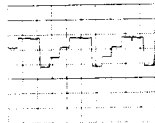
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5 mS / div

A2 7301-2



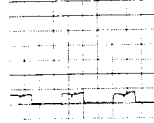
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A10 F306-11



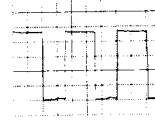
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A18 7712-C



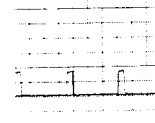
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A26 7701-1



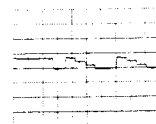
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A34 7721-B



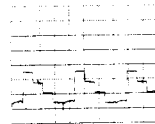
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A3 7301-5



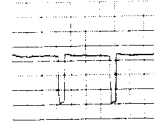
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A11 7301-19



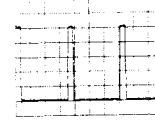
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A19 M301-2



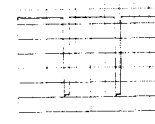
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A27 7701-13



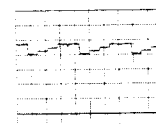
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A35 7721-C



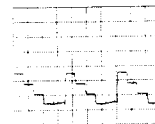
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A4 7301-20



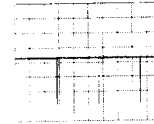
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A12 2302



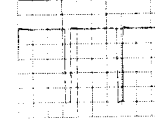
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A20 M301-4



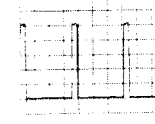
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A28 7701-11



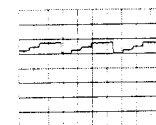
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A36 7702-6



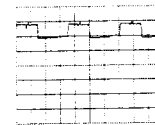
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A5 7301-17



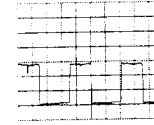
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A13 7301-18



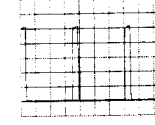
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A21 7710-B



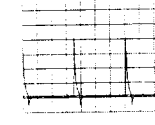
1V / div AC  
5 μS / div

A29 7701-8



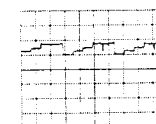
1V / div AC  
5 μS / div

A37 7702-9



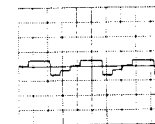
1V / div AC  
5 μS / div

A6 7301-14



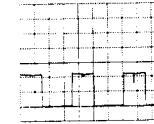
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5 μS / div

A14 3318,3321



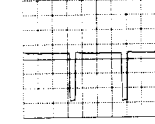
20V / div AC  
5 μS / div

A22 7710-E



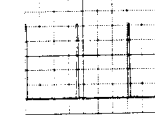
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5 μS / div

A30 7702-1



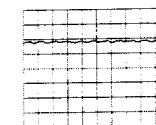
1V / div AC  
5 μS / div

A38 7702-8



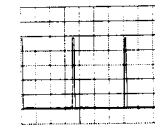
1V / div AC  
5 μS / div

A7 7312-E



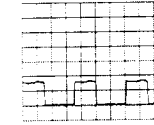
1V / div AC  
20 μS / div

A15 7301-10



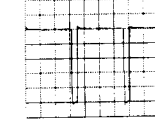
1V / div AC  
5 μS / div

A23 7713-B



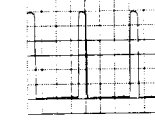
0,5V / div AC  
5 μS / div

A31 7702-3



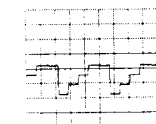
1V / div AC  
5 μS / div

A39 M302-6



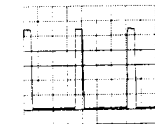
1V / div AC  
5 μS / div

A8 7312-C



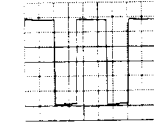
20V / div AC  
5 μS / div

A16 7301-9



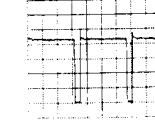
1V / div AC  
5 μS / div

A24 7713-C



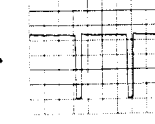
2V / div AC  
5 μS / div

A32 7716-E



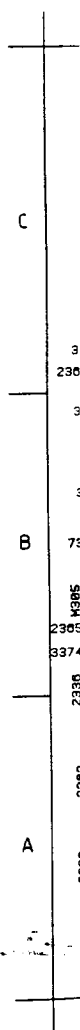
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5 μS / div

A40 M302-10



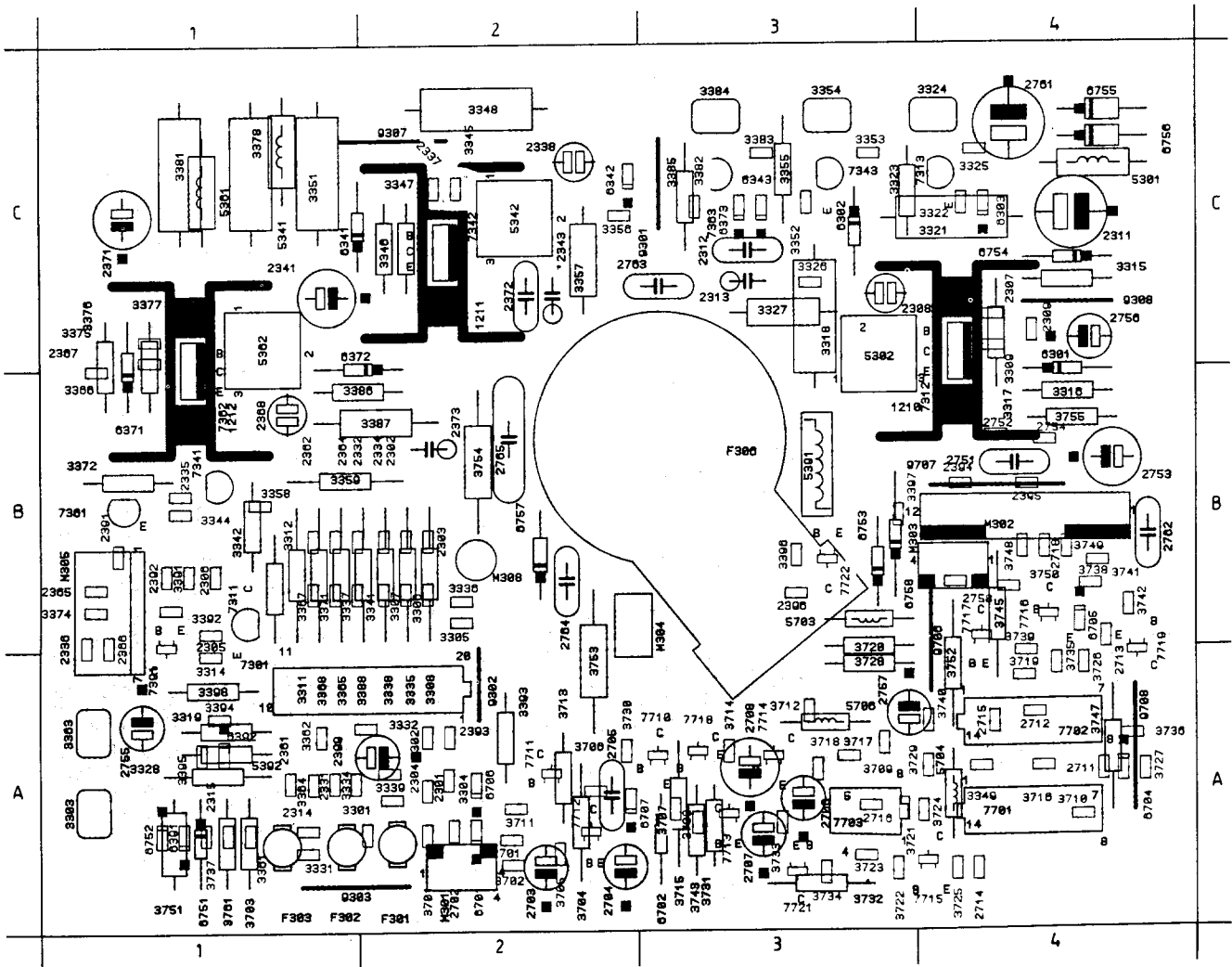
1V / div AC  
5 μS / div

1210 C1  
1211 C3  
1212 C4  
2301 A3  
2302 B3  
2303 B3  
2304 A3  
2305 B4  
2306 B4  
2307 C1  
2308 C2  
2309 C1  
2311 C1  
2312 C2  
2313 C2  
2314 A4  
2315 A4  
2331 A4  
2332 B3  
2334 B3  
2335 B4  
2336 A4  
2337 C3  
2338 C3  
2341 C4  
2343 C3  
2361 A4  
2362 B4  
2364 B4  
2365 B4  
2366 A4  
2367 C4  
2368 B4  
2371 C4  
2372 C3  
2373 B3  
2391 B4  
2392 B4  
2393 A3

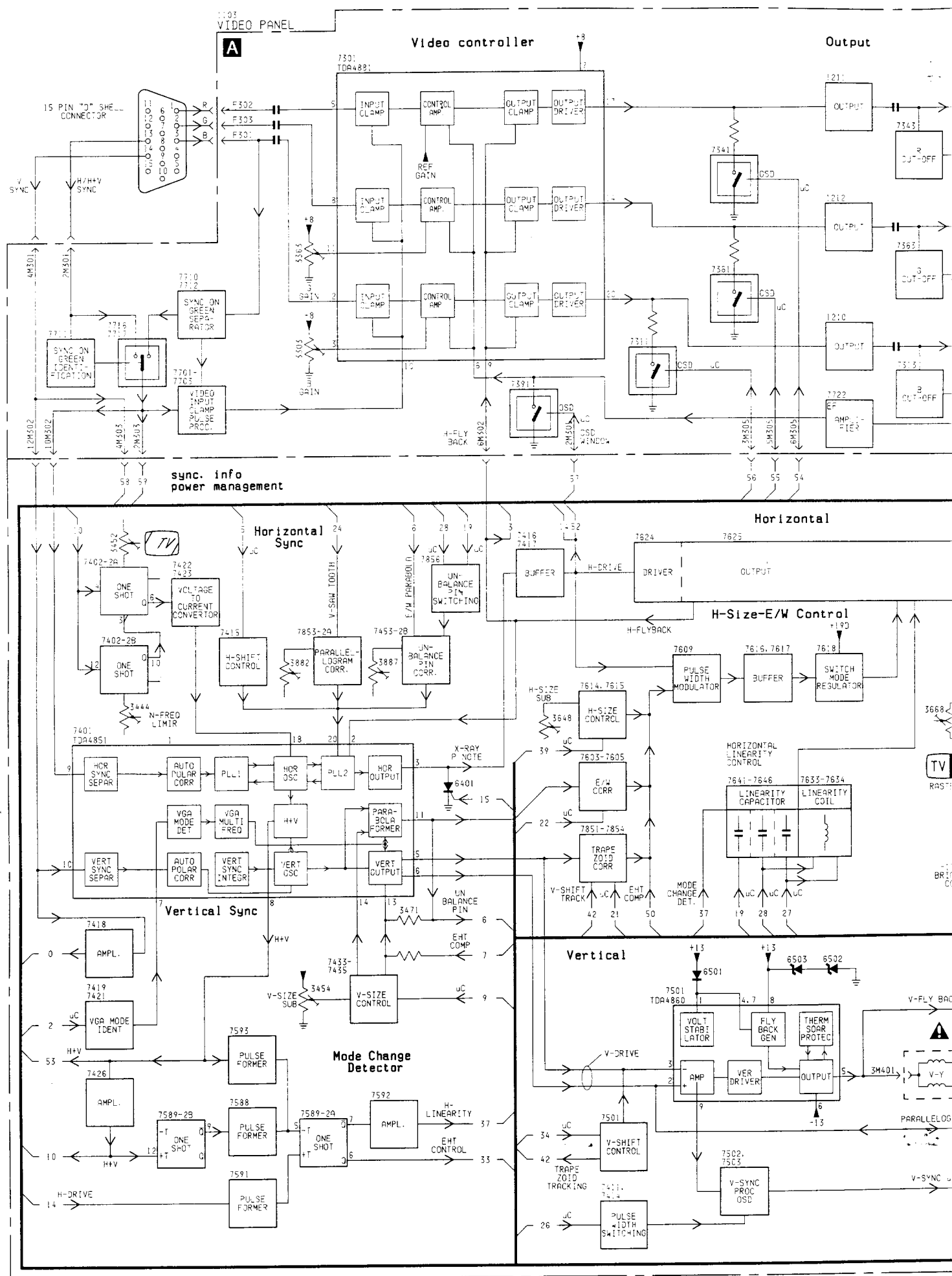


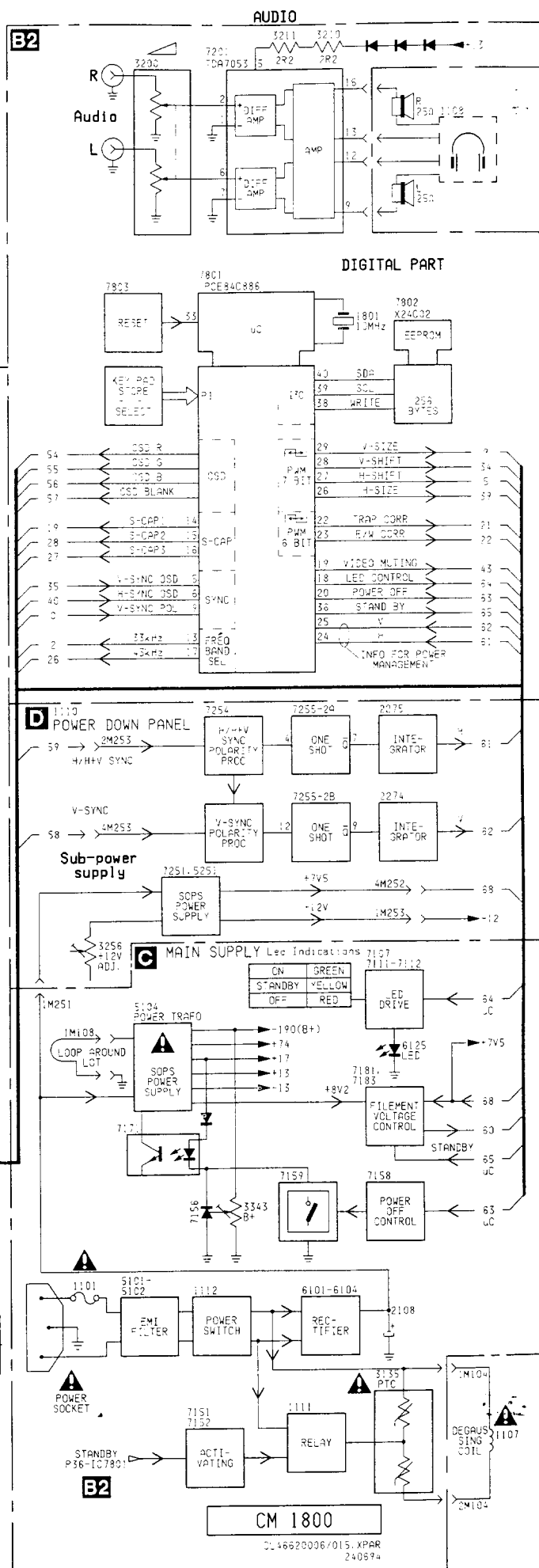
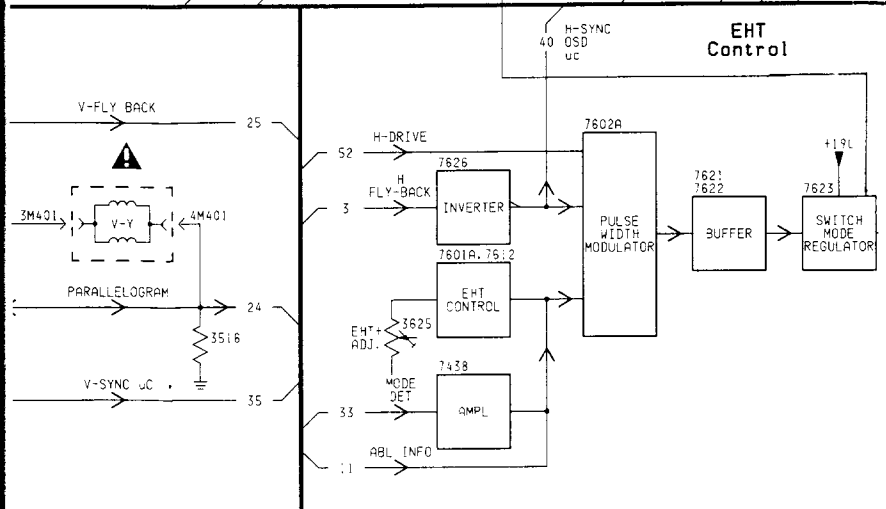
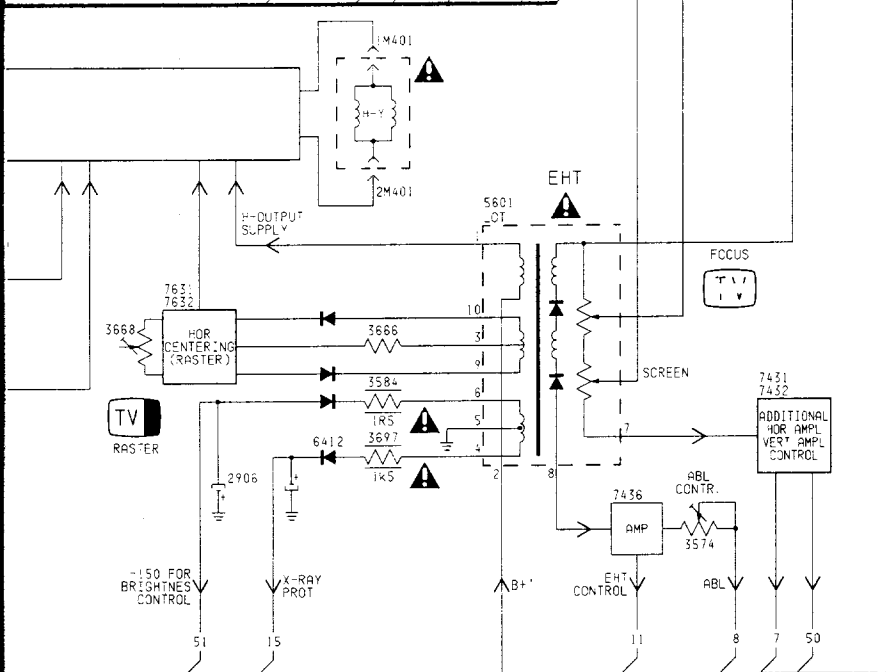
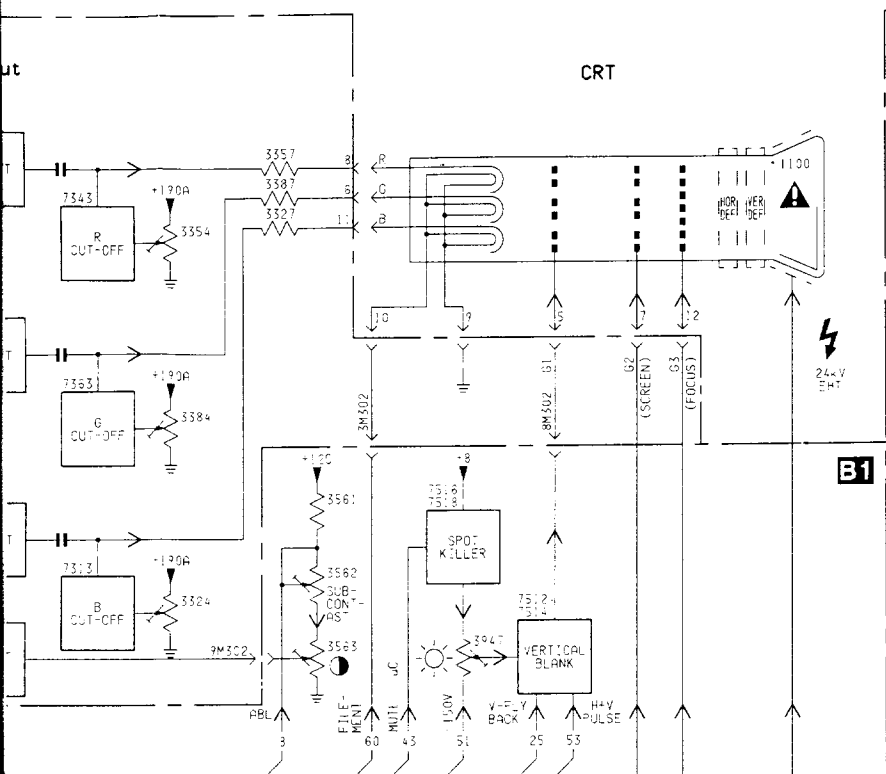
Video panel

1210 C1	2394 B1	3308 B3	3356 C3	3705 A3	3745 B1	6751 A4	F301 A3
1211 C3	2395 B1	3309 C1	3357 C3	3706 A3	3747 A1	6752 A4	F302 A4
1212 C4	2396 B2	3311 B4	3358 B4	3707 A2	3748 B1	6753 B2	F303 A4
2301 A3	2399 A3	3312 B4	3359 B4	3708 A2	3749 B1	6754 C1	F306 B2
2302 B3	2701 A3	3314 A4	3361 A4	3709 A2	3750 B1	6755 C1	M301 A3
2303 B3	2702 A3	3315 C1	3362 A4	3710 A1	3751 A4	6756 C1	M302 B1
2304 A3	2703 A3	3316 B1	3363 A4	3711 A3	3752 A1	6757 B3	M303 B1
2305 B4	2704 A3	3317 C1	3364 A4	3712 A2	3753 A3	6758 B2	M304 B3
2306 B4	2705 A3	3318 C2	3365 B4	3713 A3	3754 B3	7301 A3	M305 B4
2307 C1	2706 A2	3319 A4	3366 B4	3714 A2	3755 B1	7311 B4	M308 B3
2308 C2	2707 A2	3321 C1	3367 B4	3715 A2	3761 A4	7313 C1	
2309 C1	2708 A2	3322 C1	3368 B4	3716 A1	5301 C1	7341 B4	
2311 C1	2711 A1	3323 C2	3371 B4	3717 A2	5302 C2	7343 C2	
2312 C2	2712 A1	3324 C1	3372 B4	3718 A2	5341 C4	7361 B4	
2313 C2	2713 B1	3325 C1	3374 B4	3719 A1	5342 C3	7363 C2	
2314 A4	2714 A1	3326 C2	3375 C4	3720 B2	5361 C4	7391 A4	
2315 A4	2715 A1	3327 C2	3376 C4	3721 A2	5362 C4	7701 A1	
2331 A4	2716 A2	3328 A4	3377 C4	3722 A2	5391 B2	7702 A1	
2332 B3	2718 B1	3331 A4	3378 C4	3723 A2	5392 A4	7703 A2	
2334 B3	2751 B1	3332 A3	3381 C4	3724 A1	5703 B2	7710 A2	
2335 B4	2752 B1	3334 A3	3382 C2	3725 A1	5704 A1	7711 A3	
2336 A4	2753 B1	3335 B3	3383 C2	3726 A1	5706 A2	7712 A3	
2337 C3	2754 B1	3336 B3	3384 C2	3727 A1	6301 B1	7713 A2	
2338 C3	2755 A4	3337 B3	3385 C2	3728 A2	6302 C2	7714 A2	
2341 C4	2756 C1	3338 B3	3386 B3	3729 A1	6303 C1	7715 A1	
2343 C3	2757 A2	3339 A3	3387 B3	3730 A3	6341 C3	7716 B1	
2361 A4	2758 B1	3341 B3	3388 B3	3731 A2	6342 C3	7717 B1	
2362 B4	2761 C1	3342 B4	3391 B4	3732 A2	6343 C2	7718 A2	
2364 B4	2762 B1	3344 B4	3392 B4	3733 A2	6371 C4	7719 A1	
2365 B4	2763 C2	3345 C3	3393 A3	3734 A2	6372 C3	7721 A2	
2366 A4	2764 B3	3346 C3	3394 A4	3735 A1	6373 C2	7722 B2	
2367 C4	2765 B3	3347 C3	3395 A4	3736 A1	6391 A4	9301 C2	
2368 B4	3301 A3	3348 C3	3396 B2	3737 A4	6392 A4	9302 A3	
2371 C4	3302 A3	3349 A1	3397 B2	3738 B1	6701 A3	9303 A4	
2372 C3	3303 A4	3351 C4	3398 A4	3739 A1	6702 A2	9307 C3	
2373 B3	3304 A3	3352 C2	3701 A3	3740 A1	6704 A1	9308 C1	
2391 B4	3305 B3	3353 C2	3702 A3	3741 B1	6705 B1	9706 B1	
2392 B4	3306 B3	3354 C2	3703 A4	3742 B1	6706 A3	9707 B1	
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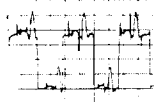


CM1800

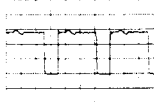




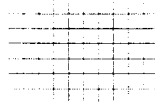
B25 7435-B

0,2V / div AC  
10  $\mu$ S / div

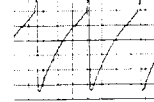
B33 5602-2

5V / div AC  
5  $\mu$ S / div

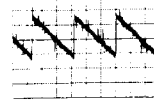
B41 7436-C

2V / div AC  
5  $\mu$ S / div

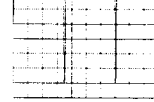
B49 7402-14

2V / div AC  
5  $\mu$ S / div

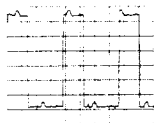
B57 M501-4

0,5V / div AC  
5 mS / div

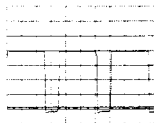
B65 7588-C

2V / div AC  
5  $\mu$ S / div

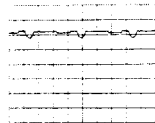
B26 7435-C

1V / div AC  
10  $\mu$ S / div

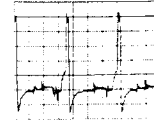
B34 5602-3

50V / div AC  
5  $\mu$ S / div

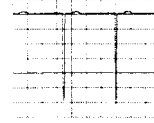
B42 7436-E

2V / div AC  
5  $\mu$ S / div

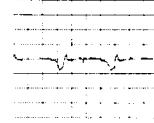
B50 7426-B

0,2V / div AC  
5  $\mu$ S / div

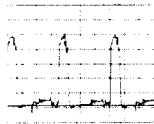
B58 7589-4

2V / div AC  
5  $\mu$ S / div

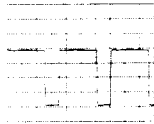
B66 7592-C

0,5V / div AC  
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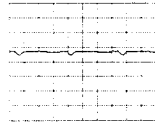
B27 7626-B

0,2V / div AC  
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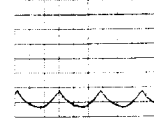
B35 5602-4

50V / div AC  
5  $\mu$ S / div

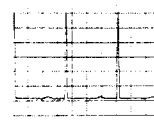
B43 7437-B

2V / div AC  
5  $\mu$ S / div

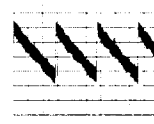
B51 7501-6

2V / div AC  
5 mS / div

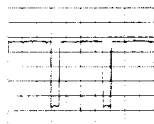
B59 7589-5

2V / div AC  
5  $\mu$ S / div

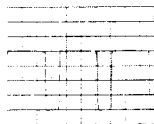
B67 7853-3

0,2V / div AC  
5 mS / div

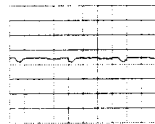
B28 7626-C

1V / div AC  
5  $\mu$ S / div

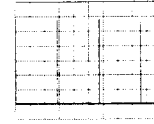
B36 7623-G

50V / div AC  
5  $\mu$ S / div

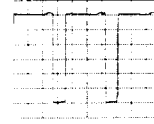
B44 7437-E

2V / div AC  
5  $\mu$ S / div

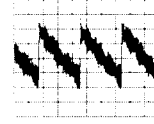
B52 7501-9

2V / div AC  
5 mS / div

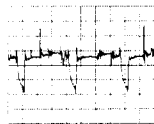
B60 7589-9

2V / div AC  
5  $\mu$ S / div

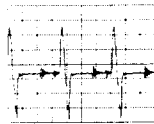
B68 7583-2

0,2V / div AC  
5 mS / div

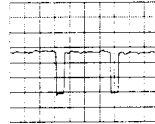
B29 7608-B

0,2V / div AC  
5  $\mu$ S / div

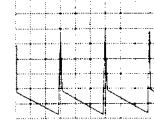
B37 7431-C

1V / div AC  
5  $\mu$ S / div

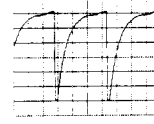
B45 7402-10

5V / div AC  
5  $\mu$ S / div

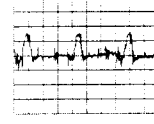
B53 7501-5

10V / div AC  
5 mS / div

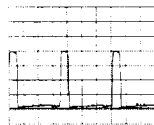
B61 7589-14

2V / div AC  
5  $\mu$ S / div

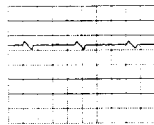
B69 7583-1

0,2V / div AC  
5  $\mu$ S / div

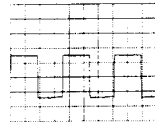
B30 7608-C

1V / div AC  
5  $\mu$ S / div

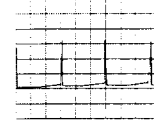
B38 7431-B

2V / div AC  
5  $\mu$ S / div

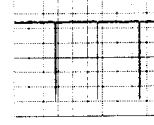
B46 7402-6

5V / div AC  
5  $\mu$ S / div

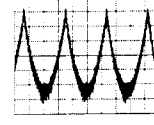
B54 7501-4

10V / div AC  
5 mS / div

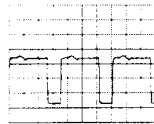
B62 7589-13

2V / div AC  
5 mS / div

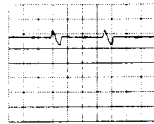
B70 7583-5

0,2V / div AC  
5 mS / div

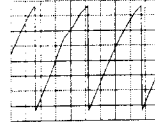
B31 7602-1

5V / div AC  
5  $\mu$ S / div

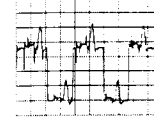
B39 7431-E

2V / div AC  
5  $\mu$ S / div

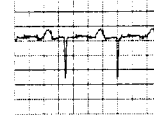
B47 7402-2

2V / div AC  
5  $\mu$ S / div

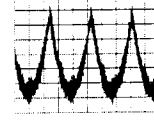
B55 7504-B

0,2V / div AC  
10  $\mu$ S / div

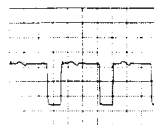
B63 7587-B

0,5V / div AC  
5  $\mu$ S / div

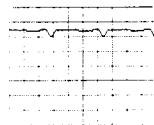
B71 7583-6

0,2V / div AC  
5 mS / div

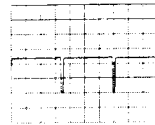
B32 7621-E

5V / div AC  
5  $\mu$ S / div

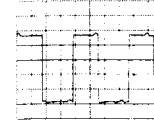
B40 7436-B

2V / div AC  
5  $\mu$ S / div

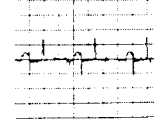
B48 7402-4

5V / div AC  
5  $\mu$ S / div

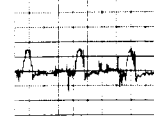
B56 7504-C

2V / div AC  
10  $\mu$ S / div

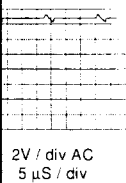
B64 7588-B

0,5V / div AC  
5  $\mu$ S / div

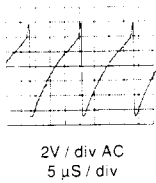
B72 7583-7

0,2V / div AC  
5  $\mu$ S / div

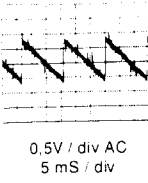
41 7436-C



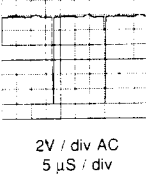
B49 7402-14



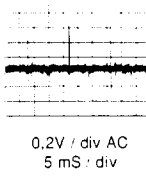
B57 M501-4



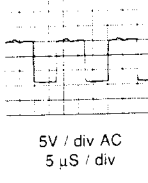
B65 7588-C



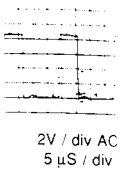
B73 7502-B



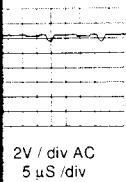
B81 7617-E



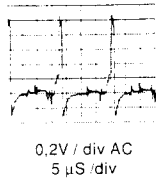
B89 7604



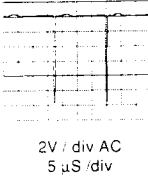
42 7436-E



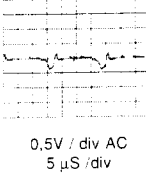
B50 7426-B



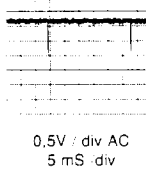
B58 7589-4



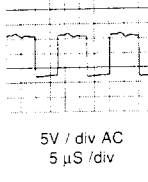
B66 7592-C



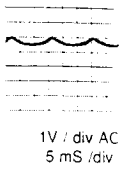
B74 7502-C



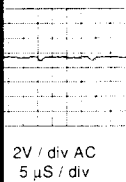
B82 5604-1



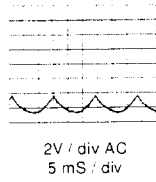
B90 7603



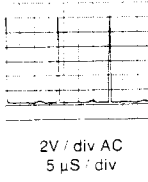
43 7437-B



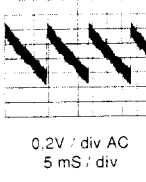
B51 7501-6



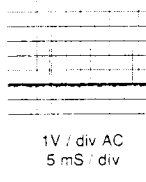
B59 7589-5



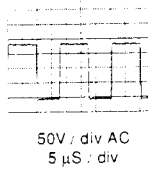
B67 7853-3



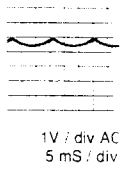
B75 7503-C



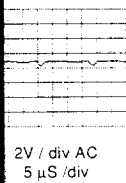
B83 5604-3



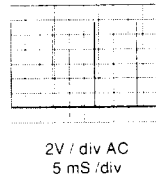
B91 7605



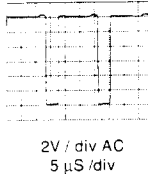
44 7437-E



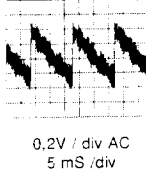
B52 7501-9



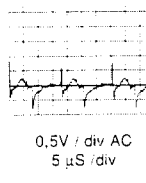
B60 7589-9



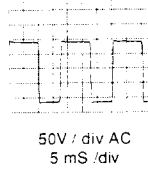
B68 7583-2



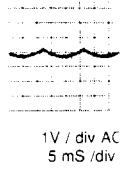
B76 7613-B



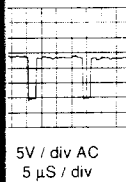
B84 5604-4



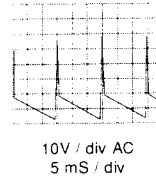
B92 7605



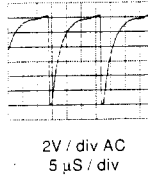
45 7402-10



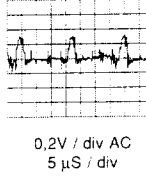
B53 7501-5



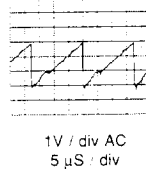
B61 7589-14



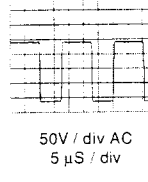
B69 7583-1



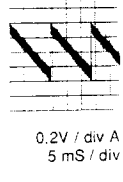
B77 7613-C



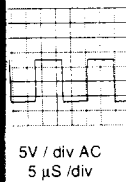
B85 7618-G



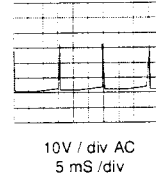
B93 785



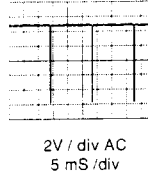
46 7402-6



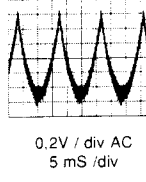
B54 7501-4



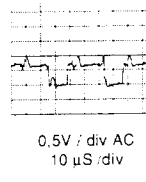
B62 7589-13



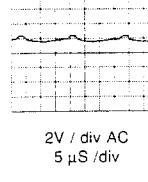
B70 7583-5



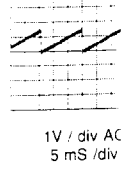
B78 7614-B



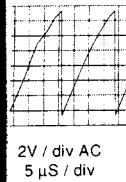
B86 7633-C



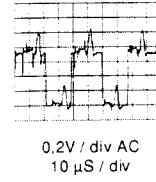
B94 785



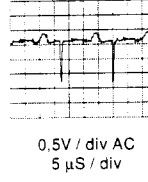
47 7402-2



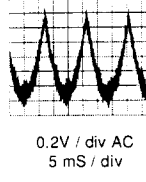
B55 7504-B



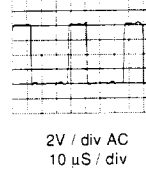
B63 7587-B



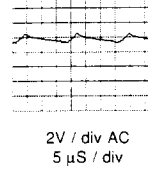
B71 7583-6



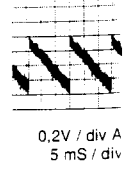
B79 7614-C



B87 5604-4



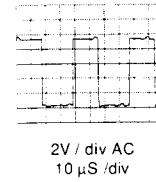
B95 785



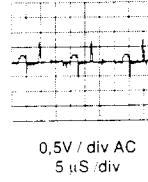
48 7402-4



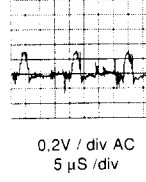
B56 7504-C



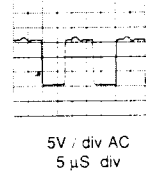
B64 7588-B



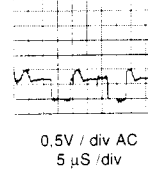
B72 7583-7



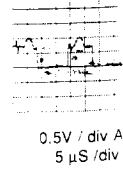
B80 7602-7



B88 7604-B

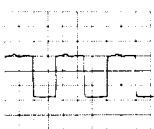


B96 785

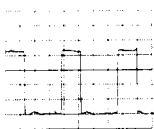




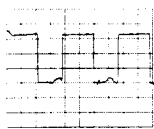
B81 7617-E

5V / div AC  
5  $\mu$ S / div

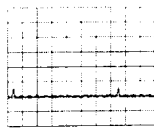
B89 7604-C

2V / div AC  
5  $\mu$ S / div

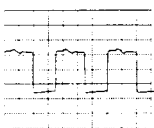
B97 7855-C

1V / div AC  
5  $\mu$ S / div

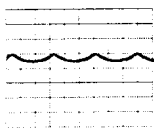
B105 7513-E

1V / div AC  
2 mS / div

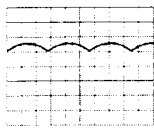
B82 5604-1

5V / div AC  
5  $\mu$ S / div

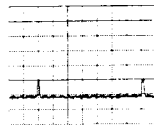
B90 7603-6

1V / div AC  
5 mS / div

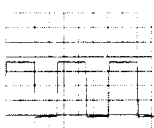
B98 7852-7

2V / div AC  
5 mS / div

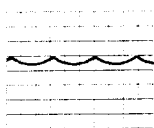
B106 7512-B

1V / div AC  
2 mS / div

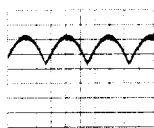
B83 5604-3

50V / div AC  
5  $\mu$ S / div

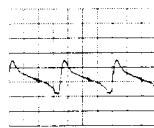
B91 7605-B

1V / div AC  
5 mS / div

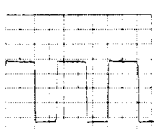
B99 7854-B

0.5V / div AC  
5 mS / div

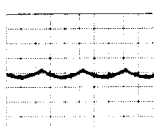
B107 7641-G

1V / div AC  
5  $\mu$ S / div

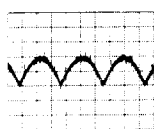
B84 5604-4

50V / div AC  
5 mS / div

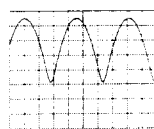
B92 7605-E

1V / div AC  
5 mS / div

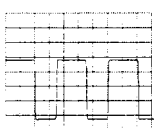
B100 7854-E

0.5V / div AC  
5 mS / div

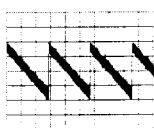
B108 7641-D

10V / div AC  
5  $\mu$ S / div

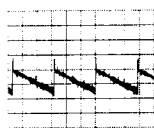
B85 7618-G

50V / div AC  
5  $\mu$ S / div

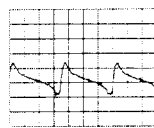
B93 7851-B

0.2V / div AC  
5 mS / div

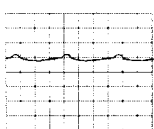
B101 7517-B

0.5V / div AC  
5 mS / div

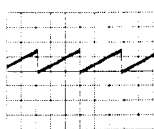
B109 7643-G

1V / div AC  
5  $\mu$ S / div

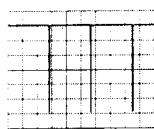
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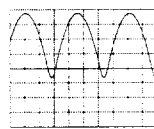
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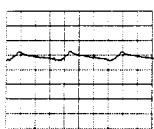
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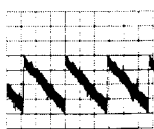
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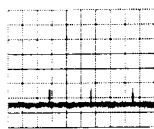
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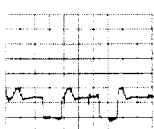
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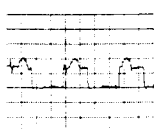
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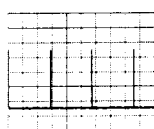
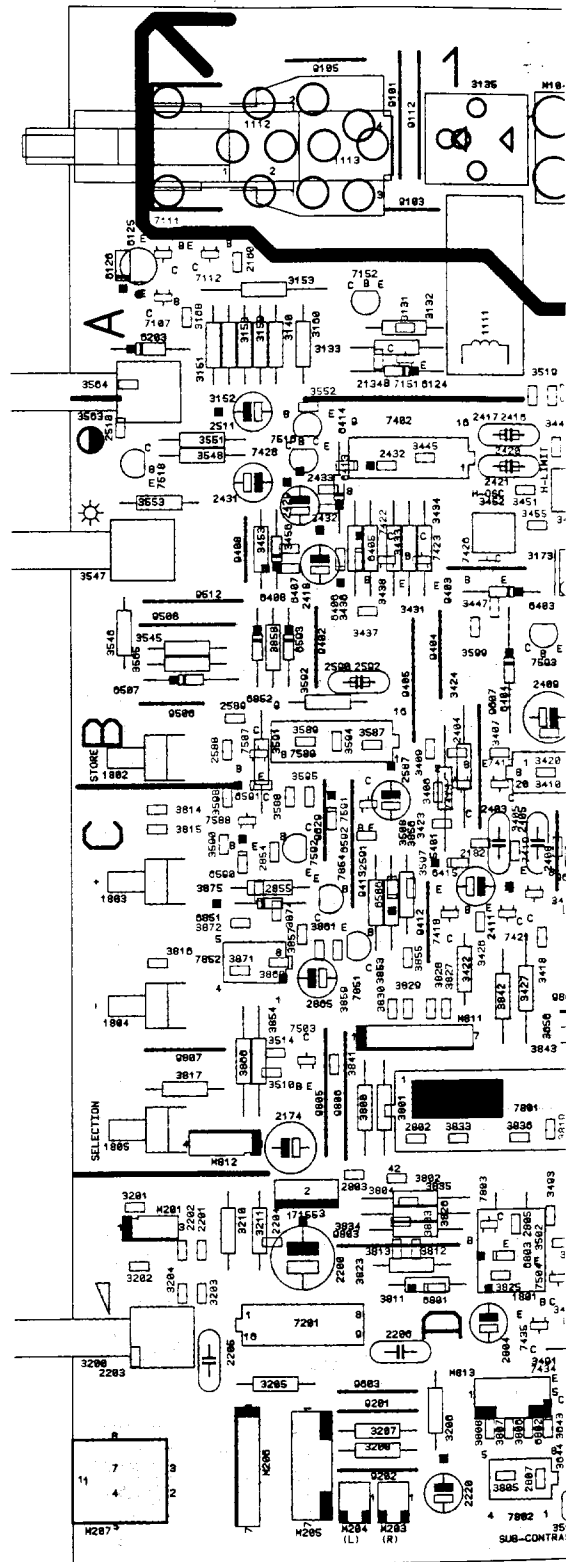
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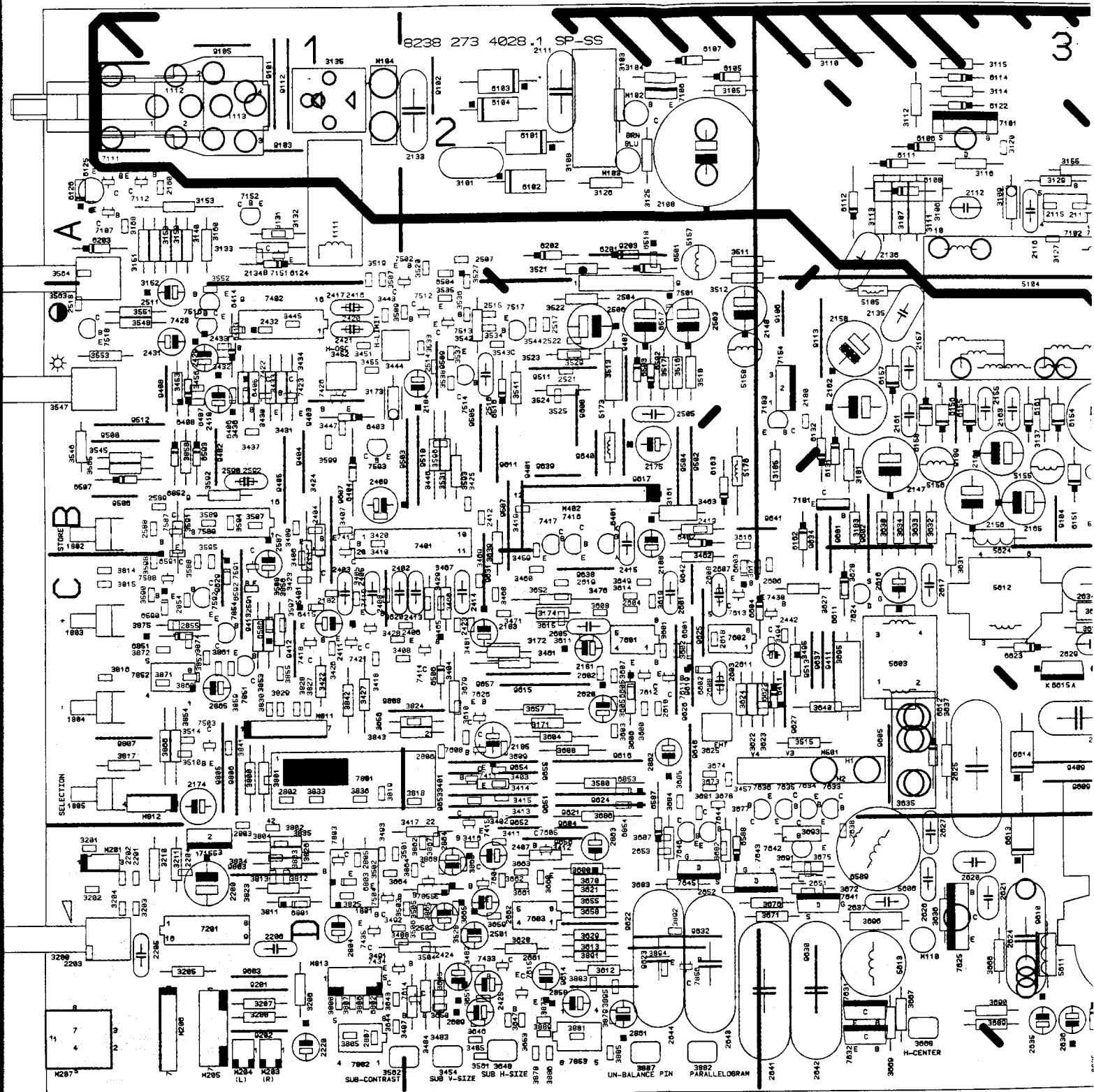
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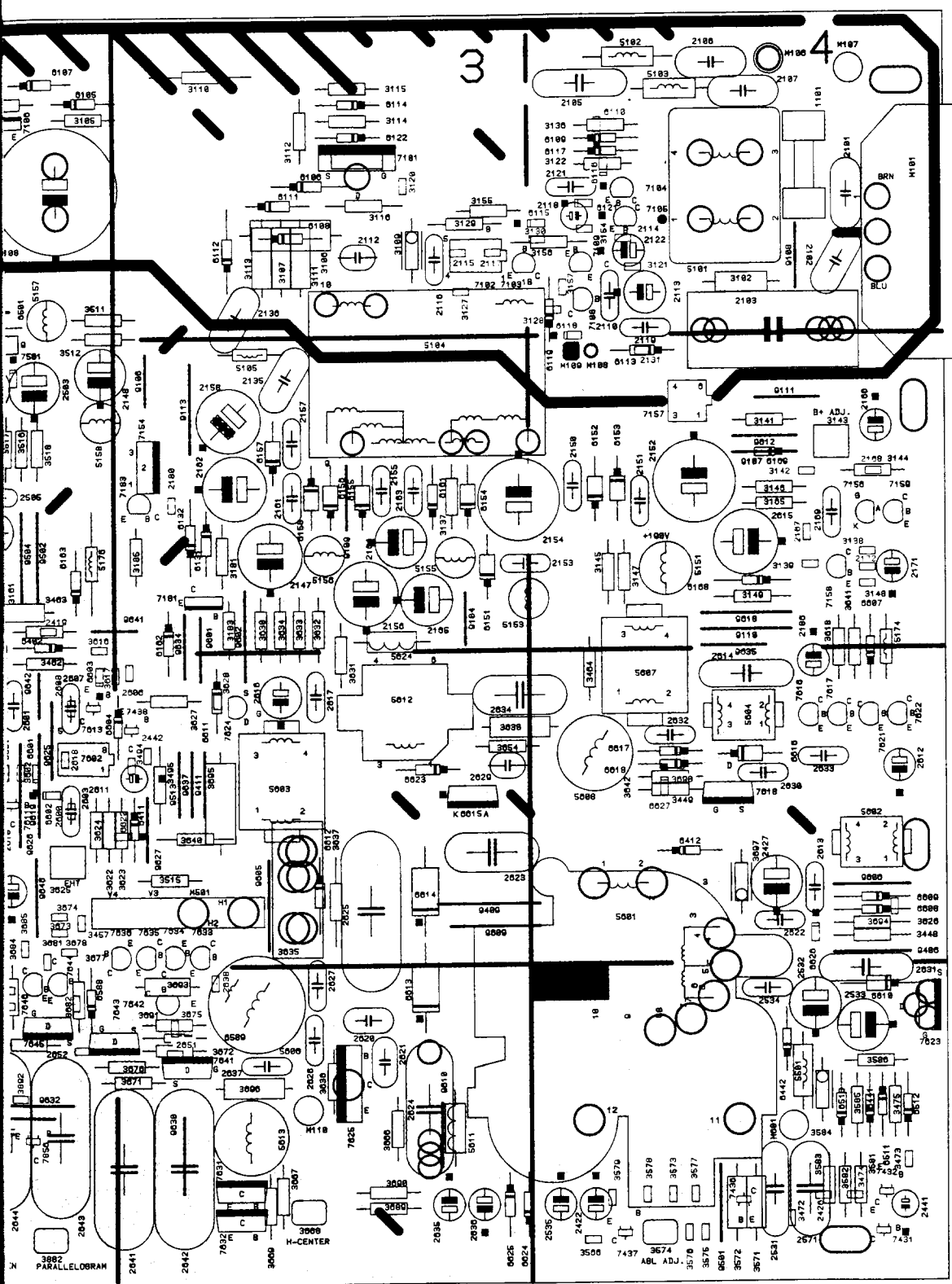
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5 mS / div

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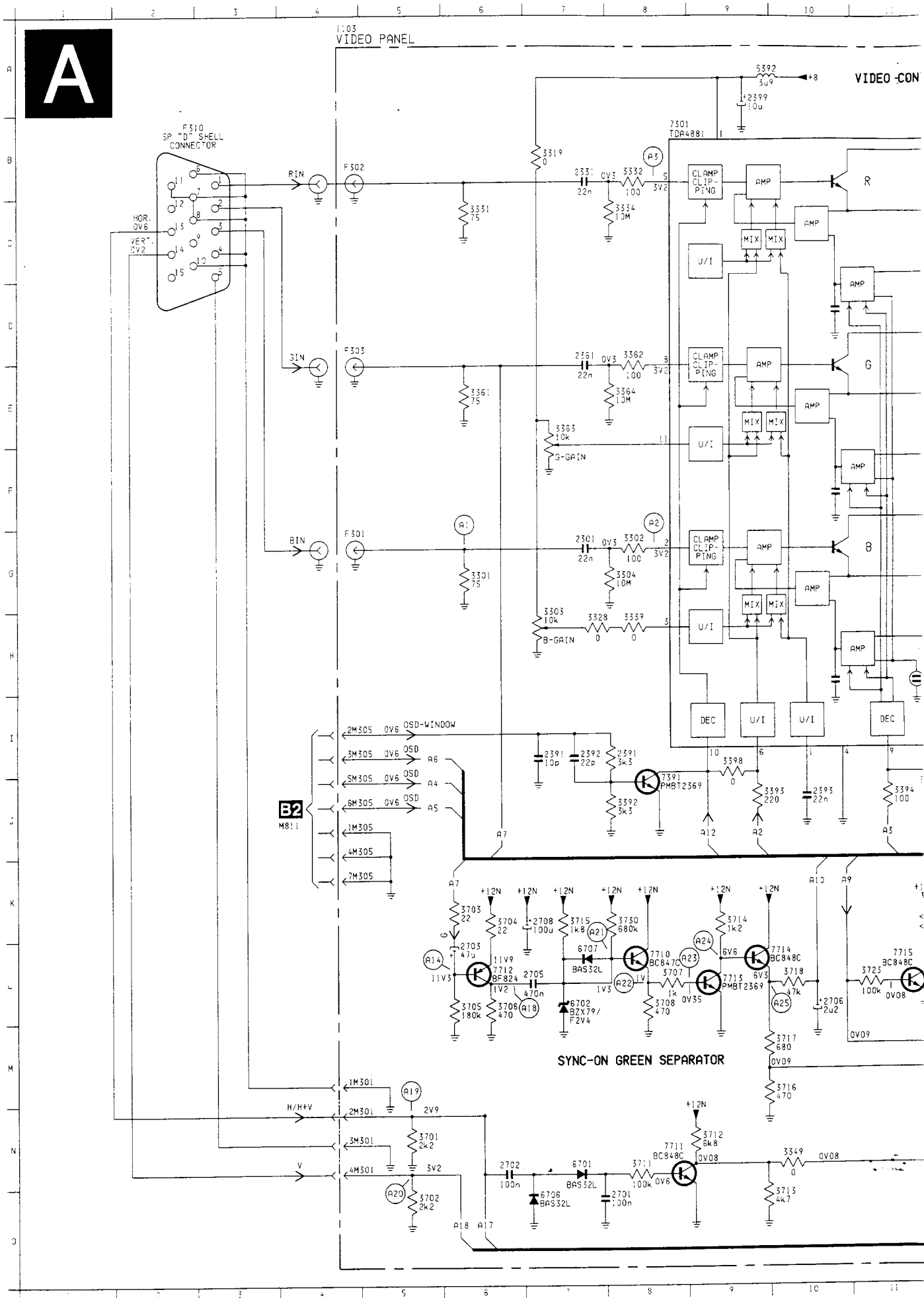
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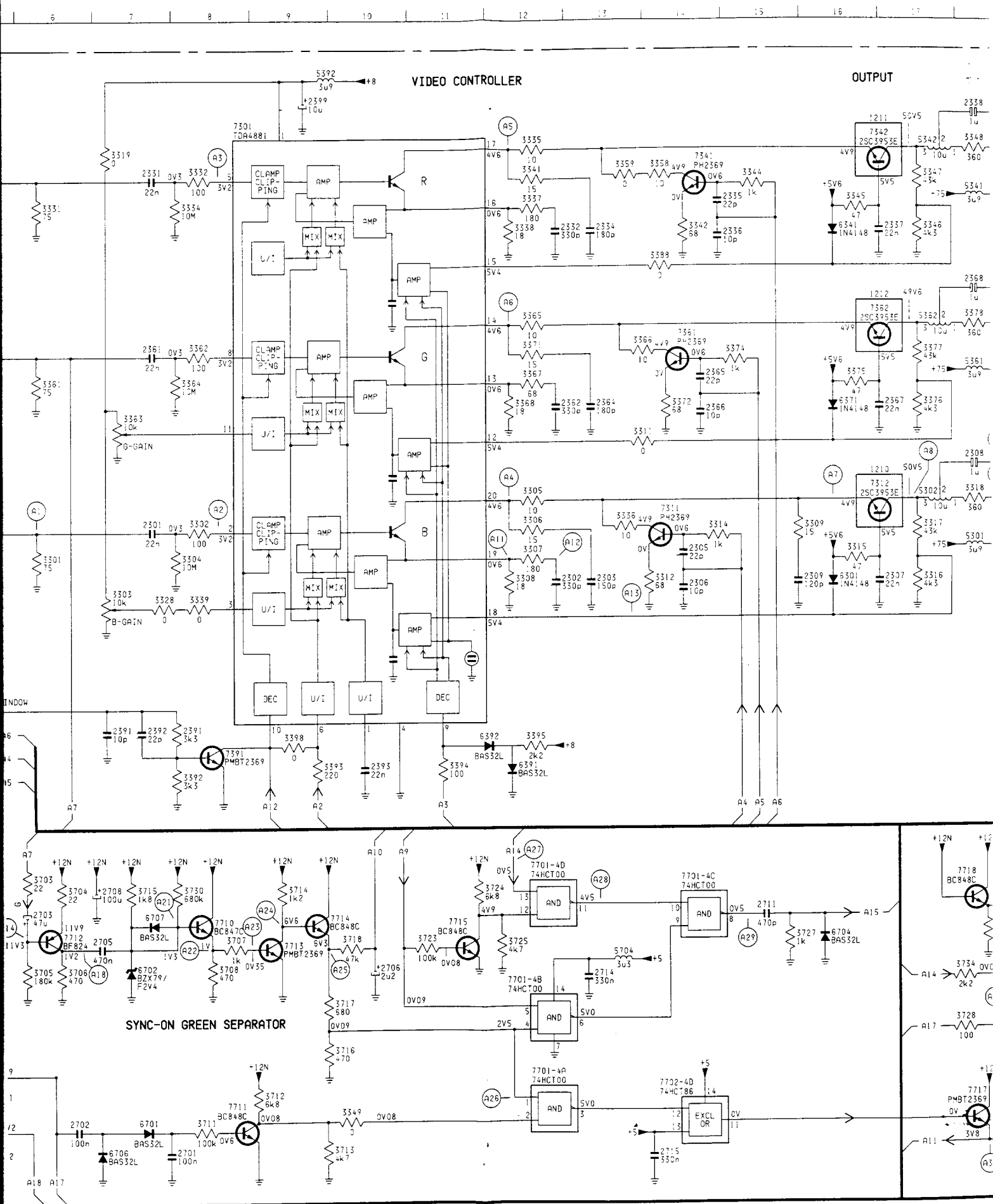
Main panel



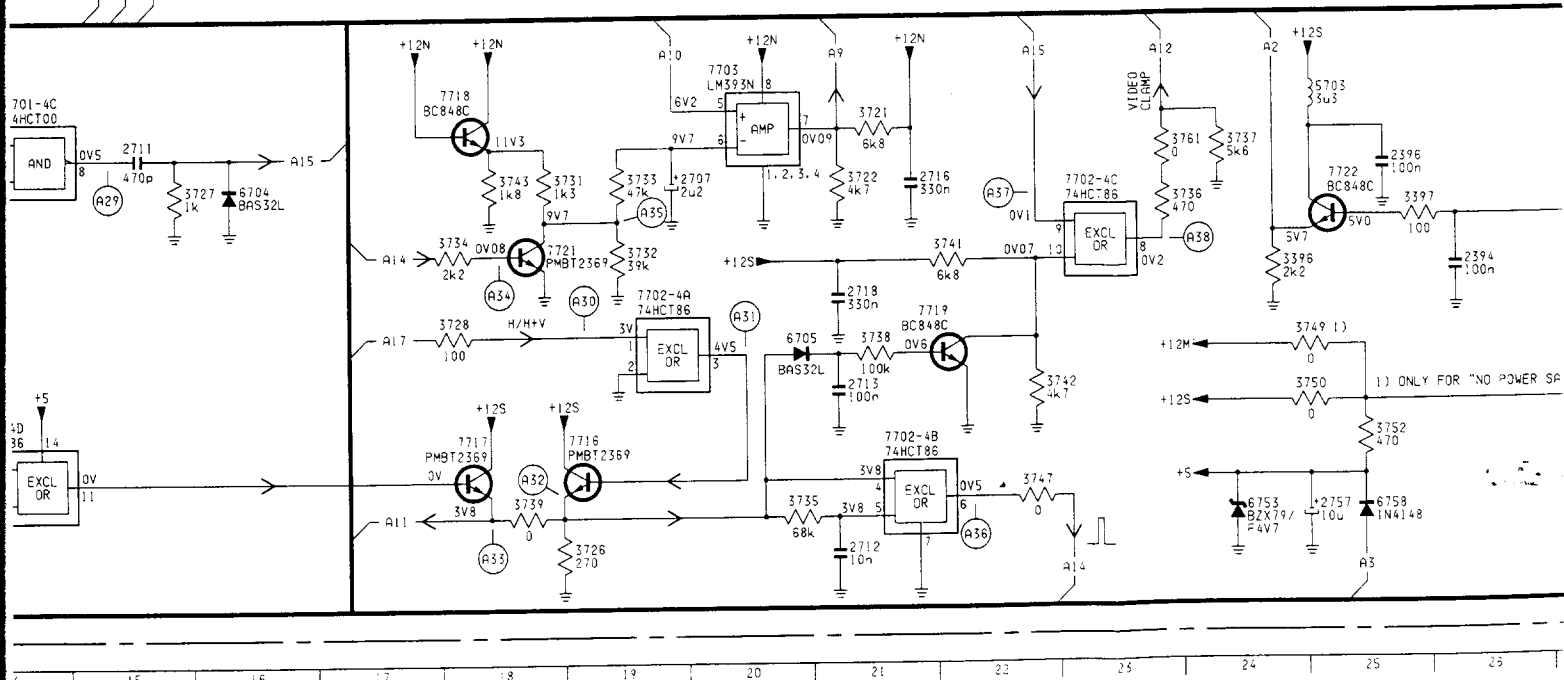
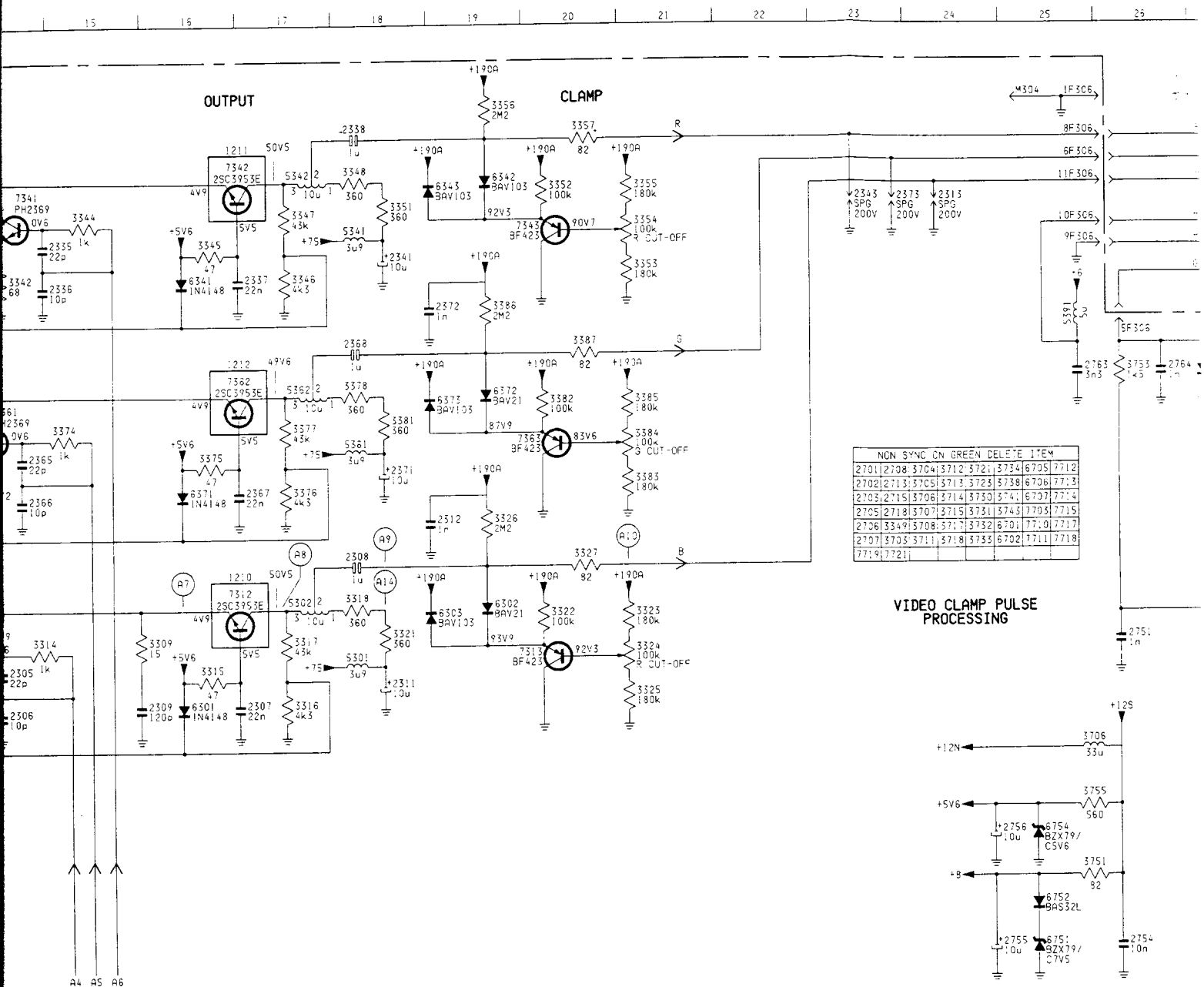
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1802 C1	2587 C1	3161 B2
1803 C1	2588 B1	3165 B4
1804 C1	2589 B1	3168 A1
1805 D1	2590 B1	3171 C2
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2103 B4	2600 C2	3174 C2
2105 A4	2601 C2	3181 B3
2106 A4	2602 C2	3183 C3
2107 A4	2603 C2	3185 B3
2108 A2	2604 C2	3200 D1
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2186 C4	2668 D1	3446 B1
2188 C2	2669 C1	3447 B1
2200 C1	2670 D1	3448 D4
2201 C1	2671 D1	3449 C4
2202 C1	2672 D1	3451 B1
2203 C1	2673 D1	3452 B1
2204 D1	2674 D1	3453 B1
2205 C1	2675 D1	3454 B2
2206 C1	2676 D1	3455 B1
2220 C1	3101 A2	3456 B1
2402 C2	3102 A4	3457 C2
2403 C1	3103 A2	3459 C2
2404 C1	3104 A2	3460 C2
2405 C1	3105 A2	3461 C2
2406 C2	3106 A2	3462 C2
2407 D2	3107 A3	3463 C2
2408 C1	3108 A2	3464 C4
2409 B1	3109 A3	3465 C2
2411 C1	3110 A3	3466 C2
2412 B2	3111 A3	3467 C2
2413 C2	3112 A3	3468 C2
2414 C2	3113 A3	3469 C2
2415 C2	3114 A3	3471 C2
2416 B1	3115 A3	3472 D4
2417 B1	3116 A3	3473 D5
2418 B1	3120 A3	3474 D5
2419 C2	3121 A4	3475 D5
2420 B1	3122 A2	3476 D5
2421 B1	3123 A2	3481 C2
2422 A4	3126 A2	3482 D2
2423 C2	3127 A3	3483 D2
2424 D2	3128 A4	3484 D2
2425 D2	3129 A3	3485 D2
2426 D4	3130 A4	3487 D2
2427 D4	3131 A1	3488 B2
2429 B1	3132 A1	3491 D2
2431 B1	3133 A1	3492 D2
2432 B1	3135 A1	3493 D1
2433 B1	3136 A4	3494 C3
2441 D5	3137 B3	3495 C3
2442 C3	3138 B4	3500 C2
2443 C3	3139 B4	3501 D1
2444 C3	3140 B4	3502 D1
2445 C3	3141 B4	3503 D2
2446 C3	3142 B4	3504 D2
2447 C3	3143 B4	3505 D2
2448 C3	3144 B4	3506 D2
2449 C3	3145 B4	3507 B1
2450 C3	3146 B4	3508 C1
2451 C3	3147 B4	3509 B2
2452 C3	3148 B4	3510 C1
2453 C3	3149 B4	3511 A3
2454 C3	3150 B4	3512 B3
2455 C3	3151 A1	3513 B2
2456 C3	3152 A1	3514 C1
2457 C3	3153 A1	3515 C1
2458 C3	3154 A1	3516 B2
2459 C3	3155 A4	3517 B2

D2	5173 B2	6105 A2	6131 B3	6403 B1	6512 D5	6609 C4	6852 B1	7158 B4	7428 B1	7588 C1	7622 C5	7851 C1	9202 D1	9507 B2	9615 C2	9638 C2	M103 A2
D2	5174 C4	6106 A3	6132 B3	6404 B1	6513 D4	6610 C4	6853 D2	7159 B5	7431 E4	7589 B1	7623 D5	7852 C1	9203 A2	9508 B1	9616 C2	9639 B2	M104 A1
D2	5176 B3	6107 A2	6151 B3	6405 B1	6516 B2	6611 C3	6854 D2	7181 B3	7432 D4	7591 C1	7624 C3	7853 D2	9401 B2	9509 B2	9617 B2	9640 B2	M105 A4
D2	5401 C1	6108 A3	6152 B4	6406 B1	6517 B2	6612 C3	7101 A3	7183 B3	7433 D2	7592 C1	7625 D3	7854 C1	9402 B1	9510 B2	9618 B4	9641 C3	M106 B4
D2	5501 D4	6109 A4	6153 B4	6407 B1	6518 A2	6613 D3	7103 A4	7201 D1	7434 D2	7593 B1	7626 C2	7855 D2	9403 B1	9511 B2	9619 C2	9642 C2	M108 B4
D2	5601 D4	6110 A4	6154 B3	6408 B1	6519 B2	6614 C3	7102 A4	7405 D1	7435 D4	7601 C2	7627 D3	7856 D2	9404 B1	9512 B1	9620 C1	9643 C2	M109 B4
D2	5602 C4	6111 A3	6155 B3	6411 C3	6520 B2	6615 C3	7103 A4	7406 D1	7436 D4	7602 C2	7632 D3	9101 A1	9405 B1	9513 C3	9621 D2	9644 C2	M110 D3
D2	5603 C3	6112 A3	6156 B3	6412 C4	6521 B2	6616 C4	7105 A4	7411 C2	7437 E4	7603 D2	7633 D3	9102 A2	9406 D4	9514 C3	9622 D2	9652 D2	M201 D1
D2	5604 C4	6113 B4	6157 B3	6413 B1	6522 B2	6617 C4	7106 A2	7412 C1	7438 C3	7604 D2	7634 D3	9103 A1	9407 B2	9515 C3	9623 D2	9653 D2	M203 E1
A4	5606 C3	6114 A3	6158 B3	6414 B1	6523 B2	6618 C1	7107 A1	7413 C1	7501 B2	7605 D2	7635 D3	9102 A2	9408 B1	9516 C3	9624 D2	9654 C2	M205 D1
A4	5607 C4	6115 A4	6159 B3	6415 C1	6524 B2	6622 C3	7108 A4	7414 C1	7502 B2	7608 C2	7636 D3	9105 A1	9409 C3	9517 C3	9625 C2	9655 C2	M206 D1
A4	5608 C4	6116 A4	6160 B3	6416 C1	6525 B2	6623 C3	7109 A4	7415 D2	7503 C1	7611 C2	7637 D3	9106 B3	9410 C3	9518 C3	9626 C2	9656 D2	M202 D1
B3	5611 D3	6117 A4	6161 B3	6417 C1	6526 B2	6624 C3	7111 A1	7416 C1	7504 B2	7612 C2	7638 D3	9107 A4	9411 C1	9519 C3	9627 C3	9657 C2	M402 B2
B3	5612 C3	6118 B4	6162 B3	6418 B1	6527 B2	6625 C3	7112 A1	7417 C2	7512 B2	7613 C3	7643 D3	9108 A4	9413 C1	9520 C3	9628 C1	9658 C1	M501 C3
B3	5613 D3	6119 A4	6163 B3	6419 B1	6528 B2	6626 C3	7113 A1	7418 C1	7513 B2	7614 D2	7644 D2	9109 B3	9501 A4	9502 B2	9609 C4	9630 C3	M601 D4
B4	5614 C3	6120 A4	6164 B3	6420 B1	6529 B2	6627 C4	7115 A1	7419 C1	7514 B2	7615 D2	7645 D2	9110 C3	9502 B2	9608 B4	9631 C2	9632 C3	M801 C1
B4	5615 C3	6121 A4	6165 B3	6421 B1	6530 B2	6628 C4	7116 A1	7420 C1	7515 B2	7616 C4	7646 D2	9111 B4	9503 B2	9610 D3	9633 C3	9634 C3	M812 D1
B3	6101 A2	6122 A3	6202 A2	6504 B2	6604 C3	6801 D1	7154 B3	7421 C1	7516 B1	7617 C4	7801 C1	9112 A1	9504 B2	9611 B2	9635 C3	9636 C3	M813 D1
B3	6102 A2	6124 A1	6203 A1	6506 C2	6605 C2	6802 D1	7155 D1	7422 B1	7517 B2	7618 C4	7802 C1	9113 B3	9505 B2	9612 B4	9635 C4	9637 C3	M101 A5
A2	6103 A2	6125 A1	6201 C2	6507 B1	6607 C4	6803 D1	7156 B4	7423 B1	7518 B1	7618 C4	7803 C1	9201 D1	9506 B1	9614 D2			
A2	6104 A2	6126 A1	6202 C2	6511 D4	6608 C4	6805 C1	7157 B4	7426 B1	7587 C1	7621 C4							

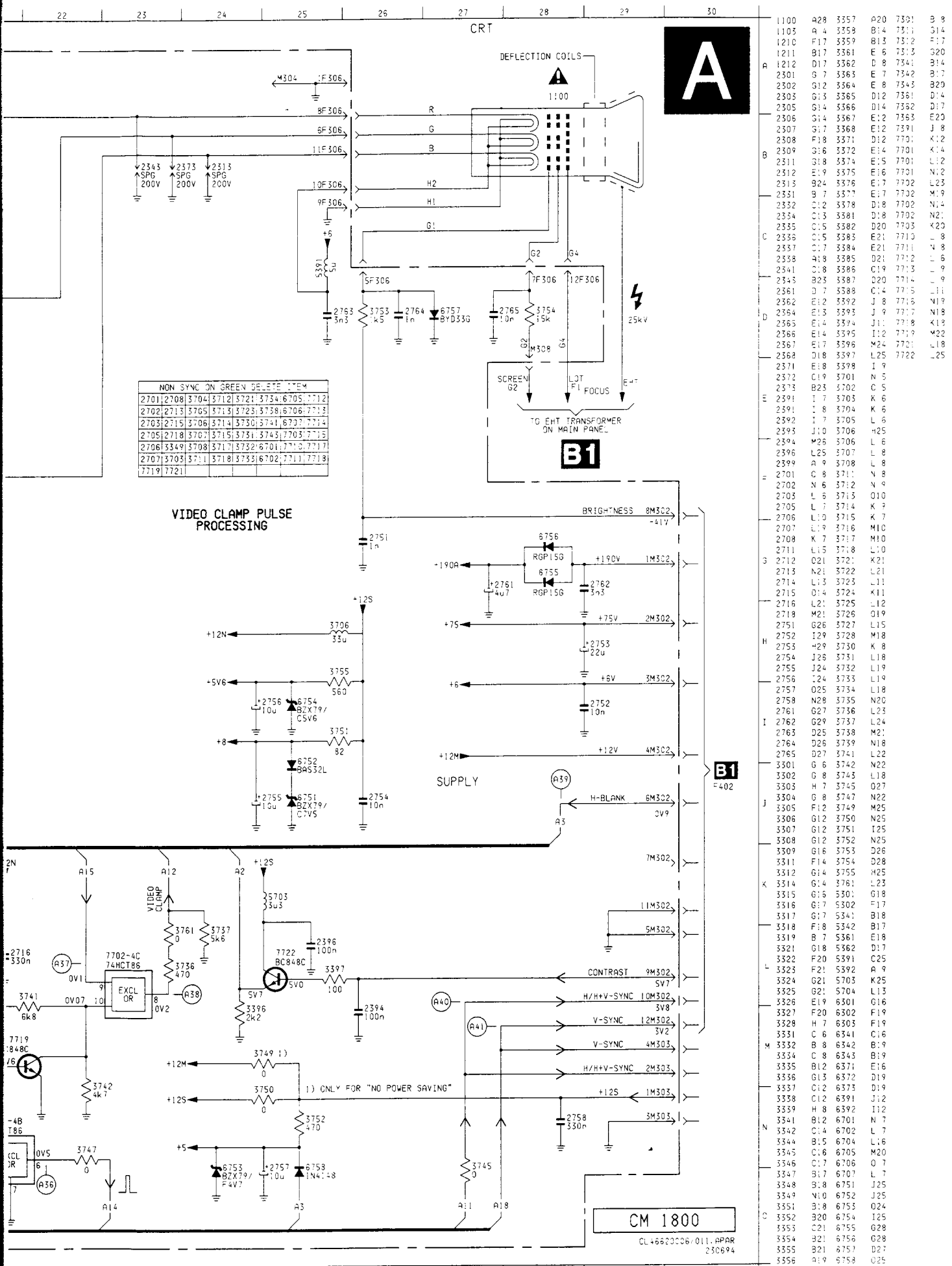




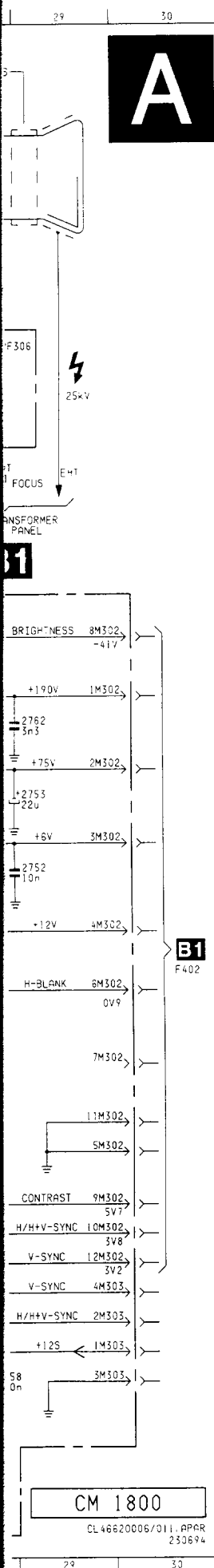
## Video



## Video

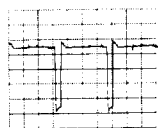


# Wave forms for diagram B1



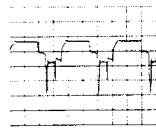
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1103	A 4	3358	B14	7311	314
1210	F17	3359	B13	7312	F17
1211	B17	3361	E 6	7313	G20
1212	D17	3362	D 8	7341	B14
2301	G 7	3363	E 7	7342	B17
2302	G12	3364	E 8	7343	B20
2303	G13	3365	D12	7361	D14
2305	G14	3366	D14	7362	D17
2306	G14	3367	E12	7363	E20
2307	G17	3368	E12	7391	J 8
2308	F18	3371	D12	7701	K12
2309	G16	3372	E14	7701	K14
2311	G19	3374	E15	7701	L12
2312	E19	3375	E16	7701	N12
2313	B24	3376	E17	7702	L23
2331	B 7	3377	E17	7702	M19
2332	C12	3378	D18	7702	N14
2334	C13	3381	D18	7702	N21
2335	C15	3382	D20	7703	K20
2336	C15	3383	E21	7710	L 8
2337	C17	3384	E21	7711	N 8
2338	A18	3385	D21	7712	L 6
2341	C18	3386	C19	7713	L 9
2343	B23	3387	D20	7714	L 9
2361	D 7	3388	C14	7715	L11
2362	E12	3392	J 8	7716	N19
2364	E13	3393	J 9	7717	N18
2365	E14	3394	J11	7718	K18
2366	E14	3395	I12	7719	M22
2367	E17	3396	M24	7721	L18
2368	D18	3397	L25	7722	L25
2371	E18	3398	I 9		
2372	C19	3701	N 5		
2373	B25	3702	O 5		
2391	I 7	3703	K 6		
2391	I 8	3704	K 6		
2392	I 7	3705	L 6		
2393	C10	3706	H25		
2394	M26	3706	L 6		
2396	L25	3707	L 8		
2399	A 9	3708	L 8		
2701	C 8	3711	N 8		
2702	N 6	3712	N 9		
2703	L 6	3713	C10		
2705	L 7	3714	K 9		
2706	L10	3715	K 7		
2707	L19	3716	M10		
2708	K 7	3717	M10		
2711	L15	3718	L10		
2712	O21	3721	K21		
2713	N21	3722	L21		
2714	L13	3723	L11		
2715	C14	3724	K11		
2716	L21	3725	L12		
2718	M21	3726	D19		
2751	G26	3727	L15		
2752	I29	3728	M18		
2753	H29	3730	K 8		
2754	J26	3731	L18		
2755	J24	3732	L19		
2756	I24	3733	L19		
2757	O25	3734	L18		
2758	N28	3735	N20		
2761	G27	3736	L23		
2762	G29	3737	L24		
2763	D25	3738	M21		
2764	D26	3739	N18		
2765	D27	3741	L22		
3301	G 6	3742	N22		
3302	G 8	3743	L18		
3303	H 7	3745	O27		
3304	G 8	3747	N22		
3305	F12	3749	M25		
3306	G12	3750	N25		
3307	G12	3751	I25		
3308	G12	3752	N25		
3309	G16	3753	D26		
3311	F14	3754	O28		
3312	G14	3755	H25		
3314	G14	3761	L23		
3315	G16	5301	G18		
3316	G17	5302	F17		
3317	G17	5341	B18		
3318	F18	5342	B17		
3319	B 7	5361	E18		
3321	G18	5362	D17		
3322	F20	5391	C25		
3323	F21	5392	A 9		
3324	G21	5703	K25		
3325	G21	5704	L13		
3326	E19	6301	G16		
3327	F20	6302	F19		
3328	H 7	6303	F19		
3331	C 6	6341	C16		
3332	B 8	6342	B19		
3334	C 8	6343	B19		
3335	B12	6371	E16		
3336	G13	6372	D19		
3337	C12	6373	D19		
3338	C12	6391	J12		
3339	H 8	6392	I12		
3341	B12	6701	N 7		
3342	C14	6702	L 7		
3344	B15	6704	L16		
3345	C16	6705	M20		
3346	C17	6706	O 7		
3347	B17	6707	L 7		
3348	B18	6751	J25		
3349	N10	6752	J25		
3351	B18	6753	O24		
3352	B20	6754	I25		
3353	C21	6755	G28		
3354	B21	6756	G28		
3355	B21	6757	D27		
3356	A19	6758	C25		

B1 7401-9



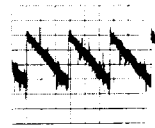
1V / div AC  
5 μS / div

B9 5603-2



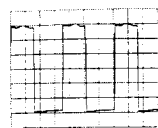
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5 μS / div

B17 7401-5



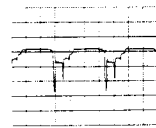
0.2V / div AC  
5 mS / div

B2 7401-3



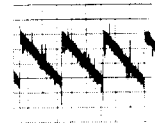
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5 μS / div

B10 7625-E



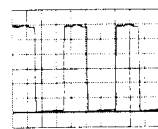
5V / div AC  
5 μS / div

B18 7401-6



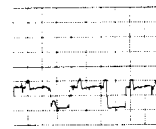
0.2V / div AC  
5 mS / div

B3 7416-B



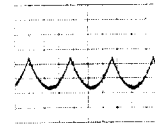
2V / div AC  
5 μS / div

B11 7415-B



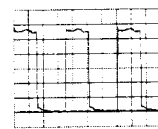
0.5V / div AC  
10 μS / div

B19 7401-11



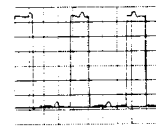
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5 mS / div

B4 7416-E



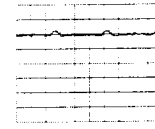
2V / div AC  
5 μS / div

B12 7415-C



1V / div AC  
10 μS / div

B20 7401-14



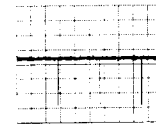
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5 μS / div

B5 7611-B



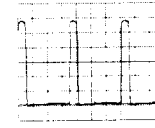
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5 μS / div

B13 7401-10



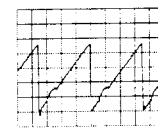
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B21 7401-2



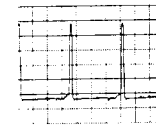
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5 μS / div

B6 7611-C



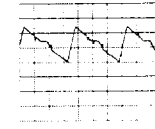
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B14 7401-8



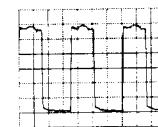
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B22 7401-19



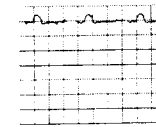
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B7 7624-G



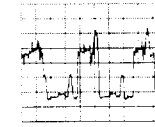
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B15 7401-15



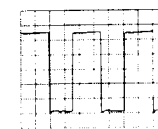
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B23 7434-B



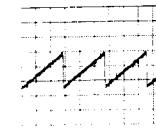
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10 μS / div

B8 7624-D



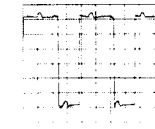
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B16 7401-16



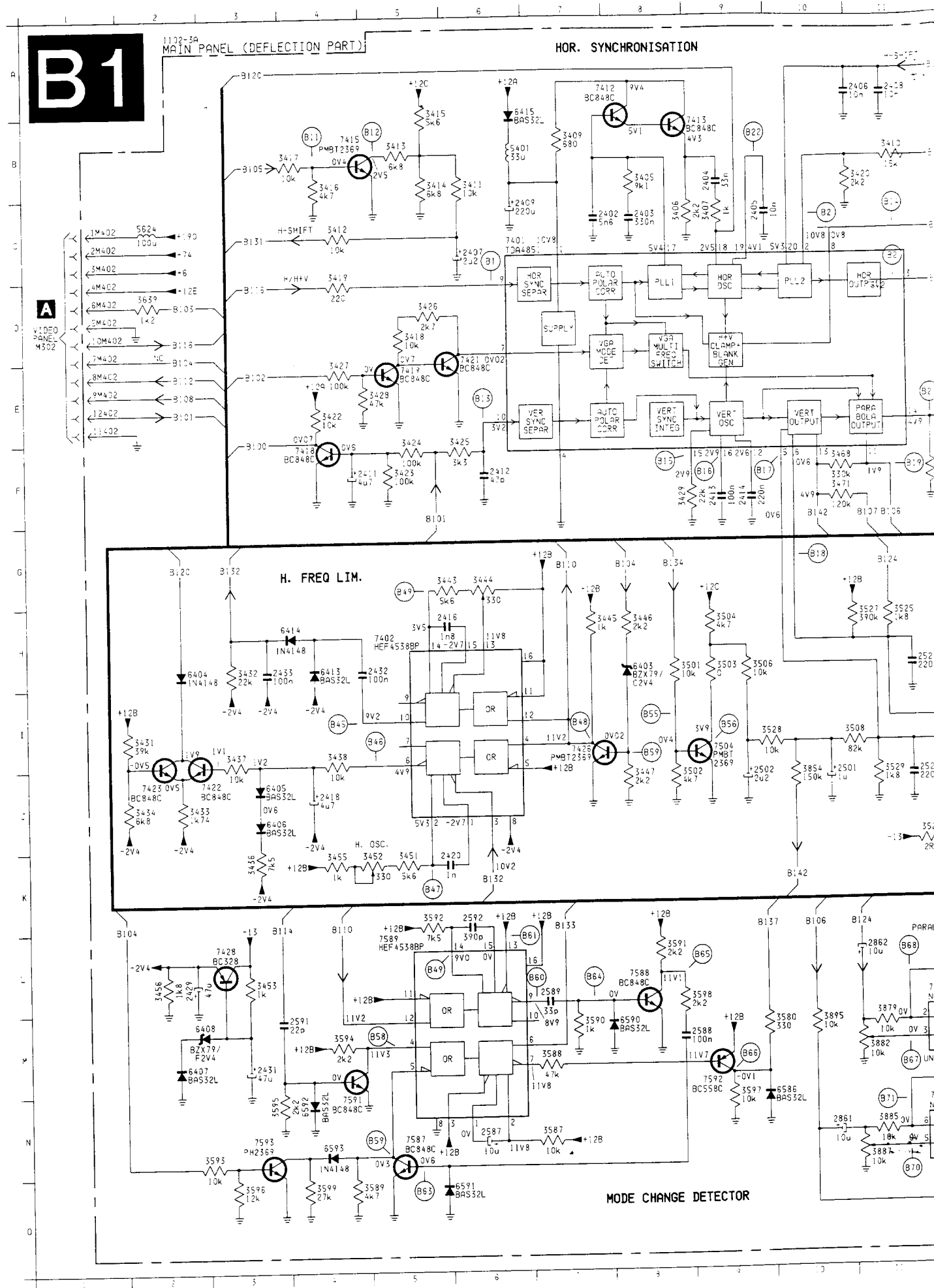
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5 mS / div

B24 7434-C

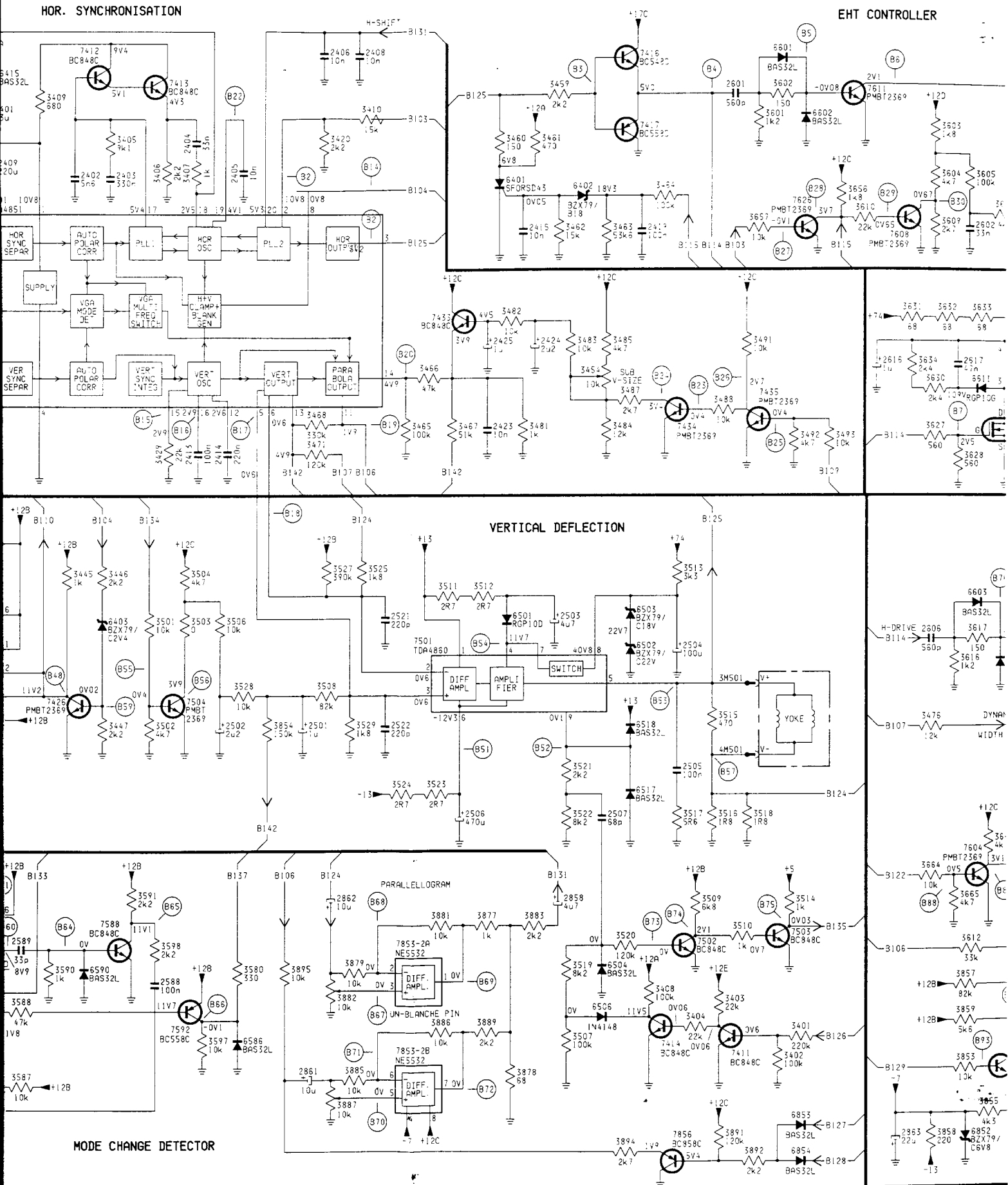


1V / div AC  
10 μS / div

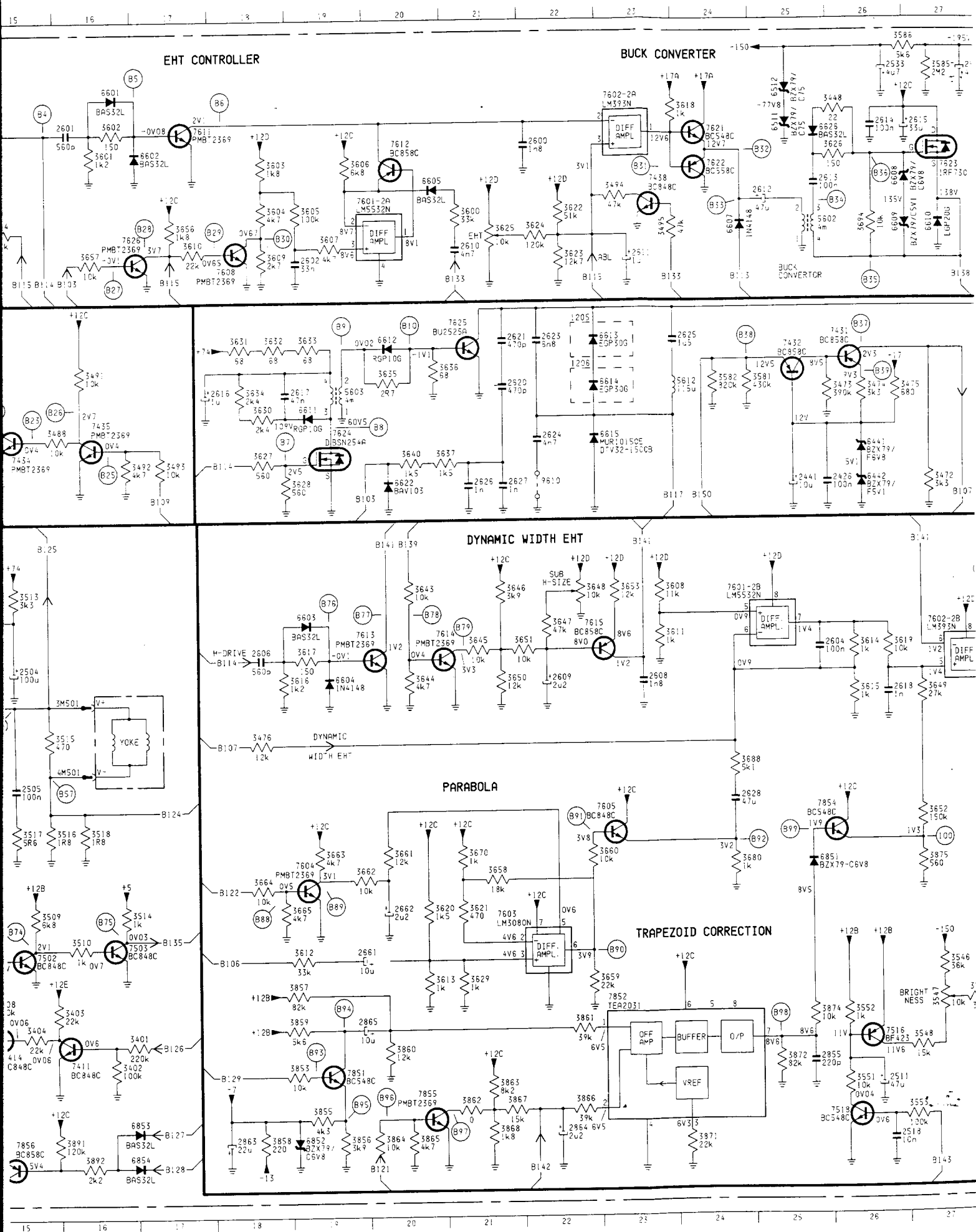




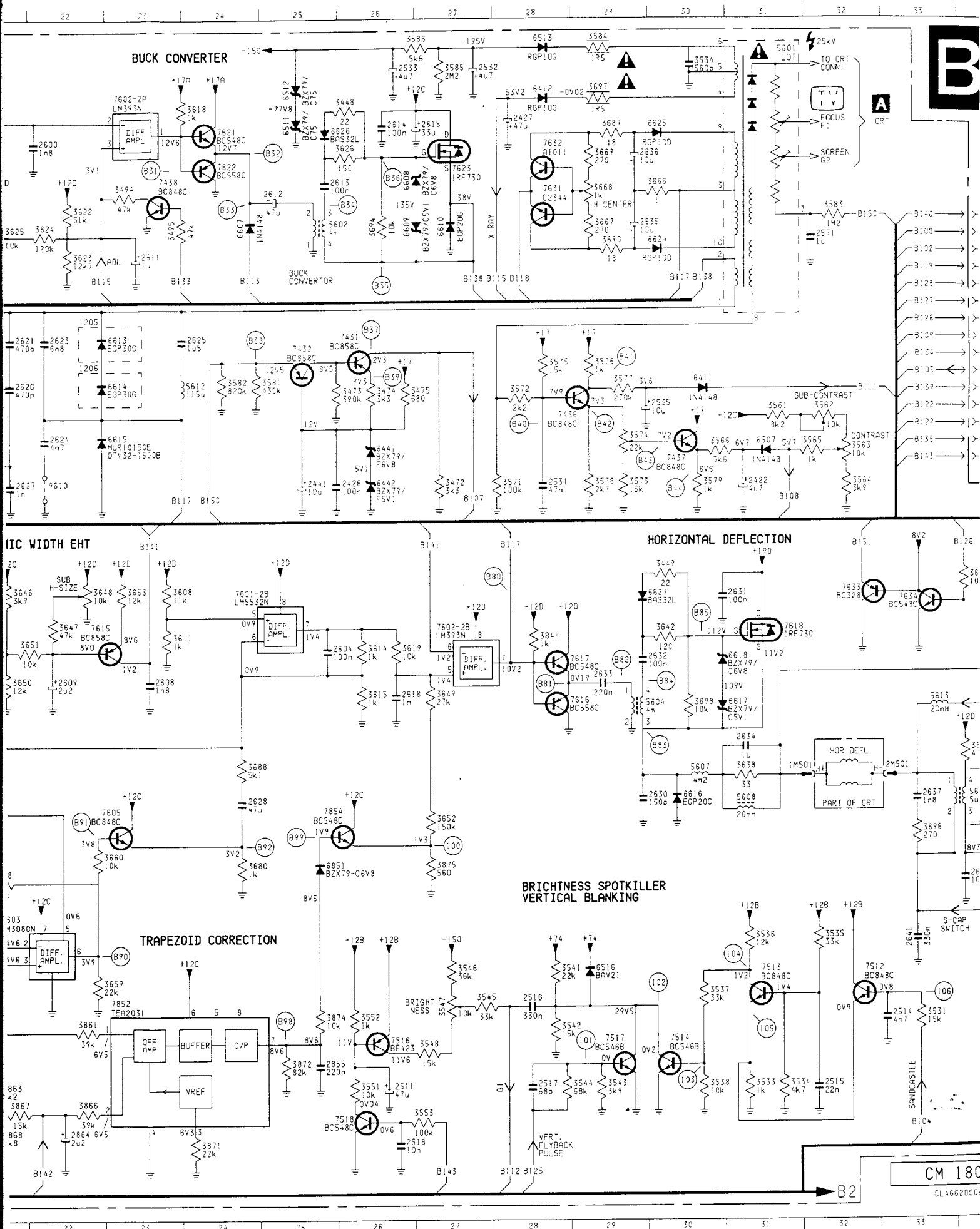
## EHT CONTROLLER



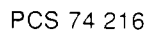
# Deflection



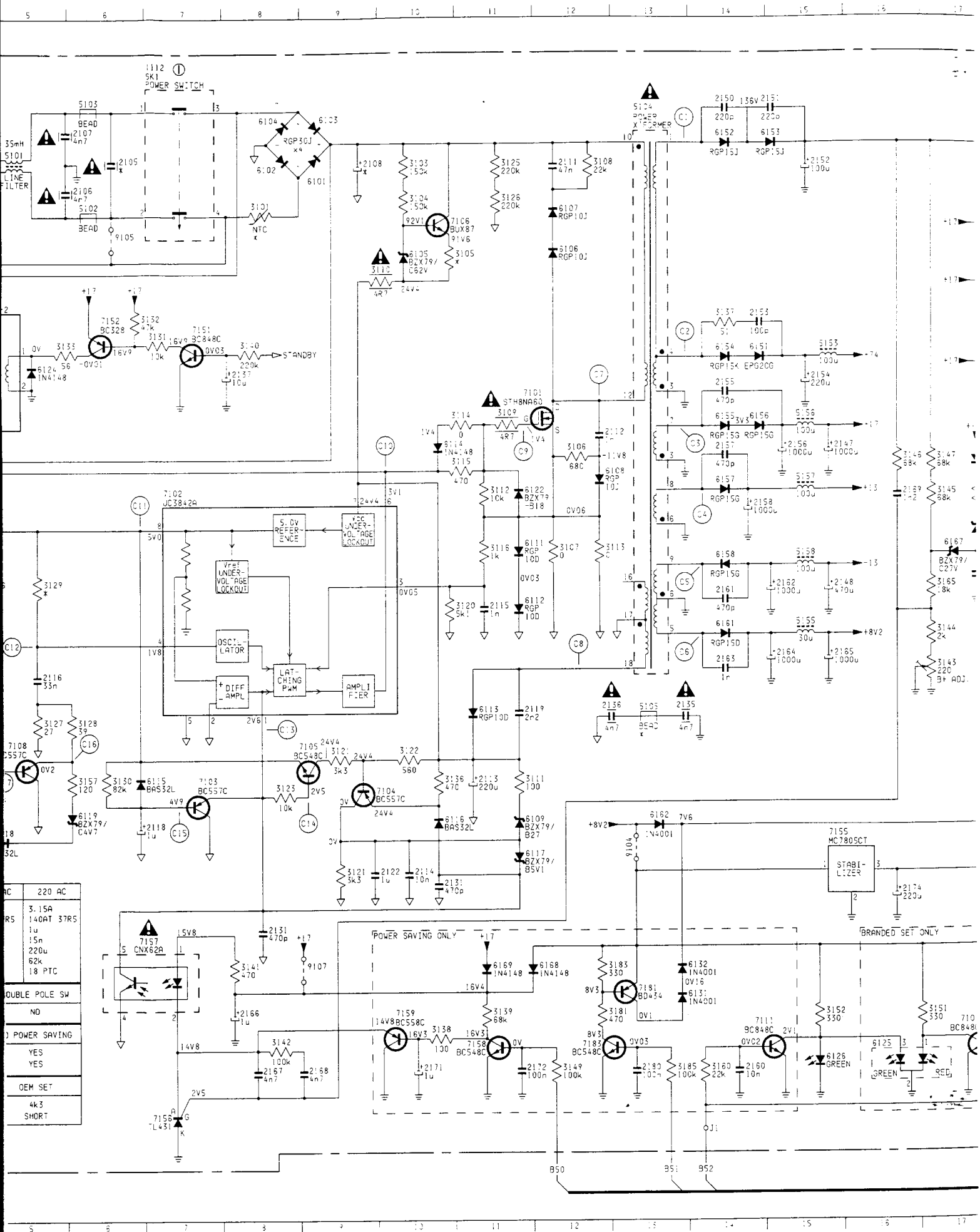
# Deflection

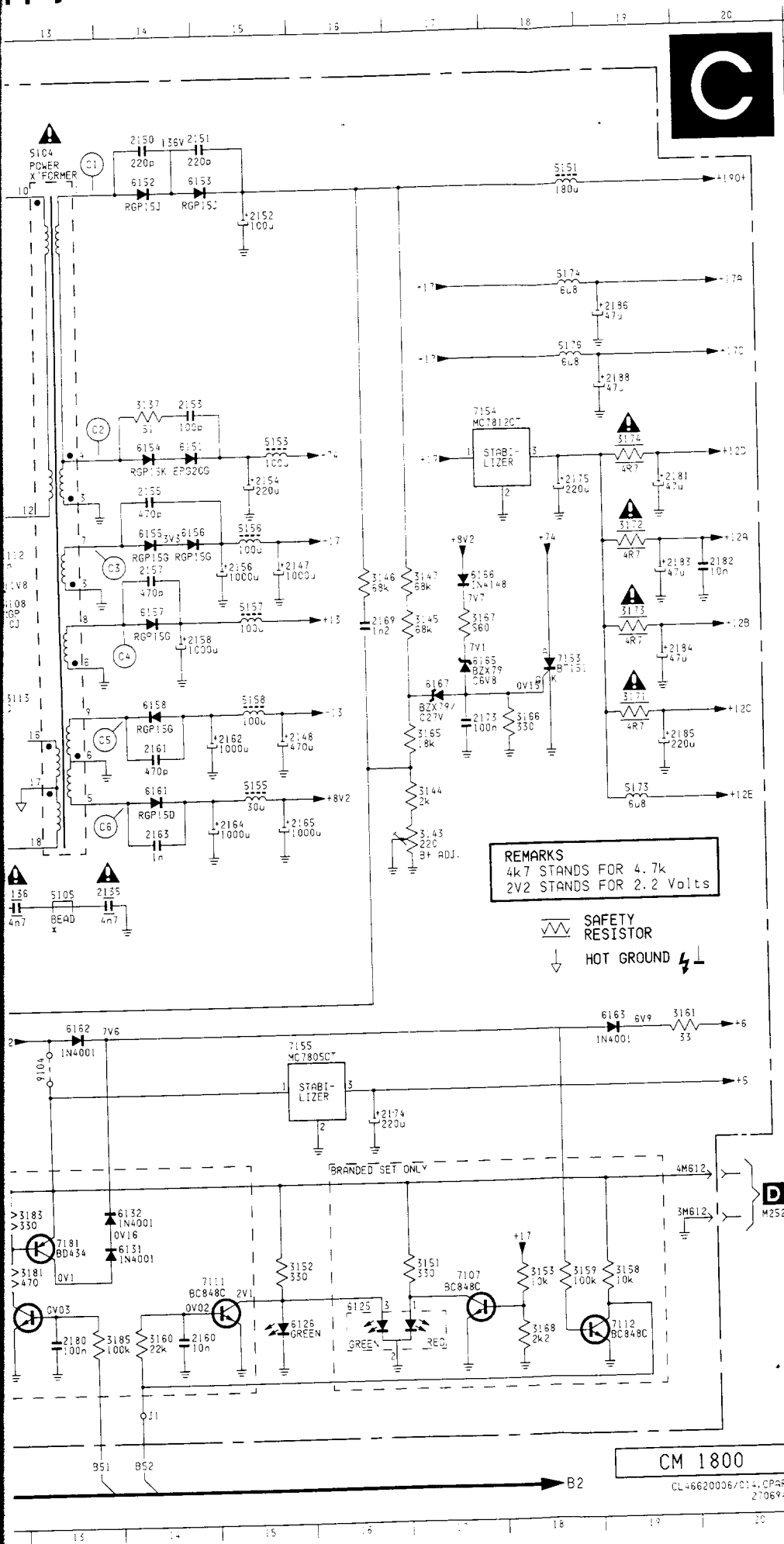






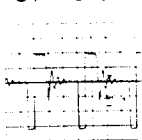
## Power supply





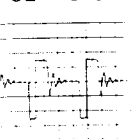
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1004	J 4	3165	H17
1005	A 7	3166	G18
1006	B 3	3167	F17
1007	B 3	3168	N18
1008	B 4	3171	G19
1009	B 6	3172	F19
1010	C 6	3173	F19
1011	B 6	3174	E19
1012	B 9	3181	M12
1013	J 4	3183	L12
1014	B12	3185	N13
1015	F12	35mH	B 5
1016	J11	5101	B 5
1017	K10	5102	C 6
1018	H11	5103	A 6
1019	I 5	5104	B13
1020	I 4	5105	L13
1021	K 7	5151	B18
1022	I 3	5155	H15
1023	K10	5156	F15
1024	L 8	5158	G15
1025	E 2	5173	H19
1026	I13	5174	C18
1027	I13	5176	D18
1028	E 3	6101	B 9
1029	F15	6102	B 8
1030	H15	6103	B 9
1031	A14	6104	B 8
1032	A15	6125	C10
1033	B15	6126	C12
1034	D14	6127	C12
1035	E15	6108	F12
1036	E14	6109	K11
1037	F15	6111	G11
1038	F14	6112	H11
1039	G14	6113	I11
1040	H14	6114	F10
1041	H14	6115	J 7
1042	H15	6116	K10
1043	H15	6117	K11
1044	H15	6118	K 5
1045	H15	6119	K 6
1046	M 8	6121	J 4
1047	N 8	6122	F11
1048	N 9	6124	E 5
1049	F18	6125	N16
1050	N10	6126	N15
1051	N11	6131	M13
1052	G17	6132	L13
1053	L16	6151	E14
1054	E18	6152	G14
1055	N13	6153	B15
1056	E19	6154	E14
1057	F15	6155	E14
1058	F19	6156	E14
1059	G19	6157	F14
1060	H19	6158	G14
1061	C19	6161	H14
1062	D19	6162	K13
1063	C 8	6163	K19
1064	B 3	6165	G17
1065	B10	6166	F17
1066	C10	6167	G17
1067	C11	6168	L12
1068	F12	6169	L11
1069	G12	7101	E12
1070	B12	7102	F 7
1071	E11	7103	J 7
1072	D10	7104	J 9
1073	J11	7105	J 9
1074	F11	7106	C10
1075	G12	7107	M17
1076	E11	7108	J 5
1077	F11	7109	J 4
1078	G11	7111	M15
1079	H11	7112	N19
1080	J 9	7151	D 7
1081	K 9	7152	D 6
1082	J10	7153	G18
1083	J 8	7154	D17
1084	B11	7155	K15
1085	C11	7156	N 7
1086	I 5	7157	L 7
1087	I 6	7158	M11
1088	H 5	7159	M10
1089	J 6	7181	M13
1090	D 7	7183	M12
1091	D 6	9102	E 3
1092	E 5	9103	E 4
1093	D 3	9104	K13
1094	J10	9105	C 6
1095	D14	9107	L 9
1096	M10		
1097	M11		
1098	E 9		
1099	L 8		
1100	M 8		
1101	I17		
1102	H17		
1103	F17		
1104	F16		
1105	F17		
1106	N12		
1107	M17		
1108	M15		
1109	M18		
1110	J 3		
1111	L 3		
1112	H 4		
1113	J 6		
1114	M19		

C1 5104-1



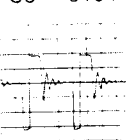
100V / div AC  
10 μS / div

C2 5104-2



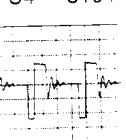
50V / div AC  
10 μS / div

C3 5104-



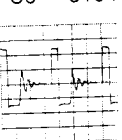
10V / div AC  
10 μS / div

C4 5104-



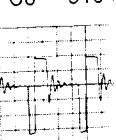
10V / div AC  
10 μS / div

C5 5104



10V / div AC  
10 μS / div

C6 5104



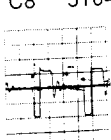
5V / div AC  
10 μS / div

C7 5104



100V / div AC  
10 μS / div

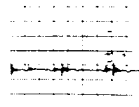
C8 5104



20V / div AC  
10 μS / div

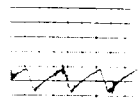


D6 7251-



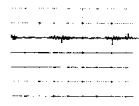
1V / div AC  
10  $\mu$ S / div

D7 7251-4



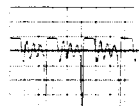
1V / div AC

D8 7251-8



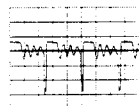
1V / div AC

D9 5251-8

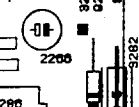
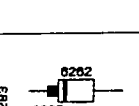


10V / div AC

D10 5251-5

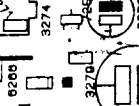


20V / div AC

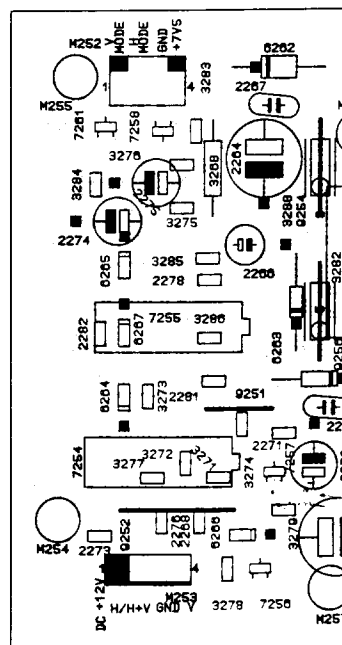


0208

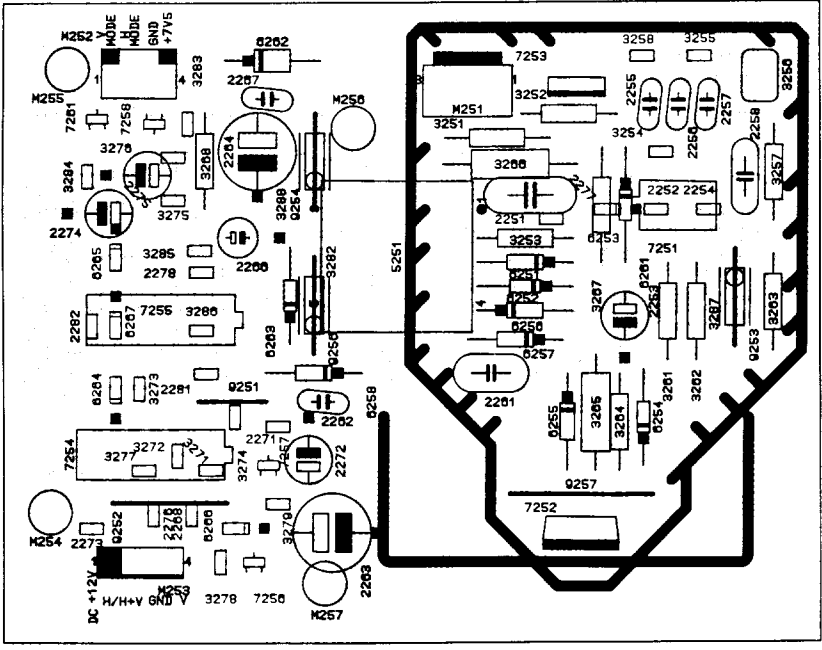
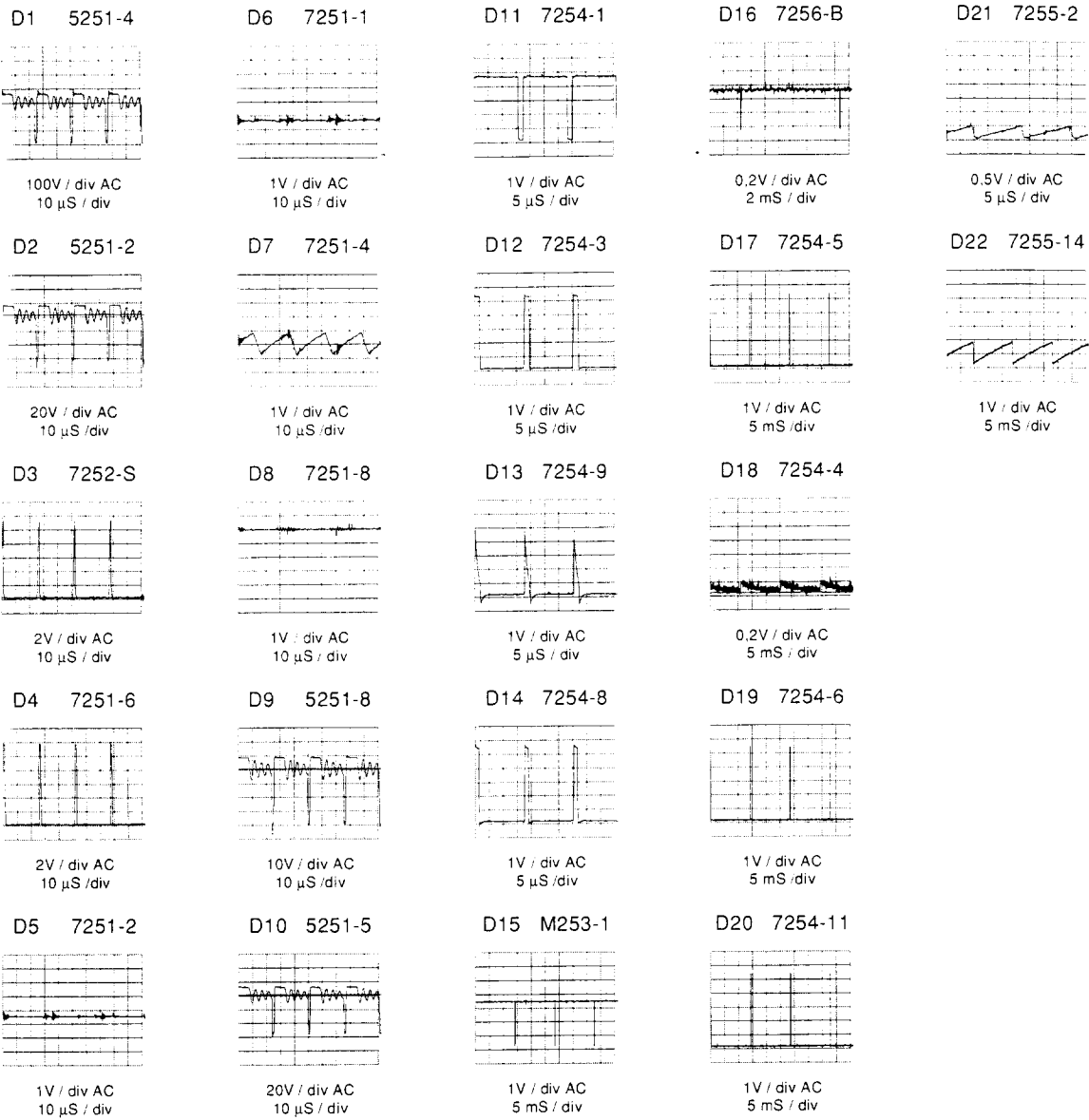
22

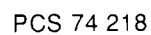


78 7258

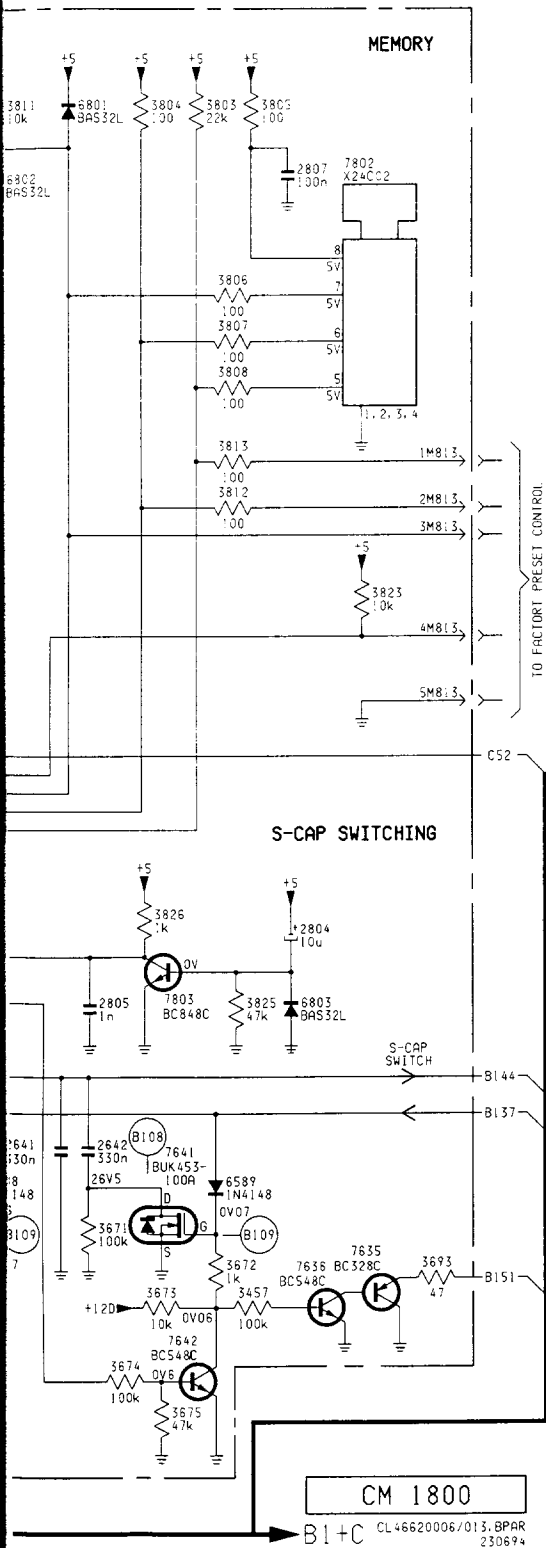


Power saving panel (1110)



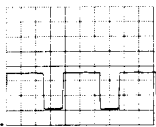


# B2



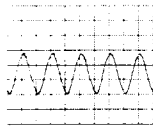
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1102	H 1
1108	B 9
1801	H 6
1802	L 2
1803	L 3
1804	L 5
1805	L 4
2200	A 6
2201	B 3
2202	D 3
2203	C 4
2204	E 4
2205	C 7
2206	F 7
2220	F 8
2641	L11
2642	L12
2643	L10
2644	L 8
2802	H 5
2803	I 7
2804	K14
2805	K12
2806	M 3
2807	E14
3200	B 4
3201	C 3
3202	E 3
3203	B 3
3204	D 3
3205	C 7
3206	C 7
3207	C 8
3208	D 8
3210	A 5
3211	A 5
3657	N13
3671	M12
3672	M13
3673	N12
3674	N12
3675	C13
3676	M10
3677	M11
3678	N11
3681	N10
3682	D11
3683	M 8
3684	M 7
3685	N 9
3686	N 8
3687	C 9
3693	M15
3800	H 8
3801	H 7
3802	H 7
3803	D13
3804	D12
3805	D13
3805	H14
3806	E13
3807	F13
3808	F13
3811	D11
3812	G13
3813	G13
3814	J 3
3815	J 3
3816	J 3
3817	J 4
3818	L 2
3819	L 2
3822	N 4
3824	M 4
3825	K13
3826	K12
3827	H 4
3828	H 3
3829	H 3
3830	H 3
3833	J10
3836	J11
3841	N 5
3842	N 5
3843	N 3
6201	A 4
6202	A 4
6203	A 4
6587	M 9
6588	M11
6589	M13
6801	D12
6802	E11
6803	K14
7201	B 5
7635	M14
7636	M14
7641	L13
7642	N13
7643	L11
7644	N11
7645	L 9
7646	N 9
7801	I 4
7802	E14
7803	K12
9201	B 7
9202	E 7
9203	A 3

B111 7801-22



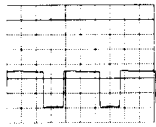
2V / div AC  
5  $\mu$ S / div

B119 7801-31



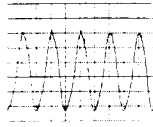
1V / div AC  
50 nS / div

B112 7801-23



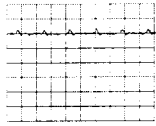
2V / div AC  
5  $\mu$ S / div

B120 7801-32



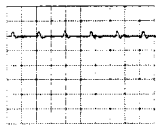
1V / div AC  
50 nS / div

B113 7801-24



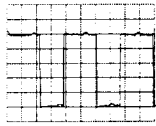
1V / div AC  
10  $\mu$ S / div

B114 7801-25



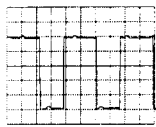
1V / div AC  
10  $\mu$ S / div

B115 7801-26



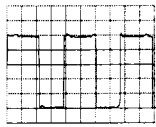
1V / div AC  
10  $\mu$ S / div

B116 7801-27



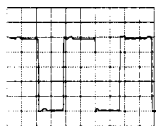
1V / div AC  
10  $\mu$ S / div

B117 7801-28

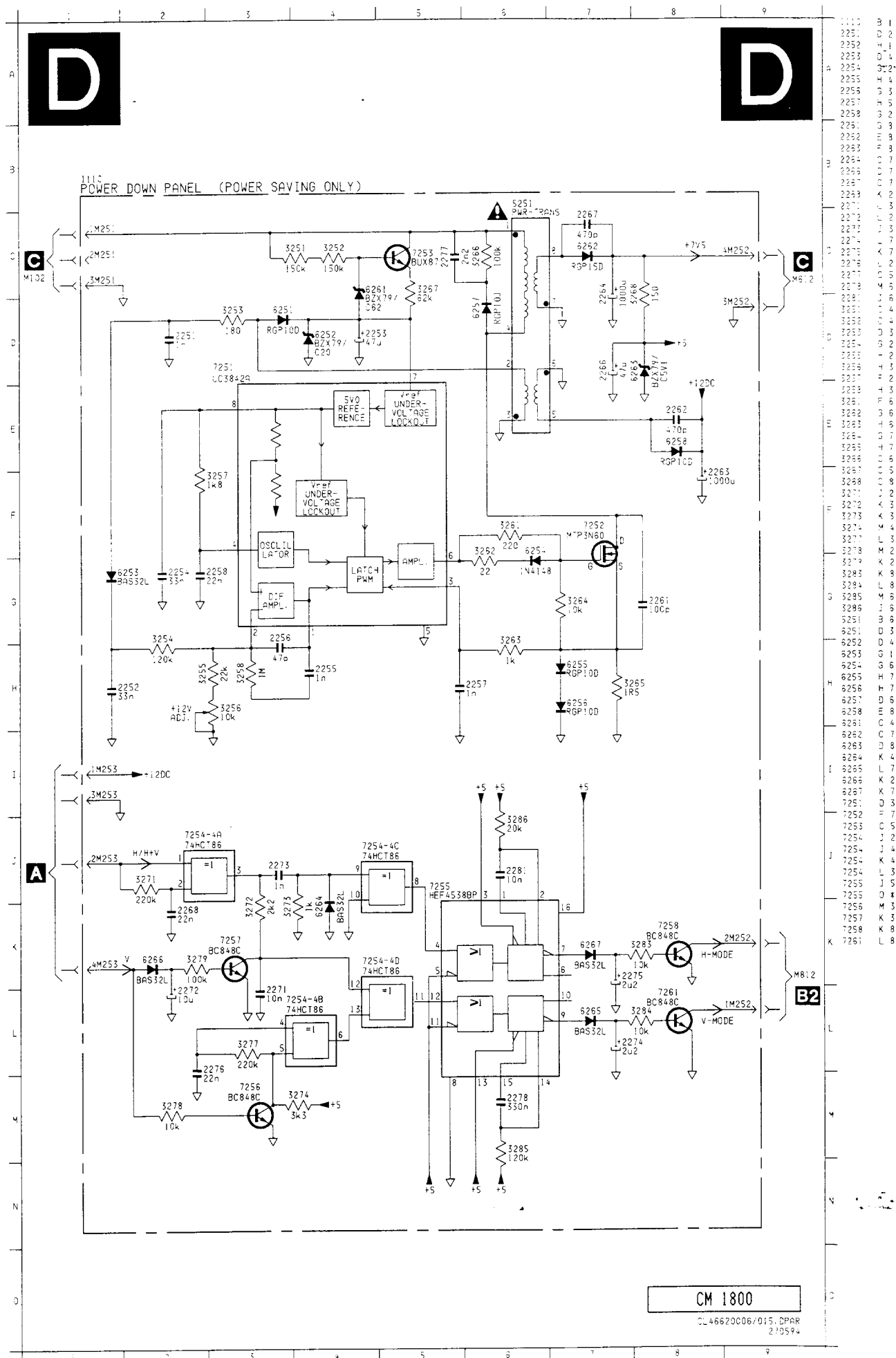


1V / div AC  
10  $\mu$ S / div

B118 7801-29



1V / div AC  
10  $\mu$ S / div



## 00. General :

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI VGA 1024 V6-1.04/PH BETA 4" interface card
- PGA1024 (4822 212 30916)
- PGA1280 (4822 212 30917)

are used as the video signal source. The signal patterns are selected from the "service test software" package (see user guide 4822 727 19896).

## 01. With ATI card :

- Installation instruction for the ATI interface card :
- Place the monitor (if possible) in east-west direction.
- Place the ATI interface card into the computer.
- Select the "vsetup" file from the "utility disk" belonging to the card.
- Select "8 bits" or "16 bits" rom operation depending on your computer type.
- Select "analog monitor"
- Select the monitor type from video ROM BIOS.
- Select "MAGNAVOX CM5000" for the resolutions:

640 \* 350 31.5 kHz/70 Hz  
 640 \* 400 31.5 kHz/70 Hz  
 640 \* 480 31.5 kHz/60 Hz  
 640 \* 480 37.8 kHz/60 Hz  
 800 \* 600 35.2 kHz/56 Hz  
 800 \* 600 37.8 kHz/60 Hz  
 800 \* 600 48.0 kHz/72 Hz  
 1024 \* 768 35.5 kHz/87 Hz  
 1024 \* 768 48.4 kHz/60 Hz  
 1024 \* 768 56.0 kHz/70 Hz

- Reboot your computer again.
- Put the floppy disk containing the service test software package in the computer and select the test pattern indicated for the service setting.

## 02. With normal VGA card :

If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 \* 480, 31.5 kHz/60 Hz (only) as signal source.

## 03. AC/DC Measurement:

The measurements for AC waveform and DC figure is based on 1024 \* 768, 56 kHz/70 Hz resolution mode with test pattern "gray scale".

## 1.0. B+ supply voltage (3143), Power saving (3256,+12V ADJ), EHT (3625).

- Apply a video signal in the 640 \* 480 with 31.5 kHz/60Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness front control 3547 and the contrast front control 3563 to the minimum position.
- Pre-set trimming potentiometer 3143,3625 and 3256 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 3143 so that the reading on the dc voltmeter is 190 V +/- 0.5 Vdc.
- Connect a dc voltmeter between the "+" pole of capacitor 2263 (on power down panel) and ground (common ground).
- Set the trimming potentiometer 3256 so that the reading on the dc voltmeter is 12.0 +/- 0.1 Vdc.

## 2.0. Line frequency limit adjustment (3444)

- Set the brightness front control 3547 at center-click position and the contrast front control 3563 to the maximum position.

## METHOD 1.

- Apply a video signal in the 1024 \* 768 with 56 kHz/70 Hz mode
- Select the "cross-hatch" pattern.
- Connect a dc voltmeter between pin 10 of IC7402 and ground.
- Set the trimming potentiometer 3444 until the reading of dc voltmeter is 9.5 vdc.

## METHOD 2.

- Apply a video signal in the 1280 \* 1024 with 64 kHz/60 Hz mode. (with CHROMA 2000)
- Select the "cross-hatch" pattern.
- Connect an oscilloscope to pin 10 of IC7402
- Using pot-meter 3444, set the timing (duty-off pulse width) of pulse at pin 10 of IC 7402 to 1 uS.

CHROMA 2000 timing chart for 1280 \* 1024 with 64 kHz/60 Hz

63.75 kHz/59.747 Hz PIXEL = 110.160 MHz

### HORIZONTAL

### VERTICAL

FRAME BORDER = 0.0000 us	FRAME BORDER = 0.0000 us
TOTAL SIZE = 15.686 us	TOTAL SIZE = 16.737 us
DISPLAY SIZE = 11.620 us	DISPLAY SIZE = 16.062 us
REAR PORCH = 1.997 us	REAR PORCH = 0.596 ms
SYNC WIDTH = 1.489 us	SYNC WIDTH = 0.047 ms
SYNC POLARITY = +/-	SYNC POLARITY = +/-

## 3.0. Horizontal synchronisation (3452)

- Set the brightness front control 3547 and the contrast front control 3563 to the maximum position.
- Set H-phase control at center position (OSD scale reach to 50).
- Apply a video signal in the 1024 \* 768 with 56 kHz/70 Hz mode.
- Select the "cross-hatch" pattern.
- Turn off the power
- To connect pin 9 of IC 7401 (TDA4851) to ground.
- Apply the positive polarity H-SYNC through a 2k2 ohm resistor to the base of transistor 7426 (To connect a 2k2 ohm resistor between M402 pin 10 and the base of transistor 7426)
- Turn on the power.
- Adjust trimming potentiometer 3452 until the picture stands straight.
- Turn off the power.
- Remove the grounding from pin 9 of IC 7401.
- Remove the 2k2 resistor.
- Turn on the power.
- Adjust the raster centering by potmeter 3668 until raster located in the bazzle center (screen center).

## 4.0. High-voltage EHT (3625)

- Apply a video signal in the 1024 \* 768 with 56 kHz/70 Hz mode.
- Select the "cross-hatch" pattern.
- Set the H-width control at minimum position (OSD scale reach to 0).
- Set the brightness front control 3547 and the contrast front control 3563 to the minimum position.
- Turn off the power.
- Connect a "high-voltage voltmeter" between the high-voltage connection of the picture tube and earth.
- Turn on the power.
- Set the EHT trimming potentiometer 3625 so that the "high-voltage voltmeter" reads 24.5KV +/- 0.2 KV.
- Turn off the power.
- Remove the "high-voltage voltmeter" from the picture tube.
- Turn on the power again.

## 5.0. Adjustment of pre-size (3648-H,3454-V)

### 5.1. Pre-sizing for H-Width (3648)

- Apply a video signal in the 640 \* 480 with 35.0 kHz/67 Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness front control 3547 and contrast front control 3563 in the mechanical mid-position.
- Adjust the H-Width to maximum (OSD scale indicator reach to 100) by press key '+'.
- Adjust the sub H-Width control by potmeter 3648 untill the horizontal width reach to bezel (edge).

## 5.2. Pre-sizing for V-Size (3454)

- Apply a video signal in the 800 \* 600 with 48 kHz/72 Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness front control 3547 and contrast front control 3563 in the mechanical mid-position.
- Adjust the V-Size to maximum (OSD scale indicator reach to 100) by press key '+'.
- Adjust the sub V-Size control by potmeter 3454 untill the vertical height reach to bezel (edge).

## 6.0. Focus setting

- Apply a video signal in the 800 \* 600 with 48 kHz/72Hz mode.
- Select the "@" pattern.
- Set the brightness front control 3547 to mid-position and contrast front control 3563 to maximum position.
- Adjust focus potentiometer (top knob on the line output transformer) so that the picture at 2/3 of the diagonal lines (from center to four corners) of the displayed screen is as sharp as possible.

## 7.0. Adjustment of cut - off

- \* VG2 (bottom knob on the line output transformer)
- \* Cut-off points of the picture tube (3324, 3354, 3384)
- \* White "D" (3303, 3363)
- Pre-set trimming potentiometers 3324, 3354, 3384 and 3303, 3363 to the mechanical mid-position.
- Apply a video signal in the 640 \* 480 with 31.5 kHz/60 Hz mode.
- Select the full white pattern.
- Set the brightness front control 3547 to the center click position and contrast front control 3563 to the mechanical minimum position.
- Set VG2 potentiometer on the line output transformer to minimum position.
- Using the VG2 setting key, increase the VG2 voltage until a color is just visible (the colour may be red, green or blue).
- Then set the cut-off points trimming pot-meter belonging to the two colours not yet visible (3324, 3354 or 3384) so that an optimum white background (raster) color is obtained.
- Set the contrast front control 3563 to maximum in order to check that the background (raster) color remains the same even at maximum contrast.
- Then set the contrast front control 3563 to the central position again.

## 7.1. White "D" (3303, 3363)

- Set the contrast front control 3563 to maximum position.
- Set the brightness front control 3547 at center click position.
- Adjust potentiometer 3303, 3363 to the same light output level so that an optimal display color (White "D") is obtained.
- If necessary, adjust sub-contrast potentiometer 3562 for the optimal light output of the video display (until the brightness no longer increases).

## 8.0. Picture geometry setting (factory pre-set modes)

- Set brightness front control 3547 and the contrast front control 3563 in the mechanical central position.
- Apply a video signal with cross-hatch pattern.
- Turn off the power.

- To short M813 pin 3 and pin 5.
- Turn on the power.

## 8.1. Horizontal geometry (OSD control)

- Adjust the H-width to 260 mm.
- Adjust the H-phase to center position.

## 8.2. Vertical geometry (OSD control)

- Adjust vertical size to 195 mm.
- Adjust V-phase to center position.

## 8.3. Parallelo distortion (3882)

- Apply a video signal in the 1024 \* 768 with 60 kHz/ 75Hz mode.
- Select the "cross-hatch" pattern.
- Adjust pot-meter 3882 to get optimum vertical line.

## 8.4. Unbalance-pincushion distortion (3887)

- Apply a video signal in the 1024 \* 768 with 60 kHz/ 75 Hz mode.
- Select the "cross-hatch" pattern.
- Adjust pot-meter 3887 to get optimum vertical line.

## 8.5. Pincushion (OSD control)

- Adjust the pincushion to straight vertical lines of the left and right edge.

## 8.6. Trapezium (OSD control)

- Adjust the trapezium to get optimum vertical line.

## 8.7. Store the preset result by pressing the store key "I↵".

- Repeat procedure 8.1-8.2 and 8.5-8.7 until all the pre-set timing has been adjusted completely.
- Turn off the power.
- Remove the connection between M813 pin 3 and pin 5.
- Turn on the power.

## 8. 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).

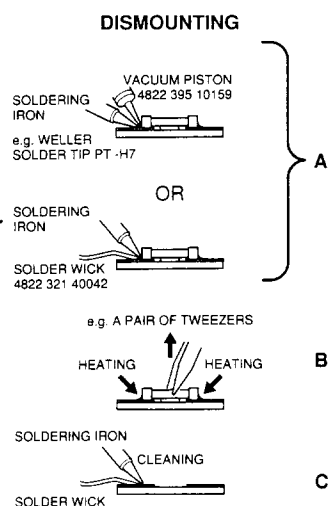


Fig. 8.1

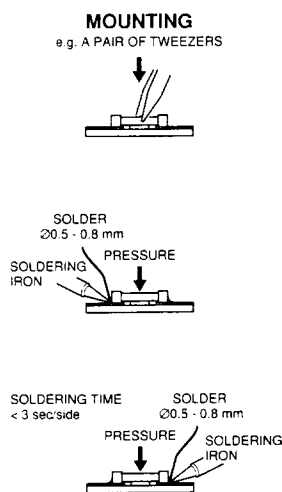


Fig. 8.2

#### 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 the 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).

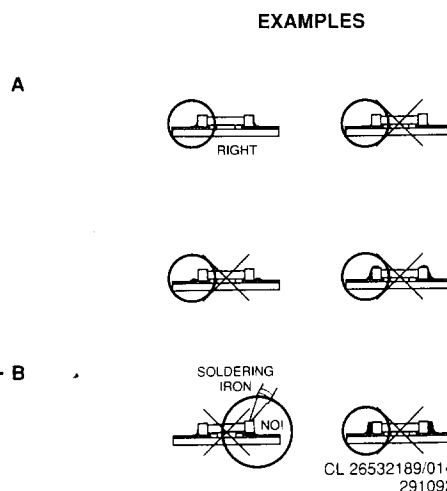


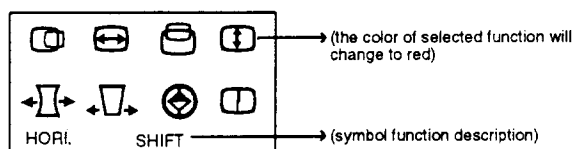
Fig. 8.3



The monitor is factory pre-set for the 7 video timings/mode.  
(ref. Technical data)  
In addition this monitor provides the ability to store 7 additional video timing/modes and related adjustments.

#### A) User Adjustments (for Factory pre-set modes and new modes)

- \* Press knob ① to switch the monitor on.
- \* Press  $\triangleright$  and the following picture will be displayed :

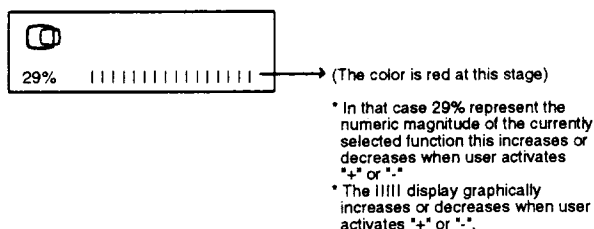


- \* This picture will disappear after 20 seconds if no adjustment is performed.
- \* Press "+" or "-" to select the item in the following order or backwards:

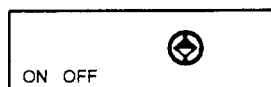
H-SHIFT<--->H-SIZE<--->V-SHIFT<--->V-SIZE<--->  
PINCUSHION<--->TRAPEZOID<--->POWER SAVING  
<--->DEGAUSSING

To perform adjustment:

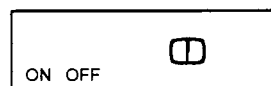
- \* Press  $\triangleright$  to confirm the selected item. After selection is done, only selected item remains visible together with magnitude indicators as shown below:



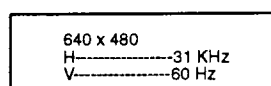
- \* Press "+" or "-" to adjust the magnitude of the change.
- \* Press  $\triangleright$  the whole function symbols will show again, then you may perform other function adjustment.
- \* If you select and confirm the "●" (power saving) item, then the following picture will be displayed.



- \* Press "+" or "-" to select "ON" or "OFF". (the color of selected item is red)
- \* If you select and confirm the "□" (Degauss) item, it will show Degaussing (active status) for 5 seconds then the following picture will be displayed:



- \* After all the adjustments have been done, press  $\triangleright$  to store the completed adjustment, then the following example picture will appear:



- \* Above display will disappear automatically after about 2 seconds (standard time out).

#### B) Power Saver

- \* In normal working conditions, Input signal is complete with its two synchronizations.
- \* LED Light is Green, this is the **ON MODE**.
- \* This monitor incorporates an energy saver feature which is activated by default, If one of the two following conditions is true:
  - One of the two synchronization signals is missing. Display is shut down after 5 seconds. LED Light blinks quickly, 0.25 second ON and 0.25 second OFF. This is the **SUSPEND** or **STAND-BY MODE**.
  - Both synchronization signals are missing. LED Light blinks slowly, 0.25 second ON and 1.75 second OFF. This is the **OFF MODE**.

- \* When both synchronization signals are detected again display is activated back in **ON MODE**.
- \* You may override the "Power Saving" function by pressing "+" and " $\triangleright$ ".

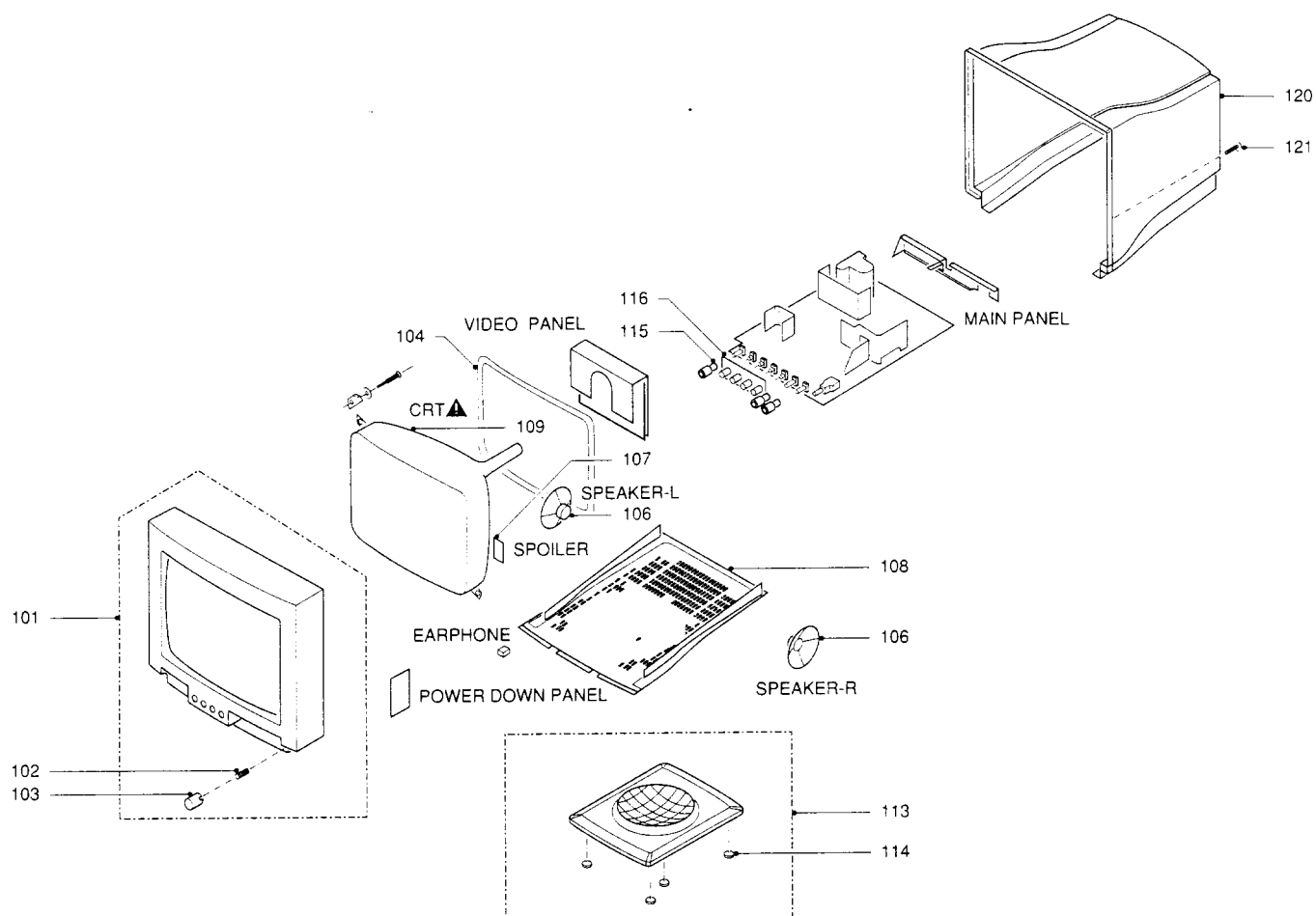
101

#### C) Other Features

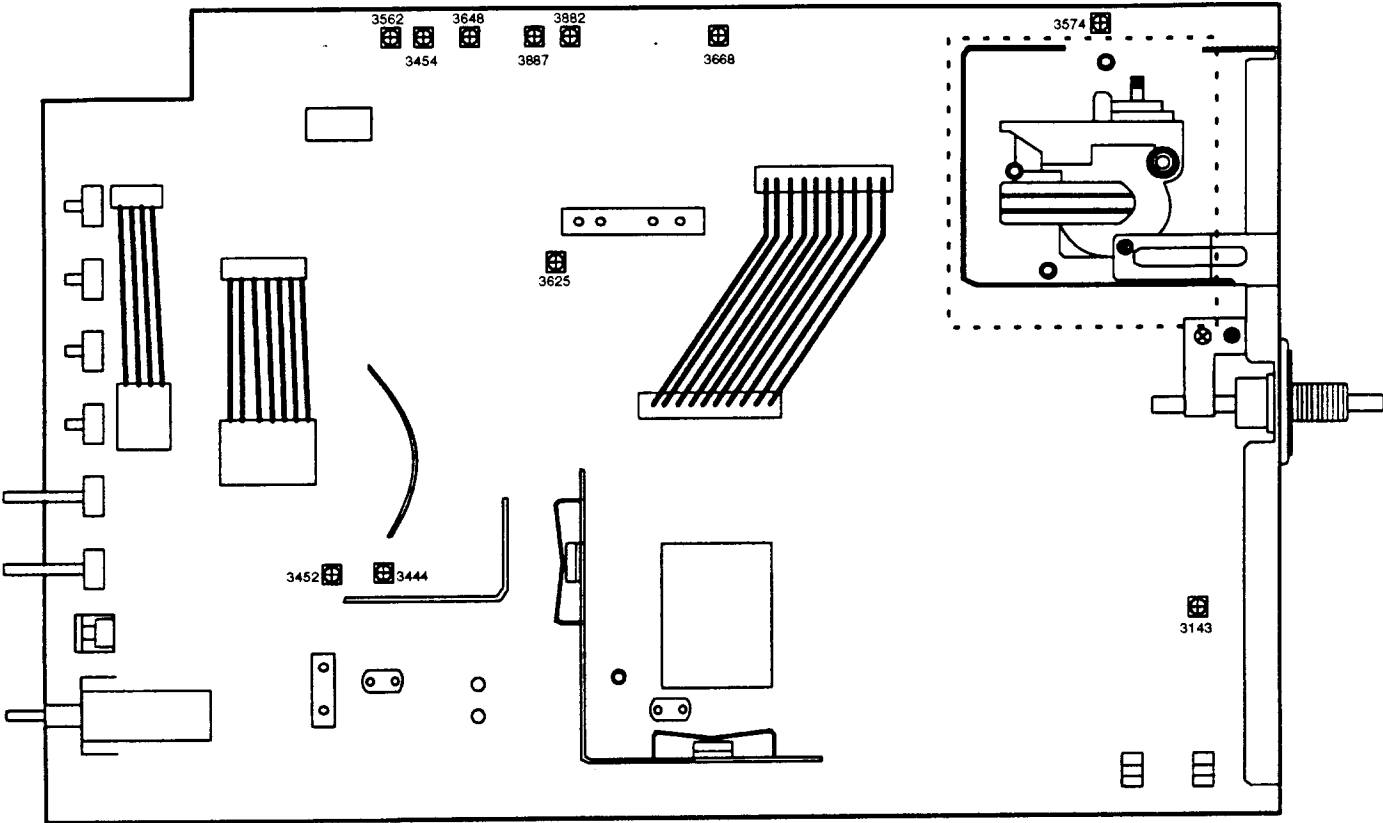
- \* When using one of the video signals, You may recall factory pre-set adjustments by pressing "-" and " $\triangleright$ ".
- \* You also may want to keep the OSD menu active beyond its standard time-out of 2 seconds. To do this press "+" and "-" simultaneously instead of " $\triangleright$ ".
- \* To press "+" and "-" simultaneously again, it will show resolution and frequency pattern, but it will only show frequencies pattern if the timing is not a factory pre-set mode.
- \* To stop OSD press "+" and "-" simultaneously again.

102  
103

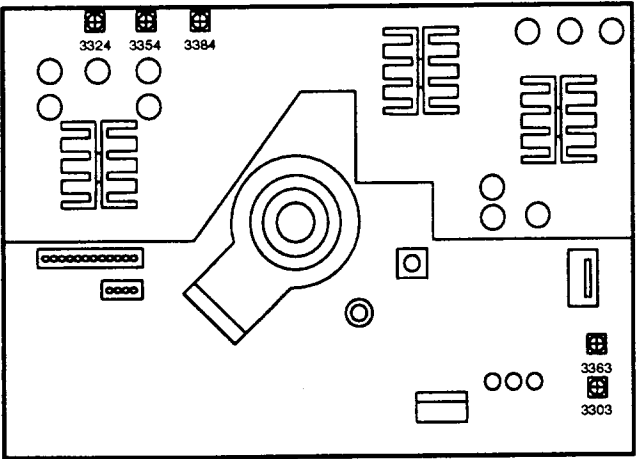
## 10. Spare parts list



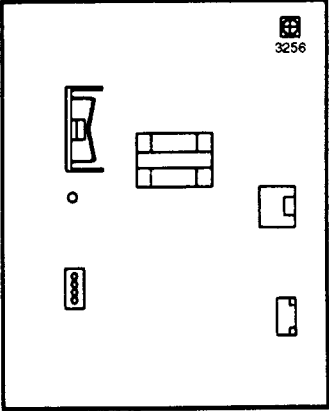
MAIN BOARD



VIDEO BOARD



POWER SAVING



6587 4822 130 30621 1N4148  
6588 4822 130 30621 1N4148  
6589 4822 130 30621 1N4148  
6590 4822 130 80446 BAS32L  
6591 4822 130 80446 BAS32L  
6592 4822 130 80446 BAS32L  
6593 4822 130 30621 1N4148  
6601 4822 130 80446 BAS32L  
6602 4822 130 80446 BAS32L  
6603 4822 130 80446 BAS32L

6604 4822 130 30621 1N4148  
6605 4822 130 80446 BAS32L  
6607 4822 130 30621 1N4148  
6608 4822 130 34278 BZX79-C6V8  
6609 4822 130 34233 BZX79-C5V1  
6610 4822 130 83539 EGP20G  
6611 4822 130 42489 RGP10G  
6612 4822 130 42489 RGP10G  
6613 4822 130 83128 EGP30G  
6614 4822 130 83128 EGP30G

6615 4822 130 82584 DTV32-1500B  
6616 4822 130 83539 EGP20G  
6617 4822 130 34233 BZX79-C5V1  
6618 4822 130 34278 BZX79-C6V8  
6622 4822 130 80877 BAV103  
6624 4822 130 31607 RGP10D  
6625 4822 130 31607 RGP10D  
6626 4822 130 80446 BAS32L  
6627 4822 130 80446 BAS32L  
6801 4822 130 80446 BAS32L

6802 4822 130 80446 BAS32L  
6803 4822 130 80446 BAS32L  
6851 4822 130 34278 BZX79-C6V8  
6852 4822 130 34278 BZX79-C6V8  
6853 4822 130 80446 BAS32L  
6854 4822 130 80446 BAS32L



7101 4822 130 63631 STH8NA60  
7101 4822 130 63631 STH8NA60  
7101 4822 130 63625 STP7NA60  
7102 4822 209 83909 UC3842AN  
7103 4822 130 42231 BC557C  
7104 4822 130 42231 BC557C  
7105 4822 130 44196 BC548C  
7106 5322 130 44918 BUX87  
7107 5322 130 42136 BC848C  
7108 4822 130 42231 BC557C

7109 4822 130 44196 BC548C  
7111 5322 130 42136 BC848C  
7112 5322 130 42136 BC848C  
7151 5322 130 42136 BC848C  
7152 4822 130 44104 BC328  
7154 4822 209 81726 MC7812CT  
7155 4822 209 80891 MC7805CT  
7156 4822 209 81397 TL431CLP  
7157▲ 4822 130 80908 CNX62A  
7158 4822 130 44196 BC548C

7159 5322 130 60068 BC558C  
7181 4822 130 40995 BD434  
7183 4822 130 44196 BC548C  
7201 4822 209 31668 TD4A053  
7401 4822 209 32284 TA84851V1E  
7402 5322 209 10422 HEF4538BP  
7411 5322 130 42136 BC848C  
7412 5322 130 42136 BC848C  
7413 5322 130 42136 BC848C  
7414 5322 130 42136 BC848C

7415 4822 209 73852 PMBT2369  
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7417 5322 130 60068 BC558C  
7418 5322 130 42136 BC848C  
7419 5322 130 42136 BC848C  
7421 5322 130 42136 BC848C  
7422 5322 130 42136 BC848C  
7423 5322 130 42136 BC848C  
7426 4822 209 73852 PMBT2369  
7428 4822 130 44104 BC328

7431 4822 130 42513 BC858C  
7432 4822 130 42513 BC858C  
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7435 4822 209 73852 PMBT2369  
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7437 5322 130 42136 BC848C  
7438 5322 130 42136 BC848C  
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7502 5322 130 42136 BC848C

7503 5322 130 42136 BC848C  
7504 4822 209 73852 PMBT2369  
7512 5322 130 42136 BC848C  
7513 5322 130 42136 BC848C

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7516 4822 130 41646 BF423  
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7587 5322 130 42136 BC848C  
7588 5322 130 42136 BC848C

7589 5322 209 10422 HEF4538BP  
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7593 4822 130 41594 PH2369  
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7603 4822 209 80723 LM3080N  
7604 4822 209 73852 PMBT2369  
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7612 4822 130 42513 BC858C  
7613 4822 209 73852 PMBT2369  
7614 4822 209 73852 PMBT2369  
7615 4822 130 42513 BC858C  
7616 5322 130 60068 BC558C  
7617 4822 130 44196 BC548C  
7618 5322 130 62262 IRF730  
7621 4822 130 44196 BC548C  
7622 5322 130 60068 BC558C

7623 5322 130 62262 IRF730  
7624 4822 130 63081 BSN254A  
7625 4822 130 63329 BU2525A  
7626 4822 209 73852 PMBT2369  
7631 4822 130 63274 2SC2344E  
7632 4822 130 63275 2SA1011E  
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7635 4822 130 44104 BC328  
7636 4822 130 44196 BC548C

7641 4822 130 63131 BUK453-100A  
7642 4822 130 44196 BC548C  
7643 4822 130 63131 BUK453-100A  
7644 4822 130 44196 BC548C  
7645 4822 130 63131 BUK453-100A  
7646 4822 130 44196 BC548C  
7801 4822 209 33553 PCE84C886P/029  
7802 4822 209 30976 ST24C02A  
7802 4822 209 33643 ST24C02CB6 (ST)8P  
7803 5322 130 42136 BC848C

7851 4822 130 44196 BC548C  
7852 4822 209 31125 TEA2031A  
7853 5322 209 86234 NE5532N  
7854 4822 130 44196 BC548C  
7855 4822 209 73852 PMBT2369  
7856 4822 130 42513 BC858C

## 1103 Video Panel A

### Various

4822 265 10274 F301; F302; F303  
4822 265 41418 12P (M302)  
4822 265 31206 4P (M303/M301)  
4822 265 41416 7P (M305)  
4822 255 70292 Socket for crt

1103▲ 4822 212 31451 Video panel

1106▲ 4822 526 20183 Spoiler



2301 4822 122 31797 22nF 10% 63V  
2302 5322 122 31842 330pF 2% 63V  
2303 4822 122 31767 150pF 2% 63V  
2305 4822 122 32482 22pF 2% 63V  
2306 4822 122 31971 10pF 2% 63V  
2307 4822 122 31797 22nF 10% 63V  
2308 4822 124 80606 1μF 20% 160V  
2309 4822 122 31766 120pF 2% 63V  
2311 4822 124 22499 10μF 160V  
2312 4822 122 33968 1nF 5% 500V

2313 4822 252 60127 DSP201M  
2331 4822 122 31797 22nF 10% 63V  
2332 5322 122 31842 330pF 2% 63V  
2334 4822 122 31768 180pF 2% 63V  
2335 4822 122 32482 22pF 2% 63V  
2336 4822 122 31971 10pF 2% 63V  
2337 4822 122 31797 22nF 10% 63V  
2338 4822 124 80606 1μF 20% 160V  
2341 4822 124 22499 10μF 160V  
2343 4822 252 60127 DSP201M

2361 4822 122 31797 22nF 10% 63V  
2362 5322 122 31842 330pF 2% 63V  
2364 4822 122 31768 180pF 2% 63V

2365 4822 122 32482 22pF 2% 63V  
2366 4822 122 31971 10pF 2% 63V  
2367 4822 122 31797 22nF 10% 63V  
2368 4822 124 80606 1μF 20% 160V  
2371 4822 124 22499 10μF 160V  
2372 4822 122 33968 1nF 5% 500V  
2373 4822 252 60127 DSP201M

2391 4822 122 31971 10pF 2% 63V  
2392 4822 122 32482 22pF 2% 63V  
2393 4822 122 31797 22nF 10% 63V  
2394 4822 122 33496 100nF 10% 63V  
2396 4822 122 33496 100nF 10% 63V  
2399 4822 124 22686 10μF 16V  
2701 4822 122 33496 100nF 10% 63V  
2702 4822 122 33496 100nF 10% 63V  
2703 4822 124 22686 47μF 20% 16V  
2705 4822 121 43698 470nF 100V

2706 4822 124 42031 2.2μF 20% 25V  
2707 4822 124 42031 2.2μF 20% 25V  
2708 4822 124 22678 100μF 20% 16V  
2711 4822 122 31727 470pF 2% 63V  
2712 4822 122 32442 10nF 50V  
2713 4822 122 33496 100nF 10% 63V  
2714 4822 126 11456 330nF 10% 63V  
2715 4822 126 11456 330nF 10% 63V  
2716 4822 126 11456 330nF 10% 63V  
2718 4822 126 11456 330nF 10% 63V

2751 4822 122 33968 1nF 5% 500V  
2752 4822 122 32442 10nF 50V  
2753 4822 124 42148 22μF 20% 100V  
2754 4822 122 32442 10nF 50V  
2755 4822 124 22686 10μF 16V  
2756 4822 124 22686 10μF 16V  
2757 4822 124 22686 10μF 16V  
2758 4822 126 11456 330nF 10% 63V  
2761 4822 124 42155 4.7μF 250V  
2762 4822 122 32707 3.3nF 10% B 500V

2763 4822 122 32707 3.3nF 10% B 500V  
2764 4822 122 33968 1nF 5% 500V  
2765 4822 126 12651 10nF 20% 2K



3301 4822 051 10759 75Ω 2% 0.25W  
3302 4822 051 10101 100Ω 2% 0.25W  
3303 4822 100 11141 10k 30%lin 0.1W  
3304 4822 051 10106 10M 5% 0.25W  
3305 4822 051 10109 10Ω 2% 0.25W  
3306 4822 051 10159 15Ω 2% 0.25W  
3307 4822 051 10181 180Ω 2% 0.25W  
3308 4822 050 21809 18Ω 1% 0.6W  
3309 4822 051 10159 15Ω 2% 0.25W  
3311 5322 116 51882 0Ω

3312 4822 050 26809 68Ω 1% 0.6W  
3314 4822 051 10102 1k 2% 0.25W  
3315 4822 050 24709 47Ω 1% 0.6W  
3316 4822 050 24302 4k3 1% 0.6W  
3317 4822 050 24303 4k3 1% 0.6W  
3318 4822 117 11332 360Ω 5% 3W  
3319 5322 116 51882 0Ω  
3321 4822 117 11332 360Ω 5% 3W  
3322 4822 051 10104 100k 2% 0.25W  
3323 4822 116 52252 180k 5% 0.5W

3324 5322 100 11539 100k 30%lin 0.1W  
3325 4822 051 10184 180k 2% 0.25W  
3326 4822 050 12403 24k 1% 0.4W  
3327 4822 111 50618 82Ω 10% 0.5W  
3328 5322 116 51882 0Ω  
3331 4822 051 10759 75Ω 2% 0.25W  
3332 4822 051 10101 100Ω 2% 0.25W  
3334 4822 051 10106 10M 5% 0.25W  
3335 4822 050 21009 10Ω 1% 0.6W  
3336 4822 051 10109 10Ω 2% 0.25W

3337 4822 051 10181 180Ω 2% 0.25W  
3338 4822 050 21809 18Ω 1% 0.6W  
3339 4822 051 10008 0Ω 5% 0.25W  
3341 4822 051 10159 15Ω 2% 0.25W  
3342 4822 050 26809 68Ω 1% 0.6W  
3344 4822 051 10102 1k 2% 0.25W  
3345 4822 051 10479 47Ω 2% 0.25W  
3346 4822 050 24302 4k3 1% 0.6W  
3347 4822 050 24303 4k3 1% 0.6W  
3348 4822 117 11332 360Ω 5% 3W

3349 4822 051 10008 0Ω 5% 0.25W  
3351 4822 117 11332 360Ω 5% 3W  
3352 4822 051 10104 100k 2% 0.25W  
3353 4822 051 10184 180k 2% 0.25W  
3354 5322 100 11539 100k 30%lin 0.1W  
3355 4822 116 52252 180k 5% 0.5W  
3356 4822 050 12403 24k 1% 0.4W  
3357 4822 111 50618 82Ω 10% 0.5W  
3358 4822 051 10109 10Ω 2% 0.25W  
3359 5322 116 51882 0Ω

3361 4822 051 10759 75Ω 2% 0.25W  
3362 4822 051 10101 100Ω 2% 0.25W  
3363 4822 100 11141 10k 30%lin 0.1W  
3364 4822 051 10106 10M 5% 0.25W  
3365 4822 050 21009 10Ω 1% 0.6W  
3366 4822 051 10109 10Ω 2% 0.25W  
3367 4822 051 10689 68Ω 2% 0.25W  
3368 4822 050 21809 18Ω 1% 0.6W  
3371 4822 051 10159 15Ω 2% 0.25W  
3372 4822 050 26809 68Ω 1% 0.6W

3374 4822 051 10102 1k 2% 0.25W  
3375 4822 051 10479 47Ω 2% 0.25W  
3376 4822 050 24302 4k3 1% 0.6W  
3377 4822 050 24303 4k3 1% 0.6W  
3378 4822 117 11332 360Ω 5% 3W  
3381 4822 117 11332 360Ω 5% 3W  
3382 4822 051 10104 100k 2% 0.25W  
3383 4822 051 10184 180k 2% 0.25W  
3384 5322 100 11539 100k 30%lin 0.1W  
3385 4822 116 52252 180k 5% 0.5W

3386 4822 050 22205 2M 2 1% 0.6W  
3387 4822 111 50618 82Ω 10% 0.5W  
3388 5322 116 51882 0Ω  
3391 4822 051 10332 3k3 2% 0.25W  
3392 4822 051 10332 3k3 2% 0.25W  
3393 4822 050 22201 220Ω 1% 0.6W  
3394 4822 051 10101 100Ω 2% 0.25W  
3395 4822 051 20222 2k2 5% 0.1W  
3396 4822 051 20222 2k2 5% 0.1W  
3397 4822 051 10101 100Ω 2% 0.25W

3398 5322 116 51882 0Ω  
3701 4822 051 20222 2k2 5% 0.1W  
3702 4822 051 20222 2k2 5% 0.1W  
3703 4822 116 52186 22Ω 5% 0.5W  
3704 4822 116 52186 22Ω 5% 0.5W  
3705 4822 051 10184 180k 2% 0.25W  
3706 4822 051 10471 47Ω 2% 0.25W  
3707 4822 051 10102 1k 2% 0.25W  
3708 4822 051 10471 47Ω 2% 0.25W  
3711 4822 051 10104 100k 2% 0.25W

3712 4822 051 10682 6k8 2% 0.25W  
3713 4822 050 24702 4k7 1% 0.6W  
3714 4822 051 10122 1k2 2% 0.25W  
3715 4822 050 21802 1k8 1% 0.6W  
3716 4822 051 10471 47Ω 2% 0.25W  
3717 4822 051 10681 680Ω 2% 0.25W  
3718 4822 051 10473 47k 2% 0.25W  
3721 4822 051 10682 6k8 2% 0.25W  
3722 4822 051 10472 4k7 2% 0.25W  
3723 4822 051 10104 100k 2% 0.25W

3724 4822 051 10682 6k8 2% 0.25W  
3725 4822 051 10472 4k7 2% 0.25W  
3726 4822 051 10271 270Ω 2% 0.25W  
3727 4822 051 10102 1k 2% 0.25W  
3728 4822 050 21001 100Ω 1% 0.6W  
3728 4822 050 21001 100Ω 1% 0.6W  
3730 4822 111 90368 680k 2% 0.125W  
3731 4822 050 11302 1k3 1% 0.4W  
3732 4822 116 82963 39k 1%  
3733 4822 051 10473 47k 2% 0.25W


3734 4822 051 20222 2k2 5% 0.1W  
3735 4822 051 10683 68k 2% 0.25W  
3736 4822 051 10471 47Ω 2% 0.25W  
3737 4822 051 10562 5k6 2% 0.25W  
3739 4822 051 10008 0Ω 5% 0.25W  
3741 4822 051 10682 6k8 2% 0.25W  
3742 4822 051 10472 4k7 2% 0.25W  
3743 4822 050 21802 1k8 1% 0.6W  
3745 5322 116 51882 0Ω  
3747 5322 116 51882 0Ω



3749 5322 116 51882 0Ω  
3750 4822 051 10008 0Ω 5% 0.25W  
3751 4822 116 80542 82Ω 1W  
3752 4822 050 24701 47Ω 1% 0.6W  
3753 4822 050 21502 1k5 1% 0.6W  
3754 4822 116 80548 15k 5% 0.5W  
3755 4822 050 25601 560Ω 1% 0.6W  
3761 5322 116 51882 0Ω

5301 4822 157 63863 3.9μH 10%  
5302 4822 157 71199 10Ω  
5341 4822 157 63863 3.9μH 10%  
5342 4822 157 71199 10Ω  
5361 4822 157 63863 3.9μH 10%  
5362 4822 157 71199 10Ω  
5391 4822 157 53189 5μH  
5392 4822 157 63863 3.9μH 10%  
5703 4822 157 52493 3.3μH  
5704 4822 157 52493 3.3μH

5706 4822 157 63211 33μH

Spare parts list

			
6301	4822 130 30621	1N4148	
6302	4822 130 30842	BAV21	
6303	4822 130 80877	BAV103	
6341	4822 130 30621	1N4148	
6342	4822 130 80877	BAV103	
6343	4822 130 80877	BAV103	
6371	4822 130 30621	1N4148	
6372	4822 130 30842	BAV21	
6373	4822 130 80877	BAV103	
6391	4822 130 80446	BAS32L	
6392	4822 130 80446	BAS32L	
6701	4822 130 80446	BAS32L	
6702	4822 130 80655	BZX79-F2V4	
6704	4822 130 80446	BAS32L	
6705	4822 130 80446	BAS32L	
6706	4822 130 80446	BAS32L	
6707	4822 130 80446	BAS32L	
6751	4822 130 30861	BZX79-C7V5	
6752	4822 130 80446	BAS32L	
6753	4822 130 34174	BZX79-F4V7	
6754	4822 130 34173	BZX79-C5V6	
6755	5322 130 31969	RGP15G	
6756	5322 130 31969	RGP15G	
6757	4822 130 42489	BYD33G	
6758	4822 130 30621	1N4148	

			
7301	4822 209 32285	TDA4881/V1	
7311	4822 130 41594	PH2369	
7312	4822 130 62279	2SC3953E	
7313	4822 130 41646	BF423	
7341	4822 130 41594	PH2369	
7342	4822 130 62279	2SC3953E	
7343	4822 130 41646	BF423	
7361	4822 130 41594	PH2369	
7362	4822 130 62279	2SC3953E	
7363	4822 130 41646	BF423	


7391	4822 209 73852	PMBT2369	
7701	5322 209 11105	74HCT00N	
7702	5322 209 11473	74HCT86N	
7710	5322 130 42755	BC847C	
7711	5322 130 42136	BC848C	
7712	4822 130 60383	BF824	
7713	4822 209 73852	PMBT2369	
7714	5322 130 42136	BC848C	
7715	5322 130 42136	BC848C	
7716	4822 209 73852	PMBT2369	
7717	4822 209 73852	PMBT2369	
7719	5322 130 42136	BC848C	
7721	4822 209 73852	PMBT2369	
7722	5322 130 42136	BC848C	

1108 Headphone PanelB2


Various			
4822 267 31526	Earphone jack		

1110 Power Down PanelD

Various			
4822 265 31206	4P (M253)		
4822 492 62076	Spring for transistors		
1110▲4822 212 31468	Power down panel		


			
2251	5322 122 31647	1nF 10% 63V	
2252	4822 122 31981	33nF +-0.5pF 50V	
2253	4822 124 80524	47µF 20% 35V	
2254	4822 122 31981	33nF +-0.5pF 50V	
2255	5322 122 32331	1nF 10% 100V	
2256	4822 126 12726	47pF 5% 50V	
2257	5322 122 32331	1nF 10% 100V	
2258	4822 121 41856	22nF 5% 250V	
2261	4822 122 33654	100pF 1KV	
2262	4822 122 33646	470pF 10% 500V	
2263	4822 124 42172	1000µF 16V	
2264	4822 124 42172	1000µF 16V	
2266	4822 124 22681	47µF 20% 16V	
2267	4822 122 33646	470pF 10% 500V	
2268	4822 122 31797	22nF 10% 63V	
2271	4822 122 32442	10nF 50V	
2272	4822 124 22686	10µF 16V	
2273	5322 122 31647	1nF 10% 63V	


2274	4822 124 40763	2.2µF 100 V	
2275	4822 124 40763	2.2µF 100 V	
2276	4822 122 31797	22nF 10% 63V	
2277	4822 121 70492	2.2nF 5% 630V	
2278	4822 126 11456	330nF 10% 63V	
2281	4822 122 32442	10nF 50V	

			
3251	4822 050 21504	150k 1% 0.6W	
3252	4822 050 21504	150k 1% 0.6W	
3253	4822 050 21801	180Ω 1% 0.6W	
3254	4822 051 10124	120k 2% 0.25W	
3255	4822 051 10223	22k 2% 0.25W	
3256	4822 100 11141	10k 30%lin 0.1W	
3257	4822 116 80941	1k8 1%	
3258	4822 051 10105	1M 5% 0.25W	
3261	4822 116 52215	220Ω 5% 0.5W	
3262	4822 116 52186	22Ω 5% 0.5W	



3263	4822 050 11002	1k 1% 0.4W	
3264	4822 050 21003	10k 1% 0.6W	
3265	4822 117 11331	1Ω 5 5% 1W	
3266	4822 117 11206	100k 5% 2W	
3267	4822 050 26203	62k 1% 0.6W	
3268	4822 050 21501	150Ω 1% 0.6W	
3271	4822 051 10224	220k 2% 0.25W	
3272	4822 051 20222	2k2 5% 0.1W	
3273	4822 051 10102	1k 2% 0.25W	
3274	4822 051 10332	3k3 2% 0.25W	

3277	4822 051 10224	220k 2% 0.25W	
3278	4822 051 10103	10k 2% 0.25W	
3279	4822 051 10104	100k 2% 0.25W	
3283	4822 051 10103	10k 2% 0.25W	
3284	4822 051 10103	10k 2% 0.25W	
3285	4822 051 10124	120k 2% 0.25W	
3286	4822 051 10203	20k 2% 0.25W	

			
5251▲4822 148 81388	Transformer		

			
6251	4822 130 31607	RGP10D	
6252	4822 130 34499	BZX79-C20	
6253	4822 130 80446	BAS32L	
6254	4822 130 30621	1N4148	
6255	4822 130 31607	RGP10D	
6256	4822 130 31607	RGP10D	
6257	4822 130 31393	RGP10J	
6258	4822 130 31607	RGP10D	
6261	4822 130 34384	BZX79-C62	
6262	5322 130 31971	RGP15D	

6263	4822 130 34233	BZX79-C5V1	
6264	4822 130 80446	BAS32L	
6265	4822 130 80446	BAS32L	
6266	4822 130 80446	BAS32L	
6267	4822 130 80446	BAS32L	

			
7251	4822 209 83909	UC3842AN	
7252	4822 130 62753	MTP3N60	
7253	5322 130 44918	BUX87	
7254	5322 209 11473	74HCT86N	
7255	5322 209 10422	HEF4538BP	
7256	5322 130 42136	BC848C	
7257	5322 130 42136	BC848C	
7258	5322 130 42136	BC848C	
7261	5322 130 42136	BC848C	

# Spare parts list

## Parts indicated on exploded view

4822 381 11548	Lens of led
▲ 4822 265 31077	AC inlet
▲ 4822 462 71981	Cap for power switch
▲ 4822 466 93161	Isolation plate (item 6615,7618)
▲ 4822 276 12445	Power switch
101 4822 430 10488	Front cabinet for 00T/05T/06T
101 4822 430 10489	Front cabinet for 74T/75T/97T
102 4822 492 71454	Spring power knob
103 4822 410 62721	Power knob
104 ▲ 4822 157 70694	Degaussing coil /00T/05T/06T/75T
104 ▲ 4822 157 70729	Degaussing coil /74T/97T
106 4822 240 30642	Loudspeaker right/left
107 4822 526 20183	Spoiler
108 4822 432 11185	Bottom plate
109 ▲ 4822 131 20589	CRT, M36KPC030X01
109 ▲ 4822 131 20617	CRT, M36KPC030X01(S) for /75T
113 4822 462 10583	Pedestal complete
114 4822 462 42033	Pad for pedestal
115 4822 413 41868	Control knob
116 4822 413 41869	OSD control
120 4822 438 10429	Rear cover
121 4822 502 21238	Screw for rear cover

### Accessoires

4822 263 50216	Adaptor 9-AVmac-000
4822 736 53922	Direction for use (multi language)
4822 736 53984	Direction for use 00T/05T/06T/75T
4822 736 53993	Direction for use 97T
4822 736 53992	Direction for use 74T
4822 321 62108	Interface cable audio
4822 321 62602	Interface cable
1109▲4822 321 10921	Power cord /97T
1109▲4822 321 22552	Power cord /74T
1109▲4822 321 10998	Power cord /75T
1109▲4822 321 11023	Power cord /05T
1109▲4822 321 10989	Power cord /06T
1109▲4822 701 13179	Power cord /00T

## 1102 Main Panel B1 B2 C

### Various

4822 267 31525	2P Cinch
4822 265 10286	2P (M204)
4822 267 31527	2P (M203)
▲ 4822 265 20604	2P (M104)
▲ 4822 265 30375	4P (M501)
4822 265 41417	7P (M205)
4822 492 71345	Fixing Spring (Item 7623)
4822 492 62076	Fixing spring (Item 6615,7618,7625)
4822 276 13467	Switch 1802...1805
1101▲4822 253 50145	Fuse (3,15A)
1111▲4822 280 70378	Relay
1801 4822 242 81785	Crystal 10MHz

### -II-

2101▲4822 122 33441	1μF 20% B 400V
2102▲4822 122 33441	1μF 20% B 400V
2103 5322 121 44212	1μF 10% 275V
2105▲4822 121 70454	15nF 20% 250V
2106 4822 122 33535	4,7nF 20% 400V
2107▲4822 122 33535	4,7nF 20% 400V
2108 4822 124 80532	220μF 20% 400V
2108 4822 124 42168	330μF 400V
2110 4822 121 70495	10nF 2% 100V
2111 4822 121 43516	47nF 400V
2112 4822 122 33352	1nF 10% 1KV
2113 4822 124 42173	220μF 35V
2114 4822 122 32442	10nF 50V
2115 5322 122 31647	1nF 10% 63V
2116 4822 126 13316	33nF 100V
2117 4822 122 33496	100nF 10% 63V
2118 4822 124 22669	1μF 20% 50V
2119 4822 126 10206	2,2nF 10% 500V
2121 4822 122 30031	820pF 10% 500V

2122 4822 124 22669	1μF 20% 50V
2131 4822 122 31727	470pF 2% 63V
2133▲4822 121 51626	47nF 10% 250V
2134 4822 122 32442	10nF 50V
2135▲4822 122 33535	4,7nF 20% 400V
2136▲4822 122 33535	4,7nF 20% 400V
2147 4822 124 40214	1000μF 20% 25V
2148 4822 124 42144	470μF 63V
2150 4822 126 13202	220pF 10% 2KV
2151 4822 126 13202	220pF 10% 2KV
2152 4822 124 80834	100μF 20% 250V
2153 4822 122 33654	100pF 1KV
2154 4822 124 80538	220μF 20% 100V
2155 4822 122 33646	470pF 10% 500V
2156 4822 124 40214	1000μF 20% 25V
2157 4822 122 33646	470pF 10% 500V
2158 4822 124 40214	1000μF 20% 25V
2160 4822 122 32442	10nF 50V
2161 4822 122 33646	470pF 10% 500V
2162 4822 124 40214	1000μF 20% 25V
2163 5322 122 32331	1nF 10% 100V
2164 4822 124 42172	1000μF 16V
2165 4822 124 42172	1000μF 16V
2166 4822 124 22669	1μF 20% 50V
2167 4822 122 31784	4,7nF 10% 50V
2168 4822 122 31784	4,7nF 10% 50V
2169 4822 126 13247	1,2nF 10% 500V
2171 4822 124 22669	1μF 20% 50V
2172 4822 122 33496	100nF 10% 63V
2174 5322 124 41817	220μF 16V
2175 5322 124 41817	220μF 16V
2180 4822 122 33496	100nF 10% 63V
2181 4822 124 22681	47μF 20% 16V
2182 4822 122 32442	10nF 50V
2183 4822 124 22681	47μF 20% 16V
2184 4822 124 22681	47μF 20% 16V
2185 5322 124 41817	220μF 16V
2186 4822 124 80132	47μF 20% 25V
2188 4822 124 80132	47μF 20% 25V
2200 4822 124 42172	1000μF 16V
2201 4822 122 33496	100nF 10% 63V
2202 4822 122 33496	100nF 10% 63V
2203 5322 122 31647	1nF 10% 63V
2204 5322 122 31647	1nF 10% 63V
2205 4822 121 43696	100nF 100V
2206 4822 121 43696	100nF 100V
2220 4822 124 22681	47μF 20% 16V
2402 4822 121 70493	5,6nF 5% 100V
2403 4822 121 43713	330nF 100V
2404 4822 122 31981	33nF +-0,5pF 50V
2405 4822 121 70495	10nF 2% 100V
2406 4822 122 32442	10nF 50V
2407 4822 124 42031	2,2μF 20% 25V
2408 4822 122 32442	10nF 50V
2409 5322 124 41817	220μF 16V
2411 4822 124 41659	4,7μF 20% 25V
2412 4822 122 31772	47pF 2% 63V
2413 4822 121 70106	100nF 5% 100V
2414 4822 121 43699	220nF 100V
2415 4822 121 43693	10nF 100V
2416 4822 122 33481	1800pF 2% 63V
2418 4822 124 41659	4,7μF 20% 25V
2419 4822 122 33496	100nF 10% 63V
2420 4822 122 31746	1000pF 2% 63V
2422 4822 124 41659	4,7μF 20% 25V
2423 4822 122 32442	10nF 50V
2424 4822 124 42031	2,2μF 20% 25V
2425 4822 124 22669	1μF 20% 50V
2426 4822 122 33496	100nF 10% 63V
2427 4822 124 42359	47μF 100V
2429 4822 124 22681	47μF 20% 16V
2431 4822 124 22681	47μF 20% 16V
2432 4822 122 33496	100nF 10% 63V
2433 4822 122 33496	100nF 10% 63V
2441 4822 124 22686	10μF 16V
2501 4822 124 22669	1μF 20% 50V
2502 4822 124 42031	2,2μF 20% 25V
2503 4822 124 40198	470μF 20% 16V
2504 4822 124 40255	100nF 20% 63V
2505 4822 121 43696	100nF 100V
2506 4822 124 40198	470μF 20% 16V
2507 4822 126 12038	68pF 2% 63V
2511 4822 124 22681	47μF 20% 16V
2514 4822 122 31784	4,7nF 10% 50V
2515 4822 122 31797	22nF 10% 63V
2516 4822 121 43697	330nF 10% 100V
2517 4822 126 12038	68pF 2% 63V
2518 4822 122 32442	10nF 50V
2521 4822 122 31965	220pF 2% 63V
2522 4822 122 31965	220pF 2% 63V
2531 4822 121 40336	47nF 10% 250V
2532 4822 124 42155	4,7μF 250V

2533 4822 124 42155	4,7μF 250V
2534 4822 126 11455	560pF 10% 2KV
2535 4822 124 42136	10μF 25V
2571 4822 121 41719	1μF 10% 100V
2587 4822 124 22686	10μF 16V
2588 4822 122 33496	100nF 10% 63V
2589 4822 126 10324	33pF 2% 63V
2591 4822 122 32482	22pF 2% 63V
2592 4822 122 31771	390pF 2% 63V
2600 4822 122 33481	1800pF 2% 63V
2601 5322 122 32336	560pF 10% 100V
2602 4822 122 31981	33nF +-0,5pF 50V
2604 4822 122 33496	100nF 10% 63V
2605 4822 121 43693	10nF 100V
2606 4822 122 31773	560pF 2% 63V
2608 4822 122 33481	1800pF 2% 63V
2609 4822 124 42031	2,2μF 20% 25V
2610 4822 122 31784	4,7nF 10% 50V
2611 4822 124 22669	1μF 20% 50V
2612 4822 124 80132	47μF 20% 25V
2613 4822 121 43696	100nF 100V
2614 4822 121 43918	100nF 10% 400V
2615 4822 124 42161	33μF 20% 250V
2616 4822 124 41867	1μF 20% 250V
2617 4822 121 43695	47nF 10% 100V
2618 5322 122 31647	1nF 10% 63V
2620 4822 126 11454	470pF 2KV
2621 4822 126 11454	470pF 2KV
2623 4822 121 70491	6,8nF 5% 630V
2624 4822 126 12096	4,7nF 5% 1.6KV
2625 4822 121 70504	1,5μF 5% 250V
2626 4822 122 33968	1nF 5% 500V
2627 4822 122 33968	1nF 5% 500V
2628 4822 124 22681	47μF 20% 16V
2630 4822 126 13249	150pF 10% 500V
2631 4822 121 43918	100nF 10% 400V
2632 4822 121 43696	100nF 100V
2633 4822 121 43699	220nF 100V
2634 4822 121 70301	1μF 100V
2635 4822 124 22686	10μF 16V
2636 4822 124 22686	10μF 16V
2637 4822 126 13248	1,8nF 10% 500V
2638 4822 122 33496	100nF 10% 63V
2641 4822 121 70448	330nF 5% 250V
2642 4822 121 70448	330nF 5% 250V
2643 4822 121 70243	820nF 5% 250V
2644 4822 121 70489	5nF 5% 250V
2661 4822 124 22686	10μF 16V
2662 4822 124 42031	2,2μF 20% 25V
2802 4822 122 33496	100nF 10% 63V
2803 4822 122 33496	100nF 10% 63V
2804 4822 124 22686	10μF 16V
2805 5322 122 31647	1nF 10% 63V
2806 4822 122 32442	10nF 50V
2807 4822 122 33496	100nF 10% 63V
2855 4822 122 31965	220pF 2% 63V
2858 4822 124 41659	4,7μF 20% 25V
2861 4822 124 22686	10μF 16V
2862 4822 124 22686	10μF 16V
2863 4822 124 22679	22μF 20% 16V
2864 4822 124 42031	2,2μF 20% 25V
2865 4822 124 22686	10μF 16V
3101 4822 116 30425	7Ω 15%
3102▲4822 053 21334	330k 5% 0,5W
3103 4822 050 21504	150k 1% 0,6W
3104 4822 050 21504	150k 1% 0,6W
3105 4822 050 25603	56k 1% 0,6W
3105 4822 050 26203	62k 1% 0,6W
3106 4822 116 80572	680Ω 10% 3W
3107 4822 116 82453	0Ω 43.5%
3108 4822 113 80608	22k 5W
3109▲4822 052 10478	4Ω 7.5% 0,33W
3110▲4822 052 10478	4Ω 7.5% 0,33W
3111 4822 051 10101	100Ω 2% 0,25W
3112 4822 050 21003	10k 1% 0,6W
3113 4822 116 82453	0Ω 5%
3114 5322 116 51882	0Ω
3115 4822 050 24701	470Ω 1% 0,6W
3116 4822 050 11002	1k 1% 0,4W
3120 4822 051 10512	5k1 2% 0,25W
3121 4822 051 10332	3k3 2% 0,25W
3122 4822 050 15601	560Ω 1% 0,4W
3125 4822 050 22204	220k 1% 0,6W
3126 4822 050 22204	220k 1% 0,6W
3127 4822 051 10279	27Ω 2% 0,25W
3128 4822 051 10399	39Ω 2% 0,25W
3129 4822 050 23602	3k6 1% 0,6W
3130 4822 051 10823	82k 2% 0,25W
3131 4822 051 10103	10k 2% 0,25W
3132 4822 050 24703	47k 1% 0,6W

3133 4822 050 25609	56Ω 1% 0,6W
3135 4822 116 40265	12Ω PTC 25% 276V
3135 4822 116 40209	18Ω
3136 4822 050 24701	470Ω 1% 0,6W
3137 4822 050 15119	51Ω 1% 0,4W
3138 4822 051 10101	100Ω 2% 0,25W
3139 4822 051 10683	68k 2% 0,25W
3140 4822 116 81849	220k 5%
3141 4822 050 24701	470Ω 1% 0,6W
3142 4822 051 10104	100k 2% 0,25W
3143 4822 100 11562	220Ω 30%
3144 4822 050 12002	2k 1% 0,4W
3145 4822 116 82967	68k 0,12

# 19 Spare parts list

276V	3455	4822 051 10102	1k 2% 0.25W	3582	4822 117 11336	820k 1% 0.5W	3677	4822 050 11002	1k 1% 0.4W	5105	4822 158 10887	Bead coil
	3456	4822 051 10182	1k8 2% 0.25W	3583	4822 050 21205	1M 2.1% 0.6W	3678	4822 051 10103	10k 2% 0.25W	5151	4822 156 21399	180uH
	3457	4822 051 10104	100k 2% 0.25W	3584	4822 052 10158	105 5% 0.33W	3680	4822 050 11002	1k 1% 0.4W	5153	4822 157 52234	100uH
	3459	4822 051 20222	2k2 5% 0.1W	3585	4822 050 22205	2M 2.1% 0.6W	3681	4822 051 10104	100k 2% 0.25W	5155	4822 157 70076	30uH
	3460	4822 051 10151	150Ω 2% 0.25W	3586	4822 050 25602	5k6 1% 0.6W				5156	4822 157 52234	100uH
	3461	4822 050 24701	470Ω 1% 0.6W	3587	4822 051 10103	10k 2% 0.25W				5157	4822 157 52234	100uH
	3462	4822 116 51255	15k 0.5% 0.4W	3588	4822 051 10473	47k 2% 0.25W	3682	4822 051 10473	47k 2% 0.25W			
	3463	4822 050 25363	53k6 1% 0.6W				3683	4822 116 52234	100k 5% 0.5W	5158	4822 157 52234	100uH
	3464	4822 050 21004	100k 1% 0.6W	3589	4822 051 10472	4k7 2% 0.25W	3684	4822 050 11002	1k 1% 0.4W	5173	4822 157 52494	6.8uH
	3465	4822 051 10104	100k 2% 0.25W	3590	4822 051 10102	1k 2% 0.25W	3685	4822 051 10103	10k 2% 0.25W	5174	4822 157 52494	6.8uH
				3591	4822 050 22202	2k2 1% 0.6W	3686	4822 116 52234	100k 5% 0.5W	5176	4822 157 52494	6.8uH
	3466	4822 051 10473	47k 2% 0.25W	3592	4822 116 82455	7k5 0.25W	3687	4822 051 10473	47k 2% 0.25W	5401	4822 157 63211	33uH
	3467	4822 050 15103	51k 1% 0.4W	3593	4822 050 21003	10k 1% 0.6W	3688	4822 050 25102	5k1 1% 0.6W	5601	4822 140 10498	Line output trf
	3468	4822 051 10334	330k 2% 0.25W	3594	4822 051 20222	2k2 5% 0.1W	3689	4822 050 11809	18Ω 1% 0.4W	5602	4822 148 81272	Line driver trf
	3471	4822 051 10124	120k 2% 0.25W	3595	4822 051 20222	2k2 5% 0.1W	3690	4822 050 11809	18Ω 1% 0.4W	5603	4822 142 40336	H-AFC trf
	3472	4822 051 10332	3k3 2% 0.25W	3596	4822 051 10123	12k 2% 0.25W	3691	4822 116 52234	100k 5% 0.5W	5604	4822 148 81272	Buck conv. trf
	3473	4822 051 10394	390k 2% 0.25W	3597	4822 051 10103	10k 2% 0.25W				5606	4822 157 71201	5.6uH
	3474	4822 051 10332	3k3 2% 0.25W	3598	4822 051 20222	2k2 5% 0.1W	3693	4822 117 11411	47Ω 1W			
	3475	4822 050 26801	680Ω 1% 0.6W				3694	4822 051 10103	10k 2% 0.25W	5607	4822 157 70081	4.2uH
	3476	4822 050 21203	12k 1% 0.6W	3599	4822 051 10273	27k 2% 0.25W	3695	4822 116 83915	47Ω 5% 3W	5608	4822 157 71197	20mH
	3481	4822 051 10102	1k 2% 0.25W	3600	4822 051 10333	33k 2% 0.25W	3696	4822 117 11012	270Ω 5% 1W	5612	4822 157 70077	115uH
				3601	4822 051 10122	1k2 2% 0.25W	3697	4822 052 10158	105 5% 0.33W	5613	4822 157 71197	20mH
	3482	4822 051 10103	10k 2% 0.25W	3602	4822 051 10151	150Ω 2% 0.25W	3698	4822 051 10103	10k 2% 0.25W	5624	4822 157 53519	100uH
	3483	4822 050 21003	10k 1% 0.6W	3603	4822 051 10182	1k8 2% 0.25W	3800	4822 050 21006	10M 1% 0.6W			
	3484	4822 050 21203	12k 1% 0.6W	3604	4822 050 24702	4k7 1% 0.6W	3801	4822 050 21006	10M 1% 0.6W			
	3485	4822 051 10472	4k7 2% 0.25W	3605	4822 051 10104	100k 2% 0.25W	3802	4822 051 10153	15k 2% 0.25W			
	3487	4822 050 12702	2k7 1% 0.4W	3606	4822 050 16802	6k8 1% 0.4W	3803	4822 051 10223	22k 2% 0.25W			
	3488	4822 051 10103	10k 2% 0.25W	3607	4822 051 10472	4k7 2% 0.25W	3804	4822 051 10223	22k 2% 0.25W	6001	4822 130 83128	EGP30G
	3491	4822 050 21003	10k 1% 0.6W	3608	4822 051 10113	11k 2% 0.25W	3805	4822 051 10101	100Ω 2% 0.25W	6001	4822 130 83128	EGP30G
	3492	4822 051 10472	4k7 2% 0.25W				3806	4822 051 10101	100Ω 2% 0.25W	6101	4822 130 80572	RGP30J
	3493	4822 051 10103	10k 2% 0.25W	3609	4822 051 10272	2k7 2% 0.25W	3807	4822 051 10101	100Ω 2% 0.25W	6102	4822 130 80572	RGP30J
	3494	4822 051 10473	47k 2% 0.25W	3610	4822 051 10223	22k 2% 0.25W	3808	4822 051 10101	100Ω 2% 0.25W	6103	4822 130 80572	RGP30J
				3611	4822 051 10102	1k 2% 0.25W	3811	4822 050 21003	10k 1% 0.6W	6104	4822 130 80572	RGP30J
	3495	4822 050 24703	47k 1% 0.6W	3612	4822 116 52271	33k 5% 0.5W	3812	4822 051 10101	100Ω 2% 0.25W	6105	4822 130 34384	BZX79-C62
	3501	4822 051 10103	10k 2% 0.25W	3613	4822 116 80394	1k	3813	4822 051 10101	100Ω 2% 0.25W	6106	4822 130 31393	RGP10J
	3502	4822 051 10472	4k7 2% 0.25W	3614	4822 051 10102	1k 2% 0.25W	3814	4822 051 10103	10k 2% 0.25W	6107	4822 130 31393	RGP10J
	3503	4822 051 10008	0Ω 5% 0.25W	3615	4822 051 10102	1k 2% 0.25W	3815	4822 051 10103	10k 2% 0.25W	6108	4822 130 31393	RGP10J
	3504	4822 051 10472	4k7 2% 0.25W	3616	4822 051 10122	1k2 2% 0.25W				6109	4822 130 34379	BZX79-B27
	3506	4822 051 10103	10k 2% 0.25W	3617	4822 051 10151	150Ω 2% 0.25W	3816	4822 051 10103	10k 2% 0.25W	6111	4822 130 31607	RGP10D
	3507	4822 051 10104	100k 2% 0.25W	3618	4822 050 11002	1k 1% 0.4W	3817	4822 050 21003	10k 1% 0.6W	6112	4822 130 31607	RGP10D
	3508	4822 050 28203	82k 1% 0.6W				3818	4822 051 10102	1k 2% 0.25W	6113	4822 130 31607	RGP10D
	3509	4822 051 10682	6k8 2% 0.25W	3619	4822 051 10103	10k 2% 0.25W	3819	4822 051 10102	1k 2% 0.25W	6114	4822 130 30621	1N4148
	3510	4822 051 10102	1k 2% 0.25W	3620	4822 050 21502	1k5 1% 0.6W	3823	4822 050 21003	10k 1% 0.6W	6115	4822 130 80446	BAS32L
				3621	4822 116 82376	470Ω 1% 0.25W	3824	4822 051 10103	10k 2% 0.25W	6116	4822 130 80446	BAS32L
	3511	4822 050 22708	2Ω 7 1% 0.6W	3622	4822 050 25103	51k 1% 0.6W	3825	4822 051 10473	47k 2% 0.25W	6117	4822 130 34233	BZX79-B5V1
	3512	4822 050 22708	8k2 1% 0.6W	3623	4822 116 30437	12.7k 1%	3826	4822 050 11002	1k 1% 0.4W	6118	4822 130 34233	BAS32L
	3513	4822 117 11205	3k3 5% 2W	3624	4822 116 80556	120k	3827	4822 051 10102	1k 2% 0.25W	6119	4822 130 34174	BZX79-C4V7
	3514	4822 051 10102	1k 2% 0.25W	3625	4822 100 20166	10k 30%LIN 0.1W	3828	4822 051 10102	1k 2% 0.25W			
	3515	4822 050 24701	470Ω 1% 0.6W	3626	4822 116 52211	150Ω 5% 0.5W				6121	4822 130 80446	BAS32L
	3516	4822 050 21808	1Ω 8 1% 0.6W	3627	4822 050 15601	560Ω 1% 0.4W	3829	4822 051 10102	1k 2% 0.25W	6122	4822 130 31024	BZX79-B18
	3517	4822 050 15608	5Ω 6 1% 0.4W	3628	4822 051 10561	560Ω 2% 0.25W	3830	4822 051 10102	1k 2% 0.25W	6124	4822 130 30621	1N4148
	3518	4822 050 21808	1Ω 8 1% 0.6W				3833	4822 051 10008	0Ω 5% 0.25W	6125	4822 130 83719	LT1542GK
	3519	4822 051 10822	8k2 2% 0.25W	3629	4822 116 80394	1k	3836	4822 051 10008	0Ω 5% 0.25W	6131	4822 130 31438	1N4001
	3520	4822 051 10124	120k 2% 0.25W	3630	4822 050 22402	2k4 1% 0.6W	3841	4822 051 10102	1k 2% 0.25W	6132	4822 130 31438	1N4001
				3631	4822 050 26809	68Ω 1% 0.6W	3842	4822 050 11002	1k 1% 0.4W	6151	4822 130 83539	EGP20G
	3521	4822 050 22202	2k2 1% 0.6W	3632	4822 050 26809	68Ω 1% 0.6W	3843	4822 050 11002	1k 1% 0.4W	6152	5322 130 33885	RGP15J
	3522	4822 050 28202	8k2 1% 0.6W	3633	4822 050 26809	68Ω 1% 0.6W	3853	4822 050 21003	10k 1% 0.6W	6153	5322 130 33885	RGP15J
	3523	4822 050 22708	2Ω 7 1% 0.6W	3634	4822 050 22402	2k4 1% 0.6W	3854	4822 050 11504	150k 1% 0.4W	6154	5322 130 31969	RGP15K
	3524	4822 050 22708	2Ω 7 1% 0.6W	3635	4822 053 32278	21Ω 10k 4.7W	3855	4822 051 10432	4k3 2% 0.25W			
	3525	4822 051 10182	1k8 2% 0.25W	3636	4822 050 26809	68Ω 1% 0.6W				6155	5322 130 31969	RGP15G
	3527	4822 051 10394	390k 2% 0.25W	3637	4822 050 21542	1k 54 1% 0.6W	3856	4822 050 13902	3k9 1% 0.4W	6156	5322 130 31969	RGP15G
	3528	4822 051 10103	10k 2% 0.25W	3638	4822 117 10032	33Ω 5% 2W	3857	4822 051 10823	82k 2% 0.25W	6157	5322 130 31969	RGP15G
	3529	4822 051 10182	1k8 2% 0.25W				3858	4822 116 52215	220Ω 5% 0.5W	6158	5322 130 31969	RGP15G
	3531	4822 050 11503	15k 1% 0.4W	3639	4822 050 21202	1k2 1% 0.6W	3859	4822 051 10562	5k6 2% 0.25W	6161	5322 130 31971	RGP15D
	3533	4822 051 10102	1k 2% 0.25W	3640	4822 050 21542	1k 54 1% 0.6W	3860	4822 051 10123	12k 2% 0.25W	6162	4822 130 31438	1N4001
				3641	4822 050 11002	1k 1% 0.4W	3861	4822 051 10393	39k 2% 0.25W	6163	4822 130 31438	1N4001
	3534	4822 051 10472	4k7 2% 0.25W	3642	4822 050 21201	120Ω 1% 0.6W	3862	4822 051 10008	0Ω 5% 0.25W	6168	4822 130 30621	1N4148
	3535	4822 051 10333	33k 2% 0.25W	3643	4822 051 10103	10k 2% 0.25W	3863	4822 051 10822	8k2 2% 0.25W	6169	4822 130 30621	1N4148
	3536	4822 051 10123	12k 2% 0.25W	3644	4822 051 10472	4k7 2% 0.25W	3864	4822 051 10103	10k 2% 0.25W	6202	4822 130 31438	1N4001
	3537	4822 051 10333	33k 2% 0.25W	3645	4822 051 10103	10k 2% 0.25W	3865	4822 051 10472	4k7 2% 0.25W			
	3538	4822 051 10103	10k 2% 0.25W	3646	4822 051 10392	3k9 2% 0.25W				6203	4822 130 31438	1N4001
	3541	4822 050 22203	22k 1% 0.6W	3647	4822 051 10473	47k 2% 0.25W	3866	4822 050 23903	39k 1% 0.6W	6401	4822 130 20245	SF0R5D43
	3542	4822 050 11503	15k 1% 0.4W	3648	4822 100 11141	10k 30%lin 0.1W	3867	4822				