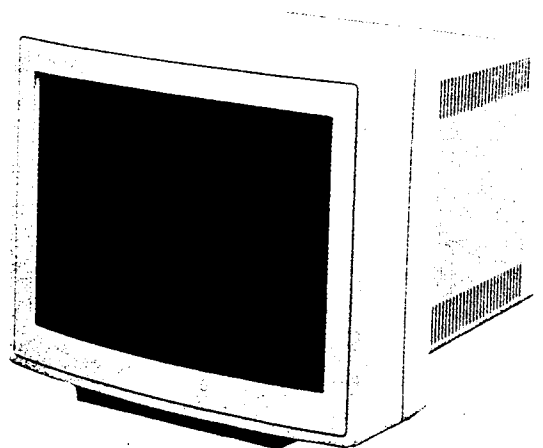


SONY.

TRINITRON® Graphic Display Monitor

GDM-1950/1952



SERVICE MANUAL

For Service Manuals
MAURITRON SERVICES
8 Cherry Tree Road, Chinnor
Oxfordshire, OX9 4QY.
Tel (01844) 351694
Fax (01844) 352554
email:- mauritron@dial.pipex.com

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.

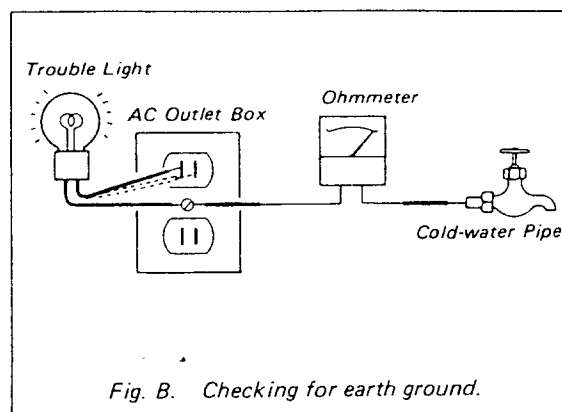
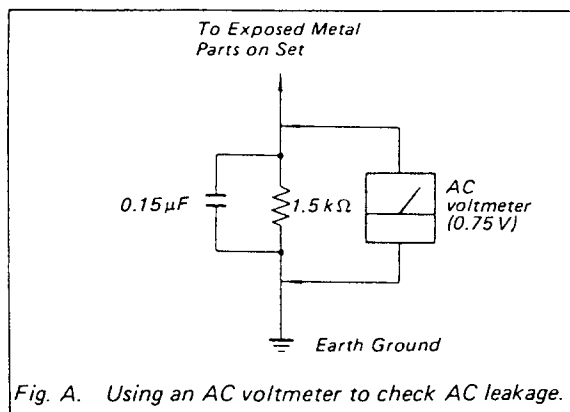
LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)



RESISTENCIAS DE CARBON DE 1/4 W

Ω	N.º de pieza	Ω	N.º de pieza	Ω	N.º de pieza	Ω	N.º de pieza	Ω	N.º de pieza	Ω	N.º de pieza	Ω	N.º de pieza
1,0	1-246-401-00	10	1-246-425-00	100	1-246-449-00	1.0k	1-246-473-00	10k	1-246-497-00	100k	1-246-521-00	1.0M	1-246-545-00
1,1	1-246-402-00	11	1-246-426-00	110	1-246-450-00	1,1k	1-246-474-00	11k	1-246-498-00	110k	1-246-522-00	1,1M	1-210-814-00
1,2	1-246-403-00	12	1-246-427-00	120	1-246-451-00	1,2k	1-246-475-00	12k	1-246-499-00	120k	1-246-523-00	1,2M	1-210-815-00
1,3	1-246-404-00	13	1-246-428-00	130	1-246-452-00	1,3k	1-246-576-00	13k	1-246-500-00	130k	1-246-524-00	1,3M	1-210-816-00
1,5	1-246-405-00	15	1-246-429-00	150	1-246-453-00	1,5k	1-246-577-00	15k	1-246-501-00	150k	1-246-525-00	1,5M	1-210-817-00
1,6	1-246-406-00	16	1-246-430-00	160	1-246-454-00	1,6k	1-246-578-00	16k	1-246-502-00	160k	1-246-526-00	1,6M	1-210-818-00
1,8	1-246-407-00	18	1-246-431-00	180	1-246-455-00	1,8k	1-246-579-00	18k	1-246-503-00	180k	1-246-527-00	1,8M	1-210-819-00
2,0	1-246-408-00	20	1-246-432-00	200	1-246-456-00	2,0k	1-246-580-00	20k	1-246-504-00	200k	1-246-528-00	2,0M	1-210-820-00
2,2	1-246-409-00	22	1-246-433-00	220	1-246-457-00	2,2k	1-246-581-00	22k	1-246-505-00	220k	1-246-529-00	2,2M	1-210-821-00
2,4	1-246-410-00	24	1-246-434-00	240	1-246-458-00	2,4k	1-246-582-00	24k	1-246-506-00	240k	1-246-530-00	2,4M	1-244-754-00
2,7	1-246-411-00	27	1-246-435-00	270	1-246-459-00	2,7k	1-246-583-00	27k	1-246-507-00	270k	1-246-531-00	2,7M	1-244-755-00
3,0	1-246-412-00	30	1-246-436-00	300	1-246-460-00	3,0k	1-246-584-00	30k	1-246-508-00	300k	1-246-532-00	3,0M	1-244-756-00
3,3	1-246-413-00	33	1-246-437-00	330	1-246-461-00	3,3k	1-246-585-00	33k	1-246-509-00	330k	1-246-533-00	3,3M	1-244-757-00
3,6	1-246-414-00	36	1-246-438-00	360	1-246-462-00	3,6k	1-246-586-00	36k	1-246-510-00	360k	1-246-534-00	3,6M	1-244-758-00
3,9	1-246-415-00	39	1-246-439-00	390	1-246-463-00	3,9k	1-246-587-00	39k	1-246-511-00	390k	1-246-535-00	3,9M	1-244-759-00
4,3	1-246-416-00	43	1-246-440-00	430	1-246-464-00	4,3k	1-246-488-00	43k	1-246-512-00	430k	1-246-536-00	4,3M	1-244-760-00
4,7	1-246-417-00	47	1-246-441-00	470	1-246-465-00	4,7k	1-246-489-00	47k	1-246-513-00	470k	1-246-537-00	4,7M	1-244-761-00
5,1	1-246-418-00	51	1-246-442-00	510	1-246-466-00	5,1k	1-246-490-00	51k	1-246-514-00	510k	1-246-538-00	5,1M	1-244-762-00
5,6	1-246-419-00	56	1-246-443-00	560	1-246-467-00	5,6k	1-246-491-00	56k	1-246-515-00	560k	1-246-539-00		
6,2	1-246-420-00	62	1-246-444-00	620	1-246-468-00	6,2k	1-246-492-00	62k	1-246-516-00	620k	1-246-540-00		
6,8	1-246-421-00	68	1-246-445-00	680	1-246-469-00	6,8k	1-246-493-00	68k	1-246-517-00	680k	1-246-541-00		
7,5	1-246-422-00	75	1-246-446-00	750	1-246-470-00	7,5k	1-246-494-00	75k	1-246-518-00	750k	1-246-542-00		
8,2	1-246-423-00	82	1-246-447-00	820	1-246-471-00	8,2k	1-246-495-00	82k	1-246-519-00	820k	1-246-543-00		
9,1	1-246-424-00	91	1-246-448-00	910	1-246-472-00	9,1k	1-246-496-00	91k	1-246-520-00	910k	1-246-544-00		

NOMENCLATURA DE LA FERRETERÍA

Tornillo:

- P 3 x 10

L: Longitud en mm

D: Diámetro en mm

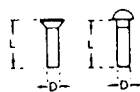
Tipo de cabeza

Se indica solamente cabeza ranurada.

A menos que se indique otra cosa,

significa cabeza con ranuras en cruz

(tipo Phillips).



Tuerca, arandela, anillo de retención

N 3

Diámetro de tornillo o de vástago utilizable

Designación de referencia

Designación de referencia	Forma	Descripción	Observaciones
TORNILLOS			
P		tornillo de cabeza troncoconica	tornillo de cabeza de sujeción para reemplazo
PWH		tornillo de cabeza troncoconica con cara de arandela	tornillo de cabeza de sujeción y arandela plana para reemplazo
PS		tornillo de cabeza troncoconica con arandela de resorte	tornillo de cabeza de sujeción y arandela de resorte para reemplazo
PSP		tornillo de cabeza troncoconica con arandela de resorte y arandela plana	tornillo de cabeza de sujeción y arandela plana y elástica para reemplazo
PSW		tornillo de cabeza troncoconica con arandela de resorte y arandela plana	tornillo de cabeza de sujeción y arandela plana y elástica para reemplazo
R		tornillo de cabeza hemisférica	tornillo de cabeza de sujeción para reemplazo
K		tornillo de cabeza embutida plana	
RK		tornillo de cabeza embutida ovalada	
B		tornillo de cabeza de sujeción	
T		tornillo de cabeza hemisférica grande	tornillo de cabeza de sujeción para reemplazo
F		tornillo de cabeza cilíndrica ranurada plana	
RF		tornillo de cabeza cilíndrica ranurada	
BV		tornillo de cabeza tipo brazer	

Designación de referencia	Forma	Descripción	Observaciones
TORNILLOS AUTORROSCANTES			
TA		tornillo autorroscante	ejemplo: TA, P3 x 10
PTP		tornillo autorroscante de cabeza troncoconica	tornillo autorroscante de cabeza de sujeción (TA, B) para reemplazo
PTPWH		tornillo autorroscante de cabeza de sujeción con cara de arandela	tornillo autorroscante de cabeza de sujeción (TA, B) y arandela plana para reemplazo
PTTWH		tornillo laminador de roscas de cabeza troncoconica con cara de arandela	tornillo de cabeza de sujeción y arandela plana para reemplazo
TORNILLOS DE APRIETE			
SC		tornillo de apriete	
SC		tornillo de apriete de hueco hexagonal	ejemplo: SC 2.6 x 4, hueco hexagonal
TUERCA			
N		tuerca	
ARANDELAS			
W		arandela plana	
SW		arandela de resorte	
LW		arandela de presión de diente interno	ejemplo: LW3, interno
LW		arandela de presión de diente externo	ejemplo: LW3, externo
ANILLOS DE RETENCIÓN			
E		anillo de retención	
G		anillo de retención tipo agarre	

LIST OF DIFFERENT POINTS (GDM-1950/1952)

This service manual has been prepared for GDM-1950.

Redraw the CIRCUIT DIAGRAM of SECTION 5, and ELECTRICAL PARTS LIST of SECTION 7 in accordance with the list of different points when using this manual for GDM-1952.

Change the H period in the waveform diagram in the CIRCUIT DIAGRAM of SECTION 5 from 15.5 to 21 μ sec and the voltage from +B145 to 120 V.

L Board	GDM-1950		GDM-1952	
	Part No.	Description	Part No.	Description
	A-1235-009-A	L BOARD COMPLETE	A-1235-014-A	L BOARD COMPLETE
L3	1-410-121-11	MICRO INDUCTOR 1.5MMH	1-408-942-00	MICRO INDUCTOR 3.3MMH
L4	1-410-121-11	MICRO INDUCTOR 1.5MMH	1-408-942-00	MICRO INDUCTOR 3.3MMH
L5	1-410-121-11	MICRO INDUCTOR 1.5MMH	1-408-942-00	MICRO INDUCTOR 3.3MMH
L6	1-410-121-11	MICRO INDUCTOR 1.5MMH	1-408-942-00	MICRO INDUCTOR 3.3MMH

POWER BLOCK ASSY	Part No. A-1477-876-A	Part No. A-1477-874-A
---------------------	-----------------------	-----------------------

G Board	Part No.	Description	Part No.	Description
	A-1316-055-A	G BOARD COMPLETE	A-1316-053-A	G BOARD COMPLETE
IC51	1-235-843-11	POWER MODULE (DM-28)	1-235-844-11	POWER MODULE (DM-32)

	GDM - 1950					GDM - 1952				
D Board	Part No.	Description				Part No.	Description			
	A-1345-641-A	D BOARD COMPLETE				A-1345-703-A	D BOARD COMPLETE			
C110	1-130-475-00	MYLAR	0.002MF	5%	50V	1-130-481-00	MYLAR	0.0068MF	5%	50V
C211	1-102-971-00	CERAMIC	82PF	5%	50V	1-102-965-00	CERAMIC	39PF	5%	50V
C219	1-136-052-00	FILM	0.3MF	5%	400V	1-136-140-00	FILM	0.51MF	5%	400V
C220	1-136-103-00	FILM	0.1MF	5%	200V					
C224	1-136-237-11	FILM	0.0032MF	3%	1.6KV	1-130-908-00	FILM	0.0039MF	3%	1.6KV
C310	1-136-069-00	FILM	0.0044MF	3%	2KV	1-136-091-00	FILM	0.0068MF	3%	2KV
C332	1-108-700-00	MYLAR	0.047MF	10%	200V	1-123-928-00	ELECT	0.47MF	20%	160V
R111	1-249-429-11	CARBON	10K	5%	1/6W	1-249-428-11	CARBON	8.2K	5%	1/6W
R137	1-249-405-11	CARBON	100	5%	1/6W	1-249-407-11	CARBON	150	5%	1/6W
R240	1-215-441-00	METAL	6.8K	1%	1/6W	1-215-449-00	METAL	15K	1%	1/6W
R242	1-215-447-00	METAL	12K	1%	1/6W	1-215-451-00	METAL	18K	1%	1/6W
R246	1-215-459-00	METAL	39K	1%	1/6W	1-215-451-00	METAL	18K	1%	1/6W
R253	1-249-435-11	CARBON	33K	5%	1/6W	1-249-433-11	CARBON	22K	5%	1/6W
R301	1-215-919-11	METAL OXIDE	2.2K	5%	3W F	1-215-918-00	METAL OXIDE	1.5K	5%	3W F
R302	1-216-438-11	METAL OXIDE	8.2K	5%	1W F	1-215-874-11	METAL OXIDE	6.8K	5%	1W F
R303	1-215-874-11	METAL OXIDE	6.8K	5%	1W F	1-215-873-00	METAL OXIDE	4.7K	5%	1W F
R304	1-215-874-11	METAL OXIDE	6.8K	5%	1W F	1-215-873-00	METAL OXIDE	4.7K	5%	1W F
R328	1-216-369-00	METAL OXIDE	1.0	5%	1W F	1-216-372-11	METAL OXIDE	1.8	5%	2W F
R335	1-215-446-00	METAL	11K	1%	1/6W	1-215-447-00	METAL	12K	1%	1/6W
R340	1-249-431-11	CARBON	15K	5%	1/6W	1-249-429-11	CARBON	10K	5%	1/6W
JS1		W					N			
JS2		W					N			
DD Board										
R20	1-249-431-11	CARBON	15K	5%	1/6W	1-249-433-11	CARBON	22K	5%	1/6W
DE Board										
C3	1-130-471-11	MYLAR	0.001MF	5%	50V	1-130-447-00	MYLAR	0.0033MF	5%	50V
R2	1-249-431-11	CARBON	15K	5%	1/6W	1-249-433-11	CARBON	22K	5%	1/6W
R3	1-215-481-00	CARBON	330K	5%	1/6W	1-249-441-11	CARBON	100K	5%	1/6W

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2.	DISASSEMBLY AND REPLACEMENT
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4.	ADJUSTMENTS
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7.	ELECTRICAL PARTS LIST

SECTION 1 GENERAL

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1-1. FEATURES

Sony GDM-1950 is a highly integrated color display monitor which is designed for displaying high resolution graphics.

- The GDM-1950 high resolution graphic display monitor employs the Super Fine-pitch TRINITRON® picture tube.
- Resolution is extremely high with 1280 (horizontal) × 1024 (vertical) picture elements per frame, thus a high-density color display can be obtained.
- A multi-layer optical coating on the screen provides a glare-free display.
- Cylindrical screen reduces distortion as viewed from the sides, sharpens the picture corners, and diminishes reflections.
- The display unit can be turned over 360 degrees to the right or left, and can be tilted 15 degrees up or 5 degrees down if SU-536 Display Stand is attached.
- Since the 60 Hz non-interlace method is employed, display of little flicker can be obtained.

1-2. SPECIFICATIONS

System Raster scanning method (non-interlace)
R/G/B input, full color system
Sync on green (internal sync), or separated/composite sync input (Automatically selected)

Picture tube Super fine-pitch Trinitron color tube
0.31mm phosphor pitch with aperture grill
19 inches measured diagonally
90-degree deflection
Anti-reflective coating (multi-layer optical coating)

Visual picture size Approx. 343(w) × 274(h) mm (13⁵/₈ × 10⁷/₈ inches)

1280(H) × 1024(V) viewable pixels

Horizontal deflection frequency (fh)

63.34 kHz

Vertical deflection frequency (fv)

59.98 Hz

Video amplifier
frequency band width

60 Hz-100 MHz ± 3 dB(TYP)

Signal In case of composite signal
R/B video signal input:
Video level—0.714 V p-p, positive
G video signal input:
1.0 V p-p, composite,
Video level—0.714 V p-p, positive
Sync level—0.286 V p-p, negative

In case of separate sync

R/G/B video signal input:

0.714 V p-p, positive

EXTERNAL SYNC input:

1.0—4.0 V p-p, negative

Connector type

BNC type 75 ohm input impedance

Power requirements

100-120V±10%

220-240V±10%

50/60 Hz ± 3 Hz

AC input current

100-120V: 2.6A max.

220-240V: 1.5A max.

Environmental conditions

Operating temperature : 10° - 40°C

Operating humidity : 10 - 80%, condensation

Storage temperature : 0° - 60°

Storage humidity : 5 - 90%, condensation

Dimensions

Approx. 480 × 446 × 535 mm (w/h/d)
(18.9 × 17.56 × 20.06 inches)

Approx. 480 × 475 × 535 mm (w/h/d) with
SU-536 Display Stand
(18.9 × 18.70 × 21.06 inches)

Weight

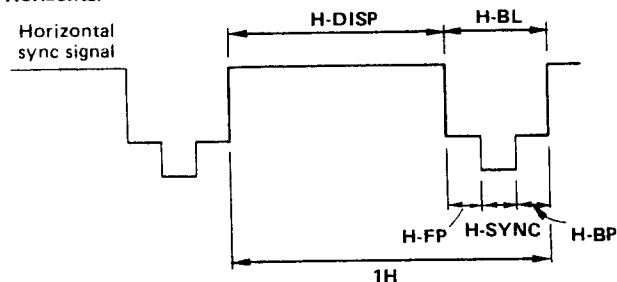
Approx. 36 kg (90 lbs, 6 oz)

Approx. 38.5 kg (97 lbs) with SU-536 Display
Stand (optional)

Signal timing

Dot clock 9.24ns(108.18MHz)

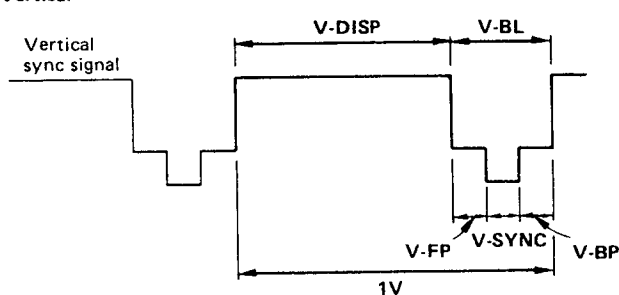
Horizontal



fH=63.34kHz

H-DISP: Horizontal-display Period active	11.832μs (1280 dot)
H-FP: Horizontal-frontporch	0.407μs (44 dot)
H-SYNC: Horizontal-sync	1.701μs (184 dot)
H-BP: Horizontal-backporch	1.849μs (200 dot)
H-BL: Horizontal-blanking	3.956μs (428 dot)
1H: 1 Horizontal total Period	15.788μs (1708 dot)

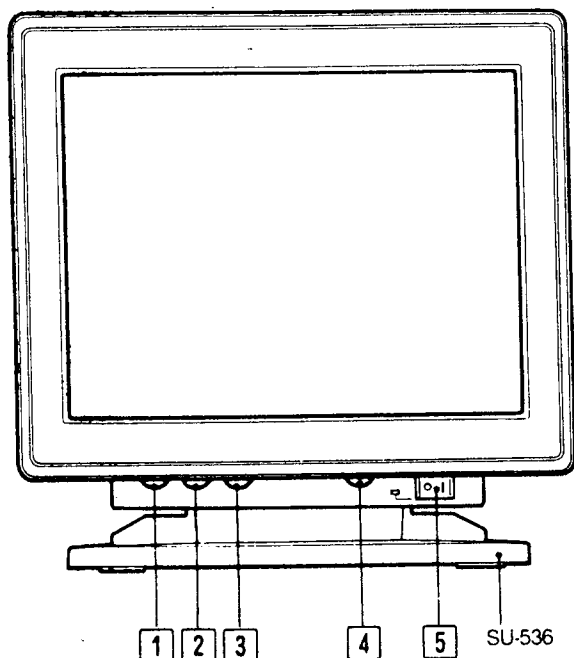
Vertical



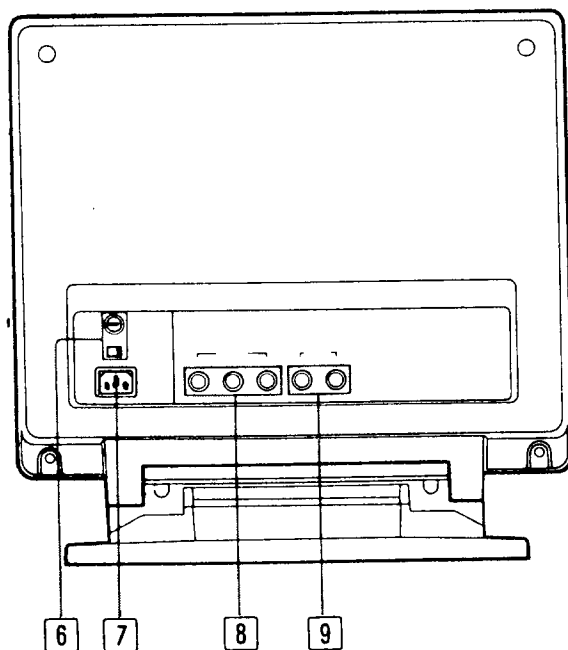
fV=59.98Hz

V-DISP: Vertical-display Period active time	16.162ms (1024 line)
V-FP: Vertical-frontporch	47.35μs (3 line)
V-SYNC: Vertical-sync	47.35μs (3 line)
V-BP: Vertical-backporch	410.4μs (26 line)
V-BL: Vertical-blanking	0.505ms (32 line)
1V: 1 Vertical-total Period	16.667ms (1056 line)

1-3. LOCATION AND FUNCTION OF CONTROLS



- 1 V STAT (vertical static convergence) control**
Adjusts the red and the blue horizontal lines so that they converge with the green horizontal line.
- 2 H STAT (horizontal static convergence) control**
Adjusts the red and the blue vertical lines so that they converge with the green vertical line.
- 3 V CENT (vertical centering) control**
Centers the picture in the vertical direction.
- 4 Contrast control (⬆)**
Adjusts the picture contrast.
- 5 Power switch and indicator**
- 6 Voltage selector (under the cover) and fuse**
Use the monitor with the appropriate selector setting and fuse.
The voltage selector is set to the 100 - 120 V position and a 4-ampere 125 V fuse is attached at the factory. When using the monitor in any other voltage area, the selector must be reset and the supplied T3.15-ampere 250 V fuse must be used. Refer this service to qualified personnel.



- 7 AC IN connector**
- 8 VIDEO IN connectors (BNC)**
Accept RGB video signals (0.714 Vp-p, positive).
When no external sync signal is applied, an internal sync signal (0.286 Vp-p, negative) must be added to the G signal.
- 9 SYNC IN (external sync input) connectors (BNC, 75 ohms)**
Accept external sync signals (1 - 4 Vp-p, negative).
HD: for horizontal drive pulse or compost sync
VD: for vertical drive pulse
When an external sync signal is applied, the monitor is automatically switched from the internal sync mode to the external sync mode.

1-1. FEATURES

Sony GDM-1952 is a highly integrated color display monitor which is designed for displaying high resolution graphics.

- The GDM-1952 high resolution graphic display monitor employs the Super Fine-pitch TRINITRON® picture tube.
- Resolution is extremely high with 1024 (horizontal) × 768 (vertical) picture elements per frame, thus a high-density color display can be obtained.
- A multi-layer optical coating on the screen provides a glare-free display.
- Cylindrical screen reduces distortion as viewed from the sides, sharpens the picture corners, and diminishes reflections.
- The display unit can be turned over 360 degrees to the right or left, and can be tilted 15 degrees up or 5 degrees down if SU-536 Display Stand is attached.
- Since the 60 Hz non-interlace method is employed, display of little flicker can be obtained.

1-2. SPECIFICATIONS

System	Raster scanning method (non-interlace) R/G/B input, full color system Sync on green (internal sync), or separated/composite sync input (Automatically selected)
Picture tube	Super fine-pitch Trinitron color tube 0.31mm phosphor pitch with aperture grill 19 inches measured diagonally 90-degree deflection Anti-reflective coating (multi-layer optical coating)
Visual picture size	360(w) × 270(h) mm (14.17 × 10.63 inches) 1024(H) × 768(V) viewable pixels
Horizontal deflection frequency (fh)	48.78 kHz
Vertical deflection frequency (fv)	60.0 Hz
Video amplifier frequency band width	60 Hz-100 MHz ± 3 dB (TYP)
Signal	In case of composite signal R/B video signal input: Video level—0.714 V p-p, positive G video signal input: 1.0 V p-p, composite, Video level—0.714 V p-p, positive Sync level—0.286 V p-p, negative In case of separate sync R/G/B video signal input: 0.714 V p-p, positive EXTERNAL SYNC input: 1.0—4.0 V p-p, negative Connector type BNC type 75 ohm input impedance
Power requirements	100-120V ± 10% 220-240V ± 10% 50/60 Hz ± 3 Hz

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Oxfordshire, OX9 4QY.
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email:- mauritron@diat.pipex.com

AC input current

100-120V: 2.6A max.
220-240V: 1.5A max.

Environmental conditions

Operating temperature : 10°- 40°C
Operating humidity : 10 - 80%, no condense
Storage temperature : 0°- 60°
Storage humidity : 5 - 90%, no condense

Dimensions

Approx. 480 × 446 × 535 mm (w/h/d)
(18.9 × 17.56 × 20.06 inches)
Approx. 480 × 475 × 535 mm (w/h/d) with
SU-536 Display Stand
(18.9 × 18.70 × 21.06 inches)

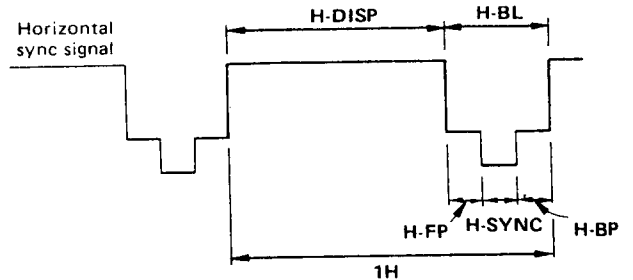
Weight

Approx. 36 kg (90 lbs, 6 oz)
Approx. 38.5 kg (97 lbs) with SU-536 Display
Stand (optional)

Signal timing

Dot clock 15.625ns (64 MHz)

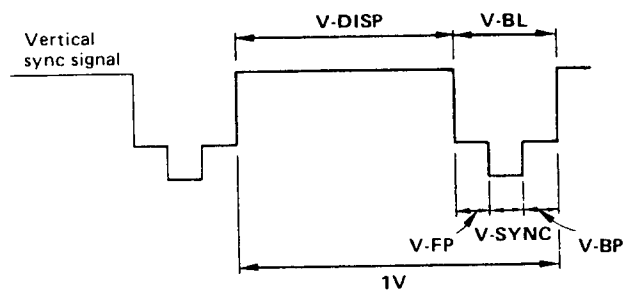
Horizontal



fh=48.78kHz

H-DISP:	Horizontal-display Period	16.0μs	(1024 dot)
H-FP:	Horizontal-frontporch	1.0μs	(64 dot)
H-SYNC:	Horizontal-sync	1.5μs	(96 dot)
H-BP:	Horizontal-backporch	2.0μs	(128 dot)
H-BL:	Horizontal-blanking	4.5μs	(288 dot)
1H:	1 Horizontal total Period	20.5μs	(1312 dot)

Vertical



fv=60.0Hz

V-DISP:	Vertical-display Period	15.744ms	(768 line)
V-FP:	Vertical-frontporch	61.5μs	(3 line)
V-SYNC:	Vertical-sync	61.5μs	(3 line)
V-BP:	Vertical-backporch	799.5μs	(39 line)
V-BL:	Vertical-blanking	922.5μs	(45 line)
1V:	1 Vertical-total Period	16.667ms	(813 line)

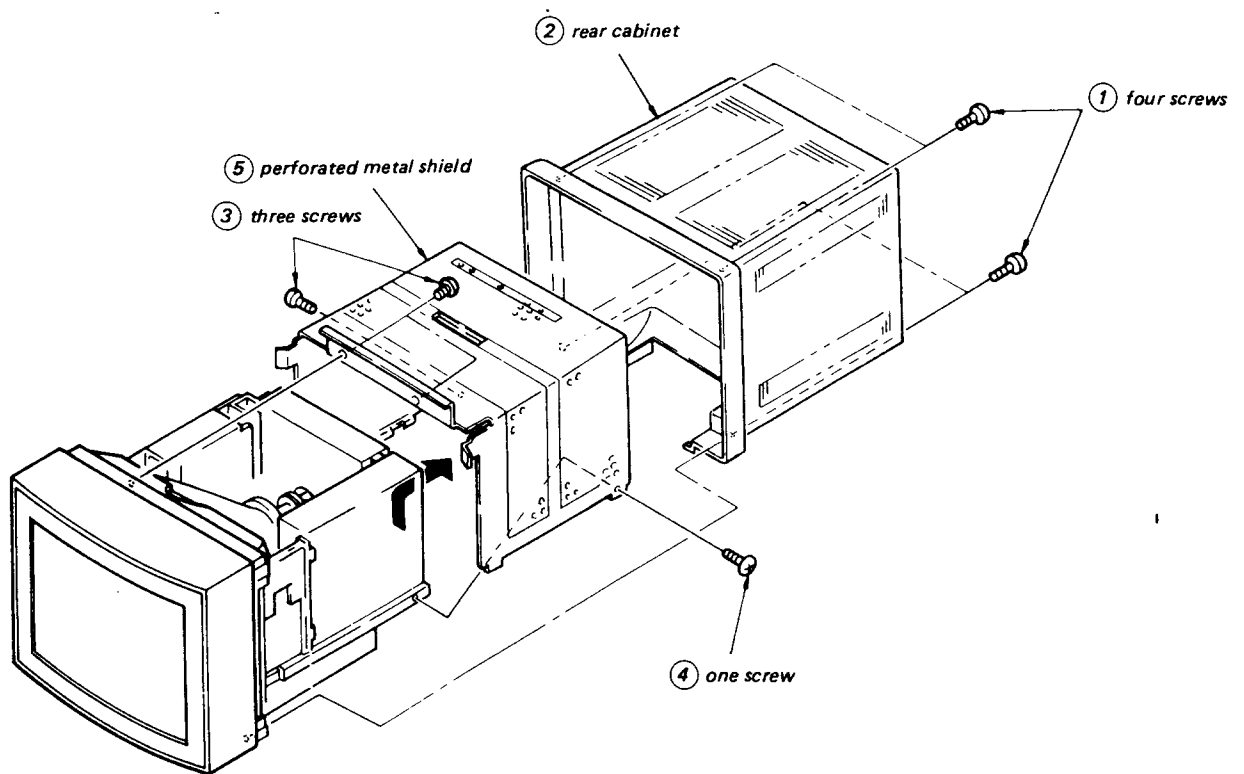
SECTION 2

DISASSEMBLY AND REPLACEMENT

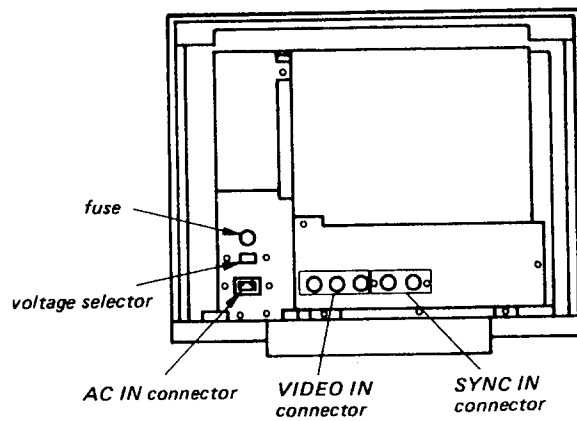
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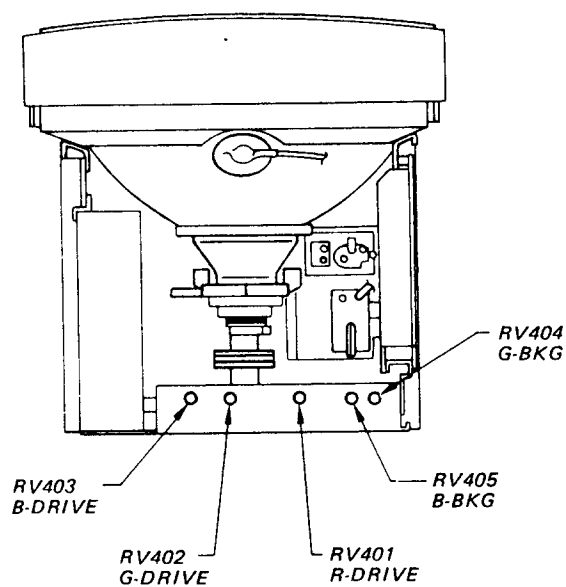
2-1. REAR CABINET REMOVAL



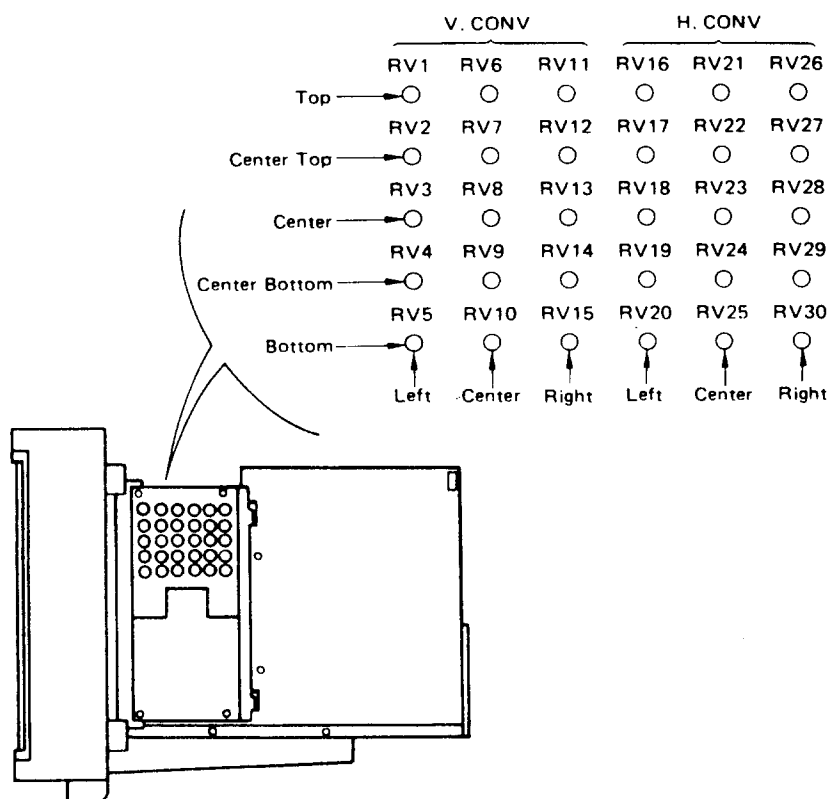
2-2. LOCATION OF REAR PANEL



2-3. LOCATION OF ADJUSTMENT FOR A BOARD

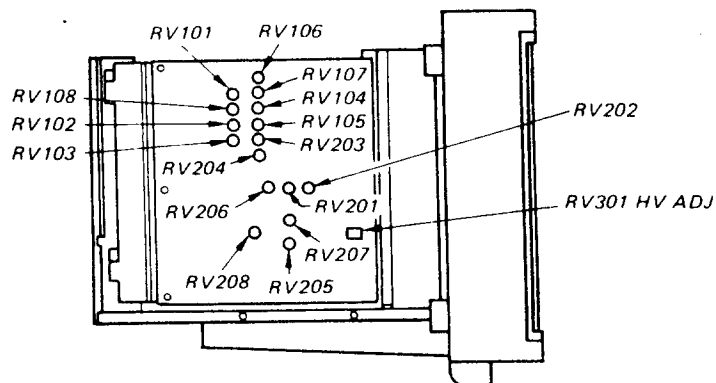


2-4. LOCATION OF ADJUSTMENT FOR L1 BOARD

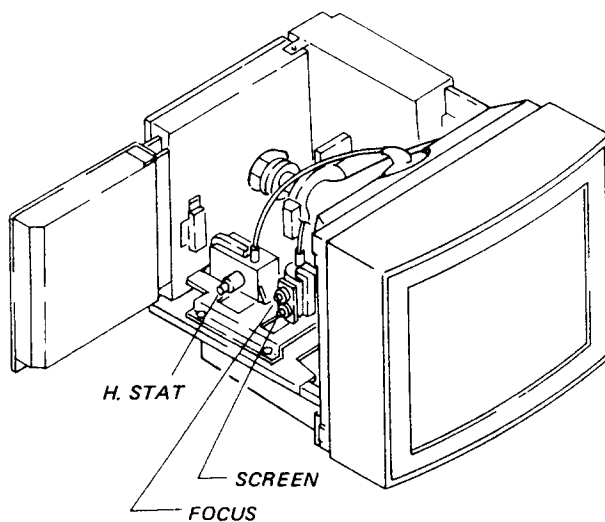


2-5. LOCATION OF ADJUSTMENT FOR D BOARD

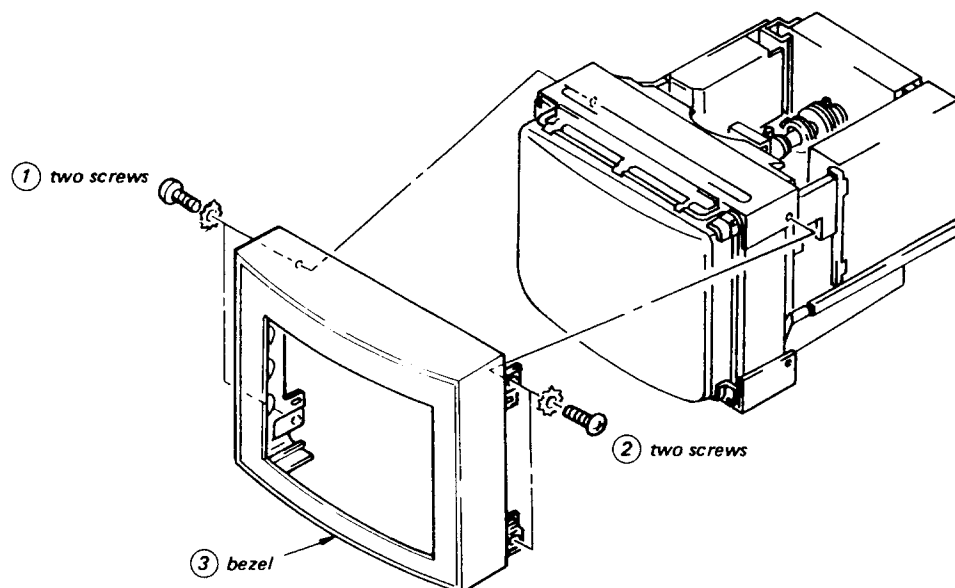
RV101	V.SIZE
RV102	V. LINEARITY
RV103	V. LINEARITY BALANCE
RV104	BOT AMP
RV105	BOT PHASE
RV106	TOP AMP
RV107	TOP PHASE
RV108	V.CENTER
RV201	KEY
RV202	KEY BALANCE
RV203	PIN AMP
RV204	H.SIZE
RV205	H.PHASE
RV206	SIDE PIN BALANCE
RV207	H-FREQUENCY
RV208	H-CENTER



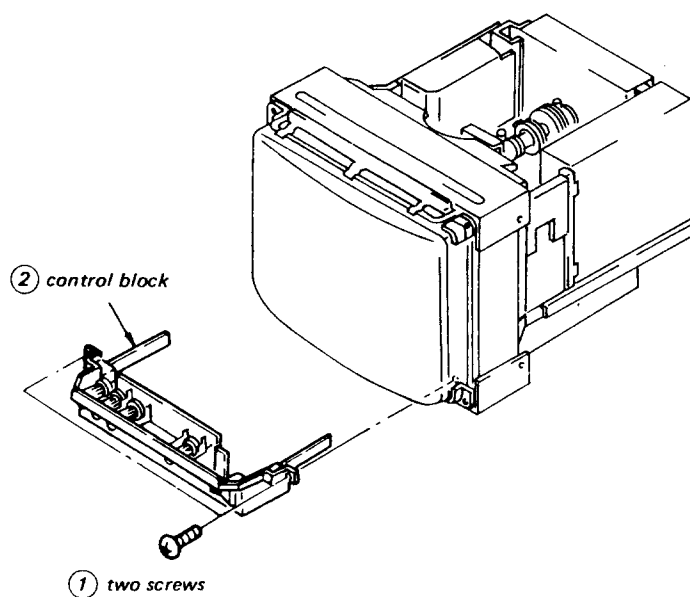
2-6. LOCATION OF ADJUSTMENT FOR FOCUS, SCREEN AND H. STAT



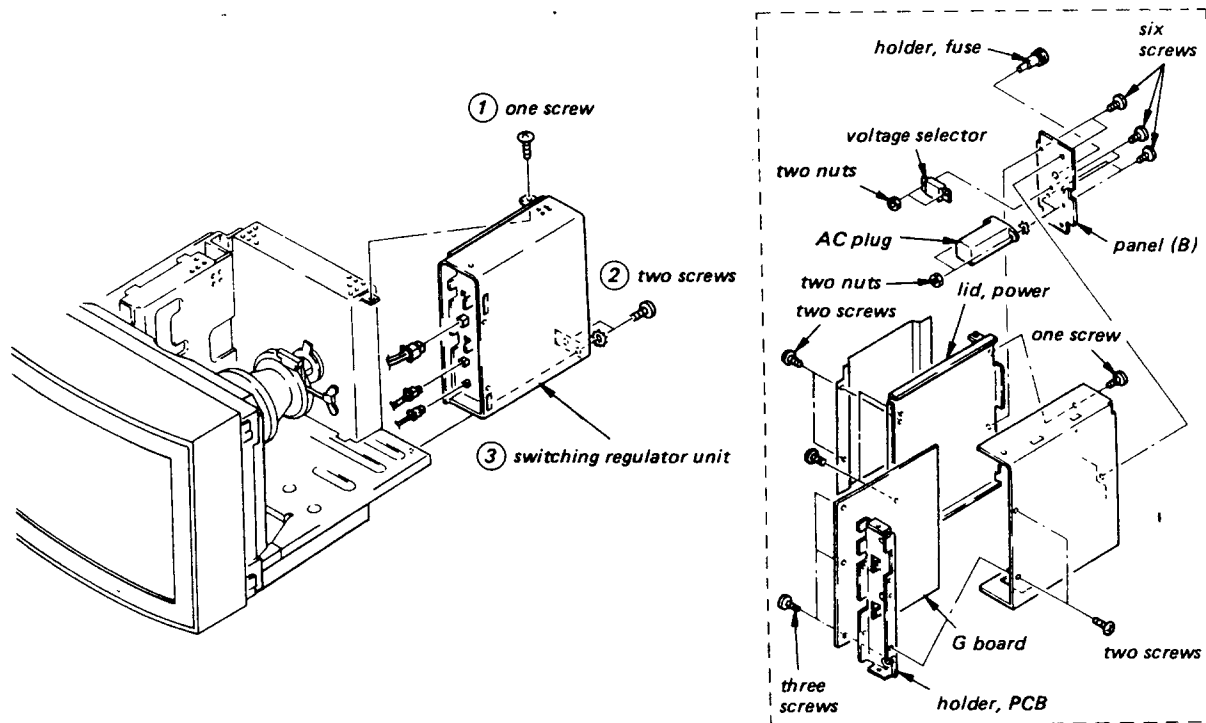
2-7. BEZEL REMOVAL



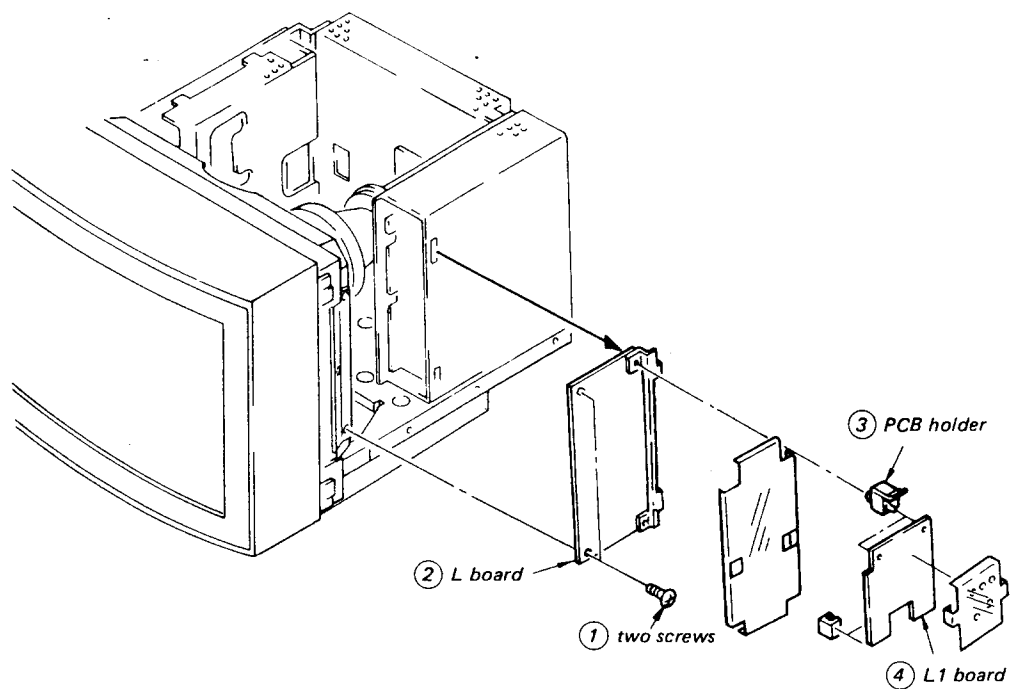
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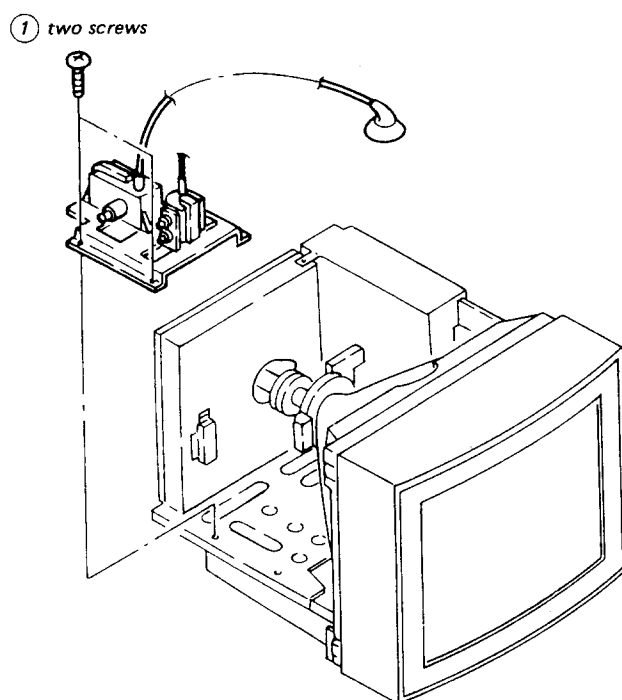
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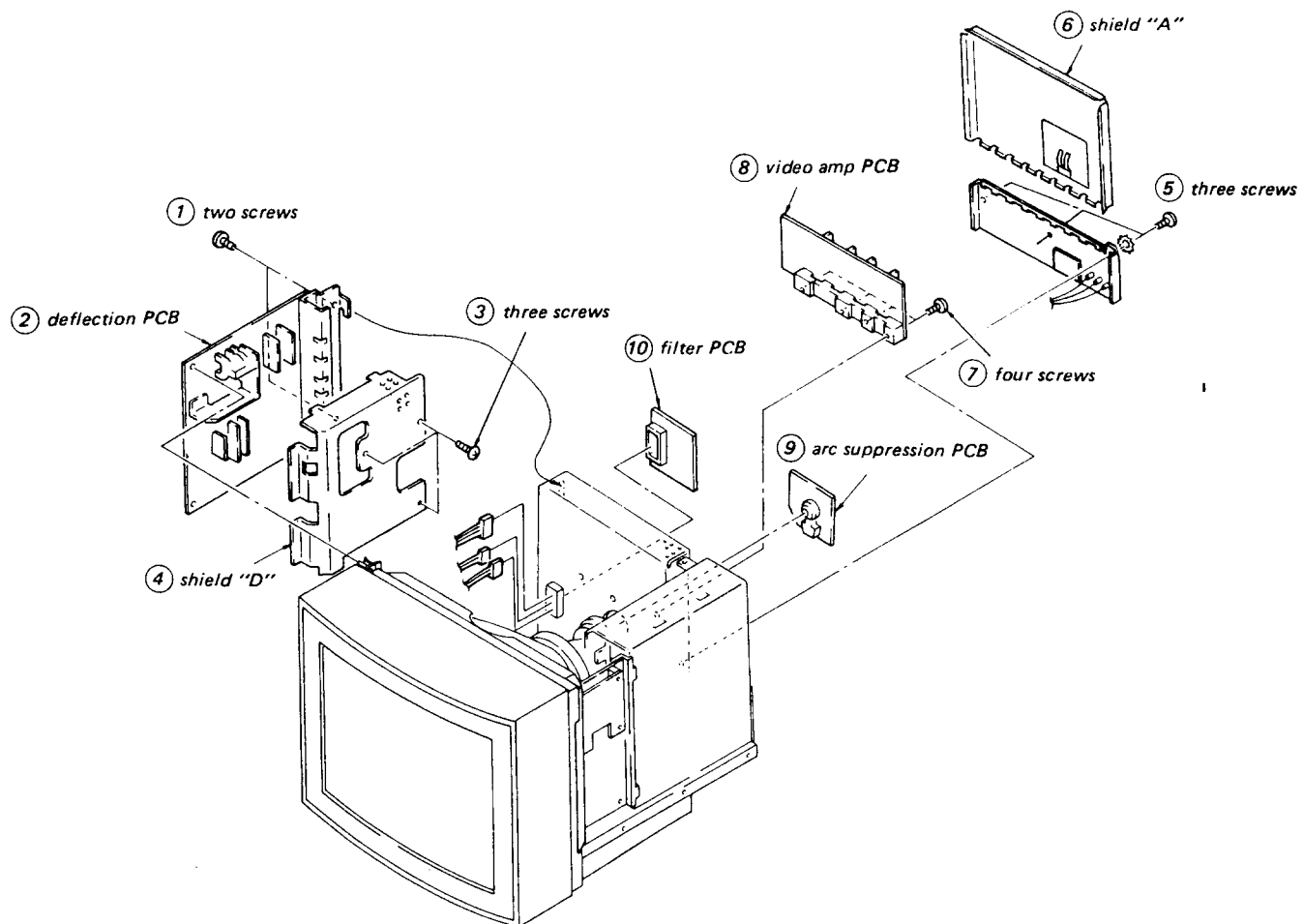
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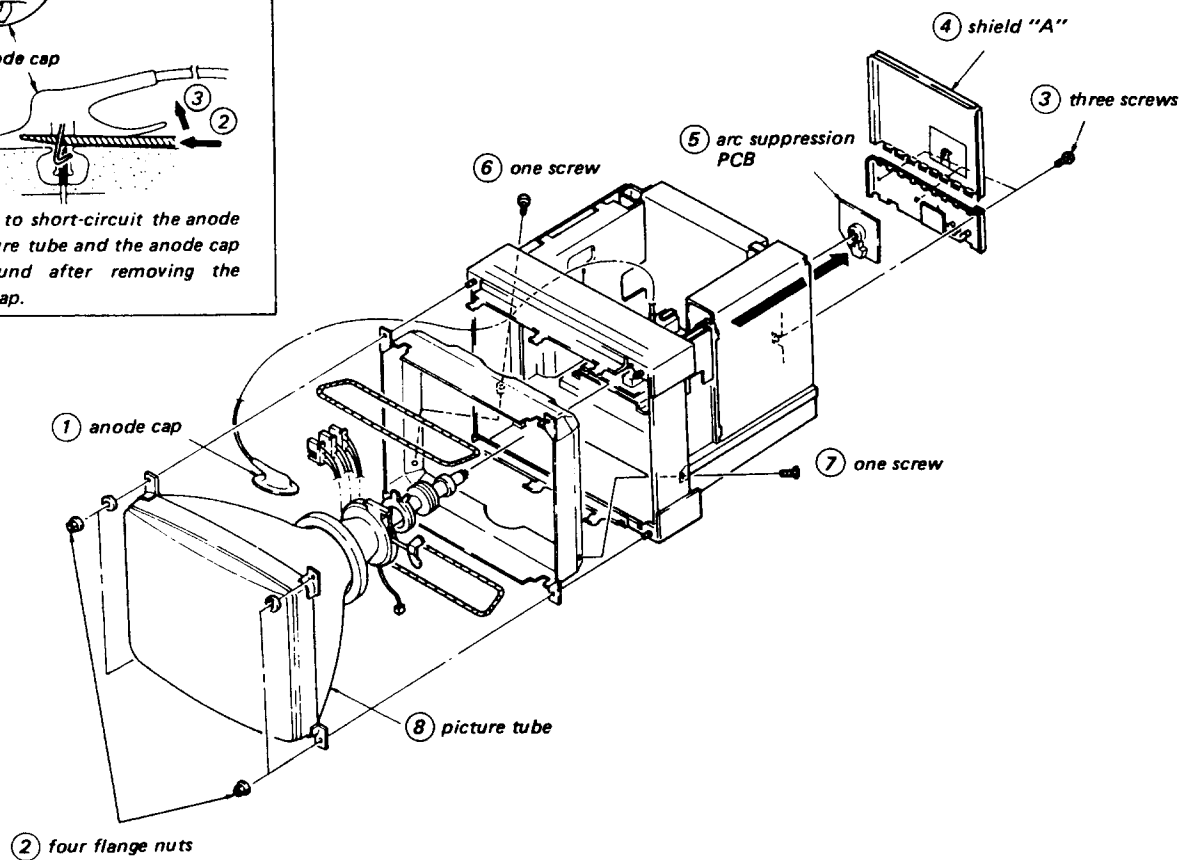
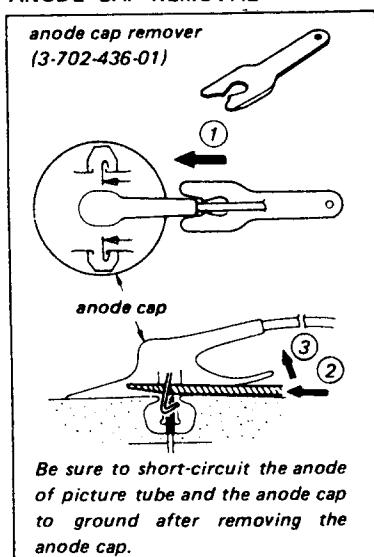


2-12. DEFLECTION PCB, VIDEO AMP PCB AND ARC SUPPRESSION PCB REMOVAL



2-13. PICTURE TUBE REMOVAL

ANODE CAP REMOVAL



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SECTION 3

CIRCUIT DESCRIPTIONS

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3-1. A BOARD

3-1-1. Composition

The A board consists of three channels of video signal amplifiers that include a contrast control circuit, pedestal clamp circuit, output amplifier (main), and blanking circuit. In addition, a sync signal separator and various control pulse generators are also located on the A board. Each of the three AA boards, mounted on the A board, consists of a contrast amplifier and clamp circuit. The AB board, also mounted on the A board, includes a sync signal separator and control pulse generators.

3-1-2. Contrast Amplifier (AA Board)

The contrast control amplifier utilizes a differential amplifier for current balance control and a feedback circuit to obtain wide frequency response and good tracking between channels. In this circuit, the amplifier gain can be continuously changed by DC adjustment for contrast control. This is achieved with the following signal process. A reference pulse is inserted on the back porch of the input signal (output of buffer Q1).

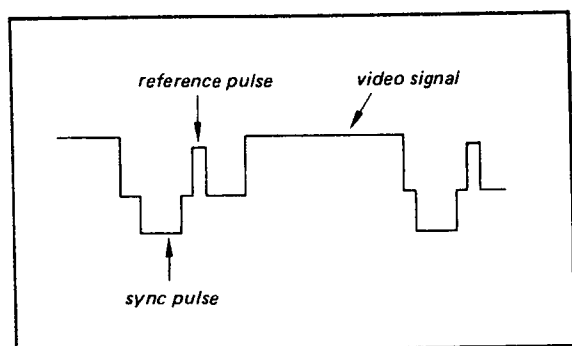


Fig. 3-1 Reference Pulse

The signal is then input to the contrast amplifier consisting of Q1 thru Q7. The gain is determined in the differential amplifier, Q3 and Q4, by altering the balance of the collector currents. Q9 thru Q13 are preamplifiers. The amplified signal is then buffered by Q14 and input to a sampling circuit for feedback. Q15 samples the magnitude of the reference pulses and charges C10. Meanwhile, a DC voltage, determined by the contrast control VR (H board) via RV401 (R-DRV), is input at pin (5) of IC1 (1/2). IC1 (1/2) outputs a DC voltage to the base of Q6 so that the sampled voltage at pin (6) is compared with that at pin (5). By feeding back the output of IC1 (1/2) to the contrast amplifier, the reference pulse level becomes equal to the potential difference between the two inputs of IC1 (1/2). Contrast can be changed by RV4 on the H board, as explained.

3-1-3. Pedestal Clamp (AA Board)

This circuit performs pedestal clamping for DC restoration of the input signal since the input stage of the video amplifier is AC coupled. Altering the DC bias at the collector of Q4 restores the DC component of the input signal and stabilizes the pedestal level (black) of the signal at the CRT cathode. Q5 acts as a DC power supply to regulate a bias voltage to Q4. The emitter voltage of Q5 is controlled by the output from IC1 (2/2), which is a high gain DC amplifier. A reference voltage (DC) is provided at pin (3) of IC1, and a feedback voltage subtracted by Q17 from the final video stage is at pin (2). Q17 samples and holds the detected voltage at R111 activating the gate by a background pulse. IC1 (2/2) compares the two input voltages and the output thru Q5, controls the DC level of the collector of Q4 so as to equalize the input voltage.

3-1-4. Sync Separator and Pulse Generator (AB Board)

The sync separator, consisting of Q1 thru Q3, distinguishes the sync portion of the composite video signal and separates the sync pulses into horizontal sync (HD) and vertical sync (VD). When external sync signals are input to the monitor, the two sync signals are directly input to pins (2) (X2) and (4) (X1) of IC1, the data selector. IC1 detects external sync pulses and automatically selects data lines X2 and X1. If no external sync pulses are detected, data lines Y2 and Y1, internal sync, are selected. HD and VD pulses are then sent to the D board via the B board.

Meanwhile, the pulses output from pin (13) of IC1 trigger IC2 (1/2), a monostable multivibrator. A background pulse is generated, synchronized with HD, and is output thru Q6 and Q7. At the same time, IC2 (2/2) is triggered by the background pulse and generates the contrast control pulse.

3-1-5. Video Output Amplifier

The video signals from the AA board preamplifier are input to the base of Q101. The video output stage is composed of a cascade amplifier consisting of Q101 and Q102 and has a gain of 20 dB. The frequency response of ± 3 dB from 60 Hz to 100 MHz is optimized with parallel peaking (L101), series peaking (L102), and emitter peaking (Q101), which compensate for the high frequency response.

3-1-6. Blanking Amplifier

Blanking signals are input from the D board, via the B board, to the base of Q403 to switch it on. Q404 is switched off when Q403 is on, and a blanking pulse of approximately 60 Vp-p appears at the emitter of Q404. The blanking pulses are then clamped at specific DC levels and supplied to each of the three G1 grids of the CRT via the C board. Two individual clamping levels can be varied by RV404 (G-BKG) and RV405 (B-BKG), with respect to the Red channel, for background level adjustment.

3-2. B BOARD

The B board is an interface card for signals between the A board and the D, H, and power supply boards. All signal I/O, as well as DC power I/O, contain filters to suppress RFI.

Q1 acts as a fade control for the picture when the monitor is powered up. When power is applied, Q1 is turned on and clamps the contrast control voltage to a minimum. C2 is gradually charged up and Q1 is switched off, returning the contrast control voltage to the normal level.

3-3. C BOARD

The C board relays the bias voltages and video signals to the CRT electrodes. Spark gaps and neon lamps are mounted on the board to return the CRT discharge (flash-over) current to chassis ground.

3-4. D BOARD (Deflection and HV Regulation)

3-4-1. DA Board

The DA board performs the horizontal oscillator, horizontal phase locked loop, vertical oscillator, and vertical synchronization functions. These functions are processed and controlled by IC1.

The horizontal and vertical sync (HD, VD) signals from the A board, positive true, are input to pins ① and ⑱ of IC1. The H sync signal is then delayed in phase by a PHASE SHIFTER and is input to an AFC circuit. Meanwhile, the horizontal retrace pulse, thru a voltage divider (C225, C226), is fed back to pin ④ and triggers a SAW TOOTH GENERATOR. The delayed H sync signal and the sawtooth wave are compared in the AFC circuit. The output from the AFC circuit synchronizes the horizontal scanning with the HD signal. RV205 (H-PHASE) controls the delay time of the PHASE SHIFTER and adjusts the horizontal position of the display image. Horizontal deflection is driven by the output at pin ⑫.

The vertical oscillator is triggered by the VD sync signal and locked at a frequency of 60 Hz. IC1 outputs two vertical rate pulses, a V drive pulse from pin ⑩ and a V blanking pulse from pin ⑮.

3-4-2. DB Board

The DB board generates waveforms, including a sawtooth wave, for S-correction of vertical deflection.

IC1 (1/2), configured as a Miller integrator, generates a vertical period sawtooth wave. Transistor Q1 and capacitor C2 control the rise and fall times of the sawtooth wave. The bias current of the ramp generator is supplied from IC2 (2/2) to pin ② of IC1 (1/2) and the peaks of the waveform are determined by diodes D1 and D5. The resulting zero-crossing sawtooth wave is input to the vertical deflection circuit via RV101 (V-SIZE) and also input to another Miller integrator, IC2 (1/2), generates a vertical period parabolic wave. IC1 (2/2) integrates the output from IC2 (1/2) and generates an S-correction wave (similar to a sine wave) at pin ⑦. This output is amplitude adjusted by RV102 (V-LIN) and is input to the vertical deflection circuit for linearity correction. RV103 (V-LINE BALANCE) adds a DC component to the V sawtooth wave at IC2 (1/2) to allow adjustment of the balance of vertical linearity at the top and bottom of the display. Additionally, the V-sawtooth and V-sine waves are supplied to other correction circuits on the D board.

3-4-3. DC Board

The DC board receives the horizontal retrace pulse from T203 (HOT) and the V-sawtooth from the DB board and generates a complex "butterfly" waveform. The sawtooth is input to D1, D2, and D3, split into positive and negative half waves, and the amplitudes are varied by RV104, RV105, RV106, and RV107. IC1 (1/2) sums the amplitude adjusted sawtooth waves to modulate the horizontal ramp signals for top and bottom pincushion correction. IC1 (2/2) performs a similar function for phase control by altering the starting point of the horizontal ramp signals. Meanwhile, the H retrace pulse is inverted by Q1 and triggers a phase control shifter composed of Q3 and Q4 after passing thru Q2. The magnitude of the pulse phase shift is varied by the output voltage from pin ⑦ of IC1 (2/2) and allows individual phase adjustments for both top and bottom pincushion distortion correction. The output voltage from pin ① of IC1 (1/2) is input to Miller integrator IC2 (2/2) with reset switch Q5 activated by the collector of Q4. Accordingly, a horizontal sawtooth signal, synchronized by Q4, is generated and is amplitude modulated by the sawtooth wave output from IC1 (1/2). This signal is inverted by IC2 (1/2) and is input to Q103.

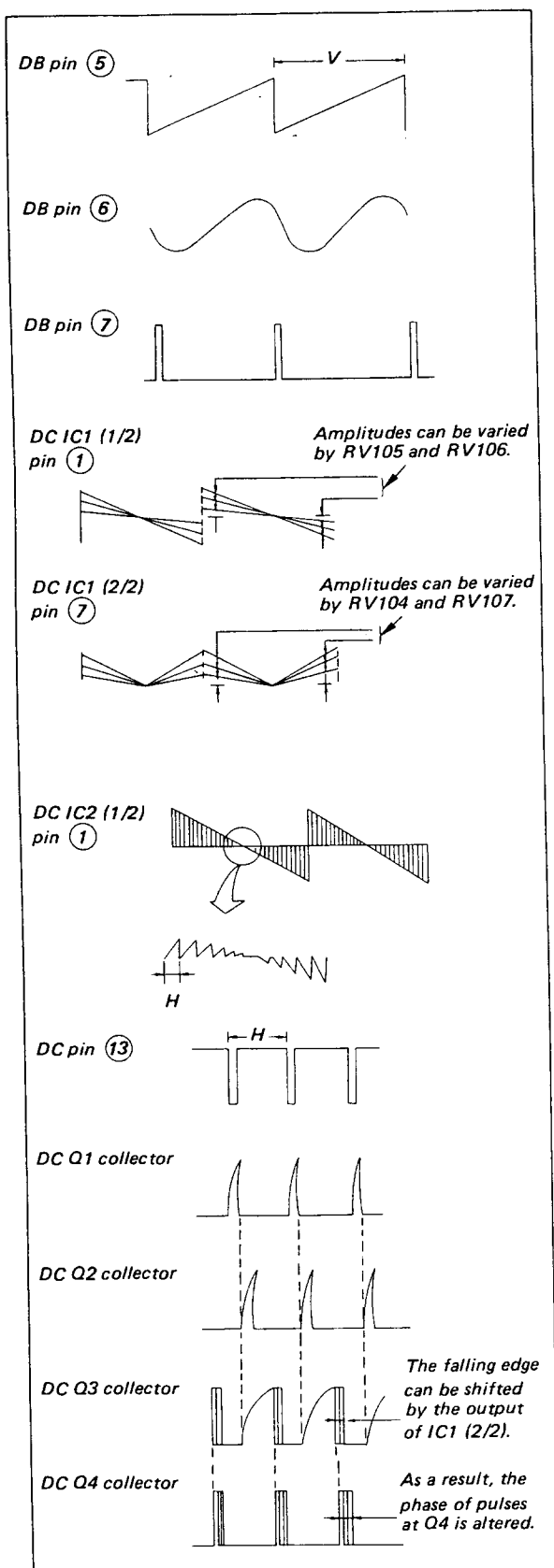


Fig. 3-2 Waveforms on "DB" and "DC" Boards

3-4-4. Horizontal Deflection Output Circuit

The horizontal predriver circuit of Q214 and T202 boosts the horizontal oscillator output from the DA board to switch output transistor Q215 on and off. The horizontal deflection yoke, resonance capacitor C224, and damper diode D210 are connected to the collector of Q215, and +B voltage is supplied to horizontal output transformer T203. The secondary windings of the HOT, via D213 and D214, produce DC voltages for Q216 and Q217 for control of raster centering. D211, D212, C227, and C228 are configured as a boot-strap circuit with the primary winding to increase the voltage at the collector of Q215 for horizontal size selection. (WIDE or NARROW can be selected by a jumper wire.)

The horizontal deflection yoke current flows thru "S" correction capacitor C219 and horizontal linearity coil (HLC) L203. Transistor Q210 provides DC power to the output circuit, thru Q211 and Q212, that is modulated with the vertical period parabolic wave to correct side pincushion distortion. Q210 is driven by IC201 (2/2) and the output at the collector of Q212 is fed back to IC201 (2/2) for regulation. At IC201 (2/2), the amplitude adjusted V parabolic wave is fed to the positive input and the regulated V sawtooth wave with specific DC bias is fed to the negative input. RV203 (PIN-AMP) adjusts the amplitude of the parabolic wave from IC201 (1/2) for side pincushion correction, and RV202 (KEY) varies the amplitude and polarity of the sawtooth wave output from Q201 to correct keystone distortion. DC bias for IC201 (2/2) is varied by RV204 (H SIZE) and changes the DC level at the emitter of Q212 for horizontal picture size adjustment.

Two vertical period waveforms, the parabolic wave from Q207 and the sawtooth wave from Q201 are input to the DA board at pin 15 and modulate the AFC voltage to allow adjustment of side pincushion distortion balance, SIDE PIN BAL RV206, and keystone distortion balance, KEY BAL RV201.

3-4-5. Vertical Deflection Output

The vertical deflection sawtooth wave and top/bottom pincushion correction signals are input to differential amplifier Q103 and Q102 to drive Q105. The output of Q105 is amplified by the SEPP complimentary pair amplifier, Q106 – Q107, and drives the vertical deflection yoke. T101 (VPT) amplifies the horizontal rate top/bottom pincushion correction signals and modulates the deflection current thru its secondary winding. The voltage across R128 resulting from detecting the deflection yoke current is fed back to the differential amplifier input via R130 and C110.

The vertical drive pulses from the DA board switch on Q104 during the duration of the vertical blanking time. Q104 then supplies +B voltage to the vertical output circuit to generate a high peak voltage flyback pulse in the deflection yoke. Consequently, the vertical retrace time is minimized and is shorter than the vertical blanking time.

3-4-6. Blanking Pulse Generator

The vertical blanking pulse output from the DA board is input to the emitter of Q203 and pulse width adjusted by Q204.

The horizontal parabolic voltage wave appearing at C219 is input to Q209 thru a voltage divider consisting of R240, C211, R257, and C217. D205 and D206 clamp the parabolic wave, and Q209 controls the input voltage to produce a horizontal rate pulse at the collector with appropriate width.

The horizontal rate pulse and the vertical rate pulses are summed at the bases of Q205 and Q206 and output to the B board.

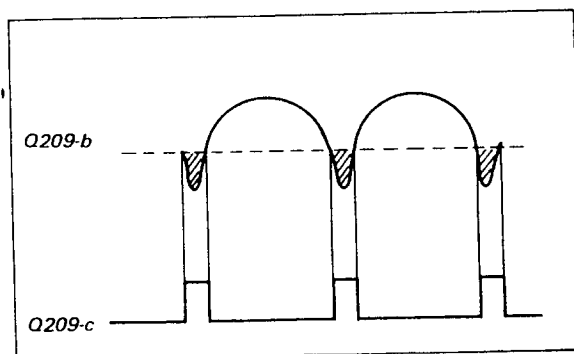


Fig. 3-3 Blanking Pulse

3-4-7. HV Regulator

Horizontal drive pulses from the collector of Q214 are input to Q302 and amplified by Q302 and Q303 to drive output transistor Q304 thru T301 (HDT). The flyback transformer (FBT) resonance capacitor C310 and regulation coil (HRC) L301 are connected to the collector of Q304, and +B voltage is supplied to the line output transformer (LOT) T303.

The FBT is a multisingular type, and its secondary winding incorporates six rectifier diodes. The second stage generates focus voltage (G4) and screen voltage (G2). The high-voltage output of the FBT is supplied to the CRT anode thru HV block and is also divided in the ratio of 1/3000 by a pair of high-voltage resistor. This divided voltage is supplied to the DD and DE boards.

IC1 (2/2) on the DE board receives this HV feedback voltage and compares it to a reference voltage of 9.00 V dc. The resulting differential voltage is amplified and input to IC2 (1/2) on the DD board.

The output pulse from Q214 is delayed in phase by Q310 and Q311 and drives the base of Q1 on the DD board. Q1 charges and discharges C4 to generate a sawtooth wave that is input to IC2 (1/2). A square wave is generated by comparing the horizontal rate sawtooth wave and the amplified idfferential error voltage. This square wave is pulse width modulated with respect to the error voltage and switches the regulator output transistor Q306 after amplification by Q305 and T302. The flyback pulse peak voltage is controlled by altering the duration of the on time of Q306 and regulates the HV voltage.

In addition to the HV output, T303 (LOT) also generates ± 24 V dc for the vertical deflection output circuit, -95 V dc for G1 bias, and 6.3 V dc for the cathode heaters.

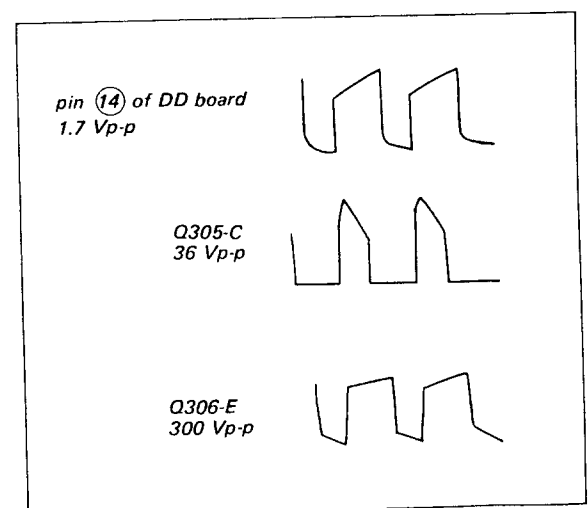


Fig. 3-4

3-4-8. HV Hold-Down Circuit

Feedback voltage, normally 9.00 V, from the HV block is input to the positive input of comparator IC1 (1/2) on the DD board. It is compared with a reference voltage (VHV) selected by R305, R345, and R314 of 9.75 ± 0.25 V. Normally, the output of IC1 (1/2) is low. When the voltage at the positive input exceeds VHV, the output voltage at pin ① goes high and switches on Q309 thru hold-circuit IC1 (1/2) on the DE board. The collector of Q309 is connected to the collector of Q302 to disable the HV drive pulse when Q309 switches on, holding down the high voltage. The high voltage value when hold down initiates can be calculated as follows:

$$\begin{aligned} \text{HP (PRT)} &= 9.75 (\pm 0.25) \times 3000 (+1/-3\%) \\ &= 29.25 \begin{smallmatrix} +1.05 \\ -1.60 \end{smallmatrix} \text{ kV} \end{aligned}$$

3-4-9. Beam Protector

If the CRT anode current increases beyond a predetermined value, the beam protector circuits inhibits high voltage operation. This monitor incorporates two individual beam protectors to provide double over current protection.

Anode current is supplied by the secondary of the FBT and flows thru series resistors R307 – R310. Voltage on pin ⑤ of connector D-6 decreases as the high voltage current increases. Since the bleed current flowing to high-voltage feedback resistors and focus resistors is constant, any change in anode current is proportional to the voltage drop across sense resistors R307 – R310. When anode current exceeds a threshold value, the voltage at the positive input of IC2 (2/2) on the DD board drops below that of the negative input (VHV), and the output changes from a "high" to a "low" state. IC2 (2/2) is configured as a comparator with hysteresis and the output is held "low". As a result, high-voltage predriver Q302 is inhibited and prevents excessive current flow to the CRT.

IC1 (2/2) on the DD board comprises the second beam protector and functions in a similar manner to IC2 (2/2). The current threshold of beam protector #2 is set at a higher value than the threshold of beam protector #1.

3-4-10. Scan Failure Protection

Scan detection circuits are utilized to inhibit HV generation and protect the CRT phosphor upon loss of horizontal or vertical deflection.

The collector voltage for Q302 (HV predriver) is obtained by rectifying the retrace pulse from the HOT. Upon loss of horizontal deflection, no voltage is supplied to the collector of Q302 and HV is inhibited.

Vertical deflection flyback pulses are rectified by D106 and charge capacitor C327 to turn Q308 "on". However, when vertical deflection fails, Q308 is switched "off" and Q307 is switched "on". The collector of Q302 is held low by Q307, inhibiting HV operation.

3-5. G BOARD (Power Supply)

3-5-1. AC Line Filter

The AC line filter consists of an input filter, and transformers T1 and T2, and capacitors C1, C28, C30, and C31 which are mounted on the G board.

3-5-2. AC Voltage Selector

AC input voltage is selected by switch S902 on the connector panel. When set for AC100 to 120 V, the voltage rectifier circuit is configured as a voltage doubler. When set for AC220 to 240 V, the voltage rectifier circuit is configured as a full-wave rectifier.

3-5-3. Degauss

The degauss coil is mounted on the metal CRT shield to automatically demagnetize the CRT. The mechanical relay RY52 and one of the two posistors THP1 and THP2 provide an attenuating AC current to the degauss coil L901. Transistor Q56 controls RY52 and a time constant circuit, R65 and C88, allows a degaussing duration time of approximately five seconds at each turn on cycle. Until RY52 is selected on, AC current thru the posistor causes its resistance to increase and the current is gradually attenuated.

3-5-4. OVP Circuit

The over voltage protection (OVP) circuit is designed into the AC primary line circuit. The circuit operates, for example, when applying an AC input voltage of 220 V to the monitor with the AC voltage selector switch set to 100 – 120 V. When the switch is set to this position, a series circuit consisting of neon lamp NL1 and resistor R4 is connected across the AC primary lines (from Live to Neutral). The neon lamp fires at a voltage of 230 ± 34 V and results in a blown fuse F901. The maximum AC voltage which triggers this protection circuit is set at 164 ± 24 V, with the voltage selection switch set to 100 – 120 V AC.

3-5-5. DC Power Supply (Regulator)

DC supply voltages ($+145 \text{ V} < \text{GDM-1952: } 120 \text{ V DC} >$, $+60 \text{ V}$, $+15$ and -15 V) are generated by a Y-Z type switching mode regulator. Two regulators are utilized, one for the +B voltage and one for +B2, $+15$, and -15 voltages. This description is for the +B regulator.

IC51 compares a feedback voltage from the +B line to

an internally generated reference voltage to determine the current flow to the control winding of transformer T4 (PRT-1). T4 is a cross transformer with the mutual inductance between the primary and secondary windings controlled by the current through a perpendicular winding. Consequently, the frequency and voltage of a resonant circuit, C15 and T5, is varied. The output from the secondary of T5 is rectified and filtered to provide +145 V DC (GDM-1952: 120 V DC). +B over voltage is detected by IC51 and opens the AC primary input lines via relay RY51. The low voltage circuit (IC52) operates in a similar manner.

3-6. H BOARD

The following operator control VRs are mounted on the H board:

- V CENT (RV1) raster vertical position adjustment
- H STAT (RV2) horizontal static convergence adjustment
- V STAT (RV3) vertical static convergence adjustment
- CONT (RV4) display contrast (intensity)

3-7. J BOARD

An LED indicator showing that the power supply "on" is mounted on the J board.

3-8. L AND L1 BOARDS (Convergence)

3-8-1. Composition

Horizontal convergence is corrected by applying a CV voltage to the convergence plate inside the CRT. Vertical convergence is corrected by flowing a current to NTC and CY. Horizontal and vertical convergence can be corrected at 3 points in the horizontal direction and 5 points in the vertical direction, or in 15 locations in total, respectively. The L board has LA and LB (x2) Sub-board which produce necessary waveforms to drive DCT, NTC, and CY in the high voltage block.

The L1 board is composed of volume matrices (15 pieces x2) for horizontal and vertical convergence correction and sends signal to the L board.

3-8-2. LA Board

The LA board receives signals VD, H.BLK, and V.PARA from the D board and produces the following waveforms:

- 1) H. PLUS 1 (Pin 23): HCT clamp pulse.
- 2) H. PLUS 2 (Pin 22): Modulation pulse to decide amplitude of the horizontal convergence correction waveform.

- 3) H. PULS 3 (Pin 21): Switching pulse to modulate the vertical convergence correction waveform.

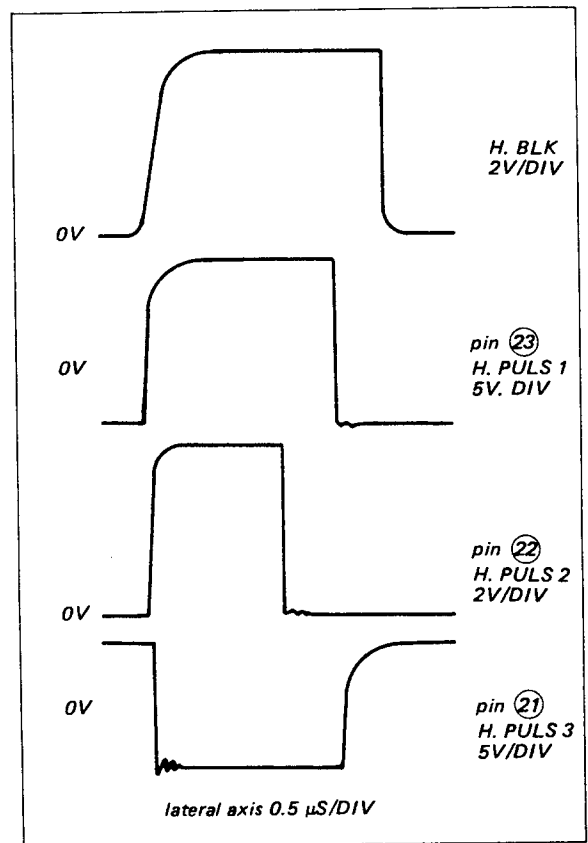


Fig. 3-5

- 4) H. PULS 4 (Pin 19): Center pulse to clamp in the picture center in a horizontal direction.
- 5) H. SQR (Pin 18): Control pulse to switch on right and left sides of the picture.

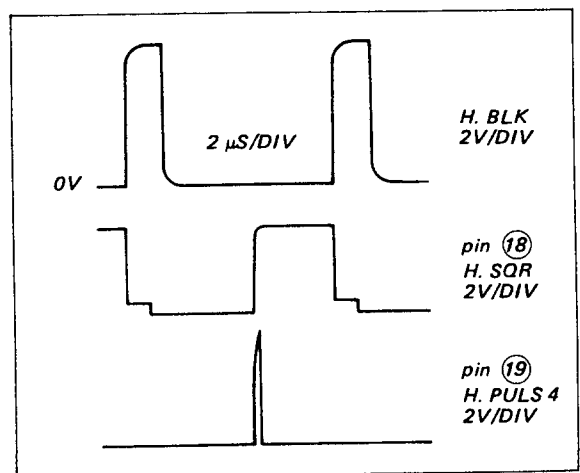


Fig. 3-6

- 6) V1 (Pin ①): V.PARA to be input.
- 7) V2 (Pin ②): The waveform obtained by inverting V1 centering GND. For correction of horizontal and vertical convergence of the picture center by V1 and V2.
- 8) V3 (Pin ③): The waveform obtained by clamping the picture center in a V direction of V2 to a zero level.
- 9) V4 (Pin ④): The waveform obtained by inverting V3. Horizontal and vertical convergence to the top and bottom darts of the picture is performed using V3 and V4.

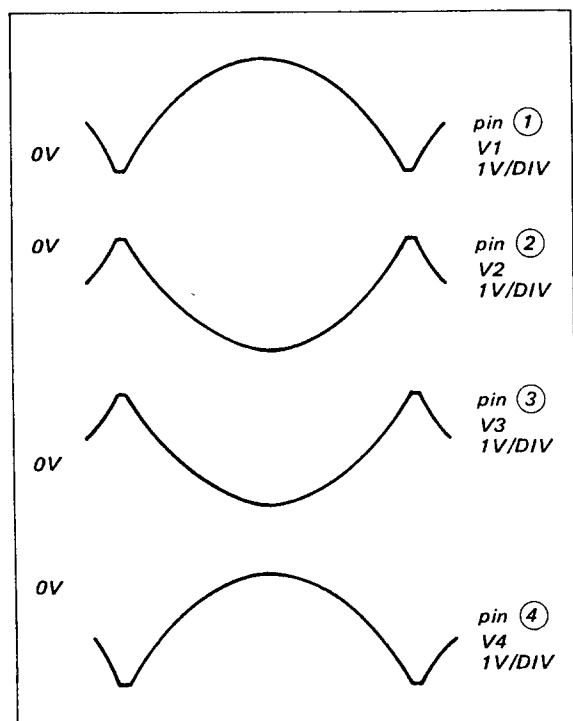


Fig. 3-7

- 10) V. SIN 1 (Pin ⑨): V. SIN of 2fv.
- 11) V. SIN 2 (Pin ⑩): Inversion of V. SIN 1.
The intermediate part is corrected using V. SIN 1 and V. SIN 2.
- 12) V. SQR (Pin ⑧): The switching pulse to switch the top and bottom of the picture.

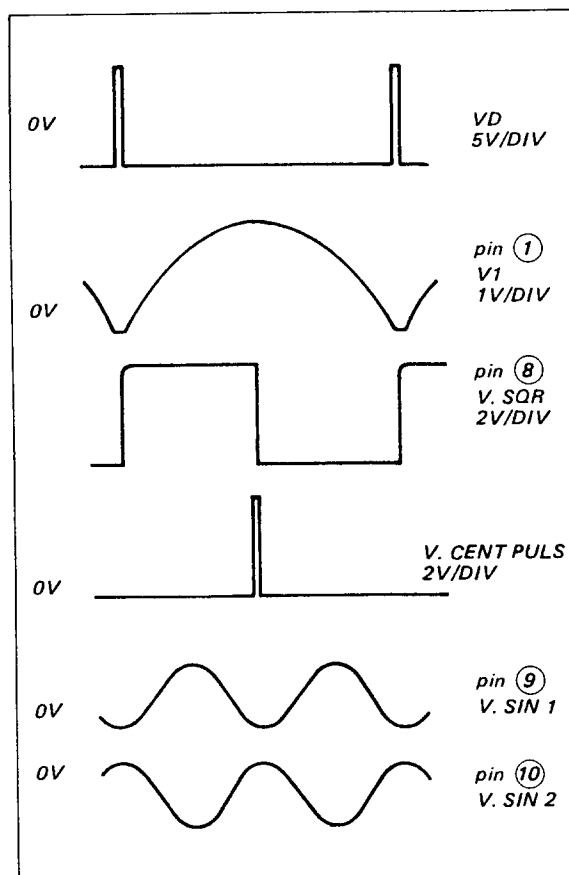


Fig. 3-8

3-8-3. LB Board

The board produces a horizontal parabolic wave, which is amplitude modulated, by switching the input signal and clamps at the center of H period. (H. PULS 4 is used as input.)

3-8-4. L Board

The signal of V period output by the LA board is amplitude modulated by the LB board by producing a necessary correction waveform using the switching circuit and using the volume matrices on the L1 board to obtain a correction waveform needed by H period. The waveforms on the left and right sides of the picture are synthesized using the switching circuit, and the synthesized waveform is supplied to the DCT or CY drive circuit. The signal output by the LA board mentioned above and correction waveform obtained through the switching circuit and L1 board volume matrix circuit are synthesized, and the synthesized waveform is supplied to the NTC drive circuit.

SECTION 4 ADJUSTMENTS

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1. PICTURE PROJECTION TEST

1-1. Picture Projection

- 1) Connect power from an isolated-type variac after checking that the power switch of the set is turned off.
- 2) Adjust the AC input to the rated voltage.
- 3) Supply signals to the set.
- 4) Adjust SCREEN VR so that the raster brightness is at an appropriate level.
- 5) Check that the picture is not rolling.
- 6) Rotate RV207 (H FREQ) on the D board to lock the picture, if there is slipping.

1-2. Checking the Operation of Individual Sections

- 1) Check that the POWER lamp (green) lights when the POWER switch on the set is turned on.
- 2) Apply input signals.
- 3) Rotate the following VR's and check that the circuits are functioning.
 - (1) CONT (contrast) VR
 - (2) V. CENT VR
 - (3) V. STAT VR
 - (4) H. STAT VR
 - (5) SCREEN VR
 - (6) FOCUS VR
 - (7) R DRV, G DRV, B DRV VR's (on the A board)
 - (8) G BKG, B BKG VR's (on the A board)
- 4) Checking Direction of Rotation of Contrast VR. Check that the contrast increases when the contrast VR is rotated clockwise and that it decreases when rotated counterclockwise.
After checking, rotate the contrast VR clockwise fully and make the contrast maximum.
- 5) Checking R, G, and B connection. Alternately switch on and off the R, G, and B switches on the signal generator and check for correspondence between the three colors R, G, and B.

1-3. Checking Voltage of Individual Sections

Checking that the following voltages are present on each board.

- 1) +B Voltage $145 \pm \frac{1}{2}$ V (GDM-1952: $120 \pm \frac{1}{2}$ V)
(D-1 pin 1 - pin 3 GND)
- 2) +12 V output 12.0 ± 0.3 V (D-1 pin ④ - pin ⑤ GND)
- 3) -12 V output -12.0 ± 0.6 V (D-1 pin ⑥ - pin ⑤ GND)
- 4) The voltage between TP304 on the D board and GND is 9.00 ± 0.05 V.
Readjust by rotating RV301 if the standard is not met.
- 5) +B₂ Voltage 59.0 ± 3 V (D-1 pin ② - GND)

2. ADJUSTMENT

2-1. White Balance Coarse Adjustment

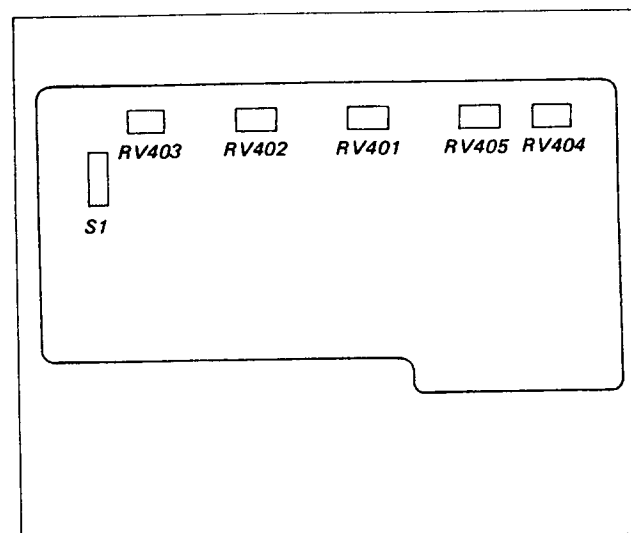


Fig. 2-1-1 A board

- 1) Adjustment of video signal voltage
 - (1) Input the full white signal
Set to the following points:
 - (2) A board

RV404 (G-BKG)	.....	Min
RV405 (B-BKG)	.....	Min
RV401 (R-DRV)	.....	Min
RV402 (G-DRV)	.....	Min
RV403 (B-DRV)	.....	Min
Front Panel CONT VR	.....	Max
 - (3) Connect the oscilloscope probe to TP2 (KR) on the C board.
 - (4) Vary RV401 on the A board and adjust the video level to 40 Vp-p. (See Fig. 2-1-2.)
 - (5) Connect the oscilloscope probe to TP1 (GIR) on the C board.

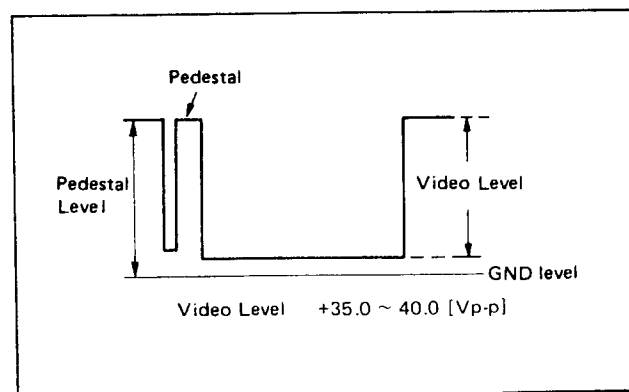


Fig. 2-1-2

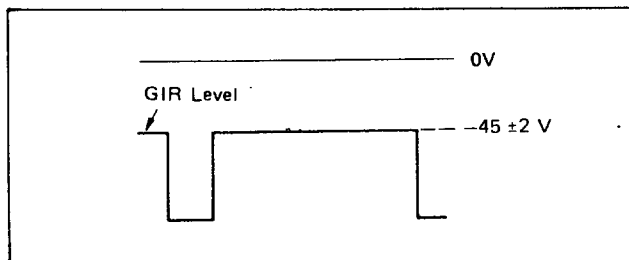


Fig. 2-1-3

2) Coarse adjustment

- (1) Set the CONT VR to minimum.
- (2) Adjust the SCREEN (G2) VR so that the background of the screen disappears.
- (3) Adjust the RV404 (G-BKG) and RV405 (B-BKG) for dark level white balance.
- (4) Set the CONT VR to maximum.
- (5) Adjust the RV402 (G-DRV) and RV403 (B-DRV) for the high-light white balance.
- (6) Repeat from (1) to (5) until getting the good white balance. (This adjustment need not be precise.)

2-2. Beam Landing Coarse Adjustment

If you use the CRT of FRU provided by SONY, you need not do adjustments describe below.

- 1) Input a full white signal (or equivalent signal).
- 2) Rotate the CONT VR fully clockwise.
- 3) Project only green (switch off SG R and B channel outputs).
- 4) Adjust SCREEN (G2) VR to obtain appropriate brightness.
- 5) Move the DY backward and make a coarse adjustment with the purity control (see Fig. 2-2-1) so that the green raster is at the screen center. (see Fig. 2-2-2)
- 6) Move the DY forward and adjust so that the entire screen turns green.
- 7) Adjust the DY tilt.
- 8) Lightly fix the DY with the DY fixing bracket.
- 9) Set the neck assembly (neck twist coil) in the position shown in Fig. 2-2-3.

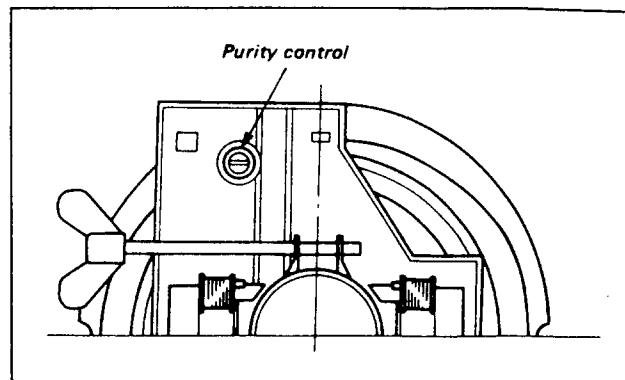


Fig. 2-2-1

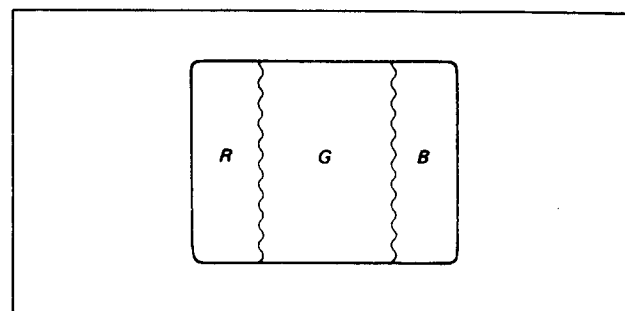


Fig. 2-2-2

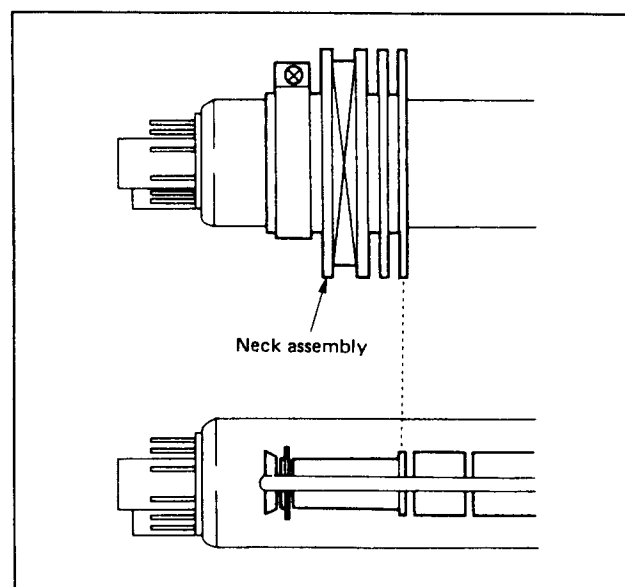


Fig. 2-2-3

2-3. Convergence Coarse Adjustment

If you use the CRT of FRU provided by SONY, you need not do adjustments describe in the item 2).

- 1) Supply a white crosshatch signal.
- 2) Align the six-pole magnet's tabs mounted on the CRT neck. (see Fig. 2-3-2)

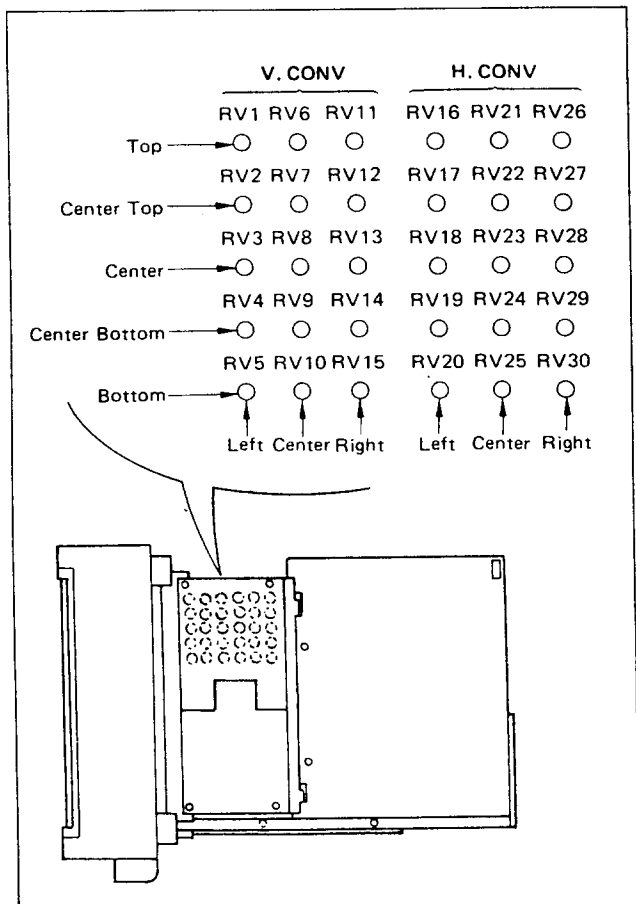


Fig. 2-3-1 L1 board

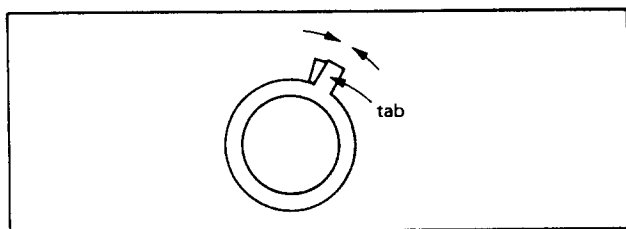


Fig. 2-3-2 6-pole magnet ring

- 3) Turn the H. STAT and V. STAT VRs on the control panel to the center click.
- 4) Rotate the H. STAT VR inside the high voltage block and adjust so that any misconvergence on the vertical lines in the center of the screen disappears. And adjust RV21 through RV25 (H. CONV) until the vertical line of the center is white. (see Fig. 2-3-3 (1))
- 5) Rotate RV16 through RV20 (H. CONV) and adjust until the vertical line on the left side of the screen is white. (see Fig. 2-3-3 (2))

- 6) Rotate RV26 through RV30 (H. CONV) to adjust the vertical line on the right side of the screen to white. (see Fig. 2-3-3 (3))

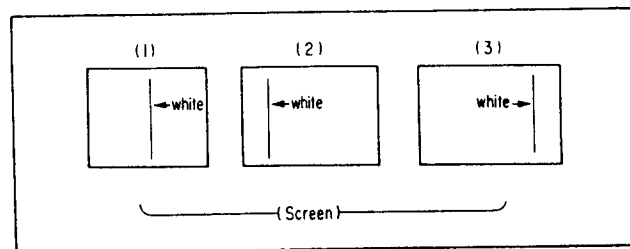


Fig. 2-3-3 H. CONV.

- 7) Rotate RV6 through RV10 (V. CONV) to eliminate misconvergence on horizontal lines in the center of the screen. (see Fig. 2-3-4)

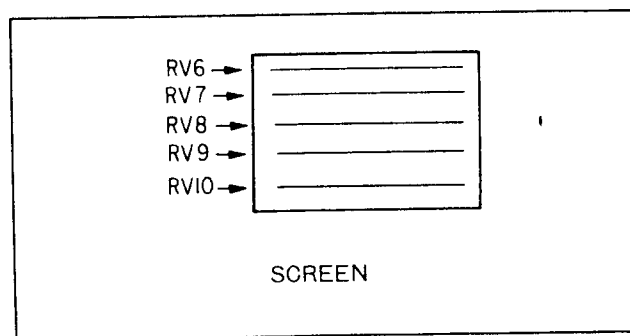


Fig. 2-3-4 V. CONV.

2-4. Beam Landing Adjustment

If you use the CRT of FRU provided by SONY, you need not do adjustments describe below.

- 1) Put the monitor in the Helmholtz room. ($B_H = 0$, $B_V = -0.35$ gauss)
- 2) Input a full white signal (or equivalent signal), and turn the Blue and Red channel off.
- 3) Set the CONT VR to maximum.
- 4) Degauss the screen by the hand degauss coil.
- 5) After more than 30 minutes aging, attach the landing checker and adjust the DY position, the purity control, the DY tilt and the landing of 4 corners. The landing deviation have to be less than $\pm 8\mu\text{m}$ at the green field, less than $\pm 15\mu\text{m}$ at the red and blue field.
- 6) Attach magnets on the panel side if necessary as shown in Fig. 2-4-1. (Do not exceed one magnet at each corner.)

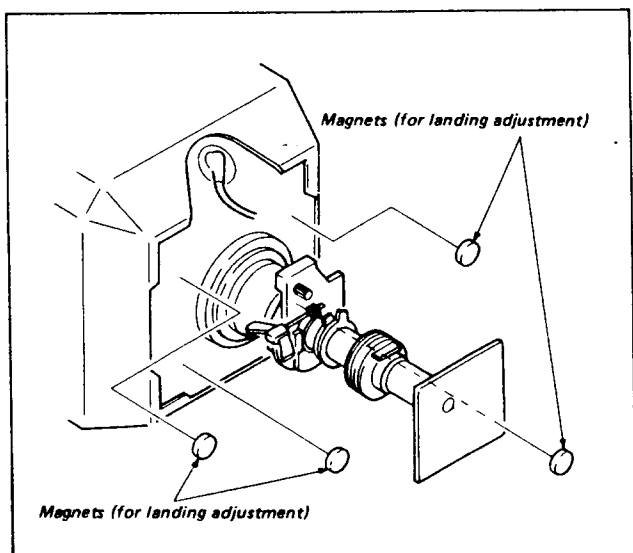


Fig. 2-4-1

- 7) Adjust the vertical cross misconvergence (XCV) by moving the DY up or down. (see Fig. 2-4-2)

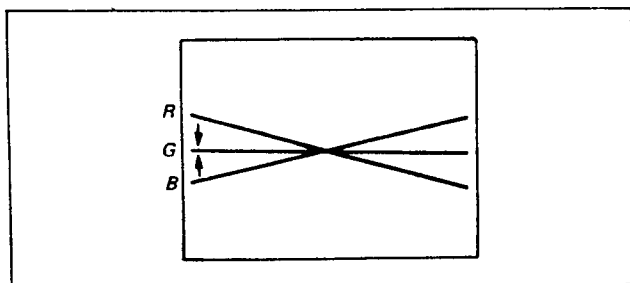


Fig. 2-4-2 XCV

- 8) Secure the DY with the spacers. (see Fig. 2-4-3)

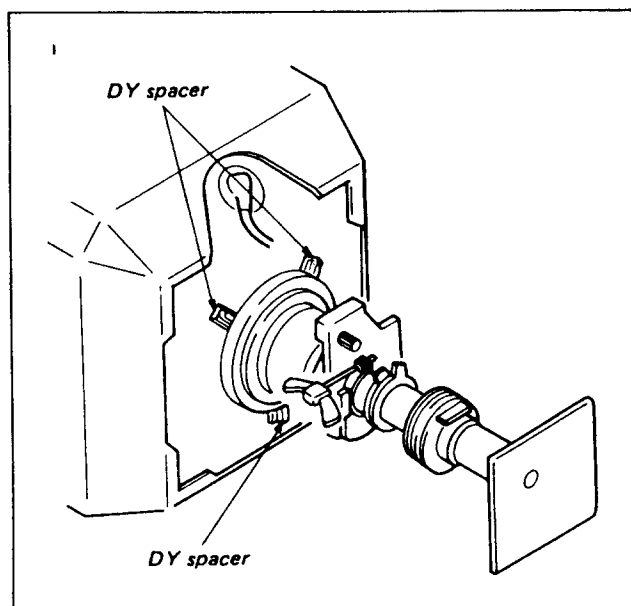


Fig. 2-4-3

Final check

After the adjustments have been completed, face the set in all direction, (North, South, East and West) and check whether there is no uneven color in any direction. This test have to be done with full flat field of RGB each color. Check that the picture is not tilted.

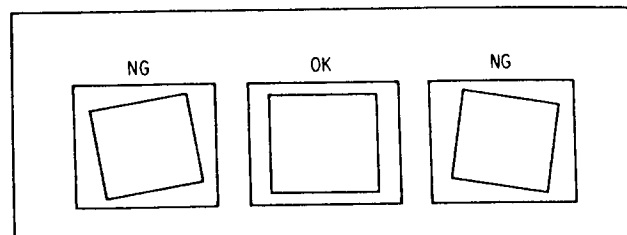


Fig. 2-4-4

After these checking, face the set E-W direction, and continue the adjustments.

2-5. Checking Synchronization

(Black hatch signal is preferred for adjusting the following items.)

Check that synchronization is normal under the conditions described below.

- 1) When the monitor POWER switch is turned on and off.
- 2) When the SG G-video switch is turned on and off (including SYNC).

2-6. Adjustment of Top and Bottom Pincushion Distortion

Input the Green Cross-hatch signal.

- 1) The picture should appear as shown in Fig. 2-6-2 when the boards have been adjusted. If not, adjust to obtain a picture as shown in Fig. 2-6-2 with the RV106 and RV104.

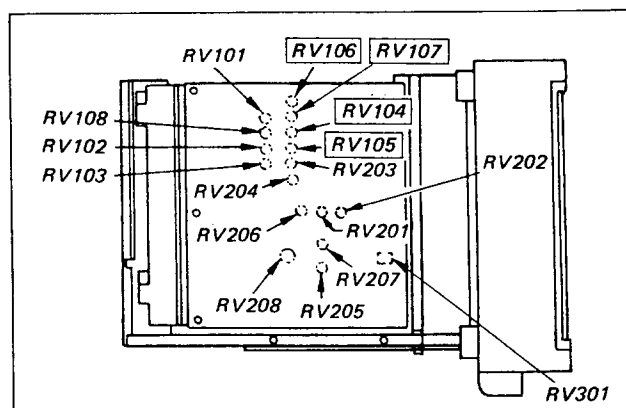


Fig. 2-6-1 Location of RV104, 105, 106, 107

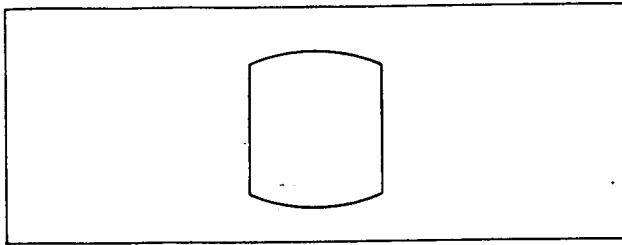


Fig. 2-6-2

- 2) Maintain this condition and move the correction crests to the center as shown in the following with the **TOP PHASE** VR (RV107) and **BOTTOM PHASE** VR (RV105).

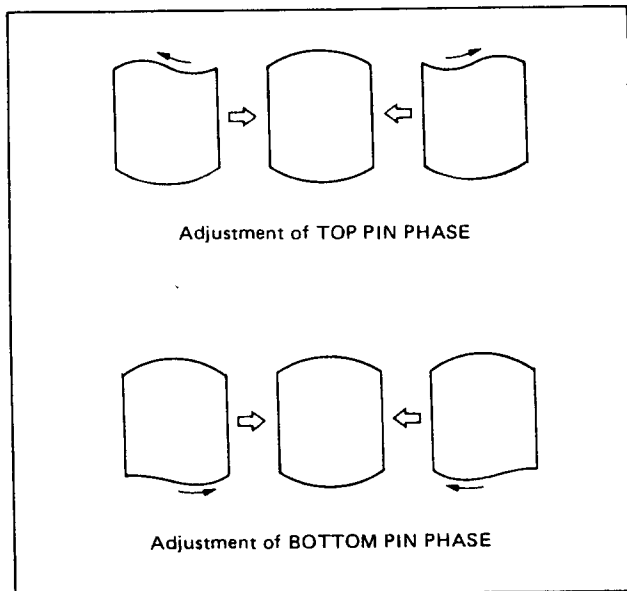


Fig. 2-6-3

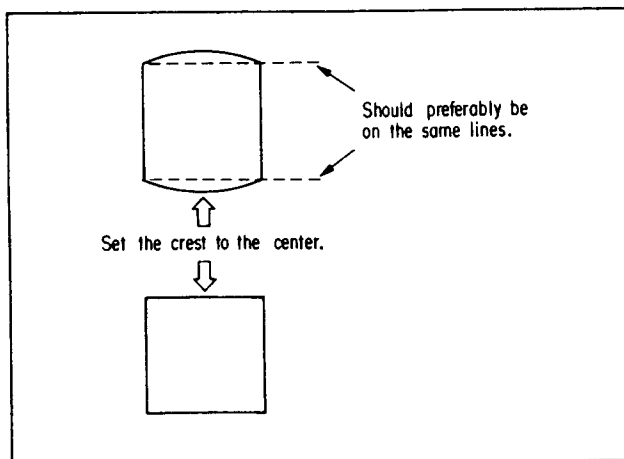


Fig. 2-6-4

- 3) Adjust the lateral line horizontally with **TOP AMP** RV106 and **BOT AMP** RV104 as shown in Fig. 2-6-5.

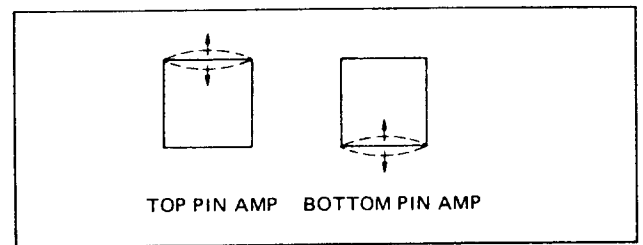


Fig. 2-6-5

2-7. Vertical and Horizontal, Position and Size Adjustment

Turn the **V-CENT** VR on the front panel control to its center click.

- 1) Face the monitor in North or South direction. Adjust the picture to the center in the vertical direction by turning **V-CENT** VR (RV108). After the adjustment have been completed, face the set in East or West direction. Be sure to degauss when the direction is changed.

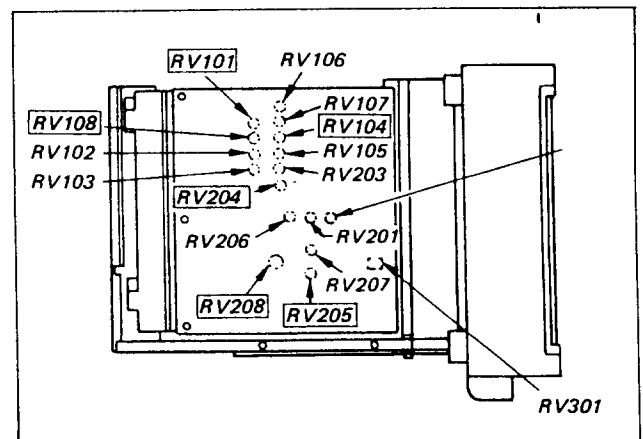


Fig. 2-7-1 Location of RV101, 108, 204, 205, 208

- 2) Set the vertical size of the screen center to 10.8" (274 mm) <GDM-1952: 10.63" (270 mm)> $\pm 1\%$ with **V SIZE** VR (RV101).
- 3) Set the A board S1 on "TEST" side, to produce raster. And adjust **H. CENT** VR (RV208) so that the raster comes to the center of the CRT.
- 4) Set the horizontal size of the screen center to 13.5" (343 mm) <GDM-1952: 14.17" (360 mm)> $\pm 1\%$ by adjusting **H. SIZE** VR (RV204).
- 5) Set the picture to the raster center by adjusting **H. PHASE** (RV205).

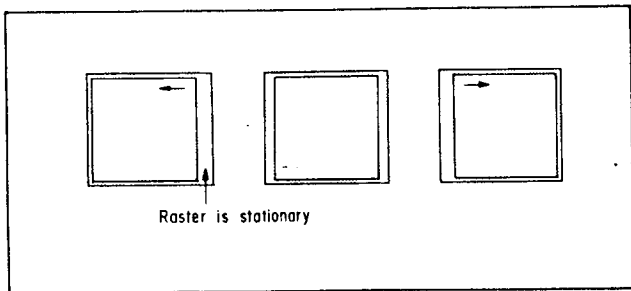
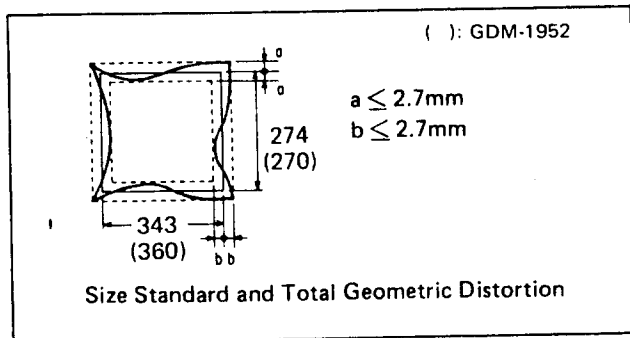
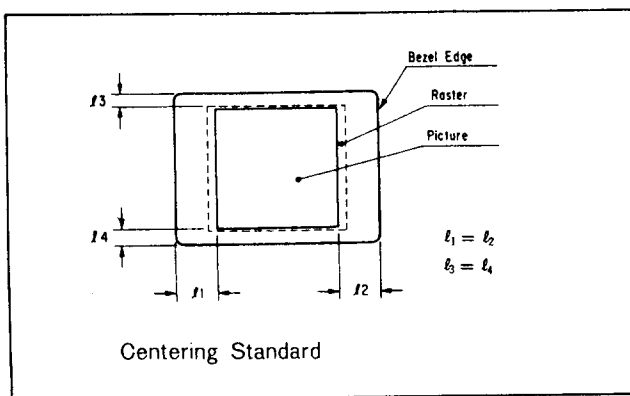


Fig. 2-7-2 Movement of H. Phase

***NOTICE**

The adjustment of section 2-7 have to be repeated after the adjustment of the section 2-8 and 2-9 have been completed.

After V&H adjustment, the raster has to be set as shown below.



***Total Geometric Distortion Check**

- 1) Attach the linearity gauge. (EIA ball-chart) Input the green cross-hatch signal.
- 2) Check all cross points on the picture whether those are in the $\pm 1\%$ deviation circles.
- 3) If there are any excess points out of circles, the monitor should be adjusted again.

2-8. Horizontal Pincushion Distortion Adjustment

- 1) Rotate **PIN AMP** RV203 so that both right and left sides of the picture become linear.

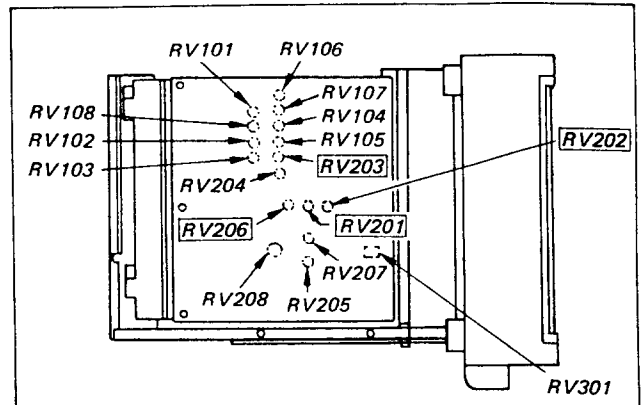


Fig. 2-8-1 Location of RV201, 202, 203, 206

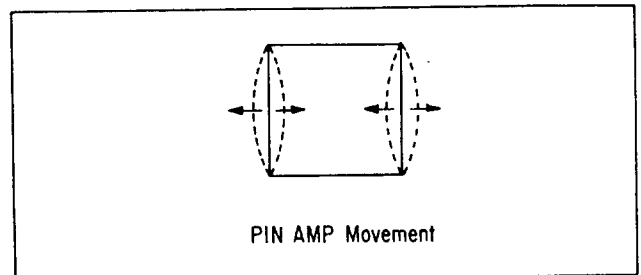


Fig. 2-8-2

- 2) Adjust with **KEY** RV201, **KEY BAL** RV202 so that the widths of the top and bottom sections of the picture become equal.

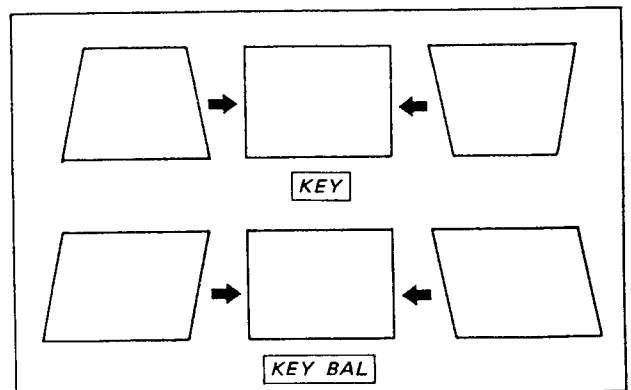


Fig. 2-8-3 Movement of KEY, KEY BAL

- Again watch the right and left pincushion distortion. When one side is over corrected or under corrected after the other side has been made linear with **PIN AMP** RV203, rotate **SIDE PIN BAL** RV206 to adjust the pincushion distortion on both sides equally, then again adjust to make linear with **PIN AMP** RV203.

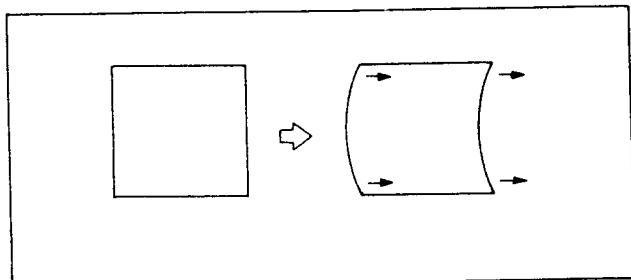


Fig. 2-8-4 PIN BAL Movement

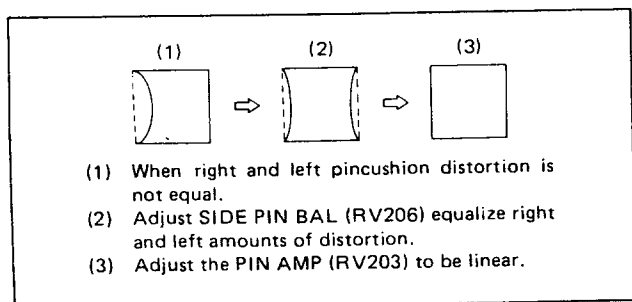


Fig. 2-8-5

2-9. Vertical Linearity Adjustment

- Rotate **V-LIN BAL** RV103 to equalize height of the frames in the upper and lower sections and in symmetrical positions.
- Adjust to equalize the frame dimensions in the upper and lower sections and in center of the picture with **V-LIN** RV102.
- Repeat Steps 1) and 2) above if necessary.

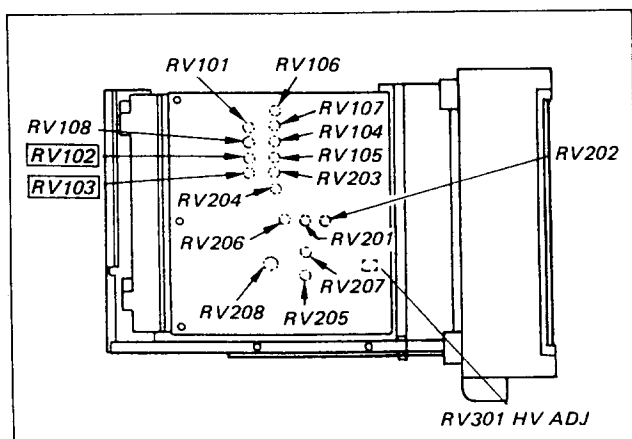


Fig. 2-9-1 Location of RV102, 103

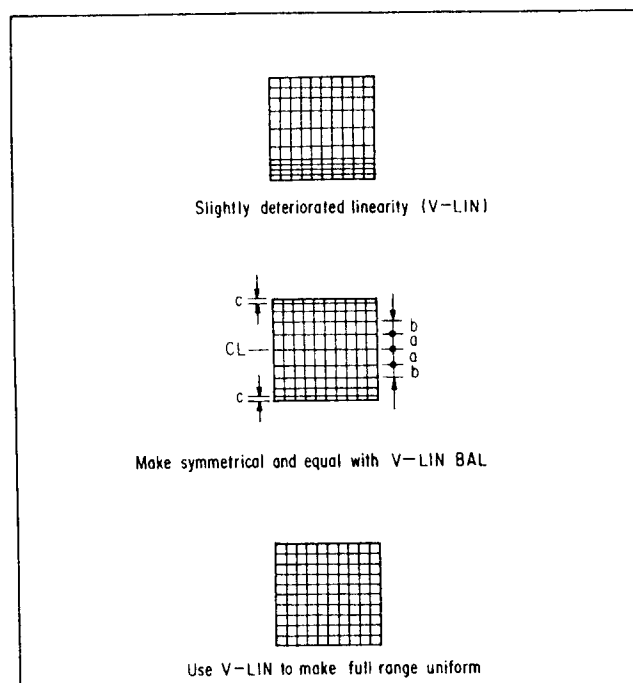


Fig. 2-9-2

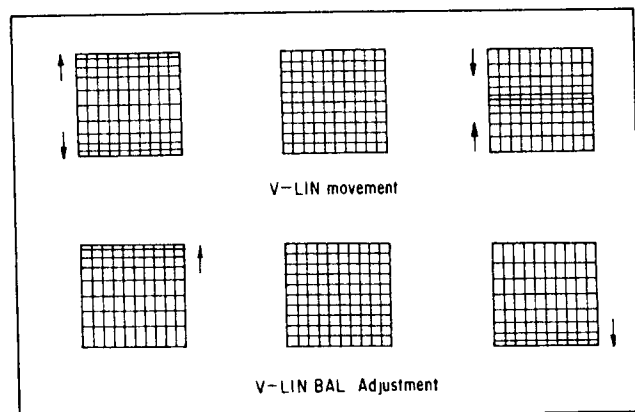


Fig. 2-9-3

Note: V-LIN BAL does not move when turning V-LIN VR to a minimum. (the center shrinks most)

2-10. Focus Adjustment

Display a white crosshatch signal.
Set CONT VR at about 80%.
Rotate the FOCUS VR and adjust the picture focus.

2-11. Static Convergence Adjustment

If you use the CRT of FRU provided by SONY, you need not do adjustment describe in the item 1) to 4).

- Input a white crosshatch signal (white lines on black background).

- 2) Adjust **V-STAT** and **H-STAT** VRs on the control panel to make the three (red, green, and blue) lines parallel. (see Fig. 2-11-1)

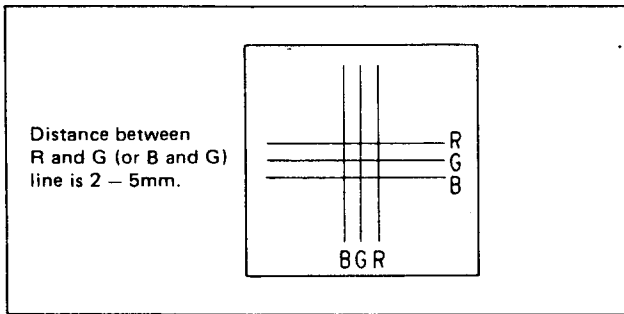


Fig. 2-11-1

- 3) When horizontal misconvergence is small during that time, adjust the **H-STAT** VR in the HV block.
- 4) Rotate the magnet ring (6-pole) behind the DY to equalize the distances between red and green and between blue and green for the three-color parallel lines.

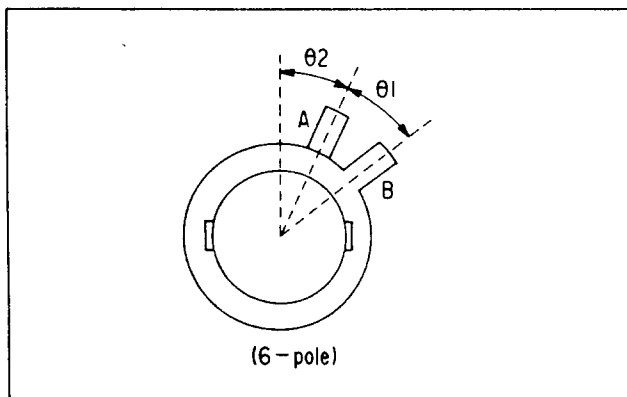


Fig. 2-11-2

*Static convergence correction is performed by changing the opening angle $\theta 1$ and inclination angle $\theta 2$ of the two tabs A and B.

(When $\theta 1 = 0$, correction is zero)

- 5) Adjust **V-STAT** and **H-STAT** VRs to their mechanical centers.
- 6) Adjust RV23 on the L board to its mechanical center.
- 7) Adjust the **H-STAT** VR in the HV block to eliminate lateral divergence in the center of the picture.

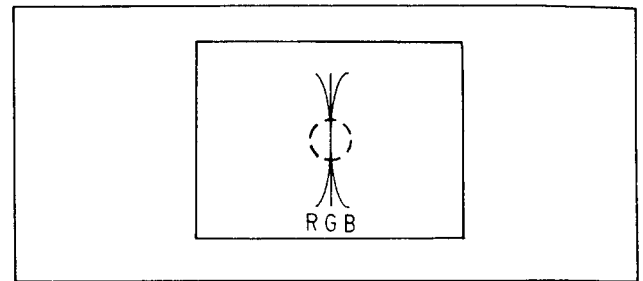


Fig. 2-11-3

2-12. Dynamic Convergence Adjustment

1) Vertical dynamic convergence adjustment

- (1) Adjust vertical color slip while watching the lateral line in the center of the picture. (The order of adjustment for VR's should be: RV8, RV6, RV10, RV7 and RV9)
- (2) Adjust the vertical color slip while watching the lateral line at left edge of the picture. (The order of adjustment for VR's should be: RV3, RV1, RV5, RV2 and RV4)
- (3) Adjust the vertical color slip while watching the lateral line at right edge of the picture. (The order of adjustment for VR's should be: RV13, RV11, RV15, RV12 and RV14)

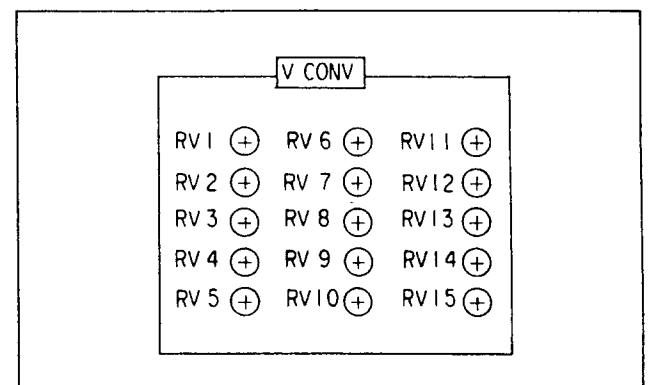


Fig. 2-12-1

There are 15 correction VR's for vertical dynamic convergence, and their layout corresponds with the correction positions on the screen.

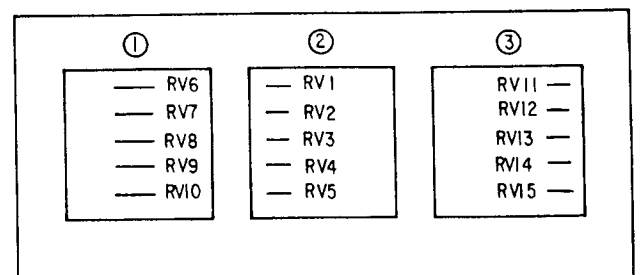


Fig. 2-12-2

2) Horizontal dynamic convergence

- (1) Adjust the color slip while watching the vertical line in the picture center. (The order of adjustment for VR's should be: RV23, RV21, RV25, RV22, and RV24)
- (2) Adjust the color slip watching the vertical line at left edge of the picture. (The order of adjustment for VR's should be: RV18, RV16, RV20, RV17, and RV19)
- (3) Adjust the color slip while watching the vertical line at right edge of the picture. (The order of adjustment for VR's should be: RV28, RV26, RV30, RV27, and RV29)
- (4) Check that lateral divergence is corrected in all instances. (Partially readjust if color slip is still remaining.)

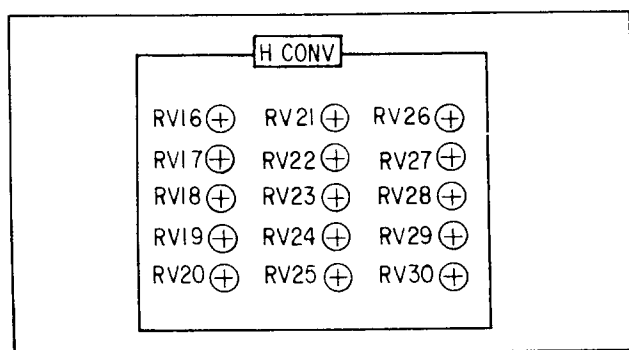


Fig. 2-12-3

There are 15 correction VR's for horizontal dynamic convergence, and their layout corresponds with the correction positions on the screen.

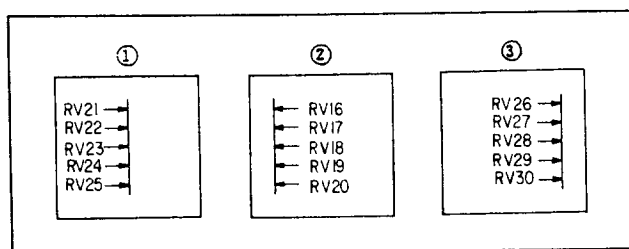


Fig. 2-12-4

2-13. White Balance Adjustment

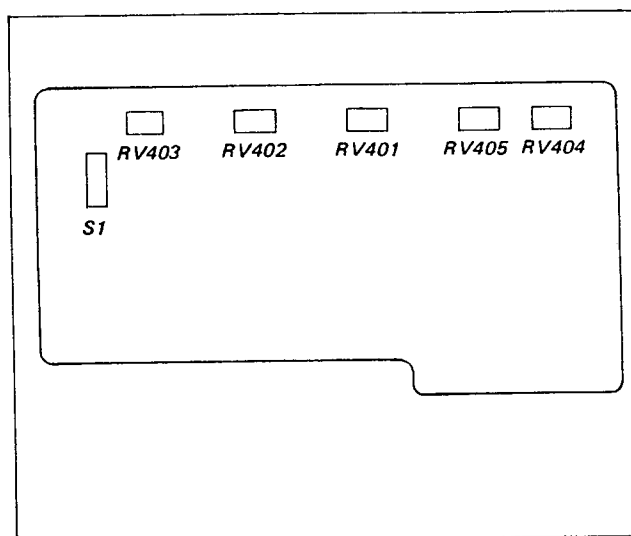


Fig. 2-13-1 A board (view from rear)

- Conditions:
1. Age the set longer than 30min.
 2. Face east or west.
 3. After convergence, landing and white balance rough adjustment have been done.
 4. Use the Minolta TV color analyzer II, calibrated by Sony spectrometer.

- (1) Set the sensor of TV color analyzer to the screen center.
- (2) Input gray scale signal with 5% set up.
- (3) Set Cont.VR to maximum.
- (4) Gradually change the G2 (SCREEN) VR and stop at the point where the pedestal level is just extinguished (check that set up level lights faintly).
- (5) Set Cont.VR to minimum.
- (6) Input full white signals and adjust the G.BKG (RV404) and B.BKG (RV405) for dark level white balance.
- (7) Return Cont.VR to its previous maximum condition.
- (8) Adjust the G.DRV (RV402) and B.DRV (RV403) for the high light white balance.
- (9) Change signals to gray scale then check the pedestal level is disappeared and set up level is appeared.
- (10) Repeat item (4) through (9) to get good white balance both high light and dark level.

* note

The color temperature is set to 9300 degrees K +8 MPCD as represented by X and Y CIE coordinates of $X = 0.283 \pm 0.03$, $Y = 0.298 \pm 0.03$.

3. SAFETY RELATED ADJUSTMENTS

The following adjustments and operational checks must be made to ensure safety from X ray emission from the set when D Board or H.V Assembly or Power Block are changed or repaired.

1) Checking Test Point Voltage

Check the voltages on the test points (TP301, 302 and 304) whether or not they meet the standard values if the parts marked \square are changed. Change the parts marked \boxtimes if the standard is not met.

Changed Parts (\square)	Check Point	Adjust Part (\boxtimes)
D302	TP301 = DC $32.00 \pm_{-1.00}^{+0.50}$ V	D302
D301, R305, R314, R345	TP302 = DC 9.75 ± 0.25 V	R312
D302, RV301, R311, R312, R313	When RV301 is turned and TP304's voltage value becomes maximum, the value must be less than 9.45 V.	R345

* Conditions. Input voltage: 100 to 120 VAC.

+B voltage: 145.0 ± 1.0 VDC

(GDM-1952:
 120.0 ± 1.0 VDC)

Input signal: White dot

(white on black)

CONT: Where a dot can be seen vaguely.

2) Replacing Power Block Assy and Checking After Part Replacement

Check that the +B MAX voltage value is within the standard and that OVP circuit operation is normal if the power block assy or a part in the power block assy (G board) is replaced.

(1) Checking +B max voltage

Condition. Input voltage: $130 \pm_{-0}^{+2}$ VAC

Input signal: White hatch on black

CONT: Minimum

The voltage on pin ① of connector D-1 should be below 146.0 VDC (GDM-1952: 121.0 VDC).

(2) Checking OVP circuit operation

Check that the OVP circuit operates and that pictures disappear if 161.50 VDC (GDM-1952: 134.00 VDC) is applied to the +B line from the outside.

3) Checking After Replacing D Board for FBT in HV Block

Check that pin ⑤ of connector D-3 on D board has a voltage of $+15.0 \pm 4.0$ V if the D board for the FBT in the HV block is replaced.

4) Check that the HV HOLD DOWN circuit operates normally if the following parts are replaced:

(Marked *)

DD board or a part on it.

DE board or a part on it.

D board or Q309 on it.

Checking Method

Apply $10.00 \pm_{-0.10}^{+0.00}$ VDC between pin ⑤ of connector D-3 on D board and the ground from the outside and check that the HOLD DOWN circuit operates and the raster disappears.

5) Check that the beam protector (1) operates normally if the following parts are replaced:

(Marked *)

DD board or a part on it.

D board or R332 on it.

Checking Method

(Adjust the voltage on TP304 to 9.00 ± 0.05 VDC by rotating RV301 before checking.)

1 The raster should show if between pin ⑩ on the DE board and ground is shorted and power is turned on.

2 When a variable resistor of over 10 k Ω is connected in series with an ammeter between TP303 and ground and the resistance value is gradually reduced from its maximum value, the protector circuit shall function and the rasters disappear when the current value drops below 1.92 mA.

3 Removal a short clip between pin ⑩ on the DE board and ground.

6) Check that the beam protector (2) operates normally if the following parts are replaced:

(Marked *)

DD board or a parts on it.

DE board or a parts on it.

D board or Q309 on it.

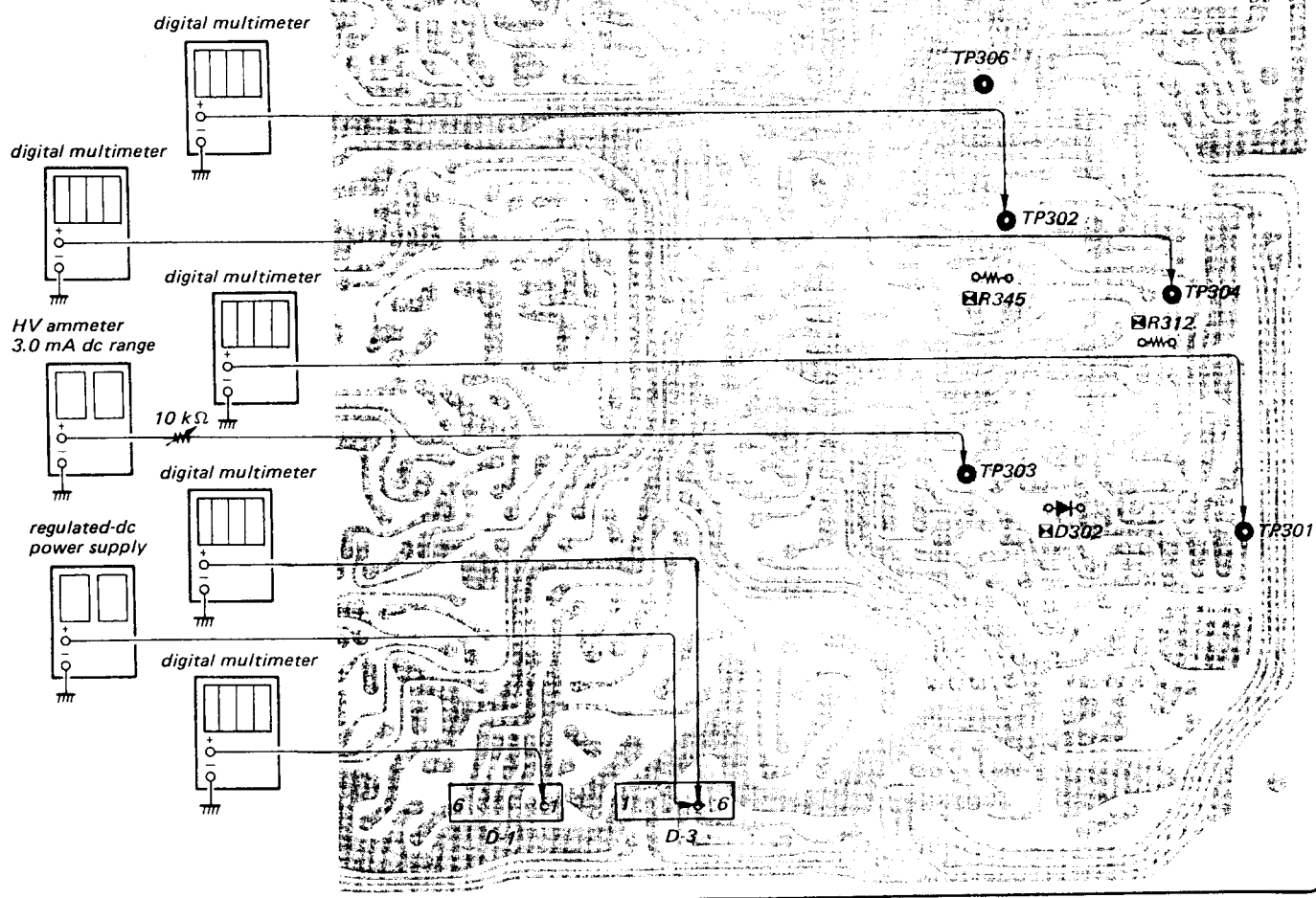
Checking Method

1 The raster should show if between TP306 and ground is shorted and power is turned on.

2 When a variable resistor of over 10 k Ω is connected in series with an ammeter between TP306 and ground and the resistance value is gradually reduced from its maximum value, the protector circuit shall function and the rasters disappear when the current value drops below 1.98 mA.

3 Removal a short clip between TP306 and ground.

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MAURITRON SERVICES
8 Cherry Tree Road, Chinnor
Oxfordshire, OX9 4QY.
Tel (01844) 351694
Fax (01844) 352554
email:- mauritron@dial.pipex.com

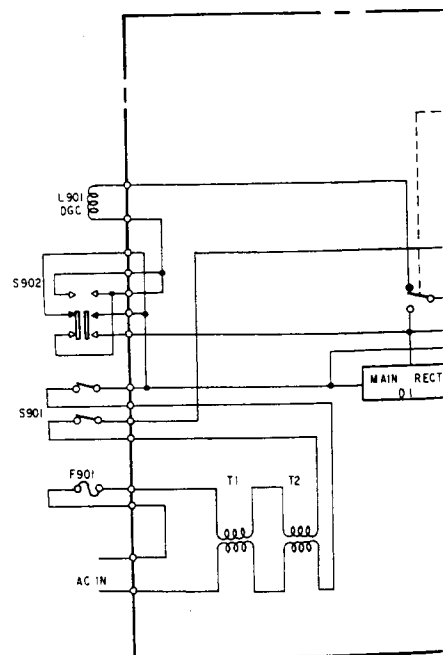
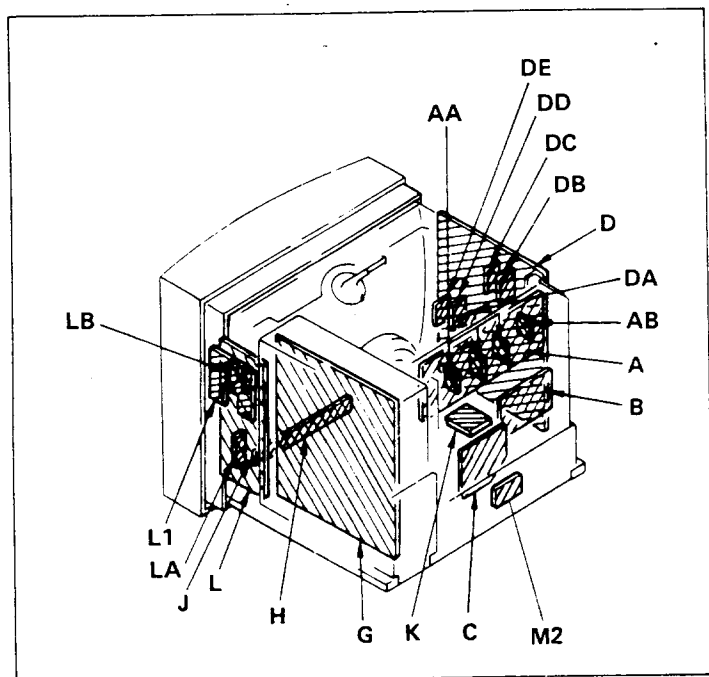


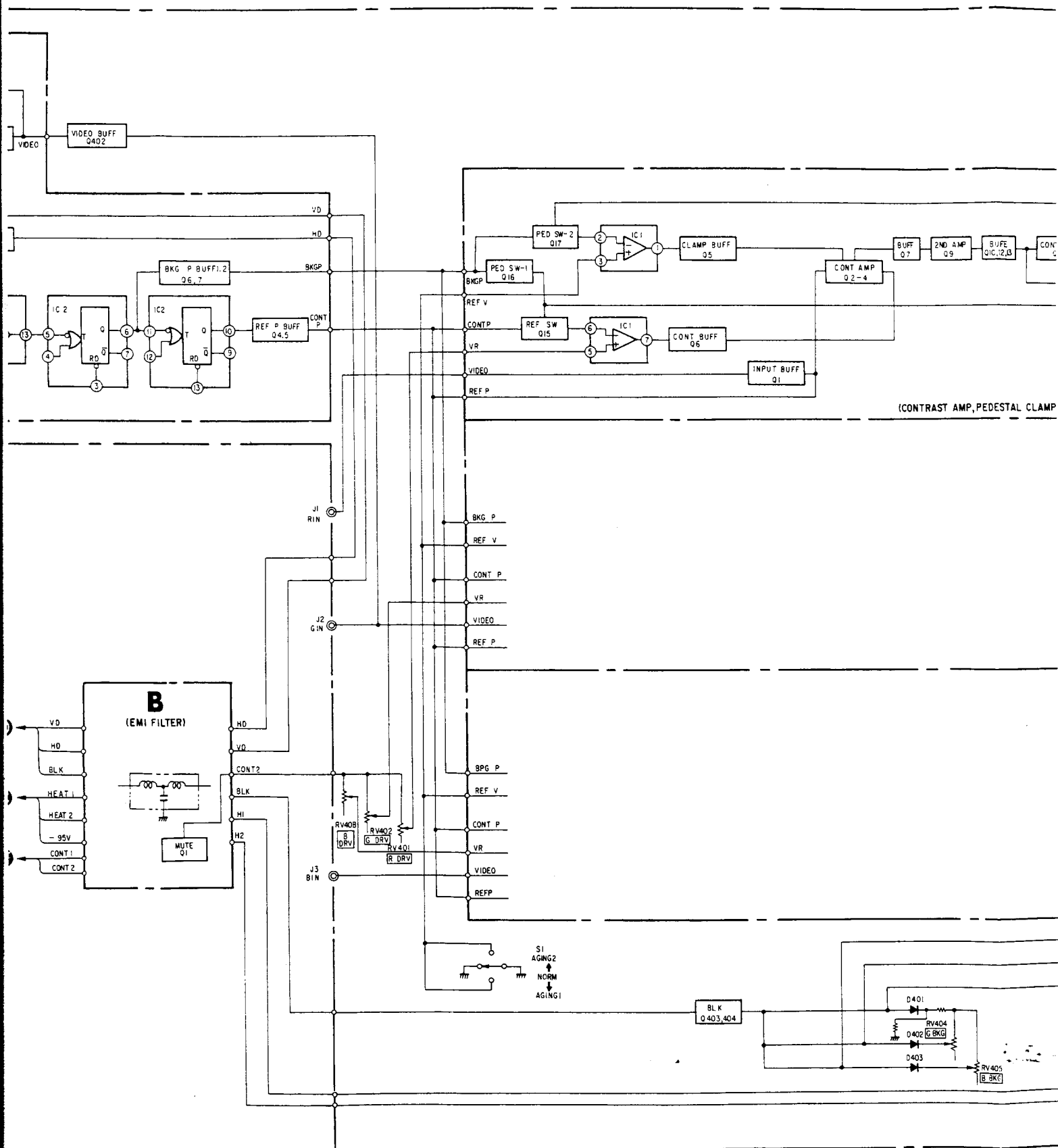
SECTION 5 DIAGRAM

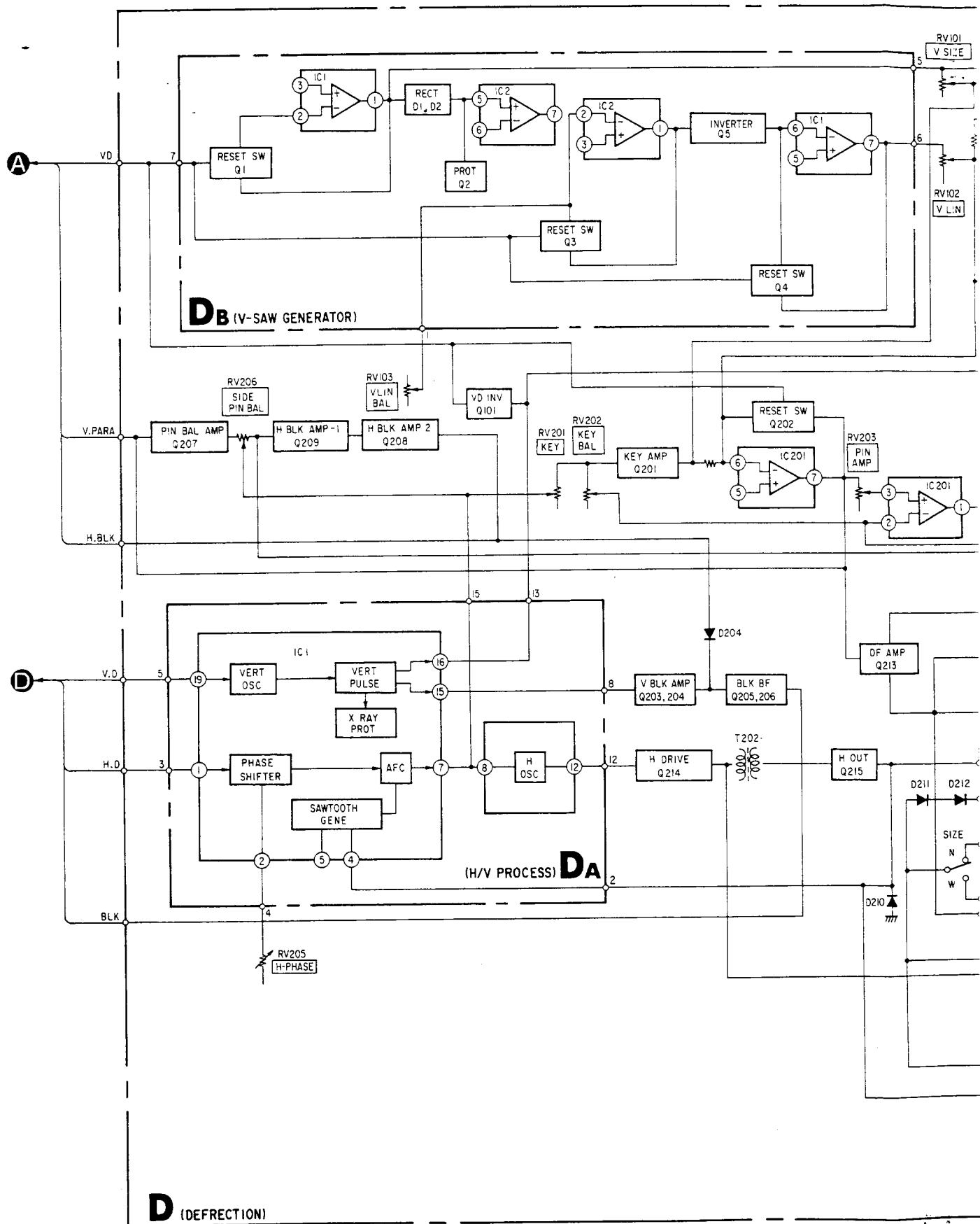
TABLE OF CONTENTS

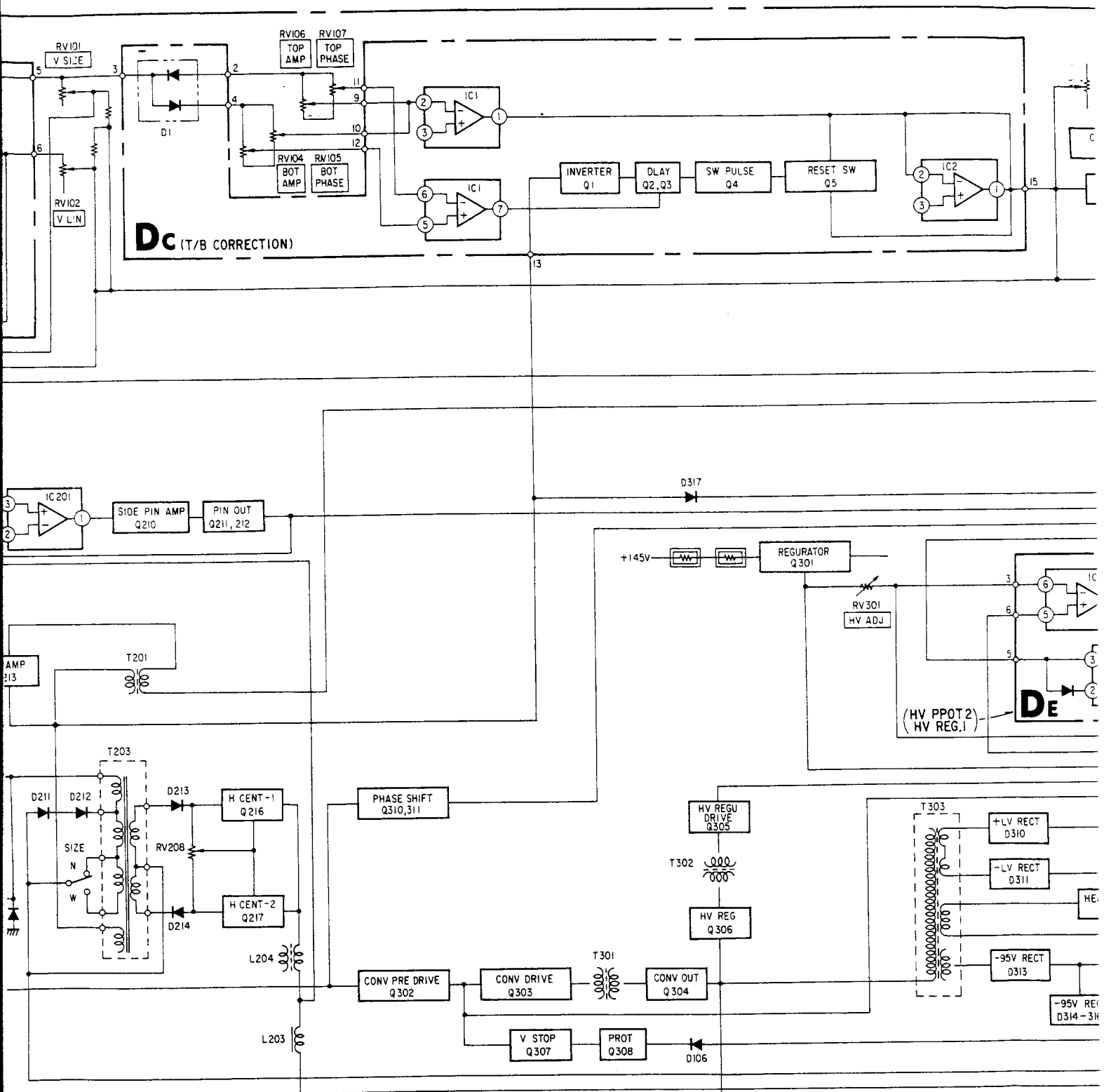
<u>Section</u>	<u>Title</u>	<u>Page</u>
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5-2.	Block Diagrams	5-1
5-3.	Frame Schematic Diagram	5-11
5-4.	Schematic Diagrams and Printed Wiring Boards	5-14
	D, DA, DB, DC, DD, DE, H, J and K Boards	5-14
	A, AA, AB, B, C, G, M and M ₂ Boards. . .	5-24
	L, L1, LA and LB Boards	5-33
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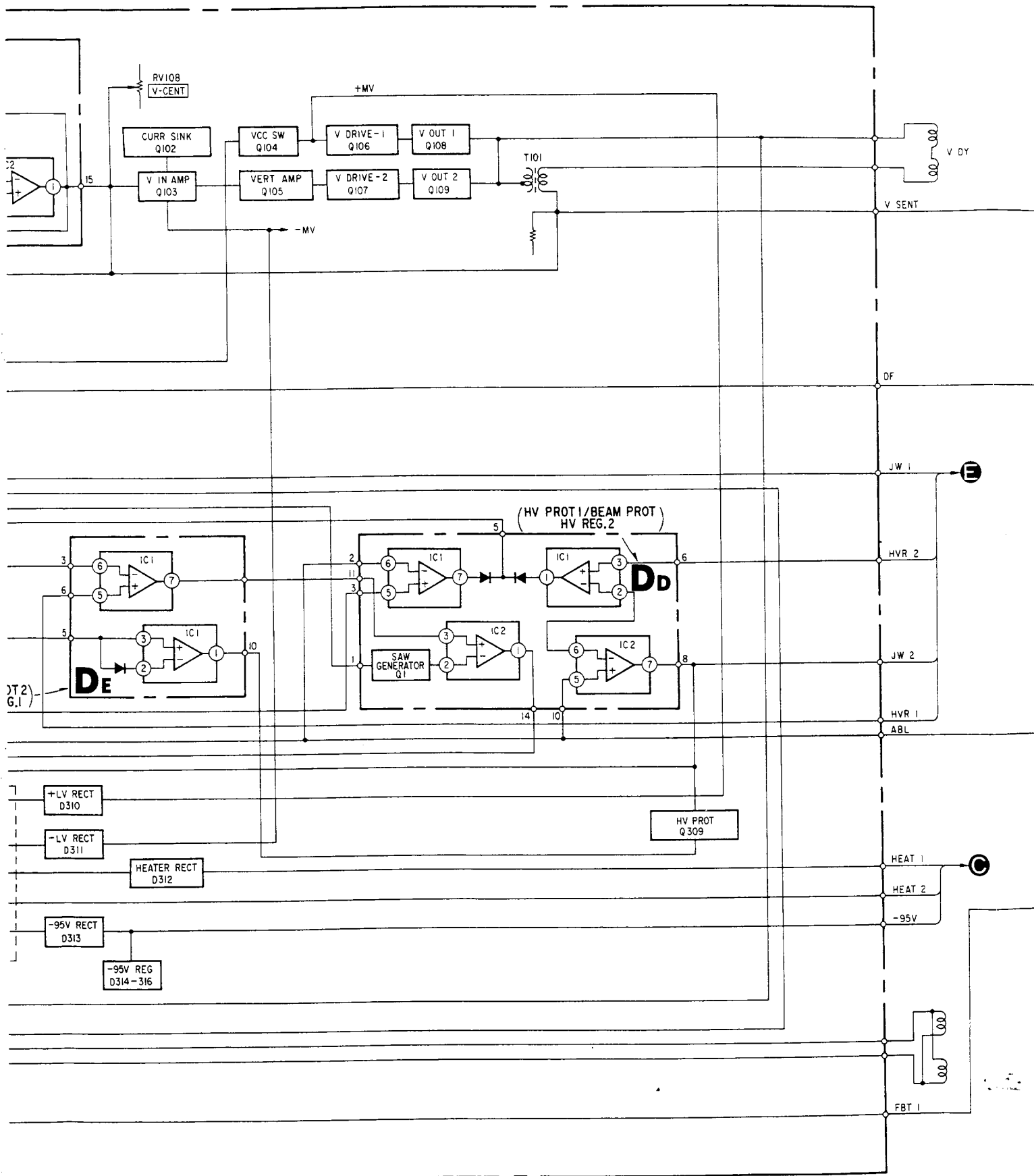
5-1. CIRCUIT BOARDS LOCATION



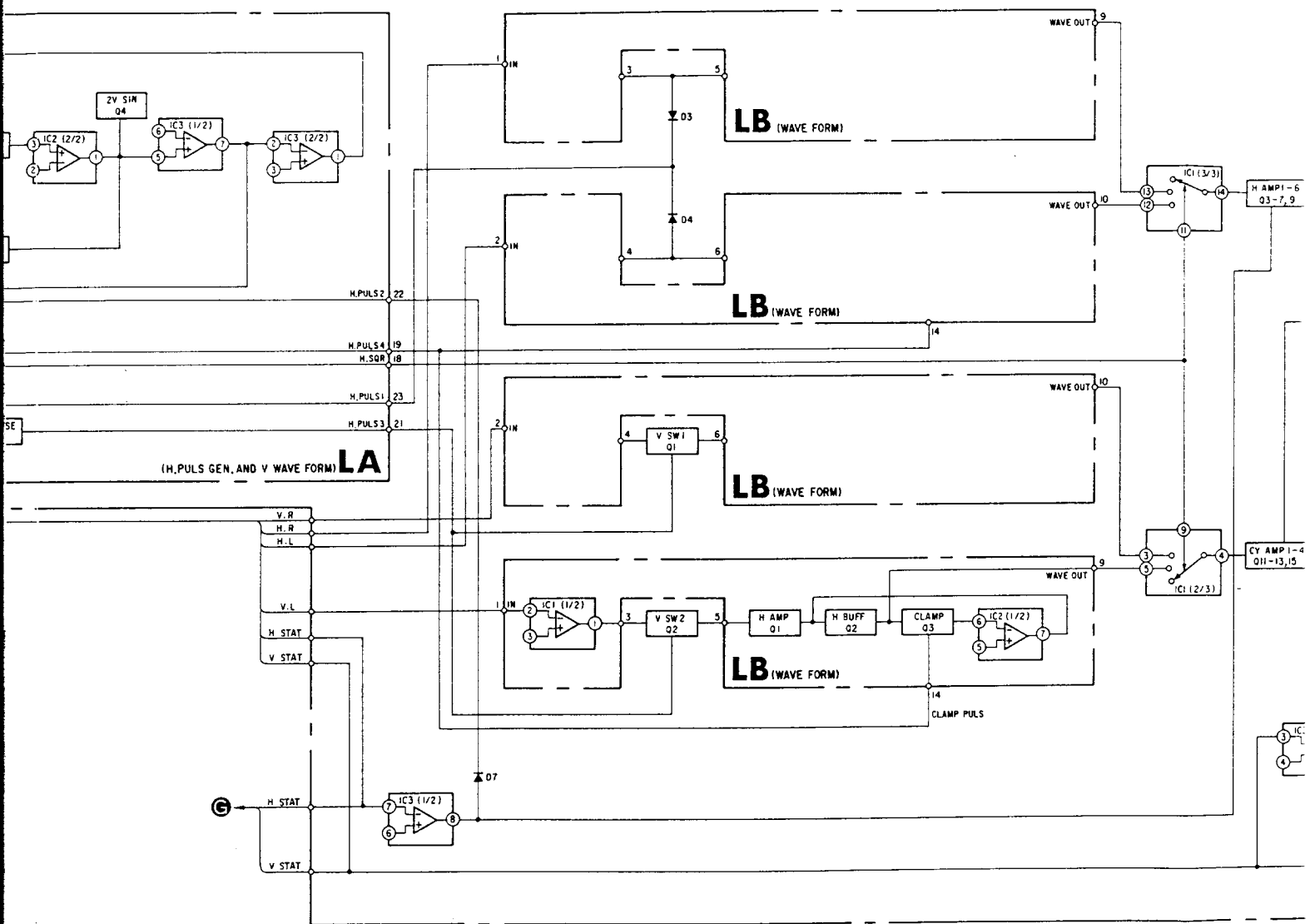




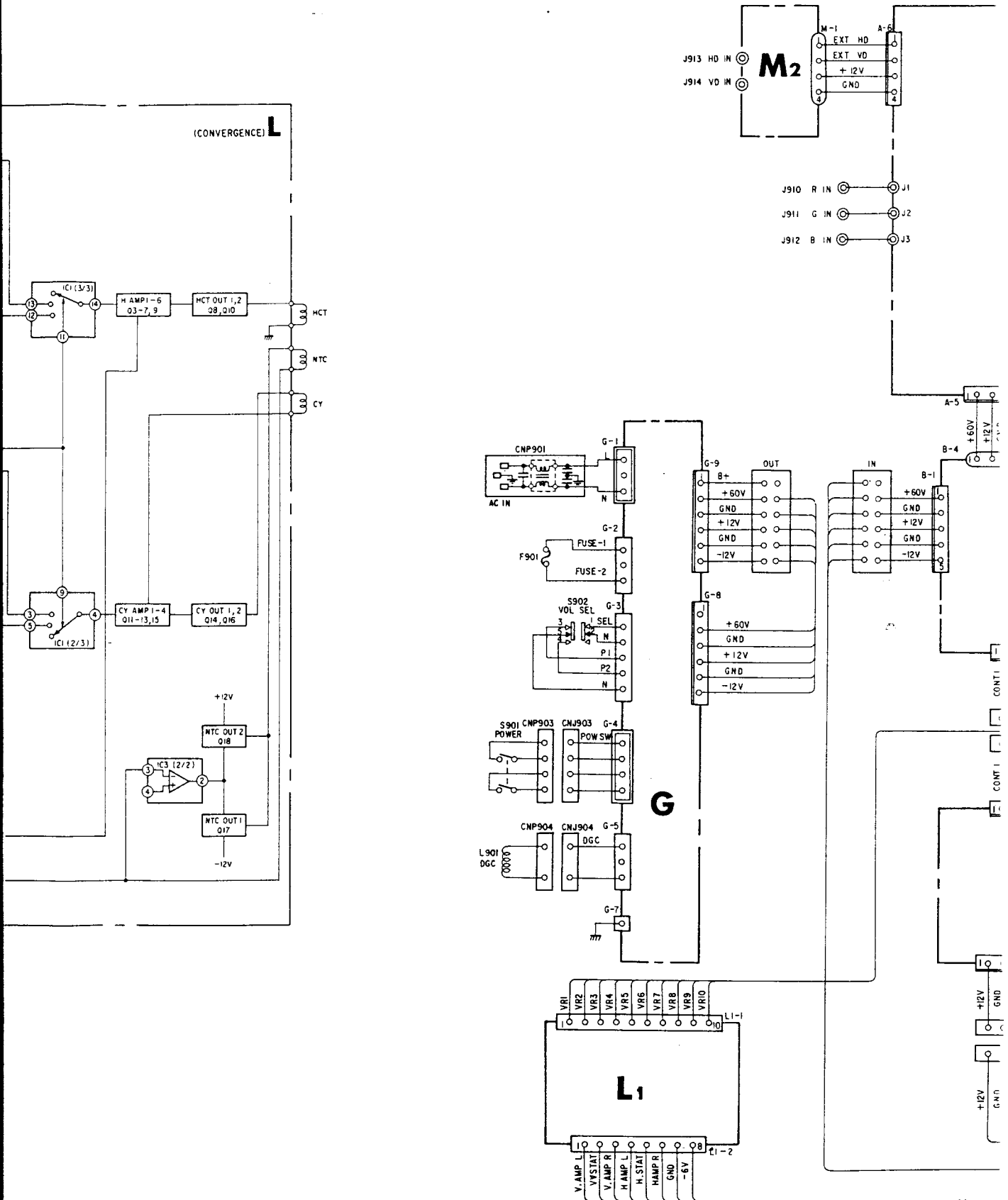


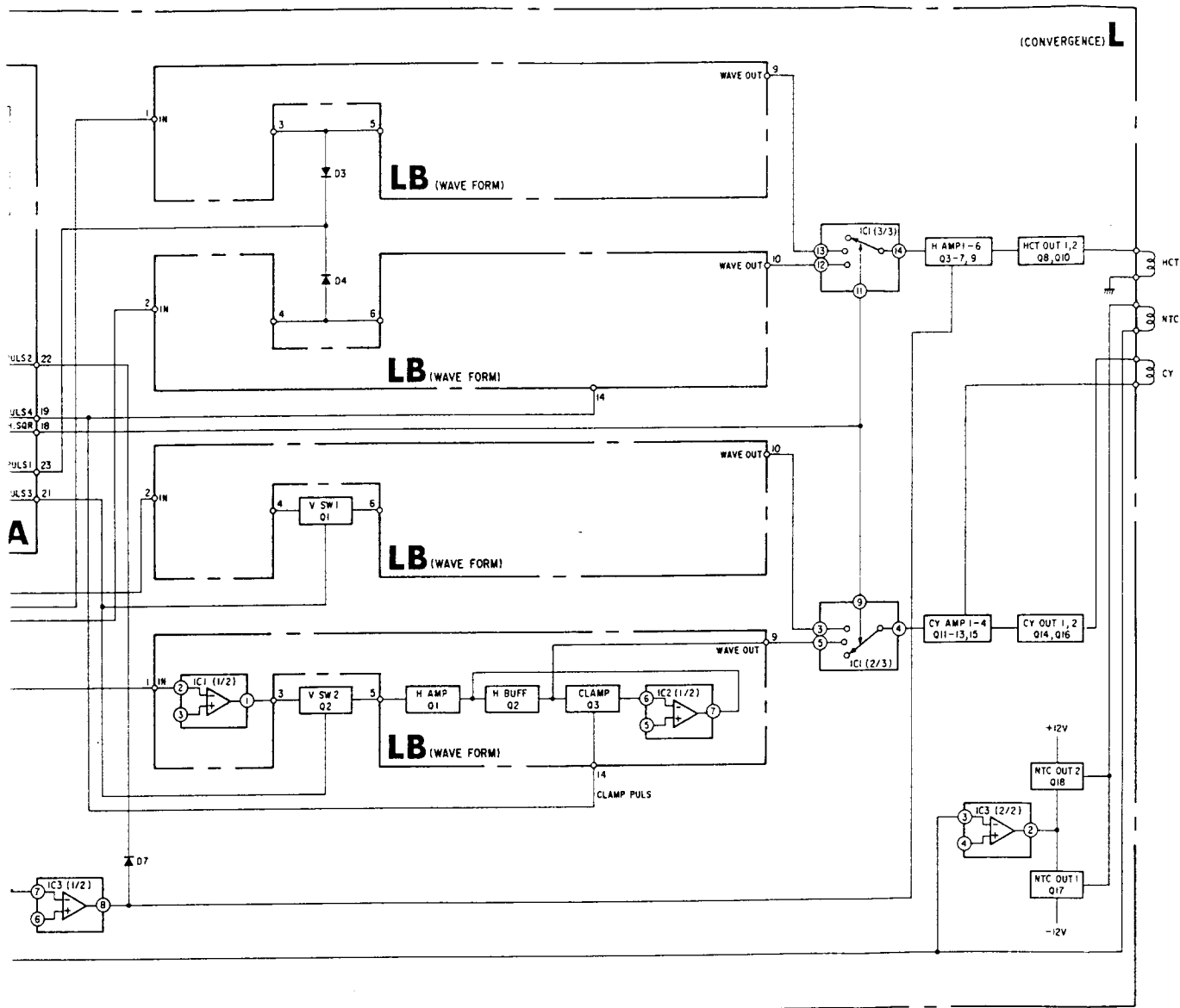




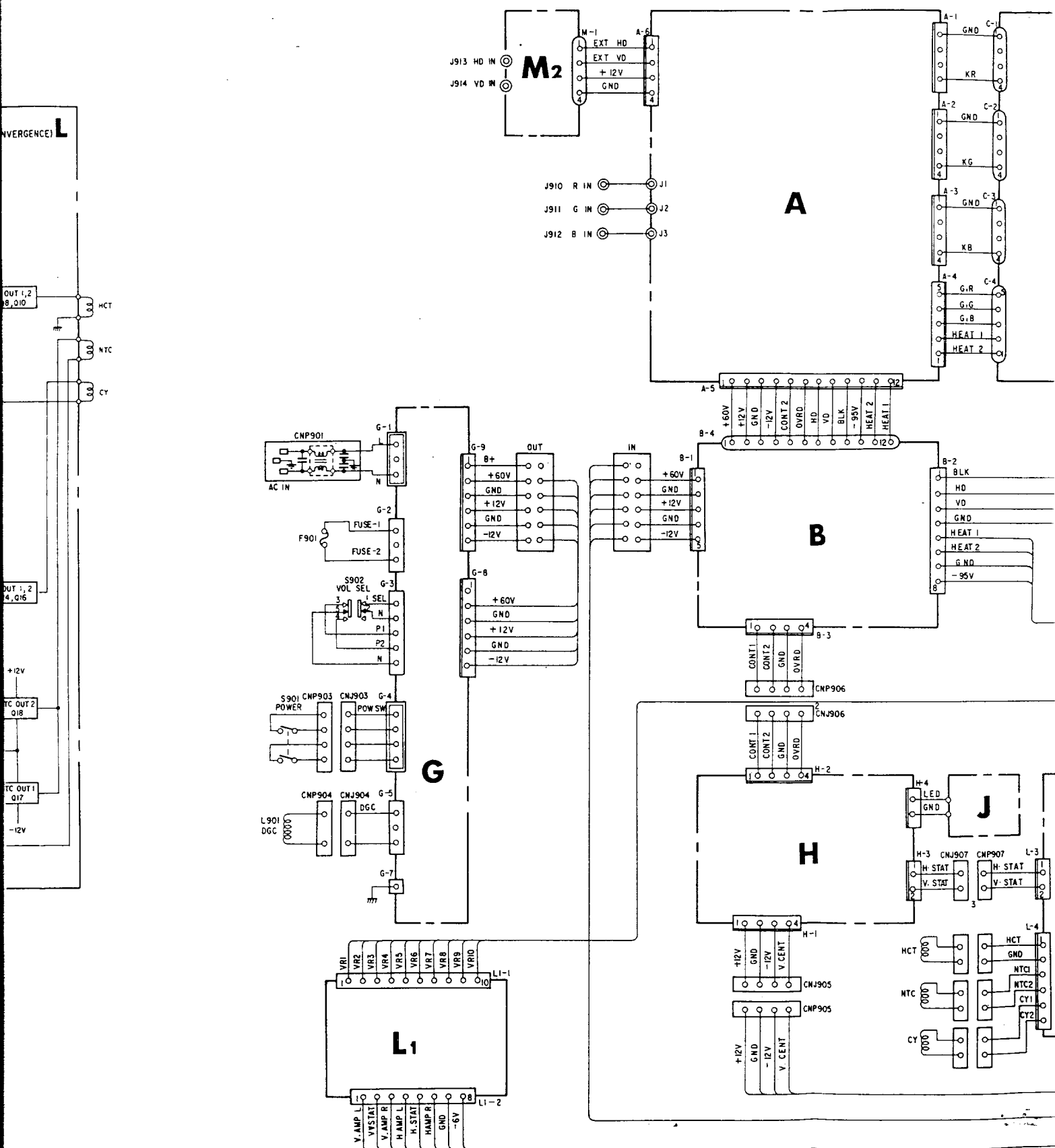


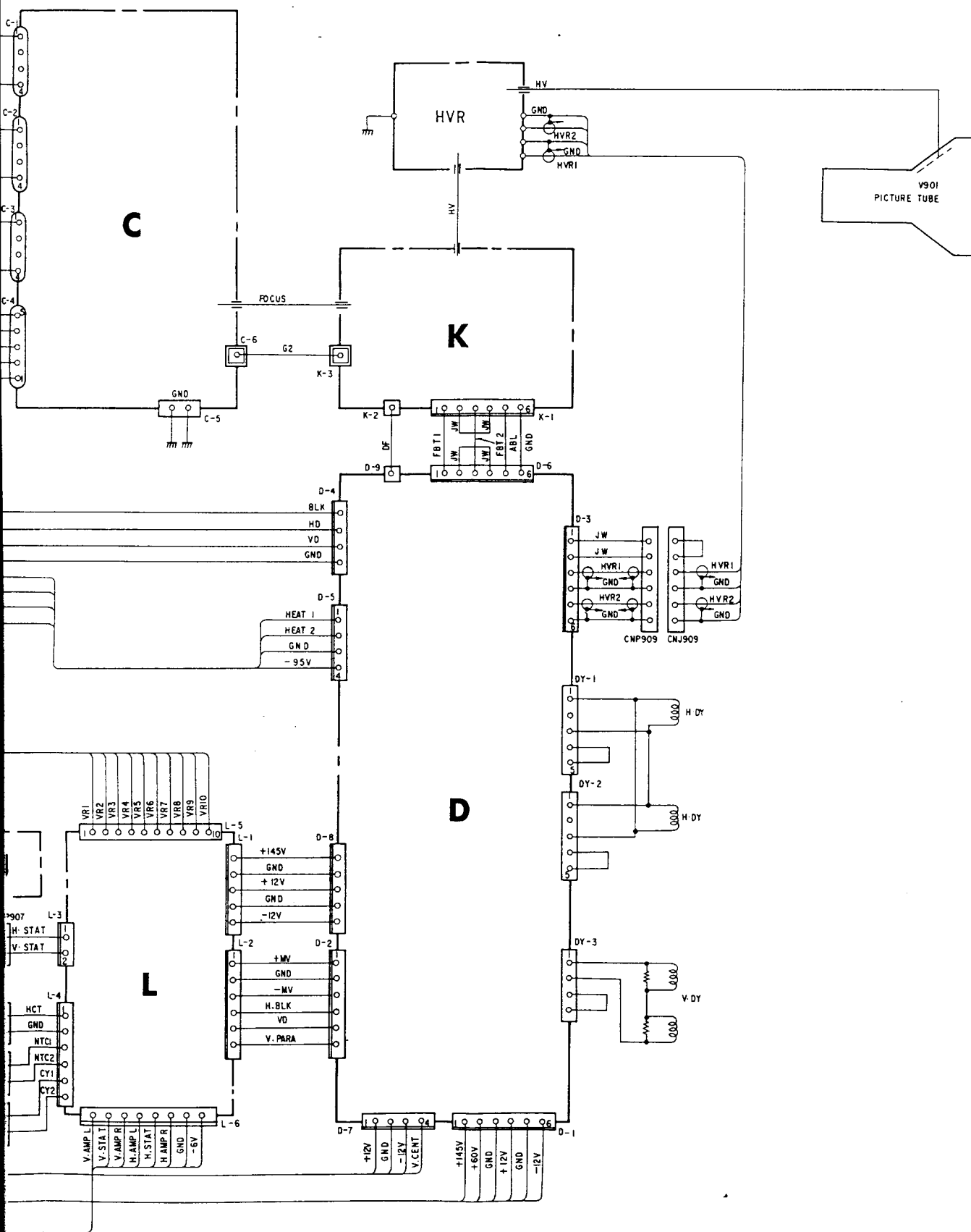
5-3. FRAME SCHEMATIC DIAGRAM





5.3. FRAME SCHEMATIC DIAGRAM






5-4. SCHEMATIC DIAGRAM AND PRINTED WIRING BOARDS

Note:


- All capacitors are in μF unless otherwise noted. pF : μF 50WV or less are not indicated except for electrolytics and tantalums.



- Resistors on LA, LB, AA, AB and DC boards are 1/10W and those on all other boards are 1/6W unless otherwise noted.

k Ω : 1000 Ω , M Ω : 1000 k Ω



- Δ : internal component.
-  : nonflammable resistor.




- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.


- The components identified by  in this parts list have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.


- When replacing components identified by  , make the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  and repeat the adjustment until the specified value is achieved. (Refer to D302, R312 and R345 adjustments and * mark on page 4-10 of Section 4.)

When replacing the part in below table, be sure to perform the related adjustment.

Part replaced ()	Adjustment ()
D302	D302
RV301, R311, R312, R313, D302	R312
D301, R305, R314, R345	R345

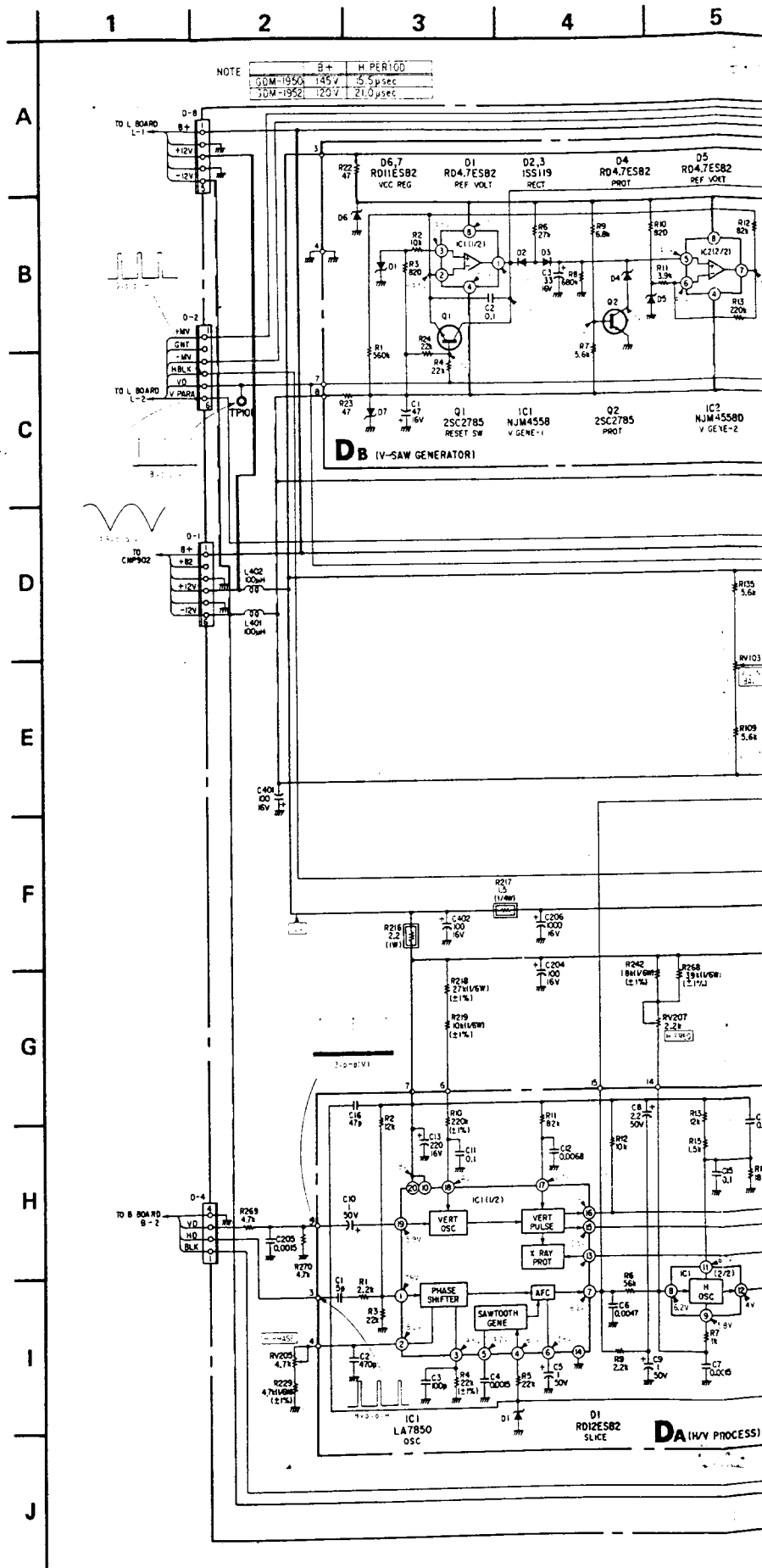
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken with a 10M Ω digital multimeter.
-  : adjustment for repair.
- Voltage variations may be noted due to normal production tolerances.
-  : B+ bus.
-  : B- bus.
- Circled numbers are waveform references.
- Readings are taken with 16 gray scale signal input.

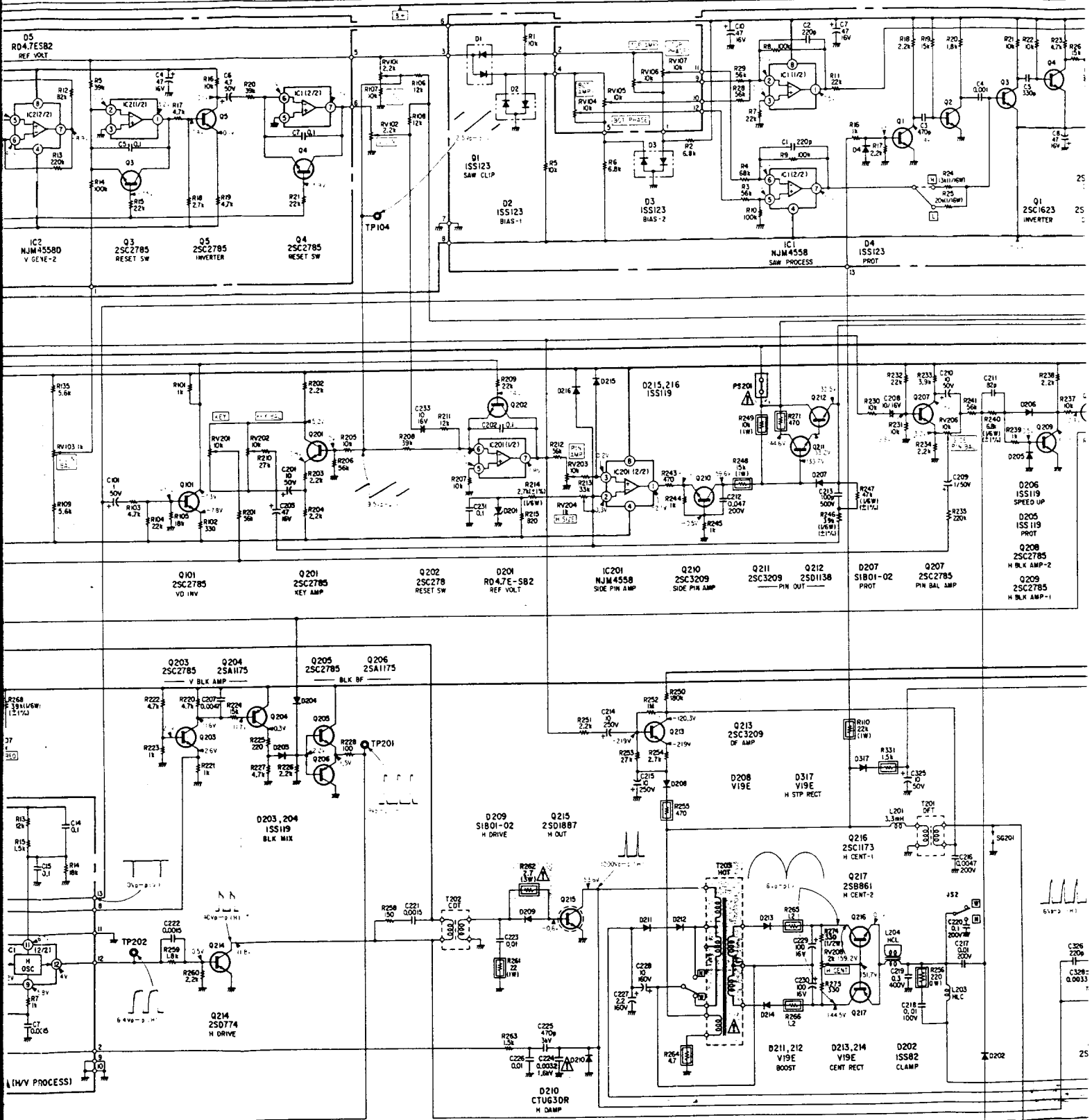
Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

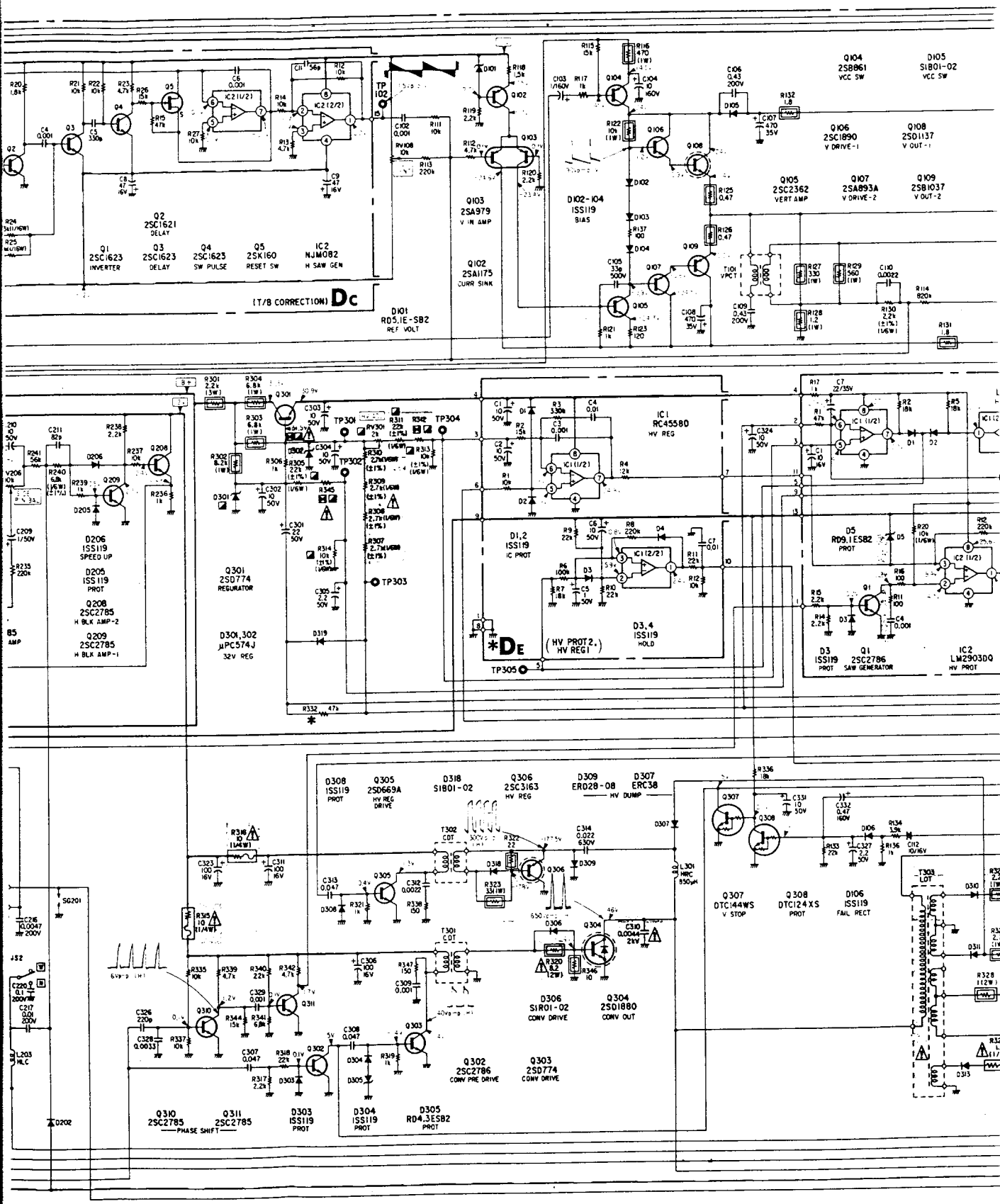
Note: Les composants identifiés par un trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

NOTE

	B+	H. PERIOD
GDM-1950	145V	15.5 μsec
GDM-1952	120V	21.0 μsec











23

24

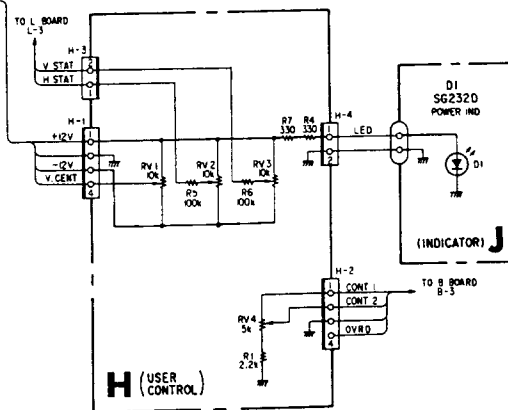
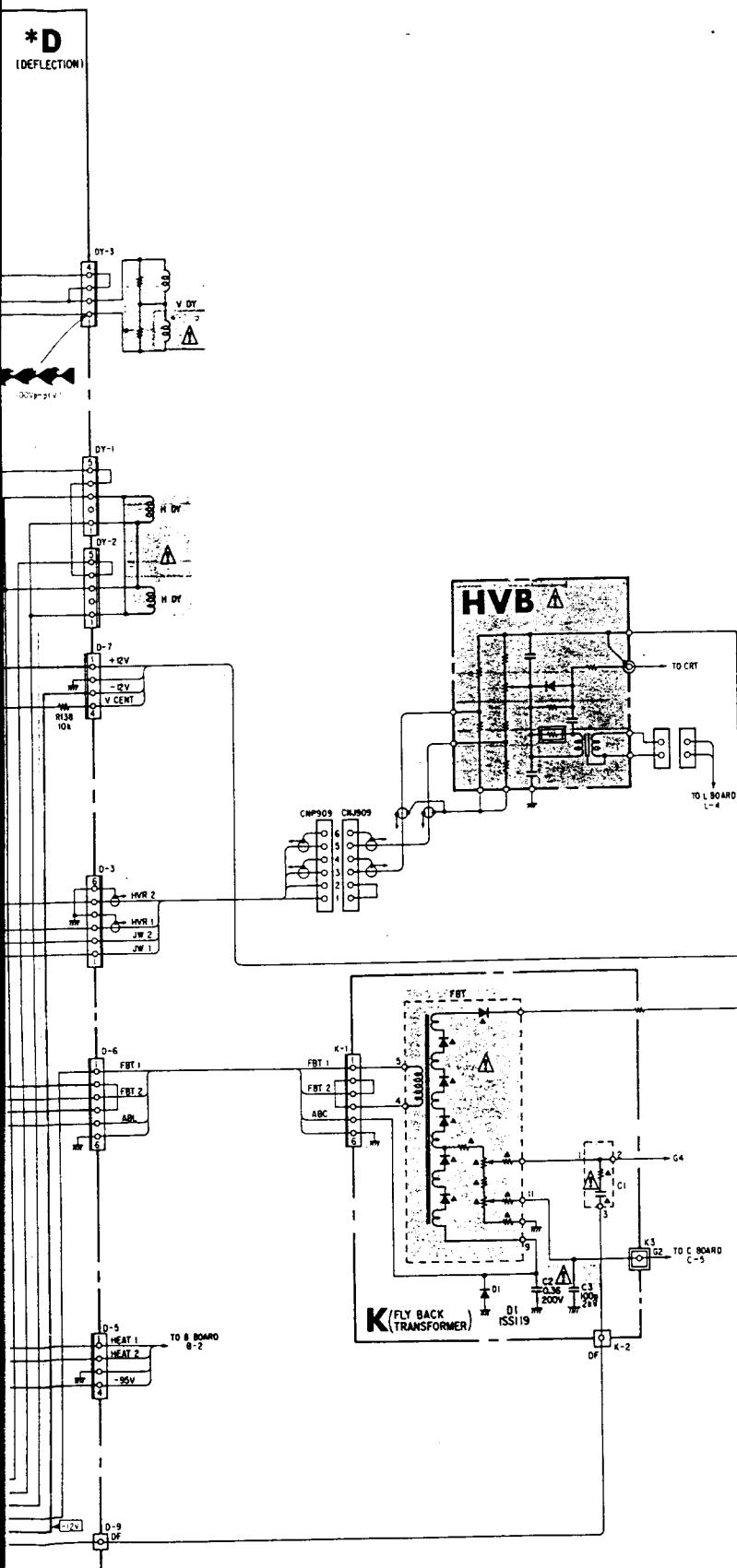
25

26

27

28

29



[DEFLECTION]

A

B

C

D

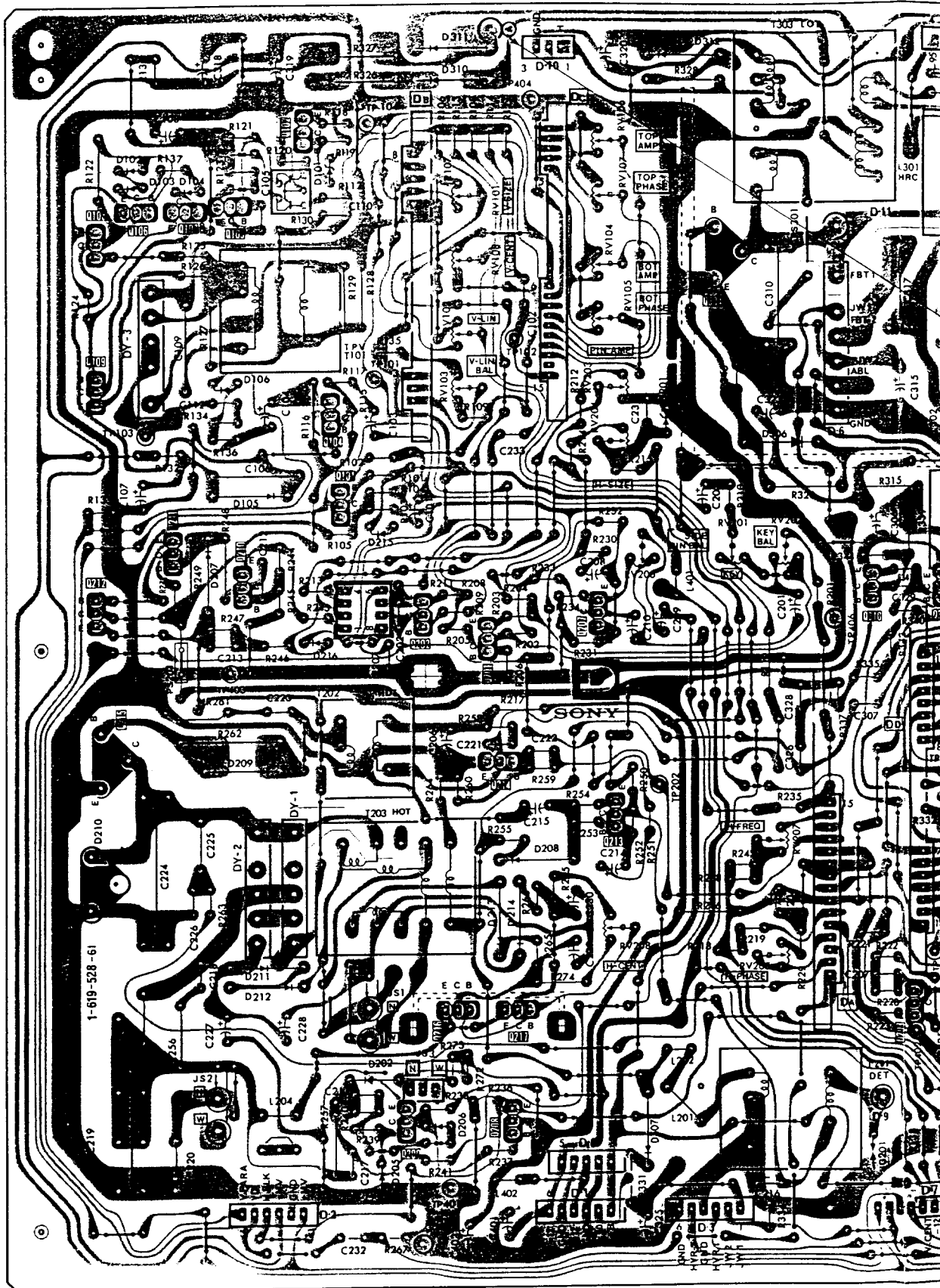
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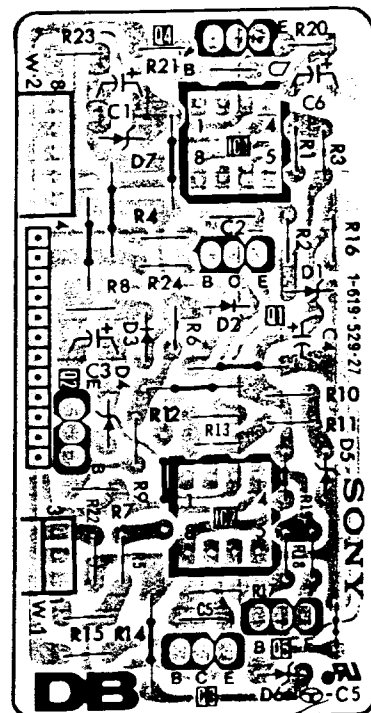
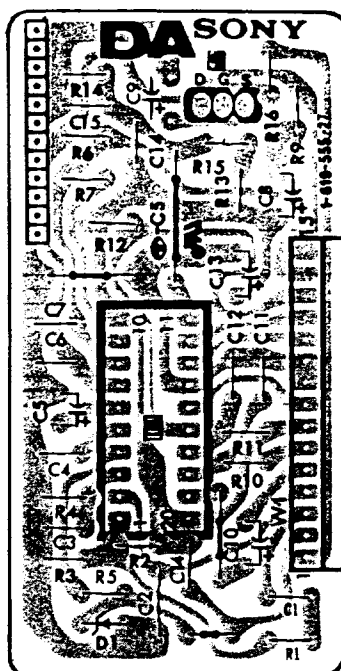
G

Н

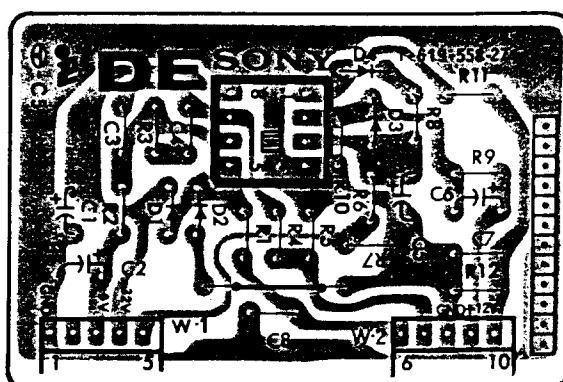
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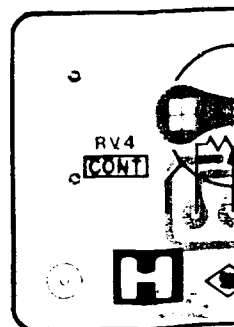




— DE Board —



- H Board -



NTROL]

DA

[H/V PROCESS]

DB

[V-SAW GENERATOR]

Dc

[T/B CORRECTION]

11

12

13

14

15

16

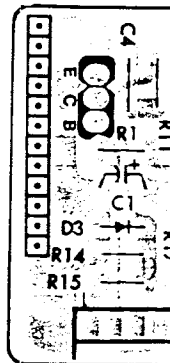
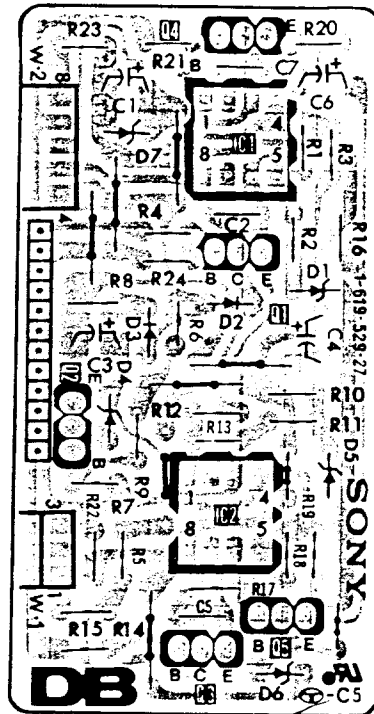
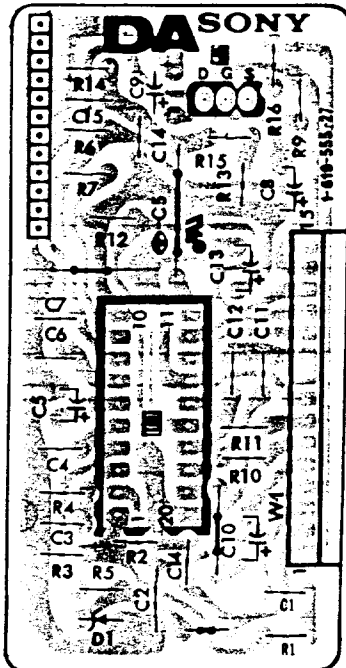
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1

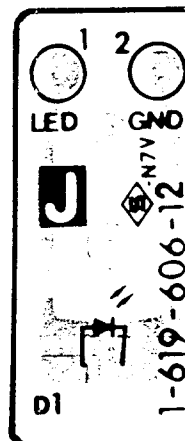
— DA Board —

— DB Board —

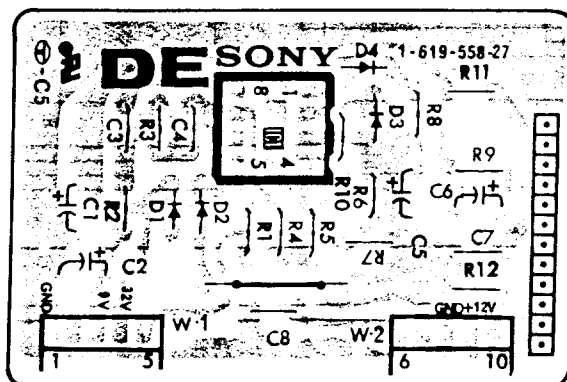
— DD Board —



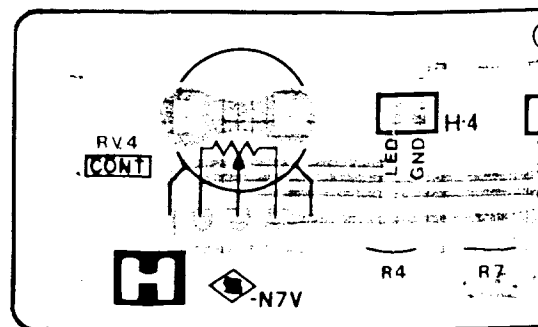
— J Board —



— DE Board —



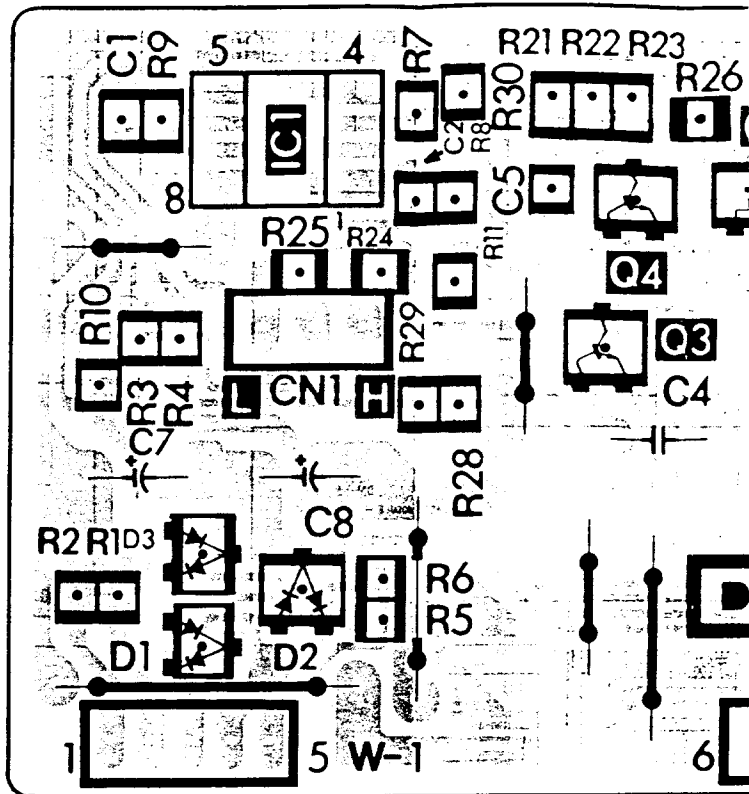
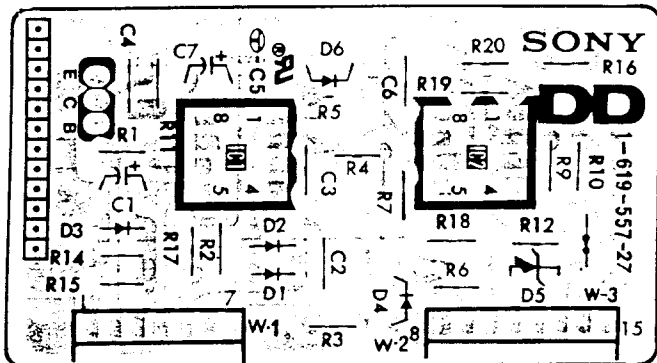
— H Board —



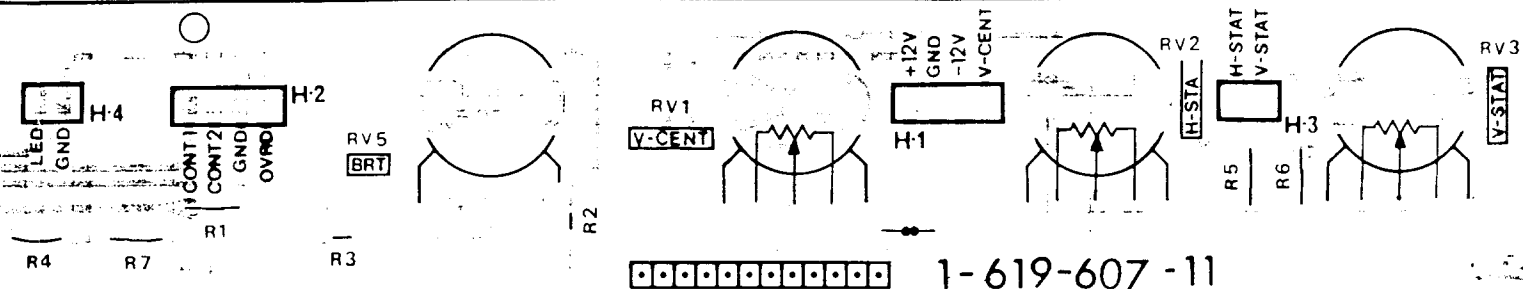
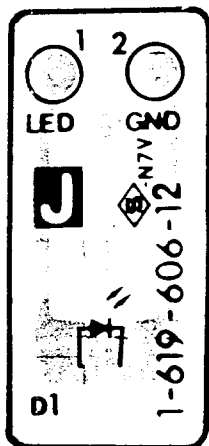
[HV PROT 1/BEAM PROT]		[HV PROT 2]		[INDICATOR]				
[HV REG 2]		[HV REG 1]						
17	18	19	20	21	22	23	24	25

— DD Board —

— DC Board —



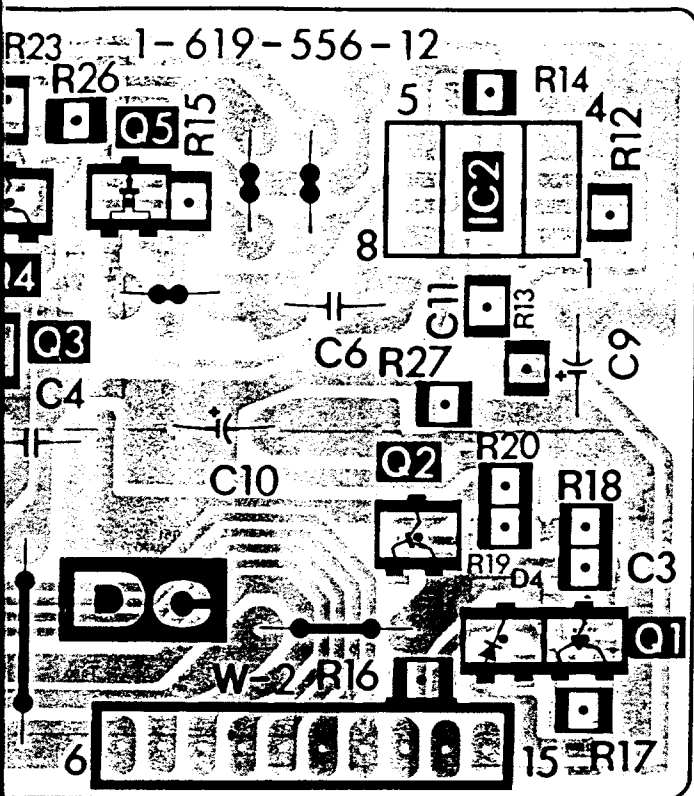
— J Board —



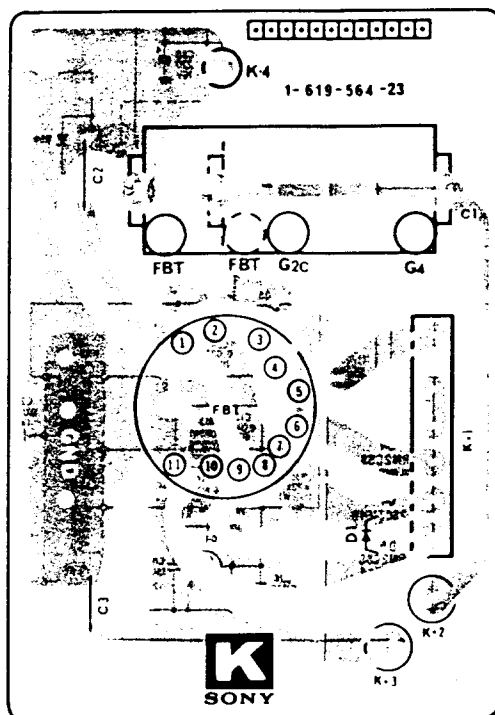
K

[FLYBACK TRANSFORMER]

25 26 27 28 29 30 31 32 33



— K Board —



A

B

C

D

E

F

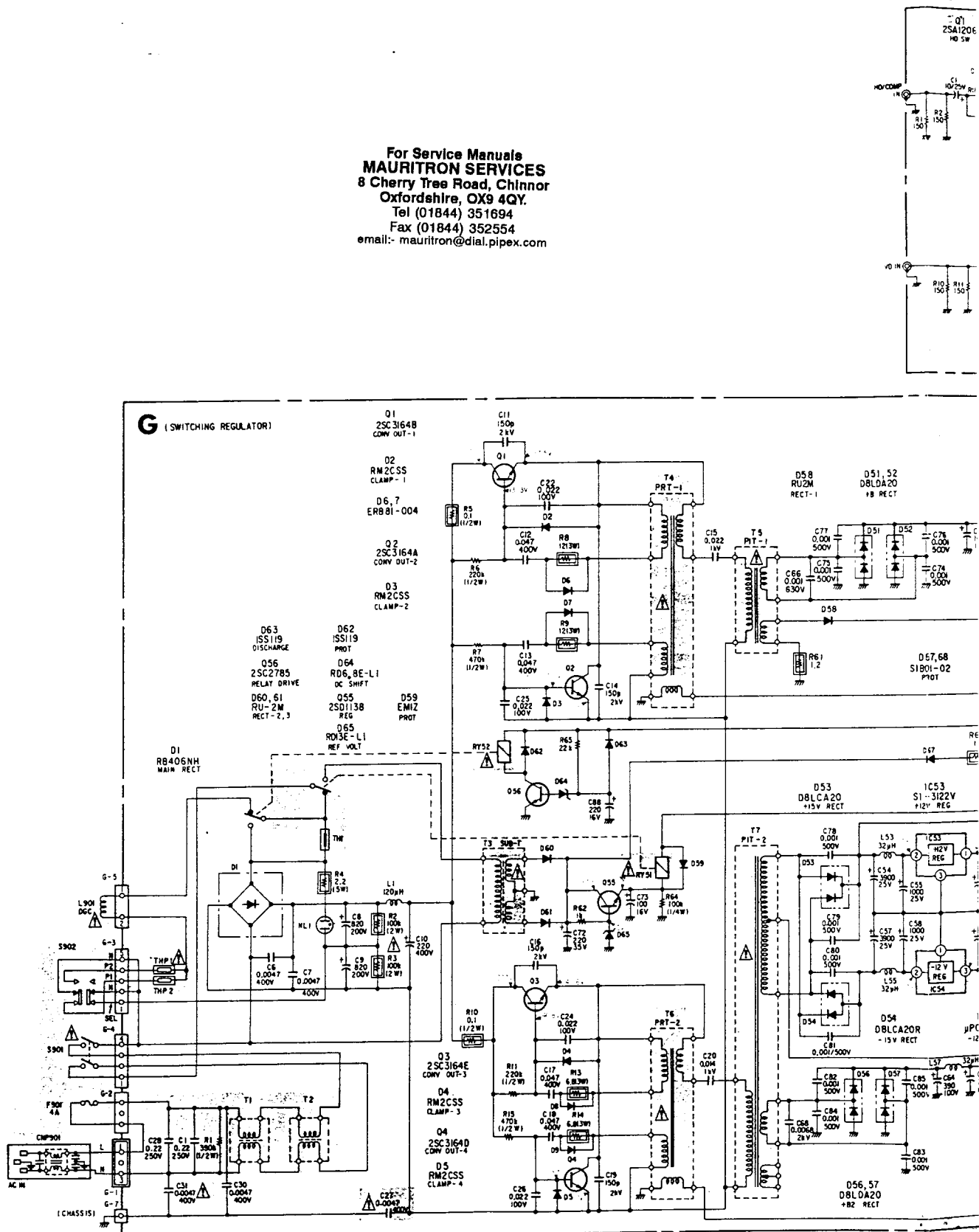
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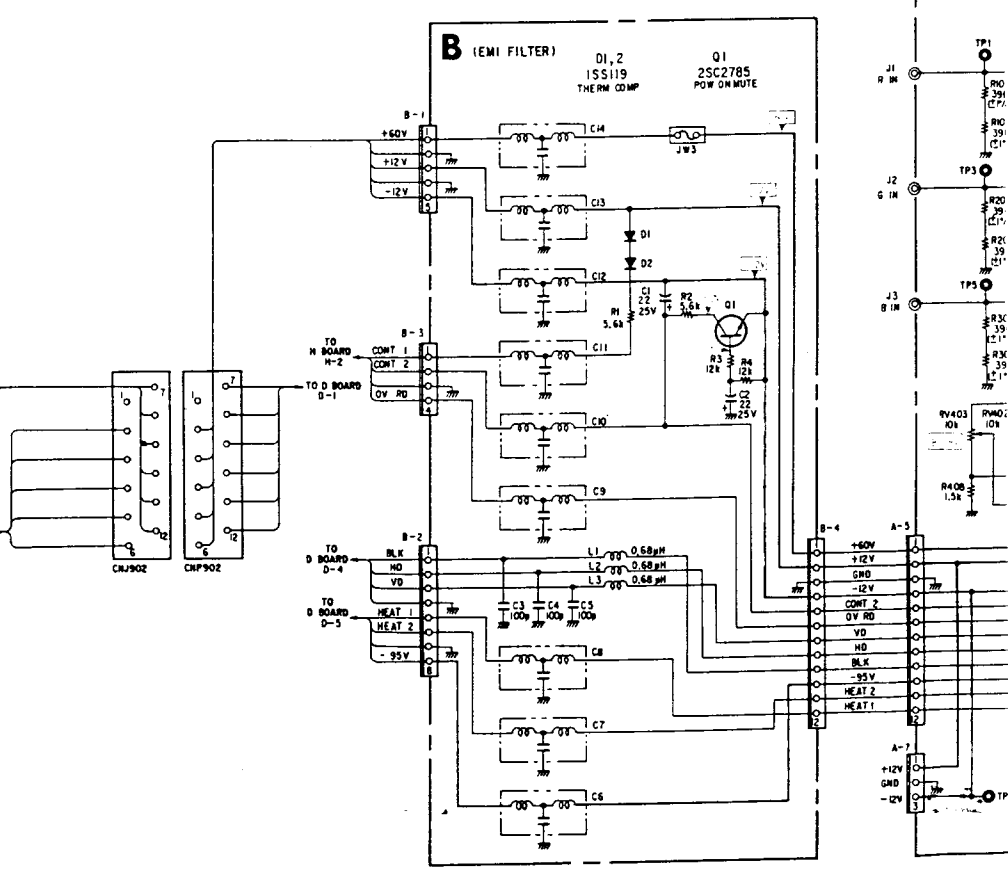
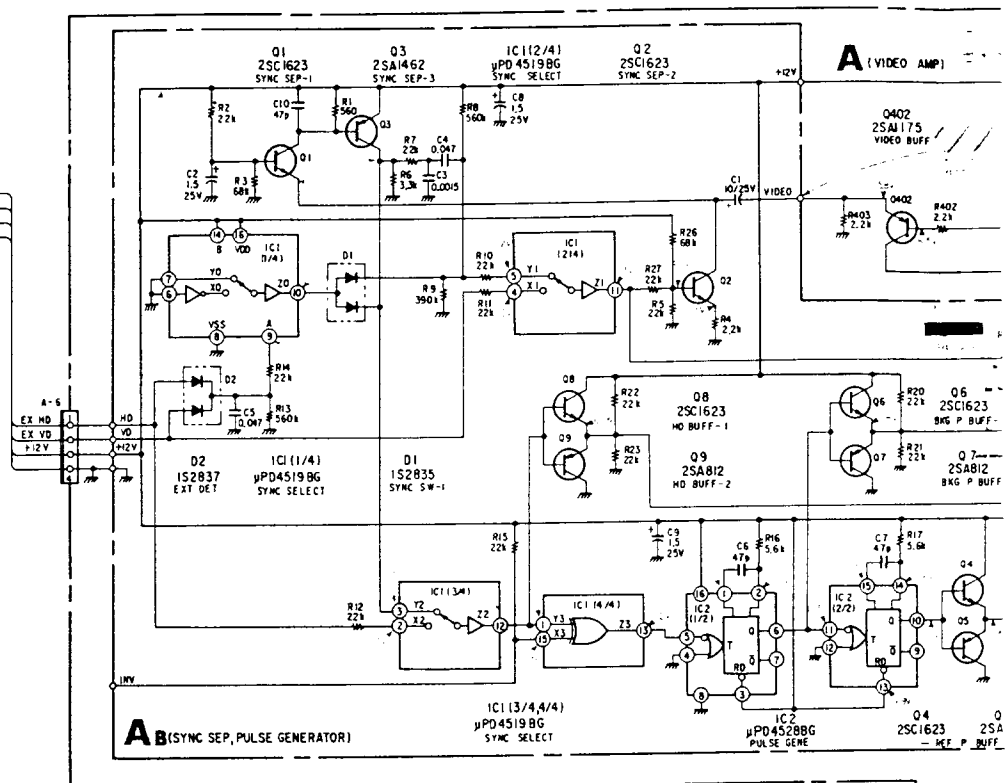
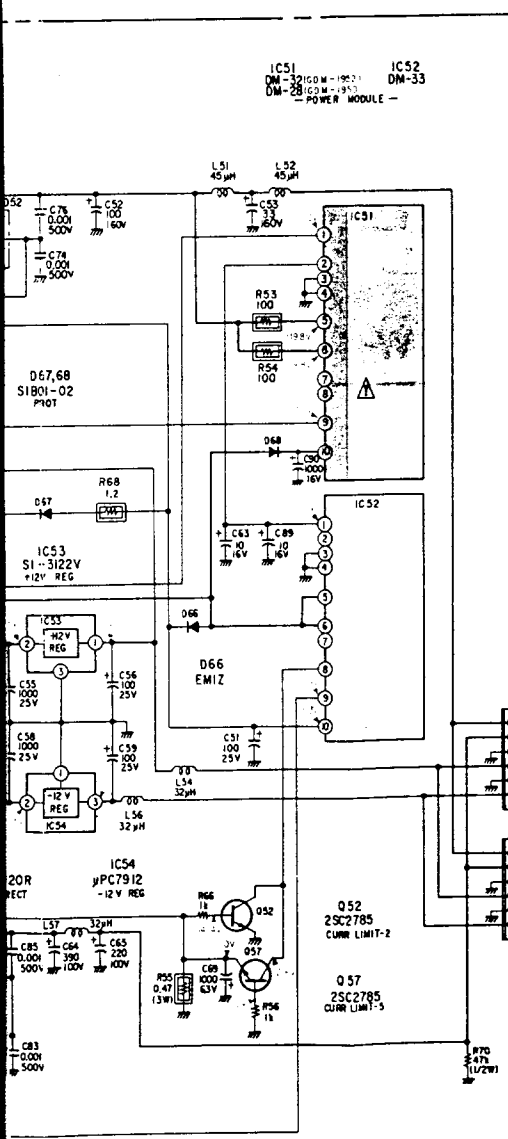
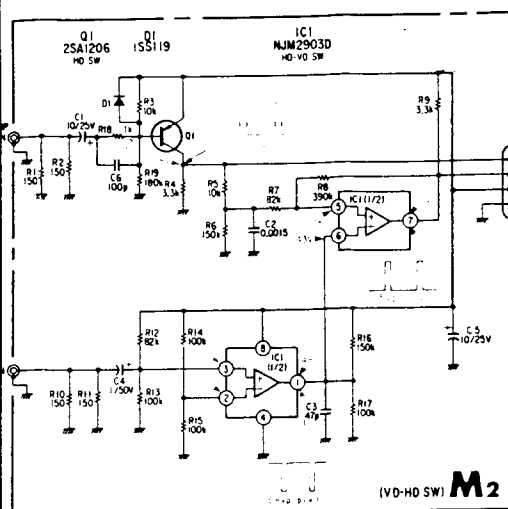
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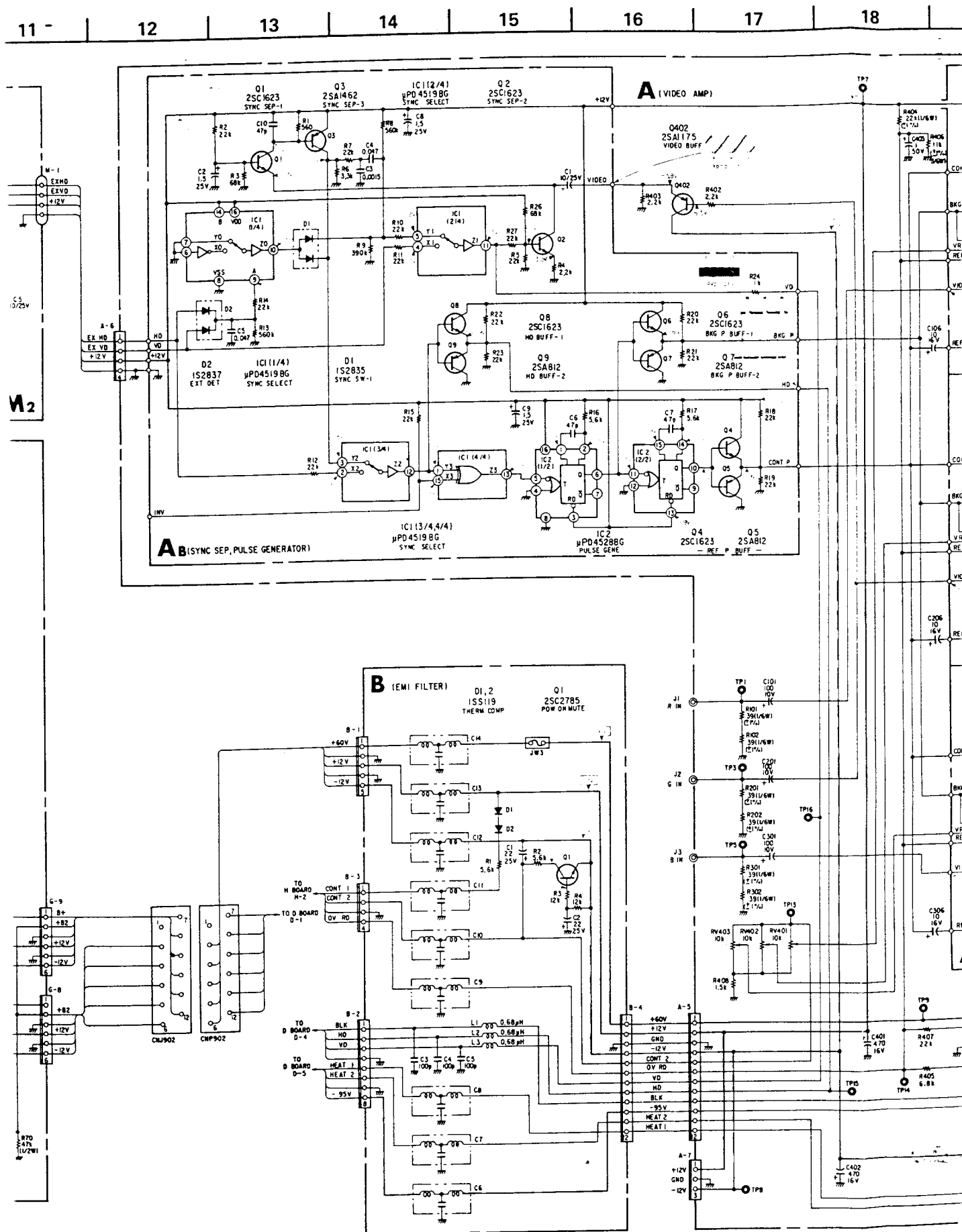
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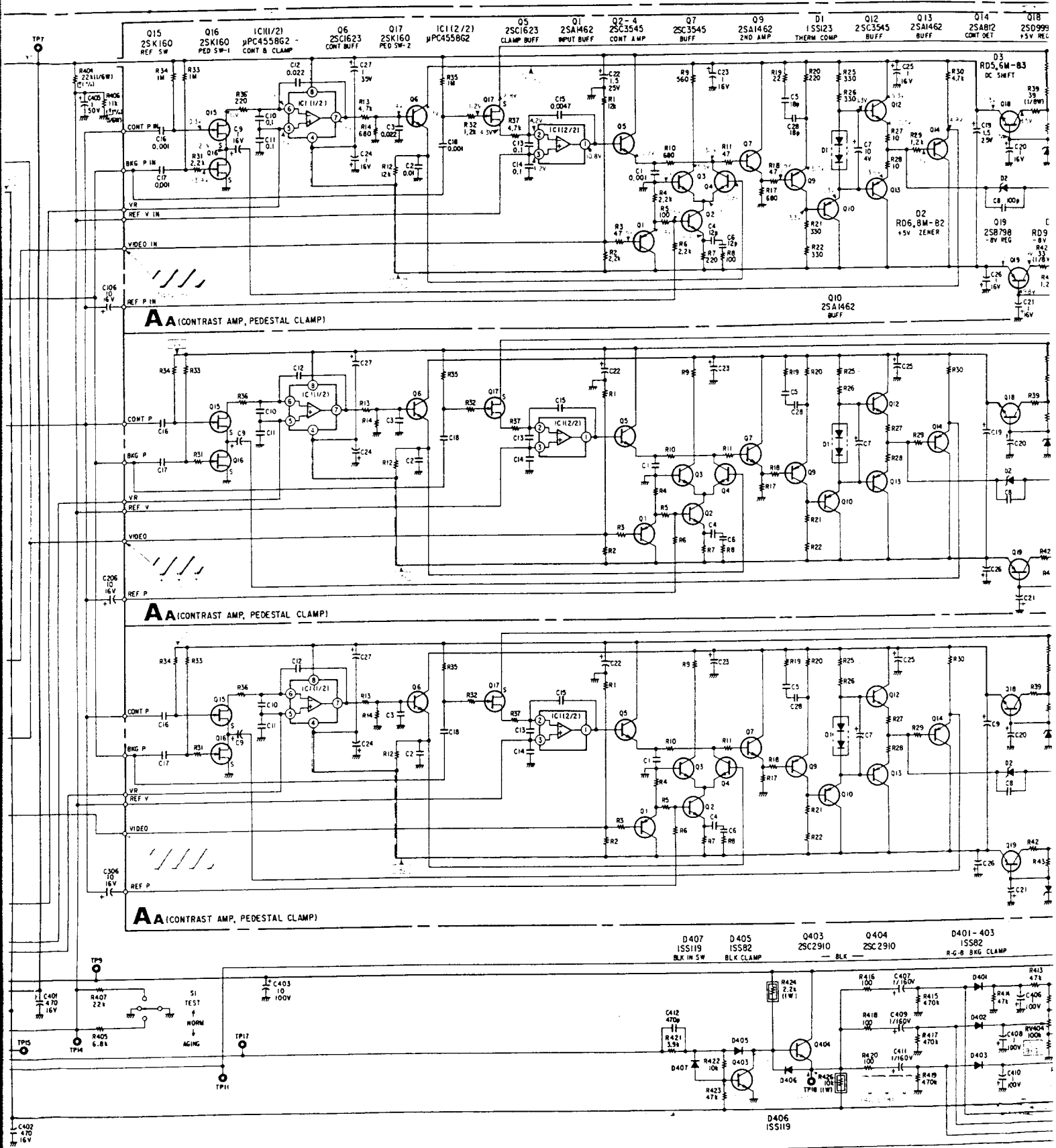
J

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 Tel (01844) 351694
 Fax (01844) 352554
 email:- mauritron@dial.pipex.com









A

[VIDEO AMP]

AA

[CONTRAST AMP,
PEDESTAL CLAMP]

1

2

3

4

5

6

7

8

A

— A Board —

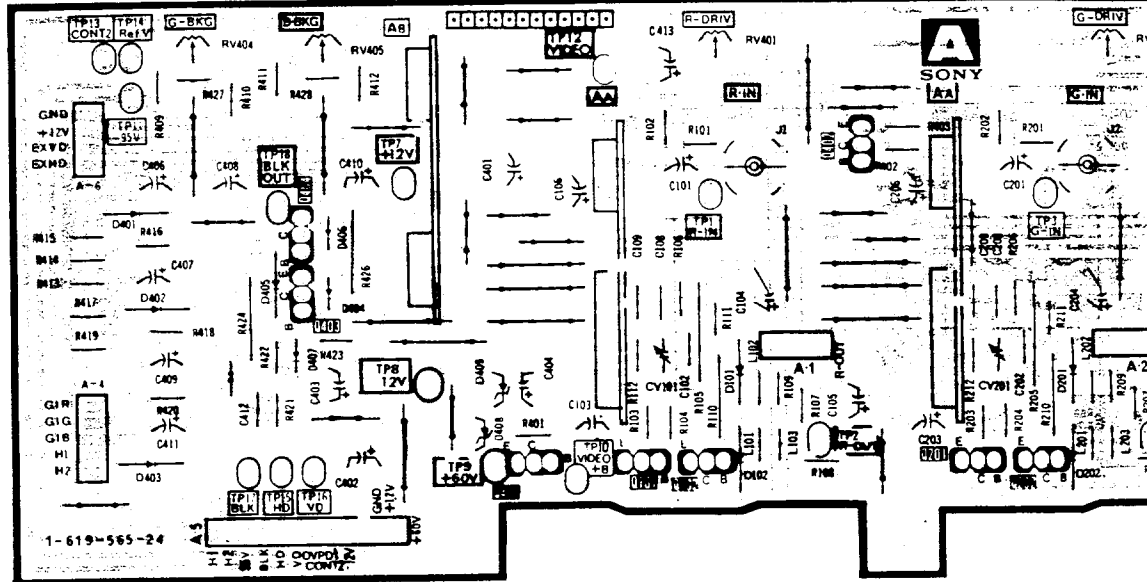
Q	404 403		401		101	102	402	201	202
IC									
D	401 402	407 404	409		101		201		
	403	405 406	408		102				
ADJ	RV404		RV405		RV401		RV402		
TP	13 14 11	17 15 16 18	7 8	9	10 12	1	2	3	4

B

C

D

E



— AA Board — (Component Side)

— AA Board — (Solder Side)

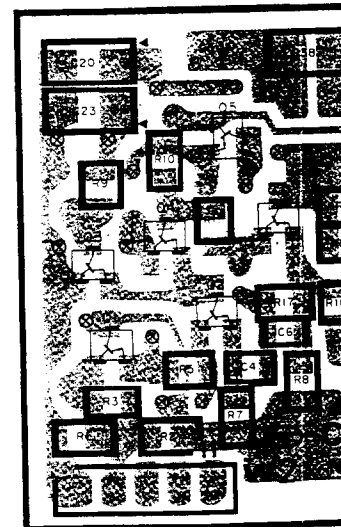
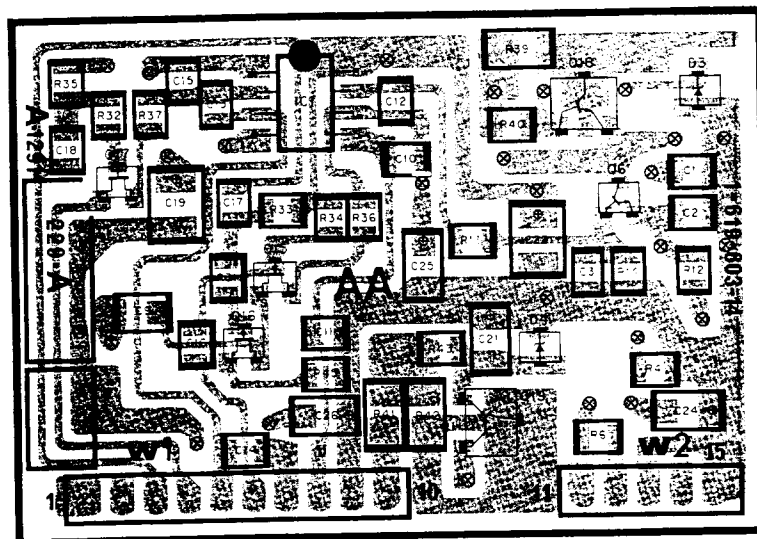
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G

H

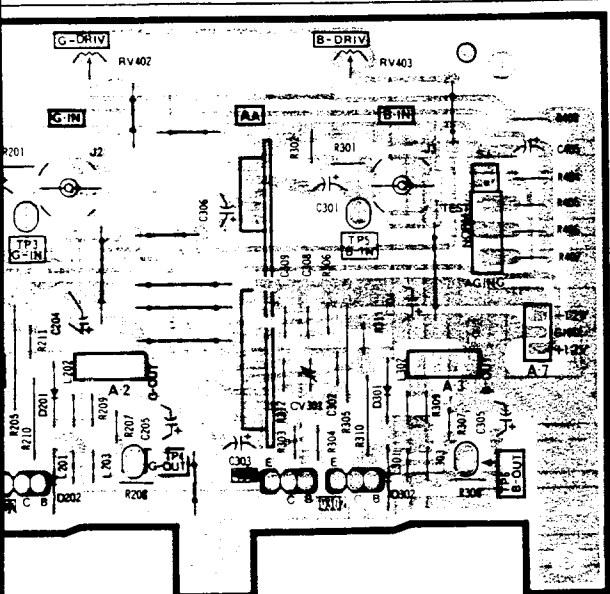
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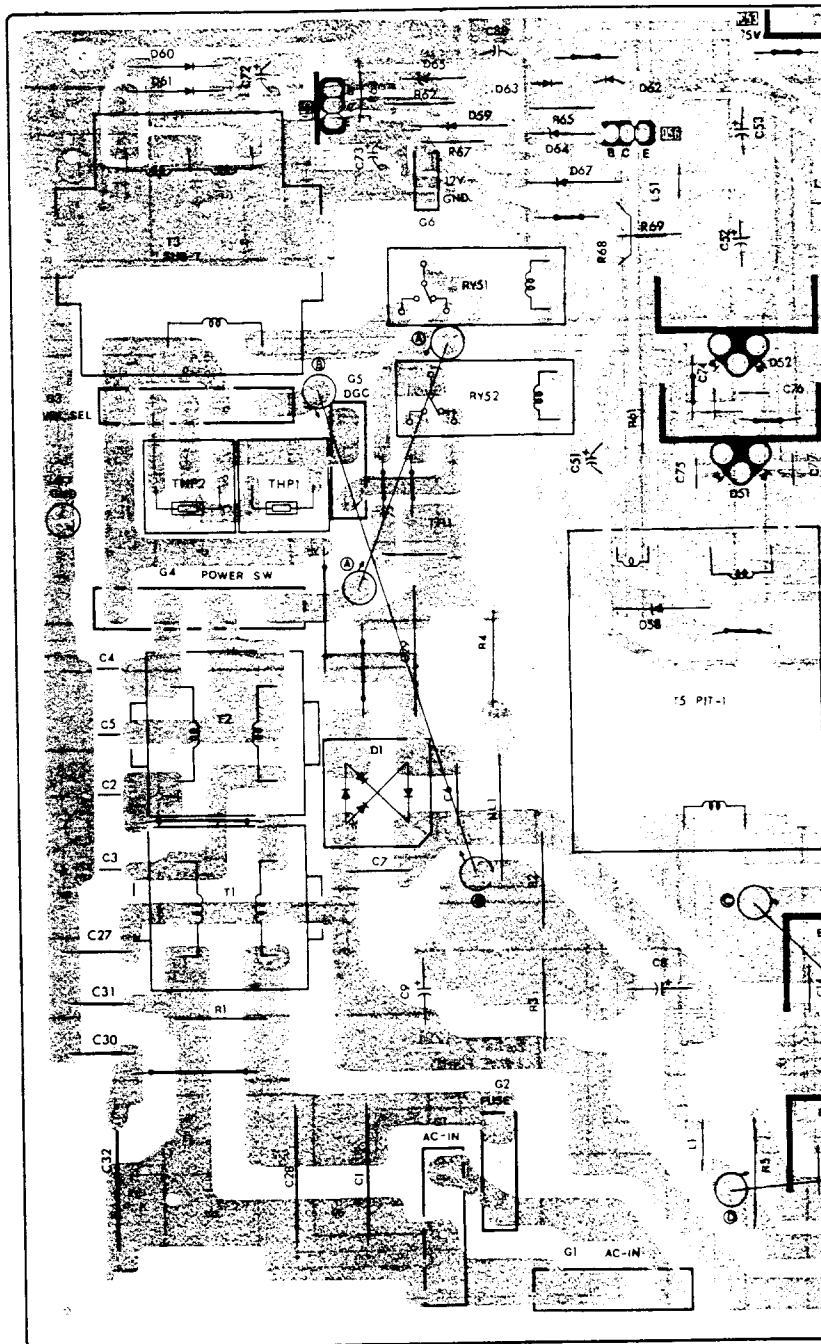
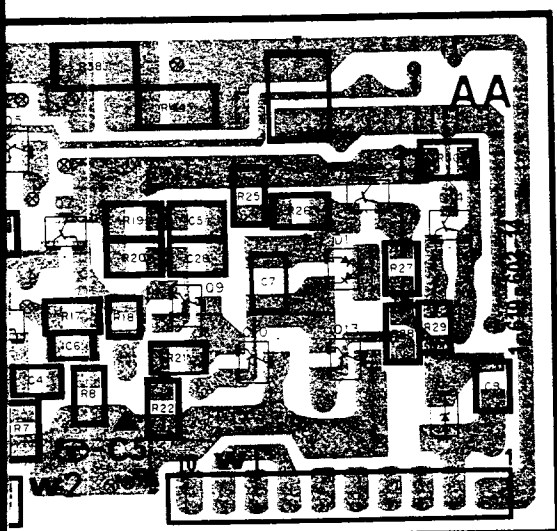


— G Board —

202	301	302		Q IC
201		301		D
	RV402		RV403	ADJ
3	4	5	6	TP



hide)



B

(EMI FILTER)

M2

[VD, HD SWITCH]

AB[SYNC SEP,
PULSE GENERA]

15

16

17

18

19

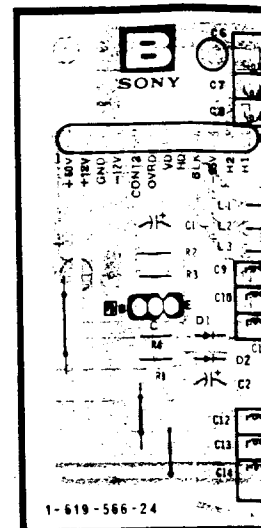
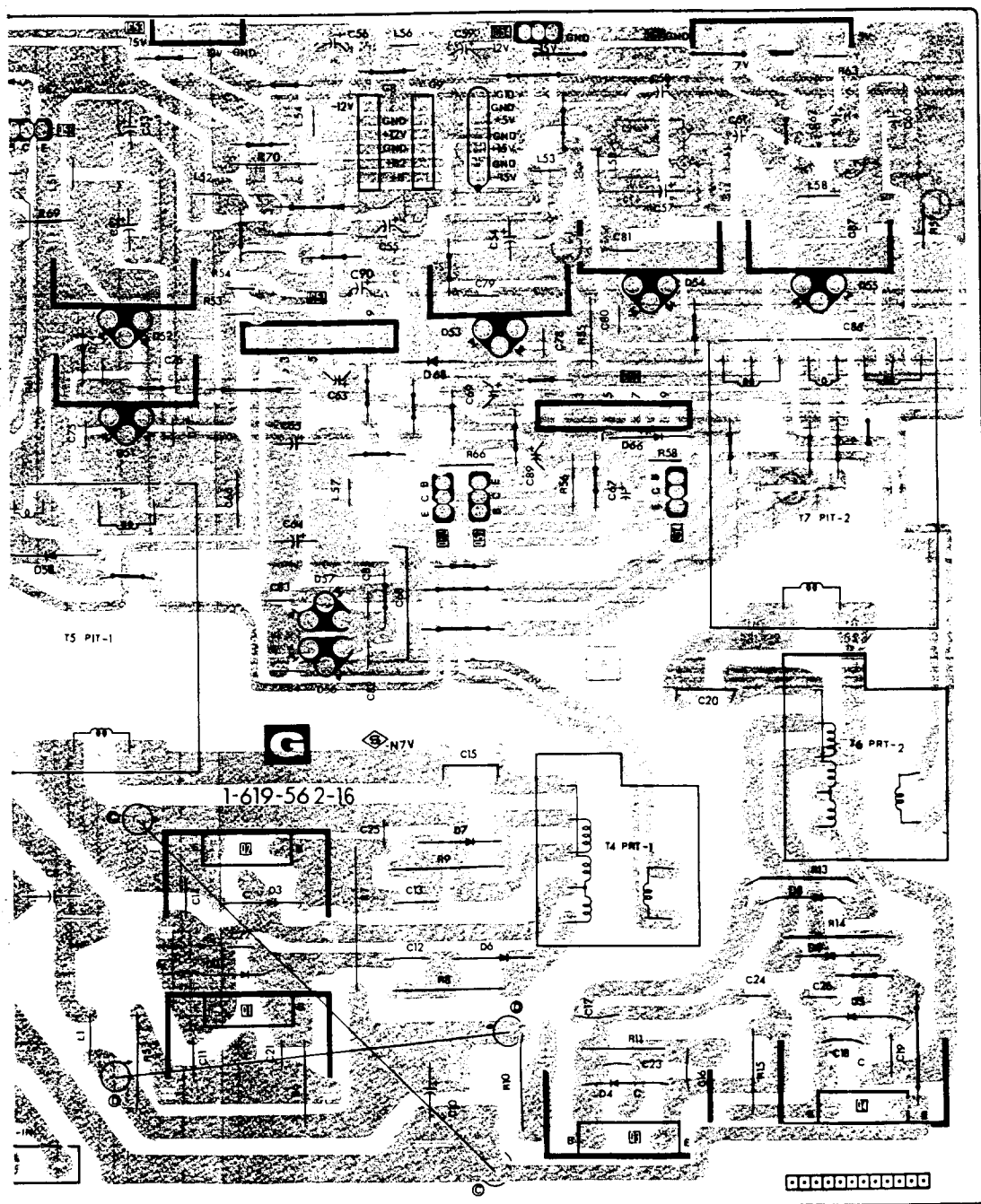
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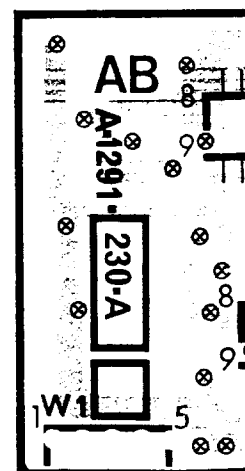
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23

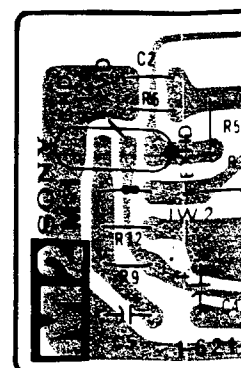
- B Board -



- AB Board - (Component Side)



- M2 Board -



For Service Manuals
MAURITRON SERVICES
 8 Cherry Tree Road, Chinnor
 Oxfordshire, OX9 4QY.
 Tel (01844) 351894
 Fax (01844) 352554
 email:- mauritron@dlal.pipex.com

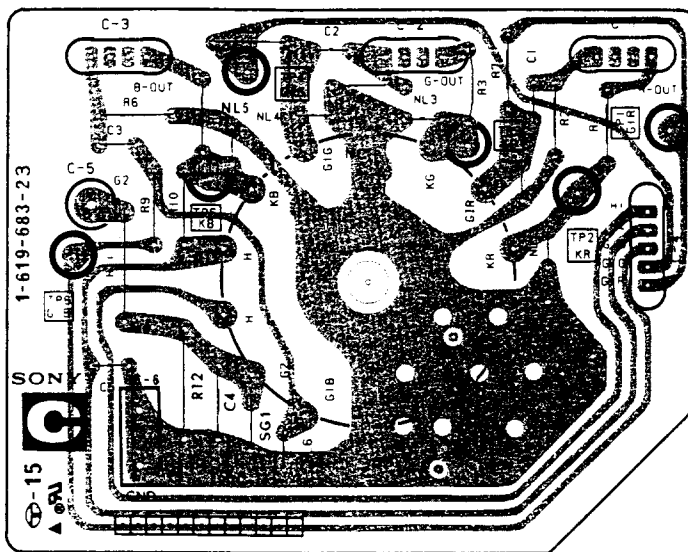
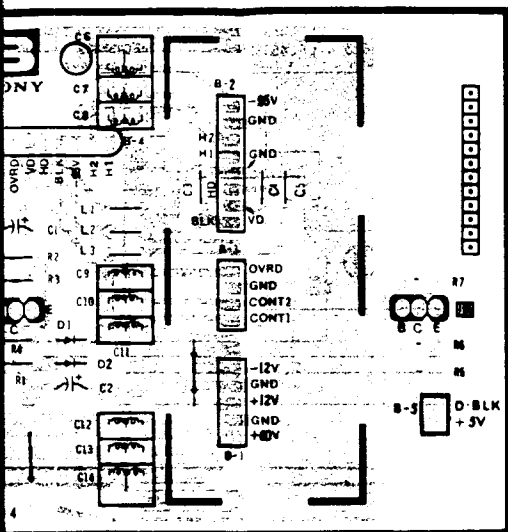
C SEP,
SE GENERATOR

C

[ARC SUPPRESSION]

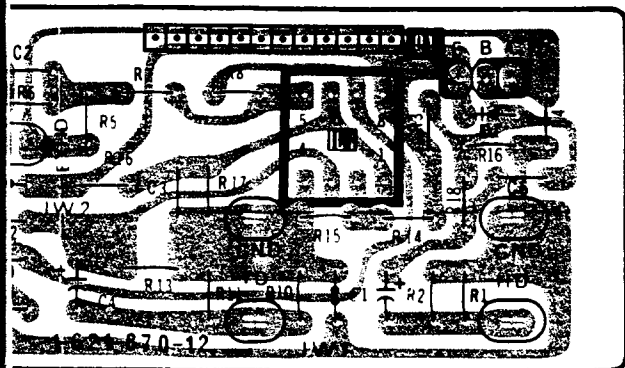
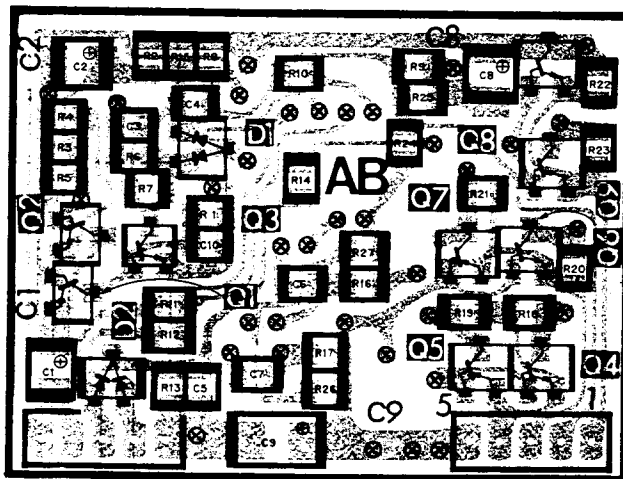
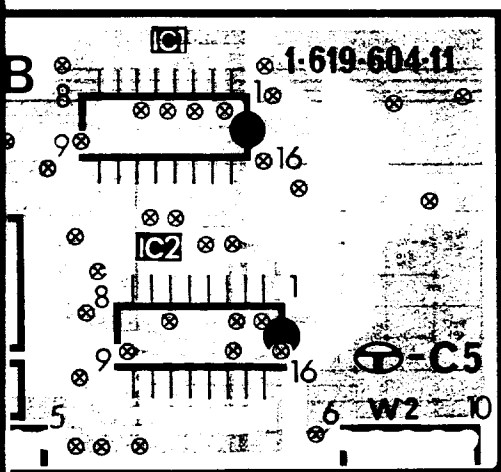
23 24 25 26 27 28 29 30

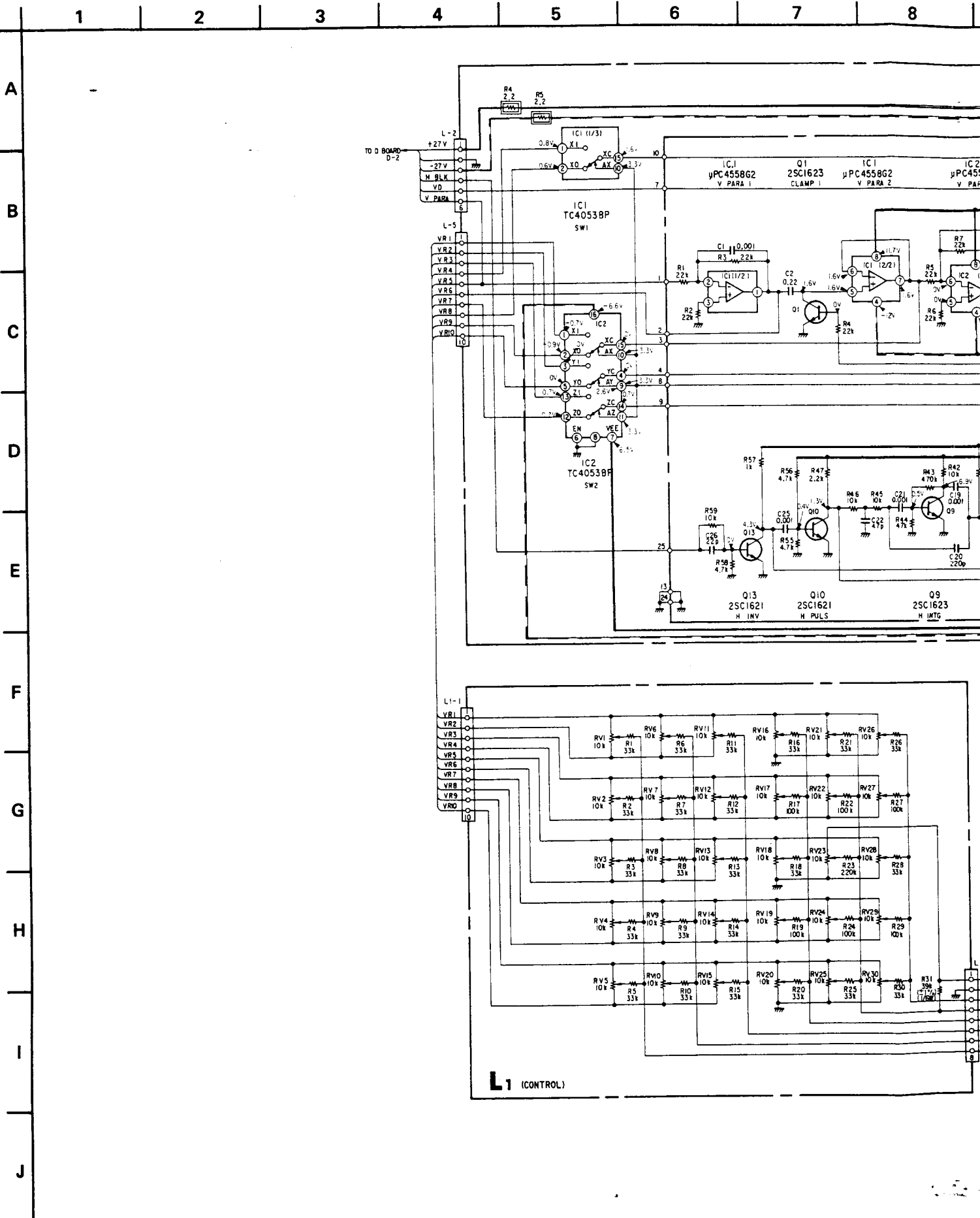
— C Board —

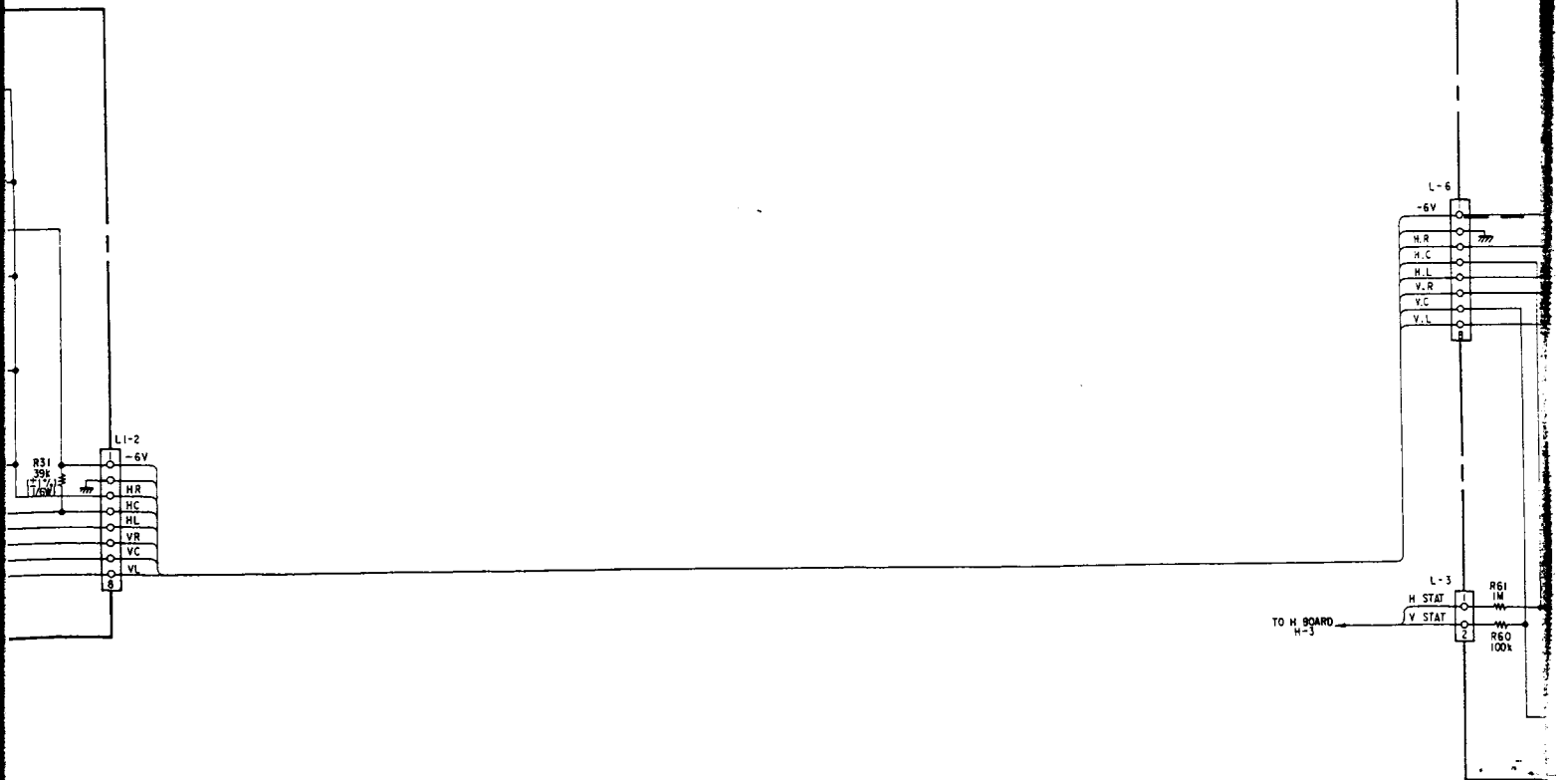
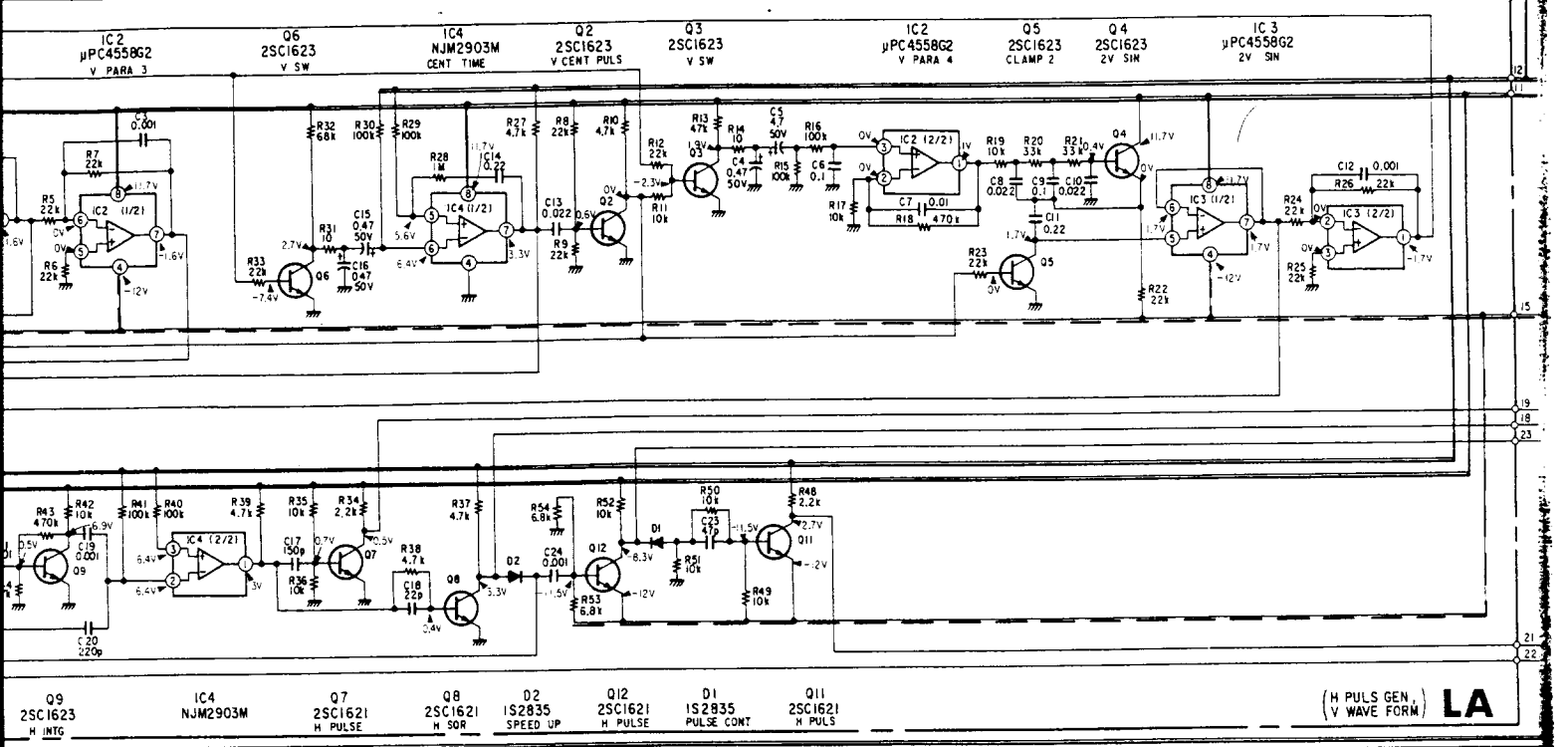


ponent Side)

— AB Board — (Solder Side)







16

17

18

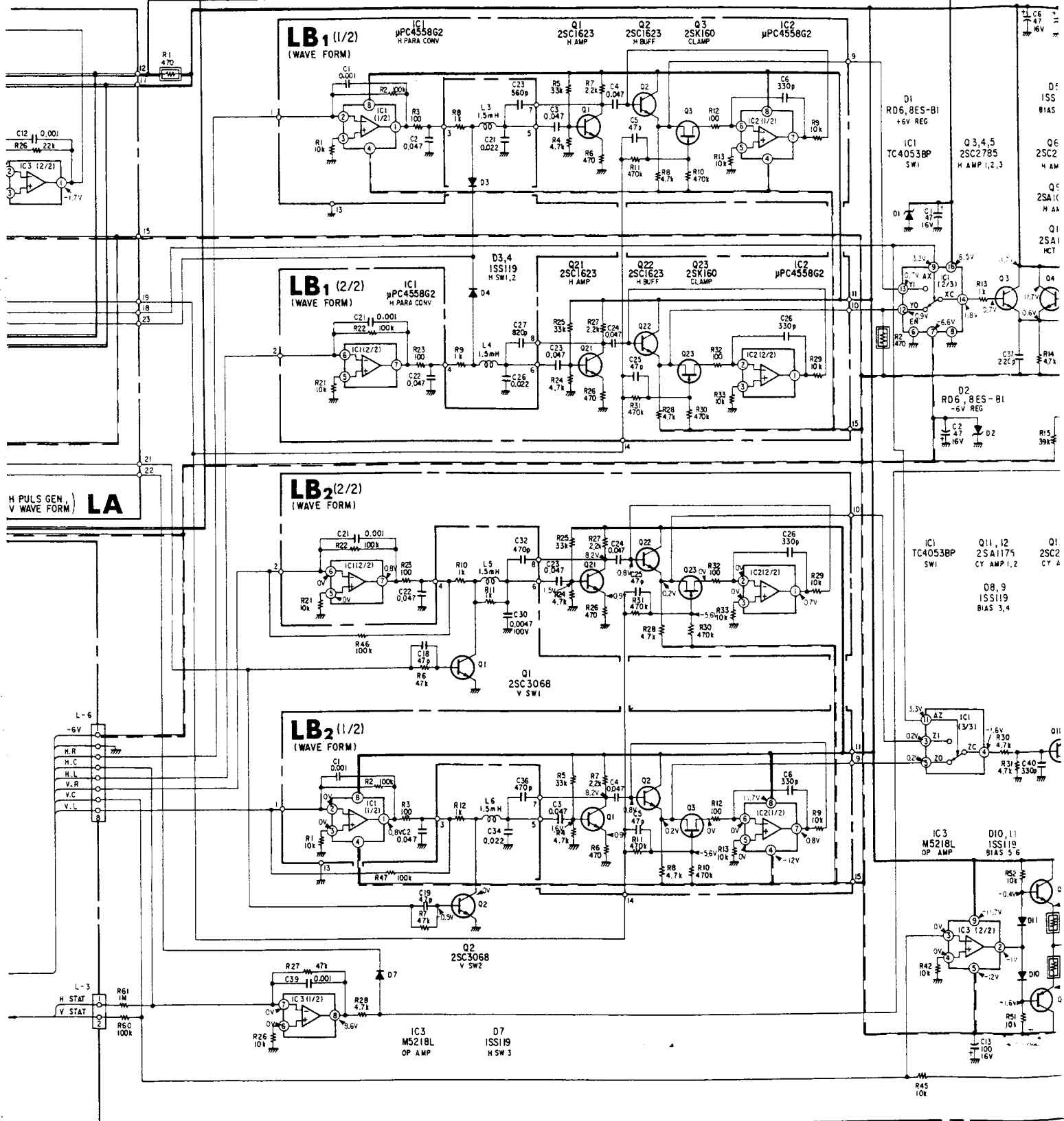
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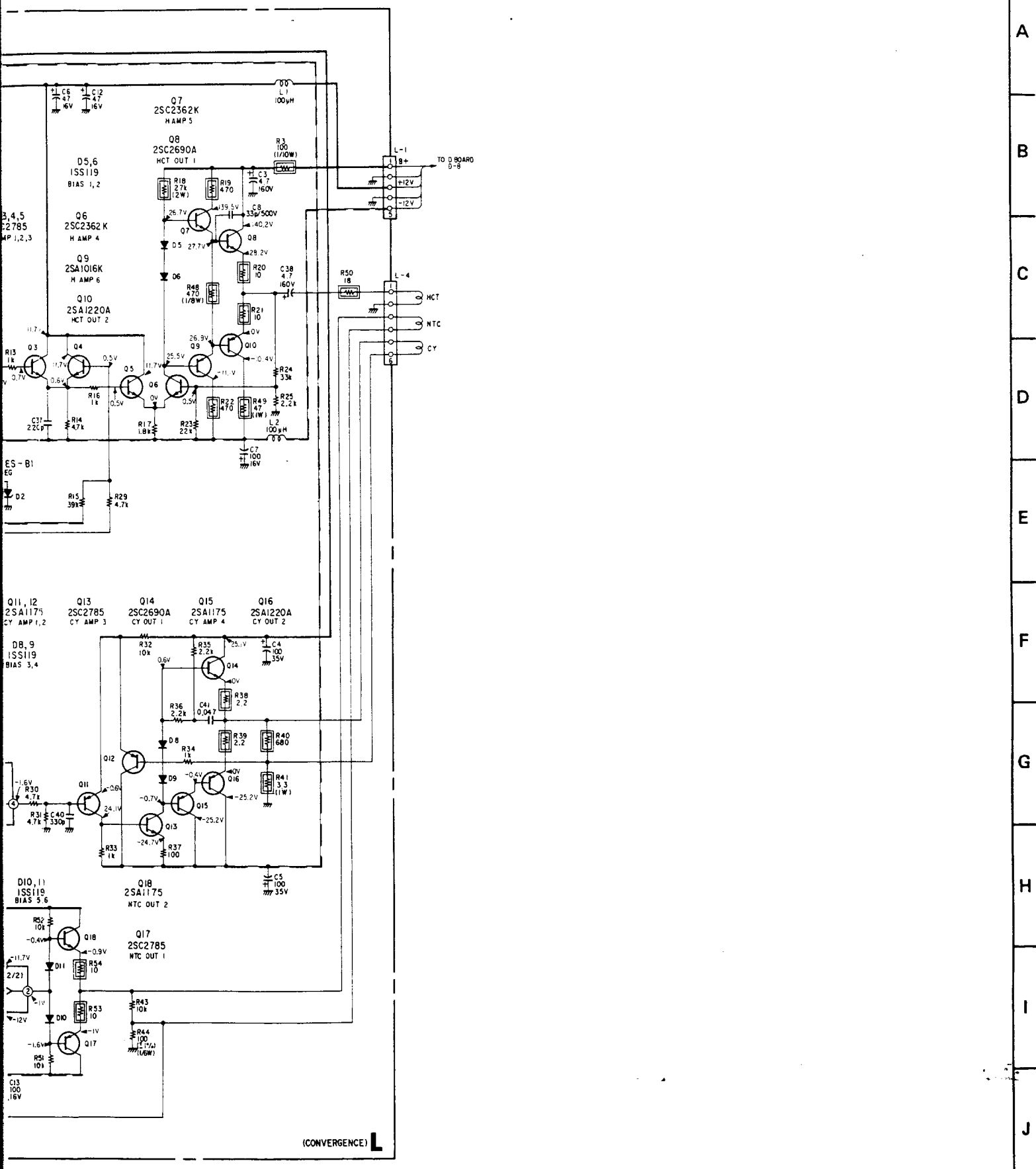
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22

23



23	24	25	26	27	28	29	30
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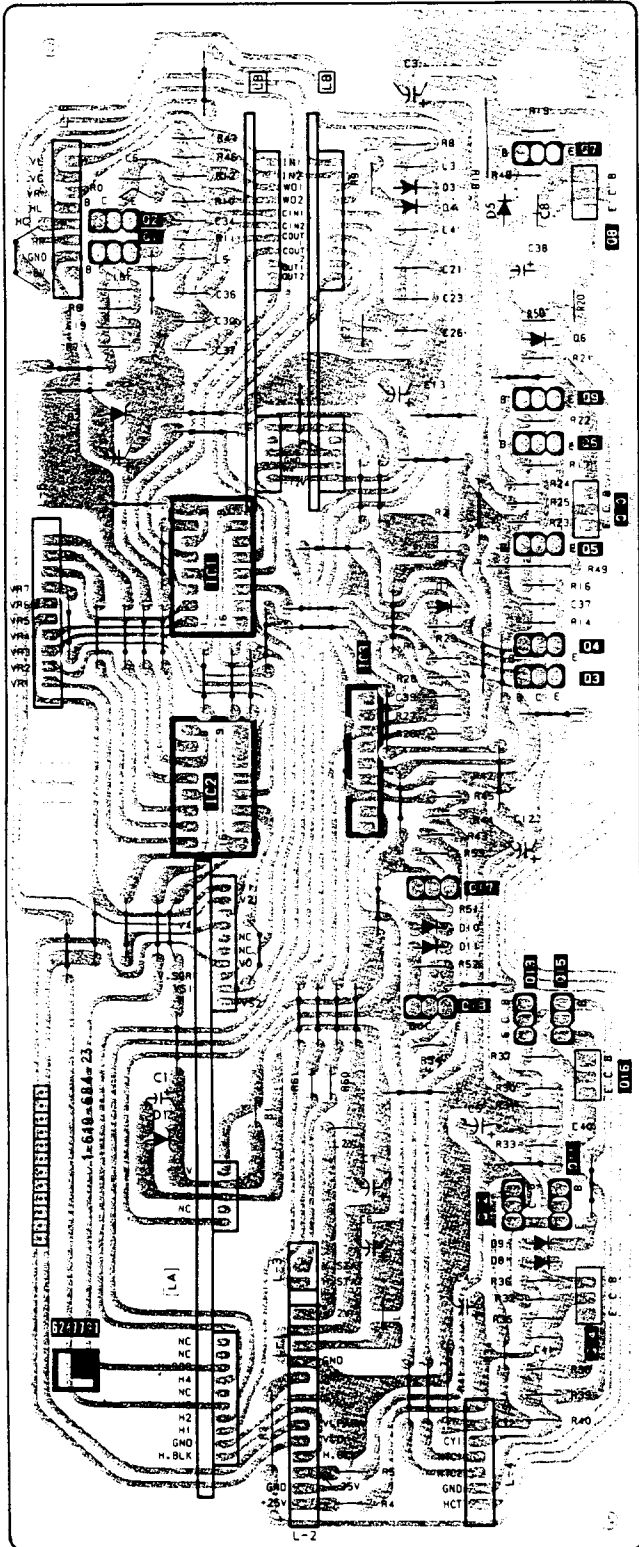


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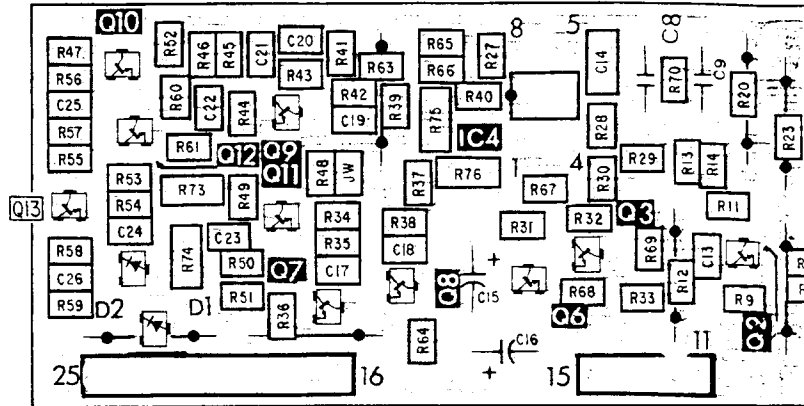


[H PULS GEN.,
V WAVE FORM]

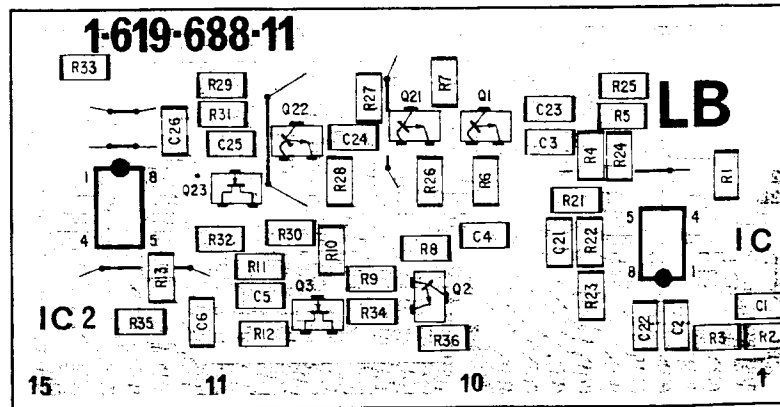
— L Board —



— LA Board —



— LB Board —



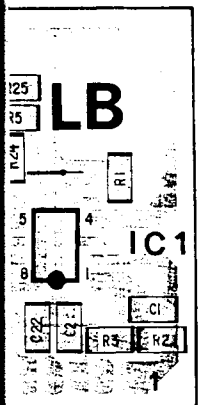
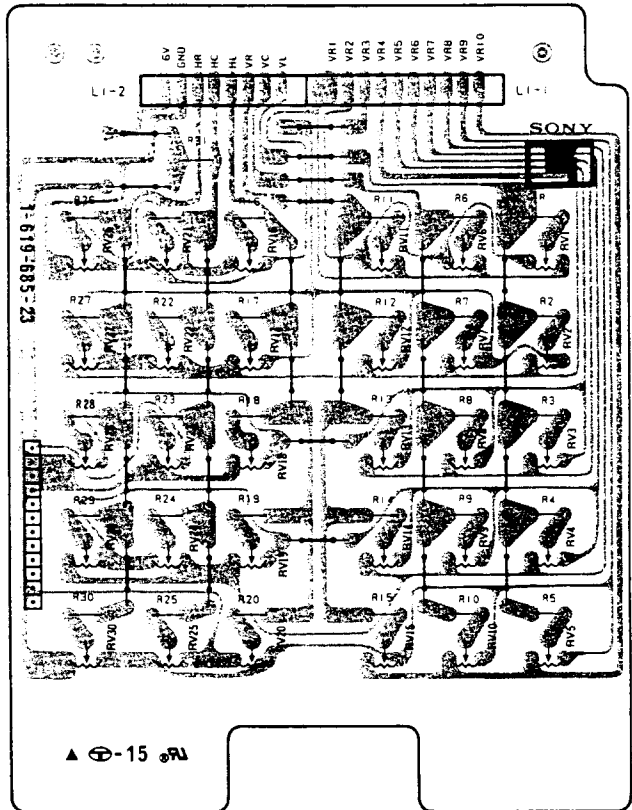
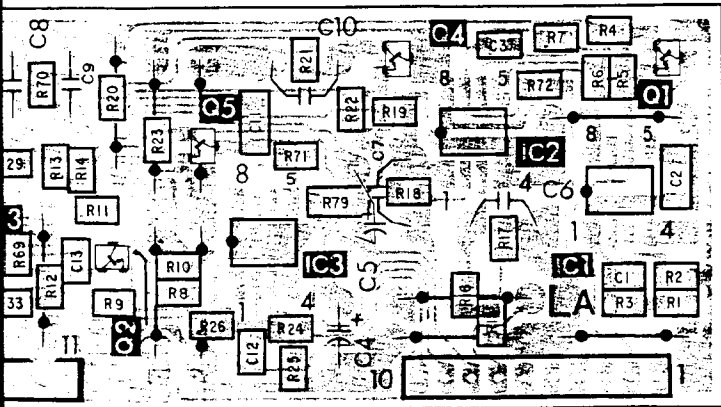
L1

[CONTROL]

LB

[WAVE FORM]

— L1 Board —

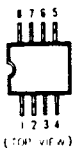


5-5. SEMICONDUCTORS

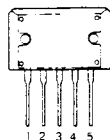
BA4558
NJM2903D
NJM4558D
μPC4558C



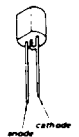
NJM2903D
μPC4082G2
μPC4558G2



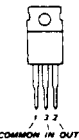
STR9005



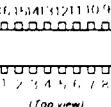
μPC574J



μPC7912H



μPD4519BG
μPD4528BG



2SA1048
2SA1115
2SC2458
2SC2603
DTC144WS



2SA1175
2SC2785
2SC2786-M



2SA1206-K1
2SC2901



2SA812
2SA1462
2SA1621
2SC1623
2SC2712Y
2SC2812L5
2SK160-K5



2SA893A
2SC2910



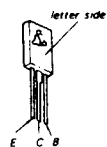
2SA933S
2SC1740
2SC1890A
2SC2362



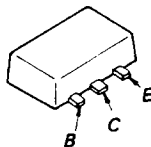
2SA979



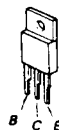
2SB649
2SC3595
2SC3597
2SD986



2SB798
2SD1664
2SD999



2SB861
2SC1173
2SC3163
2SD1137
2SD1138



2SC3164



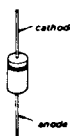
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2SD774



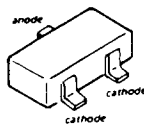
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2SD1887



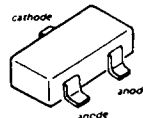
10E2
1SS82
ERD28-08S
RD13E-L1
RD6.8E-L1
RGP15G



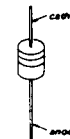
1S2835



1S2837



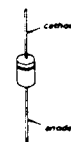
1SS119
1SS133
1SS148
RD11ES-B2
RD12ES-B2
RD4.3ES-B2
RD4.7ES-B2
RD5.1ES-B2
RD9.1ES-B2



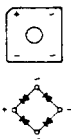
1SS123



ERD31-02
RM2CS
RU-2M
SIB01-02



RB406NH



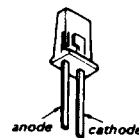
RD6.2M-B1
RD6.8M-B2
RD9.1M-B2



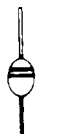
CTUG3DR



SG232D
SR632D



V19E
V19G



SECTION 6

EXPLODED VIEWS

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6-2.	Chassis	6-2
6-3.	Picture Tube	6-3
6-4.	Kit	6-4
6-5.	Packing Assy	6-5

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

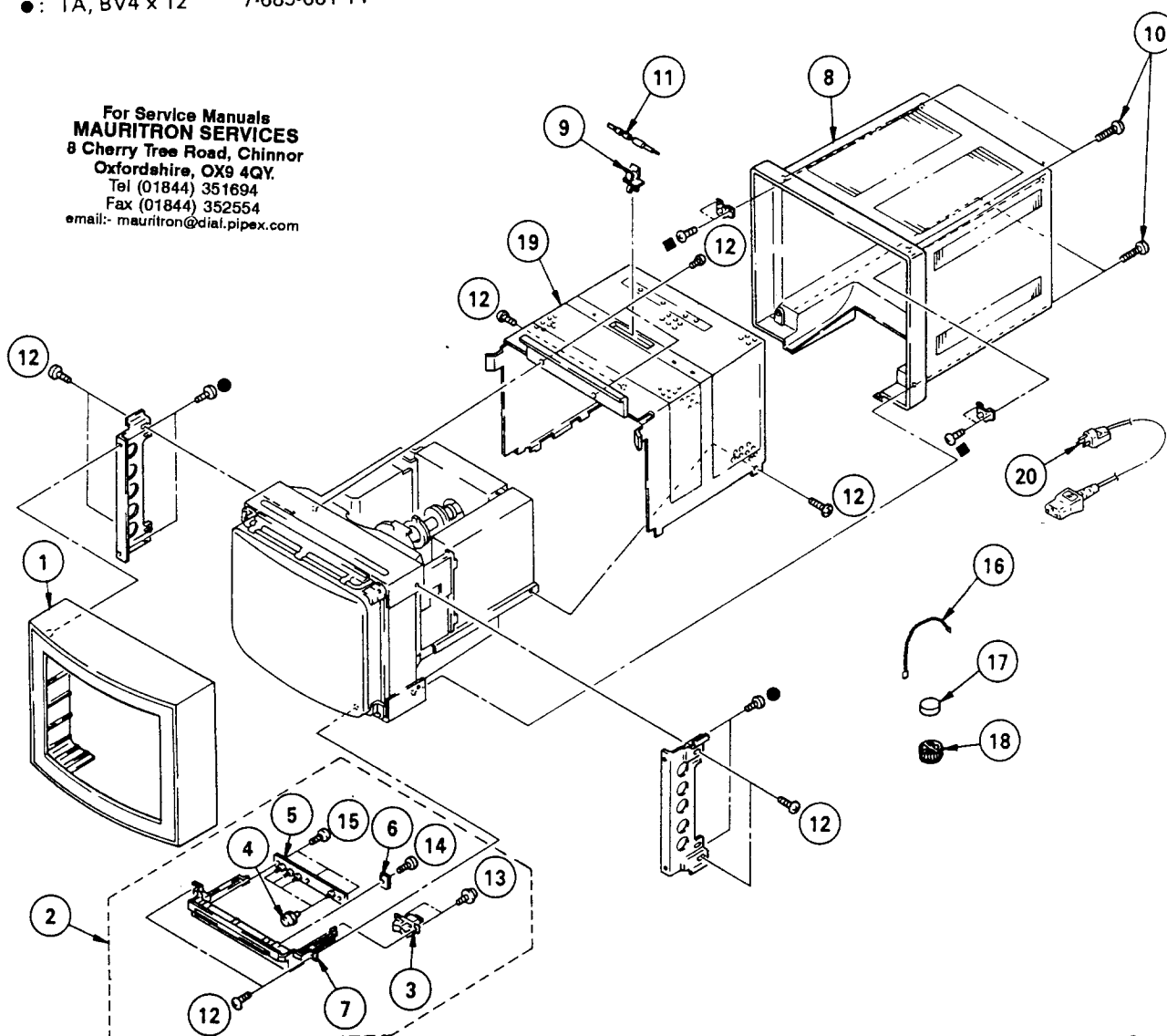
The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-1. BEZEL, CABINET

- : TA, BV3 x 8 7-685-646-79
- : TA, BV4 x 12 7-685-661-14

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 email:- mauritron@diat.pipex.com

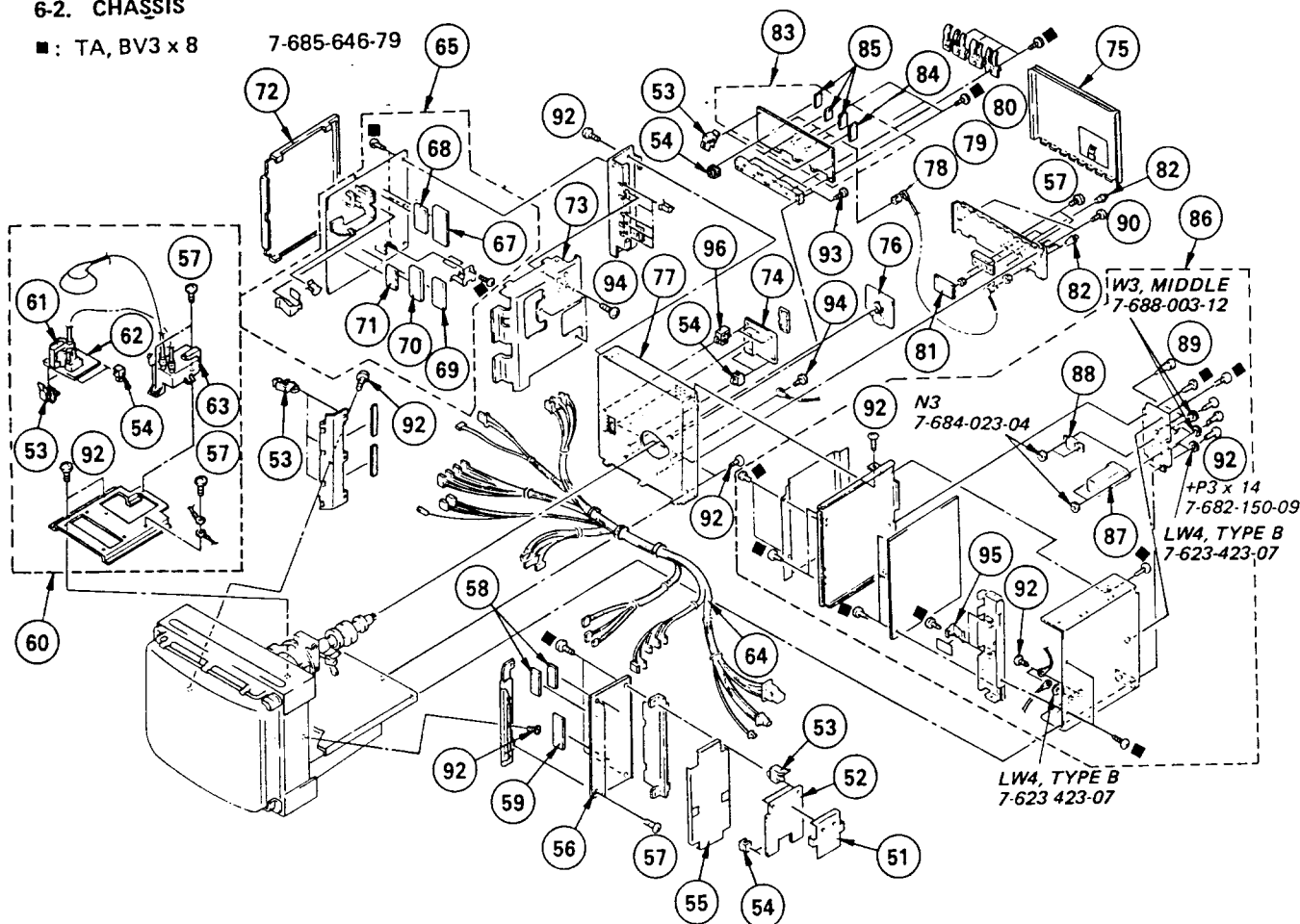


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	X-4367-024-1	BEZEL ASSY		10	4-381-963-01	SCREW (M5X16), (+-) (B)	
2	*A-1477-278-A	CONTROL BLOCK ASSY	3-7,13-15	11	4-382-826-01	SCREW DRIVER, ADJUSTMENT	
3	Δ 1-570-779-11	SWITCH, SEESAW (AC POWER)		12	4-381-962-11	SCREW (M4X8), TAPPING, (+-) (BV)	
4	4-381-915-01	KNOB		13	3-701-833-01	HEAD, WASHER, TAPPING SCREW	
5	*1-619-607-11	H BOARD		14	4-381-964-01	SCREW (3X8), TAPPING, (+-) (BV)	
6	*1-619-606-11	J BOARD		15	4-381-964-11	SCREW (3X12), TAPPING, (+-) (BV)	
7	*X-4367-022-1	PANEL ASSY, CONTROL		16	4-308-870-00	CLIP, LEAD WIRE	
8	X-4367-023-1	CABINET ASSY		17	1-452-032-00	MAGNET, DISK; 10MM ϕ	
9	*4-322-922-00	HOLDER, COIL, DEGAUSSER		18	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM ϕ	
				19	*4-382-861-01	PERFORATED METAL SHIELD	
				20	Δ 1-534-827-14	CORD POWER	

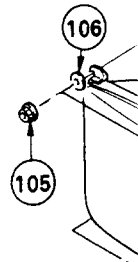
6-2. CHASSIS

■: TA, BV3 x 8

7-685-646-79



6-3. PIC



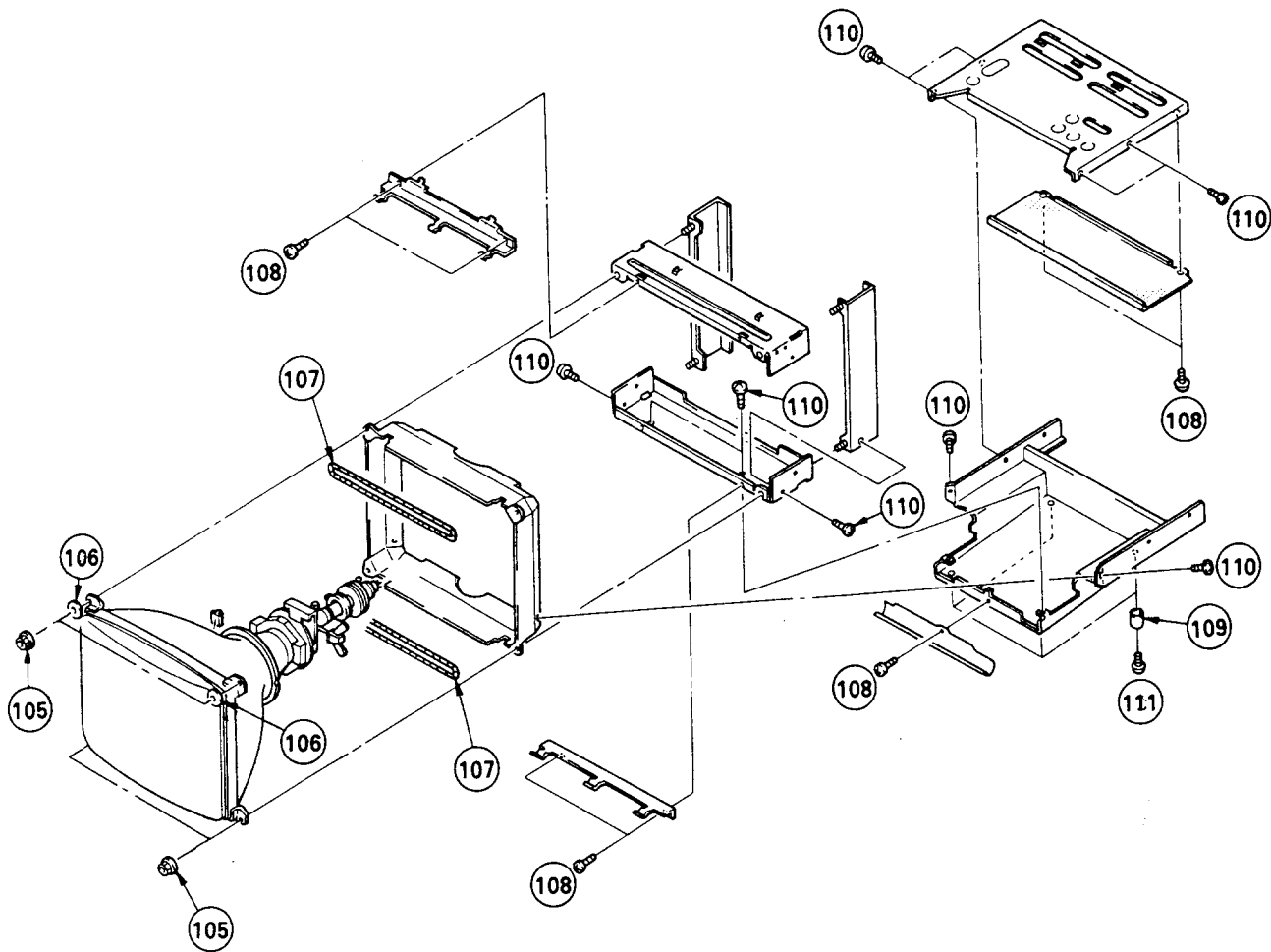
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	*4-382-875-01	COVER (L1), PC BOARD		74	*A-1130-505-A	B BOARD, COMPLETE	
52	*A-1233-065-A	L1 BOARD, COMPLETE		76	*A-1330-736-A	C BOARD, COMPLETE	
53	*3-703-141-00	HOLDER, PCB		77	*4-381-929-01	COVER, ABC SHIELD	
54	*3-701-903-00	HOLDER, PC BOARD		78	*1-557-152-21	CABLE, PIN (GREEN CABLE)	
55	*4-382-825-01	COVER (L), PC BOARD		79	*1-557-152-51	CABLE, PIN (RED CABLE)	
56	*A-1235-009-A	L BOARD, COMPLETE (GDM-1950 ONLY) 58, 59		80	*1-557-152-71	CABLE, PIN (BLUE CABLE)	
	*A-1235-014-A	L BOARD, COMPLETE (GDM-1952 ONLY) 58, 59		81	*A-1301-758-A	M2 BOARD, COMPLETE	
57	4-381-960-11	SCREW (M3X8), TAPPING, (+-) (BV)		82	1-562-576-11	ADAPTER, CONVERSION BNC PIN	84, 85
58	*A-1233-067-A	L8 BOARD, COMPLETE		83	*A-1296-180-A	A BOARD, COMPLETE	
59	*A-1233-066-A	LA BOARD, COMPLETE		84	*A-1291-229-A	AA BOARD, COMPLETE	
60	*A-1465-158-A	HV BLOCK COMPLETE ASSY 53, 54, 57, 61-63, 92		85	*A-1291-230-A	AB BOARD, COMPLETE	
61	*A-1439-393-11	TRANSFORMER ASSY, FLYBACK		86	*A-1477-876-A	POWER BLOCK ASSY (GDM-1950 ONLY)	
62	*1-619-564-21	K BOARD		87	*A-1477-874-A	POWER BLOCK ASSY (GDM-1952 ONLY)	
63	*A-1453-106-11	HIGH-VOLTAGE BLOCK (HCT BLOCK)		88	*A-1526-945-11	INLET, AC 3P	
64	*1-937-754-11	HARNESS (MAIN (C))		89	*A-1554-913-11	SWITCH, SLIDE (VOLTAGE CHANGE)	
65	*A-1345-641-A	D BOARD, COMPLETE (GDM-1950 ONLY) 67-71		90	1-533-191-11	HOLDER, FUSE	
	*A-1345-703-A	D BOARD, COMPLETE (GDM-1952 ONLY) 67-71		91	4-381-961-01	SCREW (4X8), TAPPING, (+-) (BV)	
67	*1-619-529-21	DB BOARD		92	4-381-962-11	SCREW (M4X8), TAPPING, (+-) (BV)	
68	*A-1340-848-A	DC BOARD, COMPLETE (GDM-1950 ONLY)		93	4-381-961-11	SCREW (4X16), TAPPING, (+-) (BV)	
	*A-1341-052-A	DC BOARD COMPLETE (GDM-1952 ONLY)		94	4-381-964-01	SCREW (3X8), TAPPING, (+-) (BV)	
69	*1-619-555-21	DA BOARD		95	*4-313-732-00	CLIP, HINGE, CIRCUIT BOARD	
70	*1-619-557-21	DD BOARD		96	*4-321-929-00	HOLDER, PC BOARD	
71	*1-619-558-21	DE BOARD			*A-1499-495-A	COAX CABLE, VIDEO INTERCONNECT (78, 79, 80)	
72	*4-381-997-02	COVER (D), PC BOARD			*A-1499-521-A	SAFETY COVERS, PLASTIC METAL FOR PCBs (51, 55, 73, 75)	
73	*4-381-975-01	COVER (D), PC BOARD			*A-1499-498-A	PCB PLASTIC PARTS (53, 54, 96)	

No.	Part
101	*A-1
102	3-7
105	4-3

The components identified by shading and mark **Δ** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **Δ** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-3. PICTURE TUBE

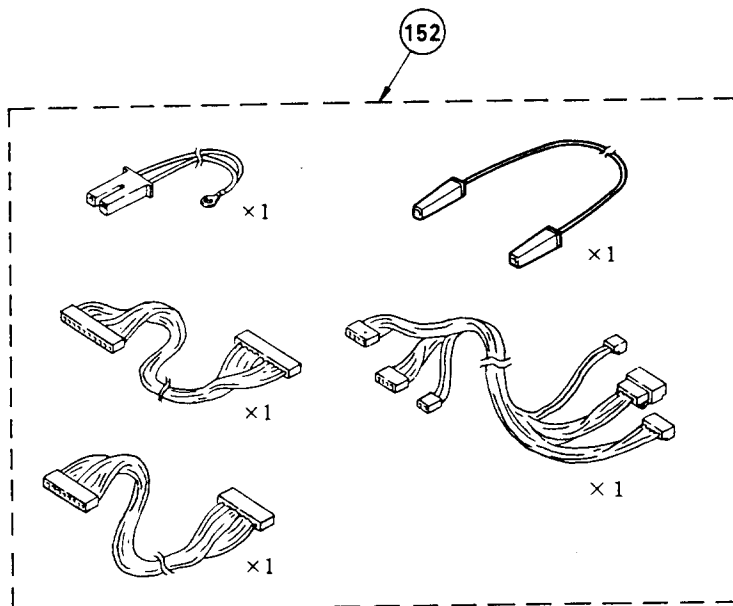
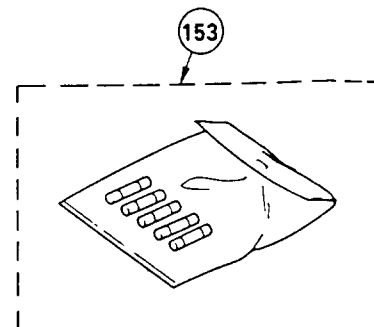
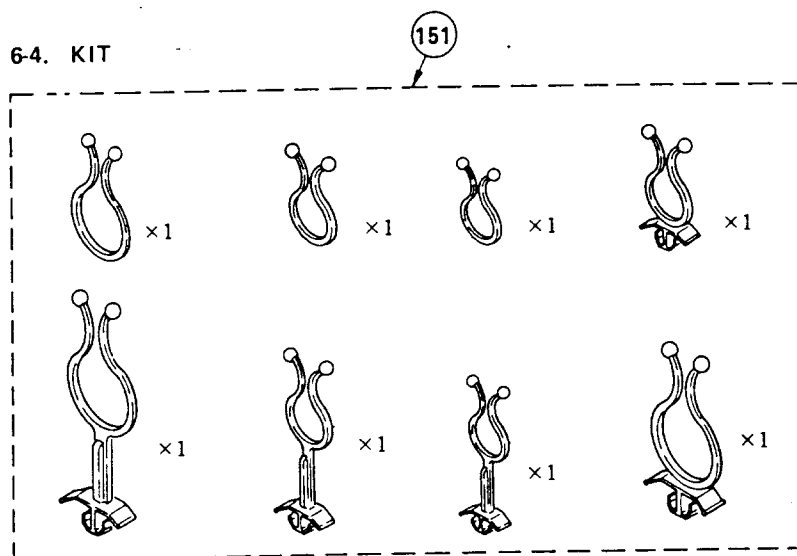


No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	▲*A-1020-465-A	PICTURE TUBE COMPLETE ASSY (M49JDA15X)		106	4-348-567-00	WASHER, CRT POSITION	
102	3-703-003-00	SPACER, DY		107	▲1-426-288-11	COIL, DEMAGNETIZATION	
105	4-306-034-00	FLANGE NUT, (B) 5MM		108	4-381-960-11	SCREW (M3X8), TAPPING, (+-) (BV)	
				109	3-642-656-01	FOOT	
				110	4-381-962-11	SCREW (M4X8), TAPPING, (+-) (BV)	
				111	4-381-962-21	SCREW (M4X20), TAPPING, (+-) (BV)	
					*A-1499-304-A	CRT HARDWARE (102, 105, 106)	

Les composants identifiés par une trame et une marque ▲ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

6-4. KIT



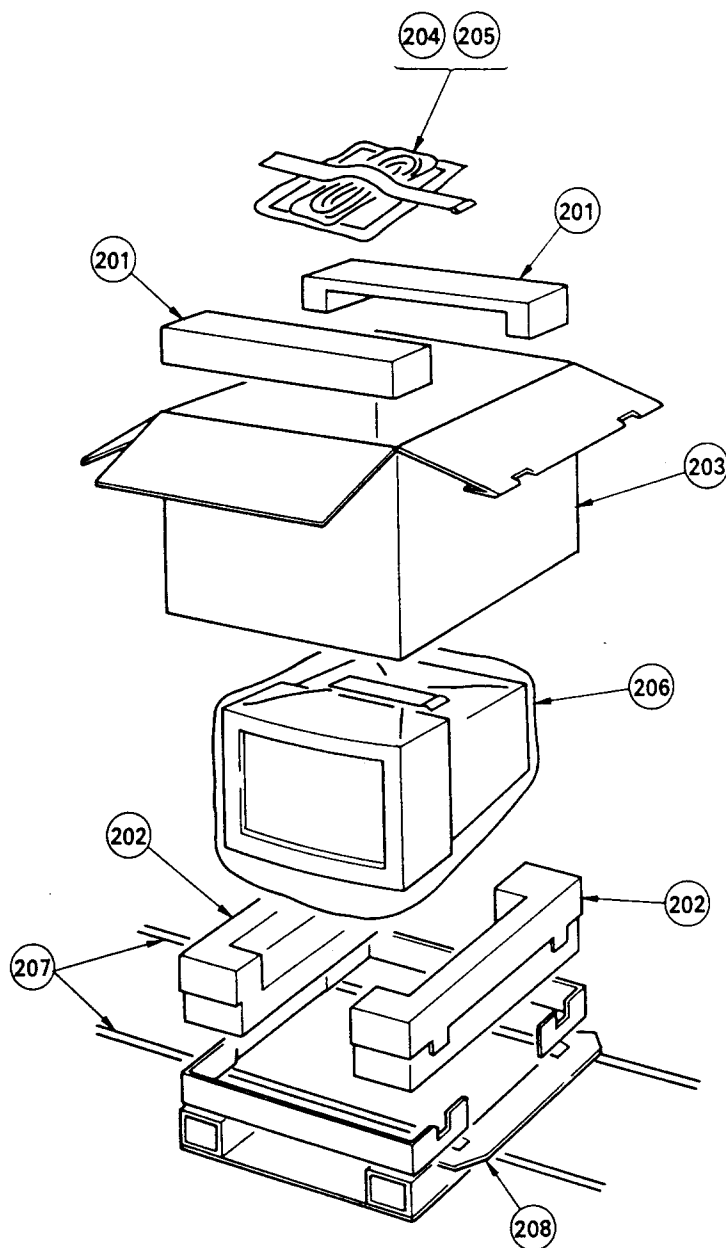
4-381-964-01	+BV	3x8	(13)
4-381-964-11	+BV	3x12	(3)
4-381-961-01	+BV	4x8	(2)
4-381-961-11	+BV	4x16	(4)
4-381-960-01	+BVTT	3x6	(4)
4-381-960-11	+BVTT	3x8	(9)
4-381-960-21	+BVTT	3x8	(2)
4-381-962-01	+BVTT	4x6	(2)
4-381-962-11	+BVTT	4x8	(40)
4-381-963-01	+MACHINE	M5x16	(4)

No.	Part No.	Description	Remark
151	*A-1499-499-A	CABLE CLAMPS	
152	*A-1499-522-A	CABLE ASSEMBLY	
153	*A-1499-501-A	FUSES FOR J/US/CND A 4AMP x5	
	Δ1-532-746-11	FUSES FOR J/US/CND 4A/125V	
	*A-1499-502-A	FUSES FOR EUROPE A T3.15AMP x5	
	Δ1-532-237-11	FUSES FOR EUROPE 3.15A/250V	
154	*A-1499-500-A	MISC SCREWS	

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-5. PACKING ASSY



No.	Part No.	Description
201	*4-368-036-01	CUSHION (UPPER) (ASSY)
202	*4-368-037-01	CUSHION (LOWER) (ASSY)
203	*4-368-038-01	INDIVIDUAL CARTON (GDM-1950 ONLY)
	*4-382-896-01	INDIVIDUAL CARTON (GDM-1952 ONLY)

Remark	No.	Part No.	Description
	204	Δ1-534-827-14	CORD, POWER (J, US, CND ONLY)
	205	4-482-319-01	MANUAL, INSTRUCTION
	206	*4-361-988-02	BAG, PROTECTION
	207	*4-382-817-01	BAND
	208	*X-4381-932-1	BOARD ASSY, BOTTOM

Remark

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

SECTION 7

ELECTRICAL PARTS LIST

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● D Board	7-10
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● DD, DE and H Boards	7-15
● J and K Boards	7-16

NOTE:

The components identified by shading and mark Δ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

• Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS

• All resistors are in ohms
• F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS

• MF : μ F, PF : μ F

COILS

• MMH : mH, UH : μ H

• The components identified by \square in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
	*A-1130-505-A	B BOARD, COMPLETE *****		R3	1-249-430-11	CARBON 12K 5% 1/4W	
				R4	1-249-430-11	CARBON 12K 5% 1/4W	

		<CONNECTOR>			*A-1233-065-A	L1 BOARD, COMPLETE *****	
B1	*1-566-057-11	PIN, CONNECTOR 5P					
B2	*1-566-060-11	PIN, CONNECTOR 8P			*1-566-047-11	PIN, CONNECTOR 8P	
B3	*1-566-056-11	PIN, CONNECTOR 4P			*1-566-049-11	PIN, CONNECTOR 10P	
		<CAPACITOR>				<RESISTOR>	
C1	1-124-598-11	ELECT 22MF 20% 25V		R1	1-249-435-11	CARBON 33K 5% 1/4W	
C2	1-124-598-11	ELECT 22MF 20% 25V		R2	1-249-435-11	CARBON 33K 5% 1/4W	
C3	1-162-282-31	CERAMIC 100PF 10% 50V		R3	1-249-435-11	CARBON 33K 5% 1/4W	
C4	1-162-282-31	CERAMIC 100PF 10% 50V		R4	1-249-435-11	CARBON 33K 5% 1/4W	
C5	1-162-282-31	CERAMIC 100PF 10% 50V		R5	1-249-435-11	CARBON 33K 5% 1/4W	
		<FILTER>		R6	1-249-435-11	CARBON 33K 5% 1/4W	
C6	1-235-451-11	FILTER, NOISE		R7	1-249-435-11	CARBON 33K 5% 1/4W	
C7	1-235-906-11	FILTER, LOW PASS		R8	1-249-435-11	CARBON 33K 5% 1/4W	
C8	1-235-906-11	FILTER, LOW PASS		R9	1-249-435-11	CARBON 33K 5% 1/4W	
C9	1-235-906-11	FILTER, LOW PASS		R10	1-249-435-11	CARBON 33K 5% 1/4W	
C10	1-235-906-11	FILTER, LOW PASS					
C11	1-235-906-11	FILTER, LOW PASS		R11	1-249-435-11	CARBON 33K 5% 1/4W	
C12	1-235-906-11	FILTER, LOW PASS		R12	1-249-435-11	CARBON 33K 5% 1/4W	
C13	1-235-906-11	FILTER, LOW PASS		R13	1-249-435-11	CARBON 33K 5% 1/4W	
C14	1-235-451-11	FILTER, NOISE		R14	1-249-435-11	CARBON 33K 5% 1/4W	
				R15	1-249-435-11	CARBON 33K 5% 1/4W	
		<DIODE>		R16	1-249-435-11	CARBON 33K 5% 1/4W	
D1	8-719-911-19	DIODE 1SS119		R17	1-249-441-11	CARBON 100K 5% 1/4W	
D2	8-719-911-19	DIODE 1SS119		R18	1-249-435-11	CARBON 33K 5% 1/4W	
				R19	1-249-441-11	CARBON 100K 5% 1/4W	
				R20	1-249-435-11	CARBON 33K 5% 1/4W	
		<IC LINK>		R21	1-249-435-11	CARBON 33K 5% 1/4W	
JW3	1-532-838-21	LINK, IC		R22	1-249-441-11	CARBON 100K 5% 1/4W	
				R23	1-247-887-00	CARBON 220K 5% 1/4W	
				R24	1-249-441-11	CARBON 100K 5% 1/4W	
				R25	1-249-435-11	CARBON 33K 5% 1/4W	
		<COIL>		R26	1-249-435-11	CARBON 33K 5% 1/4W	
L1	1-410-315-21	INDUCTOR 0.68UH		R27	1-249-441-11	CARBON 100K 5% 1/4W	
L2	1-410-315-21	INDUCTOR 0.68UH		R28	1-249-435-11	CARBON 33K 5% 1/4W	
L3	1-410-315-21	INDUCTOR 0.68UH		R29	1-249-441-11	CARBON 100K 5% 1/4W	
				R30	1-249-435-11	CARBON 33K 5% 1/4W	
		<TRANSISTOR>		R31	1-215-459-00	METAL 39K 1% 1/6W	
Q1	8-729-178-55	TRANSISTOR 2SC2785-E					
						<VARIABLE RESISTOR>	
		<RESISTOR>		RV1	1-238-016-11	RES, ADJ, CARBON 10K	
R1	1-249-426-11	CARBON 5.6K 5% 1/4W		RV2	1-238-016-11	RES, ADJ, CARBON 10K	
R2	1-249-426-11	CARBON 5.6K 5% 1/4W		RV3	1-238-016-11	RES, ADJ, CARBON 10K	
				RV4	1-238-016-11	RES, ADJ, CARBON 10K	
				RV5	1-238-016-11	RES, ADJ, CARBON 10K	



REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
RV6	1-238-016-11	RES, ADJ, CARBON 10K		D3	8-719-911-19	DIODE 1SS119	
RV7	1-238-016-11	RES, ADJ, CARBON 10K		D4	8-719-911-19	DIODE 1SS119	
RV8	1-238-016-11	RES, ADJ, CARBON 10K		D5	8-719-911-19	DIODE 1SS119	
RV9	1-238-016-11	RES, ADJ, CARBON 10K		D6	8-719-911-19	DIODE 1SS119	
RV10	1-238-016-11	RES, ADJ, CARBON 10K		D7	8-719-911-19	DIODE 1SS119	
RV11	1-238-016-11	RES, ADJ, CARBON 10K		D8	8-719-911-19	DIODE 1SS119	
RV12	1-238-016-11	RES, ADJ, CARBON 10K		D9	8-719-911-19	DIODE 1SS119	
RV13	1-238-016-11	RES, ADJ, CARBON 10K		D10	8-719-911-19	DIODE 1SS119	
RV14	1-238-016-11	RES, ADJ, CARBON 10K		D11	8-719-911-19	DIODE 1SS119	
RV15	1-238-016-11	RES, ADJ, CARBON 10K					
RV16	1-238-016-11	RES, ADJ, CARBON 10K					
RV17	1-238-016-11	RES, ADJ, CARBON 10K					
RV18	1-238-016-11	RES, ADJ, CARBON 10K					
RV19	1-238-016-11	RES, ADJ, CARBON 10K					
RV20	1-238-016-11	RES, ADJ, CARBON 10K					
RV21	1-238-016-11	RES, ADJ, CARBON 10K					
RV22	1-238-016-11	RES, ADJ, CARBON 10K					
RV23	1-238-016-11	RES, ADJ, CARBON 10K					
RV24	1-238-016-11	RES, ADJ, CARBON 10K					
RV25	1-238-016-11	RES, ADJ, CARBON 10K					
RV26	1-238-016-11	RES, ADJ, CARBON 10K					
RV27	1-238-016-11	RES, ADJ, CARBON 10K					
RV28	1-238-016-11	RES, ADJ, CARBON 10K					
RV29	1-238-016-11	RES, ADJ, CARBON 10K					
RV30	1-238-016-11	RES, ADJ, CARBON 10K					

*A-1235-009-A	L BOARD, COMPLETE (GDM-1950 ONLY)						

*A-1235-014-A	L BOARD, COMPLETE (GDM-1952 ONLY)						

<CAPACITOR>							
C1	1-124-477-11	ELECT 47MF 20% 16V					
C2	1-124-477-11	ELECT 47MF 20% 16V					
C3	1-124-801-11	ELECT 4.7MF 20% 160V					
C4	1-124-122-11	ELECT 100MF 20% 35V					
C5	1-124-122-11	ELECT 100MF 20% 35V					
C6	1-124-477-11	ELECT 47MF 20% 16V					
C7	1-126-101-11	ELECT 100MF 20% 16V					
C8	1-102-233-00	CERAMIC 33PF 10% 500V					
C12	1-124-477-11	ELECT 47MF 20% 16V					
C13	1-126-101-11	ELECT 100MF 20% 16V					
C18	1-162-215-31	CERAMIC 47PF 5% 50V					
C19	1-162-215-31	CERAMIC 47PF 5% 50V					
C21	1-136-157-00	FILM 0.022MF 5% 50V					
C23	1-162-291-31	CERAMIC 560PF 10% 50V					
C26	1-136-157-00	FILM 0.022MF 5% 50V					
C27	1-162-293-31	CERAMIC 820PF 10% 50V					
C30	1-108-622-11	MYLAR 0.0047MF 10% 100V					
C32	1-162-290-31	CERAMIC 470PF 10% 50V					
C34	1-136-157-00	FILM 0.022MF 5% 50V					
C36	1-162-290-31	CERAMIC 470PF 10% 50V					
C37	1-162-286-31	CERAMIC 220PF 10% 50V					
C38	1-124-801-11	ELECT 4.7MF 20% 160V					
C39	1-162-294-31	CERAMIC 0.001MF 10% 50V					
C40	1-162-288-31	CERAMIC 330PF 10% 50V					
C41	1-136-161-00	FILM 0.047MF 5% 50V					
<DIODE>							
D1	8-719-109-96	DIODE RD6.8ES-B1					
D2	8-719-109-96	DIODE RD6.8ES-B1					

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<RESISTOR>				*1-506-602-11 PLUG, L TYPE (2.0MM PITCH) 5P			
				*1-506-603-11 PLUG, L TYPE (2.0MM PITCH) 10P			
R1	1-249-413-11	CARBON	470 5% 1/4W F	<CAPACITOR>			
R2	1-249-413-11	CARBON	470 5% 1/4W F	C1	1-163-141-00	CERAMIC CHIP 0.001MF	50V
R3	1-215-863-11	METAL OXIDE	100 5% 1W F	C2	1-163-081-00	CERAMIC CHIP 0.22MF	25V
R4	1-249-385-11	CARBON	2.2 5% 1/4W F	C3	1-163-141-00	CERAMIC CHIP 0.001MF	50V
R5	1-249-385-11	CARBON	2.2 5% 1/4W F	C4	1-124-902-00	ELECT 0.47MF	20% 50V
R6	1-249-437-11	CARBON	47K 5% 1/4W	C5	1-124-927-11	ELECT 4.7MF	20% 50V
R7	1-249-437-11	CARBON	47K 5% 1/4W	C6	1-136-165-00	FILM 0.1MF	5% 50V
R8	1-249-417-11	CARBON	1K 5% 1/4W	C7	1-136-153-00	FILM 0.01MF	5% 50V
R9	1-249-417-11	CARBON	1K 5% 1/4W	C8	1-136-157-00	FILM 0.022MF	5% 50V
R10	1-249-417-11	CARBON	1K 5% 1/4W	C9	1-136-165-00	FILM 0.1MF	5% 50V
R11	1-249-417-11	CARBON	1K 5% 1/4W	C10	1-136-157-00	FILM 0.022MF	5% 50V
R12	1-249-417-11	CARBON	1K 5% 1/4W	C11	1-163-081-00	CERAMIC CHIP 0.22MF	25V
R13	1-249-417-11	CARBON	1K 5% 1/4W	C12	1-163-141-00	CERAMIC CHIP 0.001MF	50V
R14	1-249-425-11	CARBON	4.7K 5% 1/4W	C13	1-163-037-11	CERAMIC CHIP 0.022MF	10% 25V
R15	1-249-436-11	CARBON	39K 5% 1/4W	C14	1-163-081-00	CERAMIC CHIP 0.22MF	25V
R16	1-249-417-11	CARBON	1K 5% 1/4W	C15	1-124-902-00	ELECT 0.47MF	20% 50V
R17	1-249-420-11	CARBON	1.8K 5% 1/4W	C16	1-124-902-00	ELECT 0.47MF	20% 50V
R18	1-216-441-00	METAL OXIDE	27K 5% 1W F	C17	1-163-121-00	CERAMIC CHIP 150PF	5% 50V
R19	1-249-413-11	CARBON	470 5% 1/4W F	C18	1-163-101-00	CERAMIC CHIP 22PF	5% 50V
R20	1-249-393-11	CARBON	10 5% 1/4W F	C19	1-163-141-00	CERAMIC CHIP 0.001MF	50V
R21	1-249-393-11	CARBON	10 5% 1/4W F	C20	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
R22	1-249-413-11	CARBON	470 5% 1/4W	C21	1-163-141-00	CERAMIC CHIP 0.001MF	50V
R23	1-249-433-11	CARBON	22K 5% 1/4W	C22	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
R24	1-249-435-11	CARBON	33K 5% 1/4W	C23	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
R25	1-249-421-11	CARBON	2.2K 5% 1/4W	C24	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V
R26	1-249-429-11	CARBON	10K 5% 1/4W	C25	1-163-141-00	CERAMIC CHIP 0.001MF	5% 50V
R27	1-249-437-11	CARBON	47K 5% 1/4W	C26	1-163-101-00	CERAMIC CHIP 22PF	5% 50V
R28	1-249-425-11	CARBON	4.7K 5% 1/4W	<DIODE>			
R29	1-249-425-11	CARBON	4.7K 5% 1/4W	D1	8-719-100-03	DIODE 1S2835	
R30	1-249-425-11	CARBON	4.7K 5% 1/4W	D2	8-719-100-03	DIODE 1S2835	
R31	1-249-425-11	CARBON	4.7K 5% 1/4W	<IC>			
R32	1-249-429-11	CARBON	10K 5% 1/4W	IC1	8-759-981-92	IC RC4558M	
R33	1-249-417-11	CARBON	1K 5% 1/4W	IC2	8-759-981-92	IC RC4558M	
R34	1-249-417-11	CARBON	1K 5% 1/4W	IC3	8-759-981-92	IC RC4558M	
R35	1-249-421-11	CARBON	2.2K 5% 1/4W	IC4	8-759-981-65	IC LM2903M	
R36	1-249-421-11	CARBON	2.2K 5% 1/4W	<TRANSISTOR>			
R37	1-249-405-11	CARBON	100 5% 1/4W F	Q1	8-729-100-66	TRANSISTOR 2SC1623	
R38	1-249-385-11	CARBON	2.2 5% 1/4W F	Q2	8-729-100-66	TRANSISTOR 2SC1623	
R39	1-249-385-11	CARBON	2.2 5% 1/4W F	Q3	8-729-100-66	TRANSISTOR 2SC1623	
R40	1-249-415-11	CARBON	680 5% 1/4W F	Q4	8-729-100-66	TRANSISTOR 2SC1623	
R41	1-216-355-11	METAL OXIDE	3.3 5% 1W F	Q5	8-729-100-66	TRANSISTOR 2SC1623	
R42	1-249-429-11	CARBON	10K 5% 1/4W	Q6	8-729-100-66	TRANSISTOR 2SC1623	
R43	1-249-429-11	CARBON	10K 5% 1/4W	Q7	8-729-162-13	TRANSISTOR 2SC1621	
R44	1-215-397-00	METAL	100 1% 1/6W	Q8	8-729-162-13	TRANSISTOR 2SC1621	
R45	1-249-429-11	CARBON	10K 5% 1/4W	Q9	8-729-100-66	TRANSISTOR 2SC1623	
R46	1-249-441-11	CARBON	100K 5% 1/4W	Q10	8-729-162-13	TRANSISTOR 2SC1621	
R47	1-249-441-11	CARBON	100K 5% 1/4W	Q11	8-729-162-13	TRANSISTOR 2SC1621	
R48	1-249-413-11	CARBON	470 5% 1/4W F	Q12	8-729-162-13	TRANSISTOR 2SC1621	
R49	1-215-861-00	METAL OXIDE	47 5% 1W F	Q13	8-729-162-13	TRANSISTOR 2SC1621	
R50	1-249-396-11	CARBON	18 5% 1/4W F	<RESISTOR>			
R51	1-249-429-11	CARBON	10K 5% 1/4W	JW60	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R52	1-249-429-11	CARBON	10K 5% 1/4W	JW61	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R53	1-249-393-11	CARBON	10 5% 1/4W F				
R54	1-249-393-11	CARBON	10 5% 1/4W F				
R60	1-249-441-11	CARBON	100K 5% 1/4W				
R61	1-247-903-00	CARBON	1M 5% 1/4W				

*A-1233-066-A LA BOARD, COMPLETE							

LB

7-4

A A

7-6

Aa

Ab

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<IC>							
IC1	8-759-100-96	IC UPC4558G2		R43	1-216-051-00	METAL GLAZE 1.2K 5%	1/10W
<TRANSISTOR>				R44	1-216-164-00	METAL GLAZE 39 5%	1/8W
Q1	8-729-112-65	TRANSISTOR 2SA1462		R45	1-216-295-00	METAL GLAZE 0 5%	1/10W
Q2	8-729-107-31	TRANSISTOR 2SC3545		*****			
Q3	8-729-107-31	TRANSISTOR 2SC3545		*A-1291-230-A AB BOARD, COMPLETE			
Q4	8-729-107-31	TRANSISTOR 2SC3545		*****			
Q5	8-729-100-66	TRANSISTOR 2SC1623		<CAPACITOR>			
Q6	8-729-100-66	TRANSISTOR 2SC1623		C1	1-216-296-00	METAL GLAZE 0 5%	1/8W
Q7	8-729-107-31	TRANSISTOR 2SC3545		C2	1-135-084-21	TANTAL. CHIP 1.5MF	10% 25V
Q9	8-729-112-65	TRANSISTOR 2SA1462		C3	1-163-145-00	CERAMIC CHIP 0.0015MF	5% 50V
Q10	8-729-112-65	TRANSISTOR 2SA1462		C4	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
Q12	8-729-107-31	TRANSISTOR 2SC3545		C5	1-163-809-11	CERAMIC CHIP 0.047MF	10% 25V
Q13	8-729-112-65	TRANSISTOR 2SA1462		C6	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
Q14	8-729-100-76	TRANSISTOR 2SA812		C7	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
Q15	8-729-116-06	TRANSISTOR 2SK160-K6		C8	1-135-084-21	TANTAL. CHIP 1.5MF	10% 25V
Q16	8-729-116-06	TRANSISTOR 2SK160-K6		C9	1-135-084-21	TANTAL. CHIP 1.5MF	10% 25V
Q17	8-729-116-05	TRANSISTOR 2SK160-K5		C10	1-163-109-00	CERAMIC CHIP 47PF	5% 50V
Q18	8-729-302-74	TRANSISTOR 2SD1366A-C		<CONNECTOR>			
Q19	8-729-101-07	TRANSISTOR 2SB798		CN1	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P	
<RESISTOR>				CN2	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P	
R1	1-216-075-00	METAL GLAZE 12K 5%	1/10W	<DIODE>			
R2	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W	D1	8-719-100-03	DIODE 1S2835	
R3	1-216-017-00	METAL GLAZE 47 5%	1/10W	D2	8-719-100-05	DIODE 1S2837	
R4	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W	<IC>			
R5	1-216-025-00	METAL GLAZE 100 5%	1/10W	IC1	8-759-109-19	IC UPD4519BG	
R6	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W	IC2	8-759-106-39	IC UPD4528BG	
R7	1-216-635-11	METAL CHIP 220 0.50%	1/10W	<TRANSISTOR>			
R8	1-216-025-00	METAL GLAZE 100 5%	1/10W	Q1	8-729-100-66	TRANSISTOR 2SC1623	
R9	1-216-043-00	METAL GLAZE 560 5%	1/10W	Q2	8-729-100-66	TRANSISTOR 2SC1623	
R10	1-216-045-00	METAL GLAZE 680 5%	1/10W	Q3	8-729-112-65	TRANSISTOR 2SA1462	
R11	1-216-017-00	METAL GLAZE 47 5%	1/10W	Q4	8-729-100-66	TRANSISTOR 2SC1623	
R12	1-216-075-00	METAL GLAZE 12K 5%	1/10W	Q5	8-729-216-22	TRANSISTOR 2SA1162	
R13	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W	Q6	8-729-100-66	TRANSISTOR 2SC1623	
R14	1-216-045-00	METAL GLAZE 680 5%	1/10W	Q7	8-729-216-22	TRANSISTOR 2SA1162	
R17	1-216-045-00	METAL GLAZE 680 5%	1/10W	Q8	8-729-100-66	TRANSISTOR 2SC1623	
R18	1-216-017-00	METAL GLAZE 47 5%	1/10W	Q9	8-729-216-22	TRANSISTOR 2SA1162	
R19	1-216-009-00	METAL GLAZE 22 5%	1/10W	<RESISTOR>			
R20	1-216-635-11	METAL CHIP 220 0.50%	1/10W	R1	1-216-043-00	METAL GLAZE 560 5%	1/10W
R21	1-216-037-00	METAL GLAZE 330 5%	1/10W	R2	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R22	1-216-037-00	METAL GLAZE 330 5%	1/10W	R3	1-216-093-00	METAL GLAZE 68K 5%	1/10W
R25	1-216-037-00	METAL GLAZE 330 5%	1/10W	R4	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R26	1-216-037-00	METAL GLAZE 330 5%	1/10W	R5	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R27	1-216-001-00	METAL GLAZE 10 5%	1/10W	R6	1-216-061-00	METAL GLAZE 3.3K 5%	1/10W
R28	1-216-001-00	METAL GLAZE 10 5%	1/10W	R7	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R29	1-216-051-00	METAL GLAZE 1.2K 5%	1/10W	R8	1-216-115-00	METAL GLAZE 560K 5%	1/10W
R30	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W	R9	1-216-111-00	METAL GLAZE 390K 5%	1/10W
R31	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W	R10	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R32	1-216-051-00	METAL GLAZE 1.2K 5%	1/10W	R11	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R33	1-216-121-00	METAL GLAZE 1M 5%	1/10W	R12	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R34	1-216-121-00	METAL GLAZE 1M 5%	1/10W	R13	1-216-115-00	METAL GLAZE 560K 5%	1/10W
R35	1-216-121-00	METAL GLAZE 1M 5%	1/10W	R14	1-216-081-00	METAL GLAZE 22K 5%	1/10W
R36	1-216-033-00	METAL GLAZE 220 5%	1/10W				
R37	1-216-065-00	METAL GLAZE 4.7K 5%	1/10W				
R38	1-216-164-00	METAL GLAZE 39 5%	1/8W				
R39	1-216-164-00	METAL GLAZE 39 5%	1/8W				
R40	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W				
R41	1-216-162-00	METAL GLAZE 33 5%	1/8W				
R42	1-216-162-00	METAL GLAZE 33 5%	1/8W				

For Service Manuals
MAURITRON SERVICES
 8 Cherry Tree Road, Chinnor
 Oxfordshire, OX9 4QY.
 Tel (01844) 351694
 Fax (01844) 352554
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AB

M2

G

Les composants identifiés par
une trame et une marque Δ
sont critiques pour la sécurité.
Ne les remplacer que par une
pièce portant le numéro spécifié.

The components identified by
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for safety.
Replace only with part number
specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R15	1-216-081-00	METAL GLAZE	22K 5% 1/10W	Δ.*A-1477-876-A	POWER BLOCK ASSY (INCLUDING G BOARD) ***** (GDM-1950 ONLY)		
R16	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W				
R17	1-216-067-00	METAL GLAZE	5.6K 5% 1/10W				
R18	1-216-081-00	METAL GLAZE	22K 5% 1/10W				
R19	1-216-081-00	METAL GLAZE	22K 5% 1/10W				
R20	1-216-081-00	METAL GLAZE	22K 5% 1/10W	Δ.*A-1477-874-A	POWER BLOCK ASSY (INCLUDING G BOARD) ***** (GDM-1952 ONLY)		
R21	1-216-081-00	METAL GLAZE	22K 5% 1/10W				
R22	1-216-081-00	METAL GLAZE	22K 5% 1/10W				
R23	1-216-081-00	METAL GLAZE	22K 5% 1/10W				
R24	1-216-049-00	METAL GLAZE	1K 5% 1/10W				
R26	1-216-093-00	METAL GLAZE	68K 5% 1/10W				
R27	1-216-081-00	METAL GLAZE	22K 5% 1/10W				

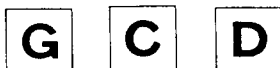
*A-1301-758-A M2 BOARD, COMPLETE *****							
1-563-559-11 RECEPTACLE, BNC							
<CAPACITOR>							
C1	1-126-096-11	ELECT	10MF 20% 25V	C1 Δ	1-136-360-11	FILM 0.22MF 20% 250V	
C2	1-130-473-00	MYLAR	0.0015MF 5% 50V	C6	1-162-599-12	CERAMIC 0.0047MF 20% 400V	
C3	1-162-215-31	CERAMIC	47PF 5% 50V	C7	1-162-599-12	CERAMIC 0.0047MF 20% 400V	
C4	1-124-499-11	ELECT	1MF 20% 50V	C8	1-125-441-21	ELECT (BLOCK) 820MF 20% 200V	
C5	1-126-096-11	ELECT	10MF 20% 25V	C9	1-125-441-21	ELECT (BLOCK) 820MF 20% 200V	
C6	1-101-810-00	CERAMIC	100PF 5% 500V				
<DIODE>							
D1	8-719-911-19	DIODE 1SS119		C10	1-125-440-11	ELECT (BLOCK) 220MF 20% 400V	
<IC>				C11	1-162-129-00	CERAMIC 150PF 10% 2KV	
IC1	8-759-981-64	IC LM2903DQ		C12	1-136-060-00	FILM 0.047MF 5% 400V	
<TRANSISTOR>				C13	1-136-060-00	FILM 0.047MF 5% 400V	
Q1	8-729-103-19	TRANSISTOR 2SA1206-K1		C14	1-162-129-00	CERAMIC 150PF 10% 2KV	
<RESISTOR>				C15	1-130-661-00	FILM 0.022MF 3% 600V	
R1	1-249-407-11	CARBON	150 5% 1/4W	C16	1-162-129-00	CERAMIC 150PF 10% 2KV	
R2	1-249-407-11	CARBON	150 5% 1/4W	C17	1-136-060-00	FILM 0.047MF 5% 400V	
R3	1-249-429-11	CARBON	10K 5% 1/4W	C18	1-136-060-00	FILM 0.047MF 5% 400V	
R4	1-249-423-11	CARBON	3.3K 5% 1/4W	C19	1-162-129-00	CERAMIC 150PF 10% 2KV	
R5	1-249-429-11	CARBON	10K 5% 1/4W				
R6	1-247-883-00	CARBON	150K 5% 1/4W	C20	1-136-240-11	FILM 0.014MF 5% 1KV	
R7	1-249-440-11	CARBON	82K 5% 1/4W	C22	1-106-375-12	MYLAR 0.022MF 10% 100V	
R8	1-247-893-11	CARBON	390K 5% 1/4W	C24	1-106-375-12	MYLAR 0.022MF 10% 100V	
R9	1-249-423-11	CARBON	3.3K 5% 1/4W	C25	1-106-375-12	MYLAR 0.022MF 10% 100V	
R10	1-249-407-11	CARBON	150 5% 1/4W	C26	1-106-375-12	MYLAR 0.022MF 10% 100V	
R11	1-249-407-11	CARBON	150 5% 1/4W	C27 Δ	1-161-953-51	CERAMIC 0.0047MF 20% 400V	
R12	1-249-440-11	CARBON	82K 5% 1/4W	C28 Δ	1-136-360-11	FILM 0.22MF 20% 250V	
R13	1-249-441-11	CARBON	100K 5% 1/4W	C30 Δ	1-161-953-51	CERAMIC 0.0047MF 20% 400V	
R14	1-249-441-11	CARBON	100K 5% 1/4W	C31 Δ	1-161-953-51	CERAMIC 0.0047MF 20% 400V	
R15	1-249-441-11	CARBON	100K 5% 1/4W	C51	1-124-478-11	ELECT 100MF 20% 25V	
R16	1-247-883-00	CARBON	150K 5% 1/4W				
R17	1-249-441-11	CARBON	100K 5% 1/4W	C52	1-124-347-00	ELECT 100MF 20% 160V	
R18	1-249-417-11	CARBON	1K 5% 1/4W	C53	1-124-494-00	ELECT 33MF 160V	
R19	1-247-885-00	CARBON	180K 5% 1/4W	C54	1-124-441-11	ELECT 3900MF 20% 25V	
*****				C55	1-124-557-11	ELECT 1000MF 20% 25V	
				C56	1-124-478-11	ELECT 100MF 20% 25V	
				C57	1-124-441-11	ELECT 3900MF 20% 25V	
				C58	1-124-557-11	ELECT 1000MF 20% 25V	
				C59	1-124-478-11	ELECT 100MF 20% 25V	
				C63	1-123-356-00	ELECT 10MF 20% 16V	
				C64	1-124-603-11	ELECT 390MF 20% 100V	
				C65	1-124-628-11	ELECT 220MF 20% 100V	
				C66	1-129-702-00	FILM 0.001MF 10% 630V	
				C68	1-136-613-11	FILM 0.0068MF 3% 2KV	
				C69	1-124-471-00	ELECT 1000MF 20% 6.3V	
				C72	1-124-484-11	ELECT 220MF 20% 35V	
				C73	1-126-101-11	ELECT 100MF 20% 16V	
				C74	1-102-038-00	CERAMIC 0.001MF 500V	
				C75	1-102-038-00	CERAMIC 0.001MF 500V	
				C76	1-102-038-00	CERAMIC 0.001MF 500V	
				C77	1-102-038-00	CERAMIC 0.001MF 500V	
				C78	1-102-038-00	CERAMIC 0.001MF 500V	
				C79	1-102-038-00	CERAMIC 0.001MF 500V	
				C80	1-102-038-00	CERAMIC 0.001MF 500V	
				C81	1-102-038-00	CERAMIC 0.001MF 500V	
				C82	1-102-038-00	CERAMIC 0.001MF 500V	
				C83	1-102-038-00	CERAMIC 0.001MF 500V	
				C84	1-102-038-00	CERAMIC 0.001MF 500V	
				C85	1-102-038-00	CERAMIC 0.001MF 500V	

The components identified by shading and mark Δ are critical for safety.
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G

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
C88	1-124-120-11	ELECT 220MF	20% 16V	L55	1-459-406-00	COIL (WITH CORE)	
C89	1-123-356-00	ELECT 10MF	20% 16V	L56	1-459-406-00	COIL (WITH CORE)	
C90	1-124-360-00	ELECT 1000MF	20% 16V	L57	1-459-406-00	COIL (WITH CORE)	
<DIODE>				<NEON LAMP>			
D1	8-719-503-06	DIODE S3WB60Z		NL1	1-519-403-11	GAS DISCHARGE TUBE (SMALL TYPE)	
D2	8-719-302-11	DIODE RM2CSS		<TRANSISTOR>			
D3	8-719-302-11	DIODE RM2CSS		Q1	8-729-904-97	TRANSISTOR 2SC3164B	
D4	8-719-302-11	DIODE RM2CSS		Q2	8-729-904-02	TRANSISTOR 2SC3164	
D5	8-719-302-11	DIODE RM2CSS		Q3	8-729-920-43	TRANSISTOR 2SC3164E	
D6	8-719-981-00	DIODE ERC81-004		Q4	8-729-920-42	TRANSISTOR 2SC3164D	
D7	8-719-981-00	DIODE ERC81-004		Q52	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D8	8-719-981-00	DIODE ERC81-004		Q55	8-729-313-82	TRANSISTOR 2SD1138	
D9	8-719-981-00	DIODE ERC81-004		*4-347-706-00	HEAT SINK (TR); Q55		
D51	8-719-500-43	DIODE D8LDA20		Q56	8-729-119-78	TRANSISTOR 2SC2785-HFE	
				Q57	8-729-119-78	TRANSISTOR 2SC2785-HFE	
D52	*4-373-947-01	HEAT SINK (GA); D51		<RESISTOR>			
				R1 Δ	1-202-845-51	SOLID 390K 10% 1/2W	
D53	*4-373-947-01	HEAT SINK (GA); D52		R2	1-215-904-11	METAL OXIDE 100K 5% 2W	F
				R3	1-215-904-11	METAL OXIDE 100K 5% 2W	F
D54	8-719-500-41	DIODE D8LCA20		R4	1-207-672-00	WIREWOUND 2.2 10% 5W	F
				R5	1-207-451-00	WIREWOUND 0.1 10% 1/2W	
D55	*4-373-947-01	HEAT SINK (GA); D53		R6	1-202-842-11	SOLID 220K 10% 1/2W	
D56	8-719-500-42	DIODE D8LCA20R		R7	1-202-846-00	SOLID 470K 10% 1/2W	
				R8	1-216-469-11	METAL OXIDE 12 5% 3W	F
D57	*4-373-947-01	HEAT SINK (GA); D54		R9	1-216-469-11	METAL OXIDE 12 5% 3W	F
D58	8-719-500-43	DIODE D8LDA20		R10	1-207-451-00	WIREWOUND 0.1 10% 1/2W	
D59	8-719-300-33	DIODE RU-3AM		R11	1-202-842-11	SOLID 220K 10% 1/2W	
D60	8-719-200-02	DIODE 10E2		R13	1-216-399-00	METAL OXIDE 6.8 5% 3W	F
D61	8-719-911-19	DIODE 1SS119		R14	1-216-399-00	METAL OXIDE 6.8 5% 3W	F
D62	8-719-911-19	DIODE 1SS119		R15	1-202-846-00	SOLID 470K 10% 1/2W	
D63	8-719-911-19	DIODE 1SS119		R53	1-249-405-11	CARBON 100 5% 1/4W	F
D64	8-719-101-64	DIODE RD6.8E-L2		R54	1-249-405-11	CARBON 100 5% 1/4W	F
D65	8-719-101-86	DIODE RD13E-L2		R55	1-207-645-00	WIREWOUND 0.47 10% 3W	F
D66	8-719-200-02	DIODE 10E2		R56	1-247-713-11	CARBON 1K 5% 1/4W	F
D67	8-719-200-02	DIODE 10E2		R61	1-249-448-11	CARBON 1.2 5% 1/4W	F
D68	8-719-200-02	DIODE 10E2		R62	1-247-713-11	CARBON 1K 5% 1/4W	
<CONNECTOR>				R64	1-249-469-11	CARBON 100K 5% 1/4W	
G1	*1-506-348-99	PIN, CONNECTOR 3P		R65	1-249-462-11	CARBON 22K 5% 1/4W	
G3	*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P		R66	1-247-713-11	CARBON 1K 5% 1/4W	
G4	*1-506-348-99	PIN, CONNECTOR 4P		R68	1-249-448-11	CARBON 1.2 5% 1/4W	F
G7	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P		R70	1-249-492-11	CARBON 47K 5% 1/2W	
G8	*1-566-058-11	PIN, CONNECTOR 6P		<RELAY>			
G9	*1-566-058-11	PIN, CONNECTOR 6P		RY51 Δ	1-515-559-11	RELAY, POWER	
<MODULE>				RY52 Δ	1-515-559-11	RELAY, POWER	
IC51 Δ	1-235-843-11	POWER MODULE (DM-28) (GDM-1950 ONLY)		<TRANSFORMER>			
				T1 Δ	1-421-662-11	LFT	
IC52	1-235-842-11	POWER MODULE (DM-33)		T2 Δ	1-421-662-11	LFT	
<IC>				T3 Δ	1-447-981-12	TRANSFORMER, POWER	
IC53	8-749-931-22	IC SI-3122V		T4 Δ	1-421-890-11	P.R.T	
IC54	8-759-179-12	IC UPC7912H		T5 Δ	1-421-892-12	PIT	
<COIL>				T6 Δ	1-421-890-11	P.R.T	
L1	1-459-215-00	CORE COIL		T7 Δ	1-421-893-13	PIT	
L51	1-459-155-00	COIL (WITH CORE) 45UH		<THERMISTOR>			
L52	1-459-155-00	COIL (WITH CORE) 45UH					
L53	1-459-406-00	COIL (WITH CORE)					
L54	1-459-406-00	COIL (WITH CORE)					



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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
TH1 Δ	1-800-416-11	THERMISTOR		<CAPACITOR>			
THP1 Δ	1-800-686-32	THERMISTOR (POSITIVE)		C101	1-124-791-11	ELECT	1MF 20% 50V
THP2 Δ	1-806-387-11	THERMISTOR (POSITIVE)		C102	1-130-471-00	MYLAR	0.001MF 5% 50V
*****				C103	1-124-798-11	ELECT	1MF 20% 160V
*A-1330-736-A C BOARD, COMPLETE				C104	1-124-046-00	ELECT	10MF 160V
*****				C105	1-102-233-00	CERAMIC	33PF 10% 500V
1-526-767-00	SOCKET, PICTURE TUBE			C106	1-136-108-00	FILM	0.43MF 5% 200V
1-556-880-51	LEAD ASSY, HIGH-VOLTAGE			C107	1-126-104-11	ELECT	470MF 20% 35V
<CAPACITOR>				C108	1-126-104-11	ELECT	470MF 20% 35V
C1	1-161-959-00	CERAMIC	22PF 10% 500V	C109	1-136-108-00	FILM	0.43MF 5% 200V
C2	1-161-959-00	CERAMIC	22PF 10% 500V	C110	1-130-475-00	MYLAR	0.0022MF 5% 50V
C3	1-161-959-00	CERAMIC	22PF 10% 500V	C112	1-126-320-11	ELECT	10MF 20% 16V
C4	1-162-114-00	CERAMIC	0.0047MF 2KV	C201	1-123-875-11	ELECT	10MF 20% 50V
C5	1-102-989-00	CERAMIC	68PF 5% 500V	C202	1-136-165-00	FILM	0.1MF 5% 50V
<CONNECTOR>				C203	1-124-477-11	ELECT	47MF 20% 16V
C6	1-560-435-00	HORIZONTAL PIN ASSY 2P		C204	1-126-101-11	ELECT	100MF 20% 16V
<NEON LAMP>				C205	1-130-473-00	MYLAR	0.0015MF 5% 50V
NL1	1-519-276-00	LAMP, NEON		C206	1-124-360-00	ELECT	1000MF 20% 16V
NL2	1-519-368-21	LAMP, NEON		C207	1-130-479-00	MYLAR	0.0047MF 5% 50V
NL3	1-519-276-00	LAMP, NEON		C208	1-126-320-11	ELECT	10MF 20% 16V
NL4	1-519-368-21	LAMP, NEON		C209	1-124-499-11	ELECT	1MF 20% 50V
NL5	1-519-276-00	LAMP, NEON		C210	1-123-875-11	ELECT	10MF 20% 50V
NL6	1-519-368-21	LAMP, NEON		C211	1-102-971-00	CERAMIC	82PF 5% 50V
<RESISTOR>				C212	1-108-700-11	MYLAR	0.047MF 10% 200V
R1	1-247-694-11	SOLID	33 10% 1/4W	C213	1-101-810-00	CERAMIC	100PF 5% 500V
R2	1-247-694-11	SOLID	33 10% 1/4W	C214	1-123-947-00	ELECT	10MF 20% 250V
R3	1-247-694-11	SOLID	33 10% 1/4W	C215	1-123-947-00	ELECT	10MF 20% 250V
R4	1-247-694-11	SOLID	33 10% 1/4W	C216	1-108-688-11	MYLAR	0.0047MF 10% 200V
R5	1-247-694-11	SOLID	33 10% 1/4W	C217	1-108-692-11	MYLAR	0.01MF 10% 200V
R6	1-247-694-11	SOLID	33 10% 1/4W	C218	1-108-626-11	MYLAR	0.01MF 10% 100V
R7	1-247-706-11	SOLID	330 10% 1/4W	C219	1-136-129-00	FILM	0.3MF 5% 400V
R8	1-247-706-11	SOLID	330 10% 1/4W	C220	1-136-103-00	FILM	0.1MF 5% 200V
R9	1-247-706-11	SOLID	330 10% 1/4W	C221	1-130-473-00	MYLAR	0.0015MF 5% 50V
R10	1-247-887-00	SOLID	220K 10% 1/4W	C222	1-130-473-00	MYLAR	0.0015MF 5% 50V
R11	1-202-838-00	SOLID	100K 10% 1/2W	C223	1-136-153-00	FILM	0.01MF 5% 50V
R12	1-202-726-00	SOLID	3.9M 10% 1/2W	C224 Δ	1-136-237-11	FILM	0.0032MF 3% 1.6KV
<SPARK GAP>				C225	1-161-753-00	CERAMIC	470PF 10% 3KV
SG1	1-519-063-99	DISCHARGING GAP		C226	1-108-626-11	MYLAR	0.01MF 10% 100V
*****				C227	1-123-267-00	ELECT	2.2MF 20% 160V
*A-1345-641-A D BOARD, COMPLETE (GDM-1950 ONLY)				C228	1-124-046-00	ELECT	10MF 160V
*****				C229	1-126-101-11	ELECT	100MF 20% 16V
*A-1345-703-A D BOARD, COMPLETE (GDM-1952 ONLY)				C230	1-126-101-11	ELECT	100MF 20% 16V
*****				C231	1-136-165-00	FILM	0.1MF 5% 50V
*1-561-724-00	SOCKET, CONNECTOR 2P			C233	1-126-320-11	ELECT	10MF 20% 16V
*4-381-995-01	SPRING (E)			C301	1-126-233-11	ELECT	22MF 20% 50V
				C302	1-123-875-11	ELECT	10MF 20% 50V
				C303	1-123-875-11	ELECT	10MF 20% 50V
				C304	1-123-875-11	ELECT	10MF 20% 50V
				C305	1-124-925-11	ELECT	2.2MF 20% 50V
				C306	1-126-101-11	ELECT	100MF 20% 16V
				C307	1-136-161-00	FILM	0.047MF 5% 50V
				C308	1-136-161-00	FILM	0.047MF 5% 50V
				C309	1-130-471-00	MYLAR	0.001MF 5% 50V
				C310 Δ	1-136-069-11	FILM	0.0044MF 3% 2KV
				C311	1-126-101-11	ELECT	100MF 20% 16V
				C312	1-130-475-00	MYLAR	0.0022MF 5% 50V
				C313	1-136-161-00	FILM	0.047MF 5% 50V
				C314	1-129-718-00	FILM	0.022MF 10% 630V
				C315	1-124-494-00	ELECT	33MF 160V
				C316	1-108-626-11	MYLAR	0.01MF 10% 100V
				C317	1-136-115-00	FILM	0.56MF 5% 200V
				C318	1-126-105-11	ELECT	1000MF 20% 35V

The components identified by shading and mark **Δ** are critical for safety. Replace only with part number specified.

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• The components identified by **Δ** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

D


REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
C319	1-126-105-11	ELECT	1000MF 20% 35V	D307	8-719-971-20	DIODE ERC38-06	
C320	1-126-103-11	ELECT	470MF 20% 16V	D308	8-719-911-19	DIODE 1SS119	
C321	1-124-046-00	ELECT	10MF 20% 160V	D309	8-719-928-08	DIODE ERD28-08S	
C322	1-124-798-11	ELECT	1MF 20% 160V	D310	8-719-933-13	DIODE ERC35-02	
C323	1-126-101-11	ELECT	100MF 20% 16V	D311	8-719-933-13	DIODE ERC35-02	
C324	1-123-875-11	ELECT	10MF 20% 50V	D312	8-719-901-58	DIODE RGP15J	
C325	1-123-875-11	ELECT	10MF 20% 50V	D313	8-719-901-58	DIODE RGP15J	
C326	1-102-978-00	CERAMIC	220PF 5% 50V	D314	8-759-157-40	IC UPC574J	
C327	1-124-925-11	ELECT	2.2MF 20% 50V	D315	8-759-157-40	IC UPC574J	
C328	1-130-477-00	MYLAR	0.0033MF 5% 50V	D316	8-759-157-40	IC UPC574J	
C329	1-130-471-00	MYLAR	0.001MF 5% 50V	D317	8-719-971-20	DIODE ERC38-06	
C331	1-123-875-11	ELECT	10MF 20% 50V	D318	8-719-200-02	DIODE 10E2	
C332	1-124-797-11	ELECT	0.47MF 20% 160V	D319	8-719-911-19	DIODE 1SS119	
C401	1-126-101-11	ELECT	100MF 20% 16V				
C402	1-126-101-11	ELECT	100MF 20% 16V				
<CONNECTOR>				<IC>			
D1	*1-566-058-11	PIN, CONNECTOR 6P		IC201	8-759-981-91	IC RC4558DQ	
D2	*1-566-058-11	PIN, CONNECTOR 6P					
D3	*1-566-058-11	PIN, CONNECTOR 6P					
D4	*1-566-056-11	PIN, CONNECTOR 4P					
D5	*1-566-056-11	PIN, CONNECTOR 4P					
D7	*1-566-056-11	PIN, CONNECTOR 4P					
D8	*1-566-057-11	PIN, CONNECTOR 5P					
D9	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P					
DY1	*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P					
DY2	*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P					
DY3	*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P					
JS1	*1-556-106-00	CONNECTOR, MINIATURE 1P					
JS2	*1-556-106-00	CONNECTOR, MINIATURE 1P					
<DIODE>							
D101	8-719-109-85	DIODE RD5.1ES-B2					
D102	8-719-911-19	DIODE 1SS119					
D103	8-719-911-19	DIODE 1SS119					
D104	8-719-911-19	DIODE 1SS119					
D105	8-719-200-02	DIODE 10E2					
D106	8-719-911-19	DIODE 1SS119					
D201	8-719-109-81	DIODE RD4.7ES-B2					
D202	8-719-901-83	DIODE 1SS83					
D203	8-719-911-19	DIODE 1SS119					
D204	8-719-911-19	DIODE 1SS119					
D205	8-719-911-19	DIODE 1SS119					
D206	8-719-911-19	DIODE 1SS119					
D207	8-719-200-02	DIODE 10E2					
D208	8-719-971-20	DIODE ERC38-06					
D209	8-719-200-02	DIODE 10E2					
D210	8-719-302-83	DIODE CTU-G3DR					
	*4-381-904-01	SPRING (C); D210					
	*4-381-908-01	INSULATOR (B); D210					
D211	8-719-971-20	DIODE ERC38-06					
D212	8-719-971-20	DIODE ERC38-06					
D213	8-719-971-20	DIODE ERC38-06					
D214	8-719-971-20	DIODE ERC38-06					
D215	8-719-911-19	DIODE 1SS119					
D216	8-719-911-19	DIODE 1SS119					
D301	8-759-157-40	IC UPC574J					
ΔD302		IC					
D303	8-719-911-19	DIODE 1SS119					
D304	8-719-911-19	DIODE 1SS119					
D305	8-719-109-75	DIODE RD4.3ES-B2					
D306	8-719-200-02	DIODE 10E2					
<COIL>							
L201	1-459-075-00	COIL,DYNAMIC CONVERSION CHOKE					
L203	1-459-482-11	COIL, FERRITE (HLC)					
L204	1-424-017-11	HCL					
L301	1-459-677-11	COIL, CHOKE (U-18 TYPE) 850UH					
L302	1-421-329-00	COIL, CHOKE					
L401	1-421-421-00	COIL, CHOKE 100UH					
L402	1-421-421-00	COIL, CHOKE 100UH					
<IC LINK>							
PS201	1-532-838-21	LINK, IC					
PS301	1-532-839-11	LINK, IC					
<TRANSISTOR>							
Q101	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q102	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q103	8-729-697-92	TRANSISTOR 2SA979					
Q104	8-729-336-11	TRANSISTOR 2SB861-02					
Q105	8-729-800-32	TRANSISTOR 2SC2362K					
Q106	8-729-309-08	TRANSISTOR 2SC1890A					
Q107	8-729-309-36	TRANSISTOR 2SA893A					
Q108	8-729-300-70	TRANSISTOR 2SD1137					
	*4-381-904-01	SPRING (C); Q108					
	*4-381-907-01	INSULATOR (A); Q108					
Q109	8-729-805-98	TRANSISTOR 2SB1037					
	*4-381-904-01	SPRING (C); Q109					
	*4-381-907-01	INSULATOR (A); Q109					
Q201	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q202	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q203	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q204	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q205	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q206	8-729-119-76	TRANSISTOR 2SA1175-HFE					
Q207	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q208	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q209	8-729-119-78	TRANSISTOR 2SC2785-HFE					
Q210	8-729-103-08	TRANSISTOR 2SC3209					
Q211	8-729-103-08	TRANSISTOR 2SC3209					
Q212	8-729-313-82	TRANSISTOR 2SD1138					
	*4-381-904-01	SPRING (C); Q212					
	*4-381-907-01	INSULATOR (A); Q212					
Q213	8-729-103-08	TRANSISTOR 2SC3209					
Q214	8-729-140-96	TRANSISTOR 2SD774-34					


D


Les composants identifiés par
une trame et une marque Δ
sont critiques pour la sécurité.
Ne les remplacer que par une
pièce portant le numéro spécifié.

The components identified by
shading and mark Δ are critical
for safety.
Replace only with part number
specified

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
Q215	8-729-805-07	TRANSISTOR 2SD1887-CA		R207	1-249-429-11	CARBON	10K 5% 1/4W
	*4-381-904-01	SPRING (C); Q215		R208	1-249-436-11	CARBON	39K 5% 1/4W
Q216	8-729-804-17	TRANSISTOR 2SD1666-R		R209	1-249-433-11	CARBON	22K 5% 1/4W
Q217	8-729-804-68	TRANSISTOR 2SB1133-S		R210	1-249-434-11	CARBON	27K 5% 1/4W
Q301	8-729-140-96	TRANSISTOR 2SD774-34		R211	1-249-430-11	CARBON	12K 5% 1/4W
Q302	8-729-178-62	TRANSISTOR 2SC2786-L		R212	1-249-438-11	CARBON	56K 5% 1/4W
Q303	8-729-140-96	TRANSISTOR 2SD774-34		R213	1-249-435-11	CARBON	33K 5% 1/4W
Q304	8-729-805-97	TRANSISTOR 2SD1880		R214	1-215-431-00	METAL	2.7K 1% 1/6W
	*4-381-904-01	SPRING (C); Q304		R215	1-249-416-11	CARBON	820 5% 1/4W
Q305	8-729-306-92	TRANSISTOR 2SD669A		R216	1-216-353-00	METAL OXIDE	2.2 5% 1W F
Q306	8-729-902-00	TRANSISTOR 2SC3163		R217	1-249-449-11	CARBON	1.5 5% 1/4W F
	*4-381-904-01	SPRING (C); Q306		R218	1-215-463-00	METAL	56K 1% 1/6W
	*4-381-907-01	INSULATOR (A); Q306		R219	1-215-445-00	METAL	10K 1% 1/6W
Q307	8-729-900-85	TRANSISTOR DTC144WS		R220	1-249-425-11	CARBON	4.7K 5% 1/4W
Q308	8-729-900-83	TRANSISTOR DTC124XS		R221	1-249-417-11	CARBON	1K 5% 1/4W
Q309	8-729-900-85	TRANSISTOR DTC144WS		R222	1-249-425-11	CARBON	4.7K 5% 1/4W
Q310	8-729-119-78	TRANSISTOR 2SC2785-HFE		R223	1-249-417-11	CARBON	1K 5% 1/4W
Q311	8-729-119-78	TRANSISTOR 2SC2785-HFE		R224	1-249-431-11	CARBON	15K 5% 1/4W
<RESISTOR>				R225	1-249-409-11	CARBON	220 5% 1/4W
R101	1-249-417-11	CARBON	1K 5% 1/4W	R226	1-249-421-11	CARBON	2.2K 5% 1/4W
R102	1-249-411-11	CARBON	330 5% 1/4W	R227	1-249-425-11	CARBON	4.7K 5% 1/4W
R103	1-249-425-11	CARBON	4.7K 5% 1/4W	R228	1-249-405-11	CARBON	100 5% 1/4W
R104	1-249-433-11	CARBON	22K 5% 1/4W	R229	1-215-437-00	METAL	4.7K 1% 1/6W
R105	1-249-432-11	CARBON	18K 5% 1/4W	R230	1-249-429-11	CARBON	10K 5% 1/4W
R106	1-249-430-11	CARBON	12K 5% 1/4W	R231	1-249-429-11	CARBON	10K 5% 1/4W
R107	1-249-429-11	CARBON	10K 5% 1/4W	R232	1-249-433-11	CARBON	22K 5% 1/4W
R108	1-249-430-11	CARBON	12K 5% 1/4W	R233	1-249-424-11	CARBON	3.9K 5% 1/4W
R109	1-249-426-11	CARBON	5.6K 5% 1/4W	R234	1-249-421-11	CARBON	2.2K 5% 1/4W
R110	1-215-877-11	METAL OXIDE	22K 5% 1W F	R235	1-247-887-00	CARBON	220K 5% 1/4W
R111	1-249-429-11	CARBON	10K 5% 1/4W	R236	1-249-417-11	CARBON	1K 5% 1/4W
R112	1-249-425-11	CARBON	4.7K 5% 1/4W	R237	1-249-429-11	CARBON	10K 5% 1/4W
R113	1-247-887-00	CARBON	220K 5% 1/4W	R238	1-249-421-11	CARBON	2.2K 5% 1/4W
R114	1-247-901-11	CARBON	820K 5% 1/4W	R239	1-249-417-11	CARBON	1K 5% 1/4W
R115	1-249-431-11	CARBON	15K 5% 1/4W	R240	1-215-441-00	METAL	6.8K 1% 1/6W
R116	1-215-867-00	METAL OXIDE	470 5% 1W F	R241	1-249-438-11	CARBON	56K 5% 1/4W
R117	1-249-417-11	CARBON	1K 5% 1/4W	R242	1-215-451-00	METAL	18K 1% 1/6W
R118	1-249-419-11	CARBON	1.5K 5% 1/4W	R243	1-249-413-11	CARBON	470 5% 1/4W
R119	1-249-421-11	CARBON	2.2K 5% 1/4W	R244	1-249-417-11	CARBON	1K 5% 1/4W
R120	1-249-421-11	CARBON	2.2K 5% 1/4W	R245	1-249-417-11	CARBON	1K 5% 1/4W
R121	1-249-417-11	CARBON	1K 5% 1/4W	R246	1-215-459-00	METAL	39K 1% 1/6W
R122	1-215-875-11	METAL OXIDE	10K 5% 1W F	R247	1-215-461-00	METAL	47K 1% 1/6W
R123	1-249-406-11	CARBON	120 5% 1/4W	R248	1-215-876-00	METAL OXIDE	15K 5% 1W F
R125	1-249-377-11	CARBON	0.47 5% 1/4W F	R249	1-215-875-11	METAL OXIDE	10K 5% 1W F
R126	1-249-377-11	CARBON	0.47 5% 1/4W F	R250	1-247-885-00	CARBON	180K 5% 1/4W
R127	1-215-866-11	METAL OXIDE	330 5% 1W F	R251	1-249-421-11	CARBON	2.2K 5% 1/4W
R128	1-216-350-11	METAL OXIDE	1.2 5% 1W F	R252	1-247-903-00	CARBON	1M 5% 1/4W
R129	1-216-431-11	METAL OXIDE	560 5% 1W F	R253	1-249-434-11	CARBON	27K 5% 1/4W
R130	1-215-429-00	METAL	2.2K 1% 1/6W	R254	1-249-422-11	CARBON	2.7K 5% 1/4W
R131	1-249-384-11	CARBON	1.8 5% 1/4W F	R255	1-249-413-11	CARBON	470 5% 1/4W F
R132	1-249-384-11	CARBON	1.8 5% 1/4W F	R256	1-215-865-11	METAL OXIDE	220 5% 1W F
R133	1-249-433-11	CARBON	22K 5% 1/4W	R257	1-214-907-00	METAL	56K 1% 1/2W
R134	1-249-424-11	CARBON	3.9K 5% 1/4W	R258	1-249-407-11	CARBON	150 5% 1/4W
R135	1-249-426-11	CARBON	5.6K 5% 1/4W	R259	1-249-420-11	CARBON	1.8K 5% 1/4W
R136	1-249-417-11	CARBON	1K 5% 1/4W	R260	1-249-421-11	CARBON	2.2K 5% 1/4W
R137	1-249-405-11	CARBON	100 5% 1/4W	R261	1-215-859-00	METAL OXIDE	22 5% 1W F
R138	1-247-725-11	CARBON	10K 5% 1/4W	R262 Δ	1-216-394-51	METAL OXIDE	2.7 5% 3W F
R201	1-249-438-11	CARBON	56K 5% 1/4W	R263	1-249-419-11	CARBON	1.5K 5% 1/4W
R202	1-249-421-11	CARBON	2.2K 5% 1/4W	R264	1-249-389-11	CARBON	4.7 5% 1/4W F
R203	1-249-421-11	CARBON	2.2K 5% 1/4W	R265	1-249-382-11	CARBON	1.2 5% 1/4W F
R204	1-249-421-11	CARBON	2.2K 5% 1/4W	R266	1-249-382-11	CARBON	1.2 5% 1/4W F
R205	1-249-429-11	CARBON	10K 5% 1/4W	R268	1-215-459-00	METAL	39K 1% 1/6W
R206	1-249-438-11	CARBON	56K 5% 1/4W	R269	1-249-425-11	CARBON	4.7K 5% 1/4W
				R270	1-249-425-11	CARBON	4.7K 5% 1/4W

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- The components identified by  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

DA

REF.NO.	PART NO.	DESCRIPTION				
R271	1-249-413-11	CARBON	470	5%	1/4W	F
R274	1-247-706-11	CARBON	330	5%	1/4W	
R275	1-249-411-11	CARBON	330	5%	1/4W	
R301	1-215-919-11	METAL OXIDE	2.2K	5%	3W	F
R302	1-216-438-11	METAL OXIDE	8.2K	5%	1W	F
R303	1-215-874-11	METAL OXIDE	6.8K	5%	1W	F
R304	1-215-874-11	METAL OXIDE	6.8K	5%	1W	F
R305	1-215-453-00	METAL	22K	1%	1/6W	
R306	1-249-417-11	CARBON	1K	5%	1/4W	
R307	1-215-431-31	METAL	2.7K	1%	1/6W	
R308	1-215-431-31	METAL	2.7K	1%	1/6W	
R309	1-215-431-31	METAL	2.7K	1%	1/6W	
R310	1-215-431-31	METAL	2.7K	1%	1/6W	
R311	1-215-453-31	METAL	22K	1%	1/6W	
R312		METAL			1/6W	
R313	1-215-445-00	METAL	10K	1%	1/6W	
R314	1-215-445-00	METAL	10K	1%	1/6W	
R315	1-212-857-00	FUSIBLE	10	5%	1/4W	F
R316	1-212-857-00	FUSIBLE	10	5%	1/4W	F
R317	1-249-421-11	CARBON	2.2K	5%	1/4W	
R318	1-249-433-11	CARBON	22K	5%	1/4W	
R319	1-249-417-11	CARBON	1K	5%	1/4W	
R320	1-216-380-51	METAL OXIDE	8.2	5%	2W	F
R321	1-249-417-11	CARBON	1K	5%	1/4W	
R322	1-249-397-11	CARBON	22	5%	1/4W	F
R323	1-215-860-11	METAL OXIDE	33	5%	1W	F
R325	1-216-469-11	METAL OXIDE	12	5%	3W	F
R326	1-216-353-00	METAL OXIDE	2.2	5%	1W	F
R327	1-216-353-00	METAL OXIDE	2.2	5%	1W	F
R328	1-216-369-00	METAL OXIDE	1	5%	2W	F
R329	1-212-936-00	FUSIBLE	1.2	5%	1/2W	F
R330	1-215-873-00	METAL OXIDE	4.7K	5%	1W	F
R331	1-247-715-11	CARBON	1.5K	5%	1/4W	F
R332	1-249-437-11	CARBON	47K	5%	1/4W	
R333	1-215-870-11	METAL OXIDE	1.5K	5%	1W	F
R334	1-249-429-11	CARBON	10K	5%	1/4W	
R335	1-249-429-11	CARBON	10K	5%	1/4W	
R336	1-249-432-11	CARBON	18K	5%	1/4W	
R337	1-249-429-11	CARBON	10K	5%	1/4W	
R338	1-249-407-11	CARBON	150	5%	1/4W	
R339	1-249-425-11	CARBON	4.7K	5%	1/4W	
R340	1-249-433-11	CARBON	22K	5%	1/4W	
R341	1-249-427-11	CARBON	6.8K	5%	1/4W	
R342	1-249-425-11	CARBON	4.7K	5%	1/4W	
R344	1-249-431-11	CARBON	15K	5%	1/4W	
R345		METAL			1/6W	
R346	1-249-393-11	CARBON	10	5%	1/4W	F
R347	1-249-407-11	CARBON	150	5%	1/4W	
<VARIABLE RESISTOR>						
RV101	1-224-250-99	RES. ADJ.	METAL GLAZE 2.2K			
RV102	1-228-991-00	RES. ADJ.	CARBON 2.2K			
RV103	1-228-990-00	RES. ADJ.	CARBON 1K			
RV104	1-228-994-00	RES. ADJ.	CARBON 10K			
RV105	1-228-994-00	RES. ADJ.	CARBON 10K			
RV106	1-228-994-00	RES. ADJ.	CARBON 10K			
RV107	1-228-994-00	RES. ADJ.	CARBON 10K			
RV108	1-228-994-00	RES. ADJ.	CARBON 10K			
RV201	1-228-994-00	RES. ADJ.	CARBON 10K			
RV202	1-228-994-00	RES. ADJ.	CARBON 10K			
RV203	1-228-994-00	RES. ADJ.	CARBON 10K			
RV204	1-224-249-99	RES. ADJ.	METAL GLAZE 1K			
RV205	1-224-251-99	RES. ADJ.	METAL GLAZE 4.7K			

REF.NO.	PART NO.	DESCRIPTION	REMARK		
RV206	1-228-994-00	RES, ADJ, CARBON 10K			
RV207	1-224-250-99	RES, ADJ, METAL GLAZE 2.2K			
RV208	1-224-250-99	RES, ADJ, CERAMIC CARBON 2K			
RV301	1-237-516-21	RES, ADJ, METAL FILM 2K			
<SPARK GAP>					
SG201	1-519-063-99	DISCHARGING GAP			
<TRANSFORMER>					
T101	1-421-602-11	TRANSFORMER, FERRITE (VPCT)			
T201	1-421-607-00	TRANSFORMER, FERRITE (DFT)			
T202	1-421-608-00	TRANSFORMER, FERRITE (CDT)			
T203	1-439-349-11	TRANSFORMER, FERRITE (HOT)			
T301	1-421-608-00	TRANSFORMER, FERRITE (CDT)			
T302	1-421-608-00	TRANSFORMER, FERRITE (CDT)			
T303	1-439-392-11	LOT			

*1-619-555-21	DA BOARD				

*1-564-350-00	PLUG (L TYPE) 15P				
<CAPACITOR>					
C1	1-102-942-00	CERAMIC	5PF	1PF	50V
C2	1-109-633-00	MICA	470PF	5%	50V
C3	1-102-973-00	CERAMIC	100PF	5%	50V
C4	1-130-473-00	MYLAR	0.0015MF	5%	50V
C5	1-124-438-00	ELECT	1MF	20%	50V
C6	1-130-479-00	MYLAR	0.0047MF	5%	50V
C7	1-136-570-11	FILM	0.0015MF	2%	50V
C8	1-124-257-00	ELECT	2.2MF	20%	50V
C9	1-124-438-00	ELECT	1MF	20%	50V
C10	1-124-438-00	ELECT	1MF	20%	50V
C11	1-136-165-00	FILM	0.1MF	5%	50V
C12	1-130-481-00	MYLAR	0.0068MF	5%	50V
C13	1-124-120-11	ELECT	220MF	20%	16V
C14	1-136-165-00	FILM	0.1MF	5%	50V
C15	1-136-165-00	FILM	0.1MF	5%	50V
C16	1-101-880-00	CERAMIC	47PF	5%	50V
<DIODE>					
D1	8-719-110-31	DIODE RD12ES-B2			
<IC>					
IC1	8-759-821-42	IC LA7851			
<RESISTOR>					
R1	1-249-421-11	CARBON	2.2K	5%	1/4W
R2	1-249-430-11	CARBON	12K	5%	1/4W
R3	1-249-433-11	CARBON	22K	5%	1/4W
R4	1-215-453-00	METAL	22K	1%	1/6W
R5	1-249-433-11	CARBON	22K	5%	1/4W
R6	1-249-438-11	CARBON	56K	5%	1/4W
R7	1-249-417-11	CARBON	1K	5%	1/4W
R9	1-249-421-11	CARBON	2.2K	5%	1/4W
R10	1-215-477-00	METAL	220K	1%	1/6W

DA

DB

DC

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R11	1-249-440-11	CARBON	82K 5% 1/4W	R21	1-249-433-11	CARBON	22K 5% 1/4W
R12	1-249-429-11	CARBON	10K 5% 1/4W	R22	1-249-401-11	CARBON	47 5% 1/4W
R13	1-249-430-11	CARBON	12K 5% 1/4W	R23	1-249-401-11	CARBON	47 5% 1/4W
R14	1-249-432-11	CARBON	18K 5% 1/4W	R24	1-249-433-11	CARBON	22K 5% 1/4W
R15	1-249-419-11	CARBON	1.5K 5% 1/4W				

*1-619-529-21 DB BOARD				<CONNECTOR>			
*****				W1	*1-564-347-00	PLUG (L TYPE) 3P	
				W2	*1-564-348-00	PLUG (L TYPE) 5P	

<CAPACITOR>				*A-1340-848-A DC BOARD, COMPLETE (GDM-1950 ONLY)			

C1	1-124-589-11	ELECT	47MF 20% 16V	*A-1341-052-A DC BOARD, COMPLETE (GDM-1952 ONLY)			
C2	1-136-165-00	FILM	0.1MF 5% 50V	*****			
C3	1-124-265-11	ELECT	33MF 20% 16V	*1-564-431-11 POST, CONNECTOR 3P			
C4	1-124-589-11	ELECT	47MF 20% 16V	<CAPACITOR>			
C5	1-136-165-00	FILM	0.1MF 5% 50V	C1	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C6	1-126-163-11	ELECT	4.7MF 20% 50V	C2	1-163-125-00	CERAMIC CHIP 220PF	5% 50V
C7	1-136-165-00	FILM	0.1MF 5% 50V	C3	1-163-133-00	CERAMIC CHIP 470PF	5% 50V
<DIODE>				C4	1-108-792-11	MYLAR	0.001MF 5% 50V
D1	8-719-109-81	DIODE RD4.7ES-B2		C5	1-163-129-00	CERAMIC CHIP 330PF	5% 50V
D2	8-719-911-19	DIODE 1SS119		C6	1-108-792-11	MYLAR	0.001MF 5% 50V
D3	8-719-911-19	DIODE 1SS119		C7	1-124-589-11	ELECT	47MF 20% 16V
D4	8-719-109-81	DIODE RD4.7ES-B2		C8	1-124-589-11	ELECT	47MF 20% 16V
D5	8-719-109-81	DIODE RD4.7ES-B2		C9	1-124-589-11	ELECT	47MF 20% 16V
D6	8-719-110-22	DIODE RD11ES-B2		C10	1-124-589-11	ELECT	47MF 20% 16V
D7	8-719-110-22	DIODE RD11ES-B2		C11	1-163-111-00	CERAMIC CHIP 56PF	5% 50V
<IC>				<DIODE>			
IC1	8-759-981-91	IC RC4558DQ		D1	8-719-800-76	DIODE 1SS226	
IC2	8-759-981-91	IC RC4558DQ		D2	8-719-800-76	DIODE 1SS226	
<TRANSISTOR>				D3	8-719-800-76	DIODE 1SS226	
Q1	8-729-178-55	TRANSISTOR 2SC2785-E		D4	8-719-800-76	DIODE 1SS226	
Q2	8-729-178-55	TRANSISTOR 2SC2785-E		<IC>			
Q3	8-729-178-55	TRANSISTOR 2SC2785-E		IC1	8-759-981-92	IC RC4558M	
Q4	8-729-178-55	TRANSISTOR 2SC2785-E		IC2	8-759-908-17	IC TL082CPS	
Q5	8-729-178-55	TRANSISTOR 2SC2785-E		<TRANSISTOR>			
<RESISTOR>				Q1	8-729-100-66	TRANSISTOR 2SC1623	
R1	1-247-897-11	CARBON	560K 5% 1/4W	Q2	8-729-162-13	TRANSISTOR 2SC1621	
R2	1-249-429-11	CARBON	10K 5% 1/4W	Q3	8-729-100-66	TRANSISTOR 2SC1623	
R3	1-249-416-11	CARBON	820 5% 1/4W	Q4	8-729-100-66	TRANSISTOR 2SC1623	
R4	1-249-433-11	CARBON	22K 5% 1/4W	Q5	8-729-116-04	TRANSISTOR 2SK160-K4	
R5	1-249-436-11	CARBON	39K 5% 1/4W	<RESISTOR>			
R6	1-249-434-11	CARBON	27K 5% 1/4W	R1	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R7	1-249-426-11	CARBON	5.6K 5% 1/4W	R2	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
R8	1-247-899-11	CARBON	680K 5% 1/4W	R3	1-216-091-00	METAL GLAZE	56K 5% 1/10W
R9	1-249-427-11	CARBON	6.8K 5% 1/4W	R4	1-216-093-00	METAL GLAZE	68K 5% 1/10W
R10	1-249-416-11	CARBON	820 5% 1/4W	R5	1-216-073-00	METAL GLAZE	10K 5% 1/10W
R11	1-249-424-11	CARBON	3.9K 5% 1/4W	R6	1-216-069-00	METAL GLAZE	6.8K 5% 1/10W
R12	1-249-440-11	CARBON	82K 5% 1/4W	R7	1-216-081-00	METAL GLAZE	22K 5% 1/10W
R13	1-247-887-00	CARBON	220K 5% 1/4W	R8	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R14	1-249-441-11	CARBON	100K 5% 1/4W	R9	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R15	1-249-433-11	CARBON	22K 5% 1/4W	R10	1-216-097-00	METAL GLAZE	100K 5% 1/10W
R16	1-249-429-11	CARBON	10K 5% 1/4W				
R17	1-249-425-11	CARBON	4.7K 5% 1/4W				
R18	1-249-422-11	CARBON	2.7K 5% 1/4W				
R19	1-249-425-11	CARBON	4.7K 5% 1/4W				
R20	1-249-436-11	CARBON	39K 5% 1/4W				

Dc

Dd

De

H

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
R11	1-216-081-00	METAL GLAZE	22K 5% 1/10W	R3	1-247-887-00	CARBON	220K 5% 1/4W
R12	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R4	1-247-887-00	CARBON	220K 5% 1/4W
R13	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R5	1-249-432-11	CARBON	18K 5% 1/4W
R14	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R6	1-249-417-11	CARBON	1K 5% 1/4W
R15	1-216-089-00	METAL GLAZE	47K 5% 1/10W	R7	1-247-895-00	CARBON	470K 5% 1/4W
R16	1-216-049-00	METAL GLAZE	1K 5% 1/10W	R10	1-249-425-11	CARBON	4.7K 5% 1/4W
R17	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R11	1-249-405-11	CARBON	100 5% 1/4W
R18	1-216-057-00	METAL GLAZE	2.2K 5% 1/10W	R12	1-247-887-00	CARBON	220K 5% 1/4W
R19	1-216-077-00	METAL GLAZE	15K 5% 1/10W	R14	1-249-421-11	CARBON	2.2K 5% 1/4W
R20	1-216-055-00	METAL GLAZE	1.8K 5% 1/10W	R15	1-249-421-11	CARBON	2.2K 5% 1/4W
R21	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R16	1-249-405-11	CARBON	100 5% 1/4W
R22	1-216-073-00	METAL GLAZE	10K 5% 1/10W	R17	1-249-417-11	CARBON	1K 5% 1/4W
R23	1-216-065-00	METAL GLAZE	4.7K 5% 1/10W	R18	1-249-441-11	CARBON	100K 5% 1/4W
R24	1-216-678-11	METAL CHIP	13K 0.50% 1/10W	R19	1-249-441-11	CARBON	100K 5% 1/4W
R25	1-216-682-11	METAL CHIP	20K 0.50% 1/10W	R20	1-249-429-11	CARBON	10K 5% 1/4W
R26	1-216-077-00	METAL GLAZE	15K 5% 1/10W	*****			
R27	1-216-073-00	METAL GLAZE	10K 5% 1/10W	*1-619-558-21 DE BOARD			
R28	1-216-091-00	METAL GLAZE	56K 5% 1/10W	*****			
R29	1-216-091-00	METAL GLAZE	56K 5% 1/10W	<CAPACITOR>			
<CONNECTOR>				C1	1-124-261-00	ELECT	10MF 20% 50V
W1	*1-506-602-11	PLUG, L TYPE (2.0MM PITCH) 5P		C2	1-124-261-00	ELECT	10MF 20% 50V
W2	*1-506-603-11	PLUG, L TYPE (2.0MM PITCH) 10P		C3	1-130-471-00	MYLAR	0.001MF 5% 50V
*****				C4	1-130-483-00	MYLAR	0.01MF 5% 50V
*1-619-557-21 DD BOARD				C5	1-124-499-11	ELECT	1MF 20% 50V
*****				C6	1-124-261-00	ELECT	10MF 20% 50V
*1-564-347-00 PLUG (L TYPE) 3P				C7	1-130-483-00	MYLAR	0.01MF 5% 50V
*1-564-348-00 PLUG (L TYPE) 5P				<DIODE>			
*1-564-349-00 PLUG (L TYPE) 7P				D1	8-719-911-19	DIODE 1SS119	
<CAPACITOR>				D2	8-719-911-19	DIODE 1SS119	
C1	1-126-157-11	ELECT	10MF 20% 16V	D3	8-719-911-19	DIODE 1SS119	
C2	1-136-171-00	FILM	0.33MF 5% 50V	D4	8-719-911-19	DIODE 1SS119	
C3	1-102-824-00	CERAMIC	470PF 5% 50V	<IC>			
C4	1-130-471-00	MYLAR	0.001MF 10% 50V	IC1	8-759-981-91	IC RC4558DQ	
C6	1-130-471-00	MYLAR	0.001MF 10% 50V	<RESISTOR>			
C7	1-123-357-00	ELECT	22MF 20% 35V	R1	1-249-429-11	CARBON	10K 5% 1/4W
<DIODE>				R2	1-249-431-11	CARBON	15K 5% 1/4W
D1	8-719-911-19	DIODE 1SS119		R3	1-247-891-00	CARBON	330K 5% 1/4W
D2	8-719-911-19	DIODE 1SS119		R4	1-249-430-11	CARBON	12K 5% 1/4W
D3	8-719-911-19	DIODE 1SS119		R6	1-249-441-11	CARBON	100K 5% 1/4W
D4	8-719-911-19	DIODE 1SS119		R7	1-249-432-11	CARBON	18K 5% 1/4W
D5	8-719-110-13	DIODE RD9.1ES-B2		R8	1-247-887-00	CARBON	220K 5% 1/4W
D6	8-719-911-19	DIODE 1SS119		R9	1-249-433-11	CARBON	22K 5% 1/4W
<IC>				R10	1-249-433-11	CARBON	22K 5% 1/4W
IC1	8-759-981-64	IC LM2903DQ		R11	1-249-433-11	CARBON	22K 5% 1/4W
IC2	8-759-981-64	IC LM2903DQ		R12	1-249-429-11	CARBON	10K 5% 1/4W
<TRANSISTOR>				<CONNECTOR>			
Q1	8-729-178-63	TRANSISTOR 2SC2786-K		W1	*1-564-348-00	PLUG (L TYPE) 5P	
<RESISTOR>				W2	*1-564-348-00	PLUG (L TYPE) 5P	
R1	1-249-437-11	CARBON	47K 5% 1/4W	*****			
R2	1-249-432-11	CARBON	18K 5% 1/4W	*1-619-607-11 H BOARD			



Les composants identifiés par une trame et une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<CONNECTOR>				CNP901A1-526-945-11 INLET, AC 3P			
H1	*1-566-043-11	PIN, CONNECTOR 4P		F901A1-532-237-11	FUSE, TIME-LAG 3.15A/250V (EUROPE ONLY)		
H2	*1-566-043-11	PIN, CONNECTOR 4P		A1-532-746-11	FUSE, GLASS TUBE 4A/125V (J,US,CND ONLY)		
H3	*1-566-041-11	PIN, CONNECTOR 2P		L901A1-426-288-11	COIL, DEMAGNETIZATION		
H4	*1-566-041-11	PIN, CONNECTOR 2P		S901A1-570-779-11	SWITCH, SEESAW (AC POWER)		
<RESISTOR>				S902A1-554-913-11	SWITCH, SLIDE (VOLTAGE CHANGE)		
R1	1-249-421-11	CARBON	2.2K 5% 1/4W	V901A1-A-1020-465-A	PICTURE TUBE COMPLETE ASSY (M49JDA15X)		
R4	1-249-411-11	CARBON	330 5% 1/4W	*****			
R5	1-249-441-11	CARBON	100K 5% 1/4W	ACCESSORIES AND PACKING MATERIALS			
R6	1-249-441-11	CARBON	100K 5% 1/4W	*****			
R7	1-249-411-11	CARBON	330 5% 1/4W	PART NO.	DESCRIPTION	REMARK	
<VARIABLE RESISTOR>				*A-1499-521-A	COVER ASSY, SAFETY		
RV1	1-228-594-00	RES. VAR, CARBON 10K		*A-1499-522-A	CABLE ASSY		
RV2	1-228-594-00	RES. VAR, CARBON 10K		*X-4381-932-1	BOARD ASSY, BOTTOM		
RV3	1-228-594-00	RES. VAR, CARBON 10K		A1-532-237-11	FUSE, TIME-LAG 3.15A/250V (EUROPE ONLY)		
RV4	1-228-596-00	RES. VAR, CARBON 5K		A1-532-746-11	FUSE, GLASS TUBE 4A/125V (J,US,CND ONLY)		
*****				A1-534-827-14	CORD, POWER		
*1-619-606-11	J BOARD	*****		*4-361-988-02	BAG, PROTECTION		
<DIODE>				*4-368-036-01	CUSHION (UPPER) (ASSY)		
D1	8-719-311-15	DIODE SEL1422G-CD		*4-368-037-01	CUSHION (LOWER) (ASSY)		
*****				*4-368-038-01	INDIVIDUAL CARTON (GDM-1950 ONLY)		
*1-619-564-21	K BOARD	*****		*4-368-072-01	PAD, TILT FIXED (GDM-1952 ONLY)		
<CAPACITOR>				*4-382-817-01	BAND		
C1	A1-453-105-11	CR PACK, HIGH-VOLTAGE		*4-382-896-01	INDIVIDUAL CARTON (GDM-1952 ONLY)		
C2	A1-136-106-11	FILM 0.36MF	5% 200V	4-482-319-01	MANUAL, INSTRUCTION		
C3	A1-162-558-51	CERAMIC 100PF	10% 2KV				
<DIODE>							
D1	8-719-911-19	DIODE ISS119					
<CONNECTOR>							
K1	*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P					
K2	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P					
K4	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P					

MISCELLANEOUS							

A1-439-393-21	TRANSFORMER ASSY, FLYBACK						
1-452-032-00	MAGNET, DISK; 10MM ϕ						
1-452-094-00	MAGNET, ROTATABLE DISK; 15MM ϕ						
A1-453-106-11	HIGH-VOLTAGE BLOCK (DCT BLOCK)						
1-533-191-11	HOLDER, FUSE						
*1-555-110-00	CABLE, PIN						
*1-555-110-00	CABLE, PIN						
*1-555-110-00	CABLE, PIN						
1-562-576-11	ADAPTER, CONVERSION BNC PIN						
*1-937-754-11	HARNESS (MAIN (C))						