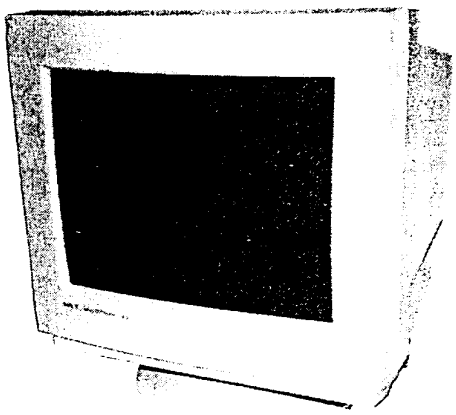
NEC

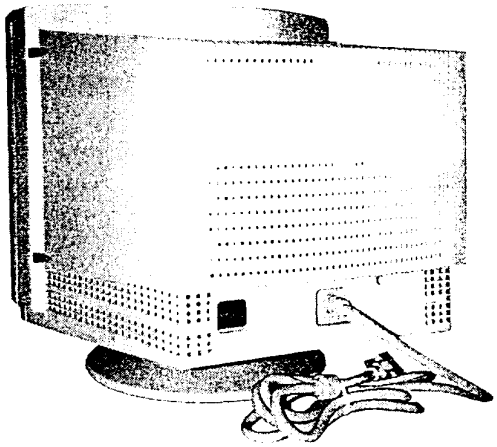
MODELS JC-1535VMA/B/B(EE)/R/
(N),(H),(P)

COLOR MONITOR MultiSync 3V
SERVICE MANUAL

PART NO.599910367

Better Service
Better Reputation
Better Profit





NEC Corporation
TOKYO, JAPAN

The SERVICE PERSONNEL should have the appropriate technical training, knowledge and experience necessary to:

- Be familiiar with specialized test equipment, and
- Be careful to follow all safety procedures associated with high voltage CRT circuit designs to minimize danger to themselves and their coworkers.

This equipment utilizes a micro-gap power switch. Turn off the monitor by first pushing the front panel power switch. Next, remove the power cord from the AC outlet.

TO avoid electrical shocks, this equipment should be used with an appropriate power cord and be connected only to a properly grounded AC outlet.

CONTENTS

SPECIFICATIONS

Electrical Description

Picture Tube	15 inch, non-glare, flat square technology CRT, 1200 mm radius 90 degree deflection, 0.28 mm trio dot pitch Dot type black matrix Medium-short persistence phosphor, anti-static coating, invar shadow mask
Input Signal	Video: ANALOG 0.7 Vp-p/75 Ohms Positive Sync : Separate sync TTL Level Horizontal sync Positive/Negative Vertical sync Positive/Negative : Composite sync TTL Level, Positive/Negative
Display Colors	Analog input: Unlimited colors (depends on video card used)
Synchronization Range	Horizontal: 31 kHz to 50 kHz (Automatically) Vertical: 55 Hz to 90 Hz (Automatically)
Maximum Resolution	Horizontal: 1024 dots Vertical: 768 lines (non-interlaced)
Maximum Video Bandwidth	65 MHz
Active Display Area (Factory Setting)	Horizontal: 260 mm/10.2 inches (Dependent upon signal timing used, Vertical: 195 mm/7.7 inches and does not include border area.)
Active Display Area (FullScan)	Horizontal: 280 mm/11.0 inches (Dependent upon signal timing used, Vertical: 210 mm/8.3 inches and does not include border area.)
Power Supply	AC 100-120V, 50/60Hz (JC-1535VMA) AC 220-240V, 50/60Hz (JC-1535VMB/B(EE)/R)
Current Rating	1.6 A (JC-1535VMA) 0.9 A (JC-1535VMB/B(EE)/R)
Power Rating	90W
Environmental Cosiderations	Operating Temperature 0°C to +35°C/+32°F to +95°F Humidity 30% to 80% 0-10,000 feet Storage Temperature -20°C to +60°C/-4°F to +140°F Humidity 10% to 90% 0-45,000 feet

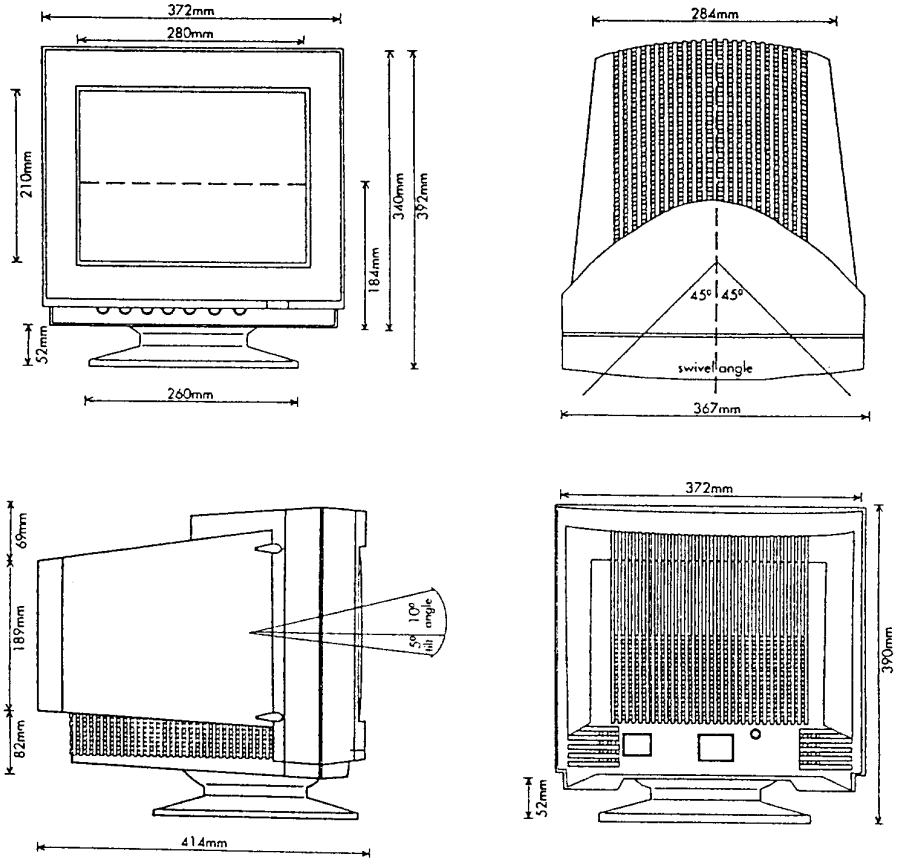
Note: The above specifications are subject to change without notice for further improvement.

Mechanical Description

1. Cabinet — Molded plastic cabinet with detachable tilt/swivel base.

2. Dimensions — 372(W)×390(H)×414(D) mm
14.6(W)×15.4(H)×16.3(D) inches

Dimensions and tilt/swivel angle



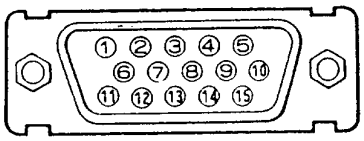
3. Weight — 15.5 kg/34.2 lbs

4. Controls — Side Pincushion Control
Vertical Size Control
Horizontal Size Control
Vertical Position Control
Horizontal Position Control
Power Switch / Degauss
Contrast Control
Brightness Control

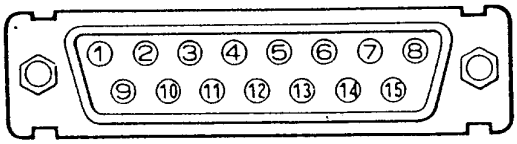
5. Input Signal Terminal — 15 pin mini D-Sub connector
15 pin D-sub connector (FG/Mac II adaptor)
(See page 3 for Pin Assignment Table)

Pin Assignment Table

15 pin mini D-Sub



15 pin D-Sub



Monitor Side

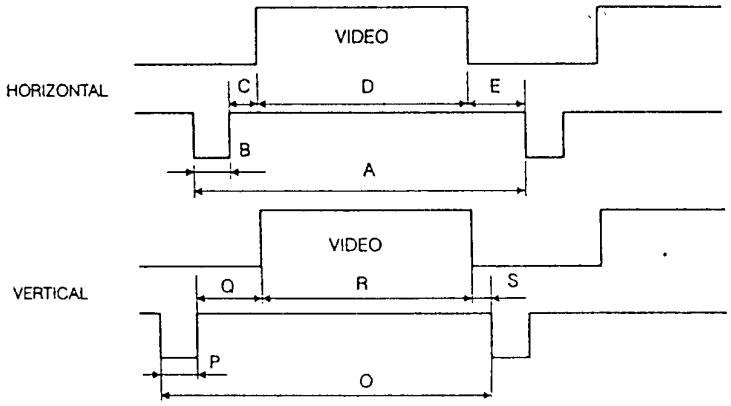
MultiSync Monitor's Input Connector 15 pin mini D-sub Male Connector	VGA, 8514/A, XGA, & XGA-2 mapped to the MultiSync Color Monitor	Mac II mapped to the MultiSync Color monitor
1	1 Red Video	1 Red Video
2	2 Green Video	2 Green Video
3	3 Blue Video	3 Blue Video
4	4 Ground	4 Ground
5	5 Self Test	5 Ground
6	6 Red Ground	6 Red Ground
7	7 Green Ground	7 Green Ground
8	8 Blue Ground	8 Blue Ground
9	9 No Connection	9 No Connection
10	10 Digital Ground	10 Sync Ground
11	11 Ground	11 Ground
12	12 Reserved	12 Reserved
13	13 Horizontal Sync	13 Composite Sync
14	14 Vertical Sync	14 Ground
15	15 No Connection	15 No Connection

Graphics Board Side

IBM VGA 15 pin mini D-sub female	IBM 8514/A 15 pin mini D-sub female	IBM XGA & XGA-2 15 pin mini D-sub female	Apple Mac II, Quadra or LC 15 pin D-sub female
1 Red Video	1 Red Video	1 Red Video	1 Red Ground
2 Green Video	2 Green Video	2 Green Video	2 Red Video
3 Blue Video	3 Blue Video	3 Blue Video	3 Composite Sync
4 Reserved	4 Display ID 2	4 Display ID 2	4 Sense 0
5 Self Test	5 Self Test	5 Self Test	5 Green Video
6 Red Ground	6 Red Ground	6 Red Ground	6 Green Ground
7 Green Ground	7 Green Ground	7 Green Ground	7 Sense 1
8 Blue Ground	8 Blue Ground	8 Blue Ground	8 Reserved(+12 Volts)
9 Key(no pin)	9 Key(no pin)	9 +12 Volt Fused	9 Blue Video
10 Digital Ground	10 Digital Ground	10 Digital Ground	10 Sense 2
11 Display ID 0	11 Display ID 0	11 Display ID 0	11 Ground
12 Display ID 1	12 Display ID 1	12 Display ID 1	12 Vertical Sync
13 Horizontal Sync	13 Horizontal Sync	13 Horizontal Sync	13 Blue Ground
14 Vertical Sync	14 Vertical Sync	14 Vertical Sync	14 Ground
15 Reserved	15 Reserved	15 Display ID 3	15 Horizontal Sync

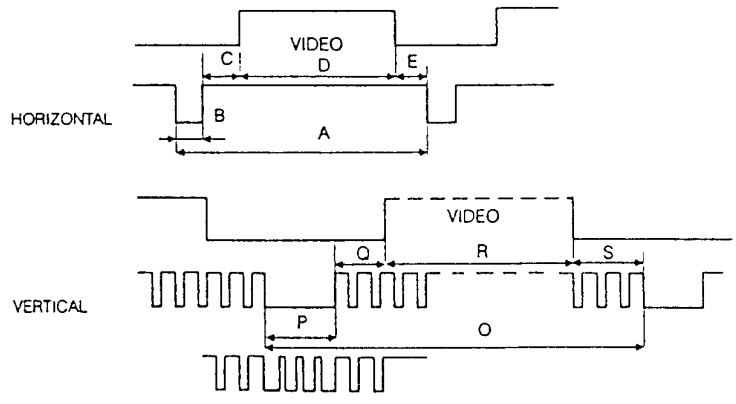
Signal Timing

SEPARATE SYNC



Sync Polarity: Positive/Negative

COMPOSITE SYNC

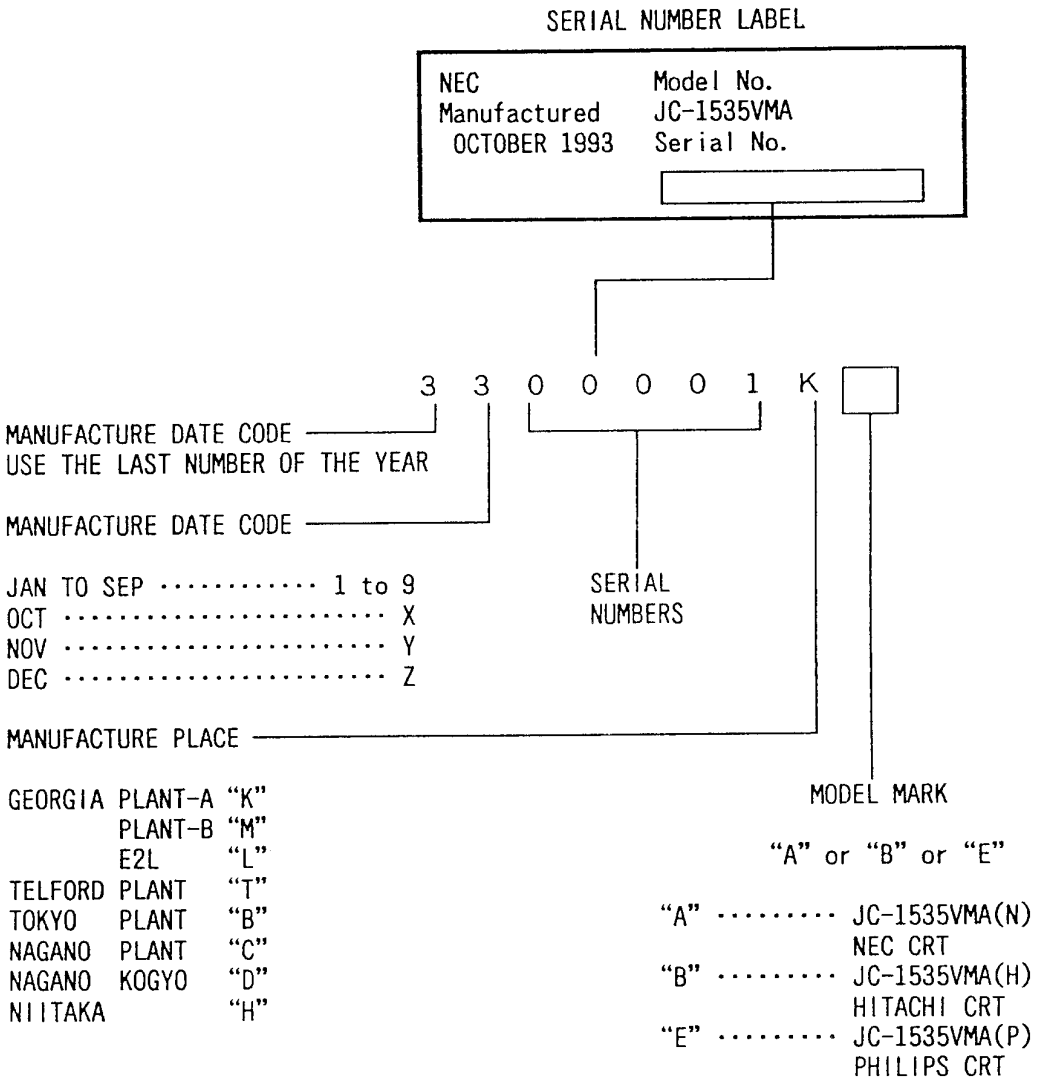


Sync Polarity: Positive/Negative

	VGA and MCGA Compatible (without border)			XGA-2's VGA and MCGA Compatible			Mac II, Quadra, or LC Compatible	VESA 640x480 at 72Hz	VESA 800x600 at 56Hz	VESA 800x600 at 60 Hz	VESA 800x600 at 72Hz	Mac II & Quadra	8514/A&XGA Interlaced Compatible	VESA 1024x768 at 60Hz
Resolution	640x350	720x400	640x480	720x350	720x400	640x480	640x480	640x480	800x600	800x600	800x600	832x624	1024x768	1024x768
Horizontal Frequency	31.469kHz	31.469kHz	31.469kHz	39.444kHz	39.444kHz	39.375kHz	35.000kHz	37.860kHz	35.156kHz	37.879kHz	48.077kHz	49.725kHz	35.587kHz	48.363kHz
(A) Horizontal Period	31.778μsec	31.778μsec	31.778μsec	25.352μsec	25.352μsec	25.397μsec	28.570μsec	26.413μsec	28.444μsec	26.400μsec	20.800μsec	20.111μsec	28.100μsec	20.677μsec
(B) Horizontal Pulse Width	3.813μsec	3.813μsec	3.813μsec	3.042μsec	3.042μsec	3.048μsec	2.120μsec	1.270μsec	2.000μsec	3.200μsec	2.400μsec	1.117μsec	3.910μsec	2.092μsec
(C) Horizontal Back Porch	1.907μsec	1.907μsec	1.907μsec	1.522μsec	1.522μsec	1.524μsec	3.170μsec	4.063μsec	3.556μsec	2.200μsec	1.280μsec	3.910μsec	1.247μsec	2.462μsec
(D) Horizontal Active Area	25.422μsec	25.422μsec	25.422μsec	20.282μsec	20.282μsec	20.317μsec	22.810μsec	20.317μsec	22.222μsec	20.000μsec	16.000μsec	14.524μsec	22.760μsec	15.754μsec
(E) Horizontal Front Porch	0.636μsec	0.636μsec	0.636μsec	0.508μsec	0.508μsec	0.508μsec	0.180μsec	0.762μsec	0.667μsec	1.000μsec	1.120μsec	0.559μsec	0.178μsec	0.369μsec
Vertical Frequency	70.080Hz	70.080HZ	59.940Hz	87.850Hz	87.850Hz	75.000Hz	66.667Hz	72.809Hz	56.250Hz	60.317Hz	72.187Hz	74.550Hz	86.960Hz	60.000Hz
(O) Vertical Period	14.268msec	14.268msec	16.683msec	11.383msec	11.383msec	13.333msec	15.000msec	13.735msec	17.778msec	16.579msec	13.853msec	13.414msec	11.499msec	16.667msec
(P) Vertical Pulse Width	0.064msec	0.064msec	0.064msec	0.051msec	0.051msec	0.051msec	0.090msec	0.079msec	0.057msec	0.106msec	0.125msec	0.060msec	0.112msec	0.124msec
(Q) Vertical Back Porch	1.907msec	1.112msec	1.049msec	1.496msec	0.862msec	0.813msec	1.110msec	0.740msec	0.626msec	0.607msec	0.478msec	0.784msec	0.577/ 0.563msec	0.600msec
(R) Vertical Active Area	11.122msec	12.711msec	15.253msec	8.873msec	10.141msec	12.190msec	13.710msec	12.678msec	17.067msec	15.840msec	12.480msec	12.549msec	10.824msec	15.880msec
(S) Vertical Front Porch	1.176msec	0.381msec	0.318msec	0.963msec	0.329msec	0.279msec	0.090msec	0.238msec	0.028msec	0.026msec	0.770msec	0.020msec	0.000/ 0.014msec	0.062msec

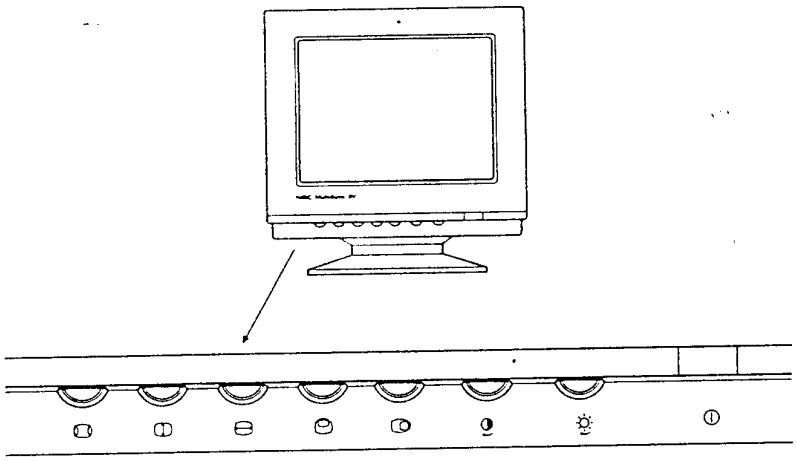
SERIAL NUMBER INFORMATION

Refer to the serial number information shown below.



Note: Models JC-1535VMB, JC-1535VMB(EE) and JC-1535VMR comply with the above.

MONITOR ADJUSTMENT CONTROLS



Side Pincushion Control
Adjust the curvature of the edges of the left and right side of the display image either inwards or outwards. The image should be adjusted to obtain a straight edge on the left and right sides.

Vertical Size Control(increase and decrease)
Adjust the vertical size of the image.

Horizontal Size Control(increase and decrease)
Adjust the horizontal size of the image.

Vertical Position Control(up and down)
Adjust the vertical position of the up and down.

Horizontal Position Control(left and right)
Adjust the horizontal position of the image from left to right.

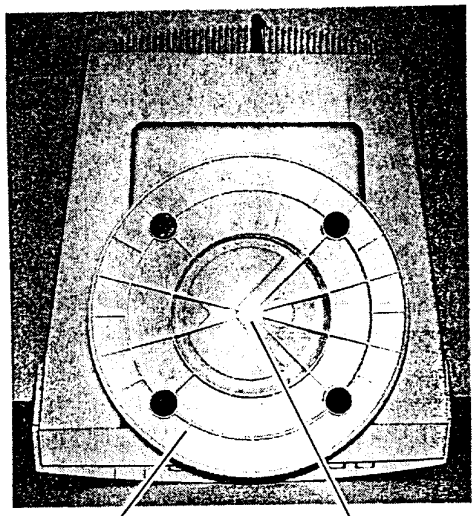
Contrast Control
Adjust the image brightness in relation to the background.

Brightness Control
Adjust the overall image and screen brightness.

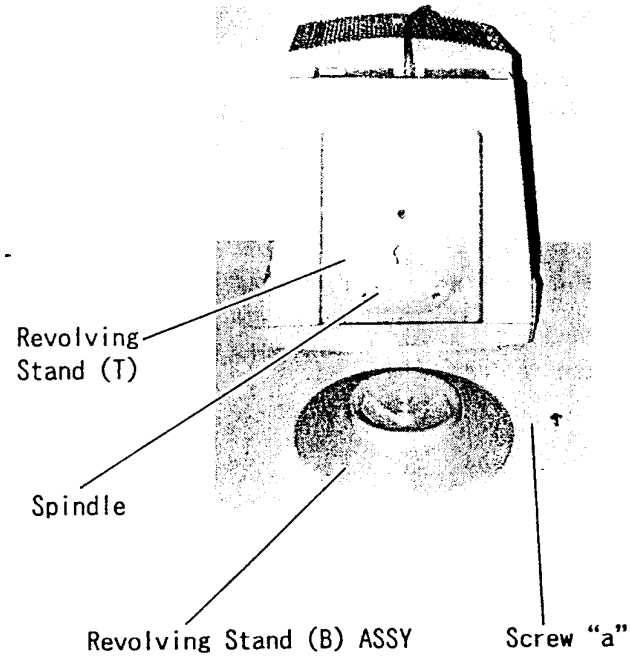
Power Switch / Degauss
Turn the power ON or OFF. When the power is ON, the LED power indicator above the power switch is lit. This switch also act as a degauss switch. On power up the degauss circuitry eliminate stray magnetic fields that alter the correct scan of the electron beams and affect the purity of the screen colors, the focus and misconvergence.

DISASSEMBLY

Tilt/Swivel ASSY

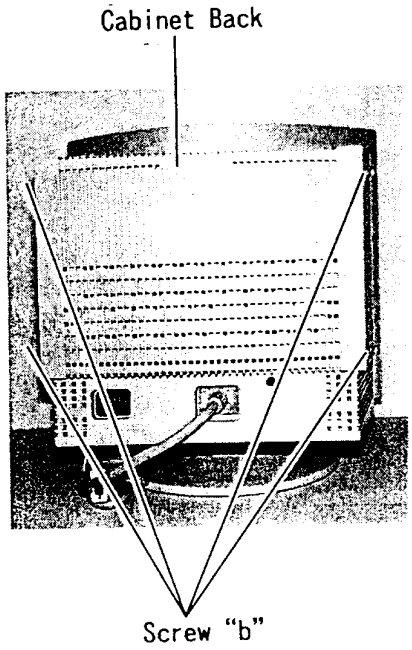


1. Turn the monitor CRT face down on a clean static free surface to prevent scratching CRT face.
2. Remove the screw "a".

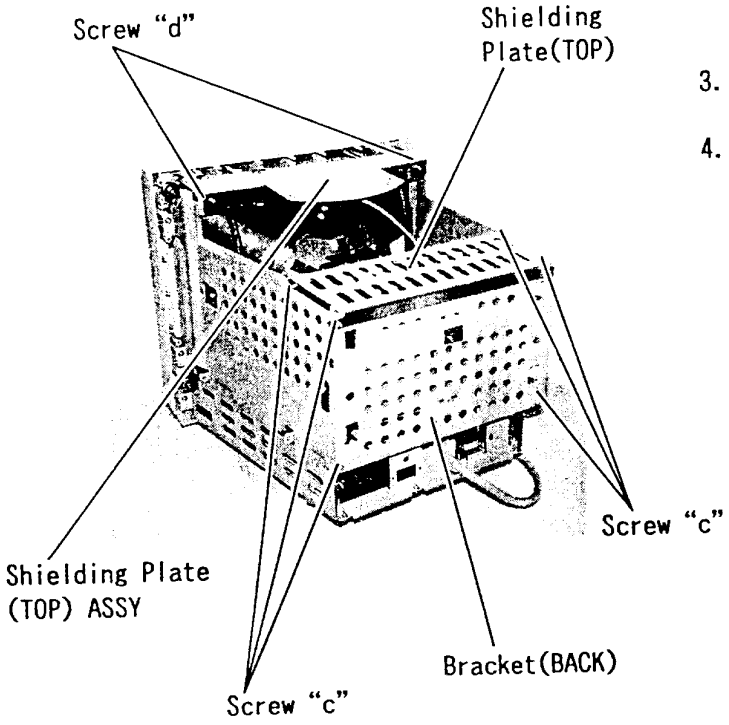


3. Remove the Revolving Stand (B) ASSY from the Revolving Stand (T).

Cabinet Back, Shielding Plate and Bracket

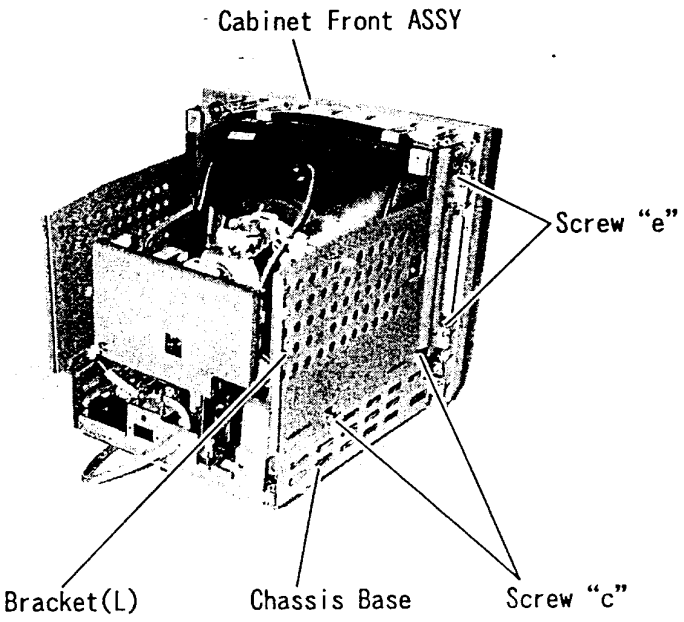


1. Remove the four screws "b".
2. Take off the Cabinet Back from the monitor.



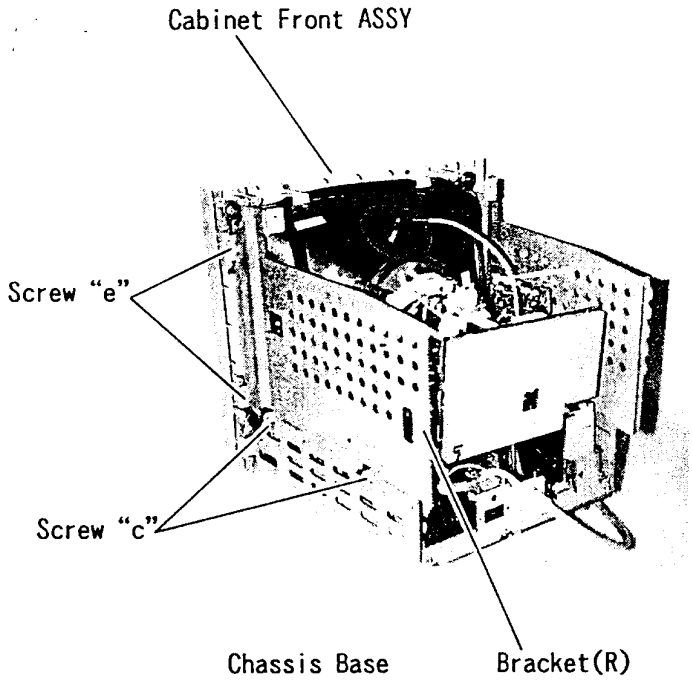
3. Remove the six screws "c" and the two screws "d".
4. Remove the Shielding Plate (top) ASSY, the Shielding Plate (top) and the Bracket (BACK).

MAIN PWB and CRT PWB



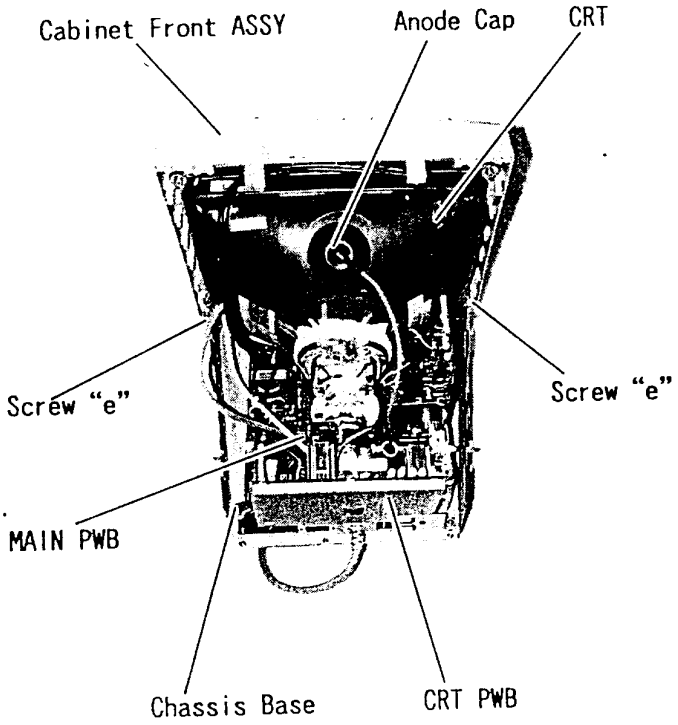
1. Remove the two screws "e" and the two screws "c".

2. Remove the Bracket (L) from the Chassis Base and the Cabinet Front ASSY.



3. Remove the two screws "e" and two screws "c".

4. Remove the Bracket (R) from the Chassis Base and the Cabinet Front ASSY.



5. Remove the Anode Cap from the CRT.

   NOTE:
   Carefully discharge the CRT anode potential by grounding to coating dag before removing Anode Cap.

6. Disconnect the CRT PWB from the CRT.

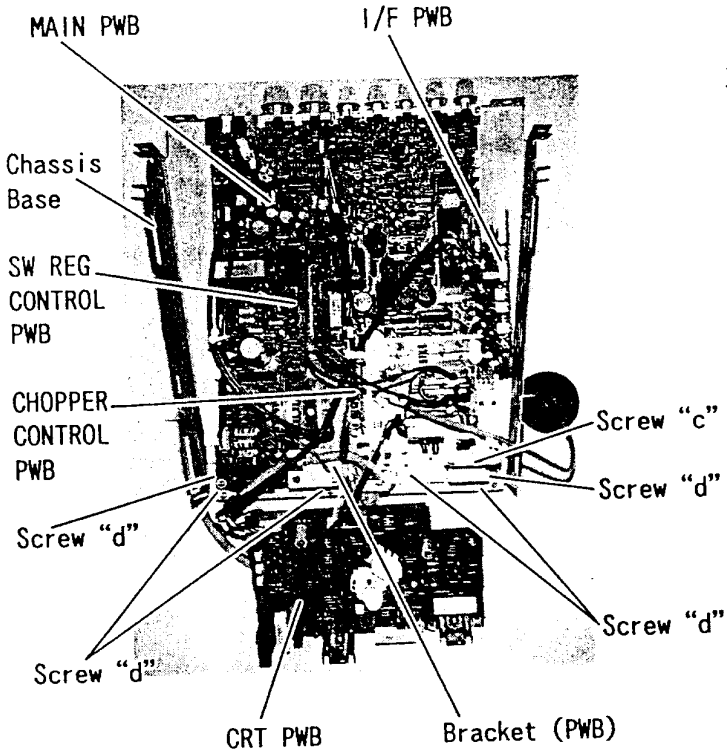
7. Disconnect the connector "CN-CE" CRT PWB.

8. Disconnect the connectors "CN-HDY", "CN-VDY" and "CN-Z" from the MAIN PWB.

9. Remove the two screws "e".

10. Remove the Cabinet Front ASSY and the CRT from the Chassis Base.

11. Untie the Degaussing Coil from the clamps.



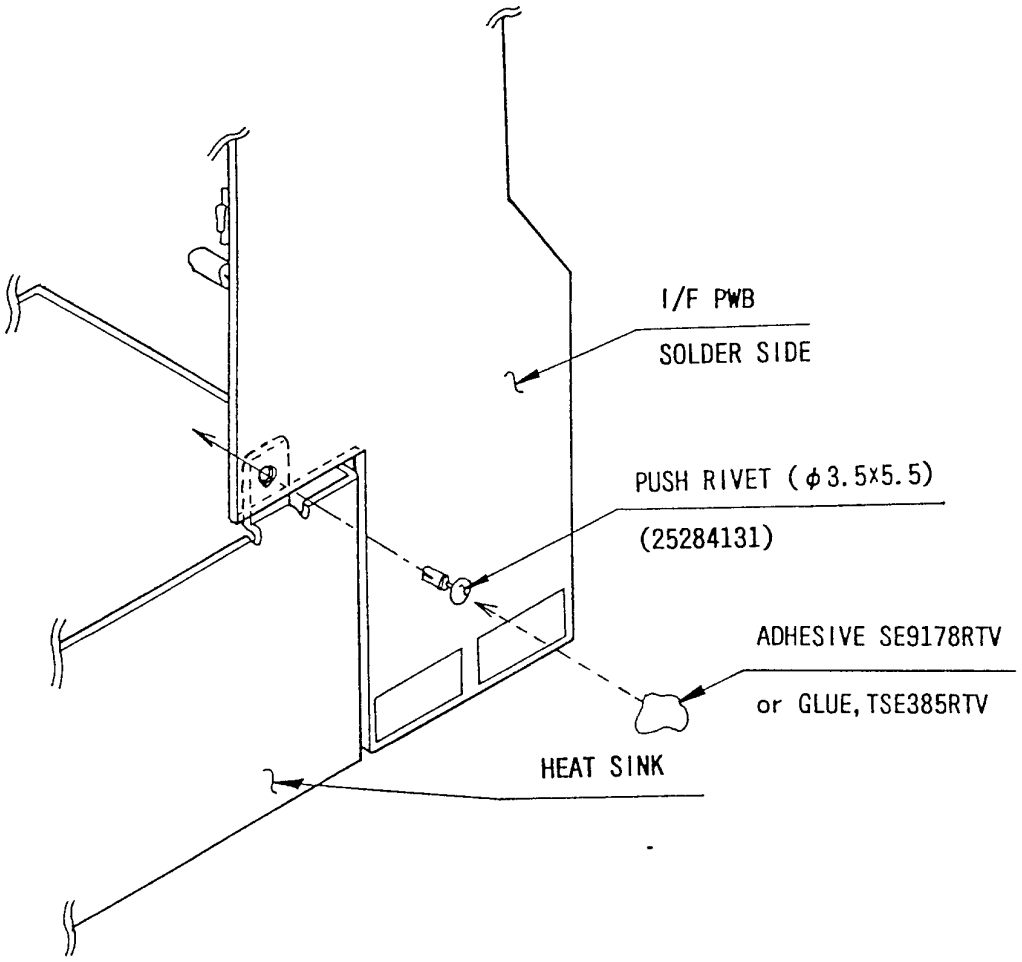
12. Remove the six screws "d" and the screw "c".

13. Remove the Bracket (PWB).

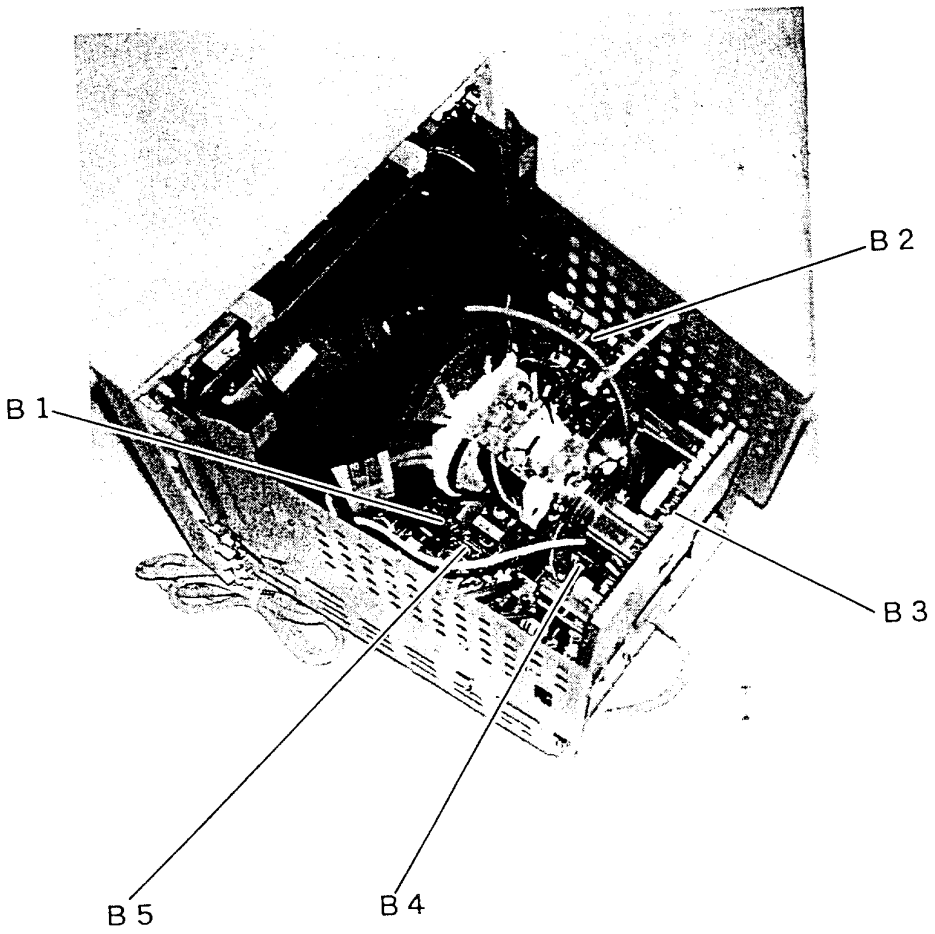
14. Remove the MAIN PWB from the Chassis Base.

NOTE:

When reassembling, use the new push rivet (25284131) and fix the push rivet with silicon glue (ADHESIVE SE9178RTV or GLUE, TSE385RTV).



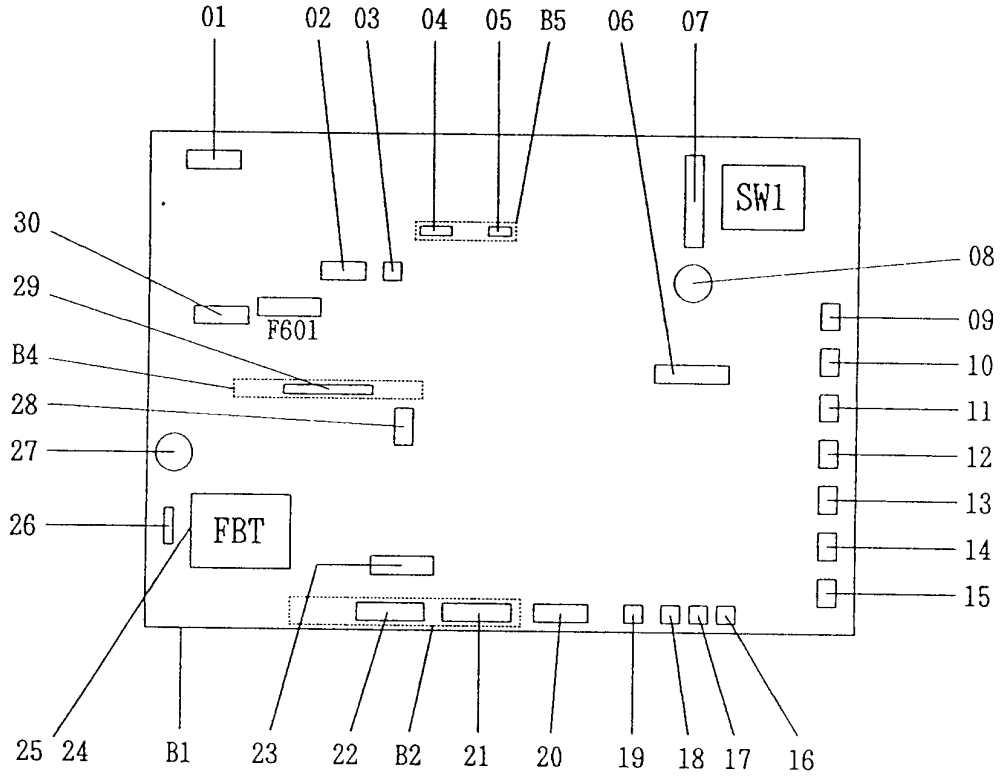
PWB LOCATION DIAGRAM



B 1	MAIN PWB (MAIN PWB ASSY)	PWE−372
B 2	I/F PWB (CRT I/F PWB ASSY B-2)	PWE−373A
B 3	CRT PWB (CRT I/F PWB ASSY B-2)	PWE−373B
B 4	CHOPPER CONTROL PWB (SUB PWB ASSY B-2)	PWE−376A
B 5	SW REG CONTROL PWB (SUB PWB ASSY B-2)	PWE−376B

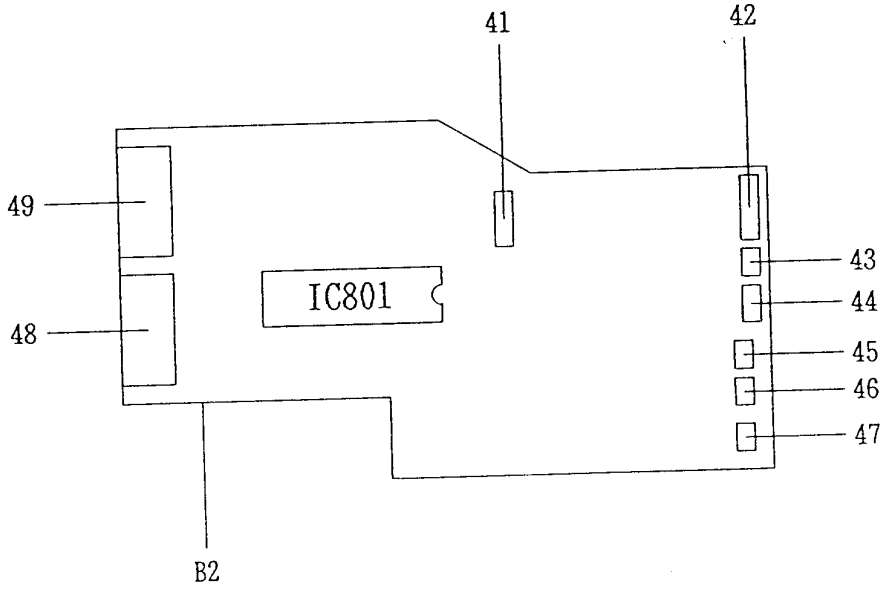
CONNECTOR, CONTROL AND TEST POINT LOCATION DIAGRAM

MAIN PWB (MAIN PWB ASSY)



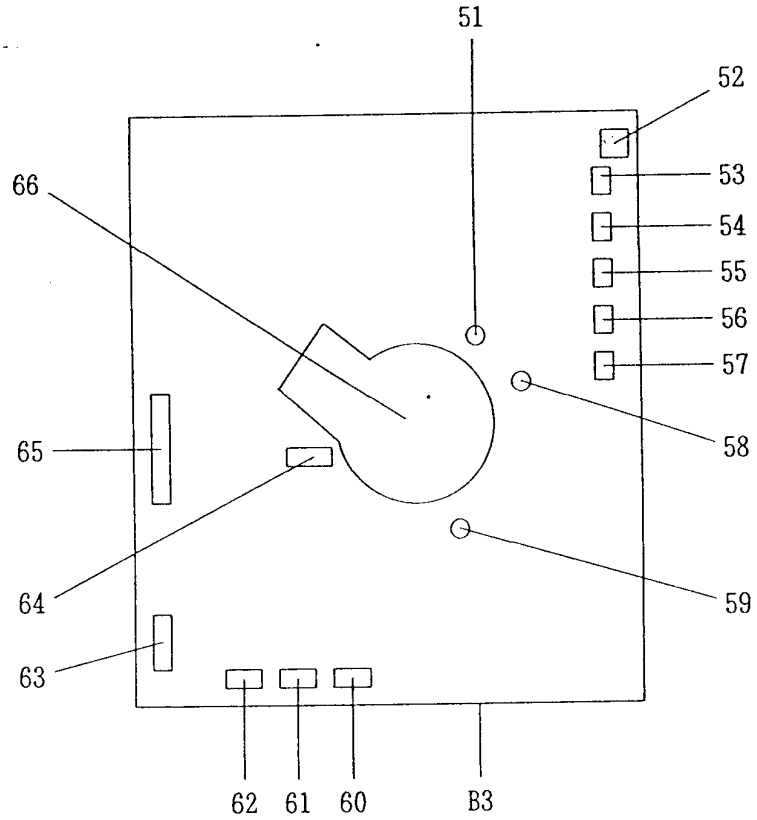
01	CONNECTOR CN-A	17	VR7LO SUB BRIGHT
02	CONNECTOR CN-Z	18	VR570 H CENT
03	CONNECTOR CN-SY	19	VR470 V LIN
04	CONNECTOR CN-601	20	CONNECTOR CN-VDY
05	CONNECTOR CN-602	21	CONNECTOR CN-MI1
06	CONNECTOR CN-CM	22	CONNECTOR CN-MI2
07	CONNECTOR CN-C	23	CONNECTOR CN-HDY
08	VR651	24	FOCUS CONTROL (UPPER SIDE)
09	VR7MO BRIGHTNESS	25	SCREEN CONTROL (LOWER SIDE)
10	VR7M1 CONTRAST	26	TEST POINT TP2000
11	VR5M2 H POSI	27	VR590 HV ADJ
12	VR4MO V POSI	28	CONNECTOR CN-HV
13	VR5M1 H SIZE	29	CONNECTOR CN-KGM
14	VR4M1 V SIZE	30	CONNECTOR CN-B
15	VR5MO SIDE PIN	B1	MAIN PWB (PWE-372)
16	VR7KO SUB CONT		

I/F PWB (CRT I/F PWB ASSY B-2)



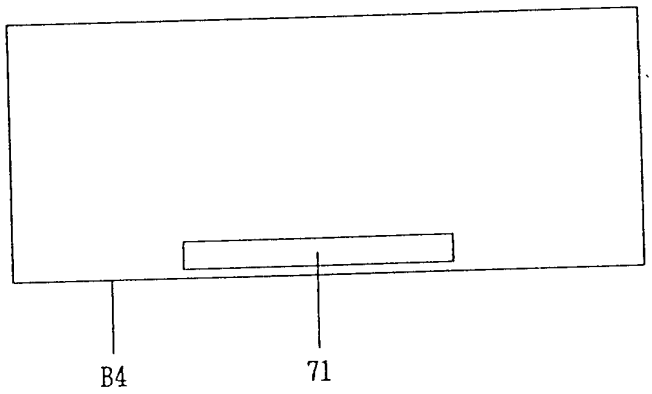
41	CONNECTOR CN-SIN	46	VR522 H HOLD2
42	CONNECTOR CN-AD	47	VR523 PARA
43	VR401 V HOLD	48	CN-MI2
44	TEST POINT TPS	49	CN-MI1
45	VR521 H HOLD1	B2	I/F PWB (PWE-373A)

CRT PWB (CRT I/F PWB ASSY B-2)



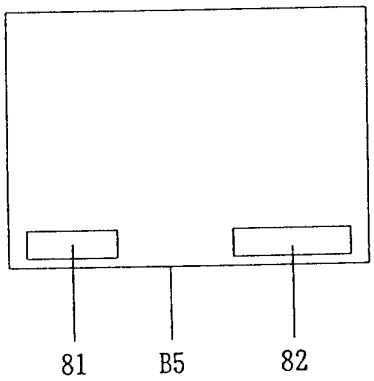
51	TEST POINT TP701B	61	VR701G G GAIN
52	TEST POINT TPCRT	62	VR701R R GAIN
53	VR751B B BIAS	63	CONNECTOR CN-VIN
54	VR751G G BIAS	64	CONNECTOR CN-CE
55	VR751R R BIAS	65	CONNECTOR CN-CM
56	VR752B B SUB BRIGHT	66	CONNECTOR CN-CRT
57	VR752G G SUB BRIGHT	B3	CRT PWB (PWE-373B)
58	TEST POINT TP701R		
59	TEST POINT TP701G		
60	VR701B B GAIN		

CHOPPER CONTROL PWB (SUB PWB ASSY B-2)



71	CONNECTOR CN-KGM	B4	CHOPPER CONTROL PWB (PWE-376A)

SW REG CONTROL PWB (SUB PWB ASSY B-2)



81	CONNECTOR CN-602	B5	SW REG CONTROL PWB (PWE-376B)
82	CONNECTOR CN-601		

ADJUSTMENT PROCEDURES

Application Range

These specifications outline the adjustment procedures for Models JC-1535VMA/B/B(EE)/R (N),(H),(P) 15 inch color monitor.

Product Name(Trade Name):	MultiSync 3V
Model Name:	JC-1535VMA/B/B(EE)/R (N),(H),(P)
Destination:	North America,Europe,Asia,and the Southern Hemisphere
Rated Voltage:	AC 100-120V 60Hz 1.6A (JC-1535VMA)
	AC 220-240V 50/60Hz 0.9A (JC-1535VMB/B(EE)/R)

Product Outline

These models are compatible with the following signals:

Preset Signals:	VGA350,VGA400,VGA480,800x600(56),800x600(60),800x600(72), EVGA350,EVGA400,EVGA480,8514/A,MAC II,EVGA480(VESA), 1024x768(60)
Horizontal Sync Frequency:	30.5 to 50kHz
Vertical Sync Frequency:	55 to 90Hz
Horizontal Sync Signal:	TTL Level Positive Polarity,Negative Polarity
Vertical Sync Signal:	TTL Level Positive Polarity,Negative Polarity
Composite Sync Signal:	TTL Level Negative Polarity
Video Signal:	Analog Positive Polarity 0.7Vp-p/75 ohms
Composite Video Signal:	Analog(Video) Positive Polarity 0.7Vp-p/75 ohms
	(Sync) Negative Polarity 0.3Vp-p/75 ohms

Adjustment Equipment

The recommended equipment for performing MultiSync 3V adjustments is listed below. Other equipment should be calibrated against this listing.

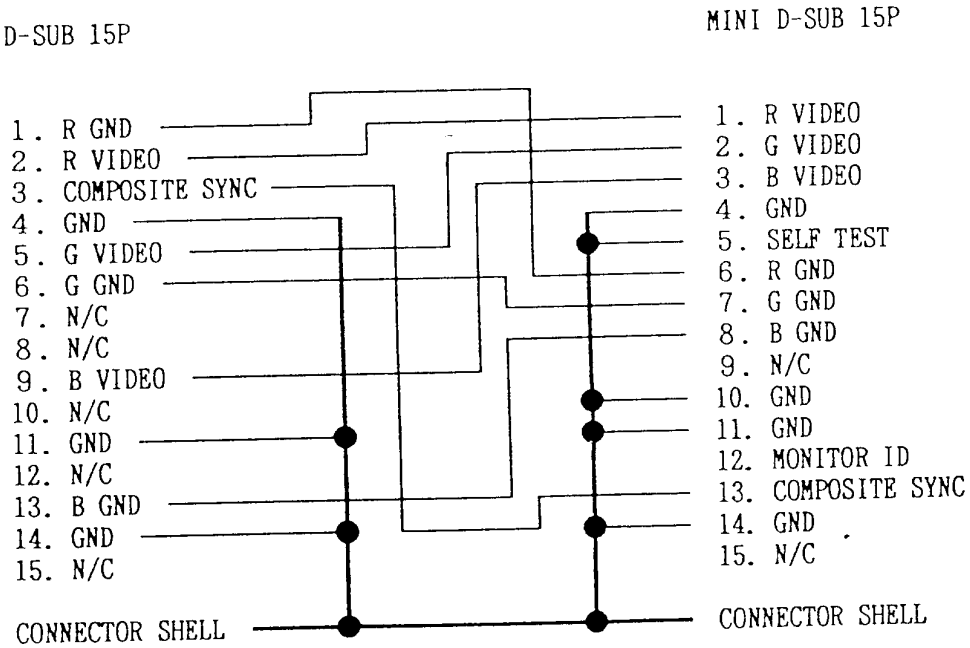
Video Signal Generator:	Leader Electron, LVG-1603
Brightness Meter:	Minolta, Color Analyzer II TV-2130 or CA-100
Static Type High Voltmeter:	Sensitive Research,Model ESH
Direct Current Voltmeter:	Internal Resistance 1 Megaohm or More
Oscilloscope:	Greater than 50 MHz Band Width

Adjustment Signal

Adjustment procedures are performed using the following signals:
Note: The exclusive FG MAC ADAPTER or CABLE must used when receiving signal 11.
Use the inverted cross hatch pattern of signal unless directed otherwise.

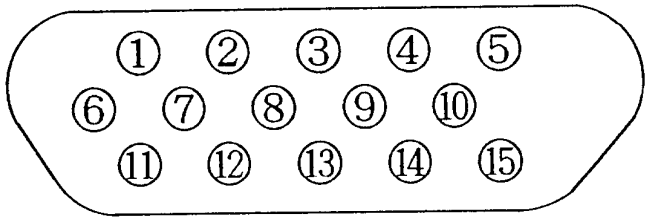
No	Signal Name	Video Signal	Sync Polarity (H/V)	
1	VGA350	Analog 0.7V	H/V Separate	P/N
2	VGA400	Analog 0.7V	H/V Separate	N/P
3	VGA480	Analog 0.7V	H/V Separate	N/N
4	800x600(56)	Analog 0.7V	H/V Separate	P/P
5	800x600(60)	Analog 0.7V	H/V Separate	P/P
6	800x600(72)	Analog 0.7V	H/V Separate	P/P
7	EVGA350	Analog 0.7V	H/V Separate	P/N
8	EVGA400	Analog 0.7V	H/V Separate	N/P
9	EVGA480	Analog 0.7V	H/V Separate	N/N
10	8514/A	Analog 0.7V	H/V Separate	P/P
11	MAC II	R Analog 0.7V G Composite 1.0V B Analog 0.7v	Composite	N/N
12	1024x768(60)	Analog 0.7V	H/V Separate	N/N
13	EVGA480(VESA)	Analog 0.7V	H/V Separate	N/N
14	Sync Signal	Analog 0.7V	H/V Separate	N/N

MAC II Adapter Wiring Diagram



Signal Input Pin Assignments

Input Connector Pin Assignment

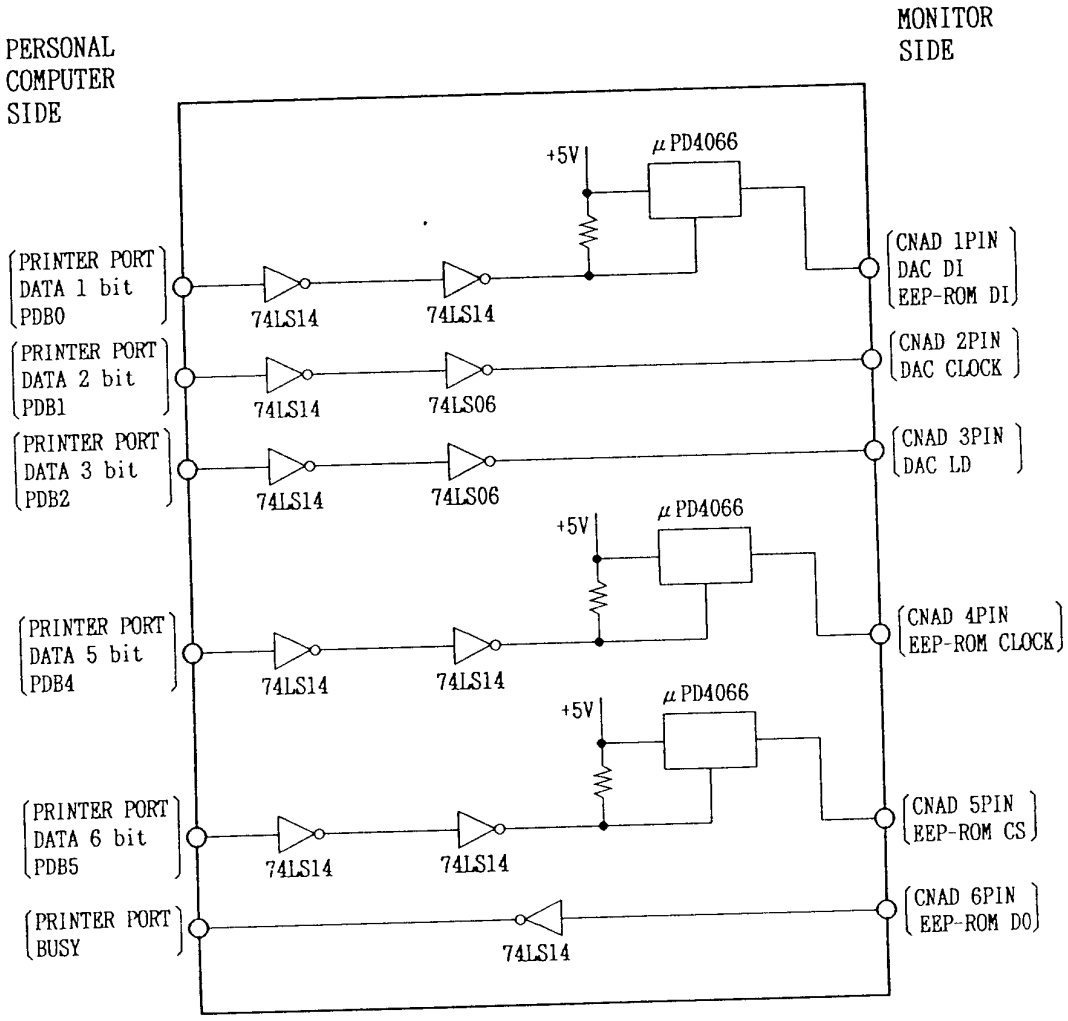


Pin No.	Input Signal	
	VGA Compatible	MAC II
1	R VIDEO	R VIDEO
2	G VIDEO	G VIDEO
3	B VIDEO	B VIDEO
4	GND (8514/A ID)	GND
5	GND (SELF TEST)	GND (SELF TEST)
6	R GND	R GND
7	G GND	G GND
8	B GND	B GND
9	N/C	N/C
10	GND	GND
11	GND (COLOR ID)	GND
12	MONITOR ID	MONITOR ID
13	H SYNC	COMPOSITE SYNC
14	V SYNC	GND
15	N/C	N/C

Note: Make sure that the test fixture cable has pin 5 (SELF TEST) grounded. Pins 6,7 and 8 should be connected to shell housing to maintain continuity of ground.

Adjustment Jig

This adjustment jig is used with a personal computer and monitor in order program size and position settings.



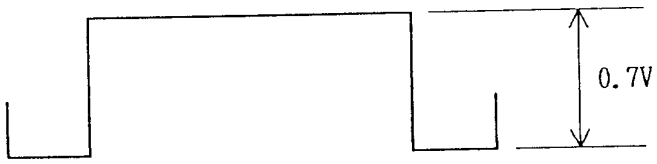
Adjustment Items

1. Adjustment Preparation
2. Horizontal Hold Adjustment
3. Vertical Hold Adjustment
4. High Voltage Adjustment
5. Vertical Linearity Adjustment
6. Horizontal Centering Adjustment
7. Parallelogram Distortion Adjustment
8. Vertical Size Adjustment
9. Vertical Position Adjustment
10. Side Pincushion Adjustment
11. Trapezoid Distortion Adjustment
12. Horizontal Phase Adjustment
13. Horizontal Size Adjustment
14. Adjustment Confirmation
15. Video Amplitude Adustment
16. Cut Off Adjustment
17. Sub Brightness Adjustment
18. White Balance Adjustment
19. Focus Adjustment
20. CRT Purity and Convergence Alignments
21. How to preset the Color Analyzer II data

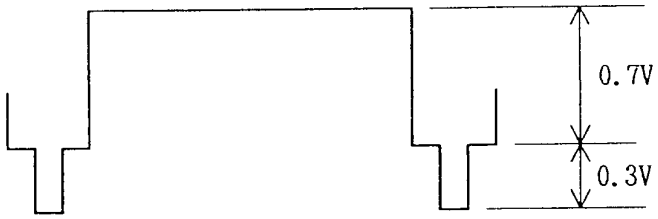
1. Adjustment Preparation

(1) Signal Generator (LVG-1603) Output Level Adjustment

When the all white of signal 1 (VGA350) is terminated at 75 ohms, adjust signal generator output level so that each waveform of R, G, B signals are obtained as shown below.



When the all white of signal 11 (MAC II) is terminated at 75 ohms, adjust signal generator output level so that waveform of G signal is obtained as shown below.



(2) Adjustment Magnetic Fields

a) Models JC-1535VMA, JC-1535VMB and JC-1535VMB(EE) should be the natural magnetic fields of Northern Hemisphere.
   Vertical Magnetic Fields 0.35 Gauss
   Horizontal Magnetic Fields 0.30 Gauss
b) Model JC-1535VMR should be the natural magnetic fields of Southern Hemisphere.
   Vertical Magnetic Fields −0.40 Gauss
   Horizontal Magnetic Fields 0.30 Gauss
c) The monitor should be facing east.
d) Before adjusting, degauss the entire unit by external degaussing coil.

(3) Production Line Initial Adjustment Control Settings

Before adjusting, set the position of controls as follows:

a) MAIN PWB (See page 14 for Control Location)

Power Switch		OFF
☆ VR651		Fully counterclockwise
VR7M0	BRIGHTNESS	Fully clockwise
VR7M1	CONTRAST	Fully clockwise
VR5M2	H POSI	Center click position
VR4M0	V POSI	Center click position
VR5M1	H SIZE	Center click position
VR4M1	V SIZE	Center click position
VR5M0	SIDE PIN	Center click position
VR470	V LIN	Mechanical center
☆ VR570	H CENT	Mechanical center
☆ VR590	HV ADJ	Fully counterclockwise
VR7K0	SUB CONT	Fully counterclockwise
VR7L0	SUB BRIGHT	Mechanical center
SCREEN CONTROL		Fully counterclockwise
FOCUS CONTROL		Fully counterclockwise

b) I/F PWB (See page 15 for Control Location)

VR401	V HOLD	Mechanical center
☆ VR521	H HOLD1	Fully clockwise
☆ VR522	H HOLD2	Mechanical center
VR523	PARA	Mechanical center

c) CRT PWB (See page 16 for Control Location)

VR701R	R GAIN	Mechanical center
VR701G	G GAIN	Mechanical center-
VR701B	B GAIN	Mechanical center
VR751R	R BIAS	90° counterclockwise(Nine o'clock)
VR751G	G BIAS	90° counterclockwise(Nine o'clock)
VR751B	B BIAS	90° counterclockwise(Nine o'clock)
VR752G	G SUB BRIGHT	Mechanical center
VR752B	B SUB BRIGHT	Mechanical center

Note: The controls marked with "☆" are production line settings which are adjustments made to prevent component damages upon initial power up.

(4) Warm Up

Adjust this monitor after a minimum of twenty minutes to allow unit to reach ambient operating temperature.

2. Horizontal Hold Adjustment

(1) Short TP-S pins 1,2 and 3.
(2) Receive signal 14 (SYNC ADJUST).
(3) Adjust VR521 (H HOLD1) so that there is one screen.
(4) Receive signal 6 (800x600(72)).
(5) Adjust VR522 (H HOLD2) so that there is one screen.
(6) Receive signal 4 (800x600(56)).
(7) Adjust VR521 (H HOLD1) so that there is one screen.
(8) Remove the short among TP-S pins 1,2 and 3.
(9) Receive signals 2 (VGA400),8 (EVGA400),check for synchronization.

3. Vertical Hold Adjustment

(1) Turn VR401 (V HOLD) fully clockwise.
(2) Receive signal 14 (SYNC ADJUST).Rotate VR401 (V HOLD) slowly counterclockwise unt the image starts to roll.Then turn VR401 back clockwise to the point the image fi stops rolling.
(3) Receive signals 2,4,and 7 (EVGA350),check for synchronization.

4. High Voltage Adjustment
(Production Line Procedure)

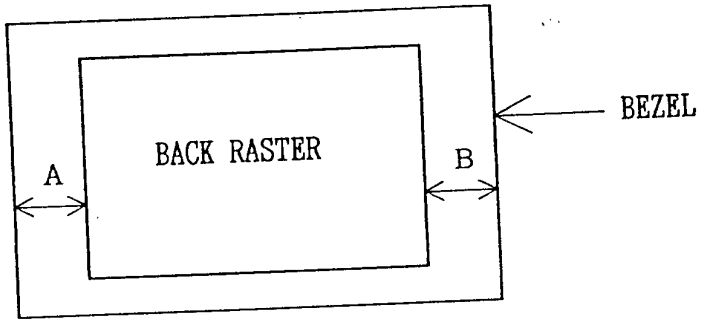
(1) Turn VR590 (HV ADJ) fully counterclockwise.
(2) Receive signal 7 (EVGA350).
(3) Measure high voltage when anode current is shown 0μA.
(4) Adjust VR590 (HV ADJ) slowly so that high voltage is 24.0$\pm$0.3kV.
(5) After adjusting,seal VR590 with a silicon adhesive and cap (VR590).

5. Vertical Linearity Adjustment
(Note: Perform this adjustment only if necessary.)

(1) Set VR470 (V LIN(C)) to the mechanical center position.
(2) Receive the cross hatch pattern of signal 4 (800x600(56)).
(3) Adjust VR4M1 (V SIZE) so that display size is about 195mm.
(4) Adjust VR4M0 (V POSI) so that display is centered within bezel.
(5) Adjust VR470 (V LIN (C)) so that up and down linearity is same.
(Turn VR470 (V LIN (C)) slowly counterclockwise when the squares on top are large than the those on the bottom.Turn VR470 slowly clockwise when the bottom squares are larger.)

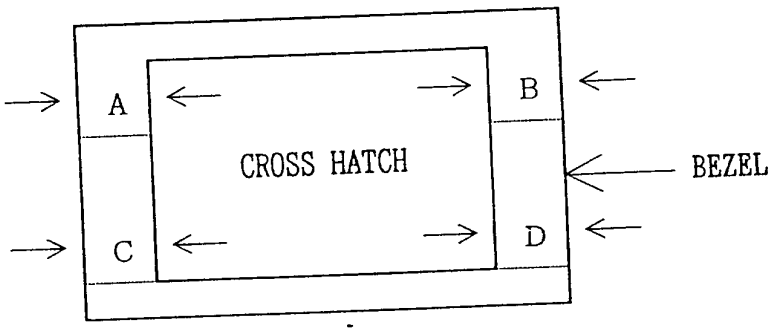
6. Horizontal Centering Adjustment

(1) Receive the all black of signal 4 (800x600(56)).
(2) Adjust SCREEN CONTROL so that back raster is bright.
(3) Turn VR5M1 (H SIZE) so that the back raster is made larger than the active image.
(4) Adjust VR570 (H CENT) so that A=B. (See diagram below.)



7. Parallelogram Distortion Adjustment

(1) Receive the cross hatch pattern of signal 4 (800x600(56)).
(2) Adjust VR5M2 (H POSI), VR4M0 (V POSI), VR5M1 (H SIZE) and VR4M1 (V SIZE) so that display screen size is 260x195mm and centered within bezel.
(3) Adjust VR523 (PARA) so that A=B, C=D. (See diagram below.)



8. Vertical Size Adjustment

(1) Receive the inverted cross hatch pattern of signal 3 (VGA480).
(2) Set VR4M1 (V SIZE) to the center click position.
(3) Adjust VR4M0 (V POSI) so that display is centered within bezel.
(4) Adjust the vertical display size to 195mm by using adjustment program.

See page 37 for adjustment program operating procedures.

9. Vertical Position Adjustment

(1) Receive the inverted cross hatch pattern of signal 3 (VGA480).
(2) Set VR4M0 (V POSI) to the center click position.
(3) Vertically center the image within the bezel by using adjustment program.

See page 37 for adjustment program operating procedures.

10. Side Pincushion Adjustment

(1) Receive the inverted cross hatch pattern of signal 3 (VGA480).
(2) Set VR4M0 (V POSI), VR4M1 (V SIZE), VR5M0 (SIDE PIN) to the center click position.
(3) Adjust VR5M1 (H SIZE) so that the horizontal display size is about 260mm.
(4) Correct the pincushion distortion (make left and right sides straight) by using adjustment program.

See page 37 for adjustment program operating procedures.

11. Trapezoid Distortion Adjustment

(1) Receive the inverted cross hatch pattern of signal 3 (VGA480).
(2) Set VR4M0 (V POSI), VR4M1 (V SIZE), VR5M0 (SIDE PIN) to the center click position.
(3) Adjust VR5M1 (H SIZE) so that the horizontal display size is about 260mm.
(4) Correct the trapezoid distortion (make left and right vertical sides equal in length) by using adjustment program.

See page 37 for adjustment program operating procedures.

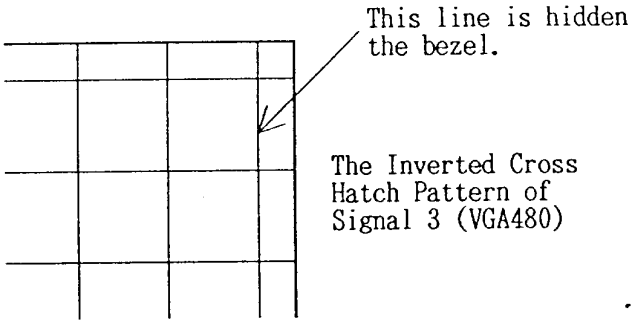
12. Horizontal Phase Adjustment

(1) Set VR5M2 (H POSI) to the center click position.
(2) Receive the inverted cross hatch pattern of signal 3 (VGA480).
(3) Horizontally center the image within the bezel by using adjustment program.

See page 37 for adjustment program operating procedures.

13. Horizontal Size Adjustment

(1) Receive the inverted cross hatch pattern of signal 3 (VGA480).
(2) Set USER CONTROLs (except BRIGHTNESS and CONTRAST) to the center click position.
(3) Set GAIN setting data and DAC data of H SIZE (CENT) to 0 by using adjustment program
(4) Adjust H SIZE (MAX) so that display area is over-scan about 2 to 3mm by using adjustment program. (When using LVG-1603, the inverted cross hatch pattern of first and seventeenth vertical lines are to hide the bezel. (See diagram below.)
(5) Adjust H SIZE (CENT) so that display size is 260mm by using adjustment program.



* When adjusting H SIZE (MAX) by signal 6 (800x600(72)), Use signal that made 87 percent (87chr) the horizontal display character of standard signal and adjust H size to 260 mm that gain setting data and DAC data of H SIZE (CENT) is made 0.

See page 37 for adjustment program operating procedures.

14. Adjustment Confirmation

When receiving the adjustment signals 1 to 13, make sure that the display size, position, trapezoid and pincushions distortions are all within specification. Verify over-scan performance by adjusting VR5M1 (H SIZE) control fully clockwise.

15. Video Amplitude Adjustment

NOTE: Verify the following video input signal before performing white balance procedure.

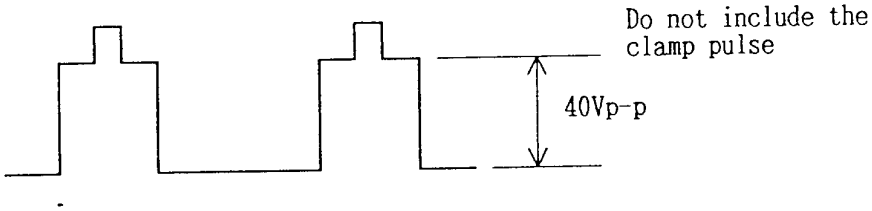
Video:	Analog 0.7Vp-p(75 ohms terminated)
Sync:	H/V Separate TTL Level

Initial setting of adjustment controls

VR7M0	BRIGHTNESS	:	Fully counterclockwise
VR7M1	CONTRAST	:	Fully clockwise
VR701R, G, B	R, G, B GAIN	:	Mechanical center position
VR7K0	SUB CONTRAST	:	Fully counterclockwise
VR751R, G, B	R, G, B BIAS	:	90° counterclockwise(Nine o'clock)
VR752G, B	G, B SUB BRIGHT	:	Mechanical center position
VR7L0	SUB BRIGHT	:	Mechanical center position
SCREEN CONTROL		:	Fully counterclockwise

(1) GAIN Adjustment

a) Receive the all white 1/4 window pattern of signal 1 (VGA350).
b) Set VR7M0 (BRIGHTNESS) fully counterclockwise, VR7M1 (CONTRAST) fully clockwise.
c) Adjust VR701R so that the TP701R on the CRT PWB are set to 40Vp-p.



(2) SUB CONTRAST Adjustment

a) Receive the all white 1/4 window pattern of signal 1 (VGA350).
b) Set VR7M0 (BRIGHTNESS), VR7M1 (CONTRAST) fully counterclockwise.
c) Adjust VR7K0 (SUB CONTRAST) so that TP701R on the CRT PWB is set to 10Vp-p.

16. Cut Off Adjustment

(1) Receive the all black pattern of signal 1 (VGA350).
(2) Set VR7M0 (BRIGHTNESS), VR7M1 (CONTRAST) and SCREEN CONTROL fully counterclockwise.
(3) Short Test Points TPCRT pin 1 and 2 on the CRT PWB.
(4) Short Test Points TP-S pin 1 and 4 on the I/F PWB.
(5) Turn SCREEN CONTROL clockwise slowly until a single color appears horizontally. Adjust SCREEN CONTROL so that the color can faintly be seen. This color is the reference color for the cut off adjustment.
(6) Turn the non-reference color BIAS VRs until a white line is formed.
(7) Remove the short between TP-S pin 1 and 4 on the I/F PWB.
(8) Remove the short between TPCRT pin 1 and 2 on the CRT PWB.

*** Check the TV-Color Analyzer has been preset with the calibration data before the starting next adjustment.

(*1) Set mode selector of the TV-Color Analyzer II to "CHROMA" position.
(*2) Select #1 CRT memory channel by pressing CRT key until LED lights beneath appropriate channel number.
(*3) Select desired COLOR memory channels by pressing CRT key until LED lights beneath appropriate channel numbers.
(*4) Check the preset data by pressing MR(memory read) key. This data will be shown on the LED displays.

COLOR #	Data"x"	Data"y"	Data"Y"
1(Memory-1)	0.300±0.002	0.305±0.002	6 cd/m²
2(Memory-2)	0.300±0.002	0.305±0.002	20 cd/m²

Note: 1 cd/m² ≒ 0.2918 Ft-L

(*5) If this data is not displayed, it has not been preset with the calibration data. The ANALYZER must be preset with the calibration data according to the document of the "How to preset the Color Analyzer II data".

*** Degauss the monitor using an external degaussing coil before continuing with the white balance adjustment.

17. Sub Brightness Adjustment

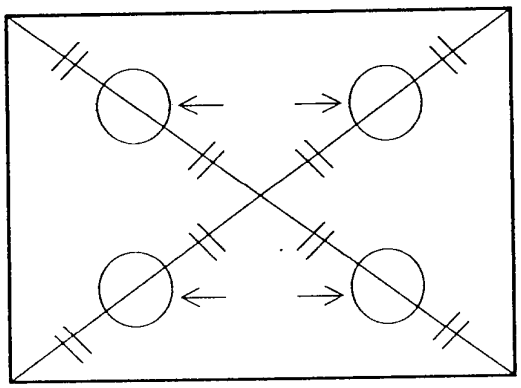
(1) Use memory-1(ANALYZER MODE) of Color Analyzer II.
Memory-1 : Chromaticity coordinates x=0.300
y=0.305
Brightness 6 cd/m²
(2) Set VR7M0 (BRIGHTNESS) fully clockwise, VR7M1 (CONTRAST) fully counterclockwise.
(3) Receive the all black pattern of signal 1 (VGA350).
(4) Adjust VR7L0 (SUB BRIGHT) so that the R display of the Color Analyzer is 100. (When unable to obtain 100, repeat step 16, Cut Off Adjustment.)
(5) Adjust VR752G, B (G, B SUB BRIGHT) to obtain 100 on the Green and Blue screens.

18. White Balance Adjustment

(1) Use memory-2(ANALYZER MODE) of Color Analyzer II.
Memory-2 : Chromaticity coordinates x=0.300
y=0.305
Brightness 20 cd/m²
(2) Set VR7M0 (BRIGHTNESS), VR7M1 (CONTRAST) fully counterclockwise.
(3) Receive the all white 1/4 window pattern of signal 1 (VGA350).
(4) Adjust VR7M1 (CONTRAST) so that the R display of the Color Analyzer is 100.
(5) Adjust the other two VR701 (GAIN) controls to obtain 100 on their respective displ

19. Focus Adjustment

(1) Receive the all "$" (4 dots missing) character pattren of signal 6 (800x600(72)).
(2) Set VR7M0 (BRIGHTNESS) so that the back-raster just disappears and set VR7M1 (CONTRAST) fully clockwise.
(3) Adjust FOCUS CONTROL to obtain the best focus the whole screen.
The standard adjustment points are shown below.



20. CRT Purity and Convergence Alignments

Receive all white pattern of signal 6. Verify monitor over-scan capability by adjusting VR5M1 (H SIZE) and VR4M1 (V SIZE). Return controls to center click position. Adjust the brightness and contrast controls as follows.

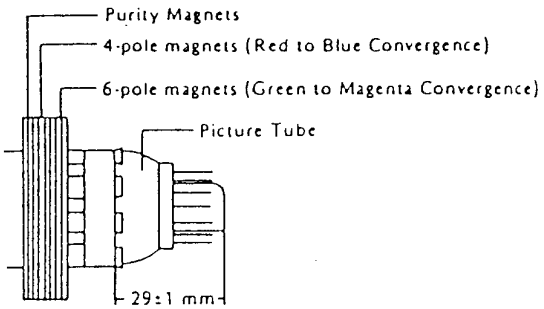
BRIGHTNESS CONTROL : Set the position so that the back-raster just disappears
CONTRAST CONTROL : Set the position so that the brightness obtains 100cd/m²

(1) Purity

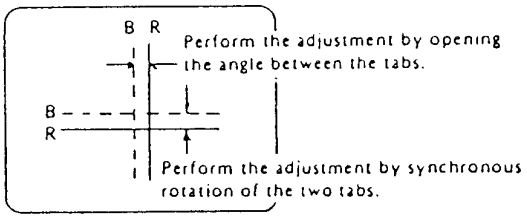
① Receive the all white of signal 6 (800x600(72)).
② The monitor should be facing east and degauss the entire unit by external degaussing coil. Make sure the single color purity in screen size 280mmx210mm.
If not, readjust CPC magnet and touch up using correction magnets.

(2) Purity Adjustment

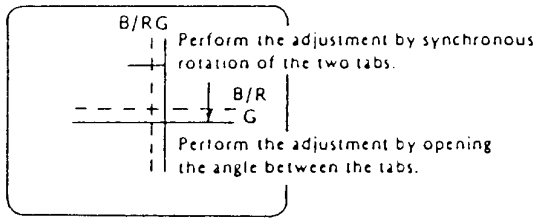
① Be sure that the display is not being exposed to any external magnetic fields.
② Ensure that the spacing between the Purity Convergence Magnet(PCM) assembly and the CRT stem is 29mm±1mm. (See diagrams below)
③ Produce a complete, red pattern on the screen. Adjust the purity magnet rings on the PCM assembly to obtain a complete field of the color red. This is done by moving the two tabs in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180°.
④ Check the complete blue and complete green patterns to observe their respective color purity. Make minor adjustments if needed.



Purity, Convergence Magnet Assembly (PCM)



Red to Blue Convergence
(Magenta)

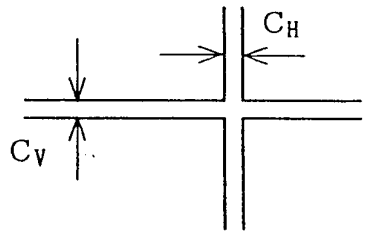


Green to Magenta Convergence
(White)

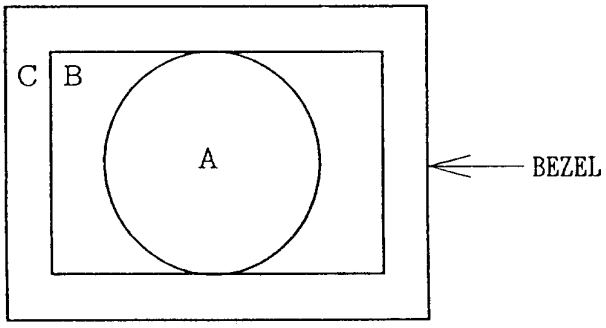
(3) Convergence

C_H : Convergence error of horizontal direction
C_V : Convergence error of vertical direction
C_S : Total deviation of Convergence error

(Calculate by " $\sqrt{C_H^2 + C_V^2}$ ")



① Receive the normal cross hatch pattern of signal 6 (800x600(72)).
② Measure convergence error. If not value below, adjust static convergence by 4-pole magnets and 6-pole magnets.



A Zone (In a circle of 195mm in diameter that make center CRT face center)
C_H , C_V : Within 0.35mm
C_S : No rule

B Zone (Part except A zone within the rectangle of 260mmx195mm)
C_H , C_V : Within 0.35mm

If not, calculate C_S.
C_S : Within 0.50mm

For details, see list below.

	$C_H \leqq 0.35$mm	0.35mm < $C_V \leqq 0.40$mm
$C_V \leqq 0.35$mm	OK	Calculate C_S and judge Within 0.50mm → OK
0.35mm < $C_V \leqq 0.40$mm	Calculate C_S and judge Within 0.50mm → OK	Need to touch up

C Zone (Part except A and B zone within the bezel)
Adjust the display screen to spread by using H Size VR and V Size VR.
C_H , C_V : Within 0.45mm
C_S : No rule

(4) Convergence Adjustment

① Produce a magenta crosshatch on the screen.
② Adjust the focus for the best overall focus on the screen.
Also adjust the brightness to the desired condition.
③ Vertical red and blue lines are converged by varying the angle between the two tabs of the 4-pole magnets on the PCM assembly. (See page 30 for diagrams)
④ Horizontal red and blue lines are converged by varying the two tabs together, keeping the angle between them constant.
⑤ Produce a white crosshach pattern on the screen.
⑥ Vertical green and magenta lines are converged by varying the angle between the two tabs of the 6-pole magnets.
⑦ Horizontal green and magenta lines are converged by varying the two tabs together, keeping the angle between them constant.

21. How to preset the Color Analyzer II data

The 3V must use the Color Analyzer II for performing the white balance adjustment. The Color Analyzer II must be preset with the standard values before performing this adjustment procedure.
This document will specify and explain how to program standard values into memory.
This section will specify and explain how to preset the standard values into the Analyzer's memory.
(General)
The 3V unique specified white balance is set to: "x=0.300, y=0.305".
(Memory preset procedure)
Equipment: Minolta, Color Analyzer II TV-2130/2140/2150/2160
3V

(1) Setup
Use the VGA480 signal for data storage. The monitor should be connected to the signal generator for a minimum of twenty minutes.

(2) Zero Calibration
a) Connect probe to main unit's probe terminal, turn power switch on.
b) An automatic check is conducted as soon as power is turned on. If check is satisfactory, top digital display reads "CAP".
c) Place calibration cap over probe or set probe in calibration chamber located on top of unit.
d) Press CAL key. "CAL" appears in top of display during operation, and all displays blink when calibration is complete.

(3) Presetting the phosphor characteristics
a) Set mode selector to ANALYZER position.
b) Display "Pure Red" 1/4 window pattern on CRT screen.
BRIGHTNESS CONTROL: Fully counterclockwise
CONTRAST CONTROL: Fully clockwise
c) Press probe firmly against monitor screen center.
d) Select CRT channel number by pressing CRT key until LED lights indicate channel #1.
e) To measure red phosphor characteristics, press the CAL key until LED lights beneath channel R.
f) After readings on LED display have stabilized, store values by pressing CAL key while holding down MS key. A LED beneath channel R blinks to confirm that red phosphor characteristics have been properly stored.
g) Repeat procedures b) through f), two more times, using CAL key select channels G and B, and consecutively input green and blue phosphor characteristics into memory. When all primaries are input to memory, LEDs beneath R, G and B blink briefly to indicate that the phosphor characteristics are properly stored in a #1 CRT channel.

NOTE: All three phosphor characteristics must be stored in memory for accurate measurement in analyze mode.

(4) Presetting data into memory 1

a) Set mode selector to CHROMA mode.

b) Set the color channel to "1" by pressing COLOR key.

c) Set the CRT channel to "1" by pressing CRT key.

d) Display "All White" pattern on CRT screen.

BRIGHTNESS CONTROL: Arbitrary position

CONTRAST CONTROL: Arbitrary position

e) Press probe firmly against monitor screen. Use tape to attach the probe to the screen to make this procedure easier to perform.

f) Generate the following white pattern on monitor's screen by adjusting a combination of the R, G and B ratio on the signal generator; or the R, G and B gain controls and/or the BRIGHTNESS and CONTRAST CONTROLS.

(Memory-1 white) $x=0.300$ $y=0.305$ $Y=6\ cd/m^2$

g) Once desired values are shown on digital display, press COLOR key while holding down MS key to store this data. The LED beneath "1" blinks and two center LEDs (green) on each deviation array light to confirm that data has been properly stored.

(5) Presetting the white balance data that named "Memory-2".

a) Set mode selector to CHROMA mode.

b) Set the color channel to "2" by pressing COLOR key.

c) Set the CRT channel to "1" by pressing CRT key.

d) Display "All White" pattern on CRT screen.

BRIGHTNESS CONTROL: Arbitrary position

CONTRAST CONTROL: Arbitrary position

e) Press probe firmly against monitor screen. Use tape to attach the probe to the screen to make this procedure easier to perform.

f) Generate the following white pattern on monitor's screen by adjusting a combination of the R, G and B ratio on the signal generator; or the R, G and B gain controls and/or the BRIGHTNESS and CONTRAST CONTROLS.

(Memory-2 white) $x=0.300$ $y=0.305$ $Y=20\ cd/m^2$

g) Once desired values are shown on digital display, press COLOR key while holding down MS key to store this data. The LED beneath "2" blinks and two center LEDs (green) on each deviation array light to confirm that data has been properly stored.

(6) Set the write protect

After presetting all data, set the W-LOCK switch to ON located under the plastic strip on the bottom of the color Analyzer. The preset data will be stored for 1,500 hours provided the Analyzer is used for at least 7 hours per week.

If the data is lost, it will be necessary to reprogram the Analyzer with the above procedure.

Timig of Referrence Signal
Signal for Using LVG-1603

	PROGRAM NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	SIGNAL NAME	VGA350	VGA400	VGA480	800x600 (56)	800x600 (60)	800x600 (72)	EVGA350	EVGA400	EVGA480	8514/A	MAC II	1024x768 (60)	EVGA480 (VESA)	SYNC ADJUST
	RESOLUTION	720x350	720x400	640x480	800x600	800x600	800x600	720x350	720x400	640x480	1024x768	640x480	1024x768	640x480	30K/51Hz
	DOT CLOCK [MHz]	28.321	28.321	25.175	36.000	40.000	50.000	35.500	35.500	31.500	44.900	30.240	65.000	31.500	24.000
	Fh [KHz]	31.469	31.469	31.469	35.156	37.879	48.077	39.444	39.444	39.375	35.522	35.000	48.363	37.860	30.000
	Fv [Hz]	70.086	70.086	59.940	56.250	60.317	72.188	87.849	87.849	75.0	86.958	66.667	60.004	72.809	51.020
H	CELL SIZE [DOT]	9	9	8	8	8	8	9	9	8	8	8	8	8	8
H	TOTAL [CHR/DOT]	100/900	100/900	100/800	128/1024	132/1056	130/1040	100/900	100/900	100/800	158/1264	108/864	168/1344	104/832	100/800
H	[μs]	31.778	31.778	31.778	28.444	26.400	20.800	25.352	25.352	25.396	28.151	28.571	20.677	26.413	33.333
H	DISP [CHR/DOT]	80/720	80/720	80/640	100/800	100/800	100/800	80/720	80/720	80/640	128/1024	80/640	128/1024	80/640	45/360
H	[μs]	25.422	25.422	25.422	22.222	20.000	16.000	20.281	20.281	20.317	22.806	21.164	15.754	20.317	15.000
H	FRONT [DOT]	18	18	16	24	40	56	18	18	16	8	64	24	24	180
H	[μs]	0.636	0.636	0.636	0.667	1.000	1.120	0.507	0.507	0.508	0.178	2.116	0.369	0.762	7.500
H	SYNC PULSE [DOT]	108	108	96	72	128	120	108	108	96	176	64	136	40	80
H	[μs]	3.813	3.813	3.813	2.000	3.200	2.400	3.042	3.042	3.048	3.920	2.116	2.092	1.270	3.333
H	BACK [DOT]	54	54	48	128	88	64	54	54	48	56	96	160	128	180
H	[μs]	1.907	1.907	1.907	3.556	2.200	1.280	1.521	1.521	1.524	1.247	3.175	2.462	4.063	7.500
V	CELL SIZE [H]	14	16	16	12	12	12	14	16	16	16	16	12	16	16
V	TOTAL [H]	449	449	525	652	628	666	449	449	525	408	525	806	520	588
V	DISP [H]	25/350	25/400	30/480	50/600	50/600	50/600	25/350	25/400	30/480	24/384	30/480	64/768	30/480	20/320
V	FRONT [H]	37	12	10	1	1	37	38	13	11	0	3	3	9	132
V	SYNC PULSE [H]	2	2	2	2	4	6	2	2	2	4	3	6	3	4
V	BACK [H]	60	35	33	22	23	23	59	34	32	20	39	29	28	132
	INTERLACE	NON	NON	NON	NON	NON	NON	NON	NON	NON	& VIDEO	NON	NON	NON	NON
	POLARITY	POS/NEG	NEG/POS	NEG/NEG	POS/POS	POS/POS	POS/POS	POS/NEG	NEG/POS	NEG/NEG	POS/POS	NEG/NEG	NEG/NEG	NEG/NEG	NEG/NEG
	COMPOSITE SYNC	—	—	—	—	—	—	—	—	—	—	NEG	—	—	—
	COMPOSITE VIDEO	—	—	—	—	—	—	—	—	—	—	GREEN	—	—	—
	CHARACTER FONT	7x9	7x9	7x9	7x9	7x9	7x9	7x9	7x9	7x9	7x9	7x9	7x9	7x9	7x9
	SERRATION	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF
	EQP	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Signal for Quantum 801C

PROGRAM NO	1	2	3	4	5	6	7	8	9	10	11	12	13	14
SIGNAL NAME	VGA350	VGA400	VGA480	800x600 (56)	800x600 (60)	800x600 (72)	EVGA350	EVGA400	EVGA480	8514/A	MAC II	1024x768 (60)	EVGA480 (VESA)	SYNC ADJUST
Dot Rate (MHz)	28.320	28.320	25.176	31.960	32.040	32.016	31.950	31.950	31.500	31.968	30.240	32.112	31.496	24.000
Horizontal Rate (KHz)	31.470	31.467	31.470	35.160	37.872	48.072	39.444	39.444	39.375	35.520	35.000	48.361	37.856	30.000
Vertical Rate (Hz)	70.09	70.08	60.06	56.26	60.31	78.18	87.849	87.849	75.000	86.96	66.67	59.85	72.80	51.02
H Dots/Char	9	9	8	9	9	9	9	9	8	9	8	8	8	8
H Total	100	100	100	101	94	74	90	90	100	100	108	83	104	100
H Chracters	80	80	80	79	71	57	72	72	80	81	80	63	80	45
H Drive Delay	82	82	82	81	75	61	74	74	82	82	88	64	83	67
H Drive Width	12	12	12	7	11	9	12	12	12	14	8	4	5	10
V Lines/Char	10	10	10	10	12	12	10	10	10	12	10	12	12	16
V Total	449	449	524	625	628	666	449	449	525	817	525	808	520	588
V Rows	35	40	48	60	50	50	35	40	48	64	48	64	40	20
V Drive Delay	39	41	49	60	50	53	39	41	49	64	48	64	41	28
V Drive Width	2	2	2	2	4	6	2	2	2	4	3	4	3	4
V Step Width	2	2	2	2	2	2	2	2	2	2	2	2	2	2
OP 1 (Comp Sync)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OP 2 (V Step)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OP 3 (H Drive)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
OP 4 (V Drive)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
OP 5 (Comp Sync P)														
OP 6 (V Step P)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OP 7 (H Drive P)	0	1	1	0	0	0	0	1	1	0	1	1	1	1
OP 8 (V Drive P)	1	0	1	0	0	0	1	0	1	0	1	1	1	1
OP 9 (Interlace)	0	0	0	0	0	0	0	0	0	3	0	0	0	0
OP 10 (Video Mode)	1	1	1	1	1	1	1	1	1	1	1	1	1	1
OP 11 (Duty Cycle)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OP 12 (Clock Phase)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OP 13 (Video P)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OP 14 (H Skew)														
OP 15 (V Skew)														
OP 16 (Cursor)														

Adjustment Program Operating Procedures

These operating procedures apply the adjustment program "ADJ203.BAS"

General Description

Functions: The off-line adjustment program of the horizontal/vertical display size and position.
File names: ADJ203.BAS, PRINT.POT
Working Conditions:
PC-9801 or IBM PC/AT compatible
(The PRINT.POT's value is changed by using personal computer.)
MS-DOS, MS-BASIC or compatible programs
Programing Language:
MS-BASIC
Equipments: Adjustment Jig, Printer Cable, 5V Power Supply

Adjustment Procedures

1. Adjustment Preparation

(1) Turn the power switch on the monitor.
(2) Connect the printer cable between PRINTER PORT (Personal Computer) and CN-PRT (Adjustment Jig).
(3) Connect 5V power supply to CN-B (Adjustment Jig).
(4) Turn the power switch on the personal computer.
(5) At the DOS prompt execute MS-BASIC program. Run the "ADJ203.BAS" basic routine.
(6) Connect a cable from CN-OUT (Adjustment Jig) to CN-AD (Monitor's I/F PWB).
(7) Set USER CONTROLs (except BRIGHTNESS and CONTRAST) to center click position.

NOTE: Initialize a new ROM before interfacing the video generator to avoid storing invalid data.

Program Operating Procedures

1. Run "ADJ203.BAS". First, determine the monitor's ID and input the 3 digit character. Use 0 to 9 and A through Z (UPPER CASE ONLY).
2. Next, initialize the ROM. Input "Y" when using un-initialized ROM.
3. T.TOTAL is automatically selected upon the ROM's initialization when "Y" is input in last step. When "Y" is not input, select from 1 to 16 the screen (s) to be adjusted. All signals are affected when "T" T.TOTAL's adjustment is performed using signal 3 (VGA480).

4. Once the input signal is selected the adjustments screen will appear. Press "1" through "7" to select adjustment item to be manipulated. Two figures will be displayed. The left side display "0" to "3" corresponds to the gain level setting. The right side "0" to "255" corresponds to the DAC level setting. The adjustment values are based on gain and DAC data. Key operations manipulate DAC and gain data is varied by one when the DAC data exceeds the limit. Gain adjustment limits are from "1" to "3", DAC adjustment limits range from "0" to "255".
DAC data is manipulated as shown below:

DECREASE DATA		INCREASE DATA	
KEY PRESS	STEPS CHANGED	KEY PRESS	STEPS CHANGED
1	-1	3	+1
4	-2	6	+2
7	-5	9	+5

Pressing "5" will restore factory preset DAC data.

Press the RETURN key upon completion. New data is written to the EEPROM and the adjustment screen is displayed. Upon completion off all adjustments type "0" and return to the select adjustment item screen. Type "E" upon completion of all adjustments for the monitor and all of this data will be written to the PC's disc in the file DATA.xxx (Where xxx is the monitor ID of step 1).

NOTE: When selecting signals in the PC program above, be sure to change video generator's signal as well.

5. Dac data change of each adjustment item as follows:

Adjustment Item		The change of the screen by changing the DAC data
H POSI	:	The screen moves right when the data values are increased. The screen moves left when the date values are decreased. The syncronization flows when the data values are too small. Caution.
V POSI	:	The screen moves up when the data values are increased The screen moves down when the data valus are decreased.
H SIZE(MAX)	:	The screen is large when the data values are increased. The screen is small when the data values are decreased. Make these adjustments carefully as circuit damage can occur when data values become too large.
H SIZE(CENT)	:	The screen is small when the data values are increased. The screen is large when the data values are decreased.
V SIZE	:	The screen is large when the data values are increased. The screen is small when the data values are decreased.
SIDE PIN	:	The screen is pincushion when the data values are increased. The screen is barrel when the data values are decreased.
TRAPEZOID	:	The screen's up is spread when the data values are decreased. The screen's down is spread when the data values are increased.

6. Power up all equipment (signal source, monitor, PC), make all adjustments, store to the EEPROM and to the disc to assure proper data storage and reduce risk of damaging DACs.

Adjustment Program

Make the subdirectory named DATA for preserving data under root directory.

Make the file named print.pot which describes the I/O address of printer port of the personal computer for adjusting and place it in the same directory that ADJ203.BAS exists. See the program's address 1090 to 1115 as shown below and write the adapted values to print.pot.

```
1000  'SAVE "adj203.BAS",A
1010  '
1020  '   CN203 ROM/DAC TEST PROGRAM_3  Ver 1.3
1030  '
1040  '                        1992-12-12  Ver 1.1
1050  '                        1993-03-18  Ver 1.2
1051  '                        1993-04-27  Ver 1.3
1060  '
1070  DIM D(13),R(11),C(2),A(7),A$(17),S$(16)
1080  DIM DA(17),DB(17,8,2),DC(17,8,2)
1081  OPEN "PRINT.POT" FOR INPUT AS #1
1082  INPUT #1,F$
1083  F=VAL(F$):CLOSE #1
1084  IF F=&H40 THEN PC$="98"
1085  IF F=&H278 OR F=&H378 OR F=&H3BC THEN PC$="IBM"
1086  IF PC$="98" OR PC$="IBM" THEN 1090
1087  CLS : PRINT "UNKNOWN PC !!! " : END
1090  'F=&H40  : PC$="98"              'F=PRINTER PORT FOR NEC PC-9801
1100  'F=&H278 : PC$="IBM"             'F=PRINTER PORT FOR IBM PC/AT
1110  'F=&H378 : PC$="IBM"             'F=PRINTER PORT FOR IBM PC/AT
1115  'F=&H3BC : PC$="IBM"             'F=PRINTER PORT FOR IBM PC/AT
1120  OUT F,4
1130  OUT F,6
1140  '
1150  A$(0)=" E. END"
1160  A$(1)=" 1. VGA350"
1170  A$(2)=" 2. VGA400"
1180  A$(3)=" 3. VGA480"
1190  A$(4)=" 4. SVGA800*600(56)"
1200  A$(5)=" 5. SVGA800*600(60)"
1210  A$(6)=" 6. SVGA800*600(72)"
1220  A$(7)=" 7. EVGA350"
1230  A$(8)=" 8. EVGA400"
1240  A$(9)=" 9. EVGA480"
1250  A$(10)="10. 8514/A"
1260  A$(11)="11. MAC2"
1270  A$(12)="12. SVGA1024*768(60)"
1280  A$(13)="13. SVGA1024*768(72)"
1290  A$(14)="14. SVGA1024*768(75)"
1300  A$(15)="15. EVGA480(VESA)"
1310  A$(16)="16. UNKNOWN"
1315  A$(17)=" T. TOTAL"
1320  '
1330  FOR K=0 TO 9
1340    R(K)=0
1350  NEXT
```

```
1360  '
1370  FOR K=1 TO 7
1380    READ A,B
1390    DA(K)=(5+A*3-(A\2)*2)*(B+1)
1400  NEXT
1410  FOR I=1 TO 16
1420    FOR J=1 TO 7
1430      READ A
1440      DB(I,J,0)=A
1450      A=(DA(J)*A)\1
1460      DB(I,J,1)=(A\2304)+(A\2048)+(((A\1280)+2)\3)
1465      DC(I,J,1)=DB(I,J,1)
1470      DB(I,J,2)=(A/(5+DB(I,J,1)*3-(DB(I,J,1)\2)*2))\1-1
1472      IF DB(I,J,1)=3 AND DB(I,J,2) > 255 THEN DB(I,J,2)=255
1475      DC(I,J,2)=DB(I,J,2)
1480    NEXT
1490  NEXT
1500  '
1510  CLS
1511  FOR I=1 TO 16
1512    FOR J=1 TO 7
1513      DB(I,J,1)=DC(I,J,1)
1514      DB(I,J,2)=DC(I,J,2)
1515    NEXT
1516  NEXT
1517  '
1518  IF PC$="98" THEN FILES "\DATA" ELSE FILES "\DATA\"
1520  PRINT " INPUT SET No. ";
1530  INPUT S$
1540  S$=LEFT$(S$+"    ",3)
1550  '
1560  FOR I=1 TO 16
1570    S$(I)=RIGHT$("  "+STR$(I),2)
1580    FOR J=1 TO 7
1590      S$(I)=S$(I)+",  ,     "
1600    NEXT
1610  NEXT
1620  '
1630  'CLS
1640  'PRINT " READ FILE ?  (Y/N) ";
1650  'A$=INKEY$
1660  'IF A$="" THEN 1650
1670  'IF A$="Y" OR A$="y" THEN GOSUB 8000
1680  '
1681  CLS
1682  PRINT " ROM INITIALIZE ?  (Y/N) ";
1683  A$=INKEY$
1684  IF A$="" THEN 1683
1685  IF A$="Y" OR A$="y" THEN 3800
1700  '
1701  GOSUB 9000
1702  '
1710  CLS
1720  FOR I=0 TO 17
1730    PRINT A$(I)
1740  NEXT
1750  PRINT
1760  PRINT "INPUT NUMBER (1-16) OR E (END) OR T (TOTAL)";
1770  INPUT A$
1780  IF A$="E" OR A$="e" THEN 1840
1785  IF A$="T" OR A$="t" THEN A$="17"
```

```
1790  A=VAL(A$)
1800  IF A<1 OR A>17 THEN 1710
1810  B$=A$(A)
1820  GOTO 3350
1830  '
1840  IF S$="   " THEN END
1850  S$="\DATA\DATA."+S$
1860  OPEN S$ FOR OUTPUT AS #1
1870  PRINT #1,S$
1880  FOR I=1 TO 16
1890    PRINT #1,S$(I)
1900  NEXT
1910  CLOSE #1
1920  GOTO 1510
1930  '
1940  CLS
1950  PRINT "MODE  : " ;B$                    ' B$ = SIGNAL MODE
1960  PRINT
1970  PRINT " 0. SIGNAL CHANGE"
1980  PRINT " 1. H.POSI"
1990  PRINT " 2. V.POSI"
2000  PRINT " 3. H.SIZE(MAX)"
2010  PRINT " 4. H.SIZE(CENT)"
2020  PRINT " 5. V.SIZE"
2030  PRINT " 6. SIDE PIN"
2035  PRINT " 7. TRAPEZOIDE"
2040  PRINT
2050  PRINT "INPUT NUMBER (0-7)";
2060  INPUT B                                  ' B = VR
2070  IF B<0 OR B>7 THEN 1940
2080  IF B=0 THEN 1710
2090  C=(A-1)*8+B-1                            ' C = ROM ADDRES
2095  IF A=17 THEN C=16
2100  '
2110  ' ***************************************************************************
2120  '
2130  '    DAC/ROM WRITE TEST
2140  '
2150  ' ***************************************************************************
2160  '
2170  D(10)=((B+1) \ 8) MOD 2                  ' D(X)=OUTPUT DATA
2180  D(11)=((B+1) \ 4) MOD 2                  '       BIT0=DATA
2190  D(12)=((B+1) \ 2) MOD 2                  '       BIT1=CLK
2200  D(13)=(B+1) MOD 2                        '       BIT2=LD
2210  '
2220  D=DB(A,B,1)                              ' D = DAC GAIN
2230  E=DB(A,B,2)                              ' E = DATA
2235  IF A=17 THEN D=DB(3,B,1)
2236  IF A=17 THEN E=DB(3,B,2)
2240  GOTO 2470
2250  '
2260  IF D<0 THEN D=0:E=0:GOTO 2470
2270  E=255
2280  GOTO 2470
2290  '
2300  IF D>3 THEN D=3:E=255:GOTO 2470
2310  IF D=1 THEN E=153
2320  IF D=2 THEN E=218
2330  IF D=3 THEN E=182
2340  GOTO 2470
```

```
2350  '
2360  IF D=0 AND E<0   THEN E=0
2370  IF D=1 AND E<153 THEN D=0:E=255
2380  IF D=2 AND E<218 THEN D=1:E=255
2390  IF D=3 AND E<182 THEN D=2:E=255
2400  GOTO 2470
2410  '
2420  IF D=0 AND E>255 THEN D=1:E=153
2430  IF D=1 AND E>255 THEN D=2:E=218
2440  IF D=2 AND E>255 THEN D=3:E=182
2450  IF D=3 AND E>255 THEN E=255
2460  '
2470  D(9)=D \ 2
2480  D(8)=D MOD 2
2490  '
2500  D(7)=(E \ 128) MOD 2
2510  D(6)=(E \ 64) MOD 2
2520  D(5)=(E \ 32) MOD 2
2530  D(4)=(E \ 16) MOD 2
2540  D(3)=(E \ 8) MOD 2
2550  D(2)=(E \ 4) MOD 2
2560  D(1)=(E \ 2) MOD 2
2570  D(0)=E MOD 2
2580  '
2590  FOR I=13 TO 0 STEP -1
2600    OUT F,D(I)
2610    OUT F,D(I) OR 2
2620  NEXT
2630  OUT F,D(0) OR 6
2640  OUT F,6
2650  PRINT D,E
2660  A$=INKEY$
2670  IF A$="" THEN 2660
2680  ' IF A$="2" THEN D=D-1:GOTO 2260
2690  ' IF A$="8" THEN D=D+1:GOTO 2300
2700  IF A$="1" THEN E=E-1:GOTO 2360
2710  IF A$="4" THEN E=E-2:GOTO 2360
2720  IF A$="7" THEN E=E-5:GOTO 2360
2730  IF A$="3" THEN E=E+1:GOTO 2420
2740  IF A$="6" THEN E=E+2:GOTO 2420
2750  IF A$="9" THEN E=E+5:GOTO 2420
2760  ' IF A$="5" THEN E=128:GOTO 2470
2763  IF A$="5" AND A=17 THEN D=DB(3,B,1):E=DB(3,B,2):GOTO 2470
2765  IF A$="5" THEN D=DB(A,B,1):E=DB(A,B,2):GOTO 2470
2770  IF A$<>CHR$(13) THEN 2660
2780  '
2790  IF A=17 THEN 2830
2800  IF A=4  THEN 2900
2810  Z=0:GOSUB 2970:GOTO 1940
2820  '
2830  Z=17
2840  FOR A=1 TO 16
2850    GOSUB 2970
2860  NEXT
2870  A=17:Z=0
2880  GOTO 1940
2890  '
2900  A=4:GOSUB 2970
2910  A=16:GOSUB 2970
```

```
2940  A=4
2950  GOTO 1940
2960  '
2970  R(10)=1                                   ' ROM WRITE ENABLE
2980  R(7)=1
2990  R(6)=1
3000  GOSUB 4130
3010  C(2)=1                                    ' DATA WRITE
3020  C(1)=0
3030  C(0)=1
3040  I=A
3050  J=B
3060  DA(0)=(5+D*3-(D\2)*2)*(E+1)
3070  IF Z=17 THEN DA(0)=(DA(0)*DB(I,J,0))\1
3100  DB(I,J,1)=(DA(0)\2304)+(DA(0)\2048)+(((DA(0)\1280)+2)\3)
3110  DB(I,J,2)=(DA(0)/(5+DB(I,J,1)*3-(DB(I,J,1)\2)*2))\1-1
3115  IF DB(I,J,1)=3 AND DB(I,J,2) > 255 THEN DB(I,J,2)=255
3120  A=I-1
3130  B=J+1
3140  GOSUB 4240
3150  A=1
3160  B=J
3220  R(10)=1                                   ' ROM WRITE DISENABLE
3230  R(7)=0
3240  R(6)=0
3242  L1$=LEFT$(S$(A),3+(B-1)*8)
3244  L2$=RIGHT$(S$(A),(7-B)*8)
3246  S$(A)=L1$+STR$(DB(I,J,1))+","+RIGHT$("    "+STR$(DB(I,J,2)),4)+L2$
3250  GOSUB 4130
3260  '
3270  RETURN
3280  '
3290  '*************************************************************************
3300  '
3310  '    ROM READ TEST
3320  '
3330  '*************************************************************************
3340  '
3350  C(2)=1
3360  C(1)=1
3370  C(0)=0
3380  A(0)=0
3390  FOR B=0 TO 7
3400    C=(A-1)*8+B
3405    IF A=17 THEN C=16
3410    A(6)=(C \ 64) MOD 2                     ' A(X)=ROM ADDRES
3420    A(5)=(C \ 32) MOD 2
3430    A(4)=(C \ 16) MOD 2
3440    A(3)=(C \ 8) MOD 2
3450    A(2)=(C \ 4) MOD 2
3460    A(1)=(C \ 2) MOD 2
3470    A(0)=C MOD 2
3480    OUT F,&H42
3490    OUT F,&H60
3500    OUT F,&H42
3510    FOR I=2 TO 0 STEP -1
3520      OUT F,C(I) OR &H42
3530      OUT F,C(I) OR &H60
3540    NEXT
```

```
3550    FOR I=7 TO 0 STEP -1
3560      OUT F,A(I) OR &H42
3570      OUT F,A(I) OR &H60
3580    NEXT
3590    FOR I=13 TO 0 STEP -1
3600      OUT F,&H40
3610      OUT F,&H60
3620      OUT F,&H62
3630      OUT F,&H42
3640    NEXT
3650    OUT F,&H46
3660    OUT F,&H66
3670    OUT F,&H46
3680    OUT F,&H66
3690    OUT F,&H46
3700    OUT F,6
3710  NEXT
3720  GOTO 1940
3730  '
3740  '*****************************************************************************
3750  '
3760  '    ROM CLEAR (ROM INITIALIZE)
3770  '
3780  '*****************************************************************************
3790  '
3800  PRINT "Y":PRINT:PRINT
3810  PRINT " NOW INITIALIZE"
3820  FOR I= TO 16
3830    FOR J=1 TO 7
3840      GOSUB 4000
3850  '   FOR K=1 TO 1000:NEXT
3860    NEXT
3870  NEXT
3880  '
3890  FOR I=1 TO 16
3900    S$(I)=RIGHT$("  "+STR$(I),2)
3910    FOR J=1 TO 7
3920      S$(I)=S$(I)+","+STR$(DB(I,J,1))+","+RIGHT$("    "+STR$(DB(I,J,2)),4)
3930    NEXT
3940  NEXT
3950  '
3960  A$="T"                              ' ROM DATA READ  (INITIAL)
3970  'B$=A$(A)
3980  GOTO 1780
3990  '
4000  R(10)=1                             ' ROM WRITE ENABLE
4010  R(7)=1
4020  R(6)=1
4030  GOSUB 4130
4040  A=I-1                               ' ROM DATA WRITE
4050  B=J+1
4060  GOSUB 4240
4070  R(10)=1                             ' ROM WRITE DISENABLE
4080  R(7)=0
4090  R(6)=0
4100  GOSUB 4130
4110  RETURN
```

```
4120  '
4130  OUT F,&H46                          ' ROM WRITE ENABLE/DISENABLE
4140  OUT F,&H66
4150  OUT F,&H46
4160  FOR K=10 TO 0 STEP -1
4170     OUT F,R(K) OR &H46
4180     OUT F,R(K) OR &H66
4190  NEXT
4200  OUT F,&H46
4210  OUT F,6
4220  RETURN
4230  '
4240  C=A*8+B-2                           ' ROM DATA WRITE   BIT0=DATA
4250  C(2)=1                              ' C(X)=COMMAND     BIT5=CLK
4260  C(1)=0                              '                  BIT6=CS
4270  C(0)=1
4280  A(7)=(C \ 128) MOD 2                ' A(X)=ROM ADDRES
4290  A(6)=(C \ 64) MOD 2
4300  A(5)=(C \ 32) MOD 2
4310  A(4)=(C \ 16) MOD 2
4320  A(3)=(C \ 8) MOD 2
4330  A(2)=(C \ 4) MOD 2
4340  A(1)=(C \ 2) MOD 2
4350  A(0)=C MOD 2
4360  D(13)=B MOD 2                      ' D(X)=OUTPUT DATA
4370  D(12)=(B \ 2) MOD 2
4380  D(11)=(B \ 4) MOD 2
4390  D(10)=(B \ 8) MOD 2
4400  D(9)=(DB(I,J,1) \ 2) MOD 2
4410  D(8)=DB(I,J,1) MOD 2
4420  D(7)=(DB(I,J,2) \ 128) MOD 2
4430  D(6)=(DB(I,J,2) \ 64) MOD 2
4440  D(5)=(DB(I,J,2) \ 32) MOD 2
4450  D(4)=(DB(I,J,2) \ 16) MOD 2
4460  D(3)=(DB(I,J,2) \ 8) MOD 2
4470  D(2)=(DB(I,J,2) \ 4) MOD 2
4480  D(1)=(DB(I,J,2) \ 2) MOD 2
4490  D(0)=DB(I,J,2) MOD 2
4500  '
4510  OUT F,&H46
4520  OUT F,&H66
4530  OUT F,&H46
4540  FOR K=2 TO 0 STEP -1
4550    OUT F,C(K) OR &H46
4560    OUT F,C(K) OR &H66
4570  NEXT
4580  FOR K=7 TO 0 STEP -1
4590    OUT F,A(K) OR &H46
4600    OUT F,A(K) OR &H66
4610  NEXT
4620  FOR K=13 TO 0 STEP -1
4630    OUT F,D(K) OR &H46
4640    OUT F,D(K) OR &H66
4650  NEXT
```

```
4660  OUT F,&H46
4670  OUT F,&H66
4680  OUT F,&H46
4690  OUT F,&H66
4700  OUT F,&H46
4710  OUT F,6
4720  FOR K=0 TO 10:NEXT
4730  RETURN
4740  '
4750  DATA   0, 207, 0, 175, 0,  83, 0,  49, 0, 151, 0, 127, 0, 177
4760  '
4770  DATA   1    , 1.126, 1    , 1    , 1.51 , 0.063, 1.011
4780  DATA   1    , 1.109, 1    , 1    , 1.291, 1.016, 1.017
4790  DATA   1    , 1    , 1    , 1    , 1    , 1    , 1
4800  DATA   1.087, 0.977, 2.108, 0.98 , 0.841, 1.008, 0.989
4810  DATA   1.227, 0.983, 3.180, 1.082, 0.94 , 1.055, 0.994
4820  DATA   1.999, 0.634, 6.056, 2.102, 1.318, 1.189, 0.955
4830  DATA   1.307, 1.023, 3.218, 1.224, 2.021, 1.189, 0.977
4840  DATA   1.316, 1.011, 3.199, 1.122, 1.726, 1.157, 0.977
4850  DATA   1.323, 0.977, 3.218, 1.204, 1.371, 1.126, 0.977
4860  DATA   1.111, 1.063, 1.892, 0.878, 1.603, 1.11 , 1
4870  DATA   1.23 , 1.189, 2.53 , 1.224, 1.159, 1.039, 1.017
4880  DATA   1.615, 1.006, 5.742, 1.327, 0.947, 1.173, 1.023
4890  DATA   1.087, 0.977, 2.108, 0.98 , 0.841, 1.008, 0.989
4900  DATA   1.087  0.977, 2.108, 0.98 , 0.841, 1.008, 0.989
4910  DATA   1.615  0.966, 3.123, 1.224, 1.291, 1.173, 0.989
4920  DATA   1.087, 0.977, 2.108, 0.98 , 0.841, 1.008, 0.989
4930  '
8000  '
8010  '
8020  '     DATA FILE READ
8030  '
8050  '
8060  '
8070  CLS
8075  PRINT
8080  PRINT " INPUT DATA No. ";
8090  INPUT S1$
8100  IF S1$<>"    " THEN 8110
8110  PRINT:PRINT
8115  IF PC$="98" THEN FILES "\DATA":GOTO 8075 ELSE FILES "\DATA\":GOTO 8075
8120  S1$="\DATA\DATA."+S1$
8130  OPEN S1$ FOR INPUT AS #1
8140  INPUT #1,S2$
8150  PRINT S2$
8160  PRINT
8170  PRINT "MODE   H.POS     V.POS    H.SIZE1   H.SIZE2   V.SIZE    SIDE.PIN  TRAPEZOIDE  "
8180  PRINT
8190  FOR I=1 TO 16
8200    INPUT #1,S2$
8210    PRINT RIGHT$("  "+S2$,2);
8220    FOR J=1 TO 7
8230      INPUT #1,S3$,S4$
8240      PRINT "      ";S3$;" ";RIGHT$("    "+S4$,3);
8250      NEXT
8260      PRINT
8270  NEXT
```

```
8271  '
8272  S2$=INKEY$
8273  IF S2$="" THEN 8272
8274  '
8280  RETURN
9000  '
9190  '*************************************************************************
9200  '
9210  '    ROM READ
9220  '
9230  '*************************************************************************
9240  '
9250  CLS
9260  PRINT:PRINT
9270  PRINT " ROM READ"
9280  PRINT
9350  PRINT " NOW READING"
9360  '
9370  FOR I=1 TO 16
9375    S$(I)=RIGHT$("  "+STR$(I),2)
9380    FOR J=1 TO 7
9390      GOSUB 9580
9395      S$(I)=S$(I)+","+STR$(DB(I,J,1))+","+RIGHT$("    "+STR$(DB(I,J,2)),4)
9400    NEXT
9410  NEXT
9420  '
9560  RETURN
9570  '
9580  A=I-1                                 ' ROM DATA READ
9590  B=J+1
9600  GOSUB 9630
9610  RETURN
9620  '
9630  C=A*8+B-2                             ' ROM DATA READ     BIT0=DATA
9640  C(2)=1                                ' C(X)=COMMAND      BIT5=CLK
9650  C(1)=1                                '                   BIT6=CS
9660  C(0)=0
9670  A(7)=(C \ 128) MOD 2                  ' A(X)=ROM ADDRES
9680  A(6)=(C \ 64) MOD 2
9690  A(5)=(C \ 32) MOD 2
9700  A(4)=(C \ 16) MOD 2
9710  A(3)=(C \ 8) MOD 2
9720  A(2)=(C \ 4) MOD 2
9730  A(1)=(C \ 2) MOD 2
9740  A(0)=C MOD 2
9750  '
9760  OUT F,&H46
9770  OUT F,&H66
9780  OUT F,&H46
9790  FOR K=2 TO 0 STEP -1
9800    OUT F,C(K) OR &H46
9810    OUT F,C(K) OR &H66
9820  NEXT
9830  FOR K=7 TO 0 STEP -1
9840    OUT F,A(K) OR &H46
9850    OUT F,A(K) OR &H66
9860  NEXT
```

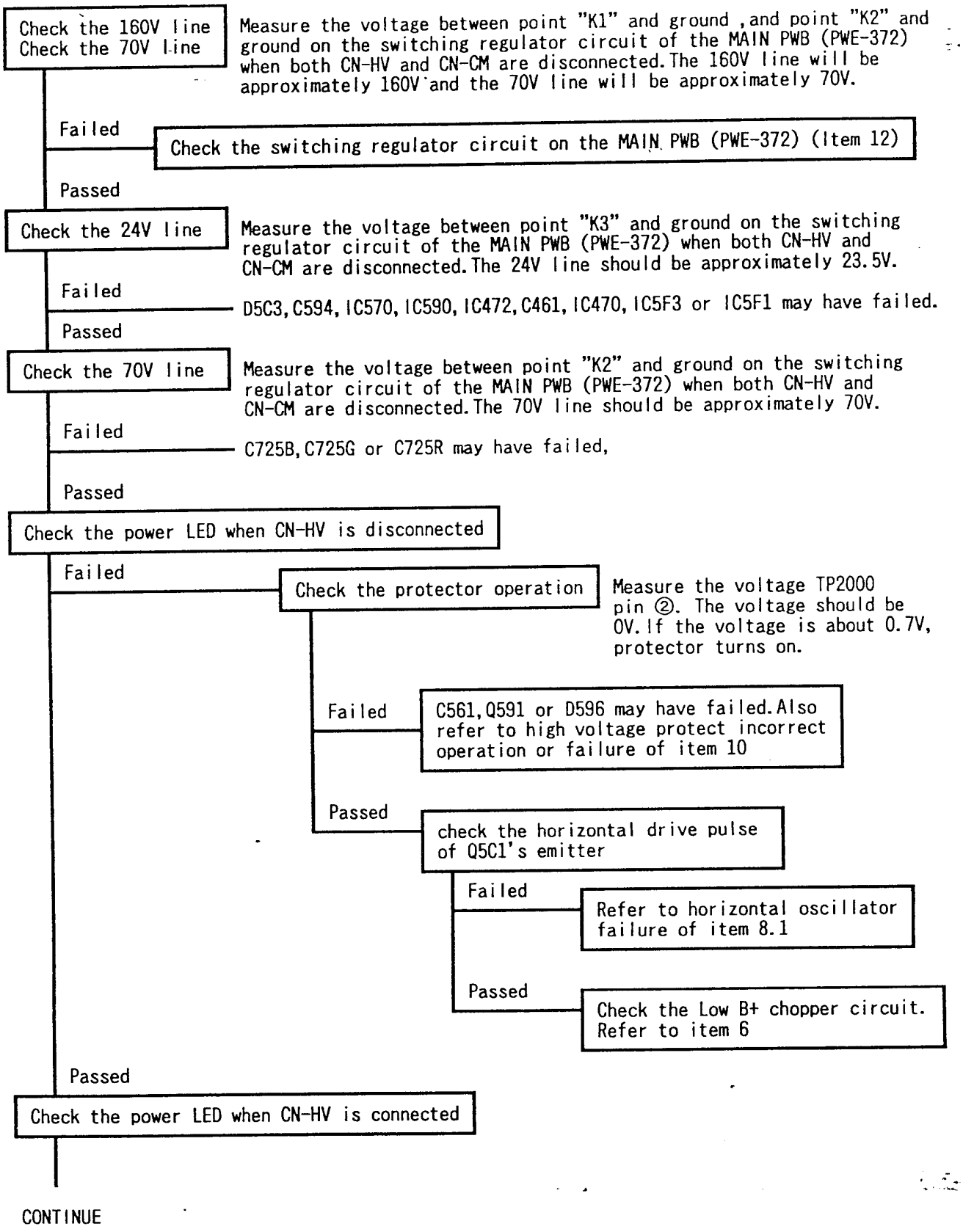
```
9870  FOR K=13 TO 0 STEP -1
9890    OUT F,&H46
9890    OUT F,&H66
9900    IF PC$="98"  THEN D(K)=(INP(F+2) AND 4)/4' FOR NEC 9801
9910    IF PC$="IBM" THEN D(K)=(INP(F+1) AND 128)/128' FOR IBM PC/AT
9920  NEXT
9930  OUT F,&H46
9940  OUT F,&H66
9950  OUT F,&H46
9960  OUT F,&H66
9970  OUT F,&H46
9980  OUT F,6
9990  '
10000  DB(I,J,1)=D(9)*2+D(8)
10010  DB(I,J,2)=D(7)*128+D(6)*64+D(5)*32+D(4)*16+D(3)*8+D(2)*4+D(1)*2+D(0)
10020  RETURN
```

TROUBLE SHOOTING

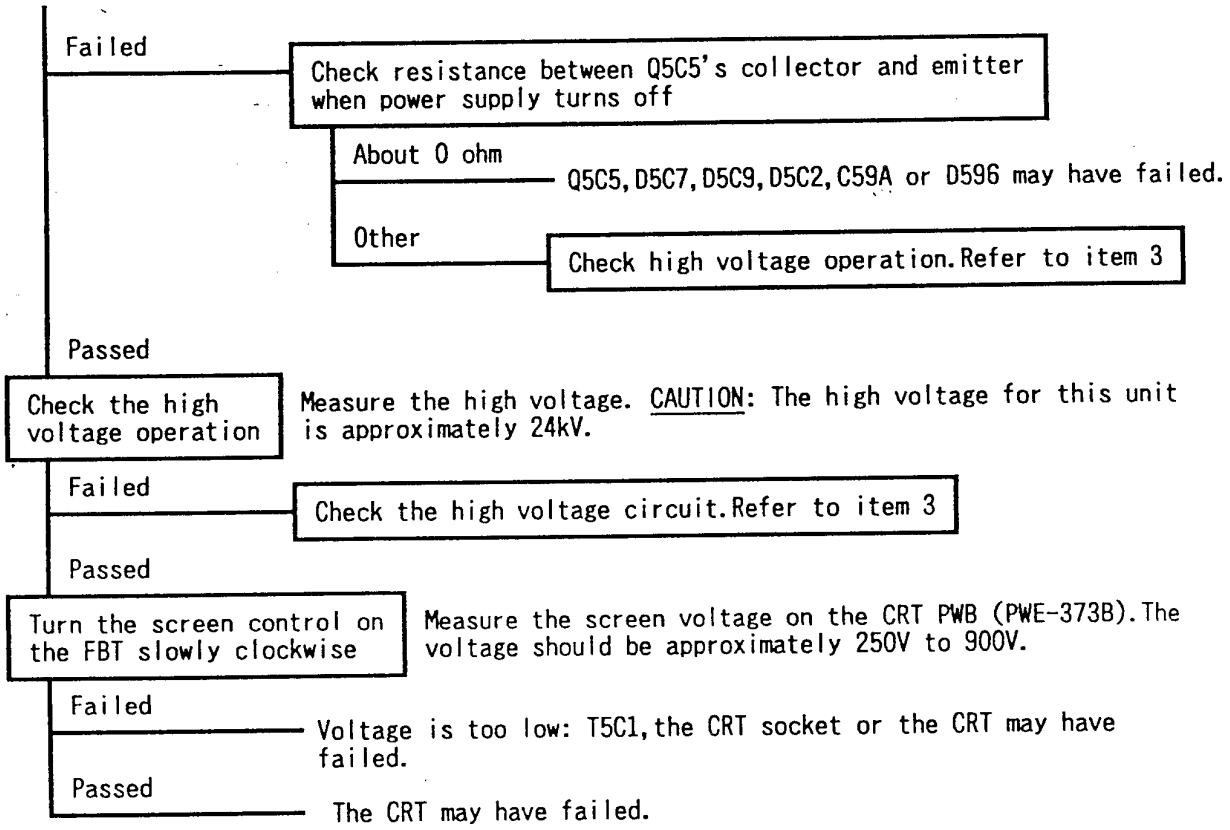
Refer to the User Manual's trouble shooting section before using this chart.

TABLE OF CONTENTS

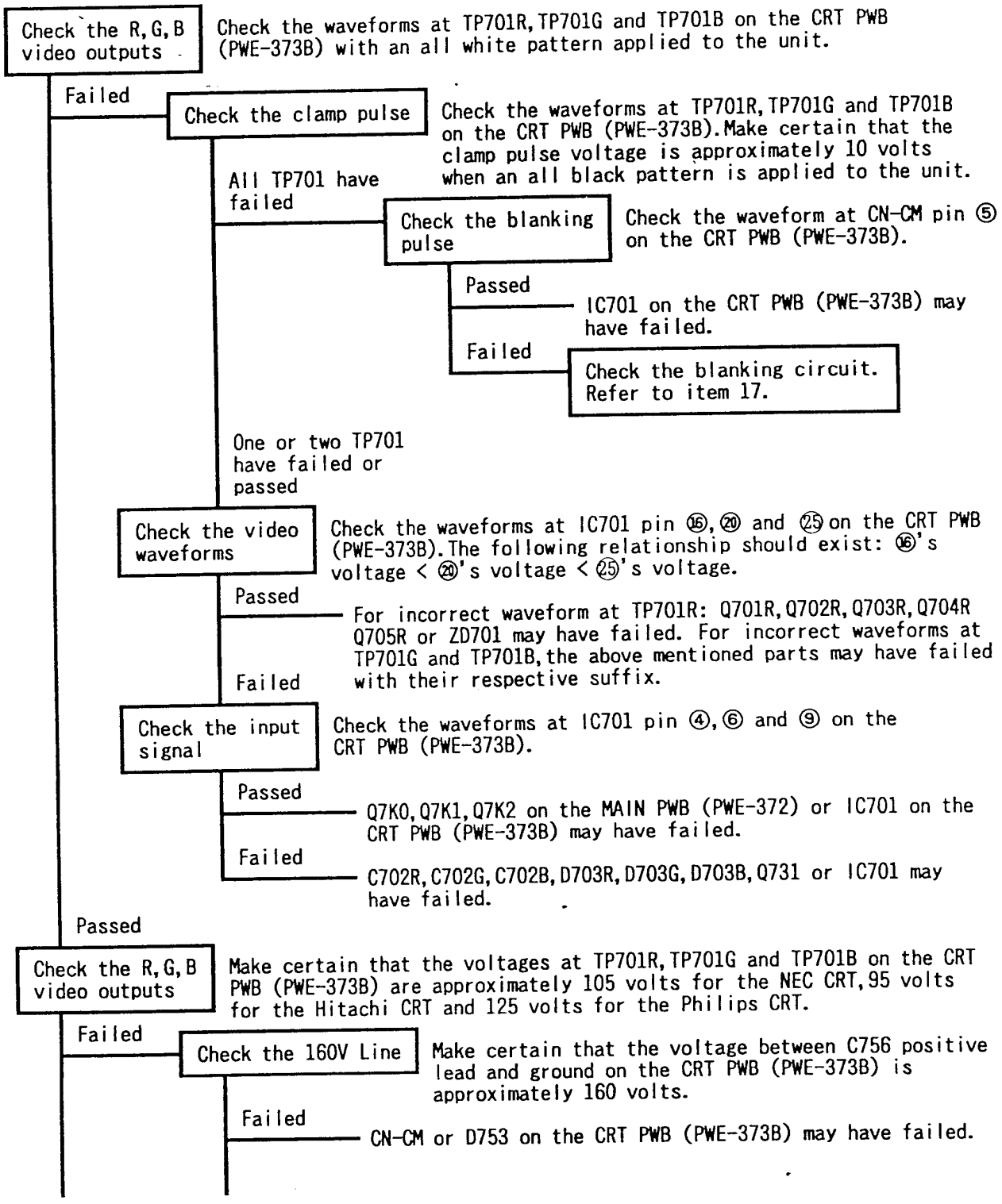
1. NO RASTER



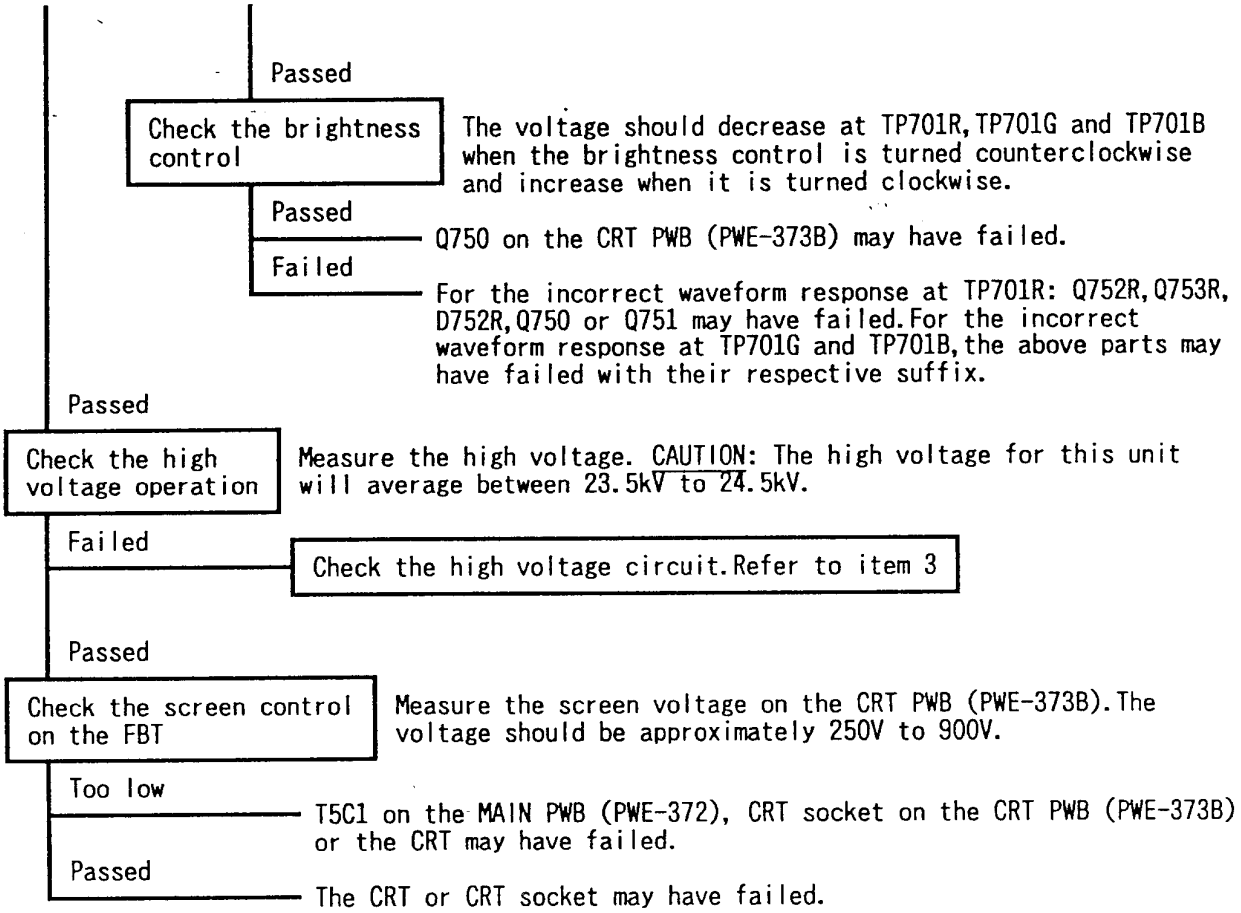
CONTINUE



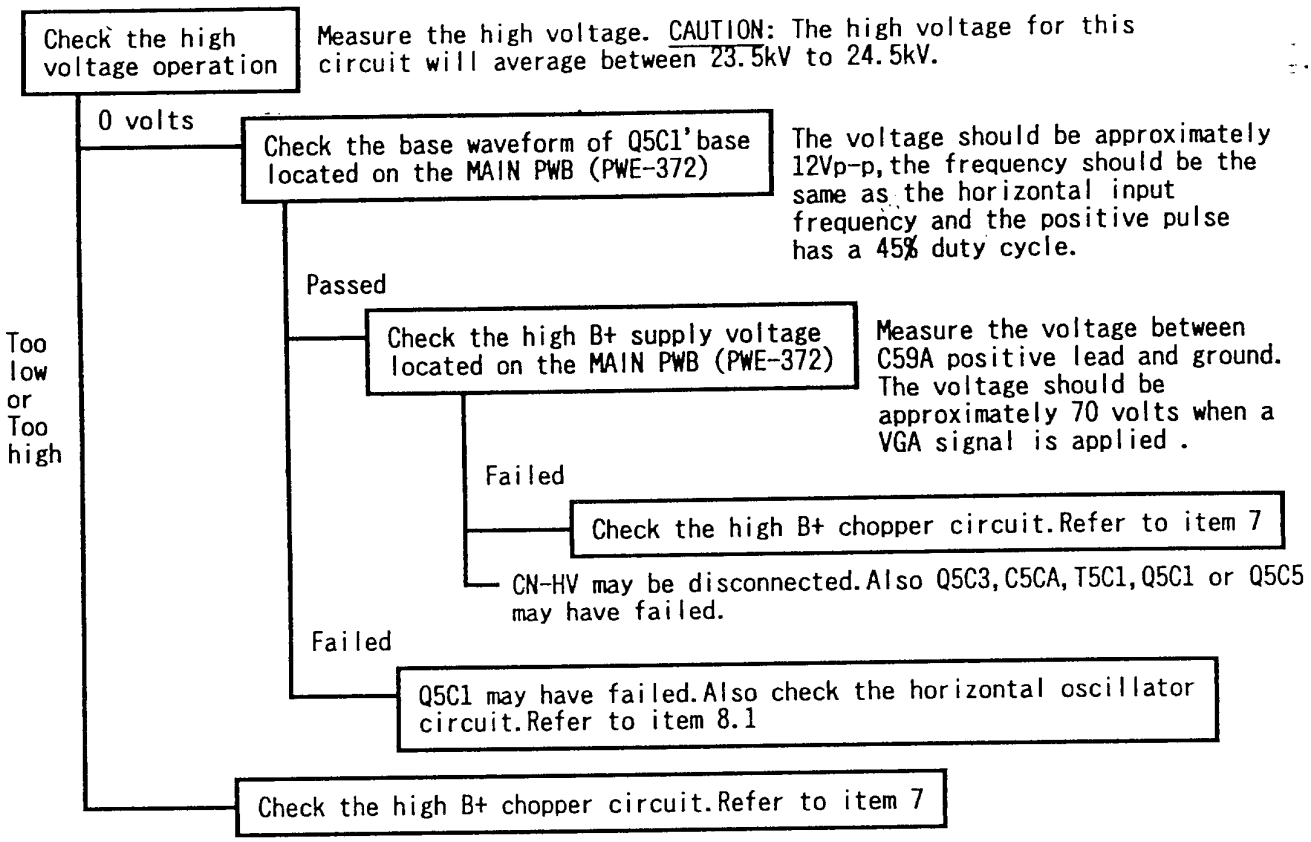
2. ABNORMAL IMAGE OR RASTER BRIGHTNESS (Too dark or Too bright)



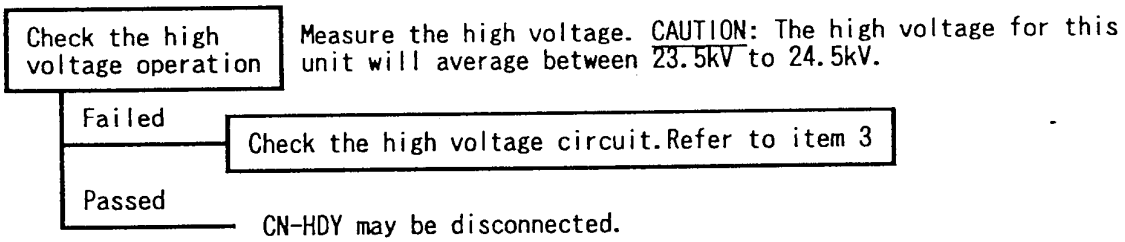
CONTINUE 1 CONTINUE 2



3. HIGH VOLTAGE FAILURE



4. NO HORIZONTAL DEFLECTION



5. NO VERTICAL DEFLECTION

Check the vertical deflection waveform located on the MAIN PWB (PWE-372) — Check the waveform of IC470 pin ⑫.

- Passed → The vertical yoke may have failed.
- Failed

Check the vertical deflection IC's power line Located on the MAIN PWB (PWE-372) — The voltage of IC470 pin ① should be approximately 12 volts.

- Failed → R460, C460 or IC470 may have failed.
- Passed

Check the vertical drive pulse located on the MAIN PWB (PWE-372) — Check the base waveform of Q471.

- Passed → Q471, ZD470, IC470, Q470, D470 or C473 may have failed.
- Failed

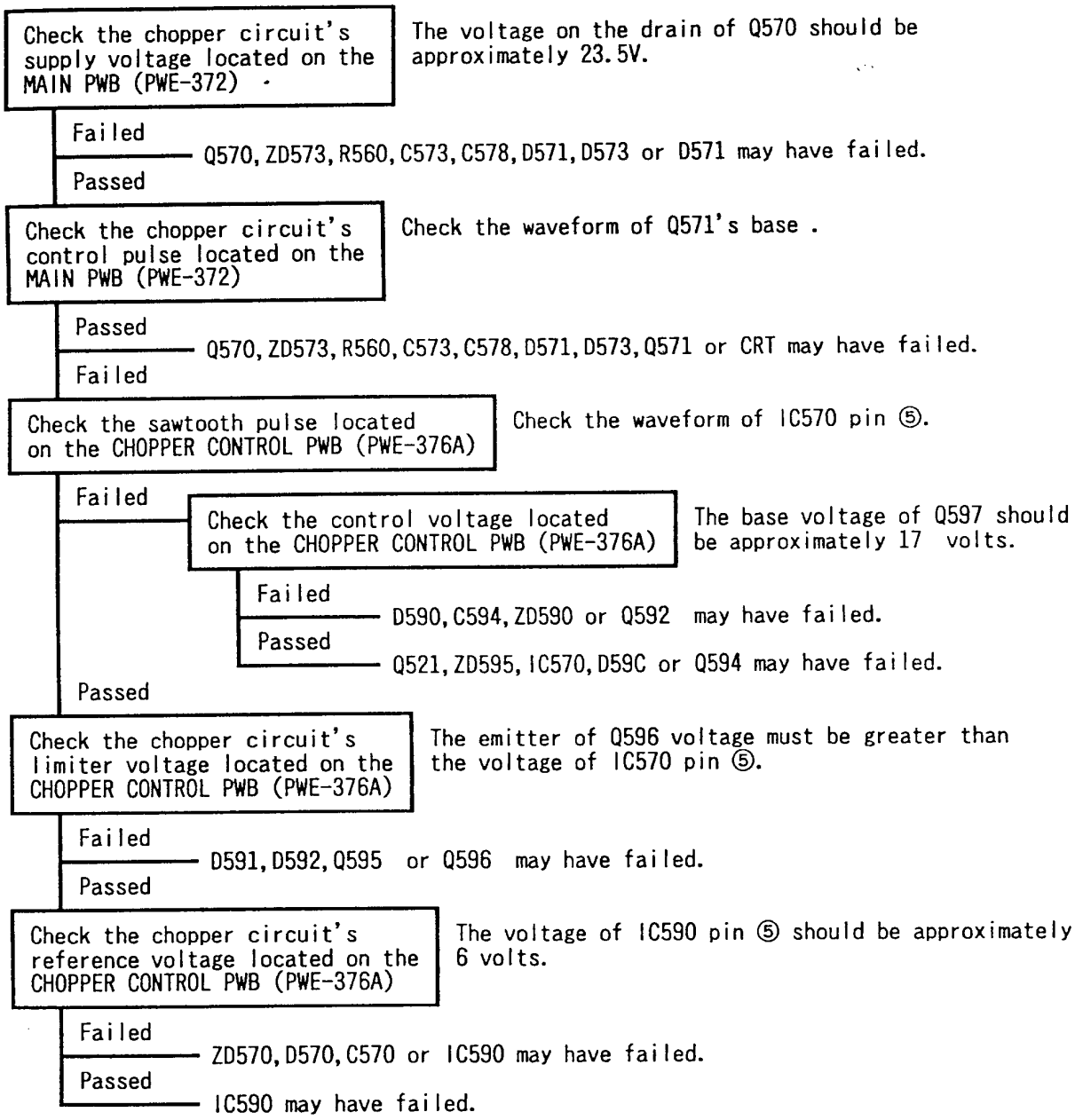
Check the vertical oscillator's output located on the INTERFACE PWB (PWE-373A) — Check the waveform of IC501 ⑱.

- Passed → Q405 or C470 may have failed.
- Failed

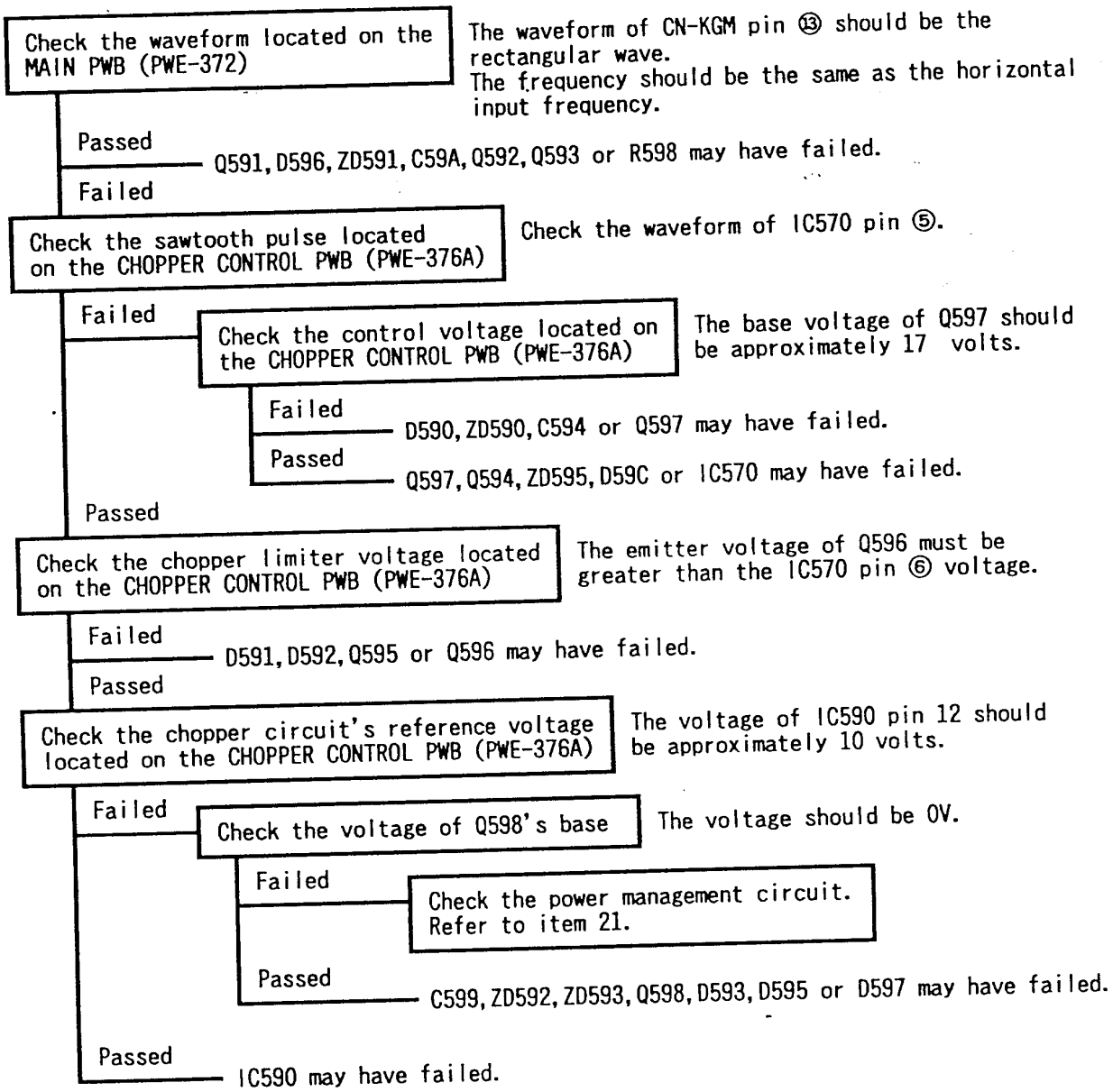
Check the vertical oscillator's supply voltage located on the INTERFACE PWB (PWE-373A) — The voltage on pin ㉒ of IC501 should be approximately 12 volts.

- Failed → C452, R451 or IC501 may have failed.
- Passed → IC501 and C403 may have failed.

6. LOW B+ CHOPPER CONTROL CIRCUIT OR THE HEATER SUPPLY VOLTAGE FAILURE

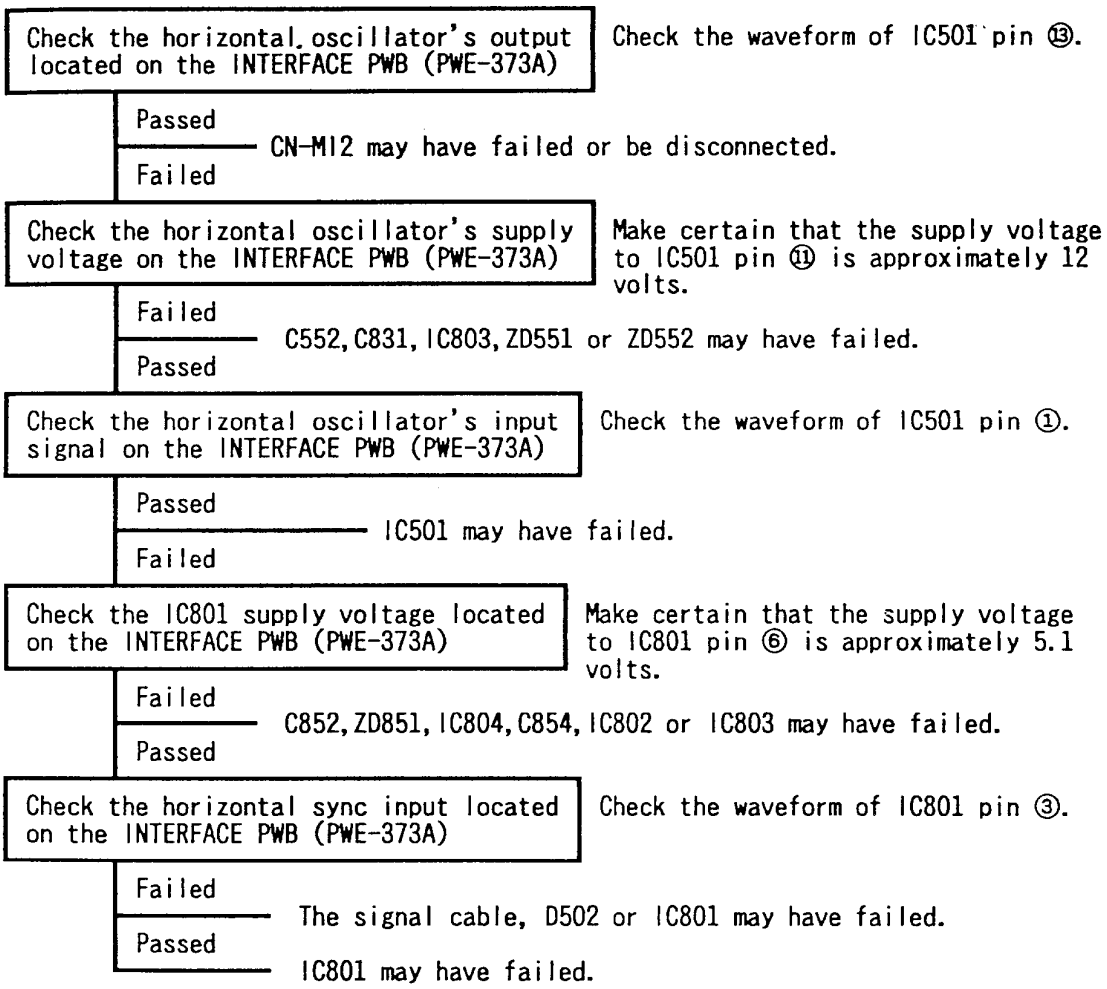


7. HIGH B+ CHOPPER CONTROL CIRCUIT OR THE DEFLECTION CIRCUIT B+ FAILURE

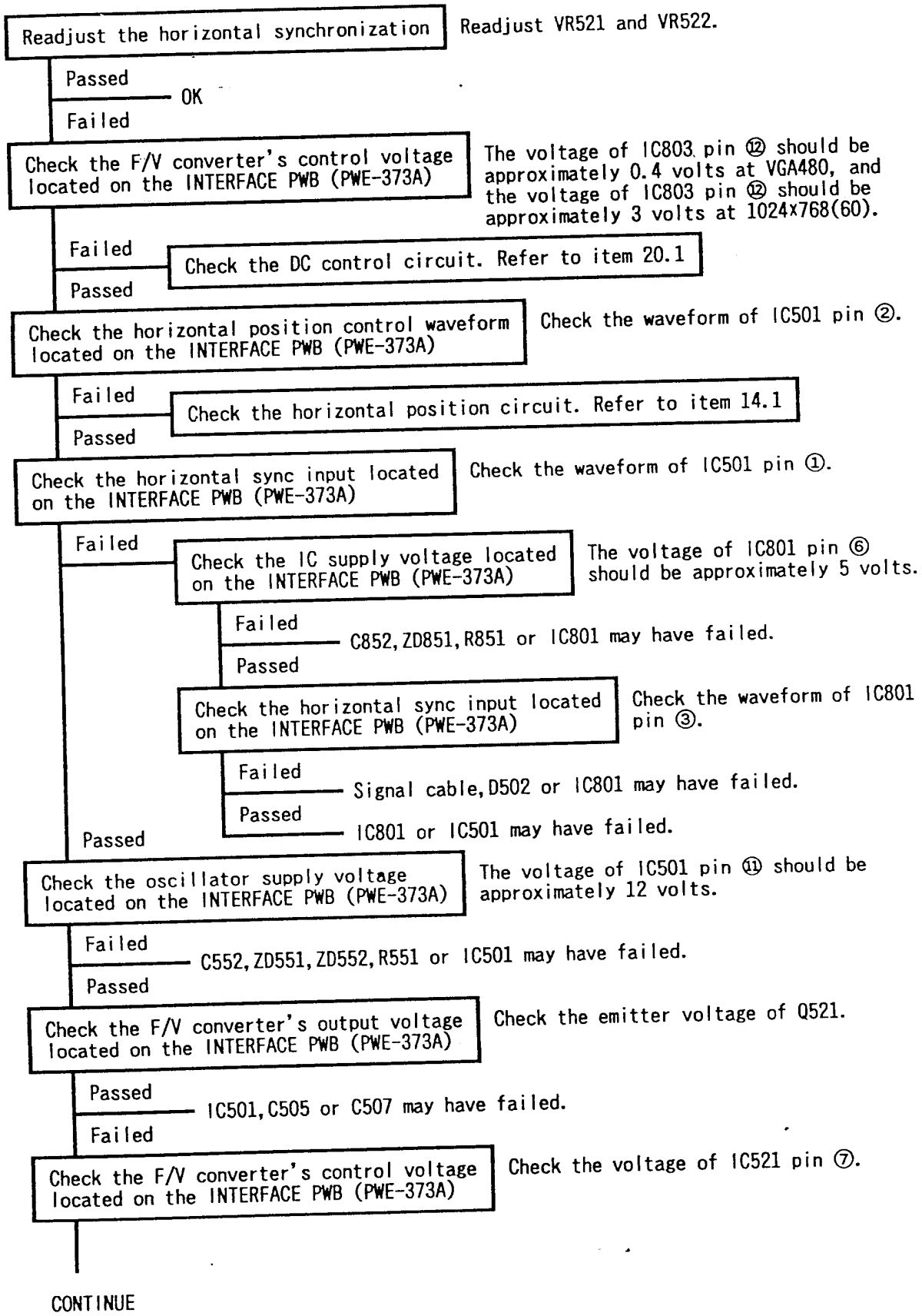


8. HORIZONTAL OSCILLATOR FAILURE

8.1 HORIZONTAL OSCILLATOR OPERATION FAILURE



8.2 UNSTABLE HORIZONTAL SYNCHRONIZATION



CONTINUE

Passed — IC521, ZD521 or Q521 may have failed.

Failed

Check the F/V converter's output voltage located on the INTERFACE PWB (PWE-373A) — Check the voltages of IC803 pin ⑫ at all signals.

Passed — IC521 or C521 may have failed.

Failed — Check the DC control circuit. Refer to item 20.1

9. UNSTABLE VERTICAL SYNCHRONIZATION

Check the vertical oscillator input located on the INTERFACE PWB (PWE-373A) — Check the waveform of IC501 pin ㉑ .

Failed — Check the vertical sync input located on the INTERFACE PWB (PWE-373A) — Check the waveform of IC801 pin ④ .

Failed — Signal cable, D402 or IC801 may have failed.

Passed — IC801 or C403 may have failed.

Passed

Check the vertical frequency band selector located on the INTERFACE PWB (PWE-373A) — Check the voltages of IC801 pin ㉑ and ㉒.

Failed — IC801 may have failed.

Passed

Check the vertical frequency band selector located on the INTERFACE PWB (PWE-373A) — Check the base voltages of Q402 and Q404.

Failed — Q401 or Q403 may have failed.

Passed

Check the vertical frequency band selector located on the INTERFACE PWB (PWE-373A) — Check the collector voltages of Q402 and Q404.

Failed — Q402 or Q404 may have failed.

Passed — IC501 may have failed.

10. HIGH VOLTAGE PROTECT INCORRECT OPERATION OR FAILURE

Check the following item before manually operating the high voltage protector circuit. The high voltage protector circuit need a few seconds after the power has been turned off to reset.

Check the voltage of Q590 collector on the MAIN PWB (PWE-372), when CN-HV is disconnected

The voltage should be 0 volts.
If the voltage about 160V, protector turns on.

- Failed → Q590 may have failed.
- Passed

Check the voltage of Q2000 collector on the MAIN PWB(PWE-372), when CN-HV is disconnected

The voltage should be 0 volts.
If the voltage about 23.5V, protector turns on.

- Failed → Q2000 or ZD2002 may have failed.
- Passed → D2000, ZD2000, C479 or IC501 may have failed.

11. DISTORTION FAILURE

11.1 SIDE PINCUSHION CONTROL CIRCUIT FAILURE

The following can be used when the side pincushion control is not operating properly or the side pincushion control level is not enough:

- **Check the side pincushion waveform located on the MAIN PWB (PWE-372)** — Check the parabolic waveform of C5F9 positive lead.
  - Passed → C5F9 may have failed.
  - Failed
- **Check the side pincushion waveform located on the MAIN PWB (PWE-372)** — Check the pulse width modulated waveform of IC5F0 pin ⑤.
  - Passed → L5F0 or C5F0 may have failed.
  - Failed
- **Check the IC5F0 supply voltage located on the MAIN PWB (PWE-372)** — The voltage on pin ⑥ of IC5F0 should be approximately 20 volts.
  - Failed → ZD561 may have failed.
  - Passed
- **Check the side pincushion waveform located on the MAIN PWB (PWE-372)** — Check the parabolic waveform of IC5F0 pin ⑦.
  - Passed → ZD5F0 or D5F0 may have failed.
  - Failed
- **Check the side pincushion operating voltage located on the MAIN PWB (PWE-372)** — The voltage of IC5F0 pin ① should be approximately 6.5 volts.
  - Failed → **Check the vertical trapezoid distortion control circuit. Refer to item 11.2**
  - Passed
- **Check the side pincushion waveform located on the MAIN PWB (PWE-372)** — Check the sawtooth waveform of C5F3 positive lead.
  - Passed → IC5F0 may have failed.
  - Failed
- **Check the side pincushion waveform located on the MAIN PWB (PWE-372)** — Check the sawtooth waveform of IC5F1 pin ⑩.
  - Passed → IC5F1, C5FC or C5F3 may have failed.
  - Failed
- **Check the side pincushion control voltage located on the MAIN PWB (PWE-372)** — Check the voltage of IC5F3 pin ③.
  - Failed → **Check the DC control circuit. Refer to item 20.2**
  - Passed → IC5F3, Q5F2, Q5F3 or D471 may have failed.

11.2 VERTICAL TRAPEZOID DISTORTION CONTROL CIRCUIT FAILURE

The following can be used when the trapezoid distortion control is not operating properly or the trapezoid distortion control level is not enough:

Check the trapezoid distortion control voltage located on the MAIN PWB (PWE-372)

The voltage of IC5F0 pin ① should be approximately 6.5 volts.

- Passed — IC5F0, R5J1 or R5J2 may have failed.
- Failed

Check the DC control circuit. Refer to item 20.2

- Failed — IC5F0 may have failed.

11.3 PARALLELOGRAM DISTORTION CONTROL CIRCUIT FAILURE

The following can be used when the trapezoid distortion control is not operating properly or the trapezoid distortion control level is not enough:

Check the parallelogram distortion waveform located on the INTERFACE PWB (PWE-373A)

Check the sawtooth waveform of TPS pin ③.

- Failed — C527 may have failed.
- Passed

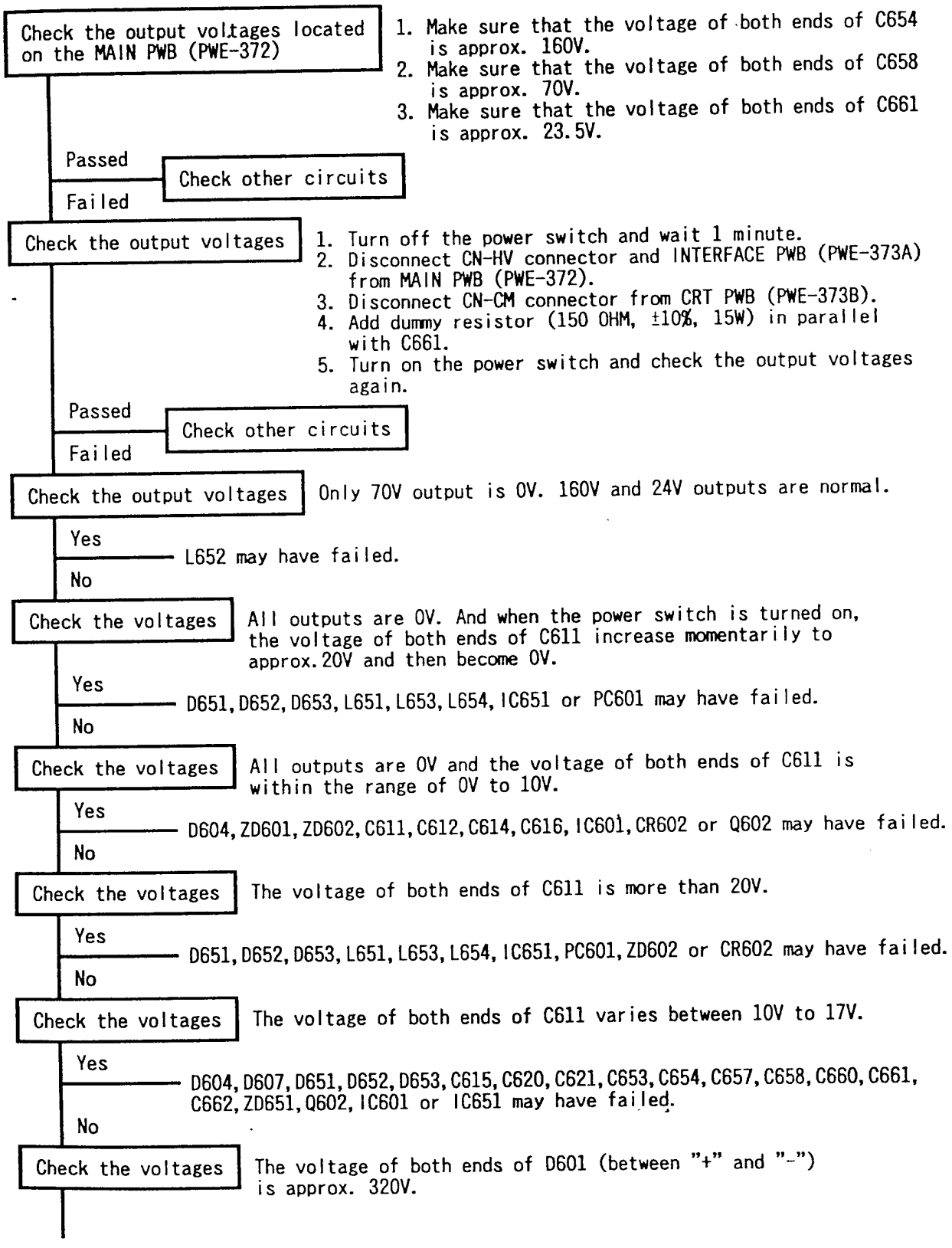
Check the parallelogram distortion waveform located on the INTERFACE PWB (PWE-373A)

The sawtooth waveform of IC521 pin ① should change, when the parallelogram distortion control (VR523) is adjusted.

- Failed — IC521 may have failed.
- Passed — C526 may have failed.

12. SWITCHING REGULATOR CIRCUIT FAILURE

The following can be used either for unstable power output or no output at all:



CONTINUE

CONTINUE

Yes — R606 or R607 may have failed.

No

Check the condition of the fuse — Fuse F601 is open.

Yes — (JC-1535VMA) : D601, D602, D603, C609, C610 or CR601 may have failed.
(JC-1535VMB/B(EE)/R): D601, C609 or CR601 may have failed.

No

Check the condition of the resistor — R625 is open.

Yes — D608, C613, C624, CR601, Q601, R611, ZD601 or IC601 may have failed.

13. IMAGE SIZE FAILURE

13.1 HORIZONTAL IMAGE SIZE FAILURE OR ABNORMAL FUNCTION

Check the horizontal size control voltage located on the MAIN PWB (PWE-372) — Check the voltage of IC5F1 pin ⑦.

Passed — Q5F0 or Q5F1 may have failed.

Failed

Check the horizontal size control voltage located on the MAIN PWB (PWE-372) — Check the voltage of IC5F1 pin ⑤.

Passed — IC5F1 may have failed.

Failed

Check the horizontal size control voltage located on the MAIN PWB (PWE-372) — Check the voltage of IC5F1 pin ⑫.

Failed

Check the High+B voltage located on the MAIN PWB (PWE-372) — Check the output voltage of T5C1 (FBT) pin ②.

Failed

Check the High B+ control circuit. Refer to item 7

Passed — R5FJ or R5FH may have failed.

Passed

Check the horizontal size control voltage located on the MAIN PWB (PWE-372) — Check the voltage of IC5F1 pin ①.

Passed — IC5F1 may have failed.

Failed

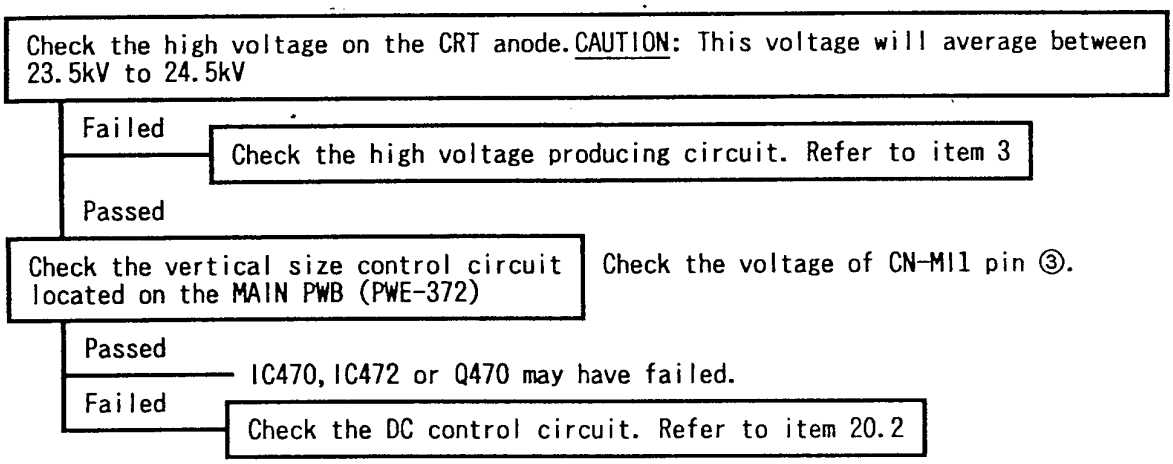
Check the horizontal size control voltage located on the MAIN PWB (PWE-372) — Check the voltages of CN-MI1 pin ④ and ⑦.

Failed

Check the DC control circuit. Refer to item 20.2

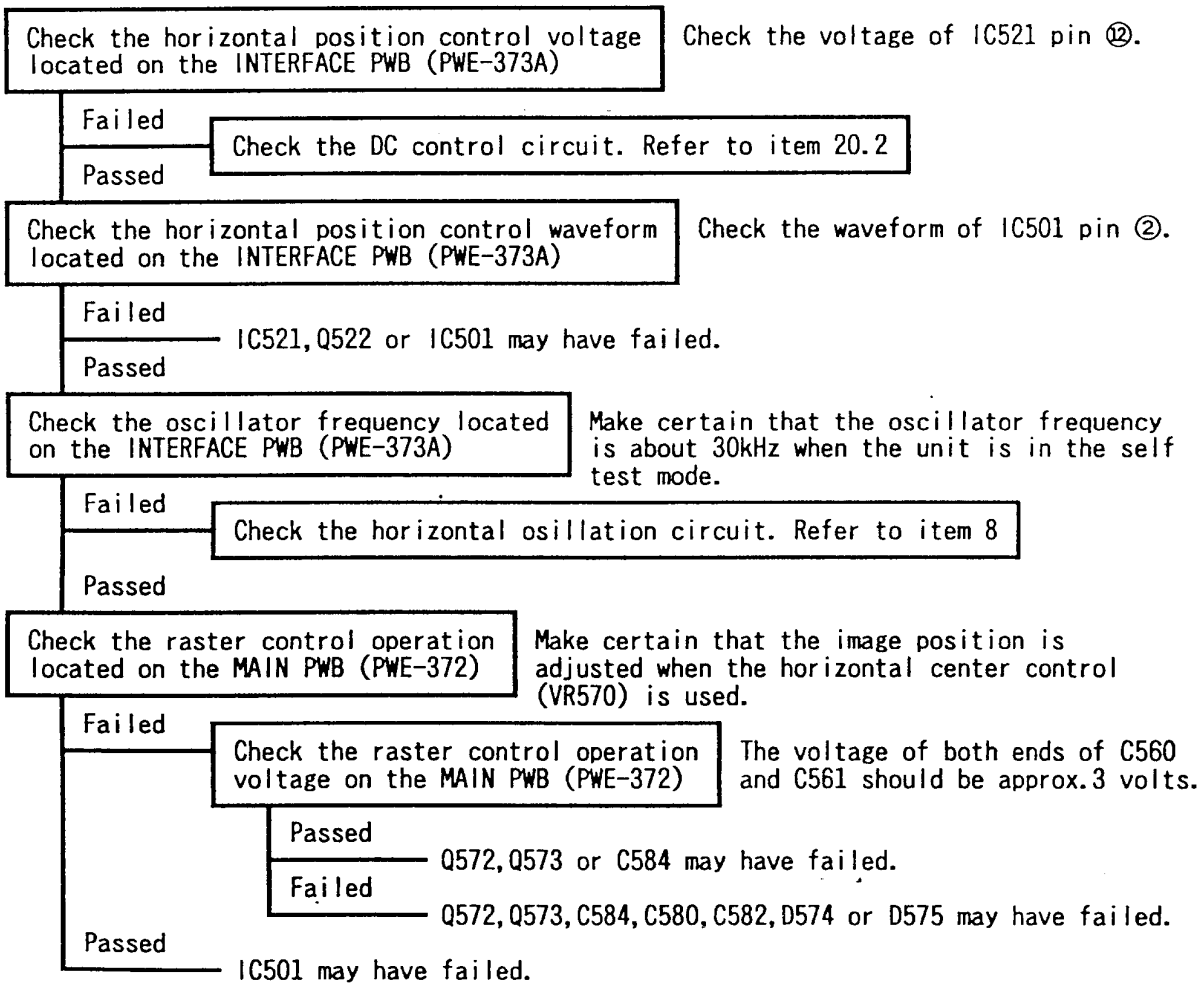
Passed — IC5F1 or C5F9 may have failed.

13.2 VERTICAL IMAGE SIZE FAILURE OR ABNORMAL OPERATION



14. IMAGE POSITION FAILURE

14.1 HORIZONTAL IMAGE POSITION FAILURE



14.2 VERTICAL IMAGE POSITION FAILURE

Check the vertical position control circuit located on the INTERFACE PWB (PWE-373A)

Check the voltage of IC803 pin ⑭.

- Failed → Check the DC control circuit. Refer to item 20.2
- Passed → Check the vertical position control circuit located on the MAIN PWB (PWE-372)

Check The voltage on the emitter of the Q474.

- Failed → IC472, Q474, Q475, C478 or R485 may have failed.
- Passed → IC470 may have failed.

15. USER CONTROL FAILURE

15.1 BRIGHTNESS USER CONTROL FAILURE

Check the brightness control voltage located on the CRT PWB (PWE-373B)

The voltage on the emitter of Q750 should decrease when the brightness control is turned clockwise and increase when the control is turned counterclockwise.

- Failed → Q750 may have failed.
- Passed → Check the brightness control's operation

The brightness does not change for the all colors (red, green, blue)
→ Q750, C756 or D753 may have failed.

The brightness does not change for the red color
→ Q752R, Q753R or D752R may have failed.

The brightness does not change for the green color
→ Q752G, Q753G or D752G may have failed.

The brightness does not change for the blue color
→ Q752B, Q752B or D752B may have failed.

15.2 CONTRAST USER CONTROL FAILURE

Check the contrast control's voltage located on the MAIN PWB (PWE-372)

The collector voltage of Q7K0 should increase when the contrast control is turned clockwise and decrease when the control is turned counterclockwise.

- Failed → IC701 on the CRT PWB (PWE-373B), Q7K0, Q7K1 or Q7K2 on the MAIN PWB (PWE-372) may have failed.
- Passed → IC701 may have failed.

15.3 HORIZONTAL POSITION CONTROL FAILURE OR ABNORMAL OPERATION

Check the horizontal position control voltage located on the INTERFACE PWB (PWE-373A)

When the horizontal position control (VR5M2) is adjusted, the voltage of IC521 pin ⑫ should change.

- Failed → IC521 or C525 may have failed.
- Passed → Check the horizontal position circuit. Refer to item 14.1

15.4 VERTICAL POSITION CONTROL FAILURE OR ABNORMAL OPERATION

Check the vertical position control voltage located on the MAIN PWB (PWE-372)

The emitter voltage of Q474 should change when the vertical position control (VR4M0) is adjusted.

- Failed → IC472, Q474, Q475, C478 or R485 may have failed.
- Passed → IC470 may have failed.

15.5 HORIZONTAL SIZE CONTROL FAILURE OR ABNORMAL OPERATION

Check the horizontal size control voltage located on the MAIN PWB (PWE-372)

The voltage of IC5F1 pin ① should change when the horizontal size control (VR5M1) is adjusted.

- Failed → Check the DC control voltage located on the MAIN PWB (PWE-372)

  The voltage of VR5M1 center pin should change when the horizontal size control (VR5M1) is adjusted.

  - Failed → Check the DC control circuit. Refer to item 20.2
  - Passed → IC5F1 may have failed.
- Passed → Check the horizontal image size control circuit. Refer to item 13.1

15.6 VERTICAL SIZE CONTROL FAILURE OR ABNORMAL OPERATION

Check the vertical size control voltage located on the MAIN PWB (PWE-372)

The voltage of IC472 pin ⑤ should change when the vertical size control (VR4M1) is adjusted.

- Failed → IC472 may have failed.
- Passed → Q470, IC472 or IC470 may have failed.

15.7 SIDE PINCUSHION CONTROL FAILURE OR ABNORMAL OPERATION

Check the side pincushion control circuit located on the MAIN PWB (PWE-372)

When the side pincushion control (VR5M0) is adjusted, the voltage of IC5F3 pin ③ should change.

- Failed → IC5F3 may have failed.
- Passed → Check the side pincushion control circuit. Refer to item 11.1

16. ABNORMAL WHITE BALANCE

Readjust white balance — Refer to the adjustment procedures.

- Passed — OK.
- Failed at only MAC mode — IC801 on the I/F PWB (PWE-373A) may have failed.
- Failed at all modes — Check the video circuit. Refer to item 2

17. BLANKING CIRCUIT FAILURE (Visible the retrace line on the back raster)

Check the G1 waveform located on the CRT PWB (PWE-373B) — Check the waveform of CN-CM pin ⑤. The waveform should have a horizontal frequency pulse and a vertical frequency pulse.

- Passed — CRT, CRT socket or T5C1 may have failed.
- Failed

Check the blanking pulse located on the MAIN PWB (PWE-372) — Check the emitter waveform of Q5L0.

- Passed — D5L1 may have failed.
- Failed

Check the blanking pulse located on the MAIN PWB (PWE-372) — Check the base waveform of Q5L1.

- Passed — Q5L0, Q5L1, R5L4 or D5L2 may have failed.
- Failed

Check the vertical deflection waveform located on the MAIN PWB (PWE-372) — Check the waveform of IC470 pin ⑫.

- Passed — Q5L1, D5L3, D5L4, D5L5 or ZD5L0 may have failed.
- Failed — C473 or D470 may have failed.

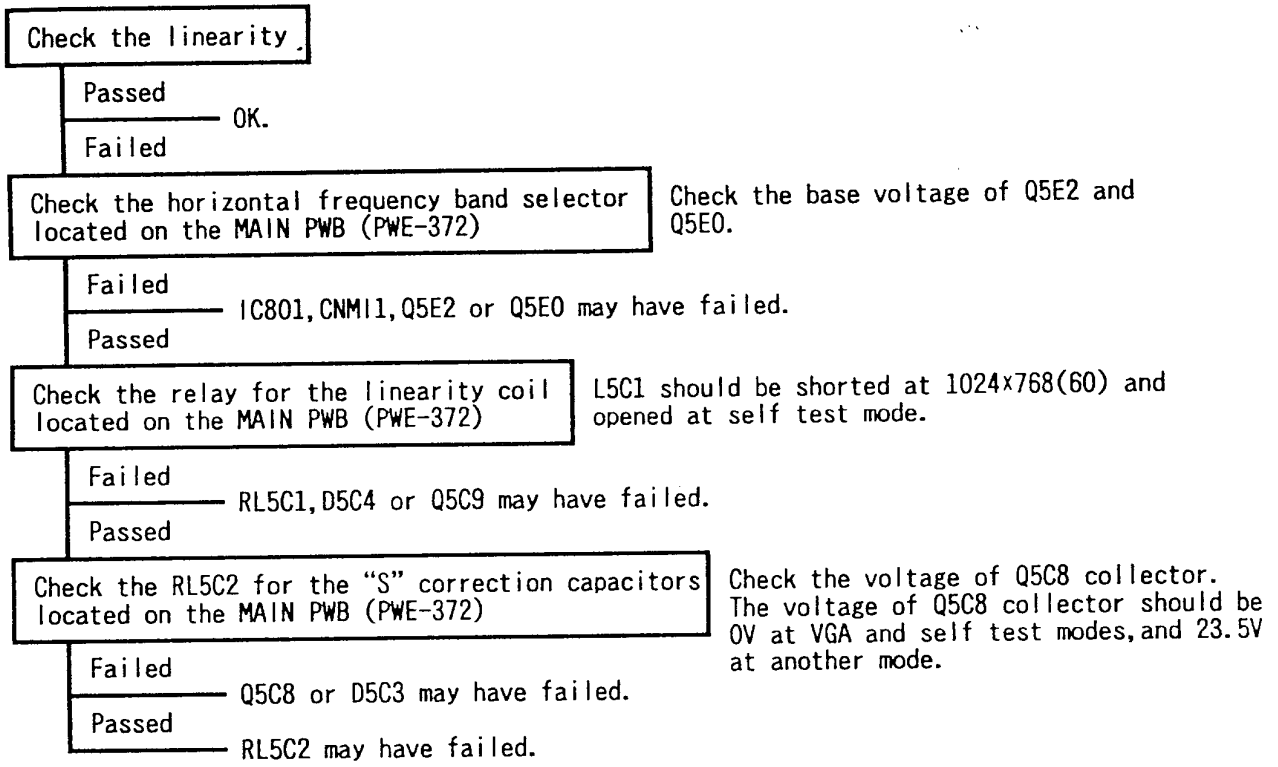
18. POOR FOCUS

Readjust the focus control

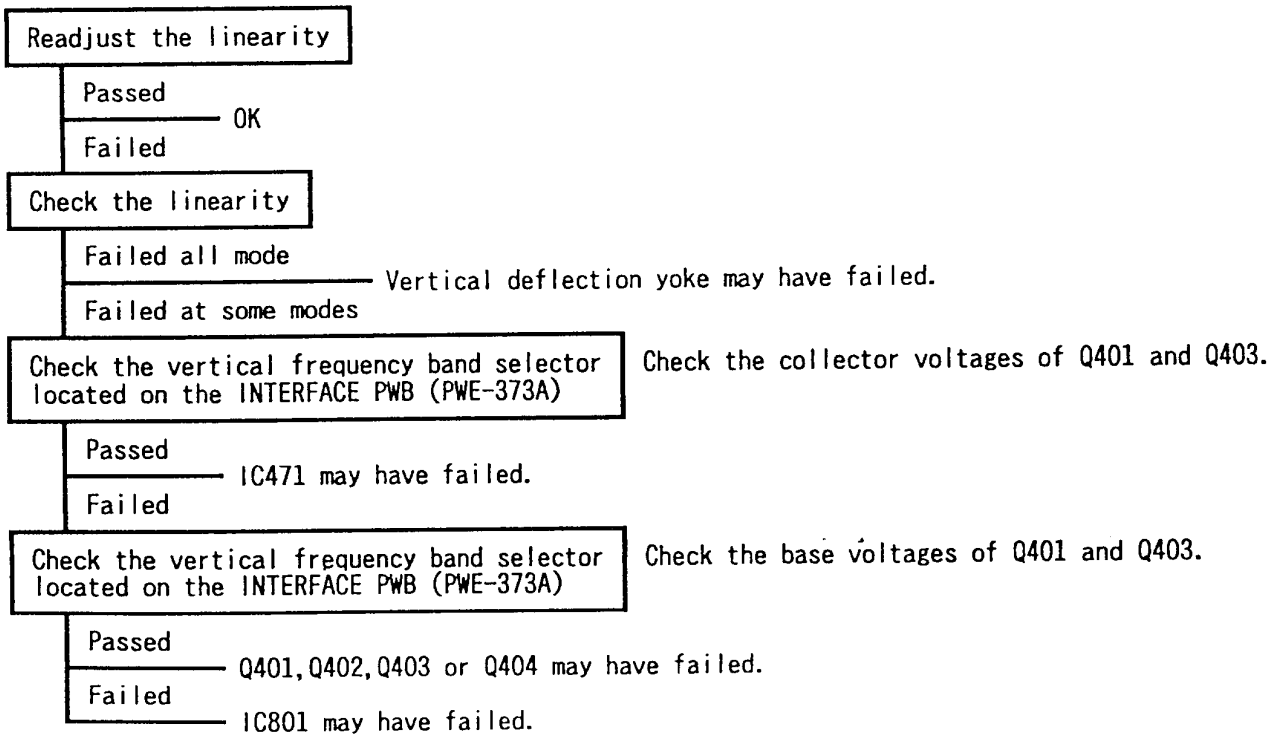
- Failed — T5C1 on the MAIN PWB (PWE-372), CRT socket or CRT may have failure.
- Passed — OK

19. POOR LINEARITY

19.1 HORIZONTAL LINEARITY FAILURE



19.2 VERTICAL LINEARITY FAILURE



20. DC CONTROL CIRCUIT FAILURE

20.1 UNSTABLE HORIZONTAL SYNCHRONIZATION

Check the F/V converter's control voltage located on the INTERFACE PWB (PWE-373A)

Check the voltages of IC803 pin ⑫ at all signals.

Passed → Check the horizontal position circuit. Refer to item 14.1

Failed

Check the IC supply voltage located on the INTERFACE PWB (PWE-373A)

Refer to item 20.4.

Passed → IC801, IC802, IC803 or IC804 may have failed.

20.2 DAC OUTPUT VOLTAGE FAILURE

Adjust the D/A converter's output voltage located on the INTERFACE PWB (PWE-373A)

The voltage of IC802 pins ④, ⑤, ⑥, ⑦, ⑬, ⑭ and ⑮ should be changed by the adjustment jig.

Passed → Refer to item 20.3

Failed

Check the IC supply voltage located on the INTERFACE PWB (PWE-373A)

Refer to item 20.4.

Passed → IC801, IC802, IC803, IC804, the adjustment jig or PC may have failed.

20.3 EEPROM READ/WRITE FAILURE

Readjust all functions at all signals by the adjustment jig

1. Readjust the size, the position and the distortion at all signals by the adjustment jig, and write data to IC804.
2. Turn on and off the power switch. Change the signals.
3. Make certain that the image position, size and distortion are correct.

Failed → IC801, IC802 and IC804 may have failed.

Passed → OK

20.4 CHECK THE IC SUPPLY VOLTAGES

Check the IC supply voltage located on the INTERFACE PWB (PWE-373A)

Check the voltage of IC803 pin ⑪ should be approx. 12 volts.

- Failed → IC803, IC501, C831, C552, ZD551 or ZD552 may have failed.
- Passed

Check the IC supply voltage located on the INTERFACE PWB (PWE-373A)

Check the voltage of IC803 pin ⑩ should be approx. 5 volts.

- Failed

  Check the IC supply voltage located on the INTERFACE PWB (PWE-373A)

  The voltage of IC801 pin ⑥ should be approx. 5 volts.

  - Passed → D852, C854, IC802 or IC803 may have failed.
  - Failed → IC801, IC804, C852 or ZD851 may have failed
- Passed

Check the voltage located on the INTERFACE PWB (PWE-373A)

The voltages of IC801 pin ㉗ and IC803 pin ⑱ should be approx. 5 volts.

- Failed → IC801, IC803, C805, Q831 or C830 may have failed.
- Passed → OK.

21. IPM (Intelligent Power Management) INCORRECT OPERATION OR FAILURE

21.1 IPM INCORRECT OPERATION (When signal is input and self test)

Check the IPM control voltage located on the INTERFACE PWB (PWE-373A)

The voltage of CN-MI2 pin ⑥ should be approx. 0 volts.

- Passed → Q598 on the CHOPPER CONTROL PWB (PWE-376A) may have failed.
- Failed

Check the IPM control voltage located on the INTERFACE PWB (PWE-373A)

The base voltage of Q875 should be approx. 5 volts.

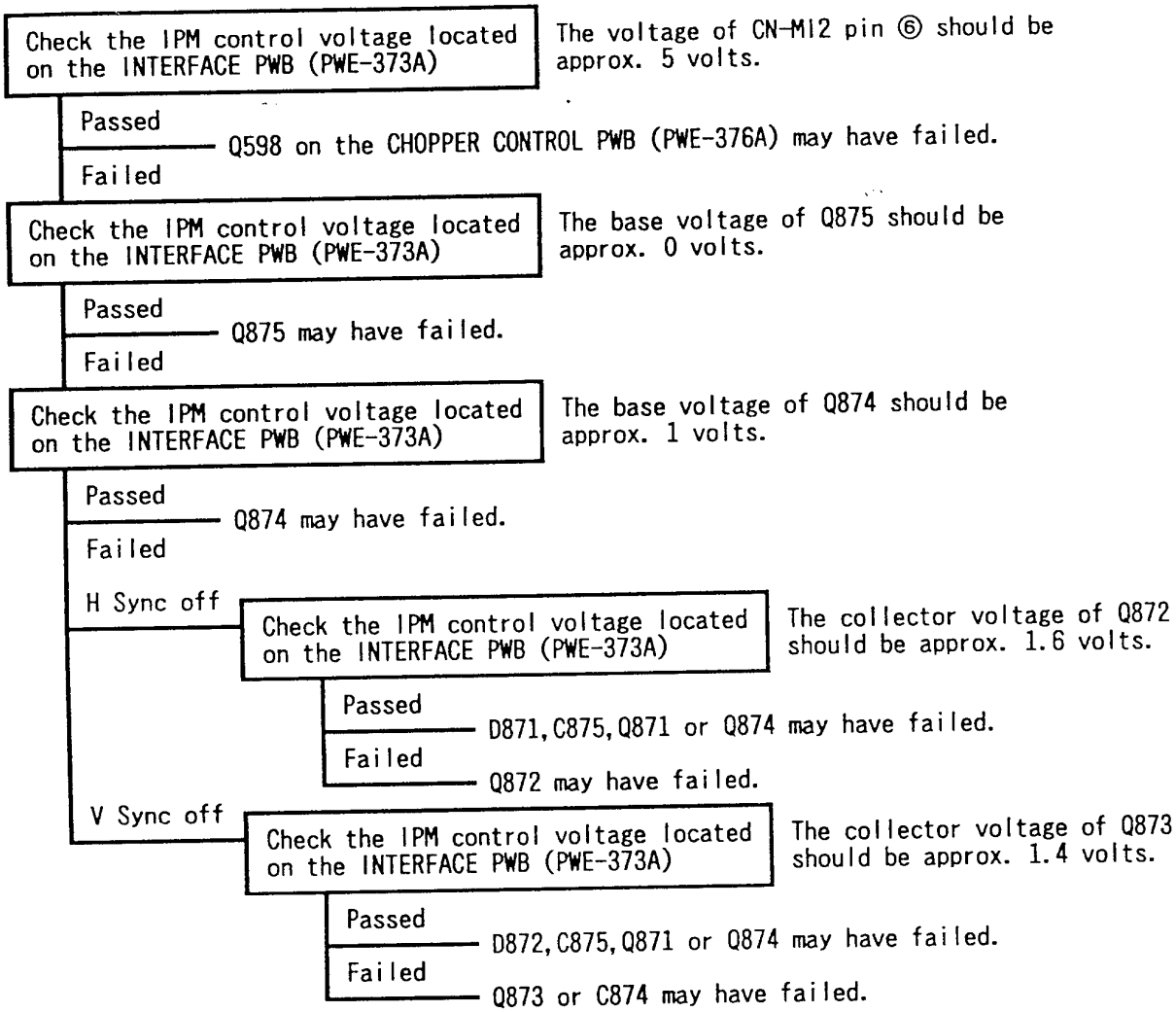
- Passed → Q875 or D873 may have failed.
- Failed

Check the IPM control voltage located on the INTERFACE PWB (PWE-373A)

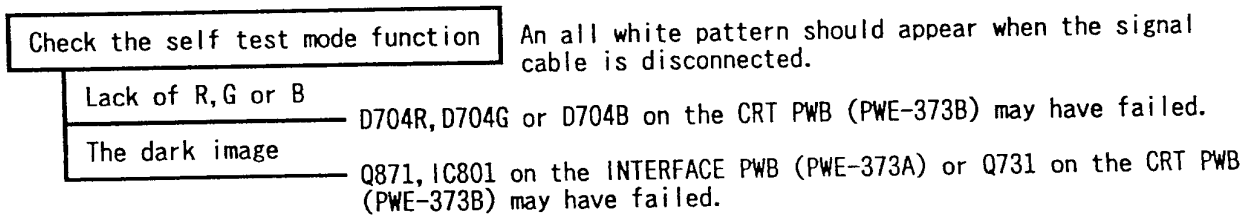
The base voltage of Q874 should be approx. 0 volts.

- Passed → Q874 may have failed.
- Failed → (Received signal) Q872 or Q874 may have failed.
  (Selftest) Q871 may have failed.

21.2 IPM FAILURE (When the H sync or V sync pulse is not input)



22. SELF TEST FAILURE



CIRCUIT DESCRIPTION

TABLE OF CONTENTS

. I/F PWB

(1) MultiSync Control Engine (Gate Array IC801)

IC801 is CMOS IC. It has the following functions:
A) Horizontal and vertical positive polarity sync generator
B) Horizontal sync frequency counter (8bits)
C) Horizontal frequency band decoder
D) Vertical frequency band decoder
E) Graphics standards preset mode select signal generator
F) Composite sync separator
G) Clamp pulse generator
H) Video signal generator for the self test mode
I) DAC and ROM controller

Pins 10, 13 and 14 are the function selector for IC801. Pins 10 and 13 must be grounded and pin 14 must be VDD(+ 5V) for the JC-1535VMA/B/B(EE)/R monitors.

Pin 3 is the horizontal or composite (H/V) sync input and pin 4 is the vertical sync input for IC801. When there is no vertical sync on pin 4, the composite (H/V) sync separator circuit will be activated within IC803. The output of IC801 is always a positive polarity signal for both horizontal sync (output pin 36) and vertical sync (output pin 35) when the inputs are either positive or negative.

The control clock for IC801 is a 10MHz crystal number X801. The input horizontal sync pulses are counted by this clock. The minimum resolution for dividing the signal is 125Hz. The counter values are registered by each of the vertical sync pulse.
The counter values are passed to IC802 pin 3 from IC801 pin 15.
Pins 23 and 25 are the horizontal frequency band outputs. If the horizontal frequency is higher than 34.5kHz then pin 23 will be high. If the horizontal frequency is more than 44KHz then pin 25 will be high. The following table explains these relationships:

	Fh<34.5kHz	34.5kHz<Fh<44kHz	44kHz<Fh
Pin 23	Low	High	High
Pin 25	Low	Low	High

Pins 21 and 22 are the vertical frequency band outputs. If the vertical frequency is between 63Hz and 80 Hz, the pin 21 will be high. If the vertical frequency is greater than 80Hz then pin 22 will be high. The following table explains these relationships:

	Fv<63Hz	63Hz<Fv<80Hz	80Hz<Fv
Pin 21	Low	High	Low
Pin 22	Low	Low	High

IC801 will judge a receiving signal by the horizontal and vertical sync frequencies as well as by the horizontal and vertical sync polarities. IC801 will output the appropriate IC802 stored data for improved DC control. Pin 38 is the clamp pulse output. When separate horizontal and vertical sync signals are applied to the monitor, the clamp pulse is basically the same as the horizontal sync signal. When a composite (H/V) sync signal is applied to the monitor, the output on pin 38 pulse width is 0.5 μs. It is a delayed horizontal sync signal. Pin 2 is the self test input. Pin 2 will be high when pin 5 of the mini D-Sub connector is not grounded. The output on pin 39 will be the self test video signal.

(2) DC Control Circuit

IC803 is a digital/analog converter. The analog outputs of IC803 will control horizontal OSC frequency (pin 12), horizontal position (pin 13), vertical positjon (pin 14), horizonta size (pin 4 and pin 15), vertical size (pin 5), side pincushion (pin 6) and trapezoid distortion (pin 7). IC803 outputs the adjustment data from IC801, IC802 and/or CN-AD. IC801 and/or an adjustment jig will control IC803 pins 1, 2 and 3. And IC803 will source the anal output. IC803 is a EEP-ROM. IC802 stores the DC control data for preset graphics standard signals. An adjustment jig will control IC802 pins 1, 2 and 3. And the jig will write the data to IC802. IC802 and the jig will control IC802 pins 1, 2, 3 and 4. And IC801 and the jig will read the data from IC802.

(3) Horizonral Oscillator's Tracking Circuit

VR521 (H HOLD1) sets the low free running horizontal frequency (usually around 30kHz). VR522 (H HOLD2) sets the low to high free running horizontal frequency. IC521's op-amp and Q521 produce the constant current source for IC501. This constant current source with C507 and IC501.determine the free running oscillator frequency.

(4) Horizontal Phase Shift (H Position Control)

IC501 pin 1 is the horizontal sync input signal. IC501 has a built-in monostable multivibrator used to shift the horizontal sync pulse. IC521's op-amp and Q522 produce the constant current source. Along with C502, they are used to produce the time constant for shifting the horizontal sync pulse which is produced by the H POSITION VR from the CN-MI2 pin 10.

(5) Horizontal Oscillation

The positive horizontal sync pulse is differentiated by C501, R504 and R505, and input to IC501 pin 1.
The horizontal section of IC501 is composed of the phase shifter, the sawtooth generator, AFC and the horizontal OSC section.
The horizontal oscillation circuit is basically CR osc circuit generating a sawtooth wave by charging and discharging capacitor C507 at IC501 pin 9.
Then, the charging current is controlled by the H F/V output.
Therefore, the horizontal free-run frequency changes in proportion to the horizontal frequency and the signal pull in from 30.0kHz to 50.0kHz horizontal scan frequency range.

(6) Parallelogram Distortion Control Circuit

The vertical sawtooth waveform is added to IC401 pin 8. The horizontal freaqency is modulated by the sawtooth waveform and the horizontal phase is shifted in the vertical piriod.

(7) Power Management Circuit

This circuit reduces power consumption expect selftest mode in the following manner when either H sync pulse or V sync pulse or both are not inputed.
When H sync pulse is off, H sync output pulse of IC801 36 pin is off. And the voltage of Q872's base becomes 0 volts. Therefore Q872 turns off. When V sync pulse is off , the same as the voltage of Q873' base becomes 0 volts and turns off. Q874 and Q875 turn on when Q873 or Q872 turn off. Therefore the voltage of Q875' collector becomes apporoximately 5 volts , which makes Q598 and D873 on. And the reference voltage of high B+ chopper becomes 0 volts and clump pulse off. Therefore horizontal defelection and high voltage operation stops and reduces consumption power.

CRT PWB

(1) Video Preamplifier

The analog video signals are received from the mini D-Sub connector pin number 1,3 and 5 (Red, Green and Blue respectively). The level of the video signals are controlled by VR701R, G and B (R, G and B gain controls) before they are applied to pins 4, 6 and 9 of the preamplifier IC701. Pin 11 of IC701 supplies the bias current for each of the video inputs. The gain of IC701 is controlled by the DC level on pin 12. The JC-1535VMA/B/B(EE)/R contrast controls adjust the DC level on pin 12. Pin 14 of IC701 is the input for the clamp pulse. The clamp pulse is obtained from the horizontal sync pulse driven from IC801 on the I/F PWB. Pins 16 (Blue), 20 (Green) and 25 (Red) are the output signals from IC701. Pins 17 (Blue), 21 (Green) and 26 (Red) are the bias level input for the next stage.

(2) Video Output Amplifier (R,G,B)

The video signals input to the cascade amplifier which consists of Q701 and Q702 is amplified by a factor of about 17 and applied to the video output buffer circuit. When the clamp pulse is applied to the base of Q703, Q702 is turned off. The clamp pulse is sent from blanking circuit.

(3) Video Bias Control Circuit

The peak level of the video output waveform is clamped to the DC bias voltage level on the CRT cathode. Q750 acts as a constant current source. Q750 emitter voltage is fed to the base of Q751. Q751 emitter is the SUB BRIGHTNESS VR control on the MAIN PWB. Q753 collector voltage, Q752 base and emitter voltage increase when Q751 emitter voltage increases. The peak level of the video output waveform increases when Q752 emitter voltage increases. Increasing the CRT cathode's peak level waveform decreases the screen's brightness.

(4) Video Signal Generator for the Self Test Mode

Q731,D704R,G and B comprise the self test mode video signal generator.

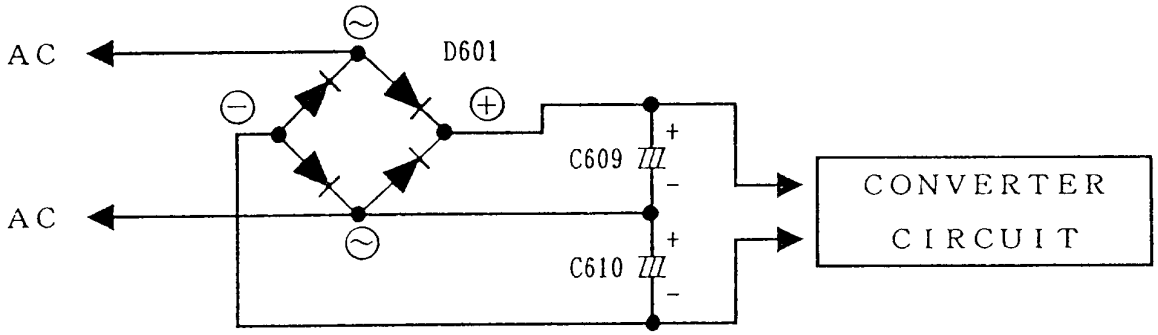
3. MAIN PWB

3.1 Switching Regulator Section

(1) Rectifying and Smoothing Circuit

(JC-1535VMA)

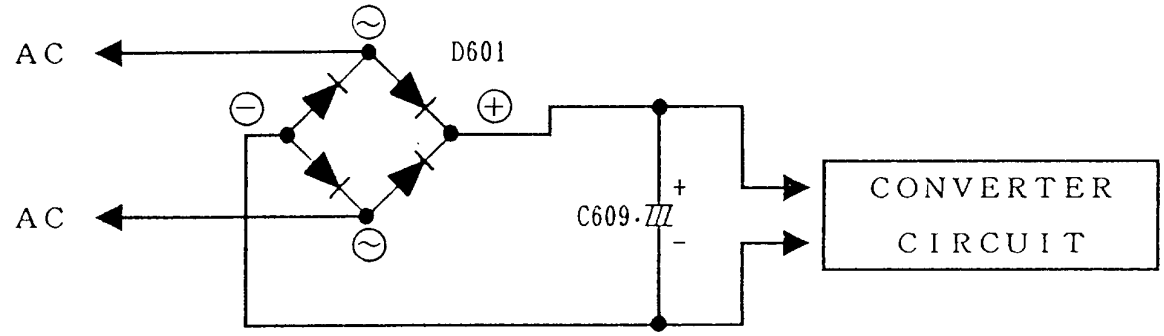
AC input is rectified by D601. Then, it is smoothed by C609 and C610. The resulting DC voltag is supplied to the converter circuit.



(Fig.3.1.1) Rectifying and Smoothing Circuit

(JC-1535VMB/B(EE)/R)

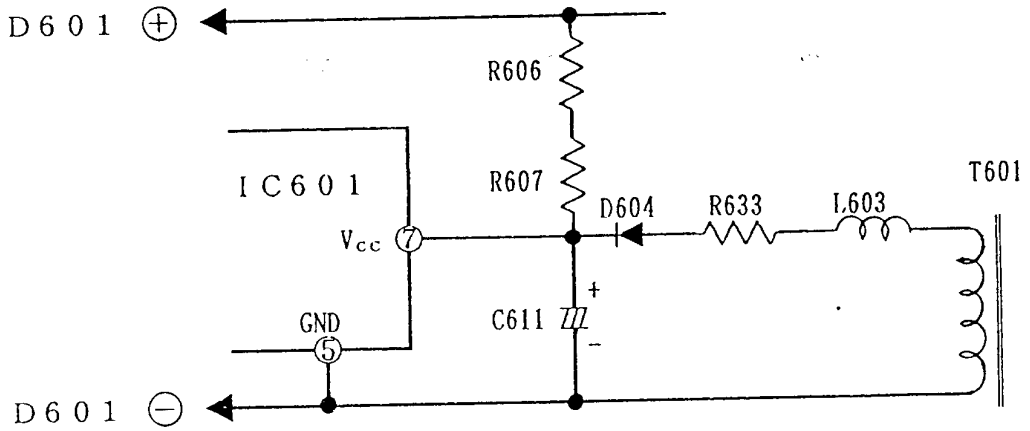
AC input is rectified by D601. Then, it is smoothed by C609. The resulting DC voltage is supplied to the converter circuit.



(Fig.3.1.2) Rectifying and Smoothing Circuit

(2) Auxiliary Power Supply Circuit

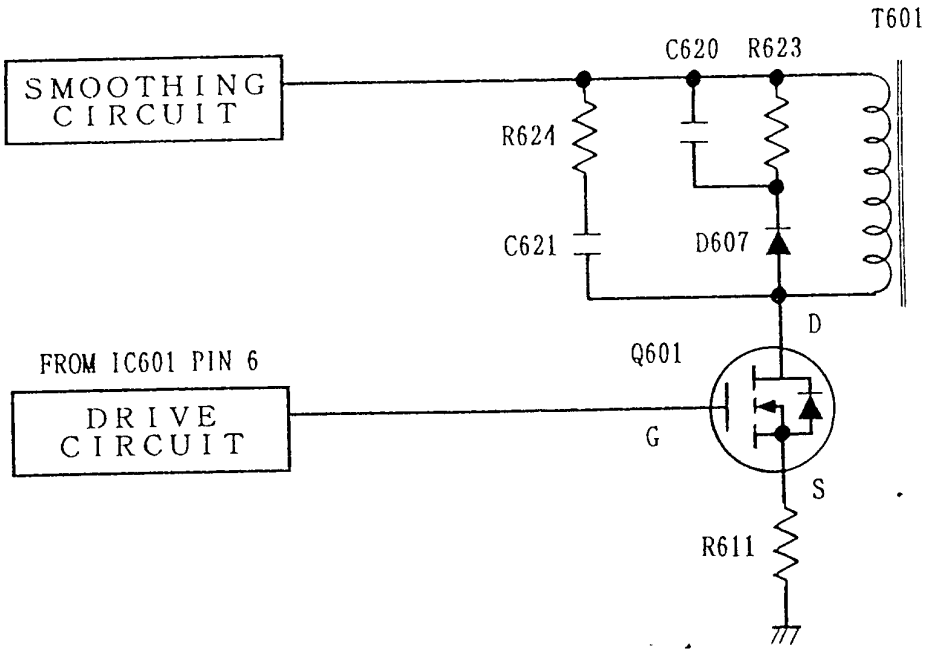
The auxiliary power supply circuit is needed to activate IC601. When the power switch is turned on, the charging current flows into the capacitor C611 through R606 and R607. Oscillation starts when the voltage of IC601 pin 7 reaches 17V by this charging operation. After the start of oscillation, the fly-back voltage of the auxiliary winding of T601 is rectified and smoothed by D604 and C611.
The resulting DC voltage is supplied to IC601 pin 7.



(Fig.3.2) Auxiliary Power Supply Circuit

(3) Converter Circuit

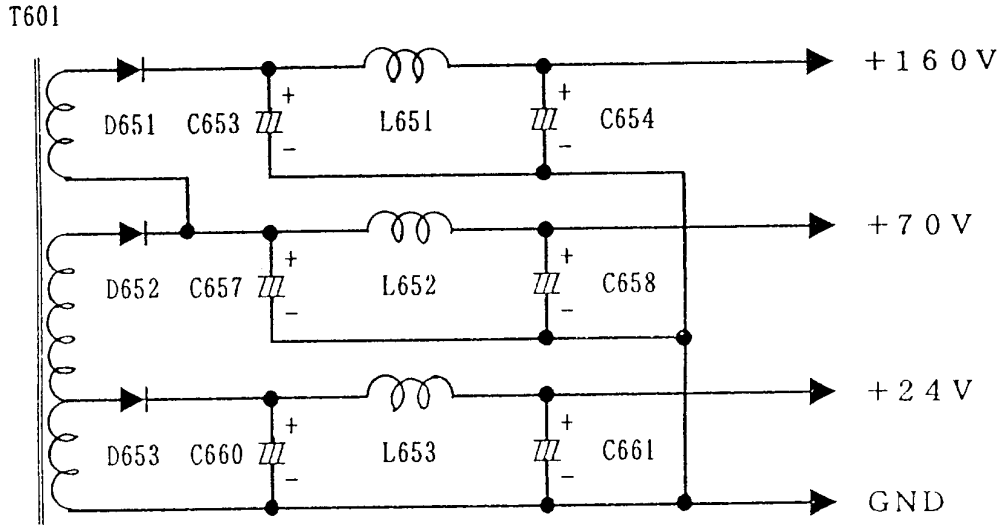
The converter circuit consists of the primary winding of T601, a switching device Q601 and surge absorbers (C620, C621, R623, R624 and D607) which are connected to the primary winding of T601.
The oscillating signal from IC601 pin 6 is applied to the gate of Q601 so that the drain-source is turned ON and OFF. In result, the oscillating voltage is applied to the primary winding of T601.



(Fig.3.3) Converter Circuit

(4) Output Rectifying and Smoothing Circuit

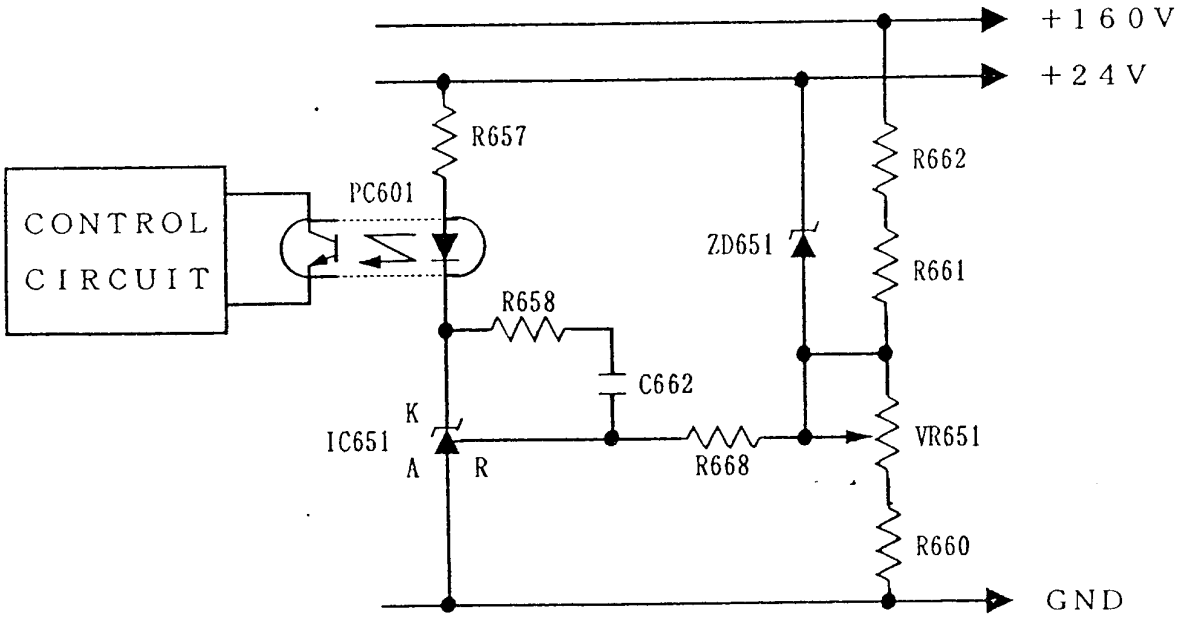
The fly-back voltages which are generated at the secondary windings of T601 are rectified by D651, D652 and D653. Then ,these voltages are smoothed by C653, C654, C657, C658, C660 and C661 so that DC voltages are obtained.
The DC voltages are maintained constantly by controlling the ON period duty cycle of Q601 in the converter circuit.



(Fig.3.4) Output Rectifying and Smoothing Circuit

(5) Error Detection Amplifier Circuit

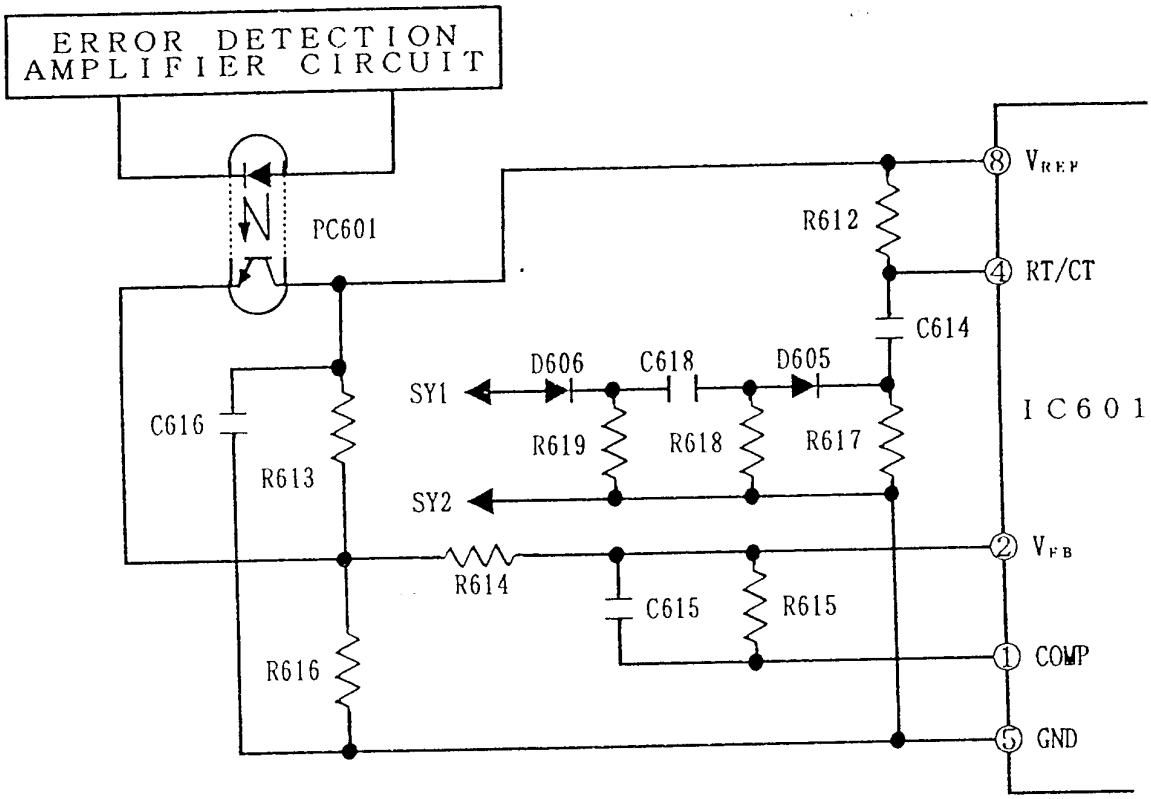
The output voltage 160V is divided by the network resistors. This divided voltage is compared with the reference voltage at the error amplifier IC651. An error signal is applied to the control circuit via the photocoupler PC601.



(Fig.3.5) Error Detection Amplifier Circuit

6) Oscillating and Control Circuit

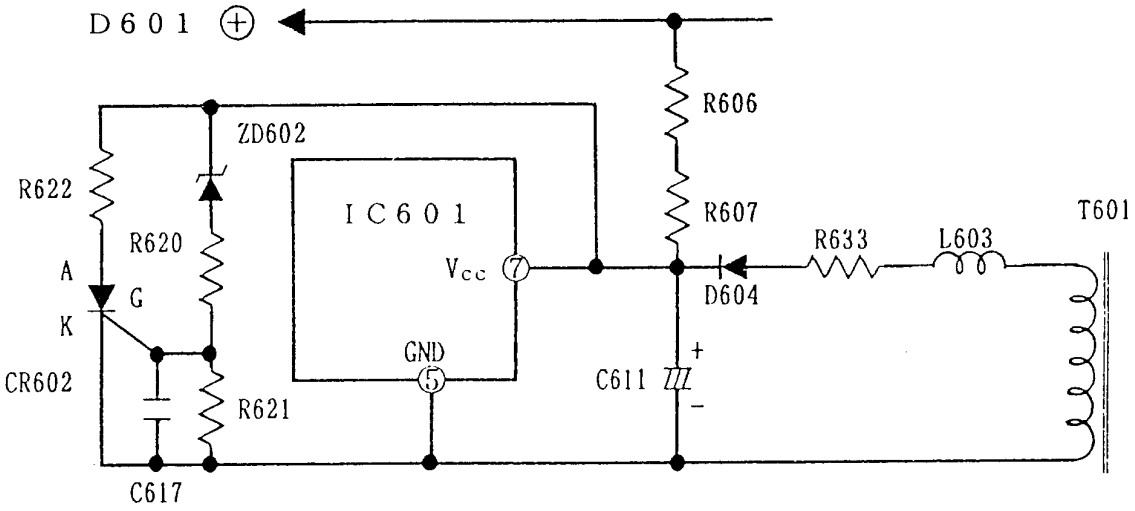
The oscillating and control circuits are contained in IC601.
IC601 has a built-in oscillator whose frequency is determined by R612 and C614 which are connected to pin 4 and pin 8 respectively. And when the pulse of the horizontal sync signal is applied to R617, the switching frequency is synchronized with the horizontal frequency. The output of the error detection amplifier circuit is fed back to IC601 pin 2 via PC601 to control the duty cycle of Q601. In result, the output voltage is kept constant.



(Fig.3.6) Oscillating and Control Circuit

(7) Overvoltage Protection

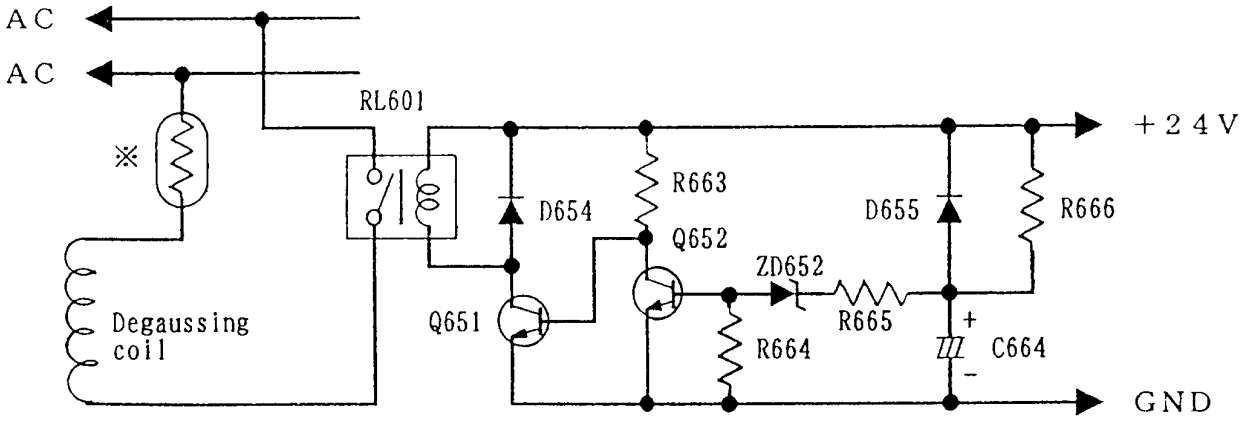
If some failure occurs and the output voltage of the secondary windings of T601 increase, the voltage of the auxiliary winding of T601 also will increase proportionally. When the voltage of IC601 pin 7 increase beyond the zener voltage of ZD602, CR602 will turn on. This action will decrease the voltage of IC601 pin 7 and will stop the oscillator within this IC.



(Fig.3.7) Overvoltage Protection

(8) Degaussing Circuit

When the power switch is turned on, the output voltage 24V is generated. The current flows the base of Q651 through R663 and then Q651 is turned on. During the period which is turned on Q651, the current flows through the degaussing coil. The ON period for Q651 is determined by R665, R666, ZD652 and C664. (approx. 2 sec.) After the approx. 2 sec, Q652 is turned on and this causes Q651 to turn off.



※ TH601 ··· JC-1535VMB/B(EE)/R
TH602 ··· JC-1535VMA

(Fig.3.8) Degaussing Circuit

3.2 MAIN PWB

(1) H Drive Pulse Buffer

The H drive pulse supplied from I/F PWB is buffered by Q5C1. Then it is supplied to the drive circuit of the H deflection circuit, and the sawtooth pulse generator of the chopper circuit.

(2) H Deflection And High Voltage Circuit

/ Drive Circuit

The H drive pulse turns Q5C3 on and off. The synchronized drive pulse is generated on the second side of T5C0.

/ Deflection circuit

The drive pulse is applied to the base of Q5C5 turning it on and off. The sawtooth waveform deflection current is generated in the deflection yoke and high voltage is generated in the second winding of the FBT. The AFC pulse and the HV protector detection voltage is generated in the third winding.
This deflection current sweeps the beam in the horizontal direction. This horizontal deflection circuit consists of the combination of a main and auxiliary generator. (This circuit is called Diode Modulation circuit.) The main generator consists of deflection coil, C5C3, D5C1(D5C9), D5C7 (D5C0) and Q5C5, the auxiliary generator, modulator coil L5C4, C5C4, D5C2, C5C2 and Q5C5. By varying the voltage of C5C2 at the auxiliary generator, the circuit can vary horizontal size and correct pincushion distortion. L5C1 and L5C2 are the horizontal linearity coils. They correct the unbalance of the horizontal linearity between right and left. L5C2 is used in all signals. L5C1 is used when the horizontal frequency is less than 44kHz. C5C7, C5D0 and C5D1 correct for the "S" characteristic and change the parabolic waveform generated at both ends of the capacitor by the inflow current. C5C7 is used in all signals. When the horizontal frequency is less than 44kHz, the correcting capacitor C5D0, C5D1 used. In VGA mode, the correcting capacitor C5D0, C5C7 and C5D1 are used.
The collector pulse width of Q5C5 is determined by the DY's induction, other inductor and the capacity of resonance capacitor C5C3. This pulse width is about 3.4us. Also input supply voltage of FBT 2 pin varies depending upon frequency. The pulse level approximately constant in the all horizontal frequency by negative feedback of high B+ chopper circuit. Therefore the high voltage regulation is constant in all frequency.
The duration of the pulse generated at D5C2's cathode is approximately 3.4μs. This pulse level changes by varying C5C2's voltage by manipulating the horizontal width control and side pincushion control circuit. As C5C2's voltage decreases the horizontal width increases. The horizontal size is defined as the difference between the FBT pin 2 (B+) and C5C2's voltages when the high voltage is constant. C5C2 follows the high B+ voltage to maintain constant horizontal size despite beam fluctuations. The high voltage changes through IC5F1, the operational amplifier, to the base of Q5F0. Q5F0 and Q5F1 act as buffers to control C5C2's voltage. Q5F1's collector voltage is fed back to IC5F1 pin 6 to stabilize the horizontal size despite beam current fluctuations.

/ H Centering Circuit

T570 generates the +/- 3 volts which is compared to the deflection circuit's power supply voltage. This voltage is divided by VR570 (H centering) and is supplied to the base of Q572 and Q573. The voltage differences of Q572's and Q573's base and emitters is supplied to L571. Horizontal centering is manipulated by the current supplied by L570 to the horizontal deflection circuit.

/ High Voltage Circuit

Q5C2 turns on and off generating the flyback pulse on the FBT's primary winding. The FBT boosts this pulse to about 24kV (high voltage) and supplies it to the CRT's anode.
The high voltage fluctuations occur because the FBT, driven by Q5C5, changes by both the horizontal input frequency and by the beam current. The high B+ chopper negative feedback circuit compensates for high voltage decreases.
The FBT's internal resistors, R59E and VR590, divide the high voltage to detect voltage changes. This detection voltage is supplied to the high B+ chopper control circuit operational amplifier, IC590. This circuit forms a feedback loop to maintain constant high voltage.

/ High Voltage Protector

This model employs three separate protection circuits. The first protect circuit becomes active when the FBT high voltage increases abnormally. The second protect circuit monitors the second side of the FBT and becomes active in the event an FBT layer short. The third circuit becomes active when the power supply input voltage to the FBT's primary side increase abnormally.
The HV protector consists of R2001, R2003, R2002, D2000, ZD2000 and IC501. HV is detected by the FBT pin 5, the third winding, whose pulse increases as the HV increases. The output pulse at the FBT pin 5 is rectified by D5C8 and C5D7 and is divided by R2001, R2002, and R2003. ZD2000 is reversed biased and conducts, thereby turning on IC501's protect circuit, when this divided voltage exceeds the voltage at ZD2000. IC501's thyristor turns on and pin 14 becomes active when its input voltage exceeds 0.7 volts. This protect circuit is active and will remain active until the power supply voltage decreases. When this circuit is active, IC501 pin 13's horizontal drive pulse stops and the high voltage decreases to 0 volts.
Leak protector of FBT's second side consists of Q2000, ZD2002, ZD2003, R2008 and IC501. When the current in the second winding of FBT increaces abnormaly, the voltage of FBT pin 8 decreaçes. And when the voltage becomes about 0 volts , ZD2002 conducts and Q2000 turns on. Therefore protector circuit in IC501 turns on.
Leak protrector of FBT primaly side consists of R590, C590, Q590, R593, R594, C591 and IC501. If the input power supply current increases abnormaly, the voltage across R590 increases. When the voltage across R590 increases and Q590's base emitter voltage exceeds 0.7 volts, Q590 is turned on and protector circuit of IC501 is turned on.

(3) High B+ Chopper

High B+ chopper circuit consists of the sawtooth generator, error amplifier, comparator and step down chopper circuit. This circuit forms a negative feedback loop to maintain constant high voltage.

/ Sawtooth Generator

Q597 works as a fixed current source and adds charging current to C592. When the differentiated H drive pulse is applied to the base of Q594, C592 discharges. Then the sawtooth waveform is generated on C592.

/ High B+ Chopper Controller

This circuit adjusts the rectangular wave output duty cycle by comparing the sawtooth wave with the feed back control voltage from high voltage detection circuit.
The on-time of the rectangular decreases when the control voltage increases.

/ High B+ Chopper Output

The chopper control wave is added to the base of Q592 and Q593 to turn it on and off. Therefore, Q591 is also turned off and on as well. A 160Vp-p rectangular wave is generated on Q591's drain. This rectangular wave is rectified by D596, C59A and L590. And the rectified voltage is added to the horizontal deflection circuit.

(4) Low B+ Chopper

/ Low B+ Chopper Controller

The rectangular wave is made by comparing the control voltage from ZD570 with the output of the sawtooth generator. The duty cycle is about 1:3.

/ Low B+ Chopper Output

This circuit is turned on and off by the low B+ chopper controlled rectangular wave.
The output is a rectangular wave of about 24Vp-p. The heater voltage (6.3 volts) is generated from this wave by D573, C578 and T570. The three terminal regulator (output 12volts) IC input approximately 15volts is suppried by T570, D577 and C582.

(5) Horizontal Size Control Circuit

The H size is varied by the voltage of C5C2. The circuit to control this voltage is composed of IC5F1, Q5F0 and Q5F1. The H size user control DC voltage supplied IC5F1 pin 2 is amplified, and vary the voltage of IC5F1 pin 7, the collector current of Q5F1, and the voltage of C5C2. When the user control voltage increases, the horizontal size decreases. The H size varies partially when the beam current varies partially. To correct it, the voltage detected from high voltage is supplied the H size control circuit (IC5F3).

(6) Side Pincushion and Vertical Trapezoid Distortion Control Circuit

/ Vertical Sawtooth Wave Generator

The charging current of C5F4 is controlled by Q5F2, Q5F3 and IC5F3. Q5F4 discharges C5F4 in the vertical frequency and therefore the sawtooth voltage is generated across C5F4. The parabolic wave for the side pincushion correction is controled by the change of this sawtooth wave peak value. IC5F1 is the buffer to supply the sawtooth current in IC5F0.

/ Parabolic Wave Generator

The parabolic wave is generated by input the vertical frequency sawtooth wave in the square generator (IC5F0). IC5F0 is driven by the sawtooth current which is product via R5G7 from the sawtooth voltage, and the parabolic voltage appears on IC5F0 pin ⑦. This parabolic voltage is compared with the horizontal frequency sawtooth voltage on pin ⑧, and the pulse-width modulated output signal is generated on pin ⑤. This pulse-width modulated voltage becomes the parabolic voltage by L5F0 and C5F0.

/ Vertical Trapezoid Distortion Correction

The voltage on IC5F0 pin ① controls the vertical trapezoid distortion correction. The same voltage as pin ① appears on pin ②, it controls the current through R5G7. When the voltage on pin ① decreases, the screen's bottom portion is widened. This voltage is varied by the vertical position, and the trapezoid distortion is corrected.

(7) Vertical Output

/ Vertical Deflection

The vertical drive pulse generated in the I/F PWB is applied to Q471. A sawtooth wave is generated across C471 by the combination of turning Q471 on and off with the current from IC470 pin 6. The time constant of the sawtooth wave is proportional to the current supplied by pin 6. This current is determined on the output current from pin 4. Pin 4's current is determined by the vertical size control circuit comprised of IC472 and Q470. A peak voltage value of the sawtooth wave is proportional to the DY's peak current value. At this time, vertical linearity is corrected by mostly C475, C476, C477, C479, VR470, R473, R474, R477 and R479. The linearity is switched for vertical frequency.

/ Vertical Position Control Circuit

The user control vertical position DC voltage is applied to IC472 pin 2. The vertical position control circuits adds the output voltage to the vertical defrection yoke through R486. The vertical position control circuit pulls out and/or pushs in the DC current from/to the V DY.

(8) Blanking Circuit

This circuit makes a negative blanking pulse for G1 of the CRT. The blanking pulse is made by the vertical output pulse of IC470 pin 12, the vertical drive pulse and the horizontal deflection output pulse of FBT pin 10. This blanking pulse is applied to G1 after the waveform correction by Q5L0 and Q5L1.

(9) Spot Killer

This circuit protects the CRT from the spot brightness in the following manner. When the high B+ voltage drops quickly, this circuit pulls G1 into negative. When the high B+ voltage drops quickly, Q5N0 base voltage drops. But Q5N0 emitter has C5N1's charge and will not drop as a result. Therefore, Q5N0 turns on and the Q573 collector voltage increases. Then Q5N1 turns on and the collector voltage of Q5N1 is changed 0 volts. This Q5N1 collector waveform applies to G1 of the CRT through C5N2.

(10) Contrast Control Circuit

This circuit has two functions. One is the processing of the user contrast control and the other is the ABL (Automatic Beam Limiter) function. The ABL control signal is obtained from the FBT. Q7K2 is activated when the ABL control voltage drops below 12 volts. Once Q7K2 is activated, the collector of Q7K1 will decrease. The collector voltage of Q7K1 also shares the load resister R7K5 with Q7K0. Q7K0 is the control transistor for the user contrast control.

PARTS DIFFERENCE LIST

PARTS DIFFERENCE LIST BETWEEN JC-1535VMA(N) AND JC-1535VMA(H)

SYMBOL	JC-1535VMA(N)		JC-1535VMA(H)	
	PART NO	DESCRIPTION	PART NO	DESCRIPTION
CRT	33015560	CRT M36KME23xx30(T3)	33015562	CRT M36KLH180x21
VR751B	410G2060	R,VARIABLE B20K	410G2059	R,VARIABLE B10K
VR751G	410G2060	R,VARIABLE B20K	410G2059	R,VARIABLE B10K
VR751R	410G2060	R,VARIABLE B20K	410G2059	R,VARIABLE B10K
	84P05D01	MAIN PWB ASSY	84P06D01	MAIN PWB ASSY
	84P05J01	CRT I/F PWB ASSY (B-2)	84P06J01	CRT I/F PWB ASSY (B-2)
R473	401K5709	R,CARBON 33K 5% 1/6W	401K5711	R,CARBON 39K 5% 1/6W
R477	401K5703	R,CARBON 18K 5% 1/6W	401K5701	R,CARBON 15K 5% 1/6W
R487	401H5655	R,CARBON 180H 5% 1/2W	401H5653	R,CARBON 150H 5% 1/2W
R489	79980016	TINNED WIRE 0.6*7.5MM	401K5673	R,CARBON 1.0K 5% 1/6W
R5D7	401H5649	R,CARBON 100H 5% 1/2W	401H5645	R,CARBON 68H 5% 1/2W
R5D8	401H5657	R,CARBON 220H 5% 1/2W	401H5661	R,CARBON 330H 5% 1/2W
C475	428B3019	C,METAL FILM 50V 0.33UF	———	
C476	428B3023	C,METAL FILM 50V 0.68UF	428B3025	C,METAL FILM 50V 1.0UF
C477	428B3021	C,METAL FILM 50V 0.47UF	428B3023	C,METAL FILM 50V 0.68UF
C5D1	42839661	C,METAL 200V 0.47UF 5%	42839662	C,METAL FILM 200V 0.56UF

PARTS DIFFERENCE LIST BETWEEN JC-1535VMB(N) AND JC-1535VMB(H)

SYMBOL	JC-1535VMB(N)		JC-1535VMB(H)	
	PART NO	DESCRIPTION	PART NO	DESCRIPTION
CRT	33015560	CRT M36KME23xx30(T3)	33015562	CRT M36KLH180x21
VR751B	410G2060	R,VARIABLE B20K	410G2059	R,VARIABLE B10K
VR751G	410G2060	R,VARIABLE B20K	410G2059	R,VARIABLE B10K
VR751R	410G2060	R,VARIABLE B20K	410G2059	R,VARIABLE B10K
	84P05J01	CRT I/F PWB ASSY (B-2)	84P06J01	CRT I/F PWB ASSY
	84P25D01	MAIN PWB ASSY	84P26D01	MAIN PWB ASSY
R473	401K5709	R,CARBON 33K 5% 1/6W	401K5711	R,CARBON 39K 5% 1/6W
R477	401K5703	R,CARBON 18K 5% 1/6W	401K5701	R,CARBON 15K 5% 1/6W
R487	401H5655	R,CARBON 180H 5% 1/2W	401H5653	R,CARBON 150H 5% 1/2W
R489	79980016	TINNED WIRE 0.6*7.5MM	401K5673	R,CARBON 1.0K 5% 1/6W
R5D7	401H5649	R,CARBON 100H 5% 1/2W	401H5645	R,CARBON 68H 5% 1/2W
R5D8	401H5657	R,CARBON 220H 5% 1/2W	401H5661	R,CARBON 330H 5% 1/2W
C475	428B3019	C,METAL FILM 50V 0.33UF	———	
C476	428B3023	C,METAL FILM 50V 0.68UF	428B3025	C,METAL FILM 50V 1.0UF
C477	428B3021	C,METAL FILM 50V 0.47UF	428B3023	C,METAL FILM 50V 0.68UF
C5D1	42839661	C,METAL 200V 0.47UF 5%	42839662	C,METAL FILM 200V 0.56UF

PARTS DIFFERENCE LIST BETWEEN JC-1535VMB(N) AND JC-1535VMB(EE)(N)

SYMBOL	JC-1535VMB(N)		JC-1535VMB(EE)(N)	
	PART NO	DESCRIPTION	PART NO	DESCRIPTION
	————		25775751	LABEL (EE)
CORD	70800066	LINE CORD E-3 #8011	————	

PARTS DIFFERENCE LIST BETWEEN JC-1535VMB(N) AND JC-1535VMB(EE)(H)

SYMBOL	JC-1535VMB(N)		JC-1535VMB(EE)(H)	
	PART NO	DESCRIPTION	PART NO	DESCRIPTION
CRT	33015560	CRT M36KME23xx30(T3)	33015562	CRT M36KLH180x21
VR751B	410G2060	R,VARIABLE B20K	410G2059	R,VARIABLE B10K
VR751G	410G2060	R,VARIABLE B20K	410G2059	R,VARIABLE B10K
VR751R	410G2060	R,VARIABLE B20K	410G2059	R,VARIABLE B10K
	84P05J01	CRT I/F PWB ASSY (B-2)	84P06J01	CRT I/F PWB ASSY
	84P25D01	MAIN PWB ASSY	84P26D01	MAIN PWB ASSY
CORD	70800066	LINE CORD E-3 #8011	————	
	————		25775751	LABEL (EE)
R473	401K5709	R,CARBON 33K 5% 1/6W	401K5711	R,CARBON 39K 5% 1/6W
R477	401K5703	R,CARBON 18K 5% 1/6W	401K5701	R,CARBON 15K 5% 1/6W
R487	401H5655	R,CARBON 180H 5% 1/2W	401H5653	R,CARBON 150H 5% 1/2W
R489	79980016	TINNED WIRE 0.6*7.5MM	401K5673	R,CARBON 1.0K 5% 1/6W
R5D7	401H5649	R,CARBON 100H 5% 1/2W	401H5645	R,CARBON 68H 5% 1/2W
R5D8	401H5657	R,CARBON 220H 5% 1/2W	401H5661	R,CARBON 330H 5% 1/2W
C475	428B3019	C,METAL FILM 50V 0.33UF	————	
C476	428B3023	C,METAL FILM 50V 0.68UF	428B3025	C,METAL FILM 50V 1.0UF
C477	428B3021	C,METAL FILM 50V 0.47UF	428B3023	C,METAL FILM 50V 0.68UF
C5D1	42839661	C,METAL 200V 0.47UF 5%	42839662	C,METAL FILM 200V 0.56UF

Two kind of FBTs are applid in the model JC-1535VMA/B/R.
One FBT is manufactured by MURATA (47105685), the other is manufactured by SANYO (47105686). Some (electrical) parts should be changed with the kind of the FBT. See the following list.

SYMBOL	FBT'S VENDOR			
	MURATA		SANYO	
	PART NO	DESCRIPTION	PART NO	DESCRIPTION
T5C1	47105685	FBT	47105686	FBT
R5E9	401H5687	R,CARBON 3.9K 5% 1/2W	401H5691	R,CARBON 5.6K 5% 1/2W
R2002	404C1691	R,METAL 5.6K 1% 1/6W	404C1689	R,METAL 4.7K 1% 1/6W

PARTS DIFFERENCE LIST BETWEEN JC-1535VMA(N) AND JC-1535VMA(P)

SYMBOL	JC-1535VMA(N)		JC-1535VMA(P)	
	PART NO	DESCRIPTION	PART NO	DESCRIPTION
CRT	33015560	CRT M36KME23xx30(T3)	33015575	CRT M36EDR320x131/F03N
VR751B	410G2060	R,VARIABLE B20K	410G2062	R,VARIABLE B50K
VR751G	410G2060	R,VARIABLE B20K	410G2062	R,VARIABLE B50K
VR751R	410G2060	R,VARIABLE B20K	410G2062	R,VARIABLE B50K
	84P05D01	MAIN PWB ASSY	84P81D01	MAIN PWB ASSY
	84P05J01	CRT I/F PWB ASSY (B-2)	84P33J01	CRT I/F PWB ASSY (B-2)
IC470	37056689	IC LA7837	37006015	IC LA7838(V OUT)
R473	401K5709	R,CARBON 33K 5% 1/6W	401K5711	R,CARBON 39K 5% 1/6W
R477	401K5703	R,CARBON 18K 5% 1/6W	401K5705	R,CARBON 22K 5% 1/6W
R479	403F2103	R,METAL OXIDE 1.2H 5% 2W	403F2101	R,METAL 1.0H 5% 2W
R487	401H5655	R,CARBON 180H 5% 1/2W		
R489	79980016	TINNED WIRE 0.6*7.5MM	401K5675	R,CARBON 1.2K 5% 1/6W
R5D7	401H5649	R,CARBON 100H 5% 1/2W	401H5645	R,CARBON 68H 5% 1/2W
R5D8	401H5657	R,CARBON 220H 5% 1/2W	401H5661	R,CARBON 330H 5% 1/2W
R760B	404C1704	R,METAL 20K 1% 1/6W	404C1706	R,METAL 24K 1% 1/6W
R760G	404C1704	R,METAL 20K 1% 1/6W	404C1706	R,METAL 24K 1% 1/6W
R760R	404C1704	R,METAL 20K 1% 1/6W	404C1706	R,METAL 24K 1% 1/6W
C475	428B3019	C,METAL FILM 50V 0.33UF	428B3017	C,METAL FILM 50V 0.22UF
C476	428B3023	C,METAL FILM 50V 0.68UF	428B3021	C,METAL FILM 50V 0.47UF
C5D1	42839661	C,METAL 200V 0.47UF 5%	42839662	C,METAL FILM 200V 0.56UF

REPLACEMENT PARTS LIST

Note : The conponents identified by ⚠ mark are critical for safety
Replace only with parts Number specified.

The components specified for Model JC-1535VMA (N)

SYMBOL	PART NO	DESCRIPTION
*** CRT & TUNER ***		
⚠CRT	33015560	CRT M36KME23XX30(T3)
*** ICS ***		
IC651	370A1009	IC UPC1093J-T (REG)
IC572	37005182	IC LM7812CT(REG)
IC472 IC5F3	37011206	IC XRA10358 (OP-AMP)
IC570	37011262	IC XRA10393 (COMP)
IC471	37051036	MOS UPD4066BC
IC804	37053342	MOS UPD74HCT08C
IC802	37055381	MOS BR93C56B-E
IC501	37056494	IC LA7853
IC470	37056689	IC LA7837
IC803	37056813	IC M62359P
IC5F1 IC521 IC590	37056917	IC XRA10324A (Q OP-AMP)
IC701	37056931	IC LM1203AN
IC801	37056965	IC HE6-0020(SLA904SCIN)
IC5F0	37056981	IC TDA8145
IC601	37076081	IC UC3842N
*** TRANSISTORS ***		
Q475 Q573	350C1218	TR 2SB1329-T105 R
Q5N1 Q571	350D7217	TR 2SC945-T Q
Q470 Q5C1 Q5C8	350E3218	TR 2SC1740S-T R
Q5C9 Q5F2 Q5L0		
Q5L1 Q522 Q592		
Q595 Q602 Q651		
Q652 Q7K0 Q7K1		
Q731 Q751		
Q474 Q572	350G1018	TR 2SD2005-T105 R
Q753B Q753G Q753R	350H4417	TR,2SC1473-TA Q
Q703B Q703G Q703R	350H5017	TR,2SC3811-TA Q
Q702B Q702G Q702R	350J4960	TR 2SC4767-(TA)
Q521 Q596 Q597	350K4518	TR 2SA933-T R
Q750		
Q752B Q752G Q752R	350K5217	TR,2SA1018-TA Q
Q5F0 Q5F3 Q5N0	350K5718	TR 2SA933S-T R
Q593 Q7K2		
⚠Q590	35005218	TR,2SA1018 R
Q705B Q705G Q705R	35006804	TR,2SA1538-RA D

SYMBOL	PART NO	DESCRIPTION
Q5F1	35066616	TR 2SD415 P
Q704B Q704G Q704R	35086004	TR,2SC3953-RA D
⚠Q5C5	35094981	TR 2SC4770,3
Q701B Q701G Q701R	35095002	TR 2SC4046 E
Q405	351G0556	TR DTA114WS-T
⚠Q2000 Q831	351G0561	TR DTA144ES-T
Q402 Q404 Q875	351G0600	TR DTA114ES-T
Q5E0 Q5E2 Q5F4	351G0601	TR DTC114ES-T
Q5F5 Q594 Q598		
Q871 Q872 Q873		
Q401 Q403	351G0602	TR DTC144ES-T
Q471	351G0653	TR DTC123ES-T
Q874	351G0654	TR DTC123JS TP
Q570	35122100	TR 2SK703
Q5C3	35122700	TR 2SK699
Q591	35127470	TR 2SJ306
⚠Q601	35127500	TR 2SK1341
CR602	35595010	THYRISTOR 03P4M-L
⚠CR601	35595014	TRIAC AC10DGM
*** DIODES ***		
⚠D2005 D401 D402	360K1027	DIODE 1SS132
D471 ⚠D472 ⚠D473		
D5C3 D5C4 D5C5		
D5F0 D5F1 D5L2		
D5L3 D5L4 D5L5		
D5N0 D501 D502		
D551 D552 D553		
D570 D572 D580		
D581 D59A D59C		
D590 D591 D592		
D593 D595 D597		
D598 D599 D605		
D606 D654 D655		
D7K0 D7K1 D701		
D702B D702G D702R		
D703B D703G D703R		
D704B D704G D704R		
D705 D706B D706G		
D706R D707B D707G		
D707R D801 D802		

SYMBOL	PART NO	DESCRIPTION
D803 D804 D871	360K1027	DIODE 1SS132
D872 D873		
D5L1 D5N1 D5N2	360K1032	DIODE 1SS82-TA
D752B D752G D752R		
D753		
D571	360K1033	DIODE 1SS131,AT52
⚠ZD2000	360K3143	DIODE,RD8.2JSB(1)-T4
ZD851	360K3157	DIODE RD5.1EB(3)-T4
ZD552	360K3160	DIODE RD8.2EB(2)-T4
ZD601	360K3186	DIODE RD22EB(1)-T4
ZD551	360K3188	DIODE RD3.9EB(2)-T4
ZD6X0	360K3618	DIODE RD3.3ESB(2)-T4
ZD574	360K3624	DIODE RD3.9ES AB2-T4
ZD801	360K3634	DIODE RD5.1ESB(1)-T4
ZD592 ZD593	360K3635	DIODE RD5.1ESB(2)-T4
ZD470	360K3638	DIODE RD5.6ESB(1)-T4
ZD590	360K3639	DIODE RD5.6ESB(2)-T4
ZD570	360K3643	DIODE RD6.2ESB(2)-T4
ZD701	360K3647	DIODE RD6.8ESB(2)-T4
ZD521	360K3652	DIODE RD7.5ESB(3)-T4
ZD573	360K3655	DIODE RD8.2ESB(2)/ESAB(2)
ZD553 ZD554	360K3659	DIODE RD9.1ESB(2)-T4
ZD571	360K3663	DIODE RD10ESB(2)-T4
ZD652	360K3672	DIODE RD12ESB(3)-T4
ZD591 ZD595	360K3679	DIODE RD15ESB(2)-T4
ZD5F0	360K3680	DIODE RD15ESB(3)-T4
ZD602	360K3691	DIODE RD20ES AB2-T4
ZD5L0	360K3692	DIODE RD20ESB(3)-T4
ZD561	360K3694	DIODE RD22ES AB1-T4
⚠ZD2002	360K3699	DIODE RD24ES AB1-T4
ZD651	360K3711	DIODE RD30ESB(3)/ESAB(3)
ZD5N0	360K3723	DIODE RD39ESB-T4
⚠ZD2003	36003698	DIODE RD24ESB
D607	361K7174	DIODE RU1P V1
D602 D603	361K7523	DIODE ERA15-04
⚠D5C8 D577	361K7562	DIODE EGP10G G23
D604 D608 D609	361K7570	DIODE DINL20
D852	361K8232	DIODE RB721Q-T72
D5C0 D573	36107293	DIODE RK14
D653	36107511	DIODE RL4Z,LKF2

SYMBOL	PART NO	DESCRIPTION
D651	36107512	DIODE RG4C,LFK2
D596	36107518	DIODE RG2
⚠D5C7	36107530	DIODE RS4FS
⚠D5C9	36107560	DIODE RG2A2
D652	36107694	DIODE RG4A(LF-K2)
⚠D5C1	36107700	DI ERD09-15J
⚠D5C2	36107701	DI RU4AM(LF-K2)
⚠D601	36108201	DIODE,NETWORK D5SBA60S
D6X0	36801331	LED SLR-54MT3F/PQ
D470 D574 D575	369K2136	DIODE RGP10G,AT
D751	380K5054	VARISTOR MA29W-A (TP)
⚠D2000	38005054	VARISTOR MA29W-A
⚠TH602	38112063	THERMISTOR,POSITIVE
⚠PC601	38200346	PHOTO COUPLER PC111YS

*** TRANSFORMERS ***

⚠T5C0	45804009	TRANS,H.DRIVE
⚠L590	46206007	COIL,CHOKE 5MH
⚠T570	46304112	TRANS,CONVERTER
⚠T601	46309805	TRANS,SWITCHING W384D
⚠T5C1	47105685	F.B.T.

*** VARIABLE RESISTORS ***

VR522	410G1159	R,VARIABLE B2.2K
VR523	410G1161	R,VARIABLE B4.7K
VR521	410G1163	R,VARIABLE B10K
VR401	410G1165	R,VARIABLE B22K
VR701B VR701G VR701R	410G2052	R,VARIABLE B200
VR570 VR7K0	410G2055	R,VARIABLE B1K
VR470 VR7L0	410G2058	R,VARIABLE B5K
VR751B VR751G VR751R	410G2060	R,VARIABLE B20K
VR752B VR752G	410G2062	R,VARIABLE B50K
VR7M0 VR7M1	41011130	R,VARIABLE B10K
VR4M1	41011131	R,VARIABLE 500
VR5M0 VR5M1	41011132	R,VARIABLE 5K
VR4M0	41011133	R,VARIABLE B20K
VR5M2	41011134	R,VARIABLE B50K
⚠VR590	415K5163	R,VARIABLE B200K
VR651	41505103	R,VARIABLE B500

SYMBOL	PART NO	DESCRIPTION
*** RELAYS & SWITCHES ***		
⚠SW1	65360043	SWITCH,PUSH BUTTON
⚠RL601	65660019	RELAY G5P-1(24V)
RL5C2	65660025	RELAY G5B-1-E5 DC24V
RL5C1	65660029	RELAY G5LE-117P(24V)
*** COILS & FILTERS ***		
FL701B FL701G FL701R	390J9027	FILTER ZJSC-R12-100TA
L5C0	60906055	COIL,WIDTH (130UH)
⚠L5C2	60919142	COIL,H.LIN 24T
⚠L5C1	60919143	COIL,H.LIN 18T
L603	610E1723	COIL,FILTER 33UH
L704G L704R	610E4031	COIL,FILTER 0.56UH
L704B	610E4032	COIL,FILTER 0.68UH
L702G L702R	610E4033	COIL,FILTER 0.82UH
L702B	610E4034	COIL,FILTER 1.0UH
L703B L703G	610E4040	COIL,FILTER 3.3UH
L703R	610E4041	COIL,FILTER 3.9UH
L562	610F3025	COIL,FILTER 47UH
L602	610F5002	FERRITE BEADS (B-02-RT)
L701	610F7025	COIL,FILTER 47UH
L5E0	610F7541	COIL,FILTER 1000UH
⚠FL5C0 L654	610G0111	INDUCTOR,BEADS(FBR07HA121
⚠L561	610G0233	FILTER CHOKE PJ8T-470K
⚠FL602	61062204	LINE FILTER (HR-24-E392)
⚠FL601	61062205	LINE FILTER (LF-4D-E102)
L5F0	61064059	COIL,FILTER S103J
L571	61070251	FILTER CHOKE 8MH
L651	61099096	FILTER CHOKE 68UH K 1R5
L652 L653	61099107	FILTER CHOKE 33UH 2.0A
DG	61315108	COIL,DEGAUSSING
FL705 FL851	616K6028	NOISE FILTER 1H223X-TA
FL704	616K6029	NOISE FILTER
FL703B FL703G FL703R	616K6075	NOISE FILTER
FL401	616K6718	NOISE FILTER 10000UH
FL702	616K6801	NOISE FILTER 2R2-101-T
	61605132	FERRITE CORE

SYMBOL	PART NO	DESCRIPTION
*** PWB ASSYS ***		
	84P05B01	SUB PWB ASSY (B-2)
	84P05D01	MAIN PWB ASSY
	84P05J01	CRT I/F PWB ASSY (B-2)
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***		
HS5F1	31709004	SHEET INSULATOR M-20
HS470	31709202	SHEET,INSULATOR
HS5C5	31709503	SHEET,INSULATOR
HS701B HS701G HS701R	31709803	SHEET INSULATOR M-45
SG701 SG702B SG702G SG702R	329J0047	ARRESTER (300V),AT52
	32990205	INSULATING CAP TIC-3.5(
X801	64098039	X'TAL(10.000MHZ)
⚠F601	66699064	FUSE UL(ET) 250V 4A
SG703	667K6007	SPARK GAP 1.5KV
⚠CNCRT	70032055	CRT SOCKET(HPS0199)
⚠IN1	70521057	INLET (NC-187-10N)
CORD	70810757	LINE CORD 3P L=1.8
CABLE	73893135	SIGNAL,CABLE MD15P-EH5,6P
VR590	74004891	CAP
*** APPEARANCE PARTS ***		
	25317211	CABINET FRONT ASSY
	25317231	CABINET,BACK
	25417703	REVOLVING SPINDLE
	25424781	REVOLVING STAND (B) ASSY
	25424801	REVOLVING STAND (T)
	25534631	COIL SPRING
	25540821	CHASSIS BASE
	25757643	LABEL(REV.)
	25779221	NAME PLATE,INSTRUCTION
	25780211	NAME PLATE,INSTRUCTION
	25780221	NAME PLATE,INSTRUCTION
	25780241	NAME PLATE,INSTRUCTION

SYMBOL	PART NO	DESCRIPTION
*** KNOBS & PUSH BUTTONS ***		
	25455911	KNOB,CONTROL (A)
	25455921	KNOB,CONTROL (B)
	25455931	PUSH BUTTON (SW)(A)
*** PRINTED & PACKING MATERIALS ***		
	24813191	BAG,POLYETHYLENE(150*370)
	25825501	SHEET,PROTECTION
	25828061	FILLER T,CARTON
	25828071	FILLER B,CARTON
	25828082	CARTON BOX(JC-1535VMA)
	78034408	MONITOR SALES OFFICE LIST
	78127573	USER'S MANUAL CN203A
*** RESISTORS ***		
R5A0 R5C5 R6X0 R610 R578 R630	401C6657	R,CARBON 220H 5% 1/4W
	401C6665	R,CARBON 470H 5% 1/4W
	401C6673	R,CARBON 1.0K 5% 1/4W
	401C6685	R,CARBON 3.3K 5% 1/4W
	401C6687	R,CARBON 3.9K 5% 1/4W
R5N1 R5N2 R608 ⚠R593 ⚠R5D9 ⚠R5E0 R632	401C6703	R,CARBON 18K 5% 1/4W
	401C6721	R,CARBON 100K 5% 1/4W
	401C6727	R,CARBON 180K 5% 1/4W
	401G6109	R,CARBON 2.2H 5% 1/4W
	401G6143	R,CARBON 56H 5% 1/4W
R609 R622 R713R R713B R719B R719G R719R R712B R712G R712R	401G6149	R,CARBON 100H 5% 1/4W
	401H5625	R,CARBON 10H 5% 1/2W
	401H5635	R,CARBON 27H 5% 1/2W
	401H5637	R,CARBON 33H 5% 1/2W
	401H5641	R,CARBON 47H 5% 1/2W
R713G ⚠R5D7 R722 R619 R487 ⚠R5D8	401H5645	R,CARBON 68H 5% 1/2W
	401H5649	R,CARBON 100H 5% 1/2W
	401H5651	R,CARBON 120H 5% 1/2W
	401H5655	R,CARBON 180H 5% 1/2W
	401H5657	R,CARBON 220H 5% 1/2W
R720 R5E9 R723	401H5661	R,CARBON 330H 5% 1/2W
	401H5687	R,CARBON 3.9K 5% 1/2W
	401H5689	R,CARBON 4.7K 5% 1/2W

SYMBOL	PART NO	DESCRIPTION	QTY
R604 R605 ⚠R601	401H5729	R,CARBON 220K 5% 1/2W	2
	401H5737	R,CARBON 470K 5% 1/2W	1
⚠R629 R588 R617 R618 R59H R5C0 R5F2 R511 R620 R7K6 R701B R701G R701R R702B R702G R702R R704B R704G R704R R709B R709G R709R R710B R710G R710R	401H5745	R,CARBON 1.0M 5% 1/2W	1
	401K5625	R,CARBON 10H 5% 1/6W	1
	401K5633	R,CARBON 22H 5% 1/6W	2
	401K5643	R,CARBON 56H 5% 1/6W	1
	401K5649	R,CARBON 100H 5% 1/6W	20
R584 R403 R503 R726 R730 R804 R806 R811 R812 R813 R814 R815 R816 R818 R819 R820 R830 R831 R832 R833 R834 R835 R839 R840 R841 R843 R844 R874 R668 R752 R801 R706B R706G R706R R731	401K5653	R,CARBON 150H 5% 1/6W	1
	401K5657	R,CARBON 220H 5% 1/6W	27
	401K5661	R,CARBON 330H 5% 1/6W	3
	401K5663	R,CARBON 390H 5% 1/6W	3
	401K5665	R,CARBON 470H 5% 1/6W	1
R725 R714G R714B R408 R409 R413 R5A8 R5G3 R5LA R5L7 R510 R616 R621 R628 R665 R7K4 R714R R721 R751 R805 R873 R5L9 R724	401K5667	R,CARBON 560H 5% 1/6W	1
	401K5669	R,CARBON 680H 5% 1/6W	1
	401K5671	R,CARBON 820H 5% 1/6W	1
	401K5673	R,CARBON 1.0K 5% 1/6W	18
	401K5675	R,CARBON 1.2K 5% 1/6W	2
R483 R5L8 R7M0 R822 R5A9 R808 R809 R810 R837 R838 R842	401K5677	R,CARBON 1.5K 5% 1/6W	4
	401K5679	R,CARBON 1.8K 5% 1/6W	1

SYMBOL	PART NO	DESCRIPTION
R401 R411 R5M3 R5N5 R501 R614 R7K3 R762 R4M0 R404 R5L2 R5M2 R7K5 R5C1 R5H8 R631 R7M1 R753 R754 R755	401K5681	R,CARBON 2.2K 5% 1/6W
R5J5 R5J6 R5L3 R579 R5F4 R5L1 R506 R538 R539 R658 R7L0 R845 R5F1 R576 R7K1 R5A4 R5D5 R5F0 R5N3 ⚠R594 R595 R7K2 R5F3 R5GR R509 R597 R7K7	401K5683	R,CARBON 2.7K 5% 1/6W
R402 R5A1 R5A3 R5A5 R5D3 R5D4 R5E7 R5FA R5FF R5FK R5F8 R5GA R5GE R5G9 R5HA R5J8 R5J9 R5L6 R502 R533 R540 R541 R547 R574 R577 R585 R59C ⚠R591 R599 R613 R615 R7K0 R703B R703G R703R R705B R705G R705R R802 R803	401K5685	R,CARBON 3.3K 5% 1/6W
R5E6 R5G6 R505 R536 R663 R5HC R5H1 R542 R543 R575 R477 R5FL R5GF R5G5 R53A R596 R5A6 R5FE R5GP R5M1 R5N4 R504 R507 R582 R586	401K5687	R,CARBON 3.9K 5% 1/6W
	401K5689	R,CARBON 4.7K 5% 1/6W
	401K5691	R,CARBON 5.6K 5% 1/6W
	401K5693	R,CARBON 6.8K 5% 1/6W
	401K5695	R,CARBON 8.2K 5% 1/6W
	401K5697	R,CARBON 10K 5% 1/6W
	401K5699	R,CARBON 12K 5% 1/6W
	401K5701	R,CARBON 15K 5% 1/6W
	401K5703	R,CARBON 18K 5% 1/6W
	401K5705	R,CARBON 22K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
R59A R821 R871	401K5705	R,CARBON 22K 5% 1/6W
R470 R5FJ R410 R473 R5E5 R5GM R5H5 R508 R570 R571 R59F R59G R7M2 R759B R759G R759R ⚠R2008 R5F9 R5GN R5GQ R5G2 R5H0 R581	401K5707	R,CARBON 27K 5% 1/6W
	401K5709	R,CARBON 33K 5% 1/6W
	401K5711	R,CARBON 39K 5% 1/6W
R474 R488 R5F5 R5GJ R5GK R5H7 R5J1 R535 R872 R5F7 R5H6 R5J2 R544 R546 R664	401K5713	R,CARBON 47K 5% 1/6W
	401K5715	R,CARBON 56K 5% 1/6W
R478 R482 R5G0 R548 R666 R761G R5G7 ⚠R59E R761B R481 R5A7 R5F6 R5H9 R5J4 R5N0 R573 R5FG	401K5717	R,CARBON 68K 5% 1/6W
	401K5719	R,CARBON 82K 5% 1/6W
	401K5721	R,CARBON 100K 5% 1/6W
R480 R484 R5G1 R5J7 R545 R758B R758G R758R	401K5723	R,CARBON 120K 5% 1/6W
	401K5727	R,CARBON 180K 5% 1/6W
R5H2 R5J0 R756B R756G R756R R5FH R757B R757G R757R R5A2 R5J3 R5L0 R572 R580 R807	401K5729	R,CARBON 220K 5% 1/6W
	401K5731	R,CARBON 270K 5% 1/6W
	401K5737	R,CARBON 470K 5% 1/6W
	401K5739	R,CARBON 560K 5% 1/6W
	401K5745	R,CARBON 1.0M 5% 1/6W
⚠R625 R587 R633 R651 R653 R655 R551 R552 R479 R590 R851	40299107	R,WIRE 15H 10% 5W
	403F1111	R,METAL OXIED 2.7H 5% 1W
	403F1133	R,METAL OXIED 22H 5% 1W
	403F1135	R,METAL OXIDE 27H 5% 1W
	403F1161	R,METAL 330H 5% 1W
	403F1167	R,METAL 560H 5% 1W
	403F2103	R,METAL OXIDE 1.2H 5% 2W
	403F2127	R,METAL OXIDE 12H 5% 2W

SYMBOL	PART NO	DESCRIPTION
R627 R561	403F2145 403F2161	R,METAL 68H 5% 2W R,METAL OXIDE 330H 5% 2W
R657 R606 R607 R652 R654 R656 R611 R624 R486	403F2177 403F2213	R,METAL 1.5K 5% 2W R,METAL 47K 5% 2W
R623 R5D0 R715B R715G R715R R5C7 R5C8 R5C9 R526 R537 R708	403F2341 403F3141 403F3145	R,METAL 0.68H 5% 2W R,METAL OXIDE 47H 5% 3W R,METAL OXIED 68H 5% 3W
R660 R527 R612 R2020 R522	403F3221 403F3343 40318271 40373131 404C1681	R,METAL 100K 5% 3W R,METAL OXIDE 0.82H 5% 3W R,METAL 820H 5% 7W R,METAL 18H 5% 3W R,METAL 2.2K 1% 1/6W
R523 ⚠R2001 ⚠R2002 ⚠R2003 R524 R534 R513 R525 R528 R707	404C1682 404C1683 404C1684 404C1685 404C1687	R,METAL 2.4K 1% 1/6W R,METAL 2.7K 1% 1/6W R,METAL 3.0K 1% 1/6W R,METAL 3.3K 1% 1/6W R,METAL 3.9K 1% 1/6W
R512 R407 R529 R405 R760B R760G R760R R471 R472	404C1689 404C1691 404C1697 404C1699 404C1701	R,METAL 4.7K 1% 1/6W R,METAL 5.6K 1% 1/6W R,METAL 10K 1% 1/6W R,METAL 12K 1% 1/6W R,METAL 15K 1% 1/6W
R406 R661 ⚠R5E3 R761R ⚠R5E4 R662	404C1702 404C1703 404C1704	R,METAL 16K 1% 1/6W R,METAL 18K 1% 1/6W R,METAL 20K 1% 1/6W
⚠R5E1 R532 R531 R521 ⚠R485 ⚠R598	404C1708 404C1711	R,METAL 30K 1% 1/6W R,METAL 39K 1% 1/6W
	404C1714 404C1717 404C1719 404C1720 404C1721	R,METAL 51K 1% 1/6W R,METAL 68K 1% 1/6W R,METAL 82K 1% 1/6W R,METAL 91K 1% 1/6W R,METAL 100K 1% 1/6W
	404C1725 404C1733 404C1739 404K5117 404K5133	R,METAL 150K 1% 1/6W R,METAL 330K 1% 1/6W R,METAL 560K 1% 1/6W R,METAL 4.7H 5% 1/4W R,METAL 22H 5% 1/4W

SYMBOL	PART NO	DESCRIPTION
⚠R716B ⚠R716G ⚠R716R ⚠R717B ⚠R717G ⚠R717R ⚠R5L4 ⚠R460 ⚠R560 R451	404K5137 404K5149 404K5345 404K6101 409A6125	R,METAL 33H 5% 1/4W R,METAL 100H 5% 1/4W R,METAL 1.0H 5% 1/4W R,METAL 1.0H 5% 1/2W R,FUSE 10H 5% 1/4W
*** CAPACITORS ***		
⚠C5D3 C585 C754B C754G C754R C755 C5C0 C726B C726G C726R ⚠C5D2 C728	420C9563 420C9567 420C9569 420C9571 420DK108	C,CERAMIC 500V 1000PF C,CERAMIC 500V 2200PF C,CERAMIC 50V 3300PF C,CERAMIC 500V 4700PF C,CERAMIC 2KV 10000PF
⚠C602 ⚠C603 ⚠C606 ⚠C607 ⚠C626 ⚠C627 C621 C651 C652 C655 C656 C659	420EC013 420EC067 420JJ088 420JJ096 42099086 421A0425	C,CERAMIC 400V 1000P C,CERAMIC 400V 2200PF C,CERAMIC 2K 220PF C,CERAMIC 2K 470PF C,CERAMIC 2KV 1000PF C,CERAMIC 50V 0.01UF
C462 C463 C47E C47F C472 C5D8 C5FF C5F7 C5F8 C5N0 C562 C563 C565 C722 C5F2 C402 C401 C572 C858 C464	421C0205 421C0208 421C0213 421C0218	C,CERAMIC 50V 220PF C,CERAMIC 50V 390PF C,CERAMIC 50V 1000PF C,CERAMIC 50V 2700PF
C710B C710G C710R C2021 C451 C522 C551 C554 C7K1 C7K2 C701 C706B C706G C706R C708 C711B C711G C711R C721 C724 C727 C729 C750 C751 C801 C851 C857 C47C C855 C856	421C0219 421D6009 421D6013	C,CERAMIC 50V 3300PF C,CERAMIC 25V 0.1UF C,CERAMIC 50V 0.1UF

SYMBOL	PART NO	DESCRIPTION
C707B C707G C707R	423A1037	C,CERAMIC 50V 47PF
C712G	423A1039	C,CERAMIC 50V 56PF
C712B	423A1045	C,CERAMIC 50V 100PF
C712R	423A1047	C,CERAMIC 50V 120PF
C474	423A1053	C,CERAMIC 50V 220PF
C871	423A1055	C,CERAMIC 50V 270PF
C586	423A1057	C,CERAMIC 50V 330PF
C802 C803	423A2025	C,CERAMIC 50V 15PF
C593	423A2037	C,CERAMIC 50V 47PF
C501	423A2045	C,CERAMIC 50V 100PF
C5L3 C503	423A2105	C,CERAMIC 50V 270PF
C760	427E4163	C,FILM 100V 0.01UF
C5F1 C613	427F4601	C,FILM 50V 1000PF
C504	427F4607	C,FILM 50V 3300PF
C405	427F4612	C,FILM 50V 8200PF
C506 C617	427F4613	C,FILM 50V 0.01UF
C615 C618	427F4615	C,FILM 50V 0.015UF
C5FG C614	427F4617	C,FILM 50V 0.022UF
C5L4	427F4623	C,FILM 50V 0.068UF
C5A3 C524 C574	427F4625	C,FILM 50V 0.1UF
C612 C616 C624		
C5D5	427F4626	C,FILM 50V 0.12UF
C662	427F4629	C,FILM 50V 0.22UF
C502	427F4647	C,FILM 50V 470PF
C592	427F4651	C,FILM 50V 1000PF
C5D9 C523 C566	427F4663	C,FILM 50V 0.01UF
C568 C577 C595		
C5F4 C872 C873	427F4675	C,FILM 50V 0.1UF
C508	427F8404	C,FILM 100V 1800PF
C5A0 C598	42703663	C,FILM 400V 0.01UF
C475	428B3019	C,METAL FILM 50V 0.33UF
C477	428B3021	C,METAL FILM 50V 0.47UF
C476	428B3023	C,METAL FILM 50V 0.68UF
C404 C471	428B3025	C,METAL FILM 50V 1.0UF
C5A1	428C9022	C,METAL FILM 250V 0.1UF
C5L1	428D0053	C,METAL 100V 0.1UF
C713B C713G C713R	428D0097	C,FILM 250V 0.22UF
C620	428D0165	C,FILM 400V 0.022UF
C753B C753G C753R	428D4413	C,METAL FILM 250V 0.1UF
⚠C5C4	42807586	C,FILM 1.6KV 8000PF

SYMBOL	PART NO	DESCRIPTION
⚠C5C3	42817092	C FILM 1.4KV 6400P
⚠C601	42824804	C,FILM AC250V 0.03UF
⚠C604 ⚠C605	42824807	C,FILM AC250V 0.1UF
C5C7	42839613	C,METAL 400V 0.56UF
⚠C5D0	42839657	C,METAL 200V 0.27UF
⚠C5D1	42839661	C,METAL 200V 0.47UF 5%
C5C2	42839691	C FILM 200V 2UF
⚠C5A2	430A4049	C,ELEC 25V 4.7UF
C479	430BF047	C,ELEC 25V 2200UF
⚠C590	430B6015	C,ELEC 10V 47UF
C580 C581	430B6017	C,ELEC 10V 220UF
C831	430B6031	C,ELEC 16V 330UF
C552	430B6032	C,ELEC 16V 470UF
C720	430B6033	C,ELEC 16V 1000UF
C874	430B6039	C,ELEC 25V 22UF
C5N1 C702B C702G	430B6041	C,ELEC 25V 47UF
C702R C709 C752		
C553	430B6043	C,ELEC 25V 220UF
C5L0	430B6053	C,ELEC 35V 47UF
C478	430B6054	C,ELEC 35V 100UF
C573	430B6057	C,ELEC 35V 470UF
C5F0 C5F3 C5F5	430B6061	C,ELEC 50V 1.0UF
C5F9 C576		
C5N2	430B6062	C,ELEC 50V 2.2UF
C599 C875	430B6064	C,ELEC 50V 4.7UF
⚠C5D7 C570 C575	430B6065	C,ELEC 50V 10UF
⚠C591		
C594	430B6068	C,ELEC 50V 47UF
C5FC	430B6223	C,ELEC 50V 0.33UF
C756	430B6536	C,ELEC 200V 10UF
C2020	430B9016	C,ELEC 10V 100UF
C723	430B9025	C,ELEC 16V 10UF
C583 C852	430B9029	C,ELEC 16V 100UF
C452	430B9030	C,ELEC 16V 220UF
C854	430B9031	C,ELEC 16V 330UF
C460	430B9033	C,ELEC 16V 1000UF
C705	430B9041	C,ELEC 25V 47UF
C611	430B9042	C,ELEC 25V 100UF
C582	430B9043	C,ELEC 25V 220UF
C664	430B9053	C,ELEC 35V 47UF

SYMBOL	PART NO	DESCRIPTION
C473 C578 C661	430B9054 430B9057	C,ELEC 35V 100UF C,ELEC 35V 470UF
C505 C507 C525	430B9061	C,ELEC 50V 1.0UF
C830 C470 C805 C461 C725B C725G C725R	430B9062 430B9065 430B9069 430B9094	C,ELEC 50V 2.2UF C,ELEC 50V 10UF C,ELEC 50V 100UF C,ELEC 100V 1.0UF
C403 C526 C5CA C660 C658	430B9221 430C2152 430C6344 4302J058 4302J102	C,ELEC 50V 0.1UF C,ELEC 50V 0.68UF C,ELEC 35V 100UF C,ELEC 35V 1000UF C,ELEC 100V 100UF
C657 C561 C654 C653 ⚠C59A ⚠C609 ⚠C610	4302J103 4302J539 4302J540 4309J171 43109424	C,ELEC 100V 220UF C,ELEC 200V 47UF C,ELEC 200V 100UF C,ELEC 200V 33UF C,ELEC 200V 330UF
C584 C521 C832 C7K0 C527	433A4026 433A4055 433A4056 433A7021 433A7046	C,ELEC 16V 100UF C,ELEC 50V 1.0UF C,ELEC 50V 2.2UF C,ELEC 25V 10UF C,ELEC 50V 10UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1535VMB (N)

Note : The conponents identified by ⚠ mark are critical for safety
Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
*** CRT & TUNER ***		
⚠CRT	33015560	CRT M36KME23XX30(T3)
*** ICS ***		
IC651	370A1009	IC UPC1093J-T (REG)
IC572	37005182	IC LM7812CT(REG)
IC472 IC5F3	37011206	IC XRA10358 (OP-AMP)
IC570	37011262	IC XRA10393 (COMP)
IC471	37051036	MOS UPD4066BC
IC804	37053342	MOS UPD74HCT08C
IC802	37055381	MOS BR93C56B-E
IC501	37056494	IC LA7853
IC470	37056689	IC LA7837
IC803	37056813	IC M62359P
IC5F1 IC521 IC590	37056917	IC XRA10324A (Q OP-AMP)
IC701	37056931	IC LM1203AN
IC801	37056965	IC HE6-0020(SLA904SC1N)
IC5F0	37056981	IC TDA8145
IC601	37076081	IC UC3842N
*** TRANSISTORS ***		
Q475 Q573	350C1218	TR 2SB1329-T105 R
Q5N1 Q571	350D7217	TR 2SC945-T Q
Q470 Q5C1 Q5C8	350E3218	TR 2SC1740S-T R
Q5C9 Q5F2 Q5L0		
Q5L1 Q522 Q592		
Q595 Q602 Q651		
Q652 Q7K0 Q7K1		
Q731 Q751		
Q474 Q572	350G1018	TR 2SD2005-T105 R
Q753B Q753G Q753R	350H4417	TR,2SC1473-TA Q
Q703B Q703G Q703R	350H5017	TR,2SC3811-TA Q
Q702B Q702G Q702R	350J4960	TR 2SC4767-(TA)
Q521 Q596 Q597	350K4518	TR 2SA933-T R
Q750		
Q752B Q752G Q752R	350K5217	TR,2SA1018-TA Q
Q5F0 Q5F3 Q5N0	350K5718	TR 2SA933S-T R
Q593 Q7K2		
⚠Q590	35005218	TR,2SA1018 R
Q705B Q705G Q705R	35006804	TR,2SA1538-RA D

SYMBOL	PART NO	DESCRIPTION
Q5F1	35066616	TR 2SD415 P
Q704B Q704G Q704R	35086004	TR,2SC3953-RA D
⚠Q5C5	35094981	TR 2SC4770,3
Q701B Q701G Q701R	35095002	TR 2SC4046 E
Q405	351G0556	TR DTA114WS-T
⚠Q2000 Q831	351G0561	TR DTA144ES-T
Q402 Q404 Q875	351G0600	TR DTA114ES-T
Q5E0 Q5E2 Q5F4	351G0601	TR DTC114ES-T
Q5F5 Q594 Q598		
Q871 Q872 Q873		
Q401 Q403	351G0602	TR DTC144ES-T
Q471	351G0653	TR DTC123ES-T
Q874	351G0654	TR DTC123JS TP
Q570	35122100	TR 2SK703
Q5C3	35122700	TR 2SK699
Q591	35127470	TR 2SJ306
⚠Q601	35127500	TR 2SK1341
CR602	35595010	THYRISTOR 03P4M-L
⚠CR601	35595015	TRIAC AC10FGM
*** DIODES ***		
⚠D2005 D401 D402	360K1027	DIODE 1SS132
D471 ⚠D472 ⚠D473		
D5C3 D5C4 D5C5		
D5F0 D5F1 D5L2		
D5L3 D5L4 D5L5		
D5N0 D501 D502		
D551 D552 D553		
D570 D572 D580		
D581 D59A D59C		
D590 D591 D592		
D593 D595 D597		
D598 D599 D605		
D606 D654 D655		
D7K0 D7K1 D701		
D702B D702G D702R		
D703B D703G D703R		
D704B D704G D704R		
D705 D706B D706G		
D706R D707B D707G		
D707R D801 D802		

SYMBOL	PART NO	DESCRIPTION
D803 D804 D871	360K1027	DIODE 1SS132
D872 D873		
D5L1 D5N1 D5N2	360K1032	DIODE 1SS82-TA
D752B D752G D752R		
D753		
D571	360K1033	DIODE 1SS131,AT52
⚠ZD2000	360K3143	DIODE,RD8.2JSB(1)-T4
ZD851	360K3157	DIODE RD5.1EB(3)-T4
ZD552	360K3160	DIODE RD8.2EB(2)-T4
ZD601	360K3186	DIODE RD22EB(1)-T4
ZD551	360K3188	DIODE RD3.9EB(2)-T4
ZD6X0	360K3618	DIODE RD3.3ESB(2)-T4
ZD574	360K3624	DIODE RD3.9ES AB2-T4
ZD801	360K3634	DIODE RD5.1ESB(1)-T4
ZD592 ZD593	360K3635	DIODE RD5.1ESB(2)-T4
ZD470	360K3638	DIODE RD5.6ESB(1)-T4
ZD590	360K3639	DIODE RD5.6ESB(2)-T4
ZD570	360K3643	DIODE RD6.2ESB(2)-T4
ZD701	360K3647	DIODE RD6.8ESB(2)-T4
ZD521	360K3652	DIODE RD7.5ESB(3)-T4
ZD573	360K3655	DIODE RD8.2ESB(2)/ESAB(2)
ZD553 ZD554	360K3659	DIODE RD9.1ESB(2)-T4
ZD571	360K3663	DIODE RD10ESB(2)-T4
ZD652	360K3672	DIODE RD12ESB(3)-T4
ZD591 ZD595	360K3679	DIODE RD15ESB(2)-T4
ZD5F0	360K3680	DIODE RD15ESB(3)-T4
ZD602	360K3691	DIODE RD20ES AB2-T4
ZD5L0	360K3692	DIODE RD20ESB(3)-T4
ZD561	360K3694	DIODE RD22ES AB1-T4
⚠ZD2002	360K3699	DIODE RD24ES AB1-T4
ZD651	360K3711	DIODE RD30ESB(3)/ESAB(3)
ZD5N0	360K3723	DIODE RD39ESB-T4
⚠ZD2003	36003698	DIODE RD24ESB
D607	361K7174	DIODE RU1P V1
⚠D5C8 D577	361K7562	DIODE EGP10G G23
D604 D608 D609	361K7570	DIODE DINL20
D852	361K8232	DIODE RB721Q-T72
D5C0 D573	36107293	DIODE RK14
D653	36107511	DIODE RL4Z,LKF2
D651	36107512	DIODE RG4C,LFK2

SYMBOL	PART NO	DESCRIPTION
D596	36107518	DIODE RG2
⚠D5C7	36107530	DIODE RS4FS
⚠D5C9	36107560	DIODE RG2A2
D652	36107694	DIODE RG4A(LF-K2)
⚠D5C1	36107700	DI ERD09-15J
⚠D5C2	36107701	DI RU4AM(LF-K2)
⚠D601	36108201	DIODE,NETWORK D5SBA60S
D6X0	36801331	LED SLR-54MT3F/PQ
D470 D574 D575	369K2136	DIODE RGP10G,AT
D751	380K5054	VARISTOR MA29W-A (TP)
⚠D2000	38005054	VARISTOR MA29W-A
⚠TH601	38112058	THERMISTOR,POSITIVE
⚠PC601	38200346	PHOTO COUPLER PC111YS

*** TRANSFORMERS ***

⚠T5C0	45804009	TRANS,H.DRIVE
⚠L590	46206007	COIL,CHOKE 5MH
⚠T570	46304112	TRANS,CONVERTER
⚠T601	46309805	TRANS,SWITCHING W384D
⚠T5C1	47105685	F.B.T.

*** VARIABLE RESISTORS ***

VR522	410G1159	R,VARIABLE B2.2K
VR523	410G1161	R,VARIABLE B4.7K
VR521	410G1163	R,VARIABLE B10K
VR401	410G1165	R,VARIABLE B22K
VR701B VR701G VR701R	410G2052	R,VARIABLE B200
VR570 VR7K0	410G2055	R,VARIABLE B1K
VR470 VR7L0	410G2058	R,VARIABLE B5K
VR751B VR751G VR751R	410G2060	R,VARIABLE B20K
VR752B VR752G	410G2062	R,VARIABLE B50K
VR7M0 VR7M1	41011130	R,VARIABLE B10K
VR4M1	41011131	R,VARIABLE 500
VR5M0 VR5M1	41011132	R,VARIABLE 5K
VR4M0	41011133	R,VARIABLE B20K
VR5M2	41011134	R,VARIABLE B50K
⚠VR590	415K5163	R,VARIABLE B200K
VR651	41505103	R,VARIABLE B500

SYMBOL	PART NO	DESCRIPTION
*** RELAYS & SWITCHES ***		
⚠SW1	65360043	SWITCH,PUSH BUTTON
⚠RL601	65660019	RELAY G5P-1(24V)
RL5C2	65660025	RELAY G5B-1-E5 DC24V
RL5C1	65660029	RELAY G5LE-117P(24V)
*** COILS & FILTERS ***		
FL701B FL701G FL701R	390J9027	FILTER ZJSC-R12-100TA
L5C0	60906055	COIL,WIDTH (130UH)
⚠L5C2	60919142	COIL,H.LIN 24T
⚠L5C1	60919143	COIL,H.LIN 18T
L603	610E1723	COIL,FILTER 33UH
L704G L704R	610E4031	COIL,FILTER 0.56UH
L704B	610E4032	COIL,FILTER 0.68UH
L702G L702R	610E4033	COIL,FILTER 0.82UH
L702B	610E4034	COIL,FILTER 1.0UH
L703B L703G	610E4040	COIL,FILTER 3.3UH
L703R	610E4041	COIL,FILTER 3.9UH
L562	610F3025	COIL,FILTER 47UH
L602	610F5002	FERRITE BEADS (B-02-RT)
L701	610F7025	COIL,FILTER 47UH
L5E0	610F7541	COIL,FILTER 1000UH
⚠FL5C0 L654	610G0111	INDUCTOR,BEADS(FBR07HA121
⚠L561	610G0233	FILTER CHOKE PJ8T-470K
⚠FL601	61062204	LINE FILTER (HR-24-E392)
⚠FL602	61062209	LINE FILTER (HR-28-E702)
L5F0	61064059	COIL,FILTER S103J
L571	61070251	FILTER CHOKE 8MH
L651	61099096	FILTER CHOKE 68UH K 1R5
L652 L653	61099107	FILTER CHOKE 33UH 2.0A
DG	61315205	COIL,DEGAUSSING
FL705 FL851	616K6028	NOISE FILTER 1H223X-TA
FL704	616K6029	NOISE FILTER
FL703B FL703G FL703R	616K6075	NOISE FILTER
FL401	616K6718	NOISE FILTER 10000UH
FL702	616K6801	NOISE FILTER 2R2-101-T
	61605132	FERRITE CORE

SYMBOL	PART NO	DESCRIPTION
*** PWB ASSYS ***		
	84P05B01	SUB PWB ASSY (B-2)
	84P05J01	CRT I/F PWB ASSY (B-2)
	84P25D01	MAIN PWB ASSY
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***		
HS5F1	31709004	SHEET INSULATOR M-20
HS470	31709202	SHEET,INSULATOR
HS5C5	31709503	SHEET,INSULATOR
HS701B HS701G HS701R	31709803	SHEET INSULATOR M-45
SG701 SG702B SG702G SG702R	329J0047	ARRESTER (300V),AT52
	32990205	INSULATING CAP TIC-3.5(
X801	64098039	X'TAL(10.000MHZ)
⚠F601	66699064	FUSE UL(ET) 250V 4A
SG703	667K6007	SPARK GAP 1.5KV
⚠CNCRT	70032055	CRT SOCKET(HPS0199)
⚠IN1	70521057	INLET (NC-187-10N)
CORD	70800066	LINE CORD E-3 #8011
CABLE	73893135	SIGNAL,CABLE MD15P-EH5,6P
VR590	74004891	CAP
*** APPEARANCE PARTS ***		
	25317211	CABINET FRONT ASSY
	25317231	CABINET,BACK
	25417703	REVOLVING SPINDLE
	25424781	REVOLVING STAND (B) ASSY
	25424801	REVOLVING STAND (T)
	25534631	COIL SPRING
	25540821	CHASSIS BASE
	25757643	LABEL(REV.)
	25779231	NAME PLATE,INSTRUCTION
*** KNOBS & PUSH BUTTONS ***		
	25455911	KNOB,CONTROL (A)
	25455921	KNOB,CONTROL (B)
	25455931	PUSH BUTTON (SW)(A)

SYMBOL	PART NO	DESCRIPTION
*** PRINTED & PACKING MATERIALS ***		
	24813191	BAG,POLYETHYLENE(150*370)
	25825501	SHEET,PROTECTION
	25828061	FILLER T,CARTON
	25828071	FILLER B,CARTON
	25828092	CARTON BOX(JC-1535VMB)
	78034408	MONITOR SALES OFFICE LIST
	78127582	USER'S MANUAL CN203B
*** RESISTORS ***		
R5A0 R5C5	401C6657	R,CARBON 220H 5% 1/4W
R6X0	401C6665	R,CARBON 470H 5% 1/4W
R610	401C6673	R,CARBON 1.0K 5% 1/4W
R578	401C6685	R,CARBON 3.3K 5% 1/4W
R630	401C6687	R,CARBON 3.9K 5% 1/4W
R5N1 R5N2	401C6703	R,CARBON 18K 5% 1/4W
R608	401C6721	R,CARBON 100K 5% 1/4W
⚠R593	401C6727	R,CARBON 180K 5% 1/4W
⚠R5D9 ⚠R5E0	401G6109	R,CARBON 2.2H 5% 1/4W
R632	401G6143	R,CARBON 56H 5% 1/4W
R609	401G6149	R,CARBON 100H 5% 1/4W
R622	401H5625	R,CARBON 10H 5% 1/2W
R713R	401H5635	R,CARBON 27H 5% 1/2W
R713B R719B R719G	401H5637	R,CARBON 33H 5% 1/2W
R719R		
R712B R712G R712R	401H5641	R,CARBON 47H 5% 1/2W
R713G	401H5645	R,CARBON 68H 5% 1/2W
⚠R5D7 R722	401H5649	R,CARBON 100H 5% 1/2W
R619	401H5651	R,CARBON 120H 5% 1/2W
R487	401H5655	R,CARBON 180H 5% 1/2W
⚠R5D8	401H5657	R,CARBON 220H 5% 1/2W
R720	401H5661	R,CARBON 330H 5% 1/2W
R5E9	401H5687	R,CARBON 3.9K 5% 1/2W
R723	401H5689	R,CARBON 4.7K 5% 1/2W
⚠R601 R604	401H5737	R,CARBON 470K 5% 1/2W
⚠R629	401H5745	R,CARBON 1.0M 5% 1/2W
R588	401K5625	R,CARBON 10H 5% 1/6W
R617 R618	401K5633	R,CARBON 22H 5% 1/6W
R59H	401K5643	R,CARBON 56H 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
R5C0 R5F2 R511	401K5649	R,CARBON 100H 5% 1/6W
R620 R7K6 R701B		
R701G R701R R702B		
R702G R702R R704B		
R704G R704R R709B		
R709G R709R R710B		
R710G R710R		
R584	401K5653	R,CARBON 150H 5% 1/6W
R403 R503 R726	401K5657	R,CARBON 220H 5% 1/6W
R730 R804 R806		
R811 R812 R813		
R814 R815 R816		
R818 R819 R820		
R830 R831 R832		
R833 R834 R835		
R839 R840 R841		
R843 R844 R874	401K5661	R,CARBON 330H 5% 1/6W
R668 R752 R801	401K5663	R,CARBON 390H 5% 1/6W
R706B R706G R706R	401K5665	R,CARBON 470H 5% 1/6W
R731	401K5667	R,CARBON 560H 5% 1/6W
R725	401K5669	R,CARBON 680H 5% 1/6W
R714G	401K5671	R,CARBON 820H 5% 1/6W
R714B	401K5673	R,CARBON 1.0K 5% 1/6W
R408 R409 R413		
R5A8 R5G3 R5LA		
R5L7 R510 R616		
R621 R628 R665		
R7K4 R714R R721		
R751 R805 R873	401K5675	R,CARBON 1.2K 5% 1/6W
R5L9 R724	401K5677	R,CARBON 1.5K 5% 1/6W
R483 R5L8 R7M0		
R822	401K5679	R,CARBON 1.8K 5% 1/6W
R5A9 R808 R809		
R810 R837 R838		
R842	401K5681	R,CARBON 2.2K 5% 1/6W
R401 R411 R5M3		
R5N5 R501 R614		
R7K3 R762	401K5683	R,CARBON 2.7K 5% 1/6W
R4M0 R404 R5L2		
R5M2 R7K5	401K5685	R,CARBON 3.3K 5% 1/6W
R5C1 R5H8 R631		
R7M1 R753 R754		

SYMBOL	PART NO	DESCRIPTION
R755	401K5685	R,CARBON 3.3K 5% 1/6W
R5J5 R5J6 R5L3 R579	401K5687	R,CARBON 3.9K 5% 1/6W
R5F4 R5L1 R506 R538 R539 R658 R7L0 R845	401K5689	R,CARBON 4.7K 5% 1/6W
R5F1 R576 R7K1 R5A4 R5D5 R5F0 R5N3 ⚠R594 R595 R7K2	401K5691 401K5693	R,CARBON 5.6K 5% 1/6W R,CARBON 6.8K 5% 1/6W
R5F3 R5GR R509 R597 R7K7	401K5695	R,CARBON 8.2K 5% 1/6W
R402 R5A1 R5A3 R5A5 R5D3 R5D4 R5E7 R5FA R5FF R5FK R5F8 R5GA R5GE R5G9 R5HA R5J8 R5J9 R5L6 R502 R533 R540 R541 R547 R574 R577 R585 R59C ⚠R591 R599 R613 R615 R7K0 R703B R703G R703R R705B R705G R705R R802 R803	401K5697	R,CARBON 10K 5% 1/6W
R5E6 R5G6 R505 R536 R663	401K5699	R,CARBON 12K 5% 1/6W
R5HC R5H1 R542 R543 R575	401K5701	R,CARBON 15K 5% 1/6W
R477 R5FL R5GF R5G5 R53A R596 R5A6 R5FE R5GP R5M1 R5N4 R504 R507 R582 R586 R59A R821 R871	401K5703	R,CARBON 18K 5% 1/6W
	401K5705	R,CARBON 22K 5% 1/6W
R470 R5FJ R410 R473 R5E5 R5GM R5H5 R508 R570 R571 R59F R59G R7M2 R759B R759G R759R	401K5707 401K5709	R,CARBON 27K 5% 1/6W R,CARBON 33K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
⚠R2008 R5F9 R5GN R5GQ R5G2 R5H0 R581	401K5711	R,CARBON 39K 5% 1/6W
R474 R488 R5F5 R5GJ R5GK R5H7 R5J1 R535 R872 R5F7 R5H6 R5J2 R544 R546 R664	401K5713	R,CARBON 47K 5% 1/6W
	401K5715	R,CARBON 56K 5% 1/6W
R478 R482 R5G0 R548 R666 R761G R5G7 ⚠R59E R761B R481 R5A7 R5F6 R5H9 R5J4 R5N0 R573 R5FG	401K5717	R,CARBON 68K 5% 1/6W
	401K5719 401K5721	R,CARBON 82K 5% 1/6W R,CARBON 100K 5% 1/6W
R480 R484 R5G1 R5J7 R545 R758B R758G R758R	401K5723 401K5727	R,CARBON 120K 5% 1/6W R,CARBON 180K 5% 1/6W
R5H2 R5J0 R756B R756G R756R R5FH R757B R757G R757R R5A2 R5J3	401K5729	R,CARBON 220K 5% 1/6W
	401K5731	R,CARBON 270K 5% 1/6W
R5L0 R572 R580 R807	401K5737 401K5739 401K5745	R,CARBON 470K 5% 1/6W R,CARBON 560K 5% 1/6W R,CARBON 1.0M 5% 1/6W
⚠R625 R587 R633 R651 R653 R655 R551 R552 R479 ⚠R590 R851 R627 R561 R657 R606 R607 R652 R654 R656 R611 R624	40299107 403F1111 403F1133 403F1135 403F1161 403F1167 403F2103 403F2127 403F2145 403F2161 403F2177 403F2213 403F2341 403F3141	R,WIRE 15H 10% 5W R,METAL OXIED 2.7H 5% 1W R,METAL OXIED 22H 5% 1W R,METAL OXIDE 27H 5% 1W R,METAL 330H 5% 1W R,METAL 560H 5% 1W R,METAL OXIDE 1.2H 5% 2W R,METAL OXIDE 12H 5% 2W R,METAL 68H 5% 2W R,METAL OXIDE 330H 5% 2W R,METAL 1.5K 5% 2W R,METAL 47K 5% 2W R,METAL 0.68H 5% 2W R,METAL OXIDE 47H 5% 3W

SYMBOL	PART NO	DESCRIPTION
R486	403F3145	R,METAL OXIED 68H 5% 3W
R623	403F3221	R,METAL 100K 5% 3W
R5D0	403F3343	R,METAL OXIDE 0.82H 5% 3W
R715B R715G R715R	40318271	R,METAL 820H 5% 7W
R5C7 R5C8 R5C9	40373131	R,METAL 18H 5% 3W
R526 R537 R708	404C1681	R,METAL 2.2K 1% 1/6W
R660	404C1682	R,METAL 2.4K 1% 1/6W
R527	404C1683	R,METAL 2.7K 1% 1/6W
R612	404C1684	R,METAL 3.0K 1% 1/6W
R2020	404C1685	R,METAL 3.3K 1% 1/6W
R522	404C1687	R,METAL 3.9K 1% 1/6W
R523	404C1689	R,METAL 4.7K 1% 1/6W
⚠R2001 ⚠R2002 ⚠R2003	404C1691	R,METAL 5.6K 1% 1/6W
R524	404C1697	R,METAL 10K 1% 1/6W
R534	404C1699	R,METAL 12K 1% 1/6W
R513 R525 R528	404C1701	R,METAL 15K 1% 1/6W
R707		
R512	404C1702	R,METAL 16K 1% 1/6W
R407 R529	404C1703	R,METAL 18K 1% 1/6W
R405 R760B R760G	404C1704	R,METAL 20K 1% 1/6W
R760R		
R471	404C1708	R,METAL 30K 1% 1/6W
R472	404C1711	R,METAL 39K 1% 1/6W
R406	404C1714	R,METAL 51K 1% 1/6W
R661	404C1717	R,METAL 68K 1% 1/6W
⚠R5E3	404C1719	R,METAL 82K 1% 1/6W
R761R	404C1720	R,METAL 91K 1% 1/6W
⚠R5E4 R662	404C1721	R,METAL 100K 1% 1/6W
⚠R5E1 R532	404C1725	R,METAL 150K 1% 1/6W
R531	404C1733	R,METAL 330K 1% 1/6W
R521	404C1739	R,METAL 560K 1% 1/6W
⚠R485	404K5117	R,METAL 4.7H 5% 1/4W
⚠R598	404K5133	R,METAL 22H 5% 1/4W
⚠R716B ⚠R716G ⚠R716R	404K5137	R,METAL 33H 5% 1/4W
⚠R717B ⚠R717G ⚠R717R		
⚠R5L4	404K5149	R,METAL 100H 5% 1/4W
⚠R460	404K5345	R,METAL 1.0H 5% 1/4W
⚠R560	404K6101	R,METAL 1.0H 5% 1/2W
R451	409A6125	R,FUSE 10H 5% 1/4W

SYMBOL	PART NO	DESCRIPTION
*** CAPACITORS ***		
⚠C5D3 C585 C754B	420C9563	C,CERAMIC 500V 1000PF
C754G C754R		
C755	420C9567	C,CERAMIC 500V 2200PF
C5C0 C726B C726G	420C9569	C,CERAMIC 50V 3300PF
C726R		
⚠C5D2	420C9571	C,CERAMIC 500V 4700PF
C728	420DK108	C,CERAMIC 2KV 10000PF
⚠C602 ⚠C603 ⚠C606	420EC067	C,CERAMIC 400V 2200PF
⚠C607 ⚠C608 ⚠C626		
⚠C627 ⚠C628		
C621	420JJ088	C,CERAMIC 2K 220PF
C651 C652 C655	420JJ096	C,CERAMIC 2K 470PF
C656		
C659	42099086	C,CERAMIC 2KV 1000PF
C462 C463 C47E	421A0425	C,CERAMIC 50V 0.01UF
C47F C472 C5D8		
C5FF C5F7 C5F8		
C5N0 C562 C563		
C565 C722		
C5F2	421C0205	C,CERAMIC 50V 220PF
C402	421C0208	C,CERAMIC 50V 390PF
C401 C572 C858	421C0213	C,CERAMIC 50V 1000PF
C464	421C0218	C,CERAMIC 50V 2700PF
C710B C710G C710R	421C0219	C,CERAMIC 50V 3300PF
C2021 C451 C522	421D6009	C,CERAMIC 25V 0.1UF
C551 C554 C7K1		
C7K2 C701 C706B		
C706G C706R C708		
C711B C711G C711R		
C721 C724 C727		
C729 C750 C751		
C801 C851 C857		
C47C C855 C856	421D6013	C,CERAMIC 50V 0.1UF
C707B C707G C707R	423A1037	C,CERAMIC 50V 47PF
C712G	423A1039	C,CERAMIC 50V 56PF
C712B	423A1045	C,CERAMIC 50V 100PF
C712R	423A1047	C,CERAMIC 50V 120PF
C474	423A1053	C,CERAMIC 50V 220PF
C871	423A1055	C,CERAMIC 50V 270PF
C586	423A1057	C,CERAMIC 50V 330PF

SYMBOL	PART NO	DESCRIPTION
C802 C803	423A2025	C,CERAMIC 50V 15PF
C593	423A2037	C,CERAMIC 50V 47PF
C501	423A2045	C,CERAMIC 50V 100PF
C5L3 C503	423A2105	C,CERAMIC 50V 270PF
C760	427E4163	C,FILM 100V 0.01UF
C5F1 C613	427F4601	C,FILM 50V 1000PF
C504	427F4607	C,FILM 50V 3300PF
C405	427F4612	C,FILM 50V 8200PF
C506 C617	427F4613	C,FILM 50V 0.01UF
C615 C618	427F4615	C,FILM 50V 0.015UF
C5FG C614	427F4617	C,FILM 50V 0.022UF
C5L4	427F4623	C,FILM 50V 0.068UF
C5A3 C524 C574	427F4625	C,FILM 50V 0.1UF
C612 C616 C624		
C5D5	427F4626	C,FILM 50V 0.12UF
C662	427F4629	C,FILM 50V 0.22UF
C502	427F4647	C,FILM 50V 470PF
C592	427F4651	C,FILM 50V 1000PF
C5D9 C523 C566	427F4663	C,FILM 50V 0.01UF
C568 C577 C595		
C5F4 C872 C873	427F4675	C,FILM 50V 0.1UF
C508	427F8404	C,FILM 100V 1800PF
C5A0 C598	42703663	C,FILM 400V 0.01UF
C475	428B3019	C,METAL FILM 50V 0.33UF
C477	428B3021	C,METAL FILM 50V 0.47UF
C476	428B3023	C,METAL FILM 50V 0.68UF
C404 C471	428B3025	C,METAL FILM 50V 1.0UF
C5A1	428C9022	C,METAL FILM 250V 0.1UF
C5L1	428D0053	C,METAL 100V 0.1UF
C713B C713G C713R	428D0097	C,FILM 250V 0.22UF
C620	428D0165	C,FILM 400V 0.022UF
C753B C753G C753R	428D4413	C,METAL FILM 250V 0.1UF
⚠ C5C4	42807586	C,FILM 1.6KV 8000PF
⚠ C5C3	42817092	C FILM 1.4KV 6400P
⚠ C601	42824804	C,FILM AC250V 0.03UF
⚠ C605	42824807	C,FILM AC250V 0.1UF
⚠ C604	42824811	C,FILM AC250V 0.47UF
C5C7	42839613	C,METAL 400V 0.56UF
⚠ C5D0	42839657	C,METAL 200V 0.27UF

SYMBOL	PART NO	DESCRIPTION
⚠ C5D1	42839661	C,METAL 200V 0.47UF 5%
C5C2	42839691	C FILM 200V 2UF
⚠ C5A2	430A4049	C,ELEC 25V 4.7UF
C479	430BF047	C,ELEC 25V 2200UF
⚠ C590	430B6015	C,ELEC 10V 47UF
C580 C581	430B6017	C,ELEC 10V 220UF
C831	430B6031	C,ELEC 16V 330UF
C552	430B6032	C,ELEC 16V 470UF
C720	430B6033	C,ELEC 16V 1000UF
C874	430B6039	C,ELEC 25V 22UF
C5N1 C702B C702G	430B6041	C,ELEC 25V 47UF
C702R C709 C752		
C553	430B6043	C,ELEC 25V 220UF
C5L0	430B6053	C,ELEC 35V 47UF
C478	430B6054	C,ELEC 35V 100UF
C573	430B6057	C,ELEC 35V 470UF
C5F0 C5F3 C5F5	430B6061	C,ELEC 50V 1.0UF
C5F9 C576		
C5N2	430B6062	C,ELEC 50V 2.2UF
C599 C875	430B6064	C,ELEC 50V 4.7UF
⚠ C5D7 C570 C575	430B6065	C,ELEC 50V 10UF
⚠ C591		
C594	430B6068	C,ELEC 50V 47UF
C5FC	430B6223	C,ELEC 50V 0.33UF
C756	430B6536	C,ELEC 200V 10UF
C2020	430B9016	C,ELEC 10V 100UF
C723	430B9025	C,ELEC 16V 10UF
C583 C852	430B9029	C,ELEC 16V 100UF
C452	430B9030	C,ELEC 16V 220UF
C854	430B9031	C,ELEC 16V 330UF
C460	430B9033	C,ELEC 16V 1000UF
C705	430B9041	C,ELEC 25V 47UF
C611	430B9042	C,ELEC 25V 100UF
C582	430B9043	C,ELEC 25V 220UF
C664	430B9053	C,ELEC 35V 47UF
C473	430B9054	C,ELEC 35V 100UF
C578 C661	430B9057	C,ELEC 35V 470UF
C505 C507 C525	430B9061	C,ELEC 50V 1.0UF
C830		
C470	430B9062	C,ELEC 50V 2.2UF

SYMBOL	PART NO	DESCRIPTION
C805	430B9065	C,ELEC 50V 10UF
C461	430B9069	C,ELEC 50V 100UF
C725B C725G C725R	430B9094	C,ELEC 100V 1.0UF
C403	430B9221	C,ELEC 50V 0.1UF
C526	430C2152	C,ELEC 50V 0.68UF
C5CA	430C6344	C,ELEC 35V 100UF
C660	4302J058	C,ELEC 35V 1000UF
C658	4302J102	C,ELEC 100V 100UF
C657	4302J103	C,ELEC 100V 220UF
C561 C654	4302J539	C,ELEC 200V 47UF
C653	4302J540	C,ELEC 200V 100UF
⚠C59A	4309J171	C,ELEC 200V 33UF
⚠C609	43109480	C,ELEC 400V 180UF
C584	433A4026	C,ELEC 16V 100UF
C521	433A4055	C,ELEC 50V 1.0UF
C832	433A4056	C,ELEC 50V 2.2UF
C7K0	433A7021	C,ELEC 25V 10UF
C527	433A7046	C,ELEC 50V 10UF

REPLACEMENT PARTS LIST

The components specified for Model JC-1535VMR (P)

Note : The conponents identified by ⚠ mark are critical for safety
Replace only with parts Number specified.

SYMBOL	PART NO	DESCRIPTION
*** CRT & TUNER ***		
⚠CRT	33015564	CRT M36EDR320X131/F03S
*** ICS ***		
IC651	370A1009	IC UPC1093J-T (REG)
IC572	37005182	IC LM7812CT(REG)
IC470	37006015	IC LA7838 (V OUT)
IC472 IC5F3	37011206	IC XRA10358 (OP-AMP)
IC570	37011262	IC XRA10393 (COMP)
IC471	37051036	MOS UPD4066BC
IC804	37053342	MOS UPD74HCT08C
IC802	37055381	MOS BR93C56B-E
IC501	37056494	IC LA7853
IC803	37056813	IC M62359P
IC5F1 IC521 IC590	37056917	IC XRA10324A (Q OP-AMP)
IC701	37056931	IC LM1203AN
IC801	37056965	IC HE6-0020(SLA904SC1N)
IC5F0	37056981	IC TDA8145
IC601	37076081	IC UC3842N
*** TRANSISTORS ***		
Q475 Q573	350C1218	TR 2SB1329-T105 R
Q5N1 Q571	350D7217	TR 2SC945-T Q
Q470 Q5C1 Q5C8	350E3218	TR 2SC1740S-T R
Q5C9 Q5F2 Q5L0		
Q5L1 Q522 Q592		
Q595 Q602 Q651		
Q652 Q7K0 Q7K1		
Q731 Q751		
Q474 Q572	350G1018	TR 2SD2005-T105 R
Q753B Q753G Q753R	350H4417	TR,2SC1473-TA Q
Q703B Q703G Q703R	350H5017	TR,2SC3811-TA Q
Q702B Q702G Q702R	350J4960	TR 2SC4767-(TA)
Q521 Q596 Q597	350K4518	TR 2SA933-T R
Q750		
Q752B Q752G Q752R	350K5217	TR,2SA1018-TA Q
Q5F0 Q5F3 Q5N0	350K5718	TR 2SA933S-T R
Q593 Q7K2		
⚠Q590	35005218	TR,2SA1018 R
Q705B Q705G Q705R	35006804	TR,2SA1538-RA D

SYMBOL	PART NO	DESCRIPTION
Q5F1	35066616	TR 2SD415 P
Q704B Q704G Q704R	35086004	TR,2SC3953-RA D
⚠Q5C5	35094981	TR 2SC4770,3
Q701B Q701G Q701R	35095002	TR 2SC4046 E
Q405	351G0556	TR DTA114WS-T
⚠Q2000 Q831	351G0561	TR DTA144ES-T
Q402 Q404 Q875	351G0600	TR DTA114ES-T
Q5E0 Q5E2 Q5F4	351G0601	TR DTC114ES-T
Q5F5 Q594 Q598		
Q871 Q872 Q873		
Q401 Q403	351G0602	TR DTC144ES-T
Q471	351G0653	TR DTC123ES-T
Q874	351G0654	TR DTC123JS TP
Q570	35122100	TR 2SK703
Q5C3	35122700	TR 2SK699
Q591	35127470	TR 2SJ306
⚠Q601	35127500	TR 2SK1341
CR602	35595010	THYRISTOR 03P4M-L
⚠CR601	35595015	TRIAC AC10FGM
*** DIODES ***		
⚠D2005 D401 D402	360K1027	DIODE 1SS132
D471 ⚠D472 ⚠D473		
D5C3 D5C4 D5C5		
D5F0 D5F1 D5L2		
D5L3 D5L4 D5L5		
D5N0 D501 D502		
D551 D552 D553		
D570 D572 D580		
D581 D59A D59C		
D590 D591 D592		
D593 D595 D597		
D598 D599 D605		
D606 D654 D655		
D7K0 D7K1 D701		
D702B D702G D702R		
D703B D703G D703R		
D704B D704G D704R		
D705 D706B D706G		
D706R D707B D707G		
D707R D801 D802		

SYMBOL	PART NO	DESCRIPTION
D803 D804 D871	360K1027	DIODE 1SS132
D872 D873		
D5L1 D5N1 D5N2	360K1032	DIODE 1SS82-TA
D752B D752G D752R		
D753		
D571	360K1033	DIODE 1SS131,AT52
⚠ZD2000	360K3143	DIODE,RD8.2JSB(1)-T4
ZD851	360K3157	DIODE RD5.1EB(3)-T4
ZD552	360K3160	DIODE RD8.2EB(2)-T4
ZD601	360K3186	DIODE RD22EB(1)-T4
ZD551	360K3188	DIODE RD3.9EB(2)-T4
ZD6X0	360K3618	DIODE RD3.3ESB(2)-T4
ZD574	360K3624	DIODE RD3.9ES AB2-T4
ZD801	360K3634	DIODE RD5.1ESB(1)-T4
ZD592 ZD593	360K3635	DIODE RD5.1ESB(2)-T4
ZD470	360K3638	DIODE RD5.6ESB(1)-T4
ZD590	360K3639	DIODE RD5.6ESB(2)-T4
ZD570	360K3643	DIODE RD6.2ESB(2)-T4
ZD701	360K3647	DIODE RD6.8ESB(2)-T4
ZD521	360K3652	DIODE RD7.5ESB(3)-T4
ZD573	360K3655	DIODE RD8.2ESB(2)/ESAB(2)
ZD553 ZD554	360K3659	DIODE RD9.1ESB(2)-T4
ZD571	360K3663	DIODE RD10ESB(2)-T4
ZD652	360K3672	DIODE RD12ESB(3)-T4
ZD591 ZD595	360K3679	DIODE RD15ESB(2)-T4
ZD5F0	360K3680	DIODE RD15ESB(3)-T4
ZD602	360K3691	DIODE RD20ES AB2-T4
ZD5L0	360K3692	DIODE RD20ESB(3)-T4
ZD561	360K3694	DIODE RD22ES AB1-T4
⚠ZD2002	360K3699	DIODE RD24ES AB1-T4
ZD651	360K3711	DIODE RD30ESB(3)/ESAB(3)
ZD5N0	360K3723	DIODE RD39ESB-T4
⚠ZD2003	36003698	DIODE RD24ESB
D607	361K7174	DIODE RU1P V1
⚠D5C8 D577	361K7562	DIODE EGP10G G23
D604 D608 D609	361K7570	DIODE DINL20
D852	361K8232	DIODE RB721Q-T72
D5C0 D573,	36107293	DIODE RK14
D653	36107511	DIODE RL4Z,LKF2
D651	36107512	DIODE RG4C,LFK2

SYMBOL	PART NO	DESCRIPTION
D596	36107518	DIODE RG2
⚠D5C7	36107530	DIODE RS4FS
⚠D5C9	36107560	DIODE RG2A2
D652	36107694	DIODE RG4A(LF-K2)
⚠D5C1	36107700	DI ERD09-15J
⚠D5C2	36107701	DI RU4AM(LF-K2)
⚠D601	36108201	DIODE,NETWORK D5SBA60S
D6X0	36801331	LED SLR-54MT3F/PQ
D470 D574 D575	369K2136	DIODE RGP10G,AT
D751	380K5054	VARISTOR MA29W-A (TP)
⚠D2000	38005054	VARISTOR MA29W-A
⚠TH601	38112058	THERMISTOR,POSITIVE
⚠PC601	38200346	PHOTO COUPLER PC111YS

*** TRANSFORMERS ***

⚠T5C0	45804009	TRANS,H.DRIVE
⚠L590	46206007	COIL,CHOKE 5MH
⚠T570	46304112	TRANS,CONVERTER
⚠T601	46309805	TRANS,SWITCHING W384D
⚠T5C1	47105685	F.B.T.

*** VARIABLE RESISTORS ***

VR522	410G1159	R,VARIABLE B2.2K
VR523	410G1161	R,VARIABLE B4.7K
VR521	410G1163	R,VARIABLE B10K
VR401	410G1165	R,VARIABLE B22K
VR701B VR701G VR701R	410G2052	R,VARIABLE B200
VR570 VR7K0	410G2055	R,VARIABLE B1K
VR470 VR7L0	410G2058	R,VARIABLE B5K
VR751B VR751G VR751R	410G2062	R,VARIABLE B50K
VR752B VR752G		
VR7M0 VR7M1	41011130	R,VARIABLE B10K
VR4M1	41011131	R,VARIABLE 500
VR5M0 VR5M1	41011132	R,VARIABLE 5K
VR4M0	41011133	R,VARIABLE B20K
VR5M2	41011134	R,VARIABLE B50K
⚠VR590	415K5163	R,VARIABLE B200K
VR651	41505103	R,VARIABLE B500

SYMBOL	PART NO	DESCRIPTION
*** RELAYS & SWITCHES ***		
⚠SW1	65360043	SWITCH,PUSH BUTTON
⚠RL601	65660019	RELAY G5P-1(24V)
RL5C2	65660025	RELAY G5B-1-E5 DC24V
RL5C1	65660029	RELAY G5LE-117P(24V)
*** COILS & FILTERS ***		
FL701B FL701G FL701R	390J9027	FILTER ZJSC-R12-100TA
L5C0	60906055	COIL,WIDTH (130UH)
⚠L5C2	60919142	COIL,H.LIN 24T
⚠L5C1	60919143	COIL,H.LIN 18T
L603	610E1723	COIL,FILTER 33UH
L704G L704R	610E4031	COIL,FILTER 0.56UH
L704B	610E4032	COIL,FILTER 0.68UH
L702G L702R	610E4033	COIL,FILTER 0.82UH
L702B	610E4034	COIL,FILTER 1.0UH
L703B L703G	610E4040	COIL,FILTER 3.3UH
L703R	610E4041	COIL,FILTER 3.9UH
L562	610F3025	COIL,FILTER 47UH
L602	610F5002	FERRITE BEADS (B-02-RT)
L701	610F7025	COIL,FILTER 47UH
L5E0	610F7541	COIL,FILTER 1000UH
⚠FL5C0 L654	610G0111	INDUCTOR,BEADS(FBR07HA121
⚠L561	610G0233	FILTER CHOKE PJ8T-470K
⚠FL601	61062204	LINE FILTER (HR-24-E392)
⚠FL602	61062209	LINE FILTER (HR-28-E702)
L5F0	61064059	COIL,FILTER S103J
L571	61070251	FILTER CHOKE 8MH
L651	61099096	FILTER CHOKE 68UH K 1R5
L652 L653	61099107	FILTER CHOKE 33UH 2.0A
DG	61315205	COIL,DEGAUSSING
FL705 FL851	616K6028	NOISE FILTER 1H223X-TA
FL704	616K6029	NOISE FILTER
FL703B FL703G FL703R	616K6075	NOISE FILTER
FL401	616K6718	NOISE FILTER 10000UH
FL702	616K6801	NOISE FILTER 2R2-101-T
	61605132	FERRITE CORE

SYMBOL	PART NO	DESCRIPTION
*** PWB ASSYS ***		
	84P05B01	SUB PWB ASSY (B-2)
	84P33D01	MAIN PWB ASSY
	84P33J01	CRT I/F PWB ASSY (B-2)
*** ELECTRICAL PARTS & MISCELLANEOUS PARTS ***		
HS5F1	31709004	SHEET INSULATOR M-20
HS470	31709202	SHEET,INSULATOR
HS5C5	31709503	SHEET,INSULATOR
HS701B HS701G HS701R	31709803	SHEET INSULATOR M-45
SG701 SG702B SG702G SG702R	329J0047	ARRESTER (300V),AT52
	32990205	INSUIATING CAP TIC-3.5(
X801	64098039	X'TAL(10.000MHZ)
⚠F601	66699064	FUSE UL(ET) 250V 4A
SG703	667K6007	SPARK GAP 1.5KV
⚠CNCRT	70032055	CRT SOCKET(HPS0199)
⚠IN1	70521057	INLET (NC-187-10N)
CABLE	73893135	SIGNAL,CABLE MD15P-EH5,6P
VR590	74004891	CAP
	75513033	POWER CORD
*** APPEARANCE PARTS ***		
	25317211	CABINET FRONT ASSY
	25317231	CABINET,BACK
	25417703	REVOLVING SPINDLE
	25424781	REVOLVING STAND (B) ASSY
	25424801	REVOLVING STAND (T)
	25534631	COIL SPRING
	25540821	CHASSIS BASE
	25757643	LABEL(REV.)
	25779241	NAME PLATE,INSTRUCTION
*** KNOBS & PUSH BUTTONS ***		
	25455911	KNOB,CONTROL (A)
	25455921	KNOB,CONTROL (B)
	25455931	PUSH BUTTON (SW)(A)

SYMBOL	PART NO	DESCRIPTION
*** PRINTED & PACKING MATERIALS ***		
	24813191	BAG,POLYETHYLENE(150*370)
	25825501	SHEET,PROTECTION
	25828061	FILLER T,CARTON
	25828071	FILLER B,CARTON
	25828101	CARTON BOX(JC-1535VMR)
	78034408	MONITOR SALES OFFICE LIST
	78043393	WARRANTY CARD
	78127582	USER'S MANUAL CN203B
*** RESISTORS ***		
R5A0 R5C5	401C6657	R,CARBON 220H 5% 1/4W
R6X0	401C6665	R,CARBON 470H 5% 1/4W
R610	401C6673	R,CARBON 1.0K 5% 1/4W
R578	401C6685	R,CARBON 3.3K 5% 1/4W
R630	401C6687	R,CARBON 3.9K 5% 1/4W
R5N1 R5N2	401C6703	R,CARBON 18K 5% 1/4W
R608	401C6721	R,CARBON 100K 5% 1/4W
⚠R593	401C6727	R,CARBON 180K 5% 1/4W
⚠R5D9 ⚠R5E0	401G6109	R,CARBON 2.2H 5% 1/4W
R632	401G6143	R,CARBON 56H 5% 1/4W
R609	401G6149	R,CARBON 100H 5% 1/4W
R622	401H5625	R,CARBON 10H 5% 1/2W
R713R	401H5635	R,CARBON 27H 5% 1/2W
R713B R719B R719G R719R	401H5637	R,CARBON 33H 5% 1/2W
R712B R712G R712R	401H5641	R,CARBON 47H 5% 1/2W
⚠R5D7 R713G	401H5645	R,CARBON 68H 5% 1/2W
R722	401H5649	R,CARBON 100H 5% 1/2W
R619	401H5651	R,CARBON 120H 5% 1/2W
⚠R5D8 R720	401H5661	R,CARBON 330H 5% 1/2W
R5E9	401H5687	R,CARBON 3.9K 5% 1/2W
R723	401H5689	R,CARBON 4.7K 5% 1/2W
⚠R601 R604	401H5737	R,CARBON 470K 5% 1/2W
⚠R629	401H5745	R,CARBON 1.0M 5% 1/2W
R588	401K5625	R,CARBON 10H 5% 1/6W
R617 R618	401K5633	R,CARBON 22H 5% 1/6W
R59H	401K5643	R,CARBON 56H 5% 1/6W
R5C0 R5F2 R511	401K5649	R,CARBON 100H 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
R620 R7K6 R701B R701G R701R R702B R702G R702R R704B R704G R704R R709B R709G R709R R710B R710G R710R R584	401K5649	R,CARBON 100H 5% 1/6W
R403 R503 R726 R730 R804 R806 R811 R812 R813 R814 R815 R816 R818 R819 R820 R830 R831 R832 R833 R834 R835 R839 R840 R841 R843 R844 R874	401K5653	R,CARBON 150H 5% 1/6W
R668 R752 R801 R706B R706G R706R R731 R725 R714G	401K5657	R,CARBON 220H 5% 1/6W
R714B R408 R409 R413 R5A8 R5G3 R5LA R5L7 R510 R616 R621 R628 R665 R7K4 R714R R721 R751 R805 R873	401K5661	R,CARBON 330H 5% 1/6W
	401K5663	R,CARBON 390H 5% 1/6W
	401K5665	R,CARBON 470H 5% 1/6W
	401K5667	R,CARBON 560H 5% 1/6W
	401K5669	R,CARBON 680H 5% 1/6W
	401K5671	R,CARBON 820H 5% 1/6W
	401K5673	R,CARBON 1.0K 5% 1/6W
⚠R489 R5L9 R724 R483 R5L8 R7M0 R822	401K5675	R,CARBON 1.2K 5% 1/6W
	401K5677	R,CARBON 1.5K 5% 1/6W
R5A9 R808 R809 R810 R837 R838 R842	401K5679	R,CARBON 1.8K 5% 1/6W
R401 R411 R5M3 R5N5 R501 R614 R7K3 R762	401K5681	R,CARBON 2.2K 5% 1/6W
R4M0 R404 R5L2 R5M2 R7K5	401K5683	R,CARBON 2.7K 5% 1/6W
R5C1 R5H8 R631 R7M1 R753 R754 R755	401K5685	R,CARBON 3.3K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
R5J5 R5J6 R5L3 R579 R5F4 R5L1 R506 R538 R539 R658 R7L0 R845	401K5687	R,CARBON 3.9K 5% 1/6W
R5F1 R576 R7K1 R5A4 R5D5 R5F0 ⚠R3N3 ⚠R594 R595 R7K2	401K5689	R,CARBON 4.7K 5% 1/6W
R5F3 R5GR R509 R597 R7K7 R402 R5A1 R5A3 R5A5 R5D3 R5D4 R5E7 R5FA R5FF R5FK R5F8 R5GA R5GE R5G9 R5HA R5J8 R5J9 R5L6 R502 R533 R540 R541 R547 R574 R577 R585 R59C ⚠R591 R599 R613 R615 R7K0 R703B R703G R703R R705B R705G R705R R802 R803	401K5691 401K5693	R,CARBON 5.6K 5% 1/6W R,CARBON 6.8K 5% 1/6W
R5E6 R5G6 R505 R536 R663	401K5695	R,CARBON 8.2K 5% 1/6W
R5HC R5H1 R542 R543 R575 R5FL R5GF R5G5 R53A R596 R477 R5A6 R5FE R5GP R5M1 R5N4 R504 R507 R582 R586 R59A R821 R871	401K5697	R,CARBON 10K 5% 1/6W
R470 R5FJ R5GM R410 R5E5 R570 R5H5 R508 R59G R571 R59F R759G R7M2 R759B R759R	401K5699	R,CARBON 12K 5% 1/6W
	401K5701	R,CARBON 15K 5% 1/6W
	401K5703	R,CARBON 18K 5% 1/6W
	401K5705	R,CARBON 22K 5% 1/6W
	401K5707 401K5709	R,CARBON 27K 5% 1/6W R,CARBON 33K 5% 1/6W

SYMBOL	PART NO	DESCRIPTION
⚠R2008 R473 R5F9 R5GN R5GQ R5G2 R5H0 R581 R474 R488 R5F5 R5GJ R5GK R5H7 R5J1 R535 R872 R5F7 R5H6 R5J2 R544 R546 R664 R478 R482 R5G0 R548 R666 R761G R5G7 ⚠R59E R761B R481 R5A7 R5F6 R5H9 R5J4 R5N0 R573 R5FG R480 R484 R5G1 R5J7 R545 R758B R758G R758R R5H2 R5J0 R756B R756G R756R R5FH R757B R757G R757R R5A2 R5J3 R5L0 R572 R580 R807 ⚠R625 R587 R633 R651 R653 R655 R551 R552 R479 ⚠R590 R851 R627 R561 R657 R606 R607 R652 R654 R656	401K5711	R,CARBON 39K 5% 1/6W
	401K5713	R,CARBON 47K 5% 1/6W
	401K5715	R,CARBON 56K 5% 1/6W
	401K5717	R,CARBON 68K 5% 1/6W
	401K5719	R,CARBON 82K 5% 1/6W
	401K5721	R,CARBON 100K 5% 1/6W
	401K5723	R,CARBON 120K 5% 1/6W
	401K5727	R,CARBON 180K 5% 1/6W
	401K5729	R,CARBON 220K 5% 1/6W
	401K5731	R,CARBON 270K 5% 1/6W
	401K5737	R,CARBON 470K 5% 1/6W
	401K5739	R,CARBON 560K 5% 1/6W
	401K5745	R,CARBON 1.0M 5% 1/6W
	40299107	R,WIRE 15H 10% 5W
	403F1111	R,METAL OXIED 2.7H 5% 1W
	403F1133	R,METAL OXIED 22H 5% 1W
	403F1135	R,METAL OXIDE 27H 5% 1W
	403F1161	R,METAL 330H 5% 1W
	403F1167	R,METAL 560H 5% 1W
	403F2101	R,METAL 1.0H 5% 2W
	403F2103	R,METAL OXIDE 1.2H 5% 2W
	403F2127	R,METAL OXIDE 12H 5% 2W
	403F2145	R,METAL 68H 5% 2W
	403F2161	R,METAL OXIDE 330H 5% 2W
	403F2177	R,METAL 1.5K 5% 2W
	403F2213	R,METAL 47K 5% 2W

SYMBOL	PART NO	DESCRIPTION
R611	403F2341	R,METAL 0.68H 5% 2W
R624	403F3141	R,METAL OXIDE 47H 5% 3W
R486	403F3145	R,METAL OXIED 68H 5% 3W
R623	403F3221	R,METAL 100K 5% 3W
R5D0	403F3343	R,METAL OXIDE 0.82H 5% 3W
R715B R715G R715R	40318271	R,METAL 820H 5% 7W
R5C7 R5C8 R5C9	40373131	R,METAL 18H 5% 3W
R760B R760G R760R	404CA706	R,METAL 24K 1% 1/6W
R526 R537 R708	404C1681	R,METAL 2.2K 1% 1/6W
R660	404C1682	R,METAL 2.4K 1% 1/6W
R527	404C1683	R,METAL 2.7K 1% 1/6W
R612	404C1684	R,METAL 3.0K 1% 1/6W
R2020	404C1685	R,METAL 3.3K 1% 1/6W
R522	404C1687	R,METAL 3.9K 1% 1/6W
R523	404C1689	R,METAL 4.7K 1% 1/6W
⚠R2001 ⚠R2002 ⚠R2003	404C1691	R,METAL 5.6K 1% 1/6W
R524	404C1697	R,METAL 10K 1% 1/6W
R534	404C1699	R,METAL 12K 1% 1/6W
R513 R525 R528	404C1701	R,METAL 15K 1% 1/6W
R707		
R512	404C1702	R,METAL 16K 1% 1/6W
R407 R529	404C1703	R,METAL 18K 1% 1/6W
R405	404C1704	R,METAL 20K 1% 1/6W
R760B R760G R760R	404C1706	R,METAL 24K 1% 1/6W
R471	404C1708	R,METAL 30K 1% 1/6W
R472	404C1711	R,METAL 39K 1% 1/6W
R406	404C1714	R,METAL 51K 1% 1/6W
R661	404C1717	R,METAL 68K 1% 1/6W
⚠R5E3	404C1719	R,METAL 82K 1% 1/6W
R761R	404C1720	R,METAL 91K 1% 1/6W
⚠R5E4 R662	404C1721	R,METAL 100K 1% 1/6W
⚠R5E1 R532	404C1725	R,METAL 150K 1% 1/6W
R531	404C1733	R,METAL 330K 1% 1/6W
R521	404C1739	R,METAL 560K 1% 1/6W
⚠R485	404K5117	R,METAL 4.7H 5% 1/4W
⚠R598	404K5133	R,METAL 22H 5% 1/4W
⚠R716B ⚠R716G ⚠R716R	404K5137	R,METAL 33H 5% 1/4W
⚠R717B ⚠R717G ⚠R717R	404K5149	R,METAL 100H 5% 1/4W
⚠R5L4	404K5345	R,METAL 1.0H 5% 1/4W
⚠R460		

SYMBOL	PART NO	DESCRIPTION
⚠R560	404K6101	R,METAL 1.0H 5% 1/2W
R451	409A6125	R,FUSE 10H 5% 1/4W

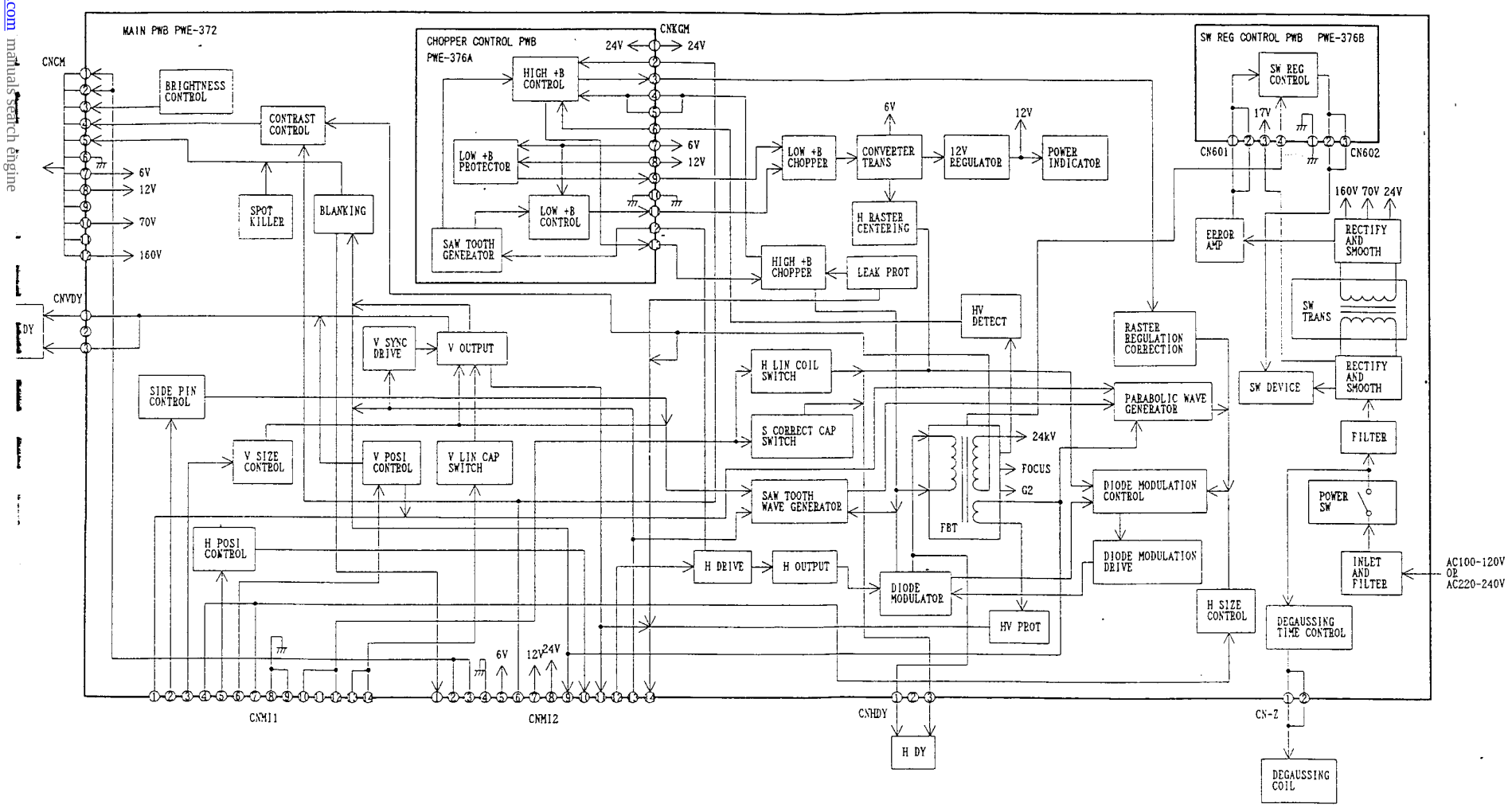
*** CAPACITORS ***

⚠C5D3	C585	C754B	420C9563	C,CERAMIC 500V 1000PF
C754G	C754R			
C755			420C9567	C,CERAMIC 500V 2200PF
C5C0	C726B	C726G	420C9569	C,CERAMIC 50V 3300PF
C726R				
⚠C5D2			420C9571	C,CERAMIC 500V 4700PF
C728			420DK108	C,CERAMIC 2KV 10000PF
⚠C602	⚠C603	⚠C606	420EC067	C,CERAMIC 400V 2200PF
⚠C607	⚠C608	⚠C626		
⚠C627	⚠C628			
C621			420JJ088	C,CERAMIC 2K 220PF
C651	C652	C655	420JJ096	C,CERAMIC 2K 470PF
C656				
C659			42099086	C,CERAMIC 2KV 1000PF
C462	C463	C47E	421A0425	C,CERAMIC 50V 0.01UF
C47F	C472	C5D8		
C5FF	C5F7	C5F8		
C5N0	C562	C563		
C565	C722			
C5F2			421C0205	C,CERAMIC 50V 220PF
C402			421C0208	C,CERAMIC 50V 390PF
C401	C572	C858	421C0213	C,CERAMIC 50V 1000PF
C464			421C0218	C,CERAMIC 50V 2700PF
C710B	C710G	C710R	421C0219	C,CERAMIC 50V 3300PF
C2021	C451	C522	421D6009	C,CERAMIC 25V 0.1UF
C551	C554	C7K1		
C7K2	C701	C706B		
C706G	C706R	C708		
C711B	C711G	C711R		
C721	C724	C727		
C729	C750	C751		
C801	C851	C857		
C47C	C855	C856	421D6013	C,CERAMIC 50V 0.1UF
C707B	C707G	C707R	423A1037	C,CERAMIC 50V 47PF
C712G			423A1039	C,CERAMIC 50V 56PF
C712B			423A1045	C,CERAMIC 50V 100PF
C712R			423A1047	C,CERAMIC 50V 120PF

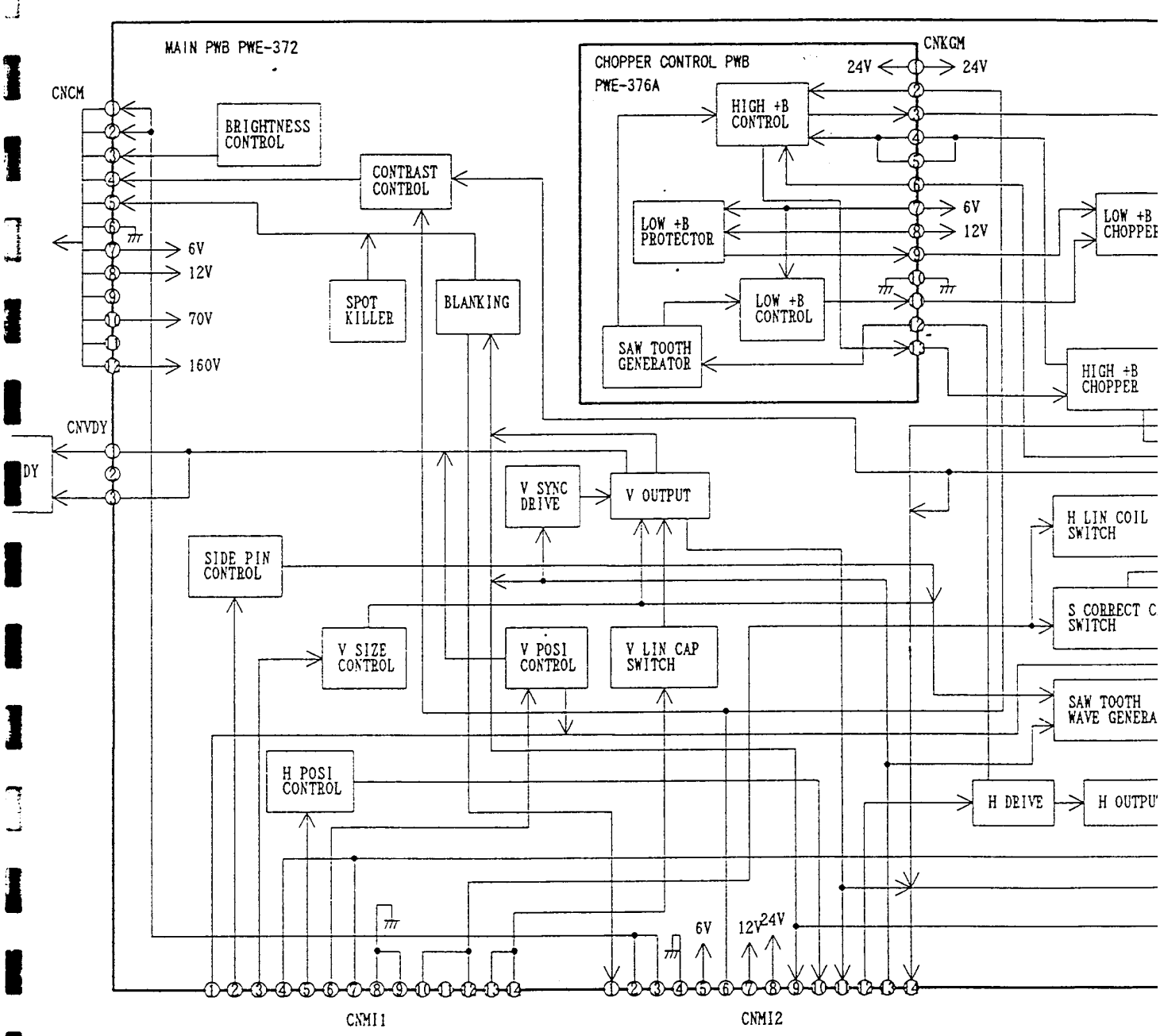
SYMBOL	PART NO	DESCRIPTION
C474	423A1053	C,CERAMIC 50V 220PF
C871	423A1055	C,CERAMIC 50V 270PF
C586	423A1057	C,CERAMIC 50V 330PF
C802 C803	423A2025	C,CERAMIC 50V 15PF
C593	423A2037	C,CERAMIC 50V 47PF
C501	423A2045	C,CERAMIC 50V 100PF
C5L3 C503	423A2105	C,CERAMIC 50V 270PF
C760	427E4163	C,FILM 100V 0.01UF
C5F1 C613	427F4601	C,FILM 50V 1000PF
C504	427F4607	C,FILM 50V 3300PF
C405	427F4612	C,FILM 50V 8200PF
C506 C617	427F4613	C,FILM 50V 0.01UF
C615 C618	427F4615	C,FILM 50V 0.015UF
C5FG C614	427F4617	C,FILM 50V 0.022UF
C5L4	427F4623	C,FILM 50V 0.068UF
C5A3 C524 C574	427F4625	C,FILM 50V 0.1UF
C612 C616 C624	427F4626	C,FILM 50V 0.12UF
C5D5	427F4629	C,FILM 50V 0.22UF
C662	427F4647	C,FILM 50V 470PF
C502	427F4651	C,FILM 50V 1000PF
C592	427F4663	C,FILM 50V 0.01UF
C5D9 C523 C566	427F4675	C,FILM 50V 0.1UF
C568 C577 C595	427F8404	C,FILM 100V 1800PF
C5F4 C872 C873	42703663	C,FILM 400V 0.01UF
C508	428B3017	C,METAL FILM 50V 0.22UF
C5A0 C598	428B3021	C,METAL FILM 50V 0.47UF
C475	428B3025	C,METAL FILM 50V 1.0UF
C476 C477	428C9022	C,METAL FILM 250V 0.1UF
C404 C471	428D0053	C,METAL 100V 0.1UF
C5A1	428D0097	C,FILM 250V 0.22UF
C5L1	428D0165	C,FILM 400V 0.022UF
C713B C713G C713R	428D4413	C,METAL FILM 250V 0.1UF
C620	42807586	C,FILM 1.6KV 8000PF
C753B C753G C753R	42817092	C FILM 1.4KV 6400P
⚠C5C4	42824804	C,FILM AC250V 0.03UF
⚠C5C3	42824807	C,FILM AC250V 0.1UF
⚠C601	42824811	C,FILM AC250V 0.47UF
⚠C605	42839613	C,METAL 400V 0.56UF
⚠C604	42839657	C,METAL 200V 0.27UF
C5C7	42839662	C,METAL FILM 200V 0.56UF
⚠C5D0	42839691	C FILM 200V 2UF
⚠C5D1	430A4049	C,ELEC 25V 4.7UF
C5C2	430BF047	C,ELEC 25V 2200UF
⚠C5A2	430B6015	C,ELEC 10V 47UF
C479	430B6017	C,ELEC 10V 220UF
⚠C590	430B6031	C,ELEC 16V 330UF
C580 C581	430B6032	C,ELEC 16V 470UF
C831	430B6033	C,ELEC 16V 1000UF
C552	430B6039	C,ELEC 25V 22UF
C720	430B6041	C,ELEC 25V 47UF
C874	430B6043	C,ELEC 25V 220UF
C5N1 C702B C702G	430B6053	C,ELEC 35V 47UF
C702R C709 C752	430B6054	C,ELEC 35V 100UF
C553	430B6057	C,ELEC 35V 470UF
C5L0	430B6061	C,ELEC 50V 1.0UF
C478	430B6062	C,ELEC 50V 2.2UF
C573	430B6064	C,ELEC 50V 4.7UF
C5F0 C5F3 C5F5	430B6065	C,ELEC 50V 10UF
C5F9 C576	430B6068	C,ELEC 50V 47UF
C5N2	430B6223	C,ELEC 50V 0.33UF
C599 C875	430B6536	C,ELEC 200V 10UF
⚠C5D7 C570 C575	430B9016	C,ELEC 10V 100UF
⚠C591	430B9025	C,ELEC 16V 10UF
C594	430B9029	C,ELEC 16V 100UF
C5FC	430B9030	C,ELEC 16V 220UF
C756	430B9031	C,ELEC 16V 330UF
C2020	430B9033	C,ELEC 16V 1000UF
C723	430B9041	C,ELEC 25V 47UF
C583 C852	430B9042	C,ELEC 25V 100UF
C452	430B9043	C,ELEC 25V 220UF
C854	430B9053	C,ELEC 35V 47UF
C460	430B9054	C,ELEC 35V 100UF
C705	430B9057	C,ELEC 35V 470UF
C611	430B9061	C,ELEC 50V 1.0UF
C582		
C664		
C473		
C578 C661		
C505 C507 C525		
C830		

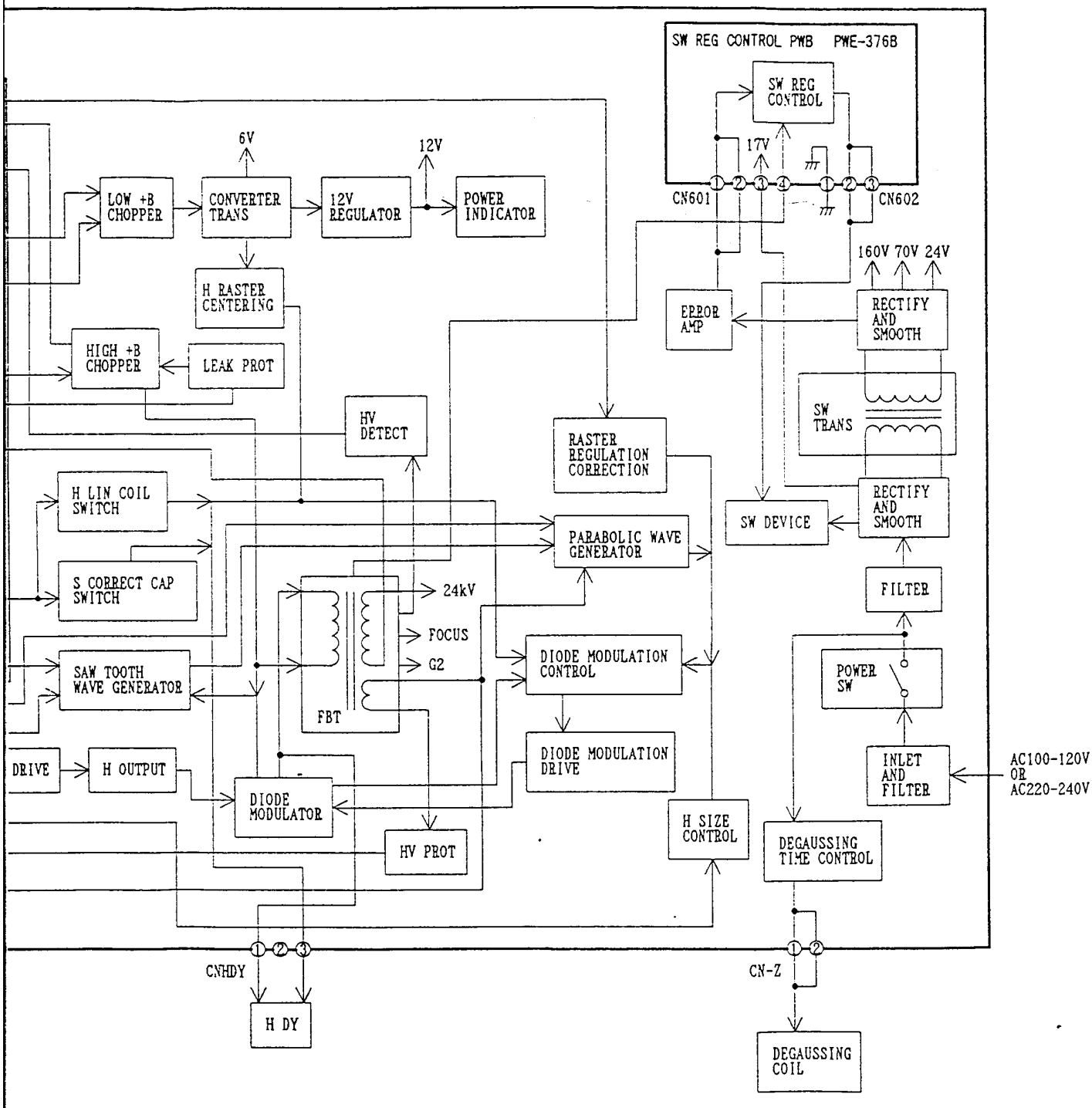
SYMBOL	PART NO	DESCRIPTION
C470	430B9062	C,ELEC 50V 2.2UF
C805	430B9065	C,ELEC 50V 10UF
C461	430B9069	C,ELEC 50V 100UF
C725B C725G C725R	430B9094	C,ELEC 100V 1.0UF
C403	430B9221	C,ELEC 50V 0.1UF
C526	430C2152	C,ELEC 50V 0.68UF
C5CA	430C6344	C,ELEC 35V 100UF
C660	4302J058	C,ELEC 35V 1000UF
C658	4302J102	C,ELEC 100V 100UF
C657	4302J103	C,ELEC 100V 220UF
C561 C654	4302J539	C,ELEC 200V 47UF
C653	4302J540	C,ELEC 200V 100UF
⚠C59A	4309J171	C,ELEC 200V 33UF
⚠C609	43109480	C,ELEC 400V 180UF
C584	433A4026	C,ELEC 16V 100UF
C521	433A4055	C,ELEC 50V 1.0UF
C832	433A4056	C,ELEC 50V 2.2UF
C7K0	433A7021	C,ELEC 25V 10UF
C527	433A7046	C,ELEC 50V 10UF

JC-1535VMA/B/R BLOCK DIAGRAM (MAIN PWB)

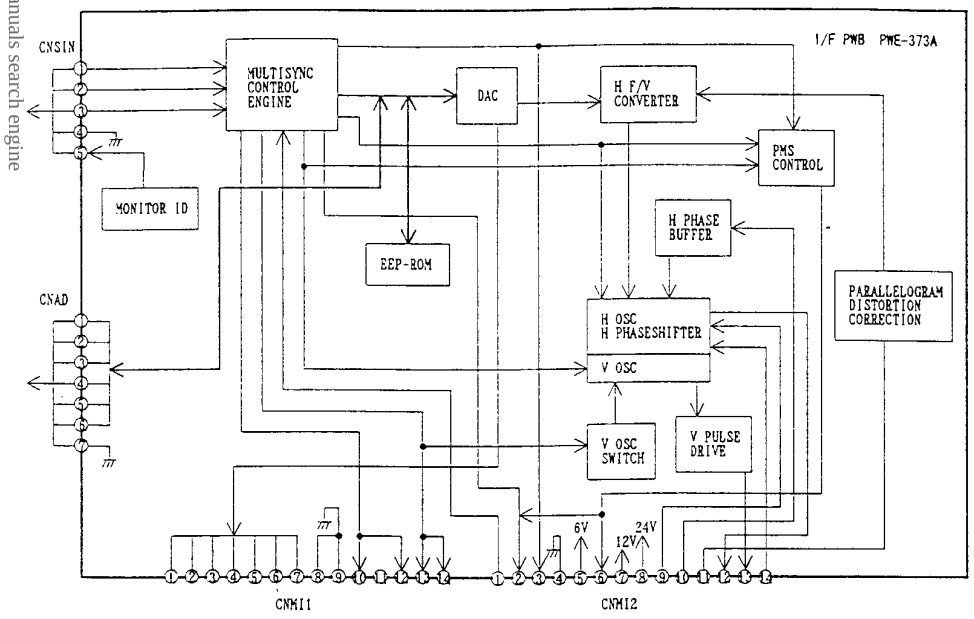


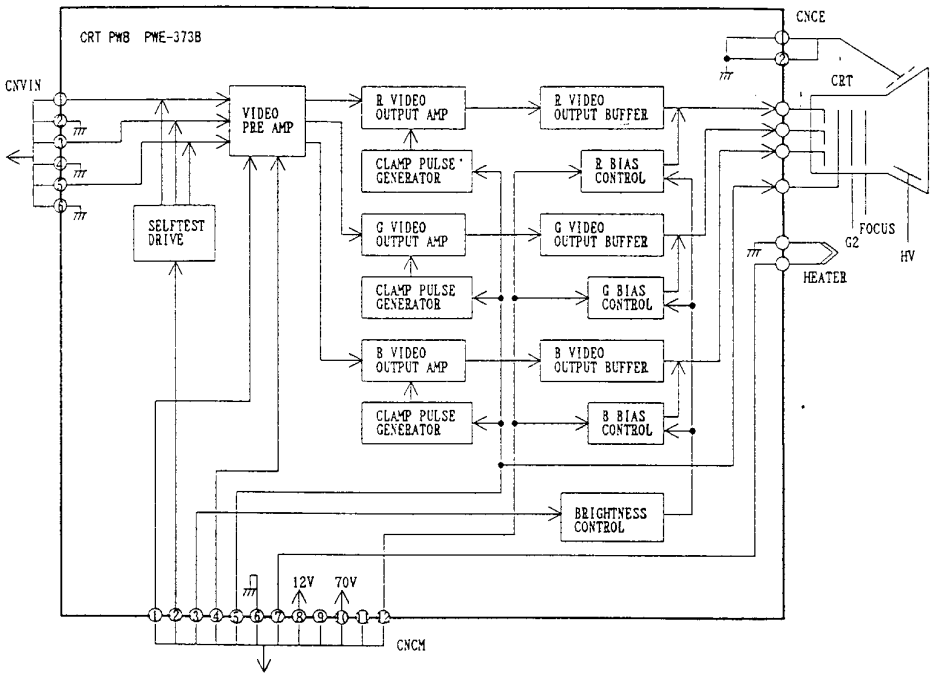
JC-1535VMA/B/R BLOCK DIAGRAM (MAIN PWB)



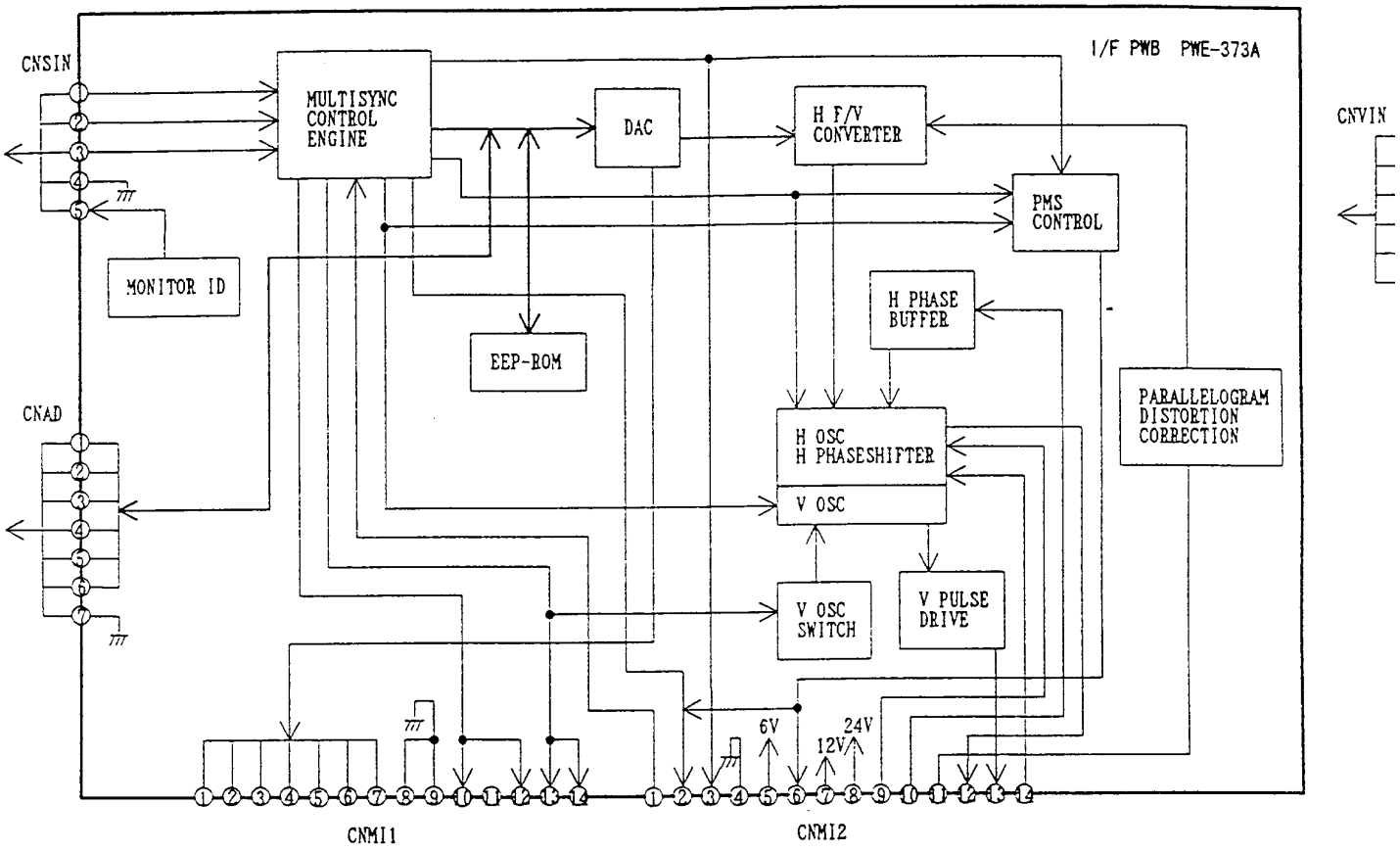


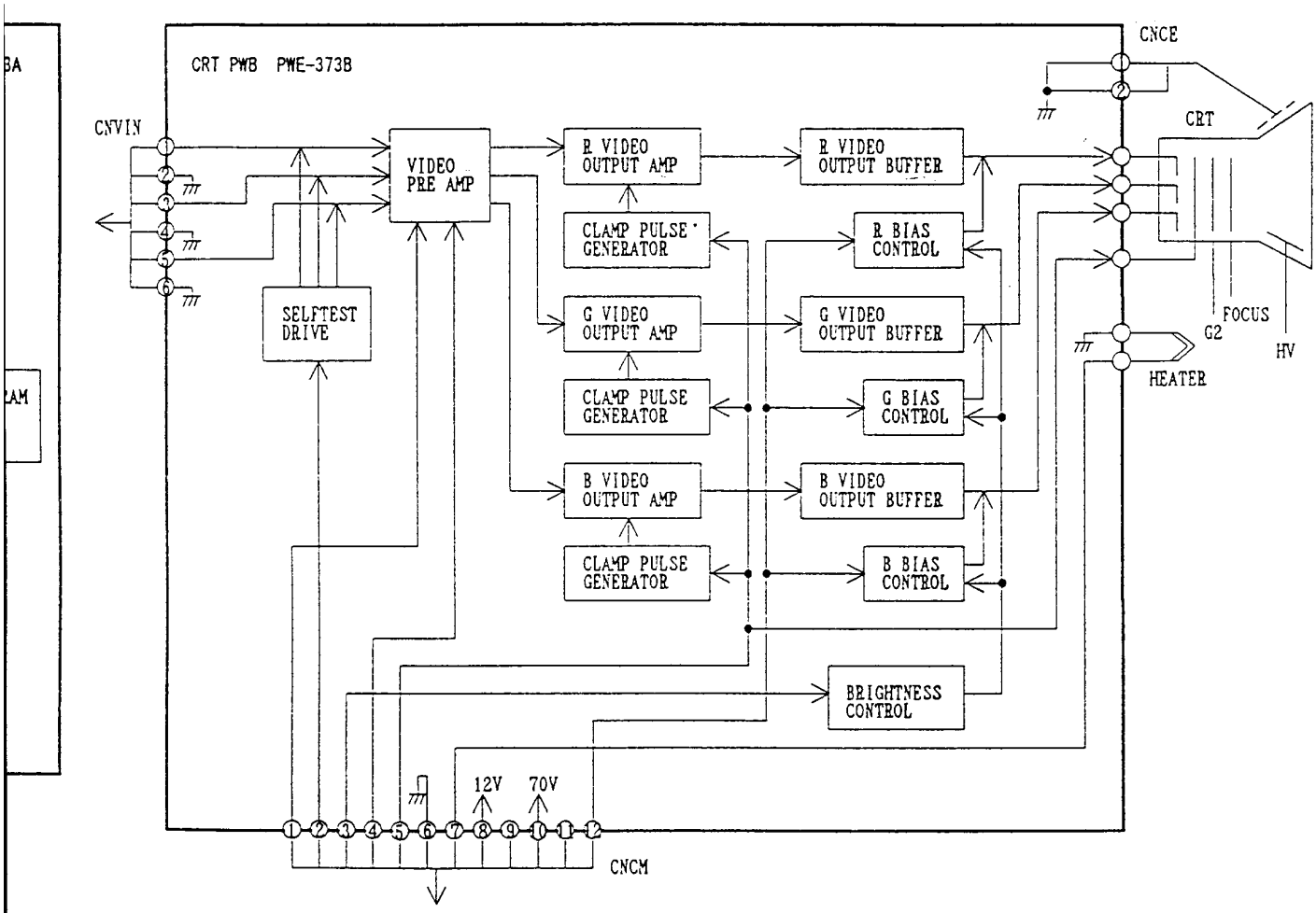
JC-1535VMA/B/R BLOCK DIAGRAMS (I/F PWB, CRT PWB)

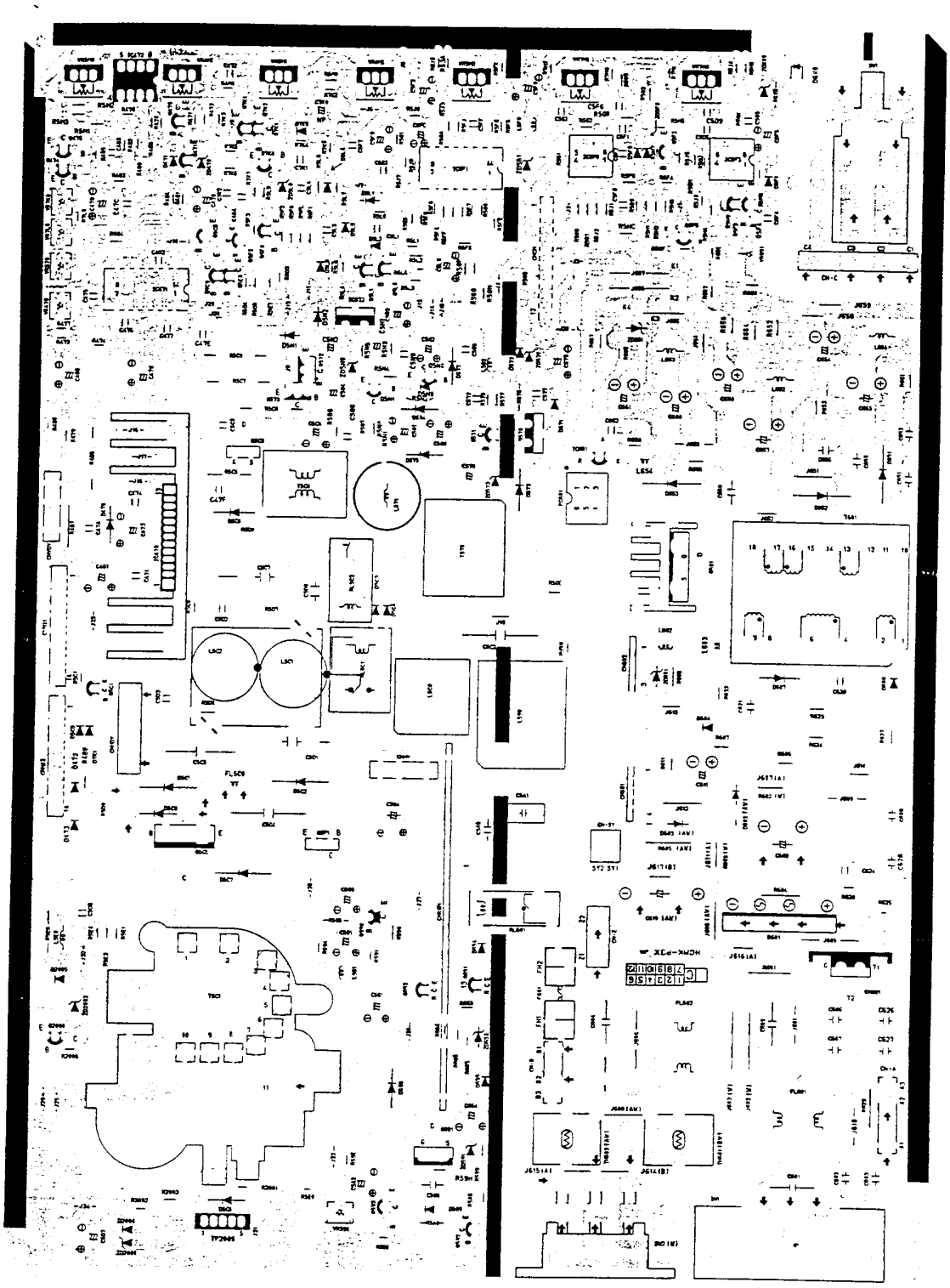




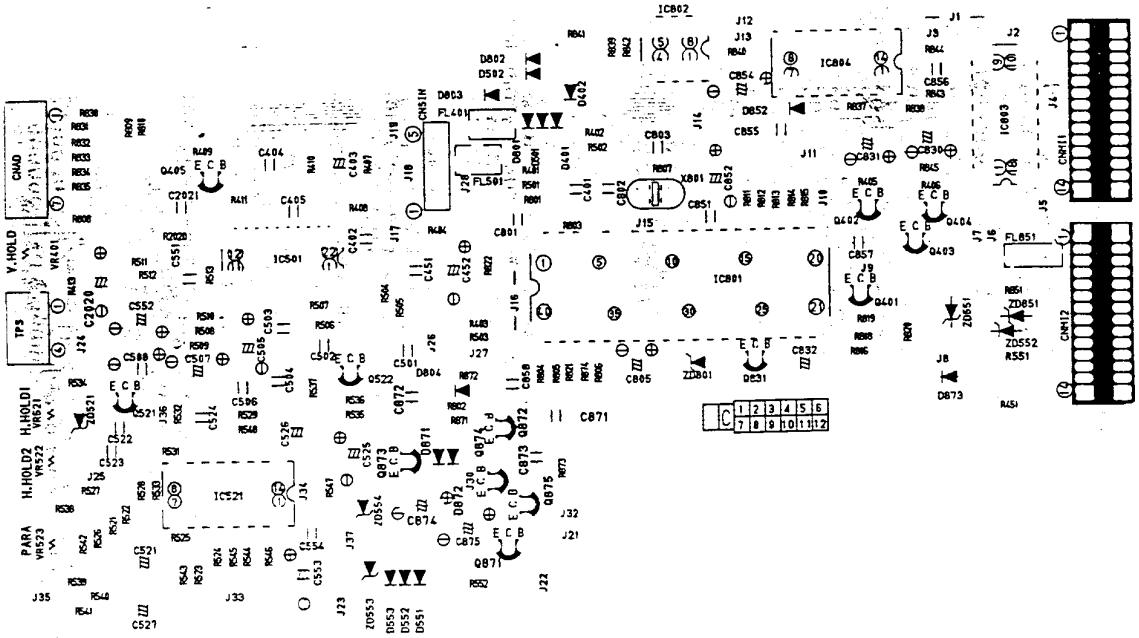
JC-1535VMA/B/R BLOCK DIAGRAMS (I/F PWB, CRT PWB)



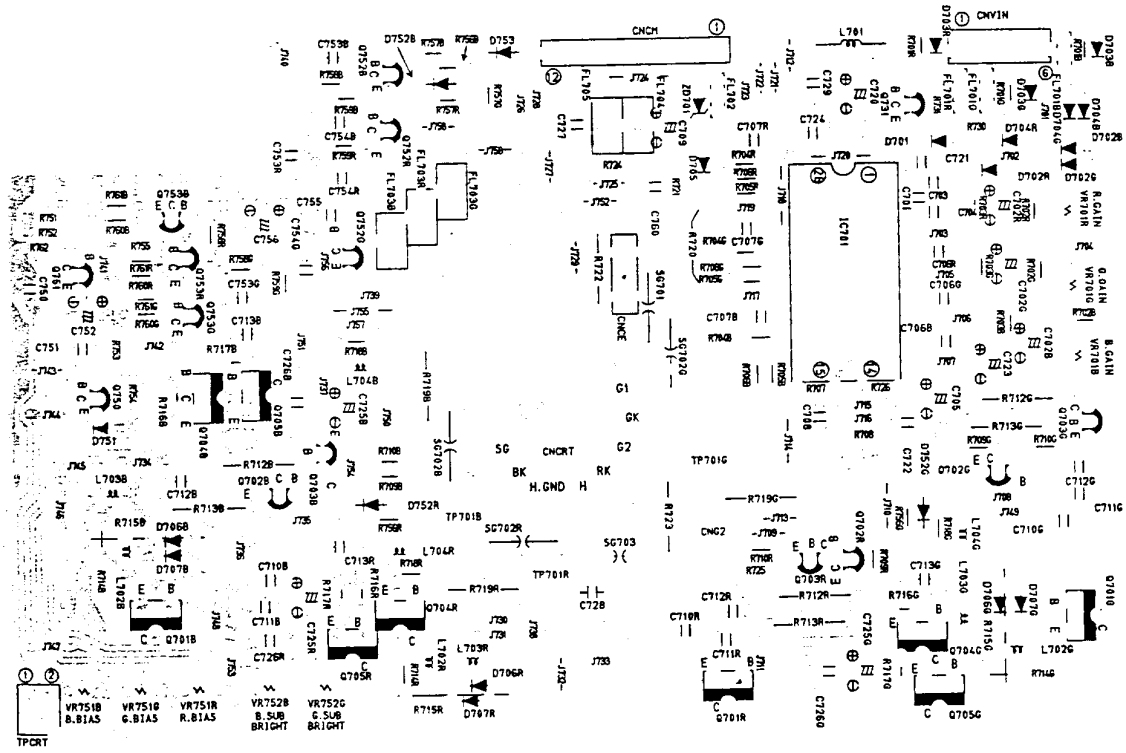




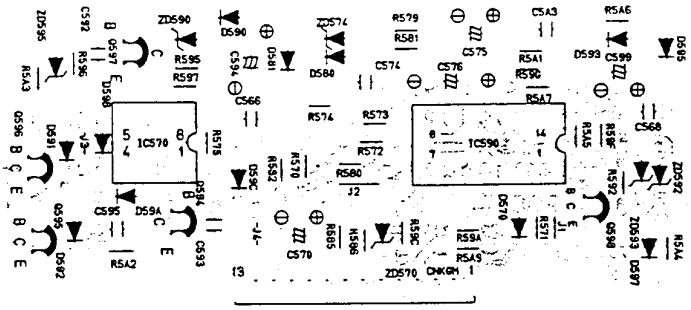
MAIN PWB (PWE-372)
— Solder Side —



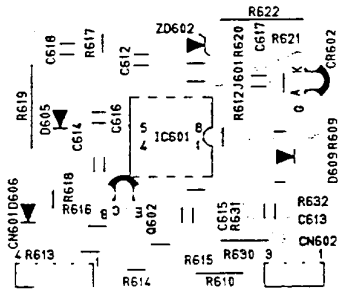
I/F PWB (PWE-373A)
— Solder Side —



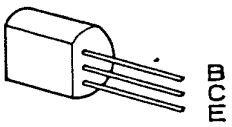
CRT PWB (PWE-373B)
— Solder Side —



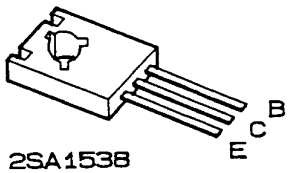
CHOPPER CONTROL PWB (PWE-376A)
— Solder Side —



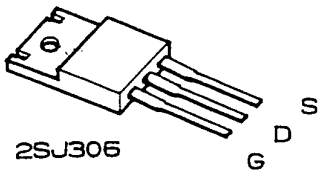
SW REG CONTROL PWB (PWE-376B)
— Solder Side —



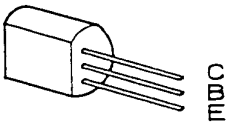
2SA933
2SC945
2SC1018
2SC1473



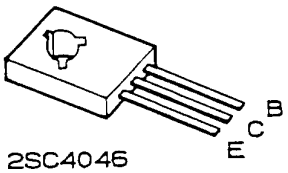
2SA1538
2SC3963



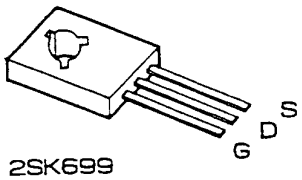
2SJ306



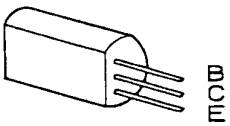
2SC3811



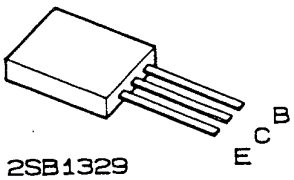
2SC4046
2SD415



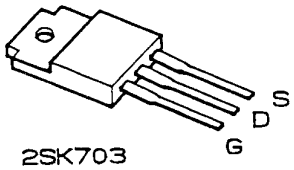
2SK699



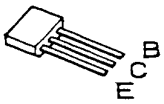
2SC4767



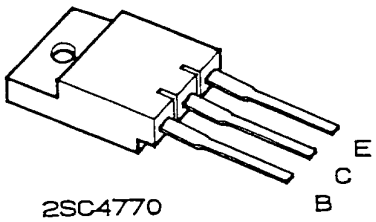
2SB1329
2SD2005



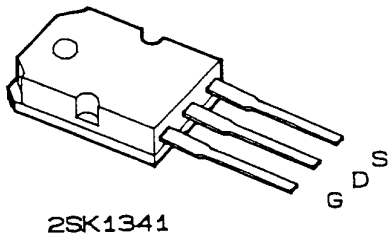
2SK703



2SA933S
2SC1740S
DTA114ES
DTA114WS
DTA144ES
DTC114ES
DTC123ES
DTC123JS
DTC144ES

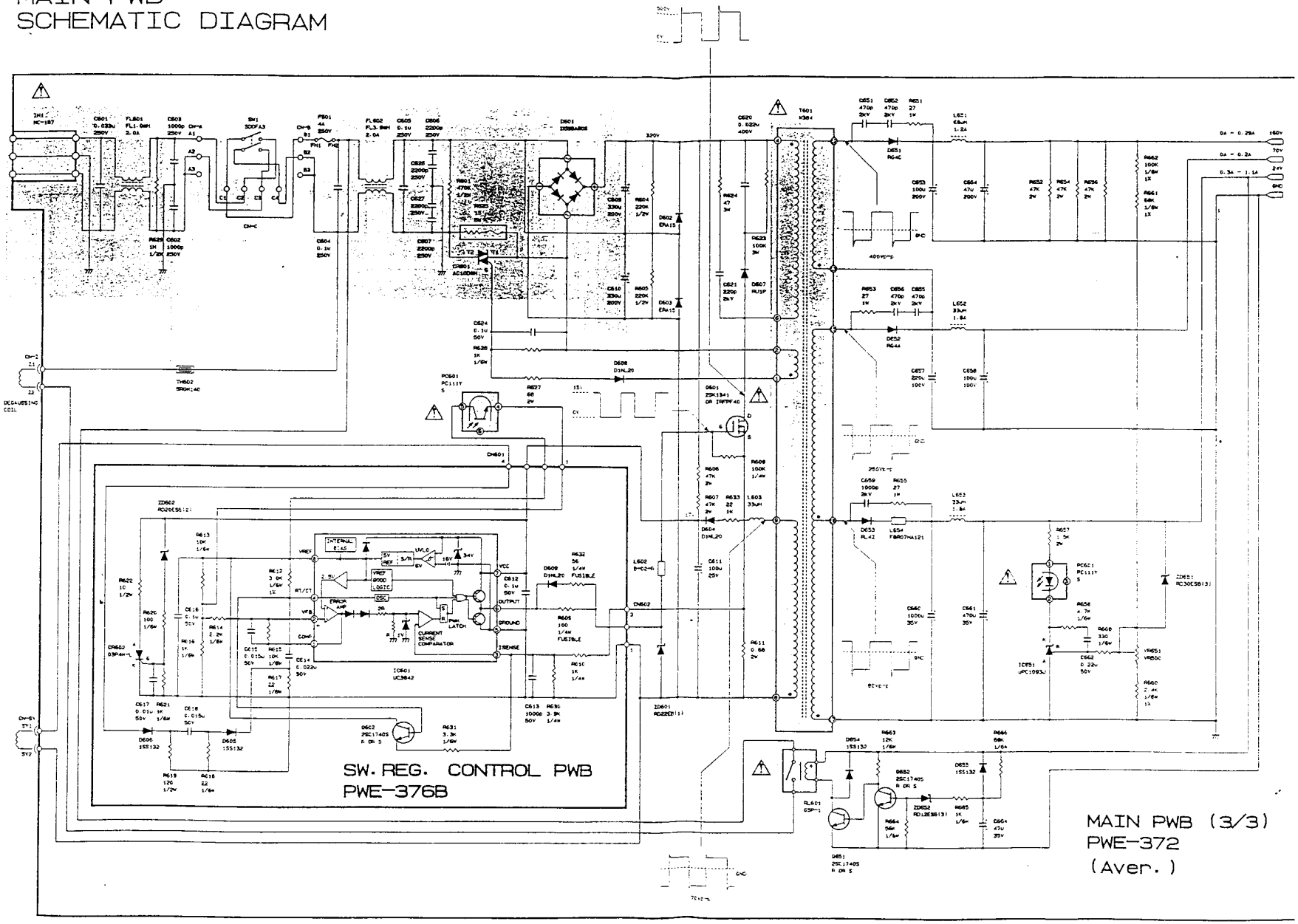


2SC4770

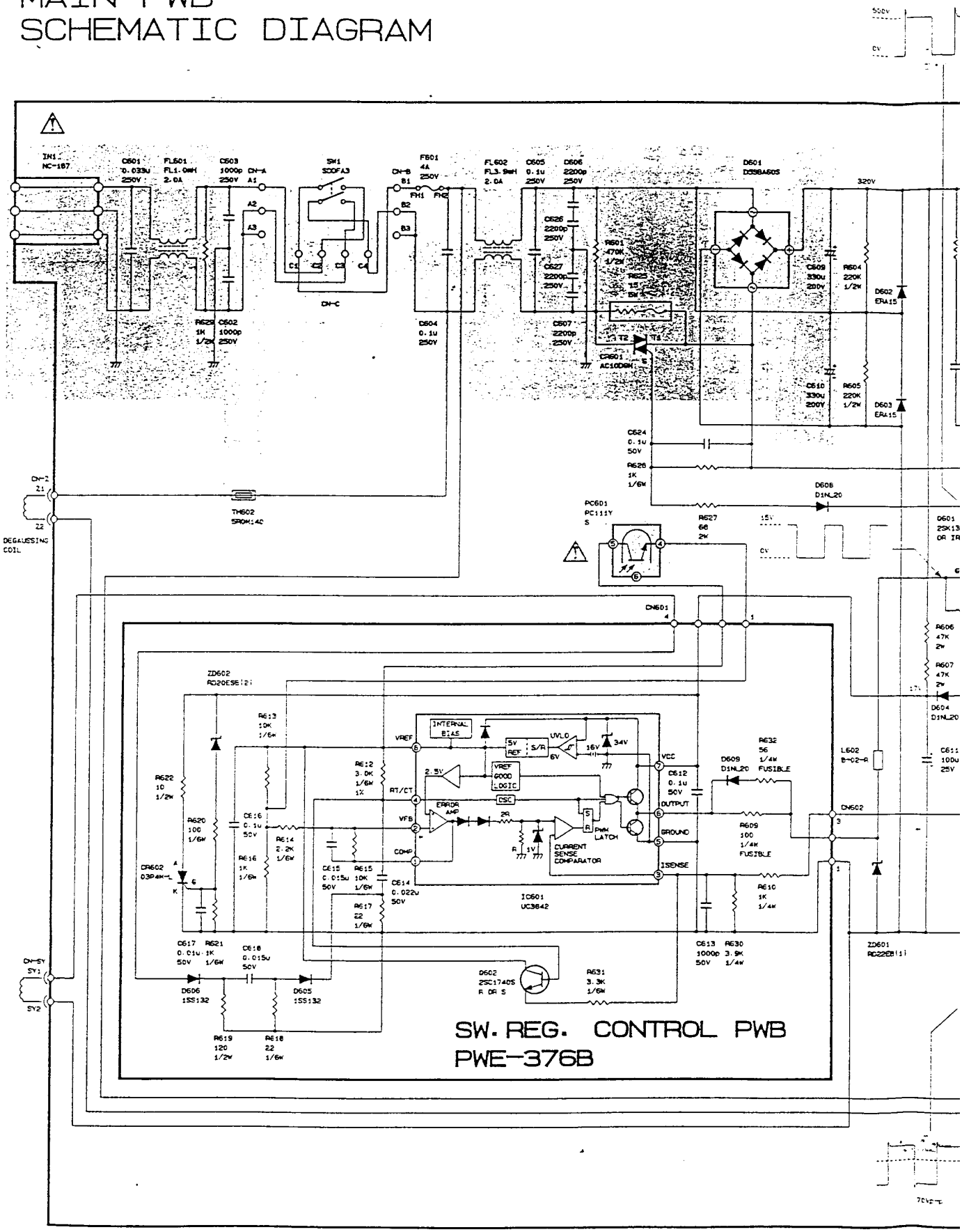


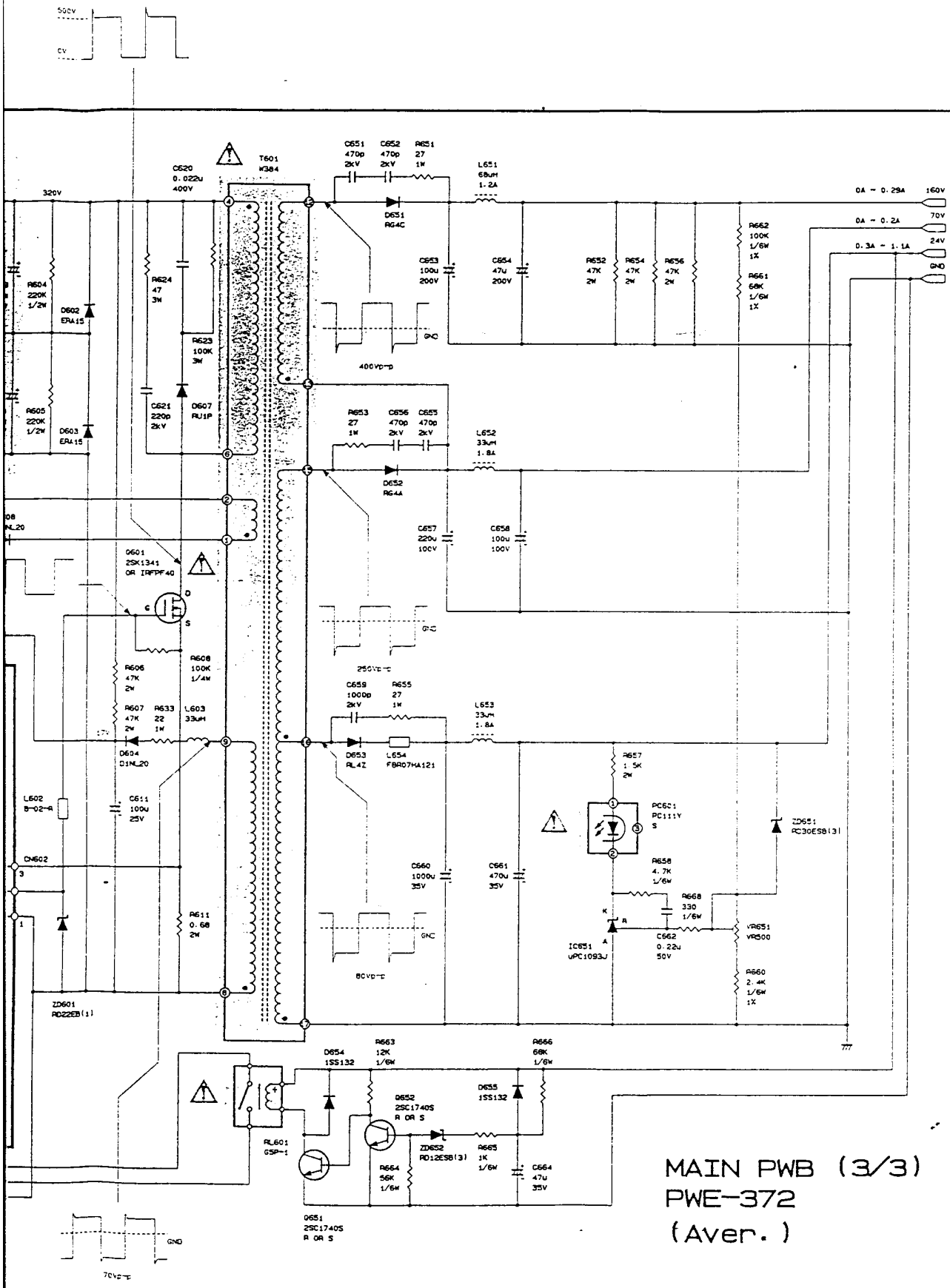
2SK1341

JC-1535VMA
MAIN PWB
SCHEMATIC DIAGRAM



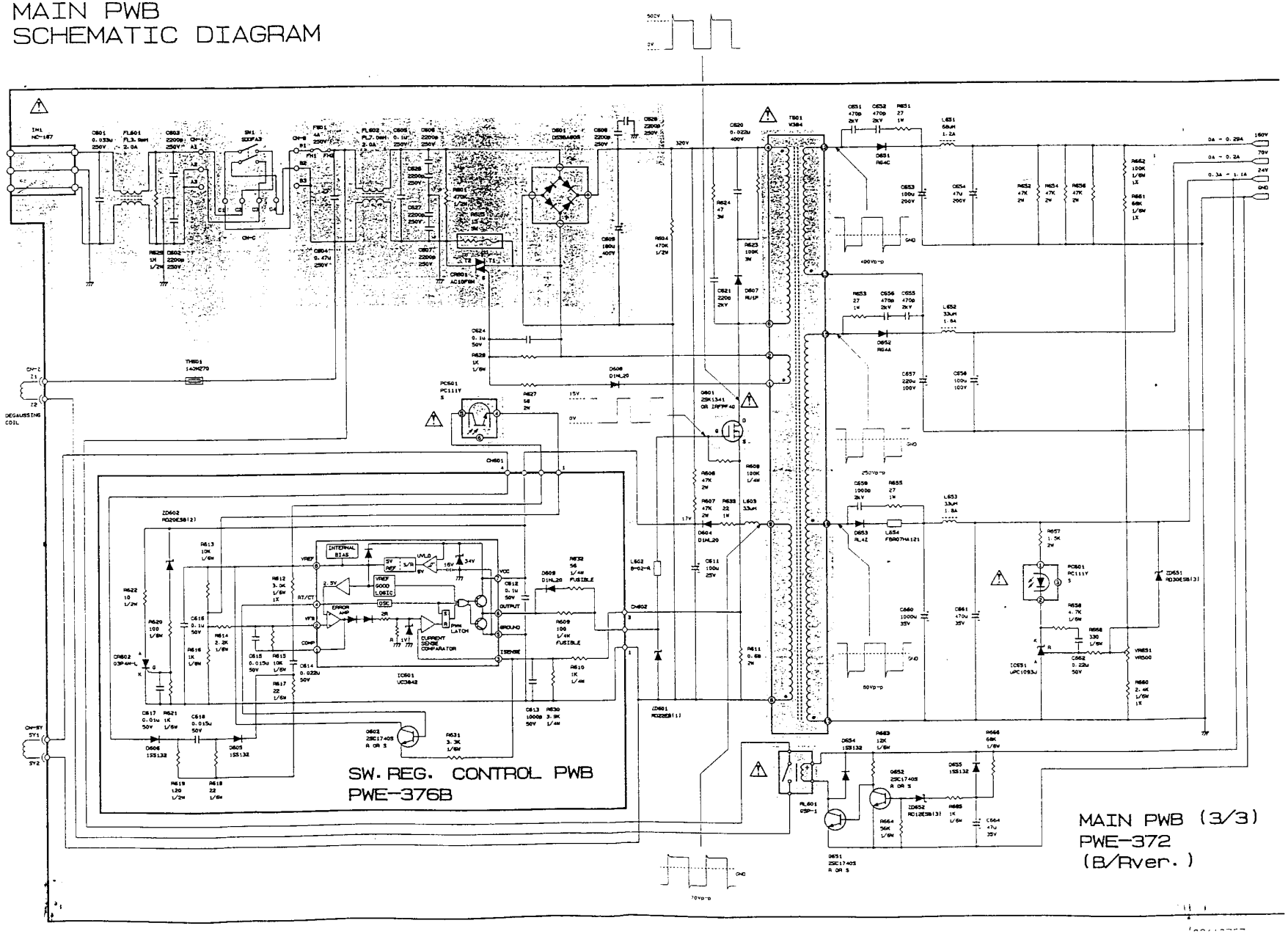
JC-1535VMA
MAIN PWB
SCHEMATIC DIAGRAM



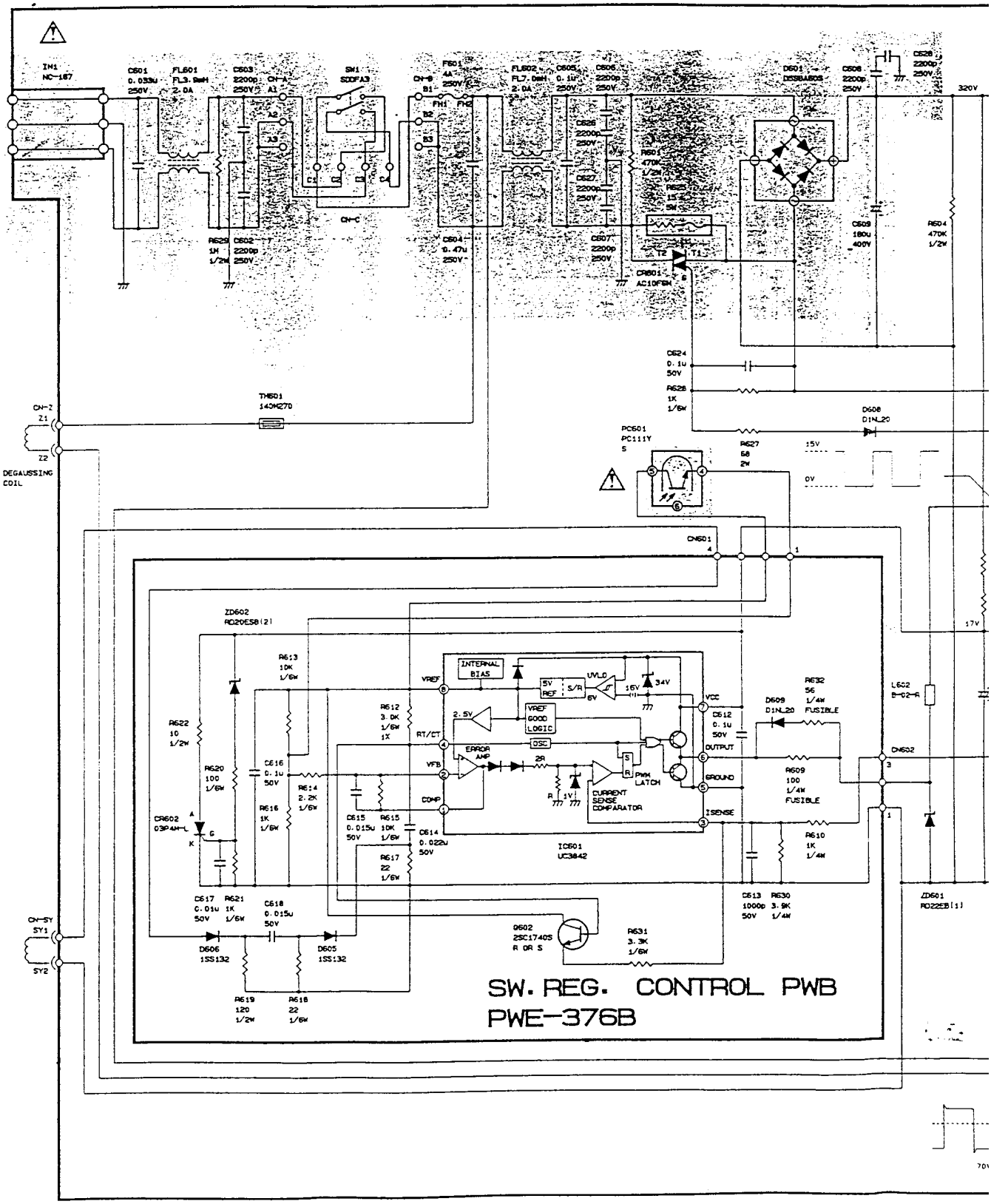


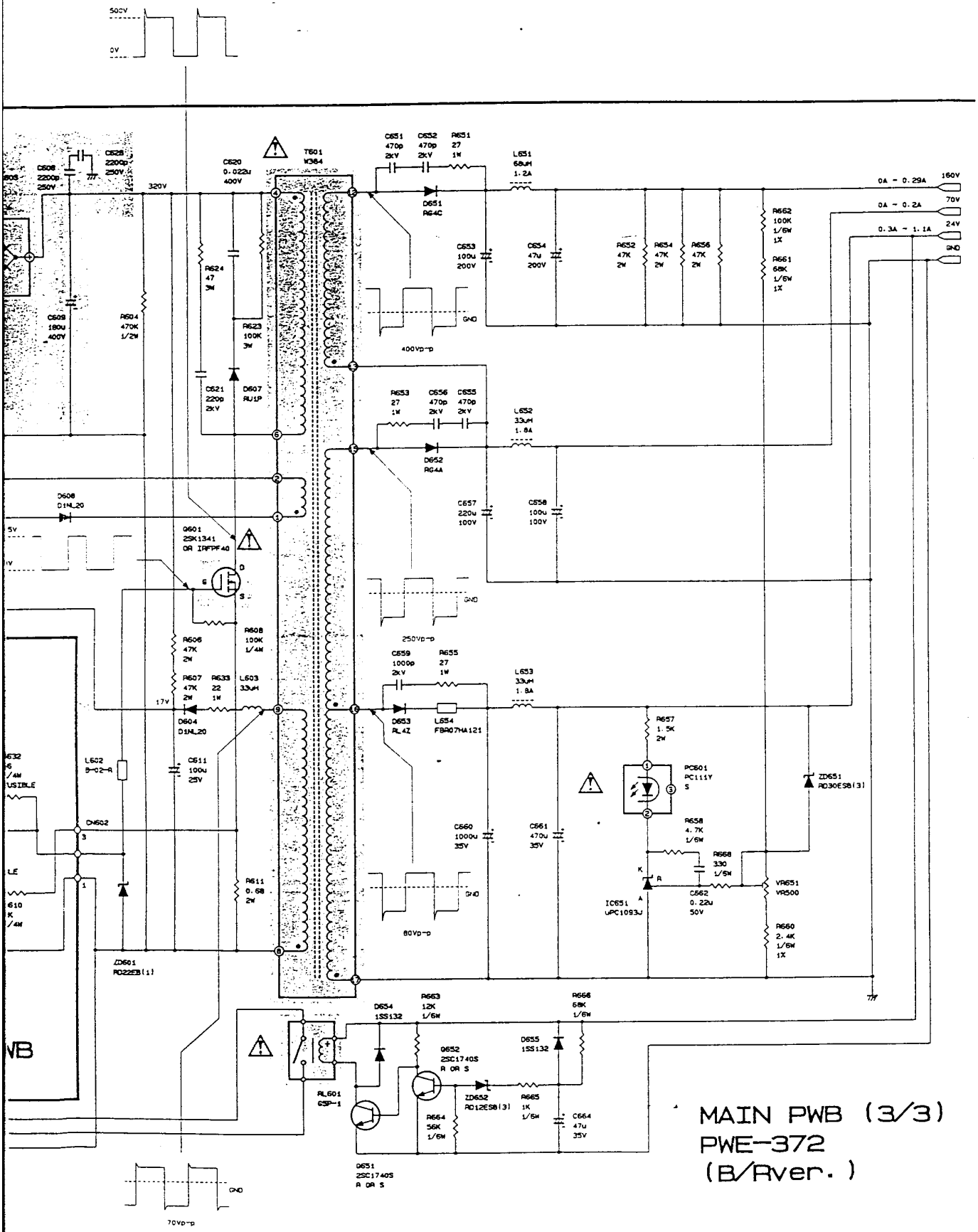
08119757
~08119762 (5/6)

JC-1535VMB/R
MAIN PWB
SCHEMATIC DIAGRAM



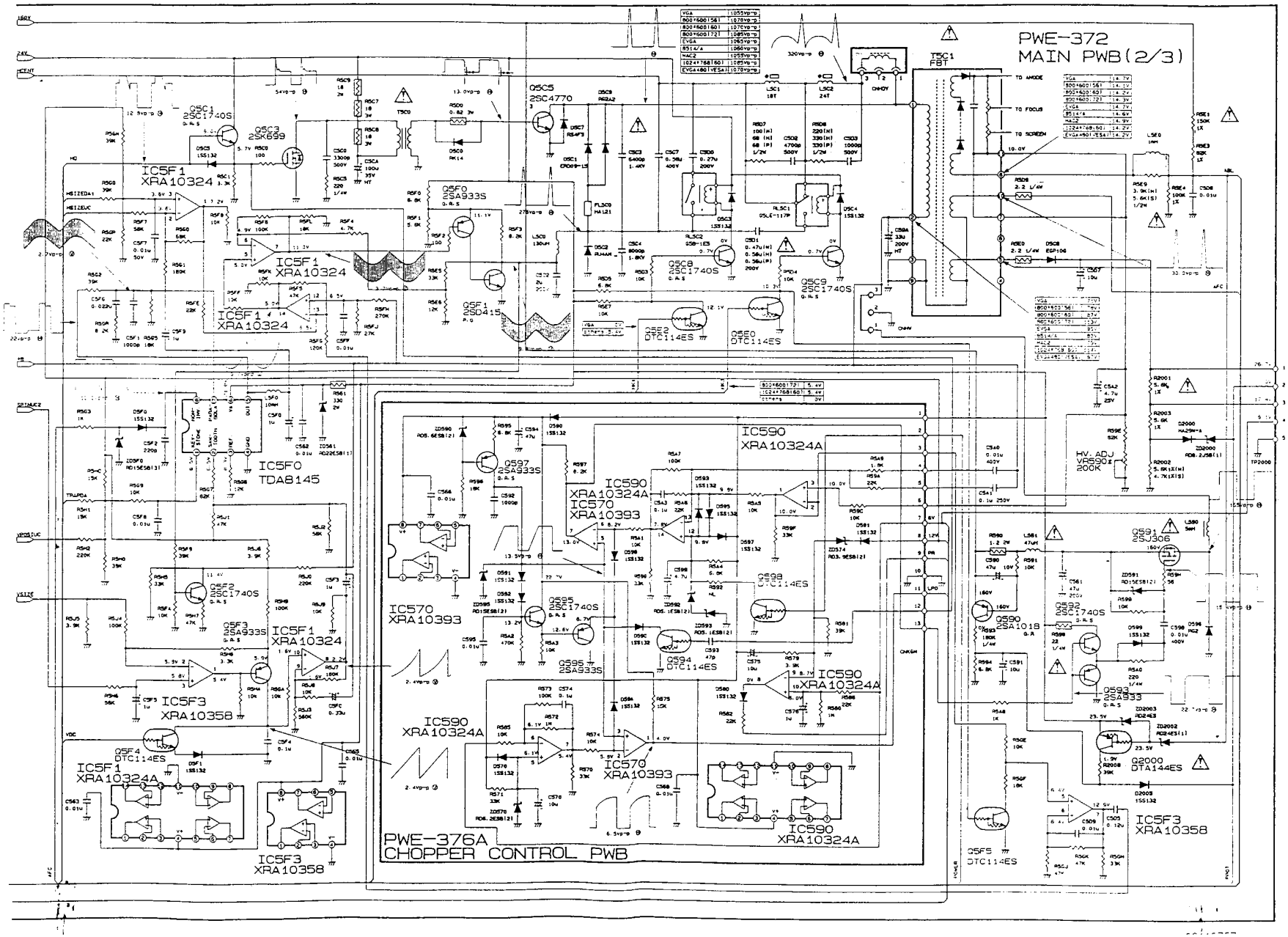
JC-1535VMB/R
MAIN PWB
SCHEMATIC DIAGRAM



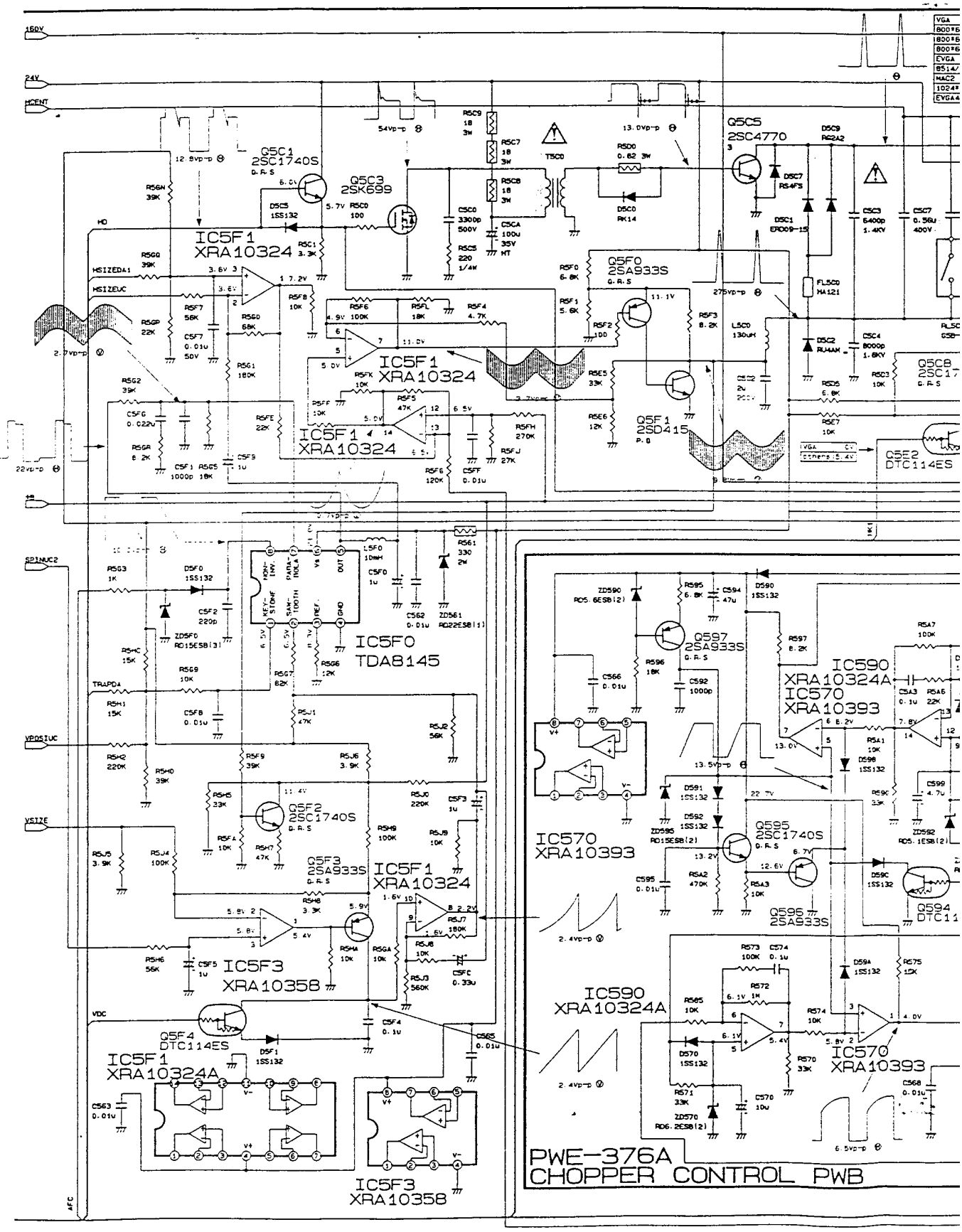


RUN No.1

MODEL JC-1535VMA/B/R MAIN PWB SCHEMATIC DIAGRAM

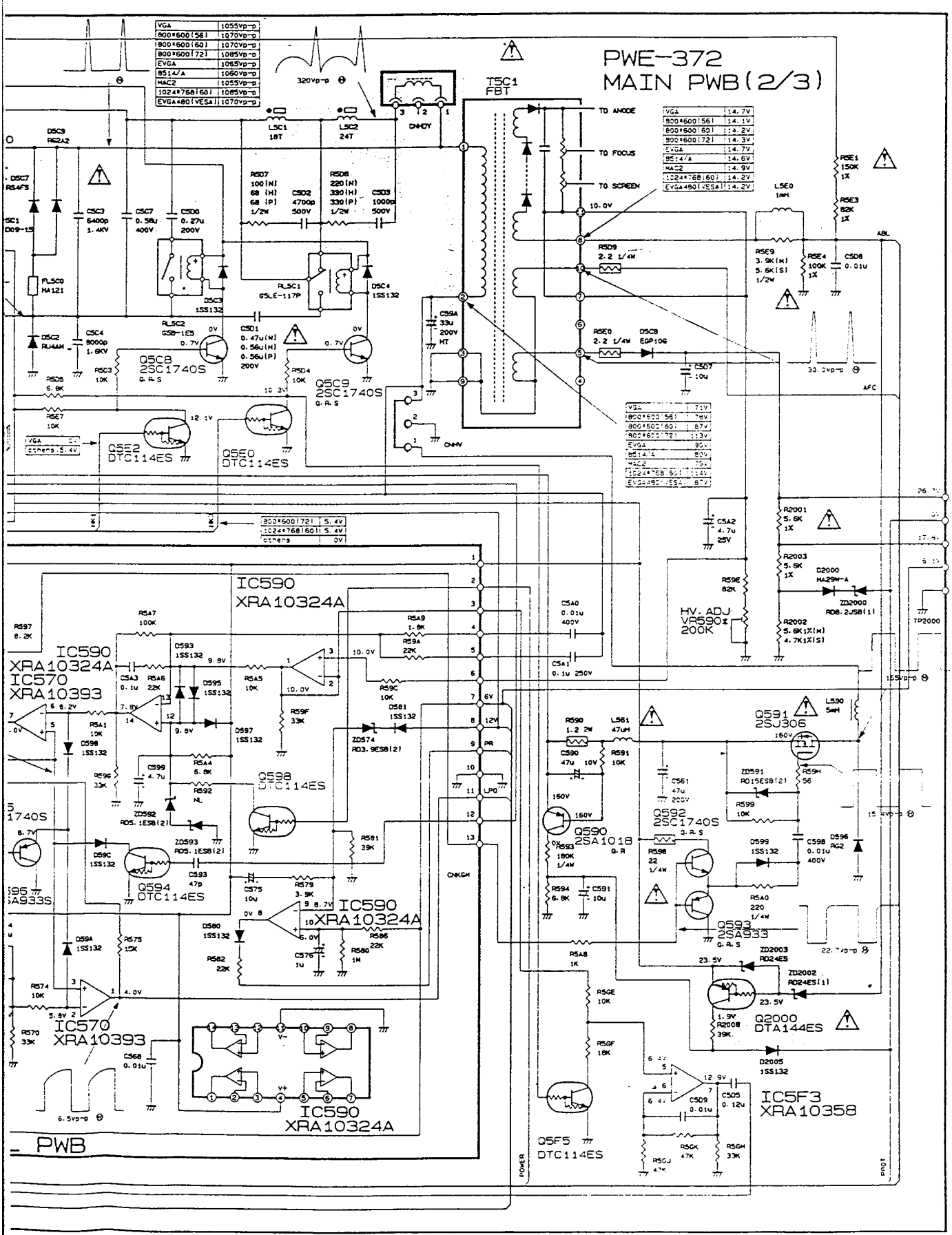


MODEL JC-1535VMA/B/R MAIN PWB SCHE

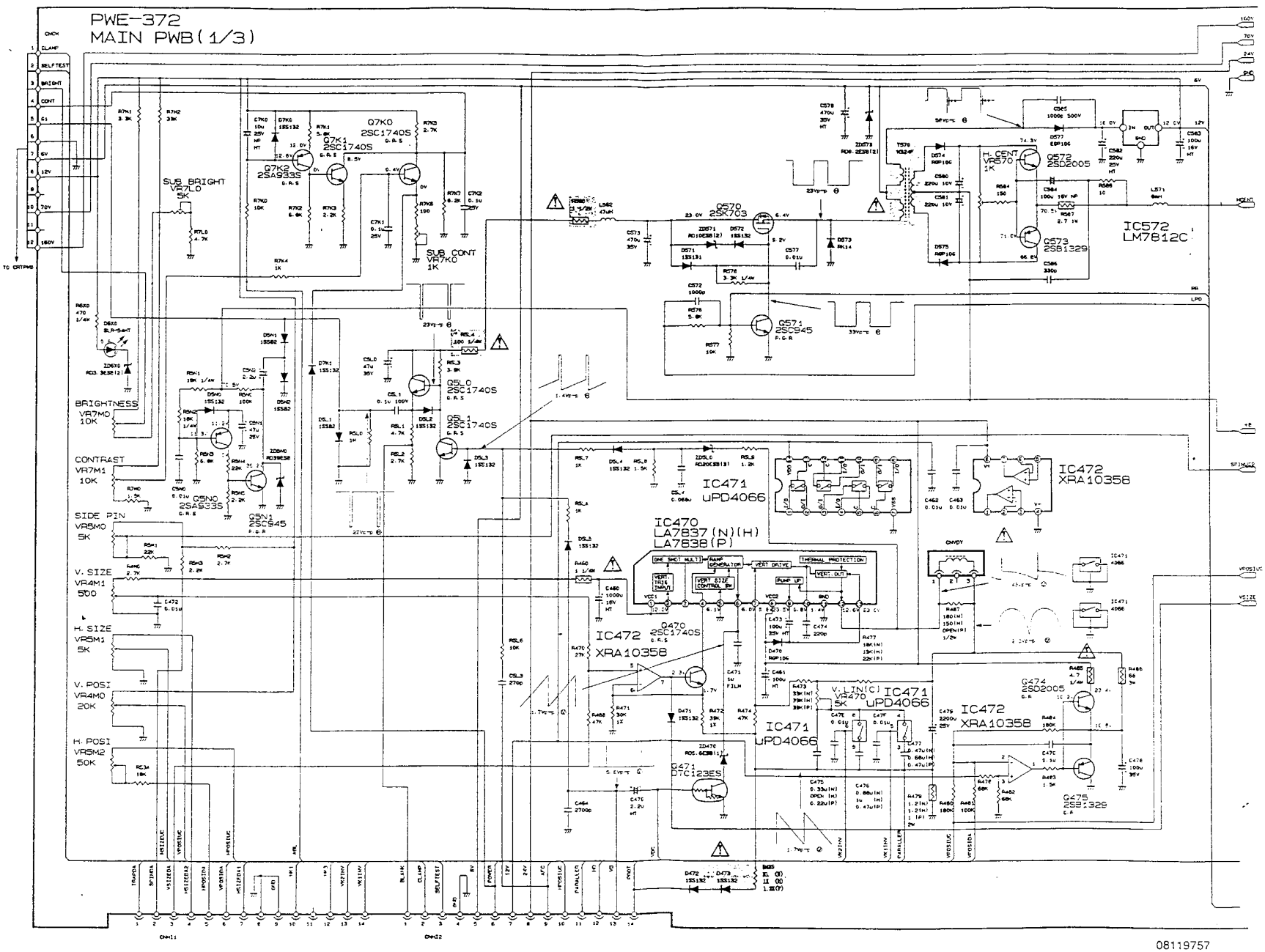


RUN N

PWB SCHEMATIC DIAGRAM

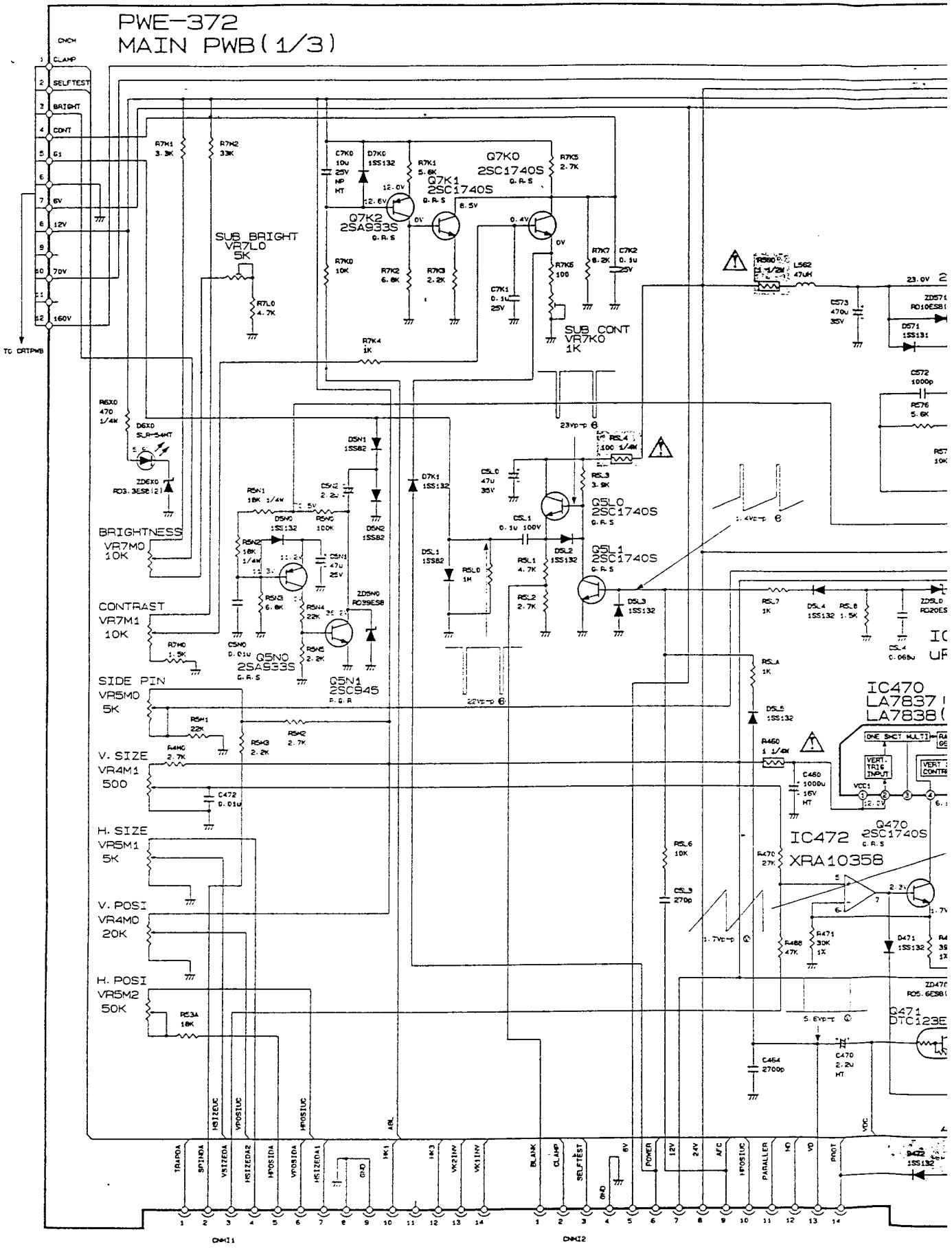


MODEL JC-1535VMA/B/R MAIN PWB SCHEMATIC DIAGRAM

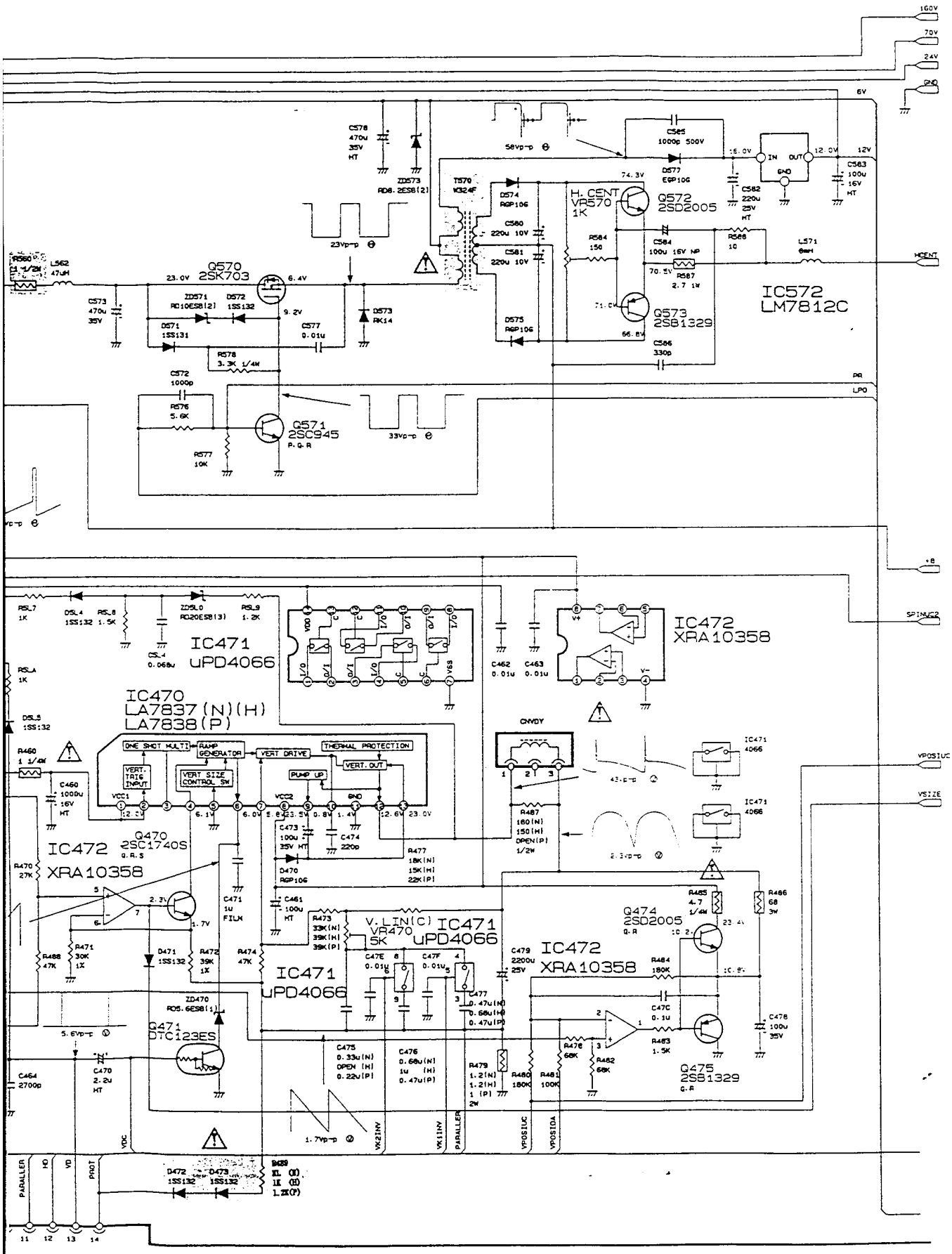


08119757
~08119762 (3/6)

MODEL JC-1535VMA/B/R MAIN PWB SCHE

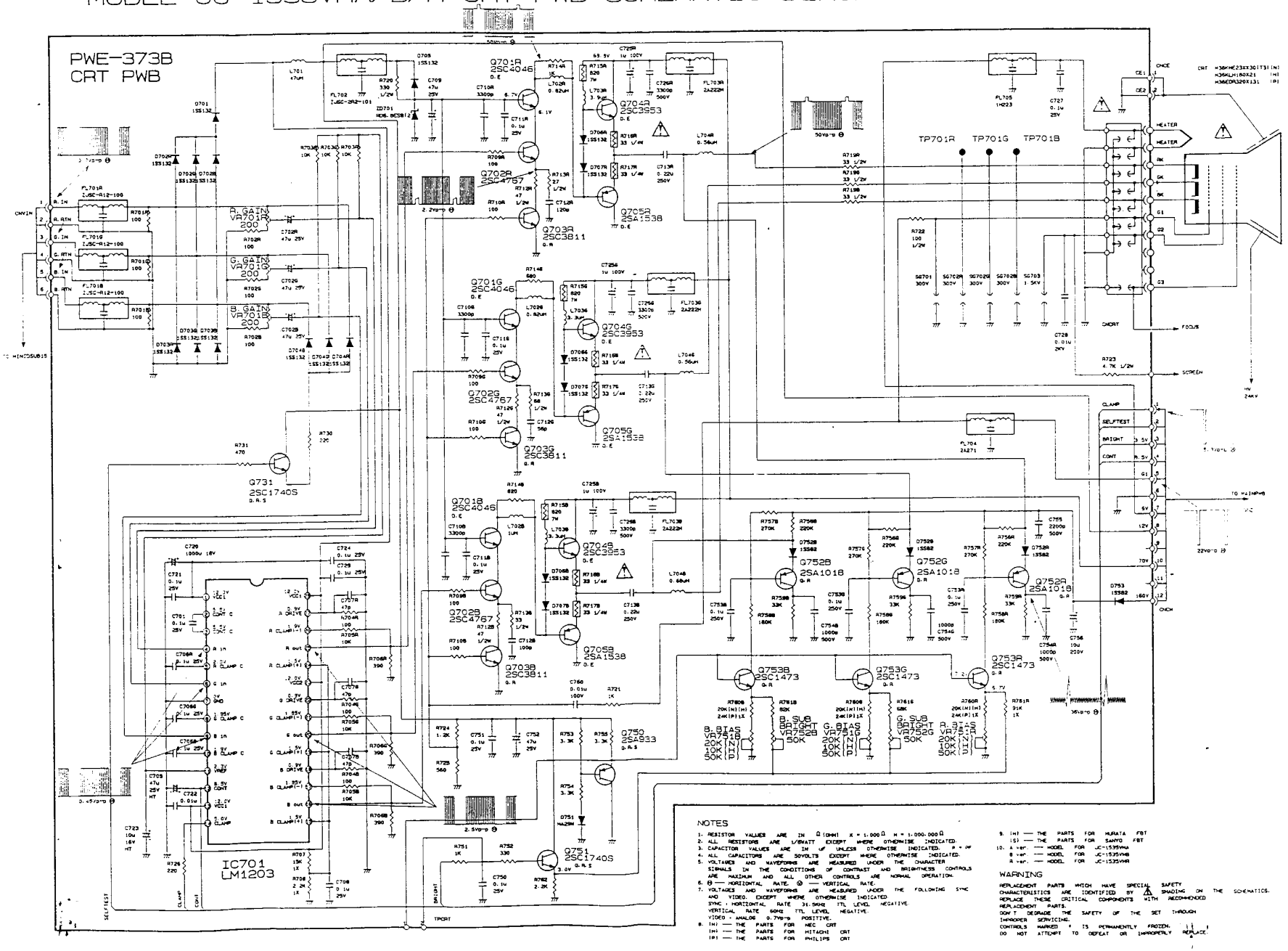


PWB SCHEMATIC DIAGRAM

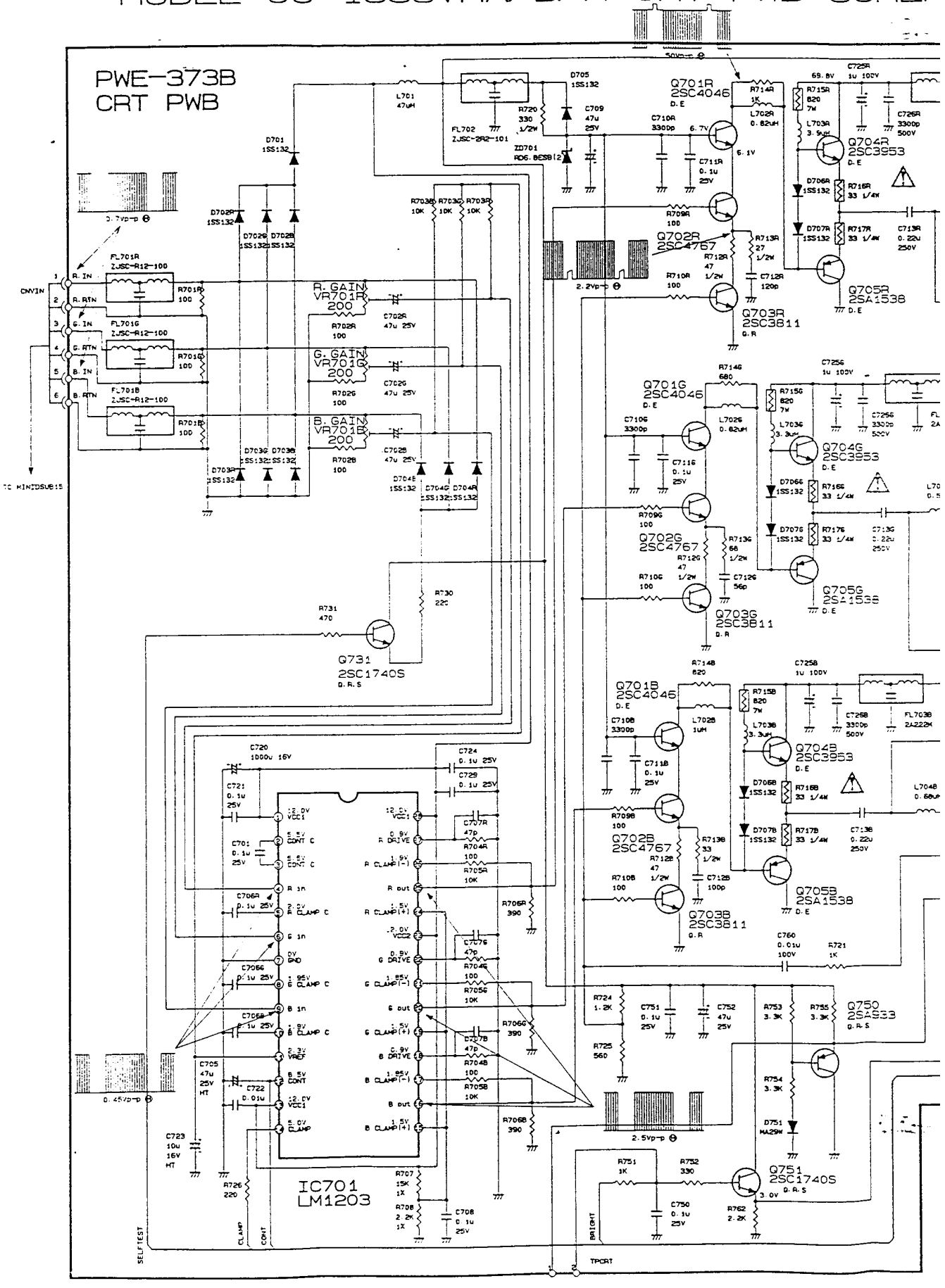


08119757
~08119762 (3/6)

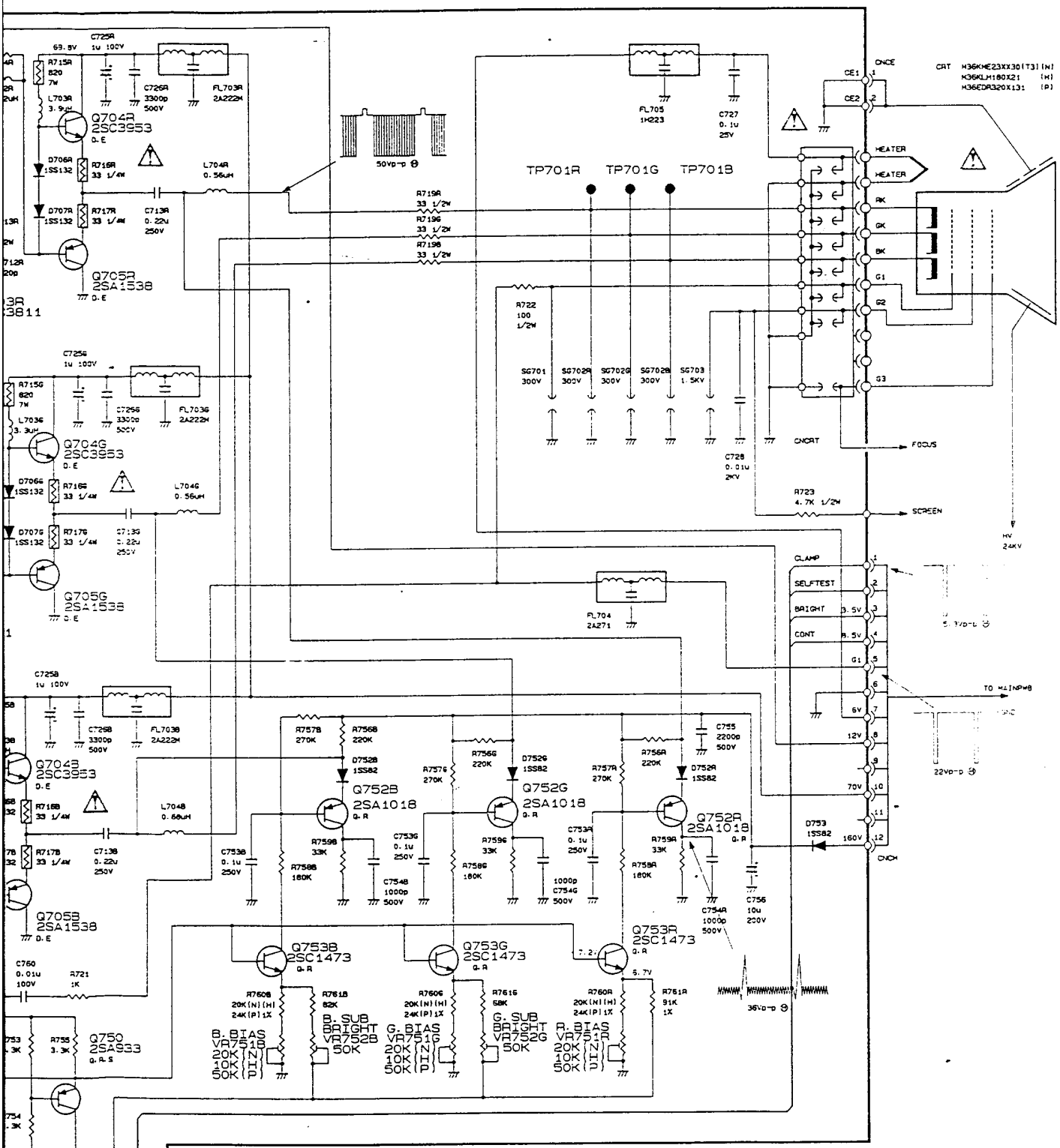
MODEL JC-1535VMA/B/R CRT PWB SCHEMATIC DIAGRAM



MODEL JC-1535VMA/B/R CRT PWB SCHEM



WB SCHEMATIC DIAGRAM



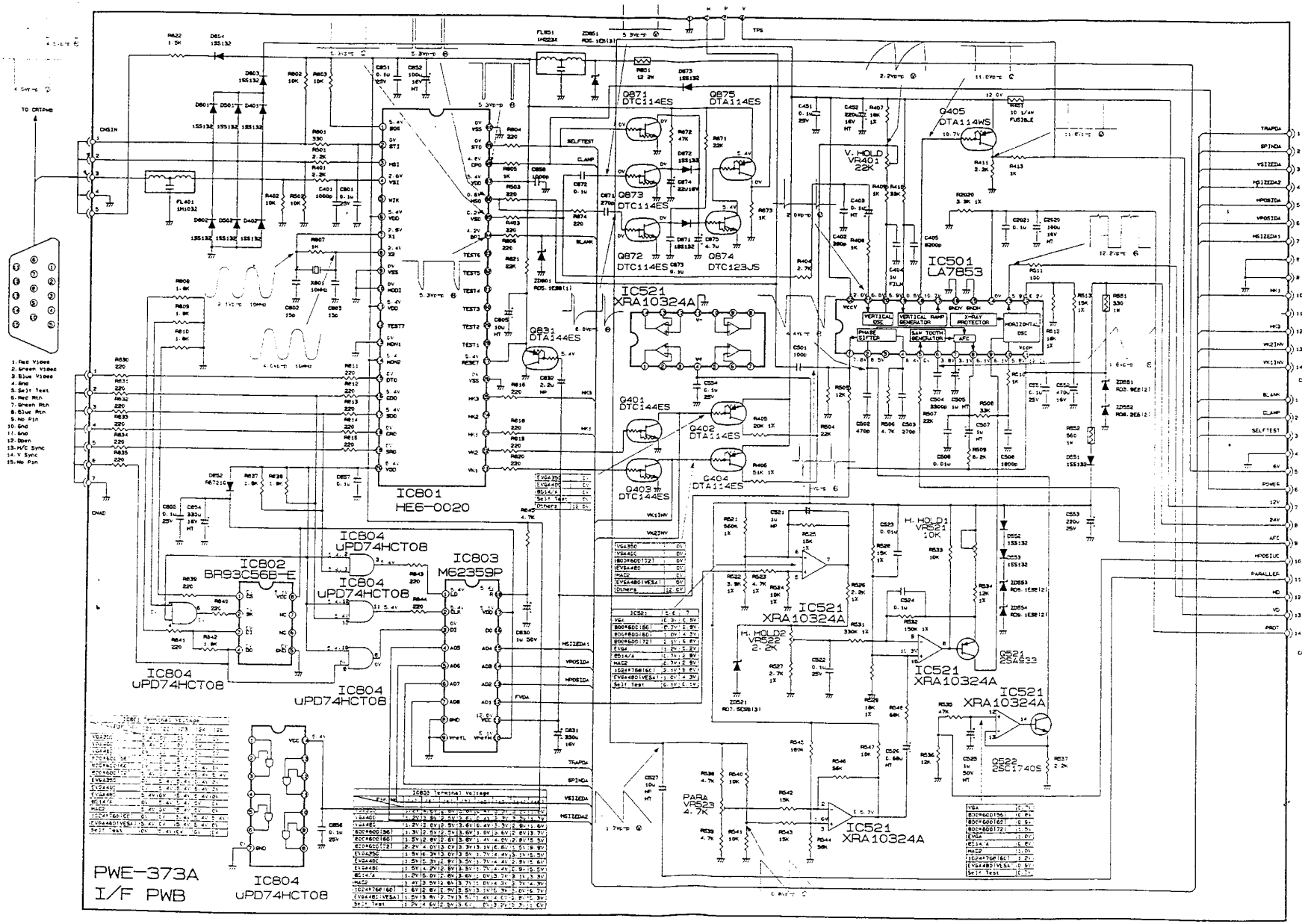
NOTES

1. RESISTOR VALUES ARE IN Ω(OHM) K = 1,000Ω M = 1,000,000Ω
2. ALL RESISTORS ARE 1/6WATT EXCEPT WHERE OTHERWISE INDICATED.
3. CAPACITOR VALUES ARE IN uF UNLESS OTHERWISE INDICATED. P = PF
4. ALL CAPACITORS ARE 50VOLTS EXCEPT WHERE OTHERWISE INDICATED.
5. VOLTAGES AND WAVEFORMS ARE MEASURED UNDER THE CHARACTER SIGNALS IN THE CONDITIONS OF CONTRAST AND BRIGHTNESS CONTROLS ARE MAXIMUM AND ALL OTHER CONTROLS ARE NORMAL OPERATION.
6. θ — HORIZONTAL RATE. Ø — VERTICAL RATE.
7. VOLTAGES AND WAVEFORMS ARE MEASURED UNDER THE FOLLOWING SYNC AND VIDEO. EXCEPT WHERE OTHERWISE INDICATED.
   SYNC : HORIZONTAL RATE 31.5KHz TTL LEVEL NEGATIVE.
   VERTICAL RATE 60Hz TTL LEVEL NEGATIVE.
   VIDEO : ANALOG 0.7Vp-p POSITIVE.
8. (N) — THE PARTS FOR NEC CRT
   (H) — THE PARTS FOR HITACHI CRT
   (P) — THE PARTS FOR PHILIPS CRT
9. (M) — THE PARTS FOR MURATA FBT
   (S) — THE PARTS FOR SANYO FBT
10. A ver. — MODEL FOR JC-1535VMA
    B ver. — MODEL FOR JC-1535VMB
    A ver. — MODEL FOR JC-1535VMA

WARNING

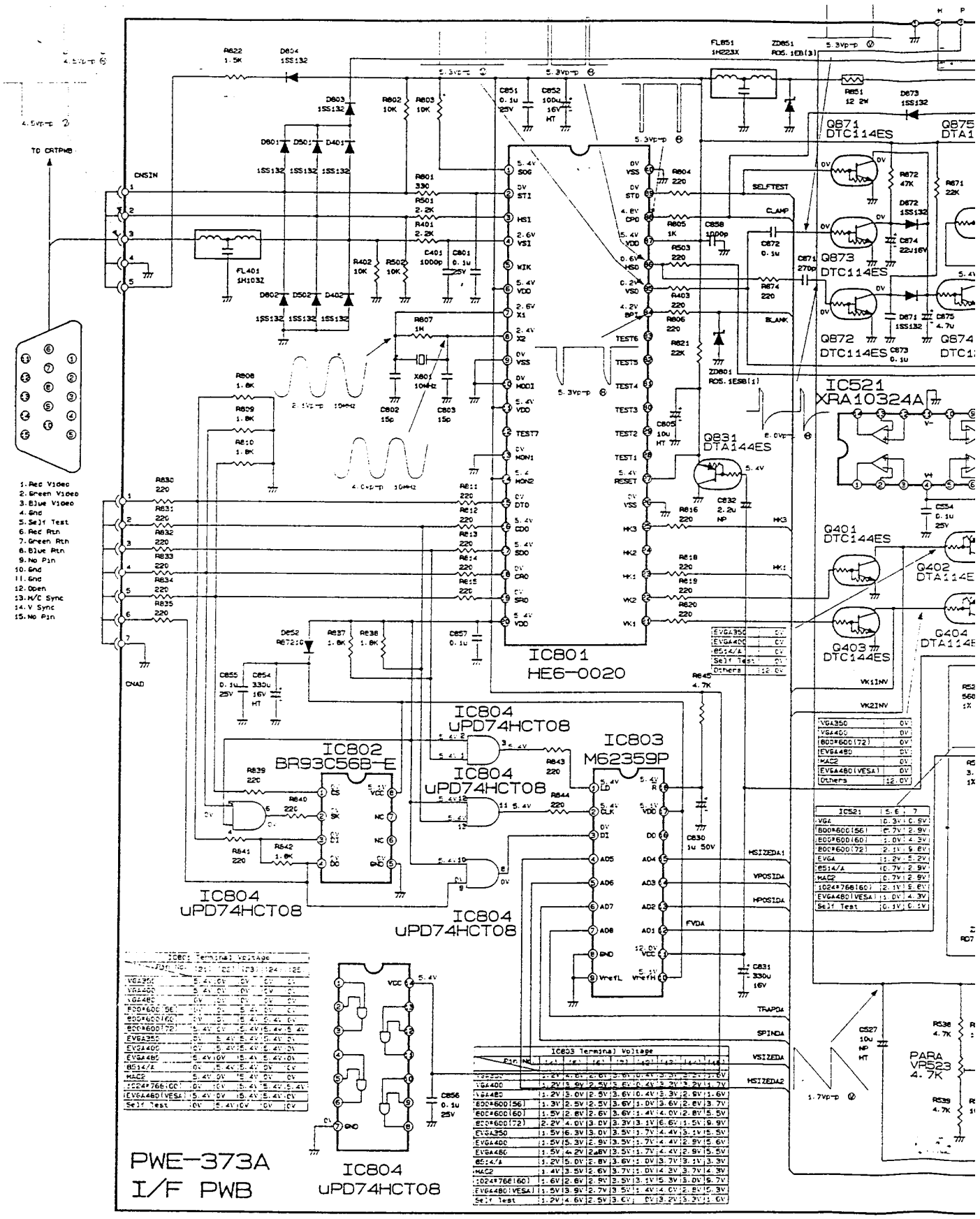
REPLACEMENT PARTS WHICH HAVE SPECIAL SAFETY CHARACTERISTICS ARE IDENTIFIED BY ⚠ SHADING ON THE SCHEMATICS.
REPLACE THESE CRITICAL COMPONENTS WITH RECOMMENDED REPLACEMENT PARTS.
DON'T DEGRADE THE SAFETY OF THE SET THROUGH IMPROPER SERVICING.
CONTROLS MARKED * IS PERMANENTLY FROZEN.
DO NOT ATTEMPT TO DEFEAT OR IMPROPERLY REPLACE.

MODEL JC-1535VMA/B/R I/F PWB SCHEMATIC DIAGRAM

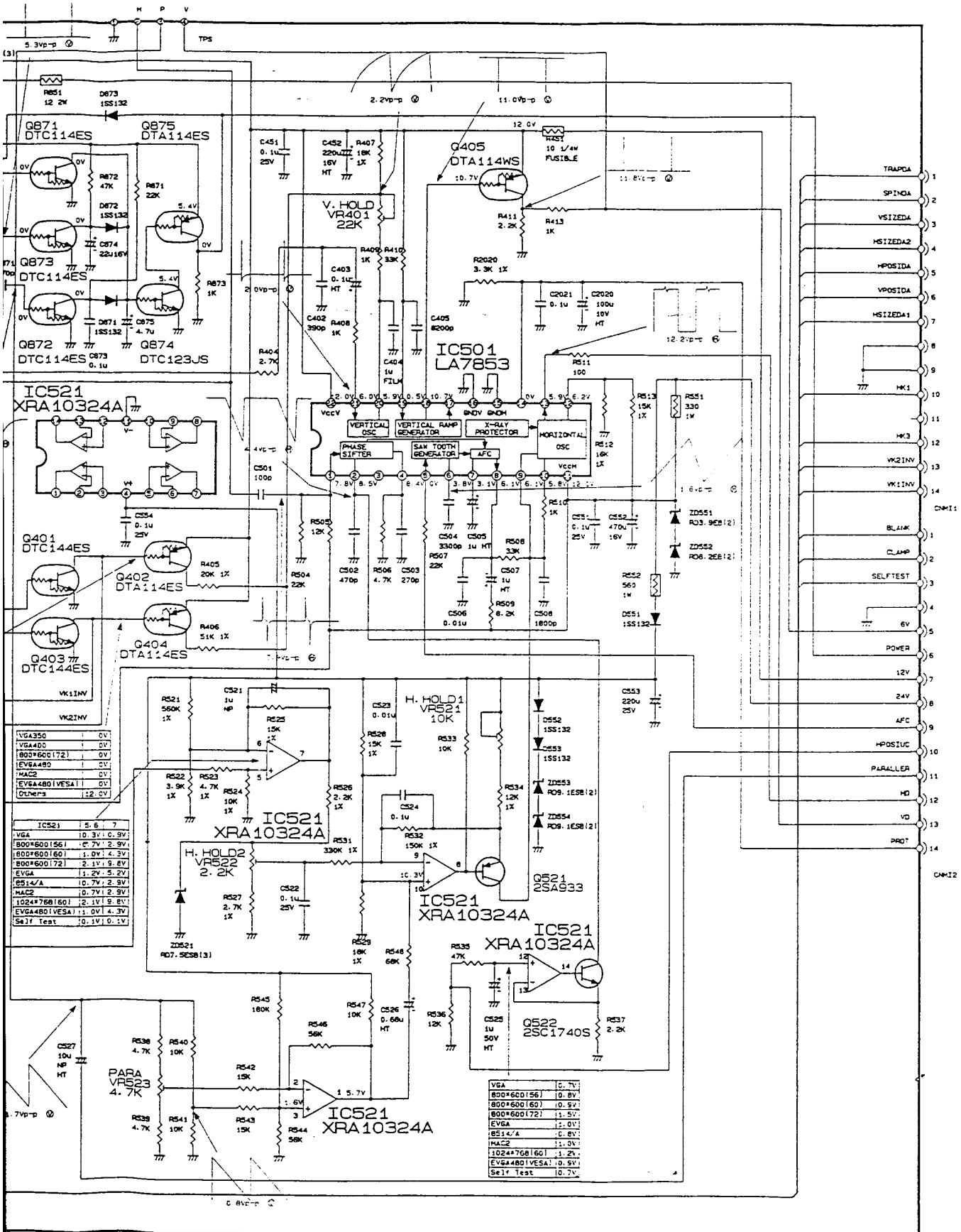


08119757
~08119762 (1/6)

MODEL JC-1535VMA/B/R I/F PWB SCHEM



B SCHEMATIC DIAGRAM



08119757
~08119762 (1/6)