ORDER NO. TD8210681S1

Service Manual

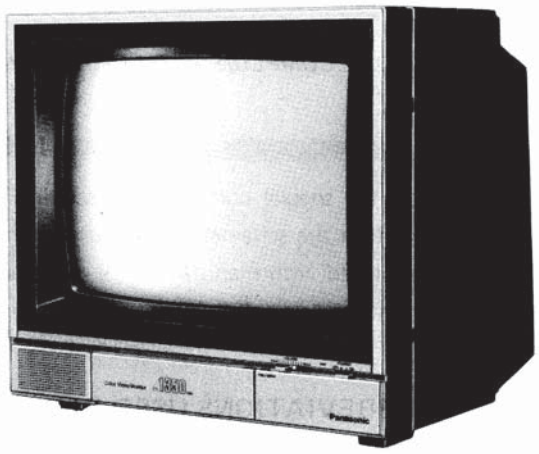
Supplement

Color Video Monitor

CT-1350MG

KS-1 chassis

Please use this manual together with the service manual for Model No. CT-1350MG
Order No. ITD8108538C1.



Please check the serial number on the front panel and back cabinet before servicing.
The CT-1350MG color video monitor sets with the serial No. CA2610001 and after have been qualified as an item of Class B computing device pursuant to Subpart J of Part 15 of FCC Rules.
When servicing these sets, refer to this manual as well as the CT-1350MG original service manual (Order No. ITD8108538C1).

The only electrical differences between class A and class B of the CT-1350MG.

Board Name	CT-1350MG	
	Class A	Class B
F-Board	TNP71561	None
V-Board	TNP71560	TNP71563
Z-Board	None	TNP71562

Panasonic

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CONTENTS

THIS MODEL COMPLIES WITH DHHS RULES 21 CFR SUBCHAPTER J APPLICABLE AT DATE OF MANUFACTURE.

IMPORTANT SAFETY NOTICE

There are special components used in Panasonic Monitor sets which are important for safety, These parts are shaded on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of Matsushita Electric.

ABBREVIATIONS USED IN THIS MANUAL

ABL Automatic Beam Limiter
ACC Automatic Color Control
APF Active Power Filter
APC Automatic Phase Control
CRT Cathode Ray Tube
DY Deflection Yoke
FBT Flyback Transformer
OTL Output Transformerless
SEPP Single-Ended Push-Pull Circuit
VTVM Vacuum Tube Volt Meter
ATT Attenuator

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. It is advisable to insert an isolation transformer in the AC supply before servicing a hot chassis.
2. When servicing, observe the original lead dress; especially the lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
3. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers, shields, and isolation R-C combinations, are properly installed.
4. Before turning the receiver on, measure the resistance between B+ line and chassis ground. Connect ⊖ side of an ohmmeter to the B+ lines, and ⊕ side to chassis ground. Each line should have more resistance than specified, as follows:

B+ Line	Minimum Resistance
115V	100kΩ
24V	280Ω
12V	280Ω

5. When the TV set is not used for a long period of time, unplug the power cord from the AC outlet.
6. Potentials, as high as 25.0 kV are present when this monitor is in operation. Operation of the monitor without the rear cover involves the danger of a shock hazard from the monitor power supply. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high-voltage equipment. Always discharge the anode of the picture tube to the receiver chassis before handling the tube.
7. After servicing make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Turn on the receiver's power switch.
3. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the receiver, such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between 240 kΩ and 5.2 MΩ.
   When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

LEAKAGE CURRENT HOT CHECK (See figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5 kΩ, 10 watts resistor, in parallel with a 0.15 μF capacitor, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the receiver should be repaired and rechecked before it is returned to the customer.

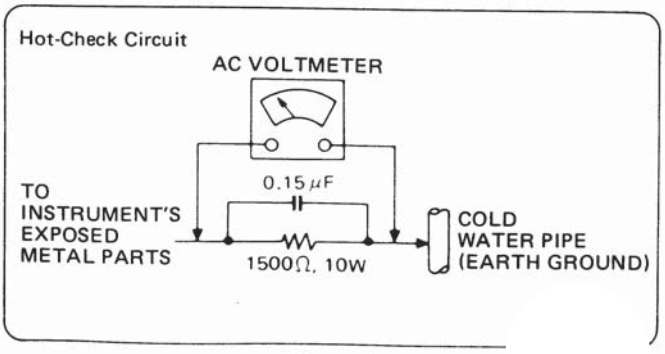


Figure 1

X-RADIATION

WARNING: 1. The potential source of X-Radiation in TV sets is the High Voltage section and the picture tube.
2. When using a picture tube test jig for service, ensure that jig is capable of handling 25.0 kV without causing X-Radiation.

NOTE: It is important to use an accurate periodically calibrated high voltage meter.

1. Turn the Brightness control fully counterclockwise.
2. Set the SERVICE switch to SERVICE.
3. Measure the High Voltage. The meter reading should indicate 23.5kV ± 1.5kV. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
4. To prevent an X-Radiation possibility, it is essential to use the specified picture tube.

HORIZONTAL OSC. DISABLE CIRCUIT TEST

SERVICE WARNING: The test must be made as a final check before set is returned to the customer.

1. With the rear cover removed, supply a nominal 120V AC to the set and turn on the power switch.
2. Adjust the customer controls to normal operating positions.
3. Short between TP801 and TP802 on the Z-Board with a jumper wire.
4. Confirm that the picture tube screen blacks out (horizontal oscillation stops).
   Turn the power switch off as soon as picture blacks out, otherwise D814 and C816 will be damaged.
5. If this does not occurs, the horizontal oscillator disable circuit is not operating.
   Follow the Repair Procedures of Horizontal Oscillator Disable Circuit before the set is returned to customer.

REPAIR PROCEDURES OF HORIZONTAL OSCILLATOR DISABLE CIRCUIT

1. Connect a DC voltmeter between the cathode of D511 and chassis ground of the main circuit board.
2. If nearly +9.0V is not present that point, find the cause by checking R519, C535 and D511, and if it is, check IC401, C507 and R509.
3. Carefully check above specified parts, and related circuits and parts.
   When the circuit is repaired, try the horizontal oscillator disable circuit test again.

BASIC CONNECTIONS OF VIDEO/AUDIO TERMINALS

[Video/Audio Terminals]

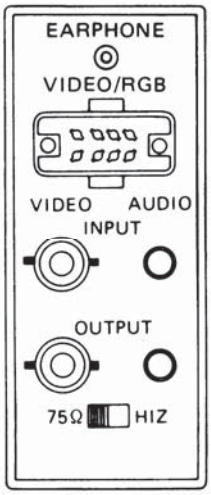
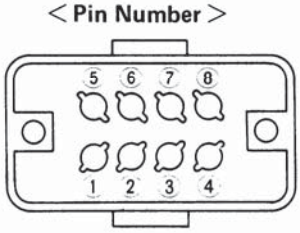


Figure 2

VIDEO/RGB Terminals

An 8 pin socket is provided to apply VIDEO/RGB signals.
Pin connections are as follows:



① Audio Input ⑤ GND
② Video Input ⑥ GND
③ R Input ⑦ Sync. Input
④ G Input ⑧ B Input

Figure 3

Signal level and Terminal Impedance

Terminal \ Item			Level	Impedance	Remarks
VIDEO	INPUT		1Vp-p / 2Vp-p	75Ω /HIZ	Video Signal includes Sync. Signal
	OUTPUT		1Vp-p / 2Vp-p	75Ω /HIZ	
AUDIO	INPUT		0 dB	100kΩ	1V rms = 0 dB 400 Hz
	OUTPUT		0 dB	100kΩ	
VIDEO/RGB	VIDEO INPUT	VIDEO	1Vp-p / 2Vp-p	75Ω /HIZ	Video Signal includes Sync. Signal
		AUDIO	0 dB	100kΩ	1Vrms = 0 dB 400 Hz
	RGB and Sync. INPUT		TTL 2Vp-p ∫ 5Vp-p (MAX)		Video and Composite Sync. Signal are Separated.

Table 1

[Impedance Selector Switch] (75 Ω or HIZ)

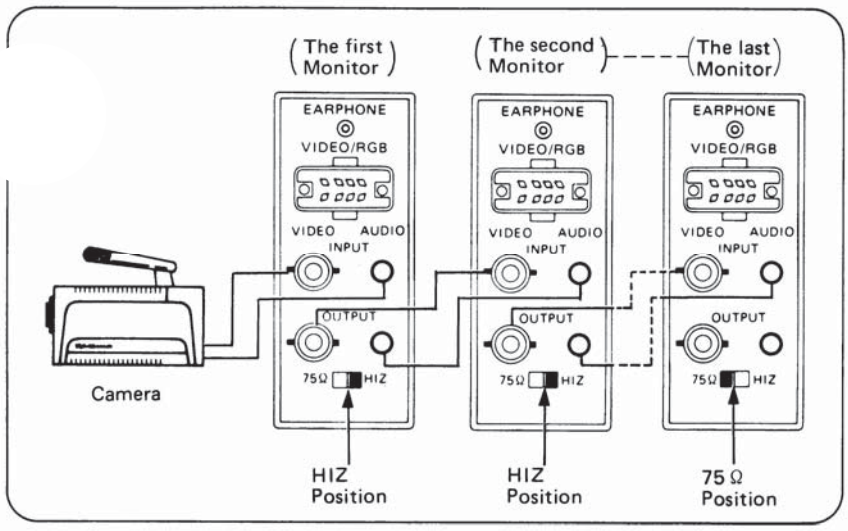


Figure 4

Video and Audio Input Terminals

Two BNC connectors are provided for the video signal input and two RCA sockets for the audio signal input. For bridge connection of signals, these video and audio terminals are respectively directly connected on the back panel. This makes it possible to take the signal out of the video and audio terminal which were applied to the input terminals.

For video signal bridge connection, however, the last set of the hookup must be terminated in 75Ω.

(For instance, if ten monitors are bridge-connected, impedance switches on the first to ninth sets must be set to HIGH impedance (HIZ), and tenth set, it must be set to 75Ω.)

If terminated midway, ghosts will appear due to signal reflection or the picture will become otherwise abnormal due to degraded frequency response.

As the number of sets connected increases and the signal travels further, both gain and frequency response decrease. Degradation of chroma carrier level with RG-59/U cable is shown in below for reference.

Distance	Gain	Frequency Response
100 m	–0.5 dB	–2 dB
500 m	–1.4 dB	–10 dB
1000 m	–2.1 dB	–19 dB

Table 2

Note: 8-pin Video input terminal pin number ② is connected to BNC terminal and 8-pin Audio input terminal pin number ① is connected to RCA terminal both is in series.

Do not apply signals to both the 8-pin input terminal and BNC terminal simultaneously.

[Application with other equipment]

Terminal		Signal	Equipment	Remarks
INPUT		Line-in Signal from other equipment	VTR/Video Camera	Line-in and line-out connectors are bridged. (connected in parallel)
OUTPUT		Line-in Signal	Monitor or VTR	When this connectors is not used, impedance select switch should be set to 75 ohms position. When another monitor's line-in is connected to this monitor's line-out connector, the impedance select switch should be set to HIZ position. The last monitor in the series of monitors should then have it's switch set to 75 ohms.
VIDEO/RGB (8-pin)	VIDEO IN	Video/Audio Signal in from VTR	1/2 inch VTR, 1/2, 3/4 inch VCR and VHS VCR	
VIDEO/RGB (8-Pin)	RGB IN	RGB Signal	Microcomputer	Video and Composite (Horizontal and Vertical) Sync. Signal are Separated.

Table 3

[Connectors]

Video Input (Bridging): 1.0Vp-p, High impedance or 75Ω switchable, BNC-type bridging, connector.

Audio Input (Bridging): RCA-type connector

VIDEO/RGB Input: 8-pin connector

CIRCUIT EXPLANATION

HORIZONTAL OSC. DISABLE CIRCUIT

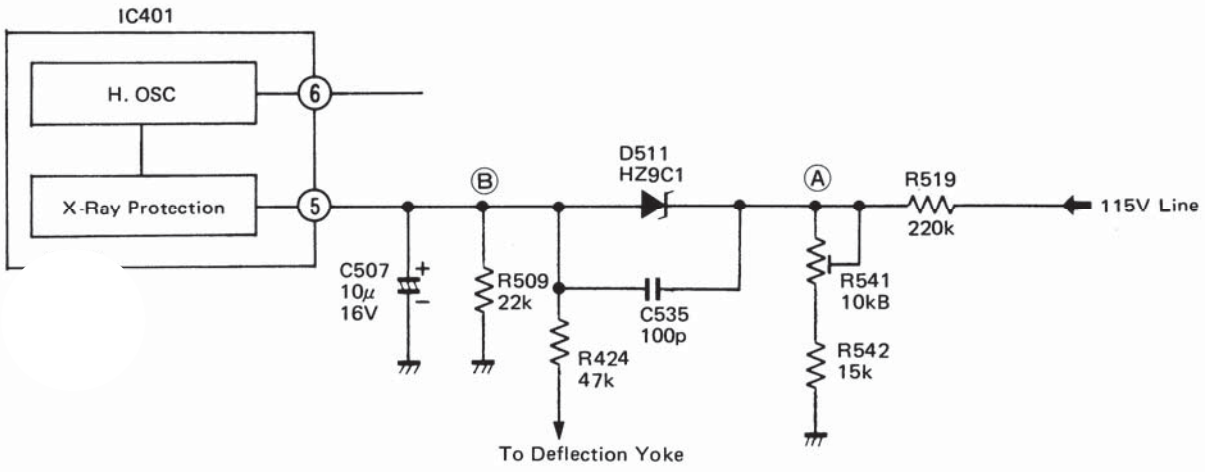


Figure 5

1. OPERATING DESCRIPTIONS

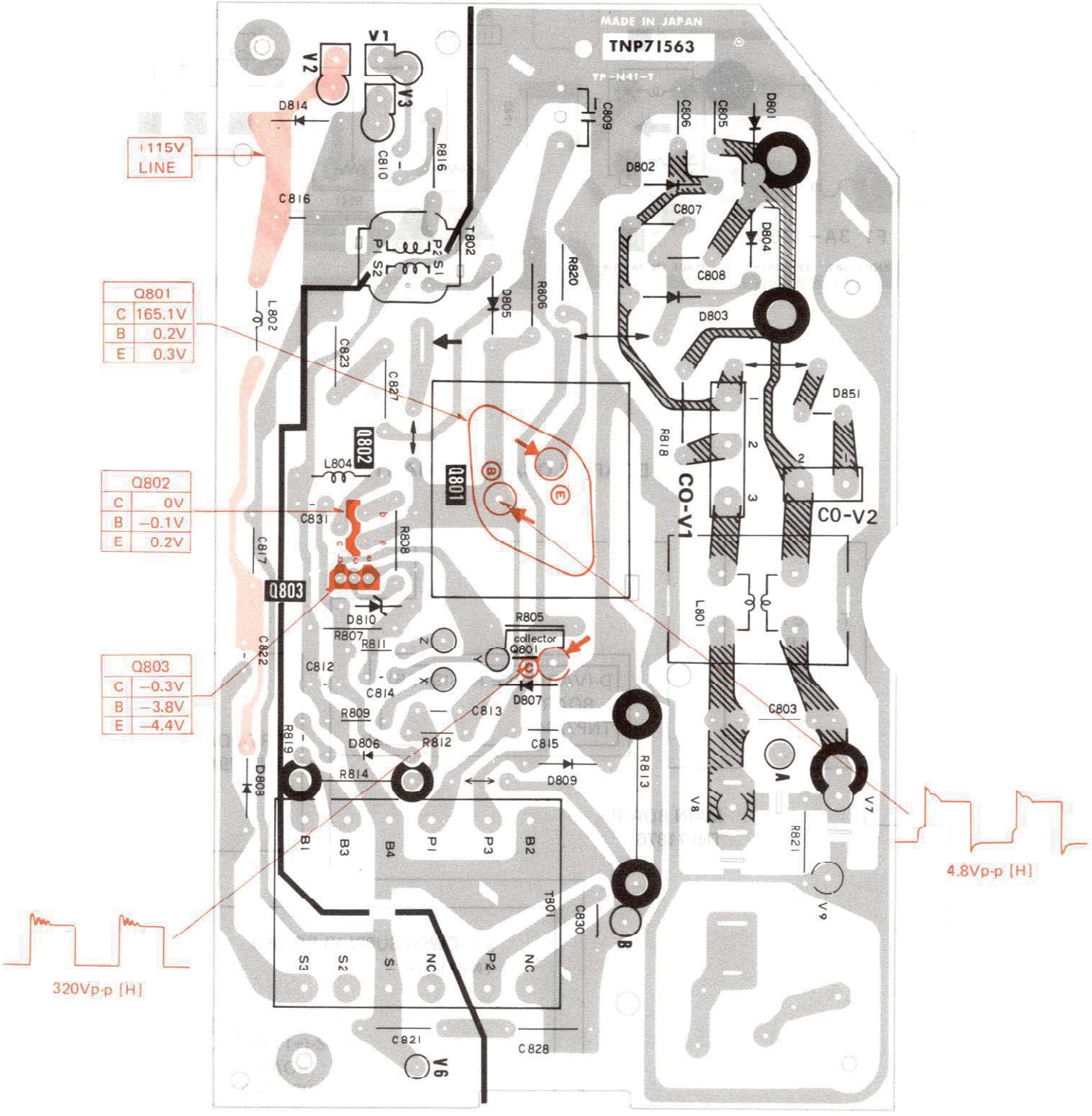
1. When the 115V line voltage rises abnormally, the voltage at point Ⓐ also rises.
2. When the voltage at point Ⓐ exceeds a certain level, D511 is turned on and the voltage at point Ⓑ rises. As a result, the X-ray protection circuit connected to pin ⑤ of IC401 functions, stopping horizontal oscillation and high voltage generation.

2. DRIVE FUNCTION

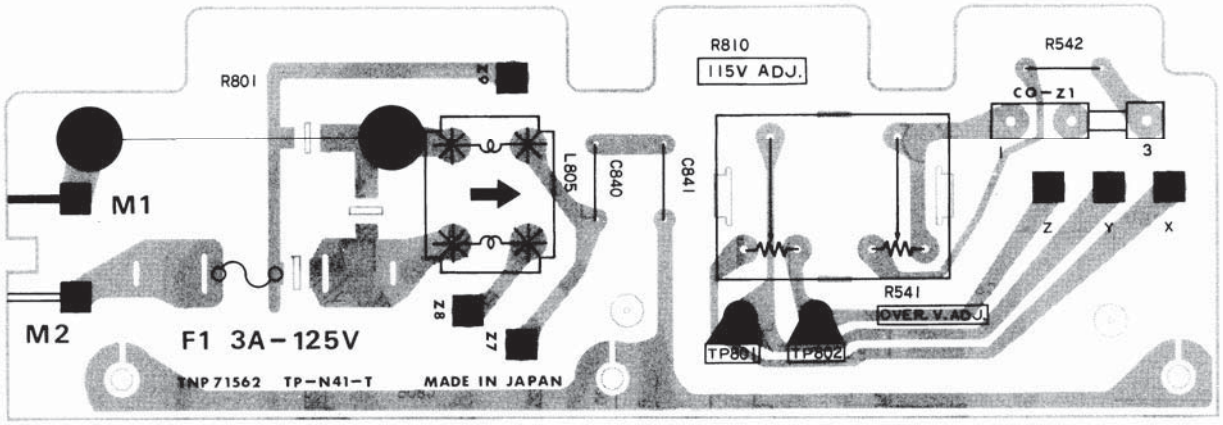
1. R519, R541 and R542 divide the 115V line voltage, and apply it to the cathode of D511.
2. D511 prevents the voltage at point Ⓑ from rising until the voltage at point Ⓐ exceeds a certain level.
3. C507 removes noise at point Ⓑ to prevent erroneous operations.
4. R509 provides a bias to the circuit connected to pin ⑤ of IC401 to help the overvoltage protection circuit of IC401 function easier.
5. C535 reduces noise at D511.
6. R424 applies voltage to point Ⓑ to actuate the X-ray protection circuit when the deflection yoke is defective.

CONDUCTOR VIEWS

V-BOARD TNP71563



Z-BOARD TNP71562



CIRCUIT BOARD LOCATION CHART

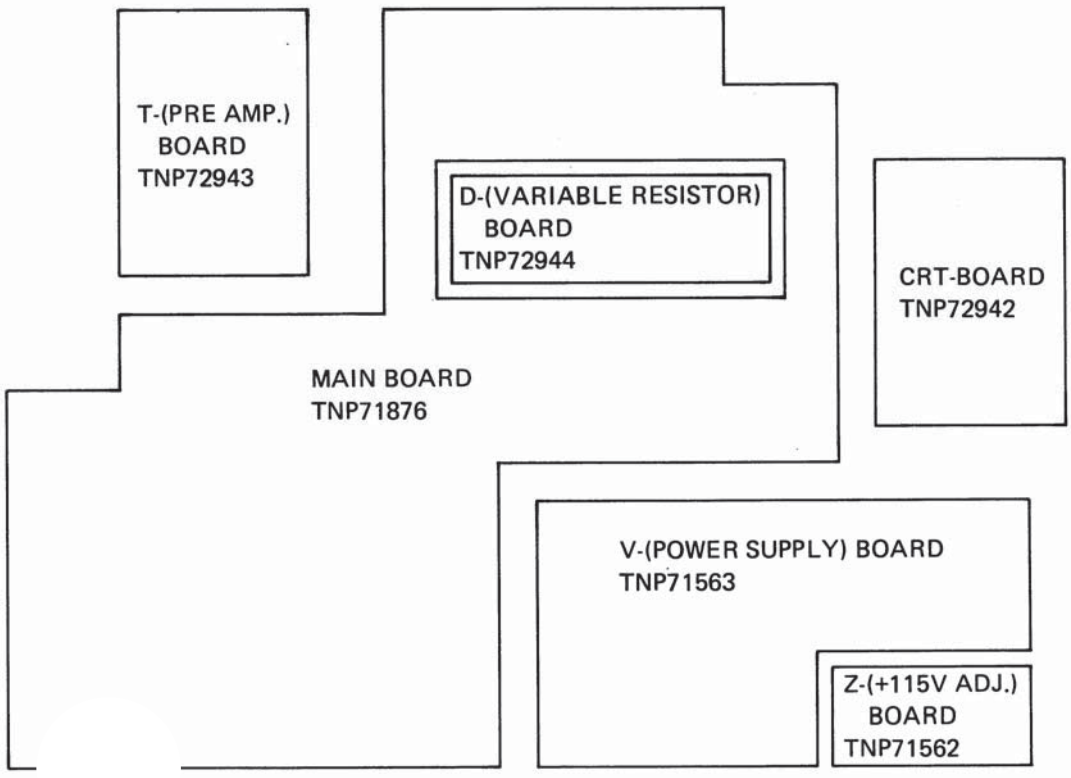
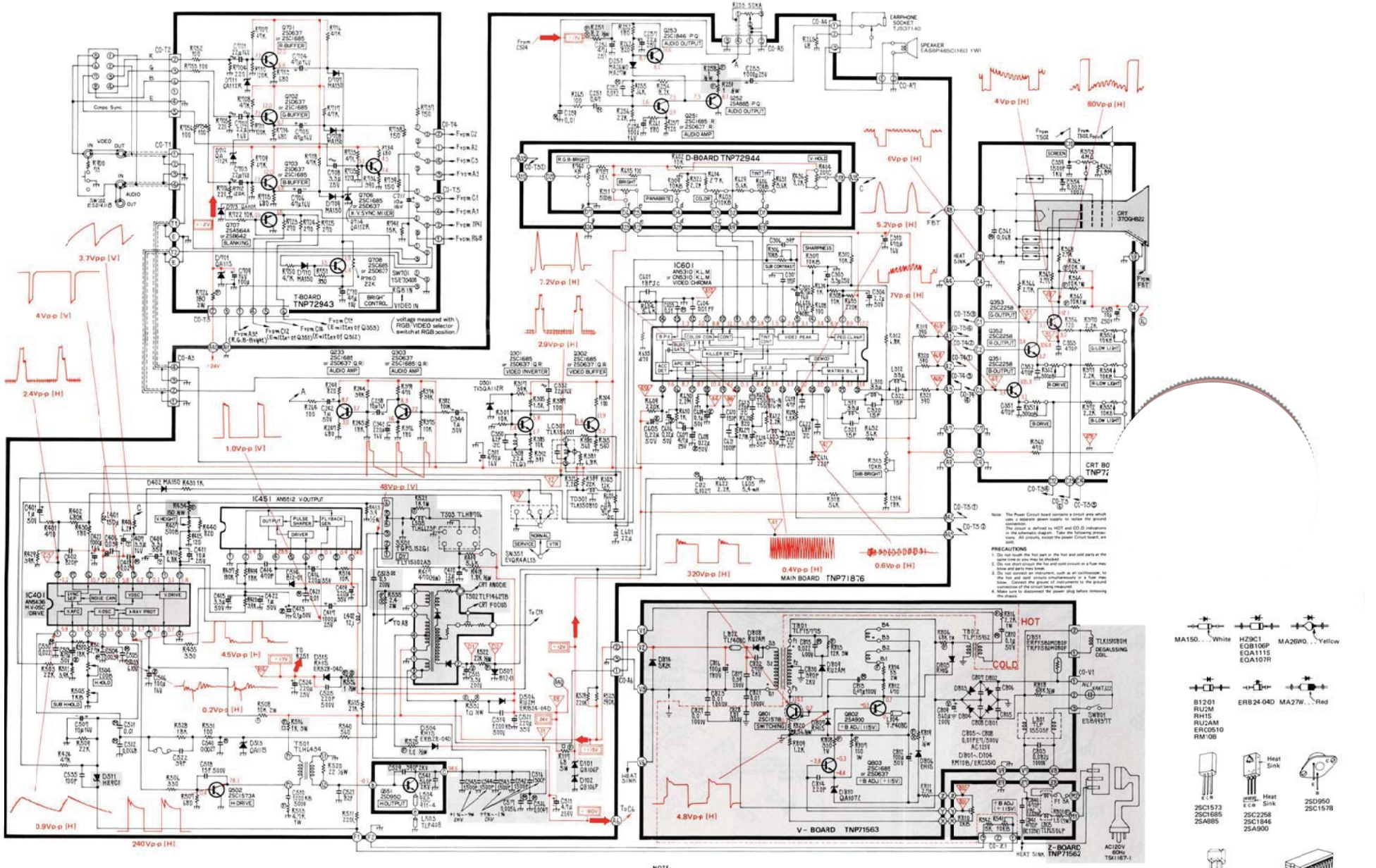


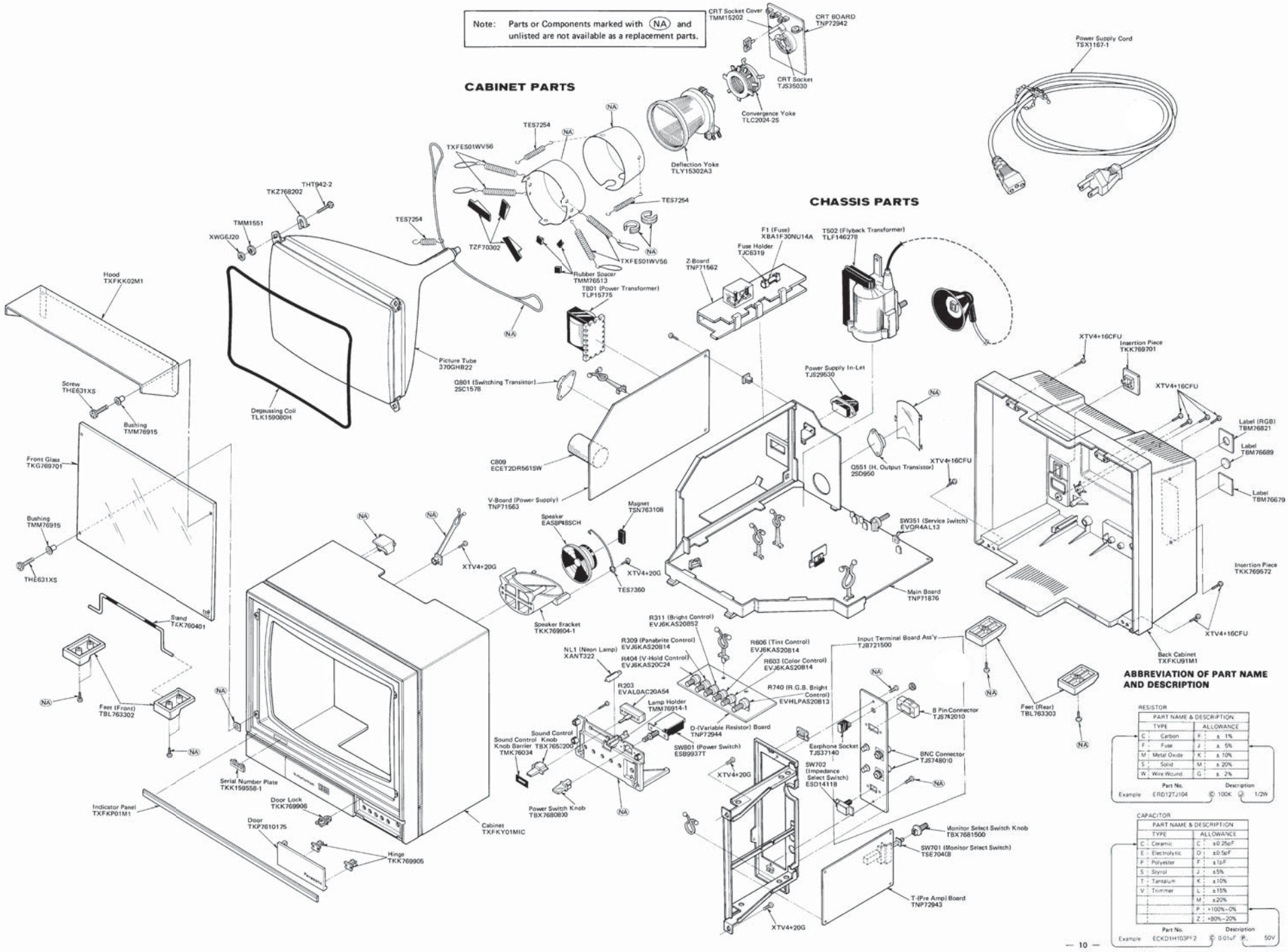
Figure 6

SCHEMATIC DIAGRAM FOR MODEL CT-1350MG (CHASSIS NO. NMX-KS-1)



EXPLODED VIEWS

Note: Parts or Components marked with (NA) and unlisted are not available as a replacement parts.



ABBREVIATION OF PART NAME AND DESCRIPTION

RESISTOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Carbon	F	± 1%
F	Fuse	J	± 5%
M	Metal Oxide	K	± 10%
S	Solid	M	± 20%
W	Wire Wound	G	± 2%

Part No. Description
Example ERD12TJ104 (C) 100K (J) 1/2W

CAPACITOR

PART NAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Ceramic	C	±0.25pF
E	Electrolytic	D	±0.5pF
F	Polyester	F	±1pF
S	Styrol	J	±5%
T	Tantalum	K	±10%
V	Trimmer	L	±15%
		M	±20%
		P	+100%–0%
		Z	+80%–20%

Part No. Description
Example ECKD1H103PF2 (C) 0.01uF (P) 50V

REPLACEMENT PARTS LIST

Important Safety Notice

Components identified by shaded area have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

Ref. No.	Part No.	Description
	RESISTORS	
R 117	ERF5AJ680	W 68OHM, J 5W
R 203	EVALOAC20A54	CONTROL 50KOHMA
R 244	ERD25TJ393	C 39KOHM, J,1/4W
R 245	ERD25TJ183	C 18KOHM, J,1/4W
R 247	ERD25TJ681	C 680OHM, J,1/4W
R 249	ERD25TJ821	C 820OHM, J,1/4W
R 251	ERQ12HJ8R2	F 8.2OHM, J, 1/2W
R 252	ERD25TJ181	C 180OHM, J,1/4W
R 254	ERD25TJ822	C 8.2KOHM, J,1/4W
R 255	ERD25TJ563	C 56KOHM, J,1/4W
R 256	ERD25TJ223	C 22KOHM, J,1/4W
R 257	ERD25TJ121	C 120OHM, J,1/4W
R 258	ERD12FJ1R0	C 1OHM, J, 1/2W
R 259	ERD12FJ1R0	C 1OHM, J, 1/2W
R 260	ERD25TJ680	C 68OHM, J,1/4W
R 261	ERD25TJ181	C 180OHM, J,1/4W
R 262	ERD25TJ821	C 820OHM, J,1/4W
R 264	ERD25TJ101	C 100OHM, J,1/4W
R 265	ERD25TJ101	C 100OHM, J,1/4W
R 301	ERD25TJ103	C 10KOHM, J,1/4W
R 302	ERD25TJ391	C 390OHM, J,1/4W
R 303	ERD25TJ122	C 1.2KOHM, J,1/4W
R 304	ERD25TJ101	C 100OHM, J,1/4W
R 305	ERD25TJ152	C 1.5KOHM, J,1/4W
R 306	EVTSOAA00B14	CONTROL 10KOHMB
R 307	EVH4TAS20B14	CONTROL 10KOHMB
R 308	ERD25TJ103	C 10KOHM, J,1/4W
R 309	EVJ6KAS20B14	CONTROL 10KOHMB
R 310	ERD25TJ103	C 10KOHM, J,1/4W
R 311	EVJ6KAS20B52	CONTROL 500OHMB
R 312	ERD25TJ682	C 6.8KOHM, J,1/4W
R 313	EVTSOAA00B14	CONTROL 10KOHMB
R 314	ERD25TJ183	C 18KOHM, J,1/4W
R 315	ERD25TJ561	C 560OHM, J,1/4W
R 317	ERD25TJ393	C 39KOHM, J,1/4W
R 318	ERD25TJ563	C 56KOHM, J,1/4W
R 319	ERD25TJ391	C 390OHM, J,1/4W
R 320	ERD25TJ391	C 390OHM, J,1/4W
R 321	ERD25TJ391	C 390OHM, J,1/4W
R 322	ERD25TJ222	C 2.2KOHM, J,1/4W
R 323	ERD25TJ222	C 2.2KOHM, J,1/4W
R 351	EVTSOAA00B32	CONTROL 300OHMB
R 352	EVTSOAA00B32	CONTROL 300OHMB
R 353	EVTSOAA00B14	CONTROL 10KOHMB
R 354	EVTSOAA00B14	CONTROL 10KOHMB
R 355	EVTSOAA00B14	CONTROL 10KOHMB
R 356	ERD25TJ121	C 120OHM, J,1/4W
R 360	ERD25TJ471	C 470OHM, J,1/4W
R 362	ERC12ZGK185	S 1.8MOHM, K,1/2W
R 363	ERG1ANJ103H	M 10KOHM, J, 1W
R 364	ERG1ANJ103H	M 10KOHM, J, 1W
R 365	ERG1ANJ103H	M 10KOHM, J, 1W
R 366	ERD25TJ272	C 2.7KOHM, J,1/4W
R 367	ERD25TJ272	C 2.7KOHM, J,1/4W
R 368	ERD25TJ272	C 2.7KOHM, J,1/4W
R 370	ERD25TJ222	C 2.2KOHM, J,1/4W
R 371	ERD25TJ222	C 2.2KOHM, J,1/4W
R 372	ERD25TJ222	C 2.2KOHM, J,1/4W
R 373	EVME0U00MB46	CONTROL 4MOHMB
R 374	ERD25TJ393	C 39KOHM, J,1/4W
R 375	ERD25TJ103	C 10KOHM, J,1/4W
R 376	ERD25TJ181	C 180OHM, J,1/4W
R 379	ERD25TJ471	C 470OHM, J,1/4W
R 380	ERD25TJ561	C 560OHM, J,1/4W
R 381	ERD25TJ682	C 6.8KOHM, J,1/4W
R 382	ERD25TJ104	C 100KOHM, J,1/4W
R 385	ERD25TJ103	C 10KOHM, J,1/4W
R 387	ERD25TJ101	C 100OHM, J,1/4W
R 389	ERD25TJ223	C 22KOHM, J, 1/4W
R 401	ERD25TJ471	C 470OHM, J,1/4W
R 402	ERD25TJ684	C 680KOHM, J,1/4W
R 404	EVJ6KAS20C24	CONTROL 20KOHMC
R 406	ERD25TJ622	C 6.2KOHM, J,1/4W
R 407	EVTSOAA00B52	CONTROL 500OHMB
R 410	ERD25TJ682	C 6.8KOHM, J,1/4W
R 413	ERD50TJ3R9	C 3.9OHM, J,1/2W
R 414	ERD25TJ183	C 18KOHM, J,1/4W
R 415	ERD25TJ121	C 120OHM, J,1/4W
R 417	ERD50TJ471	C 470OHM, J,1/2W
R 418	ERD50TJ182	C 1.8KOHM, J,1/2W
R 419	ERD25TJ562	C 5.6KOHM, J,1/4W
R 420	ERD25TJ392	C 3.9KOHM, J,1/4W
R 424	ERD25TJ473	C 47KOHM, J,1/4W
R 429	ERD25TJ393	C 39KOHM, J,1/4W
R 430	ERD25TJ181	C 180OHM, J,1/4W
R 433	ERD25TJ102	C 1KOHM, J,1/4W

Ref. No.	Part No.	Description
R 434	ERD50FJ151	C 150OHM, J,1/2W
R 435	ERD25TJ331	C 330OHM, J,1/4W
R 436	ERD25TJ822	C 8.2KOHM, J,1/4W
R 437	ERD25TJ184	C 180KOHM, J,1/4W
R 440	ERD25TJ821	C 820OHM, J,1/4W
R 503	ERD25TJ223	C 22KOHM, J,1/4W
R 504	EVTSOAA00B22	CONTROL 2000HMB
R 505	EVTSOAA00B13	CONTROL 1KOHMB
R 506	ERD25TJ331	C 330OHM, J,1/4W
R 507	ERD25TJ681	C 680OHM, J,1/4W
R 508	ERG2ANJ103H	M 10KOHM, J, 2W
R 509	ERD25TJ223	C 22KOHM, J,1/4W
R 510	ERD25TJ183	C 18KOHM, J,1/4W
R 511	ERD25TJ272	C 2.7KOHM, J,1/4W
R 512	ERD25TJ392	C 3.9KOHM, J,1/4W
R 513	ERG1ANJ472H	M 4.7KOHM, J, 1W
R 514	ERD25TJ103	C 10KOHM, J,1/4W
R 515	ERD25TJ273	C 27KOHM, J,1/4W
R 516	ERG3CJ102	M 1KOHM, J, 3W
R 519	ERD25TJ224	C 220KOHM, J,1/4W
R 520	ERD50TJ220	C 22OHM, J,1/2W
R 521	ERG1ANJ102	M 1KOHM, J, 1W
R 522	ERD12FG2202	C 22KOHM, G,1/2W
R 523	ERD25TJ394	C 390KOHM, J,1/4W
R 525	ERD50FJ1R0P	C 1OHM, J,1/2W
R 528	ERD25TJ183	C 18KOHM, J,1/4W
R 529	ERD25TJ224	C 220KOHM, J,1/4W
R 531	ERD25TJ101	C 1000HM, J,1/4W
R 532	ERQ12HJ1R0	F 1OHM, J,1/2W
R 535	ERQ2CJA2R4	F 2.4OHM, J, 2W
R 536	ERQ12HJ1R0	F 1OHM, J,1/2W
R 540	ERD25TJ561	C 560OHM, J,1/4W
R 541	EVTV3US15B14	CONTROL 10KOHMB
R 542	ERD25TJ153	C 15KOHM, J,1/4W
R 601	ERD25TJ560	C 56OHM, J,1/4W
R 602	ERD25TJ103	C 10KOHM, J,1/4W
R 603	EVJ6KAS20B14	CONTROL 10KOHMB
R 604	ERD25TJ562	C 5.6KOHM, J,1/4W
R 606	EVJ6KAS20B14	CONTROL 10KOHMB
R 608	ERD25TJ101	C 1000HM, J,1/4W
R 609	ERD25TJ224	C 220KOHM, J,1/4W
R 610	ERD25TJ102	C 1KOHM, J,1/4W
R 612	ERD25TJ222	C 2.2KOHM, J,1/4W
R 614	ERD25TJ272	C 2.7KOHM, J,1/4W
R 615	ERD25TJ101	C 1000HM, J,1/4W
R 618	ERD25TJ152	C 1.5KOHM, J,1/4W
R 620	ERD25TJ821	C 820OHM, J,1/4W
R 622	ERD25TJ222	C 2.2KOHM, J,1/4W
R 624	ERD25TJ102	C 1KOHM, J,1/4W
R 627	ERD25TJ272	C 2.7KOHM, J,1/4W
R 629	ERD25TJ562	C 5.6KOHM, J,1/4W
R 630	ERD25TJ225	C 2.2MOHM, J,1/4W
R 631	ERD25TJ562	C 5.6KOHM, J,1/4W
R 632	ERD25TJ563	C 56KOHM, J,1/4W
R 633	ERD25TJ224	C 220KOHM, J,1/4W
R 635	ERD25TJ471	C 470OHM, J, 1/4W
R 704	ERD25TJ221	C 220OHM, J,1/4W
R 705	ERD25TJ221	C 220OHM, J,1/4W
R 706	ERD25TJ221	C 220OHM, J,1/4W
R 707	ERD25TJ473	C 47KOHM, J,1/4W
R 708	ERD25TJ473	C 47KOHM, J,1/4W
R 709	ERD25TJ473	C 47KOHM, J,1/4W
R 710	ERD25TJ124	C 120KOHM, J,1/4W
R 711	ERD25TJ124	C 120KOHM, J,1/4W
R 712	ERD25TJ124	C 120KOHM, J,1/4W
R 713	ERD25TJ681	C 680OHM, J,1/4W
R 714	ERD25TJ681	C 680OHM, J,1/4W
R 715	ERD25TJ681	C 680OHM, J,1/4W
R 716	ERD25TJ473	C 47KOHM, J,1/4W
R 717	ERD25TJ473	C 47KOHM, J,1/4W
R 718	ERD25TJ473	C 47KOHM, J,1/4W
R 722	ERD25TJ103	C 10KOHM, J,1/4W
R 723	ERD25TJ271	C 270OHM, J,1/4W
R 724	ERD25TJ271	C 270OHM, J,1/4W
R 725	ERD25TJ271	C 270OHM, J,1/4W
R 726	ERG2ANJ181H	M 180OHM, J, 2W
R 733	ERD25TJ473	C 47KOHM, J,1/4W
R 734	ERD25TJ681	C 680OHM, J,1/4W
R 735	ERD25TJ124	C 120KOHM, J,1/4W
R 736	ERD25TJ391	C 390OHM, J,1/4W
R 737	ERD25TJ151	C 150OHM, J,1/4W
R 738	ERD25TJ151	C 150OHM, J,1/4W
R 739	ERD25TJ151	C 150OHM, J,1/4W
R 740	EWHLPAS20B13	CONTROL 1KOHMB
R 741	ERD25TJ153	C 15KOHM, J,1/4W
R 750	ERD25TJ472	C 4.7KOHM, J,1/4W
R 751	ERD25TJ331	C 330OHM, J,1/4W
R 752	ERD25TJ101	C 1000HM, J,1/4W
R 753	ERD25TJ101	C 1000HM, J,1/4W

Ref. No.	Part No.	Description
R 754	ERD25TJ101	C 100OHM, J,1/4W
R 756	ERD25TJ101	C 100OHM, J,1/4W
R 757	ERD25TJ153	C 15KOHM, J,1/4W
R 760	ERD25TJ223	C 22KOHM, J, 1/4W
R 801	ERF7AK1R5	W 1.5OHM, K, 7W
R 806	ERG1ANJ683H	M 68KOHM, J, 1W
R 807	ERG1ANJ151H	M 150OHM, J, 1W
R 808	ERG1ANJ331H	M 330OHM, J, 1W
R 809	ERD25TJ122	C 1.2KOHM, J,1/4W
R 810	EVTV3US15B23	CONTROL 2KOHMB
R 811	ERD25TJ272	C 2.7KOHM, J,1/4W
R 812	ERD25TJ471	C 470OHM, J,1/4W
R 813	ERG3ANJ123H	M 12KOHM, J, 3W
R 814	ERG2ANJ330H	M 33OHM, J, 2W
R 816	ERG1ANJ222H	M 2.2KOHM, J, 1W
R 818	ERD50TJ683	C 68KOHM, J,1/2W
R 819	ERQ12HJ1R0	F 1OHM, J,1/2W
R 820	ERW12PKR56	W 0.56OHM, K, 1/2W
R 900	ERD25TJ750	C 75OHM, J,1/4W
	CAPACITORS	
C 238	ECEA1CS100	E 10UF, 16V
C 242	ECEA1HS010	E 1UF, 50V
C 251	ECQM1H474KZ	P 0.47UF, K, 50V
C 252	ECQM1H123KZ	P 0.012UF, K, 50V
C 253	ECEA1ES102	E 1000UF, 25V
C 254	ECEA1CS101	E 100UF, 16V
C 255	ECEA1ES470	E 47UF, 25V
C 257	ECEA1ES220	E 22UF, 25V
C 259	ECQM1H103KZ	P 0.01UF, K, 50V
C 301	ECCF1H121K	C 120PF, K, 50V
C 302	ECEA1EN4R7S	E 4.7UF, 25V
C 303	ECEA1ES3R3	E 3.3UF, 25V
C 304	ECEA1HS2R2	E 2.2UF, 50V
C 306	ECCF1H390K	C 39PF, K, 50V
C 310	ECEA1CS471	E 470UF, 16V
C 311	ECEA1CS471	E 470UF, 16V
C 320	ECCF1H150K	C 15PF, K, 50V
C 321	ECCF1H150K	C 15PF, K, 50V
C 322	ECCF1H150K	C 15PF, K, 50V
C 332	ECEA1CN220S	E 22UF, 16V
C 343	ECEA1CS221	E 220UF, 16V
C 344	ECEA1HS010	E 1UF, 50V

Ref. No.	Part No.	Description
C 350	ECCF1H620JC	C 62PF, J, 50V
C 351	ECKF1H471KB	C 470PF, K, 50V
C 352	ECKF1H471KB	C 470PF, K, 50V
C 353	ECKF1H471KB	C 470PF, K, 50V
C 354	ECQE10222MV	P 2200PF, M, 1KV
C 358	ECEA2ES100	E 10UF, 250V
C 359	ECQE10152MV	P 1500PF, M, 1KV
C 361	ECQM1H683KZ	P 0.068UF, K, 50V
C 401	ECEA1HS010	E 1UF, 50V
C 402	ECKF1H821KB	C 820PF, K, 50V
C 406	ECQM1H393KZ	P 0.039UF, K, 50V
C 407	ECSZ16EF3R3V	T 3.3UF, 16V
C 409	ECSF35E3R3K	T 3.3UF, 35V
C 410	ECEA25N22Q	E 22UF, 25V
C 411	ECEA1ES100	E 10UF, 25V
C 413	ECEA50ZR1	E 0.1UF, 50V
C 414	ECKF1H471KB	C 470PF, K, 50V
C 415	ECEA1HS3R3	E 3.3UF, 50V
C 416	ECEA1VS221	E 220UF, 35V
C 417	ECEA1ES102	E 1000UF, 25V
C 418	ECQM1H273KZ	P 0.027UF, K, 50V
C 419	ECEA1VS221	E 220UF, 35V
C 420	ECEA1CS102	E 1000UF, 16V
C 421	ECQM1H103KZ	P 0.01UF, K, 50V
C 422	ECEA1HS010	E 1UF, 50V
C 501	ECQM1H103KZ	P 0.01UF, K, 50V
C 502	ECQM1H682KZ	P 6800PF, K, 50V
C 503	ECEA50Z4R7	E 4.7UF, 50V
C 504	ECQM1H392KZ	P 3900PF, K, 50V
C 505	ECQF6332KZ	P 3300PF, K,600V
C 506	ECEA16Z100	E 100UF, 16V
C 507	ECEA1CS100	E 10UF, 16V
C 510	ECKD2H122KB2	C 1200PF, K,500V
C 511	ECEA2ES4R7	E 4.7UF, 250V
C 515	ECEA2ES3R3	E 3.3UF, 250V
C 516	ECKD3D152KBU	C 1500PF, K, 2KV
C 517	ECQM1H562KZ	P 5600PF, K, 50V
C 518	ECCD2H150K	C 15PF, K, 500V
C 519	ECKD2H122KB2	C 1200PF, K,500V
C 521	ECEA1VS221	E 220UF, 35V
C 522	ECCF1H390J	C 39PF, J, 50V
C 523	ECQF2H304JZA	P 0.3UF, J,200V
C 524	ECEA1ES221	E 220UF, 25V
C 525	ECCD2H221K2	C 220PF, K,500V

Ref. No.	Part No.	Description
C 526	ECQM1H472KZ	P 4700PF, K, 50V
C 527	ECCF1H820K	C 82PF, K, 50V
C 529	ECKD3D391KBN	C 390PF, K, 2KV
C 530	ECQM1H223KZ	P 0.022UF, K, 50V
C 535	ECCF1H101K	C 100PF, K, 50V
C 540	ECQM1H272KZ	P 2700PF, K, 50V
C 541	ECKD3D561KBN	C 560PF, K, 2KV
C 542	ECKD3D152KBU	C 1500PF, K, 2KV
C 543	ECKD3D152KBU	C 1500PF, K, 2KV
C 544	ECKD3D152KBL	C 1500PF, K, 2KV
C 545	ECKD3D152KBL	C 1500PF, K, 2KV
C 601	ECCF1H180JC	C 18PF, J, 50V
C 603	ECQM1H103KZ	P 0.01UF, K, 50V
C 604	ECKF1H103ZF	C 0.01UF Z, 50V
C 605	ECEA50ZR22	E 0.22UF, 50V
C 606	ECEA50ZR22	E 0.22UF, 50V
C 607	ECEA1EN4R7S	E 4.7UF, 25V
C 608	ECEA50ZR22	E 0.22UF, 50V
C 609	ECEA50ZR1	E 0.1UF, 50V
C 610	ECCF1H151J	C 150PF, J, 50V
C 612	ECQM1H272KZ	P 2700PF, K, 50V
C 613	ECCF1H221JC	C 220PF, J, 50V
C 614	ECV1ZW50X32	TRIMMER
C 615	ECCF1H220JC	C 22PF, J, 50V
C 616	ECCF1H221K	C 220PF, K, 50V
C 617	ECCF1H560JC	C 56PF, J, 50V
C 618	ECCF1H470K	C 47PF, K, 50V
C 621	ECKF1H102KB	C 1000PF, K, 50V
C 622	ECCF1H680JC	C 68PF, J, 50V
C 701	ECEA1CN220S	E 22UF, 16V
C 702	ECEA1CN220S	E 22UF, 16V
C 703	ECEA1CN220S	E 22UF, 16V
C 704	ECEA1CS470	E 47UF, 16V
C 705	ECEA1CS470	E 47UF, 16V
C 706	ECEA1CS470	E 47UF, 16V
C 708	ECEA1EN3R3S	E 3.3UF, 25V
C 709	ECEA1CS101	E 100UF, 16V
C 710	ECEA1CS470	E 47UF, 16V
C 711	ECEA1CS100	E 10UF, 16V
C 803	ECQU1A823ME	P 0.082UF, M, 1KV
C 805	ECKM2H103PE7	C 0.01UF, P, 500V
C 806	ECKM2H103PE7	C 0.01UF, P, 500V
C 807	ECKM2H103PE7	C 0.01UF, P, 500V
C 808	ECKM2H103PE7	C 0.01UF, P, 500V
C 809	ECET2DR561SW	E 560UF, 200V
C 810	ECQM1H104KZ	P 0.1UF, K, 50V
C 812	ECEA1HS101	E 100UF, 50V
C 813	ECQE1474KZ	P 0.47UF, K, 100V
C 814	ECCF1H221K	C 220PF, K, 50V
C 815	ECQM6223MZ	P 0.022UF, M, 600V
C 816	ECEA180V100	E 100UF, 180V
C 817	ECQE2394KZ	P 0.39UF, K, 200V
C 821	ECQU1A103ME	P 0.01UF, M, 1KV
C 822	ECKD3D271KBN	C 270PF, K, 2KV
C 823	ECQU1A103ME	P 0.01UF, M, 1KV
C 827	ECQU1A103ME	P 0.01UF, M, 1KV
C 828	ECQU1A103ME	P 0.01UF, M, 1KV
C 830	ECKD3D391KB9	C 390PF, K, 2KV
C 840	ECKDEL471MB	C 470PF, 120V
C 841	ECKDEL471MB	C 470PF, 120V
	COILS	
L 308	TLQ220K126	PEAKING COIL 22U
L 310	TLQ330K126Y	PEAKING COIL 33U
L 311	TLQ330K126Y	PEAKING COIL 33U
L 312	TLQ330K126Y	PEAKING COIL 33U
L 401	TLT151K999G	PEAKING COIL 150U
L 402	TLT120K999G	PEAKING COIL 12U
L 503	TLP408	CHOKE COIL
L 504	TSC911-4	BEAD CHOKE
L 505	TLH6623P	LINEALITY COIL
L 601	TLT220K999G	PEAKING COIL 22U
L 603	TLT330K999G	PEAKING COIL 33U
L 605	TLT542K999G	PEAKING COIL 5.4M
L 606	TLP408	CHOKE COIL
L 801	TLP15503P	COIL, LINE FILTER
L 802	TLP408	CHOKE COIL
L 804	TLP408	CHOKE COIL
L 805	TLP6506P	LINE FILTER COIL
LC 301	TLK156001	TRAP COIL
TD 301	TLK150810	DELAY LINE
	TRANSFOMERS	
T 501	TLH6434	H-DRIVE TRANS.
T 502	TLF14627B	FLYBACK TRANS.
T 503	TLH8706	PCC TRANS.
T 801	TLP15775	POWER TRANS.
T 802	TLP15952	TRIGGER TRANS.

Ref. No.	Part No.	Description
	DIODES	
D 101	TVSQB106P	ZENER DIODE
D 102	TVSQB106P	ZENER DIODE
D 251	MA27W	DIODE
D 301	TVSQA112R	DIODE
D 402	MA150	DIODE
D 504	TVSRH1S	DIODE
D 506	TVSRU2M	DIODE
D 507	TVSERB12-01	DIODE
D 511	TVSHZ9C1	ZENER DIODE
D 513	TVSQA111S	ZENER DIODE
D 514	TVSERB12-01	DIODE
D 515	TVSRH1S	DIODE
D 701	TVSQA111S	
D 707	MA150	DIODE
D 708	MA150	DIODE
D 709	MA150	DIODE
D 710	MA150	DIODE
D 711	TVSQA112R	DIODE
D 712	TVSQA112R	DIODE
D 713	TVSQA112R	DIODE
D 714	TVSQA112R	DIODE
D 801	TVSC0510	DIODE
D 802	TVSC0510	DIODE
D 803	TVSC0510	DIODE
D 804	TVSC0510	DIODE
D 805	TVSRH1S	DIODE
D 806	TVSRH1S	DIODE
D 807	TVSRH1S	DIODE
D 808	TVSRU2AM	DIODE
D 809	TVSRU2AM	DIODE
D 810	TVSQA107R	ZENER DIODE
D 814	TVSSR2K	DIODE
D 851	ERPF5B0M080F	POSISTOR
	I.C	
IC 401	AN5436	H, V-OSC/DRIVE
IC 451	AN5512	V-OUTPUT
IC 601	AN5310	VIDEO/CHROMA
	TRANSISTORS	
Q 233	2SC1685-R	AUDIO AMP.
Q 251	2SC1685-R	AUDIO AMP.
Q 252	2SA885-PQ	AUDIO OUTPUT
Q 253	2SC1846-PQ	AUDIO OUTPUT
Q 301	2SC1685-R	VIDEO INVERTER
Q 302	2SC1685-R	VIDEO BUFFER
Q 303	2SC1685-R	AUDIO AMP.

Ref. No.	Part No.	Description
Q 351	2SC2258	B-OUTPUT
Q 352	2SC2258	R-OUTPUT
Q 353	2SC2258	G-OUTPUT
Q 502	2SC1573A	H-DRIVE
Q 551	2SD950	H-OUTPUT
Q 701	2SC1685-R	R-BUFFER
Q 702	2SC1685-R	G-BUFFER
Q 703	2SC1685-R	B-BUFFER
Q 706	2SC1685-R	H. SYNC. BUFFER
Q 707	2SA564A-R	BLANKING
Q 708	2SC1685-R	BRIGHT CONTROL
Q 801	2SC1578	SWITCHING
Q 802	2SA900	+B ADJ.
Q 803	2SC1685-R	+B ADJ.
	OTHERS	
	EAS8P48SCH	SPEAKER
	TBL763302	FEET (FRONT)
	TBL763303	FEET (REAR)
	TBM76679	LABEL
	TBM76689	LABEL
	TBM76821	LABEL (RGB)
	TBX7653200	SOUND CONTROL KNOB
	TBX7680800	POWER SWITCH KNOB
	TBX7681500	MONITOR SELECT SWITCH KNOB
	TES7254	SPRING (CRT)
	TXFES01WV56	SPRING (SHIELD CASE)
	TES7360	SPRING (SPEAKER)
	THT942-2	SCREW
	TJB721500	INPUT TERMINAL BOARD
	THE631XS	SCREW
	TJC6319	FUSE HOLDER
	TJS29530	POWER SUPPLY IN-LET
	TJS35030	CRT SOCKET
	TJS37140	EARPHONE SOCKET
	TJS742010	8 PIN CONNECTOR
	TJS748010	BNC CONNECTOR
	TJT487	1P HOUSING
	TJT488A	3P HOUSING
	TJT581A	6P HOUSING
	TJT662	2P HOUSING
	TJT683A	4P HOUSING
	TJT885	PIN CONNECTOR
	TKG769701	FRONT GLASS
	TKK769602	SERIAL NO. PLATE

Ref. No.	Part No.	Description
	TKK760401	STAND
	TXFKK02M1	HOOD
	TKK769701	INSERTION PIECE
	TKK769904-1	SPEAKER BRACKET
	TKK769905	HINGE
	TKK769906	DOOR LOCK
	TKP7610175	DOOR
	TKZ768202	CRT MOUNTING
	TLC2024-2S	CONVERGENCE YOKE
	TLK159080H	DEGAUSSING COIL
	TLY15302A3	DEFLECTION COIL
	TMK76034	SOUND VR KNOB BARRIER
	TMM76915	BUSHING
	TMM15202	CRT SOCKET COVER
	TMM1551	CRT CUSHION
	TMM76513	RUBBER SPACER
	TMM76914-1	LAMP HOLDER
	TNP71563	V-(POWER SUPPLY) BOARD
	TNP71562	Z-(115V) BOARD
	TNP71876	MAIN BOARD
	TNP72942	CRT BOARD
	TNP72943	T-(PRE AMP.) BOARD
	TNP72944	D-(VARIABLE RESISTOR) BOARD
	TPC761472	PACKING CASE
	TPD961016	CUSHION (TOP)
	TPD962016	CUSHION (BOTTOM)
	TPE744009	POLYETHYLEN BAG
	TQB611611-1	FAN BAG KIT
	TSN763108	MAGNET
	TSX1167-1	POWER SUPPLY CORD
	TXFKP01M1	INDICATOR PANEL
	TXFKU91M1	BACK CABINET
	TXFKY01M1C	CABINET
	TZF70302	DY ADJUSTMENT KIT
	XTV4+16CFU	SCREW
	XTV4+20G	SCREW
	XWG6J20	WASHER
	370GHB22	PICTURE TUBE
F 1	XBA1F30NU14A	FUSE 125V 3A
NL 1	XANT322	NEON LAMP
S 501	TGPS152G1	SPARK GAP
SW 351	EVQR4AL13	SWITCH (SVC-VTR)
SW 701	TSE70408	MONITOR SELECT SWITCH
SW 702	ESD1411B	IMPEDANCE SELECT SWITCH
SW 801	ESB9937T	POWER SWITCH
X 601	TSS816M	CRYSTAL OSCILATOR

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