ORDER NO. TD8301617C1

Service Manual

COLOR DISPLAY

CT-1300D/DT-D1300D

NMX-2G chassis

The service technician is required to read and follow the "Safety Precautions" and "Important Safety Notice" in this service manual.

Specifications

	CT-1300D	DT-D1300D
Power Source:	120 V AC, 60 Hz	120 V AC, 60 Hz
Power Consumption:	66 W	66 W
Anode Voltage:	24.5 kV $^{+1.0}_{-1.5}$ kV	24.5 kV $^{+1.0}_{-1.5}$ kV
CRT Size:	13" 90°, In-Line super dark	13" 90°, In-Line super dark (Non-Glare)
Dot Pictch:	0.52 mm	0.52 mm
Input Signal:		
* Composite signal:	1Vp-p (NEGATIVE, SYNC)	1Vp-p (NEGATIVE, SYNC)
* Data signal:	TTL (Positive)	TTL (Positive)
* H.D:	TTL (Negative)	TTL (Negative)
* V.D:	TTL (Negative)	TTL (Negative)
* AUDIO:	0.5 Vrms.	0.5 Vrms.
H. Frequency:	15.75 kHz	15.75 kHz
V. Frequency:	60 Hz	60 Hz
H. Blanking time:	10μsec.	10μsec.
V. Blanking time:	0.93 msec.	0.93 msec.
Data display time:	44.7 usec (H), 12.3 msec (V)	44.7 usec (H), 12.3 msec (V)
Display Size:	265 mm (H) x 165 mm (V)	265 mm (H) x 165 mm (V)
Display Colors	8	16
Input Connector:		
Composite signal	RCA Type for Video Audio	RCA Type for Video Audio
Separate signal	8 pin connector (square)	20 pin connector (square)
Linearity:	Less than 5%	Less than 5%
Raster Distortion:	Less than 3%	Less than 3%
Resolution (dot):	More than 400	More than 400
Display Characters:	Up to 2,000 (80 x 25 Format) characters	Up to 2,000 (80 x 25 Format) characters
Operating temperature:	32° F ~ 104° F (0°C ~ +40°C)	32° F ~ 104° F (0°C ~ +40°C)
Operating Humidity:	20% ~ 80%	20% ~ 80%
Dimensions:	Width 14 inches 356 mm	Width 14 inches 356 mm
	Height 12-11/16 inches 322 mm	Height 12-11/16 inches 322 mm
	Depth 15-17/32 inches 394 mm	Depth 15-17/32 inches 394 mm
Weight	22 lbs. (10 kg)	22 lbs. (10 kg)

Specifications are subject to change without notice.

Panasonic®

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CONTENTS

- PRODUCT COMPLIES WITH DHHS RULES 21 CFR SUBCHAPTER J IN EFFECT AS OF DATE OF MANUFACTURE.
- CERTIFIED TO COMPLY WITH THE LIMITS FOR CLASS B COMPUTING DEVICE PURSUANT TO SUBPART J OF PART 15 OF FCC RULES.
  SEE INSTRUCTIONS IF INTERFERENCE TO RADIO RECEPTION IS SUSPECTED.

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
175V	10kΩ
115V	1.5kΩ
24V	200Ω

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 25.5 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 highvoltage equipment. Always discharge the anode of the picture tube to horizontal heat sink 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 more than 1MΩ.
   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.

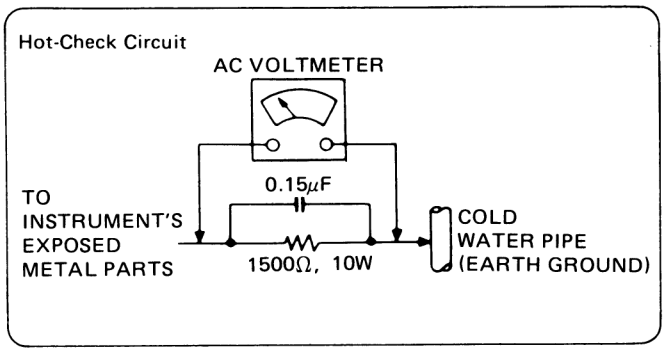


Figure 1

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 25.5kV 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 (electrostatic type) reading should indicate 24.5 kV $^{+\ 1.0}_{-\ 1.5}$ kV. 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

This test must be made as a final check before the set is returned to the customer.

1. With the rear cover removed, supply a nominal 120V AC to the set, turn on the power switch.
2. Set the customer controls to normal operating positions.
3. Make short circuit between TP91 and terminal number 4 of IC501 with a resistor of the value in range of 100 kΩ to 150 kΩ.
   Confirm that the picture falls out of horizontal sync. If this does not occur, gradually higher the AC power supply to 132V.
4. If this does not occur, the Horizontal Osc. Disable Circuit is not operating. Follow the Horizontal Oscillator Disable Circuit Repair Procedures before the set is returned to customer.

REPAIR PROCEDURES OF HORIZONTAL OSCILLATOR DISABLE CIRCUIT

1. Connect a DC voltmeter between capacitor C566 ⊕ on the main circuit board and chassis ground. If nearly +24.7V is not present on that point, find the cause. Check R561, C566 and D558.
2. Connect a DC voltmeter between pin ③ of IC401 on the main board and chassis ground.
   If nearly +2.1V is not present on that point, check R506, R505, R503, IC401 and IC501.
3. Carefuly check above specified parts and related circuits and parts. When the circuits is repaired, horizontal Oscillator Disable Circuit Test must be made again.

HOW TO REPLACE CHIPS (RESISTOR, CAPACITOR, JUMPER)

1. Remove solder from chip by using solder sucker. (soldering absorber or braided wire) as shown in figure 2.
2. Remove chip with tweezers by rotating it while removing solder as shown in figure 3.
3. Solder circuit board first and then solder chip in the direction of the arrow as shown in figure 4.

Notes:

1. Do not re-use a chip which is removed from P.C. Board.
2. Use lead wire with insulator for replacement of chip jumpers.

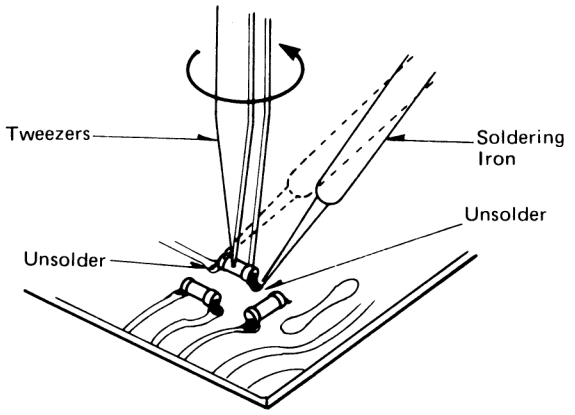
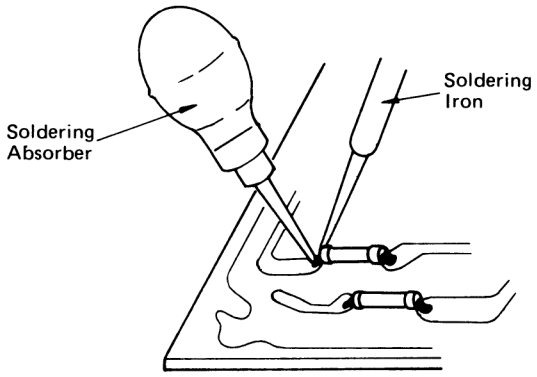


Figure 3



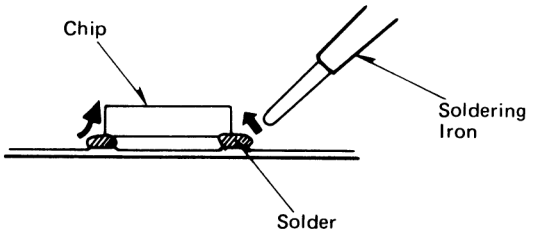


Figure 4

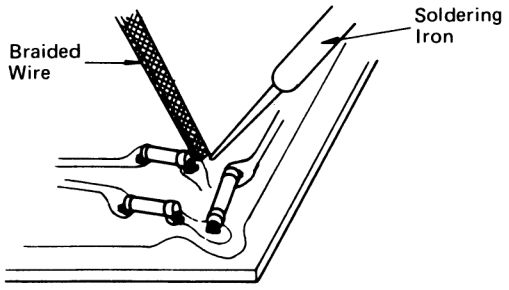


Figure 2

NOTE FOR REPLACING CHIPS

1. Do not heat chips more than three (3) seconds.
2. Be careful not to damage the electrode of chips.
3. Use soldering iron (less than 60W) and tweezers for replacing chips.
4. Use only Panasonic chips components for replacement.

FIELD ALIGNMENT OF VIDEO MONITOR

Note: Use Video pattern Generator for following alignments. (Video input should read 1.0Vp-p.)

A. WITHOUT TEST EQUIPMENT

Alignment can be accomplished by general procedures. The following describes simple alignment methods that do not require extensive service shop test equipment.

VERTICAL-HOLD ADJUSTMENT

Adjust the V-Hold control (R406) and set it at a point where vertical movement is stopped.

VERTICAL-SIZE ADJUSTMENT

Adjust the V-Size control (R409) until picture becomes symmetrical from top to bottom.

HORIZONTAL-HOLD ADJUSTMENT

Adjust the H-Hold control (R505) and set it at a point where horizontal movement is stopped.

SUB CONTRAST ADJUSTMENT

Adjust the Sub Contrast control (R1302) to the most desirable position.

FOCUS ADJUSTMENT

Adjust the Focus control to obtain a sharpest and clearest picture.

COLOR PURITY ADJUSTMENT

(See figures 5, 6 and 7.)

1. Operate the receiver for 60 minutes, with the Brightness control at maximum to warm up the CRT.
2. Degauss the receiver fully by using an external degaussing coil.
3. Perform coarse convergence adjustment. (See page 6)
4. Apply a black and white video pattern.

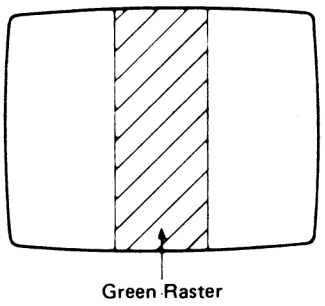


Figure 5

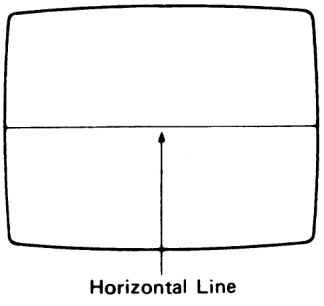


Figure 6

5. Turn the Red and Blue Low Light control fully counterclockwise to obtain a Green field. Adjust the R. and B. Drive controls if the Green field cannot be obtained.
6. Loosen the deflection yoke clamp screw and move the deflection yoke as close to the purity magnet as possible.
7. Loosen the purity magnet clamp (See figure 8) and adjust the purity magnet to set the vertical green raster precisely in the center of the screen. (See figure 5.) Tighten the clamp.
8. Slowly move the deflection yoke forward and adjust for best overall geeen screen.
9. Tighten the deflection yoke clamp screw.
10. Produce a Blue and Red raster with the Low Light controls and observe the good purity is obtained on the respective field.
11. Observe that a uniform white raster is obtained by adjusting the R.G.B. Low Light controls. If the screen is not uniformly white, repeat the above procedure.

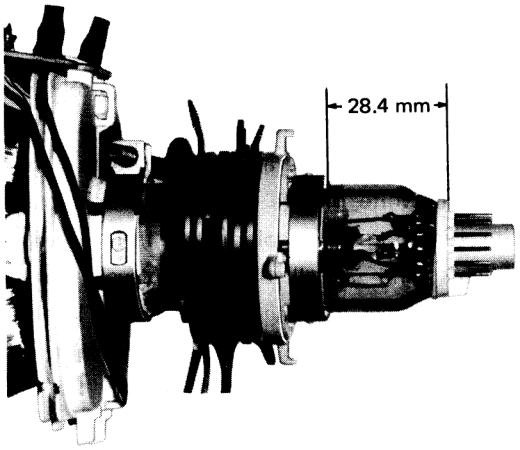


Figure 7

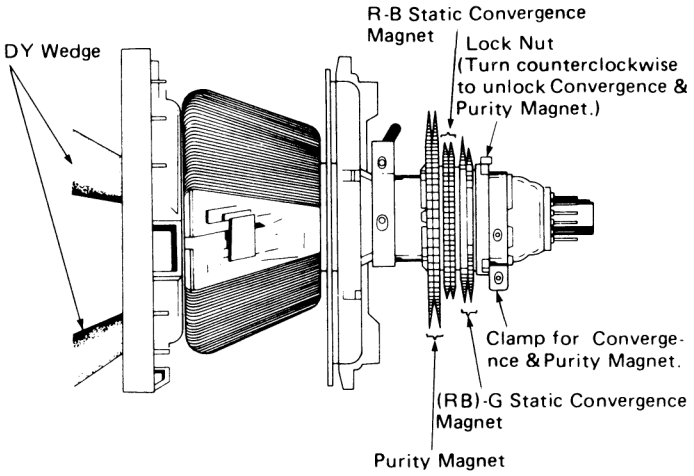


Figure 8

COLOR TEMPERATURE ADJUSTMENT

(See figures 5 and 8.)

1. Use a black and white video pattern.
2. Turn Color control fully counterclockwise.
3. Place the service switch to SERVICE position.
4. Turn the three Low light controls (R, G, B on CRT board) 60° clockwise from the full counterclockwise position.
5. Slowly turn the Screen control clockwise from the full counterclockwise position until two colors out of three R, G, B appear horizontally on the picture tube.
6. Extinguish the two horizontal colors on the picture tube by turning the two respective low light controls fully counterclockwise.
7. Turn the Screen control further clockwise until the third color appears as a faint horizontal line on the picture tube.
8. Make the horizontal line white by turning the two low light controls which were previously set fully counterclockwise at step (6).
9. Return the service switch to NORMAL position.
10. Alternately adjust the red and blue drive controls to produce a normal black and white picture. Check the black and white picture detail for proper black and white rendition (No coloration) from lowlights to highlights and at all brightness levels for proper tracking. Proper tracking at all brightness levels can be obtained when the screen controls, low light controls, and drive controls are properly adjusted. If the results are unsatisfactory, repeat all the above steps.

CONVERGENCE ADJUSTMENT

Note: Before any convergence adjustments are made vertical size and focus adjustment must be completed.

1. Use a dot pattern to complete this adjustment.
2. The brightness level should be no higher than necessary to obtain a clear pattern.
3. Loosen the convergence magnet clamp and align the red and blue dots at the center of the screen, by rotating the R-B Static Convergence Magnet. (See figures 8 and 9.)
4. Align the convergence red/blue dots with the green dots in the center of the screen, by rotating the (RB)-G Static Convergence Magnet. (See figures 8 and 9.)
5. Tighten the convergence magnet clamp.
6. Remove the DY wedges (See figure 9.) and slightly tilt (do not rotate) the deflection yoke horizontally and vertically to obtain good overall convergence.
7. Secure the deflection yoke by reinserting the wedges. (See figure 9.)
8. If purity error is found, repeat the purity adjustments.

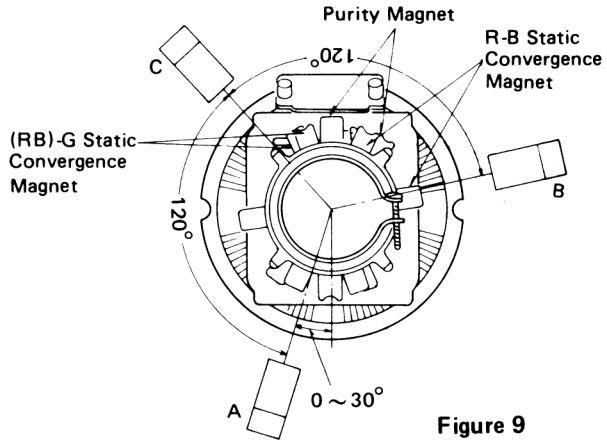


Figure 9

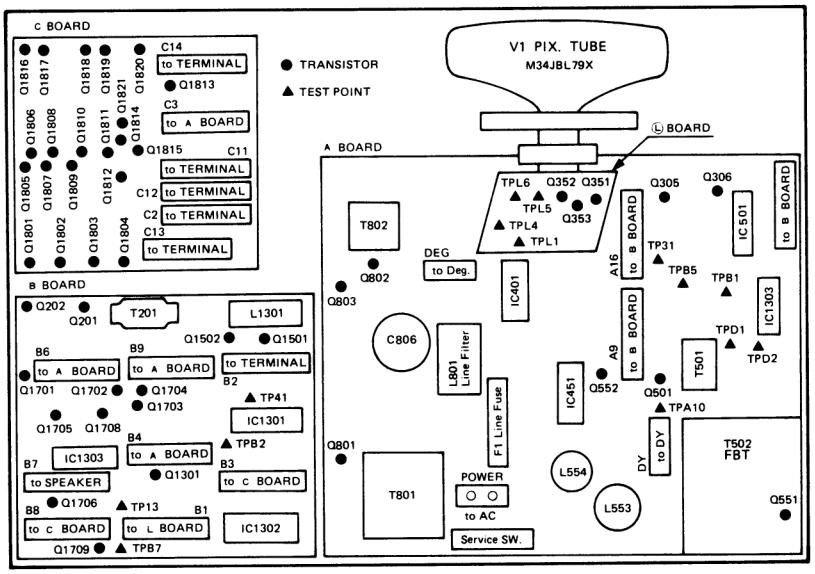
NOTE:

1. Wedge A shown in figure 9 should be fixed within a range of 0° ~ 30° to the left of the vertical line as shown.
2. After inserting wedge A, insert wedges B and C. The wedges should be set 120° apart from each other.
3. Be certain that the three wedges are firmly fixed and the Deflection Yoke is tightly clamped in place. Otherwise the Deflection Yoke may shift its position and cause a loss of convergence and purity.

B. WITH TEST EQUIPMENT

When measuring voltage with a VTVM, be sure to use the test points located on the conductor side of the circuit board.

MAIN PARTS LOCATION CHART



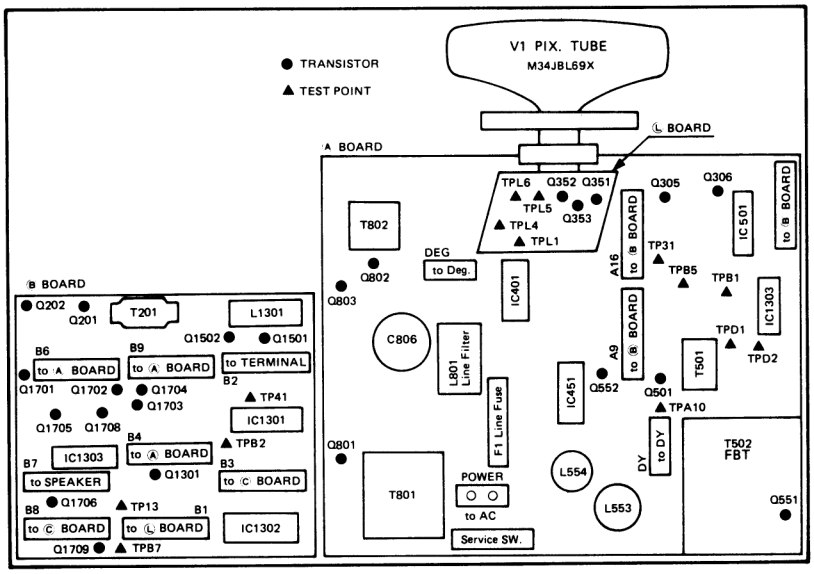


Figure 10

B+ VOLTAGE (+115V) ADJUSTMENT

1. Set Bright control (R1339) to minimum and Sub Bright control (R1318) to center position.
2. Slide the service switch to SERVICE position.
3. Connect a voltmeter between TP91 and chassis ground.
4. Adjust R811 to obtain a reading of 115.0V ± 0.5V.

HIGH VOLTAGE ADJUSTMENT

1. Adjust color temperature. (See page 6).
2. Slide the service switch to SERVICE position.
3. Using a calibrated high voltage meter confirm that High Voltage is within a range of +24.5 kV within a tolerance of +1.0 kV –1.5 kV.

NOTE: Be certain that B+ is +115V within a tolerance of ± 0.5V with beam current at zero during the High Voltage adjustment.

Note: Use Videp Pattern Generator for following alignments. (Video input should read 1.0Vp-p.)

GENERAL ALIGNMENT

Note: Use Video Pattern Generator for following alignments. (Video input should read 1.0Vp-p.)

APC ALIGNMENT

Preparation

1. Set up electronic voltmeter to TPB2 and chassis ground.
2. Set following controls and RGB/VIDEO selector switch as indicated below:

   Contrast control . . . . . Maximum
   Brightness control . . . . . Center
   RGB/VIDEO Selector SW . . . . . Video

Alignment Procedure

1. Use a studio color bar signal.
2. Turn CW ADJ. control (R1615) to keep color synchronization.
3. Read indication on an electronic voltmeter down to the second digit below the decimal point.
   (Pay attention to the polarity.)
4. Connect short jumper between TP41 and TPB7.
5. Adjust CW ADJ. control to attain the values specified in the item 3 within a tolerance $^{+\ 0.05V}_{-\ 0.03V}$ using the electronic voltmeter.
6. Disconnect short jumper and confirm that color synchronization is stable.

COLOR PHASE ALIGNMENT

Preparation.

1. Connect a oscilloscope to TP47B of CRT PCB.
2. Set following controls and RGB/VIDEO selector switch as indicated below:

   Color control . . . . . Maximum
   Tint control . . . . . Center
   Contrast control . . . . . Maximum
   Sub Brightness control . . . . . Center
   RGB/VIDEO selector SW . . . . . Video

Alignment Procedure

1. Receive a rainbow color pattern.
2. Confirm that amplitude of B-Y waveform is as in figure 11.
3. Turn Tint control and confirm that variable range is more than ± 30°.
4. Set Color control to fully countercloskwise, confirm that color disappears on the picture tube.

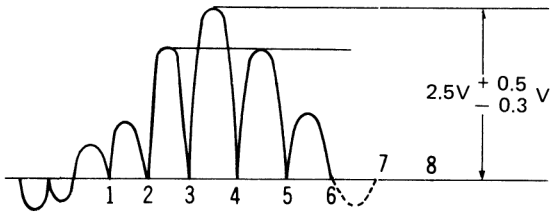


Figure 11

CIRCUIT EXPLANATION

HORIZONTAL OSCILLATOR DISABLE CIRCUIT

The positive DC voltage supplied from the cathode of D558 for monitoring the high voltage is applied to pin ④ of IC501 through R561 and to the base of Q903 through R909.

The voltage at the emitter of Q903 is regulated by Zener Diode D901. Under normal conditions, the voltage applied across the base and emitter of Q903 is not sufficient to cause emitter current to flow and holds the transistor cut off.

If the high voltage exceeds the specified level, the positive DC voltage supplied from the cathode of D558 increases.

The voltage through D558 is dividing by R909 and R908, and applied to the base of Q903. If Veb is nearly more than +0.7V, the transistor Q903 turns on, and the collector voltage of Q903 lowers which is connected to the base of Q902.

Therefore Q902 turns on, and the collector voltage of Q902 increases, which is connected to the base of Q901. Consequently Q901 turns on, and collector current of Q901, which is connected to the pin ③ of IC401, begins to flow simultaneously. This causes the horizontal oscillator frequency to increase, and also causes loss of horizontal synchronization.

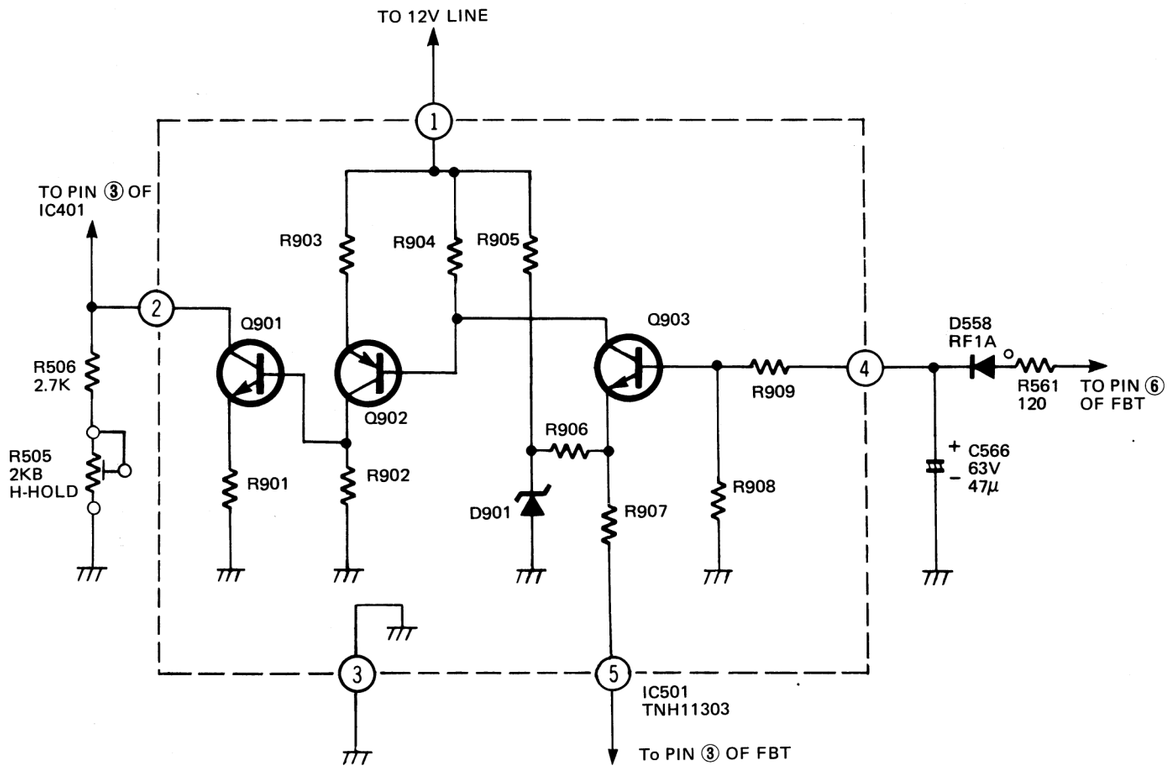
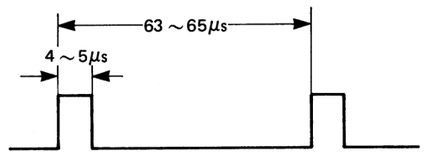
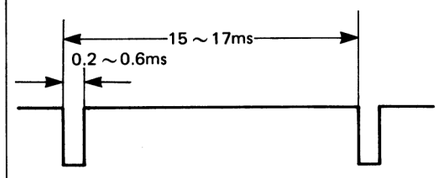
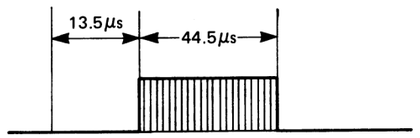
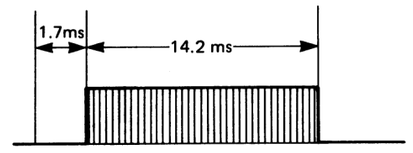
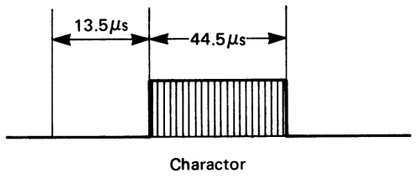
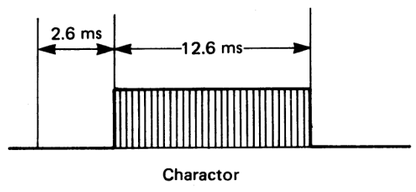
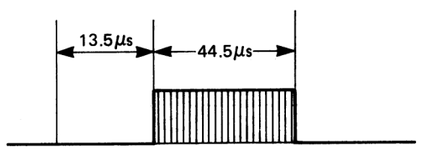
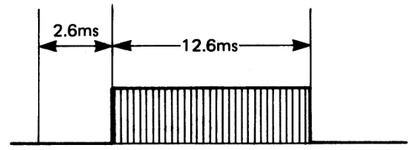
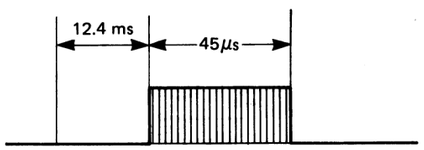
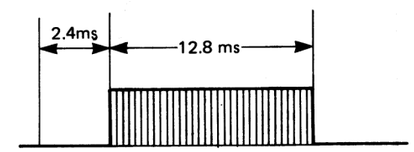
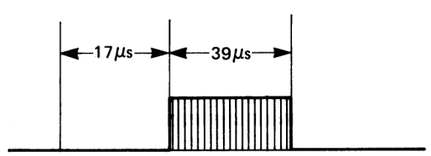
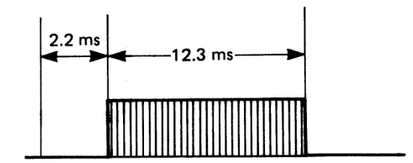
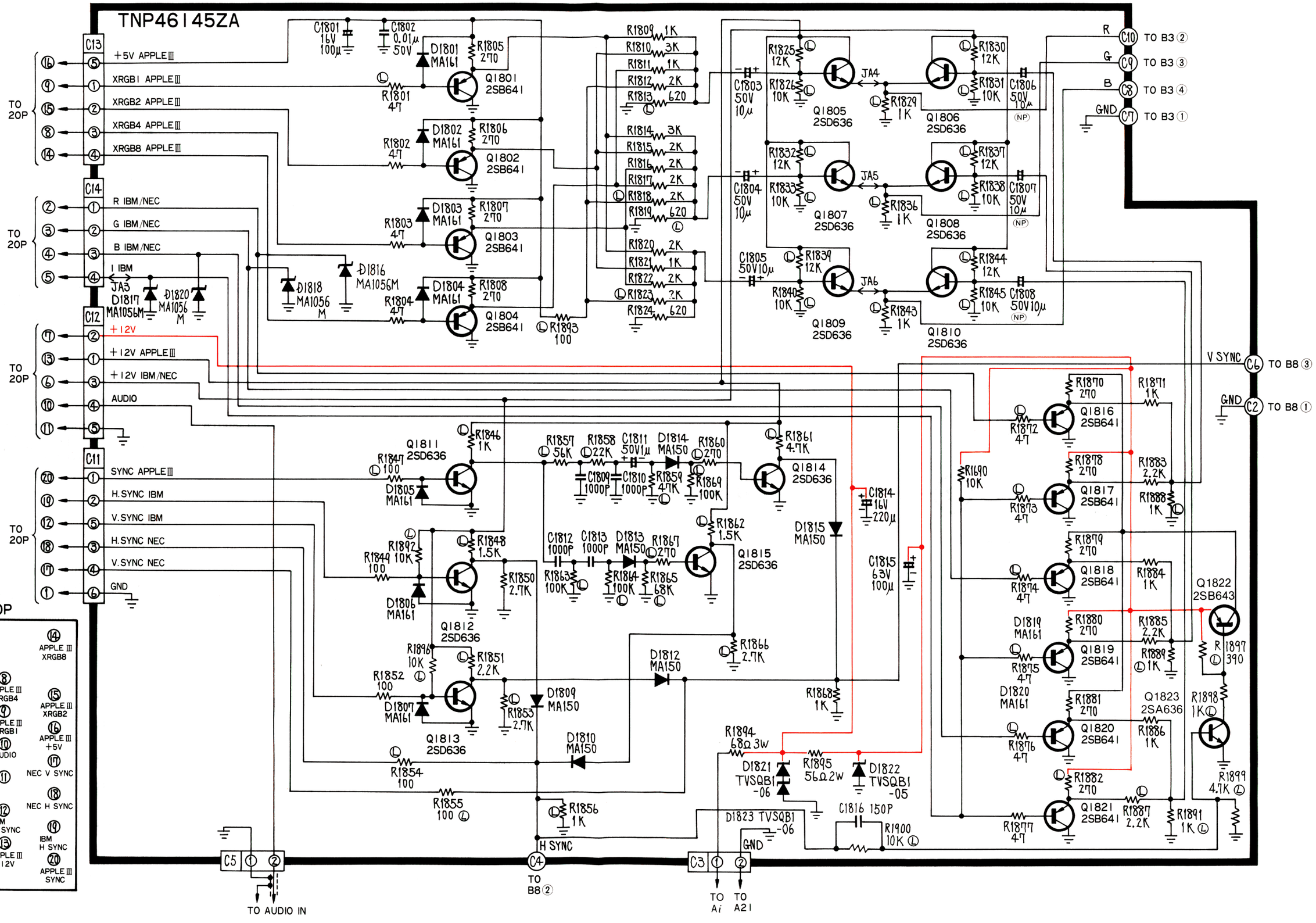


Figure 12

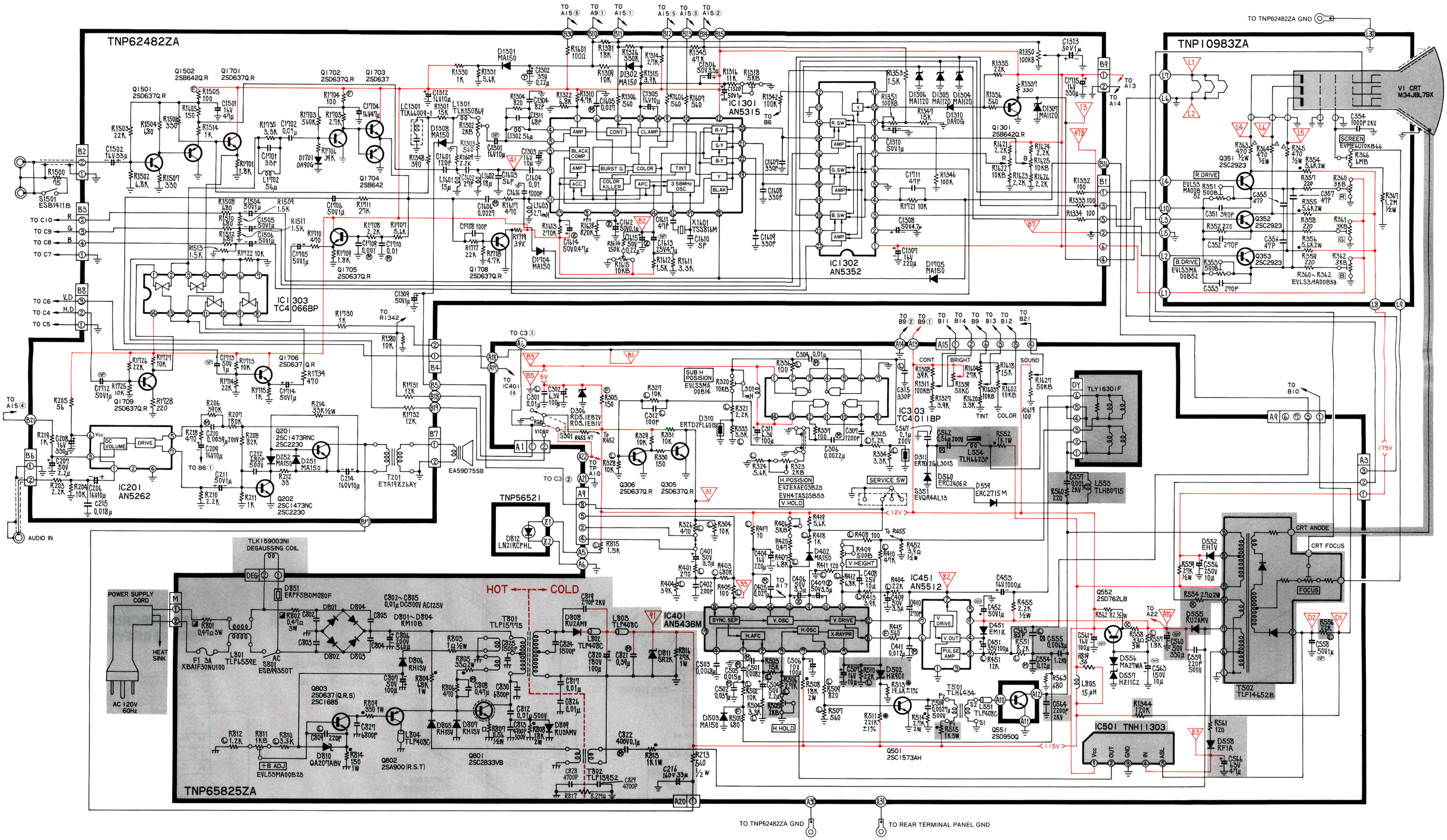
TIMING CHART

CT-1300D/DT-D1300D Horizontal Sync. Timing		CT-1300D/DT-D1300D Vertical Sync. Timing
	SYNC MANUFACTURER & MODEL NUMBER	
	Panasonic/JR-200U	
	NEC/PC-8001A	
	NEC/PC-8801A	
	IBM/IBM 5150	
	APPLE/APPLE III	

SCHEMATIC DIAGRAM FOR MODEL DT-D1300D



SCHEMATIC DIAGRAM FOR MODEL DT-D1300D (CHASSIS NO. NMX-2G)



IMPORTANT SAFETY NOTICE

THE SHADED AREA ON THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING,IT IS ESSENTIAL THAT ONLY MANUFACTURER'S SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SHADED AREAS OF THE SCHEMATIC.

Note: The Power Circuit board contains a circuit area which uses a separate power supply to isolate the ground connection.
The circuit is defined by HOT and COLD indications in the schematic diagram. Take the following precautions.

PRECAUTIONS

1. Do not touch the hot part or the hot and cold parts at the same time or you may receive a shock.
2. Do not short-circuit the hot and cold circuits or a fuse may blow and parts may break.
3. Do not connect an instrument, such as an oscilloscope, to the hot and cold circuits simultaneously or a fuse may blow. Connect the ground of instruments to the ground connection of the circuit being measured.
4. Make sure to disconnect the power plug before removing the chassis.

NOTE:

1. RESISTOR
   All resistors are carbon 1/4W resistor, unless otherwise noted the following marks.
   Unit of resistance is OHM (Ω), (K = 1,000, M = 1,000,000).
   - △ : Solid
   - □ : Wire Wound
   - (F) : Non-Flamble
   - ◪ : Cement
   - ⩘ : Thermistor
   - ⊗ : Fuse
   - ● : Metal Oxide
   - (L) : Lead Less Type
2. CAPACITOR
   All capacitors are ceramic 50V capacitor, unless otherwise noted the following marks.
   Unit of capacitance is μF, unless otherwise noted.
   - # : Electrolytic
   - (NP) : Bipolar
   - (Z) : Z Type
   - (T) : Dipped Tantalum
   - (V) : Safety Vent
   - ◎ : Titanium Oxide
   - ● : Temp Compensation
   - (M) : Polyester
   - (S) : Polystyrene
   - ⊠ : Polypropylene
3. COIL
   Unit of inductance is μH.
4. TEST POINT
   Test point position
5. When arrow mark (↗) is found, connection is easily found along with the direction of an arrow.
6. When schematic diagram of a board is described in more than two places, they are encircled with dotted line. . . . . .
7. This schematic diagram is the latest at the time of printing and subject to change without notice.

MA1120. . . . .
MA1056M. . . Green Red Brown Blue Blue

2SD601. . . . . Y
2SB709 . . . . . A

AN5512

2SD637
2SB643
2SB642
2SD636

LN21RCPHL

2SC1473
2SC1685
2SA564A
2SC1317
2SC1684
2SC1573

2SD950

RH1S
RH1M
EM1Z
C2715M
RM10B
EH1
RU2AM
RF1A

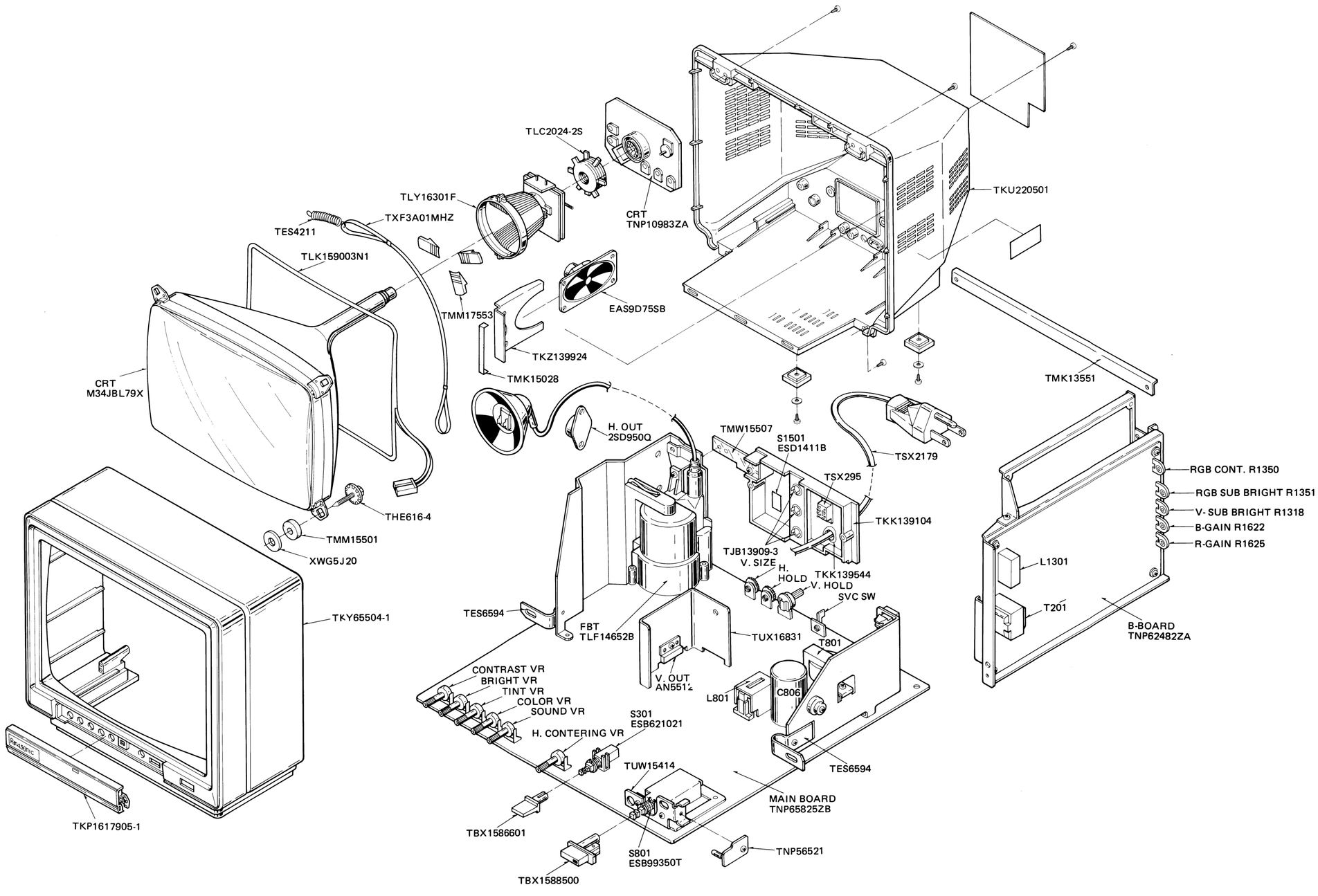
RD5.1EB1
HZ9C1
HZ11C2
QA207AB
QB105
QB106

OA90G. . . Green

MA150. . . . .White
MA27WA . . .Sky Blue
MA161. . . . .Green

AN5315. . . . .
AN5436M. . .
TC4066BP . .
TC4011BP

EXPLODED VIEWS DT-D1300D



PART DESCRIPTION AND ABBREVIATION

RESISTOR

PART TYPE & 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 © 100K Ⓙ 1/2W

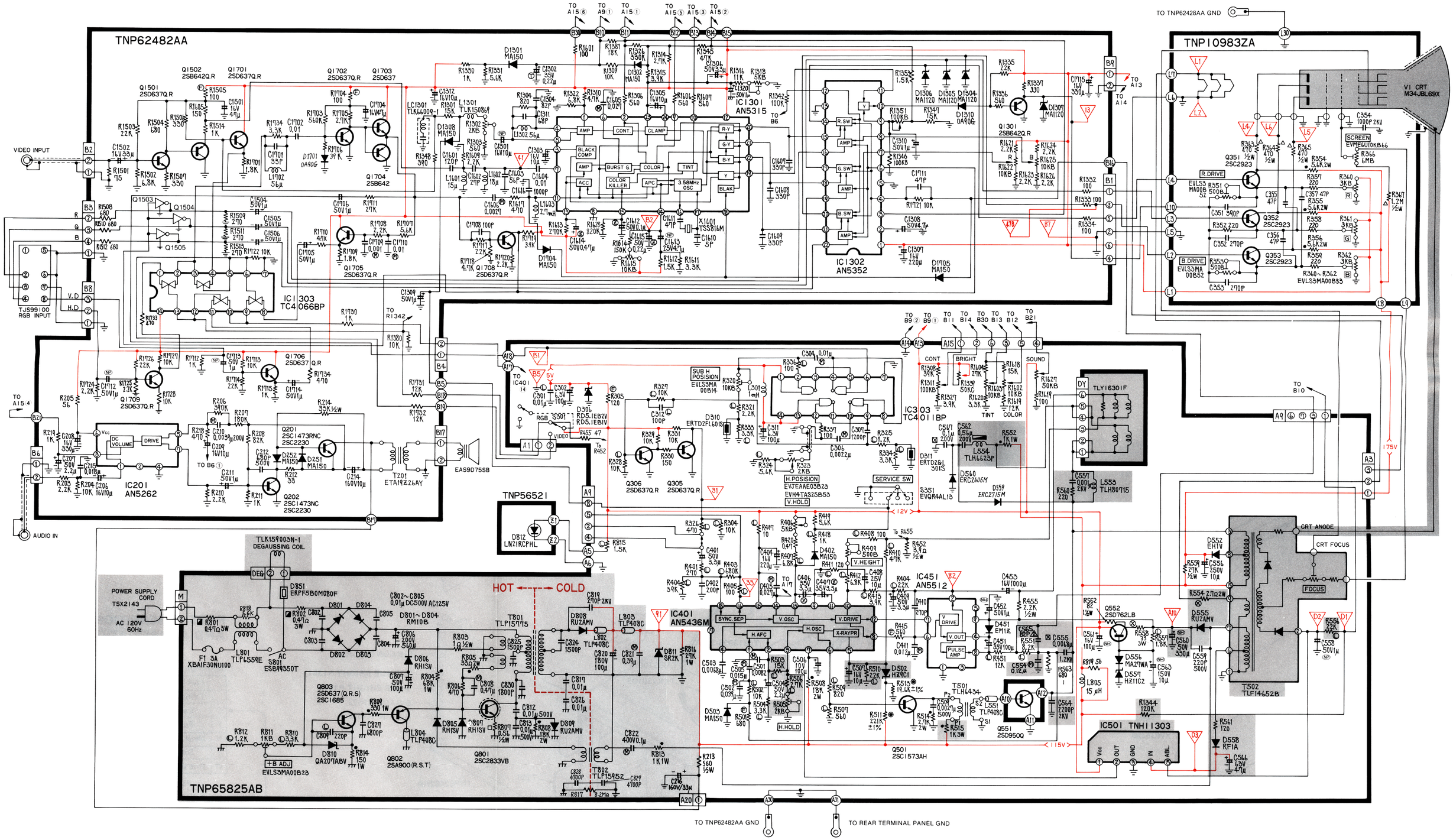
CAPACITOR

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

Part No. Description

Example: ECKD1H103PF2 © 0.01uF Ⓟ 50V

SCHEMATIC DIAGRAM FOR MODEL CT-1300D (CHASSIS NO. NMX-2G)



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2. Do not short-circuit the hot and cold circuits or a fuse may blow and parts may break.
3. Do not connect an instrument, such as an oscilloscope, to the hot and cold circuits simultaneously or a fuse may blow.
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4. Make sure to disconnect the power plug before removing the chassis.

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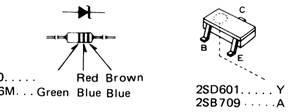
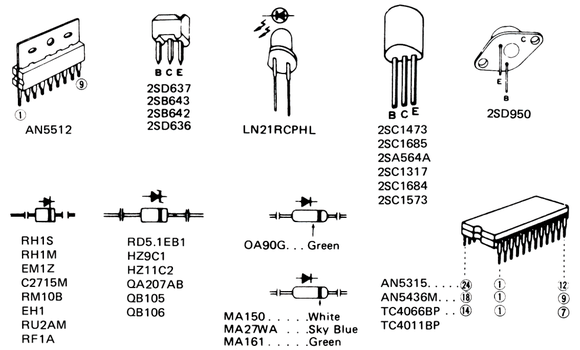
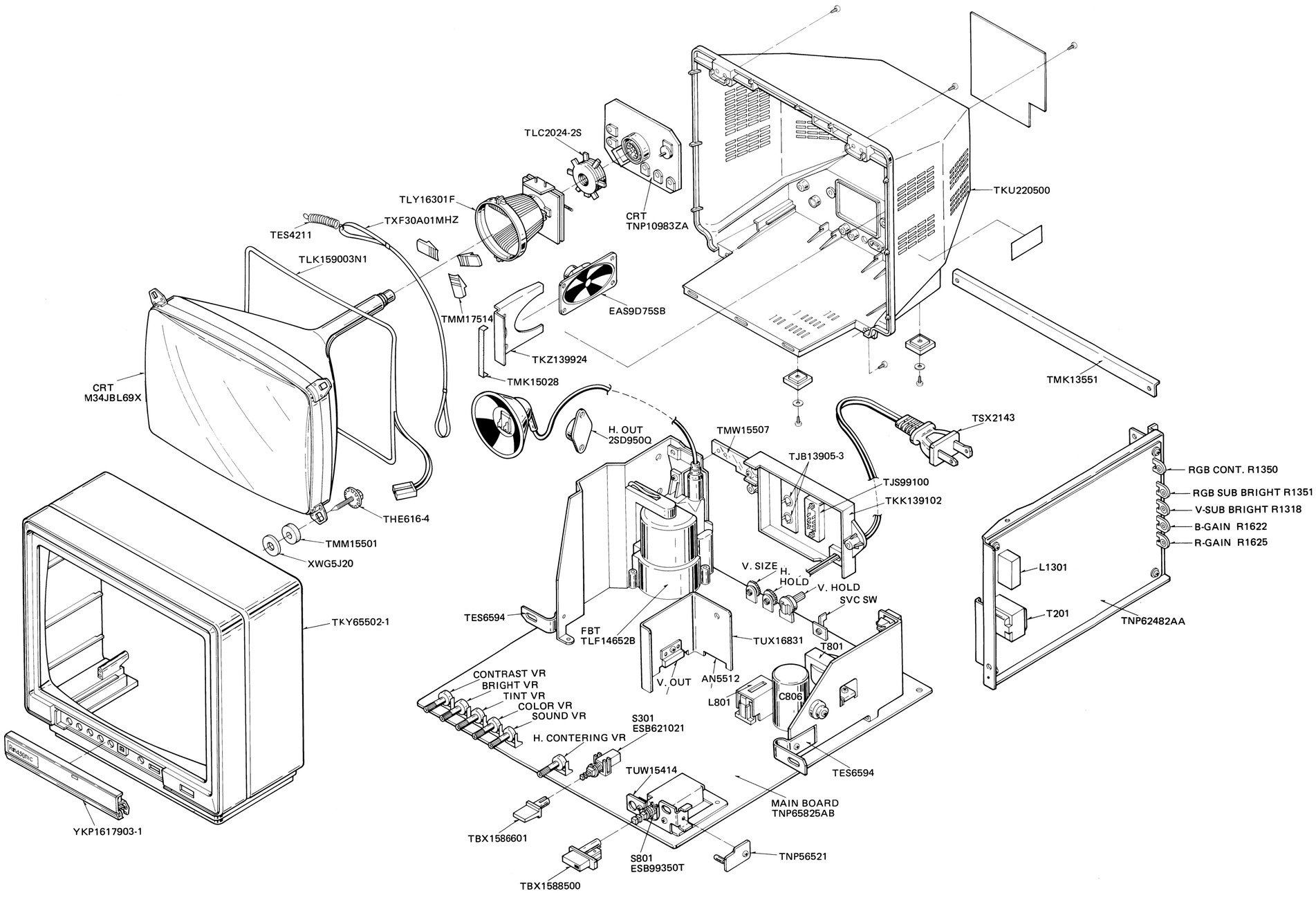
   - △ : Solid
   - □ : Wire Wound
   - (F) : Non-Flamble
   - ◪ : Cement
   - : Thermistor
   - ⊗ : Fuse
   - ● : Metal Oxide
   - (L) : Lead Less Type
2. CAPACITOR
   All capacitors are ceramic 50V capacitor, unless otherwise noted the following marks.
   Unit of capacitance is μF, unless otherwise noted.
   - ⫴ : Electrolytic
   - (NP) : Bipolar
   - (Z) : Z Type
   - (T) : Dipped Tantalum
   - (V) : Safety Vent
   - ◎ : Titanium Oxide
   - ● : Temp Compensation
   - (M) : Polyester
   - (S) : Polystyrene
   - ⊠ : Polypropylene
3. COIL
   Unit of inductance is μH.
4. TEST POINT
   Test point position
5. When arrow mark (↗) is found, connection is easily found along with the direction of an arrow.
6. When schematic diagram of a board is described in more than two places, they are encircled with dotted line. . . . . .
7. This schematic diagram is the latest at the time of printing and subject to change without notice.





EXPLODED VIEWS CT-1300D



PART DESCRIPTION AND ABBREVIATION

RESISTOR

PART TYPE & 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 TYPE & DESCRIPTION			
TYPE		ALLOWANCE	
C	Ceramic	C	±0.25pF
E	Electrolytic	D	±0.5pF
P	Polyester	F	±1pF
S	Styrene	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.

Note: TNP65825AB (A-Board for CT-1300D), TNP65825ZA (A-Board for DT-D1300D), TNP62482AA (B-Board for CT-1300D), TNP62482ZA (B-Board for DT-D1300D), TNP56521 (Z-Board) and TNP46145ZA (C-Board for DT-D1300D) are not available as a complete printed circuit board.

Ref. No.	Part No.	Description
	COMMON PARTS	
	RESISTORS	
R 203	ERD25TJ222	C 2.2KOHM, J,1/4W
R 204	ERD25TJ103	C 10KOHM, J,1/4W
R 205	ERD25FJ560	C 56OHM, J,1/4W
R 206	ERD25TJ394	C 390KOHM, J,1/4W
R 207	ERD25TJ184	C 180KOHM, J,1/4W
R 208	ERD25TJ823	C 82KOHM, J,1/4W
R 210	ERD25TJ222	C 2.2KOHM, J,1/4W
R 211	ERD25TJ102	C 1KOHM, J,1/4W
R 212	ERD25TJ330	C 33OHM, J,1/4W
R 213	ERDS1FJ561	C 560OHM, J,1/2W
R 214	ERD50TJ333	C 33KOHM, J,1/2W
R 218	ERD25TJ471	C 470OHM, J,1/4W
R 219	ERD25TJ102	C 1KOHM, J,1/4W
R 304	ERD25TLJ103	C 10KOHM, J,1/4W
R 305	ERDS1FJ151	C 150OHM, J,1/2W
R 320	EVLS3MA00B14	CONTROL 10KOHMB
R 321	ERD25TLJ222	C 2.2KOHM, J,1/4W
R 323	EVJEAAE03B23	CONTROL 2KOHMB
R 324	ERD25TLJ562	C 5.6KOHM, J,1/4W
R 325	ERD25TLJ122	C 1.2KOHM, J,1/4W
R 326	ERD25TLJ471	C 470OHM, J,1/4W
R 327	ERD25TLJ103	C 10KOHM, J,1/4W
R 328	ERD25TLJ103	C 10KOHM, J,1/4W
R 329	ERD25TLJ103	C 10KOHM, J,1/4W
R 330	ERD25TLJ151	C 150OHM, J,1/4W
R 331	ERD25TLJ103	C 10KOHM, J,1/4W
R 333	ERD25TLJ332	C 3.3KOHM, J,1/4W
R 334	ERD25TLJ332	C 3.3KOHM, J,1/4W
R 336	ERD25TLJ101	C 100OHM, J,1/4W
R 337	ERD25TLJ101	C 100OHM, J,1/4W
R 351	EVLS3MA00B52	CONTROL 5000HMB
R 352	ERD25TJ221	C 220OHM, J,1/4W
R 353	EVLS3MA00B52	CONTROL 5000HMB
R 354	ERG2ANJ562	M 5.6KOHM, J, 2W
R 355	ERG2ANJ562	M 5.6KOHM, J, 2W
R 356	ERG2ANJ562	M 5.6KOHM, J, 2W
R 357	ERD25TJ221	C 220KOHM, J,1/4W
R 358	ERD25TJ221	C 220KOHM, J,1/4W
R 359	ERD25TJ221	C 220KOHM, J,1/4W
R 360	EVLS3MA00B33	CONTROL 3KOHMB
R 361	EVLS3MA00B33	CONTROL 3KOHMB
R 362	EVLS3MA00B33	CONTROL 3KOHMB
R 363	ERC12GK471	S 470OHM, K,1/2W
R 364	ERC12GK471	S 470OHM, K,1/2W
R 365	ERC12GK471	S 470OHM, K,1/2W
R 366	EVME6U10KB66	CONTROL 6MOHMB
R 367	ERC12GK125	S 1.2MOHM, K,1/2W
R 401	ERD25TLJ271	C 270OHM, J,1/4W
R 403	ERD25TLJ684	C 680KOHM, J,1/4W
R 404	ERD25TLJ393	C 39KOHM, J,1/4W
R 405	ERD25TLJ101	C 100OHM, J,1/4W
R 406	EVH4TAS25B53	CONTROL 5KOHMB
R 407	ERD25TLJ682	C 6.8KOHM, J,1/4W
R 408	ERD25TJ101	C 100OHM, J,1/4W
R 409	EVLV0N00MB52	CONTROL 5000HMB
R 410	ERD25TLJ473	C 47KOHM, J,1/4W
R 411	ERD25TLJ121	C 120OHM, J,1/4W
R 412	ERD25TLJ682	C 6.8KOHM, J,1/4W
R 413	ERD25TLJ392	C 3.9KOHM, J,1/4W
R 414	ERD25TLJ223	C 22KOHM, J,1/4W
R 415	ERD25FJ561	C 560OHM, J,1/4W
R 417	ERD25TLJ100	C 10OHM, J,1/4W
R 418	ERD25TLJ102	C 1KOHM, J,1/4W
R 419	ERD25TLJ562	C 5.6KOHM, J,1/4W
R 420	ERW12PKR47	W 0.470HM, 1/2W
R 451	ERD25TLJ123	C 12KOHM, J,1/4W
R 452	ERDS1FJ3R9	C 3.90HM, J,1/2W
R 501	ERD25FJ681	C 680OHM, J,1/4W
R 502	ERD25TLJ103	C 10KOHM, J,1/4W
R 503	ERD25TLJ153	C 15KOHM, J,1/4W
R 504	ERD25TLJ332	C 3.3KOHM, J,1/4W
R 505	EVLV0N00MB23	CONTROL 2KOHMB
R 506	ERD25TLJ272	C 2.7KOHM, J,1/4W
R 507	ERD25TLJ561	C 560OHM, J,1/4W
R 508	ERG2ANJ183H	M 18KOHM, J,1/2W
R 509	ERD25TLJ821	C 820OHM, J,1/4W
R 510	ERD25TLJ223	C 22KOHM, J,1/4W
R 511	ERO25CKF2213	M 221KOHM, F,1/4W
R 513	ERO25CKF1962	M19.6KOHM, F,1/4W
R 514	ERG2ANJ272H	M 2.7KOHM, J, 2W
R 515	ERG3ANJ102H	M 1KOHM, J, 3W
R 551	ERD25TLJ822	C 8.2KOHM, J,1/4W
R 552	ERG1ANJ102H	M 1KOHM, J, 1W
R 554	ERQ2CJP2R7S	F 2.7OHM, J, 2W
R 556	ERD25TLJ223	C 22KOHM, J,1/4W
R 557	ERD25TLJ182	C 1.8KOHM, J,1/4W

Ref. No.	Part No.	Description
R 558	ERQ3CJP330S	F 330OHM, J, 3W
R 559	ERDS1TJ273	C 27KOHM, J,1/2W
R 560	ERD25TJ221	C 220OHM, J,1/4W
R 561	ERD25TJ121	C 120OHM, J,1/4W
R 562	ERDS1FJ820	C 820HM, J,1/2W
R 563	ERD25TJ681	C 6800HM, J,1/4W
R 801	ERF3AKR47	W 0.470HM, K, 3W
R 802	ERF3AKR47	W 0.470HM, K, 3W
R 803	ERQ12HJ1R0	F 1OHM, J,1/2W
R 804	ERG1ANJ683H	M 68KOHM, J, 1W
R 805	ERG2ANJ330H	M 330HM, J, 2W
R 806	ERD25FJ471	C 4700HM, J,1/4W
R 807	ERW12PKR56	W 0.560HM, 1/2W
R 808	ERG2ANJ183H	M 18KOHM, J,1/2W
R 809	ERG1ANJ331H	M 3300HM, J, 1W
R 810	ERD25TLJ332	C 3.3KOHM, J,1/4W
R 811	EVLS3MA00B13	CONTROL 1KOHMB
R 812	ERD25TLJ122	C 1.2KOHM, J,1/4W
R 813	ERG1ANJ102H	M 1KOHM, J, 1W
R 814	ERG1ANJ151H	M 1500HM, J, 1W
R 815	ERD25TLJ152	C 1.5KOHM, J,1/4W
R 816	ERG1ANJ273H	M 27KOHM, J,1/1W
R 817	ERC12ZGK825	S 8.2MOHM, K,1/2W
R 819	ERD50FJ560	C 56OHM, J,1/4W
R 1301	ERD25TJ152	C 1.5KOHM, J,1/4W
R 1302	EVLS3MA00B23	CONTROL 2KOHMB
R 1303	ERD25TJ561	C 5600HM, J,1/4W
R 1304	ERD25TJ821	C 8200HM, J,1/4W
R 1306	ERD25TJ561	C 5600HM, J,1/4W
R 1309	ERD25TJ103	C 10KOHM, J,1/4W
R 1310	ERD25TJ472	C 4.7KOHM, J,1/4W
R 1311	EVJEAAE03B15	CONTROL 100KOHMB
R 1314	ERD25TJ272	C 2.7KOHM, J,1/4W
R 1315	ERD25TJ392	C 3.9KOHM, J,1/4W
R 1316	ERD25TJ113	C 11KOHM, J,1/2W
R 1318	EVLS0MA00B53	CONTROL 5KOHMB
R 1322	ERD25TJ682	C 6.8KOHM, J,1/4W
R 1326	ERD25TJ334	C 330KOHM, J,1/4W
R 1327	ERD25TLJ563	C 56KOHM, J,1/4W
R 1328	ERD25TLJ393	C 39KOHM, J,1/4W
R 1330	ERD25TJ102	C 1KOHM, J,1/4W
R 1331	ERD25TJ562	C 5.6KOHM, J,1/4W
R 1332	ERD25TJ101	C 1000HM, J,1/4W

Ref. No.	Part No.	Description
R 1333	ERD25TJ101	C 1000HM, J,1/4W
R 1334	ERD25TJ101	C 1000HM, J,1/4W
R 1335	ERD25TJ223	C 22KOHM, J,1/4W
R 1336	ERD25TJ561	C 5600HM, J,1/4W
R 1337	ERD25TJ331	C 330OHM, J,1/4W
R 1339	EVJEAAE03C54	CONTROL 50KOHMC
R 1342	ERD25TJ104	C 100KOHM, J,1/4W
R 1344	ERD25TJ124	C 120KOHM, J,1/4W
R 1345	ERD25TJ473	C 47KOHM, J,1/4W
R 1346	ERD25TJ104	C 100KOHM, J,1/4W
R 1347	ERD25TJ153	C 15KOHM, J,1/4W
R 1348	ERD25TJ391	C 3900HM, J,1/4W
R 1350	EVLS0MA00B15	CONTROL 100KOHMB
R 1351	EVLS0MA00B15	CONTROL 100KOHMB
R 1353	ERD25TJ152	C 1.5KOHM, J,1/4W
R 1380	ERD25TJ103	C 10KOHM, J,1/4W
R 1381	ERD25TJ183	C 18KOHM, J,1/4W
R 1502	ERD25TJ682	C 6.8KOHM, J,1/4W
R 1503	ERD25TJ223	C 22KOHM, J,1/4W
R 1504	ERD25TJ681	C 6800HM, J,1/4W
R 1505	ERD25FJ101	C 1000HM, J,1/4W
R 1506	ERD25TJ331	C 3300HM, J,1/4W
R 1507	ERD25TJ331	C 3300HM, J,1/4W
R 1508	ERD25TJ681	C 6800HM, J,1/4W
R 1510	ERD25TJ681	C 6800HM, J,1/4W
R 1512	ERD25TJ681	C 6800HM, J,1/4W
R 1514	ERD25TJ102	C 1KOHM, J,1/4W
R 1601	ERD25TJ101	C 1000HM, J,1/4W
R 1602	EVJEAAE03B14	CONTROL 10KOHMB
R 1603	EVJEAAE03B14	CONTROL 10KOHMB
R 1604	ERD25TLJ273	C 27KOHM, J,1/4W
R 1605	ERD25TJ151	C 1500HM, J,1/4W
R 1606	ERD25TJ561	C 5600HM, J,1/4W
R 1607	ERD25TJ561	C 5600HM, J,1/4W
R 1608	ERD25TJ222	C 2.2KOHM, J,1/4W
R 1609	ERD25TJ222	C 2.2KOHM, J, 1/4W
R 1611	ERD25TJ332	C 3.3KOHM, J,1/4W
R 1612	ERD25TJ152	C 1.5KOHM, J,1/4W
R 1613	ERD25TJ274	C 270KOHM, J,1/4W
R 1614	ERD25TJ154	C 150KOHM, J,1/4W
R 1615	EVLS3MA00B14	CONTROL 10KOHMB
R 1617	ERD25TJ471	C 4700HM, J,1/4W
R 1618	ERD25TLJ153	C 15KOHM, J,1/4W
R 1619	ERD25TLJ101	C 1000HM, J,1/4W
R 1620	ERD25TLJ332	C 3.3KOHM, J,1/4W
R 1621	ERD25TJ222	C 2.2KOHM, J,1/4W

Ref. No.	Part No.	Description
R 1622	EVLSOMA00B14	CONTROL 10KOHMB
R 1623	ERD25TJ222	C 2.2KOHM, J, 1/4W
R 1624	ERD25TJ222	C 2.2KOHM, J, 1/4W
R 1625	EVLSOMA00B14	CONTROL 10KOHMB
R 1626	ERD25TJ222	C 2.2KOHM, J, 1/4W
R 1627	EVJEAAE03B54	CONTROL 50KOHMB
R 1628	ERD25TJ824	C 820KOHM, J, 1/4W
R 1701	ERD25TJ182	C 1.8KOHM, J, 1/4W
R 1703	ERD25TJ564	C 560KOHM, J, 1/4W
R 1704	ERD25FJ101	C 100OHM, J, 1/4W
R 1705	ERD25TJ272	C 2.7KOHM, J, 1/4W
R 1706	ERD25TJ393	C 39KOHM, J, 1/4W
R 1707	ERD25TJ562	C 5.6KOHM, J, 1/4W
R 1708	ERD25TJ222	C 2.2KOHM, J, 1/4W
R 1709	ERD25TJ182	C 1.8KOHM, J, 1/4W
R 1710	ERD25TJ472	C 4.7KOHM, J, 1/4W
R 1711	ERD25TJ273	C 27KOHM, J, 1/4W
R 1713	ERD25TJ103	C 10KOHM, J, 1/4W
R 1714	ERD25TJ223	C 22KOHM, J, 1/4W
R 1715	ERD25TJ102	C 1KOHM, J, 1/4W
R 1717	ERD25TJ223	C 22KOHM, J, 1/4W
R 1718	ERD25TJ472	C 4.7KOHM, J, 1/4W
R 1719	ERD25TJ392	C 3.9KOHM, J, 1/4W
R 1721	ERD25TJ103	C 10KOHM, J, 1/4W
R 1722	ERD25TJ103	C 10KOHM, J, 1/4W
R 1725	ERD25TJ103	C 10KOHM, J, 1/4W
R 1726	ERD25TJ223	C 22KOHM, J, 1/4W
R 1727	ERD25TJ102	C 1KOHM, J, 1/4W
R 1728	ERD25TJ221	C 220OHM, J, 1/4W
R 1730	ERD25TJ102	C 1KOHM, J, 1/4W
R 1731	ERD25TJ123	C 12KOHM, J, 1/4W
R 1732	ERD25TJ123	C 12KOHM, J, 1/4W
R 1733	ERD25TJ471	C 470OHM, J, 1/4W
R 1734	ERD25TJ471	C 470OHM, J, 1/4W
R 1735	ERD25TJ332	C 3.3KOHM, J, 1/4W

Ref. No.	Part No.	Description
	CAPACITORS	
C 206	ECEA1CS100	E 10UF, 16V
C 207	ECEA1HS2R2	E 2.2UF, 50V
C 208	ECEA1CS331	E 330UF, 16V
C 209	ECEA1CS100	E 10UF, 16V
C 210	ECQM2392KZ	P 3900PF, K, 200V
C 211	ECEA1HS010	E 1UF, 50V
C 212	ECKD2H681KB2	C 680PF, K, 500V
C 214	ECEA2CS100	E 10UF, 160V
C 215	ECQM1H183KZ	P 0.018UF, K, 50V
C 216	ECEA2CS330	E 33UF, 160V
C 301	TCBL1E103NR	C 0.01UF, N, 25V
C 302	ECEA0JS101	E 100UF, 6.3V
C 304	ECQM1H103JZ	P 0.01UF, J, 50V
C 306	ECQM1H822JZ	P 8200PF, J, 50V
C 307	ECKF1H122KB	C 1200PF, K, 50V
C 311	ECEA0JS101	E 100UF, 6.3V
C 312	TCBL1H101J	C 100UF, J, 50V
C 315	TCBL1H331KB	C 330PF, K, 50V
C 351	ECKF1H391KB	C 390PF, K, 50V
C 352	ECKF1H271KB	C 270PF, K, 50V
C 353	ECKF1H271KB	C 270PF, K, 50V
C 354	ECKD3D102KB4	C 1000PF, K, 2KV
C 355	ECCF1H470JC	C 47PF, J, 50V
C 356	ECCF1H470JC	C 47PF, J, 50V
C 357	ECCF1H470JC	C 47PF, J, 50V
C 401	ECEA1HS3R3	E 3.3UF, 50V
C 402	ECKF1H122KB	C 1200PF, K, 50V
C 404	ECEA1CS221	E 220UF, 16V
C 405	ECQM1H273KZ	P 0.027UF, K, 50V
C 406	ECSZ35EF3R3N	T 3.3UF, 35V
C 407	ECSZ35EF3R3N	T 3.3UF, 35V
C 408	ECEA25Z10	E 10UF, 25V
C 409	ECEA50Z3R3	E 3.3UF, 50V
C 410	ECKF1H271KB	C 270PF, K, 50V
C 411	ECQM1H123KZ	P 0.012UF, K, 50V
C 451	ECEA1VS101	E 100UF, 35V
C 452	ECEA1HG010S	E 1UF, 50V
C 453	ECEA1CS102	E 1000UF, 16V
C 501	ECQM1H822KZ	P 8200PF, K, 50V
C 502	ECQM1H393KZ	P 0.039UF, K, 50V

Ref. No.	Part No.	Description
C 503	ECQK1682JZ	P 6800PF, J,100V
C 504	ECEA1HS2R2	E 2.2UF, 50V
C 505	ECQM1H153KZ	P 0.015UF, K, 50V
C 506	ECEA1AS101	E 100UF, 10V
C 507	ECEA1CS100	E 10UF, 16V
C 509	ECKD2H272KB2	C 2700PF, K,500V
C 554	ECQM1H124KZ	P 0.12UF, K, 50V
C 555	ECWH12H682JS	P 6800PF,J,1.2KV
C 556	ECEA2EG100Z	E 10UF, 250V
C 557	ECKD3D102KB4	C 1000PF, K, 2KV
C 558	ECEA1HN010S	E 1UF, 50V
C 559	ECKD2H221KB2	C 220PF, K,500V
C 560	ECEA1HG331S	E 330UF, 50V
C 561	ECEA1CG101S	E 100UF, 16V
C 562	ECQF2H364JZA	P 0.36UF, J,200V
C 562	ECQF2H564JZI	P 0.56UF, J,200V
C 563	ECEA1HG100S	E 10UF, 50V
C 564	ECKD3D222KBN	C 2200PF, K, 2KV
C 565	TCBL1H820J	C 82PF, J, 50V
C 566	ECEA1JS470	E 47UF, 63V
C 567	ECQM2104JZ	P 0.1UF, J,200V
C 802	ECKM2H103PE7	C 0.01UF, P,
C 803	ECKM2H103PE7	C 0.01UF, P,
C 804	ECKM2H103PE7	C 0.01UF, P,
C 805	ECKM2H103PE7	C 0.01UF, P,
C 806	ECET2DR561SW	E 560UF,
C 807	ECEA1HS101	E 100UF, 50V
C 808	ECQE1474KZ	P 0.47UF, K,100V
C 809	TCBL1H221KB	C 220PF, K, 50V
C 812	ECKD2H103KB	C 0.01UF, K,500V
C 817	ECKDDL103ZE	C 0.01UF, Z,
C 819	ECKD3D271KBN	C 270PF, K, 2KV
C 820	ECEA180V100Y	E 100UF, 180V
C 821	ECQE2394MS	P 0.39UF, M,250V
C 824	ECKD3D152KBN	C 1500PF, K, 2KV
C 825	ECKD3D152KBN	C 1500PF, K, 2KV
C 826	ECKDDL103ZE	C 0.01UF, Z,
C 827	ECQM1H682KZ	P 6800PF, K, 50V
C 828	ECKDFL472ZE	C 4700PF, Z,
C 829	ECKDFL472ZE	C 4700PF, Z,
C 830	ECKD2H182KB2	C 1800PF, K,500V
C 1301	ECEA1CN100S	E 10UF, 16V
C 1302	ECSZ35EFR22N	T 0.22UF, 35V
C 1303	ECEA16Z10	E 10UF, 16V
C 1304	ECCF1H820JC	C 82PF, J, 50V
C 1305	ECEA1CS100	E 10UF, 16V
C 1306	ECEA1HS3R3	E 3.3UF, 50V
C 1307	ECEA1CS221	E 220UF, 16V
C 1308	ECEA1HS4R7	E 4.7UF, 50V
C 1309	ECEA1HS010	E 1UF, 50V
C 1310	ECEA1HS010	E 1UF, 50V
C 1311	ECCF1H680JC	C 68PF, J, 50V
C 1312	ECEA1CS100	E 10UF, 16V
C 1313	ECEA1HS010	E 1UF, 50V
C 1320	ECEA1HS010	E 1UF, 50V
C 1501	ECEA1CS470	E 47UF, 16V
C 1502	ECEA1CS330	E 33UF, 16V
C 1504	ECEA1HS010	E 1UF, 50V
C 1505	ECEA1HS010	E 1UF, 50V
C 1506	ECEA1HS010	E 1UF, 50V
C 1601	ECCF1H121JP	C 120PF, J, 50V
C 1602	ECCF1H270JC	C 27PF, J, 50V
C 1603	ECCF1H560JC	C 56PF, J, 50V
C 1604	ECKF1H103ZF	C 0.01UF, Z, 50V
C 1605	ECQM1H273MZ	P 0.027UF, M, 50V
C 1606	ECQM1H272KZ	P 2700PF, K, 50V
C 1607	ECKF1H331KB	C 330PF, K, 50V
C 1608	ECKF1H331KB	C 330PF, K, 50V
C 1609	ECKF1H331KB	C 330PF, K, 50V
C 1610	ECCF1H050CC	C 5PF, C, 50V
C 1611	ECCF1H470JC	C 47PF, J, 50V
C 1612	ECEA50ZR1	E 0.1UF, 50V
C 1613	ECEA1EN4R7S	E 4.7UF, 25V
C 1614	ECEA50ZR47	E 0.47UF, 50V
C 1615	ECEA50ZR22	E 0.22UF, 50V
C 1616	ECQM1H102MZ	P 1000PF, M, 50V
C 1701	ECCF1H330JC	C 33PF, J, 50V
C 1702	ECQM1H103MZ	P 0.01UF, M, 50V
C 1704	ECEA1CS470	E 47UF, 16V
C 1705	ECEA1HS010	E 1UF, 50V
C 1706	ECEA1HS010	E 1UF, 50V
C 1708	ECCF1H101JC	C 100PF, J, 50V
C 1709	ECQM1H102MZ	P 1000PF, M, 50V
C 1710	ECQM1H103KZ	P 0.01UF, K, 50V
C 1711	ECCF1H470JC	C 47PF, J, 50V
C 1712	ECEA1HN010S	E 1UF, 50V
C 1713	ECEA1HN010S	E 1UF, 50V
C 1714	ECEA1HS010	E 1UF, 50V
C 1715	ECEA1CS331	E 330UF, 16V

Ref. No.	Part No.	Description
	COILS	
L 301	TLQ102K126	PEAKING COIL 1M
L 551	TLP408	CHOKE COIL
L 553	TLH80715	H-ADJ COIL
L 554	TLH6623P	COIL,LINEALITY
L 801	TLP6559E	LINE FILTER
L 802	TLP408	CHOKE COIL
L 803	TLP408	CHOKE COIL
L 804	TLP408	CHOKE COIL
L 805	TLQ047K126	PEAKING COIL 15U
L 1301	TLK150869	DELAY LINE
L 1302	TLX560J176C	PEAKING COIL 56U
L 1601	TLT150J991K	PEAKING COIL 15U
L 1602	TLT180J991K	PEAKING COIL 18U
L 1603	TLT272K991K	PEAKING COIL 2.7M
L 1603	TLT272K999G	PEAKING COIL 2.7M
L 1702	TLQ047K126	PEAKING COIL 56U
LC1301	TLK66009	CHROMA TRANS.
	TRANSFORMERS	
T 201	ETA19Z26AY	AUDIO TRANS.
T 501	TLH6434	H-DRIVE TRANS.
T 502	TLF14652B	FLYBACK TRANS.
T 801	TLP15775	CONVERTER TRANS.
T 802	TLP15952	PALS TRANS.
	DIODES	
D 251	MA150	DIODE
D 252	MA150	DIODE
D 306	TVSRD5.1EB1	ZENER DIODE
D 310	ERTD2ZFL601S	THERMISTER 6000HM
D 311	ERTD2ZGL301S	THERMISTER 3000HM
D 402	MA150	DIODE
D 451	TVSEM1Z	DIODE
D 502	TVSHZ9C1	ZENER DIODE
D 503	MA150	DIODE
D 552	TVSEH1	DIODE
D 555	TVSRU2AM	DIODE
D 556	MA27WA	DIODE
D 557	TVSHZ11C2	ZENER DIODE
D 558	TVSRF1A	DIODE
D 559	TVSC2715M	DIODE
D 560	TVSC2406M	DIODE

Ref. No.	Part No.	Description
D 801	TVSRM10B	DIODE
D 802	TVSRM10B	DIODE
D 803	TVSRM10B	DIODE
D 804	TVSRM10B	DIODE
D 805	TVSRH1S	DIODE
D 806	TVSRH1S	DIODE
D 807	TVSRH1S	DIODE
D 808	TVSRU2AM	DIODE
D 809	TVSRU2AM	DIODE
D 810	TVSQA207AB	ZENER DIODE
D 811	TVSSR2K	DIODE
D 812	LN21RCPHL	DIODE (LED)
D 851	ERPF5B0M080F	POSISTOR
D 901	MA3068	DIODE
D 1301	MA150	DIODE
D 1302	MA150	DIODE
D 1304	MA1120	ZENER DIODE
D 1305	MA1120	ZENER DIODE
D 1306	MA1120	ZENER DIODE
D 1307	MA1120	ZENER DIODE
D 1308	MA150	DIODE
D 1310	0A90G	DIODE
D 1701	0A90G	DIODE
D 1704	MA150	DIODE
D 1705	MA150	DIODE
	I.C	
IC 201	AN5262	IC (SIF,AUDIO)
IC 303	TVSTC4011BP	IC
IC 401	AN5436M	IC
IC 451	AN5512	IC (V-OUT)
IC1301	AN5315	IC (VIDEO,CHROMA)
IC1302	AN5352	IC
IC1303	TVSTC4066BP	IC
	TRANSISTORS	
Q 201	2SC1473-RNC	TRANSISTOR
Q 202	2SC1473-RNC	TRANSISTOR
Q 305	2SC1685-R	TRANSISTOR
Q 306	2SC1685-R	TRANSISTOR
Q 351	2SC2923	TRANSISTOR
Q 352	2SC2923	TRANSISTOR
Q 353	2SC2923	TRANSISTOR

Ref. No.	Part No.	Description
Q 501	2SC1573AH	TRANSISTOR
Q 551	2SD950	TRANSISTOR
Q 552	2SD762	TRANSISTOR
Q 801	2SC2833VB	TRANSISTOR
Q 803	2SC1685-R	TRANSISTOR
Q 901	2SD601-R	TRANSISTOR
Q 902	2SB709-R	TRANSISTOR
Q 903	2SD601-R	TRANSISTOR
Q 1301	2SA564A-R	TRANSISTOR
Q 1501	2SC1685-R	TRANSISTOR
Q 1502	2SA564A-R	TRANSISTOR
Q 1701	2SC1685-R	TRANSISTOR
Q 1702	2SC1685-R	TRANSISTOR
Q 1703	2SC1685-R	TRANSISTOR
Q 1704	2SA564A-R	TRANSISTOR
Q 1705	2SC1685-R	TRANSISTOR
Q 1706	2SC1685-R	TRANSISTOR
Q 1708	2SC1685-R	TRANSISTOR
Q 1709	2SC1685-R	TRANSISTOR

Ref. No.	Part No.	Description
	UNIQUE PARTS FOR CT-1300D	
	RESISTORS	
R 818	ERD25TJ562	C 5.6KOHM, J, 1/4W
R 1501	ERD25TJ750	C 75OHM, J, 1/4W
R 1509	ERD25TJ271	C 270OHM, J, 1/4W
R 1511	ERD25TJ271	C 270OHM, J, 1/4W
R 1513	ERD25TJ271	C 270OHM, J, 1/4W
R 1712	ERD25TJ102	C 1KOHM, J, 1/4W
R 1724	ERD25TJ222	C 2.2KOHM, J, 1/4W
	CAPACITORS	
C 813	ECKD2H103KB	C 0.01UF, K, 500V
C 822	ECQM4104MZ	P 0.1UF, M, 400V
	TRANSISTORS	
Q 802	2SA900	TRANSISTOR
Q 1503	UN1212	TRANSISTOR
Q 1504	UN1212	TRANSISTOR
Q 1505	UN1212	TRANSISTOR
	OTHERS	
	EAS9D75SB	SPEAKER
	M34JBL69X	PICTURE TUBE
	TBL61312-1	SET LEG
	TBM24665	MODEL NAME PLATE
	TBX1586601	KNOB (RGB.VTR)
	TBX1588501	BUTTON (POWER)
	TEK6926	DOOR SWITCH
	TES4211	COIL SPRING
	TES6583	SPRING FOR TR
	TES6594	SPRING (R) (L)
	THE492-4	SCREW
	TJC6319	FUSE HOLDER
	TJS168960	2P CONNECTOR
	TJS168970	3P CONNECTOR
	TJS168980	4P CONNECTOR

Ref. No.	Part No.	Description
	TJS169010	CONNECTOR
	TJS169020	8P CONNECTOR
	TJS35030	CRT SOCKET
	TJS99100	8P VIDEO SOCKET
	TKP1617903-1	BOTTOM DOOR
	TKR15691	STAND
	TKU220500-1	REAR COVER
	TKY65502-1	CABINET
	TLC2024-2S	CONVERGENCE YOKE
	TLK159003N1	DEGAUSSING COIL
	TLY16301F	DEFLECTION YOKE
	TMK13934	CRT RUBBER
	TMM15202	CRT SOCKET COVER
	TMM15501-1	RUBBER CUSHION
	TMM17514	DY WEDGE
	TNH11303	CIRCUIT BOARD
	TNP10983ZA	CIRCUIT BOARD CRT
	TNP56521	CIRCUIT BOARD Z
	TNP62482AA	CIRCUIT BOARD B
	TNP65825AB	CIRCUIT BOARD A
	TPC149791	OUTER CARTON
	TPD151154	CUSHION (UPPER)
	TPD152158	CUSHION (BOTTOM)
	TPE24124	SET COVER
	TQB611756	FAN BAG
	TSX2143	POWER SUPPLY CORD
	TXFMK01H55	MAGNET
	XWG5J20	WASHER
A 1	TXAJTA1MHZ	CONNECTOR,A1
A 3	TXAJTA3MHZ	CONNECTOR,A3
A 9	TXAJTA9MHZ	CONNECTOR,A9
A 15	TXAJTA15MHZ	CONNECTOR,A15
A 20	TZS9014	1P COUPLER KIT
B 1	TXAJTB1MHZ	CONNECTOR,B1
B 2	TXAJTB2MHZ	CONNECTOR,B2
B 3	TXAJTB3MHZ	CONNECTOR,B3
B 4	TXAJTB4MHZ	CONNECTOR,B4
B 6	TXAJTB6MHZ	CONNECTOR,B6
B 7	TXFJTB7MHZ	CONNECTOR,B7
B 8	TXAJTB8MHZ	CONNECTOR,B8
B 9	TXAJTB9MHZ	CONNECTOR,B9
F 1	XBA1F30NU100	FUSE 125V 3A
S 301	ESB621021	SWITCH(SOUND VOL)
S 351	EVQR4AL13	SWITCH (SVC-VTR)
S 801	ESB99350T	POWER SWITCH
X 1601	TSS816M	CRYSTAL OSCILATOR
	TSX-210-2	CABLE

UNIQUE PARTS FOR DT-D1300D

	RESISTORS	
R 455	ERD25TJ470	C 47OHM, J,1/4W
R 1500	ERD25TJ750	C 75OHM, J,1/4W
R 1509	ERD25TJ152	C 1.5KOHM, J,1/4W
R 1511	ERD25TJ152	C 1.5KOHM, J,1/4W
R 1513	ERD25TJ152	C 1.5KOHM, J,1/4W
R 1801	ERD25TLJ470	C 47OHM, J,1/4W
R 1802	ERD25TJ470	C 47OHM, J,1/4W
R 1803	ERD25TJ470	C 47OHM, J,1/4W
R 1804	ERD25TJ470	C 47OHM, J,1/4W
R 1805	ERD25TJ271	C 270OHM, J,1/4W
R 1806	ERD25TJ271	C 270OHM, J,1/4W
R 1807	ERD25TJ271	C 270OHM, J,1/4W
R 1808	ERD25TJ271	C 270OHM, J,1/4W
R 1809	ERD25TJ102	C 1KOHM, J,1/4W
R 1810	ERD25TJ302	C 3KOHM, J,1/4W
R 1811	ERD25TJ102	C 1KOHM, J,1/4W
R 1812	ERD25TJ202	C 2KOHM, J,1/4W
R 1813	ERD25TLJ621	C 620OHM, J,1/4W
R 1814	ERD25TJ302	C 3KOHM, J,1/4W
R 1815	ERD25TJ202	C 2KOHM, J,1/4W
R 1816	ERD25TJ202	C 2KOHM, J,1/4W
R 1817	ERD25TJ202	C 2KOHM, J,1/4W
R 1818	ERD25TLJ202	C 2KOHM, J,1/4W
R 1819	ERD25TLJ621	C 620OHM, J,1/4W
R 1820	ERD25TJ202	C 2KOHM, J,1/4W

Ref. No.	Part No.	Description
R 1821	ERD25TJ102	C 1KOHM, J,1/4W
R 1822	ERD25TJ202	C 2KOHM, J,1/4W
R 1823	ERD25TLJ202	C 2KOHM, J,1/4W
R 1824	ERD25TJ621	C 620OHM, J,1/4W
R 1825	ERD25TLJ123	C 12KOHM, J,1/4W
R 1826	ERD25TLJ103	C 10KOHM, J,1/4W
R 1829	ERD25TLJ102	C 1KOHM, J,1/4W
R 1830	ERD25TLJ123	C 12KOHM, J,1/4W
R 1831	ERD25TLJ103	C 10KOHM, J,1/4W
R 1832	ERD25TLJ123	C 12KOHM, J,1/4W
R 1833	ERD25TLJ103	C 10KOHM, J,1/4W
R 1836	ERD25TLJ102	C 1KOHM, J,1/4W
R 1837	ERD25TLJ123	C 12KOHM, J,1/4W
R 1838	ERD25TLJ103	C 10KOHM, J,1/4W
R 1839	ERD25TLJ123	C 12KOHM, J,1/4W
R 1840	ERD25TLJ103	C 10KOHM, J,1/4W
R 1843	ERD25TLJ102	C 1KOHM, J,1/4W
R 1844	ERD25TLJ123	C 12KOHM, J,1/4W
R 1845	ERD25TLJ103	C 10KOHM, J,1/4W
R 1846	ERD25TLJ102	C 1KOHM, J,1/4W
R 1847	ERD25TLJ101	C 100OHM, J,1/4W
R 1848	ERD25TLJ152	C 1.5KOHM, J,1/4W
R 1849	ERD25TJ101	C 100OHM, J,1/4W
R 1850	ERD25TJ272	C 2.7KOHM, J,1/4W
R 1851	ERD25TLJ222	C 2.2KOHM, J,1/4W
R 1852	ERD25TJ101	C 100OHM, J,1/4W
R 1854	ERD25TLJ101	C 100OHM, J,1/4W
R 1855	ERD25TLJ101	C 100OHM, J,1/4W
R 1856	ERD25TLJ102	C 1KOHM, J,1/4W
R 1857	ERD25TLJ563	C 56KOHM, J,1/4W
R 1858	ERD25TLJ223	C 22KOHM, J,1/4W
R 1859	ERD25TLJ473	C 47KOHM, J,1/4W
R 1860	ERD25TLJ271	C 270OHM, J,1/4W
R 1861	ERD25TLJ472	C 4.7KOHM, J,1/4W
R 1862	ERD25TLJ152	C 1.5KOHM, J,1/4W
R 1863	ERD25TLJ104	C 100KOHM, J,1/4W
R 1864	ERD25TLJ104	C 100KOHM, J,1/4W
R 1865	ERD25TLJ683	C 68KOHM, J,1/4W
R 1866	ERD25TLJ272	C 2.7KOHM, J,1/4W
R 1867	ERD25TLJ271	C 270OHM, J,1/4W
R 1868	ERD25TJ102	C 1KOHM, J,1/4W
R 1869	ERD25TLJ104	C 100KOHM, J,1/4W
R 1870	ERD25TJ271	C 270OHM, J,1/4W
R 1871	ERD25TJ102	C 1KOHM, J,1/4W
R 1872	ERD25TLJ470	C 47OHM, J,1/4W
R 1873	ERD25TLJ470	C 47OHM, J,1/4W
R 1874	ERD25TLJ470	C 47OHM, J,1/4W
R 1875	ERD25TLJ470	C 47OHM, J,1/4W
R 1876	ERD25TLJ470	C 47OHM, J,1/4W
R 1877	ERD25TJ470	C 47OHM, J,1/4W
R 1878	ERD25TJ271	C 270OHM, J,1/4W
R 1879	ERD25TJ271	C 270OHM, J,1/4W
R 1880	ERD25TJ271	C 270OHM, J,1/4W
R 1881	ERD25TJ271	C 270OHM, J,1/4W
R 1882	ERD25TLJ271	C 270OHM, J,1/4W
R 1883	ERD25TJ222	C 2.2KOHM, J,1/4W
R 1884	ERD25TJ102	C 1KOHM, J,1/4W
R 1885	ERD25TJ222	C 2.2KOHM, J,1/4W
R 1886	ERD25TJ102	C 1KOHM, J,1/4W
R 1887	ERD25TLJ222	C 2.2KOHM, J,1/4W
R 1888	ERD25TLJ102	C 1KOHM, J,1/4W
R 1889	ERD25TLJ102	C 1KOHM, J,1/4W
R 1890	ERD25TJ103	C 10KOHM, J,1/4W
R 1891	ERD25TLJ102	C 1KOHM, J,1/4W
R 1892	ERD25TLJ103	C 10KOHM, J,1/4W
R 1893	ERD25TLJ101	C 100OHM, J,1/4W
R 1894	ERG3SJ680H	M 68OHM, J, 3W
R 1895	ERG2SJ560H	M 56OHM, J, 2W
R 1896	ERD25TLJ103	C 10KOHM, J,1/4W
R 1897	ERD25TLJ391	C 390OHM, J,1/4W
R 1898	ERD25TLJ102	C 1KOHM, J,1/4W
R 1899	ERD25TLJ472	C 4.7KOHM, J,1/4W
R 1900	ERD25TLJ103	C 10KOHM, J,1/4W
	CAPACITORS	
C 813	ECKD2H472KB2	C 4700PF, K,500V
C 822	ECQM4104KZ	P 0.1UF, K,400V
C 1606	ECQM1H272MZ	P 2700PF, M, 50V
C 1801	ECEA1CS101	E 100UF, 16V
C 1802	ECKF1H103KB	C 0.01UF, K, 50V
C 1803	ECEA1HS100	E 10UF, 50V
C 1804	ECEA1HS100	E 10UF, 50V
C 1805	ECEA1HS100	E 10UF, 50V
C 1806	ECEA1HN100S	E 10UF, 50V
C 1807	ECEA1HN100S	E 10UF, 50V
C 1808	ECEA1HN100S	E 10UF, 50V
C 1809	ECQM1H102KZ	P 1000PF, K, 50V
C 1810	ECQM1H102KZ	P 1000PF, K, 50V
C 1811	ECEA1HS010	E 1UF, 50V

Ref. No.	Part No.	Description
C 1812	ECQM1H102KZ	P 1000PF, K, 50V
C 1813	ECQM1H102KZ	P 1000PF, K, 50V
C 1814	ECEA1CS221	E 220UF, 16V
C 1815	ECEA0JS101	E 100UF, 6.3V
C 1816	ECCF1H151J	C 150PF, J, 50V
	DIODES	
D 1801	MA161	DIODE
D 1802	MA161	DIODE
D 1803	MA161	DIODE
D 1804	MA161	DIODE
D 1805	MA161	DIODE
D 1806	MA161	DIODE
D 1807	MA161	DIODE
D 1809	MA150	DIODE
D 1810	MA150	DIODE
D 1812	MA150	DIODE
D 1813	MA150	DIODE
D 1814	MA150	DIODE
D 1815	MA150	DIODE
D 1816	MA1056M	ZENER DIODE
D 1817	MA1056M	ZENER DIODE
D 1818	MA1056M	ZENER DIODE
D 1820	MA1056M	ZENER DIODE
D 1821	TVSQB106	ZENER DIODE
D 1822	TVSQB105	ZENER DIODE
D 1823	TVSQB106	ZENER DIODE
	TRANSISTORS	
Q 802	2SA900-R	TRANSISTOR
Q 1301	2SA564A-RS	TRANSISTOR
Q 1502	2SA564A-RS	TRANSISTOR
Q 1801	2SA564-R	TRANSISTOR
Q 1802	2SA564-R	TRANSISTOR
Q 1803	2SA564-R	TRANSISTOR
Q 1804	2SA564-R	TRANSISTOR
Q 1805	2SC1684-R	TRANSISTOR
Q 1806	2SC1684-R	TRANSISTOR
Q 1807	2SC1684-R	TRANSISTOR
Q 1808	2SC1684-R	TRANSISTOR
Q 1809	2SC1684-R	TRANSISTOR
Q 1810	2SC1684-R	TRANSISTOR
Q 1811	2SC1684-R	TRANSISTOR
Q 1812	2SC1684-R	TRANSISTOR
Q 1813	2SC1684-R	TRANSISTOR
Q 1814	2SC1684-R	TRANSISTOR
Q 1815	2SC1684-R	TRANSISTOR
Q 1816	2SA564-R	TRANSISTOR
Q 1817	2SA564-R	TRANSISTOR
Q 1818	2SA564-R	TRANSISTOR
Q 1819	2SA564-R	TRANSISTOR
Q 1820	2SA564-R	TRANSISTOR
Q 1821	2SA564-R	TRANSISTOR
Q 1822	2SA719-S	TRANSISTOR
Q 1823	2SC1684-R	TRANSISTOR
	OTHERS	
	EAS9D75SB	SPEAKER
	M34JBL79X	PICTURE TUBE
	TBL61312-1	SET LEG
	TBM24671	MODEL NAME PLATE
	TBX1586601	KNOB (RGB.VTR)
	TBX1588500	POWER BUTTON
	TEK6926	DOOR SWITCH
	TES4211	COIL SPRING
	TES6583	SPRING FOR TR
	TES6594	SPRING (R) (L)
	THE492-4	SCREW
	TJC6319	FUSE HOLDER
	TJS168960	2P CONNECTOR
	TJS168970	3P CONNECTOR
	TJS168980	4P CONNECTOR
	TJS168990	5P CONNECTOR
	TJS169010	CONNECTOR
	TJS169020	8P CONNECTOR
	TJS35030	CRT SOCKET
	TKP1617905-1	BOTTOM DOOR
	TKR15692	ARM STAND
	TKU220501-1	REAR COVER
	TKY65504-1	CABINET
	TLC2024-2S	CONVERGENCE YOKE
	TLK159003N1	DEGAUSSING COIL
	TLY16301F	DEFLECTION YOKE
	TMK13934-1	CRT RUBBER
	TMM15202	CRT SOCKET COVER
	TMM15501-1	RUBBER CUSHION
	TMM17514	DY WEDGE
	TNH11303	CIRCUIT BOARD

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	TNP10983ZA	CIRCUIT BOARD CRT			
	TNP46145ZA	CIRCUIT BOARD C			
	TNP56521	CIRCUIT BOARD Z			
	TNP62482ZA	CIRCUIT BOARD B			
	TNP65825ZA	CIRCUIT BOARD A			
	TPC149792	OUTER CARTON			
	TPD151154	CUSHION (UPPER)			
	TPD152158	CUSHION (BOTTOM)			
	TPE24124	SET COVER			
	TQB611751	FAN BAG			
	TSX2179	POWER SUPPLY CORD			
	TXFMK01H55	MAGNET			
	XWG5J20	WASHER			
A 1	TXAJTA1MHZ	CONNECTOR,A1			
A 3	TXAJTA3MHZ	CONNECTOR,A3			
A 9	TXAJTA9MHZ	CONNECTOR,A9			
A 15	TXAJTA15MHZ	CONNECTOR,A15			
A 20	TZS9014	1P COUPLER KIT			
B 1	TXAJTB1MHZ	CONNECTOR,B1			
B 2	TXAJTB2MGZ	CONNECTOR,B2			
B 3	TXAJTB3MGZ	CONNECTOR,B3			
B 4	TXAJTB4MHZ	CONNECTOR,B4			
B 6	TXAJTB6MHZ	CONNECTOR,B6			
B 7	TXFJTB7MHZ	CONNECTOR,B7			
B 8	TXAJTB8MGZ	CONNECTOR,B8			
B 9	TXAJTB9MHZ	CONNECTOR,B9			
C 3	TXAJTC3MGZ	CONNECTOR,C3			
C 5	TXAJTC5MGZ	CONNECTOR,C5			
F 1	XBA1F30NU100	FUSE 125V 3A			
S 301	ESB621021	SWITCH(SOUND VOL)			
S 351	EVQR4AL13	SWITCH (SVC-VTR)			
S 801	ESB99350T	POWER SWITCH			
S 1501	ESD1411B	SWITCH			
X 1601	TSS816M	CRYSTAL OSCILATOR			
	TKK179463	METAL PLATE			

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