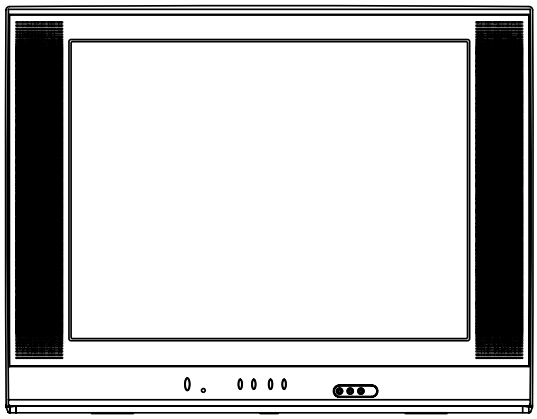
SERVICE MANUAL

COLOR TELEVISION RECEIVER

DTV2784



All the specifications and features are subject to change without notice.

ORIGINAL
VERSION (A)

S/M CODE NO. M3W4062ASM
DATE OF ISSUE 02/2006

IMPORTANT SERVICE SAFETY INFORMATION

Operating the receiver outside of its cabinet or with its back removed involves a shock hazard. Work on these models should only be performed by those who are thoroughly familiar with precautions necessary when working on high voltage equipment.

Exercise care when servicing this chassis with power applied. Many B plus and high voltage RF terminals are exposed which, if carelessly contacted, can cause serious shock or result in damage to the chassis. Maintain interconnecting ground lead connections between chassis, escutcheon, picture tube dag and tuner cluster when operating the chassis.

These receivers have a "polarized" AC line cord. The AC plug is designed to fit into standard AC outlets in one direction only. The wide blade connects to the "ground side" and the narrow blade connects to the "hot side" of the AC line. This assures that the TV receiver is properly grounded to the house wiring. If an extension cord must be used, make sure it is of the "polarized" type.

Since the chassis of this receiver is connected to one side of the AC supply during operation, service should not be attempted by anyone not familiar with the precautions necessary when working on these types of equipment.

When it is necessary to make measurements or tests with AC power applied to the receiver chassis, an Isolation Transformer must be used as a safety precaution and to prevent possible damage to transistors. The Isolation Transformer should be connected between the TV line cord plug and the AC power outlet.

When removing springs or spring mounted parts from the tuner, tuner cluster or chassis, shatterproof goggles must be worn. Keep others without shatterproof goggles away.

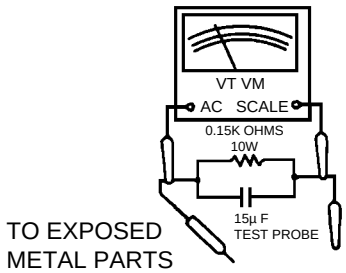
Before returning the receiver to the user, perform the following safety checks:

1. Inspect all lead dress to make certain that leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the receiver.
2. Replace all protective devices such as nonmetallic control knobs, insulating fishpapers, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. To be sure that no shock hazard exists, a check for the presence of leakage current should be made at each exposed metal part having a return path to the chassis (antenna, cabinet metal, screw heads, knobs and/or shafts, escutcheon, etc.) in the following manner.

Plug the AC line cord directly into a 120V AC receptacle. (Do not use an Isolation Transformer during these checks.) All checks must be repeated with the AC line cord plug connection reversed. (If necessary, a nonpolarized adapter plug must be used only for the purpose of completing these checks.)

If available, measure current using an accurate leakage current tester. Any reading of 0.35mA or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.

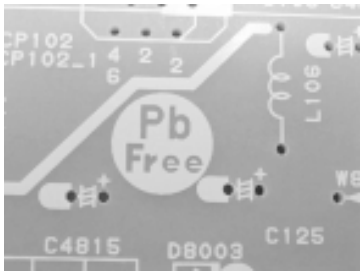
If a reliable leakage current tester is not available, this alternate method of measurement should be used. Using two clip leads, connect a 1500 ohm, 10 watt resistor paralleled by a 0.15µF capacitor in series with a known earth ground, such as a water pipe or conduit and the metal part to be checked. Use a VTVM or VOM with 1000 ohms per volt, or higher, sensitivity to measure this AC voltage drop across the resistor. Any reading of 0.35 volt RMS or more is excessive and indicates a potential shock hazard which must be corrected before returning the receiver to the owner.



ABOUT LEAD FREE SOLDER (PbF)

Distinction of PbF PCB:

PCBs (manufactured) using lead free solder will have a PbF printing on the PCB.
(Please refer to figures.)



Caution:

- Pb free solder has a higher melting point than standard solder;
  Typically the melting point is 86°F~104°F(30°C~40°C) higher.
  Please use a soldering iron with temperature control and adjust it to 650°F ± 20°F (350°C ± 10°C).
  In case of using high temperature soldering iron, please be careful not to heat too long.
- Pb free solder will tend to splash when heated too high (about 1100°F/ 600°C).
- All products with the printed circuit board with PbF printing must be serviced with lead free solder.
  When soldering or unsoldering, completely remove all of the solder from the pins or solder area,
  and be sure to heat the soldering points with the lead free solder until it melts sufficiently.

Recommendations

Recommended lead free solder composition is Sn-3.0Ag-0.5Cu.

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GENERAL SPECIFICATIONS

G-1	TV SYSTEM	CRT	CRT Size / Visual Size		27 inch / 676.0mmV
			CRT Type		Normal
			Magnetic Field BV/BH		+0.45G/0.18G
		Color System			NTSC
		Speaker			2Speaker
			Position		Front
			Size		2.0 x 3.5 Inch
			Impedance		8 ohm
		Sound Output	MAX		1.0 + 1.0 W
			10%(Typical)		- W
		NTSC3.58+4.43 /PAL60Hz			No
G-2	Tuning System	Broadcasting System	Analog		US System M
			Digital		ATSC(8VSB), QAM
		Tuner and	System		1Tuner
		Receive CH	Destination		USA(W/ CATV)
			CH Coverage		2 - 69, 4A, A-5 - A-1, A - I, J - W, W+1 - W+84
		Intermediate	Digital		44.00MHz
		Frequency	Analog	Picture(FP)	45.75MHz
				Sound(FS)	41.25MHz
				FP-FS	4.50MHz
		Preset CH			No
		Stereo/Dual TV Sound			Yes
		Tuner Sound Muting			Yes
G-3	Power	Power Source	AC		120V AC 60Hz
			DC		
		Power Consumption		at AC	
				27"	110 W at AC 120 V 60 Hz
			Stand by (at AC)		3 W at AC 120 V 60 Hz
			Per Year		-- kWh/Year
		Protector	Power Fuse		Yes
			Safety Circuit		Yes
			IC Protector(Micro Fuse)		No
G-4	Regulation		Safety		UL
			Radiation		FCC
			X-Radiation		DHHS
G-5	Temperature		Operation		+5°C ~ +40°C
			Storage		-20°C ~ +60°C
G-6	Operating Humidity				Less than 80% RH
G-7	On Screen Display	Menu			Yes
			Menu Type		Icon
		Menu1	Picture		Yes
				Mode(Picture preference)	No
				Contrast	Yes
				Brightness	Yes
				Color	Yes
				Tint	Yes
				Sharpness	Yes
				Color Temperature	No
				Reset	Yes
			Audio		Yes
				MTS	Yes
				Bass	No
				Treble	No
				Balance	No
				BBE	No
				Stable Sound	No
				Speakers On/Off	No
				Audio Language	Yes
				Digital Output (PCM/Dolby Digital)	Yes
				Surround	No
				Reset	Yes
			Setup		Yes
				Language	Yes
				Clock Set	Yes
				TV/CABLE	Yes
				Auto CH Memory	Yes
				Add/ Delete	Yes
				Closed Caption	Yes
				CC Advanced (Size, Type, Edge, Color, Background Color)	Yes
				Signal Meter	Yes
			Option		Yes
				On/Off Timer	Yes

GENERAL SPECIFICATIONS

				Favorite CH	No
				CH Label	Yes
				Video Label	No
			Locks		Yes
				Password	Yes
				V-Chip	Yes
				Video Lock	Yes
				CH Lock	Yes
				Game Timer	No
				Front. Panel Lock	Yes
			Control Level		Yes
				Volume	Yes
				Contrast	Yes
				Brightness	Yes
				Color	Yes
				Tint	Yes
				Sharpness	Yes
				Bass	No
				Treble	No
				Balance	No
				Signal Meter	Yes
			Stereo, SAP, Mono		Yes
			Video		Yes
			Component		Yes
			Channel(TV/Cable)		Yes
			CH Label		Yes
			Video Label		No
			Clock		Yes
			Game Timer		No
			On/Off Timer		Yes
			Sleep Timer		Yes
			Reset		Yes
			Sound Mute		Yes
			Picture Size		Yes
			V-chip Rating		Yes
G-8	**OSD Language**				English French Spanish
G-9	**Clock and Timer**	Sleep Timer	Max Time		120 Min
			Step		10 Min
		On/Off Timer	Program(On Timer / Off Timer)		Yes
		Timer Back-up (at Power Off Mode) more than			-- Min Sec
G-10	**Remote Control**	Unit			RC-KL
		Glow in Dark Remocon			No
		Format			NEC
		Remocon Format			Orion
		Custom Code			86-05 h
		Power Source	Voltage(D.C)		3V
			UM size x pcs		UM-4 x 2 pcs
		Total Keys			27 Keys
		Keys	Power		Yes
			1		Yes
			2		Yes
			3		Yes
			4		Yes
			5		Yes
			6		Yes
			7		Yes
			8		Yes
			9		Yes
			0		Yes
			100		No
			CH Up		Yes
			CH Down		Yes
			Volume Up		Yes
			Volume Down		Yes
			TV/Caption/Text		Yes
			CH1/CH2		No
			TV/Video(TV/AV)		Yes
			CH RTN/CH ENT(Quick View)		Yes
			Sleep		Yes
			Display(Call) / -		Yes
			Reset		Yes
			Menu		Yes
			Enter		Yes

GENERAL SPECIFICATIONS

			Mute	Yes
			Exit	Yes
			MTS(Audio Select)	Yes
			Set +	No
			Set -	No
			Picture Size	Yes
		Multi Brand Keys	CH Up(VCR)	No
			CH Down(VCR)	No
			Pause/Still	No
			TV/VCR(VCR)	No
			CH Enter	No
			Code Set (Code)	No
			FF	No
			Rew	No
			Rec	No
			Play	No
			Stop	No
			TV	No
			VCR	No
			Cable	No
G-11	**Features**	Auto Degauss		Yes
		Auto Shut Off		Yes
		Canal+		No
		Cable(CATV)		Yes
		Anti-theft		No
		Rental		No
		Memory(Last CH)		Yes
		Memory(Last Volume)		Yes
		V-Chip (Analog & Digital)		Yes
			Type	USA, ORION Type
		BBE		No
		Auto Search		No
		CH Allocation		No
		SAP		Yes
		Tone Control		No
		Just Clock Function		No
		Game Position		No
		CH Label		Yes
		VM Circuit		No
		Full OSD		No
		Premiere		No
		Comb Filter		No
				Lines
		Auto CH Memory		Yes
		Hotel Lock		No
		Closed Caption (Analog & Digital)		Yes
		CC Advance		Yes
		Stable Sound		No
		Surround		No
		CH Lock		Yes
		Video Lock		Yes
		Game Timer (Max Time:120 Min)		No
		Energy Star		No
		Power On Memory		Yes
		Favorite CH		No
		FBT Leak Test Protect		No
		Mode(Picture Preference)		No
		Variable Audio Out		No
		Front Panel Lock		Yes
		QAM		Yes
		Digital Out	Dolby Digital	Yes
			MPEG	No
			PCM	Yes
			DTS	No
		Zoom		Yes
G-12	**Accessories**	Owner's Manual	Language	English / Spanish
			w/Guarantee Card	Yes
		Remote Control Unit		Yes
		Rod Antenna		No
			Poles	
			Terminal	
		Loop Antenna		No
			Terminal	
		U/V Mixer		No

GENERAL SPECIFICATIONS

		DC Car Cord (Center+)			No
		Guarantee Card			No
		Warning Sheet			No
		Circuit Diagram			No
		Antenna Change Plug			No
		Service Facility List			No
		Important Safeguard			No
		Dew/AHC Caution Sheet			No
		AC Plug Adapter			No
		Quick Set-up Sheet			No
		Battery			**Yes**
				UM-4 x 2pcs	
				OEM Brand	No
		AC Cord			No
		AV Cord (2Pin-1Pin)			No
		Registration Card			No
		Information Sheet			No
		PTB Sheet			No
		300 ohm to 75 ohm Antenna Adapter			No
		Information Sheet(Return)			Yes
G-13	**Interface**	Switch	Front	Power	Yes
				System Select	No
				Main Power SW	No
				Sub Power	No
				Channel Up	Yes
				Channel Down	Yes
				Volume Up	Yes
				Volume Down	Yes
			Rear	AC/DC	No
				TV/CATV Selector	No
				Degauss	No
				Main Power SW	No
		Indicator		Power	No
				Stand-by	No
				On Timer	No
		Terminals	Front	Video Input = VIDEO2	RCA
				Audio Input = VIDEO2	RCA x 2 (L/MONO,R)
				Other Terminal	No
			Rear	Video Input(Rear1) = VIDEO1	RCA
				Video Input(Rear2)	No
				Audio Input(Rear1) = VIDEO1	RCA x 2 (L/MONO,R)
				Audio Input(Rear2)	No
				Video Output	No
				Audio Output	No
				S-Input	Yes
				Component Input2(w/ Analog Audio L/R)	RCA x 5
				Digital Audio Out	Coaxial x 1
				Diversity	No
				Ext Speaker	No
				DC Jack 12V(Center +)	No
				VHF/UHF Antenna Input	F Type
				AC Outlet	No
G-14	**Set Size**			Approx. W x D x H (mm)	740 x 489.5 x 571.5
G-15	**Weight**			Net (Approx.)	35kg (77.2 lbs)
				Gross (Approx.)	38Kg (83.8 lbs)
G-16	**Carton**	Master Carton			No
				Content	---- Sets
				Material	-- /--
				Dimensions W x D x H(mm)	-- x -- x --
				Description of Origin	No
			Gift Box	Material	Double/White W/Photo Label
				Dimensions W x D x H(mm)	850 x 575 x 665
				Description of Origin	Yes
			Drop Test		Natural Dropping At 1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	31
				Container Stuffing	192 Sets/40' container
G-17	**Material**	Cabinet		Cabinet Front	PS 94V0 DECABROM
				Cabinet Rear	PS 94V0 DECABROM
		PCB		Non-Halogen Demand	No
				Eyelet Demand	No
G-18	**Environment**	Environmental standard requirement (by buyer)			Green procurement of ORION
		Pb-free			Phase3(Phase3A)

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF ANODE CAP

Read the following **NOTED** items before starting work.

* After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
* Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

REMOVAL

1. Follow the steps as follows to discharge the Anode Cap. **(Refer to Fig. 1-1.)**
   Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated screwdriver, touch the support of the Anode with the tip of the screwdriver.
   A cracking noise will be heard as the voltage is discharged.

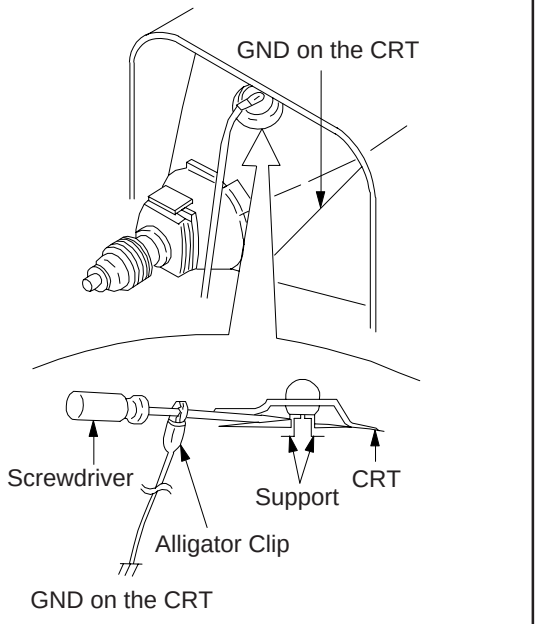


Fig. 1-1

2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support. **(Refer to Fig. 1-2.)**

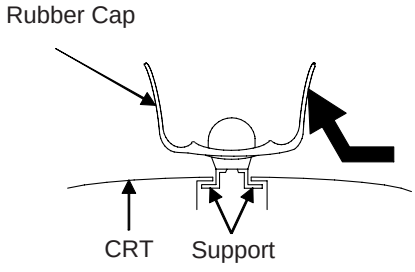


Fig. 1-2

3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

1. Clean the spot where the cap was located with a small amount of alcohol. **(Refer to Fig. 1-3.)**

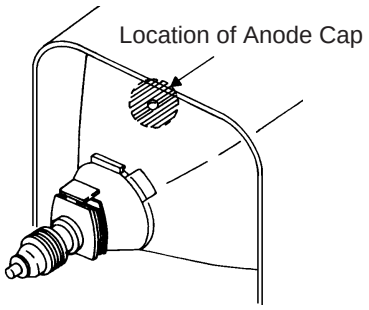


Fig. 1-3

NOTE

Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. **(Refer to Fig. 1-4.)**

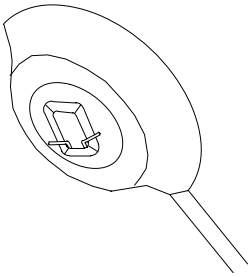


Fig. 1-4

4. Insert one end of the Anode Support into the anode button, then the other as shown in **Fig. 1-5**.

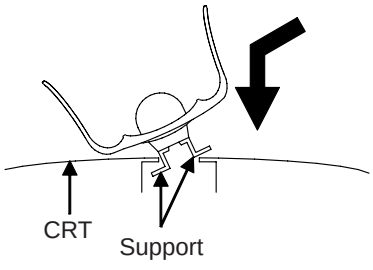


Fig. 1-5

5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

DISASSEMBLY INSTRUCTIONS

2. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 2-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

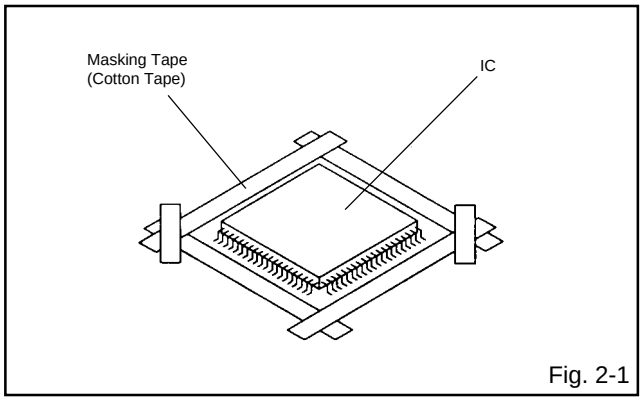


Fig. 2-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 2-2.)**

   NOTE

   Do not rotate or move the IC back and forth until IC can move back and forth easily after desoldering the leads completely.

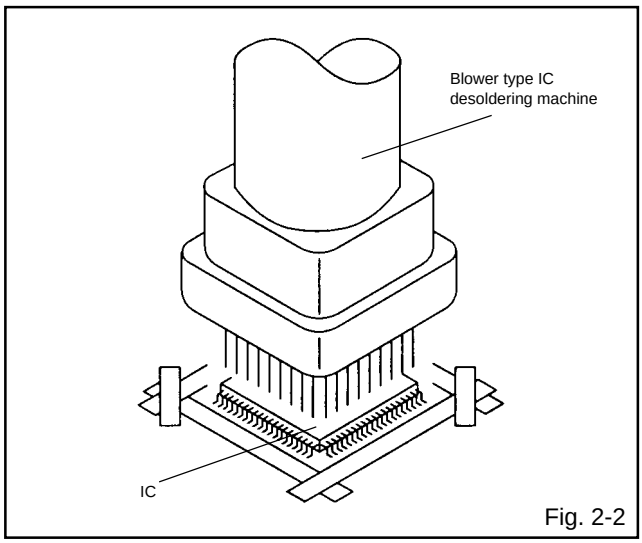


Fig. 2-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 2-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

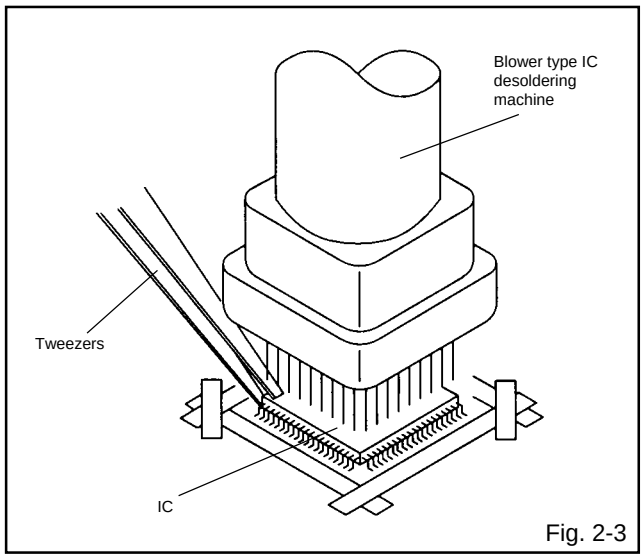


Fig. 2-3

4. Peel off the Masking Tape.

5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 2-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

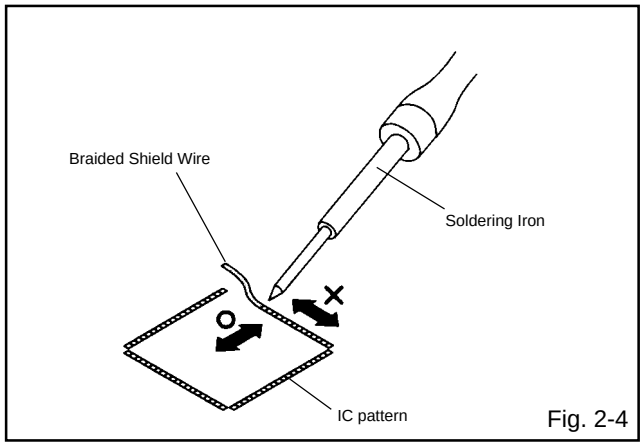


Fig. 2-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 2-5.)**

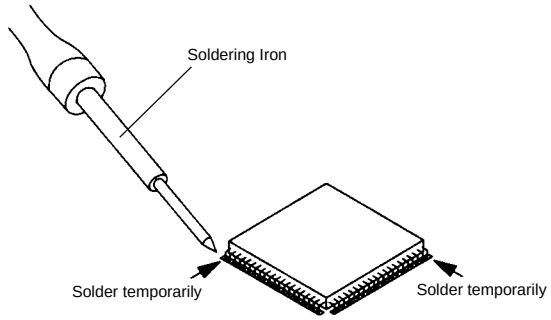


Fig. 2-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 2-6.)**

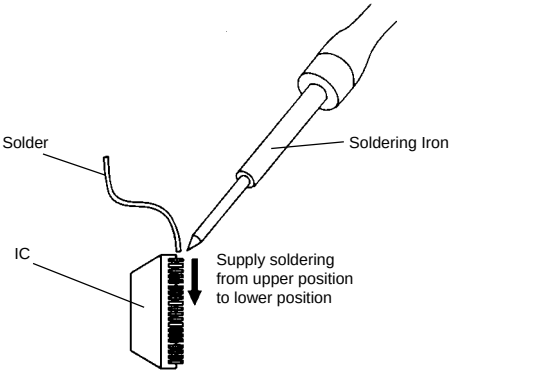


Fig. 2-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 2-7.)**

   NOTE

   Do not absorb the solder to excess.

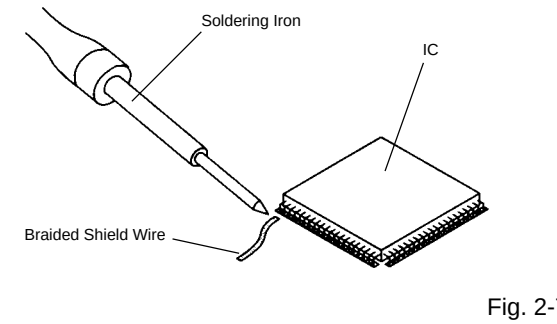


Fig. 2-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 2-8.)**

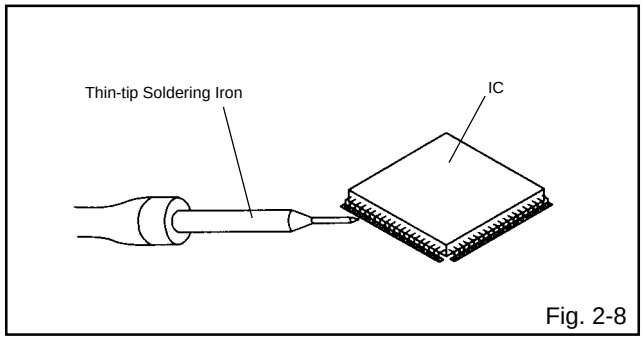


Fig. 2-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

SERVICE MODE LIST

This unit is provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter the Service Mode, press both set key and remote control key for more than 2 seconds.

Set Key	Remocon Key	Operations
VOL. (-) MIN	0	Releasing of V-CHIP PASSWORD.
VOL. (-) MIN	1	Initialization of factory data. NOTE: Do not use this for normal servicing. If you set factory initialization, the memories are reset such as the channel setting, and the POWER ON total hours.
VOL. (-) MIN	8	Check of the SUM DATA and MICON VERSION on the screen. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	6	Check for the firmware version. Can be checked of the INITIAL DATA of MEMORY IC. Refer to the "WHEN REPLACING EEPROM (MEMORY) IC".
VOL. (-) MIN	9	Display of the Adjustment MENU on the screen. Refer to the "ELECTRICAL ADJUSTMENT" (On-Screen Display Adjustment).

WHEN REPLACING EEPROM (MEMORY) IC

CONFIRMATION OF CHECK SUM, POWER ON TOTAL HOURS, MICON VERSION AND DIGITAL TV MICON FIRMWARE VERSION

Initial total of MEMORY IC, POWER ON total hours, MICON VERSION and Digital TV MICON Firmware VERSION can be checked on the screen. Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".
Please refer to "CONFIRMATION OF INITIAL DATA" when SUM DATA is not corresponding.

1. Turn on the POWER, and set to the TV mode.
2. Set the VOLUME to minimum.
3. Press both VOL. DOWN button on the set and Channel button **(8)** on the remote control for more than 2 seconds.
4. After the confirmation of each check sum, power on total hours, micon version and Digital TV MICON Firmware version, turn off the power.

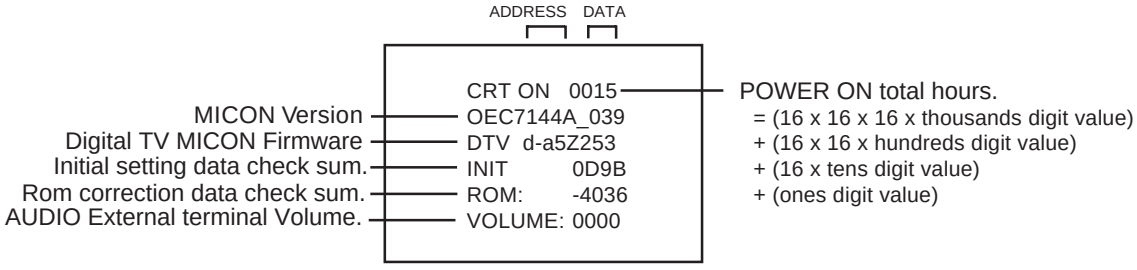


FIG. 1

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

INI	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	C1	A2	4D	1A	22	00	02	00	00	80	10	00	30	36	03	00
10	68	00	00	00	00	00	00	00	00	00	18	07	00	05	AA	00
20	79	00	00	73	00	00	00	00	00	00	00	00	00	00	00	00
30	70	B0	06	01	03	04	20	02	01	00	D0	02	B1	10	00	00
40	00	00	00	00	00	00	00	80	80	80	00	40	40	00	00	00
50	00	00	00	00	1E	00	0C	00	45	00	02	00	02	80	00	C0
60	00	00	00	00	00	84	00	00	C2	04	01	00	00	01	02	00
70	00	00	00	14	07	00	63	2F	00	00	00	00	00	00	00	00
80	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
90	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
A0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
B0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
C0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
D0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
E0	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
F0	00	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

Table 1

CONFIRMATION OF INITIAL DATA

1. Enter DATA SET mode by setting VOLUME to minimum.
2. Press both VOL. DOWN button on the set and Channel button **(6)** on the remote control for more than 2 seconds. ADDRESS and DATA should appear as FIG 1.
3. ADDRESS is now selected and should "blink". Using the UP/DOWN button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
4. Press RIGHT/LEFT button to select DATA. When DATA is selected, it will "blink".
5. Again, step through the DATA using UP/DOWN button until required DATA value has been selected.
6. Pressing RIGHT/LEFT button will take you back to ADDRESS for further selection if necessary.
7. Repeat steps 3 to 6 until all data has been checked.
8. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

9. Turn POWER on.
10. Press both VOL. DOWN button on the set and Channel button **(1)** on the remote control for more than 2 seconds.
11. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

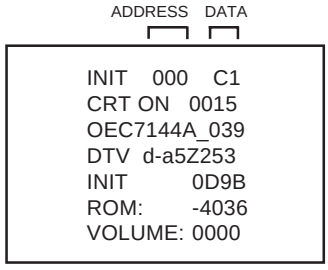
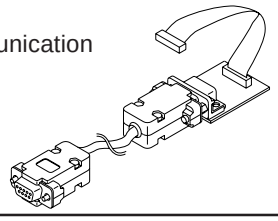
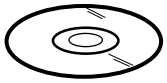
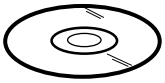


FIG. 1

RE-WRITE FOR DIGITAL SOFT FIRMWARE

JG198 Serial Communication Change JIG 	JG199 Flash UP-Date Soft Disc 	JG176 USA SD DTV ROM DISC 

Ref. No.	Part No.	Parts Name	Remarks
JG198	APJG198000	Serial Communication Change JIG	Connect the set to personal computer
JG199	APJG199000	Flash UP-Date Soft Disc	Up-Date of the Firmware
JG176	APJG176093	USA SD DTV ROM DISC	Up-Date of the Firmware

1. Confirm that the AC cord is plugged out.
2. Using the Serial Communication Change JIG **(JG198)**, connect the set to personal computer. **(Refer to Fig. 1)**
   NOTE: It is possible to write only with the personal computer of WINDOWS.

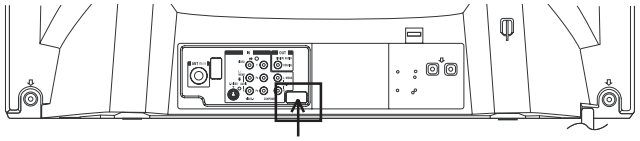


Fig. 1

3. Using the Flash UP-Date Soft Disc **(JG199)** and USA SD DTV ROM DISC**(JG176)**, please Re-write the DIGITAL SOFT FIRMWARE.
   The operating manual for Re-writing is included in Flash UP-Date Soft Disc **(JG199)**.

ELECTRICAL ADJUSTMENTS

1. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

- Use an isolation transformer when performing any service on this chassis.
- Before removing the anode cap, discharge electricity because it contains high voltage.
- When removing a PCB or related component, after unfastening or changing a wire, be sure to put the wire back in its original position.
- When you exchange IC and Transistor with a heat sink, apply silicon grease on the contact section of the heat sink. Before applying new silicon grease **(YG6260M)** , remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

Prepare the following measurement tools for electrical adjustments.

1. Oscilloscope
2. Digital Voltmeter
3. Multi-sound Generator
4. Pattern Generator

On-Screen Display Adjustment

1. In the condition of NO indication on the screen. Press the VOL. DOWN button on the set and the Channel button **(9)** on the remote control for more than 2 seconds to appear the adjustment mode on the screen as shown in **Fig. 1-1**.

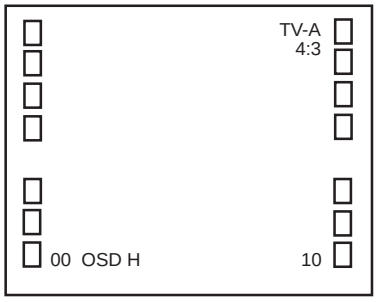


Fig. 1-1

2. Use the VOL. UP/DOWN button or Channel button **(0-9)** on the remote control to select the options shown in **Fig. 1-2**.
3. Press the MENU button on the remote control to end the adjustments.
4. To display the adjustment screen for AV, CS and DIGITAL mode, press the TV/VIDEO button on the remote control to set to the AV, CS and DIGITAL mode. Press the VOL.DOWN button on the set and the channel **(9)** on the remote control for more than 2 seconds.

NO.	FUNCTION	NO.	FUNCTION
00	OSD H	20	CONT.CENT
01	OSD C	21	CONT.MAX
02	CUT OFF	22	CONT.MIN
03	H.POSI	23	COL.CENT
04	H BLK L	24	COL.MAX
05	H BLK R	25	COL.MIN
06	V. SIZE	26	TINT CENT
07	V POSI	27	SHARP.CENT
08	V.LIN	28	SHARP.MAX
09	VS CORR	29	SHARP.MIN
10	V COMP	30	SUB BIAS
11	R.BIAS	31	H.SIZE
12	G.BIAS	32	PARABOLA
13	B.BIAS	33	TRAPEZIUM
14	R.DRV	34	COR TOP
15	G.DRV	35	COR BTM
16	B.DRV	36	TEST STEREO
17	BRI.CENT	37	TEST AUDIO
18	BRI.MAX	38	H FREQ
19	BRI.MIN		

Fig. 1-2

2. BASIC ADJUSTMENTS

2-1: CONSTANT VOLTAGE

1. Place the set in AV MODE without signal.
2. Connect the digital voltmeter to the **TP003**.
3. Adjust the **VR502** until the digital voltmeter is 120 ± 0.5V.

2-2: CUT OFF

1. Place the set in Aging Test for more than 15 minutes.
2. Place the set in AV MODE without signal.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(02)** on the remote control to select "CUT OFF".
5. Adjust the **Screen Volume** until a dim raster is obtained.

2-3: FOCUS

1. Receive the monoscope pattern.
2. Turn the Focus Volume fully counterclockwise once.
3. Adjust the **Focus Volume** until picture is distinct.

2-4: WHITE BALANCE

NOTE: Adjust after performing CUT OFF adjustment.

1. Place the set in Aging Test for more than 15 minutes.
2. Receive the white 100% signal from the Pattern Generator.
3. Using the adjustment control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(11)** on the remote control to select "R.BIAS".
5. Using the CH. UP/DOWN button on the remote control, adjust the R.BIAS.
6. Press the VOL. UP/DOWN button on the remote control to select the "R.DRIVE", "B.DRIVE", "G.BIAS" or "B.BIAS".
7. Using the CH. UP/DOWN button on the remote control, adjust the R.DRIVE, B.DRIVE, G.BIAS or B.BIAS.
8. Perform the above adjustments 6 and 7 until the white color is achieved.

ELECTRICAL ADJUSTMENTS

2-5: BRIGHT CENT

1. Receive the monoscope pattern. (RF Input)
2. Set the screen mode to FULL.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(17)** on the remote control to select "BRI CENT".
5. Press the CH. UP/DOWN button on the remote control until the white 2.7% is starting to be visible
6. Receive the monoscope pattern. (Audio Video Input)
7. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.
8. Receive the monoscope pattern.
9. Press the TV/VIDEO button on the remote control to set to the CS mode.Then perform the above adjustments 2~5.

2-6: CONTRAST MAX

1. Receive an over 70dB color bar pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(21)** on the remote control to select "CONT.MAX".
4. Press the CH. UP/DOWN button on the remote control until the contrast step No. becomes "100".
5. Receive a broadcast and check if the picture is normal.
6. Receive the color bar pattern. (Audio Video Input)
7. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.
8. Receive a broadcast and check if the picture is normal. Receive the monoscope pattern.
9. Press the TV/VIDEO button on the remote control to set to the CS mode.Then perform the above adjustments 2~5.

2-7: TINT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness and contrast to normal position.
3. Connect the oscilloscope to **TP024**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(26)** on the remote control to select "TINT".
5. Press the CH. UP/DOWN button on the remote control until the section A becomes as straight line. **(Refer to Fig. 2-1)**
6. Receive the color bar pattern. (Audio Video Input)
7. Press the TV/VIDEO button on the remote control to set to the AV mode. Then perform the above adjustments 2~5.
8. Receive the color bar pattern.
9. Press the TV/VIDEO button on the remote control to set to the CS mode.Then perform the above adjustments 2~5.
10. Receive the digital color bar pattern.
11. Press the TV/VIDEO button on the remote control to set to the DIGITAL mode.Then perform the above adjustments 2~5.

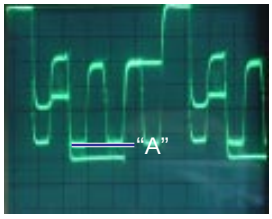


Fig. 2-1

2-8: COLOR CENT

1. Receive the color bar pattern. (RF Input)
2. Using the remote control, set the brightness, contrast, color and tint to normal position.
3. Connect the oscilloscope to **TP022**.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(23)** on the remote control to select "COL.CENT".
5. Adjust the VOLTS RANGE VARIABLE knob of the oscilloscope until the range between white 100% and 0% is set to 4 scales on the screen of the oscilloscope.
6. Press the CH. UP/DOWN button on the remote control until the red color level is adjusted to 110 ± 5% of the white level. **(Refer to Fig. 2-2)**
7. Receive the color bar pattern. (Audio Video Input)
8. Press the AV mode. Then perform the above adjustments 2~6.
9. Receive the color bar pattern.
10. Press the TV/VIDEO button on the remote control to set to the CS mode.Then perform the above adjustments 2~6.
11. Receive the digital color bar pattern.
12. Press the TV/VIDEO button on the remote control to set to the DIGITAL mode.Then perform the above adjustments 2~6.

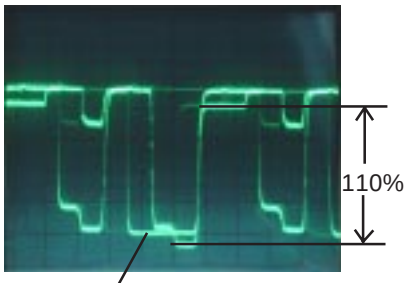


Fig. 2-2

2-9: HORIZONTAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(03)** on the remote control to selec "H.POSI".
4. Press the CH. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on right and left becomes minimum.

ELECTRICAL ADJUSTMENTS

2-10: HORIZONTAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(31)** on the remote control to select "H.SIZE".
4. Press the CH. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on the right and left becomes 8± 3%.

2-11: VERTICAL LINEARITY

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness, contrast, to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(08)** on the remote control to select "V.LIN".
4. Press the CH. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes minimum.

2-12: VERTICAL POSITION

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Adjust the **VR401** until the horizontal line becomes fit to the notch of the shadow mask.
   (Refer to Fig. 2-3)

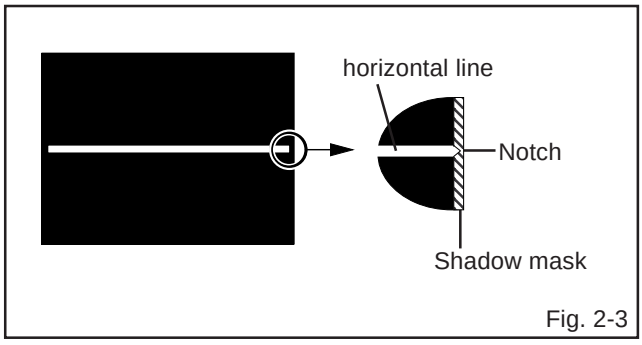


Fig. 2-3

2-13: VERTICAL SIZE

1. Receive the monoscope pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(06)** on the remote control to select "V. SIZE".
4. Press the CH. UP/DOWN button on the remote control until the SHIFT quantity of the OVER SCAN on upside and downside becomes 9 ± 2%.

2-14: TRAPEZIUM

1. Receive the crosshatch signal from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(33)** on the remote control to select "TRAPEZIUM".
4. Press the CH. UP/DOWN button on the remote control until both ends of the right and left vertical lines of the 4th length lines screen become parallel.

2-15: PALABOLA

1. Receive the crosshatch pattern.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(32)** on the remote control to select "PALABOLA".
4. Press the CH. UP/DOWN button on the remote control, so that the line becomes straight from the outside of the right and left.

2-16: COR TOP/BTM

1. Receive the crosshatch signal from the Pattern Generator.
2. Set the screen mode to FULL.
3. Using the remote control, set the brightness and contrast to normal position.
4. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(34)** on the remote control to select "COR. TOP".
5. Press the CH. UP/DOWN button on the remote control until both ends of the vertical lines become straight.
6. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(35)** on the remote control to select "COR. BTM".
7. Press the CH. UP/DOWN button on the remote control until both ends of the vertical lines of the screen become parallel.

2-17: OSD POSITION

1. Receive the monoscope pattern from the Pattern Generator.
2. Using the remote control, set the brightness and contrast to normal position.
3. Activate the adjustment mode display of **Fig. 1-1** and press the channel button **(00)** on the remote control to select "OSD H".
4. Press the CH. UP/DOWN button on the remote control until the difference of A and B becomes minimum.
   (Refer to Fig. 2-4)

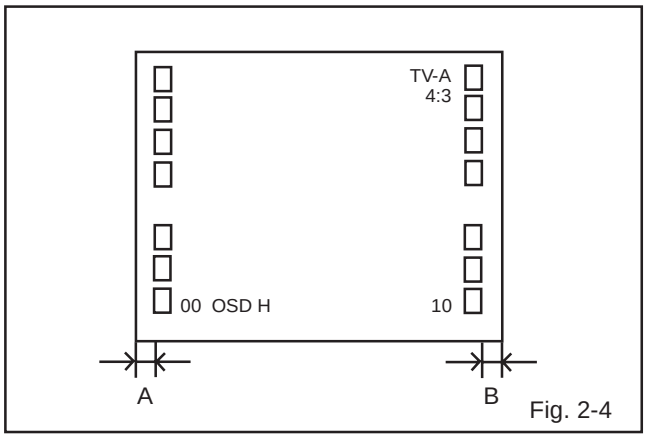


Fig. 2-4

ELECTRICAL ADJUSTMENTS

2-18: Confirmation of Fixed Value (Step No.)

Please check if the fixed values of each adjustment item is set correctly referring below.

NO.	FUNCTION	RF	AV	CS	DIGITAL
1	OSD C	02	02	02	02
4	H BLK L	06	06	06	06
5	H BLK R	02	02	02	02
9	VS CORR	11	11	11	11
10	V COMP	00	00	00	00
18	BRI.MAX	120	120	120	120
19	BRI.MIN	30	30	30	30
20	CONT.CENT	55	50	50	55
22	CONT.MIN	20	20	20	20
24	COL.MAX	120	120	120	120
25	COL.MIN	20	20	20	20
27	SHARP.CENT	35	25	25	25
28	SHARP.MAX	50	40	40	40
29	SHARP.MIN	20	10	10	10
30	SUB BIAS	00	00	00	00
36	TEST STEREO	00	00	00	00
37	TEST AUDIO	00	00	00	00
38	H FREQ	07	07	07	07

ELECTRICAL ADJUSTMENTS

3. PURITY AND CONVERGENCE ADJUSTMENTS

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

3-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 3-1)**
   If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from the color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

3-2: PURITY

NOTE

Adjust after performing adjustments in section 3-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
   Adjust the pair of purity magnets so the color at the ends are equally wide.
3. Move the deflection yoke backward (to neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue color.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

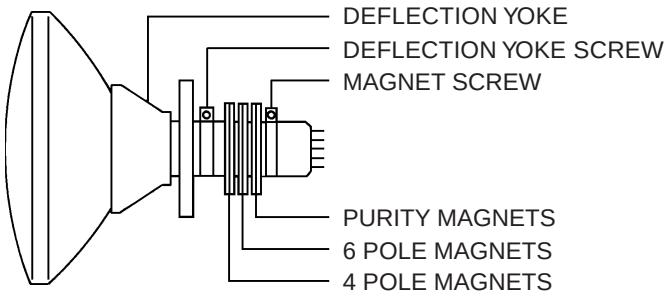


Fig. 3-1

3-3: STATIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-2.

1. Receive the crosshatch pattern from the color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

3-4: DYNAMIC CONVERGENCE

NOTE

Adjust after performing adjustments in section 3-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 3-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 3-2-b)**

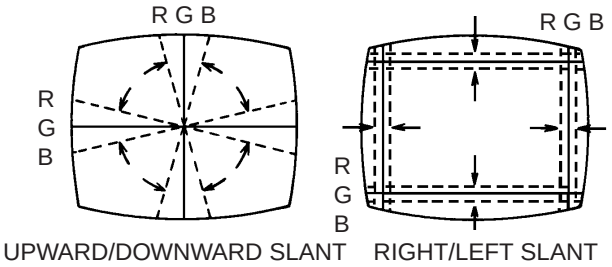
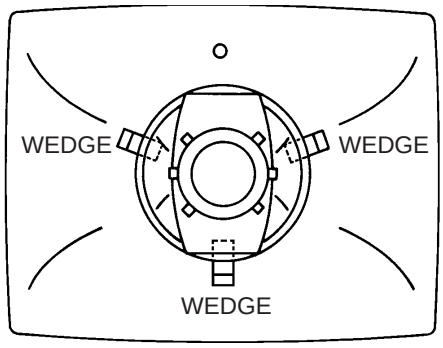


Fig. 3-2-a

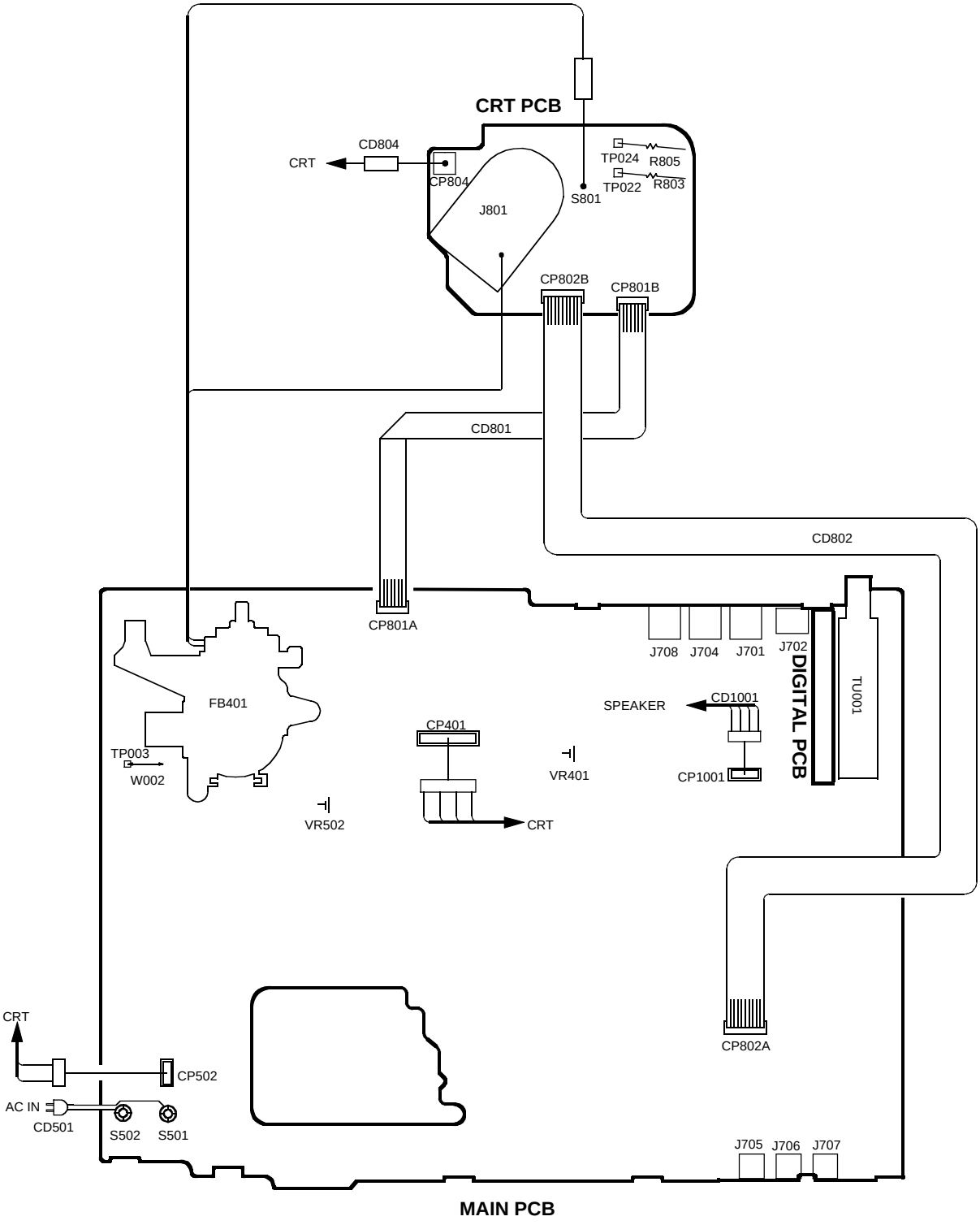


WEDGE POSITION

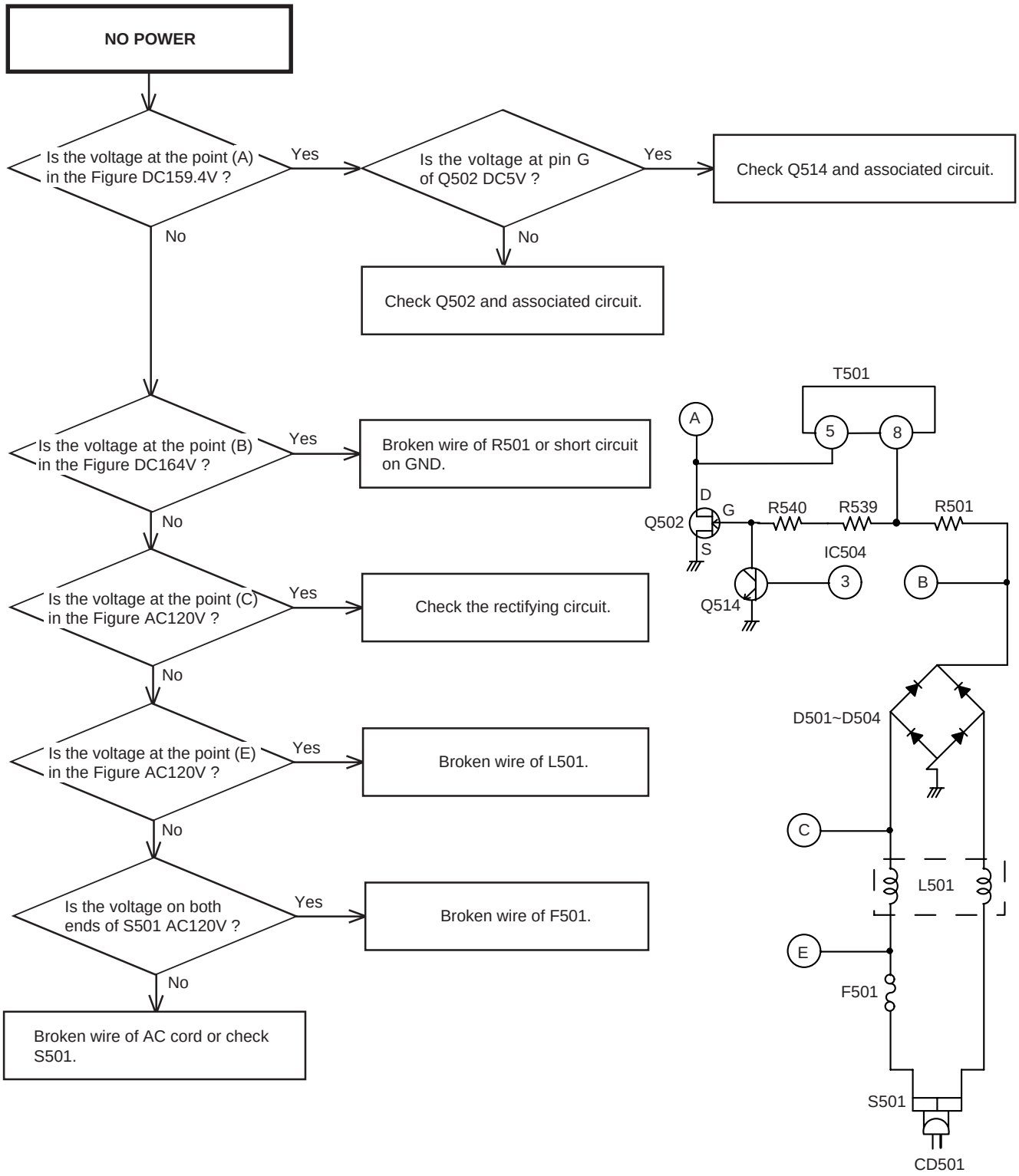
Fig. 3-2-b

ELECTRICAL ADJUSTMENTS

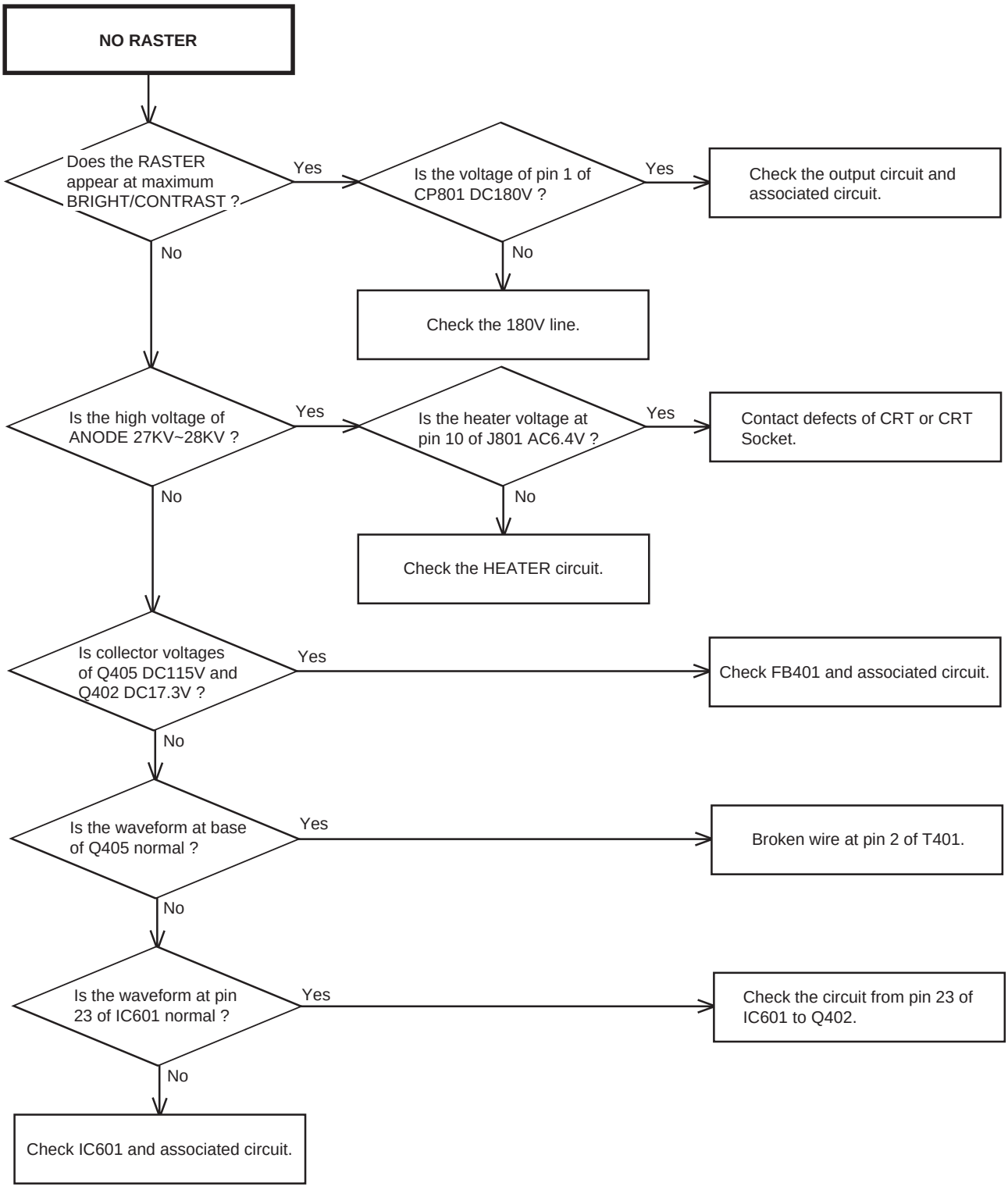
4. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)



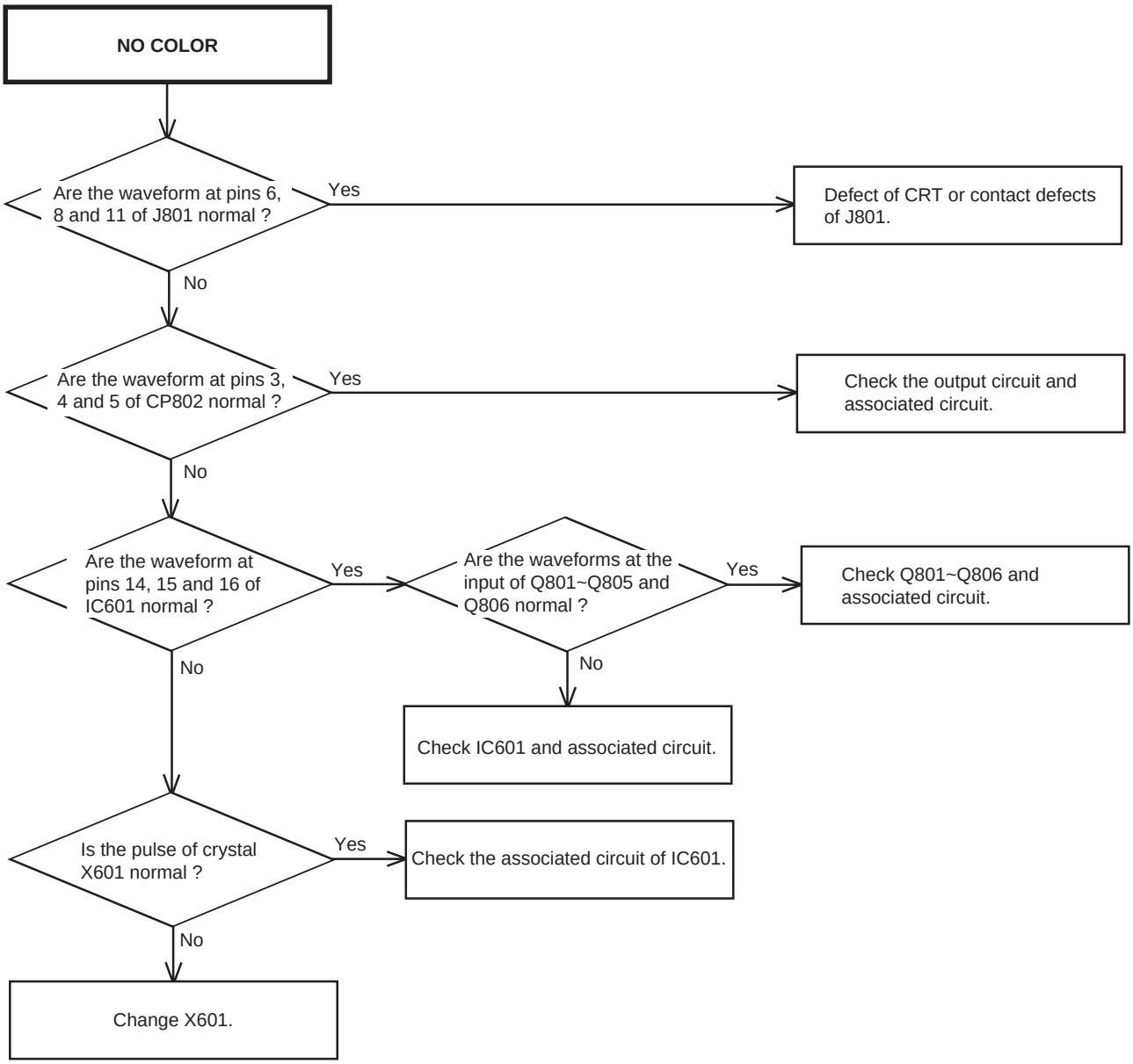
TROUBLESHOOTING GUIDE



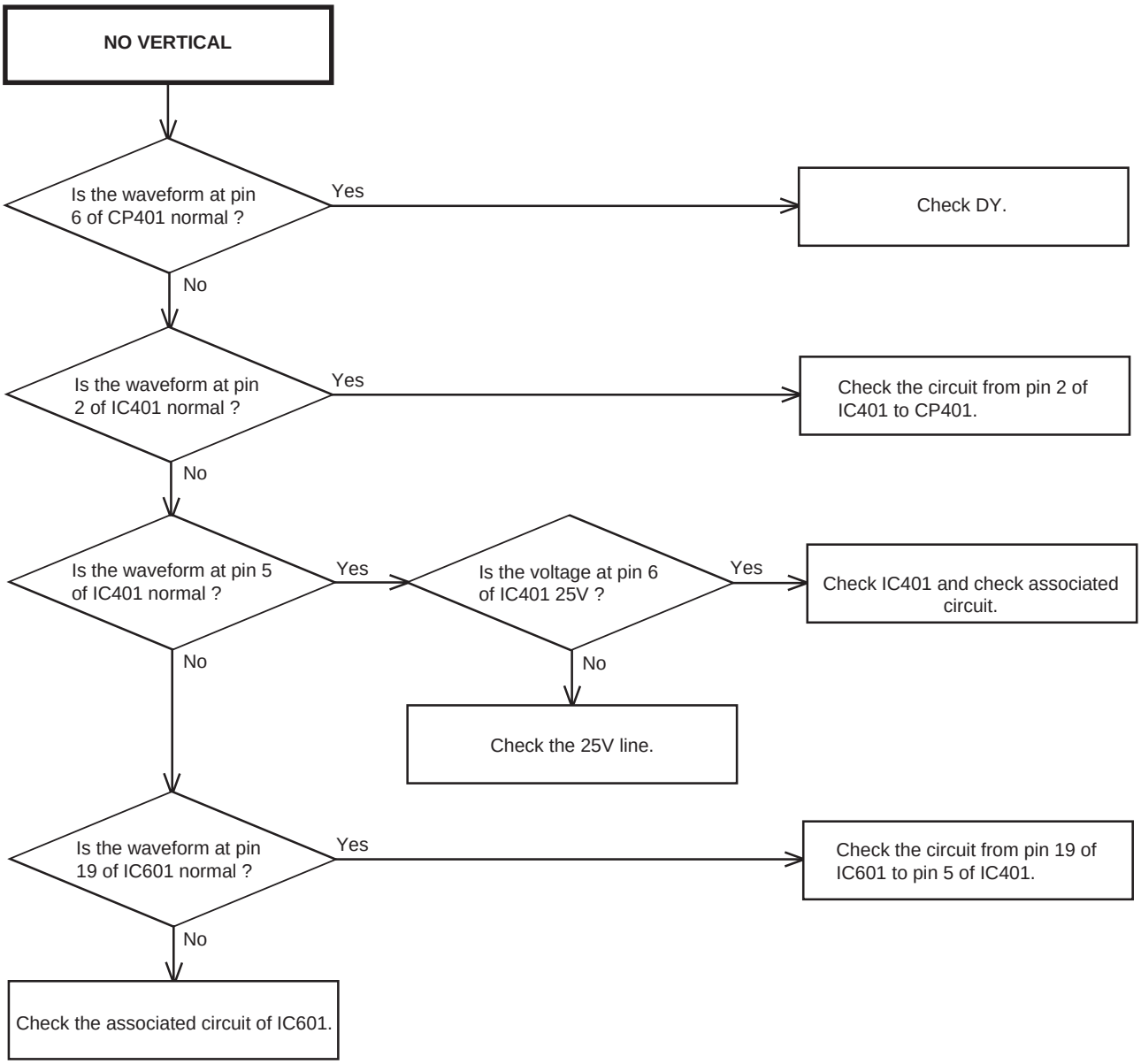
TROUBLESHOOTING GUIDE



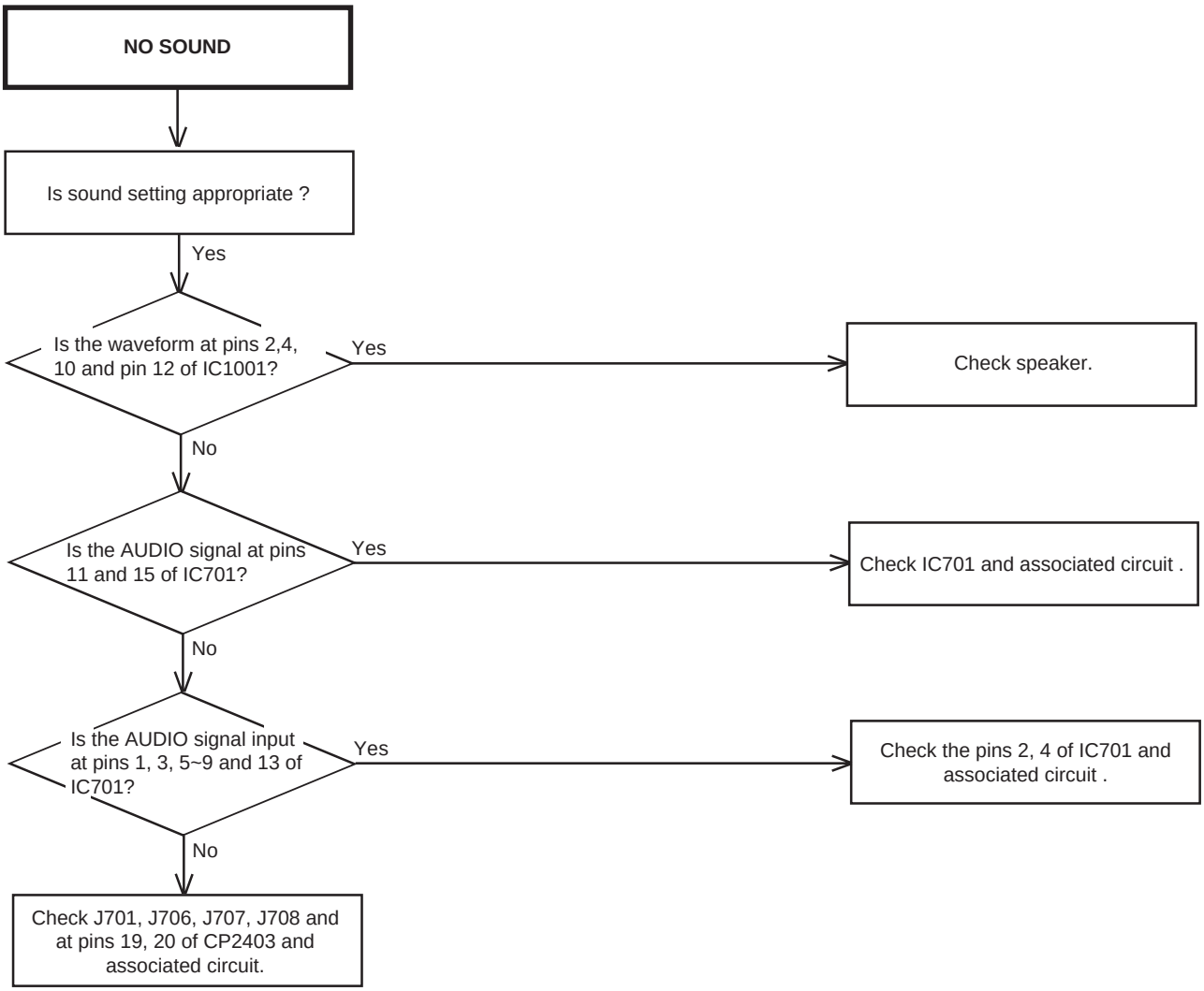
TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE



TROUBLESHOOTING GUIDE



IC DESCRIPTION

OEC7144A (IC101)

No.	Pin name	Symbol	I/O	Logic	Function	Option	When unused
1	VHOLD	V.HOLD_MAIN	I	-	Condenser of slicer.	-	-
2	HLF	HLF_MAIN	I/O	-	Filter of slicer.	-	-
3	P94/SCL3/RxD2	SCL1	O	1	IIC BUS(1) CLOCK output.	C-MOS	-
4	P93/SDA3/TxD2	SDA1	I/O	1	IIC BUS(1) DATA I/O.	C-MOS	-
5	P92/TB2/DIGR0	YUV-H	O	0	SW COMPONENT	C-MOS	OPEN
6	P91/TB1		O	-	Not used.(L output)	C-MOS	OPEN
7	P90/TB0	HSYNC	I	1	SYNC input for SD distinction.	C-MOS	PD
8	BYTE	BYTE	I	-	It connects it with VSS.	-	VSS
9	CNVss	CNVss	I	-	It connects it with VSS. When you write Flash "H"	-	PD
10	P87/XCIN/DIGG0		O	-	Not used.(32KHz IN)	C-MOS	OPEN
11	P86/XCOUT/DIGB0		O	-	Not used.(32KHz OUT)	C-MOS	OPEN
12	RESET	RESET	I	0	RESET input. "L" ---> when Flash is written "H"	-	PU
13	XOUT	Xout	O	-	Main Oscillation.	-	-
14	VSS	VSS	Power supply	-	GND	-	-
15	XIN	Xin	I	-	Main Oscillation.	-	-
16	VCCI	VCC(3.3V)	Power supply	-	3.3V	-	-
17	OSC1/OSCHLF	OSCHLF	I	-	External clock input for OSD.	-	-
18	OSC2		O	-	Not used.(departure pendulum reserve for OSD)	-	OPEN
19	P83/INT1	REMOCON	I	0	REMOCON input.	C-MOS	PU
20	P82/INT0	P.FAIL	I	0	Power failure detection.	C-MOS	PU
21	OUT1	BLANK1	O	1	BLANK output for OSD/CCD(1)	-	-
22	OUT2	BLANK2	O	1	BLANK output for OSD/CCD(2)	-	-
23	P77/HC1		O	-	Not used.	C-MOS	OPEN
24	P76/TA3		O	-	Not used.	C-MOS	OPEN
25	P75/HC0	EXT A MUTE	O	1	Sound Mute for Audio out terminal	C-MOS	OPEN
26	P74/TA2	VOLUME	O	1	PWM output for Audio Volume	C-MOS	OPEN
27	P73/CTS2,RTS2		O	-	Not used.	C-MOS	OPEN
28	P72/SCL2/CLK2	AFT2	O	-	Detect Tuner AFT2 (analog)	C-MOS	OPEN
29	P71/SCL1/RxD2		O	-	Not used.	Nch-OD	OPEN
30	P70/SDA1/TxD2		O	-	Not used.	Nch-OD	OPEN
31	P67/SDA2	AFT1	O	-	Detect Tuner AFT1 (analog)	C-MOS	OPEN
32	R/DIGR1	RED R	O	1	RED output for OSD/CCD.	-	-
33	G/DIGG1	GREEN G	O	1	GREEN output for OSD/CCD.	-	-
34	B/DIGB1	BLUE B	O	1	BLUE output for OSD/CCD.	-	-
35	P63/TxD0	DTV Tx	O	0	Communication of Digital Module	C-MOS	PU
36	P62/RxD0	DTV Rx	I	0	Communication of Digital Module	C-MOS	PU
37	P61/CLK0	(CLK0)	O	-	Not used.	C-MOS	PU
38	P60/CTS0,RTS0	(PRT0)	O	-	Not used.	C-MOS	PU
39	P57,RDY/CLK		O	-	Not used.(L output)	C-MOS	OPEN
40	P56/ALE	DTV RESET	O	0	Reset output of Digital Module	C-MOS	OPEN
41	P55/HOLD		O	-	Not used.	C-MOS	PD
42	P54/HLDA		O	-	Not used.	C-MOS	OPEN
43	P53/BCLK		O	-	Not used.	C-MOS	OPEN
44	P52/RD		O	-	Not used.	C-MOS	OPEN
45	P51/WRH/BHE		O	-	Not used.	C-MOS	OPEN
46	P50/WRL/WR		O	-	Not used.	C-MOS	PU
47	P47/CS3	SD	O	1	Detect Tuner SD (analog)	C-MOS	OPEN

IC DESCRIPTION

OEC7144A (IC101)

No.	Pin name	Symbol	I/O	Logic	Function	Option	When unused
48	P46/CS2		O	-	Not used.	C-MOS	OPEN
49	P45/CS1		O	-	Not used.	C-MOS	OPEN
50	P44/CS0		O	-	Not used.	C-MOS	OPEN
51	P43/A19	AUDIO MUTE	O	1	Volume MUTE output.	C-MOS	OPEN
52	P42/A18		O	-	Not used.	C-MOS	OPEN
53	P41/A17		O	-	Not used.	C-MOS	OPEN
54	P40/A16	VIDEO MUTE	O	1	Image MUTE output.	C-MOS	OPEN
55	P37/A15	EEPROM_SCL	O	1	IIC CLOCK output for EEPROM.	C-MOS	PU
56	P36/A14	EEPROM_SDA	I/O	1	IIC DATA I/O for EEPROM.	C-MOS	PU
57	P35/A13		O	-	Not used.	C-MOS	OPEN
58	P34/A12		O	-	Not used.	C-MOS	OPEN
59	P33/A11		O	-	Not used.	C-MOS	OPEN
60	P32/A10		O	-	Not used.	C-MOS	OPEN
61	P31/A9		O	-	Not used.	C-MOS	OPEN
62	Hsync	HD	I	-	HSYNC input for OSD.	-	-
63	P30/A8		O	-	Not used.	C-MOS	OPEN
64	Vsync	VD	I	-	VSYNC input for OSD.	-	-
65	P27/A7		O	-	Not used.	C-MOS	-
66	P26/A6		O	-	Not used.	C-MOS	OPEN
67	P25/A5		O	-	Not used.	C-MOS	OPEN
68	P24/A4		O	-	Not used.	C-MOS	OPEN
69	P23/A3		O	-	Not used.	C-MOS	OPEN
70	P22/A2		O	-	Not used.	C-MOS	OPEN
71	P21/A1		O	-	Not used.	C-MOS	OPEN
72	P20/A0		O	-	Not used.	C-MOS	OPEN
73	P17/D15		O	-	Not used.	C-MOS	OPEN
74	P16/D14		O	-	Not used.	C-MOS	OPEN
75	P15/D13		O	-	Not used.	C-MOS	OPEN
76	P14/D12		O	-	Not used.	C-MOS	OPEN
77	P13/D11		O	-	Not used.	C-MOS	OPEN
78	P12/D10	S	I	0	S jacks input of distinction input.	C-MOS	PU
79	P11/D9		O	-	Not used.	C-MOS	PU
80	P10/D8		O	-	Not used.	C-MOS	PU
81	P07/D7	TV POWER	O	1	TV POWER control output.	C-MOS	OPEN
82	P06/D6		O	-	Not used.	C-MOS	OPEN
83	P05/D5	DTV POWER	O	1	Power SW of Digital Module	C-MOS	OPEN
84	P04/D4	STAND BY-L	O	0	SUB power supply control terminal.	C-MOS	OPEN
85	P03/D3	DEGAUSS	O	1	Degauss control output	C-MOS	OPEN
86	P02/D2	IIC_OFF	I	0	IIC BUS STOP input for adjustment.	C-MOS	PU
87	P01/D1	PROTECT	O	1	Control H Pulse	C-MOS	PU
88	P00/D0	H_CTL	O	1	Control H Pulse	C-MOS	PU
89	P107/AN5/DIGR2	E0-LEAK	I	1	E0 LEAK Detection	C-MOS	PD
90	P106/AN4/DIGG2		O	-	Not used.(L output)	C-MOS	OPEN
91	P105/AN3/DIGB2	AFT_MAIN	I	-	AFT voltage input for tuning in.	C-MOS	PU
92	P104/AN2	KEY B	I	-	Main unit key input.	Nch-OD	PU
93	P103/AN1	KEY A	I	-	Main unit key input.	Nch-OD	PU
94	P102/AN0	X-RAY	I	1	X-RAY Detection	Nch-OD	PD
95	VHOLD2	VHOLD2	I	-	Condenser of slicer.	-	PD
96	HLF2	HLF2	O	-	Filter of slicer.	-	PD
97	CVin2	CVIN2	I	-	Not used.	-	PU
98	TVSETB	TVSETB	I	-	It connects it with VSS.	-	VSS
99	VCCE	VCC(5V)	Power supply	-	5V	-	-
100	CVin1	CVIN_MAIN	I	-	Video signal input	-	-

SEMICONDUCTOR BASE CONNECTIONS

DIODE

RD47FBD-3
1SS133T-77
AU02A-EIC
DSS-272M-S00B
ERD07-15L50
FE201-6L49
MTZJ10B-EIC
MTZJ15B-EIC
MTZJ18B-EIC
MTZJ2.2B-EIC
MTZJ3.3B-EIC
MTZJ3.9B-EIC
MTZJ33B-EIC
MTZJ5.6B-EIC
MTZJ6.2B-EIC
MTZJ8.2B-EIC
MTZJ9.1B-EIC

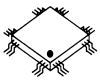
1N4002-PAN
1N4937-PAN

1N4005-EIC
21DQ09N-TA2B1
RM11C-EIC
SB140-EIC

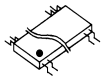
RB085T-40

ENE271D-10A

IC



CAS-220/CS
LA76327M-MPB-E

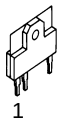


HY5DU561622DTP-D43
NJM2750M(TE1)

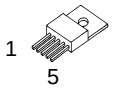
CS4345-CZZ

AT24C128N-10SU-1.8
TC7W66FU(TE12L,F)

PST3229NR



LA7847-E



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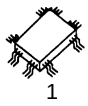
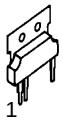
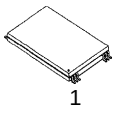


OEC7144A



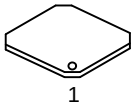
AN17822A



SST39VF1681-70-4C-EKE

TRANSISTOR

PS2561AL1-1-V(W)



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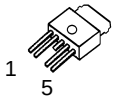

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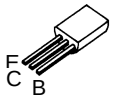
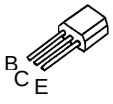
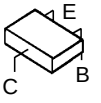


2SA1371(D,E)-AE
2SC2909(S,T)-AA
KTA1266-AT(Y,GR)
KTA1271_Y-AT



KTC3198-AT(Y,GR)
KTC3199_Y-AT
KTC3203_Y-AT
KTC3209_Y-AT
KTC3227_Y-AT



2SC3841-T1B_T63
KRA102SRTK
KRC102SRTK
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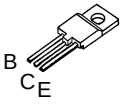
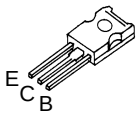
KRC104SRTK
KTA1504S_Y_RTK
KTC3875S_Y_RTK
KTC4075E-Y-RTK/P



2SD2499(LBOEC1)



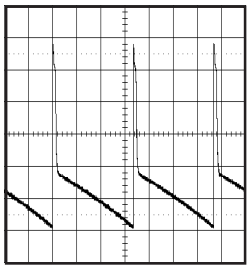
KTC4217(O,Y)

WAVEFORMS

DEFLECTION

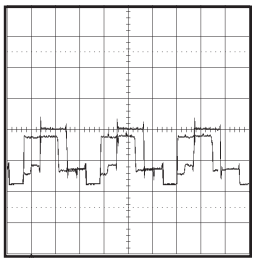
POWER ON
5ms
10.0V

⑱



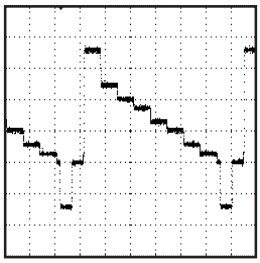
20µs
2V

㉓



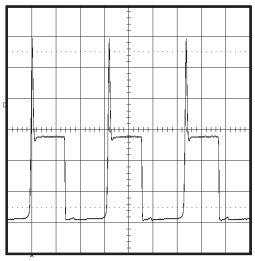
10µs
200mV

㉘



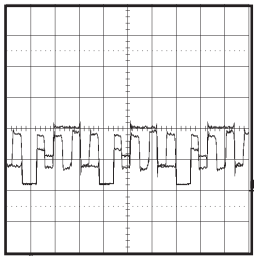
20µs
20V

⑲



20µs
2V

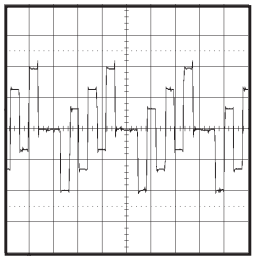
㉔



AV/SOUND

20µs
200mV

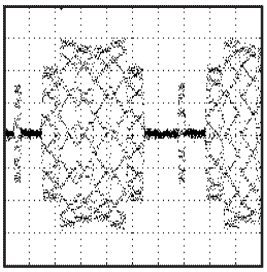
㉙



CHROMA/IF

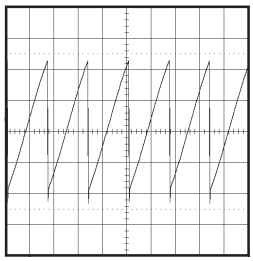
10µs
200mV

⑳



10ms
0.5V

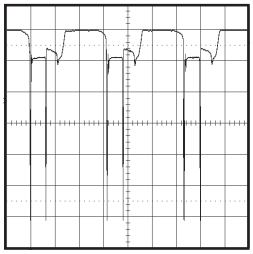
㉕



DEFLECTION

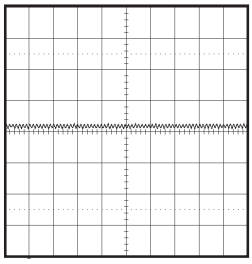
20µs
2V

㉚



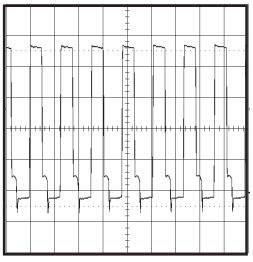
2µs
1V

㉑



50µs
1V

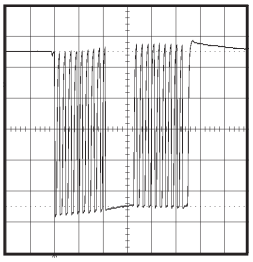
㉖



MICON

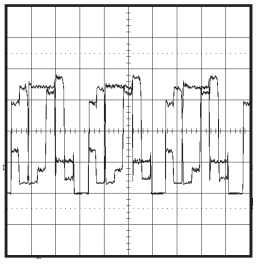
50µs
1V

㉝



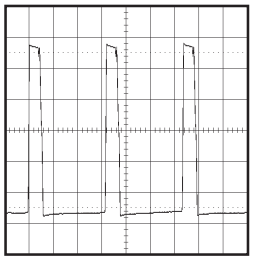
20µs
1V

㉒



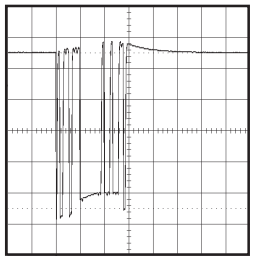
20µs
2V

㉗



0.1ms
1V

㉞



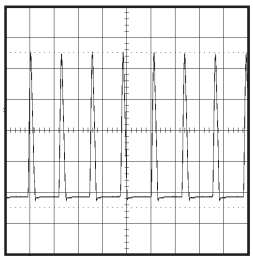
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

DEFLECTION

50µs
200V

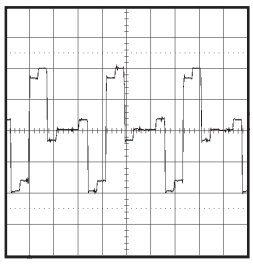
(35)



AV/SOUND

20µs
200mV

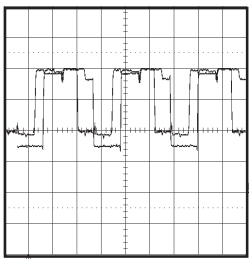
(36)



CRT/SVM

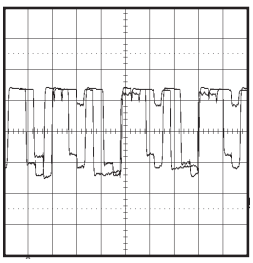
20µs
50V

(37)



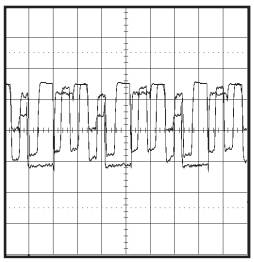
20µs
50V

(38)



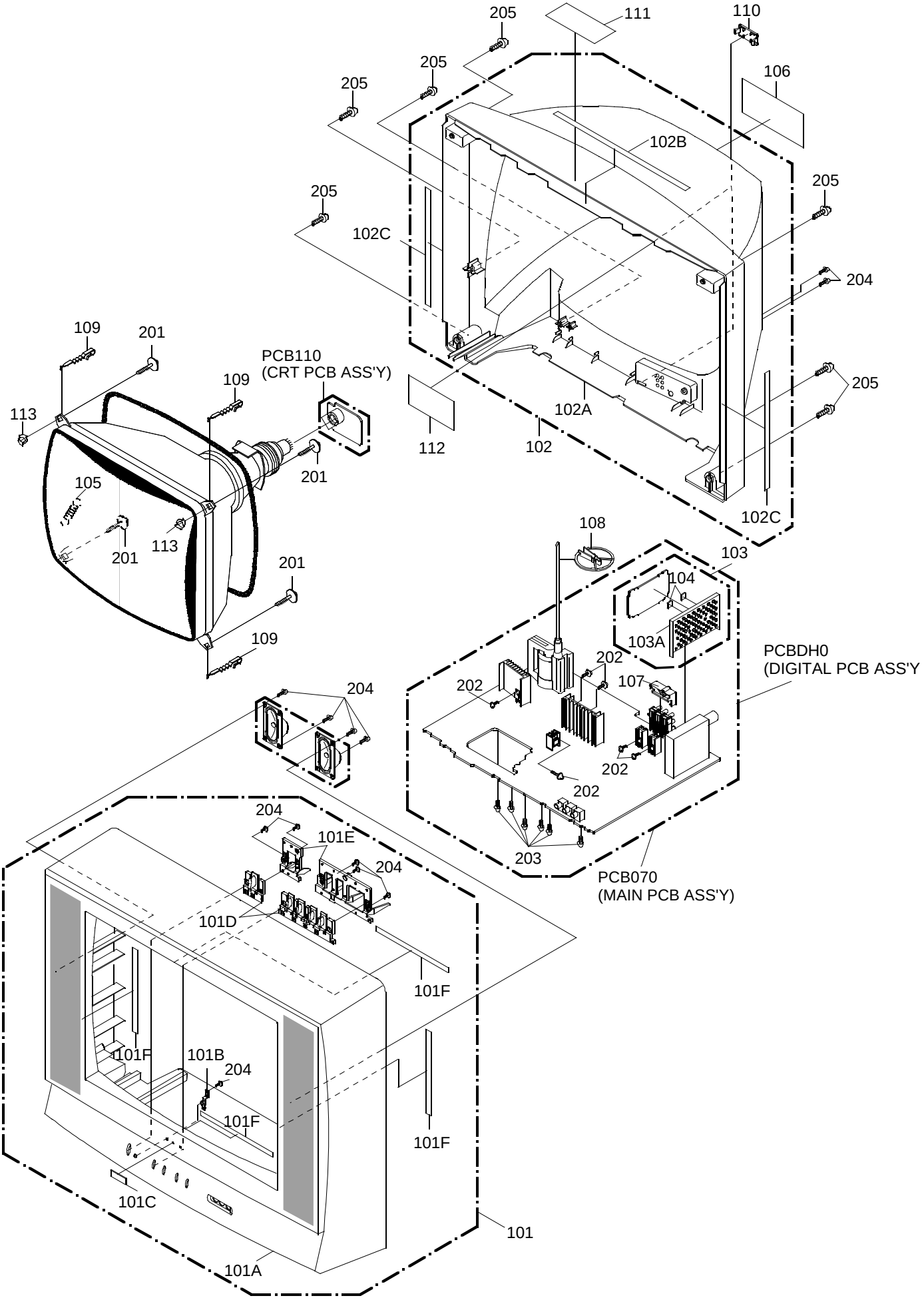
20µs
50V

(39)



NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

MECHANICAL EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		
101	7A701A658A	FRONT CABI ASS'Y		
101A	701WPJD241	CABINET FRONT		
101B	713WPA0230	GUIDE,REMOCON		
101C	711WPCA061	BADGE BRAND		
101D	735WPA0696	BUTTON,BASE		
101E	735WPBB513	BUTTON FRAME		
101F	800WQ0A041	FELT SHEET		18x200xT=0.5
102	7A7020063A	BACK,CABI ASS'Y		or
	7A702A207A	BACK CABI ASS'Y		
102A	702WPA1204	CABINET,BACK		
102B	800WQ0A076	FELT,SHEET		9x540xT=0.5
102C	800WQ0A092	FELT SHEET		9x390xT=0.5
103	7G7520022A	SHIELD,BOTTOM ASS'Y		
103A	752WSA0546	SHIELD,BOTTOM		
104	800WR00079	SHEET,SILICONE		
105	741WUA0021	SPRING EARTH		
106	722671A001	SHEET RATING		
107	761WPA0424	HOLDER,JACK		
108	899HV3T000	HOLDER ANODE WIRE		
109	762WPA0009	HOLDER,CRT WIRE		
110	706WPA0015	COVER,CONNECTOR		
111	7230007075	SHEET INFORMATION		
112	726000A137	SHEET CRT SERVICEMAN		
113	769WSAA012	WASHER CRT T=0.5		
201	8141J50D5U	SCREW TAP TITE(P)	GW20	5x45 HEXAGON
202	8109I30A0U	SCREW TAP TITE(B)	WH7	3x10
203	810963080Q	SCREW TAP TITE(B)	BRAZIER	3x8 STAINLESS
204	8110630A0U	SCREW TAP TITE(P)	BRAZIER	3x10
205	8117540B0U	SCREW TAP TITE(B0)	TRUSS	4x20
---	7230007398	SECURITY TAG		
---	791WHAA115	FILM BAG		
---	791WHAA138	LIGHTRON SHEET		
---	792WHAA073	PACKAGE,TOP		
---	792WHAA074	PACKAGE,BOTTOM		
---	795WCA0665	PAD		378x1114
---	793WCDD069	GIFT BOX		

ACCESSORY REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
TM101	07640KL060	TRANSMITTER	RC-KL060
---	JB5ND300	POLYBAG INSTRUCTION(RED CAUT	
---	J3T11629A	INFORMATION SHEET(RETURN)	
---	J3W20199A	CORRECTION SHEET	
---	J3W40621A	INSTRUCTION BOOK(E/S)	
---	A3W4062975	INSTRUCTION BOOK KIT	

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS				**RESISTORS**	
R001	R803R9222J	RC	2.2K OHM 1/16W	R147	R803R9100J	RC	10 OHM 1/16W
R002	R3X28B010J	R,METAL OXIDE	1 OHM 3W	R149	R803R9010J	RC	1 OHM 1/16W
R003	R803R9223J	RC	22K OHM 1/16W	R150	R803R9472J	RC	4.7K OHM 1/16W
R004	R3X28B010J	R,METAL OXIDE	1 OHM 3W	R151	R803R9472J	RC	4.7K OHM 1/16W
R005	R803R9102J	RC	1K OHM 1/16W	R152	R002T4101J	RC	100 OHM 1/4W
R006	R002T4181J	RC	180 OHM 1/4W	R153	R002T4101J	RC	100 OHM 1/4W
R007	R3X28B010J	R,METAL OXIDE	1 OHM 3W	R154	R803R9010J	RC	1 OHM 1/16W
R008	R803R9222J	RC	2.2K OHM 1/16W	R155	R803R9010J	RC	1 OHM 1/16W
R009	R803R9101J	RC	100 OHM 1/16W	R156	R803R9010J	RC	1 OHM 1/16W
R011	R803R9392F	RC	3.9K OHM 1/16W	R157	R002T4221J	RC	220 OHM 1/4W
R012	R803R9222F	RC	2.2K OHM 1/16W	R158	R803R9103J	RC	10K OHM 1/16W
R013	R803R9680J	RC	68 OHM 1/16W	R159	R002T4103J	RC	10K OHM 1/4W
R014	R803R9123J	RC	12K OHM 1/16W	R160	R002T4182J	RC	1.8K OHM 1/4W
R015	R803R9123J	RC	12K OHM 1/16W	R162	R803R9103J	RC	10K OHM 1/16W
R016	R803R9750J	RC	75 OHM 1/16W	R163	R803R9103J	RC	10K OHM 1/16W
R017	R803R9272J	RC	2.7K OHM 1/16W	R164	R803R9103J	RC	10K OHM 1/16W
R018	R002T4102J	RC	1K OHM 1/4W	R165	R803R9103J	RC	10K OHM 1/16W
R019	R803R9394J	RC	390K OHM 1/16W	R166	R803R9010J	RC	1 OHM 1/16W
R020	R803R9123J	RC	12K OHM 1/16W	R167	R803R9010J	RC	1 OHM 1/16W
R022	R803R9472J	RC	4.7K OHM 1/16W	R168	R803R9103J	RC	10K OHM 1/16W
R023	R803R9102J	RC	1K OHM 1/16W	R169	R803R9151J	RC	150 OHM 1/16W
R025	R803R9472J	RC	4.7K OHM 1/16W	R171	R803R9103J	RC	10K OHM 1/16W
R026	R803R9102F	RC	1K OHM 1/16W	R172	R002T4101J	RC	100 OHM 1/4W
R027	R803R9821F	RC	820 OHM 1/16W	R173	R803R9102J	RC	1K OHM 1/16W
R028	R803R9101J	RC	100 OHM 1/16W	R174	R803R9683J	RC	68K OHM 1/16W
R029	R803R9153J	RC	15K OHM 1/16W	R175	R803R9102J	RC	1K OHM 1/16W
R030	R803R9822J	RC	8.2K OHM 1/16W	R176	R803R9102J	RC	1K OHM 1/16W
R031	R803R9823J	RC	82K OHM 1/16W	R177	R803R9103J	RC	10K OHM 1/16W
R037	R002T4102J	RC	1K OHM 1/4W	R178	R002T4102J	RC	1K OHM 1/4W
R038	R803R9820J	RC	82 OHM 1/16W	R186	R803R9101J	RC	100 OHM 1/16W
R039	R803R9471J	RC	470 OHM 1/16W	R189	R803R9101J	RC	100 OHM 1/16W
R040	R803R9102J	RC	1K OHM 1/16W	R401	R002T2122J	RC	1.2K OHM 1/2W
R041	R002T4102J	RC	1K OHM 1/4W	R404	R803R9103J	RC	10K OHM 1/16W
R042	R803R9680J	RC	68 OHM 1/16W	R405	R803R9392J	RC	3.9K OHM 1/16W
R043	R803R9471J	RC	470 OHM 1/16W	R406	R002T2471J	RC	470 OHM 1/2W
R044	R803R9102J	RC	1K OHM 1/16W	R407	R803R9562J	RC	5.6K OHM 1/16W
R101	R803R9103J	RC	10K OHM 1/16W	R408	R65582010J	R,FUSE	1 OHM 1/2W
R102	R803R9222J	RC	2.2K OHM 1/16W	⚠R410	R3X28B820J	R,METAL OXIDE	82 OHM 3W
R103	R803R9101J	RC	100 OHM 1/16W	R411	R6558A5R6J	R,FUSE	5.6 OHM 2W
R104	R803R9222J	RC	2.2K OHM 1/16W	R412	R803R9102J	RC	1K OHM 1/16W
R106	R803R9103J	RC	10K OHM 1/16W	R413	R4K1T4183F	R,METAL	18K OHM 1/4W
R107	R803R9103J	RC	10K OHM 1/16W	R414	R4K1T4273F	R,METAL	27K OHM 1/4W
R108	R803R9103J	RC	10K OHM 1/16W	⚠R415	R803R9821J	RC	820 OHM 1/16W
R109	R803R9103J	RC	10K OHM 1/16W	⚠R416	R002T23R3J	RC	3.3 OHM 1/2W
R110	R803R9103J	RC	10K OHM 1/16W	R417	R803R9273J	RC	27K OHM 1/16W
R111	R803R9101J	RC	100 OHM 1/16W	R418	R002T2821J	RC	820 OHM 1/2W
R113	R803R9472J	RC	4.7K OHM 1/16W	⚠R420	R002T23R3J	RC	3.3 OHM 1/2W
R114	R803R9103J	RC	10K OHM 1/16W	R421	R3X18A181J	R,METAL OXIDE	180 OHM 2W
R115	R803R9471J	RC	470 OHM 1/16W	R422	R002T2681J	RC	680 OHM 1/2W
R116	R803R9105J	RC	1M OHM 1/16W	R425	R803R9472J	RC	4.7K OHM 1/16W
R117	R803R9471J	RC	470 OHM 1/16W	⚠R426	R4K1T4272F	R,METAL	2.7K OHM 1/4W
R118	R002T4101J	RC	100 OHM 1/4W	R427	R002T2681J	RC	680 OHM 1/2W
R119	R803R9222J	RC	2.2K OHM 1/16W	R428	R002T4101J	RC	100 OHM 1/4W
R120	R002T4470J	RC	47 OHM 1/4W	R430	R002T2124J	RC	120K OHM 1/2W
R121	R803R9102J	RC	1K OHM 1/16W	R431	R803R9472J	RC	4.7K OHM 1/16W
R122	R002T4101J	RC	100 OHM 1/4W	R432	R002T2103J	RC	10K OHM 1/2W
R123	R803R9222J	RC	2.2K OHM 1/16W	⚠R434	R5X2CF3R3J	R,CEMENT	3.3 OHM 10W
R124	R002T4561J	RC	560 OHM 1/4W	⚠R436	R4K1T4183F	R,METAL	18K OHM 1/4W
R125	R803R9561J	RC	560 OHM 1/16W	R437	R002T2010J	RC	1 OHM 1/2W
R126	R803R9683J	RC	68K OHM 1/16W	R438	R6558A1R2J	R,FUSE	1.2 OHM 2W
R127	R803R9272J	RC	2.7K OHM 1/16W	R439	R3K181102J	R,METAL OXIDE	1K OHM 1W
R128	R803R9102J	RC	1K OHM 1/16W	⚠R441	R4K1T4153F	R,METAL	15K OHM 1/4W
R130	R803R9102J	RC	1K OHM 1/16W	R442	R002T4102J	RC	1K OHM 1/4W
R131	R803R9101J	RC	100 OHM 1/16W	R443	R002T2683J	RC	68K OHM 1/2W
R132	R002T4472J	RC	4.7K OHM 1/4W	R444	R803R9563J	RC	56K OHM 1/16W
R133	R803R9561J	RC	560 OHM 1/16W	R452	R3X18A101J	R,METAL OXIDE	100 OHM 2W
R135	R803R9103J	RC	10K OHM 1/16W	R459	R655822R2J	R,FUSE	2.2 OHM 1/2W
R136	R803R9100J	RC	10 OHM 1/16W	R500	R0G3K2275K	RC	2.7M OHM 1/2W
R137	R803R9471J	RC	470 OHM 1/16W	R501	R5X2AE010J	R,CEMENT	1 OHM 7W
R138	R803R9100J	RC	10 OHM 1/16W	R502	R3K58A331J	R,METAL OXIDE	330 OHM 2W
R139	R803R9471J	RC	470 OHM 1/16W	R504	R002T4331J	RC	330 OHM 1/4W
R141	R803R9222J	RC	2.2K OHM 1/16W	R505	R002T4103J	RC	10K OHM 1/4W
R142	R803R9222J	RC	2.2K OHM 1/16W	⚠R506	R002T4682J	RC	6.8K OHM 1/4W
R143	R803R9471J	RC	470 OHM 1/16W	R507	R002T2823J	RC	82K OHM 1/2W
R144	R803R9471J	RC	470 OHM 1/16W	R508	R002T4101J	RC	100 OHM 1/4W
R145	R803R9471J	RC	470 OHM 1/16W	R510	R002T4101J	RC	100 OHM 1/4W
R146	R803R9102J	RC	1K OHM 1/16W	⚠R511	R803R9223J	RC	22K OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION		REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS				**RESISTORS**	
R512	R002T2102J	RC	1K OHM 1/2W	R705	R803R9332J	RC	3.3K OHM 1/16W
R513	R002T4103J	RC	10K OHM 1/4W	R706	R803R9221J	RC	220 OHM 1/16W
R515	R002T4103J	RC	10K OHM 1/4W	R707	R803R9220J	RC	22 OHM 1/16W
R516	R803R9103J	RC	10K OHM 1/16W	R708	R803R9220J	RC	22 OHM 1/16W
R518	R803R9103J	RC	10K OHM 1/16W	R709	R002T4680J	RC	68 OHM 1/4W
R519	R002T4103J	RC	10K OHM 1/4W	R712	R803R9104J	RC	100K OHM 1/16W
⚠R520	R002T2155J	RC	1.5M OHM 1/2W	R714	R803R9473J	RC	47K OHM 1/16W
R521	R002T4100J	RC	10 OHM 1/4W	R715	R803R9473J	RC	47K OHM 1/16W
R522	R65582330J	R,FUSE	33 OHM 1/2W	R717	R803R9473J	RC	47K OHM 1/16W
R524	R002T4102J	RC	1K OHM 1/4W	R718	R803R9473J	RC	47K OHM 1/16W
R525	R002T2683J	RC	68K OHM 1/2W	R724	R803R9750J	RC	75 OHM 1/16W
R526	R002T2683J	RC	68K OHM 1/2W	R725	R803R9151J	RC	150 OHM 1/16W
R528	R002T4101J	RC	100 OHM 1/4W	R726	R803R9273J	RC	27K OHM 1/16W
R529	R002T4102J	RC	1K OHM 1/4W	R728	R803R9273J	RC	27K OHM 1/16W
R530	R002T4222J	RC	2.2K OHM 1/4W	R729	R803R9750J	RC	75 OHM 1/16W
R532	R803R9152J	RC	1.5K OHM 1/16W	R730	R803R9221J	RC	220 OHM 1/16W
R533	R803R9271J	RC	270 OHM 1/16W	R733	R803R9273J	RC	27K OHM 1/16W
R539	R002T2125J	RC	1.2M OHM 1/2W	R734	R803R9273J	RC	27K OHM 1/16W
R540	R002T2125J	RC	1.2M OHM 1/2W	R735	R803R9750J	RC	75 OHM 1/16W
R541	R63881R22J	R,FUSE	0.22 OHM 1W	R736	R803R9221J	RC	220 OHM 1/16W
R542	R3X181R22J	R,METAL OXIDE	0.22 OHM 1W	R739	R803R9750J	RC	75 OHM 1/16W
R543	R002T2102J	RC	1K OHM 1/2W	R743	R803R9473J	RC	47K OHM 1/16W
R544	R002T4271J	RC	270 OHM 1/4W	R744	R803R9473J	RC	47K OHM 1/16W
R545	R002T4151J	RC	150 OHM 1/4W	R745	R002T4273J	RC	27K OHM 1/4W
R546	R002T4101J	RC	100 OHM 1/4W	R746	R002T4273J	RC	27K OHM 1/4W
R547	R002T4102J	RC	1K OHM 1/4W	R801	R803R9221J	RC	220 OHM 1/16W
R548	R803R9101J	RC	100 OHM 1/16W	R802	R002T4272J	RC	2.7K OHM 1/4W
R549	R002T4473J	RC	47K OHM 1/4W	⚠R803	R3X18A153J	R,METAL OXIDE	15K OHM 2W
R550	R002T4472J	RC	4.7K OHM 1/4W	R804	R002T4272J	RC	2.7K OHM 1/4W
⚠R551	R803R9102J	RC	1K OHM 1/16W	⚠R805	R3X18A153J	R,METAL OXIDE	15K OHM 2W
R552	R002T4103J	RC	10K OHM 1/4W	R806	R002T4272J	RC	2.7K OHM 1/4W
R553	R002T2273J	RC	27K OHM 1/2W	⚠R807	R3X18A153J	R,METAL OXIDE	15K OHM 2W
R554	R002T2823J	RC	82K OHM 1/2W	R808	R803R9221J	RC	220 OHM 1/16W
R555	R002T4102J	RC	1K OHM 1/4W	R809	R803R9122J	RC	1.2K OHM 1/16W
R601	R002T4101J	RC	100 OHM 1/4W	R810	R803R9221J	RC	220 OHM 1/16W
R603	R3X28B560J	R,METAL OXIDE	56 OHM 3W	R811	R803R9122J	RC	1.2K OHM 1/16W
R604	R002T4101J	RC	100 OHM 1/4W	R812	R803R9101J	RC	100 OHM 1/16W
R605	R002T4333J	RC	33K OHM 1/4W	R813	R803R9181J	RC	180 OHM 1/16W
R606	R002T4101J	RC	100 OHM 1/4W	R814	R803R9122J	RC	1.2K OHM 1/16W
R607	R803R9123J	RC	12K OHM 1/16W	R815	R803R9181J	RC	180 OHM 1/16W
R608	R803R9472J	RC	4.7K OHM 1/16W	R816	R803R9181J	RC	180 OHM 1/16W
R609	R803R9101J	RC	100 OHM 1/16W	R817	R803R9680J	RC	68 OHM 1/16W
R610	R803R9101J	RC	100 OHM 1/16W	R818	R803R9680J	RC	68 OHM 1/16W
R611	R803R9101J	RC	100 OHM 1/16W	R819	R803R9680J	RC	68 OHM 1/16W
R612	R002T4101J	RC	100 OHM 1/4W	R820	R803R9101J	RC	100 OHM 1/16W
R613	R002T2101J	RC	100 OHM 1/2W	R821	R803R9101J	RC	100 OHM 1/16W
R615	R803R9103J	RC	10K OHM 1/16W	R824	R002T2100J	RC	10 OHM 1/2W
R616	R002T4331J	RC	330 OHM 1/4W	R1001	R803R9683J	RC	68K OHM 1/16W
R617	R803R9222J	RC	2.2K OHM 1/16W	R1002	R803R9473J	RC	47K OHM 1/16W
R618	R002T4221J	RC	220 OHM 1/4W	R1003	R803R9274J	RC	270K OHM 1/16W
R619	R4X5T6472F	R,METAL	4.7K OHM 1/6W	R1006	R803R9332J	RC	3.3K OHM 1/16W
R622	R803R9391J	RC	390 OHM 1/16W	R1008	R803R9332J	RC	3.3K OHM 1/16W
R623	R002T4101J	RC	100 OHM 1/4W	R1010	R803R9102J	RC	1K OHM 1/16W
R624	R803R9274J	RC	270K OHM 1/16W	R1014	R803R9103J	RC	10K OHM 1/16W
R625	R803R9123J	RC	12K OHM 1/16W	R1015	R803R9103J	RC	10K OHM 1/16W
R626	R803R9123J	RC	12K OHM 1/16W	R1016	R002T4563J	RC	56K OHM 1/4W
R627	R002T4331J	RC	330 OHM 1/4W	R1017	R803R9333J	RC	33K OHM 1/16W
R628	R002T4103J	RC	10K OHM 1/4W	R1501	R803R9682J	RC	6.8K OHM 1/16W
R629	R002T4101J	RC	100 OHM 1/4W	R1502	R803R9332J	RC	3.3K OHM 1/16W
R630	R803R9102J	RC	1K OHM 1/16W	R1503	R803R9271J	RC	270 OHM 1/16W
R631	R002T41R8J	RC	1.8 OHM 1/4W	R1505	R803R9682J	RC	6.8K OHM 1/16W
R632	R002T4101J	RC	100 OHM 1/4W	R1506	R803R9332J	RC	3.3K OHM 1/16W
R635	R803R9103J	RC	10K OHM 1/16W	R1507	R803R9102J	RC	1K OHM 1/16W
R636	R803R9562J	RC	5.6K OHM 1/16W	R1512	R803R9101J	RC	100 OHM 1/16W
R638	R803R9472J	RC	4.7K OHM 1/16W	R1530	R803R9471J	RC	470 OHM 1/16W
R645	R002T4470J	RC	47 OHM 1/4W	R2408	R808R9222J	RC	2.2K OHM 1/16W
R647	R002T4101J	RC	100 OHM 1/4W	R2411	R808R9222J	RC	2.2K OHM 1/16W
R648	R002T4102J	RC	1K OHM 1/4W	R2414	R808R9472J	RC	4.7K OHM 1/16W
R649	R803R9102J	RC	1K OHM 1/16W	R2419	R808R9472J	RC	4.7K OHM 1/16W
R650	R3X28B8R2J	R,METAL OXIDE	8.2 OHM 3W	R2420	R808R9472J	RC	4.7K OHM 1/16W
R651	R3X28B8R2J	R,METAL OXIDE	8.2 OHM 3W	R2421	R808R9472J	RC	4.7K OHM 1/16W
R653	R803R9151J	RC	150 OHM 1/16W	R2425	R808R9101J	RC	100 OHM 1/16W
R656	R803R9123J	RC	12K OHM 1/16W	R2426	R808R9102J	RC	1K OHM 1/16W
R701	R803R9100J	RC	10 OHM 1/16W	R2427	R808R9101J	RC	100 OHM 1/16W
R702	R803R9152J	RC	1.5K OHM 1/16W	R2428	R808R9151J	RC	150 OHM 1/16W
R703	R803R9104J	RC	100K OHM 1/16W	R2429	R808R9151J	RC	150 OHM 1/16W
R704	R803R9104J	RC	100K OHM 1/16W	R2430	R808R9120F	RC	12 OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		RESISTORS	
R2431	R808R9682J	RC	6.8K OHM 1/16W
R2432	R808R9220J	RC	22 OHM 1/16W
R2433	R808R9220J	RC	22 OHM 1/16W
R2434	R808R9182J	RC	1.8K OHM 1/16W
R2435	R808R9561J	RC	560 OHM 1/16W
R2436	R808R9101J	RC	100 OHM 1/16W
R2437	R808R9682J	RC	6.8K OHM 1/16W
R2438	R808R9682J	RC	6.8K OHM 1/16W
R2439	R808R9221J	RC	220 OHM 1/16W
R2440	R808R9751J	RC	750 OHM 1/16W
R2441	R808R9472J	RC	4.7K OHM 1/16W
R2442	R808R9101J	RC	100 OHM 1/16W
R2443	R808R9101J	RC	100 OHM 1/16W
R2456	R808R9220J	RC	22 OHM 1/16W
R2457	R808R9220J	RC	22 OHM 1/16W
R2464	R808R9220J	RC	22 OHM 1/16W
R2465	R808R9220J	RC	22 OHM 1/16W
R2471	R808R9470J	RC	47 OHM 1/16W
R2472	R808R9470J	RC	47 OHM 1/16W
R2491	R808R9472J	RC	4.7K OHM 1/16W
R2492	R808R9472J	RC	4.7K OHM 1/16W
R2493	R808R9472J	RC	4.7K OHM 1/16W
R2494	R808R9472J	RC	4.7K OHM 1/16W
R2496	R808R9270J	RC	27 OHM 1/16W
R2497	R808R9270J	RC	27 OHM 1/16W
R2498	R808R9472J	RC	4.7K OHM 1/16W
R2499	R808R9472J	RC	4.7K OHM 1/16W
R2500	R808R9472J	RC	4.7K OHM 1/16W
R2503	R808R9222J	RC	2.2K OHM 1/16W
R2504	R808R9103J	RC	10K OHM 1/16W
R2505	R808R9472J	RC	4.7K OHM 1/16W
R2507	R808R9103J	RC	10K OHM 1/16W
R2508	R808R9105J	RC	1M OHM 1/16W
R2509	R808R9101J	RC	100 OHM 1/16W
R2510	R808R9471J	RC	470 OHM 1/16W
R2511	R808R9471J	RC	470 OHM 1/16W
R2514	R808R9331F	RC	330 OHM 1/16W
R2516	R808R9101J	RC	100 OHM 1/16W
R2517	R808R9750F	RC	75 OHM 1/16W
R2518	R808R9750F	RC	75 OHM 1/16W
R2519	R808R9750F	RC	75 OHM 1/16W
R2520	R808R9750J	RC	75 OHM 1/16W
R2522	R808R9750F	RC	75 OHM 1/16W
R2523	R808R9750F	RC	75 OHM 1/16W
R2525	R808R9470J	RC	47 OHM 1/16W
R2550	R808R9472J	RC	4.7K OHM 1/16W
R2551	R808R9472J	RC	4.7K OHM 1/16W
R2552	R808R9221J	RC	220 OHM 1/16W
R2553	R808R9221J	RC	220 OHM 1/16W
R2556	R808R9101J	RC	100 OHM 1/16W
		CAPACITORS	
C001	CS0PB0315K	CC	0.1 UF 25V B
C002	E02LU0221M	CE	220 UF 6.3V
C003	CS0PB0315K	CC	0.1 UF 25V B
C004	CS0PB0315K	CC	0.1 UF 25V B
C005	E02LF1222M	CE	2200 UF 10V
C006	CS0PB02L5K	CC	0.33 UF 16V B
C007	CS0PB0315K	CC	0.1 UF 25V B
C010	E02LU1101M	CE	100 UF 10V
C011	CS0PB0315K	CC	0.1 UF 25V B
C012	E02LU1471M	CE	470 UF 10V
C015	E02LU1471M	CE	470 UF 10V
C016	CS0PB02Q5K	CC	0.47 UF 16V B
C017	CS0PB0315K	CC	0.1 UF 25V B
C018	CS0PB0414K	CC	0.01 UF 50V B
C019	CS0PB0315K	CC	0.1 UF 25V B
C021	CS0PB02L5K	CC	0.33 UF 16V B
C022	E02LU0221M	CE	220 UF 6.3V
C023	E02LU1101M	CE	100 UF 10V
C024	CS0PB0414K	CC	0.01 UF 50V B
C025	CS0PB0315K	CC	0.1 UF 25V B
C026	E02LT1102M	CE	1000 UF 10V
C027	CS0PB04H3K	CC	0.0022UF 50V B
C028	CS0PCH4Q1J	CC	47 PF 50V CH
C029	CS0PCH4Q1J	CC	47 PF 50V CH
C030	E50HU3100M	CE	10 UF 25 V
C031	E00NU1100M	CE	10 UF 10 V

REF. NO.	PART NO.	DESCRIPTION	
		CAPACITORS	
C033	CS0PB02L5K	CC	0.33 UF 16V B
C034	E02LU1471M	CE	470 UF 10V
C035	CS0PB0315K	CC	0.1 UF 25V B
C036	E02LU1471M	CE	470 UF 10V
C037	CS0PB02L5K	CC	0.33 UF 16V B
C038	E02LU1471M	CE	470 UF 10V
C039	CS0PB0315K	CC	0.1 UF 25V B
C040	CS0PB0415K	CC	0.1 UF 50V B
C042	CS0PB0414K	CC	0.01 UF 50V B
C043	CS0PB0414K	CC	0.01 UF 50V B
C044	CS0PCH4Q1J	CC	47 PF 50V CH
C046	CS0PCH4Q1J	CC	47 PF 50V CH
C101	CS0PB0414K	CC	0.01 UF 50V B
C102	E02LT1102M	CE	1000 UF 10V
C103	CS0PB0216K	CC	1 UF 16V B
C104	E02LU1101M	CE	100 UF 10V
C105	CS0PB0315K	CC	0.1 UF 25V B
C106	CS0PB0315K	CC	0.1 UF 25V B
C107	CS0PB0315K	CC	0.1 UF 25V B
C108	CS0PCH4G1J	CC	18 PF 50V CH
C109	CS0PB0315K	CC	0.1 UF 25V B
C110	CS0PB0413K	CC	0.001 UF 50V B
C111	CS0PCH4H2J	CC	220 PF 50V CH
C113	E50HU52R2M	CE	2.2 UF 50V
C115	E02LU1101M	CE	100 UF 10V
C116	CS0PB0216K	CC	1 UF 16V B
C117	CS0PB0315K	CC	0.1 UF 25V B
C118	E50HU3100M	CE	10 UF 25 V
C119	E50HU5010M	CE	1 UF 50V
C120	CS0PB0216K	CC	1 UF 16V B
C121	CS0PCH4G1J	CC	18 PF 50V CH
C122	CS0PCH4U2J	CC	680 PF 50V CH
C123	E50HU5R47M	CE	0.47 UF 50V
C125	CS0PCH412J	CC	100 PF 50V CH
C127	CS0PCH420C	CC	2 PF 50V CH
C128	CS0PB04E4K	CC	0.015 UF 50V B
C139	CQGTF0416Z	CC	1 UF 50V F
C140	CS0PB0315K	CC	0.1 UF 25V B
C142	CS0PB0316K	CC	1 UF 25V B
C143	CS0PCH412J	CC	100 PF 50V CH
C144	E02LU1101M	CE	100 UF 10V
C318	CS0PB0N16K	CC	1 UF 10V B
C319	CS0PB0N16K	CC	1 UF 10V B
C401	C0JTSL5S1J	CC	56 PF 500V SL
C402	P232W1103J	CMP	0.01 UF 100V MMTS
C403	E02LU5220M	CE	22 UF 50V
C404	CS0PB04H3K	CC	0.0022UF 50V B
C405	E00NU34R7M	CE	4.7 UF 25 V
C406	E02LU5010M	CE	1 UF 50V
C407	E02LU4101M	CE	100 UF 35V
C408	E5EZF3222M	CE	2200 UF 25V
C411	CS0PCH413J	CC	0.001 UF 50V CH
C412	P4G8FJ272H	CMPP	0.0027UF 1.25KV PHE
C413	E0ELF4102M	CE	1000 UF 35V
C415	C0JTB05H2K	CC	220 PF 500V B
C416	CS0PCH412J	CC	100 PF 50V CH
C417	P235W1224J	CMP	0.22 UF 100V MKT
⚠C418	P4J7F3394J	CMPP	0.39 UF 250V PMS
C419	C0JTB05H3K	CC	0.0022UF 500V B
C420	P4G8FJ153H	CMPP	0.015 UF 1.25KV PHE
⚠C421	P3N1F5223J	CPP	0.022 UF 630V
C422	P611T1334J	CMPL	0.33 UF 100V TF
C423	E50HU54R7M	CE	4.7 UF 50V
C424	CS0PCH412J	CC	100 PF 50V CH
C425	C03L0R713K	CC	0.001 UF 2KV R
C426	E5EZFD220M	CE	22 UF 250V
C427	P235W1104J	CMP	0.1 UF 100V MKT
C429	CS0PB04L2K	CC	330 PF 50V B
⚠C430	E02LU8220M	CE	22 UF 100V
C431	CQGTB0415K	CC	0.1 UF 50V B
C432	E62DFB470M	CE	47 UF 160V
C433	E02LU54R7M	CE	4.7 UF 50V
C434	CQGTCH412J	CC	100 PF 50V CH
C436	E02LU5100M	CE	10 UF 50V
C439	CS0PB0413K	CC	0.001 UF 50V B
C442	E736F56R8M	CE	6.8 UF 50V
C501	E5EZF2222M	CE	2200 UF 16V

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
		CAPACITORS			**CAPACITORS**
C502	C03L0R713K	CC 0.001 UF 2KV R	C707	CS0PB0315K	CC 0.1 UF 25V B
C503	C03L0R713K	CC 0.001 UF 2KV R	C712	E50HU3100M	CE 10 UF 25 V
⚠C504	E02LU5220M	CE 22 UF 50V	C714	E50HU3100M	CE 10 UF 25 V
C505	P2122B334M	CMP 0.33 UF 275V ECQUL	C715	E50HU3100M	CE 10 UF 25 V
C506	P2122B224M	CMP 0.22 UF 275V ECQUL	C716	CS0PCH4Q2J	CC 470 PF 50V CH
C507	E51CGC471M	CE 470 UF 200V	C717	E02LU2101M	CE 100 UF 16V
C508	CC3LE0MH3M	CC 0.0022UF 250V	C719	CS0PB0415K	CC 0.1 UF 50V B
C509	E02LU3470M	CE 47 UF 25V	C720	CS0PB0415K	CC 0.1 UF 50V B
C510	CQGTB0414K	CC 0.01 UF 50V B	C722	CS0PB0415K	CC 0.1 UF 50V B
C511	CS0PCH4H2J	CC 220 PF 50V CH	C724	CS0PB0415K	CC 0.1 UF 50V B
C512	P232W1473J	CMP 0.047 UF 100V MMTS	C725	CS0PB0415K	CC 0.1 UF 50V B
⚠C513	CC3LE0M13M	CC 0.001 UF 250V	C727	CS0PB0415K	CC 0.1 UF 50V B
⚠C514	E61FT2681D	CE 680 UF 16V	C733	E02LU5R68M	CE 0.68 UF 50V
C515	E50HU3100M	CE 10 UF 25 V	C734	CS0PB0415K	CC 0.1 UF 50V B
C516	CHGTB0413K	CC 0.001 UF 50V B	C736	CS0PCH4Q2J	CC 470 PF 50V CH
C517	C03L0R7K3K	CC 0.0027UF 2KV R	C737	CS0PCH4Q2J	CC 470 PF 50V CH
C518	CS0PF0415Z	CC 0.1 UF 50V F	C738	CS0PCH4Q2J	CC 470 PF 50V CH
⚠C519	CC3LE0M13M	CC 0.001 UF 250V	C741	CS0PCH4Q2J	CC 470 PF 50V CH
C520	C0JTB0513K	CC 0.001 UF 500V B	C742	CS0PCH4Q2J	CC 470 PF 50V CH
C521	E62NFC221M	CE 220 UF 200V	C801	C0JTB0512K	CC 100 PF 500V B
C522	E02LU2101M	CE 100 UF 16V	C802	C0JBB0713K	CC 0.001 UF 2KV B
C523	CQGTB04H3K	CC 0.0022UF 50V B	C806	CS0PB0413K	CC 0.001 UF 50V B
C524	CHGTB0413K	CC 0.001 UF 50V B	C809	CS0PCH4S2J	CC 560 PF 50V CH
C526	CS0PB0315K	CC 0.1 UF 25V B	C810	CS0PCH4Q2J	CC 470 PF 50V CH
C527	E02LF2222M	CE 2200 UF 16V	C811	CS0PCH4Q2J	CC 470 PF 50V CH
C528	E61FF0222D	CE 2200 UF 6.3V	C1001	CS0PB0216K	CC 1 UF 16V B
C529	E50HU1330M	CE 33 UF 10 V	C1002	CS0PB04W3K	CC 0.0082UF 50V B
C530	E02LT0102M	CE 1000 UF 6.3V	C1003	CS0PB0216K	CC 1 UF 16V B
C535	C0PLRR7H3K	CC 0.0022 UF 2KV R	C1004	CS0PB04W3K	CC 0.0082UF 50V B
C541	CQGTB04S4K	CC 0.056 UF 50V B	C1005	E50HU3100M	CE 10 UF 25 V
C549	CQGTB04Q4K	CC 0.047 UF 50V B	C1006	E02LU5220M	CE 22 UF 50V
C554	CHGTB0413K	CC 0.001 UF 50V B	C1007	CS0PCH4N2J	CC 390 PF 50V CH
C601	CS0PB0415K	CC 0.1 UF 50V B	C1009	CS0PB02Q5K	CC 0.47 UF 16V B
C603	E02LU2101M	CE 100 UF 16V	C1011	E02L02222M	CE 2200 UF 16V
C604	CS0PB0415K	CC 0.1 UF 50V B	C1504	E50HU3100M	CE 10 UF 25 V
C606	CS0PB0316K	CC 1 UF 25V B	C1505	CQG0B0415K	CC 0.1 UF 50V B
C608	CS0PB0415K	CC 0.1 UF 50V B	C1509	CS0PB0414K	CC 0.01 UF 50V B
C609	E02LU2101M	CE 100 UF 16V	C1510	E02LU1101M	CE 100 UF 10V
C611	P232W0474J	CMPL 0.47 UF 50V MMTS or	C1513	CS0PB0415K	CC 0.1 UF 50V B
	P232T0474J	CMPL 0.47 UF 50V MMTV or	C1517	CS0PCH412J	CC 100 PF 50V CH
	P6M9W0474J	CMPL 0.47 UF 50V TF	C1528	E02LU2101M	CE 100 UF 16V
C612	E02LU2101M	CE 100 UF 16V	C1529	CS0PB0315K	CC 0.1 UF 25V B
C613	CS0PB0415K	CC 0.1 UF 50V B	C1531	CS0PB0414K	CC 0.01 UF 50V B
C614	CS0PB02L5K	CC 0.33 UF 16V B	C1535	E02LU5010M	CE 1 UF 50V
C617	CS0PB02L5K	CC 0.33 UF 16V B	C2401	CS0UB0N15K	CC 0.1 UF 10V B
C618	CS0PB04S3K	CC 0.0056UF 50V B	C2402	CS0UB0N15K	CC 0.1 UF 10V B
C619	CS0PB0316K	CC 1 UF 25V B	C2403	CS0UB0P16K	CC 1 UF 6.3V B
C621	CS0PB0415K	CC 0.1 UF 50V B	C2404	CS0UB0P16K	CC 1 UF 6.3V B
C622	E02LU5R68M	CE 0.68 UF 50V	C2405	CS0UB0P16K	CC 1 UF 6.3V B
C624	E02LU0221M	CE 220 UF 6.3V	C2406	CS0UB0413K	CC 0.001 UF 50V B
C625	CS0PB0415K	CC 0.1 UF 50V B	C2407	CS0UB0N15K	CC 0.1 UF 10V B
C626	CS0PB0316K	CC 1 UF 25V B	C2408	CS0UB0N15K	CC 0.1 UF 10V B
C627	CS0PB04Q4K	CC 0.047 UF 50V B	C2410	E61UM0221D	CE 220 UF 6.3V
C628	CS0PB0316K	CC 1 UF 25V B	C2411	E61UM0221D	CE 220 UF 6.3V
C629	CS0PCH480D	CC 8 PF 50V CH	C2412	CT7RC0P17M	CC 10 UF 6.3V C
C630	CS0PCH480D	CC 8 PF 50V CH	C2413	CS0UB0N15K	CC 0.1 UF 10V B
C631	E50HU3100M	CE 10 UF 25 V	C2414	CS0UB0N15K	CC 0.1 UF 10V B
C632	E50HU3100M	CE 10 UF 25 V	C2415	CS0UB0N15K	CC 0.1 UF 10V B
C633	E50HU3100M	CE 10 UF 25 V	C2416	CS0UB0N15K	CC 0.1 UF 10V B
C634	CS0PB0316K	CC 1 UF 25V B	C2417	CS0UB0N15K	CC 0.1 UF 10V B
C635	E50HU3100M	CE 10 UF 25 V	C2418	CS0UB0N15K	CC 0.1 UF 10V B
C636	CS0PB0316K	CC 1 UF 25V B	C2419	CS0UB0N15K	CC 0.1 UF 10V B
C638	E50HU3100M	CE 10 UF 25 V	C2420	CS0UB0N15K	CC 0.1 UF 10V B
C639	CS0PCH4N1J	CC 39 PF 50V CH	C2421	CS0UB0N15K	CC 0.1 UF 10V B
C643	CS0PB0316K	CC 1 UF 25V B	C2422	CT7RC0P17M	CC 10 UF 6.3V C
C644	CS0PB0415K	CC 0.1 UF 50V B	C2423	CT7RC0P17M	CC 10 UF 6.3V C
C645	CS0PB0415K	CC 0.1 UF 50V B	C2424	CS0UB0N15K	CC 0.1 UF 10V B
C646	CS0PB0415K	CC 0.1 UF 50V B	C2425	CS0UB0N15K	CC 0.1 UF 10V B
C647	CS0PB0316K	CC 1 UF 25V B	C2426	CS0UB0N15K	CC 0.1 UF 10V B
C648	E50HU3100M	CE 10 UF 25 V	C2427	CS0UB0N15K	CC 0.1 UF 10V B
C649	E50HU3100M	CE 10 UF 25 V	C2428	CS0UB0N15K	CC 0.1 UF 10V B
C701	CS0PB0415K	CC 0.1 UF 50V B	C2429	CS0UB0N15K	CC 0.1 UF 10V B
C702	CS0PB0315K	CC 0.1 UF 25V B	C2430	CS0UB0N15K	CC 0.1 UF 10V B
C703	E02LU1101M	CE 100 UF 10V	C2431	CS0UB0N15K	CC 0.1 UF 10V B
C704	CS0PB04H4K	CC 0.022 UF 50V B	C2432	CS0UB0N15K	CC 0.1 UF 10V B
C705	CS0PB0415K	CC 0.1 UF 50V B	C2433	CT7RC0P17M	CC 10 UF 6.3V C
C706	CS0PCH412J	CC 100 PF 50V CH	C2434	CT7RC0P17M	CC 10 UF 6.3V C

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		CAPACITORS	
C2435	CS0UB0N15K	CC	0.1 UF 10V B
C2436	CS0UB0N15K	CC	0.1 UF 10V B
C2437	CS0UB0N15K	CC	0.1 UF 10V B
C2438	CS0UB0N15K	CC	0.1 UF 10V B
C2439	CS0UB0N15K	CC	0.1 UF 10V B
C2440	CS0UB0N15K	CC	0.1 UF 10V B
C2441	CS0UB0N15K	CC	0.1 UF 10V B
C2442	CS0UB0N15K	CC	0.1 UF 10V B
C2443	CS0UB0N15K	CC	0.1 UF 10V B
C2444	CS0UB0N15K	CC	0.1 UF 10V B
C2445	CS0UB0N15K	CC	0.1 UF 10V B
C2446	CS0UB0N15K	CC	0.1 UF 10V B
C2447	CS0UB0N15K	CC	0.1 UF 10V B
C2448	CS0UB0N15K	CC	0.1 UF 10V B
C2449	CS0UB0N15K	CC	0.1 UF 10V B
C2450	CT7RC0P17M	CC	10 UF 6.3V C
C2451	E61UM0221D	CE	220 UF 6.3V
C2452	CS0UCH4H1J	CC	22 PF 50V CH
C2453	CS0UCH4H1J	CC	22 PF 50V CH
C2454	CS0UB0413K	CC	0.001 UF 50V B
C2457	E62YM0101D	CE	100 UF 6.3V
C2458	CS0UB0413K	CC	0.001 UF 50V B
C2460	CS0UB0N15K	CC	0.1 UF 10V B
C2461	CS0UB0N15K	CC	0.1 UF 10V B
C2462	CS0UB0N15K	CC	0.1 UF 10V B
C2463	CS0UB0N15K	CC	0.1 UF 10V B
C2464	CS0UB0N15K	CC	0.1 UF 10V B
C2465	CS0UB0N15K	CC	0.1 UF 10V B
C2466	CS0UB0N15K	CC	0.1 UF 10V B
C2467	CS0UB0N15K	CC	0.1 UF 10V B
C2468	CT7RC0P17M	CC	10 UF 6.3V C
C2469	CS0UB0N15K	CC	0.1 UF 10V B
C2470	CS0UB0N15K	CC	0.1 UF 10V B
C2471	CS0UB0N15K	CC	0.1 UF 10V B
C2472	CS0UB0N15K	CC	0.1 UF 10V B
C2473	CT7RC0P17M	CC	10 UF 6.3V C
C2474	CS0UB0N15K	CC	0.1 UF 10V B
C2475	CS0UB0P16K	CC	1 UF 6.3V B
C2476	CS0UB0N15K	CC	0.1 UF 10V B
C2478	CS0UB0413K	CC	0.001 UF 50V B
C2479	CS0UCH412J	CC	100 PF 50V CH
C2481	CS0UCH4Q1J	CC	47 PF 50V CH
C2482	CS0UB0N15K	CC	0.1 UF 10V B
C2483	CS0UB0413K	CC	0.001 UF 50V B
C2484	CS0UCH4Q1J	CC	47 PF 50V CH
C2486	CS0UB0N15K	CC	0.1 UF 10V B
C2487	E61UM0101D	CE	100 UF 6.3V
C2488	E72KM0221D	CE	220 UF 6.3V
C2489	E72KM0221D	CE	220 UF 6.3V
C2490	CS0UB0P16K	CC	1 UF 6.3V B
C2491	CS0UB0N15K	CC	0.1 UF 10V B
C2492	CS0UB0P16K	CC	1 UF 6.3V B
C2493	CS0UB0P16K	CC	1 UF 6.3V B
C2494	CS0UB0413K	CC	0.001 UF 50V B
C2495	CS0UB0N15K	CC	0.1 UF 10V B
C2496	CS0UB0N15K	CC	0.1 UF 10V B
C2497	CS0UB0N15K	CC	0.1 UF 10V B
C2498	CS0UB0N15K	CC	0.1 UF 10V B
C2499	CS0UB0P16K	CC	1 UF 6.3V B
C2500	CS0UB0413K	CC	0.001 UF 50V B
C2501	CS0UB0413K	CC	0.001 UF 50V B
C2502	CS0UB0N15K	CC	0.1 UF 10V B
C2503	CS0UB0P16K	CC	1 UF 6.3V B
C2504	CS0UB0N15K	CC	0.1 UF 10V B
C2505	CS0UCH4S1J	CC	56 PF 50V CH
C2506	CS0UB0N15K	CC	0.1 UF 10V B
C2507	CS0UB0N15K	CC	0.1 UF 10V B
C2508	CS0UB0P16K	CC	1 UF 6.3V B
C2509	CS0UB0N15K	CC	0.1 UF 10V B
C2510	CS0UB0N15K	CC	0.1 UF 10V B
C2511	CS0UCH4G1J	CC	18 PF 50V CH
C2512	CS0UCH4G1J	CC	18 PF 50V CH
C2513	CS0UB0N15K	CC	0.1 UF 10V B
C2514	CS0UB0P16K	CC	1 UF 6.3V B
C2515	CS0UB0N15K	CC	0.1 UF 10V B
C2516	CS0UB0413K	CC	0.001 UF 50V B
C2517	CS0UB0413K	CC	0.001 UF 50V B
C2518	CS0UB0413K	CC	0.001 UF 50V B
C2519	CS0UB0P16K	CC	1 UF 6.3V B
C2520	E61UM2100D	CE	10 UF 16V
C2521	CS0UB0N15K	CC	0.1 UF 10V B
C2525	E61UM2100D	CE	10 UF 16V
C2527	CS0UCH4Q1J	CC	47 PF 50V CH
C2528	CS0UCH4Q1J	CC	47 PF 50V CH
C2529	CS0UB0N15K	CC	0.1 UF 10V B
C2533	CT7RC0P17M	CC	10 UF 6.3V C
C2535	CS0UCH4Q1J	CC	47 PF 50V CH
C2536	CS0UCH4Q1J	CC	47 PF 50V CH
C2537	CT7RC0P17M	CC	10 UF 6.3V C
C2538	CS0UB04K3K	CC	0.0027UF 50V B
C2539	CS0UB04K3K	CC	0.0027UF 50V B
C2540	E61UM0101D	CE	100 UF 6.3V
C2541	CS0UB0N15K	CC	0.1 UF 10V B
C2543	CS0UCH4Q1J	CC	47 PF 50V CH
C2544	CS0UCH4Q1J	CC	47 PF 50V CH
C2547	CS0UCH4Q1J	CC	47 PF 50V CH
C2548	CS0UCH4Q1J	CC	47 PF 50V CH
C2549	CS0UCH4Q1J	CC	47 PF 50V CH
C2550	CS0UCH4Q1J	CC	47 PF 50V CH
C2551	CS0UCH4U1J	CC	68 PF 50V CH
C2552	CS0UB0314K	CC	0.01 UF 25V B
C2555	CS0UB0314K	CC	0.01 UF 25V B
C2556	CS0UCH4L1J	CC	33 PF 50V CH
C2568	CS0UCH4Q1J	CC	47 PF 50V CH
C2569	CS0UB0N15K	CC	0.1 UF 10V B
C2570	CS0UB0N15K	CC	0.1 UF 10V B
C3401	CS0UB0413K	CC	0.001 UF 50V B
C3402	CS0UB0413K	CC	0.001 UF 50V B
C3403	CS0UB0413K	CC	0.001 UF 50V B
C3404	CS0UB0413K	CC	0.001 UF 50V B
C3406	CT7RC0P17M	CC	10 UF 6.3V C
C3416	CT7RC0P17M	CC	10 UF 6.3V C
C3417	CT7RC0P17M	CC	10 UF 6.3V C
C3422	CS0UB0413K	CC	0.001 UF 50V B
C3430	CS0UB0413K	CC	0.001 UF 50V B
C3431	CS0UB0413K	CC	0.001 UF 50V B
C3434	CT7RC0P17M	CC	10 UF 6.3V C
C3435	CS0UB0413K	CC	0.001 UF 50V B
		DIODES	
D003	D2WXN40050	DIODE SILICON	1N4005-EIC
D103	D9WU03R92B	DIODE ZENER	MTZJ3.9B-EIC
D104	D1VT001330	DIODE,SILICON	1SS133T-77
D105	D9WU03R92B	DIODE ZENER	MTZJ3.9B-EIC
D106	D9WU05R62B	DIODE ZENER	MTZJ5.6B-EIC
D110	D2WXSB1400	DIODE SCHOTTKY	SB140-EIC
D111	D2WXSB1400	DIODE SCHOTTKY	SB140-EIC
D112	D9WU05R62B	DIODE ZENER	MTZJ5.6B-EIC
D113	D9WU05R62B	DIODE ZENER	MTZJ5.6B-EIC
D114	D9WU05R62B	DIODE ZENER	MTZJ5.6B-EIC
D401	D2MXN40020	DIODE,FAST RECOVERY	1N4002-PAN
D402	D2MXN40020	DIODE,FAST RECOVERY	1N4002-PAN
D403	D9WU03302B	DIODE ZENER	MTZJ33B-EIC
D404	D9WU09R12B	DIODE ZENER	MTZJ9.1B-EIC
⚠D405	D2WTAU02A0	DIODE SILICON	AU02A-EIC
⚠D406	D9WU03R32B	DIODE ZENER	MTZJ3.3B-EIC
⚠D407	D2WTAU02A0	DIODE SILICON	AU02A-EIC
D408	D2CF0715L0	DIODE SILICON	ERD07-15L50
D409	D2CF2016L0	DIODE SILICON	FE201-6L49
D410	D9WU03302B	DIODE ZENER	MTZJ33B-EIC
⚠D411	D2WTAU02A0	DIODE SILICON	AU02A-EIC
⚠D412	D2WXN40050	DIODE SILICON	1N4005-EIC
D414	D2MXN40020	DIODE,FAST RECOVERY	1N4002-PAN
D415	D2MXN40020	DIODE,FAST RECOVERY	1N4002-PAN
⚠D501	D2WTRM11C0	DIODE SILICON	RM11C-EIC
⚠D502	D2WTRM11C0	DIODE SILICON	RM11C-EIC
⚠D503	D2WTRM11C0	DIODE SILICON	RM11C-EIC
⚠D504	D2WTRM11C0	DIODE SILICON	RM11C-EIC
D505	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
⚠D506	D2MXN49370	DIODE,FAST RECOVERY	1N4937-PAN
D507	D1VT001330	DIODE,SILICON	1SS133T-77
D508	D9WU03R92B	DIODE ZENER	MTZJ3.9B-EIC
D509	D9WU01502B	DIODE ZENER	MTZJ15B-EIC
D510	D2CF2016L0	DIODE SILICON	FE201-6L49
⚠D511	D2MXN49370	DIODE,FAST RECOVERY	1N4937-PAN

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		DIODES	
⚠D512	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D513	D1VT001330	DIODE,SILICON	1SS133T-77
D514	D1VT001330	DIODE,SILICON	1SS133T-77
D515	D1VT001330	DIODE,SILICON	1SS133T-77
D516	D1VT001330	DIODE,SILICON	1SS133T-77
D517	D2MXN49370	DIODE,FAST RECOVERY	1N4937-PAN
D520	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D522	DOU002720M	DIODE VARISTA	DSS-272M-S00B
⚠D523	D9WU01802B	DIODE ZENER	MTZJ18B-EIC
D524	D1VT001330	DIODE,SILICON	1SS133T-77
D525	D9WU05R62B	DIODE ZENER	MTZJ5.6B-EIC
⚠D526	D6E027110A	DIODE VARISTA	ENE271D-10A
D527	D1VT001330	DIODE,SILICON	1SS133T-77
D528	D9WU05R62B	DIODE ZENER	MTZJ5.6B-EIC
⚠D529	D28T21DQN9	DIODE SCHOTTKY	21DQ09N-TA2B1
D530	D9WU01002B	DIODE ZENER	MTZJ10B-EIC
D531	D9WU03302B	DIODE ZENER	MTZJ33B-EIC
D532	D9WU08R22B	DIODE ZENER	MTZJ8.2B-EIC
D534	D27A85T400	DIODE SCHOTTKY	RB085T-40
D535	D9WU03R32B	DIODE ZENER	MTZJ3.3B-EIC
D537	D9WU02R22B	DIODE ZENER	MTZJ2.2B-EIC
D539	D1VT001330	DIODE,SILICON	1SS133T-77
D611	D1VT001330	DIODE,SILICON	1SS133T-77
D612	D1VT001330	DIODE,SILICON	1SS133T-77
D709	D9WU06R22B	DIODE ZENER	MTZJ6.2B-EIC
D801	D1VT001330	DIODE,SILICON	1SS133T-77
D802	D1VT001330	DIODE,SILICON	1SS133T-77
D803	D1VT001330	DIODE,SILICON	1SS133T-77
D810	D1VT001330	DIODE,SILICON	1SS133T-77
D811	D1VT001330	DIODE,SILICON	1SS133T-77
D812	D1VT001330	DIODE,SILICON	1SS133T-77
		ICS	
IC001	I55J07W660	IC	TC7W66FU(TE12L,F)
⚠IC002	I07F0C0WF0	IC	BA00BC0WFP-E2
⚠IC003	I07F0C0WF0	IC	BA00BC0WFP-E2
IC004	I07A078100	IC	BA7810T-V5
⚠IC005	I07A078100	IC	BA7810T-V5
IC101	I56F07144A	IC	OEC7144A
IC102	I9UF032290	IC	PST3229NR
IC199	A3W4062075	INIT DATA	AT24C128N-10SU-1.8
IC401	I03SD78470	IC	LA7847-E
IC504	000220002W	PHOTO COUPLER	PS2561AL1-1-V(W)
IC601	I03FC63270	IC	LA76327M-MPB-E
IC701	I0QF027500	IC	NJM2750M(TE1)
IC1001	I0FSP7822A	IC	AN17822A
IC2401	ICQK039640	IC	ZR39640BGCG-B1
IC2402	IFYK002200	IC	CAS-220/CS
IC2404	ICLJ022DT5	IC	HY5DU561622DTP-D43
IC2408	ICMJ0F1687	IC	SST39VF1681-70-4C-EKE
IC2501	I1FF043450	IC	CS4345-CZZ
		TRANSISTORS	
Q002	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
Q003	TAAT012714	TRANSISTOR, SILICON	KTA1271_Y-AT
Q004	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q005	T82A03841Q	TRANSISTOR SILICON	2SC3841-T1B_T63
Q006	T82A03841Q	TRANSISTOR SILICON	2SC3841-T1B_T63
Q007	T82A03841Q	TRANSISTOR SILICON	2SC3841-T1B_T63
Q009	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK
Q010	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q101	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q102	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q103	TCAA3875SY	TRANSISTOR SILICON	KTC3875S_Y_RTK
Q104	TCAT03209Y	TRANSISTOR SILICON	KTC3209_Y-AT
Q106	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q107	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q301	TNAAD05001	COMPOUND TRANSISTOR	KRC104SRTK
Q302	TNAAD05001	COMPOUND TRANSISTOR	KRC104SRTK
⚠Q402	TCAT03227Y	TRANSISTOR SILICON	KTC3227_Y-AT
Q405	TDUU024990	TRANSISTOR SILICON	2SD2499(LB0EC1)
⚠Q501	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q502	TJXG10NK50	FET	STF10NK50Z
⚠Q503	TA3T1371A0	TRANSISTOR,SILICON	2SA1371(D,E)-AE
Q504	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q505	TC3T029090	TRANSISTOR,SILICON	2SC2909(S,T)-AA
Q506	TNAAD05001	COMPOUND TRANSISTOR	KRC104SRTK
⚠Q507	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
⚠Q508	TAAT012714	TRANSISTOR, SILICON	KTA1271_Y-AT

REF. NO.	PART NO.	DESCRIPTION	
		TRANSISTORS	
Q509	TCATC31980	TRANSISTOR,SILICON	KTC3198-AT(Y,GR)
Q510	TNAAD05001	COMPOUND TRANSISTOR	KRC104SRTK
⚠Q511	TAAA1504SY	TRANSISTOR SILICON	KTA1504S_Y_RTK
Q513	TCAA3875SY	TRANSISTOR SILICON	KTC3875S_Y_RTK
⚠Q514	TCAT032034	TRANSISTOR, SILICON	KTC3203_Y-AT
Q601	TNAAB05003	COMPOUND TRANSISTOR	KRC102SRTK
Q602	TCAT03209Y	TRANSISTOR SILICON	KTC3209_Y-AT
Q603	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q605	TPAAB05001	COMPOUND TRANSISTOR	KRA102SRTK
Q606	TCAT03209Y	TRANSISTOR SILICON	KTC3209_Y-AT
Q607	TCAT03209Y	TRANSISTOR SILICON	KTC3209_Y-AT
Q608	TCAT03209Y	TRANSISTOR SILICON	KTC3209_Y-AT
Q609	TCAT03209Y	TRANSISTOR SILICON	KTC3209_Y-AT
Q610	TCAA3875SY	TRANSISTOR SILICON	KTC3875S_Y_RTK
⚠Q611	TCAT03209Y	TRANSISTOR SILICON	KTC3209_Y-AT
Q612	TCAA3875SY	TRANSISTOR SILICON	KTC3875S_Y_RTK
Q701	TCAA3875SY	TRANSISTOR SILICON	KTC3875S_Y_RTK
⚠Q801	TCATC3199Y	TRANSISTOR SILICON	KTC3199_Y-AT
⚠Q802	TCATC3199Y	TRANSISTOR SILICON	KTC3199_Y-AT
⚠Q803	TCATC3199Y	TRANSISTOR SILICON	KTC3199_Y-AT
⚠Q804	TCA0042170	TRANSISTOR SILICON	KTC4217(O,Y)
⚠Q805	TCA0042170	TRANSISTOR SILICON	KTC4217(O,Y)
⚠Q806	TCA0042170	TRANSISTOR SILICON	KTC4217(O,Y)
Q1001	TCAA3875SY	TRANSISTOR SILICON	KTC3875S_Y_RTK
Q1503	TCAA3875SY	TRANSISTOR SILICON	KTC3875S_Y_RTK
Q1508	TCAA3875SY	TRANSISTOR SILICON	KTC3875S_Y_RTK
Q2401	TCAA040754	TRANSISTOR SILICON	KTC4075E-Y-RTK/P
Q2402	TCAA040754	TRANSISTOR SILICON	KTC4075E-Y-RTK/P
		COILS &TRANSFORMERS	
L001	02167F220J	COIL	22 UH
L003	02167F101J	COIL	100 UH
L004	02167F220J	COIL	22 UH
L402	022100031A	COIL,LINEARITY	ELH5L7120N
L403	02DK000058	COIL CHOKE	02DK000058
⚠L501	029X000098	COIL,LINE FILTER	SS28H-20075
⚠L503	028R270017	COIL,DEGAUSS	VRK0968-065-060
L601	02167F101J	COIL	100 UH
L702	02167F101J	COIL	100 UH
L801	02167D151K	COIL	150 UH
L1505	02167F150J	COIL	15 UH
L1511	02167F150J	COIL	15 UH
L2402	021AS9224J	COIL	0.22 UH
L2404	0216SDR47J	COIL	0.47 UH
L2405	0216SDR47J	COIL	0.47 UH
T401	0450190171	TRANS,HORIZONTAL DRIVE	ETH19Y206AY
T501	0481350994	TRANSFORMER,SWITCHING	81350994
		JACKS	
J701	060J431020	RCA JACK	MSP-213V2-432_NI_LF
J702	063D700010	JACK	MDC-012V1-A_LF
J704	060J411032	RCA JACK	MSP-213V1-652_NI_LF
J705	060J401104	RCA JACK	MTJ-032-03A-30FE
J706	060J401106	RCA JACK	MTJ-032-03A-32FE
J707	060J401105	RCA JACK	MTJ-032-03A-31FE
J708	060J431022	RCA JACK	MSP-213V2-732_NI_LF
⚠J801	066F130021	SOCKET,CATHODE RAY,TUBE	ISHS62S
		SWITCHES	
SW101	0504101T34	SWITCH,TACT	EVQ21505R
SW102	0504101T34	SWITCH,TACT	EVQ21505R
SW103	0504101T34	SWITCH,TACT	EVQ21505R
SW104	0504101T34	SWITCH,TACT	EVQ21505R
SW105	0504101T34	SWITCH,TACT	EVQ21505R
		VARIABLE RESISTORS	
VR401	V1K63H3BTE	VOLUME,SEMI FIXED	NVG6TLTAB222
VR502	V1163H4BTC	VOLUME,SEMI FIXED	EVNCYAA03BE4
		P.C.BOARD ASSEMBLIES	
PCB070	A3W4062070	PCB ASS'Y	CME073B MAIN
PCB110	A3W4012110	PCB ASS'Y	CCE066B CRT
PCBDH0	A3W4012DH0	PCB ASS'Y	CEE139B DIGITAL
		MISCELLANEOUS	
B001	024AC5102F	CORE,BEADS	BLM18BD102SN1D
B101	024H003553	CORE,BEADS	W5RH3.5X5X1.0 or
	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B102	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B401	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B402	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
B405	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0
⚠B501	024HT03564	CORE,BEADS	W4BRH3.5X6X1.0

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	
		MISCELLANEOUS	
B502	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
⚠B504	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B701	024AC5600E	CORE,BEADS	BLM18BB600SN1D
B702	024AC5600E	CORE,BEADS	BLM18BB600SN1D
B1501	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2402	024HC51513	CORE,BEADS	FCM1608KF-151T06
B2403	024HC51513	CORE,BEADS	FCM1608KF-151T06
B2404	024HC51513	CORE,BEADS	FCM1608KF-151T06
B2405	024HC51513	CORE,BEADS	FCM1608KF-151T06
B2406	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2407	024HC51513	CORE,BEADS	FCM1608KF-151T06
B2408	024HC51513	CORE,BEADS	FCM1608KF-151T06
B2409	024HC51513	CORE,BEADS	FCM1608KF-151T06
B2410	024HC51513	CORE,BEADS	FCM1608KF-151T06
B2411	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2412	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2413	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2414	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2415	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2416	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2417	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2418	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2419	024HC51513	CORE,BEADS	FCM1608KF-151T06
B2421	024HC51513	CORE,BEADS	FCM1608KF-151T06
B2423	024HC51023	CORE,BEADS	FCM1608KF-102T02
B2501	024HC51023	CORE,BEADS	FCM1608KF-102T02
B3402	024HC16014	CORE,BEADS	HCB3216KF-601T20
B3403	024HC51513	CORE,BEADS	FCM1608KF-151T06
B3404	024HC16014	CORE,BEADS	HCB3216KF-601T20
B3405	024HC16014	CORE,BEADS	HCB3216KF-601T20
BT001	141R004016	BATTERY,MANGAN	GR03X-SP2
BT002	141R004016	BATTERY,MANGAN	GR03X-SP2
CD501	1209414909	CORD AC BUSH	9414909
CD801	WCL6840038	FLAT CABLE AWM2468	AWG26 5C GRAY 400MM
CD802	WEL6858038	FLAT CABLE AWM2468	AWG26 7C GRAY 580MM
CD804	06CU013005	CORD CONNECTOR	CU013005
CP101	069S280639	CONNECTOR PCB SIDE	A2001WR2-8P
CP102	069S270629	CONNECTOR PCB SIDE	A2001WV2-7P
CP401	069S460089	CORD UX CONNECTOR	A1561WV2-A6P
CP502	069S420110	CONNECTOR PCB SIDE	A1561WV2-2P
CP507	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP508	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP509	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP804	069D01001A	CONNECTOR PCB SIDE	003P-2100
CP1001	069S140419	CONNECTOR PCB SIDE	A2502WV2-4P
CP2403	069R2Y0700	CONNECTOR PCB SIDE	87760-3416
CP801A	067U005049	WIRE HOLDER	B2013H02-5P
CP801B	067U005049	WIRE HOLDER	B2013H02-5P
CP802A	067U007029	WIRE HOLDER	B2013H02-7P
CP802B	067U007029	WIRE HOLDER	B2013H02-7P
EL0701	124116281A	EYE LET	XRY16X28BD
EL0702	124120301A	EYE LET	XRY20X30BD
F501	081PC6R305	FUSE	51MS063L
FB401	043227016F	TRANSFORMER,FLYBACK	FJN27A003_M
FH501	06710T0009	HOLDER,FUSE	EYF-52BCY
FH502	06710T0009	HOLDER,FUSE	EYF-52BCY
NR2402	110P4220M6	R,NETWORK	4D02WGJ0220TCE
NR2403	110P4220M6	R,NETWORK	4D02WGJ0220TCE
NR2404	110P4220M6	R,NETWORK	4D02WGJ0220TCE
NR2405	110P4220M6	R,NETWORK	4D02WGJ0220TCE
NR2406	110P4220M6	R,NETWORK	4D02WGJ0220TCE
NR2407	110P4220M6	R,NETWORK	4D02WGJ0220TCE
NR2408	110P4220M6	R,NETWORK	4D02WGJ0220TCE
NR2409	110P4220M6	R,NETWORK	4D02WGJ0220TCE
NR2410	110P4220M6	R,NETWORK	4D02WGJ0220TCE
NR2411	110P4220M6	R,NETWORK	4D02WGJ0220TCE
OS101	0773071001	REMOTE RECEIVER	RPM7138-WH5
RY501	0560X20118	RELAY	G5PA-1-SA(WEC)
⚠SP1001	070Y435017	SPEAKER	S0509F12A-F
⚠TH501	DF5EL3R0A0	DEGAUSS ELEMENT	ZPB45BL3R0A
TU001	0164100005	DIGITAL TUNER	ENG36A49KF
⚠V801	0981270B01	CRT W/DY	M68LWF088X50
X103	100WT01611	CRYSTAL	HC-49/U-S
X601	100DT3R531	CRYSTAL	HC-49/U
X2401	100GA02402	CRYSTAL	B24576K010
X2402	100GA02502	CRYSTAL	B25000H006

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

HOW TO ORDER PARTS

When placing a parts order, please have the following information.

A. MODEL NUMBER and VERSION NUMBER
   Located on the back of the unit.
   EX: VR0100 (Model no.), VERSION/A (Version no.)

B. PART NO. and DESCRIPTION
   Located in your SERVICE MANUAL. (See pages M1-1~M2-7)
   EX: I235953420, STK5342, Voltage Regulator

C. QUANTITY

D. Mailing address and NAME
   EX: ABC Service Center
   111 Broadway
   NEW YORK, N.Y. 10005

   ATTN: MR. X Y Z

ORION SALES, INC.
HIGHWAY 41
ORION PLACE
PRINCETON, INDIANA 47670