

Service Manual

DIGITAL

Digital Audio Processor

SV-110/(K)

 [E], [EK], [EG], [EB], [EH],
[EF], [Ei], [XA], [PC]


- * The colors of this model include silver and black.
- * The black type model is provided with (K) in the Service Manual.

SV-110 (K)
Notes:

- * Sets for [PC] area are of NTSC format.
- * Set for [XA] area are available in NTSC format and PAL/SECAM format.
- * Sets for other areas are of PAL/SECAM format.

Areas

- * [E] is available in Switzerland and Scandinavia.
- * [EK] is available in United Kingdom.
- * [EG] is available in F.R. Germany.
- * [EB] is available in Belgium.
- * [EH] is available in Holland.
- * [EF] is available in France.
- * [Ei] is available in Italy.
- * [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
- * [PC] is available in European Audio Club.

English

Specifications

 Specifications are subject to change without notice for further improvement.
Weight and dimensions shown are approximate.

■ General

Power supply: ~110/120/220/240 V,
50/60 Hz

Power consumption: 40 W

Dimensions: 43 W × 37.5 D × 7.6 H cm
(16¹⁹/₁₆" × 14³/₄" × 3")

Weight: 6.1 kg (13.7 lb.)

■ System type

Type: Digital audio processor

PCM standard: Consumer PCM encoder/decoder standards file STC-008 (for PAL/SECAM format), STC-007 (for NTSC format) of the EIAJ stereo technical committee, video technical committee.

Quantization: 14-bit linear.

Coding: 14-bit linear

Number of audio channels: 2 (L, R stereo)

Frequency response: 2 Hz ~ 20 kHz (±0.5 dB)

Total harmonic distortion: 0.01% or less (1 kHz, 0 dB)

Dynamic range: 86 dB or more

Wow & flutter: unmeasurable
(Below measurement threshold)

■ Input level and impedance

Line: 55 mV [at reference input level (-15 dB indication)]/50 kΩ

Microphone: 1.1 mV [(at reference input level (-15 dB indication)]/600Ω

Video: 1 Vp-p/75Ω

■ Output level and impedance

Line: 310 mV [at reference output level (-15 dB indication)]/220Ω

Video: 1 Vp-p/75Ω

Monitor: 1 Vp-p/75Ω

Technics

 Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

 Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shibakoen, Minato-ku, Tokyo 105 Japan

Deutsch

TECHNISCHE DATEN

Anderungen der technischen Daten vorbehalten.
Die angegebenen Gewichts- und Abmessungsdaten sind ungefähre Werte.

■ Allgemeines

Stromversorgung:	~110/120/220/240 V, 50/60 Hz
Stromverbrauch:	40 W
Abmessungen:	43 (B)×37,5 (T)×7,6 (H) cm
Gewicht:	6,1 kg

■ Systemtyp

Typ:	Digital Audio Prozessor
PCM-Norm:	Verbraucher-PCM-Ver-/Entschlüssel-Norm STC-008 (für PAL/SECAM-Format) STC-007 (für NTSC-Format) vom EIAJ stereotechnischen Ausschuß, videotechnischen Ausschuß. (Mit Aufnahmevorbetonung)
Quantisierung:	14 Bit, linear
Schlüsselung:	14 Bit, linear

Anzahl der

Audiokanäle:	2 (L, R-Stereo)
Frequenzgang:	2 Hz–20 kHz ($\pm 0,5$ dB)
Totale Klirrvverzerrung:	0,01% oder weniger (1 kHz, 0 dB)
Dynamikbereich:	86 dB oder mehr
Gleichlaufschwankungen:	Ausserhalb Messbarkeit

■ Eingangspegel und -impedanz

Leitung:	55 mV [bei Referenzeingangspegel (-15 dB Anzeige)]/50 k Ω
Mikrophon:	1,1 mV [bei Referenzeingangspegel (-15 dB Anzeige)]/600 Ω
Video:	1 V _{p-p} /75 Ω

■ Ausgangspegel und -impedanz

Leitung:	310 mV [bei Referenzausgangspegel (-15 dB Anzeige)]/220 Ω
Video:	1 V _{p-p} /75 Ω
Monitor:	1 V _{p-p} /75 Ω

Français

CARACTERISTIQUES

Les spécifications sont susceptibles d'être modifiées sans préavis.
Le poids et les dimensions donnés sont approximatifs.

■ Généralités

Alimentation:	-110/120/220/240 V, 50/60 Hz
Consommation:	40 W
Dimensions:	43 (L)×37,5 (P)×7,6 (H) cm
Poids:	6,1 kg

■ Type du système

Type:	Processeur audio-numérique
Norme de la modulation par impulsions codées (PCM):	En conformité avec les notations normalisées STC-008 (pour caractéristique PAL/SECAM), STC-007 (pour caractéristique NTSC) d'encodage/décodage de modulation par impulsions codées du Comité Technique Vidéo et du Comité Technique Stéréo EIAJ.
Quantification:	14 bits linéaires
Codage:	14 bits linéaires
Nombre de canaux audio:	2 (gauche et droite stéréophoniques)

Réponse en

fréquence:	2 Hz–20 kHz ($\pm 0,5$ dB)
Distorsion harmonique totale:	0,01% ou moins (1 kHz, 0 dB)
Plage dynamique:	86 dB ou plus
Scintillation et pleurage:	Non mesurable (Au-dessous du seuil de mesurage)

■ Niveau d'entrée et impédance

Ligne:	55 mV [à un niveau d'entrée de référence (indication de -15 dB)]/50 k Ω .
Microphone:	1,1 mV [à un niveau d'entrée de référence (indication de -15 dB)]/600 Ω .
Vidéo:	1 V crête-à-crête/75 Ω

■ Niveau de sortie et impédance

Ligne:	310 mV [à un niveau de sortie de référence (indication de -15 dB)]/220 Ω
Vidéo:	1 V crête-à-crête/75 Ω
Moniteur:	1 V crête-à-crête/75 Ω

ESPECIFICACIONES

Las especificaciones quedan sujetas a cambios sin aviso previo.
Los pesos y las dimensiones indicados son aproximativos.

■ En general

Suministro de corriente:	- 110/120/220/240 V, 50/60 Hz
Consumo de corriente:	40 W
Dimensiones:	43 (ancho) × 37,5 (prof.) × 7,6 (alto) cm
Peso:	6,1 kg

■ Tipo de sistema

Tipo:	Procesador digital de audio
Normas para PCM:	En conformidad con el archivo STC-008 (para el sistema PAL/SECAM), STC-007 (para el sistema NTSC) de las normas para codificadores/decodificadores PCM para consumidores de los comités técnicos de estéreo y de video EIAJ
Cuantificación:	lineal de 14 bits
Codificación:	lineal de 14 bits
Número de canales de audio:	2 (estéreos, derecho e izquierdo)

Respuesta de frecuencia:

2 Hz–20 kHz ($\pm 0,5$ dB)

Distorsión armónica total:

0,01 % o menos (1 kHz, 0 dB)

Gama dinámica:

86 dB o más

Ululaciones y trémolo:

Inmedibles (Inferior al umbral de medición)

■ Nivel e impedancia de entrada

Línea:	55 mV [en el nivel de entrada de referencia (marcando -15 dB)]/50 k Ω
Micrófono:	1,1 mV [en el nivel de entrada de referencia (marcando -15 dB)]/600 Ω
Video:	1 V _{p-p} /75 Ω

■ Nivel e impedancia de salida

Línea:	310 mV [en el nivel de salida de referencia (marcando -15 dB)]/220 Ω
Video:	1 V _{p-p} /75 Ω
Monitor:	1 V _{p-p} /75 Ω

MEASUREMENTS AND ADJUSTMENTS English

• Adjustment of display circuit

After repair of display circuit, make the adjustment as follows:

• Instruments used and setting

- | | |
|--------------------------------------|--|
| 1. AC electronic voltmeter | 6. Connect 100 Hz sine-wave oscillator and AC electronic voltmeter to LINE IN. |
| 2. 100 Hz sine-wave oscillator | |
| 3. Recording levelmax. | 7. Adjust the oscillator so that the input of LINE IN is 319 mV. |
| 4. Recording balancecenter | |
| 5. Playback mode switch1 | |

Step	Item	Parts adjusted	ADjusting procedure
1	0 dB	VR213 (Fig. 8)	<ul style="list-style-type: none"> Adjust VR213 so that 0 dB (B16) of level meter on the right begins to light up. (Fig. 9)
2	Balance	VR211 (Fig. 8)	<ul style="list-style-type: none"> Adjust VR211 so that 0 dB (B16) of level meter on the left begins to light up. (Fig. 9)
3	Recovery time	VR212 (Fig. 8)	<ul style="list-style-type: none"> Instantaneously cut off the input of LINE IN and check the falls of right and left channels of level meter. If there is a difference between right and left channels, adjust VR212 until no difference.

MESSUNGEN UND JUSTIERUNGEN Deutsch

• Justierung der Anzeigschaltung

Nach der Reparatur der Anzeigschaltung ist die folgende Justierung durchzuführen:

• Zu verwendende Instrumente und Einstellungen am Gerät

- | | |
|---|--|
| 1. Elektronisches Wechselstrom-Voltmeter | 6. Den 100 Hz-Sinuswellen-Oszillator und das elektronische Wechselstrom-Voltmeter an den LINE IN-Anschluß anschließen. |
| 2. 100 Hz-Sinuswellen-Oszillator | |
| 3. Aufnahmepegel.Max. | 7. Den Oszillator so einstellen, daß die Eingangsleistung am LINE IN-Anschluß 319mV beträgt. |
| 4. AufnahmebalanceMitte | |
| 5. Wiedergabebetriebsart-Wahlschalter.1 | |

Schritt	Abgleich	Zu justierende Teile	Justierung
1	0 dB	VR213 (Abb. 8)	<ul style="list-style-type: none"> VR213 so justieren, daß 0 dB (B16) des Pegelmeters rechts gerade aufleuchtet. (Abb. 9)
2	Balance	VR211 (Abb. 8)	<ul style="list-style-type: none"> VR211 so justieren, daß 0 dB (B16) des Pegelmeters links gerade aufleuchtet. (Abb. 9)
3	Rückkehrzeit	VR212 (Abb. 8)	<ul style="list-style-type: none"> Die Eingangsleistung an LINE IN plötzlich ausschalten und das Abfallen des linken und rechten Kanals des Pegelmeters überprüfen. Falls zwischen dem rechten und linken Kanal ein Unterschied besteht, diesen Unterschied durch Justieren von VR212 eliminieren.

MESURAGES ET RÉGLAGES Français

● Réglages du circuit de l'affichage

Après avoir réparé le circuit de l'affichage, effectuer le réglage de la manière suivante:

● Appareils utilisés et mises au point

1. Voltmètre électronique à C.A.
2. Oscillateur à ondes sinusoïdales de 100 Hz
3. Niveau d'enregistrement. max.
4. Equilibrage de l'enregistrement. centre
5. Commutateur de mode de lecture. . . 1
6. Raccorder l'oscillateur à ondes sinusoïdales de 100 Hz et le voltmètre électronique à C.A. à "LINE IN" (entrée de ligne).
7. Régler l'oscillateur de telle sorte que l'ENTREE DE LIGNE soit de 319 mV.

Etape	Article	Elément à régler	Mode de réglage
1	0 dB	VR213 (Fig. 8)	● Régler VR213 de telle sorte que 0 dB (B16) de l'indicateur de niveau sur la droite commence à s'éclairer. (Fig. 9)
2	Equilibrage	VR211 (Fig. 8)	● Régler VR211 de telle sorte que 0 dB (B16) de l'indicateur de niveau sur la gauche commence à s'éclairer. (Fig. 9)
3	Durée de rétablissement	VR212 (Fig. 8)	● Couper instantanément l'entrée de "LINE IN" (entrée de ligne) et vérifier les chutes de tension des canaux de droite et de gauche de l'indicateur de niveau. ● S'il y a une différence entre les canaux de droite et de gauche, régler VR212 jusqu'à ce que cette différence disparaisse.

MEDICIONES Y AJUSTE Español

● Circuito de presentación

Después de la reparación del circuito de presentación, haga el ajuste como sigue:

● Instrumentos usados y puesta

1. Voltímetro electrónico de CA
2. Oscilador de onda sinusoidal
3. Nivel de grabación máx.
4. Equilibrio de grabación centro
5. Interruptor de modalidad de reproducción 1
6. Conectar oscilador de onda sinusoidal de 100 Hz y voltímetro electrónico de CA a "LINE IN" (entrada de línea).
7. Ajustar el oscilador de manera que la entrada de "LINE IN" sea 319 mV.

Paso	Item	Piezas ajustadas	Procedimiento de ajuste
1	0 dB	VR213 (Fig. 8)	● Ajustar VR213 de manera que 0 dB (B16) de medidor de nivel de la derecha comience a iluminarse. (Fig. 9)
2	Equilibrio	VR211 (Fig. 8)	● Ajustar VR211 de manera que 0 dB (B16) de medidor de nivel de la izquierda comience a iluminarse. (Fig. 9)
3	Tiempo de	VR212 (Fig. 8)	● Instantáneamente interrumpir la entrada de "LINE IN" y comprobar las caídas de los canales derecho e izquierdo del medidor de nivel. ● Si hay una diferencia entre los canales derecho e izquierdo, ajustar VR212 hasta que no haya diferencia.

ADJUSTMENT POINTS

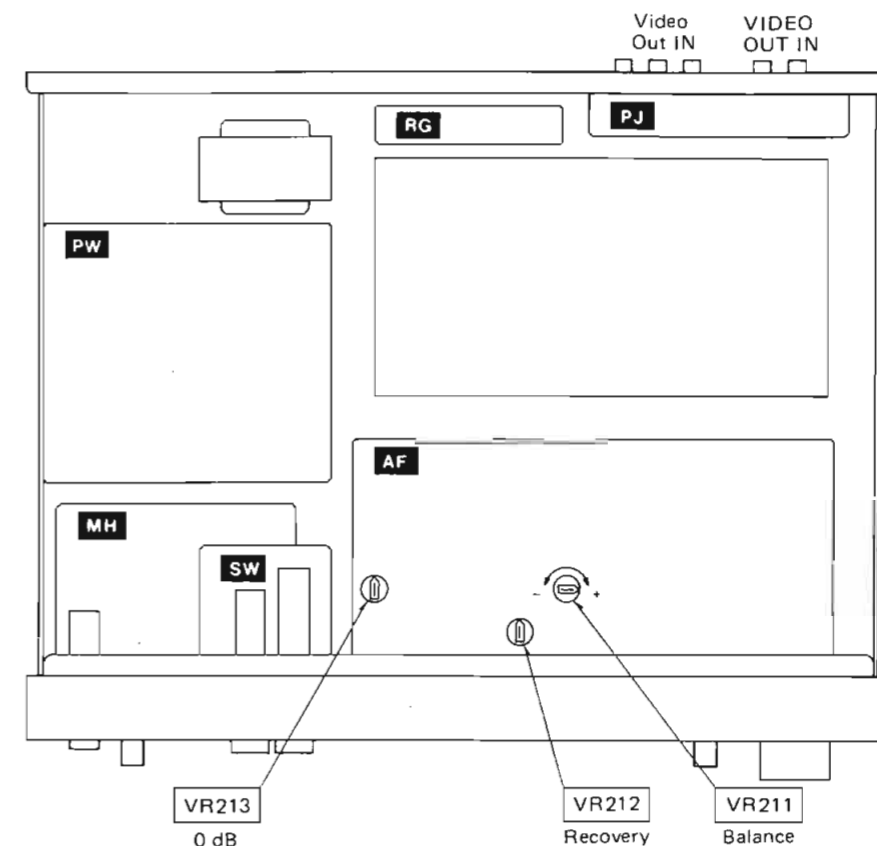


Fig. 8 (Abb. 9)

● Display

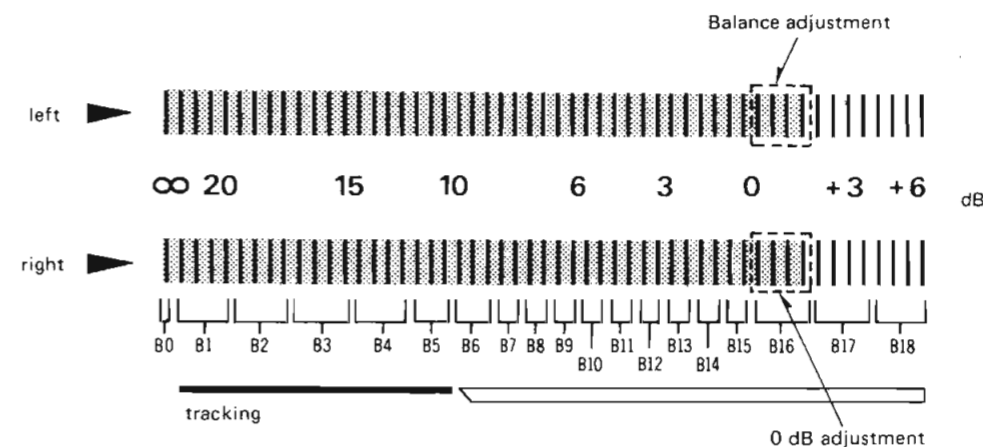


Fig. 9 (Abb. 9)

CHANGES

REPLACEMENT PARTS LIST

Notes:

- Mentioned in this parts list are only those changed in Model No. SV-110 for destination [M] area.
- Important safety notice:
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- \square NTSC stands for parts for NTSC format.
- \square PAL stands for parts for PAL/SECAM format.
- Parts without \square NTSC and \square PAL are common to both NTSC and PAL/SECAM format.
- \textcircled{K} -marked parts are used for black only, while \textcircled{O} -marked parts are for silver type only. \square Black type model No. SV-110 (K)
- Parts other than \textcircled{K} and \textcircled{O} -marked are used for both black and silver types.
- This replacement parts list contains the main parts changed from those of [M] area. For the detailed replacement parts list, refer to page 13, 14.
- For resistors and capacitors, refer to the resistors and capacitors list on page 11, 12.

Areas

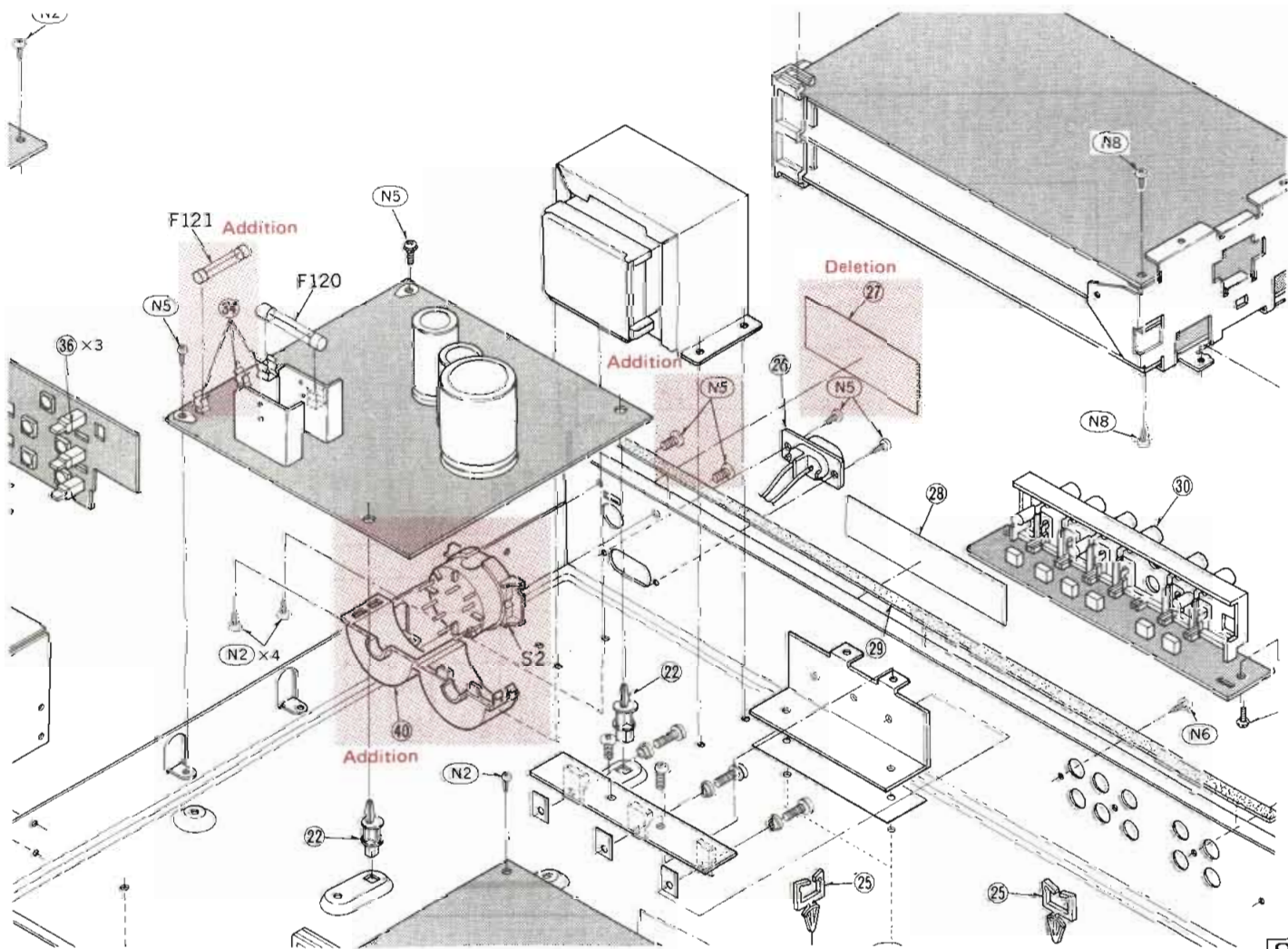
- * [E] is available in Switzerland and Scandinavia.
- * [EK] is available in United Kingdom.
- * [EG] is available in F.R. Germany.
- * [EB] is available in Belgium.
- * [EH] is available in Holland.
- * [EF] is available in France.
- * [Ei] is available in Italy.
- * [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America. ([NXA] stands for NTSC format set for [XA] area.)
- * [PC] is available in European Audio Club.

Ref. No.	Change of Part No.		Part Name & Description	Per Set (Pcs.)	Remarks
	SV-110 [M]	SV-110			
INTEGRATED CIRCUITS					
IC481	Addition	DN74LS174 or SVIHD74LS174	D Flip Flop	1	\square PAL
IC482	Addition	DN74LS174 or SVIHD74LS174	D Flip Flop	1	\square PAL
IC483	Addition	DN74LS174 or SVIHD74LS174	D Flip Flop	1	\square PAL
IC485	Addition	DN74LS125A or SVIHD74LS125	Buffer Gate	1	\square PAL
IC486	Addition	DN74LS123	Multivibrator	1	\square PAL
IC487	Addition	SVITC5081AP	Phase Comparator	1	\square PAL
IC488	Addition	SVISN74LS628	Voltage Control OSC.	1	\square PAL
DIODE					
D632	LN329GP	LN329YP	PB Mute Indicator	1	
OSCILLATOR					
X401	SVQ43U1586	SVQ43U1586 [PC, NXA]	Crystal 15.86 MHz	1	\square NTSC
		SVQ18C1575	Crystal, 15.75 MHz	1	\square PAL
TRANSFORMER					
T1	SLTF6244	SLTF6642	Power Source	1	Δ
VARIABLE CAPACITOR					
TC485	Addition	ECVIZW50X32E	PLL Lock Adj.	1	\square PAL
SWITCHES					
S1	ESB8213V	SFDSSDS3P	Power Switch	1	Δ
S2	Addition	ESE37200	Voltage Selector	1	Δ
FUSES					
F120	XBA1F10NU14	XBA2C10TR0	T1A, 250V	1	Δ
F121	Addition	XBA2C03TR0	T300mA, 250V	1	Δ

Ref. No.	Change of Part No.		Part Name & Description	Per Set (Pcs.)	Remarks
	SV-110 [M]	SV-110			
RESISTORS					
R481	Addition	ERDS2TJ563	Carbon, 1/4W, 56k Ω	1	\square PAL
R483	Addition	ERDS2TJ561	Carbon, 1/4W, 560 Ω	1	\square PAL
R485	Addition	ERDS2TJ103	Carbon, 1/4W, 10k Ω	1	\square PAL
R486	Addition	ERDS2TJ103	Carbon, 1/4W, 10k Ω	1	\square PAL
CAPACITORS					
C1		ECKDKC103PF	Ceramic, 400V, 0.01 μ F	1	Δ
C2	Addition	ECKDKC103PF	Ceramic, 400V, 0.01 μ F	1	Δ
C120		ECKDHS222MD	Ceramic, 400V, 0.0022 μ F	1	Δ
C121	Addition	ECKDHS222MD	Ceramic, 400V, 0.0022 μ F	1	Δ
C122		ECKDHS222MD	Ceramic, 400V, 0.0022 μ F	1	Δ
C123	Addition	ECKDHS222MD	Ceramic, 400V, 0.0022 μ F	1	Δ
C124		ECKDKC103PF	Ceramic, 400V, 0.01 μ F	1	Δ
C407		ECCD1H470K	Ceramic, 50V, 47pF	1	\square NTSC
		ECCD1H100KC [PC, NXA]	Ceramic, 50V, 10pF	1	\square PAL
C408		ECCD1H470K	Ceramic, 50V, 47pF	1	\square NTSC
		ECCD1H100KC [PC, NXA]	Ceramic, 50V, 10pF	1	\square PAL
C481	Addition	ECQM1H103JZ	Polyester, 50V, 0.01 μ F	1	\square PAL
C485	Addition	ECEA1CS100S	Electrolytic, 16V, 10 μ F	1	\square PAL
C486	Addition	ECEA1HU010	Electrolytic, 50V, 1 μ F	1	\square PAL
C487	Addition	ECCD1H121JZ	Ceramic, 50V, 120pF	1	\square PAL
C490	Addition	ECEA0JU470	Electrolytic, 6.3V, 47 μ F	1	\square PAL
C491	Addition	ECKD1H103MD	Ceramic, 50V, 0.01 μ F	1	\square PAL
C492	Addition	ECKD1H103MD	Ceramic, 50V, 0.01 μ F	1	\square PAL
CABINET and CHASSIS PARTS					
1	SSBP110N01E	SSBP110N01E	Front Panel (Silver)	1	\textcircled{O}
		SSBP110N11E	Front Panel (Black)	1	\textcircled{K}
13	SSUM110N01E	SSUM110N01E	Sub Panel (Silver)	1	\textcircled{O}
		SSUM110N11E	Sub Panel (Black)	1	\textcircled{K}
14	SSUP110N03	SSUP110N03	Cabinet (Silver)	1	\textcircled{O}
		SSUP110N13	Cabinet (Black)	1	\textcircled{K}
26	SFDJHSC0491	SFDJHSC0491 [XA, PC]	Jack, AC IN	1	Δ
		SFDJHSC0516 [Other areas]	Jack, AC IN	1	Δ
27	SRNZ010M03	Deletion	-----	1	
28	SSNN110M01	SSNN110S01 [E]	Name Plate	1	
		SSNN110P02 [PC]	Name Plate	1	
		SSNN110X01 [XA]	Name Plate	1	
		SSNN110G01 [EK]	Name Plate	1	
		SSNN110R01 [Other areas]	Name Plate	1	
34	SJT345	SJT347	Holder, Fuse	4	
37	SSGK110N01	SSGK110N01	Cap (Silver)	1	\textcircled{O}
		SSGK110N11	Cap (Black)	1	\textcircled{K}
40	Addition	SUV453	Cover Voltage Selector	1	
SCREW					
N4	XTB4+8BFN	XTB4+8BFN	Screw, Cabinet (Silver)	4	\textcircled{O}
		XTB4+8BFZ	Screw, Cabinet (Black)	4	\textcircled{K}

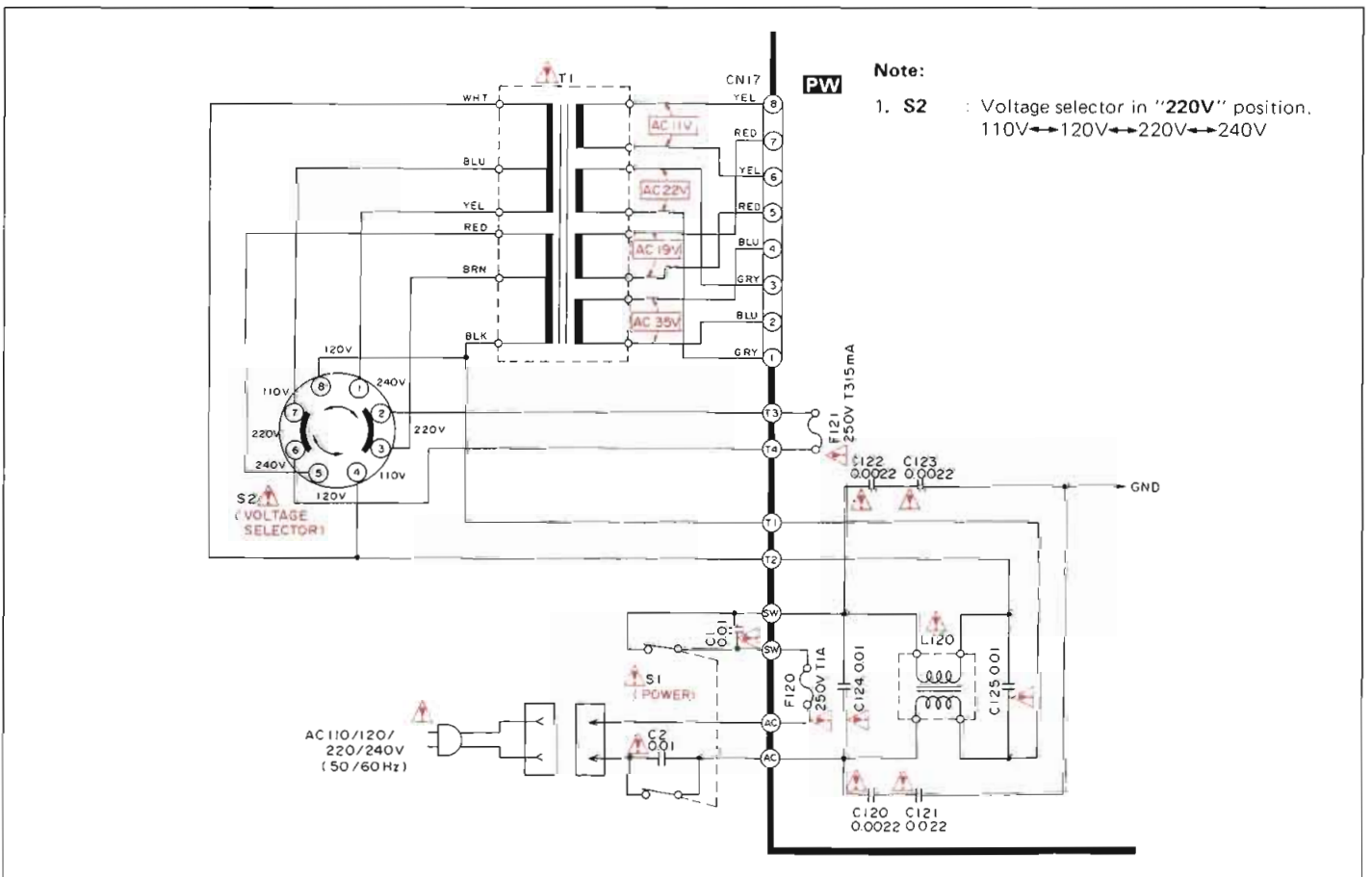
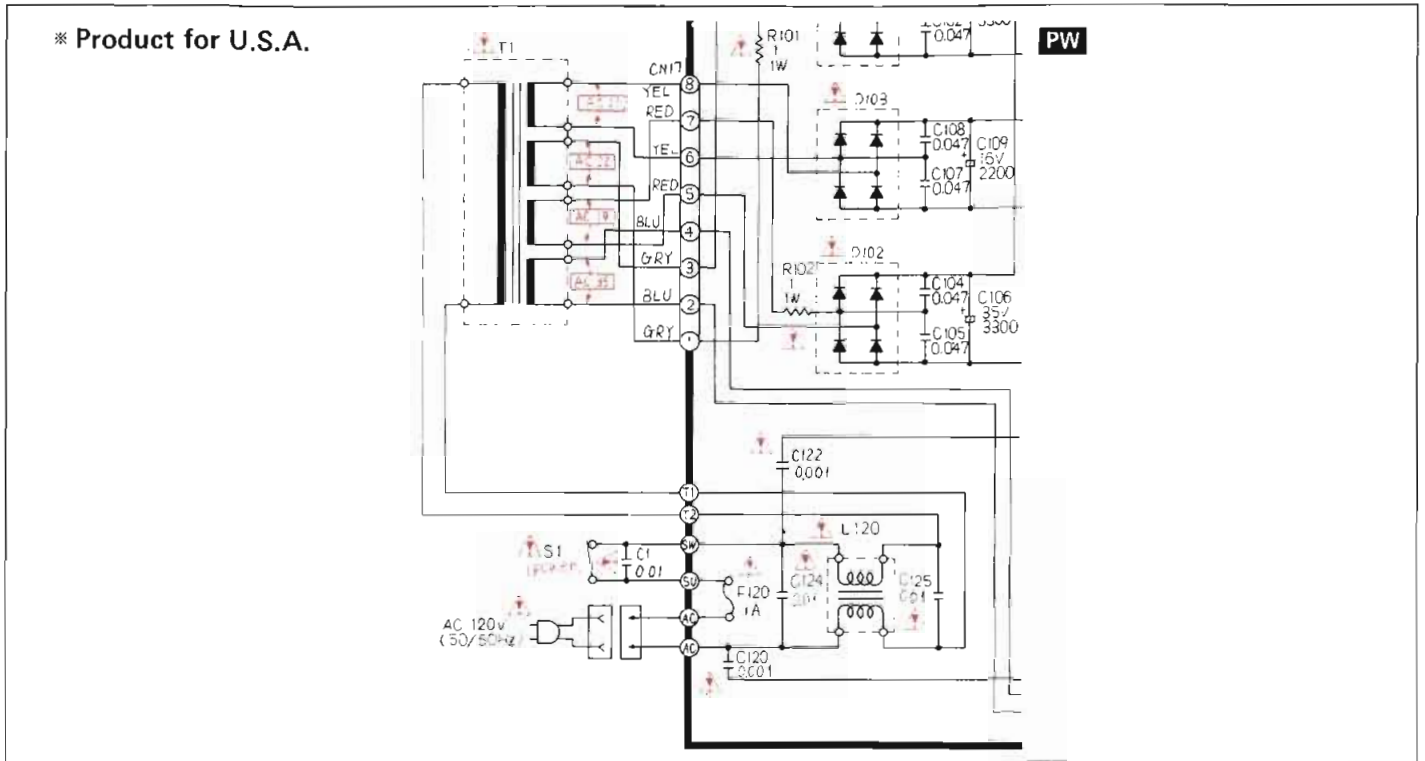
Ref. No.	Change of Part No.		Part Name & Description	Per Set (Pcs.)	Remarks
	SV-110 [M]	SV-110			
ACCESSORIES					
A1	SSNU110M01	SSNU110G01 [EK]	Instruction Book	1	
		SSNU110I01 [Ei]	Instruction Book	1	
		SSNU110X01 [EG, EF, XA]	Instruction Book	1	
		SSNU110P01 [PC]	Instruction Book	1	
		SSNU110S01E [Other areas]	Instruction Book	1	
A2	SFDAC05M01	SFDAC05G02 [EK]	AC Cord	1	⚠
		SFDAC05X02 [XA]	AC Cord	1	⚠
		SFDAC05N01 [PC]	AC Cord	1	⚠
		SFDAC05E02 [Other areas]	AC Cord	1	⚠
A6	Addition	----- [PC, NXA]	-----	0	NTSC
		SSDK101S01	BNC Adaptor	2	PAL
A7	Addition	SFDK119118 [XA] only	2 Pin-Plug	1	⚠
A8	Addition	QJP0603S [PC] only	Adaptor, Gimens	1	⚠
PACKING PARTS					
P1	SSHP110M01	SSHP110C01 [EF] only	Carton Box (Silver)	1	○
		SSHP110M01 [Other areas]	Carton Box (Silver)	1	○
		SSHP110C11 [EF] only	Carton Box (Black)	1	Ⓚ
		SSHP110M11 [Other areas]	Carton Box (Black)	1	Ⓚ

EXPLODED VIEW



■ SCHEMATIC DIAGRAM

- Power source circuit



RESISTORS AND CAPACITORS

- Notes:**
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
 2. Important safety notice:
Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
 3. **NTSC** stands for parts for NTSC format.
 4. **PAL** stands for parts for PAL/SECAM format.

5. Parts without **NTSC** and **PAL** are common to both NTSC and PAL/SECAM format.
6. The "S" mark is service standard parts and may differ from production parts.
7. The unit of resistance is (ohm).
K = 1000 M = 1000K
8. The unit capacitance is μF (microfarad)
P = $10^{-6} \mu F$

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

ERX	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon	25 : 1/4W	G : $\pm 2\%$
ERG : Metal Oxide	1 : 1W	J : $\pm 5\%$
ERO : Metal Film	S2 : 1/4W	K : $\pm 10\%$
ERQ : Fuse		

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	R47	R
Type	Voltage	Reclularity use	Value	Special use

Capacitor Type	Voltage	Tolerance
ECEA : Electrolytic	OJ : 6.3V	C : $\pm 0.25\mu F$
ECEB : Electrolytic	1A : 16V	G : $\pm 2\%$
ECEA...N : Non Polar Electrolytic	1C : 16V	J : $\pm 5\%$
ECCD : Ceramic	1E : 25V	K : $\pm 10\%$
ECCR : Ceramic	25 : 25V	M : $\pm 20\%$
ECKD : Ceramic	1V : 35V	P : +100%, -0%
ECQM : Polyester	1H : 50V	Z : +80%, -20%
ECQP : Polypropylene	KC : 400V	
ECES : Electrolytic		

RESISTORS

Ref No.	Part No.	Value	Ref. No.	Part No.	Value	Ref No.	Part No.	Value	Ref. No.	Part No.	Value
R101,102	Δ ERQ1CJ1R0	1	R195	ERDS2TJ103	10K	R234	ERDS2TJ474	470K	R305	ERDS2TJ222	2.2K
R104	ERDS2TJ103	10K	R196	ERDS2TJ472	4.7K	R235	ERDS2TJ103	10K	R306	ERDS2TJ272	2.7K
R105	ERDS2TJ152	1.5K	R197	ERDS2TJ332	3.3K	R236	ERDS2TJ472	4.7K	R307	ERDS2TJ102	1K
R106	ERDS2TJ103	10K	R198	ERDS2TJ471	470	R237	ERDS2TJ104	100K	R308	ERDS2TJ102	1K
R107,108	ERDS2TJ221	220	R199	ERDS2TJ472	4.7K	R238	ERDS2TJ472	4.7K	R309	ERDS2TJ472	4.7K
R109,110	ERDS2TJ103	10K	R200	ERDS2TJ102	1K	R239	ERDS2TJ104	100K	R310	ERDS2TJ472	4.7K
R111	$\text{\textcircled{S}}$ ERGIANJ221	220	R201	ERDS2TJ472	4.7K	R241	ERDS2TJ104	100K	R311	ERDS2TJ393	39K
R112,113	ERDS2TJ681	680	R202	ERDS2TJ102	1K	R242	ERDS2TJ473	47K	R312	ERDS2TJ472	4.7K
R114	ERDS2TJ103	10K	R203	ERDS2TJ472	4.7K	R253	ERDS2TJ103	10K	R313	ERDS2TJ122	1.2K
R130	ERDS2TJ100	10	R204	ERDS2TJ102	1K	R255,256	ERDS2TJ561	560	R314	ERDS2TJ272	2.7K
R131	ERDS2TJ221	220	R205	EROS2TJ102	1K	R257,258	ERDS2TJ473	47K	R315	ERDS2TJ183	18K
R149,150	ERDS2TJ474	470K	R206,207	EROS2TJ271	270	R259,260	ERDS2TJ221	220	R316	ERDS2TJ472	4.7K
R151,152	ERDS2TJ104	100K	R208	EROS2TJ102	1K	R261,262	ERDS2TJ332	3.3K	R317	ERDS2TJ153	15K
R153,154	EROS2TKG3902	39K	R209	ERDS2TJ472	4.7K	R263,264	ERDS2TJ332	3.3K	R318	ERDS2TJ680	68
R155,156	EROS2TKG3601	3.6K	R210	ERDS2TJ103	10K	R265,266	ERDS2TJ332	3.3K	R319	EROS2TJ472	4.7K
R157,158	EROS2TKG1102	11K	R211,212	EROS2TKG5102	51K	R267,268	ERDS2TJ223	22K	R320	ERDS2TJ153	15K
R159,160	EROS2TKG2701	2.7K	R213	ERDS2TJ333	33K	R269,270	ERDS2TJ221	220	R321	EROS2TJ472	4.7K
R161,162	EROS2TKG2701	2.7K	R214	EROS2TKG3902	39K	R271,272	ERDS2TJ103	10K	R322	ERDS2TJ822	8.2K
R163,164	EROS2TKG2401	2.4K	R215,216	ERDS2TJ472	4.7K	R273,274	ERDS2TJ104	100K	R323	ERDS2TJ682	6.8K
R165,166	EROS2TKG2401	2.4K	R217	ERDS2TJ104	100K	R275	ERDS2TJ102	1K	R324	ERDS2TJ153	15K
R167,168	EROS2TKG3902	39K	R218	ERDS2TJ474	470K	R276	ERDS2TJ561	560	R325	EROS2TJ223	22K
R169,170	EROS2TKG1802	18K	R219,220	ERDS2TJ433	43K	R281,282	ERDS2TJ104	100K	R326	ERDS2TJ472	4.7K
R171,172	EROS2TKG1602	16K	R221,222	ERDS2TJ682	6.8K	R283,284	ERDS2TJ123	12K	R327	EROS2TJ472	4.7K
R173,174	EROS2TKG3601	3.6K	R223,224	ERDS2TJ473	47K	R285,286	ERDS2TJ123	12K	R328	ERDS2TJ223	22K
R175,176	ERDS2TJ333	33K	R225	ERDS2TJ473	47K	R287,288	ERDS2TJ223	22K	R329	ERDS2TJ153	15K
R177	ERDS2TJ102	1K	R226,227	ERDS2TJ223	22K	R289,290	ERDS2TJ223	22K	R330	EROS2TJ153	15K
R178	ERDS2TJ472	4.7K	R228,229	ERDS2TJ472	4.7K	R291,292	ERDS2TJ820	82	R331	EROS2TJ102	1K
R185	ERDS2TJ472	4.7K	R230	ERDS2TJ472	4.7K	R293,294	ERDS2TJ820	82	R332	EROS2TJ102	1K
R186	ERDS2TJ471	470	R231	ERDS2TJ474	470K	R301	ERDS2TJ820	82	R333	EROS2TJ273	27K
R187	ERDS2TJ561	560	R232	ERDS2TJ123	12K	R302	ERDS2TJ472	4.7K	R334	EROS2TJ822	8.2K
R188,189	ERDS2TJ103	10K	R233	ERDS2TJ472	4.7K	R303	ERDS2TJ223	22K	R335	ERDS2TJ392	3.9K
R190	ERDS2TJ271	270				R304	ERDS2TJ472	4.7K	R336	EROS2TJ272	2.7K
R191	ERDS2TJ472	4.7K									
R192,193	ERDS2TJ103	10K									

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R337	ERDS2TJ102	1K	R374	ER0S2TKG1002	10K	R501	ERDS2TJ393	39K	R545	ERDS2TJ105	1M
R338	ERDS2TJ102	1K	R375	ER0S2TKG1002	10K	R502	ERDS2TJ393	39K	R546	ERDS2TJ470	47
R339	ERDS2TJ102	1K	R376	ER0S2TKG1002	10K	R503	ERDS2TJ223	22K	R547	ERDS2TJ332	3.3K
R340	ERDS2TJ102	1K	R377	ER0S2TKG2002	20K	R504	ERDS2TJ103	10K	R548	ERDS2TJ563	56K
R341	ERDS2TJ103	10K	R378	ER0S2TKG2002	20K	R505	ERDS2TJ182	1.8K	R549	ERDS2TJ332	3.3K
R342	ERDS2TJ103	10K	R379	ER0S2TKG2401	2.4K	R506	ERDS2TJ473	47K	R550	ERDS2TJ563	56K
R343	ERDS2TJ102	1K	R380	ER0S2TKG2401	2.4K	R507	ERDS2TJ102	1K	R551	ERDS2TJ332	3.3K
R344	ERDS2TJ153	15K	R381	ER0S2TKG1302	13K	R508	ERDS2TJ102	1K	R552	ERDS2TJ563	56K
R345	ERDS2TJ153	15K	R382	ER0S2TKG1302	13K	R509	ERDS2TJ102	1K	R553	ERDS2TJ103	10K
R346	ERDS2TJ123	12K	R383	ER0S2TKG1302	13K	R510	ERDS2TJ223	22K	R554	ERDS2TJ473	47K
R347	ERDS2TJ103	10K	R384	ER0S2TKG1302	13K	R511	ERDS2TJ223	22K	R555	ERDS2TJ472	4.7K
R349	ERDS2TJ102	1K	R385	ER0S2TKG5101	5.1K	R512	ERDS2TJ103	10K	R557	ERDS2TJ154	150K
R350	ERDS2TJ473	47K	R386	ER0S2TKG5101	5.1K	R513	ERDS2TJ103	10K	R561	ERDS2TJ472	4.7K
R353	ERDS2TJ153	15K	R387	ERDS2TJ221	220	R514	ERDS2TJ123	12K	R562	ERDS2TJ561	560
R354	ERDS2TJ103	10K	R388	ERDS2TJ332	3.3K	R515	ERDS2TJ223	22K	R563	ERDS2TJ103	10K
R355	ERDS2TJ103	10K	R389	ERDS2TJ332	3.3K	R516	ERDS2TJ102	1K	R564	ERDS2TJ473	47K
R356	ERDS2TJ122	1.2K	R390	ERDS2TJ102	1K	R517	ERDS2TJ562	5.6K	R565	ERDS2TJ473	47K
R357	ERDS2TJ102	1K	R391	ERDS2TJ332	3.3K	R520	ERDS2TJ473	47K	R601.602	ERDS2TJ221	220
R358	ERDS2TJ122	1.2K	R392	ERDS2TJ332	3.3K	R521	ER0S2TKG4640	464	R631.632	ERDS2TJ472	4.7K
R359	ERDS2TJ152	1.5K	R393	ERDS2TJ472	4.7K	R522	ER0S2TKG2800	280	R633.634	ERDS2TJ472	4.7K
R360	ERDS2TJ153	15K	R394	ERDS2TJ473	47K	R523	ER0S2TKG6340	634	R635	ERDS2TJ472	4.7K
R361	ERDS2TJ104	100K	R395	ERDS2TJ472	4.7K	R524	ER0S2TKG1101	1.1K	R636	ERDS2TJ681	680
R362	ERDS2TJ123	12K	R396	ERDS2TJ221	220	R525	ER0S2TKG1000	100	R637	ERDS2TJ471	470
R363	ERDS2TJ103	10K	R397	ERDS2TJ103	10K	R526	ER0S2TKG2431	2.43K	R638	ERDS2TJ681	680
R364	ERDS2TJ103	10K	R398	ERDS2TJ472	4.7K	R527	ERDS2TJ102	1K			
R365	ERDS2TJ103	10K	R399	ERDS2TJ472	4.7K	R528	ERDS2TJ121	120			
R366	ERDS2TJ103	10K	R401	ERD25FJ102	1K	R529	ERDS2TJ121	120			
R367	ERDS2TKG1002	10K	R402	ERD25FJ102	1K	R530	ERDS2TJ121	120			
R368	ERDS2TKG1002	10K	R403	ERD25TJ333	33K	R531	ERDS2TJ121	120			
R369	ERDS2TKG1002	10K	R404	ERD25TJ333	33K	R532	ERDS2TJ104	100K			
R370	ERDS2TKG1002	10K	R405	ERD25TJ224	220K	R533	ERDS2TJ104	100K			
R371	ERDS2TJ221	220	R408	ERD25FJ103	10K	R534	ERDS2TJ102	1K			
R372	ERDS2TJ221	220	R481 PAL	ERDS2TJ563	56K	R537	ERDS2TJ472	4.7K			
R373	ERDS2TKG1002	10K	R483 PAL	ERDS2TJ561	560	R538	ERDS2TJ472	4.7K			
			R485 PAL	ERDS2TJ103	10K	R541	ERDS2TJ222	2.2K			
			R486 PAL	ERDS2TJ103	10K	R542	ERDS2TJ123	12K			
						R543	ERDS2TJ102	1K			

● CAPACITORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
C1.2	△ ECKDKC103PF	0.01	C261.262	Ⓢ ECEA0JU101	100	C379	Ⓢ ECCD1H220K	22P	C509	Ⓢ ECQM1H104JZ	0.1
C101.102	Ⓢ ECKD1H473ZF	0.047	C263.264	Ⓢ ECCD1H101K	100P	C380	Ⓢ ECEA1CU101	100	C510	Ⓢ ECQM1H104JZ	0.1
C103	Ⓢ ECEA1VU332	3300	C265.266	△Ⓢ ECEA1CN100S	10	C381	Ⓢ ECEA1CU101	100	C511	Ⓢ ECQM1H104JZ	0.1
C104.105	Ⓢ ECKD1H473ZF	0.047	C267	Ⓢ ECEA1CU331B	330	C382	Ⓢ ECEA0JU331	330	C514	Ⓢ ECKD1H473ZF	0.047
C106	Ⓢ ECEA1VU332	3300	C268.269	Ⓢ ECEA1CU221	220	C383	Ⓢ ECEA1AU221	220	C515	Ⓢ ECEA0JU101	100
C107.108	Ⓢ ECKD1H473ZF	0.047	C270	Ⓢ ECEA1CU221	220	C384	Ⓢ ECEA0JU331	330	C516	Ⓢ ECEA0JU471	470
C109	ECES1CV223Y	22000	C281.282	Ⓢ ECCD1H101K	100P	C385	Ⓢ ECKD1H473ZF	0.047	C517	Ⓢ ECKD1H473ZF	0.047
C110	Ⓢ ECEA1CU331B	330	C283.284	Ⓢ ECCD1H101K	100P	C388	Ⓢ ECEA1EU470	47	C518	Ⓢ ECEA0JU471	470
C111	Ⓢ ECEA1EU221	220	C285.286	△Ⓢ ECEA1HN010S	1	C389	Ⓢ ECEA1EU470	47	C519	Ⓢ ECKD1H473ZF	0.047
C112	Ⓢ ECEA1CU331B	330	C287	△Ⓢ ECEA1CN100S	10	C390 NTSC	Ⓢ ECEA0JU331	330	C520	Ⓢ ECEA1HU010	1
C113	Ⓢ ECEA0JU101	100	C301	Ⓢ ECEA1CU220	22	C391 NTSC	Ⓢ ECEA0JU331	330	C523	Ⓢ ECKD1H473ZF	0.047
C114	Ⓢ ECEA0JU102	1000	C302	Ⓢ ECEA1CU220	22	C401	Ⓢ ECKD1H473ZF	0.047	C524	Ⓢ ECEA0JU221	220
C120~123	△ ECKDHS222MD	0.0022	C303	Ⓢ ECEA1CU220	22	C402	Ⓢ ECKD1H102KB	0.001	C525	Ⓢ ECKD1H473ZF	0.047
C124.125	△ ECKDKC103PF	0.01	C304	Ⓢ ECCD1H470K	47P	C403	Ⓢ ECKD1H102KB	0.001	C526	Ⓢ ECKD1H473ZF	0.047
C128	Ⓢ ECKD1H473ZF	0.047	C305	Ⓢ ECEA1HU2R2	2.2	C404	Ⓢ ECKD1H473ZF	0.047	C527.528	Ⓢ ECKD1H473ZF	0.047
C130.131	Ⓢ ECEA1HUR47	0.47	C306	Ⓢ ECCD1H181K	180P	C405	Ⓢ ECKD1H473ZF	0.047	C531	Ⓢ ECEA0JU471	470
C132	Ⓢ ECEA1HUR47	0.47	C307	Ⓢ ECQM1H122JZ	0.0012	C406	Ⓢ ECKD1H473ZF	0.047	C532	Ⓢ ECEA0JU471	470
C151.152	△Ⓢ ECEA1CN100S	10	C308	Ⓢ ECCD1H561K	560P				C541	Ⓢ ECQM1H103JZ	0.01
C153.154	ECQP1392GZ	0.0039	C309	Ⓢ ECCD1H101K	100P				C542	Ⓢ ECEA1CU100	10
C155.156	Ⓢ ECCD1H331K	330P	C310	△Ⓢ ECEA1HN010S	1				C543	Ⓢ ECKD1H1042F	0.1
C157.158	Ⓢ ECQM1H104JZ	0.1	C312	Ⓢ ECQM1H332JZ	0.0033	C407 NTSC	Ⓢ ECCD1H470K	47P	C544	Ⓢ ECKD1H1042F	0.1
C159.160	ECQP1122GZ	0.0012	C313	Ⓢ ECEA0JU330	33	C408 PAL	Ⓢ ECCD1H100KC	10P	C546	Ⓢ ECCD1H680K	68P
C161.162	Ⓢ ECCD1H470K	47P	C314	Ⓢ ECEA1EU4R7	4.7	C408 PAL	Ⓢ ECCD1H100KC	10P	C547	Ⓢ ECCD1H070CC	7P
C163.164	ECQP1392GZ	0.0039	C320	Ⓢ ECQM1H103JZ	0.01	C409	Ⓢ ECKD1H473ZF	0.047	C548	Ⓢ ECCD1H070CC	7P
C165.166	△Ⓢ ECEA1CN100S	10	C321	Ⓢ ECKD1H473ZF	0.047	C410	Ⓢ ECKD1H473ZF	0.047	C549	Ⓢ ECCD1H070CC	7P
C171.172	Ⓢ ECEA1CU331B	330	C322	Ⓢ ECKD1H473ZF	0.047	C411	Ⓢ ECKD1H473ZF	0.047	C550	Ⓢ ECCD1H070CC	7P
C173.174	Ⓢ ECEA1HU3R3	3.3	C324	Ⓢ ECKD1H473ZF	0.047	C412	Ⓢ ECEB0J5102	1000	C551	Ⓢ ECQM1H102JZ	0.001
C193	Ⓢ ECEA0JU470	47	C325	Ⓢ ECKD1H473ZF	0.047	C414	Ⓢ ECCD1H391J	390P	C552	Ⓢ ECQM1H272JZ	0.0027
C194	Ⓢ ECEA0JU471	470	C336	Ⓢ ECCD1H681J	680P				C554	Ⓢ ECEA1CU100	10
C195.196	Ⓢ ECKD1H103MD	0.01	C364	Ⓢ ECCD1H101K	100P				C555	Ⓢ ECQM1H223JZ	0.022
C197.198	Ⓢ ECKD1H103MD	0.01	C365	△Ⓢ ECEA1CN101S	100	C481 PAL	Ⓢ ECQM1H103JZ	0.01	C557	ECQP1123JZ	0.012
C199	Ⓢ ECEA1AU220	22	C366	△Ⓢ ECEA1CN101S	100	C485 PAL	△ ECEA1CN100S	10	C601.602	△Ⓢ ECEA1CN100S	10
C211.212	△Ⓢ ECEA1HN2R2S	2.2	C367	Ⓢ ECCD1H471K	470P	C486 PAL	Ⓢ ECEA1HU010	1	C603.604	Ⓢ ECQM1H332JZ	0.0033
C213.214	Ⓢ ECEA25M10R	10	C368	Ⓢ ECCD1H471K	470P	C487 PAL	Ⓢ ECCD1H121JZ	120P	C641	△Ⓢ ECEA1CN100S	10
C215	Ⓢ ECEA1HU010	1	C369	Ⓢ ECCD1H151K	150P	C490 PAL	Ⓢ ECEA0JU470	47			
C216	Ⓢ ECEA1CU470	47	C370	Ⓢ ECCD1H151K	150P	C491 PAL	Ⓢ ECKD1H103MD	0.01			
C217	Ⓢ ECQM1H473JZ	0.047	C371	ECQP1102GZ	0.001	C492 PAL	Ⓢ ECKD1H103MD	0.01			
C218	Ⓢ ECEA1EU101	100	C372	ECQP1102GZ	0.001	C501	Ⓢ ECQM1H103JZ	0.01			
C255.256	△Ⓢ ECEA1CN100S	10	C373	Ⓢ ECCD1H471K	470P	C502	Ⓢ ECEA1EU3R3	3.3			
C257.258	Ⓢ ECCD1H101K	100P	C374	Ⓢ ECCD1H471K	470P	C503	Ⓢ ECQM1H102JZ	0.001			
C259.260	Ⓢ ECKD1H103MD	0.01	C375	Ⓢ ECCD1H820K	82P	C504	Ⓢ ECQM1H102JZ	0.001			
			C376	Ⓢ ECCD1H820K	82P	C505	Ⓢ ECQM1H103JZ	0.01			
			C377	ECQP1392GZ	0.0039	C506	Ⓢ ECCD1H101K	100P			
			C378	ECQP1392GZ	0.0039	C507	Ⓢ ECCD1H101K	100P			
						C508	Ⓢ ECQM1H104JZ	0.1			

REPLACEMENT PARTS LIST

Notes:

- Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
- Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
- Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
- NTSC** stands for parts for NTSC format.
- PAL** stands for parts for PAL/SECAM format.
- Parts without **NTSC** and **PAL** are common to both NTSC and PAL/SECAM format.
- The "S" mark is service standard parts and may differ from production parts.
- The parenthesized numbers in the columns of description stand for the quantity per set.
- (K)-marked parts are used for black only, while (O)-marked parts are for silver type only.
- Parts other than (K) and (O)-marked are used for both black and silver types.

Black the model No. SV-110 (K)

Areas

- * [E] is available in Switzerland and Scandinavia.
- * [EK] is available in United Kingdom.
- * [EG] is available in F.R. Germany.
- * [EB] is available in Belgium.
- * [EH] is available in Holland.
- * [EF] is available in France.
- * [Ei] is available in Italy.
- * [XA] is available in Southeast Asia, Oceania, Africa, Middle Near East and Central South America.
- * [PC] is available in European Audio Club.

Notes:

- * Sets for [PC] area are of NTSC format.
- * Set for [XA] area are available in NTSC format and PAL/SECAM format.
- * Sets for other areas are of PAL/SECAM format.

Ref. No	Part No	Description
INTEGRATED CIRCUITS		
IC101	AN78M20	Regulator,+20V
IC102	AN78M05	Regulator,+5V
IC130	AN78M15	Regulator,+15V
IC131	AN78M12	Regulator,+12V
IC132	AN7805	Regulator,+5V
IC151,153,154	SVINJ4559DDM	Pri-emphasis, Buffer
IC155,156	MN6631	Analog Switch
IC191	MN1420PCF	Micro Computer
IC192	MN4001B	NOR Gate
IC193	MN4040B	12-Bit Binary Counter
IC194	MN4013B	D Flip Flop
IC211,212	AN6552F	Buffer
IC213	SVIUPD4066BC	Quad Bilateral Switch
IC214	AN6870N	Display Drive
IC255	SVINJ4559DDM	Microphone Amplifier
IC281,282	SVINJM4556S	Head-phone Amplifier
IC302	DN74LS123	Multivibrator
IC303	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC305	DN74LS00 or SVIHD74LS00P	NAND Gate
IC308,309	SVITL082CP	Operational Amp.
IC310	AN6552F	Comparator
IC311	AN6914	Comparator
IC312,313	SVITL810CP	Operational Amp.
IC365,366	SVITL082CP	Operational Amp.
IC367,368	SVIUPD4066BC	Quad Bilateral Switch
IC369	SVITL082CP	Operational Amp.
IC370,371	SVIUPD4066BC	Quad Bilateral Switch
IC372	DN74LS126A or SVIHD74LS126	Buffer
IC373,374	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC375	EHKMA6196	D-A/A-D Converter
IC377,378	SVITL082CP	Operational Amp.
IC379	DN74LS02	NOR Gate
IC401	MN6603	REC/PB Control

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC402,404	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC403	DN74LS04	Inverter
IC405	DN74LS125A or SVIHD74LS125	Buffer Gate
IC406	DN74LS123	Multivibrator
IC407	DN74LS86 or SVIHD74LS86P	Exclusive OR Gate
IC408	MN6602	PB Control
IC409	MN6601	REC Control
IC410,411	SVIHM6116P-4	Random Access Memory
IC412	DN74LS161A or SVIHD74LS161	4-Bit Binary Counter
IC413	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC414	DN74LS02	NOR Gate
IC415	DN74LS161A or SVIHD74LS161	4-Bit Binary Counter
IC416	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC417,418	SVIHM6116P-4	Random Access Memory
IC420	DN74LS123	Multivibrator
IC421	DN74LS126A or SVIHD74LS125	Buffer
IC481,482	PAL DN74LS174 or SVIHD74LS174	D Flip Flop
IC483	PAL DN74LS174 or SVIHD74LS174	D Flip Flop
IC485	PAL DN74LS125A or SVIHD74LS125	Buffer Gate
IC486	PAL DN74LS123	Multivibrator
IC487	PAL SVITC5081AP	Phase Comparator
IC488	PAL SVISN74LS628	Voltage Control OSC
IC501	DN74LS02	NOR Gate
IC502	DN74LS123	Multivibrator
IC503	DN74LS00 or SVIHD74LS00P	NAND Gate
IC504,505	DN74LS123	Multivibrator
IC506	DN74LS02	NOR Gate
IC507	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC508	DN74LS00 or SVIHD74LS00P	NAND Gate
IC509	MN1542PCK	Micro Computer

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC510	DN74LS157 or SVIHD74LS157	Multiplexer
IC511	SVISN74LS393	4Bit Binary Counter
IC512	SVITL082CP	Operational Amp.
IC513	SVIUPD4066BC	Quad Bilateral Switch
IC514	SVITC40H004P	Inverter
IC515	SVITL082CP	Operational Amp.
IC516	SVINJ4559DDM	Operational Amp.
IC517~520	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC521	DN74LS00 or SVIHD74LS00P	NAND Gate
IC522	DN74LS126A or SVIHD74LS126	Buffer
IC524	DN74LS04	Inverter
TRANSISTORS		
Q101,102	2SD636	Muting Circuit
Q103	2SB641	Muting Circuit
Q104	2SD636	Muting Circuit
Q105	2SB641	Muting Circuit
Q151	2SD636	L.E.D Drive
Q191	2SB641	Switching
Q192,193	2SD636	Switching
Q194,195	2SD636	Switching
Q211,212	2SD636	Buffer
Q213,214	2SD636	Buffer
Q215	2SD636	Buffer
Q216	2SB641	Switching
Q217	2SD636	Switching
Q218	2SB641	Switching
Q255,256	2SC2385-G	Microphone
Q257,258	2SC2385-G	Microphone
Q301	2SC2377	Amplifier
Q302,303	2SD636	Amplifier
Q304	2SC2377	Amplifier
Q305,306	2SD636	Amplifier
Q307,308	2SB641	Separator
Q309	2SD636	Switching
Q310	2SB641	Switching
Q311	2SK301	FET Driver
Q313	2SD636	Switching
Q365	2SD636	Switching

Ref. No	Part No.	Description
TRANSISTORS		
Q501,502	2SD636	Video Amp.
Q503	2SB641	Video Amp.
Q504	2SD636	Video Amp.
Q505,506	2SB641	Video Amp. & Switching
Q507,508	2SB641	Switching
Q510	2SB641	Switching
DIODES		
D101,102	△ SVDS1W810	Rectifier
D103	△ SVDS4VB10	Rectifier
D104	MA4075	7.5V,Zener
D105	MA4056	5.6V,Zener
D106,107	⑤ MA162A	Switching
D151	MA165	Switching
D191	MA165	Switching
D193	MA165	Switching
D211,212	MA165	Switching
D213	MA4068	6.8V,Zener
D214,215	⑤ MA26TO-A	Switching
D216	MA165	Switching
D255	MA165	Switching
D301,302	MA165	Switching
D303,304	MA165	Switching
D305,306	MA165	Switching
D307,308	MA165	Switching
D365,366	MA165	Switching
D367	MA4051	5.1V,Zener
D501	⑤ MA26TO-A	Switching
D502	SVDKV1236Z	Variable Capacitor Diode
D503	MA165	Switching
D611,612	LN0401GP3	System Indicator
D613,614	SVDLD-101MG	System Indicator

Ref. No.	Part No.	Description
DIODES		
D631,633	LN229RP	REC/COPY Indicator
D632	LN329YP	PBMUTE Indicator
OSCILLATORS		
X401	NTSC	SVQ43U1586 Crystal, 15.86MHz
X401	PAL	SVQ18C1575 Crystal, 15.75MHz
X501,502	EF0A4R0M01A	Ceramic, 4MHz
COILS and TRANSFORMERS		
L120	△ ELF18D112	Line Filter
L301	ELB5F7	Low Pass Filter
L302	ELB5G038	Delay Line
L501,502	SLQ0930T300C	Balun Coil
L503~506	ELEH100JA	Choke Coil
LPF151,152	EULBPF304	Low Pass Filter
T1	△ SLTF6642	Power Source
VARIABLE RESISTORS		
VR151	EWGGDA510375	Recording Balance
VR152	EWJKDA016A15	Recording Balance
VR211	EVN38CA00B24	Adjustment 20k Ω(B)
VR212	EVN38CA00B16	Recovery Time Adjustment 100k Ω(B)
VR213	EVN38CA00B14	0dB Adjustment 10k Ω(B)
VR255	EWCSNAF15AF5	Head Phone Level
VR365,366	EVN38CA00B24	Offset Adj. 20k Ω(B)
VR501	EVN38CA00B53	5k Ω(B)
VR502,503	EVN38CA00B14	10k Ω(B)

Ref. No	Part No.	Description
VARIABLE RESISTORS		
VR504	EVMG0GA01B54	50k Ω(B)
VARIABLE CAPACITOR		
TC485	PAL ECV12W50X32E	ADCK PLL Lock Adj.
FLUORESCENT DISPLAY TUBE		
FL201	SSDQBG193Z	Level/Tracking Indication
RELAY		
RLY151,260	SFDYQ11N02	Muting
SWITCHES		
S1	△ SFDSSDS3P	Power Switch
S2	△ ESE37200	Voltage Selector
S621	SSDS2K4KB1X	Master Switch, Playback Mode Switch, Recording/Copy Muting
S631	EVQQJ104K	Peak Hold
S632	EVQQJ104K	Tracking
S633	EVQQJ104K	Copy
S634	EVQQJ104K	Playback
S635	EVQQJ104K	Muting
FUSE		
F120	△ XBA2C10TRO	T1A,250V
F121	△ XBA2C03TRO	T315mA,250V

Ref. No.	Part No.	Description
CABINET AND CHASSIS PARTS		
1	SSBP110N01E	Front Panel(Silver),with Power Switch Button (1)
1	Ⓚ SSBP110N11E	Front Panel(Black),with Power Switch Button (1)
2	SBC261-1	Button,Power Switch (1)
3	SUS193	Spring,Power Switch Button (2)
4	SSUZ110N03	Sheet (2)
5	SBN947-1	Knob,Recording Balance/Head Phones Level (2)
6	SBN943-1	Knob,Recording Level (1)
7	SSKT110N07	Button,Peak Hold (1)
8	SSKT110N09	Button,Tracking (1)
9	SSKT110N08	Button,Play Back Muting (1)
10	SSKT110N10	Button,Copy (1)
11	SSKT110N02	Button,Recording Muting (1)
12	SSQA110N01	Spring,Buttons (4)
13	SSUM110N01E	Sub Panel (Silver) (1)
13	Ⓚ SSUM110N11E	Sub Panel (Black) (1)
14	SSUP110N03	Cabinet (Silver) (1)
14	Ⓚ SSUP110N13	Cabinet (Black) (1)
15	SBC315-4	Button,PB Mode/Master VTR Selector (2)
16	SSDJ3315020	Jack,Head Phone (1)
17	SSDJ3315010	Jack,Microphone (2)
18	SJF3225N	Terminal Plate,Video Input/Output (1)
19	SSUM110N02	Holder,L.E.D. (1)
20	SSUP110N01	Bottom Board (1)
21	SKL117-1	Foot (4)
22	SSUM110N03	Spacer,P.C.Board (2)
23	SFDBC07-01	Bushing,Regulator IC (3)
24	SFDCC07-01	Insulator, Regulator IC (3)
25	SSUM110N04	Clamper,Lead Wires (2)
26(XA,PC)	△ SFDJHSC0491	Jack,AC IN (1)
26(Other areas)	△ SFDJHSC0516	Jack,AC IN (1)
28(E)	SFNN110S01	Name Plate (1)

Ref. No.	Part No.	Description
28(PC)	SFNN110P02	Name Plate (1)
28(XA)	SFNN110X01	Name Plate (1)
28(EK)	SNN110G01	Name Plate (1)
28(Other areas)	SNN110R1	Name Plate (1)
29	SSUZ101N01	Felt (1)
30	SJF3059-4N	Terminal Plate, Video Input/Output, Monitor Output (1)
31	SSUM101N08	Latch,P.C.B (2)
32	SSUM110N08	Bracket (1)
34	SJT347	Holder,Fuses (4)
35	SFDJW-D0603	Connector (3pin) (2)
35	SFDJW-D0605	Connector (5pin) (1)
35	SFDJW-D0606	Connector (6pin) (1)
36	SSGZ110N01	Spacer,L.E.D. (3)
37	SSGK110N01	Cap(Silver),Video Input/Output Terminal (1)
37	Ⓚ SSGK110N11	Cap(Black),Video Input/Output Terminal (1)
38	SSKK110N02	Filter (1)
39	SSDC110N01	Sheet (1)
40	SUV453	Cover, Voltage Selector (1)
SCREWS, WASHERS AND NUTS		
N1	Ⓚ XTN3+6B	Screw,Front Panel (7)
N2	Ⓚ XTV3+6BFZ	Screw,P.C.Board Power Transformer, Foot (15)
N3	Ⓚ XTV3+6BFZ	Screw,Rec Mute Button (1)
N4	Ⓚ XTB4+8BFN	Screw,Cabinet(Silver) (4)
N4	Ⓚ XTB4+8BFZ	Screw,Cabinet(Black) (4)
N5	SRXG010N12	Screw,Power Switch Voltage Selector P.C Board Heat Sink,A.C Socket (1)
N6	Ⓚ XTV3+8BFZ	Screw,Terminal Plate (4)
N7	XTN3+55J	Screw (2)
N8	Ⓚ XTV3+6BFN	Screw,P.C Board (12)
N9	Ⓚ XTV3+8BFN	Screw,P.C Board (2)

Ref. No	Part No.	Description
N10	Ⓚ XSN3+8S	Screw,Regulator IC (3)
N10	Ⓚ XWA3B	Washer,Regulator IC (3)
N11	SSXW110N01	Washer,Volume (2)
N12	Ⓚ XNS12	Nut,Head Phone Jack, Microphone Jack (2)
N13	Ⓚ XNS8	Nut,Volume (3)
ACCESSORIES		
A1(EK)	SSNU110G01	Instruction Book (1)
A1(E)	SSNU110I01	Instruction Book (1)
A1(EG, EF, XA)	SSNU110X01	Instruction Book (1)
A1(PC)	SSNUN0P01	Instruction Book (1)
A1(Other areas)	SSNU110S01E	Instruction Book (1)
A2(EK) △	SFDAC05G02	AC Cord (1)
A2(XA) △	SFDAC05X02	AC Cord (1)
A2(PC) △	SFDAC05N01	AC Cord (1)
A2(Other areas) △	SFDAC05E02	AC Cord (1)
A3	SFDHC05N01	Cord,Line Input/Output (2)
A4	SSDH101N02	Cord,Video Input (2)
A5	SSDK101S01	BNC Adaptor Instruction Book (2)
A6	Ⓚ SSDK101S01	BNC Adaptor (2)
A7(XA) △	SFDK19118	2pin-Plug (1)
A8(PC) △	only QJP0603S	Gimens Adaptor (1)
PACKING PARTS		
P1(EF) only	SSHP110C01	Carton Box(Silver) (1)
P1(Other areas)	SSHP110M01	Carton Box(Silver) (1)
P1(EF) only	SSHP110C11	Carton Box(Black) (1)
P1(Other areas)	SSHP110M11	Carton Box(Black) (1)
P2	SSHH110N01E	Pad,Front(Left) (1)
P3	SSHH110N02E	Pad,Front(Right) (1)
P4	SSHH110N03	Pad,Rear(Left) (1)
P5	SSHH110N04	Pad,Rear(Right) (1)
P6	SSHD110N01	Box,Cords (1)
P7	SFYH60X60	Polyethylene Bag,Set (1)
P8	SFYH17X16	Polyethylene Bag,Cords (3)

Service Manual

Digital Audio Processor

SV-110

[M], [MC]

DIGITAL

For NTSC format



Areas

- * [M] is available in U.S.A.
- * [MC] is available in Canada.

Specifications

Specifications are subject to change without notice the further improvement.
Weights and dimensions shown are approximate.

■ General

Power supply: 120 V, AC 60 Hz
Power consumption: 40 W
Dimensions: 43 W x 37.5 D x 7.6 H cm
 (16-15/16" x 14-3/4" x 3")
Weight: 6.1 kg (13.7 lb.)

■ System Type

Type: Digital audio processor
PCM standard: Consumer PCM encoder/decoder standards file STC-007 of the EIAJ stereo technical committee, video technical committee.

Quantization: Recording: with emphasis
Coding: 14-bit linear
Number or audio channels: 2 (L, R stereo)
Frequency response: 2 Hz ~ 20 kHz (± 0.5 dB)

Total harmonic distortion: 0.01% or less (1 kHz, 0 dB)
Dynamic range: 86 dB or more
Wow and flutter: Unmeasurable
 (Below measurement threshold)

■ Input level and impedance

Line: 55 mV [at reference input level (-15 dB indication)] / 50 kΩ
Microphone: 1.1 mV [at reference input level (-15 dB indication)] / 600 Ω
Video: 1Vp-p/75 Ω

■ Output level and impedance

Line: 310mV [at reference output level (-15 dB indication)] / 220 Ω
Video: 1Vp-p/75 Ω
Monitor: 1Vp-p/75 Ω

Technics

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 50 Meadowland Parkway,
 Secaucus, New Jersey 07094

Panasonic Hawaii Inc.
 91-238 Kauhū St. Ewa Beach
 P.O. Box 774
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 Division of Matsushita Electric of Puerto Rico, Inc.
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 Victoria Industrial Park
 Carolina, Puerto Rico 00630

■ CONTENTS

	Page		Page
SAFETY PRECAUTION	2	DISCRIPTION OF EACH TERMINAL	
LOCATION OF CONTROLS	3	OF MN1420PCF	11
FUNCTIONS	4	RESISTORS AND CAPACITORS	12
CONNECTION AND OPERATION	5	REPLACEMENT PARTS LIST	14
DISASSEMBLY INSTRUCTION	6	EXPLODED VIEW	16
TROUBLE SHOOTING	8	BLOCK DIAGRAM	18
CHECKING BY USE OF A TV SET	8	CIRCUIT BOARDS AND WIRING	
ABOUT VIDEO CASSETTES AND RECORDERS	9	CONNECTION DIAGRAM	21
MEASUREMENTS AND ADJUSTMENT	10	PRINTED CIRCUIT BOARDS	24
		SCHEMATIC DIAGRAM	31

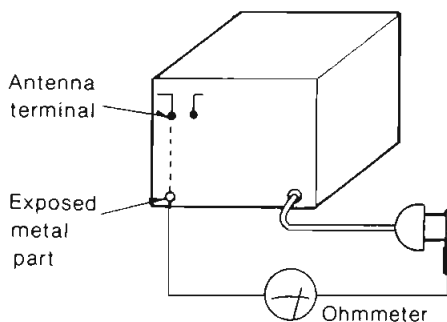
■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

● INSULATION RESISTANCE TEST

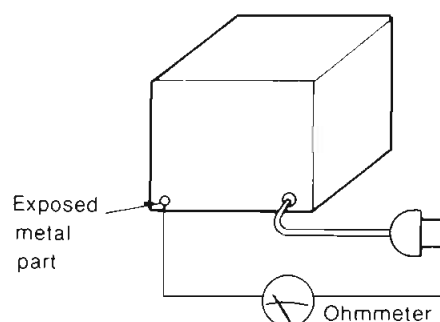
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between $3M\Omega$ and $5.2M\Omega$ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = $3M\Omega$ — $5.2M\Omega$

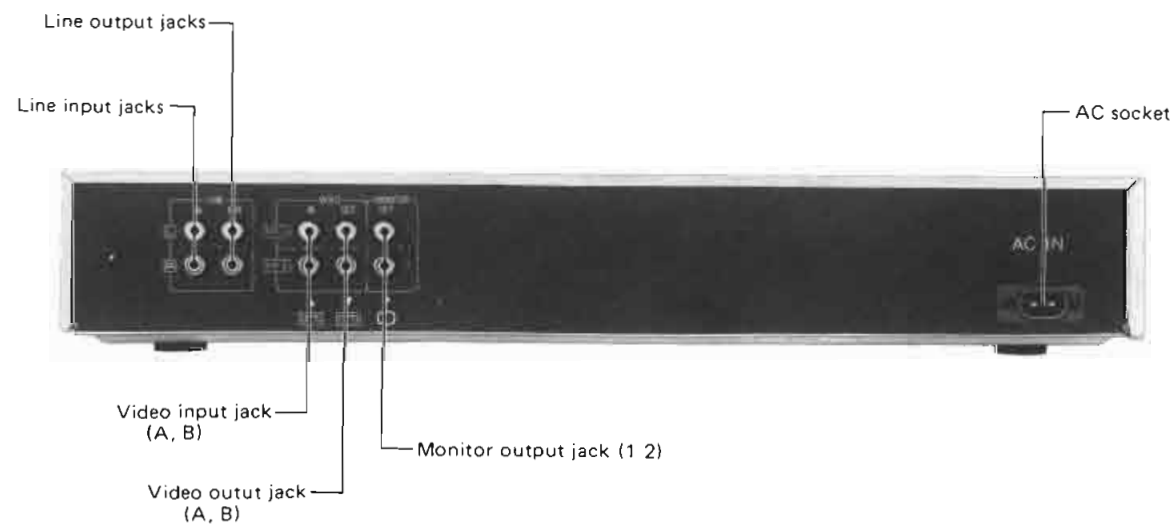
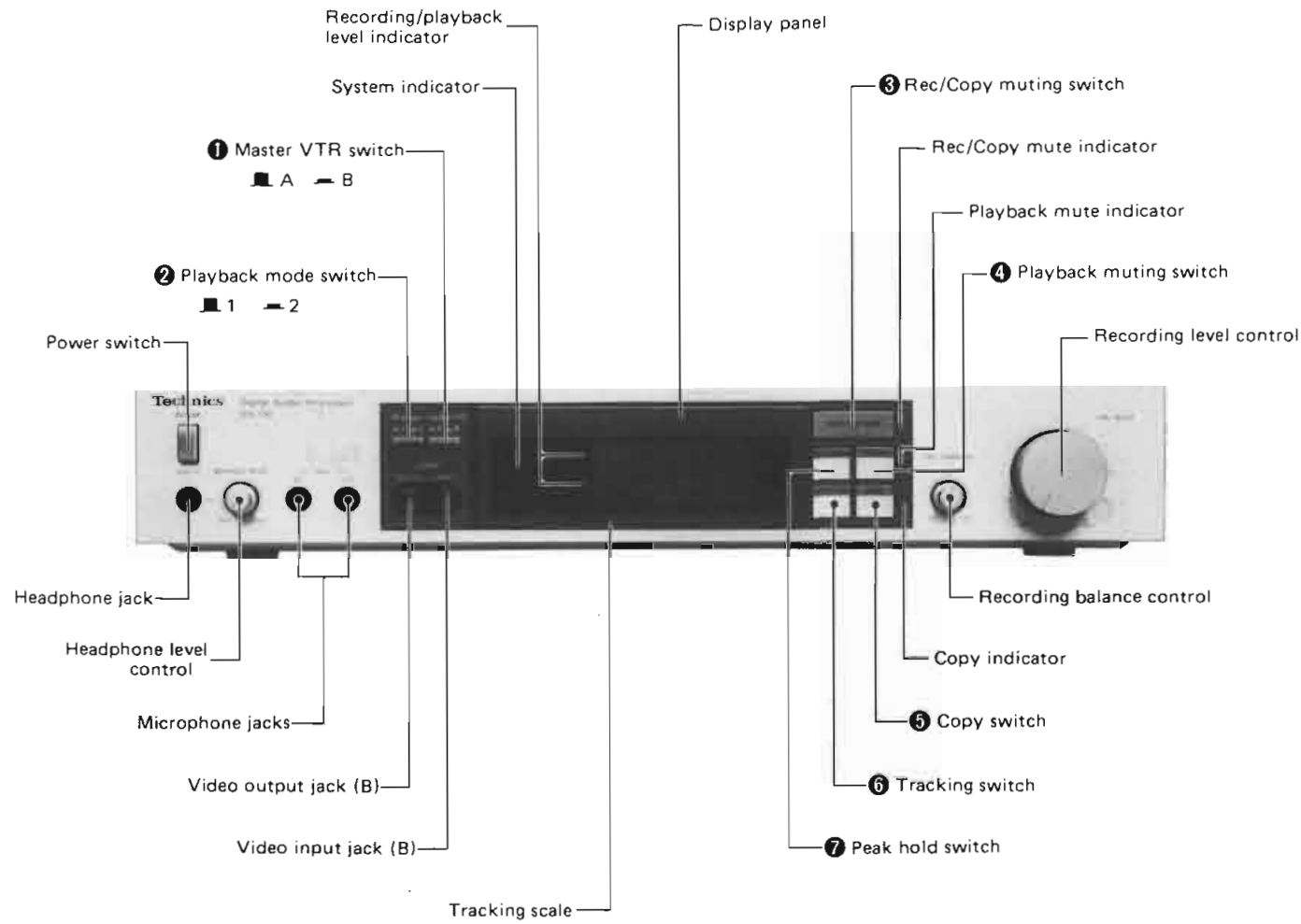


(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ LOCATION OF CONTROLS



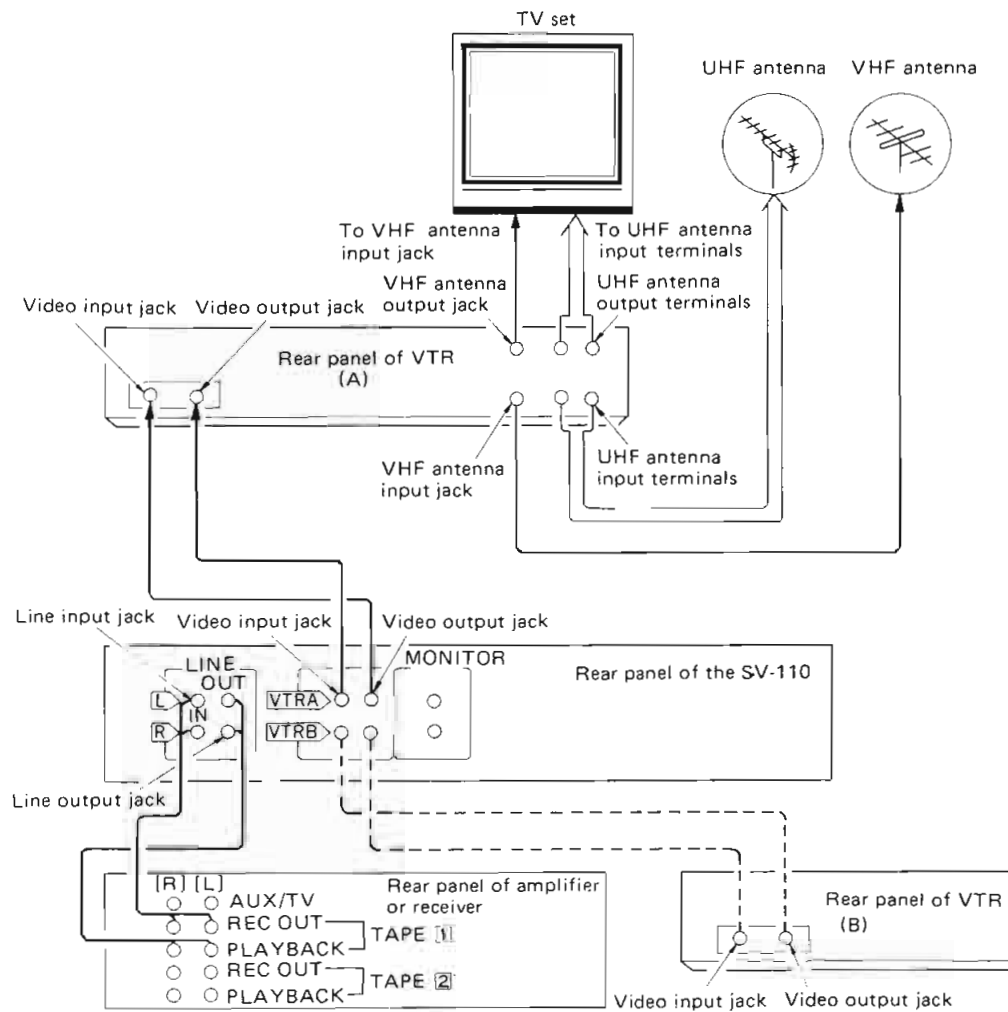
■ FUNCTIONS

- 1 Master VTR switch (master VTR ■ A ■ B)**
 - When making digital tape copies, use this switch to select which VTR is playing the master tape.
 - During ordinary PCM recording and playback, set this switch to the position (A or B) that matches the rear panel jacks to which your VTR is connected.
 - This is also used to switch between video (position B) and PCM (position A) operation.
- 2 Playback mode switch (playback mode ■ 1 ■ 2)**
 - Used to select the demodulation mode that best matches the playback signal characteristics of the VTR being used.
- 3 Recording muting switch (rec/copy mute)**
 - Press when you want to record a blank space on the tape.
 - Recording muting (no-signal recording) only takes place as long as this switch is kept depressed during recording.
- 4 Playback muting switch**
 - Playback muting along with the playback mute indicator are tuned on automatically when the unit's power is turned on. In this state, playback noise (caused by dropouts, poor tracking, and so forth) is muted automatically so that any parts of the tape with extremely poor quality are not reproduced.
 - By pressing this switch, it turns playback muting off (and the indicator goes out).
 - Press again to turn muting back on.

- 5 Copy switch**
 - This is pressed when two VTRs are used to make digital tape copies. (Copy indicator on)
 - Press again to return to normal condition. (Copy indicator off)
- 6 Tracking switch**
 - When this is pressed, the level indicator scale markings go off and the left channel is no longer shown. Instead, the right channel display shows tracking quality.
 - Press again to return to normal indication.
- 7 Peak hold switch**
 - Peak hold indication is normally reset every two seconds.
 - Press this switch to hold the peak indication for longer periods of time during recording or playback.
 - Press again to return to the audio reset (2-second) peak hold indication.

CONNECTION AND OPERATION

Connections for PCM Recording/Playback and TV Program Recording/Playback



How to operation

PCM recording and playback

- Shift the video input select switch to "Ext. Input" or "Camera".
- Follow the normal procedure for PCM record and playback.

TV program recording and playback

- Shift the video input select switch to "Tuner" or "TV".
- Follow the normal procedure for TV program record and playback.

Digital dubbing (copying)

- Connect record video (B) as shown above.
- Put the master video cassette into playback (master) video (A).
- Set the master switch to "A", then shift playback video (A) to playback mode and recording video (B) to recording mode.

Note: With master switch set to "B", digital dubbing from video (B) to video (A) is possible.

- To finish dubbing (copying), push the Rec/copy muting switch to prevent noise, and about 5 sec. later, stop the recording video.

DISASSEMBLY INSTRUCTIONS

How to remove the cabinet

- Remove the 4 setscrews (Fig. 1 : ① ~ ④) of the cabinet.
- Remove the cabinet.

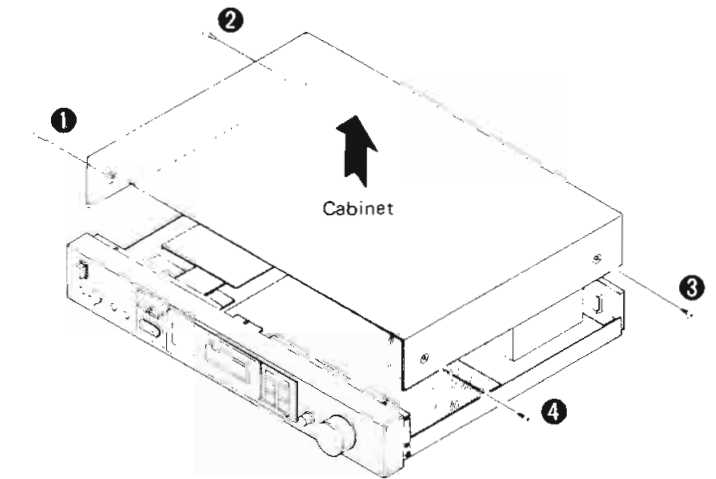


Fig. 1

How to remove the front panel

- Remove the cabinet.
- Remove the 4 setscrews (red) (Fig. 2 : ⑤ ~ ⑧) of the front panel and the 4 setscrews (Fig. 2 : ⑨ ~ ⑫) of the P.C.B.
- Remove the 3 setscrews (Fig. 3 : ⑬ ~ ⑮) of the front panel.
- Pull out the front panel with care not to scratch the knobs. (See Fig. 3.)
- When fitting the front panel, match the claws of bottom board with the holes in the front panel. (See Fig. 2.)

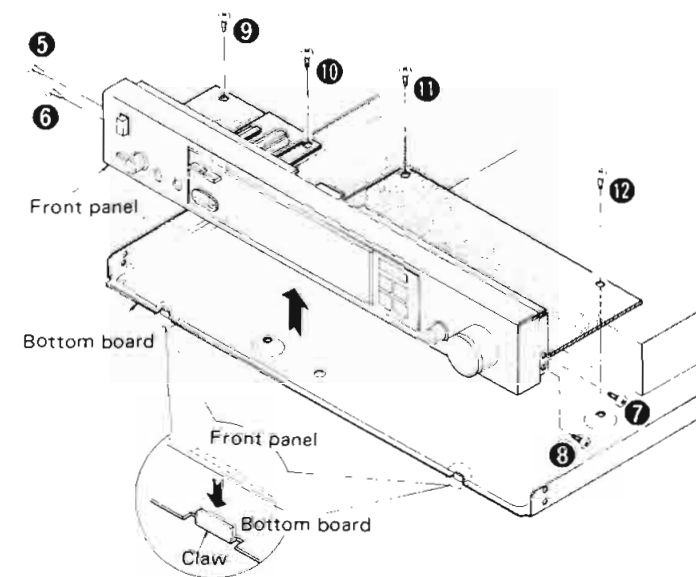


Fig. 2

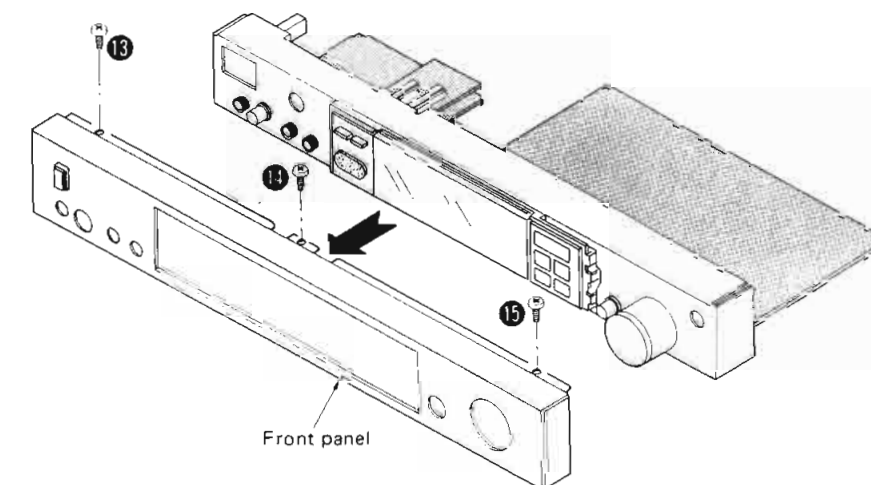


Fig. 3

● How to remove the sub-panel

1. Remove the cabinet and front panel.
2. Release the 3 claws of switch P.C.B. and the 2 claws of LED P.C.B. (See Fig. 4.)
3. Release the 2 claws of sub-panel and FL respectively. Then pull out the sub-panel. (See Fig. 4.)

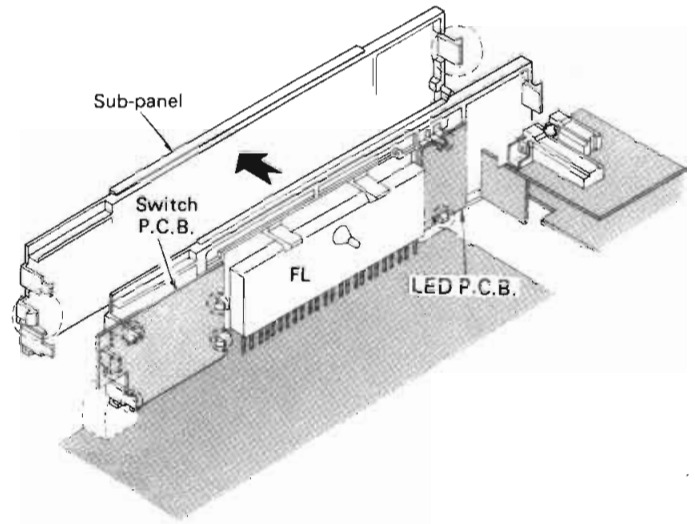


Fig. 4

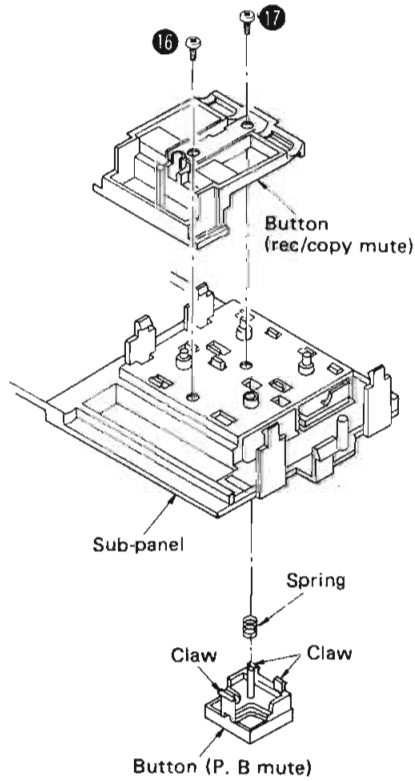


Fig. 5

● How to remove buttons (rec/copy mute, peak hold, indicator, PB mute, copy)

1. Remove the cabinet and front panel.
2. Remove the sub-panel, and the 2 setscrews (Fig. 5 : 16 , 17) of rec/copy mute button, getting across from the back.
3. Release the claws of each button and remove the button. (See Fig. 5.)

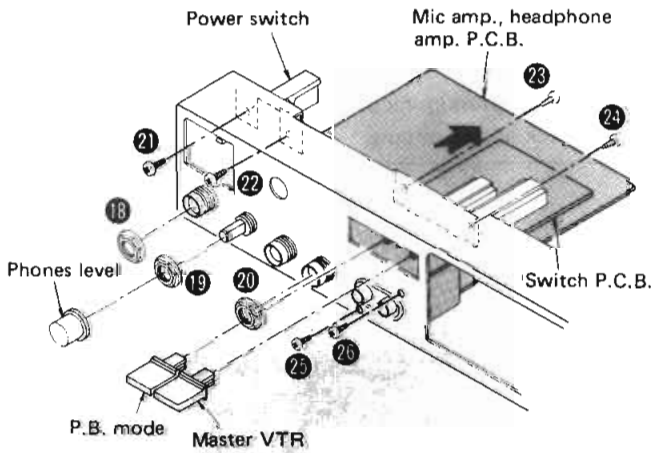


Fig. 6

● How to remove mic amp, headphone amp P.C.B. and power switch

1. Remove the cabinet and front panel.
2. Remove the jack and volume nuts (Fig. 6 : 18 ~ 20).
3. To remove the power switch, remove the setscrews (Fig. 6 : 21 , 22).

● How to remove the switch P.C.B. and video input/output terminals

1. Remove the sub-panel.
2. Remove the 2 buttons and setscrews (Fig. 6 : 23 , 24) of the switch board.
3. Remove the 2 setscrews (Fig. 6 : 25 , 26) of video input/output terminals.

● How to remove the main P.C.B.

1. Remove the cabinet and front panel.
2. Remove the 2 knobs. (See Fig. 7.)
3. Remove the 2 volume nuts. (See Fig. 7.)

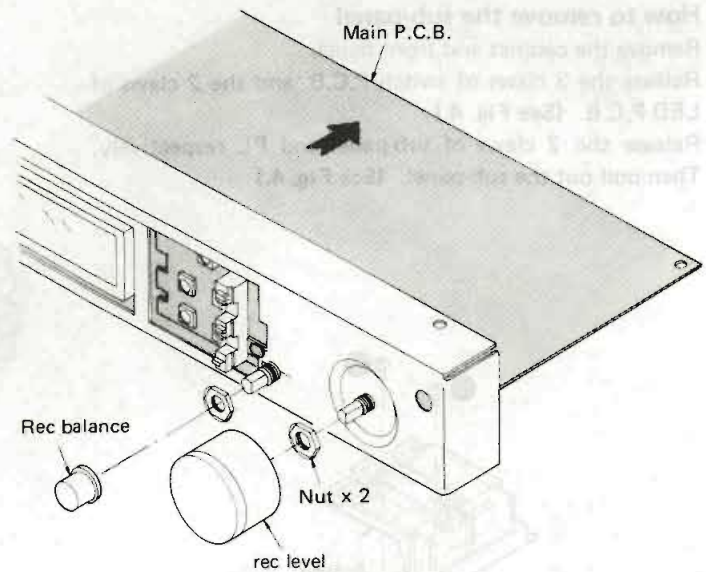


Fig. 7

■ TROUBLE SHOOTING

Check the connection of each instrument and knob position before repair, and use the table below.

Problem	Cause	Solution
No recording with video in rec mode.	* Video cassette lug is broken. * Recording level is low. (When level indicator is not deflected.)	* Cover the hole in the cassette with tape. * Adjust recording level watching the level indicator.
Neither recording nor playback are possible.	* VTR is defective. * The unit is out of order.	* Check VTR and unit with reference to "Checking by use of a TV set" given in the following.
Noise is made during playback. Playback quality is poor.	* Video cassette tape is defective. * Tracking adjustment is not sufficient. * VTR head area is stained.	* Play another recorded tape. If playback is perfect, the previous tape is defective or recording connections are bad. (It can also be checked by recording a picture on the tape to check for noise.) * Select either "1" or "2" of playback mode. Also, adjust tracking of the VTR used. * Clean the VTR'S video head.
Playback sound is distorted.	* Recording level is too high or low. * Analog circuit is defective.	* Select optimum recording level. * Check analog circuit.

■ CHECKING BY USE OF A TV SET

If recording and playback are not possible or noise is made during playback, it can be checked by using a TV to check whether the cause is in the unit or in video.

● Check of VTR

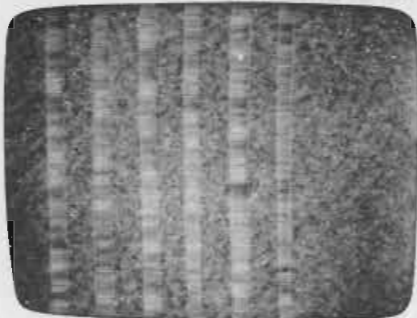
1. Record a picture on the VTR.
2. Play it on the TV. If the picture is normal, then the VTR is normal.
3. If noise is excessive on the picture, the possible causes are scratches on the tape, insufficient adjustment of tracking, and stains on VTR's head.



Tape is damaged if this kind of picture appears and cannot be corrected using tracking adjustment.

● Check of the unit

1. After PCM recording, play the video cassette on a TV.
2. If the picture is like **photo 1**, the tape is PCM-recorded, and normal. If it is like **photo 2**, the tape is not PCM-recorded and blank. The recording system may be defective.
3. If the picture is like **photo 3**, no signal is recorded on the tape. If this picture appears when the level indicator is deflected, the recording system of digital circuit may be defective. If this picture appears when the level indicator is not deflected, the recording system of analog circuit may be defective.
4. Check it by playing the PCM recorded video cassette tape.



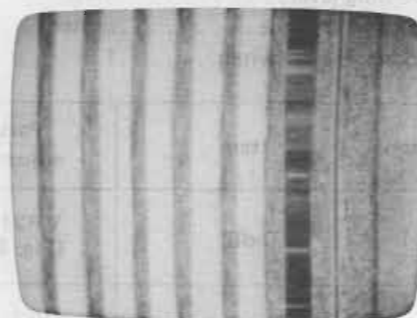
(Photo 1)

Tape is PCM-recorded, and normal.
(Normal)



(Photo 2)

Tape is not PCM-recorded, and blank.
(No recording)



(Photo 3)

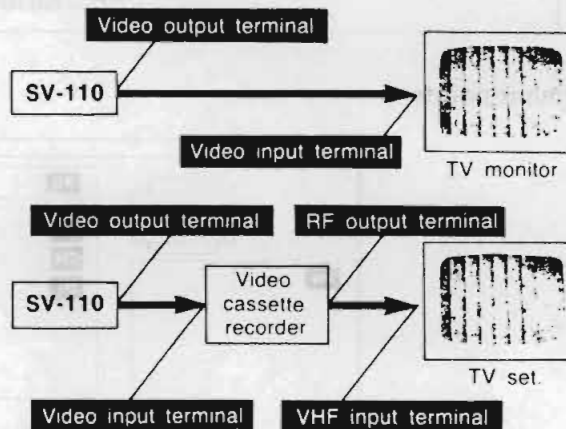
Tape is PCM-recorded but no signal is recorded.
(No signal)

● To check whether the SV-110 is recording properly: [How to connect]

There are two connection methods that can be used to check whether this unit is recording signals properly.

[Procedure]

- Use the LINE IN or microphone input for the recording input signal.
- Adjust the recording level control of the SV-110 so the recording/playback level indicators rise and fall. At this time, the television screen should show the pattern shown above if the SV-110 is properly recording the input signal.



■ ABOUT VIDEO CASSETTES AND RECORDERS

- On the average a typical video cassette tape can be used about 300 times (for recording and playback). If the same tape is used too many times, magnetic surface wear and tape stretch may interfere with normal playback. However, how many times a tape can be used depends on tape quality, VTR used, and the environment.
- Because video playback is seen by the human eye as a continuously moving picture, dropouts are rarely noticeable. However, in PCM recording and playback, dropouts can cause noise because they interfere with correct retrieval of the digital signal information. Of course, error correction circuitry and playback muting serve to minimize this problem. But the point is that tape quality is much more important for PCM recording and playback than it is for video.
- Therefore, for PCM recording it is recommended that you use the best quality video cassettes possible and if they are not new they should have been used only a few times.
- Clean the video heads from time to time. Good PCM recordings cannot be made if the heads are dirty.
- For best PCM recording and playback results, it is recommended that you use HG (high grade) VHS video cassettes.
- To avoid accidental erasure, break off the video cassette's safety tab after recording.

MEASUREMENTS AND ADJUSTMENT

Adjustment of display circuit

After repair of display circuit, make the adjustment as follows:

Instruments used and setting

1. AC electronic voltmeter
2. 100 Hz sine-wave oscillator
3. Recording levelmax.
4. Recording balancecenter
5. Playback mode switch1
6. Connect 100 Hz sine-wave oscillator and AC electronic voltmeter to LINE IN.
7. Adjust the oscillator so that the input of LINE IN is 319 mV.

Step	Item	Parts adjusted	Adjusting procedure
1	0 dB	VR213 (Fig. 8)	<ul style="list-style-type: none"> Adjust VR213 so that 0 dB (B16) of level meter on the right begins to light up. (Fig. 9)
2	Balance	VR211 (Fig. 8)	<ul style="list-style-type: none"> Adjust VR211 so that 0 dB (B16) of level meter on the left begins to light up. (Fig. 9)
3	Recovery time	VR212 (Fig. 8)	<ul style="list-style-type: none"> Instantaneously cut off the input of LINE IN and check the falls of right and left channels of level meter. If there is a difference between right and left channels, adjust VR212 until no difference.

Adjustment points

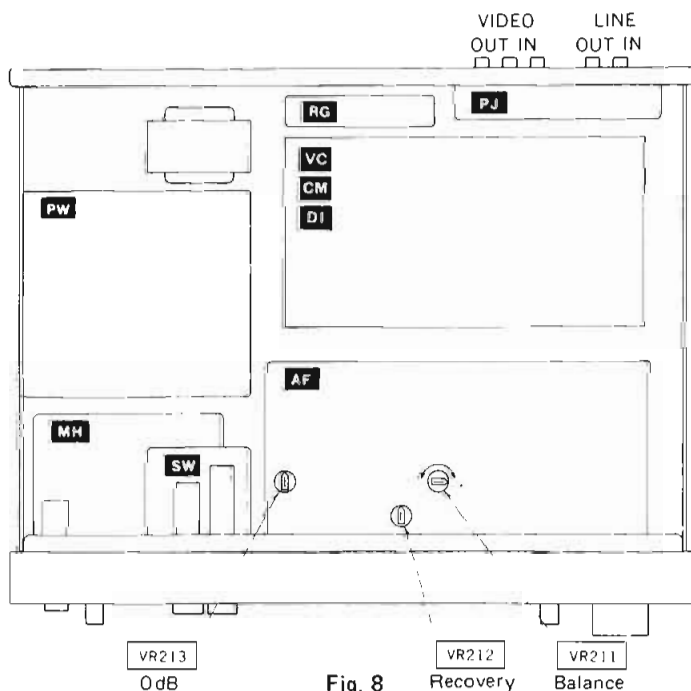


Fig. 8

Display

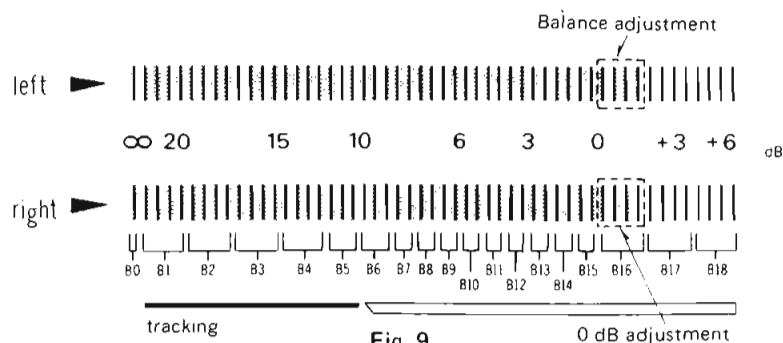


Fig. 9

DISCRIPTION OF EACH TERMINAL OF MN1420PCF

Pin No.	Symbol	Description	Pin No.	Symbol	Description									
1	VSS	Ground terminal	20	BI1	Rec/Play checking input terminal Rec mode "L" Play mode "H"									
2	CO11	MCK select control terminal INTERNAL "H" AUTO "L"	21	BI0	Master VTR select input terminal VTR A "H" VTR B "L"									
3	CO10	Vertical synchronizing signal control terminal	22	EO0	} System indicator control output terminals									
4	CO9	PLL frequency dividing signal control terminal	23	EO1										
5	CO8	Reset control terminal Reset mode "L" Normal mode "H"	24	EO2										
6	CO7	PAL/NTSC select control terminal PAL "H" NTSC "L"	25	EO3										
7	CO6	Muting control terminal in cue and review Cue, review "L" Normal mode "H"	26	TST	Test terminal (not used, connected to ground)									
8	CO5	} Rec/playback select control terminal	27	RST	Reset terminal (microcomputer is reset at "L".)									
9	CO4		28	CSLCT	Vertical synchronizing signal frequency dividing (1/4) input terminal.									
		<table border="1"> <thead> <tr> <th>Pin No.</th> <th>8</th> <th>9</th> </tr> </thead> <tbody> <tr> <td>Rec mode</td> <td>"L"</td> <td>"H"</td> </tr> <tr> <td>Play mode</td> <td>"H"</td> <td>"L"</td> </tr> </tbody> </table>	Pin No.	8	9	Rec mode	"L"	"H"	Play mode	"H"	"L"	29	SNS0	122 Hz input terminal
Pin No.	8	9												
Rec mode	"L"	"H"												
Play mode	"H"	"L"												
10	CO3	Muting circuit, control terminal Muting on "L" Muting off "H"	30	SNS1	31.25 kHz input terminal									
11	CO2	Display select control terminal Tracking display "H" Level display "L"	31	DO0	Copy indicator terminal									
12	CO1	Peak hold control terminal Peak hold "H" Normal mode "L"	32	DO1	Playback muting indicator terminal									
13	CO0	Display muting control terminal Muting mode "H" Normal mode "L"	33	DO2	Record muting indicator terminal									
14	A13	} Key scan input	34	DO3	Video output control terminal Copying mode "H" Normal mode "L"									
15	A12		Tracking	35	DO4	Playback muting control terminal Playback muting on "H" Playback muting off "L"								
16	A11		Peak hold	36	DO5	Record muting control terminal Record muting on "H" Record muting off "L"								
17	A10		Copy	37	DO6	Copy muting control terminal Copy muting on "H" Copy muting off "L"								
18	BI3	Playback muting	38	DO7	MCK select control terminal INTERNAL "H" AUTO "L"									
19	BI2	Record muting	39	VDD	Power supply (+5V)									
		PLL lock detection input terminal Lock mode "L" Free mode "H"	40	OSC	Oscillation circuit (clock frequency : 250 kHz)									

RESISTORS AND CAPACITORS

- Notes:**
- Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
 - Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
 - The "S" mark is service standard parts and may differ from production parts.
 - The unit of resistance is Ω (ohm).
K = 1000 Ω , M = 1000k Ω
 - The unit of capacitance is μ F (microfarad)
P = 10⁻⁶ μ F

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value
ERX	2	AN	J	2R2
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon	25 : 1/4W	G : \pm 2%
ERG : Metal Oxide	1 : 1W	J : \pm 5%
ERO : Metal Film	S2 : 1/4W	K : \pm 10%
ERO : Fuse		

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M	R47	R
Type	Voltage	Peculiarity use	Value	Special use

Capacitor Type	Voltage	Tolerance
ECEA : Electrolytic	OJ : 6.3V	C : \pm 0.25 μ F
ECEB : Electrolytic	1A : 16V	G : \pm 2%
ECEA...N : Non Polar Electrolytic	1C : 16V	J : \pm 5%
ECCD : Ceramic	1E : 25V	K : \pm 10%
ECCR : Ceramic	25 : 25V	M : \pm 20%
ECKD : Ceramic	1V : 35V	P : \pm 100%, -0%
ECQM : Polyester	1H : 50V	Z : +80%, -20%
ECOP : Polypropylene	MY : 125VAC	
ECES : Electrolytic	ECQP1 : 100V	

RESISTORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R101,102	Δ ERQ1CJ1R0	1	R195	ERDS2TJ103	10K	R234	ERDS2TJ474	470K	R305	ERDS2TJ222	2.2K
R104	ERDS2TJ103	10K	R196	ERDS2TJ472	4.7K	R235	ERDS2TJ103	10K	R306	ERDS2TJ272	2.7K
R105	ERDS2TJ152	1.5K	R197	ERDS2TJ332	3.3K	R236	ERDS2TJ472	4.7K	R307	ERDS2TJ102	1K
R106	ERDS2TJ103	10K	R198	ERDS2TJ471	470	R237	ERDS2TJ104	100K	R308	ERDS2TJ102	1K
R107,108	EROS2TJ221	220	R199	ERDS2TJ472	4.7K	R238	ERDS2TJ472	4.7K	R309	ERDS2TJ472	4.7K
R109,110	ERDS2TJ103	10K	R200	ERDS2TJ102	1K	R239	ERDS2TJ104	100K	R310	ERDS2TJ472	4.7K
R111	S ERGIANJ221	220				R241	ERDS2TJ104	100K	R311	ERDS2TJ393	39K
R112,113	EROS2TJ681	680	R201	ERDS2TJ472	4.7K	R242	ERDS2TJ473	47K	R312	ERDS2TJ472	4.7K
R114	ERDS2TJ103	10K	R202	ERDS2TJ102	1K				R313	ERDS2TJ122	1.2K
R130	ERDS2TJ100	10	R203	ERDS2TJ472	4.7K	R253	ERDS2TJ103	10K	R314	ERDS2TJ272	2.7K
R131	ERDS2TJ221	220	R204	ERDS2TJ102	1K	R255,256	ERDS2TJ561	560	R315	ERDS2TJ183	18K
R149,150	ERDS2TJ474	470K	R205	ERDS2TJ102	1K	R257,258	ERDS2TJ473	47K	R316	ERDS2TJ472	4.7K
R151,152	ERDS2TJ104	100K	R206,207	ERDS2TJ271	270	R259,260	ERDS2TJ221	220	R317	ERDS2TJ153	15K
R153,154	EROS2TKG3902	39K	R208	ERDS2TJ102	1K	R261,262	ERDS2TJ332	3.3K	R318	ERDS2TJ680	68
R155,156	EROS2TKG3601	3.6K	R209	ERDS2TJ472	4.7K	R263,264	ERDS2TJ332	3.3K	R319	ERDS2TJ472	4.7K
R157,158	EROS2TKG1102	11K	R210	ERDS2TJ103	10K	R265,266	ERDS2TJ332	3.3K	R320	ERDS2TJ153	15K
R159,160	EROS2TKG2701	2.7K				R267,268	ERDS2TJ223	22K	R321	ERDS2TJ472	4.7K
R161,162	EROS2TKG2701	2.7K	R211,212	EROS2TKG5102	51K	R269,270	ERDS2TJ221	220	R322	ERDS2TJ822	8.2K
R163,164	EROS2TKG2401	2.4K	R213	ERDS2TJ333	33K				R323	ERDS2TJ682	6.8K
R165,166	EROS2TKG2401	2.4K	R214	EROS2TKG3902	39K	R271,272	EROS2TJ103	10K	R324	EROS2TJ153	15K
R167,168	EROS2TKG3902	39K	R215,216	ERDS2TJ472	4.7K	R273,274	ERDS2TJ104	100K	R325	ERDS2TJ223	22K
R169,170	EROS2TKG1802	18K	R217	ERDS2TJ104	100K	R275	ERDS2TJ102	1K	R326	EROS2TJ472	4.7K
			R218	ERDS2TJ474	470K	R276	EROS2TJ561	560	R327	EROS2TJ472	4.7K
			R219,220	ERDS2TJ433	43K	R281,282	EROS2TJ104	100K	R328	ERDS2TJ223	22K
R171,172	EROS2TKG1602	16K				R283,284	ERDS2TJ123	12K	R329	ERDS2TJ153	15K
R173,174	EROS2TKG3601	3.6K	R221,222	ERDS2TJ682	6.8K	R285,286	ERDS2TJ123	12K	R330	ERDS2TJ153	15K
R175,176	ERDS2TJ333	33K	R223,224	ERDS2TJ473	47K	R287,288	ERDS2TJ223	22K	R331	ERDS2TJ102	1K
R177	ERDS2TJ102	1K	R225	ERDS2TJ471	47K	R289,290	ERDS2TJ223	22K	R332	ERDS2TJ102	1K
R178	ERDS2TJ472	4.7K	R226,227	ERDS2TJ223	22K	R291,292	ERDS2TJ820	82	R333	ERDS2TJ273	27K
R185	ERDS2TJ472	4.7K	R228,229	ERDS2TJ472	4.7K	R293,294	ERDS2TJ820	82	R334	ERDS2TJ822	8.2K
R186	ERDS2TJ471	470	R230	ERDS2TJ472	4.7K	R301	ERDS2TJ820	82	R335	ERDS2TJ392	3.9K
R187	ERDS2TJ561	560				R302	ERDS2TJ472	4.7K	R336	ERDS2TJ272	2.7K
R188,189	ERDS2TJ103	10K	R231	ERDS2TJ474	470K	R303	ERDS2TJ223	22K			
R190	ERDS2TJ271	270	R232	ERDS2TJ123	12K	R304	ERDS2TJ472	4.7K			
			R233	ERDS2TJ472	4.7K						

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R337	ERDS2TJ102	1K	R370	ER0S2TKG1002	10K	R404	ER025TJ333	33K	R533	ERDS2TJ104	100K
R338	ERDS2TJ102	1K	R371	ERDS2TJ221	220	R405	ERD25TJ224	220K	R534	ERDS2TJ102	1K
R339	ERDS2TJ102	1K	R372	ERDS2TJ221	220	R408	ERD25FJ103	10K	R537	ERDS2TJ472	4.7K
R340	ERDS2TJ102	1K	R373	ER0S2TKG1002	10K	R501	ERDS2TJ393	39K	R538	ERDS2TJ472	4.7K
R341	ERDS2TJ103	10K	R374	ER0S2TKG1002	10K	R502	ERDS2TJ393	39K	R541	ERDS2TJ222	2.2K
R342	ERDS2TJ103	10K	R375	ER0S2TKG1002	10K	R503	ERDS2TJ223	22K	R542	ERDS2TJ123	12K
R343	ERDS2TJ102	1K	R376	ER0S2TKG1002	10K	R504	ERDS2TJ103	10K	R543	ERDS2TJ102	1K
R344	ERDS2TJ153	15K	R377	ER0S2TKG2002	20K	R505	ERDS2TJ182	1.8K	R545	ERDS2TJ105	1M
R345	ERDS2TJ153	15K	R378	ER0S2TKG2002	20K	R506	ERDS2TJ473	47K	R546	ERDS2TJ470	47
R346	ERDS2TJ123	12K	R379	ER0S2TKG2401	2.4K	R507	ERDS2TJ102	1K	R547	ERDS2TJ332	3.3K
R347	ERDS2TJ103	10K	R380	ER0S2TKG2401	2.4K	R508	ERDS2TJ102	1K	R548	ERDS2TJ563	56K
R349	ERDS2TJ102	1K	R381	ER0S2TKG1302	13K	R509	ERDS2TJ102	1K	R549	ERDS2TJ332	3.3K
R350	ERDS2TJ473	47K	R382	ER0S2TKG1302	13K	R510	ERDS2TJ223	22K	R550	ERDS2TJ563	56K
R353	ERDS2TJ153	15K	R383	ER0S2TKG1302	13K	R511	ERDS2TJ223	22K	R551	ERDS2TJ332	3.3K
R354	ERDS2TJ103	10K	R384	ER0S2TKG1302	13K	R512	ERDS2TJ103	10K	R552	ERDS2TJ563	56K
R355	ERDS2TJ103	10K	R385	ER0S2TKG5101	5.1K	R513	ERDS2TJ103	10K	R553	ERDS2TJ103	10K
R356	ERDS2TJ122	1.2K	R386	ER0S2TKG5101	5.1K	R514	ERDS2TJ123	12K	R554	ERDS2TJ473	47K
R357	ERDS2TJ102	1K	R387	ERDS2TJ221	220	R515	ERDS2TJ223	22K	R555	ERDS2TJ472	4.7K
R358	ERDS2TJ122	1.2K	R388	ERDS2TJ332	3.3K	R516	ERDS2TJ102	1K	R557	ERDS2TJ154	150K
R359	ERDS2TJ152	1.5K	R389	ERDS2TJ332	3.3K	R517	ERDS2TJ562	5.6K	R561	ERDS2TJ472	4.7K
R360	ERDS2TJ153	15K	R390	ERDS2TJ102	1K	R520	ERDS2TJ473	47K	R562	ERDS2TJ561	560
R361	ERDS2TJ104	100K	R391	ERDS2TJ332	3.3K	R521	ER0S2TKG4640	464	R563	ERDS2TJ103	10K
R362	ERDS2TJ123	12K	R392	ERDS2TJ332	3.3K	R522	ER0S2TKG2800	280	R564	ERDS2TJ473	47K
R363	ERDS2TJ103	10K	R393	ERDS2TJ472	4.7K	R523	ER0S2TKG6340	634	R565	ERDS2TJ473	47K
R364	ERDS2TJ103	10K	R394	ERDS2TJ473	47K	R524	ER0S2TKG1101	1.1K	R601.602	ERDS2TJ221	220
R365	ERDS2TJ103	10K	R395	ERDS2TJ472	4.7K	R525	ER0S2TKG1000	100	R631.632	ERDS2TJ472	4.7K
R366	ERDS2TJ103	10K	R396	ERDS2TJ221	220	R526	ER0S2TKG2431	2.43K	R633.634	ERDS2TJ472	4.7K
R367	ER0S2TKG1002	10K	R397	ERDS2TJ103	10K	R527	ER0S2TJ102	1K	R635	ERDS2TJ472	4.7K
R368	ER0S2TKG1002	10K	R398	ERDS2TJ472	4.7K	R528	ER0S2TJ121	12K	R636	ERDS2TJ681	680
R369	ER0S2TKG1002	10K	R399	ERDS2TJ472	4.7K	R529	ER0S2TJ121	12K	R637	ERDS2TJ471	470
			R401	ERD25FJ102	1K	R530	ERDS2TJ121	12K	R638	ERDS2TJ681	680
			R402	ERD25FJ102	1K	R531	ERDS2TJ121	12K			
			R403	ERD25TJ333	33K	R532	ERDS2TJ104	100K			

● CAPACITORS

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
C1	ECKDMY103PF	0.01	C255.256	ECEA1CN100S	10	C371	ECQP1102GZ	0.001	C506	ECCD1H101K	100P
C101.102	ECKD1H473ZF	0.047	C257.258	ECCD1H101K	100P	C372	ECQP1102GZ	0.001	C507	ECCD1H101K	100P
C103	ECEA1VU332	3300	C259.260	ECKD1H103MD	0.01	C373	ECCD1H471K	470P	C508	ECCD1H104JZ	0.1
C104.105	ECKD1H473ZF	0.047	C261.262	ECEA0JU101	100	C374	ECCD1H471K	470P	C509	ECQM1H104JZ	0.1
C106	ECEA1VU332	3300	C263.264	ECCD1H101K	100P	C375	ECCD1H820K	82P	C510	ECQM1H104JZ	0.1
C107.108	ECKD1H473ZF	0.047	C265.266	ECEA1CN100S	10	C376	ECCD1H820K	82P			
C109	ECES1CV223Y	22000	C267	ECEA1CU331B	330	C377	ECQP1392GZ	0.0039	C511	ECQM1H104JZ	0.1
C110	ECEA1CU331B	330	C268.269	ECEA1CU221	220	C378	ECQP1392GZ	0.0039	C514	ECKD1H473ZF	0.047
C111	ECEA1EU221	220	C270	ECEA1CU221	220	C379	ECCD1H220K	22P	C515	ECEA0JU101	100
C112	ECEA1CU331B	330	C281.282	ECCD1H101K	100P	C380	ECEA1CU101	100	C516	ECEA0JU471	470
C113	ECEA0JU101	100	C283.284	ECCD1H101K	100P	C381	ECEA1CU101	100	C517	ECKD1H473ZF	0.047
C114	ECEA0JU102B	1000	C285.286	ECEA1HN010S	1	C382	ECEA0JU331	330	C518	ECEA0JU471	470
			C287	ECEA1CN100S	10	C383	ECEA1AU221	220	C519	ECKD1H473ZF	0.047
C120.122	ECKDAL1022-T	0.001	C301	ECEA1CU220	22	C384	ECEA0JU331	330	C520	ECEA1HU010	1
C124.125	ECKDMY103PF	0.01	C302	ECEA1CU220	22	C385	ECKD1H473ZF	0.047	C523	ECKD1H473ZF	0.047
C128	ECKD1H473ZF	0.047	C303	ECEA1CU220	22	C388	ECEA1EU470	47	C524	ECEA0JU221	220
C130.131	ECEA1HUR47	0.47	C304	ECCD1H470K	47P	C389	ECEA1EU470	47	C525	ECKD1H473ZF	0.047
C132	ECEA1HUR47	0.47	C305	ECEA1HU2R2	2.2	C390	ECEA0JU331	330	C526	ECKD1H473ZF	0.047
C151.152	ECEA1CN100S	10	C306	ECCD1H181K	180P	C391	ECEA0JU331	330	C527.528	ECKD1H473ZF	0.047
C153.154	ECQP1392GZ	0.0039	C307	ECQM1H122JZ	0.0012	C401	ECKD1H473ZF	0.047			
C155.156	ECCD1H331K	330P	C308	ECCD1H561K	560P	C402	ECKD1H102KB	0.001	C531	ECEA0JU471	470
C157.158	ECQM1H104JZ	0.1	C309	ECCD1H101K	100P	C403	ECKD1H102KB	0.001	C532	ECEA0JU471	470
C159.160	ECQP1122GZ	0.0012	C310	ECEA1HN010S	1	C404	ECKD1H473ZF	0.047	C541	ECQM1H103JZ	0.01
C161.162	ECCD1H470K	47P				C405	ECKD1H473ZF	0.047	C542	ECEA1CU100	10
			C312	ECQM1H332JZ	0.0033	C406	ECKD1H473ZF	0.047	C543	ECKD1H104ZF	0.1
C163.164	ECQP1392GZ	0.0039	C313	ECEA0JU330	33	C407	ECCD1H470K	47P	C544	ECKD1H104ZF	0.1
C165.166	ECEA1CN100S	10	C314	ECEA1EU4R7	4.7	C408	ECCD1H470K	47P	C546	ECCD1H680K	68P
C171.172	ECEA1CU331B	330	C320	ECQM1H103JZ	0.01	C409	ECCD1H470K	47P	C547	ECCD1H070CC	7P
C173.174	ECEA1HU3R3	3.3	C321	ECKD1H473ZF	0.047	C410	ECCD1H473ZF	0.047	C548	ECCD1H070CC	7P
C193	ECEA0JU470	47	C322	ECKD1H473ZF	0.047				C549	ECCD1H070CC	7P
C194	ECEA0JU471	470	C324	ECKD1H473ZF	0.047	C411	ECKD1H473ZF	0.047	C550	ECCD1H070CC	7P
C195.196	ECKD1H103MD	0.01	C325	ECKD1H473ZF	0.047	C412	ECEB0JS102	1000	C551	ECQM1H102JZ	0.001
C197.198	ECKD1H103MD	0.01	C336	ECCD1H681J	680P	C414	ECCD1H391KZ	390P	C552	ECQM1H272JZ	0.0027
C199	ECEA1AU220	22	C364	ECCD1H101K	100P	C501	ECQM1H103JZ	0.01	C554	ECEA1CU100	10
			C365	ECEA1CN101S	100	C502	ECEA1EU3R3	3.3	C555	ECQM1H223JZ	0.022
C211.212	ECEA1HN2R2S	2.2	C366	ECEA1CN101S	100	C503	ECQM1H102JZ	0.001	C557	ECQP1123JZ	0.012
C213.214	ECEA25M10R	10	C367	ECCD1H471K	470P	C504	ECQM1H102JZ	0.001	C601.602	ECEA1CN100S	10
C215	ECEA1HU010	1	C368	ECCD1H471K	470P	C505	ECQM1H103JZ	0.01	C603.604	ECQM1H332JZ	0.0033
C216	ECEA1CU470	47	C369	ECCD1H151K	150P				C641	ECEA1CN100S	10
C217	ECQM1H473JZ	0.047	C370	ECCD1H151K	150P						
C218	ECEA1EU101	100									

REPLACEMENT PARTS LIST

- Notes:**
- Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
 - Important safety notice: Components identified by Δ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
 - Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

- The "(S)" mark is service standard parts and may differ from production parts.
- The parenthesized numbers in column of description stand for the quality per set.

Areas

- * [M] is available in U.S.A.
- * [MC] is available in Canada.

Ref No	Part No.	Description
INTEGRATED CIRCUITS		
IC101	AN78M20	Regulator, +20V
IC102	AN78M05	Regulator, +5V
IC130	AN78M15	Regulator, +15V
IC131	AN78M12	Regulator, +12V
IC132	AN7805	Regulator, +5V
IC151,153,154	SVINJ4559DDM	Pri-emphasis, Buffer
IC155,156	MN6631	Analog Switch
IC191	MN1420PCF	Micro Computer
IC192	MN4001B	NOR Gate
IC193	MN4040B	12-Bit Binary Counter
IC194	MN4013B	D Flip Flop
IC211,212	AN6552F	Buffer
IC213	SVIUPD4066BC	Quad Bilateral Switch
IC214	AN6870N	Display Drive
IC255	SVINJ4559DDM	Microphone Amplifier
IC281,282	SVINJM4556S	Head-phone Amplifier
IC302	DN74LS123	Multivibrator
IC303	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC305	DN74LS00 or SVIHD74LS00P	NAND Gate
IC308,309	SVITL082CP	Operational Amp.
IC310	AN6552F	Comparator
IC311	AN6914	Comparator
IC312,313	SVITL810CP	Operational Amp
IC365,366	SVITL082CP	Operational Amp.
IC367,368	SVIUPD4066BC	Quad Bilateral Switch
IC369	SVITL082CP	Operational Amp.
IC370,371	SVIUPD4066BC	Quad Bilateral Switch
IC372	DN74LS126A or SVIHD74LS126	Buffer
IC373,374	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC375	EHKMA6196	D-A/A-D Converter
IC377,378	SVITL082CP	Operational Amp.
IC379	DN74LS02	NOR Gate
IC401	MN6603	REC/PB Control
IC402,404	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC403	DN74LS04	Inverter
IC405	DN74LS125A or SVIHD74LS125	Buffer Gate
IC406	DN74LS123	Multivibrator
IC407	DN74LS86 or SVIHD74LS86P	Exclusive OR Gate
IC408	MN6602	PB Control
IC409	MN6601	REC Control
IC410,411	SVIHM6116P-4	Random Access Memory
IC412	DN74LS161A or SVIHD74LS161	4-Bit Binary Counter
IC413	DN74LS74A or SVIHD74LS74P	D Flip Flop

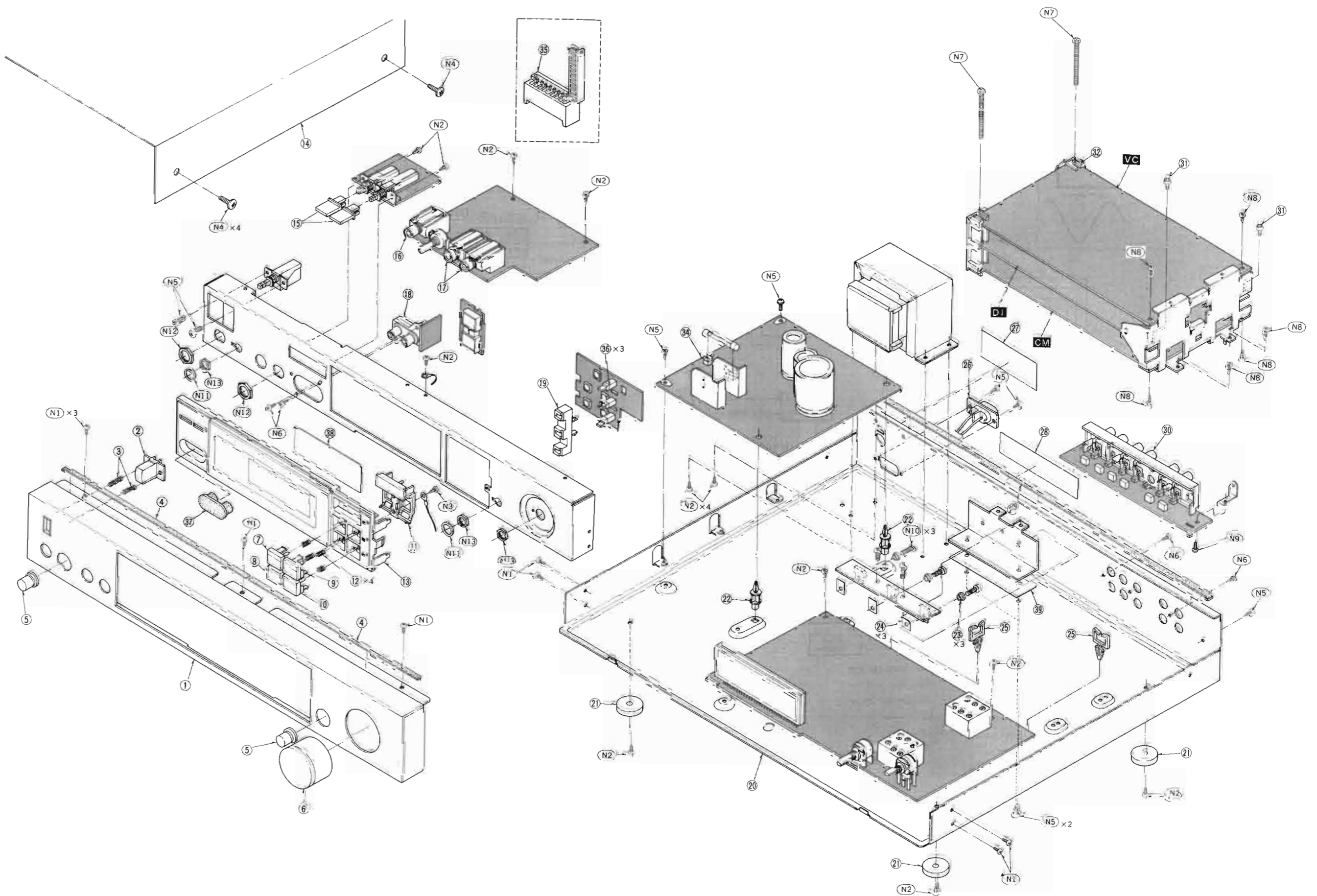
Ref. No.	Part No	Description
INTEGRATED CIRCUITS		
IC414	DN74LS02	NOR Gate
IC415	DN74LS161A or SVIHD74LS161	4-Bit Binary Counter
IC416	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC417,418	SVIHM6116P-4	Random Access Memory
IC420	DN74LS123	Multivibrator
IC421	DN74LS126A or SVIHD74LS126	Buffer
IC501	DN74LS02	NOR Gate
IC502	DN74LS123	Multivibrator
IC503	DN74LS00 or SVIHD74LS00P	NAND Gate
IC504,505	DN74LS123	Multivibrator
IC506	DN74LS02	NOR Gate
IC507	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC508	DN74LS00 or SVIHD74LS00P	NAND Gate
IC509	MN1542PCK	Micro Computer
IC510	DN74LS157	Multiplexer
IC511	SVISN74LS393	4Bit Binary Counter
IC512	SVITL082CP	Operational Amp.
IC513	SVIUPD4066BC	Quad Bilateral Switch
IC514	SVITC40H004P	Inverter
IC515	SVITL082CP	Operational Amp.
IC516	SVINJ4559DDM	Operational Amp.
IC517~520	DN74LS74A or SVIHD74LS74P	D Flip Flop
IC521	DN74LS00 or SVIHD74LS00P	NAND Gate
IC522	DN74LS126A or SVIHD74LS126	Buffer
IC524	DN74LS04	Inverter
TRANSISTORS		
Q101,102	2SD636	Muting Circuit
Q103	2SB641	Muting Circuit
Q104	2SD636	Muting Circuit
Q105	2SB641	Muting Circuit
Q151	2SD636	L.E.D Drive
Q191	2SB641	Switching
Q192,193	2SD636	Switching
Q194,195	2SD636	Switching
Q211,212	2SD636	Buffer
Q213,214	2SD636	Buffer
Q215	2SD636	Buffer
Q216	2SB641	Switching
Q217	2SD636	Switching
Q218	2SB641	Switching
Q255,256	2SC2385-G	Microphone Amplifier
Q257,258	2SC2385-G	Microphone Amplifier
Q301	2SC2377	Buffer
Q302,303	2SD636	Input Amp.
Q304	2SC2377	Input Amp

Ref No	Part No	Description
TRANSISTORS		
Q305,306	2SD636	Input Amp. & CSYNC Separator
Q307,308	2SB641	Separator
Q309	2SD636	Switching
Q310	2SB641	FET Driver
Q311	2SK301	Switching
Q313	2SD636	Switching
Q365	2SD636	Switching
Q501,502	2SD636	Video Amp.
Q503	2SB641	Video Amp.
Q504	2SD636	Video Amp.
Q505,506	2SB641	Video Amp & Switching
Q507,508	2SB641	Switching
Q510	2SB641	Switching
DIODES		
D101,102	Δ SVDS1WB10	Rectifier
D103	Δ SVDS4VB10	Rectifier
D104	MA4075	7.5V.Zener
D105	MA4056	5.6V.Zener
D106,107	Δ MA162A	Switching
D151	MA165	Switching
D191	MA165	Switching
D193	MA165	Switching
D211,212	MA165	Switching
D213	MA4068	6.8V.Zener
D214,215	Δ MA26TO-A	Switching
D216,217	MA165	Switching
D255	MA165	Switching
D301,302	MA165	Switching
D303,304	MA165	Switching
D305,306	MA165	Switching
D307,308	MA165	Switching
D365,366	MA165	Switching
D367	MA4051	5.1V.Zener
D501	Δ MA26TO-A	Switching
D502	SVDKV1236Z	Variable Capacitor
D503	MA165	Diode
D611,612	LN0401GP3	System Indicator
D613,614	SVDDL-101MG	System Indicator
D631,633	LN229RP	REC/COPY Indicator
D632	LN329GP	PBMUTE Indicator
OSCILLATORS		
X401	SVQ43U1586	Crystal,15.86MHz
X501,502	EF0A4R0M01A	Ceramic,4MHz
COILS and TRANSFORMERS		
L120	ELF18D112	Line Filter
L301	ELB5F7	Low Pass Filter
L302	ELB5G038	Delay Line
L501,502	SLQ0930T300C	Balun Coil
L503~506	ELEH100JA	Choke
LPF151,152	EULBPF304	Low Pass Filter
T1	Δ SLTF6244	Power Source

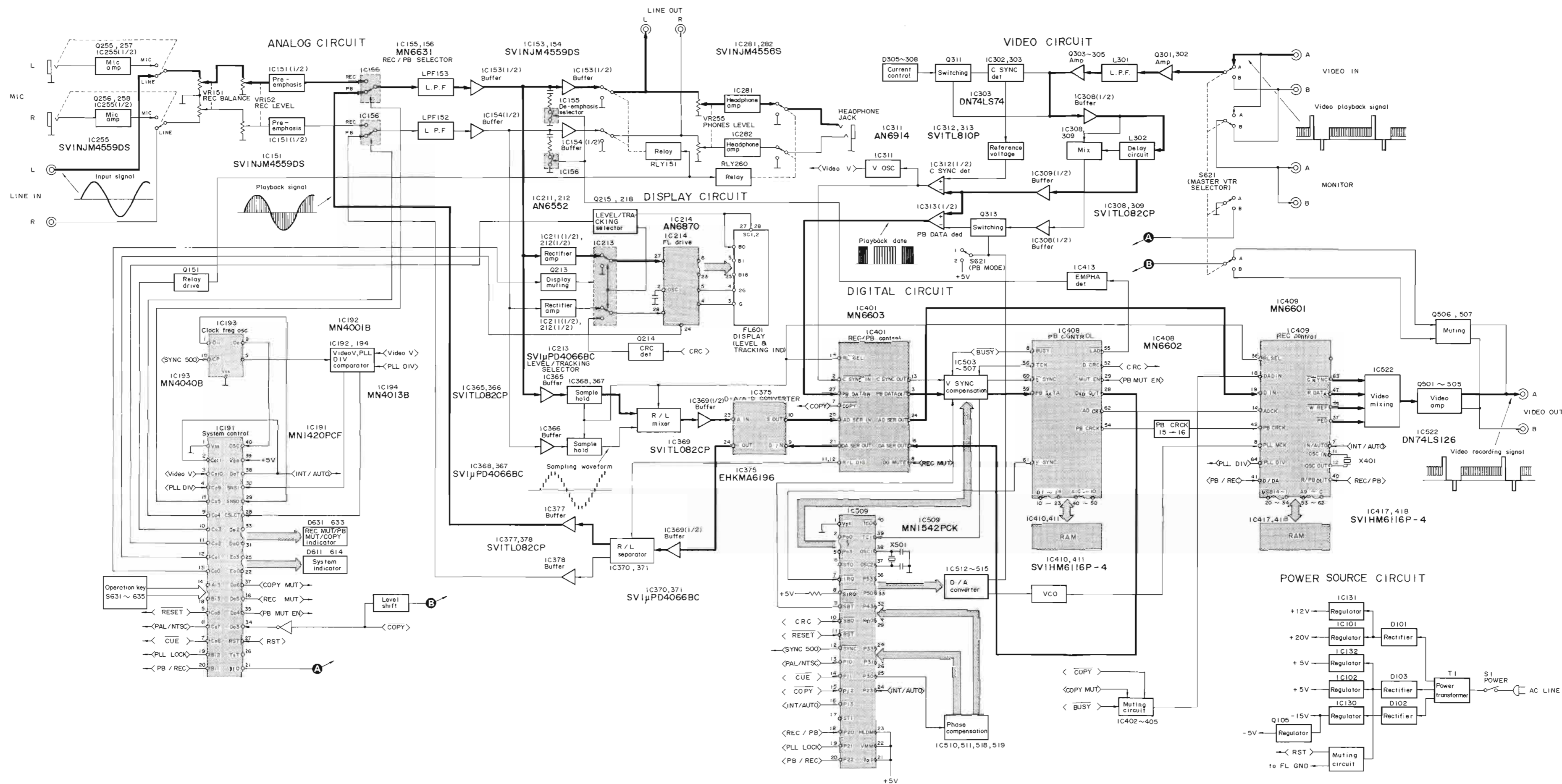
Ref. No	Part No	Description	Ref. No	Part No	Description	Ref. No	Part No	Description
VARIABLE RESISTORS			VARIABLE RESISTORS			SWITCHES		
VR151	EWGGDA510375	Recording Balance	VR255	EWCSNAF15AF5	Head Phone Level	S1	△ ESB8213V	Power Switch
VR152	EWJKDA016A15	Recording Level	VR365.366	EVN38CA00B24	Offset Adjustment	S621	SSDS2K4KB1X	Master Switch, Playback
VR211	EVN38CA00B24	Balance Adjustment 20k Ω(B)	VR501	EVN38CA00B53	5k Ω(B)	S631	EVQJ104K	Mode Switch
VR212	EVN38CA00B16	Recovery Time Adjustment 100k Ω(B)	VR502.503	EVN38CA00B14	10k Ω(B)	S632	EVQJ104K	Recording
VR213	EVN38CA00B14	0dB Adjustment 10k Ω(B)	VR504	EVMG0GA01B54	50k Ω(B)	S633	EVQJ104K	Muting
			FLUORESCENT DISPLAY TUBE			S634	EVQJ104K	Peak Hold
			FL201			SSDOB193Z		Tracking
			RELAY			S635	EVQJ104K	Copy Playback
			RLY151.260			SFDYQ11N02		Muting
						FUSE		
						F120	△ XBA1F10NU14	1A,125V

Ref. No	Part No	Description	Ref. No	Part No	Description	Ref. No	Part No	Description
CABINET AND CHASSIS PARTS			CABINET AND CHASSIS PARTS			SCREWS, WASHERS AND NUTS		
1	SSBP110N01E	Front Panel with Power Switch Button (1)	27	SRN2010M03	Label, AC IN (1)	N8	⊗ XTV3+6BFN	Screw, P.C. Board (12)
2	SBC261-1	Button, Power Switch (1)	28 (M)	SSNN110M01	Name Plate (1)	N9	⊗ XTV3+6BFN	Screw, P.C. Board (2)
3	SUS193	Spring, Power Switch Button (2)	28 (MC)	SSNN110C01	Name Plate (1)	N10	⊗ XSN3+8S	Screw, Regulator IC (3)
4	SSUZ110N03	Sheet (2)	29	SSUZ101N01	Sheet (1)	N10	⊗ XWA3B	Washer, Regulator IC (3)
5	SBN947-1	Knob, Recording Balance/Phones Level (2)	30	SJF3059-4N	Terminal Plate, Line Input/Output, Video Input/Output, Monitor P.C.B. (1)	N11	SSXW110N01	Washer, Volume (2)
6	SBN943-1	Knob, Recording Level (1)	31	SSUM101N08	Latch, P.C.B. (2)	N12	⊗ XNS12	Nut, Head Phone Jack, Microphone Jack (2)
7	SSKT110N07	Button, Peak Hold (1)	32	SSUM110N08	Bracket (1)	N13	⊗ XNS8	Nut, Volume (3)
8	SSKT110N09	Button, Tracking (1)	34	SJT345	Holder, Fuse (2)	ACCESSORIES		
9	SSKT110N08	Button, PB Mute (1)	35	SFDJW-D0603	Connector(3pin) (2)	A1 (M)	SSNU110M01	Instruction Book (1)
10	SSKT110N10	Button, Copy (1)	35	SFDJW-D0605	Connector(5pin) (1)	A1 (MC)	SSNU110C01E	Instruction Book (1)
11	SSKT110N02	Button, REC Mute (1)	35	SFDJW-D0606	Connector(6pin) (1)	A2 (M)	SFDAC05M01	AC Cord (1)
12	SSQA110N01	Spring, Buttons (4)	36	SSGZ110N01	Spacer, L.E.D (3)	A2 (MC)	SRDA010C01	AC Cord (1)
13	SSUM110N01E	Sub Panel (1)	37	SSGK110N11	Cap, Video Input/Output Terminal (1)	A3	SFDHC05N01	Cord, Line Input/Output (2)
14	SSUP110N03	Cabinet (1)	38	SSKK110N02	Filter (1)	A4	SSDH101N02	Cord, Video Input (2)
15	SBC315-4	Button, PB Mode/Master VTR Selector (2)	39	SSDC110N01	Sheet (1)	PACKING PARTS		
16	SSDJ3315020	Jack, Head Phone (1)	SCREWS, WASHERS AND NUTS			P1 (M)	SSHP110M01	Carton Box (1)
17	SSDJ3315010	Jack, Microphone (2)	N1	⊗ XTN3+6B	Screw, Front Panel (7)	P1 (MC)	SSHP110C01	Carton Box (1)
18	SJF3225N	Terminal Plate, Video Input/Output Holder, L.E.D (1)	N2	⊗ XTV3+6BFZ	Screw, P.C. Board, Power Transformer, Foot (17)	P2	SSHH110N01E	Pad, Front(Left) (1)
19	SSUM110N02	Bottom Board (1)	N3	⊗ XTV3+6BFZ	Screw, Rec Mute Button (1)	P3	SSHH110N02E	Pad, Front(Right) (1)
20	SSUP110N01	Spacer, P.C.B (2)	N4	⊗ XTB4+8BFN	Screw, Cabinet (4)	P4	SSHH110N03	Pad, Rear(Left) (1)
21	SKL117-1	Foot (4)	N5	⊗ SRXG010N12	Screw, Power Switch P.C. Board, Heat Regulator IC (3)	P5	SSHH110N04	Pad, Rear(Right) (1)
22	SSUM110N03	Clamper, Lead Wires (2)	N6	⊗ XTV3+8BFZ	Screw, Terminal Plate (4)	P6	SSHD110N01	Box, Cords (1)
23	SFDBC07-01	Bushing, Regulator IC (3)	N7	⊗ XTN3+55J	Screw, P.C. Board (2)	P7	SFYH60X60	Polyethylene Bag, Set (1)
24	SFDC07-01	Insulator, Regulator IC (3)				P8	SFYH17X16	Polyethylene Bag, Cords (3)

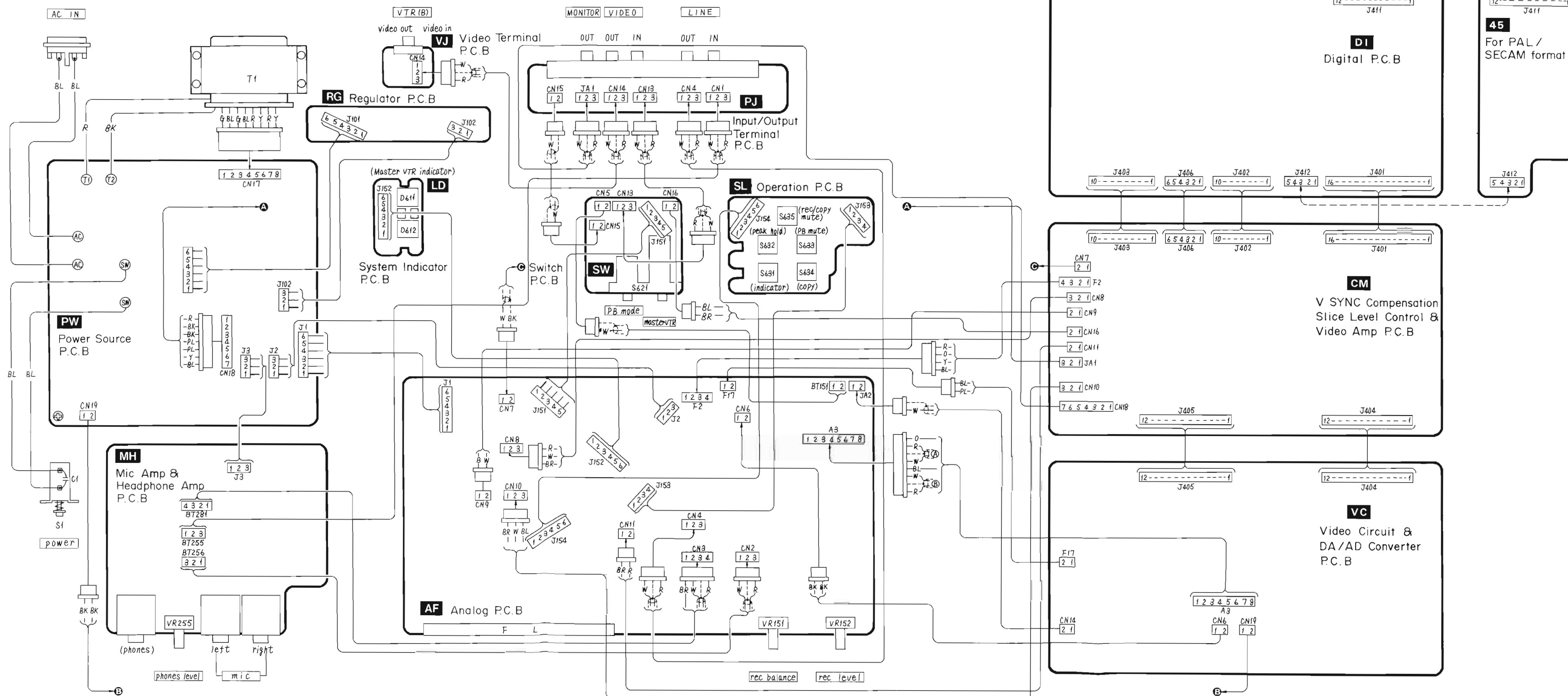
EXPLODED VIEW



BLOCK DIAGRAM



CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

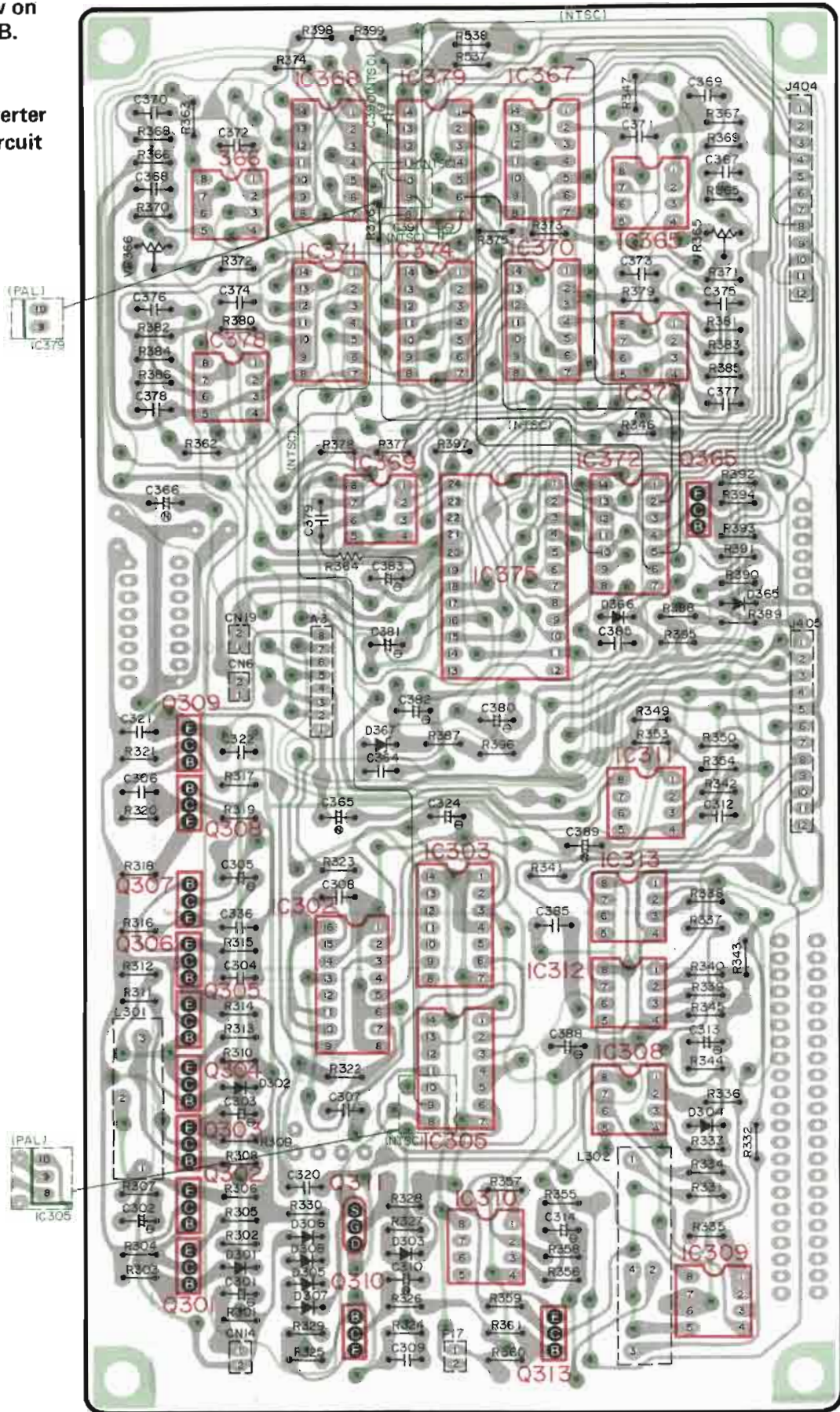


PRINTED CIRCUIT BOARDS

Circuit view on top of P.C.B.

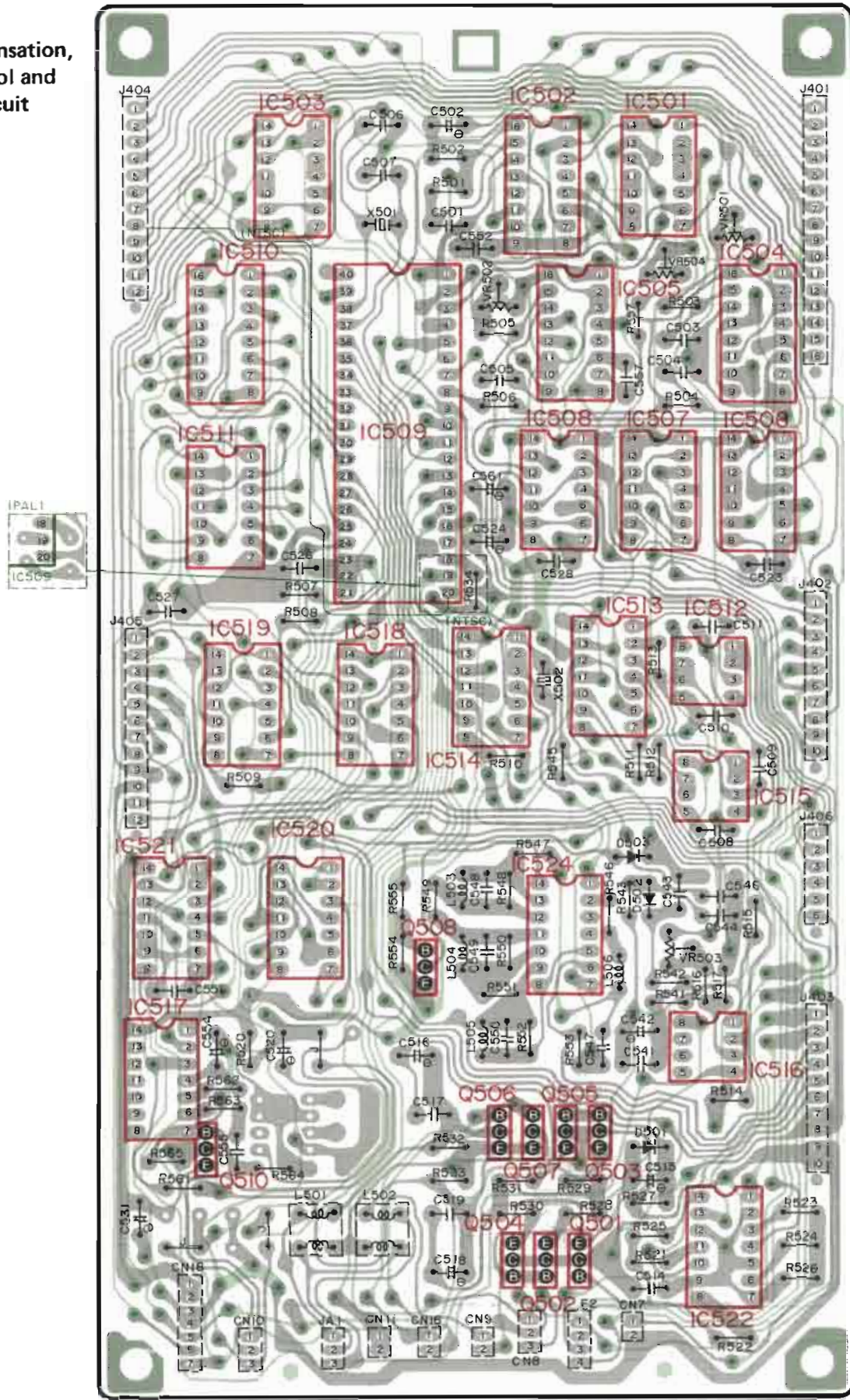
VC

DA/AD Converter and Video Circuit



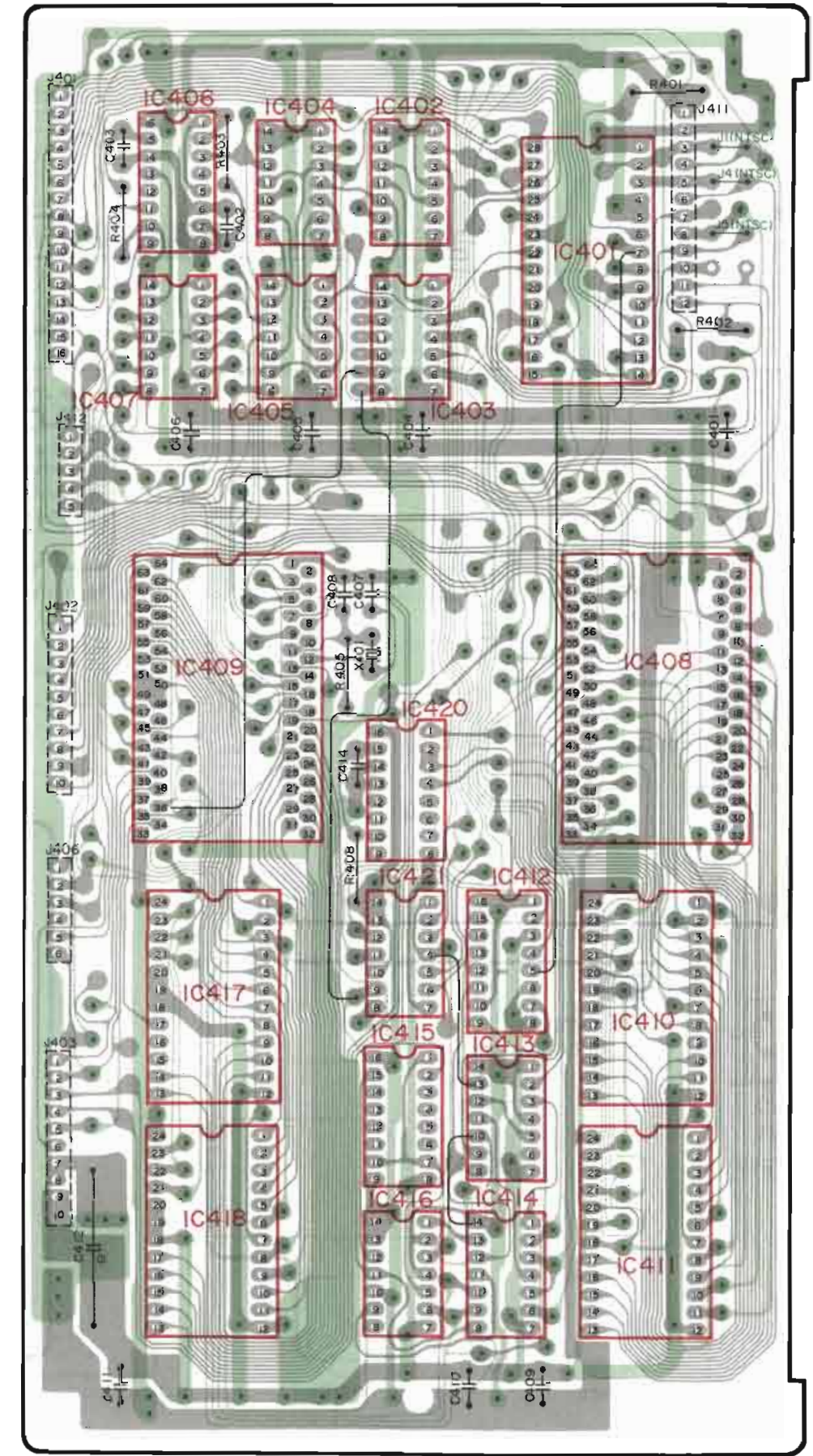
CM

V SYNC Compensation, Slice level Control and Video Amp. Circuit

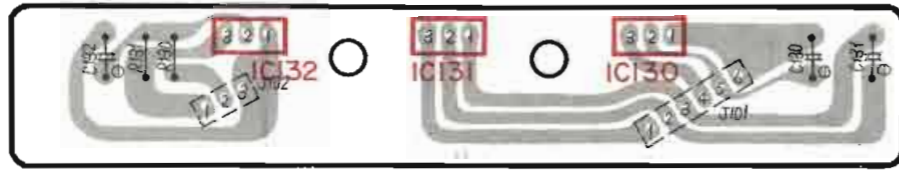


DI

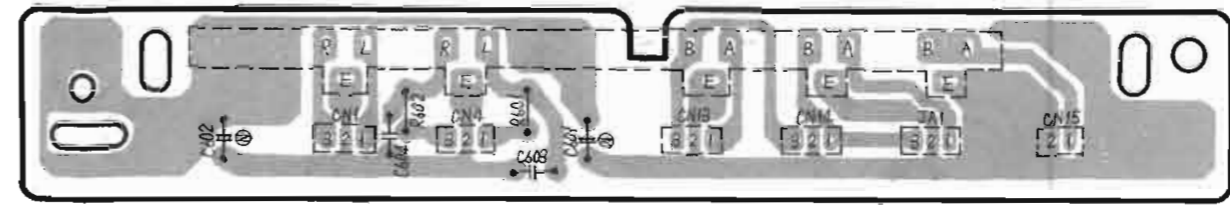
Digital Circuit



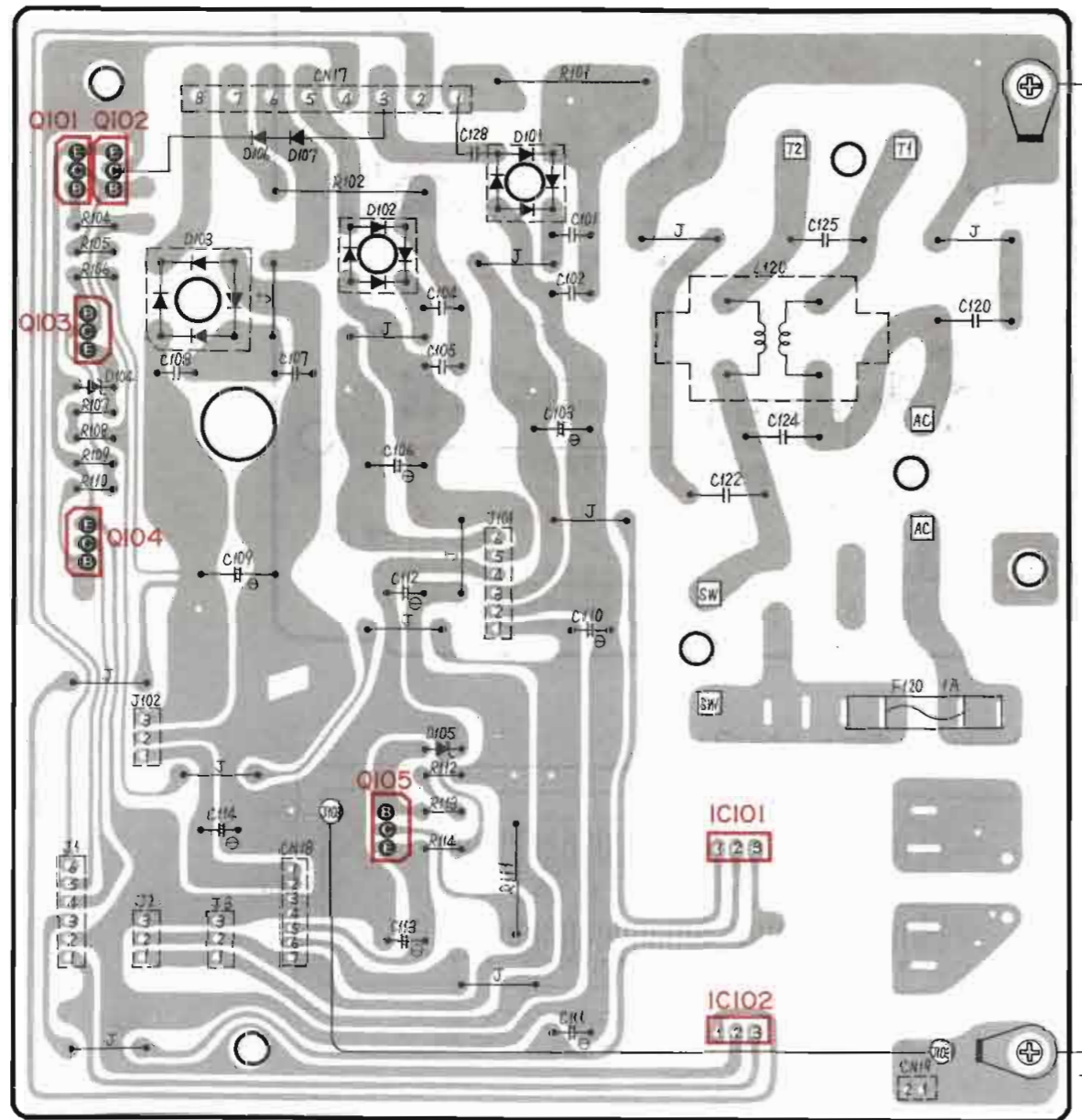
RG Regulator P.C.B.



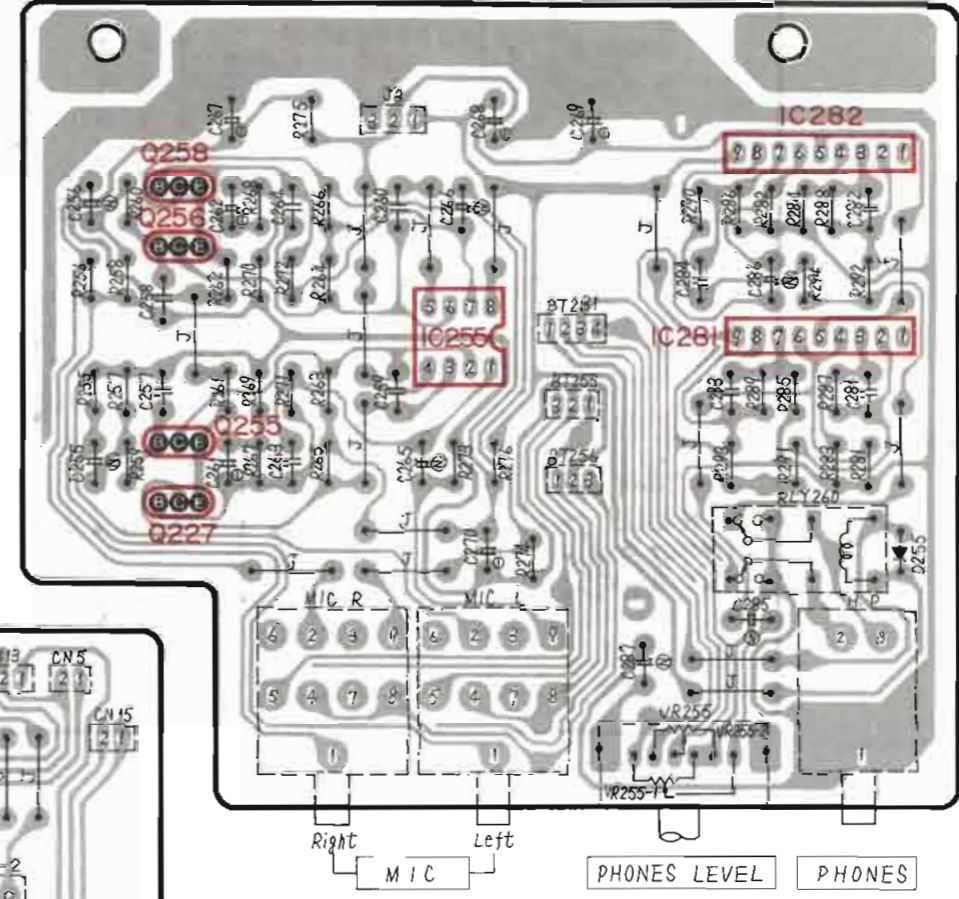
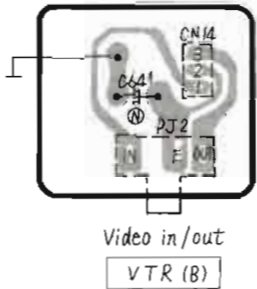
PJ Input/output terminal P.C.B. **LINE IN** **LINE OUT** **VIDEO IN** **VIDEO OUT** **MONITOR OUT**



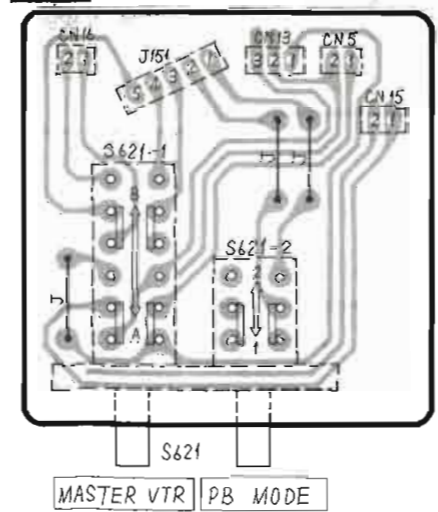
PW Power source P.C.B.



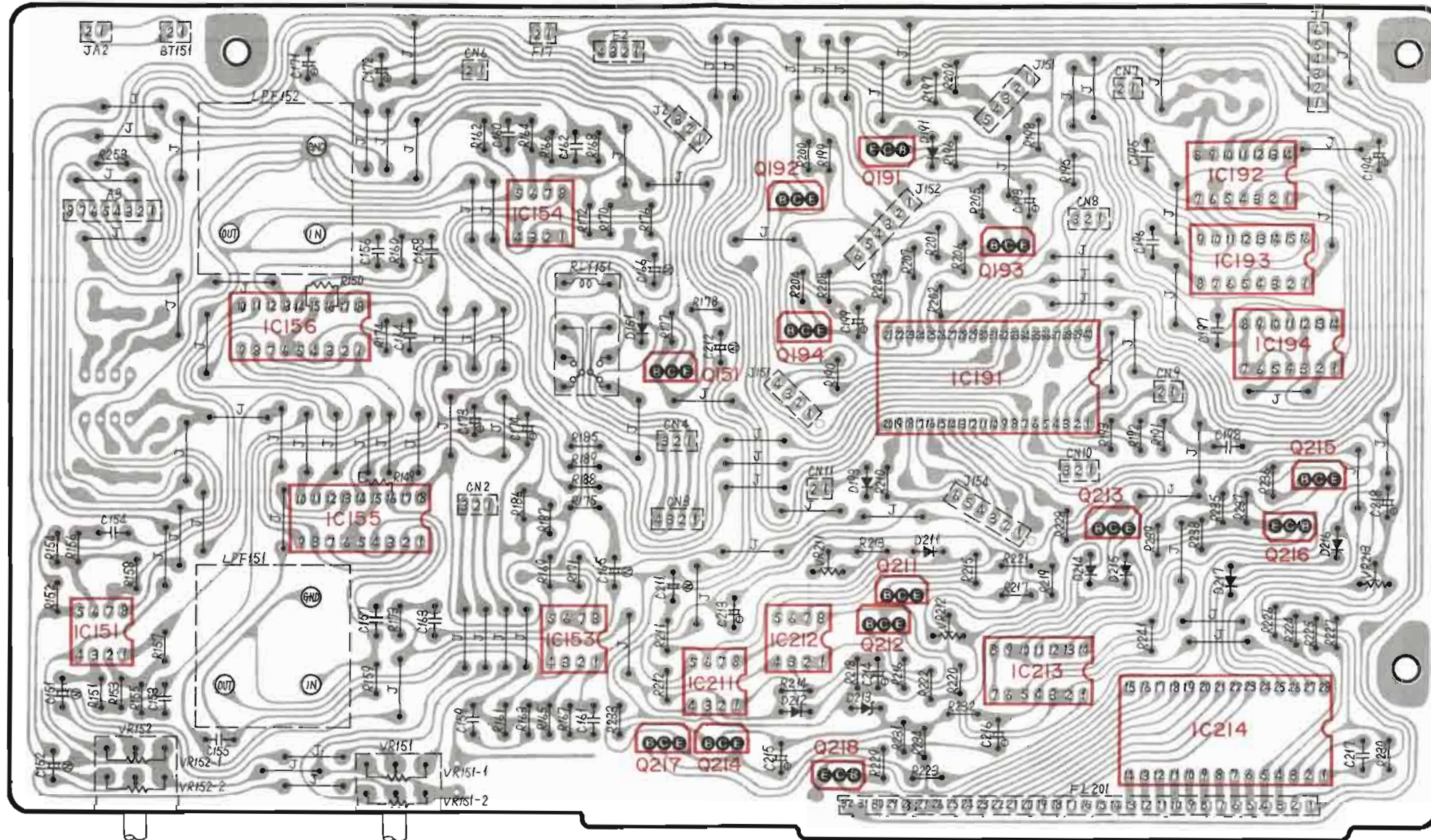
VJ Terminal P.C.B. **MH** Mic amp. & headphone amp. P.C.B.



SW Switch P.C.B.

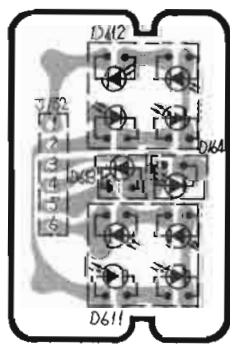


AF Analog & display P.C.B.

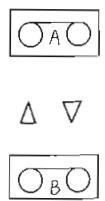


REC LEVEL REC BALANCE

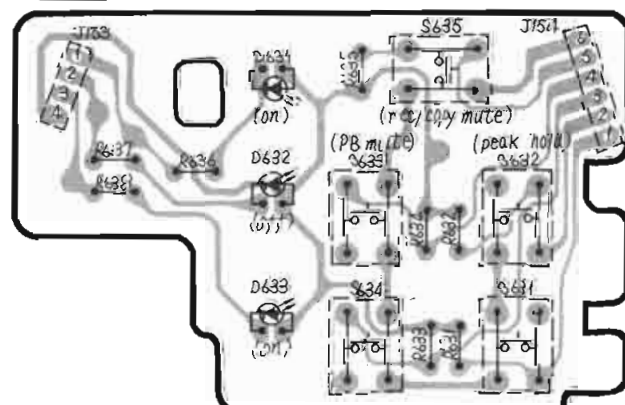
LD System indicator P.C.B.



(System indicator)

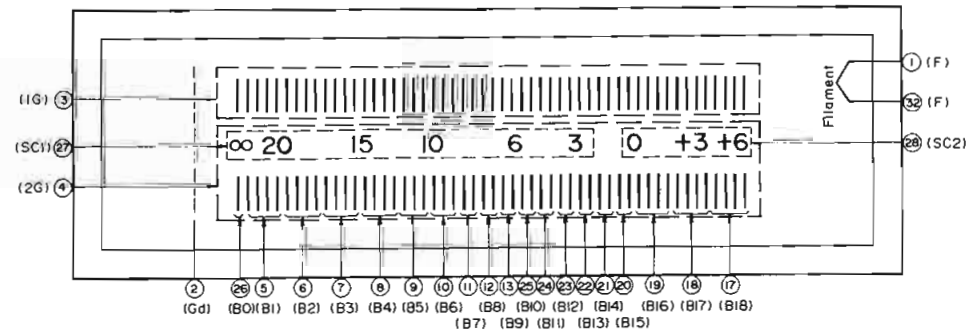


SL Operation P.C.B.



(copy) (tracking)

• Fluorescent display tube (FL)



■ SCHEMATIC DIAGRAM (A) DA/AD Converter and Video Circuit

- Notes:
- S601 : Power switch in "on" position.
 - S602-1 : Master VTR switch in "A" position.
A ↔ B
 - S602-2 : Playback mode switch in "1" position.
1 ↔ 2
 - S631 : Tracking switch.
 - S632 : Peak hold switch.
 - S633 : Copy switch.
 - S634 : Playback muting switch.
 - S635 : Rec/Copy muting switch.
 - The voltage value and waveforms are reference voltage and waveform in playback mode which are measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of each line. Accordingly, the voltage value may include some error depending upon the internal impedance of DC electronic voltmeter (tester, etc.) and set measured.
 - : Voltage in playback mode.
 - : Voltage in recording mode.
 - Part No. with ◉ mark are not identical between regulator part No. and repair part No. supplied. So, when placing an order for repair parts, use the part No. in the replacement part list of repair parts.
 - : +B voltage lines. ○ : Playback signal lines.
 - ▶ : Recording signal lines.
 - Important safety notice: Components identified by ◈ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
 - This schematic diagram may be modified at anytime with the development of new technology.
 - Both NTSC and PAL/SECAM formats are mentioned in this schematic diagram. (NTSC) and (PAL) in the schematic diagram indicates the difference in format. Those with (NTSC) are connected only to NTSC format. Those with (PAL) are connected only to PAL/SECAM format. When the constant is different between NTSC and PAL/SECAM formats, refer to the table in the schematic diagram and the resistors & capacitors list.

IMPORTANT SAFETY NOTICE

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.

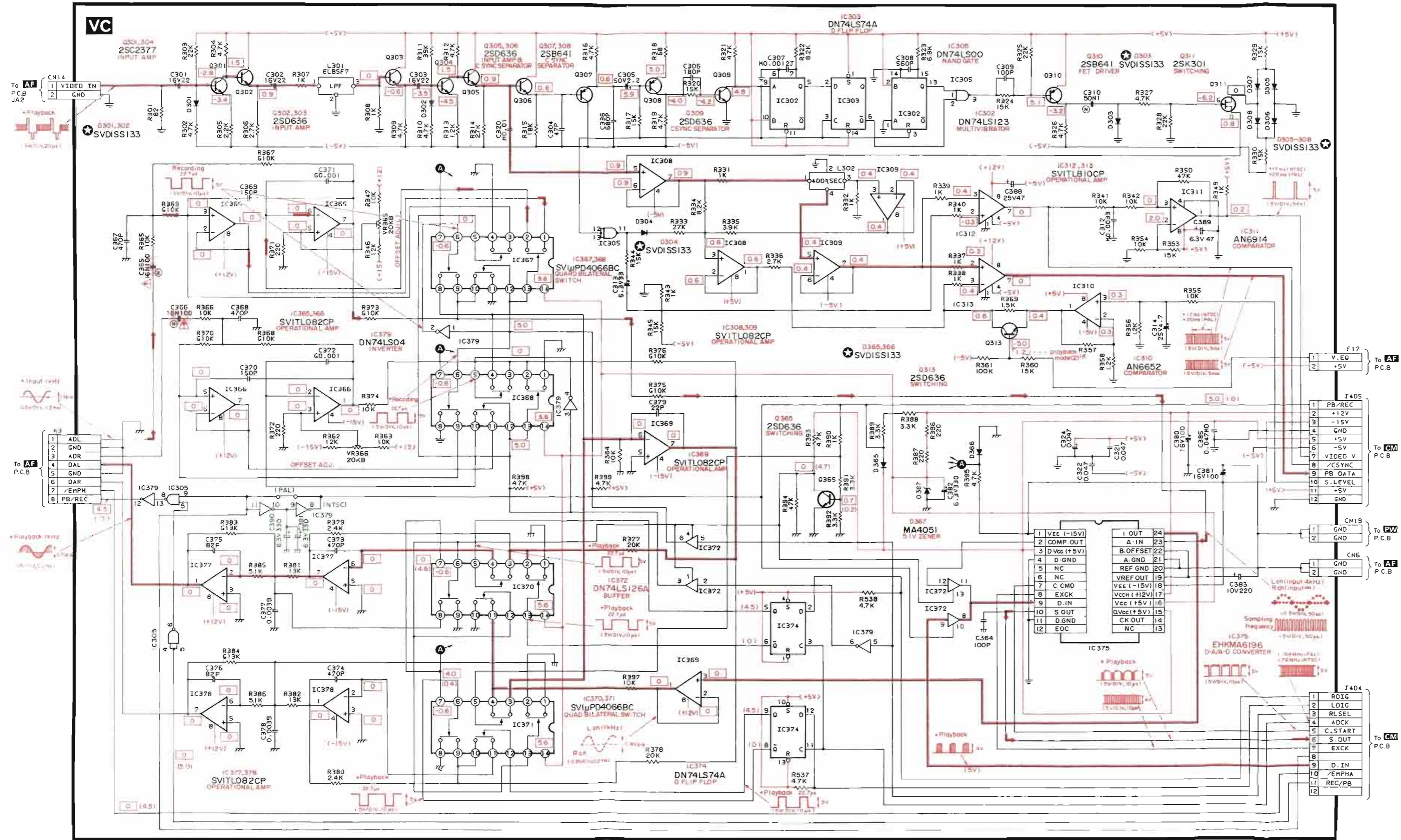
● Product for MC only

FUSE REPLACEMENT

◈ Symbol located near the fuse indicates fast operating type. For continued protection against fire hazard, replace with same type fuse. Refer to the symbol for fuse rating.

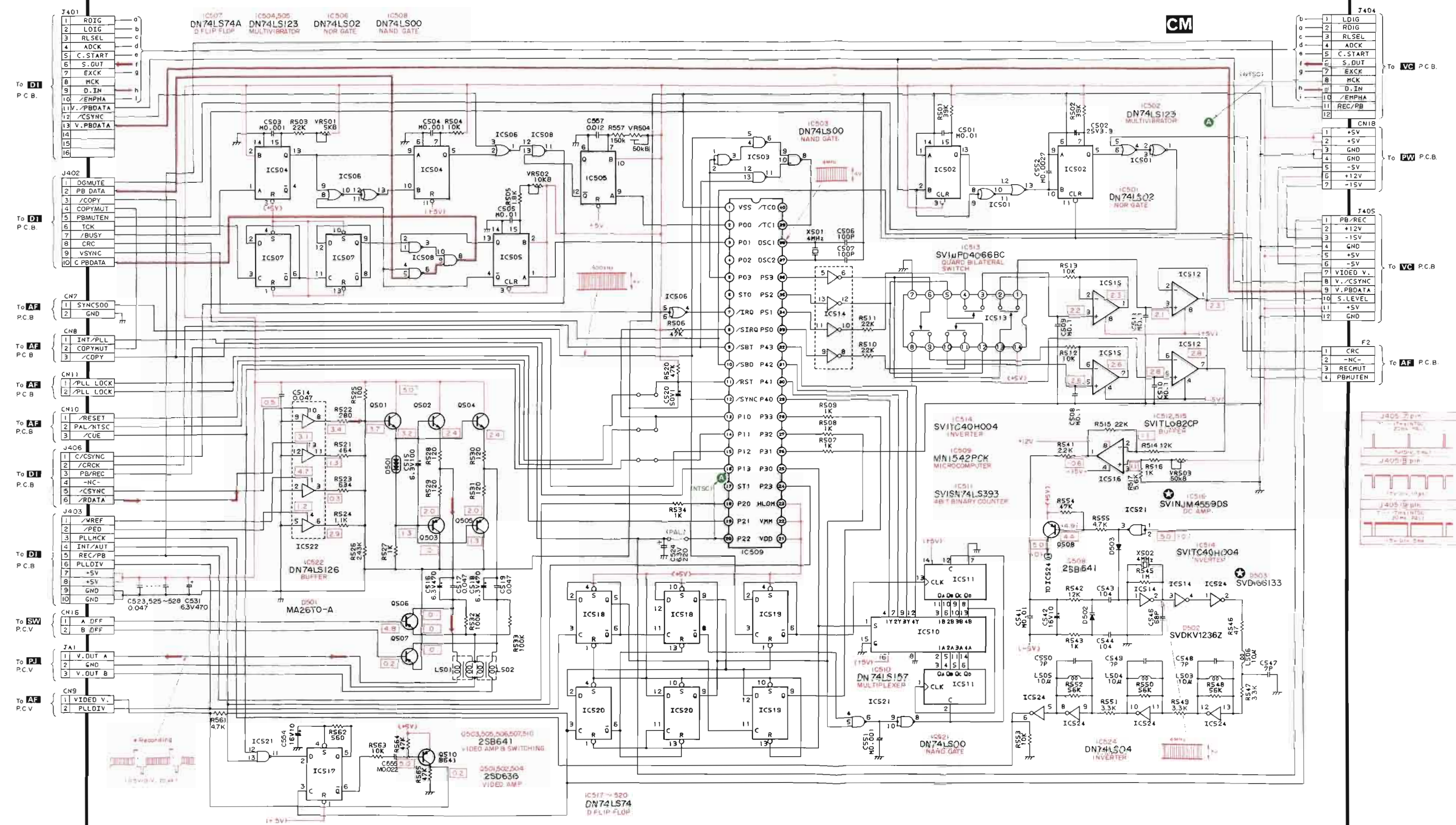
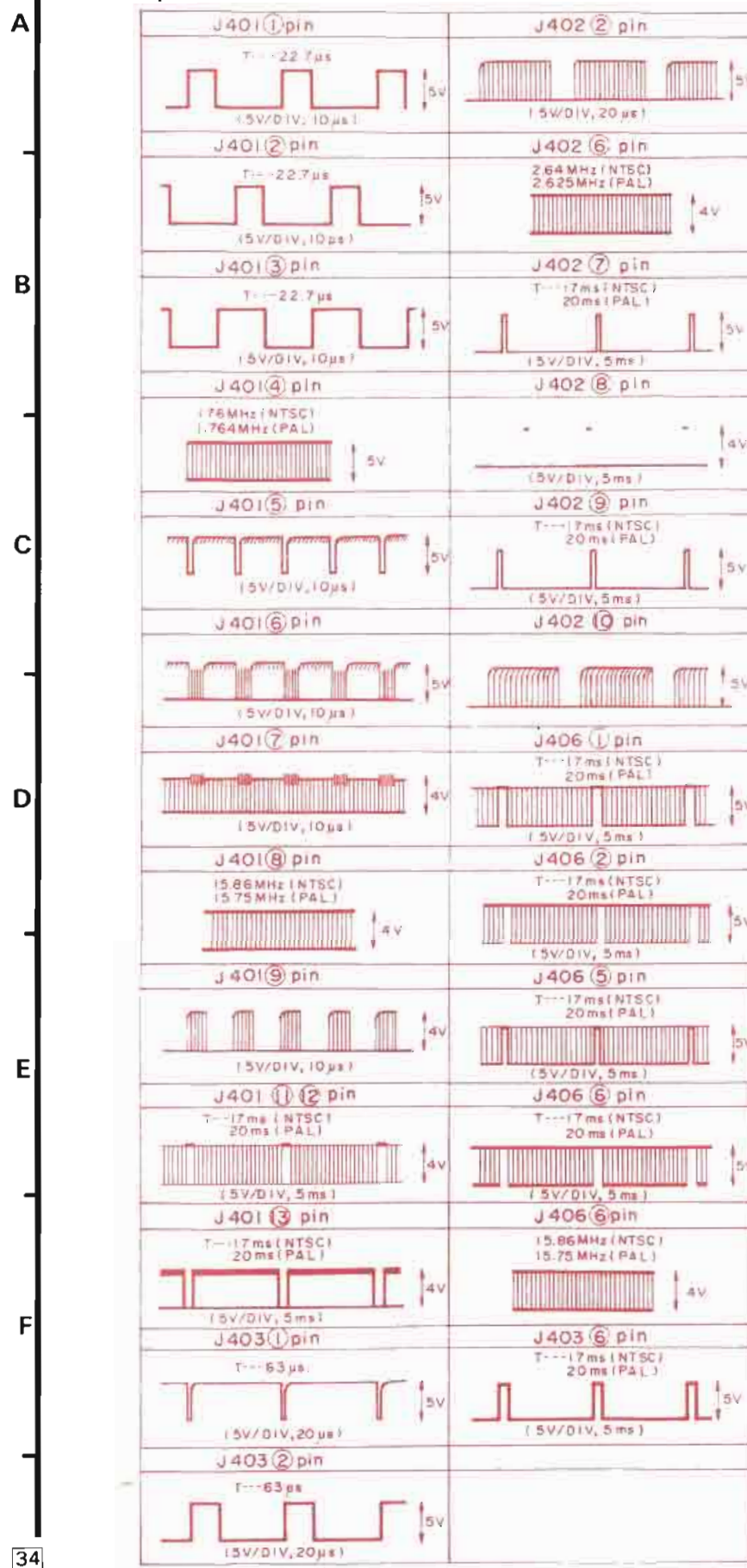
FUSIBLE REMPLACEMENT

◈ Le symbole qui se trouve près du fusible signifie un fusible à action rapide. Pour une protection continue contre les risques d'incendie, n'utiliser que des fusibles de même type. Se rapporter au symbole pour la valeur des fusibles.



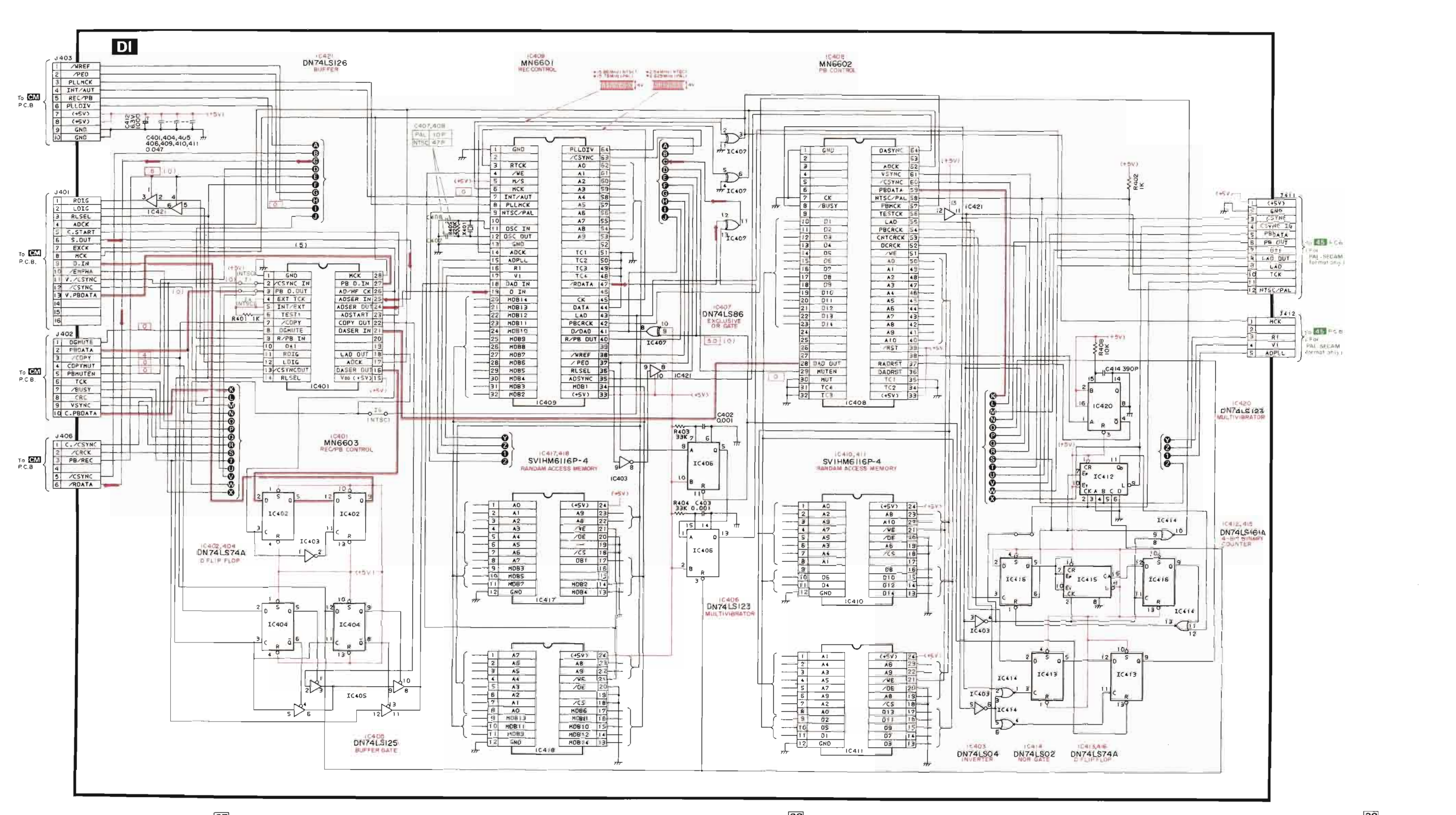
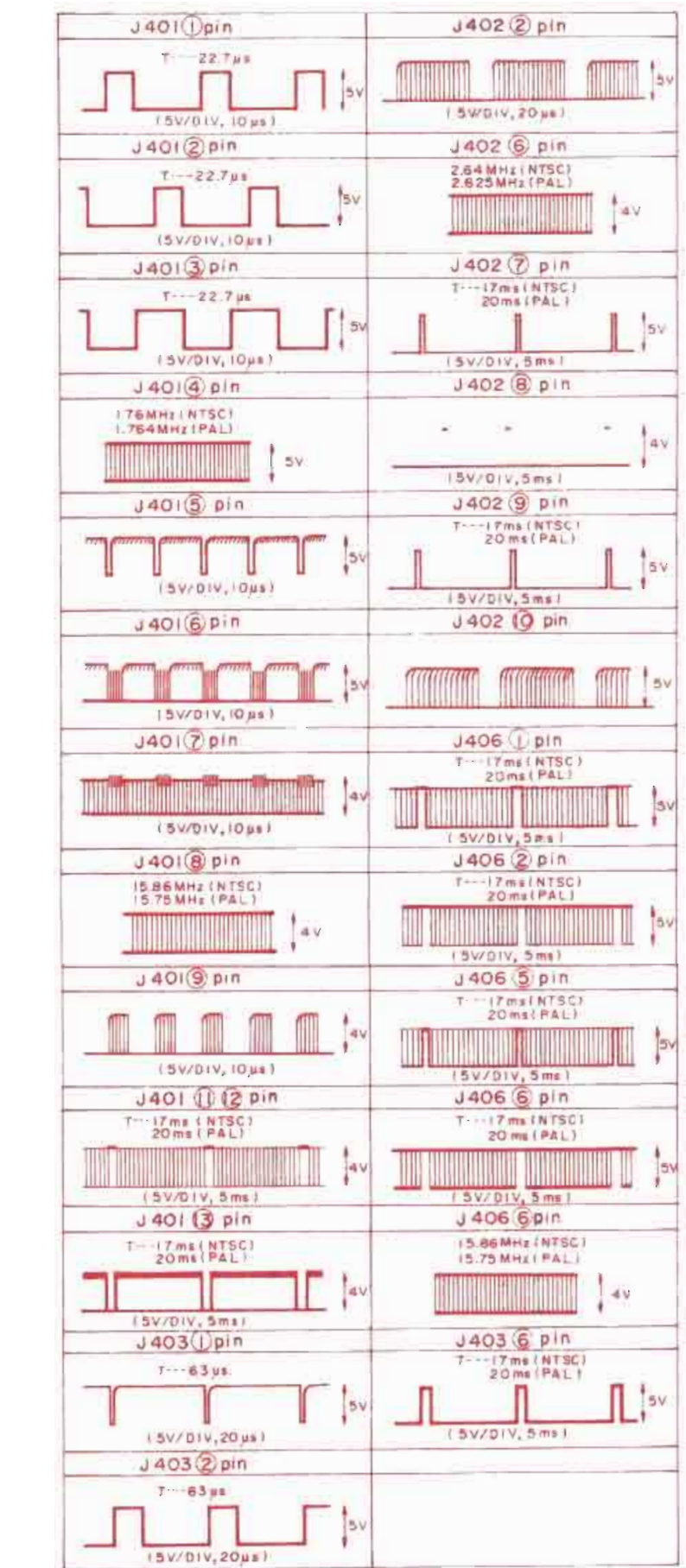
SCHEMATIC DIAGRAM (B)

V SYNC Compensation, Slice Level Control and Video Amp. Circuit

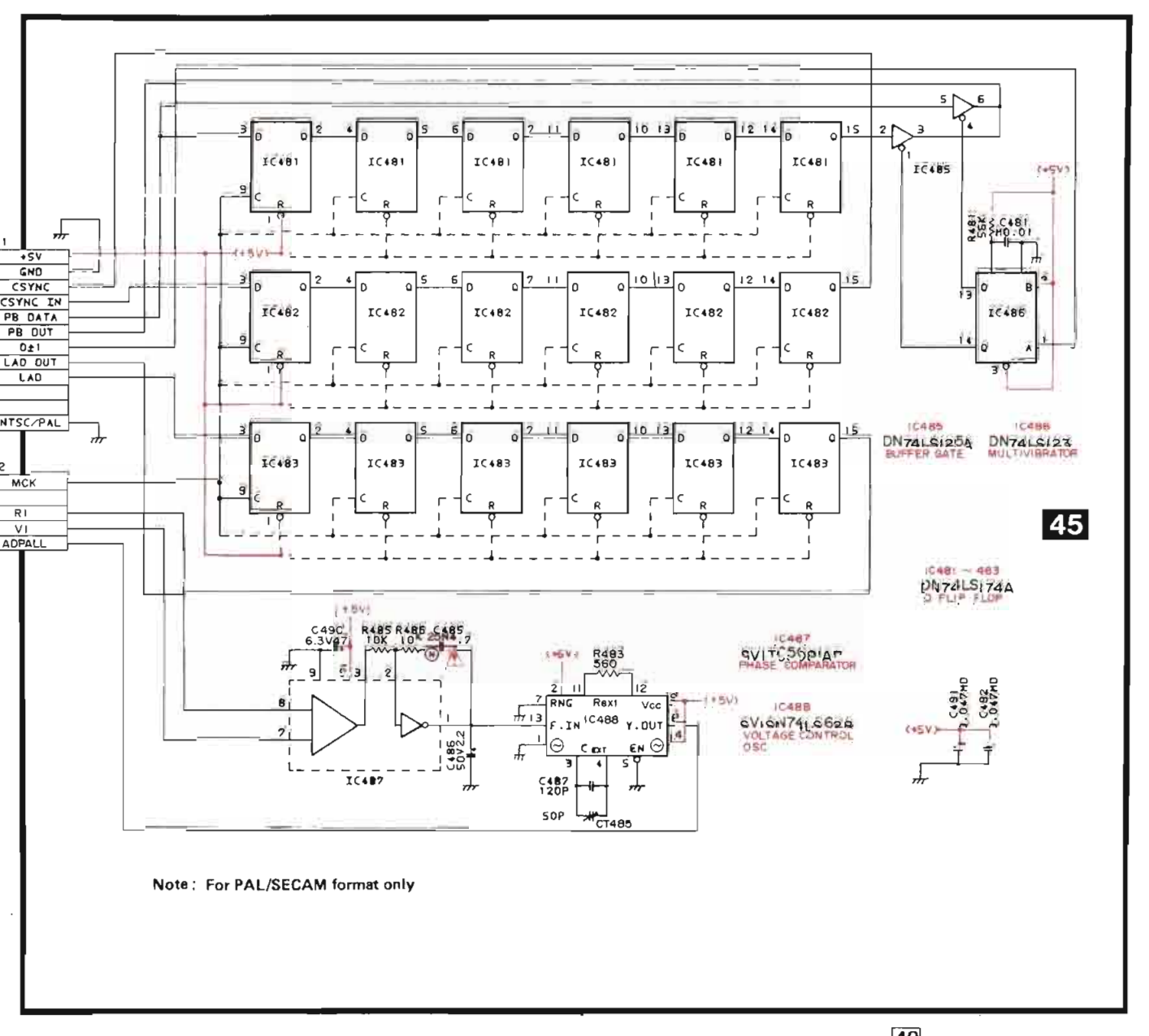
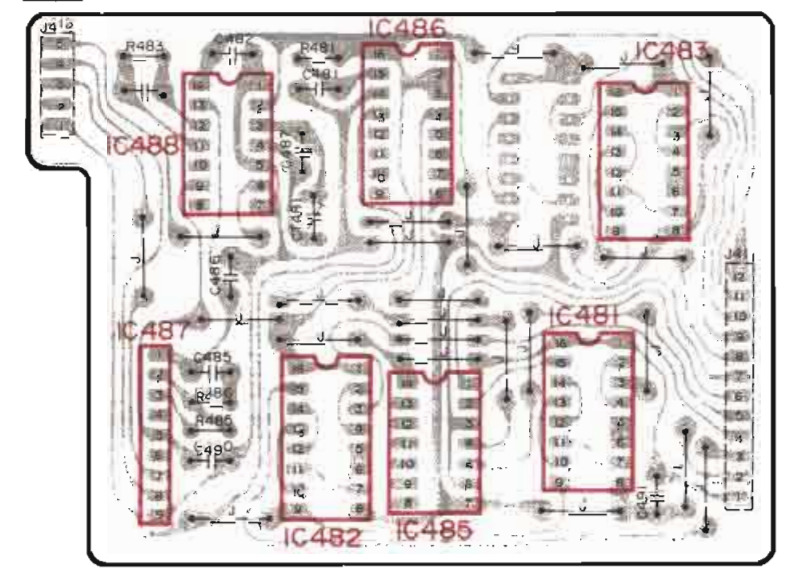


SCHEMATIC DIAGRAM ©

Digital Circuit



45 For PAL/SECAM format only



TERMINAL GUIDE OF IC'S, TRANSISTORS AND DIODES

DN74LS00 DN74LS02 DN74LS04 DN74LS74 DN74LS16 DN74LS126 MN4001B MN40013B SVITC40H004 SVIUPD4066BC	MN6601, MN6602 MN6603 EHKMA6196	28 pin 24 pin
DN74LS123 DN74LS161 MN4040B	AN6552, AN6914 SVIHM4559DS SVITL082P SVITL810CP	16 pin 16 pin
MN6631	SVIHM6116P-4	18 pin 24 pin
SVIHM6116P-4 AN6870N	SVIHM4556S AN78M05, AN78M12 AN78M15, AN78M20 AN7805	24 pin 28 pin
MN1420PCF MN1542PCK	2SD641, 2SD636 2SC2385	40 pin
Drain Gate Source	SVDS4VB10 SVDS1WB10	
LN0401GP3	LN229RP (Red) LN329GP (Green) SVOLD-101MG	
MN4056, MA4068 MA4075, MA4051	NA26T0-A MA162A MA165, MA150	

