

HB-F9P / F9S

SERVICE MANUAL

SPAIN Model
AEP Model




SPECIFICATIONS

CPU		Keyboard	
Processor used	Z80A	Scanning method	Software scanning
Clock frequency	3.58 MHz	Total number of keys	90
WAIT	1 WAIT at CPU M1 cycle		Control keys: 12
Interrupt	Maskable interrupt		Function keys: 5
	Z80A mode 1		Edit keys: 8
Resetting	Automatic at power on/Manual (Memory contents are not maintained.)		Numeric keys: 16
Memory		Input/Output	
ROM	96K bytes (BASIC 48K bytes, Built-in software 48K bytes)	RF output	phono jack adjusted to TV channel UHF 36
MAIN RAM	128K bytes	RGB output	Audio: -5dBs
VRAM	128K bytes		8-pin DIN
CRT display		AUDIO/VIDEO output	RGB video: 0-0.7V, 75 ohms
CRT controller	V9938		Audio: -5dBs (0dBs = 0.775V)
Display screen	Character/graphic display and border area		6-pin DIN
	Initial state: Screen 0: 37 characters x 24 lines		Composite video: 1Vp-p,
Character display	Screen 0: Max 80 characters x 24 lines	Sound generator	Color/black and white selectable with
	16 colors out of 512 colors	Audio cassette interface	B/W switch,
	Screen 1: Max 32 characters x 24 lines		75 ohms, sync negative
Graphic display	Screen 2: 256(horizontal) x 192(vertical) dots	Printer interface	Audio: -5dBs
	16 colors out of 512 colors		8-octave, 3 tones and 1 noise output
	Screen 3: 64 x 48 dots		8-pin DIN jack
	16 colors out of 512 colors		Baud rate: 1200/2400 bps
	Screen 4: 256 x 192 dots		Remote control function provided
	16 colors out of 512 colors		14-pin connector
	Screen 5: 256 x 212 dots,		TTL level
	16 colors out of 512 colors		Standard 8-bit parallel transfer
	Screen 6: 512 x 212 dots,		
	4 colors out of 512 colors, 4 pages		
	Screen 7: 512 x 212 dots,		
	16 colors out of 512 colors, 2 pages		
	Screen 8: 256 x 212 dots,		
	256 colors, 2 pages		
Border area	16-color display		
Character font	5 x 7 dot matrix/character		

—Continued on next page—

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.



HOME COMPUTER
SONY®

Scanned and converted to PDF by HansO, 2001
Original by Bas Kornalijnslijper, MCWF

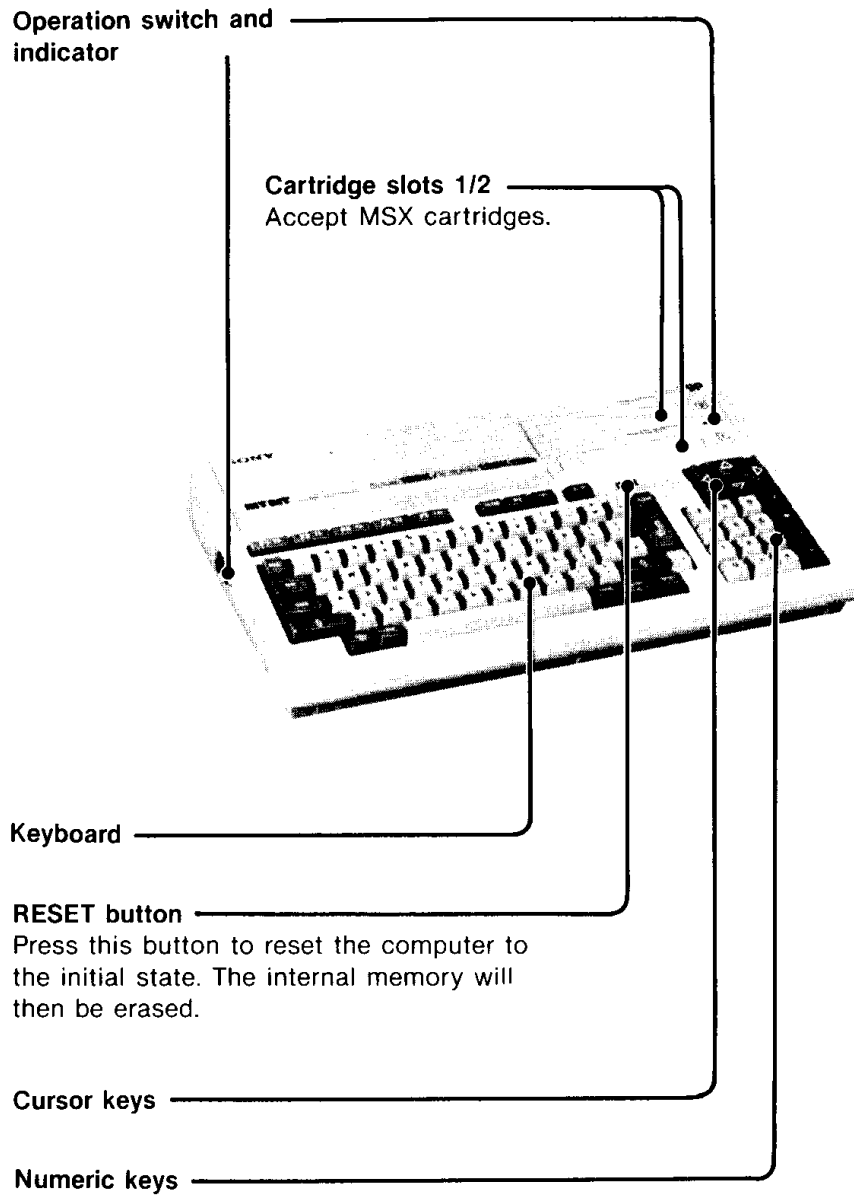
General	
Power requirement	220V ac, 50/60Hz
Power consumption	17W (main unit only)
Operating conditions	Temperature: 5°C to 35°C (41°F to 95°F)
	Humidity: 20% to 80%
Storage temperature	-15°C to +60°C (5°F to 140°F)
Dimensions	Approx. 405 × 70 × 245mm (w/h/d)
	(16 × 3 × 13 inches)
Weight	Approx. 3.5kg (7lb 12 oz)

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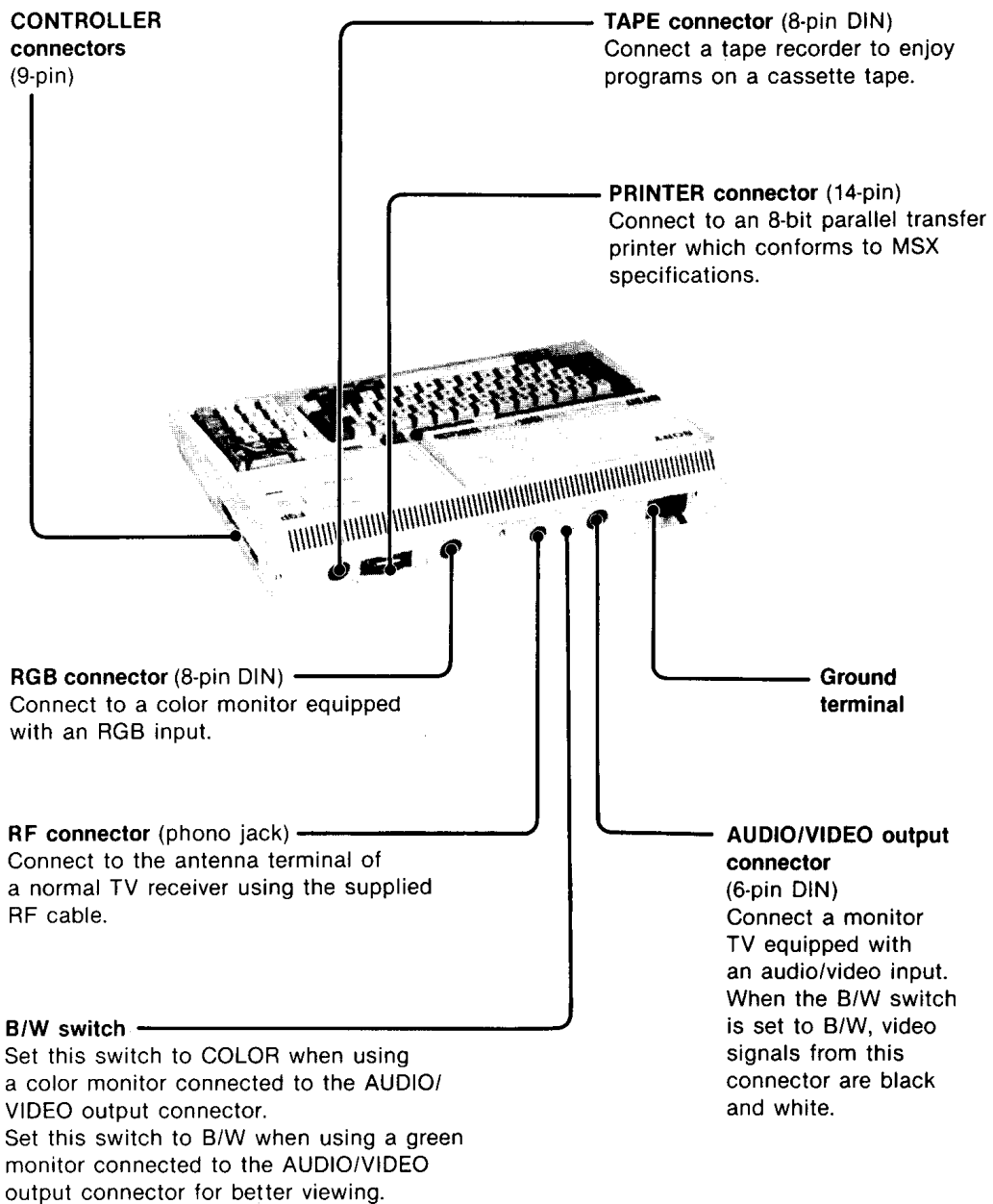
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PARTS IDENTIFICATIONS

Front view

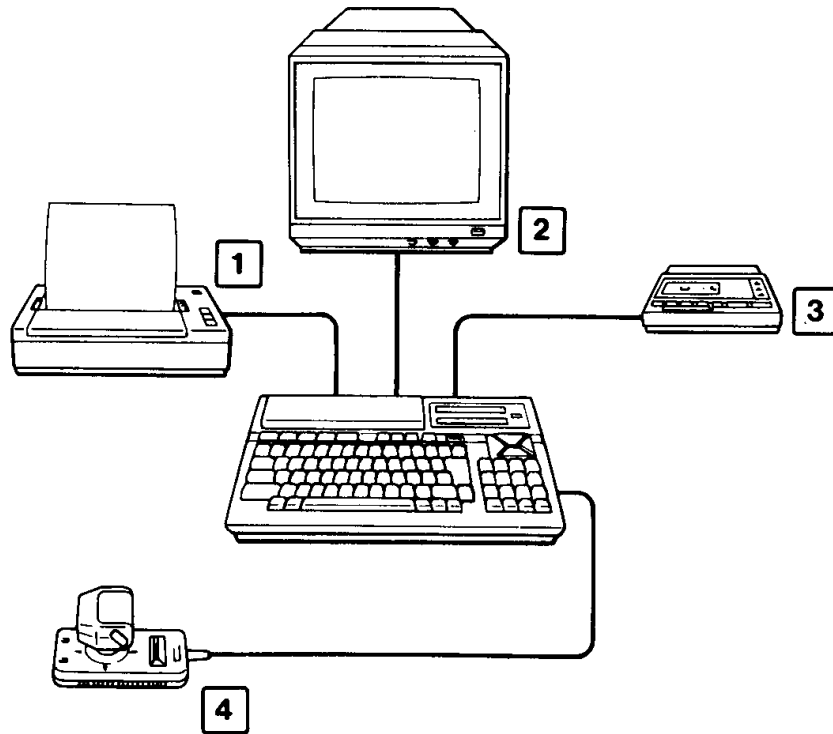


Rear view



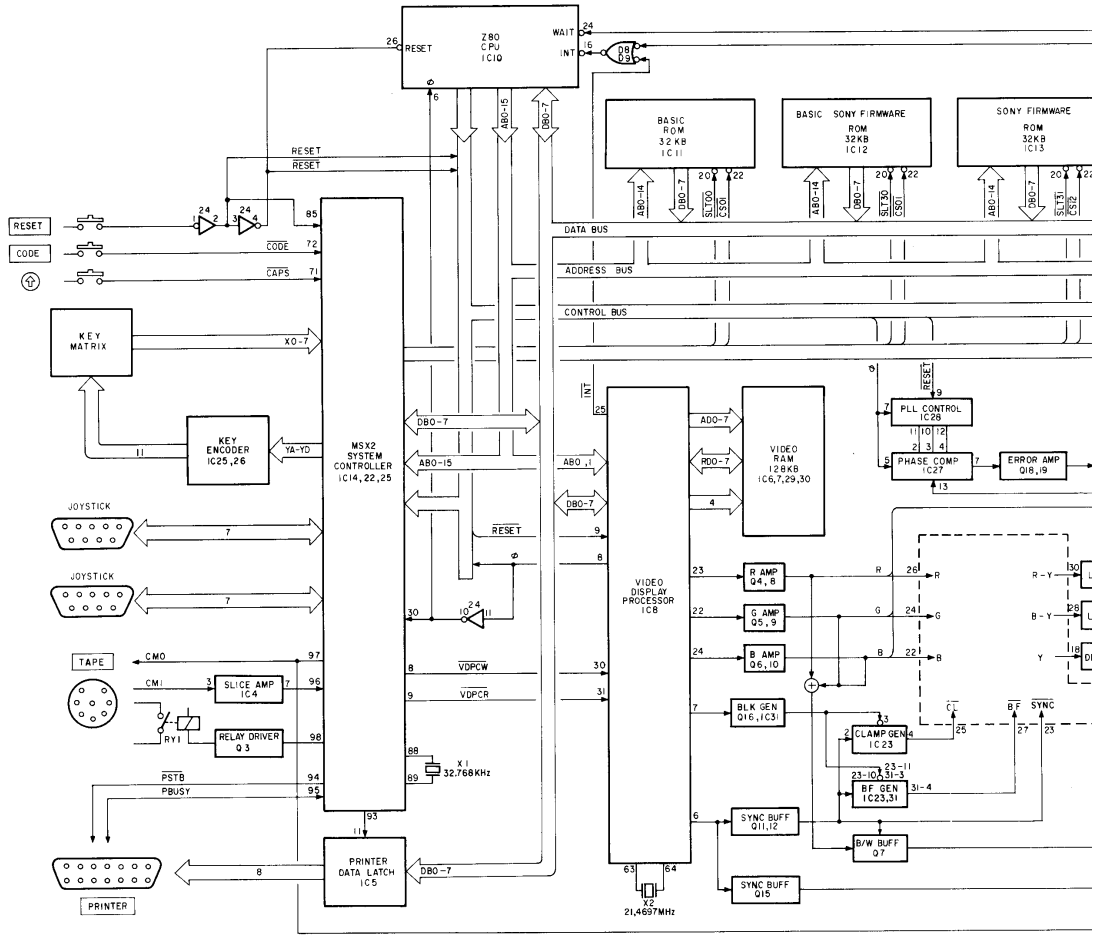
FEATURES

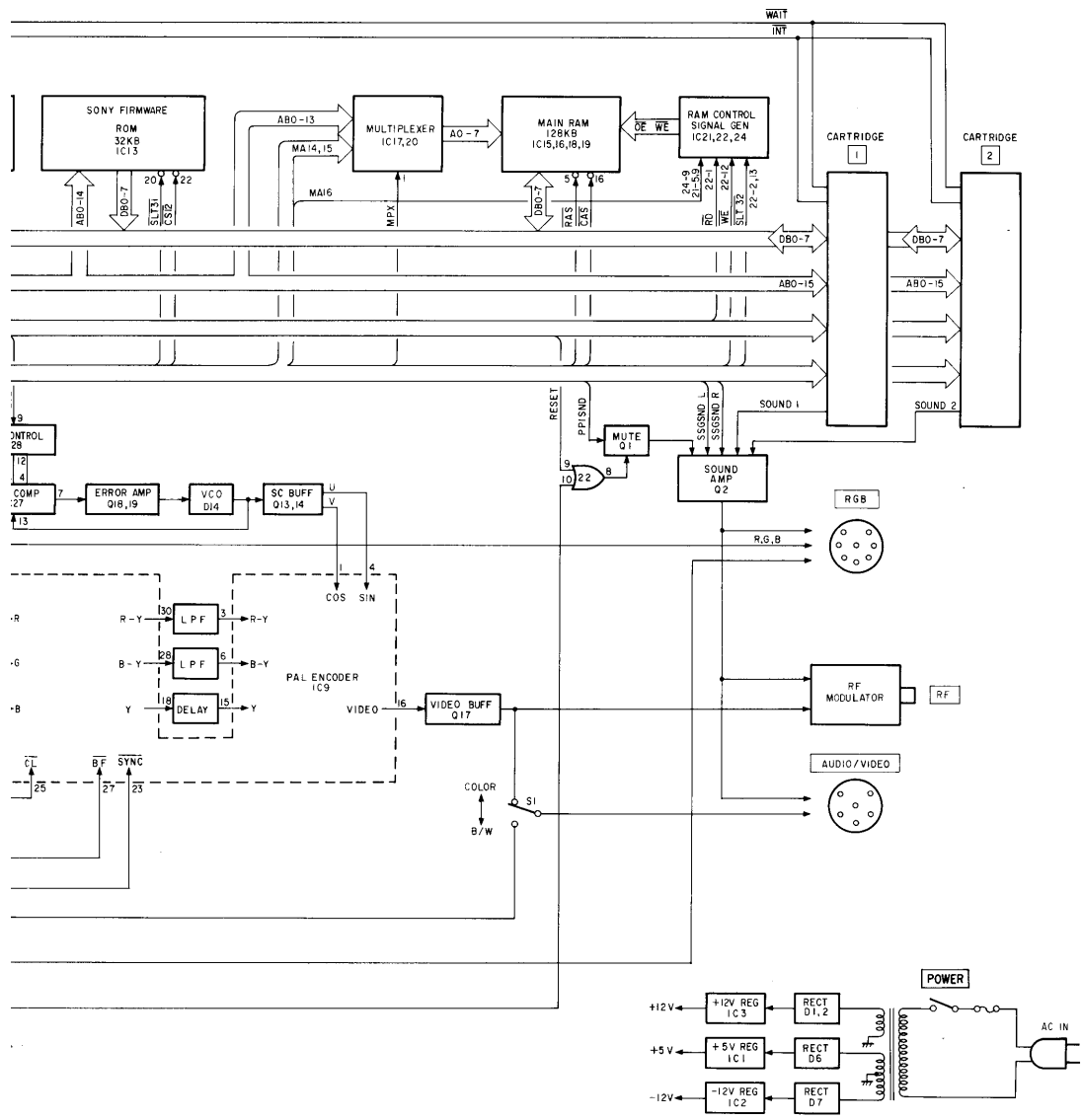
- Home computer with MSX-BASIC Version 2.0* incorporated.
- Using the built-in software:
 - personal data such as address and telephone lists, schedule, notes, etc. can be saved.
 - the calendar of the desired month and year can be displayed.
 - an alarm can be set to warn you within a period of 24 hours.
 - various functions of the computer such as setting the clock, printing, etc. can be done simply by following the instructions on the display.
- Various connectors for up-grading the system:
 - for a printer **1**
 - for a color monitor to create high resolution picture **2**
 - for a tape recorder used as an external memory device **3**
 - for a joystick **4**



The numbers in the illustration is keyed to that in the descriptive text.
*In this manual, MSX-BASIC Version 2.0 is referred to as MSX2-BASIC.

SECTION 1 BLOCK DIAGRAM

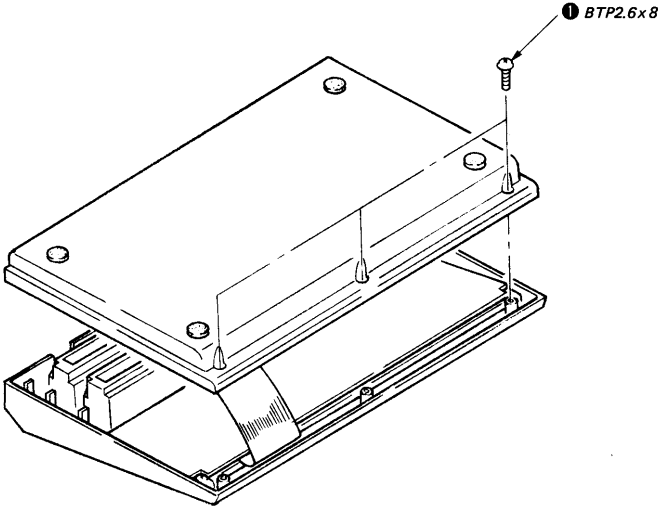




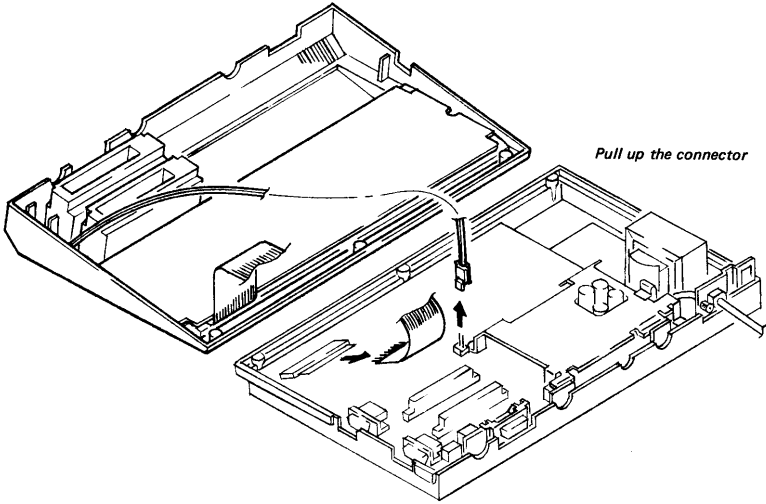
**SECTION 2
DISASSEMBLY**

Note: Follow the disassembly procedure in the numerical order given.

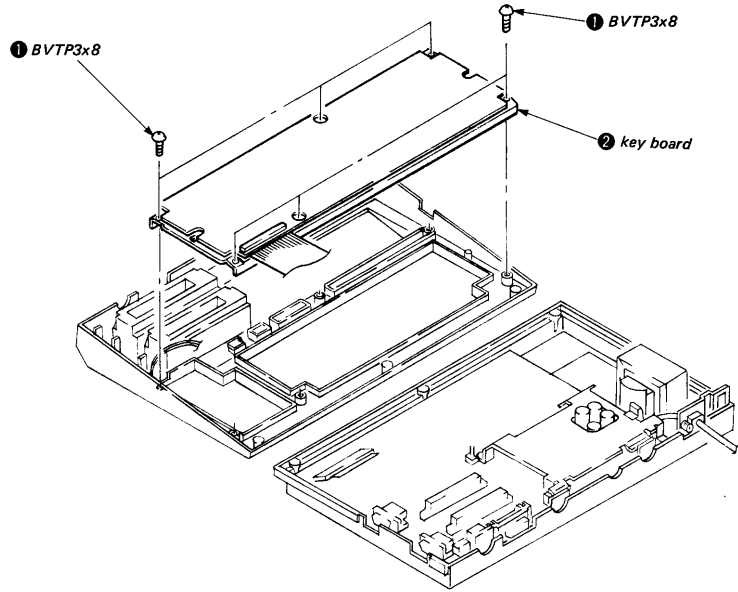
CABINET (1/2)



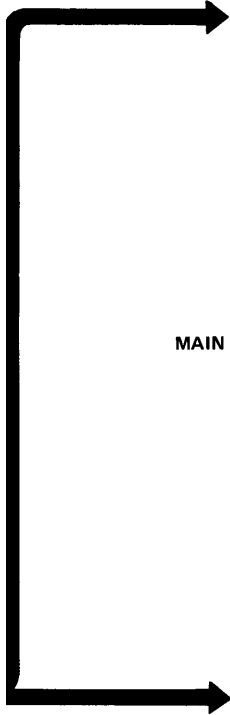
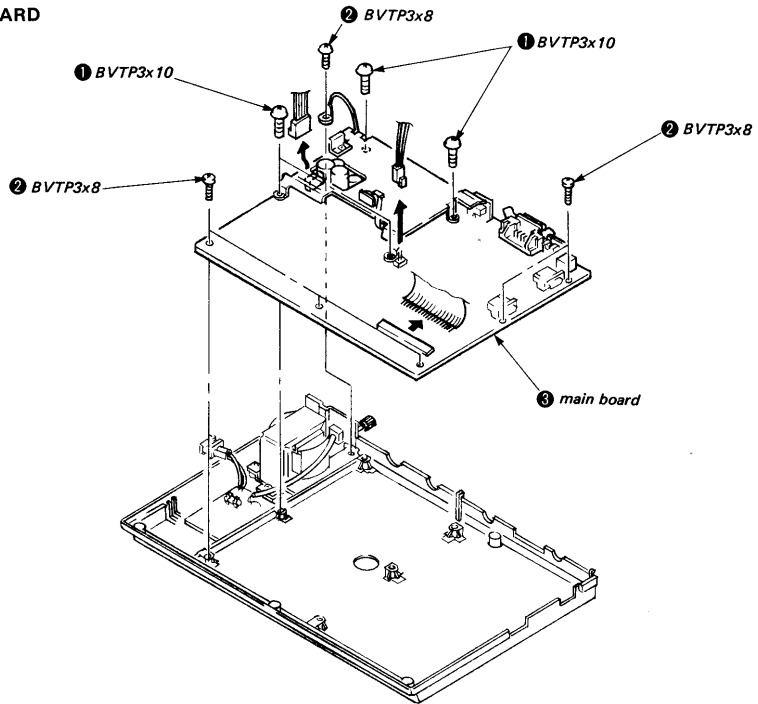
CABINET (2/2)



KEY BOARD



MAIN BOARD



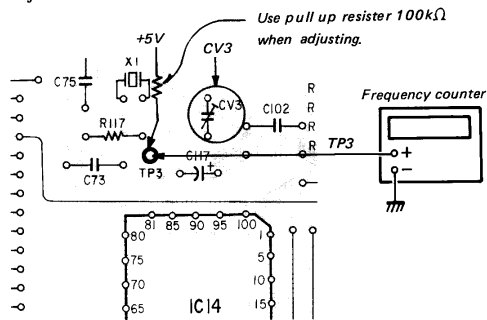
SECTION 3 ADJUSTMENTS

TIMER CLOCK FREQUENCY ADJUSTMENT

RUN the adjustment program and press the S key.
After adjustment is completed, press the R key.

Specification: 159,999Hz to 160,001Hz

Adjustment Location:



Example of Adjusting Program (BASIC)

```

10 *****
20 *
30 * CHECK PROGRAM *
40 * for HB-F5/F50 *
50 *
60 *****
70 CLS
80 PRINT:"Push any key":PRINT
90 PRINT:"1.Push W key=RGB level adj."
100 PRINT:"2.Push S key=Timer Clock adj.(set)"
110 PRINT:"3.Push R key=Timer Clock adj.(reset)"
120 A$=INKEY$
130 IF A$="W" OR A$="w" THEN 170
140 IF A$="S" OR A$="s" THEN 190
150 IF A$="R" OR A$="r" THEN 230
160 GOTO 120
170 SCREEN 1:COLOR 15,15,15:White
180 GOTO 120
190 SCREEN 1:COLOR 15,4,7:MENU
200 OUT &HB4,14:OUT &HB5,0
210 OUT &HB4,15:OUT &HB5,8:"Timer Clock adj.(set)"
220 GOTO 80
230 SCREEN 1:COLOR 15,4,7:MENU
240 OUT &HB5,12:"Timer Clock adj.(reset)"
250 GOTO 80

```

Use of Adjusting Program Example

When the program is run, the MENU display appears on the screen.

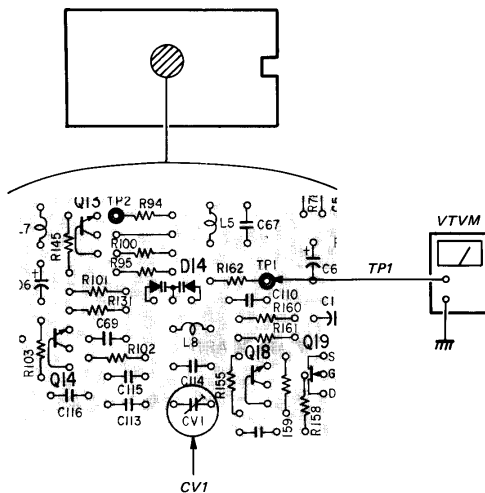
1. Press the W key.
The whole screen display turns white.
Used for the RGB level adjustment.
2. Press the S key.
Used for the timer block adjustment.
A 16Hz frequency appears at IC11 through IC15.
3. Press the R key.
Cancels the timer clock adjustment.

VCO PHASE ADJUSTMENT

Adjust CV1 so that the VTVM reads 7V.

Specification: 6.9 to 7.1V

Adjustment Location:



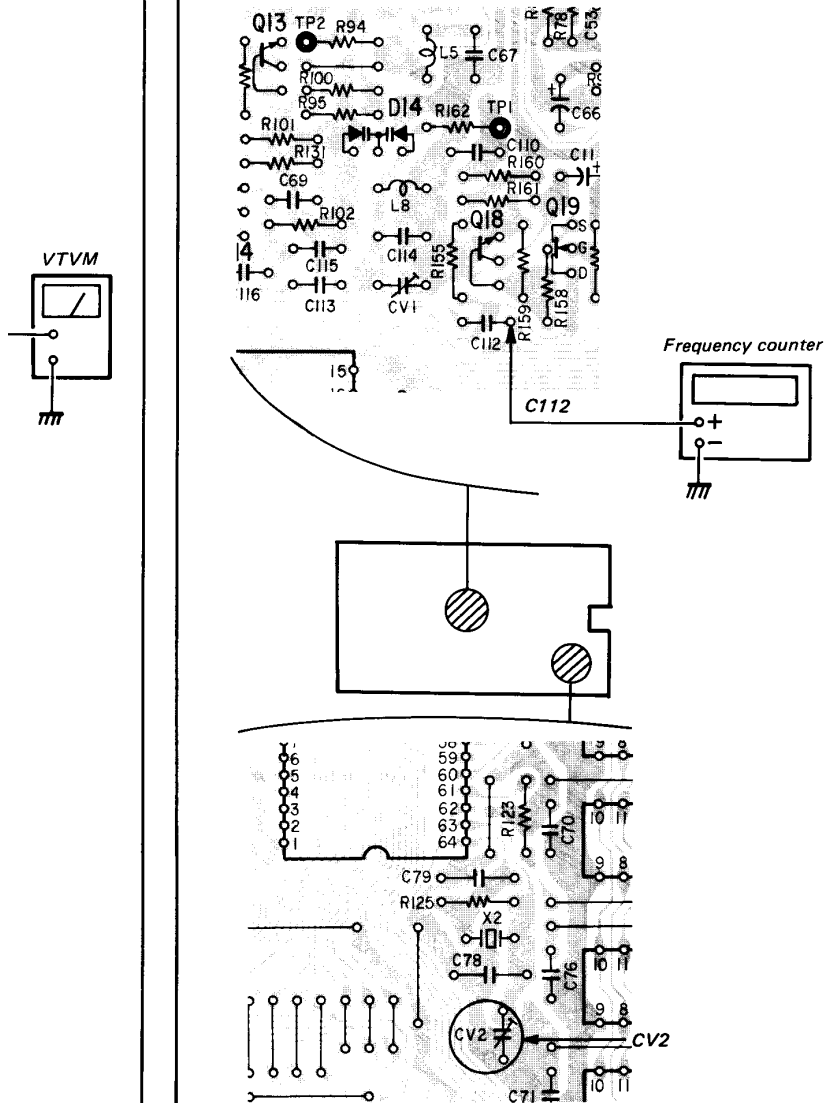
SUBCARRIER FREQUENCY ADJUSTMENT

After VCO phase adjustment.

Adjust CV2 so that the frequency counter reads 4,433,618Hz.

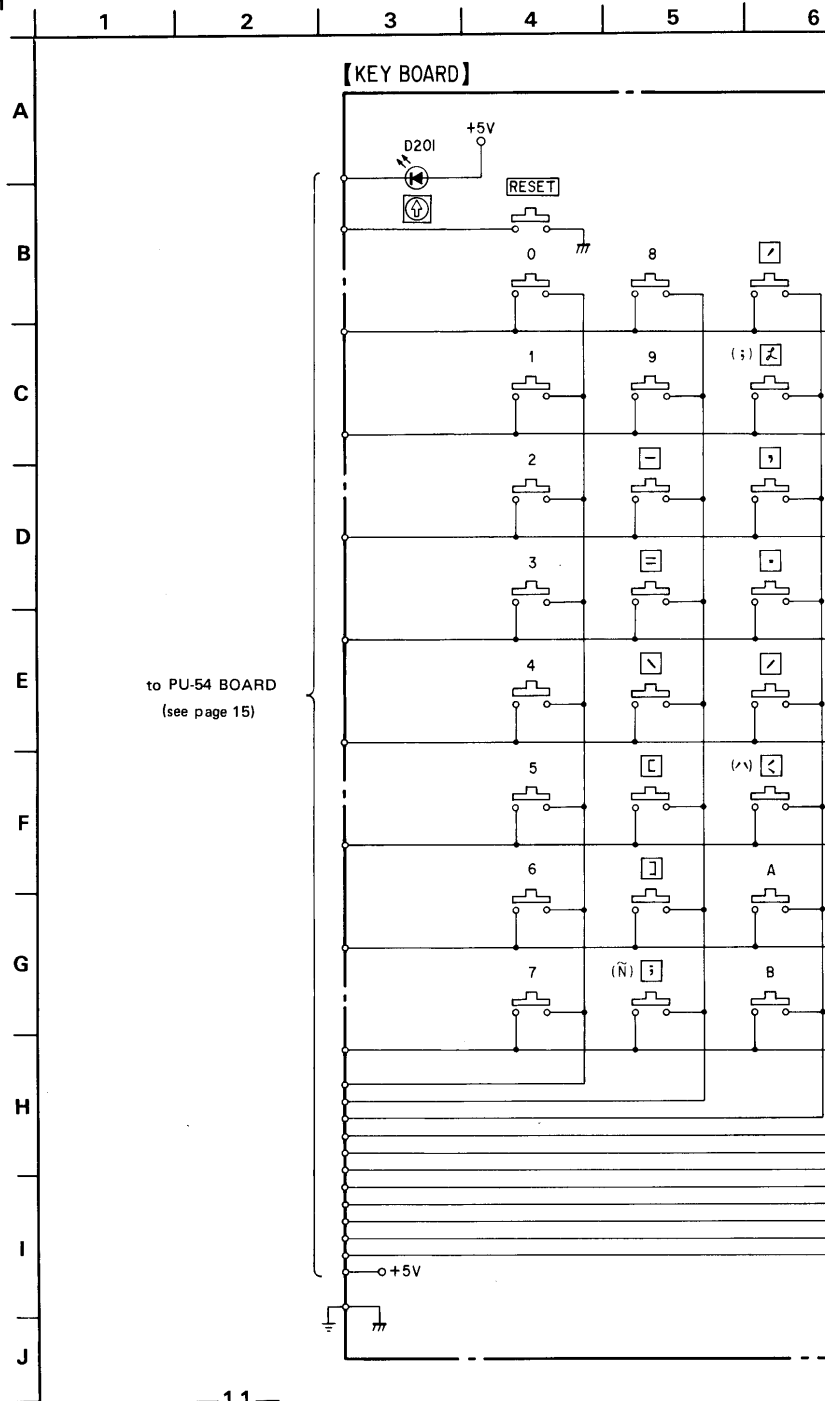
Specification: 4,433,608 to 4,433,628Hz

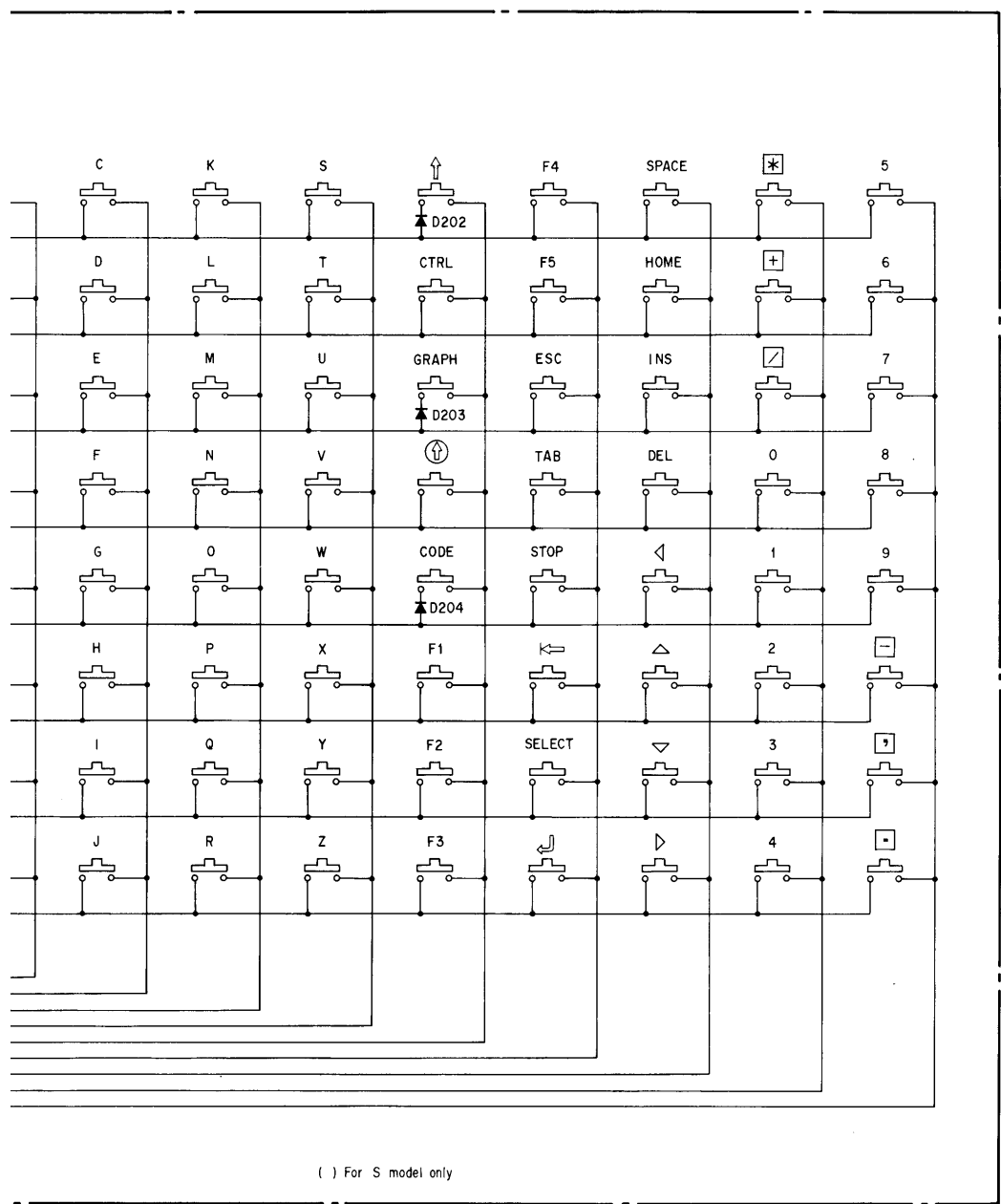
Adjustment Location:



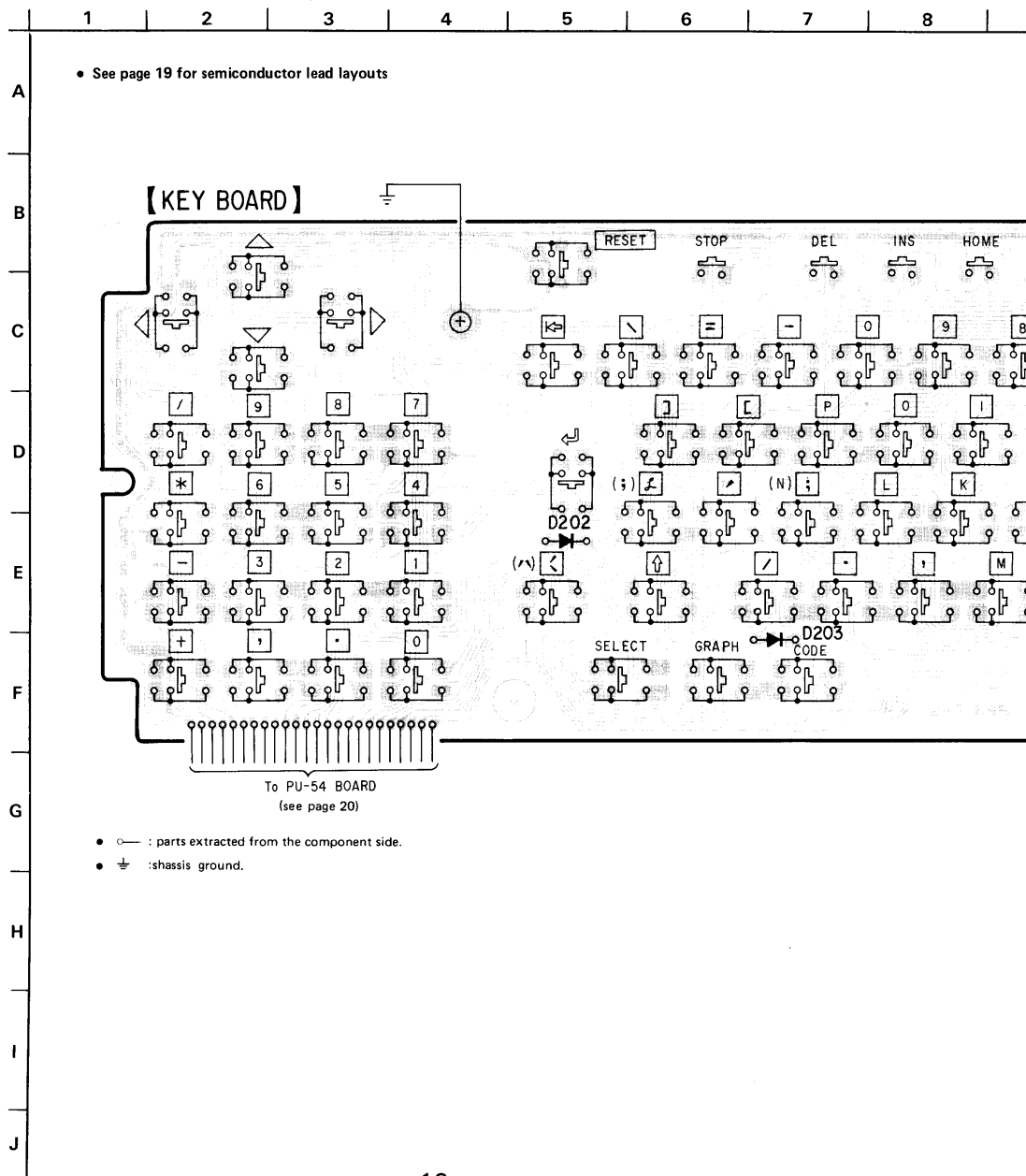
SECTION 4 DIAGRAMS

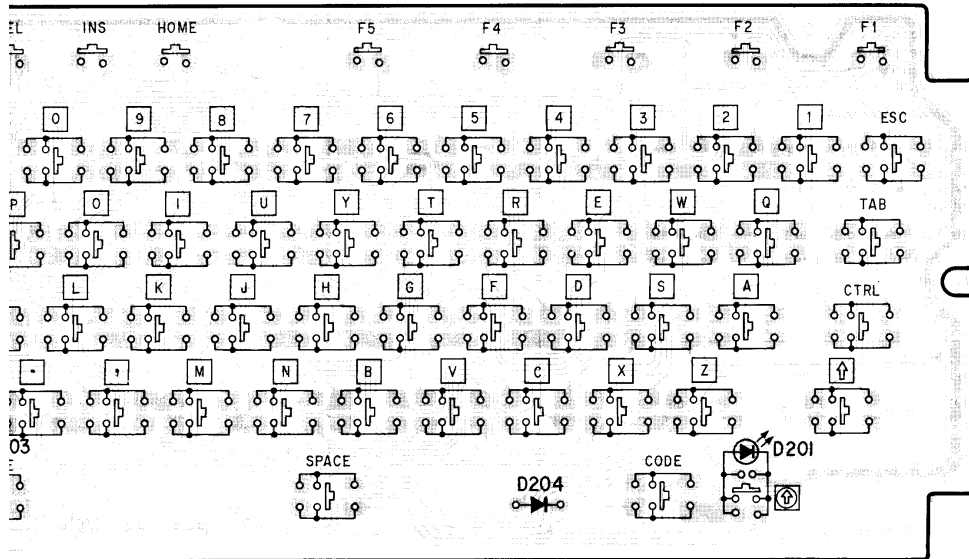
4-1. SCHEMATIC DIAGRAM —Key board Section—





4.2. MOUNTING DIAGRAM -Key board Section-





() For S model only

4-3. SCHEMATIC DIAGRAM
 -CPU Section-

Note:

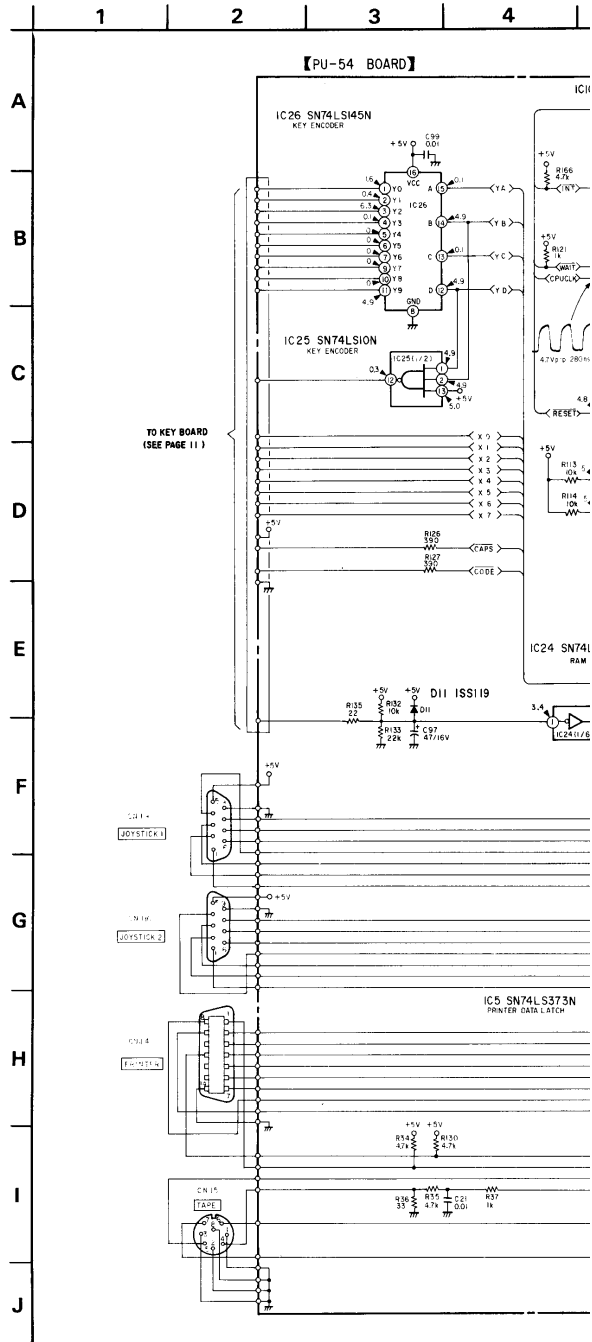
- All capacitors are in μF unless otherwise noted. pF: μF 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.

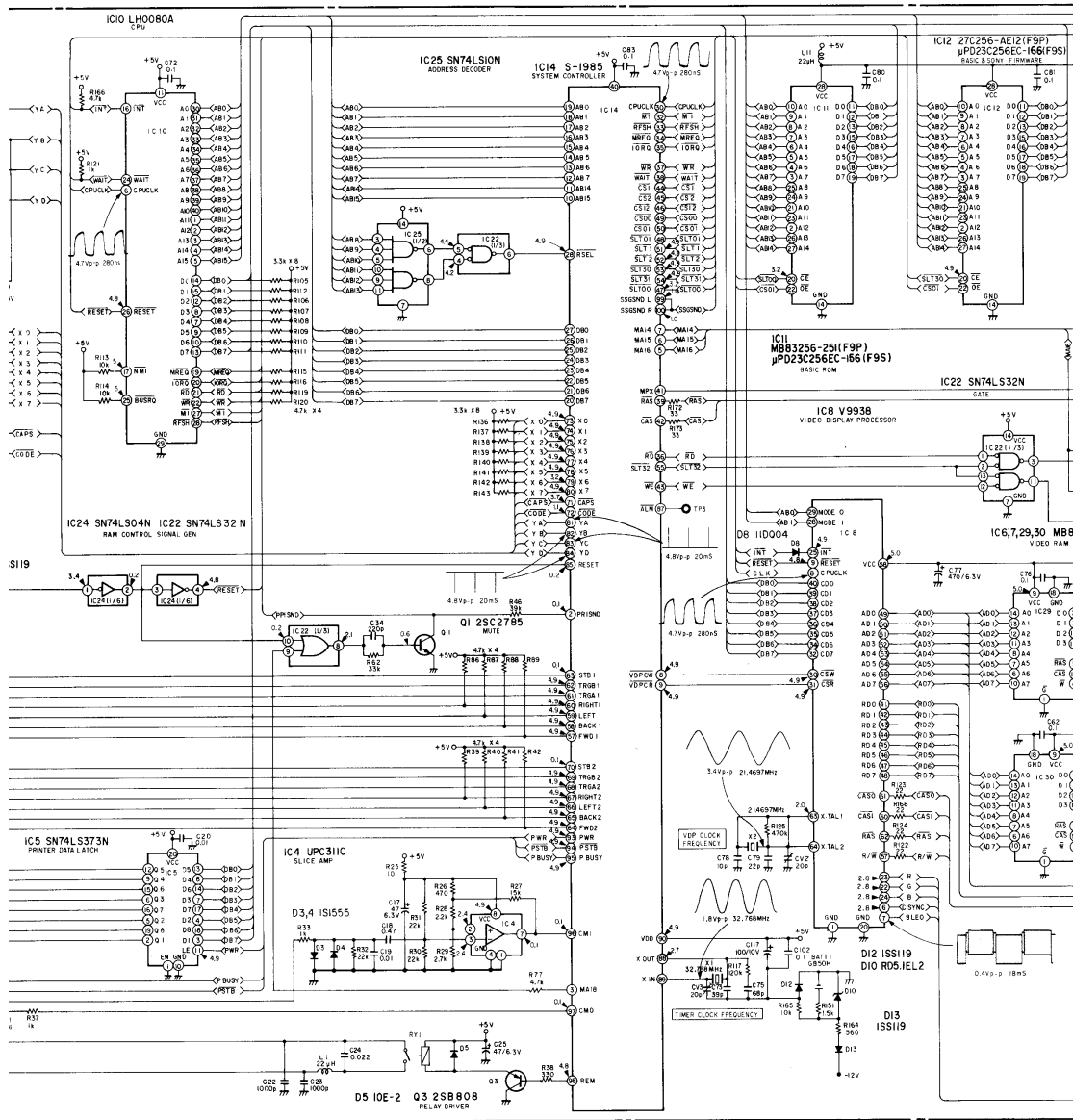
Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

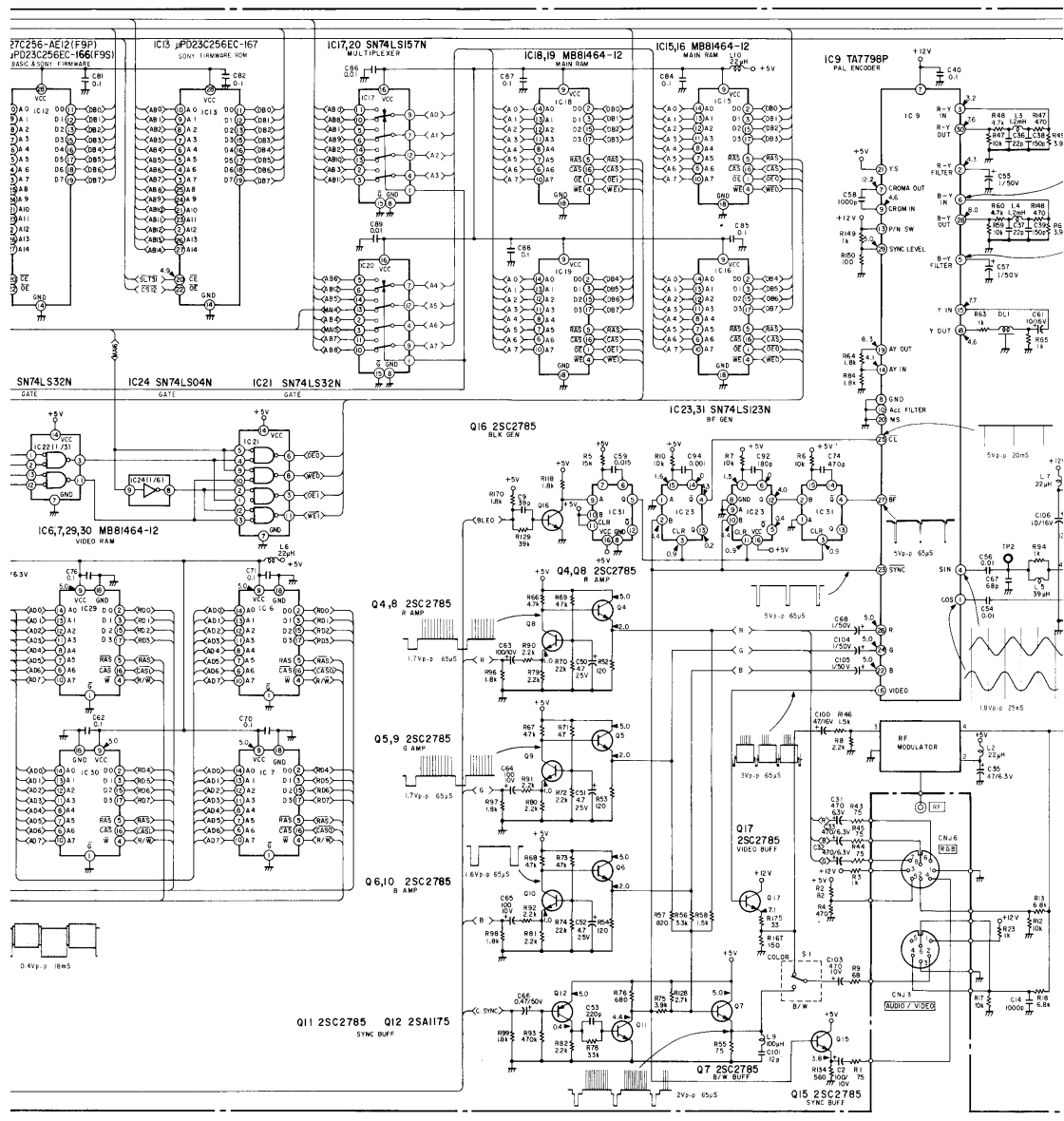
- : adjustment for repair.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal conditions with a VOM (50 k Ω /V).
 Waveforms are taken to ground by using oscilloscope.
 Voltage variations may be noted due to normal production tolerances.

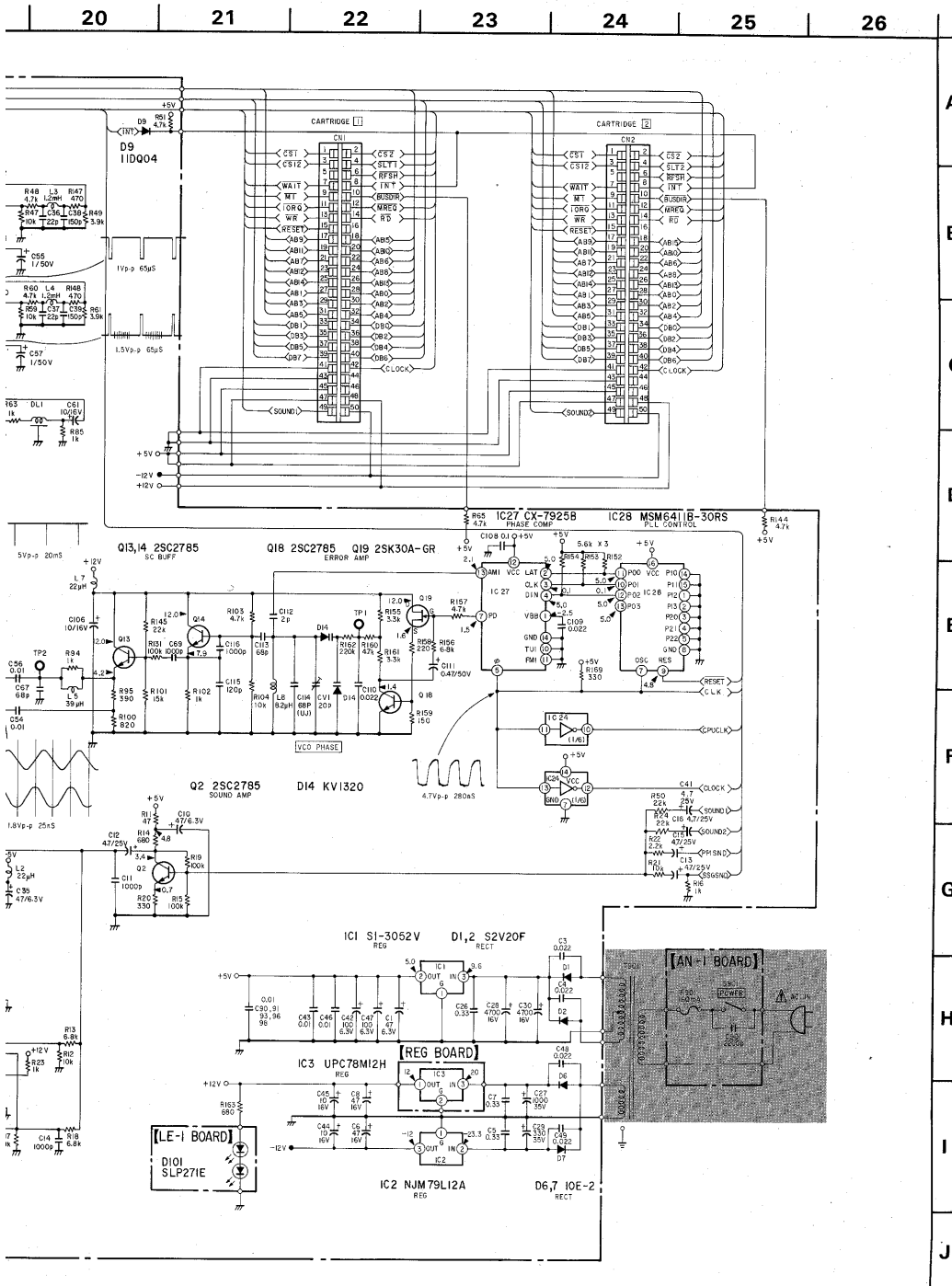
Switch

Ref. No.	Switch	Position
S1	B/W	COLOR
S901	POWER	OFF







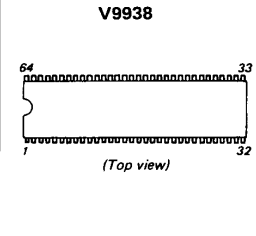
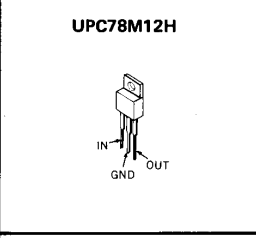
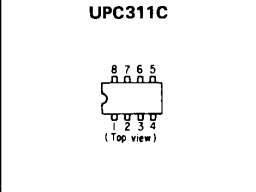
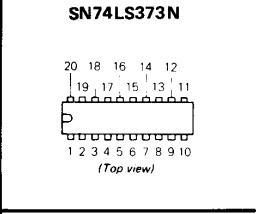
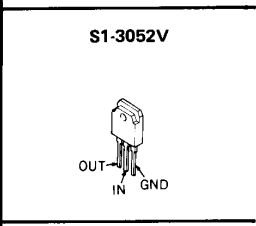
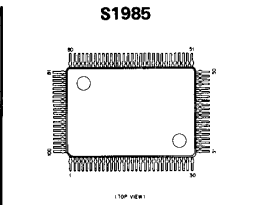
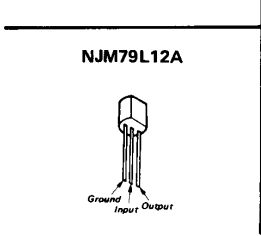
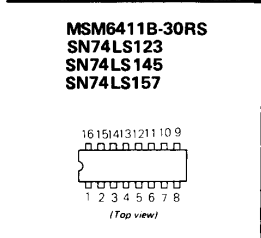
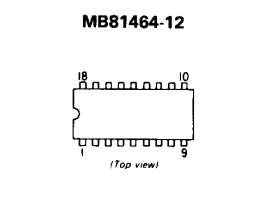
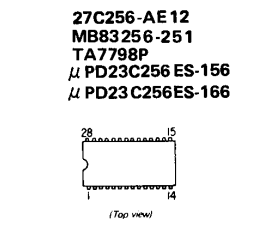
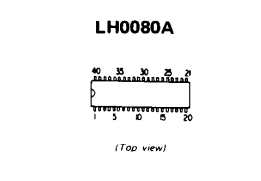
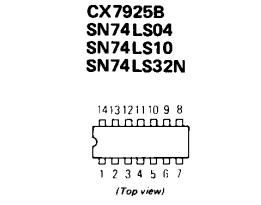


4-4. MOUNTING DIAGRAM —CPU Section—

Note:

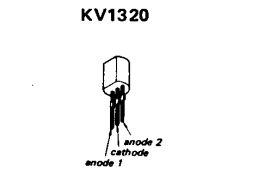
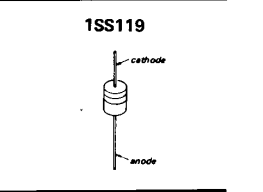
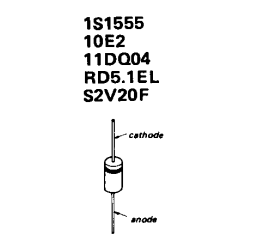
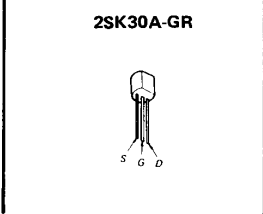
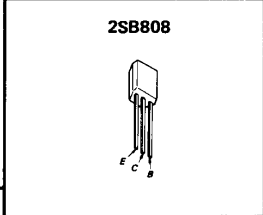
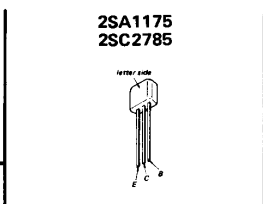
- —: parts extracted from the component side.

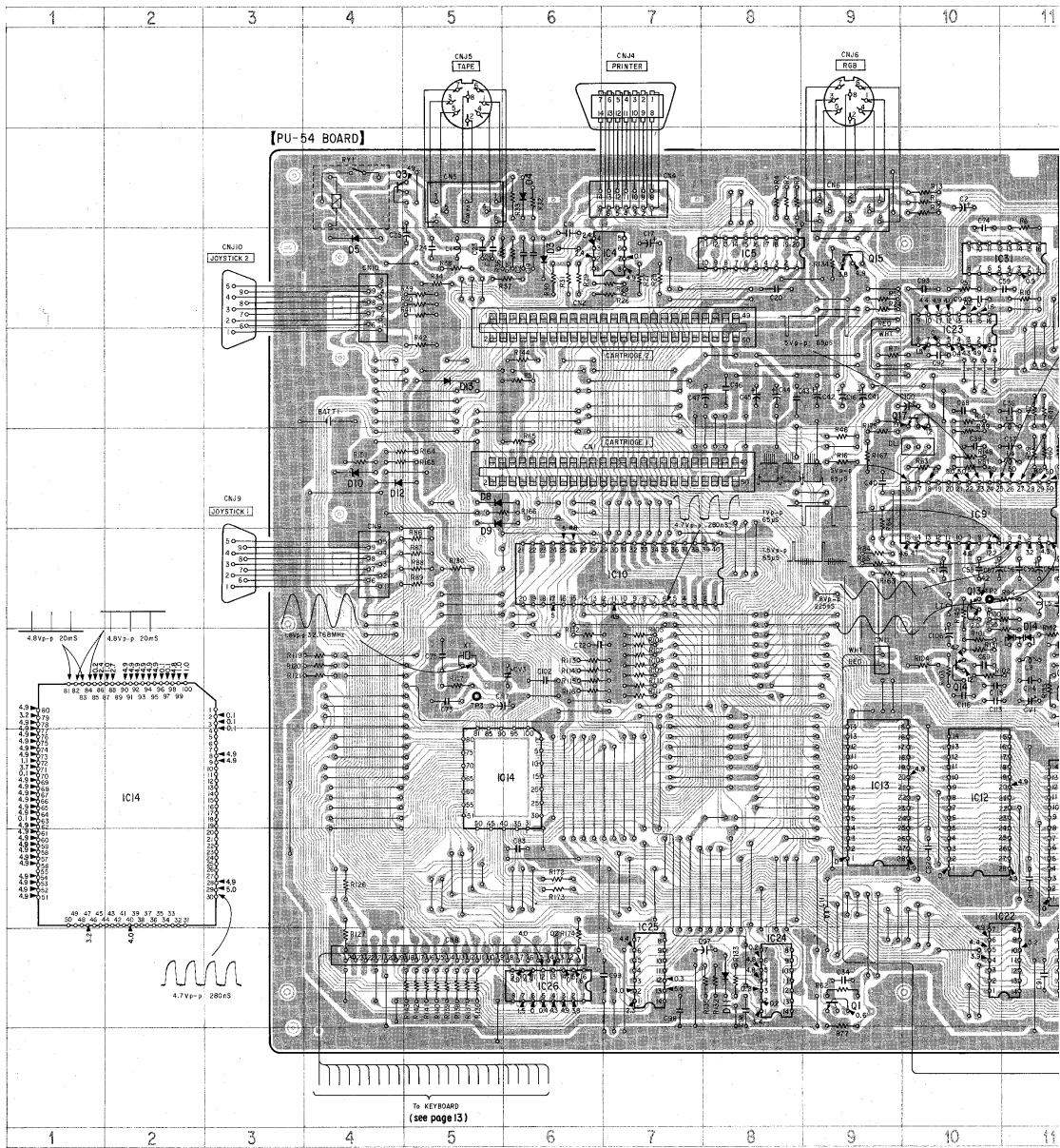
• **Semiconductor Lead Layouts**

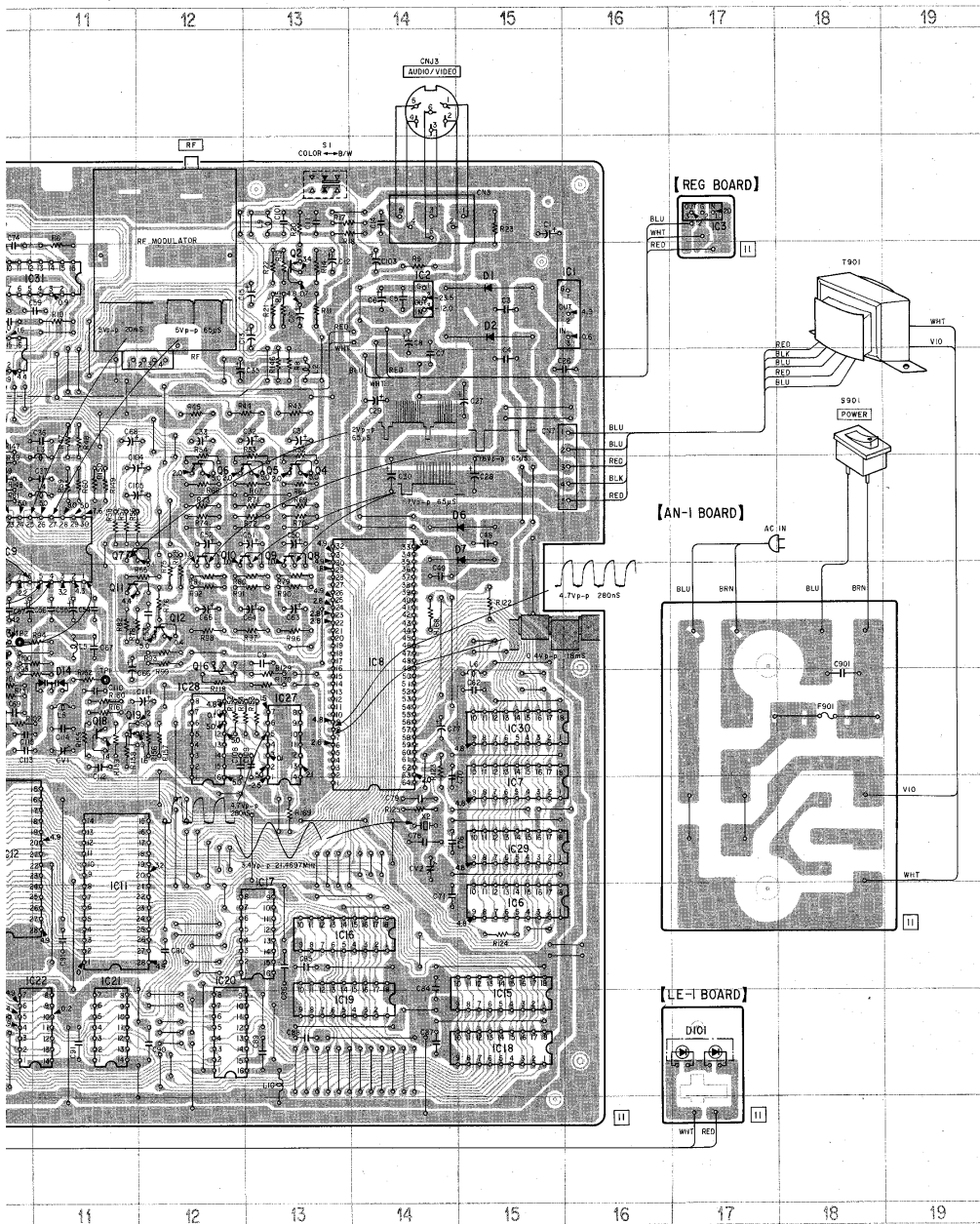


• **Semiconductor Location**

Ref. No.	Location	Ref. No.	Location
D1	C-15	IC19	J-13
D2	C-15	IC20	J-12
D3	C-6	IC21	J-11
D4	B-6	IC22	J-11
D5	C-4	IC23	D-10
D6	E-15	IC24	J-8
D7	E-15	IC25	J-7
D8	E-5	IC26	J-6
D9	E-5	IC27	G-13
D10	E-4	IC28	G-12
D11	J-8	IC29	H-15
D12	E-8	IC30	G-15
D13	D-5	IC31	C-11
D14	G-11		
D101	J-17	Q1	J-9
		Q2	C-13
		Q3	B-5
IC1	C-16	Q4	E-13
IC2	C-14	Q5	E-13
IC3	B-17	Q6	E-12
IC4	C-7	Q7	E-12
IC5	C-8	Q8	E-13
IC6	I-15	Q9	E-13
IC7	H-15	Q10	E-12
IC8	F-14	Q11	F-12
IC9	E-10	Q12	F-12
IC10	F-7	Q13	F-10
IC11	I-11	Q14	G-10
IC12	H-10	Q15	C-9
IC13	H-9	Q16	F-12
IC14	H-5	Q17	D-10
IC15	J-15	Q18	G-11
IC16	I-13	Q19	G-11
IC17	I-13		
IC18	J-15		







SECTION 5 EXPLODED VIEWS AND PARTS LIST

NOTE:

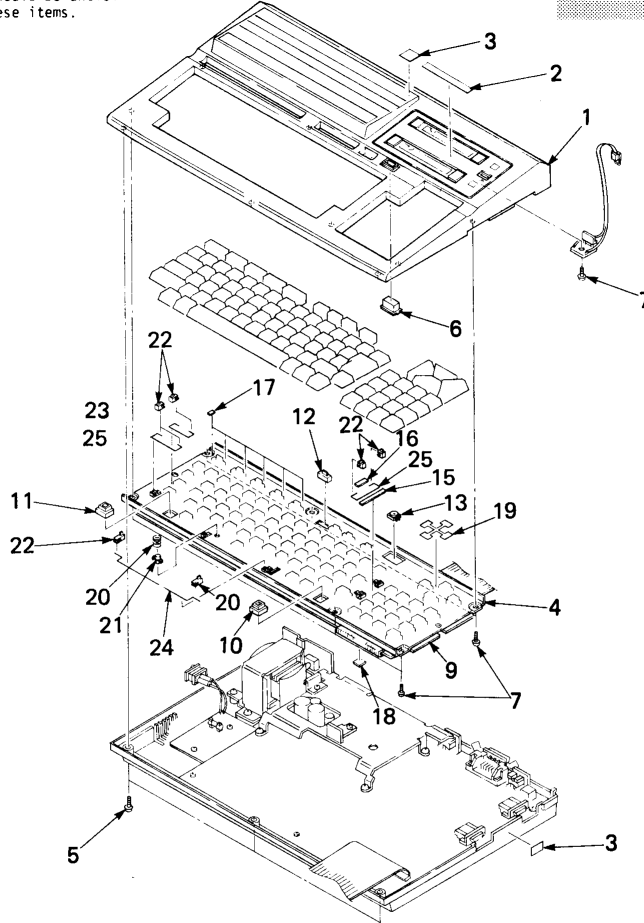
The mechanical parts with no reference number in the exploded views are not supplied.

Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The construction parts of an assembled part are indicated with a collation number in the remark column.

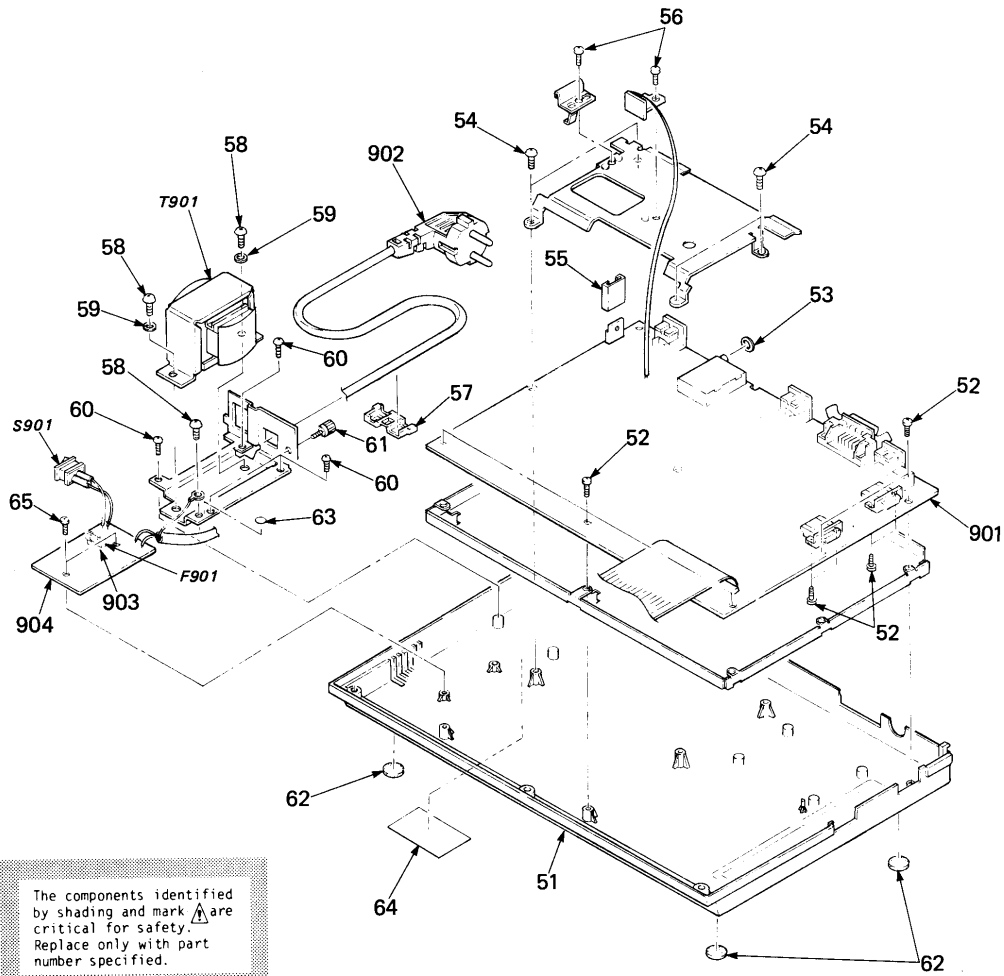
The components identified by shading and mark are critical for safety. Replace only with part number specified.

5-1.



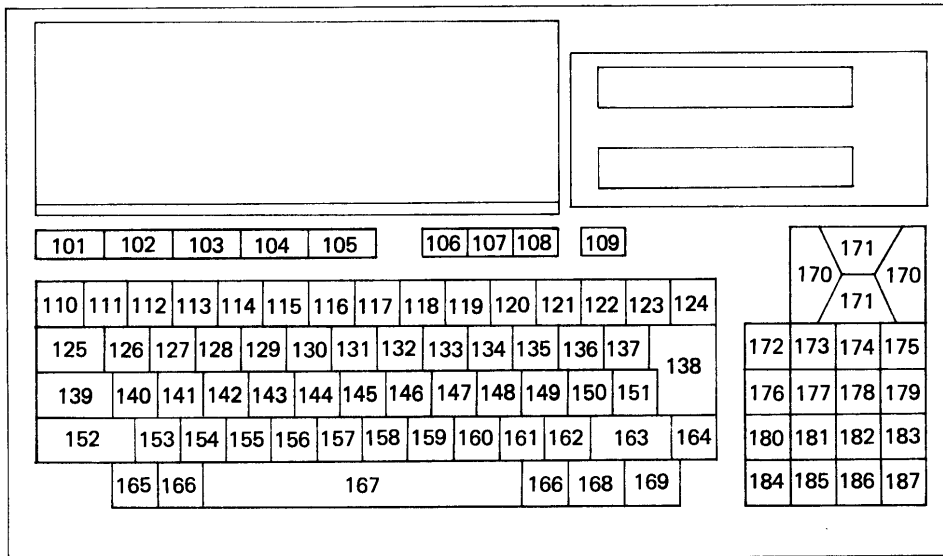
No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	X-4604-332-1	(HB-F9S)...CABINET (UPPER) ASSY		10	9-991-798-01	KEY SWITCH	
	X-4604-333-1	(HB-F9P)...CABINET (UPPER) ASSY		11	9-991-797-01	KEY SWITCH	
2	3-703-713-01	STICKER, SONY SYMBOL (10)		12	9-991-796-01	KEY SWITCH	
3	4-604-332-01	LABEL, CONTROL		13	1-552-539-11	KEY SWITCH	
4	9-991-800-01	PANEL		14	9-991-852-01	FPC BOARD	
5	7-685-134-19	SCREW +BTP 2.6X8 TYPE2 N-S		15	9-991-851-01	CUSHION (A)	
6	4-605-190-01	KEY TOP (RESET)		16	9-991-850-01	CUSHION (B)	
7	7-685-646-71	SCREW +BVTP 3X8 TYPE2 N-S		17	9-991-849-01	CUSHION (C)	
8	*4-605-464-01	(HB-F9P)...LABEL, CAUTION		18	9-991-848-01	SPACER	
	*4-608-460-01	(HB-F9S)...LABEL, CAUTION		19	9-991-847-01	CUSHION (D)	
9	9-991-799-01	(HB-F9P)...CIRCUIT BOARD		20	9-992-001-01	SPRING	
	9-991-850-01	(HB-F9S)...CIRCUIT BOARD		21	9-991-995-01	GUID	
				22	9-991-996-01	HOLDER	
				23	9-982-080-01	JOINT	
				24	9-991-999-01	JOINT	
				25	9-988-081-01	JOINT	

5-2.



No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
51	X-4604-334-1	PLATE ASSY (LIGHT GRAY), BOTTOM		63	3-701-699-01	(HB-F9S)...LABEL, GROUP TERMINAL	
52	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S		64	4-608-461-01	(HB-F9S)...LABEL, CAUTION	
53	*4-604-335-01	PLATE, BLIND (A)		65	7-685-544-19	SCREW +BTP 3X5 TYPE2 N-S	
54	7-685-647-14	SCREW +BVTP 3X10 TYPE2 N-S		901	*A-8040-588-A	(HB-F9P)...MOUNTED PCB, PU-54	
55	4-605-188-01	SHEET, RADIATION			*A-8040-680-A	(HB-F9S)...MOUNTED PCB, PU-54	
56	7-682-546-04	SCREW +P 3X5		902	1-534-817-XX	(HB-F9P)...CORD, POWER, EULO PLUG	
57	3-703-244-00	(HB-F9P)...BUSHING (2104), CORD			1-558-777-21	(HB-F9S)...CORD, POWER	
	4-608-348-02	(HB-F9S)...BUSHING, CORD		903	1-533-183-11	HOLDER, FUSE	
58	7-685-880-01	SCREW +BVTT 4X6 (S)		904	*1-620-125-11	PC BOARD, AN-1	
59	*4-608-349-01	WASHER		F901	1-532-612-00	FUSE, TIME-LAG	
60	7-685-646-71	SCREW +BVTP 3X8 TYPE2 N-S		S901	1-553-575-21	SWITCH, SEESAW	
61	*3-706-165-00	SCREW		T901	1-448-664-11	TRANSFORMER, POWER	
62	4-860-711-00	FELT					

5-3.



No.	Part No.	Description	No.	Part No.	Description	No.	Part No.	Description
101	9-987-989-01	KEY TOP	134	9-991-759-01	KEY TOP	164	9-991-774-01	(HB-F9P)...KEY TOP
102	9-987-990-01	KEY TOP	135	9-991-758-01	KEY TOP		9-991-853-01	(HB-F9S)...KEY TOP
103	9-987-991-01	KEY TOP	136	9-991-782-01	KEY TOP	165	9-991-835-01	KEY TOP
104	9-987-992-01	KEY TOP	137	9-991-781-01	KEY TOP	166	9-991-834-01	KEY TOP
105	9-987-993-01	KEY TOP	138	9-991-823-01	KEY TOP	167	9-991-822-01	KEY TOP
106	9-987-994-01	KEY TOP	139	9-988-028-01	KEY TOP	168	9-988-055-01	KEY TOP
107	9-987-995-01	KEY TOP	140	9-991-773-01	KEY TOP	169	9-988-058-01	KEY TOP
108	9-987-996-01	KEY TOP	142	9-991-770-01	KEY TOP	170	9-988-076-01	KEY TOP
109	9-987-997-01	KEY TOP	143	9-991-768-01	KEY TOP	171	9-988-075-01	KEY TOP
110	9-987-998-01	KEY TOP	144	9-991-767-01	KEY TOP	172	9-988-059-01	KEY TOP
111	9-991-794-01	KEY TOP	145	9-991-766-01	KEY TOP	173	9-988-060-01	KEY TOP
112	9-991-793-01	KEY TOP	146	9-991-764-01	KEY TOP	174	9-988-061-01	KEY TOP
113	9-991-792-01	KEY TOP	147	9-991-763-01	KEY TOP	175	9-988-062-01	KEY TOP
114	9-991-791-01	KEY TOP	148	9-991-762-01	KEY TOP	176	9-988-063-01	KEY TOP
115	9-991-790-01	KEY TOP	149	9-991-780-01	(HB-F9P)...KEY TOP	177	9-988-064-01	KEY TOP
116	9-991-789-01	KEY TOP		9-991-855-01	(HB-F9S)...KEY TOP	178	9-988-065-01	KEY TOP
117	9-991-788-01	KEY TOP	150	9-991-779-01	KEY TOP	179	9-988-066-01	KEY TOP
118	9-991-787-01	KEY TOP	151	9-991-778-01	(HB-F9P)...KEY TOP	180	9-988-067-01	KEY TOP
119	9-991-786-01	KEY TOP		9-991-854-01	(HB-F9S)...KEY TOP	181	9-988-068-01	KEY TOP
120	9-991-795-01	KEY TOP	152	9-991-846-01	KEY TOP	182	9-988-069-01	KEY TOP
121	9-991-785-01	KEY TOP	153	9-991-839-01	KEY TOP	183	9-988-077-01	KEY TOP
122	9-991-784-01	KEY TOP	154	9-991-841-01	KEY TOP	184	9-988-071-01	KEY TOP
123	9-991-783-01	KEY TOP	155	9-991-771-01	KEY TOP	185	9-988-072-01	KEY TOP
124	9-991-825-01	KEY TOP	156	9-991-843-01	KEY TOP	186	9-988-073-01	KEY TOP
125	9-988-014-01	KEY TOP	157	9-991-772-01	KEY TOP	187	9-988-074-01	KEY TOP
126	9-991-757-01	KEY TOP	158	9-991-760-01	KEY TOP			
127	9-991-842-01	KEY TOP	159	9-991-761-01	KEY TOP			
128	9-991-769-01	KEY TOP	160	9-991-777-01	KEY TOP			
129	9-991-756-01	KEY TOP	161	9-991-776-01	KEY TOP			
130	9-991-845-01	KEY TOP	162	9-991-775-01	KEY TOP			
131	9-991-840-01	KEY TOP	163	9-991-838-01	KEY TOP			
132	9-991-844-01	KEY TOP						
133	9-991-765-01	KEY TOP						

SECTION 6 ELECTRICAL PARTS LIST

NOTE:

Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF:μF, PF:μF.

RESISTORS

· All resistors are in ohms.

· F : nonflammable

COILS

· MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:

UA...: μA..., UPA...: μPA..., UPC...: μPC,

UPD...: μPD...

The components identified by shading and mark Δ are critical for safety. Δ Replace only with part number specified.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
901	*A-8040-588-A	(HB-F9P)...MOUNTED PCB, PU-54			
	*A-8040-680-A	(HB-F9S)...MOUNTED PCB, PU-54			
902	Δ 1-534-817-XX	(HB-F9P)...CORD, POWER, EULO PLUG			
	Δ 1-558-777-21	(HB-F9S)...CORD, POWER			
903	1-533-183-11	HOLDER, FUSE			
904	*1-620-125-11	PC BOARD, AN-1			
BATT1	1-528-171-11	BATTERY, STORAGE, NI-CD (GB50H)			
C1	1-123-306-00	ELECT 47MF	20%	6.3V	
C2	1-123-307-00	ELECT 100MF	20%	10V	
C3	1-101-005-00	CERAMIC 0.022MF		50V	
C4	1-101-005-00	CERAMIC 0.022MF		50V	
C5	1-136-171-00	FILM 0.33MF	5%	50V	
C6	1-123-821-00	ELECT 47MF	20%	16V	
C7	1-136-171-00	FILM 0.33MF	5%	50V	
C8	1-123-821-00	ELECT 47MF	20%	16V	
C9	1-102-520-00	CERAMIC 39PF	5%	50V	
C10	1-123-306-00	ELECT 47MF	20%	6.3V	
C11	1-102-074-00	CERAMIC 0.001MF	10%	50V	
C12	1-123-616-00	ELECT 4.7MF	20%	25V	
C13	1-123-616-00	ELECT 4.7MF	20%	25V	
C14	1-102-074-00	CERAMIC 0.001MF	10%	50V	
C15	1-123-616-00	ELECT 4.7MF	20%	25V	
C16	1-123-616-00	ELECT 4.7MF	20%	25V	
C17	1-123-306-00	ELECT 47MF	20%	6.3V	
C18	1-136-173-00	FILM 0.47MF	5%	50V	
C19	1-162-113-00	CERAMIC 0.01MF	30%	16V	
C20	1-162-113-00	CERAMIC 0.01MF	30%	16V	
C21	1-162-113-00	CERAMIC 0.01MF	30%	16V	
C22	1-102-074-00	CERAMIC 0.001MF	10%	50V	
C23	1-102-074-00	CERAMIC 0.001MF	10%	50V	
C24	1-101-005-00	CERAMIC 0.022MF		50V	
C25	1-123-306-00	ELECT 47MF	20%	6.3V	
C26	1-136-171-00	FILM 0.33MF	5%	50V	
C27	1-123-349-00	ELECT 1000MF	20%	35V	
C28	1-123-327-00	ELECT 4700MF	20%	16V	
C29	1-123-347-00	ELECT 330MF	20%	35V	
C30	1-123-327-00	ELECT 4700MF	20%	16V	
C31	1-124-470-11	ELECT 470MF	20%	6.3V	
C32	1-124-470-11	ELECT 470MF	20%	6.3V	
C33	1-124-470-11	ELECT 470MF	20%	6.3V	
C34	1-102-983-00	CERAMIC 220PF	10%	50V	
C35	1-123-306-00	ELECT 47MF	20%	6.3V	
C36	1-102-959-00	CERAMIC 22PF	5%	50V	
C37	1-102-959-00	CERAMIC 22PF	5%	50V	
C38	1-102-108-00	CERAMIC 150PF	10%	50V	
C39	1-102-108-00	CERAMIC 150PF	10%	50V	

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
C40	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C41	1-123-616-00	ELECT 4.7MF	20%	25V	
C42	1-123-661-00	ELECT 100MF	20%	6.3V	
C43	1-162-113-00	CERAMIC 0.01MF	30%	16V	
C44	1-123-617-00	ELECT 10MF	20%	16V	
C45	1-123-617-00	ELECT 10MF	20%	16V	
C46	1-162-113-00	CERAMIC 0.01MF	30%	16V	
C47	1-123-661-00	ELECT 100MF	20%	6.3V	
C48	1-101-005-00	CERAMIC 0.022MF		50V	
C49	1-101-005-00	CERAMIC 0.022MF		50V	
C50	1-123-616-00	ELECT 4.7MF	20%	25V	
C51	1-123-616-00	ELECT 4.7MF	20%	25V	
C52	1-123-616-00	ELECT 4.7MF	20%	25V	
C53	1-102-983-00	CERAMIC 220PF	10%	50V	
C54	1-136-153-00	FILM 0.01MF	5%	50V	
C55	1-123-380-00	ELECT 1MF	20%	50V	
C56	1-136-153-00	FILM 0.01MF	5%	50V	
C57	1-123-380-00	ELECT 1MF	20%	50V	
C58	1-102-074-00	CERAMIC 0.001MF	10%	50V	
C59	1-136-155-00	FILM 0.015MF	5%	50V	
C60	1-123-617-00	ELECT 10MF	20%	16V	
C61	1-123-617-00	ELECT 10MF	20%	16V	
C62	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C63	1-123-307-00	ELECT 100MF	20%	10V	
C64	1-123-307-00	ELECT 100MF	20%	10V	
C65	1-123-307-00	ELECT 100MF	20%	10V	
C66	1-123-379-00	ELECT 0.47MF	20%	50V	
C67	1-102-525-00	CERAMIC 68PF	5%	50V	
C68	1-123-380-00	ELECT 1MF	20%	50V	
C69	1-102-074-00	CERAMIC 0.001MF	10%	50V	
C70	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C71	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C72	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C73	1-162-027-00	CERAMIC 39PF	5%	50V	
C74	1-102-114-00	CERAMIC 470PF	10%	50V	
C75	1-162-033-00	CERAMIC 68PF	5%	50V	
C76	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C77	1-124-470-11	ELECT 470MF	20%	6.3V	
C78	1-162-013-00	CERAMIC 10PF	5%	50V	
C79	1-162-021-00	CERAMIC 22PF	5%	50V	
C80	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C81	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C82	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C83	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C84	1-161-974-00	CERAMIC 0.1MF	20%	16V	
C85	1-161-974-00	CERAMIC 0.1MF	20%	16V	

ELECTRICAL PARTS

Ref.No.	Part No.	Description				
C86	1-162-113-00	CERAMIC	0.01MF	30%	16V	
C87	1-161-974-00	CERAMIC	0.1MF	20%	16V	
C88	1-161-974-00	CERAMIC	0.1MF	20%	16V	
C89	1-162-113-00	CERAMIC	0.01MF	30%	16V	
C90	1-162-113-00	CERAMIC	0.01MF	30%	16V	
C91	1-162-113-00	CERAMIC	0.01MF	30%	16V	
C92	1-102-109-00	CERAMIC	180PF	10%	50V	
C93	1-162-113-00	CERAMIC	0.01MF	30%	16V	
C94	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C96	1-162-113-00	CERAMIC	0.01MF	30%	16V	
C97	1-123-821-00	ELECT	47MF	20%	16V	
C98	1-162-113-00	CERAMIC	0.01MF	30%	16V	
C99	1-162-113-00	CERAMIC	0.01MF	30%	16V	
C100	1-123-821-00	ELECT	47MF	20%	16V	
C101	1-102-949-00	CERAMIC	12PF	5%	50V	
C102	1-161-974-00	CERAMIC	0.1MF	20%	16V	
C103	1-123-310-00	ELECT	470MF	20%	10V	
C104	1-123-380-00	ELECT	1MF	20%	50V	
C105	1-123-380-00	ELECT	1MF	20%	50V	
C106	1-123-617-00	ELECT	10MF	20%	16V	
C108	1-161-974-00	CERAMIC	0.1MF	20%	16V	
C109	1-101-005-00	CERAMIC	0.022MF		50V	
C110	1-101-005-00	CERAMIC	0.022MF		50V	
C111	1-123-379-00	ELECT	0.47MF	20%	50V	
C112	1-102-939-00	CERAMIC	2PF	0.5PF	50V	
C113	1-102-760-00	CERAMIC	68PF	5%	50V	
C114	1-102-760-00	CERAMIC	68PF	5%	50V	
C115	1-102-107-00	CERAMIC	120PF	10%	50V	
C116	1-102-074-00	CERAMIC	0.001MF	10%	50V	
C117	1-123-307-00	ELECT	100MF	20%	10V	
C901	△ 1-161-742-00	CERAMIC	0.0022MF	20%	400V	
CN1	1-562-383-00	SOCKET, CONNECTOR				
CN2	1-562-383-00	SOCKET, CONNECTOR				
CN3	1-562-121-00	CONNECTOR, DIN 6P				
CN4	1-563-005-11	CONNECTOR 14P				
CN5	1-561-468-00	SOCKET, CONNECTOR (DIN8P)				
CN6	1-561-468-00	SOCKET, CONNECTOR (DIN8P)				
CN7	*1-564-242-00	PIN, CONNECTOR 5P				
CN8	*1-563-488-11	CONNECTOR, FPC 24P				
CN9	1-564-372-21	PIN, CONNECTOR 9P				
CN10	1-564-372-21	PIN, CONNECTOR 9P				
CN11	*1-560-060-00	PIN, CONNECTOR 2P				
CV1	1-141-227-00	CAP, CERAMIC TRIMMER				
CV2	1-141-227-00	CAP, CERAMIC TRIMMER				
CV3	1-141-227-00	CAP, CERAMIC TRIMMER				
D1	8-719-911-55	DIODE U05G				
D2	8-719-911-55	DIODE U05G				
D3	8-719-911-19	DIODE 1SS119				
D4	8-719-911-19	DIODE 1SS119				
D5	8-719-200-02	DIODE 10E2				
D6	8-719-200-02	DIODE 10E2				
D7	8-719-200-02	DIODE 10E2				
D8	8-719-200-29	DIODE 11DQ04				
D9	8-719-200-29	DIODE 11DQ04				
D10	8-719-101-50	DIODE R05.1EL2				
D11	8-719-911-19	DIODE 1SS119				
D12	8-719-911-19	DIODE 1SS119				

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D13	8-719-911-19	DIODE 1SS119
D14	8-719-901-59	DIODE KV1320
D101	8-719-903-17	DIODE SLP271E
DL1	1-415-513-11	DELAY LINE (Y-DL)
F901	△ 1-532-612-00	FUSE, TIME-LAG
IC1	8-749-930-52	IC SI-3052V
IC2	8-759-700-69	IC NJM79L12A
IC3	8-759-170-12	IC UPC78M12H
IC4	8-759-131-11	IC UPC311C
IC5	8-759-903-73	IC SN74LS373N
IC6	8-759-922-42	IC MB81464-12
IC7	8-759-922-42	IC MB81464-12
IC8	8-759-922-51	IC V9938
IC9	8-759-207-67	IC TA7798P
IC10	8-759-916-80	IC LH0080A
IC11	8-759-111-42	(HB-F9S)...IC UPD23C256ES-156
IC11	8-759-925-62	(HB-F9P)...IC MB83256-251
IC12	8-759-112-67	(HB-F9S)...IC UPD23C256EC-166
IC12	8-759-772-00	(HB-F9P)...IC 27C256-AE12
IC13	8-759-112-68	IC UPD23C256EC-167
IC14	8-759-933-46	IC S-1985
IC15	8-759-922-42	IC MB81464-12
IC16	8-759-922-42	IC MB81464-12
IC17	8-759-901-57	IC SN74LS157N
IC18	8-759-922-42	IC MB81464-12
IC19	8-759-922-42	IC MB81464-12
IC20	8-759-901-57	IC SN74LS157N
IC21	8-759-900-32	IC SN74LS32N
IC22	8-759-900-32	IC SN74LS32N
IC23	8-759-901-23	IC SN74LS123N
IC24	8-759-900-04	IC SN74LS04N
IC25	8-759-900-10	IC SN74LS10N
IC26	8-759-901-45	IC SN74LS145N
IC27	8-757-925-20	IC CX-7925B
IC28	8-759-925-65	IC MSM6411B-30RS
IC29	8-759-929-47	IC MB81464-10
IC30	8-759-929-47	IC MB81464-10
IC31	8-759-901-23	IC SN74LS123N
L1	1-408-413-00	MICRO INDUCTOR 22UH
L2	1-408-413-00	MICRO INDUCTOR 22UH
L3	1-410-495-31	MICRO INDUCTOR 1.2MMH
L4	1-410-495-31	MICRO INDUCTOR 1.2MMH
L5	1-408-416-00	MICRO INDUCTOR 39UH
L6	1-408-413-00	MICRO INDUCTOR 22UH
L7	1-408-413-00	MICRO INDUCTOR 22UH
L8	1-410-222-11	MICRO INDUCTOR 8.2UH
L10	1-410-556-21	MICRO INDUCTOR 22UH
L11	1-410-556-21	MICRO INDUCTOR 22UH
Q1	8-729-600-27	TRANSISTOR 2SC634SP
Q2	8-729-600-27	TRANSISTOR 2SC634SP
Q3	8-729-800-83	TRANSISTOR 2SB808
Q4	8-729-600-27	TRANSISTOR 2SC634SP
Q5	8-729-600-27	TRANSISTOR 2SC634SP
Q6	8-729-600-27	TRANSISTOR 2SC634SP
Q7	8-729-600-27	TRANSISTOR 2SC634SP
Q8	8-729-600-27	TRANSISTOR 2SC634SP
Q9	8-729-600-27	TRANSISTOR 2SC634SP

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
Q10	8-729-600-27	TRANSISTOR	2SC634SP		
Q11	8-729-600-27	TRANSISTOR	2SC634SP		
Q12	8-729-117-54	TRANSISTOR	2SA1175		
Q13	8-729-600-27	TRANSISTOR	2SC634SP		
Q14	8-729-600-27	TRANSISTOR	2SC634SP		
Q15	8-729-600-27	TRANSISTOR	2SC634SP		
Q16	8-729-600-27	TRANSISTOR	2SC634SP		
Q17	8-729-600-27	TRANSISTOR	2SC634SP		
Q18	8-729-600-27	TRANSISTOR	2SC2785		
Q19	8-729-178-54	TRANSISTOR	2SK30A		
R1	1-247-804-00	CARBON	75	5%	1/6W
R2	1-247-805-00	CARBON	82	5%	1/6W
R3	1-249-417-11	CARBON	1K	5%	1/6W
R4	1-247-823-00	CARBON	470	5%	1/6W
R5	1-247-859-00	CARBON	15K	5%	1/6W
R6	1-249-429-11	CARBON	10K	5%	1/6W
R7	1-249-429-11	CARBON	10K	5%	1/6W
R8	1-247-839-00	CARBON	2.2K	5%	1/6W
R9	1-247-803-00	CARBON	68	5%	1/6W
R10	1-249-429-11	CARBON	10K	5%	1/6W
R11	1-247-799-00	CARBON	47	5%	1/6W
R12	1-249-429-11	CARBON	10K	5%	1/6W
R13	1-247-851-00	CARBON	6.8K	5%	1/6W
R14	1-249-415-11	CARBON	680	5%	1/6W
R15	1-249-441-11	CARBON	100K	5%	1/6W
R16	1-249-417-11	CARBON	1K	5%	1/6W
R17	1-249-429-11	CARBON	10K	5%	1/6W
R18	1-247-851-00	CARBON	6.8K	5%	1/6W
R19	1-249-441-11	CARBON	100K	5%	1/6W
R20	1-247-819-00	CARBON	330	5%	1/6W
R21	1-249-429-11	CARBON	10K	5%	1/6W
R22	1-247-839-00	CARBON	2.2K	5%	1/6W
R23	1-249-417-11	CARBON	1K	5%	1/6W
R24	1-249-433-11	CARBON	22K	5%	1/6W
R25	1-247-783-00	CARBON	10	5%	1/6W
R26	1-247-823-00	CARBON	470	5%	1/6W
R27	1-247-859-00	CARBON	15K	5%	1/6W
R28	1-247-839-00	CARBON	2.2K	5%	1/6W
R29	1-249-422-11	CARBON	2.7K	5%	1/6W
R30	1-249-433-11	CARBON	22K	5%	1/6W
R31	1-249-433-11	CARBON	22K	5%	1/6W
R32	1-249-433-11	CARBON	22K	5%	1/6W
R33	1-247-713-11	CARBON	1K	5%	1/4W
R34	1-249-425-11	CARBON	4.7K	5%	1/6W
R35	1-249-425-11	CARBON	4.7K	5%	1/6W
R36	1-247-795-00	CARBON	33	5%	1/6W
R37	1-249-417-11	CARBON	1K	5%	1/6W
R38	1-247-819-00	CARBON	330	5%	1/6W
R39	1-249-425-11	CARBON	4.7K	5%	1/6W
R40	1-249-425-11	CARBON	4.7K	5%	1/6W
R41	1-249-425-11	CARBON	4.7K	5%	1/6W
R42	1-249-425-11	CARBON	4.7K	5%	1/6W
R43	1-247-804-00	CARBON	75	5%	1/6W
R44	1-247-804-00	CARBON	75	5%	1/6W
R45	1-247-804-00	CARBON	75	5%	1/6W
R46	1-247-869-00	CARBON	39K	5%	1/6W
R47	1-249-429-11	CARBON	10K	5%	1/6W
R48	1-249-425-11	CARBON	4.7K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R49	1-247-845-00	CARBON	3.9K	5%	1/6W
R50	1-249-433-11	CARBON	22K	5%	1/6W
R51	1-249-425-11	CARBON	4.7K	5%	1/6W
R52	1-247-809-00	CARBON	120	5%	1/6W
R53	1-247-809-00	CARBON	120	5%	1/6W
R54	1-247-809-00	CARBON	120	5%	1/6W
R55	1-247-804-00	CARBON	75	5%	1/6W
R56	1-249-423-11	CARBON	3.3K	5%	1/6W
R57	1-247-829-00	CARBON	820	5%	1/6W
R58	1-249-419-11	CARBON	1.5K	5%	1/6W
R59	1-249-429-11	CARBON	10K	5%	1/6W
R60	1-249-425-11	CARBON	4.7K	5%	1/6W
R61	1-247-845-00	CARBON	3.9K	5%	1/6W
R62	1-249-435-11	CARBON	33K	5%	1/6W
R63	1-249-417-11	CARBON	1K	5%	1/6W
R64	1-249-420-11	CARBON	1.8K	5%	1/6W
R65	1-249-425-11	CARBON	4.7K	5%	1/6W
R66	1-249-425-11	CARBON	4.7K	5%	1/6W
R67	1-249-425-11	CARBON	4.7K	5%	1/6W
R68	1-249-425-11	CARBON	4.7K	5%	1/6W
R69	1-249-437-11	CARBON	47K	5%	1/6W
R70	1-249-433-11	CARBON	22K	5%	1/6W
R71	1-249-437-11	CARBON	47K	5%	1/6W
R72	1-249-433-11	CARBON	22K	5%	1/6W
R73	1-249-437-11	CARBON	47K	5%	1/6W
R74	1-249-433-11	CARBON	22K	5%	1/6W
R75	1-247-845-00	CARBON	3.9K	5%	1/6W
R76	1-249-415-11	CARBON	680	5%	1/6W
R77	1-249-425-11	CARBON	4.7K	5%	1/6W
R78	1-249-435-11	CARBON	33K	5%	1/6W
R79	1-247-839-00	CARBON	2.2K	5%	1/6W
R80	1-247-839-00	CARBON	2.2K	5%	1/6W
R81	1-247-839-00	CARBON	2.2K	5%	1/6W
R82	1-247-839-00	CARBON	2.2K	5%	1/6W
R84	1-249-420-11	CARBON	1.8K	5%	1/6W
R85	1-249-417-11	CARBON	1K	5%	1/6W
R86	1-249-425-11	CARBON	4.7K	5%	1/6W
R87	1-249-425-11	CARBON	4.7K	5%	1/6W
R88	1-249-425-11	CARBON	4.7K	5%	1/6W
R89	1-249-425-11	CARBON	4.7K	5%	1/6W
R90	1-247-839-00	CARBON	2.2K	5%	1/6W
R91	1-247-839-00	CARBON	2.2K	5%	1/6W
R92	1-247-839-00	CARBON	2.2K	5%	1/6W
R93	1-247-895-00	CARBON	470K	5%	1/6W
R94	1-249-417-11	CARBON	1K	5%	1/6W
R95	1-247-821-00	CARBON	390	5%	1/6W
R96	1-249-420-11	CARBON	1.8K	5%	1/6W
R97	1-249-420-11	CARBON	1.8K	5%	1/6W
R98	1-249-420-11	CARBON	1.8K	5%	1/6W
R99	1-249-420-11	CARBON	1.8K	5%	1/6W
R100	1-247-829-00	CARBON	820	5%	1/6W
R101	1-247-859-00	CARBON	15K	5%	1/6W
R102	1-249-417-11	CARBON	1K	5%	1/6W
R103	1-249-425-11	CARBON	4.7K	5%	1/6W
R104	1-249-429-11	CARBON	10K	5%	1/6W
R105	1-249-423-11	CARBON	3.3K	5%	1/6W
R106	1-249-423-11	CARBON	3.3K	5%	1/6W

ELECTRICAL PARTS


Ref.No.	Part No.	Description			
R107	1-249-423-11	CARBON	3.3K	5%	1/6W
R108	1-249-423-11	CARBON	3.3K	5%	1/6W
R109	1-249-423-11	CARBON	3.3K	5%	1/6W
R110	1-249-423-11	CARBON	3.3K	5%	1/6W
R111	1-249-423-11	CARBON	3.3K	5%	1/6W
R112	1-249-423-11	CARBON	3.3K	5%	1/6W
R113	1-249-429-11	CARBON	10K	5%	1/6W
R114	1-249-429-11	CARBON	10K	5%	1/6W
R115	1-249-425-11	CARBON	4.7K	5%	1/6W
R116	1-249-425-11	CARBON	4.7K	5%	1/6W
R117	1-247-881-00	CARBON	120K	5%	1/6W
R118	1-249-420-11	CARBON	1.8K	5%	1/6W
R119	1-249-425-11	CARBON	4.7K	5%	1/6W
R120	1-249-425-11	CARBON	4.7K	5%	1/6W
R121	1-249-417-11	CARBON	1K	5%	1/6W
R122	1-247-791-00	CARBON	22	5%	1/6W
R123	1-247-791-00	CARBON	22	5%	1/6W
R124	1-247-791-00	CARBON	22	5%	1/6W
R125	1-247-895-00	CARBON	470K	5%	1/6W
R126	1-247-821-00	CARBON	390	5%	1/6W
R127	1-247-821-00	CARBON	390	5%	1/6W
R128	1-249-422-11	CARBON	2.7K	5%	1/6W
R129	1-247-869-00	CARBON	39K	5%	1/6W
R130	1-249-425-11	CARBON	4.7K	5%	1/6W
R131	1-249-441-11	CARBON	100K	5%	1/6W
R132	1-249-429-11	CARBON	10K	5%	1/6W
R133	1-249-433-11	CARBON	22K	5%	1/6W
R134	1-249-414-11	CARBON	560	5%	1/6W
R135	1-247-791-00	CARBON	22	5%	1/6W
R136	1-249-423-11	CARBON	3.3K	5%	1/6W
R137	1-249-423-11	CARBON	3.3K	5%	1/6W
R138	1-249-423-11	CARBON	3.3K	5%	1/6W
R139	1-249-423-11	CARBON	3.3K	5%	1/6W
R140	1-249-423-11	CARBON	3.3K	5%	1/6W
R141	1-249-423-11	CARBON	3.3K	5%	1/6W
R142	1-249-423-11	CARBON	3.3K	5%	1/6W
R143	1-249-423-11	CARBON	3.3K	5%	1/6W
R144	1-249-425-11	CARBON	4.7K	5%	1/6W
R145	1-249-433-11	CARBON	22K	5%	1/6W
R146	1-249-419-11	CARBON	1.5K	5%	1/6W
R147	1-247-823-00	CARBON	470	5%	1/6W
R148	1-247-823-00	CARBON	470	5%	1/6W
R149	1-249-417-11	CARBON	1K	5%	1/6W
R150	1-249-405-11	CARBON	100	5%	1/6W
R151	1-249-419-11	CARBON	1.5K	5%	1/6W
R152	1-247-849-00	CARBON	5.6K	5%	1/6W
R153	1-247-849-00	CARBON	5.6K	5%	1/6W
R154	1-247-849-00	CARBON	5.6K	5%	1/6W
R155	1-249-423-11	CARBON	3.3K	5%	1/6W
R156	1-247-851-00	CARBON	6.8K	5%	1/6W
R157	1-249-425-11	CARBON	4.7K	5%	1/6W
R158	1-247-815-00	CARBON	220	5%	1/6W
R159	1-247-811-00	CARBON	150	5%	1/6W
R160	1-249-425-11	CARBON	4.7K	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R161	1-249-423-11	CARBON	3.3K	5%	1/6W
R162	1-247-887-00	CARBON	220K	5%	1/6W
R163	1-249-415-11	CARBON	680	5%	1/6W
R164	1-249-414-11	CARBON	560	5%	1/6W
R165	1-249-429-11	CARBON	10K	5%	1/6W
R166	1-249-425-11	CARBON	4.7K	5%	1/6W
R167	1-247-811-00	CARBON	150	5%	1/6W
R168	1-247-791-00	CARBON	22	5%	1/6W
R169	1-247-819-00	CARBON	330	5%	1/6W
R170	1-249-420-11	CARBON	1.8K	5%	1/6W
R172	1-247-795-00	CARBON	33	5%	1/6W
R173	1-247-795-00	CARBON	33	5%	1/6W
R174	1-247-795-00	CARBON	33	5%	1/6W
R175	1-247-795-00	CARBON	33	5%	1/6W
RF1	1-464-698-11	MODULATOR, RF (PAL)			
RY1	1-515-520-00	RELAY			
S901	1-553-575-21	SWITCH, SEESAW			
SW1	1-554-695-11	SWITCH, SLIDE			
T901	1-448-664-11	TRANSFORMER, POWER			
X1	1-567-098-00	VIBRATOR, CRYSTAL			
X2	1-567-551-11	VIBRATOR, CRYSTAL			

ACCESSORY & PACKING MATERIAL

Part No.	Description
1-558-201-11	CORD, RF CONNECTION
3-701-625-00	BAG, POLYETHYLENE
*3-764-300-11	(HB-F9P)...CHART, REFERENCE
*3-764-300-42	(HB-F9S)...CHART, REFERENCE
*3-764-300-61	(HB-F9P)...CHART, REFERENCE
*3-764-300-71	(HB-F9P)...CHART, REFERENCE
*3-764-318-12	(HB-F9P)...MANUAL, MSX-BASIC VERSION (2.0)
*3-764-318-42	(HB-F9S)...MANUAL, MSX-BASIC VERSION (2.0)
*3-764-318-61	(HB-F9P)...MANUAL, MSX-BASIC VERSION (2.0)
*3-764-318-71	(HB-F9P)...MANUAL, MSX-BASIC VERSION (2.0)
3-765-569-11	(HB-F9P)...MANUAL, INSTRUCTION
3-765-569-41	(HB-F9S)...MANUAL, INSTRUCTION
3-765-702-11	(HB-F9P)...MANUAL, INSTRUCTION
3-765-702-41	(HB-F9S)...MANUAL, INSTRUCTION
3-765-702-51	(HB-F9P)...MANUAL, INSTRUCTION
3-765-702-61	(HB-F9P)...MANUAL, INSTRUCTION
4-605-140-01	SHEET, PROTECTION
*4-608-340-01	SPACER
*4-608-341-01	(HB-F9S)...INDIVIDUAL CARTON
*4-608-342-01	(HB-F9P)...INDIVIDUAL CARTON
*4-608-346-01	CUSHION (LEFT)
*4-608-347-01	CUSHION (RIGHT)

The components identified by shading and mark  are critical for safety. Replace only with part number specified.

Sony Corporation

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