

Service Manual

Power Amplifier

Power Amplifier

SE-FX1

Radio en Televisieservice
"KEES van de MORTEL"
 Boksheuvelstraat 14
 5222 AN 's-HERTOGENBOSCH
 Tel.: 073 - 218344



Color

(K) Black Type

Area

Country Code	Areas	Color
(EB)	Great Britain	(K)
(EG)	Continental Europe and F.R. Germany	

This system can be used in a cordless configuration in which the speakers are located separately from the main operation unit and controlled by means of optical digital space transmission. When a component requires service, send or bring in the entire system.

■ SPECIFICATIONS

Power Output:	DIN 1 kHz THD 1% 6Ω 2×25 W
Power Requirement:	AC 230–240 V, 50 Hz
Power Consumption:	163 W (with opt-digital units) 148 W (without opt-digital units)
Dimensions (W×H×D):	154×146×211 mm
Weight:	2.9 kg

Notes:

- Specifications are subject to change without notice.
- Weight and dimensions are approximate.

System	CD/deck/receiver	Power amplifier	Optical digital adaptor Optical digital emitter	Optical digital receiver	Speaker system
SC-FX2	SA-FX1	SE-FX1	SH-FX1T	SH-FX1R	SB-FX2

Panasonic

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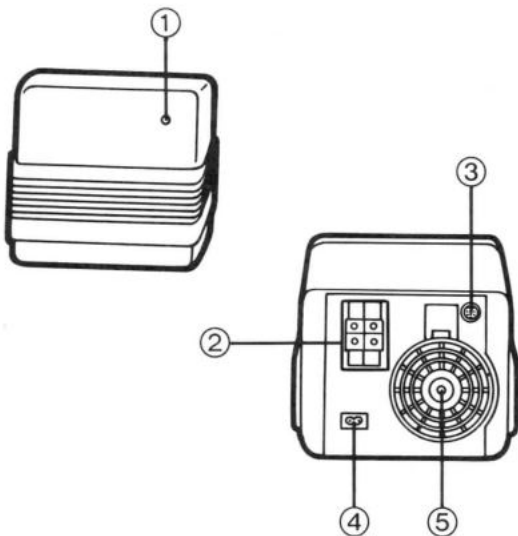
Note:

Refer to service manual for Model No. SA-FX1, Order No. AD9109208C2 for information on SYSTEM LINE-UP, SUPPLIED ACCESSORIES, INSTALLATIONS, CONNECTIONS, TROUBLESHOOTING GUIDE AND PACKAGING.

■ BEFORE REPAIR

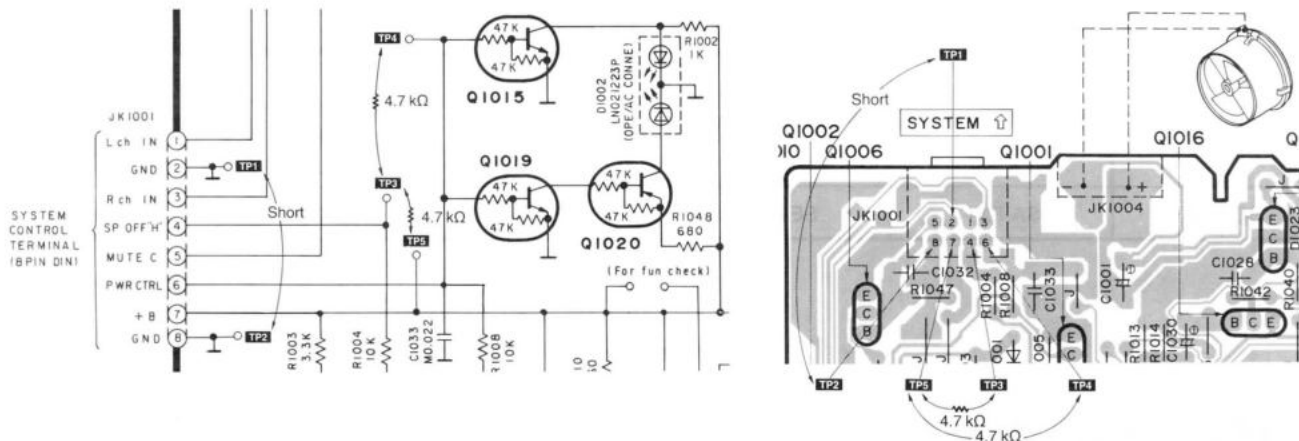
- (1) Turn off the power supply. Using a 10Ω, 10 W resistor, connect both ends of power supply capacitors (C1009, C1010, 1000 μF and C1004, 2200 V) in order to discharge the voltage.
- (2) Before turning the power supply on, after completion of repair, slowly apply the primary voltage by using a power supply voltage controller to make sure that the consumed current at 230–240 V, 50 Hz in NO SIGNAL mode is 40~200 mA.

■ LOCATION OF CONTROLS

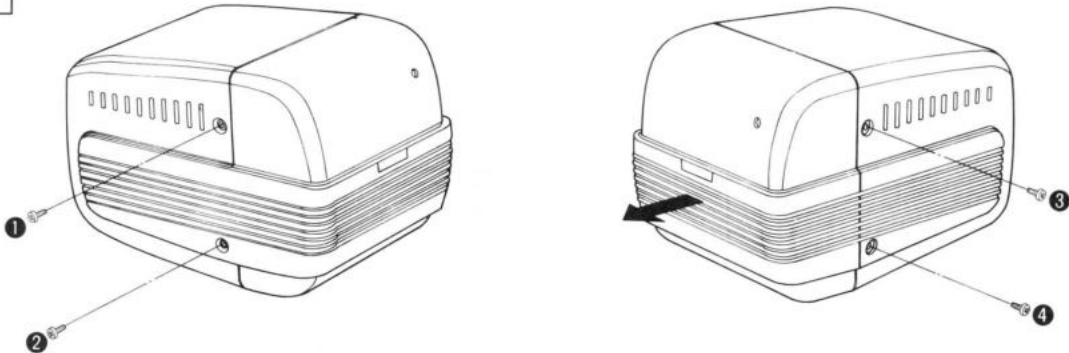
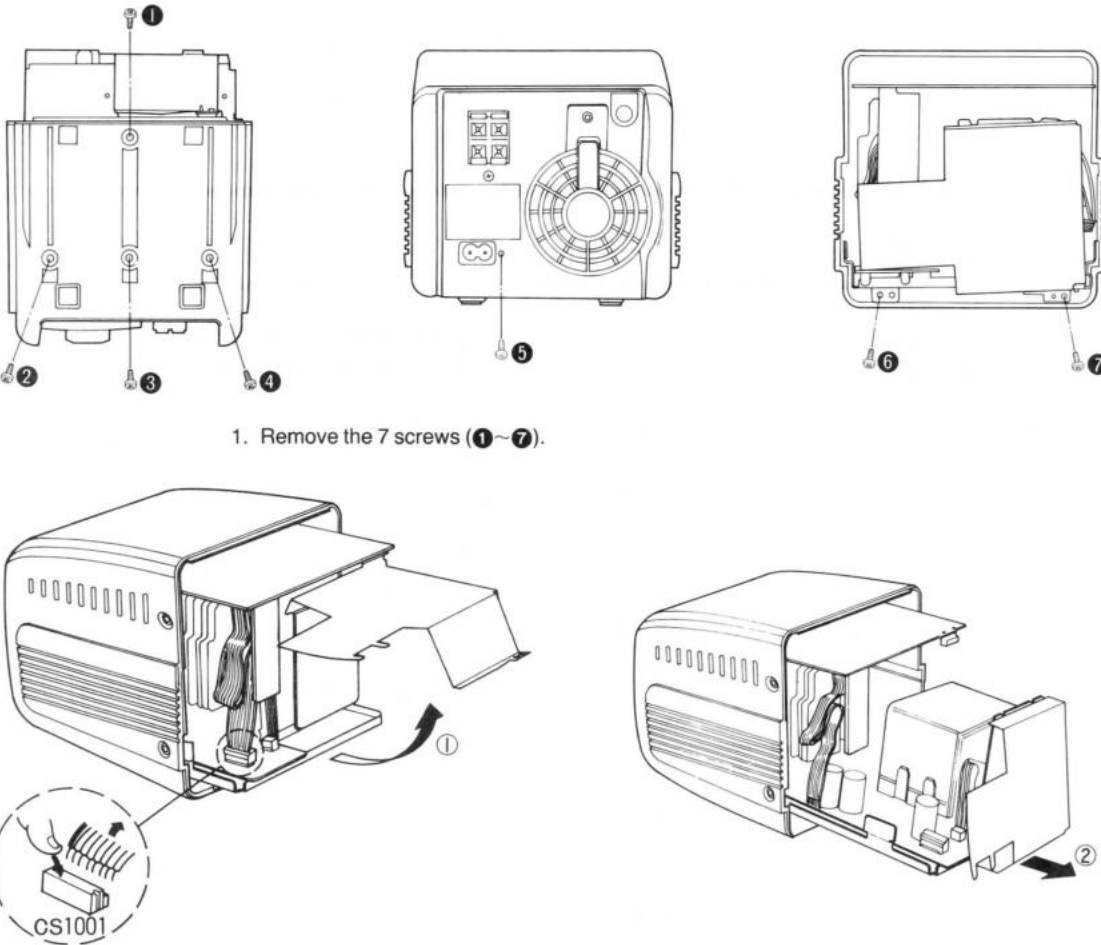


- ① **Operation/AC connection indicator**
The indicator illuminates red when the AC power supply cord is connected to the AC power outlet.
- ② **Speaker terminals (SPEAKERS)**
- ③ **System control connection jack (SYSTEM)**
Connect the system cord from the optical digital receiver.
- ④ **AC socket (AC IN~)**
- ⑤ **Cooling fan**
The cooling fan alternately rotates and stops in order to remove heat from the amplifier.
(Do not block off the outlet of the cooling fan.)

● Because the SE-FX1 has no power switch, short-circuit between **TP1** and **TP2**, connect 2 resistors between **TP3**, **TP4** and **TP5** on the main P.C.B. for power on.



DISASSEMBLY INSTRUCTIONS

Ref. No. 1	Removal of the Front Cabinet
Procedure 1	 1. Remove the 4 screws (①~④). 2. Remove the front cabinet in the direction of the arrow.
Ref. No. 2	Removal of the Power Supply Unit
Procedure 1→2	 1. Remove the 7 screws (①~⑦). 2. Lift up the cover in the direction of the arrow ① and release the connector (CS1001). 3. Remove the power supply unit in the direction of the arrow ②.

Ref. No. 3	Removal of the Main P.C.B.	1. Remove the 2 screws (①, ②). 2. Remove the main P.C.B. in the direction of the arrow.	
Ref. No. 4	Removal of the Power Supply P.C.B.	1. Remove the cover. 2. Release the 2 connectors (CS1002, CS1003). 3. Remove the 3 screws (①~③).	
Ref. No. 5	Removal of the Power Transformer	Ref. No. 6	Removal of the Fan Motor
Procedure 1→2→4→5		Procedure 1→2→3→6	
•Remove the 4 screws (①~④).		•Release the 3 claws in the direction of the arrow ① and remove the fan motor in the direction of the arrow ②.	

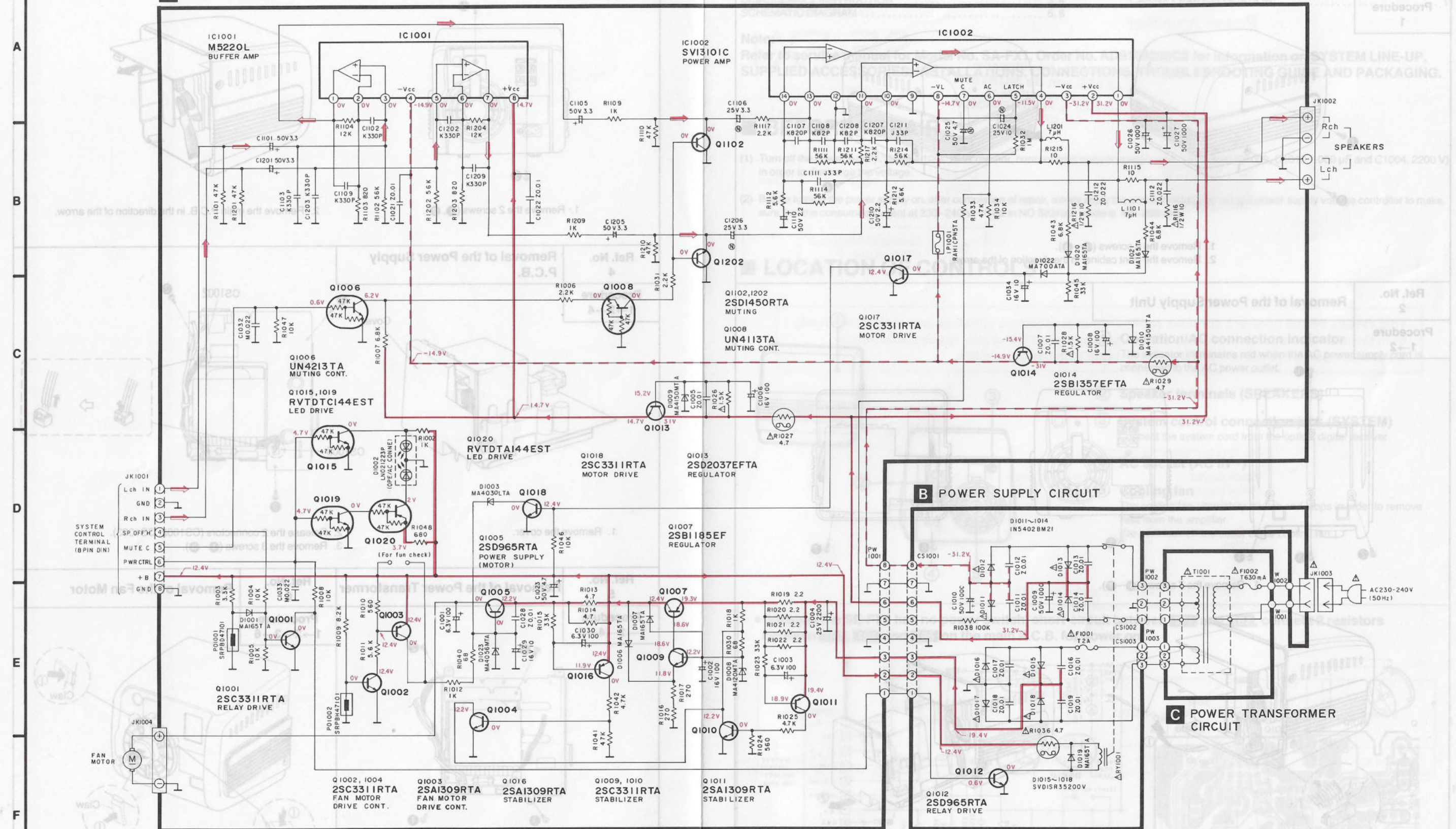
SCHEMATIC DIAGRAM

: Main signal line

: Positive voltage line

: Negative voltage line

A MAIN CIRCUIT



Notes:

- Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
- 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.
- This schematic diagram may be modified at any time with the development of new technology.



REPLACEMENT PARTS LIST

Notes : * Important safety notice:

Components identified by $\triangle$ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.

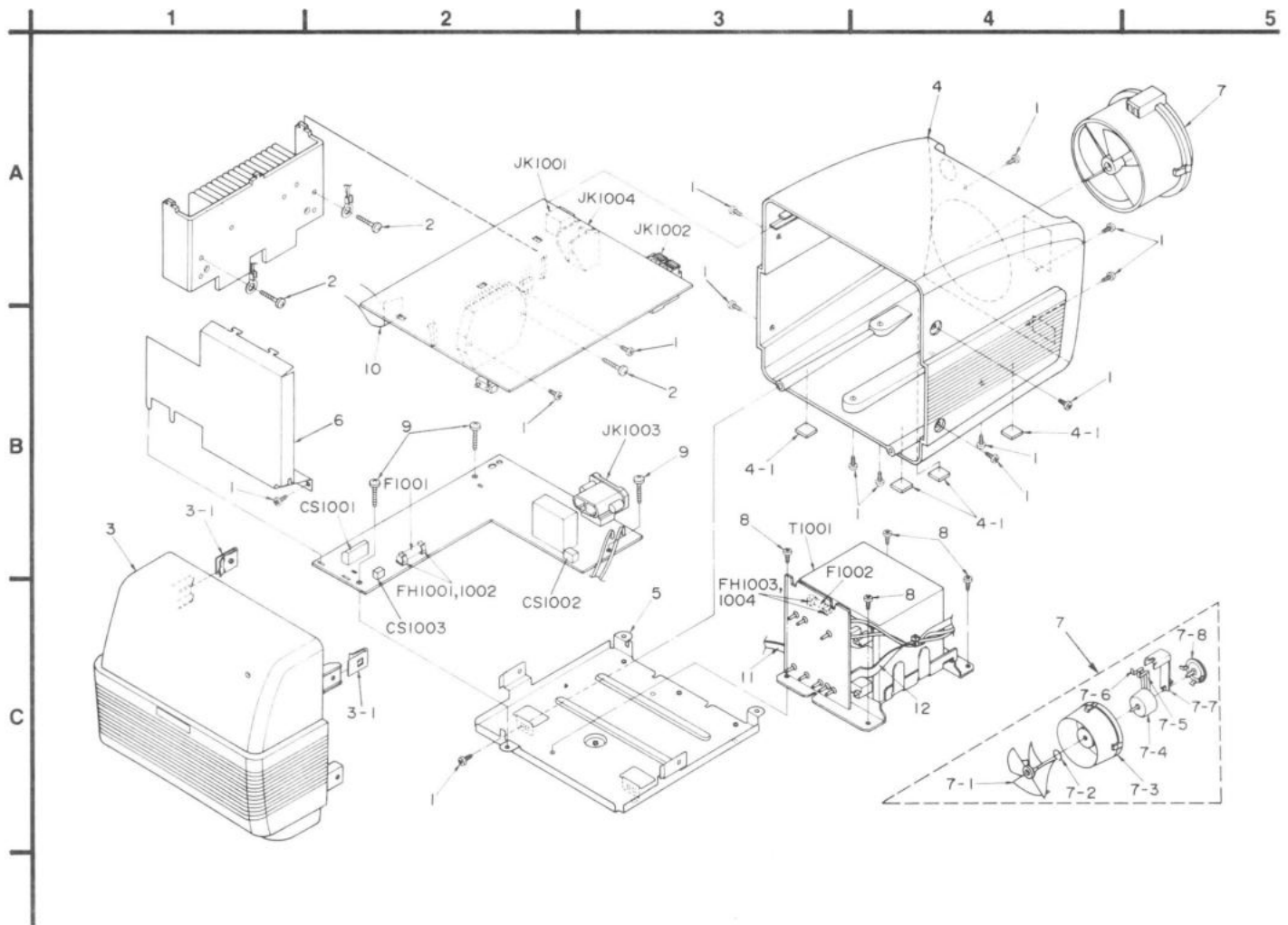
* The parenthesized indications in the Remarks columns specify the areas. (Refer to the cover page for area.) Parts without these indications can be used for all areas.

Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
						TRANSFORMER(S)	
		INTEGRATED CIRCUIT(S)					
IC1001	M5220L	I. C, BUFFER AMP		T1001 $\triangle$	RTP1M1B002-V	TRANSFORMER	
IC1002	SVI3101C	I. C, POWER AMP				FUSE(S)	
		TRANSISTOR(S)		F1001 $\triangle$	XBA2C20TB0	FUSE	
				F1002 $\triangle$	XBA2C06TB0	FUSE	
Q1001, 1002	2SC3311R	TRANSISTOR				CONNECTOR	
Q1003	2SA1309R	TRANSISTOR					
Q1004	2SC3311R	TRANSISTOR		CS1001	RJS8T4ZA	CONNECTOR	
Q1005	2SD965Q	TRANSISTOR		CS1002	RJS1A1703	CONNECTOR	
Q1006	UN4213	TRANSISTOR		CS1003	RJS1A1703	CONNECTOR	
Q1007	2SB1185EF	TRANSISTOR					
Q1008	UN4113TA	TRANSISTOR				FUSE HOLDER	
Q1009, 1010	2SC3311R	TRANSISTOR					
Q1011	2SA1309R	TRANSISTOR		FH1001 $\triangle$	EYF52BC	FUSE HOLDER (FH1001-FH1004)	
Q1012	2SD965Q	TRANSISTOR					
Q1013	2SD2037EFTA	TRANSISTOR				IC PROTECTOR	
Q1014	2SB1357EFTA	TRANSISTOR					
Q1015	RVTDC144EST	TRANSISTOR		IP1001	RAHICPN5TA	IC PROTECTOR	
Q1016	2SA1309R	TRANSISTOR					
Q1017, 1018	2SC3311R	TRANSISTOR				POSISTOR	
Q1019	RVTDC144EST	TRANSISTOR					
Q1020	RVTDA144EST	TRANSISTOR		P01001	SRPBD47101	POSISTOR	
Q1102	2SD1450RTA	TRANSISTOR		P01002	SRPBH47101	POSISTOR	
Q1202	2SD1450RTA	TRANSISTOR				JACK(S)	
		DIODE(S)					
				JK1001	RJS1D0608-M	MINI DIN	
D1001	MA165	DIODE		JK1002	RJR0054D	SP	
D1002	LN021223P	LED		JK1003 $\triangle$	SJS9236	AC IN	
D1003	MA4030LTA	DIODE		JK1004	RJS1A7402-1	CONNECTOR	
D1006, 1007	MA165	DIODE				RELAY	
D1008	MA4120	DIODE					
D1009, 1010	MA4150M	DIODE					
D1011-1014	1N5402BM21	DIODE	$\triangle$	RY1001 $\triangle$	RSY0007-C	RELAY	
D1015-1018	SVD1SR35200A	DIODE	$\triangle$				
D1019-1021	MA165	DIODE					
D1022	MA700	DIODE					
D1023	MA4056MTA	DIODE					
		COIL(S)					
L1101	SLQY07G-40	COIL					
L1201	SLQY07G-40	COIL					

Notes : * Capacity value are in microfarads (uF) unless specified otherwise, P=Pico-farads (pF) F=Farads (F)
 * Resistance values are in ohms, unless specified otherwise, 1K=1,000 (010M) , 1M=1,000k (010M)

Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks	Ref. No.	Part No.	Values & Remarks
		RESISTORS	R1116 △	ERD2FCVG100T	1/4W 10	C1202, 1203	ECBT1H331KB5	50V 330P
			R1117	ERDS2TJ222	1/4W 2.2K	C1205	ECEA1HKA3R3B	50V 3.3U
			R1201	ERDS2TJ473	1/4W 47K	C1206	ECEA1EKN3R3B	25V 3.3U
R1002	ERDS2TJ102	1/4W 1K	R1202	ERDS2TJ563	1/4W 56K	C1207	ECBT1H821KB5	50V 820P
R1003	ERDS2TJ332	1/4W 3.3K	R1203	ERDS2TJ821	1/4W 820	C1208	ECBT1H820KB5	50V 82P
R1004, 1005	ERDS2TJ103	1/4W 10K	R1204	ERDS2TJ123	1/4W 12K	C1209	ECBT1H331KB5	50V 330P
R1006	ERDS2TJ222	1/4W 2.2K	R1209	ERDS2TJ102	1/4W 1K	C1210	ECEA1HKA2R2B	50V 2.2U
R1007	ERDS2TJ682T	1/4W 6.8K	R1210	ERDS2TJ473	1/4W 47K	C1211	ECBT1H330J5	50V 33P
R1008	ERDS2TJ103	1/4W 10K	R1211	ERDS2TJ563	1/4W 56K	C1212	ECKT1H223ZF	50V 0.022U
R1009	ERDS2TJ822	1/4W 8.2K	R1212	ERDS2TJ562	1/4W 5.6K			
R1010	ERDS2TJ561	1/4W 560	R1214	ERDS2TJ563	1/4W 56K			
R1011	ERDS2TJ562	1/4W 5.6K	R1215	ERDS2TJ100	1/4W 10			
R1012	ERDS2TJ102	1/4W 1K	R1216 △	ERD2FCVG100T	1/4W 10			
R1013, 1014	ERDS2TJ4R7T	1/4W 4.7	R1217	ERDS2TJ222	1/4W 2.2K			
R1015	ERDS2TJ333	1/4W 33K						
R1016, 1017	ERDS2TJ271	1/4W 270			CAPACITORS			
R1018	ERDS2TJ102	1/4W 1K						
R1019-1022	ERDS2TJ2R2T	1/4W 2.2	C1001	ECEA0JU101B	6.3V 100U			
R1023	ERDS2TJ333	1/4W 33K	C1002	ECA1CM101B	16V 100U			
R1024	ERDS2TJ561	1/4W 560	C1003	ECEA0JU101B	6.3V 100U			
R1025	ERDS2TJ472	1/4W 4.7K	C1004	ECEA1EU222	25V 2200U			
R1026 △	ERDS1FVJ152T	1/2W 1.5K	C1005	ECKR1H103ZF5	50V 0.01U			
R1027 △	ERD2FCVJ4R7T	1/4W 4.7	C1006	ECA1CM101B	16V 100U			
R1028 △	ERDS1FVJ152T	1/2W 1.5K	C1007	ECKR1H103ZF5	50V 0.01U			
R1029 △	ERD2FCVJ4R7T	1/4W 4.7	C1008	ECA1CM101B	16V 100U			
R1030	ERDS2TJ680T	1/4W 68	C1009, 1010	ECEA1HU102	50V 1000U			
R1031	ERDS2TJ222	1/4W 2.2K	C1011-1014	ECKR1H103ZF5	50V 0.01U			
R1032	ERDS2TJ105T	1/4W 1M	C1016-1019	ECKR1H103ZF5	50V 0.01U			
R1033	ERDS2TJ473	1/4W 47K	C1021, 1022	ECKR1H103ZF5	50V 0.01U			
R1034	ERDS2TJ103	1/4W 10K	C1023	ECEA1HKA4R7B	50V 4.7U			
R1036 △	ERD2FCVJ4R7T	1/4W 4.7	C1024	ECEA1EN100SB	25V 10U			
R1038	ERDS2TJ104	1/4W 100K	C1025	ECEA1HN4R7SB	50V 4.7U			
R1040	ERDS2TJ680T	1/4W 68	C1026, 1027	ECEA1HU102	50V 1000U			
R1041	ERDS2TJ473	1/4W 47K	C1028	ECKR1H103ZF5	50V 0.01U			
R1042	ERDS2TJ472	1/4W 4.7K	C1029	ECEA1CKA100B	16V 10U			
R1043, 1044	ERDS2TJ682T	1/4W 6.8K	C1030	ECEA0JU101B	6.3V 100U			
R1045	ERDS2TJ333	1/4W 33K	C1032, 1033	ECFR1C223MR	16V 0.022U			
R1046, 1047	ERDS2TJ103	1/4W 10K	C1034	ECEA1CKA100B	16V 10U			
R1048	ERDS2TJ681	1/4W 680	C1101	ECEA1HKA3R3B	50V 3.3U			
R1101	ERDS2TJ473	1/4W 47K	C1102, 1103	ECBT1H331KB5	50V 330P			
R1102	ERDS2TJ563	1/4W 56K	C1105	ECEA1HKA3R3B	50V 3.3U			
R1103	ERDS2TJ821	1/4W 820	C1106	ECEA1EKN3R3B	25V 3.3U			
R1104	ERDS2TJ123	1/4W 12K	C1107	ECBT1H821KB5	50V 820P			
R1109	ERDS2TJ102	1/4W 1K	C1108	ECBT1H820KB5	50V 82P			
R1110	ERDS2TJ473	1/4W 47K	C1109	ECBT1H331KB5	50V 330P			
R1111	ERDS2TJ563	1/4W 56K	C1110	ECEA1HKA2R2B	50V 2.2U			
R1112	ERDS2TJ562	1/4W 5.6K	C1111	ECBT1H330J5	50V 33P			
R1114	ERDS2TJ563	1/4W 56K	C1112	ECKT1H223ZF	50V 0.022U			
R1115	ERDS2TJ100	1/4W 10	C1201	ECEA1HKA3R3B	50V 3.3U			

CABINET PARTS LOCATION



Ref. No.	Part No.	Part Name & Description	Remarks	Ref. No.	Part No.	Part Name & Description	Remarks
		CABINET PARTS		7	REM0020	FAN ASS'Y	
1	XTB3+10JFZ	SCREW		7-1	SHE232	FAN	
2	XTB3+16JFZ	SCREW		7-2	SUS271	SPRING	
3	RFKGEFX1EGK	FRONT CABINET ASS'Y		7-3	RMQ0209-K	CASE	
3-1	SNE4064-1	FIXER		7-4	MDN-4RB4MRC	MOTOR	
4	RFKHEFX1EBK	REAR CABINET ASS'Y	(EB)	7-5	RJR0067	TERMINAL	
4	RFKHEFX1EGK	REAR CABINET ASS'Y	(EG)	7-6	RJR0066	TERMINAL	
4-1	RKA0017	RUBBER		7-7	RMQ0212-K	CASE	
5	RMA0445	CHASSIS		7-8	RMQ0208-K	COVER	
6	RMV0030	SHIELD PLATE		8	XTB3+6F	SCREW	
				9	XTB3+8J	SCREW	
				10	RWJ1108115QQ	FLAT CABLE (CS1001)	
				11	RWJ1803145KQ	FLAT CABLE (W1002)	
				12	RWJ1803070KQ	FLAT CABLE (W1003)	